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OFFICIAL GAZETTE

UNITED STATES PATENT OFFICE

VOL. 61

OCT. - DEC.

1892

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OFFICIAL GAZETTE

OF THE

UNITED STATES PATENT OFFICE.

VOLUME LXI.

OCTOBER 4 TO DECEMBER 27, INCLUSIVE.

1892.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1893.

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ERRATA.

483,532, page 7, in heading, after residence of inventor, insert *assignors of one-third to Prosper H. Ellsworth, Hot Springs, Ark.*

484,006, page 165, strike out all after number—title, drawings, and claims—and insert CANCELED.

484,307, page 257, in heading, assignment, for "said Fields assignor of three-eighths to Abram D. Reynolds and John B. Childers" read *assignors, by direct and mesne assignments, of three-fourths to Abram D. Reynolds and John B. Childers.*

484,328, page 263, in heading, after residence of inventor, insert *assignor to the Lauth Patent Furnace Company, same place.*

484,329, page 263, in heading, after residence of inventor, insert *assignor to the Lauth Patent Furnace Company, same place.*

484,594, pages 356 and 357, in claims, strike out all after line 2, fifth claim, to and including line 6, sixth claim.

484,668, page 383, in heading, for "assignor, by direct and mesne assignments, to John C. Palmer, Ridley Park, Pa." read *assignor, by mesne assignments, to Armstead O. Bills, same place.*

485,334, page 629, third claim, line 4, for reference-letter "*a*" read *A*, and in line 7, same claim, for reference-letter "N" read *or.*

485,471, page 673, first claim, line 4, strike out hyphen between the words "adjustment" and "ball" and insert a comma in place thereof.

486,197, page 936, in heading, for the words and figures "Original application filed Oct. 19, 1892, Serial No. 449,386. Divided and this application filed June 18, 1892" read *Application filed June* 18, 1892.

486,263, page 961, sixth claim, line 2, strike out comma after the word "lazy-tongs."

487,441, page 1391, fifth claim, line 3, for "independently-slotted" read *independent* and strike out the hyphen.

487,890, page 1551, first claim, line 2, strike out the words "consisting in."

488,216, page 1681, in heading, residence of inventor, for "Lorraine" read *Petit Quevilly.*

488,268, page 1696, in heading, after the word "assignor," insert the word *two-thirds.*

488,290, page 1703, in heading, name of assignee, for "F. Von Heyden Nachfolger" read *Dr. F. Von Heyden Nachfolger.*

488,501, page 1771, in heading, name of assignee, for "Leach, Rooster & Baker Company" read *Leach Roaster and Baker Company.*

488,621, page 1824, first claim, line 8, for "communication" read *communicating;* line 10, for reference-letter "*l*" read 1, and same line for "communication" read *communicating.*

488,758, page 1865, fourth claim, line 2, strike out the word "engaging."

488,775, page 1870, in heading, residence of inventors, for "Brahilor" read *Brahilov.*

488,782, page 1873, second claim, line 4, for "furcation draft-iron" read *draft-iron furcation.*

488,791, page 1876, in heading, for "assignor of one-half, by mesne assignments, to K. D. Harger, Elgin, Ill., and Lucy A. Harger, Pontiac, Mich." read *assignor of one-half, by direct and mesne assignments, to K. D. Harger, Elgin, Ill., and Lucy A. Harger and Joel Pease Harger, Pontiac, Mich.*

11,283, (reissue,) page 1008, in heading, after residence of inventors, insert *said McTighe assignor to said Hoeveler.*

11,284, (reissue,) page 1009, in heading, after residence of inventors, insert *said McTighe assignor to said Hoeveler.*

22,197, (Trade-Mark,) page 1786, for the word "Eysolene" read *Eyesoline.*

Commissioner's Decisions, page 564, second column, counsel for the complainant, after "*Mr. Grosvenor Lowry,*" insert *Mr. Albert H. Walker.*

Commissioner's Decisions, page 1165, first column, line 7, for "construed" read *construing.*

Commissioner's Decisions, page 1480, first column, line 1, for "non-competent" read *not competent.*

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OFFICIAL GAZETTE

OF THE

UNITED STATES PATENT OFFICE.

OCTOBER–DECEMBER, 1892.

THE

OFFICIAL GAZETTE

OF THE

United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 61.—No. 1. TUESDAY, OCTOBER 4, 1892. PRICE—$5 per year.

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Attorneys.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., September 27, 1892.

SIR: I am directed by the Secretary to inform you that the order of the Department dated July 20, 1891, directing that Richard J. Hartman, of Washington, D. C., be no longer recognized as attorney or agent in the prosecution of any claim or other matter before the Department of the Interior or any Bureau thereof, has this day been rescinded.

Very respectfully,

E. M. DAWSON,
Chief Clerk.

The Commissioner of Patents.

Withdrawal of Cases from Issue.

Hereafter all amendments proposed to allowed applications which involve a withdrawal from issue, and all petitions and requests relating thereto, shall be filed with the docket clerk, Mr. J. M. Emory, and transmitted by him to the Primary Examiner for report. If the Examiner shall report favorably to the admission of such amendment, the matter will be laid before the Commissioner for immediate determination. If the Examiner shall report unfavorably, the case will be docketed and will be heard and decided by the Commissioner in regular course, unless good reasons shall appear for immediate action.

Copies of Decisions Furnished.

Hereafter an uncertified copy of every decision or action by any tribunal in this Office will be furnished by such tribunal to the interested party or parties without charge.

This order does not include the written statements of the grounds of decisions made by Examiners to the appellate tribunal in *ex parte* cases.

World's Columbian Exposition.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 8, 1892.

To the Inventors and Manufacturers of the United States:

It is the intention of the Patent Office to make at the World's Columbian Exposition at Chicago in 1893 an exhibit which will show that great advance in the several arts which is due, in large measure, to the encouragement and support afforded by our patent system. This exhibit is to consist of models of patented inventions, which will be carefully selected, to show as far as is possible the inception of each art, the stages through which the art has advanced, and the final development reached at the present time. This display of typical inventions, embodied in concrete form and properly arranged, will, it is believed, constitute a grand historical exhibit of the progress of the useful arts and one which will be of great interest not only to inventors and manufacturers, but to the public generally.

The Office collection of models has been seriously impaired by fire, and is further incomplete by reason of the fact that models have not generally been required or received during the last ten years. The Office is not, therefore, in possession of the models of many valuable inventions which might properly be included in such an exhibit, and without which, indeed, the exhibit would be incomplete. The limited appropriation for this exhibit will not permit the Office to make such models. An urgent appeal is therefore made to all inventors and manufacturers to come to the assistance of the Office in this matter, either by loans of models already built or by the construction of such models not in the possession of the Office as should properly be placed in such a collection. Of course, where models are loaned to the Office all proper credit will be given both in labels and catalogues to the parties by whom the loans are made, and such disposition will be made of the models after the close of the exhibit as the owners shall direct. Many inventors and manufacturers have already indicated a willingness to co-operate with the Office in this matter, and it is confidently expected that such a response will be made to this general appeal as will assure the unparalleled success of this attempt to graphically and concretely show the development of American invention.

W. E. SIMONDS,
Commissioner.

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Notice.

All solicitors, agents, or attorneys who, in circulars or advertisements or otherwise, refer to the Commissioner of Patents, or to any other official of the Patent Office, for evidence of their professional standing, do so without authority.

Names of Applicants.

When the full first name of the applicant does not appear either in his signature or in the preamble to the specification, the Examiner will, in his first official letter, require an amendment supplying the omission, and he will not pass the application to issue until the omission has been supplied, unless an affidavit shall have been filed setting forth that the full first name of the applicant is the one originally given by him.

Issue of October 4, 1892.

Patents	468	No. 483,518 to No. 483,985, inclusive.
Designs	10	No. 21,875 to No. 21,884, inclusive.
Trade-Marks	50	No. 21,806 to No. 21,855, inclusive.
Labels	None.	
Reissues	2	No. 11,274 to No. 11,275, inclusive.
Total issue	530	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	3	....	Nevada	1	1
Arizona Territory	1	....	New Hampshire	2	....
Arkansas	4	....	New Jersey	14	....
California	19	3	New Mexico Territ'y	....	....
Colorado	4	....	New York	65	13
Connecticut	19	1	North Carolina	2	....
Delaware	1	....	North Dakota	....	....
District of Columbia	5	....	Ohio	28	1
Florida	....	2	Oregon	1	....
Georgia	2	....	Pennsylvania	49	2
Idaho	1	....	Rhode Island	6	1
Illinois	33	5	South Carolina	....	1
Indian Territory	1	....	South Dakota	2	2
Indiana	17	....	Tennessee	3	....
Iowa	10	1	Texas	5	1
Kansas	10	....	Utah Territory	....	....
Kentucky	3	....	Vermont	1	....
Louisiana	5	1	Virginia	5	....
Maine	5	1	Washington	1	....
Maryland	7	....	West Virginia	2	....
Massachusetts	49	5	Wisconsin	4	....
Michigan	17	2	Wyoming	....	....
Minnesota	5	2	U. S. Army	....	....
Mississippi	1	....	U. S. Navy	....	....
Missouri	11	1			
Montana	1	....	Total to citizens of the United States	426	47
Nebraska	1	1			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	....	....	Mexico	....	....
Austria-Hungary	1	....	Netherlands	1	..
Belgium	1	....	Newfoundland	....	....
Bermuda	....	....	New South Wales	....	
Brazil	....	....	New Zealand	....	....
Canada	13	1	Norway	....	....
Chile, Republic of	....	....	Queensland	1	....
Cuba	....	....	Russia	....	....
Denmark	1	....	Scotland	1	....
Ecuador	....	....	South Australia	....	....
England	11	....	Spain	....	....
France	6	....	Sweden	1	....
Germany	11	2	Switzerland	....	....
India	2	....	Victoria	1	....
Ireland	2	....			
Italy	....	....	Total to citizens of foreign countries	52	3
Japan	....	....			

APPLICATIONS UNDER EXAMINATION.

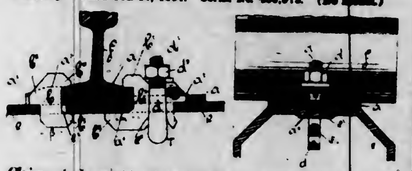
Condition at Close of Business September 27, 1892.

Division No.	Subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended	No. of applications awaiting action.
	Between one and two months in arrears.			
31	Gas, Painting, Leather, Tanning, Alcohol, Oils, Fats, and Glue, etc.	Aug. 16	Sept. 23	81
11	Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting.	July 28	Sept. 21	218
14	Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, etc.	July 28	Sept. 12	100
8	Furniture, Toilet, Umbrellas and Canes, etc.	July 27	Sept. 12	288
30	Lamps, Gas-Fittings, Type-Writers, Matrix-Making Machines.	Aug. 6	Aug. 26	169
5	Fine Arts, Stationery, Book-Binding, Music, etc.	July 28	Aug. 8	252
6	Chemistry, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc.	July 28	Aug. 3	192
	Between two and three months in arrears.			
16	Telegraphy, Telephony, Electric Lighting and Signaling.	July 11	Sept. 12	229
21	Textiles, etc.	July 14	Sept. 10	201
24	Sewing-Machines and Apparel	July 18	Sept. 8	129
25	Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, etc.	June 28	Sept. 8	260
23	Instruments of Precision, Acoustics, Optics, etc.	June 30	Sept. 5	272
12	Mechanical Engineering, Stores-Service, etc.	July 5	Sept. 3	256
20	Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc.	July 15	Aug. 27	272
22	Fire-Arms, Navigation, Signals, etc.	July 2	Aug. 15	222
27	Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	June 30	Aug. 15	322
3	Metallurgy, Metal Founding, Forging, Rolling, Coating, Annealing and Tempering, etc.	June 30	Aug. 11	205
18	Steam-Engineering, etc	July 12	July 14	199
1	Tillage and Fences	July 15	July 12	280
	Between three and four months in arrears.			
32	Advertising, Baggage, Packing and Storing Vessels, etc.	June 13	Sept. 9	307
10	Carriages and Wagons and Railway-Cars.	June 21	Sept. 1	497
4	Civil Engineering, etc.	June 10	Aug. 26	385
9	Hydraulics, Fire-Extinguishers, etc.	June 24	Aug. 24	403
7	Harvesters, Games and Toys	June 10	Aug. 16	563
17	Paper-Manufactures and Printing.	June 10	Aug. 9	256
2	Farm Stock, Products, etc	June 20	Aug. 4	371
	Between four and five months in arrears.			
29	Wood-Working Machines, Carpentry, Coopering and Roofing, etc.	May 7	Aug. 31	468
15	Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc.	May 23	July 28	277
19	Stoves and Furnaces	May 16	July 11	480
28	Pneumatics, Refrigeration, Air and Gas Engines, etc.	May 12	July 7	498
	Between five and six months in arrears.			
13	Metal-Working, Arms and Projectiles, etc.	Apr. 18	Sept. 21	336
26	Electricity, Generation, Distribution, etc.	Apr. 18	Aug. 30	487
	Total number of applications awaiting action			9,475
	Under one month in arrears.			
	Designs	Sept. 22	Sept. 22	32
	Trade-Marks	Sept. 13	Sept. 16	89

PATENTS

GRANTED OCTOBER 4, 1892.

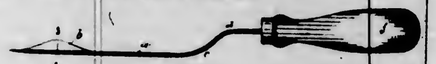
483,518. RAIL-FASTENING. HUGO ALEXY, Buda-Pesth, Austria-Hungary. Filed Oct. 17, 1891. Serial No. 408,973. (No model.)



Claim.—1. In combination with the slotted tie and the rail, a plate *a*, upon which the rail bears, having openings a' a^2 and the nose a^3 to fit into the opening in the tie, the hooks *b* and b', having catching projections to bear upon the rail-flange and the tie, the said hooks passing through the openings in the plate and tie, the locking-hook *c*, and the wedge interposed between the hook b' and the locking-hook *c*, said wedge having a screw-threaded end, and the nut d^2 thereon, substantially as described.

2. In combination, the slotted cross-tie, the base-plate *a*, having the openings therein, the rail resting thereon, the hooks adapted to pass through said openings, and the wedging means for clamping the parts in place, the said plate *a* having a removable nose a^4, adapted to the opening in the cross tie, substantially as described.

488,519. PAPER-KNIFE. HERBERT R. ALLEN, St. Louis, Mo., assignor of one-half to John R. A. Hussey, Brookline, Mass. Filed July 2, 1892. Serial No. 438,737. (No model.)



Claim.—1. A paper-roll knife consisting of a blade, a longitudinal upright rib with cutting-edge on the upper face of the blade and tapering downward toward its forward end, and a handle which enables the blade to be pushed while lying on its under face, substantially as described.

2. A paper-roll knife consisting of a blade with cutting-edge, a longitudinal upright rib with cutting-edge on the upper face of the blade and tapering downward at each end, the forward end of the rib extending short of the end of the blade, and the shank of the blade bent to raise the handle above the plane of the blade, substantially as and for the purpose described.

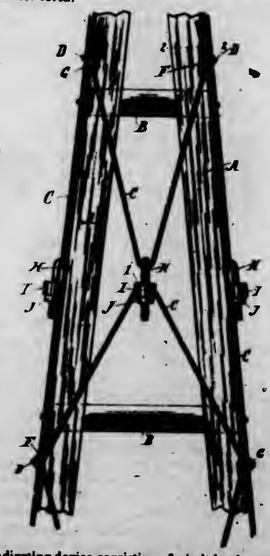
488,520. ADJUSTABLE BRACE FOR WINDMILL-TOWERS. ERNEST J. ALTEMUS, Waupun, Wis. Filed Apr. 23, 1892. Serial No. 430,366. (No model.)

Claim.—1. In an adjusting device, the combination of looped wires, a bolt having a hooked end to engage one of the loops and its opposite end screw-threaded, a collar loose upon said bolt to receive the other loop, and a nut turning upon the screw-threads against the collar, substantially as set forth.

2. In an adjusting device, the combination of looped wires, a bolt having a hooked end to engage one of the loops and its opposite end screw-threaded, a collar loose upon said bolt and provided with a recess conforming to and receiving the other loop, and a nut turning upon the screw-threads against the collar, substantially as set forth.

3. In an adjusting device, the combination of a tower composed of uprights provided with apertures, a series of looped brace-wires upon the sides of the tower, having their looped portions adjacent, the ends of said wires secured in the apertures, each aperture throughout the series receiving one end of each of two of the wires whose loops are upward and located upon angularly-adjacent sides of the tower and also receiving one end of two of the wires similarly located, but having their looped portions downward, and adjusting devices constructed to engage the adjacent loops and draw the same closer together or farther apart, substantially as set forth.

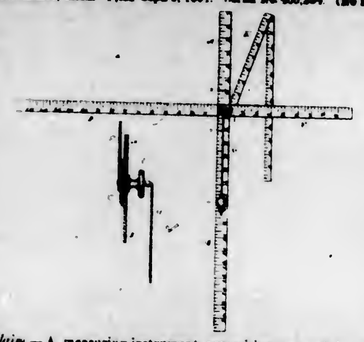
4. In an adjusting device, the combination of a tower composed of angular uprights provided with apertures at the angles thereof, a series of looped brace-wires upon the sides of the tower, having their looped portions adjacent, the ends of said wires secured in the apertures, each aperture throughout the series receiving one end of two of the wires whose loops are upward and located upon angularly-adjacent sides of the tower and also receiving one end of two of the wires similarly located, but having their looped portions downward, bolts passing through the apertures, the heads of said bolts having metallic washers interposed between the same and the inner bent ends of the wires, nuts upon the outer ends of the bolts, washers interposed between the same and the outer portions of the wires, and adjusting devices for engaging the loops and drawing the same closer together or farther apart, substantially as set forth.



5. An adjusting device consisting of a bolt having one end hooked and the opposite end screw-threaded, a collar loose upon said bolt, and a nut turning upon the threads against the collar, substantially as set forth.

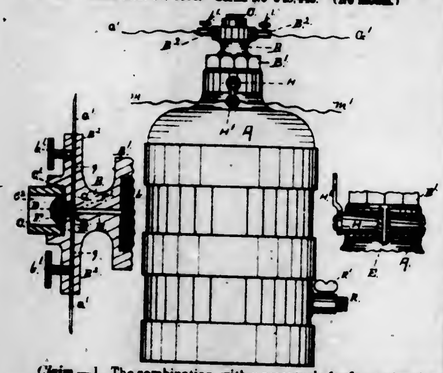
6. In an adjusting device, the combination of uprights provided with apertures, wires each having its ends passing through the apertures and bent down at right angles upon the uprights, bolts inserted between the wires, washers interposed between the wires and the heads of said bolts upon one side of the uprights, and washers upon the opposite side of the uprights, inserted between the wires, and nuts upon the threaded ends of the bolts, substantially as forth.

483,521. TAILOR'S MEASURING-SQUARE. PIER H. ARVIDSON, Kalamazoo, Mich. Filed Sept. 9, 1891. Serial No. 405,234. (No model.)



Claim.—A measuring-instrument comprising an upright elastic measuring bar having an open channel on the back side, a horizontal elastic measuring-bar crossing the former-named bar at right angles and fitting into said channel, a thumb-screw rigidly and detachably holding these elastic measuring-bars together where they cross, said thumb-screw projecting well out from the face of the bars, the plumb, the upper end of the cord of which is attached to the outer end of said thumb-screw, and a flexible measuring-tape attached in a fixed manner to the crossing measuring-bars at their point of interception, substantially as set forth

483,522. FIRE-EXTINGUISHER. OSCAR J. AVERELL, New York, N. Y. Filed Mar. 11, 1890. Serial No. 343,448. (No model.)



Claim.—1. The combination, with a receptacle for fire-extinguishing fluid, provided with a suitable discharge-tube having a recess in its outer end and a shoulder surrounding the discharge-passage, of a seal covering the discharge-passage and bearing against the shoulder, a tubular holder secured in said recess and clamping said seal against the shoulder, a cartridge beneath said seal, and means for exploding said cartridge, substantially as described.

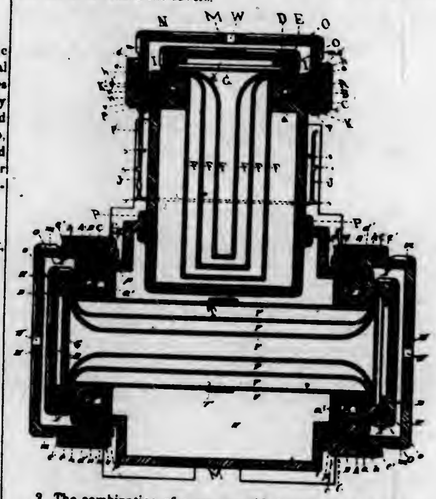
2. The combination of a discharge-nozzle for a fire-extinguishing apparatus, consisting of a neck provided with a longitudinal bore for the passage of fluid and a receptacle containing explosive in the end thereof, with a seal covering the end of said bore and said explosive and a conductor for electricity passing through said neck to the explosive for igniting the latter, substantially as described.

3. The combination of a discharge nozzle for a fire-extinguishing apparatus, consisting of a neck provided with a longitudinal bore for the passage of fluid and a receptacle containing explosive in the end thereof, with a seal covering the end of said bore and said explosive and means for igniting the explosive, substantially as described.

4. The receptacle A for containing a fire-extinguishing element, a cartridge F to blow off the seal D, and the conductors G and G', in combination with the lightning-rod P to fire the cartridge F, as and for the purpose specified.

483,523. PACKAGE. ALBERT BAKER, Fort Wayne, Ind., assignor of one-half to Frank D. Bittinger, Dayton, Ohio. Filed Dec. 3, 1890. Serial No. 373,417. (No model.)

Claim.—1. The combination of a central case provided with one or more openings, with one or more cases constructed in sections placed through said openings partially within said central case and hermetically joined thereto, journals attached to the central case at opposite ends, adapted to support said case in position to be revolved when placed in bearings, means to rotate or agitate the inclosing case upon said journals, covers to the openings of the cases and means to hermetically seal them, interior vessels or chambers F, provided with rims adapted to rest upon and be supported by the shoulder of the interior recess *a* of the projection A, a plate adapted to fit in said recess and be supported by said shoulder, the lateral flange *c*, provided with perforations, a packing covering the upper surface of said flange *c*, provided with channels corresponding to the perforations through said flange *c*, connecting them with the chamber I, an outer cover provided with a flange adapted to form with the inner cover a space or chamber extending around its inner surface, pipes *p*, provided with small orifices connected to said perforations in said lateral flange and extending into a jacket of porous or absorbent material enveloping the case or cases externally, suitable packing material placed between the parts requiring sealing, and means to secure the covers.



2. The combination of a case provided with a neck or opening, with a projection attached thereto constructed with an interior recess upon its upper inner surface of sufficient depth to receive the rims of interior vessels and a plate so as to form a chamber between said plate and a cover placed on the projection and also constructed with an exterior recess upon its lower exterior surface and also with a lateral flange extending out from its lower end, adapted to form a seat for the rim of a cover, interior vessels or chambers F, provided with rims or flanges adapted to rest upon and be supported by said shoulder within the interior recess of said projection, a plate adapted to fit in said recess and be supported by said shoulder, a cover provided with a flange adapted to closely envelop that part of the projection opposite the said interior recess and to form with the said lower part of said projection and its arm a closed space or chamber and means to secure the cover, a second projection adapted to receive the flange of said cover and closely envelop the same, a lateral flange attached to the neck of the case or to said second projection and extending therefrom so as to form a seat for the rim of an outer cover and a space between said rim and its said attachment for perforations through said lateral flange, a packing covering the upper surface of said lateral flanges, provided with perforations or channels corresponding to the perforations through said flange, an outer projection attached to said lateral flange adapted to closely envelop the flange of an outer cover, an outer cover provided with a flange adapted to form with the inner cover a space or chamber extending around its interior surface enveloping the case or cases externally, suitable packing material placed between the parts requiring sealing, and means to secure the covers.

3. The combination of a case provided with an opening, with a projection attached thereto constructed with an interior recess upon its upper inner surface of sufficient depth to receive the rims or flanges of interior vessels and a plate so as to form a chamber between said plate and a cover placed on the projection and also constructed with an exterior recess upon its lower exterior surface and also with a lateral flange extending out from its lower part, adapted to form a seat for the rim of a cover, interior vessels or chambers F, provided with rims or flanges adapted to rest upon and be supported by said shoulder within the interior recess of said projection, a plate adapted to fit in said recess and be supported by said shoulder, a cover provided with a flange adapted to closely envelop that part of the projection opposite the said interior recess and to form with the said lower part of said projection and its arm a closed space or chamber, suitable packing material placed between the parts requiring sealing, and means to secure the covers.

4. The combination of a case provided with an opening, with a projection attached thereto constructed with an interior recess upon its upper inner surface of sufficient depth to receive the rims or flanges of interior vessels and a plate so as to form a chamber between said plate and a cover placed on the projection and also constructed with an exterior recess upon its lower exterior surface and also with a lateral flange extending out from its lower part, adapted to form a seat for the rim of a cover, a plate adapted to fit in said recess and be supported by said shoulder, a cover provided with a flange adapted to closely envelop that part of the projection opposite the said interior recess and to form with the said lower part of said projection and its arm a closed space or chamber, suitable packing material placed between the parts requiring sealing, and means to secure the covers.

5. The combination of a case provided with an opening, with a projection attached thereto constructed with a recess upon its lower exterior surface, a lateral flange extending out from its lower part and adapted to form a seat for the rim of a cover, a cover provided with a flange adapted to closely envelop the upper part of the projection and to form with the said lower part of said projection and its lateral flange a closed space or chamber and means to secure the cover, and suitable packing material placed between the parts requiring sealing.

6. The combination of a case provided with an opening, with a projection attached thereto constructed with a recess upon its lower exterior surface, a lateral flange extending out from its lower end and adapted to form a seat for the rim of a cover, a cover provided with a flange adapted to closely envelop the upper part of the projection and to form with the said lower part of said projection and its lateral flange a closed space or chamber and means to secure the cover, a second projection adapted to receive the flange of said cover and closely envelop the same, and suitable packing material placed between the parts requiring sealing.

7. The combination of a case having a cover with a lateral flange attached to the neck of the case or to a projection and extending therefrom so as to form a seat for the rim of a second or outer cover and a space between said rim and its said attachment, a second or outer projection attached to said lateral flange, adapted to closely envelop the flange of an outer cover, an outer cover provided with a flange adapted to form with the inner cover a space or chamber extending around its interior surface, perforations through said lateral flange, and a jacket of porous or absorbent material enveloping the case.

8. The combination of a case having a cover with a lateral flange attached to the neck of the case or to a projection and extending therefrom so as to form a seat for the rim of a second or outer cover and a space between said rim and its said attachment, an outer cover provided with a flange adapted to form with the inner cover a space or chamber extending around its interior surface, perforations through said lateral flange, and a covering of porous or other absorbent material enveloping the case.

9. The combination of a central case with one or more cases placed partially therein through openings in said central case and hermetically joined thereto, with means to hermetically seal the openings of the inserted cases.

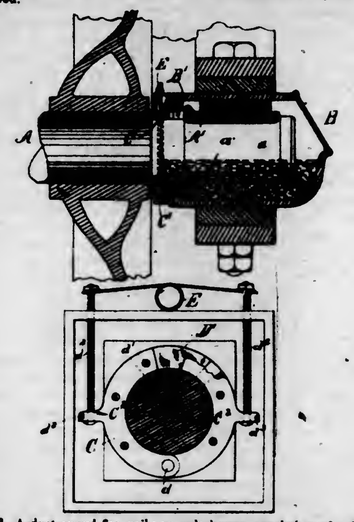
10. The combination of a case provided with a cover and means to hermetically seal the cover, with a projection attached to the opening of the case constructed with a recess and shoulder on its upper interior surface, and two or more interior vessels provided with rims adapted to rest upon and be supported by said shoulder within the interior recess of said projection.

11. In a central case adapted to receive and contain other cases and vessels, the combination of journals adapted to support the central case in position to be revolved, the hermetical sealing devices herein described, the case N, constructed in sections as described, two or more interior vessels F, adapted to rest within each other, with spaces between them and provided with flanges adapted to rest upon and be supported by the shoulder of the recess *a*, the jacket J, and means to cause liquids or fluids to flow upon and through said jacket.

483,524. DUST-GUARD FOR CAR-AXLE BOXES. WILLIAM BARR, Detroit, Mich. Filed Oct. 22, 1891. Serial No. 409,404. (No model.)

Claim.—1. A dust-guard for railway axle-boxes, consisting of a hood of flexible material engaged with the edges of the opening in the inner end of the axle-box and provided with a metal ring in which the axle revolves, said ring provided with means for automatically taking up the wear and maintaining an oil-tight joint with said axle, substantially as described.

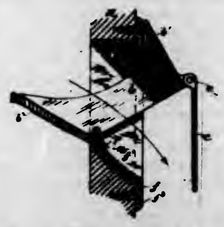
2. A dust-guard for railway axle-boxes, consisting of a hood of flexible material engaged with the edges of the opening in the inner end of the box and provided with a spring-ring embracing the axle, adapted to keep an oil-tight joint with said axle, substantially as described.



3. A dust-guard for railway axle-boxes, consisting of a hood of flexible material engaged with the edges of the opening in the inner end of the box and provided with a sectional ring having a joint below the axle, and means for drawing the section up against said axle and together to take up the wear, substantially as described.

4. A dust-guard for railway axle-boxes, consisting of a hood of flexible material engaged with the edges of the opening in the inner end of the box and provided with a sectional ring having a joint below the axle, and rods d^3, engaged with the sections of the ring, said rods supported on springs, whereby the wear on said sectional ring is taken up, substantially as described.

483,525. LETTER-BOX. GEORGE R. BISHOP, Providence, R. I. Filed Jan. 6, 1892. Serial No. 417,197. (No model.)

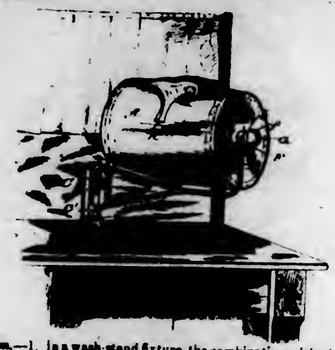


Claim.—1. The house-door letter-box hereinbefore described, consisting of the frame portion adapted to be permanently secured to the door, having an opening or mouth formed therein increasing in width in a vertical direction from the front, and the box or receptacle *b*, pivoted to the frame and arranged to be tilted back and forth in said opening and having the front b^2 of the box arranged to practically conceal the frame-opening.

2. The house-door letter-box substantially as hereinbefore described, the same consisting of the frame portion *f*, adapted to be permanently secured to the door, having its inner opening wider vertically than the front or outer opening, and the self-closing box *b*, pivoted to and arranged to be vibrated or tilted back and forth in the frame, said box being provided with stops for limiting its movement and having a movable bottom *c* hinged thereto, and means for securing the bottom in a closed position.

3. The combination of the frame *f*, the self-closing box *b*, jointed thereto, a bottom *c*, hinged to the box, and means for locking or securing the box and its bottom in position, substantially as described.

488,526. WASH-RECEPTACLE FOR WASH-STANDS. NATHAN G. ROSS, Fairfax Court-House, Va., assignor of three-fourths to Gen. R. Mathews, Washington, D. C. Filed Dec. 26, 1891. Serial No. 416,268. (No model.)



Claim.—1. In a wash-stand fixture, the combination, with a bracket adapted to be attached to a wash-stand, of a pivoted laterally-swinging frame pivoted therein and carrying brackets provided with elongated bearings and a pitcher provided upon each side with trunnions supported and having a lateral rolling and tilting motion in said bearings, substantially as shown and described, whereby the pitcher may be swung laterally with the frame in the arc of a circle and be moved laterally in its bearings on said brackets, for the purpose specified.

2. In a wash-stand fixture, the combination, with a bracket adapted to be attached to a wash-stand, of a pivoted laterally swinging frame pivoted therein and carrying brackets provided with elongated bearings and a pitcher provided upon each side with trunnions supported and having a rolling motion in said bearings, each of said trunnions having a flattened side, substantially as shown and described, whereby said pitcher may be swung laterally with said frame and be moved laterally and tilted in the bearings of said frame, for the purpose specified.

3. In a wash-stand fixture, the combination, with a pivoted swinging frame provided with brackets having elongated bearings, of a pitcher provided with trunnions mounted and having a rolling motion in said bearings, a boss on said pitcher, and a stop carried by the frame and engaging said boss, substantially as described, and for the purpose specified.

4. In a wash-stand fixture, the combination of a swinging frame carrying brackets, of a swinging pitcher having a projecting boss and provided with trunnions mounted in bearings in said brackets, and an upwardly and outwardly extending arm carried by said frame and adapted to engage said boss when the pitcher is swung to discharge its contents and to engage the bottom of the pitcher when the same swings back, substantially as described, and for the purpose specified.

5. In a wash-stand fixture, the combination of the standard C, provided with sockets *c c*, the frame D, having pintles *d d'*, journaled in said sockets and provided with brackets E E, carrying elongated bearings, and the pitcher A, provided with trunnions B B, resting in said bearings, and each having a flattened side, substantially as described.

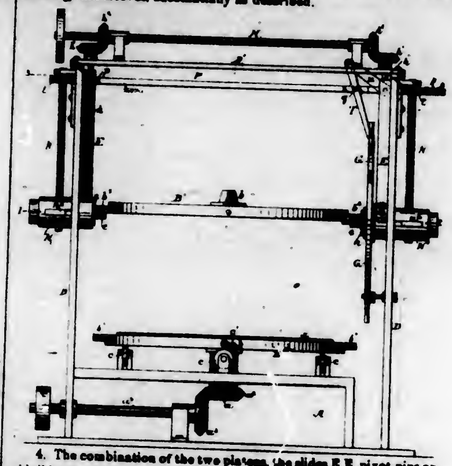
6. In a wash-stand fixture, the combination of the standard C, provided with sockets *c c* and an outwardly-projecting flange *c'*, the frame D, having pintles *d d'*, journaled in said sockets and provided with brackets E E, carrying elongated bearings, and the pitcher A, provided with trunnions B B, resting in said bearings, and each having a flattened side, all constructed and arranged substantially in the manner shown and described, and for the purpose specified.

488,527. MACHINE FOR GRINDING GLASS. JAMES W. BOSTA, Wayne, assignor to James H. Shakespeare, trustee, Philadelphia, Pa. Filed Aug. 27, 1891. Serial No. 403,946. (No model.)

Claim.—1. The combination, in a grinding-machine, of the mechanism for rotating the glass under the grinders, a platen adapted to said mechanism and on which the glass to be ground is mounted, a second platen, also adapted to the rotating mechanism, means for securing the two platens together, and means for reversing the platens with the glass between them, substantially as described.

2. The combination of the two platens adapted to clamp the glass between them, mechanism for rotating the platen carrying the glass beneath the grinders, bearings on each of said said platens, pivots adapted to said bearings, and vertically-adjustable frames carrying said pivots, substantially as described.

3. The combination of the two platens, mechanism for rotating the lower platen when in position, bearings on each of said platens, vertically-movable slides carrying pivot-pins adapted to the bearings, sleeves extending over said bearings, and mechanism for advancing and withdrawing said sleeves, substantially as described.



4. The combination of the two platens, the slides E E, pivot-pins on said slides, to which the platens are adapted, vertical screw-rods adapted to said slides, and a driving-shaft geared to both of said screw-rods, substantially as described.

5. The combination of the two platens, two slides, pivot-pins on said slides, adapted to bearings on the platens, mechanism for raising and lowering the said slides, sleeves on each slide capable of being moved over the bearings of the platens, vertical cam-shafts carried by the slides, cams on said shafts, adapted to move the sleeves, pinions on said shafts, with a rack-bar engaging said pinions, and mechanism for moving said rack-bar, substantially as described.

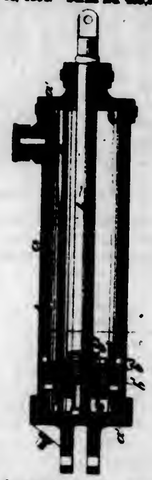
488,528. RAILWAY-SIGNAL CASE. LAWSON A. BOYD, Indianapolis, Ind. Filed Mar. 22, 1892. Serial No. 425,918. (No model.)

Claim.—1. A set of railway signaling apparatus, the several devices composing which are removably connected with or contained in separate compartments of a single case provided with means for hanging and handling the whole as a single device, substantially as set forth.

2. A case for railway-signals, consisting of the two chambers, as described, having loops upon one side of the main chamber for attachment to hooks or brackets on the side of the coach, a hook for attaching a lantern thereto, other loops on the other side of said case, to which a strap for handling and carrying the case is connected, and a torpedo-holder, all substantially as set forth.

3. The combination of the case A, formed with the two chambers, the flag-staff with the flag thereon in one of said chambers and carrying the torpedo-holder on its outer end, the lantern attached to the case, and means for supporting and carrying the same, substantially as set forth.

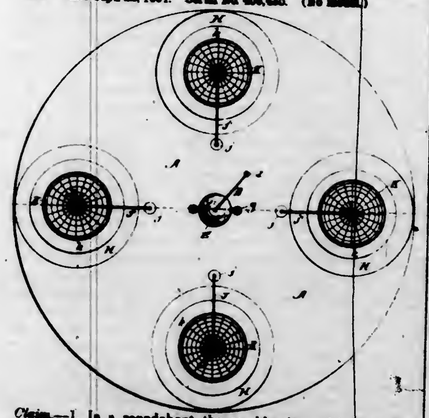
488,529. AIR-CYLINDER. WILLIAM J. O. BOYD, Jr., New York, N. Y. Filed Sept. 11, 1891. Serial No. 405,202. (No model.)



Claim.— 1. A cylinder provided with a piston having one or more openings therein and an adjusting-rod of gradually-decreasing dimensions from a point at or near one end toward its opposite end located within the cylinder and extending through one of said openings in the piston, substantially as described, and for the purpose set forth.

2. A cylinder provided with a piston having openings therein, a valve in rear of said piston having an opening therein coinciding with one of the openings in the piston, and a tapering rod extending through one of the openings in the piston and the coinciding opening of the valve, substantially as described, and for the purpose set forth.

488,530. ROUNDABOUT. JEFFERSON L. BOYCE, Birmingham, Ala. Filed Sept. 22, 1891. Serial No. 406,436. (No model.)



Claim.—1. In a roundabout, the combination, with a primary platform, of a series of auxiliary platforms mounted thereon and each carrying a globe and one or more seats, a hollow shaft rigid with each auxiliary platform and adapted to be rotated by gearing which meshes with a rack, a central shaft in the primary platform, carrying one or more globes, and independent gearing for rotating the central shaft, substantially as described.

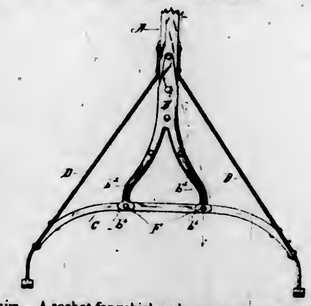
2. In a roundabout, the combination, with a primary platform adapted to revolve on a central base, the auxiliary platforms rigid with the hollow shaft I, extending up through the platform and carrying the globes K, representing the earth, the rollers A, carried by the auxiliary platforms and adapted to revolve on circular tracks *k'* on the primary platform, the seats *k*, arranged around the globes, the circular rack *b*, the gear-wheels *i* on the lower ends of the hollow shafts I, and gearing intermediate of said rack and gear to rotate the latter and the auxiliary platforms as the primary platform revolves, of the spindles J, the arms *j'*, carrying globes *j*, secured on said spindles, the stationary gear F and the train of gears *f*, meshing with said stationary gear, the outer gears of which are rigid on the spindles J to rotate the latter as the primary platform turns, the central shaft *c*, carrying a globe E, the arm D, carrying a globe *d*, and means for rotating said shaft and globes, substantially as described.

3. In a roundabout, the combination of the circular track, the primary platform supported on a central base B and having rollers to run on said track, the auxiliary platforms carried by the main platform and supporting globes, the spindles extending through said platforms and globes and having gears on their lower ends, a circular rack arranged concentric with the track beneath the primary platform, and gears carried by the primary platform and engaging with said rack and the gears on the spindles to rotate the latter and the auxiliary platforms and globes as the primary platform is revolved, substantially as described.

4. In a roundabout, the combination, with a base, of a primary platform supported on said base, a spindle C, extending through the center of said platform, a tubular shaft fitted on said spindle, an arm secured on said shaft and carrying a globe on its end, a stationary gear on the base, the idle-gears *f*, meshing with said stationary gear, a vertical shaft G, secured rigidly to one gear *f* and extending above the primary platform, and gearing intermediate of said shaft and the tubular shaft to rotate the latter, substantially as described.

5. In a roundabout, the combination, with a base, of a primary platform supported thereon, the auxiliary platforms arranged on said primary platform and carrying globes, the hollow shafts I, extending through said auxiliary platforms and globes, a circular rack arranged beneath the primary platform, the gears *b'*, carried by said platform and adapted to impart motion to the hollow shafts I and platforms as the primary platform is revolved, the spindles J, extending through said hollow shafts and carrying smaller globes representing the moon on their upper ends and gears on their lower ends, a stationary gear arranged on the base B, and idle-gears intermediate of said stationary gears and the gears on said spindles to rotate the latter independently of the auxiliary platforms, substantially as described.

488,531. VEHICLE-POLE. LOUIS I. BUFFUM, Racine, Wis. Filed Dec. 21, 1891. Serial No. 415,690. (No model.)



Claim.—A socket for vehicle poles or tongues, consisting of an upper concave plate having a divided or bifurcated rear portion, the extremities of the arms formed thereby being provided with projections or lips, and a lower plate registering therewith and also having the ends of its rear arms provided with angular spring projections or lips, substantially as set forth.

488,532. CHLORIDIZING MUFFLE-FURNACE. HUGH CALHOUN, Hot Springs, and ABNER M. BEAN, Bear, Ark. Filed June 30, 1891. Serial No. 397,666. (No model.)

Claim.—1. In a muffle-furnace, the combination of a containing-chamber and a series of muffles arranged one above another within said chamber and alternately placed in contact with opposite sides thereof, whereby a circuitous flue is formed about the muffles and a ledge is provided above each muffle upon which to burn fuel when required, and charge-openings through which to introduce fuel to said ledges.

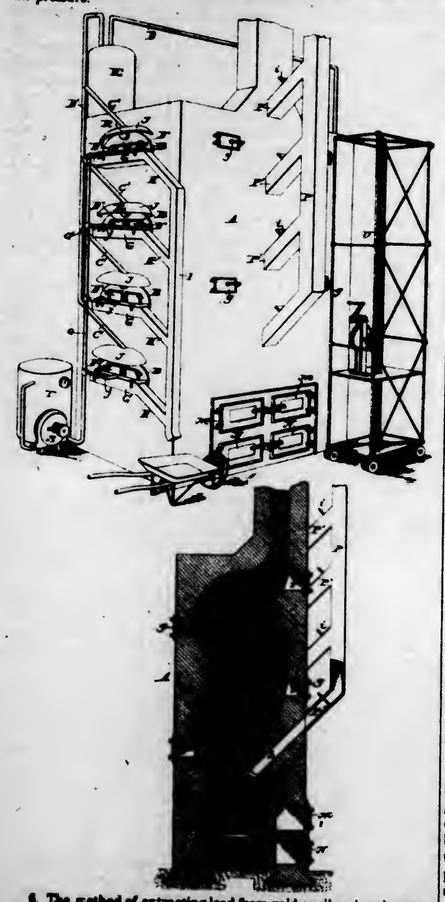
2. In combination with chamber A, provided with zigzag flue *c*, muffles located one above another in said flue, ledges *c* at one side of each muffle, feed-openings *f* above the ledges *c*, and doors or closures for said openings.

3. In combination with chamber A and muffles B, provided with

inlet or charge openings, partition-wall O, provided with chutes A, registering with the charge-openings of the muffles.

4. In combination with a furnace-chamber and with a muffle located therein and provided with doors, a hood located above the doors, a tank, and a pipe connecting the hood and the tank and serving to conveny matters collected by the hood to the tank.

5. In combination with furnace-chamber A and muffles B, located in said chamber one above another, pipes Q Q', extending into the muffles, blower S, communicating with pipe Q, and receiver T, interposed between the blower and the pipe Q and serving to equalize the air-pressure.



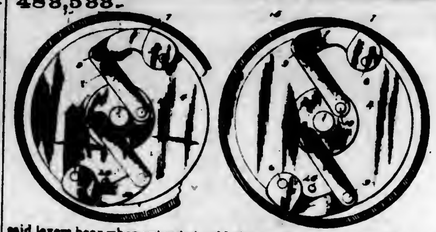
6. The method of extracting lead from gold or silver bearing ores, which consists in first reducing the ore to granular form, heating said ore in a closed receptacle in the presence of sufficient oxygen to insure the combustion of the carbonaceous matter present, the temperature being maintained at or slightly below 900° Fahrenheit, and finally removing the lead from the mass in the form of black particles, which it assumes under the treatment stated.

488,533. CLUTCH. WILLIAM B. CARROT, Downer's Grove, Ill. Filed Mar. 18, 1892. Serial No. 425,416. (No model.)

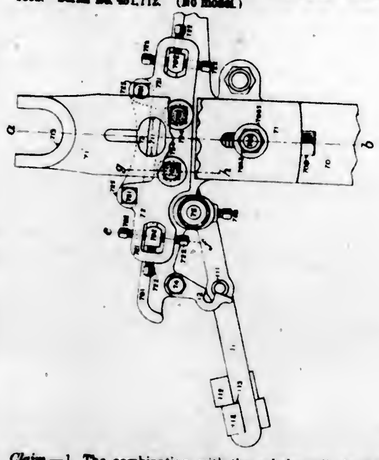
Claim.—1. In a clutch, a central hub connected to the driving-shaft and a disk mounted on said hub, a series of levers pivoted near the periphery of the disk and a link connecting each lever to the hub, and a rim surrounding said levers and attached to the second hub or driving-pulley of the clutch, all the above-named parts combined substantially as described.

2. In a clutch, a central hub having links pivoted thereto, a lever-support in proximity to said hub and having cam-levers pivoted near its outer edge and connected to said links, and a rim against which said levers bear when extended, said rim connected to the driving hub or pulley, all the above-recited elements combined substantially as described.

488,588.



488,534. GRINDING MECHANISM FOR THE FLATS OF TRAVELING-FLAT CARDING-MACHINES. WILLIAM P. CANNING, Lowell, Mass., assignor to the Lowell Machine Shop, same place. Filed Apr. 29, 1892. Serial No. 431,112. (No model.)



Claim.—1. The combination, with the grinder-roll, the grinder-bracket, and the milled seat for guiding the flats as they pass adjacent to the grinder-roller, of the seat-support held to the said bracket and adjustable thereon universally in a vertical plane and setting devices whereby to provide for fixing the seat-support accurately in the desired position of adjustment upon the bracket, substantially as and for the purposes set forth.

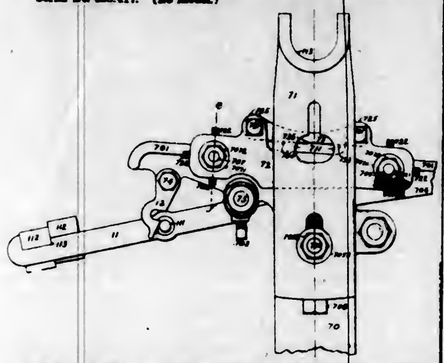
2. The combination, with the grinder-roll, the grinder-bracket, and the milled seat for guiding the flats as they pass adjacent to the grinder-roll, of the seat-support held to the said bracket and having openings receiving loosely therein projections from the bracket and horizontal and vertical setting-screws acting against the said projections to provide for fixing the seat-support accurately in the desired position of universal adjustment in a vertical plane upon the bracket, substantially as described, and for the purposes set forth.

3. The combination, with the grinder-roll, the grinder-bracket, and the milled seat for guiding the flats as they pass adjacent to the grinder-roll, of the seat-support having openings receiving loosely therein projections from the bracket and holes for the passage of screws for holding the seat-support to the bracket, screws passing through said holes, and horizontal and vertical setting-screws acting against the said projections to provide for determining the universal adjustment of the seat-support in a vertical plane upon the bracket, substantially as and for the purposes set forth.

4. The combination, with the grinder roll, the grinder-bracket, and the milled seat for guiding the flats as they pass adjacent to the grinder-roll, of the seat-support held to the said bracket, setting devices whereby to provide for fixing the seat-support accurately in the desired position of universal adjustment upon the bracket in a vertical plane to vary its position with relation to the grinder-roll, and the grinder stand having formed therein the eight holes, all substantially as and for the purposes set forth.

5. The combination, with the grinder-roll, the milled seat, and means for accurately setting the said seat into the desired position of adjustment, of the weighted presser-lever, its pivotal stud, and devices for accurately setting and holding the said stud in the desired position of adjustment, substantially as described, and for the purposes set forth.

488,585. GRINDING MECHANISM FOR FLATS OF TRAVELING-FLAT CARDING-ENGINES. WILLIAM P. CANNING, Lowell, Mass., assignor to the Lowell Machine Shop, same place. Filed June 3, 1892. Serial No. 435,417. (No model.)



Claim.—1. The combination, with the grinder-roll, the grinder-bracket, studs projecting from the said bracket having threaded outer ends, the milled seat with its surface, against which the working faces of the ends of the flats bear successively during the grinding operation, the seat-support having holes 721, through which the said studs project, and which holes are larger in every direction than the studs to permit of universal adjustment of the seat-support upon the bracket, and the nuts on the outer threaded ends of the said studs, whereby the seat-support may be held clamped to the bracket in the desired position of adjustment, of devices acting against said studs, whereby the desired position of the seat-support and milled seat may be fixed, substantially as described.

2. The combination, with the grinder-roll, the grinder-bracket, studs projecting from the said bracket having threaded outer ends, the milled seat with its surface, against which the working faces of the ends of the flats bear successively during the grinding operation, the seat-support having holes 721, through which the said studs project, and which holes are larger in every direction than the studs to permit of universal adjustment of the seat-support upon the bracket, and nuts on the outer threaded ends of the said studs, whereby the seat-support may be held clamped to the bracket in the desired position of adjustment, of screws passing through the seat-support and taking bearings by their inner ends against the sides of the said studs for fixing the desired position of the seat-support and milled seat, substantially as described.

3. The combination, with the grinder-roll, the grinder-bracket, studs projecting from the said bracket having threaded outer ends, the milled seat with its surface, against which the working faces of the ends of the flats bear successively during the grinding operation, the seat-support having holes 721, through which the said studs project, and which holes are larger in every direction than the studs to permit of universal adjustment of the seat-support upon the bracket, and nuts on the outer threaded ends of the said studs, whereby the seat-support may be held clamped to the bracket in the desired position of adjustment, of screws passing through portions of the seat-support and taking bearings at their inner ends against the sides of the said studs for fixing the desired position of the seat-support and milled seat, said screws being arranged in opposing vertical and horizontal pairs, substantially as described.

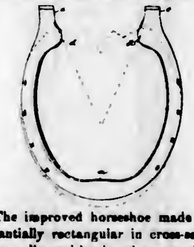
488,586. HORSESHOE. GEORGE T. CHAPMAN, White Plains, assignor of one-half to William Harvey Merritt, New York, N. Y. Filed May 1, 1889. Serial No. 309,143. (No model.)

Claim.—1. The improved horseshoe for contracted heels, consisting of a plain bar of spring metal without calks and having gradually-diminishing cross-section and rigidity from the toe each way to the heel, also having the required width at the heel for hoofs of normal shape for application alike to them and to contracted hoofs, and also having the swaged-up bearing-supports *d*, projecting inwardly from the inner edges of the heels of the shoe.

2. The improved horseshoe for contracted heels, consisting of a plain bar of spring metal without calks and having gradually-diminishing cross-section and rigidity from the toe each way to the heel, also having the required width at the heel for hoofs of normal shape for application alike to them and contracted hoofs, also having the swaged-up bearing-supports *d*, projecting inwardly from the inner edges of the heels of the shoe, and also having the hook-points of said supports adapted to engage the clefts of the heel of the hoof.

3. The improved horseshoe for contracted heels, consisting of a plain bar of spring metal without calks and having gradually-diminishing cross-section and rigidity from the toe each way to the heel, also having the required width at the heel for application alike to hoofs of normal shape and to contracted hoofs, also having the swaged-up bearing-supports *d*, projecting inwardly from the inner edges of the heels of the shoe, also having the hook-points of said supports adapted to engage the clefts of the heel of the hoof, and also having the toe-clip *c*, adapted to be forced back and exert compression on the toe of the hoof.

483,537. HORSESHOE. GEORGE T. CHAPMAN, White Plains, assignor of one-half to William Harvey Merritt, New York, N. Y. Filed May 1, 1889. Serial No. 309,144. (No model.)



Claim.—1. The improved horseshoe made of a bar of uniform area of and substantially rectangular in cross-section throughout its length and without calks and having the swaged or hammered back-set *a* in the lower side of the toe approximating the shape of the toe of the natural unshod hoof, and also having the widened bearing-surface of the toe rearward, substantially as described.

2. The improved horseshoe made of a bar of uniform area of and substantially rectangular in cross-section throughout its length and without calks and having the inwardly-extended bearing-supports *d*, swaged up from the lower side flush with the upper surface, as represented at the heel, substantially as described.

3. The improved horseshoe made of a bar of uniform area of and substantially rectangular in cross-section throughout its length and without calks and having the back-set *a* in the lower side of the toe and the inwardly-extended bearing-supports *d*, as represented at the heels, and being swaged up from the lower side flush with the upper surface of the shoe, substantially as described.

4. The improved horseshoe made of a bar of uniform area of and substantially rectangular in cross-section throughout its length and without calks and having the swaged or hammered back-set *a* in the lower side of the toe and the resultant widened bearing-surface of the toe backward, and also the prominent bearing-points at the extremities *c* of said back-set, substantially as described.

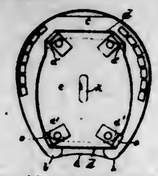
5. The improved horseshoe consisting of a bar of uniform area of and substantially rectangular in cross-section throughout its length and without calks and having plain—that is, unmilled—bottom, the prominent bearing-points at *c*, and the rear heel extensions of the bar, said bar having the bevel ends and projecting lower corners, substantially as described.

488,588. HORSESHOE. GEORGE T. CHAPMAN, White Plains, assignor of one-half to William Harvey Merritt, New York, N. Y. Filed Mar. 18, 1890. Serial No. 344,453. (No model.)

Claim.—1. The combination, with the shoe having the cross-bar connecting the heels and being rabbeted in the lower inner corners of the toe and cross-bar, of the guard-plate of slightly-greater length than the distance between the opposing walls of the rabbets and secured therein by the resilient power of the plate sprung into its position in said rabbets, substantially as described.

2. The combination, with the shoe having the cross-bar connecting the heels and being rabbeted in the lower inner corners of the toe

and cross-bar, of the guard-plate of slightly-greater length than the distance between the opposing walls of the rabbets and secured therein by the resilient power of the plate sprung into its position in said rabbets, said plate having the central slot for connecting the detaching-tool, substantially as described.



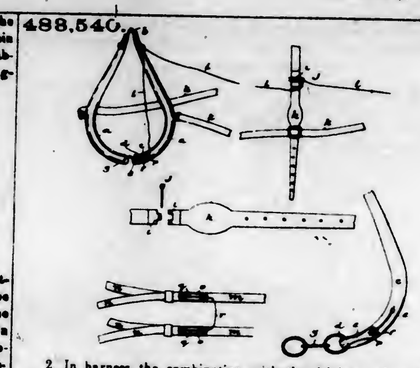
3. The combination, with the shoe having the cross-bar connecting the heels and being rabbeted in the lower inner corners of the toe and cross-bar, of the guard-plate of slightly-greater length than the distance between the opposing walls of the rabbets and secured therein by the resilient power of the plate sprung into its position in said rabbets, said plate having the calks attached at the corners and the central slot for connecting the detaching-tool, substantially as described.

488,539. FIREARM WITH BREECH OPERATED BY GASES OF EXPLOSION. VICTOR CLAIR and ERNEST CLAIR, St. Etienne, France. Filed Mar. 20, 1890. Serial No. 344,995. (No model.)

Claim.—In a magazine-firearm, as an improvement in attachments for loading the gun automatically after firing by the explosive gas conducted from the bore of the barrel through a vent into a cylinder arranged under the latter, the combination of the piston *p* in said cylinder and the spring E, pressing rearward on the piston, the yielding drive-rod d^2, provided with a nose *d* and a finger d^3, the former adapted to engage with the drive-rod *f*, a spring S, pressing forward on the rod, the latter adapted to meet with a projection in the path of the drive-rod d^3, so as to release the latter from the rod *f* at the end of the backward motion, the cross-head a^x at the breech end of a rod T, forming the rearward extension of the drive rod *f*, and the follower *b* engaging with the cross-head a^x and connected through the rod *c* with the breech-bolt and through the rod *e* with the feed-head *f*, conveying the cartridges from the magazine into the breech-cylinder of the gun, substantially as and for the purpose set forth.

488,540. HARNESS. JAMES G. CAMPBELL, Glenn, Indiana. Filed Feb. 27, 1892. Serial No. 423,163. (No model.) Patented in England May 2, 1891, No. 7,041.

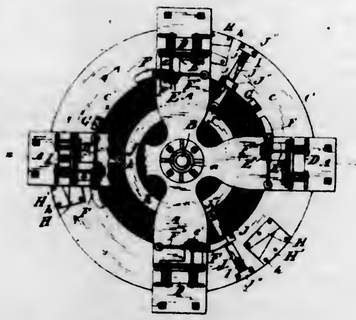
Claim.—1. In harness, the combination, with the hames, the hook *c* pivoted thereon, staples *p*, adapted to be engaged by said hook, the pin *f*, adapted to pass through said staple to hold said hook firmly in place, and a cord attached to one end of said pin to disengage the same from the staple, and a detachable band and reins, substantially as set forth.



2. In harness, the combination, with the driving and coupling reins, of plate *o*, provided with staples adapted to pass through said driving and coupling reins to hold the same together, pins *q*, passing through said staples, a cord attached to the ends of said pins to disengage the same from the staples, and a detachable hame and band, substantially as set forth.

3. In harness, the combination, with the band A, provided with hinge i, pin *j*, adapted to connect said hinge and having cord attached to one end to disengage the same to separate the parts of the band, and a detachable hame and reins, substantially as set forth.

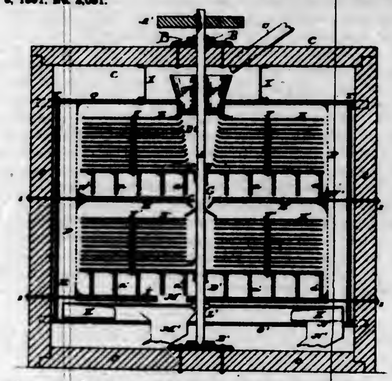
488,541. MATCH-SPLINT-CUTTING MACHINE. THOMAS A. COOK, Ottawa, Canada, assignor to Edward William Cook, same place. Filed Mar. 5, 1891. Renewed Aug. 20, 1892. Serial No. 443,540. (No model.)



Claim.—1. In a match-splint-cutting machine, the combination of a table consisting of spider-shaped arms supported upon a rigid framework providing support for bearings of a central vertical shaft, a horizontal rotary disk having a broad raised rim set close to the under side of the table-arms and mounted upon the central shaft, provided with pulley, a series of movable bars bedded in the rim of said disk holding near their outer ends a series of spurs or incisors projecting above the surface of said rim, a spring pressing each of said bars toward the center and against a cam, a spring-shaped central cam bearing on the ends of said bars, a pair of slicing-knives inclosing with their cutting-edges a V-shaped space set in said rim after each row of spurs, a feed-box mounted upon each spider-arm and over the rim of the disk, provided with channeled feed-rollers geared together, and means for actuating said rollers after each operation of the slicer, substantially as set forth.

2. In a match-splint-cutting machine, the combination of a spider-shaped table A, supported upon a frame, a central disk C upon a shaft B, journaled centrally in said table and frame, feed-boxes D, set over and into openings near the outer ends of the table-arms A and having feed-rollers geared together, a ratchet-wheel F' upon the axles of one of the feed-rollers, a weighted lever F, straddling said ratchet-wheel and journaled upon its axle and its free end bearing upon the rim *c*, a pawl F', pivoted upon said lever and engaging said ratchet-wheel, a detent F'', pivoted upon the arm A and engaging said ratchet-wheel, and cams G, secured upon the disk C and adapted to pass under and raise the lever F, substantially as set forth.

488,542. MACHINE FOR DRESSING FLOUR, MIDDLINGS, SEMOLINA, GRAIN, SEEDS, &c. ROBERT CRESSER, Maryborough, Queensland. Filed Apr. 30, 1892. Serial No. 430,997. (No model.) Patented in New South Wales Nov. 3, 1891, No. 3,570, and in South Australia Nov. 6, 1891, No. 2,051.



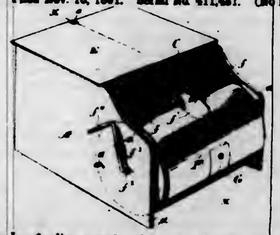
Claim.—1. In a device of the character herein described, the combination of the hopper V, the spindle A, the disks D D', the paddles *a a'*, having an end turned at right angles and secured to the disks D D', the disks E E', the tables H and I, the openings G, M, and N, and the chutes M' and N', substantially as described.

2. In a device of the character herein described, the combination of the spindle A, the driving-pulley A', means for securing the spindle to the framework C, the casing O O', the disks D D', secured to the spindle, and the paddles *a a'*, having an end turned at right angles and secured to disks D D', substantially as described.

3. In a device of the character herein described, the combination of the spindle A, the disks D D', secured thereto, the disks E E', connected with the disks D D' by bolts and nuts F F', the disks being kept at equal distances by means of ferrules P', and the table H, substantially as described.

4. In a device of the character herein described, the combination of the spindle A, the disks D D', and disks E E', having holes in the center gradually decreased in diameter as they descend, the tables H and I, the screen P, the paddles K, and the chute M'.

488,543. FEEDING MATCH-SAFE. HENRY CRESSON, Washington, D. C. Filed Nov. 10, 1891. Serial No. 411,481. (No model.)

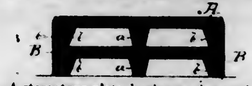


Claim.—1. In a feeding match-safe, in combination with the match-holding receptacle having a discharge opening toward and through which the matches tend to move, the rotary feed-roller standing close to said opening, provided with a longitudinal match receiving and holding groove in its periphery, and a yielding flap extending down over the discharge-opening, substantially as and for the purpose shown.

2. In a feeding match-safe, in combination with the match-holding receptacle having a discharge-opening toward and through which the matches tend to move, the rotary feed-roller standing close to said opening, having in its periphery a longitudinal match receiving and holding groove and a second deeper groove at right angles to the other, and a yielding flap extending down over the discharge-opening and made long enough to project into the deeper of the two grooves, substantially as and for the purpose set forth.

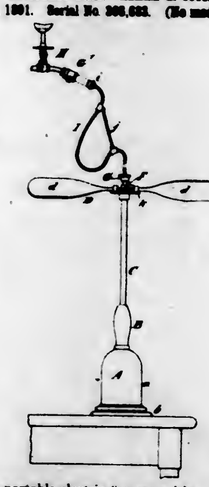
3. In a feeding match-safe, in combination with the match-holding receptacle having an inclined bottom and a discharge-opening at the lower end of the latter, the rotary feed-roller standing close to said opening, having in its periphery a longitudinal match receiving and holding groove and a second deeper groove at right angles to the other groove, the flexible flap extending down over the discharge-opening, and means for holding the roller normally turned with its match-receiving groove upward and returning it to such position after it it has been rotated to bring the latter groove down to the discharge-opening of the receptacle and released, substantially as and for the purpose described.

488,544. STEREOTYPE PLATE AND BASE. JOHN R. CUMMINS, Chicago, Ill., assignor to The American Press Association, same place. Filed Jan. 14, 1890. Serial No. 336,979. (No model.)



Claim.—A stereotype-plate having an impression-surface on its upper side made of such thickness that when several of them are mounted one above the other, so that their longitudinal side edges are bounded by the same vertical planes, the impression-surface of the uppermost plate will be just type-high.

488,545. ELECTRIC FAN. ELISHA J. CUTTER, New York, N. Y. Filed May 23, 1891. Serial No. 393,623. (No model.)



Claim.—1. A portable electric fan comprising a base containing an electromotor, a vertical shaft projecting upwardly from said base and connected with the base to said motor, so as to be rotated thereby, a fan carried by said shaft, and a connecting-socket mounted at the top comprising of said shaft and electric terminals in connection with the terminals of the motor.

2. A portable electric fan comprising a base, an electromotor inclosed in said base, a tubular handle attached to said base and projecting upwardly, by means of which the motor may be lifted, a vertical revolving shaft passing out from the base through said tubular handle connected within the base to said motor, so as to be driven thereby, and a fan mounted on said shaft.

3. A portable electric fan consisting of a base, an electromotor therein, a vertical revolving shaft extending upwardly from said base and connected to said motor, so as to be driven thereby, and electric conductors extending down through said shaft and connecting with said motor.

4. A portable electric fan consisting of a base, an electromotor therein, a fixed post extending from said base vertically upward, a tubular shaft mounted over said post and driven by said motor, a fan mounted on said shaft, and a socket or terminal connection at the upper part of said post, with means for conducting an electric current downward from said terminals in said socket to the terminals of the motor.

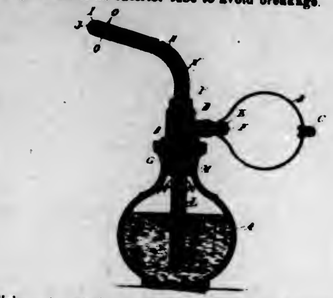
5. A portable electric fan consisting of a base, an electromotor therein, a fixed tubular post projecting upwardly from said base, electric wires passing down through said post and connected to the terminals of said motor, a tubular shaft mounted over and revolving around said post and driven by said motor, and a fan carried by said shaft.

6. The combination, with a portable electric fan having a terminal socket above the wings of the fan, of a connecting-cable comprising two wires terminating at opposite ends in plugs or terminals for connection the one with said socket and the other with the socket of an electric-light fixture, and a spring for taking up the slack in said cable, whereby

the fan may be moved from place to place within the limit of the length of said cable without disconnecting it from the source of electric current.

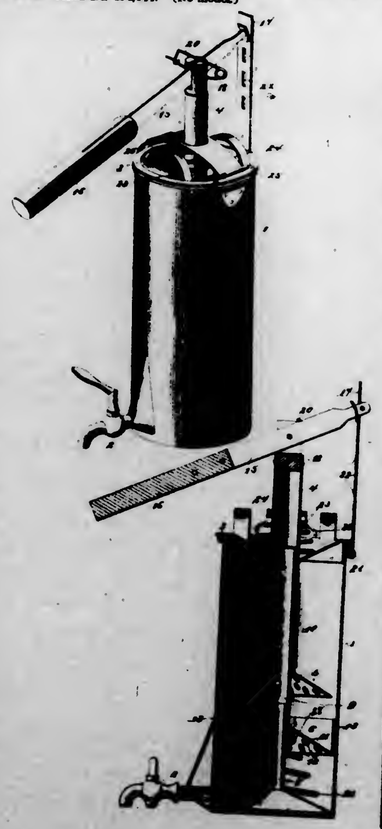
483,546. ATOMIZER. MYER DITTENHOEFER, New York, N. Y. Filed Sept. 5, 1891. Serial No. 404,869. (No model.)

Brief.—The fragile liquid-tube is protected throughout its entire length by means of an exterior tube to avoid breakage.



Claim.—An atomizer attachment comprising an interior tube for conveying the liquid and an exterior tube for receiving the air, the latter covering and protecting the interior tube throughout substantially its entire length and being attached to and removable with the fitting, both of said tubes being detached from the bottom of the atomizer, substantially as set forth.

483,547. WASHING-MACHINE. WILLIAM F. ELKINS, Comanche, Tex., assignor of one-half to Thomas J. Burts, same place. Filed May 23, 1892. Serial No. 434,011. (No model.)

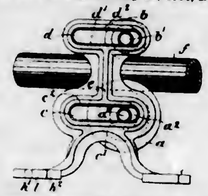


Claim.—1. In a washing-machine, the combination of a body, a yielding support arranged therein, a clothes-carrier mounted on the support and comprising a perforated disk provided at its periphery with a vertical flange and a tube rising from the disk and provided with perforations and having its upper end closed, and a pounder provided with a vertical stem receiving the tube and having a disk provided with perforations, substantially as described.

2. In a washing-machine, the combination of a body, a yielding support comprising a base arranged upon the bottom of the body, a tubular stem rising from the base, and a spiral spring disposed upon the stem and having its lower end bearing against the base, a clothes-carrier provided with perforations and having a tube receiving the stem of the support and provided with perforations, and a pounder having a tubular stem receiving the tube of the clothes-carrier, substantially as described.

3. In a washing-machine, the combination of a body provided at opposite sides with handles extending upward, a pounder provided with a stem, a cover having a central opening to receive the stem, a spiral spring disposed on the stem, and a transverse piece having a central opening to receive the stem and bearing against the upper end of the stem and having its ends engaging the handles, substantially as described.

483,548. BEARING FOR SIGNAL AND SWITCH RODS. ARTHUR G. EVANS, Westminster, England. Filed June 20, 1892. Serial No. 437,394. (No model.) Patented in England July 31, 1891, No. 13,004.

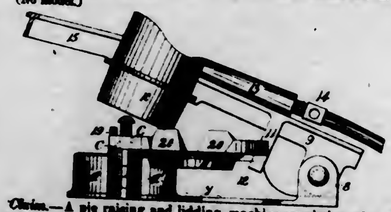


Claim.—1. In supporting-guides for rods employed in railway signaling, an elongated path or slot upon which a movable top roller is free to travel to and fro, the said roller having movement communicated to it by point-rod used or employed for communicating to-and-fro movements on railways in connection with railway signaling apparatus, the said roller or pulley having spindles or pivots of relatively-smaller diameter, substantially as hereinbefore described.

2. In supporting-guides for rods employed in railway signaling apparatus communicating to-and-fro movements on railways, the combination, with a bottom roller or pulley provided with spindles or pivots of relatively-smaller diameter arranged to roll either on a recessed shelf on the side cheek of a standard or along the lower side of an elongated slot provided in such standard, of a top roller also provided with spindles or pivots of relatively-smaller diameter arranged to roll on a recessed shelf on the side cheek of a standard or upon the upper or lower side or path of an elongated slot provided in the standard, substantially as and for the purposes herein set forth, and as illustrated upon the drawings.

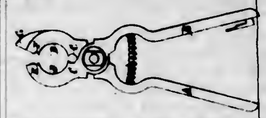
3. The combination, with a longitudinal rod, of rollers arranged above and below the rod and brackets provided with longitudinal ways for the ends of the spindles of the said rollers to roll along when the said rod is actuated, substantially as set forth.

483,549. PIE RAISING AND LIDDING MACHINE. WILLIAM R. GAUDIE, Jarrow, England. Filed May 31, 1892. Serial No. 434,939. (No model.)



Claim.—A pie raising and lidding machine consisting of a mold adapted to be opened and shut horizontally and a lidder adapted to be lifted and swung round on a pivot on or contiguous to the mold, in combination with an arm and a gas-heated plunger carried thereby, the said arm being centered on an extension of the same frame or casting as the mold itself and having a handle to apply pressure to the plunger, the several parts being arranged and adapted to operate substantially as herein set forth.

488,550. PINCHERS. JOSEPH GIRARD, Dôle, France. Filed July 9, 1892. Serial No. 439,554. (No model.) Patented in France Apr. 22, 1891, No. 212,966.

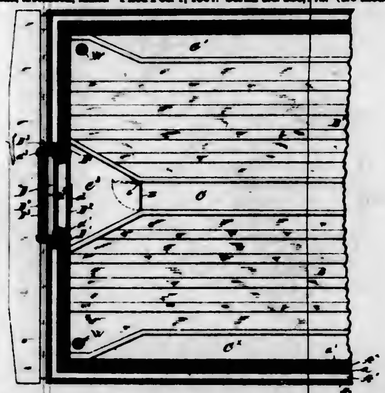


Claim.—1. In combination, in a cutting implement, the two members pivoted together and having cutting-blades C and the semicircular extensions beyond the same, the said semicircular parts having cutting-edges also, substantially as described.

2. In combination, the two members pivoted together and having blades C C, the semicircular extensions beyond the said blades, and the cutters E F at the other ends of the semicircular extensions, substantially as described.

3. In combination, the two members having the cutters C C, the semicircular extensions, the cutters G, carried thereby, one of said extensions being grooved to receive the other, substantially as described.

483,551. VENTILATED REFRIGERATOR-CAR. HENRY C. GOODELL, Atchison, Kans. Filed Feb. 1, 1887. Serial No. 226,172. (No model.)



Claim.—1. In a refrigerator-car, an ice-chamber in the top of the car, comprising two ice-boxes with a passage between them extending longitudinally of the car, a storage-chamber beneath the ice-chamber, valved air-inlet openings in the end walls of the car, substantially in line with the central passage, and an interposed valve or gate independently operated between the said passage and the air-inlet opening for deflecting the current admitted, substantially as described.

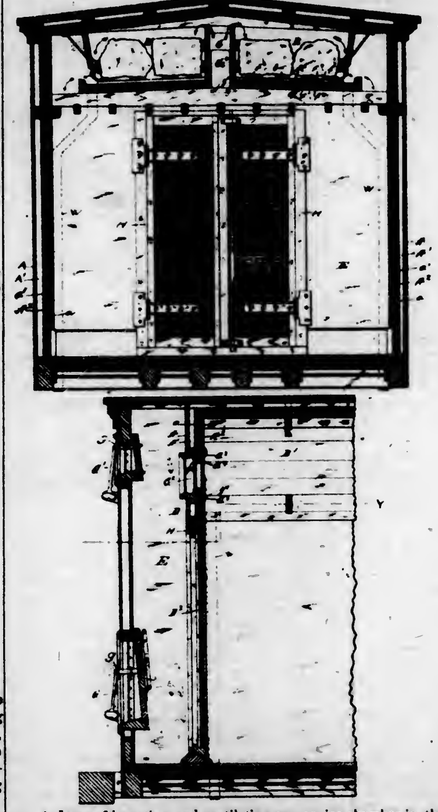
2. In a refrigerator-car, an ice-chamber in the top of the car, comprising two ice-boxes with a passage between them extending longitudinally of the car, a storage-chamber beneath the ice-chamber, valved air inlet and outlet openings in the end walls of the car, a flaring extension of the central passage between the ice-boxes, and a supplemental valve arranged between the air-inlet opening and the said central passage, substantially as described.

483,552. COMBINED REFRIGERATOR AND FRUIT CAR. HENRY C. GOODELL, Atchison, Kans. Filed Feb. 1, 1887. Serial No. 226,171. (No model.)

Claim.—1. In a refrigerating and ventilating car, an ice-chamber in the upper part of the car, an independent storage-chamber beneath the same, ventilating gated openings in each end of the car in line with each other and with the ice-chamber, and ventilating gated openings at each end of the car in line with the storage-chamber and with each other, and means for independently controlling said openings, substantially as described.

2. In a refrigerating and ventilating car, an ice-chamber extending along the upper part of the car, an independent storage-chamber beneath the same, partition-walls intermediate of the end walls, forming the end walls of the ice and storage chambers, independently-controlled gated openings in said partitions at each end in line with each other, one pair being in line with the ice-chamber and the other pair with the storage-chamber, and a gated opening in each end wall of the car, substantially as described.

3. In a refrigerating and ventilating car, an ice-chamber extending along the upper part of the car, an independent storage-chamber beneath the same, partition-walls intermediate of the end walls, forming the end walls of the ice and storage chambers, independently-controlled gated openings in said partitions at each end in line with each other, one pair being in line with the ice-chamber and the other pair with the storage-chamber, and corresponding and independently-controlled gated openings in each end wall of the car at the upper and lower part thereof, substantially as described.



4. In a refrigerating and ventilating car, an ice-chamber in the top of the car, comprising two ice-boxes with a space between them centrally, partition-walls forming the ends of the ice-chamber, a gated opening in each partition-wall in line with said central passage between the ice-boxes, an independent storage-chamber beneath the ice-chamber, the partition-walls also forming the end walls of said chamber, gated openings in said walls in line with the storage-chamber and with each other, and gated openings in the end walls of the car, substantially as described.

5. In a refrigerating and ventilating car, an ice-chamber in the upper part of the car, a storage-chamber beneath the same, partition-walls intermediate of the end walls of the car, forming the end walls of the ice and storage chambers, ventilating gated openings in said partition-walls in line with each other and with the storage-chamber, and ventilating gated openings in each end of the car, substantially as described.

488,553. SPRING SHADE-ROLLER. EDMUND F. HARTSHORN, Newark, assignor to Stewart Hartshorn, Short Hills, N. J. Filed June 26, 1891. Serial No. 397,096. (No model.)

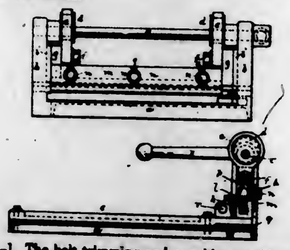
Claim.—1. As a new article, the spindle end A for shade-rollers, cast in one piece, having the flat end *a*, notch *d*, hole *c*, and the forked ends B B, provided with the ribs *b b*, substantially as described.

2. As a new article, the spindle and A for shade-rollers, cast in one piece, adapted to engage with the bracket and with the stopping device on the roller and having the forked ends B B, provided with the ribs b b, substantially as described.

488,554. COFFEE-POT. CHARLES HEISLER, Altoona, Pa. Filed June 27, 1892. Serial No. 438,120. (No model.)

Claim.—In a coffee-pot, the combination of the body portion having a spout with valved aperture, a partition over a portion of the interior surface, including the spout-aperture, and extending from near the rim of said pot to a short distance from the bottom, the bottom of said partition being perforated and the top portion being extended, to prevent coffee from spilling when the same is being poured through the spout, all substantially as shown and described.

488,555. MACHINE FOR PUNCHING AND TRIMMING BELTS. FRED B. HERSEY, Wolfborough, N. H. Filed Nov. 13, 1891. Serial No. 411,816. (No model.)



Claim.—1. The belt trimming and punching machine comprising the combination, with the bed-plate and the straight-edge at one side thereof, of the cross-bar A, extending across the bed-plate at a right angle to the line of the straight-edge, a series of punches carried by the said bar, the trimming-knife applied to and carried by the cross-bar, the said series of punches and trimming-knife extending in the direction of the length of the bar, and means whereby the cross-bar may be reciprocated, and thereby caused to simultaneously punch a series of holes across the end of the belt and trim off the end portion beyond said holes, substantially as described.

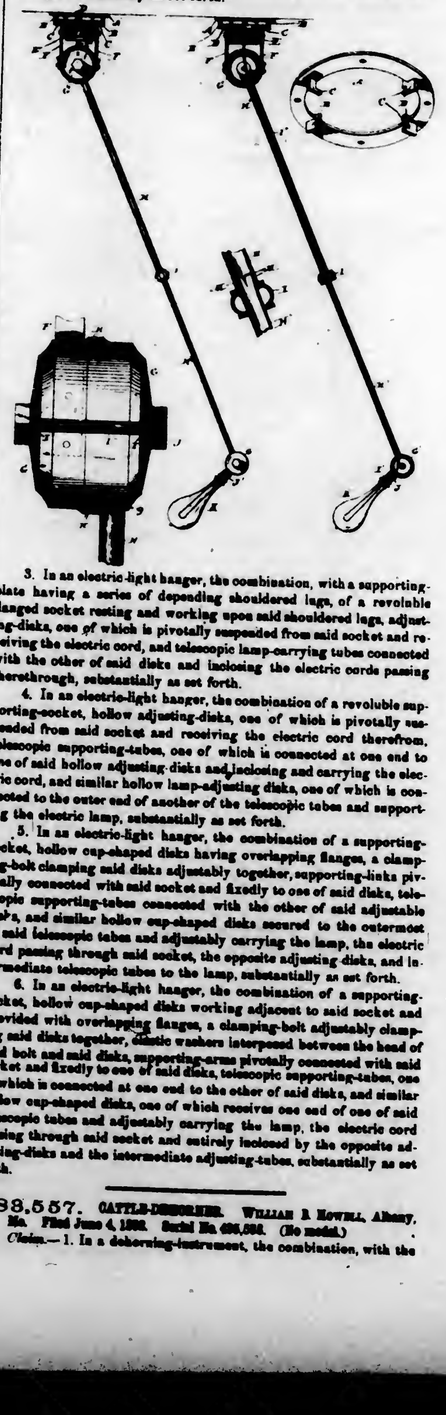
2. The belt trimming and punching machine comprising the combination, with the bed-plate and the straight-edge at one side thereof, of the cross-bar A, extending across the bed-plate at a right angle to the line of the straight-edge, the said cross-bar having the two lines of holes, the holes in one line being placed opposite alternate holes in the other line, the punches applied to the said holes, the knife carried by the said bar at one side of the series of punches, and means whereby the cross-bar may be reciprocated, and thereby caused to simultaneously punch a staggered series of holes across the end of a belt and trim off the end portion beyond such holes, substantially as described.

3. The belt trimming and punching machine comprising the combination, with the bed plate and the straight-edge adjustably mounted thereon, of the cross-bar having the two lines of holes with the holes in one line opposite alternate holes in the other line, the punches applied to the said holes, the knife carried by the said bar, and means whereby the cross-bar may be reciprocated, substantially as described.

488,556. ADJUSTABLE ELECTRIC-LIGHT HANGER. HERBERT L. HALL, Ellsworth, Me. Filed Feb. 5, 1892. Serial No. 420,620. (No model.)

Claim.—1. In an electric-light hanger, the combination of a revolvable socket, adjusting-disks, one of which is pivotally suspended from said socket, and telescopic tubes connected with the other of said disks and adapted to support the electric lamp and inclose the electric cords passing through said socket and adjusting-disks, substantially as set forth.

2. In an electric-light hanger, the combination of a supporting-socket, adjusting-disks, one of which is pivotally suspended from said socket and receiving and accommodating the electric cord therefrom, and telescopic lamp-supporting tubes connected with the other of said disks and receiving and inclosing the electric cords passing therethrough, substantially as set forth.



3. In an electric-light hanger, the combination, with a supporting-plate having a series of depending shouldered lugs, of a revolvable flanged socket resting and working upon said shouldered lugs, adjusting-disks, one of which is pivotally suspended from said socket and receiving the electric cord, and telescopic lamp-carrying tubes connected with the other of said disks and inclosing the electric cords passing therethrough, substantially as set forth.

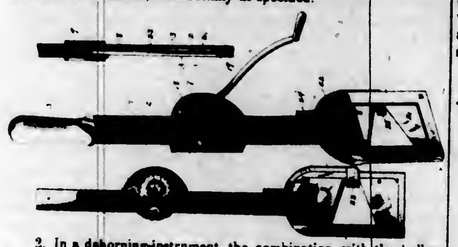
4. In an electric-light hanger, the combination of a revoluble supporting-socket, hollow adjusting-disks, one of which is pivotally suspended from said socket and receiving the electric cord therefrom, telescopic supporting-tubes, one of which is connected at one end to one of said hollow adjusting-disks and inclosing and carrying the electric cord, and similar hollow lamp-adjusting disks, one of which is connected to the outer end of another of the telescopic tubes and supporting the electric lamp, substantially as set forth.

5. In an electric-light hanger, the combination of a supporting-socket, hollow cup-shaped disks having overlapping flanges, a clamping-bolt clamping said disks adjustably together, supporting-links pivotally connected with said socket and fixedly to one of said disks, telescopic supporting-tubes connected with the other of said adjustable disks, and similar hollow cup-shaped disks secured to the outermost of said telescopic tubes and adjustably carrying the lamp, the electric cord passing through said socket, the opposite adjusting disks, and intermediate telescopic tubes to the lamp, substantially as set forth.

6. In an electric-light hanger, the combination of a supporting-socket, hollow cup-shaped disks working adjacent to said socket and provided with overlapping flanges, a clamping-bolt adjustably clamping said disks together, elastic washers interposed between the head of said bolt and said disks, supporting-arms pivotally connected with said socket and fixedly to one of said disks, telescopic supporting-tubes, one of which is connected at one end to the other of said disks, and similar hollow cup-shaped disks, one of which receives one end of one of said telescopic tubes and adjustably carrying the lamp, the electric cord passing through said socket and entirely inclosed by the opposite adjusting-disks and the intermediate adjusting-tubes, substantially as set forth.

488,557. CATTLE-DEHORNER. WILLIAM B. HOWELL, Albany, Mo. Filed June 4, 1892. Serial No. 435,502. (No model.)

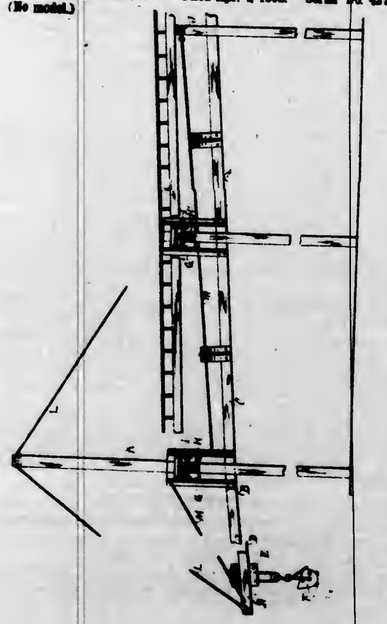
Claim.—1. In a dehorning-instrument, the combination, with the hollow handle terminating at its front end in a horn-receiving frame and provided at its outer end with a fixed knife, of a movable knife mounted in the frame, a plunger mounted in the hollow handle and secured at its front end to the fixed knife, means for operating the plunger, and a pivoted knife-gaging lever mounted on the handle and having its free end adapted to take into the path of the movable knife, and means for advancing the gage into the path of the knife when the latter is withdrawn and withdrawing the gage from said path when the knife is advanced, substantially as specified.



2. In a dehorning-instrument, the combination, with the hollow handle terminating at its front end in a frame carrying a fixed knife and provided in rear of the same with an opening, of a knife-gaging lever 22, having its front end 23 inwardly extended and in rear of its pivot 25 provided with a tail having a curved recess extending each side of the pivot, a plunger mounted in the handle, a knife carried by the plunger, means for operating the plunger, and a lug mounted on the plunger and operating in the curved recess at opposite sides of the pivot 25, substantially as specified.

3. In a dehorning-instrument, the section 1, comprising a handle 2, frame 3, and widened portion 7, the whole surrounded by the flange 6, the frame being provided with a recess 20, in which is seated a fixed knife 21, combined with the correspondingly-shaped section 2, having the grip 5 and bolted to the section 1, the plunger 10, having teeth 11, the movable knife 8, secured to the front end of the plunger, the anti-friction-roller 12, mounted on the shaft 13 in rear of the plunger, the transverse shaft 14, the gear 15 and pinion 16 thereon, the latter engaging the teeth 11, the shaft 18, the crank-handle 19 for operating the same, the pinion 17, mounted on the shaft and engaging the gear 15, the lug 26 on the plunger, and the pivoted gage-lever 22, having the inwardly-disposed head 23 and curved tail or extension 24 in the path of the lug, substantially as specified.

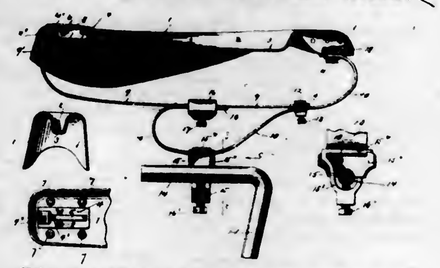
488,558. HOISTING AND CONVEYING APPARATUS. GEORGE H. HULETT, Cleveland, Ohio. Filed Apr. 4, 1892. Serial No. 427,772. (No model.)



Claim.—1. In a hoisting and conveying apparatus, a track O, a pivoted boom A, forming an extension of the track, suspending-supports G for the track, lateral ways, rollers I, extending across between the uprights G and running on the ways, a mast K, carried by the supports G, and operating means from the mast to the boom, substantially as described.

2. In a hoisting and conveying apparatus, a laterally-movable track O, a pivoted extension A, a supporting structure from which the track is suspended, consisting of uprights G and cross-rollers I, lateral ways, guy-lines between the supporting structure and the pivoted boom, a mast, and operating connections from the mast to the boom, substantially as described.

488,559. VELOCIPEDE-SADDLE. JONATHAN A. HUFF, Westborough, Mass. Filed Mar. 16, 1892. Serial No. 425,104. (No model.)



Claim.—1. A saddle-seat for velocipedes and bicycles, having a central longitudinal depression formed therein, the upper portion of the walls of which depression are rounding and the bottom of which depression is perforated and is of such a width and at such a distance below the upper surface of the seat as that when the upper portions of the walls are forced together the lower portion of the depression will remain open and unobstructed, substantially as set forth.

2. In a bicycle-saddle, an improved attachment for the front end of the spring-support, consisting of a plate, as 6, adapted to be secured to the saddle, and a tongue or flat projection 5 upon the under side of said plate, adapted to extend through a longitudinal slot in a second plate, as 4, provided with a hook 4' at its front end, and said plate 4 and a pin 8 or equivalent device for holding the plate 4 on said tongue 5, which has a rear projecting end 5' to extend over the rear end of said plate 4, substantially as set forth.

3. In a bicycle-saddle, the combination, with a metal plate, as 6, secured to the front end of the saddle-seat and having a downwardly-extending tongue 5, with a rearwardly-projecting end 5', of a plate, as 4, having a hook on the front end thereof and a longitudinal slot in the body thereof adapted to receive the tongue 5, and a pin 8 or other device for securing the plate 4 on said tongue, with the rear end 5' of said tongue extending over the rear end of said plate, substantially as set forth.

4. In a spring-support for bicycle-saddles, the combination, with a flat spring attached at one end to the saddle and curved upwardly at said end and from said curved end extending in substantially a straight line, of a second flat spring secured to the other end of the saddle and curved downwardly toward the saddle-support and from the point of attachment to the saddle-support curved upwardly and rearwardly and extending in a plane below the first-mentioned spring and clamped thereto, substantially as shown and described.

5. In a spring-support for bicycle-saddles, the combination, with a spring 9, curved upwardly at one end and extending in substantially a straight line from the point of curvature to its rear end, of a spring 10, curved upwardly at one end, where it is attached to the saddle, and from said end curved downwardly to the point where it is to be clamped to the saddle-support and from said point extending upwardly and rearwardly in the direction of its other end and in a plane below the spring 9 and clamped thereto, substantially as shown and described.

6. In a spring-support for bicycle-saddles, the combination, with a flat spring curved upwardly at one end and adapted to be attached to the saddle at said end and extending in substantially a straight line from its point of curvature, of a second flat spring adapted to be attached at one end to the saddle and curved downwardly to a point where it is to be attached to the saddle-support and from that point curved upwardly and rearwardly, bearing against the lower side of the first-mentioned spring and clamped thereto, and also clamped to the free end of the first-mentioned spring for the purpose stated, substantially as shown and described.

7. The combination, with the spring-support of a bicycle-saddle, of a clamp for attaching the same to the saddle-support, consisting of a yoke and a jacket mounted and adapted to slide thereon and so bind

the spring-support between the upper surface of said jacket and the upper end of said yoke and a set-screw for clamping the parts together upon the saddle-support, substantially as set forth.

8. A clamp for attaching the spring-support of bicycle-saddles to the saddle-support, consisting of the yoke-piece 15', through which passes the saddle-support, the jacket 15", mounted on said yoke, between the upper surface of which and the upper end of the yoke the spring passes, and a set-screw for drawing the yoke 15' into the jacket 15" to clamp the spring, substantially as shown and described.

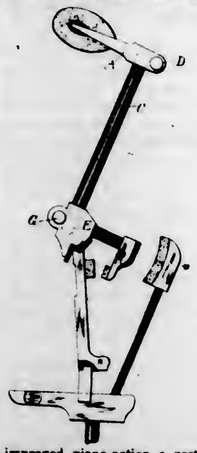
9. The combination, with a saddle for bicycles, of a hook plate secured to the under side thereof at the front end of the saddle and extending rearwardly the length of the saddle and attached to the rear frame of the saddle to serve as a brace and support and rubber cushions or springs interposed between said plate and the under side of the saddle-seat for the purpose stated, substantially as set forth.

483,560. METHOD OF AFFIXING MANUFACTURED ASBESTUS. FREDERICK W. JAGEL, Jr., Cleveland, Ohio. Filed Feb. 23, 1891. Serial No. 382,267. (Specimens.)

Claim.—1. The method herein described of applying manufactured asbestus for insulating purposes, the same consisting in saturating the asbestus in water or its equivalent and while wet pressing it upon the surface covered thereby, so as to cause it to lie closely and evenly upon the same, substantially as described.

2. The method of covering metallic or other surfaces with asbestus paper, cloth, or the like, which consists in thoroughly moistening the asbestus with a liquid which has no adhesive ingredients and then spreading the paper or cloth on the surface to be covered and finally pressing it closely and evenly upon the same, substantially as described.

483,561. PIANO-ACTION. STANLEY A. JEWETT, Cleveland, Ohio. Filed June 27, 1892. Serial No. 438,208. (No model.)



Claim.—1. In an improved piano-action, a vertically-cleft hammer provided with the opening A', in combination with the stem and a set-screw in the manner substantially as and for the purpose set forth.

2. In an improved piano action, a vertically-cleft heel provided with the opening E', in combination with the stem and a set-screw in the manner substantially as and for the purpose set forth.

3. In an improved piano-action, a stem, in combination with a vertically-cleft and pierced hammer and heel, each provided with a suitable set-screw in the manner substantially as and for the purpose set forth.

4. In an improved piano-action, a vertically-cleft and pierced hammer and heel connected by a stem and suitable set-screws, in combination with the springs and bridge of a piano in the manner substantially as and for the purpose set forth.

483,562. STORAGE-BATTERY. EDWARD P. KNOWLES, Brooklyn, N. Y. Filed Oct. 15, 1891. Serial No. 408,832. (No model.)

Claim.—1. An element for a storage-battery, composed of a number of separated elementary cells or boxes, each of said elementary cells or boxes being perforated and filled with absorptive material, in combination with spacing-strips separating the cells from one another, and the whole being combined and united together by means of bands and rivets, substantially as described.

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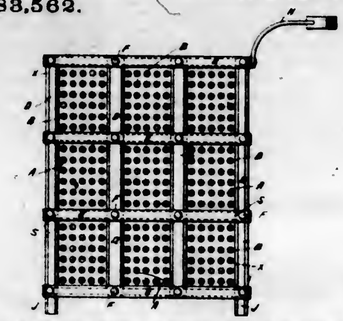
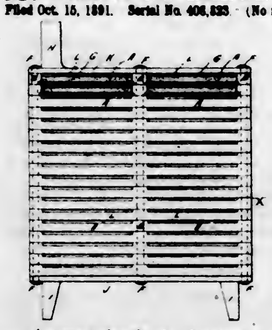


2. In a storage battery, an electrode formed of a series of parts, each part consisting of a hollow box or cell with thin perforated walls filled with absorptive material, said boxes or cells being arranged both in horizontal and vertical series to form said primary element, substantially as described.

3. In a storage-battery, the combination of a series of cells or boxes A A and spacing-strips for separating and holding said cells in vertical and horizontal arrangement, substantially as described.

483,563. STORAGE-BATTERY. EDWARD P. KNOWLES, Brooklyn, N. Y. Filed Oct. 15, 1891. Serial No. 408,833. (No model.)



Claim.—1. A support-plate for the absorptive material of a storage-battery, consisting of a series of containing trays or boxes having at each end on the bottom a peaked projection and at each end on the top an angular groove, said trays or boxes being arranged one on top of the other, said peaked projections upon the bottom of the one tray or box fitting into the angular grooves upon the top of the next tray or box, substantially as described.

2. A support-plate for the absorptive material of a storage-battery, consisting of a series of containing trays or boxes having at each end on the bottom a peaked projection and at each end in the top an angular groove, said peaked projections upon the bottom of the one tray or box fitting into the angular grooves upon the top of the next tray or box, said trays or boxes having their upper edges cut away in such a manner that when they are assembled together there shall be an open space between the top of one tray or box and the bottom of the next tray or box, all being united together, substantially as described.

3. In a storage-battery, a containing tray or box X, forming an elementary part of a support-plate for the absorptive material, having thickened ends B B and a central rib B', substantially as described.

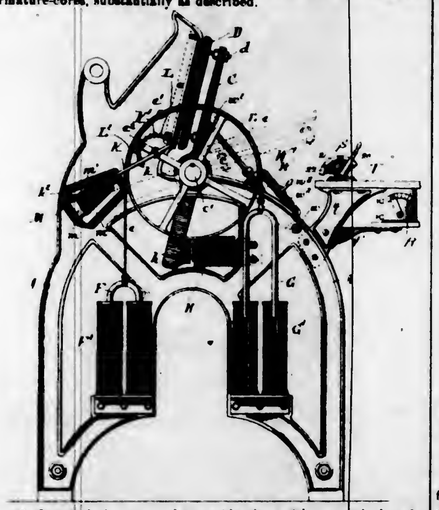
4. An electrode for electric accumulators, consisting of series of containing trays or boxes arranged in column, one on top of another, in combination with a superposed strip K, provided with a lug H, substantially as described.

5. An electrode for electric accumulators, consisting of a series of containing trays or boxes arranged in column, one on top of another, in combination with a bottom strip J, provided with supporting-feet I I, substantially as described.

483,564. ELECTRO-MAGNETIC MECHANISM FOR OPERATING PRINTING-PRESSES. ERNST H. KOMMERER, Kansas City, Mo. Filed Sept. 5, 1891. Serial No. 404,837. (No model.)

Claim.—1. In a printing-press, the combination, with the type-bed and a movable platen, of a vibratory pendulum-frame whereby said platen is carried, said pendulum-frame extending at each side of the shaft whereon it is journaled to counterbalance the platen and insure its easy movement, armature-cores connected with said shaft for effecting the movement of said pendulum-frame and platen, and electro-magnets for attracting said armature-cores, substantially as described.

2. In a printing-press, the combination, with a type-bed and a movable platen, of a vibratory pendulum-frame whereby said platen is carried, said pendulum-frame extending below the shaft whereon it is journaled to counterbalance the platen and insure its easy movement, a pulley connected to the shaft of said pendulum-frame, and armature-cores connected to said pulley and electro-magnets for attracting said armature-cores, substantially as described.



3. In a printing-press, the combination, with a type-bed and a movable platen, of electro-magnets and armatures for effecting the main movement of said platen and a supplemental electro-magnet and armature suitably connected with said platen for effecting its final movement to produce the impression, substantially as described.

4. In apparatus of the class described, the combination, with the part to be operated—such, for example, as a platen—of a pulley E, a strap or chain connected to said pulley and passing over its periphery, armature-cores attached to the ends of said strap, magnets for attracting said armature-cores, and a balanced pendulum-frame connected with said pulley, whereby a uniform and easy movement of said platen or part to be operated is secured, substantially as described.

5. In apparatus of the class described, the combination, with the part to be operated—such, for example, as a platen—of a suitable pulley, a strap or the like connected to said pulley, armature-cores connected to said strap, electro-magnets for attracting said armature-cores, a balanced pendulum-frame connected to said pulley, an impression-magnet for attracting the pendulum-frame at the extreme end of its stroke, and suitable switch mechanism, substantially as described.

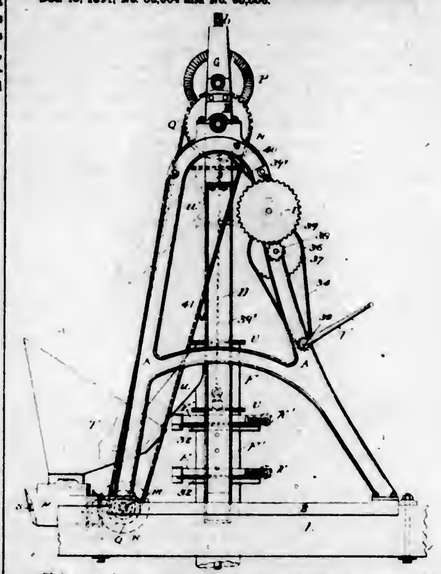
6. In apparatus of the class described, the combination, with the part to be operated—such, for example, as a platen—of a pulley, armature-cores connected to said pulley, magnets for said armature-cores, switch mechanism for controlling the alternate energization and de-energization of said magnets, said switch mechanism comprising a switch-rod connected with the pulley, and a switchboard provided with a series of contact-plates connected with their respective magnets, substantially as described.

7. In a printing press, the combination, with a type-bed and a movable platen, of a pulley E or equivalent, straps *e*, connected to said pulley, armature-cores F and G, connected to said straps, magnets F' and G', pendulum-frame C, connected to the shaft of said pulley E, an impression-magnet H and armature A, and an automatic switch mechanism comprising a spring-actuated switch-arm K and a switchboard provided with a series of contact-plates *m*, *m'*, and *m²*, substantially as described.

483,565. ARTIFICIAL MARBLE. JÖRGEN C. MAARS, Copenhagen, Denmark. Filed Sept. 24, 1890. Serial No. 366,006. (No specimens.)

Claim.—The herein-described composition of matter, which forms the artificial marble, consisting of burnt gypsum, potash alum ($KAl_2(SO_4)_4+12H_2O$), magnesite, ($MgCO_3$), magnesium chloride, ($MgCl_2$), burnt flint, (SiO_2), and water, in the proportions specified.

483,566. GRAIN-ELEVATOR. APOLLOS MARANGE, Marseilles, France. Filed Apr. 14, 1892. Serial No. 429,227. (No model.) Patented in France Feb. 20, 1890, No. 208,810; in Belgium Aug. 22, 1890, No. 91,782; in England Aug. 25, 1890, No. 13,349; in Italy Sept. 11, 1890, No. 145; in Spain Apr. 6, 1891, No. 11,773, and in Austria-Hungary Dec. 15, 1891, No. 38,664 and No. 63,358.



Claim.—1. In a spiral conveyer, the combination, with a tube formed of a series of sections having clamping-flanges internally recessed, of a conveyer-blade made up of a series of independent sections provided at their adjacent ends with engaging rings bearing and turning in said recesses, substantially as set forth.

2. In combination, the frame, the vertical conveyer made up of detachable sections, the adjustable clamp on the frame adapted to embrace the sectional conveyer, and the means for raising and lowering the conveyer through the said clamp, substantially as described.

3. In combination, the main frame, the vertical screw conveyer supported thereby and having a spout at its upper end, the horizontally arranged conveyer pivotally connected to the frame, the hopper carried by said conveyer and arranged below the spout of the vertical conveyer, the means for raising and lowering the vertical conveyer, and the means for adjusting the horizontal conveyer on its pivot, substantially as described.

4. In combination, the main frame, the hanger-arms D D, pivotally secured thereto, the vertical conveyer, the means for moving the same vertically, and the guiding means in connection with said conveyer, said guiding means extending between the hanger-arms D D, substantially as described.

5. The combination of the incasing tube and spiral conveyer within the same, the latter projecting beyond the lower end of the same and provided with a block 3, arranged adjacent to said lower edge, substantially as set forth.

6. The combination of an inclosing casing and spiral conveyer within the same and latter projecting beyond the lower edge of the former, and a spring projection *d*, located adjacent to said lower edge, substantially as set forth.

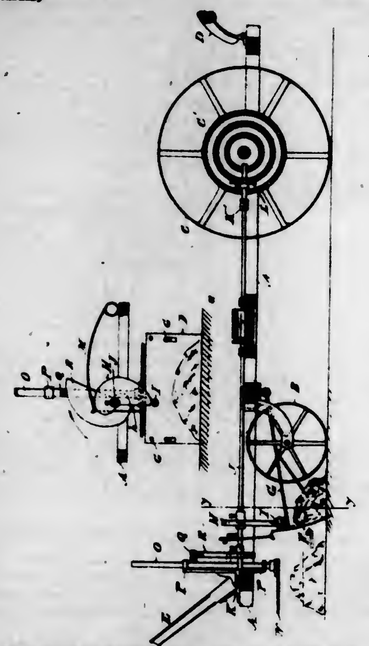
7. The combination, in a grain-elevating apparatus, of the side standards A and an interior frame carrying the conveyer-tube, spiral conveyer, and gear-shaft, said interior frame being pivotally suspended in said standards A A, substantially as set forth.

8. In combination, in a conveying apparatus, the conveyer-tube formed in sections with means at their edges for securing the sections together, the screw conveyer within said tube also formed in sections, and the rings secured at the ends of the conveyer-sections, said rings interlocking with each other to communicate the movement of one section to the next and engaging the conveying-tube and serving to hold the sections in position, substantially as described.

9. In combination, the main frame, the conveyer, the means for carrying the same, consisting of the supplemental frame, including the hangers journaled in the upper part of the main frame, the conveyer-shaft journaled in the said supplemental frame, and the means for driving the said conveyer-shaft, comprising the transverse driving-shaft

extending through the pivotal bearings of the hangers, substantially as described.

488,567. TOBACCO-HILLER. WILLIAM P. MARSHALL and OLIVER MARSHALL, Dayton, Ohio. Filed May 31, 1892. Serial No. 434,912. (No model.)



Claim.—1. In a tobacco-hiller, the combination, with a carrying-frame, of a scraper or hoe connected therewith and operating to and from the ground, and means to effect such operation of the hoe, and patter to flatten the hill collected by said scraper.

2. In a tobacco-hiller, the combination, with a frame and carrying-wheels, one acting as a driver, of a scraper or hoe to collect a hill, a patter to flatten said hill, cams operating said scraper and patter, respectively and operative connections between said cams and driving-wheel to effect the automatic action thereof.

3. In a tobacco-hiller, the combination, with driving and carrying wheels, of a patter consisting of a flattening-plate and a reciprocating rod supporting said plate, a cam having a sharp change of contour and adapted to lift said patter and allow its descent on the hill beneath, a shaft for said cam, and gear connections between said shaft and driving-wheel to effect such operation of the patter at predetermined intervals.

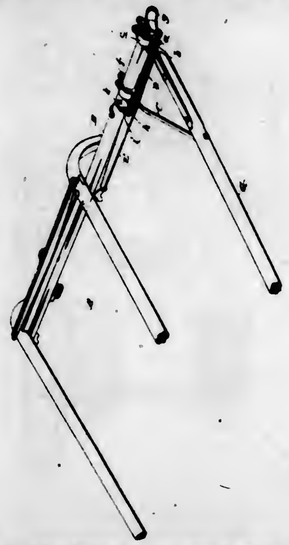
4. In a tobacco-hiller, the combination, with a frame carrying a driving-wheel, of a scraper or hoe having arms or extensions connected at one end to said frame, whereby the hoe or scraper may be adjusted to and from the ground, a spring tending to lift the hoe or scraper, a cam having a sharp change of contour and acting to depress said scraper or hoe and allow the action of the spring, a shaft for said cam, and adjustable gear connections with said driving-wheel to vary the speed of said shaft and the intervals between said lifting of the hoe.

5. In a tobacco-hiller, the combination, with a frame having a driving-wheel at one end and a caster-wheel near the other end, both wheels supporting the said frame, of a hoe or scraper hung to said frame in the rear of said caster-wheel and a patter mounted in the rear of said hoe or scraper, adjustable cam mechanism acting on said hoe and patter to allow the raising of the hoe and descent of the patter correspondingly, and means to connect said driving-wheel with said cam mechanism to effect such operation.

6. In a tobacco-hiller, the combination, with a frame, a driving-wheel, and a carrying-wheel for said frame, of a swinging scraper and a reciprocating patter to collect and flatten a hill, respectively, a driving-shaft and gear slidingly mounted thereon, a toothed disk on said driving-wheel adapted to be engaged by said gear to vary the speed of said shaft, and cam-actuating means to operate said scraper and patter successively.

7. In a tobacco-hiller, the combination, with a frame and a supporting-wheel near one end and a caster-wheel near the other end, the supporting-wheel being provided with a gear-faced disk, of a shaft, a bevel-gear slidingly mounted thereon and adapted to be engaged with said disk on the driving-wheel at different distances from the center, cam devices carried by said shaft, a scraper, and a patter or flattener respectively operated by said cam devices.

488,568. SHAFT ATTACHMENT FOR VEHICLES. FRANK M. MERRIMAN, Attica, Ind. Filed May 2, 1892. Serial No. 431,517. (No model.)



Claim.—1. A bar adapted to be secured to the shafts of a cart or sulky so as to extend laterally therefrom, in combination with a shaft or thill connected with one end of said bar, whereby a colt may be harnessed at the side of the shafts of an ordinary cart or sulky, substantially as specified.

2. The combination, with the shafts of a cart or a sulky, of a cross-bar, suitable means for securing said bar to the shafts so as to extend on one side thereof, and a shaft or thill connected to the outer end of said bar, substantially as specified.

3. A bar adapted to be secured to the shafts of a cart or sulky so as to extend laterally therefrom and also having its extended end provided on opposite sides with a shackle for the attachment of a shaft or thill, substantially as specified.

4. The laterally-extensible bar having the shackles on opposite sides at one end, in combination with the shaft, the bolt for connecting the shaft to the shackles, and the pin or key for securing the bolt in position, substantially as specified.

488,569. SAFETY ATTACHMENT FOR ELEVATORS. JACOB MERRIMAN, Calumet, Mich. Filed Apr. 13, 1892. Serial No. 428,906. (No model.)

Claim.—1. The combination, with the uprights with stops, of the elevator-car, the rock-shafts journaled on the side posts of the car and provided with projecting crank-arms, the bent rod, and the connections between the bent rod and the rock-shafts, substantially as shown and described.

2. The combination, with the uprights with stops, of the elevator-car, the rock-shafts journaled on the side posts of the car and provided with projecting crank-arms, the bent rod and the spring connecting the bent rod with the car, and the connections between the bent rod and the rock-shafts, substantially as shown and described.

3. The combination, with the uprights and the car, of the movable bent rod E and the collars on the said rod, and the bar G, secured to the bent rod and barrying pivoted arms, and the springs connecting said arms with the car, substantially as shown and described.

4. The combination, with the uprights and the car, of the movable bent rod E and the collars on the said rod, and the bar G, secured to the bent rod and carrying pivoted arms, and the springs connecting said arms with the car, and a loose connection between the pivoted arms and the bar G, all substantially as shown and described.

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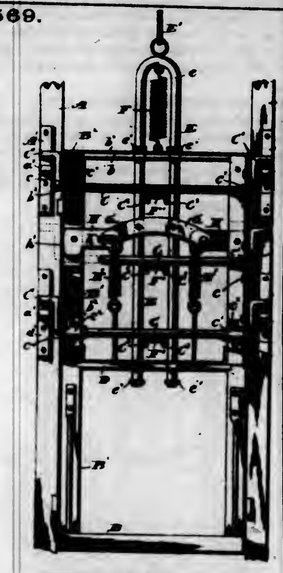
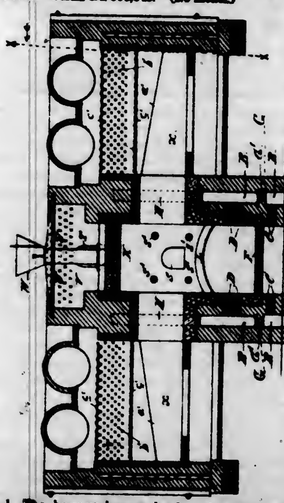


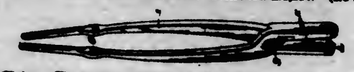
488,570. FURNACE. LEWIS MEYBERG, New Orleans, La. Filed June 30, 1891. Serial No. 398,063. (No model.)



Claim.—1. The bagasse-burner having the air-spaces E on opposite sides of the combustion-chamber and adapted to connect with air-tunnels, as described, said spaces also having partitions with provided with openings, in combination with the combustion-chamber, the ash-pit having the sloping bottom, as described, the tuyeres connecting the air-spaces with the combustion-chamber and ash-pit, respectively, the slides for regulating the supply of air, and the furnaces on opposite sides of the bagasse-burner, connected by the flues H and having the sloping bridge-walls *c'*, substantially as specified.

2. The combination, with the bagasse-furnace having the arch K, and the radiating-chamber above said arch, of the hopper W, passing through said chamber and arch, the wings pivoted in the hopper and having the arms X, and the forked levers, also pivoted to the hopper and having their forked ends engaging the arms of the wings and having their handles projecting through the covering-plates, whereby said wings may be manipulated to deflect fuel to the front or rear of the furnace, substantially as specified.

488,571. FLOORING OR SIDING TONGS. GEORGE W. HILLER, Lenox, Mich. Filed Mar. 24, 1892. Serial No. 426,207. (No model.)



Claim.—The tongs herein described, consisting of jaws having projections or points extending from the inner sides of the jaws thereof and transverse openings extending through the reins or handles of the same and a rod or bar having a yoked end with legs to engage said openings in the reins or handles at one end thereof and the opposite end tapered into a point, substantially as described.

488,572. PEN AND LETTER RACK. SILAS B. MOSER, Putnam, Conn. Filed June 18, 1892. Serial No. 436,882. (No model.)

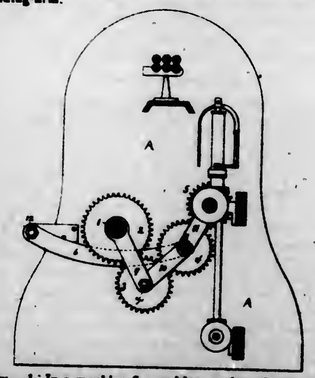
Claim.—1. In a device of the character set forth, the combination of a frame, grooved ends or heads at opposite portions of said frame, and a spring loosely supported thereby and freely movable at either end from or toward the ends or heads of the frame, substantially as described.

2. In a device of the character set forth, the combination of a frame having ends or heads with circular grooves therein, a connecting rod or bolt, and a spring freely movable and loosely connected to said frame and adapted to have the last coil at opposite ends thereof to engage the said circular grooves of the ends or heads, substantially as described.

3. In a device of the character set forth, the combination of a frame having ends or heads with circular grooves therein and constructed in the form of rings, together with recesses at opposite sides thereof and slots and recesses at the bases of said rings, side bars fitted in said recesses at the opposite sides of the ends or heads, a connecting-bolt engaging said slots or recesses at the bases of the rings, and a spring mounted in loose engagement with said parts, substantially as described.

488,573. ROVING-FRAME. BENJ. P. MORGAN, Saco, and JAMES H. MCMILLAN, Portland, Me. Filed Jan. 18, 1892. Serial No. 418,383. (No model.)

Brief.—In order to avoid a variable rotary movement of the bobbins incident to the vertical traverse of the bobbin-rail, intermediate gears are flexibly connected with each other and also with the main driving-gear and the bobbin-rail-shaft gear, their path being controlled by a guiding-arm.



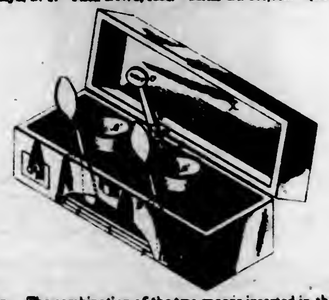
Claim.—1. In a machine for making roving of cotton or other fibers, the combination, with a main driving-gear and a bobbin-rail-shaft gear, of a flexible chain of gears flexibly connected with each other and with said driving and said bobbin-rail-shaft gear, as herein set forth, and for the purpose specified.

2. In a machine for making roving of cotton or other fibers, the

combination of a main driving-gear 2, intermediate gears 3 and 4, bobbin-rail-shaft gear 5, connecting-arms 9, 10, and 11, pivoting-studs 7 and 7', directing-arm 6, and stud 12, said connecting-arms being pivoted on the main driving-gear shaft, bobbin-rail-gear shaft, and on the pivoting-studs 7 and 7' to secure the flexible connection of the several gears, said directing-arm being pivoted on the studs 7 and 12 to control the path of motion of the intermediate 4 conformably to the limit of the vertical traverse of the bobbin-rail shaft, substantially as and for the purpose specified.

3. In a machine for making roving of cotton or other fibers, the combination of a main driving-gear, a bobbin-rail-shaft gear, and intermediate gears, all flexibly connected with means for controlling the path of motion of said intermediates, in the manner described, to fill the conditions herein set forth.

483,574. AUTOMATIC MEDICINE-STAND. CHARLES A. MORIARTY, Brooklyn, N. Y. Filed Nov. 5, 1891. Serial No. 411,013. (No model.)



Claim.—The combination of the two spoons inserted in their slots, the sliding bar F, with its slots, levers G, P, and Q, the levers M N, having thereon an index, and the projecting ends R S of the boxes K L, all substantially as and for the purpose described.

483,575. CLOSURE FOR VESSELS. JESSE B. MCFARR, Salem, Ohio. Filed Feb. 16, 1892. Serial No. 421,735. (No model.)

Claim.—In combination, a vessel having an exteriorly-threaded neck and an annular groove surrounding the neck, the groove having downwardly-convergent outer and inner sides, the interiorly-threaded cap fitting upon said neck and provided at its lower edge with an outwardly-flared flange to enter and extend to the bottom of said groove and lie in contact with its inner inclined side, and sealing material disposed in the groove upon the upper and outer side of said flange and in contact therewith, whereby the removal of the cap prior to the displacement of the sealing material is prevented, substantially as specified.

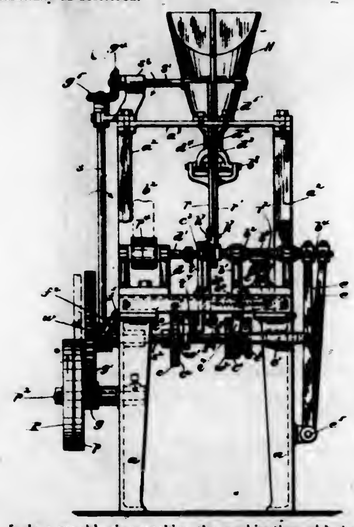
483,576. SPOOL-BORING MACHINE. JOHN M. PARKER, Pawtucket, R. I. Filed June 6, 1891. Serial No. 395,644. (No model.)

Claim.—1. A spool-boring machine having a hopper or reservoir for the spool-blanks, a jointed runway communicating with and extending downwardly from the hopper, two laterally-separated revolving drills, two blank-receiving holders arranged in line with the drills, mechanism for intermittingly vibrating the runway to deliver blanks singly to the holders, and mechanism for reciprocating the holders alternately in a longitudinal direction, substantially as described.

2. In a spool-boring machine, substantially as described, the combination, with a pair of laterally-separated revolving drills, a pivotally-mounted double-mouthed runway arranged to receive a column of spool-blanks, and mechanism for vibrating the runway transversely of the machine and in front of the drills, of two suitably-mounted holders arranged to receive the blanks singly and intermittingly from the runway, an arbor for each holder, arranged to hold a blank in position therein, and mechanism for alternately moving the holders and arbors in a longitudinal direction.

3. In a spool-boring machine, the combination, with a suitably-mounted hopper, a pair of revolving drills, and intermittingly-operating blank-holding devices arranged to reciprocate back and forth longitudinally of the machine, of an adjustable double-mouthed runway pivoted to and communicating with the hopper, a movable tongue mounted in the runway for diverting the blanks to the two mouths alternately, and mechanism for vibrating the runway transversely of the machine, substantially as herein before described, and for the purpose set forth.

4. In a spool-boring machine, a pivotally-suspended blank-carrying runway adapted to be vibrated back and forth, having its lower portion provided with two oppositely-arranged mouths or outlets, a yielding front or cover for each, an adjustable base attached to and moving in unison with the runway, yielding stops or guards, as A^4, and a movable tongue, as K', for diverting the blanks to the right and left, substantially as described.



5. In a spool-boring machine, the combination, with the mounted revolving drills and pivotally-mounted double-mouthed adjustable runway working transversely of the machine, of the mounted spring-resisted hollow shafts b^3, provided each with a holder b^4, adapted to receive a blank, an arbor b^4, passing through each shaft, arranged to frictionally retain a spool blank between the adjacent ends or faces of the holder and arbor, and mechanism for forcing the thus-retained blank into engagement with the corresponding drill and withdrawing and releasing the blank after it is drilled, substantially as described.

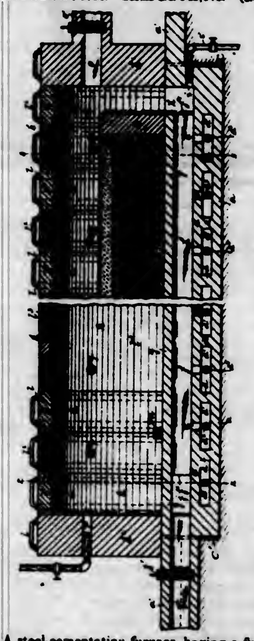
6. In an automatic spool-boring machine, the combination of a continuously-revolving drill, an intermittingly-reciprocating central arbor having an end arranged to engage the spool-blank, a longitudinally-movable spring-resisted non-rotating shaft having said arbor passing through and actuated by the arbor-operating mechanism, a blank-holder secured to the forward end of the shaft, arranged to have the drill pass through it, mechanism for delivering the spool-blanks singly to the holder in advance of the arbor, there to be frictionally held between the adjacent faces of the holder and arbor during the drilling operation, and a clearer arranged to detach drilled blanks adhering to the arbor, substantially as described.

7. In an automatic spool-boring machine, the combination of a revolving drill, a swinging runway communicating with a reservoir containing spool-blanks, a spring-resisted holder arranged to receive the blanks singly from the runway, a central arbor passing through the rear portion of the holder, arranged to engage the spool-blank, mechanism for intermittingly reciprocating said holder and arbor to and from the drill, and a clearer arranged to detach the bored blank from the arbor and holder, substantially as herein before described.

8. An automatic spool-boring machine having a suitable hopper or reservoir for the spool-blanks, a runway or chute leading downwardly therefrom, two laterally-separated revolving drills, a yielding holder and center spindle mounted in line with each drill, mechanism for alternately delivering the blanks singly from the mouth of the runway to the holders, and devices for feeding the said holder, blank, and spindle ahead to drill the blank and for releasing the latter after it has been acted upon by the drill, substantially as described.

9. In an automatic spool-boring machine, the combination, with a hopper provided with a mirror, a movable runway communicating with the hopper, a pair of revolving drills, and mechanism for conveying the blanks singly from the runway and placing them in position in line with the drills, of a spring-resisted longitudinally-movable non-revolving hollow arbor and holder arranged opposite to and in line with each drill, a center spindle passing longitudinally through the arbor, and mechanism for intermittingly and alternately forcing or feeding the said arbors, holders, and spindles in a longitudinal direction, substantially as herein before described, and for the purpose set forth.

483,577. FURNACE FOR TREATING STEEL. JOHN PEDDER, Pittsburg, Pa. Filed Mar. 15, 1890. Serial No. 343,973. (No model.)



Claim.—1. A steel-cementation furnace having a furnace-chamber provided with a hearth to receive the metal, a fuel-entrance at one end thereof, a discharge-flue at the other end thereof, and having fuel-entrances above the metal on the hearth at intervals in the length of the furnace-chamber, said discharge flue extending through the hearth below but close to the upper surface thereof and communicating with the chimney-flue at the forward end of the furnace, substantially as and for the purposes set forth.

2. A steel-cementation furnace having a hearth to receive the metal, a fuel-entrance at one end thereof and communicating with the space above the metal on the hearth, a downtake-flue leading from the opposite or rear end of the hearth, a flue leading therefrom and extending through the hearth and communicating with the chimney-flue at the forward end of the furnace, and a fuel-entrance at the rear of the furnace, communicating with the longitudinal flue extending through the hearth, substantially as and for the purposes set forth.

3. A steel-cementation furnace having a hearth to receive the metal, longitudinal flues extending from the hearth through the bottom wall of the hearth and communicating with the chimney, and cross-flues beneath said longitudinal flues and communicating therewith, said cross-flues having fuel-supply pipes leading thereto, substantially as and for the purposes set forth.

4. A steel-cementation furnace having a hearth to receive the metal, a fuel-entrance at the forward end thereof, a discharge-flue leading from the opposite end thereof, and removable arched sections forming both the side walls to confine the charge on the hearth and the roof of the fire-chamber, substantially as and for the purposes set forth.

5. A steel-cementation furnace having a furnace-chamber provided with a hearth to receive the metal, a fuel-entrance at one end thereof, a discharge-flue at the other end thereof, and having fuel-entrances above the metal on the hearth at intervals in the length of the furnace-chamber, substantially as and for the purposes set forth.

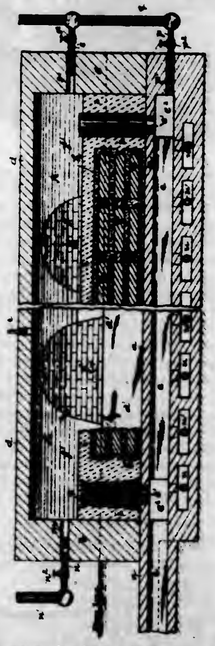
6. A steel-cementation furnace having a hearth to receive the metal, a fuel-entrance at one end thereof, a discharge-flue at the opposite end thereof, openings at intervals in the side wall at about the level of the hearth to receive test-bars, and gas entrances above the metal on the hearth at intervals in the length of the furnace, substantially as and for the purposes set forth.

7. The herein-described method of operating steel-cementation furnaces, consisting in building up the charge on a flat hearth, inclosing the top and sides thereof with loam or like material, confining the sides of the charge by one or more arched sections extending over the hearth, and passing the heat and flame longitudinally over the loam covering and between it and the roof, substantially as and for the purposes set forth.

8. The herein-described method of operating steel-cementation furnaces, consisting in building up the charge on a flat hearth, inclosing the sides and top thereof with loam or like covering, confining the sides of the charge by one or more arched sections, with an interposed layer of tile between the loam covering and arched sections, and passing the heat and flame longitudinally over the loam covering between it and the roof formed by the arched section, substantially as and for the purposes set forth.

9. A steel-cementation furnace having a hearth to receive the metal, a fuel-entrance at the forward end thereof, a discharge-flue leading from the opposite end thereof, a stationary arch, and a removable arch-section fitting against the stationary arch to form the roof of the fire-chamber, substantially as and for the purposes set forth.

483,578. FURNACE FOR TREATING STEEL. JOHN PEDDER, Pittsburg, Pa. Filed Apr. 4, 1891. Serial No. 387,662. (No model.)



Claim.—1. A cementation-furnace having a hearth to receive the metal, a fuel-entrance at the forward end thereof and communicating with the space above the metal on the hearth, and one or more tubular downtake-flues at the opposite end of the furnace, said tubular flues extending above the hearth, so as to be surrounded by the loam or like covering in which the metal under treatment is inclosed, substantially as and for the purposes set forth.

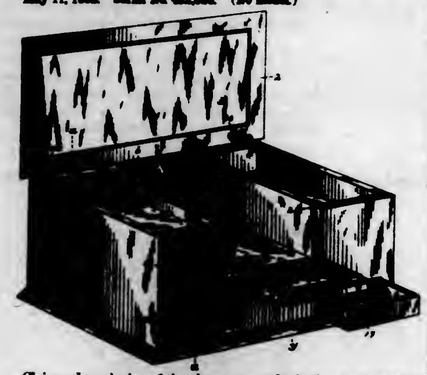
2. A steel converting or cementation furnace having a hearth to receive the metal, a fuel-entrance at the forward end thereof and communicating with the space above the metal on the hearth, one or more tubular downtake-flues leading from the space above the hearth down to a stack-flue extending along through the hearth to the forward end of the furnace, said tubular flues extending above the hearth, so as to be surrounded by the loam or like covering of the charge, and a fuel-entrance communicating with said return flue at the rear end of the furnace, substantially as and for the purposes set forth.

3. A steel-cementation furnace having a hearth to receive the metal, front and rear end walls, both said walls having fuel-entrances communicating with the space above the metal on the hearth, a return-flue extending longitudinally through the hearth and close to the upper surface thereof and opening at one end into the discharge-flue, downtake-flues at or near both ends of said furnace-chamber, open-

leg at the upper end into the furnace-chamber and at their lower ends into the return-flue, and a cover for closing the downtake-flue not in use, substantially as and for the purposes set forth.

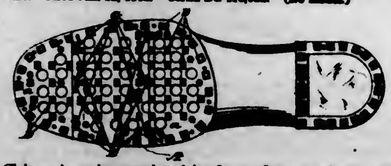
4. A steel converting or cementation furnace having a hearth to receive the metal, front and rear end walls, and an arched side and top wall extending over said hearth and having side entrances therein, which are removably closed by brickwork during the treatment of the metal, and gas-entrances formed in the brickwork, closing each side entrance, substantially as and for the purposes set forth.

488,579. SHAVING-CASE. HARRY T. PETERS, Woodland, Pa. Filed May 11, 1892. Serial No. 432,892. (No model.)



Claim.—In a device of the character set forth, the combination of a box or case having transverse partitions vertically disposed intermediate of the ends thereof and extending completely from front to rear to form a central space, the front side of said box or case being cut away to form an opening in line with the said central space, a horizontal partition between and below the said transverse partitions, extending to within a short distance of the back side of the box or case and having a circular opening therein adjacent to one of said transverse partitions to receive a shaving-mug, a rear vertically-disposed narrow partition arranged between the central portion of the rear edge of said horizontal partition and the back side of the box to form receptacles for removably receiving bottles, shallow receptacles between the said transverse partitions and the ends of the box or case, razor-strops at one side of said box or case, a drawer at the lower portion of the opposite side of said box or case, a strip hinged to the bottom wall of the opening in the front side of the box or case, a hook carried on the inner side of said strip, catches secured to the upper portion of the inner side of said strip, an adjustable bar below said strip to form a support for the same, and a hinged lid or cover having a mirror on the inner side thereof, substantially as described.

488,580. SOLE. LEROY S. PEGUM and LORENZO D. BALL, Canton, Ohio. Filed Jan. 28, 1892. Serial No. 419,262. (No model.)



Claim.—As an improved article of manufacture, a boot or shoe sole formed in sections and of aluminum, the meeting edges of the adjacent sections provided, respectively, with the recesses B, having the depressed bars *b*, and the hooked extensions C, arranged to interlock, substantially as described.

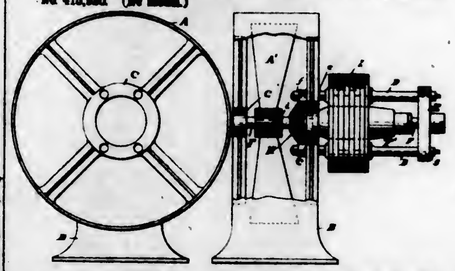
488,581. MILK-BUCKET. ABNER PEARSON, Marion, Ind. Filed Feb. 23, 1892. Serial No. 422,923. (No model.)

Claim.—The combination, with the milk-bucket 1, of the cover provided with a central opening, the funnel arranged upon the upper face of the cover, the depending tube 5, having the spiral wire 6 secured to its outer face and forming a thread, the strainer-section provided with hooks 7, arranged to engage the spiral wire, the removable strainer arranged within the strainer-section, the cloth covering the lower end of the strainer-section, the valve-section arranged upon the strainer-section and confining the cloth thereto and provided with

488,581.

depending hooks, and the conical valve secured in place by the hooks and adapted to close the lower end of the valve section when the bucket is overturned, substantially as described.

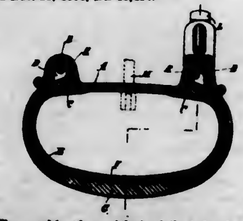
488,582. MOTOR-MOUNTING FOR ELECTRICALLY-DRIVEN FANS. ANDREW L. RICKER, New York, N. Y. Filed Dec 22, 1891. Serial No. 415,980. (No model.)



Claim.—1. The combination of a fan, a casing surrounding the same and mounted on a suitable support, a ring-plate on one side of the casing and forming part thereof, an electromotor having its frame secured by detachable bolts to the outside of said ring-plate and wholly supported thereby, and a shaft carrying the armature of said motor and also the fan, said shaft passing freely through said plate and having a removable journal-bearing at its outer end, so that the shaft and magnet-frame are each removable without disturbing the other, substantially as set forth.

2. A combined ventilating-fan and driving-motor comprising, in combination, the following elements: a casing surrounding the fan, a ring-plate at one side of the casing, a magnet-frame on the outside of said ring-plate, bolts secured by nuts to said ring-plate and extending outwardly therefrom, a magnet-frame supported and also held together by said bolts, a removable journal-bearing on the outer extremity of said bolts, and a shaft passing freely through said ring-plate and supporting on one side thereof the fan and on the other side thereof the armature of the motor, substantially as described.

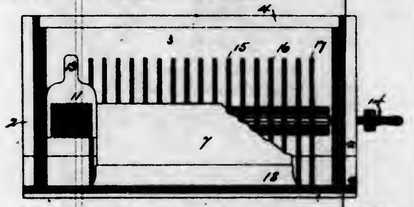
488,588. PNEUMATIC TIRE. THOMAS W. ROBINSON, Dublin, Ireland. Filed Sept. 17, 1891. Serial No. 405,966. (No model.) Patented in England Nov. 20, 1889, No. 19,497.



Claim.—The combination, with the fully A, having the side grooves or recesses B, of an inclosing or protective cover for a tire, composed of a woven strip F with longitudinal pockets D along its edges and a rubber sheet or band united to the said strip and having enlargements along its edges in which the said pockets are embedded, and wires contained in the pockets and passing through the fully and tightened so as to hold the edges of the said cover in the grooves or recesses in the fully, the said grooves being sufficiently deep to receive the enlarged

edges of the cover and prevent lateral displacement of the same, as set forth.

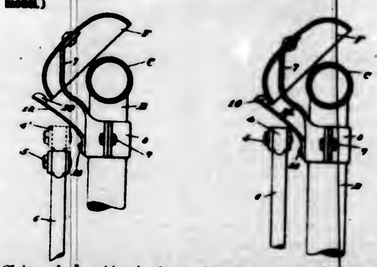
488,584. CHURN. NELSON ROGERS, Hinsdale, N. Y. Filed Feb 23, 1892. Serial No. 422,122. (No model.)



Claim.—1. In a churn, the combination of a box, a vertical partition of less height and length than the height and length of the box, a removable vertically-tined grating having vertically-adjustable bearing at its respective sides on one end of said box and on the upper portion of the adjacent end of said partition a dasher consisting of a shaft journaled in the ends of said box at a point below the top of said partition, and a radiating series of blades having concaved faces and sharp front edges, substantially as and for the purpose set forth.

2. In a churn, the combination of a box longitudinally divided into two compartments communicating with each other at their respective ends by respectively an unimpeded passage-way and a grating-guarded passage-way, and a dasher extending longitudinally through one of said compartments and having radiating dasher-blades having concaved faces and knife-edged front edges, substantially as and for the purpose set forth.

488,585. SIGNAL APPARATUS FOR BICYCLES. ALVIN J. SANDGREN, Hartford, Conn. Filed Dec. 7, 1891. Serial No. 414,512. (No model.)



Claim.—1. In a bicycle, the combination, with the shaft carrying the handle-bars and with the brake-lever of the bicycle, of the signal-bell, and a bell-striker intermediate to the brake-lever and bell and actuated by said lever to strike the bell, substantially as described.

2. In a bicycle, the combination, with the shaft carrying the handle-bars and with the brake-lever of the bicycle, of the adjustably-fixed bell-supporting arm, the bell carried by said arm, and a bell striker, substantially as described, intermediate to the brake-lever and bell, whereby the operation of the bell-striker by the brake-lever may be regulated by adjusting the position of said arm, substantially as described.

3. In a bicycle, the combination, with the shaft carrying the handle-bars and with the brake-lever of the bicycle, of a signal-bell adjustably supported adjacent to the brake-lever, and the bell-striker carried by a spring-arm rigidly fixed at the end thereof opposite to the striker and having its middle portion in position to be struck by the brake-lever on the retraction thereof, substantially as described.

4. In a bicycle, the combination, with the handle-bar and with the bicycle-wheel, of the brake movable toward and from the wheel, the signal device and its striker carried with the handle-bar, and a lever carried with the handle-bar and having its handle end adjacent to the handle of said bar and constructed and connected to actuate both the signal-striker and the brake, substantially as described.

488,586. CHIMNEY-HOLDER. JOHN W. SHARPE, Lowell, Mass. Filed Feb 10, 1892. Serial No. 420,963. (No model.)

Claim.—1. A chimney-holder comprising the continuous non-elastic loop 2, having curved wires adapted to saddle the bulged portion of a chimney, and elastic connections between the ends of the loop and a burner, substantially as described.

2. A chimney-holder comprising the non elastic loop 2, adapted to

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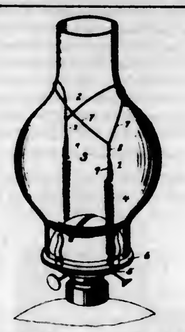
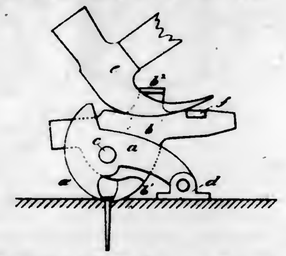


saddle the bulged portion of a chimney, spiral springs having their upper ends attached to the loop and forming elastic connections between the latter and the burner, hooks arranged at the lower ends of the springs to engage a burner, and the handles 10, provided with finger-loops 11 and constructed of wire secured to the hooks, substantially as described.

488,587. NAIL-PULLER. ALBERT F. STRENT, Rockville, Conn. Filed Sept. 7, 1891. Serial No. 404,926. (No model.)

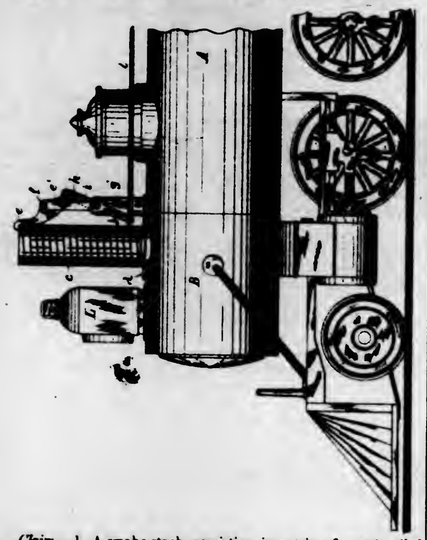


Claim.—The improved nail-puller composed of a pair of nail-grasping jaws pivoted together, the longer arms of the levers projecting on the same side of the pivot-pin, one lever having a nail-grasping jaw and a downturned lever-arm pivoted to a fulcrum-foot, the fulcrum-foot and the other lever having a nail-grasping jaw with a claw-engaging lug b^2, and claw-rests *f* on the longer arm of said lever overlying the arm of the other lever bearing the fulcrum-foot, all substantially as described.

488,588. PRUNING IMPLEMENT. WILLIAM D. SMEDELIN, Green Island, N. Y. Filed May 13, 1892. Serial No. 433,041. (No model.)

Claim.—A pruning instrument capable of operation when pulled or pushed, formed by the combination, with the handle B, of the bifurcated knife A and bifurcated blade E, made integral with each other from thin steel and having their respective members or branches corrugated in direction of their length, and their respective cutting-edges *b* and *b'* projected above the plane of the upper surfaces of the bodies of their respective parts and bordered at their upper side by flattened portions *c c'*, respectively, substantially as and for the purposes set forth.

483,589. PNEUMATIC STACK FOR STEAM-BOILERS. BENJAMIN F. TAYLOR, Newark, N. J., assignor of one-half to James Moffat, New York, N. Y. Filed Oct. 5, 1891. Serial No. 407,710. (No model.)



Claim.—1. A smoke-stack consisting in a strip of metal coiled spirally with means for separating or closing the coils at pleasure, as set forth.

2. A smoke-stack consisting in a strip of metal coiled spirally, with means for separating or closing the coils at pleasure, and means for deflecting the drafts upward upon entering the openings, as set forth.

3. A smoke stack consisting in a strip of metal coiled spirally and beveled as herein set forth, and means for separating and closing the coils at pleasure, as set forth.

4. The combination, with a smoke-stack consisting in a strip of metal coiled spirally, of a lever with curved face having an arm attached to the upper end of the smoke-stack, and means for moving the lever to bend the stack into contact with the curved surface, as set forth.

5. The combination, with a locomotive-boiler, of a stack consisting in a strip of metal coiled spirally with its lower end attached to the smoke-box, the upper end attached to an arm upon the lever *e'* for separating the coils, and the rod *l* with connection to the lever for moving the same at pleasure, as and for the purpose set forth.

483,590. PROCESS OF AND MACHINE FOR MANUFACTURING WADDING FROM CELLULOSE AND COTTON. CARL WAIBEL, Neustadt-on-the-Hardt, Bavaria, Germany. Filed Apr. 4, 1892. Serial No. 427,768. (No model.)

Brief.—The cellulose is sifted on the cotton as the latter is passing on the feed-apron to the carding machine.

Claim.—1. The process of making wadding from cotton and cellulose, which consists in beating the cellulose so as to disaggregate and reduce the fibers thereof, sifting the same for removing the non-disaggregated parts, spreading the disaggregated fibers on a fleece of cotton, and carding the cellulose together with the cotton, substantially as described.

2. In combination, the hopper and means for imparting a trembling motion thereto, the feed-regulating rollers *c c'*, arranged below the hopper to receive the material therefrom, the sieve arranged below the feed-rollers, and means for shaking the said sieve, and a traveling feed-apron below the sieve, substantially as described.

3. In combination, the hopper, the sieve arranged below the

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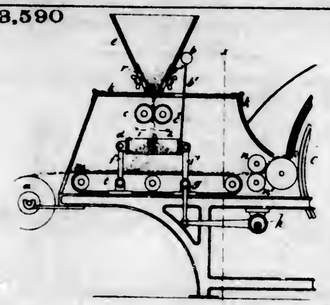
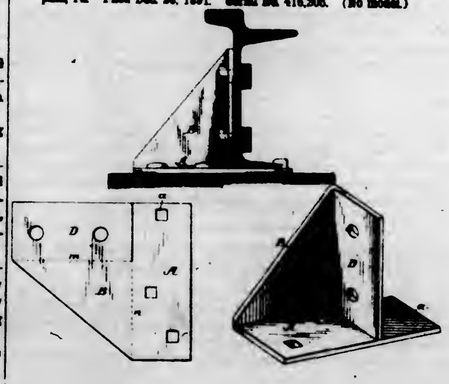


same, the movable legs *f f'* for the sieve, the traveling apron below the sieve, the means for oscillating the sieve on its supporting-legs, and the upright rod *b'*, having the knob *b* for vibrating the hoper, substantially as described.

483,591. LAMP-STOVE. SARAH L. WALKER, Bloomville, Ohio. Filed June 28, 1890. Serial No. 357,106. (No model.)

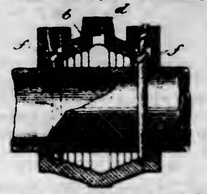
Claim.—In a device of the character set forth, the combination of a wooden box having a central vertically-disposed partition dividing the same into opposite compartments, one of which is formed as a baker and provided with a hinged door lined with asbestus and with a horizontal partition above the bottom of the box, with a central opening therein dividing the compartment in which it is situated into an upper enlarged closed baking chamber space and a lower reduced lamp-chamber having a tier of drawers in one end thereof, a lining of asbestus entirely surrounding the interior of the said baking-chamber space and having a central opening in the bottom thereof aligning with the opening in said horizontal partition, feet projecting upward from the said horizontal partition on opposite sides of the opening therein, a baking-chamber removably resting on the said feet and having a hinged door, and a wooden block in the bottom of the lamp-compartment for supporting a lamp and elevating the same so that the chimney thereof will be projected through the central opening in the aforesaid horizontal partition, the single hinged door of the entire compartment supporting said baking apparatus forming a closure for the baking space and the lamp chamber and said baking-space and lamp-chamber both opening out toward said door, substantially as described.

483,592. RAILWAY-CHAIR. WILLIAM WHARTON, Jr., Philadelphia, Pa. Filed Dec. 26, 1891. Serial No. 416,208. (No model.)



Claim.—The within-described rail-chair, comprising a base A, extending under the rail, a vertical portion D, secured to the rail, and a brace portion B, tying the vertical portion to the base, the whole being made from a single piece of sheet metal bent to the form described, substantially as set forth.

483,593. PIPE-COUPLING. ALFRED WILSON, Indianapolis, Ind. Filed May 6, 1891. Serial No. 391,720. (No model.)

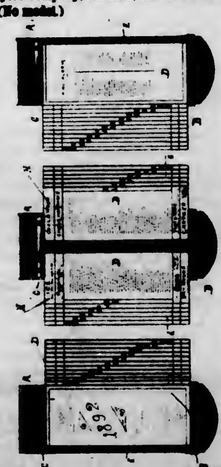


Claim.—A pipe-coupling consisting of an inclosing sleeve for the pipe ends, providing an interior chamber for a suitable filling, rope gaskets surrounding the pipe ends within the sleeve, and V-shaped grooves adapted to receive the gaskets, whereby a space is left in the rear of the gaskets for receiving a filling and thus preserve the gaskets and at the same time prevent the passage of gas in rear of the same, substantially as described.

483,594. HALTER. JOEL C. AVERILL, Traer, Iowa. Filed Nov. 24, 1891. Serial No. 412,955. (No model.)

Claim.—In a halter, the combination of the continuous rope A, forming the head-band and hitch-rope, the nose-band B, the shield D, and the throat-latch C C', having the loop C', through which the rope passes, substantially as and for the purpose set forth.

483,595. INDEX. HENRY S. BACON, Worcester, Mass., assignor to the Bacon-Tyler Company, Berwick, Me. Filed Mar. 22, 1892. Serial No. 426,097. (No model.)

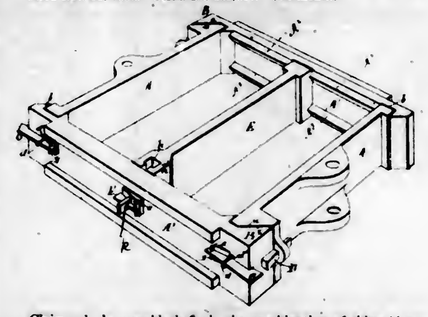


Claim.—1. In a device of the character described, the combination of the base having two ledges, the binders E, each consisting of a piece of metal bent to U-shaped form, the leaves the edges of which are inserted within and held by said binders, and a pin passing through each ledge into each binder, said pins thereby forming pivots for the binders, and whereby by the removal of the pins the binders and leaves may be removed, substantially as described.

2. In a device of the character described, the combination of the base having the two ledges, the binders E, each consisting of a piece of metal bent to U-shaped form, the leaves the edges of which are inserted within and held by said binders, and the pins passing through the said ledges into the binders and forming pivots for the leaves, the leaves being cut away, as at *c*, to clear the pins, substantially as described.

3. In a device of the character described, the combination of the leaves and means for pivoting the same so that the leaves will stand in vertical planes, said leaves being made out of stiff material and having body portions for the subject-matter, indexes on the edges of the same, and advertising- pages above and below the subject-matter spaces, substantially as described

483,596. MOLDER'S FLASK. FREDERICK BAUER, Alliance, Ohio. Filed Nov. 30, 1891. Serial No. 413,487. (No model.)



Claim.—1. In a molder's flask, the combination of sides A', provided with slotted extensions B, each extension B having an inclined face *c*, sides A, provided with shoulders, each shoulder having an inclined face *a*, devices secured to the sides A and extending through the slotted extensions B, and means engaging said devices to lock the sides together.

2. The combination, with the sides A and A', one of the latter provided with a slot, of a partition provided with an open undercut groove, a headed bar F, engaging said groove and extending through the slot in the side A', and a key engaging a slot in said bar, substantially as described.

3. The combination, with sides A and slotted sides A', of a partition provided with an undercut groove at one end, a headed bar engaging said groove and extended through one of the slotted sides A', a key engaging a slot in said bar, a staple secured to the other end of the partition and extending through the other of said slotted sides A', and a key engaging said staple, substantially as described.

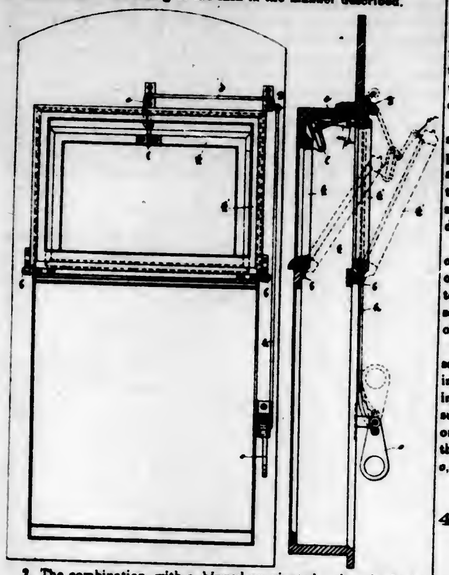
4. The combination of the sides A, provided with shoulders having inclined faces, the sides A', provided with slotted extensions B, having inclined faces, staples secured to the sides A and extending through the slotted extensions, grooves formed in the extension, and keys engaging said grooves and said staples, substantially as described.

5. The combination, with sides A and slotted sides A', of a partition provided with an undercut groove at one end, a headed bar engaging said groove and extended through one of the slotted sides A', a key engaging a slot in said bar, a staple secured to the other end of the partition and extending through the other of said slotted sides A', a key engaging said staple, shoulders formed on the sides A, slotted extensions on the sides A', said shoulders and extensions having coincident inclined faces, staples secured to the sides A, extending through the slotted extensions B, and a key engaging said staples, substantially as described.

483,597. TRANSOM-LIFTER. CARL L. BOEHME, Dresden, Germany. Filed Apr. 30, 1892. Serial No. 431,227. (No model.)

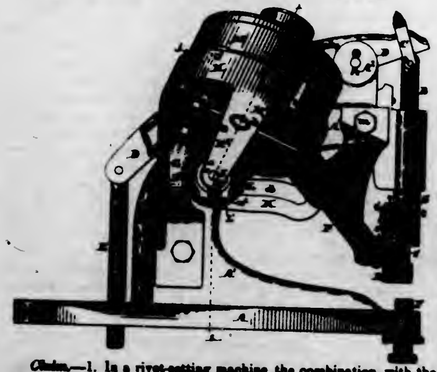
Claim.—1. The combination, with a hinged or pivoted sash or leaf of a window, of a vertically-arranged rod adapted for vertical movement, as described, a horizontally-arranged rod pivoted to the window-frame and provided with a cranked portion at one end, pivotally connected to the upper end of the vertical rod, an arm connected with the other end of the horizontal rod, means located intermediate the said arm and the pivoted sash and loosely connecting the two and adapted to cause the turning of the sash when the said arm is oper-

ated, and an operating-lever *e*, pivoted at one end to the window-frame, and to which lever intermediate its ends is pivoted the lower end of the vertically-movable rod, said lever being adapted to be swung downwardly and upwardly, as described, to effect the turning of the sash and form a lock for the vertical rod when in either position to prevent accidental turning of the sash in the manner described.



2. The combination, with a hinged or pivoted sash or leaf of a window, of a vertically-arranged rod adapted for vertical movement, as described, a horizontally arranged rod pivoted to the window-frame and provided at one end with a cranked portion connected pivotally to the upper end of the vertical rod, an arm connected to the other end of the horizontal rod, and a second arm pivoted at one end to the first arm and at its lower end to the frame of the movable sash, as and for the purpose specified.

488,598. RIVET-SETTING MACHINE. MELLEN H. BRAY, Brookline, and EVERETT M. POPE, Quincy, Mass.; said Pope assignor to said Bray. Filed Dec. 7, 1891. Serial No. 414,320. (No model.)



Claim.—1. In a rivet-setting machine, the combination, with the setting-plunger and tool and a vibrating lever for operating the same, of a circular hopper mounted upon an inclined shaft, a horizontal shaft provided with a crank or lever at one end, suitable gears connecting said inclined and horizontal shafts, a cam-plate connected to and movable with said vibrating lever and provided with a cam-slot to engage said crank, the upper and lower portions of which are inclined in opposite directions, and a friction device interposed between said crank-lever and said hopper, whereby an intermittent movement of said hopper about its axis is obtained at each upward and each downward movement of said plunger operating lever.

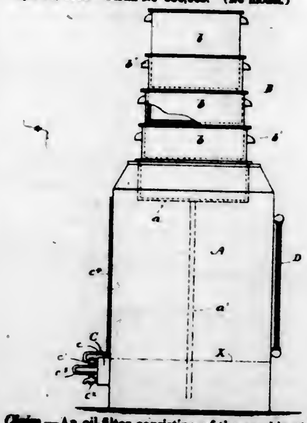
2. In a rivet-setting machine, the combination of the lever D for operating the setting-plunger, the cam-plate K, connected to and movable with said lever and provided with the path *d*, portions of which are inclined in two opposite directions, the shaft I, the crank J, the collars *a* and *b*, secured on said shaft I, the gear-wheel L, mounted loosely on said shaft between the collars *a* and *b*, the strap L', surrounding the hub of said gear L, the band of frictional material *e*, interposed between said strap and hub, the ear *a'*, projecting from the collar *a*, the bolt *a²* for clamping said strap upon said frictional material and the hub of the gear L, the gear O, shaft N, the hopper M, provided with the ratchet-teeth *j*, and the pawl *k*, all constructed, arranged, and operating substantially as described.

3. In a rivet-setting machine, the hopper M, provided with the series of tangentially-arranged slots *i*, cut through its bottom or that portion of the casing which is at right angles to its axis of rotation, and a portion of the upper surface of the hopper-bottom contiguous to each slot on its forward or advance side beveled or inclined toward said slots, as at *i'*, the opposite side walls of said slots being perpendicular to the inner face of said bottom for its entire thickness.

4. In a rivet-setting machine, a rivet-receiving pocket composed of two spring-pressed jaws, each having formed in its inner face the half of a rivet holding socket with an oblong rectangular opening at its bottom and a laterally-inclined surface at the rear of the upper part of said socket and a vertically-inclined surface at right angles to the inner faces of or the line of separation between said jaws.

5. In a rivet-setting machine, the combination, with the anvil and setting-plunger and tool of a rivet-setting machine, of the rivet-receiving pocket R, composed of two spring-pressed jaws, each having formed in its inner face the half of a rivet-receiving socket *s* and the oblique surface *o* and upon its upper end the upwardly-projecting segmental lip or rib *r*, and the inclined guiding-surface *o'*, arranged at right angles to the inner faces of said jaws and abutting against said obliqae surface *o*, substantially as described.

488,599. OIL-FILTER. EDWIN S. BREED, Paterson, N. J. Filed Apr. 30, 1890. Serial No. 350,005. (No model.)



Claim.—An oil-filter consisting of the combination, with a can or vessel, of a plurality of trays having plain perforated bottoms and vertical sides, the lowest tray fitting in the mouth of the can and each of the others in succession fitting within the tray below it and resting upon the filtering material therein and the several trays being of substantially-uniform depth, substantially as described.

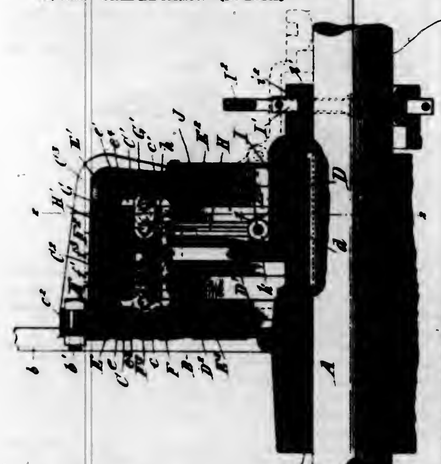
488,600. RACE-COURSE FOR HORSES. HENRY S. BUTLER, Des Moines, Iowa. Filed Apr. 2, 1892. Serial No. 427,573. (No model.)

Claim.—1. A race-course having a descending grade and a track connection between the starting-point and the terminus, adapted to be traversed by a horse before starting over the course and also after passing the terminus of the course, for the purpose stated.

2. A race-course having an elevated starting-point, a circuitous track, and descending grade terminating at the starting-point, an arch at the intersection, and a continuation of the track in the form of a loop that has an ascending grade and terminates on top of the arch and at the starting-point, for the purposes stated.

488,600.

488,601. CLUTCH. CHARLES L. CARMAN, Chicago, Ill. Filed Jan. 26, 1892. Serial No. 419,259. (No model.)



Claim.—1. A friction-clutch comprising two members, one provided with two opposite fixed friction-surfaces radial to the axis of rotation and the other provided with two movable parts having friction-surfaces located, respectively, opposite to and parallel with said fixed friction-surfaces, and mechanism for positively actuating said movable parts away from each other in the line of the axis of rotation to engage the friction-surfaces, substantially as described.

2. A friction-clutch comprising two members, one provided with two opposite fixed friction-surfaces radial to the axis of rotation and the other provided with two movable rings located, respectively, opposite to and parallel with said friction-surfaces, and toggle mechanism for actuating said rings away from each other in the line of the axis of rotation, substantially as described.

3. A friction-clutch comprising two members, one provided with two annuli, one of which is detachable, said annuli having opposite friction-surfaces radial to the axis of rotation, the other member being provided with two movable rings located between said friction-surfaces and respectively opposite to and parallel with the same, and mechanism for positively actuating said rings in opposite directions in the line of the axis of rotation, substantially as described.

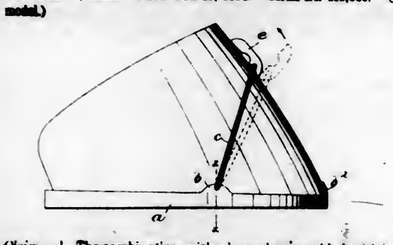
4. A friction-clutch comprising two members, one provided with two opposite fixed friction surfaces radial to the axis of rotation and the other provided with two movable rings located, respectively, opposite to and parallel with said friction surfaces, and a plurality of toggle mechanisms for actuating said rings away from each other in the line of the axis of rotation, one of the members of each toggle mechanism being adjustable, substantially as described.

5. A friction-clutch comprising two members, one provided with two opposite fixed friction-surfaces radial to the axis of rotation and the other provided with two movable rings located, respectively, opposite to and parallel with said friction surfaces, and a plurality of toggle mechanisms each comprising links pivoted, respectively, to the rings and to each other, one of said links being a two-part link of adjustable length, an arm pivoted at one of its ends to the links at their point of connection, and a longitudinally-movable sleeve to which the other end of said arm is pivoted, substantially as described.

6. The combination, with a shaft, of a clutch one member of which is provided with two opposite fixed radial friction-surfaces, the other member being provided with two movable rings located, respectively, opposite to and parallel with said friction-surfaces, a plurality of toggle mechanisms each comprising toggle-links and a toggle-arm, and a sleeve connected with the said toggle-arm and being longitudinally movable on the shaft and free of contact therewith at its point of connection with said arms, substantially as described.

7. The combination, with a shaft, of a clutch one member of which is normally disconnected from said shaft and is provided with two opposite fixed radial friction-surfaces, the other member comprising a body fixed on the shaft and having guiding and supporting devices, two movable parts mounted on said guiding and supporting devices and rotated thereby, and mechanism for actuating said movable parts away from each other in the line of the axis of rotation to engage the friction-surfaces thereof with the fixed friction-surfaces, substantially as and for the purpose set forth.

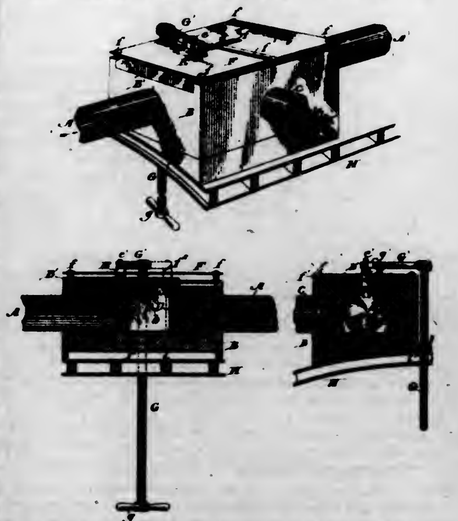
488,602. FASTENING FOR HORSESHOES. EDWARD T. COVELL, New Bedford, Mass. Filed Dec. 15, 1891. Serial No. 415,089. (No model.)



Claim.—1. The combination, with a horseshoe provided with lugs or projections to engage with the edge of the hoof, of the fastening-band connected at its ends with the sides of the shoe and adapted to extend up over the fore part of the hoof and the straining device therefor provided with a projection to engage with the fore part of the hoof, substantially as and for the purpose described.

2. The combination, with the shoe, of a fastening-band connected with the sides of said shoe and constructed to extend over the fore part of the hoof and a straining-lever engaged with said band and provided with spurs to engage with the hoof, substantially as and for the purpose described.

488,603. CHECK-VALVE. EDWIN W. CRAINE, Missouri Valley, Iowa. Filed Dec. 18, 1891. Serial No. 415,464. (No model.)



Claim.—1. The combination, with a main pipe and a branch pipe,

of a coupling uniting the same and containing a chamber, a sliding cover for said chamber, and a check-valve hinged to said sliding cover and adapted thereby to be brought against the end of the main pipe, substantially as described.

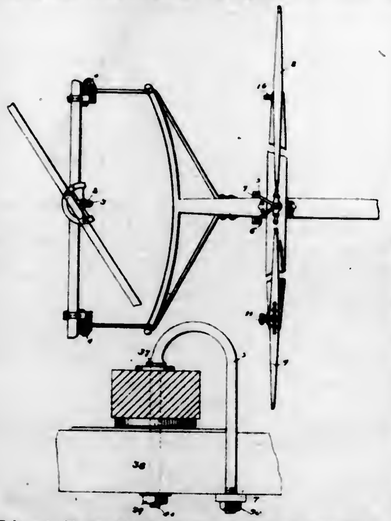
2. The combination, with the body B, containing the chamber *b*, of the pipes A C, entering said chamber, the sliding cover B', the stem E, rigidly held in said cover, and the flap-valve D, hinged to the lower end of the stem, substantially as described.

3. The combination, with the body B, containing the chamber *b*, of the pipes A C, entering said chamber, the cover B', rabbeted to slide in grooves in the body B and carrying a check-valve adapted to coact with the pipes A, and a spring bearing upon the cover B', substantially as described.

4. The combination, with the chambered body B and the pipes A C, of the sliding cover B', carrying the valve D, and the plate F, secured to the body B and having a transverse corrugation bearing upon the cover B', substantially as described.

5. The combination, with the chambered body B and the pipes A C, of the sliding cover B', stem E, held in the cover, the valve D, hinged to said stem, the slotted corrugated presser-plate F, and the rock-shaft G, connected with the stem, substantially as described.

483,604. WHIFFLETREE. JOHN EDGAR, Rochester, Minn. Filed Oct. 28, 1890. Serial No. 369,569. (No model.)



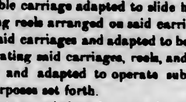
Claim.—1. The combination, with an evener with a whiffletree or pole, of the rod bent upon itself and forming a center-pin and a reinforcing leg or bolt therefor, a nut on the end of said leg, said nut provided with enlarged parts and a contracted part between the same, and a fixed plate embracing the said contracted part of the nut and securing said nut in place, substantially as described.

2. The combination, with the whiffletree or evener and its support, of the center-pin, the reinforcing-pin secured thereto, the plate through which said pins extend, and the locking-nut arranged in the slot in said plate and engaging the threaded end of said reinforcing-pin, substantially as described.

3. The combination, with the whiffletree or evener, of the center-pin extending through said whiffletree or evener and through its support, a shoulder or collar upon said center-pin, adapted to bear upon the upper surface of the whiffletree or evener, a reinforcing-pin formed integrally with said center-pin and extending parallel therewith, a plate or support through which both center-pin and reinforcing-pin pass, and a nut arranged upon said reinforcing-pin beneath said plate or support by which nut said reinforcing-pin may be drawn through said plate or support, bringing the shoulder or collar upon the center-pin to bear upon the upper surface of the whiffletree or evener and limited in passing through said plate only when said shoulder or collar comes to its bearing and whereby said center-pin may be drawn down and tilted backward to counteract the forward tilt of the whiffletree or evener.

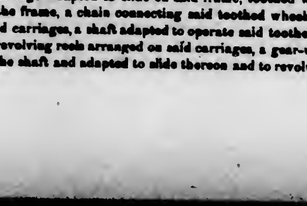
4. The combination, with the evener, of the center-pin extending through said evener and through its support, two reinforcing-pins formed integrally with said center-pin and extending parallel therewith and arranged in the rear of said evener, and oblique arms connecting said pins, the plate through which said reinforcing-pins extend, and the locking-nuts upon said pins, adapted to bear against said support, whereby said center may be drawn downward and may also be tilted backward or sidewise by tightening the nuts upon said reinforcing-pins, substantially as described.

483,605. VEIL-PIN. GEORGE H. FISH, Oneida, N. Y. Filed May 31, 1892. Serial No. 434,982. (No model.)



Claim.—As a new article of manufacture, a veil-pin comprising a clasp consisting of a curved diagonal bar having on each of its faces barbs or the like and two end bars forming a continuation of said central bar and having at each extremity an inwardly-curved portion to engage the opposite loops of the clasp, and a pin secured to one of the end bars thereof.

483,606. DEVICE FOR MODIFYING AND CONTROLLING RAYS OF LIGHT FOR PHOTOGRAPHIC PURPOSES. AMASA P. FLAGLER, San Francisco, Cal., assignor to Helen Flagler, same place. Filed Oct. 9, 1890. Serial No. 367,515. (No model.)



Claim.—1. The combination, with a skylight or other opening for the admission of light, of a device consisting of a number of tubes or cells so arranged that the direct rays of the sun will always be prevented from striking below the walls of said tubes or cells.

2. The combination, with a skylight, of a nest of tubes or cells substantially opaque and open at both ends for the admission of light, constructed in separate sections and placed upon said skylight and arranged to intercept the direct rays of light and to cause the reflected rays to enter in line substantially parallel with their walls, substantially as and for the purpose set forth.

3. In combination with a skylight, a nest of tubes or cells open at both ends for the admission of light, constructed in separate sections, each section being separately hinged to the skylight, substantially as set forth.

4. The combination, with a skylight, of a series of tubes or cells open at both ends for the admission of light, decreasing successively in height from rear toward the front, substantially as and for the purpose set forth.

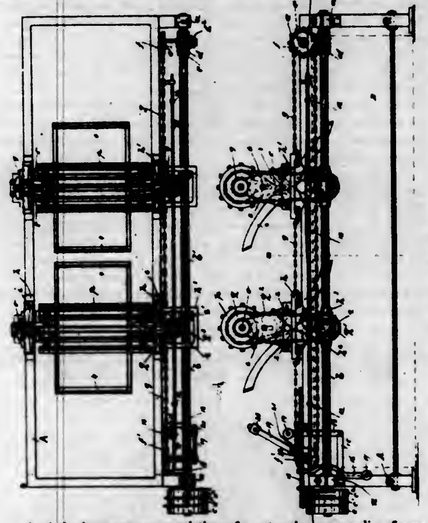
5. The combination, with a series of tubes or cells open at both ends for the admission of light for the purpose described, of separate telescopic tubes sliding within the same, substantially as set forth.

483,607. APPARATUS FOR DYEING. EDWARD J. GERBER, Paterson, N. J. Filed Mar. 18, 1892. Serial No. 425,392. (No model.)

Claim.—1. A dyeing apparatus consisting of a vat and a surrounding frame, a double carriage adapted to slide back and forward on said frame, revolving reels arranged on said carriages, rockers below said reels and on said carriages and adapted to be oscillated thereon, and means for operating said carriages, reels, and rockers, all said parts being combined and adapted to operate substantially as described, and for the purposes set forth.

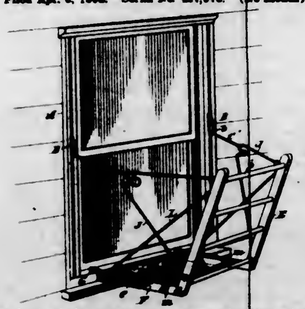
2. A dyeing apparatus consisting of a vat and a surrounding frame, a double carriage adapted to slide back and forward on said frame, revolving reels arranged on said carriages, toothed wheels arranged on the frame, a chain connecting said toothed wheels and secured to said carriages, a shaft adapted to operate said toothed wheels and chain through a worm connection, rockers arranged on said carriages and below the reels and adapted to be oscillated, means for operating the reels, and means for operating said rockers, all said parts being arranged and combined substantially as described, and for the purposes set forth.

3. A dyeing apparatus consisting of a vat and a surrounding frame, a double carriage adapted to slide on said frame, toothed wheels arranged on the frame, a chain connecting said toothed wheels and secured to said carriages, a shaft adapted to operate said toothed wheels and chain, revolving reels arranged on said carriages, a gear-wheel arranged on the shaft and adapted to slide thereon and to revolve therewith, a gear-wheel adapted to revolve in bearings in the carriage and meshing into gear-wheel on the shaft, means for transmitting said motion to the reels, all said parts being arranged and combined to operate substantially as described, and for the purposes set forth.



4. A dyeing apparatus consisting of a vat and a surrounding frame, a double carriage adapted to slide on said frame, toothed wheels arranged on the frame, a chain connecting said toothed wheels and secured to said carriages, a shaft adapted to operate said toothed wheels and chain, rockers arranged on said carriages, a gear-wheel arranged on the shaft and adapted to slide thereon and to revolve therewith, a gear-wheel adapted to revolve in bearings in the carriage and meshing into gear-wheel on the shaft, means for transmitting said motion to the rockers, reels arranged on said carriages and adapted to be revolved and operated from the said shaft, and means for reversing the motion of all said parts, substantially as described, and for the purposes set forth.

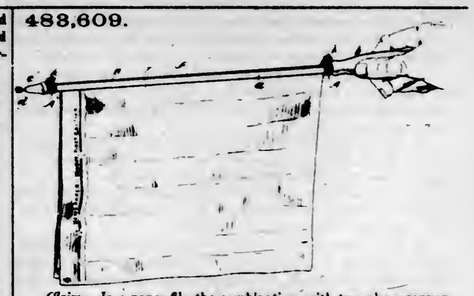
483,608. WINDOW-CHAIR. EZRA B. GILDERSLEEVE, New York, N. Y. Filed Apr. 6, 1892. Serial No. 427,976. (No model.)



Claim.—1. A chair or support constructed with uprights E and horizontal pieces F, hinged or pivoted together by means of the angle-irons *d*, said uprights E having secured thereto the guards J, adapted to be folded inwardly, and means for securing said guards J and pieces F to the window-frames, substantially as described.

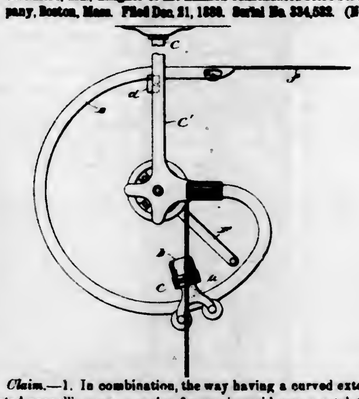
2. A window-cleaning chair or support constructed with uprights E, hinged to the horizontal pieces F, the latter having supported thereon the hinged seat proper H, and provided with guards J, having chains secured thereto for attachment to the window-frame, and with metal plates secured to said horizontal pieces F for attachment to said window-frame, in combination with a ladder detachably secured to said chair and to said window-frame, substantially as described.

483,609. PAPER-FILE. THOMAS J. GODDARD, Boston, Mass. Filed Feb. 5, 1892. Serial No. 420,493. (No model.)



Claim.—In a paper-file, the combination, with two plano-convex holding strips, of a flexible thong passing around the strips at or near their ends to serve as a hinge, one part of said thong being contiguous to the plane faces of the strips and the adjoining part contiguous to the convex faces thereof, the two parts of the thong being secured together between the strips and also on the outer side of one of said strips, and the thong having a prolongation carrying a fastening device adapted to register, when the file is closed, with a correlative device secured to the outside of the convex portion of the thong.

483,610. STORE-SERVICE APPARATUS. RICHARD GORNALL, Baltimore, Md., assignor to the Lamson Consolidated Store Service Company, Boston, Mass. Filed Dec. 21, 1889. Serial No. 334,582. (No model.)

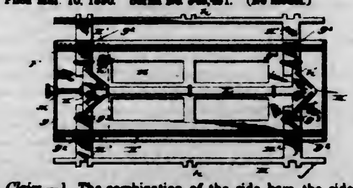


Claim.—1. In combination, the way having a curved extension, a pivoted propelling-arm, a spring for moving said arm, a catch for holding the arm in normal position, means for winding the said spring, and automatic means for releasing the catch, whereby the arm will be turned to force the carrier along the curved way, substantially as described.

2. In combination, the way, a movable propelling-arm, a supporting-spindle therefor, a spring for forcing said arm forward, a catch for holding the arm in retracted position, means for placing a tension on the spring, and means carried by the spindle and acting to release the catch from the arm, substantially as described.

3. In combination, the way, with a curved extension, the pivoted propelling-arm, the spring arranged about the spindle of said propelling-arm, a catch for holding the arm in retracted position, a wheel on the spindle, having a projection to release the catch, and a cord connected with the wheel for turning the same to wind the spring and release the catch, substantially as described.

483,611. BOOK-HOLDER. GEORGE W. GROVE, Washington, D. C. Filed Mar. 10, 1890. Serial No. 343,431. (No model.)



Claim.—1. The combination of the side bars, the sides hinged thereto by hinges having upward extensions *i'*, the side-supports con-

sliding of lower portions pivoted to the side bars and upper portions pivoted to the lower portions and sliding between the extensions f, and dogs mounted on the sides and engaging the said upper portions.

2. The combination of the shelf and the shelf-plate secured thereto, the rocking plate pivotally mounted on the shelf-plate, and the book-holder having side bars mounted in said rocking plate and adapted to slide longitudinally therein.

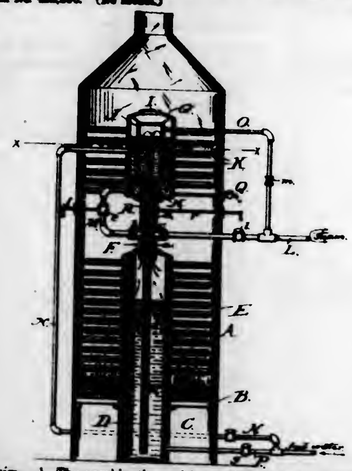
3. The combination of the shelf-plate, the rocking plate mounted thereon, and the sliding wedges mounted on the shelf-plate above the rocking plate and adapted to limit the play of the same.

4. The combination of the shelf-plate, the rocking plate mounted thereon, the sliding holder carried by the said rocking plate, and laterally-adjustable sides mounted on the holder.

5. The combination of the shelf-plate, the rocking plate pivotally mounted thereon, the springs secured to the shelf-plate and bearing down on the rocking plate, and adjustable stops on the shelf-plate, limiting the movement of the rocking plate.

6. The combination of the shelf-plate, the rocking plate, set-screws mounted in the shelf-plate and serving as pivots for the rocking plate, and the sliding book-holder carried by the rocking plate.

483,612. BOILER. CHARLES HALLETT, Riverhead, N. Y., assignor to the Hallett Boiler Company, of New Jersey. Filed Feb. 20, 1892. Serial No. 422,980. (No model.)



Claim.—1. The combination, with a main boiler connected with the feed-water supply, of a supplemental boiler detachably fitted to and above the main boiler and having radial tubes located in the path of the gases and products of combustion which have passed the main boiler, a pipe connecting the supplemental boiler with the feed-water supply, and a pipe connection between the main and supplemental boilers, substantially as herein described.

2. The combination, with a main boiler connected with the feed-water supply, of a coupling fitted to the exterior of its upper head, having its upper end closed and its lower end open and provided with branches, a supplemental boiler fitted to and supported by the coupling and having radial tubes located in the path of the gases and products of combustion which have passed the main boiler, a pipe connecting with the steam-chamber of the coupling and delivering the steam from the main boiler to the supplemental boiler, a main steam-pipe, and a steam-pipe leading from the supplemental boiler and connecting with the main steam-pipe, substantially as herein described.

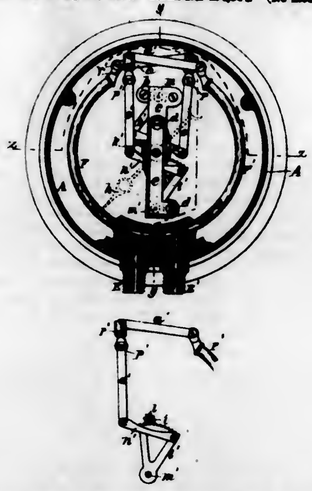
3. The combination, with the main boiler connected with the feed-water supply, of a coupling fitted to the upper head of said boiler, a supplemental boiler fitted to and supported by the coupling and provided with radial tubes, said coupling being closed at its upper end and open at its bottom, a feed-water pipe leading to the supplemental boiler, a connection between the main and supplemental boilers, a steam-pipe leading from the steam-chamber of the coupling, and a second steam-pipe leading from the supplemental boiler to the main steam-pipe, substantially as herein described.

4. The combination of main and supplemental boilers, each of which connects with the feed-water supply, a coupling forming a connection between said boilers, having its lower end open and in connection with the steam-space of the main boiler, a pipe passing through the coupling and forming a connection between the two boilers, a valve in said pipe for cutting the supplemental boiler off from the main boiler, and steam-pipes leading from the steam-space of the coupling and the supplemental boiler, respectively, substantially as herein described.

5. A supplemental boiler adapted to be detachably fitted upon the main boiler and having radial water-tubes, a chamber J within the boiler, having a closed upper end and open bottom, a pipe leading from the feed-water supply to the supplemental chamber between the inner wall of the same and the outer wall of the chamber J and having its discharge end curved to impart a rotary motion to the water, a coupling fitted to the supplemental boiler, having a closed upper end and an open lower end adapted to enter the steam-space of the main boiler, a steam-pipe leading from the chamber J and a steam-pipe leading from the coupling, and a valve-controlled pipe leading from the interior of the chamber J through the coupling to the main boiler, substantially as herein described.

6. The combination of a main boiler, a supplemental boiler having radial tubes, a coupling supporting the latter boiler above and outside of the main boiler, having its lower end open and receiving steam from the main boiler, a valve-controlled pipe M, leading from the steam-space of the coupling to the lower portion of the supplemental boiler for flushing the latter, a draw-off cock from the supplemental boiler, through which sediment or deposits may be drawn off, and a valve-controlled pipe communicating with both boilers, whereby one may be cut off from the other, substantially as herein described.

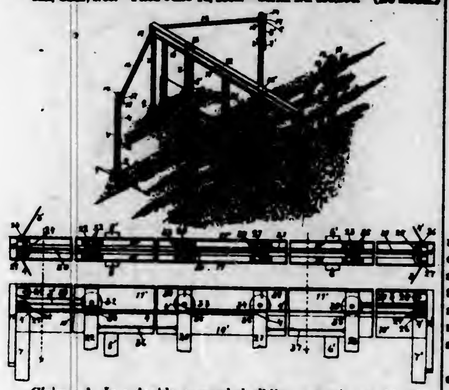
483,613. DUPLEX PRESSURE-GAGE. FRANK H. HASKELL, Revere, Mass. Filed May 26, 1892. Serial No. 434,504. (No model.)



Claim.—1. In a pressure-gage having two independently-operated index-fingers movable about a common axis, two independent inlet-pipes, and two independent spring-tubes of equal lengths connected one to each of said inlet-pipes by one end and projecting therefrom in opposite directions, the combination, with said parts, of an index-carrying spindle, a pinion mounted thereon, an index-carrying sleeve surrounding a portion of said spindle, a pinion on said sleeve, a pair of toothed segments mounted and movable about independent axes upon opposite sides of said spindle and sleeve and constructed and arranged to engage one with the spindle-pinion and the other with said sleeve-pinion, a pair of two-armed levers mounted upon independent fixed fulcrums, a pair of links connecting the short arms of said levers to the movable ends of said spring-tubes, one to each, and a pair of links connecting the long arms of said levers to said segments, one to each, said connections to the segments in each case being between the fulcrum of the segment and the pinion with which it engages.

2. In a duplex pressure-gage, the combination of the casing A, the dial D, the two inlet-pipes E and E', the two independent spring-tubes F and F', the spindle *g*, the pinion *h*, and index-finger *k*, carried by said spindle, the sleeve *i*, surrounding said spindle, the pinion *l* and index-finger *j*, carried by said sleeve, the segments *k'* and *l'*, mounted upon independent axes on opposite sides of said spindle and sleeves, the levers *o* and *o'*, mounted on independent fixed fulcrums and having their short arms constructed and adapted to be adjusted to greater or less lengths, the links *n* and *n'*, connecting the short arms of said levers *o* and *o'*, respectively, to the movable ends of the spring-tubes F and F', and the links *n* and *n'*, connecting the long arms of said levers *o* and *o'* to the segments *k'* and *l'*, respectively, substantially as described.

488,614. DOUBLE SUSPENDED SLIDING GATE. PETER H. JENSEN, Holt, Neb. Filed June 10, 1892. Serial No. 436,268. (No model.)



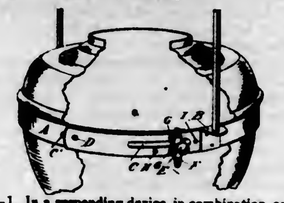
Claim.—1. In a double suspended sliding gate, the combination of two half-closures having outer and meeting stiles extending upward between a pair of guide-tracks, each stile having a pair of wheels adapted to run on said tracks, each half closure connected with the opposite one by a line attached to its outer stile, running around a pulley at the adjacent ends of tracks, then to and attached to the meeting stile or the opposite half-closure, opening lines attached to the outer stiles, passed around pulleys at the adjacent ends of tracks, and then diagonally to the side of drive a suitable distance from the gate, closing-lines attached to the meeting stiles and passed to and around pulleys at the opposite ends of tracks, and then diagonally to the side of drive opposite to the opening-lines, substantially as shown and described.

2. In a double suspended sliding gate, the combination of two half-closures having the meeting stiles 20 and 21, the outer stiles 22 and 23, provided with the pair of wheels 32, 33; 34, and 35, adapted to run on the tracks 10 and 10', supported above the drive by the single end posts 7 and 7' and the intermediate double posts 5 5' and 6 6', the outer stiles 22 and 23, connected with the meeting stiles 20 and 21 of each opposite half-closure by the lines 30 and 31, running over the pulleys 24 and 25, all substantially as shown and described.

3. In a double suspended sliding gate, the combination of two half-closures having the meeting stiles 20 and 21 and the outer stiles 22 and 23, provided with the pairs of wheels 32 33, 34, and 35, adapted to run on the tracks 10 and 10', supported above the drive on the single end posts 7 and 7' and the intermediate double posts 5 5' and 6 6', the outer stiles 22 and 23 of each half-closure connected with the meeting stiles 20 and 21 of each opposite half-closure by the lines 30 and 31, running over the pulleys 24 and 25, opening-lines 3 and 3', attached to the outer stiles 22 and 23, then running to and around pulleys 27 and 28 to and over pulleys 17 17 at tops of posts 8' and 8'' and suspended at their ends the weight-handles 1 and 1', the closing-line 4, attached to meeting stile 21, running loosely through the apertures 38 38 in the meeting stile 20 and outer stile 22, to and around pulley 29, to and over pulley 17 at top of post 8, and having weight-handle 2 suspended at its end, in like manner closing-line 4', attached to meeting stile 20, then through stiles 21 and 23, around pulley 26, over pulley 17 on post 8'', and having at its end the weight-handle 2', all substantially as shown and described.

4. In a double suspended sliding gate, the combination of the framework consisting of the single posts 8, 8', 8'', and 8''', having the inverted-V-shaped braces 16 16 16 16, attached near the top and connecting them with the casing, consisting of side pieces 11 and 11', cap-pieces 12, and ends 19 and 19', covering the double track 10 10', which is supported by the single end posts 5 5' and 6 6', with two half-closures having the meeting stiles 20 and 21, and the outer stiles 22 and 23, provided with the pairs of wheels 32, 33, 34, and 35 at their upper ends, adapted to run on the tracks 10 10', the outer stiles of each half-closure connected with the meeting stile of the opposite half-closure by the lines 30 and 31, running over the pulleys 24 and 25, opening-lines 3 3', attached to the outer stiles running around the pulleys 27 and 28, then under the inverted-V-shaped coverings 16 16 to and over the pulleys 17 17 at the top of posts 8' and 8''', closing-lines 4 and 4', attached to the meeting stile of each half-closure and passed around the pulleys 26 and 29 at opposite ends of tracks, then under coverings 16 16, over pulleys 17 17 at top of posts 8 8', and the extreme ends of opening and closing lines provided with weight-handles 1 1' and 2 2', substantially as shown and described.

488,615. SUSPENDING DEVICE. JOHN I. JOHNSON, Meriden, Conn., assignor to the Edward Miller & Company, same place. Filed July 12, 1892. Serial No. 440,004. (No model.)



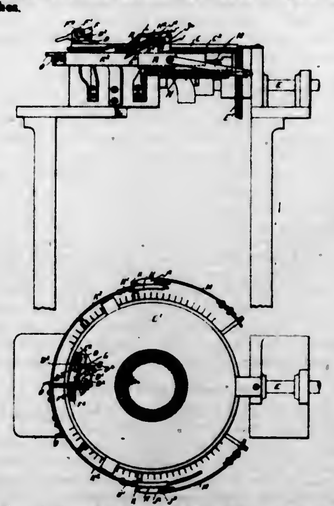
Claim.—1. In a suspending device, in combination, an expansible ring the ends of which overlap each other, a slot in the outer of said ends, a pin attached to the inner of said ends and passing through said slot, a button rotatably secured on said pin, and studs or projections on the outer of said ends, one on each side of said slot, said button being adapted to pass between said studs and to engage with said studs to maintain said ring in its normal or closed position, substantially as described.

2. In a suspending device, in combination, an expansible ring the ends of which overlap each other, a slot in the outer of said ends, a pin attached to the inner of said ends and passing through said slot, a button rotatably secured on said pin, studs or projections on the outer of said ends, one on each side of said slot, said button being adapted to pass between said studs and to engage with said studs to maintain said ring in its normal or closed position, and a stud, as H, at one side of said slot, substantially as described.

3. In a suspending device, in combination, an expansible ring the ends of which overlap each other, a slot in the outer of said ends, a pin attached to the inner of said ends and passing through said slot, a button rotatably secured on said pin, studs or projections on the outer of said ends, one on each side of said slot, said button being adapted to pass between said studs and to engage with said studs to maintain said ring in its normal or closed position, and a stud, as I, substantially in line with and near the inner end of said slot, substantially as described.

488,616. CIRCULAR-KNITTING MACHINE. BENJAMIN KERR and ISAAC L. BERRIDGE, Leicester, England. Filed Nov. 30, 1891. Serial No. 413,510. (No model.) Patented in England Feb. 28, 1891, No. 3,655.

Brief.—A tuck-stitch is formed upon each selvage-needle as it is thrown out of action in narrowing. The slides carrying the devices which actuate the throw-out cam are connected to the fashioning-slides, so as to approach each other as the number of needles in action diminishes.



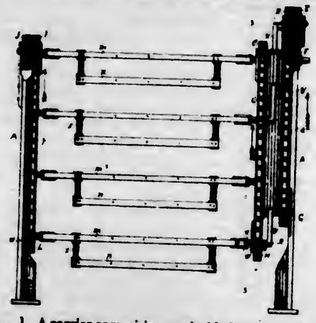
Claim.—1. In a circular reversible knitting-machine, the combination, with the outthrow-cam, of a spring-controlled and slotted plate, such as D, carried on the needle-actuating circular cam-plate C, and means to actuate the said plate and withdraw the cam to cause the selvage-needles to produce tuck-stitches during the narrowing operation, substantially as and for the purpose described.

2. In a circular reversible knitting-machine, the combination, with the cutthrow-cam, of a spring-controlled slotted plate, such as D, having a vertical inclined lug, such as D^3, a lever, such as F, carried by the needle-actuating cam-plate, and a movable slide, such as K, having provision for actuating said lever, substantially in the manner and for the purpose described.

3. In a circular reversible knitting-machine, the combination, with the lever F, of an adjustable spring-controlled arm H, a lever, such as L, a movable slide, such as K, and a curved bar, such as K^2, having lugs O, substantially as and for the purpose described.

4. In a circular reversible knitting-machine, the combination of an adjustable spring-controlled arm H, lever L, stop-plate O, bar K^2, slide K, rod M, and movable segmental cam slide or rack N, constructed and operating substantially in the manner and for the purpose described.

488,617. GRAIN-CARRIER. William H. Knapp, Kalamazoo, Mich. Filed Mar. 30, 1892. Serial No. 427,084. (No model.)



Claim.—1. A carrier comprising a suitable frame, a series of transverse bars provided with teeth, a traveling belt and pulleys at each side, to which belts the ends of the tooth-bars are pivotally attached, arms elbowed at the ends in opposite directions, one end of said arm being rigidly attached to the tooth-bars, a traveling belt to which the other ends of said arms are pivotally attached, this latter-named belt being jogged by the other belt at the same side of the carrier, and suitable means for transmitting power from one side of the carrier to the other side of the carrier, substantially as set forth.

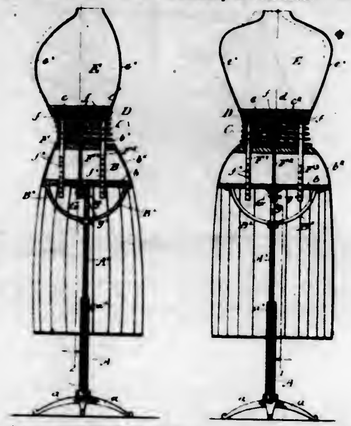
2. A carrier comprising a suitable frame, a series of transverse bars provided with teeth, supplemental bars provided with teeth and attached to the former-named tooth-bars, a traveling belt and pulleys at each side, to which belts the ends of the tooth-bars are pivotally attached, arms elbowed at the ends in opposite directions, one end of said arm being rigidly attached to the tooth-bars, a traveling belt to which the other ends of said arms are pivotally attached, this latter-named belt being jogged by the other belt at the same side of the carrier, and suitable means for transmitting power from one side of the carrier to the other side of the carrier, substantially as set forth.

3. The combination of a suitable frame, a series of transverse bars provided with teeth, a traveling belt at one side of the carrier, to which belt the ends of the tooth-bars are pivoted, two parallel belts jogging by each other at the other side of the carrier and to one of which belts the other ends of the tooth-bars are pivoted, the elbow-arms between said belts, one end of said arm being rigidly attached to the tooth-bars and the other end pivoted to the outermost belt, wheels or pulleys upon which said belts are mounted, wheels or pulleys at one end of the carrier for transmitting power, one being rigidly attached to the wheel or pulley of the belt to which the elbow-arms are pivoted and the other rigidly attached to the wheel or pulley of the belt at the opposite side of the carrier, a transverse shaft having a wheel or pulley at each end, and belts mounted upon said wheels or pulleys and upon the above-named power-transmitting wheels or pulleys, substantially as set forth.

488,618. DRESS-FORM. Howard L. Mayer, Chicago, Ill. Filed Feb. 18, 1892. Serial No. 421,976. (No model.)

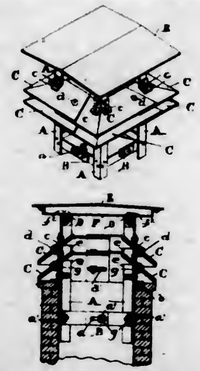
Claim.—1. A two-part dress-form, a spring interposed between the two parts thereof, and rods adjustably uniting the two parts, whereby any given position of the parts of the dress-form relative to each other can be maintained, substantially as described.

2. A two-part dress-form consisting of a lower part extending upward to the waist-line and an upper part extending above the waist, an adjustable standard on which each lower part is mounted, a spring extending between the upper and lower part of the dress-form, and connecting pieces adjustably uniting the two parts of the dress-form, whereby the lower part of the dress-form can be adjusted to a given height and the relative position of the two parts of the dress-form can be adjusted and maintained, substantially as described.



3. A two-part dress-form consisting of a lower part extending upward to the waist-line and an upper part extending above the waist, a spring interposed between said two parts, and an adjusting connection between said parts comprising a back and front rod for adjusting the upper part backward or forward and a rod at each side for inclining it sidewise, substantially as described.

488,619. CHIMNEY-COWL. John R. Oldershaw, Baltimore, Md. Filed Mar. 26, 1892. Serial No. 426,353. (No model.)



Claim.—1. A chimney-cowl comprising corner-posts to fit the inside corners of the chimney and joined together by extensible connections and a suitable top covering supported by said posts.

2. A chimney-cowl comprising corner-posts to fit the inside corners of a chimney and joined together by extensible connections, deflector-plates supported by said posts, and a suitable top covering.

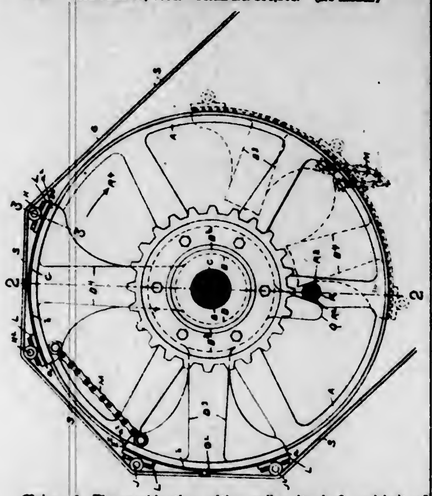
3. A chimney-cowl comprising corner-posts to fit the inside corners of a chimney and joined together by extensible flats, each consisting of two overlapping parts connected by means of a slot and bolt, and a suitable top covering.

4. A chimney-cowl comprising corner-posts to fit the inside corners of the chimney and joined together by extensible connections, overlapping deflector-plates supported by said posts and connected together by means of slots and bolts, and a suitable top covering.

5. A chimney-cowl comprising corner-posts to fit the inside corners of a chimney and joined together by extensible connections, said posts having horizontal slotted brackets at their upper ends, and a cap-plate having slotted foot pieces resting on said brackets and connected therewith by bolts extending through the slots in the brackets and foot-pieces.

6. A chimney-cowl comprising corner-posts to fit the inside corners of a chimney and joined together by extensible connections, deflector-frustums supported by said posts and each composed of over and under lapping corner-plates connected together by means of slots and bolts, and a suitable top covering.

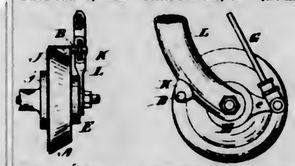
488,620. BELT-SHIPPER. Benjamin F. Ramsdell, Hyde Park, Mass. Filed June 15, 1891. Serial No. 396,576. (No model.)



Claim.—1. The combination, with a pulley, its shaft, and belt, of two separate frames each arranged to swing about the axis of said shaft and adapted to cross the periphery of said pulley and a chain connection of said swinging frames end to end adapted to allow said frames to approach and to recede from each other, as described, for the purposes specified.

2. The combination, with a pulley, its shaft, and belt, of two separate frames each arranged to swing about the axis of said shaft and adapted to cross the periphery of said pulley, a chain connection of said swinging frames end to end adapted to allow said frames to approach and to recede from each other, a prong held on and projected from one of said frames, and a stationary stop located for said prong and for the other of said frames to abut thereagainst but on opposite sides thereof, as described, for the purposes specified.

488,621. BRAKE FOR BICYCLES. David L. Reahey, Bradford, Engl. Filed Mar. 5, 1892. Serial No. 423,958. (No model.)



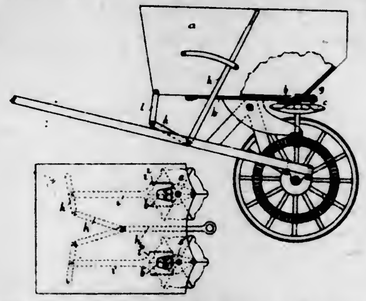
Claim.—1. In a hub brake, the combination, with the wheel-spindle and the hub, said spindle having a threaded portion, as described, of a cone secured to said hub, an internally-threaded collar revolubly mounted on the threaded portion of the spindle, a second cone mounted upon said collar and adapted to be moved laterally thereby to cause it to engage the first cone, and an operating-lever connected at one end with the said collar and adapted to turn the same, as described.

2. The combination, with the cone A, of the pin B, fixed thereto and arranged to engage a stationary portion of the velocipede so as to keep cone A from rotation without materially interfering with the side motion of said cone A, substantially as herein shown and described, and for the purpose specified.

488,622. SHOE-LACE FASTENING. Isaac H. Simon, Providence, R. I. Filed Apr. 6, 1892. Serial No. 428,675. (No model.)

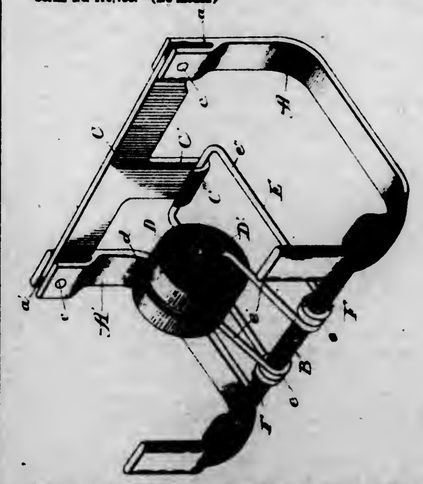
Claim.—A lace-clasp composed of a continuous piece of metal shaped to form a cross-piece *f*, and an outer holding-down portion at each end of the said cross-piece, the free ends of the material being returned together intermediate the holding-down portions to form two inner portions in close proximity to each other and over which the intermediate portions of the lace will extend, and the free ends of the said inner portions being bent to form securing-prongs of considerable length to constitute when the clasp is set a backing portion or support for those portions of the clasp which seize and hold the lace, substantially as shown and described.

488,623. SOWING-MACHINE. Emil G. Theslén, Kristianstad, Sweden. Filed Nov. 19, 1891. Serial No. 412,366. (No model.)



Claim.—In a seed-sowing machine having a pair of centrifugal seed-distributing wheels, the combination therewith of perforated and movable adjustable plates for controlling the quantity of seed being sown, an angle-lever, link, and handle for stopping the movement, as desired, of said wheels, even when the carriage is moved forward, and a toothed ring on the naves of the wheels, and a spring-actuated pawl on the wheel-axles for preventing the movement of said wheels when the carriage is moved backward, the combination being and operating substantially as set forth.

488,624. AXLE-LUBRICATOR. William H. Ward, Topeka, Kans., assignor, by mesne assignments, to William B. Ferguson, John Weyerhaeuser, John Volk, John Ohlweiler, Gustave Stengle, and George E. Lambert, Rock Island, Ill., Emil Lange, Davenport, Iowa, William Ullmann, Moline, and A. A. Chapman, Galesburg, Ill. Filed Jan. 30, 1892. Serial No. 419,753. (No model.)



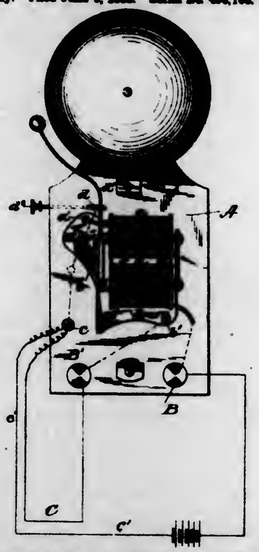
Claim.—1. An axle-lubricator comprising end pieces, a roller-carrying rod secured to one side of each end piece, a T-shaped bar secured to the other side, and a spring supporting a lubricating-roller mounted upon the rod and engaging with a hook on the bar, substantially as described.

2. The combination of end pieces having uprights at each corner provided with slots at their upper ends at one side, a T-shaped bar se-

cured in each slot and provided with a depending hook, a rod rigidly secured to the end pieces at suitable points in the side thereof opposite to the bar, a duplex spring supported upon each rod, having an arm engaging with the hook on the bar and arms supporting a roller-journal, and a roller mounted upon each journal and held in contact with the axle by means of the spring, substantially as described.

3. The combination of end pieces, a T-shaped bar connecting and forming a tie for each end pieces by being latched into slots formed in the uprights of each end pieces, a bar carrying a depending hook, a rod rigidly secured to the end pieces on the opposite side to the bar, and a spring supported at one side by said rod and at the other by the hook and provided with arms extending from the rod at an angle to the horizontal arm supporting the journal upon which revolves the lubricating-wheels, substantially as described.

488,625. ELECTRIC BURGLAR-ALARM. ROBERT T. WILSON, Louisville, Ky. Filed June 9, 1892. Serial No. 436,163. (No model.)



Claim.—The combination, with the base A, provided with an alarm-bell, and coils *a a*, having binding-posts B B' in direct connection therewith, of the battery-circuit *d'* and the alarm-circuit C in electrical connection with the post *c*, which in turn is connected to the spring-contact arm *d*, adjustably secured to said base A and having its connecting point or free end passing through a slot in said base, so as to contact with the vibrating-armature hammer, substantially as shown and described.

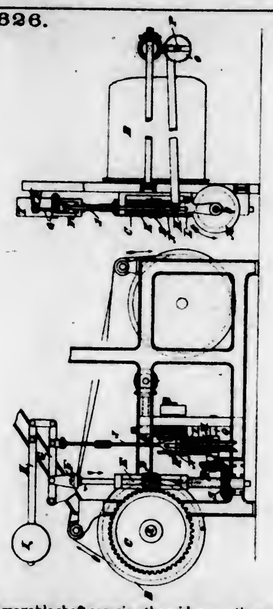
488,626. LOOM LET-OFF MOTION. WILLIAM ROSS, Glasgow, Scotland. Filed Apr. 4, 1892. Serial No. 428,234. (No model.) Patented in England Feb. 23, 1891, No. 3,226.

Brief.—The tension of the warp controls the vertical movement of a worm-shaft, which in turn controls the revolving motion imparted to said worm-shaft through a ratchet-and-pawl mechanism and consequently the amount of warp let off the beam.

Claim.—1. In combination, the beam, the worm-wheel thereon, the worm engaging the said wheel, the longitudinally-movable shaft, the gearing connected with the shaft for rotating it, the driving connections for operating the said gearing, consisting of the eccentric rod and pin K and the slotted lever with the pawl thereon, and the connections from the vertical shaft to the pin for adjusting the same to vary the throw of the pawl as the worm-shaft is moved longitudinally, substantially as described.

2. In combination, the beam, the worm-wheel and worm, the longitudinally-movable shaft H, carrying the said worm, the gearing for rotating the said shaft, the driving connections therefor, including the ratchet-wheel, the slotted lever carrying the pawl and the eccentric rod and pin K thereon engaging said slot, the weight for controlling the movement of the shaft H longitudinally, and the connections from the pin K to the shaft H for controlling the position of said pin, consisting of the link J and the lever G, substantially as described.

3. In combination, the beam, the worm-wheel and worm, the longitudinally-movable shaft carrying the said worm, the pawl and ratchet-wheel and connections therefrom to the worm-shaft for rotating the same, the lever carrying the pawl, the means for operating the lever, having an adjustable connection therewith movable toward and from the center of oscillation of said lever, the weight for acting upon the longitudinally-movable shaft, and the connections from the said adjustable connection to the longitudinally-movable shaft, controlled by the movement of said shaft, substantially as described.



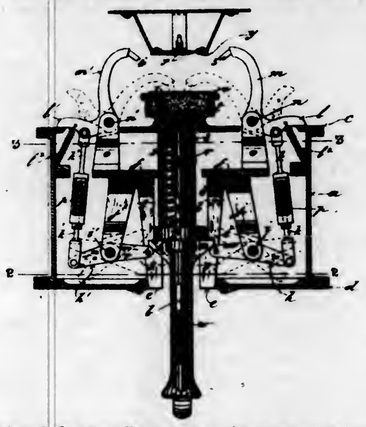
488,627. VINE-CUTTER. SAMUEL H. FRANCIS, Houston, Tex. Filed Mar. 5, 1892. Serial No. 424,199. (No model.)

Claim.—In a vine-cutter, a post or support, divergent elongated horizontally-arranged cutters secured to the opposite sides thereof and having their lower rear sides formed into cutting-edges of concave form, said cutters being deflected downward at a slight angle of inclination, and means for connecting said cutters to said post, said post being vertically arranged and the cutters being secured to the lower end thereof, substantially as described.

488,628. BEDCLOTHES-CLAMP. ANTHONY W. HAEBLE, Allen, Kans. Filed Dec. 31, 1891. Serial No. 416,681. (No model.)

Claim.—A bedclothes-clamp comprising a plate provided with a perforated leg, clamping-arms having their inner ends pivoted together and their outer ends provided with oppositely-disposed concave circular clamping-jaws, and a coupling-block pivoted to the inner ends of the arms and to the legs and provided with bifurcations disposed at right angles to receive the parts, substantially as described.

488,629. WORKMAN'S TIME-RECORDER. ALPHEUS L. JAYNES, St. Louis, Mo. Filed May 6, 1892. Serial No. 432,070. (No model.)



Claim.—1. In a recording apparatus, the combination of a key or other instrument, a tape and inking-ribbon, a clock-dial, and a movable type, the said key or other instrument when moved in one direction forcing the tape and ribbon against the clock-dial and when moved in the other direction forcing the type against the ribbon and tape, substantially as shown, and for the purpose described.

2. In a recording apparatus, the combination of a key having a prong or other projection and movable along a stem or other guide, a tape and inking-ribbon, and a type carried by a pivoted lever, the said lever being connected to a pivoted lever actuated by the key, substantially as shown, and for the purpose described.

3. In a recording apparatus, the combination of a key having a prong or other projection and movable along a stem or other guide, a ring or other shoulder-piece movable along the stem and connected to a plate carrying a tape and inking-ribbon, a spring for returning the said plate and ring, a clock-dial, and a type carried by a pivoted lever, the said lever being connected to a pivoted lever actuated by the key, substantially as shown, and for the purpose described.

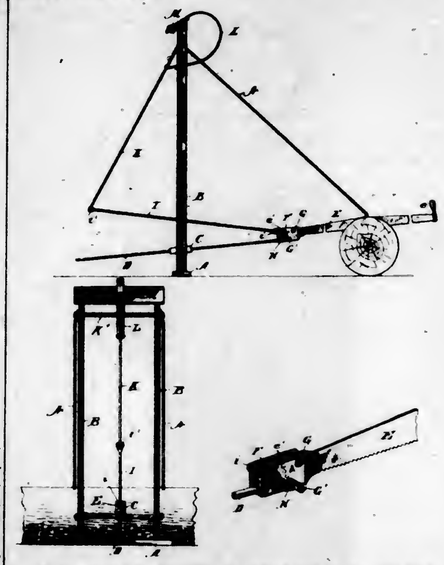
4. In a recording apparatus, the combination of a key having a prong or other projection and a pivoted lever, which is normally held in one position by a spring, the said lever being adjustably connected to a pivoted lever actuated by the lever, substantially as shown, and for the purpose described.

5. In a recording apparatus, the combination, severally, with a series of keys, each key having a prong or prongs and movable along a central stem or other guide, of a ring or other shoulder-piece, preferably surrounding and movable along the stem, the said ring being connected to a plate carrying across its face a tape and inking-ribbon, a clock-dial having hands actuated by ordinary clock-work, a spring for returning the said plate and ring, a fixed tube or sleeve surrounding and concentric with the stem and ring, the said tube having longitudinal slots corresponding, respectively, to a series of pivoted levers movable at one end along the said slots and adjustably connected to a corresponding series of levers carrying types or marks and adjustably connected to a fixed part of the apparatus, substantially as shown, and for the purpose described.

6. In a recording apparatus, the combination of mechanism for moving longitudinally the tape and inking-ribbon, comprising, respectively, the plate *l*, having oppositely-projecting arms *z z'*, carrying rollers *d'* and intermediate pins *b'*, pin *r*, engaging ratchet-lever q^2, having pawl *q'*, ratchet-wheel *p'*, spur-wheel f^3, and pinion *f'* for actuating the rollers *d'* of tape *u*, pin *w'*, engaging ratchet-lever *v*, having pawl v^3, and ratchet-wheel *x'* for actuating the rollers *d'* of inking-ribbon *v*, substantially as shown and described.

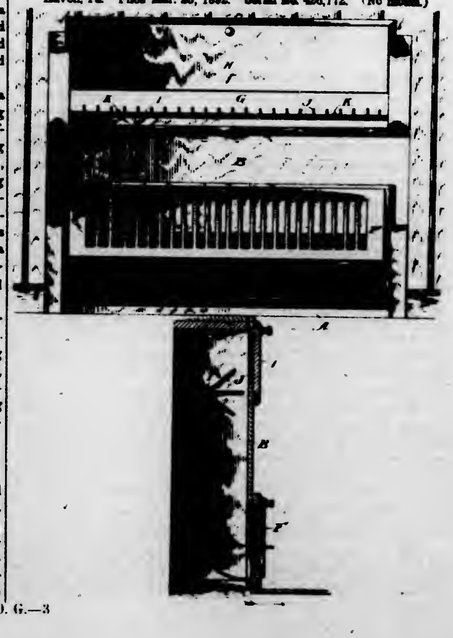
488,630. DRAG-SAWING MACHINE. CROMBO L. KIRKSEY and FOUNTAIN P. BOWDEN, Dover, Ark. Filed Feb. 24, 1892. Serial No. 422,642. (No model.)

Claim.—1. In a drag-saw apparatus, the combination of the saw-blade having the handle at one end and the series of perforations *d'* at the other end, the block F, the pin which permanently unites the saw-blade and the block, the detachable pin, which is adapted to engage with the said perforations *d'* and thereby, also, unite the blade and the block, these parts being arranged substantially as set forth, whereby the parts may be adjusted and held relative to each other, the rod E, rigidly secured to the block F, and a guide in line with the said rod through which it slides.



2. In a drag-saw apparatus, the combination of the supporting-frame, the saw-blade, the guide rod secured to the end of the saw opposite to the handle, the guide in which the said rod slides, the rod I, pivotally connected with the saw above the said guide, the rod K, pivotally supported in the frame and also pivotally united with the rod I, and the spring L, supported in the frame and connected directly with the rod K, substantially as set forth.

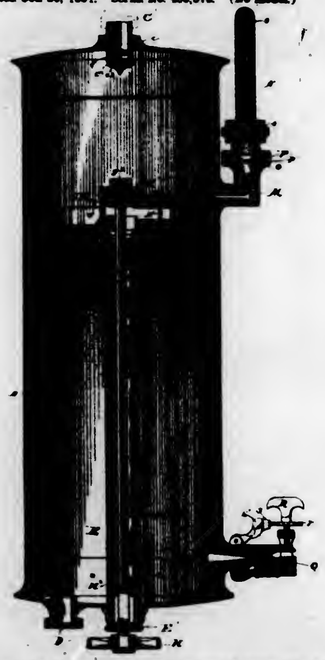
483,631. FOUL-AIR VENTILATOR. SAMUEL Z. MARTIN, Look Haven, Pa. Filed Mar. 28, 1892. Serial No. 426,172. (No model.)



Claim.—1. An improved vent for ventilating, consisting of a body portion divided into two portions by means of an upright partition, with a grating on the lower front part of the body over the inlet, and with a dust-arrester, substantially as described, arranged adjacent to the top of the partition.

2. An improved vent for ventilating, consisting of a body divided into two portions by means of an upright partition, with a grating near the forward lower part of the body over the inlet, a dust-arrester near the top of the partition, and an opening adjacent to said dust-arrester, for the purposes set forth.

483,632. FIRE-EXTINGUISHER. JOSEPH M. MILLER, Chicago, Ill. Filed Oct. 26, 1891. Serial No. 409,573. (No model.)



Claim.—1. In a fire-extinguisher, the combination, with an inclosing vessel or casing and a diaphragm separating the interior of the vessel into pressure and liquid chambers, said diaphragm having an opening or passage for establishing communication between the pressure and liquid chambers, of a valve controlling said passage in the diaphragm and valve operating devices on the exterior of the vessel, substantially as described.

2. In a fire-extinguisher, the combination, with an inclosing vessel or casing and a diaphragm separating the interior of the vessel into pressure and liquid chambers, said diaphragm having an opening or passage for establishing communication between the pressure and liquid chambers, of a valve controlling said passage in the diaphragm and a valve-stem controlling the valve passing through the liquid-chamber to the exterior of the vessel, substantially as described.

3. In a fire-extinguisher, the combination, with the vessel, the diaphragm dividing the same into two compartments, and the valve located in said diaphragm, of the tube passing through one of the compartments to the valve and the valve-rod passing through said tube, substantially as described.

4. In a fire-extinguisher, the combination, with the vessel, the diaphragm dividing the same into two compartments, and the valve located in said diaphragm, of the tube passing through the lower compartment, the valve-rod passing through the tube, and the packing or gasket surrounding the valve-stem and fitting in the upper end of the tube, whereby the escape of pressure or liquid through the tube is prevented, substantially as described.

5. In a fire-extinguisher, the combination, with the vessel, the diaphragm dividing the same into two compartments, and the valve located in said diaphragm and opening into the air-compartment, of the check-valve opening into the liquid-compartment, substantially as described.

6. In a fire-extinguisher, the combination, with the vessel, the diaphragm dividing the vessel into two compartments, the valve located in said diaphragm and opening into the air-compartment, and the valve-stem controlling said valve passing to the outside, of the check-valve opening into the liquid-compartment for preventing access of the liquid to the first-mentioned valve, substantially as described.

7. In a fire-extinguisher, the combination, with the vessel, the diaphragm dividing the vessel into two compartments, the valve located in the diaphragm and opening into the air-compartment, the valve stem, and the tube surrounding said stem passing through the liquid-compartment, of the check-valve controlling the opening from the first-mentioned valve to the liquid-compartment, substantially as described.

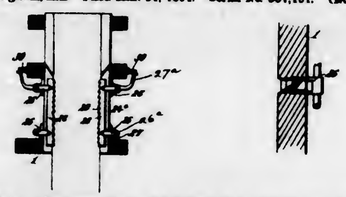
8. In a fire-extinguisher, the combination, with the vessel and the diaphragm dividing the same into two compartments, of the fitting secured on the diaphragm and having openings to the respective compartments, oppositely-arranged valves located in said openings, and a valve-stem for opening the valve in the pressure-compartment, substantially as described.

9. In a fire-extinguisher, the combination, with the vessel provided with two compartments for the air and liquid, respectively, of the fitting forming the communication between said compartments, the check-valve for preventing the entrance of liquid to said fitting, and the valve controlling the passage of air through the fitting, substantially as described.

10. In a fire-extinguisher, the combination, with the vessel, of the valve-fitting having the cross-piece, the elastic disk covering the opening in the fitting, the plate overlying the disk, and the pin passing through the cross-piece disk and plate and held by the cross-piece against movement in the direction of the elastic disk, substantially as described.

11. In a fire-extinguisher, the combination, with the vessel, of the valve formed by the fitting, the elastic disk covering the opening therein, the plate overlying the disk, and the pin secured to the plate and fitting and passing through and holding the disk compressed against the fitting, substantially as described.

483,633. DUPLEX COTTON-PRESS. ROBERT S. MUMFORD, Birmingham, Ala. Filed Mar. 31, 1891. Serial No. 387,181. (No model.)



Claim.—In a cotton-press, the combination, with the press-box having its side walls provided with vertical slots, of movable serrated bars arranged in said slots and adapted to hold the compressed cotton as it is driven down by a packer, links pivotally connected with the upper and lower ends of said bars and projecting outward through the slotted press-box, shafts mounted in brackets on the outside of said press-box and pivotally supporting the outer ends of the said links, an upwardly and outwardly curved arm mounted on each upper shaft, and a catch to engage and hold said arm until the serrated bars are to be released, substantially as described.

483,634. WASHING-POWDER. ELIZABETH F. O'NEAL, Philadelphia, Pa. Filed Oct. 7, 1891. Serial No. 408,016. (No specimens.)

Claim.—1. A washing-powder composed of borax, soda, pearlash, salts of tartar, oxalic acid, and soluble blue, substantially as described.

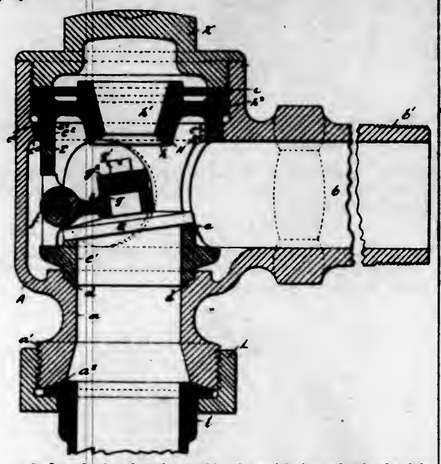
2. A washing-powder composed of borax, soda, pearlash, salts of tartar, oxalic acid, and soluble blue, and in the proportions substantially as described.

3. A washing-powder in granular form, composed of borax, soda, pearlash, salts of tartar, oxalic acid, and soluble blue, substantially as described.

483,635. CHECK-VALVE. SAMUEL F. PRINCE, Jr., Reading, Pa. Filed Jan. 2, 1892. Serial No. 416,706. (No model.)

Claim.—1. In a check-valve, the combination, with the casing having inlet and outlet branches arranged at an angle to each other and an independent opening thereto, of the valve-cage adapted to enter the casing through said opening and provided with an inclined valve-seat, means for maintaining said cage at any desired position in the casing circumferentially, and independent means for pressing it firmly against its seat, substantially as set forth.

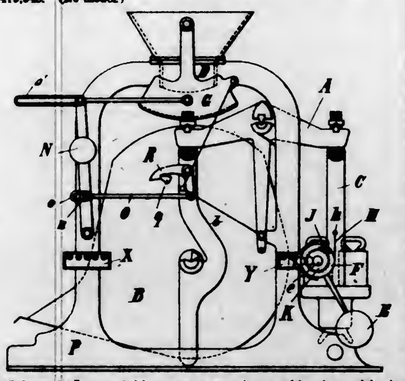
2. In a check-valve, the combination, with the casing having inlet and outlet branches arranged at an angle to each other and an independent opening thereto, of the valve-cage forming an extension of said inlet branch and entering said opening, the exteriorly-threaded sleeve within said opening, whereby the cage is adjustably secured, and the screw-cap to close said opening, all substantially as and for the purpose set forth.



3. In a check-valve, the combination, with the casing having inlet and outlet branches arranged at an angle to each other and an independent opening thereto, of the valve-cage, the valve seated therein, and the screw-sleeve for securing said cage, having a central opening whereby access may be had to said valve, substantially as and for the purpose set forth.

4. In a check-valve, the combination, with the casing having inlet and outlet branches arranged at an angle to each other and an independent opening thereto, of the valve cage and valve seated therein and the screw-sleeve for securing said cage, having a central opening whereby access may be had to said valve, and a circular flange which serves to limit the valve-lift, all substantially as and for the purpose set forth.

483,636. AUTOMATIC WEIGHING APPARATUS. MICHAEL E. REINERT, Hennef-on-the-Sieg, Germany. Filed Feb. 1, 1892. Serial No. 419,945. (No model.)



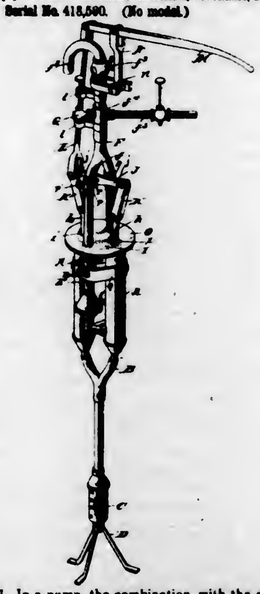
Claim.—1. In a weighing apparatus, the combination, with the scale-beam, a self-tilting receptacle suspended therefrom, a hopper for supplying the material to the receptacle, and a cut-off for the supply, of a resistance antagonizing the movement of the scale-beam with the loaded receptacle whenever said load is heavier than the weight on the beam, a device for retarding the tilting of the vessel until the supply is cut off, and means for ascertaining the weight of the power exerted by said resistance, for the purpose set forth.

2. In a weighing apparatus, the combination, with the scale-beam, a self-tilting receptacle suspended therefrom, a hopper for supplying the material to the receptacle, and a cut-off for the supply, of a variable resistance antagonizing the movement of the scale-beam with the loaded receptacle whenever said load is heavier than the weight on the beam, a device for retarding the tilting of the vessel until the supply is cut off, and means for ascertaining the weight of the power exerted by said resistance, for the purpose set forth.

3. In a weighing apparatus, the combination, with the scale-beam, a self-tilting receptacle suspended therefrom, a hopper for supplying the material to the receptacle, and a cut-off for the supply, of a variable resistance antagonizing the movement of the scale-beam with the loaded receptacle whenever said load is heavier than the weight on the beam, a device for retarding the tilting of the vessel until the supply is cut off, and means for ascertaining the weight of the power exerted by said resistance, for the purpose set forth.

4. In a weighing apparatus, the combination, with the scale-beam, the receptacle for the material to be weighed suspended therefrom and adapted to automatically tilt when the arm of the beam to which it is suspended descends, the gate G, and slotted rod O', connected therewith, of the locking-pawl R, adapted to engage a lug *q* on the receptacle, the slotted rod O, and the weighted lever N, having pins or studs extending into the slots of the said rods O and O', respectively substantially as and for the purpose set forth.

483,637. PUMP. MILLAGE M. SMITH, Stockdale, Tex. Filed Jan. 19, 1892. Serial No. 418,590. (No model.)



Claim.—1. In a pump, the combination, with the opposite cylinders having open upper ends, the opposite discharge-pipes, and the plunger-rods extending through the open ends of the cylinders, of the combined guide-head and brace encircling and supported by the discharge-pipes and provided with bearings lying directly over the center of the open upper ends of the cylinders to receive said plunger-rods, and a metallic shield or cap resting upon said combined guide-head and brace over said open upper ends of the cylinders to serve as a covering therefor and protect the same from foreign matter, substantially as set forth.

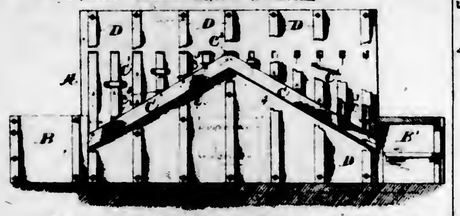
2. In a double-cylinder pump, the combination, with the cylinders, of the opposite parallel discharge-pipes connected with their respective cylinders and extending centrally above the same and connected with a main conducting-pipe, forming a crotch, the plunger-rods extending above the top of the cylinders, a horizontal lever or walking beam located in said crotch and vertically adjustable therein upon said discharge-pipes and provided with a series of perforations in each end, swinging connecting-links adjustably engaging the ends of said walking-beam and pivoted directly to the plunger-rods, a pump-rod pivoted to one end of said walking-beam, a swinging standard, and a pump-handle pivoted in said standard and connected with said pump-rod, substantially as set forth.

3. In a pump of the class described, the combination, with the opposite cylinders and the opposite parallel discharge-pipes connected

with their respective cylinders and extending parallel to each other above said cylinders, of the metallic clamping-band continuously encircling the parallel cylinders and discharge-pipes and U-shaped clamping-bolts embracing each cylinder and each discharge-pipe and having their ends clamped to said band, substantially as set forth.

4. In a double-cylinder pump, the combination, with the cylinders, the opposite parallel discharge-pipes connected at the upper ends by an inverted Y or crotch connection and the plungers, of the vertically-adjustable collars mounted upon and adapted to be adjusted on said connection, a fixed pivot-rod carried by said collars between said discharge-pipes and in a crotch of said inverted-Y connection, a horizontal lever or walking-beam pivotally mounted upon said rod between said pipes and connected with each plunger, and means for oscillating said walking-beam, substantially as set forth.

483,638. BRICK-KILN. CHARLES A. SNOW, Brick Haven, Va. Filed Feb. 17, 1892. Serial No. 421,813. (No model.)



Claim.— 1. In a brick-kiln, the combination, with the furnaces, of flues extending on an angle from said furnaces to a point below the top of the kiln and provided with smaller flues extending therefrom and opening into the kiln.

2. A brick-kiln having furnaces arranged in pairs and flues extending from said furnaces on an angle to a point below the top of the kiln, where they meet and open into each other, thus connecting said furnaces, and smaller flues extending vertically from said flues to a point above the apex of the first-mentioned flues, where they enter the kiln on an angle, substantially as described.

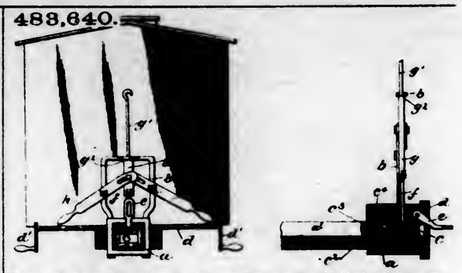
3. A brick-kiln having furnaces arranged in pairs and flues extending from said furnaces on an angle to a point below the top of the kiln, where they meet and open into each other, thus connecting said furnaces, said flues being provided with smaller flues opening into the kiln, for the purposes described.

4. A brick-kiln having furnaces arranged in pairs and flues extending from said furnaces on an angle to a point below the top of the kiln, where they meet and open into each other, thus connecting said furnaces, smaller flues extending vertically from said flues to a point above the apex of the same, dampers located in said vertical flues and the horizontal flue at the bottom of the kiln, also connecting the furnaces, and provided with small flues extending horizontally into the kiln, and a damper located at the junction of the two main flues, all combined and operating substantially as described.

483,639. PROCESS OF TREATING COPPER AND NICKEL PYRITES. JULES STRAP, Paris, France. Filed June 3, 1892. Serial No. 435,977. (No specimens.)

Claim.—The hereinbefore-described process, consisting in crushing the mineral to proper size, roasting the crushed mineral in two operations at a temperature less than 600° centigrade, liviviating the roasted material in acidulated water to dissolve the sulphates of copper and nickel, separating the sulphates, the copper by cementation and the nickel and iron by the precipitation of the latter, and subjecting the sulphate of nickel to treatment by electrolysis after first adding a proportion of sulphate of ammonium, substantially as described.

483,640. CAR-COUPLING. JOHN C. STUART, Dalark, Ark. Filed May 14, 1892. Serial No. 434,160. (No model.)



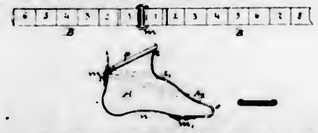
Claim—1. The combination of the draw-head *a*, pin-seat *c*, provided with means for operating the same, shaft *d*, passing through said draw-head and having on each end weighted crank-handles d', link *e*, having one end secured on said shaft, frame *b*, secured on the upper face of said draw-head, rod *g*, having the shoulders g^3 and neck g', said neck passing through a perforation in the upper part of said frame, coupling-pin *f*, bolted to the lower end of said rod *g*, and slotted levers A, fulcrumed to said frame and pivoted through its slots to said rod *g*, substantially as shown and described, and for the purposes set forth.

2. The combination of the draw-head *a*, having the groove a', pin-seat *c*, having the neck c', its rear end passing through the rear plate a^2, plate a^2, secured at the rear end of the throat of said draw-head, nut a^3, working against the rear face of said plate, link *e*, hinged in the front end of the draw-head, and coupling-pin *f*, provided with means for operating the same, substantially as shown and described, and for the purposes set forth.

483,641. TRIMMING FOR BUCKETS, PAILS, &c. EDWARD L. BAILEY, Philadelphia, Pa., assignor to Brown & Bailey, same place. Filed Jan. 14, 1892. Serial No. 418,056. (No model.)

Claim.—A lining for a candy-receptacle, consisting of a flexible strip having a body portion D, adapted to encircle the inner sides of the receptacle, and the flexible points C on opposite sides, adapted to cover the top and bottom of the contents of the receptacle, and an inner reinforcing-strip having flies attached to one of its edges and provided with a tongue and slit, substantially as described.

483,642. MEASURING-BAND. RUDOLF BEHNER, Berlin, Germany. Filed Mar. 24, 1892. Serial No. 426,197. (No model.)



Claim.—1. An improved rule for measuring and determining the shape of objects, consisting of a band or strip of flexible but non-elastic metal that will retain the contour into which it is bent and that is provided with one or several joints, substantially as specified.

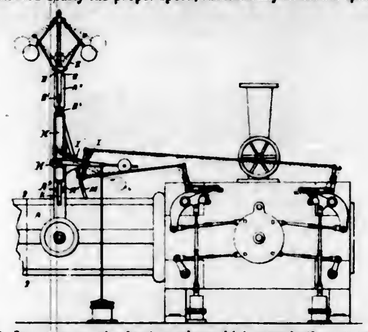
2. An improved rule for measuring and determining the shape of objects, consisting of a tubular flexible but non elastic metal band that will retain the contour in which it is bent and is provided with inclosed wires and with joints, substantially as specified.

3. An improved rule for measuring and determining the shape of objects, consisting of a flexible but non-elastic metal band that will retain the contour into which it is bent and is provided with joints and auxiliary end bands, substantially as specified.

483,643. STEAM-ENGINE GOVERNOR. GEORGE F. CORLISS and LUTHER H. WATTLES, Providence, R. I. Filed Jan. 28, 1892. Serial No. 419,513. (No model.)

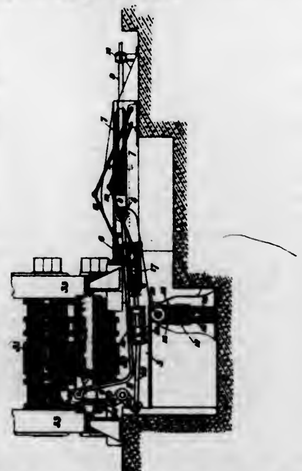
Claim.—1. In a steam-engine having valves which serve both as steam and cut-off valves, a governor sensitive to changes of velocity, and valve-operating gear controlled thereby, in combination with each other and with an arresting device having power accumulated in it to effect the stopping of the engine and arranged outside of and distinct from the governor-shaft, the catches H^3 K^3 for holding such arresting device out of action under ordinary conditions, but capable of being easily worked to release it, the bracket A^3, and the downwardly extended spring K, arranged to be operated either automatically or at will, all substantially as herein specified.

2. In a steam-engine, the combination of the steam-valves with the valve-liberating mechanism and detachable connection between the liberating mechanism and governor arranged outside of the governor-stand, consisting of a cylinder attached to the liberating mechanism and containing a spring which presses upon a rod connected to the governor, said rod and cylinder being connected by a spring-catch, and a cam-lever for setting the governor to permit the engine to be started and to automatically change its position to permit the liberating mechanism to be controlled by the governor to act when the engine has attained nearly the proper speed, substantially as herein specified.



3. In a steam-engine having valves which serve both as steam and cut off valves, a governor sensitive to changes of velocity, and valve-operating gear controlled thereby, in combination with each other and with a device, as the compressed spring G and connected mechanism, adapted to rapidly stop the engine, arranged outside of and distinct from the governor-stand, and provisions for setting it in action when the governor fails, and the cam-lever M M', adapted to condition the engine for starting, arranged to suspend the action of the governor, maintain each condition until the engine has accumulated a certain speed, and then automatically remove itself to permit the governor to control the engine in the usual way, all substantially as herein specified.

483,644. INGOT-MANIPULATOR. PETER N. CUNNINGHAM, New Castle, assignor of one-half to Robert Gray, Pittsburg, Pa. Filed Sept. 26, 1891. Serial No. 406,883. (No model.)



Claim.—1. An ingot-manipulator comprising a movable platform, pivoted pushers mounted thereon and arranged to engage at least two sides of the ingot, and means for turning said pushers, substantially as and for the purposes described.

2. An ingot-manipulator comprising a movable platform, upright finger-bars rigidly connected thereto, fingers pivotally mounted upon the finger-bars and arranged to engage at least two sides of the ingot, and means for turning the fingers, substantially as and for the purposes described.

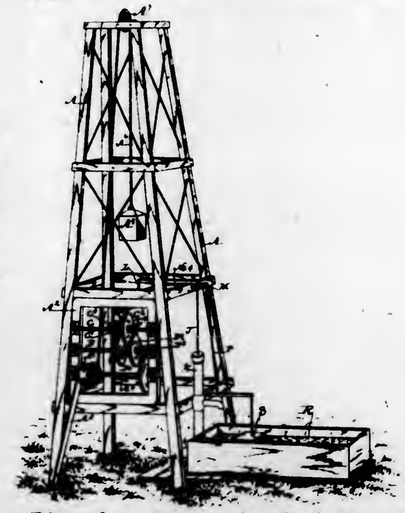
3. An ingot-manipulator comprising a vertically and longitudinally movable platform, pivoted pushers mounted thereon, and means for turning said pushers upon their pivots, substantially as and for the purposes described.

4. An ingot-manipulator comprising a vertically and longitudinally movable platform, pushers pivotally mounted thereon, a cylinder carried by the platform, and connections between said cylinder and pushers for actuating the same, substantially as and for the purposes described.

5. An ingot-manipulator comprising a platform carried by a vertically reciprocating plunger, means for moving said platform longitudinally thereon, pushers pivoted to the platform, a cylinder carried thereon, and connections between said cylinder and the pushers for actuating the same, substantially as and for the purposes described.

6. An ingot-manipulator comprising a platform carried by a vertically-reciprocating plunger, a separate cylinder reciprocating over a fixed piston-rod and pivotally connected with the platform, pushers pivotally mounted upon the platform, and motive cylinders also mounted thereon and arranged to actuate said pushers, substantially as and for the purposes described.

483,645. GRAVITY-MOTOR. ANDREW P. DRAKE and WILLIAM WOHR, Audubon, Iowa. Filed May 16, 1892. Serial No. 433,345. (No model.)



Claim.—1. In a gravity-motor, a drum-wheel fixed to a rotating shaft, a rope fixed to the drum and extended over a pulley supported in a higher plane, and a weight attached to the free end of the rope, a fixed shaft extended parallel with the rotating shaft, a gear-wheel having a smaller wheel on its hub mounted loosely on the fixed shaft extended parallel with the first-mentioned fixed shaft, and a gear-wheel mounted loosely thereon to engage the small wheel on the first fixed shaft and a small wheel on the hub thereof to engage the large wheel on the first shaft, and a duplex pin-wheel mounted loosely on the second fixed shaft, and a small gear-wheel combined with the hub of the pin-wheel to engage one of the larger wheels on the first fixed shaft, arranged and combined to operate in the manner set forth, for the purposes stated.

2. In a gravity motor, two uniform elbow-shaped levers pivoted at the central portions of their short arms and in parallel position to vibrate in vertical planes and a weight adjustably attached to the lower end of the long arm of each of said mating levers, and the free end of each short arm adapted to engage the pins of a pin-wheel, in combination with a duplex rotating pin-wheel, to operate in the manner set forth, for the purposes stated.

3. In a gravity-motor, a duplex pin-wheel at the end of a train of gear-wheels for transmitting power and motion to extraneous machinery, two mating elbow-shaped levers pivoted in parallel position to vibrate in vertical planes, a weight adjustably connected with the long arm of each of said mating levers, and a third lever pivoted in a higher plane and connected at points opposite its fulcrum with the mating elbow-shaped levers, said elbow-shaped levers carrying weights at their lower ends, all arranged and combined to serve as an escapement and also as a governor and to transmit power and convert motion, in the manner set forth.

4. Mechanism for transmitting and converting motion, consisting of a rotating duplex pin-wheel, two mating elbow-shaped levers pivoted in parallel position to alternately engage the pin-wheel at the

ends of their short arms, weights adjustably connected with the long arms of the said mating levers to vibrate in vertical planes, a third lever pivoted in a higher plane and connected with the said mating elbow-shaped levers by means of rods that extend from points on the opposite side of its fulcrum to the said mating levers, and a fourth lever connected with the said third lever to extend to a pump or other extraneous machinery, all arranged and combined to operate in the manner set forth, for the purposes stated.

5. A gravity-motor comprising a drum and fixed gear-wheel on a rotating shaft, a rope fixed to the drum and extended over a pulley supported in a higher plane, a fixed shaft extended parallel with the said rotating shaft, a gear-wheel having a gear-wheel smaller in diameter on the hub mounted loosely on said fixed shaft, a second gear-wheel mounted loosely on the same fixed shaft, a second fixed shaft in parallel position with the first-named fixed shaft, a gear-wheel having a gear-wheel of smaller diameter on its hub mounted loosely on the said second fixed shaft to allow the large wheel to engage the small wheel on the first shaft and the small wheel to engage the large wheel on the first fixed shaft, a duplex pin-wheel and gear-wheel combined and loosely mounted on the second fixed shaft to rotate jointly and the gear-wheel to engage one of the gear-wheels of larger diameter on the first fixed shaft, two mating elbow-shaped levers pivoted in parallel position to allow the ends of their short arms to alternately engage the duplex pin-wheel and vibrate vertically, a weight on the lower end of the long arm of each of said levers, a third lever pivoted in a higher plane and its end portions connected with the mating elbow-shaped levers, and a fourth lever connected with the third lever to extend to a pump-rod or other machinery, all arranged and combined to operate in the manner set forth

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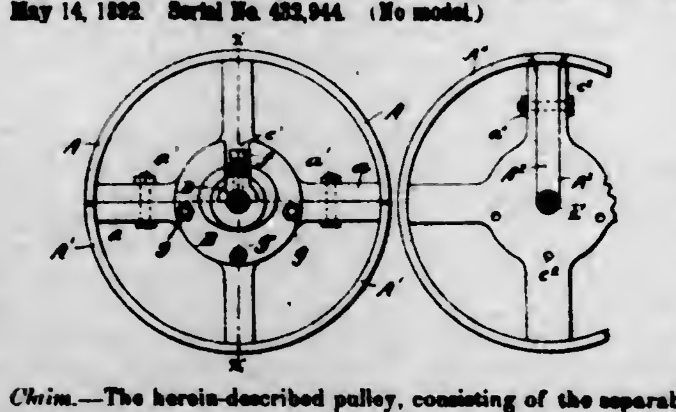
483,646. PROCESS OF MAKING ARTIFICIAL MICA SHEETS FOR ELECTRICAL INSULATION. ARTHUR H. S. DYER, Schenectady, assignor to Eugene Munsell & Co., New York, N. Y. Filed June 1, 1892. Serial No. 435,216. (No specimens.)

Claim.—1. The method of manufacturing electrical insulating mica sheets, the same consisting in varnishing a large sheet of iron or similar foundation-plate and placing thereon a series of smaller mica scales with their edges overlapping each other, varnishing the layer of scales and applying a second series of smaller sheets with their edges overlapping, continuing in the same manner until a plate of the required thickness is formed, heating the sheet to partially evaporate the solvent of the varnish, rolling the same to remove the excess of the varnish, subjecting the sheet to a heavy pressure, and finally cooling it, as hereinbefore described.

2. The herein-described method of building up electrical insulating mica sheets, consisting in varnishing a foundation-plate, placing mica scales thereon while the varnish is still wet or soft with their edges overlapping, varnishing the mica sheets, thus forming a second and third, &c., layer of mica in a similar manner until the required thickness of mica sheet is obtained, and chilling the sheet while rigidly held in a curved position.

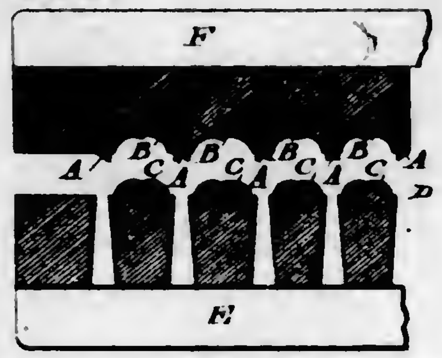
3. The hereinbefore-described method of manufacturing electrical insulating sheet-mica, consisting in cementing together with lapped joints scales of mica of various shapes of given size, varnishing the sheet thus formed, laying a second layer of scales in the same manner as before and repeating these steps until the desired thickness is obtained, and finally cementing to the sheet thus formed a larger sheet upon one or both sides of the sheet which is made of the said small pieces.

483,647. SPLIT PULLEY. JOHN C. FISHER, Reading, Pa. Filed May 14, 1892. Serial No. 432,944. (No model.)



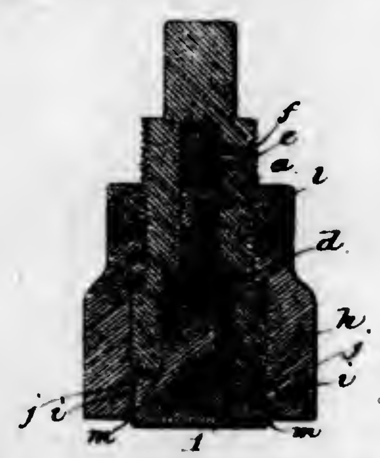
Claim.—The herein-described pulley, consisting of the separable sections, means for removably securing the same together, the hub-pieces B, located on each side of the sections and each having substantially-elliptical bosses and formed with openings, said openings consisting of the semicircular portions b', forming half-bearings for the shaft, portions b, communicating with said portions b' and of greater diameter than the same, and portions c', communicating with said portions b, slidable blocks fitted in said portions b and having bosses extending into said portions c', said blocks being adapted to bear directly against the shaft and forming the other half-bearing therefor, and set-screws engaging said blocks, all substantially as shown and described.

483,648. MANUFACTURE OF PAPER FRAMES FOR SLATES, &c. JOHN F. PINCHER, Philadelphia, Pa. Filed Feb. 23, 1892. Serial No. 422,543. (No model.)



Claim.—A device for the purpose named, consisting of the head F and the base E, the dies C, secured to the base E and having the cutters D on the edges, and the dies B, secured to the head F and having the cutters A between them, said cutters A being adapted to pass between the dies C, said parts being combined substantially as described.

483,649. BOX-MACHINE. JONATHAN GODFREY, Bridgeport, Conn., assignor of one-half to W. E. Baillie, same place. Filed Mar. 1, 1892. Serial No. 423,370. (No model.)



Claim.—1. The combination of the resilient plunger-block on which the boxes are placed, means for confining the sides of said boxes down to a predetermined point, means for forcing said boxes and block against the resiliency of the latter, and means for arresting the movement of the boxes prior to the stopping of the movement of the plunger, substantially as set forth.

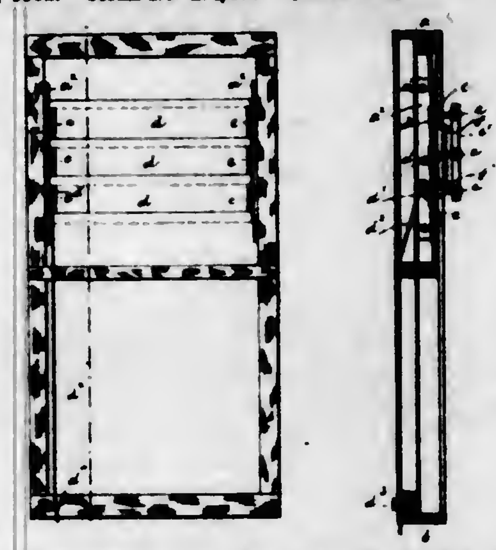
2. The combination of the block a, having shoulder j, block b within the block a and capable of a limited play therein, spring d, which exerts a constant pressure against block b, shell h, surrounding block b, but separated therefrom by an annular space sufficient only to contain the side of a box, anvil k, and means for reciprocating the block a and parts carried thereby, substantially as set forth.

3. The combination of the block a, the block b, contained and having a limited play therein, the spring whereby the block b is normally projected beyond the block a, the shoulder j at the rear of the annular space i, which latter is between the blocks and is sufficient only to contain the side of the box, and means applied to the bottom of the box for driving the block b against its resiliency, substantially as shown and described.

4. The combination of a plunger-block on which the box is mounted, means for confining the box laterally while on said block down to a predetermined point, a shoulder against which the box abuts, a spring which acts against said plunger, and means applied to the bottom of the box to force the plunger against the resiliency of said spring while the box is stationary, substantially as set forth.

5. In a machine for forming beads on paper boxes, the combination of a resilient plunger-block closely conformed to the interior of the box, means for confining said box laterally, a stop against which the box abuts, means applied to the bottom of the box for forcing the plunger against its resiliency, whereby the basal portion of the lateral area of the box will be outwardly disposed, and instrumentalities for compressing such disposed portion, substantially as set forth.

483,650. VENTILATOR. JOHN GROSS AND HERMAN BECK, New York, N. Y., assignors of one-third to Joseph Weiss, same place. Filed Mar. 10, 1892. Serial No. 424,464. (No model.)



Claim.—The combination of sash a with pivoted pockets c, inclosed glass panes d, and with the inwardly-projecting lug d' on pocket c, a button d^2 on sash b, and a connecting-string d^3, substantially as specified.

483,651. AIR-GUN. JOHN C. HOWE, Worcester, Mass., assignor to James J. Warren and John M. Warren, both of same place. Filed Oct. 17, 1891. Serial No. 408,988. (No model.)

Claim.—1. The barrel of an air-gun, consisting of an inner tube serving as the bore of the barrel and an outer tube encircling the inner tube, with a space between the tubes to serve as a magazine and hold the shot or projectiles, the outer tube having an opening therein through which the shot are inserted, and means for opening and closing said opening, substantially as set forth.

2. In an air-gun of the class described, the magazine for holding the shot, consisting of a tube forming the outer surface of the barrel of the gun and encircling a tube of less diameter forming the bore of the barrel, with a space between the tubes, into which the shot are inserted through an opening in the outer tube, substantially as set forth.

3. In an air-gun of the class described, the magazine of the gun, consisting of a tube forming the outer surface of the barrel of the gun and encircling a tube of less diameter forming the bore of the barrel, with a space between the tubes, into which the shot are inserted through an opening in the outer tube, and means for opening and closing said opening, substantially as set forth.

4. In an air-gun of the class described, the magazine of the gun, consisting of a tube forming the outer surface of the barrel of the gun and encircling a tube of less diameter forming the bore of the barrel, with a space between the tubes, into which the shot are inserted through an opening in the outer tube, and means for opening and closing said opening, and an opening leading from the inner end of said magazine-tube into the breech of the gun to allow the shot to pass from said tube to the loading-pin, substantially as set forth.

5. In an air-gun of the class described, the combination, with the barrel consisting of an inner tube serving as the bore of the barrel and an outer tube encircling the inner tube, with a space between the tubes to serve as a magazine and hold the shot, and means for opening and closing the opening in said outer tube, through which the shot are inserted, and an opening at the inner end of said magazine-tube and in the breech portion to allow the shot to pass from the magazine to the loading-pin, of a spring-actuating loading-pin having an opening therein to receive the shot from the magazine and adapted to be moved to carry the shot in line with the bore of the barrel, substantially as set forth.

6. In an air-gun of the class described, the combination, with the breech portion provided with openings therein leading from the magazine and from the bore of the barrel, of a spring-actuated loading device adapted to receive the shot from the magazine to carry the same to the bore of the barrel and consisting of a pin 9, having a hole 10 therein, and a flange or collar 13 thereon to limit the movement of the pin 9, and an actuating-spring 11, encircling the pin 9 and bearing at its lower end on the collar 13 and at its upper end on shoulders or notches formed in the breech of the gun, for the purpose stated, substantially as set forth.

7. In an air-gun of the class described, the combination, with the breech portion having a vertical opening therein and horizontal openings leading from said vertical opening to the magazine of the gun and to the bore of the barrel, of a spring-actuated loading device adapted to be automatically moved to receive the shot from the magazine and to be actuated by the loading-lever to carry the shot from the magazine to the bore of the barrel, said loading device consisting of a pin located in the vertical opening in the breech of the gun and having a hole 10 therein and a flange or collar 13 thereon adapted to engage with a plate secured upon the lower surface of the breech to retain the pin in place, and a spring 11, encircling said pin and bearing at its lower end against the collar 13 and at its upper end against shoulders or notches 12, said spring serving to move the pin 9 into position to receive the shot from the magazine, substantially as set forth.

8. In an air-gun of the class described the combination, with a metal tube forming the bore of the barrel, of a second metal tube of greater diameter than the first-mentioned tube and encircling the same, with a space between the tubes to serve as a magazine and hold the shot, and an opening in the outer tube, through which the shot are inserted, and means for opening and closing said opening consisting of a cylinder extending within the magazine-tube and provided with a pin extending through a slot in the tube to move said cylinder, said pin serving as a sight at the end of the barrel, substantially as set forth.

483,652. PROCESS OF REDUCING ZINC. CHRISTOPHER JAMES, Swansea, England. Filed Dec. 28, 1891. Serial No. 416,370. (No specimens.) Patented in England July 7, 1891, No. 11,563; in Belgium Aug. 17, 1891, No. 95,768; in Spain Sept. 23, 1891, No. 12,373, and in France Nov. 16, 1891, No. 215,113.

Claim.—A process for the treatment of zinc ores, consisting of mixing any natural or other oxide of zinc with sulphur or sulphides of any metal, subjecting the same to a melting heat in a neutral or slightly-reducing furnace, the relative proportions of the sulphur and oxides being such that the oxygen and sulphur will mutually react to entirely reduce the zinc to a metallic but vaporized condition, and collecting the latter by condensation, substantially as described.

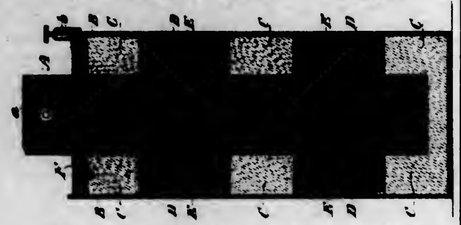
483,653. MOLDING MICA FORMS FOR ELECTRICAL INSULATORS. CHARLES W. JEFFERSON, Schenectady, assignor to Eugene Munsell & Co., New York, N. Y. Filed June 1, 1892. Serial No. 435,170. (No model.)

Claim.—1. A mold for forming and setting laminated mica sheets, consisting of an annular plate f, an annular plate c, having a spiral groove extending from its outer to its inner periphery clamped to the plate f in such relative positions that the groove becomes a conduit, closed except at the ends and having a curved groove b for containing the laminated and cemented mica scales, a core a, fitting in the groove b, and means for preventing leakage, consisting of a gasket at and between the outer peripheries of the rings c and f.

2. The hereinbefore-described process of bending and setting mica sheets, consisting in building a mica sheet by cementing together laminæ of mica scales with overlapping edges, compressing the sheet into the desired form while the cement is wet, drying the cement by

evaporating the solvent thereof, and finally chilling the molded mica sheet while under compression.

483,654. GALVANIC BATTERY. HARRY T. JOHNSON, New York, N. Y. Filed Dec. 10, 1891. Serial No. 414,563. (No model.)



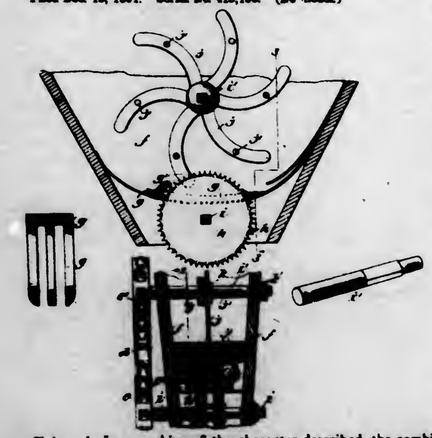
Claim.—1. A galvanic battery of the character described, having the exciting agent and the depolarizing agent arranged alternately in horizontally-disposed strata within the cup-shaped positive electrode, substantially as herein shown and described.

2. A galvanic battery of the character described, having the exciting agent arranged in horizontally-disposed strata contacting with both electrodes, and the depolarizing agent, also arranged in horizontal strata alternately with those of the exciting agent, and separators for preventing the conducting substance mixed with the depolarizing substance from contacting with the positive electrode, substantially as shown and described.

3. In a galvanic battery of the character described, the combination, with the positive and negative electrodes, of an exciting agent arranged in horizontally-disposed strata and contacting with both electrodes, the depolarizing agent, also arranged in horizontally-disposed strata between the strata of exciting agent, and the separators E, interposed between the positive electrode and the depolarizing agent, substantially as shown and described.

4. In a galvanic battery of the character described the combination, with the positive and negative electrodes, of an exciting agent arranged in horizontally-disposed strata and contacting with both electrodes, the depolarizing agent also arranged in horizontally-disposed strata between the strata of exciting agent, the separators E, interposed between the positive electrode and the depolarizing agent, and the seal closing the top of the positive electrode, substantially as shown and described.

483,655. COTTON-SEED PLANTER. ALOIS LANG, Macon, Ga. Filed Dec. 15, 1891. Serial No. 415,139. (No model.)



Claim.—1. In a machine of the character described, the combination, with the hopper and a detachable wheel, of a shaft *i*, having the integral collar, a cylindrical section, an adjacent squared section whose greatest diameter is inscribed within that of the cylindrical portion, and a cylindrical extremity adjacent to the squared portion, the said shaft *i* arranged transversely and having its bearings in the hopper, as shown and described.

2. In a machine of the character described, the combination, with the seed-hopper, of the revolvable seed-agitating wheel having a series of radial arms provided with transverse rods which are of alternately-unequal length, as shown and described.

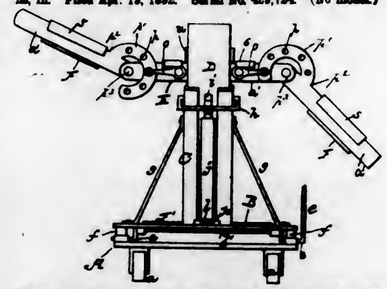
483,656. CARTRIDGE FOR FIREARMS. ULDARICUS MARGA, Brussels, Belgium. Filed Jan. 27, 1892. Serial No. 419,483. (No model.) Patented in England July 17, 1891, No. 12,190; in Germany July 30, 1891, No. 10,494, and in Spain Oct. 29, 1891, No. 12,627.

Claim.—1. The combination, in a cartridge, of an outer shell having a recessed base, an interior flanged tube engaging the base, and a plug fitting in the recess and engaging the inner tube, said plug carrying the anvil, substantially as described.

2. A cartridge for firearms, consisting of an outer shell having a recessed base, an interior flanged tube engaging said base, a plug B, fitting the recess and clamping the flange of the inner tube, and a cap located in the recess below the plug, substantially as described.

3. A cartridge consisting of an outer case, an inner tube of less length than the outer tube, a bullet having a conical point engaging the inner tube, a cylindrical part held by the walls of the outer shell, a truncated part M, and a projecting ogival point, substantially as described.

483,657. INVALID-SUPPORTER. SOLOMON J. REOADS, Metropolis, Ill. Filed Apr. 19, 1892. Serial No. 429,734. (No model.)



Claim.—1. The combination of the base, the platform, and transverse rods having pivoted angular ends, and a hand-lever and spring interposed between said platform and base, the hollow standard having the brace-bars, the sliding bar having the rack, the pawl engaging said rack and foot-lever secured to the pawl, the supporting device composed of the jointed arms and fingers, and a catch-plate for holding the bearing-arms to the sliding bar, all substantially as described.

2. The within-described invalid-supporter, consisting of the base mounted on caster-wheels and a platform connected to the base by the transverse rods pivoted both to the base and platform, having a hand-lever, the hollow standard, and sliding bar, the rack and pawl, the jointed bars carrying the fingers, and the sliding catch for said bars, all as shown and described.

483,658. CAR-COUPLING. JOHN SPRINGS, Norwich, Conn. Filed May 2, 1892. Serial No. 431,566. (No model.)

Claim.—1. In a car-coupling, the combination of a draw-head slotted and laterally recessed, as set forth, and a coupling-bar hinged therein, formed with a head corresponding in shape and size with the said lateral recesses, the coupling-bar being slotted, as at *d*, to permit a limited longitudinal movement of said bar, and the inner end wall of the draw-head slot being formed with a projection b^3, that may coact with the end of said bar when the latter is raised to vertical position, as and for the purpose specified.

2. In a car coupling, the combination of a draw-head slotted longitudinally and recessed laterally, as set forth, a slotted coupling-bar hinged within the draw-head by a bolt passing through its slot, a fixed point or projection b^3 on the draw-head, adapted to coact with the coupling-bar, as described, when the latter is in its vertical position,

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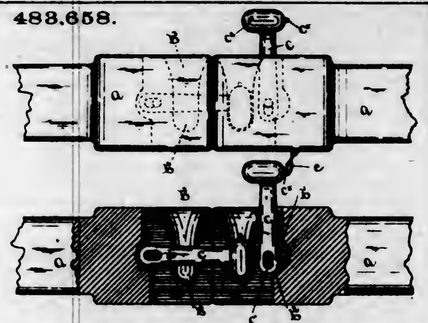
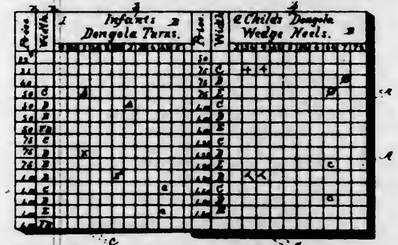


and a chain attached to the head of the coupling in the rear of the vertical center of said bar, as and for the purpose specified.

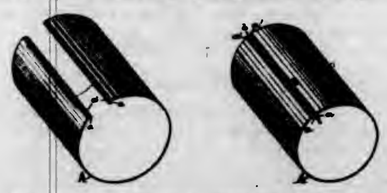
483,659. MEANS FOR KEEPING STOCK-RECORD OF CERTAIN MERCHANDISE IN RETAIL ESTABLISHMENTS. DAVID H. STERR, Philadelphia, Pa. Filed May 27, 1892. Serial No. 434,573. (No model.)



Claim.—1. The means for keeping account of stock in a retail shoe-dealer's establishment, which consists in a book-manual, each page of which is devoted to a separate class of shoes, the respective pages having displayed on blank space B trade-title *b* of the division or class, under which title are horizontal lines A and vertical lines C, two of said vertical lines extending the full length of the page, whereby a series of quadrangular spaces *c* are formed, each page having in upper spaces between the two longer vertical lines the captions "Price" and "Width," each page of the manual having displayed upon its upper horizontal line in progression ordinals indicating the size-number of shoes, compiled on said page, as and for the purpose intended, substantially as described.

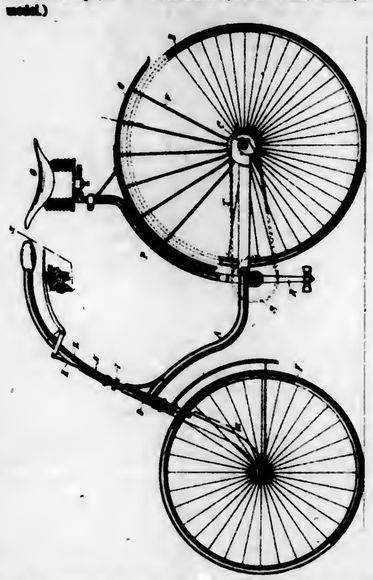
2. A shoe-stock manual having separate pages, each devoted to a special class of shoes, the description being displayed on a space at the upper portion thereof, immediately below which is shown in progressive order sizes of the shoes, each page having quadrangular spaces *c*, adapted to receive erasible symbols indicating the style, number, and other description of shoes withdrawn from the package to which the several pages refer, in combination with an index having pages each separately devoted to a special class of shoes and having displayed at the top of each page of said index a caption directly referring to the coincident title B shown on the several pages of the manual, as and for the purpose intended, substantially as set forth.

483,660. SHEET-METAL CAN-BODY. ISAIAH H. TAYLOR, Baltimore, Md. Filed Aug. 6, 1891. Serial No. 401,856. (No model.)



Claim.—A can-body having its confronting or adjacent edges bent inward to form flanges, the extreme outer or tip edges of which flanges touch with each other, and thereby form a trough or substantially-V-shaped groove longitudinally along the can-body between said flanges, and a filling of solder in the groove extending from the bottom of the trough substantially out to the exterior of the can, whereby a uniformity of exterior is secured, substantially as set forth.

483,661. BICYCLE. HENRY W. TRUMBOUR, Woodside, N. Y., and ERIK STRUBBERG, Rockaway, N. J., assignors of one-third to George B. Burns, Brooklyn, N. Y. Filed Nov. 20, 1891. Serial No. 412,484. (No model.)



1. In a bicycle, the combination, with the main frame in which the wheels are mounted, of a rigid bar or frame carrying the saddle and pedal-shaft, and a series of spring bars or rods the ends of which are secured in plates on opposite sides of the driving or rear wheel, said rods radiating in an upward direction from a point at or near the axis of the said wheel and supporting the bar or frame, as set forth.

2. In a bicycle, the combination, with a mud guard or shield surrounding the upper portion of the rear or driving wheel and a series of spring-supporting rods therefor the ends of which are secured in plates on each side of the driving-wheel and radiating upward from the axis of said wheel, of a bar attached to said guard, a saddle mounted thereon forward of the axis of the driving-wheel, and a pedal or crank shaft carried by the said bar, as set forth.

3. The combination, with the horizontal frame or bar A, the handle-frame pivoted thereto, and the front and rear wheels mounted in the two parts, as described, of a curved bar P, carrying the saddle and the pedal or crank shaft and bifurcated to embrace the bar A, the spring-rods V, secured to the bar A on each side of the rear wheel and radiating upward from the axis of said wheel, the said rods being connected to the bar P and forming supports therefor, as set forth.

483,662. THERMOMETER-SCALE. SUSAN R. WARD, Phelps, N. Y. Filed Jan. 21, 1892. Serial No. 418,745. (No model.)

Claim.—1. A thermometer-scale composed of alternate series of blocks, one series having degree-lines extending across the whole scale, the other series having degree-lines extending only partially across, occupying the central portion and resting between sections at the sides of a different shade or color from the rest of the scale, as specified.

2. A thermometer-scale whose degree-lines are arranged in blocks, the lines of each alternate block extending across the scale and the lines of each intermediate block extending only partially across, the lines forming a continuous scale from bottom to top, as described.

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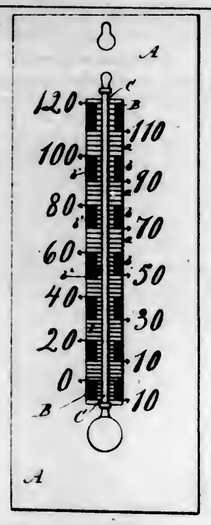
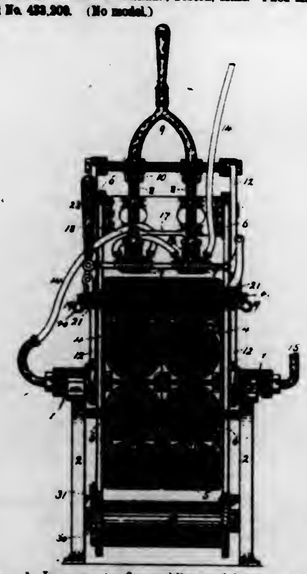


483,668. MACHINE FOR MOLDING ARTICLES FROM PLASTIC COMPOUNDS. Henry C. Warren, Boston, Mass. Filed May 16, 1892. Serial No. 433,209. (No model.)



Claim.—1. In apparatus for molding articles, a revolable carrier mounted upon a horizontal shaft and furnished with hollow molds placed circumferentially thereon and adapted for internal fluid circulation, combined with co-operating plungers having hollow heads also adapted for fluid circulation, together with means for operating the plungers, and mechanism for ejecting the finished articles from the molds, substantially as described.

2. In apparatus for molding articles, a rotary carrier provided with hollow molds about its circumference, combined with a series of reciprocating plungers, likewise hollow, and a frame which supports said plungers and swings on the axis of the carrier, said mold-plates and plungers being adapted to permit of fluid circulation within them, substantially as explained.

3. In combination with a suitable standard, a revolable mold-plate carrier and mechanism to lock the two together, one or more reciprocating plungers, a swinging frame adapted to support said plungers and pivotally mounted on the axis of the revolable carrier, oscillating fulcrum-bars likewise pivoted on said axis, and a lever which actuates said plungers, substantially as described.

4. The combination, with a rotary carrier, the removable molds secured circumferentially thereabout and fitted for internal fluid circulation, of a swinging frame upon the carrier axis, one or more reciprocating lever-actuated plungers mounted in said frame, and a lever to impart axial rotation to the plunger, substantially as specified.

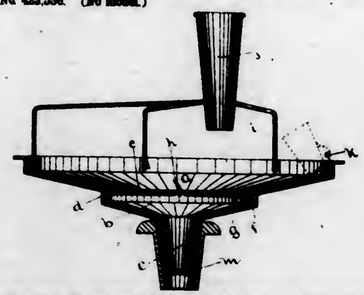
5. In combination with a revolable mold-plate carrier and a series of co-operating plungers, a series of removable hollow molds with inlet and outlet passages, and a movable push-pin in said plates, together with mechanism on the standard adapted to actuate said pins by the rotary movement of the carrier and so discharge the molded articles from the molds at predetermined intervals, substantially as described and stated.

6. In apparatus for molding articles, a revolable mold-carrier, one or more co-operating plungers, a swinging frame which supports said plungers, and locking-pins 19, with the controlling-lever 23, adapted to release the plunger-frame when interlocked with the carrier, combined with the fulcrum-bars 12, pivoted upon the carrier-axis, a lever 10, uniting said plungers and bars, and lever handle 9, all operating substantially as explained.

7. In apparatus for molding articles, a suitable standard, a rotary mold-plate carrier for liquid circulation, a plunger-frame and plungers likewise for internal fluid circulation, adapted to swing upon the carrier-axis, oscillating fulcrum-bars likewise upon said axis, mechanism operated by said plunger-frame to lock the standard with the carrier, mechanism for locking the plunger-frame with the carrier, a lever for operating the same, together with means for imparting axial rotary movement to the plungers, as likewise means for ejecting the molded articles from the carrier, substantially as herein set forth and specified.

8. In combination with a revoluble carrier, a series of mold-plates circumferentially thereon, inlet and outlet passages for fluid circulation in said plates, push-pins for ejecting articles from the molds, one or more plungers upon an oscillating frame, mechanism for reciprocating said plungers, mechanism, as described, for interlocking the plunger-frame and carrier, as likewise means for locking the carrier and standard together, and a drum with an endless band intermittingly actuated to receive the molded articles, substantially as set forth.

483,664. RACK FOR HOLDING AND DRAINING LIQUID-MEASURES. Alonzo R. Ames, Norwich, Conn. Filed Mar. 2, 1892. Serial No. 423,536. (No model.)



Claim.—1. In combination with a funnel-shaped receptacle with strainer, as set forth, a tabular funnel-support *j*, located eccentric to the said receptacle and supported by wires located at varying distances apart, as and for the purpose specified

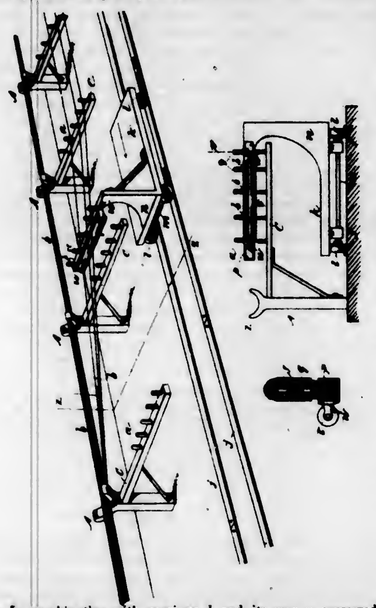
2. In combination with a funnel-shaped receptacle with strainer, as set forth, having a tabular funnel-support mounted on wires over said receptacle, a bushing *m*, adapted to receive and support the said receptacle, all being substantially as and for the purposes specified.

3. In combination with a funnel-shaped receptacle with strainer, as set forth, and a tabular funnel-support mounted thereon by wires, an angle-wire *k*, secured to the rim of said receptacle, substantially as and for the object specified.

483,665. CORDAGE-MANUFACTURING APPARATUS. Henry M. Ingham, Everett, Mass. Filed June 7, 1890. Serial No. 354,583. (No model.)

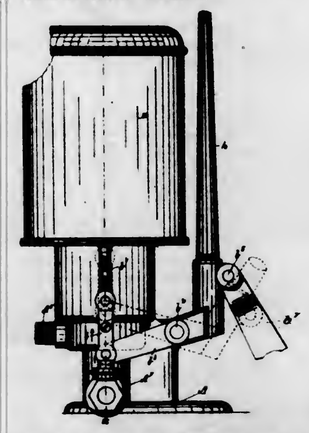
Brief.—The strands are transferred from the post-heads to the arms C by placing them on the arm *p* of the carriage *k* and then running the carriage along its track.

Claim.—1. In combination with the posts A of a rope-walk formed with concave tops to receive the twisted strands *b*, the arms C, extended horizontally and provided with studs *a*, the truck *k*, formed with wheels *l*, arranged to run on tracks *j*, arranged at one side of said posts, the arm *p*, carried by said truck and arranged to pass over arms C, and the studs *q*, arranged in said arm to coincide with studs *a* in arm C, substantially as specified.



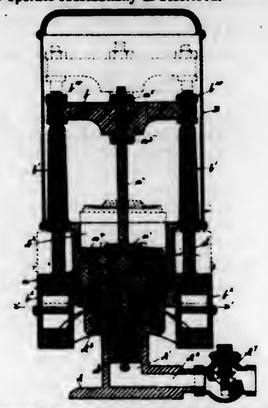
2. In combination with carriage *k* and its arm *p*, arranged to transfer strands *b* from posts A to arm C, the roller *t*, journaled upon arm *p* at one side thereof, substantially as specified.

483,666. PUMP. Henry H. Cushing, Malden, Mass. Filed Oct. 14, 1890. Serial No. 368,090. (No model.)



Claim.—1. A pump containing the following instrumentalities, viz: two cylinders, each having an open end and a valve-controlled end, a chamber intermediate said cylinders and communicating with their open ends, a piston-rod having an apertured plunger for each cylinder, independent valves to open the apertures in one plunger and close them in the other simultaneously at each stroke of the piston, and means to reciprocate the piston, substantially as described.

2. A pump containing the following instrumentalities, viz: two cylinders, an inlet-valve at one end of one of said cylinders and an outlet-valve at the delivery end of the other of said cylinders, a chamber communicating with and contiguous to the opening of the cylinders opposite the said valves, and a piston-rod having plungers for said cylinders and each provided with valves to control the communication between said chamber and cylinders, and means to reciprocate the said piston-rod, to operate substantially as described.



3. In a pump, the combination of the following instrumentalities, viz: a chamber, a cylinder leading therefrom and in unobstructed communication therewith, a second cylinder leading from and of smaller diameter than the first, a plunger for the said cylinders having a passage intermediate and connecting the said chamber with said second cylinder beyond said plunger and a valve to control said passage, co-operating valves in said cylinders and on said plunger to control the passage of the fluid from the first to the second cylinder, and means to reciprocate said plunger, to operate substantially as described.

4. The chamber B, cylinders A′ A^3, leading therefrom, and valves A^4 and A^7, combined with a plunger *a*, having a valve a^4, a passage *a′*, and valve a^3, said valves a^4 and a^3 controlling the passage of fluid through the plunger, and mechanism to reciprocate the said plunger, substantially as described.

5. The chamber B and cylinders A′ A^3, combined with a plunger *a*, having openings a^3, central opening *a′*, connecting said chamber B and cylinder *a′*, and valves controlling the same, and by which valves and openings communication between cylinder A^3, chamber B, and cylinder A′ is established, substantially as described.

6. The combination of the chamber B, cylinders A′ A^3, communicating therewith, the plunger *a* in said cylinders, its plunger-rod *a″*, yoke *b* in the chamber B, and the bars *b′*, the bars *b′* extended beyond said chamber, guides therefor in said chamber, links b^3, connected to said bars, and pivoted levers b^3, to operate substantially as described.

7. In a pump, a chamber, two cylinders of different diameters placed substantially in line, inlets and outlets for the said cylinders, the outlet of one cylinder leading to the said chamber and to the inlet of the other cylinder, and valves controlling the same, combined with a plunger for the said cylinders and means to reciprocate the same, to operate substantially as described.

483,667. APPARATUS FOR SAVING LIFE AT SEA. John D'Arcy-Irvine, Howth, Ireland. Filed Nov. 13, 1891. Serial No. 411,068. (No model.) Patented in England Dec. 31, 1890. No. 21,351.

Claim.—1. In a projectile, a striker S and holding-springs O O, in combination with each other and with a case or shell and with means for supplying gas which is set free by the movement of the striker, as herein set forth.

2. A projectile having one or more bags of flexible material arranged close to the main body of the case or inclosing shell, in combination with the said main body and with bags A A, and with means D D′ and F for attaching each bags, and with means for inflating the latter after the discharge, so as to make the projectile capable of floating in water, as herein specified.

3. In a projectile having a bag or bags attached and provisions for inflating each controlled by a valve, a striker S, adapted to move rearward by inertia when the projectile is discharged and arranged to open the valve by such movement, as herein specified.

4. In a projectile having a bag or bags attached and provisions for inflating each controlled by a valve, a striker S, adapted to move rearward by inertia when the projectile is discharged, in combination with the spring-hooks O for holding the valve, all substantially as herein specified.

5. In a projectile having a bag or bags attached and provisions for inflating each controlled by a valve, a striker S, adapted to move rearward by inertia when the projectile is discharged, in combination

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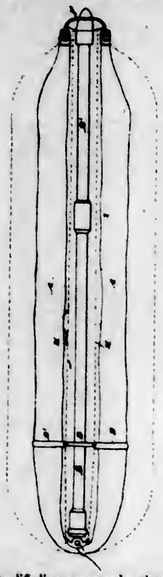
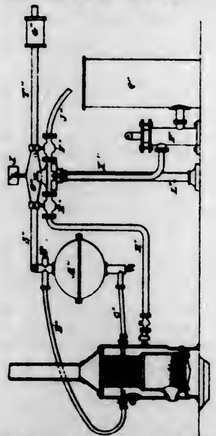


with a connection to the life-line arranged, substantially as shown, so that the tension of the life-line contributes to open and to hold open the valve, as herein specified.

483,668. BOILER-FEEDER. LOUIS DEBUT, Proules, France. Filed May 23, 1892. Serial No. 434,102. (No model.)



Claim.—In combination, the boiler, the feed-water pipe, the receptacle A", the flexible-pipe connection therefrom to the boiler, the inlet and relief valves, and the means for operating both of said valves reversely and positively and for supporting the removable receptacle, consisting of the lever O", fulcrumed between the two valves, having an arm extending over each and connected thereto, the said receptacle A" being pivoted to the extremity of one arm and the weight G" adjustable on the end of the other arm, substantially as described.

483,669. COMBINED BOOK-CASE AND DESK. PAUL GAMBLIN, Schwerin, Mecklenburg, Germany. Filed Mar. 28, 1892. Serial No. 426,777. (No model.)

Claim.—1. In combination, in a combined book-case and desk, the body portion having the inclined slots, the adjustable plate, and the arms *d d'*, extending from the body portion to the said plate, the outer ends of said arms being pivoted to the plate and the opposite ends working in the slots, substantially as described.

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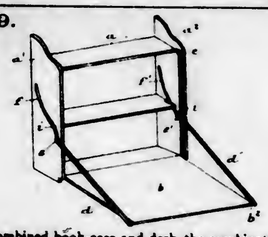


2. In a combined book-case and desk, the combination, with the body portion having inclined slots, of an adjustable plate, arms pivoted at one end thereto and at their other ends provided with headed pivots working in said slots, substantially as set forth.

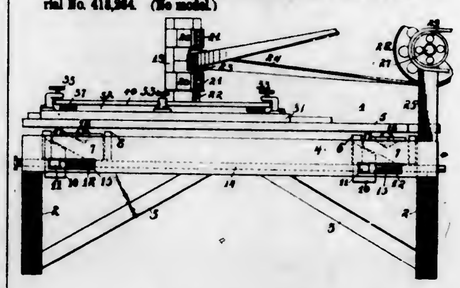
3. In a combined book-case and desk, the combination, with the body portion, the adjustable plate having movable arms *d d'*, pivotally connected thereto at one end, the other end having headed pivots working in the inclined slots having a downward dip, and the adjustable plate working in vertical grooves formed in or between guide-rails *c*, the curved part *d'* of the rails for the engagement of pivots *b'* thus preventing the plate from falling, substantially as set forth.

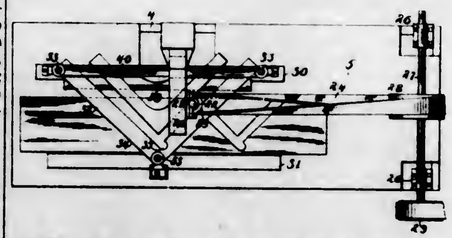
483,670. SPOUT ATTACHMENT FOR BOTTLES. SARAH H. GARWOOD, Southsea, England. Filed Feb. 12, 1892. Serial No. 421,360. (No model.) Patented in England Mar. 4, 1891, No. 3,953.

Claim.—1. An attachment for bottles, &c., the same consisting of a spout and collar made in one piece of resilient material, the collar being split at the rear to present two spring-clamping members to close by their own resiliency on the neck of a bottle, &c., substantially as set forth.

2. An attachment for bottles, &c., the same consisting of a spout and collar made in one piece of resilient material, the collar being split at its rear to form clamping members and capable of being expanded to only partly embrace the neck of the bottle, &c., and knobs projecting from the rear portion of the collar, substantially as set forth.

483,671. ROUTING-MACHINE. WILLIAM GREAVES, St. Louis, Mo., assignor to Charles Greaves, same place. Filed Jan. 16, 1892. Serial No. 418,264. (No model.)



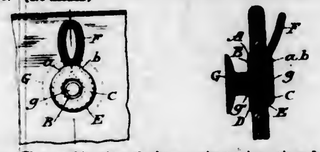


Claim.—1. In a routing-machine, the combination, with a vertically and horizontally adjustable bed and a bit rotating above the same, of a gage comprising a square, and an auxiliary square adjustable to or from the same for regulating the intervening space, and means for clamping said squares upon the bed, substantially as and for the purpose set forth.

2. In a routing-machine, the combination, with a vertically and horizontally adjustable bed provided with two parallel guide-strips and a fixed bit rotating above said bed, of a gage consisting of a square, an auxiliary square adjustable to or from the same, said squares being provided at their ends with slots, and a strip passing through the latter, and clamps for binding the gage upon the strips carried by the bed, substantially as and for the purpose set forth.

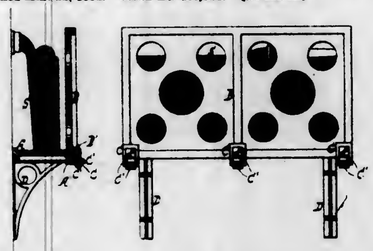
3. As an improvement in routing-machines, a gage composed of a square, such as 34, a portion, such as 37, adapted to be moved to and from said square for adjusting the space between the two, and a strip, such as 39, passed through suitable grooves formed in the ends of said portions for holding the said parts in their proper position and location to one another, substantially as described.

483,672. LOOP-FASTENER. HERMANN GRESS, New York, N. Y., assignor to Hertz & Gress, same place. Filed Oct. 20, 1891. Serial No. 409,263. (No model.)



Claim.—The combination of a loop, a rivet, a burr therefor formed with an overturned edge adapted to receive and cover said loop, said overturned edge being flattened or slotted for a portion of its circumference to prevent cutting the outwardly-extending portion of the loop, and a button fixed to the shank of said rivet, substantially as shown and described.

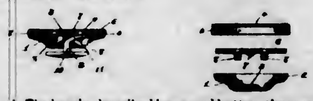
483,673. HOSE-RACK. JOHN C. H. GILBERT, New York, N. Y. Filed Mar. 22, 1892. Serial No. 426,031. (No model.)



Claim.—1. A horse-rack consisting of the stationary shelf, the swinging leaf connected to the front edge of the shelf, and devices for sustaining the leaf in vertical position above the shelf and horizontal position coincident with the shelf, substantially as shown and described.

2. A hose-rack consisting of the stationary shelf and swinging leaf having mitered abutting edges for sustaining the leaf in vertical position and the hinges connecting the leaf to the front edge of the shelf formed with stops for sustaining the leaf in horizontal position, substantially as shown and described.

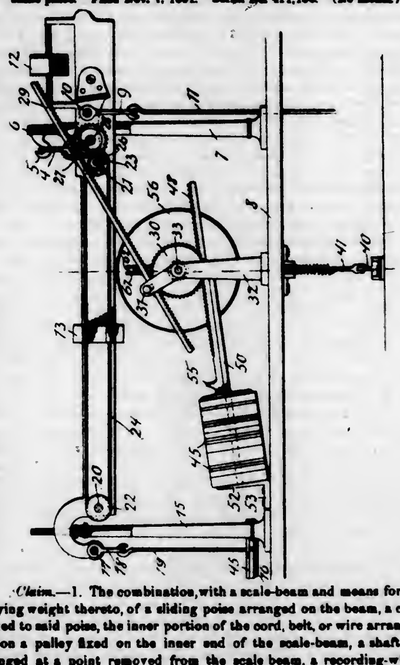
483,674. BUTTON. WALLACE R. JACKSON, Waterbury, Conn., assignor to the Patent Button Company, same place. Filed Oct. 21, 1891. Serial No. 409,384. (No model.)



Claim.—1. The herein-described improved button, the same consisting of a back and front plate secured together, the former provided with an opening, an intermediate turner-plate having an eye at one side of the opening, an inclined guide-leg formed upon the plate in line with the opening and at one side of the eye, and a fastener consisting of a head and a shank, the latter reduced to form a point and adapted to pass through the opening and be deflected by the guide into a clinched position with relation to the eye, substantially as specified.

2. The herein-described improved button, the same consisting of the perforated back-plate of concavo-convexed form, the flanged face-plate inclosing the back-plate, the intermediate turner-plate having the guide-leg provided with opposite inclined faces, said leg being in line with the perforation in the back-plate, and the fastener consisting of a head and a shank, the latter reduced to form a point and adapted to be inserted through the perforation and by the leg to have its upper end deflected into a clinched position with relation to either of the eyes, which are located at opposite sides of the leg upon the turner-plate, substantially as specified.

483,675. WEIGHING AND RECORDING SCALE. ROBERT MCFARLANE, Minneapolis, Minn., assignor of one-half to Waldo H. Holman, same place. Filed Nov. 7, 1891. Serial No. 411,134. (No model.)



Claim.—1. The combination, with a scale-beam and means for applying weight thereto, of a sliding poise arranged on the beam, a cord fixed to said poise, the inner portion of the cord, belt, or wire arranged upon a pulley fixed on the inner end of the scale-beam, a shaft arranged at a point removed from the scale beam, a recording-wheel thereon, and means for operating the same from said cord, substantially as described.

2. The combination, with the scale-beam, of the frame wherein the same is pivoted, a poise on said beam, pulleys arranged on the ends of the beam, an endless cord, belt, or wire provided thereon, a separately and independently arranged recording device, and a connection between the same and the innermost of said pulleys, substantially as and for the purpose specified.

3. The combination, with the pivoted scale-beam, of sheaves arranged at the ends thereof, a poise, a cord or belt or wire arranged on said sheaves or pulleys, said cord connected with said sliding weight, a gear in connection with the innermost pulley, a rack engaging the same, and a recording device to be operated by the movement of said rack, substantially as described.

4. The combination, with the pivoted scale-beam and means for applying weight thereto, of sheaves or pulleys arranged on said beams, an endless cord passing over and between the same, a poise arranged upon the beam and engaging said cord, wire, or belt, a gear arranged in connection with the innermost pulley, a rack meshing therewith to be operated thereby, a recording or registering wheel, a gear-wheel to move therewith, said rack engaging the same, figures or characters arranged on said wheel, and means for taking impressions therefrom, substantially as described.

5. The combination of the scale-beam and the weight-carrier thereof with detachable counterpoise-weights, a frame or bar whereon the same are stored when not in use on said carrier, a recording wheel, a slidable head to engage the end of the row of stored weights, and means in connection therewith for operating the recording-wheel, substantially as described.

6. The combination, with the beam and the weight-carrier swung from the end thereof, of detachable weights adapted to be placed thereon, a bar or frame for storing said weights when not in use, a rack having an end adapted to engage the end of the row of stored

weights, a recording-wheel, and a gear arranged in connection therewith to engage said rack, whereby on the movement of the rack the wheel is operated, means being provided in connection with said wheel for permanently recording the weights indicated thereby, substantially as described.

7. The combination, with the beam pivotally supported in a suitable frame, of a weight-carrier therefor, detachable counterpoise-weights, a stationary bar or frame therefor, a movable rack having an end to engage the same when on said frame, a recording-wheel supported upon a suitable shaft, and a gear-wheel arranged in connection therewith and meshing with said movable rack, said rack provided with the end 54 and the finger-lug 55, substantially as described.

8. The combination of the pivoted scale-beam, the poise slidable thereon, and the weight-carrier with separable counterpoise-weights therefor, a fixed frame adapted to receive said weights when not in use, a rack longitudinally slidable with respect to the row of weights thus stored, the head or end of said rack adapted to engage the foremost counterpoise-weight on the frame, a recording-wheel having figures indicating units and adapted to be operated by the movement of said rack, sheaves or pulleys arranged at the ends of said beam, a cord or belt or wire arranged upon the same and fixed on the poise and rack, a gear interposed between the same and the innermost sheave or pulley, a second recording-wheel arranged to be operated by the movement of said second rack, said second wheel provided with figures to indicate fractions of a unit, and means for simultaneously printing from said wheels to record the total weight, substantially as described.

9. The combination, with the beam and the weight-carrier hung therefrom, of separable counterpoise-weights, a stationary frame or bar whereon the same are adapted to be stored, a rack having a head or end to engage the end of the row of weights, a recording-wheel adapted to be operated by the movement of said rack, sheaves on the beam, a cord or belt or wire passing over and between the same, the beam-poise arranged on the beam and fixed to the cord, a second recording-wheel, and a rack adapted to operate the same and to be operated by the movement of said slidable weight communicated through said cord, belt, or wire, substantially as described.

10. The combination of the pivoted scale-beam, the sliding poise, and the weight-carrier with an endless cord or belt or wire arranged in connection with said beam and poise, a rack to be operated by said cord, wire, or belt, and gear operated thereby, a shaft, a recording-wheel yieldingly fixed on the same, a gear provided on said shaft and meshing with the lower part of said rack, means for holding said rack thereon, a stationary frame or rod, the counterpoise-weights to be stored thereon, another rack slidably arranged with respect to the same, a second recording-wheel arranged on a sleeve loosely provided on said shaft and having a gear to engage the second rack, said second wheel yieldingly fixed on said sleeve, and a printing-plate movably arranged with respect to said recording-wheels, and means for forcing the same against the peripheries thereof, substantially as described.

11. The combination, with the beam 2, of the frame whereon the same is pivoted, the sheaves 22 and 23, arranged on opposite ends of the beam, the endless cord 24, passing over the same, the poise 13, arranged on the beam and whereto one side of the cord is fixed, the gear-wheel 26 to move therewith, a gear 27, meshing therewith, the rack-bar 29, engaging the same, the gear 30, arranged on the shaft journaled in standards, the lugged arm 31, guiding said bar 29, and the recording-wheel to be operated by the movement of the rack 29, substantially as described.

12. The combination, with a weighing-scale, of a recording wheel or wheels adapted to be operated in connection therewith, a printing-plate 35, provided on the stem 36, the pivoted lever 38, the treadle 40, linked thereto, and a spring for raising the same, substantially as described.

13. The combination, with the standards, of the shaft with a recording-wheel arranged thereon, an arm clamped thereon, springs arranged on the sides of said arms, and a pin on said wheel or disk and engaged by said spring, substantially as described.

14. The combination, with the beam 2 and the poise thereof, of the grooved pulleys or sheaves 22 and 23, arranged on said beam, the pulley 23, arranged on the inner portion of the beam, being provided with a spiral groove 25, an endless cord, belt, or chain wound about said sheave and extending over the sheave 22, and a recording device to be operated from the sheave 23, substantially as described.

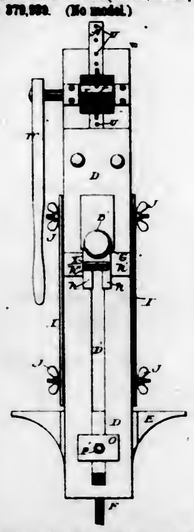
488,676. SELF-LOCKING NUT. WILLIAM S. NEEL, Rhea, W. Va. Filed Nov. 4, 1891. Serial No. 410,576. (No model.)

Claim.—1. The combination, with the bolt and fish-plate or other object through which the bolt passes, of the improved nut formed of spring metal and consisting of two layers formed integral and having an inner concaved face and an outer convexed face, the outer layer being curved to a greater degree than the inner layer, and said layers having a threaded bolt-receiving opening, substantially as specified.

2. The herein-described improved nut, formed of a blank of spring metal and consisting of inner and outer integral layers, the outer layer being longer than the inner layer and folded over the free end of the same, beyond which it extends, and having its edge serrated, substantially as specified.

3. The herein-described improved nut, formed of a blank of spring metal, said blank bent back upon itself, forming an inner and an outer layer, the outer layer being longer than the inner layer and folded over the free end of the same, beyond which it extends, and having its edge serrated and provided with a chisel or other prying device receiving notch 5, substantially as specified.

488,677. HINGE-SEAT CUTTER. GEORGE W. SCOTT, Santa Rosa, Cal., assignor of one-half to R. P. Crawford, same place. Filed Feb. 2, 1891. Serial No. 379,989. (No model.)



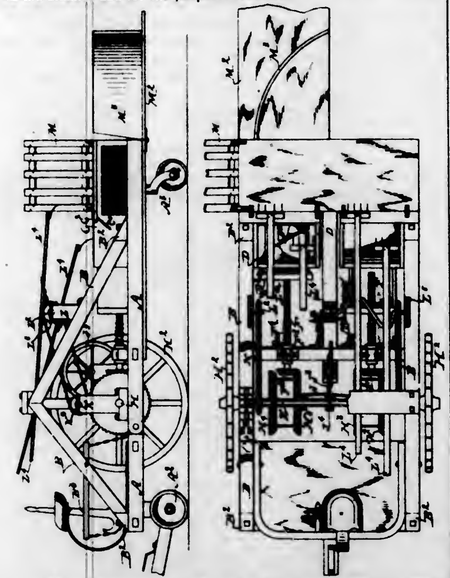
Claim.—The combination, in a hinge-seat cutter, of two chisels set and operating at right angles to each other, the horizontal chisel A, having lips *a'* and holes U, also a raised tongue K on its bevel, placed and operating in a groove in block C, attached to the end of a slotted top piece D, with a cylinder L journaled on said block C, having set in its surface pins T, arranged and spaced to match and fit the holes U in the horizontal chisel, with a lever W attached to the axle of said cylinder L, and slotted top piece D, with sliding block E attached at its end opposite block C, with screw F and gages I on either side of top piece D, with chisel B secured to top piece D and operating at right angles to and in conjunction with chisel A, all constructed, arranged, and operating substantially as set forth.

488,678. MACHINE FOR GATHERING AND BALING HAY. JAMES B. ST. JOHN, Hopeville, assignor of two-thirds to J. M. Jackson and R. P. Ferguson, Tingley, Iowa. Filed Sept. 26, 1891. Serial No. 407,077. (No model.)

Claim.—1. The combination, in a hay-baling machine, of an oblong frame jointed in its approximate center, mounted on wheels at its forward and rear ends and provided with two traction-wheels in its approximate center, which traction-wheels are adapted to operate the baling mechanism, an arched frame resting in metal sockets fixed on the sides of the said oblong frame, the said metal sockets, substantially as described, and a lever fulcrumed to the said arched frame and connected with the said jointed portion of the oblong frame, whereby the said traction-wheels may be elevated from the ground, substantially as shown and described.

2. The combination, in a hay-baling machine adapted to be advanced and operated by draft-animals, of two baling-boxes mounted on the machine, two pairs of bevel-wheels mounted on the axle of the traction-wheels of the device, a screw mounted in bearings fixed to a part of the frame and extended through an internally-screw-threaded block connected with a follower or plunger in each of the said boxes, a coil-spring placed on each of the said screws, for the purposes stated, the said screw and follower or plunger, a bevel-wheel on the other end of each of the said bolts, adapted to mesh with either wheel in the said pairs of beveled wheels mounted on the axle of the traction-wheels, and means for automatically moving the said bevel-wheels longitudinally on their axle, substantially as and for the purposes stated.

3. A hay-baling machine adapted to be advanced and operated by draft animals, consisting of an oblong frame mounted on wheels, two baling-boxes mounted on the said frame, a follower or plunger in each of the said boxes, a screw connected with each of the said followers or plungers, as required to operate them when rotated, a bevel-wheel on the end of each of the said screws, an axle having traction-wheels on its outer ends and two pairs of bevel-wheels fixed thereon, one pair being in juxtaposition to each of the said bevel-wheels, adapted to mesh with them, means for automatically reversing the movement of the bevel-wheels on the ends of the screws, which means comprise a rod having an annular collar on each end adapted to enter a corresponding annular groove formed in the hub of each of the said pairs of bevel-wheels, two lugs projecting upward from the central portion of the said rod, a cog-wheel fixed to the axle of the traction-wheels in juxtaposition to the said lugs, and a wave-wheel having cogs on its periphery adapted to mesh with the cog-wheel on the said axle to be rotated thereby and having bearings in a projection from the frame of the machine and interposed between the lugs on the said rod, substantially in the manner and for the purposes set forth.

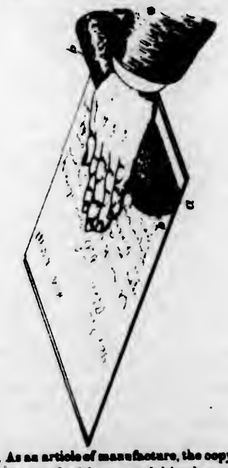


4. A machine for gathering and baling hay, comprising an oblong frame supported at its front portion by means of a rotatable axle and a traction-wheel on each end of the axle, two baling-boxes in parallel position on the rear portion of the said frame, a follower in each box connected with a screw extended horizontally and connected with the rotating axle by means of bevel-gears, means for alternately connecting and disconnecting said screws with the said axle, an auxiliary frame or truck at the front end of the main frame, adapted for hitching horses thereto and provided with a hinged connection with the main frame that allows the jointed portion of the said frame to be elevated, a truck at the rear end of the main frame, provided with a hinged connection that allows vertical flexion, a hay-rake and elevator connected with the rear truck to automatically gather and elevate hay to the baling-boxes on the rear part of the main carriage-frame, caster-wheels under the rear part of the main frame, and means for elevating the approximate central portion of the main frame, arranged and combined to operate in the manner set forth, for the purposes stated.

5. In a hay-baling machine adapted to be advanced and operated by draft-animals, and consisting of a frame mounted on wheels, having two baling-boxes mounted thereon adapted to contain hay, straw, &c., the combination of a follower in each of the said boxes, a block connected with the follower, having a screw-threaded bore, a screw-threaded bolt having bearings in frame of the machine and adapted to enter the said bore, a coil-spring on the said bolt between its bearing-block and the screw-threaded portion thereof, for the purposes stated, and means actuated by the traction-wheels of the machine for operating the screw-threaded bolt, as and for the purposes stated.

6. In a hay-baling machine adapted to be advanced and operated by draft-animals, and consisting of a frame mounted on wheels, having two baling-boxes mounted thereon adapted to contain hay, straw, &c., the combination of a follower in each of the said boxes, a block connected with each follower, having a screw-threaded bore, a screw-threaded bolt having bearings in the frame of the machine adapted to enter the said bore, a bevel-wheel on the opposite end of the bolt, two bevel-wheels adapted to mesh with the bevel-wheel in the bolt and rotate it when moved into engagement therewith, an axle having traction-wheels on its outer ends upon which the said bevel-wheels are fixed and have a longitudinal movement, with means for forcing the hay into the boxes, comprising a crank-shaft, and an arbor having bearings in the arched frame above each of the boxes in which the hay, straw, &c., is placed, a cog-wheel on the arbor adapted to mesh with cogs formed in the periphery of one of the said bevel-wheels when the bevel-wheel is moved on the axle of the traction-wheels into engagement with the said cog-wheel, a sprocket-wheel fixed on the said arbor and connected with a sprocket-wheel on the crank-shaft by means of a sprocket-chain, and one or more arms fixed to the cranks formed in the crank-shaft and having their forward ends extend through loops in the top of the arched frame and their rear ends provided with forks, substantially as shown and described, for the purposes stated.

488,679. COPYING APPLIANCE. OLOF W. ANDERSON, Moorhead, Minn. Filed Dec. 26, 1891. Serial No. 416,208. (No model.)



Claim.—1. As an article of manufacture, the copying-roller consisting of a cylinder covered with a material having a periphery formed by a long stiff nap, which will yieldingly force the wet tissue out flat and evenly and prevent running or blotting, substantially as described.

2. The herein-described copying appliance, consisting of a cylinder having a covering of soft material—such as Mequette carpet—with a long nap on its outside, whereby when the cylinder is rolled over the writing to be copied all running or blurring of the ink caused by the surplus moisture is prevented, as set forth.

488,680. LACING-STUD. HENRY B. BAKER, Dighton, Mass. Filed Oct. 5, 1891. Serial No. 407,743. (No model.)

Claim.—As an improved article of manufacture, a lacing-hook for boots or shoes, consisting of a loop forming a head having a depend-

ing hook arranged in a vertical plane and extending into horizontally-disposed laterally-projecting loops *d*, forming base-rests, with their ends projecting downward and adapted to be upset against the under side of the material to which the device is connected, the said projecting loops forming the base-rests being extended outwardly at a greater distance than the width of the head, and the said head being slightly deflected, respectively, below the horizontal and inward from an outer vertical plane, in order to provide a secure fastening or retention of the loss engaging the same, substantially as described.

483,681. CASH-CARRIER. JAMES F. BARTLETT, Chicago, Ill., assignor to the Chicago Cash Carrier Company, of Illinois. Filed May 12, 1892. Serial No. 432,786. (No model.)

Claim.—1. In a cash-carrier, the combination of a way, a car arranged to travel thereover, a collapsible elastic buffer in the path of the car to arrest its motion, and a detent adapted to engage the car and prevent the same from rebounding.

2. In a cash carrier, the combination of a way, a wheeled car movable thereover, a collapsible buffer at the end of the line to arrest the advancing car, and a detent connected to the buffer and adapted to engage the car and prevent its rebounds.

3. In a cash-carrier, the combination of the wire, the car mounted thereon, the collapsible chamber or buffer, and the shouldered neck attached to the chamber or buffer and adapted to engage and hold the car.

4. In a cash-carrier, the combination of the wireway, a car movable thereon, a collapsible elastic buffer mounted on and sustained by the wire to check the movement of the advancing car, and the shouldered neck connected to the buffer and adapted to enter an opening in the car and interlock therewith.

5. In a cash-carrier, the combination of the wireway, the shouldered neck or detent thereon, the carriage provided with the opening to admit the detent and with the lip projecting longitudinally beyond the carrier by which to lift the latter out of engagement, and a lifting device on the way for raising the carriage.

6. In a cash-carrier, the wireway and the car thereon, in combination with the collapsible chamber having the tubular neck, and the conical head or detent adapted to slide loosely upon the wire.

7. In a cash-carrier, the combination of a wireway or track, an annular shouldered detent thereon encircling the same, and a carriage having in its end a shouldered opening to receive and engage said detent.

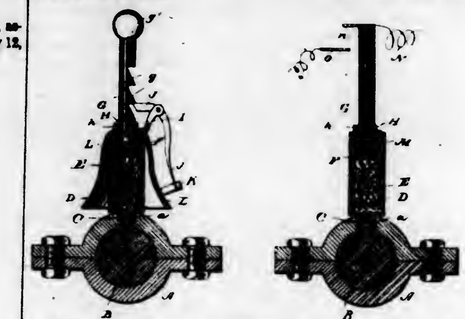
8. In a cash carrier, the combination of a wireway or track, a detent encircling the same and comprising a cylindrical neck and a tapered head, and a carriage having in its end a shouldered opening to receive and engage said detent and capable of swinging around the same.

9. In a cash carrier, and in combination with a way and a car thereon, a buffer consisting of an elastic sack provided with a vent to permit the escape of air under the impact of the car.

483,682. HOT-BOX ALARM. JOHN C. BASEL and EDUARD FRIEBARD, Galveston, Tex. Filed Oct. 20, 1891. Serial No. 410,268. (No model.)

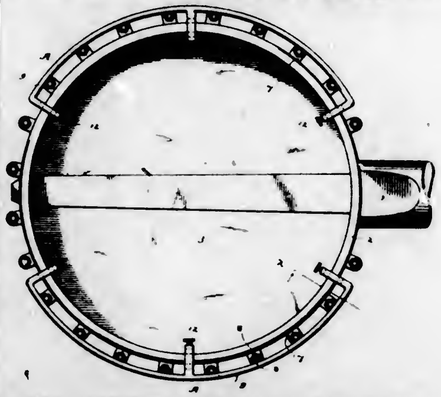
Claim.—1. In a hot-box alarm, the combination, with a journal-box, of a cylinder supported upon said box and designed to accommodate a liquefying solid, a perforated plunger supported upon the solid within the cylinder and adapted to work through the solid when melted, and means for connecting said plunger with an alarm, substantially as set forth.

2. In a hot-box alarm, the combination, with a journal-box, of a cylinder supported upon said box and designed to accommodate a liquefying solid, a perforated plunger supported upon the solid within the cylinder and provided with a stem having a series of notches, a hammer-carrying pawl supported over said cylinder and engaging said notches, and a gong or bell suspended in the path of said hammer, substantially as set forth.



3. In a hot-box alarm, the combination, with a journal-box, of a cylinder supported upon said box and designed to accommodate a liquefying solid, a perforated plunger-head or piston supported upon said solid within the cylinder, a stem or rod connected with said head and provided with a series of notches upon one side thereof, a bracket supported upon the upper end of said cylinder, a pawl or dog carrying a hammer and pivoted to said bracket and normally engaging said notches, and a bell or gong supported upon said cylinder in the path of said hammer, substantially as set forth.

483,683. GUARD FOR BANJOS. WILLIAM H. COLLINS, Bethel, Conn. Filed May 31, 1892. Serial No. 434,896. (No model.)



Claim.—A detachable guard for banjos, consisting of a smooth strip of metal having radially-extending arms, each arm having a pair of legs adapted to lie on opposite sides of the holding-ring of a banjo, the inner arm of each pair having a set-screw provided with a loose bead which is adapted to be turned up against the inner side of the holding-ring to lock the guard in place.

483,684. BENCH-HOOK. WILLIAM L. FREBER, Syracuse, N. Y., assignor of one-half to Willard H. Lape, same place. Filed July 23, 1891. Serial No. 400,504. (No model.)

Claim.—1. In a bench-hook, the combination, with a frame having a concave recess formed with an inner wall having a curved or inclined outer face, of a dog mounted in said recess and movable lengthwise therein and formed with a curved or inclined inner face, whereby when the dog is moved lengthwise its end is adapted to project beyond the top face of the recess, and a clamp for securing the dog in its adjusted position, substantially as and for the purpose specified.

2. In a bench-hook, the combination, with a frame having a concave recess in its upper face provided with an inner wall having a curved or inclined outer face and a lengthwise slot therein, of a dog mounted in said recess and movable lengthwise therein and formed with a curved or inclined inner face, whereby when the dog is moved lengthwise its end is adapted to project beyond the top face of the recess, and a clamp engaged with said dog, passed through said slot in the inner wall of the recess, and movable lengthwise in said slot for securing the dog in its adjusted position, substantially as and for the purpose described.

3. In a bench-hook, the combination, with a frame having a recess in its top face provided with an inner wall having a lengthwise slot therein and ribs on the outer face of the inner wall of the recess arranged on opposite sides of said slot, of a dog adjustable lengthwise in said recess, and a clamp having its head between said ribs and its shank passed through said slot and engaged with the dog, substantially as and for the purpose specified.

4. In a bench-hook, the combination of a frame having a concave recess formed with an inner wall having a curved or inclined outer face, with a dog mounted in said recess and movable lengthwise therein and formed with a curved or inclined inner face, whereby when the dog is moved lengthwise its end is adapted to project beyond the top face of the recess, ribs provided on the inner face of said dog, and a clamp for securing the dog in its adjusted position, substantially as and for the purpose described.

5. In combination, a frame having a recess provided with an inner wall having an inclined or curved upper face, a dog adjustable lengthwise in said recess and provided with a lower curved or inclined face adapted to bear upon the adjacent face of the recess and provided with a recess in its top face, a bolt for securing the dog in its adjusted position, and a nut on said bolt mounted in the recess in the dog, substantially as specified.

6. In combination, a frame having a concave recess provided with an inner wall having an outer curved face, a dog adjustable lengthwise in said recess and having its lower face of a less curvature than the adjacent outer face of the inner wall of the recess, and a clamp for securing the dog in its adjusted position, substantially as and for the purpose set forth.

7. In combination, a frame having a concave recess provided with an inner wall having a lengthwise slot, a dog adjustable lengthwise within said recess and formed with a curved lower face adapted to bear against the adjacent face of the inner wall of the recess, a recess at the upper face of the dog, a screw passed through and movable lengthwise of the frame in said slot and engaged with said dog, and a nut mounted in the recess in the top face of the dog and engaged with said screw, substantially as and for the purpose specified.

483,685. LAWN-MOWER. WILLIAM L. FREBER, Syracuse, N. Y., assignor of one-half to Willard H. Lape, same place. Filed July 23, 1891. Serial No. 400,505. (No model.)

Claim.—1. The combination of a ratchet-gear having locking-faces K^4 and inclined faces K^5 on its inner periphery, a journal for the gear provided with a longitudinal slot, a reciprocally-moving dog for locking the gear and journal together, movable longitudinally in said slot and formed with the locking-face *F*, arranged at its longitudinal edge and adapted to project beyond said longitudinal slot for engaging said faces K^4, and with transversely-extending inclined faces *I*, formed by a cut-out at the center of said dog and adapted, also, to project beyond said longitudinal slot for engaging the said faces K^5, and a frame having a recess for permitting movement of said dog, substantially as specified.

2. The combination of a ratchet-gear, having a hub provided with an outer peripheral bearing-face L^4 and a projecting rib on its inner periphery formed with locking-faces, a journal for the gear having a lengthwise slot, a reciprocally-moving dog mounted in the slot in the journal for locking the gear and journal together and formed with a locking-face projecting from said slot for engaging the locking-faces of said rib, and a frame having a journal-bearing a^4 for the outer peripheral face L^4 on the hub of said gear for preventing wear of said rib, substantially as set forth.

3. The combination of a ratchet gear having oppositely-arranged hubs formed with the peripheral bearing-faces L^4 L^5, a journal for the gear, a locking-dog for locking the gear and journal together, and a frame consisting of separable sections having journal-bearings a^5 a^4 for said bearing-faces L^4 L^5, substantially as described.

4. The combination of a ratchet-gear having oppositely-arranged hubs formed with the peripheral bearing-faces L^4 L^5, a journal for the gear, a reciprocally-moving dog for locking the gear and journal together, and a frame having journal-bearings a^5 a^4 for the bearing-faces L^4 L^5 on the hub of the gear and having a recess for permitting movement of the ratchet-dog, substantially as described.

5. The combination of a traction-wheel having a projecting hub formed with a slot, an axle journaled in the hub, a gear mounted on said hub, a dog for locking the gear to the hub, and a frame for inclosing said gear formed with a journal-bearing for the gear and a bearing for said axle, substantially as set forth.

6. The combination of a traction-wheel having a projecting hub formed with a slot, an axle journaled in the hub, a gear mounted on said hub, a dog for locking the gear to the hub, a frame consisting of the section *a*, having the journal-bearing a^5, the sections *a'*, having the journal-bearing a^4 and the recess a^3, and clamps for securing said frame-sections together, substantially as described.

7. In a lawn-mower, the combination of a frame having its rear edge formed with a transverse curved face A^3, provided with ribs g^3, the rear-roller support G, having a curved front face at the upper extremity *g'*, formed with grooves g^3 for receiving the ribs g^3 and having a slot extending through said upper extremity from front to back, and the clamp g^3, substantially as described.

483,686. JACKET, &c. LOUIS GOSSMAN, New York, N. Y. Filed Feb. 4, 1892. Serial No. 420,261. (No model.)

Claim.—A garment composed of a body the front and back of which are cut in one piece, provided at each armhole with outwardly-extending tongues, to the edges of which are connected, respectively, the upper and lower sleeve portions, the lower sleeve portion being provided with flaps at their upper ends which overlap said tongues and are secured to the body portion of the garment.

483,687. PRINTING-PRESS. SAMUEL G. GOSS, Chicago, Ill., assignor to the Goss Printing Press Company, same place. Filed Jan. 9, 1892. Serial No. 417,570. (No model.)

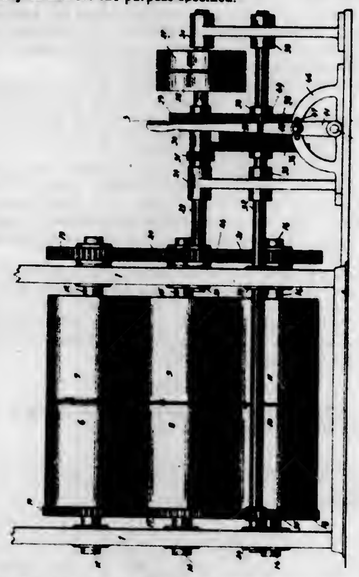
Claim.—1. The combination, with sectional form and impression cylinders, the sections on opposite sides of the press being adapted to rotate independently of each other, of two shafts geared, respectively, to the cylinder-sections and provided with gear-wheels of different sizes, and means for throwing the said different-sized gear-wheels into and out of engagement to regulate the relative speed of the cylinder-sections at opposite sides of the press, substantially as described.

2. The combination, with sectional printing-press cylinders, the sections of each cylinder being adapted to be rotated independently of each other, of two shafts geared, respectively, to the cylinder-sections and provided with two sets of gear-wheels, each wheel in one set being adapted to intermesh with a wheel in the other set, and means for moving the wheels of the different sets into engagement with each other, substantially as and for the purpose specified.

3. The combination, with sectional printing-press cylinders, the sections of each cylinder being adapted to be rotated independently of each other, of two shafts geared, respectively, to the cylinder-sections and provided with two sets of gear-wheels, the wheels in each set being of different diameters and each wheel in one set being adapted

to intermesh with a wheel in the other set, and means for effecting the engagement of the different intermeshing wheels with each other, substantially as described.

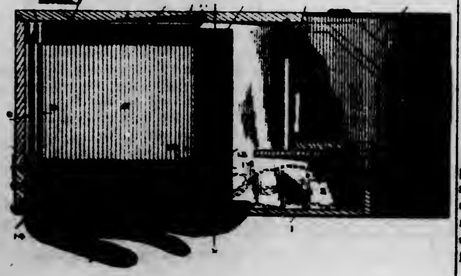
4. The combination, with cylinder-shafts, sectional form and impression cylinders mounted thereupon, the sections at one side of the press being loosely mounted upon said shafts and the other sections being fixed upon said shafts, of a shaft 23, gearing for rotating said cylinder-shafts, shaft 32, gearing for rotating said loosely-mounted cylinder-sections, gear-wheels of different sizes carried by each of said shafts 23 and 32, each wheel of one of the shafts 23 or 32 being adapted to intermesh with one of the wheels on the other shaft, and means for throwing said wheels into and out of engagement with each other, substantially as and for the purpose specified.



5. The combination, with cylinder-shafts, sectional form and impression cylinders mounted thereupon, the sections at one side of the press being loosely mounted upon said shafts and the other sections being fixed upon said shafts, gearing carried by said loose sections, and gear-wheels carried by said cylinder-shafts, of a shaft 23, pinion 26, carried thereby, shaft 32, pinion 35, gears 29, 30, and 31 on said shaft 23, movable gears 36, 37, and 38 on said shaft 32, and means for moving said gears 36, 37, and 38 upon the shaft 32, substantially as and for the purpose specified.

6. The combination, with cylinder-shafts, sectional form and impression cylinders mounted thereupon, the sections at one side of the press being loosely mounted upon said shafts and the other sections being fixed upon said shafts, of a shaft 23, gearing for rotating said cylinder-shafts, shaft 32, gearing for rotating said loosely-mounted cylinder-sections, gear-wheels of different sizes carried by each of said shafts 23 and 32, each wheel on one of the shafts 23 or 32 being adapted to intermesh with one of the wheels on the other shaft, levers 41 and 44, and collar 43, substantially as and for the purpose specified.

488,688. PHOTOGRAPHIC CAMERA. FREDERICK A. HEFFERINGTON, Indianapolis, Ind. Filed Dec. 11, 1891. Serial No. 414,753. (No model.)



Claim.—1. In a photographic camera, the combination of a casing having grooves in its sides, such casing recessed in front of one end of each grooves, each grooves adapted to engage with the projecting spring-supports of a series of plate or film carriers, whereby the carriers are supported, substantially as shown and described.

2. In a photographic camera, the combination of a casing having grooves in its sides in which the projecting spring-supports on each plate or film carrier of a series are adapted to move laterally and by which such carriers are suspended, a retaining-spring secured to the top of the casing for engaging the upper edge of the forward carrier, and a cross-piece extending across the casing near its bottom for engaging the lower edge of such carrier, the cross-piece having a recessed finger-opening, giving access to the forward carrier, substantially as shown and described.

3. In a photographic camera, the combination of a casing, a retaining-spring secured to the top of such casing and adapted to engage with the forward plate or film carrier of a series as it is presented to the lens, such carrier adapted to be supported within such casing, and a fixed cross-piece adapted to engage with the lower edge of the forward carrier, in combination with a laterally-moving diaphragm or partition arranged to separate the exposed from the unexposed plates, substantially as shown and described.

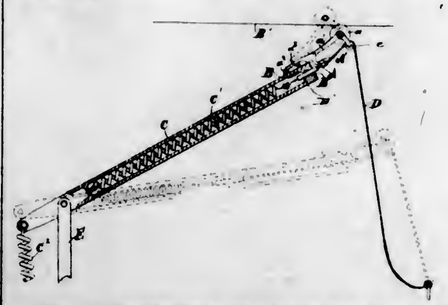
4. In a photographic camera, the combination of a casing having grooves in its sides in which the projecting spring-supports on each plate or film carrier of a series are adapted to move laterally and by which such carriers are suspended, a fixed cross-piece forming a retaining-ledge for the lower edge of the carriers and having a recessed finger-opening, giving access to the forward one, and a retaining-spring engaging with the upper edge of the forward carrier, in combination with a spring-diaphragm arranged to separate the exposed from the unexposed plates, substantially as shown and described.

5. In a photographic camera, the combination of a casing having grooves in its sides, such casing recessed in front of one end of such grooves, such grooves adapted to receive and support a series of plate or film carriers, a retaining-spring connected with the upper edge of the forward carrier, and a fixed cross-piece forming a retaining-ledge for the lower edge of the carriers, in combination with a spring-diaphragm arranged to separate the exposed from the unexposed plates, substantially as shown and described.

6. In a photographic camera having a portion of its lower side cut out, rabbeted grooves formed in the body or casing, and a rectangular wire frame with the top of a flexible bag secured thereto and adapted to fit in such grooves, the rear of such camera-casing hinged to allow the removal of such bag and its frame, substantially as shown and described.

7. In a photographic camera, the combination of a casing having grooves in its sides adapted to engage with the projecting spring-supports of a series of laterally-moving plate or film carriers, whereby such carriers are supported, a spring diaphragm arranged to separate the exposed from the unexposed plates, and a bag formed of flexible material secured to an open side of the casing, whereby the forward plate may be removed and inserted behind the spring-diaphragm, substantially as shown and described.

483,689. TROLLEY-CATCHER. JOHN J. HOPPES, Springfield, Ohio, assignor, by mesne assignments, to the Thomson-Houston Electric Company, of Connecticut. Filed Feb. 24, 1891. Serial No. 382,593. (No model.)



Claim.—1. The combination, with a trolley-arm in two or more parts adapted to move in relation to each other, said trolley-arm being adapted to be held in its normal position by a yielding pressure to contact with the conductor, of a separate connection from said trolley-arm to a stationary part and an operating mechanism adapted to shorten said stationary connection, and thus withdraw said trolley-arm from its normal position, said operating mechanism being adapted to be set into operation by the relative movement between the parts of the trolley-arm, substantially as specified.

2. A trolley-arm provided with a broken or flexible portion having an independent movement with reference to the solid or main portion, a flexible cord of a definite length connected at one end to a stationary part and at the other to operating mechanism adapted when released to shorten said cord, and thus withdraw said trolley-arm, and a catch to release said mechanism by an independent movement of said flexible portion, substantially as specified.

3. An electric trolley-arm having a flexible or yielding portion, a spring to hold said portion yieldingly against an electric conductor, and thus move the flexible portion of said arm to its normal operative position, an independent connection to said trolley-arm adapted when shortened to withdraw said trolley-arm against said spring, and an operating mechanism attached to said connection, and means for releasing said operating mechanism by an independent movement of the flexible portion of said arm to cause the same to shorten said independent connection, substantially as specified.

4. The combination, with a trolley-arm having an outer movable part yieldingly connected thereto and held in a normal position by the pressure of an actuating-spring to force said arm in contact with an overhead conductor, of an operating-cord of a limited length connected rigidly at one end to a stationary part and at the other to a spring on said trolley-arm, and means for releasing said spring to shorten said cord by an independent movement of the outer portion of said arm, substantially as specified.

5. The combination, with a trolley-arm comprising parts adapted to move in relation to each other, of means for holding said trolley-arm yieldingly against a conductor to bring said parts in their normal positions, an operating-cord rigidly connected at one end to a stationary part and at the other to a movable plunger on said trolley-arm, and means in said trolley-arm to produce a movement of said plunger to shorten said cord, and thus lower said arm when released by the relative movement of the parts of said arm, substantially as specified.

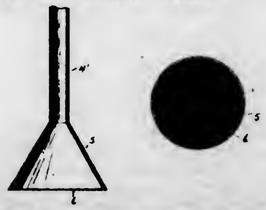
6. The combination, with a pivoted trolley-arm and a spring adapted to hold the same yieldingly in contact with an overhead conductor, of an operating-cord connected at one end to a spring supported on said trolley-arm and at the other to a stationary part from which said trolley-arm is supported, and means on said trolley-arm for releasing said spring when the contact or trolley wheel has moved to an unusual position, substantially as specified.

7. The combination, with a yielding trolley-arm having an operating cord connected at one end to a spring supported on said trolley-arm and at the other to a stationary part from which said trolley-arm is supported, said spring being normally under tension and adapted when released to shorten said cord, of means for releasing said spring when the contact or trolley wheel is moved to an unusual position, substantially as specified.

8. The combination, with a pivoted hollow trolley-arm normally held in contact with an overhead conductor by a yielding pressure, a spring in said trolley-arm, a plunger connected to one end of the spring, and a catch mechanism supported on said trolley-arm and engaging said plunger, so as to hold said spring normally under tension, of a separate independent connection from said plunger to a stationary part from which said trolley-arm is supported, and means for releasing said spring and thus shortening said connection when the contact of said trolley arm is moved to an unusual position, substantially as specified.

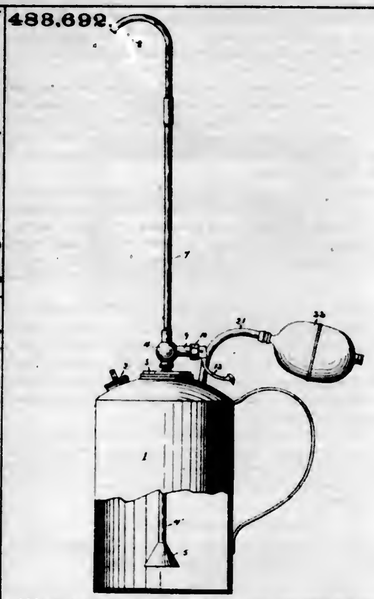
9. The combination, with a trolley-arm having an electric contact device supported by a yielding pressure in contact with an overhead conductor, of a spring mechanism on said arm normally under tension, an independent connection from said spring mechanism to a stationary part from which said trolley-arm is supported, and means for releasing said spring mechanism to shorten said connection when said contact is moved to an unusual position, substantially as specified.

483,690. FORCE-FEED OILER. HARRY JOHNS, Ypsilanti, Mich. Filed Oct. 8, 1891. Serial No. 408,065. (No model.)

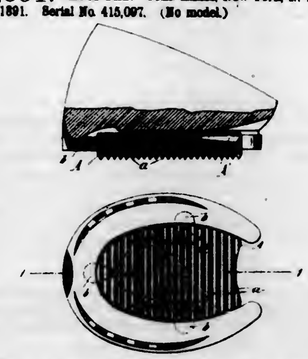


Claim.—In a force-feed oiler, a can, a cap secured therein, a valve-casing secured in the cap, formed with a longitudinal duct and a right-angular tubular boss, a spring-actuated valve located in the boss and normally closing the duct, a lever secured to the valve-stem at one end, said lever bearing against the tubular boss, the opposite end extending in close proximity to the handle of the can, said lever being adapted to be pressed in to operate the valve, a compressible bulb located near the handle and connected with the interior of the can, and a depending pipe and nozzle secured to the cap and valve-casing, respectively, said depending pipe extending to near the bottom of the can and provided with a strainer.

488,692.



483,691. HOOF-PAD. JOHN KERR, New York, N. Y. Filed Dec. 15, 1891. Serial No. 415,097. (No model.)



Claim.—1. A hoof-pad for horses, composed of an elastic pad having a concave upper rear surface and a U-shaped plate embedded in the front part of the pad at its outer edge some distance from the edge of the same, so that the rubber will inclose the plate, said plate being provided with projecting lugs at the front and ends, substantially as set forth.

2. A hoof-pad for horses, composed of an elastic pad having transverse ribs at its under side and a concave upper rear surface and a U-shaped plate embedded in the front part of the pad at its outer edge some distance from the edge of the same, so that the rubber will inclose the plate, said plate being provided with projecting lugs at the front and ends and with perforations in said plate, so that the plate is fully embedded in the elastic material of the pad, substantially as set forth.

483,692. ELECTROLYTIC DIAPHRAGM. ANTON J. LEHMAN, New York, N. Y. Filed July 6, 1891. Serial No. 398,619. (No specimens.)

Claim.—1. A separating diaphragm or partition for an electric battery or electrolytic cell, partially or wholly of an amorphous non-

gelatinous precipitate precipitated before use in an electric battery or electrolytic cell, and which precipitate is not dependent upon the solutions subsequently used in an electric battery or electrolytic cell, substantially as described.

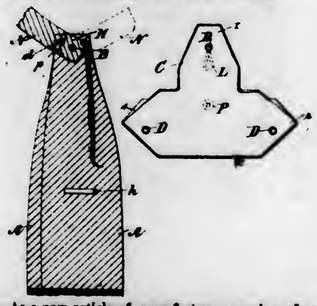
2. A separating diaphragm or partition for an electric battery or electrolytic cell of an amorphous non-gelatinous precipitate, combined with a holder, precipitated or impregnated before use in an electric battery or electrolytic cell, which precipitate is not dependent upon the solutions subsequently used in an electric battery or electrolytic cell, substantially as described.

3. A separating partition or diaphragm for an electric battery or electrolytic apparatus, consisting of a porous or absorbent substance impregnated with an amorphous non-gelatinous precipitate impregnated before use in an electric battery or electrolytic cell, and which precipitate is not dependent upon the solutions subsequently used in an electric battery or electrolytic cell for its treatment, substantially as described.

4. A separating partition or diaphragm for an electric battery or electrolytic cell, consisting of a porous or absorbent substance or material having its pores or substance filled with an amorphous non-gelatinous precipitate precipitated before use in an electric battery or electrolytic cell, which precipitate is not dependent upon the solutions subsequently used in an electric battery or electrolytic cell for its treatment, substantially as described.

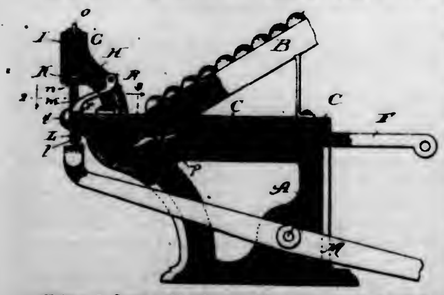
5. A separating diaphragm or partition for an electric battery or electrolytic cell, consisting of a porous substance having its pores filled with an amorphous non-gelatinous precipitate and said precipitate being preserved in a moist state by treatment with a deliquescent salt, substantially as described.

483,693. NECKSCARF. JOSEPH O. NIGHTINGALE, Paterson, N. J. Filed Mar. 14, 1892. Serial No. 424,772. (No model.)



Claim.—As a new article of manufacture, a neckscarf consisting of the combination of the apron portion A, provided in its upper end with the opening B, the head-piece or knot C, provided with the arms *s*, *t*, and *r*, each of said arms being provided with an opening D, the fastener P, permanently secured in the head-piece or knot C and having legs adapted to pass through the openings B D and to be bent over to secure together the parts of the scarf, and means for securing the scarf to the collar, substantially as shown and described.

483,694. BUTTON-SETTING MACHINE. FREDERICK A. RAY, Chicago, Ill., assignor to the Heaton Peninsular Button Fastener Company, Providence, R. I. Filed Dec. 21, 1891. Serial No. 415,743. (No model.)



Claim.—1. In a machine for attaching buttons to shoes and other articles, the combination, with the supporting-frame, of a magnet secured horizontally thereon, a chute for delivering the buttons, with their attached fasteners, one at a time to the magnet, with the fastener on the under side of the magnet and the button on the upper side thereof, a pusher and actuating mechanism therefor for impelling the fastener to the forward end of the magnet while held to the latter by attraction, and impact mechanism for clinching the fastener to the material while the fastener is being supported by the magnet, substantially as described.

2. In a machine for attaching buttons to shoes and other articles, the combination, with a supporting-frame, of a magnet horizontally secured thereto, a chute for delivering the buttons, with their attached fasteners, one at a time to the magnet, with the button upon the upper side and the fastener upon the lower side thereof, a pusher and actuating mechanism therefor for impelling the fastener and button forward to the end of the magnet, a finger and actuating mechanism therefor for tilting the button over the end of the magnet, and impact mechanism for clinching the fastener while it is supported by the magnet, substantially as described.

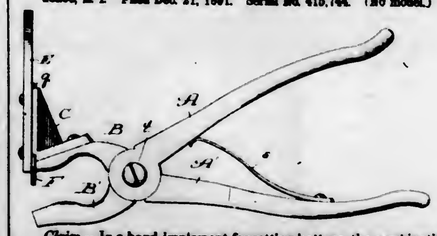
3. In a machine for attaching buttons to shoes and other articles, the combination, with the supporting-frame, of a magnet secured thereto in horizontal position, means for delivering the buttons, with their attached fasteners, one at a time to the magnet, with the buttons above and the fasteners below the same, a spring-actuated plate L, having an opening *m* and slot *l*, abutting against the end of the magnet, mechanism for impelling the button and staple forward to the end of the magnet, mechanism for tilting the button through the opening *m* of the plate L, and impact mechanism operating against the lower end of the plate L and the lower end of the fastener to clinch the latter, substantially as described.

4. In a machine for attaching buttons to shoes and other articles, the combination, with the supporting-frame, of a magnet C, secured thereto, a chute B, delivering the buttons, with their attached fasteners, one at a time to the forward part of the magnet, with the buttons above and the fasteners below the same, mechanism for pushing the buttons and fasteners forward to the end of the magnet, a plate L, having an opening *m* and slot *l*, abutting against the end of the magnet, a spring I, tending to maintain the plate in its lowest position, mechanism for tilting the button through the opening *m*, a lever for clinching the fastener by impact against the lower end thereof, and mechanism for actuating the moving parts, substantially as described.

5. In a machine for attaching buttons to shoes and other articles, the combination, with a supporting-frame, of a magnet C, secured thereto, means for delivering the buttons one at a time to the magnet, with the buttons above and the fasteners below the magnet, a pusher E, impelling the button and fastener forward to the end of the magnet, a spring-actuated plate *L*, having an opening *m* and slot *l*, abutting against the end of the magnet, a pin *f*, projecting from the pusher, a crank R, supported in bearings and having a rigid extension *g*, an arm *g'*, loosely hung upon the crank-journal adjacent to the extension *g* in the path of the pin *f*, a finger Q, loosely mounted upon the crank R, a spring tending to maintain the crank in nearly-vertical position, an impact-lever for clinching the staple, and means for connecting the moving parts of the machine, substantially as described.

6. In a machine for attaching buttons to shoes and other articles, the combination, with a supporting-frame A, of a magnet C, secured thereto, chute B, delivering the buttons and their attached fasteners one at a time to the magnet, bridge D, supported below the magnet, push-plate E, having the extension F and conforming to the bridge D and reciprocating over the same, impact-lever M, link P, connecting the impact-lever with the extension F, and treadle mechanism for actuating the lever M, substantially as described.

483,695. BUTTON-SETTING TOOL. FREDERICK A. RAY, Chicago, Ill., assignor to the Heaton Peninsular Button Fastener Company, Providence, R. I. Filed Dec. 21, 1891. Serial No. 415,744. (No model.)



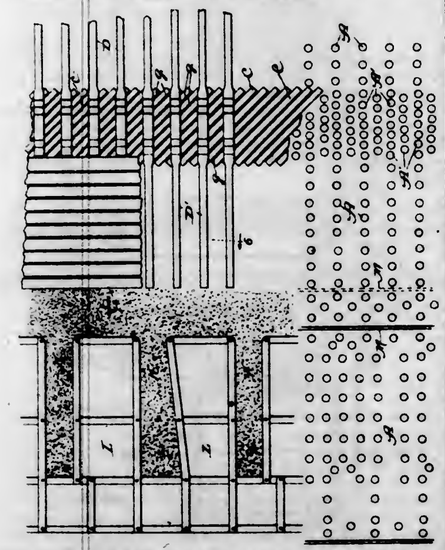
Claim.—In a hand implement for setting buttons, the combination of a casing C, secured in fixed relation to one of the jaws thereof, a spring D, inclosed within the casing, a plate F, having a slot *m* crossing the end of the jaw and extending normally beyond the inner surface of the same and having its upper end extended, as required, to meet the spring, a magnet B, secured in fixed relation to the jaw beyond and adjacent to the plate F and having its end suitably shaped to form an abutting surface for the fastener, and a clinching-die upon the other jaw, substantially as described.

483,696. TIMEPIECE-DIAL. GUSTAVE RIES, Brooklyn, N. Y., assignor of one-half to August J. Gleismer, same place. Filed Feb. 15, 1892. Serial No. 422,042. (No model.)

Claim.—1. The combination, with a timepiece having an opening in its dial, of an hour-disk having figures arranged on the same that are shown successively through said opening, a star-wheel applied to the arbor of the hour-disk, an arm applied loosely to the arbor of the minute-hand and provided with a pin at one end that engages the said star-wheel, a fixed eccentric on the minute-arbor, a pivoted lever that is provided with a lug to ride on the eccentric and with a pallet that engages the end of the arm opposite to that of the pin, and a spring interposed between the minute-arbor and the arm on the same, said spring holding said arm in contact with a fixed pin on the eccentric, substantially as set forth.

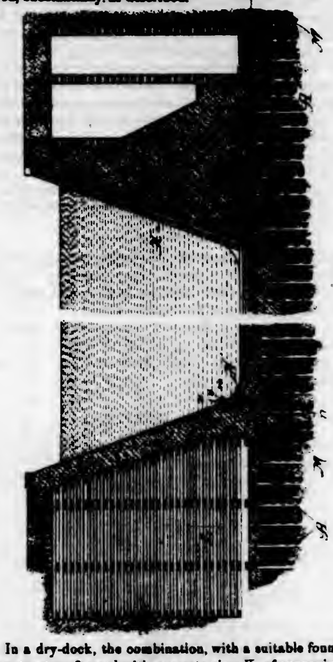
2. The combination, in a timepiece, of a dial provided with an opening for exhibiting the figures indicating the full hour, an intermittently-shiftable hour-disk arranged back of the dial, a star-wheel attached to said hour-disk, an eccentric keyed to the minute-arbor and provided with a fixed pin, a spring-actuated arm placed loosely on the minute-arbor and provided with a pin at one end for engaging the teeth of the star-wheel, and a pivoted and a spring-actuated lever-arm provided with a lug that rides on the eccentric and with a pallet for engaging the end of the pin-carrying arm, so as to retard the same until the eccentric produces the full lifting of the lever and permits the passing of the spring-actuated arm and the actuating of the star-wheel and hour-disk, substantially as set forth.

483,697. DRY-DOCK. WATSON W. REES, Minneapolis, Minn. Filed Nov. 16, 1891. Serial No. 412,004. (No model.)



Claim.—1. In a dry-dock, the combination, with a suitable foundation, of the superstructure formed with concrete piers K, of approximately-triangular shape in cross-section and broader at the base than at the top, the concrete sides H, faced with altars *o*, and a bed, substantially as described.

2. In a dry-dock, the combination, with a suitable foundation, of the superstructure formed with concrete piers K, of approximately-triangular shape in cross-section and broader at the base than at the top, cribwork L, and the concrete sides H, faced with altars *o*, substantially as described.



3. In a dry-dock, the combination, with a suitable foundation, of the superstructure formed with concrete piers K, of approximately-triangular shape in cross-section and broader at the base than at the top, cribwork L, and the concrete sides H, faced with altars *o*, substantially as described.

4. In a dry-dock, the combination of the foundation formed with piling and the superstructure formed with the concrete bed E, concrete piers K, of approximately-triangular shape in cross-section and broader at the base than at the top, and concrete sides H, faced with the altars *o*, substantially as described.

5. In a dry-dock, the combination of the foundation formed with piling A and sheet-piling M and the superstructure formed with concrete piers K, of approximately-triangular shape in cross-section and broader at the base than at the top, the concrete sides H, faced with altars *o*, and a bed, substantially as described.

6. In a dry-dock, the combination of the foundation formed with piling and the superstructure comprising the concrete bed E, concrete piers K, of approximately-triangular shape in cross-section and broader at the base than at the top, cribwork L, and the concrete sides H, faced with the altars *o* and mounted with stone coping I, substantially as described.

7. In a dry-dock or other structure formed with concrete and timber, the combination, with the concrete, of beams D, expanded toward their bases and embedded at their expanded portions in and thereby fastened by the concrete, substantially as and for the purpose set forth.

8. In a dry-dock, the combination, with a suitable foundation, of the superstructure formed with a concrete bed E and floor-beams D, embedded at their expanded portion in and fastened by the concrete piers K, and concrete sides H, faced with altars *o*, substantially as described.

9. In a dry-dock, the combination, with its foundation, sides, and bed, of caps C, laid diagonally at intervals under the keelway, substantially as described.

10. In a dry-dock, the combination, with its foundation and sides, of a concrete bed E, caps C, laid diagonally at intervals under the keelway, and floor-beams D, bolted to and extending across the caps and embedded at their expanded portions in and fastened in place by the concrete bed, substantially as described.

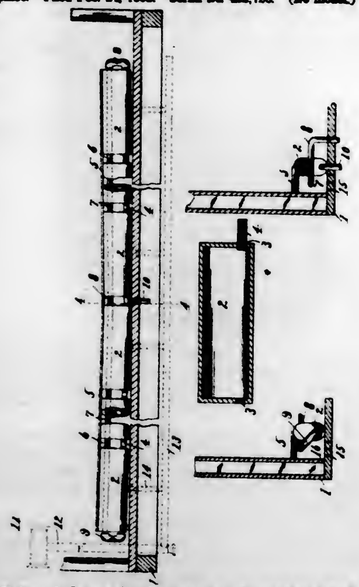
11. In a dry-dock, the combination, with the foundation, bed, and sides, of a sub-drain pipe N and relief-pipe N', extending therefrom above the bed and provided with a flap-valve *l*, substantially as and for the purpose set forth.

12. In a dry-dock, the combination, with the foundation, bed, and sides, of a sub-drain pipe N and relief-pipe N', extending therefrom above the bed and provided with a removable cap *v* and spout *m*, having a flap-valve *l*, substantially as and for the purpose set forth.

13. In a dry-dock, the combination, with the foundation, bed, and sides, of a floating gate or caisson S, provided with bilge-keels T, substantially as and for the purpose set forth.

14. A dry-dock comprising, in combination with a foundation, the superstructure formed of a concrete bed E, caps C, laid on said bed diagonally at intervals under the keelway, floor-beams D, bolted to and extending across the caps and embedded at their expanded portions in and fastened in place by the concrete bed, a drain F in the bed, toward which it slopes, spaced floor-timbers G on the bed, the sides formed with piers K, cribwork L, and the concrete faces H, having altars *o*, and a sub-drain pipe N and relief-pipe N', extending therefrom above the bed and provided with a flap-valve *l*, substantially as described.

483,698. CAR-HEATING APPARATUS. EDWARD F. ROBERTS, Columbus, Ohio, assignor to the Roberts Manufacturing Company, same place. Filed Feb. 24, 1892. Serial No. 422,720. (No model.)



Claim.—1. In a car-heating apparatus, the combination of the car-body, two or more hollow castings arranged near the floor and near the side of said car-body so as to have open spaces between the adjacent ends of said castings, steam connections between said hollow castings, and connections to the train pipe and drip, together with the horizontal partition extending from the side of the car-body to the top of the hollow castings, whereby a hot-air chamber is formed behind said castings, and a number of fresh-air inlets to said chamber, substantially as described.

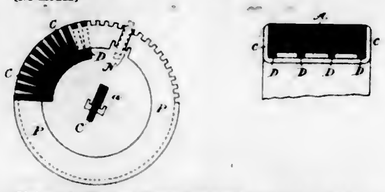
2. In a car-heating apparatus, the combination of the car-body, a number of hollow castings arranged in rows near the floor and near either side of said car-body so as to leave spaces between the adjacent ends of said castings, steam-pipe connections between said hollow castings, of much smaller cross-section than the castings, a steam-supply pipe which runs between the hollow castings and the side of the car-body and connects with the casting at either end of the row, the outlet from the center of the row to the drip, and the horizontal partition extending from the side of the car-body to the top of the row of hollow castings, whereby a hot-air chamber is formed behind said castings, substantially as described.

483,699. SPRING-SEAT. SAMUEL G. SHARRITT, St. Louis, Mo. Filed May 16, 1892. Serial No. 433,227. (No model.)

Claim.—1. The combination of double-cone springs and a metallic tie-strip intersecting the central coils of said springs, said tie-strip having cut therein tongues for clasping said coils, and transverse slots for securing the free end of said tongues when bent, substantially as set forth and described.

2. A metallic tie-strip having tongues struck up therein and transverse slots for securing the free end of said tongues when bent, in combination with double-cone springs, the central coils of said springs intersected by said strips and held by said tongues, substantially as set forth and described.

483,700. ARMATURE FOR DYNAMOS AND MOTORS. ELIHU THOMSON, Swampscott, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Dec. 2, 1891. Serial No. 413,823. (No model.)



Claim.—1. The combination, with the annular magnetic core having one or more notches and filling-plugs and having projections on its inner surface, of the separable coils of a size and shape enabling them to be passed through the notch and over the projections, said coils being secured in place between such projections.

2. The combination, with the annular magnetic core having one or more notches and filling-plugs and having projections on its surface, of the separable coils of a size and shape enabling them to be passed through the notch and over the projections, said coils being secured in place between such projections by a bearing against the armature.

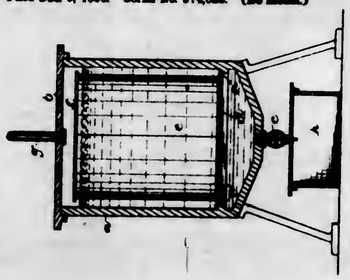
3. The combination, with the annular magnetic core having a notch and a filling-plug and having a toothed and a plain portion, of coils of a size and shape enabling them to be passed through the notch and over the projections and having a part secured between the projections and a part supported firmly adjacent to the plain portion of the armature.

4. The combination, with the notched ring core having toothed and plain portions, of the coils large enough to pass over the teeth and secured between said teeth and blocks interposed between said coils and a plain part of the core.

5. The combination, with an annular core composed of sections having ventilating-openings between them, of coils around the same of larger diameter than the core, whereby there is left an intermediate space between the coils and core, and blocks inserted at intervals in such space.

6. The combination of a magnetic core, coils around the same having different diameters, and thereby leaving spaces of different size between the coils and core, and blocks inserted at intervals in such spaces.

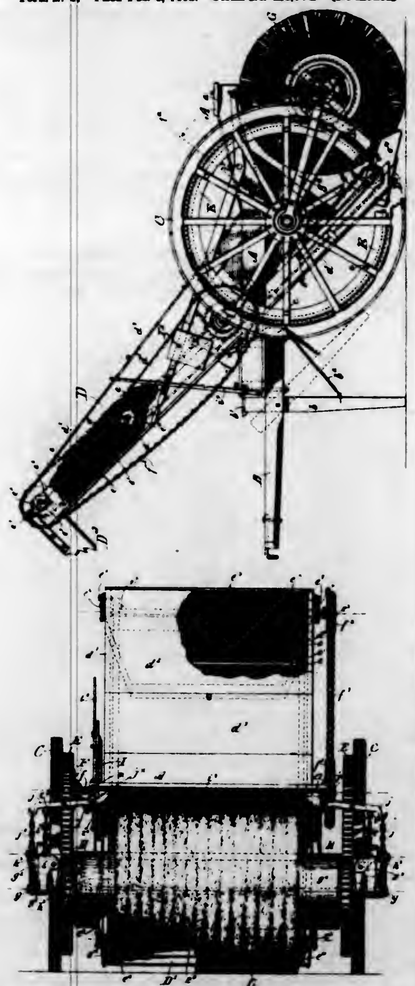
483,701. APPARATUS FOR THE MANUFACTURE OF TRANSPARENT SHEETS OF PYROXYLINE. EDMUND H. TODD, Newark, N. J. Filed Dec. 9, 1890. Serial No. 374,023. (No model.)



Claim.—1. The herein-described apparatus for the manufacture of thin transparent sheets of nitro-cellulose or pyroxyline, which consists of a suitable tank provided with a spigot or valve having a wire-netting partition and a spirally-formed plate or coil arranged thereon upon which said sheets are formed in a thin and evenly-distributed film, as and for the purposes set forth.

2. The herein-described apparatus for the manufacture of thin sheets of nitro-cellulose or pyroxyline, which consists of a suitable tank provided with means for drawing the solution therefrom and a spirally-formed plate or coil upon which said sheets are formed in a thin and evenly-distributed film, as and for the purposes set forth.

483,702. STREET-SWEEPER. ARCHIBALD B. VANDEMARK, New York, N. Y. Filed Feb. 8, 1892. Serial No. 420,674. (No model.)



Claim.—1. In a dirt-loader, the combination, with the axle and ground-wheels, the inclined chute mounted thereon, the endless conveyor mounted in said chute and driven from the ground-wheels, the broom rotatively mounted in drawing-links pivoted to the said axles, and the gearing intermediate between the broom and ground-wheels, whereby the former is driven from the latter, of means for raising the broom and a disengaging mechanism operated automatically when the broom is raised for disengaging the gearing which drives the broom, substantially as set forth.

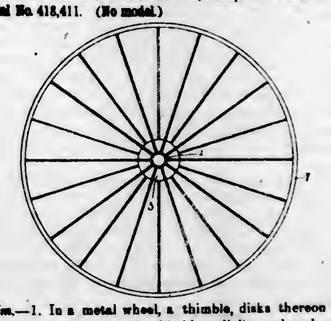
2. In a dirt-loader, the combination, with an inclined chute having a close stationary bottom *d* and sides *d'*, of the endless conveyor mounted therein and having shafts at its upper end, the lower ends being provided with sprocket-wheels which carry the conveyer-chains, said shafts being adapted to rise each independently of the other at their bearings and thus permit the passage of large objects carried up by the conveyer-flights.

3. The combination of the rotatively-mounted broom, the pinion H, mounted loosely on the broom-shaft, the ratchet g^4 on the end frame of the broom, the grooved bow h^3, arranged to slide on the hub of the pinion H and carrying studs A, which normally engage the ratchet g^4 and which play in guide-apertures in the pinion, and means for operating said grooved bow for disengaging the studs A from the ratchet on the broom, substantially as set forth.

4. The combination, with the broom mounted rotatively in arms, whereby it may be raised and lowered and said broom provided at its end with a ratchet g^6, forming one member of a driving-clutch, and the other or sliding member of said clutch mounted rotatively on the broom-shaft and having a grooved bow, of the elbow-lever A^3, having a fork which engages the groove in said bow, the lifting-link *i*, in which the lever A^3 is fulcrumed, a lifting and disengaging mechanism, substantially as described, coupled to one arm of said elbow-lever, and a spring for effecting the automatic engagement of the clutch, substantially as set forth.

5. The combination of the broom rotatively mounted in the lifting-link *i*, the said link, the clutch device, the sliding member of which is operated by an elbow-lever A^3, which is fulcrumed in the link *i*, the said elbow-lever, the broom-raising lever I, coupled to the link *i*, the lever *j*, fulcrumed on the lever I and coupled at one end to an arm of the elbow-lever A^3, and the machine-frame having a projection in the path of the free end of the lever *j*, whereby when the broom is raised the shorter lever *j* engages said projection and disengages the clutch, substantially as set forth.

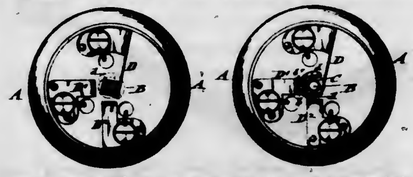
483,703. METAL WHEEL. HARLEY E. WEST, Toledo, Ohio, assignor of one-fourth to Michael V. Wall, same place. Filed Jan. 18, 1892. Serial No. 418,411. (No model.)



Claim.—1. In a metal wheel, a thimble, disks thereon formed with recesses diverging from the thimble radially, and spokes formed with a return-bend in engagement with the disks, the wire resting in the recesses, the outer ends being secured to the wheel-rim.

2. In a metal wheel, a hub comprising a thimble, and disks upon each end thereof, formed with projections concentric from the thimble and diverging therefrom, in combination with return-bend spokes angled at the loop and engaged with the projections, the free ends of the spokes being secured to the wheel-rim.

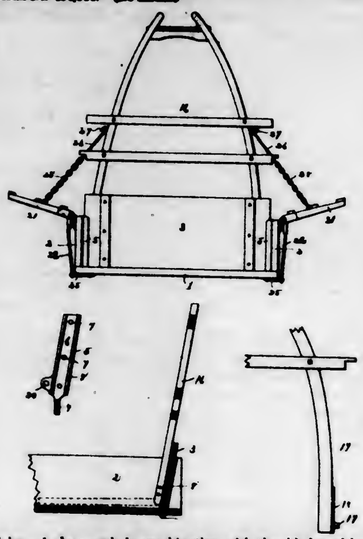
483,704. ELECTRIC SWITCH. DAVID H. ARMSTRONG, Long Island City, N. Y. Filed June 11, 1892. Serial No. 436,236. (No model.)



Claim.—A switch for electric circuits, composed of an insulating-base, a center post having a thumb-piece at the outer end and a square inner end, a sleeve on said post, means for connecting the post with said sleeve, a segmental cam on said sleeve, a contact-spring connected with the main line, placed in contact with the square end of the sleeve, and two contact-springs adapted to be moved in or out of circuit with the cam, so that either one or both lighting-circuits can be placed in circuit with the main line, substantially as set forth.

483,705. CONVERTIBLE HAY AND STOCK RACK.

Edward E. Avery and Charles A. Gratton, Tecumseh, Mich. Filed Sept. 3, 1891. Serial No. 404,516. (No model.)



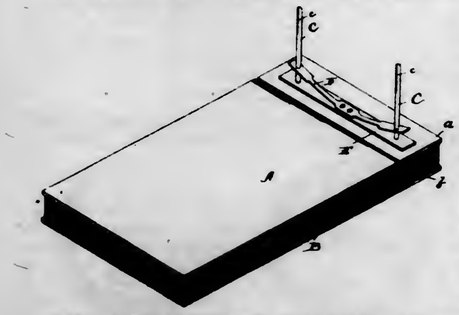
Claim.—1. In a rack, in combination with the side board having staples secured therein, perforated plates upon the body below the same, suspension-rods formed with hooked ends engaging the staples, and downwardly-projecting ends passed through the perforations in the plates, and side racks pivotally secured to the hooks and suspended by flexible hangers secured thereto and to ladders of the rack.

2. In a rack, ladders at each end thereof and side racks pivotally secured to the body of the rack and held suspended by two-part hangers comprising a hook-and-eye rod and a chain portion, the hangers being removably connected to the ladders by reason of the hooks and to the racks.

3. In a rack, combined straps and cleats, each having an offset provided with a perforation, in combination with a ladder having a plate secured to the lower end of each standard and having integral pivots engaging the perforation in the offsets, and side racks pivotally secured to the body of the racks and held suspended by two hangers comprising a hook-and-eye rod and a chain portion, the hangers being removably connected to the ladders by means of the hooks and secured to the racks.

483,706. TEMPORARY BINDER.

Albert R. Baker, Indianapolis, Ind. Filed Apr. 18, 1892. Serial No. 429,673. (No model.)

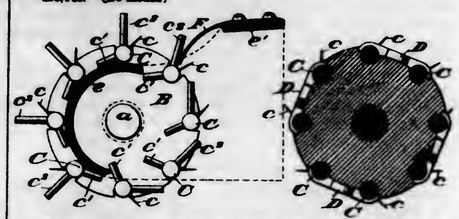


Claim.—1. The temporary binder having upright rods C, upon which the papers are threaded and which are adapted to engage with and hold the temporary clamping device of the binder, said uprights being also split at their upper ends, so such ends may be turned down upon the contents and clamp them permanently, substantially as set forth.

2. The combination, in a temporary binder, of covers A B, clamping-boards b, bar D, and uprights rods C, the latter being split at their upper ends, and thus adapted to be turned down to permanently clamp the contents of the binder, substantially as set forth.

483,707. COTTON-PICKER.

Charles Ball, Brooklyn, N. Y., assignor to Ball & Jewell, same place. Filed Apr. 7, 1892. Serial No. 428,140. (No model.)

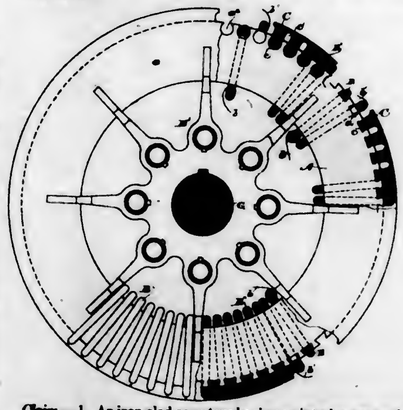


Claim.—1. In a cotton-picker, a roller provided with longitudinal grooves, rocking bars mounted in said grooves and provided with picking-pins, and a cam and a spring mounted independently of the roller, the cam adapted to rock the bars in one direction and the spring adapted to rock the bars in the opposite direction, substantially as set forth.

2. In a cotton-picker, a roller having a longitudinal groove therein, a rocking bar mounted in said groove and provided with picking-pins, fingers on said bar, and a cam and spring mounted independently of the roller, said cam engaging one of the fingers and the spring adapted to engage the other finger, whereby the bars, and thereby the pins, are first rocked in one direction and then in the opposite direction as the roller is rotated, substantially as set forth.

483,708. ARMATURE FOR MOTORS AND GENERATORS.

Norman C. Bassett, Lynn, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Feb. 27, 1891. Serial No. 383,106. (No model.)



Claim.—1. An iron-clad armature having an interior core or body with peripheral grooves, coils surrounding the core between the grooves, and sections attached to said core-body by engagement in said grooves and surrounding the coils.

2. An armature having an interior core and surface sections attached to said body, extending out over the coils, and meeting at the surface, so as to completely inclose the coils and form a closed surface.

3. An armature having its periphery built up of sections attached to and interlocked with an interior core-body, the said sections being channeled to receive the armature-coils.

4. The method of forming and winding an armature, which consists in forming a groove in the periphery of the core, winding the coil around the core, placing the coil to register with said groove and winding the coil with tape, placing the coil over the ungrooved portion, and filling up the groove with magnetic material.

5. The core-body having peripheral grooves forming a space for receiving the armature coils or tape while winding the armature with tape, in combination with attachable sections adapted to fill said grooves and be held in them and to surround and hold in place the armature-coils when the latter are shifted to their final positions.

6. The combination, with a laminated core-body and the coils wound thereon, of the laminar sections attached to and interlocking with the core-body and extending between and over the armature-coils, so as to form the periphery or surface of the armature.

7. An armature-core comprising an interior laminated core-body, laminar peripheral sections interlocked therewith, and end plates or heads and end pieces also interlocking, between which the body and section laminations are respectively clamped.

8. The method of winding and insulating an armature, which consists in placing separators against the core ends, winding the coils on the core and over said separators, removing said separators, and then winding the coil with tape, passing the tape through the space left by the removal of such separators.

9. An armature for dynamo-electric machines, having coils wound thereon and sections attached to the body of the core between the coils and meeting over the coils to form the periphery or surface of the armature.

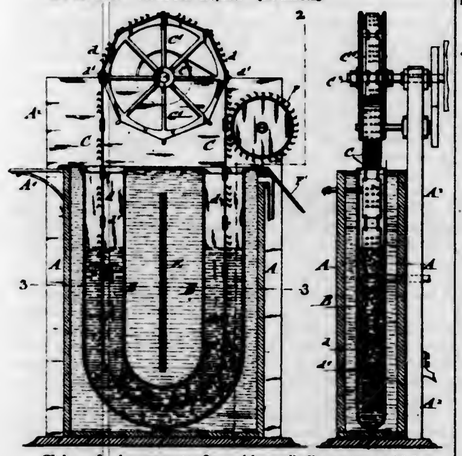
10. An armature for dynamo-electric machines, having coils wound thereon and sections interlocking with the body of the core and extending between the coils to form the periphery or surface of the armature.

11. An armature having a portion of its surface built up of sections attached to and interlocked with an interior core-body, the sections being channeled to receive the armature-coils.

12. The method of forming and winding an armature, which consists in forming a groove in the surface of the core, winding the coil around the core, placing the coil to register with said groove and winding the coil with tape, placing the coil over the ungrooved portion, and filling up the groove with magnetic material.

483,709. APPARATUS FOR MAKING GUN-COTTON.

Joseph Benn, Thomasville, N. C., and Oscar A. Hennessen, Newark, N. J. Filed June 23, 1892. Serial No. 436,951. (No model.)



Claim.—1. An apparatus for making collodion-cotton, which consists of a U-shaped acid-tank, a water bath for said tank, an endless chain formed of toothed plates and connecting-links, said chain passing through the tank, and a toothed roller at the outgoing end of the tank for removing the nitrated cotton, substantially as set forth.

2. An apparatus for making collodion-cotton, composed of a U-shaped acid-tank, a water bath surrounding the same, means for heating the water bath, an endless chain composed of toothed plates and connecting-links, passing through the tank, a sprocket-wheel for moving the endless chain through the tank, and a toothed roller located at the outgoing end of the tank for removing the nitrated cotton from the plates of the chain, substantially as set forth.

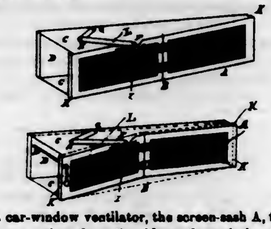
3. An apparatus for making collodion-cotton, composed of a U-shaped acid-tank, a water bath in which the acid-tank is suspended, means for heating the water bath, an endless chain formed of toothed plates and connecting-links, a sprocket-wheel for moving the endless chain through the acid-tank, a table for feeding the cotton to the ingoing end of the acid-tank, an inclined discharge-plate at the outgoing end of the tank, and a rotating toothed roller adapted to remove the nitrated cotton from the toothed plates of the chain, substantially as set forth.

483,710. PASSENGER-CAR COOLER AND VENTILATOR.

Alexander Black, Toledo, Ohio. Filed Apr. 8, 1892. Serial No. 428,377. (No model.)

Claim.—1. The combination, in a car-window ventilator, the screen-sash A, formed in two parts and hinged together in the middle of the ventilator, the side D, and the flexible material connecting the screen-sash with the said side, for the purpose set forth.

2. In a car-window ventilator, the screen-sash A, the lugs K, formed upon each end of the sash, the hinges B, the side D, and the flexible material C, connecting the side with the screen-sash, combined with means, such as shown and described, for adjusting the said sash for the purpose set forth.

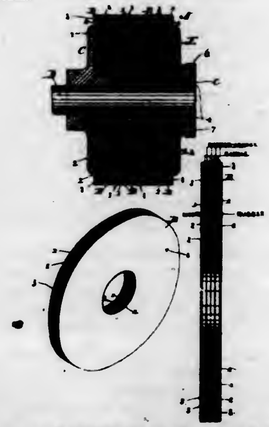


3. In a car-window ventilator, the screen-sash A, the side D, and the flexible connections from the side to the sash, leaving an opening J at one end and an opening E at the opposite end of the ventilator, in combination with the knuckle-jointed arm L, pivoted to the side D and to the sash to regulate the size of the opening E, for the purpose set forth.

4. The combination, with a car-window frame, of a ventilator consisting of an open-ended case comprising the side D, hinged screen-sash A, and the material connecting the said side and sash, and means, such as shown and described, for adjusting and locking the sash to regulate the size of one of the open ends, substantially as set forth.

483,711. FEED-ROLLER FOR WOODWORKING-MACHINES.

John Davis, Albany, N. Y. Filed Feb. 16, 1892. Serial No. 421,673. (No model.)



Claim.—1. A feed-roller formed of a series of composite disks composed of canvas or other textile fabric secured together by a cement of india-rubber or other elastic material, said disks being faced on their opposite flat surfaces with india-rubber, as and for the purpose herein specified.

2. In a feed-roller, the combination of a series of composite disks composed of canvas or other textile fabric, the layers of said fabric being secured face to face by means of an elastic cement, and a clamping mechanism for securing said disks in place, as and for the purpose herein specified.

483,712. ELECTRIC SWITCH.

Axel Rissrud, Lynn, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Nov. 10, 1890. Serial No. 370,956. (No model.)

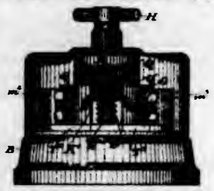
Claim.—1. In an electric switch, the combination, with a suitable

base, of a bracket secured thereto, a spindle held between and having a bearing in said base and bracket, a handle engaging with said spindle by a lost-motion connection, a cam fixed upon and rotating with the spindle, a non-rotating cam movable axially upon the spindle, a spring seated under said movable cam to press said cams against each other, and a contact-maker carried by the spindle, substantially as described.

2. The combination, in an electric switch, of a contact-maker and spindle with the fixed cam thereon and the reversely-shaped non-rotating cam spring-pressed into engagement with the fixed cam, said cams being provided with locking-lugs to prevent turning the spindle backward, as described.

3. In an electric switch, the combination, with a base having contacts secured thereto, of cams adjacent to said contacts, a rotative spindle, and a contact-maker consisting of a resilient cross-bar rigidly secured to said spindle at its center, its ends being adapted to ride up said cams and spring quickly upon the contacts, substantially as set forth.

483,713. ELECTRIC SNAP-SWITCH. AXEL RENTSÖN, Lynn, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Apr. 7, 1891. Serial No. 388,044. (No model.)



Claim.—1. In an electric switch, the combination, with the fixed contact-surfaces, of the reciprocating bridging-contact movable perpendicularly to said surfaces to press against or be withdrawn from the same and having outwardly and downwardly extending spring ends.

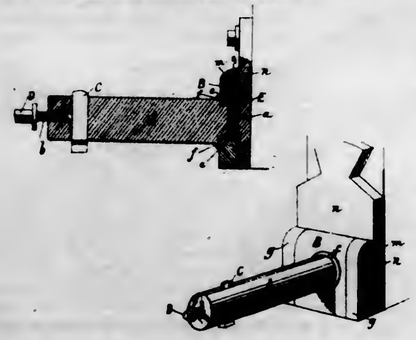
2. In an electric switch, the combination, with the fixed contact-surfaces, of the reciprocating bridging spring-plate movable perpendicularly to said surfaces to press against or be withdrawn from the same and having outwardly and downwardly extending ends.

3. The combination, in an electric switch, of the fixed contact-surfaces, the spring-plate having outwardly and downwardly extending ends for contact therewith, guides in which the spring-plate moves perpendicularly to the fixed contact-surfaces, and a rotary operating device—such as a cam-action—for depressing and releasing the spring-plate.

4. The combination, in an electric switch, of the fixed contact-surfaces, the laminated plate having outwardly and downwardly extending ends for contact therewith, guides in which the spring-plate moves perpendicularly to the fixed contact-surfaces, and a rotary operating device—such as a cam-action—for depressing and releasing the laminated plate.

5. The combination, with the vertically-movable switch-contact, of an actuator therefor, consisting of two engaging cams, one having an inclined surface, an adjoining elevated flat surface, and a projection at the junction of said surfaces and the other having an inclined tooth adapted to ride up said inclined surface and snap over said projection, substantially as described.

483,714. KEY-SEATING ATTACHMENT FOR METAL PLANING AND SHAPING MACHINES. FERDINAND J. FELDT, Peoria, Ill. Filed Nov. 5, 1891. Serial No. 410,938. (No model.)



Claim.—In a metal planing and shaping machine or the sliding carriages thereof, of the plate *n*, secured to the forward end of the carriage and provided with the lugs *g g*, the pivoted metal trap-plate B, held in position, as at *m*, and provided with the opening *e*, and the metal extension A, provided with the rim *f f* and with the threaded extension *a*, upon which is designed to be screwed the nut E in the angular recess of the trap-plate B, the said extension A being further provided with the cutting-tool C, carried in a transverse slot in the forward end and secured in position by the set-screw D, all substantially as described and set forth.

483,715. CARD GAME-COUNTER. GEORGE H. FISHER, South Bend, Ind. Filed June 13, 1892. Serial No. 436,466. (No model.)

Claim.—1. A game-counter consisting of cards fastened together at one point so as to revolve about the point independently, with suitable numerals shown upon some of the cards, others of the cards left blank, so that the number of points and games may be shown by so turning the blank cards as to reveal the desired number on the numbered cards, substantially as shown and described.

2. A game-counter consisting of cards so fastened together at one point that they can be turned independently of each other, one card showing numerals of tens, another card showing units, and a third card being a cover, so that by turning the cards the number of games or points may be shown on the numbered cards, substantially as shown and described.

3. In a game-counter, cards so fastened together at the lower left-hand corner of each that the cards can be turned independently of each other, the lower card showing numerals in tens, the card above it showing units, and a third card showing units in rings, with blank cards above them, so that by turning the cards in relation to each other the desired number of games or points won or lost may be shown on the numbered cards, substantially as shown and described.

4. A game-counter consisting of five cards so fastened at their lower left-hand corners that they can be turned independently, the under card showing numerals in tens, a card above it showing units, and a third card showing units in rings, with two cover-cards, so that the games and points won or lost may be designated, substantially as shown and described.

5. A game-counter consisting of five cards shaped like playing-cards, such cards so fastened together at the lower left-hand corners that they can be turned independently, the under card showing numerals in tens and a third card showing units in rings and having a blank ring at an upper corner, in combination with cover-cards, whereby the points and games won and lost may be designated, substantially as shown and described.

483,716. COMPOSITION FOR STEREOTYPE-PLATES. WILLIAM A. POSEN, Brooklyn, N. Y. Filed Oct. 1, 1891. Serial No. 407,390. (No specimens.)

Claim.—1. The composition herein set forth for forming stereotype-plates, the same consisting of rubber, plumbago, white lead, litharge, and sulphur, substantially as specified.

2. The composition herein set forth for forming stereotype-plates, the same consisting of rubber, plumbago, white lead, litharge, and sulphur in about the proportion of two and a half pounds of rubber, four pounds two and a half ounces each of plumbago, white lead and litharge, and six ounces of sulphur, substantially as specified.

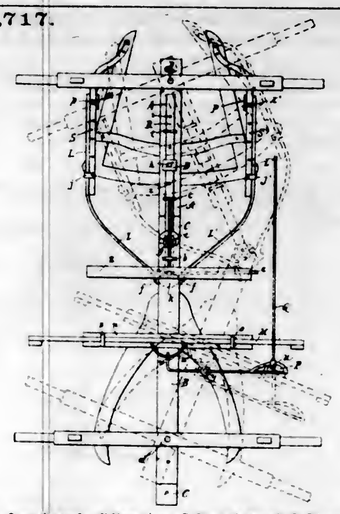
3. The composition herein set forth for forming stereotype-plates, the same consisting of rubber, plumbago, white lead, litharge, zinc, baryta, and sulphur, substantially as specified.

4. The composition herein set forth for printing-plates, composed of a body such as litharge, white lead, baryta or zinc, and plumbago, rubber, and sulphur, substantially as specified.

483,717. RUNNING-GEAR FOR VEHICLES. HENRY T. GOODRICH, Peoria, Ill. Filed May 6, 1892. Serial No. 432,002. (No model.)

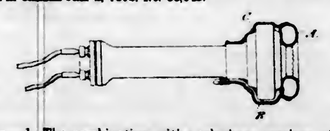
Claim.—In running-gear for vehicles, the combination of the main reach pivotally attached to the front and adjustably connected to the

483,717.



rear axle, front hounds, sliding plates S S', sliding rods L L', provided with sliding blocks *p p* at the forward rods L L', with bearing and curved to connect with the head *k* of the piece R, and supplemental reaches A B, connected by means of the headed piece R, secured to the supplemental reach A and bearing through the eyebolt *g g* in the forward end of the supplemental reach B, the main reach C, all the said reaches being pivotally or adjustably connected with the axles, all substantially as described and set forth.

483,718. TELEPHONE-RECEIVER. FERDINAND GROSS, Montreal, Canada. Filed Jan. 18, 1892. Serial No. 418,466. (No model.) Patented in Canada Jan. 2, 1892. No. 38,043.



Claim.—1. The combination, with a telephone-receiver, of a compressible cushion held in place with one side bearing against the face of such receiver by a detachable flexible connection, for the purpose set forth.

2. The combination, with a telephone-receiver, of a compressible air-cushion and a conically-shaped sheet-rubber elastic hood, as shown, and for the purpose set forth.

3. The combination, with a telephone-receiver, of a soft-rubber air-cushion held in place with one side bearing against the face of such receiver by a detachable flexible connection, for the purpose set forth.

4. The combination, with a telephone receiver, of a soft-rubber hollow inflated annulus A, inflating-tube B, and elastic hood C, as shown, and for the purpose set forth.

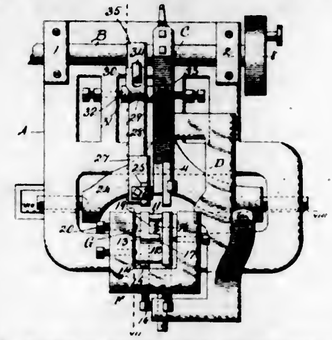
483,719. BOUQUET AND BADGE HOLDER. JOHN B. HANNAH, Widowsville, Ohio. Filed Dec. 7, 1891. Serial No. 414,287. (No model.)

Claim.—A bouquet and badge holder consisting of the plate A, having a catch D on one edge and hinges E upon the opposite edge, a spring-hook C, formed upon the lower end of said plate, a spring-lid G, hinged to the plate A, a pin I, secured to the back of the plate A, and an elastic band secured to the concave plate in rear of the hinged cover for securing a bouquet arranged as shown, and for the purpose set forth.

483,720. NAIL-MACHINE. CHARLES R. HOUGHTON, Northumberland, Pa., assignor of one-half to Horace Rufus Johnson, same place. Filed Mar. 1, 1892. Serial No. 423,603. (No model.)

Claim.—1. The combination, with the bed-die and knife-chamber of a nail-machine, of a face-piece *a*, secured to the vertical inner face of the machine-frame and having its upper portion extending above the floor of the die and knife-chamber, for the purposes specified.

2. The combination, with the bed-die and knife-chamber, having a face-piece *a* extending above the floor of the said chamber, of the gripping-die, the back piece formed with a hole through it, a movable plug in the hole, an adjusting-screw through the end wall of the chamber, a point-cutting die formed with a lateral projection at its base and arranged to rock sidewise in its seat on the inner end of the movable plug, and a spring arranged between the projecting face-piece and the lateral projection of the point-cutting bed-die, as and for the purpose specified.

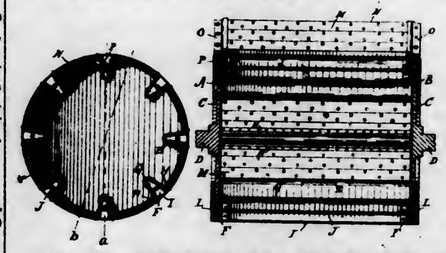


3. In a machine for pointing cut nails, the combination of a rock-shaft mounted in bearings across the frame of the machine and having an endwise play in its bearings and formed with a standard having a die-seat in its upper end, means connected to the driving-shaft to reciprocate the die-seat, and a lever to reciprocate the rock-shaft in the direction of its length, as specified.

4. In a machine for pointing cut nails, the combination of the rock-shaft H, arranged in bearings to have an endwise movement therein and having a die support projected therefrom, a lever fulcrumed on the machine with one end engaging the rock-shaft, and the heading-lever arranged to engage and move the lever, whereby the shaft is reciprocated endwise.

5. The combination, in a machine for pointing cut nails, of a rock-shaft carrying a standard formed with a die-seat, a die in the seat, means to move the die-seat horizontally, and the heading-lever formed with a lug to engage and move the lever laterally.

483,721. WASHING-MACHINE. RALPH DE W. HULBERT, Indianapolis, Ind., assignor of one-half to Fred B. Comstock, same place. Filed Dec. 16, 1891. Serial No. 415,215. (No model.)

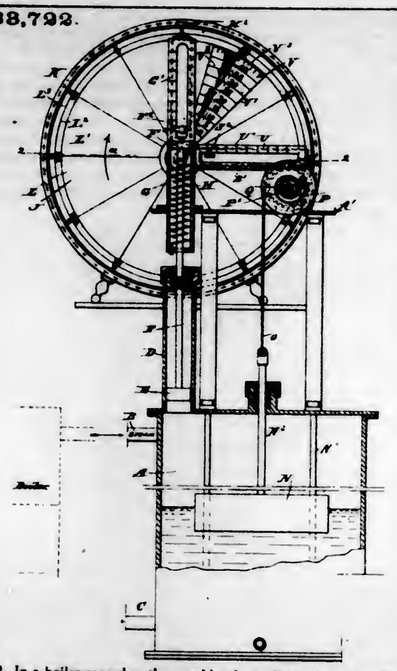


Claim.—In a washing-machine cylinder, the hollow metallic rib consisting of the pair of castings F, forming the ends thereof, the sheet-metal strip G, bent to inclose said castings and provided with the flanges H H, and the flat metallic strips I, all riveted together, substantially as set forth.

483,722. BOILER WATER-LEVEL RECORDER. WILLIAM M. LEWIS, New Castle, Colo. Filed Sept. 3, 1891. Serial No. 404,658. (No model.)

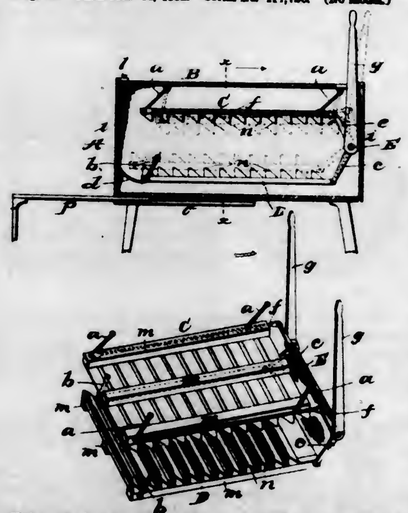
Claim.—1. In a boiler-recorder, the combination, with a float controlled by the rising and falling of the water in the boiler, of a pencil controlled by the said float, a dial on which the said pencil is adapted to mark, a clock-work for driving the said dial, and a graduated indicator hung loosely on the said dial and adapted to indicate the time for the indicating-line marked by the said pencil on the said dial, substantially as shown and described.

488,722.



2. In a boiler-recorder, the combination, with a float controlled by the rising and falling of the water in the boiler, of a pencil controlled by the said float, a dial driven by clock work and on which the said pencil is adapted to mark, a graduated indicator hung loosely on the said dial and adapted to indicate the time for the indicating-line marked by the said pencil on the said dial, and intermediate mechanism, substantially as described for connecting the said float with the said pencil, substantially as shown and described.

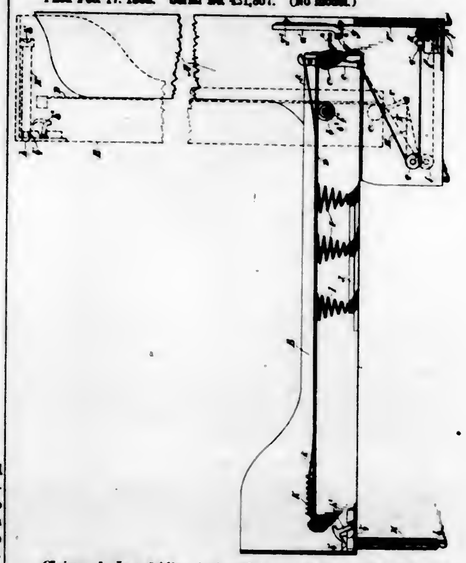
488,723. WASHING-MACHINE. JOSEPH A. MEEKER, McKeesburg, Pa. Filed Jan. 11, 1892. Serial No. 417,720. (No model.)



Claim.—1. In a washing-machine, a pair of rubbers composed of a series of longitudinal bars having transverse serrated rubbing-surfaces attached thereto, vibrating links upon which the rubbers are suspended, and a rock-shaft having a web the width of the rubbers and said web connected to the lower rubber, in combination with rods connecting the upper arms of the rock-shaft to one end of the upper rubber.

2. In a washing-machine, the combination of a vertically-adjustable cover having a rubber pivotally secured to the under side, a rubber pivotally connected to the sides of the tub at one end and to an arm of a rock-shaft at the opposite end, and connections for imparting a reciprocating and vertical movement to the rubbers.

488,724. FOLDING BED. WALTER B. HOYER, San Francisco, Cal. Filed Feb. 17, 1892. Serial No. 421,867. (No model.)



Claim.—1. In a folding bed, and in combination with the main frame and the swinging mattress-frame pivoted thereto, the oscillating roller with crank-arms and carried by the swinging frame, the mattress fabric connected with said roller and with the other end of the swinging frame, and spring connections between said crank-arms and the main frame, whereby the swinging frame is balanced, substantially as herein described.

2. In a folding bed, and in combination with its main frame and swinging mattress-frame pivoted thereto, the oscillating roller carried by the swinging frame and having crank-arms, the mattress fabric connected with said roller and with the other end of the swinging frame, the cables connected with said crank-arms and with the fixed frame, and the springs let into said cables, substantially as herein described.

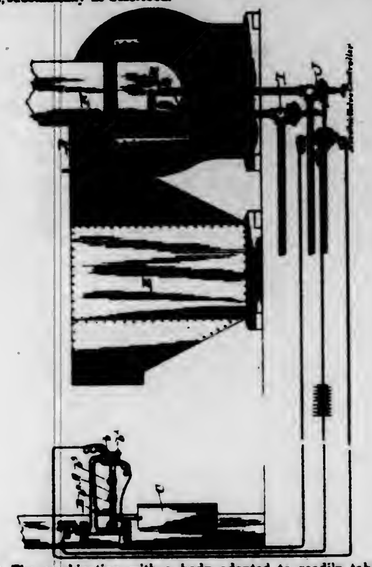
3. In a folding bed, and in combination with its main frame and its swinging mattress-frame pivoted thereto, the oscillating roller carried by the swinging frame and having crank-arms, the mattress fabric connected with said roller and with the other end of the swinging frame, the cables connected with the crank-arms of the roller, said cables being guided forward and back in the sides of the main frame across the end thereof in opposite directions and secured to the main frame, and the springs let into said cables, substantially as herein described.

4. In a folding bed, and in combination with its main frame and swinging mattress-frame pivoted thereto, the oscillating roller carried by the swinging frame and having crank-arms, the mattress fabric secured to said roller and to the other end of the swinging frame, the cables connected with said crank-arms, the springs let into said cables, and the hand-levers with which said cables are connected, said levers being pivoted to the main frame and bearing backwardly against fixed stops thereon, substantially as herein described.

488,725. HYGROMETRIC VALVE-CONTROLLER. CHARLES W. ROGERS, Chicago, Ill. Filed Dec. 24, 1891. Serial No. 416,099. (No model.)

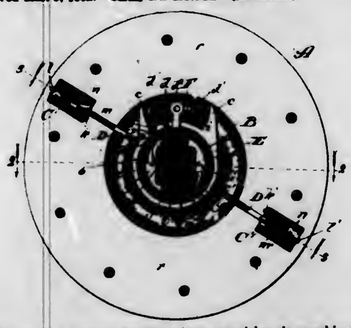
Claim.—1. In a hygrometer, and in combination with a suitable weighing device, a body supported therefrom and composed of clay provided with a suitable cover to prevent it from loss, substantially as described.

2. The combination, with a measuring device adapted to be operated by changes in humidity of the atmosphere, of suitable air-moistening devices provided with valves and suitable connecting devices through which said valves may be operated by the measuring device, substantially as described.



3. The combination, with a body adapted to readily take up moisture from the air or to give up the same thereto under proper conditions, of a weighing device supporting said body upon its weight end, a series of electric circuits adapted to be made and broken by the movements of said weighing device, a moistening device provided with a valve, and means for automatically operating said valve by the making and breaking of the electric circuits.

488,726. ROTARY STEAM-ENGINE. FREDERICK A. SMALL, Blue Island, Ill. Filed Nov. 3, 1890. Renewed Aug. 30, 1891. Again renewed Mar. 5, 1892. Serial No. 423,944. (No model.)



Claim.—1. A rotary steam-engine comprising, in combination, a non-rotary cylinder divided internally into at least four chambers having ports, one of each pair of said chambers forming a steam-chamber and the other an exhaust-chamber, the steam-chambers being respectively on different sides in the hollow axis and intercommunicating and the exhaust-chambers being similarly disposed and intercommunicating, a rotary wheel supported independently of the said cylinder to surround it and containing an inner peripheral steam-expansion chamber provided with ports to communicate with a pair of the said steam and exhaust chambers in the cylinder, valves supported to work in chambers on the wheel containing pistons and communicating from opposite sides of the pistons, respectively, with the members of the said other pair of steam and exhaust chambers in the hollow axis, and a stationary abutment in the said expansion-chamber supported from the cylinder, substantially as described.

2. In a rotary steam-engine having a wheel and a non-rotary cylinder about which the wheel is supported to rotate and through which the steam for driving the wheel is directed to expand against it, a steam-expansion chamber surrounding the inner periphery of the wheel and having a circumferential slot-opening, a stationary abutment inside the said expansion-chamber, and a ring-section surrounding the cylinder and extending into the said slot-opening, substantially as and for the purpose set forth.

3. In a rotary steam-engine, the combination of a non-rotary cylinder divided internally into chambers having ports, ducts leading to the said chambers, an annular wheel supported to surround and be rotated about the cylinder and containing a steam-expansion chamber surrounding its inner periphery and having ports, valves for the expansion-chamber, a stationary abutment supported from the cylinder in the expansion-chamber, and means, substantially as described, for closing the said expansion-chamber to a steam-supply port immediately after its port has passed the latter, thereby utilizing the expansive force of the steam in driving the wheel, substantially as set forth.

4. In a rotary steam-engine, the combination of a non-rotary cylinder E, divided internally into chambers g and f, having ports g' and f', a diaphragm i', forming end chambers h and h' in the cylinder, communicating, respectively, with the chambers f and g, ducts v and v', an annular wheel A, supported to surround and be rotated about the cylinder and containing a steam-expansion chamber B, surrounding its inner periphery and having ports o and o', chambers C and C', formed radially in the wheel and containing piston-heads n and n', having valves D and D' connected with them, ducts k and k', leading into the said piston-chambers near the inner ends of the play of the piston-heads from the plane of the chambers h and h', and a stationary abutment F, supported from the cylinder in the expansion-chamber, substantially as described.

5. In a rotary steam-engine, the combination of a non-rotary cylinder E, divided internally into chambers g and f, having ports g' and f', a diaphragm i', forming end chambers h and h' in the cylinder, communicating through the diagonal ducts e and e', respectively, with the chambers f and g, ducts v and v', leading to the chambers g and f, an annular wheel A, supported to surround and be rotated about the cylinder and containing a steam-expansion chamber B, surrounding its inner periphery and having ports o and o', chambers C and C', formed radially in the wheel and containing piston-heads n and n', having valves D and D' connected with them, ducts l and l', leading into the said piston-chamber near the outer end of the play of the piston-head and communicating with the cylinder near one end, ducts k and k', leading into the piston-chambers near the inner ends of the play of the piston-heads from the plane of the chambers h and h', and a stationary abutment F, supported from the cylinder in the expansion-chamber, substantially as described.

6. In a rotary steam-engine, the combination of a non-rotary cylinder divided internally into chambers and having ports g' and f', ducts v and v', leading to the chambers, a shifting band b, having openings and surrounding the cylinder and provided with an abutment b^3, extending into a chamber b^4 in the outer side of the cylinder, ducts b^5 and b^6, leading into the chamber b^4 at opposite sides of the said abutment and communicating with the chambers in the cylinder and an annular wheel A, supported to surround and be rotated about the cylinder, and steam-expansion chamber B in the wheel, surrounding the inner periphery thereof and having ports o and o', valves D and D' for the expansion-chamber, and a stationary abutment F, supported from the cylinder in the expansion-chamber, substantially as described.

7. In a rotary steam-engine, the combination, with the non-rotary cylinder E, wheel A, supported to surround and be rotated about the cylinder and provided with the steam-expansion chamber B, of the reciprocating valves D and D' in the wheel, a stationary abutment F, supported in the expansion-chamber from the cylinder, a ring d', loosely surrounding the cylinder E and forming the closure for the expansion-chamber B, and cam-guides c on the ring at opposite ends of the abutment, substantially as and for the purpose set forth.

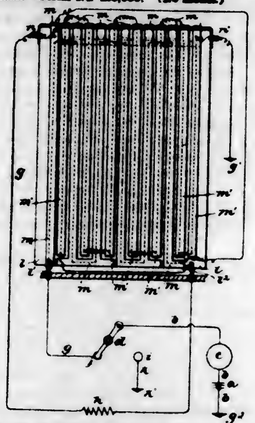
488,727. TOY ANIMAL FIGURE. CELIA M. SMITH, Rhinos, N. Y. Filed June 2, 1892. Serial No. 435,249. (No model.)

Claim.—1. The animal figure composed of two suitably-shaped pieces of fabric printed or marked in imitation of an animal and se-

cured together at their edges corresponding to the upper, front, and rear outline of the animal, and a base-piece secured to their bottom edges to constitute said base, the receptacle thus formed being stuffed with a filling material, substantially as set forth.

2. The animal figure having a broad and practically-flat base and composed of two suitably-shaped pieces of fabric secured together at their edges corresponding to the upper, front, and rear outline of the animal, and a base-piece secured to their bottom edges to constitute said base, the receptacle thus formed being stuffed with a filling material, substantially as set forth.

488,728. ELECTRIC BURGLAR-ALARM. ALFRED STROMBERG, Chicago, Ill., assignor of one-half to Mark Simons, same place. Filed Mar. 15, 1892. Serial No. 425,080. (No model.)



Claim.—1. In an electric burglar-alarm, the combination, with a battery *a*, one side of which is connected to ground, of suitable alarm-recording apparatus connected with said battery, circuit-wire *b*, another circuit-wire *g*, one end of which is connected to ground, said wire *g* crossing said wire *b* and insulated therefrom, the resistance *h*, and the switch *e*, adapted to connect wires *b* and *g* together or to connect wire *b* to ground, substantially as and for the purpose specified.

2. In an electric burglar-alarm, the combination, with the flexible cover of an opening, of flexible metallic conducting-strips attached thereto, said strips being folded longitudinally and attached to said covering by one of the free edges thereof, an electric circuit including said conducting-strips, a resistance included in said circuit, and circuit-breakers adapted to open said circuit when said flexible cover is moved, and a responsive device adapted to be actuated when said circuit is broken or when said resistance is cut out of the circuit, substantially as described.

3. In an electric-burglar-alarm circuit, the combination, with a flexible surface, of a series of pliable conducting-strips, said strips being folded longitudinally and attached by one of the free edges thereof to said flexible surface, and electrical connections between said strips, substantially as described.

4. In an electric burglar-alarm for metal inclosed vaults, the combination, with strips of conducting material fastened to the sides and doors of the vault, but insulated therefrom, said strips of conducting material being included in series in an electric circuit, of a battery and a recording device included in said circuit, means for breaking said circuit to give an alarm when the door is opened, the metallic walls of the vault connected at one point to the circuit including the strips of conducting material, and a suitable resistance located in said circuit and adapted to be cut out and give alarm when circuit is made between the metallic walls of the vault and the strips of conducting material, substantially as described.

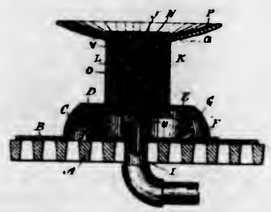
488,729. ARMATURE-WINDING FOR DYNAMO-ELECTRIC MACHINES. ERNST P. WARNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Sept. 30, 1889. Serial No. 325,543. (No model.)

Claim.—1. An attachment between the segment of a commutator and a coil of the armature, consisting of a tang *g*, provided with shoulders forming steps, said tang being bound to its coil by a lashing of bare wire about the shoulders forming the steps and the wire of the coil, said tang being curved outwardly, substantially as and for the purpose specified.

2. The combination, in an armature, of coils or convolutions of wire forming a continuous conductor, said conductor consisting of two pieces of wire soldered together, each piece of wire containing the same number of convolutions and provided with loops, one with loops c' c' on one side of the armature and the other with loops c^3 c^3 on the opposite side thereof, and the commutator having segments corresponding to and connected with the loops, substantially as and for the purpose specified.

3. The combination, with the armature-core, of coils wound thereon in uniform relation with respect to the different turns, the two halves of each turn upon the face of the armature being removed from diametrical position by the thickness of the wire, substantially as and for the purpose specified.

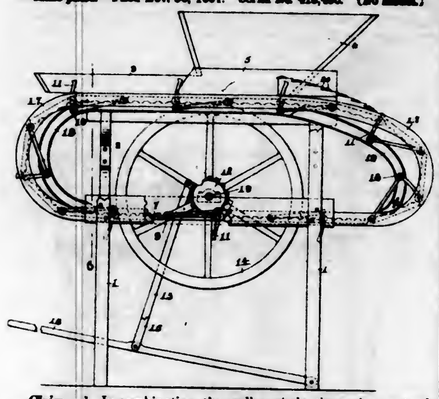
483,730. FUEL-OIL BURNER. CORTLAND BALL, Indianapolis, Ind. Filed Apr. 1, 1892. Serial No. 427,312. (No model.)



Claim.—1. In a fuel-oil burner, the combination, with a vertical supply-pipe, of the spool carrying a series of wire coils and removably secured upon the pipe so as to receive the discharge of oil therefrom upon the coils, and a retort arranged to inclose said discharge-pipe, spool, and coils, substantially as set forth.

2. In a fuel-oil burner, the combination of the plate having the central circular raised portion provided with a central opening, the cup secured to said plate concentric with said opening, the supply-pipe projecting vertically above said cup, the spool carrying a series of wire coils and mounted upon said pipe so as to receive the oil therefrom, and the retort mounted upon said spool and arranged to inclose the supply-pipe and the coil, all arranged to co-operate substantially as and for the purpose set forth.

483,731. FRUIT-SLICING MACHINE. ARTHUR J. BARKER, Scipio, N. Y., assignor of one-half to Henry A. Tripp and Walter Tripp, both of same place. Filed Nov. 30, 1891. Serial No. 413,490. (No model.)



Claim.—1. In combination, the endless chain, the pushers extending through the chain, and the track for the pushers, said track being curved to draw the pushers inwardly with respect to the chain, substantially as set forth.

2. In a fruit-slicing machine, an endless fruit-carrier composed of loosely-pivoted links provided with rack-teeth, a driving-gear adapted to engage the said rack, and a fruit-pusher loosely connected to the pivot of two adjacent links and having one end movable between the ends of links, the pivoted end of said pusher being slotted to permit the gear to engage the rack, substantially as set forth.

3. In a fruit-slicing machine, fruit-carrying mechanism, a pushing device adapted to be operated by said mechanism and adapted to extend above the position of the horizontal center of an apple and curved forwardly to bear on the fruit above said center, and fruit-cutting blades, substantially as set forth.

4. In combination with the endless chains, the curved tracks therefor and the blades having their edges arranged in a curved plane, the curved plane of said edges approaching that of the adjacent tracks, whereby the chain moves the unsliced remnants of the fruit against the lower blades, substantially as set forth.

5. In combination, the fruit-moving devices or carrier adapted to carry two or more apples side by side, the blades, the feeding box or table situated in part on each side of the carrier, and a hopper having a floor immediately over the carrier and two delivery-chutes, one on each side of the fruit-carrier and arranged to deliver fruit on each portion of the table, substantially as set forth.

6. In combination, the fruit-carrying device, the wheel for propelling the same, the crank-arm, two treadles, and the connecting-rod between the double treadle and arm, whereby either or both feet can be used to move the chain, a two-part table, and a hopper adapted to supply fruit on both the right and left of the machine, substantially as set forth.

7. In combination, the fruit-carrying chain adapted to carry two or more apples side by side, the chain-moving wheel, the crank-arm, two treadles, one under each part of the feeding box or table, and the connecting-rod between the treadle and the arm, whereby either or both feet can be used to move the chain, the hopper having a floor immediately over the carrier, and a delivery-chute on each side of the chain, substantially as set forth.

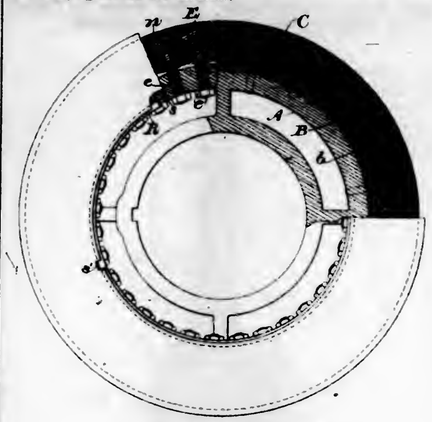
483,732. COMMUTATOR FOR ELECTRIC MACHINES. NORMAN C. RASSETT, Lynn, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Aug. 26, 1891. Serial No. 403,236. (No model.)

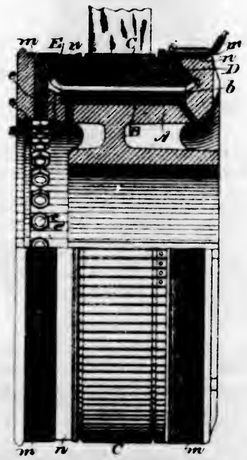
Claim.—1. In a commutator for dynamo-electric machines or motors, the combination of a shell or cylinder, commutator-segments arranged around the periphery thereof, and a number of individually-adjustable clamping devices, each engaging with two or more of said segments and clamping them to the cylinder.

2. The combination, in a commutator, of a shell or cylinder having an annular shoulder or bearing-surface, a series of independently-adjustable clamping devices, and a series of commutator-segments embraced between such shoulder and clamping devices.

3. The combination of a commutator-shell having an annular shoulder, a number of individually-adjustable clamping devices arranged around the shell, and commutator-segments clamped between said clamping devices and shoulder.

4. The combination of a commutator-shell having an annular shoulder and an annular bearing portion, a series of individually-adjustable clamping devices arranged around said shell, and commutator-segments resting on said annular bearing portion and clamped between said clamping devices and shoulder.





5. The combination of a commutator-shell having an annular undercut or inclined shoulder, a series of individually-adjustable clamping-blocks arranged around the commutator and having undercut or inclined bearing portions, and commutator-segments having inclined ends engaging with the inclined portions of said shoulder and clamping devices.

6. The combination of the commutator-shell having an inclined shoulder, the series of blocks engaging with said shell by screw-bolts and having inclined bearing portions, and commutator-segments having inclined ends engaging with the inclined bearing portions of the blocks and shoulder.

7. The combination of a commutator-shell having an annular toothed bearing portion and a shoulder, a series of commutator-segments engaging with said shoulder and between the teeth of said ring, and clamping devices for said segments.

8. The combination of a commutator-shell, an annular central toothed bearing portion and end clamping devices, and commutator-segments clamped between said clamping devices and resting between the teeth of said central toothed portion.

9. The combination, with the segments of a commutator, of the series of independent end clamping devices therefor and an insulating peripheral covering for said clamping devices.

10. The combination of the commutator-shell, the series of commutator-segments, the series of independently-adjustable clamping devices for said segments, and a common locking device for several or all of such clamping devices.

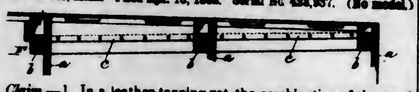
11. The combination of the commutator-shell, the annular bear-

ing portion having tapering teeth, the commutator-segments beveled on one side and placed in pairs between said teeth, and clamping devices for said segments.

483,733. BROOM-GUARD. HARRY J. BENNETT, San Francisco, Cal. Filed Sept. 1, 1891. Serial No. 404,493. (No model.)

Claim.—An improved broom-guard consisting of the band encircling the broom-head, a band D, fixed to the broom-handle and extended at one side to form a vertical ridge having a series of holes *d'*, a sleeve on said band D, extended at one side to form a guideway which fits over the ridge of the band, whereby the sleeve is vertically guided and held against lateral or twisting movement, a spring-controlled pawl carried on the guide of the sleeve and adapted to engage the holes in the ridge of the fixed band, and the wires F, connecting the sleeve with the broom-band, all constructed and arranged to operate as herein described.

483,734. LEATHER-TANNING VAT. BENJAMIN P. BRADFORD, Worcester, Mass. Filed Apr. 13, 1892. Serial No. 428,937. (No model.)



Claim.—1. In a leather-tanning vat, the combination of the usual plank partitions with a horizontal frame secured thereto, dropped a little below the top thereof, and inclined as described, and vertical partitions secured to said frame at the opposite side from the plank partitions to form an inclined trough between them and having lateral inlets from the vats to said trough, substantially as set forth.

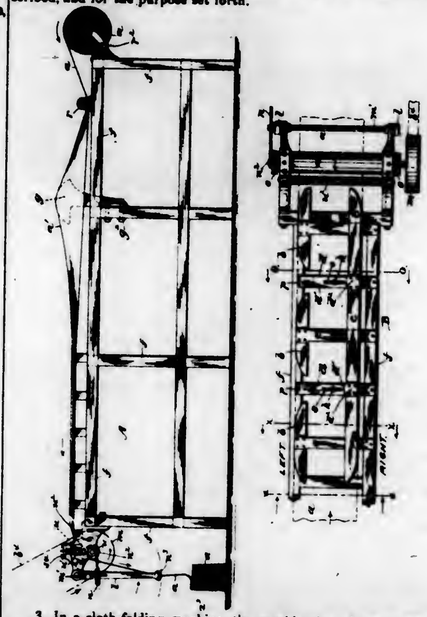
2. In a leather-tanning vat, the combination of the plank partitions *a* and the frame *b*, dropped a short distance below the top of said partitions and inclined as described, with the supporting-plank *c*, secured to said frame *b* at the opposite side from the planking *a*, the board *d*, secured just inside of said plank and notched out at its upper edge to form openings *e*, and cover *f*, substantially as and for the purpose set forth.

483,735. MACHINE FOR MULTIPLE-FOLDING WIDE FABRICS. JEROME B. CLARK, Allendale, assignor to the Allendale Company, Providence, R. I. Filed June 23, 1891. Serial No. 397,110. (No model.)

Brief.—The invention comprises a folder plate or saddle arranged to fold the cloth longitudinally and a series of oppositely-mounted secondary folder-plates arranged to receive the once-folded fabric and fold the same into a four-ply or twice-folded form.

Claim.—1. The combination of an initial guide or folder with oppositely-arranged secondary guides *b c* and fixed arms having said secondary guides secured to the free ends thereof, substantially as described.

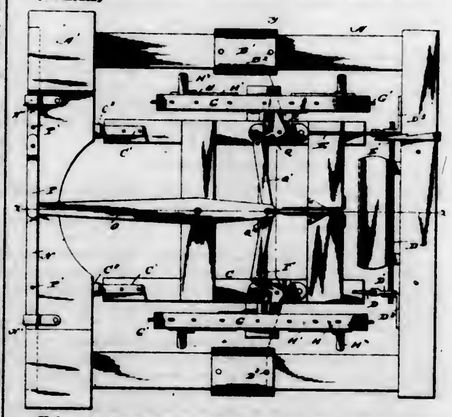
2. The combination, with a device for initially or first folding a web of fabric longitudinally, of oppositely-located secondary folder-guides *b c*, arranged parallel with each other and lengthwise of the web, and arms or supports carrying said secondary guides, fixed to one side of the machine, and suitably mounted and actuated rolls for drawing the fabric through the machine, substantially as hereinbefore described, and for the purpose set forth.



3. In a cloth-folding machine, the combination of one or more guides *b*, an oppositely-located guide or guides *c*, and bent or reflexed arms having said guides *c* adjustably secured thereto, said guides and arms being arranged to receive a web of folded cloth endwise and refold it, substantially as described.

4. In a cloth-folding machine, a series of oppositely-arranged stationary folder-guides having their outer edges adapted to engage the folds of the traveling fabric, and arms having said guides secured thereto, said arms being attached to one side of the machine, substantially as described.

483,736. CORN-PLANTER. JACOB R. COX, Clayton, assignor, by direct and mesne assignments, of three-fourths to James Allen Downard, Danville, Ind., and John Vestal Hadley, Enoch George Hogate, Joel Taylor Barker, and David Hadley. Filed May 16, 1892. Serial No. 433,177. (No model.)

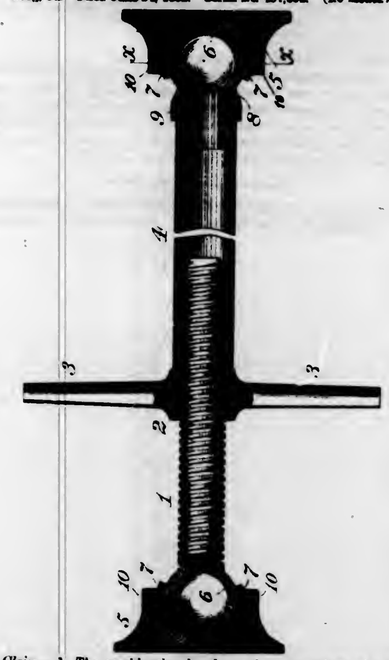


Claim.—1. In a corn-planter, the combination of a main frame, hangers B', adjustably connected to and extending on opposite sides of the side members of said frame, carrying-wheels mounted on axles

journaled in said hangers, hoppers carried by the main frame and communicating with planting-tubes thereon, an auxiliary or supplemental frame arranged within and connected to the main frame, operating-wheels mounted on an axle journaled in the supplemental frame, an operating-lever fulcrumed on the supplemental frame and connected with a feed-slide arranged in the hoppers, bell-crank levers fulcrumed on the supplemental frame and connected with the operating-lever, and fingers carried by the operating-wheels and adapted to contact with the free arms of the bell-crank-levers as said wheels are rotated, substantially as described.

2. In a corn-planter, the combination, with operating-wheels, of the blocks I, having their ends bifurcated and adapted to receive adjacent spokes on the wheel, and marking-arms adjustably connected to said blocks, substantially as described.

483,737. BRACE FOR EXCAVATIONS. WILLIAM T. DUNN, Pittsburg, Pa. Filed June 24, 1892. Serial No. 437,892. (No model.)



Claim.—1. The combination, in a brace for excavations, of a ball or male joint member provided with a lateral extension having an inwardly tapered or inclined annular socket, a sleeve fitting at one end in said socket, a nut secured to the opposite end of said sleeve, and a threaded stem engaging said nut, substantially as set forth.

2. The combination, in a brace for excavations, of a socketed shoe having a series of inwardly curved or bent lips or projections on the periphery of its socket, a protecting-flange inclosing said lips, and a ball or curved-face male joint member fitting said socket and held therein by said lips or projections, substantially as set forth.

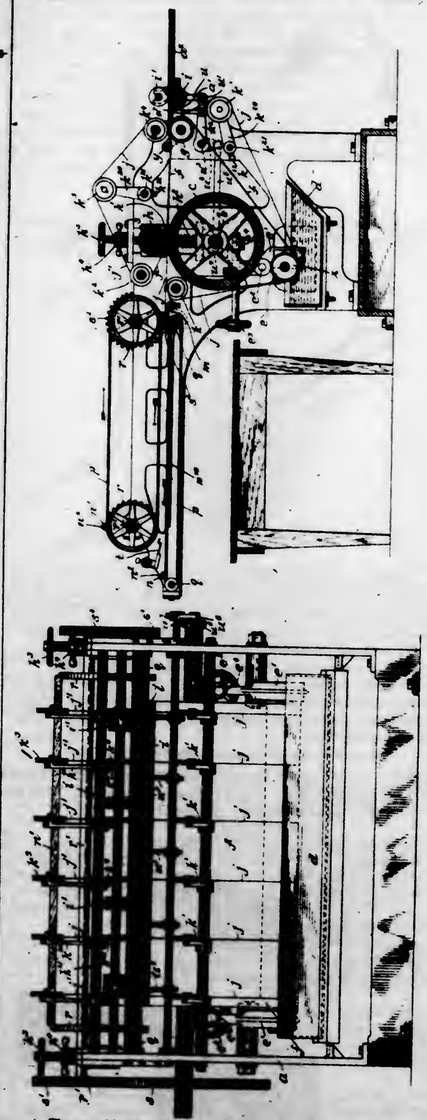
3. The combination, in a brace for excavations, of an oblong or spheroidal ball or continuously-curved-face male joint member and a shoe having a recess adapted to fit said ball, substantially as set forth.

483,738. PAPER-DAMPENING MACHINE. EDMOND T. FISHER, Boston, Mass., assignor of one-third to Fred K. Parker, same place. Filed Feb. 23, 1892. Serial No. 422,942. (No model.)

Claim.—1. In a paper dampening machine, the combination of an endless band or apron, a cylinder and guide-rolls supporting the same, means for wetting said band, a squeezing-roll arranged to cooperate with said cylinder in expressing water from a sheet of material carried by said band, two series of endless cords, and guides or supports therefor, the lower series being arranged to bear on the under side of said sheet and to guide the sheet away from the periphery of the cylinder, while the upper series is arranged to bear on the upper side of the sheet and to guide the sheet away from the periphery of the squeezing-roll, as set forth.

2. In a paper-dampening machine, the combination of an endless band or apron, a cylinder and guide-rolls supporting the same, means for wetting said band, a squeezing-roll arranged to co-operate with said cylinder in expressing water from a sheet of material carried by said band, two series of endless cords, and guides or supports therefor, and means for independently adjusting the tension of said cords, as set forth.

3. The combination of the endless band, pressure-rolls between which said band passes, the upper and lower series of cords arranged to pass, with the band, between said rolls, guides which cause the two series of cords to diverge in passing from said rolls, and fixed shoes or guides to which a sheet is guided or delivered by the lower cords, as set forth.



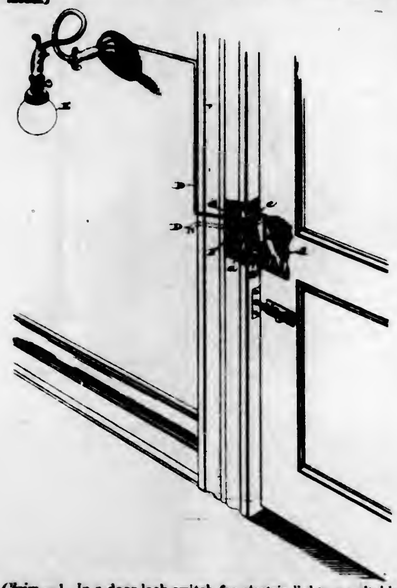
4. The combination of the endless band, pressure-rolls between which said band passes, the upper and lower series of cords arranged to pass, with the band, between said rolls, guides which cause the two series of cords to diverge in passing from said rolls, fixed shoes or guides to which a sheet is guided or delivered by the lower cords, traveling

jaws arranged to grasp and carry forward the sheets delivered to said fixed guides, and means for operating said jaws, as set forth.

5. The combination, with the paper dampening and delivering mechanism, including the cords *j j'*, of the traveling sheet-grasping jaws, and the stop-fingers adapted to arrest the sheets at a point where they are released by said jaws, as set forth.

6. The combination, with the endless band, its supporting-rolls, and the cords *j j'*, of the roll *y*, arranged to deflect a portion of the band, as set forth.

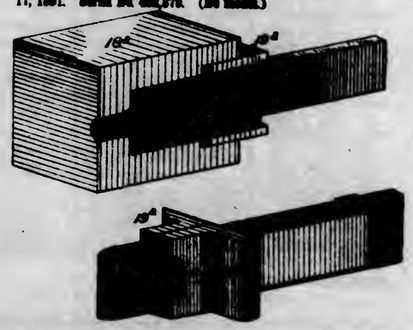
488,739. DOOR-LOCK SWITCH FOR ELECTRIC LIGHTS. CHARLES GREEN, Toronto, Canada. Filed Apr. 8, 1892. Serial No. 428,236. (No model.)



Claim.—1. In a door-lock switch for electric lights, a switching-piece pivoted in the keeper and having one end located between the conducting-wires and held normally out of contact therewith and the other end adapted to be operated by the bolt of the lock to close the circuit, substantially as described.

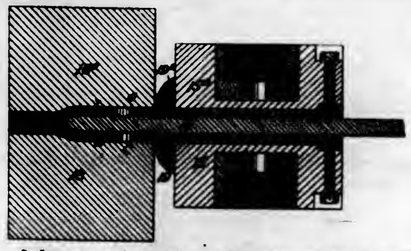
2. The combination, with the bolt B, of the lock A and the switch C, having the wedged or V-shaped portion *c* and provided with the spring *a* and designed to come in contact with the plates F and G, so as to complete or break the circuit through the wires D, as and for the purpose specified.

488,740. ART OF AND MACHINES FOR MANUFACTURING JAWS FOR COUPLING-RODS. JAMES T. HARRAY, Pittsburg, Pa. Filed Aug. 17, 1891. Serial No. 402,570. (No model.)



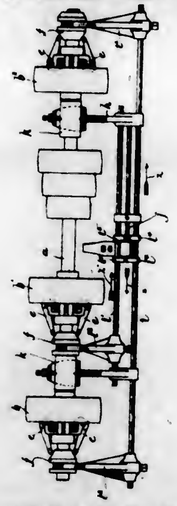
Claim.—1. As an improvement in the art of manufacturing jaws for coupling-rods, the method herein described, consisting in splitting the end of the rod and then simultaneously upsetting and shaping the divided portions, again splitting, upsetting, and shaping the divided ends, and continuing the splitting, upsetting, and shaping operations until the jaws are completed, substantially as set forth.

2. In a machine for manufacturing jaws for coupling-rods, the combination of dies provided with suitable matrices and a knife operating between said dies, whereby a rod held between the dies is split and the divided ends pressed laterally into the matrices of the dies, substantially as set forth.



3. In a machine for manufacturing jaws for coupling-rods, the combination of dies provided with suitable matrices and adapted to grasp the rod to be operated on, a knife operating between said dies to split the end of the rod and press the divided ends into the matrices of said dies, and dies operating alongside of the knife to upset the ends of the divided portions of the rod, substantially as set forth.

488,741. CLUTCH-OPERATING MECHANISM. JAMES HARTNESS, Springfield, Vt. Filed Feb. 15, 1892. Serial No. 421,517. (No model.)



Claim.—1. The combination, with a shaft having a plurality of loose pulleys and pulley-engaging clutch members, of a plurality of shipper-rods arranged in different planes or lateral positions, connections between said rods and the clutch members, whereby the clutch members are made operative when the rods are moved endwise, the arrangement being such that a movement of one rod in one direction will operate a clutch member connected therewith, while a movement of another rod in the opposite direction will operate a clutch member connected with the last-mentioned rod, and a shipper-lever adapted to oscillate in different planes, whereby said lever may be engaged with and move either rod independently, as set forth.

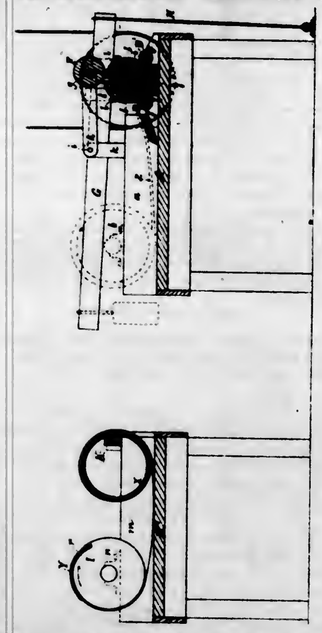
2. The combination of a counter-shaft having a plurality of loose pulleys and pulley-engaging clutch members, two shipper-rods movable lengthwise parallel with the shaft, connections between one of said rods and a clutch member on the shaft, arranged to make the clutch member operative by a movement of said rod in one direction, connections between the other rod and another clutch member, arranged to make the last-mentioned clutch member operative by a movement of the rod in the opposite direction, a shipper-lever adapted to assume either of two operative positions and to engage and move either rod, and means for preventing the rod-operating movement of said lever when it is in an intermediate position, as set forth.

3. The combination of a counter-shaft having a plurality of loose pulleys and pulley-engaging clutch members, the latter being affixed to the shaft, the levers pivoted to the clutch members and adapted to move the pulleys into engagement with the clutch members, the conical collars on the shaft, adapted to actuate said levers, the two shipper-rods movable parallel with the shaft and provided with shipper-arms engaged with said collars, and the shipper-lever adapted to engage and move either rod, as set forth.

4. The combination of a counter-shaft having a plurality of loose pulleys and pulley-engaging clutches, a plurality of independently-movable shipper-rods, each connected with one or more of said clutches, and a shipper lever adapted to be engaged with and move either rod, as set forth.

5. The combination of a counter-shaft having a plurality of loose pulleys and pulley-engaging clutch members, a plurality of independently-movable shipper-rods, each connected with one or more of said clutch members, a shipper-lever adapted to be operated in different positions, as described, and means for preventing the movement of said lever from one position to another, excepting when the shipper-rod last operated is in an inoperative position, as set forth.

488,742. MACHINE FOR MAKING HOLLOW CYLINDERS OF STRIPS OF SHEET MATERIAL AND THE PROCESS THEREOF. JAMES MACFARLANE, Malden, Mass. Filed Oct. 14, 1890. Renewed Aug. 27, 1891. Again renewed Mar. 7, 1892. Serial No. 424,092. (No model.)



Claim.—1. A machine, substantially as described, for winding a strip composed of a series of strips of fibrous sheet material to form a hollow cylinder, said machine consisting of a bench or table, a mandrel-shaft, a grooved cylindrical mandrel applied to the latter, shields and rods applied to the mandrel and grooves, friction-rolls D D', a concave bed between them, a pressure-roll, and levers G G', adapted to force the strip while winding on the mandrel into contact with the friction-rolls and bed, all arranged to operate essentially as represented and explained.

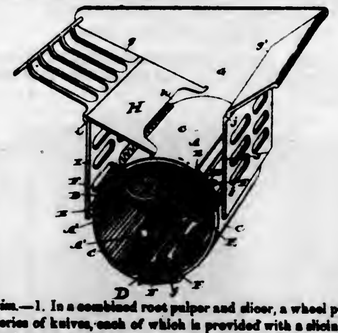
2. A machine for winding a strip composed of a series of strips of fibrous sheet material to form a hollow cylinder, said machine consisting of a bench or table, a mandrel-shaft, a grooved cylindrical mandrel supported on and fixed to said shaft, the friction-rollers D D', a concave bed between said rollers, a pressure-roll F, levers G G', adapted to force the mandrel toward the friction-rollers and bed, and a cylinder for supporting the compound strip while being wound on the mandrel, essentially as set forth and represented.

3. In a machine for winding a strip composed of a series of strips of fibrous sheet material, a cylindrical mandrel having its periphery grooved longitudinally, a shaft upon which the same is mounted, the curved shields around the periphery of the mandrel, rods fitted in the grooves of the mandrel, and the half-rings connected with the rods, resting against the end of the cylinder to remove the cylinder from the mandrel, substantially as herein described.

4. A mandrel consisting of a grooved and cylindrical body and one or more series of lags, the first series being secured to the mandrel and each succeeding series to that series on which it is placed and fixed, the outer curved surface of said lags in cross-section being somewhat less than a quarter of a circle, in combination with rods extending longitudinally through the body, substantially as and for the purpose explained.

5. The process of preparing and arranging a strip composed of a series of strips of any fibrous sheet material to form a hollow cylinder, substantially as described, consisting in first subjecting each strip of the series to a bath of liquid asphaltum, next drying the same, next arranging a sufficient number of said strips edge to edge until their combined width shall be equal to the required length of the cylinder, next applying and securing to said series another series of strips arranged edge to edge, the grain of the one series crossing that of the other series, next subjecting the compound strip to a bath of hot water to render it pliable, next winding said compound strip on a mandrel, waterproof cement being applied to those parts of the surface of said strip that come in contact while winding, next drawing said cylinder off the mandrel when wound, as explained, and coating the said cylinder inside and outside with waterproof cement, pulverized mica, and asbestos, essentially as set forth.

488,743. ROOT-CUTTER. DAVID MAXWELL, St. Marys, Canada, assignor to David Maxwell & Sons, same place. Filed May 5, 1892. Serial No. 431,998. (No model.)



Claim.—1. In a combined root pulper and slicer, a wheel provided with a series of knives, each of which is provided with a slicing and a pulping edge, the knives being supported over elongated openings made in the working surface of the wheel and the slicing and pulping edges being contiguous and slightly above the side edges of the openings, as and for the purpose specified.

2. The wheel A, having a series of knives B, V-shaped in cross-section, each of which is provided with a slicing-edge *b* and a toothed pulping-edge *b'* and is supported over openings D by the end bridges E, to which the knife is secured by the bolts *f*, as and for the purpose specified.

3. The wheel A, having a series of knives B, V-shaped in cross-section, each of which is provided with a slicing-edge *b* and a toothed pulping-edge *b'*, supported over opening D by the end bridges E, to which the knife is secured by the bolts *f*, and is provided with a stiffening-back F, as and for the purpose specified.

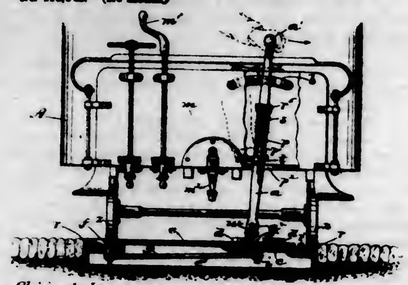
4. The combination, with the wheel A, having a series of knives V-shaped in cross-section, each of which is provided with a slicing and a pulping edge *b* and *b'*, supported on bridges E over the openings D, of the hopper G and grated sides I and J, as and for the purpose specified.

5. The combination, with the wheel A, having a series of knives V-shaped in cross-section, each of which is provided with a slicing and a pulping edge *b* and *b'*, supported on bridges E over an opening D, of the hopper G, grated sides I and J, and the guiding-plate H, arranged as and for the purpose specified.

6. The combination, with a wheel A, having a series of knives V-shaped in cross-section, each of which is provided with a slicing and a pulping edge *b* and *b'*, supported on bridges E over an opening D, of the hopper G, grated sides I and J, and the guiding-plate H, cut away at A, as and for the purpose specified.

7. The combination, with the wheel A, having a series of knives V-shaped in cross-section, with slicing and pulping edges *b* and *b'*, supported on bridges E over the openings D, of the central web or arms A, secured to the shaft A' and having an outer end of the arms extending behind the portion C of the wheel, as and for the purpose specified.

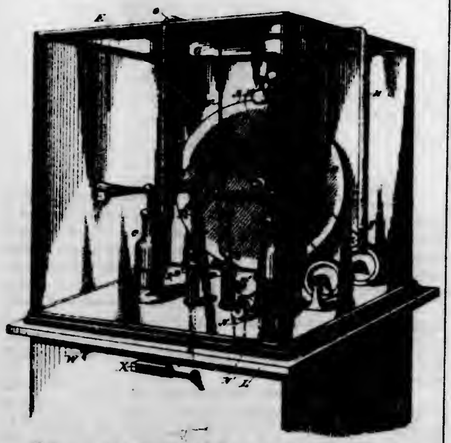
483,744. SWITCH ATTACHMENT FOR CARS. WM. H. HEAGREN and ALBERT HOWARTH, Providence, R. I. Filed Jan. 20, 1892. Serial No. 418,648. (No model.)



Claim.—1. In a tramway-switch-operating mechanism, a lever loosely attached to a fixed part of a car and free to play vertically within fixed limits and carrying a yielding block near its upper end, a guide-wheel carried by the lower end of the lever, and a spring-actuated-treadle attachment on said lever, as set forth.

2. In a tramway-switch-operating mechanism, a vibrating lever loosely mounted on a car and free to play vertically within fixed limits, a guide-wheel carried by the lower end of the lever, a spring-actuated treadle attachment on the lever, and a guide-quadrant having stops at the ends, and a rubber block on the lever and engaging the under side of the said quadrant, as and for the purpose specified.

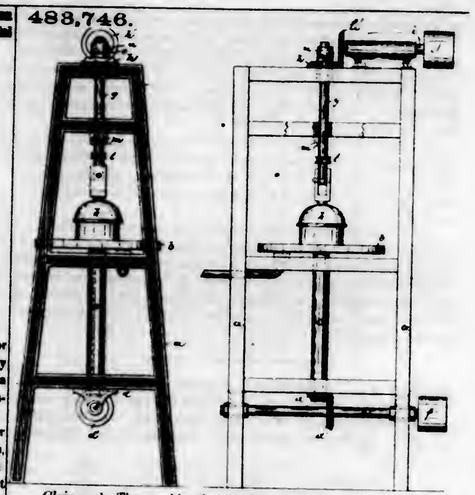
483,745. ELECTRO-THERAPEUTICAL INSTRUMENT. JAMES W. MOLIÈRE, San Francisco, Cal. Filed Sept. 14, 1891. Serial No. 405,692. (No model.)



Claim.—1. An apparatus for the simultaneous application of an electrical current and the inhalation of ozonized air, consisting of an electrical machine inclosed in an air-tight insulated casing, an inlet-passage and an air-forcing device whereby air is delivered into the case, an outlet-passage and a flexible non-conducting pipe and mouthpiece exterior thereto, and a conductor leading from the dischargers of the machine through the interior of the inhalation-tube and terminating within the non-conducting mouthpiece, substantially as herein described.

2. An electric machine, an air-tight insulated inclosing case within which it is contained, an air-blast apparatus connecting with an inlet-opening, through which air is forced into the case, an outlet-passage, and a main non-conducting tube and mouthpiece, a conductor leading from the dischargers of the apparatus through said tube into the mouthpiece, and a supplemental tube and mouthpiece connecting with the discharge-opening, said supplemental tube having no electrical conductor within it, and a stopper or plug adapted to be fitted in either of said tubes to close the same and prevent the exit of ozone from the tube containing said stopper or plug, substantially as herein described.

483,746. HAT-BRIM-IRONING MACHINE. WILLIAM J. MCGALL, West Orange, N. J. Filed Feb. 11, 1892. Serial No. 421,093. (No model.)

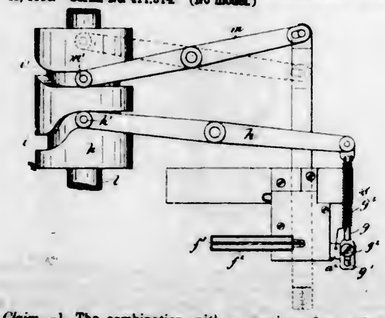


Claim.—1. The combination, with a rotary ironing-disk, of a hat-block and a rotary concave clamp arranged above said disk and adapted to grasp the hat-body upon the said hat-block and cause the same to revolve upon the ironing-disk, substantially as set forth.

2. The combination, with a rotary ironing-disk, of a rotary shaft arranged above the center of said disk, a clamp to engage the hat-block and secured to said shaft to revolve therewith and movable to and from the said disk, and a hat-block adapted to receive the body of the hat and admit of the brim of said hat lying on said disk, substantially as set forth.

3. In a hat-brim-ironing machine, the combination, with a rotary ironing-disk, of an elastic hat-body clamp disposed above the center of the said ironing-disk and revoluble at a rate of speed slower than that of said disk, but in the same direction, substantially as and for the purposes set forth.

483,747. TACK-DRIVING MACHINE. ERUS PATTEN, Lynn, Mass., assignor to the Lynn Lasting Machine Company, same place. Filed Nov. 13, 1891. Serial No. 411,814. (No model.)



Claim.—1. The combination, with gaging-jaws for receiving a tack and a cut-off for preventing the entrance of tacks between the jaws while the latter are separated, of means for opening the jaws and moving the cut-off, a carrier located beneath the jaws and receiving the tack or nail when dropped from the open jaws and also holding the tack until driven, and means for moving the carrier to present the tack held thereby in position for being driven, substantially as described.

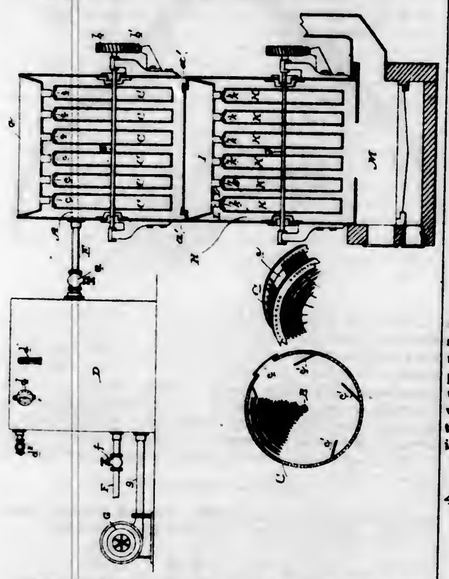
2. The combination, with a gaging-jaw mounted to partially rotate and means for moving the same, of an opposing gaging-jaw abutting against the side of the jaw first mentioned and a spring for causing the same to close against the partially-rotatable jaw, substantially as described.

3. The combination, with a gaging-jaw mounted to partially rotate, a cut-off carried thereby and moving therewith, and means for moving the said gaging-jaw and cut-off, of an opposing jaw abutting against the side of the jaw first mentioned and a spring for causing the same to close against the partially-rotatable jaw, substantially as described.

4. The combination, with a cut-off mounted to partially rotate, of an arm rigidly connected therewith, a rod having a sliding connection with the said arm, a spring connecting the arm and rod, and means for moving the rod to actuate the cut-off, substantially as described.

5. The combination, with the partially-rotatable gaging-jaw, a cut-off carried thereby and moving therewith, an opposing movable gaging-jaw, a spring for causing the said movable jaw to bear against the partially-rotatable jaw, and means for operating the partially-rotatable jaw and cut-off, embracing a yielding connection, of a carrier provided with spring-pressed jaws having between them a receiving-opening and means for actuating the carrier, substantially as described.

483,748. APPARATUS FOR MAKING MALT. WILLIAM A. PETERS, of San Francisco, Cal. Filed Aug. 28, 1891. Serial No. 404,016. (No model.)



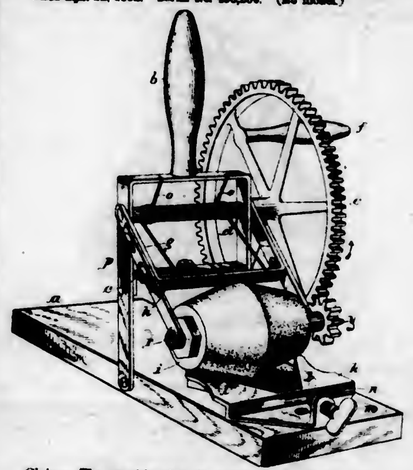
Claim.—1. In an apparatus for making malt, a chamber or casing having a shaft passing transversely through it, the foraminous or open-work cylinders placed side by side on said shaft and having inlet-doors and stirring flanges or plates, means for rotating said shaft and cylinders, a vessel containing moisture-laden air, having a valve-controlled pipe leading to the chamber or casing, and means for forcing said air into the casing, substantially as herein described.

2. In an apparatus for making malt, the combination, with a chamber or casing having a series of revolving foraminous cylinders placed side by side in its upper portion for receiving and agitating the steeped barley and means for supplying moisture-laden air to said upper portion of the casing, of a shaft passing transversely through the lower portion of the casing or chamber, a series of foraminous cylinders placed side by side on said shaft, means for rotating the shaft, and a drying-kiln communicating with the lower cylinders, substantially as herein described.

3. An apparatus for making malt, consisting of a casing or chamber, a shaft passing transversely through the upper portion of the same, a series of foraminous or open-work rotating cylinders placed side by side on said shaft and adapted to receive the steeped barley, the regulating-vessel D, connected with a source of steam-supply and with the casing or chamber, a fan-blower connected with said vessel for forcing moisture laden air into the chamber or casing, a drying-kiln communicating with the lower portion of the casing or chamber, and a second shaft passing transversely through said lower portion of the casing or chamber, having a series of open-work cylinders in said kiln for receiving the barley from the upper cylinders, substantially as herein described.

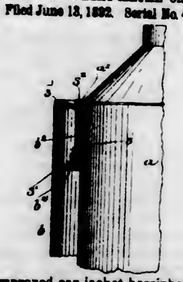
4. An apparatus for making malt, comprising a casing or chamber, shafts passing transversely through the upper and lower portions thereof and provided with foraminous cylinders placed side by side, means for rotating said shafts, inlet doors and stirring-flanges in said cylinders, hoppers having spouts adapted to discharge into said doors, means for forcing moisture-laden air into the upper portion of the casing or chamber, and a kiln in the lower portion of said casing and in which the series of cylinders are located, substantially as herein described.

483,749. GRINDING-MACHINE. JOHN ROGERS, Elkhart, Ind. Filed Apr. 22, 1892. Serial No. 430,206. (No model.)



Claim.—The combination in a grinding-machine, of a base, a main frame pivoted directly thereon, a shaft journaled in said frame, said shaft carrying a power-wheel, a secondary frame pivoted to said main frame, said secondary frame carrying a grind-wheel having a pinion on one end of its shaft, which meshes with said power-wheel, whereby motion is transmitted from the power-wheel to the grind-wheel, and springs coiled around said shaft, their ends bearing against the main and secondary frames, respectively, whereby the grind-wheel is kept in position, substantially as described.

483,750. JACKET FOR SHEET-METAL CANS. ISAAC SEXTON, Somerville, Mass. Filed June 13, 1892. Serial No. 436,441. (No model.)



Claim.—1. The improved can-jacket hereinbefore described, the same consisting of the sheet-metal body doubled at its upper portion, said doubled portion being bent to form an inwardly and downwardly projecting flange composed of two thicknesses, a part of the doubled portion bearing as a brace against the inner surface of the body of the jacket, as set forth.

2. The combination of a can-jacket having an inwardly and downwardly projecting flange at its upper end, a can formed to enter the space surrounded by said flange and provided with a flange a^2, projecting outwardly over the inwardly-turned portion of the flange on the jacket, and a strip s, having at one end a hook s', engaged with the flange on the jacket, and at its other end a hook s^2, engaged with the flange of the can, as set forth.

483,751. BOX-SUPPORTER. WALTON D. SMITH, Prophetstown, Ill., assignor of one-half to John S. Hunter, same place. Filed Apr. 14, 1892. Serial No. 429,142. (No model.)

Claim.—1. As an improved article of manufacture, a box supporter or prop having legs with a serrated portion at the upper part thereof, substantially as described.

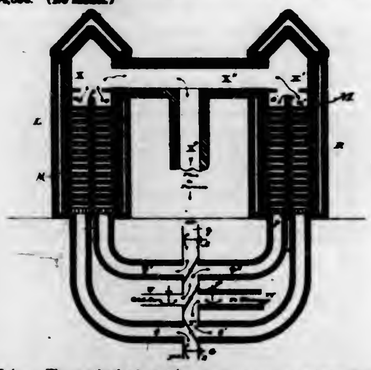
2. In a box support or prop, the combination of two legs connected by flexible webs or strips and a metallic plate connected to the

upper end of one of said legs and having serrations, substantially as described.

2. In a box support or prop, the combination of two legs connected by flexible webs or strips at the bottom and top portions thereof and a metallic plate embracing the upper end of one of said legs, substantially as described.

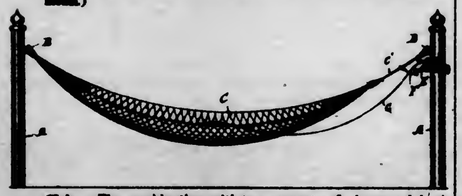
4. A box support or prop consisting of legs flexibly connected together and having serrations or teeth at the top, as set forth.

488,752. METHOD OF WORKING HEAT-REGENERATORS. JAMES T. WAINWRIGHT, Pittsburg, Pa. Filed Aug. 28, 1888. Serial No. 284,096. (No model.)



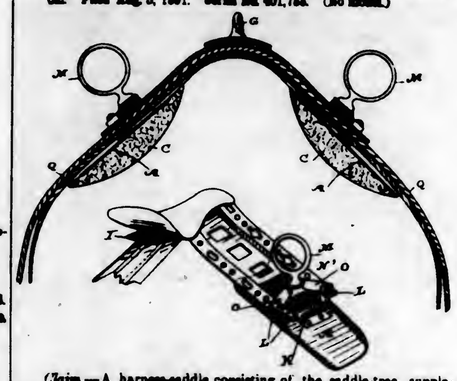
Claim.—The method of working regenerators, consisting in heating a single surface regenerator by passing products of combustion therethrough, then reversing the current and passing a gas in an opposite direction therethrough, passing through a second preheated regenerator or set of regenerators another gas or gases capable of producing combustion when united therewith, uniting these gases and passing the mixture through a third regenerator or set of regenerators, and reversing the currents through the second and third regenerators while they continue in the same direction through the first regenerator, substantially as and for the purposes described.

488,758. HAMMOCK-SWINGING APPARATUS. CHRISTIAN WAGNER, Bridgewater, Mass. Filed Oct. 3, 1891. Serial No. 406,813. (No model.)



Claim.—The combination, with two supports, of a hammock horizontally suspended therefrom, the connection between the hammock and the supports being such that the hammock can have a lateral and vertical movement relatively to the supports, a bracket secured to one of the supports and projecting laterally therefrom relatively to the hammock, a bell-crank lever pivotally secured at its angle to the outer end of the bracket, with its arms movable in a horizontal plane, one arm of the lever projecting toward the center of the hammock and the other arm projecting substantially toward the support, a cord secured to the outer end of the first-mentioned arm and connecting with the hammock near the support, and another cord secured to the outer end of the other arm and extending to the central portion of the hammock and adapted to be drawn longitudinally by the occupant, said cords crossing each other near the support, substantially as set forth.

488,754. HARNESS-SADDLE PAD. RUSSELL WHITMAN, Oakland, Cal. Filed Aug. 5, 1891. Serial No. 401,783. (No model.)



Claim.—A harness-saddle consisting of the saddle-tree, supplemental pad-plates having upturned edges and pads secured to them, and a flexible continuous connection between the plates, bridges attached to the backs of said plates, and shafts extending transversely across beneath said bridges, exterior transverse plates O, into which the terrets are secured, and screws or rivets passing through the ends of said plates and into the bridge-shafts beneath, whereby a space or passage is left between the screws or rivets beneath the exterior plates for the passage and free movement of the back-strap, substantially as herein described.

488,755. CORN-HARVESTER. GEORGE M. WOODRUFF, Colony, Kans. Filed Dec. 18, 1891. Serial No. 415,595. (No model.)

Claim.—1. In a harvester, a cutting apparatus consisting of a stationary knife supported obliquely by the framework, a finger pivoted at its rear end to the framework on a plane above the knife, and a set-screw for locking the finger in adjusted position, as and for the purpose set forth.

2. In a harvester, a cutting apparatus consisting of a stationary knife supported obliquely by the framework, a finger pivoted at its rear end to the framework on a plane above the knife, means for locking the finger in adjusted position, and a wheel pivoted to the finger and moving over the knife, as and for the purpose set forth.

3. In a harvester, the combination, with the main framework and the cutting apparatus thereon, of stub axles, each comprising a bar having an elbow in its body with a spindle at its outer end, a main wheel journaled on said spindle, and a divided clip on the framework for receiving the axle, and means for locking the clamping-sections of the clip upon the axle, as and for the purpose set forth.

4. In a harvester, the combination, with the main framework and the cutting apparatus thereon, of stub-axles, each comprising a bar polygonal in cross-section, an elbow at the outer end thereof, a spindle projecting outward from the elbow, a main wheel journaled on the spindle, and a two-part clip on the framework, having an octagonal interior detachably engaging said body, as and for the purpose set forth.

5. In a harvester, the combination, with the main framework and the cutting apparatus thereon, of stub axles, each comprising a bar of octagonal cross-section, an elbow at its outer end, a spindle projecting outward from the elbow, a supporting-wheel journaled on the spindle, and a two-part clip whose lower member is countersunk in the framework and whose upper member stands above, the recessed meeting faces of the members fitting closely on said octagonal body, a fish-plate below the platform, and bolts passing through the ends of the members, the platform, and the fish-plate, as and for the purpose set forth.

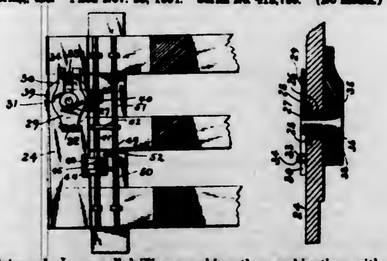
6. In a corn-harvester, the combination, with the main framework and cutting apparatus at the front corners thereof, of tables carried by and pivotally connected with said framework and retaining-shields normally standing above the rear edges of the tables, substantially as described.

7. In a corn-harvester, the combination, with a main framework and a cutting apparatus thereon, of a table comprising a circular bed centrally pivoted on the framework in rear of the cutting apparatus and a curved retaining-shield rising from the bed at its edge and open at one side, substantially as described.

8. In a corn-harvester, the combination, with a main framework and a cutting apparatus thereon, of a table comprising a circular bed centrally pivoted on the framework in rear of the cutting apparatus, a curved sheet-metal retaining-shield rising from the edge of the bed and open at one side to form a mouth, and a rope secured to the bed at one side of the mouth and leading across the mouth to the other side of the machine, as and for the purpose set forth.

9. In a corn-harvester, the combination, with the main framework and a cutting apparatus thereon, of a table comprising an approximately-circular bed centrally pivoted on the framework in rear of said apparatus, a solid sheet-metal retaining-shield rising from the bed, open at one side to form a mouth, and inclining to the rear at the opposite side, and means, substantially as described, for turning said table on its pivot, as and for the purpose set forth.

488,756. WELL-DRILLING MACHINE. GEORGE ZINK, Clear Spring, Md. Filed Nov. 23, 1891. Serial No. 412,780. (No model.)



Claim.—1. In a well-drilling machine, the combination, with a drill-rope and drill and means for raising and lowering the same, of a driving-shaft having a pulley thereon, a worm-shaft having screw-threads thereon, an arm engaging with said screw-shaft and engaging with pins on a shifting-bar, fast and loose pulleys on said shaft connected by means of crossed and straight belts with the pulley on the driving-shaft, and a transverse plate carrying a revolvable worm-wheel engaging with the worm-shaft, said wheel being provided with an angular

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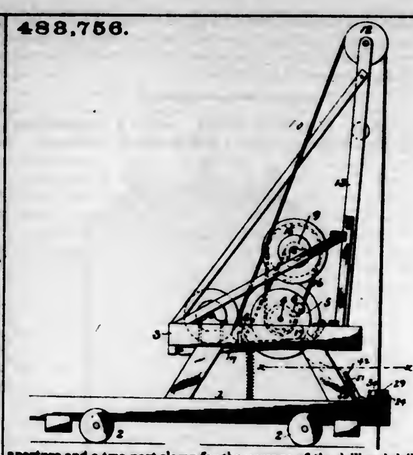


aperture and a two-part clamp for the passage of the drill and drill-rod, substantially as described.

2. In a well-drilling machine, the combination, with a driving-shaft having a pulley thereon, a worm-shaft having loose and fixed pulleys connected to said pulley by crossed and straight belts and provided with screw-threads and a gravity-arm, and a shifting-bar having pins engaging with said arm and pins engaging with the said belts, of a transverse plate having a worm-wheel engaging with said worm-shaft and having an angular opening therein and a rotatable hub having an angular periphery fitting within said opening and a central aperture and a two-part clamp for the passage of the drill and drill-rod, substantially as described.

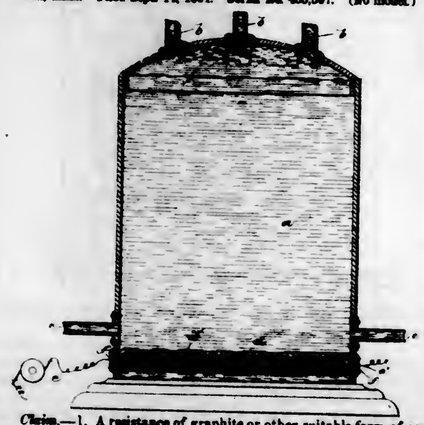
3. In a well-drilling machine, the combination, with the transverse plate having a recess on its upper side and a circular aperture, of a hub having an angular lower end and an annular flange at its upper end, a yoke for securing said hub in place, a worm-wheel having an angular recess in which said hub fits and an annular flange at its lower side fitting in an opening in a plate secured to the under side of said transverse plate, a screw-threaded worm-shaft, and means for rotating the same, substantially as described.

488,757. COMBINED PUMP AND DRIPPER FOR BARRELS. CHARLES B. ALLGOOD, Petersburg, Va. Filed June 8, 1892. Serial No. 436,068. (No model.)

Claim.—In a combined pump and dripper for barrels, the combination of a body having a door and a lower hopper-shaped extension with a funnel connected to the lower end thereof, a sieve or reticulated partition in the lower portion of said extension over the funnel, a tube centrally extending through the funnel and upward through the sieve

into the upper portion of the body, a removable rack below the upper end of said tube, and a pump barrel with a suitable piston and piston-rod therein removably mounted in said tube and supported in position by the latter, substantially as described.

483,758. ELECTRICAL HEATER. ARTHUR E. APPLEYARD, Boston, Mass. Filed Sept. 14, 1891. Serial No. 405,597. (No model.)



Claim.—1. A resistance of graphite or other suitable form of carbon, having wires connected to its ends, and an externally-exposed homogeneous waterproof insulating-covering inclosing the sides and ends thereof, substantially as described.

2. The combination, with the carbon *d*, of the plates d^2 at the ends thereof, wires *e e'*, connected with said plates, and an externally-exposed homogeneous waterproof insulating material inclosing the said carbon and plates and a portion of the wires, substantially as described.

3. An electric heater composed of a solid and rigid resistance-rod having an externally-exposed coating of waterproof vitreous material, said coating entirely inclosing the rod, substantially as described.

483,759. ELECTRICAL HEATER. ARTHUR E. APPLEYARD, Boston, Mass. Filed Dec. 28, 1891. Serial No. 416,303. (No model.)

Claim.—1. An electrical heating apparatus comprising in its construction a water-tight casing and a resistance consisting of a strip of flat or ribbon form contained in said casing and insulated therefrom, the sides of the strip being presented to the walls of the casing, as set forth.

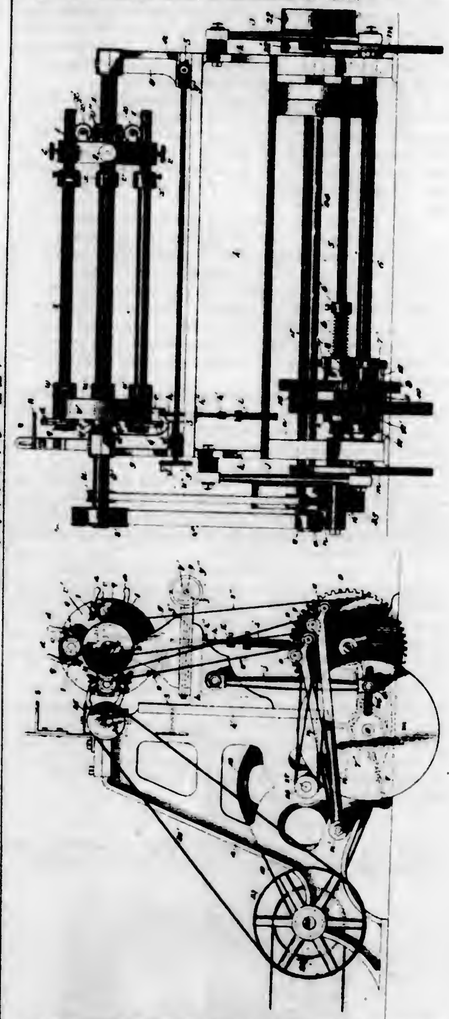
2. An electrical heating apparatus comprising in its construction a water-tight casing lined with insulating material not affected by heat and an electrical resistance composed of a flat or ribbon-like strip within said casing and in direct contact with said insulating material, the sides of the strip being presented to the insulating material, as set forth.

3. An electrical heating apparatus comprising a water-tight casing lined with insulating material and a resistance composed of ribbon-wire placed within the casing and having its flat sides in contact with or presented to the insulating lining, as set forth.

483,760. WOOD-TURNING MACHINE. MONROE A. BENNETT and VITUS V. HAIDACHER, Wilkes-Barre, Pa. Filed Sept. 30, 1891. Serial No. 407,266. (No model.)

Claim.—1. A rotating shaft, a drum fixed thereon and having chucks, and cutters, in combination with a second drum having a hub adjustable longitudinally on said shaft, chucks having toothed shanks passing outwardly through this drum at points to support the chucks in alignment with those in the other drum, set-screws through the movable drum, bearing on said shanks, and gear-wheels journaled in brackets at the rear side of the drum adjacent each shank and engaging the teeth thereof, the shaft of said wheel being squared, as and for the purpose set forth.

2. A vertically-moving standard, a chuck journaled for rotation and carried thereby, and a notched disk connected with said chuck, in combination with a spring-actuated latch normally engaging a notch in said disk and stops by which the engaging latch is tripped as the standard moves, substantially in the manner set forth.



3. A vertically-moving standard, a chuck journaled for rotation and carried thereby, and a notched disk connected with said chuck, in combination with a spring-actuated latch which normally engages a notch in said disk, stops by which the engaging latch is tripped as the standard moves, and means for automatically turning the chuck in its bearings when said latch is tripped, substantially in the manner set forth.

4. A vertically-moving standard, a chuck journaled for rotation and carried thereby, and a notched disk connected with said chuck, in combination with a spring-actuated latch which normally engages a notch in said disk, stops by which the engaging latch is tripped as the standard moves, a pulley journaled in the standard and connected by gearing with said chuck, a belt leading from said pulley, bent at an angle, and passing around a driving-pulley, and a belt-tightener in said angle, substantially as described.

5. A vertically-moving standard, a chuck journaled for rotation and carried thereby, latches preventing such rotation, and means for tripping the latches at certain times, in combination with a pulley connected with said chuck, a belt leading downwardly from said pulley, bent at an angle, and extending laterally to and around a driving-pulley, and a weighted belt-tightener mounted at one end on a pivot and having rollers at its other end resting in the angles of said belt, substantially as described.

6. A rotating disk having a radial slot, a crank-pin adjustable therein, a vertically-movable bracket, a rod pivotally connecting said bracket and pin, and a standard adjustable laterally on the bracket, in combination with a chuck journaled for rotation and carried by the standard, a pulley connected with said chuck, a belt leading from said pulley, bent at an angle, and passing around a driving-pulley, and a belt-tightener in said angle, substantially as described.

7. A vertically-moving bracket, means for adjusting the length of the movement thereof, and a standard adjustable laterally on the bracket, in combination with a chuck journaled for rotation in said standard, a pulley connected with said chuck, a belt leading from said pulley, bent at an angle, and passing around a driving-pulley, and a belt-tightener in said angle, substantially as described.

8. A vertically-moving bracket, means for adjusting the length of the movement thereof, a standard adjustable laterally on said bracket, a chuck journaled for rotation therein, and means for producing such rotation, in combination with spring-actuated latches normally preventing said rotation and vertically-adjustable stops tripping a latch at each end of the movement of the bracket, substantially as described.

9. A vertically-moving standard, a chuck carried thereby and adapted for rotation, and a disk detachably connected to the shank of said chuck and having alternating notches in its periphery, in combination with latches pivoted above and below said disk and having inturned ends adapted to alternately engage said notches, springs bearing said ends into operative position, and stops adapted to trip said latches at the ends of the movements of said standard, as and for the purpose set forth.

10. In a wood-turning machine, a moving standard carrying chucks, a latch for each chuck, and devices for tripping the latch of any one of the chucks as the standard reaches the limit of its movement, substantially as specified.

11. In a woodworking-machine, a moving standard carrying brackets, chucks mounted on the brackets, a latch for each chuck, the rotary cutters, devices for adjusting the brackets laterally toward or away from the cutters, means for moving the standard carrying the chucks across the path of the cutters, said means being capable of adjustment to regulate the length of the stroke, and adjustable stops or tripping devices against which the latch of any one of the chucks is adapted to abut to trip the same, for the purpose set forth.

12. A vertically-moving standard, a drum journaled therein and having notches, a latch, a spring bearing the latch normally into engagement with one of the notches, and a rotating cam tripping said latch at predetermined intervals, in combination with a number of chucks journaled in said drum, a rotating cutter, means for rotating the chuck adjacent the cutter, a spring-actuated latch normally preventing the rotation of said chuck, and stops for tripping said latch at the extremities of the movements of said standard, substantially as described.

13. In a woodworking-machine, a moving standard carrying a drum provided with chucks, a latch for each chuck, devices for tripping the latch of any one of the chucks at the end of the limit of movement of the standard, means for rotating the drum, a latch to hold the drum inactive, and devices actuated by the operative gearing to trip the latch and release the drum, whereby the latter is permitted to be turned by the means for rotating the same, substantially as described.

14. A standard, a drum journaled therein and having notches in its periphery, a pulley on the shaft of said drum, a belt connecting said pulley with a driving-pulley, a latch normally preventing the rotation of the drum, and means for tripping said latch at predetermined intervals, in combination with a number of chucks journaled in said drum, a cutter, means for rotating the chuck adjacent the cutter, a latch normally preventing the rotation of this chuck, and means for tripping this latch at shorter intervals than those at which the drum-latch is tripped, as and for the purpose set forth.

15. A vertically-moving standard, a drum journaled therein, and means for giving the drum a partial rotation at predetermined intervals, in combination with a number of chucks journaled in the drum and having gears on their shanks, a shaft journaled in the standard and having a gear engaging that on the shank of the chuck at the rear of the drum, a pulley on said shaft, means for rotating said pulley, a latch normally preventing the rotation of said chuck, a stop for tripping said latch, and a rotating cutter at the rear of the drum, substantially as described.

16. A vertically-moving bracket, means for adjusting the length of the movements thereof, a standard on said bracket, and a drum journaled in the standard and having notches in its periphery, in combination with a latch centrally pivoted to the standard with one end in the path of said chuck, a rod pivoted to and depending from the other end, an adjustable sleeve extending beyond the lower end of said rod, and a rotating cam adapted to strike said sleeve, substantially as described.

17. A vertically-moving bracket, means for adjusting the length of the movements thereof, a standard on said bracket, a drum journaled in the standard and having notches in its periphery, a pulley on the shaft of said drum, a belt connecting this pulley with a driving-pulley, and a belt-tightener therefor, in combination with a latch normally engaging one of said notches, a rod depending from said latch, means for adjusting the length of the rod, and a rotating cam adapted to push said rod at predetermined intervals, as and for the purpose set forth.

18. A vertically-moving bracket, means for adjusting the length of the movements thereof, a standard on said bracket, a drum journaled in the standard and having notches in its periphery, a pulley on the shaft of said drum, a number of chucks journaled in said drum, a cutter, a shaft journaled in said standard and having a pulley, connections between said shaft and the chuck which stands adjacent said cutter, a lose belt connecting each of said pulleys with a source of power, and a belt-tightener for each belt, in combination with a latch normally engaging one of said notches, a rod depending from said latch, means for adjusting the length of the rod, and a rotating cam adapted to push said rod at predetermined intervals, as and for the purpose set forth.

19. A vertically-moving bracket, means for adjusting the length of the movements thereof, a standard on said bracket, a drum journaled in the standard and having notches in its periphery, a pulley on the shaft of said drum, a number of chucks journaled in the drum, a rotating cutter, a shaft journaled in said standard and having a pulley, connections between said shaft and the chuck which stands adjacent said cutter, latches normally preventing the rotation of this chuck, stops tripping said latches at the limits of the movement of said bracket, a loose belt connecting each of said pulleys with a source of power, and a belt-tightener for each belt, in combination with a latch normally engaging one of said notches, a rod depending from said latch, means for adjusting the length of the rod, and a rotating cam adapted to push said rod at predetermined intervals, as and for the purpose set forth.

20. In a wood-turning machine, the driving-shaft having a broad driving-gear, a crank-shaft having a clutch member fixed thereon, a vertically-movable standard connected with the crank of said shaft, a notched disk journaled in said standard and carrying the chuck, a latch adapted to engage one of said notches, and a rod depending therefrom, in combination with an idle-gear turning loosely on the crank-shaft and carrying a second clutch member, said gear meshing with the driving-gear and having a broad toothed hub with an integral grooved collar, a cam-shaft having a rotating cam engaging the lower end of said rod, a driven gear on this shaft meshing with said toothed hub and having a beveled cam, a spring-actuated sleeve engaged by said cam, and a lever pivoted at one end to this sleeve and at the other end to a fixed support and having a roller between its ends engaging said grooved collar, the whole operating substantially as described.

21. In a wood-turning machine, the driving-shaft having a broad driving-gear, a crank-shaft having a clutch member fixed thereon, a vertically-movable standard connected with the crank of said shaft, a notched disk journaled in said standard and carrying the chuck, a latch adapted to engage one of its notches, and a rod depending from the latch, in combination with an idle-gear turning loosely on the crank-shaft and carrying a second clutch member, said gear meshing with the driving-gear and having a broad toothed hub, a cam-shaft having a rotating cam engaging the lower end of said rod, a driven gear on this shaft meshing with said toothed hub, and means, substantially as described, for moving said hub longitudinally on the crank-shaft at predetermined intervals, the whole operating as set forth.

22. In a wood-turning machine, the driving-shaft having a broad driving-gear, a crank-shaft having a clutch member fixed thereon, a vertically-movable standard connected with the crank of said shaft, a notched disk journaled in said standard and carrying the chuck, and a latch adapted to engage one of its notches, in combination with an idle-gear turning loosely on the crank-shaft and carrying a second clutch member, intermittent tripping devices for said latch, the idle-gear constantly connecting said driving-gear with such devices, and means, substantially as described, for moving the idle-gear and its clutch member longitudinally on the crank-shaft at predetermined intervals, as and for the purpose set forth.

23. A driving-shaft journaled in a frame and having independent driving-pulleys, a crank-shaft connected with said driving-shaft, a vertically-movable bracket, a rod connecting this bracket with the crank of said shaft, and a laterally-movable standard on said bracket, in combination with a drum journaled in said standard and having a pulley on its shaft, a number of chucks journaled in the drum and each hav-

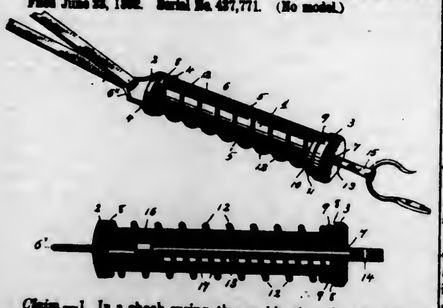
ing a gear on its shaft, a small shaft journaled in said standard and having a gear adapted to engage that on one chuck and a pulley on its other end, a loose belt connecting this pulley with one of said driving-pulleys, another loose belt connecting the drum-pulley with the other of said driving-pulleys, a projection on the frame, two weighted belt-tightener arms pivoted on said projection, and two rollers pivoted in the outer end of each arm and engaging one of said belts, as and for the purpose hereinbefore set forth.

483,761. CLOSED CONDUIT FOR ELECTRIC RAILWAYS. WILLIAM G. CREESEROS, Norwood Park, Ill. Filed Feb. 6, 1892. Serial No. 420,888. (No model.)

Claim.—1. A combined tube and rail provided with an angular slot for the passage of the traveling contact and a slot for the slot-closer and a depending flange between the two with a lug to limit the downward movement of the latter, as set forth.

2. The combination, with the combined tube and rail with angular slot and a longitudinal passage parallel with the upper vertical portion of the slot and a lug opposite the horizontal portion of said slot, of a vertically-movable jointed slot-closer arranged in said passage above said lug, substantially as specified.

483,762. CHECK-REIN-SPRING. IRA W. CRIPPEN, Ypsilanti, Mich. Filed June 23, 1892. Serial No. 437,771. (No model.)



Claim.—1. In a check-spring, the combination of a barrel or cylinder, a spring surrounding the same, a spring-actuated rod located in said barrel or cylinder and partially projecting therefrom, and a yoke embracing the said barrel or cylinder and controlled by the spring surrounding the same, substantially as described.

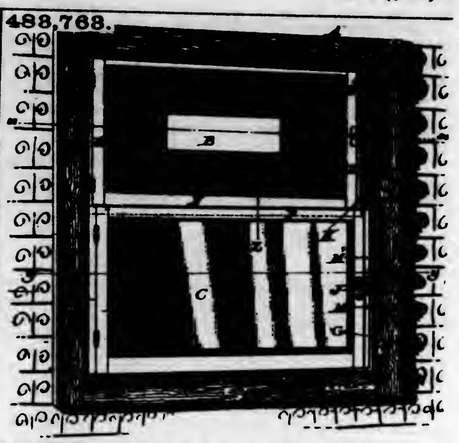
2. In a check-spring, the combination of a barrel or cylinder, a spring surrounding the same, a spring-actuated rod located in said barrel or cylinder and partially projecting therefrom, a ring mounted on said barrel, and a yoke engaging said ring, substantially as described.

3. In a check-spring, the combination of a barrel or cylinder, a spring surrounding the same, heads connected to said barrel or cylinder, one of which has eyes, a ring movably surrounding said barrel or cylinder, a yoke having legs embracing the barrel or cylinder, movably connected to said ring and having an engaging loop, a spring surrounding said barrel or cylinder between said ring and the front head, a spring-actuated rod movably located in the barrel or cylinder, and a strap connected to the rear end of said rod, substantially as described.

483,763. REVERSIBLE WINDOW-SASH. GOTTLIEB HAGNER, Philadelphia, Pa., assignor to Henry Hagner, same place. Filed Nov. 9, 1891. Serial No. 411,949. (No model.)

Claim.—A reversible window-sash consisting of upper and lower sashes, the upper sash being formed of outer and inner frames, the latter being hinged to one of the side stiles of the outer frame, and the lower sash consisting of side stiles and an inner frame hinged to one

483,768.



of said stiles, the meeting-rails of the inner frame of the lower sash and the outer frame of the upper sash having lapping flanges, said parts being combined substantially as described.

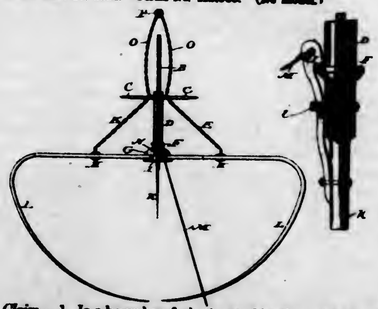
483,764. SHOE-LACE FASTENER. CLAUDE M. JOHNSON, Lexington, Ky. Filed Feb. 2, 1892. Serial No. 420,063. (No model.)

Claim.—1. A clip for holding the string of a boot, shoe, or other article, consisting of a base-plate provided with a longitudinal rib 4, the edge 5 of which is normally inclined downward in a direction from the outer to the inner end thereof, and a spring-tongue or finger 3, connected with the base-plate and acting to press a portion or portions of the string against the inclined edge of the longitudinal rib, substantially as described.

2. A clip for holding the string of a boot, shoe, or other article, consisting of a base plate 1, provided with a pair of longitudinal ribs 4, the edges 5 of which normally incline downward in a direction from the outer to the inner ends thereof, and a spring-tongue or finger 3, composed of an elastic strip of metal rigidly secured at one extremity to the base-plate and acting to press a portion or portions of the string against the inclined edges of the longitudinal ribs, substantially as described.

3. A clip for holding the string of a boot, shoe, or other article, consisting of a base-plate provided with a pair of longitudinal ribs 4 and an intermediate longitudinal ledge 9, the edge of each of which inclines downward in a direction from the outer to the inner end thereof, and a spring-tongue or finger-piece 3, connected with the base-plate and acting to press a portion or portions of the string against the inclined edges of the longitudinal ribs and ledge, substantially as described.

483,765. DERRICK-FORK. GEORGE I. LADERTON, Reno, Nev. Filed Nov. 19, 1891. Serial No. 412,563. (No model.)



Claim.—1. In a horse hay-fork, the combination, with the shaft B, provided at its lower end with a spear K and carrying a plate G, of

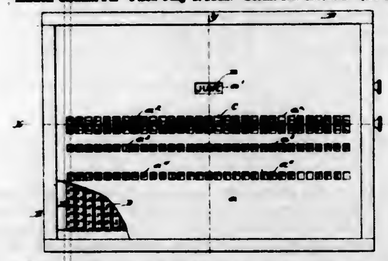
curved tines pivoted to said plate, the cylinder D, sliding on said shaft and carrying a collar F and handles C, the spring-catch I, secured to the plate G and engaging the collar F, and chains E, secured to the tines and to the handles C, and chains O, secured to said handles and adapted to be connected with the hoisting apparatus, substantially as described.

2. In a horse hay-fork, the combination, with the shaft B, provided at its lower end with a spear K and carrying a plate G, of curved tines pivoted to said plate, the cylinder D, sliding on said shaft and carrying a collar F, beveled upon its lower side, and handles C, the spring-catch I, secured to the plate G and engaging the collar F, and chains E, secured to the tines and to the handles C, and chains O, secured to said handles and adapted to be connected with the hoisting apparatus, substantially as described.

483,766. PROCESS OF EXTRACTING GOLD FROM ITS ORES. CARL HAUSSERMANN, Frankfort-on-the-Main, Germany. Filed Feb. 20, 1892. Serial No. 422,294. (No specimens.)

Claim.—The process herein described of extracting gold from its ores, consisting in subjecting the ores to the dissolving action of cyanide of potassium in the presence of permanganate of potassium, substantially as herein described.

483,767. TIME-RECORDING MECHANISM. DAVID B. PURSELL, Mauch Chunk, Pa. Filed July 1, 1892. Serial No. 438,714. (No model.)



Claim.—1. The herein-described method of recording time, it consisting in marking by means of interchangeable characters upon a calendar opposite the respective days of the week or month the hours of working time, said hours being expressed in days, and fractions thereof, of ten hours each, substantially as and for the purpose set forth.

2. In a recording device, the combination, with a determinate set of signs indicating the days of the week, of devices, substantially as set forth, for indicating the hours, as described.

3. A recording device having a determinate set of signs or symbols indicating days of the month or week and movable devices for indicating the hours of each days, substantially as shown and described.

4. In a recording device, the combination, with a frame having a row of symbols for indicating the days, of a set of movable bands respectively opposite the said row of symbols and having thereon symbols indicating hours, substantially as set forth.

5. A recording device having a frame, a movable month-indicator, a day-indicator, and movable devices for indicating the hours of the day, substantially as set forth.

6. The combination, with the frame, a traveling band for indicating the months, and a traveling band for indicating the days, of bands, one for each day of the month, for indicating the hours, substantially as set forth.

7. The combination, with the frame having a determinate set of symbols indicating days, of devices, one for each day, having symbols indicating hours and movable relatively to said set of symbols, and means for moving said devices, substantially as set forth.

8. The combination of the frame, the longitudinally-moving band indicating the month, the longitudinally-moving band indicating the days, and transversely-moving bands for indicating the hours, substantially as set forth.

9. In a calendar, the combination of a series of characters indicating months adapted to have each month distinguished from the others, a series of characters indicating the days of the month, and a series of sets of characters arranged, respectively, opposite to the characters of the second aforesaid series and those of each of the last said sets indicating one or more fractional parts of a day, substantially as set forth.

10. In a calendar, a series of movable indicators, each provided with characters indicating fractional parts of a day and each being in whole or in part a duplicate of another or others and arranged to move parallel to each other, substantially as set forth.

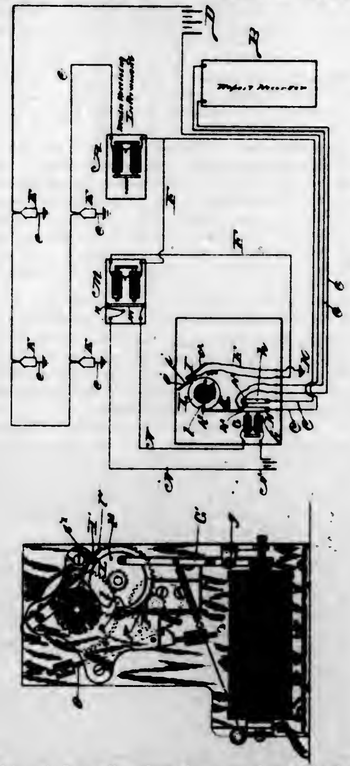
11. In a calendar for indicating fractional parts of a day, a series of indicators which are in whole or in part duplicates of each other and have characters indicating fractional parts of a day, a series of characters indicating months and adapted to have each month distinguished from the others, and a series of characters indicating the days of the month, substantially as set forth.

12. In a calendar for indicating fractional parts of a day, a series of characters indicating the days of the month, and a series of sets of characters respectively opposite the aforesaid characters, those of each set comprising characters of two distinguishable kinds, respectively, adapted to indicate different fractional parts of a day, substantially as set forth.

13. In a calendar, a series of duplicate movable indicators, each provided with characters indicating fractional parts of a day, and a series of characters indicating entire successive days, respectively, opposite to said indicators, substantially as set forth.

14. In a calendar, a frame or holder, a movable indicator supported thereon and having a series of characters, of which one or more are visible from the front side of the calendar, means for moving the indicator, and a duplicate stationary set of characters behind the calendar to guide in moving the indicator, substantially as set forth.

488,768. POLICE-TELEGRAPH SYSTEM. CHARLES A. ROLFE, Chicago, Ill. Filed May 6, 1892. Serial No. 432,094. (No model.)



Claim.—1. In a police-telegraph system, the combination of the main line, including a signal-transmitting instrument, a normally-open ground branch thereat, a main receiving-instrument and a normally-closed ground branch at the receiving-station, a report-recorder to receive and record reports separate from the main receiving-instrument, and an automatic shunt device normally shunting the report-recorder from the main-line circuit and comprising a relay, which is operated by a current or impulse over the normally-closed ground branch, so as to place the report-recorder in circuit with the main line when the ground branch at the signal-transmitting instrument is closed as a preliminary to the sending in of a report therefrom, substantially as described.

2. In a police-telegraph system, the combination of the main line, including a signal-transmitting instrument, a normally-open ground branch thereat, a main receiving-instrument, and a normally-closed

ground branch at the receiving-station, a report-recorder to receive and record reports separate from the main receiving-instrument, a local-battery circuit comprising a relay which is operated to close the local-battery circuit by a current or impulse over the normally-closed ground branch, and an automatic shunt device normally shunting the report-recorder from the main-line circuit and comprising a relay, which is arranged in the local-battery circuit and operative to cause the shunt device to place the report-recorder in the main-line circuit when the ground branch at the transmitting-instrument is closed as a preliminary to the sending in of a report, substantially as described.

3. The combination of the main line, including a transmitting-instrument, a normally-open ground thereat, a main receiving-instrument, and a normally-closed ground at the receiving-station, a report-recorder to receive and record reports separate from the main receiving-instrument, an automatic shunt device normally shunting the report-recorder from the main-line circuit and comprising a relay, which is subject to a current or impulse over the normally-closed ground branch and operative to cause the shunt device to place the report-recorder in the main-line circuit, and an automatic make-and-break device arranged in said normally-closed ground branch and operating to open the same when the report-recorder is placed in the main-line circuit, substantially as described.

4. The combination, in a police-telegraph system, of the main line, including a signal-transmitting instrument, a normally-open ground thereat, a main receiving-instrument, and a normally-closed ground branch at the receiving-station, a report-recorder to receive and record reports separate from the main receiving-instrument, a shunt device operating to place the report-recorder when both of said grounds are closed, and a make-and-break device included in the ground branch at the transmitting-instrument and arranged to open the same after said branch has been closed for the purpose of causing the report-recorder to be placed in the main-line circuit, but prior to the transmission of the report, substantially as described.

5. The combination, in a system such as set forth, of the automatic shunt normally shunting the report-recorder from the main-line circuit and operating to place the report-recorder in said circuit when an impulse or current is induced over the ground branch at the receiving-station, an automatically-actuated cam operating to maintain the shunt device in condition to keep the report-recorder in circuit during the transmission of a report over the main line, and an automatic stop to arrest the cam at the termination of the report, substantially as described.

6. The combination, in a system such as set forth, of the shunt-relay, the shunt-contacts normally shunting the report-recorder from the main line, a rotary cam arranged for holding the shunt-contacts apart during each of its revolutions, and a stop device governed by the shunt-relay and operating to release the rotary cam when its magnet is energized as a result of an impulse over the ground branch at the receiving-station, substantially as described.

7. In a system such as set forth, the combination, with a suitable transmitting-instrument, of a ground branch connected with the main line and comprising a couple of normally-separated contacts, which are closed only by the preliminary action necessary to the transmitting of a report, and a couple of contacts which are normally closed and opened when the instrument is operated for the purpose of transmitting a report or signal, substantially as described.

8. In a system such as set forth, the combination, with a suitable transmitting-instrument, of a ground branch connected with the main line and comprising a couple of normally separated contacts, which are closed only by the preliminary action necessary to the transmission of a report, and the contacts R R', which are normally closed, and a vibratory arm S, connected with the crank-lever of the instrument and closing said contacts R R' when the crank-lever is in its normal position, substantially as described.

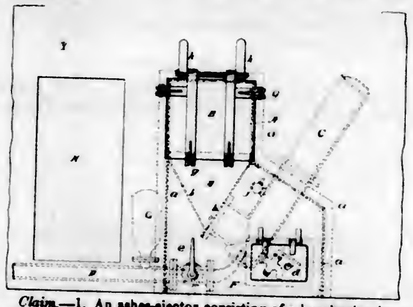
9. The combination of the shunt-contacts, the rotary cam provided with stops and arranged for separating the shunt-contacts for the purpose set forth, and the shunt-relay having its armature arranged to engage one of the cam-stops when said armature is in its normal position and to stand in the path of the remaining cam-stop, so as to engage the same when said armature is attracted by the relay-magnet, substantially as and for the purpose described.

483,769. SAD-IRON. JOHN SADDLE, Boyertown, Pa. Filed May 21, 1892. Serial No. 433,897. (No model.)

Claim.—1. The combination of the iron block having a recess in its upper side and a bar thereacross, and also lugs on its upper surface at opposite ends of the recess, a handle having a plate with a hook on the under side to take under the cross-bar of the iron, grooves to fit over the lugs on the iron, and feet on opposite sides of the grooves to rest on the top surface of the iron, and a spring-catch to hold the hook in engagement with the cross-bar.

2. The combination of the iron block having a recess in its upper side and a bar thereacross, and also lugs on its upper surface at opposite ends of the recess, a handle having a plate with an inclined hook on the under side to take under the cross-bar of the iron, grooves to fit over the lugs on the iron, and feet on opposite sides of the grooves to rest on the top surface of the iron, and a lever pivoted to the handle-plate and having a prong with an eccentric face to bear against the end wall of the recess in the iron, in the manner and for the purpose described.

483,770. APPARATUS FOR EJECTING ASHES FROM VESSELS. HORACE SEE, New York, N. Y. Filed Mar. 29, 1892. Serial No. 426,913. (No model.)

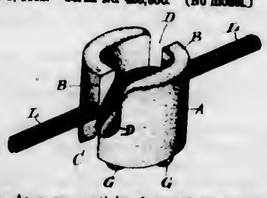


Claim.—1. An ashes-ejector consisting of a box having its upper portion formed into an ash receptacle or hopper provided with a close-fitting door for opening and closing and its lower portion forming a case inclosing ejecting and discharging connections for said ash-receptacle.

2. An ashes-ejector consisting of a box having its upper portion formed into an ash receptacle or hopper and its lower portion forming a case inclosing discharging devices for said hopper, one side of said box being formed by a wall, partition, or bulk-head provided with one or more doors opening into the box, as and for the purposes set forth.

3. In an ashes-ejector, the combination of the following-named elements: an ash receptacle or hopper, a discharge-pipe therefrom, and an ejector-pipe provided with a cock or valve located in close proximity to the jet end of said pipe for opening and closing communication between said pipes and with an air-vessel in close proximity to said cock or valve, as and for the purposes set forth.

483,771. INSULATOR. ALBERT P. SEYMOUR, Syracuse, N. Y. Filed Mar. 5, 1892. Serial No. 423,830. (No model.)



Claim.—1. As a new article of manufacture, a block insulator consisting of a solid block or piece of porcelain or similar material provided on its periphery at one end with two hooks or lugs disposed on opposite sides of the line in which the wire lies when passed beneath both said lugs or hooks and having a central axial perforation extending through the block endwise from a depressed or recessed end portion lying between the lugs or hooks, as and for the purpose described.

2. As a new article of manufacture, a block insulator provided at the end that engages the surface of the support with a number of bearing-studs projecting directly from the body thereof at a number of points between the edge and the central perforation for the fastening-screw.

3. As a new article of manufacture, a block insulator consisting of a solid block of porcelain, having at one end two hooks or lugs inclosing a central depressed end portion from which extends a hole centrally through the block to the opposite end, where the block is provided with several bearing-studs or projections engaging the surface to which it is applied.

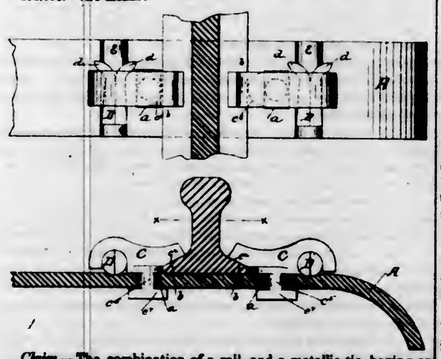
4. As a new article of manufacture, a wiring-insulator consisting of a solid block of porcelain or similar material, having at one end a pair of hooks lying on opposite sides of the line in which the wire lies, a central depressed or recessed portion at the same end connected with the opposite end of the block by a countersunk hole or perforation, said depressed portion and hooks being disposed or arranged so as to tend to produce a slight bend in the wire in a direction transverse to that in which it has to be bent or deflected in order to pass it under the hooks or lugs.

483,772. PUZZLE. JOSEPH A. SLOAN, Toledo, Ohio. Filed June 4, 1892. Serial No. 435,331. (No model.)

Claim.—1. In a puzzle, a receptacle having contained therein a flexibly-suspended object having a projecting point and a floating object formed with a perforation to engage the projecting point.

2. A puzzle comprising a receptacle, a hook flexibly suspended in the same, a liquid substance partially filling the receptacle, having floating thereon a weighted object having a perforation which by the skill of the operator is caused to engage the hook.

483,773. METALLIC RAILWAY-TIE. BENJAMIN F. SPARR and MILLARD F. SPARR, Brooklyn, N. Y. Filed Aug. 5, 1891. Serial No. 401,731. (No model.)



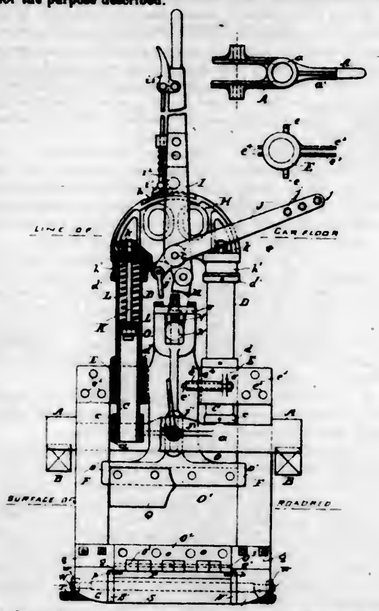
Claim.—The combination of a rail and a metallic tie having an aperture A in its top, arranged with its longest diameter substantially parallel with the rail, and a groove E, also parallel with the rail, and means for holding one side of said rail with a locking device having a head C, provided with a tapering groove c^4 on its under side, a curved shoulder c^3, a stem c^2, and an oblong head, and a wedge driven into said grooves E and c^4 between said head and tie, as set forth.

483,774. GRIP FOR CABLE RAILWAYS. CHARLES VOGEL, San Anselmo, Cal., and COLIN MCKENZIE, Tacoma, Wash., assignors to the Vogel Cable Construction Company, of Colorado. Filed Feb. 26, 1892. Serial No. 423,209. (No model.)

Claim.—1. In combination with the cable-gripping jaws and their operating mechanism, the improved carrying-frame herein shown and described, consisting, essentially, of the beam A, with columns C projecting therefrom, side bars F, carrying grip-heads G on lower and socket-pieces H at upper ends, columns D, projecting out of sockets E and sliding upon the columns C, arch-piece H, with its notched quadrant J secured upon ends of columns D, springs L, with their bolts K arranged to support the entire grip upon the ends of columns C, and the depressing-lever J, the whole arranged and operating substantially as and for the purpose set forth and described.

2. In combination with a grip for cable railways, adapted to be elevated and depressed within the slot of the subway, the brake-shoes Q, secured to a vertically-moving part of said grip, whereby the act of depressing said grip will cause the shoes to wedge themselves between the slot-irons and act as a brake to stop the motion of the car, as herein set forth.

3. In a cable-railway grip, in combination with the frame, jaws, and working levers, the improved grip-shank herein described, consisting, essentially, of a cast-metal head-piece O, connected with the working levers, plate-metal body-piece O', secured to lower end of said head-piece, and hinge-piece O^2, secured to lower end of body-piece and connecting with the toggle-levers operating the grip-jaws, substantially as and for the purpose described.



4. In a railway-car, in combination, grip-jaws, mechanism whereby the same are actuated, a frame in which said mechanism and said grip-jaws are mounted, and mechanism whereby said frame is moved vertically, and a support for all of said parts mounted upon the running-gear of the car independently of the body of the car, substantially as described.

5. In a railway-car, in combination, the jaws, mechanism whereby the same are actuated, a frame supporting said jaws and said mechanism, and a support for said frame upon the running-gear of the car independent of the body of the car, substantially as described.

6. In a railway-car, in combination, the jaws, the mechanism whereby the same are actuated, a frame wherein said jaws and said mechanism are mounted, and a spring whereby said frame is supported upon the running-gear of the car, substantially as described.

7. In combination with the running-gear of a railway car, the jaws, mechanism whereby said jaws are actuated, a frame combining said jaws and said mechanism, a spring supporting said frame upon said running-gear, and a lever fulcrumed on said running-gear, whereby said frame may be thrust downward, substantially as described.

8. In a railway-car, in combination, the jaws, a frame carrying the jaws and movable vertically, a spring supporting each side of said frame, and a lever having its bearing upon said frame equidistant from said springs and also having its fulcrum connected with the car equidistant from said springs, substantially as described.

9. In a railway-car, an inverted-U-shaped frame provided with the gripping-jaws supported between the extremities of said frame, spring-sockets provided on opposite sides of said frame, and a bearing for the jaw-actuating mechanism provided at the cross-piece of said frame, substantially as described.

10. In a railway-car, in combination, the horizontal piece A, bearing upon the car, the inverted-U-shaped or arch frame, the gripping-jaws mounted between the extremities of said frame, the spring-support interposed between said frame and said piece A, a bearing for the jaw-actuating mechanism at the cross-piece of said frame, and means whereby power may be applied to the cross-piece of said frame to force the same downward in antagonism to said spring-support, substantially as described.

11. In a railway-car, in combination, the cross-piece A, formed with an opening for portions of the grip-supporting frame and also for the grip-shank, upright posts supported upon said cross-piece and hav-

ing a portion of the grip-supporting frame moving thereon, and actuating-levers carried by said grip-supporting frame, substantially as described.

13. In a railway-car, in combination, the upright posts supported upon a stationary cross-piece, upright portions of a movable grip-supporting frame sliding upon said upright posts, springs interposed between the upright posts and the sliding portions of the grip-supporting frame, and means connecting the opposite upright sliding portions of the grip-supporting frame, substantially as described.

13. In a railway-car, in combination, the cross-piece A, having openings for the passage of a portion of the grip-supporting frame and also for the grip-shank, upright posts supported upon said cross-piece, sliding collars encircling said upright posts and formed on one side with flanges to form guideways for the grip-shank and on the other side with flanges to have secured thereto portions of the grip-supporting frame, and a grip shank moving between the flanges, constituting a guide therefor, substantially as described.

14. In a railway-car, in combination, the cross-piece A, having openings for portions of the grip-supporting frame and also for the grip-shank, upright posts supported upon said cross-piece, sliding collars encircling said upright posts and constituting a portion of the grip-supporting frame, and transverse bars connecting one of said collars with the other to brace the same, substantially as described.

15. In a railway-car, in combination, the transverse piece A, having openings for the passage of the grip shank and portions of the grip-supporting frame, upright posts fitting into sockets of said cross-piece and locked therein, columns sliding upon said upright posts, collars or socket-pieces having said columns secured thereto, upright portions of the grip-supporting frame secured to flanges projecting from said collars, and a grip-shank moving with said grip-supporting frame, substantially as described.

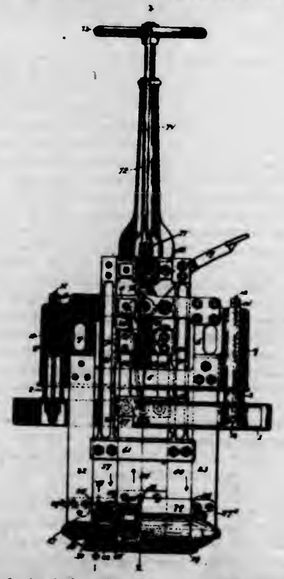
16. In a railway-car, in combination, the movable grip-supporting frame and springs located above the car-truck timbers for sustaining said grip-supporting frame, substantially as described.

17. In a railway-car, in combination, the grip-shank and the grip-supporting frame affording guides for the grip-shank both above and below the car-truck timbers, substantially as described.

18. In a railway-car, in combination, the grip-supporting frame and actuating mechanism for said frame having its fulcrum connected with a part secured to the car-truck timbers, substantially as described.

19. In a railway-car, in combination, the grip-shank, the cross-piece formed with the guide for the grip shank, and the grip-supporting frame provided with guideways for the grip-shank, substantially as described.

488,775. GRIP FOR CABLE RAILWAYS. CHARLES VOGEL, San Anselmo, Cal. Filed Oct. 24, 1891. Serial No. 409,709. (No model.)



Claim.—1. A grip for cable railways, consisting, essentially, of two side-by-side pairs of gripping-jaws having pivotal opening and closing movements, said jaws being set at a level which will permit them to grasp the cable as it rests upon its pulley-supports, substantially as described.

2. A grip for cable railways, consisting, essentially, of two side-by-side pairs of gripping-jaws having pivotal opening and closing movements, said jaws being set at a level which will permit them to grasp the cable as it rests upon its pulley-supports, and the acting faces of said jaws being constructed substantially as described, whereby the closing of the grip lifts the cable slightly above its pulley-support, substantially as described.

3. A grip for cable railways, consisting, essentially, of two side-by-side pairs of gripping-jaws having pivotal opening and closing movements, said jaws being set at a level which will permit the lower edge of each movable jaw to strike the periphery of the cable below its horizontal diameter, whereby the act of closing the jaw lifts the cable slightly from its support, substantially as described.

4. In combination, two side-by-side pulley cable supports, the periphery of each of which is depressed toward the middle, and two pairs of gripping-jaws having pivotal opening and closing movements, and the edges of each pair of jaws protruding downward to facilitate the gripping of the cable as it lies in the depression of the pulley periphery, substantially as described.

5. In combination, two pairs of jaws and two cables arranged substantially as described, whereby when either pair of jaws grips its cable the other pair is at such a level as will permit it to grip its cable as the cable rests upon the pulley supports, substantially as described.

6. In combination, the two pairs of gripping-jaws side by side and having a circumferential opening and closing movement, and two pairs of twin cones located one pair at each end of the jaws, whereby the jaws are guided by obstructions, substantially as described.

7. In combination, a vertically-reciprocating connecting-plate, two jaw-shafts located one on either side of the line of movement of the same, the two pairs of jaws, and means whereby said jaw-shafts are supported, substantially as described.

8. In combination, two pairs of gripping-jaws arranged side by side, two end pieces, one extending across both jaws at each end, two shafts extending from one end piece to the other, upon which the movable jaws are mounted, two connecting-plates for operating said jaws, and a guide connected with said end pieces below the level of the slot-irons, whereby the alignment of said connecting-plates in the slot is maintained, substantially as described.

9. In combination, two pairs of gripping-jaws, two vertically-reciprocating connecting-plates, and two links whereby the said connecting-plates are secured to the arms of the jaws, respectively, substantially as described.

10. In combination, two side-by-side pairs of gripping-jaws, two vertically-reciprocating plates arranged in a plane extending between said pairs of jaws, and connections between each plate and the movable jaw of one pair, substantially as described.

11. In combination, two jaw-shafts, a support for the same at each end, a bridge-piece embracing both of said shafts, a rod engaging said bridge-piece at its middle, and end pieces whereby the ends of said rod are connected with the shaft-supports, substantially as described.

12. In combination, two side-by-side pairs of jaws, a connecting-plate for each arranged in a plane extending between said jaws, and mechanism whereby said connecting-plates are operated inversely, substantially as described.

13. In combination, two side-by-side pairs of jaws, means whereby the inner member of each pair is secured in a fixed position, means whereby the outer member of each pair is pivotally secured, two vertically-reciprocating plates, and means whereby one of said plates is secured to each of said pivoted jaw members, substantially as described.

14. In a railway-car, in combination, a spring-mounted frame, two pairs of jaws carried by said frame, two moving frames mounted upon said first-named frame, and mechanism whereby the motions of said moving frames are respectively communicated to said jaws, substantially as described.

15. In a railway-car, a spring-mounted frame, two pairs of jaws carried by the same, two moving frames mounted upon said first-named frame, mechanism whereby the motions of said moving frames are respectively communicated to said jaws, and mechanism whereby said first-named frame may be thrust downward in antagonism to its spring-support, substantially as described.

16. In a railway-car, a frame supported on the car, two pairs of jaws carried by said frame, two moving frames carried by said first-named frame, mechanism whereby the motions of said moving frames are communicated to the jaws, and mechanism having a bearing on said first-named frame, whereby said moving frames are moved inversely, substantially as described

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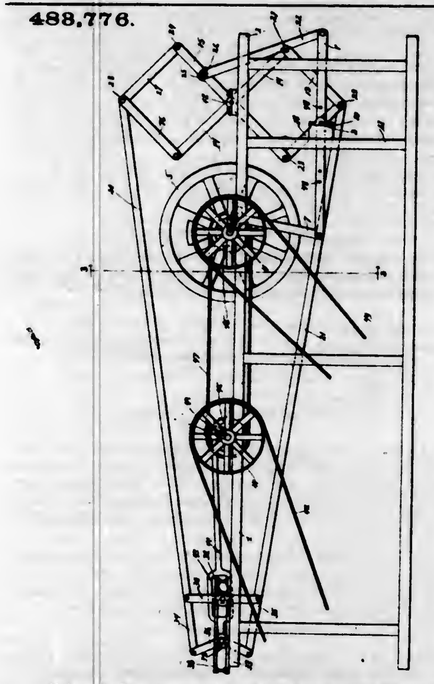
488,776. LEVER-POWER ENGINE. ALLEN ARMSDALE, Chicago, Ill. Filed May 28, 1892. Serial No. 434,103. (No model.)

488,776.



Claim.—1. In a lever-power engine, the combination, with a crank-shaft, of a number of levers, a knuckle-joint connecting the short arms of said levers together and being connected with said crank-shaft for rotating the same, a brace-bar secured between said levers, and means for forcing the long arms of said levers toward and from each other, substantially as set forth.

2. In a lever-power engine, the combination, with a crank-shaft, of a number of levers, a knuckle-joint connecting the short arms of said levers together and being connected with said crank-shaft for rotating the same, a traveling brace-bar or fulcrum secured between said levers, crossed levers connected at their upper and lower ends, respectively, to the aforesaid levers, and means for oscillating said crossed levers, substantially as set forth.

3. In a lever-power engine, the combination of a number of levers, a knuckle-joint connecting the short arms of said levers together, a traveling brace-bar or fulcrum secured between said levers, and means for moving the ends of the long arms of said levers to and from each other in a straight line, substantially as set forth.

4. In a lever-power engine, the combination of upper and lower levers, a knuckle-joint connecting the short arms of said levers together, a traveling brace-bar or fulcrum secured between said levers, and crossed levers connected at their upper and lower ends, respectively, to the upper and lower levers, whereby said upper and lower levers will counterbalance each other and the ends of their long arms will be caused to oscillate in a straight line, substantially as set forth.

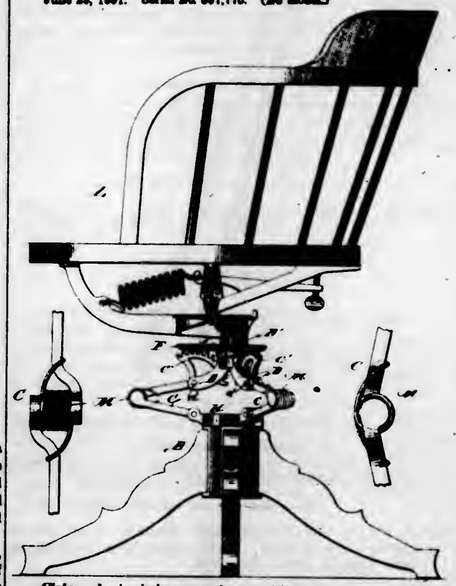
5. In a lever-power engine, the combination of the upper and lower levers, a traveling brace-bar to which said levers are fulcrumed, a knuckle-joint connecting the ends of said levers together, crossed levers, links connecting the upper and lower ends of said crossed levers with said upper and lower levers, respectively, a lever for oscillating said crossed levers, and a connecting-rod secured to said knuckle-joint, substantially as set forth.

6. In a lever-power engine, the combination, with a traveling cross-head, of levers fulcrumed above and below and carried by said cross-head, crossed levers connected at their upper and lower ends to the aforesaid levers, and a crank-shaft having lever connection with said crossed levers, substantially as set forth.

7. In a lever-power engine, the combination of a runway, independent cross-heads supported upon said runway, main power levers, a brace supported upon one of said cross-heads and having said levers fulcrumed thereon, a knuckle-joint connected to the other of said cross-heads and to the short arms of said levers, a crank-shaft, a pitman connecting said crank-shaft with said knuckle-joint, a second crank-shaft geared to the first crank-shaft and having means for driving it, crossed levers having a stationary pivot or fulcrum, links connecting the upper and lower ends of said crossed levers with said main power-levers, respectively, and a lever connection between said second crank-shaft and crossed levers, substantially as set forth.

8. In a lever-power engine, the combination of the main power-levers, a knuckle-joint connecting the short arms of said levers together, a crank-shaft connected with said knuckle-joint, a second crank-shaft geared to said first crank-shaft and having means for driving it, and a lever connection between said second crank-shaft and said main power-levers, substantially as set forth.

488,777. ADJUSTABLE CHAIR OR STOOL. PAUL A. BRESSOLD, Chicago, Ill., assignor of one-half to Louis H. Bourret, same place. Filed June 29, 1891. Serial No. 397,775. (No model.)



Claim.—1. A chair or stool comprising a seat, a set of elbow-jointed toggles C for the purpose set forth, arranged to bend outwardly from a common center and having their upper end portions pivoted to a holder, whereon the seat is sustained, and provided above the points whereat they are thus pivoted with toothed segments, a base whereon the lower ends of the toggles are pivotally supported, and a movable locking device arranged within reach of an occupant of the seat and applied for engaging and locking the toothed segments on the upper ends of the toggles, substantially as described.

2. The combination of the seat, its supporting elbow-jointed toggles C, arranged substantially as set forth and having their upper ends provided with toothed segments and pivoted to a holder whereon the seat is sustained, a base whereon the lower ends of the toggles are pivotally supported, and a vertically-movable locking plate F, adapted for engaging and locking the toothed segments on the upper ends of the toggles, substantially as described.

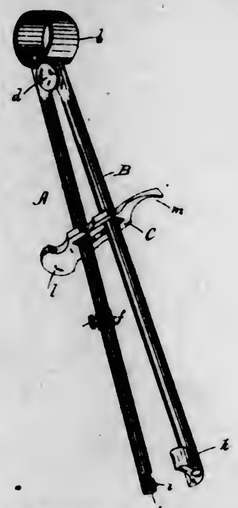
3. The combination, substantially as hereinbefore set forth, of a seat provided with a stem E on its under side, a socket in which the stem is arranged to turn, arms D on the socket, a base, elbow-jointed toggles C, supported upon said base and pivoted to said arms, rack-segments C' on the upper ends of the toggles, and a toothed locking-plate for engaging and locking the rack-segments.

4. The combination of the seat and a holder for the same, a base, the set of outwardly-bending elbow-jointed seat-supporting toggles C, pivotally supported at their lower ends upon the base and having their upper end portions pivotally connected with the holder for the seat and arranged for engagement with a locking-plate, and the vertically-movable locking-plate arranged under the seat in position for engaging the upper ends of the toggles and provided with toothed portions with which said upper ends of the toggles engage when the locking-plate is lowered into position to thus engage and lock the toggles, substantially as described.

5. The combination of the seat, the seat-holder comprising a socket in which the seat is swiveled, and a set of arms arranged to radiate from said socket, the locking-plate constructed with a centrally-arranged sleeve fitted to slide upon the socket and arms which radiate from said sleeve, a base, and a set of elbow-jointed toggles pivotally

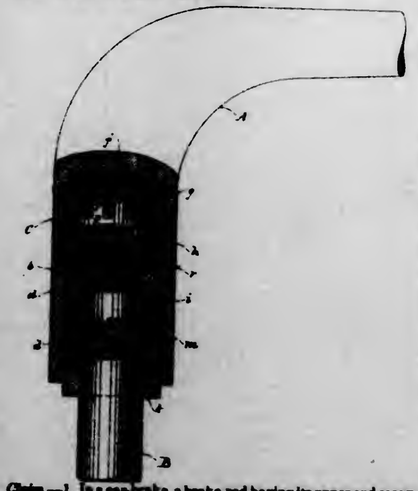
supported at their lower ends upon the base and having their upper ends pivoted to the arms on the socket and arranged for engagement with the arms of the locking-plate, substantially as described.

483,778. TOOL FOR CUTTING GLASS GAGE-TUBES. ARTHUR W. CHESTERTON, Boston, Mass. Filed Jan. 12, 1891. Serial No. 377,598. (No model.)



Claim.—In a tool for cutting glass tubes, two spring-tensioned arms provided, respectively, with a cutter and cutter-block, in combination with a sliding link loosely encircling said arms and adapted to be tilted to force them together, substantially as described.

483,779. CAR-BRAKE HANDLE. AUSTIN B. COLLETT, Lynn, assignor of one-half to David F. Kimball, Chelsea, Mass. Filed Mar. 24, 1892. Serial No. 426,317. (No model.)



Claim.—1. In a car-brake, a brake-rod having its upper end screw-threaded, in combination with a chambered handle, a clutch member secured in said chamber, and a companion member turned onto said rod, substantially as described.

2. In a car-brake, a brake-rod, in combination with a clutch member detachably secured thereon, a brake-handle chambered to receive said member, a companion member fast in said chamber, a detachable plug closing the mouth of said chamber and loose on said rod, and a push-spring interposed between said plug and detachable member, substantially as set forth.

3. In a car-brake, the threaded brake-rod, in combination with the chambered handle, the clutch member secured therein, and the companion member turned onto said rod, said handle having an opening in the wall of its chamber adapted to register with an indentation in said rod clutch member, substantially as and for the purpose set forth.

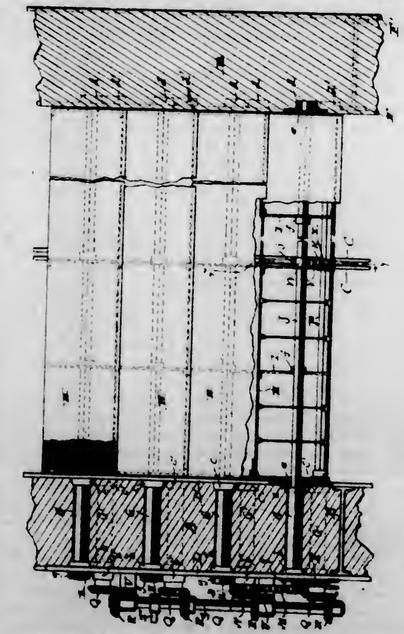
4. In a car-brake, the handle A, chambered at *d* and interiorly threaded at its mouth, in combination with the clutch member *f*, secured in said chamber, the rod B, threaded at *b*, the clutch member *h*, interiorly threaded to receive said rod and having the smooth portion *i*, the screw-plug *k* in the mouth of said chamber, and the spring *m* between said plug and rod clutch member, all being arranged to operate substantially as described.

483,780. COFFIN-PROTECTOR. THOMAS H. FISHER, Cleveland, Ohio, assignor to George H. Smith and Leonora R. Fisher, same place. Filed May 21, 1892. Serial No. 433,793. (No model.)

Claim.—1. As a new article of manufacture, a cover for burial cases, consisting of a metal plate constructed to rest immediately upon the case and cover the same over its entire surface, horizontally-arranged keepers on the ends of the said cover having locks on their inside, and spikes in said keepers serrated to engage said locks, substantially as described.

2. The flat-metal plate A and keepers *a* on the ends of said plate, having spring-locks *a'* thereon, in combination with spikes B, having heads to prevent them being driven through said keepers and serrated on one side to engage the lock *a'*, substantially as described.

483,781. MALT-KILN FLOOR. FRANKLIN B. GISSLER, Milwaukee, Wis. Filed June 20, 1891. Serial No. 397,364. (No model.)



Claim.—1. A malt-kiln floor comprising a series of pivotal trays, a lever-and-gear mechanism for turning the trays on their pivots, a series of lifting devices arranged under the tray-frames independent of the latter, and a gear connection between the lifting devices and the tray-turning mechanism, substantially as set forth.

2. A malt-kiln floor comprising a series of pivotal trays, lifting devices arranged under the tray-frames independent of the latter, supporting-fingers also arranged under the tray-frames independent thereof, and a tray-turning mechanism in gear with said lifting devices and supporting-fingers, substantially as set forth.

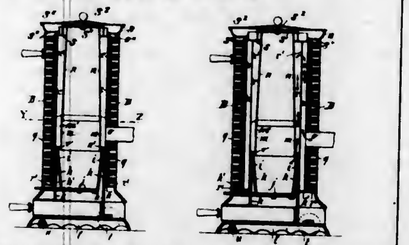
3. A malt-kiln floor comprising a series of trays fast on pivotal rods arranged off center of the trays, lever-arms on all the rods, a link connecting the lever-arms together, a lever-controlled turning-rod, a toothed cam geared to the lever-controlled rod, and another toothed cam in mesh with the first and rigid on one of the tray-rods, substantially as set forth.

4. A malt-kiln floor comprising a series of trays fast on pivotal rods arranged off center of the trays, lever-arms on all the rods, a link connecting the lever-arms together, other pivotal rods provided with collars having cam-shoulders normally opposed to the lighter sides of said trays and fingers that normally support the heavier sides of the same, a lever-controlled turning-rod geared to all the latter rods, a toothed cam fast on one of said latter rods, and another toothed cam in mesh with the first and rigid on one of the tray-rods, substantially as set forth.

5. A malt-kiln having its walls provided with bearings, standards arranged at intervals between the walls and also provided with bearings, a series of trays fast on eccentrically-arranged axial rods journaled in certain of the bearings, other rods journaled in the remainder of the bearings and carrying lifting-cams and supporting-fingers for the trays, and a lever-and-gear mechanism for actuating both series of rods, substantially as set forth.

6. A malt-kiln having opposing walls thereof provided with plates connected by tie bars, bearings on both plates of one wall, connected by tubes, and bearings on the inner plate only of the opposing wall, standards arranged at suitable intervals between the walls and provided with bearings, a series of trays trunnioned in certain of the plate-bearings and fast on eccentrically-arranged axial rods passed through certain of the tubes, other rods passed through the remainder of the tubes and trunnioned in certain others of the plate-bearings, collars arranged on all the rods to engage the bearings on the standards, the collars on the non-axial rods provided with lifting-cams and supporting-fingers for the trays, and a lever-and-gear mechanism for actuating both series of rods, substantially as set forth.

483,782. THERMO-ELECTRIC BATTERY. PAUL GIRAUD, Chantilly, France. Filed Aug. 1, 1891. Serial No. 401,378. (No model.) Patented in France April 10, 1890. No. 204,902.



Claim.—1. An electrode for a thermo-electric battery, composed of antimony, zinc, cadmium, and silicium in proportions substantially as herein set forth.

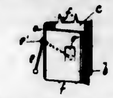
2. An electrode for a thermo-electric battery, composed of antimony, zinc, cadmium, silicium, copper, and tin in proportions substantially as herein set forth.

3. The combination, with each battery element and the heating-surface to which it is attached, of a metal cup *c*, receiving the inner end of said element and insulated therefrom by a cement which serves to hold the elements in the cup, the said cup serving to attach the elements to the heating-surface and to transmit heat uniformly around that end of the element which is to be heated, substantially as herein described.

4. The combination, with a heating-surface and a series of thermo-electric-battery elements arranged in several tiers against such surface, of a series of metal cups *c*, receiving and insulated from their respective elements and each insulated from the adjacent ones of the same tier and from those of the tiers above and below and being secured to said heating-surface by an insulating-cement, substantially as herein set forth.

5. The combination, with the combustion-chamber and the series of thermo-electric elements with which it is surrounded, of three annular walls *u v e*, arranged one within another between said chamber and said series of elements and forming two annular spaces, the inner of which spaces communicates at its lower part with the combustion-chamber and the outer of which spaces has an outlet in the lower part to the atmosphere, and the middle wall *v*, having openings in the upper part, and the thermo-electric elements being outside of and attached to but insulated from the outermost of said walls *e*, all substantially as herein set forth.

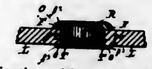
483,783. SCARF-CLASP. JAMES J. HALLAHAN, Brooklyn, N. Y. Filed June 27, 1892. Serial No. 438,075. (No model.)



Claim.—1. A clasp for a neckscarf, consisting of a piece of elastic sheet metal which is bent into a substantially U shape to form spring-jaws, one adapted to be fastened to the scarf by one of said jaws, in combination with a locking device for the jaws, substantially as shown and described.

2. A clasp for a neckscarf, consisting of a piece of elastic sheet metal bent into a substantially U shape to form spring-jaws and adapted to be fastened to the scarf by one of said jaws, in combination with a locking-lever pivoted at the junction of the jaws and constructed to engage a jaw, substantially as shown and described.

483,784. EYELET. FRANK F. HAWKINS, Troy, N. Y. Filed Mar. 17, 1892. Serial No. 425,210. (No model.)



Claim.—The combination, with a tubular hard-rubber or celluloid part made with an encircling flange at its outer end and having a flange in its tubular part near the inner end of the latter, of a tubular metallic eyelet part having a flange on its outer end constructed to engage with the interior flange of the hard-rubber part when passed down through the latter and to be clinched on its inner end, substantially in the manner as and for the purposes set forth.

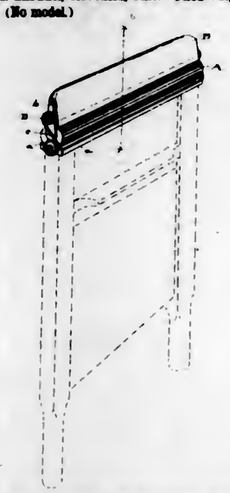
483,785. PIPE-WRENCH. GEORGE S. HILES, Groton, N. Y., assignor of two-thirds to Duncan McLachlan, same place. Filed Mar. 23, 1892. Serial No. 426,096. (No model.)

Claim.—1. In a pipe-wrench, the combination, with the internally-threaded sleeve, the dog pivoted upon an arm extending from the outer end thereof, and the chain connected thereto, of a screw-threaded handle inserted through the sleeve and engaging with the dog.

2. In a pipe-wrench, the combination, with the internally-threaded sleeve, the screw-threaded handle inserted therein, and the chain connected to the sleeve, of the toothed dog pivoted upon an arm projecting from the outer end of the sleeve and having its free end adapted to engage with a link of the chain.

3. The combination, with the internally-threaded sleeve and the chain connected thereto, of the dog pivoted upon an arm extending from the outer end thereof, its free end adapted to engage with a link of the chain, and the screw-threaded handle inserted through the sleeve and engaging with the said dog.

483,786. BREAST-REST FOR WASH-BOARDS. OWEN T. LAPHAM and JOSEPH H. LAPHAM, Cleveland, Ohio. Filed July 12, 1892. Serial No. 439,773. (No model.)



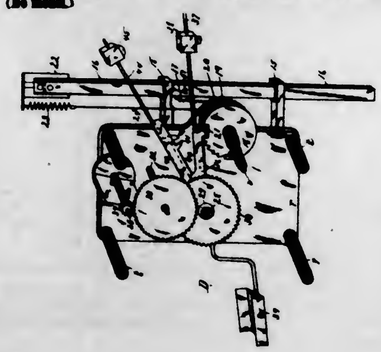
Claim.—1. As a new article of manufacture, a breast-rest for wash-boards, consisting of a base member provided with ledges along its own base to serve as stops for the movable member, the said movable member pivotally supported at its ends to swing to either side of the said base, and springs to hold the said movable member in working position, substantially as described.

2. The article of manufacture herein described, the same consisting of the base A, having ledges *a* along either side thereof, the movable part B, provided at its ends with straps *b*, pivoted in the said base at *c*, and substantially-S shaped springs D, having one end fixed to the said movable part B and the other below the pivot-point C, substantially as described.

3. The base or lower portion of the breast-rest, the top or movable portion and the straps at the ends of said portions connecting them pivotally together, and a spring outside of said straps at each end connected to the pivoted or movable portion of the said rest above its pivot-point to hold the said portion in working position, substantially as described.

4. The breast-rest consisting of a base member having ledges along its base and the top member pivoted on said base by means of straps at its ends and constructed to rest on the said ledges when turned to either side, substantially as described.

483,787. COIN-OPERATED WEIGHING-SCALE. GEORGE G. MURRAY, Boston, Mass., assignor to Irving B. Williams, Woburn, Mass., and J. C. Dickinson, Brooklyn, N. Y. Filed May 23, 1892. Serial No. 434,008. (No model.)



Claim.—1. In an index mechanism for coin-actuated weighing-machines, an arbor bearing the index, a gravity rack-bar meshing with a pinion loose to move in one direction on said arbor, a spring-tensioned cord on the arbor connecting with said bar, a ratchet on the arbor, a coin-released locking-pawl therefor, two opposite pitch-ratchets on said arbor, and gravity locking-pawls therefor adapted to be released by the ascent of said bar.

2. The spring-scale mechanism, in combination with the arbor-segment, ratchet thereon, and locking-pawl, the gravity rack-bar supported by said mechanism and fitted to rotate the arbor in one direction when released, and the spring-tensioned cord connecting the arbor and bar for reciprocating said arbor as the bar ascends.

3. The spring-scale mechanism, in combination with an arm on the connecting-bar thereof, the index-arbor provided with a ratchet 18, the coin-released pawl engaging said ratchet, the gravity-rack normally supported on said arm, the pinion loose on said arbor, and the spring-tensioned cord connecting said arbor and bar, whereby the arbor may be rotated, substantially as described.

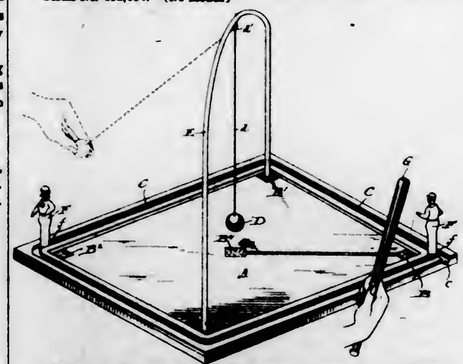
4. The platform and spring-scale mechanism, in combination with the index-arbor, the gravity rack-bar supported by said mechanism, the loose pinion on said arbor, mechanism for locking said pinion against rotation in one direction, the segment-ratchet, the coin-released locking-pawl engaging said ratchet, and a spring-actuated connection between said bar and pinion, whereby the pinion may be rotated as the bar ascends.

5. The platform and spring-scale mechanism, in combination with the index-arbor, the loose pinion thereon, the gravity rack-bar meshing with said pinion and supported by the scale mechanism, the segment-ratchet on said arbor, the coin-released pawl therefor, the ratchets 19 and 20 on said arbor, the counterbalanced pawls therefor, a retarding mechanism for said pawls, mechanism for tripping said pawls as the bar ascends, and a spring-actuated connection between the bar and arbor, substantially as and for the purpose set forth.

6. The platform and spring-scale mechanism, in combination with the index-arbor bearing ratchets 18, 19, and 20, the coin-released pawl engaging the ratchet 18, the lock-pawls 40 and 42 for engaging the companion ratchets, a retarding mechanism for said pawls, the gravity-rack, the loose pinion on said arbor, a spring-actuated connection between the rack and arbor for reciprocating said arbor, and mechanism actuated by the rack for tripping the pawls 40 and 42, substantially as described.

7. The index-arbor, ratchet 18 thereon, and coin-released pawl, in combination with the opposite-toothed ratchets on said arbor, the counterbalanced pawls therefor, retarding mechanism for said pawls, the loose pinion and locking mechanism, the gravity-rack, the spring connection between said rack and arbor, and an arm on said rack for tripping and supporting said locking-pawls.

483,788. GAME-BOARD. PATRICK O'CARROLL, Milwaukee, Wis., assignor of one-half to Thomas Crooks, same place. Filed Nov. 21, 1891. Serial No. 412,657. (No model.)



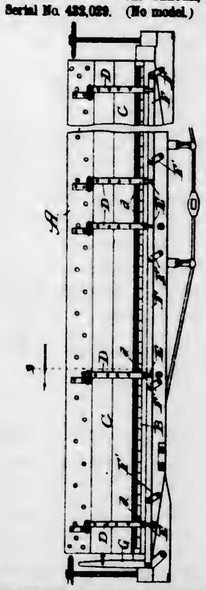
Claim.—1. The herein-described game apparatus, comprising a board provided with representations of the several bases of a base-ball ground, one or more movable objects adapted to be moved from one base to another, and a ball suspended above the central portion of the board and adapted to be swung or moved into a position to touch any one of the bases or movable objects, substantially as and for the purposes described.

2. A game apparatus comprising a board provided with representations of the several bases of a base-ball ground, a peripheral groove or track extending from one of said bases to another, a ball suspended above the central portion of the board by means of an elastic cord attached to an arch or hoop, and one or more movable objects adapted to be removably engaged with said peripheral groove or track and to be moved from base to base about the board, the construction being such as to enable the ball to be swung or moved into a position to touch either of the bases or movable objects, substantially as described.

483,789. WINDOW-SCREEN. WARD B. PIERCE, Pulaski, N. Y. Filed Apr. 27, 1891. Serial No. 390,632. (No model.)

Claim.—A window-screen consisting of a wire-screen body, a continuous arch transverse thereto, created by bending said body outward, and a series of openings in said arch created by displacing or omitting a number of the woof-wires and tying the warp-wires in bunches at the apex of the arch, in combination with peforated stay-bars across the base of the arch and rods connected to the screen-body on either side of the arch and passing through and adjustable in said stay-bars to vary the spring of said arch and the size of said openings therein longitudinally, substantially as described.

483,790. DUMPING-CAR. JOHN PLAYER, Topeka, Kans. Filed May 6, 1892. Serial No. 432,029. (No model.)



Claim.—1. In a dumping-car, a locking-bar pivotally attached to the car and adapted to move longitudinally and in a vertical plane to lock and unlock the door, substantially as described.

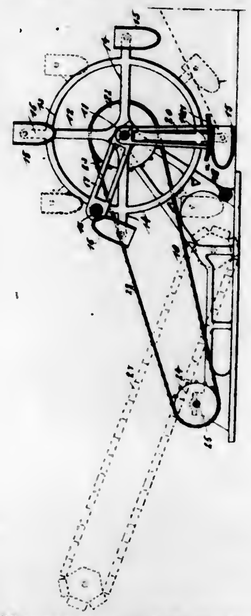
2. A dumping-car provided with swinging doors, in combination with a locking-bar pivoted to the car and adapted to move longitudinally and in a vertical plane to engage with lugs upon the door, substantially as described.

3. In a dumping-car, the combination of one or more doors hinged at either side thereof and provided with downward extensions, hooks attached to the car, and a locking-bar attached to the car by means of links and adapted to move longitudinally and vertically to pass between the hooks and extensions and to lock the door and to be moved longitudinally and in a vertical plane to be lowered and unlock the same, substantially as described.

483,791. COAL-LIFTER. ALBERT ROLL, South Amboy, N. J. Filed Dec. 19, 1891. Serial No. 415,667. (No model.)

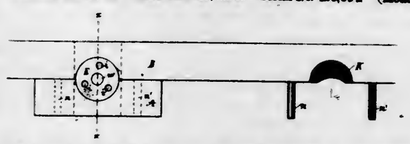
Claim.—1. A lifting-machine comprising a revoluble wheel having radially-extending arms thereon, buckets pivotally suspended between the arms, arms secured to the wheel-shaft and projecting radially therefrom, and a roller carried by the shaft-arms and arranged in the path of the bucket-arms, substantially as described.

2. The combination, with a revoluble wheel having buckets pivoted thereon, of a roller mounted near the bottom of the wheel in the path of the bucket-bottoms and a stationary guide-plate held adjacent to the roller and adapted to engage the buckets, substantially as described.



3. A coal-lifter comprising a revoluble wheel having radially-extending arms, buckets pivotally suspended in the arms, a roller mounted in the path of the buckets, and a guard-plate supported adjacent to the bottom of the wheel and adapted to engage the buckets, substantially as described.

483,792. PRINTER'S QUOIN. ERNST A. SCHMID and ADOLPH G. SCHMID, Peoria, Ill. Filed Mar. 23, 1892. Serial No. 426,064. (Model.)



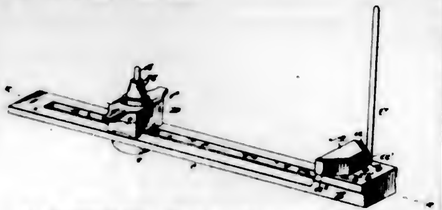
Claim.—In a printer's quoin, the combination of a foot-stick formed with a circular depression cut out of its inner face to form a half-circle at its upper portion and one-eighth of a circle at its lower portion, the lower circle having the same radius, the whole circular recess being of uniform radius and decreasing length of chord and the middle portion of the arc depression on a line from the top face to the lower face forming a gradual oblique taper, while the sides from the center or circumferential center are concaved to form concaved obliquely-tapering surfaces, the concave gradually increasing from the central oblique line to outer edges of depressions, with an exactly similar depression in the quoin to coincide with the one in the foot-stick to form a gradually downwardly-tapering circular recess when the two parts are placed in conjunction, and there being provided the socket-nut, cone-shaped, and adapted to be screwed down to force the quoin from the foot-stick and the threaded stem upon which the socket-nut is screwed, all substantially as described and set forth.

483,793. SAW-SET. HIRAM B. SMITH, Atlanta, Ga., assignor to the Millers Falls Company, Erving, Mass. Filed Feb. 15, 1892. Serial No. 421,561. (No model.)

Claim.—1. The combination, with the anvil having a plurality of beveled or rounding edges and a plurality of apertures, of a guide-rod

the lower end of which engages any one of said apertures, according to which edge of the anvil is in use, substantially as set forth.

2. In a saw-set, a support or base provided on its upper side with a series of apertures and an anvil having beveled or oval edges, one for each hole, whereby a guide-rod may be inserted in any one of the holes, substantially as set forth.



3. The combination, with the anvil having a series of beveled or oval edges and a base projecting thereabeyond, of a vertical rod adjustable on the said base to any one of said edges, substantially as set forth.

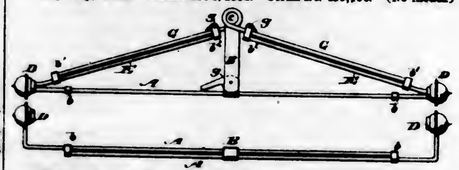
4. In a saw-set, the combination of the anvil A, provided with beveled or oval edges a a' a^2, the anvil-support B, provided with apertures for receiving the hammer-guide and furnished with a slotted arm c, the hammer-guide rod C, and the adjustable saw-support D, provided with the rod d, and the conical bushing E, substantially as described.

488,794. COTTON-CHOPPER. WILLIAM SMITH, Bastrop, La., assignor of one-half to Joseph B. Levy, same place. Filed May 18, 1892. Serial No. 433,497. (No model.)

with a valve-seated end flush with the end of the body and separated therefrom by an annular delivery-passage, a close-ended cap internally screw-threaded to fit upon the body, and a valve-packing carried by the said cap, substantially as described.

2. The combination, in a faucet, of a screw-threaded body portion provided with an internal valve-seat, the end of the body and the said valve-seat being nearly level with each other, and a cap-shaped valve adapted to fit upon both the seat and the end of the body at once, substantially as described.

488,796. WINDOW-SHADE SUPPORTER. STEPHEN T. STUVER, Puyallup, Wash. Filed June 1, 1892. Serial No. 435,183. (No model.)



Claim.—1. An adjustable window-shade supporter composed of a truss-frame constructed in sections fitted to slide one upon or along the other and made up of an upper and lower series of wires, clips or guides adapted to provide for such sliding action, locking devices mounted on the clips or guides and engaging the wires to secure them when adjusted, knobs or sockets at the ends of the wires and adapted to carry the shade-roller, and one or more upper suspension-eyes adapted to insure the straight hang of the window-shade, substantially as described.

2. An adjustable window-shade supporter composed of a stationary wire G, having an eye e and inclined downward in opposite directions from the eye, rods E, parallel with the inclined ends of wire G, clips b' b^2, forming a sliding connection between said wires, parallel wires A A, sliding upon each other, and shade-roller supports D, connected to the outer ends of wires A A E E, substantially as set forth.

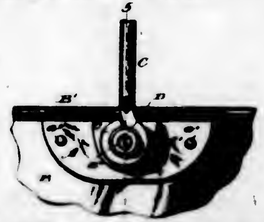
3. An adjustable window-shade supporter composed of a stationary upper wire having a suspension-eye, sliding wires parallel with said stationary wire, guides or clips uniting said wires, lower sliding wires

8. A hollow grate-bar having tuyeres or air-tubes, in combination with an adjustable and removable top provided with jet apertures and marginal notches, said bar also having a flange for seating the top and a perforated slide for regulating the openings in the tuyeres or air-tubes, substantially as specified.

9. The hollow grate-bar having screw-tapped apertures in its bottom and also having tuyeres or air-tubes therein and provided with the horizontal flange at their upper ends, said bar also having the horizontal ledge or flange in a plane with the flanges of the tuyeres, in combination with the removable and adjustable top or cover having the elongated passages in its marginal edge and apertures arranged in groups at points above the flanges of the tuyeres, and also provided on its under side with depending screw-tapped bosses and threaded bolts or rods taking through the bosses for adjustably securing the top to the bar, substantially as specified.

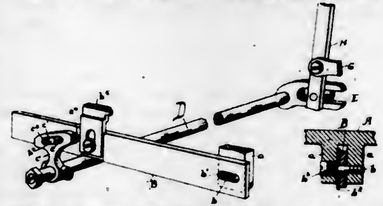
10. A hollow grate-bar having vertically-disposed stands or supports therein and provided with flat heads at their upper ends, in combination with a cover having apertures above the heads of the stands and suitable means for adjustably sustaining the cover and drawing the same upon said heads, substantially as specified.

488,798. RAIL-BAR FOR BUCKETS. MARTIN THOMS, Monticello, assignor of one-half to James Milne, Scotch Grove, Iowa. Filed Mar. 11, 1892. Serial No. 424,579. (No model.)



Claim.—A bail-bar comprising a horizontal plate adapted to fit the

488,800. FEEDING MECHANISM FOR SEWING-MACHINES. BENJAMIN F. BELLOWS, Cleveland, Ohio, assignor to Edward T. Loftin, same place. Filed Feb. 8, 1892. Serial No. 420,708. (No model.)



Claim.—In a sewing-machine, a feed-bar, a pin projecting therefrom, and a tension device, combined with a rock-shaft, an arm secured thereto having a cam-slot into which said pin projects, and the buffer-pieces projecting into the ends of said slot, substantially as set forth.

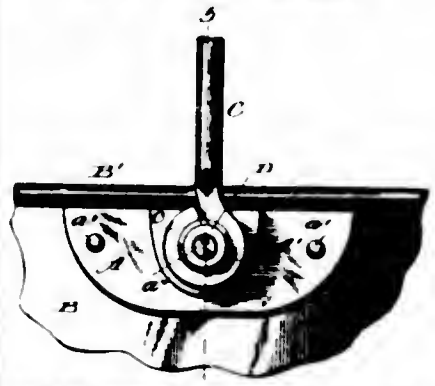
488,801. CAR-AXLE-BOX LID. FRANK P. BOATMAN, Indianapolis, Ind., assignor to the Morris Box Lid Company, Pittsburg, Pa. Filed May 21, 1892. Serial No. 433,867. (No model.)

8. A hollow grate-bar having tuyeres or air-tubes, in combination with an adjustable and removable top provided with jet apertures and marginal notches, said bar also having a flange for seating the top and a perforated slide for regulating the openings in the tuyeres or air-tubes, substantially as specified.

9. The hollow grate-bar having screw-tapped apertures in its bottom and also having tuyeres or air-tubes therein and provided with the horizontal flange at their upper ends, said bar also having the horizontal ledge or flange in a plane with the flanges of the tuyeres, in combination with the removable and adjustable top or cover having the elongated passages in its marginal edge and apertures arranged in groups at points above the flanges of the tuyeres, and also provided on its under side with depending screw-tapped bosses and threaded bolts or rods taking through the bosses for adjustably securing the top to the bar, substantially as specified.

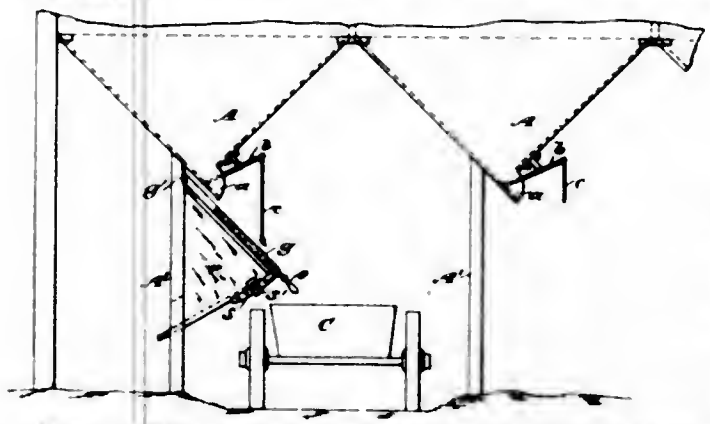
10. A hollow grate-bar having vertically-disposed stands or supports therein and provided with flat heads at their upper ends, in combination with a cover having apertures above the heads of the stands and suitable means for adjustably sustaining the cover and drawing the same upon said heads, substantially as specified.

483,798. BAIL-EAR FOR BUCKETS. MARTIN THOMEL, Monticello, assignor of one-half to James Milne, Scotch Grove, Iowa. Filed Mar. 11, 1892. Serial No. 424,579. (No model.)



Claim.—A bail-ear comprising a base-plate adapted to fit the body of a vessel and the under surface of its top, rim, or body and for attachment to said body and provided with a raised portion for retaining the bail outside of the body of the vessel, a projection forming a pivot for a bail, and a projection for receiving a washer and serving the function of a rivet, the whole constructed of a single piece, substantially as and for the purpose specified.

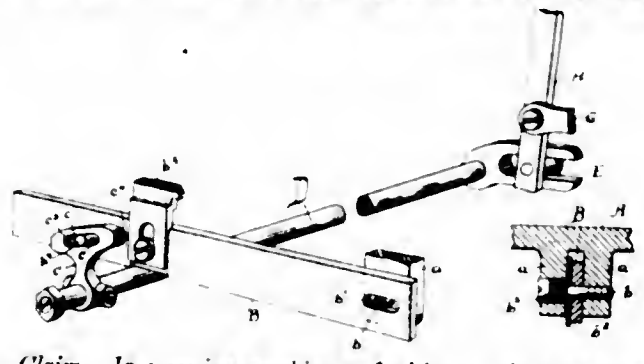
483,799. SCREENING DEVICE FOR COAL-POCKETS. GEORGE A. THOMPSON, Brooklyn, N. Y. Filed Nov. 18, 1891. Serial No. 412,258. (No model.)



Claim.—1. The combination, with the elevated coal-pocket having a gate, of a vertically-swinging inclined frame hinged at its rear end below said gate and having adjusting mechanism for its forward end, a vibrating screen within the frame and having an operating-lever extending outwardly to the free edge of the frame within reach of the operator, an operating device depending from the gate of the pocket and also within reach of the operator to permit of simultaneous operation, and a dust-conveyer below and inclined reversely to the screen and its frame, substantially as set forth.

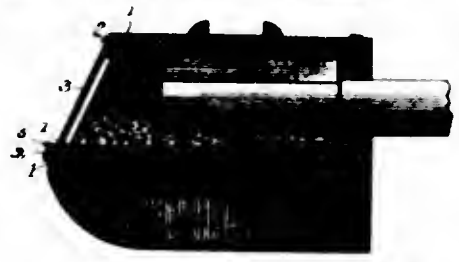
2. An apparatus for loading vehicles with coal, comprising an elevated pocket having a gate and a vertically-swinging frame hinged therebelow, an apertured curved arm secured to the frame and provided with a keeper and adjusting-pin, a dust-chute beneath and inclined reversely to said frame, a vibratory screen within the frame, a lever pivoted to the frame, connected to the screen, and extending to the lower outer edge thereof in reach of the operator, and a gate for the pocket, having its operating device extending down toward the said lever for simultaneous operation therewith, substantially as set forth.

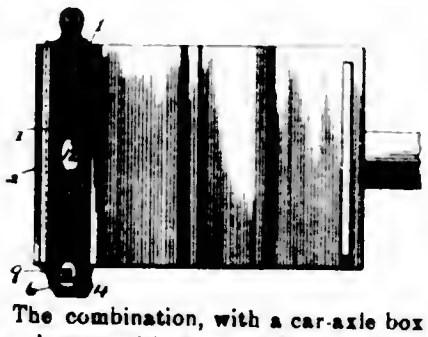
483,800. FEEDING MECHANISM FOR SEWING-MACHINES. BENJAMIN F. BELLOWS, Cleveland, Ohio, assignor to Edward T. Lufkin, same place. Filed Feb. 8, 1892. Serial No. 420,703. (No model.)



Claim.—In a sewing-machine, a feed-bar, a pin projecting therefrom, and a tension device, combined with a rock-shaft, an arm secured thereto having a cam-slot into which said pin projects, and the buffer-pieces projecting into the ends of said slot, substantially as set forth.

483,801. CAR-AXLE-BOX LID. FRANK P. BOATMAN, Indianapolis, Ind., assignor to the Morris Box Lid Company, Pittsburg, Pa. Filed May 21, 1892. Serial No. 433,867. (No model.)





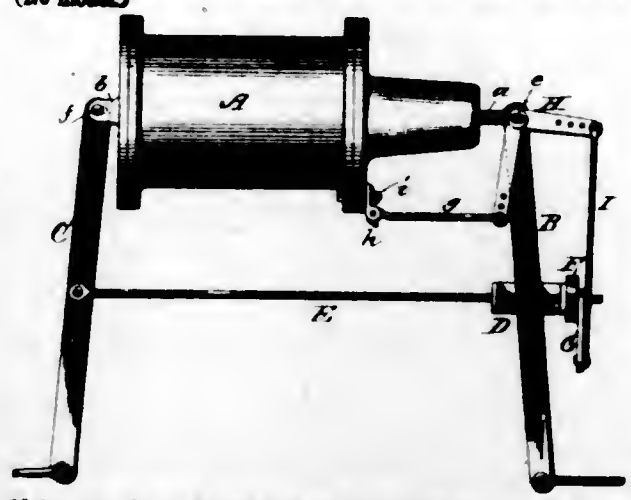
Claim.—1. The combination, with a car-axle box having its lid-seat standing on a downward incline and formed with a rib or shoulder at the lower side of its opening, of a lid pivoted at the side of the box, formed with a lip or flange standing upward at its lower edge, whereby to form a long surface bearing upon the inner side of said box-shoulder, for the purpose stated.

2. A car-axle-box lid or cover formed with an outward-upset lip or flange on its lower edge to form a long surface bearing on the box at the lower edge of its opening and provision at one end for a pivotal connection, substantially as described.

3. A car-axle-box lid or cover formed with a lapping spring-tongue at one end having registering holes in the lapped parts and an outwardly-upset flange or lip at its lower edge, for the purpose stated.

4. A car-axle-box lid having a pivot-attaching end having a spring function and an outward-upset bearing lip or flange along its lower edge, for the purpose stated.

483,802. SLACK-ADJUSTER FOR AIR-BRAKES. CHARLES R. CORPORAN, Colorado City, Colo. Filed Feb. 20, 1892. Serial No. 422,312. (No model.)



Claim.—1. In a slack-take-up for air-brakes, a suitable piston

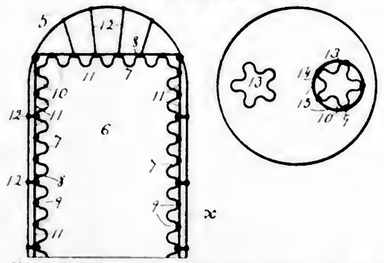
and cylinder and brake-levers connected therewith, in combination with a pawl-and-ratchet device and a screw-rod connecting the brake-levers together and engaging with a screw-threaded hole in the ratchet-wheel, substantially as and for the purpose set forth.

2. In a slack-take-up for air-brakes, a suitable air-cylinder and piston and brake-levers connected therewith, in combination with a rod connecting said levers together and having its free end screw-threaded, a ratchet-wheel having a screw-threaded hole with which the screw-threaded end of the rod engages, an arm connected to the rod and carrying a pawl, and a rod connecting the arm with a bell-crank lever, substantially as and for the purpose described.

3. In a slack-take-up for air-brakes, a suitable air-cylinder and piston and brake-levers connecting therewith, in combination with a screw-threaded rod connecting said levers together, a bracket connected to one of said levers and through which the screw-threaded end of the rod passes, a pawl-and-ratchet device upon the end of the screw-rod, a bell-crank lever, an intermediate connection between it and the pawl-and-ratchet device, and an intermediate connection between it and a fixed arm, substantially as and for the purpose described.

4. In a slack-take up for air-brakes, a suitable cylinder and piston, brake-levers connected thereto, a pawl-and-ratchet device upon the end of a rod that connects the levers together, and a bracket upon one of the levers through which the screw-threaded end of the rod passes, in combination with a rod adjustably connected to an arm of the ratchet-wheel and to a bell-crank lever and a rod adjustably connected to the bell-crank lever and a fixed arm, substantially as and for the purpose specified.

483,803. STEAM-BOILER. JOHN D. HULINGS, Hulings, W. Va. Filed May 18, 1892. Serial No. 433,410. (No model.)

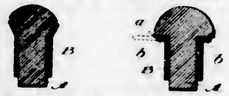


Claim.—1. The combination, in a steam-boiler, of an outer shell, a fire-box within of corrugated plate, and an intermediate plate secured to the corrugated plate and forming a series of pipes therewith, the said intermediate plate being perforated along the said pipes, substantially as described.

2. The combination, in a steam-boiler, of an outer shell, a corrugated fire-plate within the shell, and an intermediate plate secured to the corrugated plate, substantially as described.

3. The combination, in a steam-boiler, of an outer shell, a corrugated fire-plate within the shell, a plate intermediate between the shell and fire-plate, rivets firmly securing the intermediate plate to the corrugated fire-plate, and stay-bolts securing both the fire-plate and the intermediate plate to the shell, substantially as described.

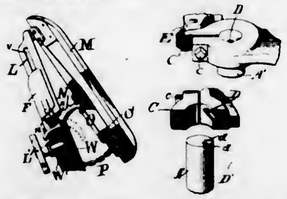
483,806. INSULATED RIVET. WILLIAM S. HULL, Sheffield, Ala. Filed May 2, 1892. Serial No. 431,402. (No model.)



Claim.—1. As an article of manufacture, a rivet provided with a jacket, sleeve, or covering of asbestus, as set forth.

2. A rivet provided with a non conducting sleeve, jacket, or covering set within the body of the rivet, as set forth.

483,807. DENTIST'S CHAIR. WILLIAM A. JOHNSTON and ARTHUR W. BROWNE, Prince's Bay, N. Y., assignors to the S. S. White Dental Manufacturing Company, Philadelphia, Pa. Filed Oct. 31, 1889. Serial No. 328,787. (No model.)



Claim.—1. The combination of the chair frame or body, the support or plunger therefor, the carrying frame or yoke having the split socket for connecting the chair-frame and its support or plunger and about the journals of which the chair-frame rocks, and the clamp-screw by which the carrying-frame is adjustably secured upon the support or plunger, substantially as set forth.

2. The combination of the chair frame or body, the support or plunger therefor provided with the holes at its upper end, the socketed

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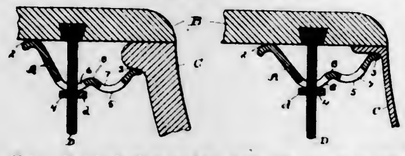
483,804. BASIN-CLAMP. JOSEPH H. GLAUBER, Cleveland, Ohio. Filed May 23, 1892. Serial No. 434,743. (No model.)

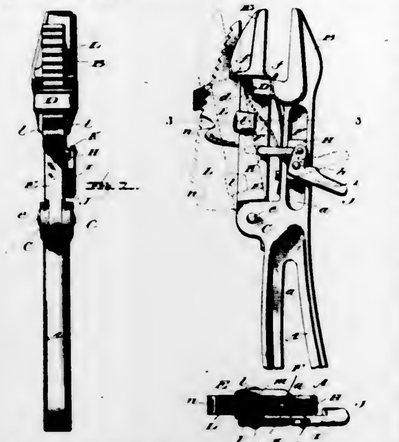


Claim.—1. A basin-clamp having a depression between its ends, rounded on the bottom side, substantially on the segment of a circle, the center of which comes between and beneath the plane of the ends of the clamp, and an opening through said rounded portion, in combination with a clamping-bolt through said slot and a nut, substantially as described.

2. A basin-clamp having two different portions of its body rounded on the exterior to the segment of a circle and an opening for the clamping-bolt through said rounded portions, substantially as described.

3. As a new article of manufacture, a clamp for securing basins in position having its ends constructed to engage the flange of the basin and the supporting-slab, respectively, and having a portion between its ends formed with a rounded surface and an opening through said rounded portion for the securing-bolt, the said rounded and slotted portion located below the plane of the ends of the clamp, substantially as described.

483,805. WRENCH. LAWRENCE I. FOLK, JOHN W. NAIRN, and LOUIS H. DEMPSEY, Dubuque, Iowa. Filed May 28, 1892. Serial No. 434,719. (No model.)



Claim.—The wrench described, consisting of the handle with fixed jaw, ears and yoke formed with toothed cross-bar, the movable jaw pivoted between said ears and formed with shoulder *f*, the spring between the jaws, the elbow-lever pivoted on the fixed jaw, the link connecting the lever with the movable jaw, and the sliding wedge having lugs to embrace the movable jaw and toothed to engage the tooth of the yoke and arranged within the yoke and formed with thumb-piece *n*, all substantially as and for the purpose specified.

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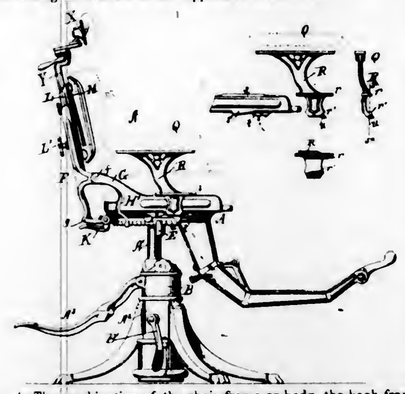
carrying frame or yoke detachably connecting the chair frame and its support or plunger and having a hole in the wall of its socket, and the locking-pin for engagement with the holes in the support and yoke, substantially as and for the purpose set forth.

3. The combination, substantially as set forth, of the vertically-adjustable and turning support or plunger, the elevating-lever turning with the support, the carrying frame or yoke connected with and horizontally adjustable by turning about the support, the chair frame or body carried by the yoke, and the locking devices for clamping the yoke to the support in the position of horizontal adjustment, to which the yoke may be brought by turning it about the support, whereby horizontal turning adjustment of the chair-body independently of the support and relatively to the elevating-lever is provided for, the lever is caused to project in the desired direction relatively to the chair-seat, and these relative positions are maintained throughout vertical and turning movements of the support, as described.



4. The combination of the chair frame or body, the back-frame projecting in rear thereof and pivotally connected therewith and provided beneath its pivot with the forwardly-projecting arm, the yielding-armed clamp piece, and a lever-actuated clamp acting upon the armed clamp-piece for engaging it with the projecting arm of the back-frame, substantially as and for the purpose set forth.

5. The combination of the back-pad carrier, the handled detent or locking-latch pivoted in a recess in the carrier and curved and toothed in advance of its pivot, and the back-pad frame hinged to the carrier, engaged by said locking-latch, and provided with the opening in which said latch works and acts against the shoulder formed by the top wall thereof, substantially as and for the purpose set forth.

6. The arm-frame carrying the arm at top and having on the inside of its lower portion the two grooved lugs, one above the other, the groove in the one lug extending horizontally and that in the other being inclined, substantially as and for the purpose set forth.

7. The combination of the seat-frame provided with the horizontally-extending and inclined top and bottom guide-ribs and the arm-frame having on the inner side of its lower portion the two lugs grooved to adapt them to slide upon the ribs of the seat-frame, substantially as and for the purpose set forth.

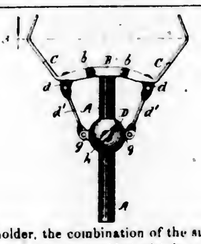
8. The combination of the chair-seat frame provided at its side below the level of the upper surface of the upholstered seat with the top and bottom guide-ribs, the detachable arm-frame provided with the grooved lugs to slide upon said guide-ribs, and the lock to retain the arm-frame in position, substantially as set forth.

9. The combination of the seat-frame provided with the horizontally-extending top rib and the inclined bottom rib, the pivoted lock in advance and inside of said bottom rib, and the arm-frame provided with the two inwardly-projecting grooved lugs, one above the other, the upper one extending horizontally and the lower inclined to correspond with the inclination of the bottom rib of the seat-frame, the said arm-frame being also provided at its front lower corner with the inclined laterally-projecting lugs, substantially as and for the purpose set forth.

483,808. SHOE-HOLDER. EDWARD LEGER, Chicago, Ill., assignor of one-third to Harry B. Leger, same place. Filed Mar. 22, 1892. Serial No. 425,961. (No model.)

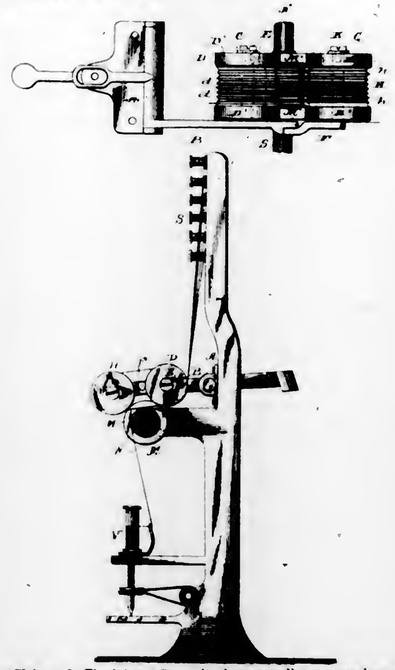
Claim.—1. In a shoe-holder, the combination of a supporting-stem, a head-piece mounted on the upper end thereof, the companion clamping-jaws hinged to said head-piece, the slide mounted on the lower part of said stem, and the companion links connecting said jaws and slide, whereby a vertical adjustment of said slide imparts a swinging movement to said jaws, substantially as set forth.

483,808.



2. In a shoe-holder, the combination of the supporting-stem, the head-piece, the clamping-jaws provided with lugs on the under side and hinged to said head-piece, the movable slide provided on opposite sides with lugs, and the connecting-links pivoted at their upper ends to the lugs on said jaws and the lower ends pivoted to the companion lugs on said slide, substantially as set forth.

483,809. ROLLS FOR DOUBLING AND TWISTING MACHINES. JOHN N. LEONARD, Northampton, Mass. Filed Nov. 19, 1891. Serial No. 412,416. (No model.)



Claim.—1. The jointed frame having a spindle connected to each part thereof, the grooved roll on each spindle, and a driving-roll engaging one of the grooved rolls, in combination, substantially as described.

2. The pivoted frame carrying a plurality of rollers supported from said frame at one end only, in combination with the driving-roller on a shaft practically parallel with the rolls on the frame and against which one of the rolls on the frame bears when in operation, substantially as described.

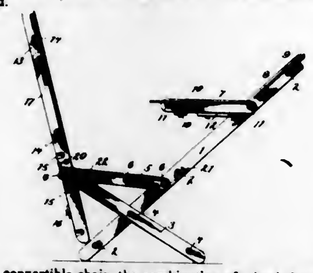
483,810. CONVERTIBLE CHAIR. JOSEPH A. NESBITH, Paxton, Va. Filed Apr. 25, 1892. Serial No. 430,529. (No model.)

Claim.—1. In a convertible chair, the combination, with a back-frame and a seat-frame, of a pivoted back-section adapted for adjustment as a disk, and a detachable frame hung upon the seat-frame, whereby to form a seat-back when the chair is used with the desk-back part, substantially as described.

2. In a convertible chair, the back-frame 1, having a pivoted section 7, provided with the button 12, a pivoted seat-section 5, having its front cross-bar 6 projecting at each side 18, and the rear legs 3, pivoted to said back-frame and adapted to engage said seat cross-bar

in combination with the frame 13, having a backing, and the notches 15, adapted for engagement with said seat cross-bar ends 18, as shown and described.

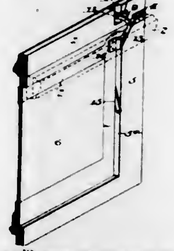
3. In a convertible chair, the back-frame 1, having the pivoted section 7, provided with the buttons 12 and 19, a pivoted seat-section 5, having its front cross-bar 6 projecting at each side 18, and the rear legs 3, pivoted to said back-frame and adapted to engage said seat cross-bar, in combination with a separate frame 13, having a backing, the notches 15, the buttons 16, and the pivoted bars 17, bifurcated at their free ends and adapted for engagement with said cross-bar ends, as described.



4. In a convertible chair, the combination of a back-frame having a pivoted back-section provided with a pair of buttons on the under side of each side bar, a seat-frame having its front cross-brace projecting at each side, and a detachable frame having notches at one end in the side bars thereof, a button for each notched bar, and pivoted bars at the other end of said frame, whereby the latter may be applied to the chair in the several ways and for the purposes stated.

5. The combination, in a convertible chair, of a back-frame having a pivoted back-section provided with a pair of buttons on the under side of each side bar, a seat frame, and a detachable frame having its side bars disconnected at one end and provided each with a button on its under side, its other end having pivoted bars, whereby the said detachable frame is connected with and supported upon the pivoted back-section and the seat-frame, substantially as described.

483,811. PIANO-CASE. JEROMINUS REINERS, Toronto, Canada. Filed Feb. 5, 1892. Serial No. 420,445. (No model.)



Claim.—1. In a tone-liberator, the combination, with an upright-piano case, of a movable panel located in the middle of the upper front frame, a supplemental panel located above the movable panel and extending across the top of the upper front frame, means for pivotally connecting the supplemental panel to the piano-case, and an arm connecting the supplemental panel to the movable panel, said supplemental panel adapted to be opened and closed, respectively, by and simultaneously with the opening and closing of the movable panel, substantially as described.

2. In a tone liberator, the combination, with an upright-piano case, of a movable panel located in the middle of the upper front frame, a supplemental panel located above the movable panel and extending across the top of the upper front frame, a pivotal connection between the supplemental panel and the piano-case, a lever pivotally connected to the inner side of the upper front frame, an arm connecting the movable panel and the lever, and a link connected to the lever and to the supplemental panel, substantially as described.

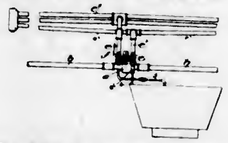
3. In a tone-liberator, the combination, with an upright-piano case, of a movable panel located in the middle of the upper front frame, a supplemental panel located above the movable panel and extending across the top of the upper front frame, a hinge connecting the supplemental panel to the inner side of the upper front frame, a lever pivotally connected to the inner side of the upper front frame, an arm connecting the lever with the movable panel, a link connecting the supplemental panel with the lever, the movable panel adapted to move downward and forward when opened, stops to arrest the downward and forward movements of the movable panel, and the supplemental panel adapted to move simultaneously with the movement of the movable panel, substantially as described.

483,812. EYEGLASSES. FRITZ G. SCHMIDT, New York, N. Y. Filed May 23, 1892. Serial No. 433,979. (No model.)

Claim.—1. The improved nose-piece for eyeglasses or analogous devices, consisting of the substantially-flat metallic piece H, adapted to be connected to the glasses, having integral portion *a*, constituting the usual forward nose-piece, extending substantially in the plane of the lenses and constructed on its back face to be attached directly to the usual stud of the glasses and on its front face to be connected directly to the shell of the nose-piece, having the integral adjustable rearwardly-extending shank G projecting from said portion *a* and having the integral rearward portion *b* at the end of said shank, constructed on its front face to be connected directly to a shell and constituting an auxiliary nose-piece adapted to engage the nose of the user rearwardly of the plane of the lenses, whereby only one piece of metal is required for the usual and auxiliary nose-pieces of each lens of the glasses, substantially as and for the purpose set forth.

2. In eyeglasses or analogous devices, the lenses or lens-frames, their studs D, and the intermediate bridge connected thereto, in combination of a nose-piece for each lens, consisting of a substantially-flat metallic piece, as H, having an elongated forward portion *a* extending in the plane of the lens, constructed at the upper end of its back face to be connected directly to the stud of the glasses and on its front face to be directly connected to a facing *e* and constituting the usual front nose-piece E for engaging the front of the nose, a lateral shank, as G, integral with and projecting from the rear side of said portion *a* in substantially the same plane therewith, and a rearward portion *b*, integral with and projecting from said shank, extending substantially parallel with said portion *a*, constructed on its front face to carry a facing *f* and constituting an auxiliary nose-piece F, said portions *a*, G, and *b* all constructed of one integral piece, substantially as and for the purpose set forth.

483,813. CAR-HEATING APPARATUS. JAMES H. SEWALL, Portland, Me., assignor to the Consolidated Car Heating Company, Wheeling, W. Va. Filed May 17, 1889. Serial No. 311,173. (No model.)



Claim.—1. In a heating apparatus, the combination of a valve-case having a steam-passage *a'* through it from end to end, two transverse passages *c* and c^3 and a passage *c'*, leading from passage *a'* to passage *c*, a three-way valve located within passage *a'* and controlling the flow of steam therethrough and through the passage *c'*, a main steam pipe communicating with passage *a'*, the circulating-pipes within the car, located at each side thereof, supply-pipes leading from passage *c* to said circulating-pipes, and return-pipes leading from said circulating-pipes to passage c^3, substantially as described.

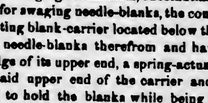
2. In a heating apparatus, the combination of a valve-case having a steam-passage *a'* through it from end to end, two independent passages *c* and c^3, and a passage *c'*, leading from passage *a'* to passage *c*, a valve located within passage *a'* and controlling the flow of steam therethrough and through passage *c'*, a valve, as *f*, located within said passage *c'*, a main steam-pipe communicating with passage *a'*, the circulating-pipes within the car, located at each side thereof, supply-pipes leading from passage *c* to said circulating-pipes, and return-pipes leading from said circulating-pipes to passage c^3, substantially as described.

3. In a heating apparatus, the combination of a valve-case having a steam-passage *a'* through it from end to end, two independent passages *c* and c^3, the said passage *c* communicating with the passage *a'*, a valve located within passage *a'* and controlling the flow of steam therethrough and through the passage *c*, a main steam-pipe communicating with passage *a'*, the circulating-pipes within the car, located at each side thereof, supply-pipes leading from passage *c* to said circulating-pipes, and return-pipes leading from said circulating-pipes to passage c^3, and a valve, as c^3, controlling the escape from or outlet of the said paid passage c^3, substantially as described.

4. In a heating apparatus, the combination of a valve-case having a steam-passage *a'* through it from end to end, two independent or non-communicating passages *c* and c^3, the said passage *c* communicating with the passage *a'*, a three-way valve located within passage *a'* and controlling the flow of steam therethrough and through the passage *c*, a main steam-pipe communicating with passage *a'*, the circulating-pipes within the car, located at each side thereof, supply-pipes leading from passage *c* to said circulating-pipes, return-pipes leading from said circulating-pipes to passage c^3, and an auxiliary boiler located beneath and in communication with said passage c^3, substantially as described.

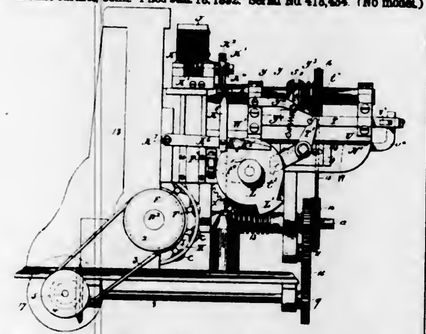
5. In a heating apparatus, the combination of a valve-case having a steam-passage *a'* through it from end to end, independent or non-communicating passages *c* and c^3, the passage *c'*, leading from passage *a'* to passage *c*, a valve controlling the flow of steam through the passage *c'*, a main steam-pipe communicating with passage *a'*, circulating-pipes within the car, located at each side thereof, supply-pipes leading from passage *c* to said circulating-pipes, and return-pipes leading from said circulating-pipes to passage c^3, substantially as described.

483,814. BLOCK FOR PRINTERS' USE. EULIUS B. SHELDON, New Haven, Conn. Filed Dec. 21, 1891. Serial No. 415,823. (No model.)



Claim.—In a block for printers' use, the combination, with a chambered body, of one or more clamps loosely connected therewith, substantially as set forth, to fall slightly away from the said body when relieved of outside pressure, and a printing or face plate adapted to be applied to the said body and clamped thereto by the said clamps, which hold it against lateral movement thereon, the upper face of the body and the lower face of the plate being facially configurated transversely to interlock and hold the plate against endwise movement on the body, substantially as described.

483,815. MACHINE FOR SWAGING NEEDLES. IRA T. SMITH, Mount Carmel, Conn. Filed Jan. 18, 1892. Serial No. 418,434. (No model.)



Claim.—1. In a machine for swaging needle-blanks, the combination, with a hopper having a narrow vertical passage formed in its lower end and constructed with a slot leading into the said passage, of a friction feed-disk having a yielding periphery which projects through the said slot into the said passage, means for rotating the said disk, a blank-carrier located below the hopper and adapted to remove needle-blanks therefrom one at a time and to stop the column in the said passage while it is feeding them, a chuck to receive the blanks from the said blank-carrier, and swaging mechanism, substantially as set forth.

2. In a machine for swaging needle-blanks, the combination, with a hopper, of an oscillating blank-carrier located below the same to successively remove the needle-blanks therefrom and having a pocket formed in the inner edge of its upper end, a spring-actuated clearance-plate pivoted to the said upper end of the carrier and co-operating with the said pocket to hold the blanks while being fed, means for actuating the said carrier, a chuck to receive the blanks from it, and swaging mechanism, substantially as set forth.

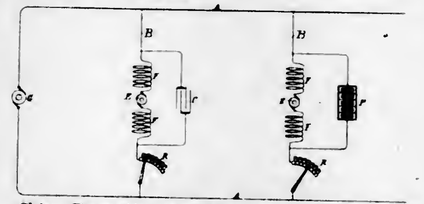
3. In a machine for swaging needle-blanks, the combination, with a hopper, of an oscillating blank-carrier located below the same to remove the blanks therefrom one by one and consisting of a block having its upper end convexed to move under the hopper in close proximity thereto and constructed with a pocket formed in the inner edge of its said convexed upper end, a spring-actuated clearance-plate attached to the upper end of the carrier to coact with its said pocket to hold the blanks while they are being fed, means for actuating the said carrier, a chuck to receive the blanks from it, and a swaging mechanism, substantially as set forth.

4. In a machine for swaging needle-blanks, the combination, with a hopper, of an oscillating blank-carrier located below the same, hung between its upper and lower ends on a horizontal pivot and having its upper end adapted to remove the blanks from the hopper one by one, a spring-actuated clearance-plate pivoted to the upper end of the hopper and coacting with its said pocket, an operating-cam adapted to engage directly with the said carrier below its pivot for actuating it, a chuck to receive the blanks from it, and a swaging mechanism, substantially as set forth.

5. In a machine for swaging needle-blanks, the combination, with a sliding carriage, of a chuck mounted therein and containing a gripping-jaw, means for operating the said jaw, including a slide mounted in the carriage and furnished with a bevel, and a tensional retaining-arm engaging with the said bevel to hold the slide forward, and thus sustain the gripping-jaw in its active position, substantially as set forth.

6. In a machine for swaging needle-blanks, the combination, with a sliding carriage, of a chuck mounted therein and containing a gripping-jaw, means for operating the said jaw, including a slide mounted in the carriage, a device for moving the slide inward to aid in the actuation of the gripping-jaw, a pivotal arm hung at the rear end of the said carriage and connected at one end with the outer end of the said slide, and a buffer arranged to engage with the other end of the said pivotal arm in the outward movement of the carriage, substantially as described.

483,816. ALTERNATING-CURRENT MOTOR. WILLIAM STANLEY, Jr., and JOHN F. KELLY, Pittsfield, Mass. Filed Mar. 10, 1892. Serial No. 424,591. (No model.)



Claim.—The combination, with an alternating-current motor, of a condenser or its described equivalent in a shunt to the motor and of a capacity or value capable of neutralizing the self-induction of the motor with which it is associated, as set forth.

483,817. EVAPORATING APPARATUS. OSCAR R. STILLMAN, Natick, Mass. Filed Sept. 5, 1890. Serial No. 364,013. (No model.)

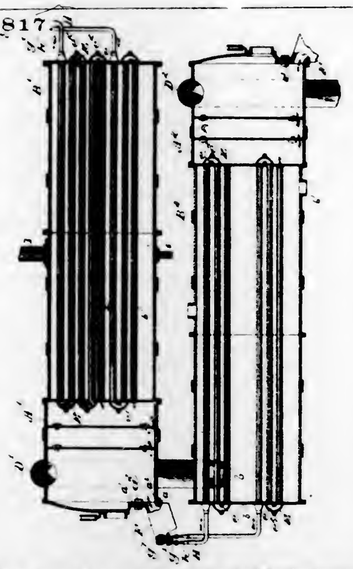
Claim.—1. An evaporating apparatus containing adjacent heating-chambers arranged in series of two or more, a distributing-chamber interposed between a separating-chamber of one effect and a heating-chamber of the next effect, a continuous horizontal delivery-channel in the bottom of the distributing-chamber, a series of independent distributing-pipes leading from the bottom of the said channel, the delivery ends of said pipes being connected one to each coil of a following effect, and a valve to simultaneously control the admission of a uniform quantity of liquid from the said distributing-chamber into each distributing pipe and coil, substantially as described.

2. In an evaporating apparatus, a distributing-valve having a series of openings and a series of distributing-pipes connected with the seat of the chamber on which the said valve is made movable and registering with the openings therein, combined with a series of coils, one for the delivery end of each of said distributing-pipes and adapted to be fed uniformly by adjustment of one and the same valve, substantially as described.

3. A distributing-chamber, a many-ported valve extended longitudinally therein, and a series of independent distributing-pipes in communication with said chamber and each under the control of the said valve, combined with a fixed stop and an adjustable regulating device for limiting positively the throw of the said valve, substantially as described.

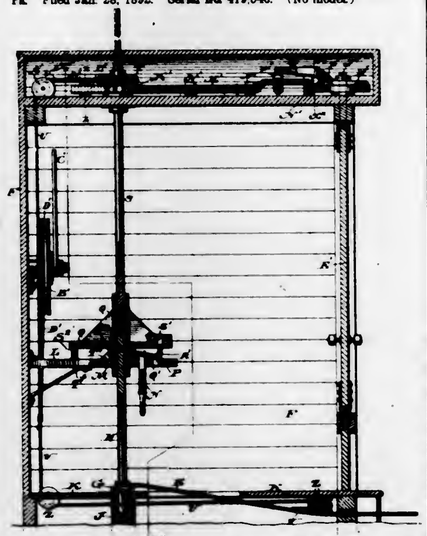
4. A distributing-chamber, a many-ported valve extended longitudinally therein, and a series of distributing-pipes in communication with said chamber and under the control of the said valve, each pipe having its own ports, the openings in the said valve and seat being of elliptical and circular shape, substantially as described, to enable the liquid-passages to be kept substantially circular, thereby insuring uniform flow without clogging, substantially as described.

483,817.



5. An evaporating apparatus containing the following instrumentalities, viz: two or more heating-cylinders and separating-cylinders arranged in vertical series of two or more, a distributing-chamber for each effect, a many-ported valve therein controlled externally, and a series of distributing-pipes, one for each coil of each effect and controlled each by a port and under the control of the said valve to insure a uniform supply of liquid from the distributing-chamber directly into each coil, the said parts being arranged substantially as represented, whereby the liquid is at all times aided by gravity in its passage from one to the other effects, as set forth.

483,818. RAILROAD-SWITCH. JOHN N. STRONG, Philadelphia, Pa. Filed Jan. 28, 1892. Serial No. 419,546. (No model.)



Claim.—1. A head with a recess therein and a switch-operating shaft on which said head is mounted, a plate through which said shaft freely passes, a dog on said plate having a nose adapted to enter the recess of the head, and a lever having a pivotal connection with said shaft, whereby a switch may be operated, said lever being adapted to raise said dog, whereby the latter may be locked to said head, said parts being combined substantially as described.

2. A switch-operating shaft, a plate through which said shaft passes, a lever pivotally connected with said shaft, a dog mounted on said plate, and a head which is freely mounted on said shaft, said plate having recesses to receive the toes of the dog when the latter is raised to engage with the head, thus preventing rotation of said head, said parts being combined substantially as and for the purpose set forth.

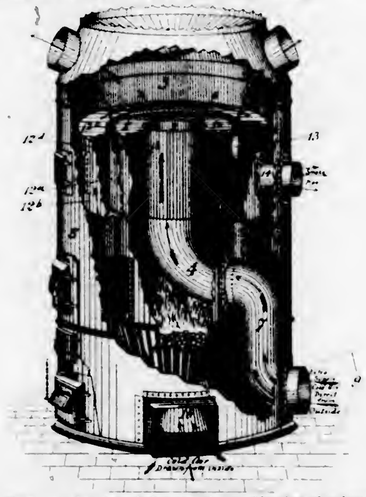
3. A horizontal plate having a recess therein, a rotary shaft with lever and an arm and rod for operating the movable rails, a head freely mounted on said shaft above said plate and having a vertical shaft secured thereto, a pulley on said vertical shaft, a wheel with a signal adapted to be lowered across the main-track rails, intermediate pulleys and cords between said shaft-pulley and said wheel for operating said signal, and means, substantially as described, for locking said head and plate together, said parts being combined substantially as described.

4. The plate L, with the recess P, the rotary shaft H, with the piece M connected therewith and having the pivoted lever N, the head Q, freely mounted on the shaft H and having the recesses S', and the dog Q', with a nose R', adapted to enter said recess S', said parts being combined substantially as described.

5. A plate with a recess therein, a rotary shaft for operating the movable rails journaled in said plate, a head freely mounted on said shaft, a dog on the plate, provided with toes adapted to engage in recesses in blocks secured to said plate, and a nose on said dog engaging in a recess in said head, said parts being combined substantially as described.

6. A switch-house with a swinging door, a disk on a journal of said door with a recess therein, an arm on said disk, a spring controlling said arm, a signal-operating mechanism, and a sliding lock for said disk, having a rack engaging a rotary cog-wheel on the signal mechanism, said parts being combined substantially as described.

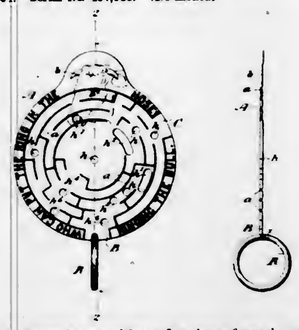
483,819. HOT-AIR FURNACE. ROBERT TATE, Toronto, Canada. Filed Mar. 26, 1892. Serial No. 426,515. (No model.)



Claim.—1. In a hot-air furnace, the combination of an inner heating-drum suspended within the furnace-casing, a vertical passage-way through the inner heating-drum and located centrally in the same, a distributing-chamber above the heating-drum, into which opens the upper end of the vertical passage-way, the fire-box located below the heating-drum; a pipe within the fire-box, the upper end of which is connected to the lower end of the vertical passage-way and the lower end of said pipe projecting beyond the fire-box wall, a furnace-casing, a cold-air-supply pipe located between the furnace-casing and the outer wall of the fire-box, the upper end of the cold-air-supply pipe connected to the lower and outer end of the pipe within the fire-box, a cold-air-supply shaft connected to the cold-air-supply pipe, and a passage between the furnace-casing and the outer walls of the fire-box and heating-drum, leading to the distributing-chamber, substantially as described.

2. In a hot-air furnace, the combination of the inner heating-drum suspended within the furnace-casing, a vertical passage-way through and located centrally in the drum, a distributing-chamber, the upper end of said passage-way opening into the distributing-chamber and the lower end connected to the top end of a bent pipe located within the fire-box, the other end of said bent pipe projecting beyond the wall of the fire-box, a metallic pipe connected to the outer end of the bent pipe and to the cold-air-supply shaft, said metallic connection-pipe adapted to be heated by the radiation of the heat from the walls of the fire-pot and the bent pipe adapted to be heated by the radiation of the heat from the fire within the fire-box, a cold-air-supply shaft connected to the cold-air-supply pipe entering the heating-chamber between the furnace casing and the walls of the fire pot, the fire-box, and the heating-drum, substantially as described.

483,820. PUZZLE. JOEL W. THORNE, New York, N. Y. Filed Oct. 7, 1891. Serial No. 407,989. (No model.)



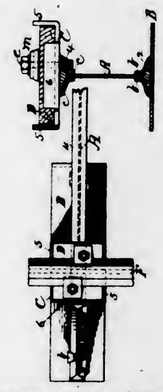
Claim.—1. A puzzle comprising a flat piece of metal or other suitable material, having perforations formed therein and raised ribs intersecting a direct line between said perforations, in combination with an open ring, substantially as described.

2. A puzzle comprising a flat piece of metal or other suitable material, having circular and elongated perforations formed therein, in combination with an open ring, substantially as described.

3. The hereinbefore-described puzzle, comprising a disk having operative perforations formed therein at determinate distances from each other, raised ribs intersecting a direct line between said perforations, and false perforations formed at irregular distances from the operative perforations, in combination with an open ring, as described.

4. A puzzle consisting of a flat piece of metal or other suitable material, having ribs raised thereon and perforations formed therein at predetermined distances apart, and a ring having a transverse opening of sufficient breadth to pass over the unraised portions of the flat piece, but not over the raised portions, substantially as described.

483,821. METAL RAILROAD-TIE. SAMUEL H. WILSON, Webster, Mass. Filed Mar. 30, 1892. Serial No. 426,997. (No model.)



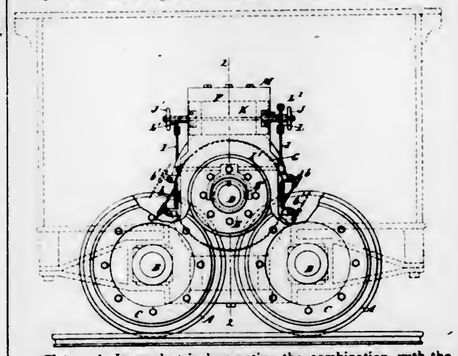
Claim.—1. The within-described metal railroad-tie, consisting of the I-shaped body-beam, the horizontal foot-plates and cap-plates attached to the respective ends of the body by ears that are punched through and set out from the plate metal and formed to embrace the body-flanges at opposite sides thereof, substantially as set forth.

2. In a metal railroad-tie, the combination, substantially as described, of the body composed of a straight rolled I-shaped beam with diagonally-formed ends, the horizontally-disposed foot-plates having attaching ears that overlock on the body-flanges, the cap-plates having attaching-ears that embrace the top body-flanges and provided with upwardly-projecting guard-lugs, and the rail-seat blocks, for the purposes set forth.

3. In a railroad-tie, the combination, with the straight body having the upright web with flanged edges, of the short cap or rail-seat plates adapted to slip onto the ends of the body-flanges by means of the underlocking-ears, and the rail-holding bolts passing through said plates and the body-flange, as and for the purpose set forth.

483,821.

483,822. ELECTRIC LOCOMOTIVE. THOMAS L. WILLSON, Brooklyn, N. Y. Filed Aug. 25, 1891. Serial No. 403,701. (No model.)



Claim.—1. In an electric locomotive, the combination, with the armature shaft of the electro motor and gearing interposed between said shaft and the driving-wheels, of the armature mounted to revolve freely on said shaft, and a friction-clutch adapted to wholly disconnect the armature from its shaft or to gradually couple it thereto, whereby by disengaging the clutch the armature may be caused to revolve without load while the locomotive is stationary, and thereby to store up power by its momentum to be utilized in starting the locomotive by gradually throwing on the load through the medium of said clutch.

2. In an electric locomotive, an electromotor having opposite friction-wheels on its shaft and friction-wheels engaging them in connection with the driving-wheels, the weight of the motor hung from its armature-shaft, whereby it serves to press said wheels into frictional

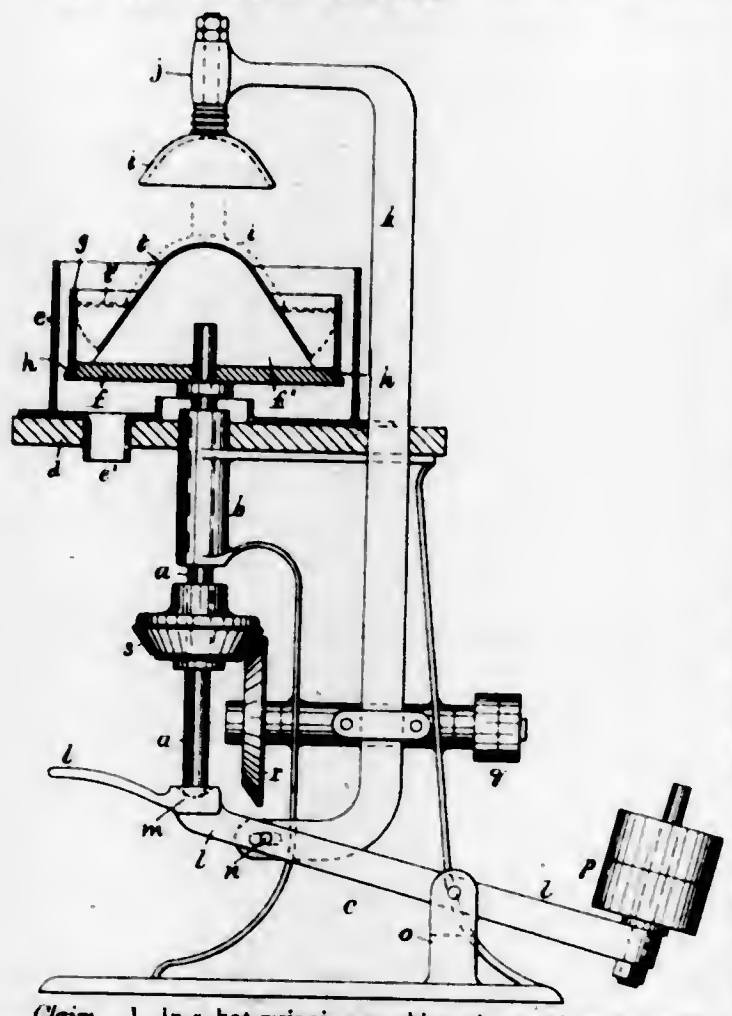
engagement, and the armature thereof mounted to turn freely on said shaft, in combination with a friction-clutch interposed between the armature and its shaft, whereby the armature may be coupled gradually to the shaft.

3. In an electric locomotive, the combination of armature-shaft D, geared to the driving-wheels, armature G, mounted loosely on said shaft and having a recessed hub, and a friction-clutch H, having friction-shoes connected to said shaft and engaging in the recess in said hub.

4. In an electric locomotive, the combination of armature-shaft D and armature G, turning loosely thereon, two friction-clutches H H, engaging said armature to couple it to the shaft, the operating-levers I I for working said clutches, and a mechanical connection between said levers, whereby the operation of either clutch will simultaneously operate the other.

5. In an electric locomotive, the combination of armature-shaft D, armature G, turning loosely thereon and constructed with a hub *c*, having opposite cones *d d'*, and a divided sleeve *h*, expansible thereby within the armature-ring, and friction-clutches H H, having carriers *j* fixed to the shaft, and shoes *k k*, carried by said carriers, said clutches being located in recesses in the ends of the armature-hub and provided with means for expanding said shoes into frictional engagement with the surfaces of said recesses.

483,828. MACHINE FOR WRINGING HATS. GEORGE YULE, Newark, N. J., and WILLIAM A. BAGLIN, New York, N. Y. Filed Oct. 16, 1891. Serial No. 408,906. (No model.)



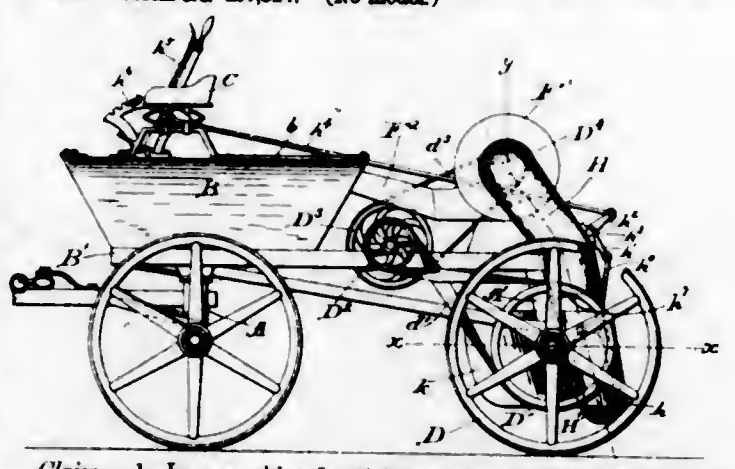
Claim.—1. In a hat-wringing machine, the combination, with a spindle and means for rapidly rotating and stopping the same at pleasure, of a carrier attached to the spindle and provided with a vertically-projecting rim at the outer periphery of the carrier to shape the edge of the hat-body, and a curb surrounding the carrier to retain the water discharged from the same, as set forth.

2. In a hat-wringing machine, the combination with a spindle and means for rapidly rotating and stopping the same at pleasure, of a carrier attached to the spindle and provided with a vertically-projecting rim at the outer periphery of the carrier, held detachably upon the carrier to shape the edge of the hat-body, and a curb surrounding the carrier to retain the water discharged from the same, as set forth.

3. In a hat-wringing machine, the combination, with a spindle and means for rapidly rotating and stopping the same at pleasure, of a carrier attached to the spindle and provided with a vertically projecting rim at the outer periphery of the carrier to shape the edge of the hat-body and a socket pressed upon the hat-body and adapted to shape the crown at the band and to limit the area expanded in the brim, substantially as set forth.

4. A hat-wringing machine consisting in the frame *c*, carrying the bearing *b* and curb *e*, the driving-spindle having pulleys *q* and friction-wheel *r*, the carrier-spindle *a*, having friction-pulley *s* and carrier *f*, with vertically-projecting rim at the outer periphery of the carrier attached thereto, the hat-block *f'* upon the carrier, the bar *k*, provided with bearing *j* and rotary socket *i*, and the treadle *l*, provided with weight *p* and step *m*, fitted to spindle *a*, and pivoted to the bar *k*, as set forth.

483,824. COTTON-HARVESTER. GEORGE H. ZEMPTER, REUBEN A. MANNING, and GEORGE W. OVERALL, Memphis, Tenn. Filed Apr. 2, 1892. Serial No. 427,527. (No model.)



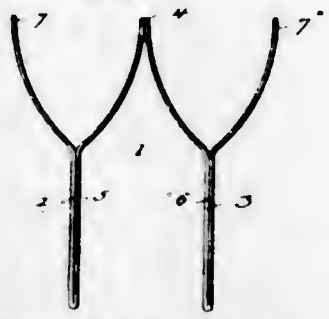
Claim.—1. In a machine for picking cotton impelled by any suitable power, the combination, with a wheeled frame, of a fan or fans revolving in a closed air-chamber, a suction-tube formed in two sections, with a telescopic joint connected to said fan, the lower section of said tube opening at or near the cotton-plants for drawing in the cotton, a system of levers for raising and lowering said lower section, a delivery-tube leading from said fan for the discharge of the cotton from the fan, and a receptacle for the cotton at the end of said delivery-tube, the said receptacle having an apertured cover, substantially as described.

2. In a machine for picking cotton impelled by any suitable power, the combination, with a wheeled frame, of two fans revolving in two closed air-chambers, two suction-tubes, each formed in two sections, with a telescopic joint connected to said air-chamber, with openings on the inner side of each for sucking in the cotton, and means for raising and lowering the lower ends of said suction-tubes, a guide-plate having a flaring mouth opening on either side of said suction-tube for guiding the cotton-plants in front of said openings, a delivery-tube leading from said air-chamber, and a receptacle at the end of said delivery-tube, with a wire screen or screens covering said receptacle, substantially as and for the purposes described.

3. In a machine for picking cotton impelled by any suitable power, the combination, with a wheeled frame, of the driving-pulley D', attached to one of the wheels of said frame, the belt d', the pulleys D^2 and D^3, keyed on the same shaft, the belt d^3, the pulley D^4, and fans F, keyed on the same shaft, the telescopic suction-tubes H', with means for raising the lower end of the same, the delivery-tubes F^2, and the receptacle B, having perforated cover, substantially as and for the purposes described.

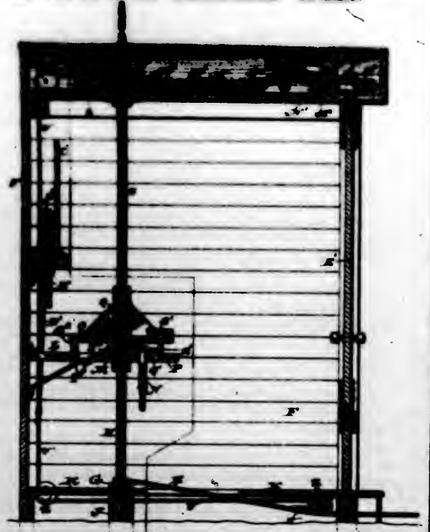
4. In a machine for picking cotton impelled by any suitable power, the combination, with a wheeled frame, of the driving-pulley D', attached to one of the wheels of said frame, the belt d', the pulleys D^2 and D^3, keyed on the same shaft, the belt d^3, the pulley D^4, and fans F, keyed on the same shaft, the telescopic suction-tubes H', the rod h^9, connected to the movable section of said tubes, the hand-lever h^3, rod h^4, and a bell-crank lever connecting said rods h^4 and h^9, whereby the lower end of the said suction-tubes may be raised or lowered, the delivery-tubes F^2, and the receptacle B, having a perforated cover, substantially as and for the purposes described.

483,825. CLAMP. WILLIAM N. R. ALDERSON and JAMES W. ALLEN, Eureka Springs, Ark.; said Alderson assignor, and said Allen assignor of one-third of his right, to Edwin R. Ray, same place. Filed Feb. 4, 1892. Serial No. 420,253. (No model.)

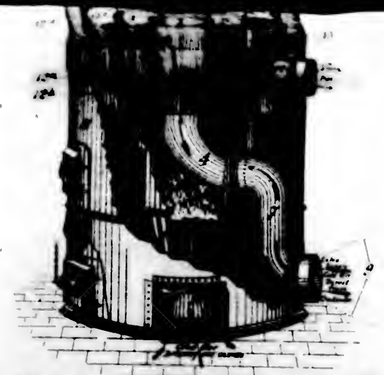


Claim.—A suspension-clamp consisting of a series of binding-arms, two of them having eyes at their free ends and the others having the double intermediate eye, substantially as described.

[illegible] RAILROAD SWITCH [illegible] Philadelphia, Pa. Filed Jan. 24, 1892. Serial No. 419,348. (No model.)



Claim.—1. A head with a recess therein and a switch-operating shaft on which said head is mounted, a plate through which said shaft freely passes, a dog on said plate having a nose adapted to enter the recess of the head, and a lever having a pivotal connection with said shaft, whereby a switch may be operated, said lever being adapted to raise said dog, whereby the latter may be locked to said head, said parts being combined substantially as described.



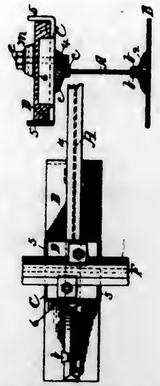
Claim.—1. In a hot-air furnace, the combination of an inner heating-drum suspended within the furnace-casing, a vertical passage-way through the inner heating-drum and located centrally in the same, a distributing-chamber above the heating-drum, into which opens the upper end of the vertical passage-way, the fire-box located below the heating-drum; a pipe within the fire-box, the upper end of which is connected to the lower end of the vertical passage-way and the lower end of said pipe projecting beyond the fire-box wall, a furnace-casing, a cold-air-supply pipe located between the furnace-casing and the outer wall of the fire-box, the upper end of the cold-air-supply pipe connected to the lower and outer end of the pipe within the fire-box, a cold-air-supply shaft connected to the cold-air-supply pipe, and a passage between the furnace-casing and the outer walls of the fire-box and heating-drum, leading to the distributing-chamber, substantially as described.

2. In a hot-air furnace, the combination of the inner heating-drum suspended within the furnace-casing, a vertical passage-way through and located centrally in the drum, a distributing-chamber, the upper end of said passage-way opening into the distributing-chamber and the lower end connected to the top end of a heat pipe located within

each other, raised ribs intersecting a direct line between said perforations, and [illegible] perforations formed at irregular distances from the operative perforations, in combination with an open ring, as described.

4. A puzzle consisting of a flat piece of metal or other suitable material, having ribs raised thereon and perforations formed therein at predetermined distances apart, and a ring having a transverse opening of sufficient breadth to pass over the surfaced portions of the flat piece, but not over the raised portions, substantially as described.

483,821. METAL RAILROAD-TIE. SAMUEL H. WILSON, Webster, Mass. Filed Mar. 30, 1892. Serial No. 426,997. (No model.)

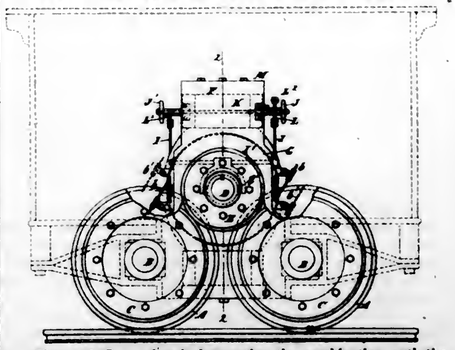


Claim.—1. The within-described metal railroad-tie, consisting of the I-shaped body-beam, the horizontal foot-plates and cap-plates attached to the respective ends of the body by ears that are punched through and set out from the plate metal and formed to embrace the body-flanges at opposite sides thereof, substantially as set forth.

2. In a metal railroad-tie, the combination, substantially as described, of the body composed of a straight rolled I-shaped beam with diagonally-formed ends, the horizontally-disposed foot-plates having at-

3. In a railroad-tie, the combination, with the straight body having the upright arch with flanged edges, of the short cap or rail-seat plates adapted to dip onto the ends of the body-flanges by means of the underlocking ears, and the rail-holding bolts passing through said plates and the body-flange, as and for the purpose set forth.

483,822. ELECTRIC LOCOMOTIVE. THOMAS I. WILLSON, Brooklyn, N. Y. Filed Aug. 25, 1891. Serial No. 403,701. (No model.)



Claim.—1. In an electric locomotive, the combination, with the armature shaft of the electro motor and gearing interposed between said shaft and the driving-wheels, of the armature mounted to revolve freely on said shaft, and a friction-clutch adapted to wholly disconnect the armature from its shaft or to gradually couple it thereto, whereby by disengaging the clutch the armature may be caused to revolve without load while the locomotive is stationary, and thereby to store up power by its momentum to be utilized in starting the locomotive by gradually throwing on the load through the medium of said clutch.

2. In an electric locomotive, an electromotor having opposite friction-wheels on its shaft and friction-wheels engaging them in connection with the driving-wheels, the weight of the motor hang from its armature-shaft, whereby it serves to press said wheels into frictional

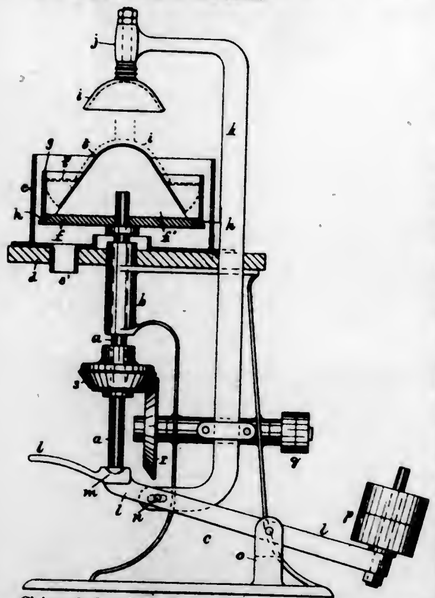
engagement, and the armature thereof mounted to turn freely on said shaft, in combination with a friction-clutch interposed between the armature and its shaft, whereby the armature may be coupled gradually to the shaft.

3. In an electric locomotive, the combination of armature-shaft D, geared to the driving-wheels, armature G, mounted loosely on said shaft and having a recessed hub, and a friction-clutch H, having friction-shoes connected to said shaft and engaging in the recess in said hub.

4. In an electric locomotive, the combination of armature-shaft D and armature G, turning loosely thereon, two friction-clutches H H, engaging said armature to couple it to the shaft, the operating-levers I I for working said clutches, and a mechanical connection between said levers, whereby the operation of either clutch will simultaneously operate the other.

5. In an electric locomotive, the combination of armature-shaft D, armature G, turning loosely thereon and constructed with a hub *c*, having opposite cones *d d'*, and a divided sleeve *h*, expansible thereby within the armature-ring, and friction-clutches H H, having carriers *j* fixed to the shaft, and shoes *k k*, carried by said carriers, said clutches being located in recesses in the ends of the armature-hub and provided with means for expanding said shoes into frictional engagement with the surfaces of said recesses.

488,823. MACHINE FOR WRINGING HATS. GEORGE YULE, Newark, N. J., and WILLIAM A. BAGLIN, New York, N. Y. Filed Oct. 16, 1891. Serial No. 408,906. (No model.)



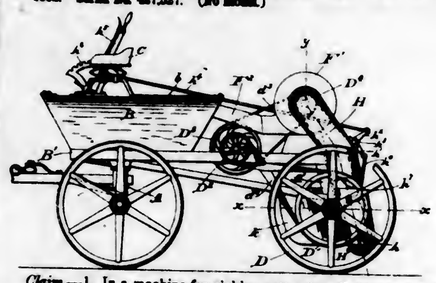
Claim.—1. In a hat-wringing machine, the combination, with a spindle and means for rapidly rotating and stopping the same at pleasure, of a carrier attached to the spindle and provided with a vertically-projecting rim at the outer periphery of the carrier to shape the edge of the hat-body, and a curb surrounding the carrier to retain the water discharged from the same, as set forth.

2. In a hat-wringing machine, the combination with a spindle and means for rapidly rotating and stopping the same at pleasure, of a carrier attached to the spindle and provided with a vertically-projecting rim at the outer periphery of the carrier, held detachably upon the carrier to shape the edge of the hat-body, and a curb surrounding the carrier to retain the water discharged from the same, as set forth.

3. In a hat-wringing machine, the combination, with a spindle and means for rapidly rotating and stopping the same at pleasure, of a carrier attached to the spindle and provided with a vertically projecting rim at the outer periphery of the carrier to shape the edge of the hat-body and a socket pressed upon the hat-body and adapted to shape the crown at the band and to limit the area expanded in the brim, substantially as set forth.

4. A hat-wringing machine consisting in the frame *c*, carrying the bearing *b* and curb *c*, the driving-spindle having pulleys *q* and friction-wheel *r*, the carrier-spindle *a*, having friction-pulley *s* and carrier *f*, with vertically-projecting rim at the outer periphery of the carrier attached thereto, the hat-block *f'* upon the carrier, the bar *k*, provided with bearing *j* and rotary socket *i*, and the treadle *l*, provided with weight *p* and stop *m*, fitted to spindle *a*, and pivoted to the bar *k*, as set forth.

488,824. COTTON-HARVESTER. GEORGE H. ZEMPTER, REUBEN A. MANNING, and GEORGE W. OVERALL, Memphis, Tenn. Filed Apr. 2, 1892. Serial No. 427,527. (No model.)



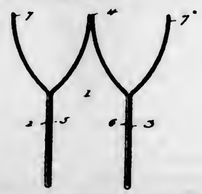
Claim.—1. In a machine for picking cotton impelled by any suitable power, the combination, with a wheeled frame, of a fan or fans revolving in a closed air-chamber, a suction-tube formed in two sections, with a telescopic joint connected to said fan, the lower section of said tube opening at or near the cotton-plants for drawing in the cotton, a system of levers for raising and lowering said lower section, a delivery-tube leading from said fan for the discharge of the cotton from the fan, and a receptacle for the cotton at the end of said delivery-tube, the said receptacle having an apertured cover, substantially as described.

2. In a machine for picking cotton impelled by any suitable power, the combination, with a wheeled frame, of two fans revolving in two closed air-chambers, two suction-tubes, each formed in two sections, with a telescopic joint connected to said air-chamber, with openings on the inner side of each for sucking in the cotton, and means for raising and lowering the lower ends of said suction-tubes, a guide-plate having a flaring mouth opening on either side of said suction-tube for guiding the cotton-plants in front of said openings, a delivery-tube leading from said air-chamber, and a receptacle at the end of said delivery-tube, with a wire screen or screens covering said receptacle, substantially as and for the purposes described.

3. In a machine for picking cotton impelled by any suitable power, the combination, with a wheeled frame, of the driving-pulley D', attached to one of the wheels of said frame, the belt d', the pulleys D^2 and D^3, keyed on the same shaft, the belt d^3, the pulley D^4, and fans F, keyed on the same shaft, the telescopic suction-tubes H', with means for raising the lower end of the same, the delivery-tubes F^2, and the receptacle B, having perforated cover, substantially as and for the purposes described.

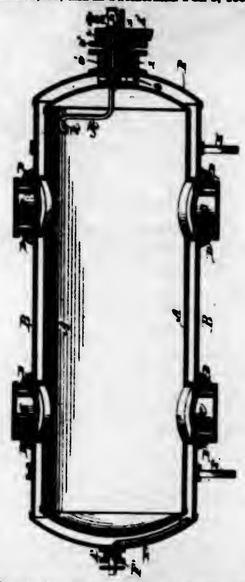
4. In a machine for picking cotton impelled by any suitable power, the combination, with a wheeled frame, of the driving-pulley D', attached to one of the wheels of said frame, the belt d', the pulleys D^2 and D^3, keyed on the same shaft, the belt d^3, the pulley D^4, and fans F, keyed on the same shaft, the telescopic suction-tubes H', the rod h^2, connected to the movable section of said tubes, the hand-lever h^3, rod h^4, and a bell-crank lever connecting said rods h^4 and h^2, whereby the lower end of the said suction-tubes may be raised or lowered, the delivery-tubes F^2, and the receptacle B, having a perforated cover, substantially as and for the purposes described.

488,825. CLAMP. WILLIAM H. R. ALDERSON and JAMES W. ALLEN, Eureka Springs, Ark.; said Alderson assignor, and said Allen assignor of one-third of his right, to Edwin R. Ray, same place. Filed Feb. 4, 1892. Serial No. 420,253. (No model.)



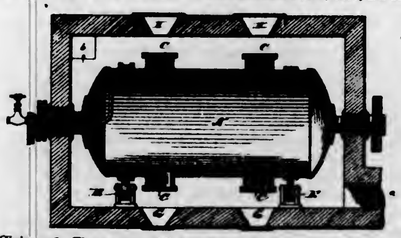
Claim.—A suspension-clamp consisting of a series of binding-arms, two of them having eyes at their free ends and the others having the double intermediate eye, substantially as described.

488,826. PROCESS OF LINING DIGESTERS. HERMANN BRÜNGER, Cunnersdorf, assignor to Ferdinand Salomon, Berlin, Germany. Filed Apr. 26, 1890. Serial No. 349,621. (No specimens.) Patented in England Sept. 17, 1888, No. 13,396, and Dec. 10, 1888, No. 18,008; in Norway Sept. 17, 1888, No. 1,067; in France Oct. 19, 1888, No. 193,637; in Belgium Nov. 5, 1888, No 83,841, and Dec. 1, 1888, No. 84,140; in Germany Nov. 7, 1888, No. 50,789, and in Switzerland Feb. 5, 1889, No. 398.



Claim.—The herein-described process of forming on the interior surface of boilers or digesters a protective coating or lining, which consists in separating a salt from a suitable solution by the agency of heat and depositing the same upon the interior surface of the boiler or digester to form a coating or lining insoluble in the solution used, substantially as set forth.

488,827. PROCESS OF LINING DIGESTERS. HERMANN BRÜNGER, Cunnersdorf, assignor to Ferdinand Salomon, Berlin, Germany. Filed Apr. 26, 1890. Serial No. 349,622. (No specimens.) Patented in England Sept. 17, 1888, No. 13,396, and Dec. 10, 1888, No. 18,008; in Norway Sept. 17, 1888, No. 1,067; in France Oct. 19, 1888, No. 193,637; in Belgium Nov. 5, 1888, No. 83,841, and Dec. 1, 1888, No. 84,140; in Germany Nov. 7, 1888, No. 50,789, and in Switzerland Feb. 5, 1889, No. 398.

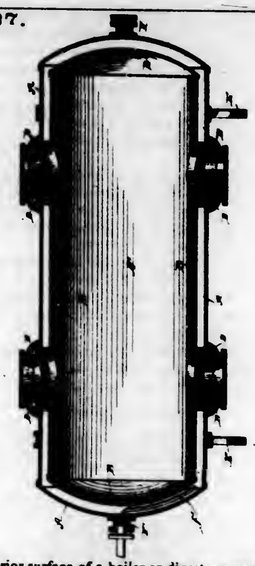


Claim.—1. The process of lining digesters, which consists in forming on the interior surface of a boiler or digester a protective coating or lining insoluble in a sulphite solution, such coating or lining being produced by decomposing or partially decomposing by means of heat a sulphite solution while in contact with said surface, as set forth.

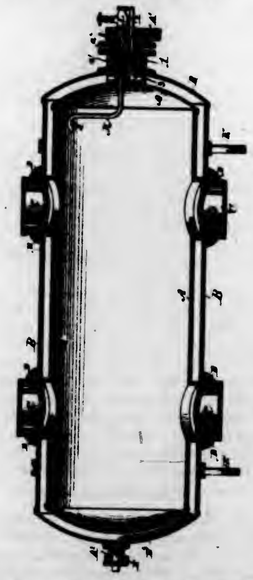
2. The process of lining digesters, which consists in forming on the interior surface of a boiler or digester a protective coating or lining insoluble in a sulphite solution, such coating or lining being produced by decomposing or partially decomposing a sulphite solution by bringing the same in contact with said surface previously heated, as set forth.

3. The process of lining digesters, which consists in forming on the interior surface of a boiler or digester a protective coating or lining insoluble in a sulphite solution, such coating or lining being produced by decomposing or partially decomposing by means of heat a sulphite solution and revolving the digester during the operation, as set forth.

4. The process of lining boilers or digesters, which consists in forming on the interior surface of a boiler or digester a protective coating or lining insoluble in a sulphite solution, such coating or lining being produced by charging the boiler or digester with a sulphite solution and with the fibrous material to be reduced and in decomposing or partially decomposing by means of heat said sulphite solution and simultaneously therewith reducing the fibrous material, as set forth.



488,828. DIGESTER. HERMANN BRÜNGER, Cunnersdorf, assignor to Ferdinand Salomon, Berlin, Germany. Filed Apr. 26, 1890. Serial No. 349,623. (No model.) Patented in England Sept. 17, 1888, No. 13,396, and Dec. 10, 1888, No. 18,008; in Norway Sept. 17, 1888, No. 1,067; in France Oct. 19, 1888, No. 193,637; in Belgium Nov. 5, 1888, No. 83,841, and Dec. 1, 1888, No. 84,140; in Germany Nov. 7, 1888, No 50,789, and in Switzerland Feb. 5, 1889, No. 398.



Claim.—1. A digester or boiler having its interior surface provided with a protective coating or lining of a salt or salts precipitated upon said surface and insoluble in the solution used in the boiler, as set forth.

2. As an improvement in apparatus for manufacturing cellulose by the sulphite process, a boiler or digester having its interior surface provided with a protective coating or lining of a salt or salts precipitated upon said surface and insoluble in sulphite solutions, as set forth.

3. As an improvement in apparatus for manufacturing cellulose by the sulphite process, a boiler or digester having its interior surface provided with a protective coating or lining of a salt or salts of the alkalies earths precipitated upon said surface and insoluble in sulphite solutions, as set forth.

4. As an improvement in apparatus for manufacturing cellulose by the sulphite process, a boiler or digester having its interior surface provided with a protective coating or lining of a sulphur salt or sulphur salts of the alkaline earths precipitated upon said surface and insoluble in sulphite solutions, as set forth.

5. As an improvement in apparatus for manufacturing cellulose by the sulphite process, a boiler or digester having its interior surface provided with a protective coating or lining of a sulphur salt or sulphur salts of calcium precipitated upon said surface and insoluble in sulphite solutions, as set forth.

6. A digester or boiler having its interior surface provided with a protective coating or lining consisting in part of a sulphite and insoluble in sulphite solutions, as set forth.

483,829. AIR-CYLINDER. WILLIAM J. O. BRYON, Jr., New York, N. Y. Filed Dec. 5, 1891. Serial No. 414,067. (No model.)

Claim.—1. A cylinder provided with a piston, a valve, a hollow piston-rod having openings communicating with the cylinder-chamber at opposite sides of the piston, and a rod extending into said hollow piston-rod, constructed in a manner to allow for a uniformly increasing or decreasing flow of fluid or air from one end of the cylinder-chamber to the other through the opening in the piston-rod as the piston moves from one end of its stroke to the other, substantially as and for the purpose set forth.

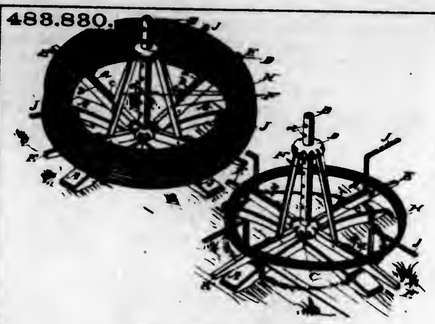
2. A cylinder provided with a piston, a hollow piston-rod having openings or outlets communicating with opposite sides of the cylinder-chamber, and a device for adjusting the size of one of said outlets to regulate the pressure to the piston, substantially as and for the purpose set forth.

3. A cylinder provided with a piston, a hollow piston-rod provided with openings or outlets communicating with the cylinder-chamber at opposite sides of the piston, a rod or device extending within said hollow piston to form a variable passage between said openings, and a device for regulating the size or capacity of one of said outlets in the piston-rod, substantially as and for the purpose set forth.

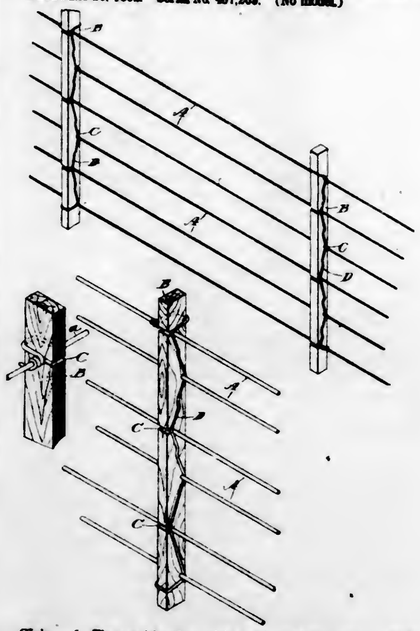
488,830. WIRE-REEL. JOHN W. BUCHANAN, Smithville, Ohio. Filed Feb. 27, 1892. Serial No. 422,968. (No model.)

Claim.—The combination, with a suitable support, of a rotary spindle, a head C, mounted on said spindle near one of its end portions, arms E, pivotally secured to said head to vibrate transverse thereto, brackets J, secured to the arms E to slide thereon, sliding head D, and links F, connecting the arms with the sliding head, substantially as described.

488,880.



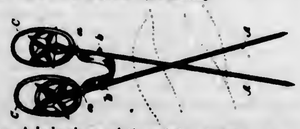
483,831. WIRE FENCE. JOHN W. BUCHANAN, Smithville, Ohio. Filed June 20, 1892. Serial No. 437,269. (No model.)



Claim.—1. The combination, with a series of fence-wires A, placed in vertical order, of a spacing stay-bar B, provided on its opposite edges with alternate kerfs C to embrace and hold said wires at a previously-determined distance apart, and a binding or stay wire C to secure said fence-wires in the kerfs and adapted to be tightened thereon, substantially as described, and for the purpose set forth.

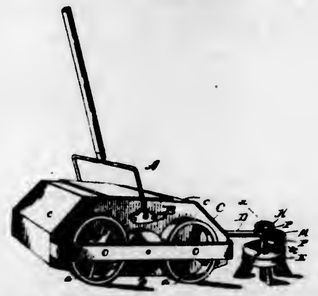
2. A fence-panel consisting of a series of fence-wires arranged one above the other, a spacing stay-bar provided on its opposite edges with alternating kerfs to embrace and space said wires apart, and a stay-wire passing in and out through said fence-wires and having its ends lead around the opposite edges of the stay-bar and coiled around the lower and upper fence-wires, said stay-wire being crimped after being placed in position to securely retain the fence-wires in the kerfs, substantially as set forth.

483,832. HAIR-PIN. JOHN F. CHASE, Augusta, Me. Filed Apr. 6, 1892. Serial No. 428,054. (No model.)



Claim.—A hair-pin consisting of the straight prongs, a U-shaped flat metal spring tapering toward its ends and having the tubular extension and perforated ears or lugs, and finger-pieces rigidly secured to said extensions, whereby said prongs normally cross or intersect each other about midway their length, substantially as described.

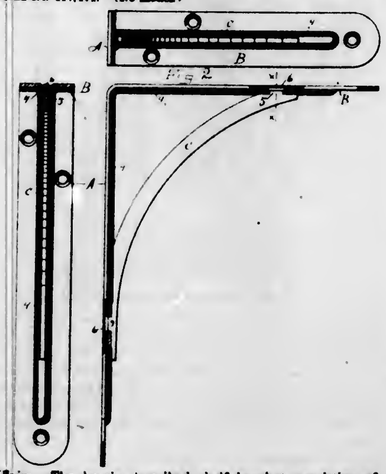
483,833. ATTACHMENT FOR CARPET-SWEEPERS. JOHN F. CHASE, Augusta, Me. Filed Apr. 6, 1892. Serial No. 428,055. (No model.)



Claim.—1. The combination, with a carpet-sweeper, of a supplemental brush arranged in advance of and supported from said carpet-sweeper, a friction-wheel for rotating said brush, and a friction-wheel adapted to be rotated by frictional contact with a mop-board and to rotate said first-named wheel, substantially as described.

2. The combination, with a carpet-sweeper, of a bracket-arm having a lateral arm at one end and a tubular extension, a vertical shaft having a friction-wheel at one end inserted in said tubular extension, a brush secured to the lower end of said shaft, and a friction-wheel mounted on the lateral arm, substantially as described.

483,834. SHELF-BRACKET. THOMAS CORNADEN, New Britain, Conn., assignor to the Stanley Works, same place. Filed Jan. 9, 1892. Serial No. 417,471. (No model.)



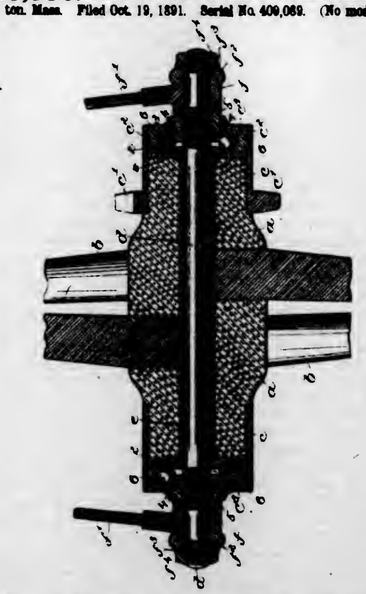
Claim.—The herein-described shelf-bracket, consisting of the sheet-metal wall and shelf plates having the central longitudinal bead swaged therefrom and projecting on that face of said plates which is upon the inside of the angle formed by them and the brace resting on said bead at the inside of said plates, to which it is secured, substantially as described, and for the purpose specified.

483,835. DRESS-STAY. JOHN S. CROTTY, New York, N. Y. Filed July 5, 1892. Serial No. 438,942. (No model.)

Claim.—The herein-described dress stay, consisting of the spring A, provided with metal tips B at its ends, a covering composed of two thicknesses, both thicknesses broader and longer than the width and length of the spring, with a protector E, doubled over each end of the spring, the protector being of a width substantially corresponding to the width of the two thicknesses of covering, the two thicknesses of covering applied to the respective sides of the spring and its protectors, with longitudinal lines of stitches run through the two thicknesses and through the double protectors at each side the spring, substantially as described.

488,835.

483,836. BALL-BEARING FOR AXLES. STERLING ELLIOTT, Newton, Mass. Filed Oct. 19, 1891. Serial No. 409,069. (No model.)



Claim.—1. The hub of a wheel and the ferrule-like end piece having sprocket-teeth c', a tube upon which it is fitted which passes axially through the hub, the annular rib 8, and the annular screw-threaded flange c^3, combined with a recessed shell c^3, having annular ribs or projections 2 3 4 in the recessed portion thereof, and the bushing 5, having a beveled end 7, which enters the recessed portion of the shell c^3 and furnishes a bearing-point, and a series of balls contained in said recessed shell c^3 and normally bearing upon the points 2 3 7, but permitted to fall and be supported by the points 4 8, substantially as described.

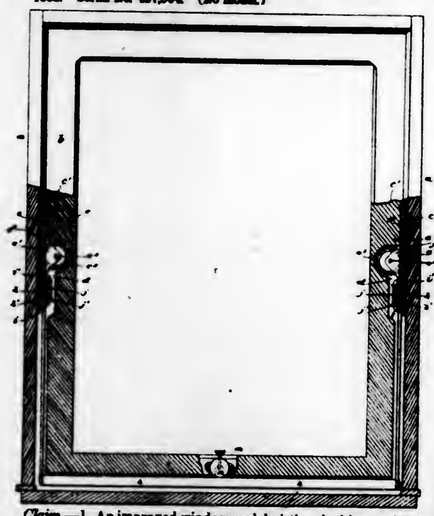
2. The hub a, having on it the ferrule-like end piece provided with a flange c^3 and the annular rib 8, combined with a recessed shell c^3, having within its recessed portion three annular ribs 2 3 4, a bushing 5, adapted to be supported on the axle, its end portion being beveled, as at 7, and entering the recessed portion of the shell, and a series of balls contained in said shell, substantially as described.

3. The hub a, having on it the ferrule-like end piece provided with a flange, as c^3, combined with a recessed shell, as c^3, having an-

nular ribs 2 3 in its recessed portion, and a bushing 5, arranged on the axle and entering said recessed portion of the shell to furnish an additional bearing for a series of balls contained in said recessed portion, substantially as described.

4. A hub having on it at each end ferrule-like end pieces, with flanges internally screw-threaded to receive ball-tracks, as described, the said screw-threads on one flange being cut in an opposite direction to those on the other flange, substantially as described.

483,837. SASH-FASTENER. ANDREW S. FISHER, Bedford, Pa., assignor of one-half to Milton H. Valentine, same place. Filed June 22, 1892. Serial No. 437,504. (No model.)



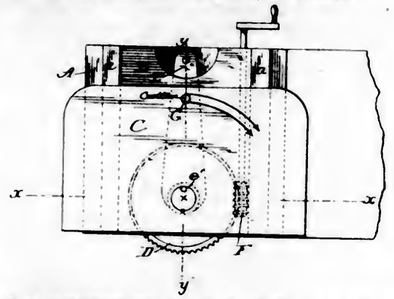
Claim.—1. An improved window-sash hoisting, locking, and tightening device consisting of two pivoted dogging devices having oblique slots in one end and feet on the other end, stationary plates having straight longitudinal slots therein intersecting the oblique slots of the dogging devices, toothed racks engaged by said dogging devices, rods connected by hooks *i'* at one of their ends with said dogging devices through said slots and attached at their other ends to the ends of a rigid bar extending across the bottom edge of the sash, springs fastened to said rods and bearing against abutments on the stationary plates normally to raise said rods and throw and hold the dogging devices in engagement with the toothed racks, and a push-piece attached to said bar and adapted to operate said dogging devices through the bar and rods, to unlock, release, and loosen the sash, and also to permit said dogging devices to lock and tighten it, in combination with sash-balancing devices, such as spring-toothed wheels, adapted to engage the toothed racks, substantially in the manner and for the purpose set forth.

2. An improved window-sash balancing, hoisting, locking, and tightening device comprising a balancing medium, preferably coiled springs incased in hollow toothed wheels which are held in position in the sash or frame by suitable cases, face-plates on such cases having straight longitudinal slots and toothed racks or plates adapted to engage and turn said toothed wheels, a flat movable cross-bar, a push-piece attached thereto, and rods connected to such cross-bar and fitted with spiral springs and having hooked ends *i'* passed through said straight slots in said face-plates and through oblique slots in dogging devices pivoted to said face-plates, the other ends of said dogging devices being provided with feet to engage the racks, whereby the sash can by one hand be raised, stopped, locked, and tightened or loosened and released at any desired position, in the manner described, and substantially as and for the purposes set forth.

488,838. MILLING-MACHINE. WILLIAM R. FOX, Grand Rapids, Mich., assignor to the Fox Machine Company, same place. Filed Feb. 8, 1892. Serial No. 420,965. (No model.)

Claim.—1. In combination, the tool, the rotary holder for the work, the movable support therefor, the means for rotating the holder, and an independent drawing connection operated by the rotary movement of the holder for moving the holder with its movable support toward and from the tool, said drawing connection extending in the line of the longitudinal movement of the holder toward and from the tool, substantially as described.

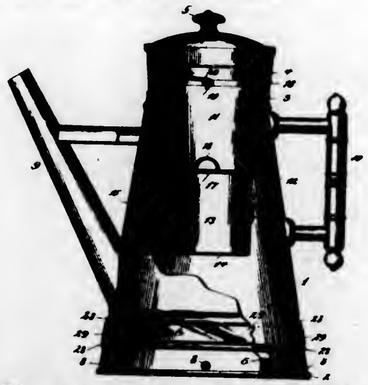
2. In combination, the tool, the rotary work-holder, the reciprocating support therefor, the means for giving the initial movement and rotating the holder in its support, and an independent drawing connection operated positively by the rotary movement of the holder for reciprocating the work-holder, substantially as described.



3. In combination, the arbor *d*, the guiding means therefor to direct its movement toward the milling-tool, the means for rotating the arbor, and the link E, pivoted to the frame and eccentrically to the arbor, substantially as described.

4. In combination, a plate, as C, mounted upon a sliding table, the bed supporting the table, an arbor on which the plate is fixed, mechanism for turning the arbor, and a connection between the arbor and the bed arranged eccentrically of the pivotal line of the plate, substantially as described.

488,839. COFFEE-POT. JOHN R. FULTON, Wa Keeney, Kans. Filed Mar. 9, 1892. Serial No. 424,292. (No model.)



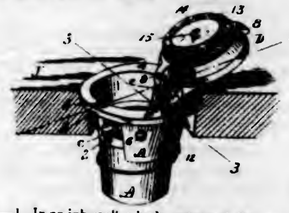
Claim.—1. A strainer for coffee-pots, the same consisting of an upper portion having an outturned upper end, an inwardly-projecting shoulder at the lower end thereof, a cylindrical lower portion depending from the inner edge of said shoulder, a fabric clamped over the open lower end of said lower portion, and a perforated disk resting on said shoulder, combined with a pot whose body tapers to its upper end, a flaring ring secured in such upper end and adapted to receive the flaring upper end of the strainer, and a cover for said ring, substantially as described.

2. In a coffee-pot, the combination, with the body of the pot tapering to its upper end, a flaring ring secured in said upper end, a cover therefor, and a zinc ring secured in close metallic contact on said body, of the strainer, substantially as described, its upper portion flaring upwardly and its upper edge being raw and turned out so as to fit closely within said flaring ring, as and for the purpose set forth.

3. In a coffee-pot, the combination, with the body of the pot having annular crimps and a zinc ring secured between said crimps and in close metallic contact with said body, of a strainer, substantially as described, and a wedging connection between the body and the strainer, whereby they are held in close metallic contact, as and for the purpose set forth.

4. The combination, with a pot having a zinc ring on its body, of a strainer consisting of an upper portion in close metallic connection with the body, a cylindrical lower portion, a fabric over the open lower end of the latter, a removable ring clamping said fabric in place thereon, and spring-legs secured to said ring, bowing outward beyond the fabric depending below the lower end of the lower portion and in close metallic contact with the body, substantially as hereinbefore described.

483,840. INKSTAND. JOHN H. GIFFORD, Springfield, Mass. Filed Aug. 10, 1892. Serial No. 442,736. (No model.)



Claim.—1. In an ink-well, a body, substantially as described, having a laterally-extending rim at its upper extremity and two pending cams beneath said rim, combined with a cover entering said body having thereon laterally-extending bosses for engagement with said cams, a hinge connection, substantially as described, between said cover and body, which permits the cover to be reciprocally rotated within and lifted above said body and swung to a position of rest above said rim, and an ink-cup suspended in said body, substantially as set forth.

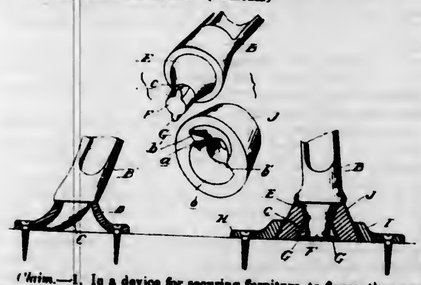
2. In an ink-well, a body, substantially as described, having a laterally-extending rim at its upper extremity and two pending cams beneath said rim, combined with a cover entering said body, having thereon bosses for engagement with said cams, a hinge connection between said cover and body, consisting of a pending link engaging with one of said bosses, having a ring on its lower end encircling said body and having a free vertical and reciprocally-rotating movement thereon, and an ink-cup suspended in said body, substantially as set forth.

3. In an ink-well, a body, substantially as described, having a laterally extending rim at its upper extremity eccentrically located on said body and having two pending cams beneath said rim and a recess 5 in the inner border thereof, and a concentric shoulder in said body on which to hang an ink-cup, combined with a cover closing the upper end of said body, having the bosses 8 and 9 thereon for engagement with said cams, the link 10, engaging with said boss 8 and having the ring 12 on its free end encircling and freely engaged with said body, and an ink-cup, substantially as set forth.

4. An ink-well body and cover consisting of a body, substantially as described, having a laterally-extending rim and two pending cams beneath said rim, combined with a cover entering said body, having thereon laterally-extending bosses for engagement with said cams, and a hinge device, substantially as described, between said cover and body, whereby the cover is loosely connected to the body and is thereby permitted to be reciprocally rotated within and lifted above said body and is supported in an outwardly-inclined position on said rim, substantially as set forth.

5. An ink-well consisting of a body, substantially as described, having a laterally-extending rim at its upper extremity in which is the recess 5, two pending cams beneath said rim, and a concentric shoulder in said body, on which to hang an ink-cup by its rim, combined with a cover having the depressions *x x*, closing the upper end of said body and said ink-cup and having bosses thereon for engagement with said cams, the outer surface of said cover when in said body being in the plane of the surrounding rim 4, substantially as set forth.

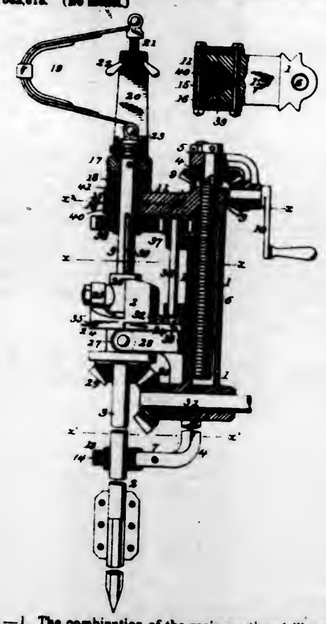
483,841. DEVICE FOR DETACHABLY SECURING DESKS, SEATS, &c., TO FLOORS. FRANK E. GOODSOW, Northville, Mich. Filed Jan 21, 1892. Serial No. 418,761. (No model.)



Claim.—1. In a device for securing furniture to floors, the combination, with the rear legs of the furniture, of curved horns on the legs, fixed slotted plates with which the horns engage, extensions on the forward legs, formed with lateral wings, fixed plates below the extensions, having central conical apertures, and conical collars loosely fitted in the apertures, formed with radial grooves and inclined planes on their under faces, substantially as described.

2. In a device for securing furniture to floors, the combination with the legs of the furniture, of extensions on the legs having lateral wings on opposite sides, plates on the floor, formed with conical openings, and conical collars loosely fitted in the openings of the plates, formed with the radial grooves at opposite sides, through which the wings pass, and oppositely-inclined planes on their under faces, substantially as described.

483,842. OPERATING MECHANISM FOR MINING DRILLS AND STAMPS. GEORGE H. GRAM, Chicago, Ill. Filed Feb. 24, 1891. Serial No. 382,618. (No model.)



Claim.—1. The combination of the reciprocating drill-rod 3, the cam 2 of an annular form concentric on its hub that surrounds the rod 3 and is provided with annular supporting recess, the carriage 1, having laterally overhanging bracket-arm 12, forming a guide for the drill-rod, a laterally-overhanging bracket-arm 28, engaging in the annular recess in the cam-hub to form a support for the same, and a lower bracket 7, such bracket being of an open-sided formation to admit of the lateral removal of the drill-rod and its parts, essentially as set forth.

2. The combination of the reciprocating drill-rod 3, the cam 2 of an annular form concentric on its hub 24, that surrounds the rod 3, the adjustable carriage 1, having laterally-overhanging bracket-arms 12 28, that form, respectively, a guide for the upper end of the rod 3 and a support for the hub 24 of the cam, the lower guide-box 13, having upper and lower flanges and adapted to engage the forked formation of the shelf or bracket 7, and a cross bolt 14 for securing it in place, substantially as set forth.

3. The combination of the reciprocating drill-rod 3, the cam 2 of an annular form concentric on its hub 24, that surrounds the rod 3, the adjustable carriage 1, having laterally-overhanging bracket-arms 12 28, that form, respectively, a guide-box having an outer removable section 15 for the upper end of the rod 3 and a support for the hub 24 of the cam, the lower guide-box 13, having upper and lower flanges and adapted to engage the forked formation of the shelf or bracket 7, and a cross-bolt 14 for securing it in place, substantially as set forth.

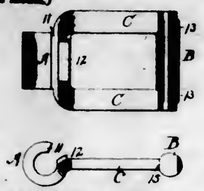
4. The combination of a reciprocating drill or stamp rod 3 and the lifting-cam 2 therefor, having an annular form, concentric with the axis of the rod 3, with the carriage 1, having bracket formation 28, provided with friction-reducing rollers 27, engaging in an annular recess in the hub of the cam to support the same in proper position, substantially as set forth.

5. The combination of the reciprocating drill or stamp rod 3 and the lifting-cam 2 therefor, having an annular form, concentric with the axis of the rod 3 and provided with a wiper or tooth 32, and recess

35, with the spur-gear 33, locking-dog 34, shaft 36, pinion 37, and gear-wheel 38, connected by a key and keyway to the rod 3, substantially as set forth.

6. A frame or slideway for portable rock-drill, consisting of parallel square bars having an angular arrangement to form V-shaped guides for the carriage with their lower ends bent inwardly and forwardly so as to meet and form a bracket for the lower guide box of the drill-rod, as set forth.

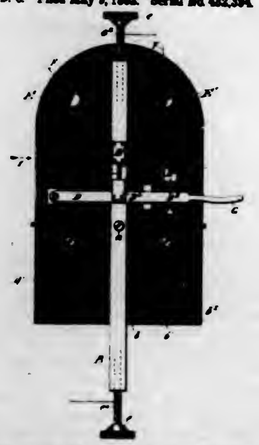
488,843. DRIVE-CHAIN. WILLIAM H. HART, New Britain, Conn., assignor to the Stanley Works, same place. Filed July 30, 1892. Serial No. 441,667. (No model.)



Claim.—1. The herein-described chain-link, consisting of the sheet-metal knuckle and side bars having the tenons at the pintle ends of said side bars, and the separately-formed round pintle having perforations which receive said tenons and within which they are secured, substantially as described, and for the purpose specified.

2. The herein-described knuckle and side-bar blank of a drive-chain link, consisting of the knuckle-blank 13 and side bars C C, of sheet metal, with their pintle ends separated by a space substantially equal to the width of said knuckle-blank, substantially as described, and for the purpose specified.

488,844. BURGLAR-ALARM CONTACT. NEVIL M. HOPKINS, Washington, D. C. Filed May 9, 1892. Serial No. 432,394. (No model.)



Claim.—1. The combination, in a burglar-alarm system, of an alarm-circuit, a normally-closed local circuit, and a trip mechanism forming part of said local circuit for holding said alarm-circuit open, said trip mechanism being connected with the property to be protected and adapted to be actuated to close the alarm-circuit on a disturbance of the connections with the property, substantially as described.

2. The combination, in a burglar-alarm system, of a rod or lever forming part of a normally-closed local circuit, a tension device forming part of said local circuit, a trip mechanism, and a main-line circuit, said main-line circuit being adapted to be closed by the breaking of the local circuit, substantially as described.

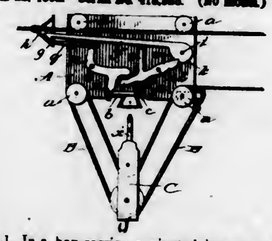
3. The combination, in a burglar-alarm system, of a main-line circuit, a lever or rod, a spring adapted to throw said lever in one direction, a local circuit, and a wire forming part of said local circuit and connected with said lever or rod to hold the same against the action of the spring, said wire being arranged to be engaged by the doors or shutters or sash of the property to be protected, substantially as described.

4. The combination, in a burglar-alarm system, of a lever or rod forming a part of a local circuit, a trip mechanism, a main-line circuit, a tension device forming a part of the local circuit, and means for adjusting and regulating the tension, substantially as set forth.

5. The combination, in a burglar-alarm system, of a lever forming a part of a local circuit, tension wires or cords, means for connecting the cords or wires to either end of the lever and regulating the tension on said wires or cords, a main or alarm circuit, and means for closing the main-line circuit on the change of tension, substantially as and for the purpose set forth.

6. The combination, in a burglar-alarm system, of a lever forming a part of a local circuit, tension cords or wires in said circuit, a lever forming a part of the main or alarm circuit, means for normally holding the levers in contact, and means for closing the main-line circuit on a disturbance of the tension of the cords or wires, substantially as and for the purpose set forth.

488,845. HAY-CARRIER. NORMAN HAGGERSON, Marion, Idaho. Filed Jan. 22, 1892. Serial No. 418,986. (No model.)



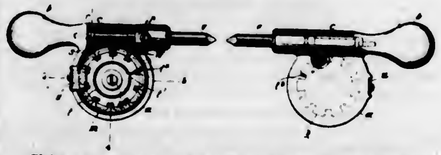
Claim.—1. In a hay-carrier, a pivoted lever *m*, a locking-slide, and a bell-crank lever connected with the slide and operated by the lever *m*, substantially as described.

2. In a hay-carrier, a lever *m*, a locking-slide, a bell-crank connected therewith and operated by the lever *m*, and a slide for operating the bell-crank, said slide being acted upon by the stop on the way, substantially as described.

3. In combination with the lever *m*, the bell-crank lever operated thereby, a locking-slide operated by the bell-crank lever, and an unlocking-slide connected with the bell-crank and projecting beyond the frame, a collar encircling the way and concentric therewith, and a latch on the carrier engaging said collar, said collar presenting a plane surface adapted to form a stop to actuate the unlocking-slide, substantially as described.

4. In a hay-carrier, the combination of a locking-slide having a tongue *x*, and also having side extensions *d d* grooved on the under faces near the outer ends, a cross-bar extending between the side plates of the carrier-frame for supporting the free end of the tongue, and means for operating the locking-slide, substantially as described.

488,846. SPEED-MEASURE. OSCAR KNAPP, Brooklyn, N. Y. Filed May 20, 1892. Serial No. 433,680. (No model.)



Claim.—1. As a new article of manufacture, a speed-indicator casing composed of soft metal or composition provided with hard-metal wearing parts or bearings for the spindle and dials, substantially as set forth.

2. A speed-indicator casing composed of soft metal or composition with a handle formed integral therewith, provided with spindle and dial bearings of hard metal firmly fixed in their appropriate positions, substantially as set forth.

3. A speed-indicator casing composed of soft metal or composition provided with a hard-metal stud centrally located in the casing and provided with a beveled base to afford security against its displacement, substantially as set forth.

4. In a speed-indicator, a casing provided with spindle-bearings and a centrally-fixed stud provided with two shoulders one above the other, a spindle mounted in said bearings, two registering-dials mounted upon the shoulders of said stud to revolve independently of each other, means for communicating the revolution of the spindle to the upper dial, a spring-pin fixed to the upper dial with its free end projecting through an opening in said dial, and a depressing-plate for said spring-pin secured to the outside of the casing, whereby at each

complete revolution of the upper dial said spring-pin passing under the depressing-plate is held depressed to co-operate with the lower dial long enough to permit the latter dial to travel one-tenth of a revolution, said plate also serving, in its position on the outside of the casing, to prevent the means for communicating the revolution of the spindle to the upper dial from becoming disengaged from said dial, substantially as set forth.

5. In a speed-indicator, the combination, with a spindle mounted in bearings in the casing and two dials mounted one above the other on a centrally-located stud of the casing to revolve independently of each other, means for communicating the movement of the spindle to the upper dial, and a connection between the two dials, adapted to become operative to cause the lower dial to move at the proper interval, of a spring fixed in the indicator-casing and having two members which co-operate with the teeth in the rims of the superimposed dials to insure the lower dial stopping at the proper point after the release of the connection between the upper and lower dials and to prevent the upper dial from moving backward with the backward movement of the means which transfers the revolution of the spindle to said upper dial, substantially as set forth.

6. In a speed-indicator, the combination, with a casing provided with spindle-bearings and a centrally-fixed stud, of a spindle seated in said bearings and provided with an eccentric near its inner end, two dials mounted upon said stud to revolve independently of each other, a pawl carried by the spindle and co-operating with the eccentric thereon and in co-operation at its outer end with the teeth in the rim of the upper dial, a spring-pin fixed in the upper dial with its free end projecting through an opening in said dial and adapted to co-operate with the teeth in the lower dial, a plate fixed to the casing and adapted to hold said spring pin depressed when the upper dial has completed a full revolution long enough to cause the lower dial to travel one-tenth of a revolution, and a spring fixed within the casing and having two members at its free end, one of which co-operates with the teeth in the rim of the lower dial and the other with the teeth in the rim of the upper dial, substantially as set forth.

488,847. PULP-DRAINER. GUSTAV L. JARGER, New York, N. Y. Filed May 12, 1891. Serial No. 392,581. (No model.)

Claim.—1. In a pulp-drainer, a foraminous receptacle provided with an inlet for the pulp and with a contracted outlet for the solid matter and external means connected with the inlet of the receptacle for supplying pulp under pressure, substantially as described.

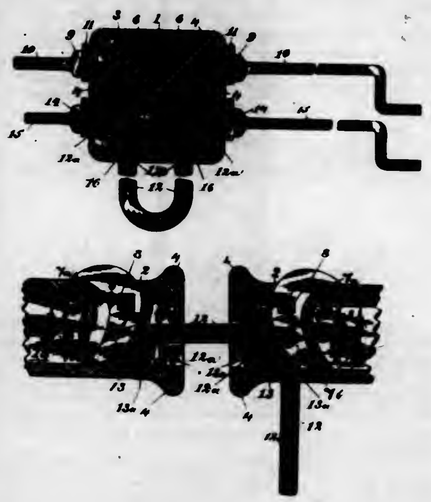
2. In a pulp-drainer, a foraminous receptacle provided with an inlet for the pulp and with an outlet for the drained solid matter, said receptacle consisting of two concentric bodies with an interposed filtering material, and external means connected with the inlet of the receptacle for supplying pulp under pressure, substantially as described.

3. In a pulp-drainer, a foraminous receptacle provided with an inlet for the pulp and an outlet for the drained solid matter, a shell B, surrounding the receptacle and provided with a discharge-opening, and external means for supplying pulp under pressure, substantially as described.

4. In a pulp-extractor, a foraminous receptacle provided with an inlet for the pulp and with an outlet for the drained solid matter, a central foraminous body, and means for supplying pulp under pressure, substantially as and for the purpose specified.

488,848. CAR-COUPLING. JOHN T. JONES, Toronto, Canada. Filed Mar. 16, 1892. Serial No. 424,927. (No model.)

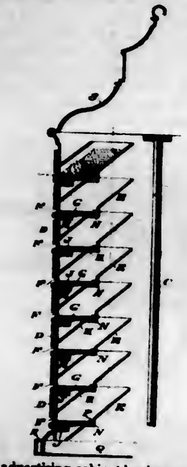
Claim.—1. A car-coupler consisting of a draw-head, a slot formed in its upper side, a coupling-pin pivoted in the draw-head, one end of which rests upon the inner side of the bottom of the draw-head and the other end extending through the said slot and curved to rest upon the metal surrounding said slot, a U-shaped link the ends of which are bent to form eyes, a spindle passing through said eyes and journaled in the sides of the draw-head, the ends of said spindle fitted to receive a lever extending across the end of the car to the sides and adapted to raise the link to enter the adjacent draw-head of the next car, and slots formed in the under side of the draw-head to receive the side bars of the coupling-link when the coupling link is in its vertical position, substantially as described.



2. A car-coupler consisting of a draw-head having a slot formed in its upper side to the rear of the rib at the front of said draw-head, a curved coupling-pin mounted on a spindle journaled in suitable bearings formed in the sides of the draw-head, one or both ends of said spindle fitted to receive a lever extending across the end of the car to the sides, said pin adapted to be turned rearward and upward by said lever, a U-shaped link the ends of which are bent into eyes the inner sides of which have one or more flattened surfaces, a spindle passing through said eyes having flattened surfaces to engage with the flattened surfaces of the eyes, one or both ends of said spindle fitted to receive a lever extending across the end of the car to the side and adapted to raise the coupling-link to enter the adjacent draw-head of the next car, and two longitudinal slots formed in the under side of said draw-head, which receive the side bars of the coupling-link when in its vertical position, substantially as described.

3. A car-coupler consisting of a draw-head having a slot formed in its upper side and to the rear of the rib at its front end, two slots formed in its under side, extending longitudinally inward from the front of said rib, a U-shaped coupling-link the ends of which are bent into eyes having their inner surfaces flattened, a spindle passing through the said eyes and journaled in suitable bearings formed in the sides of the draw-head, said spindle having flattened surfaces to engage with the flattened surfaces of the said eyes, a lug extending outwardly from one or both ends of said spindle, fitted to receive the key-lever rigidly connected to said lug by means of a pin passing through said key-lever and lug, said key-lever extending across the end of the car to the side and cranked at its free end, said coupling-link adapted to be raised into a horizontal position by the movement of said lever and the side bars of the link entering the slots in the under side of the draw-head when hanging in its vertical or normal position, a coupling-pin located within the draw-head and having a polygonal opening therethrough through which passes a correspondingly-shaped spindle, the ends of said spindle journaled in bearings formed in the sides of the draw-head, and a lug projecting outwardly from one or both ends of said spindle and fitted to receive a key-lever rigidly connected to the said lugs by means of pins passing through the said key-lever and through the said lug, said lever extending across the end of the car to the side and having its free end cranked, said lever adapted to turn the coupling-pin rearward and upward when uncoupling the cars, said coupling-pin extending upwardly through the slot in the upper side of the draw-head and curved to rest on the surrounding metal, substantially as described.

483,849. ADVERTISING OR BUSINESS CABINET. Mark W. Harmon, Philadelphia, Pa. Filed Nov. 2, 1891. Serial No. 410,922. (No model.)

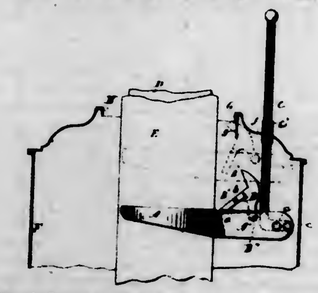


Claim.—1. An advertising-cabinet having a card-receiving drawer with a recess in the rear thereof, said drawer having inclined front and rear walls and perpendicular side walls and said recess having a vertical rear wall, and a slide with a finger working in a slot in a flat bottom of said drawer and adapted to enter said recess behind the contents of the lower part of the drawer, said drawer having a throat in its front wall at the bottom thereof, said parts being combined substantially as described.

2. An advertising-cabinet having a drawer with a flat bottom and inclined front and rear walls, a box below said flat bottom, and a slide movable in the front and rear walls of said box and having a finger working in a slot in said flat bottom and the floor of a recess in the back part of the said drawer, said parts being combined substantially as described.

3. A cabinet having a series of drawers arranged in a vertical row with inclined front and rear walls and perpendicular side walls, the rear wall of each drawer forming the front wall of the next lower drawer, flat bottoms for said drawers, a horizontal throat at the lower end of the front of each drawer, and a spring-finger working in a slot in the bottom of each of said drawers and in a recess having a perpendicular wall formed in the rear wall of each drawer, said parts being combined substantially as described.

483,850. WICK-CARRIER. John C. Miller, Waterbury, Conn., assignor to the Matthews & Willard Manufacturing Company, same place. Filed May 2, 1892. Serial No. 431,561. (No model.)

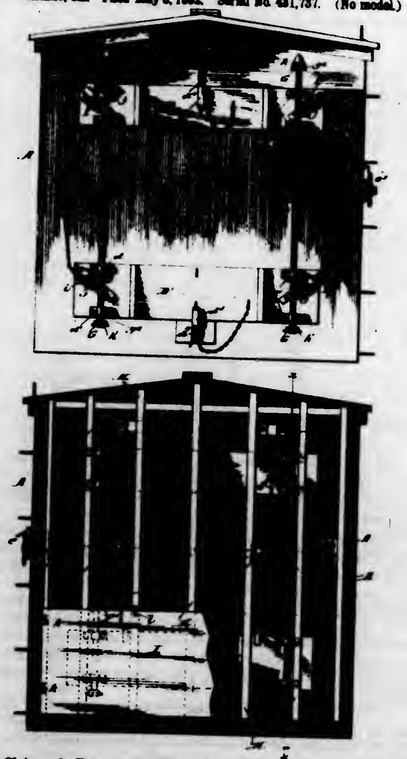


Claim.—1. In a central-draft lamp, the combination, with the fount and draft-tube thereof, the top of the former being constructed with a cam-surface, of a wick-carrier comprising two clamping-arms, a draw-bar attached to the shanks thereof and extending upward through the top of the fount, in which it has bearing, a dog pivoted between the shanks of the jaws and having a wedge and a tripping-tooth, which latter engages with the said cam-surface to turn the dog in one direction, and a tripping device depending from the top of the fount and constructed to permit the dog to be thrown inward for entering its wedge between the said arms when the carrier is raised to the top of the fount and operating through the tripping-tooth to withdraw the wedge from between the arms when the draw-bar is forced downward, substantially as described.

2. In a central-draft lamp, the combination, with the fount and the draft-tube thereof, the top of the former being constructed with a cam-surface, of a wick-carrier comprising two bowed clamping-arms, each having a straight shank and made of a single piece of spring sheet metal, a draw-bar attached to the outer ends of the said shanks, a dog pivoted between the shanks and having a wedge and a tripping-tooth located above the same, the said tooth engaging with the said cam-surface to turn the dog in one direction, and a tripping device depending from the top of the fount and constructed to permit the dog to be forced inward for entering its wedge between the arms when the carrier is raised to the top of the fount and operating through the tripping-tooth to withdraw the wedge from between the arms when the draw-bar is pressed downward, substantially as described.

3. In a central-draft lamp, the combination, with the fount and draft-tube thereof, the top of the former being constructed with a cam-surface, of a wick-carrier comprising two bowed clamping-arms, each having a straight shank, a draw-bar attached to the outer ends of said shanks, a dog pivoted between the shanks between the said draw-bar and the arms and constructed with a wedge, and a tooth located above the same, the said tooth engaging with the said cam-surface to turn the dog in one direction, and a tripping device consisting of a plate depending vertically from the top of the fount and formed with an opening to receive the tooth and thus permit the dog to be turned inward on its pivot when the carrier is raised and operating through the tripping-tooth to withdraw the wedge from between the arms when the draw-bar is forced downward, substantially as described.

483,851. VENTILATING DEVICE FOR RAILROAD-CARS. Albert Mimnick, Colton, assignor of one-half to Myra Blanchard, San Bernardino, Cal. Filed May 3, 1892. Serial No. 431,737. (No model.)



Claim.—1. The combination, with a car having an opening in the same, of offsetting vertical rods secured to the car in parallel position, a sliding door arranged between the rods and the car and having keepers or guides embracing said rods, wedge-seats fixed to the door, and wedges adapted to be forced in the seats between the door and rods, substantially as shown and described.

2. In a car having an opening in the same, of offsetting vertical rods secured to the car in parallel position, a sliding door arranged between the rods and the car, diagonally-arranged wedge-seats *i*, and wedges adapted to fit therein between the door and the rods, substantially as shown and described.

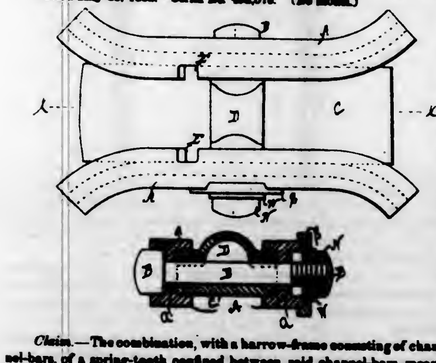
3. The combination, with a car having an opening in the same, of offsetting vertical rods secured to the car in parallel position, a sliding door arranged between the rods and the car, diagonally-arranged wedge-seats *i*, and wedges adapted to fit therein between the door and the rods, substantially as shown and described.

4. The combination of a car having openings through the same with vertical rods upon opposite sides, tie-plates extending from one rod through the car to the other rod, doors sliding on said rods between the rods and the car, and means for tightening the doors against the car, substantially as shown and described.

5. The tie-plates G, having shoulders g^3, with openings in their ends, combined with the car-body, the door, and rods extending through said plates, substantially as shown and described.

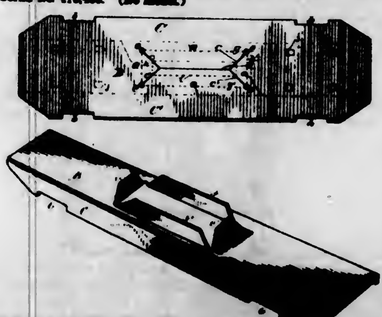
6. The combination, with the car having openings and doors regulating said openings in its end, of a skeleton frame H, shutting off the space about the doors from the rest of the car, and the detachable imperforate grain-door I, substantially as shown and described.

483,852. FASTENING FOR SPRING-TOOTH HARROWS. Aaron F. Moulton, Lansing, Mich., assignor to H. Bement & Sons, same place. Filed May 26, 1892. Serial No. 433,073. (No model.)



Claim.—The combination, with a harrow-frame consisting of channel-bars, of a spring-tooth confined between said channel-bars, means for drawing said channel-bars together, and a spring-stop between said channel-bars, substantially as shown and described.

483,853. METALLIC RAILWAY-TIE. Robert Morrell, Summit, N. J., assignor of fourteen-twentieths to Charles S. Day, Augustus F. Libby, Charles F. Wood, and George H. Williams, same place, William W. McCollum, Millburn, James Neafie and Charles Brock, Boonton, William H. Lewis and Andrew Rossmer, Hoboken, Frederick Hinkwitz, Millington, and Charles Stoller, Morristown, N. J. Filed Dec. 29, 1891. Serial No. 416,493. (No model.)



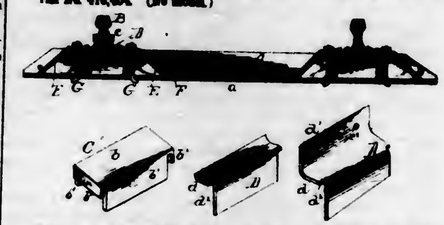
Claim.—1. A blank for a metallic railway-tie, provided on its edges with notches and in its central portion with slots or cuts *c d'*, ending in holes *e*, and a slit *d*, connecting slits *c d'*, as and for the purpose set forth.

2. A metallic railway-tie provided with a central opening in the base thereof, the displaced metal being turned downward and forming longitudinal and transverse flanges, as at *f f'* and *c d*, as set forth.

3. A metallic railway-tie provided with longitudinal and transverse downward flanges formed of the metal of the base of the tie by slitting the tie on the lines *c d d* and then bending the metal downward, as set forth.

4. A metallic railway-tie provided with longitudinal and transverse downward flanges cut from the body of the bottom and bent downward, the points at the junctions of these flanges being cut out, forming a rounded ending to the cuts, for the purpose set forth.

483,854. RAIL-JOINT FASTENING. Robert Morrell, Summit, N. J., assignor of fourteen-twentieths to Charles S. Day, Augustus F. Libby, Charles F. Wood, and George H. Williams, same place, William W. McCollum, Millburn, James Neafie and Charles Brock, Boonton, William H. Lewis and Andrew Rossmer, Hoboken, Frederick Hinkwitz, Millington, and Charles Stoller, Morristown, N. J. Filed Dec. 29, 1891. Serial No. 416,494. (No model.)



Claim.—1. The combined clip and fish-plate D, having its body of a size and form to fit between the sides and rest upon the bottom of the tie without direct fastening thereto and its upper portion formed as a clip *d* and a fish-plate d^2, the two latter portions being of a width greater than the main body, forming a shoulder d^3, as and for the purpose set forth.

2. The clip-plate D, having its main body of a size and form to fit between the sides and rest upon the bottom of the tie without direct fastening thereto and its clip portion *d* made wider, thereby forming a shoulder d^3 to rest in the rail-notch on the top of the base of the rail, as and for the purpose set forth.

3. The metallic cushion-plate herein described, consisting of a flat top, downward-depending sides of a size to fit between the sides of the tie, and downward-depending vertical ends embracing the vertical sides of the tie, in the manner and for the purposes set forth.

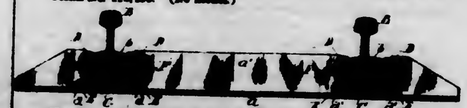
4. The inclined clip-plate herein described, consisting of a clip portion to rest above the flange of the rail, the angular rib upon the under side thereof, and the inclined portion long enough to reach the bottom of the tie and be secured against spreading, as and for the purpose set forth.

5. In combination, the tie, the rail, the inclined clip-plate resting above the flange of the rail at one end and upon the bottom of the tie at the other, the vertical securing-bolts, and the horizontal bolts passing through the sides of the tie above the lower ends of the inclined clip plates, as and for the purposes set forth.

6. In combination, the rail, the cushion, the tie, the clip-plate D, the inclined clip-plate having an angular rib on its under side, and the horizontal and vertical bolts for securing the clips, in the manner and for the purposes set forth.

7. In combination with two abutting rails, the combined clip and fish-plate D, the cushion, the inclined clip-plate, and the horizontal and vertical securing-bolts, as and for the purposes set forth.

483,855. RAILWAY-RAIL FASTENING. Robert Morrell, Summit, N. J., assignor of fourteen-twentieths to Charles S. Day, Augustus F. Libby, Charles F. Wood, and George H. Williams, same place, William W. McCollum, Millburn, James Neafie and Charles Brock, Boonton, William H. Lewis and Andrew Rossmer, Hoboken, Frederick Hinkwitz, Millington, and Charles Stoller, Morristown, N. J. Filed Dec. 29, 1891. Serial No. 416,495. (No model.)

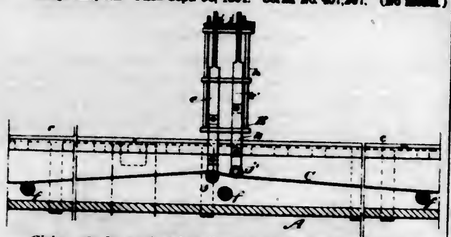


Claim.—1. The combination of the tie, the cushion-block therein, the rail resting on the cushion block, the clips engaging the base-flanges of the rails at their upper ends and formed as hooks at their lower ends, and transverse bolts passing through the sides of the tie and engaging the hooked lower ends of the clips, as set forth.

2. In combination, the tie, the cushion-block, a rail resting thereon, a clip bent to pass upon and engage the top of the base-flanges of the rail and having its lower ends passed downward against the cushion-

block and turned outward, a transverse horizontal bolt passing through the sides of the tie and engaging the lower end of the clips, and a longitudinal bolt passing through the clips and the cushion-block, as set forth.

483,856. ELECTRIC RAILWAY. WILLIAM G. MURPHY, Jr., Marysville, Cal. Filed Sept. 30, 1891. Serial No. 407,267. (No model.)

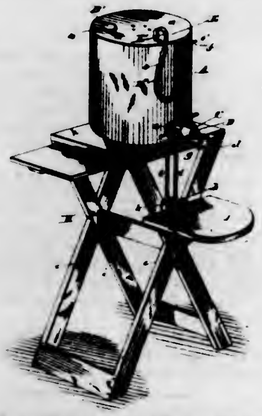


Claim.—1. In an electric railway, a car carrying a motor, a conduit arranged below the level of the track and provided with insulated roller-supports, a cable resting normally upon the rollers, a connector carried by the car, projecting into the conduit, and furnished with grooved rollers for engaging the cable, and means for bringing the connector in engagement with the cable or removing it therefrom, substantially as specified.

2. A connector formed of two sliding bars, each carrying a grooved roller for contacting with the cable, one bar being adapted to raise the cable and the other to depress it, substantially as specified.

3. In an electric railway, the combination, with the conduit, of a bow-spring supported in the conduit and projecting into the path of the connector for preventing the cable from rising through the slot of the conduit, substantially as specified.

483,857. LAMP-FILLING TANK OR CAN. ALEXANDER K. MURRAY, Bradford, Pa. Filed Jan. 23, 1892. Serial No. 419,088. (No model.)



Claim.—1. The tank or can, the exterior valve provided with the depending nozzle on the inside of the tank, the removable plug secured to the valve and provided with the depending spout, and the air-tube separate from the valve and its spout and having one end secured to the head of the tank and provided with the tip which is adapted to be inserted along with the spout into the mouth or filling-opening of a lamp, as and for the purpose described.

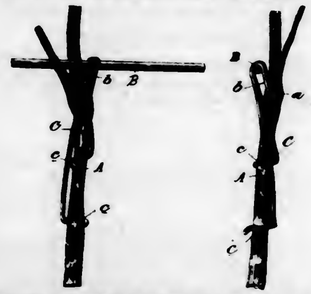
2. The tank or can, the exterior valve provided with the depending nozzle on the inside of the tank, the depending spout on the outer end of the valve and depending below the bottom of the tank, the air-tube having one end secured to the head of the tank and provided with the tip at its free end, the upper loop or retainer on the outside of the tank to receive the tip of the air-tube, and the hook near the bottom of the tank close to the valve and spout and adapted to support the lower part of the tube and hold the same in position for its tip to enter a lamp alongside of the spout on the valve, as and for the purpose set forth.

3. The combination of the tank or can, the valve having the depending nozzle on the inside of the can, the plug carrying the depending spout on the outside of the can, and the extensible air-tube having its two sections connected by an intermediate tube-coupling and one of the sections secured to the head of the tank and the other section provided with a tip or nozzle, for the purpose described, substantially as set forth.

4. The tank or can having its heads arranged parallel with each other and connected by an intermediate stay-rod which is united rigidly to both heads, the exterior valve provided with the depending nozzle on the inside of the tank, the plug secured in the valve and having the depending spout, and the air-tube secured to the upper head of the tank and provided with the tip at its free end, as and for the purpose described.

5. In a lamp-filling oil tank or can, the stand having the top adapted to support a tank so that its spout will not contact with said stand, the vertical parallel rods rigidly secured to said top near one edge thereof and depending from the same, and the adjustable shelf having the friction-clamps fitted on said rods and adapted to bite thereon to hold the shelf at the desired elevation, substantially as described.

483,858. VINE-HOLDER. JOHN I. MCGARRELL, Westfield, N. Y. Filed Aug. 26, 1891. Serial No. 403,723. (No model.)

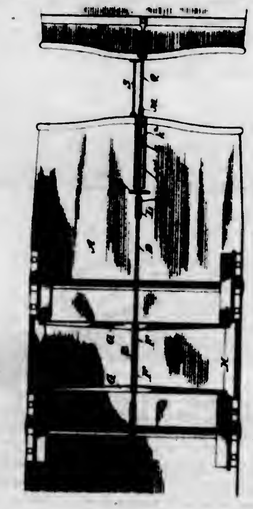


Claim.—1. A vine-holder formed of a single piece bent upon itself and having a hook for holding it upon a support and arms of different lengths formed with vine-engaging beads, said hook and arms extending in substantially-parallel planes, as set forth.

2. A vine-holder formed of a single piece of wire having a retaining-hook and arms of different lengths formed at their free ends with vine-engaging beads at substantially-right angles to each other, as set forth.

3. The vine-holder described, formed of a single piece of wire having the hook *b* with rounded bead, the arms of different lengths extending from the said hook, the free ends of the said arms being provided with curved beads at an angle to each other, as and for the purpose specified.

483,859. CAR-BRAKE. JOHN W. HEUBAUS and JOHN R. PFLAUM, Louisville, Ky. Filed Jan. 4, 1892. Serial No. 417,021. (No model.)



483,859.

Claim.—1. The combination, with the brake-beams, of the pitmen, the arm to which the pitmen are attached, the operating-rod to which the arm is attached, the hand-lever, the toggle, and pitman-rod connecting the hand-lever and operating-rod, substantially as shown and described.

2. The combination, with the motor and trail-cars, of the brake-beams suspended from said trail-car, the pitmen, the arm connected thereto, the operating-rod, the rigid coupling-bar, and the link connecting the rod and bar, substantially as shown and described.

3. The combination, with the motor and trail-cars, of the rigid coupling-bar, the vertically-movable brake-operating rod, the link connecting the rod and bar, the pitmen, and brake-beams connected with the operating-rod, substantially as shown and described.

4. The combination, with the brake-beams carrying shoes, of the pitmen, the rod to which the pitmen are connected, and the hand-lever connected with the free end of said rod, substantially as and for the purpose described.

5. The combination, with the brake-beams, of the operating-rod, the connections between the rod and beams, the hand-lever, the toggle, and pitman-rod connecting the hand-lever with the joint of the toggle, whereby said rod may be depressed, substantially as shown and described.

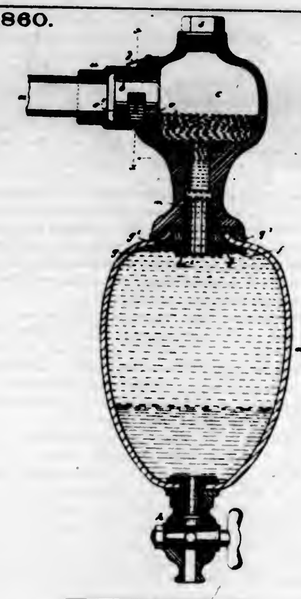
6. The combination of the rod having the beams connected therewith, the post upon the forward end of said rod, the sleeve mounted thereon, the link connected with the sleeve, and the rigid coupling-bar, all arranged substantially as shown and described.

483,860. LUBRICATOR. ALEXANDER OBERMEYER, Barmen, Germany. Filed Apr. 14, 1892. Serial No. 429,172. (No model.)

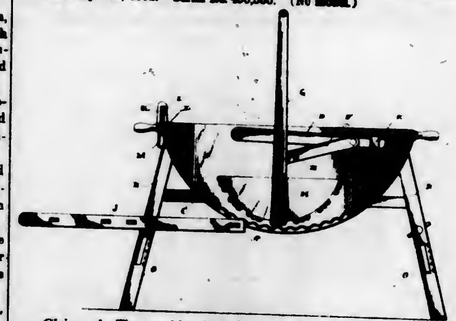
Claim.—1. The combination, with a condensing pot or vessel *c* and an oil-chamber *d*, communicating therewith, of a steam and oil conducting tube connected with the condensing pot or vessel and containing a rotatable core *b*, provided with a channel *e*, which is adjustable to different levels relatively to the lower side of the tube, substantially as and for the purpose described.

2. A lubricator provided with a condensing-chamber having a rotary adjustable core provided with an opening formed in two branches *e e'*, of varying size, and a recess or depression which communicates with both branches, substantially as described.

483,860.



483,861. WASHING-MACHINE. CALVIN ORSON, Flagstaff, Ariz. Filed Apr. 25, 1892. Serial No. 430,535. (No model.)



Claim.—1. The combination of a tank, arms pivoted to opposite sides of the tank, means for holding the arms in a horizontal position in the tank, bars pivoted to the free ends of the said arms, and a rubber pivotally connected to the said bars, substantially as shown and described.

2. The combination, with a tank and arms pivoted at their ends to opposite sides of the tank, of latches on the tank sides, which engage the free ends of said arms for the purpose of holding them in a horizontal position, bars pivoted to the free ends of the said arms, and a rubber pivotally connected to the said bars, substantially as shown and described.

3. In a washing-machine, the combination of a frame, a corrugated tank supported therein, arms pivoted at their ends to the tank sides, bars pivoted to the free ends of the said arms, latches pivoted to the tank for holding the arms in a horizontal position, a rubber pivotally connected to the free ends of the said bars, and a shelf pivotally secured to the frame for the purpose of holding the rubber when turned outward, substantially as shown and described.

483,862. ELECTRIC SWITCH. HARRY T. PAINE, West Chester, Pa. Filed May 14, 1891. Serial No. 392,660. (No model.)

Claim.—1. In an electric switch, the combination of shoulders or stops with a rotary switch-bar, a shaft, a spring connecting the shaft and switch-bar, and a catch connected to the switch-bar to rotate therewith, but free to have a lateral motion independently thereof, and a device to move the said catch laterally to cause it to be disengaged from and engage with said shoulders or stops as the shaft is rotated, all substantially as described.

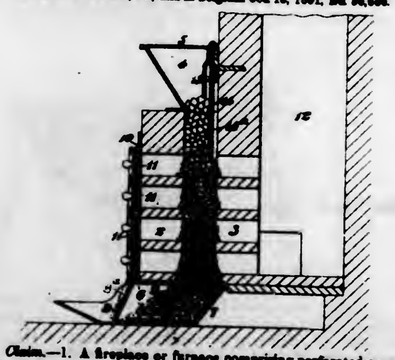
483,862.

2. In an electric switch, the combination of shoulders or stops with a rotary switch-bar, a shaft having an eccentric, a spring connecting the shaft and switch-bar, and a catch connected to the switch-bar to rotate therewith, but free to have a lateral motion independently thereof, the catch being acted on by the said eccentric to cause it to engage with and be disengaged from the shoulders or stops as the shaft is rotated, all substantially as described.

3. The combination of the base having terminals and shoulders or stops with a disk having a nose engaging with said shoulders or stops, an eccentric acting on said disk, a shaft carrying said eccentric, a switch-bar adapted to turn with the disk, a spring one end of which is connected to the shaft, the opposite end being connected to the switch-bar or disk, whereby on turning the shaft the switch will be turned intermittently, substantially as described.

4. The combination of a base having the shoulders or stops *a'* and terminals with a vertical shaft B, a key for said vertical shaft, an eccentric C on the shaft, a catch-disk D, having a nose to engage with the shoulders or stops, said catch-disk being adapted to the eccentric, a disk E, a slot therein, a pin of the catch-disk entering said slot, a switch-bar secured to said disk E and having contacts adapted to engage with the terminals on the base, with a spring one end of which is secured to the shaft, the opposite end being secured to the switch-bar, the whole acting substantially as and in the manner set forth.

483,863. FURNACE. HENRY G. PLATTS, London, England. Filed Oct. 16, 1891. Serial No. 408,919. (No model.) Patented in France Oct. 6, 1891, No. 216,573, and in Belgium Oct. 16, 1891, No. 96,698.



Claim.—1. A fireplace or furnace comprising perforated or grid-like walls arranged to form between them a fuel-space closed at the sides and bottom and through which solid fuel can descend by gravity from a hopper above and air-regulators consisting of perforated plates mounted to slide in suitable guides on one of said walls and each adapted to control the passage of air through a part of said wall, substantially as herein described, for the purposes specified.

2. A fireplace or furnace comprising the two perforated or grid-like walls arranged to form between them a fuel-space closed at the sides and through which solid fuel can descend by gravity, air-regulating devices for independently controlling the flow of air through various parts of one of said walls, a hopper located directly above the said fuel-space, an ash-pit arranged at the lower end of said fuel-space and normally closed by a door, and an air-inlet passage having its outlet end arranged near the top of and between said walls and below said hopper, substantially as described and shown, for the purposes specified.

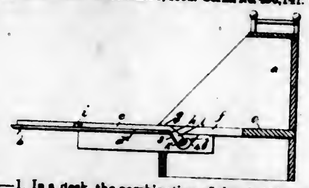
3. A fireplace or furnace comprising two perforated or grid-like walls arranged to form between them a fuel-space closed at the sides and through which solid fuel can descend by gravity, a hopper for introducing fuel to the top of the space between said walls, and fuel-charging passages having their discharging ends terminating in said fuel-space at a point below the top of said walls, substantially as herein described, for the purposes specified.

4. A fireplace or furnace comprising two perforated or grid-like walls arranged to form between them a fuel-space closed at the sides and through which solid fuel can descend by gravity and a number of separate air-regulators arranged in front of one of said walls and whereby the admission of air to each horizontal row of perforations in said wall can be regulated independently of the admission to the other rows of perforations, substantially as herein described.

5. A fireplace or furnace comprising two perforated or grid-like walls arranged to form between them a fuel-space closed at the sides and through which solid fuel can descend by gravity and a casing containing refractory brickwork arranged to form an air-regenerator external to and so as to be heated by waste or radiant heat from said fire-grate or furnace, substantially as herein described.

6. A fireplace or furnace comprising perforated or grid-like inner and outer walls 2 and 3, arranged vertically and so as to form between them a fuel-space closed at the ends, independent air-regulators 11, arranged in front of each horizontal row of perforations in said outer wall, a combustion-chamber 12 at the rear of said inner wall, a fuel-charging hopper 4 above said fuel-space, a normally-closed ash-pit 6 below said fuel-space, and an air-passage 14^a, having its lower end terminating at a point below the top of the fuel between said walls, substantially as herein described, for the purposes specified.

483,864. DESK. EDWARD F. POOLEY, Media, assignor to Pooley Bros., Philadelphia, Pa. Filed June 9, 1892. Serial No. 436,141. (No model.)



Claim.—1. In a desk, the combination of the shelf having the end slots and the recesses from the front ends of said slots through the front edge of the shelf and the intermediate shoulders at the junctions of said shelf slots and recesses, the lid having recesses forming continuations of said shelf-recesses, the slides beneath the shelf and having side recesses, and the links at their outer ends pivoted in said lid-recesses and having the bent inner ends pivoted in said recesses of the slides, said links being so shaped as to fit in said recesses flush with the surfaces of the lid and shelf when the lid is lowered, substantially as described.

2. In a desk, the combination of the shelf having the end slots terminating in recesses extending through the front edge of the shelf with inclined shoulders formed at the junctions of the slots and recesses, the slides having side pintles, the lid having recesses corresponding to said shelf-recesses, and the links pivoted in said lid-recesses and having the bent inner ends, the inner edges forming such an angle as to fit said recesses and shoulders so as to lie flush with the shelf and lid, the inner ends of the links being pivoted to said pintles, substantially as described.

3. In a desk, the combination of the shelf having end slots and recesses, the horizontal reciprocating slides in the desk beneath said shelf and having headed pintles on their sides, the lid hinged to said shelf, and the links at their outer ends pivoted to the lid and having their inner ends bent to extend down through said slots to the slides and slotted to form hooks to engage said pintles, as described.

483,865. TOOL-HANDLE. GIDEON POTTER and HENRY DARBYFIELD, Osceola, Ill. Filed Dec. 30, 1891. Serial No. 416,589. (No model.)

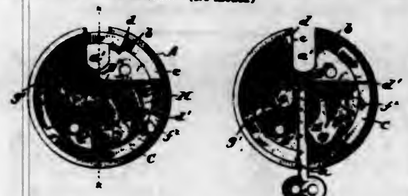
Claim.—1. A tool-handle made up of the sections A and A', which are adapted to receive between them the shank of a tool, and a curved spring B, having its terminals flared outwardly, so as to engage with the shank of the tool when inserted in the handle, substantially as shown, and for the purpose set forth.

2. A tool-handle consisting of the sections A and A', one end being adapted to receive a tool, the opposite end being provided with bosses or projections *b*, around which passes a spring, the terminals projecting toward the open end of the handle, so as to embrace the shank of a tool when inserted in the handle, substantially as shown.

3. A tool-handle made up of sections A and A', one of the sections

carrying a set-screw and a recess *d'* and the other with a V-shaped recess e^3, springs C C, having rearwardly-projecting free ends which are beveled on their inner sides, and a looped or curved spring B, retained between the sections, the free ends thereof being flared and placed so as to lie adjacent to the terminals of the springs C C, substantially as shown, and for the purpose set forth.

483,866. PADLOCK. JOHN B. PEIRCE, Wollaston, Mass. Filed Mar. 30, 1892. Serial No. 427,109. (No model.)



Claim.—1. In a padlock, the combination, with the slotted casing, of an annular divided bolt guided within said casing to have circular movement therein, a pivoted key-operated hub connected to the bolt, and a tongue arranged in the path of a key, and the tumblers E, pivoted within the casing and having the hooks *f*, which take over the tongue of the key-operated piece, said tumblers having projections between their pivots and the hooks *f*, which are adapted to be operated by a key to force the tumblers away from the key-operated piece, as and for the purpose described.

2. In a padlock, the combination, with a suitable casing, of a divided annular bolt guided within the casing to have circular movement therein, a pivoted operating-piece having an arm connected to said bolt and a tongue arranged in the key-path, and the tumblers engaging with said tongue of the operating-piece, substantially as described.

3. In a padlock, the combination of a suitable casing, an annular divided bolt having the notch f^3, the key-operated piece connected with the bolt and having a tongue, and the pivoted tumblers, each having two hooks or projections, one projection being normally in engagement with said tongue and the other projection adapted to engage with the notch in the bolt, for the purpose described, substantially as set forth.

4. In a padlock, the combination of a casing having a key-opening and a radial slot, the pillar-plate forming an annular groove within the casing, the divided bolt fitted in said groove and having the notch f^3, the pivoted hub provided with an arm which is connected to the bolt, and a tongue arranged in a key-path, the pivoted double-hooked tumblers, and a spring for projecting the bolt across the radial slot in the casing, substantially as described.

483,867. SEAL-LOCK. JOHN B. PEIRCE, Wollaston, Mass. Filed Mar. 30, 1892. Serial No. 427,110. (No model.)

Claim.—1. In a seal-lock, the combination of a circularly-moving bolt and a seal rupturing mechanism independent of the bolt and adapted to be operated thereby only when the bolt is retracted, as and for the purpose described.

2. In a seal-lock, the combination of a circularly-moving bolt, the tumblers, and a seal-rupturing device independent of the bolt and having a part which is arranged to be operated by the bolt when it is retracted and which permits the rupturing device to remain at rest as the bolt is projected, as and for the purpose described.

3. In a seal-lock, the combination, with a bolt, of a seal-rupturing lever having a tooth or spur adapted to destroy the seal as the lever is operated, means for holding the seal in juxtaposition to the rupturing device, and a detent or trip connected to the rupturing device and arranged in the path of a bolt to operate the rupturing-lever as the bolt is retracted, substantially as and for the purpose described.

4. In a seal-lock, the combination, with a bolt, of a seal-rupturing lever having a tooth or spur, a spring for holding the lever, a trip pivoted to the lever and having a lip which takes against one edge of the lever and having its other end in the path of the bolt, and a spring which controls the movement of the trip or detent in one direction, as and for the purpose described.

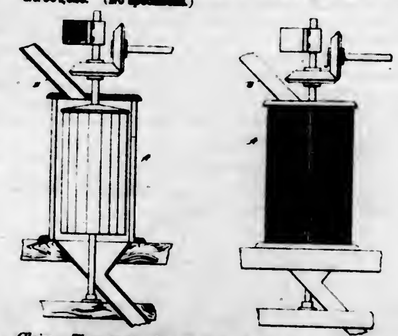
5. In a seal-lock, the combination, with a bolt, of a seal-rupturing lever having a tooth or spur, means for holding a seal in position to be torn by the lever, the tumblers, and a trip arranged in the path of the bolt and having movement in one direction independently of the lever and a moving in the other direction simultaneously with the lever, the whole combined to permit the projection of the bolt without operating the seal-rupturing lever and to hold the latter in position for instantaneous operation on the retrograde movement of the bolt, as and for the purpose described.

6. In a seal-lock, the combination, with a lock-casing and a circularly-movable bolt, of a pillar-plate having a hollow central boss or annulus, a seal-rupturing lever having a tooth or spur operating in and across the boss, a trip connected to the lever and arranged in the path of the bolt, and an adjustable protection-cover having a protected viewing-opening in line with the boss or annulus of the pillar-plate, as and for the purpose described.

7. In a seal-lock, the combination of a case having a central opening, an annular circularly-moving bolt guided in the casing, a seal-rupturing device having its tooth or spur operating in the opening and adapted to be moved when the bolt is retracted, and a hinged outside cover having a protected viewing-opening through which the seal-rupturing lever is visible, said cover being provided with a keeper arranged to be engaged by the bolt on the projection of the latter, as and for the purpose described.

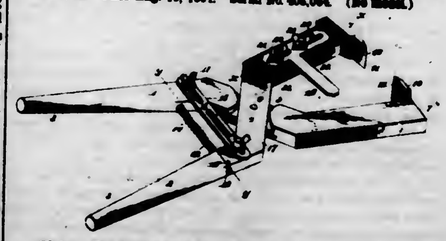
8. In a seal-lock, the combination, with a circularly-moving bolt and a seal-rupturing mechanism arranged for operation by the bolt when the latter is retracted, of the tumblers, each pivoted at an intermediate point of its length and having the shoulders or nibs arranged on opposite sides of the fulcrum of the tumbler to take into notches therein, for the purpose described, substantially as set forth.

483,868. METHOD OF POLISHING RICE OR OTHER GRAINS. GEORGE B. PRECHAMA, New Orleans, La. Filed May 25, 1892. Serial No. 434,086. (No specimens.)



Claim.—The process of preparing and polishing rice, consisting in heating the same in a suitable rice-milling machine, then removing the heated rice and placing the same in the cooling floor-bins, then mingling soapstone therewith, and finally passing the rice through a polishing-machine, substantially as specified.

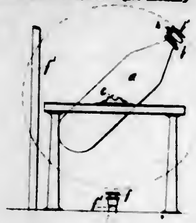
483,869. MORTISING DEVICE. ALEXANDER E. RAPPLE, Grayville, Ill. Filed Aug. 19, 1891. Serial No. 402,994. (No model.)



Claim.—The herein-described mortising device, the same consisting of the opposite members inclined and crossing each other at their centers, a pivot connecting the two, said members terminating at their

outer corners in inwardly-disposed jaws 7, provided with the recesses 8, the cutters mounted in the recesses, and the screws passing through the same into the heads, the T-shaped gage-plate having slots and set-screws passed through the same into one of the members, the limiting-plate 13, having slots 14, crossing the members in rear of their pivot, set-screws passed through the slots into the members, the rod 12, extending from one member through the opposite member, the coiled spring thereon and interposed between the two members, and the stop-pin 15, passed through one member into the path of the rod, substantially as specified.

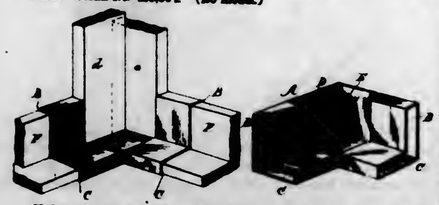
483,870. APPARATUS FOR THE MANUFACTURE OF PAPER-PULP. ROBERT H. REDMAYNE, Newcastle-on-Tyne, England. Filed Mar. 28, 1891. Serial No. 386,752. (No model.)



Claim.—1. The combination, with a rotating pulp-boiler having a conical discharging end provided with a valve-casing containing a valve or cock, of a curved pulp-conducting pipe or tube having at its receiving extremity a vertically-sliding tube or gland provided with a tapering internal surface, and means for detachably connecting the sliding tube or gland with the valve-casing on the conical discharging end of the pulp-boiler, substantially as described.

2. The combination, with a rotating pulp-boiler having a conical discharging end provided with a valve-casing containing a valve or cock, of a pulp-conducting pipe, a sliding gland-piece arranged on the pulp-conducting pipe and provided with a tapering internal surface, and a reducing-pipe section fitted in juxtaposition to the pulp-chest, the several parts being arranged to, first, conveniently connect or disconnect the boiler with the pulp-chest; second, to effect a partial reduction of the pulp by the agitation caused by the increased velocity in the contracted area of the gland-piece, and, finally, to effect a thorough reduction of the pulp prior to its entrance into the pulp-chest, substantially as described.

483,871. CRATE. DAVID J. REX, Pittsburg, Pa. Filed Apr. 16, 1892. Serial No. 429,304. (No model.)



Claim.—1. A corner-piece for crates, provided at its ends with sockets forming seats for the side and end slats and provided between the said ends with seats for the uprights or posts, substantially as set forth.

2. A corner-piece for crates, provided at its ends with seats for the side and end slats, the seats at the same end of the corner-piece being arranged at right angles to each other, substantially as set forth.

3. A corner-piece for crates, made right-angular and having in its ends L-shaped seats forming communicating sockets arranged side by side, the sockets at the same end of the corner-piece being at right angles to each other, substantially as set forth.

4. A right-angular corner-piece for crates, provided at its opposite ends with seats for the end and side slats and between said ends with seats for the uprights or posts, substantially as set forth.

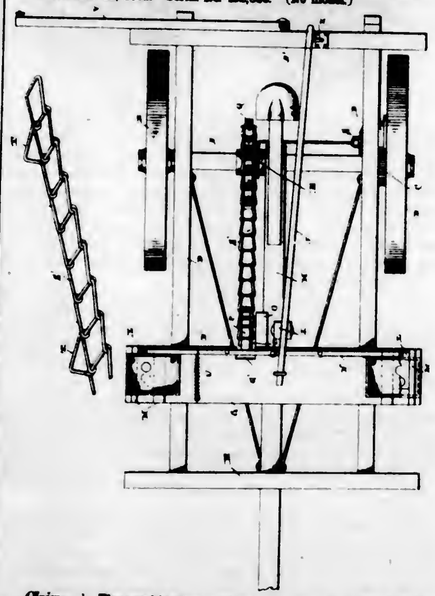
5. A corner-piece for crates, having L-shaped seats forming communicating sockets arranged side by side and at right angles to each other, one of each sockets being wider than the other, whereby the slat inserted therein may rest edgewise against the face of the similar slat fitted in the other socket, substantially as set forth.

6. The right-angular corner-piece for crates, having at its opposite ends communicating seats formed at right angles to each other and provided at its angle with communicating seats, all substantially as described, and for the purposes set forth.

7. A crate composed of the side and end slats, the corner-posts, the corner-pieces having seats for the said slats and posts, and means for binding the crate together longitudinally and transversely, substantially as set forth.

8. A right-angular corner-piece for crates, provided in its opposite ends with sockets closed laterally and opening out of the ends of the corner-piece, whereby the slats may be inserted and removed longitudinally from their sockets, but will be held from displacement laterally, substantially as and for the purpose described.

483,872. CORN-PLANTER. WILLIAM O. REUDLE, De Smet, S. D. Filed May 13, 1892. Serial No. 432,886. (No model.)



Claim.—1. The combination, with an axle, a frame mounted thereon, sprocket-wheels on the axle and frame, seed-slides on opposite sides of the frame, and pivoted levers for operating said slides, of a drive-chain on said sprocket-wheels formed of U-shaped links, the ends of some of which being extended over the next-adjacent links to form wedge-shaped projections, for the purpose substantially as shown and described.

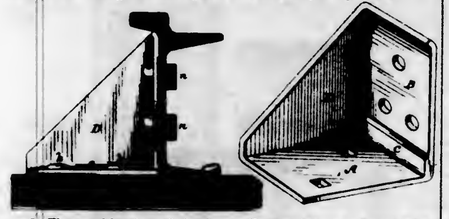
2. The combination, with an axle, drive-wheels thereon, a sprocket-wheel between the drive-wheels, and a frame pivotally supported on the axle, of a tongue projecting forward from the axle, a standard projecting vertically therefrom, a lever pivoted to said standard and loosely connected at its forward end to said frame, seed-slides and pivoted levers for operating them, a sprocket wheel journaled to the frame, a drive-chain encircling said sprocket wheels, and stops on the periphery of the drive-chain, substantially as shown and described.

3. The combination of an axle, drive-wheels thereon, a sprocket-wheel Q, a frame extending forward from the axle, cross-board G', levers pivoted in line near the rear edge of the said board, seed-slides connected to the outer ends of the levers, whereby they are moved transversely across the ends of the said board, seed-boxes arranged over the slides, standard O, sprocket-wheel P, a chain encircling sprockets P and Q, and stops T, projecting from the edge of said chain, substantially as shown and described.

483,873. COMBINED FOOT AND BRACE FOR RAILWAY-RAILS. EDWARD SAMUEL, Philadelphia, Pa. Filed Dec. 26, 1891. Serial No. 416,166. (No model.)

Claim.—1. The within-described rail foot and brace, comprising the base portion for bearing on the tie, the vertical securing-flange to which the rail is attached, and a triangular brace at one side extending from the base to the securing-web, the whole being formed from sheet metal in one piece by bending the parts into proper relation to each other, substantially as specified.

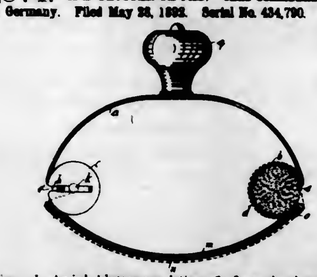
2. The within-described rail foot and brace, made from a single sheet of wrought metal, comprising the triangular brace D, the base A, projecting from the lower portion of the brace, and the vertical securing-web B, projecting from one side of the brace, said vertical securing-web and base being welded together, substantially as specified.



3. The combination of the brace D, securing-web B, extending from one side of the brace, and a base A, extending from the lower portion of the base, with an extension *d*, projecting from the base toward the web, substantially as described.

4. The within-described blank for a rail foot and brace, said blank being of the shape shown and composed of a triangular central portion D, having extensions A and B, substantially as described.

483,874. INK BLOTTER OR PAD. CARL SCHEIDEMEYER, Otten see, Germany. Filed May 28, 1892. Serial No. 434,790. (No model.)

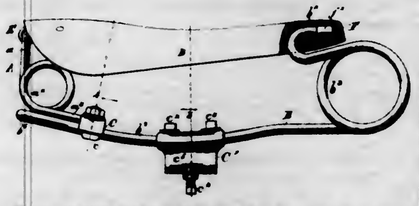


Claim.—1. An ink-blotter consisting of a frame having oppositely-arranged slotted tubes, one of which is adapted to contain a roll of blotting-paper, and a rotary shaft extending through the other tube for connecting with the blotting-paper to wind it within said tube, as required, substantially as described.

2. An ink-blotter consisting of a frame having oppositely-arranged slotted tubes, one of which is adapted to contain a roll of blotting-paper, a case movable into and out of the other slotted tube, and a rotary shaft journaled in the movable case and having a crank-handle, substantially as described.

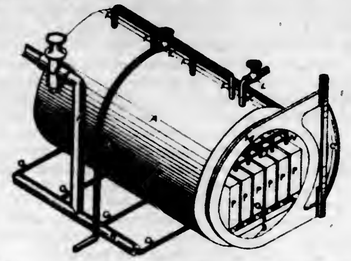
3. An ink-blotter consisting of a frame having a curved surface over which the blotting-paper is adapted to travel, a tube located at one side of the holder and adapted to contain a roll of blotting-paper, and a winding mechanism arranged at the opposite side of the frame for winding the blotting-paper, as required, substantially as described.

483,875. VELOCIPEDE-SADDLE. FITZ M. SLOCUM, Erie, Pa. Filed Nov. 28, 1891. Serial No. 413,434. (No model.)



Claim.—An improved velocipede saddle composed of two one-part springs of round wire, a pair of screw-clamps, one of which adjustably connects said springs and the other provides for adjustably supporting the saddle, and a flexible seat having within and beneath its respective ends a hook which engages with a central loop of the front spring and a cantle-bar which connects directly with the main spring at the rear end of the saddle, substantially as hereinbefore specified.

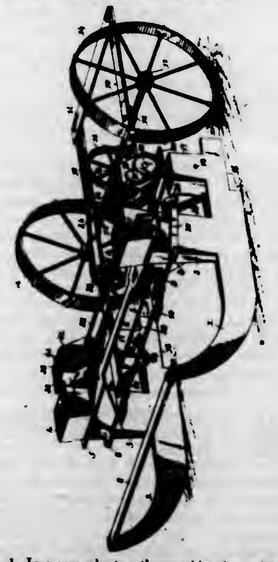
483,876. REFRIGERATING APPARATUS. HENRY SEAGEY and JAMES G. LIGHTFOOT, Indianapolis, Ind. Filed May 7, 1891. Serial No. 391,964. (No model.)



Claim.—1. In a refrigerating apparatus, the combination of an external casing, an internal chamber arranged therein with an annular gas-expansion space between them, said internal chamber having a door, a gas-supply pipe having a gas-regulating valve and communicating with the upper portion of the exterior shell, an outlet or discharge pipe at the bottom of the external shell, said pipe having suitable connections with other pipes which are provided with a pressure-regulating valve, an exhaust-air pipe entering the wall of the internal shell and having a stop-valve, the water-supply pipe located within the upper portion of the internal shell or chamber, and suitable receptacles placed within the internal chamber for the purpose of holding the liquid to be frozen, substantially as described.

2. In a refrigerating apparatus, the combination of an external casing A, an internal chamber B therein, arranged so that a gas-expansion annular space may exist between them, said internal chamber having a door C, a gas-supply pipe D, running from a natural-gas well, so as to supply natural gas to the apparatus, said pipe having a gas-regulating valve E and communicating with distributing-pipes that enter the top of shell A, the outlet or discharge pipes G at the bottom of the shell A, connecting with a pipe H, from which runs a pipe I, having a pressure-regulating valve J, an exhaust-air pipe K, entering the internal shell B and having a stop-valve L, the water-supply pipe M, arranged within the upper portion of the shell B and having the water-distributing pipes connected thereto, and drain-pipe O, a series of freezing-cans P or other suitable receptacles resting upon the floor within the shell B, substantially as described.

483,877. FERTILIZER-DISTRIBUTER ATTACHMENT FOR CHECK-ROW CORN-PLANTERS. JOHN A. STUFF, Bellville, Ohio. Filed June 24, 1892. Serial No. 437,864. (No model.)

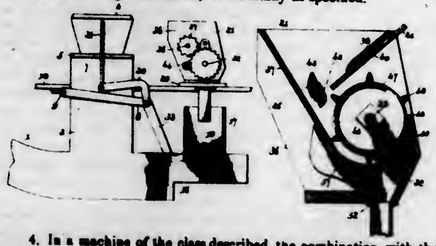


Claim.—1. In a corn-planter, the combination, with the opposite runners, the usual framework, seed-hoppers, and check-row levers, of

fertilizer-tubes located upon the rear ends of the runners, fertilizer-hoppers supported on the tubes, valves located in the fertilizer-tubes below the hoppers, and devices between the check-row levers and valves for intermittingly operating the valves, substantially as specified.

2. The combination, with the runners, corn-hoppers, and check-row operated corn-discharge mechanism, the same comprising a notched lever, of fertilizer-tubes mounted on the rear ends of the runners, fertilizer-hoppers mounted on the tubes, valves arranged in the tubes, and mechanism between the check-row levers and valves for communicating motion from said levers to the valves, substantially as specified.

3. In a machine of the class described, the combination, with the opposite runners, superposed hoppers, intermediate seed-discharge tubes, and the check-row levers, of fertilizer-discharging tubes mounted on the runners in rear of the hoppers, valves located therein, devices for communicating motion from the check-row levers to the valves, superposed fertilizer-hoppers, an axle, ground-wheels, agitator-shafts mounted in the hoppers, and means for communicating motion from the axle to said agitator-shafts, substantially as specified.



4. In a machine of the class described, the combination, with the runners, the seed-discharge tubes mounted thereon near their rear ends, and the seed-hoppers mounted on the tubes and provided in rear of the same with the bearings, of the rock-shaft mounted in the bearings, the elbow-levers on the ends of the rock-shaft, the slotted check-row levers rising from the elbow-levers at the sides of the seed-hoppers, the fertilizer-discharging tubes mounted on the heels of the runners, the hoppers thereon having inclined bottoms, a transverse shaft connecting the hoppers below the bottoms, a sprocket-wheel at the center of the shaft, a gear-wheel at each end of the shaft, agitating-shafts mounted in the hoppers, gear-wheels on the same, meshing with those of the transverse shaft, an axle, ground-wheels, a sprocket-wheel mounted on the axle, an endless sprocket-chain connecting the sprocket-wheel with that of the transverse shaft, and elbow-levers connecting the rock-shaft with the shafts of the valves in the fertilizer-tubes, substantially as specified.

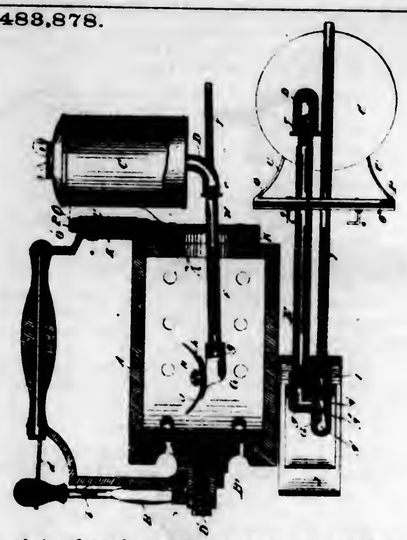
5. In a machine of the class described, the combination, with the runners, seed-hoppers, and means for operating the same, of the fertilizer-hoppers mounted on the rear ends of the runners, a shaft connecting the two, means for operating the shaft, openings formed in the opposite sides of the hoppers and in the bottoms of the same, bearing-spiders mounted in the openings for supporting the shaft, front and rear inclined walls above the shaft, curved flanges or shells parallel to each other and located below the discharge-opening in the hoppers, and the pairs of disks mounted in each hopper and having outwardly-disposed fingers moving between the flanges or shells, substantially as specified.

6. In a machine of the class described, the combination, with the runners, seed-hoppers, and means for operating the same, of the fertilizer-hoppers mounted on the rear ends of the runners, a shaft connecting the two, means for operating the shaft, openings formed in the opposite sides of the hoppers and in the bottoms of the same, bearing-spiders mounted in the openings for supporting the shaft, front and rear inclined walls above the shaft, curved flanges or shells parallel to each other and located below the discharge-opening in the hoppers, the pairs of disks mounted in each hopper, guides located under the rear wall of the hopper, a cut-off mounted in the guides, a transverse agitator-shaft, a longitudinal blade on the same, and means for communicating motion from the transverse shaft to the agitator-shaft, substantially as specified.

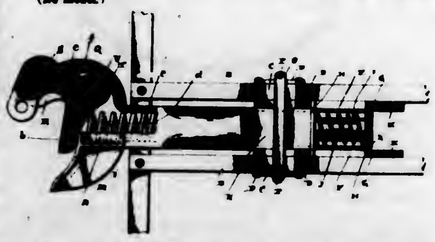
488,878. SAD-IRON HEATER. FREDERICK R. SUTTON, Lawrence, Kans., assignor to Mary Sutton, same place. Filed Jan. 28, 1892. Serial No. 419,093. (No model.)

Claim.—The combination, with a sad-iron having an opening in its heel and a ball engaging said heel, of a non-heat-conducting shield supported by said ball and adapted to close said opening, an oil-reservoir secured to said shield, a two-part oil-conducting tube leading from said reservoir and having an asbestus packing interposed between the sections of the tube, a casting G, having the communicating passages g, g^3, and g', the first for the admission of oil and the last adapted to be closed by a needle valve, the burner H, communicating with passage g^3, the reflector J, surrounding the burner, and a packing of asbestus between said reflector and casting, substantially as described.

488,878.



488,879. CAR-COUPLING. EDWARD S. THOMAS and JOSEPH E. LITTLEJOHN, Cedar Rapids, Iowa. Filed May 6, 1892. Serial No. 432,090. (No model.)



Claim.—1. A car-coupler consisting of a draw-head having a jaw-cavity in its front end, a rearward extension having a spring-bolding cavity communicating with the jaw-cavity, a jaw substantially U-shaped in plan and pivoted at its outer side, the inner extension of the U shape projecting over the said spring-cavity, and a spring within the cavity and engaging the said inner extension, substantially as specified.

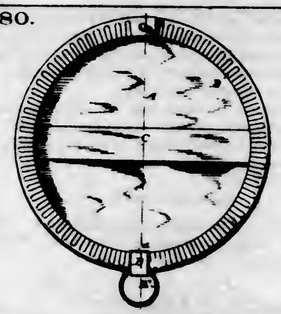
2. A car-coupler consisting of a draw-head having a jaw-cavity and a pivotal pin opening between its ends, and a locking-pin in front of the said pivotal opening and engaging the other side of the said jaw, the jaw having a cavity and the pin a projection which enters the said cavity when the jaw is open and engages the space adjacent to the cavity when closed, substantially as and for the purpose described.

3. A car-coupler consisting of a draw-head having a jaw cavity or recess, a jaw substantially U-shaped in plan, a pivotal projection between the ends of the said U-shaped jaw and extending outward, and a locking-pin in front of the said projection which engages the outer side of the said jaw, substantially as set forth.

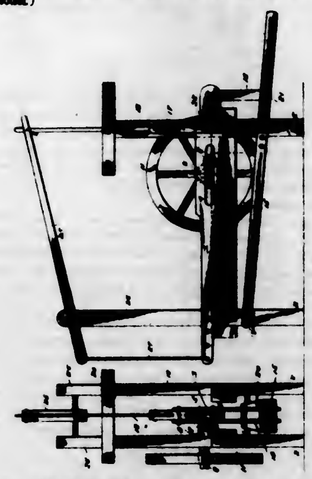
488,880. STOVE-MAT. WILLIAM J. TURPIN, Oakdale Station, Pa. Filed Dec. 31, 1891. Serial No. 416,633. (No model.)

Claim.—A stove lid or mat comprising a disk of asbestus having a metallic binding comprising a single strip of metal formed into an annular double-corrugated ring V-shaped in cross-section, a diametric brace or stiffener held at its ends between said disk and binder, and a handle-clasp secured to said binder, substantially as specified.

488,880.



488,881. MECHANICAL MOVING-POWER. CHARLES R. VAN COUSENET, Watertown, N. Y. Filed Feb. 19, 1892. Serial No. 422,120. (No model.)



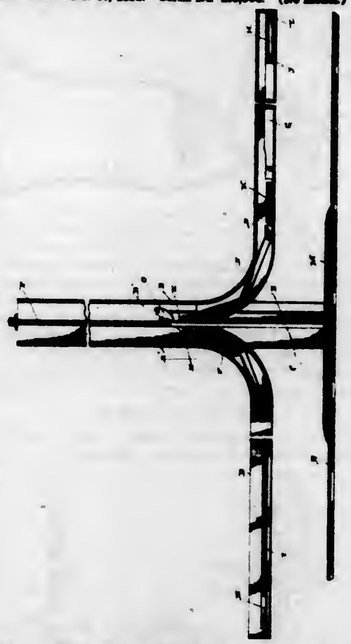
Claim.—1. In a mechanical moving-power, the combination of a main lever fulcrumed on a suitable frame and provided with a longitudinal slot at an intermediate point of its length, the driving-shafts arranged in axial alignment with each other and provided on their approximate inner ends with the aligned crank-arms, the crank-pin connecting the free ends of said crank-arms and extending through the slot in the main lever, the loose friction-roller on said crank-pin and riding on the walls of the slot in the main lever, a treadle, and the links connecting the main lever and the treadle, substantially as described.

2. In a mechanical moving-power, the combination of the main lever having the longitudinal slot 4, the driving-shaft, the crank-arm on said shaft and having its crank-pin provided with a friction-roller that rides in the slot of the main lever, the head-block 17, links connecting the head-block, the treadle, and the main lever, the arm 25, linked to the main lever, and the counter-shaft geared to the driving-shaft, substantially as described.

488,882. COMBINED BROILER AND TOASTER. JAMES A. VARLEY, Toronto, Canada. Filed Jan. 14, 1892. Serial No. 418,093. (No model.) Patented in Canada Feb 29, 1892, No. 36,315.

Claim.—In a combined broiler and toaster, the ring A, having an inwardly-extending ledge C, a downwardly-projecting portion C', extending from the inner margin of the ledge and adapted to enter a pot-hole of a stove, and a rack B, secured to the portion C', in combination with the detachable rack D and cover E, both fitting inside of ring A and supported by the ledge C, substantially as described.

488,883. MINE-DOOR. GOVERNOR D. WARREN, Coal Gate, Ind. Ter. Filed Mar. 19, 1892. Serial No. 425,586. (No model.)



Claim.—1. The combination, with a frame and a door adapted to move vertically therein, of guideways, flexible bars moving therein, which engage the door at their inner ends and are adapted to be engaged by the train at their outer ends, and an automatic locking mechanism, substantially as shown and described.

2. The combination, with a frame and a door adapted to move vertically therein, of slotted guideways, jointed bars moving therein, which are adapted to engage the door at their inner ends, outwardly-projecting shoes secured to the rear ends of the bars and which extend through the slots, and a suitable locking mechanism, substantially as shown and described.

3. The combination, with a frame, a door adapted to move vertically therein, and continuous horizontal and vertical guideways having slots I and K, of jointed bars which move in the said guideways and which engage the door at their inner ends, the rear bar being formed with a slot, a shoe pivoted in said slot, and a locking mechanism, substantially as shown and described.

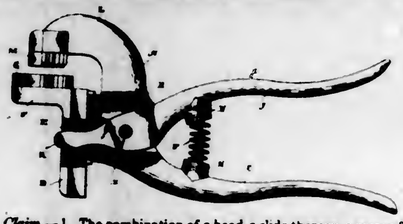
4. The combination, with a frame, a door adapted to move vertically therein, and continuous vertical and horizontal guideways having slots I and K, of jointed bars which move in the said guideways and which engage the door at their inner ends, the rear bar being formed with a slot, a shoe pivoted in said slot and adapted to project through the slots I and K, and a spring arranged behind the shoe, substantially as shown and described.

5. The combination, with a vertical frame, vertical parallel passages secured thereto, a door adapted to move between said passages, and stops secured to opposite sides of the door, which move in the said passages, of horizontal guideways which are curved upward at their inner ends, where they are connected to the lower ends of the vertical ways, jointed bars which move in the said guideways and which engage the said stops at their upper ends, a suitable connection between the passing train and the rear ends of the bars, and a locking mechanism, substantially as shown and described.

6. The combination, with a suitable frame, a door therein, and a means for moving it vertically, of a latch pivoted to the said frame, a vertical rod connected thereto, and an automatic mechanism for raising and lowering the said rod, substantially as shown and described.

7. The combination, with a suitable frame, a door therein, and a means for vertically moving the door, of a latch pivoted to the frame and which is adapted to engage the door, a depending rod secured to the latch, and a spring-actuated rail or bar connected to the lower end of the rod, substantially as shown and described.

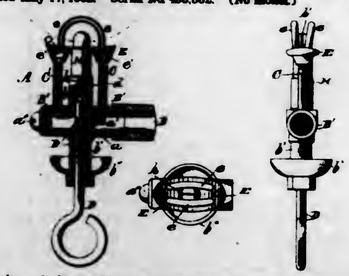
488,884. PINKING DEVICE. JOHN R. WELKER, Hiawatha, Kans. Filed Feb. 26, 1892. Serial No. 422,562. (No model.)



Claim.—1. The combination of a head, a slide thereon, a means for operating the slide, an outwardly-extending table at the upper end of the slide, a die-section carried by the table, and a registering die-section supported by the head, substantially as shown and described.

2. The combination of a slotted head having a guideway in its forward face, an arm projecting upward and outward from said head, a die-section secured to the under side thereof beyond the vertical line of said guideway, a slide in said guideway, an outwardly-extending table at the upper end of the slide, a die-section carried by the table, which registers with the first-named die-section, and an operating-lever pivoted in the slotted head, substantially as shown and described

488,885. VAPOR-BURNER. JOSEPH S. WOOD, Philadelphia, Pa. Filed May 17, 1892. Serial No. 433,332. (No model.)



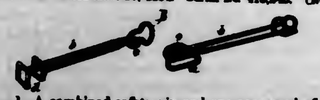
Claim.—1. In combination with the body of the vaporizing device provided with a jet-orifice and needle-valve and also having a transverse partition, the tubular columns, one on each side of said partition, and the hollow closed flame-spreader and gas-heater connecting with the upper ends of said columns, substantially as described.

2. The body of the vaporizer provided with a jet-orifice, a needle-valve, and a transverse partition, in combination with tubular columns, the hollow flame-spreader and heater connecting with such columns, the tubular bows connecting with said spreader, and the burner-tip, substantially as described.

3. In a vapor-burner, the short tubular bows, in combination with a hollow flame-spreader and gas-heater and suitable hollow connections with the body of the vaporizer, substantially as described.

4. The body of the vaporizer provided with a jet-orifice, a needle-valve, and a transverse partition, said partition having an opening, in combination with screw *d'* and tubular heating columns and bows connecting on each side of the said partition, substantially as described.

488,886. HOOK-AND-EYE SAFETY-PIN. ELIAS M. WRIGHT, Brooklyn, N. Y. Filed Nov. 27, 1891. Serial No. 413,245. (No model.)

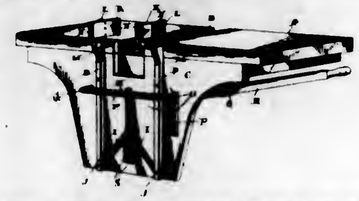


Claim.—1. A combined safety-pin and eye composed of a single piece of wire having a pin, a guard for the end of the pin, said guard extending around and beyond the extreme outer end of the pin, a spring-coil formed in the wire, and a loop formed in the wire independent of the spring-coil, substantially as set forth.

2. The combination, with a pin having an eye or loop, of a combined safety-hook and pin composed of wire having a hook at one end and catch at the other end for the reception of the free end of the pin, the wire at the inner end of said pin coiled, and this coiled portion forming a latch adapted to enter the said hook and constitute it a snap-hook, substantially as set forth.

3. A combined wire safety-hook and safety-pin having a hook at one end and a catch at the other end for the reception of the free end of the pin, and a spring formed at the inner end of the pin, said spring adapted to enter the hook and constitute it a snap-hook, substantially as set forth.

483,887. MARKING ATTACHMENT FOR TENONING-MACHINES. CYRUS J. ZIMMERMAN, Manor Station, Pa. Filed Nov. 30, 1891. Serial No. 413,566. (No model.)



Claim.—1. An attachment for tenoning-machines, comprising two levers pivoted between their ends and carrying markers at their upper ends, links having one end connected to the lower ends of the said levers, the upper ends of the links being pivoted together, a guideway for the connected ends of the links, for the purpose specified, and an operating means connected with the said links at their connected ends, substantially as set forth.

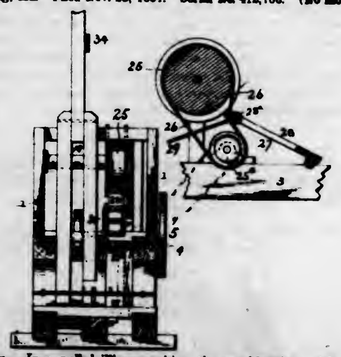
2. An attachment for tenoning-machines, comprising levers pivoted between their ends and carrying markers at their upper ends, links connected to the lower ends of said levers, a sliding bar to which the opposite ends of the links are connected, a guide for the said bar, and an operating means connected with the said bar, substantially as specified.

3. The combination, with the movable plate of a tenoning-machine, of levers carrying markers, a stationary camway, an operating-lever engaging the camway, and connections between the operating-lever and the said marking-levers, substantially as described.

4. An attachment for tenoning-machines, comprising levers pivoted between their ends carrying markers at their upper ends, links connected to the lower ends of said levers and connected together at their opposite ends, and an operating-lever pivoted at one end and connected with the connected ends of the links between its ends for actuating the operating-lever, substantially as specified.

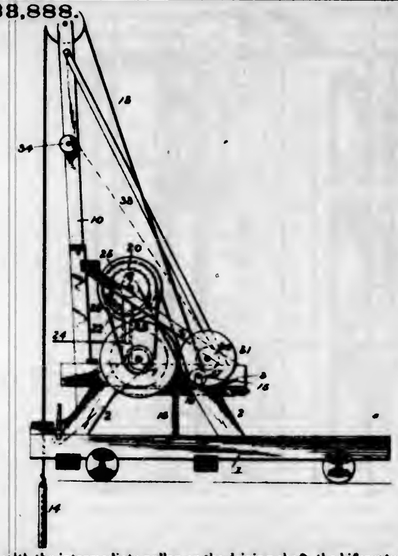
5. In an attachment for tenoning-machines, levers having sockets, bars carrying markers adapted to be placed in the said sockets, links connecting the opposite ends of the said levers, an operating-lever, and a connection between the operating-lever and the said links, all combined to operate in the manner shown and described.

483,888. WELL-DRILLING MACHINE. GEORGE ZINK, Clear Spring, Md. Filed Nov. 23, 1891. Serial No. 412,788. (No model.)



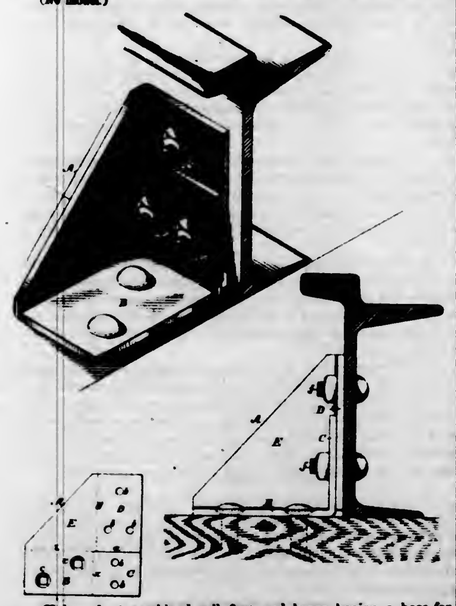
Claim.—In a well-drilling machine, the combination, with a driving-shaft having a disk at one end, provided with a crank-pin, a pulley at the opposite end, and an intermediate pulley, and a lever carrying a sheave actuated by said crank-pin, of a shaft provided with an escapement wheel and lever and a pulley, a loose belt connecting said

488,888.



pulley with the intermediate pulley on the driving-shaft, the bifurcated yoke pivoted to the machine-frame, a transverse roller mounted in the opposite end of said yoke, the operating-handle, and the horizontally-movable shaft provided with a friction-wheel adapted to be thrown into and out of contact with the pulley on the end of the driving-shaft for actuating the sand-pump, substantially as described.

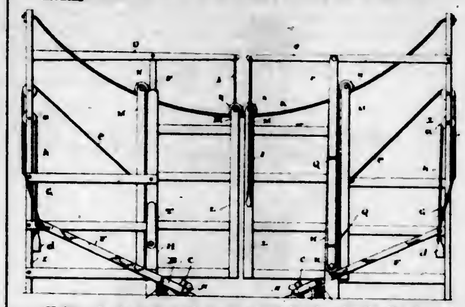
483,889. COMBINED FOOT AND BRACE FOR RAILWAY-RAILS. VICTOR ADDMER, Philadelphia, Pa., assignor to the William Wharton, Jr., and Company, same place. Filed May 16, 1892. Serial No. 433,130. (No model.)



Claim.—1. A combined rail, foot, and brace having a base for bearing on the tie, overlapping vertical wings, to both of which the web of the rail is secured, and a brace-flange tying one of the wings to the base, the whole being made of one piece of sheet or plate metal, substantially as described.

2. The within-described blank for a rail, foot, and brace, said blank being of the shape shown in Fig. 3 and having an incision *a* and holes *b* and *c*, substantially as described.

488,890. AUTOMATIC RAILROAD OR FARM GATE. JOSEPH R. BARNES, Somers, Tex. Filed Apr. 13, 1892. Serial No. 429,080. (No model.)



Claim.—1. An automatic gate comprising longitudinally-pivoted operating-boards having arms extending outward therefrom, supporting-posts, a track connected to the posts and curved inward from each end thereof, gates which have their upper ends sliding and supported upon the said curved tracks, a connection between the outer ends of the said arms and the said gates for moving them outward, and a means for normally holding the operating-boards upward, substantially as described.

2. An automatic gate comprising operating-boards extending along the roadway and pivoted at their inner edges, supporting-posts at opposite sides of the roadway, a track supported by the posts and curved downward and inward from its outer ends, gates which have their upper ends supported and sliding upon the said track, arms which extend outward from the said boards at each side of the said posts, a bail connecting the outer ends of the said arms, a pulley, and a cord passing over the pulley and connected at opposite ends to the gate and bail, respectively, substantially as specified.

3. An automatic gate comprising an operating-board which extends along the roadway, supporting-posts at each side of the roadway, a track supported by the posts and curved downward and inward from its ends, an arm extending outward from the said board, a vertically-sliding bar which engages the said arm, and a lever for moving the bar vertically and depressing the said arm, and a means for holding the operating-board up, and a connection between the said arm and the gate for moving the gate outward when the arm is depressed, substantially as set forth.

483,891. CIGAR-LIGHTER. JOSEPH R. S. BIRCH, San Diego, Cal. Filed June 6, 1890. Serial No. 354,531. (No model.)

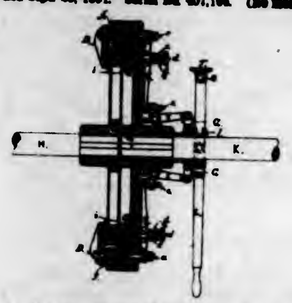
Claim.—1. A cigar-lighter adapted to be secured to the outer end of a cigar, comprising a disk chemically treated to produce combustion, a stem connected with the disk and adapted to be inserted in the cigar, an igniting material on the surface of the disk, and a covering for said disk, adapted to be removed therefrom, in the manner and for the purpose set forth.

2. A cigar-lighter adapted to be secured to the outer end of a cigar, comprising a disk chemically treated to perform combustion, a stem for said disk, adapted to be inserted in the cigar, and a cover for the disk, consisting of a square of tissue-paper folded thereon and having a piece of sandpaper, all for the purpose set forth.

3. A cigar-lighter adapted to be secured to the outer end of a cigar, comprising a disk chemically treated to produce combustion, an igniting material on the surface of the disk, a stem for the disk, also chemically treated and adapted to be inserted in a cigar, and a temporary covering for the disk, consisting of a square of tissue-paper connected thereto and having a piece of sandpaper thereon and adapted to be

folded over the disk to leave the sandpaper exposed, said covering being adapted to be removed by hand and to be utilized for producing combustion by drawing the sandpaper over the igniting material.

488,892. FRICTION DEVICE. RICHARD C. BUSHMAN, Philadelphia, Pa. Filed Sept. 30, 1891. Serial No. 407,168. (No model.)



Claim.—1. The combination of the friction-wheel, the spider, the clamping-shoes on opposite sides of said friction-wheel, and operating devices for each pair of clamping-shoes, said devices comprising a lever having at the outer end a rod connected to one of the shoes and at a point some distance from the outer end a pin passing through the spider and bearing upon the other shoe, and means for operating said lever, substantially as specified.

2. The combination of the friction-wheel, the spider, and the clamping-shoes located on opposite sides of the friction-wheel and each guided on the spider, and operating devices for each pair of shoes, said devices comprising a lever having at the outer end a rod connected to the shoe on one side of the friction-wheel and some distance from the outer end a pin projecting through the spider and bearing upon the other shoe, means for operating said lever, and springs for pressing the shoes away from the friction-wheel when said operating-lever is released from pressure, substantially as specified.

3. The combination of a shaft, a wheel or pulley loose thereon, a friction-wheel keyed to the shaft, a spider secured to the wheel or pulley and having arms in line with spaces between the spokes of the said pulley, clamping-shoes on opposite sides of the friction-wheel, and means for operating each pair of said shoes, said means comprising a lever having at the outer end a rod connected to one of the shoes and some distance from the outer end a pin projecting through an opening in the spider and bearing upon the other shoe, and means for operating said lever, substantially as specified.

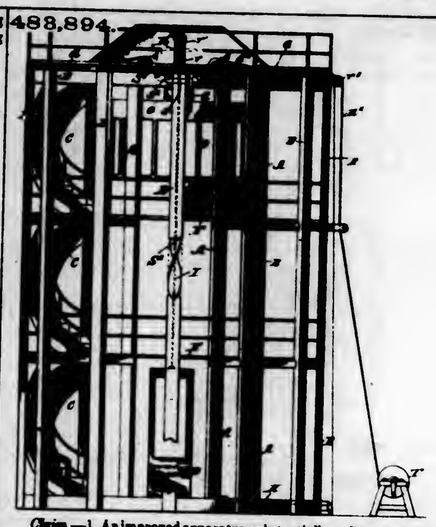
488,893. BOOK. FRANK BOWMAN, Brooklyn, N. Y. Filed June 10, 1892. Serial No. 436,217. (No model.)

Claim.—1. In a book, the combination of an outer stiff concaved back, covers flexibly secured thereto, a rigid inner back secured permanently in the concavity of the outer back, consisting of the lower rigid concaved strip and the upper flat strip secured across the concavity of the lower strip, and signatures secured to said flat strap, substantially as described.

2. In a book, the combination of an outer rigid concaved back, covers flexibly secured thereto, a rigid inner back secured in the concavity of the outer back, consisting of the lower curved strip, the upper flat strip, and the fabric *g*, secured to the under side of the upper flat strip, its ends being turned under and glued to the under side of the concaved strip, thereby enveloping said strip, and signatures secured to the upper flat strip, substantially as described.

3. In a book, the combination of an outer rigid concaved back, covers flexibly secured thereto, an inner rigid back constructed of flat strip *e* and lower curved strip *f* and fabric *g*, said inner back secured in the concavity of the outer back, a fabric *h*, secured over the upper flat strip *e* of the inner back and to the inner ends of the covers on the inner side thereof, and signatures secured to the upper strip *e*, the fastening of said signatures passing though said strips and fabrics *g* and *h*, substantially as described.

488,894. ELEVATOR. JAMES W. BROWN, Lynchburg, Va. Filed Oct. 27, 1891. Serial No. 410,013. (No model.)



Claim.—1. An improved apparatus, substantially as described, comprising the tower or frame, the car, and the spiral or screw shaft arranged concentric with the car, the car being adapted to contain passengers and to be revolved as it descends by the action of the said shaft, all substantially as and for the purposes set forth.

2. The combination, in an apparatus substantially as described, of the car, the tower or frame, and the shaft supported therein and arranged concentric with the car and having practically throughout its length a spiral or thread, the car being movable vertically upon such shaft and provided with a bearing engaging the same, whereby the car will be revolved as it descends, substantially as set forth.

3. In an apparatus substantially as described, the combination of the tower or frame, the spiral or screw shaft supported therein, devices whereby said shaft may be held from turning or may be released to turn, and the car provided with a bearing engaging such shaft, such bearing being fixed with relation to the car, all substantially as set forth.

4. The combination of the tower or frame, the spiral or screw shaft journaled in bearings therein, the latch arranged to hold the said shaft from turning, and the cord or the like connected with such latch and extended downward, whereby the latch may be released from engagement with the shaft, substantially as and for the purposes set forth.

5. In an apparatus substantially as described, the combination of the tower or frame, the spiral or screw shaft, and the car adapted to contain passengers and to be revolved by the action of the spiral or screw shaft, the hanger encircling the shaft and journaled to the car, and the hoisting-cable connected with the said hanger, substantially as set forth.

6. The combination of the tower or frame, the spiral or screw shaft, the car having a bearing engaging such shaft, the hanger journaled to said car, whereby the latter may turn independently of the hanger, the bars secured to the hanger and extended therefrom, and the cables connected with the extended ends of the said bars, all substantially as set forth.

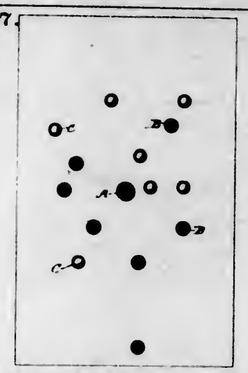
7. The combination of the tower or frame, the spiral or screw shaft, the car having a bearing engaging said shaft, the hanger encircling the said shaft and journaled to the car and provided with a squared portion, the bars secured to the said squared portion and extended beyond the same, the hoisting-cables connected with one pair of said bars, the counterbalance-cables connected with the other pair of such bars, and the counterbalance-weights, substantially as set forth.

8. The combination of the tower or frame, the spiral or screw shaft journaled in suitable bearings therein, the latch for holding said shaft from turning, and the trip connected with said latch and arranged for operation by the car, whereby the car may automatically release the latch to permit the shaft to turn, substantially as and for the purpose set forth.

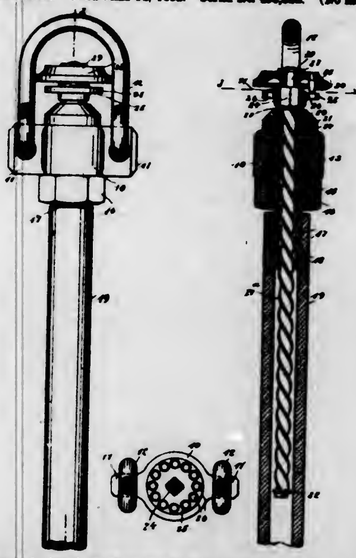
488,895. GAME APPARATUS. ALFRED P. BOWLBY, Philadelphia, Pa. Filed Dec. 24, 1891. Serial No. 416,012. (No model.)

Claim.—A game apparatus designed for use on an unmarked plane surface, comprising a movable weighted target adapted to be placed in the middle of the board or table and of such weight that it is movable freely under the impact of the moving pieces, but it is not ordinarily forced thereby from the table, and two sets of moving pieces suitably colored or otherwise designated to distinguish the two sets, and each piece of each set having the concave bottom and narrow edge adapted to slide freely and easily over the plane surface on which the game is played, each piece being of a thickness about half the diameter of the piece so it can be easily projected, substantially as described.

488,897.



488,896. ROD-COUPLING. LOUIS BURNS and JOHN COWLING, Republic, Mich. Filed June 11, 1892. Serial No. 436,332. (No model.)



Claim.—1. A rod-coupling comprising a supporting-yoke, a swivel-plug held to turn in the yoke and provided with a threaded lower end, a screw extending longitudinally through the plug and adapted to turn the same, a collar held to turn with the upper end of the screw, a hand-wheel journaled loosely on the screw, and a fastening device to connect the hand-wheel and collar, substantially as described.

2. A rod-coupling comprising a supporting-yoke, a swivel-plug journaled in the yoke and having a longitudinal bore and a threaded lower end, a screw extending longitudinally through the plug and adapted to turn the latter, a collar held to slide on and turn with the screw, said collar having perforations therein, a hand-wheel journaled loosely on the screw near the collar, and a pin secured to the hand-wheel and adapted to register with the holes in the collar, substantially as described.

3. A rod-coupling comprising a supporting-yoke, a swivel-plug held to turn in the yoke and provided with a longitudinal bore and a threaded lower end, a nut secured in the bore of the plug, a screw extending longitudinally through the plug and held to turn in the bore, stops to limit the movement of the screw, a collar held to slide on and turn with the screw, a hand-wheel journaled on the screw adjacent to the collar, and a fastening device to secure the hand-wheel and collar together, substantially as described.

4. A rod-coupling comprising a supporting-yoke provided with a ball, a swivel plug journaled in the yoke and having a threaded lower end, a nut held within the plug, a screw extending longitudinally through the nut, the screw having stops near its ends and a squared head at its outer end, a perforated collar held to slide on the squared head of the screw, a hand-wheel journaled on the screw above the collar, a pin secured to the hand-wheel and held to register with the perforations in the collar, and a spring to force the collar and hand-wheel apart, substantially as described.

488,897. VIOLIN. DANIEL F. BURSHER, Horse Creek, Tenn. Filed Dec. 28, 1891. Serial No. 416,236. (No model.)

Claim.—1. A violin or like instrument having an interior horizontal longitudinal partition or diaphragm held therein by means of notched edges engaging ribs on the case and by strips or purflings, substantially as specified.

2. A violin or like instrument having an interior horizontal longitudinal partition or diaphragm, double sounding posts passing through said diaphragm, and a number of hollow tubes projecting through its face or front and communicating with the interior, substantially as specified.

3. A violin or like instrument having hollow tubes communicating with the interior and projecting through the front or face, substantially as specified.

4. A violin or like instrument having a series of hollow tubes projecting through its face or front, in combination with an interior central horizontal longitudinal partition or diaphragm, substantially as specified.

5. A violin or like instrument having a series of hollow tubes projecting through its face or front and communicating with the interior thereof, in combination with an interior central horizontal longitudinal partition or diaphragm, a number of said tubes projecting through said diaphragm, substantially as specified.

6. A violin or like instrument having a double convex rear end, substantially as specified.

7. A violin or like instrument having a concavity in its rear end, substantially as specified.

8. The tail-piece or apron for violins or like instruments, comprising the angular arm secured to the rear end of the case, its forward end standing at an angle to the face of the instrument, said arm resting on a projection i of the case, substantially as specified.

9. A tail-piece or apron for violins or like instruments, comprising an angular arm secured to the rear end of the case, its forward end standing at an angle to the face of the instrument, said arm resting on a projection i of the case, said forward end having a series of perforations therein designed to be engaged by hooks on the strings, substantially as specified.

10. A violin having on a face or sound-board a series of vertically-disposed accumulator-strips, substantially as specified.

11. A violin having on its face or sound-board a series of vertically disposed accumulator-strips extending from the string-board to ports at the rear of the bridge, substantially as specified.

12. A violin or like instrument having, in combination with its sounding-posts, a number of hollow tubes projecting into its interior, substantially as specified.

13. A violin or like instrument having a number of hollow tubes projecting through its face or front and terminating in its interior, substantially as specified.

14. A violin having an interior longitudinal partition or diaphragm dividing its interior into two chambers, sounding-posts passing through said diaphragm, a number of hollow tubes projecting through the face or front into the interior chambers, and carved strips secured to its face, substantially as specified.

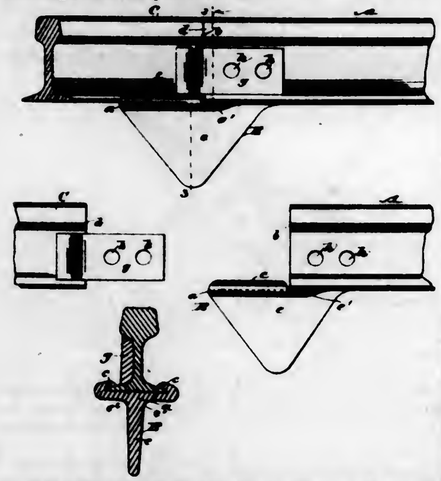
488,898. RAIL JOINT AND CHAIR. JOSEPH H. CAMPBELL, Chicago, Ill. Filed Apr. 15, 1892. Serial No. 429,263. (No model.)

Claim.—1. A rail having an integral shoe or chair formed longitudinally on one end and projecting therefrom to engage the end of

another rail, the side edges of the shoe base-flange being return-bent and forming lip-flanges or square shoulders which envelop the base-flanges of said latter-named rail, substantially as described.

2. A rail having an integral return-bent flanged shoe on one end and an integral internally-formed fish-plate on the other end of said rail, substantially as described.

3. A rail having an integral shoe projected longitudinally from one end and comprising a base-flange, a rib depending from the base-flange, and return-bent lip-flanges or square shoulders on the side edges of the base-flange, substantially as described.



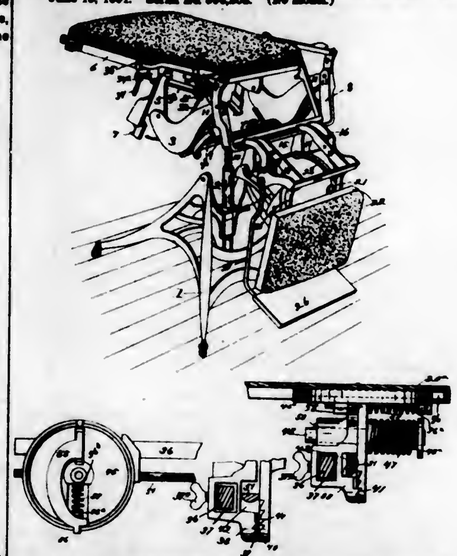
4. A rail having an integral shoe projected longitudinally from one end and comprising a base-flange aligning at its top face with the bottom of the track-rail, a rib depending from the base-flange and cove-filleted where it joins the base-flange, and return-bent lip-flanges or square shoulders on the side edges of the base-flange, substantially as described.

5. The combination, with a track-rail having an integral shoe or chair thereon at one end adapted to interlock with the base of another track-rail, of a track-rail having an integral fish-plate thereon at one or both ends and adapted to bear on the web of the end of the first-named rail, substantially as described.

488,899. MACHINE FOR HULLING RICE. EDWARD I. CANTWELL, Calcutta, India. Filed Feb. 5, 1892. Serial No. 420,444. (No model.)

Claim.—In a grain-huller, the combination, with the imperforate conical shell C, having a longitudinally-corrugated interior face, a feed-aperture at the small end, and a discharge-aperture at the large end of said shell, of an endwise-adjustable shaft passing loosely through the center of the heads of the shell, said shaft having radial arms c^4, the supporting-arms a, secured to arms c^4, the elastic hulling-blades B, secured to arms a, and means for adjusting the blades relatively to the corrugated face of the shell, consisting of the curved arms c^5, also secured to arms a, the adjusting-bolts b in the outer end of said arms a^2, and the chains c', respectively, connected with the free end of the blades and the said bolts, substantially as and for the purpose set forth.

488,900. SURGICAL CHAIR. FRANK H. CASE, Canton, Ohio. Filed June 13, 1891. Serial No. 396,202. (No model.)



Claim.—1. The combination, with a base-frame, a supporting-frame carried thereby, and a seat-frame, of oscillatory bars pivotally connected with the supporting-frame, a chair-back pivotally connected with the oscillatory bars and adapted to be lowered to a horizontal position and then shifted forward and elevated by the forward-swinging motion of the oscillatory bars, and means for holding the oscillatory bars and chair-back stationary when required, substantially as described.

2. The combination, with a base-frame and a supporting-frame carried thereby, of oscillatory bars pivoted to the supporting-frame, a chair-back pivoted to the oscillatory bars and adapted to be lowered to a horizontal position and then shifted forward and elevated by the forward-swinging motion of the oscillatory bars, a swinging seat-frame adapted to drop downward when the chair-back is lowered to a horizontal position and shifted forward and elevated, and means for holding the oscillatory bars, the chair-back, and the seat-frame stationary when required, substantially as described.

3. The combination, with a base-frame and a supporting frame carried thereby, of oscillatory bars pivotally connected between their ends with the supporting-frame, a chair-back pivotally connected with the upper ends of the oscillatory bars and adapted to be lowered to a horizontal position and then shifted forward and elevated by the forward-swinging motion of said bars, a suspended seat-frame adapted to drop downward when the chair-back is lowered to a horizontal position and shifted forward and elevated, and a lock for engaging the lower ends of the oscillatory bars and connecting them with the supporting-frame, substantially as described.

4. The combination, with a base-frame and a supporting-frame carried thereby, of oscillatory bars pivotally connected with the supporting-frame, a chair-back pivotally connected with the oscillatory bars and adapted to be lowered to a horizontal position and then shifted forward and elevated by the forward-swinging motion of said bars, a suspended swinging seat-frame pivotally connected with the lower end portion of the chair-back and adapted to drop downward when the latter is lowered to a horizontal position and shifted forward and elevated, and means for holding the oscillatory bars, the chair-back, and the seat-frame stationary when required, substantially as described.

5. The combination, with a base-frame and a supporting-frame carried thereby, of oscillatory bars pivotally connected between their ends with the supporting-frame, a chair-back pivotally connected with the upper ends of the oscillatory bars and adapted to be lowered to a horizontal position and shifted forward and elevated by the forward motion of the bars, a lock for connecting the lower ends of the oscillatory bars with the supporting-frame, a seat-frame pivotally connected

with the lower portion of the chair-back, a swinging frame carried by the supporting-frame and sustaining the forward portion of the seat-frame, and connections between the swinging frame and the chair-back, substantially as described.

6. The combination, with a base-frame and a supporting-frame carried thereby, of oscillatory bars pivotally connected between their ends with the supporting-frame, a chair-back pivotally connected with the upper ends of the oscillatory bars and adapted to be lowered to a horizontal position and then shifted forward and elevated by the forward-swinging motion of said bars, a pivoted locking-frame carried by the supporting-frame and detachably engaging the lower ends of the oscillatory bars, and a suspended swinging seat-frame adapted to drop downward when the chair-back is lowered to a horizontal position and shifted forward and elevated, substantially as described.

7. The combination, with a base-frame and a supporting-frame carried thereby, of oscillatory bars pivotally connected with the supporting-frame, a chair-back pivotally connected with the oscillatory bars and adapted to be lowered to a horizontal position and then shifted forward, a suspended seat-frame, a swinging frame carried by the supporting-frame, connections between the swinging frame and the chair-back, whereby the latter is elevated as it is shifted forward, and means for holding the oscillatory bars, the chair-back, and the seat-frame stationary when required, substantially as described.

8. The combination, with a base-frame and a supporting-frame carried thereby, of oscillatory bars pivoted between their ends to the supporting-frame and having their lower end portions provided with hooks, a chair-back pivoted to the upper ends of the oscillatory bars and adapted to be lowered to a horizontal position and shifted forward and elevated by the forward motion of the bars, a locking-frame pivoted to the supporting-frame and having teeth to engage the hooks of said bars, and a suspended seat-frame, substantially as described.

9. The combination, with a base-frame, a supporting-frame carried thereby, a chair-back pivotally connected with the supporting-frame, a suspended seat-frame, and connecting-rods carrying the side arms of the chair, of a bracket-plate secured to the lower end of the chair-back and having an orifice and a lug or support, a set-screw engaging the lug or support and adapted to enter the orifice in the bracket-plate, and a segmental rod pivoted to one of said connecting-rods and entering the orifice in the bracket-plate for engagement with one end of the set-screw, substantially as described.

10. The combination, with a base-frame and a supporting-frame carried thereby, of a swinging frame or yoke pivoted to the supporting-frame and having upwardly-projecting extensions, a suspended seat-frame, a chair-back pivotally connected with the supporting-frame, connecting-rods pivoted to the chair-back and to the upwardly-projecting extensions of the swinging frame or yoke, a bracket-plate secured to the lower end of the chair-back and having an orifice, a set-screw carried by the bracket-plate, and a segmental rod pivoted to one of the connecting-rods and entering the orifice in the bracket-plate for engagement with one end of the set-screw, substantially as described.

11. The combination, with a base-frame and a supporting-frame carried thereby, of oscillatory bars pivoted to the supporting-frame, a chair-back pivoted to the oscillatory bars, a suspended seat-frame pivotally connected with the chair-back, a swinging frame or yoke pivoted to the supporting-frame and having upwardly-projecting extensions, and connecting-rods connected to the chair-back and to the upwardly-projecting extensions of the swinging frame or yoke, substantially as described.

12. The combination, with a base-frame and a supporting-frame carried thereby, of oscillatory bars pivoted to the supporting-frame, a lock for rigidly connecting the oscillatory bars with the supporting-frame, a chair-back pivotally connected with the upper ends of the oscillatory bars, a suspended seat-frame pivotally connected with the lower portion of the chair-back, a swinging frame or yoke pivoted to the supporting-frame and sustaining the forward portion of the seat-frame, and connections between the swinging frame or yoke and the chair-back, substantially as described.

13. In a chair, the combination of a base-frame, a supporting-frame carried thereby, oscillatory bars pivoted to the supporting-frame, a chair-back pivoted to the oscillatory bars and adapted to be lowered to an approximately-horizontal position and then shifted forward and elevated by the forward motion of the bars, an open seat-frame pivotally connected with the chair-back, having a removable upholstered top section, and a removable and replaceable pan or tray sustained by the open seat-frame and adapted to be covered and concealed by the upholstered top section, and means for holding the oscillatory bars, the chair-back, and the seat-frame stationary when required, substantially as described.

14. In a chair, the combination of a base-frame, a supporting-frame carried thereby, a chair-back pivotally connected with the supporting-frame and adapted to be swung to a reclining position, a stirrup having a shank, locking devices for holding the shank in different positions of adjustment, and a locking and releasing bar extending parallel with the stirrup-shank and adapted to be rotated axially for actuating the devices which secure the stirrup-shank in its adjusted position, substantially as described.

15. The combination, with a surgical chair, of a support carried by a part of the chair, a stirrup having a shank carried by the support, devices for locking and releasing the stirrup shank, and an axially-rotating releasing-bar extending parallel with the stirrup-shank and operating when turned axially to actuate the locking and releasing devices, substantially as described.

16. The combination, with a surgical chair, of a support carried by a part of the chair, a stirrup having a shank carried by the support, toothed locking devices for holding the stirrup-shank in any position of adjustment, and an axially-rotatable releasing-bar extending parallel with the stirrup-shank and operating when turned to disengage the toothed parts of the locking devices, substantially as described.

17. The combination, with a surgical chair, of a turn-table supported by a part of the chair and having a toothed segment, a vertically-oscillatory toothed segment pivotally engaged with the toothed segment of the turn-table, a foot-supporting stirrup having a shank adjustable in the toothed segment of the turn table, an axially-rotatable releasing-bar extending parallel with the stirrup-shank and operating when turned to disengage the toothed segments, and locking devices for holding the turn-table in a fixed position, substantially as described.

18. The combination, with a surgical chair, of a turn table supported by a part of the chair and having a toothed segment, a vertically-oscillatory toothed segment pivotally engaged with the toothed segment of the turn-table, a foot-supporting stirrup having a shank adjustable in the toothed segment of the turn-table, an axially-rotatable releasing-bar operating when turned to disengage the toothed segments, and locking devices operated by the oscillatory segment when the releasing-bar is rotated for locking and releasing the turn-table, substantially as described.

19. The combination, with a chair having a side arm provided with teeth, of a turn-table pivotally engaged with the side arm and having a toothed portion and a locking-dog, a pin carried by the toothed part of the turn-table, the oscillatory-toothed segment mounted on the pin, a stirrup having a shank adjustable on the toothed part of the turn-table, and an axially-rotatable releasing-bar for disengaging the toothed segment from the toothed portion of the turn-table, substantially as described.

20. The combination, with a chair having a part provided with tooth 54, of a turn-table pivotally engaged with such toothed part of the chair and having a rigidly-attached toothed segment 41, a locking-dog mounted on the turn-table for engaging and disengaging the toothed part of the chair, an oscillatory toothed segment 43, a pin 48, passing through the toothed segments, a stirrup having a shank adjustable on the toothed segment of the turn-table, and a releasing-bar adapted to axially rotate for moving the toothed segments out of engagement with each other, substantially as described.

21. The combination, with a chair having a part provided with tooth 54, of a turn-table pivotally engaged with such toothed part of the chair and having a toothed segment 41, a spring-actuated locking-dog mounted on the turn-table for engaging and disengaging the toothed part of the chair, a spring-pressed pin 48, supported by the toothed segment of the turn-table, a toothed segment 43, journaled on the pin and having a part adapted to move the locking-dog of the turn-table, a stirrup having a shank adjustable on the toothed segment of the turn-table, and a releasing-bar adapted to axially rotate for disengaging the toothed segments, substantially as described.

22. In a surgical chair, a foot-supporting stirrup having a shank and adapted to support the foot of a patient, and an axially-rotatable releasing-bar extending parallel with the stirrup-shank, in combination with a pair of toothed segments, one of which is moved laterally by the releasing-bar when turned axially, substantially as described.

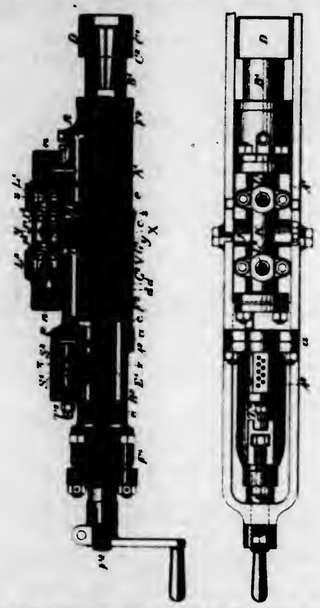
488,901. ROCK-DRILLING MACHINERY. ADAM E. CROCKER, San Francisco, Cal. Filed Sept. 10, 1891. Serial No. 405,903. (No model.)

Claim.—1. In a rock-drilling machine, the combination of the main cylinder, a hollow piston therein consisting of hollow end members and a tubular connection between them, a feed-screw located within the central bore of the piston, a main valve alongside of the cylinder, and suitable ports and passages arranged so that the action of the steam may be between the end sections of the piston, substantially as described.

2. In a rock-drilling machine, the combination of the main cylinder consisting of two parts, a hollow piston therein consisting of the hollow end members and the tubular connection between them, a partition in said cylinder, which forms a tight steam-joint around the central tubular connection of the piston, a feed-screw located within the central bore of the piston, and a main valve which introduces steam to act between the piston-heads, substantially as described.

3. In a rock-drill, the combination of the main cylinder consist-

ing of two parts, a hollow piston consisting of the hollow end members or heads and a central tubular connection between them, an adjusting or feed screw located within the central bore of the hollow piston, a partition in the main cylinder, said partition being provided with external and internal packing, so as to form an automatic steam-joint both around the central tubular part of the piston and also against the walls of the main cylinder, a main valve, and the ports and passages arranged so as to introduce the impelling-steam between the end members of the pistons and permit the action thereof, substantially as described.



4. In a rock-drilling machine, the combination of the main cylinder, the piston therein, the main valve and its chamber, and the ports H, I, and Q, together with the steam-passage connecting the ports I and Q, so that when the steam-current is arrested it will react on the main valve and reverse the piston at any point in its stroke, substantially as described.

5. In a rock-drilling machine, the combination, with the main valve J^3, of the conical nozzle N, placed in the principal port for the forward stroke and so arranged as to produce an induced current as the piston moves forward and a backflow of steam if the piston stops, thus reversing the main valve J^3 at any point of the main stroke where the pistons may stop, substantially in the manner described.

6. In a rock-drilling machine, the main valve J^3, and the piston m' and ports Q and R, the latter opening into the main cylinder, so as to determine the extreme range of stroke for the pistons and drill and reverse the main valve J^3 at some predetermined point, substantially in the manner and for the purposes specified.

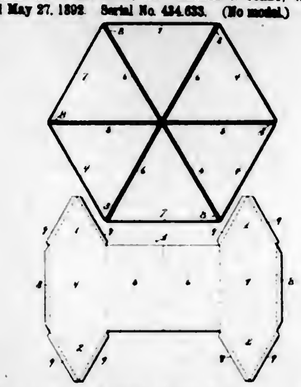
7. In a rock-drilling machine, the combination, with the main cylinder and the main valve, of the ports H, I, and Q and the annular chamber adjacent to the port I, the piston within the cylinder, and the piston m', substantially as described.

8. In a rock-drilling machine, the combination of the main cylinder, a piston therein, the main-valve chamber, a valve therein having an auxiliary valve-piston, the passages leading to the small piston m' at each end, the steam-passages between the main valve-chamber and the cylinder, and a nozzle located in one of them through which steam may pass into the cylinder from the valve, with the result of producing an induced current as the piston moves forward and a backflow when the piston stops for the purpose of reversing the main valve at any point of the main stroke where the piston may stop, substantially as described.

9. In a rock-drilling machine, the combination of the main cylinder, a piston therein, a main-valve chamber and its valve therein, another chamber communicating with the cylinder through a series of holes h A, the interior of said chamber communicating with the main valve through a suitable passage, and a hollow sleeve within the aforesaid chamber, having holes disposed helically around its bore, so that communication may be established through the center of the chamber and the other chambers of the machine, substantially as described.

10. In a rock-drilling machine, the combination of the main cylinder, a piston therein, a main-valve chamber with valve therein, a cylindrical chamber S', communicating with the cylinder through the openings h A, a port P between the chamber S' and the main valve, a hollow sleeve S^2 within the chamber S', having holes disposed helically around its bore, so that by turning it more or less either one of the radial holes can establish communication through the center of the cylinder T, port P, and other chambers, and the screw-nut T^2, which holds the sleeve T, which screw-nut is adjustable for the purpose of changing the lead for the main valve, substantially as described.

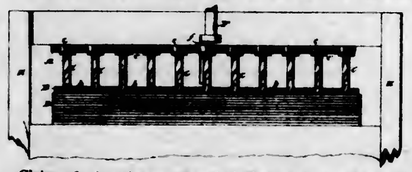
483,902. CAN, PAIL, &c. LEONEL C. COREY, Waverly, N. Y.
Filed May 27, 1892. Serial No. 434,633. (No model.)



Claim.—1. As a new article of manufacture, a can or vessel having a series of compartments with intervening walls and formed of blanks, each consisting of a rectangular body portion provided with side wings having triangular end portions, the sides of each of said end portions corresponding with the width of the respective sides of the compartments, substantially as and for the purposes specified.

2. A blank for forming a can or vessel, consisting of a rectangular portion 5 and 6, with a central crease, and the wings 4 and 7 with triangular ends 1 and 2, the sides of each of said triangular ends corresponding with the width of the respective portions 4, 5, 6, and 7, said parts being combined and arranged as and for the purposes specified.

483,903. MECHANISM FOR DRILLING. BOXLEY R. COXE and SAMUEL SALMON, Drifton, Pa.; said Salmon assignor to said Coxe. Filed Apr. 4, 1888. Renewed May 2, 1889. Serial No. 309,414. (No model.)



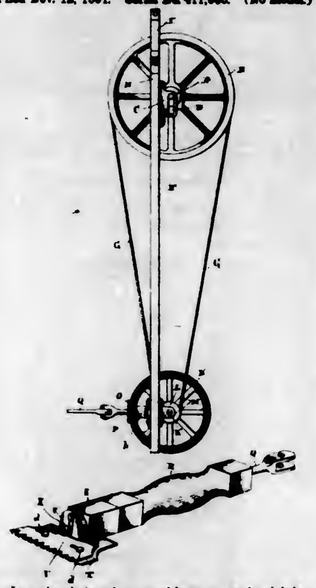
Claim.—1. As an improvement in drilling mechanism, in combination, a series of vertically-journaled and vertically-movable cranked drills, a crank-plate engaging the drill-cranks and adapted to move downward of its gravity and carry with it said drills and so feed the same to their work, and suitable means for oscillating said plate, substantially as and for the purpose set forth.

2. As an improvement in drilling mechanism, in combination, a series of drills cranked at their upper ends and having enlargements thereat, a crank-plate resting upon the latter and of its gravity adapted to move downward and carry with it said drills, and the drill journaling and guiding plate adapted to be secured to the work to be drilled and being a duplicate of said crank-plate in respect to openings and their relative location, substantially as and for the purpose shown and described.

3. As an improvement in drilling mechanism, in combination with a drill and with a templet which is provided with a drill-opening, a bushing or thimble that is journaled within such opening and is adapted to receive such drill and permit it to pass longitudinally through the same, substantially as and for the purpose shown.

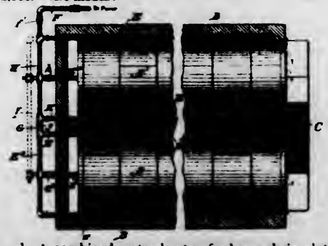
4. As an improvement in drilling mechanism, in combination with a drill and with a templet which is provided with a drill-opening, a bushing or thimble that is journaled within such drill-opening and is adapted to receive such drill and permit it to pass through the same in the line of the clearance-grooves, substantially as and for the purpose set forth.

483,904. ANIMAL-SHEARS. HENRY S. DAGGETT, Monument, Colo. Filed Nov. 12, 1891. Serial No. 411,630. (No model.)



Claim.—In animal-shearing machines, a main driving shaft, a hanger, a pulley upon the main driving-shaft, boxes upon the hanger having a vertical slot through which the main shaft passes, a pulley on the lower end of the said hanger, a belt connecting the said pulleys and a mechanism driven by the said pulley at the lower end of the hanger, and a means for raising the said hanger, for the purpose described, the parts combined substantially as specified.

483,905. FEED-WATER HEATER AND CIRCULATING SYSTEM. STANISLAUS C. DENFREE, Traverse City, Mich. Filed May 9, 1892. Serial No. 432,300. (No model.)



Claim.—1. A combined water heater, feeder, and circulating system for steam-boilers, comprising a series of pipes or tubes arranged on opposite sides of the boiler, a pipe-section connecting the lower terminals of the series of pipes with the bottom of the boiler through a single controlling-valve, a similar pipe-section connecting the upper terminals of said series of pipes with the upper part of the boiler below the water-line therein, a single valve for controlling the flow of water through the last-mentioned pipe-section, and a valve-controlled feed-pipe communicating with both series of circulating-pipes, substantially as described.

2. In a water heater, feeder, and circulating system for steam-boilers, the combination of the series of pipes extending back and forth at either side on a gentle incline from the receiving to the delivery ends thereof, couplings connecting the two series of pipes at their receiving and delivery ends, an intermediate pipe-section connecting the lower coupling with the bottom of the boiler, a similar pipe-section connecting the upper coupling with the upper part of the boiler below the water-line therein, a single valve controlling the flow through each of said pipe-sections, and a valved feed-pipe communicating with both series of circulating-pipes, substantially as described.

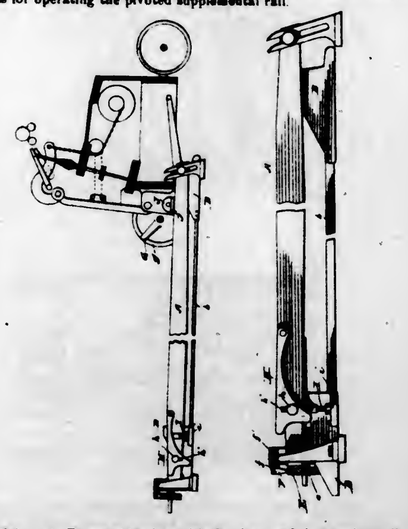
3. In combination with the main boiler and water-circulating pipes or coils and the valves for controlling such pipes, a reserve boiler and water-circulating pipes connected therewith, and interposed valve mechanism, substantially as described, whereby the water in the reserve boiler may be heated by the circulation of the water from the coils of the main boiler through the reserve boiler, and vice versa, substantially as set forth.

4. In combination with the main boiler and its valved circulating-pipes, the reserve boiler provided with a similar system of valved circulating-pipes, and the coupling connecting the pipes of the two boilers and provided with a valve for controlling the circulation between the same, substantially as described.

5. In combination with the boiler and furnace, the series of vertically-disposed circulating pipes secured to the furnace-walls at either side thereof and connecting at one end with the boiler at or about at the highest boiling-point and at the other end with the lowest point of the boiler, the feed-pipe with stop-valve therein, and the straight-way valves interposed in said circulating-pipes between said stop-valve and the pipe-sections leading to the boiler, together with the reserve boiler, provided with a similar double series of circulating-pipes and straight-way valves controlling the same, and the intermediate cut-off valves for opening and closing communication between the reserve boiler and adjacent circulating-coils, substantially as described.

483,906. SPINNING-MULE. PARDON H. DEXTER, Jr., Salmon Falls, N. H. Filed Nov. 13, 1891. Serial No. 411,808. (No model.)

Brief.—The invention is designed to maintain the yarn in a taut condition while winding the bottom of the cops, and consists of the described means for lowering the copping-rail and of the described means for operating the pivoted supplemental rail.



Claim.—1. The combination, with the shoes and the copping-rail, of the pivoted rail carried by the copping-rail and having a curved lower edge, so that said rail is wider at its free end than at its pivoted end, the pin on the copping-rail extending through a slot in the pivoted rail, and the screw carried by the forward shoe and adapted to support the pivoted rail, substantially as described.

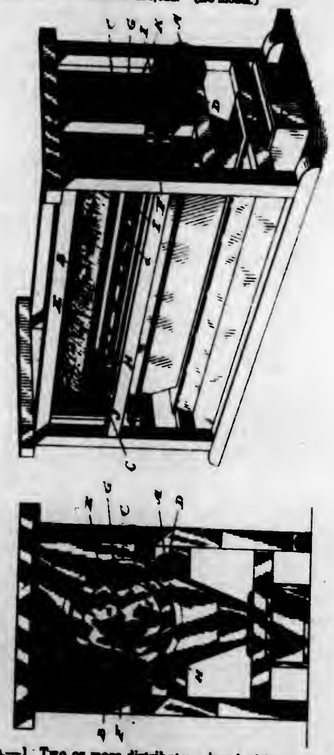
2. The combination, with the base-plate, the shoes, and the copping-rail, of the pivoted rail arranged on one side of said copping-rail near the outer end thereof, the pillow-block, the feed-screw operating in said pillow-block and connected with the forward shoe, the collars s on said screw on either side of the pillow-block, the ratchet, the arm pivoted on the pillow-block and carrying a pawl adapted to engage with said ratchet, and the dagger carried by the mule-carriage and arranged to depress the pivoted arm to operate the pawl and ratchet and work the shoes backward, substantially as described.

3. The combination, with the movable shoes and the copping-rail of the supplemental rail pivoted on the side of the copping-rail at the outer end thereof and having the curved lower edge, so that said rail is wider at its free end than at its pivoted end, a bracket carried by the forward shoe and extending under the copping-rail to the other side thereof, and the adjustable vertical support carried by said bracket to receive the pivoted rail and move back and forth with the forward shoe along the curved lower edge of said pivoted

rail, whereby the pivoted rail is raised and lowered, substantially as and for the purpose described.

4. The combination, with the shoes and the copping-rail, of the supplemental rail pivoted at its narrow inner end on the side of the copping-rail and having a curved lower edge, so that said rail is wider at its free end than at its pivoted end, the adjustable support on the forward shoes upon which rests the pivoted rail, whereby said rail will project above the copping-rail when the cop is commenced and gradually fall to a level therewith as the shoes and the support are moved backward, and the bowl or dog arranged to move on the copping-rail and having a lateral projection to run on the incline formed by the pivoted rail, substantially as and for the purpose set forth.

483,907. REEL. ALEXANDER DOBSON, Beaverton, Canada. Filed Apr. 28, 1892. Serial No. 430,622. (No model.)

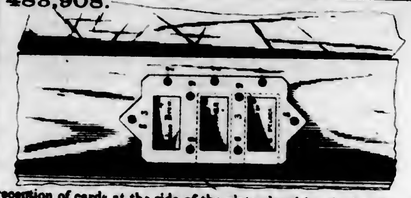


Claim.—1. Two or more distributers placed within a reel, one on the upgoing side of the said reel and another substantially opposite to it, the said distributers revolving in the same direction as but at a far greater speed than the said reel, substantially as and for the purpose specified.

2. Two or more distributers placed within a reel, one on the upgoing side of the said reel and another substantially opposite to it, in combination with a stationary partition located near the periphery of the reel between the two revolving distributers, substantially as and for the purpose specified.

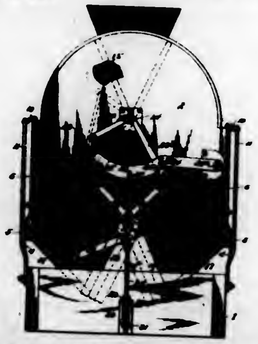
3. In a reel, a distributer situated outside the center of said reel and consisting of a series of slats fixed to and arranged around a shaft, each slat set at such an angle that its face shall be opposite to the circumference of the reel within which it is placed, substantially as and for the purpose specified.

483,908. OFFICE-DOOR INDICATOR. JULIUS DREW, Chattanooga, Tenn. Filed Apr. 30, 1892. Serial No. 431,302. (No model.)



Claim.—The combination, with a door-frame having a beading and a door, of the office-door indicator consisting of a single plate having slots or openings and nails or screws by which the plate is secured to the face of the door in close proximity to the beading, leaving spaces between the plate and the face of the door to provide pockets for the reception of cards at the side of the plate closed by the beading, the cards being retained in place and the withdrawal thereof being prevented by the beading of the door-frame, substantially as described.

483,909. GRAIN-WEIGHING MACHINE. AUGUST H. W. DROSTE and HENRY H. BRUNS, St. Charles, Mo. Filed Apr. 12, 1892. Serial No. 428,869. (No model.)



Claim.—1. In a grain-weighing machine, with a grain-receptacle supported on a scale-beam and having two compartments 13 13ª for alternate use, a swinging bottom common to both compartments, an arm extending from said bottom board, a detent-lever 23, a rod connecting the said arm to the lever, and a gravitating latch 26 with shoulders engaging the stud 24 on the lever 23.

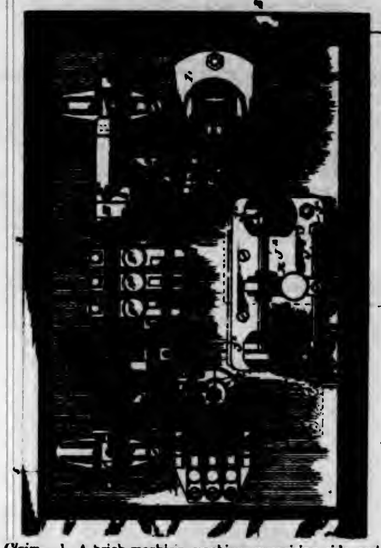
2. In a grain-weighing machine, a grain-receptacle supported on a scale-beam and having two compartments for the grain, a swinging bottom common to both compartments, an arm extending from the swinging bottom, a rod connecting the said arm to a lever, having a detent-stud, a gravitating detent-latch pivoted to a fixed point and having shoulders engaging the detent-stud in the two positions of the swinging bottom, and a rod extending from the latch to a fixed point and arresting the descent of the latch and disengaging the detent-leg on the descent of the receptacle, substantially as and for the purpose set forth.

3. In a grain-weighing machine having a receptacle supported on a scale-beam and with two compartments, a swinging bottom common to both compartments, an arm extending from said bottom connected by a rod with a lever carrying a detent-stud, a latch pivoted at a fixed point and with shoulders engaging the detent-stud in the two positions of the swinging bottom, a rod hanging from the latch, passing loosely through a fixed lug, with a stop-nut on the rod above the lug, and a spring on the rod below the lug, all constructed and adapted to operate substantially as and for the purpose set forth.

4. In a grain-weighing machine, a receptacle having two grain-compartments for alternate use, a scale-beam supporting such receptacle, a swinging bottom common to both compartments, a deflector adapted to deflect the grain into either compartment, a device, substantially as set forth, connecting the swinging bottom and deflector, an arm depending from the deflector, having a stud, a gravitating detent-latch having shoulders engaging the stud, and a device to arrest the descent of the detent-latch with the receptacle, all substantially as and for the purpose set forth.

5. The combination, in a grain-weighing machine, of a scale-beam, a grain-receptacle supported on the scale-beam and having two grain-compartments for alternate use, a swinging bottom common to both compartments, a deflector deflecting the grain into either compartment, arms on the deflector and swinging bottom connected by a rod, an arm on the deflector carrying a detent-stud, and a detent-latch adapted to hold the deflector in either position and released by the downward movement of the grain-receptacle, substantially as set forth.

483,910. BRICK-MARKING MACHINE. JOHN B. RUNK, Duluth, Minn. Filed Oct. 20, 1891. Serial No. 410,206. (No model.)



Claim.—1. A brick-marking machine comprising side and end guides for guiding one end of the brick and movable guides for the opposite end of the brick, said guides carrying marking devices adapted to simultaneously mark the end and side of the brick, substantially as and for the purpose described.

2. A brick-marking machine having fixed end guides and marking devices arranged to engage the face of the brick and adapted to be set relatively to the fixed end guides, whereby to mark the face of the brick at a given point on its face, substantially as and for the purpose described.

3. A brick-marking machine comprising end and side guides and marking-rollers having their marking-faces arranged in different planes, whereby to be set in marking position to engage bricks of different thicknesses, as and for the purpose described.

4. In a brick-marking machine, the combination, with the side and end guides and the base, of a marking device adjustably held on the base and adapted to be set to mark the face or end of the brick, as and for the purpose described.

5. In a brick-marking machine, the combination, with the guideways and the marking devices arranged as shown, whereby to form a pocket-like portion, of restraining devices adapted to hold the brick from engaging the marking devices when inserted in the pocket diagonally and arranged to be released and depressed by the brick when it is entered horizontally in such pocket portion, substantially as and for the purpose described.

6. In a brick-marking machine, the combination, with the guide-rollers and the inking devices arranged as shown, of the rock-shaft C, the frames I^1, loosely mounted thereon, the frames E, fixedly connected to the shaft C, and the locking-frames F' F, said frames D arranged, when moved, to unlock the frames E and F, substantially as and for the purpose described.

7. In a brick-marking device, substantially as described, the combination, with the side guides, of an inking-roller spring-actuated and normally held out to its operative position and means for adjusting its marking-face relatively to the said guides, substantially as and for the purpose described.

8. In a brick-marking machine, the combination, with the fixed end and side guides, of a marking device consisting of a plurality of marking-rollers having each a yielding bearing, whereby two or more of such rollers can be brought in the same plane by the insertion of a brick between the fixed guides and said rollers, substantially as and for the purpose described.

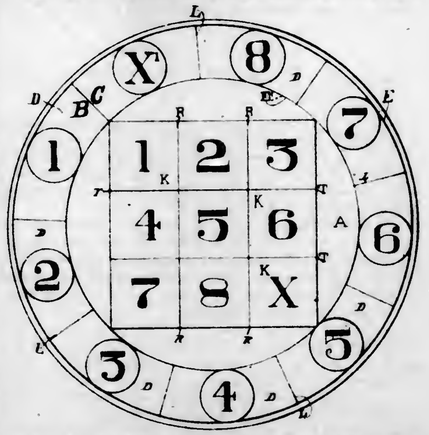
483,911. DRAFT-EQUALIZER. PHILIP EVANS, Bend Head, Canada, assignor to Ira Clarke Evans, Tacoma, Wash. Filed May 4, 1892. Serial No. 431,902. (No model.)

Claim.—1. A lever pivoted on a bar extending from one side of the tongue, a whiffletree pivoted on the end of the said lever, and a sliding block supported on the tongue and connected to the lever by a chain or rope extending around a pulley pivoted in the tongue, substantially as and for the purpose specified.

2. A lever pivoted on a bar extending from one side of the tongue, a whiffletree pivoted on the end of the said lever, and a sliding block supported on the tongue and connected to the lever by a chain or rope extending around a pulley eccentrically pivoted in the tongue, substantially as and for the purpose specified.

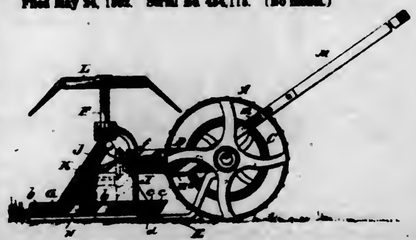
3. A block E, slidingly supported on the tongue D and on which the doubletree is pivoted, in combination with a hasp J, pin K, and means, as a pulley H and chain G, for controlling the position of said block E, substantially as described.

483,912. PUZZLE. CHARLES S. FORD, Jr., Philadelphia, Pa., assignor of two-thirds to Edward Burris, same place, and Thomas J. Duncan, Ilion, Pa. Filed Jan. 4, 1892. Serial No. 416,992. (No model.)



Claim.—The circular disk A, having a series of segmental spaces or subdivisions D arranged equidistant from each other upon its border between the concentric lines E E' and subdivided by the lines L, radiating from the center of the disk, forming spaces D, marked numerically from number "1" to "8," and one space additional marked "X," the spaces "1" and "X" being also marked alphabetically "B" "C," as shown, and the rectangular spaces K, formed upon said disk by means of the series of horizontal and vertical lines R and T, in combination with a series of square and circular counters J' J, marked, respectively, from number "1" to number "8," substantially as herein shown and described, for the purpose set forth.

483,913. LAWN-MOWER. HORACE L. FREEMAN, Lexington, N. C. Filed May 24, 1892. Serial No. 434,118. (No model.)

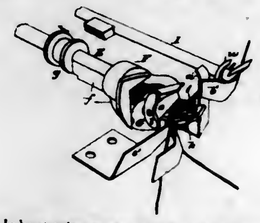


Claim.—1. The frame D, having a central tubular portion with bifurcated branches at its rear end with bearings for the axle, and with vertical arms D^2 D^2 at its front end with bearings for the vertical cut-

ter-shaft, and also with horizontal arms D' D' at its front end, in combination with the axle B, with gear-wheel C, the shaft C^3, arranged within the tubular part of frame D and carrying bevel-gear C' at its rear end and bevel-gear F^2 at its front end, and the vertical cutter-shaft F, arranged in the arms D^2, the finger-bar plate, and rods I, connecting the same to the horizontal arms D', substantially as shown and described.

2. The means for adjusting the revolving cutter and subjacent finger-bar plate in relation to each other, consisting of the frame-arms D' D', rods I, connecting the same to the finger-bar plate, and having nuts *f f'* on opposite sides of the arms at the upper ends of the rods, the yoke-shaped frame E, with screws *g* and *h* for connecting the same to the finger-bar plate, the revolving cutter-shaft and set-screw *a*, tapped through the finger-bar plate and forming the step-bearing for the cutter-shaft, substantially as shown and described.

488,914. KNOT-TYING MECHANISM FOR HARVESTERS. WILLIAM H. CASKILL, Wilson, N. Y. Filed June 2, 1891. Serial No. 394,823. (No model.)



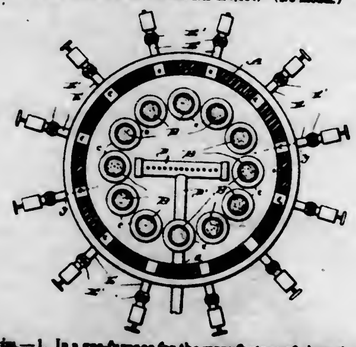
Claim.—1. In a knot-tying mechanism, the combination of the shaft E, the head F, provided with a transverse stud *e*, the sliding sleeve *g*, the fork G, pivoted to the sliding sleeve and embracing the stud *e*, the angled lever *h*, pivoted to one arm of the fork and provided with the lug *k*, and means for turning the head and projecting and withdrawing the fork, substantially as specified.

2. In knot-tying mechanism, the combination of the shaft E, having the head F, provided with the stud *e*, furnished with the head *l*, the sliding sleeve *g*, the fork G, the angled lever *h*, pivoted in the said fork, the irregular pinion *c*, and the mutilated wheel B for imparting to the shaft E, head F, and parts carried thereby an intermittent rotary motion, substantially as specified.

3. In knot tying mechanism, the combination of the shaft E, having the head F, provided with the stud *e*, the sleeve *g*, the fork G, jaw *i*, the cam H, carrying the fork *m*, and the wheel D, furnished with the roller-crank *o*, arranged to engage the cam H, substantially as specified.

4. In knot-tying mechanism, the combination, with the knot-forming devices, of the spring *b'*, attached to the movable arm *q*, which carries one jaw of the main cord-holder, and the standard *a'*, arranged in the path of the spring for holding the ends of the twine, the said spring *b'* being adapted to close against the standard *a'* as the main cord-holder opens, substantially as specified.

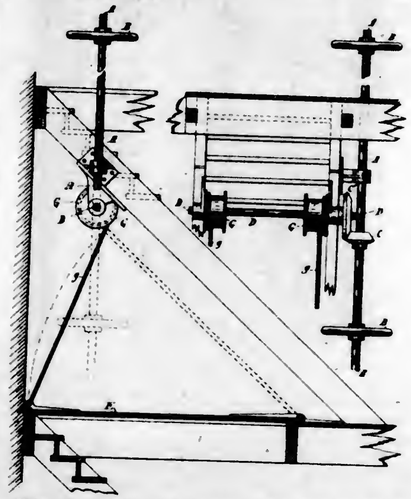
488,915. GLASS-MELTING FURNACE. RALPH GRAY, Anderson, Ind. Filed June 18, 1892. Serial No. 437,187. (No model.)



Claim.—1. In a gas-furnace for the manufacture of glass, the combination, with the pots and central burner-pipe therefor, of the additional burners arranged to direct their flames from the outside between adjacent pots, substantially as specified.

2. In a gas-furnace for the manufacture of glass, the combination of a series of pots, a burner-pipe located centrally within the space inclosed by said series, the surrounding furnace-wall having a series of apertures therethrough, and a series of burner-pipes located exteriorly of the furnace and arranged to direct their flames through the said apertures between adjacent pots, substantially as specified.

488,916. DOOR-OPERATING DEVICE. REUBEN HALLENSTEIN, Melbourne, Victoria. Filed May 18, 1891. Serial No. 393,213. (No model.) Patented in England Oct. 1, 1890, No. 15,541; in Belgium Oct. 1, 1890, No. 93,171; in Turkey Oct. 1, 1890, No. 196; in France Oct. 1, 1890, No. 208,678; in Italy Nov. 13, 1890, LVI, 83; in Spain Nov. 15, 1890, No. 11,291; in Brazil Dec. 16, 1890, No. 1,018; in Cape of Good Hope Feb. 4, 1891, No. 666, and in Austria-Hungary Feb. 12, 1891, No. 44,186 and No. 77,529.



Claim.—In combination, the hatchway-door hinged at one edge, a shaft journaled above the door and extending parallel with the free edge of the same, the two drums, one at each end of the said shaft, the flexible connections from the drums to the free edge of the door near the corners thereof, and the means for operating the horizontal drum-shaft, consisting of the vertical shaft and the gearing between the same and the horizontal shaft, substantially as described.

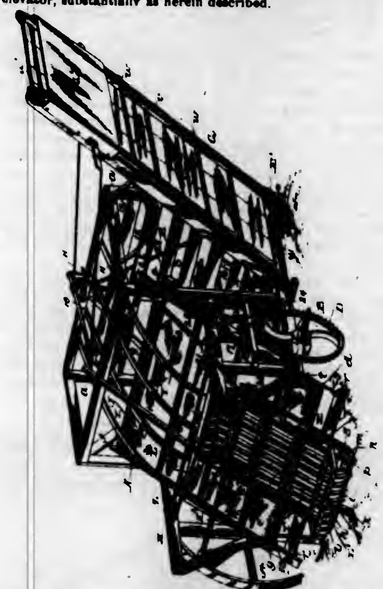
488,917. COMBINED HAY RAKE AND LOADER. JOHN W. HARRON, Cromwell, Iowa. Filed Jan. 18, 1892. Serial No. 418,532. (No model.)

Claim.—1. In a hay rake and loader, the combination, with a wheeled frame having an elevator, a crib into which the same discharges, and means connecting with the main supporting-wheels for driving the elevator, of a shaft in rear of the elevator, independent rake-frames placed side by side and having their upper portions pivotally hung upon said shaft, adjustable casters at the lower ends of the rake-frames and resting upon the ground, shafts in the lower part of the rake-frames, sprocket-wheels on the shaft upon which the rake-frames are hung, endless chains passing around said sprocket-wheels, rake-heads secured to said chains and provided with rake-teeth and adapted to pass through the slatted bottom of the frames when elevating the hay, and means for driving the chains, substantially as herein described.

2. A hay rake and loader comprising a wheeled frame having an elevator, a crib into which the same discharges, independent rake-frame pivotally hung in rear of the elevator having endless chains provided with rake heads and teeth, a yielding board in rear of the receiving end of the elevator and interposed between the same and the adjacent side of the rake-frames, and means for operating the rakes and elevator by power derived from the main supporting-wheels, substantially as herein described.

3. In a hay rake and loader, the wheeled main frame having a supplemental frame in its rear, an elevator mounted between the main and supplemental frames, a transverse shaft K^2, mounted in the supplemental frame and provided with sprocket-wheels L^2 near its ends and center, the rake-frames O, pivotally mounted at their upper ends on said shaft, an adjustable shaft S in the lower portion of said rake-frame, having sprocket-wheels at its ends, the spaced strips P, forming the bottoms of the rake-frames and having their opposite ends curved, endless chains passing around the sprocket-wheels on the shafts K^2 and S, the rake-heads having their ends secured to the chains, rake-teeth projecting from said heads and adapted to enter the spaces between said strips when carrying the hay upward, means for operating the chains and elevator, and a yielding board between the rakes and receiving end of the elevator for directing the hay onto the latter and prevent its bunching, substantially as herein described.

4. In a hay rake and loader having an elevator for carrying the hay to the point of discharge, the pivotally-suspended endless rakes in rear of the elevator with their lower ends resting upon the ground, and a directing-board hung from the lower end of the elevator-frame and having end shoes resting upon the ground, said board being interposed between the rake and receiving end of the elevator to prevent the hay rolling under the influence of the rakes and to direct it onto the elevator, substantially as herein described.



5. In a hay rake and loader having an elevator in front of the rake, a board loosely hung in rear of the receiving end of the elevator, adapted to restrain the rolling action of the hay and direct the hay without bunching onto the elevator, and means for operating the rakes and elevator, substantially as herein described.

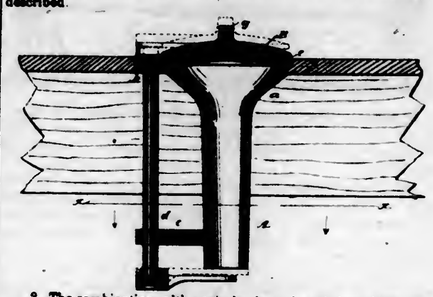
6. In a hay rake and loader, the rakes, the elevator, and the interposed board V, in combination with endless chains having the bars L secured to them and the bar or beater extending over the face of the elevator and adapted to be run at a greater speed than the elevator, and means for operating the rakes, elevators, and beater.

7. In a hay-rake and loader, the main and supplemental frames, the independent pivotally-secured rake-frames having adjustable casters at their lower ends resting upon the ground, the elevator J, the bars L, and the beater W, extending across the elevator, the board V, interposed between the rakes and elevator, the curved guards Y and 12 at the upper end of the elevator and crib, the crib E, into which the elevator discharges and provided with the crosswise carrier F, the side elevator G and means for adjusting the same, the guard G' on the under side of the upper portion of the side elevator, and means for adjusting the side elevator and driving the rakes, elevators, and beater, substantially as herein described.

8. In a hay rake and loader, the main frame with its elevator, the crib, and the adjustable side elevator, in combination with a supplemental frame H, the transverse shaft K^2, journaled therein, having sprocket-wheels at its end and center, the rake-frames pivotally suspended near their upper ends from said shafts, the transverse beam Z, the brace-beam 13, supported by the beam Z and having a bearing at its lower end for the center of the shaft, and the tram-rod below the beam Z, substantially as herein described.

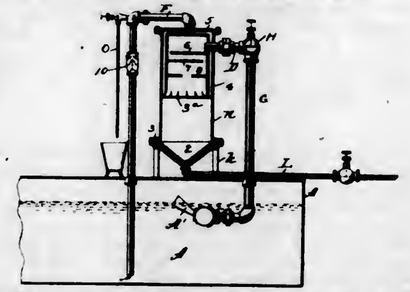
488,918. SPITTOON FOR RAILWAY-CARS. EDWARD L. HARRIS, Red Banks, Miss. Filed Apr. 30, 1891. Serial No. 391,095. (No model.)

Claim.—1. The combination, with a tube having a funnel-shaped upper end, of a cover beveled to fit in the upper end of the tube, a vertical rod mounted to turn and slide endwise and having its upper end secured to the cover, and a valve on the lower end of the said rod, whereby when the cover is swung to one side the valve will be swung under and in contact with the lower end of the tube, substantially as described.



2. The combination, with a tube having a funnel-shaped upper end and provided with laterally-projecting and apertured arms, of a vertically-sliding rod mounted in the apertures of the said arms, a cover beveled to fit in the upper end of the tube and provided with a flange resting upon the upper edge of the said tube, and a cross-arm secured to the lower end of the rod and provided with two valves, substantially as herein shown and described.

488,919. BOILER-CLEANER. HULBERT HAYES, Elizabethtown, Ohio. Filed May 27, 1892. Serial No. 434,646. (No model.)

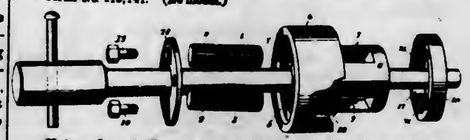


Claim.—1. In a purifying apparatus, the skimmer consisting of the pipe extending transversely across the boiler and having closed ends and a slot extending longitudinally along its front side approximately from end to end, the funnel extending from end to end of said slot, and the upflow-pipe connecting centrally with the rear side of the transverse pipe, substantially as described.

2. In combination, the boiler, the skimmer, the upflow-pipe, the mud drum, the precipitator of less diameter secured within the drum and having the precipitator-plates, the lower edge of the said precipitator being slitted and bent outwardly against the mud-drum, and the return-pipe and the blow-off, substantially as described.

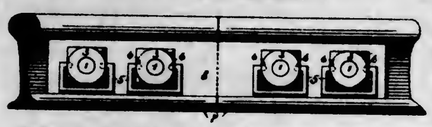
3. In combination, the boiler, the mud-drum, the upflow and return pipes, the blow-off leading from the mud-drum, and the valved blow-off pipe leading from the return-pipe, substantially as described.

488,920. TOOL FOR EXPANDING THE ENDS OF BOILER-TUBES. AUGUSTUS L. HENDERER, Wilmington, Del. Filed Dec. 15, 1891. Serial No. 415,141. (No model.)



Claim.—In a boiler-tube expander, the combination, with the thrustable and rotatable conical mandrel 3, of the guard-ring 4, the head 5, and the hub 6, said head and hub having the series of equidistant oblique slots 7 and said hub having the peripheral screw-thread 12; the cylindrical expanding-rollers 8 and supporting-rollers 9 within said slots, and the thrust and gage ring 10, having the cores 17 and the thread 11 on its interior periphery, all as herein described and shown.

483,921. NUT-LOCK. THOMAS HUBB, Osage City, Kans. Filed Nov. 27, 1891. Serial No. 413,393. (No model.)

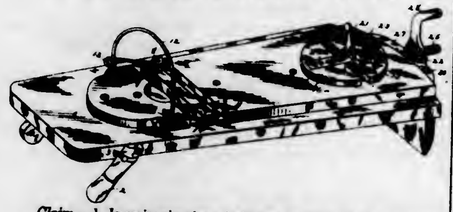


Claim.—1. The combination of a bolt, a nut thereon, and a clamp hinged to said nut and adapted to fold down over the sides thereof and engage a stop to prevent the nut from unscrewing, substantially as set forth.

2. In a nut-lock, the combination of a bolt, a nut thereon provided with openings 4 in its sides, and a spring clamping-bail engaging said openings 4 of the nut and adapted to be turned down into engagement with a stationary stop to prevent the nut from unscrewing, substantially as set forth.

3. In a nut-lock, the combination of a bolt, a nut thereon formed with openings in its sides, and a clamp of substantially bail shape formed with inturned ends engaging the openings in the sides of the nut, said clamp being adapted to turn down over the sides of the nut and engage a stop to prevent the nut from unscrewing, substantially as set forth.

483,922. IRONING-BOARD. SCHUYLER C. HORN, Bladensburg, Ohio. Filed Mar. 31, 1892. Serial No. 427,273. (No model.)



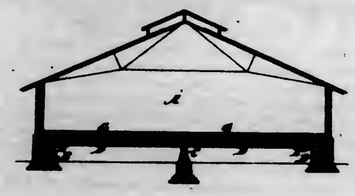
Claim.—1. In an ironing-board, the combination of a board proper and a bosom-board fixed to one side thereof and having a screw-rod projecting from the end of the same, a reversible clamp at the end of said boards having a recess in the upper side thereof and a wire loop for the passage therethrough of the said screw-rod, and also provided with a shoulder on which the board rests, a collar-expander on the bosom-board, and a stretching device at the foot of the bosom-board, substantially as described.

2. In an ironing-board, the combination of the board proper and a bosom-board fixed to one side thereof, a stretcher consisting of a fixed section, a movable section, an operating-bail pivotally connected to said fixed section, and a clamping-bail movably attached to said operating-bail and adapted to engage the said movable section, substantially as described.

3. In an ironing-board, the combination of a board proper and a bosom-board thereon, a neckband-expanding device consisting of a fixed section and a movable section, a guide-rod having projections thereon and secured to said movable section, and a lever attached to the fixed section and having a loop adapted to engage said projections of the guide-rod, substantially as described.

4. In an ironing-board, the combination of a board proper and a bosom-board fixed thereon, a stretcher consisting of a fixed and a movable section arranged at the foot of said bosom-board, an operating-bail pivotally connected to said fixed section, a clamping-bail movably attached to said operating-bail, a neckband-expanding device at the head of said bosom-board, consisting of a movable and a fixed section, and a reversible clamp at the head of said boards having a shoulder substantially as described.

483,923. APPARATUS FOR DRYING COFFEE, &c. SAMUEL L. EUSEBE, The Hague, Holland. Filed Sept. 10, 1891. Serial No. 405,254. (No model.)



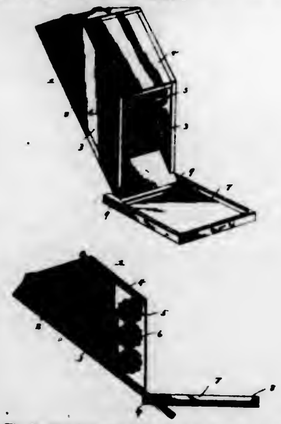
Claim.—In an apparatus for drying coffee, cocoa, pepper, and the like, the combination, with a perforated rotating floor, of the stationary girders G, levers H, pivoted to said girders, rakes having plowshare-shaped shoes secured to one end of said levers, a counterbalance-weight secured to the other end of said levers, an air-heating chamber communicating by a passage with the space under the perforated floor, a fan for supplying air to said heating-chamber, and means, substantially as described, for operating said fan and for moving said perforated rotating floor, substantially as described.

483,924. PROCESS OF SEPARATING COPPER FROM CUPRIFEROUS NICKEL ORES. THOMAS S. HUNT and JAMES DOUGLAS, New York, N. Y.; James Douglas executor of said Hunt, deceased. Filed Sept. 12, 1891. Serial No. 405,533. (No specimens.)

Claim.—1. The hereinbefore-described method of separating copper from ore or matte containing copper pyrites and oxides of nickel and iron and recovering the nickel and iron as nickeliferous iron, which consists in crushing and thoroughly roasting the ore or matte, then digesting the mass in sulphuric acid to dissolve the copper oxide and a small quantity of iron and nickel, then separating the solution from the residue, then smelting the residue to produce nickeliferous iron, then adding a soluble chloride to the solution and subjecting it to a stream of sulphurous-acid gas in order to reduce the copper and generate acid, then precipitating the last traces of copper in the form of metallic copper, and, lastly, crystallizing the iron and nickel from the solution and calcining and smelting the crystals to produce nickeliferous iron.

2. The hereinbefore-described method of separating the copper from a solution containing copper oxide and oxides of iron and nickel to produce nickeliferous iron, which consists in first adding common salt to the said solution, then passing a stream of sulphurous-acid gas through the said solution, then precipitating the last traces of the copper in the form of metallic copper, and subsequently crystallizing out the nickel and iron and calcining and smelting the product to obtain nickeliferous iron, substantially as specified.

483,925. FEED-TROUGH. JOHN HURDLE, Polo, Ill. Filed Apr. 5, 1892. Serial No. 427,863. (No model.)



Claim.—The herein-described stock-salter, consisting of a box having an opening in its front and having its rear wall inclined and extending beyond and in front of the opening, the vertical series of transverse shafts located in the side walls of the box immediately in rear of the opening, the series of independent roller-sections mounted on the shafts and of such combined diameter as to close the opening, and the tray having its opposite sides inwardly extended to embrace the extended portion of the rear wall and pivoted thereto and supported in a horizontal position, substantially as described.

483,926. ROLLING-MILL. GRIFFITH W. JONES, Reading, Pa. Filed Mar. 8, 1892. Serial No. 424,166. (No model.)

Claim.—In a rolling-mill, the combination of a double housing formed of a single casting, double roll-sets mounted therein, two or more additional housings in line with the said double housings, roll-sets mounted in said additional housings, horizontal guide-rolls for the roll-sets, endless aprons between the adjacent rolls, a brush mounted above one of the aprons, and suitable operating means, substantially as shown and described.

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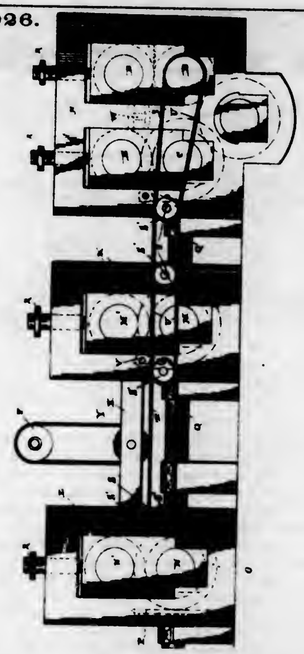
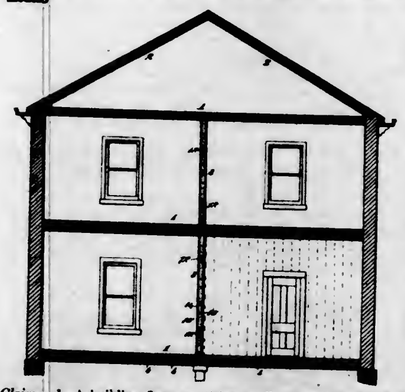


483,927. WALL, FLOOR, OR ROOF OF BUILDINGS. ARTHUR J. JONES, St. Louis, Mo. Filed Oct. 16, 1891. Serial No. 408,863. (No model.)



Claim.—1. A building floor, partition, wall, or roof composed of independent corrugated strips placed a distance apart and a grouting, substantially as set forth.

2. A building floor, partition, wall or roof composed of corrugated strips, retaining-bars, and a grouting, substantially as set forth.

483,928. PRUNING IMPLEMENT. FRANK P. KEEN, Missoula, Mont. Filed Feb. 19, 1892. Serial No. 422,124. (No model.)

Claim.—1. The pruning-shears comprising an upward-curved hook having a depending shank, a handle slidably mounted on the hook-shank, a shear pivoted at the base of the hook and adapted to close against one side of the same, the shear having a depending shank normally extending down alongside of the handle, means for holding the shear away from the hook to permit the entrance of the limb from above, and a connection between the shear shank and the handle, substantially as described.

2. The pruning-shears comprising an open-topped hook having a depending straight shank, a sleeve held to slide on the hook-shank and adapted to be secured to a handle, a shear pivoted at the base of

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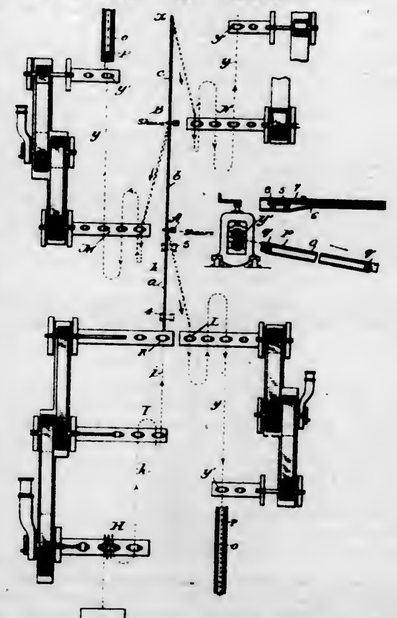
the hook and having a weighted shank, and connecting-rods pivoted to the sleeve and to the shear-shank, substantially as described.

483,929. ROLLING-MILL. PETER L. KIMBERLY, Sharon, Pa. Filed Mar. 5, 1892. Serial No. 423,848. (No model.)



Claim.—1. A rolling-mill consisting of a series of roughing or reducing rolls arranged in proper relation to a heating-furnace, a series of cutting mechanisms arranged substantially in line with the last of the series of reducing-rolls and adapted to act simultaneously to sever the reduced bar at different points, and a series of finishing-rolls arranged alternately on the right and left of the line of cutting mechanisms, as set forth.

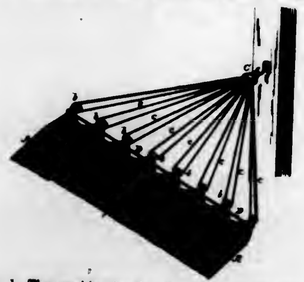
2. A rolling-mill consisting of a series of roughing or reducing rolls in proper relation to a heating-furnace, a series of cutting mech-

anisms substantially in line with the last of the series of reducing-rolls, and a series of finishing rolls arranged alternately on the right and left of the line of cutting mechanisms and in rear, respectively, of the points of severance of the bar, whereby the sections of the bar are drawn backward in finishing, as set forth.

3. A rolling-mill plant consisting of a series of roughing or reducing rolls, a series of cutting mechanisms adapted to operate simultaneously on the reduced bar, a series of finishing-rolls, and a chute at the end of each of the finishing series, combined with an endless traveling band arranged in the chute, substantially as described.

4. In a rolling-mill plant having a series of roughing or reducing rolls and a series of cutting mechanisms substantially in line with the last of the reducing-rolls, a series of finishing-rolls of different forms, whereby different products may be made simultaneously from the same bloom, as set forth.

488,930. HAMMOCK-STRETCHER. ABRAM C. KNIGHT, Philadelphia, Pa. Filed June 15, 1892. Serial No. 436,814. (No model.)

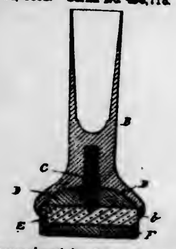


Claim.—1. The combination, in a hammock, of the body, end projections on said body consisting of portions of the fabric of which the hammock is composed and to which the cord *c* is tied, with a stretcher-rod passing through some of these projections, thus preventing lateral movement of the rod, said rod having eyes at its ends, each eye encircling one of the end projections of the body portion, thus preventing longitudinal movement of the rod, substantially as specified.

2. The combination, in a hammock, of the body portion having a series of bunched projections at one end and a cord tied to said bunched projections, with a stretcher-rod passing through each bunched projection and secured to the end projection, substantially as described.

3. The combination, in a hammock having a lapped end fastened to the body and split at intervals, forming bunched projections of double fabric, of a suspending-cord secured to the projection with a stretcher-bar having at each end an eye, said stretcher-bar passing through the central projections and the end projections passing through the eyes in the bar, substantially as described.

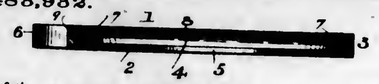
488,931. CRUTCH-FOOT. HENRY LANDSDALE, North Cambridge, Mass. Filed June 14, 1892. Serial No. 436,718. (No model.)



Claim.—As an improved article of manufacture, a crutch-foot consisting of a socket-piece B, formed with an inverted cup B', a screw C, constituting an immovable part of the socket and projecting at the center of the cup, and a pad composed of an inner leather disk D, a sole F, and an interposed rubber cushion E, said pad being adapted to screw onto or off of the screw, while the latter stands immovable in the socket, substantially as described.

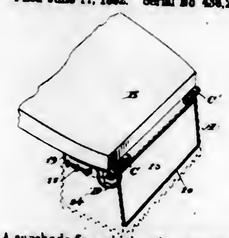
488,932. PLATE FOR VAPOR-STOVES. FRANK J. LITTLE, Portland, Mich., assignor of one-half to John B. Dinsmore, same place. Filed Feb. 20, 1892. Serial No. 422,936. (No model.)

Claim.—The combination, with the bottom 2, having a central opening and provided with a rim 3, having annular groove 9 and loop



6, of the corrugated removable top 1, connected to said bottom by screws 7, substantially as described.

488,933. SUNSHADE FOR VEHICLES. LETITIA V. LOCK, New Orleans, La. Filed June 11, 1892. Serial No. 436,297. (No model.)

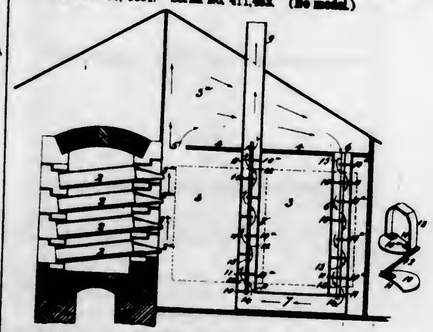


Claim.—1. A sunshade for vehicles, the same consisting of brackets adapted for attachment to a vehicle, one of the brackets being provided with a spring, a frame held to slide in the brackets and against the tension of the above-named spring, and a rack also adapted for attachment to the vehicle and having a series of notches or recesses to receive one edge of the frame, as and for the purpose set forth.

2. A sunshade for vehicles, consisting of brackets adapted for attachment to the canopy or top, the brackets being provided with pins and one of them with a spring, a frame provided with a cover and held to travel upon the pins of the brackets and against the tension of the said spring, and a rack provided with a series of notches or recesses and located adjacent to the spring-carrying bracket, the notches being adapted to receive a side of the frame, substantially as and for the purpose set forth.

3. A sunshade for vehicles, the same consisting of brackets adapted for attachment to the top or canopy of a vehicle, the brackets being provided with pins and one of them with a spring coiled around its pin, a rack adapted for attachment to the top or canopy adjacent to the spring-carrying bracket, a covered frame having side extensions, the frame having sliding movement upon the pins of the brackets against the tension of the spring carried by one of the brackets and one edge of the frame being adapted for engagement with the rack, and guides supporting the side extensions of the frame-cover, as and for the purpose set forth.

488,934. ZINC-FURNACE. OCTAVIUS LURAGHI, St. Louis, Mo. Filed Nov. 10, 1891. Serial No. 411,462. (No model.)



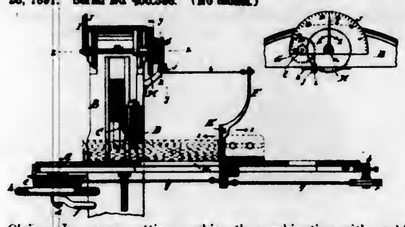
Claim.—1. In combination with a flue for collecting fumes, a series of removable deflectors, each having two plates 10 10^a with recesses upon the opposite sides, a bar connecting the plates, and a standing frame secured upon the plate 10^a and adapted to support another deflector, as set forth.

2. In a zinc-subliming furnace, the combination of the retorts, a passage in communication with the retorts and containing deflectors adapted to receive deposits of the metallic oxide, and an ascending flue in connection with the discharging end of such passage and in proximity to the retorts, so as to cause an upward current through such flue, substantially as set forth.

3. The combination, in a zinc subliming furnace, of the retorts, a chamber for receiving the metallic fumes from the retorts, a passage

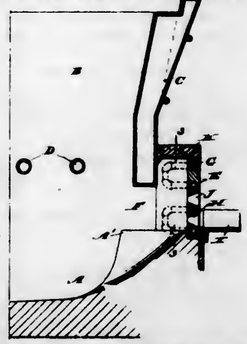
containing deflectors, having an induction end open to said chamber and an ascending flue at the eduction end in proximity to the retorts, for the purpose set forth.

488,935. PAPER-CUTTING MACHINE. ALEXANDER MALM, New York, N. Y., assignor to T. W. & C. B. Sheridan, same place. Filed July 23, 1891. Serial No. 400,383. (No model.)



Claim.—In a paper-cutting machine, the combination, with a table A, a knife C, a gage E, and means for moving the gage back and forth, of a dial-plate J, a movable index-hand I, having an arbor *n*, provided with a cog-wheel H, a rotating spring-drum G, having a pinion *m*, engaging the cog-wheel on the arbor of the index-hand, and a rope *i*, connected with the gage and winding on and unwinding from the spring-drum, substantially as described.

488,936. FURNACE-TAP. EDWARD P. MATHEWSON, Pueblo, Colo. Filed Mar. 4, 1892. Serial No. 423,720. (No model.)



Claim.—1. In a furnace-tap, the combination, with a casing in communication at the lower part of its rear open end with the interior of the furnace, the front of the casing being formed with a tap-hole for the matte, and the top formed with a discharge-opening for the slag, of an incline arranged on one side of the said casing next to the said discharge opening and a trough at the bottom of the said incline, substantially as shown and described.

2. The herein-described furnace-tap, comprising the casing E, having front and side walls, main and safety openings H J through the lower portion of its front wall for the discharge of matte, water-circulating pipes in the front and side walls, a top K, and an opening L at one side of the top for the continuous discharge of slag, substantially as set forth.

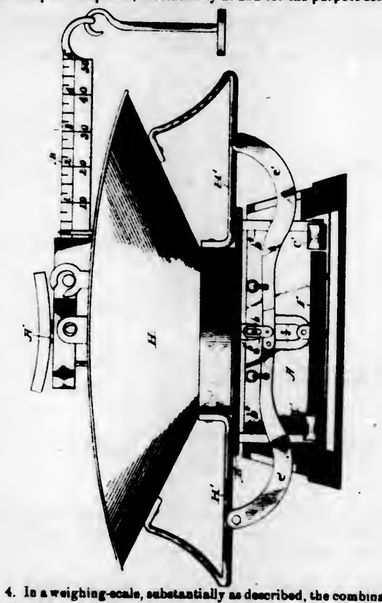
3. In a furnace-tap, the combination, with a casing in communication at the lower part of its rear open end with the interior of the furnace, the front of the casing being formed with a tap-hole for the matte and the top with a discharge-opening for the slag, of an incline arranged on one side of the said casing next to the said discharge-opening, a trough at the bottom of the said incline, and a spout arranged on the front of the said casing below the said tap-hole for the matte, substantially as shown and described.

488,937. PLATFORM-BALANCE. HARVIN M. MERRILL, Marshall, Mich. Filed Sept. 19, 1891. Serial No. 406,178. (No model.)

Claim.—1. In a weighing-scale, substantially as described, the combination, with the platform, the weighted levers, and a link connecting said levers and the platform, of a scoop adapted to operate the weighted levers, so as to take their weight off the platform and compensate therefor, substantially as and for the purpose set forth.

2. In a weighing-scale, substantially as described, the combination, with the platform having the pin *b* and the weighted levers, of the slotted link or plate connecting the weighted levers and the pin *b*, substantially as and for the purpose set forth.

3. In a weighing-scale, substantially as described, the combination, with the platform, of the weighted levers *d'*, the levers *e*, and the longitudinal bars connecting the levers *e d'* and adapted to be engaged by a scoop or receptacle, substantially as and for the purpose set forth.



4. In a weighing-scale, substantially as described, the combination, with the platform having the pin *b*, the levers *d'*, and a slotted link or plate connecting one of said levers and the pin *b*, of the weight F and links connecting the weight and the levers *d'*, substantially as and for the purpose set forth.

5. In a weighing-scale, substantially as described, the combination, with the platform having the pin *b*, of the levers *d'*, a slotted link or plate connecting one of said levers and the pin *b*, the weight F, links connecting said weight and the levers *d'*, the levers *e*, and the bars E, connecting the levers *e* and *d'*, substantially as and for the purpose set forth.

6. In a weighing-scale, substantially as described, the combination, with the platform, the weighted levers *d'*, a link connecting said levers to the platform, the levers *e*, and the bars E, connecting the levers *e d'*, of a scoop or receptacle and brackets connected thereto and adapted to engage the bars E, substantially as and for the purpose set forth.

7. As an improved article of manufacture, a scoop or receptacle having the bracket-arms H', substantially as and for the purpose set forth.

488,938. DRAFT-EQUALIZER. THEODOR J. MILAND, White, S. D. Filed Dec. 29, 1891. Serial No. 416,442. (No model.)

Claim.—1. In a draft-equalizer, the combination, with a pole, of a lever pivoted thereto, pulleys on the ends of the lever, chains passing over the pulleys and adapted to carry whiffletrees at their ends, a bar secured to the pole in the rear of the lever at about the middle of its length, a brace connecting one end of the bar with the pole, an evener-bar pivoted to the pole in rear of the said bar, a draw-bar pivoted to the evener-bar and to the lever, and a second draw-bar pivoted to the evener-bar and to the bar which is connected to the pole by a brace, substantially as described.

2. A draft-equalizer comprising a pole, a lever pivoted thereon and extending to one side thereof, means for preventing the forward movement of the lever, pulleys pivoted near the ends of the lever, a bell-crank pivoted on the lever and having arms of unequal length; and drawing-chains connected with the opposite arms of the bell-crank and with the whiffletrees, substantially as described.

3. A draft-equalizer comprising a pole, a lever pivoted thereon and extending to one side thereof, pulleys pivoted on the lever near the ends, a bell-crank pivoted on the lever, drawing-chains connected with the arms of the bell-crank and extending over the lever, parallel evener-bars pivoted on the pole in the rear of the lever, said evener-bars being connected at one end, draw-bars connecting one end of the rear evener-bar with the lever, and a brace extending from one end of the front evener-bar to the pole, substantially as described.

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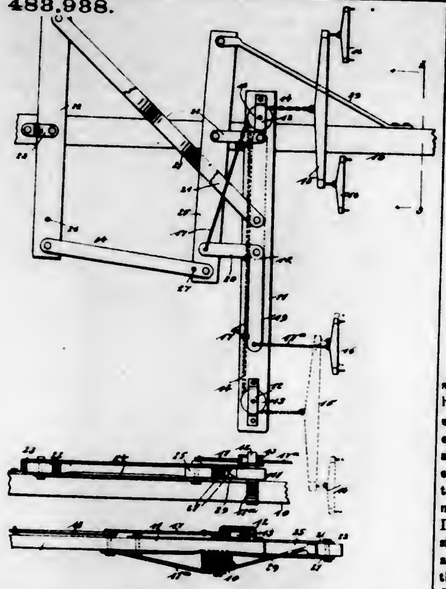
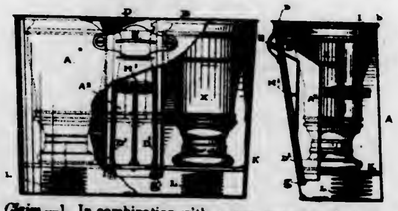


3. In an electric heater, an open cylinder composed of insulating material and formed with grooves upon the inner and outer surfaces and the conducting-wire wound longitudinally upon the cylinder and arranged in the grooves and extending over the inner and outer surfaces of said cylinder, whereby air-currents are heated upon the interior and exterior of the cylinder.

488,939. COIN-OPERATED OPERA-GLASS RECEPTACLE. JOHN J. MCDADE, San Francisco, Cal. Filed Oct. 26, 1889. Renewed Feb. 16, 1892. Serial No. 421,756. (No model.)



Claim.—1. In combination with a case or receptacle having an opening controlled by a lid, the locking device consisting of the hasp or part D, the hooked bolts D' D', and spring E, placed for operation with relation to a coin-slit in the case, as described, the said bolts being adapted to be separated by the direct action of the inserted coin.

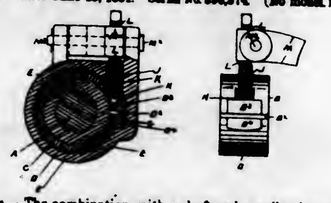
2. The combination, with the lid having the hasp D, of the spring-bolts D' D', the yielding bottom K, and the rod M, carrying a cross-head and setting between said bolts, as described.

488,940. ELECTRIC HEATER. FRED B. PERKINS and CHARLES S. JOHNS, Toledo, Ohio, assignors, by direct and mesne assignments, to the Toledo Electric Heating Company, same place. Filed Apr. 1, 1892. Serial No. 427,379. (No model.)

Claim.—1. In an electric heater, the combination, with an outer casing having apertures in the top and bottom of the same, of an insulating-cylinder which fits over the bottom aperture, and the conducting-wire wound longitudinally upon the cylinder, extending over the inner and outer faces of the same.

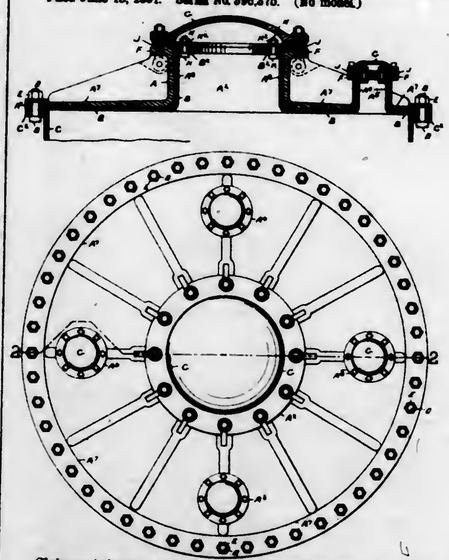
2. In an electric heater, a cylinder formed with longitudinal grooves upon each side and conducting-wires wound longitudinally upon the cylinder and lying in the grooves and insulated by means of a plastic material compacted upon the wire and adhering to the cylinder.

488,941. FRICTION-CLUTCH. BENJAMIN F. RADFORD, Hyde Park, Mass. Filed June 15, 1891. Serial No. 396,374. (No model.)



Claim.—The combination, with a shaft and a pulley loose on said shaft, of a ring D at one side, radially split and normally loose on the hub of the pulley and at its split having radial projected and opposed ear-pieces D^3 D^4, a pin H, held on and tangentially projected from said ear-piece D^3, a collar E, loosely surrounding said ring and at its inner side having a recess G, receiving said ear-pieces D^3 D^4 and making a seat for the ear-piece D^4, and also having a hub extension F fixed on the shaft, a block J loose in and tangential to said collar and at its inner end seated on the outer and free end of said pin H of the ear-piece D^3 of said split ring D, a lever M, fulcrumed on said collar and at one side of its fulcrum having bearing on the outer end of said block J, and a cone-shaped slide N of the shaft, having said lever M bearing thereon at the opposite side of the fulcrum to its bearing on the block J, substantially as described, for the purposes specified.

488,942. DIGESTER. BENJAMIN F. RADFORD, Hyde Park, Mass. Filed June 15, 1891. Serial No. 396,375. (No model.)



Claim.—A dome or head for digesters, composed of an outer layer of iron and an inner layer of bronze, adapted to closely fit each other, and having openings or holes leading therethrough, an inward circumferential flange of bronze at said openings, an outward circumferential flange of iron at said openings, a metal ring covering both of said flanges and secured to the bronze flange, and a cover seated on said ring and it and the ring secured to the iron flange, substantially as described, for the purposes specified.

488,948. CONTROLLER FOR ELEVATORS. JOHN REILLY, Baltimore, Md., assignor of one-half to Thomas A. Symington, same place. Filed Apr. 9, 1892. Serial No. 428,460. (No model.)

Claim.—In a controller for an elevator, the combination of the

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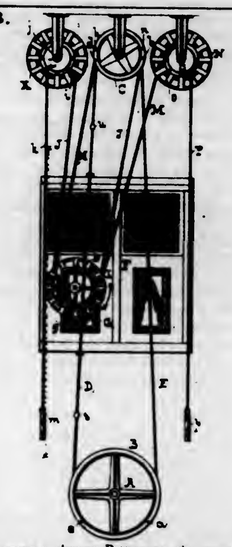
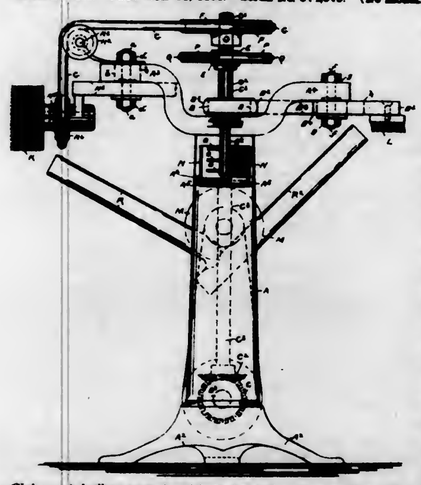


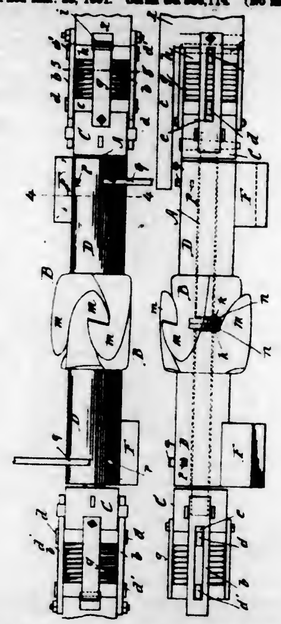
starting-shaft A, having a sheave B thereon, the overhead sheave C, cords D and E, which are secured to and lead from opposite sides of the sheave B to and over the sheave C, to which they are fastened, the shaft G in the cab F, having a sheave I exterior of the wall thereof, the cords J and M, leading from opposite sides of the sheaves C, to which they are attached, downward and around the sheave I in opposite directions, then upward and over sheaves K and N, respectively, to which they are tied, sheaves L and O, which have motion in common with the ones K and N, and the weighted cords *k* and P, attached to the said sheaves L and O, substantially as and for the purpose specified.

488,944. SOLE-STAINING MACHINE. FRED L. RICHARDSON, Milford, Mass. Filed Dec. 11, 1890. Serial No. 374,375. (No model.)



Claim.—A hollow post A, with horizontal arm extensions A^3 A^4 at its upper end and on its opposite sides, a rotating vertical shaft C^3 within said post, an eccentric D and pulley F on said shaft and above said side arms, a rectilinear and horizontal reciprocating brush L of said arm A^4, a rotating brush K of said arm A^3, means to reciprocate said brush L, consisting of said eccentric D, an eccentric-strap D^4, having an extension D^5, with a slot *h* and a block fitting and held in said slot *h* and to said arm A^4 by screw-bolts *f* and nuts *g*, and means to rotate said brush K, consisting of said pulley F, a pulley H^4 of the brush, guide-pulleys H H^3 of said arm A^3, and a belt G, connecting said pulleys F H^4 and guided by said guide-pulleys H H^3, in combination with air-chutes R R^3, respectively, leading downward from said brushes K L and both opening into the hollow post A, and an air-suction blower adapted and arranged to draw air downward through said chutes and to discharge into said post, all as described, for the purpose specified.

488,945. CAR-COUPLING. DAVID L. RICHARDS, St. John, Canada. Filed Mar. 23, 1891. Serial No. 386,114. (No model.)



Claim.—1. In a car-coupling, the combination, with the draw-rod provided with the block or enlargement C at its rear portion and the head *n* at its forward end and supporting and spring-cushioning appliances for said draw-rod, of the coupling-head having hooked and cam-sided jaws and comprising the shank portion D with the weight member F, as described, said head being mounted on the draw rod for rotational movement and having a length less than the distance between the draw-bar head and the enlargement C, as and for the purpose set forth.

2. In a car-coupling, in combination, the supporting-bars *b b* of the car, provided with ways or slots, the draw-rod provided with the forward head *n* and having on its rear portion the block or part C, provided with the strap, the followers *c* and *h*, each having the guiding-lugs *d d*, and the spring intermediate the coupling-head, having the cam-formed and hooked jaws and the extended rear shank with the weight member thereon and mounted for rotation on the said rod and movable longitudinally along same, substantially as and for the purposes set forth.

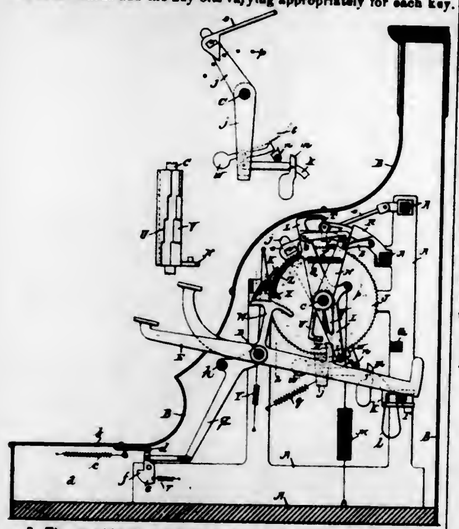
3. In a car-coupling, in combination, the car-supported bars *b b*, having the slots, the draw rod provided with the forward head *n* and having thereon the block or enlargement C, the strap *g*, carried on the latter, the follower-blocks *c h*, having the lugs *d d*, engaging said slots, and the intermediate spring, the coupling-head having hooked and cam-formed jaws and the rear shank with the weight member F and the catch-lug *p* and mounted for rotation and also a slight endwise movement on the draw-rod, the detent *g*, supported on the car and coacting with said lug in the manner set forth, and a device for securing the partial rotation of the coupling-head, substantially as and for the purposes set forth.

488,946. CASH-REGISTER. EDWARD P. ROBERTS, Columbus, Ohio, assignor to the Roberts Manufacturing Company, same place. Filed Apr. 9, 1892. Serial No. 428,559. (No model.)

Claim.—1. The combination, substantially as set forth, of a ratchet-wheel, a pawl therefor, a rocker carrying said pawl, a dog mounted on said rocker and adapted to engage said pawl and hold it against release from the ratchet-wheel, a stop, as a count-ward, to limit the forward motion of said rocker with its pawl and dog, a drag-rocker normally engaging said dog and holding it free of engagement with

the pawl, a connection uniting the two rockers and adapted to yield under excessive strain, and mechanism for giving to the drag-rocker a motion in excess of the motion of the first rocker, whereby when the pawl has reached its forward limit of motion it remains locked to its ratchet-wheel by the dog until the drag-rocker completes its forward stroke and returns to the dog.

2. The combination, substantially as set forth, of a ratchet-wheel, a counting-rocker, a pawl thereon engaging the ratchet-wheel, a drag-rocker, a connection between the two rockers, adapted to yield under excessive strain, a group of finger-keys engaging and adapted to rock the drag-rocker and provided with bits, and count-wards carried by said count-rocker and standing forward of said key-bits in position to be arrested by said key-bits as the key-bits rise, the distance between the count-wards and the key-bits varying appropriately for each key.



3. The combination, substantially as set forth, with a pawl-and-ratchet mechanism and a group of finger-keys acting thereon, of count-wards moving with the pawl, a yielding connection between the pawl and keys to permit the keys to continue motion after the pawl has come to rest, and bits moving with the keys and arresting the motion of the count-wards and pawl.

4. The combination, substantially as set forth, with a pawl-and-ratchet mechanism, of a group of finger-keys, a yielding connection between the pawl and all the keys of the group, whereby any key tends to give maximum pawl-stroke to the pawl, wards moving with the pawl, and a bit on each key in a position to engage a ward and prevent the farther advance of the pawl under the influence of said yielding connection from the key in action and also in position to be obstructed by the wards if moved by a previously-operated key.

5. In a cash-register, the combination, substantially as set forth, of a till, a cover hinged thereto and provided with a locking projection extending inwardly beyond the hinge, a spring tending to open the cover, a locking-dog engaging under the projection and preventing the opening of the cover, a group of finger-keys, and connections from said keys to said locking-dog, whereby the operation of any key releases the locking-dog from the projection.

6. In a cash-register, the combination, substantially as set forth, of a till, a cover hinged thereto and provided with a locking projection, a spring tending to open the cover, a locking-dog engaging said projection and preventing the opening of the cover, a hook standing normally out of the path of movement of said projection and moving with the locking-dog and adapted to move into the path of said projection and prevent the complete opening of the cover, a group of finger keys, and connections between said keys and locking-dog and hook, whereby the depression of a key releases the locking-dog and puts the hook in arresting position.

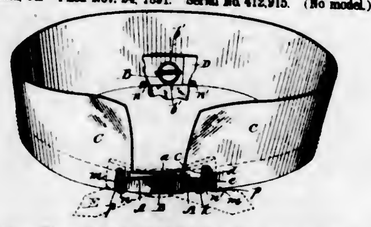
7. In a cash-register, the combination, substantially as set forth, of two independent groups of finger-keys, each group having an independent count wheel and counting mechanism, a series of transfer-pins in one of said count-wheels, a transfer-pawl engaging the other count-wheel, a bar adapted to be moved by any finger-key of either group, and connecting devices, substantially as set forth, between said pins and bar to cause said pawl to move with the bar at each passage of a pin.

8. In a cash-register, the combination, substantially as set forth, of two independent groups of finger-keys, each group having an independent count wheel and counting mechanism, the keys being arranged for a degree of motion before acting on their counting mechanisms, transfer-pins in one of said count-wheels, a transfer pawl engaging the other count-wheel, a bar arranged to be moved by any key of either group before the key acts on its own counting mechanism, and devices, substantially as described, for causing said bar to move said transfer-pawl each time one of said pins comes into action, whereby a single key stroke may first make a transfer count upon its count-wheel and then add to that count a count appropriate to the value of the key.

9. In a cash-register, the combination, substantially as set forth, of two independent groups of finger-keys, each group having its own independent count-wheel and counting mechanism, transfer-pins in one of said count-wheels, a pawl engaging the other count-wheel, a rocker carrying said pawl, a spring urging said rocker and pawl in one direction, a link restraining the action of the rocker and arranged to release at the passage of each of said pins so that the spring may cause the pawl to move, a bar arranged to be moved by any key of either group, and connections between said bar and rocker to cause the bar to move the rocker in the direction opposed to said spring.

10. In a cash-register, the combination, substantially as set forth, of two independent groups of finger-keys, each group having its own independent count-wheel and counting mechanism, a transfer rocker, a pawl carried by said rocker and engaging one of said counting-wheels, pins in the other counting-wheel, a transfer-bar arranged to be moved by any key of either group and adapted to move said transfer rocker and pawl in the forward direction, a link engaging said transfer rocker and holding it in its forward position of motion and adapted to be disengaged at the passage of each of said pins, and a spring arranged to move said rocker and pawl in its backward direction of motion when said link is disengaged.

483,947. NECKTIE-FASTENER. FREDERICK R. SCOFIELD, Penfield, Pa. Filed Nov. 24, 1891. Serial No. 412,915. (No model.)



Claim.—The controller constructed with an intermediate arch-shaped loop, a hook *n'*, an upturned hook *n*, and a downturned hook *m* at each end, hooks *m* and *n'* being constructed to form inclosed spaces and the ends of the hooks *n* being laterally deflected from said hooks *m* in order to admit entrance into the spaces in rear of said hooks, substantially as described.

483,948. SANITARY SEAL FOR COVERS OF TOILET VESSELS. CHARLES SHART, San Francisco, Cal. Filed Jan. 12, 1892. Serial No. 417,878. (No model.)

Claim.—The herein-described seal for covers of toilet vessels, comprising the body A, the flanges 1 and 2, and the circular tubular cushion 3, constructed and arranged for operation as herein set forth.

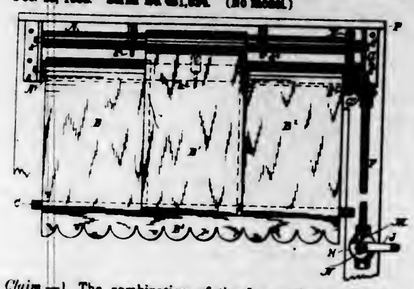
483,949. WATCH-CHARM. DANIEL A. SMITH and CHARLES E. GRAPEWINE, Kokomo, Ind. Filed Mar. 17, 1892. Serial No. 425,350. (No model.)

Claim.—1. A watch-charm comprising in its construction two pieces of plate glass and a narrow metallic band uniting said pieces and concealing their point of juncture, substantially as described.

2. A watch-charm comprising in its construction two pieces of plate-glass laid face to face and forming a cube, and a narrow metallic band surrounding and concealing the point of juncture of the two

pieces and uniting the said pieces, all whereby two front faces and eight edge faces of glass are presented, through which may be seen oppositely or nearly oppositely located pictures or inscriptions, substantially as described.

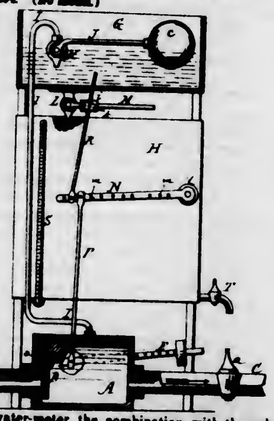
488,950. AWNING. HENRY VATER, San Francisco, Cal. Filed Feb. 14, 1892. Serial No. 421,694. (No model.)



Claim.—1. The combination of the frame, the parallel shafts mounted in said frame and extending the entire length thereof, intermeshing pinions on the ends of said shafts, means for rotating the lower shaft, and strips of cloth winding alternately on said shafts and having their edges overlapping.

2. The combination of parallel shafts provided with intermeshing pinions at their ends, strips of cloth having overlapping edges and winding alternately on said shafts, a vertical driving-shaft gearing between said shaft and the lower parallel shaft, and mechanism for rotating the said driving-shaft.

488,951. WATER-METER. HENRY R. WILLIAMS, Rochester, N. Y., assignor of one-half to Lemuel A. Jeffreys, same place. Filed Apr. 3, 1890. Serial No. 346,494. (No model.)



Claim.—In a water-meter, the combination, with the valve D in the receiving-chamber A and the cock L, attached to the supply-tank G, of the arm E, attached to the axis of the valve, the arm M, attached to the plug of the cock, the intermediate pivoted arm N, the connecting-rods P R, the slide *i*, and pivoted bearing *k*, arranged to operate in the manner and for the purpose specified.

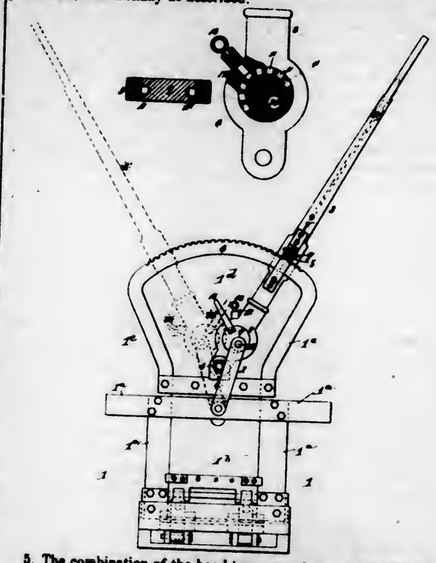
488,952. CABLE-GRIP. FRANK A. YARD, St. Louis, Mo., assignor, by direct and mesne assignments, to Edward A. More, trustee, same place. Filed Apr. 15, 1891. Serial No. 389,094. (No model.)

Claim.—1. In a cable-grip, the combination, with a gripping hand-lever, of an adjustable eccentric carried by the hand-lever, located between the pivot and the handle of the hand-lever, and a connection between the eccentric and the gripping-jaws, substantially as set forth.

2. In a cable-grip, the combination of a gripping hand-lever, an eccentric carried by the hand-lever, located between the pivot and the handle of the hand-lever, a connection between the eccentric and the gripping-jaws, and a pin for holding the eccentric to different positions, substantially as set forth.

3. In a cable-grip, the combination of a gripping hand-lever, an eccentric carried by the hand-lever, located between the pivot and the handle of the hand-lever and provided with a perforated periphery, a connection between the eccentric and the gripping-jaws, a spring-actuated pin for holding the eccentric to its adjustment, and a hand-lever secured to the eccentric, by which it may be moved when the pin is raised, substantially as and for the purpose set forth.

4. The combination of the hand-lever carrying an adjustable eccentric located between its pivot and its handle, means for adjusting the eccentric, and connections from said eccentric to the jaws of the jaw-frame, substantially as described.



5. The combination of the hand-lever carrying an adjustable eccentric located between its pivot and its handle, means for locking the eccentric in different positions, an arm on the eccentric for rotating the latter, and connections from said eccentric to the jaws of the jaw-frame, substantially as described.

488,953. BOX-FASTENER. CHARLES W. BEEBLER, St. Louis, Mo., assignor of two-thirds to Albert Kuehne and Frank Hemsperger, same place. Filed June 7, 1892. Serial No. 436,572. (No model.)

Claim.—In a box-fastener, the combination of a spring-catch provided with a loop at one end and a stationary catch secured to the body of the box, said catch being secured to the box by means of a staple provided with a loop or bulge and a seal adapted to be applied to the loop of the spring-catch and the staple, substantially as set forth.

488,954. CIRCULAR-KNITTING MACHINE. WILLIAM DERBY, Philadelphia, Pa., assignor to Frederick Buxbaum and Victor C. Driesbach. Filed Aug. 28, 1889. Serial No. 322,202. (No model.)

Brief.—During fashioning a leg on the cam-cylinder engages devices whereby a straight and a crossed belt are alternately shifted on and off the driving-pulley. The fashioning-needles are automatically raised and lowered by a picker connected to the cam-cylinder, the reciprocations of the picker being limited by contact with the needles elevated out of action, and the vertical movements of the picker being produced by cams located above.

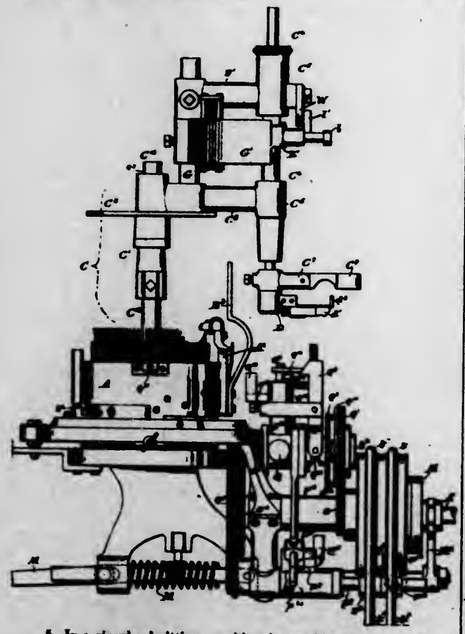
Claim.—1. In a circular-knitting machine, in combination, the needle-cylinder, needles resting in said needle-cylinder, a cam-cylinder, a needle-elevating plate within said cam-cylinder, extending over a portion of said needle-cylinder, a needle-elevating cam adapted to elevate said elevating-plate and lift a portion of the needles out of action, and means, substantially as described, to operate said elevating-cam, whereby when said cam is operated a portion of said needles are elevated out of action.

2. In a circular-knitting machine, in combination, a needle-cyl-

inder, needles supported within said needle-cylinder, a cam-cylinder, an elevating-plate within said cam-cylinder extending over one-half of said needle-cylinder, a needle-elevating cam to elevate said plate, a sliding bar outside of said cam-cylinder, connections between the needle-elevating cam and said sliding bar through the cam-cylinder, whereby when said bar is moved the plate elevates the needles out of notice.

3. In a circular-knitting machine, in combination, the needle-cylinder, needles supported within said needle-cylinder, a cam-cylinder, a needle-elevating plate within said cam-cylinder, a needle-elevating cam adapted to elevate said elevating-plate, a sliding bar outside of said cam-cylinder, and a pin upon the needle-elevating cam, which connects said needle-elevating cam with the sliding bar, and a slot in the cam-cylinder, in which slot the pin is adapted to move.

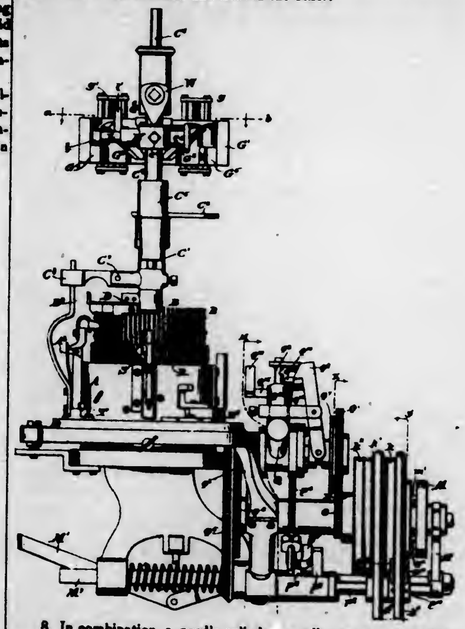
4. In a circular-knitting machine, in combination, a needle-cylinder, a cam-cylinder, needle-picking mechanism, substantially as described, adapted to be connected with said cam-cylinder, and mechanism, substantially as described, to rotate said cam-cylinder first in one direction and then in the other.



5. In a circular-knitting machine, in combination, a needle-cylinder, needles supported within said needle-cylinder, a cam-cylinder, needle-picking mechanism, substantially as described, adapted to be connected with said cam-cylinder, a shaft, pulleys k k' k^2 upon said shaft, a sleeve connected to said pulley k' upon the main shaft, a gear upon the end of said sleeve, intermediate mechanism, substantially as described, between said gear-wheel and the cam-cylinder, a straight belt on the pulley k, and a cross-belt on the pulley k^2, and means, substantially as described, to shift said belts on and off the pulley k', whereby the cam-cylinder is caused to vibrate first in one direction and then in the other.

6. In combination, a needle-cylinder, needles supported within said cylinder, a cam-cylinder, needle-picking mechanism, substantially as described, adapted to be connected with said cam-cylinder, a shaft, pulleys k k' k^2 upon said shaft, a sleeve connected to the pulley k', a gear-wheel at the end of said sleeve, a shaft o^3, a gear-wheel which gears into the gear-wheel on the sleeve, normally running idle on said shaft o^3, a clutch member upon the said shaft, means, substantially as described, to operate said clutch member, and connections between the shaft o^3 and cam-cylinder, a straight belt on the pulley k, and a cross-belt on the pulley k^2, and means, substantially as described, to shift the belts automatically off and on said pulley k', whereby the cam-cylinder is caused to vibrate first in one direction and then in the other.

7. In combination, a needle-cylinder, needles supported within said cylinder, a cam-cylinder, needle-picking mechanism, substantially as described, adapted to be connected with said cam-cylinder, a shaft, pulleys k k' k^2 upon said shaft, a sleeve connected to the pulley k', a gear-wheel at the end of said sleeve, a shaft o^3, a gear-wheel which gears into the gear-wheel on the sleeve, normally running idle on said shaft o^3, a clutch member upon said shaft, means, substantially as described, to operate said clutch member, a gear-wheel O^3 on the other end of the shaft o^3, a gear-wheel O^4 on the main driving-shaft, a bevel-gear on the end of said shaft, a gear on the cam-cylinder in which said gear works, a straight belt on pulley k, and a cross-belt on pulley k^2, and means, substantially as described, to automatically shift said belts on and off the pulley k', whereby the cam-cylinder is caused to vibrate first in one direction and then in the other.



8. In combination, a needle-cylinder, needles supported within said cylinder, a cam-cylinder, needle-picking mechanism, substantially as described, adapted to be connected with said cam-cylinder, a shaft, pulleys k k' k^2 on said shaft, a straight belt on pulley k, a cross-belt on pulley k^2, a sleeve connected to the pulley k', a gear-wheel on said sleeve, intermediate mechanism, substantially as described, between the gear-wheel and cam-cylinder, including a bracket o^{20}, sleeved upon the shaft o^3, an arm p^4, connected to said bracket, belt-shifting arms p^5 and p^{12}, provided with bifurcated ends, the belts running on pulleys k and k^2 being inclosed by said ends of arms p^5 and p^{12}, and intermediate mechanism between the arms p^5 and p^{12} and the arm p^4, whereby when the bracket is vibrated the arms p^5 and p^{12} are operated and the belts shifted on or off the active pulley and the cam-cylinder caused to rotate first in one direction and then in the other.

9. In combination, a needle-cylinder, needles supported within said cylinder, a cam-cylinder, needle-picking mechanism, substantially as described, adapted to be connected with said cam-cylinder, a shaft, pulleys k k' k^2 on said shaft, a straight belt on pulley k, a cross-belt on pulley k^2, a sleeve connected to the pulley, a gear-wheel on said sleeve, intermediate mechanism, substantially as described, between the gear-wheel and cam-cylinder, including a bracket o^{20}, sleeved upon the shaft o^3, and a projection o^{17} on the cam-cylinder, and a projection o^{16}, connected to the bracket o^{20}, an arm p^4, connected to said bracket, belt-shifting arms p^5 and p^{12}, provided with bifurcated ends, the belts running on pulleys k and k^2 being inclosed by said ends of arms p^5 and p^{12}, and intermediate mechanism between the arms p^5 and p^{12} and the arm p^4, whereby the cam-cylinder in its rotation automatically shifts the belts on and off the active pulley and the cam-cylinder caused to vibrate first in one direction and then in the other.

10. In combination, a needle-cylinder, needles supported within said cylinder, a cam-cylinder, needle-picking mechanism, substantially as described, adapted to be connected with said cam-cylinder, a shaft, pulleys k k' k^2 upon said shaft, a sleeve connected to the pulley k', a gear-wheel at the end of said sleeve, a shaft o^3, a gear-wheel which gears into the gear-wheel on the sleeve, normally running idle on said shaft o^3, a bracket o^{20} upon said shaft o^3, a clutch member upon said shaft, gearing between the shaft o^3 and cam-cylinder, a straight belt on the pulley k, and a cross-belt on the pulley k^2, a lever o^8 for said clutch member, a spring-actuated plunger o^9, an arm o^{10} of said plunger, which normally rests against lever o^8 and holds said clutch member out of engagement, a projecting lug o^{15}, connected to the plunger o^9, and a projection o^{17} on the cam-cylinder, said projecting lug o^{15} being in the path of movement of the projection o^{17} on the cam-cylinder when the clutch member is in engagement, a stop o^{13}, normally in connection with said plunger o^9, and connections, substantially as described, between said bracket o^{20} and the said belts.

11. In combination, a needle-cylinder, needles supported within said cylinder, a cam-cylinder, needle-picking mechanism, substantially as described, adapted to be connected with said cam-cylinder, a shaft, pulleys k k' k^2 upon said shaft, a sleeve connected to the pulley k', a gear-wheel at the end of said sleeve, a shaft o^3, a gear-wheel which gears into the gear-wheel on the sleeve, normally running idle on said shaft o^3, a bracket o^{20}, sleeved upon said shaft o^3, an arm p^4, connected to said bracket, arms p^5 and p^{12}, provided with bifurcated ends, the belts surrounding the pulleys k k^2 being inclosed by said ends of arms p^5 and p^{12}, connections, substantially as described, between the arm p^4 and arms p^5 and p^{12}, a clutch member upon said shaft o^3, a straight belt on the pulley k, and a cross-belt on the pulley k^2, a lever o^8, a spring-actuated plunger o^9, an arm o^{10} of said plunger, which normally rests against said lever o^8 and holds said clutch member out of engagement, a projecting lug o^{15}, connected to the plunger o^9, and a projection o^{17} on the cam-cylinder, said projecting lug o^{15} being in the path of movement of the projection o^{17} on the cam-cylinder when the clutch is in engagement, a stop o^{13}, normally in connection with said plunger o^9, a gear-wheel o^5 on the other end of said shaft o^3, a gear-wheel o^4 on the shaft A′, a bevel-gear o^6 on said shaft A′, and a gear o^7 on the cam-cylinder, whereby the cam-cylinder is caused to vibrate first in one direction and then in the other.

12. In combination, a needle-cylinder, needles supported within said cylinder, a cam-cylinder, needle-picking mechanism, substantially as described, adapted to be connected with said cam-cylinder, a shaft, pulleys k k' k^2 upon said shaft, a sleeve connected to the pulley k', a gear-wheel at the end of said sleeve, a shaft o^3, a gear-wheel which gears into the gear-wheel on the sleeve, normally running idle on said shaft o^3, a clutch member upon said shaft, gearing between the shaft o^3 and cam-cylinder, a straight belt on the pulley k, and a cross-belt on the pulley k^2, the lever o^8 for said clutch member, a spring-actuated plunger o^9, and arm o^{10} of said plunger, which normally rests against said lever o^8 and holds said clutch member out of engagement, a projecting lug o^{15}, connected to the plunger o^9, and a projection o^{17} on the cam-cylinder, said projecting lug o^{15} being in the path of movement of projection o^{17} on the cam-cylinder when the clutch is in engagement, a stop o^{13}, normally in connection with said plunger o^9, a bracket o^{20}, sleeved upon said shaft o^3, a lever p^4, connected to said bracket, belt-shifting arms p^5 and p^{12}, provided with bifurcated ends which engage the straight and cross belts, and intermediate connections between the arms p^5 and p^{12} and the lever p^4, whereby the cam-cylinder is caused to vibrate first in one direction and then in the other.

13. In combination, a needle-cylinder, needles supported within said cylinder, a cam-cylinder, needle-picking mechanism, substantially as described, adapted to be connected with said cam-cylinder, a shaft, pulleys k k' k^2 on said shaft, a straight belt on pulley k, a cross-belt on pulley k^2, a sleeve connected to the pulley k', a gear-wheel on said sleeve, intermediate mechanism, substantially as described, between the gear-wheel and cam-cylinder, including a bracket o^{20}, mounted upon the shaft o^3, a plate P, attached to said bracket, an arm p^4, attached to said plate, a beat arm p^3, a plunger p^9, dogs p^6 and p^7, connected to said plunger p^9, between which said beat arm rests, belt-shifting arms p^5 and p^{12}, provided with bifurcated ends which engage the straight and cross belts, and gearing between the cam-cylinder and the shaft o^3, whereby the cam-cylinder is caused to vibrate first in one direction and then in the other.

14. In combination, a needle-cylinder, needles supported within said cylinder, a cam-cylinder, needle-picking mechanism, substantially as described, adapted to be connected with said cam-cylinder, a shaft, pulleys k k' k^2 upon said shaft, a sleeve connected to the pulley k', a gear-wheel at the end of said sleeve, a shaft o^3, a gear-wheel which gears into the gear-wheel on the sleeve, normally running idle on said shaft o^3, a clutch member upon said shaft, gearing between the shaft o^3 and cam-cylinder, a straight belt on the pulley k, and a cross belt on the pulley k^2, a lever o^8, connected to said clutch member, a spring-actuated plunger o^9, an arm o^{10} of said plunger, which normally rests against said lever o^8 and holds said clutch member out of engagement, a projecting lug o^{15}, connected to the plunger o^9, and a projection o^{17} on the cam-cylinder, said projecting lug o^{15}, being in the path of movement of projection o^{17} on the cam-cylinder when the clutch is in engagement, a stop o^{13}, normally in connection with said plunger o^9, a bracket o^{20}, adapted to vibrate, a plate P, attached to said bracket, an arm p^4, attached to said plate, a beat arm p^3, a plunger p^9, dogs p^6 and p^7, connected to said plunger p^9, between which said beat arm rests, and belt-shifting arms p^5 and p^{12}, connected to said plunger, said arms being provided with bifurcated ends which engage the straight and cross belts, whereby the cam-cylinder is caused to vibrate first in one direction and then in the other.

15. In combination, a needle-cylinder, needles supported within said needle-cylinder, a cam-cylinder, needle-picking mechanism, substantially as described, adapted to be connected with said cam-cylinder, a shaft, pulleys k k' k^2 upon said shaft, a sleeve connected to the pulley k', a gear-wheel at the end of said sleeve, a shaft o^3, a gear-wheel, which gears into the gear-wheel on the sleeve, normally running idle on said shaft o^3, a clutch upon said shaft, a straight belt on the pulley k, and a cross-belt on the pulley k^2, a lever o^8, a spring-actuated plunger o^9, an arm o^{10} of said plunger, which normally rests against said lever o^8 and holds said clutch member out of engagement, a projecting lug o^{15}, connected to the plunger o^9, and a projection o^{17} on the cam-cylinder, said projecting lug o^{15} being in the path of movement of projection o^{17} on cam-cylinder when the clutch is in engagement, a stop o^{13}, normally in connection with said plunger o^9, a bracket o^{20}, mounted upon said shaft o^3, a plate P, attached to said bracket, an arm p^4, attached to said plate, a beat arm p^3, a plunger p^9, dogs p^6 and p^7, connected to said plunger p^9, between which said beat arm rests, belt-shifting arms p^5 and p^{12}, connected to said plunger, said arms being provided with bifurcated ends which engage the straight and cross belts, a gear-wheel on the other end of said shaft o^3, a gear-wheel o^4 on the shaft A′, a bevel-gear o^6 on said shaft A′, and a gear o^7 on the cam-cylinder, whereby the cam-cylinder is caused to vibrate first in one direction and then in the other.

16. In combination, a needle-cylinder, needles supported within said cylinder, a cam-cylinder, needle-picking mechanism, substantially as described, adapted to be connected with said cam-cylinder, a shaft, pulleys k k' k^2 on said shaft, a straight belt on pulley k, a cross-belt on pulley k^2, a sleeve connected to the pulley k', a gear-wheel on said sleeve, intermediate mechanism, substantially as described, between the gear-wheel and cam-cylinder, including a bracket o^{20}, mounted on the shaft o^3, a pawl p', connected to said bracket, a toothed wheel p^8, on which said pawl rests, a spring-seated frame on the back of said wheel, a pin X′ on said spring-seated frame, and an arm p, connected to said bracket, having the pin g, and devices, substantially as described, between the bracket o^{20} and the belts, whereby the cam-cylinder is caused to vibrate first in one direction and then in the other.

17. In combination, a needle-cylinder, needles supported within said cylinder, a cam-cylinder, needle-picking mechanism, substantially as described, adapted to be connected with said cam-cylinder, a shaft, pulleys k k' k^2 on said shaft, a straight belt on pulley k, a cross-belt on pulley k^2, a sleeve connected to the pulley k', a gear-wheel on said sleeve, intermediate mechanism, substantially as described, between the gear-wheel and cam-cylinder, including a bracket o^{20}, mounted on the shaft o^3, an arm p^4, connected to said bracket, belt-shifting arms p^5 and p^{12}, provided with bifurcated ends, the belts running on pulleys k and k^2 being engaged by said ends of arms p^5 and p^{12}, and intermediate mechanism between the arms p^5 and p^{12} and the arm p^4, whereby when the bracket is vibrated the arms p^5 and p^{12} are operated and the belts shifted off or on the active pulley, a pawl p', connected to said bracket, a toothed wheel p^8, on which said pawl rests, a spring-seated frame on the back of said wheel, and a pin X′ on said spring-seated frame, and an arm p, connected to said bracket, having the pin g, whereby said cam-cylinder is caused to vibrate first in one direction and then in the other.

18. In combination, a needle-cylinder, needles supported within said cylinder, a cam-cylinder, needle-picking mechanism, substantially as described, adapted to be connected with said cam-cylinder, a shaft, pulleys k k' k^2 on said shaft, a straight belt on pulley k, a cross-belt on pulley k^2, a sleeve connected to the pulley, a gear-wheel on said sleeve, intermediate mechanism, substantially as described, between the gear-wheel and cam-cylinder, including a bracket o^{20}, mounted on the shaft o^3, an arm p^4, connected to said bracket, belt-shifting arms p^5 and p^{12}, provided with bifurcated ends, the belts running on pulleys k and k^2 being engaged by said ends of arms p^5 and p^{12}, and intermediate mechanism between the arms p^5 and p^{12} and the arm p^4, a projection o^{17} on the cam-cylinder, and a projection o^{16}, connected to the bracket o^{20}, a pawl p', connected to said bracket, a toothed wheel p^8, on which said pawl rests, a spring-seated frame on the back of said wheel, a pin X′ on said spring-seated frame, and an arm p, connected to said bracket, having the pin g, whereby the cam-cylinder is caused to vibrate first in one direction and then in the other.

19. In combination, a needle-cylinder, needles supported within said cylinder, a cam-cylinder, needle-picking mechanism, substantially as described, adapted to be connected with said cam-cylinder, a shaft, pulleys k k' k^2 on said shaft, a straight belt on pulley k, a cross-belt on pulley k^2, a sleeve connected to the pulley k', a gear-wheel on said sleeve, a shaft o^3, a gear-wheel normally running idle on said shaft, which gears into the wheel on the sleeve, and connections, substantially as described, between said shaft and the cam-cylinder, a bracket o^{20}, mounted on the shaft o^3, an arm p^4, connected to said bracket, belt shifting arms p^5 and p^{12}, provided with bifurcated ends, the belts running on pulleys k and k^2 being engaged by said ends of arms p^5 and p^{12}, and intermediate

mechanism between the arms p^9 and p^{10} and the arm p^4, whereby when the bracket is vibrated the arms p^9 and p^{10} are operated and the belts shifted on or off the active pulley, the clutch member mounted on the shaft o^3, a lever o^5, connected to said clutch member, a spring-actuated plunger o^6, an arm o^{10} of said plunger, which normally rests against said lever o^5 and holds said clutch member out of engagement, a stop o^{12}, normally in connection with said plunger o^6, a projecting lug o^{16}, connected to the plunger o^6, and a projection o^{17} on the cam-cylinder, said projecting lug o^{16} being in the path of movement of the projection o^{17} on the cam-cylinder when the clutch is in operation, a pawl p', connected to said bracket, a toothed wheel p^3, on which said pawl rests, a spring-seated frame on the back of said wheel, a lug X' on said spring-seated frame, and an arm p, connected to said bracket, having the pin q, whereby the cam-cylinder is caused to vibrate first in one direction and then in the other.

20. In combination, a needle-cylinder, needles supported within said cylinder, a cam-cylinder, needle-picking mechanism, substantially as described, adapted to be connected with said cam-cylinder, a shaft, pulleys k k' k^2 upon said shaft, a sleeve connected to the pulley k', a gear-wheel at the end of said sleeve, a shaft o^3, a gear-wheel which gears into the gear-wheel on the sleeve, normally running idle on said shaft o^3, a clutch member upon said shaft, gearing between the shaft o^3 and cam-cylinder, a straight belt on the pulley k, and a cross-belt on the pulley k^2, a lever o^5, connected to said clutch member, a spring-actuated plunger o^6, an arm o^{10} of said plunger, which normally rests against said lever o^5 and holds said clutch member out of engagement, a stop o^{12}, normally in connection with said plunger o^6, a projecting lug o^{16}, connected to the plunger o^6, and a projection o^{17} on the cam-cylinder, said projecting lug o^{16} being in the path of movement of the projection o^{17} on the cam-cylinder when the clutch is connected, a bracket o^{20}, mounted on said shaft o^3, a pawl p', connected to said bracket, a toothed wheel p^3, in which said pawl rests, a spring-seated frame on the back of said wheel, a pin X' on said spring-seated frame, and an arm p, connected to said bracket, having the pin q, and devices, substantially as described, between the bracket o^{20} and the belts.

21. In combination, a needle-cylinder, needles supported within said cylinder, a cam-cylinder, needle-picking mechanism, substantially as described, adapted to be connected with said cam-cylinder, a shaft, pulleys k k' k^2 upon said shaft, a sleeve connected to the pulley k', a gear-wheel at the end of said sleeve, a shaft o^3, a gear-wheel which gears into the gear-wheel on the sleeve, normally running idle on said shaft o^3, a clutch member upon said shaft, a straight belt on the pulley k, and a cross-belt on the pulley k^2, a lever o^5 for said clutch member, a spring-actuated plunger o^6, an arm o^{10} of said plunger, which normally rests against said lever o^5 and holds said clutch member out of engagement, a stop o^{12}, normally in connection with said plunger o^6, a gear-wheel o^3 on the other end of said shaft o^3, a gear-wheel o^4 on the shaft A', a bevel-gear o^5 on said shaft A', and a gear o^8 on the cam-cylinder, a bracket o^{20}, mounted upon the shaft o^3, a lever p^4, connected to said bracket, belt-shifting arms p^9 and p^{10}, provided with ends which surround the straight and cross belts, intermediate connection between the arms p^9 and p^{10} and the lever p^4, a pawl p', connected to said bracket, a toothed wheel p^3, on which said pawl rests, a spring-seated frame on the back of said wheel, a pin X' on said spring-seated frame, and an arm p, connected to said bracket, having the pin q.

22. In the automatic picking mechanism of a circular-knitting machine, in combination, a spring-actuated plunger, a needle-picker loosely connected to said plunger, a cam-rod connected to said plunger, a roller at the end of said cam-rod, a cam-frame, and spring-seated cams in said frame.

23. In the automatic picker mechanism of a circular-knitting machine, in combination, a spring-actuated plunger, a needle-picker journaled upon said plunger, said needle-picker being provided with the jaws d and d' and plate d^3, and means, substantially as described, to receive and elevate said plunger.

24. In the automatic picker mechanism of a circular-knitting machine, in combination, a spring-actuated plunger and a needle-picker journaled upon said plunger, said needle-picker being provided with the jaws d and d' and plate d^3, said plate d^3 being adapted to slide upon and between said jaws d d'.

25. In the automatic picking mechanism of a circular-knitting machine, in combination, a spring-actuated plunger and a needle-picker loosely connected to said plunger, a cam-rod connected to said plunger, a roller at the end of said cam-rod, a cam-frame, and spring-seated cams in said frame, said needle-picker being provided with the jaws d d' and plate d^3.

26. In the automatic picking mechanism of a circular-knitting machine, in combination, a spring-plunger, a needle-picker loosely connected to said plunger, a cam-rod connected to said plunger, a roller at the end of said cam-rod, a cam-frame, and spring-seated cams in said frame, said needle-picker being provided with the jaws d d' and plate d^3, said plate d^3 being adapted to slide upon and between said jaws d and d'.

27. In the automatic picking mechanism of a circular-knitting machine, in combination, a spring-actuated plunger, a needle-picker loosely connected to said plunger, a cam-rod connected to said plunger, a roller at the end of said cam-rod, a cam-frame, and spring-seated cams in said frame, a cam-cylinder, and means, substantially as described, to connect the needle-picking mechanism with the cam-cylinder.

28. In the automatic picker mechanism of a circular-knitting machine, in combination, a spring-actuated plunger, a needle-picker journaled upon said plunger, said needle-picker being provided with the jaws d and d' and plate d^3, said plate d^3 being adapted to slide upon and between said jaws d d', a cam-cylinder, and means, substantially as described, to connect the needle-picking mechanism with the cam-cylinder.

29. In the automatic picker mechanism of a circular-knitting machine, in combination, a spring-actuated plunger, a needle-picker loosely connected to said plunger, a cam-rod connected to said plunger, a roller at the end of said cam-rod, a cam-frame, and spring-seated cams in said frame, said needle-picker being provided with the jaws d d' and plate d^3, a cam-cylinder, and means, substantially as described, to connect the needle-picking mechanism with the cam-cylinder.

30. In the automatic picking mechanism of a circular-knitting machine, in combination, a spring-actuated plunger, a needle-picker loosely connected to said plunger, a cam-rod connected to said plunger, a roller at the end of said cam-rod, a cam-frame, and spring-seated cams in said frame, said needle-picker being provided with the jaws d and d' and plate d^3, said plate d^3 being adapted to slide upon and between said jaws d and d', a cam-cylinder, and means, substantially as described, to connect the needle picking mechanism with the cam-cylinder.

31. In the automatic picking mechanism of a circular-knitting machine, in combination, a spring actuated plunger, a needle-picker loosely connected to said plunger, a cam-rod connected to said plunger, a roller at the end of said cam-rod, a cam-frame, and spring-seated cams in said frame, a pivoted arm, arm C^3, connected to said plunger, a cam-cylinder, a projection on said cam-cylinder, which said pivoted arm surrounds.

32. In the automatic picking mechanism of a circular-knitting machine, in combination, a spring-actuated plunger, a needle-picker journaled upon said plunger, said needle-picker being provided with the jaws d and d' and plate d^3, said plate d^3 being adapted to slide upon and between said jaws d d', a pivoted arm, arm C^3, connected to said plunger, a cam-cylinder, and a projection on said cam-cylinder, which said pivoted arm surrounds.

33. In the automatic picking mechanism of a circular-knitting machine, in combination, a spring-actuated plunger, a needle-picker loosely connected to said plunger, a cam-rod connected to said plunger, a roller at the end of said cam-rod, a cam-frame, and spring-seated cams in said frame, said needle-picker being provided with the jaws d d' and plate d^3, a pivoted arm, arm C^3, connected to said plunger, a cam-cylinder, and a projection on said cam-cylinder, which said pivoted arm surrounds.

34. In the automatic picking mechanism of a circular-knitting machine, in combination, a spring-actuated plunger, a needle-picker loosely connected to said plunger, a cam-rod connected to said plunger, a roller at the end of said cam-rod, a cam-frame, spring-seated cams in said frame, said needle-picker being provided with the jaws d d' and plate d^3, said plate d^3 being adapted to slide upon and between said jaws d and d', a pivoted arm, arm C^3, connected to said plunger, a cam-cylinder, and a projection on said cam cylinder, which said pivoted arm surrounds.

35. In the automatic picker mechanism of a circular-knitting machine, in combination, a spring-seated plunger C^3, a cam-rod L, attached to said plunger, provided at one end with a roller l, a cam-frame G', cams G^2 G^3, secured in spring-seated guides in said frame, a needle-picker loosely secured to said plunger, a cam-cylinder, and means, substantially as described, to connect said plunger and the cam-cylinder.

36. In the automatic picker mechanism of a circular-knitting machine, in combination, a spring-seated plunger, guides for said plunger, a cam-rod L, attached to said plunger, provided at one end with projection l', a cam W, secured to the upper guide C^3, a needle-picker loosely connected to said plunger, a cam-cylinder, and means, substantially as described, to connect the plunger and cam-cylinder.

37. In the automatic picker mechanism of a circular-knitting machine, in combination, a spring-seated plunger C^3, a hollow arm in the upper end of said plunger, a cam-rod L, which rests in said hollow arm, a roller at one end of said rod, a cam frame G, cams G^2 and G^3, secured on spring-seated guides in said frame, said roller striking said cams G^2 G^3 in its movement, a needle-picker loosely secured to said plunger, a cam-cylinder, and means, substantially as described, to connect said plunger and the cam-cylinder.

38. In the automatic picker mechanism of a circular-knitting machine, in combination, a spring-seated plunger C^3, guides C^3, in which said plunger works, a hollow arm in the upper end of said plunger, a cam-rod L, which rests in said hollow arm, a projection on said rod, a cam W, secured to the upper guide C^3, said projection on the rod in its movement striking said cam W, a needle-picker loosely secured to said plunger, a cam-cylinder, and means, substantially as described, to connect said plunger and the cam-cylinder.

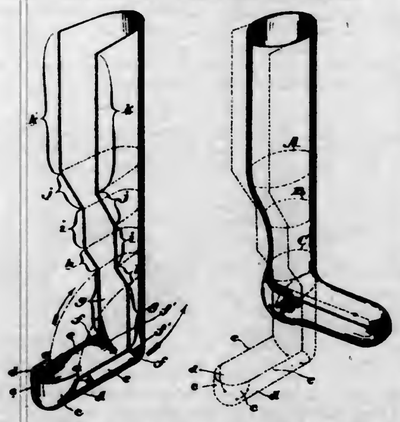
39. In combination, the needle-picker mechanism, a rod C^{12}, upon which said mechanism is journaled, a plate C^3, connected to said picker mechanism journaled upon said rod C^{12}, detents in said plates C^3, and a spring-arm projecting from the main frame of the machine and adapted to rest in the detents in the plate C^3.

40. In a circular-knitting machine, in combination, a cam-cylinder, a needle cylinder, needles held in said cylinder, a plunger R, guided in bracket r, a spring r^2, against which said plunger rests, a leaf-spring r', which normally holds said plunger down, and a depressor S, attached to said plunger, which depressor S when the plunger is forced down is within the cam-cylinder and in the travel of the cylinder strikes the shanks of the needles.

41. In a circular-knitting machine, in combination, a cam cylinder, a needle-cylinder, needles held in said cylinder, a guide r, secured to the cam-cylinder, a plunger R in said guide, a spring r^2, against which said plunger rests, a depressor S, attached to said plunger, which depressor S when the plunger is forced down is within the cam-cylinder and in the travel of said cylinder strikes the shanks of the needles, said plunger having a detent r^3, a leaf-spring r', and a projection r^3 on said spring adapted to rest in said detent in the plunger when the plunger is pressed down.

42. In a circular-knitting machine, in combination, a cam-cylinder, a needle-cylinder, needles held in said cylinder, a guide r, secured to the cam-cylinder, a plunger R in said guide, a spring r^2, against which said plunger rests, a depressor S, attached to the said plunger, which depressor S when the plunger is forced down is within the cam-cylinder and in the travel of the cylinder strikes the shanks of the needles, said plunger having a detent r^3, a leaf spring r', a projection r^3 on said spring adapted to rest in said detent when the plunger is pressed down, and a projection T on the frame of the machine in the line of travel of the leaf-spring r', whereby if the plunger R is down when the leaf-spring strikes the projection T the projection r^3 is released from the detent in the plunger R.

488,955. METHOD OF KNITTING STOCKINGS. William Diebel, Philadelphia, Pa., assignor to Frederick Buckbalter and Victor C. Driesbach. Filed Apr. 23, 1890. Serial No. 349,149. (No model.)



Claim.—1. The hereinbefore-described method of forming a stocking, which consists in knitting the heel in the ordinary manner, then knitting one-half the foot of the same width throughout, then forming the toe in the ordinary manner, then knitting a straight portion of the same width to conform to the half of the foot already formed, then widening out the knitting to equal the number of stitches in the heel, then knitting the goods straight to form the ankle, then increasing the width of the goods gradually to form the calf of the leg, then knitting the goods of the same width to form the leg, and seaming together the edges of the web.

2. The hereinbefore-described method of forming a stocking, which consists in knitting the heel in the ordinary manner, then knitting one-half the foot of the same width throughout, then forming the toe in the ordinary manner, then knitting a straight portion of the same width to conform to the half of the foot already formed, then widening out the knitting to equal the number of stitches in the heel, then knitting the ankle and calf portions and in the knitting widening the fabric to the greatest width of the calf, then knitting the goods of the same width to form the leg, and seaming together the edges of the web.

488,956. MACHINE FOR REDUCING BRASSES OF JOURNALS. Edward Ferrin, Alta, Cal., assignor of one-half to Nelson A. Jones, same place. Filed Oct. 14, 1891. Serial No. 408,730. (No model.)

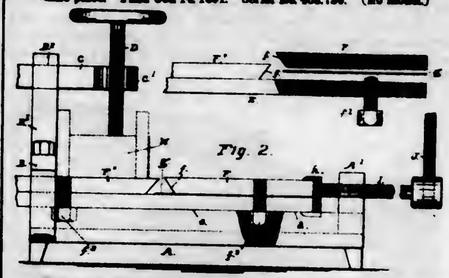
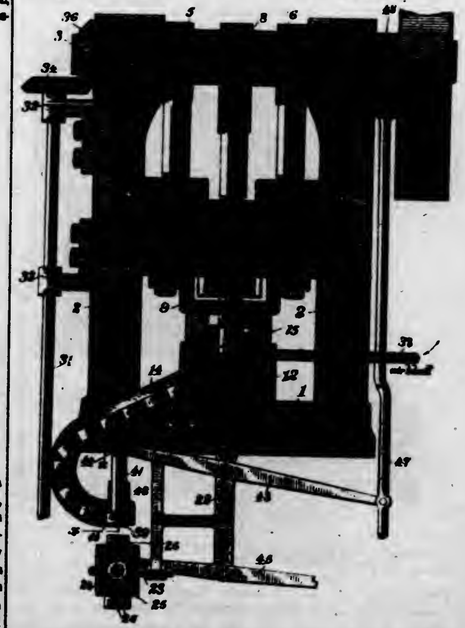


Fig. 2.

Claim.—1. The machine for reducing journal-brasses herein described, consisting of a suitable bed having at one end a cross-head B and a supporting-standard B' for a clamp-screw and at the other end a post A' for a feed-screw I, a sliding plate E, having a planer-iron F and a plate $F^\times$ to hold the brass to the cutting-edge of the planer, and the adjustable arm C and clamp-screw D, combined for operation as set forth.

2. In a machine for reducing brasses, the combination, with the stationary bed having a cross-head and means for holding the brass against vertical movement at the cross-head, of the sliding plate E, having interchangeable planer-irons F $F^\times$ with beveled edges, and a feed-screw to move said plate, substantially as described.

488,957. MACHINE FOR MAKING PAPER BOXES. Jonathan Goodrey, Bridgeport, Conn., assignor of one-half to W. R. Ballin, same place. Filed Nov. 5, 1891. Serial No. 410,990. (No model.)

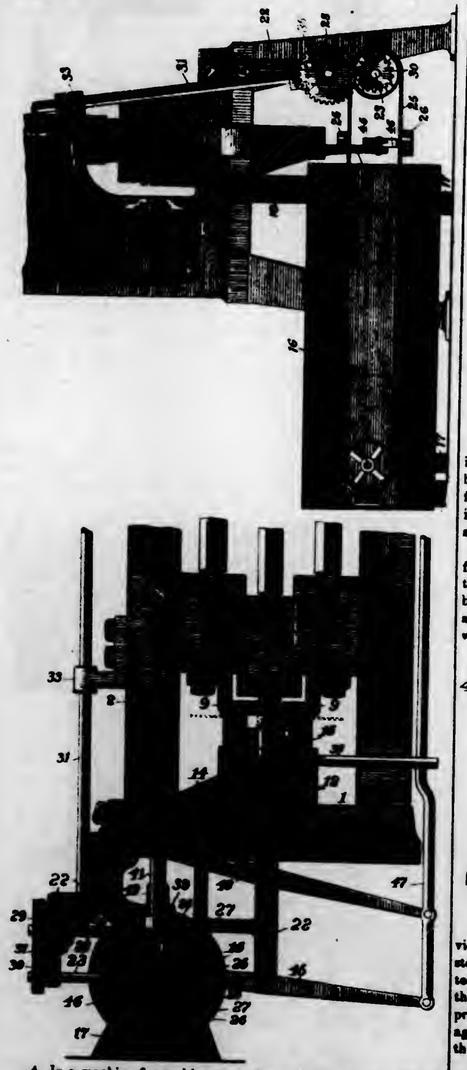


Claim.—1. In a machine for making paper boxes, the combination, with suitable dies for forming the boxes from a moist strip of paste or straw board, of a drying-drum, an endless apron traveling in said drum and provided with blocks for the reception of the moist boxes, means for depositing said boxes successively upon said blocks, and means for stripping said boxes from said blocks, substantially as set forth.

2. In a machine for making paper boxes, the combination of suit-

able dies for forming the boxes from moist pasteboard, drying-forms beneath said dies, means for forcing said boxes while moist upon said forms prior to drying, and means for stripping said boxes from said forms after the completion of the drying, substantially as set forth.

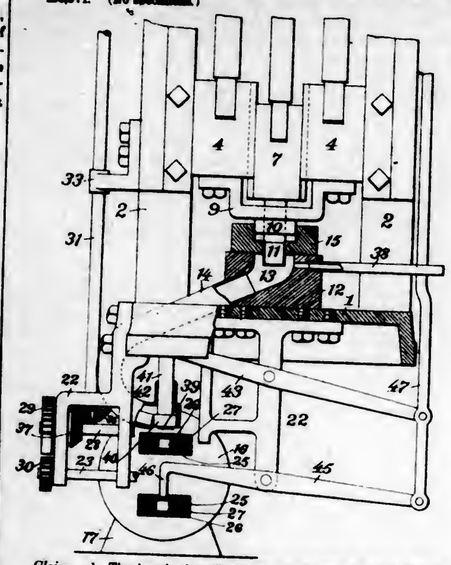
3. In a machine for making paper boxes from moist pasteboard, the combination, with suitable dies whereby the boxes are shaped, of drying-forms, means for automatically bringing said forms to a predetermined position, instrumentalities for depositing the boxes while moist on said forms preparatory to drying, and instrumentalities for stripping said boxes from said forms after drying, substantially as set forth.



4. In a machine for making paper boxes from moist pasteboard, the combination of suitable dies for shaping the boxes, automatically-controlled drying-forms, and appliances for forcing the boxes while moist successively upon said forms preparatory to drying, substantially as shown and described.

5. The combination of the shaping-dies, the apron adapted to travel within the drying-drum, the forms carried at regular intervals by said apron, the chute whereby the boxes are successively delivered above the forms, the reciprocatory plunger whereby the boxes are forced upon said forms, and the reciprocatory stud whereby the boxes are stripped from said forms, substantially as and for the purposes set forth.

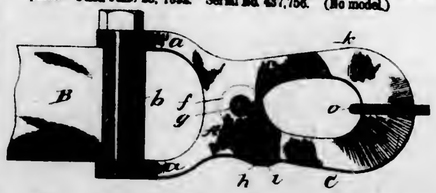
488,958. PROCESS OF MAKING BOXES FROM PASTE OR STRAW BOARD. JONATHAN GODFREY, Bridgeport, Conn., assignor of one-half to W. H. Baillie, same place. Filed Apr. 8, 1892. Serial No. 428,371. (No specimens.)



Claim.—1. The herein-described improvement in the art of making boxes from moist pasteboard, which consists in cupping up the boxes in the proper shape, transferring said boxes when cupped up onto forms which resist the tendency of the boxes to distort, and then drying the boxes while on such forms without bringing the unsupported surfaces of the boxes into foreign contact, substantially as set forth.

2. The herein-described improvement in the art of making boxes from moist pasteboard, which consists in cupping up the boxes into the proper shape, transferring them onto forms which support the boxes as against lateral distortion, and then passing the forms through a heating-chamber without bringing the boxes into contact with the walls of said chamber, substantially as set forth.

488,959. HARNESS TUG-HOOK. JOHN GREEN, Renovo, Pa., assignor of two-thirds to Samuel M. English and Anders E. Stagren, same place. Filed June 23, 1892. Serial No. 437,756. (No model.)



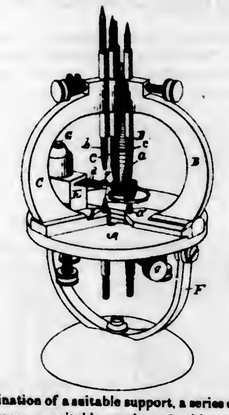
Claim.—A hook consisting of two members, one of which is provided with attaching means, a short arm on its lower side forming a stop or seat for the hook to abut, and a horn on the upper side extending beyond said arm and having an inclined end and a groove therein, the hook member being pivoted thereto on the under side and provided with a vertical stop or seat at its rear end, resting normally against said arm, and a projection on the end of the beak to engage the groove in said horn.

488,960. WATCHMAKER'S DEPTHING AND ADJUSTING TOOL. GEORGE W. HASKIN, Sturgis, Mich., assignor of one-half to Henry Baumgartel, same place. Filed Jan. 13, 1892. Serial No. 417,836. (No model.)

Claim.—1. A watch-tool for the purpose described, comprising a suitable support, a series of upright radial arms mounted thereon, a suitable number of said arms being adjustable inward and outward radially, said arms bearing a series of vertically-adjustable and reversible depthing-pins, one of the pins in the upper end of one of the arms being angled at the lower end, forming a step with a concavity in the upper surface of said step directly beneath the point of the other depthing-pin in said arm, for the purpose stated, substantially as set forth.

2. The combination of a suitable support, a series of upright radial arms mounted thereon, a suitable number of said arms being adjustable inward and outward radially, said arms bearing a series of vertically-adjustable and reversible depthing-pins, and clamp-arms provided with upright banking-pin projections, said clamp-arms being laterally adjustable in relation to each other and to the watch-lever and also adjustable endwise, substantially as set forth.

3. The combination of a suitable support, a series of upright radial arms mounted thereon, a suitable number of said arms being adjustable inward and outward radially, said arms bearing a series of vertically-adjustable and reversible depthing-pins, and clamp-arms provided with upright banking-pin projections, said clamp-arms being laterally adjustable in relation to each other and to the watch-lever, and also adjustable endwise, a radially-adjustable block in which the rear end of the clamping-arms are pivoted, a shaft transversely through said block and endwise adjustable therein, said block having a transverse slot above said shaft, said shaft being provided with upright projections passing up through said slot and forming pivots to the clamping-arms, a spring in said block pressing against the outside of each clamping-arm, a vertically-adjustable pin in said block provided with a point at the lower end, adapted to be inserted between the clamping-arms for opening them and withdrawn to allow them to close, substantially as set forth.



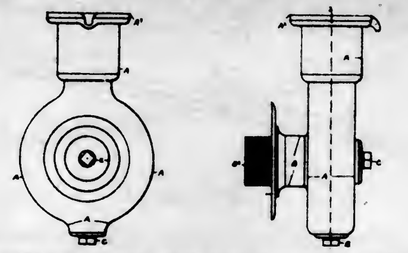
4. The combination of a suitable support, a series of upright radial arms mounted thereon, a suitable number of said arms being adjustable inward and outward radially, said arms bearing a series of vertically-adjustable and reversible depthing-pins and clamp-arms provided with upright banking-pin projections, said clamp-arms being laterally adjustable in relation to each other and to the watch-lever, and also adjustable endwise, a radially-adjustable block in which the rear ends of the clamping-arms are pivoted, a shaft transversely through said block and endwise adjustable therein, said block having a transverse slot above said shaft, said shaft being provided with upright projections passing up through said slot and forming pivots to the clamping-arms, a spring in said block pressing against the outside of each clamping-arm, a vertically-adjustable pin in said block provided with a point at the lower end, adapted to be inserted between the clamping-arms for opening them, said pin being provided at the rear side with a funnel-hole and an adjusting set-screw inserted into the block and provided with a pointed end adapted to enter the funnel-hole to lower said pin to permit the clamp-arms to approach each other, substantially as set forth.

5. A watch-tool for the purpose described, comprising a suitable support, said support being adapted to be tilted from a horizontal to different oblique angles, and vice versa, a series of upright radial arms mounted thereon, a suitable number of said arms being adjustable inward and outward radially, said arms bearing a series of vertically-adjustable and reversible depthing-pins, substantially as set forth.

6. The combination of a frame-support, a plate pivotally attached to said frame-support in a manner to be tilted from a horizontal to different oblique angles, and vice versa, upright arms on said plate, a suitable number of which arms are radially-adjustable inward and outward, and a series of depthing-pins vertically adjustable and reversible in said arms, substantially as set forth.

7. A watch-tool for the purpose described, comprising a suitable support, a series of upright radial arms mounted thereon, a suitable number of said arms being adjustable inward and outward radially, said arms bearing a series of vertically-adjustable and reversible depthing-pins, in combination with a stand for temporarily placing in the tool to support the watch-plate beneath the upper depthing-pins, substantially as set forth.

488,961. TRAP FOR SEWER, &c. DENNIS A. HOBBAN, Boston, Mass. Filed June 2, 1890. Serial No. 353,951. (No model.)



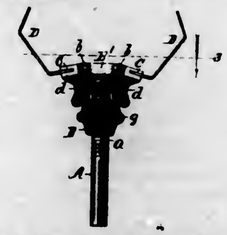
Claim.—1. In a trap, a casing having an outlet-chamber extending horizontally across it from side to side and provided with a discharge-pipe projecting from one side of said casing, combined with an inlet chamber or passage encircling said outlet-chamber and communicating with the upper portion of the same and with the inlet-pipe, substantially as described, for the purpose specified.

2. In a trap, a casing having an outlet-chamber extending horizontally across it from side to side and provided with a discharge-pipe projecting from one side of said casing, combined with an inlet chamber or passage encircling said outlet-chamber and communicating with the upper portion of the same and with the inlet-pipe and a clean-out aperture and cap located at one end of said outlet-chamber and opposite to and in line with its discharge-pipe, substantially as described, for the purpose specified.

488,962. PROCESS OF SMELTING COMPLEX SILVER ORES. CHRISTOPHER JAHN, Swansea, England. Filed Aug. 20, 1891. Serial No. 403,239. (No specimens.) Patented in England Aug. 14, 1891, No. 13,740; in France Sept. 20, 1891, No. 216,380, and in Belgium Sept. 28, 1891, No. 96,562.

Claim.—A process for the treatment of a complex silver carrying ore containing zinc blende and galena, consisting of finely crushing the ore, calcining approximately two-thirds of the ore to convert the sulphides into oxides, mixing the calcined with the remaining one-third of the raw ore, and smelting the mixture in a reverberatory furnace upon a bath of lead, a reduction being thus effected by the reaction of the sulphides and oxides upon one another to SO_2 and reduced metals, of which the lead carries down the silver into the said lead bath, and of the other constituents zinc is volatilized and may be collected, while others collect in a slag which can be removed from the surface of the molten bath.

488,963. SHOE-HOLDER. EDWARD LEGER, Chicago, Ill., assignor of one-third to Harry B. Leger, same place. Filed Feb. 16, 1892. Serial No. 421,690. (No model.)



Claim.—In a shoe-holder, the combination of the supporting-stem screw-threaded exteriorly, as at *a*, the head-piece rigidly mounted on the upper end of said stem, the companion plates hinged to opposite sides of said head-piece and provided on the under side with downwardly-projecting lugs, the clamping-jaws secured to the companion plates, and the screw-threaded nut mounted upon and adapted to traverse the threaded portion of the supporting-stem, substantially as and for the purpose set forth.

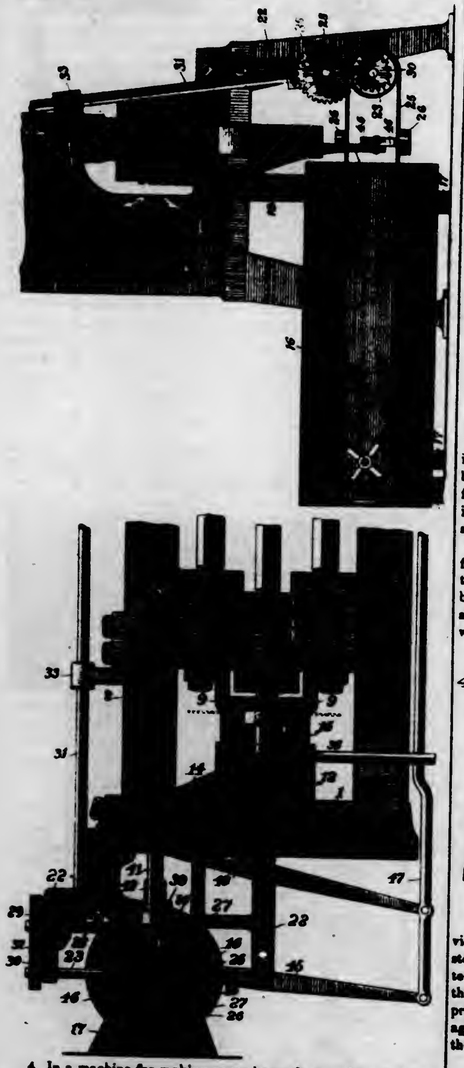
488,964. FROG. HENRY R. LOTHER, Cambridge, Mass., assignor to Barbour, Stockwell & Co., same place. Filed Oct. 19, 1891. Serial No. 408,105. (No model.)

Claim.—1. The herein-described railway-frog, it having its tread formed of rails of ordinary construction bound rigidly together by a body portion cast about them and having formed upon it suitable guards *b'*, substantially as described.

2. The herein-described railway-frog, it having its treads formed

able dies for forming the boxes from moist pasteboard, drying-forms beneath said dies, means for forcing said boxes while moist upon said forms prior to drying, and means for stripping said boxes from said forms after the completion of the drying, substantially as set forth.

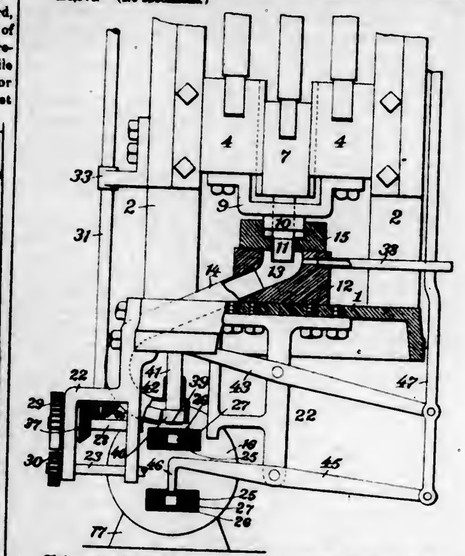
3. In a machine for making paper boxes from moist pasteboard, the combination, with suitable dies whereby the boxes are shaped, of drying-forms, means for automatically bringing said forms to a predetermined position, instrumentalities for depositing the boxes while moist on said forms preparatory to drying, and instrumentalities for stripping said boxes from said forms after drying, substantially as set forth.



4. In a machine for making paper boxes from moist pasteboard, the combination of suitable dies for shaping the boxes, automatically-controlled drying-forms, and appliances for forcing the boxes while moist successively upon said forms preparatory to drying, substantially as shown and described.

5. The combination of the shaping-dies, the apron adapted to travel within the drying-drum, the forms carried at regular intervals by said apron, the chute whereby the boxes are successively delivered above the forms, the reciprocatory plunger whereby the boxes are forced upon said forms, and the reciprocatory stud whereby the boxes are stripped from said forms, substantially as and for the purposes set forth.

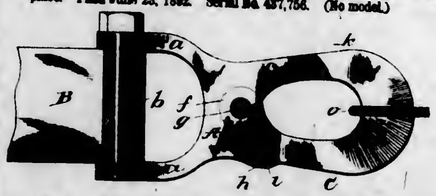
488,958. PROCESS OF MAKING BOXES FROM PASTE OR STRAW BOARD. JONATHAN GOUPEY, Bridgeport, Conn., assignor of one-half to W. B. Ballin, same place. Filed Apr. 2, 1892. Serial No. 428,371. (No specimens.)



Claim.—1. The herein-described improvement in the art of making boxes from moist pasteboard, which consists in capping up the boxes in the proper shape, transferring said boxes when capped up onto forms which resist the tendency of the boxes to distort, and then drying the boxes while on such forms without bringing the unsupported surfaces of the boxes into foreign contact, substantially as set forth.

2. The herein-described improvement in the art of making boxes from moist pasteboard, which consists in capping up the boxes into the proper shape, transferring them onto forms which support the boxes as against lateral distortion, and then passing the forms through a heating-chamber without bringing the boxes into contact with the walls of said chamber, substantially as set forth.

488,959. HARNESS TUG-HOOK. JOHN GREEN, Renovo, Pa., assignor of two-thirds to Samuel M. English and Anders E. Stagren, same place. Filed June 23, 1892. Serial No. 437,756. (No model.)



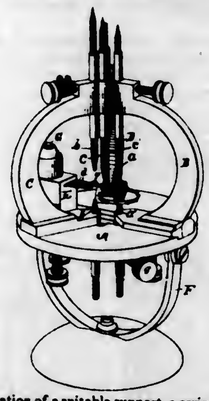
Claim.—A hook consisting of two members, one of which is provided with attaching means, a short arm on its lower side forming a stop or seat for the hook to abut, and a horn on the upper side extending beyond said arm and having an inclined end and a groove therein, the hook member being pivoted thereto on the under side and provided with a vertical stop or seat at its rear end, resting normally against said arm, and a projection on the end of the beak to engage the groove in said horn.

488,960. WATCHMAKER'S DEPTHING AND ADJUSTING TOOL. GEORGE W. HARRIS, Sturgis, Mich., assignor of one-half to Henry Baumgartel, same place. Filed Jan. 13, 1892. Serial No. 417,826. (No model.)

Claim.—1. A watch-tool for the purpose described, comprising a suitable support, a series of upright radial arms mounted thereon, a suitable number of said arms being adjustable inward and outward radially, said arms bearing a series of vertically-adjustable and reversible depthing-pins, one of the pins in the upper end of one of the arms being angled at the lower end, forming a step with a concavity in the upper surface of said step directly beneath the point of the other depthing-pin in said arm, for the purpose stated, substantially as set forth.

2. The combination of a suitable support, a series of upright radial arms mounted thereon, a suitable number of said arms being adjustable inward and outward radially, said arms bearing a series of vertically-adjustable and reversing depthing-pins, and clamp-arms provided with upright banking-pin projections, said clamp-arms being laterally adjustable in relation to each other and to the watch-lever and also adjustable endwise, substantially as set forth.

3. The combination of a suitable support, a series of upright radial arms mounted thereon, a suitable number of said arms being adjustable inward and outward radially, said arms bearing a series of vertically-adjustable and reversible depthing-pins, and clamp-arms provided with upright banking-pin projections, said clamp-arms being laterally adjustable in relation to each other and to the watch-lever, and also adjustable endwise, a radially-adjustable block in which the rear end of the clamping-arms are pivoted, a shaft transversely through said block and endwise adjustable therein, said block having a transverse slot above said shaft, said shaft being provided with upright projections passing up through said slot and forming pivots to the clamping-arms, a spring in said block pressing against the outside of each clamping-arm, a vertically-adjustable pin in said block provided with a point at the lower end, adapted to be inserted between the clamping-arms for opening them and withdrawn to allow them to close, substantially as set forth.



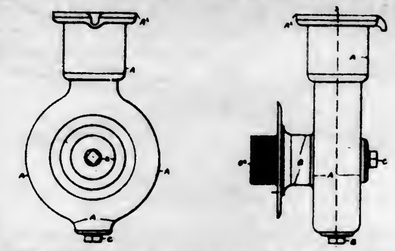
4. The combination of a suitable support, a series of upright radial arms mounted thereon, a suitable number of said arms being adjustable inward and outward radially, said arms bearing a series of vertically-adjustable and reversible depthing-pins and clamp-arms provided with upright banking-pin projections, said clamp-arms being laterally adjustable in relation to each other and to the watch-lever, and also adjustable endwise, a radially-adjustable block in which the rear ends of the clamping-arms are pivoted, a shaft transversely through said block and endwise adjustable therein, said block having a transverse slot above said shaft, said shaft being provided with upright projections passing up through said slot and forming pivots to the clamping-arms, a spring in said block pressing against the outside of each clamping-arm, a vertically-adjustable pin in said block provided with a point at the lower end, adapted to be inserted between the clamping-arms for opening them, said pin being provided at the rear side with a funnel-hole and an adjusting set-screw inserted into the block and provided with a pointed end adapted to enter the funnel-hole to lower said pin to permit the clamp-arms to approach each other, substantially as set forth.

5. A watch-tool for the purpose described, comprising a suitable support, said support being adapted to be tilted from a horizontal to different oblique angles, and vice versa, a series of upright radial arms mounted thereon, a suitable number of said arms being adjustable inward and outward radially, said arms bearing a series of vertically-adjustable and reversible depthing-pins, substantially as set forth.

6. The combination of a frame-support, a plate pivotally attached to said frame-support in a manner to be tilted from a horizontal to different oblique angles, and vice versa, upright arms on said plate, a suitable number of which arms are radially-adjustable inward and outward, and a series of depthing-pins vertically adjustable and reversible in said arms, substantially as set forth.

7. A watch-tool for the purpose described, comprising a suitable support, a series of upright radial arms mounted thereon, a suitable number of said arms being adjustable inward and outward radially, said arms bearing a series of vertically-adjustable and reversible depthing-pins, in combination with a stand for temporarily placing in the tool to support the watch-plate beneath the upper depthing-pins, substantially as set forth.

488,961. TRAP FOR SEWER, &c. DENNIS A. HORGAN, Boston, Mass. Filed June 2, 1890. Serial No. 353,951. (No model.)



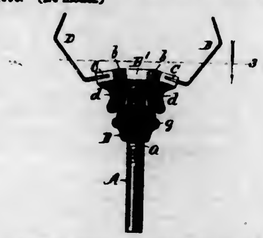
Claim.—1. In a trap, a casing having an outlet-chamber extending horizontally across it from side to side and provided with a discharge-pipe projecting from one side of said casing, combined with an inlet chamber or passage encircling said outlet-chamber and communicating with the upper portion of the same and with the inlet-pipe, substantially as described, for the purpose specified.

2. In a trap, a casing having an outlet-chamber extending horizontally across it from side to side and provided with a discharge-pipe projecting from one side of said casing, combined with an inlet chamber or passage encircling said outlet-chamber and communicating with the upper portion of the same and with the inlet-pipe and a clean-out aperture and cap located at one end of said outlet-chamber and opposite to and in line with its discharge-pipe, substantially as described, for the purpose specified.

488,962. PROCESS OF SMELTING COMPLEX SILVER ORES. CHRISTOPHER JAHNS, Swansea, England. Filed Aug. 20, 1891. Serial No. 403,229. (No specimens.) Patented in England Aug. 14, 1891, No. 16,740; in France Sept. 20, 1891, No. 216,380, and in Belgium Sept. 28, 1891, No. 96,562.

Claim.—A process for the treatment of a complex silver carrying ore containing zinc blende and galena, consisting of finely crushing the ore, calcining approximately two-thirds of the ore to convert the sulphides into oxides, mixing the calcined with the remaining one-third of the raw ore, and smelting the mixture in a reverberatory furnace upon a bath of lead, a reduction being thus effected by the reaction of the sulphides and oxides upon one another to SO_2 and reduced metals, of which the lead carries down the silver into the said lead bath, and of the other constituents zinc is volatilized and may be collected, while others collect in a slag which can be removed from the surface of the molten bath.

488,963. SHOE-HOLDER. EDWARD LIBBY, Chicago, Ill., assignor of one-third to Harry B. Lager, same place. Filed Feb. 16, 1892. Serial No. 421,690. (No model.)

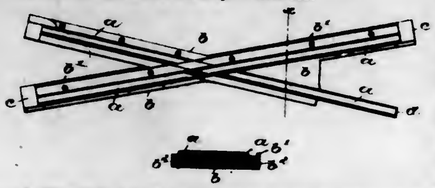


Claim.—In a shoe-holder, the combination of the supporting-stem screw-threaded exteriorly, as at *a*, the head-piece rigidly mounted on the upper end of said stem, the companion plates hinged to opposite sides of said head-piece and provided on the under side with downwardly-projecting lugs, the clamping-jaws secured to the companion plates, and the screw-threaded nut mounted upon and adapted to traverse the threaded portion of the supporting-stem, substantially as and for the purpose set forth.

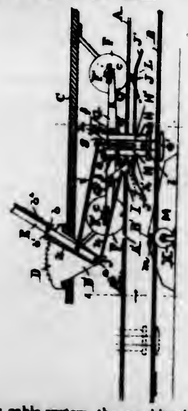
488,964. FROG. HENRY R. LOTHER, Cambridge, Mass., assignor to Barbour, Stockwell & Co., same place. Filed Oct. 19, 1891. Serial No. 409,106. (No model.)

Claim.—1. The herein-described railway-frog, it having its tread formed of rails of ordinary construction bound rigidly together by a body portion cast about them and having formed upon it suitable guards *b'*, substantially as described.

2. The herein-described railway-frog, it having its treads formed

of usual and independent rails bound rigidly together by a body portion cast about them and having seats formed in said body portion at the ends and below the tops of the rails to receive and support the end of an abutting rail, substantially as described.

3. The herein described railway-frog, having its point and also the treads formed of usual independent rails bound rigidly together by a body cast about them and having portions extended through openings in the webs of the rails, the body extending beyond the outer sides of the treads, the portions of the body upon opposite sides of the rails being united by the portions thereof extended through the said rails, substantially as described.

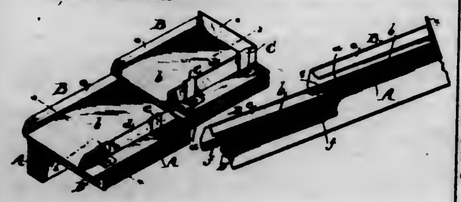
483,965. CABLE RAILWAY. JAMES B. MARAFFEY, Baltimore, Md., assignor of one-half to Rhea B. Hunting, same place. Filed July 21, 1892. Serial No. 440,749. (No model.)



Claim.—1. In a cable system, the combination of a supporting-frame mounted to slide laterally on the track of a car, a gripper pivotally hung from said frame and vertically movable thereon, said gripper having grip-bars which engage the upper and lower sides of the cable, suitable appliances for operating the gripper, means for automatically releasing the same as it approaches a crossing cable, a track-slot having a deflected part at the crossing, a bridge in the conduit below the deflected part of the said slot and having a depression for the crossing cable to pass through, said bridge inclined downward on each side of said depression to a point below the line of travel of the lowest part of the gripper when it is released, and devices for suitably supporting the cable at the crossing.

2. In a cable system, the combination of a gripper, a stationary rack, a lever pivoted at the lower end and carrying a pawl which engages said rack, a pulley on the pivot of said lever, a deflector-plate in the conduit, a pivoted arm carried by the car and arranged to ride over said plate, and a flexible connection between said arm and the pawl and passing over the said pulley.

483,966. ROOF. LEVI H. MORRISON, Camden, N. J., assignor to Charles Merchant, Philadelphia, Pa. Filed Mar. 12, 1892. Serial No. 424,686. (No model.)



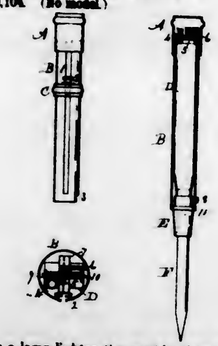
Claim.—1. A roofing consisting of a series of flat plates arranged side by side in rows located in different planes, the adjacent side edges of plates in the same row being clamped together and the upper end edge of each plate being bent up to a distance approximately equal to the plane of the plates in the next row above and the end of said upturned edge being bent outward, the lower end edge of the adjacent plates of the next row above being turned down into the plane of its plate and its extremity being bent over the said outwardly-bent portion of the upturned upper edge of the plate of the adjacent row below.

2. A roof consisting of a flat stepped frame and a series of plates having flat bases seated upon the flat frame with upturned side edges, said upturned side edges of adjacent plates being butted together and lapped, the upper end edges of the plates being upturned and butted against the adjacent stepped portion of the roof and the adjacent end edges of the next row of plates above being lapped over said upturned upper end edges.

3. A roof consisting of a flat stepped frame and a series of plates having flat bases seated upon the flat frame with upturned side edges, said upturned side edges of adjacent plates being butted together and lapped, the upper end edges of the plates being upturned and butted against the adjacent stepped portion of the roof and the adjacent end edges of the next row of plates above being lapped over said upturned upper end edges, and intermediate fastening-cleats secured to the frame of the roof and lapped between the adjacent side edges of adjacent plates.

4. A roof consisting of a flat stepped frame and a series of roofing-plates having flat bases resting upon said flat frame and arranged in rows, the upper end edges of each row being upturned and butted against the adjacent offset formed by the stepped portion of the roof and the extremity of said upturned end portion being bent outward into the plane of the upper portion of the roof adjacent to the offset, the lower end edges of each row of plates extending beyond the offset portion of the roof and lapping over the outwardly-bent portion of the upper end edges of the adjacent row of plates upon the adjacent lower portion of the frame.

483,967. LAMP-LIGHTER. WESLEY PALMER, Dayton, Ohio, assignor of one-half to John Williams, same place. Filed Apr. 14, 1892. Serial No. 429,104. (No model.)



Claim.—1. In a lamp-lighter, the combination of the reservoir D with its wick-tube and roller at the top and guide-pin at the bottom, the case B, provided with exploding-wires, slot, and notch, and the carrier-ring C with its loop for the fulminate tape, substantially as described.

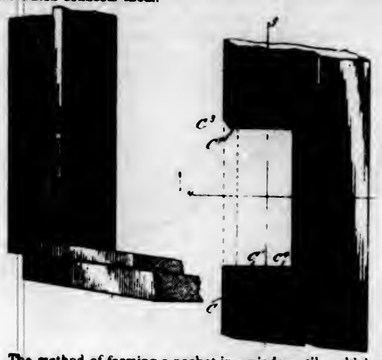
2. In a lamp-lighter, the combination of the reservoir D, provided with wick-tube and roller at the top, bottom E with guide-pin and an extension for a pencil, the case B, provided with exploding-wires, carrier-ring C with loop, and the cap A, substantially as described.

3. In a lamp-lighter, the combination of the slotted case B, the carrier-ring C with its broad loop 2, the fulminate tape 7, the igniting-wire 6, and the reservoir with its flattened adjacent sides, substantially as described.

483,968. WINDOW-FRAME POCKET. FRANCIS V. PHILLIPS, Chicago, Ill., assignor to the Smith & Phillips Manufacturing Company, same place. Filed Oct. 21, 1891. Serial No. 409,469. (No model.)

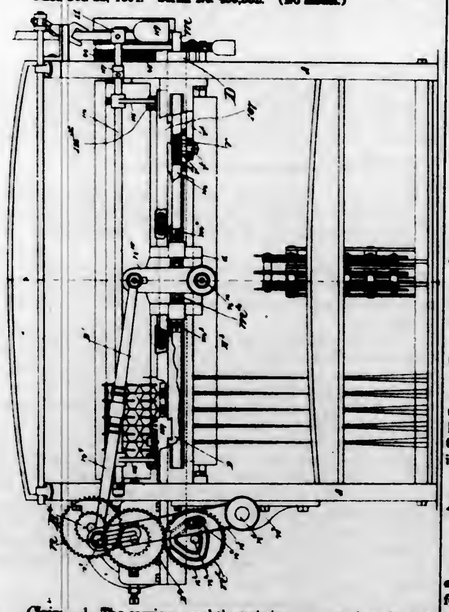
Claim.—1. A pocketed window-stile and pocket-piece formed of the same board, the stile-opening and pocket-piece joining at one or both ends in an indirect division-line comprising two offsets, transverse cuts extending inwardly from the opposite faces of the stile to a plane between said faces, and a vertical fracture extending from one of said cuts to the other.

2. A pocketed window-stile and pocket-piece formed of the same board, the stile-opening and the pocket-piece having interlapping surfaces at their upper ends and having at their lower ends an indirect line of division which comprises two offsets, transverse cuts extending inwardly from opposite faces of the stile to an intermediate vertical fracture which connects them.



3. The method of forming a pocket in a window-stile, which consists in cutting the stile inwardly part way through from opposite faces and in different planes and then splitting the wood from one of such cuts to the other.

483,969. WIRE-NETTING MACHINE. BENJAMIN SCARLES, Clinton, Mass., assignor to the Clinton Wire Cloth Company, same place. Filed Oct. 22, 1891. Serial No. 409,532. (No model.)

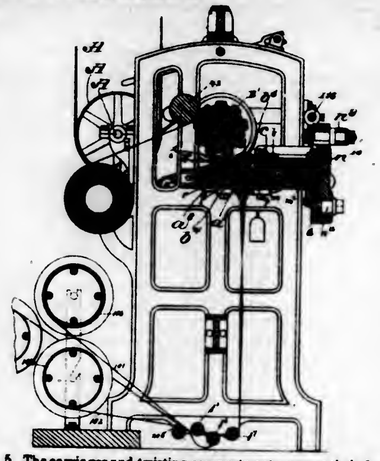


Claim.—1. The carriages and the twisting-segments kept in position thereon by tracks and shoes, each segment being kept in position upon its own carriage by a shoe, one entering a recessed track on the other, substantially as described.

2. The carriages, combined with the twisting-segments mounted thereon, the said segments being cut away to leave between them a free open space, as described, to enable the said segments in each direction of the movement of the carriages to embrace or come onto a strand-wire, substantially as described.

3. In a machine for the production of wire-netting, two carriages and a series of twisting-segments thereon provided with holes for the passage of wires to the twisting-point, combined with rollers or sheaves, one on each half of each twisting-segment, the said rollers or sheaves being supported by strands erected on the twisting-segments, the wires after leaving the holes in the segments being drawn over the rolls or sheaves, as and for the purposes set forth.

4. The carriages and twisting-segments having wire passages, combined with delivering sheaves or rolls and independent swiveling sleeves or collars on which they are mounted, each sleeve or collar being free thereby to rotate about the mesh wire delivered from its supporting-segment, substantially as described.



5. The carriages and twisting-segments cut away at their faces for the introduction of strand-wires, combined with two rack-bars, one for each segment of each pair of segments, substantially as described.

6. The carriages and twisting-segments suitably held by or between them and clamping devices having movable surfaces to clamp the mesh-wires where they are twisted together, combined with devices to move the clamping devices and a mesh-roll and means to move it continuously, substantially as described.

7. The carriages, their twisting-segments, and the jaw-bars, combined with levers having clamping-surfaces adapted to engage the wires at the mesh-twist and travel with the netting during the reverse twist, substantially as described.

8. The carriages, twisting-segments suitably mounted thereon, means to rotate the said segments, and the clamping devices, part of which include the jaw 107, combined with the cam bar a^4, devices to move it, and devices intermediate said cam-bar, and the said clamping-jaw 107 to actuate the latter, substantially as described.

9. The carriages, the twisting-segments mounted thereon, the rack-bars, and their connecting pinion, combined with the cam n^2, the lever n^3, and its connections with one of the said rack-bars to intermittingly actuate the rack-bars, substantially as described.

10. The reciprocating carriages and their twisting-segments shaped to leave a space between the segments for a selvage or strand-wire, each semi segment having a separate guide passage for a mesh-wire and having strands at their upper ends, combined with rollers or sheaves having their acting surfaces located at a distance from and in line with the open ends of the mesh-wire passages to thereby adapt the said segments to manipulate wire of different diameters without injury to the segments.

483,970. PLANING-MACHINE. JOHN R. THOMAS, Boston, Mass., assignor to the S. A. Woods Machine Company, same place. Filed Nov. 17, 1890. Serial No. 371,710. (No model.)

Claim.—1. In a planing-machine, the combination, with the cutter *a*, upper and lower feed-rolls, and adjustable bearings for the upper feed-roll, of a yoke pivoted to said bearings, levers *c*, centrally pivoted to said yoke and carrying at their opposite ends the parallel pressure-rolls *d'*, to be acted upon in succession by the stock, a spring interposed between the yoke and one of the rolls to keep the same normally depressed, and a stop on the yoke to limit the depression of the said roll by the spring, substantially as described.

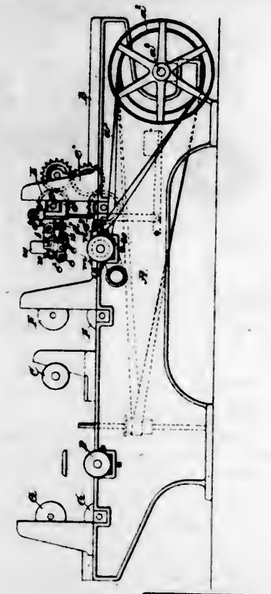
2. The under cutting-cylinder *a*, combined with a trough-shaped housing therefor having closed ends and bearings forming part of said ends in which the said under cutting-cylinder rests and rotates, a longitudinal outlet for said housing, and a spout connected with the said outlet and leading to one side through the side frame of the machine, and chip-breakers resting in seats formed in said housing, substantially as described.

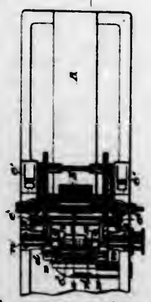
3. The combination, with the bearings d^2, of the yoke *d*, hinged thereto, set-screws 10 12, levers *c*, rollers *d'*, and springs *s*, arranged to operate substantially as described.

4. The combination, with the bearings d^2, of the yoke *d*, hinged

thereto, the rollers *d'*, carried thereby, the weight *w*, and limiting-screws 15, to operate substantially as described.

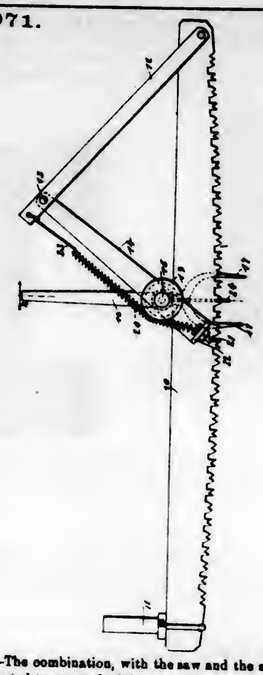
5. In a planing-machine, the combination, with the feed-rolls E, of the pressor-rolls *d'*, movable vertically with and independently of said feed-rolls, and limiting-screws to regulate the independent movement of the pressor-rolls, and the cutting cylinder *a*, substantially as described.





6. In a planing-machine, a fixed preparatory under cutter or irregular-surface reducer to act upon the stock throughout its entire length, and a fixed under cutter located at a distance therefrom to act on the face of the material previously acted upon by the preparatory cutter, combined with an upper cutter to act on the opposite side of the material at a point between the fixed preparatory and under cutters, whereby the knots or projections along the entire under side of the material are first trued and then the upper and lower sides of the material, respectively, as and for the purpose set forth.

483,971. SAW ATTACHMENT. Henry C. Webb, Russiaville, Ind. Filed Oct. 2, 1891. Serial No. 407,508. (No model.)



Claim.—The combination, with the saw and the supporting-post, of a lever pivoted to one end of the saw and pivoted near its free end to another lever, the latter being pivoted near one end to the post, a pulley mounted on one side of the post-lever, and a spring bearing upon the pulley and connecting the short ends of the two levers, substantially as described.

483,972. PROCESS OF TREATING MIXTURES CONTAINING SULPHIDES OF PRECIOUS METALS AND COPPER. Carell Whitehead, Washington, D. C. Filed Mar. 19, 1892. Serial No. 425,619. (No specimens.)

Claim.—1. The process of treating a mixture containing sulphides of gold, silver, and copper, which consists in separating the copper and leaving the gold and silver in their original condition, substantially as described.

2. The process of converting the copper contained in a mixture of sulphides of copper and of the precious metals into a soluble salt and separating it from the precious metals and forming sulphide of silver, which consists in treating the mixed sulphides with solution of a salt of silver and separating the solution from the residue and precipitate, substantially as described.

3. The process of treating a mixture containing sulphides of the precious metals and of copper, which consists in mixing the sulphides with solution of a salt of silver, whereby a soluble salt of copper is formed and sulphide of silver is precipitated, separating the solution containing the copper from the residue containing the precious metals, roasting this residue to reduce the precious metals to the metallic state, treating the reduced metals with hot sulphuric acid to dissolve the silver, separating the silver solution from the residue, and melting the final residue, substantially as described.

483,973. MONEY-CHANGER. John Adams, Chicago, Ill. Filed Sept. 14, 1891. Serial No. 405,602. (No model.)

Claim.—1. In a money-changer, the combination, with the coin-holders, of the ejectors and levers for operating the ejectors and a weighted bar for restoring the ejectors to their normal position, substantially as described.

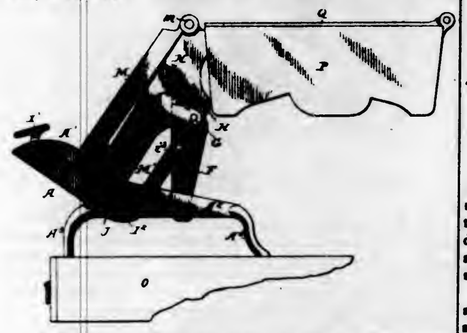
2. In a money-changer, the combination, with the coin-holders and ejectors, of pivoted levers connected to the ejectors and a weighted crank-arm normally resting on said levers and tending to restore the ejectors, substantially as described.

3. In a money-changer, the combination, with the coin-holder and the ejectors, of the pivotally-supported levers loosely connected to the ejectors and a weight resting on the levers, substantially as described.

4. In a money-changer, the combination, with the coin-holder, of the ejectors, each ejector consisting of two side bars having ends beveled laterally and vertically, the side bars being connected by two rods near their rear ends, substantially as described.

5. In a money-changer, the combination of the ejectors, each comprising two side bars connected by two rods, the rods being notched on their inner sides, and the levers provided with notched ends adapted to engage the rods of the ejectors, substantially as described.

6. In a money-changer, the combination, with the coin-holders, of a notched platform-supporting bar, platforms thereon, and ejectors, each comprising two side bars passing through the notches, substantially as described.



7. In a money-changer, the combination, with the coin-holders, of the notched platform-supporting bar, platforms thereon, and the ejectors, the side bars of which pass through the notches and embrace the platform, the platforms being slotted at their rear to admit the crank-levers and having extending ends forming guides for the ejectors, substantially as described.

8. In a money-changer, the combination, with the coin-holders, of the crank-levers, each lever being provided with a substantially-rectangular body portion having a curved under surface, an arm projecting therefrom at substantially-right angles and provided with a bifurcated end, and a laterally-bent operating-lever carrying a button secured to the body portion, substantially as described.

9. In a money-changer, in combination with a supporting-rod, a crank-lever having a central body of substantially-rectangular form with a curved under portion and provided with an arm extending at substantial right angles to the body portion, the body portion forming three bearings for the rod upon which it is mounted, substantially as described.

10. In a money-changer, the combination, with the frame having a curved slotted table, the coin-holders rising from the table, and a series of crank-levers, each lever provided with a laterally-bent operating-arm extending through the slotted table and carrying a button, of a substantially-rectangular body portion having a curved under surface, and an arm extending from the body portion at substantial right angles thereto, substantially as described.

11. In a money-changer, the combination of the coin-holder having a series of recesses, the platforms arranged beneath the recesses, the ejectors sliding beneath the coin-holders and guided by the platforms, the pivoted back levers loosely connected to the ejectors, the weighted crank-arm bearing on the levers, and the crank-levers connected to operate the back levers, substantially as described.

12. In a money-changer, the combination, with the coin-holders, of a cover pivoted thereto, the cover being recessed to correspond with the coin-chamber and provided with lips having perforations, and spring-bolts on the frame of the money-changer, adapted to engage the perforations, substantially as described.

13. In a money-changer, the combination, with the coin-holder, the ejector therefor, the levers operating the ejectors, and the weighted crank-arm for the levers, of a cover for the coin-holder, the cover being provided with projections passing the coin-holder and engaging the weighted crank-arm, substantially as described.

14. In a money-changer, the combination, with the coin-holders, of the ejectors, levers for operating the ejectors, a weighted crank-arm for restoring the ejectors to their normal position, and means for locking the weighted crank-arm, substantially as described.

15. In a money-changer, the combination, with the base and inclined coin-holders, platforms for the coin-holders, the ejectors, the levers operating the ejectors, and the crank-levers for operating the ejector-levers, of the weighted crank-arm, whereby the parts are normally restored to their respective positions by gravity, substantially as described.

16. In a money-changer, a coin-tray provided with a series of semicircular recesses arranged on opposite sides thereof, the recesses being separated by steps, substantially as described.

17. In a money-changer, a coin-tray provided with a series of recesses arranged on opposite sides thereof, with a recess at the bottom of the tray and steps between the recesses, substantially as described.

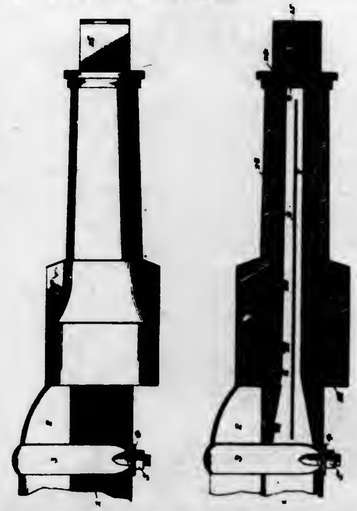
18. In a money-changer, a coin-tray comprising the end walls forming supports for the tray, the sides provided with a series of semicircular recesses for the coins, steps between the recesses, and a central depression between the series of recesses, substantially as described.

483,974. HOLDER FOR INCANDESCENT LAMPS. Edwin P. Allan, Romford, assignor of one-half to Ernest Richard Dolby, London, England. Filed Oct. 27, 1891. Serial No. 410,017. (No model.) Patented in England Aug. 9, 1890. No. 12,504.

Claim.—1. The combination, with the base *b* of non-conducting material and the two contact-pieces secured therein, of the two contact-screws having their heads let into the said base and a removable disk of non-conducting material clamped upon the top of the said base and provided with a hole through which the wires pass to the said screws, substantially as set forth.

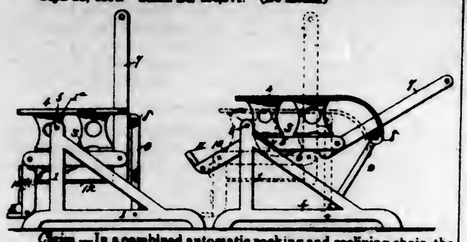
2. The combination, with the base *b* of non-conducting material and the two contact-pieces secured in holes therein, of the two contact-screws having their heads let into the said base, a removable disk of non-conducting material provided with a hole arranged out of line with the holes in the base, and means for clamping the said disk on top of the base, whereby the wires are secured between the disk and the base above their junction with the said screws, substantially as set forth.

483,975. VEHICLE-AXLE. Oscar W. Beach, South Riverside, Cal., assignor to James P. Curry, Fort Morgan, Colo. Filed Nov. 19, 1891. Serial No. 412,393. (No model.)



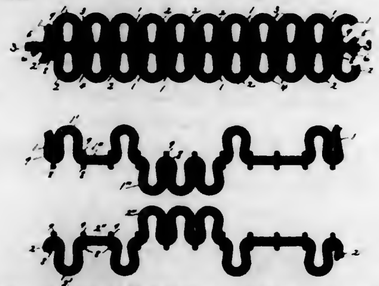
Claim.—The combination, with an axle-skein consisting of the reduced conical and straight bearing portions 6 and 7, respectively, the latter being threaded at its outer extremity, of the axle-sleeve internally bored to fit the skein and therefore having the plain bore 11 and rear conical bore 13 and having the external annular shoulder 12, the axle-bed, the clip embracing the same and the rear end of the axle-sleeve, which latter terminates between the axle and bed, the inner nut 14, threaded on the end 8 of the axle, bearing against the outer end of the axle-sleeve, agreeing with it in diameter and pressing its interconical bore against the conical rear portion of the axle, the hub-sleeve mounted on the axle-sleeve and at its front end inclosing the inner nut and having rear internal shoulders bearing against the external annular shoulder formed on the axle-sleeve, and the external nut or cap fitting over the outer end of the axle, embracing the hub-sleeve and bearing against the inner nut, substantially as specified.

483,976. CHAIR. LEWIS W. CHAPMAN, Grand Ledge, Mich. Filed Sept. 26, 1891. Serial No. 406,871. (No model.)



Claim.—In a combined automatic rocking and reclining chair, the combination, with the side pieces 1, the seat 3, provided with arms 4, the swinging rock-bar 5, pivoted to the side frames 1 and to the seat-bars, the back 7, pivoted to the seat, and the leg rest bars 10, pivoted to the seat and carrying a foot-rest, of a frame 9, pivoted to the side pieces 1 and to plates 8, secured to the back 7, and a connecting-rod 12, pivoted respectively, to the back extensions and to the leg-rest, all arranged and operating substantially as set forth.

483,977. DOUBLE-FACED WOVEN PILE FABRIC. JOSEPH COLBY, Worcester, Mass. Filed Feb. 15, 1892. Serial No. 421,601. (Specimens.)



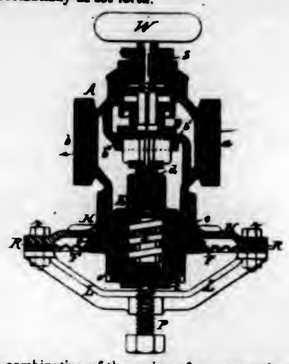
Claim.—A double-faced pile fabric woven from an even number of frames of worsted warps and having the same pattern on both sides, but each side having a different coloring, and consisting of two binding-warps passing entirely through the floating worsted warps from top to bottom and from bottom to top, and two sets of filling-wefts and worsted warps when selected appearing on coincident portions of both sides of the fabric to form the loops or pile surface on each side of the fabric and when unselected carried in the body of the fabric between the filling-wefts, substantially as set forth.

488,978. BARREL-STAND. HORACE H. FIRE, Florence, Oreg. Filed Mar. 28, 1892. Serial No. 426,693. (No model.)

Claim.—In barrel-stands pivoted to turn on wheels, the shafts made with the obtuse angles *b b'* and the inclined arm *b²* at the outer end, as and for the purpose set forth.

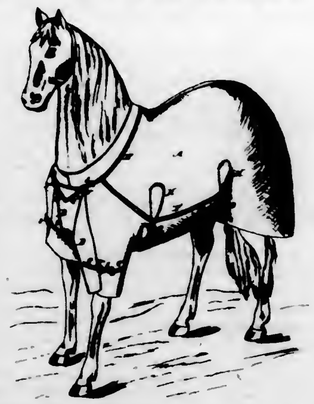
483,979. AUTOMATIC REGULATING-VALVE. JOHN M. FOSTER, Guilford, assignor to the Foster Engineering Company, Newark, N. J. Filed May 16, 1891. Serial No. 392,903. (No model.)

Claim.—1. The combination of the casing of an automatic regulator having inlet and outlet ports and a valve with a diaphragm open to the fluid-pressure and having a hub which carries the said valve, a polygonal nut on the hub to clamp the diaphragm and a part of the casing having a polygonal opening to receive and hold the nut from turning, substantially as set forth.



2. The combination of the casing of an automatic regulator having inlet and outlet ports and a valve with a diaphragm open to the fluid-pressure and having a hub which carries the valve and a polygonal nut for clamping the diaphragm to the hub, the casing having a polygonal opening to receive the said nut, the nut and opening being tapered, substantially as and for the purpose set forth.

483,980. HORSE-BLANKET. CHRISTOPHER A. GEYER, Cedar Rapids, Iowa. Filed Apr. 15, 1892. Serial No. 429,263. (No model.)

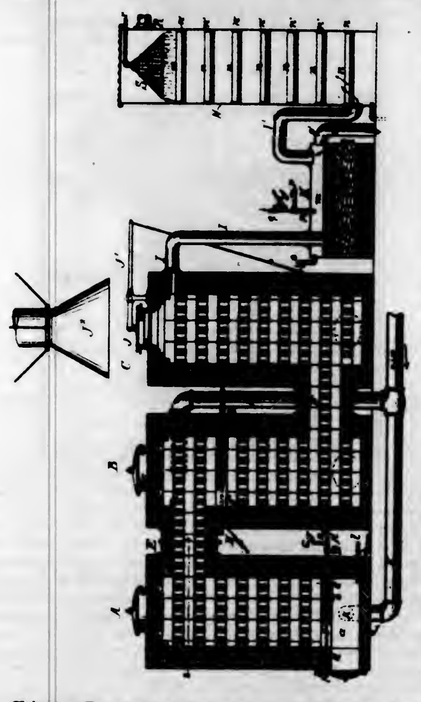


Claim.—1. In a horse-blanket, the combination of the duplicated body portions A, seamed together at the back and each with a slit at a point just back of the fore-leg portion, the duplicated parts B and C, seamed to each other at the sides having the greatest curvature, as shown, and these parts seamed to the body portions, as described—that is to say, the sides *b* and *b'* adjoining and the sides *c* and *c'* adjoining—and means, substantially as described, for fastening said blanket on the animal.

2. In a horse-blanket, the combination of the duplicated body portions A, seamed together at the back and each having a slit just back of the fore-leg portion and the breast-flap A', the duplicated parts B and C, seamed together along the side of greatest curvature, as shown, and to the body portions of the blanket, as described—that is to say, with the sides *b* and *b'* adjoining and the sides *c* and *c'* adjoining—and suitable straps and rings for attaching the blanket to the horse.

3. In a horse-blanket, the combination of the body portions composed of two similar parts A, seamed together at the curved line of the back and having the dart *a*, gore D, slit *b' c'*, and breast-flap A', and the parts B and C, together forming combined sleeves and apron, the parts being seamed together at the sides of greatest curvature, as shown, and to the body portion, as specified, the side *b* to the side *b'* and the side *c* to the side *c'*, with surcingles and fastening straps and rings, substantially as described.

483,981. PROCESS OF AND APPARATUS FOR THE MANUFACTURE OF GAS. JOHN L. JANEWAY, Phœnixville, and Ferdinand Lepaa, Corner Stores, Pa. Filed Oct. 3, 1891. Serial No. 408,218. (No model.)



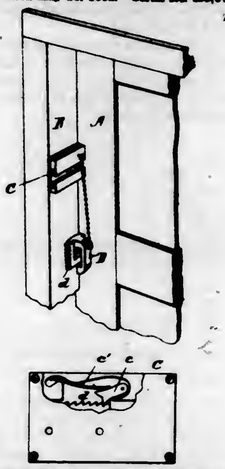
Claim.—1. The process of manufacturing gas, which consists, first, in heating a series of chambers containing refractory material to a degree below that necessary to decompose steam; second, admitting thereto a mixed supply of steam and oil; third, forcing such mixed supply of steam and oil by other steam-pressure from its point of entrance through said chambers to an outlet, and, finally, condensing said steam, substantially as specified.

2. The process of manufacturing gas, which consists, first, in heating a series of chambers containing refractory material to a degree below that necessary to decompose steam; second, admitting thereto a supply of oil and steam; third, forcing each supply of oil and steam by other steam-pressure from its point of entrance to said chambers to a wash-box; fourth, injecting into said gas by steam-pressure a supply of air heated nearly to the temperature of the gas in the wash-box, and, finally, condensing all of the steam in the wash-box, substantially as specified.

3. An apparatus for manufacturing gas, comprising a series of communicating chambers filled with refractory material, an inlet for the heating supply of oil and steam at or near the lower end of the first of these chambers, a steam-pipe for admitting the steam to be superheated in the subsequent manufacture of the gas, said steam-pipe being situated at or near the lower end of the first of these chambers, an inlet for the supply of oil and steam from which the gas is to be manufactured, said inlet being situated at or near the top of the second of the series of chambers, and outlets in the last chamber of the series for the products of combustion and for the manufactured gas, substantially as specified.

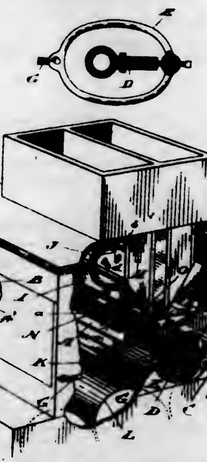
4. An apparatus for manufacturing gas, comprising a series of communicating chambers filled with refractory material, an inlet for the heating supply of oil and steam, an air-blast inlet, and an inlet for steam to be superheated in the subsequent manufacture of the gas, all situated at or near the lower end of the first chamber of the series, an air-blast pipe to assist in heating the chamber, and an inlet for the supply of oil and steam from which the gas is to be manufactured, said inlets being situated at or near the top of the second chamber, and outlets for the products of combustion and the manufactured gas, said outlets being situated at or near the exit end of the final chamber of the series, substantially as specified.

483,982. BOLT FOR MILK-CANS. NATHANIEL P. RUTTER, Waltham, Mass. Filed May 20, 1892. Serial No. 433,647. (No model.)



Claim.—A milk-can safeguard-lock consisting of a plate having therein a channel and a pawl and ratchet, in combination with a locking-guard and a door or groove closing device, substantially as described.

483,983. FEED FOR ROLLER-MILLS. HENRY R. SHAW, St. Catharines, Ontario, Canada, assignor of two-thirds to Emerson Wright and James Cunningham, same place. Filed Apr. 4, 1892. Serial No. 427,719. (No model.)



Claim.—1. In a roller-mill feed, a gate provided with carved hangers having teeth formed on their inner circumference to fit over pivot-pins, substantially as and for the purpose specified.

2. In a roller-mill feed, a gate suspended on carved hangers and provided with a bar adjustably held to the bottom of the gate upon projecting pins, substantially as shown and described.

3. In a roller-mill feed, a series of grinding-rollers, in combination with a shoe provided with the pivoted boards K, arranged to feed material to different rollers, substantially as and for the purpose specified.

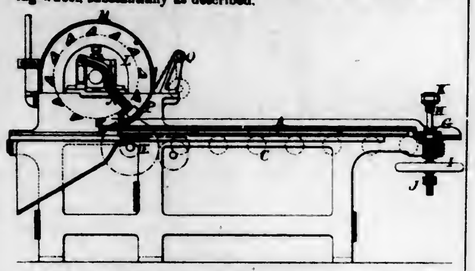
4. The ring E, connected to the shoe and provided with a set-screw on the point of which the eccentric-strap is pivoted, substantially as and for the purpose specified.

483,984. MACHINE FOR SCUTCHING AND CLEANING FIBROUS STEMS OR LEAVES. HUBBARD DEATH, Leicester, England. Filed Jan. 27, 1892. Serial No. 419,492. (No model.) Patented in England July 10, 1891, No. 11,703.

Brief.—The machine includes a reciprocating table for carrying

the material to be operated upon, a clamp for holding the ends of the material, a scutching-wheel under which the table is moved, and a curved presser-plate adjacent the scutching-wheel for holding down the fibers when the table is drawn back.

Claim.—1. In apparatus for scutching and cleaning fibrous stems or leaves, the combination, with a revolving scutching-wheel armed with beaters, of a flat movable table carrying the material to be operated upon and means for moving said table to and fro under the scutching-wheel, substantially as described.



2. In apparatus for scutching and cleaning fibrous stems or leaves, the combination, with a revolving scutching-wheel armed with beaters, of a flat movable table carrying the material to be operated upon, a clamp for clamping the material to said table, and means for moving said table to and fro under the scutching-wheel, substantially as described.

3. In apparatus for scutching and cleaning fibrous stems or leaves, the combination, with a revolving scutching-wheel armed with beaters, of a flat movable table carrying the material to be operated upon, means for moving said table to and fro under the scutching-wheel, and a curved presser-plate for holding down the material operated on during the return stroke of the table, substantially as described.

488,985. METALLURGICAL FURNACE. GEORGE W. BIEBER, Allegheny, assignor of one half to George W. Bowers, Pittsburg, Pa. Filed July 7, 1892. Serial No. 439,306. (No model.)

Claim.—In a furnace provided with a combustion-chamber and separate gas-heating and separate air-heating chambers, each gas and air chamber containing an openly-arranged mass of brick, the combination consisting of an unobstructed channel extending longitudinally through the mass of brick in each gas-heating chamber, a tuyere inserted in each end of said channel, a pipe for conducting petroleum into said tuyeres, a pipe for conducting and directing a pressure of steam or air to forcibly inject the petroleum into said channel amid the heated mass of brick, a valve in the petroleum-conducting pipe, and a valve in the injecting-pipe.

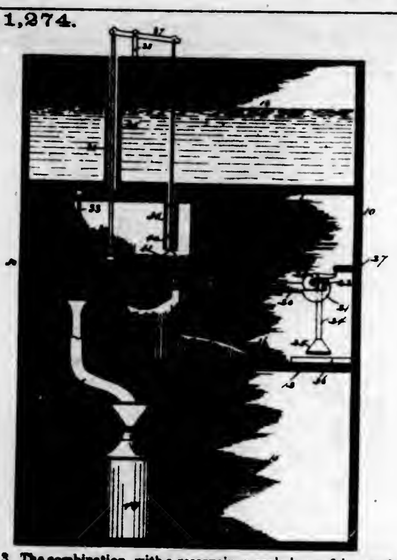
REISSUES.

11,274. WEIGHING OIL-TANK. ELMER H. BACHELDER and FRED H. LOVEJOY, Portland, Me. Filed Jan. 31, 1890. Serial No. 338,823. Original No. 408,490, dated Aug. 6, 1889.

Claim.—1. The combination, with a reservoir, of a scale-beam fulcrumed below the reservoir, a weighing-tank supported upon one arm of the scale-beam, a latch pivoted upon the extremity of the other arm of the scale-beam, a weight-carrier engaging with the said latch, means for tripping the latch, and a connection between the reservoir and the weighing-tank, substantially as shown and described.

2. The combination, with a reservoir and a scale-beam fulcrumed below the said reservoir, a latch pivoted upon the outer extremity of the longer arm of the said beam, and a weight-carrier supported by said latch, of a tank attached to the other arm of the scale-beam, provided with a valve-opening in its bottom and a valve connection between the reservoir and the weighing-tank, and means, substantially as shown and described, for tripping the pivoted latch, as and for the purpose specified.

11,274.



3. The combination, with a reservoir, a scale-beam fulcrumed below the same, having its longer arm provided at the extremity with an essentially-hook-shaped pivoted latch, and a weight-carrier notched to receive one end of the said latch, of a tank supported upon the short arm of the weighing-beam, provided with an outlet-aperture in its bottom, a valve adapted to close the said outlet-aperture, having a jointed stem hinged to the lower surface of the reservoir, a trip post or stud held horizontally above the latch of the scale-beam, an outlet-tube extending from the reservoir into the weighing-tank, a valve adapted to close the lower end of the said outlet-tube, and a connection, substantially as shown and described, between the weighing tank and the said valve of the outlet-tube, all combined for operation as and for the purpose specified.

4. The combination, with a reservoir, a scale-beam fulcrumed beneath the same, having an essentially-hook-shaped latch pivoted to the outer extremity of its longest arm, a weight-carrier provided with a notch in its vertical rod, capable of engagement with the inner end of the latch, and a trip post or stud horizontally supported above the outer end of the said latch, of a tank supported upon the shorter arm of the scale-beam, provided with an outlet-aperture in its bottom, a valve adapted to close said outlet-aperture, provided with a jointed stem hinged to the under surface of the reservoir, an outlet-tube projected from the reservoir and extending downward within the tank, a valve capable of closing the lower end of said outlet-tube, a lever fulcrumed upon the top of the reservoir, a stem connecting one end of the lever and the valve of the reservoir-outlet tube, and a pitman pivoted to the other end of the lever and hinged to the bottom of the weighing-tank, all combined for operation substantially as shown and described.

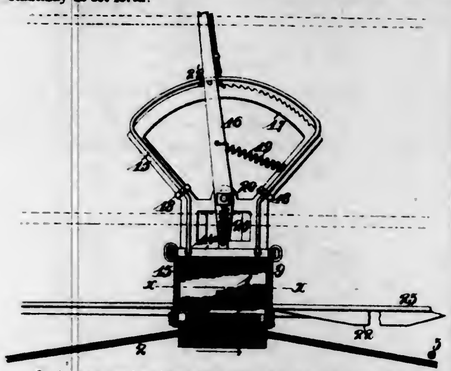
5. The combination of a scale-beam, a weighing-tank secured thereto, a weight-carrier adapted to depend from said scale-beam, and a tripping device for detaching said weight-carrier from said scale-beam when the latter begins to rise, substantially as described.

6. The combination, with a reservoir, of a scale-beam fulcrumed below the reservoir, a weighing-tank supported upon one arm of the scale-beam, a weight-carrier adapted to depend from the other arm of the scale-beam, a latch for forming a connection between the weight-carrier and the scale-beam, and means for tripping said latch, and a connection between the reservoir and the weighing-tank, substantially as described.

11,275. AUTOMATIC RELEASE FOR CABLE-GRIPS. ALBERT D. SMITH and FRANK W. SMITH, St. Louis, Mo., assignors, by direct and mesne assignments, of part to C. W. Crutsinger, same place. Filed June 21, 1892. Serial No. 437,546. Original No. 454,482, dated Aug. 25, 1891.

Claim.—1. An automatic release for cable-grips, comprising a frame having a lower portion embracing the grip below the slot-rails, upright pieces at either end of said lower portion, wedges located in the subway, co-operating with said lower portion, and means attached to the upper portion of said rods in operative connection with the pawl carried by the grip-lever for releasing the same, substantially as described.

2. An automatic release for cable-grips, comprising a frame having a lower portion embracing the grip below the slot-rails, a bar forming the upper portion thereof, upright pieces at either end of said bar connecting the lower and upper portions, respectively, wedges located in the subway, co-operating with said lower portion, and means attached to the upper portion of the frame and in operative connection with the pawl carried by the grip-lever for releasing the same, substantially as set forth.



3. An automatic release for cable-grips, comprising a frame 4, a bar 15, actuated by said frame for releasing the pawl carried by the grip-lever, means located in the subway, against which the lower portion of the frame is brought in contact, and a spring for restoring the said frame to its normal position, substantially as described.

4. An automatic release for cable-grips, consisting of a frame the lower portion of which is located in the subway, a bar 15, attached to the upper portion of the frame for releasing the pawl carried by the grip-lever, means for restoring the frame to its normal position, wedges located in the subway, against which the lower portion of the frame is brought in contact, and a spring 19 for throwing the grip-lever in one direction after the same has been released.

5. The herein-described automatic release for cable crossings, having a vertically-adjustable frame, such as 4, a connecting-bar, such as 5, for connecting the ends of the said frame, upright pieces 9 and 13, secured to the said connecting-bar and frame, respectively, U-shaped bar 14, secured to said upright pieces, a bar 15, secured to the said U-shaped bar and adapted to depress and disengage a dog 21, carried by the grip-lever, a spring 19 for operating said grip-lever, and a wedge or block, such as 22, for depressing or lowering said framework 4, substantially as set forth.

DESIGNS.

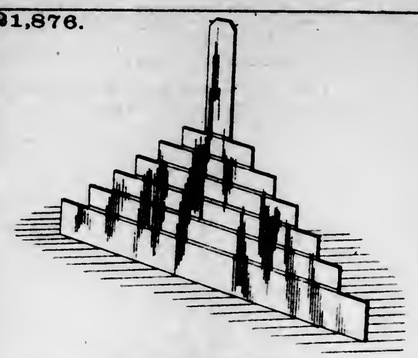
21,875. BADGE. AUGUSTUS T. HATCH, San Francisco, Cal. Filed July 16, 1892. Serial No. 440,407. Term of patent 3½ years.

Claim.—The design for a badge herein described and shown.

21,876. CUFF-HOLDER STAND. HENRY C. FRANK, New York, N. Y. Filed June 6, 1892. Serial No. 436,093. Term of patent 7 years.

Claim.—The design for a cuff-holder stand, substantially as herein shown and described.

21,876.



21,877. VASE, &c. SYDNEY STARKEY, East Liverpool, Ohio. Filed Aug. 22, 1892. Serial No. 443,504. Term of patent 14 years.

Claim.—The design for a vase or similar article, as herein shown and described.

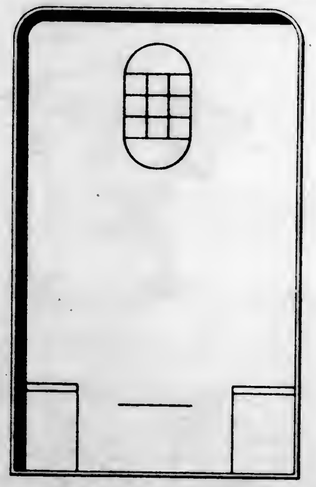
21,878. TABLE-VESSEL. CARL V. HELMSMUELLER, Meriden, Conn., assignor to the C. F. Monroe Company, same place. Filed Aug. 18, 1892. Serial No. 443,447. Term of patent 3½ years.

Claim.—The design for vessels for table use, substantially as herein shown and described.

21,879. SPOON. ADOLPH LEOWER, Brooklyn, N. Y. Filed Aug. 26, 1892. Serial No. 444,113. Term of patent 7 years.

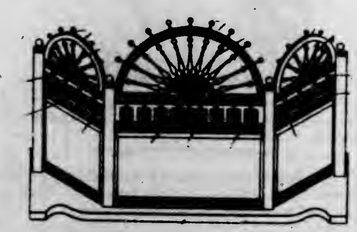
Claim.—The design for a spoon, substantially as herein shown and described.

21,880. GAME-BOARD. MARY H. CAMERON, Albany, N. Y. Filed Aug. 3, 1892. Serial No. 442,009. Term of patent 3½ years.



Claim.—The design for a game-board, substantially as herein shown and described.

21,881. TOP OF AN ORGAN-CASE. OSCAR H. BRANDT, Chicago, Ill., assignor to the W. W. Kimball Company, same place. Filed Apr. 11, 1892. Serial No. 428,718. Term of patent 3½ years.

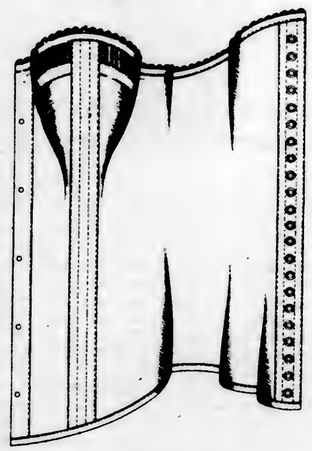


Claim.—The design for the top of an organ-case, substantially as herein shown.

21,882. TOP OF AN ORGAN-CASE. OSCAR H. BRANDT, Chicago, Ill., assignor to the W. W. Kimball Company, same place. Filed Apr. 11, 1892. Serial No. 428,717. Term of patent 3½ years.

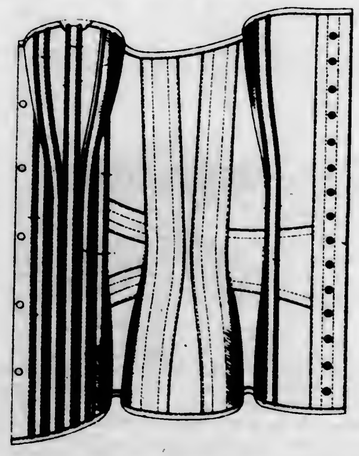
Claim.—The design for the top of an organ-case, substantially as herein set forth.

21,883. CORSET. DE VER H. WARNER, Bridgeport, Conn. Filed Apr. 26, 1892. Serial No. 430,634. Term of patent 7 years.



Claim.—The design for a corset, substantially as shown and described.

21,884. CORSET. DE VER H. WARNER, Bridgeport, Conn. Filed July 7, 1891. Serial No. 398,722. Term of patent 14 years.



Claim.—The design for a corset, substantially as described and shown.

TRADE-MARKS

REGISTERED OCTOBER 4, 1892.

21,806. BATH-TUBS. GEORGE BOOTH, Detroit, Mich. Filed Aug. 15, 1892.

STEEL CLAD

Essential feature.—The words "STEEL CLAD." Used since January, 1891.

21,807. WHISKY. SAMUEL C. BOEHM & Co., New York, N. Y. Filed Aug. 27, 1892.

DEMOCRATIC CLUB

Essential feature.—The words "DEMOCRATIC CLUB." Used since July 23, 1892.

21,808. WHISKY. SAMUEL C. BOEHM & Co., New York, N. Y. Filed Aug. 27, 1892.

REPUBLICAN CLUB

Essential feature.—The words "REPUBLICAN CLUB." Used since July 23, 1892.

21,809. POWDERED LYE. CHAMPION CHEMICAL WORKS, Chicago, Ill. Filed Aug. 30, 1892.

CHAMPION

Essential feature.—The word "CHAMPION." Used since 1881.

21,810. ICE-CHESTS, COOLERS, AND REFRIGERATORS. CHALLENGE CORN PLANTER COMPANY, Grand Haven, Mich. Filed Aug. 31, 1892.

CHALLENGE ICEBERG.

Essential feature.—The words "CHALLENGE ICEBERG." Used since January, 1885.

21,811. WHISKY, RUM, GIN, CORDIALS, AND CALIFORNIA WINES AND BRANDY. DELAPENA, McGOVERN & Co., New York, N. Y. Filed Aug. 19, 1892.

RED STAR

Essential feature.—The word "RED STAR." Used since June 1, 1892.

21,812. SOAP. WILLIAM H. HALL, New York, N. Y. Filed Aug. 20, 1892.

SOZODERMA

Essential feature.—The word "SOZODERMA." Used since August 8, 1892.

21,813. LAUNDRY SOAP. READE MANUFACTURING CO., Chicago, Ill. Filed Sept. 1, 1892.

E-Z

Essential feature.—The letters "E Z." Used since November 1, 1891.

21,814. REMEDY FOR PILES. WILLIAM T. STRONG, London, Canada. Filed Aug. 1, 1892.

[redacted]

Essential feature.—The word "PILEKONE." Used since April 1, 1892.

21,815. BOOTS AND SHOES. SMITH BROS., Boston, Mass. Filed Aug. 13, 1892.

CRESCENT

Essential feature.—The word "CRESCENT." Used since September 1, 1890.

21,816. LADIES' FRENCH CORSETS. SYNDICATE TRADING COMPANY, New York, N. Y. Filed Aug. 4, 1892.

Essential feature.—The representation of a woman reclining on the back of a flying eagle and the letters "H C." Used since March 15, 1892.

21,817. WHEAT-FLOUR. WILLIAM H. SEMEN, Watertown, S. D. Filed Aug. 30, 1892.

WANETA

Essential feature.—The word "WANETA." Used since December 1, 1892.

21,818. WHEAT-FLOUR. William H. Stokes, Watertown, S. D. Filed Aug. 20, 1892.

SUNSHINE

Essential feature.—The word "Sunshine." Used since December 1, 1882.

21,819. TYPE-WRITING MACHINES. Wyckoff, Seamans & Benedict, Ilion and New York, N. Y. Filed Aug. 29, 1892.

PARAGON

Essential feature.—The word "Paragon." Used since May 14, 1892.

21,820. SILVER-POLISH IN THE FORM OF POWDER AND SOAP. The Electro Silicon Company, New York, N. Y. Filed Apr. 21, 1892.

Essential feature.—The representation of a woman apparently engaged in polishing a silver pitcher upon which her face is reflected. Used since October 12, 1891.

21,821. SHIRTS, COLLARS, CUFFS, AND BLOUSES. Charles H. McClellan, Troy, N. Y. Filed Sept. 3, 1892.

IPSE

Essential feature.—The word "Ipse." Used since May 27, 1892.

21,822. POULTRY AND EGGS. Max Prowatt, St. Paul, Hutchinson, and Glencoe, Minn. Filed June 13, 1892.

P

Essential feature.—The outline of a star surrounding and inclosing the letter "P." Used since September 15, 1890.

21,823. BUCKWHEAT, GRAHAM FLOUR, CORNMEAL, ROLLED OATS, AND SIMILAR MANUFACTURED CEREALS. Frank L. Thornton, Providence, R. I. Filed Sept. 1, 1892.

21,823.

Essential feature.—The pictorial representation of a water-mill. Used since January 1, 1886.

21,824. ORANGES. David Tillson, Orange Bend, Fla. Filed Aug. 19, 1892.

Essential feature.—The head of Washington and the name "Washington." Used since January 1, 1890.

21,825. HATS. The Volk Hat Company, South Norwalk, Conn. Filed Sept. 8, 1892.

Essential feature.—The words "Hand Made" and the representation of an open hand. Used since June, 1892.

21,826. PLOWSHARES. L. A. Weyburn Company, Rockford, Ill. Filed Sept. 3, 1892.

ROCKFORD IDEAL

Essential feature.—The word-symbols "Rockford Ideal." Used since October 1, 1885.

21,827. SARSAPARILLA COMPOUND. Hartwell L. Woodcock and John B. Woodcock, Baldwin, Md. Filed Aug. 6, 1892.

Essential feature.—The representation of a mounted knight in full armor, bearing a standard, and the word "Leon's." Used since July 1, 1892.

21,828. VELOCIPEDES AND PARTS THEREOF AND WHEELS FOR USE IN LIGHT VEHICLES. Amer & Frost Company, Chicago, Ill. Filed Sept. 8, 1892.

IMPERIAL

Essential feature.—The word "Imperial." Used since December 15, 1890.

21,829. REMEDY FOR THE TOOTHACHE. Raffaele Arduini, New Orleans, La. Filed Sept. 5, 1892.

Essential feature.—The symbol of a drawn tooth upon a shield. Used since July 1, 1878.

21,830. SHEEP-DIP OR CATTLE-WASH. Frederick D. Banning, Charleston, S. C. Filed Sept. 9, 1892.

SKABCURA

Essential feature.—The word "Skabcura." Used since September 3, 1892.

21,831. HOSIERY. Joseph Black & Sons, Philadelphia, Pa. Filed Sept. 9, 1892.

GLADSTONE

Essential feature.—The word "Gladstone." Used since June 1, 1889.

21,832. MEDICATED SOAP. Cincinnati Soap Co., Cincinnati, Ohio. Filed Oct. 3, 1891.

SCHOENHALS' RENAISSANCE

Essential feature.—The words "Schoenhals Renaissance." Used since January 1, 1886.

21,833. MEDICINE FOR FOWLS. Orlando Medicine Company, Orlando, Fla. Filed Sept. 9, 1892.

NONE-SUCH

Essential feature.—The words "None-Such." Used since February 1, 1892.

21,834. GAS AND GASOLINE ENGINES. Palmer & Rey, San Francisco, Cal. Filed Sept. 6, 1892.

IMPROVED HERCULES

Essential feature.—The words "Improved Hercules." Used since June, 1891.

21,835. GAS AND GASOLINE ENGINES. Palmer & Rey, San Francisco, Cal. Filed Sept. 6, 1892.

NEW HERCULES

Essential feature.—The words "New Hercules." Used since June, 1891.

21,836. GAS AND GASOLINE ENGINES. Palmer & Rey, San Francisco, Cal. Filed Sept. 6, 1892.

HERCULES

Essential feature.—The word "Hercules." Used since June, 1891.

21,837. TOP-BUGGIES. Charles H. Palmer, Jr., Amesbury, Mass. Filed July 25, 1892.

COLUMBIAN

Essential feature.—The word "Columbian." Used since May 1, 1892.

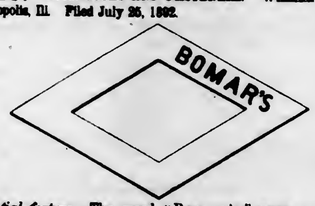
21,838. BOOTS AND SHOES. T. A. Whicher & Co., Boston, Mass. Filed Sept. 9, 1892.

Essential feature.—The words "Durham Calf." Used since March 1, 1892.

21,839. LAUNDRY SOAP. John W. Alexander and Theophilus W. Alexander, Burlington, Iowa. Filed Aug. 30, 1892.

Essential feature.—A monogram composed of the letters "I" and "S" and the abbreviation "Co.," arranged within fancifully-ornamented rings or bands, and the words "Iowa Soap Co., Burlington, Iowa," arranged on a dark background around the monogram. Used since November, 1890.

21,840. SASH LOCKS AND FASTENERS. William A. Bomar, Metropolis, Ill. Filed July 25, 1892.



Essential feature.—The word "Bomar's" upon a diamond-shaped figure. Used since March, 1891.

21,841. ANTIPYRETIC. George E. Dixon, St. Paul, Minn. Filed Aug. 20, 1892.

Antitoxine

Essential feature.—The word "ANTITOXINE." Used since March 1, 1890.

21,842. DYES OR COLORS. FERDINAND GLASSNAR, VERS. OTTO SEYFERT, Glauchau, Germany. Filed Sept. 10, 1892.

O. Seyfert

Essential feature.—The fac-simile signature of "O. SEYFERT." Used since March 20, 1892.

21,843. GOODS. PAINE-HILSON COMPANY, New York, N. Y. Filed Sept. 7, 1892.

THE PACIFIC

Essential feature.—The words "THE PACIFIC." Used since December, 1879.

21,844. WHIPS. POMEROY & VAN DEUSEN, Westfield, Mass. Filed Sept. 8, 1892.

Essential feature.—The word "AJAX." Used since March 30, 1887.

21,845. MEDICATED BELTS, PILLS, AND SALTS. ABBOTT LORING, Boston, Mass. Filed Aug. 1, 1892.

Essential feature.—The letter "L" and the representation of a belt, which incloses it. Used since July 1, 1892.

21,846. CHEMICAL PRODUCTS. DR. F. VON HEYDEN NACHFOLGER, Radebeul, near Dresden, Germany. Filed Sept. 7, 1892.

SUCROL

Essential feature.—The word "SUCROL." Used since August 17, 1892.

21,847. TEA. PAYNE & GALLAGHER, Omaha, Neb. Filed Apr. 20, 1892.

Essential feature.—The word "KOBE" on a scroll. Used since September 1, 1890.

21,848. LIQUEFIED CARBONIC-ACID GAS. TREMLOW & CO., New York, N. Y. Filed Sept. 10, 1892.

Essential feature.—The representation of a geyser or fountain. Used since April 25, 1892.

21,849. REMEDIES FOR EXTERNAL USE. SAMUEL L. WILLARD, San Augustine, Tex. Filed Aug. 22, 1892.

Essential feature.—The representation of a star and the words "THE LONE STAR REMEDY." Used since June 1, 1892.

21,850. A REMEDY FOR DISEASES OF THE KIDNEYS AND GENITAL ORGANS. JULIUS G. ANHAEUSER, Syracuse, N. Y. Filed Aug. 29, 1892.

COLUMBIAN

Essential feature.—The word "COLUMBIAN." Used since July 5, 1892.

21,851. CAPSULES FOR MEDICINAL USE. HENRY HOWARD BLOOM, Virginia City, Nev. Filed Sept. 6, 1892.

Persian Safety Capsules

Essential feature.—The phrase "PERSIAN SAFETY CAPSULES." Used since January, 1892.

21,852. TOY. CLARENCE A. BUSHER, Philadelphia, Pa. Filed July 21, 1891.

Essential feature.—The representation of a human face upon or formed by a clenched human fist. Used since July 1, 1891.

21,853. HYDRAULIC AND OTHER CEMENTS. EIMER & MENDELSON COMPANY, New York, N. Y. Filed July 28, 1892.

Essential feature.—The representation of a compass and rule and the letters "O. K." Used since June 1, 1892.

21,854. CHEMICAL PRESERVATIVE. OTTO HAHN & BROTHER, New York, N. Y. Filed July 13, 1892.

Essential feature.—The word "PRESERVIT." Used since October 1, 1891.

21,855. CHEWING AND SMOKING TOBACCO AND CIGARS. GEORGE A. NEFF, CHARLES J. NEFF, and WILLIAM J. NEFF, Kansas City, Mo. Filed Aug. 12, 1892.

Essential feature.—An equilateral triangle formed within a quadrangle, two battle-axes partly resting on the right-hand and left-hand corners of the triangle, and the letters "K P" placed at the lower portion and within the square. Used since 1887.

THE ROBBS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE AMERICAN LEAD PENCIL COMPANY.

Decided September 27, 1892.

PRACTICE—TRADE-MARK—EFFECT OF REGISTRATION UNDER ACT OF 1870 FOR PURPOSES OF INTERFERENCE WITH PRESENT APPLICATION.

Where the subject-matter of application for Trade-Mark is clearly anticipated by a mark registered under the act of 1870, and the Examiner properly refused to declare an interference because of the nullity of such prior registration, and also properly refused registration to the present applicant because the prior registry makes the mark an anticipation, *Held* the proper course for the Office in such a case is to give the applicant under the law of 1870 notice that an application is pending with which his registry would interfere if it were under the existing act and allow him sixty days to make a new application.

ON petition.

TRADE-MARK.

Application of American Lead Pencil Company filed May 17, 1892.

Mr. Joseph Lyon for the applicant.

SIMONDS, *Commissioner:*

This is an appeal from the action of the Primary Examiner refusing to grant registration for a Trade-Mark to this applicant, and also refusing to declare an interference with a prior registration of substantially the same mark under the act of 1870.

The Examiner declines to institute the interference on the ground that the registrations under the act of 1870 are known to be null and void through the decision of the United States Supreme Court, and he declines to grant registration because, although the previous registration is void, yet it makes the Trade-Mark in question known to the Patent Office.

Under such circumstances the proper and equitable thing seems to be to give the registrant under the act of 1870 opportunity to file an application under the existing act and become an interference contestant if that party so chooses.

Notice will be issued to the registrant under the act of 1870 that an application for registry is pending with which the said registry would interfere if it were a registry under the existing act, and that sixty days will be allowed wherein such registrant may make application under the existing act with a view to interference.

FOGLESONG v. HUTT AND PHILLIPS.

Decided September 27, 1892.

PRACTICE—INTERFERENCE—MOTION TO DISSOLVE ON GROUND OF ESTOPPEL.

Where a party to an interference moved its dissolution on the ground that the opposing party was estopped by a prior interference, and appealed from the action of the Examiner of Interferences transmitting the case to the Primary Examiner for his decision, the appellant alleging that the Examiner of Interferences should have himself decided the motion, since it did not go to the right of the opposing party to make the claim involved, *Held* not to be a real distinction, and the Examiner of Interferences affirmed.

APPEAL from Examiner of Interferences.

MACHINE FOR MAKING PAPER VESSELS.

Application of W. Foglesong filed January 26, 1891, No. 379,148. Application of Hutt and Phillips filed January 2, 1891, No. 376,508.

Messrs. Whitaker & Prevost for Foglesong.

Mr. W. H. Doolittle for Hutt and Phillips.

SIMONDS, *Commissioner:*

The following is a notice of a motion heard by the Examiner of Interferences:

Take notice that on Thursday, the 4th instant, at ten o'clock or as soon thereafter as counsel can be heard, motion will be made to dissolve the above-entitled interference, on the ground that the applicants Hutt and Phillips are not entitled to an interference with the application of Foglesong, in view of the proceedings in the prior interference No. 15,380 between the same parties

The decision of the Examiner of Interferences thereon was as follows:

The within motion appears to have reference to the right of Hutt and Phillips to make the claim involved, for otherwise they would appear to be entitled to the interference. The Examiner, so construing it, deems it in proper form, and hence transmits it with the files and papers to the Primary Examiner for his determination under Rule 122.

Foglesong appeals from this decision of the Examiner of Interferences on the ground that he should decide the motion himself, because Foglesong is not meddling with the question whether Hutt and Phillips have the right to make the claim in question, his motion being directed solely to the point that whether or not they have the right to make the claim they are estopped from having this interference. Suppose the attempted distinction be held to be material and the interference denied on the ground of estoppel, but the claim be allowed to *Hutt and Phillips ex parte*. It needs no prophet to predict that Foglesong will recoil from that consequence of his motion. It is, however, its legitimate result. The distinction is not a real one.

The action of the Examiner of Interferences is affirmed and the appeal dismissed.

EX PARTE FINLAYSON, BOUSFIELD & CO.

Decided September 28, 1892.

TRADE-MARK—REFUNDING FEES PAID BY MISTAKE—RULE 224.

Where the domestic branch of a business firm having offices in this country and abroad filed application for Trade-Mark registration, and subsequently learned that application for the same mark had already been filed through the London agent, *Held* that the second filing was a case of mistake under the law, and the fee refunded.

ON petition.

TRADE MARK FOR LINEN THREAD.

Application of Finlayson, Bousfield & Co. filed April 19, 1892.

Messrs. Foster & Freeman for the applicants.

SIMONDS, *Commissioner:*

This a petition for the return of money paid as a fee upon an application for the registration of a Trade-Mark upon the following representation:

This application for registration was filed through inadvertence, accident, or mistake. It appears that the home firm in Johnstone filed applications for registration of this same subject-matter on December 17, 1889; that the member of the firm having charge of the United States matters, without having knowledge of the previous applications, caused this present application for registration of the same Trade-Mark to be made, and has only just learned that prior application had been made by the firm through its London agent. In view of these facts we hereby abandon the above application for registration in favor of the prior application. Further, in view of the fact that this application was filed by inadvertence, accident, or mistake, it is requested that the fee paid be returned to our attorneys, Messrs. Foster & Freeman.

The present application was filed April 19, 1892. As originally filed it presented "a Trade-Mark for linen thread." It said:

Our Trade-Mark consists in a representation of a star.

By amendment of April 26, 1892, it added—

or the word star.

As originally presented it further said:

The essential feature * * * is the representation of a star.

By amendment of April 26, 1892, there was added—

or the word star.

December 17, 1889, the same applicants filed two applications for registry of Trade-Marks, one of which eventuated in Trade-Mark certificate No 21,356, dated June 28, 1892, and the other in Trade-Mark certificate No. 21,892, dated June 28, 1892. The former of these said:

Our Trade-Mark consists in the word-symbol "Star."

It also said:

The essential feature of the Trade-Mark being the word-symbol "STAR."

The latter of these certificates said:

Our Trade-Mark consists in a representation of a star—

and—

the essential feature of the Trade-Mark being the representation of a star.

Both of these registrations were for—

a Trade-Mark for linen and hemp yarn and thread.

The statute applying to this matter is in these words:

Sec. 4936. The Treasurer of the United States is authorized to pay back any sum or sums of money to any person who has through mistake paid the same into the Treasury, or to any receiver or depository, to the credit of the Treasury, as for fees accruing at the Patent Office, upon a certificate thereof being made to the Treasurer by the Commissioner of Patents.

The rule of the Patent Office applying to this matter is as follows:

224. Money paid by actual mistake, such as a payment in excess, or when not required by law, or by neglect or misinformation on the part of the Office, will be refunded; but a mere change of purpose after the payment of money, as when a party desires to withdraw his application for a patent or for the registration of a Trade-Mark, or to withdraw an appeal, will not entitle a party to demand such a return.

The present application as originally presented is for the identical subject-matter covered by Trade-Mark certificate No. 21,392, and the alternative matter brought in by amendment of April 26, 1892, is identical with the subject-matter of Trade-Mark certificate No. 21,856. No possible motive or advantage hoped to be gained by the present application can be imagined, in view of the said Trade-Mark certificates already issued. It seems to be a case of actual mistake, and the facts which appear of record are consistent with the allegations above quoted from applicants' petition.

The petition is granted and the money will be refunded.

EX PARTE FEISTER.

Decided September 2, 1892.

1. PRACTICE.

If the Examiner is of the opinion that there is a want of divisibility of invention between the claims of an application and the claims of a patent to the same applicant, both applications having been pending concurrently, he should *reject* the claims of the application for that reason.

2. SAME.

In such a case a petition that the Examiner be instructed that the application is a division of the application for which a patent was granted will not be passed upon, since it presents a question relating to the merits of the case.

ON petition.

PRINTING-PRESS.

Application of Henry P. Feister filed October 19, 1887, No. 252,781.

Mr. R. M. Hunter for the applicant.

FROTHINGHAM, *Acting Commissioner:*

This is a petition that—

the Primary Examiner may be instructed that this application is properly a division of the said application, No. 214,926, filed September 30, 1886, and that the claims of this application may be considered upon their merits.

It appears that the petitioner has heretofore had two applications for similar inventions pending at the same time—the one now under consideration and the one referred to in the petition, Serial No. 214,926; that the earlier-filed application became ready for allowance, but that the Examiner refused to allow it until the later case should be formally abandoned or such claims in the earlier case as applied to what was shown and claimed in the later case should be erased; that upon appeal the Commissioner reversed the action of the Examiner and instructed him that the later application was no bar to the allowance of the earlier, (*ex parte Feister*, 53 O. G., 1089;) that the Examiner thereupon allowed the earlier case, which was patented May 26, 1891, No. 452,933, and that the applicant on February 15, 1889, filed an amendment in the later case to the effect that it was a division of the earlier case.

The Examiner declined to act further on the merits, because in his opinion there was no proper line of division between the two cases.

It was said in *ex parte Feister*, *supra*, as follows:

Of course after one application describing and claiming a particular feature has been patented or passed to issue it is very plain that thereafter no other application describing and claiming the same feature should be passed—

referring to applications by the same inventor.

It was said in *ex parte Woodward* (53 O. G., 1090) that—

where an application was rejected on applicant's prior patent, the application for which was pending concurrently with the present application, and it appeared that the claims of said patent and application covered the same invention under a slightly-different guise, and that the case was one in which the lines of division between the supposed different inventions existed as mental figments only and had no corresponding existence in the concrete subject of invention, *Held* that the application was rightly rejected because of want of divisibility of invention between it and said patent. [Syllabus.]

It is therefore held that action should be given upon the merits, and in fact the Examiner in his statement admits that this would be the proper course.

If the Examiner is of the opinion that there is want of divisibility of invention between the claims of the patent and the application, his action should consist of a rejection on that ground and on all other grounds which may exist for rejection.

With respect to the first prayer of the petition, it need only be said that the question in substance presented thereby for consideration is whether or not applicant's patent is a bar to the allowance of the present application, which is in effect a question relating to the merits of the case and therefore one not properly before the Commissioner for determination.

The petition to the foregoing extent is granted, and the case is remanded for action in conformity herewith.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court of Appeals—Sixth Circuit.

MOSHER *v.* JOYCE *et al.*

Decided July 28, 1892.

1. PATENTS FOR INVENTIONS—IMPROVEMENTS—LIFTING-JACKS.

Letters Patent Nos. 168,663 and 172,471, issued to Samuel E. Mosher, October 11, 1875, and January 18, 1876, respectively, for lever lifting-jacks, are for improvements only, and not for an entirely new machine or jack.

2. SAME—INFRINGEMENT—REFERENCE TO TAKE ACCOUNT—SEGREGATION OF PROFITS.

In a suit for infringement of a patent for a lifting-jack the court decreed that complainant recover the profits made "from said infringement by the manufacture, use, or sale of the improvements described" in the patent, and referred the cause to a master to take proof and report the profits made from the manufacture, use, or sale "of said improvements or from said infringement." No proof was given before the order of reference was made showing that the patented feature gave the infringing machine its entire commercial value. *Held* that the order did not and could not properly direct the finding of profits on the entire machine, and defendants having claimed at the commencement of the hearing before the master that they were liable only for the profits realized from the infringing feature the burden was on complainant to show either that such feature gave the machine its entire commercial value or else to segregate the profits made on that feature from the profits on the machine as a whole (45 Fed. Rep., 205, affirmed.)

3. SAME—MASTER'S REPORT—RECOMMITTAL.

Complainant, claiming that the entire commercial value of the infringing machine was due to the patented improvement, offered no evidence to segregate the profits on that feature alone, and the master reported the profits on the whole machine. The court, on exceptions to the report, held that the entire commercial value was not due to the patented feature, and thereupon complainant moved to recommit the report for evidence of separate profits. *Held* that it was a proper exercise of discretion for the court to refuse the motion, as complainant, with full notice of defendants' claim, had chosen to rely entirely on his own theory of the case.

APPEAL from the Circuit Court of the United States for the Western Division of the Southern District of Ohio.

Bill by Samuel E. Mosher against Jacob O. Joyce and others for infringement of a patent. The patent was sustained, infringement declared, and a reference for an accounting ordered. (31 Fed. Rep., 557.) Subsequently the cause was heard on exceptions by defendants to the master's report, which exceptions were sustained and a decree entered for nominal damages. (45 Fed. Rep., 205.) Complainant appeals. Affirmed.

STATEMENT OF THE CASE.

In 1883 the appellant brought suit against the appellees for the infringement of Letters Patent Nos. 168,663 and 172,471, granted to him October 11, 1875, and January 18, 1876, respectively, for certain new and useful improvements in lifting-jacks. After the issues were made up and the proofs taken the cause came on for hearing in 1887, when the circuit court sustained the patents, adjudged that respondents' jack, No 29, embodied and infringed the patented improvements, and decreed—

that the complainant recover of the defendants the profits which they have received or made or which have accrued to them from said infringement by the manufacture, use, or sale of the improvements described and secured by said Letters Patent at any and all times since the 18th day of January, 1876, and also the damages which the complainant has sustained thereby.

And as it did not appear what said profits and damages were, it was further ordered and decreed that the cause be referred to a special master—

to take proof and report to the court an account of the profits which the defendants have received or which have arisen or accrued to them from the manufacture, use, or sale of said improvements or from said infringement and to ascertain and report the damages which the complainant has sustained thereby since January 18, 1876, from the papers and evidence in the cause and from any evidence which either party may produce before him of the same.

Upon the execution of this reference neither party introduced before the special master any evidence as to the profits made or realized by defendants from the manufacture, use, or sale of the patented improvement nor as to the damages which complainant had sustained by reason of the infringement. The master took proof as to the profits defendants had made from the manufacture and sale of the entire jacks embodying the patented improvements, and reported such profits upon the whole machines at the sum of $1,905.06. He found and reported that defendants had manufactured and sold 301 jacks embodying the patented inventions, for which they received the aggregate or gross sum of $3,956.86. From this he deducted the cost of manufacturing and materials and found a net profit of $1,905.06, which he reported as due to complainant from defendants—

on account of damages from infringement adjudged in this case.

The master's findings and report were founded upon the theory that complainant was entitled to the entire profits made by defendants upon the whole machines, or the entire jacks manufactured and sold by them, and that the amount of such net profits was the measure of complainant's damages for the infringement of the patented improvement. After his report was filed the defendants moved the court to refer the account back to the master, which motion was overruled and denied. Thereupon the defendants filed exceptions to the report. The main grounds of exception were that there was no evidence produced before the master or found in the cause that the patented improvement or device had any market value, or that defendants had derived any profit by the use thereof, or that complainant had sustained any damage from the infringement, and, further, that there was no evidence to show what value or profit on the jacks manufactured and sold by defendants was due to or had accrued from the use of the patented improvement or that they had realized or derived any profits therefrom,

and that the master erred in awarding complainant the whole net profits upon the entire machines. The defendants, in the opening of the reference before the master, claimed that only such profits as resulted from the use of the patented improvements could be allowed the complainant; that the burden of showing what such profits were rested upon the complainant, inasmuch as defendants had the right to make and sell jacks and all parts thereof not covered by complainant's patent, and that complainant's profits or damages should be confined or limited to such as were shown to have resulted from the manufacture and sale of the infringing jacks over and above other and similar jacks which they had the right to make and sell. The complainant's claim and contention was that the improvement covered by his invention and patents made in effect an entirely new machine—an improved lifting-jack—so different in operation from lifting-jacks previously in use and so much more efficient that the doctrine of the apportionment of profits could not properly be applied, and that he should be allowed the entire profits on all jacks embodying his improvement.

The court below held that complainant's patents were for improvements only, and not for an entirely new machine or lifting-jack; that it was the duty of complainant to give evidence separating or apportioning the defendants' profits and his damages between the patented feature and the unpatented features of the jacks made and sold, as held in *Garretson* v. *Clark* (111 U. S., 120; 4 Sup. Ct. Rep., 291) and *Black* v. *Thorne*, (111 U. S., 124; 4 Sup. Ct. Rep., 326,) and that, complainant having failed to show either profits or damages that were attributable to the use of the improvements infringed, he was entitled to only nominal damages. The respondents' exceptions to the master's report were accordingly sustained and the complainant was decreed nominal damages and taxed with the costs of the reference. The complainant moved for a modification of the court's rulings and for a recommittal of the cause to the master to take additional testimony, which motions were denied.

From the decree of the court below awarding him only nominal damages, assessed at the sum of six cents, the complainant has appealed to this court and has assigned various errors as grounds of reversal. These assignments need not be severally noticed or considered in detail. The principal ones relied on relate to the ruling of the lower court upon the character and scope of the invention and rule of the apportionment applied as to the profits. It is also claimed that the interlocutory decree of reference directed the master to find and report the profits made by defendants on the entire jack, which infringed the patented improvement, that the court erred in decreeing nominal damages for want of testimony apportioning the same, and that the cause should have been referred back to the master to take proper testimony on which to make such apportionment.

Mr. L. M. Hosea for the appellant.

Mr. Edmond E. Wood (*Wood & Boyd*, of counsel) for the appellees.

Before BROWN, JACKSON, and TAFT, Judges.

JACKSON, *J.:*

There was no error in the holding of the circuit court that complainant's invention and patents were for improvements only, and not for an entirely new machine or lifting-jack. The patented improvement made jacks on which it was used more efficient, but did not operate to make an entirely new machine, nor did it supersede all other jacks.

We are clearly of the opinion that the order of reference did not direct the master to find and report the profits made by defendants on the entire jack manufactured and sold by them. In the absence of proof showing that the defendants' infringing jack derived its whole commercial value from the use of the patented improvement the court could not properly have made such an order of reference as appellant claims was made. This is settled by *Littlefield* v. *Perry*, (21 Wall., 205, 228, 229.) The reference was ordered in substantial conformity with that in *Dobson* v. *Dornan*, (118 U. S., 15, 16; 6 Sup. Ct. Rep., 946,) and directed an account of the profits from the infringement; but if that were not so, still, upon the coming in of the report, the court upon the final hearing had full authority to vary or depart from the interlocutory decree on the question of profits.

There is nothing in the record to show that the court below erred in refusing to recommit the cause to the master for the purpose of taking testimony upon which to make an apportionment of the profits. It was claimed by respondents pending the reference that complainant could only be allowed the profits which defendants have realized as the result or consequence of the wrongful use of the patented improvement. This involved the apportionment of the profits. The complainant being thus informed of what the defendants would contend for cannot well claim that he has been taken by surprise. No accident, inadvertence, or mistake is shown as a ground for the recommittal of the cause. The complainant, after notice of defendants' position and claim, neglected and omitted to introduce any testimony on the point. Nor is his motion to refer the account back to the master supported by any affidavit or showing that he can hereafter produce testimony that will enable either the master or the court to ascertain the profits attributable to his patented improvement. In respect to such matters as the recommittal of accounts or reference back to a master the chancellor exercises a very large discretion, and is not to be put in error in his action upon such motions except upon very clear showing of merits and in the absence of negligence. Where litigants have an opportunity of presenting their case fully and elect to proceed on a certain theory as to their rights, which is subsequently not sustained, and then move to reopen the cause for proof upon another theory, some good showing should be presented to support such motion. No special circumstances are disclosed in the present case which satisfy us that the court below erred in refusing to refer the cause back to the master for proof on the apportionment of the profits.

The remaining and principal question presented by the appeal relates to the proper measure of profits which complainant was entitled to recover. Did the circuit court err in confining and limiting his profits to such as resulted from or were attributable to his patented improvement, and, in the absence of proof on that subject, awarding only nominal damages, or was complainant entitled to the entire profits on all the jacks manufactured and sold by defendants which embodied his invention? The rule for the determination of this question is well settled by the Supreme Court. It is so clearly stated in *Garretson* v. *Clark* (111 U. S., 120, 121; 4 Sup. Ct. Rep., 291) as to render any discussion of or reference to earlier authorities unnecessary. In that case the Court say that—

> where a patent is for an improvement, and not for an entirely new machine or contrivance, the patentee must show in what particular his improvement has added to the usefulness of the machine or contrivance. He must separate its results distinctly from those of the other parts, so that the benefits derived from it may be distinctly seen and appreciated. The rule on this head is aptly stated by Mr. Justice Blatchford in the court below. The patentee [he says] must in every case give evidence tending to separate or apportion the defendant's profits and the patentee's damages between the patented feature and the unpatented features, and such evidence must be reliable, and tangible and not conjectural or speculative; or he must show, by equally reliable and satisfactory evidence, that the profits and damages are to be calculated on the whole machine, for the reason that the entire value of the whole machine as a marketable article is properly and legally attributable to the patented feature.

The rule thus laid down is reaffirmed in *Dobson* v. *Carpet Co.* (114 U. S., 444, 445; 5 Sup. Ct. Rep., 945) and later decisions. Has complainant complied with either branch of the rule, so as to entitle himself to anything more than nominal damages? It is clearly shown, and not disputed, that he made no effort and produced no evidence, either before or after the reference, "tending to separate or apportion the defendants' profits and the patentee's damages between the patented features and the unpatented features" of the infringing jacks. His claim below and his contention here is that his case falls within the second branch of the rule announced, in that his profits and damages should be calculated on the whole machine, for the reason that the entire value of the whole infringing machine as a marketable article was properly and legally attributable to the patented improvement. If he has established this by reliable and satisfactory evidence, his case falls within the exception recognized and applied in *Manufacturing Co.* v. *Cowing*, (105 U. S., 253;) *Root* v. *Railway Co*, (*id.*, 189;) *Hurlbut* v. *Schillinger*, (130 U. S., 456, 471, 472; 9 Sup. Ct. Rep., 584,) and *Crosby, etc., Valve Co.* v. *Consolidated Safety Valve Co.*, (141 U. S., 454; 12 Sup. Ct. Rep., 49,) where the patentee was given the entire profits, because it was shown that the infringing machine or device had derived its entire commercial value from the patented feature or improvement. Thus, in *Hurlbut* v. *Schillinger*, (130 U. S., 456; 9 Sup. Ct. Rep., 584,) which appellant relies on, it is said by the Court:

> It clearly appears that the defendant's concrete flagging derived its entire value from the use of the plaintiff's invention, and that if it had not been laid in that way it would not have been laid at all.

So in *Crosby, etc., Valve Co.* v. *Consolidated Safety Valve Co.* (141 U. S., 454 12 Sup. Ct. Rep., 49;) it was established by the patentee to the satisfaction of the court that the whole commercial value of the infringing article was derived from the use of the patented feature, and for that reason the court awarded the entire profits. Has complainant brought his case within the rule established by these authorities? We are clearly of the opinion that he has not. He has wholly failed to show, as the burden rested upon him to establish, that the commercial value of the infringing jack made and sold by defendants was derived from the use of the patented feature. On the contrary, the proof on this subject, so far as there is any relating to the matter, tends strongly in the other direction. Having failed to prove by reliable and tangible evidence that the entire value of the infringing jack as a marketable article was properly and legally attributable to his patented feature, the court cannot indulge in conjecture or speculation in order to give him the entire profits made by the defendants. It was open to complainant to show that defendants had received an increased price for their infringing jacks which was fairly attributable to his patented improvement or that the infringing jacks derived their entire value as marketable articles from his invention. He has failed to do either, and we are clearly of the opinion that the decree below was therefore correct and should be affirmed, with costs of appeal, and it is accordingly so ordered and adjudged.

U. S. Circuit Court—Northern District of California.

CALIFORNIA FIG SYRUP COMPANY *v.* IMPROVED FIG SYRUP COMPANY.

Decided May 23, 1892.

1. TRADE-MARKS—FRAUDULENT IMITATION—EVIDENCE.
   Complainant, California Fig Syrup Company, manufactured a sirup from figs and put it up in packages, having as a device thereon a fig-tree, with leaves and fruit, and the words "Syrup of Figs," as a Trade-Mark. Respondent, Improved Fig Syrup Company, made and put up the same article in a package with the same device and the words "Improved Syrup of Figs" as a Trade-Mark Respondent, on remonstrance, changed its device to the figure of a woman holding up a fig, with the words "Fig Syrup" as a Trade-Mark, all of which occupied the same place and space on the package as complainant's device and was, besides, an imitation of complainant's newspaper advertising device. *Held* that complainant was entitled to an injunction.
2. SAME—EFFECT OF PLAINTIFF'S DECEPTION.
   The fact that plaintiff's Trade-Mark, "Syrup of Figs," being merely descriptive, was deceptive as a designation of the compound did not affect plaintiff's right to an injunction, the matter in controversy being not the right to the exclusive use of the words, but respondent's simulation of complainant's devices and packages with a view to deceive customers.
3. SAME—PLEADING.
   An objection to the bill on the ground that it was uncertain whether complaint was made of the use of the words "Fig Syrup" or "Syrup of Figs" by themselves or in combination with other words, devices, etc., could not be sustained, it being enough for the purposes of a demurrer that complainant was entitled to relief in respect of the combined use, which was clearly set forth in the bill.
4. SAME—PARTIES.
   The bill alleged that respondents B. and others were using respondent corporation as a means of infringement, they being themselves substantially the corporation. *Held* that there was no misjoinder in making them parties defendant.

SUIT by the California Fig Syrup Company against the Improved Fig Syrup Company. On demurrer to the bill.

Messrs. Olney, Chickering & Thomas and *Mr. Paul Bakewell* for the complainant.

Mr. John L. Boone for the respondent.

MCKENNA, *J.*, (orally:)

This is a case of infringement of a Trade-Mark. There is a demurrer to the complaint and a motion for an injunction. The granting of the latter is dependent upon the action of the court on the former. The basis of the suit is the effort of the respondent to imitate the Trade-Mark of the complainant, and to thereby represent to the public that its goods are those of complainant. If the bill shows this, the complainant is entitled to relief. In *McLean* v. *Fleming* (96 U. S., 245) the Court say:

> It is not necessary, in order to give the right to an injunction, that the specific Trade-Mark should be infringed; but it is sufficient if the court should be satisfied that there was intent on the part of the respondent to palm off his goods as the goods of complainant, and that he persists after being requested to desist.

Citing *Woollam* v. *Ratcliff*, (1 Hem. & M., 259.) To the same effect is *Pierce* v. *Guittard*, (68 Cal., 68; 8 Pac. Rep., 645.)

The bill alleges a high reputation of complainant's compound, acquired by its virtues and by extensive and expensive advertising, and also describes complainant's Trade-Mark, the form and size of the bottles and packages used by it, and illustrates them by exhibits. It also describes the imitations of respondent and illustrates them by exhibits. The exhibits are identical in form, size, and in device. The respondent changed its device, retaining all other resemblances. The complainant is called "California Fig Syrup Company" and its article "Syrup of Figs." The respondent is called "Improved Fig Syrup Company" and its article "Improved Syrup of Figs." The latter letters are displayed on the package in large type, imitating not only complainant's name, but the style of letters, while the word "Improved" is printed in small type. The respondent changed its device from a branch of a fig-tree with leaves and fruit—an exact imitation of complainant's device—to the figure of a woman holding up temptingly a fig in one hand and holding under the arm of the other a basket of figs, and instead of "Syrup of Figs" there is substituted "Fig Syrup." The new device, with its accompanying words, occupies exactly the same space and place on the box as complainant's device, and is, besides, an imitation of a device of complainant used in the newspaper advertisement. It is evident, therefore, to use the language of Justice Clifford in *McLean* v. *Fleming*—

that the general appearance of respondent's device is such as would be likely to mislead one in the ordinary course of purchasing the goods and induce him to suppose that he was purchasing the genuine article.

This is similitude enough, and on the case as it now stands there is no doubt of respondent's intention. Its first and almost exact imitation of complainant's packages and device showed not the advertisement of a new article with a reputation yet to make, but the counterfeiting of an old article with a reputation already made, and the change in the device was and is an attempt to preserve the deceit and yet avoid liability for it.

But respondent urges that the words "Syrup of Figs" are descriptive, and that complainant deceives when it uses them to designate its compound. The deceit does not appear on the face of the bill, and it is unimportant if they are descriptive. The question is now, not whether complainant has the exclusive right to use the words "Syrup of Figs" or "Fig Syrup," but it is whether respondent has by use of them and other words and by the other imitations alleged and exhibited so far imitated the form of complainant's device and description to represent its goods as its goods and appropriate its reputation and trade. The gravamen of the action is the simulation of complainant's devices and the deception of purchasers. This is the principle of the best-considered cases, uniting them, notwithstanding their diverse facts. (*Burton* v. *Stratton*, 12 Fed. Rep., 696; *Baking Powder Co.* v. *Fyfe*, 45 Fed. Rep., 799; *Nerve Food Co.* v. *Baumbach*, 32 Fed. Rep., 205; *Anonyme, etc., Société* v. *Western Distilling Co*, 43 Fed. Rep., 417.)

Respondent also demurs to the bill on the ground that it is uncertain whether it complains of the use of the words "Fig Syrup" or "Syrup of Figs" by themselves or complains of them in combination with other words, the wrappers, etc. The complainant prays for an injunction against their use disjoined or conjoined with the other words and devices used by respondents. It is not necessary now to pass upon both claims for relief. It is enough for the purposes of this demurrer that complainant is entitled to the latter claim.

Respondent also urges that there is a misjoinder of parties defendant. I do not think so. The bill alleges that the respondents, Bishop *et al.*, are using the corporation but as a means of infringement; that they are substantially the corporation. In the case of *Nerve Food Co.* v. *Baumbach*, *supra*, the Star Bottling Works, a corporation, was joined with the respondent, Baumbach, under the same circumstances, the corporation namely belonging to him. Besides, it is doubtful if the respondents, Bishop *et al.*, have not waived this point by not demurring separately. The demurrer is overruled.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 61.—No. 2. TUESDAY, OCTOBER 11, 1892. PRICE—$5 per year.

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World's Columbian Exposition.

To the Inventors and Manufacturers of the United States:

It is the intention of the Patent Office to make at the World's Columbian Exposition at Chicago in 1893 an exhibit which will show that great advance in the several arts which is due, in large measure, to the encouragement and support afforded by our patent system. This exhibit is to consist of models of patented inventions, which will be carefully selected, to show as far as is possible the inception of each art, the stages through which the art has advanced, and the final development reached at the present time. This display of typical inventions, embodied in concrete form and properly arranged, will, it is believed, constitute a grand historical exhibit of the progress of the useful arts and one which will be of great interest not only to inventors and manufacturers, but to the public generally.

The Office collection of models has been seriously impaired by fire, and is further incomplete by reason of the fact that models have not generally been required or received during the last ten years. The Office is not, therefore, in possession of the models of many valuable inventions which might properly be included in such an exhibit, and without which, indeed, the exhibit would be incomplete. The limited appropriation for this exhibit will not permit the Office to make such models. An urgent appeal is therefore made to all inventors and manufacturers to come to the assistance of the Office in this matter, either by loans of models already built or by the construction of such models not in the possession of the Office as should properly be placed in such a collection. Of course, where models are loaned to the Office all proper credit will be given both in labels and catalogues to the parties by whom the loans are made, and such disposition will be made of the models after the close of the exhibit as the owners shall direct. Many inventors and manufacturers have already indicated a willingness to co-operate with the Office in this matter, and it is confidently expected that such a response will be made to this general appeal as will assure the unparalleled success of this attempt to graphically and concretely show the development of American invention.

W. E. SIMONDS,
Commissioner.

Protection of Foreign Exhibitors.

DEPARTMENT OF STATE,
Washington, D. C., July 30, 1892.

To the Diplomatic and Consular Officers of the United States:

GENTLEMEN: I subjoin a transcript of the act of Congress approved April 6, 1892, Public No. 29, entitled "An act to protect foreign exhibitors from prosecution for exhibiting wares protected by American patents and trade-marks," which reads as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That no citizen of any other country shall be held liable for the infringement of any patent granted by the United States, or of any trade-mark or label registered in the United States, where the act complained of is or shall be performed in connection with the exhibition of any article or thing at the World's Columbian Exposition at Chicago.

You will transmit copies of this circular to the government of the country to which you are accredited, and ask that it be given the widest possible circulation for the information of those directly concerned.

I am, gentlemen, your obedient servant,

JOHN W. FOSTER,
Secretary of State.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., August 4, 1892.

Official copy to the Commissioner of Patents for his information and guidance.

E. M. DAWSON,
Chief Clerk.

Withdrawal of Cases from Issue.

Hereafter all amendments proposed to allowed applications which involve a withdrawal from issue, and all petitions and requests relating thereto, shall be filed with the docket clerk, Mr J. M. Emory, and transmitted by him to the Primary Examiner for report. If the Examiner shall report favorably to the admission of such amendment, the matter will be laid before the Commissioner for immediate determination. If the Examiner shall report unfavorably, the case will be docketed and will be heard and decided by the Commissioner in regular course, unless good reasons shall appear for immediate action.

Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subclassified in the Scientific Library for convenient and ready reference.

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Issue of October 11, 1892.

Patents	400—No. 483,986 to No. 484,385, inclusive.
Designs	13—No. 21,885 to No. 21,897, inclusive.
Trade-Marks	10—No. 21,856 to No. 21,865, inclusive.
Labels	None.
Reissue	1—No. 11,276.
Total issue	424

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1	.....	Nevada	2	.....
Arizona Territory	2	.....	New Hampshire	1	.....
Arkansas	1	.....	New Jersey	29	.....
California	21	.....	New Mexico Ter	.....	.....
Colorado	10	1	New York	66	5
Connecticut	10	.....	North Carolina	8	.....
Delaware	1	.....	North Dakota	1	.....
District of Columbia	1	.....	Ohio	29	.....
Florida	1	1	Oregon	1	.....
Georgia	1	.....	Pennsylvania	27	.....
Idaho	.....	.....	Rhode Island	1	.....
Illinois	27	1	South Carolina	.....	.....
Indian Territory	.....	.....	South Dakota	2	.....
Indiana	18	.....	Tennessee	3	1
Iowa	6	.....	Texas	3	.....
Kansas	.....	.....	Utah Territory	1	.....
Kentucky	8	.....	Vermont	.....	.....
Louisiana	3	.....	Virginia	1	.....
Maine	5	.....	Washington	1	.....
Maryland	1	.....	West Virginia	2	.....
Massachusetts	34	1	Wisconsin	8	.....
Michigan	20	.....	Wyoming	.....	.....
Minnesota	11	.....	U. S. Army	.....	.....
Mississippi	.....	.....	U. S. Navy	1	.....
Missouri	13	.....	Total to citizens of the United States	387	10
Montana	1	.....			
Nebraska	4	.....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	.....	.....	Netherlands	.....	.....
Austria-Hungary	.....	.....	Newfoundland	.....	.....
Belgium	.....	.....	New South Wales	.....	.....
Bermuda	.....	.....	New Zealand	.....	.....
British Guiana	.....	.....	Norway	.....	.....
Canada	3	.....	Porto Rico	.....	.....
Chile, Republic of	.....	.....	Portugal	.....	.....
Cuba	.....	.....	Russia	.....	.....
Denmark	.....	.....	Scotland	.....	.....
England	15	.....	South Australia	.....	.....
France	2	.....	Spain	.....	.....
Germany	5	.....	Sweden	.....	.....
Guatemala	.....	.....	Switzerland	.....	.....
India	.....	.....	Victoria	.....	.....
Hawaii	.....	.....	West Indies	.....	.....
Ireland	.....	.....			
Italy	1	.....	Total to citizens of foreign countries	26	.....
Mexico	.....	.....			

APPLICATIONS UNDER EXAMINATION.

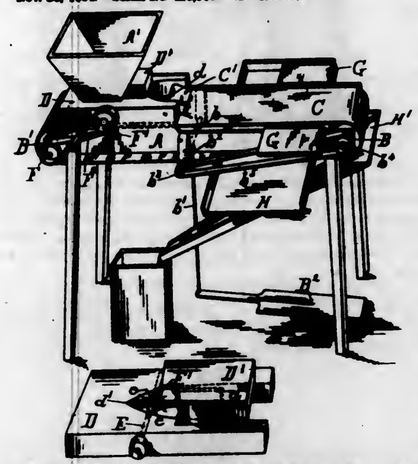
Condition at Close of Business October 4, 1892.

Division No.	Subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended	No. of applications awaiting action.
	Between one and two months in arrears.			
11	Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting.	Aug. 6	Sept. 30	219
31	Gas, Painting, Leather, Tanning, Alcohol, Oils, Fats, and Glue, etc.	Aug. 26	Sept. 28	69
16	Telegraphy, Telephony, Electric Lighting and Signalling.	Aug. 5	Sept. 21	164
30	Lamps, Gas-Fittings, Type-Writers, Matrix-Making Machines.	Aug. 6	Sept. 16	200
8	Furniture, Toilet, Umbrellas and Canes, etc.	Aug. 4	Sept. 15	272
14	Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, etc.	Aug. 12	Sept. 14	105
21	Textiles, etc.	Aug. 6	Sept. 12	187
23	Instruments of Precision, Acoustics, Optics, etc.	Aug. 6	Sept. 12	221
3	Metallurgy, Metal Founding, Forging, Rolling, Coating, Annealing and Tempering, etc.	Aug. 6	Sept. 10	201
24	Sewing-Machines and Apparel	Aug. 5	Sept. 8	113
12	Mechanical Engineering, Store-Service, etc.	Aug. 6	Sept. 7	229
9	Hydraulics, Fire-Extinguishers, etc.	Aug. 6	Sept. 5	392
20	Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc.	Aug. 9	Sept. 2	254
27	Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	Aug. 5	Aug. 16	281
22	Fire-Arms, Navigation, Signals, etc.	Aug. 6	Aug. 15	175
6	Chemistry, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc.	Aug. 20	Aug. 13	199
5	Fine Arts, Stationery, Book-Binding, Music, etc.	Aug. 6	Aug. 8	250
18	Steam-Engineering, etc	Aug. 8	Aug. 5	176
1	Tillage and Fences	Aug. 5	July 22	263
	Between two and three months in arrears.			
32	Advertising, Baggage, Packing and Storing Vessels, etc.	July 5	Sept. 15	248
25	Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, etc.	July 12	Sept. 10	258
10	Carriages and Wagons and Railway-Cars.	Aug. 2	Sept. 5	439
15	Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc.	Aug. 2	Aug. 4	265
	Between three and four months in arrears.			
4	Civil Engineering, etc.	June 17	Sept. 8	396
7	Harvesters, Games and Toys	June 25	Sept. 1	591
2	Farm Stock, Products, etc	June 20	Aug. 20	358
17	Paper-Manufactures and Printing.	June 13	Aug. 9	235
19	Stoves and Furnaces	June 6	July 11	448
	Between four and five months in arrears.			
29	Wood-Working Machines, Carpentry, Coopering and Roofing, etc.	May 25	Sept. 18	414
28	Pneumatics, Refrigeration, Air and Gas Engines, etc.	May 13	July 16	512
	Between five and six months in arrears.			
13	Metal-Working, Arms and Projectiles, etc.	May 2	Sept. 24	308
26	Electricity, Generation, Distribution, etc.	Apr. 22	Sept. 7	465
	Total number of applications awaiting action			8,909
	Under one month in arrears.			
	Designs	Oct. 1	Oct. 3	12
	Trade-Marks	Sept. 23	Sept. 26	61

PATENTS

GRANTED OCTOBER 11, 1892.

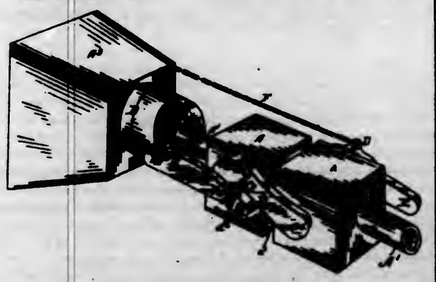
483,986. BEAN-PICKER. HIRAM A. BAIRD, Pontiac, Mich. Filed Nov. 28, 1891. Serial No. 413,208. (No model.)



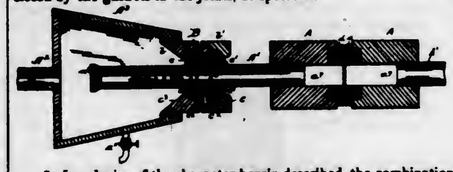
Claim.—1. In a bean-picker, the combination of a hopper, a block at the base of said hopper, provided with an angular recess, an armed revolving feeder adapted to rotate in said angular recess, a sliding valve above said angular recess, provided with a slot within which the arms of said feeder rotate and adapted to constrict the opening from said hopper to said angular recess, and a traveling belt adapted to receive and carry forward the beans fed to it by said revolving feeder, substantially as and for the purpose specified.

2. In a bean-picker, the combination of the hopper A', the block D, provided with the angular recess *d d'*, the armed revolving feeder E, the sliding valve D', provided with the slot d^3, through which the arms of the revolving feed E pass, a traveling belt C, and the suspended apron C', substantially as and for the purpose specified.

483,987. STEAM-COUPLING AND AUTOMATIC PARTING AND CUT-OFF DEVICE. FREDERICK BALMAR, Louisville, Ky., assignor of one-half to Henry Bahlau, same place. Filed Mar. 7, 1892. Serial No. 423,990. (No model.)



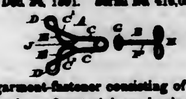
Claim.—1. In a device of the character herein described, the combination, with the body portions A, provided with coupling means, steam-boxes A^1, and pipes connecting said body portions and steam-boxes, the ends of the pipes within said steam-boxes being closed and said pipes having the perforations a^2 adjacent to the ends of the steam-boxes, of ball-and-socket joints at the ends of said steam-boxes, through which said pipes extend, gaskets within said joints, said gaskets surrounding said pipes, and chains connecting said body portions and steam-boxes in the manner described, whereby the parting of the cars will cause said chains to draw the perforated portions of the pipes from the steam-boxes into position, where the perforations will be closed by the gaskets in the joints, as specified.



2. In a device of the character herein described, the combination, with the body portions A, said body portions having lugs a^6, and latches pivoted at their ends to said body portions and adapted to engage said lugs, of steam-boxes, pipes connecting said body portions and steam-boxes, said pipes having their ends within the steam-boxes closed and formed at or near the forward end of the steam-boxes with perforations, joints at the ends of said steam-boxes, through which said pipes pass, gaskets in said joints, said gaskets surrounding the pipes adjacent to the perforations thereof, and chains secured to the latches and to the steam-boxes, substantially as described, whereby the parting of a train causes the chains to first draw the perforated portions of the pipes out of the steam-boxes into positions where the perforations will be closed by the gaskets in the joints, thus cutting off the steam and then to raise the latches to permit the body portions to separate, as specified.

3. The combination, with the body portions, steam-chests, and connecting steam-pipes, of the sockets B, secured to the open ends of the steam-chests, said sockets being made in two parts *b b'*, removably fastened together, and the balls C within said sockets, each of said balls being made in sections and formed with external and internal recesses and also with an opening for the passage of the steam-pipe, and gaskets within said recesses in the balls, all substantially as shown and described.

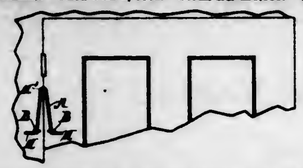
483,988. GARMENT-FASTENER. FRANCIS B. BENNETT, Philadelphia, Pa. Filed Dec. 24, 1891. Serial No. 416,069. (No model.)



Claim.—1. A garment-fastener consisting of two members, each composed of a single piece of material, one having a double shank and an eye and a spring-jaw formed of a continuation of one side of the shank, the said eye being formed intermediate of said shank and jaw and the said jaw being adapted to close a throat at the entrance between the side of the shank, and the other member having a single shank adapted to enter said throat and a head of greater width than the distance between the sides of the shank of the other member, substantially as described.

2. A garment-fastener consisting of two members, each composed of a single piece of material, one of said members having a double shank and jaws, the latter closing on each other, forming a throat, and eyes at the connection of the jaws and shank, and the other member having a shank adapted to enter said throat and a head of greater width than the distance between the sides of the shank of the other member, said parts being combined substantially as described.

488,989. DOOR-CLOSER. HARMAN DOERER, Barrie, Canada, assignor to Ella Jackson Ahbourne, Wanpaus, Wis., George Taft Blackstock and John Charles McKeggie, Toronto, and James Herbert McKeggie, Barrie, Canada. Filed Feb. 9, 1892. Serial No. 420,839. (No model.)



Claim.—1. In a door-closer, the combination, with a door and its jamb, of a single piece of wire having angularly-bent ends, said ends twisted out of their true normal plane, engaging the woodwork of the door and jamb, respectively, and secured thereto by means of staples, the automatic closing of the door being effected by the torsional power of the spring exerted laterally thereagainst, substantially as set forth.

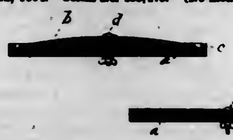
2. In a door-closer, the combination of a door and its jamb, a single piece of wire bent into approximate V shape, provided at a central bend with a coil and having its lower ends bent at right angles in opposite directions, and staples securing the angular ends to the door and jamb, respectively, substantially as set forth.

488,990. TIRE FOR BICYCLE-WHEELS. GEORGE A. BURWELL, Highlandville, Mass. Filed Aug. 20, 1891. Serial No. 403,159. (No model.)

Claim.—1. The combination of a hollow tire having a continuous flexible wall and outward extensions or thickened portions at the sides thereof with a wheel-rim having a receiving-groove and a seat or shoulder intermediate in the depth of said groove substantially at right angles to the plane of rotation of the wheel, said seat portions engaging the extensions of the tire and supporting the same against pressure toward the center of the wheel, and the side walls of the wheel-rim radially beyond said seats supporting the said extensions of the tire laterally, substantially as described.

2. The herein-described tire, having a continuous flexible wall surrounding and inclosing an air-chamber, said wall being composed of thin curved portions at its inner and outer periphery and having thickened outwardly-projecting side portions a^4, the portion of said tube that is embedded in the wheel-rim being the same shape as the portion which projects therefrom to enable said tire to be reversed after its projecting side is worn, substantially as described.

488,991. PACKING-CASE. JEFFERSON CHASE, Portland, Me. Filed Sept. 12, 1891. Serial No. 405,475. (No model.)

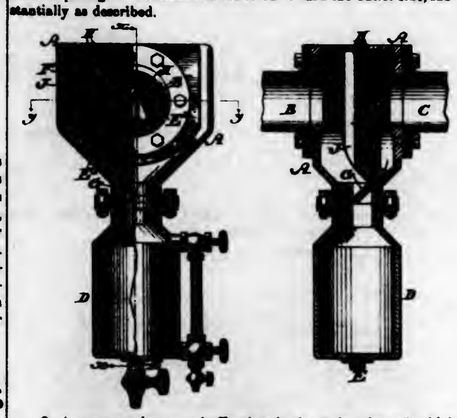


Claim.—A homogeneous seamless packing for saws, molded directly from vegetable pulp, having a flange on the outer edge and a cover adapted to fit inside said flange and rest upon the saw, said case and cover having holes therein, in combination with a bolt adapted to pass through the holes in said case and cover and a nut to travel on said bolt to hold the saw and cover, substantially as and for the purposes set forth.

488,992. SEPARATOR FOR STEAM. DAVID COMBRADE, Philadelphia, Pa., assignor to Harrison Safety Boiler Works, same place. Filed July 20, 1892. Serial No. 441,670. (No model.)

Claim.—1. A separator consisting of a casing with inlet and outlet pipes, a communicating well below the same, and a baffle-plate, which latter extends vertically in said casing and forms a chamber which is closed at top and bottom and has passages at its sides, substantially as described.

2. A separator having in the casing thereof a vertically-extending baffle-plate forming a chamber which is closed at top and bottom and has passages at its sides and deflected toward the outlet side, substantially as described.



3. A separator having a baffle-plate in the casing thereof which forms a chamber, the same being closed at top and bottom and has passages at its sides, a communicating well below said casing, and a drain-pipe at the base of the baffle-plate, leading from the discharge side of the casing to said well, said parts being combined substantially as described.

488,993. RAIL-JOINT. WINFIELD CURTIS, Oakland, assignor of one-half to E. F. May, San Francisco, Cal. Filed Nov. 16, 1891. Serial No. 412,051. (No model.)

Claim.—The combination, with two abutting rails having the vertical webs B, the beveled surfaces *a* and *b*, and the flat horizontal surfaces *c* and *d*, of fish-plates of such shape in cross-sections as to fit the said web and said beveled and horizontal surfaces, substantially as set forth.

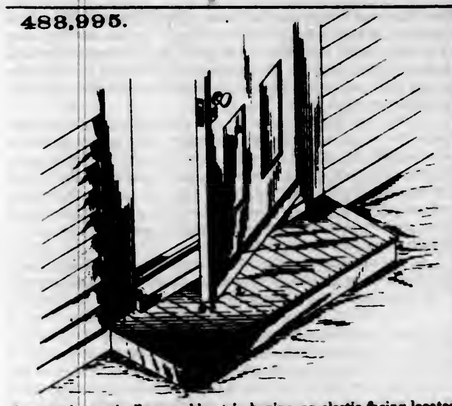
488,994. PLOW. WILLIAM W. DAVIS, Ashland Centre, Mich. Filed Nov. 27, 1891. Serial No. 413,339. (No model.)

Claim.—In a plow attachment, the combination, with the plow-beam having a side groove, of a vertically-slotted standard or arm fitted in said side groove of the beam and provided at its lower end, beneath the beam, with a horizontal bearing, a combined securing and adjusting screw engaging the slot in said standard to adjustably secure the same within the side groove of the beam, an extended horizontal stationary axle loosely fitting said bearing, a set screw passing through said bearing and engaging the axle therein to hold the same stationary at any point of lateral adjustment, and a plow-wheel journaled upon the outer end of said axle and adapted, when the same is fully extended, to lie in a plane beyond the extreme outer end of the mold-board and travel in the furrow, substantially as set forth

488,995. WEATHER-STRIP. ISAAC A. DELAHUT, Warren, Pa. Filed July 11, 1891. Serial No. 398,126. (No model.)

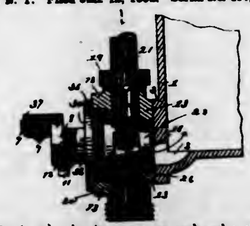
Claim.—The combination, with a door, of the housing secured

488,995.



thereto, the vertically-movable strip having an elastic facing located in said housing, the springs connected at their upper ends with the housing and their lower ends passing through staples secured to said strip, the horizontally and vertically movable block having a recess in its upper side located in the housing and resting upon the upper edge of the movable strip, the downwardly-depending arm pivoted at its upper end to the housing and its lower end engaging with the recess in the block, whereby the latter is depressed when moved horizontally inward, and the bar connected with said block adapted to contact with a door-frame to actuate the same, substantially as described.

488,996. VALVE FOR STEAM-ENGINES. HARMER DENNEY, New York, N. Y. Filed Jan. 12, 1892. Serial No. 417,733. (No model.)



Claim.—1. A valve having an open end and a closed end and interiorly chambered and steam and exhaust ports leading from its exterior to the interior, the open end acting alternately as a steam and exhaust port and leading to a cylinder, substantially as described.

2. A conoidal valve having an open end and a closed end and interiorly chambered, steam and exhaust ports, the open end acting alternately as a steam and exhaust port and leading to a cylinder, and a rib on the closed end having a valve-stem flexibly secured thereto, substantially as described.

3. A valve having an open end and a closed end, a rib on the closed end, steam and exhaust ports, the open end acting alternately as a steam and exhaust port and leading to a cylinder, a stem flexibly secured to the rib, and a spring between the rib and stem, substantially as described.

4. A valve having an open end and a closed end, a transverse rib on the closed end, a jawed stem flexibly engaging the rib, a spring between the rib and stem, and means in said stem for adjusting the tension of the spring, substantially as described.

5. A valve having an open end and a closed end, a rib on the closed end, a hollow stem flexibly secured to the rib, a spring in the hollow stem, and a set-screw in one end of the stem, the spring normally bearing against the set-screw and rib, substantially as described.

6. A valve-casing, a valve having an open end and a closed end seated in the casing, a rib on the closed end of the valve, a flange-stem flexibly secured to the rib, and a spring between the rib and stem, the said flange on the stem bearing against a portion of the casing, substantially as described.

7. A conoidal valve having an open end and a closed end and interiorly chambered, steam and exhaust ports leading to the chamber, a casing having a conoidal seat for the valve and a mutual steam and exhaust port aligning with the open end of the valve a stem flexibly secured to the valve, and means carried by said stem for packing it and pressing the valve to its seat, substantially as described.

8. A conoidal valve having an open end and a closed end and interiorly chambered, steam and exhaust ports leading to the chamber, a casing having a conoidal seat for the valve, a flanged stem, the flange bearing on a portion of the valve-casing, and a spring between the valve and stem, substantially as described.

9. A conoidal valve having an open end and a closed end and interiorly chambered, steam and exhaust ports leading to the chamber, a casing having a conoidal seat for the valve, a rib on the closed end of the valve, a flanged stem flexibly secured to the rib, and a spring between the rib and the stem, the spring pressing the valve to its seat and the flanged stem against a portion of the casing, substantially as described.

10. A valve-casing having outwardly-extending apertured elbows, an orifice extending through the casing, a cap for closing one end of the orifice, a valve having an open end and a closed end within said orifice, the open end of the valve being adjacent to the open end of the orifice, a rib on the closed end of the valve, and a stem flexibly secured to the rib extending through the said cap, substantially as described.

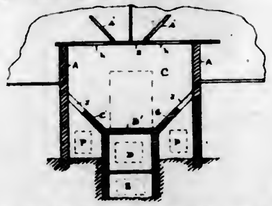
11. A valve-casing having outwardly-extending apertured elbows, an orifice extending through the casing, a cap for closing one end of the orifice, a valve having an open end and a closed end within said orifice, the open end of the valve being adjacent to the open end of the orifice, the valve being interiorly chambered, steam and exhaust ports in the valve, a stem on the valve extending through the said cap, and means for pressing the valve to its seat and packing the stem, substantially as described.

12. A valve conformed to a frustum of a cone and interiorly chambered, having an open and closed end, steam and exhaust ports in the valve, a valve-casing surrounding the valve and having a steam-inlet and an exhaust-outlet, and means for alternately aligning the steam and exhaust ports with the steam-inlet and exhaust-outlet, substantially as described.

13. A valve-casing 13, having the aperture 18 at one side, apertured cap 32 at the other, outwardly extending apertured elbows 19 20, flange 17, and outwardly-extending ears 14, substantially as described.

14. A valve having an open and closed end, a rib on the closed end, a hollow stem flexibly secured to the rib, a spring in the stem bearing on said rib, and a set-screw adapted to move in said stem against the spring, substantially as described.

488,997. DRY CLOSET. WILLIAM D. DICKSON, Peoria, Ill. Filed Oct. 22, 1891. Serial No. 409,489. (No model.)



Claim.—1. In a dry closet, a vault having arranged therein the transverse partition B and its extension B', the partitions C C', bearing from the sides of the vault obliquely downward to the level of the transverse partitions B and upon the partition B', so arranged as to facilitate the deposit of excrement in the center of the vault, and having the openings J J J, &c., as ducts for the transmission of foul air into the ducts P P, the heat or smoke duct F, the foul-air ducts P P, and the partitions composed of layers of brick or similar absorbent material arranged to receive, absorb, and retain the liquid matter deposited in the vault until the same is evaporated by the current of air passing through the vault, all substantially as described and set forth.

2. In combination with the vault C of a dry closet, the transverse absorbent partitions B B', and oblique partitions C C', with an air-space above and a fire-box below the partition B, a heat or smoke flue below the partition B', and air-ducts below the partitions C C', and with perforations J J J, &c., to provide air-ducts connecting the vault C with the air-ducts P P, all substantially as described and set forth.

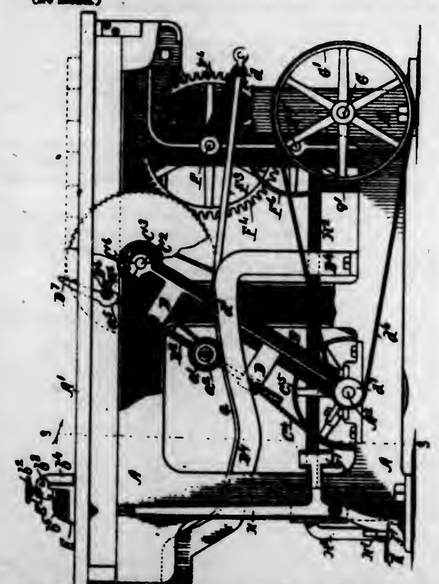
3. The combination, in a dry closet, of the vault C, connected with the foul-air ducts P P by means of the perforations J J J, &c., in the partitions C C', the ducts P P, connected with the vent-shaft at one end for the passage of a current of air, the fire-box D, separated from the vault C by means of the partition B, and the duct F underneath the vault and connected at one end to a smoke-flue F' for the passage of smoke, all substantially as shown and described.

4. The combination, with a building, of a vault or dry closet, as C, constructed with the holes *h h h*, &c., for admission of air from the room containing the closet or from the exterior of the building by suitable ducts, the transverse partitions B B', separating the fire-box from the vault proper, the oblique partitions C C', provided with the open-

ings J J J, &c., the fire and smoke duct F, connected with suitable flue, and foul-air ducts P P, connected with flue in suitable manner, all substantially as described and set forth.

5. In combination with a building, a dry closet constructed as follows: of the frame-work A A, provided with suitable room-partitions, perpendicular and oblique partitions forming the vault C, the same connected from without by the air-ducts or seat-holes A A A A for the admission of air into the vault, the foul-air ducts P P, separated from the vault C by means of the oblique partitions C C, but connected therewith for the purpose of free passage of air by means of the perforations or openings J J J, &c., in said partitions C C, the fire-box D, separated from the vault C by means of the transverse partition B, the heat and smoke duct F, opening out of the fire-box and separated from the vault C by means of the partition E, the general duct G, connected with the foul-air ducts P P, the vent-shaft Z, connected with the air-duct G and inclosing the smoke-flue F, the ash-pit E, and the openings L M N O O, connected with the various compartments within the structure and all provided with suitable doors, all substantially as shown.

488,998. AUTOMATIC CUT-OFF SAWING-MACHINE. EDMUND FREEZE, Chicago, Ill. Filed Mar. 7, 1891. Serial No. 384,102. (No model.)



Claim.—1. In a cut-off sawing-machine, the combination of the swinging saw-frame having projecting legs formed thereon, the companion rods having an endwise movement in said legs and parallel to the swinging frame, the track-bars having an irregular tracking-surface, the wheels secured to the companion rods and moving on the track-bars, the transverse rod connecting the upper ends of said companion rods, and the push-fingers loosely mounted on said transverse rod and projecting up through slots in the feed-table and adapted to have a movement coincident with that of the saw-frame, substantially as and for the purpose set forth.

2. In a cut-off sawing-machine, the combination, with a swinging saw-frame, of a number of push-fingers pivotally connected with relation thereto and having a movement coincident therewith, whereby the sawed-off material is pushed out of the way on the forward movement of the saw, substantially as described.

3. In a cut-off sawing-machine, the combination, with a swinging saw-frame, of a number of push-fingers connected to and moving therewith, the feed-table provided longitudinally with a number of slots in which said fingers move, and the transverse bar R, said fingers being rigid on their forward movement, but are depressed below the surface of the table on their return by coming in contact with said transverse bar, substantially as described.

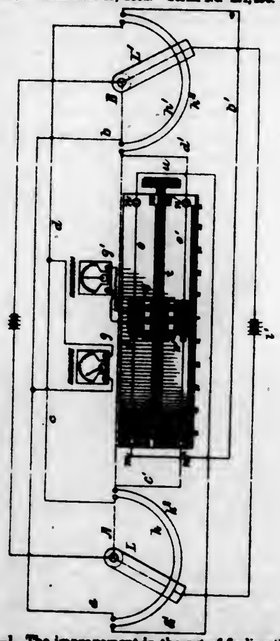
4. In a cut-off sawing-machine, the combination, with a swinging saw-frame, of two companion endwise-moving rods located on opposite sides of said frame, a transverse carrying-rod connecting the upper ends of the companion rods, a number of push-fingers pivotally mounted on the carrying-rod and having a forward-and-back movement coincident with the saw-frame, the feed-table provided longitudinally with a number of slots up through which said fingers project, and the transverse bar bolted to the upper side of said table, said fingers being rigid on the forward movement, but depressed on their return movement by coming in contact with said bar or other object lying in their pathway, substantially as described.

5. In a cut-off sawing-machine, the combination of the swinging frame, the curved track-rails, the companion endwise-moving rods located at each side of said frame, the transverse carrying-rod connecting the upper ends of said companion rods, a number of push-fingers having counter-weights on their lower ends and loosely mounted on said carrying-rod, and a number of collars having one end and side cut away, whereby said fingers have a pivotal or rocking movement on their bearings, substantially as described.

6. The combination, with the transverse bar provided with a number of recesses or pockets, of the gage-stop having a gage-plate hinged or pivoted thereto and the push-fingers, substantially as described.

7. In a cut-off sawing-machine, the combination, with a swinging saw-frame, of a number of push-fingers pivotally connected thereto and having a coincident movement therewith, a feed-table provided with a number of slots up through which said fingers project, a transverse bar provided with a number of pockets or recesses, a gage-stop, and a gage-plate hinged or pivoted thereto, substantially as described.

488,999. RANGE AND POSITION FINDER. BRADLEY A. FISKE, U. S. Navy. Filed Feb. 13, 1892. Serial No. 421,482. (No model.)



Claim.—1. The improvement in the art of finding the position of a distant object, which consists in, first, determining a fractional portion of a conducting-body bearing in length a ratio to the azimuth angle of said object, and, second, measuring the electrical resistance of said length.

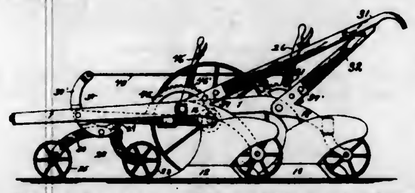
2. The method of determining the azimuth angle of a distant object, which consists, first, in directing two alidade-arms located at opposite ends of a base-line longitudinally in line with said objects, the said arms establishing and maintaining contact with similar bodies of conducting material, similarly disposed with reference to said base-line, and, second, measuring the sum of the azimuth angles made by said alidade-arms, substantially as described.

3. In a range or position finder, in combination with a source of electricity and an indicating device such as described, two similar bodies of conducting material, similarly disposed with reference to a predetermined base-line, alidade-arms establishing and maintaining electrical contact with said bodies, and circuit connections, as set forth, including a Wheatstone bridge having adjacent members connected to opposite ends of said bodies.

4. In a range or position finder, in combination with a source of electricity and two indicating devices, substantially as described, two similar bodies of conducting material, similarly disposed with reference to a predetermined base-line, alidade-arms establishing and maintaining electrical contact with said bodies, and circuit connections, as set forth, including a Wheatstone bridge having adjacent members a b and c d, connected to the arms $A A'$, the indicator g in circuit with said connections, the battery i, having its terminals connected to said telescopes L L', the Wheatstone-bridge connections a' b' c' d', connected to said arms A^2 A^3, the indicator g', connected in circuit with said connections a' b' c' d', and the battery i', having its terminals connected to contact-points respectively on said telescopes L L'.

5. The combination of the arms A^2 A^3, of conducting material, the pivoted telescopes L L', moving over said arms, the battery i', communicating with said telescopes, the Wheatstone-bridge connections a' b' c' d', including the fixed conductors s s', the sliders r r', moving over said wires s s' and insulated from one another, and the screw t, actuating and adjusting said sliders.

484,000. COMBINED RIDING AND WALKING GANG-PLOW. ASA M. FITCH, Seymour, Ind. Filed July 27, 1891. Serial No. 400,847. (No model.)



Claim.—1. In a combined walking and riding gang-plow, the combination, with two parallel plow-beams having overlapping and channeled front ends for regulating the width of the line of draft, of means for laterally adjusting said beams, substantially as described.

2. In a combined walking and riding gang-plow, the combination, with two parallel plow-beams, of trailing furrow-wheels suspended from the rear portions of said beams and right-angled hangers, one of which is vertically adjustable, substantially as described.

3. In a combined walking and riding gang-plow, the combination, with two parallel and laterally-adjustable plow-beams, of trailing furrow-wheels and right-angled hangers attached to the rear portions of said beams, one of said hangers being provided with a ribbed or toothed disk locking with the correspondingly-ribbed surface of the hanger, thus making said hanger vertically adjustable, substantially as described.

4. In a combined walking and riding gang-plow, the combination, with two parallel and laterally-adjustable plow-beams having overlapping and channeled front ends for regulating the width of the line of draft, of trailing furrow-wheels suspended from the rear portions of said beams and right-angled hangers, one of which is vertically adjustable, substantially as described.

5. In a combined walking and riding gang-plow, the combination, with two parallel and laterally-adjustable plow-beams, of a front truck pivotally secured to said beams, means for operating the same, and trailing furrow-wheels suspended from the rear portions of said beams provided with right-angled hangers, one of which is vertically adjustable, substantially as described.

6. In a combined walking and riding gang-plow, the combination, with two parallel plow-beams, of a front truck consisting of a front wheel and a rear caster-wheel pivotally secured to said beams, a crane-lever, and means for operating the same, substantially as described.

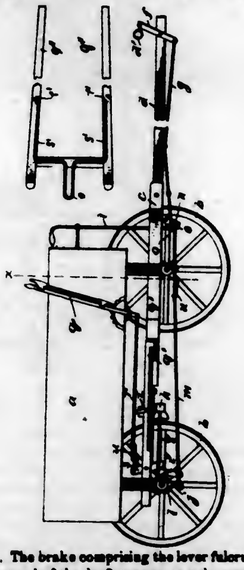
7. In a combined walking and riding gang-plow, the combination, with two parallel plow-beams, of a front truck consisting of a front wheel and a rear caster-wheel pivotally secured to said beams, a crane-lever, and means for operating the same, said means consisting of a connecting-bar and an adjustable hand-lever, substantially as described.

8. In a combined walking and riding gang-plow, the combination, with two parallel plow-beams, of a front truck consisting of a front wheel and a rear caster-wheel pivotally secured to said beams, the rear caster-wheel being provided with means for limiting its horizontal movement, the crane-lever, and means for operating the same, substantially as described.

9. In a combined walking and riding gang-plow, the combination, with two parallel plow-beams, of trailing furrow-wheels suspended from the rear portions of said beams and right-angled hangers, one of which is vertically adjustable, a front truck pivotally secured to said beams, means for operating the same, and a land-wheel eccentrically mounted on an axle, substantially as described.

10. In a combined walking and riding gang-plow, the combination, with two parallel and laterally-adjustable plow-beams, of a front truck pivotally secured to said beams and means for operating said truck, trailing furrow-wheels, and a land-wheel eccentrically mounted on a swinging axle, one end of which is pivotally attached to a clip, which is adjustably mounted on the coupling-bar between the plow-beams and the other end of which is held in position by a supporting-rod coming from the front portion of the plow, substantially as described.

484,001. WAGON-BRAKE. BENJAMIN F. FLESHMAN, Alvon, W. Va. Filed Jan. 4, 1892. Serial No. 416,980. (No model.)



Claim.—1. The brake comprising the lever fulcrumed between its ends to the front end of the draft tongue or pole, a neck-yoke carried by the upper end of said levers, a loosely-mounted brake-lever, a brake-lever mounted in the running-gear with one end connected to the brake-beam, an intermediate lever fulcrumed at its upper end and having its lower end connected to said brake-lever and said neck-yoke lever, one of said connections having a loop loosely embracing said intermediate lever, and a rod for raising or lowering said loop, as and for the purposes set forth.

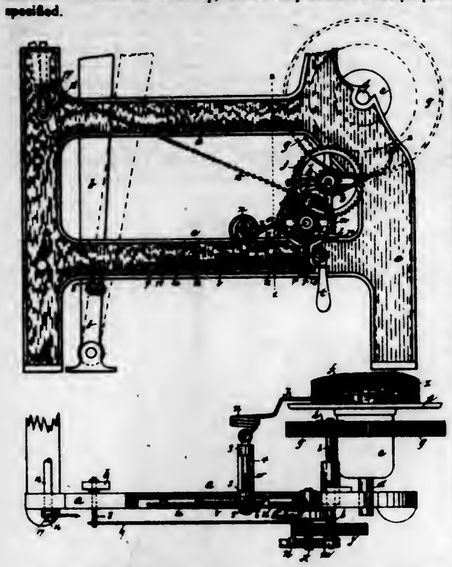
2. In a vehicle, the combination of the brake mechanism, the mechanism controlled by the backward pull of the draft animal or animals to apply the brake, connecting-rods from said mechanism to the operating means of the brake, a lever interposed in said connections, having one connection attached to its lower end and the other connection looped around said lever, and means to raise and lower said looped end to break operative connection with the braking and mechanism, substantially as described.

3. In a vehicle-brake, the combination of the draft shafts or tongue thereof, one or more levers pivoted thereto and having a portion of the harness secured thereto so that the lever or levers will be swung when the draft-animal holds back, the braking mechanism, connections from said lever or levers to the braking mechanism, and an intermediate device provided with hand operating means, such as a rod, and included in the said connections to the braking mechanism, arranged and constructed to throw said lever or levers out of operative connection with the braking mechanism, in the manner and for the purpose set forth.

484,002. LET-OFF MECHANISM FOR LOOMS. ISAAC PONTAINE, Chicopee, Mass., assignor of one-half to Frank X. Dervin, same place. Filed Dec. 30, 1891. Serial No. 416,891. (No model.)

Claim.—1. The combination, in a loom, of a warp-beam provided with a gear g, a shaft i, having a pinion h meshing with the gear g, a gear j, mounted on the shaft i, a shaft k, a pinion l on the shaft k, meshing with the gear j, a friction-pulley o on the shaft k, a friction-

strap *p* on the friction-pulley, formed with depending arms, a shaft 4, connected through intermediate mechanism with one of the depending arms of the friction-strap, an arm *y*, arranged to bear with its free end against the warps on the beam and connected at its opposite end with the shaft 4, the lay-sword, and a connecting-rod between the lay-sword and the arm of the friction-strap, substantially as and for the purpose specified.



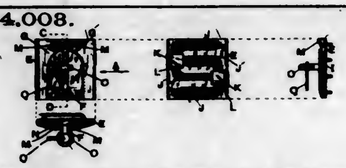
2. The combination, in a loom, of a warp-beam, a friction-pulley, a friction-strap mounted thereon, means to communicate motion from the warp-beam to the shaft upon which the friction-pulley is mounted, a ratchet-wheel mounted on the shaft with the friction-pulley, a dog arranged to prevent return movement of the ratchet-wheel and shaft upon which the same is mounted, means to communicate motion from the lay-sword to the friction-strap and move the same upon friction-pulley while the same is restrained from rotation by the dog, and an arm arranged with one end provided with a roll to bear against the warp and the opposite end operating through intermediate mechanism to limit the rotation of the shaft upon which the friction-pulley is mounted with reference to the relative position of the free end of said arm and the axis of the warp-beam, substantially as shown.

3. The combination of a loom-frame, a warp-beam mounted therein, a lay-sword, a gear mounted upon the warp-beam, a shaft *i*, provided with a pinion *k* and a gear *j*, a shaft *k*, provided with a pinion *l*, a friction-pulley and a ratchet-wheel, a dog *m*, pivotally mounted on the end of shaft i and arranged with its nose to engage the teeth on the ratchet-wheel, a shaft 4, provided with an arm 5, a rod *u*, a connecting-arm extending from arm 5 to the rod *u*, a friction-strap mounted upon the friction-pulley and provided with depending arms, one arm of which is pivotally connected with the rod *u*, a bolt *r*, passing through the arms of the friction-strap and pivotally connected at one end with a cam *s*, a rod 9, connected at one end with the lay-sword and at its opposite end with one of the depending arms of the friction-strap, and an arm *y*, provided at its free end with a friction-pulley *x* to bear against the warp and connected at its opposite end with the shaft 4, all arranged and operating substantially as and for the purposes stated.

4. The combination of a loom-frame provided with a lay-sword and a warp-beam, a shaft *i*, arranged to be rotated by the rotation of the warp-beam, a shaft *k*, arranged to be rotated by the rotation of the shaft *i*, a friction-pulley on the shaft *k*, provided with a friction-strap, a ratchet-wheel on the shaft *k*, arranged to prevent motion of the friction-pulley in one direction, an arm *y*, provided at its free end with a shaft 4, an arm 5, connected with shaft 4, a rod *u*, connected at one end with the friction-strap and provided with a suitable support at its opposite end, an arm 6, pivotally connected with arm 5 at one end and arranged to engage the rod *u* at its opposite end, and a rod 9, connected at one end with the lay-sword and at its opposite end with the friction-strap to move the same in one direction only, all in combination substantially as and for the purposes stated.

484,008. WATCH-HOLDER. ROSALIE POPPE, Chicago, Ill. Filed July 9, 1892. Serial No. 439,654. (No model.)

484,008.



Claim.—1. A watch-holder consisting of a plate of elastic material bent upon itself at each end, substantially as shown and described, having slot F formed by the space between the opposite ends of said bent material, a catch-button capable of being attached to a watch and serving in combination with said holder by the shank of said button being adapted to pass longitudinally through slot F and the button adapted to pass longitudinally between the walls of said holder, the walls of said holder provided with the described depressed portions H and H', which form shoulders at S inside the holder, said shoulders, as shown and described, permitting said button to pass through said holder in but one direction, substantially as and for the purpose described.

2. A watch-holder consisting of a piece of elastic material bent upon itself at both ends, as shown and described, having a slot *F*, as described, a catch-button whose shank is adapted to operate in said slot, and a spring in the end of said button, said spring operating in combination with the ends of the bent portion of the holder, for the purpose described.

3. A watch-holder, as described, having buckle-pins formed in pairs, the portion which connects said pins in pairs forming the hinge for said pins, said connection flattened at L, said flattened portion serving in combination with springs K, for the purpose described.

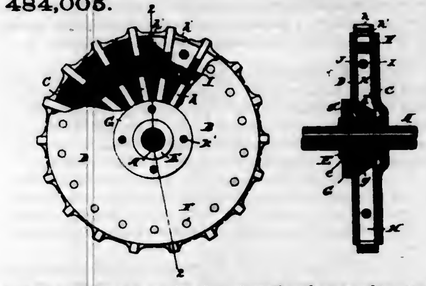
484,004. SCREW-DRIVER. GEORGE R. GAY and JOHN H. PARSONS, Augusta, Me. Filed Nov. 16, 1891. Serial No. 412,106. (No model.)

Claim.—The combination of a tubular handle with a loosely-revolving metallic tube having a limited longitudinal motion and a spirally-threaded interior and having notches or projections on one end, with a longitudinally moving spindle or blade having one end enlarged and fitted to conform to the spirally-threaded interior of said tube and its other end flattened and projecting beyond the handle, with a metallic fastening or fitting secured to the handle and having notches or projections adapted to engage with the notches or projections on said tube, all substantially as described and set forth.

484,005. VARIABLE-PITCH SPROCKET-WHEEL. FRANCIS GLEASON, Philadelphia, Pa. Filed Nov. 23, 1891. Serial No. 413,344. (No model.)

Claim.—1. A variable-pitch sprocket-wheel for bicycles, comprising the parallel plates secured together, one of the plates having formed thereon a screw-threaded hub, sprockets sliding between the plates, a screw-threaded bearing-piece having an inclined conical surface mounted on the hub and arranged to force the teeth outward, and a

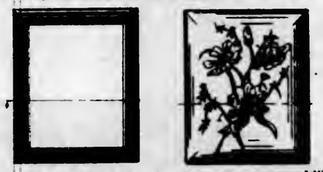
484,005.



spring passing through openings in each tooth and arranged to retract the teeth, substantially as described.

2. A sprocket-wheel for bicycles, comprising two parallel plates secured together, the sprocket-teeth arranged between the plates, each tooth consisting of a body portion having a central tooth *h*, provided with lateral extensions *h'*, the extensions being curved and shaped substantially as shown, and for the purpose set forth.

484,006. METHOD OF MAKING CORNERS, COVERS, AND LIKE PARTS FOR BOOKS, BOXES, AND SIMILAR ARTICLES OF CELLULOID OR KINDRED MATERIAL. ALFRED C HAPELY, New York, N. Y. Filed Apr. 27, 1892. Serial No. 430,900. (No model.)



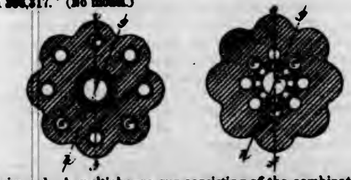
Claim.—1. The method of making covers, corners, and like parts for books, boxes, and other uses of sheet-celluloid or kindred material rendered plastic by heat, which consists of forming up its border by suitable dies first at right angles and then parallel to the cover or corner and uniting them by the application of heat and pressure, substantially as set forth.

2. The method of making covers, corners, and like parts for books, boxes, and other uses of sheet-celluloid or kindred material rendered plastic by heat, which consists of forming up its border by suitable dies first at right angles and then parallel to the cover or corner, uniting and bleeding them by the application of heat and pressure, and padding or filling the interiors so formed, substantially as set forth.

3. The method of making corners, covers, and like parts for books, boxes, and other uses of celluloid or other material that may be rendered plastic by heat, which consists in applying heat and pressure by suitable dies, folding over the borders, and cementing or otherwise securing them together, substantially as set forth.

4. A cover or corner for books, boxes, and like uses, consisting of a sheet of celluloid or kindred material and provided with round corners, the borders of the said cover or corner being folded over upon its back, and a tongue or flap at meeting edges of the said borders, cemented or otherwise secured thereto, substantially as and for the purposes set forth.

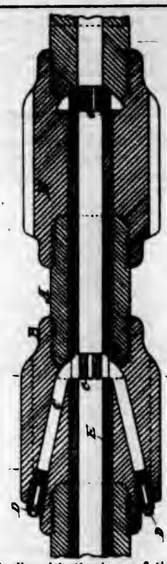
484,007. MULTICHARGE-GUN. JAMES R. HASKELL, Passaic, N. J., assignor to Julia W. Haskell, same place. Filed June 15, 1891. Serial No. 396,317. (No model.)



Claim.—1. A multicharge-gun consisting of the combination of a plurality of separate sections of substantially-uniform diameter, the sections containing the charges and the intervening sections being separate and united together longitudinally to form the gun, said sections containing supplemental charge-pockets suitable for containing and firing explosives and arranged to discharge successively into the bore of the gun at different points upon the advancing projectile.

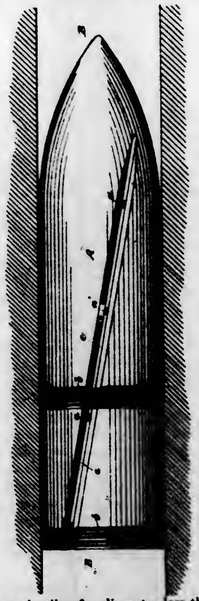
2. In a multicharge-gun, a series of supplemental charge-pockets

484,007.



arranged concentrically with the bore of the gun, combined with a series of bridges in the bore, one between each of the channels connecting the bore with said pockets, whereby the continuity of the bore is maintained from one section to another of the gun-barrel.

484,008. PROJECTILE. JAMES R. HASKELL, Passaic, N. J., assignor to Julia W. Haskell same place. Filed Mar. 24, 1890. Renewed June 15, 1891. Again renewed Mar. 2, 1892. Serial No. 424,268. (No model.)

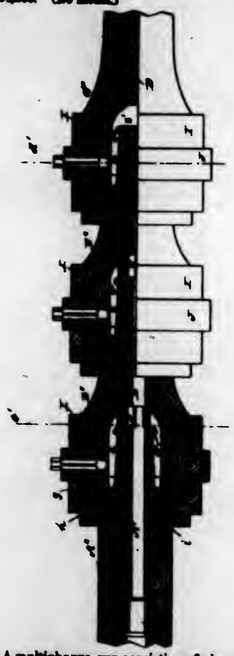


Claim.—1. A projectile of a diameter less than the bore of the gun, correspondingly rifled before it is introduced into the barrel and having one or more raised gas-check rings made to fit the internal surface of the barrel, substantially as described.

2. A projectile having grooves made in the surface thereof to fit the rifling of the gun, said grooves being provided with suitable anti-friction bearing-pieces for the purpose of diminishing friction, substantially as described.

3. A hollow projectile having longitudinal grooves in its exterior surface and corresponding projections in its interior, the wall of the shell being of equal thickness throughout its entire circumference, the projections on the inside corresponding to the indentations made on the outside, for the purpose specified.

484,009. MULTICHARGE OR ACCELERATING GUN. JAMES R. HASKELL, Passaic, N. J., assignor to Julia W. Haskell, same place. Filed Mar. 24, 1890. Renewed Jan. 15, 1891. Again renewed Mar. 9, 1892. Serial No. 424,569. (No model.)



Claim.—1. A multicharge-gun consisting of a breech-section, combined with one or more supplemental sections, one or more of said supplemental sections to be provided with an independent charge-chamber charged with any suitable explosive and opening into the bore of the gun and discharging its load behind the advancing projectile subsequent to the explosion of the breech-charge.

2. A multicharge-gun consisting of a breech-section, combined with one or more supplemental sections constructed to unite with and form, in combination with another section, an annular pocket or charge-chamber suitable for receiving, confining, and sustaining a charge of any suitable explosive about the muzzle or forward end thereof and opening into the bore of the gun behind the projectile after the explosion of the primary charge.

3. A multicharge-gun consisting of a series of sections united longitudinally to the breech of each section succeeding the breech section, forming an annular charge-chamber upon and around the muzzle of the breech, and said charge-chamber being made suitable to receive, confine, and sustain a charge of any suitable explosive, opening into the bore of the gun, and being supplied with the necessary priming and cleaning holes fitted with the necessary stop-pins, as described.

4. A multicharge-gun consisting of two or more separately-formed cylindrical sections screwed together longitudinally, each of said sections being made independent of all of the rest and combined with separate independent charge-chambers suitable to receive, confine, and sustain a charge of any suitable explosive to discharge successively from the several chambers into the bore of the gun when the several sections are united, as described.

5. A multicharge-gun consisting of a succession of external sections united together longitudinally upon central longitudinal sections, forming the internal wall and bore of the gun, said several parts being fitted and where it may be necessary shrunk together to unite the whole in a solid structure.

6. In a multicharge-gun consisting of several sections, one or more of which contains a supplemental charge-chamber, a band of some suitable metal shrunk upon the section over the charge-chamber, substantially as described.

7. In a multicharge-gun consisting of a series of sections containing charge-chambers, a gas-check ring interposed between the joining ends of the sections in which the bore is made, substantially as described.

8. In a multicharge-gun suitable for firing explosives, composed of two or more sections united longitudinally and containing supplemental charge-chambers for receiving, sustaining, and confining any suitable explosives, opening into the bore of the gun, a channel or opening leading from the supplemental explosive-chamber to the bore of the gun, equal to or greater in area than the bore of the gun.

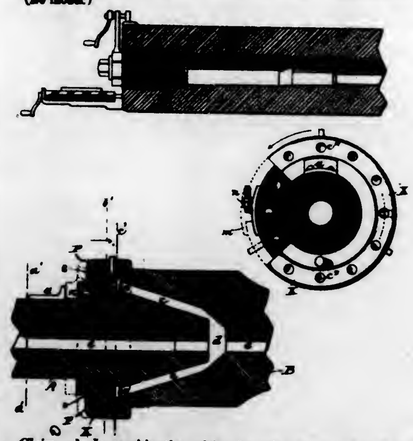
9. A multicharge-gun suitable for firing explosives, consisting of a series of supplemental sections and charge-chambers formed around the muzzle end of one section and in the breech of another section, said explosive-chambers being the result of the form and union of the several sections.

10. A multicharge-gun consisting of a series of supplemental sections containing charge-chambers to receive, confine, and sustain a suitable explosive, as set forth, the several sections being united by screw-threads cut therein or thereon.

11. A multicharge-gun consisting of a series of external and internal sections, the internal sections being held together longitudinally by the longitudinal union of the external sections, the gun depending for its tensile strength upon the union of the external sections, substantially as described.

12. In a multicharge-gun in which the supplemental charge-chamber is formed around the muzzle and in the breech of contiguous sections, a collar or flange by which the powder or other explosive is prevented from overflowing into the bore of the gun.

484,010. MULTICHARGE-GUN. JAMES R. HASKELL, Passaic, N. J., assignor to Julia W. Haskell, same place. Filed Mar. 24, 1890. Renewed June 15, 1891. Again renewed Mar. 9, 1892. Serial No. 424,570. (No model.)



Claim.—1. In combination with a breech-section A, one or more separable supplemental cartridge-sections, each section consisting of a magazine of separate cartridge-chambers arranged around and concentrating their fire into the bore of the gun.

2. In a multicharge-gun consisting of one or more supplemental charge-chambers composed of a magazine of two or more separate cartridge or loading chambers, a suitable breech piece or plate operating in combination with a screw-cap and simultaneously closing the breech of each and all of the cartridge or loading chambers.

3. In a multicharge-gun composed of one or more supplemental charge-chambers consisting of a magazine having a series of separate charge or cartridge chambers distributed around the bore of the gun and discharging into the same and a breech-cap X, in combination with a breech-ring plate having pins or stops operating to open and close simultaneously the breech of each and all of the charge-chambers.

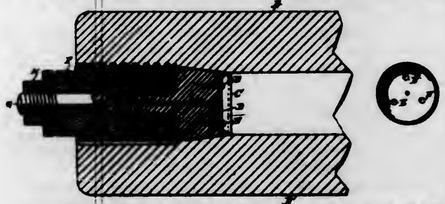
4. In a multicharge-gun consisting of two or more separate magazine-sections, the bridges or supporting-sections formed between the opening *a* at the end of the muzzle of each section by which a continuity of the bearing is maintained between the several sections to carry the projectile from section to section and in case the gun be rifled to contain the lands of the rifling, substantially as described.

5. In a multicharge-gun consisting of two or more separate sections joined together to form the gun, a beveled or undertapping joint between the muzzle and breech of the several sections, by which the expansion of the muzzle end, due to the explosion and heat of the charge, has the effect of tightening the joint between the two sections, substantially as described.

484,011. MULTICHARGE-GUN. JAMES R. HASKELL, Passaic, N. J., assignor to Julia W. Haskell, same place. Filed Apr. 9, 1890. Renewed June 15, 1891. Again renewed Mar. 9, 1892. Serial No. 424,571. (No model.)

Claim.—A multicharge-gun consisting of the combination of a plurality of separate sections united together longitudinally to form the gun, each section in advance of the breech-section being fitted with a supplemental charge-chamber suitable for containing and firing explosives and arranged to discharge successively into the bore of the gun at different points upon the advancing projectile.

484,012. ORDNANCE. JAMES R. HASKELL, Passaic, N. J., assignor to Julia W. Haskell, same place. Filed May 24, 1890. Renewed June 15, 1891. Again renewed Mar. 9, 1892. Serial No. 434,572. (No model.)

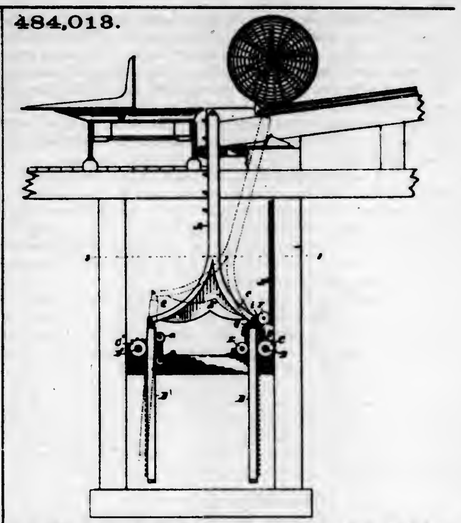


Claim.—A gas-check for breech-loading ordnance, consisting of a separate metallic disk *c*, having a circumferential projecting flange adapted to expand by the explosive force of the charge, in combination with a similar-shaped disk made in the end of the breech-plug, the two disks coacting under the explosive force of the charge to form the "gas-check."

484,013. LOG LOADER AND TURNER. WILLIAM B. BELL, Kalamazoo, Mich. Filed Feb. 15, 1892. Serial No. 421,602. (No model.)

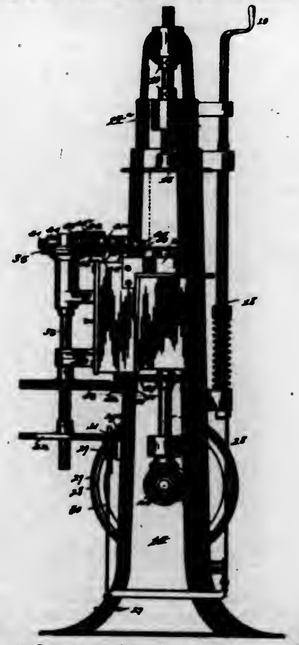
Claim.—1. In a log loader and turner, the combination of a tooth-bar having the laterally-extending arms at the lower end, a vertically-playing rack pivotally attached to one of said arms, suitable guides for said rack, a vertically-playing and laterally-tilting rack pivotally attached to the other arm of the tooth-bar, adjustable guides therefor, and power-shafts bearing pinions meshing with said racks, substantially as set forth.

484,018.



2. In a log loader and turner, the combination of a tooth-bar having the laterally-extending arms at the lower end, a vertically-playing rack pivotally attached to one of said arms, a cushion to receive the shock when the tooth-bar falls to place, suitable guides for said rack, a vertically-playing and laterally-tilting rack pivotally attached to the other arm of the tooth-bar, adjustable guides therefor, and power-shafts bearing pinions meshing with said racks, substantially as set forth.

484,014. MACHINE FOR MAKING SHEET-METAL CANS. GEORGE B. HORTON, Chicago, Ill., assignor to the Fairbank Canning Company, same place. Filed Mar. 23, 1891. Serial No. 386,010. (No model.)



Claim.—1. In a can-machine, the combination, with a rotatable can-support, of a seaming-wheel mounted upon a rock-shaft, a pattern-wheel adapted to control the rocking of said shaft, and a spring for moving the shaft endwise in its bearings, whereby to move the seaming-wheel from the work, substantially as described

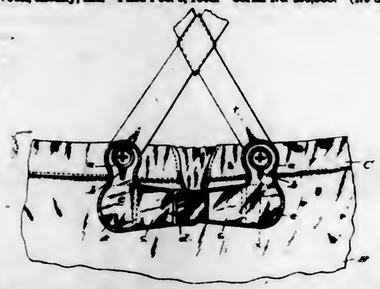
2. The combination, in a can-machine substantially such as herein described, of a rotatable can-support, a seaming-wheel having its periphery grooved to engage and bend the flanges of the can to form the seam, a rock-shaft supporting the seaming-wheel and having an arm or crank bearing upon cam-surfaces formed in a rotating disk or pattern-wheel, whereby the rocking of the shaft is controlled, said disk having depressions in its periphery, upon which the rock-shaft arm also bears, and a spring for shifting the rock-shaft endwise to release it from contact with the can, substantially as described.

3. In a can-making machine, the combination, with a rotatable can-support, of a seaming-wheel, a rock-shaft or frame upon which the seaming-wheel is mounted, a rotatable pattern-wheel having cams adapted to engage and rock the seaming-wheel support, a spring for moving the shaft endwise in its bearings, whereby to move the seaming-wheel from the work, and suitable gearing for driving the parts in due order, substantially as described.

4. In a can-making machine, the combination, with a rotatable can-support, of a seaming-wheel, a rock-shaft upon which the said wheel is mounted, a rotatable pattern-wheel, means for imparting an endwise movement to the rock-shaft, and suitable gearing for actuating the said parts, substantially as described.

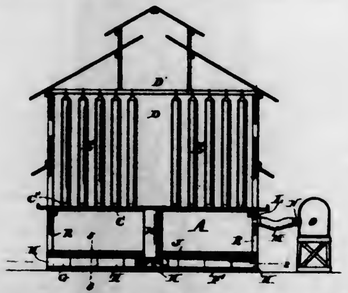
5. In a can-machine, the combination, with a rotatable can-support, of a movable clamp for holding the can upon the support, a seaming-wheel, a rock-shaft for supporting the said wheel, a spring for imparting an endwise movement to the said shaft, a rotatable pattern-wheel having cam-surfaces upon which the said shaft bears, and mechanism for rotating the said parts, substantially as described.

484,015. TROUSERS. WILLIAM C. HUFFMAN and JOSEPH LE FAVOUR, Albany, Ind. Filed Feb. 6, 1892. Serial No. 420,535. (No model.)



Claim.—A pair of trousers having a back strap consisting of the pieces A, each of which is of an approximately-angular form and is permanently connected at its angle to the trousers below the waistband, the said pieces A having the loose upwardly-extending tabs provided with button-holes to engage the buttons on the waistband, and the strap *a*, adapted to be adjustably connected together, as and for the purpose set forth.

484,016. FUME-ARRESTER. MALVERN W. ILES and DENNIS SHERRY, Denver, Colo. Filed Feb. 3, 1892. Serial No. 420,159. (No model.)



Claim.—1. In combination with the smoke-main, a series of masonry chambers A, connected with said main and connected with a series of bags B B, &c., as described, said chambers having air-flues formed beneath their floors, substantially as and for the purpose specified.

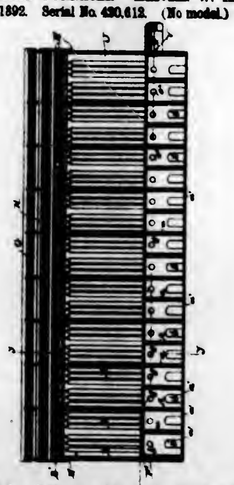
2. In combination with the smoke-main, a series of masonry chambers A, connected with said main and connected with a series of bags B B, &c., as described, said chambers having a double series of air-flues formed beneath their floors, one above the other, substantially as and for the purpose specified.

3. In combination with the smoke-main, a series of masonry chambers A, connected with said main and connected with a series of bags B B, &c., as described, said chambers having air-flues formed beneath their floors, and stacks K, connected with the flues and leading upward therefrom, substantially as and for the purpose specified.

4. In combination with the smoke-main, a series of masonry chambers A, connected with said main and connected with a series of bags B B, &c., as described, said chambers having air-flues formed beneath their floors, and stacks K, connected with the flues and leading through the chambers to and through the top thereof, substantially as and for the purpose specified.

5. In combination with the smoke-main, a series of masonry chambers connected with the main and connected with a series of bags B B, &c., as described, said chambers having air-flues formed beneath their floors, and stacks K, connected with the flues and opening in the bag-room at or near the level of the floor thereof.

484,017. DEVICE FOR CATCHING AND SAVING FUMES FROM METALLURGICAL FURNACES. MALVERN W. ILES, Denver, Colo. Filed Feb. 6, 1892. Serial No. 420,612. (No model.)



Claim.—1. A bag-house consisting of a lower story divided into a series of separate chambers A by masonry partitions and separated from an upper bag-room by a partition F, having perforations leading into each chamber A, in combination with a series of bags B, suspended in the bag-room and communicating with the chambers A through the perforated partition, an independent smoke-delivery pipe leading into each chamber A, and a series of doors D', opening into each chamber A through the outer wall of the bag-house.

2. The combination of a smoke-conduit made of two separate and non-communicating incombustible parts, a connecting-section formed of combustible fabric, and a group of fabric screens communicating with said conduit, all substantially as and for the purpose specified.

3. The combination of a smoke-main O, a series of delivery-pipes O', leading therefrom, a series of dust-chambers, as A, each communicating with a separate group of bags and each having a smoke-entrance pipe O^2, and combustible fabric tubes, as C, connecting the pipes O' O^2, substantially as and for the purpose specified.

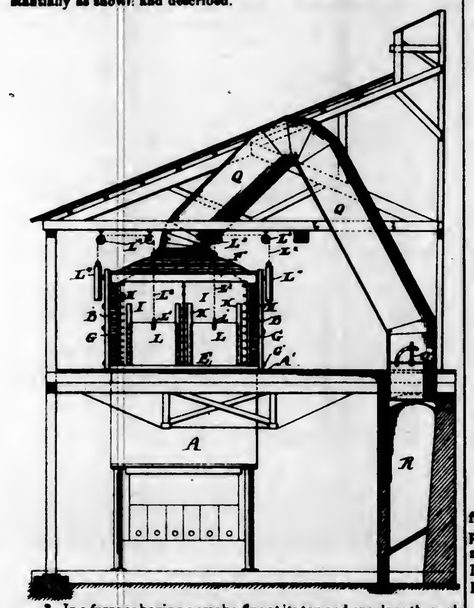
4. The combination of a series of dust-chambers communicating with a smoke-main O, a bag-room situated above said chambers and separated therefrom by a perforated partition or floor, said room having air inlets K K, &c., situated in its sides substantially on the level of the floor, and air-exit openings at its top and a series of bags suspended therein and attached to the floor, all substantially as and for the purpose specified.

5. The combination of the smoke-main O, the delivery-pipes O', leading therefrom, the series of valves P', arranged to regulate the openings of pipes O' and having operating-stems running through main O, a series of dust-chambers communicating with pipes O', and a series of bags communicating with the dust-chambers, all substantially as and for the purpose specified.

484,018. BLAST-FURNACE TOP. MALVERN W. ILES, Denver, Colo. Filed May 25, 1892. Serial No. 434,345. (No model.)

Claim.—1. In combination with a furnace having a smoke-flue at its top and openings through its sides above the feed-floor, one or more removable plates I, secured across the vertical apertures through which the furnace is fed, and sliding feed-doors secured to said plates by guides, which permit them to move thereon.

2. In combination with a furnace having a smoke-flue at its top and openings through its sides above the feed-floor, a removable vertical beam N, secured across said aperture, independently-removable plates I I, secured to said beam and to the top and sides of the furnace, and sliding feed doors L, secured to said plates I by guides, substantially as shown and described.



3. In a furnace having a smoke-flue at its top and openings through its sides above the feed-floor, the combination of a plate E on the sill of the aperture, having lugs P P, a plate F at the top of the aperture, having lugs M M, facing-lugs P, a beam N, adapted to fit between lugs P P and M M, removable plates I, and means for securing said plates to beam N and the sides of the furnace, all substantially as and for the purpose specified.

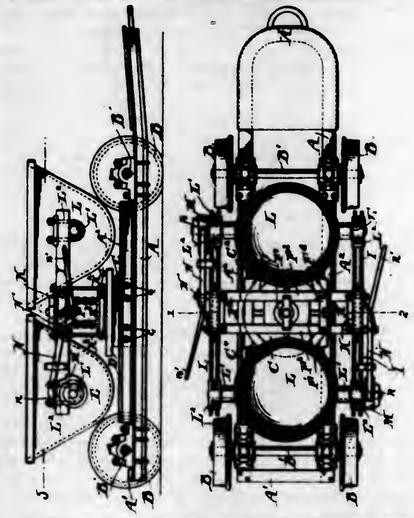
4. In a furnace having a smoke-flue at its top and openings through its sides above the feed-floor, the combination of a plate E on the sill of the aperture, having lugs P P, a plate F at the top of the aperture, having lugs M M, facing-lugs P P, a beam N, adapted to fit between lugs P P and M M, a bolt O, and wedge O' for holding the top of beam N, side plates H, secured to the edges of the aperture, plates I, secured to the plates F and to the beam N by wedges, and sliding doors L, secured to plates I in guides, all substantially as shown and described.

5. In combination with a furnace having a smoke-flue at its top and openings through its sides above the feed-floor, an iron sill-plate E, extending above the feed-floor, iron top and side plates H H and F, permanently secured in place, a removable vertical beam N, means for securing said beam to the sill and top plate, removable plates I I, secured to the beam N and to the top and side plates, as described, and sliding doors L L, secured in guides on plates I I, all substantially as shown and described.

484,019. DUMPING-CAR. MALVERN W. ILES, Denver, Colo. Filed June 7, 1892. Serial No. 436,332. (No model.)

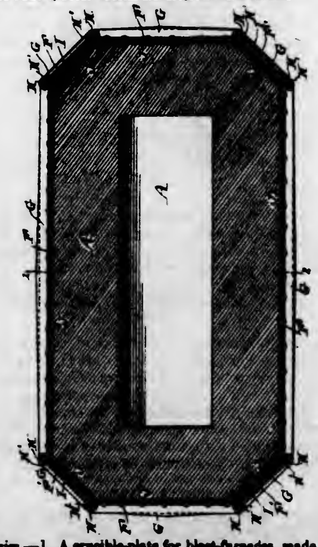
Claim.—1. In a dumping-car, a frame A, supported on wheels, in combination with a rectangular pivot-casting C, secured to the frame, said casting being of rectangular shape and formed with upwardly-extending flanges C^2 C^3, hubs C', and bracing-webs C^4, a pivot-pin E, resting in a cavity of the hub, a casting F, supported on pin E, a cross-beam F^2, made up of angle and plate iron bars bolted together and to casting F, as specified, beams I I, secured on the ends of beam F^2, and receptacles L, supported on trunnions at each end of beams I I, all substantially as shown and described.

2. In a dumping-car, a frame A, supported on wheels, in combination with a pivot-casting C, secured to the frame, said casting being of rectangular shape and formed with upwardly-extending flanges C^2 C^3, hub C', and bracing-webs C^4, a pivot-pin E, resting in a cavity of the hub, a casting F, supported on pin E, a circular bearing-ring D, supported on casting C, a cross-beam F^2, made up of angle and plate iron bars bolted together and to casting F, as specified, shoes G, secured to frame F so as to bear on ring D, a latch-pin H, carried in frame F^2 and adapted to enter a hole D^2 in ring D, beams I I, secured on the ends of beam F^2, and receptacles L, supported on trunnions at each end of beams I I, all substantially as shown and described.



3. In a dumping-car having a truck-frame and pivotally-supported frame I I, arranged substantially as described, receptacles L L, supported on trunnions L' on said frame, a detent M, secured to one trunnion, and a catch-lever N, pivoted at a point N' near the center of frame I I, said lever having a catch *n* at one end adapted to engage detent M and a handle *n'* at its other end.

484,020. BLAST-FURNACE. MALVERN W. ILES, Denver, Colo. Filed June 7, 1892. Serial No. 436,334. (No model.)

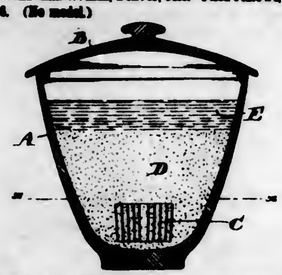


Claim.—1. A crucible-plate for blast-furnaces, made of cast-iron, with longitudinal strengthening-ribs on its outer face and having a wrought-iron band riveted to its inner face.

2. The combination of the side and end crucible-plates F F F F, having strengthening-ribs G and oblique vertical flanges H, with corner-plates F', having rectangular flanges H', adapted to fit against flanges

H, and tie-bolts I, passing through the flanges of both joints at the furnace corners and securing the plates together, as specified.

484,021. PROCESS OF RECOVERING METALS FROM COPPER ALLOYS. MALVERN W. ILES, Denver, Colo. Filed June 24, 1892. Serial No. 437,816. (No model.)



Claim.—1. The method of recovering the precious metals from jewelers' sweeps or equivalent material, as described, which consists in making an intimate mixture of the alloy with sulphide of iron and fusing the mixture to form a fusible matte of copper and iron and a residue of precious metals.

2. The method of recovering the precious metals from jewelers' sweeps or equivalent material, as described, which consists in making an intimate mixture of the alloy with sulphide of iron, adding a flux to said mixture, and fusing the mixture to form a fusible matte of copper and iron and a residue of precious metals.

3. The method of recovering the precious metals from jewelers' sweeps or equivalent material, as described, which consists in flattening all large pieces of the alloy into thin sheets, covering said sheets previously coiled or folded with sulphide of iron, and fusing the mixture to form a fusible matte of copper and iron and a residue of precious metals.

4. The method of recovering the precious metals from jewelers' sweeps or equivalent material, as described, which consists in flattening all large pieces of the alloy into thin sheets, covering said sheets previously coiled or folded with sulphide of iron in admixture with finely-divided particles of the alloy, and fusing the mixture to form fusible matte of copper and iron and a residue of precious metals.

484,022. TOE-WEIGHT. CHARLES C. JEROME, Chicago, Ill. Filed Apr. 28, 1892. Serial No. 430,405. (No model.)

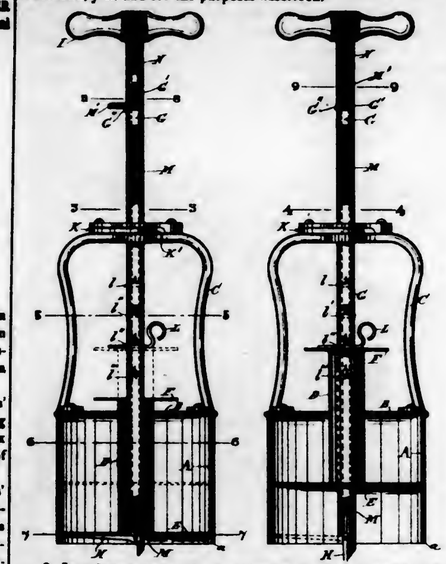
Claim.—1. A toe weight consisting of a grooved plate shaped to fit the hoof and provided with holes for the reception of screws for attaching said plate to the hoof, and a weight adapted to enter the groove in said plate, the weight being provided with an internally-screw-threaded hole for the reception of a screw, which latter when in place rests in a countersink located in the plate, substantially as set forth.

2. A toe-weight consisting of a flexible plate having a horizontal dovetailed groove and adapted to be fitted to the hoof and provided with holes for the reception of screws for attaching said plate directly to the hoof, and a weight provided with a dovetailed tongue adapted to enter the dovetailed groove in said plate and provided with an internally-screw-threaded hole for the reception of a screw, which latter when in position enters a countersink located in said plate and holds the weight against displacement, substantially as set forth.

484,023. BUTTER-CUTTER. JOSEPH A. KAEBER, St. Louis, Mo. Filed Jan. 28, 1892. Serial No. 419,313. (No model.)

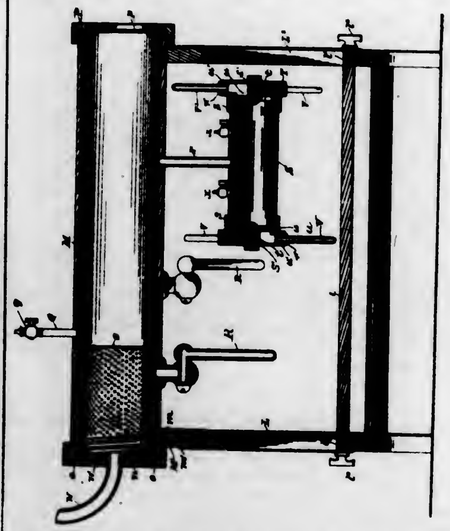
Claim.—1. In a butter-cutter, the combination, with the cutter, of a rod, a knife pivoted in the end thereof, means for releasing said knife to permit it to assume a position parallel to the rod, and a false-bottom ejector-plate sleeved on said rod, substantially as and for the purposes described.

2. In a butter-cutter, the combination, with a cutter, of a hollow knife-supporting rod, a knife pivoted in the end of said rod, a controlling-rod for the knife, a spring bearing against the controlling-rod, and means for locking the said rod against longitudinal movement, substantially as and for the purposes described.



3. In a butter-cutter, the combination, with the cutter and its handle, of a hollow knife-supporting rod, a knife pivoted in the end of said rod, an ejector-plate sleeved on said rod, and means on the handle for locking the knife-supporting rod against longitudinal and rotary movement, substantially as and for the purposes described.

484,024. APPARATUS FOR BOTTLING BEER. JOHN H. KERNBROCK, Columbus, Nebr. Filed Mar. 7, 1891. Serial No. 384,140. (No model.)

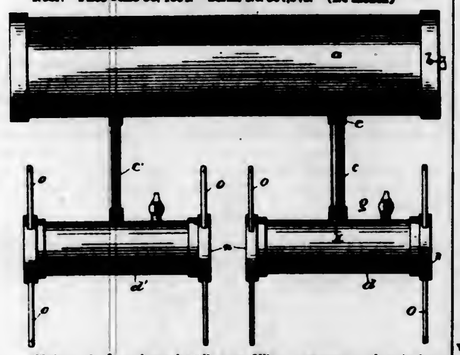


Claim.—1. The combination, in an apparatus for bottling beer or other liquors, of a horizontal cylinder or reservoir, a receiving-pipe entering said cylinder, a strainer located within the cylinder and over the end of the pipe, removable caps over the ends of the cylinder, an auxiliary or smaller cylinder having its axis parallel with and located below the large cylinder, a pipe communicating with the two and by which the auxiliary cylinder is suspended, rotary heads upon the opposite ends of the auxiliary cylinder, pivots passing through the ends of the auxiliary cylinder and on which the heads rotate, radiating siphons in said heads, the auxiliary cylinder, the heads, and the siphons being provided with fluid-passages adapted to be intermittently opened and closed by the rotation of the rotary heads, and a bottle-support located below the auxiliary cylinder, in the manner and for the purpose set forth.

2. In an apparatus for bottling beer or other liquors, the combination of a horizontal cylinder, a receiving-pipe entering the cylinder, an auxiliary smaller cylinder located below the main cylinder, a pipe connecting the two cylinders, revolving heads on the opposite ends of the auxiliary cylinder, siphons radiating from said heads, the opposite ends of the auxiliary cylinder being provided with outlet-passages adapted to intermittently register with outlet-passages in the rotary heads, and a bottle-support adjustable toward and away from said siphons, as and for the purpose set forth.

3. In an apparatus for bottling beer or other liquors, a horizontal cylinder or reservoir, in combination with an auxiliary cylinder suspended by and below the main cylinder and communicating therewith and a series of radiating rotary discharging-siphons at each end of the auxiliary cylinder, substantially as and for the purpose set forth.

484,025. BEER APPARATUS. JOHN H. KERNBROCK, Columbus, Nebr. Filed June 30, 1891. Serial No. 397,972. (No model.)



Claim.—1. In a beer bottling or filling apparatus wherein beer under pressure is bottled, the combination, with the main reservoir, of a main outlet-pipe, an independent pipe leading directly from the reservoir, said outlet-pipe being provided with a self-regulating or automatic valve to prevent foaming and letting the excess of liquor off when there is an overpressure, and supplemental reservoirs into which said pipes discharge, substantially as described.

2. In a beer bottling or filling apparatus, a main reservoir having two outlet-pipes, one of which is of larger internal diameter than the other and constitutes a relief-pipe and is provided with a self-regulating or automatic valve, and supplemental reservoirs at the ends of the pipes, substantially as set forth.

484,026. ARCHITECTURAL COLUMN. JOSEPH M. LARIMER, Chicago, Ill. Filed Sept. 30, 1891. Serial No. 407,114. (No model.)

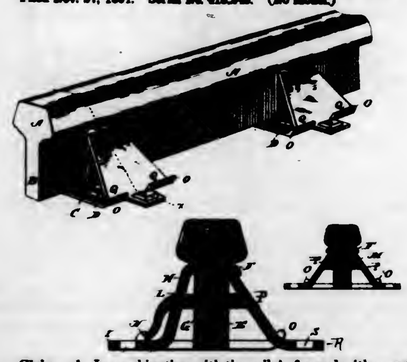
Claim.—1. An architectural column having, in combination, a core formed of metal beams having their webs centrally connected and their heads presenting outwardly and an inclosing shell consisting of metal plates, two of which are secured directly to opposite heads by bolts or rivets and two of which are secured to the other of said heads by clips, substantially as described.

2. The herein-described column, comprising the central core, the inclosing shell, and the clips for securing the shell to the core, said clips being secured against turning, substantially as described.

3. An architectural column comprising, in combination, a central core composed of beams having outwardly-presenting heads or flanges, an inclosing shell consisting of metal plates, and clips for securing the plates of the shell to the heads of the beams composing the core, substantially as described.

4. An architectural column having, in combination, a core formed of metal beams having outwardly-presenting heads or flanges and centrally-connected webs and an inclosing shell consisting of metal plates secured to the heads or flanges of the core, the edges of said plates being suitably connected to each other, substantially as described.

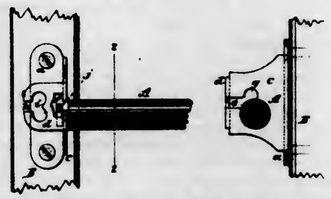
484,027. RAILROAD. WILLIAM LATHER, Wilmington, N. C. Filed Nov. 27, 1891. Serial No. 413,249. (No model.)



Claim.—1. In combination with the rail A, formed with a vertical web B, the chair C, formed with parallel vertical supports E G, adapted to embrace the under side of the flange of the rail, the locking device M, and arrow plate P, engaging with the noses O of the chair C, substantially as and for the purpose set forth.

2. The chair C, provided with suitable spike-holes for securing the same to the tie and formed with suitable vertical supporting-webs E G, and upturned noses O to receive and interlock with the locking device M and arrow plate P, substantially as and for the purpose set forth.

484,028. COMBINED SOCKET AND BRACKET FOR CURTAIN-RODS. CHARLES W. LAWRENCE, New York, N. Y. Filed June 23, 1892. Serial No. 437,554. (No model.)



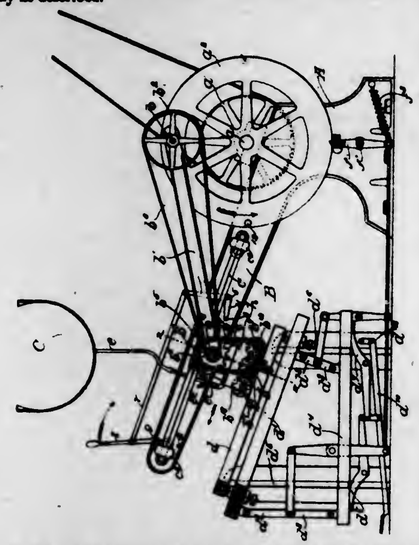
Claim.—The combined socket and bracket consisting of the body *c* and lip *d*, the body having narrow slot *e* and enlarged slot *g*, and the lip *d*, having enlarged slot *f*, communicating with the narrow slot *e*, and having, also, the narrow slot *h* and its enlargement *i*, substantially as and for the purpose herein shown and described.

484,029. LEATHER DRESSING OR FINISHING MACHINE. LEWIS R. LEARNED, Denver, Mass. Filed July 16, 1891. Serial No. 399,722. (No model.)

Claim.—1. In a leather dressing or finishing machine, a work-table, supports at its ends, and means, substantially as described, for positively moving said supports independently and alternately to thereby raise and lower the ends of the table at different times, com-

bined with one or more dressing or finishing tools and means for moving them over the table, substantially as described.

2. In a leather dressing or finishing machine, a work-table, independent movable supports at its ends, and means to positively move said supports independently and at different times to thereby cause the table to rock, combined with one or more rotatable dressing or finishing tools, means for moving them, and a straight guide, substantially as described.



3. In a leather dressing or finishing machine, a work-table, combined with toggles at each end to support it and independent means for positively moving each set of toggles separately and alternately to rock the table, substantially as described.

4. In a leather dressing or finishing machine, a work-table, a bed to support it, and means to adjust the table with relation to the bed, combined with toggles at each end of the bed to support it and independent means for positively moving each set of toggles separately and alternately to rock the bed and its table, substantially as described.

5. In a leather dressing or finishing machine, a work-table, independent toggles at each end supporting it, and a rising and falling base supporting said toggles, combined with pivoted levers, as f f^3, respectively connected to said toggles, and controlling-springs f^5 f^6 to normally retain said toggles extended, and devices to turn first one and then the other of said levers on their pivots, substantially as described.

6. In a leather dressing or finishing machine, a work table, toggles at each end supporting it, and a rising and falling base supporting said toggles, combined with pivoted levers, as f f^3, respectively connected to said toggles, and controlling-springs, and a wheel, as a^3, having pins 12 13, located substantially diametrically opposite each other, for moving said levers f f^3 to impart a rocking motion to said table, substantially as described.

7. In a leather dressing or finishing machine, a work-table, one or more dressing or finishing tools, and means for moving the same over the table, combined with a liquid-containing tank, a delivery-pipe, and an automatically-operated valve moving with said tools and actuated by devices independent thereof, substantially as described.

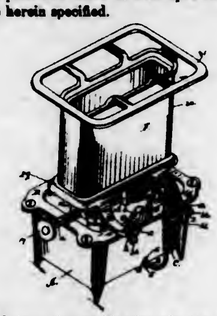
8. In a leather dressing or finishing machine, a work-table and one or more dressing or finishing tools reciprocated by a carriage, combined with a liquid-containing tank, a delivery-pipe leading to the tools, a valve, and operating devices therefor at each end of the movement of the carriage to open said valve at one end and to close it at the other end, substantially as described.

9. In a leather dressing or finishing machine, a work-table and one or more dressing or finishing tools reciprocated by a carriage, combined with a liquid-containing tank, a delivery-pipe leading to the tools, a valve, and operating devices therefor at each end of the movement of the carriage to open said valve at one end and to close it at the other end, and a hand-operated lever connected with one of said operating devices by which its co-operating with the valve is prevented, substantially as described.

484,080. OIL-STOVE. ERNEST S. LESSER, Albany, N. Y. Filed Mar. 9, 1891. Serial No. 384,269. (No model.)

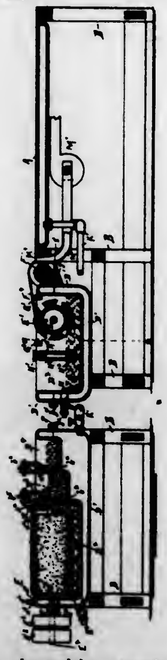
Claim.—1. In an oil-stove, the combination of a perforated diaphragm made of flexible metal and a rigid metallic frame for said diaphragm, provided at each of the inner sides of the opposite ends with inwardly-turned lugs and having at the inside of each of its opposite side bars a flange arranged at a lower plane than said lugs, as and for the purpose herein specified.

2. In an oil-stove, the combination of a top plate provided with a collar having a slotted opening for containing a wick-tube and having a convexo-concave swell formed at one side of said collar, a wick-tube which fits into said slotted opening, and a binder secured to the lower side of said top plate and fitted to bear upon said wick-tube, as and for the purpose herein specified.



3. In an oil-stove, the combination of a top plate provided with a collar having a slotted opening for containing a wick-tube and having a convexo-concave swell at its side, the hollow of said swell forming part of a recess for containing a revoluble wick-raiser, and a slotted binder provided with a convexo-concave swell at one side of its slotted opening, said swell forming the complement of the recess for the wick-tube and said binder being secured to the lower side of said top plate, so as to bear upon the wick-tube, as and for the purpose herein specified.

484,081. GLUE-APPLYING APPARATUS. JOHN LUSER, Sr., and LOUIS LUSER, North St. Paul, Minn. Filed Jan. 26, 1892. Serial No. 419,220. (No model.)



Claim.—1. In a glue-applying apparatus, a hollow table A, adapted to be heated, in combination with a glue-receptacle D', adapted to be heated and having a revolving cylindrical brush therein, whereby when the material after being heated on the hot table is passed over said cylindrical brush the glue is applied thereby to its surface, substantially as and for the purpose set forth.

2. In a glue-applying apparatus, the combination of a table A, adapted to be heated, a glue-receptacle adapted to be heated and having cylindrical brush F journaled therein and adapted to be revolved to apply the glue, and a dusting-brush F' between said hot table and cylindrical brush, substantially as and for the purpose set forth.

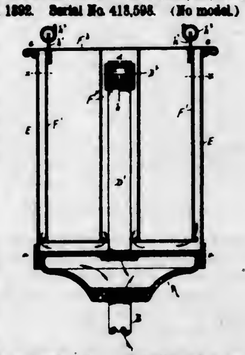
3. In a glue-applying apparatus, the combination of a glue-receptacle adapted to be heated and having cylindrical brush F journaled therein and adapted to be revolved to apply the glue, and guards G' G^3, secured across said receptacle and adapted to support the material upon each side of said brush in passing over it, substantially as and for the purpose set forth.

4. In a glue-applying apparatus, the combination of a table A, adapted to be heated, a glue-receptacle adapted to be heated and having cylindrical brush F journaled therein and adapted to be revolved to apply the glue, and a double reversible wiper-brush H' H^3 in said receptacle in advance of said cylindrical brush, substantially as and for the purpose set forth.

5. In a glue-applying apparatus, a glue-receptacle having hollow walls and divided into compartments of increasing depth with valves between said compartments, and a cylindrical brush within the deepest of said compartments and adapted to be revolved therein, whereby the glue may be reduced in the more shallow of said compartments and fed to the compartment containing the revolving brush as fast as required, substantially as and for the purpose set forth.

6. In a glue-applying apparatus, the combination of a table A, adapted to be heated, a glue-receptacle adapted to be heated and having cylindrical brush F journaled therein and adapted to be revolved to apply the glue, and suction-tubing M^3, arranged between said table and receptacle, substantially as and for the purpose set forth.

484,082. GLUE-HEATER. JOHN LUSER, Sr., North St. Paul, Minn. Filed Jan. 19, 1892. Serial No. 418,598. (No model.)



Claim.—1. A heater for glue and similar substances, consisting of a hollow base A, into which steam is adapted to be fed, a casing E, supported upon said base, and a receptacle F, suspended from said casing, and means whereby a sufficient quantity of steam may be allowed to enter the space surrounding said receptacle to generate the requisite quantity of heat, substantially as and for the purpose set forth.

2. A heater for glue and similar substances, consisting of a hollow base A, into which steam is adapted to be fed, and supporting a casing E, a feed-tube D', rising from said base into the interior of said casing and provided with means for regulating the escape of the steam therefrom, a receptacle F, adapted to fit into said casing and having central tubular section F^3 fitting over said feed-tube, and a closed top whereby the escaping steam comes first in contact with the central portion of said receptacle and is then carried downward and ascends around the outside thereof, substantially as and for the purpose set forth.

484,088. PROCESS OF EXTRACTING NICKEL FROM ORES. THOMAS MACFARLANE, Ottawa, Canada. Filed Aug. 12, 1891. Serial No. 402,457. (No specimens.)

Claim.—1. The process of extracting nickel from ores, consisting in calcining or roasting the ore with a chloride, dissolving out the resulting chloride of nickel, adding a weak alkali to the solution to decompose the perchloride of iron contained therein and precipitate hydrated peroxide, and subsequently recovering the nickel from the decanted solution.

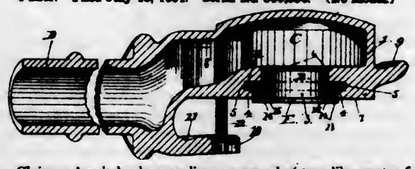
2. The process of extracting nickel from ores, consisting in calcining or roasting the ore with a chloride, dissolving out the resulting nickel salts, adding sodium sulphide to the solution to precipitate the copper therefrom, and subsequently recovering the nickel from the decanted solution.

3. The process of extracting nickel from ores, consisting in calcining or roasting the ore with a chloride, dissolving out the resulting chloride of nickel, adding a weak alkali to the solution to precipitate out the peroxide of iron, then precipitating out the copper, then adding a strong alkali to precipitate oxide of nickel, and reducing this oxide to metallic nickel.

4. The process of extracting nickel from ores rich in sulphur, consisting in first roasting the ore to expel the excess of sulphur, then mixing raw ore and a chloride with the ore, calcining it, dissolving out the nickel salt, and recovering the nickel from the solution.

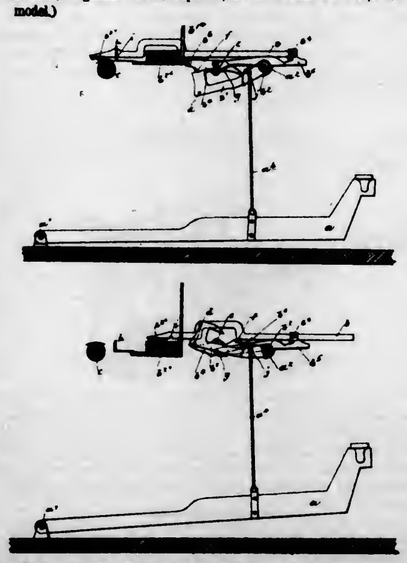
5. The process of extracting nickel from ores rich in sulphur, consisting in first roasting the ore to expel the excess of sulphur, then mixing sodium chloride with the ore, then calcining the mixture until sulphur fumes cease to be given off and chlorine fumes appear, and until protochloride of iron is eliminated, then leaching the resulting ore first with hot water to dissolve out the chloride of nickel, adding weak alkali to the solution to precipitate peroxide of iron, adding sodium sulphide to precipitate copper, adding a strong alkali to precipitate oxide of nickel, and finally reducing this oxide to metallic nickel.

484,084. AIR-BRAKE COUPLING. JAMES R. MARBLE, Albany, N. Y., assignor, by mesne assignments, of one-half to Joseph Wiltsie Fuller. Filed July 13, 1891. Serial No. 399,230. (No model.)



Claim.—An air-brake coupling composed of two like parts of the form herein described, each of said parts consisting of a chambered head having a screw-threaded mouth or opening, a circumferential groove formed therein, an annular gasket made of elastic material and provided with a peripheral flange which is fitted to engage in said circumferential groove, said gasket having a right cylindrical inner surface and projecting beyond the mouth of the coupling, and a right cylindrical tubular metallic sleeve having its inner end screw-threaded and adapted to be screwed into said opening and form a lateral support for said gasket, substantially as described.

484,085. TYPE-WRITING MACHINE. JOHN H. MASKELYNE, Jr., London, England. Filed Sept. 11, 1891. Serial No. 405,366. (No model.)



Claim.—1. The combination, with a key, of a link-rod, a pivoted lever connected thereto and provided with operating projections, a type-rod, and an intermediate lever connected to the type rod, pivoted to a stationary support and engaged by the projections of the first-named lever, substantially as described.

2. In a type-writing mechanism, the combination, with a type-

rod, of a lever pivoted to the type-rod and to a fixed support and provided with two steps, substantially as described.

3. In a type-writing mechanism, the combination, with a key, a link-rod, and a hooked lever provided with a projection and pivoted to a fixed support, of a type-rod and a lever pivoted to the type-rod and to a fixed support and operated by the hooked lever, substantially as described.

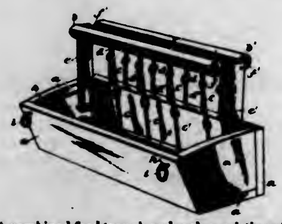
4. The combination, with the pivoted guide, the stationary guides, and the V-shaped piece, of the type-rod provided with a recess, substantially as described.

484,036. RAILROAD-TIE AND FASTENING. THOMAS B. MOORE, Philadelphia, Pa., and JESSE G. HOSKINS, Maywood, Ill. Filed Feb. 20, 1891. Serial No. 382,900. (No model.)

Claim.—1. The combination, with tie B, having opening b' and slot b^2 communicating therewith, of rail A, check-plate D, fitting on said tie, slightly thicker than the extreme flange of the rail, clamp-plate C and bolt F, having head f, adapted to pass through said opening b' and engage said tie around said slot b^2, one end of said check-plate abutting against the flange of the rail and its other end abutting against the tie at said opening or recess therein, said check-plate being made slightly thicker than the extreme flange of the rail to admit of the longitudinal movement of the rail on the tie due to expansion and contraction, said check-plate D having a slot or opening d^2 for said bolt to pass through and said bolt being fixed in position by the surrounding walls of said slot b^2 in the tie, and said slot d^2 in the check-plate, and said clamp-plate C being fixed in position by said bolt, substantially as specified.

2. The combination, with metallic tie B, having opening b' and slot b^2 communicating therewith, one on each side of the rail, of check-plate D, having lug or projection d fitting in said opening b' and abutting at its other end against the flange of the rail and provided with a slot or opening d^2, having edge or wall d^3, adapted to fit against the clamping-bolt, clamp-plate C and clamping-bolt F, having a head f, adapted to pass through said opening b', but not through said slot b^2, furnished with a non-circular or square portion f, fitting in said slots b^2 and d^2 in the tie and check-plate, respectively, and embraced between the opposite back walls of said slots and thus fixed in position, substantially as specified.

484,037. COMBINED FEED TROUGH AND RACK. JACOB W. MOORE, Oxford, Ark. Filed Nov. 24, 1891. Serial No. 412,970. (No model.)



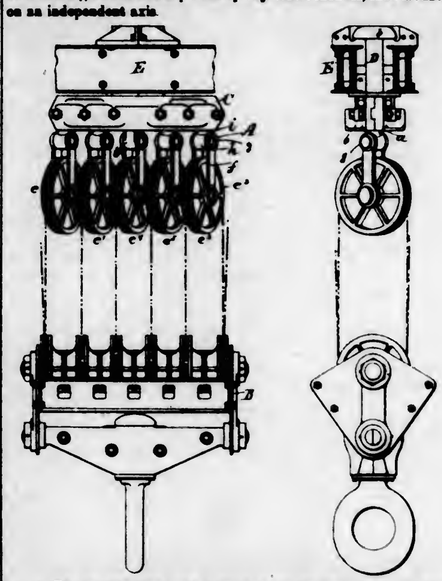
Claim.—A combined feed trough and rack consisting of the trough a, supports c c', hinged to trough ends and adapted to fold within the same, the bar b^2, located in the trough, the bar b, attached to the supports c c' and connected to bar b^2 by means of the links c c', and the bar b', connected to the supports at the ends and with the rear side of the trough by means of the links d d', substantially as described.

484,038. CHAIN-BLOCK. JOHN P. MORGAN, Altenau, Ohio, assignor of three-fourths to Thomas B. Morgan, Sr., Thomas B. Morgan, Jr., and William H. Morgan, same place. Filed June 20, 1891. Serial No. 397,047. (No model.)

Claim.—1. In a hoisting-tackle, a lower block having a series of sheaves and an upper block having a series of independent sheaves, each of the latter being carried by an adjustable bearing or spindle, substantially as set forth.

2. The combination, with a lower block having a series of independently-revolvable sheaves, of an upper block having a series of adjustable sheaves arranged, substantially as shown, with relation to its block and to the sheaves of the lower block.

3. The combination, with a lower block having a series of independently-revolvable sheaves mounted on a common axis, of an upper block having a series of independently-adjustable sheaves, each mounted on an independent axis.



4. The combination, with a lower block having a series of independently-revolvable sheaves, of an upper block having a series of sheaves mounted independent of each other, the devices supporting the sheaves being movably secured in the block, substantially as set forth.

5. The combination, with a lower block having a series of independently-revolvable sheaves, of an upper block, a series of independent sheave-supporting devices, and a sheave for each sheave-supporting device, the said sheaves adapted to revolve on horizontal axes and the said sheave-supporting devices having a movement on vertical axes, substantially as set forth.

484,039. REGULATOR FOR FEED-BOXES. ALFRED A. MORRIS, Sandy Hill, N. Y. Filed Dec. 26, 1891. Serial No. 416,315. (No model.)

Claim.—1. In a feed-regulator, the combination of a longitudinally-tapered case or shell, a cover having its sides pivoted to and adapted to lie within the sides of the case, a vertically-movable feed-slide, and a spring for holding said slide at any desired elevation, substantially as described.

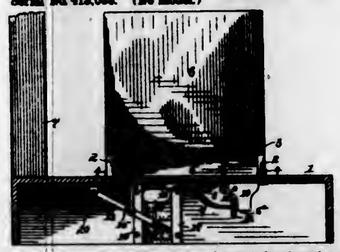
2. In a feed-regulator, the combination of a longitudinally-tapered case or shell provided with an inclined bottom and having its front cut away at the upper and lower ends, a cover pivotally connected to the sides of the case and arranged to close the upper end thereof, a feed-slide arranged within the shell and adapted to close the opening at the base thereof, said slide having the projecting lugs which extend over the edges of the sides of the shell, and a spring for holding said slide at the desired elevation with relation to the bottom of the regulator, substantially as described.

3. In a feed-regulator, substantially as described, the longitudinally-tapered receptacle having the opening in the upper part thereof, the vertical cover having its upper end bent to close the upper end of the receptacle and provided with the sides which fit between the sides of the case and are formed with slots, the pivots passing through said slotted sides of the cover, and an adjustable gate at the lower discharge end of the receptacle, as and for the purpose described.

4. In a feed-regulator, the receptacle provided with the opening in the upper and front part thereof, the vertical cover arranged to close the open front and top part of said receptacle and having the side pieces joined to the receptacle by a pin-and-slot connection concealed within the receptacle and adapted to permit of a limited outward adjustment of the cover, and a regulating-gate at the discharge-opening of the receptacle, as and for the purpose described.

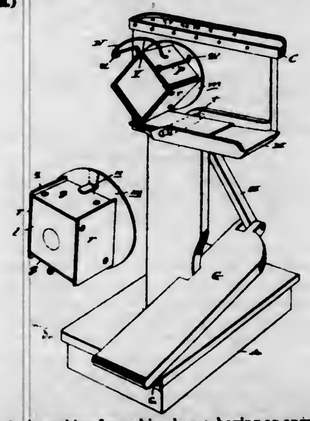
5. In a regulator for feed-boxes, the combination of a receptacle provided with an inclined bottom and the slotted front, which is cut away at its lower end to form a discharge-opening, a regulating-gate arranged within and adapted to close the discharge-opening of the receptacle, said gate being provided with projecting lugs or ears, which ride against the front edges of the receptacle, a bolt connected to the gate and extending through the slot in the front of the receptacle, and a flat leaf-spring fitted around the bolt and having its ends bearing against the gate, substantially as described.

484,040. PRIVY. PHILIP MUELLER, Decatur, Ill. Filed Nov. 26, 1891. Serial No. 413,063. (No model.)



Claim.—In privies, the combination of seat 1, having the customary hole and the ventilating-opening 19, the horizontally-swinging arm 9, carrying plate 8 and having a slot, bell-crank lever 11, having arm 12 extended through the slot of the arm, the tilting board 3, pivoted at 4, the link 21, connecting the bell-crank lever with the front part of the tilting board, slide 14, adapted to close opening 19, arm 13, carrying the slide, and link 15, connecting the arm 13 with the rear part of the tilting board, as set forth.

484,041. BOX-MACHINE. ALBERT M. MURRAY and DANIEL H. STUTSMAN, near Goshen, Ind. Filed Mar. 26, 1892. Serial No. 426,918 (No model.)

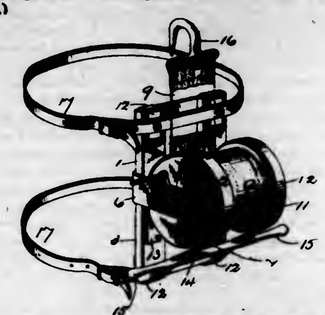


Claim.—1. A machine for making boxes, having an angular mandrel or box-holder with two of its opposite sides depressed, in combination with a shaft carrying said mandrel, a pedal-lever connected with said shaft for rotating the same, the lip or lug in one of the depressed sides, the clamp or arm in the opposite depressed side, and a friction-spring adapted to bear against the sides of the mandrel during rotation, substantially as specified.

2. A machine for making boxes, having an angular mandrel or box-holder provided with facing-plates, the opposite plates of one set being of less width than the opposite plates of the opposite set, and the edges of the wider plates overlapping those of the narrower plates, substantially as specified.

3. A box-making machine having an intermittent rotatable mandrel or box-holder, and having two opposite sides depressed, and also having a lip or lug in one of the depressed sides, and a clamp or arm in the opposite depressed side, substantially as specified.

484,042. FIRE-ESCAPE. JOSEPH MURPHY and FRANCIS M. RANKIN, Covington, Ohio. Filed Apr. 28, 1892. Serial No. 430,878. (No model.)



Claim.—1. A fire-escape consisting of a breast-plate having outwardly-extending reel-bearing strips, straps secured at the top and bottom, respectively, of said breast-plate and adapted to pass around the body of the user and secure said breast-plate thereto, a reel having journal-bearings within said bearing-strips, disks mounted on the respective ends of said reel, friction-bands secured at their respective ends to said breast-plate and extending over said disks, a hand-grasp extending transversely across and secured to said friction-bands, and a supporting-band, all substantially as and for the purpose set forth.

2. A fire-escape consisting of a breast-plate, straps secured thereto and adapted to pass around and secure said breast plate to the body of the user, journal-bearings extending forwardly from said breast-plate, a reel having friction-disks on its ends, friction-bands secured at their upper ends to said breast-plate and thence passing over and around the upper and front portions of said disks and thence across the space intervening between the reel and the bottom of the breast-plate, whereby flexibility of movement is permitted said bands at that point, a hand-grasp extending transversely across and secured to said friction-bands at their flexible portion, and a supporting-band, substantially as and for the purpose set forth.

3. The fire escape herein described, consisting of a frame or breast-plate, attaching-straps secured to said frame, journal-bearings extending forwardly from said frame, a band-carrying reel journaled in said bearings, a crank secured to the reel-journal, friction-disks on the respective ends of said reel, brake-bands secured at their respective ends to said frame and embracing said friction-disks, and a hand-grasp secured to said brake-bands for the purpose of regulating the frictional contact between said disks and brake-bands, substantially as and for the purpose set forth.

484,048. HILLSIDE-PLOW. CHARLES P. MCWANE, Graham, Va. Filed Mar. 2, 1892. Serial No. 423,513. (No model.)

Claim.—1. The combination, in a plow, of a standard having an inclined slot and provided with bearings at opposite sides of the slot, said bearings extending to the rear edge of the standard, a rock-shaft journaled in said bearings and extending upward from the rear edge of the standard, an arm secured to the rock-shaft and arranged in the slot and adapted to swing through the same and provided at its outer end with oppositely-disposed hook projections, a hinged mold-board provided at opposite sides with shoulders adapted to be engaged by said hook projections, and a rod having its lower end connected to the rock-shaft and adapted to extend to the handles of a plow and provided at its upper end with a handle, substantially as described.

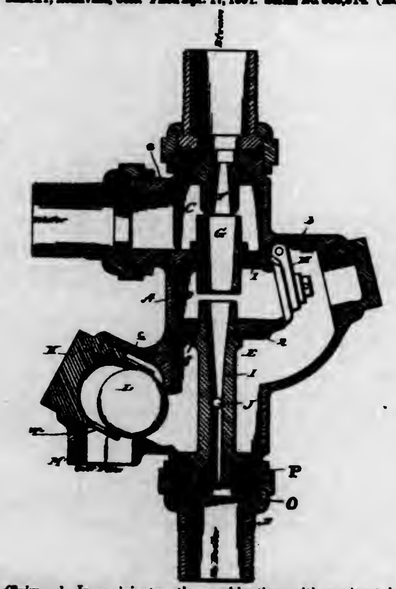
2. In a plow, the combination of a standard, a hinged mold-board provided with opposite shoulders, a rock-shaft journaled on the standard, a hook arm carried by the rock-shaft and adapted to swing to

opposite sides of the standard and provided at its outer end with oppositely-disposed hook projections adapted to engage said shoulder, and spring for holding the rock-shaft against turning to maintain the hook projections in engagement with the shoulders, substantially as described.

3. In a plow, the combination of a standard, a mold-board hinged at the bottom of the standard and provided at opposite sides with shoulders, a rock-shaft journaled on the standard and provided with a hook-arm adapted to engage either one of the shoulders and having an intermediate flattened portion, springs bearing on the flattened portion and adapted to hold the hook-arm in engagement with the shoulders, and means for turning the rock-shaft, substantially as described.

4. The combination of a standard provided with a slot, a mold-board hinged at the bottom of the standard and having shoulders at the opposite sides, a rock-shaft journaled on the standard and having a flattened portion and provided with a hook-arm arranged opposite said slot and adapted to engage the shoulders of the mold-board, a projection extending from the top of the standard and provided with grooves, a removable plate arranged on the projection and provided with grooves, parallel resilient rods clamped in said grooves and arranged on opposite sides of the said flattened portion of the rock-shaft, and an operating-rod extending from the rock-shaft and connected therewith and adapted to extend to the handles of a plow, substantially as described.

484,044. AUTOMATIC RESTARTING-INJECTOR. WILLIAM PHILBRICK, Louisville, Colo. Filed Apr. 17, 1891. Serial No. 389,314. (Model.)



Claim.—1. In an injector, the combination, with suction-tube G and chamber D, formed by walls 1 and 2, of the disk valve H, hinged and arranged at an angle to the vertical casing, as shown and described.

2. In an injector, the combination, with suction-tube G and chamber D, of the ball-valve H' and the flanged socket-nut H², arranged at an angle to the casing, as shown and described.

3. In combination with the overflow of an injector, the ball-valve L and flanged socket-nut K, arranged at an angle to the vertical casing, as shown and described.

4. In combination with tube G, chamber D, combining-tube I, chamber B, connecting chamber D with the overflow, the disk valve H, and ball-valve L, and flanged socket-nut K, arranged, as shown, in relation to the vertical casing, as and for the purpose described.

5. In combination with the overflow-passage of an injector, the ball-valve and socket-nut provided with inwardly-extended flanges having apertures m.

6. The combination of the combining-tube with the tail-pipe B and screw-nut and diaphragm 2, said diaphragm being made thin to allow of a slight longitudinal movement, as and for the purpose set forth.

7. In combination with the overflow of an injector, the ball-valve L and the flanges or guides for the same, arranged at an angle to the vertical line of the casing, as shown and described.

484,045. ELECTRIC-CABLE SPLICE. FREDERICK A. C. PERRINE, Trenton, N. J., assignor to the John A. Roebling's Sons Company, same place. Filed June 20, 1891. Serial No. 397,032. (No model.)

Claim.—1. An unfilled electric-cable splice having each spliced conductor surrounded by a sleeve of non-absorbent paper or similar non-absorbent material and having a casing outside the group of spliced conductors, substantially as described.

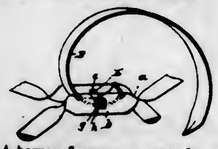
2. An unfilled electric-cable splice having each spliced conductor surrounded by a sleeve of non-absorbent paper or similar non-absorbent material and having a covering of non-absorbent paper or similar non-absorbent material about the group of spliced conductors and an outside casing, substantially as described.

484,046. RUBBER DAM. CHARLES P. PITMAN, Freehold, N. J. Filed Apr. 14, 1892. Serial No. 429,097. (No model.)

Claim.—1. A dentist's rubber dam provided with a raised elastic bridge, substantially as specified.

2. A dentist's rubber dam provided with a raised elastic bridge and perforations at the sides of the bridge, substantially as specified.

484,047. HARROW. VICTOR H. RANDALL, Marshall, Mich. Filed Mar. 18, 1892. Serial No. 425,460. (No model.)

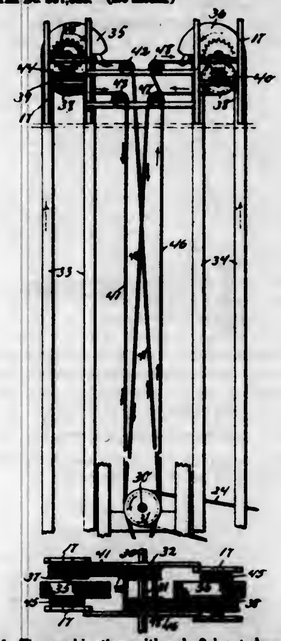


Claim.—1. A harrow-frame composed of metal bars of convex-plano form in cross-section, said bars being twisted and crossing each other at their twisted portions and bent so as to bring the bent portions vertical and parallel to each other to receive between them a tooth, substantially as specified.

2. A harrow-frame composed of bars of metal twisted and crossing each other at the twisted portions and bent so as to bring the bent portions parallel, said bent portions having a groove in their inner sides and a hole to receive a connecting-bolt, the groove being designed to receive a tooth, substantially as specified.

3. A harrow-frame composed of bars of metal of convex-plano form in cross-section, said bars crossing each other and being twisted and bent so as to bring the bent portions parallel to each other, said bent portions having grooves in their inner sides to receive a tooth and holes to receive a connecting-bolt, and the forward or outer bar of the frame extended and curved laterally, so as to form a guard, substantially as specified.

484,048. MEANS FOR TRANSMITTING POWER TO GRAIN-ELEVATORS. DEDRICK A. ROBERTSON, Minneapolis, Minn. Filed June 28, 1891. Serial No. 397,055. (No model.)



Claim.—1. The combination, with a shaft located centrally in the lower part of the building, of an elevator belt or belts extending into the top thereof, boot-pulleys for said belts, arranged in the lower part of the building, a head or head-pulleys for said belts, drive-pulleys secured on said central shaft, said boot and drive pulleys being secured on separate shafts by suitable clutches, and means for driving said head pulley or pulleys from said drive pulley or pulleys on said central shaft, substantially as described.

2. The combination, with a main shaft centrally located in the lower part of the building, of means for driving the same, drive-pulleys thereon, two or more elevator-belts, head and boot pulleys therefor, idlers, drive belts extending from said drive-pulleys over the same to drive said head-pulleys, and means for reversing the action of said belts upon said head-pulleys with respect to one another, substantially as described.

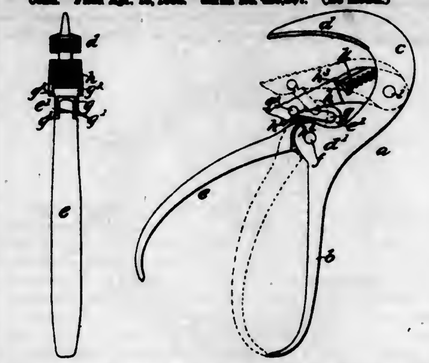
3. The combination, with a main shaft centrally located in the lower part of the building, of drive-pulleys and means for frictionally securing the same thereon, head-pulleys therefor, and rope-drive belts passing from said drive-pulleys on the main shaft over idlers and to power connections with said head-pulleys, one of said connections being for a direct drive and the other adapted to reverse the movement, substantially as described.

4. The combination, with a main central shaft located in the lower part of the building, of an elevator-belt arranged on each side thereof, head-pulleys and driving-gears therefor secured on short counter-shafts, idlers arranged in the upper part of the building, and belts passing up through the central part of the building thereto and from thence over drive-pulleys arranged in connection with said head-pulleys, substantially as described.

5. The combination, with the centrally-located shaft provided in the lower story of the building, of an elevator-belt arranged on each side thereof, drive-pulleys adapted to be secured on said shaft by suitable clutches, head-pulleys for said elevator-belts, shafts arranged beneath the same, drive-pulleys arranged thereon, idlers arranged on a substantial level therewith, and rope-drive belts passing through the center of the building and over said idlers and to said drive-pulleys, said belts being crossed and interlaced to secure a reverse action of one of the same upon its elevator-belt with respect to the other elevator-belt, substantially as described.

6. The combination, with a main drive-shaft and the elevator-belts, of head and boot pulleys therefor, with the rope-drive belts passing from said drive-shaft and each made up of two or more strands, and the idlers over which said belts run, two of said idlers being double grooved and the strands of one belt of each pair being interlaced thereon, as and for the purpose specified.

484,049. NUT-CRACKER. OLIVER H. ROBERTSON, Forestville, Conn. Filed Apr. 15, 1892. Serial No. 429,307. (No model.)



Claim.—1. In combination with the stock having a handle portion and an integral head portion terminating in an integral jaw arranged opposite the inner end of the handle and extending transversely across the line thereof, a swinging jaw pivoted to the head and having its grasping-surface at an angle with a line drawn from the outer extremity of the jaw through its pivot, the lever-handle pivoted to the stock, and the link pivotally connecting the swinging jaw and the lever-handle, all substantially as described.

2. In a nut-cracker, in combination with a stock having a head *c* and handle *b*, a fulcrum *d'*, with the fixed jaw *d*, extending transversely of the line of the handle, a swinging jaw *h*, pivoted to the head and having its grasping-surface at an angle with a line drawn from the extremity of the jaw through its pivot, the open trunnion-socket formed on the under side of the jaw, with projections adapted to embrace the trunnion on the link, a lever-handle pivoted to the stock, and a link having the integral pivots formed at its opposite ends, all substantially as described.

3. In a nut-cracker, in combination with a stock having a fixed jaw arranged transversely of the line of the handle of the stock, a swinging jaw pivoted to the stock and with a grasping-surface arranged in operative relation to the fixed jaw, a lever-handle pivoted to the stock, a toggle-link connecting the end of the lever-handle and the outer end of the swinging jaw and connected to said parts by the downturned integral projections embracing the pivots on the link, and the jaw-opening spring, all substantially as described.

484,050. AUGER-HANDLE. GEORGE H. ROGERS, Greenfield, assignor to the Miller's Falls Company, Miller's Falls, Mass. Filed Jan. 9, 1892. Serial No. 417,651. (No model.)

Claim.—The within-described handle, consisting of the removable pieces A A', the bolts a^3 a^3, screw-threaded at their outer ends, and screw-threaded thumb-nuts a^4 a^4, and springs a^5 a^5, all suitably adapted to receive and hold the shank of an auger or similar tool-shank, substantially as and for the purposes described.

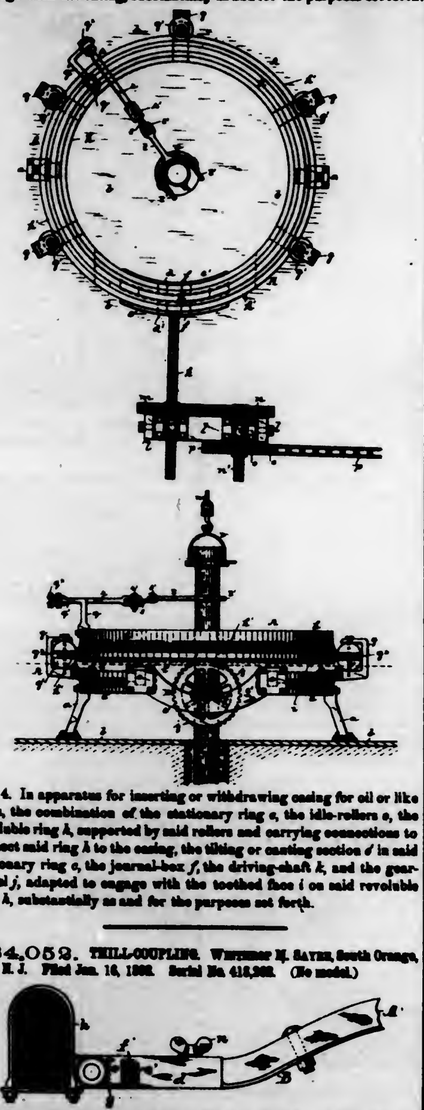
484,051. APPARATUS FOR INSERTING OR WITHDRAWING CASING FOR OIL OR LIKE WELLS. CHARLES A. SAWYER, Rochester, Pa. Filed May 18, 1892. Serial No. 433,413. (No model.)

Claim.—1. In apparatus for inserting or withdrawing casing for oil or like wells, the combination, with the frame, of a tilting or casting section, a power-shaft journaled in said tilting or casting section, and connections between said power-shaft and a revolving ring, and connections carried by said ring to connect said ring to the casing, substantially as and for the purposes set forth.

2. In apparatus for inserting or withdrawing casing for oil or like wells, the combination, with the frame, of a tilting or casting section carried thereby, a power-shaft journaled in said tilting or casting section, a gear-wheel on said shaft adapted to engage with teeth formed on a ring supported by said frame, and connections carried by said ring to connect said ring to the casing, substantially as and for the purposes set forth.

3. In apparatus for inserting or withdrawing casing for oil or like

walls, the combination, with the frame, of the revolubie ring A, the upright arm q, provided with the outwardly-projecting extension q', the arm r, the link s, provided with the hook s', and the lever t, adapted to engage with the casing, substantially as and for the purposes set forth.



4. In apparatus for inserting or withdrawing casing for oil or like wells, the combination of the stationary ring c, the idle-rollers e, the revolubie ring h, supported by said rollers and carrying connections to connect said ring h to the casing, the tilting or casting section d in said stationary ring c, the journal-box f, the driving-shaft k, and the gear-wheel j, adapted to engage with the toothed face i on said revolubie ring h, substantially as and for the purposes set forth.

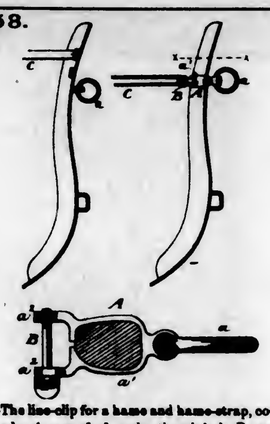
484,052. THILL-COUPLING. WHITEMAN M. SAYER, South Orange, N. J. Filed Jan. 16, 1892. Serial No. 418,262. (No model.)

Claim.—1. The combination, with the axle-clip, of the socket d, pivoted thereto and provided with the openings f, and the thill-iron having the box e, containing the pivoted jaws, having the arms l and the hooks projected from the opposite sides of the box and provided with the button m, adapted to separate the arms and retract the hooks, substantially as herein set forth.

2. The combination, with the axle clip, of the socket d, pivoted thereto and provided with the openings f, and the thill-iron having the box e, containing the pivoted jaws, having the arms l and the hooks projected from the opposite sides of the box and provided with the button m, adapted to separate the arms, and the hooks being formed with outer faces o, sloped toward the end of the box to clip automatically within the socket, as and for the purpose set forth.

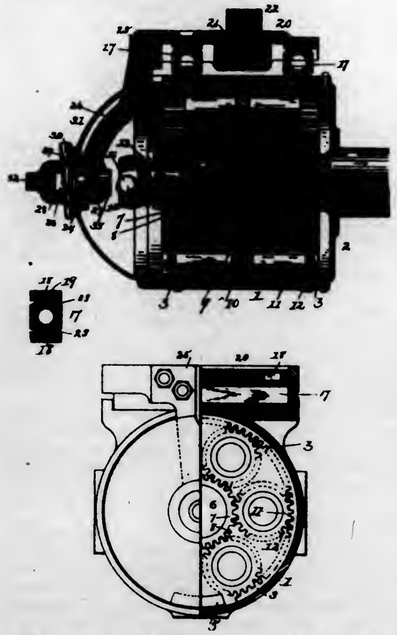
484,053. HAME-CLIP. JAMES SEIFF, Bethany, Ont. Filed Feb. 12, 1892. Serial No. 421,351. (No model.)

484,053.



Claim.—The line-clip for a hame and hame-strap, consisting of the ring a, split body a', ears a^2 a^2, and a thumb-bolt B, passing through one ear and screwing into the other, the said body being adjustable on the hame and clamped thereto by the screw-bolt, as described.

484,054. CAR-AXLE BOX. REBE L. SHARPNECK, Chicago, Ill. Filed Jan. 6, 1892. Serial No. 417,189. (No model.)



Claim.—1. The combination, with the case 20, having the bearing-surfaces 4 and the toothed rings 3, of the rollers 11, having teeth engaging with the toothed rings and with teeth surrounding the axle and the filling-piece 5, substantially as described.

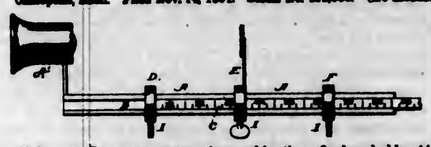
2. The combination, with an axle and a box for the same, of the casting 20, the bearers 17, set between the box and support and having flat surfaces at the top and bottom and tangentially curved at each side of said flat surfaces, substantially as described.

3. The combination, with the case 20, having the bearing-surfaces 4, the filling-piece 5, and the toothed rings 3, of the axle 6, having a toothed sleeve 7, and the toothed rollers 11, engaging with the teeth on the sleeve 7 and with the teeth on rings 3, substantially as described.

4. The combination, with the axle 6, having a tapering hole in the end, of a ball-carrying cap 15, having a tapering stem 14, substantially as described.

5. The combination, with an axle swinging in a suitable box and having a ball-carrying cap, of an arm 26, supported at the end of said box, a screw set therein, and a tapering wearing-plug set in the screw, substantially as described.

484,055. FOCAL-CENTER OPTOMETER. JAMES S. SHERMAN, Canopolis, Mich. Filed Nov. 14, 1891. Serial No. 411,869. (No model.)

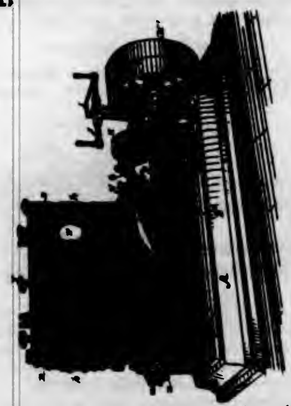


Claim.—1. In an optometer, the combination of a lens-holder A', an arm A, an adjustable measure, collars D and F, and adjustable design B, as and for the purposes set forth.

2. In an optometer, a slotted arm A, provided with an adjustable measure, in combination with a lens-holder, movable collars, adjustable design B, and set-screws to retain the collars and design B in fixed positions after adjustment, substantially as described and set forth.

3. The combination, in an optometer, of a lens-holder A', arm A, test design adjustable on arm A, an adjustable measure C, collar D, provided with an aperture G, collar F, and set-screws on said collars and design, substantially as described and set forth.

484,056. GRINDING-MACHINE FOR PAPER-STOCK. MATHIS H. SIMONIN, Gratelin, France. Filed Oct. 24, 1890. Serial No. 369,269. (No model.)



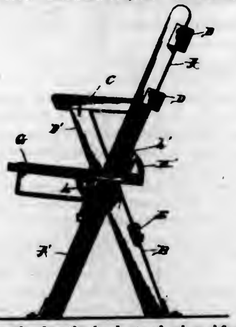
Claim.—1. In a machine of the class described, the combination, with a suitable bed and an inclosing casing mounted thereon and made in two sections pivoted together, said sections having the shape described, of reducing-rolls revolubly mounted in said casing and provided with spirally-arranged ribs or blades, the number of which increases from the feed end of the rolls to the delivery end thereof, reducing-plates adjustably mounted within the casing and partaking of the shape of the sections thereof and being provided with blades having a pitch relatively to the axis of the rolls, a longitudinal cutting-blade arranged vertically within the lower part of the casing and adapted to be adjusted relatively to the blades on the rolls, a feed-pipe communicating with the interior of the casing at one end thereof, and a delivery-pipe communicating with the interior of said casing at the opposite end of the latter, and means for rotating the rolls, as and for the purpose specified.

2. In a machine of the class described, the combination, with a suitable bed and an inclosing casing mounted thereon and made in two sections pivoted together, said sections having the shape described, of reducing-rolls revolubly mounted in said casing and provided with spirally-arranged ribs or blades, the number of which increases from the feed end of the rolls to the delivery end thereof, reducing-plates adjustably mounted within the casing and partaking of the shape of the sections thereof and being provided with blades having a pitch relatively to the axis of the rolls, said plates being adapted to be adjusted toward and from the rolls independently of each other, a longitudinal cutting-blade arranged vertically within the lower part of the casing and adapted to be adjusted relatively to the blades on the rolls, a feed-pipe communicating with the interior of the casing at one end thereof, a delivery-pipe communicating with the said interior at the opposite end, and means for rotating the rolls, as and for the purpose specified.

484,057. DRINKING-FOUNTAIN. GEORGE S. SIMMS, Covington, Ohio. Filed Feb. 6, 1892. Serial No. 420,801. (No model.)

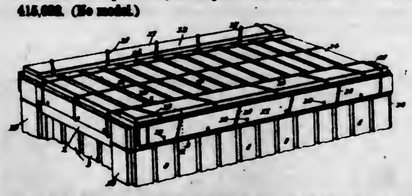
Claim.—The combination of the top-closed water-tank provided with means for the introduction of feed-water and having, also, the vertical open-bottomed top-closed heating-drum wholly within said tank, the open-topped water-jacket wholly within the tank, inclosing the aforesaid drum, and the water-space between drum and jacket and rising above the top of the drum, the trough formed around the outside and at the bottom of the water tank, and the apertures formed in a single horizontal plane around the wall of the tank at a proper distance above the floor and below the rim of the said trough, with the vertical open-topped perforated heating-jacket fitting against the bottom of the aforesaid water-tank and provided interiorly with means for sending a current of heat upward and into the aforesaid heating-drum, the whole constructed and arranged as and for the purposes hereinbefore fully described.

484,058. FOLDING CHAIR. DAVID A. SIMBAUGH, Utica, Ohio. Filed June 24, 1890. Serial No. 356,555. (No model.)



Claim.—A seat having the back standards and front legs made in one piece and the rear legs made in one piece with the arm, in combination with a folding seat provided with a stop-plate having the stops formed in an angle corresponding to the incline of the standards of the back and legs, substantially as set forth.

484,059. CRATE. FRANK R. SIPE, Defiance, Ohio, assignor of one-half to Henry D. Bishop, same place. Filed Dec. 14, 1891. Serial No. 415,082. (No model.)

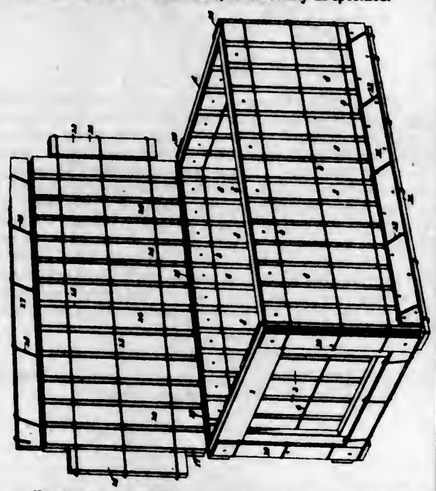


Claim.—1. The herein-described improved crate, the same consisting of the opposite end and side walls and bottom, the pairs of corner-strips nailed to the ends and sides and bottom of the crate, and the strand of wire for each pair of strips, said strand having its ends seated between the strips and walls of the crate and its intermediate portion alternately wrapped about the pair of strips, substantially as specified.

2. The herein-described improved crate, the same consisting of the opposite rectangular end frames, the longitudinal bar connecting the upper front corners thereof, the slatted end walls secured to the inner faces of the frames, the front and rear slatted walls connecting the frames and having their end slats or strips secured to the outer faces of the end frames and embracing the corners thereof, and the series of pairs of corner-strips, and the binding-wires connecting each pair, said strips being disposed at a right angle to each other and

nailed to the side, end, and bottom walls, the end corner-strips being interposed between the end strips of the front and rear walls, substantially as specified.

3. The herein-described improved crate, the same consisting of the body portion, the cover, and the flexibly-connected opposite side and end strips, the rear side strips being secured to the rear wall of the crate and the remaining strips adapted to be bent down to embrace the front and end walls of the crate, substantially as specified.

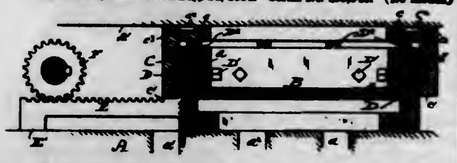


4. The herein-described improved crate, the same consisting of the body portion, the cover composed of a weaving of slats and wires, the outer slats being adapted to be folded down upon and embrace the ends of the crate, and the front and rear pairs of strips or slats, and binding-wires connecting these of each pair, the inner slats being connected to the front and rear edges of the cover and adapted to be nailed to the walls of the crate, substantially as specified.

5. The herein-described improved crate, the same consisting of the body portion, the cover composed of a weaving of slats and wires, the outer slats being adapted to be folded down upon and to embrace the ends of the crate and provided with nails adapted to be driven into the walls of the crate, the front and rear pairs of strips, and the binding-wires connecting these of each pair, the inner strips being connected by nails to the front and rear edges of the cover and the outer front strip being provided with inwardly-disposed nails adapted to be driven into the front wall of the crate, substantially as specified.

6. The herein-described improved crate, the same consisting of the body portion, the cover composed of a weaving of slats and wires and the front and rear pairs of strips or slats, and binding-wires flexibly connecting these of each pair, the inner slats being permanently connected to the front and rear edges of the cover and adapted to be nailed removably to the walls of the crate and be swung up therefrom, substantially as specified.

484,060. BALANCED SLIDE-VALVE. FREDERICK R. SKINNER, Milwaukee, Wis. Filed Aug. 31, 1891. Serial No. 403,963. (No model.)



Claim.—1. The herein-described slide-valve, comprising a lower part movably engaged with the valve-seat and adapted to cover and uncover the ports, said lower part being provided with an upwardly-extending marginal flange and having a central opening, and an upper part adapted to engage with the side of the steam-chest opposite to the seat and provided with a downwardly-extending flange adapted to be movably engaged with the flange on the lower part, a circumferential groove in one of said flanges, an elastic packing located in said groove, a non-elastic backing located between said packing and the base of said groove, and set-screws extending through said flange and engaged with said backing and operating to crowd the packing against the surface of the flange on the other part, substantially as described.

2. The herein-described slide-valve, comprising a lower part movably engaged with the valve-seat and adapted to cover and uncover the ports, said lower part being provided with an upwardly-extending marginal flange and having a central opening, and an upper part adapted to engage with the surface of the steam-chest opposite to the seat and provided with a downwardly-extending marginal flange adapted to be movably engaged with the flange on the lower part, a circumferential groove in one of said flanges, an elastic packing located in said groove, a non-elastic backing located between said packing and the base of the groove, set-screws extending through said flange and engaged with said backing and operated to crowd the packing against the surface of the flange on the other part, and suitable springs or cushions located between the lower surface of the upper part and the upper surface of the lower part, and adapted to press said upper part against the wall of the steam-chest, so as to exclude live steam from the open central portion of the lower part of the valve, substantially as described.

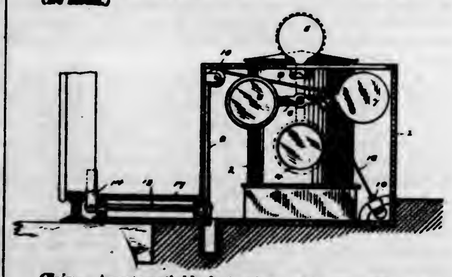
3. An improved slide-valve comprising a lower part movably engaged with the valve-seat and adapted to cover and uncover the ports and provided with an extension adapted for operative engagement with a suitable rock-shaft, a central opening in said lower part, an upwardly-extending marginal flange outside of the same and provided with a circumferential groove, an elastic packing in said groove, an upper part adapted to bear against the wall of the steam-chest opposite to the valve-seat and provided with a downwardly-extending flange adapted for movable engagement with the outside of the flange on the lower part, and suitable springs for pressing said upper part against the said wall of the steam-chest, substantially as described.

484,061. WIRE-STRETCHER. JOSEPH SPELLISSER, Philadelphia, Pa. Filed Mar. 25, 1892. Serial No. 426,574. (No model.)

Claim.—1. The combination, in a fence, of posts, horizontal wires, and a series of wire-tighteners connected with the wires and each composed of a frame having a back plate secured to one of the posts and detachable interlocking side plates provided with bearings and a drum journaled in the bearings, substantially as described.

2. In a fence, a wire-tightener comprising the back plate having a central opening and provided with the side openings beveled at the bottoms of the same, the side plates having bearing-openings provided at their inner ends with recesses and fitting into the side openings and engaging their beveled portions and provided at their outer faces with laterally-extending lugs, a drum journaled in the bearing-openings and provided with a ratchet, and a pawl loosely mounted in the frame and arranged to engage the ratchet, substantially as described.

484,062. AUTOMATIC BLOCK-SIGNAL FOR RAILWAYS. SYDNEY J. STOCKEY, Danbury, Conn. Filed Mar. 14, 1892. Serial No. 424,868. (No model.)

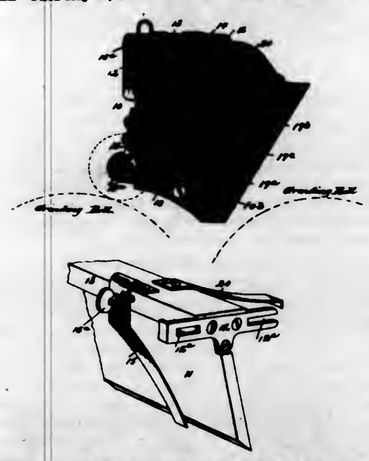


Claim.—An automatic block-signal comprising a signal-lamp showing a white light, a stationary white disk arranged vertically above said light, an arm pivoted between said light and disk and carrying at one end a red glass and at the other a red disk, said glass and disk being arranged to stand in front of the white light and disk when the arm is turned to a vertical position, a housing incasing the light and arm, but having a slotted top to permit the red disk to rise into danger position, and mechanism whereby the arm is automatically raised and lowered by a passing train, substantially as described.

484,063. MANUFACTURE OF PARQUETRY OR INLAID WOOD. HERMANN BRUSER, Inowrazlaw-Kruk, Germany. Filed Mar. 18, 1892. Serial No. 425,472. (No specimens.) Patented in Germany Feb. 26, 1891, No. 59,894; in France June 16, 1891, No. 214,171; in Sweden Sept. 25, 1891, No. 3,533, and in England Oct. 6, 1891, No. 16,948.

Claim.—The method of manufacturing parquetry, consisting in impressing into one of two plates of wood of different colors a pattern by means of a punch and into the other by means of a matrice, and in gluing together the figured surfaces thus obtained and dividing the block by a cut through the parts of the pattern fitting into each other into two massive plates of parquetry, the pattern of the first being light on a dark ground and that of the second dark on a light ground, for the purpose as described.

484,064. FEED-REGULATOR. MARION A. SWIRE, Washington, Ind. Filed May 16, 1891. Serial No. 393,055. (No model.)



Claim.—1. In a feed-regulator, the combination, with a hopper, of a reciprocating feed-board, rocking arms for operating said board, a revolvable shaft for operating said arms, a rubber friction-roller adjustably mounted upon said shaft, and a grinding-roll adapted to contact with and operate the friction-roller, substantially as shown and described.

2. In a feed-regulator, the combination, with a hopper, of a reciprocating feed-board, the rocking arms for reciprocating said board, a vertically-adjustable revolvable shaft for operating said arms, a friction-roller mounted upon said shaft, and a grinding-roll adapted to contact with said roller, substantially as and for the purpose described.

3. In a feed-regulator, the combination, with the corrugated feed-board, of the stirrer-bail arranged at the lower end of the same and the rocking arms for reciprocating said board and stirrer-bail, substantially as shown and described.

4. In a feed regulator, the combination, with a hopper, of a reciprocating feed-board, an adjustable top bar, and springs connected with the said bar and feed-board, substantially as shown and described.

5. In a feed-regulator, the combination, with a hopper, of the reciprocating feed-board composed of the lower bar, the corrugated plate, and the stirrer-bail, all arranged substantially as shown and described.

6. In a feed-regulator, the combination, with a hopper, of a reciprocating feed-board, an adjustable top bar, a pivoted fall board or gate, adjustable springs connected with the bar and bearing on the fall board or gate, and springs connecting the bar and reciprocating gate, substantially as shown and described.

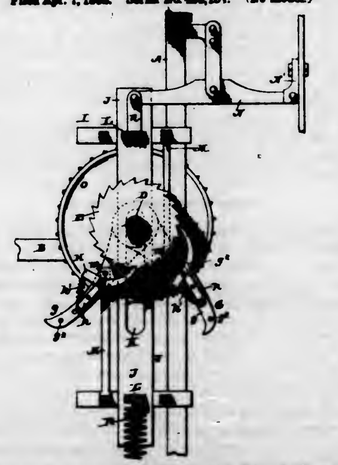
7. In a feed-regulator, the combination, with a hopper, of a reciprocating feed-board, an adjustable top bar, a fall board or gate pivoted thereto, adjusting-springs attached to the top bar and bearing on the fall board or gate, springs connecting the top bar and feed-board, the spring-wire rocking arms, the shoes and blocks, the adjustable revolvable shaft having sinuitinear surfaces adapted to bear upon the said blocks, and the adjustable rubber friction-roller mounted on said shaft, all arranged substantially as shown and described.

484,065. SUSPENSORY GARMENT. CHARLES C. TAYLOR, New York, N. Y. Filed Feb. 27, 1892. Serial No. 423,005. (No model.)

Claim.—1. In a suspensory garment, the combination of the yoke-band *a* and arm-bands *b b* with the belt or waistband *c* and with back-bands *d d*, connecting said yoke-band *a* and arm-bands *b b* with said waistband *c*, substantially as described.

2. The combination of the receptacle A with the yoke-band *a*, arm-bands *b b*, back-bands *d d*, and waistband *c*, said receptacle A being fastened to said arm-bands *b b* and said back-bands *d d* uniting said yoke-band *a* and arm-bands *b b* with the waistband *c*, substantially as described.

484,066. POWER-TRANSMITTER. ABIE S. THOMPSON, Kossuth, Iowa. Filed Apr. 7, 1892. Serial No. 428,157. (No model.)



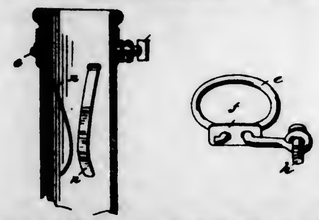
Claim.—1. In a power-transmitter, the drive-shaft, a ratchet-wheel secured to said shaft, oppositely-swinging pawl-carrying frames straddling said ratchet-wheel and loosely connected with the shaft on each side of said wheel, spring-actuated pawls mounted in each of said opposite frames and moving over opposite edges of the ratchet-wheel, and a vertically-reciprocating slotted frame working over said shaft and connected with said pawl-carrying frames, and opposite pairs of raising and lowering rods loosely connecting said pawl-carrying frames to the ends of said slotted frame, substantially as set forth.

2. In a power-transmitter, the combination, with the shaft and the ratchet-wheel secured thereto, of opposite-swinging pawl-carrying

frames straddling said ratchet-wheel and provided with a series of perforations in opposite sides thereof, oppositely-working pawls pivoted within said frames on each side of the ratchet-wheel, a vertically-reciprocating slotted frame working over said shaft and extending above and below the same, and connecting-rods pivoted at their ends in pairs on opposite sides of the shaft to the upper and lower ends of the reciprocating frame, respectively, and provided at their inner ends with inwardly-projecting pins engaging the perforations in said pawl-carrying frames, substantially as set forth.

3. In a power transmitter, the combination, with the shaft and the drive-chain wheel thereon, of the ratchet-wheel secured to said shaft, opposite-swinging pawl-carrying frames loosely connected at their inner ends to said shaft on opposite sides of the ratchet-wheel and provided with a series of perforations in opposite sides thereof, opposite spring-actuated pawls pivoted within said frames, a vertically-reciprocating frame having longitudinally-disposed slots working over said shaft, connecting-rods arranged in pairs on each side of the shaft, one of each pair of rods being loosely connected to the top and the other rods of each pair with the bottom of the frame, all of said rods being provided at their inner ends with inwardly-projecting pins engaging the perforations in said pawl-carrying frames, and a spring connected to the bottom of said reciprocating frame and a suitable point of attachment, substantially as set forth.

484,067. WHIP-SOCKET. EDWIN H. TUFTS, Beverly, Mass. Filed Dec 10, 1891. Serial No. 414,945. (No model.)



Claim.—1. In combination with the socket-barrel, the wire *c*, surrounding the same, the clip *f* for securing the ends of the wire, and means for attaching the socket to a vehicle, substantially as described.

2. In combination with the socket-barrel, the wire *c*, surrounding the same, spring-strips, as *n*, secured at one end by said wire and passing into the interior of the socket-barrel, and a clip for holding the ends of the wire, and means for attaching the socket to a vehicle, substantially as described.

3. In combination with the socket-barrel *a*, the wire *c*, surrounding the same, the clip *f*, against which the wire ends are overturned, one of said ends having a loop, and a screw, as *h*, passing through the loop in the end of the wire for securing the socket to the vehicle, substantially as described.

4. In combination with the socket-barrel *a*, the wire *c* and the clip *f*, said wire having its ends overturned against the clip and the clip having its end extended to engage the screw *h* in one end of said wire *c*, substantially as described.

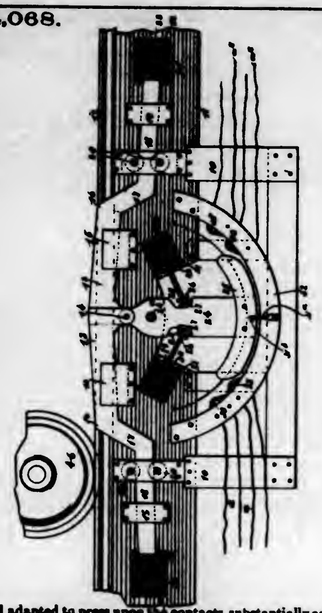
484,068. RAILROAD-SIGNAL. BERNHE URBAIN, Brooklyn, N. Y. Filed Oct. 20, 1891. Serial No. 409,272. (No model.)

Claim.—1. A railroad electric signal comprising a series of electric lights and bells arranged alongside the track, circuit-closing contacts connected with the lights and bells and placed adjacent to a track-rail, vertically and longitudinally movable levers arranged in pairs placed near the track in the path of the car-wheels, said levers having oppositely-extending inclined upper faces, and means for operating the circuit-closing contacts by the movement of the levers, substantially as described.

2. The combination, with the electric lights and bells and the circuit-closing contacts placed adjacent to the track-rails, of longitudinally and vertically movable spring-pressed levers placed adjacent to a track-rail, said levers having inclined upper faces which terminate in shoulders arranged in the path of the car-wheels, the outer ends of the levers being bent downward and held to slide in suitable guides or keepers, and means for operating the circuit-closing contacts by the movement of the levers, substantially as described.

3. A railroad electric signal comprising electric bells and lights of different sound and color arranged in sets adjacent to a railroad-track, sliding spring-pressed levers arranged parallel with a track-rail, contacts mounted on a curved bed beneath the levers and arranged on opposite sides thereof, the contacts connecting with the different sets of bells and lights, and a swinging arm pivoted to a support, said arm having its upper end connected with the track-levers and having its

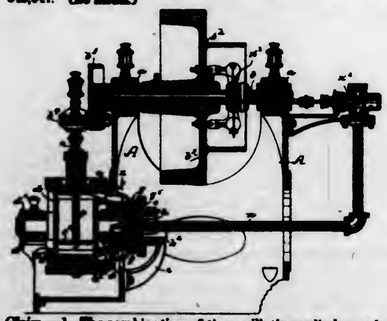
484,068.



lower end adapted to press upon the contacts, substantially as described.

4. In a railroad electric signal, the combination, with the sliding and vertically-movable levers placed adjacent to a track and a curved bed having contacts on opposite sides thereof, which contacts are electrically connected with the signals, of a swinging contact-arm pivoted to the adjacent ends of the levers, a curved contact-plate secured to the lower end of the arm and adapted to press the contacts, and a spring mechanism for holding the contact-arm out of engagement with the contacts, substantially as described.

484,069. STEAM-ENGINE. MAX ULEHLE, Northampton, Mass., assignor to Arthur G. Hill, same place. Filed Mar. 12, 1890. Serial No. 343,647. (No model.)



Claim.—1. The combination of the oscillating cylinder and valve-piece connected with said cylinder and having a bore coaxial with the axis of oscillation of the cylinder and port-openings extending from points diametrically opposite one another in the said bore of the valve-piece to the ends of the cylinder with a steam-chest having a curved surface that has a working fit in the bore of said valve-piece, said steam-chest being divided by a longitudinal partition into live-steam and exhaust chambers and having ports adjacent to said partition at diametrically-opposite points, co-operating with the ports in the valve-piece, substantially as and for the purpose described.

2. The combination of the cylinder provided with trunnions and supporting-bearings for said trunnions with a valve-piece having a core coaxial with the trunnions, said valve piece being secured to the cylinder and having ports leading from its bore to the ends of the cylinder, said valve-piece having a recess adjacent to the side of the cylinder, in which recess one of the cylinder-trunnions and its bearing is located, and a steam-chest contained within the said valve-piece and divided by a longitudinal partition into inlet and exhaust chambers, said steam-chest having ports adjacent to said partition and diametrically opposite one

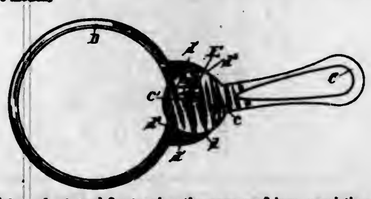
another, co-operating with the ports in the valve-piece, substantially as described.

3. The oscillating cylinder provided with trunnions and supporting-bearings for said trunnions, combined with a valve-piece connected with said cylinder near its ends and recessed to receive one of the cylinder-trunnions and its bearing between the said valve-piece and the side of the cylinder, said valve-piece having a bore coaxial with the cylinder-trunnions, and a stationary steam-chest contained in the bore of said valve-piece, and a cap or bonnet detachably connected with said valve-piece and engaging the said steam-chest to confine the latter in the bore of the valve-piece, substantially as described.

4. The oscillating cylinder provided with trunnions and bearings therefor, combined with the valve-piece provided with a bore, said valve-piece and cylinder being provided with an interlocking tongue and groove, as g^5, turned concentric with the trunnion on the cylinder and concentric with the bore in the valve-piece, as described, whereby when the said cylinder and valve-piece are engaged at said tongue and groove the bore of the valve-piece is concentric with the trunnion of the cylinder, substantially as described.

5. The combination of the oscillating cylinder and valve-piece connected therewith, having a bore coaxial with the cylinder-trunnions, and ports leading from said bore to the ends of the cylinder, with a steam-chest having a working fit in the bore of said valve-piece and divided by a longitudinal partition into live-steam and exhaust chambers and provided with ports immediately adjacent to said partition, and a packing-strip interposed between the said ports in the steam-chest, substantially as and for the purpose described.

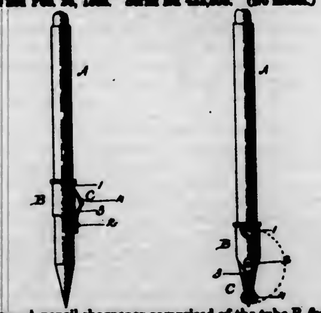
484,070. TOOL FOR TURNING FRUIT-JAR COVERS. JOHN VAN ALPHEN, Milwaukee, Wis. Filed Oct. 19, 1891. Serial No. 408,100. (No model.)



Claim.—1. A tool for turning the covers of jars, consisting of a ring or annulus having no cover or cross-bar, so that it can be used either side up, and provided with a projecting lateral flange, and a lever-handle having a circular head pivoted eccentrically to said projecting flange, the head being arranged to swing slightly into the aperture of the ring, substantially as described.

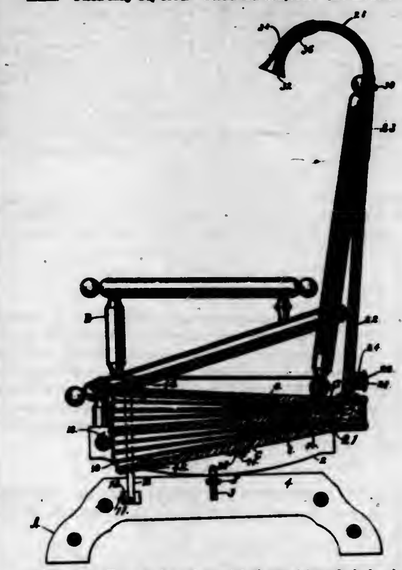
2. A tool for turning the cover of a jar, consisting of a ring or annulus having no cover or cross-bar, so that it can be put over and about a jar-cover either side up, and provided with a flange projecting laterally therefrom, said flange provided upon one surface with upstanding opposite side walls adapted to limit the movement of the lever-handle on the ring, and a lever-handle having a circular head pivoted eccentrically on the flange and arranged to swing slightly into the aperture of the ring, the movement of the lever with reference to the ring being limited by the side walls, substantially as set forth.

484,071. PENCIL-SHARPENER. FREDERICK J. WALKER, Milton, Pa. Filed Feb. 20, 1892. Serial No. 422,888. (No model.)



Claim.—A pencil-sharpener comprised of the tube B, formed with an aperture 1 to receive the end of the sharpener and a pivot 2, and a chisel having its shank pivoted on the pivot 2 to turn on a plane parallel with the face of the tube and having its chisel bent down at an incline from the shank to make the point, substantially as described.

484,072. PNEUMATIC CHAIR. ARMAH P. WARNER, Lake City, Minn. Filed May 14, 1891. Serial No. 392,791. (No model.)

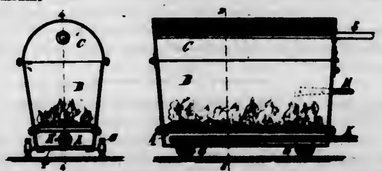


Claim.—1. The combination, with the rocking-chair having a stationary frame and a rocking frame supported thereon, of a double bellows having its center board secured to the rocking frame and its top and bottom boards secured to the stationary frame and having suitable inlet and outlet valves for the respective chamber, the outlet-pipe therefor secured in an upright position to the back of the chair, the detachable pipe-section vertically adjustable upon the upper end of said outlet-pipe and depending over the chair-seat, and the nozzle for said pipe-section adjustable lengthwise of said section, substantially as and for the purposes set forth.

2. The combination, with the rocking-chair, of the bellows adapted to be operated by the rocking motion of the chair, the vertical pipe 23, provided with the lateral perfume-chamber 24, the removable pipe-section 28, slidably and rotatably adjustable in the top of said outlet-pipe, and the sliding nozzle 34 upon said pipe-section, substantially as described.

3. The combination, with the rocking-chair provided with bellows operated by the rocking motion of the chair and means for charging the air with perfume as it issues from the bellows, of an upright outlet-pipe for said bellows, secured to said chair, a downturned pipe-section connected to said outlet-pipe and rotatably and slidably adjustable thereon, and means for adjusting the length of said pipe-section, substantially as described.

484,073. BARREL-HEATER. ROBERT WIDDIS and BERNO WARNECKE, New York, N. Y. Filed Feb. 6, 1892. Serial No. 420,553. (No model.)



Claim.—In a barrel-heater, the combination, with a suitable bottom section provided with wheels, a grate supported in said bottom section, an intermediate section bolted on the bottom section, a cover-section hinged on the intermediate section and forming a tight joint, a perforated air-inlet tube in the bottom section below the grate and projecting from one end of said bottom section, and an outlet-tube for the products of combustion projecting from the end of the top section, substantially as set forth.

484,074. LAWN-SPRINKLER. DANIEL C. WILSON, Los Angeles, Cal. Filed Apr. 28, 1892. Serial No. 430,971. (No model.)

Claim.—A lawn-sprinkler provided with a flat circular vortex-

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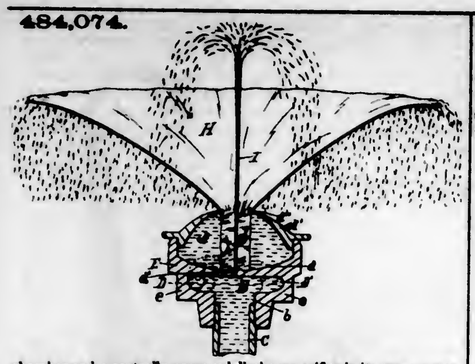


chamber and a centrally-arranged discharge-orifice in its top, a water-supply chamber beneath such vortex-chamber and arranged for attachment to the supply-pipe, two inlet-passages leading from the supply-chamber to the vortex-chamber and arranged to discharge into such vortex-chamber in reverse directions upon opposite sides of such chamber tangential to its periphery, and the jet-passage arranged in line with the axis of the vortex-chamber and leading from the supply-chamber to the vortex-chamber.

484,075. IMPLEMENT FOR CUTTING PEARL, &c. FREDERICK WILKIN, New York, N. Y. Filed Mar. 24, 1892. Serial No. 426,201. (No model.)

Claim.—1. In an implement of the character herein set forth, a hollow cylindrical cutter slitted as explained, the same being mounted upon a corresponding cylindrical sizing-plug and combined with jaws, substantially as described, for compressing and holding the cutter upon the plug, for the purposes explained.

2. In an implement of the character herein set forth, a hollow cylindrical cutter, a sizing-plug for receiving said cutter, an abutting nut movable upon the shaft of the sizing-plug, and clamping-arms for holding the cutter, combined and arranged substantially as explained.

3. In combination with a hollow cylindrical cutter slitted as explained and mounted upon a cylindrical sizing-plug, a slitted band mounted upon said cutter and adapted to increase the external diameter thereof, and jaws for compressing the band and cutter upon the sizing-plug, substantially as and for the purposes set forth.

4. The herein-described sizing-plug, the same being threaded into the base part of the clutch and having the threaded shank for the reception of an abutting nut, the same being combined with an abutting nut, substantially as shown and explained.

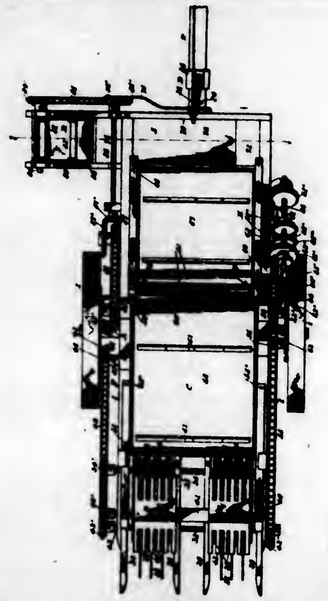
5. The herein-described implement, comprising the clutch-base, spring clamping-arms, sizing-plugs, slitted cylindrical cutter, and adjustable sleeve, all mounted, arranged, and combined substantially as shown.

484,076. CORN-HUSKER. MATTHEW WILSON, Garrison, Iowa. Filed Oct. 13, 1891. Serial No. 408,607. (No model.)

Claim.—1. In a corn-harvester, the herein-described gatherer, comprising parallel side-boards carried by the frame of the machine and projecting forward thereof, a transverse rotating shaft through their upper ends, a series of sprocket-wheels mounted thereon, an idle-shaft connecting the side-boards at about the centers of their lengths, a series of sprockets thereon, a series of belts connecting the sprockets in pairs, and a series of sheet-metal fingers, each of which is mounted on edge on said shafts between adjacent sprockets and projects forward of said idle-shaft, and a beater consisting of a horizontal shaft rotating above and standing across the gatherer, and combs projecting therefrom.

2. In a corn-harvester, the herein-described gatherer, comprising parallel side-boards carried by the frame of the machine and projecting forward thereof, a series of sheet-metal fingers standing on edge between and parallel with said boards, rearwardly-moving belts between the fingers at the rear portions of their bodies, and a beater mounted rotatively above and standing across the gatherer.

3. In a corn-harvester, the combination, with a gatherer comprising parallel longitudinal fingers and belts moving to the rear between them, of a beater consisting of a horizontal shaft rotating above and standing across the gatherer and combs projecting therefrom with their teeth moving adjacent to and in the same direction as said chains.



4. In a corn-harvester, the combination of a gatherer having deep side-boards and a series of longitudinal fingers standing on edge between and parallel with said boards and having rearwardly-movable belts between them, a beater-shaft standing across and above the gatherer, a polygonal roller on said shaft, combs mounted on the faces of said roller, and means for rotating the latter, substantially as described.

5. In a corn-harvester, the combination, with the main framework and banks of gatherers carried thereon, each gatherer comprising deep side-boards extending forward of the frame and pointed, a rearwardly-rotating shaft through the upper ends of said boards, an idle-shaft through them near their centers, a series of sprockets on the shafts, chain belts connecting them in pairs, and a series of sheet-metal fingers on edge extending between the sprockets and to a line nearly parallel with the points of the boards, of a transverse shaft above the gatherers, means for turning it in opposite direction to the shaft through the gatherers, a square roller on this shaft, and combs mounted on said roller with their teeth projecting tangentially therefrom.

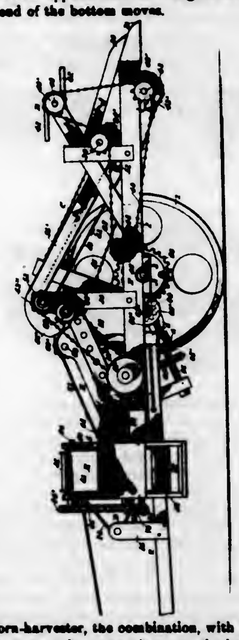
6. In a corn-harvester, the combination, with the gatherers projecting beyond the front end of the main frame and having sheet-metal fingers on edge, of a beater above said gatherers and another beater below the gatherers in rear of the front ends of said fingers and comprising a square roller whose upper face is moving forwardly.

7. In a corn-harvester, the combination, with a gatherer comprising side-boards, a series of rearwardly turning sprocket-wheels at about the centers of said boards, chains leading rearwardly therefrom, and a series of fingers interposed between and projecting forward of said wheels, of a lower beater comprising a forwardly-turning shaft below and parallel with the shaft of said wheels and a roller mounted on and turning with said shaft and having an angular face.

8. In a corn-harvester, the combination, with the main frame mounted on supporting-wheels, gatherers at the front end of said frame, having rearwardly-moving belts therein, oppositely-moving beaters located one above and one below said gatherers, wheels on the shafts of the beaters, and a driving-shaft for said belts, of a toothed ring on one supporting-wheel, a gear engaging said ring and having a wheel on its hub, and a belt connecting this wheel with the wheels on said shafts.

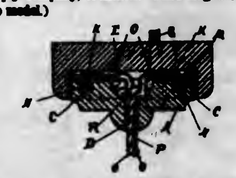
9. In a corn-harvester, the combination, with the main frame, the gatherers at the front end thereof, and a rearwardly-moving and upwardly-inclined carrier, of the husking devices in rear of said carrier, a feeder-roll under the carrier, comprising a polygonal roller turning to the rear, and guide-boards along the edges of the carrier, having their rear ends passing over the feeder-roll and bent slightly inward.

10. In a corn-harvester, the combination, with the main framework having a transverse box across its rear end, provided with a longitudinal slot in its rear wall and an inclined directing-board at one end, and means for gathering the ears and delivering them into said box, of cross-bars at the open bottom of the box, a bottom sliding on said cross-bars, a rotating crank-wheel, a pitman leading from its crank through said slot and connected with the bottom, and a receptacle at the end of the bottom opposite said directing-board, beneath which latter the other end of the bottom moves.



11. In a corn-harvester, the combination, with the main framework having a transverse box across its rear end, a horizontal rotating shaft above said box, a sprocket-wheel on said shaft, having a crank-pin, connections between the shaft and one of the supporting-wheels, and means for gathering the ears and delivering them into the box, of bars across the bottom of the box, an inclined board resting on said bars, connections between this board and said crank-pin, an elevator whose casing is mounted on the projecting end of the box, a receptacle at the lower end of said board and from which the elevator leads, and a chain connecting said sprocket-wheel with the elevator for driving the latter.

484,077. ROSETTE. CHARLES WIRT, Chicago, Ill., assignor to the Electrical Supply Company, of Illinois. Filed Aug. 20, 1891. Serial No. 404,070. (No model.)



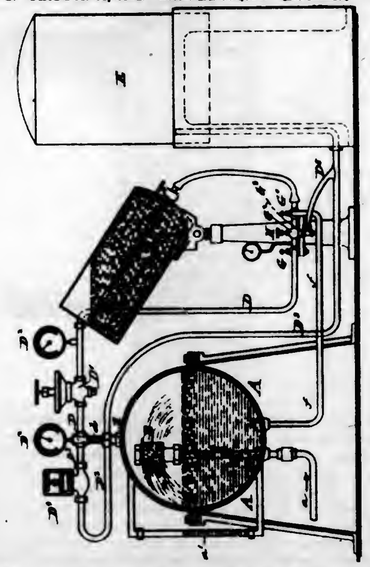
Claim.—1. In a rosette, the combination of a cap with recesses therein with circuit-closers consisting each of a bend cemented into each recesses and separated outer ends between and about which the local conductor may be twisted and secured.

2. In a rosette, the combination of a cap with circuit-closers consisting each of a bend secured to the cap and each having separated outer ends between and about which the local conductors may be twisted and secured and co-operating contacts pressing together the two parts of the terminal around which the wire is wound or twisted.

3. In a rosette, the combination of a cap with circuit-closers consisting each of a single piece bent so as to form a bend to be secured to the cap and to have each separated outer ends between and about which a local conductor may be twisted and secured, and co-operating contacts pressing together the two parts of the terminal around which the wire is wound or twisted.

4. In a rosette, the combination of a base provided with main conductors lying across the same and cap adapted to be received upon such base, spring circuit-closers secured to the cap and having separated outer ends between and about which the local conductors are twisted and secured and which are adapted to engage the main conductors and screws which pass entirely through both top and base and hold the cap upon the base and when driven home screw the rosette in position and by compressing the separated outer ends of the circuit closers together and forcing them against the main conductors make and keep contact between the circuit-closers and both the main and local conductors.

484,078. APPARATUS FOR CHARGING PORTABLE FOUNTAINS WITH CARBONATED BEVERAGES. JAMES F. WITTEMANN, Yonkers, N. Y. Filed Feb. 10, 1891. Serial No. 381,007. (No model.)



Claim.—1. The combination, with a reservoir for carbonated liquid, of a liquid-supply pipe terminating above the level of the liquid and a spray-head composed of longitudinal sections having radial spray-holes, substantially as described.

2. The combination, with a reservoir for carbonated liquid, of a liquid-supply pipe terminating above the level of the liquid and a spray-head composed of longitudinal sections having radial spray-holes, said holes being conically tapered from their inner to their outer ends, substantially as described.

3. The combination, with a reservoir for carbonated liquid, of a supply-pipe, a spray-head having a central conduit and radial tapering holes extending outward therefrom, and a tapering plug extending into said conduit opposite said holes.

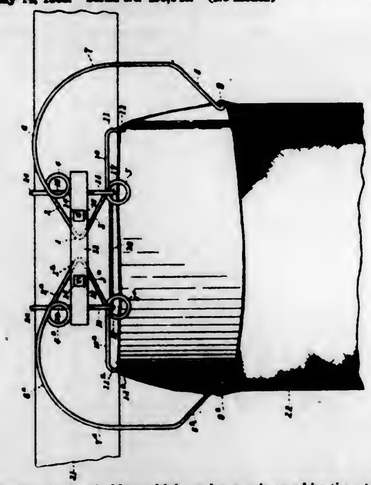
4. The combination, with a reservoir for carbonated liquid, of a supply-pipe, a spray-head for supplying carbonated liquid, composed of sections having radial and conically-tapering holes, a tapering plug extending into the spray-head, a threaded collar engaging one end of the sections, and a screw-cap engaging the other end of the sections, substantially as set forth.

5. The combination of a reservoir containing carbonated liquid, a switch-pipe adapted to be connected to the fountain to be charged, a gas-supply pipe connected with the upper part of the reservoir, a valve connecting said gas-supply pipe with said switch-pipe, a liquid-supply pipe connected to the lower part of the reservoir, a valve connecting said liquid-supply pipe with said switch-pipe, a storage-tank, a mixing-pipe connected to the storage-tank, and a valve connecting said mixing-pipe with the switch-pipe, substantially as described.

6. The combination of a reservoir containing carbonated liquid, a switch-pipe adapted to be connected to the fountain to be charged, a gas-supply pipe connected with the upper part of the reservoir, a valve connecting said gas-supply pipe with said switch-pipe, a liquid-supply pipe connected to the lower part of the reservoir, a valve connecting said liquid-supply pipe with said switch-pipe, a storage-tank, a mixing-pipe connected to the storage-tank, a valve connecting said mixing-pipe with the switch-pipe, and a pivoted lever common to all of said valves for opening either one thereof, substantially as described.

7. The combination of a reservoir containing carbonated liquid, a switch-pipe adapted to be connected with the fountain to be filled, a gas-supply valve, a liquid-supply valve, and a sniffing-valve connected to said switch-pipe, and pipes connecting said valves with the upper and lower part of the reservoir and with a storage-tank, respectively, said valves being provided with spring-actuated spindles, and a pivoted lever having cams for actuating either one of the valves, substantially as set forth.

484,079. BAG-HOLDER. ANDREW YOUNG, Union City, Pa. Filed July 14, 1892. Serial No. 439,948. (No model.)

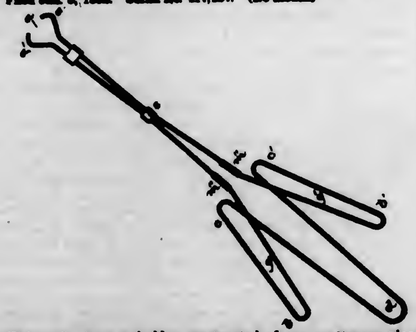


Claim.—A bag-holder which embraces, in combination, two V-shaped wires, their points extending opposite, secured between two horizontally-extending clamping-bars, each V-shaped arm wound in a series of coils, the wire continued from each coil into arms terminating in hooks constructed to respectively engage a front and rear portion of the mouth of the bag, and another wire interposed between the lower coils of the two V-shaped wires, each end passing and extending through the clamping-bars and coil above and terminating in a rearwardly and downwardly extending hook for suspending the device, substantially as described.

484,080. PROCESS OF DYEING. ERNST ELLENBERG, Crefeld, Germany. Filed July 18, 1891. Serial No. 399,971. (No specimens.)

Claim.—The herein-described process for dyeing silk goods in contrasting colors, which consists in treating part of the silk threads to be woven with a mordant before weaving, then weaving the same together with the part not so treated to form the desired pattern in contrasting colors on the face of the fabric, and finally dyeing in the piece the fabric thus formed, substantially as described.

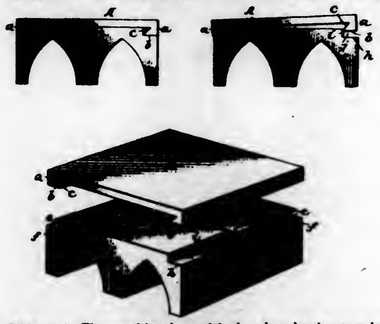
484,081. SPOON-HOLDER. GEORGE W. BABCOCK, Ithaca, N. Y. Filed Jan. 5, 1892. Serial No. 417,127. (No model.)



Claim.—1. A spoon-holder constructed of one continuous piece of wire, the extreme ends of which are formed in two opposing hooks and the middle formed into a loop to engage the inside of the vessel, two diverging loops formed on each side of the middle loop for engagement with the outer surface of the vessel, and a sliding band on the upper ends to vary the distance apart of the hooks, as set forth.

2. A spoon-holder constructed of one piece of wire formed into loops to embrace the edge of the vessel, furnished with angles near the point where the spoon-holder engages the top of the vessel, in combination with a shelf formed of a loop of wire whose inner side is bent upward to form a ledge *n'* and furnished with eyes which rest on the said angles, as set forth.

484,082. STEREOTYPE-PLATE AND HOLDER. MARK BENNETT, Buffalo, N. Y. Filed Dec. 29, 1891. Serial No. 416,461. (No model.)



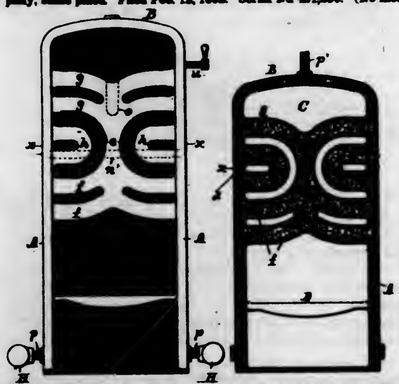
Claim.—1. The combination, with the plate having two locking-faces oppositely arranged, of a base or block consisting of two or more independent sections of substantially the width of the plate, each section provided with a locking-face adapted to engage one of said locking-faces on the plate, the sections being reversed in position when in normal engagement with the plate, substantially as described.

2. The combination, with the plate having two oppositely-arranged inclined locking-faces on its under side, of a base composed of two or more independent sections of substantially the width of the plate, each section provided with a similar locking-face adapted to engage one of said locking-faces on the plate, and a guide-face to engage the other of said locking-faces thereon, the sections being reversed in position when in normal engagement with the plate, substantially as described.

3. The combination, with the plate provided with edge flanges, each having an undercut locking-face, of a base composed of two or more independent sections, each having an undercut locking-face at one end and a rabbet at the opposite end, substantially as described.

4. The combination, with the plate having depending flanges, each provided with an inner inclined locking-face, of a base consisting of two or more independent sections, each having an undercut locking-face at one end and a vertical guide-face at the other, substantially as described.

484,088. STEAM OR HOT-WATER HEATING BOILER. GEORGE C. BLACKMER, Newark, N. J., assignor to the Mastmoro Heating Company, same place. Filed Feb. 12, 1892. Serial No. 421,359. (No model.)



Claim.—1. A section for a vertical sectional boiler, consisting in side columns A, united at the top by arch B and having the partitions *d* formed therein and having transverse tubes connected with the columns A above and below the partition *d* and united in a central column *c*, as set forth.

2. A section for a vertical sectional boiler, consisting in the columns A, connected by arch B and provided with the loops A, and the tubes *f* and *g*, united in the column *c* and having the partition *d* inserted in the columns A between the ends of the loop, with the water-inlets *p* and the outlet *p'*, arranged substantially as set forth.

3. In a vertical sectional boiler, the combination, with a series of vertical cast-iron sections consisting each in side columns A, united at the top by arch B and having the partition *d* formed therein and having the transverse tubes connected with the columns A above and below the partition *d* and united in a central column *c*, of the water-plate J, applied at one end of the series, and the front plate I, provided with the door I', opening into the combustion-chamber, being applied at the opposite side of the series, as and for the purpose set forth.

4. In a vertical sectional boiler, the combination, with a series of vertical cast-iron sections provided with a combustion-chamber in the top of the boiler beneath a water-arch, of the partition *m* and the ribs *n* and *o*, arranged at one end of the boiler, as set forth, to form a return flue, and the smoke-outlet J', and the damper *t*, arranged opposite the same to furnish a direct or indirect draft, substantially as herein set forth.

5. A cast-iron sectional boiler formed with a series of vertical sections having a combustion-chamber in the top beneath a water-arch and provided at one end with the water-plate J, having the smoke-outlet J', and the hollow rib *o*, projected into a return-flue, and the vertical section adjacent to the water-plate, being provided with a partition *m*, and the damper *t*, arranged and operated substantially as herein set forth.

484,084. ANTIFRICTION ALLOY. THOMAS D. BOTTOMS, Hoosick, N. Y. Filed Dec. 29, 1891. Serial No. 416,411. (No specimens.)

Claim.—1. An antifriction alloy consisting of lead, antimony, tin, and magnesium, as described.

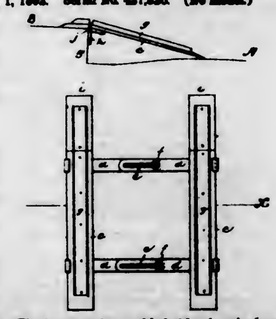
2. An antifriction alloy consisting of eight hundred parts of lead, one hundred and fifty parts of antimony, fifty parts of tin, and two parts of magnesium.

3. An antifriction alloy consisting of three to sixteen parts of lead, one to ten parts of antimony, one part of tin, more or less, and one to ten parts of magnesium to each one thousand parts of first-named metals when mixed together, substantially as described.

484,085. COLLAR, CUFF, AND GARMENT RACK. HENRY CASPAR, New Orleans, La. Filed Feb. 8, 1892. Serial No. 420,723. (No model.)

Claim.—A collar and cuff holder comprising a board or frame adapted to be secured to a support a frame hinged at one end to said board and carrying on one side a curvilinear flange or bearing for the collar and blocks adapted to receive cuffs, and springs exterior to the collar-bearing flange and cuff-blocks to retain a collar and cuff thereon, said frame being so hinged that when turned up the collar and cuffs thereon will be hidden from view, substantially as specified.

484,086. PORTABLE BRIDGE. JOHN T. CASSIDY, Harrison, N. J. Filed Apr. 1, 1892. Serial No. 427,330. (No model.)



Claim.—1. The improved portable bridge herein described, which consists of track-beams *c*, bars *d*, secured thereto and overlapping and adjustable in relation to one another, guards or guard *g*, a shoulder A, and the adjustable end or part *i*, combined and arranged as described, and for the purposes set forth.

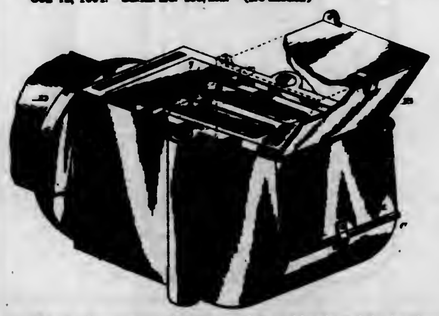
2. The combination of the track-beams *c*, adjustable bars *d*, guard *g*, and shoulder A, arranged as described, and for the purposes set forth.

484,087. PARLOR BOWLING GAME-BOARD. PAUL H. COLMIL, New York, N. Y., assignor of one-half to Robert L. Prange, same place. Filed Feb. 10, 1892. Serial No. 421,201. (No model.)

Claim.—1. A parlor bowling game composed of two hinged box-sections, the diagonal opposite end walls of which are made higher than the remaining walls, a raised alley arranged in each box-section, and a pin-board arranged at the end of each alley, substantially as set forth.

2. A parlor bowling game composed of two hinged box-sections, the diagonally-opposite end walls of which are made higher while the remaining walls are made lower, a raised alley arranged in each box-section and provided with a pin-board at opposite ends, recesses arranged near both ends of the adjacent side walls, and a transversely-inclined gutter that extends from the higher end of one box-section to the lower end of the adjoining box-section, so as to send the spent balls from one box section to the other, substantially as set forth.

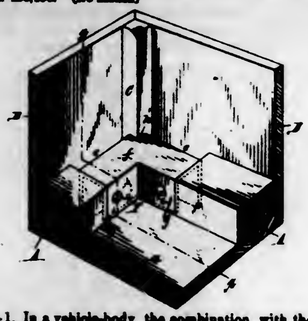
484,088. AXLE-LUBRICATOR. HARRISON V. CONWAY, Boone, Iowa, assignor of one-half to Isaac H. Throckmorton, same place. Filed Oct. 12, 1891. Serial No. 408,422. (No model.)



Claim.—In a car-axle lubricator, the combination of the box having the lower oil and waste holder, the oil-reservoir mounted on the box and having oil-channels, oil-channels in the box, communicating with the channels of the reservoir, a brass fitting in the box and having channels communicating with the channels of the box, said channels of

the box and brass leading to the inner shoulder of the axle, substantially as described.

484,089. VEHICLE-BODY. THOMAS FAULKNER, SYRACUSE, N. Y., assignor to Christopher C. Bradley, same place. Filed Feb. 3, 1892. Serial No. 420,193. (No model.)

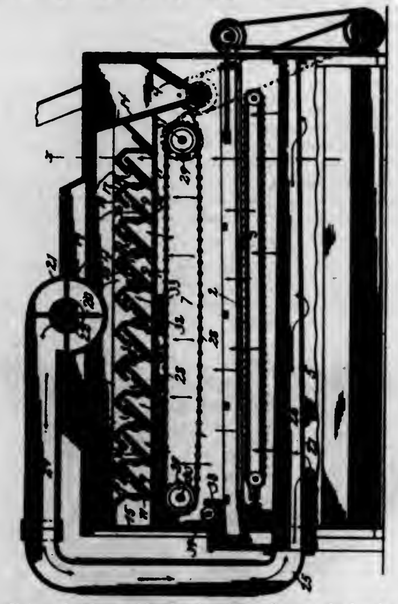


Claim.—1. In a vehicle-body, the combination, with the upright boards, of sills provided with openings adjacent to the corner of the body and a corner-brace connecting the adjoining ends of the sills, substantially as set forth.

2. In a vehicle-body, the combination, with the upright boards, of sills recessed on their outer sides adjacent to the corner of the body, whereby vertical passages are formed between the upright boards and the sills, and a corner-brace connecting the adjoining ends of the sills and consisting of an angle-plate resting upon the sills and flanges depending on the inner and outer sides of the sills, substantially as set forth.

3. In a vehicle-body, the combination, with the upright boards and the post arranged in the inner corner of the boards, of sills recessed adjacent to the post and a corner-brace consisting of an angle-plate resting upon the sills and notched at its outer corner to straddle the post and depending on the inner and outer sides of the sills, substantially as set forth.

484,090. DUST-COLLECTOR. JOHN J. GERARD, Minneapolis, Minn. Filed May 6, 1892. Serial No. 432,013. (No model.)



Claim.—1. The combination, in a dust-collector, of a dust-hopper provided with the discharge-valve, with the traveling carrier adapted to open said valve and receive the dust from said hopper, substantially as described.

2. The combination, in a dust-collector, of a series of pockets or settlings-chambers with valves therefor and a traveling dust-carrier arranged to open said valves and receive the dust from said hoppers, substantially as described.

3. The combination, with a series of valved pockets, of means for deflecting the dust-laden air into the same to precipitate the dust into the same and means for successively opening the valves of said pockets and conducting away the dust, substantially as described.

4. The combination, with a chamber for the dust-laden air and a chamber for the dust-freed air, of a series of dust-pockets or settlings-chambers interposed between the same, means for drawing the dust-laden air into said pockets and for deflecting the same thereinto, said pockets provided with discharge-valves, and a traveling carrier arranged to successively open said valves and carry away the dust, substantially as described.

5. The combination, with a separating device, of the inclosing walls, a series of valved dust-collecting pockets provided above said device, a traveling carrier and valve-opener to receive the dust therefrom, a suction-fan arranged above said pockets to take the air rising therefrom, and a dust leading therefrom and arranged to discharge the air beneath said separating device, substantially as described.

6. The combination, with the large chamber, of a separating device arranged therein, a series of dust-collecting pockets arranged above the same and each provided with a valve, the narrow channels or throats arranged between said hoppers or pockets, the deflectors arranged above the same, lugs arranged upon said valves, the traveling carrier, a trough or hopper to receive the dust therefrom, and means for creating a current of air through said channels and pockets, substantially as described.

7. The combination of the inclosing walls and means for creating an air current within the same, the dust-collecting pockets or hoppers having the inclined walls 9, the walls 10, and the hinged valves or gates, springs to normally close the same, the narrow channels being formed between the upper edges of said parts, the oppositely-inclined parts 17 and 18, the endless belts, the cross-slats arranged thereon, and the flexible strips arranged between said cross-slats, thereby forming the dust-carrier, and the same being adapted to successively engage said gates to open the same, substantially as described.

8. The combination, with a series of dust-collecting pockets or hoppers, of the hinged valves or gates thereof, the endless belts and the shafts and wheels thereof, the cross-slats 32, arranged on said belts, the flexible strips provided between said slats, a lug on the forward slat to engage a lug provided on each of said gates, a receiving-trough 38, and a conveyer provided therein, all substantially as and for the purpose specified.

484,091. COMBINED FIRE-DOG AND GRATE. GILES T. GLASCOCK, Greensborough, N. C. Filed June 29, 1891. Serial No. 397,867. (No model.)

Claim.—1. A fire-dog and grate consisting of the grated fronts having the supporting-lugs on their rear faces and the grates resting on said lugs and having each a supporting-leg.

2. A fire-dog and grate consisting of the grated fronts having the supporting-legs, the grates having the broad front edges supported by said fronts and having the inner reduced ends, and a leg depending from the reduced ends to support the grates.

3. A fire-dog and grate consisting of the fronts having the grates provided with supports and the grate resting on said supports having the central and end pieces rising therefrom, with spaces on each side of the central piece, whereby when the parts are assembled the supporting-fronts are secured in the spaces between the central and end pieces and form a complete closed grate.

4. In a fire-dog and grate, the combination, with the grated fire-dog consisting of the two sections, of the grated bottom having the end pieces and the outwardly-curved central piece adapted to be connected to form a complete closed grate.

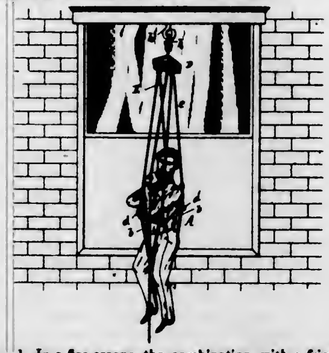
484,092. STAMP AND MATCH BOX. ASCHE GOSSEN, Newark, N. J. Filed June 4, 1892. Serial No. 435,699. (No model.)

Claim.—1. The improved match and stamp box herein described, comprising the body *a*, having ears *b*, providing bearings for a transverse pin or pivot *c*, said said pin or pivot extending across the mouth of the box, forming openings at each side, a partition-piece secured beneath one of said openings and extending from one end to a point beneath the pivot and thereat extending upward, the said partition forming a shallow stamp-receptacle above one end of the match-chamber, and hinged covers arranged on said pivot and closing said openings, substantially as set forth.

2. The combination, with the box *a*, having the hinged covers, of a partition-piece having legs *c*, holding said partition-piece up from the bottom of the box, and stays for holding said partition-piece against longitudinal movement, substantially as set forth.

3. The combination, with the box having a transverse pin *c* and covers hinged thereon, of a partition-piece secured beneath one of the openings to the box and up from the bottom thereof, the said partition having the bottom plate *k* and vertically-turned flange *l*, substantially as set forth.

484,093. FIRE-ESCAPE. ADA V. GOLTERMANN, New York, N. Y. Filed Dec. 26, 1891. Serial No. 416,158. (No model.)

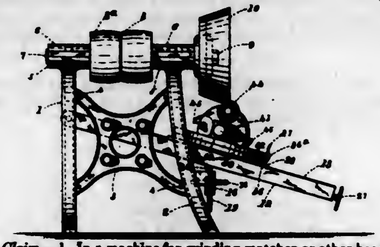


Claim.—1. In a fire-escape, the combination, with a friction device and a seat portion formed of a saddle, of suspension-cords attached to said saddle and provided with cross-strips at their upper ends, said suspension-cords being provided with loops above said cross-strips, and adjustable suspension-cords that are passed through the loops of the suspension-cords and through eyes of the friction device, substantially as set forth.

2. In a fire-escape, the combination, with a seat portion composed of a saddle formed of leather and end blocks connected by a right and left hand screw, of double suspension-cords extending across the under side of the saddle and attached thereto, cross-strips attached to the upper ends of the suspension cords, which are provided with loops above said cross-strips, and adjustable suspension-cords passing through the loops above the cross-strips, substantially as set forth.

3. In a fire-escape, the combination, with a seat portion formed of a saddle, of suspension-cords attached to said saddle and cross-strips attached to the upper ends of the front and rear suspension-cords, adjustable cords passed through loops arranged in the stationary suspension-cords above the cross-strips and through eyes at the bottom of the friction device, a friction device, and a brake-cord suspended by a stationary hook and passing through the members of said friction device, substantially as set forth.

484,094. MACHINE FOR SHARPENING MATCHER-HEADS. WILLIS H. HAZARD, Buffalo, assignor to Henry F. McCune and William S. Whitman, Salamanca, N. Y. Filed Apr. 1, 1892. Serial No. 427,262. (No model.)

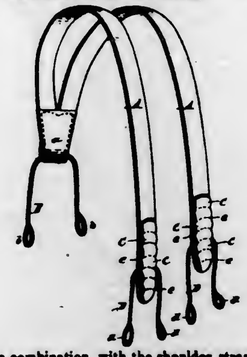


Claim.—1. In a machine for grinding matcher or other heads, the combination of a carriage mounted on slideways pivoted to the frame of the machine for the purpose of carrying the cutter-heads to or from the grinding-wheel, with two vertical pins projecting up from said carriage, and a reversible double arbor removably mounted on said pins for receiving and carrying cutter-heads of different-sized bores to or from the grinding-wheel and operating the cutter-head while its cutters are being ground, substantially as described.

2. In a machine for grinding the cutters of matcher or other cutter heads, the combination, with the slideway-frame upon which the carriage moves, of a slideway on the inner side of said frame, a stop-block secured in said slideway so as to be movable back and forth, a screw passing through said block and having its outer end secured so as to turn in the end cross-bar of the slideway-frame, a hand-wheel for turning it, and a lug projecting down from the carriage, whereby the forward movement of the carriage carrying the cutter-head may be adjusted and limited, substantially as described.

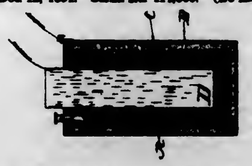
3. In a machine for grinding the cutters of matcher or other cutter heads, a carriage adapted to slide to or from the grinding-wheel and carrying the cutter-heads, consisting of a substantially-square base, an upward-projecting circular rim 30, a ring constructed to fit in and turn in said rim, a means on said ring for receiving and holding the cutter-head, and a pivoted cam-lever for holding said ring at any part of its rotary adjustment, for the purposes described.

484,095. SUSPENDERS. HENRY A. HEMPEL, Gotha, Fla. Filed Aug. 3, 1891. Serial No. 401,443. (No model.)



Claim.—The combination, with the shoulder straps or braces, of vertical series of flexible loops open at their sides and secured to the front sides of the straps or braces by transverse lines of stitching and button tabs or straps passing freely through said loops, substantially as set forth.

484,096. GALVANIC BATTERY. JOHN W. HOFFMAN, Chicago, Ill. Filed Dec. 12, 1891. Serial No. 414,866. (No model.)



Claim.—1. A galvanic battery comprising a zinc cup or coil pro-

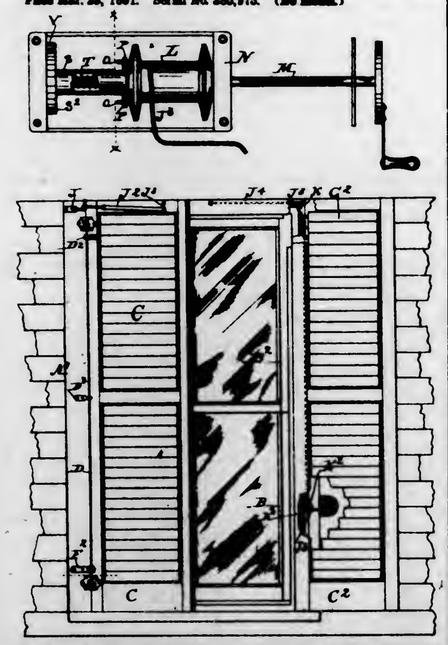
vided with a plastic lining of starch and an excitant, a moistened filling of crushed coke or carbon and a depolarizing agent, and a carbon stick or plate embedded in said filling, substantially as described.

2. A galvanic battery comprising a zinc cup or cell provided with a plastic lining of starch and an excitant, a filling of crushed coke or carbon, crushed peroxide of manganese, and glycerine, and a carbon stick or plate embedded in said filling, substantially as described.

484,097. STREET-SIGN. Magnus Hoffheimer, New York, N. Y., assignor to the Electrical Reflector Company, of New Jersey. Filed Jan. 23, 1892. Serial No. 418,890. (No model.)

Claim.—The combination of the sign-boards A E with the translucent and reflector plate B, placed between them, all arranged to admit light to the open space between said boards A E and plate B, so that the rays of light will serve to illuminate one of said signs by reflected and the other by transmitted light simultaneously, substantially as described.

484,098. SHUTTER-OPENER. Abijah H. Hull, Odebolt, Iowa. Filed Mar. 23, 1891. Serial No. 385,973. (No model.)



Claim.—1. In a shutter-operating device, the combination, with the shutter, of a reel connected to the shutter by a rope adapted to be wound on the reel and a crank-shaft normally connected to said reel by means of a clutch, for the purposes stated.

2. In a shutter-operating device, the combination, with a shutter and an automatic locking device secured thereto, of a lever pivoted to said shutter and fulcrumed to a hook or stop fixed to the casing and a rope and manually-actuated reel to operate the lever, for the purposes stated.

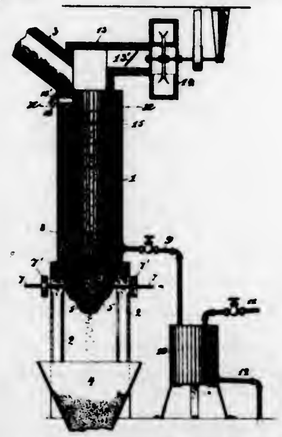
3. In a shutter-operating device, the combination, with a spring-operated shutter, of a rope fixed to and connecting the shutter with a reel, which latter is normally held in engagement with a manually-actuated shaft by spring-actuated clutch mechanism, as set forth.

4. In a shutter-operating device, the combination, with a shutter normally opened by yielding pressure fixed thereon, of a rope fixed to and connecting said shutter with a reel mounted on a manually-actuated shaft and connected thereto by a manually-releasable clutch which is normally held in engagement by yielding pressure and a pawl for preventing backward movement of said shaft, for the purposes set forth.

5. In a shutter-operating device, the combination, with a shutter-blind hinged with locking-hinges, of a lever J^3, pivoted to said shutter-blind and fulcrumed to a hook or stop J, fixed to the window-casing, and a rope connected with said lever and extended through said hinged shutter-blind, for the purposes stated.

6. In a shutter-operating device, a reel mechanism comprising a frame N, a crank-shaft M, mounted in bearings in the frame N and having a fixed pin P, a reel L, mounted loosely on the crank-shaft M and having projections O to be engaged by the pin P, a sleeve S, mounted loosely on the crank-shaft M and having slots on its inner end to admit the pin P and a ratchet-wheel S^2 on its outer end, a pawl V to engage the ratchet-wheel S^2, and a rope J^3, wound on the reel L, for the purposes stated.

484,099. APPARATUS FOR STEAMING GRAIN. Herbert S. Jewell, Brooklyn, N. Y. Filed Oct. 27, 1891. Serial No. 409,994. (No model.)



Claim.—1. A grain-steaming apparatus having means, substantially as described, for carrying off the surplus steam and the dust from the entering grain, arranged at the upper part of the apparatus where the grain enters, whereby the formation of slime in the apparatus is prevented.

2. A grain-steaming apparatus comprising an upright conduit having a grain-inlet at its upper part, a valve-controlled outlet at its lower part, a steam-nozzle within the conduit, and an air-exhausting mechanism connected with the upper part of said conduit for removing the surplus steam and the dust from the grain.

3. A grain-steaming apparatus having an automatically-regulated outlet-valve for the grain, said valve consisting of the hinged flaps 5, the sides 6, of flexible material, secured to and connecting the flaps 5, and adjustable weights on said flaps which tend to close the valve.

4. A grain-steaming apparatus comprising a conduit of wood or like non-heat-conducting material having an inlet for grain at its upper part and an outlet for the same at its lower part, a steam-nozzle arranged within said conduit, and means for drawing off the surplus steam and the dust at the upper part of said conduit.

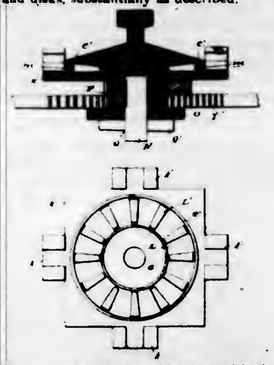
5. A grain-steaming apparatus comprising a conduit having a grain-inlet at its upper part and a grain-outlet at its lower part, a steam-nozzle in said conduit, an air-exhauster, a trunk connecting said air-exhauster with the upper part of said conduit, and means for regulating the force of the draft through said trunk.

6. A grain-steaming apparatus comprising a conduit having a grain-inlet at its upper part, a grain-outlet at its lower part, and an air-inlet 16, arranged below the grain-inlet, a steam-nozzle arranged within said conduit, an air-exhauster, and a trunk connecting said air-exhauster with the upper part of said conduit, whereby the air entering at the inlet 16 is compelled to pass through the inflowing grain on its way to the air-exhauster.

484,100. RAILROAD-CROSSING. Monroe G. Kinney, Oak Cliff, Tex. Filed Mar. 30, 1892. Serial No. 426,925. (No model.)

Claim.—1. In an automatic railway-crossing, the combination, with the main-track rails and the crossing-rails, of an axially-turning disk at each intersection of said rails and having the movable rail-section and a depending stem provided with a double gear-pinion, a stationary bed for each disk, the two sets of reciprocating bars, each having the rack-teeth which mesh with the pinions on the stems of two disks, and means for actuating either of said reciprocating bars, substantially as and for the purpose described.

2. In a railway-crossing, the combination, with the main-track rails and crossing-rails, of the fixed beds at the intersection of said rails comprising the central socket and chamber, the annular vertical flange c', and the integral radial rail-seats in which are firmly secured the contiguous ends of the main-track and crossing rails, the revoluble disks seated in roller-bearings in said beds and having the depending stems and the annular flanges m, adapted to engage the flanges c' of the beds, and means geared to the stems to simultaneously turn the series of stems and disks, substantially as described.

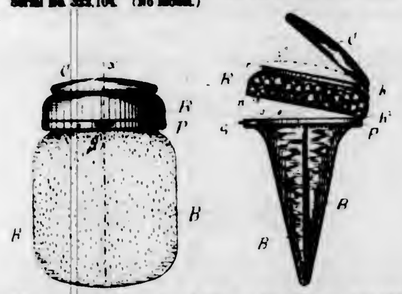


3. In a railway-crossing, the combination, with the main-track and crossing rails, of the fixed beds which receive the contiguous ends of said rails, the axially-turning disks carrying the movable stub-rails, the depending stems rigid with each disk and passing through the bed and a lower guide-block and having the key below the said block, the gear-pinion keyed to each stem, and the reciprocating rack-bars geared to the pinions on the stems of the disks, substantially as described.

4. In a railway-crossing, the combination, with the main-track and crossing rails, the disks carrying the movable stub-rails, and the rack-bars for actuating said disks, of a sectional pressure-bar connected to said main-track rail and having a pendant connected to a rocker and a spring-pitman between the rocker and the rack-bar, substantially as described.

5. In a railway-crossing, the combination, with the main-track and the crossing rails, the disks carrying the stub-rails and having the depending stems, and the rack-bars geared to said stems, of the sectional pressure-bar pivoted at the ends to a main-track rail and connected to a common pendant, the bell-crank rocker having the pendant connected to one arm, and the spring-pitman pivoted to the other arm of the pendant and connected to a rack-bar, substantially as and for the purposes described.

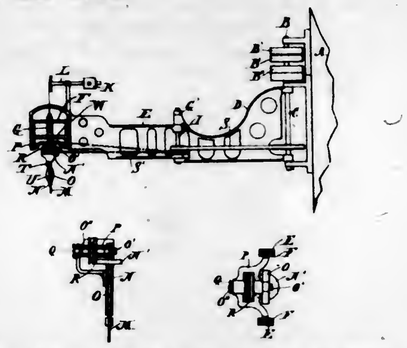
484,101. PURSE. Solomon C. Langfeld, New York, N. Y., assignor, by mesne assignments, to August Goertz. Filed Aug. 27, 1888. Serial No. 322,104. (No model.)



Claim.—1. A purse or bag having at its mouth a pair of lids hinged to the supporting-frame thereof, the outer lid closing upon the inner one, the inner one forming a chamber or receptacle as well as a cover for the mouth of the purse or bag, and suitable fastening devices for the same.

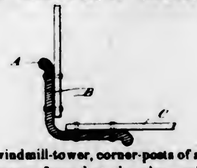
2. A purse and bonbonnière combined, consisting of a pouch or sack provided with a metallic rim or frame at the upper end or mouth thereof, to which is hinged a bonbonnière provided with a lid and serving as a cover for the mouth of the pouch or sack, and devices for holding the bonbonnière in closed relation to the pouch or sack and the lid in closed relation to said bonbonnière, substantially as set forth.

484,102. CARVING-MACHINE. William C. Layer, Milwaukee, and Edward U. Taylor, Fond du Lac, Wis. Filed Nov. 9, 1891. Serial No. 412,260. (No model.)



Claim.—In a carving-machine having a vertically-movable sash in the outer end of a doubly-jointed swinging arm, a yoke journaled in the vertically-movable sash, a spindle-frame journaled in the yoke at right angles to the axis of the yoke and in a radial plane thereof and so as normally to be at right angles to the material to be carved, a pulley in the yoke, the axis of which pulley is in the axis of the spindle-frame, a spindle having its bearings in the frame and provided with a gear bearing against the pulley in the yoke, and a belt running on the pulley in the yoke, combined substantially as described.

484,103. WINDMILL-TOWER. Joseph Lucas, Lansing, Mich. Filed June 6, 1892. Serial No. 436,710. (No model.)

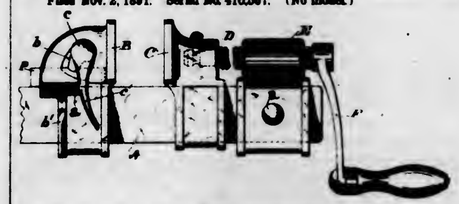


Claim.—1. In a windmill-tower, corner-posts of angle iron, having longitudinal ribs or flanges formed at the edges, substantially as described.

2. In a windmill-tower, corner-posts formed of angle-iron, having longitudinal flanges at the edges thereof extending entirely beyond the outer face, forming an inner flat face B, in combination with braces C, secured to the said flat face B, substantially as described.

3. In a windmill-tower, the combination of corner-posts of angle-iron rolled with a rounded apex and longitudinal rounded ribs or flanges at both edges extending entirely from the outer face thereof and having flat inner faces B with braces C, secured to said flat faces, substantially as described.

484,104. JOINER'S CLAMP. Frank Martin, Cincinnati, Ohio. Filed Nov. 2, 1891. Serial No. 410,567. (No model.)



Claim.—1. In a joiner's clamp, an integral clamping or backing head provided with a slot adapted to embrace and extend above the connecting-bar and with a lateral opening extended through the side cheeks of the slot, in combination with a friction-block riding upon the connecting-bar within the slot, and an eccentric pawl or cam inserted in the side opening and bearing against the clamping-head and the friction-block, substantially as set forth.

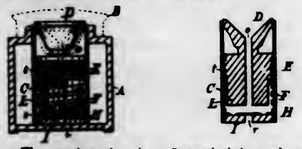
2. In a joiner's clamp, an integral clamping or backing head pro-

vided with a slot adapted to embrace and extend above the connecting-bar and with a lateral opening extended through the side cheeks of the slot, in combination with a friction-block riding upon the connecting-bar within the slot, an eccentric pawl or cam inserted in the side opening and bearing pivotally against the clamping-head and the friction-block within the slot, and a spring operating upon and holding said pawl or cam normally engaging the clamping-head and friction-block, substantially as set forth.

484,105. METHOD OF ATTACHING BUTTONS. JOSEPH MATHISON, Somerville, Mass. Filed May 5, 1890. Serial No. 350,563. (No model.)

Claim.—The method of attaching shoe-buttons, consisting in inserting the prongs of a wire staple through separate openings in a button-supporting piece from the under side, then placing the eye of a button against the face of the piece, then bending the upwardly-projecting prongs through the eye from one and the same side thereof, and then carving their ends under the eye each side of the center thereof, substantially as described.

484,106. FOUNTAIN-INKSTAND. EDWARD C. MAYLOY, Rochester, N. Y., assignor of one-half to Andrew J. Bevier, same place. Filed Dec. 26, 1891. Serial No. 416,161. (No model.)



Claim.—1. The combination, in a fountain-inkstand, of the ink-reservoir, the inner tube open at its upper end and extending from the top to the bottom of the reservoir and having its lower end in contact with the bottom, the perforated piston arranged to reciprocate freely in the tube and carrying the funnel fitted to the tube at its margin, the spring inside the tube supporting the piston, and a restricted opening or passage at the lower end of the tube, communicating between the reservoir and the tube, substantially as described.

2. In a fountain-inkstand, a suitable reservoir, the vertical tube, and the perforated piston arranged to reciprocate freely within the tube, so as to be depressed by the pen and grooved around its circumference to insure tightness and carrying a funnel, substantially as described.

3. The combination, in a fountain-inkstand, of the reservoir A, the inner tube C, communicating at its lower end with the reservoir, and the reciprocating perforated grooved piston E, funnel D, and a suitable supporting-spring inclosed within the tube, substantially as described.

4. The combination, in a fountain-inkstand, of an ink-reservoir, an inner tube containing a reciprocating perforated piston carrying a funnel, and a spiral hard-rubber spring arranged to sustain the piston and funnel, substantially as described.

5. The combination, in a fountain-inkstand, of the reservoir A, the inner tube C, communicating at its lower end with the reservoir, and the reciprocating grooved perforated piston E, supported within the tube by the spring F and having the extension L within the spring, substantially as described.

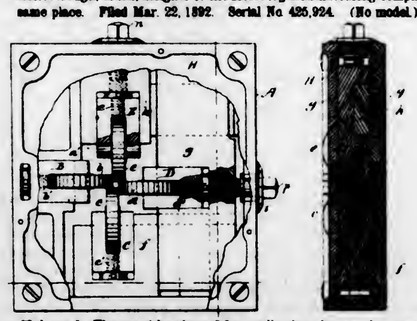
6. In a fountain-inkstand, a suitable reservoir, the vertical tube, and the perforated piston arranged to reciprocate freely in the tube and grooved around its circumference, so as to insure tightness, and a funnel attached to the piston and fitted at its margin to slide freely in the tube, substantially as described.

484,107. BRUSH. EDWARD I. MILLER, Westfield, N. Y., assignor to the Business Men's Manufacturing Company, same place. Filed July 20, 1891. Serial No. 400,175. (Model.)

Claim.—1. The combination, in a brush, of a brush-block provided with taft-holes A and brush-tufts consisting of bunches of brush fiber bound together near the center thereof and having their longer ends centrally divided and turned outward and backward over the binders thereon, with staples E, provided with central depressions *e*, substantially as and for the purpose set forth.

2. The combination, in a brush, of a brush-block provided with taf-holes A, formed with ledges *a*, and brush-tufts consisting of bunches of brush fiber bound together near the centers thereof and having their longer ends centrally divided and turned outward and backward over the binders thereon, with staples E passing down over the taft-binders and provided with central depressions *e*, passing down inside of the binders, substantially as and for the purpose set forth.

484,108. JEWELER'S TURK'S-HEAD ROLL. FRANK MOSBERG, Attleborough, Mass., assignor to the Mosberg Manufacturing Company, same place. Filed Mar. 22, 1892. Serial No. 425,924. (No model.)

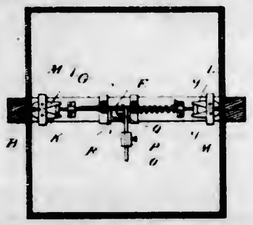


Claim.—1. The combination of four rolls placed around a center, each roll having its periphery in contact with the plane face of the roll next to it, the first and second roll having a connection between them, whereby when the first roll is moved the second roll will be moved in the same direction, and the second and third rolls having a connection between them, whereby the second roll being moved the third roll will be moved in the same direction with said connections, and means for moving the first and second rolls, substantially as specified.

2. The combination of the case A, carriages B, C, D, and E, arranged to slide in ways in said case, rolls *b*, *c*, *d*, and *e*, held in bearings in said carriages, adjusting-screws *b'*, *c'*, *d'*, and *e'* in the rear end of said carriages, bars *h*, *g*, and *f*, having sliding connections with each other, connecting carriages C, D, and E, and screws *n* and *p*, threaded through the sides of the case and bearing against the bars *g h*, respectively, substantially as set forth.

3. The combination of the case A, carriages B, C, D, and E, sliding in ways therein, rolls *b*, *c*, *d*, and *e*, held in bearings in said carriages, screws *n* and *p*, passing through the sides of the case and bearing against bars *h g*, and bars *h*, *g*, and *f*, arranged to slide in ways and connected together by sliding connections, substantially as set forth.

484,109. SAFETY DEVICE FOR ELEVATORS. HENRY MURDY and HENRY A. HOERR, Detroit, Mich. Filed June 20, 1892. Serial No. 437,341. (No model.)

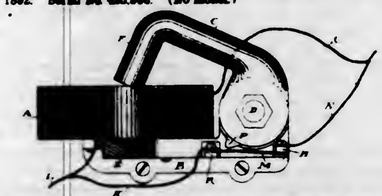


Claim.—1. The combination, with an elevator-car, its suspending-cable, and the guide-strips upon which it is vertically guided, of a lever to which said suspending-cord is secured, a spring acting normally to lower the free end of said lever, a shaft journaled on the elevator and extending to both sides thereof, cam-shaped heads at the ends thereof, levers forming clamping-jaws between which said heads rotate, a weighted lever secured to said shaft, and a supporting-finger on the suspending-lever, upon which the weighted lever is engaged, substantially as described.

2. The combination, with an elevator-car, its suspending-cable, and the guide-strips upon which it vertically moves, of the levers L, pivoted in the bracket M at each side of the elevator and extending on both sides of the guide-strips, the shaft I, the cam-shaped heads K at each end of said shaft, the spring N, acting to rotate said shaft, the counterweighted lever O, secured to said shaft, a finger on said shaft, a lever E, having a shoulder with which said finger engages, a spring for withdrawing the lever E, and the cable secured to said lever, substantially as described.

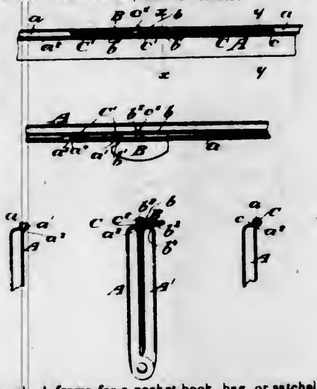
3. The combination, with an elevator-car, its cable, and an automatic gripping device adapted to be actuated on the breaking of the cable, of the lever E, the bracket F, in which one end of said lever is pivoted, the bracket H, having the cross-bar beneath which said lever engages, the cable secured to the lever between the brackets, a spring-actuated rod, gripping devices actuated by the rod, and a detachable connection between the rod and lever, substantially as described.

484,110. APPARATUS FOR REGULATING THE INTENSITY OF INCANDESCENT LIGHTS. JAMES F. MCILROY, Albany, N. Y., assignor to the Consolidated Car-Heating Company, same place. Filed Mar. 14, 1892. Serial No. 425,386. (No model.)



Claim.—In an apparatus for regulating the intensity of incandescent lights, the combination of an iron frame, an electric coil secured to said frame and so constructed as to allow a free circulation of air through the iron parts, an armature bent near its end in such a manner that the bended portion may be placed within the coil passing through the center thereof, coming into contact with the iron frame on the opposite side of the coil from which it entered, said armature fulcrumed to said iron frame and provided on its lower portion with a lug, a spring attached to the iron frame, which will be operated upon by said lug when the end of the armature enters the coil, the movement of the spring when operated by said lug breaking the circuit, substantially as described, and for the purpose set forth.

484,111. FRAME FOR POCKET-BOOKS, &c. ERNST OLDENBURGH, Jersey City, assignor to William Schimper & Co. Hoboken, N. J. Filed Mar. 15, 1892. Serial No. 425,044. (No model.)

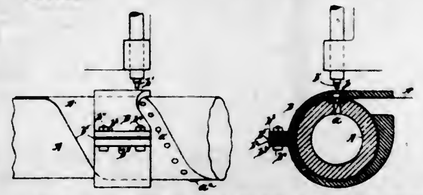


Claim.—1. A frame for a pocket-book, bag, or satchel of a general U shape in cross-section and having its bight extended to form a tubular bead, substantially as set forth.

2. The combination, with a frame provided with a tubular bead and a catch provided with an eye, of a spring-wire having one end turned within the tubular bead and fitted to engage the neck of the tubular bead to prevent its rotating and its opposite end extended within and through the wall of the eye of the catch, substantially as set forth.

3. The combination, with the frame provided with a tubular bead, of a catch provided with an eye, the tubular bead being cut away to receive the eye of the catch, the eye and the tubular bead being provided with interlocking shoulders to limit the swing of the catch, a torsion-spring extending within the tubular bead and within and through the eye of the catch, and a pintle-wire extending within the bead and within the opposite end of the catch, substantially as set forth.

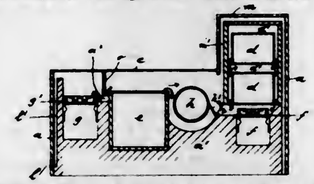
484,112. MACHINE FOR MAKING SHEET-METAL PIPES. HARVEY D. RICE, Brooklyn, assignor to the Abendroth & Root Manufacturing Company, New York, N. Y. Filed Mar. 16, 1892. Serial No. 425,110. (No model.)



Claim.—1. In a machine for making pipes of strip metal, the combination, with a mandrel and a punch, of a tubular former on the mandrel and having means for adjusting its inner diameter, said mandrel and former having registering openings to receive the punch, substantially as specified.

2. In a machine for making strip-metal pipes the combination, with a mandrel and a punch, of the former split transversely and having the outwardly-extending jaws, a shim between said jaws, and clamping means, the said mandrel and former having registering openings to receive the punch, substantially as specified.

484,113. STOVE. FRIEDRICH O. RUEHLE and ALBERT G. SCHMIDT, Newark, N. J., assignors to the American Art Stove and Mantel Company, same place. Filed Apr. 4, 1892. Serial No. 427,595. (No model.)



Claim.—1. A kitchen-stove combining therein two fireplaces, a grate arranged in each of said fireplaces and provided with upwardly-extending perforated flanges, and a damper between said fireplaces and adapted to make each of said fireplaces independent of the other, substantially as described and set forth.

2. A kitchen-stove having two fireplaces and provided with a vertical plate adjacent to one of said fireplaces, depending from the top of the stove and terminating in about the plane of the grate in said fireplace.

3. A kitchen-stove combining therein two fireplaces, a grate arranged in each of said fireplaces and provided with upwardly-extending perforated flanges, a hot-water tank arranged between said fireplaces, a damper so arranged as to make each of said fireplaces independent of the other, and a downwardly-extending iron plate serving as a smoke-consumer, all said parts being arranged to operate substantially as described and set forth.

4. In a kitchen-stove, the combination, with the ovens and fireplaces, of grates arranged in said fireplaces and provided with upwardly-extending perforated flanges, cold-air chambers *l* and *m*, arranged in said stove and connected with the outer atmosphere through ventilators *l* and *m*, and a damper arranged between said fireplaces and chambers, all said parts being arranged substantially as described, and for the purposes set forth.

484,114. VAPOR-BURNER. JOSEPH R. SAPP, Cuyahoga Falls, Ohio. Filed July 30, 1891. Serial No. 401,280. (No model.)

Claim.—The vapor-burner herein described, consisting of a right-angled or elbow-shaped pipe or coupling having in its vertical portion a gasoline-vaporizing chamber, said vertical portion at its lower end being connected with the gasoline-supply pipe and having at its upper end a flat crown, the horizontally-extending or branch portion of said pipe having at its rear end an interiorly-threaded upwardly-extending offset and a right-angled passage-way connecting said vaporizing chamber and offset, a needle-valve having bearing within said offset, a tube

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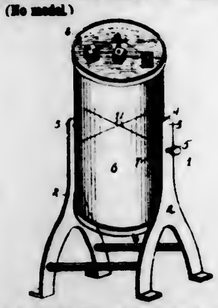
lar air and vapor commingling chamber extending parallel with and above the horizontal portion of said elbow-shaped pipe and having an open rear end, and a lipped and slitted front end, the upper lip of which extends forwardly over a portion of the flat crown of the vaporizing-chamber, substantially as and for the purpose set forth.

484,115. GAME APPARATUS. HARRY J. SAXTON, St. Louis, Mo., assignor to James Gamble, New York, N. Y. Filed Mar. 26, 1892. Serial No. 426,372. (No model.)



Claim.—1. A hermetically-sealed receptacle containing dice and filled with a fluid having greater specific gravity than the dice located in said receptacle, substantially as set forth.

2. A hermetically-sealed receptacle filled with a liquid and dice located in said receptacle, substantially as set forth.

3. A hermetically-sealed dice-box filled with a liquid, dice located in said box, and devices located in the same for disturbing the passage of said dice through said liquid, substantially as set forth.

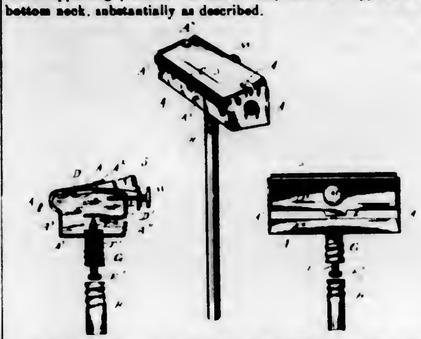
4. The herein-described apparatus for playing dice and similar games, comprising a hermetically-sealed receptacle pivotally mounted in a stand, liquid contained in said receptacle, and means for holding the same in a vertical position when it is desired not to revolve the same, substantially as set forth.

5. The herein-described apparatus for playing dice and similar games, which consists of a stand, a hermetically-sealed receptacle pivotally mounted on the same, wires or similar devices passing through said receptacle, liquid contained in the same, a clamping device for holding said receptacle in a vertical position when desired, and dice or similar symbols of similar games located in said receptacle, substantially as set forth.

6. The herein-described apparatus for playing dice and similar games, comprising a hermetically-sealed receptacle provided with transparent ends, liquid contained in said receptacle, devices located in the same for disturbing the passage of the dice through said liquid when said receptacle is revolved, and means for holding said receptacle in a vertical position when desired, substantially as set forth.

484,116. SAFETY-RAZOR. ISAAC L. SCHMITT, New York, N. Y. Filed Apr. 15, 1892. Serial No. 429,260. (No model.)

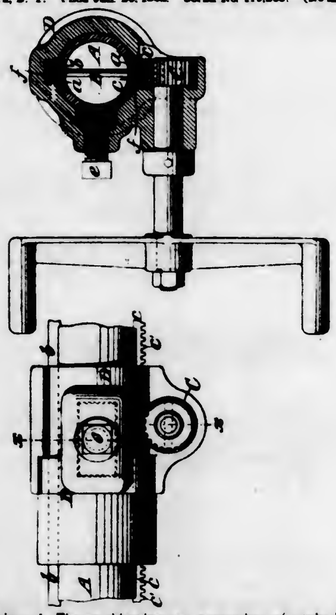
Claim.—1. In a safety-razor, the combination of a blade-holding casing having a vertical front plate provided in its upper portion with outwardly-curved bulging teeth integral with said plate, the upper portion of said teeth forming a flat rest for the cutting-edge of the blade, blade-retaining lugs projecting from the upper edges of the end pieces, a hinged blade-supporting plate having a forwardly-projecting arm at its bottom edge, a blade-holding screw in said plate, a screw in the bottom neck of the casing and bearing against the arm of the blade-supporting plate, and a handle adapted to be applied on said bottom neck, substantially as described.



2. In a safety-razor, the combination, with a casing provided with a fixed comb and retaining-lugs at the upper edges of the end pieces, of a pivoted blade-supporting plate in said casing, which blade supporting plate is capable of moving independently of the comb, a blade-retaining screw held in said pivoted supporting-plate, and a separate screw for adjusting said supporting-plate, which separate screw is screwed through the bottom of the casing, substantially as set forth.

3. In a safety-razor, the combination, with a casing provided with a comb or guard and with blade-retaining lugs projecting from the upper edges of the end pieces, of a hinged blade-supporting plate provided with a forwardly-projecting arm at its bottom edge, a blade-holding screw in said plate, a screw in a bottom neck of the casing and bearing against the arm of the blade-supporting plate, and a handle adapted to be applied on said bottom neck, substantially as set forth.

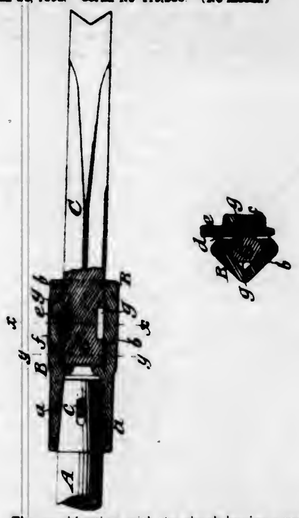
484,117. BAR FOR QUARRY-FRAMES. HENRY C. SERGEANT, Westfield, N. J., assignor to the Ingersoll-Sergeant Drill Company, New York, N. Y. Filed Jan. 26, 1892. Serial No. 419,285. (No model.)



Claim.—1. The combination, in a quarry-bar, of a tube longitudinally grooved on opposite sides, two parallel splines, one in each groove, and bolts passing transversely through said tube and both splines and fastened at their ends on said splines, substantially as herein set forth.

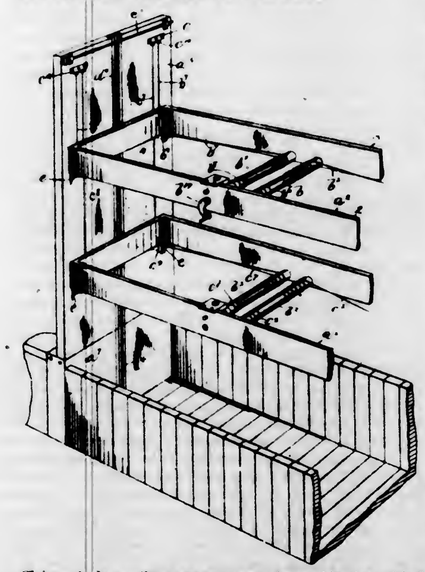
2. The combination, in a quarry-bar, of a tube longitudinally grooved on opposite sides, two parallel splines, one in each groove, and one of which has a toothed rack, and bolts passing transversely through said tube and both splines and fastened at their ends on said splines, substantially as herein set forth

484,118. DRILL-CHUCK. HENRY C. SERGEANT, Westfield, N. J., assignor to the Ingersoll-Sergeant Drill Company, New York, N. Y. Filed Jan. 26, 1892. Serial No. 419,286. (No model.)



Claim.—The combination, with the chuck having a square socket for the reception of the square shank of a drill or pick and having a keyway across one of its angles, of a taper key inserted in said keyway to wedge one of the angles of the shank into the corresponding angle of the socket, substantially as herein set forth.

484,119. RAILWAY-CAR. CHARLES J. SEYMOUR, Brookline, Mass. Filed Jan. 6, 1892. Serial No. 417,165. (No model.)



Claim.—1. In a railway passenger-car, the combination, with the car-body provided with pockets or wells beneath the floor of the car and with covers for said pockets, forming sections of the car-floor, of one or more berths or bed-supporting frames normally concealed in said pockets, a drum or roller supported by the berth or bed-supporting frame, and flexible supports for said berth or bed-supporting frame, adapted to be wound upon the said drum or roller to raise the said berth from the pocket and to be unwound from the said drum to lower the said berth into the pocket, and a locking device for said drum or roller, substantially as described.

2. In a railway passenger-car, the combination, with the car-body provided with pockets or wells below the floor of the car and with covers for said pockets, forming sections of the car-floor and provided with a guideway, of one or more berths or bed-supporting frames normally concealed in said pockets, a drum or roller supported by the berth or bed supporting frame, and flexible supports having one end secured to the said drum or roller and adapted to be wound thereon and having its other end extended in the direction of the length of the berth and under the same and secured to a rigid support, substantially as described.

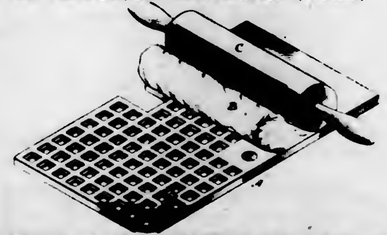
3. In a railway passenger-car, the combination, with the car-body provided with pockets or wells below the floor of the car and with covers for said pockets, forming sections of the car-floor and provided with a guideway, of one or more berths or bed-supporting frames normally concealed in said pockets, a drum or roller supported by the berth or bed supporting frame, and flexible supports having one end secured to the said drum or roller and adapted to be wound thereon and having its other end extended in the direction of the length of the berth and under the same and secured to a rigid support, and a guide on the said berth or bed-supporting frame to enter the said guideway and provided with a friction-roller, substantially as described.

4. In a railway passenger-car, the combination, with the car-body provided with pockets or wells beneath the floor of the car and with covers for said pockets, forming sections of the car-floor, of one or more berths or bed-supporting frames normally concealed in said pockets, a drum or roller supported by the berth or bed-supporting frame, and flexible supports for said berth or bed-supporting frame, secured to the drum or roller and to the said floor-sections, substantially as described.

5. In a railway passenger-car, the combination, with the car-body provided with pockets or wells beneath the floor of the car and with covers for said pockets, forming sections of the car-floor, of one or more berths or bed-supporting frames normally concealed in said pockets, a drum or roller supported by the berth or bed-supporting frame, and flexible supports for said berth or bed-supporting frame, adapted to be wound upon the said drum or roller to raise the said berth from the pocket and to be unwound from the said drum to lower the said berth into the pocket, and a locking device for said drum or roller, substantially as described.

6. In a railway passenger-car, the combination, with the car-body provided with pockets or wells beneath the floor of the car and with covers a^4 a^5 for said pockets or wells, forming sections of the car-floor, of one or more berths or bed-supporting frames normally concealed in said pockets and consisting of side bars 2 3 and end bars 4 5, drums or rollers b b', supported by the side bars 2 3, gears b^{14} on said rollers in mesh with each other, a beveled gear b^{15}, secured to one of said rollers, a bevel-gear b^{13} in mesh with the bevel-gear b^{15}, a substantially-vertical shaft b^{16}, on which the bevel-gear b^{13} is mounted, a locking device for the said shafts, and flexible supports secured to the drums or rollers and extended under the cross-bars 4 5 and attached to the covers a^4 a^5, substantially as described.

484,120. SECONDARY BATTERY. WILLIAM L. SILVEY, Lima, Ohio. Filed Jan. 29, 1892. Serial No. 419,636. (No model.)



Claim.—1. The process of initially preparing secondary-battery plates, which consists in mixing a suitable metallic oxide with a liquid, placing the resulting paste on a suitable support, subjecting the oxide to the action of heat and pressure, and then pickling the whole in an acid solution.

2. The process of making secondary-battery plates, which consists in mixing a suitable metallic oxide with a liquid, placing the resulting paste on a suitable support, subjecting the oxide to the action of heat and pressure, pickling the whole in an acid solution, and then forming.

3. The process of making secondary-battery plates, which consists in mixing an oxide of lead with a liquid, placing the resulting paste on a suitable support, subjecting the oxide to the action of heat and pressure, pickling the whole in a solution of sulphuric acid and water, and then forming.

4. The process of making secondary-battery plates, which consists in mixing an oxide of lead with a liquid, placing the resulting paste on a suitable support, subjecting the oxide to the action of heat and pressure, pickling the whole in a solution of sulphuric acid of from 15° to 35° Baumé, and then forming.

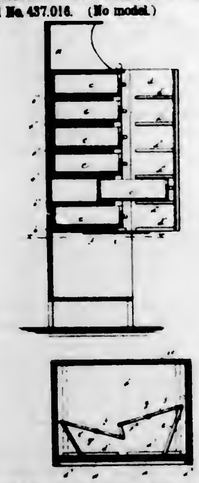
5. The process of making secondary-battery plates, which consists in mixing an oxide of lead with a liquid, placing the resulting paste on a suitable support, subjecting the oxide to the action of heat and pressure, pickling the whole in an acid solution, and then forming in the pickling solution.

6. The process of intimately uniting the active material with the supporting-plate of a secondary battery, which consists in mixing a suitable metallic oxide with a liquid, placing the resulting paste on a suitable metallic support, subjecting the oxide to the action of heat and pressure, and then pickling the whole in an acid solution until an envelope of a combination of the oxide and the metal of the support with the acid is produced.

7. The process of chemically uniting the active material with the supporting-plate of a secondary battery, which consists in mixing an oxide of lead with a liquid, placing the resulting paste on a suitable metallic support, subjecting the oxide to the action of heat and pressure, and then pickling the whole in an acid solution until an envelope of a sulphate is produced.

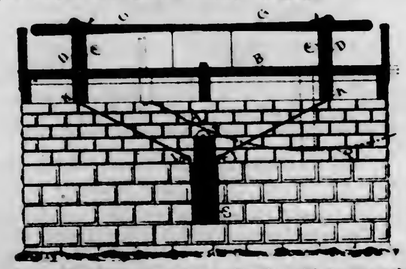
8. The process of making secondary-battery plates, which consists in mixing a metallic oxide with a liquid, placing the resultant product on a suitable support, subjecting it to the action of heat, then pickling it in a solution, and forming.

484,121. CABINET. JOHN STEIN, New York, N. Y. Filed June 17, 1892. Serial No. 437,016. (No model.)



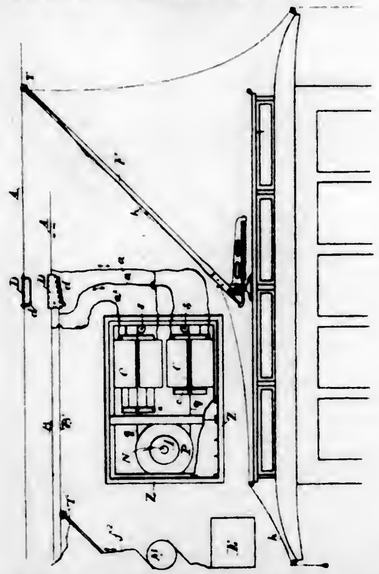
Claim.—The combination of a cabinet having a pair of hinged doors, with a pair of rods *e e'* of different lengths pivoted to the doors, a pair of levers *f f'* vibrating on separate pivots behind one another and connected to the rods at their outer ends, and with a link *f²* that connects the inner ends of the levers, substantially as specified.

484,122. BRIDGE-GATE. CHARLES STOCKER, Jr., Saginaw, Mich. Filed Jan. 20, 1892. Serial No. 418,636. (No model.)



Claim.—In a bridge-gate, the combination, with the gate, of the cables D D, secured to the arms G G at one end, the other end connected to the lower end of the sliding post E, and one or more pulleys over which the cables run, the sliding post E, the roller F, journaled in the top of the post E, the box H, the coiled spring S within the box H under the post E, the convex shoe R on the draw, adapted to run upon the roller F, and thereby force the post E downward, thereby raising the arms, and the springs 4 4 for lowering the arms, substantially as described.

484,128. ELECTRICALLY-OPERATED RAILWAY-SWITCH. CHARLES A. STONE, Newton, and EDWIN S. WEBSTER, Boston, Mass. Filed Sept. 25, 1891. Serial No. 406,572. (No model.)



Claim.—1. In an electric railway, the combination of a main electric conductor provided with switch-sections insulated from direct connection therewith, connecting-conductors between the main conductor and each of said switch sections, a railway-switch magnet in the circuit of each connecting-conductor, an electric collector supported upon the car to make contact with the said switch-section conductors, and a current-conductor from the said collector to the car-motor, whereby the motor and railway-switch magnet will be automatically placed in series whenever the said collector is upon a switch-section, for the purpose specified.

2. The combination of devices for operating railway-switches electrically, consisting of a pair of switch-section conductors each connected through a magnet of the railway-switch with the main electrical conductor, a trolley or collector supported upon the car and adapted to make contact with either switch-section conductor, as desired, and a current-conductor from the collector to the car-motor, substantially as described.

3. In an electric railway, a main conductor provided with switch-sections insulated from direct connection therewith, a connecting-conductor for each of said sections, which has a railway-switch magnet in circuit, electric collectors supported upon the car to make contact with said switch-section conductors, a current-switch upon the car, connected with the motor-circuit, and a conductor from each of said collectors to a contact of said current-switch, whereby when the collectors are upon a switch-section the motor and a magnet of the railway-switch will be in series and its switch operated when the current-switch is placed upon either of its said contacts, substantially as described.

4. In combination with the main conductor of an electric railway, a pair of switch-section conductors connected therewith through the magnets of the railway-switch, contact-makers supported upon the car for said switch-section conductors, a hand-switch upon the car, connected with the motor-circuit, and current-conductors from said hand-switch to the respective contact-makers, whereby the motor and one of said railway-switch magnets will be placed in series when the contact-maker is upon a switch-section, substantially as described, and for the purpose specified.

5. The combination of devices for operating railway-switches electrically, consisting of a pair of switch-section conductors respectively connected through one of the magnets of the railway-switch with the main conductor, a collector or contact-maker supported upon the car for each switch-section conductor, a guide to direct the contact-makers to the said conductors, a hand-switch upon the car in the motor-circuit, and a connecting-conductor between each collector, and a separate contact of said hand-switch, substantially as described.

6. In an electric railway, the combination, with the main electrical conductor, of a pair of switch-section conductors each electrically connected therewith through a magnet of the railway-switch, a pair of collectors upon the trolley-support, adapted by their contact with the said switch-section conductors to place the motor and one of the railway-switch magnets in a series circuit, a current-switch upon the car, connected with the motor-circuit, and electrical connections between separate contacts of said current-switch and the said collectors, respectively, substantially as described.

7. In an electrically-operated switch for a railway, a pair of electro-magnets arranged beneath the switch to act in opposition to one another and separately connected with a source of electrical supply, a shaft pivoted beneath the switch-tongue, a finger upon said tongue which engages with a slotted lever on said shaft, and connecting devices between the respective armatures of the magnets and the said pivoted shaft, whereby the attraction of either armature by its magnet will turn the said shaft and move the switch-tongue, substantially as described.

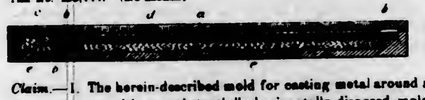
8. In an electrical railway, a pair of switch-operating magnets respectively in separate circuits, connecting the main electrical conductor and a switch-section conductor, a pivoted shaft beneath the switch tongue, operative connection between the armature of each magnet and said shaft, and a projecting lug upon the switch-tongue to engage with a slotted arm upon said shaft, substantially as described, and for the purpose specified.

9. In combination with an electrically-operated railway-switch, a switch-section electric conductor connected with an electro-magnet of the railway-switch through an independent circuit, which circuit is adapted to be interposed in the main circuit between the motor and the source of electrical supply, substantially as described, and for the purpose specified.

10. In combination with a railway-switch, a pair of electro-magnets connected with the main conductor in parallel circuits and arranged beneath the switch with their cores substantially in a straight line, a connection between the armatures of the respective magnets, a railway-switch-operating shaft, an arm or link rigidly attached to said shaft and flexibly to said armature connection, and switching mechanism upon the car, by which the current from the main conductor may be drawn through either of the electro-magnets as desired, substantially as described.

11. In combination with a main conductor of an electric railway, a pair of switch-section conductors respectively connected therewith through one of the magnets of the railway-switch, a contact-maker supported upon the car and connected through the motor with the return-circuit, and switching mechanism by which the motor and a magnet of the railway-switch may be connected in series through either of said switch-section conductors, as desired, substantially as described.

484,124. MOLD FOR CASTING METAL AROUND INTERNAL CORES. FRANK G. STONE, Bridgeport, Conn. Filed Feb. 8, 1892. Serial No. 420,777. (No model.)



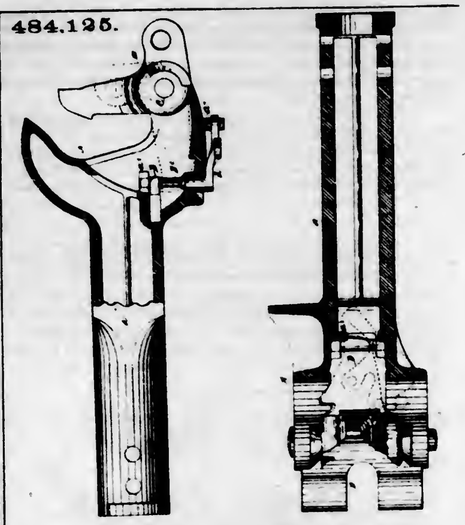
Claim.—1. The herein-described mold for casting metal around a core, the same comprising a substantially horizontally-disposed mold provided at one end with a core-support and adjacent to and at some distance from the other end with a bridge for supporting a core, there being an inlet for the molten metal under said bridge.

2. The herein-described open mold for casting metal around a core, the same comprising a horizontally disposed mold-box, a core-support at one end, and a bridge near the other end, each recessed for receiving the core and each provided with a removable cap for holding the core in position, there being an inlet at the bridge end of the mold for the molten material and a passage under the bridge connecting the inlet and the main portion of the box.

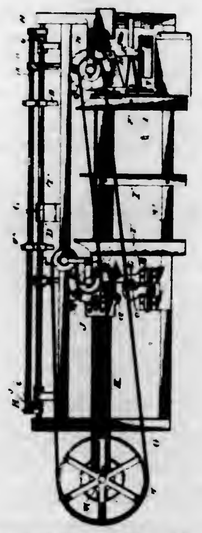
3. The herein-described mold for casting metal around a core, the same comprising a substantially horizontally-disposed mold open at the top and provided at the ends with supports for the core and having at one end a gate and an inlet leading from said gate under a core-support into the mold below the core, as described.

484,125. CAR-COUPLING. CLIFTON A. TOWER, Cleveland, Ohio, assignor to the Empire Car Coupler Company, Weehawken, N. J. Filed Mar. 14, 1892. Serial No. 424,767. (No model.)

Claim.—The combination, with a draw-head and a knuckle consisting of a bell-crank lever fulcrumed thereto, of a dog or block for directly engaging with the knuckle, a rock-shaft from which said dog or block extends, and an arm connected with the rock-shaft outside the draw-head, constituting a counter-balance for returning the dog or block to its normal position, substantially as specified.



484,126. MACHINE FOR POINTING AND LAPPING HOOPS. ALEXANDER F. WARD, Detroit, Mich., assignor to William L'Estrange Mahon, same place. Filed Sept. 23, 1886. Serial No. 214,333. (No model.)



Claim.—1. In a machine for pointing and lapping hoops, the combination, with a frame, of a fixed arbor mounted therein, a horizontal saw on the arbor, a longitudinally-adjustable arbor on the frame, a horizontal saw on the same, a single belt for driving the saws, an idle-pulley on which the belt passes, and means for adjusting the idler simultaneously with the adjustment of the adjustable saw.

2. In a machine for pointing and lapping hoops, the combination of two horizontally running saws, one mounted in standards upon the supporting-frame and the other in standards secured upon a carriage which is adjustable from and toward the other saw, a drive-pulley on the arbor of each saw, an idler-pulley on the standard of the adjustable saw, and a drive-belt passing around said pulleys, substantially as described.

3. In a machine for pointing and lapping hoops, the combination of two horizontally-revolving saws and two bed-plates having inclined portions extending beneath the saws and horizontal portions extending out in front of the saws, above and clear of the frame to which they are attached at their edges, substantially as described.

4. In a machine for pointing and lapping hoops, the combination,

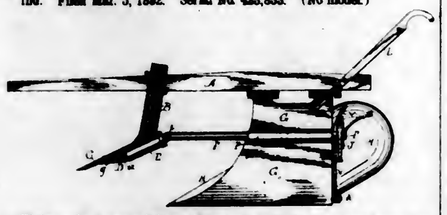
with the two horizontally-revolving saws, of an adjustable carriage upon which one of the saws is mounted, the cutting-off shears operating in advance of the adjustable saw and secured to said carriage, and an eccentric longitudinally adjustable on its shaft for actuating the shears, substantially as described.

5. In a feeding device for machines for pointing and lapping hoops, the combination, with means for pointing and lapping the hoops, of the feed-arms D D', provided with fingers d d^3, the grooved guides l l', upon which the hoops are supported, and the compensating springs y, secured upon the under side of said feed-arms, substantially as described.

6. The combination of the two horizontally-revolving saws, the pressure-rolls C C', and the sharpened edges below these pressure-rolls to nip the hoops while the saws are operating, substantially as described.

7. The herein-described feed-movement, consisting of the oscillating arms H, provided with the slots, the rock-shaft G, journaled in said oscillating arms and carrying the feed arms D D', the rock-arm a, secured upon said rock-shaft, the revolving shaft T, provided with the cam, the lever W, supported upon said cam and provided with the bearing m, upon which the rock-arm a rests, and the cranks j, engaging into the slots of the oscillating arms, substantially as described.

484,127. PLOW-COLTER. GEORGE C. WESTERVELT, South Bend, Ind. Filed Mar. 5, 1892. Serial No. 423,833. (No model.)



Claim.—In a reversible mold-board plow, the combination of the standard G, oscillating latch J, shaft F, shaft D, coupled to shaft F, jointer c, and shank B, and sleeve E, substantially as and for the purpose set forth.

484,128. SIDE-HILL PLOW. GEORGE C. WESTERVELT, South Bend, Ind. Filed Apr. 21, 1892. Serial No. 430,011. (No model.)

Claim.—1. The combination of the standard S, having segment c, plow-beam B, pivotally connected thereto and having the lever t, slotted frame o, handles g, notched cross-bar m, cross-bar Z, having a mortise for receiving the upper end of arm K of latch D, mold-board G, rod B^3, brace H, latch D, having the standard S, shaft E, guides F, located parallel with each other on the inner side of standard K for receiving between them the outer end of lever t, hooks L, spring-bolt Z', lever a, having segment-cogs C, clevis d, having the segment-cogs for meshing with cogs C, and spring-latch N, all arranged to operate substantially as and for the purpose set forth.

2. In a reversible side-hill plow, the combination of the standard S, mold-board G, shaft E, hooked latch D, having the guides F and bolt-holes Z^3, slotted frame o, standard K, spring-latch Z', beam B, having lever t, having segment c, colter P, handles g, having the cross-bars m and Z, brace L', and clevis d, having a segment for meshing with segment c, all arranged to operate substantially as and for the purpose set forth.

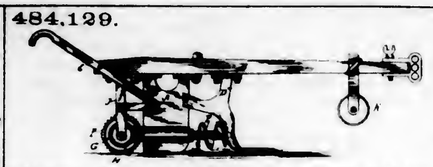
3. In a reversible side-hill plow, the combination of standard S, latch D, pivoted thereto at its rear end and having the standard K, and the handles g, having the cross-bars m and Z, all arranged to operate substantially as for the purpose set forth.

484,129. PLOW. GEORGE C. WESTERVELT, South Bend, Ind. Filed June 7, 1892. Serial No. 436,222. (No model.)

Claim.—1. In a plow, the combination of the standard and colter and the shaft having the auger or screw mold-board and means for rotating said mold-board, substantially as and for the purpose set forth.

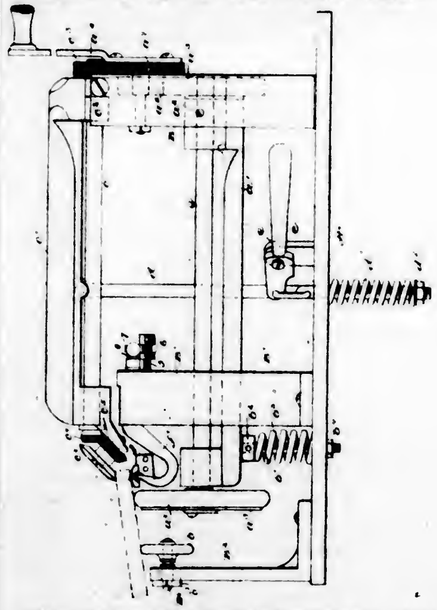
2. In a plow, the combination of the standard A, having a journal-box shaft S fitting said journal-box and having the bevel-gear H and auger or screw-blade B, colter D, having a box for receiving the forward end of said shaft, and spur drive-wheel F, having bevel-gear G

484,129.



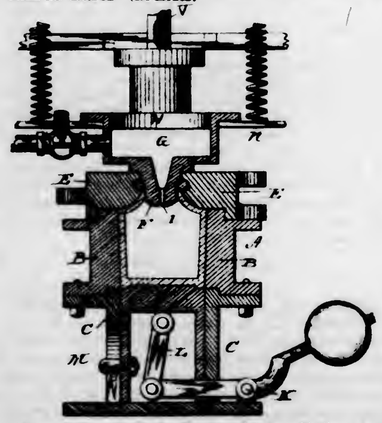
for driving said shaft, substantially as and for the purpose set forth.

484,130. CHANNELING-MACHINE. HENRY H. ARNOLD, Rockland, Mass. Filed Aug. 1, 1891. Serial No. 401,359. (No model.)



Claim.—In a channeling-machine for boots and shoes, a channel-cutting blade and holder for it and feeding mechanism, including a support for the sole contiguous to the cutting-blade, combined with a guide, as b, adapted to bear upon the side of the sole being channeled at or near the edge opposite the edge being channeled, substantially as described.

484,131. DEVICE FOR MANUFACTURING HOLLOW GLASSWARE. THOMAS R. ATTERBURY, Pittsburg, Pa. Filed Mar. 24, 1892. Serial No. 426,244. (No model.)



Claim.—1. In a device for the manufacture of hollow glassware,

the mold in which the glass article is pressed and blown and the plunger adapted to enter said mold to press the top of the article, said plunger having an air-chamber provided therein in which operates automatically a plunger for forcing the air of said chamber into the glass article being formed, substantially as described, and for the purpose set forth.

2. In a device for manufacturing hollow glassware, the mold provided with a movable bottom held normally raised and adapted to recede as the glass article is being blown, a hollow plunger adapted to enter the said mold and press the top of the article, an air-chamber formed within the upper part of said plunger and communicating with the interior of the mold, and a plunger operating automatically within said air-chamber, substantially as described, and for the purpose set forth.

3. In a device for manufacturing hollow glassware, the mold in which the article is to be pressed and blown, having the movable bottom normally elevated by weighted lever and adapted to be forced down to its lowest limit by the expansion of the glass as it is blown, combined with a hollow plunger fitted to the mold and a plunger operated automatically within an air-chamber in the upper part of the hollow plunger, substantially as set forth.

4. In a device for the manufacture of hollow glassware, the mold in which the glass is pressed and blown, having a movable bottom operated by a lever provided with a weight to keep the bottom normally raised, said lever connecting with the bottom by means of a link connection, and a projection provided in the downward extension of the movable bottom, which said projection enters a vertical slot in the support or casing, whereby the movement of the bottom may be controlled within certain limits, substantially as described, and for the purpose set forth.

5. In a device for the manufacture of hollow glassware, the mold in which the glass is pressed and blown, the pressure plunger secured to the center rod of the press by a yielding connection, an air-chamber formed in the upper part of said plunger, and a plunger adapted to work in said air chamber, connected to the center rod of the press, substantially as described, and for the purpose set forth.

6. In a device for manufacturing hollow glassware, the mold in which the glass is pressed and blown, a plunger fitted to the mold and having an air-chamber in the upper portion, and a yieldingly-mounted pressure-plunger working in said chamber, substantially as specified.

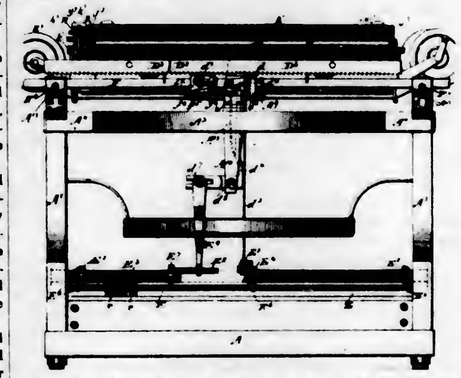
484,132. TYPE-WRITING MACHINE. WALTER J. BARRON, FRANK X. WAGNER, and ARON DENNMORE, New York, N. Y.; said Barron and Wagner assignors to said Dennmore. Filed Oct. 28, 1889. Serial No. 328,371. (No model.)

Claim.—1. In a type-writing machine, the combination of key-levers and straps thereon with type-levers and connecting rods uniting them to the straps of the key-levers, said connecting-rods consisting of two sections having serrations on their adjacent ends and a sleeve embracing and uniting said serrated ends of the sections, substantially as described.

2. The combination of key-levers and type-levers with trough-shaped bearings B for said type-levers, bell-crank levers b^4, pivoted, also, to said bearings and provided with a loop b^5, and connecting-rods having their upper ends pivoted to the bell-crank and flattened to enter between the sides of the trough-shaped bearings alongside of the bell-crank, substantially as described.

3. The combination of the frame of a type-writing machine, the rod A^8, secured thereto, the bracket A^9, and key-levers having hooked portions C^3 with the wires C^2 under the bracket and hooked portions and resting upon the rod A^8, substantially as described.

4. The combination of the frame of a type-writing machine, the guide-bridges A^6, having one edge vertically slotted for the reception of the key-levers, the key-levers, the flattened tubular key-holder C^4, and finger-keys, each having a flat stem inserted in said holder, substantially as described.

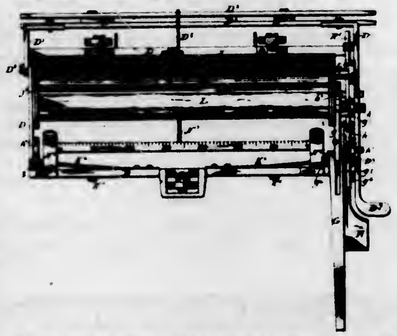


5. The combination of the frame of a type-writing machine and its type-bar bearings, the plate A^2 above said bearings and secured to said frame, the bracket A^{10} under said plate, and the pawl-carrying arm d^6, pivoted to the bracket, with a spring A^{12}, pressing against said arm d^6, a pawl upon said arm, and the rack of the paper-carriage engaging with said pawl, substantially as described.

6. The combination of a paper-carriage frame, two racks having their teeth in the same horizontal plane and inclined in opposite directions and rigidly secured together, but hinged to said carriage-frame, a push-pawl d, in engagement with one of the racks, and a retaining pawl or rod d^2, in engagement with the other rack, and the universal rod E, connected to said rod d^2, substantially as described.

7. The combination of a paper-carriage frame, two racks having their teeth in the same horizontal plane and inclined in opposite directions and rigidly secured together, but hinged to said carriage-frame, and having a handle D^7, extending in front of said carriage, and a pawl in engagement with each rack, substantially as described.

8. The combination of a paper-carriage frame, two racks having their teeth inclined in opposite directions and rigidly secured together, but hinged to said carriage-frame, and a pawl in engagement with each rack with the universal bar of a type-writing machine and means, substantially as described, for connecting the universal bar with the pawls operating the paper-carriage, substantially as described.



9. The combination of a paper-carriage frame, two racks having their teeth inclined in opposite directions and rigidly secured together, pawls d and d^2, in engagement with said racks, and the dog d^{12}, also in engagement with one of the racks, substantially as described.

10. The combination of the type-bars and their bearings, the plate A^2 above said bearings, the paper-carriage and its guide-rail F, and the rack D^2 and its pawl d with the dog d^{12} and the bell-crank-shaped dog f^4, substantially as and for the purpose described.

11. The combination of a frame of a type-writing machine and its

rearwardly-extended arms A^{12}, having bearings at the rear ends thereof and slots in said bearings, with the carriage-supporting frame having end straps F^3, rearwardly projecting and provided with journals F^4 and pins F^4 radially extending therefrom, substantially as described.

12. The combination of the paper-carriage frame, its revolvable square platen and retaining-spring I^3, and two paper-feed rolls having their point of contact on a level above said platen, substantially as described.

13. The combination of the paper-carriage frame, its revolvable polygonal platen and retaining spring I^3, two feed-rolls having their point of contact on a level above said platen, and a ratchet-wheel upon the end of one of the feed-rolls with a line-space lever G and its pawl in engagement with said ratchet-wheel, substantially as described.

14. The combination of the paper-carriage frame, its revolvable polygonal platen and retaining-spring I^3, a feed-roll above said platen, a ratchet-wheel upon said feed-roll, and a plate g^3, pivoted upon the journal of the feed-roll, with a line-space lever pivoted upon said plate g^3 and its pawl in engagement with the ratchet of the feed-roll, substantially as described.

15. The combination of the paper-carriage frame, its polygonal platen, a feed-roll above said platen, a ratchet-wheel upon said feed-roll, and a plate g^3, pivoted upon the journal of the feed roll, with a line-space lever pivoted upon said plate g^3 and its pawl in engagement with the ratchet of the feed-roll, a triangular pin g^7, projecting laterally from the pawl, and the lever H, having a hooked end adapted to rest upon the pin g^7, substantially as described.

16. The combination of a paper-carriage frame, a paper-feed roll, a ratchet upon said roll, and a plate g^3, pivoted upon the journal of said roll, with a line-space lever upon said plate g^3 and its pawl in engagement with the ratchet of the feed-roll, a pin g^7, projecting laterally from the pawl, and the lever H, having a hooked end adapted to rest upon the pin g^7, substantially as described.

17. The combination of the paper-carriage frame having at one end the standard D^3, rearwardly notched, a paper-feed roll, a ratchet-wheel upon said roll, and a plate g^3, pivoted upon its journal, with a line-space lever pivoted upon said plate, a lever H, pivoted upon the journal of the feed-roll, and the rod A, having one end pivoted to the lever H and the other end loosely retained by the plate g^3, and a pin h^3 between said two ends, in engagement with the notch of the frame-standard D^3, substantially as described.

18. The combination of the paper-carriage frame, its polygonal platen, a feed roll above said platen, and a paper-directing plate in front and over the platen, substantially as and for the purpose described.

19. The combination of the paper-carriage frame, its polygonal platen, a feed-roll above said platen, the paper-table J, movable under the platen and having its side frames J^3 mounted upon the journal of the feed-roll, and the spring J^2, connecting it with the paper carriage frame, substantially as described.

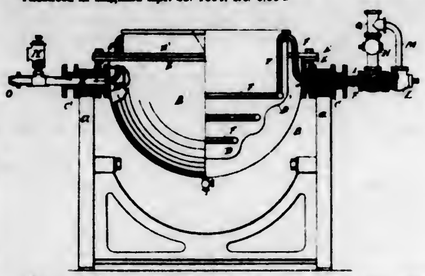
20. The combination of the paper carriage, its polygonal platen, a feed-roll above said platen, the paper-table J, movable under the platen, and plate g^3, pivoted upon the journal of the paper-feed roll and having an arm g^3, adapted to press against the edge of the paper-table to normally uncover the platen, substantially as described.

21. The combination of the paper-carriage frame, its polygonal platen, and a feed-roll above said platen with the pressure-roll K^3, its bearings K^3, and springs K^4, carrying said bearings, said springs being secured to the paper-carriage frame, substantially as described.

22. The combination of the paper-carriage frame, its polygonal platen, a feed-roll K above said platen, a pressure-roll K^3 in front of said platen, an inking-ribbon and a metal strip a under said platen, a number-scale, and a pointer projecting up from said strip, substantially as described.

23. The combination of the paper-carriage frame, its feed-roll, and a polygonal platen under said feed-roll, a metal strip a, an inking-ribbon passing diagonally under said platen and feed-roll, a ratchet-wheel upon the journal of one of the ribbon-spools, the lever r^3, the pawl r, and plate R^3, having a beveled end r^4, substantially as described.

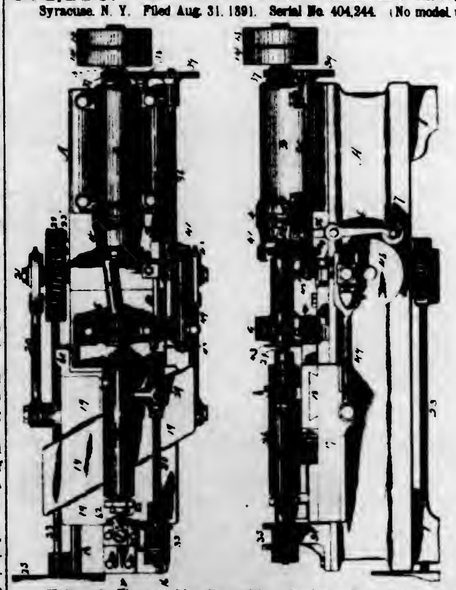
484,184. CONFECTIONER'S KETTLE. WILLIAM BRIERLEY, Rochdale, England. Filed Mar. 22, 1892. Serial No. 426,094. (No model.) Patented in England Apr. 23, 1891, No. 6,904.



Claim.—1. In combination with an inner pan D and outer jacket B, provided with trunnions C, with which the said pan and jacket may at will be rocked together, a coil F within said pan, and means for supplying steam at will to said coil and to the space between the said pan and jacket, substantially as set forth.

2. In an apparatus for boiling or heating sugar, the combination, with an outer and an inner vessel, the latter provided with a steam-coil and being pivotally mounted, of a passage through the journals of said vessel to supply steam to the space between said vessels, a pipe occupying part of said passage and supplying said steam-coil, and valves to check or permit the flow through either supply.

484,135. TYPE-MAKING MACHINE. ALEXANDER T. BROWN, Syracuse, N. Y. Filed Aug. 31, 1891. Serial No. 404,244. (No model.)



Claim.—1. The combination, with a horizontally-reciprocating chuck, of a universal rocking matrix-die and means to operate them.

2. The combination, with a reciprocating chuck, of a spherical die-holder concaved in its front face, a matrix-die mounted in said concavity, and means to impart a rocking motion to said die-holder.

3. The combination, with a reciprocating chuck, of a spherical die-holder concaved in its front face, a matrix-die mounted in said concavity, a concaved bearing for said die-holder, and means to rock the same in its bearing.

4. The combination, with the bed-plate provided with longitudinal ways and a sliding table mounted thereon, provided with diagonally-transverse ways, of a slide mounted upon said diagonal ways, and a chuck-carrier secured upon said slide, and means to operate it in a direct line and to shift it sidewise simultaneous with the traverse of the table.

5. The combination, with the cam mounted upon the drive-shaft, of the lever pivoted upon the bed of the machine and having one end engaging with the cam and the other pivotally connected to the wire-feed slide, a tubular wire-feed slide mounted in suitable bearings and through which the wire passes, and dogs pivoted in said bearings and engaging with the wire through slots in said slide.

6. The combination, with the traversing table and the slide mounted in the diagonal ways thereon, of the cutter-shaft journaled in bearings mounted thereon, a cutter mounted upon the inner end of said shaft, and means to rotate it.

7. The combination, with the diagonally-traversing slide and the cutter-shaft journaled thereon, of the belt-shifter secured upon a stationary standard secured upon the bed-plate.

8. The combination, with the longitudinally-traversing table and the diagonally-traversing slide mounted thereon, of the cutter-shaft and cutter mounted in bearings erected upon said slide, and means to rotate said shaft, of the belt-shifter mounted upon a standard erected upon the bed-plate.

9. A matrix-die located substantially at the axis of a universal joint and means to operate it, in combination and in line with a chuck for holding the material to be impressed by the die and means for feeding said chuck.

10. The combination, with the traversing table and the slide mounted in the diagonal ways thereon, of the cutter-shaft journaled in bearings erected upon the slide, and means to rotate it, the cutter mounted in said shaft, and means to feed the wire to said cutter, the chuck mounted upon said slide, the matrix-die, and means to actuate the table and slide.

11. In a type-making machine, a chuck and a rotating cutter-shaft erected parallel to each other upon a diagonally-operated slide carried by a longitudinally-reciprocating table, and means to shift said slide upon the table, a cutter upon said shaft, and means to feed the wire to said cutter, and a matrix-die normally in line with the chuck.

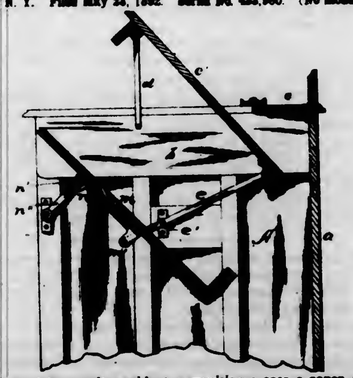
12. The combination, with the traversing table, the slide mounted in diagonal ways thereon, the chuck mounted upon said slide, the rotating cutter-shaft erected in bearings thereon, the wire-trimming cutter mounted in said shaft, and means to actuate said table and slide, of the longitudinally-reciprocating wire-feed tube with which the cutter-shaft is normally in alignment and a matrix die normally in alignment with the chuck.

13. The combination, with the traversing table, the slide mounted in diagonal ways thereon, the chuck mounted upon said slide, the rotating cutter-shaft erected in bearings thereon, a wire-trimming cutter on said shaft, and a matrix-die normally in alignment with the chuck, of the longitudinally-reciprocating wire-feed tube, and the wire-cut-off saw contiguous thereto, and means to operate said table, slide, cutter, wire-feed, and saw in unison.

14. In a type-making machine, a type-blank-holding chuck, and a matrix-die, and a cutter for shaping the butt-end of a type-blank, a wire-feed, and means for operating them simultaneously to feed the wire to the cutter to prepare a blank thereby and to finish a type with the matrix.

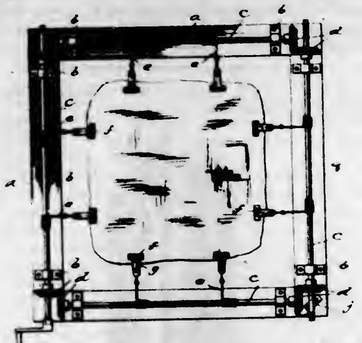
15. In a type-making machine, a matrix-die, a type-blank-holding chuck, and a cutter for shaping the butt-end of a type-blank, means for shifting said chuck to receive the prepared blank and return it into alignment with the die, and means to feed the wire to the cutter.

484,136. TYPE-WRITER CABINET. ALEXANDER T. BROWN, Syracuse, N. Y. Filed May 23, 1892. Serial No. 433,980. (No model.)



Claim.—A type-writer cabinet comprising a case, a cover, a connecting-bar pivoted to the case and cover, a table, legs and ears thereon, a lever pivoted upon the case and having one end pivoted to the cover and the other end pivoted to the legs projecting beyond the lower face of the table, and arms pivotally connected at one end to the case and at the other to the ears below said table, whereby said table and cover simultaneously swing upon pivotal centers when the cover is opened or closed, in combination as set forth.

484,187. LEATHER-FRAME. LUKE F. CAUFFIELD, Ashtabula, Ohio. Filed June 16, 1892. Serial No. 437,172. (No model.)

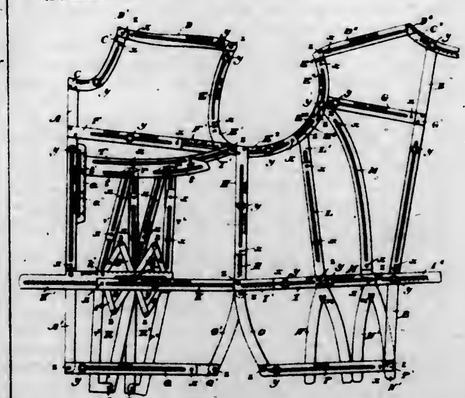


Claim.—1. In a leather-stretching frame, the combination of a frame, a series of shafts journaled in bearings on the sides of said frame, means for locking said shafts against rotation, a series of cords having their ends secured to the shafts, and clasps secured to the free ends of the cords, whereby when the edges of the leather to be stretched are engaged by the clasps and the shafts revolved said leather will be drawn taut and suspended within the frame, substantially as described.

2. The combination of a frame, shafts thereon, and means for rotating them, cords connected to the shafts, a series of clasps for grasping the edges of the leather, and means, substantially as described, for connecting the clasps to the cords, whereby the tighter the cords are drawn the stronger will the clasps grip the leather, substantially as described.

3. A leather-stretching frame consisting of a supporting-frame, shafts mounted in bearings supported on said frame, means for simultaneously revolving said shafts, clasps or grippers connected to said shafts, said clasps consisting of the plates *g g*, provided with gripping-jaws and pivoted together, a spring for keeping the gripping-jaws normally closed, and the yoke *i*, its diverging arms passing through perforations in the rear ends of plates *g g*, and a cord connecting the rear end of said yoke with one of the shafts, substantially as described, and for the purpose set forth.

484,188. PATTERN FOR DRAFTING GARMENTS. JOSEPH H CROQUETTE, Fall River, Mass. Filed Sept. 2, 1891. Serial No. 404,480. (No model.)



Claim.—1. In a drafting-form for garments, lazy-tongs for outlining the darts, consisting of straight bars pivoted together at their middle and having a link pivoted to each end, the links nearer the front bar of the drafting-form being pivoted together and to the waist-bar and the other links being pivoted together, but free to move away from the front bar, substantially as described.

2. In a drafting-form for garments, a pair of connected lazy-tongs for outlining the darts, consisting of four straight bars pivoted together

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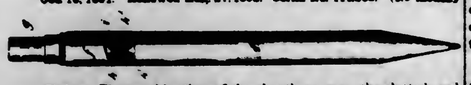
484,138. LEAD OR CRAYON HOLDER. CLARK W. BOWAN, New York, N. Y., assignor to the Eagle Pencil Company, same place. Filed Oct. 16, 1891. Renewed Aug. 27, 1892. Serial No. 444,283. (No model.)



Claim.—The combination of the sheath or case, the slotted and toothed receiver, the slotted guide-tube longitudinally movable within the receiver, the toothed follower contained and frictionally held in the guide-tube, the pin-and-slot connection between the guide-tube and the receiver, consisting of the V-slot *h h'* and return-slot h^2 in the one part and the spring yielding or depressible pin for engaging said slot on the other part, the pressure-cap, and the retracting-spring, substantially as and for the purposes hereinbefore set forth.

at their middle by a rivet sliding in a slot in the waist-bar and links pivoted to the ends of the bars, the four links nearer the front being pivotally connected with the waist-bar at a fixed point, the other four links being pivotally connected together, but free to move, substantially as described.

3. In a drafting-form, the combination, with suitable bars for outlining the back, side form, and under-arm pieces, of two inverted-V-shaped hip-dart bars N N', each having a V-shaped slot, as *n n'*, substantially as described.

484,139. PUMP. AUGUST D. COOK, Lawrenceburg, Ind. Filed May 23, 1892. Serial No. 434,007. (No model.)

Claim.—1. In a pump, the combination, with the well-pipe, a working barrel, and an expansible and contractible joint located in the upper end of the barrel, of a pump-rod, an expanding device mounted on the rod, and escape-ports for easing the head of water above the plunger of the rod, substantially as specified.

2. In a pump, the combination, with the well-pipe, a working barrel, and an expansible and contractible joint located in the upper end of the barrel, of a pump-rod, an expanding device mounted on the rod, a plunger at the lower end of the rod, escape-ports located in the working barrel, valves for closing the same, and stems extending from the valves into the path of and adapted to be struck by the plunger, substantially as specified.

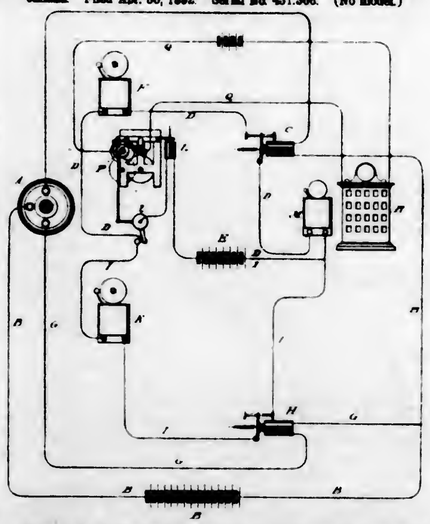
3. In a pump, the combination, with the well-pipe and the working barrel located therein, of a tube inserted in the working barrel and longitudinally slitted to form spring-tongues, a packing-sleeve about the tube and having its upper end enlarged and overlapping the upper end of the tube and taking between the tube and pipe, a pump-rod, and a conical plug, through which the rod passes, inserted in the tube and adapted to be driven therein for spreading the same, substantially as specified.

4. In a pump, the combination, with the well-pipe and the pump-barrel, of a slitted tube having a series of spring-tongues and provided with an external packing-ring the upper end of which overlaps the upper end of the tube and terminates between it and the pipe, a pump-rod mounted loosely in the working barrel and provided with shoulders arranged some distance apart, and a conical plug mounted on the rod between the shoulders, adapted to be struck thereby and inserted into the upper end of the slitted tube, substantially as specified.

5. In a pump, the combination, with the well-pipe, the working barrel, the pair of slitted tubes arranged one within the other and both located in the upper end of the working barrel, and the rubber sleeve encircling the inner tube and located within the outer one and having its upper end provided with an external enlargement or packing-ring slitted at its lower edge to receive the upper end of the external tube, of the pump-rod provided with the upper and lower shoulders and the conical spreading-plug having the hollow bore and provided at its upper end with a spider provided with a central opening for the pump-rod and located upon the latter between its shoulders, substantially as described.

6. In a pump, the combination, with the well-pipe, the cylinder-sections interiorly threaded, the intermediate exteriorly-threaded coupling having the opposite pairs of guide-perforations, and intermediate valve-seat formed at the upper ends of L-shaped ports, the valve-plugs mounted on the seats, and the stems extending from the plugs through the guide-perforations and below the coupling, of the expanding joint at the upper end of the working barrel, the pump-rod depending through the same and the coupling, and the plunger and shoulder upon the rod, the former adapted to contact with the valve-stems and the latter with a conical plug located on the rod and adapted to spread the said joint, substantially as specified.

484,140. ELECTRIC FIRE-ALARM. HARVEY CORTLAND, Toronto, Canada. Filed Apr. 30, 1892. Serial No. 431,366. (No model.)



Claim.—1. In combination with the double-acting thermostat, the main and branch circuits controlled thereby, the relays in said circuits, the local circuits controlled by the relays and containing alarm-instruments, and a switch mechanism controlled by one local circuit and acting to open the same and to close the other.

2. In combination with the double-acting thermostat, the main and branch circuits, their relays, the local circuits controlled by the relays and containing alarm-instruments, and the mechanical alarm switch mechanism L, adapted to open one local circuit and close the other, and also adapted and arranged to transmit a signal to a central-office instrument, and a magnet to control the instrument L, located in the local circuit.

3. The improved thermostat, consisting of the frame, the convex expansible disk, the conducting-fingers a^4 and a^5, and the intermediate conducting-finger a^6, operated by the disk.

4. In combination with a thermostat and two circuits controlled thereby, the mechanical switch-instrument L, consisting of the spring-actuated clock-train and its eccentric, the lever moved by the eccentric and connected to the switch proper, and the controlling-magnet.

5. The combined switch and signal instrument, consisting of the spring-actuated clock-train, the signal-wheel and finger, the eccentric, the lever actuated thereby, the switch proper connected with the lever, the detent, and the magnet controlling the detent.

484,141. FEEDING MECHANISM. LUTHER C. CROWELL, Brooklyn, assignor to Robert Hoe, Stephen D. Tucker, Theodore H. Mead, and Charles W. Carpenter, New York, N. Y. Filed Aug. 4, 1891. Serial No. 401,602. (No model.)

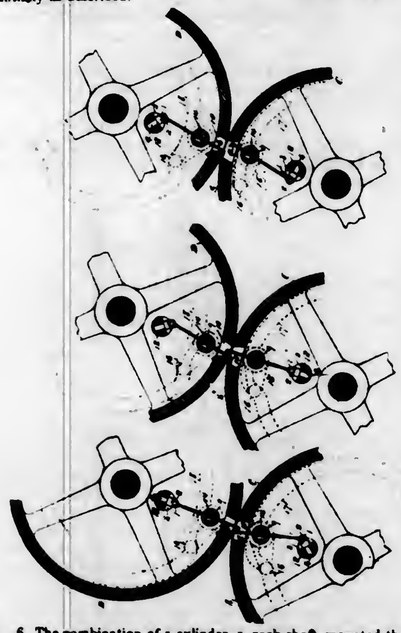
Claim.—1. The combination, with a cylinder and its grippers, of a movable support carried by said cylinder, on which the grippers are pivotally mounted, and means for simultaneously rocking said grippers and moving the support to carry the axes of the grippers to and from the surface of the cylinder, substantially as described.

2. The combination, with a cylinder and its grippers, of a rocking support carried by said cylinder, on which the grippers are pivotally mounted, and means for controlling said grippers, substantially as described.

3. The combination, with a cylinder and its grippers, of a rocking support carried by said cylinder, on which the grippers are pivotally mounted, and guides between which said grippers move, substantially as described.

4. The combination, with a cylinder and its grippers, of a rocking support carried by said cylinder, on which the grippers are pivotally mounted, and rocking guides between which said grippers move, substantially as described.

5. The combination of a cylinder, a rock-shaft mounted therein parallel with the axis of the cylinder, grippers carried by said rock-shaft and pivotally mounted thereon with their axes parallel with the axis of the shaft, and guides between which said grippers move, substantially as described.



6. The combination of a cylinder, a rock-shaft mounted therein parallel with the axis of the cylinder, grippers carried by said rock-shaft and pivotally mounted thereon with their axes parallel with the axis of the shaft, and rocking guides between which said grippers move, substantially as described.

7. The combination of a cylinder, a rock-shaft mounted therein, grippers carried by said rock-shaft and pivotally mounted thereon with their axes parallel with the axis of the shaft, and a rock-shaft mounted in said cylinder parallel with the first-mentioned shaft and provided with slots through which the grippers pass and in which they are guided, substantially as described.

8. The combination of a cylinder, a rock-shaft mounted therein, grippers carried by said rock-shaft and pivotally mounted thereon with their axes parallel with the axis of the shaft, and a rock-shaft mounted in said cylinder parallel with and outside the first-mentioned rock-shaft and provided with slots through which the grippers pass and in which they are guided, substantially as described.

9. The combination of a cylinder, a rock-shaft mounted therein, grippers carried by said rock-shaft and pivotally mounted thereon with their axes parallel with the axis of the shaft, and a rock-shaft mounted in said cylinder parallel with and outside the first-mentioned rock-shaft and provided with slots through which the grippers pass, said slots being beveled inwardly from opposite sides of the shaft to form narrow guides for the grippers, substantially as described.

10. The combination of a cylinder, a rock-shaft mounted therein, grippers carried by said rock-shaft and pivotally mounted thereon with their axes parallel with the axis of the shaft, a rock-shaft mounted in said cylinder parallel with and outside the first-mentioned rock-shaft and provided with slots through which the grippers pass and in which the grippers are guided, driving connections between said shafts, and means for actuating one of said shafts during the rotation of the cylinder, substantially as described.

11. The combination of a cylinder, a rock-shaft mounted therein, grippers carried by said rock-shaft and pivotally mounted thereon with their axes parallel with the axis of the shaft, a rock-shaft mounted in said cylinder parallel with and outside the first-mentioned rock-shaft and provided with slots through which the grippers pass, means for actuating the outer shaft during the rotation of the cylinder, and connections between said shaft and the inner shaft for rocking the latter simultaneously, substantially as described.

12. The combination, with the cylinder C, having openings 10, of rock-shaft 12 in said cylinder, grippers *a*, having stems pivotally mounted on said shaft, rock-shaft 14, outside said shaft 12 and provided with slots through which the gripper-stems pass, and means for rocking said shafts simultaneously, substantially as described.

13. The combination, with the cylinder C, having openings 10, of rock-shaft 12 in said cylinder, grippers *a*, having stems pivotally mounted in said shaft 12, rock-shaft 14, outside said shaft 12 and provided with slots through which the gripper-stems pass, arm 13, and segmental gears 6 7, connecting said shafts, and means for rocking one of said shafts, substantially as described.

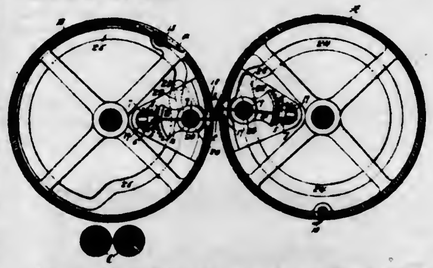
14. The combination, with cylinder C, having openings 10, of rock-shaft 12 in said cylinder, grippers *a*, having stems pivotally mounted on said shaft, rock-shaft 14, outside said shaft 12 and provided with slots through which the gripper-stems pass, arm 13, and segmental gears 6 7, connecting said shafts, a crank-arm and bowl on one of said shafts, and a cam engaging said bowl for rocking said shafts, substantially as described.

15. The combination, with cylinders C D, each provided with openings 10 11, the openings 11 extending behind openings 10, of grippers *a b*, carried by said cylinders, rocking supports in said cylinders, on which the grippers are pivotally mounted, guides between which said grippers move, and means for rocking said supports to operate one set of grippers to release and the other set to take the sheet, whereby the sheet is transferred from one cylinder to the other, substantially as described.

16. The combination, with the cylinders C D, each provided with openings 10 11, the openings 11 extending behind openings 10, of grippers *a b*, carried by said cylinders, rocking supports in said cylinders, on which the grippers are pivotally mounted, rocking guides between which said grippers move, and means for rocking said supports to operate one set of grippers to release and the other set to take the sheet, whereby the sheet is transferred from one cylinder to the other, substantially as described.

17. The combination, with a cylinder and its grippers, of spring-cushions on the cylinder, normally projecting outside the surface of the cylinder and forming a part of the surface of the cylinder and coacting with the grippers to seize and hold the sheets, substantially as described.

484,142. FOLDING MECHANISM. LUTHER C. CROWELL, Brooklyn, assignor to Robert Hoe, Stephen D. Tucker, Theodore H. Mead, and Charles W. Carpenter, New York, N. Y. Filed Jan. 22, 1892. Serial No. 418,948. (No model.)



Claim.—1. The combination, with a rotating carrier provided with a gripper coacting with the periphery of the carrier to seize the sheet, of a rotating carrier provided with devices for seizing a sheet, and a folding-blade, and means for actuating said blade to tuck the fold line of a sheet carried by the blade-carrier between said gripper and the periphery of the gripper-carrier and withdrawing said blade during the rotation of the carrier, substantially as described.

2. The combination, with a rotating carrier provided with a gripper coacting with the periphery of the carrier to seize the sheet, of a folding-blade, a rotating carrier for said blade, and means for actuating said blade to tuck the fold-line of a sheet between said gripper and the periphery of the gripper-carrier and withdrawing said blade during the rotation of the carrier, substantially as described.

3. The combination, with a rotating carrier provided with a gripper coacting with the periphery of the carrier to seize a sheet, of a rotating carrier provided with a folding-blade, a movable support carried by said carrier on which the blade is pivotally mounted, and means for simultaneously rocking said blade and moving the support to and from the surface of the carrier, whereby the blade is operated to tuck

the fold-line of a sheet between said gripper and the periphery of the gripper-carrier, substantially as described.

4. The combination, with a rotating carrier provided with a gripper coacting with the periphery of the carrier to seize a sheet, of a rotating carrier provided with a folding-blade, movable supports carried by the carriers on which the gripper and blade are pivotally mounted, and means for simultaneously rocking said gripper and blade and moving the supports to carry the axes of the gripper and blade to and from the surface of the carriers, whereby the blade is operated to tuck the fold-line of a sheet between said gripper and the periphery of the gripper-carrier, substantially as described.

5. The combination, with carriers A B, of folding-blade *b* and gripper *c*, carried by said carriers, respectively, rocking supports in said carriers on which the blade and gripper are pivotally mounted by stems 4, guides between which said stems move, and means for rocking said supports to operate the blade and gripper to fold the sheet from carrier A to carrier B, substantially as described.

6. The combination, with carriers A B, of folding-blade *b* and gripper *c*, carried by said carriers, respectively, rocking supports in said carriers on which the blade and gripper are pivotally mounted by stems 4, rocking guides between which said stems move, and means for rocking said supports to operate the blade and gripper to fold the sheet from carrier A to carrier B, substantially as described.

484,148. JOURNAL-BEARING. WILLIAM CURRAN, Chicago, Ill., assignor of four-fifths to Ransom Bertelson, Herman Lorenz, Frederick Reehl, and A. C. Glover, all of same place. Filed Dec. 10, 1890. Serial No. 374,209. (No model.)

Claim.—1. A journal-bearing having a short and narrow or contracted portion substantially midway between its ends and diverging sides or edges extending from said narrow or contracted portion toward the outer ends of the bearing to form expanded or widened end portions.

2. A journal-bearing having a short and narrow or contracted portion substantially midway between its ends and diverging sides or edges extending from said narrow or contracted portion toward the outer ends of the bearing to form expanded or widened end portions, said diverging sides or edges being provided with notches adjacent their outer ends.

3. A journal-bearing having a short and narrow or contracted portion substantially midway between its ends and diverging sides or edges extending from said narrow or contracted portion toward the outer ends of the bearing to form expanded or widened end portions, said narrow or contracted portion being wider at its center than at its ends.

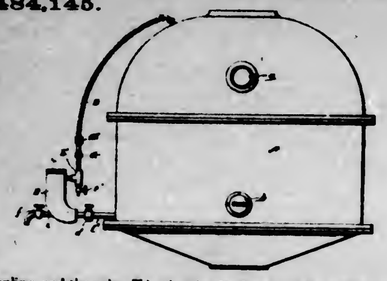
484,144. TUBULAR METALLIC POLE. DAVID DORWARD, San Francisco, Cal., assignor to the Risdon Iron and Locomotive Works, same place. Filed Apr. 25, 1892. Serial No. 430,483. (No model.)

Claim.—The combination of an outer tube, an inner tube of smaller diameter inserted therein and having its lower edge spread so as to close the annular space between the two tubes, and a filling in said annular space, substantially as set forth.

484,145. SUGAR-GAGE FOR VACUUM-PANS. EDWARD H. DUMAS, New Orleans, La. Filed May 11, 1891. Renewed July 29, 1892. Serial No. 441,867. (No model.)

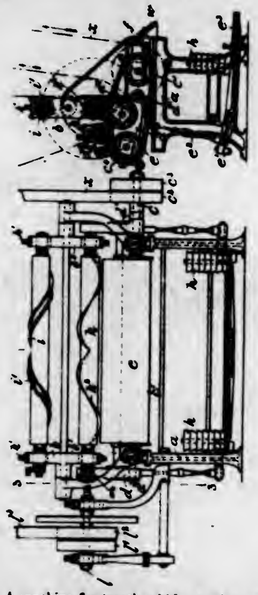
Claim.—The combination, with a vacuum-pan A, of the gage-cylinder B, arranged vertically at the base of the vacuum-pan and having the top *c*, the pipe C, carrying the cock *d* and connecting the gage-cylinder with the bottom of the pan, the discharge-pipe *e*, provided with a waste-cock and secured to the bottom of the cylinder, the air-pipe D, leading from the vapor-space of the vacuum-pan and its opposite end connected by one branch of a T-coupling with the upper portion of the gage-cylinder, the cock F on the lower branch of the T-

484,145.



coupling, and the valve H in the air-pipe between the vacuum-pan and the cylinder, all adapted to operate substantially as and for the purpose specified.

484,146. MACHINE FOR TREATING HIDES OR SKINS. WILLIAM EVANS, Philadelphia, Pa. Filed Dec. 20, 1891. Serial No. 416,490. (No model.)



Claim.—1. A machine for treating hides or skins, provided with a rotatable carrier, a positively-driven cylinder-shaft, a clutch, and hide-dressing cylinders journaled to said carrier and adapted, respectively, to be brought into connection with said shaft, substantially as and for the purposes set forth.

2. A machine for treating hides or skins, provided with a rotatable carrier, hide-dressing cylinders journaled in said carrier and adapted to be singly and successively brought into operative position, a positively-driven cylinder-shaft, and a clutch connected with said shaft and adapted for engagement with each of said cylinders after it is in operative position, substantially as and for the purposes set forth.

3. A machine for treating hides or skins, provided with a rotatable carrier, a slate-cylinder and a knife-cylinder journaled to said carrier, a positively-driven cylinder shaft, and a clutch connected with said shaft and adapted to detachably engage the spindle or arbor of each of said cylinders, substantially as and for the purposes set forth.

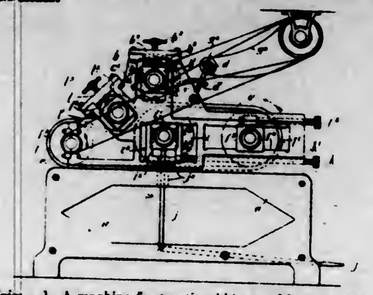
4. A machine for treating hides or skins, provided with a rotatable carrier having radially-adjustable journal-boxes, a positively-driven cylinder-shaft, a clutch connected with said shaft, and a slate and a knife cylinder mounted in said boxes and adapted to be turned into range of and adjusted into alignment with said clutch, substantially as and for the purposes set forth.

5. The combination, in a machine for treating hides or skins, of a main frame provided with a feed-apron drum and its complemental driving mechanism, a swinging frame provided with a feed-apron drum and journaled at one end thereof to said main frame at a point intermediate of the feed-apron drums, a feed-apron or endless band,

and a counterbalanced treadle for lifting said swinging frame to free the feed-apron, substantially as and for the purposes set forth.

6. A machine for treating hides or skins, provided with a carrier, a positively-driven shaft, a clutch, and a cylinder provided with slates arranged in courses obliquely to the radii thereof and the successive slates inclined in opposite directions from the radial lines, substantially as and for the purposes set forth.

484,147. MACHINE FOR TREATING HIDES OR SKINS. WILLIAM EVANS, Philadelphia, Pa. Filed June 16, 1892. Serial No. 436,807. (No model.)



Claim.—1. A machine for treating hides or skins, provided with a hide-dressing cylinder, a feed-apron and its complemental guide-rolls, a work-roll disposed intermediate of the guide-rolls and afforded a range of horizontal and vertical adjustment in respect to the axis of the hide-dressing cylinder, a pressure-roll susceptible of radial adjustment in respect to the axis of the work-roll, and means for shifting said work and pressure rolls, substantially as and for the purposes set forth.

2. In a machine for treating hides or skins, a hide-dressing cylinder, a feed-apron, a vertically and horizontally adjustable work-roll, and a pressure-roll susceptible of adjustment with respect to the work-roll and to deflect the feed-apron from the hide-dressing cylinder, substantially as and for the purposes set forth.

3. In a machine for treating hides or skins, a hide-dressing cylinder, a feed-apron, a roll for conducting the apron into proximity to the cutting-edges of the cylinder, and a roll for deflecting the apron from the axis of the cylinder to afford clearance to said cutting-edges, substantially as and for the purposes set forth.

4. In a machine for treating hides or skins, a hide dressing cylinder, and a feed-apron for conducting the work into range of the cutting-edges of the knives or cutters of the cylinder and out of range of the rear edges of the knives or cutters of the cylinders, substantially as shown, and for the purposes set forth.

5. A machine for treating hides or skins, provided with a hide-dressing cylinder, a feed-apron, and means for deflecting the feed-apron from the axis of the cylinder to afford clearance for the cutting edges or blades thereof, substantially as and for the purposes set forth.

6. A machine for treating hides or skins, provided with a hide-dressing cylinder, a feed-apron, and means susceptible of vertical and horizontal adjustment for bringing said apron into proximity to and away from the knives or cutters of said cylinder, substantially as and for the purposes set forth.

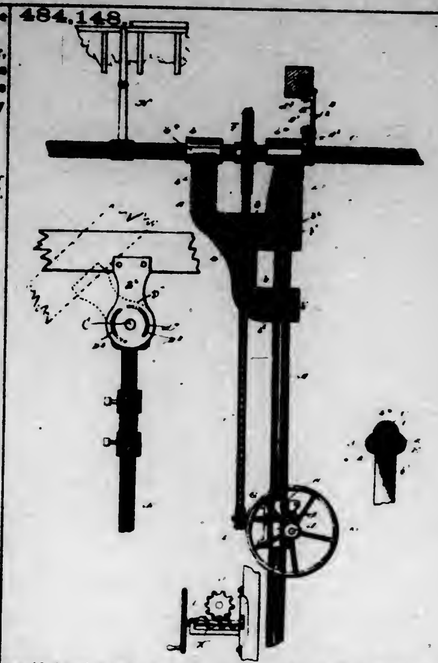
484,148. SUPPORT FOR SHAFTING. JOHN A. EVANS, Richmond, Ind. Filed Mar. 28, 1892. Serial No. 426,679. (No model.)

Claim.—1. The combination, with the post, of a bracket secured at its lower end to the upper end of said post and having upwardly-projecting arms, each of said arms having at its upper extremity a chambered bearing-box, antifriction-wheels in the lower chambers of said bearing boxes, a line-shaft passing through said bearing-boxes and resting on said antifriction-wheels, a wheel on said line shaft between said bearing-boxes, means for connecting said line-shaft with window-sashes, and means connected with said wheel for operating said line-shaft.

2. The combination, with the line-shaft and a post supporting the bearing-boxes for said line-shaft, of a bracket contiguous to one of said bearing boxes, said bracket having an opening for the passage of the line-shaft and being made in two parts, one of said parts having a flange adapted to be secured to a rafter of a building and also having elongated curved openings and both of said parts having inwardly-projecting flanges *d'*, *d²*, and *d³*, arranged as described, and bolts passing through said curved openings in one of the parts and through perforations in the other of the parts, substantially as and for the purposes set forth.

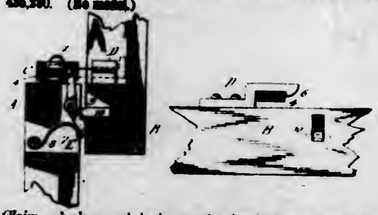
3. The combination of the post, line-shaft, bracket having arms

484,148.



provided with bearing-boxes for the line-shaft, a bracket for supporting the upper end of said post, said bracket consisting of two parts, one of which is adjustable on the other and has a flange designed to be secured to a rafter of a building, a wheel on said line-shaft between the arms of said first mentioned bracket, arms designed to connect said line-shaft with window-sashes, and operating means connected with said wheel, substantially as described.

484,149. FASTENER FOR THE MEETING-RAILS OF SASHES. CHARLES S. FAY, San Francisco, Cal. Filed June 2, 1892. Serial No. 435,280. (No model.)



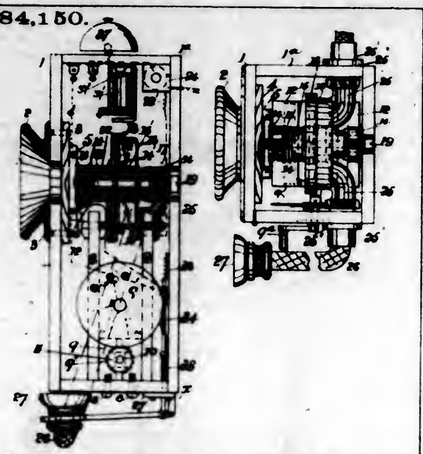
Claim.—1. In a sash-lock, a spring-latch pivoted upon the inner rail, a catch secured to the outer rail, a vertically-pivoted spring-trigger located in a recess in the inner rail and having its upper end adapted to engage the latch, a spring bearing against the lower end of the trigger, and a pivoted pin carried by the other sash, adapted to force the trigger inward and release the latch, substantially as described.

2. In a sash-fastener, the combination, with the meeting-rails, of a latch pivoted upon one rail, a catch secured upon the other, a spring for causing the engagement of said latch and catch, a spring-trigger on one rail for retaining the latch, and a pivoted pin upon the other rail, adapted to yield to movement of the sash in one direction, but to release the trigger as the meeting-rails approach, and thus permit the engagement of the latch and catch, substantially as described and shown.

3. In a sash-fastener, the combination, with the meeting-rails, of a hollow beam pivoted upon the inner rail and having a projecting latch, a coil-spring within said beam, a fixed catch upon the outer rail, a spring-pressed trigger for holding the latch, and a pivoted pin located in a V-shaped recess and movable in one direction and pivoted in the outer rail for causing the release of the trigger, substantially as and for the purposes set forth.

484,150. MAGNETIC TELEPHONE. CHARLES S. PEIRCE, London, England. Filed May 16, 1892. Serial No. 433,161. (No model.)

484,150.

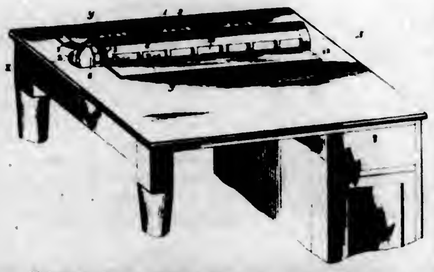


Claim.—1. The combination of the compound ringing-magneto having soft-iron pole-pieces carried by one end with a tympan-box and tympan and adjustable polar extensions, each carrying an inducing-bobbin filled with a conducting-wire connecting line and earth, and the generator at the reverse end, operating substantially as described.

2. The combination of the compound magneto having at one end pole-pieces supporting the cylinder, the rings through which the said cylinder is supported by said pole-pieces, the two tympan-plates carried by the said cylinder and polarized by the adjustable screwed cups, and the T-shaped extension carrying the inducing-bobbins, the microphone and induction-coil operating therewith, and the generator mounted in the reverse end of said magneto for actuating the bell by means of the switching-gear, as described.

3. In a magneto-telephone combination, the T-shaped extension 13, carrying inducing-coils, operating in the manner set forth.

484,151. INDEX. MATTHEW S. FORD, Blackburn, La. Filed May 11, 1892. Serial No. 432,619. (No model.)



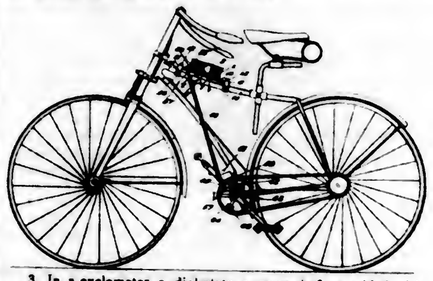
Claim.—1. In an indexing device, the combination of a drum adapted to have names and addresses arranged in columns thereon, a head connected to said drum for operating the same, provided with ratchet-teeth, a spring pawl or click engaging said head, and a cap or cover hingedly mounted over said drum, substantially as described.

2. In an indexing device, the combination, with a desk or table having a recess or opening therein and bearings or ears, of a drum rotatably mounted in said recess or opening, an operating-head secured to said drum and provided with ratchet-teeth, a spring pawl or click secured to an adjacent portion of the table or desk and engaging the said ratchet-teeth of the head, and a cap or cover hinged to said desk or table and adapted to fit over and cover the said drum, the said cap or cover being provided with a series of slots or openings and a flange for raising and lowering the same, substantially as described.

484,152. SPEED-RECORDER AND ODOMETER. CESAR J. FOSS, Chillicothe, Ohio, assignor of one-half to Samuel Earl Mosher, same place. Filed Sept. 19, 1891. Serial No. 405,994. (No model.)

Claim.—1. In a cyclometer and speed-recorder, the combination of the casing having the transverse perforated lugs, parallel spring-supporting rods adjustably secured within said lugs, metallic clips adjustably secured upon the ends of said rods and having semicircular recesses and spring-clasps spanning said recesses, substantially as set forth.

2. In a cyclometer, a dial-plate, a worm-shaft horizontal to said plate and provided with a screw-worm and a pawl-and-ratchet operating device, a hand-shaft vertically journaled in said plate and provided with a laterally-disposed projection, a worm-pinion mounted upon said shaft and meshing with said worm, a hand-operating shaft carrying a pinion engaged by the projection on said shaft at every revolution thereof and provided with an upwardly-projecting pin, a cog-wheel mounted upon said plate adjacent to said pinion and engaged by the upwardly-projecting pin thereof, and a hand-carrying shaft having a cog-wheel located above said pinion and meshing with said adjacent cog, substantially as set forth.



3. In a cyclometer, a dial-plate, a worm-shaft provided with a screw-worm and a pawl-and-ratchet device, a hand-shaft carrying a worm-pinion meshing with said worm and provided with a projection, a hand-shaft carrying a pinion engaged by said projection and provided with an upwardly-extending pin, an adjacent cog-wheel operated by said pin and having a downwardly-extending lug, a hand-carrying wheel beneath said wheel and engaged by said adjacent cog, and a supplemental hand-carrying wheel engaged by the lug of said adjacent cog-wheel, substantially as set forth.

4. In a cyclometer, a dial-plate, a worm-shaft provided with a screw-worm and a pawl-and-ratchet device, a hand-shaft carrying a worm-pinion meshing with said worm and provided with a projection, a hand-shaft carrying an operating-pinion engaged by said projection and provided with an upwardly-extending pin, an independent adjacent cog-wheel operated by said pin and having a downwardly-extending leg, a hand-operating cog-wheel working over the shaft of said pinion above the same and engaged by said adjacent cog-wheel, a supplemental hand-operating cog-wheel engaged by the lug of said adjacent cog wheel at every revolution thereof, and spring-pawls engaging the peripheries of said pinions and cog-wheels, substantially as set forth.

5. In a cyclometer, the combination, with the worm-pinion and the intermeshing and engaging hand operating-pinions, of the worm shaft carrying a ratchet-wheel rigidly mounted on said shaft, a sleeve mounted upon said shaft adjacent to said ratchet-wheel and provided with an enlarged spring-actuated plate, a spring-actuated dog mounted upon said plate and engaging said ratchet-wheel, a spring-pawl normally engaging said ratchet-wheel, and means for operating said sleeve, substantially as set forth.

6. In a cyclometer, the combination, with the hand-operating wheels and the pawl-and ratchet device connected therewith, of the vibrating lever connected with said pawl and-ratchet device, a walking-beam pivotally connected to the frame of the vehicle, a rod adjustably connecting said lever with said walking-beam, and a projection secured to the driving-gear and adapted to engage the free end of said walking-beam, substantially as set forth.

7. In a cyclometer, the combination, with the hand-operating wheels and the pawl-and-ratchet device connected therewith, of the vibrating lever connected with said pawl-and-ratchet device, a spring-pressed walking-beam pivotally connected to the frame of the vehicle, a contact-spring secured to the spring-pressed end of said walking-beam, a rod adjustably connecting the other end of said walking-beam with said lever, and a projection secured to the driving-gear and adapted to engage the spring end of said walking-beam, substantially as set forth.

8. In a cyclometer, the combination, with the hand-operating wheels and the pawl-and-ratchet device connected therewith, of the vibrating lever connected with said pawl-and-ratchet device, a spring-pressed walking-beam pivotally connected to the frame of the vehicle, a rod adjustably connecting said lever with said walking-beam, a tubular guard or shield incasing said connecting-rod, and a clamp secured to the driving-gear of the vehicle and carrying a loosely-mounted roller adapted to engage the free end of said walking-beam, substantially as set forth.

9. In a cyclometer and speed-recorder, the combination, with the hand-operating wheels, of the worm-pinion provided with a notched face, a spring-drawn hammer pivoted adjacent to said pinion and provided with an upwardly-extending beveled pin or stud traveling under said notched face, the speed-recording dial revolved by clock-movement, and a sliding spring-controlled marking attachment located over said dial above said hammer, and also operated in one direction by the movement of the clock, substantially as set forth.

10. In a cyclometer and speed-recorder, the combination, with the hand-operating wheels, of the worm-pinion provided with a notched face, a spring-drawn hammer pivoted adjacent to said pinion and operated by the notched face thereof, a clock, a speed-recording dial secured to the center post of said clock, and a sliding spring-controlled marking attachment located under said dial above said hammer and slidingly operated in one direction by the movement of said center post, substantially as set forth.

11. In a cyclometer and speed-recorder, the combination, with the hand-operating wheels, of the worm-pinion provided with a series of notches and inclined projections, a spring-controlled hammer pivoted adjacent to said pinion and provided with an upwardly-extending stop and an upwardly-extending beveled pin or stud traveling over said inclined projections and notches, a clock, a speed-recording dial rotated by the movement of said clock, and a spring-controlled marking attachment located over said dial above the hammer and slidingly operated by the clock-movement, substantially as set forth.

12. In a cyclometer and speed-recorder, the combination, with the distance-indicating mechanism and the hammer operated thereby, of a clock, a flanged collar having a downwardly-extending pin secured to the center post of the clock, a dial-plate seated upon said flange and engaging the downwardly-extending pin thereof, a spring-actuated sliding marker located between said hammer and dial-plate, and means for moving said marker back and forth over the face of said dial-plate by the clock-movement, substantially as set forth.

13. In a cyclometer and speed-recorder, the combination, with the distance-indicating mechanism and the hammer operated thereby, of a clock, a dial-plate mounted upon the center post of said clock, flanged studs, a sliding spring-actuated plate having a longitudinal slot engaging said studs and the center post of the clock, a spring-actuated strike-arm pivoted to the outer end of said plate, a marking-point adjustably secured in the end of said strike-arm, and means for moving said marker back and forth over the face of said dial-plate by the clock-movement, substantially as set forth.

14. In a cyclometer and speed-recorder, the combination, with the distance-indicating mechanism and the hammer operated thereby, of a clock, a flanged collar having a downwardly-extending pin secured to the center post of the clock and having a downwardly-extending threaded post, a dial-carrying plate seated upon said flange and engaging the downwardly-extending pin thereof, a graduated recording-plate located under said main plate, a binding-nut engaging said threaded post and bearing upon said graduated dial, a sliding marker located between said hammer and dial, and means for moving said marker back and forth over the face of said dial-plate by the clock-movement, substantially as set forth.

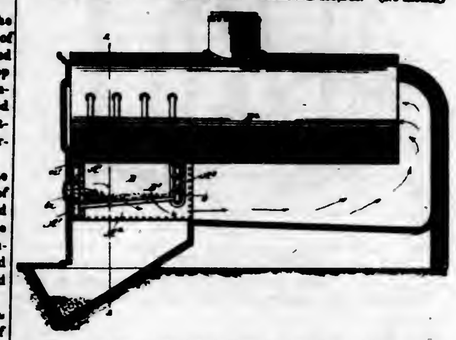
15. In a cyclometer and speed-recorder, the combination, with the distance-indicating mechanism and the hammer operated thereby, of a clock, a graduated dial secured to the center post, flanged studs projecting from the back of said clock, a sliding spring-actuated plate having a longitudinal slot engaging said stud and the center post of the clock and bifurcated legs at its outer end, a strike-arm pivoted between said legs and provided with the upwardly-extending projections near one end and a slot in the free end thereof, a marking-point adjustably secured in said slot, a leaf-spring secured to said plate and bearing under the projections of said strike arm, and means for moving said plate and strike-arm back and forth over the face of said dial-plate by the clock-movement, substantially as set forth.

16. In a cyclometer and speed-recorder, the combination, with the distance-indicating mechanism and the hammer operated thereby, of a clock, a flanged collar having an upward-extending pin secured to the center post of the clock, a sliding marking attachment located above said hammer, a dial carried upon said flange and above the marking attachment, a cog-wheel mounted upon the clock adjacent to the center post and engaged by the upwardly-extending pin of said flange, a cam-plate carried by said wheel, and a curved lever operated by said cam-plate and connected with said marking attachment, substantially as set forth.

17. In a cyclometer and speed-recorder, the combination, with the distance-indicating mechanism and the hammer operated thereby, of a clock, a flanged collar secured to the center post of the clock and having the upwardly-extending pin, a dial carried upon said flange, a sliding marking attachment having a short transverse slot therein and located under said dial and above said hammer, a spring-pressed cog-wheel mounted upon the clock adjacent to the center post and engaged by the upwardly-extending pin of said flange, a cam-plate carried by said wheel and a curved lever having at one end an upwardly-extending pin engaging said transverse slot, and an intermediate pin engaged by the periphery of said cam-plate, substantially as set forth.

18. In a cyclometer and speed-recorder, the combination, with the distance-indicating mechanism and a hammer operated thereby, of a clock, a graduated dial-plate mounted on the center post of said clock, a marking attachment operated by the clock-movement and located under said dial-plate and above said hammer, sockets secured upon the sides of said clock, right-angularly bent rods seated in said sockets and projecting over said dial-plate, hollow rollers journaled on said rods parallel with said dial-plate, and an inking-ribbon rolled upon said rollers and interposed between the marker and dial-plate, substantially as set forth.

484,153. STEAM-BOILER FURNACE. BENJAMIN R. HERBERT, St. Joseph, Mo. Filed Aug. 20, 1891. Serial No. 403,243. (No model.)



Claim.—1. The combination, with the side legs, of the front and rear legs connected with the side legs, all of which are closed at the top, the upper sides of the front and rear legs being concaved and adapted to form a rest for the boiler, the rear leg being shorter than the front leg, whereby a downdraft may be secured, substantially as and for the purpose described.

2. The combination, with the side legs, of the front and rear legs, all of which are closed at the top, the rear legs being shorter than the front and side legs, and the tubular grate-bars connecting the lower portion of the front leg with the lower end of the rear leg, whereby a downdraft through the fire-box is produced, substantially as shown and described.

3. The combination, with the side legs, of the front and depending legs connecting the side legs, all of said legs being closed at the top, the front and end legs having concaved upper sides, and the tubular grate-bars connecting the front and depending legs, substantially as shown and described.

4. The combination, with a boiler, of a fire-box essentially independent thereof and composed of the side water-legs closed at the top, and the front and depending water-legs also closed at the top and concaved to receive and support the boiler, the tubular grate-bars connecting the front and depending legs, and the circulating-tubes connecting the side legs and boiler, substantially as shown and described.

484,154. FRUIT-PITTER. GEORGE C. HOWELL, Alameda, Cal. Filed Nov. 21, 1891. Serial No. 412,618. (No model.)

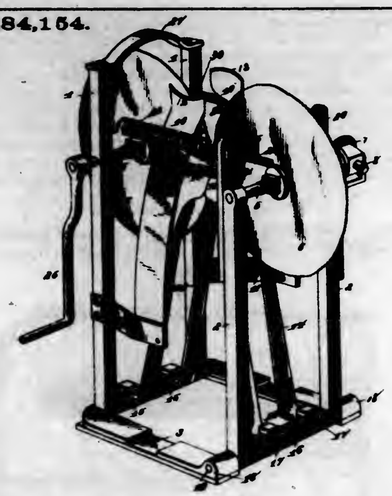
Claim.—1. In a fruit-stoning machine, the combination of a base, uprights 1 and 2, mounted on the base, the latter being hinged to the same, shafts journaled on the uprights, cutters mounted on the shafts 5, shafts 8, having their inner ends connected by a universal joint, and bevoled gears connecting the outer ends of the shaft 8 with the shafts 5, substantially as described.

2. In a fruit-stoning machine, the combination of a frame, shafts journaled in the frame, cutters mounted on the shafts, and springs arranged on opposite sides of the cutters and being curved throughout their length and having their upper ends transversely curved, substantially as described.

3. In a fruit-stoning machine, the combination of a frame, shafts journaled in the frame, cutters mounted on the shafts, springs arranged on opposite sides of the cutters and forming a chute, and binders arranged in pairs on opposite sides of cutters and being inclined and provided with shanks adjustably secured to the frame, substantially as described.

4. In a fruit-stoning machine, the combination of a frame, shafts journaled in the frame, cutters mounted on the shafts, springs arranged on opposite sides of the cutters and forming a chute, and binders arranged in pairs on opposite sides of the cutters and at right angles to the springs, substantially as described.

484,154.



Claim.—1. A vegetable-cutter having a receiving-box and plunger, combined with a cutter-head composed of a four-sided frame containing the cutters or knives and adapted to be slipped over the end of the box and removably screwed thereto, substantially as described.

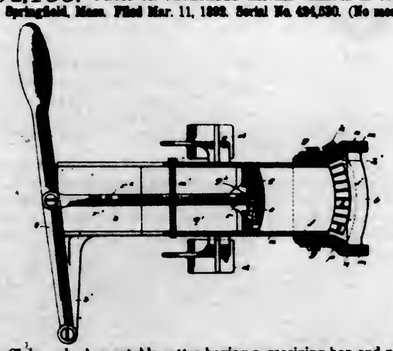
2. A cutter-head for vegetable-cutters, composed of a box, a series of knives arranged in said box, movable spacing-blocks interposed between said knives at opposite ends of the knives, and adjusting-screws applied sidewise to said blocks, substantially as described.

3. A cutter-head for vegetable-cutters, having its top and bottom provided with the undercut grooves A, movable spacing-blocks arranged therein, knives secured between such spacing blocks, and adjusting-screws applied sidewise to such blocks, substantially as and for the purpose described.

4. In a vegetable-cutter, the combination, with a removable cutter-head, of an independent cutter-head composed of cheek-pieces *p*, provided with grooves in which the knives and spacing-blocks are arranged and adapted to be applied to such removable cutter-head at pleasure, substantially as described.

5. In a vegetable-cutter, the plunger having a body cut away and recessed at its forward portion, combined with a plunger-rod having journals fitted in said recesses, and a face-piece, substantially as described.

484,155. FRUIT OR VEGETABLE SLICER. SAMUEL M. JONES, Springfield, Mass. Filed Mar. 11, 1892. Serial No. 424,530. (No model.)



Claim.—1. In a device of the character specified, the combination, with the head and the wires secured therein, of the metal plate extending over the end of the head, through which the wires pass, the body of said plate through which the wires pass being slightly removed from the head, leaving a space between the head and plate, whereby sharp bends in the wires are prevented, substantially as described.

484,156. COMBINED RAKE AND BROOM. JOHN W. KESSLER, Winston, N. C., assignor of one-half to Ottinger Brothers. Filed June 17, 1892. Serial No. 437,088. (No model.)

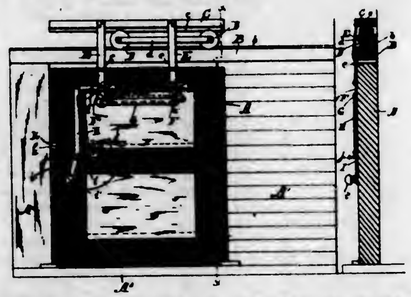
Claim.—1. In a device of the character specified, the combination, with the head and the wires secured therein, and the metal plate extending over the head, as shown, through which the wires pass, of the rake-teeth secured in one face of the head at an angle thereto, substantially as described.

2. In a device of the character specified, the combination, with the head and the wires located in the head thereof, of the rake-teeth in one face of the head, projecting at an angle to the broom-wires, substantially as described.

3. In a device of the character specified, the combination, with the head, the wires secured therein, and the metal plate extending over the head, as shown, through which the wires pass, of the rake-teeth secured in one face of the head at an angle thereto, substantially as described.

4. In a device of the character specified, the combination, with the head and the wires secured in the end thereof, of the handle secured to the head and projecting at an angle thereto and the rake-teeth secured to the head and projecting at an angle from the side opposite that toward which the handle is inclined, substantially as described.

484,157. DOOR-HANGER. CHARLES D. LAWRENCE, Fairfield, Me., assignor of one-half to Vaughn M. Mayo, same place. Filed Mar. 27, 1891. Serial No. 386,645. (No model.)



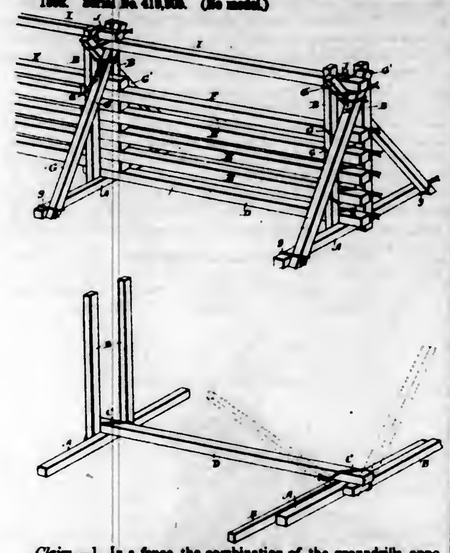
Claim.—1. In combination with a sliding door, rolls, and suspending devices for suspending said door from said rolls, a track on which said rolls are adapted to run, a threshold on which said door rests, and a lever connecting said door with said suspending devices for raising said door from said threshold to a bearing on said rolls, and a device for automatically and positively shifting the position of said lever to allow said door to drop when the same is shut, substantially as shown.

2. In combination with a sliding door, rolls, and a pair of suspending-rods supported by said rolls, elbow-levers pivoted to said door and to the lower ends of supporting-rods, a link joining said elbow-levers, a handle-lever pivoted to the door, and a link connecting said handle-lever with one of said elbow-levers, whereby they may be depressed and the door lifted to a bearing on said rolls, substantially as shown.

3. In combination with a sliding door, rolls, and a suspending device supported by said rolls, a lever pivoted to the door and to said suspending device for lifting said door, a stop for limiting the motion of said lever after the pivots have passed each other vertically, and a device for automatically and positively shifting the position of said lever to allow said door to drop when the door is closed, substantially as shown.

4. In combination with a door, rolls, and a suspending-rod supported by said rolls and connected with said door by a connection which allows the door a limited vertical movement in relation to said rod, a slotted plate or guide secured to the door through which said rod passes, said rod having a head where it passes through said guide, which throws the door outward as it rises, substantially as shown.

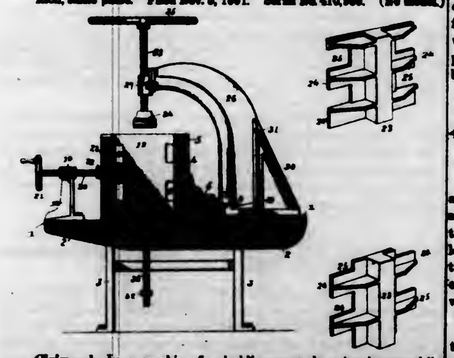
484,158. FENCE. JOHN T. LUCAS, Gibson, Ohio. Filed Feb. 1, 1892. Serial No. 419,908. (No model.)



Claim.—1. In a fence, the combination of the groundsills, opposite vertical spaced posts having their lower ends resting against opposite sides of the groundsills, the rails placed between said posts, the lowermost of which have their ends resting upon the groundsills and locked thereto and between the lower ends of said posts, locking-wires binding the uppermost rails to said spaced posts, and diagonal cross-stakes locked together at their points of intersection and having their lower ends sprung over and against the groundsills, substantially as set forth.

2. In a fence, the combination, with the vertical posts, the rails therebetween, and the diagonal cross-stakes locked between and against the upper ends of said vertical posts, of the rider-rails seated in the crotches of said cross-stakes between said vertical posts and having their ends overlapping in said crotches and the top wire locking clamping the various intersecting members together and passing from the upper end of one cross-stake over the top of the under rider-rail to and around the upper end of the opposite cross-stake, thence around and over the end of the upper rider-rail, (forming the locking-rail,) from said upper rider-rail around the upper end of one of the upright posts, back under the end of the under rider-rail to and around the opposite upright posts, thence looped a second time under and around the upper locking rider-rail, and finally back to the original starting-point, substantially as set forth.

484,159. BOX SCREW AND CLAMP. WILLIAM H. MILLER and THOMAS L. FARROW, Winston, N. C., assignors of one-third to Edwin D. Rich, same place. Filed Nov. 5, 1891. Serial No. 410,998. (No model.)



Claim.—1. In a machine for holding and clamping boxes while their contents are being compressed, the combination, with a bed or frame, of a series of jaws or clamps mounted thereon with interlocking tongues and grooves at the points of meeting of the jaws, means for adjusting and holding the jaws, and a compressing mechanism.

2. In a machine of the class described, the combination, with a bed plate or frame, of two plates 4 and 12, arranged at right angles to each other and having interlocking tongues and grooves at their meeting edges, two plates 23 23, arranged at right angles to each other and having interlocking tongues and grooves at their meeting edges, interlocking tongues and grooves at the meeting edges of the plates 4, 12, and 23 23, and means for adjusting the movable plates toward and from the stationary plates.

3. A tobacco-box clamp or holder consisting of a bed plate or frame, clamping jaws, heads, or plates provided with interlocking tongues and grooves to preserve the continuity of the box-opening, and mounted upon the bed-plate, and means for adjusting one or more of said jaws, heads, or plates.

4. In a tobacco-box clamp, the combination of a bed frame or table, a shroud composed of a series of clamping walls or plates arranged to form a rectangular box-opening, means for adjusting one or more of said plates, and interlocking tongues or grooves at the junction of the movable plate with the adjacent plates.

5. In combination with a bed or frame, a box-holding clamp mounted thereon, an upright overhanging arm pivoted thereto and provided with a compressing mechanism adapted to work within the box-clamp, and the fixed bracket 30, engaging the arm and adapted to support the same, substantially as shown and described.

6. In a tobacco-box clamp, a base-plate, a stationary clamping-plate 4, bolted upon said base and provided with oppositely-projecting parallel arms and intermediate notches, an adjustable clamping-plate 12, right-angularly disposed to said stationary plate and provided with similar arms and notches and adapted to receive the arms and work within the notches of said stationary plate, sliding clamping-jaws 23 23, having opposite parallel arms and intermediate notches located parallel to said stationary plate 4 and said adjustable plate 12 and adapted to receive the arms and work within the notches of the plate adjacent to the same, means for moving said sliding jaws or plates, and a compressing mechanism mounted upon said base and adapted to work within said rectangular clamp, substantially as set forth.

7. In a tobacco-box clamp, a base-plate provided with a laterally-disposed slot 17, a stationary clamping-plate 4, provided with oppositely projecting parallel arms and intermediate notches, an adjustable clamping-plate 12, bolted in said slot and provided with similar arms and notches and adapted to receive the arms and work within the notches of said stationary plate and at right angles thereto, sliding clamping jaws 23 23, having opposite parallel arms and intermediate notches located parallel to said stationary plate 4 and said adjustable plate 12 and adapted to receive the arms and work within the notches of the plate joining or connecting therewith, bearing-standards 18, mounted upon said base, adjusting-screws 20, horizontally mounted in said standards and moving said sliding jaws or plates 23 23, and a compressing mechanism, all substantially as set forth.

8. In a tobacco-box clamp, the combination, with a base-plate having an integral block 7 rising therefrom, a stationary clamping-plate 4, having a flange 9 bolted over said block and projecting beyond the same, of a series of jaws or plates arranged with said stationary plate to form a rectangular box-holding clamp, a swinging screw-arm 26, pivotally mounted upon said base and provided with a threaded bearing at one end and an annular flange or shoulder at the other, adapted to work under said projecting flange 9 of the stationary plate, substantially as set forth.

9. In a tobacco-box clamp, the combination, with the base-plate, of a series of clamping jaws or plates located upon said base-plate and forming a box-holding clamp, a compressing mechanism adapted to work within said box-clamp, an ejector-rod located beneath said base-plate and working in a perforation therein, and a treadle-lever pivoted beneath the bed or base-plate and connected to said ejector-rod.

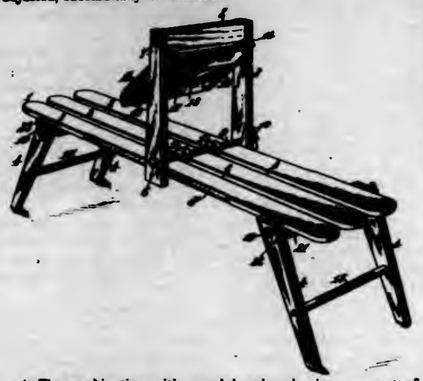
484,160. COMBINED WASH-BENCH AND WRINGER-SUPPORT. WILBUR F. FARNHAM, Middletown, Conn. Filed Sept. 24, 1891. Serial No. 406,731. (No model.)

Claim.—1. The combination, with a slatted-top wash-bench, of an adjustable wringer-supporting frame engaged with the side edges of said bench to slide thereon, a rod or bolt passed transversely through the standards of said frame adjacent to the bench, washers placed loosely on said rod or bolt to drop into and fit within the spaces between the slats of the wash-bench top, and a clamping device on one end of said rod or bolt to detachably and adjustably secure the said wringer-supporting frame to the bench, substantially as described.

2. The combination, with a wringer-supporting frame having a transverse rod supported between the standards of said frame, of an adjustable drip-pan provided on its under side with elongated loops engaged with said transverse rod, whereby the drip-pan can be moved across said rod to either side of the frame and be adjusted to any de-

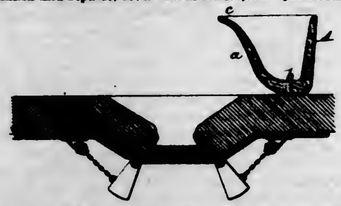
dred inclination toward either side of the frame or be suspended vertically between the standards, substantially as described.

3. The combination, with a ringer-supporting frame having a transverse rod supported between the standards of said frame, of an adjustable drip-pan provided on its under side with elongated loops engaged with said transverse rod and a cleat having a series of notches to engage said rod and secure the pan in any position to which it may be adjusted, substantially as described.



4. The combination, with a wash-bench and wringer support, of a cross-piece secured to each end of the wash-bench and provided with beveled extremities which project from opposite sides of the bench, folding legs having their inner sides formed with notches which engage the projecting beveled ends of the cross-pieces, transverse bolts carried by the cross-pieces and constituting pivots for the folding legs, and screw-nuts mounted on the bolts for engaging the notched portions of the legs with the beveled ends of the cross-pieces, substantially as described.

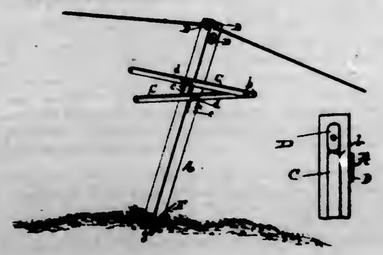
484,161. MELTING-POT. ROSCOE S. PEASE, Boise, Idaho. Original application filed Feb. 11, 1891, Serial No. 381,011. Divided and this application filed Sept. 19, 1891. Serial No. 406,177. (No model.)



Claim.—1. The herein-described pot or vessel, formed in one integral body of refractory material and having its front face cut away toward the bottom, substantially as described and shown, whereby it is adapted to be used within a glass furnace or oven and to be readily tipped to and held at any desired inclination.

2. The herein-described pot, formed of refractory material with a flat bottom and flat front side and having its front face rounded or cut away toward the bottom, substantially as shown, whereby the pot is adapted to be readily tipped and held in any desired position.

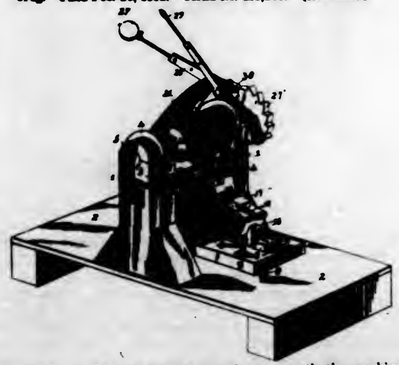
484,162. COMBINED CLOTHES-LINE PROP AND CLOTHES-HANGER. CHARLES A. POTTS, Trenton, N. J. Filed Oct. 20, 1891. Serial No. 410,242. (No model.)



Claim.—1. In a combined clothes-line prop and clothes-hanger, the combination, with the upright or prop having two vertical parallel series of apertures in its side, of a hanger-arm or branch pivotally connected adjacent to its middle to the prop at a point above the series of apertures and between the vertical planes thereof, and pins adapted to take into the apertures and fix the arm or branch with respect to the upright or prop, substantially as specified.

2. In a combined clothes-line prop and clothes hanger, the combination, with the upright or prop having two vertical parallel series of apertures in its sides and a turn-button pivotally connected to the prop, of a hanger arm or branch pivotally connected adjacent to its middle to a prop at a point above the series of apertures and between the vertical planes thereof and having one of its longitudinal edges and one of its ends beveled, and pins adapted to take into the apertures in the upright or prop and fix the arm or branch with respect thereto, substantially as specified.

484,168. SAW-TOOTH SWAGE. WILLIAM W. RYDER, Alsea, Oreg. Filed Feb. 20, 1892. Serial No. 423,271. (No model.)



Claim.—1. In a machine for swaging saw-teeth, the combination of a base, an anvil fulcrumed intermediate of its ends on the base, and adjusting-screws arranged at the ends of the anvil to secure the same at any desired inclination in either direction, substantially as described.

2. In a saw-swaging machine, the combination of a base, vertically-adjustable screws mounted on the base, an anvil fulcrumed intermediate of its ends on the supporting-screws, and the adjusting-screw arranged at the ends of the anvil to secure the latter at any desired inclination in either direction, substantially as described.

3. In a machine for swaging saw-teeth, the combination of an anvil provided with a transverse groove, a straight polygonal die of the same thickness throughout its length, arranged in said anvil and capable of longitudinal adjustment to present different portions of the same face and adapted to present any one of its faces, and a tooth-rest mounted on the anvil, substantially as described.

4. In a machine for swaging saw-teeth, the combination of an anvil provided with a flange having an inclined upper edge, a tooth-rest provided in its lower face with a groove to receive the flange and capable of longitudinal adjustment thereon, and means for securing the tooth-rest in its adjustment, substantially as described.

5. In a machine for swaging saw-teeth, the combination of a base, the bearings rising therefrom and provided with polygonal openings 19, an anvil arranged between the bearings and having an adjustable polygonal die of a size to pass through the openings 19, a tooth-rest mounted on the anvil, and a shaft journaled in said bearings and carrying a swaging-cam, substantially as described.

6. In a machine for swaging saw-teeth, the combination of bearings, a shaft journaled therein, a power-lever rigidly connected with the shaft, a ratchet-wheel similarly secured to the shaft, a hand-lever loosely mounted on the shaft and provided with a pawl to engage the ratchet-wheel, and a weight adjustably mounted on the power-lever, substantially as described.

484,164. CINDER-CONDUCTOR. HENRY C. SARGENT, Machias, Me. Filed Sept. 30, 1891. Serial No. 407,203. (No model.)

Claim.—1. A car provided with an outer casing extending laterally over its top and forming a lateral longitudinal opening and provided with enlarged flaring ends extending entirely across the car, whereby the smoke and cinders from a casing of one car of a train will be delivered into the casing of another car without employing couplings to connect the casings, substantially as described.

2. A car provided with an outer casing extending over its top and

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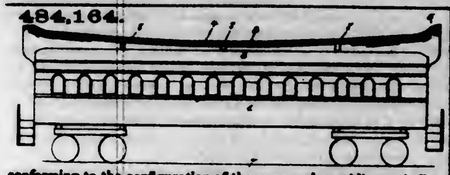
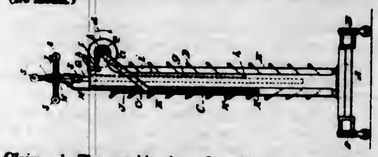

conforming to the configuration of the same and providing a shallow opening extending across the car and along the same, said casing being provided with flaring ends and depending flaring portions arranged at the ends of the car at opposite sides of the same, substantially as described.

484,165. PHOTOGRAPHER'S BACKGROUND-HOLDER. WILLIAM I. SCAMBLER, Brooklyn, N. Y. Filed Apr. 21, 1892. Serial No. 430,028. (No model.)

Claim.—1. The combination of uprights, a vertically-movable frame supported upon them, revolvable supports for the rollers, having their axes in said movable frame, and means to elevate the said frame, substantially as set forth.

2. The combination of uprights, a vertically-movable frame supported upon them, revolvable supports for the rollers, having their axes in said movable frame, means to elevate the said frame, and means to lock the said revolving frame, substantially as set forth.

3. The combination of uprights, a vertically-movable frame supported upon them, revolvable supports for the rollers, having their axes in said movable frame, means to elevate the said frame, means to lock said revolving frame, and spring-actuated screen-rollers adapted to be supported upon the revolving frame, substantially as set forth.

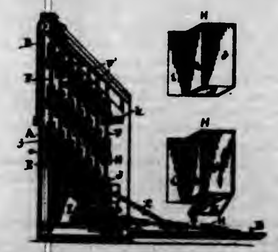
4. The combination of uprights, vertically-movable frames supported upon them, revolving supports or arms, one set upon each end of the vertically-movable frame and having, respectively, bearings for a Hartshorn or similar roller, substantially as set forth.

5. The combination of uprights, vertically-movable frames supported upon them, revolving supports or arms, one set upon each end of the vertically-movable frame, having, respectively, bearings for a Hartshorn or similar roller, and means to lock the said revolving frame, substantially as set forth.

6. The combination of a base placed upon rollers or wheels, two uprights attached to the base, a rack supported by the uprights, a vertically-movable frame supported upon the uprights, rotatable devices for holding the screens, attached to the vertically-movable frame, and means to elevate the movable frame, substantially as set forth.

7. The combination of a base placed upon rollers or wheels, two uprights attached to the base, a rack supported by the uprights, a vertically-movable frame supported upon the uprights, rotatable devices for holding the screens, attached to the vertically-movable frame, means to elevate the movable frame, and means to lock the rotatable frame, substantially as set forth.

484,166. CABINET FOR DISPLAYING SAMPLE GOODS. ARTHUR T. SHARON, New York, N. Y. Filed Dec. 19, 1891. Serial No. 415,869. (No model.)



Claim.—1. A cabinet for displaying sample goods, comprising a suitable case having notches arranged in inclined series within it and a number of boards therein provided with trunnions at the lower edge which have bearings in said notches, said boards carrying holders which project from their surfaces to receive the goods, substantially as described.

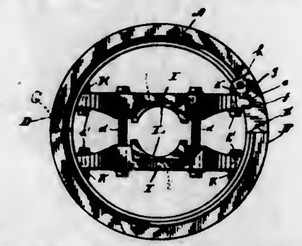
2. A cabinet for displaying sample goods, comprising a case having a hinged front and an inclined movable top, inclined strips inside the case having rows of notches, boards for carrying the goods, provided with trunnions which have bearings in said notches, and a drawer in the space behind said inclined strips.

3. A cabinet for displaying sample goods, comprising a suitable case having notches arranged in inclined series within it, a number of boards therein for carrying the goods, provided with trunnions which have bearings in said notches, said boards to have a vertical position in the case and to swing outward to an approximately-horizontal position, and hinged strips to cover said notches and confine the trunnions therein, in the manner described.

4. A cabinet for displaying sample goods, comprising a suitable case having notches arranged in inclined series within it, a number of boards therein for carrying the goods, provided with trunnions which have bearings in said notches, said boards to have a vertical position in the case and to swing outward to an approximately-horizontal position, and holders for the goods, each comprising a corner-rest having a front, side, and bottom, and a flange by which it is secured to the board.

5. A cabinet for displaying sample goods, comprising a suitable case having notches arranged in inclined series within it, a number of boards therein for carrying the goods, provided with trunnions which have bearings in said notches, said boards to have a vertical position in the case and to swing outward to an approximately-horizontal position, and holders for the goods, each comprising a corner-rest having a front, side, bottom, and inclined under surface, and a flange by which it is secured to the board.

484,167. WOOD SPLIT PULLEY. DAVID A. SPRINGER, Pennsborough, W. Va. Filed May 9, 1892. Serial No. 432,246. (No model.)



Claim.—The herein-described split pulley, consisting of the rim A, made of a series of sectional rings and divided transversely to form the sections D D', one end of one of said sections having a pointed tongue E, formed with concave sides, and its other end formed with a curved tongue and a recess beside said tongue, and one end of the other of said sections having a recess formed with convex inclined sides to receive said tongue E and its other end formed with a curved tongue and a recess adapted to engage the recess and tongue, respectively, of the adjacent end of said first mentioned section, the bolts A, located within the inner rings only of said sections, the arms I, the anchor-rods, each having one end threaded and extending through an end of one of said arms and its other end formed with an eye engaging one of said bolts, nuts on the threaded ends of said rods, and a hub carried by said arms.

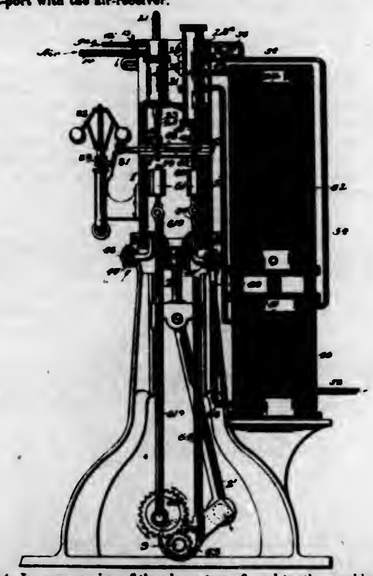
484,168. GAS-ENGINE. JOHN WESTINGHOUSE, Cleveland, Ohio. Filed Dec. 31, 1891. Serial No. 416,668. (No model.)

Claim.—1. In a gas-engine of the character described, the combination, with the cylinder, the piston, and an igniting device, of gas and air supply inlets, a discharge-passage communicating with a reservoir, a valve controlling the discharge-passage, valves controlling the gas and air inlets, a compressed-air receiver communicating with the said discharge-passage, and valves arranged between the cylinder and the reservoir and air-receiver, and mechanism connected with the engine for operating the said valves, whereby gas and air are first supplied to the cylinder and exploded to propel the piston, the exploded gases discharged into the reservoir and subsequently passed back into the cylinder, and a supply of compressed air admitted to the cylinder to combine with the gas from the reservoir, as set forth.

2. In a gas-engine of the character described, the combination, with the cylinder, piston, and igniting device, of a valve-chest communicating with the cylinder and provided with valved gas and air inlet ports and a discharge-port, a valve controlling said discharge-port, a valve-chest provided with a port communicating with said dis-

charge-port and also provided with ports communicating, respectively, with a compressed-air receiver, a reservoir, and an exhaust, valves controlling said ports, and mechanism for actuating said valves to automatically admit gas and air to the cylinder to be exploded and propel the piston, besides discharging the exploded gas into the reservoir and conveying it back into the cylinder and finally exhausting the exploded gas and compressed air, substantially as set forth.

3. In a gas-engine of the character described, the combination of the cylinder, one end whereof is an air compressor, and the piston, a chamber communicating with the cylinder and provided with valved gas and air supply ports and with a discharge-port, a valve controlling said discharge-port, a chamber provided with a port communicating with said discharge-port and provided with a compressed-air supply port, a gas-port, and an exhaust-port, valves controlling these ports, a reservoir communicating with said gas-port, an air-receiver communicating with the air-compressor, a pipe connecting said receiver with a chamber surrounding the cylinder, a passage connecting said chamber with said compressed-air-supply port, and a pipe connecting the exhaust-port with the air-receiver.



4. In a gas-engine of the character referred to, the combination, with the cylinder, piston, and igniting device, of gas and air supply inlets, valves normally closing said inlets, a discharge-port, a valve controlling said port, said gas and air valves opening on the downstroke of the piston when the discharge-port is closed, a compressed-air receiver, and a gas-reservoir, and exhaust-port, valves controlling said ports, mechanism connected with the engine for actuating the valves, and a governor driven by the engine and alternately throwing said valves in and out of operation, whereby the engine is alternately operated by exploding gas and air and by the mingled exploded gas and compressed air, substantially as set forth.

5. In a gas-engine of the character described, the combination, with the cylinder, piston, and igniting device, of gas and air inlet valves, a discharge-valve, a gas-reservoir, a compressed-air receiver, valves controlling communication between said reservoir and receiver and the discharge-valve, mechanism driven by the engine for actuating the valves, and mechanism actuated by the engine-governor for alternately throwing said valves in and out of operation, whereby gas and air are exploded within the cylinder to propel the piston and the exploded gas utilized by discharging the same back into the cylinder and combining compressed air therewith to propel the piston by expansion, as set forth.

6. In a gas-engine of the character described, the combination, with the cylinder, piston, and igniting device, of an exploded-gas reservoir, a compressed-air receiver, passages connecting the cylinder and the said reservoir and receiver, an exhaust, valves controlling said passages and exhaust, mechanism driven by the engine for engaging the stems of said valves and actuating the same, collars fixed on the valve-stems, sliding bars provided with lugs adapted to engage said collars, and a governor driven by the engine and operating said sliding bars to alternately cause said lugs to engage said collars and hold said valves out of engagement with the actuating mechanism, substantially as described.

7. In a gas-engine of the character described, the combination, with the cylinder, piston, and igniting device, of valved gas and air inlets, the gas-reservoir and compressed-air receiver, the connecting passages and valves and the exhaust-port, collars carried by the valve-stems, mechanism driven by the engine for engaging the valve-stems and actuating the valves, and sliding bars provided with lugs and actuated by a governor driven by the engine to cause the lugs to alternately engage said collars and hold the valves out of engagement with the valve-actuating mechanism, as set forth.

8. The combination, with the cylinder, piston, and ignitor, of the valved gas and air inlets, the exploded-gas reservoir, and compressed-air receiver, the connecting passages and valves, and the exhaust-port, collars carried by the valve-stems and having angularly-recessed bottoms, mechanism driven by the engine for engaging the valve-stems and actuating the valves, and sliding bars provided with beveled lugs and actuated by a governor driven by the engine to cause the lugs to alternately engage said collars and hold the valves out of engagement with the valve-actuating mechanism, substantially as shown and set forth.

9. The combination, with the cylinder, the exploded gas reservoir, the compressed-air receiver, and the connecting passages and valves, of the valve stems provided with collars 24 and 41 for depressing the valve-stems, push rods 59 and 60, driven by the engine, for elevating the valve-stems, sliding bars 66 and 67, loosely connected and carrying the beveled lugs, a spring for forcing said bars apart, a spring for forcing them together when released, and a governor driven by the engine, connected to one of said sliding bars, and operating to cause said lugs to alternately engage said collars and hold the valve-stems out of engagement with the push-rods, as set forth.

10. The combination, with the cylinder, the exploded-gas reservoir, the compressed-air receiver, and the connecting passages and valves, of the valve-stems provided with collars 24 and 40, having angularly-recessed bottoms, springs 25 and 41 for depressing the valve-stems, push-rods 59 and 60, adapted to engage and elevate said stems, mechanism for actuating said push-rods, the said push-rod 60 being actuated twice while the rod 59 is actuated once, sliding bars 66 and 67, carrying beveled lugs and loosely connected together, a spring for forcing said bars apart, a spring for again forcing them together, and a governor driven by the engine, connected to one of said sliding bars and operating to cause said lugs to alternately engage said collars and hold the valve-stems out of engagement with the push-rods, as set forth.

11. In a gas-engine of the character described, the combination, with the cylinder, piston, and igniter, of the valve-chest 4, communicating with the cylinder and provided with valved gas and air inlets and a discharge-port 26, a valve 22, actuated by the engine for closing said port, the valve-chest 5, provided with ports 28, 29, 30, and 31, the port 28 communicating with a compressed-air supply, the port 29 with a reservoir for storing exploded gas, the said port 30 communicating with the said port 26, and the port 31 with an exhaust, the valve-stem 34, carrying the fixed perforated valve 32 and the pistons 35 and 36, and the sliding valves 37 and 39, carried by the stem and having lost motion thereon, mechanism driven by the engine for actuating said valves, and a governor also driven by the engine for automatically throwing said valves in and out of operation as the speed of the engine increases and diminishes, as set forth.

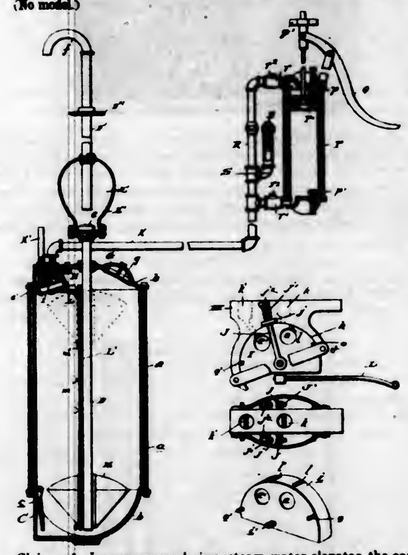
12. The combination, with the cylinder, the exploded-gas reservoir, and compressed-air receiver, of the valve-chest 4, communicating with the cylinder and provided with valved gas and air ports and a valved discharge-port, the valve-chest 5, communicating with said discharge-port and provided with ports communicating with the reservoir and air-receiver and with an exhaust, the valve-stem 34, carrying a perforated valve adapted to alternately open communication between the discharge-port and the reservoir and air-receiver, the valves 37 and 39, loosely mounted on said stem and having lost motion thereon, the said valve 37 controlling the admission of compressed air and the valve 39 controlling the exhaust, pistons 35 and 36, respectively mounted above and below said valves 37 and 39, and mechanism for operating these valves, as set forth.

13. In combination with the cylinder, exploded-gas reservoir, and compressed air receiver, the valve-chest 4 and its inlet and outlet ports and valves, the valve-chest 5, communicating with the chest 4 and provided with ports leading to the reservoir and air-receiver, a check-valve located between said receiver and air-port, the valves 32, 37, and 39, controlling said ports, and a balance-port communicating with the compressed-air port and adapted to admit air above the valve 37 to balance said valve, as set forth.

14. In a gas-engine, the combination, with a cylinder and piston and gas and air inlets, of an igniting device consisting of the double poppet-valves 35 and 36, seating in an opening in the end of the cylinder, said opening communicating with a hollow chamber provided with an orifice arranged opposite to a gas-burner, and a spring for normally holding the valve 35 closed and valve 36 open, but yielding to permit the reversal of said valves when the gas and air in the cylinder is compressed by the piston, as set forth.

15. In an igniting device for explosive-gas engines, the combination, with the cylinder and piston, of the hollow boss 33, communicating by an opening with said cylinder, double poppet-valves 35 and 36, seated in said opening, a hollow nut 39, tapped in said boss and guiding the valve-stem, a spring arranged between said valves and nut, and an orifice in said boss located opposite a gas-burner, as set forth.

484,169. FORCE-PUMP AND WATER-ELEVATOR. Milo L. G. Wheeler, North Yakima, Wash. Filed Apr. 20, 1891. Serial No. 389,697. (No model.)



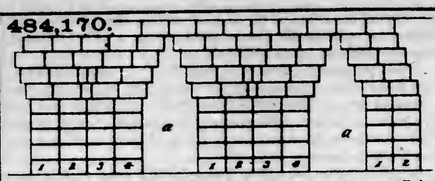
Claim.—1. In a compressed-air or steam water-elevator, the combination, with a cylinder and an exit-pipe leading therefrom, of the perforated valve-support fixed within the cylinder, the oscillating valve fitted snugly in said support and having its passages opposing directly into the cylinder, the adjustable links in which the valve is supported and free to rock or turn, the arm rigid with the valve, the endwise-movable stem having the studs, and the float, substantially as described.

2. In a compressed-air or steam water-elevator, the combination, with a cylinder and an exit-pipe leading therefrom, of the fixed support within the cylinder, the rocking valve having the passages and the rigid bolt or shaft, the lugs in which the valve is pivotally supported and fitted in the fixed guides, the tension-springs and adjusting means therefor, the float-rod connected to said valve, and the float, substantially as described.

3. In a compressed-air or steam water-elevator, the combination, with a cylinder and its exit-pipe, of the valve-support having the passages, the rocking valve provided with the lateral studs, the stops fixed to said support and arranged in the path of the studs on said valve, the arm rigid with the valve, the supporting-links in which the valve is journaled, the rod, and a float, substantially as described.

4. In a compressed-air or steam water-elevator, the combination of a cylinder, a discharge-pipe arranged therein and adapted to receive therefrom, a fixed valve-support having ingress and egress passages and also arranged in the cylinder, a rocking valve fitted to said support and likewise having the inlet and egress passages, an endwise-movable rod connected to said valve, and a float slidable on said pipe and rod and adapted to move the latter, as and for the purpose described.

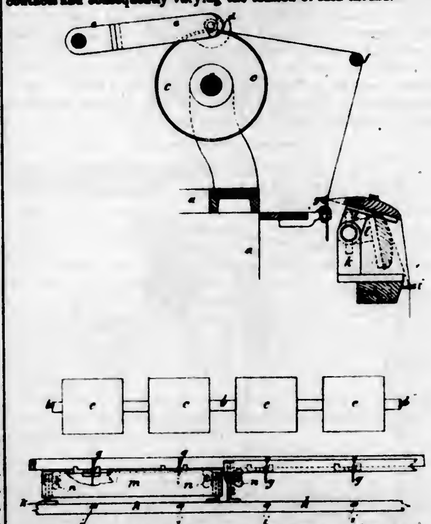
484,170. METHOD OF SETTING BRICK IN KILNS. Frank Alby, Chicago, Ill. Filed Dec. 26, 1891. Serial No. 416,014. (No model.)



Claim.—The herein-described method of setting brick in the arches and piers of a brick-kiln so as to form spaces or flues *c* in the bottom courses, the courses forming the side walls of the arches above the courses in which said flues are provided being set as closely as possible, these courses at the top of the arch being set loosely or openly to provide for a proper amount of draft and these courses in the interior of the piers, as there 2 and 3, above the flues *c* and up to the height of the top of the arch being set very loosely, so as to allow a sufficient proportion of the heat to escape up through the interior of the piers.

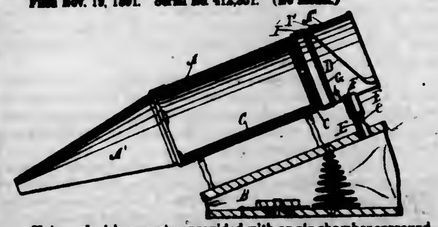
484,171. MACHINE FOR WINDING YARN OR THREAD. Robert Broadbent, Stalybridge, England. Filed June 27, 1892. Serial No. 438,102. (No model.)

Brief.—The thread passes over a rail having a rounded surface covered with felt. The rail is secured by set-screws, so it can be set at any angle, thus varying the extent of surface with which the thread contacts and consequently varying the tension of said thread.



Claim.—A tension device for drum winding-frames, consisting of a rail with rounded surface covered with felt or other suitable substance and adjustable arms or levers supporting the same, so that the angle of inclination of such surface over which the threads pass may be adjusted so as to give more or less friction and tension on such threads, substantially as hereinbefore described, and illustrated by the drawings annexed.

484,172. BEE-SMOKER. George W. Brodbeck, Los Angeles, Cal. Filed Nov. 19, 1891. Serial No. 412,351. (No model.)



Claim.—1. A bee-smoker provided with an air-chamber surrounding the fire barrel and communicating with the blast-chamber at one end and with the smoke-nozzle at the other end, and a suitable damper arranged upon the end of the fire-barrel to prevent the passage of the blast through the fire-barrel and to direct the blast through such air-chamber.

2. The combination, in a bee-smoker, of a suitable barrel provided near one end with a blast-opening, a suitable smoke-nozzle arranged at the opposite end of such barrel, suitable means for producing a blast through such blast-opening, and a forwardly-inclined blast-deflec-

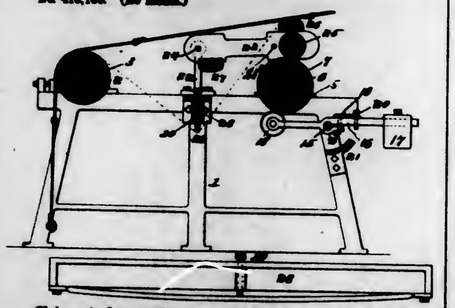
ter extending from the rear of the blast-opening upward screen and obliquely transverse to the plane of such opening to deflect the blast forward through the barrel and mouth.

3. In a bee-smoker, the combination of a detachable blast-chamber provided with a blast-opening, the bellows, and a blast-tube connecting such bellows with such blast-chamber and provided upon one side with an air-ingress opening communicating with the exterior air and arranged to be advanced into or retracted from the blast opening in the blast-chamber.

4. A bee-smoker comprising the combination set forth of a suitable barrel provided near one end with a blast-opening, a suitable smoke-cumle arranged at the opposite end of such barrel, a bellows attached to such barrel by suitable means, and a sliding tube connecting the bellows with the blast-opening and comprising the inner and outer telescoping members, one of which is provided with the longitudinal slits to form the spring-tongue, said tongue being arranged to press upon the other member, substantially as and for the purpose set forth.

5. A bee-smoker comprising the combination of a casing provided with a nozzle at one end, a fire-barrel of less diameter than such casing and provided at each end with an outward flange to extend across the space between the fire-barrel and the casing and provided with the air-passages in such flanges, the damper of approximately the same diameter as the inside of the casing and provided with the notches in its periphery corresponding to the air-passage in the flanges of the fire-barrel, and the spring-tongue arranged to project through one of the passages in the flange and engage with such flange to hold such damper in position upon the end of the fire-barrel.

484,173. MACHINE FOR SLITTING AND WINDING PAPER. ARTHUR P. BROWN, Fort Madison, Iowa. Filed Dec. 26, 1891. Serial No. 416,186. (No model.)



Claim.—1. In a machine for winding roll-paper, a spindle divided longitudinally on a diagonal line, forming two parts 8 and 9, dovetailed together and fitted together at their tapered ends by beveled faces 8^a and 9^a, substantially as described.

2. In a machine for slitting and winding roll-paper, the combination of a suitable frame supporting a roll from which the paper is wound, and a spindle upon which the paper is wound, arms pivoted to said frame, a bar 26 on said arms, a friction-roller 25 on said arms, and cutters, substantially as and for the purpose set forth.

3. In a machine for slitting and winding roll-paper, the combination of a suitable frame, a support for a roll from which the paper is wound, a support for a spindle upon which the paper is wound, pivoted arms 23, an intermediate tension-bar, friction-bar 26, secured to said arms, a roller 25, journaled in said arms, and cutters 18, substantially as and for the purpose set forth.

4. In a machine for slitting and winding roll-paper, the combination of a suitable frame, a support for a roll from which the paper is wound, a support for a spindle upon which the paper is wound, a cross-piece 26, a rod 20, a set-screw 30, a bar 26, and cutters 18, substantially as and for the purpose set forth.

5. In a machine for slitting and winding roll-paper, the combination of a suitable frame supporting a roll from which the paper is wound and a spindle upon which the paper is wound, arms pivoted to said frame, a friction-roller journaled in said arms, and a tension-rod in said arms, substantially as and for the purpose set forth.

484,174. SIGN. ALFRED L. ROSENBAUM, Paterson, N. J. Filed Feb. 8, 1892. Serial No. 420,963. (No model.)

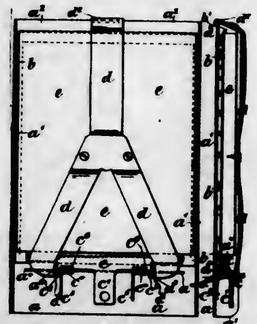
Claim.—1. An illuminating-sign consisting of a box, opaque sign-plates secured thereto and having blank letter-spaces, a series of prismatic tubes adapted to be revolved between said sign-plates, and means for revolving said series of tubes, substantially as set forth.

2. An illuminating-sign consisting of a box, opaque sign-plates secured thereto and provided with blank letter-spaces, a series of transparent tubes adapted to be revolved between sign-plates, pieces of glass of various colors placed in said tubes, and means for revolving said tubes.

3. An illuminating-sign consisting of a box, opaque sign-plates secured thereto and provided with blank letter-spaces, a transparent background arranged between sign-plates, means for revolving said background, and a movable opaque background arranged between the transparent background and the sign-plates.

4. An illuminating-sign consisting of a box, opaque sign-plates secured thereto and provided with blank spaces, a series of tubes adapted to be revolved between said sign-plates, means for revolving said series of tubes, and a curtain or shade arranged between said tubes and sign-plates and adapted when opened to give a plain background to the letters on the sign plates, substantially as described, and for the purposes set forth.

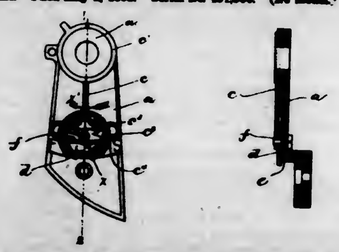
484,175. PHOTOGRAPHIC-PRINTING FRAME. FREDERICK O. BYRON, London, England. Filed June 28, 1892. Serial No. 438,209. (No model.)



Claim.—1. The combination, in a photographic-printing frame, of the frame *a*, a spring-clip pivoted to one end of said frame, a pressure-board fitting in said frame, and a spring-carrier carrying the pressure-board, the spring-clip and carrier being both mounted on the same hinge-pin, substantially as set forth.

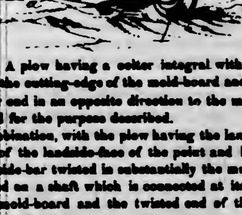
2. A photographic-printing frame constructed with a front *a*, having two perforated lugs a^3, through which is passed a hinge-pin a^4, carrying a spring-clip *c*, provided with a lever-handle *c'*, and also carrying a spring-carrier *d*, on which the pressure-board *e* is fixed, said spring-carrier *d* being provided with a catch d^3 to catch over the front edge of the frame *a*, substantially as herein shown and described, and for the purpose stated.

484,176. WATCH-REGULATOR. DEANE H. GREEN, Boston, Mass. Filed May 2, 1892. Serial No. 431,303. (No model.)



Claim.—A watch-regulator comprising in its construction a regulator arm having at its outer end a segmental elastic frame inclosing a segmental slot, the outer side of said frame being serrated at its concave edge, and a wheel rotatively connected with the balance-cock and provided with a pinion engaged with the serrated side of said frame, as set forth.

484,177. WATCH-CASE PENDANT. DEANE H. GREEN, Boston, Mass. Filed June 6, 1892. Serial No. 435,697. (No model.)



Claim.—1. In a stem winding and setting watch, a coupling-bar or key which is longitudinally movable in the key-pipe and rotatively engaged therewith, a crown attached to the key-pipe and provided with an orifice, and a key-adjusting device movable in the orifice in the crown and adapted to be positively secured in different positions, as set forth.

2. In a stem winding and setting watch, the combination of a tubular key-pipe adapted to be rotated in the pendant, a coupling-bar or key longitudinally movable in said key-pipe, a crown attached to the key-pipe and having an orifice extending through it, and a coupling-adjusting device movable longitudinally in the orifice in the crown, the said adjusting device and crown having interlocking projections and recesses, substantially as described, whereby the adjusting device may be engaged with and held by the crown in different positions, as set forth.

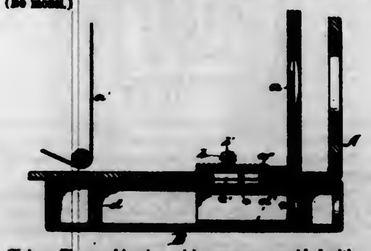
3. In a stem winding and setting watch, the combination of a tubular key-pipe adapted to be rotated in the pendant, a coupling-bar or key longitudinally movable in said key-pipe, a crown attached to the key-pipe and having an orifice extending through it, and a coupling-adjuster consisting of a push-piece movable longitudinally in the orifice in the crown and provided with an angular groove in its periphery adapted to engage a stud or pin in the crown, as set forth.

484,178. PLOW. URIAH A. CLEVELAND, Albert Lea, Minn. Filed Mar. 21, 1892. Serial No. 425,790. (No model.)

Claim.—1. A plow having a colter integral with and projected vertically from the cutting-edge of the mold-board and curving laterally at its upper end in an opposite direction to the mold-board, substantially as and for the purpose described.

2. The combination, with the plow having the landside-bar set in from the plane of the landside-face of the point and having the rear end of the landside-bar twisted in substantially the manner shown, of a roller mounted on a shaft which is connected at its ends with, respectively, the mold-board and the twisted end of the landside-bar, substantially as set forth.

484,179. FINDER ATTACHMENT FOR CAMERAS. WILLIAM R. COGSWELL, Syracuse, N. Y. Filed May 7, 1892. Serial No. 432,166. (No model.)



Claim.—The combination, with a camera provided with a screen and a lens adjustable with reference to the screen and mounted upon a sliding frame, of a range-finder consisting of a separate case detachably connected to the body of the camera and provided with a screen and a lens adjustable with reference to the screen, mounted in a sliding frame within the finder-case, and means to simultaneously and equally reciprocate the frame of the camera-lens and the frame of the finder-lens, both lenses being of equal focus and always at the same focal distance from their respective screens, the frame of the finder-lens being detachably connected to the other frame through a slot in the side of the finder-case, said finder being also provided with a viewing-aperture.

484,180. SMOKING TOY. JOSEPH T. CRAW, Jersey City, N. J. Filed Dec. 11, 1891. Serial No. 414,728. (No model.)

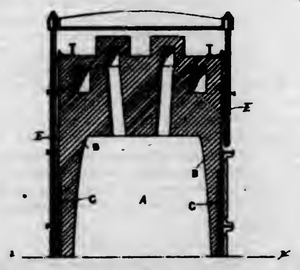
Claim.—1. The combination, in a smoking toy, of a suction device, a disk held thereto and extending above the same, the disk simulating a head, and eyes held loosely to the head and having a rocking movement when the manipulation of the suction device vibrates the disk, substantially as described.

2. The combination, in a smoking toy, of a suction device scored in curved lines, as described, a disk held in fixed relation thereto and simulating a head, the suction device having an aperture leading to the mouth of the head, adapted to receive a cigarette, and eyes loosely held in place to rock in response to the vibrations caused by manipulating the suction device, substantially as described.

3. The combination, in a smoking toy, of a disk secured thereto and made to simulate a head, eyes held in diagonal positions in the head by a cord, and a suction device held to the disk and having an aperture for receiving a cigarette, the manipulation of the said suction device serving to vibrate the structure and rock the eyes, substantially as described.

4. The herein-described suction device, consisting of a box-like structure of stiff material scored in curved lines adjacent to certain of its angles, substantially as specified.

484,181. BASIC-LINED FURNACE. JOHN H. DARBY, Rhyabo, near Wrexham, England. Filed Nov. 27, 1891. Serial No. 413,247. (No model.)



Claim.—1. A basic lined furnace having a solid wall formed of said material, a metallic backing, and a layer C of refractory substance of a neutral character between said wall and metallic backing.

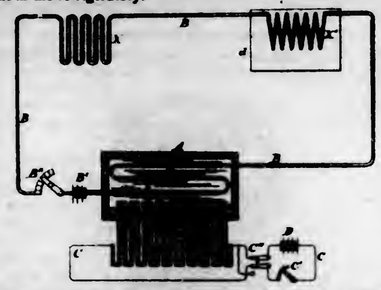
2. The combination of the basic lining A A, the wall and roof B B of the furnace made of said material, and the metallic casing or framework E, with the packing of refractory material of neutral character C placed between the walls B and the framework E, substantially as and for the purpose described.

484,182. METHOD OF ELECTRICAL REFRIGERATION. MARK W. DEWEY, Syracuse, N. Y., assignor to the Dewey Corporation, same place. Filed Feb. 8, 1892. Serial No. 420,921. (No model.)

Claim.—1. The method of electrically cooling, consisting in cooling or lowering the temperature in a portion of a suitable electric conductor and passing an electric current through said conductor to in-

ocess the conduction of heat from the warmer portion of the conductor to the cooled portion.

2. The method of electrically cooling, consisting in establishing an electric circuit, locating a portion of said circuit in a locality to be cooled, locating another portion in a suitable refrigeratory and to be cooled by the latter, and passing an electric current through the circuit to absorb heat from the portion of the circuit in the said locality to be cooled and to deposit the heat absorbed in the portion of the circuit in the refrigeratory.



3. The method of electrically cooling, consisting in establishing an electric circuit, locating a portion of said circuit in a locality to be cooled, locating another portion in a receptacle containing a cooled medium, insulating the latter portion of the circuit from said medium, and passing an electric current through the circuit to absorb heat from the portion of the circuit in the said locality to be cooled and to deposit the heat absorbed in the portion of the circuit in the receptacle.

4. The method of electrically cooling, consisting in establishing an electric circuit, locating a portion of said circuit in a locality to be cooled, locating another portion in a receptacle containing a cooled medium, agitating said medium, insulating the latter portion of the circuit from said medium, and passing an electric current through the circuit to absorb heat from the portion of the circuit in the said locality to be cooled and to deposit the heat absorbed in the portion of the circuit in the receptacle.

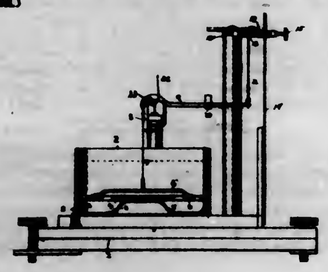
5. The method of electrically changing temperature, consisting in cooling or heating a portion of a suitable electric conductor and passing an electric current through said conductor to equalize the temperature thereof.

6. The method of electrically changing temperature, consisting in locating a portion of an electric conductor in a locality wherein the temperature is to be changed, changing the temperature of the conductor at one or more points, and passing an electric current through the conductor to remove the temperature produced at the said point or points to the locality wherein the temperature is to be changed.

7. The method of electrically changing temperature, consisting in locating a portion of an electric conductor in a locality wherein the temperature is to be changed, electrically changing the temperature of the conductor at one or more points, and passing an electric current through the conductor to remove the temperature produced at the said point or points to the locality wherein the temperature is to be changed.

8. The method of electrically cooling, consisting in establishing an electric circuit, locating a portion of said circuit in a locality to be cooled, locating another portion in an electric refrigeratory and to be cooled by the latter, and passing an electric current through the circuit to absorb heat from the portion of the circuit in the said locality to be cooled and to deposit the heat absorbed in the portion of the circuit in the refrigeratory.

484,188. ELECTRICAL DEPOSITING-METER. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Sept. 2, 1891. Serial No. 404,427. (No model.)



Claim.—1. The combination, in a depositing-meter, of a cell, an electrolyte and two electrodes therein, one electrode being of such form and arrangement that parts of it stand on opposite sides of the other electrode, and means for weighing one electrode, whereby the current may be measured by the weight of metal deposited or removed from said electrode, substantially as described.

2. The combination, in a depositing-meter, of a single cell, an electrolyte therein, two electrodes in the electrolyte, one being of such form and arrangement that parts of it stand on two opposite sides of the other electrode, and means for weighing one electrode, substantially as described.

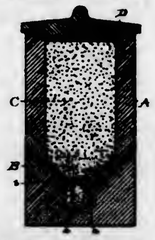
3. The combination, in a depositing-meter, of a cell, an electrolyte therein, two electrodes in the electrolyte, one electrode being in parts separated by a space, and the other electrode being between said parts, and means for weighing one of the electrodes, substantially as described.

4. The combination, in a depositing-meter, of a single cell, an electrolyte therein, and two electrodes in the electrolyte, one electrode being in two parts separated by an annular space and the other electrode being of ring shape and between said parts, substantially as described.

5. The combination, in an electrical meter, of the ring electrode, the weighing apparatus therefor, and the second electrode on two sides of the first electrode, substantially as described.

6. The combination of an electrode for a depositing-meter, consisting of a cup-shaped insulating-body, a metal forming the circuit terminal within said body and exposed on its upper side, and a support holding said electrode in a horizontal position, substantially as described.

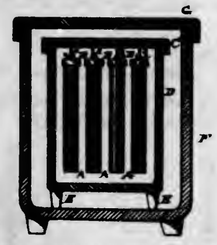
484,184. MANUFACTURE OF CARBON FILAMENTS. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Oct. 27, 1890. Renewed Mar. 30, 1892. Serial No. 427,009. (No model.)



Claim.—1. The herein-described improvement in the method of carbonizing filaments for electric lamps, consisting in placing the bare filaments in a chamber, together with a quantity of lead or other fusible material in its unfused condition and then exposing the same to carbonizing-heat.

2. The combination, with the carbonizing-chamber, of the filaments, the powdered metal placed around and above them, and the larger pieces of metal above the powdered metal, substantially as set forth.

484,185. MANUFACTURE OF CARBON FILAMENTS. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Dec. 27, 1890. Renewed Mar. 30, 1892. Serial No. 427,010. (No model.)



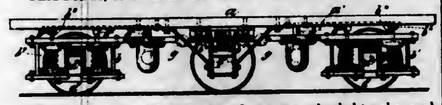
Claim.—1. The combination, with the receptacles for the filaments, of the chamber for receiving the same and means for suspending the receptacles in the chamber out of contact with the walls of said chamber, substantially as set forth.

2. The combination, with the receptacle containing the filaments and infusible heat-conducting powder, of the chamber for receiving the same and means for suspending the receptacle in the chamber out of contact with the walls, substantially as set forth.

3. The combination, with the receptacles for the filaments, of the chamber for receiving the same and the hooks and eyes for suspending the receptacles within the chamber, substantially as set forth.

4. In carbonizing apparatus, the combination of the outer chamber, the inner chamber separated from the outer one by an air-space, and the receptacles for the filaments suspended within said inner chamber out of contact with the walls thereof, substantially as set forth.

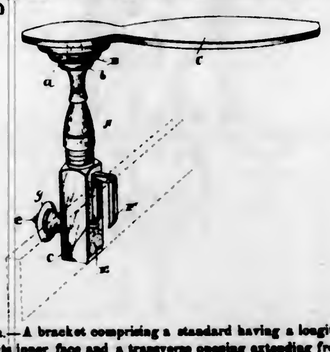
484,186. RUNNING-GEAR FOR VEHICLES. ROBERT L. BLAIKIE, Taunton, Mass., assignor of one-half to Francis E. Fuller, same place. Filed Dec. 26, 1891. Serial No. 416,153. (No model.)



Claim.—1. In a vehicle, front and rear two-wheeled trucks, each pivoted to the vehicle body by its king-bolt at one side of a line joining its wheels, connecting mechanism, substantially such as described, and springs for lining up the trucks, all combined and operating substantially as and for the purposes specified.

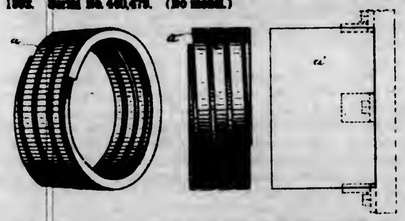
2. In a vehicle, front and rear two-wheeled trucks, each pivoted to the vehicle-body by its king-bolt at one side of a line joining its wheels, a middle truck fast to the vehicle-body, and connecting mechanism, substantially such as described, between the front and rear trucks and independent of the middle truck, all combined and operating substantially as and for the purposes specified.

484,187. TABLE ATTACHMENT FOR BEDSTEADS. CHARLES G. BLATCH, Elmira, N. Y. Filed Apr. 7, 1892. Serial No. 428,191. (No model.)



Claim.—A bracket comprising a standard having a longitudinal recess in its inner face and a transverse opening extending from the rear wall of the recess to the opposite side of the standard from the said recess, a depending clamping-jaw having a horizontal arm which extends into the said recess, a depending vertical arm made integral with the inner end of the horizontal arm, the said vertical arm being the same width as the said recess, a screw-threaded rod connected at its inner end to the lower end of the said vertical arm and which extends outward through the rod-opening, and a clamping-button for the outer end of the rod, substantially as shown and described.

484,188. PISTON-PACKING. FRANK H. RICHARDS, Boston, Mass., assignor of one-third to George A. Peterson, same place. Filed July 19, 1892. Serial No. 440,679. (No model.)

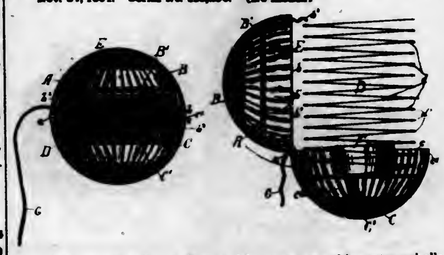


Claim.—1. A helical packing-strip of resilient material, having a series of normally-open convolutions and presenting a true cylindrical periphery when said convolutions are closed and contracted, the end convolutions being tapered and the sides of all the convolutions, excepting the outer sides of the end convolutions, being beveled, substantially as and for the purpose specified.

2. A helical packing-strip of resilient material, having a series of normally-open convolutions and presenting a true cylindrical periphery when said convolutions are closed and contracted, the end convolutions being reduced in width and provided with outwardly-projecting flanges, combined with expansible packing-rings mounted on said flanges, as set forth.

3. A helical packing-strip of resilient material, having a series of normally-open convolutions and presenting a true cylindrical periphery when said convolutions are closed and contracted, the end convolutions being reduced in width and provided with outwardly-projecting flanges, combined with expansible packing-rings mounted on said flanges and a piston having heads or flanges between which said helical strips and rings are confined, as set forth.

484,189. TOY BALL. WILLIAM J. FAHLBERG, Chicago, Ill. Filed Nov. 27, 1891. Serial No. 413,256. (No model.)



Claim.—1. A hollow ball comprising two separable parts or shells, said ball being provided interiorly with a diaphragm, to which is secured a folded strip, substantially as described.

2. A hollow ball comprising two separable parts or shells, one of which is provided with a diaphragm arranged parallel with the edges of said shell, and a folded strip secured to said diaphragm, substantially as described.

3. A hollow ball comprising two separable parts or shells, said ball being provided interiorly with two diaphragms arranged parallel with each other and with the meeting edges of the shells, and a mirror secured upon one of said diaphragms, substantially as described.

4. A hollow ball comprising two separable parts or shells hinged together, one of which is provided with a diaphragm secured in the same parallel with and inside of the edge thereof to form a recess, said diaphragm being provided with integral marginal tongues which project beyond the edge of the shell within which said diaphragm is secured to afford guides for the edge of the other shell, substantially as described.

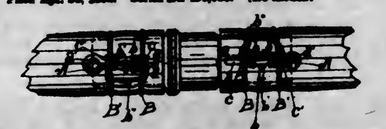
5. A hollow ball comprising two separable parts or shells having interiorly-arranged diaphragms, to one of which is secured a folded strip, one of said shells being provided near its edge with an elastic cord, substantially as described.

6. A hollow ball comprising two separable parts or shells united by a hinge and provided with a catch to hold them closed, one or both of said parts or shells being provided with an interior diaphragm, on which may be placed or secured a mirror, picture, or the like, substantially as described.

7. A hollow ball comprising two separable parts or shells united by a hinge and provided with a catch to hold them closed, one or both of said parts or shells being provided with an interior diaphragm, on which may be placed or secured a mirror, picture, or the like, and an elastic cord attached to the ball, substantially as described.

8. A hollow ball comprising two separable parts or shells hinged together, one of which is provided with a diaphragm secured in the same parallel with the edge thereof and provided with tongues or projections extending beyond its edge to engage the edge of the other part or shell, and a folded strip secured to said diaphragm, substantially as described.

484,190. HOSE-BAND. GEORGE FERGUSON, Los Angeles, Cal. Filed Apr. 28, 1892. Serial No. 430,995. (No model.)



Claim.—1. In a hose-band, the combination of a key-post arranged at one end to receive a wrench or other means adapted to apply power to rotate the post, and two parallel wire bands or hoops

connected to each other at one end and provided at each end with a suitable journal arranged to encircle each post and having their other ends attached to each posts and adapted to be wound thereupon when the post is rotated in such journal.

2. In a hose-band, the combination of the key-post formed of a cotter made of a single length of half-round wire reversely bent to bring the two members together with their flat faces inside and to form the loop or ring at the end of the post, and the hose-embracing loops attached to each other at one end and twisted at such end to form the journal-eyes arranged to encircle the post and having their free ends inserted between the members of the cotter, substantially as and for the purpose set forth.

484,191. STREET-CLEANING MACHINE. ROBERT W. FURNAS, Indianapolis, Ind. Filed Dec. 31, 1891. Serial No. 416,305. (No model.)

Claim.—1. In a street-cleaning machine, a collecting mechanism, a furnace, and a conveyor leading from the collecting mechanism to the combustion-chamber of such furnace, where the dirt and refuse collected are consumed, the whole mounted upon a movable frame-work, substantially as shown and described.

2. In a street-cleaning machine, a framework mounted upon trucks or wheels, a gathering-hood adjustably suspended beneath suction-fans, and a furnace carried on the framework, pipes connecting the gathering-hood with the suction-fans, and connections between the suction-fans and the furnace, whereby the refuse collected by the gathering-hood is drawn therefrom by the fans and discharged into the furnace, where it is consumed, substantially as shown and described.

3. In a street-cleaning machine, a framework mounted upon trucks, a gathering-hood adjustably suspended beneath suction-fans, and a separator carried on the framework, and suitable connections from such fans with the hood and the separator, a furnace, also carried upon the framework, pipes connected therewith and from the fans, and means for operating such fans, whereby the dirt and refuse are drawn up through the hood by such fans and thence through the separator and discharged into the combustion-chamber of the furnace, the heavier particles above the grate and the lighter below it, whereby they are consumed, substantially as shown and described.

4. In a street-cleaning machine, a framework mounted upon trucks, a gathering-hood adjustably suspended beneath suction-fans carried on the framework and connected by a suitable shaft, a reservoir or separator, also carried on the framework, and a pipe connected to one of such fans discharging into such separator, a furnace carried upon the framework, a pipe connected near the bottom of such separator for carrying the heavier material into such furnace above its grate, and a second pipe connected near the top of the separator and discharging the finer material into the furnace below the grate, in combination with suitable motive power for driving the fans, substantially as shown and described.

5. In a street-cleaning machine, a portable framework, a gathering-hood adjustably suspended below such framework and above the pavement to be cleaned, its front end flexible to avoid breakage, its rear sides provided with air-chambers, gathering-fans located above the hood and connected to the top thereof by an elastic suction-pipe, branch discharge-pipes leading from such fans to the air-chambers in the sides of such hood, a second suction-fan carried upon the framework and having a draft-pipe connected centrally to the rear of such hood for taking up the dirt collected by the action of the first fan, a delivery-pipe connected to the second fan and discharging into a separating-reservoir, and a furnace contiguous to and connected with the separating-reservoir by discharge-pipes, in combination with mechanism for driving the several fans, substantially as shown and described.

484,192. STREET-CLEANING MACHINE. ROBERT W. FURNAS, Indianapolis, Ind. Filed Dec. 31, 1891. Serial No. 416,306. (No model.)

Claim.—1. In a street-cleaning machine, a portable dust-box detachably connected to the rear thereof, a water-trough at the rear of such dust-box, and a cylindrical screen revolving in bearings in such trough and partly submerged in water while in operation with means for revolving the screen, and such dust-box being provided with an opening behind the screen, permitting the passage of air, substantially as shown and described.

2. In a street-sweeping machine, means for collecting and taking the dirt from the pavement, a fan and connections for delivering the dirt to a dirt-receptacle, an engine for actuating the dirt-collecting means and the fan, a dirt-receptacle connected to the machine, and an exhaust-pipe leading from the engine-cylinder into the dirt-receptacle for spraying the material deposited therein, substantially as shown and described.

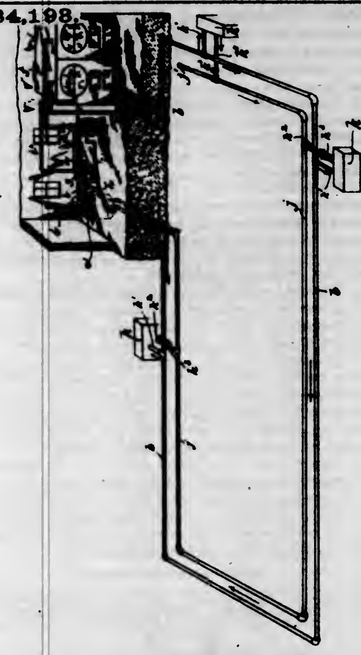
3. In a street-sweeping machine, the combination of means for collecting and taking the dirt from the pavement, a fan and connections for delivering the dirt to a dirt-receptacle, an engine for actuating the dirt-collecting means and the fan, a dirt-receptacle connected to the machine, and an exhaust-pipe leading from the engine-cylinder into the dirt-receptacle for spraying the material deposited therein, an opening provided in the rear end of such dirt-receptacle, and a water-trough supported therein with a cylindrical screen revolving in bearings in such trough before the opening and partly submerged in water while in operation with means for revolving such screen, substantially as shown and described.

484,193. WATER-HEATING SYSTEM. FARRER A. GATES and EUGENE H. GATES, Fitchburg, Mass., assignors to the E. H. Gates Heating Company, same place. Filed Aug. 31, 1891. Serial No. 404,393. (No model.)

Claim.—1. The combination of a heater, a supply-pipe leading from said heater, radiators having outlet-pipes, connections between said radiators and supply-pipe, the said supply-pipe and the said outlet-pipes leading to a tank open to atmospheric pressure, and a pump for forcing water through the system, the size of the outlet from the supply-pipe being such relatively to the capacity of the pump that the pump will maintain a pressure in the supply-pipe, substantially as and for the purpose set forth.

2. The combination of a heater, a supply-pipe leading from said heater, radiators having outlet-pipes, connections between said radiators and supply-pipe, the said supply-pipe and the said outlet-pipes leading to a tank open to atmospheric pressure, and a pump for forcing water through the system, and means for altering the size of the outlet from the supply-pipe, substantially as described.

484,198.



484,194. ADVERTISING-BOARD. PAUL R. GREEN, Georgetown, Colo. Filed Dec. 8, 1891. Serial No. 414,689. (No model.)

Claim.—1. The combination, in a sectional advertising-board, of recessed or grooved type-blocks, a supporting-frame therefor, and locking-rods for holding the type-blocks in place in the frame, which is provided with apertures for the reception of these rods, which engage the recesses in the blocks, substantially as described.

2. In an advertising-board, the combination of a double supporting-frame, two sets of rods therefor suitably connected with the frame, and recessed blocks which said rods engage, substantially as described.

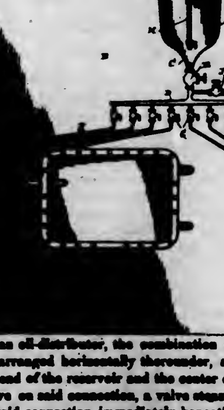
3. In a sectional advertising-board, the combination of a supporting-frame provided on one side with a stationary tongue, type-blocks grooved to engage said tongue, locking-rods for the type-blocks, and apertures formed in the frame to receive said rods, substantially as described.

484,195. LUBRICATOR. JOHN GREEN, Greensborough, N. C. Filed Jan. 20, 1892. Serial No. 418,693. (No model.)

Claim.—1. In a lubricator, the combination of a perforated hanger formed with a rounded lower end, a perforated oiler having a rounded depression in its upper end and which is pivotally connected to the hanger, and a laterally-moving bearing which engages the oiler, vibrating the same, whereby oil is passed therethrough from the said hanger, substantially as shown and described.

2. In a lubricator, the combination of a perforated hanger, a perforated oiler pivoted thereto, a spring secured at its opposite ends to the hanger and oiler, respectively, and a laterally-moving bearing which engages the oiler, vibrating the same, whereby oil is passed therethrough from the said hanger, substantially as shown and described.

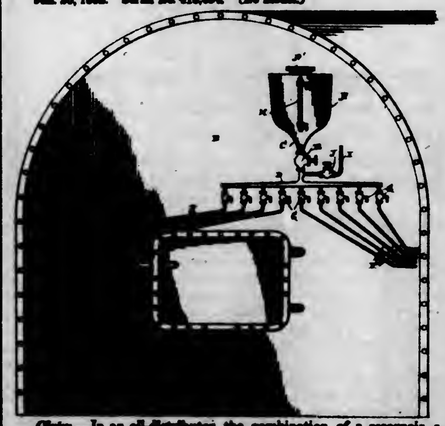
3. In a lubricator, in combination, a perforated hanger having a rounded lower end, a perforated oiler having a rounded depression in its upper end and which is pivotally connected to the said hanger, a spring having a rigid connection at its upper end with the hanger and its depending end connected to the said oiler, an oil-cup mounted on the bearing which is to be lubricated, and a stop on the said cup which is adapted to engage the depending end of the spring, and thus oscillate the oiler, substantially as shown and described.



4. In a lubricator, in combination, a perforated hanger having a rounded lower end, a perforated oiler having a depression in its upper end and which is pivotally connected to the said hanger, the said oiler being formed with a vertical passage having a forked upper end, a spring secured at its opposite ends to the hanger and oiler, respectively, an oil-cup on the bearing to be lubricated, and a bar secured across the said cup which engages the depending end of the spring, whereby the said conveyor is oscillated, substantially as shown and described.

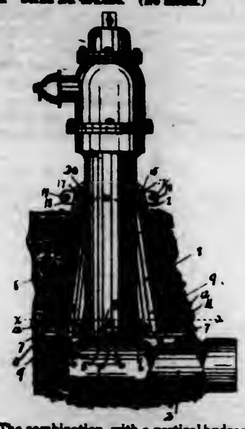
5. In a lubricator, the combination, with a perforated hanger and a perforated oiler, of a pivotal bolt connecting the same, the said bolt being provided with a slot in its extended end, and a spring which is secured between its ends in the said slot and which is secured at its ends to the said hanger and conveyor, respectively, substantially as shown and described.

484,196. LUBRICATOR. JOHN GREEN, Greensborough, N. C. Filed Jan. 20, 1892. Serial No. 418,694. (No model.)



Claim.—In an oil-distributer, the combination of a reservoir, a distributing-pan arranged horizontally thereunder, a connection between the lower end of the reservoir and the center of the upper side of the pan, a valve on said connection, a valve steam-pipe communicating with the said connection immediately beneath the said valve, and valved distributing-pipes extending from the bottom of the said pan, substantially as shown and described.

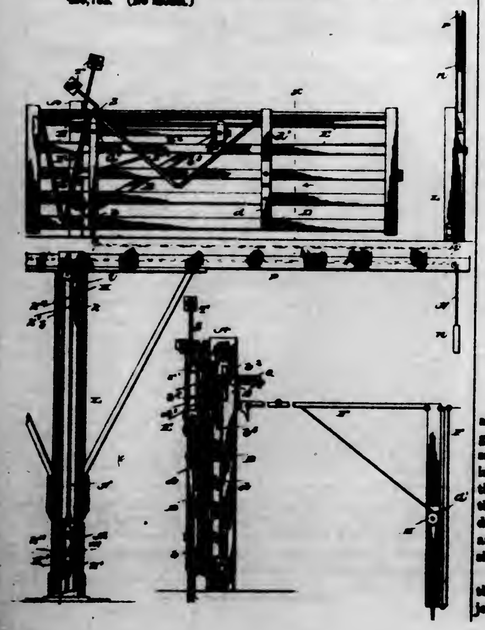
484,197. HYDRANT. JOHN A. GREEN, West Bay City, Mich. Filed Mar. 14, 1892. Serial No. 424,858. (No model.)



Claim.—1. The combination, with a vertical hydrant-column provided on its lower portion with radially-extending lugs, of a jacket of conical form around the lower portion of the column, and with its base resting upon and bolted to said lugs, and with its upper end provided with a cover fitted around the column above the earth-line, and with a conical annular chamber between the column and the jacket and having openings between the lugs to the base of the chamber, for the purpose set forth, substantially as described.

2. In a hydrant, the combination of the branch pipe 2, having an upwardly-turned portion 5, provided with radially-extending flanges 4, and with lugs 7, projecting from the flange, and with the bolts 6, tapped into and projecting above the flange, with the hydrant-column 1, with its lower end resting on said flange 4 and provided with lugs 3, having slots 13, passed over the bolts 6 beneath their head portions, and a jacket 8 around the column and with its lower open end secured to said lugs 7 and having its upper end covered by a removable cap-piece fitted to encircle the body of the column, substantially as set forth.

484,198. GATE. WILLIAM T. HARRIS, Defiance, Ohio, assignor to Benjamin F. Southworth, same place. Filed Apr. 19, 1892. Serial No. 429,782. (No model.)



Claim.—1. The combination, with a sliding gate and means for supporting the same, of two pairs of toggle-levers connected to said gate and supports and cords connected to said two pairs of toggle-levers, one for opening and the other for closing the same, substantially as described.

2. The combination, with a sliding gate and means for supporting the same, of two pairs of toggle-levers connected to said gate and supports, cords for closing said levers, and weights for straightening said levers to lock the gate either in an open or closed position at will, substantially as described.

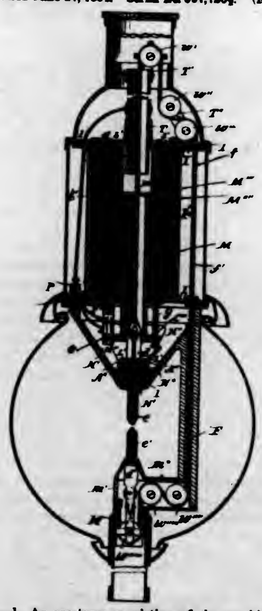
3. The combination, with a sliding gate, a crane on which it is supported, a post carrying operating-cords, of two pairs of toggle-levers connected to the crane and gate, and cords passing over pulleys on the crane, and the carrying-post for operating said toggle-levers, whereby said gate may be slid open by a driver in a vehicle or swung open to its full width, substantially as described.

4. The combination, with a sliding gate, of a crane on which it is supported, two sets of toggle-levers connected to the crane and gate, two cords attached to the levers, and operating mechanism alternately engaging with each of said cords, substantially as described.

5. The combination, with a sliding gate, of a crane supporting the same, having a hollow bar, two pairs of toggle-levers attached to said crane and gate, cords passing through said hollow bar and each having one end connected to a pair of the levers, a shuttle attached to the other end of each cord, and a shuttle-dog constructed to engage alternately with said shuttles, substantially as described.

6. In combination with a sliding gate, supports for the same, two sets of toggle-levers connected to said supports and gate, two cords, each connected at one end to a set of said levers, a spring-shuttle attached to the free end of each of said cords, the weighted shuttle-dog having the double-pointed catch pivoted therein, and the cords N N, attached to said shuttle-dog, substantially as described.

484,199. ELECTRIC-ARC LAMP. JOEL A. HAYES, Carson City, Nev. Filed June 27, 1891. Serial No. 397,730. (No model.)



Claim.—1. An arc lamp consisting of the combination of upper and lower carbon holders or carbons, upper and lower friction and guiding pulleys, a ligature connecting said carbons and passing upon said pulleys, a hollow core carrying a wedge-shaped projection and inclosing and surrounding a portion of the upper carbon and forming the passage-way therefor, springs *h*, lying in the path of said projection and normally touching the same, two coils for the said core of different resistances and a resistance-coil *h'* in circuit with said springs and in shunt with the coil of higher resistance, the coil of higher resistance being in shunt to the carbons of the lamp.

2. An arc lamp consisting of the combination of a solenoid, a core therefor, a carbon balanced in said core, which is hollow, lugs projecting from the lower end of the core, a clutch for the carbon and

suspended from the lugs through the medium of links L, provided with slots, through which pass pins carried on the lugs, a projection O, also on the lower end of the core, springs *h* in the path of the projection and forming the terminals of an electric circuit, a lug projecting from the base of said solenoid and carrying said springs, which are insulated from said lug, a guide-rod extending downward from the said base and passing through a projection on the lower part of said core, the said clutch consisting of semicircular rings having slots in their ends and lugs on their outer sides, the links L being pivoted to said lugs, and links L', connecting the semicircular rings and fitting and pivoted in said slots.

3. An arc lamp consisting of the combination of a solenoid and hollow core therefor, an upper carbon movable in said core, a pulley at the top of the solenoid, having its periphery so to one point lying in the axis of said core, a second pulley, one point in whose periphery lies in a tangent to the first pulley and located below the other in such a manner that said tangent is vertical, a third pulley a little to one side of the second and lower, but all three pulleys being located above the said solenoid, a lower carbon, a pulley below the same, two other pulleys—namely, the fifth and sixth—whose axes are in a horizontal plane and are nearer the lower than the upper carbon, a clamp for the upper carbon, a chain connected to the clamp and passing over the top of the first pulley, under the second, and on top of the third, an insulating-cord connecting the free end to a second chain heavier than the first, passing under the sixth, over the fifth, and under the fourth, and then to a fixed point, and a frame carrying both the lower carbon and the fourth pulley.

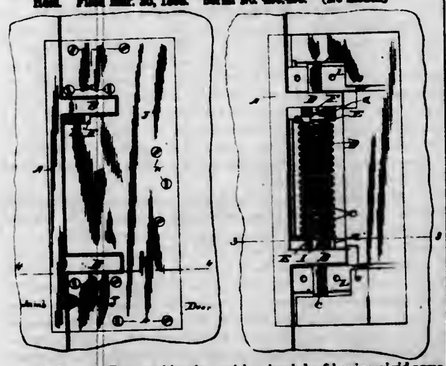
4. In an arc lamp, the combination, with a casing surrounding the solenoid, of a conical casing terminating the same, surrounding the upper carbon, and provided with holes covered by an inner sliding conical shutter, for the purpose described.

5. In an arc lamp, the combination, with a casing surrounding the solenoid, of the conical casing terminating the same, surrounding the upper carbon, and provided with holes covered by an inner sliding conical shutter, for the purpose described, and a tube projecting downward from the said conical casing and supporting the lower carbon holder.

6. In an arc lamp, the combination of a solenoid, a core therefor, a V-shaped projection on the lower end thereof between two electric terminals, a second projection on the said end of the core opposite the first projection and provided with a hole, and a guide-rod extending downward from said solenoid and passing through said hole, and additional projections *c* upon said core, to which are pivoted links, and semicircular friction-clutches suspended upon said links, pressing upon the carbons of the lamp, and linked together by links L'.

7. In an arc lamp, the combination of a solenoid, a core therefor, to which are pivoted links, and semicircular friction-clutches suspended upon said links, pressing upon the carbon of the lamp, and linked together by links L'.

484,200. SPRING-HINGE. ANDREW S. HELM, Prospect, Ill., and LEMUEL PATTERSON, Allegheny, Pa.; said Patterson assignor to said Helm. Filed Mar. 26, 1892. Serial No. 426,490. (No model.)



Claim.—1. The combination, with a jamb-leaf having rigid arms projecting in the plane of the door and bearing a pintle, of a spring mounted upon said pintle, lugs arranged to impart tension to the spring at its opposite ends, respectively, stops to hold the spring at all times under tension, and a separable door-leaf adapted to clasp the pintle and operatively engage said lugs, whereby the door may be removed or replaced by separating the parts of its leaf and without disturbing any other parts.

2. The combination, with a leaf bearing a pintle, of a second leaf having the same pintle and divided along the line of that pintle and means for detachably uniting the parts of the divided leaf, whereby the leaves may be detached by separating the parts of one of them.

3. The combination, with the door-leaf and its attaching-flanges adapted to lie, respectively, in three faces of a door, of the concave jamb-leaf contiguous to the door-leaf and having rigid arms extending through the latter, a pintle mounted in said arms, and a spring coiled about the pintle and arranged to be operatively engaged by the door-leaf when the latter swings from its normal position.

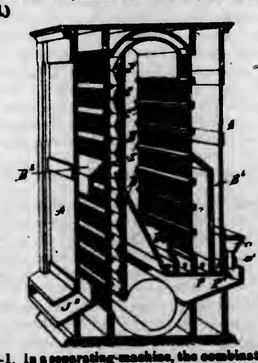
4. The combination, with the door-leaf and its attaching-flanges adapted to lie in and flush with three faces of a door, of a concave jamb-leaf having rigid arms equal in width to the door's thickness and projecting through the door-leaf and a pintle mounted in said arms equidistant from the sides and ends of each and operatively connecting the two leaves, whereby whether the door be fully open in either direction or be closed the sides and ends of the arms form continuations of the faces of the door-leaf and its flanges.

5. The combination, with the jamb-leaf bearing the pintle and the stops for resisting the uncoiling of a spring and the spring coiled about the pintle and provided with the end buttons having each a projecting lug, one being adjustable, of a door leaf swinging upon said pintle against one or the other of said lugs, according to the direction of its motion, said door-leaf being divided along the line of the pintle and provided with devices for securing its parts together.

484,201. SKATE-SHARPENER. CURTIS HOLLAND, Millis, Mass. Filed July 1, 1892. Serial No. 438,642. (No model.)

Claim.—The bar *a*, of suitable length to be engaged by both hands, having in its under side at a point midway between its ends a transverse slot or recess *b* of suitable width to receive the skate-runner and dovetailed at the bottom, combined with a file shaped in cross-section to fit said dovetailed portion of the recess, thereby lying in parallelism with and forming the bottom of said recess, and the set-screw *c*, passing down through the hand-piece and engaging the back of the file, substantially as described.

484,202. COMBINED SCALPER, PURIFIER, AND GRADER. NOAH W. HOLT, Manchester, Mich. Filed Dec. 23, 1891. Serial No. 415,947. (No model.)



Claim.—1. In a separating-machine, the combination of a fan and fan-case, feed mechanism feeding the material to be separated directly into the fan-case, wind-trunks communicating with the fan-case the walls of which are formed wholly or partially of bolting material, a settling-chamber communicating with said wind-trunks, and a return-flue for the purified air, leading to the eye of the fan, substantially as described.

2. The combination of a fan and fan-case, wind-trunks communicating with the fan-case the walls of which are formed wholly or partially with bolting material, each separate wind-trunk having the bolting material of its walls of a different degree of fineness from that of the adjacent wind-trunks, and means whereby the air-currents are compelled to traverse the wind-trunk containing the finest material successively to that of the nearest bolting material, substantially as described.

3. The combination of a fan and fan-case, feed mechanism adapted to feed directly into the fan-case, perpendicular wind-trunks communicating with said fan-case and adapted to receive the material therefrom, the walls of which are composed wholly or partially of bolting

material, a dust-collecting chamber, and return-passages to the eye of the fan, substantially as described.

4. The combination of a case containing feed and discharge openings, a fan and fan-case, wind-trunks the sides of which are constructed wholly or partially of bolting-surfaces the meshes of which open into dust-air-receiving chambers, a dust-collecting chamber into which said wind-trunks open, and a return-flue leading to the eye of the fan, substantially as described.

5. The combination of a fan, fan-case, wind-trunks communicating with said fan-case the walls of which are wholly or partially constructed of bolting-cloth, and a dust-collector located in the return-flue between said wind-trunks and the eye of the fan, substantially as described.

6. In a separating-machine, the combination of a fan, fan-case, wind-trunks the surfaces of which are composed wholly or partially of bolting-surfaces, and a return-passage for the air from the outlet of said wind-trunks to the eye of the fan, all so arranged that the material to be graded is compelled to pass in a direction substantially parallel to the face of the bolting-surfaces by means of air-currents, substantially as described, and a dust-collecting chamber communicating with said wind-trunks, into which the residue from the wind-trunks is conveyed, and a passage therefrom to the eye of the fan, substantially as described.

7. In a separating-machine, a substantially-air-tight casing containing feed and discharge openings, wind-trunks located therein the walls of which are wholly or partially formed of bolting-surfaces of different degrees of fineness, means for compelling the passage of a current of air carrying the material to be separated through said wind-trunks in a general direction substantially parallel to said bolting-surfaces, and means whereby the material to be separated is caused to impinge against said bolting-surfaces, whereby the material is separated into grades of different degrees of fineness, substantially as described.

8. In a separating-machine, the combination of a rotary fan, a fan-case, feed mechanism feeding directly into the fan-case, wind-trunks the walls of which are composed wholly or partially of bolting-surfaces, a dust-collecting chamber, and wind-trunks leading therefrom to the eye of the fan, substantially as described.

9. In a separating-machine, the combination of a rotary fan, a fan-case, wind-trunks the walls of which are composed wholly or partially of bolting-surfaces, a dust-collecting chamber, and wind-trunks leading therefrom to the eye of the fan, substantially as described.

10. The combination of a fan, a fan-case, wind-trunks adapted to receive the material to be bolted, purified, scalped, or graded, the walls of which are wholly or partially constructed of bolting-cloth, riffle-boards, and baffle-strips arranged to deflect the currents of air carrying the material against the bolting-surfaces, substantially as described.

11. The combination of a closed case having an inlet-opening for the material to be operated upon and exit-openings discharging the various grades therefrom, a fan-case inclosed in said case, a fan inclosed in the fan-case, wind-trunks through which the material to be operated upon is driven by the air-blast from the fan, a bolting-surface forming a portion of the walls of said wind-trunks, devices for deflecting the currents carrying the material against the bolting-surface, and a dust-collecting chamber and wind-trunks leading therefrom into the eye of the fan, substantially as described.

12. The combination of a closed case having an inlet-opening for the material to be operated upon and exit-openings discharging the various grades therefrom, a fan-case inclosed in said case, a fan inclosed in the fan-case, wind-trunks through which the material to be operated upon is driven by the air-blast from the fan, bolting-surfaces of different degrees of fineness forming the walls of said wind-trunks, devices for deflecting the currents carrying the material against the bolting-surfaces, deflecting-boards for shifting the current from one wind-trunk to the other and compelling the air-current to traverse the machine in a cycloid manner, a settling-chamber, and wind-trunks leading from said settling-chamber to the eye of the fan, substantially as described, and for the purposes set forth.

13. The combination of a case having an inlet and one or more outlet openings for the material operated upon, a fan-case therein, a fan in said fan-case, a grading-sleeve or bolter adapted to deliver the tailings therefrom into the fan-case, a passage leading from said fan-case into dust-collecting and settling chambers, deflecting-boards placed in said passage to shift the circulating current from the head to the tail of the machine, and a wind-trunk leading from the dust-settling chambers to the eye of the fan, substantially as described.

14. The combination of a case having inlet and one or more outlet openings for the material to be operated upon, a fan-case therein, a fan in said fan-case, a grading-sleeve or bolter adapted to deliver the tailings therefrom into the fan-case, a passage leading from said fan-case into dust collecting and settling chambers and a wind-trunk leading from the dust-settling chambers to the eye of the fan, substantially as described.

15. The combination of a case having inlet and one or more outlet openings for the material operated upon, a fan-case therein, a fan in said fan-case, a grading-sleeve or bolter adapted to deliver the tailings therefrom into the fan-case, the passage leading from said fan-case into dust-collecting and settling chambers, and a partition and adjustable valve whereby the heavier dust is separated out and returned to the grading-sleeve, substantially as shown and described.

16. In a separating-machine in which the air-currents are returned by suitable wind-trunks to the eye of the fan, the combination of partitions forming passage-ways therein the walls of which are formed wholly or partially of bolting-cloths, each passage-way having its cloth of a different degree of fineness from the others, the finest being at the head of the machine and the coarsest at the tail, and deflecting-boards G G, whereby the circulating current carrying the material is shifted from the head to the tail of the machine, substantially as set forth.

17. In a combined scalper, purifier, and grader in which the air-currents are returned by suitable wind-trunks to the eye of the fan the walls of which are constructed of bolting-cloth of different degrees of fineness, the combination, with a passage-way therein, of adjustable deflecting-boards G G, whereby the circulating current carrying the material is shifted from the head to the tail of the machine, substantially as described.

18. The combination of vertical bolting-surfaces forming either wholly or partially the sides of wind-trunks through which the material is carried by air-currents with cloth-cleaning devices, substantially as described.

19. In a separating-machine, the combination of a substantially-air-tight case having inlet and outlet openings for the passage of the material to be operated upon, in combination with perpendicular wind-trunks the sides of which are formed wholly or partially of bolting-cloths, a fan, a fan-case so arranged that the air-currents operate perpendicularly over the bolting-cloths of said wind-trunks, and conveyors conveying the separated material out of said case, substantially as described.

20. In a separating-machine, the combination of a substantially-air-tight case having inlet and outlet openings, a fan and fan-case situated therein, substantially-vertical wind-trunks the sides of which are wholly or partially composed of bolting-cloths, and a curvilinear passage connecting the upper portions of such opposite wind-trunks, whereby the material is prevented from settling in said passage-ways, substantially as described.

21. In a combined separating-machine and dust-collector consisting of a substantially-air-tight case containing a fan-case, a fan, and substantially-vertical wind-trunks the sides of which are composed wholly or partially of bolting-cloth, a settling-chamber connecting with the outlet end from said wind-trunks and receiving the dust and air-current therefrom, the combination and arrangement of wind-trunks extending from the eyes of the fan and connected by adjustable openings to the settling-chamber and also to the air-spaces forming the receptacles behind the bolting-surfaces, whereby the strength of the currents from these receptacles and from the wind-trunks can be reciprocally adjusted, substantially as described.

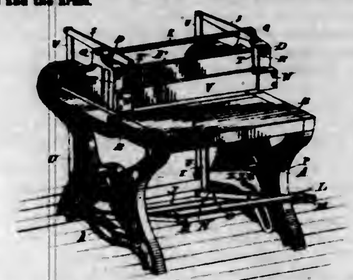
22. In a combined separating-machine and dust-collector consisting of a substantially-air-tight case containing a fan-case, a fan, and substantially-vertical wind-trunks the sides of which are composed wholly or partially of bolting-cloth, a settling-chamber connecting with the outlet end from said wind-trunks and receiving the dust and air-current therefrom, the combination and arrangement of wind-trunks extending from the eyes of the fan and connected by adjustable openings to the settling-chamber and also to the air-spaces forming the receptacles behind the bolting-surfaces, and short partitions within said air-spaces, whereby a current of air may be caused to rise through the lower portion of the falling bolted material, substantially as described, and for the purposes set forth.

23. A combined separating-machine and dust-collector consisting of the closed case having inlet and outlet openings for the material operated upon, a fan, a fan-case into which the material is fed and consisting of wind-trunks the sides of which are constructed wholly or partially of bolting-surfaces and connected with the outlet from said fan-case, whereby the material to be bolted is forced over the bolting-surfaces by air-currents, exterior substantially-dead-air chambers to receive the bolted material, an interior settling and dust-collecting chamber connected with the bolting wind-trunks, wind-trunks connecting said settling-chamber with the eyes of the fan, and suitable conveyors whereby the material thus bolted, graded, or separated is conveyed from the machine, substantially as described.

484,203. MEAL-SIFTER. ELMER T. HOWSON, Cambridge City, Ind., assignor of one half to John A. Spence, same place. Filed Feb. 15, 1892. Serial No. 421,902. (No model.)

Claim.—1. In a machine for cutting meal, the combination of a pressure-bar, vibratory arms connected with said pressure-bar, an angle-lever connected with said vibratory arms by connecting-rods and provided with an angle-slot, and an operating-arm provided with a stud engaging the said slot.

2. In a machine for cutting meal, the combination of a reciprocating jaw, a treadle, intermediate connections between the jaw and the treadle, a foot-rest having rearwardly-extending arms hinged at their ends to the rear end of the treadle, studs rising from the treadle and passing through the said arms, and springs arranged between the treadle and the arms.

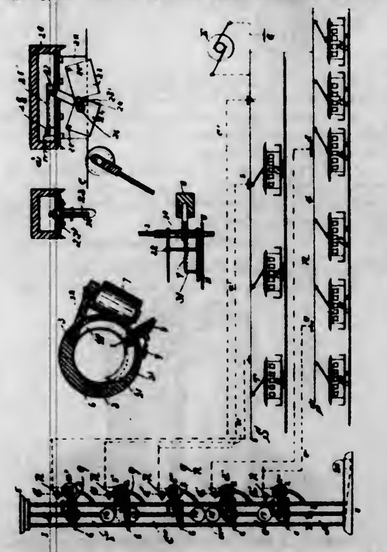


3. In a machine for cutting meal, the combination of a treadle, angle-levers provided with angle-slots, an arm hinged on the treadle and adapted to operate the same and provided with studs engaging the angle-slots, the angle-levers, springs holding the said arm normally raised, a pressure-bar, a knife-carrying jaw, connections between the said jaw and the treadle, and connections between the pressure-bar and the angle-levers.

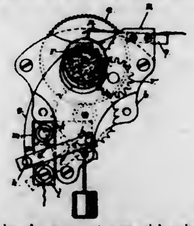
484,204. NUT-LOCK. JOHN H. HIMES and GEORGE M. RHYN, Johnstown, Pa. Filed Apr. 18, 1892. Serial No. 429,033. (No model.)

Claim.—A nut-lock comprising a nut having an internal key-seat extending lengthwise thereof, such nut having an external notch or depression, a key constructed to fit such key-seat, such key having teeth for cutting a key-seat in the opposing screw-threads of the bolt lengthwise the latter, such key having also an elastic locking-finger for engaging the external notch or depression of the nut, substantially as and for the purpose set forth.

484,205. APPARATUS FOR INDICATING THE POSITIONS OF RAILWAY-CARS. JOSEPH H. HUNTER, Pittsburg, and JOHN S. LOCOCK, Allegheny, Pa. Filed June 24, 1891. Serial No. 397,370. (No model.)



484,206. DEVICE FOR PREVENTING ACCIDENTAL CLOSING OF ELECTRIC CIRCUITS IN SIGNAL-BOXES. WILLIAM H. JAMES, Boston, Mass., assignor to the E. Howard Watch and Clock Company, same place. Filed Feb. 16, 1892. Serial No. 421,631. (No model.)



Claim.—1. In a car-indicator, the chute, the annular perforated partitions dividing the chute into sections, in combination with the visual balls, each of which represent the position of a car on its track, the electro-magnets, and the circuit-closers for controlling the movement of the balls, substantially as and for the purpose set forth.

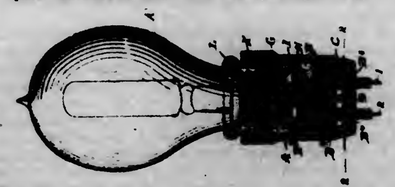
2. In an apparatus for indicating and tracing the movements of cars upon a railroad-track, the track divided into sections, as shown, the electric closing devices at the end of each of said sections connected with the sections of a chute, in combination with said chute, the annular perforated partitions dividing the chute into sections equal in number to the track-sections, the electro-magnet with which each chute-section is provided, each magnet having an armature provided with two curved arms concentric with the perforations of the said annular partitions, the visual devices capable of passing through said annular partitions, and means, such as shown and described, for electrically controlling the movements of said visual devices from cars upon the track.

3. In an apparatus for indicating and tracing the movements of cars upon a railroad-track, the combination, with a road divided into sections, the electric-circuit closing devices such as shown and described located at the end of each of said sections, of a chute divided into the same number of indicator-sections as the road, the ring 6, which divides said indicator-sections, the visual balls located in the chute, and the electrical connections from the cars on the road to the indicators, substantially as set forth.

4. In an indicator, the combination of a chute divided into sections by annular perforated partitions, an electro-magnet for each of said sections, said electro-magnets each having an armature upon which are mounted two curved arms concentric with the holes in said annular partitions, substantially as described.

5. In an indicator, the combination of a chute divided into sections by annular perforated partitions, electro-magnets for each of said sections, each having an armature provided with two curved arms concentric with the holes of said annular partitions, and visual devices capable of passing through said annular partitions, substantially as described.

484,207. INCANDESCENT-ELECTRIC-LAMP SOCKET. CHARLES J. KLEIN, New York, N. Y., assignor to the Bergmann & Company, same place. Filed Dec. 26, 1890. Serial No. 335,252. (No model.)



Claim.—1. A signal-movement comprising in its construction a plate or contact-piece, with which the wire of one pole of an electric circuit is connected, insulated from other parts of the movement, a movable part in electrical connection with the movement and adapted to be supported in contact with and fall away from the contact plate or piece, and the actuating-spring adapted to be connected with the said arm and support the same in contact with the plate or contact-piece.

2. A signal-movement comprising in its construction a stud *k*, provided with a pin *o*, connected with one pole of an electric circuit and insulated from the other pole, a movable part *i*, connected with the other pole of an electric circuit, and an actuated spring adapted to be connected with said arm and support the same in contact with the pin *o*, as set forth.

Claim.—1. The combination, with an incandescent lamp and socket divided into two parts by a perforated partition, of conductors 1 2, a packing located between the neck of the lamp and its socket, a packing around the conductors below the partition, and a waterproofing material between the said conductors and the bottom or partition of the socket, substantially as set forth.

2. The combination, with an incandescent lamp and socket, of conductors 1 2, a packing located between the neck of the lamp and the socket, a waterproofing material between said conductors and the bottom of the socket, and a clamping device, substantially as set forth.

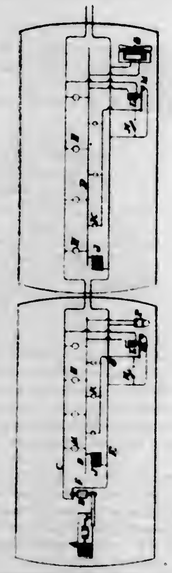
3. The combination, with an incandescent lamp and socket and conductors 1 2, of a waterproofing material between said conductors and the bottom of the socket and a clamping device, substantially as set forth.

4. The combination, with an incandescent lamp and socket, of conductors 1 2, of a waterproofing material between said conductors and the bottom of the socket, a clamping device, and a waterproofing material surrounding said clamping device, substantially as set forth.

5. The combination of an electric lamp having a tapering neck and a socket whose upper end terminates in a narrow flange, of an elastic ring on the neck, the thickness of which is greater than the distance between the neck and socket, substantially circular in cross-section and of less diameter than the neck of the lamp, substantially as set forth.

6. The combination, with an electric lamp, of a socket therefor provided with an upwardly-extending circular flange and an elastic ring, the thickness of which is greater than the distance between the flange and lamp, located on the neck of the lamp in contact with said flange, whereby the ring rests on the flange and a water-tight joint is formed, substantially as set forth.

484,208. SYSTEM OF ELECTRICAL DISTRIBUTION. HARRY W. LEONARD, New York, N. Y. Filed June 3, 1892. Serial No. 435,357. (No model.)



Claim.—1. In a system of electrical distribution, the combination of the main generator, the main lamps in multiple arc therewith, the low-volt storage-battery in series with the main lamps, and the low-volt lamps in multiple arc with said storage-battery, substantially as set forth.

2. In a system of electrical distribution, the combination of the main generator, the two main conductors extending therefrom, the third conductor, the main lamps connected between one of said main conductors and said third conductor, the low-volt storage-battery connected between the third conductor and the other main conductor, so as to be in series with said main lamps, and the low-volt lamps in multiple arc with said storage-battery, substantially as set forth.

3. The combination of the main generator, the main lamps, the low-volt storage-battery in series with the main lamps, the low-volt lamps in multiple arc with said storage-battery, and an electro-magnetic switch in the circuit of said low-volt lamps, controlled by the current of the main generator, substantially as set forth.

4. The combination of the main generator, the two main conductors therefrom, the third conductor, the main lamps connected between one of said main conductors and said third conductor, the low-volt storage battery connected between the third conductor and the other main conductor, so as to be in series with said main lamps, the low-volt lamps connected between said third conductor and a branch conductor which is in connection with the other main conductor, and an electro-magnetic switch in said branch conductor controlled by the current of the main generator, substantially as set forth.

5. The combination of the main generator, two or more sets of lamps, the sets and the lamps of each set being in multiple arc to each other, two or more storage batteries in multiple series with said lamps across the terminals of the generator, and two or more other sets of lamps in multiple arc with the storage-batteries, substantially as set forth.

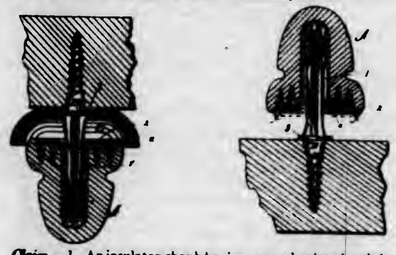
6. In a system of electrical distribution, the combination of the main generator, translating devices in multiple arc therewith, the low-volt auxiliary generator in series with the main lamps, and the low-volt translating devices in multiple arc with said auxiliary generator, substantially as set forth.

7. The combination of a generator of electricity, two main conductors leading therefrom, and two or more sets of incandescent electric lamps, each set being connected between the main conductors through a storage-battery and each storage-battery having incandescent electric lamps in multiple arc with it, substantially as set forth.

8. In a train-lighting system, the combination of two or more cars, a storage-battery on each car, incandescent electric lamps in multiple arc with each battery, and other incandescent electric lamps in multiple arc with each other and in series with the storage-battery and its lamps, substantially as set forth.

9. In a train-lighting system, the combination of a generator of electricity, two main conductors extending through the train, and upon each car a third conductor having incandescent electric lamps in multiple arc between it and one of said main conductors and having a storage-battery and incandescent lamps in multiple arc between it and the other main conductor, substantially as set forth.

484,209. INSULATOR. FRED M. LOCKE, Victor, N. Y. Filed July 13, 1891. Serial No. 399,284. (No model.)



Claim.—1. An insulator-shank having one end pointed and threaded and the other end solid and channeled longitudinally.

2. An insulator-shank having one end threaded and the other end solid and channeled longitudinally and corrugated transversely and provided with a central flange.

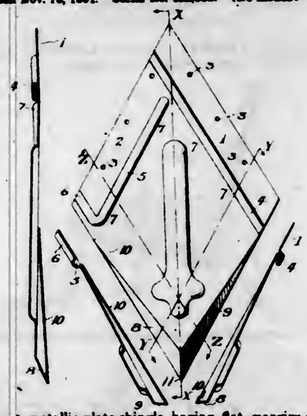
3. The combination, with an inverted insulator-cap and its supporting shank provided with a flange, of a concavo-convex cover inclosing part of the cap and secured by the flange engaging under it and the shank passing through it.

484,210. TAPER FOR NIGHT-LIGHTS. BLARD LUDDE, Maspeth, N. Y. Filed Dec. 29, 1891. Serial No. 416,495. (No model.)

Claim.—1. A taper for night-lights, composed of a disk having a central opening and radial slots, and a wick inserted into said opening and formed into a head at the under side of the disk, substantially as set forth.

2. A taper for night-lights, composed of a disk having a central opening and radial slots extending from said opening and a wick the lower end of which is made to form a head, portions of which are pressed into the inner ends of the radial slots, but leaving the outer ends of the same open, substantially as set forth.

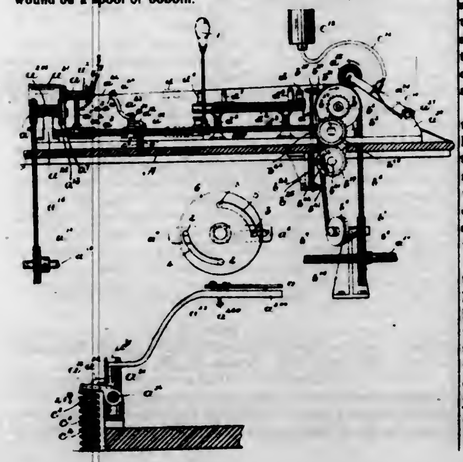
484,211. METALLIC SHINGLE. DAVID D. LOWRY, Philadelphia, Pa. Filed Nov. 18, 1891. Serial No. 412,252. (No model.)



Claim.—A metallic plate-shingle having flat margins extending from the upper corner upon the upper edges for nailing, a downwardly-open hooked groove parallel with and near one upper edge, adapted to engage an upwardly-bent flange on the lower edge of a similar plate-shingle, a stiffening-rib commencing below said hooked groove and extending parallel with the other upper edge near to the length of said second edge and then returned in parallel direction with the hooked groove across said edge, a gradually-raised plate extending below the hooked groove and stiffening-rib, terminating in downwardly-bent flanges parallel with the hooked groove and longer sides of the stiffening-rib and adapted to cover the stiffening-rib of a similar shingle with one lower flange and provided with an upwardly-bent edge upon the other lower flange, adapted to engage in the downwardly-open hooked groove of a similar shingle, substantially as set forth.

484,212. APPARATUS FOR FORMING A KNOTLESS THREAD. ROBERT H. MACKINNON, Boston, Mass. Filed Feb. 26, 1892. Serial No. 423,051. (No model.)

Brief.—A knot-catcher stops the machine, whereupon the thread is clamped at two points, untwisted between those points, the knot removed, the strands reunited, and the thread again twisted and then wound on a spool or bobbin.



Claim.—1. In an apparatus for forming a knotless thread from a knotted thread composed of a plurality of strands, the combination of the following instrumentalities, viz: a thread untwisting and twisting portion, consisting of a thread-guide, a clamp or thread-holding device, and means to actuate the said thread-guide to untwist the thread, a winding mechanism consisting of a cylinder or drum, mechanism to operate it and a reciprocating thread-guide, and an intermediate strand-uniting portion consisting of stationary strand-holders and a movable strand-holder clamp, substantially as described.

2. In an apparatus for forming a knotless thread from a knotted thread composed of a plurality of strands, the combination of the following instrumentalities, viz: a winding mechanism consisting of a cylinder or drum, a bobbin-holder co-operating therewith, a driving mechanism for said winding mechanism, a reciprocating thread-guide movable in the direction of the length of the said cylinder or drum, a clutch to couple the winding mechanism to the driving mechanism, and a knot-catcher provided with jaws, between which the thread is passed and one of which is adjustable toward the other to correspond to the size of thread being operated upon, the said knot-catcher controlling the operation of the clutch in one direction and operated by a knot in the thread to actuate the clutch and disengage the winding mechanism from its driving mechanism, substantially as described.

3. In an apparatus for forming a knotless thread from a knotted thread composed of a plurality of strands, the combination of the following instrumentalities, viz: a thread-guide and a clamp or thread-holding device, a winding mechanism, a driving mechanism for said winding mechanism, a reciprocating thread-guide co-operating with the winding mechanism, a clutch to couple the winding mechanism to the driving mechanism, a knot-catcher intermediate of the clamp and the winding mechanism controlling the operation of the clutch in one direction and operated by a knot in the thread to actuate the clutch, as described, and a strand-uniting portion consisting of stationary strand-holders and a movable strand-holding clamp, substantially as described.

4. In an apparatus for forming a knotless thread from a knotted thread composed of a plurality of strands, the combination of the following instrumentalities, viz: a thread untwisting and twisting portion consisting of a hollow thread-guide a, a hub a^2, to which it is connected, a rock-shaft a^3, on which the hub a^2 is mounted to rock therewith and to move longitudinally thereon, means to revolve the thread-guide a in opposite directions, a thread-clamping device carried by the said thread-guide, a winding portion consisting of a winding drum or cylinder b, a bobbin-holder co-operating therewith, mechanism to rotate said drum or cylinder, a clutch to connect the winding drum or cylinder with the driving mechanism, a reciprocating thread-guide, and means to reciprocate the same, and a knot-catcher normally controlling the operation of the said clutch and adapted to be operated by a knot in the thread to permit the clutch to be operated to disengage the winding drum or cylinder from its driving mechanism, substantially as described.

5. The herein-described strand-uniting mechanism, consisting of a table or support d^3, stationary strand-holders d^5 d^6, mounted thereon, and a movable strand-holder d^7, substantially as described.

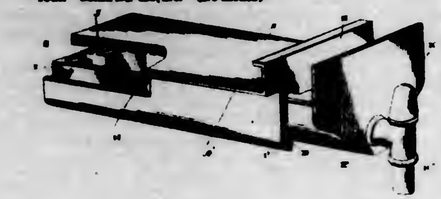
6. The combination, with the cylinder b, mounted on a table A, and mechanism to operate it, of a sleeve or hub b^{36}, loosely mounted on the rod b^{30}, an arm b^{41}, secured to or forming part of the sleeve b^{36} and extended over the cylinder b and provided at its end with an eye, a vibrating arm b^{34}, pivoted below the said table and extended up through the same, a link b^{37}, joining the said vibrating arm with the sleeve, a cam to vibrate said arm, a bobbin-holder co-operating with the cylinder b, and means to press the bobbin-holder toward the said cylinder and keep the thread in engagement with the cylinder b, substantially as described.

7. In an apparatus for forming a knotless thread from a knotted thread composed of a plurality of strands, the combination of the following instrumentalities, viz: a thread untwisting and twisting portion consisting of a thread-guide, a clamp or thread-holding device, and means to actuate the said thread-guide to untwist the thread, a winding mechanism consisting of a cylinder or drum, mechanism to operate it, and a reciprocating thread-guide, and an intermediate strand-uniting portion consisting of one or more holders for the individual strands, substantially as described.

8. In an apparatus for forming a knotless thread from a knotted thread composed of a plurality of strands, the combination of the following instrumentalities, viz: a thread-guide and a clamp or thread-holding device, a winding mechanism, a driving mechanism for said winding mechanism, a reciprocating thread-guide co-operating with the winding mechanism, a clutch to couple the winding mechanism to the driving mechanism, a pivoted knot-catcher intermediate of the clamp and the winding mechanism and having one arm provided with jaws through which the thread is passed and its other arm co-operating with and controlling the operation of the clutch in one direction and operated by a knot in the thread to actuate the clutch, as described,

and a strand-uniting portion consisting of one or more strand-holders, substantially as described.

484,213. VISE. WILLIAM HAHN, Cleveland, Ohio. Filed June 3, 1892. Serial No. 435,692. (No model.)

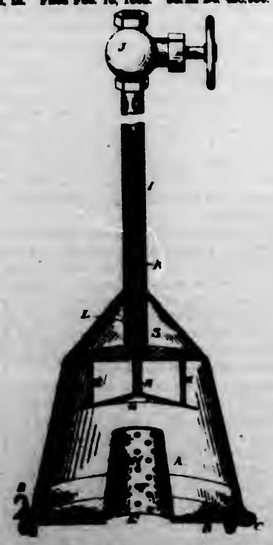


Claim.—1. The combination of a frame having depending sides, flanges on the adjacent walls of the sides, a longitudinally-movable frame within the first-named frame, trunnions projecting from the said movable frame, which rest on said flanges, a screw-shaft in said movable frame, a screw-threaded head adapted to move on said shaft, and an adjustable connection between the said head and the first-named frame, substantially as shown and described.

2. In a vise, the combination, with a top, a rack on the under side thereof, sides depending from the top, and shoulders on the adjacent walls of the said sides, of a frame adapted to move longitudinally between the said sides, trunnions projecting from opposite sides of the said frame, which rest on the said shoulders, a screw-shaft journaled in the frame, a head adapted to move longitudinally on the screw-shaft, which engages the rack of the said top, and a clamping-jaw on the outer end of the said frame, substantially as shown and described.

3. The combination, with a frame having depending sides, shoulders on the said sides, and a rack formed in the top of the frame, of a frame F, trunnions projecting from the sides thereof rearward from its center, which rest on the said shoulders, a screw-shaft within the frame F, a movable head on said shaft, and a rib on the upper end of the head, substantially as shown and described.

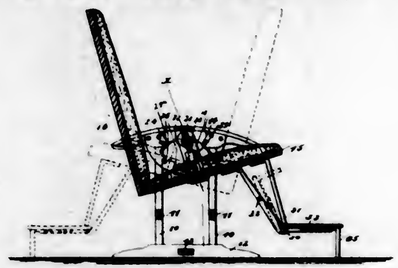
484,214. WELL OR CISTERN CLEANER. JAMES W. MASTIN, Charleston, Ill. Filed Feb. 10, 1892. Serial No. 420,930. (No model.)

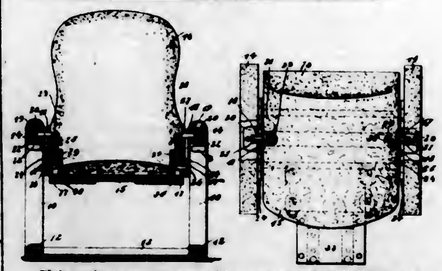


Claim.—1. In a well or cistern cleaner, the combination of a collector having an inlet-opening provided with an interiorly-projecting perforated cone, a vertically-moving diaphragm adapted to cover said opening, having projections or stops for limiting its motion and a rod which enters the pipe connection, a pipe connection for the collector serving, also, as a rod-guide, and an air-chamber in the upper portion of the collector and exterior to the pipe and having connections with the pipe and collector.

2. In a well or cistern cleaner, the combination of a collector having an inlet-opening and a pipe connection and a supplementary air-chamber in the upper portion of the collector, a perforated wall between the collector and air-chamber, and perforations in the pipe connection between the said pipe and air-chamber.

484,215. CAR-SEAT. CONRAD H. MATTHIESSEN, Odell, Ill. Filed Mar. 7, 1892. Serial No. 424,046. (No model.)





Claim.—1. A car-seat comprising supports provided with sockets open at their upper ends, movable plates or closures for closing the open ends of the sockets, a seat having pivots projecting from its ends and entering said sockets, the chair being reversible by lifting it until its pivots are out of the sockets and then turning it around and again entering its pivots in the sockets and locking them therein by said plates or closures, and means for adjusting the seat at any desired angle, substantially as described.

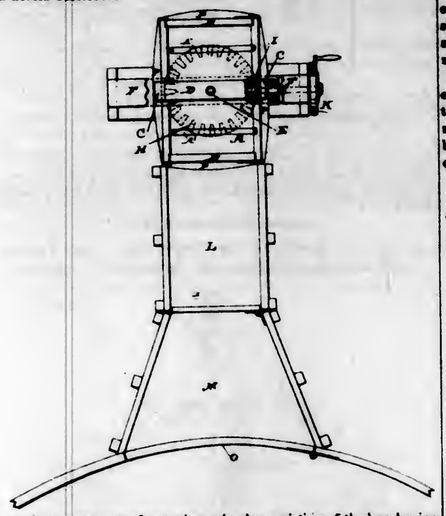
2. A car-seat comprising supports having sockets 19, open at their upper ends, plates 20, movable over said open ends and provided with operating-shafts 22, having handles or heads 23 on their lower ends, the seat having pivots 18 at its ends entering said sockets, and an adjusting mechanism, substantially as described.

3. In a car-seat, the angle-iron 17, having a pivot-lug 18 at the outer side of the upper end of its vertical member, a slot 17^a in said member, a casing on the inner side of said member over the slot, a bolt 27, sliding in said casing and having its lower end projected laterally outward through the slot 17^a, a spring on the bolt within the casing, and a handle on the upper end of the bolt, substantially as described.

4. A car-seat comprising the vertical supports provided with upward-opening sockets having plates or closures movable across their open ends, a downwardly-curved segment 24, secured to the inner face of each support concentric with the sockets and having their concave edges provided with notches 25, and the bodily removable and reversible seat provided with angle-plates 17 at its ends, the vertical slotted members 17^a of which have outward-projecting pivots 18 seated in said sockets, and vertically-sliding spring-pressed bolts on said members 17^a, having their lower ends projected outwardly through the slots into engagement with the notches, substantially as described.

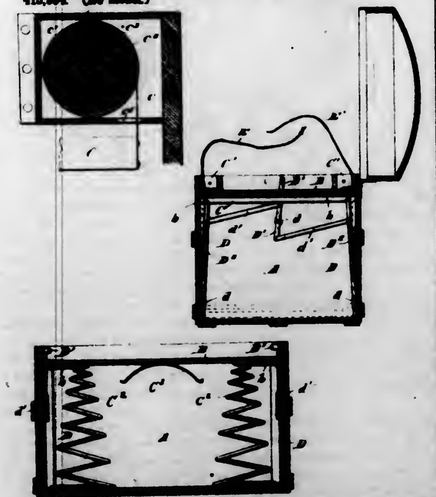
484,216. HORSE-TAMING APPARATUS. RALPH MAMA, Niles, Cal. Filed Jan. 15, 1892. Serial No. 418,168. (No model.)

Claim.—1. An apparatus for taming animals, consisting of a box rotatable about a vertical axis, doors at opposite ends of the box for the admission and egress of the animal, a passage-way extending from the box to the inclosure, and a gate in said passage-way cutting off the same from the inclosure, whereby the animal is confined within the passage-way, from which he is driven into the box, substantially as herein described.



2. An apparatus for taming animals, consisting of the box having doors at opposite ends, a supporting and strengthening framework upon the sides and a cross-bar over the top and center of the box, with the vertical shaft or spindle and journal-box within which it turns, a spindle in line therewith projecting from the bottom and a step within which it turns, beveled gear-wheels secured to the bottom of the box, and a horizontal shaft having a pinion at one end, engaging the teeth of the gear-wheel upon a box, and a crank-shaft at the opposite end, by which it is rotated and the box turned in either direction, substantially as herein described.

484,217. TRUNK. MAX J. MICHELSON, Chicago, Ill., assignor of one-half to Joseph Harris, same place. Filed Dec. 22, 1891. Serial No. 415,864. (No model.)



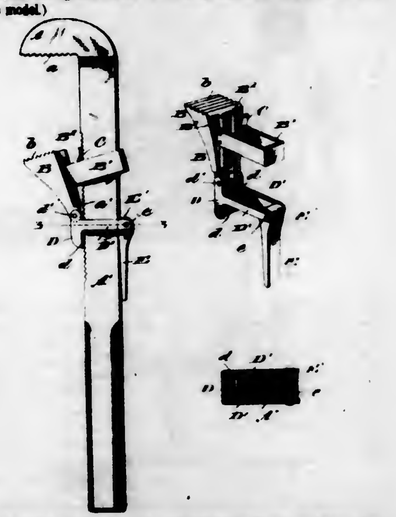
Claim.—1. The combination, with a trunk, of a vertically-movable tray or bottom therein, springs yieldingly sustaining said tray or bottom, and a locking device for supporting the said tray or bottom independently of the sustaining-springs when elevated, substantially as described.

2. The combination, with a trunk, of a vertically-movable tray or bottom, springs yieldingly supporting said tray or bottom, detents on the trunk engaging said tray or bottom when the same is at the upward limit of its movement, and means for actuating said detents, substantially as described.

3. The combination, with a trunk, of a vertically-movable tray or bottom therein and means for yieldingly supporting the same, consisting of a plurality of revolving barrels mounted on the trunk, springs actuating said barrels, and straps wound upon the barrels and connected with the said tray or bottom, substantially as described.

4. The combination, with a trunk, of a vertically-movable tray or bottom, horizontal strips or ledges located adjacent to the ends of the trunk, upon which the said tray or bottom rests, revolving barrels mounted in the corners of the trunk, springs applied to actuate said barrels, and straps wound upon the barrels and attached to the ends of said strips or ledges, substantially as described.

484,218. WRENCH. ARTHUR W. MILES and EDWARD A. CONNANDER, Livingston, Mont. Filed May 13, 1892. Serial No. 433,758. (No model.)



Claim.—1. The combination, with the shank and stationary jaw, of the block for engaging the shank, the movable jaw pivoted to the said block, the loop on the movable jaw, and the cam-lever pivotally mounted for drawing the block against the shank, as set forth.

2. The combination, with the shank and stationary jaw, of the block with arms, the movable jaw pivoted to the block and provided with loop, a spring pivoted to the movable jaw, and a cam-lever pivoted in the arms of the block, as set forth.

3 The combination, with the shank and stationary jaw, of the pivoted movable jaw provided with ribs, the spring secured at one end between said ribs, the loop on the movable jaw, the block to which the movable jaw is pivoted, the arms on said block, and the cam-lever pivoted between said arms, as set forth

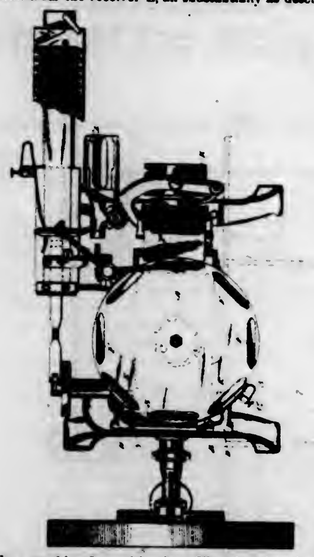
484,219. CIGAR-BUNCH MACHINE. FREDERICK C. MILLER, Newport, Ky. Filed Mar. 8, 1892. Serial No. 424,173. (No model.)

Claim.—1. In a machine for making long-filler cigar-benches, the combination of the horizontal rotary filler-carrier A, having one or more exposed pockets F extending completely through it, formed approximately to the shape of a cigar-bunch, the stationary bed 2 beneath the rotary carrier, forming a bottom for the pockets thereof and having an aperture with which the successive pockets register, the plunger F for ejecting the successive fillers from the pockets of the carrier, the bunch-rolling mechanism beneath the filler-carrier, and the described mechanism imparting intermittent motion to the filler-carrier and plunger in time movements corresponding with the movement of the rolling mechanism, substantially as described.

2. In a machine for making long-filler cigar-bunches, the combination of the horizontal rotary filler-carrier A, having one or more exposed pockets F extending completely through it, formed approximately to the shape of a cigar-bunch, the stationary bed 2 beneath the rotary carrier, forming a bottom for the pockets therein and having an aperture with which the successive pockets register, the plunger F for ejecting the successive fillers from the pockets of the carrier, the bunch-rolling apron 9 beneath the filler-carrier, upon which the fillers are delivered, and the cams G I J and levers and connections,

substantially as described, whereby the filler-carrier A, the plunger F', and the rolling mechanism are operated in synchronous movements, as explained.

3. In a machine for making long-filler cigar-bunches, the combination of the horizontal rotary filler-carrier A, having one or more exposed pockets F extending completely through it, formed approximately to the shape of a cigar-bunch, the stationary bed beneath the rotary filler-carrier, forming a bottom for the pockets therein and having an aperture with which the successive pockets register, the plunger F' for ejecting the successive fillers from the pockets of the carrier, the bunch-rolling apron beneath the filler-carrier, the bunch-receiver L, the plungers F' and F'', and connections for imparting reciprocating movement to the said plungers for ejecting fillers from the carrier A and bunches from the receiver L, all substantially as described.



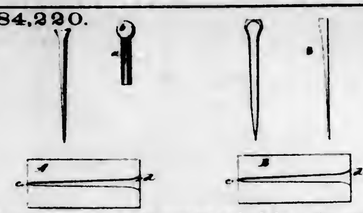
4. In a machine for making long-filler cigar-bunches, the combination of the horizontal rotary filler-carrier A, having one or more exposed pockets F extending completely through it, formed approximately to the shape of a cigar-bunch, the stationary bed beneath the rotary filler-carrier, forming a bottom for the pockets therein and having an aperture with which the pockets register in the rotation of the carrier, the plunger F' for ejecting the successive fillers from the pockets of the carrier, the bunch-rolling apron beneath the filler-carrier, the cam G, levers E, links D, cross-bar S, pawl B, and ratchet-wheel C for imparting intermittent motions to the rotary filler-carrier in synchronous movement with the filler-discharging and bunch-rolling mechanism, as explained.

5. In a machine for making long-filler cigar-bunches, the combination of the horizontal rotary filler-carrier A, having one or more exposed pockets F extending completely through it, formed approximately to the shape of a cigar-bunch, the stationary bed beneath the rotary filler-carrier, forming a bottom for the pockets therein and having an aperture with which the pockets register in the rotation of the carrier, the vertically-reciprocating plunger F' for ejecting the successive fillers from the pockets of the carrier, the bunch-rolling apron beneath the filler-carrier, the cams, levers, and connections for actuating the filler-carrier, ejecting-plunger, and rolling-apron in proper time movements, the brake-spring 3, and the regulating-screw G', whereby the positive intermittent movement of the filler carrier and the adjustment of the pockets thereof in line with the ejecting device are secured, as explained.

484,220. DIE FOR SWAGING BLANKS FOR HORSESHOE-NAILS. William W. Hinds, New Haven, assignor to the New Process Nail Company, Torrington, Conn. Filed Feb. 22, 1892. Serial No. 422,822. (No model.)

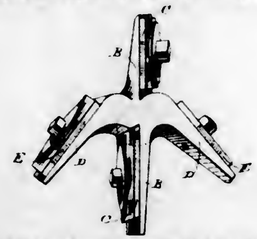
Claim.—The herein-described dies for the manufacture of horseshoe-nails, consisting of two parts, their faces adapted to meet in a plane common to both, the said meeting surfaces each having a longitudinal cavity therein and each cavity substantially semicircular in transverse section, the said cavity starting from the outside of one end of the parts and contracting to form a bell-shaped mouth opening outward, thence gradually diminishing in diameter to near the opposite

484,220.



end of the cavity, the said opposite end of the cavity contracting rapidly and so as to form a sharp close point, substantially as described, and whereby the dies are adapted to produce a blank with a sharp finished point.

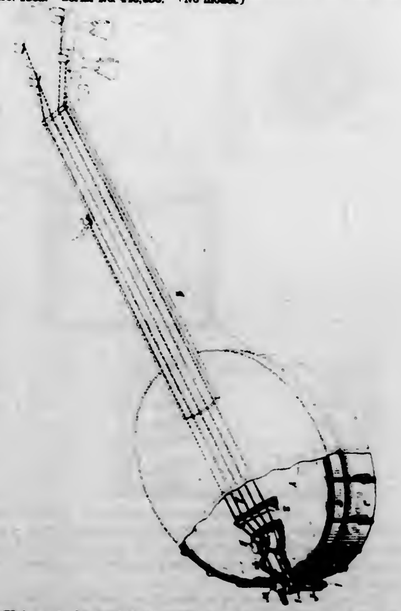
484,221. ROSETTE-TURNING CUTTER-HEAD. Robert B. Moore, San Francisco, Cal. Filed Mar. 21, 1892. Serial No. 426,317. (No model.)



Claim.—1. A head for rosette-cutting tools, consisting of the shaft having radial tool-supporting wings, in combination with the supplemental intermediate wings the faces of which are tangential to the periphery of a cylinder surrounding the axis of the cutter-head, substantially as herein described.

2. A rosette-cutting tool-head consisting of the rotary shaft having the radial and inclined tool-supporting wings, in combination with intermediate wings the faces of which support the tools in planes which are tangent to the periphery of a cylinder surrounding the axis of the cutter-head, substantially as herein described.

484,222. BANJO. David T. Moore, Brooklyn, N. Y. Filed July 30, 1892. Serial No. 440,653. (No model.)



Claim.—1. In combination with the tail-piece of a banjo, a support or bearing adapted to press upon and hold the forward end of

the tail-piece against upward movement, substantially as set forth.

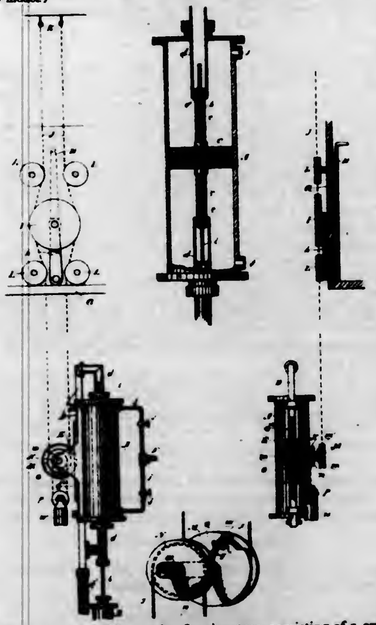
2. In combination with a banjo and the tail-piece thereof, a vertically-adjustable support adapted to bear upon the front end of the tail-piece and hold the same against upward movement, substantially as set forth.

3. In combination with a banjo and its tail-piece, a support for the tail-piece, adapted to hold the forward end of the same against upward movement, substantially as set forth.

4. In combination with a banjo and its tail-piece support, an arm arranged adjacent the tail-piece and carrying a screw which bears upon the tail-piece and is adapted to hold the same against vertical movement, substantially as set forth.

5. In combination with a banjo and its tail-piece and tail-piece support, a vertically-adjustable arm arranged adjacent the tail-piece and adapted to bear on the tail-piece and hold the same against upward movement, substantially as set forth.

484,223. AUXILIARY VALVE FOR ELEVATORS. Alexander J McAdam, San Francisco, Cal. Filed Nov. 12, 1891. Serial No. 411,716. (No model.)



Claim.—1. An auxiliary valve for elevators, consisting of a cylinder, a reciprocating piston therein connected with the stem of the main valve, a water-inlet into each end of the cylinder on each side of the piston, and an exhaust mechanism for alternately exhausting the water from the cylinder on each side of the piston, consisting of a reciprocating pipe-frame adapted to open and close alternately each end of the cylinder, substantially as herein described.

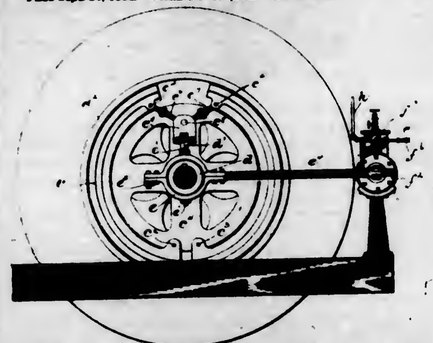
2. An auxiliary valve for elevators, consisting of a cylinder, a reciprocating piston within it connected with the stem of the main valve, a water-inlet communicating with each end of the cylinder on each side of the piston, and sliding or reciprocating exhaust-pipes passing into each end of the cylinder and adapted to be alternately opened and closed to control the cylinder on each side of the piston, substantially as herein described.

3. An auxiliary valve for elevators, consisting of a cylinder, a reciprocating piston therein, a water-inlet to each end of the cylinder, a sleeve connected with each side of the piston and secured to the stem of the main valve, and the reciprocating and communicating pipes *d*, extending into each end of the cylinder and adapted to alternately fit over and be removed from the sleeves of the piston therein, whereby they are alternately opened and closed, substantially as herein described.

4. An auxiliary valve for elevators, consisting of a cylinder, a reciprocating piston therein, a water-inlet to each end of the cylinder, a sleeve connected with each side of the piston and secured to the stem of the main valve, a washer on each end of the sleeve, and the reciprocating and communicating pipes *d*, extending into each end of the cylinder and adapted to alternately fit over and be removed from the sleeve of the piston therein, whereby they are alternately opened and closed by the washers, substantially as herein described.

5. An auxiliary valve for elevators, consisting of a cylinder, a reciprocating piston therein having the oppositely-extending sleeve, said sleeve being connected with the stem of the main valve, a water-inlet to each end of the cylinder, an exterior sliding pipe D, and the pipes *d*, connected with each end of the pipe D and entering the ends of the cylinder and adapted to fit over the ends of the sleeve of the piston, whereby they are alternately opened and closed, substantially as herein described.

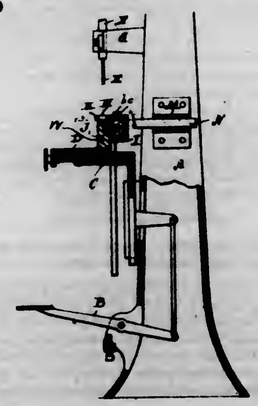
484,224. CLUTCH. William H. McCorkell, Wilconville, Ohio. Filed Sept. 21, 1891. Serial No. 406,374. (No model.)



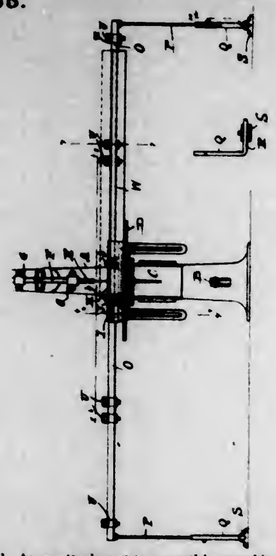
Claim.—1. The combination, with a main shaft, a loosely-mounted wheel having an annular flange thereon, pivoted clutch-shoes connected to said shaft and adapted to be moved to or from said clutch-ring and to contact therewith, a toggle-jointed connection between said clutch-shoes, a sliding sleeve on said main shaft, a peripheral groove in said sleeve, a two-part yoke adapted to embrace said sleeve, loose connecting-pins having projecting ends which fit in bearings in said yoke and extended heads to fit in said groove, an extended lever on said yoke, a pivoted link from one end of said lever to a stationary support, and a pivoted link connection from the opposite end of said lever to a moving piston, substantially as specified.

2. The combination, with a main shaft, an annular clutch-flange, and pivoted shoes, as described, mounted within said flange, of pivoted adjustable links connected to said shoes and to a common moving block, and a sliding sleeve on the main shaft, to which said shoes are connected, a peripheral groove on said sleeve, a pivoted arm from said sleeve to said block, an operating-lever pivoted at one end by a link connection to a stationary support and at the other end to the piston of a steam-cylinder, and said operating-lever being provided with a divided yoke adapted to embrace said sleeve, and connecting-pins having enlarged heads to fit in said groove and reduced extremities to pivotally connect to said yoke, substantially as specified.

484,225. ATTACHMENT FOR MORTISING-MACHINES. John R. Russell, Milwaukee, Wis. Filed Feb. 20, 1892. Serial No. 422,158. (No model.)



484,225.



Claim.—1. As an attachment to a mortising-machine, a support arranged to extend laterally in opposite directions from said machine in rear of the work on the table portion of the same, and a series of upwardly-lifting stops connected to the support to normally extend outward therefrom, substantially as set forth.

2. As an attachment to a mortising-machine, a support arranged to extend laterally in opposite directions from said machine in rear of the work on the table portion of the same, and a series of upwardly-lifting but normally-horizontal stops adjustable on the support in the direction of its length, substantially as set forth.

3. As an attachment to a mortising-machine, spring-controlled stop-dogs longitudinally adjustable on opposite sides of the center of the machine, a support extended laterally on opposite sides of said machine in rear of the work on the table portion of the same, and a series of yielding stop-dogs adjustable on the support in the direction of its length, substantially as set forth.

4. As an attachment to a mortising-machine, a support extending laterally in opposite directions from the machine in rear of the work on the table portion thereof, a series of clamps adjustable on the support, and an upwardly-lifting dog pivotally connected to each clamp to normally extend outward from said support, substantially as set forth.

5. As an attachment to a mortising-machine, a support extending laterally in opposite directions from the machine in rear of the work on the table portion thereof, a series of clamps adjustable on the support, an upwardly-lifting dog pivotally connected to each clamp to normally extend outward from said support, and a spring interposed between each dog and its relative clamp, substantially as set forth.

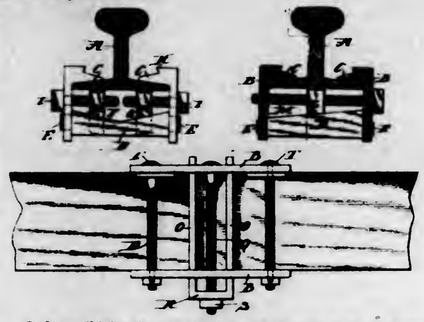
6. As an attachment to a mortising-machine, a pair of spring-controlled stop-dogs longitudinally adjustable on opposite sides of the center of the machine and arranged to swing on a horizontal plane, a support extending laterally on opposite sides of said machine, and a series of pivotal stop-dogs adjustable on the support in the direction of the length of the same and arranged to normally extend from said support, substantially as set forth.

7. As an attachment to a mortising-machine, a recessed stop-plate, blocks longitudinally adjustable therein, a spring-controlled dog pivotally connected to each block, a bar adjustably connected to each side of the machine-standard, a series of clamps adjustable on each bar, and a dog pivotally connected to each clamp to normally extend from the adjacent bar, substantially as set forth.

484,226. RAIL-JOINT. MILTON C. HILES, Oak Park, Ill. Filed July 30, 1891. Serial No. 400,926. (No model.)

Claim.—1. In a rail-joint, the combination, with the rails, the independent clamping-plates provided with overhanging projections engaging the rail-flanges, and struts extending between said clamping-plates below the rail, of wedging truss-plates separate from said clamping-plates and upon which the rails are supported and means for operating said truss-plates, substantially as described.

2. In a rail-joint, the combination, with the rails, the independent clamping-plates provided with overhanging projections engaging the rail-flanges, and struts extending between said clamping-plates below the rail and being independent of said clamping-plates, of a wedging truss-plate upon which the rails are supported and screw-bolts for operating said truss plates, passing through both of said clamping-plates, substantially as described.



3. In a rail-joint, the combination, with the rails, of the clamping-plates having overhanging projections resting upon the foot flanges of the rails, a wedge supported by said clamping-plates and being independent thereof, and the bolt passing through said wedge and through both of said clamping-plates under the rails, substantially as set forth.

4. In a rail-joint, the combination, with the rails, of clamping-plates having overhanging projections resting upon the foot-flanges of the rails, a wedge supported by said clamping-plates and being independent thereof, a bolt passing through said wedge and through both of said clamping-plates under the rails, and the strut arranged between said clamping-plates below said bolt, substantially as set forth.

5. In a rail-joint, the combination, with the rails, of clamping-plates having overhanging projections supported by the foot-flanges of said rails, a U-shaped wedge having arms O, supported by said clamping-plates, a bolt passing through said wedge between the arms thereof and through both of said clamping-plates under the rails, and a strut arranged between said clamping-plates below said bolt, substantially as set forth.

6. In a rail-joint, the combination, with the rails, the clamping-plate provided with overhanging projections bearing upon the rail-flanges, and struts extending between said clamping-plates below the rails and each provided with double inclined upper faces, of wedging truss-plates extending between and resting upon said struts, the lower faces of the ends of which are inclined to correspond with the faces of the struts, and screw-bolts working through the clamping-plates and engaging and actuating the truss-plates so as to wedge them between the struts and the bottom of the rails, substantially as described.

484,227. RAIL-JOINT. MILTON C. HILES, Oak Park, Ill. Filed Oct. 27, 1891. Serial No. 409,990. (No model.)

Claim.—1. In a rail-joint, the combination, with the rails, of abutment-plates having flanges supported upon the rails, brace-plates resting upon said abutment-plates for holding said abutment-plates in place and supporting the rails, and devices abutting against said abutment-flanges and being adapted to slide said brace-plates along said abutment-plates toward the rails, substantially as described.

2. In a rail-joint, the combination, with the rails, of brace-plates for supporting said rails, abutment-flanges held in place by the pressure of said brace-plates, and set-bolts engaging in said abutment-flanges and impinging said brace-plates, substantially as described.

3. In a rail-joint, the combination, with the rails, of brace-plates for supporting said rails, abutment-plates secured against outward or transverse movement on the rails and upon which the lower edges of said brace-plates rest, and set-bolts carried by said abutment-plates and adapted to impinge said brace-plates and slide the same on said abutment-plates toward the rails, substantially as described.

4. In a rail-joint, the combination, with the rails having perforations in their foot-flanges, of overlying abutment-plates resting flat upon said foot-flanges and having depending lugs engaging in said perforations for preventing said abutment-plates from slipping off and means for supporting the rails upon said abutment-plates, substantially as described.

5. In a rail-joint, the combination, with the rails having sockets, of brace-plates for supporting said rails, abutment-plates upon which the lower ends of said brace-plates rest, having lugs engaging in said sockets, and means for impinging the said brace-plates for fixing the latter toward the rail, substantially as described.

6. In a rail-joint, the combination, with the rails having sockets in their foot-flanges, of brace-plates, abutment-plates upon which the lower ends of said brace-plates rest, having lugs engaging in said sockets and abutment flanges, and set-bolts engaging in said abutment-flanges and impinging said brace-plates, substantially as described.

7. In a rail-joint, the combination, with the rails, of brace-plates for supporting said rails, having upright bearing-surfaces at their lower edges, abutment flanges secured to the rails, and set-bolts engaging between each of said upright bearing-surfaces and said abutment flanges, substantially as described.

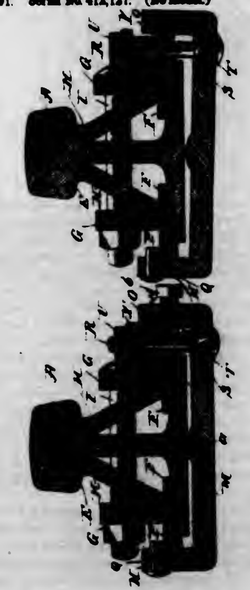
8. In a rail-joint, the combination, with the rails, of brace plates for supporting said rails, having cavities or sockets at their lower edges, overlying abutment-plates having flanges secured to the flanges of the rails and supporting said brace-plates, and set-bolts threaded in said flanges and engaging in the said sockets in the brace plates, substantially as described.

9. In a rail-joint, the combination, with the rails having elongated perforations in their foot-flanges, of brace-plates for supporting said rails, overlying abutment-plates upon which said brace-plates rest, supported on the foot-flanges of the rails and having depending lugs engaging in said perforations, and abutment-flanges having set-bolts impinging said brace-plates, substantially as described.

10. In a rail-joint, the combination, with the rails having their foot-flanges provided with perforations and the rail-bearing plate H, provided with registering perforations or sockets, of brace-plates for supporting the rails, abutment-plates upon which said brace-plates rest, having depending lugs passing through said perforations in the foot-flanges into the perforations in the plate H and being provided with abutment-flanges d', and means for imparting inward pressure to the brace-plates, substantially as described.

11. In a rail-joint, the combination, with the rails, of abutment-plates resting upon the rails and being provided with substantially-horizontal surfaces d^3, brace-plates depending under the heads of the rails and resting upon said surfaces d^3, and means for forcing said brace-plates across said surfaces d^3 toward the rails, substantially as set forth.

484,228. RAIL-JOINT. MILTON C. HILES, Oak Park, Ill. Filed Nov. 17, 1891. Serial No. 412,127. (No model.)



Claim.—1. In a rail-joint, the combination, with the rails, of the brace-plates engaging said rails, angle-plates supported upon the rails and upon which said brace-plates are supported, and bolts passing through the rails for drawing said angle-plates toward each other, substantially as set forth.

2. In a rail-joint, the combination, with the rails, of the brace-plates engaging said rails, angle-plates supported by the flanges of the rails and having inwardly-projecting flanges upon which said brace-plates are supported, and upright flanges and bolts for drawing said upright flanges toward each other, substantially as set forth.

3. In a rail-joint, the combination, with the rails, of inclined brace-plates engaging under the heads of the rails, angle-plates having horizontal wedge-shaped flanges resting on the rail-flanges and supporting said brace-plates, respectively, and upright flanges, and bolts passing through said upright flanges, substantially as set forth.

4. In a rail-joint, the combination, with the rails, of the brace-plates engaging under the heads of the rails, angle-plates upon which said brace-plates rest, and bolts passing through the rails and through said angle-plates at both ends of the brace-plates, substantially as set forth.

5. In a rail-joint, the combination, with the rails, of brace-plates engaging said rails, angle-plates upon which said brace-plates bear, supported by the rails, a truss passing under the rails and being supported by said angle-plates, and bolts for forcing said truss upward and the angle-plates inward, substantially as set forth.

6. In a rail-joint, the combination, with the rails, of brace-plates engaging the rails, angle-plates upon which said brace-plates are supported, bolts for forcing said angle-plates toward the brace-plates, a truss passing under the rails and having a boss bearing against the under side of the rails, and means for clamping the rails and truss together, substantially as set forth.

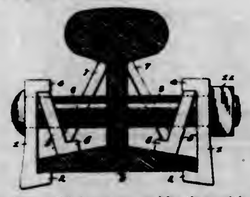
7. In a rail-joint, the combination, with the rails, of brace-plates engaging the heads of the rails, angle-plates upon which said brace-plates are supported, a truss passing under the rails and being adjustably clamped to said angle-plates, and bolts for forcing said angle-plates inward, substantially as set forth.

8. In a rail-joint, the combination, with the rails, of brace-plates engaging the rails, angle-plates upon which said brace-plates rest, having outwardly-projecting flanges, a truss supported at one side on one of said flanges, a bolt supporting the other side of said truss on the other of said flanges, and a set-bolt in said truss impinging against one of said angle-plates, substantially as set forth.

9. In a rail-joint, the combination, with the rails, of brace-plates engaging said rails, angle-plates upon which said brace-plates are supported, bolts for drawing said angle-plates toward the brace-plates, a truss having lugs resting on the angle-plate on one side and having an upturned flange at its other side, a set-bolt passing through said upturned flange and impinging against the other of said angle plates, and a bolt passing through a slot in and supporting said truss and having a bearing on one of said angle-plates, substantially as set forth.

10. In a rail-joint, the combination, with the rails, of the brace-plates engaging under the heads of the rails, angle-plates upon which said brace-plates rest, having outturned flanges, bolts for forcing said angle-plates toward the brace-plates, a truss passing under the rails and engaging one of said angle-plates on one side and having an upturned flange at its other side, set-bolts passing through said upturned flange and impinging the other of said angle-plates, a bearing-block supported upon said other angle-plate, and a bolt passing through said block, the angle-plate, and the truss, substantially as set forth.

484,229. RAIL-JOINT. MILTON C. HILES, Oak Park, Ill. Filed May 18, 1892. Serial No. 433,413. (No model.)



Claim.—1. In a rail-joint, the combination, with the rails, of independent side lever-plates having hooks along their lower edges, engaging under the rails, clamping-plates abutting against said side lever-plates and being supported by the rails, and means for drawing said side plates toward the rails, substantially as set forth.

2. In a rail-joint, the combination, with the rails, of independent side lever-plates having hooks or flanges along their lower sides, engaging under the rails, inclined clamping-plates abutting against the said side plates at or near the upper edges of the latter and being sup-

ported upon the rails, and means for drawing said side plates toward the rails, substantially as set forth.

3. In a rail-joint, the combination, with the rails, of independent side lever-plates having overhanging lips and hooks or flanges engaging under the rails, inclined clamping-plates supported by the rails and abutting under said overhanging lips, and means for forcing said side plates and clamping-plates together, substantially as set forth.

4. In a rail-joint, the combination, with the rails, of independent side lever-plates having overhanging lips and hooks or flanges engaging under the rails, clamping-plates supported by the rails and abutting under said overhanging lips, brace-plates supported upon said clamping-plates and engaging under the heads of the rails, and means for forcing said side plates toward the rails, substantially as set forth.

5. In a rail-joint, the combination, with the rails, of independent side lever-plates having overhangiging lips and hooks or flanges engaging under the rails, inclined clamping-plates supported upon the rails and abutting under said overhanging lips and having angle-toes, brace-plates supported upon said angle-toes and engaging under the heads of the rails, and means for forcing said side plates inward, substantially as set forth.

6. In a rail-joint, the combination, with the rails, of independent side lever-plates having hooks or flanges at their lower edges, engaging under the rails and being free to move inward at their upper edges, clamping-plates abutting against the said side plates and being supported by the foot-flanges of the rails, and means for drawing said side plates inward, substantially as set forth.

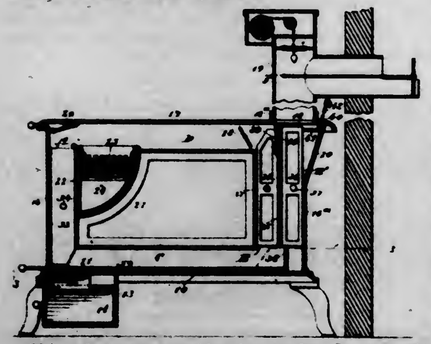
7. In a rail-joint, the combination, with the rails, of independent side lever-plates having hooks or flanges at their lower edges, engaging under the rails and being free to move inward at their upper edges, clamping-plates abutting against said side plates and being supported by the foot-flanges of the rails, and bolts passing through said side plates for creating pressure upon said clamping-plates, substantially as set forth.

8. In a rail-joint, the combination, with the rails, of side lever-plates having hooks or flanges engaging under the rails and being free to move inward at their upper edges, clamping-plates abutting against the said side plates and being supported by the foot-flanges of the rails, and bolts passing through the rails and through said clamping-plates and side plates for drawing the side plates inward, substantially as set forth.

9. As a new and useful article of manufacture, the plate 1, having a narrow hook or flange 2 along its lower edge and an overhanging lip 4 along its other edge, in combination with a clamping-plate 5, of less width than the said plate 1, said plates being provided with registering bolt-holes, substantially as set forth.

10. As a new and useful article of manufacture, the side lever-plate 1, having a narrow hook or flange 2 along its lower edge and an overhanging lip 4 along its upper edge, in combination with a clamping-plate 5, being of less width than said plate 1 and having the angle-toe 6 for supporting a brace-plate, said plates 1 and 5 having registering bolt-holes, substantially as set forth.

484,230. STOVE. OLAF HULDEN, Salt Lake City, Utah. Filed Sept. 1, 1891. Serial No. 404,302. (No model.)



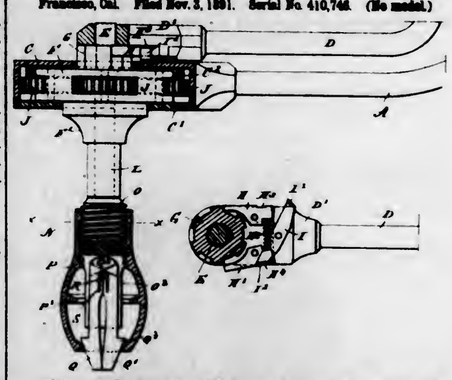
Claim.—1. A stove comprising the outer frame, an oven within the frame, flues or chambers A B C D between the front and rear ends and bottom and top, respectively, of the oven and frame, a fire-pot at the upper forward corner of the oven, an ash-pit beneath the fire-pot and having a door in the side of the stove, a damper 26 at the juncture of chambers or flues A D, a flue or chamber F between the rear wall of the frame and the flue or chamber B and communicating with the chamber or flue C, a damper 30 in the upper end of the partition 28, which separates the flues or chambers B F, and a smoke-outlet in the top of the frame over the flue or chamber F, the said flues or chambers B F being the full width and height of the oven and both opening at their lower ends directly into the rear end of the single undivided chamber C, substantially as set forth.

2. A stove comprising the rectangular frame, an oven therein, the fire-pot at the upper forward corner of the oven, the front chamber or flue A, top and bottom flues or chambers D C, and rear flues or chambers B B', having a dividing-partition 25, provided at its upper end with a damper to connect flue D with the outlet for a direct draft, the said flues or chambers B B' being the full width and height of the oven and both opening at their lower ends directly into the rear end of the single undivided chamber C, the damper 26 at juncture of flues or chambers A D, an opening 11 through the forward end of the frame bottom below chamber or flue A, and a casing or dust-chamber into which said opening leads, substantially as set forth.

3. A stove comprising the rectangular frame, an oven therein, flues or chambers A B B' C D, spacing the front and rear ends and the bottom and top of the oven from the frame, the rear flues or chambers B B' being separated by a vertical partition transverse to the stove and having a damper 30 at its upper end and terminating at its lower end at the bottom line of the oven, the said flues or chambers B B' being the full width and height of the oven and both opening at their lower ends directly into the rear end of the single undivided chamber C, a fire-pot flush with the front and top walls of the oven and having an ash-pit opening through one side of the frame, a damper 26 at the juncture of the chambers or flues A D, vertical scraper-blades in the chambers or channels A B B', and a horizontal scraper in the chamber or flue C, movable toward and from the front end of the stove, an opening 11 through the front end of the stove bottom, and a dust-chamber into which said opening leads, substantially as set forth.

4. A stove having the rear wall of its rear vertical flue enlarged or swelled outward and upward at its upper end, as shown at 20, beneath the smoke-outlet, and the scraper comprising the semicircular foot 41, working in said enlargement or swelling and having a shank-section 42 projecting through the top of the slope and having a suspension hook or eye at its upper end, substantially as set forth.

484,231. RATCHET-DRILL BRACE. WILLIAM P. NOLAN, San Francisco, Cal. Filed Nov. 3, 1891. Serial No. 410,746. (No model.)

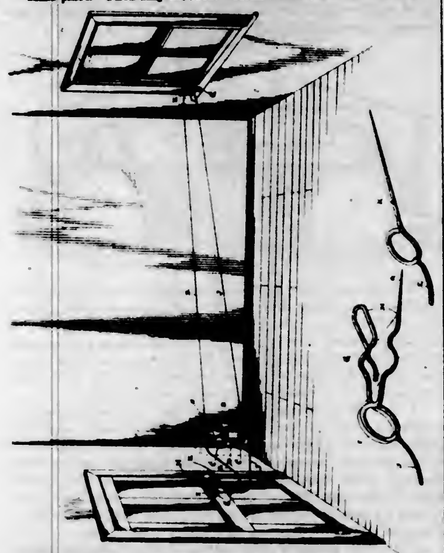


Claim.—1. In a ratchet-drill brace, the combination, with the ratchet-wheel, of the operating-crank provided with two pivoted pawls H H', having notches H^2 H^4 on the outer edges of their rear ends, and the transverse centrally-pivoted lever I, having end projections I' I^2, adapted to engage said notches and hold the respective pawls out of engagement with the ratchet-wheel, substantially as set forth.

2. In a ratchet-drill brace, the combination, with a U shaped frame formed with a casing having an internal gear-wheel, of a crank-arm mounted to turn within the said frame, spring pressed pawls pivoted on the said crank-arm, a ratchet-wheel adapted to be alternately engaged by the said pawls, a disk mounted to turn within the said casing and carrying the said ratchet-wheel, a series of gear-wheels journaled in the said disk and in mesh with the internal gear-wheel of the said casing, a shaft journaled in the said disk and carrying a gear-wheel in mesh with the said series of gear-wheels, and a lever pivoted on the said crank-arm and formed with lugs adapted to alternately engage notches in the said spring-pressed pawls, substantially as shown and described.

3. In a ratchet-drill brace, a chuck comprising a revolvable shaft formed with a forked end, a screw-thread and recesses therein, a casing fitted to slide and to screw on the said thread and recesses, jaws held in the forked end of the said shaft and adapted to be closed by the said casing, the said casing being provided with an annular flange adapted to engage shoulders on the said jaws, and a spring for opening the said jaws, substantially as shown and described.

484,232. PORTABLE BURGLAR-ALARM. DAVID D. HOLLEY, Wilson, N. C., assignor to R. K. Wright, Frank Rountree, and J. D. Farrior, same place. Filed May 26, 1892. Serial No. 434,210. (No model.)



Claim.—1. A portable burglar-alarm comprising a detachable clasp having one end formed into a clasp for attachment to a door-knob and its opposite end having an opening, a detachable contact passed through the said opening and secured to the door, a battery, a bell, and connecting-wires, substantially as specified.

2. A burglar-alarm comprising a battery, a bell, two contact-points, one having two coacting clamping-arms for securing it to an object and the other having a screw, and connecting-wires, substantially as described.

3. A portable burglar-alarm comprising a detachable clasp having clamping-arms, one of which has its end screw-threaded, for the purpose specified, said clasp having an opening forming a contact, a second contact passing through said opening and having a screw-threaded end for attachment, a battery, a bell, and connecting-wires, substantially as described.

484,233. COMBINED ELECTRIC BURGLAR AND FIRE ALARM. DAVID D. HOLLEY, Wilson, N. C., assignor to R. K. Wright, Frank Rountree, and J. D. Farrior, same place. Filed May 26, 1892. Serial No. 434,219. (No model.)

Claim.—1. In an electric burglar-alarm, the combination of a door or window frame having a keeper or recess, a screw or pin extending transverse thereof, an electric circuit closer and breaker consisting of a metal spring having one end doubled upon itself and hung over the said pin, and a contact-point at the free end of the said closer and against which it strikes to form an electrical contact, and the door or window having a means to engage and depress the free end of the said closer, and electrical connection between an electric source and the said contact and pin, substantially as set forth.

2. An electric burglar-alarm consisting of an outside keeper secured to the frame of a door, the screws which secure it in place, a spring-closer having one end bent upon itself and hung over one of the said screws, a pin or projection extending outward from the door-frame and engaging the free end of the said closer, the door, the sash-window-moving latch which engages the said closer at its free end for forcing it inward, and electrical connection between a source of electrical supply and the said pin and screw, substantially as described.

3. In an electric burglar-alarm, the combination of a door-keeper having a transverse pin or screw, a spring circuit-closer supported thereon, a pin against which the free end of the spring-closer strikes, a means upon the door for forcing the closer inward when the door is closed, electrical connection between a battery and the said pin and screw, and a cut-out within the said keeper for forcing the said closer inward at its free end, and thus prevent it from being operated by the door, substantially as specified.

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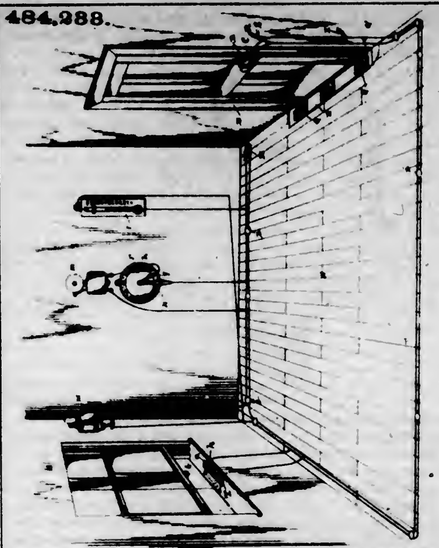
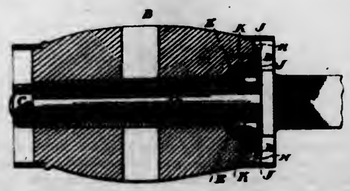


4. A burglar-alarm for a window, consisting of a spring-contact at the outer edge of the window-sill to be engaged by the shutters, a spring at the inner edge of the sill to be engaged by the window-sash when lowered, a contact at the free end of each spring and with which it normally engages, electrical connection with one end of the said springs and with the contacts at the other ends thereof, and a device between the springs for forcing one down and out of contact with its contact-point, substantially as and for the purpose set forth.

5. A fire-alarm consisting of a battery, two wires side by side connected with opposite poles of the battery, the said wires provided with a fusible insulation, and headed screws or tacks placed between the said wires for holding them in place, whereby when the insulation is burned the circuit is closed by the heads of the tacks or screws, substantially as described.

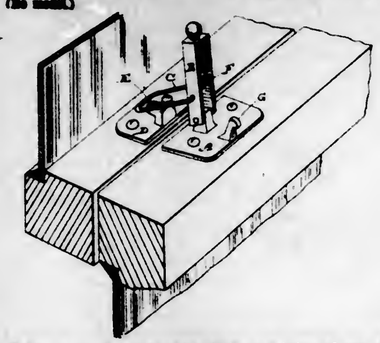
484,234. AXLE-LUBRICATOR. CHESTER C. PIERCE, Clayton, assignor of one-half to George B. Lewis, Carthage, N. Y. Filed Apr. 16, 1892. Serial No. 429,051. (No model.)



Claim.—1. The herein-described combined sand-band and oil-cup attachment for vehicle-wheels, the same comprising the part E, of such diameter as to permit it to be inserted within a chamber formed in the inner end of a vehicle-wheel hub and having flange H and having its interior tapered or bell-shaped and its inner end provided with an inwardly-extending flange G, the annular plate or ring J, having a diameter equal to the diameter of flange H and having a central opening for the passage of the axle, and means, substantially as described, for securing together the parts E and J and for securing both within the chamber in the hub, substantially as described.

2. The combination, with a vehicle-hub provided with an annular chamber at its inner end, of a bell-shaped casting fitted within the chamber, said casting being provided at its outer end with an outwardly-extended flange H and at its inner end with an inwardly-extending flange adapted to bear upon the axle, and a collar J, having a diameter equal to that of the flange H and having an aperture for the passage of the axle, said collar being secured in place against the outer face of the flange H by the means employed for securing the casting to the hub, substantially as shown.

484,285. FASTENER FOR THE MEETING-RAILS OF SASHES. JAMES C. PLUMMETT, Oakland, Cal. Filed Mar. 21, 1892. Serial No. 425,936. (No model.)



Claim.—1. A window-fastening device consisting of two plates fixed, respectively, to the lower and upper sashes, a hook lug or spur projecting from the plate upon the upper sash, a bar hinged to the plate upon the lower sash, having a link loosely attached to it a short distance from the hinge and adapted to engage the hook upon the upper sash when the bar is in a vertical position, whereby the sashes are drawn and locked together when the bar is in a horizontal position, and a spring-actuated bolt movable within the bar, and a catch upon the front of the plate, to which the bar is hinged for the engagement of the bolt, substantially as herein described.

2. A window-locking device consisting of a plate secured to the top of the lower sash, having bars B, hinged to it, adapted to fold down upon the plate at right angles with each other, links connected with each of the bars near the hinge-pins, and spring-actuated locking bolts and catches by which the bars are held in a horizontal position, in combination with plates secured to the upper sash and window-casing, respectively, and having hook-shaped legs E, with which the links are adapted to engage when the bars are in a vertical position and to which they are locked when the bars are in a horizontal position, substantially as herein described.

484,286. ALARM-CLOCK. WILLIS R. FOSTER, New Haven, Conn., assignor to the New Haven Clock Company, same place. Filed May 31, 1892. Serial No. 434,857. (No model.)

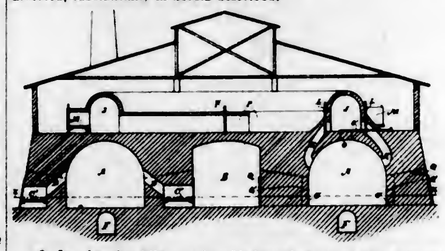
Claim.—1. The combination, with a time mechanism and a dial, of a hand frictionally mounted in the central opening of the latter, a cone driven by the said mechanism and movable on its shaft, a pivotal lifting-lever engaging with the said cone, a sleeve-cam, a pin to co-operate therewith, one being connected with the said cone and the other with the said hand, and a spring for moving the cone in one direction on its shaft, substantially as described.

2. The combination, with a time mechanism and a dial, of a hand frictionally mounted in the central opening of the latter, a pinion connected with the said hand, a wheel meshing into the said pinion and constructed with a sleeve carrying a radially-arranged pin, a laterally-movable combined sleeve-cam, cone, and wheel, whereof the latter is meshed with a member of the time mechanism and the cam arranged to present its edge to the said pin, a spring for moving the said combined cam, cone, and wheel toward the said pin, and a lifting-lever engaged with the said cone, substantially as described.

484,287. CONTINUOUS KILN. WILLIAM RADMORE, San José, Cal. Filed Apr. 26, 1892. Serial No. 430,804. (No model.)

Claim.—1. In a burning-kiln, a series of independent chambers adjacent to each other, having fireplaces C at opposite sides, and grates and ash-pits C^2 below the bottom of the chambers, in combination with the supplemental fireplaces C' and passages D, leading therefrom into the chambers at points above the bottom, substantially as herein described.

2. In a burning-kiln, a series of independent chambers adjacent to each other, having main and supplemental fireplaces C C' C^2 at the bottom, a central flue extending beneath the chambers and communicating with the chimney, transverse passages E, connecting therewith, and dampers by which communication between this flue and the interior of the burning-chambers may be opened or cut off and the heat diverted, substantially as herein described.

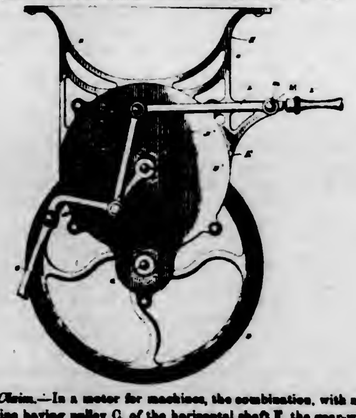


3. In a burning-kiln, a series of independent chambers, main and supplemental fireplaces at the bottom with passages opening therefrom into the kiln, a continuous passage around the top of the kiln centrally above the burning-chambers, and supplemental furnaces M upon the top of the kiln connecting with said passage, and branch passages opening from the continuous top passage into the sides of the upper part of the kiln, substantially as herein described.

4. In a kiln, a series of independent closed chambers successively arranged, a continuous passage around the kiln centrally above the burning-chambers, supplemental furnaces upon the top of the kiln, connecting with said passage, dampers by which the main passage is cut off at any desired point, and side passages leading from the main passage into the upper sides of the kiln, together with dampers L, by which said passages are controlled and the direction of the heat changed, substantially as herein described.

5. In a kiln, a series of closed burning chambers arranged successively, a continuous passage around the top of the kiln, situated centrally above the chambers, having central and side passages connecting it with the interior of the chambers, dampers by which any or all of said passages may be closed, dampers by which the main continuous passage may be cut off at any point, a continuous passage arranged centrally beneath the floor of the burning-chambers, side openings in the lower part of the burning-chambers, and passages connecting these side openings with the continuous passage beneath the floor of the kiln, whereby a downward draft from the top passage to the bottom one may be produced and the current diverted to either side, and supplemental furnaces upon the top of the kiln, connecting with said continuous passage, substantially as herein described.

484,288. MOTOR FOR MACHINES. ELI S. REED, Chattanooga, Tenn. Filed Feb. 6, 1892. Serial No. 420,590. (No model.)



Claim.—In a motor for machines, the combination, with a driven machine having pulley C, of the horizontal shaft F, the gear-wheel H, mounted thereon, the horizontal shaft G, the pinion I thereon intermeshing with the gear-wheel H, the band-wheel D, a belt a, passing around wheel D and pulley C, a crank-arm K on the end of shaft F, a lever L, having at one end a suitable handle, said lever being the

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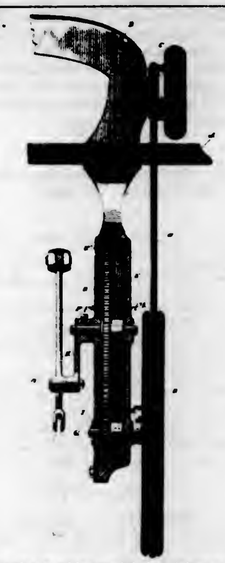
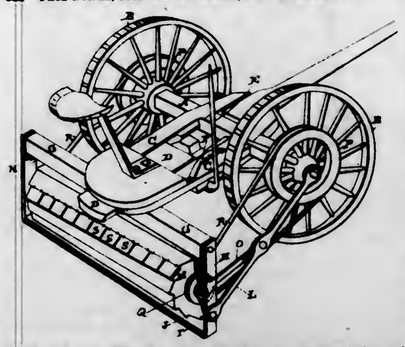


operating-lever for the machine and being fulcrumed at a suitable point, so as to vibrate vertically, a bell-crank lever composed of the arms N' and N^2, said crank-lever being pivotally connected to the end of crank K and the end of arm N' being pivotally connected to the end of lever L, and link O, pivotally connected to arm N^2 and to a treadle mechanism, substantially as described.

484,289. CULTIVATOR AND PULVERIZER. CHRISTOPHER C. REYNOLDS, Kelseyville, assignor of one-half to J. C. Plunkett, Oakland, Cal. Filed Dec. 22, 1891. Serial No. 415,904. (No model.)



Claim.—1. A cultivator and pulverizer consisting of the main frame, a frame longitudinally slidable thereon and having a depending frame at its rear provided with cultivator-teeth which are raised and lowered by the movement of the sliding frame, a crushing-roller within the depending frame and above the plane of the cultivator-teeth, and means for rotating the roller to pulverize clods passing between the roller and teeth, substantially as herein described.

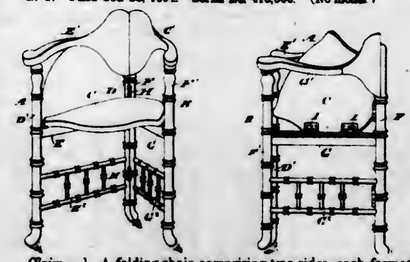
2. A cultivator and pulverizer consisting of a frame mounted upon bearing-wheels, a frame slidable longitudinally upon the main frame and having a vertical frame depending from its rear end, cultivator-teeth supported from said vertical frame extending horizontally across the rear of the machine, a mechanism whereby the slidable frame is moved so as to raise or depress the points of the cultivator-teeth, arms extending rearwardly from the wheel-shafts, a roller journaled at the rear ends of said arms above the cultivator-teeth and their supporting-bars, and pulleys and belts by which said roller is rotated from the main bearing-wheels of the machine, substantially as herein described.

3. A cultivator and pulverizer consisting of a frame mounted upon bearing-wheels, a sliding frame adapted to move forward and backward upon the main frame, arms extending downwardly from said sliding frame having the lower ends connected by horizontal bars extending across the rear of the machine, double-ended cultivator-teeth fitting between said bars and means for clamping them therein, fulcrumed arms extending from the lower ends of the cultivator-tooth frame to the ends of the main-wheel shaft and serving as fulcrums for said frame, and a lever by which the upper part of the sliding frame is moved backward or forward, whereby the cultivator-teeth are raised or depressed, substantially as herein described.

4. A cultivator and pulverizer consisting of a frame mounted upon bearing-wheels, a supplemental frame, a guide upon which said supplemental frame is movable backward and forward upon the main frame, arms depending from the ends of the supplemental frame and bars extending horizontally between the lower ends of said arms behind the machine, reversible cultivator-teeth clamped between said bars, fulcrum-arms extending from the lower ends of the side bars to the ends of the main-wheel axle, and a lever by which the upper part of the supplemental frame is moved backward and forward to raise or depress the points of the cultivator-teeth, arms O, extending rearwardly from the fulcrum-arms, a roller journaled between the ends of said arms, and pulleys and belts whereby said roller is rotated from the main wheels, said roller being free to rise and fall with relation to the cultivator-teeth and the clamping-bars, whereby clods which are raised by the teeth are pulverized by the roller, substantially as herein described.

5. A cultivator and pulverizer consisting of the main and supplemental frames mounted upon the bearing-wheels, cultivator-teeth supported from the supplemental frame and extending across the rear of the machine, so as to dig up and cultivate the soil and adjustable by movement of the supplemental frame, a second framework, a roller journaled therein above the cultivator-teeth and their supporting-bars, said roller having the independently-hinged plates attached to it around its periphery from end to end, whereby said plates are allowed to yield to stones or other hard substances, substantially as herein described.

484,240. FOLDING CHAIR. HERMAN A. J. RINCKERT, New York, N. Y. Filed Oct. 28, 1891. Serial No. 410,066. (No model.)



Claim.—1. A folding chair comprising two sides, each formed of two legs connected together by bars, the rear legs of each side being semicircular and hinged together at their front edges, and a seat hinged to one of the bars of one side and resting on one of the bars of the other side, whereby when the chair is open the two semicircular legs form a round leg and serve as a limit to the outward movement of the said sides, substantially as herein shown and described.

2. A folding chair comprising two sides, each formed of two legs connected by bars, the rear legs being semicircular and hinged together and one of the said legs being extended to form a back, and a seat hinged to the top bar of one side and resting when open on the top bar of the other side, the said seat being adapted to fold down on the outside of one side when the chair is folded, substantially as described.

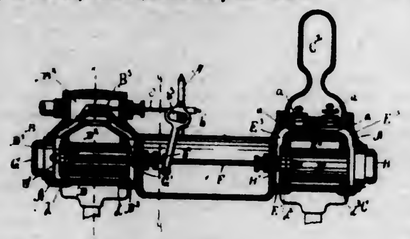
3. In a folding chair, the combination, with two sides, each provided with a front and a rear post and bars for connecting the same, one of the bars being provided with legs adapted to engage recesses in the other bar on the opposite side, of hinges for connecting the rear posts with each other and a seat hinged on the said legs of one bar and adapted to rest on the opposite bar, substantially as shown and described.

484,241. STEAM-PUMP. GEORGE J. ROGERS, Dayton, Ohio. Filed Aug. 3, 1891. Serial No. 401,468. (No model.)

Claim.—1. In a pump, the combination, with a hollow casing, the interior of which is provided with two perforated division-walls joined to the casing at the bottom and at the sides and extending to the top thereof, of a cylinder secured at its ends in the perforations of said division-walls, whereby three independent and disconnected compartments are formed, a piston in the cylinder, and means for opening and closing the said compartments at the top, substantially as set forth.

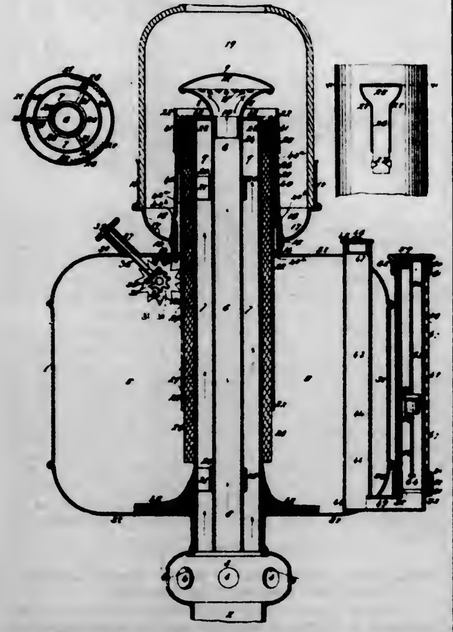
2. In a pump, the combination, with a hollow casing, the walls of which are open at each end and at the top and the interior is provided with two perforated walls, the perforations in the end of the

casing and in the walls upon the interior being in alignment and the walls upon the interior being joined to the bottom and the sides of the casing and extending to the top thereof, whereby three open-top compartments are formed, and a slug in each of the end openings of the casing, of a cylinder secured at its ends in the apertures of the interior walls, a piston in the cylinder, and means for opening and closing the top of the compartments, substantially as set forth.



3. In a pump, the combination, with a frame having a casing at each end, one of which is provided with a cylinder and a piston and valve and the other casing is provided with means for operating said piston and valve, of an arch on the frame intermediate the casings, the sides of the arch being perforated, one of the perforations being provided with a shoulder and the other one being provided with a screw-thread, a rod in the perforations in the arch of a less length than the exterior width of the arch, one end of the rod bearing against the shoulder of one of the perforations, a screw-plug in the screw-threaded portion of the other perforation, and a sleeve upon the rod, provided with an arm and a projection, the arm being connected with the piston and the projection being connected with the valve, substantially as set forth.

484,242. CENTRAL-DRAFT LAMP. NATAN ROTHMAN, St. Louis, Mo. Filed July 2, 1891. Serial No. 398,290. (No model.)

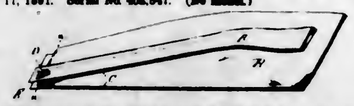


Claim.—1. The combination of the reservoir having a central draft-tube, a wick-carrier tube, an outer wick-tube forming an annular air-passage around the carrier-tube, a collar surrounding the outer wick-tube, by which the latter is supported on the reservoir, and a collar surrounding the outer wick-tube, substantially as described.

2. The combination, with a reservoir, of the horizontal tube having an angle-flange, the glass cylinder and the register-tube supported in the angle-flange, the said register-tube provided with perforate apertures for sighting the registering-float, and the cap having a pendent rod and a float sliding on the rod, substantially as described.

3. The combination, with a reservoir, of the aerating and oil-supply tube having perforations for the passage of air and oil, the horizontal tube connected with the supply-tube, having an angle-flange, the glass cylinder and the register-tube supported in the angle-flange, and the float, substantially as described.

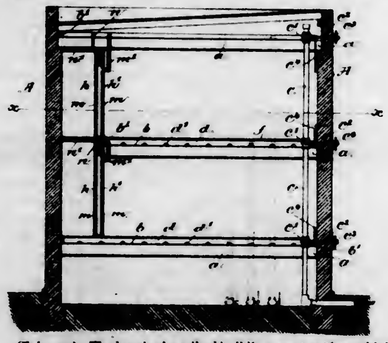
484,248. SHIRT-BOSOM. ANTON ROTHE, Chicago, Ill. Filed Aug. 17, 1891. Serial No. 402,847. (No model.)



Claim.—1. A three-ply shirt-bosom consisting of two overlapping parts, the back lining of the upper part and the interlining of the under part being formed of a single piece of cloth folded as shown and described, and for the purpose specified.

2. As an article of manufacture, a shirt bosom consisting of two overlapping parts, the face of the upper part and the back lining of the under part being longer than and projecting below the other plies of the bosom and one of the plies of the upper part being folded at the lower end of the bosom and turned upward to form one ply of the under part, substantially as shown and described, and for the purpose specified.

484,244. CONSTRUCTION OF BUILDINGS. BENJAMIN RUSSELL, Portsmouth, N. H. Filed Sept. 29, 1891. Serial No. 407,113. (No model.)



Claim.—1. The herein-described building construction, which consists in a series of independent partition-tanks composed each of upright double partitions lined with waterproof material and extending from floor to ceiling of each story, forming three sides of the stairway or elevator-well, and means for flooding said tanks independently by water in case of fire, substantially as described.

2. The combination, with a series of floor-tanks, of a stand-pipe *c*, placed in the interior of the building and provided with valves *c'*, having their stems extended through the wall of the building and accessible from both the interior and exterior of the building for the operation of the valve, substantially as described.

3. The herein-described improved building construction, which consists in a series of independent floor-tanks and vertical tank-partitions in communication with each other and adapted to be flooded in case of fire, substantially as described.

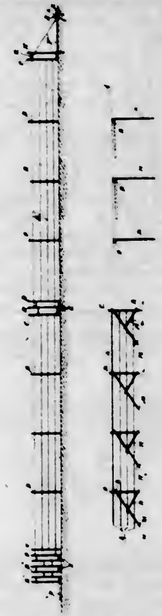
4. In a building having elevator-wells or stairways, the combination, with a floor-tank, of a perforated pipe placed in said well or stairway and in communication with said floor-tank, substantially as described.

5. The combination, with the floor-tank, of a partition-tank to receive the overflow from the said floor-tank connected therewith, substantially as described.

6. In a building having elevator-wells or stairways, the combination, with a floor-tank provided with a series of perforations in its bottom normally closed by fusible solder, of a perforated pipe placed in said well or stairway and in communication with said floor-tank, substantially as described.

484,245. FENCE. LARSH S. SAPPER, Keiso, N. D. Filed June 23, 1891. Serial No. 397,265. (No model.)

Claim.—1. In a portable fence, the combination, with the posts for holding the wires or boards, of lateral braces applied to the sides of the posts, having pivotal connections therewith and having their fence ends extending beyond the posts, whereby when the braces are swung lengthwise and the fence is turned down the body of the fence will rest entirely on the braces, clear of the ground, and without distortion of any of its parts, substantially as described.



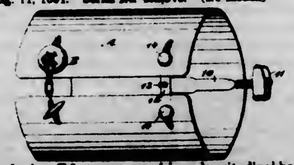
2. In a portable fence, the combination, with the posts for holding the wires or boards, of the lateral braces having pivotal connections with the posts and provided with chamfered or beveled extremities, whereby when the fence is turned over on the braces they will act like sled-runners to support and permit the fence to be dragged over the ground.

3. A post-and-wire fence having in addition to the ordinary intermediate posts two or more terminal posts at one end to which the wires are secured in pairs, one pair of the wires being also secured to all the intermediate posts and the other wires loosely stapled thereto, whereby the wires may be tightened in pairs, substantially as described.

4. A post-and-wire fence having in addition to the ordinary intermediate posts two or more terminal posts at one end, the top and bottom wires being secured to one of said terminal posts and all the intermediate posts, and the intermediate wires loosely stapled to the intermediate posts and secured in pairs to other terminal posts, whereby the intermediate wires may be adjusted lengthwise of the top and bottom wires, or the latter on the former, substantially as described.

5. In a post-and-wire fence, a compensating panel consisting of a series of two or more spring-posts looped together by wires, the said connecting-wires uniting any two adjacent posts being located at unequal distances from the ends of the posts, whereby the posts will spring or yield, substantially as described.

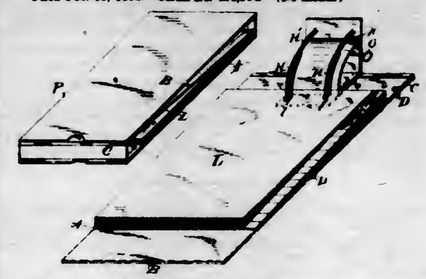
484,246. CUFF-HOLDER. LEWIS S. SARGENT, New York, N. Y. Filed Aug. 11, 1891. Serial No. 402,373. (No model.)



Claim.—1. A cuff-fastener comprising a longitudinal bar provided at one end with means for attachment to a sleeve and at its opposite end with a swinging member pivoted between its ends to the bar to be swung into parallelism therewith or at right angles thereto and fastenings at opposite ends of the swinging member, substantially as set forth.

2. As an improved article of manufacture, a cuff-holder comprising a body-section having a clip attached at one end and an arm pivoted near its center at the opposite end, the said arm being provided with buttons near its extremities, as and for the purpose specified.

484,247. LETTER-FILE. HERBERT L. SAWYER, Springfield, Ohio. Filed Feb. 13, 1892. Serial No. 421,994. (No model.)



Claim.—1. In a letter-file, the combination, with a suitable support, of a file-clip consisting of a fixed member secured to the support and a rotatable member, one member having filing-hooks and the other member sheaths for said hooks, both hooks and sheaths being curved about the axis of rotation, a stop to obstruct the withdrawal of said hooks from their sheaths, and a spring-catch to free said stop and allow separation of the hook and sheaths.

2. In a letter-file, the combination, with a support, of a file-clip mounted thereon and consisting of a fixed member secured to said support and a rotatable member having a notched and interlocking engagement with said fixed member at the axis of rotation, and means to maintain the letters on said clip and prevent the disengagement of said interlocked members.

3. In a letter-file, the combination, with a file-board, of a file-clip consisting of a fixed member mounted on said board and having an arched front and tubular sheaths parallel thereto, and a rotatable member having a pivotal engagement with said fixed member and provided with hooks arched to correspond with and enter said sheaths, a stop carried by the rotatable member, and a spring-catch mounted on the fixed member, the engagement of the said stop and catch obstructing the withdrawal of the hooks from their sheaths, yet allowing of separating the same to remove said letters from the clip.

4. In a letter-file, the combination, with two members adapted to form covers and an intermediate member hinged to said cover and adapted to form a back, of a clip mounted on one cover separate from the back, which allows of folding the other cover under the former cover without acting on said clip, and means to secure said covers temporarily in their double-folded position to constitute a file-board, substantially as described.

5. In a letter-file, the combination, with a file-board, of a clip mounted thereon, consisting of a member fixed to a file-board and provided with arched hooks for the index leaves and papers and a rotatable member operating therewith, both members having a grooved guiding-plate substantially concentric with said hooks and sliding one within the other, the arch of the rotatable member thus forming a continuation of the arch of the fixed member when rotated outward, whereby a continuous guiding-surface for the back edges of the index-leaves mounted on said clip is provided, substantially as shown and described.

6. In a letter-file, the combination, with a file-board, of a file-clip mounted thereon, consisting of arched hooks secured to said file-board and an arched plate concentric with said hooks and adapted to form a guide for the back edges of the file mounted on said hook.

7. In a letter-file, the combination, with a file-board, of a file-clip mounted thereon, consisting of arched hooks and an arched front plate concentric with said hooks and provided with an opening in the back thereof, a matching-plate also concentric with said hooks and front plate and adapted to rotate into and out of the said opening and provided with arched hooks operating in connection with the former hooks on the fixed member, whereby the clip may be opened more or less and increase the length of the arc of said hooks and plates.

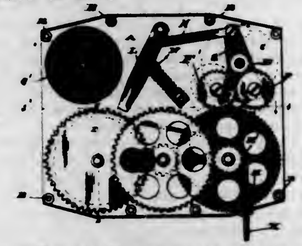
8. In a letter-file, the combination, with a file-board, of a file-clip consisting of a fixed member mounted thereon and a rotatable member hinged thereto, the said members bearing pieces adapted to clip said file and hinged together by slots in one member meshing and interlocking with matching portions of the other member without other central connection to secure them together.

9. In a letter-file, the combination, with a file-board, of a clip thereon, an arched member fixed to said board and a rear opening to-

ward the center axis about which the arch is formed, and a rotatable member having a similar arched plate matching said opening and provided with slots I, engaging with said fixed member, the arch of the rotatable member operating under the arch of the fixed member and preventing the separation of the hinge at the common axis, substantially as described, and clipping means operating in connection with said arched members to support the letter-file adjacent thereto.

10. In a letter-file, the combination, with a file-board, of a clip mounted on said board and consisting of a fixed member secured to the board and provided with arched sheathing-tubes and a front plate concentric therewith and provided with an opening behind, a rotatable member having an arched plate adapted to fit said opening and carrying hooks concentric with the plate portion and meshing with said sheathing-tubes, and a spring-catch mounted transversely to said opening and adapted to be engaged by a projection from the rotatable member to limit the outward movement and maintain the hooks sheathed and allow of unsheathing said hooks by freeing said stop and catch.

484,248. CASH-CARRIER APPARATUS. JACOB SCHIEBER, Detroit, Mich., assignor of two-thirds to Henry S. Hopkins, St. Louis, Mo., and William H. Parmenter, Boston, Mass. Filed Jan. 7, 1892. Serial No. 417,264. (No model.)



Claim.—1. In a motor for cash or parcel carriers, the combination of track-wheels, propelling mechanism therefor, reversing mechanism comprising an oscillating lever fulcrumed on a point concentric with the shaft of one of the track-wheels and provided with gear-wheels adapted to alternately engage the propelling mechanism, and means for actuating the oscillating lever from the track, substantially as and for the purposes specified.

2. In a cash or a parcel carrier, the combination, with the track-wire, of a carrier mounted thereon provided with track-wheels, propelling mechanism for the track-wheels, a reversing mechanism interposed between the propelling mechanism and the track-wheels, and a split clamp secured on the under side of the wire, provided with a lateral projection, a spring-supported tongue mounted in said projection, and a lever pivoted in the carrier controlling the reversing mechanism, placed in the path of said tongue and adapted to be actuated when the carrier is moving in one direction, substantially as and for the purpose described.

3. The combination, with the propelling mechanism and track-wheel adapted to be actuated thereby, of a track, a pinion on the shaft of the track-wheel, a rocking arm, pinions on said arm, adapted to alternately engage the propelling mechanism, and means on the track for alternately rocking said arm, substantially as and for the purposes described.

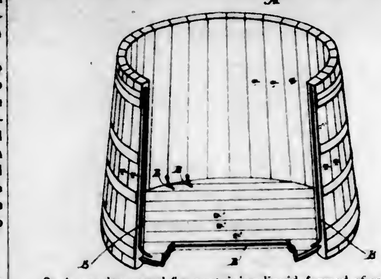
4. In a propelling mechanism for cash-carriers, a master-wheel provided with a projecting drum, a main spring within the drum, a cord-drum surrounding the drum and extending into an opposite direction to incase a retracting-spring, a retracting spring within the casing, a winding-cord attached to the cord-drum, and a ratchet-and-pawl mechanism adapted to wind the main spring when the cord is unwound and permit the return of the cord when the cord-drum is actuated by the retracting-spring, substantially as and for the purposes described.

5. In a cash or parcel carrier, the combination, with the carrier and track, of a retaining device projecting over the track at a station, said device consisting of a yielding arm provided with a secondary spring adapted to engage and retain the carrier at the station, substantially as and for the purposes described.

484,249. WOODEN LIQUID-CONTAINING VESSEL. JAMES M. SUTHERLAND, Harvel, Ont., assignor of one-half to R. S. O'Brien, same place. Filed June 20, 1892. Serial No. 437,267. (No model.)

Claim.—1. A wooden vessel for containing liquid, formed of separate sections, pieces, or staves having grooves in their meeting edges and pieces, strips, or strings of absorbent material seated in said grooves, substantially as herein described.

2. A wooden vessel for containing liquid, formed of separate sections, pieces, or staves and having pieces, strips, or strings of absorbent material seated in its joints, said absorbent material projecting into the interior of the vessel, substantially as herein described.



3. A wooden vessel for containing liquid, formed of separate sections, pieces, or staves having grooves in their meeting edges and pieces, strips, or strings of absorbent material seated in said grooves and projecting into the interior of the vessel, substantially as herein described

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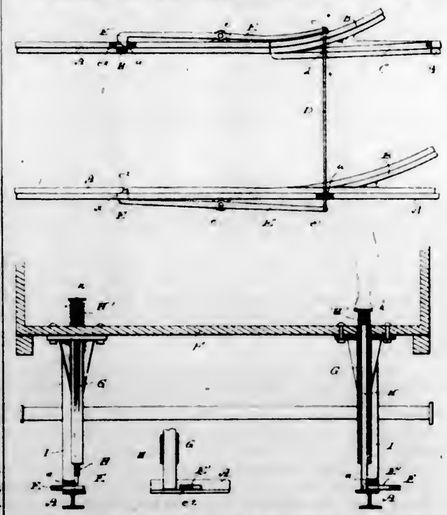
484,250. SWITCH-OPERATING DEVICE. GERHARD SCHUMACHER, Milwaukee, Wis. Filed Mar. 16, 1892. Serial No. 425,177. (No model.)



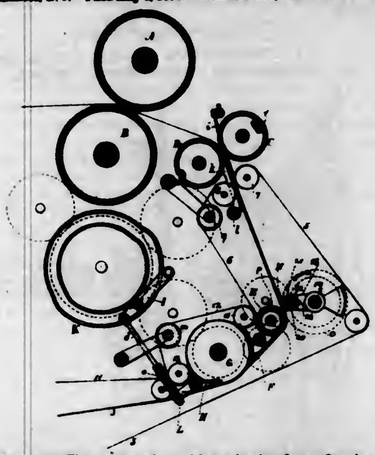
Claim.—1. The combination, with the track-rails and the movable switch-tongue of a railway-track, of a transversely-arranged longitudinally-movable rod engaged with said movable switch-tongue, and pivoted levers extending longitudinally adjacent to the track-rails and arranged to vibrate horizontally, each of said levers being pivotally engaged at one end with one end of said transverse rod and provided at its free end with a laterally-oblique surface adapted for engagement with a depending device upon a car, whereby said levers may be vibrated into a position to shift said transverse rod and the connected switch-tongue, substantially as described.

2. The combination, with the main-track rails and the movable switch-tongue of a railway-track, of a transversely-arranged longitudinally-movable rod pivotally engaged with said movable switch-tongue and extending outside of the track-rails upon opposite sides of the track, levers extending lengthwise of the track and pivotally supported upon opposite sides thereof and arranged to vibrate horizontally, each of said levers being pivotally engaged at one end with one end of the transverse rod, suitable slots in the webs of the track-rails, and inwardly-extending wedge-shaped projections upon the free ends of said levers, arranged to project through said slots and adapted for engagement with a suitable depending device upon a car, whereby said lever may be vibrated to shift the transverse rod and the connected switch-tongue, substantially as described.

3. The combination, with the main-track rails and the movable switch-tongue of a railway-track, of a transversely-arranged longitudinally-movable rod operatively engaged with the said movable switch-

tongue, horizontal levers located upon opposite sides of the track and extending longitudinally thereof, each of said levers being pivotally supported on its central portion and provided at its free end with an inclined surface and having operative engagement at its other end with said transverse rod, and one or more depending hangers located upon a car and each carrying a vertically-movable bar adapted to be moved into a position to be engaged with the inclined surface on one of said levers to vibrate said lever and the connected switch-tongue, substantially as described.

484,251. SHEET-DELIVERY MECHANISM. WALTER SCOTT, Plainfield, N. J. Filed May 1, 1891. Serial No. 391,362. (No model.)



Claim.—1. The combination, with mechanism for perforating the web transversely and tapes and rollers for forwarding the web, of a breaker-bar, a shaft and arms for carrying such breaker-bar, and gearing to drive the same at the same accelerated speed as the tapes and their rolls, substantially as set forth.

2. The combination, with mechanism for printing on a web and for perforating the same transversely, of tapes and a breaking-roll around which the tapes pass, such breaking-roll being peripherally recessed the thickness of the tapes which run in such recesses, and a breaker-bar, a shaft and arms carrying the same, and mechanism for revolving the shaft and giving to the breaker-bar an accelerated surface speed corresponding to that of the tapes for separating the sheets at the transverse perforations, substantially as set forth.

3. The combination, with mechanism for perforating the web transversely, of tapes and rolls for the same, one of which forms a breaking-roll and is recessed peripherally to correspond with and receive the tapes, and a breaker-bar and a revolving shaft carrying the same, such breaker-bar being recessed slightly in its operative surface and at places corresponding to some of the tapes, substantially as set forth.

4. The combination, with perforating-cylinders, tapes for carrying a web forward, and means for accelerating the speed of the tapes, of a shaft rotating in unison with the perforating-cylinders, a breaking-roll over which the tapes and web pass, and a breaker-bar connected to and rotating with the shaft to press the tapes and web toward the breaking-roll for accelerating the speed of the paper to separate the sheet from the web, substantially as set forth.

5. The combination, in a sheet-delivery apparatus, of tapes for carrying the web forward, a revolving shaft, arms secured to and revolving with the shaft, the breaker-bar composed of the rubber and its clamping-bars and connected to the arms, and a roll against which the breaker bar acts, substantially as set forth.

6. The combination, with the perforating mechanism and the breaker-roller and tapes, of a breaker-bar, a shaft and stock for holding the same, springs for pressing the breaker-bar outwardly, and adjusting-screws to limit the movement, substantially as set forth.

7. The combination, in a sheet-delivery apparatus, of tapes for carrying the web forward, a revolving shaft, adjustable bearings for the same, arms secured to and revolving with the shaft, and a breaker-bar having an elastic clamping-edge, and a roll against which the breaker-bar acts, substantially as set forth.

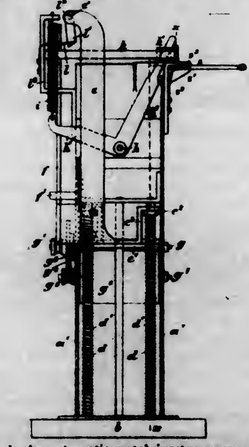
8. The combination, in a sheet-delivery apparatus, of a perforating mechanism, tapes for carrying the web forward, a breaker-roll, a revolving shaft and breaker-bar carried by such shaft and acting to nip the margin of the sheet between the roll and bar, substantially as set forth.

9. The combination, with the collecting-cylinder and belts for supplying sheets to the same, of a switch mechanism for moving the switch toward and from the collecting-cylinder, and a yielding connection between the switch and its actuating mechanism to prevent injury to the parts in cases where there is an obstruction to the movement of the switch toward the cylinder, substantially as set forth.

484,252. HOISTING DEVICE AND SUPPORT. HENRY SELLNER, New York, N. Y. Filed May 5, 1892. Serial No. 431,992. (No model.)

Claim.—In a hoisting device, the combination, with a support provided with an eye and a pulley above the eye, of a tackle provided with a hook for engaging the eye of the support, a lever pivoted to the shank of the hook of the tackle and having an eye in one end, and a rope passed over the said pulley and provided at one end with a hook engaging the hook of the tackle, the other end of the rope being passed through the eye of the lever pivoted to the tackle-hook, substantially as herein shown and described.

484,253. AUTOMATIC MATCH-IGNITOR. RUDOLF SIEMENS, Pforzheim, Germany. Filed June 2, 1892. Serial No. 435,221. (No model.)



Claim.—1. An automatic match-igniter composed of a match-receptacle with inclined bottom and a slot at the lower end thereof, a match-lifter movable vertically in said slot and having at the top a groove for receiving a match, a match-projector guided horizontally in the line into which the match is raised by the lifter when being at the top of its course, an elbow-lever in connection with and operating

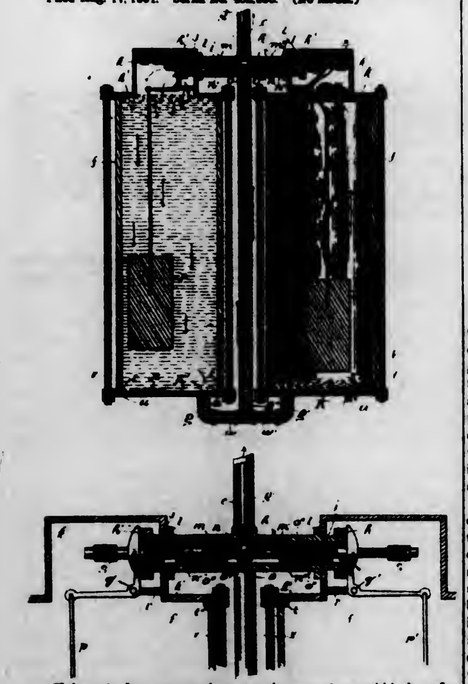
the projector, a spring acting on the lever to drive the projector against the tail end of the match when raised, a spring-catch arranged to retain the projector rearward of the match, a pin in rigid connection with the match-lifter and adapted on descending to operate the said lever to retract the projector and on rising to disengage the catch from the projector, and frictional spring-pressed surfaces placed in a line with the path of the projector and adapted to ignite the match when it is thrust along the same, substantially as described.

2. An automatic match-igniter composed of a match-receptacle *a*, having an inclined bottom a^2 and slot a^3, a vertically-movable match-lifter *c*, having a groove at the top, a match-projector *k'*, having guide-rods *k*, a bell-crank lever $k' k^2$, pivoted at *k* and having spring *i*, a spring retaining-catch *l l'*, having hook *l'*, a rigid arm *c* on the match-lifter having pin *c'*, frictional spring-surfaces at the discharge-opening for the match, springs *d'*, in connection with the lifter, to raise the same, and suitable check mechanism to prevent the too sudden action of said springs, substantially as described.

484,254. SINKER. DAVID W. SETTLE, Paducah, Ky. Filed Nov. 6, 1891. Serial No. 411,106. (Model.)

Claim.—A sinker having openings therein transversely to its major axis and openings at the extremities thereof and merging into its surface, said openings being for the passage of the line and for sliding engagement therewith.

484,255. PNEUMATIC WATER-ELEVATOR. ALONZO H. SIBLEY, Birmingham, Ala., assignor of one-half to Charles B. Roberts, same place. Filed Aug. 17, 1891. Serial No. 402,833. (No model.)



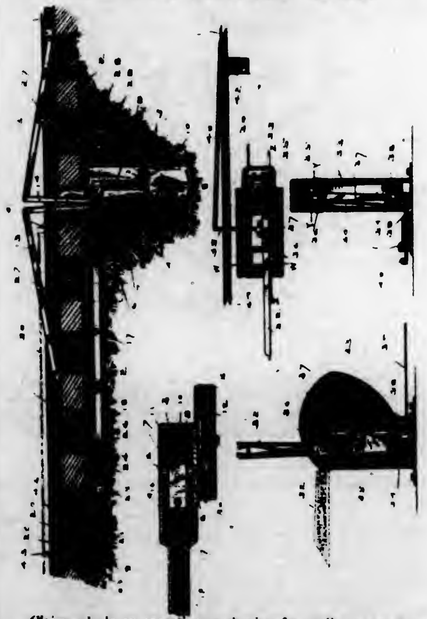
Claim.—1. In a pneumatic water-elevator, the combination of a compressed-air reservoir provided with a discharge-pipe leading to a valve-cylinder, a valve provided with cut-offs located in the cylinder, said cut-offs being provided with perforations, a piston located off a central point between the contiguous ends of the cut-offs, bell-crank levers, and weights attached to the levers, all arranged and adapted to operate in the manner and for the purpose set forth.

2. In a pneumatic water-elevator, a valve provided with cut-offs and a piston located off a central point between the cut-offs, in combination with levers attached to floats and arranged to act independently of the valve when moved in one direction and to actuate it when moved in the opposite direction, substantially as described.

3. In a pneumatic water-elevator, the combination of a compressed-air reservoir provided with a discharge-pipe leading to a cylinder containing a horizontally-movable air-valve provided with perforated cut-offs, a piston located off a central point between the cut-offs, and weights and levers for actuating the valve, all arranged and adapted to operate in the manner substantially as set forth.

4. The combination of a horizontal reciprocating valve provided with perforated cut-offs, a piston located off a central point between the cut-offs, and gravitating weights connected at the opposite ends of the valve to bell-crank levers, as and for the purpose substantially as set forth.

484,256. RAILROAD-GATE. COLUMBUS A. SNIDER, Greencastle, Ind. Filed June 24, 1892. Serial No. 437,845. (No model.)



Claim.—1. In an operating mechanism for a railway-gate, a vertical sliding box working in a casing set at one side of the track, teeth on such box engaging with a pinion on a shaft at one side, carrying a grooved wheel, an operating wire or cord attached to such wheel and the gate to be operated on, pivoted levers supported above the track and adapted to come in contact with the passing car-wheels, and rods pivoted to their inner ends, adapted to operate on the sliding box and depress the same, whereby the gate is allowed to fall, in combination with means for retaining such gate in a lowered position and releasing the same when the train has passed, substantially as shown and described.

2. An operating mechanism for a railway-gate, consisting of a casing set contiguous to the rails, a spring-controlled box sliding therein, teeth formed on the side of such box, engaging with a pinion on a shaft carrying a grooved fly-wheel within such casing, a wire or cord connecting such wheel with the weighted end of the gate to be operated upon, operating-levers pivoted to one side of the rails and adapted to be operated on by the wheels of a passing train, rods pivoted to the inner ends of such levers, their ends working in the sliding box, and a movable partition within such box, connected with a horizontal rod operated through a trip set at one side of the rail, whereby the gate will be operated through the movement of the sliding box by the train in one direction only, substantially as shown and described.

3. An operating mechanism for a railway-gate, consisting of a casing set beneath one of the rails, a spring-controlled box sliding on tracks therein, teeth formed on one side of such box, engaging with a pinion carried on a shaft, a grooved fly-wheel also mounted on said shaft and within the casing and connected by a cord or rope with the weighted end of a pivoted gate set at a suitable distance from the operating mechanism, operating-levers, their inner ends normally supported above a line with the rails by springs, and rods pivoted to such inner ends and adapted to operate on a partition within the sliding box, whereby upon the passage of the train over the operating levers the sliding box will be depressed and through its connections with the gate the latter will be dropped, substantially as shown and described.

4. An operating mechanism for a railway-gate, consisting of a spring-controlled box sliding within a suitable casing set beneath the rails, a grooved fly-wheel mounted on a shaft within such casing and rotated by the movement of such box through a rack and pinion, such fly-wheel connected by a wire or cord with the weighted end of a gate set at any suitable distance from such operating mechanism, pivoted levers held normally above a line with the rails and operated on by the wheels of the passing train, and rods connected to such levers and normally in connection with such sliding box, whereby through the movement of the levers the sliding box is operated on and through its connections with the gate the latter is lowered, substantially as shown and described.

5. An operating mechanism for a railway-gate, consisting of a spring-controlled box sliding on tracks within a suitable casing set beneath the rails, such box operating to rotate a grooved fly-wheel, also within such casing and connected by a wire or cord with the weighted end of a gate set at a suitable distance and pivoted within a base, means for holding the gate in a lowered position, a movable partition within the sliding box, detachably connected by an operating-rod, its end pivoted to a crank adapted to be operated upon by a lever whose end projects above a line with the rail, operating-levers pivoted to one side of the rail, their inner ends in line with and above the sliding box and above a line with the rail, and rods pivoted to their inner ends, and adapted to operate on the partition of the box upon a train passing over such operating-levers in one direction and to operate loosely within such box upon the train coming from the other direction after tripping the lever which removes the sliding partition of such box, in combination with a lever set within one of the rails and connected with a pivoted supporting-lever for releasing the gate when the train has passed, substantially as shown and described.

6. A railway-gate pivoted within a suitable base and carrying a weighted arm on its inner end, a wire or cord connected to such arm and carried by suitable pulleys along the rails to a suitable distance, where it is attached to a grooved fly-wheel of an operating mechanism, such fly-wheel mounted on a shaft within a casing beneath the rails, a pinion carried on such shaft and operated through engaging teeth on the side of a box sliding in grooves within such casing and supported upon a suitable spring, a movable partition within such box, adapted to be operated upon through pivoted levers, their inner ends above a line with the rail and engaging with the passing wheels of a train, whereby such sliding box is depressed and the gate allowed to fall, and a lever pivoted to one side of the track and adapted to engage with the wheels of the train and to operate in one direction upon a crank connected with a rod and the partition of the sliding box, whereby such partition will be withdrawn from the box and the operating-levers 13 will become inoperative, in combination with suitable means for holding such gate in a lowered position and releasing the same when the train has passed, substantially as shown and described.

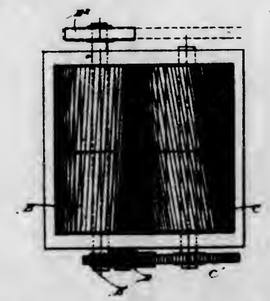
7. A railway-gate pivoted within a suitable base and having a weighted arm on its inner end, a cord connected therewith and passing over a pulley within such base and connected with mechanism at a suitable distance therefrom for raising and lowering such gate, a pivoted supporting-lever within such base, adapted to engage with the weighted end of the gate when the latter is raised, and a lever pivoted inside the rails and operated upon by the flange of the passing car-wheels to release the lowered gate when the train has passed, substantially as shown and described.

8. An operating mechanism for a railway-gate, consisting of a spring-controlled box sliding on tracks within a suitable casing set beneath the rails, teeth on the side of such box engaging with a pinion carried on a shaft having bearings in such casing, a grooved fly-wheel also carried on such shaft, a wire or cord attached to such fly-wheel and carried over suitable pulleys to the gate to be operated upon, a movable partition within such sliding box, connected with a rod whose outer end is pivoted to a crank, such crank pivoted within an extension of the main casing, a lever pivoted within such extension, one end engaging with such crank, its upper end extending above the rails and adapted to engage with the wheels of a passing train and to operate in one direction upon such crank and its connecting-rod, whereby the movable partition of the sliding box will be drawn out, operating-levers pivoted to one side of the track, their inner ends normally supported by springs above a line with the rail, and rods pivoted to such ends and adapted to work within the sliding box, whereby upon the passage of the train in one direction the levers will be depressed and with them the sliding box, whereby through its connections with the gate the same will be operated upon and upon the passage of the train from the opposite direction the arms will be inoperative within such box, substantially as shown and described.

484,257. DRESS. MARY K. SPAAR, Milwaukee, Wis. Filed Aug. 22, 1890. Serial No. 362,622. (No model.)

Claim.—As an improved article of manufacture, a dress consisting of a bodice C, adapted to fit the person, the part A, secured together and attached at its upper edge to the neck of the bodice and by a curved line of stitches to the lower part thereof, as at *a*, thereby forming a fold A', and a cord D, surrounding and secured to the neck part and adapted to be crossed in front and then behind, and thence carried forward and tied beneath the fold and on which the fold rests, substantially as described.

484,258. DECORTICATING GRAIN. JULES SLOAN, Paris, France. Filed Apr. 13, 1890. Serial No. 348,487. (No model.) Patented in Belgium Jan. 8, 1890, No. 86,732; in France Jan. 9, 1890, No. 199,991, and in England Feb. 1, 1890, No. 1,772.



Claim.—1. The combination of the rotatable roll B and the rotatable roll C, arranged to rotate in the same direction at different speeds, one of said rolls having left-hand spiral corrugations and the other roll having right-hand spiral corrugations, substantially as set forth.

2. The combination of the roll B and the roll C, arranged to rotate in the same direction at different speeds, one of said rolls having left-hand spiral corrugations and the other right-hand spiral corrugations, the inclinations of said corrugations being arranged in inverse ratio to the velocity of the roll, substantially as set forth.

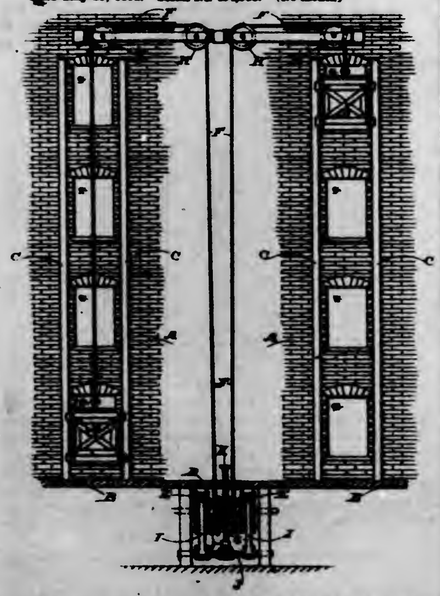
3. The combination of the roll B, rotatably mounted in fixed bearings in the frame, the roll C, rotatably mounted in the upper ends of pivoted levers E, rods G, passing through the lower ends of said levers and provided with eyes G', springs K, seated on said rods and confined against the lower ends of levers E, shaft I, carrying eccentrics which engage in the eyes G', and a lever J for operating said eccentrics, substantially as set forth.

484,259. VEHICLE RUNNING-GEAR. EDWARD STOKES, Poughkeepsie, N. Y. Filed Mar. 5, 1892. Serial No. 424,114. (No model.)

Claim.—In a vehicle running-gear, the combination, with a lowered or cranked axle, of the end spring having inwardly-turned ends to which the side bars are secured, the head-block, the bearing-plate, and the fifth-wheel, to which said spring is connected at points midway between the king-bolt and the side bars, substantially as set forth.

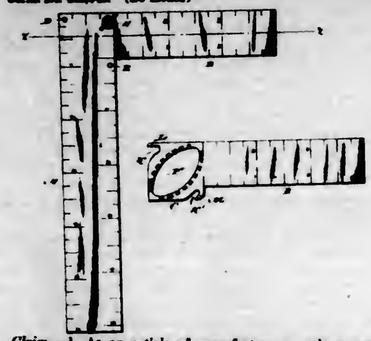
484,259.

484,260. FIRE-ESCAPE. PHILIP B. SULLIVAN, Tuscarora, Nev. Filed May 26, 1892. Serial No. 434,333. (No model.)



Claim.—An improved fire-escape consisting of the fixed guides, the oppositely-moving cages adapted to travel between said guides and by the vertical tiers of windows of a building, a winding-drum under the sidewalk at the base of the building and actuated by the weight of the loaded cage, a cable wound in opposite directions upon said drum and having its ends attached each to one of said cages, whereby the drum is turned under the weight of the loaded cage to pay out that end of the cable attached to said cage and to wind up that end attached to the empty cage, guide-pulleys for directing said cable, a brake for controlling the movement of the drum, a lever accessible from the sidewalk, and connections comprising a rock-shaft and a crank-arm connected with the lever for operating the brake, substantially as herein described.

484,261. FOLDING SQUARE. JAMES C. SWIRE, South Ann, Mich., assignor of one-half to J. H. Lemmy, same place. Filed Feb. 20, 1892. Serial No. 422,963. (No model.)



Claim.—1. As an article of manufacture, a scale measure and square consisting of a member having a bifurcated end, another member provided with an elliptical slot or aperture and fitted in the bifurcated end of the other member, and a set-screw passing through the slot for holding the two members rigidly together, substantially as described.

2. In a scale-measure, the combination of an arm having one end bifurcated, the pins connecting the sides of said bifurcated end, another member provided with a slotted end which fits in the bifurcated end of the first member, said slotted end being provided with suitable notches or recesses to receive the pins in the first member, and a set-screw passing through the slot for holding the two members in the desired relative positions, substantially as described.

3. As an article of manufacture, a scale measure and square comprising the bifurcated member having the fixed pins, a slotted member fitted in the bifurcated end of the other member and provided with seats to receive the fixed pins, and a set-screw passing through the slot for clamping the bifurcated end of one member upon the other member to hold the two parts rigidly in position, substantially as and for the purpose set forth.

4. As a new article of manufacture, a scale measure and square comprising the member having one of its ends bifurcated, another member fitted in the bifurcated end of the first member and having a slot whose major axis is at an angle to the longitudinal axis of the member and has its edges graduated, and a set-screw operating in the bifurcated end of the one member and passing through the slot in the other member, substantially as described.

5. As a new article of manufacture, a scale measure and square comprising the bifurcated member provided with the fixed pins or stops at the angles or corners of the bifurcated part thereof, another member with a transversely-inclined slot and the seats on the opposite sides of the slot to receive the fixed stops on the other member, and a set-screw passing through the slot between the fixed pins or stops of the bifurcated member, substantially as described.

484,262. APPARATUS FOR WRITING MUSIC. ANGELO TESSARO, Padua, Italy. Filed Apr. 2, 1892. Serial No. 427,264. (No model.)

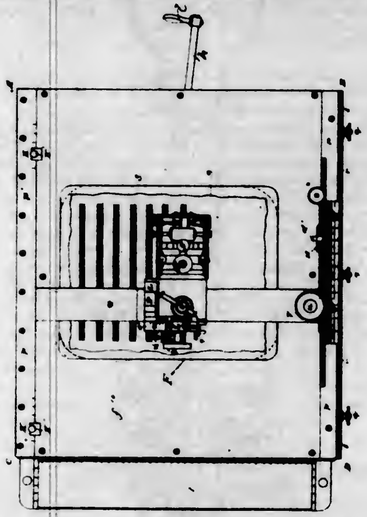
Claim.—1. An apparatus for writing music, comprising a suitable bed or frame, a freely-movable support for the material on which the music is to be written attached to said bed, and a carriage traveling on said bed and provided with means for the attachment of different instruments for writing, substantially as described.

2. An apparatus for writing music, comprising a suitable bed, a frame, a freely-movable support for the material on which the music is to be written attached to said bed, a sliding bar on said bed, and a support for the writing-instruments movable on said bar, substantially as described.

3. An apparatus for writing music, comprising a suitable bed, a frame, a grooved movable support or turn-table for the material on which the characters are to be written, and a carriage traveling on said bed and provided with means for the attachment of the different writing-instruments, substantially as described.

4. An apparatus for writing music, comprising a suitable bed or frame, a movable support for the material on said bed, said bed having grooves upon two sides thereof, a bar, as G, attached at either end to slides movable in said grooves, means for moving said bar or carriage along the grooves, and a sliding block on said bar, to which can be secured different instruments for writing, substantially as described.

5. An apparatus for writing music, comprising a suitable bed, a frame, a movable support for the material on said frame, said bed having grooves on two sides thereof, upright bars attached to said bed adjacent to the grooves, a rack carried by one of said upright bars, a bar G, attached at either end to slides movable in said grooves, and a pinion supported by one of said slides and meshing with the rack, and means for turning said pinion to move the carriage, and a sliding block attached to said bar, to which are adapted to be attached various writing-instruments, substantially as described.



6. An apparatus for writing music, comprising a suitable bed or frame, a movable support for the material on said frame, said bed having grooves upon two sides thereof, upright bars attached to said bed adjacent to the grooves, a rack carried by one of said upright bars, a bar G, attached at either end to slides movable in said grooves, and a pinion supported by one of said slides and meshing with the rack, and means for turning said pinion to move the carrier, and a sliding block on said bar movable thereon by means of a rack and pinion, a rack carried by the bar and the pinion by the block, said sliding block being adapted to the support of various writing-instruments, substantially as described.

7. An apparatus for writing music, comprising a suitable bed or frame having upright bars attached thereto provided with a graduated scale, a support for the material on which the carriers are to be inserted movable on said bed, a sliding bar, a carriage, and an indicator carried thereby to register with the marks on the scale, and a sliding block adapted to support various writing-instruments and movable on said bar, said block having, also, a scale and indicator, substantially as described.

8. An apparatus for writing music, comprising a frame, a main carrier carried thereby, a sliding block secured to said carrier, a ruling device adapted to be secured to said sliding block and consisting of a plate provided with lateral arms or branches, an oscillating frame pivoted thereto, an inking-roller on said oscillating frame, ruling-disks suitably mounted thereon, and means for forcing the inking-roller against the ruling-disks, substantially as set forth.

9. An apparatus for writing music, comprising a frame, a main carrier carried thereby, a printing device adapted to be applied to said main carrier and consisting of a frame, an inking-roller displaced axially therein, a pivoted stem or cone on said frame, a type-bar sliding in said stem and provided with a type-wheel, and an adjustable indicator, all operating substantially as and for the purpose set forth.

484,263. ROOF-VALLEY. FREDERICK C. TRUMBOUR, Evansville, Ind. Filed Mar. 18, 1892. Serial No. 425,621. (No model.)

Claim.—1. The combination, in a roofing-valley, of a fixed concave bed and a bodily-removable sheet-metal trough or gutter resting thereon, the edges of said gutter being housed within grooves of the roof, substantially as herein described, and for the purpose stated.

2. The combination, in a roofing-valley, of a concave bed A, side beams B B', secured to said bed, longitudinal grooves *b b'* along the inner surfaces of said beams, and a bodily-removable sheet-metal trough or gutter G, resting upon said bed and having its margins housed within said grooves *b b'*, all as herein described, and for the purpose stated.

3. A roofing-valley bed consisting of a series of slats A, arranged side by side and having a concave upper surface, in combination with

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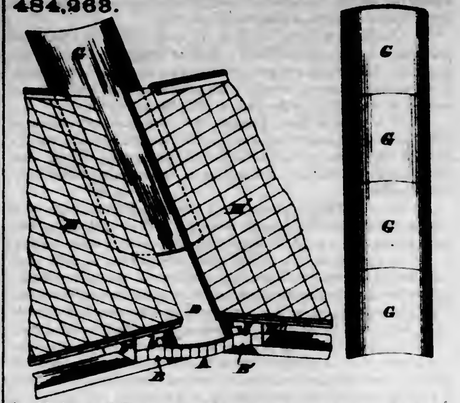
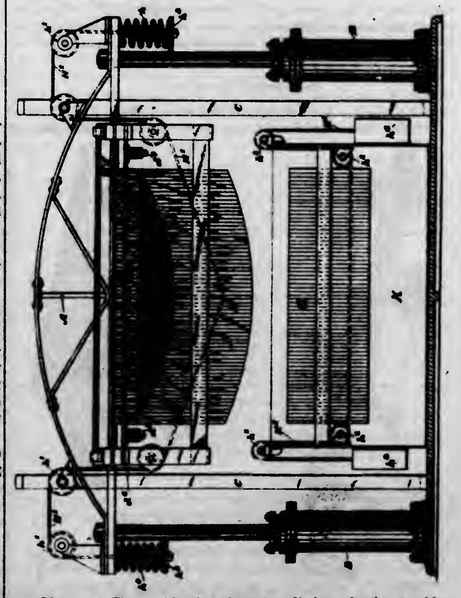


the side beams B B' and a tie rod C, that unites said slats and beams, as herein described.

484,264. MEANS FOR SHAPING METAL PLATES, BARS, &c. NICHOLAS B. TRIST, Pittsburg, Pa. Filed Jan. 14, 1892. Serial No. 418,089. (No model.)



Claim.—1. The combination of a series of independently-movable plates forming a hammer, a series of adjusting plates or wedges longitudinally movable relatively to the first-named plates for setting them in any required relative positions, and a series of independently-movable plates forming an anvil for the hammer.

2. In a metal-working machine, the combination of a hammer and an anvil, each consisting of a series of independently-movable plates placed side by side, and adjusting devices consisting of wedges movable along the backs of the plates of one set for fixing them in definite relative positions, and thereby causing their faces to present a determinating curve or contour.

3. In a metal-working machine, a hammer consisting of a series of plates placed side by side and a yielding support therefor and a corresponding series of backing-wedges for adjusting the plates, the pitch of the wedges from either end to the center gradually increasing.

4. In a metal-working machine, the combination of a series of vertically-movable plates placed side by side and having their upper ends beveled at different angles and a series of adjusting-wedges for

setting said plates, the respective wedges engaging the beveled ends of the several plates, substantially as described.

5. In a metal-working machine, the combination of a series of plates independently movable and a series of wedges for adjusting the plates, the pitch of said wedges increasing from each end to the center of the series and the end of each plate adjacent to said wedges being beveled to correspond to the pitch of the adjacent wedge.

6. In a metal-working machine, the combination of a series of plates forming a hammer and a series of wedges for adjusting the position of said plates, a flexible cord or cable extending through said plates supporting the same, and springs or weights placing said cord under tension.

7. In a metal-working machine, a hammer or anvil composed of a series of independently-movable sections, a cord or cable supporting said sections, and a spring or weight placing said cord under tension.

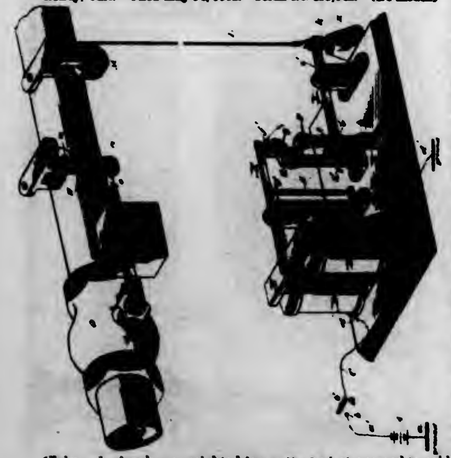
8. In a metal-working machine, the hammer and an anvil, each composed of a series of independently-movable plates, adjustable backing-wedges for adjusting the relative positions of the plates of one series, and a vertically-movable frame supporting one of the series above the other, and means for advancing the frame, substantially as described.

9. In a metal-working machine, the combination of the vertically-movable frame A, a hammer carried thereby, consisting of adjustable plates and a yielding support for the same, and the hydraulic cylinders for advancing the frame, substantially as described.

10. In a metal-working machine, a hammer consisting of a series of independently-movable plates and series of beveled wedges for adjusting the plates, said wedges being rounded upon the edges presented to the plates and the plates being grooved to correspond, substantially as described.

11. In a metal-working machine, a hammer composed of independently-movable plates and adjustable wedges for the respective plates, each plate and its corresponding wedge fitting together by a groove and rounded edge, the end of the plate being beveled to correspond to the pitch of the wedge.

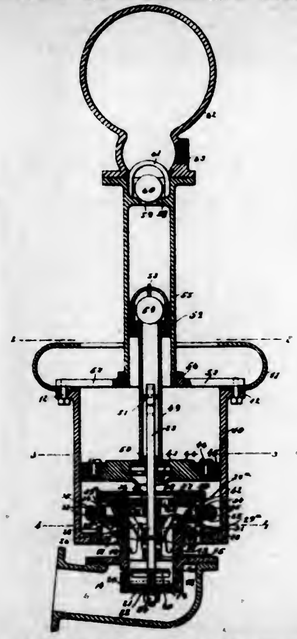
484,265. VALVE-OPERATING MECHANISM. JACOB WAGNER, Sidney, Ohio. Filed May 31, 1892. Serial No. 435,042. (No model.)



Claim.—1. A valve, a weighted lever attached at one end to said valve, a pivoted arm normally supporting the free end of said lever, a rope attached to said arm, a pulley over which the rope passes, a weight attached to the rope, a trip-lever normally supporting said weight, means for holding the trip-lever, a normally-open electric circuit, means for closing the same, a battery for energizing the circuit, an electro-magnet included in the circuit, an armature, and mechanism operated by the armature as the circuit is closed to release the trip-lever, thereby permitting the weight to drop and disengage the pivoted arm from the weighted valve-lever.

2. A valve, a weighted lever attached at one end to said valve, a pivoted arm normally supporting the free end of said lever, a rope attached to said arm, a pulley over which the rope passes, a weight attached to the rope, a trip-lever normally supporting said weight, a pivoted pin-carrying arm normally engaging the trip-lever, a weighted swinging arm, a hooked lever adapted to engage the swinging arm, an armature attached to the hooked lever, an electro-magnet, a normally-open electric circuit, in which the electro-magnet is included, a battery, and a switch for closing the circuit, substantially as described, and for the purposes set forth.

484,266. HYDRAULIC RAM. LEWIS T. WESTON, Northfield, Mass. Filed Nov. 26, 1891. Serial No. 413,041. (No model.)



Claim.—1. The combination, with two differential cylinders each having an imperforate piston, a tube connecting the two pistons and opening at its ends into the said cylinders to conduct the water from the lower part of the larger cylinder into the smaller upper cylinder, and a check-valve operating over the upper end of the said tube, of a central leaking inlet-valve connected with the lower end of the larger cylinder and an exhaust or outlet valve in the bottom of the larger cylinder to exhaust the water therefrom to permit the descent of the pistons, said inlet and exhaust valves being connected together and adapted to be operated by the rise of the pistons, substantially as set forth.

2. The combination, with the differential cylinders, the two imperforate pistons having a tube connecting them and the two cylinders at opposite sides of said pistons to conduct water from the lower to the upper cylinder, a check-valve closing the upper end of the tube within the upper cylinder, and a check-valve in the smaller upper cylinder above its piston, of a central leaking inlet-valve in the bottom of the larger cylinder and an exhaust or outlet valve also in the bottom of the larger cylinder to exhaust the water and permit the pistons to descend, a rod connecting the two valves, extending up into the piston-tube and provided with a projection to be engaged by the lower piston in its upward movement, substantially as set forth.

3. The combination, with the differential cylinders and their pistons, a tube connecting the two pistons and the two cylinders at opposite sides thereof to conduct water from the lower to the upper cylinder, and check-valves in the upper cylinder and upper end of said tube, of a central inlet-pipe in the bottom of the larger cylinder and having lateral apertures exterior thereto, a cap-like valve operating on said leaking inlet-pipe and having lateral openings, exhaust-outlets in the bottom of the said cylinder, a centrally-apertured valve-plate in the cylinder and having plugs on its lower side to close said outlets, and a rod connecting said valve and plate and operated by the upward movement of the pistons, substantially as described.

4. The combination, with the differential cylinders having pistons, a tube connecting the two pistons to conduct the water from the lower into the upper cylinder, a flange 48 on the lower side of the larger piston, and a check-valve for the upper end of the said tube, of a central inlet-valve in the bottom of the larger cylinder, exhaust-outlets also in the bottom of said cylinder exterior to the inlet-valve, an exhaust or outlet valve comprising a plate having a central opening to permit the passage of water from the inlet-valve and provided on its lower face with plugs to close the exhaust-outlet, a flanged cap resting on the upper side of the said plate and having a central opening to closely embrace the piston-flange 48, and means for simultaneously operating the inlet and exhaust valves from the said pistons, substantially as set forth.

5. The combination, with the main cylinder having a central inlet in its bottom, provided with a leaking-valve, an annular channel 29 in the bottom of the cylinder, exhaust-outlet apertures beyond said channel, of the valve-plate 25, having a central opening, an annular flange 28, entering channel 29, plugs closing the exhaust-outlet apertures, a notched annular flange 32 on the upper side of the valve-plate, horizontal annular packing 34 concentric therewith, the centrally-apertured cap having a depending flange 30 resting on said packing, and connections between the said valve-plate and inlet-valve, substantially as set forth.

6. The combination, with the differential cylinders, the lower larger cylinder being open at its upper end and provided with the extension 11, the imperforate pistons having a tube connecting them and conducting the water from the lower into the upper cylinder, and a check-valve for the upper end of said tube, of the inlet-valve at the bottom of the cylinder, an exhaust-valve also in the lower part of the cylinder and connected with the inlet-valve, and means for operating said valves by the upward movement of the pistons, substantially as set forth.

7. The combination, with the differential cylinders and the pistons therein having a connecting-tube to conduct the water from the lower into the upper cylinder, a central inlet-tube 13 in the bottom of the larger cylinder and having lateral apertures and a guide-collar 15, provided with upward-extending arms 17, and exhaust-outlet apertures 30 in the bottom of the said cylinder beyond the plate inlet-tube 13, of the leaking inlet-valve 18, inclosing the lower end of the inlet-tube and having lateral apertures, the valve 25, having a central collar 27, arms 26, guided by arms 17, and plugs 29, closing the outlets 30, the centrally-apertured cap 36, resting upon valve-plate 25, and the rod 23, connecting the valve 18 and plate 25, extending up into the water-conducting tube and provided with a projection 51, to be acted upon when the pistons move upward, substantially as set forth.

484,267. PAPER-FILE. OLIVER F. WARNER, Liverpool, England. Filed Jan. 21, 1891. Serial No. 378,885. (No model.)

Claim.—1. The combination of the binding-eyes C, boards E and H, binding-cords D, having needles F permanently attached thereto, and adjustable fastening devices temporarily securing the needle ends of the cords to the board H, substantially as described.

2. The combination of the binding-eyes B, boards E and H, cords D, needles F, and extensible connections J K, substantially as described.

3. In a binding or filing appliance, the combination of a series of binding-eyes B, a lower board E, a flexible back flap G, forming an extension of the lower board and adapted to be folded over onto the papers, an upper board H, one or more binding cords D, attached to the lower board and threaded through the eyes B, flap G, and upper board H successively, and adjustable devices connecting the cords temporarily to the upper board, substantially as described.

4. The combination of the eyes B, boards E and H, flap G, cords D, needles F, hooks J, and adjustable connections *k k'*, all arranged substantially as and for the purposes described.

5. In a binding or filing appliance, the combination of the board E, having flexible flap G, the board H, the cords D, attached to the board E and adapted to be connected to the edges of the papers and to be threaded successively through the flap G and board H, the needles F, and adjustable devices for securing the needle ends of cords D to board H, substantially as described.

6. In a binding or filing appliance, the combination, with a series of rigid binding-eyes adapted to be attached to the papers at or near one edge thereof, of one or more binding-cords threaded through said eyes, a fixed fastening on one end of each cord, and an extensible fastening on the other end thereof, substantially as described.

7. The combination of the binding-eyes B, binding-cords D, needles F, fixed fastening on one end of each cord, and extensible fastening on the opposite end thereof, substantially as described.

8. The combination, with a rigid binding-eye B, having a loop *b*, adapted to project through the folds of the papers from the inside, of a flat needle C, having a hook *d* for engaging the loop *b*, and a blade of approximately the same width as the loop, whereby the folds of the paper may be perforated and the loop drawn through into position at one operation, substantially as described.

484,268. BINDING DEVICE FOR PERIODICALS, NEWSPAPERS, &c. OLIVER F. WARNER, Liverpool, England, assignor of one-half to Montagu Higginson and David Maurice Vaughan, same place. Filed Feb. 2, 1891. Serial No. 379,575. (No model.)

Claim.—1 In a paper-filing appliance, the combination, with the flexible binder B, the stop-disk D, and the perforator C, of a loose retaining-piece E, embracing the binder and bearing against the papers thereon, and a catch, as described, on the piece E for securing the same positively to the binder, substantially as described.

2. In a paper-filing appliance, the combination of the chain B, stop-disk D, perforator C, loose retaining-piece E, having slot *f*, adapted to receive a link of the chain edgewise, and slotted spring F on the piece E, also adapted to receive said link and to bear against the chain-link above it and press the piece E down onto the papers, substantially as described.

3. The combination of the chain B, stop-disk D, perforator C, loose retaining-piece E, spring F, and cord H, connecting the piece E and disk D, substantially as described.

4. The combination of the chain B, stop-disk D, slotted retaining-disk E, and slotted spring F, substantially as described and shown.

5. In combination with the flexible binder of a paper-filing appliance, a stop-piece D, fixed to one end of the binder, a loose retaining-piece E, having a fastening device and adapted to be attached to any desired point on the binder, and a flexible line H, connecting the pieces D and E to prevent the loss of said loose piece E when detached from the binder, while permitting said piece E to be manipulated independently of the stop-piece D, substantially as described.

6. In combination with the binding-chain of a paper-filing appliance, a retaining-disk E, having a slot *f*, adapted to receive a link of the chain edgewise, and a flat spring F on the disk E, having a similar slot to receive said link edgewise, and having, also, a cross-slot *f'* to receive the end of the link above it when the disk is pushed home onto the chain, substantially as described.

7. The combination of the binding-chain B, slotted retaining-disk E, spring F, formed in one with the disk E and having slots *f* and *f'*, and lip G on the disk in proximity to the free end of the spring, substantially as described and shown.

8. In a paper-filing appliance, the combination, with a flexible binder and a perforator connected thereto, of a guard adapted to receive the point of the perforator in such manner as to form an extension thereof and to serve as a temporary paper-holding device, substantially as and for the purposes described.

9. In combination with the flexible binder B and perforator C, the perforator-guard M, having collar *m* and forming an extension of the perforator, substantially as and for the purposes described.

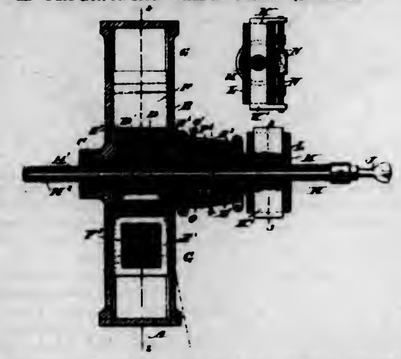
484,269. REDUCTION OF COMPLEX ORES. WILLIAM C. WETHERILL, Joplin, Mo. Filed June 26, 1888. Serial No. 438,469. (No specimens.)

Claim.—1. For the reduction of complex ores containing silver and gold, or either of these metals, in association with zinc, the process which consists, first, in calcining the ores to rid them of sulphur; second, treating the calcined ores in a Wetherill zinc-furnace to separate the zinc and some of the gold and silver from the original ores; third, smelting the cinder resulting from said furnace treatment in a furnace such as is commonly used in smelting for silver and gold; fourth, treating the powdered substances (condensed fumes) produced by said Wetherill furnace treatment in a retort-furnace commonly used for the reduction of metallic zinc, and, finally, subjecting the cinder from the said retort-furnace to the smelting treatment commonly employed in smelting for silver and gold, substantially as set forth.

2. For the reduction of complex ores containing silver and gold, or either of these metals, in association with zinc, the process which consists, first, in treating the ores in a Wetherill zinc-furnace to separate the zinc and some of the gold and silver from the original ores; second, smelting the cinder from said furnace treatment in a furnace such as is commonly used in smelting for silver and gold; third, treating the powdered substances (condensed fumes) produced by said Wetherill-furnace treatment in a retort-furnace commonly used for the reduction of metallic zinc, and, finally, subjecting the cinder from the

furnace last mentioned to the smelting-trentpent commonly employed in smelting for silver and gold, substantially as set forth.

484,270. DRILLING-MACHINE. ROBERT H. WILLERMAN, Belleville, Ill. Filed Nov. 20, 1891. Serial No. 412,009. (No model.)



Claim.—1. In a drilling-machine, the combination, with a longitudinally-yielding drill-shaft, of a rotary engine arranged centrally on the said drill-shaft for turning and feeding the same, substantially as shown and described.

2. In a drilling-machine, the combination, with a drill-shaft formed with a screw-thread, of a yielding nut engaging the said thread on the drill-shaft to permit the shaft to yield longitudinally, and a rotary engine held centrally on the said shaft and imparting a rotary motion to the same, substantially as shown and described.

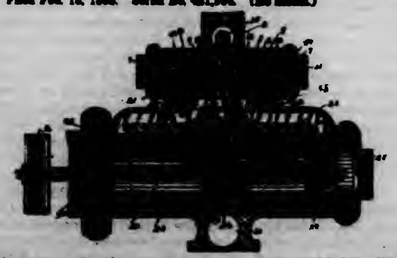
3. In a drilling-machine, the combination, with a rotary engine provided with a cylinder and a hollow shaft, and a piston secured on the said shaft and operating in the said cylinder, of a drill-shaft mounted to slide in and to turn with the said hollow shaft, the said drill-shaft being provided with a screw-thread and laterally movable nuts supported yieldingly from the said cylinder and engaging the said screw-thread on the drill-shaft to feed the screws and permit it to yield longitudinally, substantially as shown and described.

4. In a drilling-machine, the combination, with a drill-shaft having a positive rotary motion and provided with a screw-thread, of a nut engaging the said screw-thread, and a casing containing the said nut and mounted to slide yieldingly, substantially as shown and described.

5. In a drilling-machine, the combination, with a drill-shaft having a rotary motion and provided with a screw-thread, of a nut engaging the said screw-thread, a casing containing the said nut and formed with a conical hub, a sleeve formed with a conical seat for the said hub, and a spring pressing on the said conical hub, substantially as shown and described.

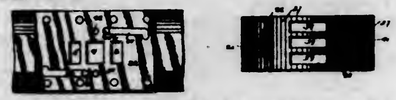
6. In a drilling-machine, the combination, with a drill-shaft having a rotary motion and provided with a screw-thread, of a nut engaging the said screw-thread, a casing containing the said nut and formed with a conical hub, a sleeve formed with a conical seat for the said hub, a spring pressing on the said conical hub, and a rotary engine supporting on its cylinder the said sleeve and imparting a positive rotary motion to the said shaft, substantially as shown and described.

484,271. WATER-MOTOR. CHARLES L. WILKIN, Columbus, Ohio. Filed Feb. 18, 1892. Serial No. 421,904. (No model.)



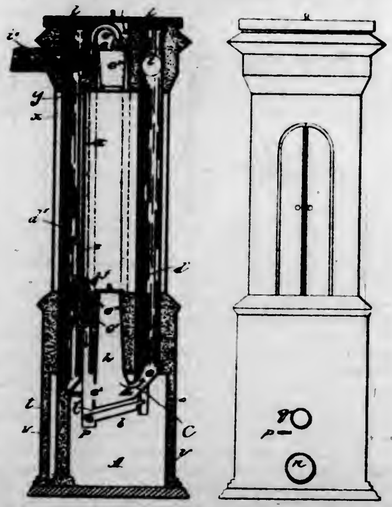
Claim.—1. In a water-motor, the combination, with the cylinder 24, a ring-valve therein, openings 23, pockets 40 41, and notches 42 43 in said ring-valve, the latter having a sliding motion, as described, of a valve-cylinder, a reciprocating valve therein, and ports connecting said cylinder 24 with the valve-cylinder, said ports adapted, as described, to be opened and closed by the movement of said ring-valve, substantially as specified.

2. In a water-motor, the combination, with the power-cylinder 24 and driving-piston therein, valve-cylinder 2, the valve 8 and its operating-piston therein, and a feed-pipe for said valve-cylinder, and two pairs of live-water passages, one passage of each pair connecting cylinder 24 and feed-pipe 44 and the other connecting cylinder 24 and one end of the cylinder 2, of a valve-ring 37, fitting and sliding in cylinder 24, and separated pockets 40 41 in said ring, the latter adapted to be forced to such position in said power-cylinder as to alternately form a connection through the medium of said pockets between the passages composing each of live-water passages, substantially as described.



3. In a water-motor, the combination, with the power-cylinder 24 and driving-piston, as described, therein, valve-cylinder 2, and feed-pipe therefor, and two pairs of live-water passages, one passage of each pair connecting cylinder 24 and feed-pipe 44 and the other connecting the cylinder 24 and one end of the cylinder 2, of a valve-ring 37, fitting and sliding within the cylinder 24, separated pockets 40 and 41 in said ring, and notched outlets 42 and 43 on opposite sides of said ring and opposite said pockets, said ring adapted to be forced in such position in said power-cylinder as to alternately form a connection through the medium of said pockets between the passages composing each pair of live-water passages, substantially as specified.

484,272. HEATING AND VENTILATING APPARATUS. AUGUST WILLEMSEN, Stadtsteinhorst, Germany. Filed Jan. 2, 1889. Serial No. 295,162. (No model.) Patented in Germany Jan. 1, 1888, No. 45,461.

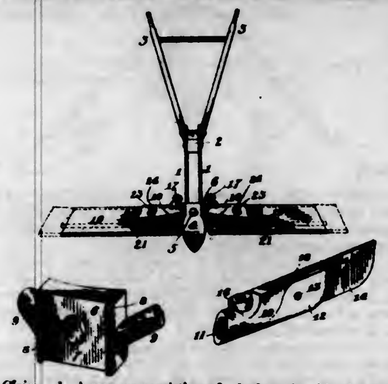


Claim.—1. In combination, the fire-box, the conduits for the products of combustion, including the pipe d^3, the ventilating-pipe e, extending from the top of the heater to the fire-box, the openings e^1 and e^2, and the valve d', arranged to control the admission of air through the opening e^2, leading to the top of the hopper, the said opening e^1 leading to the fire-box.

2. In combination, the lower casing containing the fire-box and ash-pit, a series of vertical conduit-pipes for the products of combustion, connected to each other, each of said pipes having a funnel extension m at its lower end extending into the ash-pit, substantially as described.

3. In combination, the lower casing containing the fire-box, ash-pit, and hopper with filling or cooling material, the upper casing, also having cooling material, the series of vertical conduit-pipes extending from the lower to the upper casing, the funnels m at the lower ends of the said pipes, and the movable screws seated in the cooling material and closing the upper ends of the pipes, substantially as described.

484,273. AGRICULTURAL SCRAPER. ROBERT H. WILSON, Unionville, Va. Filed July 18, 1891. Serial No. 399,669. (No model.)

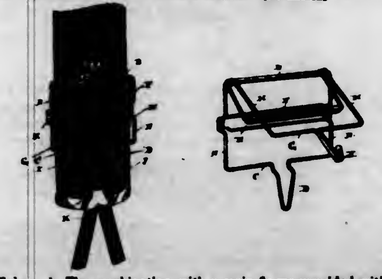


Claim.—1. A scraper consisting of a body or head having an obliquely-arranged round stud, a holder mounted on and adjustable on said stud, and a cutter-plate secured adjustably to the holder, substantially as described.

2. A scraper consisting of a body or head having a stud, a holder constructed with arms having bolt-holes and secured to said stud, and a cutter-plate having bolt-holes constructed with a recess fitting the socket portion of the holder and secured to the arms of the holder, substantially as described.

3. The combination of the body or head having obliquely-arranged studs and flanges and adapted to be secured to a standard or stock, the holders having sockets constructed with arms and provided with set-screws or set-bolts and nuts, and the cutter-plates forming wings or blades having bolt-holes and adjustably secured to the arms of the holders, substantially as described.

484,274. SUSPENDER-BUCKLE. ROBERT M. WILSON, Newberry, Pa. Filed Nov. 5, 1891. Serial No. 410,995. (No model.)



Claim.—1. The combination, with a main frame provided with a cross-bar between its ends, of the spring-frames F H, which are pivoted and depend from the upper end of the main frame, at which point the said pivoted frames are rigid with each other, the frame F being adapted to bear inward against the said cross-bar, and a means for securing the lower end of the frame H to main frame, substantially as shown and described.

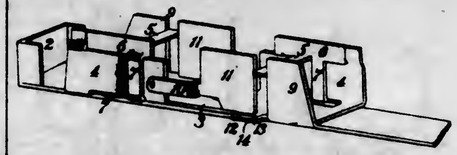
2. In a suspender-buckle, the combination, with a main frame formed with a depending loop D and a cross-bar secured to the said frame between its ends, of a clamping device consisting of a frame doubled upon itself and hinged to the main frame at the doubled point, the inner end of the frame being adapted to bear against the said cross-bar, a hook formed on the outer end of the said clamping-frame and which swings inward through the loop D, and a means for holding the said hook behind the loop, substantially as described.

484,275. BINDER FOR LEAVES. GEORGE H. WESLOW, Pittsburg, Pa. Filed Mar. 31, 1892. Serial No. 427,262. (No model.)

Claim.—1. A binder for leaves, consisting of a laterally-movable plate provided with side pieces having inwardly-projecting prongs attached thereto and adapted to be pushed through the leaves by a lateral movement of the plate, substantially as set forth.

2. A binder for leaves, having, in combination, a base or foundation plate, a plate movably connected thereto and provided with side pieces having inwardly-projecting prongs attached thereto, substantially as set forth.

3. A binder for leaves, having, in combination, a movable plate provided with side pieces having inwardly-projecting prongs attached thereto and a lock for holding the leaves upon the prongs, substantially as set forth.

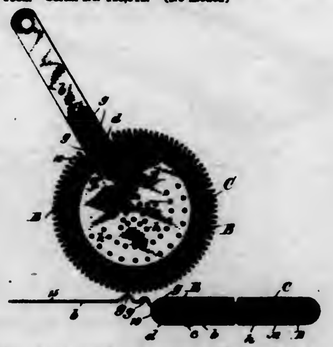


4. A binder for leaves, having, in combination, a base or foundation plate, a plate pivoted thereon and provided with vertical sides on opposite edges, and prongs detachably connected to said sides, substantially as set forth.

5. A binder for leaves, having, in combination, a base or foundation plate provided with guards along its edges, a plate pivotally mounted on the base-plate and provided with vertical sides, inwardly-projecting prongs attached to the sides, and locks for holding the leaves on the prongs and locking the movable plate parallel with the base-plate, substantially as set forth.

6. In a binder for leaves, the combination of a base or foundation plate, a plate movably connected to the base or foundation plate and provided with side pieces having inwardly-projecting prongs, and a locking device for holding the movable plate parallel with the base-plate, substantially as set forth.

484,276. STRAINER FOR MIXED DRINKS. WILLIAM WRIGHT, Boston, Mass., assignor to Dennis P. Sullivan, same place. Filed July 19, 1892. Serial No. 440,512. (No model.)



Claim.—1. In a strainer, the combination, with the bottom plate and its handle, of a wire ring extending around said plate a short distance from its outer edge and a coil of wire placed upon and supported by said ring and extending around the edge of said plate without being connected therewith, said wire ring being divided or disconnected at its ends to leave a space or opening through which said wire coil may be placed upon said ring and readily removed therefrom, substantially as and for the purpose set forth.

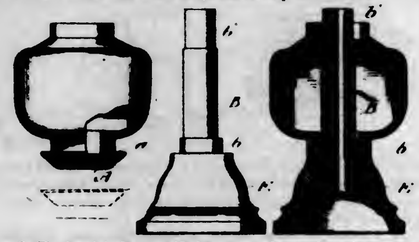
2. In a strainer, the combination of the bottom plate A, provided with a handle b, having transverse corrugations g at its inner end, a divided wire ring B, secured to said handle and extending around the plate A at a short distance from its outer edge, and the wire coil C, mounted upon and supported by said ring B and extending around the edge of the plate A without being connected therewith, said wire coil C being made removable from the ring B through the space or opening between the separated ends of said ring, all constructed and arranged to operate substantially as set forth.

484,277. PROCESS OF MANUFACTURING CENTRAL-DRAFT LAMPS. WILLIAM A. YOUNG and ASA G. HEVELL, Batavia, Ill. Filed Aug. 6, 1891. Serial No. 401,903. (No model.)

Claim.—1. The hereinbefore-described process of manufacturing central-draft glass lamps, which consists in forming the base and the central draft-tube in one piece, then forming the bowl in a separate piece, and subsequently inserting the tube within the bowl and uniting the bowl and the tube together by the application of heat which fuses the glass, substantially as set forth.

2. The hereinbefore-specified process of manufacturing central-

draft glass lamps, which consists in forming the base and the central draft-tube in one piece, the base having an exterior annular shoulder, then forming the bowl in a separate piece, and subsequently inserting the tube within the bowl until the said annular shoulder touches the lower edge of the bowl and uniting the bowl and the tube together by a fusion of the surfaces in contact, substantially as described.



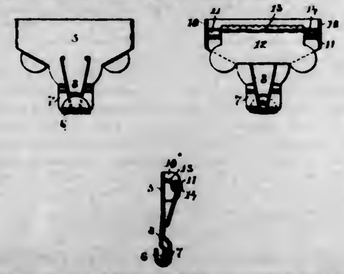
3. The hereinbefore-specified process of manufacturing central-draft glass lamps, which consists in forming the base and the central draft-tube in one piece, the base having an exterior annular shoulder, and then placing a piece of fused glass around the tube and supporting it on the said annular shoulder, then forming the bowl in a separate piece and inserting the tube therein until the fused glass surrounding the tube and supported on the said annular shoulder comes in contact with the lower edge of the bowl, when the parts will become united, substantially as described.

484,278. FEED-BAG HOLDER. JOHN H. R. REIF, St. Louis, Mo. Filed Apr. 18, 1892. Serial No. 429,054. (No model.)

Claim.—1. The herein-described feed-bag holder, consisting in the combination, with the shafts A, of the adjusting-rods C, the feed-bag D, provided with the buckle-provided straps *a*, by means of which it is secured to the rods C C, said straps passing through slots in the rods, the sleeves B, which are entered at their rear ends by the thills A and at their forward ends by the rods C, said sleeves being provided with suitable set-screws, by means of which they can be clamped upon the thills and rods, substantially as described.

2. The combination of the shafts A, the slide-rods C, the feed-bag D, fastened securely to the slide-rods C, the sleeves B, having set-screws *c*, and the straps *b*, passing loosely around the sleeves B and connected to the feed-bag, substantially as described.

484,279. BUCKLE. GEORGE H. ADAMS, Providence, R. I. Filed Aug. 20, 1891. Serial No. 404,077. (No model.)



Claim.—The combination, with the face-plate 5, having the depending hook 6, the shank of which is in the rear of the plane of the face-plate, the spring-arm 8, partially closing said hook, the ears 10 10, bent up from said face plate, and the tubular bearings 11 11, bent from the metal of said ears, of the clamping-plate 12, having the bent portion 13 and pintles 14, adapted to engage in the tubular bearings 11 11, as and for the purpose described.

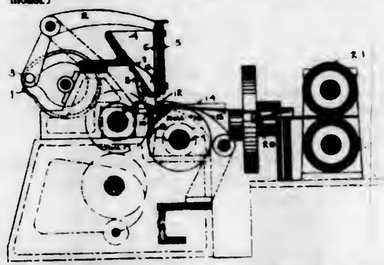
484,280. TROLLEY-WIRE INSULATOR. ALBERT ANDERSON, Boston, Mass. Filed Dec. 26, 1890. Serial No. 376,502. (No model.)

Claim.—1. The combination, with substantially-arch-shaped frames provided with enlarged portions to form a socket or insulator receptacle, of an insulator in said socket and a clamping device secured to said insulator, substantially as described.

2. The combination, with a hanger or support consisting of frames A A' of sheet metal struck up to form flanges *a a'*, and bosses or projections a^3 a^3, of an insulator located within said bosses or projections and means to support a trolley-wire secured to the said insulator, substantially as described.

3. The combination, with a hanger or support consisting of substantially-arch-shaped frames A A' of sheet metal struck up to leave flanges *a a'* and secured together, and pins or studs in the ends of the said frames, of a span-wire extended over the said frames and under the said pins or studs, substantially as described.

484,281. PAPER-BAG MACHINE. FRANK I. BAKER, Wilmington, Del., assignor, by mesne assignments, to the Diamond Paper Bag Company, same place. Filed Sept. 8, 1891. Serial No. 405,070. (No model.)



Claim.—1. In a paper-bag machine, the combination of a paste-applier, and a presser whereby the end of the bag is creased, supplied with distributed paste and held during the clocking and covering of the blank from the web, with means for completing the fold of the creased and pasted end portion, substantially as described.

2. The combination, with the paste-blade carrying paste on one of its sides, of a paste-bar between which and the paste-blade the paper is grasped, substantially as described.

3. The combination, with the paste-blade carrying paste on one side, of the paste-bar between which bar and blade the paper is grasped, one of the parts being movable with respect to the other, substantially as described.

4. The combination, with the reciprocating paste-blade carrying paste on one of its sides, of the movable bar adapted to press the paper against the paste blade, substantially as described.

5. The combination, with the feed-rolls, the guide, and cutting-blades, of a paste-bar having an inclined surface and a reciprocating paste-blade, the arrangement being such that the paper is fed over the inclined surface of the bar and is pressed against the face of the paste-blade, substantially as described.

6. The combination, with the feed-rolls, guide, and cutters, of the paste-bar, a reciprocating paste-blade, and an operative mechanism for said bar and blades, the arrangement being such that the paper is grasped between the bar and blade and held while the bag-length is being severed, substantially as described.

7. The combination, with the rolls, of a reciprocating paste-blade, a paste-bar co-operating with the paste-blade to grasp and crease the end of the tube and apply paste thereto, and a tucker for tucking the creased portion into the bite of the roller, substantially as described.

8. The combination, with the rolls having recesses 24, of a tucking-blade having projections corresponding with said recesses, substantially as described.

9. The combination, with the pasting and creasing device, of a tucking blade having projections and the rolls having recesses 24 corresponding with the projections to form a clearance for said projections, substantially as described.

10. The combination, with the paste-box and vertically-reciprocating paste-blade, of a doctor-plate for the blade and adjusting screw-rods having conical ends, substantially as described.

484,282. HORSE-SHIELD. CHARLES H. BALDWIN, Glens Falls, N. Y. Filed May 7, 1892. Serial No. 432,191. (No model.)

Claim.—1. The herein-described improved horse-shield, comprising a pad having attaching-straps and provided with a circular opening, an inflexible tube extending from said opening, and the perforated disk or plate in the outer end of said tube, as set forth.

2. The herein-described improved horse-shield, comprising the pad having a circular opening and depending flange, the tube in said opening attached to said flange and having a flange in the outer end, and the perforated disk or plate supported by said flange, substantially as set forth.

3. The herein-described improved horse-shield, comprising the pad having reduced ends and a circular opening, the web or bands secured to said ends, the strips attached to said pad and extending on either side of said opening, and the tube secured in said opening, substantially as set forth.

484,283. HAME-FASTENER. EDWARD BRADBURY, Chicago, Ill. Filed May 24, 1892. Serial No. 434,217. (No model.)

Claim.—The improved hame-fastener described, consisting of the main part A, formed with integral hook at one end and integral lugs at the other upon the same side of the said part and with a longitudinal slot, the lever having a lug with flat faces, one of which is tapered and pivoted between the lugs of the part A, the spring held to the part A and arranged in the slot thereof and bearing upon the flat faces of the leg of the lever, and the part D, having a plurality of openings of less length than that of the face of the leg and the lever, whereby the lug assists in drawing the part D against the part A, and at one end a hook, all substantially as shown and specified.

484,284. WINDOW-CLEANER. MARGARET J. BERRIN, Cohoes, N. Y. Filed June 10, 1891. Renewed Sept. 5, 1892. Serial No. 445,076. (No model.)

Claim.—1. The herein-described window-cleaner, comprising the post or standard, the brush yieldingly secured thereon, capable of being raised and lowered, and the springs bearing against said brush for forcing the same outward away from said post or standard, substantially as set forth.

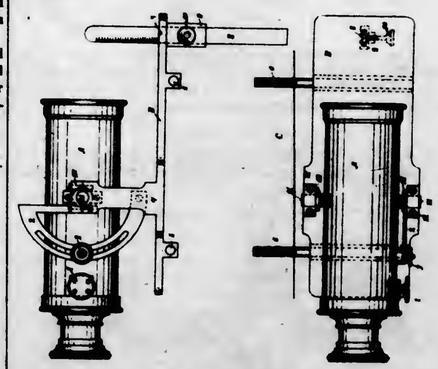
2. The herein-described window-cleaner, comprising the post or standard, the brush secured thereon, the spiral spring encircling said post or standard and holding said brush raised or elevated, and the cord or strap secured to said brush for lowering the same, substantially as set forth.

3. The herein-described window-cleaner, comprising the post or standard, the brush having studs or short rods, the block movable on said post or standard and into which said studs or rods are projected, the springs encircling said studs or rods, the spiral spring bearing against said plate and holding said brush raised or elevated, the wheel or pulley secured to the lower end of said post or standard, and the cord or strap for lowering said brush, passed around said wheel or pulley, as set forth.

4. The herein-described window-cleaner, comprising the lower angular holding-plate, the post or standard secured thereto at its lower end, the angular bar adjustably secured to the upper end of said post or standard, the spring-pressed brush movable on said post or standard, and the cord or strap connected to said brush for lowering the same, substantially as set forth.

5. The herein-described window-cleaner, comprising the lower angular holding-plate, the post or standard secured thereto at its lower end, the angular bar adjustably secured to the upper end of said post or standard, the brush having studs or short rods, the block movable on said post or standard and into which said studs or rods are projected, the springs encircling said studs or rods, the spiral spring bearing against said plate and holding said brush raised or elevated, the wheel or pulley secured to the lower end of said post or standard, and the cord or strap for lowering said brush, passed around said wheel or pulley, as set forth.

484,285. TELESCOPIC SIGHT FOR CANNON. VALENTINE BERBERICH, Frankfort, Ky. Filed Feb. 20, 1892. Serial No. 422,177. (No model.)



Claim.—1. A gun-sight comprising a frame, a telescope adjustably supported thereon, and a sight supported by said frame in the range of the telescope and adjustable independently of the telescope, substantially as set forth.

2. A gun-sight comprising a frame, a telescope, and a sight supported independently of the telescope and located in the range thereof, substantially as set forth.

3. In a gun-sight, the combination of a telescope adjustably supported, means for securing said telescope in any desired adjustment, a sight adjustably supported in the range of said telescope, and means for securing each sight in any desired adjustment, substantially as set forth.

4. In a gun-sight, the combination, with a suitable support, of a telescope, a sight in the range of said telescope, and a support or frame for said telescope and sight independently of the gun, substantially as set forth.

5. In a telescopic gun-sight, substantially as described, the telescope-supporting frame provided with a plurality of lateral openings adapted to receive rods projected from the side of the gun, whereby the sight may be conveniently applied to and removed from the gun, substantially as and for the purposes set forth

6. The combination of the gun, the rods 6, projecting laterally from the gun, and the frame or support provided with the telescope and sight and having openings to slide on said rods 6, whereby the frame may be applied to and removed from the gun, substantially as set forth.

7. An improved sighting-instrument consisting of the frame having its base provided with slot 7 and with standards 4 and arc 2, the telescope journaled to the standards 4, means for securing said tele-

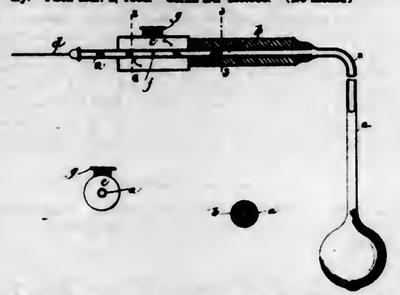
scope in any desired adjustment to the arc 2, and the eight-bar 8, adjustable in the slot 7, all substantially as and for the purposes set forth.

484,286. LINING FOR BESSEMER CONVERTERS. CARL W. BLAPP, Worcester, Mass. Filed May 4, 1891. Serial No. 391,544. (No specimens.)

Claim.—1. In a converter, a lining consisting, substantially, of silicate of manganese.

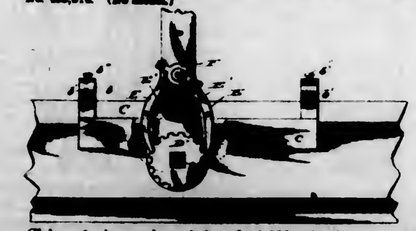
2. The method of lining converters, which consists in coating the interior of the converter before use with a mixture consisting, essentially, of silica and manganese or such compounds of these substances as will produce silicate of manganese when heated and a suitable binding material, and then subjecting the coating to the action of heat, substantially as and for the purpose set forth.

484,287. DENTAL INSTRUMENT. JOHN C. BLAIR, Louisville, Ky. Filed Mar. 2, 1892. Serial No. 423,595. (No model.)



Claim.—In an instrument of the class hereinbefore indicated, the combination, with the receiver *c*, of the air-conducting tube having two openings within said receiver, and a plug which is located between the openings, as and for the purpose specified.

484,288. WRENCH. PETER BROLIN, Ransom, Mich., assignor of one-half to Joseph H. Ettinger, same place. Filed May 31, 1892. Serial No. 435,012. (No model.)



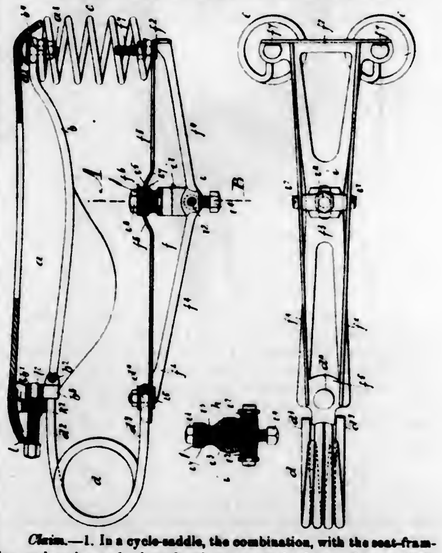
Claim.—1. A wrench consisting of a rigid head and stem, a ratchet secured on the stem, an operating-lever fulcrumed on the stem and provided on opposite sides with pawls adapted to engage the teeth of the ratchet, and a latch or keeper pivoted on the lever and bent at intermediate points of its length to pass across the pawls, substantially as described.

2. A wrench consisting of a head, a stem rigid with said head, a bifurcated lever pivoted on the stem, a ratchet rigidly attached to the stem within the bifurcated end of the operating-lever, spring-pressed pawls pivoted within the bifurcated end of the lever and adapted to engage with the ratchet, and a latch or keeper centrally pivoted to one side of the lever and having its arms bent to extend over opposite edges of the lever and across the pawls on opposite sides of their pivots from the ratchet-wheel, substantially as described, for the purpose specified.

3. A wrench consisting of a hollow head provided with a longitudinal slot in opposite sides and having diverging grooves or ways formed in the inner faces of said sides, clamping-jaws pivotally connected together and provided with projecting pins or lugs which ride in the grooves or ways in the inner faces of the sides of the head, and means for moving the jaws longitudinally of the head, substantially as shown and described.

4. The combination, in a wrench, of the sectional head provided with a longitudinal slot in opposite sides and having diverging grooves formed in the inner faces of said sides, the clamping-jaws having their inner ends reduced and lapped one upon the other and provided with projecting pins which fit in the diverging grooves in the head, a bolt extending through the slots in the sides of the head and the lapped ends of the clamping-jaws, and a nut fitted on one end of said bolt, substantially as described.

484,289. CYCLE-SADDLE. JOHN B. BROOKS, Birmingham, England. Filed Apr. 8, 1892. Serial No. 428,906. (No model.) Patented in England Sept. 30, 1890, No. 15,494, and Apr. 13, 1891, No. 6,233.



Claim.—1. In a cycle-saddle, the combination, with the seat-framing and springs, of a base-framing composed of trussed parts f^4 f^5, and with the latter f^5 directed angularly to the former, substantially as described and set forth.

2. In a base-framing of a cycle-saddle, the combination, with a trussed bracket, of a pivotally-mounted L-pin boss i i^2 i^3 i^4 i^5 i^6, as set forth.

3. In a cycle-saddle, jointing the fore part or parts of the frame-rods *b* to a junction-piece b^3 or to the terminal upper members d^3 of loop-coiled springs *d*, as set forth.

4. In a cycle-saddle, the combination, with frame-rods *b*, connected at their rear ends to the under side after part of the seat of the saddle and at their fore ends to a junction-piece b^3, of the branches d^3 of a spring or springs *d*, as set forth.

5. In a cycle-saddle, the combination, with jointed frame-rods b b^2 b^3, of loop and pillar coiled springs *d e*, the former disposed forward of the saddle-seat and the latter under the after end, as set forth.

6. In a cycle-saddle, the combination, with the seating framing-rods *b*, of a joint b^2, junction-piece b' b^3, tension-screw l l^2, and bracket k k^2, as set forth.

484,290. CYCLE-SADDLE. JOHN B. BROOKS, Birmingham, England. Filed Apr. 8, 1892. Serial No. 428,907. (No model.) Patented in England Apr. 30, 1890, No. 6,893; Apr. 13, 1891, No. 6,232; Dec. 3, 1891, No. 21,169, and Mar. 16, 1892, No. 5,188.

Claim.—1. In a cycle-saddle, suspending or supporting the seat of the same from frame-rods c^4 c^5, having loops c^6 c^7 and bracket c^7, in combination with rubber cushioning-blocks *m*, as set forth.

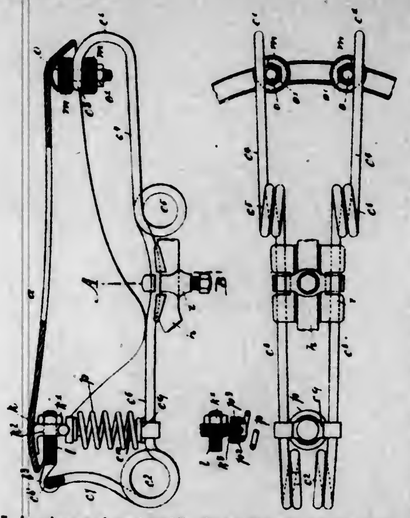
2. In a cycle-saddle, combining with the rear end framing *n* of the same rubber blocks *m*, as set forth in Figs. 6 and 7.

3. In a hammock cycle-saddle, the combination, with the frame-rods c^4 c^5 and bracket or fore part c^7, of a pillar-coiled spring *p*, located between the front under side of the seat of the saddle and the base framing-rods rear of the said front or bracket part c^7, as set forth.

4. In a hammock cycle-saddle, the combination, with the seat and framing-rods, of a supplemental crest pillar-coiled spring *p*, disposed rear of the front of the said framing-rods, as set forth.

5. In a hammock cycle-saddle, the combination, with the seat of the same, of a tension-pin *l*, having hooked end l^2, as set forth.

6. In a hammock cycle-saddle, the combination, with the framing-rods c^4 c^5, having looped ends c' c^8, fitted with rubber cushioning expedients *m*, body-coils c^9, and looped front coils c^8, having bracket-arms c^7 c^8, connected by a tension-screw pin l^2, carried by a bracket k k^2 and secured by a nut k', of a supplemental pillar-coiled spring *p*, located between the bracket *k* of the frame-rods c^4 and connected at top by a joint k^3 p^2 p^3 and at bottom supported by and attached to a bridge-bracket c^9, as set forth.

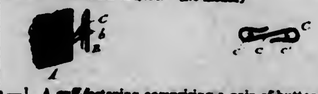


7. In a hammock cycle-saddle, the combination, with the supplemental spring *p*, of a spring bracket arm or arms c^7, situated forward of the said spring and adapted to pull or keep on stretch the seat of the saddle by its outward tension, as set forth.

8. In saddle-iron or L-pin bosses, the combination, with rod-framings and L-pins, of clawed and gapped sections, with set-screw passing up a seat of the middle one of them, as set forth, whereby the screwing up of the said set-screw affixes the bosses to the framing-rods and the saddle to the L-pin.

9. In saddle-iron or L-pin bosses, the combination, with rod-framings and L-pins, of clawed and gapped sections, as set forth.

484,291. CUFF-BUTTON. LEMUEL F. BROOKS, Boston, Mass. Filed May 25, 1892. Serial No. 434,302. (No model.)



Claim.—1. A cuff-fastening comprising a pair of buttons or bars provided with eyes and a link connecting them, having a hooked end with a stop on its shank projecting toward the prong of the hook.

2. A cuff-fastening comprising a pair of buttons or bars provided with eyes and a link connecting them, having a hooked end with a stop on its shank convex on one side and concave on the other and projecting toward the hook.

484,292. BOOK OR MUSIC-LEAF HOLDER. ALEXANDER G. BROWN, San Francisco, Cal. Filed Feb. 17, 1892. Serial No. 421,898. (No model.)

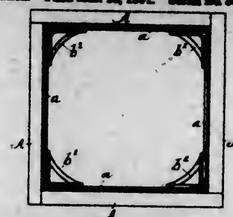
Claim.—1. A music-leaf holder consisting of a plate having clamping sides and end sockets and a ring pivotally held in said sockets and serving as a finger-catch, substantially as herein described.

2. A music-leaf holder consisting of the plate bent centrally so that its sides form a clamp for engaging the leaf, and a ring pivoted in the bent end of the plate and serving as a finger-catch, substantially as described.

3. A music-leaf holder consisting of the plate bent centrally so that its sides form a clamp for engaging the leaf, a rivet in the plate near its bent end and forming a socket therein, and a ring pivoted in said bent end and serving as a finger-catch, substantially as described.

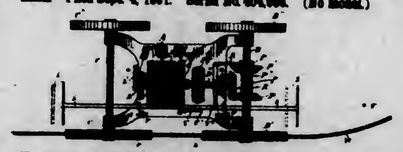
4. A music-leaf holder consisting of the plate bent centrally so that its sides form a clamp for engaging the leaf, said plate having at its bent end the shoulders *b*, and the finger-catch ring pivoted in the bent end of the plate and limited in its movement by the shoulders, substantially as described.

484,293. WINDOW-SCREEN FRAME. JOHN P. BOYNTON, Fenton, assignor of two-thirds to George J. Butcher and Bert E. Boyd, Mount Pleasant, Mich. Filed Mar. 14, 1891. Serial No. 385,189. (No model.)



Claim.—A screen-frame constructed of four like bars, each provided with a T-shaped tenon along its inner edge, having marginal tongues *a' a'* on the sides thereof and with a T-shaped mortise at one end for receiving and holding the tenon of the adjacent bar, said bars having, in combination therewith at each corner of the frame, a metallic bracket constructed with arms *b b*, each provided with narrow lugs *b'* upon each side thereof and cut away therebetween, said lugs being bent around the marginal tongues of the adjacent bars and embedded therein to, forming shoulders upon each side of said lugs, whereby the two adjacent bars of the frame are held immovably fastened together, the bars of the frame held immovable in one direction by the mortise-and-tenon engagement thereof at the corners of the frame, the bars being held immovable longitudinally thereof in the completed frame by the forcing of the lugs of said brackets into the tongues thereof, substantially as set forth.

484,294. LAWN-SPRINKLER. GABRIEL CARLSON, Minneapolis, Minn. Filed Sept. 4, 1891. Serial No. 404,696. (No model.)



Claim.—1. A sprinkler comprising a truck movable over the ground, a discharge-nozzle carried by the truck, a flexible hose of sufficient length to permit the travel of the sprinkler, connecting said nozzle to a supply of water under pressure, a water-wheel mounted on the truck operated by the discharge from the nozzle and adapted to serve both as a power-wheel and a spraying device, and a drive or gearing for conveying motion from the said water-wheel to the truck-wheel to propel the truck, substantially as described.

2. The combination, with the truck movable on the ground, of the discharge-nozzle carried by the said truck, the flexible hose of sufficient length to permit the travel of the sprinkler, connecting the said nozzle with a fixed pipe containing water under pressure, the water-wheel mounted on the said truck and adapted to be actuated by the discharge of water from the said hose and serve both as a power-wheel and sprayer, a drive or gearing for conveying motion from the said water-wheel to the truck-wheels, including as one of its elements a reversing-gear, and a reversing-lever for shifting said gear, adapted to be tripped or operated by an obstacle in the path of the truck to reverse the direction of travel, substantially as described.

3. The combination, with the truck movable over the ground, of the pivoted support carried by said truck, the discharge-nozzle and the water-wheel mounted on said pivoted support, the flexible hose connecting the said nozzle with the water-supply pipe and of sufficient length to permit the travel of the sprinkler, the drive or gearing for transmitting motion from the said water-wheel to the truck-wheel, and the rocking connections from said support to the said drive or gearing, arranged to swing the said support transversely to the line of travel, substantially as and for the purpose set forth.

4. The combination, with the truck movable over the ground, of the pivoted support carried by the truck, the discharge-nozzle and the water-wheel mounted on said pivoted support, the flexible hose connecting the said nozzle with the water-supply pipe, a driving-shaft on the truck-frame, connected to the truck-wheels, a counter-shaft also located on said truck-frame and forming the pivotal connection between the said support and the said truck-frame, a train of reducing-gears connecting the said shafts, driving connections between the water-wheel and the counter-shaft, a crank-arm on the lower end of

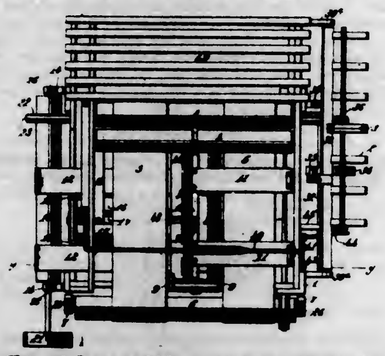
the said pivoted support, and a rod connecting the said crank-arm to a crank on the said driving-shaft, substantially as and for the purpose set forth.

5. The combination, with an automatically-traveling sprinkler having a water-motor and one or more grooved truck-wheels, of a flexible pipe for supplying water to the motor and a flexible rope or cable resting upon the ground, the said truck-wheels being adapted to run upon and be guided by the cable, whereby the sprinkler may be directed in any desired course, substantially as described.

6. The combination, with the truck movable over the ground, of the discharge-nozzle and the flexible section of hose carried by the truck, the water-wheel operated by the discharge from the said nozzle and serving both as a power-wheel and a sprayer, and driving connections from the said water-wheel to the truck-wheel, including as elements thereof a train of reducing-gears for converting the speed of the water-wheel into power with slow motion on the truck, substantially as and for the purpose set forth.

7. The combination, with the truck movable over the ground, of the pivoted support carried by the truck-frame, the discharge-nozzle and the water-wheel on said pivoted support, a train of gearing on the truck-frame for operating the truck-wheels, and driving connections between the water-wheel and the train of gears for communicating motion and permitting a swinging movement to the said support, without disturbing the driving connections, substantially as described.

484,295. PAPER-FOLDING MACHINE. JOHN CARNES, Lima, Ohio. Filed Mar. 11, 1892. Serial No. 424,595. (No model.)



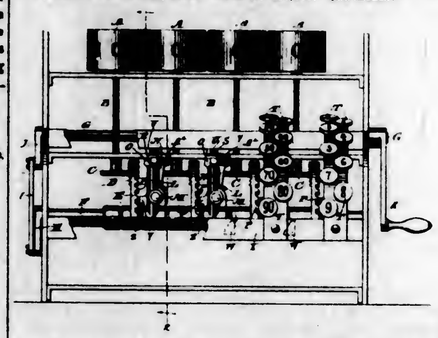
Claim.—1. In a paper-folding machine, the combination of several pairs of folding-rolls, each succeeding pair of rolls being below and at right angles to a preceding pair of rolls, endless belts or tapes for transmitting power to said rolls and conveying the paper from one pair of rolls to the next, and a number of oscillatory folding-blades each of which is adapted to enter the paper between a pair of rolls, the second and third folding-blades being arranged, respectively, at right angles to the first and second pairs of folding-rolls and the forward rolls of said first and second pairs of folding-rolls being each provided with a central circumferential groove to receive one end of an adjacent folding-blade and enable it to make a crease entirely across the paper, substantially as described.

2. In a paper-folding machine, the combination, with the pairs of folding-rolls 4, 8, and 15, each succeeding pair of rolls being arranged below and at right angles to a preceding pair, and the forward roll in the first and second pairs being each provided with a central circumferential groove 48, of the folding-blades 3, 10, and 17, having concavely-beveled sides and adapted to crease the paper and enter it between the folding-rolls, the grooves 48 in the forward rolls of the first and second pairs of rolls being each arranged to receive one end of an adjacent folding-blade to enable it to make a crease entirely across the paper and prevent the paper from being carried around the rolls, substantially as described.

3. In a paper-folding machine, the combination of the folding-rolls 4, 8, and 15, arranged in three pairs, each succeeding pair below and at right angles to the preceding pair of rolls, the shafts 6 and 20, mounted in adjustable bearings 7, endless belts or tapes 5 and 19, connecting the first and third pairs of folding-rolls with said shafts, the driving-shaft 13, mounted at right angles to the shafts 6 and 20 in adjustable bearings 14, the endless belts or tapes 12, that connect said driving-shaft with the second pair of folding-rolls, the belt 23, by which the shafts 6 and 20 are driven from the shaft 13, and the guide-pulleys 24, that turn said belt at right angles to its shafts, one of said pulleys being mounted in adjustable bearings to serve as a belt-tightener, substantially as described.

4. In a paper-folding machine, the combination of a series of folding-rolls 4, 8, and 15, arranged in pairs, a fly 2, having a folding-blade 3 integral therewith and arranged at right angles to the pivotal bar or axis 30 of said fly, the second and third folding-blades 10 and 17, mounted on pivoted arms, the rock-shaft 40, connected with said folding-blades and provided at one end with arms 41, the spring 42, connected with one of said arms, and the bell-crank 44, connected with the other arm for operating the second and third folding-blades, the cam-shaft 32, having a cam 34 mounted thereon, and the slotted lever 31, loosely mounted on the cam-shaft and having its upper end pivotally connected with the fly, said lever provided with a lug or bearing 33 for the cam 34 to act on to raise the fly and attached folding-blade, substantially as described.

484,296. CASH REGISTER AND INDICATOR. THOMAS CARNEY, Dayton, Ohio, assignor to the National Cash Register Company, same place. Filed Apr. 23, 1892. Serial No. 430,308. (No model.)



Claim.—1. In a cash-indicator, the combination of an oscillatory segment geared to an indicator oscillating on an axis at an angle to the axis of said segment, and a driver intermittently connected to said segment, substantially as described.

2. In a cash-indicator, the combination of the oscillatory segment E, geared to the indicator A, oscillating on an axis at an angle to the axis of said segment, a driver, and means for intermittently connecting said driver and segment, substantially as described.

3. In a cash-indicator, the combination of a segment oscillating on a horizontal axis, a driving mechanism, means for connecting the segment with and disconnecting it from the driving mechanism, and an indicator oscillating on a vertical axis and geared to the segment, substantially as described.

4. In a cash-indicator, the combination of the rock shaft F, the oscillating segments E, mounted thereon, means for connecting the shaft with and disconnecting it from the segments, and the vertical spindles B, geared to the segments and carrying the indicators A, substantially as described.

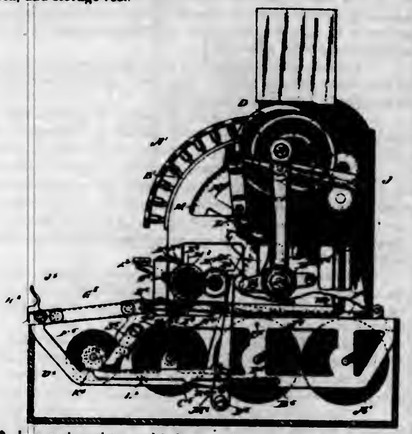
5. In a cash-indicator, the combination of the revolvable shaft G, the rock-shaft F, the crank-and-pitman connection between them, the oscillatory segments E, loose on the shaft F, the plates N, pivoted on the supports L, fast on said shaft, means for shifting the positions of the plates N to connect and disconnect the shaft and segments, and the vertical spindles B, geared to the segments and carrying the indicators A, substantially as described.

6. In a cash-indicator, the combination of the rock-shaft F, the oscillatory segments E, loose thereon, the spindles B, geared to the segments at an angle to the shaft F and carrying the indicators A, the arms or supports L, fast on the shaft F, the plates N, carried by the supports L and co-operating with the segments, and the series of keys T and cams U W, co-operating with each plate N, substantially as described.

7. In a cash-indicator, the combination of the rock-shaft F, the oscillatory segments E, loose thereon, the spindles B, geared to the segments at an angle to the shaft F and carrying the indicators A, the arms or supports L, fast on the shaft F, the plates N, pivoted upon the supports L and each provided with the tooth O, lug S, and cam A', and the keys T and cams U W, co-operating with the plate N, substantially as described.

484,297. CASH REGISTER, INDICATOR, AND RECORDER. THOMAS CARNEY, Dayton, Ohio, assignor to the National Cash Register Company, same place. Filed June 10, 1892. Serial No. 436,245. (No model.)

Claim.—1. In a cash register and indicator, the combination, with the indicators, of a set of type-wheels adjusted simultaneously with the indicators to bring to the printing-point type-numbers corresponding to the numbers exposed upon the indicators, a platen co-operating with the type-wheels, a check-strip and a record-strip led between the platen and type-wheels, a writing-tablet in front of the printing-point over which the check-strip is led from the printing-point, and means for severing said strip at the forward end of the tablet after it has been written upon, a storage-reel upon which the record-strip is wound after it has been printed upon by the type-wheels, and actuating devices or driving mechanism for the indicators, type-wheels, platen, and storage reel.



2. In a cash register and indicator, the combination of the indicators, a set of type-wheels adjusted simultaneously with the indicators to bring to the printing-point type-numbers corresponding to the numbers exposed upon the indicators, a platen co-operating with the type-wheels, two check-strips and a record-strip carried in supply-rolls within the machine and led between the platen and type-wheels, a writing-tablet over which the check-strips are led from the printing-point, manifolding material between said strips upon said tablet, and means for severing the checks from the strips after they have been written upon, a storage-reel upon which the record-strip is wound after it passes the printing-point, and actuating devices or driving mechanism for the indicators, type-wheels, platen, and storage-reel.

3. In a cash register and indicator, the combination of the rock-shaft C, the oscillating segments M, mounted thereon, means for coupling them to and uncoupling them from the shaft C, the indicators geared to the segments M, the segments E^3, movable with the respective segments M, the type-wheels geared to the segments E^3, and a platen co-operating with the type-wheels.

4. The combination of the rock-shaft C, an oscillating segment M, loosely mounted thereon and having teeth S, a hub N, fast on the shaft C and having the ear or plate O projecting from it, the plate Q, pivoted to the plate O and provided with the lug U, the tubular housing X, carried by the plate O and containing the spring Y, and the plug Z, co-operating with the plate Q, and the cams V and C and keys A', co-operating with the plate Q, substantially as described.

5. In a cash-indicator, the combination of the two sets of indicators mounted on vertical spindles, the oscillating screen-plates B^2, co-operating therewith upon opposite sides of the indicators, the plate C^2, connecting all of the screens, the spring D^2, connected with said plate, and a connection between the plate C^2 and the driving mechanism of the machine, whereby the screens are oscillated back and forth to alternately hide and expose the numbers on the indicators, substantially as described.

6. In a cash-indicator, the combination of the indicating-cylinders mounted on vertical spindles, the oscillating screen-plates B^2, supported by crank-plates A^2, mounted upon the indicator-spindles, the plate C^2, pivoted to the plates A^2, the spring D^2, connected to the plate C^2, the lever E^2, the rock-shaft C, and the arm G^2 thereon, co-operating with the lever E^2, substantially as described.

7. In a cash-indicator, the combination of the indicators Q', Q^2, Q^4, and Q^5, fast on the vertical spindles T', the indicators Q^3, Q^7, Q^9, and Q^{10}, carried by sleeves U', U^3, U^5, and U^6, loose upon the spindles T', the pinions fast upon said spindles and sleeves, the pivoted segments W' to W^5, meshing with the pinions, and the links Y' to Y^4, connecting the respective segments, for the purpose described.

8. In a cash-indicator, the combination of the rock-shaft C, the oscillating segments M, loose thereon, means for connecting and disconnecting the shaft and segments, the pinions G', meshing with the segments, the ratchets J', turning with the pinions, the rock-shaft J^3, the locking dogs K^3, fast thereon and co-operating with the ratchets J', the arm L^3, fast on the shaft J^3, and the arm G^3, fast on the shaft C and co-operating with the arm L^3, substantially as and for the purpose described.

9. The combination of the rock-shaft C, the segments M, loose thereon, means for connecting and disconnecting them, the revolvable driving-shaft A, the disk D, fast thereon and provided with the cam-groove G, the lever I, carrying a stud fitting in said groove, the arm L, fast on the shaft C, and the link K, connecting the arm L and lever I, substantially as described.

10. The combination of the type wheels, the platen I^4, co-operating therewith and carried by the frame J^4, the housing T^4, carried by the frame J^4, the revolvable shaft L^4, the disk P^4, eccentrically secured thereon, the rod S^4, carrying at its upper end the ring E^4, surrounding the disk P^4 and fitting at its lower end in the housing T^4, and the spring V^4, confined in said housing beneath the rod S^4, substantially as described.

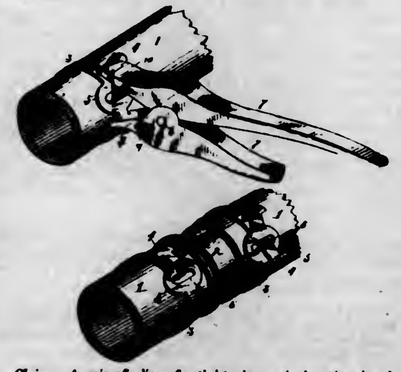
11. The combination of the type-wheel, the impression-platen, the record-strip led from the supply-roll C^2 between the platen and type wheels, the storage-reel therefor, provided with the ratchet K^2, the pawl L^2, lever M^2, spring F^2, rock-shaft C, and the arm G^2, fast on said shaft and co-operating with the lever M^2, substantially as described.

12. The combination of the type-wheels, the platen co-operating therewith, the check-strips and record-strip led from the rolls A^2, B^2, and C^2 between the type-wheels and platen, the writing-tablet C^2, over which the check-strips are drawn from the printing-point, the hinged knife-bar H^2 at the forward edge of said tablet, the storage-reel for the record-strip, having the ratchet K^2, and a pawl co-operating with the ratchet to turn the storage-reel and wind up the record-strip at each operation of the machine.

13. The combination of the operating-handle having the laterally-projecting spindle A^2, the sliding rod C^2, fitted in a bore within the spindle and provided with a slot F^2 and pin L^2, extending across said slot, the spring D^2, acting on the rod C^2, rod J^2, co-operating with the pin L^2, and the stop E^2, co-operating with the rod C^2, substantially as described.

14. The combination of the handle B, having the laterally-projecting spindle A^2, the grasping-knob B^2, carried thereby, the sliding rod C^2, fitted in a bore in the spindle A^2 and having a slot F^2 and transverse pin L^2, the spring D^2, the rod J^2, passed through the slot F^2 and provided with a notch co-operating with the pin L^2, and the stop E^2, co-operating with the rod C^2, substantially as described.

484,298. DEVICE FOR APPLYING HOSE-CLAMPS. SIMEON L. CHADBOURNE and HOWARD A. BENEDICTUS, Brooklyn, N. Y., and HENRY J. MCCOY, Orange, N. J. Filed Feb. 2, 1892. Serial No. 420,122. (No model.)

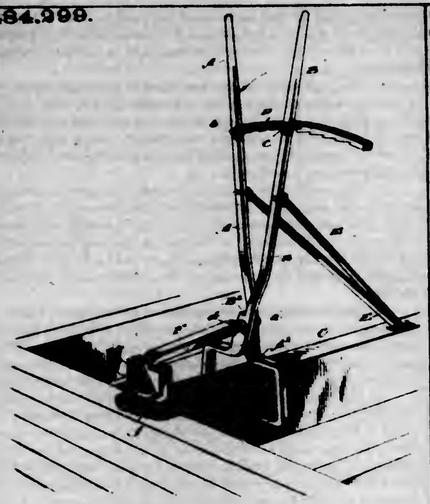


Claim.—A pair of pliers for tightening and clamping bands for hose-couplings, consisting of the pivoted legs forming jaws and handles, each of said jaws being formed with two outwardly-projecting lugs and an intermediate slot, substantially as described.

484,299. FLOORING AND CEILING TOOTH. SAMUEL L. CLEMMER, East Eagle, Ky. Filed Nov. 4, 1892. Serial No. 370,369. (No model.)

Claim.—The combination, with the levers pivoted together at their points of intersection and provided with jaws to clamp a joist, of an arm pivoted to the levers at their intersection, and a block carried by the said arm and consisting of two parts adjustably held together to vary the size of a groove in its acting edge to receive the tongue of a board, substantially as specified.

484,799.



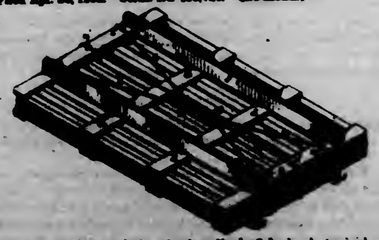
484,800. WHEEL-GUARD. PATRICK J. CONNELL, College Point, N. Y. Filed July 5, 1892. Serial No. 438,977. (No model.)

Claim.—1. A wheel-guard comprising two sections adapted to lie one within the other, the sections being connected at one end by a hinge and having depending sides adapted to envelop a felly of a carriage-wheel, a spring arranged to normally hold the sections extended, and a spring-clasp arranged to embrace the top and sides of one of the sections, said clasp having a handle secured to it, substantially as described.

2. A wheel-guard comprising two sections having depending sides and hinged together so as to fold one within the other, the inner sections having a reduced free end, with a handle and spring-clasp attached thereto, and the outer section having strengthening-ribs upon its sides, substantially as described.

3. In a wheel-guard, the combination, with the two sections adapted to fit upon a carriage-wheel, of a spring secured to the backs of the two sections and extending across the joint or hinge, substantially as described.

484,801. METHOD OF PRESSING AND DRYING PLANTS AND PRESSES ADAPTED THEREFOR. RICHARD H. DAY, Philadelphia, Pa. Filed Apr. 26, 1892. Serial No. 430,720. (No model.)



Claim.—1. The mode herein described of drying botanical specimens, said mode consisting in extracting the moisture from the specimens by evaporation while said specimens are held under pressure, substantially as specified.

2. The within-described presser-pad for plant-presses, said pad having yielding surfaces and being porous internally for the access of air, substantially as specified.

3. The within-described pad for plant-presses, said pad consisting of a surface or covering porous or permeable to moisture, but close in texture, and confining a porous or open-work filling, substantially as specified.

4. The within-described presser-pad for plant-presses, the same consisting of outer layers of material close in texture, but porous or permeable to moisture, and a body or filling composed of layers of matting, substantially as specified.

5. A plant-press consisting of a series of presser-pads of porous or open-work material, opposite sides, and means for confining said sides together, substantially as specified.

6. The within-described press, consisting of opposite sides and tackle, upon the principle of the block and fall, for drawing said sides together with any desired degree of pressure, substantially as specified.

7. The within-described press, consisting of opposite sides, tackle for drawing together the sides of the press at the opposite ends of the same, and a strip or bar carried by the tackle for one end of the press and having a bearing at that end against a projection on one of the sides of the press, but movable out of engagement therewith, substantially as specified.

8. A plant-press consisting of opposite sides, means for confining the same together, a series of presser-pads, and straps or bands for confining some of said presser-pads to one of the sides of the press, substantially as specified.

9. The combination of the opposite sides and porous presser-pads of a plant-press, with flexible sheets of impervious material introduced between said porous presser-pads to prevent moisture passing from one specimen or set of specimens to another, substantially as specified.

10. The within-described press, consisting of opposite sides, each having at the back girders for stiffening and preventing the bending of the same, and tackle, on the principle of the block and fall, for confining said sides together, substantially as specified.

11. The within described press, consisting of opposite sides, each consisting of an open skeleton frame, with stiffening-girders extending along the back of the same, and tackle, on the principle of the block and fall, for confining the said sides together, substantially as specified.

12. The within-described press, consisting of opposite sides, each having on the back stiffening-girders of greater depth than width, and means for confining said sides together, substantially as specified.

13. A plant-press having a heating-chamber confined therein, substantially as specified.

14. A plant-press having therein a heating-chamber with spacing devices forming passages for heated air adjacent to the casing of said chamber, substantially as specified.

15. The within-described heating chamber for plant-presses, the same consisting of side plates, filling-pieces separating the same, and slotted frames outside of the plates, substantially as specified.

16. The within-described heating-chamber for plant-presses, the same consisting of side plates, corrugated strips for separating said plates, and slotted frames for bearing against the outer sides of the plates, substantially as specified.

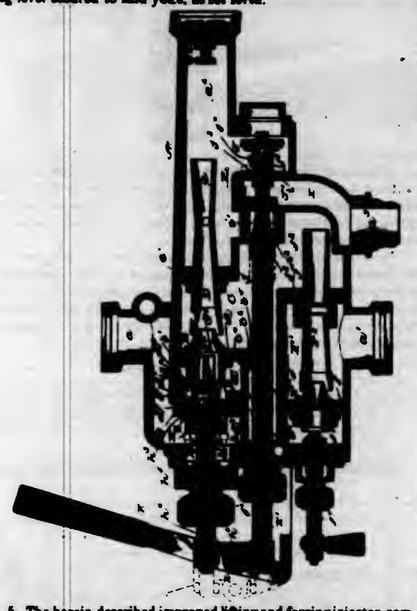
484,802. STEAM-INJECTOR. JOHN H. DERBY, Brooklyn, assignor to the Hayden & Derby Manufacturing Company, New York, N. Y. Filed Mar. 12, 1892. Serial No. 424,681. (Model.)

Claim.—1. In a lifting and forcing injector having the upper and lower series of jets or tubes and double overflows, the primary steam-inlet valve and primary overflow-valve for said lower series of jets or tubes, said valves being secured with relation to each other, whereby their operation will be simultaneous and said primary overflow-valve will be held to its seat by the steam-pressure exerted on the face of said primary steam-inlet valve, as set forth.

2. In a lifting and forcing injector having the upper and lower series of jets or tubes and double overflows, the primary steam-inlet valve provided with a projecting stem, and a primary overflow-valve for said lower series of jets or tubes and also having a stem which is connected with that of said steam-inlet valve, whereby the operation of said valves is simultaneous and said primary overflow-valve will be held to its seat by the steam-pressure exerted on the face of said primary steam-inlet valve, as set forth.

3. In a lifting and forcing injector having the upper and lower series of jets or tubes and double overflows, the primary and main steam-inlet valves for said upper and lower series of jets or tubes and primary and main overflow-valves for said double overflows secured with relation to each other, whereby the operation of said primary steam and overflow valves will be simultaneous and said primary overflow-valve will be held to its seat by the steam-pressure exerted on the face of said primary steam-inlet valve, substantially as set forth.

4. The herein-described improved lifting and forcing injector, comprising the primary and main steam-inlet valves, said primary valve having a stem projecting therefrom and designed to unseat said main steam inlet valve, the primary and main overflow-valves secured to a common stem, the yoke connecting both of said stems, and the operating-lever secured to said yoke, as set forth.



5. The herein-described improved lifting and forcing injector, comprising the casing having the lifting and forcing tubes, two steam-supply chambers, a secondary steam-chamber communicating with the steam chamber of said lifting apparatus, the main steam-supply valve having holes or ports therein, and the primary steam-inlet valve normally seated in said main steam-inlet valve, whereby steam will be successively admitted through said main steam-inlet valve into said tubes of the lifting and forcing apparatus, as set forth.

6. The herein-described improved lifting and forcing injector, comprising the casing having the lifting and forcing tubes, two steam-supply chambers, a secondary steam-chamber communicating with the steam-chamber of said lifting apparatus, the main steam-inlet valve of said forcing apparatus for controlling the admission of steam to said forcing apparatus and having communication with said secondary steam-chamber, and the primary steam-inlet valve for controlling the admission of steam to said main valve, substantially as set forth.

7. The herein-described improved lifting and forcing injector, comprising the casing having two steam-supply chambers, a secondary steam-chamber adjacent to the steam-chamber of the forcing apparatus and communicating through a cored passage with the steam-chamber of the lifting apparatus, the steam-inlet tube of said forcing apparatus having holes or ports opening into said secondary steam-chamber, the main steam-inlet valve located in said steam-inlet tube and also having holes or ports opening therefrom, and the primary steam-inlet valve for controlling the admission of steam into said main steam-inlet valve, substantially as set forth.

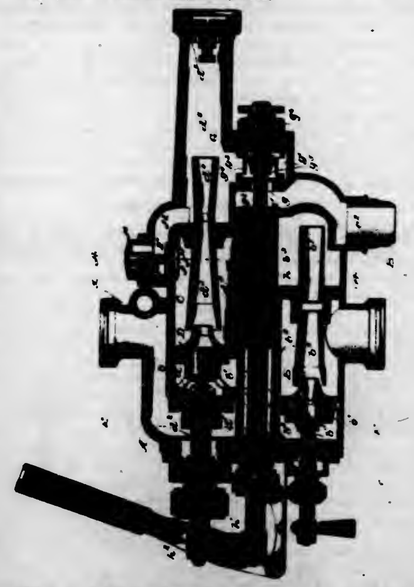
8. The herein-described improved lifting and forcing injector, comprising the casing having the lifting and forcing tubes, the main steam-inlet valve having a cylindrical portion provided with holes or ports, and a piston fitting in the steam-tube of said forcing apparatus, and the primary steam-inlet valve having a forward seat against the outer end of the cylindrical portion of said main steam-inlet valve and designed to engage the rear end of said inner valve when withdrawn, and thereby effect the withdrawal of said piston from said steam-tube, as set forth.

9. The herein-described improved lifting and forcing injector, comprising the casing having the overflow-arm, a duct or channel leading therein, provided with opposite discharge-openings, and the primary and main overflow-valves designed to be seated against said openings and under the control of a common stem, said main overflow-valve having a limited independent movement and held to its seat by the pressure in the main overflow-chamber, as set forth.

10. The herein-described improved lifting and forcing injector, comprising the casing having the overflow-arm, a duct or channel leading therein, provided with opposite discharge-openings, the valve-stem extended through a cylindrical chamber of said casing to the outside thereof and having a primary overflow-valve rigidly secured thereto designed to be seated against the primary discharge-opening, and a second valve loosely secured on said stem designed to be seated against the main discharge-opening, substantially as set forth.

11. The herein-described improved lifting and forcing injector, comprising the casing having a cylindrical chamber therein and a duct or channel leading to the overflow-arm, provided with primary and main discharge-openings, the series of tubes of the forcing apparatus, the steam tube of which is provided with a cylindrical portion having holes or ports and is rigidly held in a wall or diaphragm forming a secondary steam-chamber, the main steam-inlet valve having holes or ports opening into said cylindrical portion of said steam-tube and also provided with a piston at its forward end in said steam-tube and a nut in its rear end, the primary steam-inlet valve designed to be seated against the outer central portion of said main steam-inlet valve and having its stem projected through said nut and the end of said casing, the overflow-valves, the stem therefor projected through said cylindrical chamber, the yoke connected to said stems, the operating-lever fulcrumed to said yoke, and the series of tubes forming the lifting apparatus, substantially as set forth.

484,808. STEAM-INJECTOR. JOHN H. DERBY, Brooklyn, assignor to the Hayden & Derby Manufacturing Company, New York, N. Y. Filed May 6, 1892. Serial No. 432,071. (Model.)



Claim.—1. A lifting and forcing injector having an overflow for the lifting apparatus opening into the delivery-chamber of the forcing apparatus, as set forth.

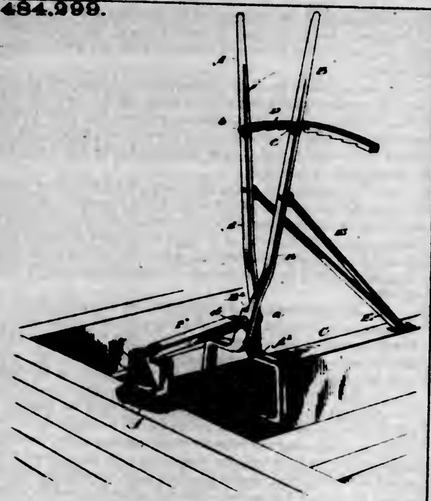
2. A lifting and forcing injector having an overflow for the lifting apparatus opening into the delivery-chamber of the forcing apparatus, and a valve automatically operated for opening and closing said overflow, said valve being held to its seat during the working of the injector by the pressure in said delivery-chamber, as set forth.

3. A lifting and forcing injector having an overflow for the lifting apparatus opening into the delivery-chamber of the forcing apparatus, an automatically-operated valve for opening and closing said overflow, and the positively-operated valve for closing the overflow-opening of said delivery-chamber, substantially as set forth.

4. A lifting and forcing injector having an overflow for the lifting apparatus opening into the delivery-chamber of the forcing apparatus, an automatically-operated valve for opening and closing said overflow, a steam-inlet valve for said forcing apparatus, having a projecting stem, and a positively-operated valve for the overflow-opening of the forcing apparatus, having a projecting stem movable with the stem of said steam-inlet valve, as set forth.

5. A lifting and forcing injector having an overflow for the lifting apparatus opening into the delivery-chamber of the forcing apparatus, an automatically-operated valve for opening and closing said overflow,

484,299.



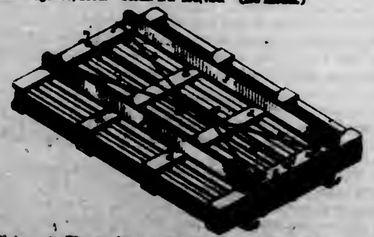
484,300. WHEEL-GUARD. PATRICK J. CONNELL, College Point, N. Y. Filed July 6, 1892. Serial No. 439,277. (No model.)

Claim.—1. A wheel-guard comprising two sections adapted to lie one within the other, the sections being connected at one end by a hinge and having depending sides adapted to envelop a fully of a carriage-wheel, a spring arranged to normally hold the sections extended, and a spring-clasp arranged to embrace the top and sides of one of the sections, said clasp having a handle secured to it, substantially as described.

2. A wheel-guard comprising two sections having depending sides and hinged together so as to fold one within the other, the inner sections having a reduced free end, with a handle and spring-clasp attached thereto, and the outer section having strengthening-ribs upon its sides, substantially as described.

3. In a wheel-guard, the combination, with the two sections adapted to fit upon a carriage-wheel, of a spring secured to the backs of the two sections and extending across the joint or hinge, substantially as described.

484,301. METHOD OF PRESSING AND DRYING PLANTS AND PRESSES ADAPTED THEREFOR. RICHARD H. DAY, Philadelphia, Pa. Filed Apr. 26, 1892. Serial No. 430,720. (No model.)



Claim.—1. The mode herein described of drying botanical specimens, said mode consisting in extracting the moisture from the specimens by evaporation while said specimens are held under pressure, substantially as specified.

2. The within-described presser-pad for plant-presses, said pad having yielding surfaces and being porous internally for the access of air, substantially as specified.

3. The within-described pad for plant-presses, said pad consisting of a surface or covering porous or permeable to moisture, but close in texture, and confining a porous or open-work filling, substantially as specified.

4. The within-described presser-pad for plant-presses, the same consisting of outer layers of material close in texture, but porous or permeable to moisture, and a body or filling composed of layers of matting, substantially as specified.

5. A plant-press consisting of a series of presser-pads of porous or open-work material, opposite sides, and means for confining said sides together, substantially as specified.

6. The within-described press, consisting of opposite sides and tackle, upon the principle of the block and fall, for drawing said sides together with any desired degree of pressure, substantially as specified.

7. The within-described press, consisting of opposite sides, tackle for drawing together the sides of the press at the opposite ends of the same, and a strip or bar carried by the tackle for one end of the press and having a bearing at that end against a projection on one of the sides of the press, but movable out of engagement therewith, substantially as specified.

8. A plant-press consisting of opposite sides, means for confining the same together, a series of presser-pads, and straps or bands for confining some of said presser-pads to one of the sides of the press, substantially as specified.

9. The combination of the opposite sides and porous presser-pads of a plant-press, with flexible sheets of impervious material introduced between said porous presser-pads to prevent moisture passing from one specimen or set of specimens to another, substantially as specified.

10. The within-described press, consisting of opposite sides, each having at the back girders for stiffening and preventing the bending of the same, and tackle, on the principle of the block and fall, for confining said sides together, substantially as specified.

11. The within described press, consisting of opposite sides, each consisting of an open skeleton frame, with stiffening-girders extending along the back of the same, and tackle, on the principle of the block and fall, for confining the said sides together, substantially as specified.

12. The within-described press, consisting of opposite sides, each having on the back stiffening-girders of greater depth than width, and means for confining said sides together, substantially as specified.

13. A plant-press having a heating-chamber confined therein, substantially as specified.

14. A plant-press having therein a heating-chamber with spacing devices forming passages for heated air adjacent to the casing of said chamber, substantially as specified.

15. The within-described heating-chamber for plant-presses, the same consisting of side plates, filling-pieces separating the same, and slatted frames outside of the plates, substantially as specified.

16. The within-described heating-chamber for plant-presses, the same consisting of side plates, corrugated strips for separating said plates, and slatted frames for bearing against the outer sides of the plates, substantially as specified.

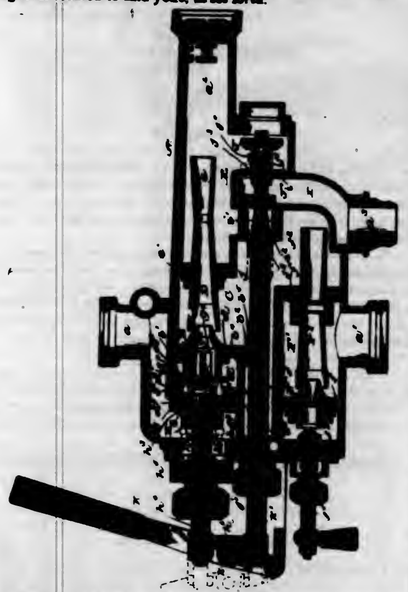
484,302. STEAM-INJECTOR. JOHN H. DERBY, Brooklyn, assignor to the Hayden & Derby Manufacturing Company, New York, N. Y. Filed Mar. 12, 1892. Serial No. 424,601. (Model.)

Claim.—1. In a lifting and forcing injector having the upper and lower series of jets or tubes and double overflows, the primary steam-inlet valve and primary overflow-valve for said lower series of jets or tubes, said valves being secured with relation to each other, whereby their operation will be simultaneous and said primary overflow-valve will be held to its seat by the steam-pressure exerted on the face of said primary steam-inlet valve, as set forth.

2. In a lifting and forcing injector having the upper and lower series of jets or tubes and double overflows, the primary steam-inlet valve provided with a projecting stem, and a primary overflow-valve for said lower series of jets or tubes and also having a stem which is connected with that of said steam-inlet valve, whereby the operation of said valves is simultaneous and said primary overflow-valve will be held to its seat by the steam-pressure exerted on the face of said primary steam-inlet valve, as set forth.

3. In a lifting and forcing injector having the upper and lower series of jets or tubes and double overflows, the primary and main steam-inlet valves for said upper and lower series of jets or tubes and primary and main overflow-valves for said double overflows secured with relation to each other, whereby the operation of said primary steam and overflow valves will be simultaneous and said primary overflow-valve will be held to its seat by the steam-pressure exerted on the face of said primary steam-inlet valve, substantially as set forth.

4. The herein-described improved lifting and forcing injector, comprising the primary and main steam-inlet valves, said primary valve having a stem projecting therefrom and designed to unseat said main steam inlet valve, the primary and main overflow-valves secured to a common stem, the yoke connecting both of said stems, and the operating-lever secured to said yoke, as set forth.



5. The herein-described improved lifting and forcing injector, comprising the casing having the lifting and forcing tubes, two steam-supply chambers, a secondary steam-chamber communicating with the steam chamber of said lifting apparatus, the main steam-supply valve having holes or ports therein, and the primary steam-inlet valve normally seated in said main steam-inlet valve, whereby steam will be successively admitted through said main steam-inlet valve into said tubes of the lifting and forcing apparatus, as set forth.

6. The herein-described improved lifting and forcing injector, comprising the casing having the lifting and forcing tubes, two steam-supply chambers, a secondary steam-chamber communicating with the steam-chamber of said lifting apparatus, the main steam-inlet valve of said forcing apparatus for controlling the admission of steam to said forcing apparatus and having communication with said secondary steam-chamber, and the primary steam-inlet valve for controlling the admission of steam to said main valve, substantially as set forth.

7. The herein-described improved lifting and forcing injector, comprising the casing having two steam-supply chambers, a secondary steam-chamber adjacent to the steam-chamber of the forcing apparatus and communicating through a cored passage with the steam-chamber of the lifting apparatus, the steam-inlet tube of said forcing apparatus having holes or ports opening into said secondary steam-chamber, the main steam-inlet valve located in said steam-inlet tube and also having holes or ports opening therefrom, and the primary steam-inlet valve for controlling the admission of steam into said main steam-inlet valve, substantially as set forth.

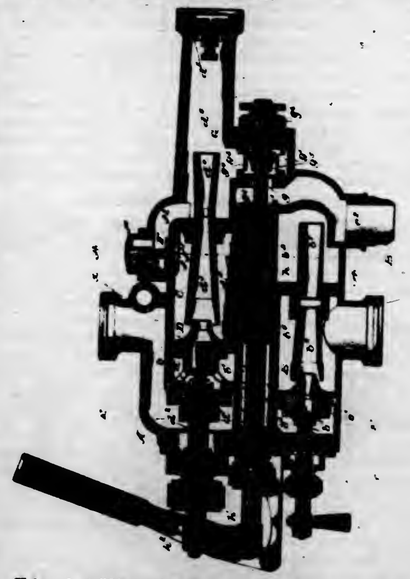
8. The herein-described improved lifting and forcing injector, comprising the casing having the lifting and forcing tubes, the main steam-inlet valve having a cylindrical portion provided with holes or ports, and a piston fitting in the steam-tube of said forcing apparatus, and the primary steam-inlet valve having a forward seat against the outer end of the cylindrical portion of said main steam-inlet valve and designed to engage the rear end of said inner valve when withdrawn, and thereby effect the withdrawal of said piston from said steam-tube, as set forth.

9. The herein-described improved lifting and forcing injector, comprising the casing having the overflow-arm, a duct or channel leading therein, provided with opposite discharge-openings, and the primary and main overflow-valves designed to be seated against said openings and under the control of a common stem, said main overflow-valve having a limited independent movement and held to its seat by the pressure in the main overflow-chamber, as set forth.

10. The herein-described improved lifting and forcing injector, comprising the casing having the overflow-arm, a duct or channel leading therein, provided with opposite discharge-openings, the valve-stem extended through a cylindrical chamber of said casing to the outside thereof and having a primary overflow-valve rigidly secured thereto designed to be seated against the primary discharge-opening, and a second valve loosely secured on said stem designed to be seated against the main discharge-opening, substantially as set forth.

11. The herein-described improved lifting and forcing injector, comprising the casing having a cylindrical chamber therein and a duct or channel leading to the overflow-arm, provided with primary and main discharge-openings, the series of tubes of the forcing apparatus, the steam tube of which is provided with a cylindrical portion having holes or ports and is rigidly held in a wall or diaphragm forming a secondary steam-chamber, the main steam-inlet valve having holes or ports opening into said cylindrical portion of said steam-tube and also provided with a piston at its forward end in said steam-tube and a nut in its rear end, the primary steam-inlet valve designed to be seated against the outer central portion of said main steam-inlet valve and having its stem projected through said nut and the end of said casing, the overflow-valves, the stem therefor projected through said cylindrical chamber, the yoke connected to said stems, the operating-lever fulcrumed to said yoke, and the series of tubes forming the lifting apparatus, substantially as set forth.

484,303. STEAM-INJECTOR. JOHN H. DERBY, Brooklyn, assignor to the Hayden & Derby Manufacturing Company, New York, N. Y. Filed May 6, 1892. Serial No. 432,071. (Model.)



Claim.—1. A lifting and forcing injector having an overflow for the lifting apparatus opening into the delivery-chamber of the forcing apparatus, as set forth.

2. A lifting and forcing injector having an overflow for the lifting apparatus opening into the delivery-chamber of the forcing apparatus, and a valve automatically operated for opening and closing said overflow, said valve being held to its seat during the working of the injector by the pressure in said delivery-chamber, as set forth.

3. A lifting and forcing injector having an overflow for the lifting apparatus opening into the delivery-chamber of the forcing apparatus, an automatically-operated valve for opening and closing said overflow, and the positively-operated valve for closing the overflow-opening of said delivery-chamber, substantially as set forth.

4. A lifting and forcing injector having an overflow for the lifting apparatus opening into the delivery-chamber of the forcing apparatus, an automatically-operated valve for opening and closing said overflow, a steam-inlet valve for said forcing apparatus, having a projecting stem, and a positively-operated valve for the overflow-opening of the forcing apparatus, having a projecting stem movable with the stem of said steam-inlet valve, as set forth.

5. A lifting and forcing injector having an overflow for the lifting apparatus opening into the delivery-chamber of the forcing apparatus, an automatically-operated valve for opening and closing said overflow,

a steam-inlet valve for said forcing apparatus, having a projecting stem, a positively-operated valve for the overflow-opening of the forcing apparatus, having a projecting stem, a yoke connected to both of said valve-stems, and the operating-lever fulcrumed to said yoke, whereby said steam-inlet valve and overflow-valve of the forcing apparatus will be operated concurrently, substantially as set forth.

6. The herein-described improved steam-injector, comprising the casing, the lifting and forcing apparatuses, the delivery-chamber of the lifting apparatus opening into the water-chamber of the forcing apparatus, the automatic overflow between said water-chamber and the delivery-chamber of the forcing apparatus, the overflow-valve of said forcing apparatus, having its stem extended on either side thereof, serving at one end as a guide, and the steam-inlet valve for said forcing apparatus, having its stem connected to and movable in unison with the stem of said overflow-valve, substantially as set forth.

7. The herein described improved lifting and forcing injector comprising the casing having the delivery-chamber of the lifting apparatus opening into the water-chamber of the forcing apparatus, the overflow-opening over said water-chamber, the automatic valve therefor, the channel leading from said overflow-opening to the delivery-chamber of said forcing apparatus, the overflow duct or passage-way having an opening extending into said delivery-chamber of the forcing apparatus, the valve for said overflow-opening, the stem thereof extending longitudinally through the casing, and means for operating the same, substantially as set forth.

8. The herein-described improved lifting and forcing injector, comprising the casing having the delivery-chamber of the lifting apparatus opening into the water-chamber of the forcing apparatus, the automatic overflow between said water-chamber and the delivery chamber of said forcing apparatus, said delivery-chamber having a lower extension provided with a threaded opening, the overflow duct or passage-way having an opening into said delivery-chamber, the plug having an inner apertured cylindrical portion, the overflow-valve having a projecting portion movable in and guided by said plug, the stem of said valve, extended through a core or shell of said casing, the steam-inlet valve of said forcing apparatus, having a projecting stem, the yoke connected thereto and to the stem of said overflow-valve, and the operating-lever fulcrumed to said yoke, substantially as set forth.

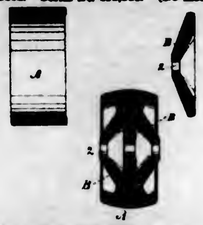
484,804. LIGHT FOR CHRISTMAS-TREES. HENRY W. DIRR, Baltimore, Md. Filed Sept. 30, 1891. Serial No. 407,141. (No model.)

Claim.—1. A gas-lighting system for Christmas-trees and gardens, consisting of a main supply-tube, a distributer arranged to be connected therewith, provided with means for attachment to a tree, and having a series of branch tubes, pliable pipes attached to said tubes and adapted to extend along the limbs of the tree, burners applied to the ends of the last-named tubes, and means for securing the burners in place.

2. In a tree-lighting device, the combination, with a gas-distributer provided with means for attachment to the tree, of branch tubes leading therefrom and adapted to extend along the limbs of the tree, burners applied to said branch tubes, and means for securing the burners in place.

3. In a device for lighting Christmas-trees, the distributer-tube consisting of the main tube adapted to be connected with the source of gas-supply and provided with the series of branch tubes communicating with the main tube and projecting therefrom, in combination with the screw connected to said distributer-tube and adapted to enter the tree to hold the same in place.

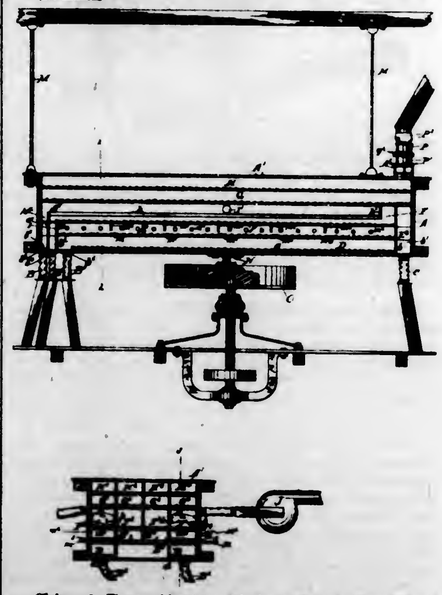
484,805. CASTER-WHEEL. ALBERT B. DOE, Brooklyn, N. Y. Filed Jan. 18, 1892. Serial No. 418,268. (No model.)



Claim.—1. The caster-wheel having a rim composed of a tube-section and two or more centrally-perforated convex disks placed within the tube-section with their convex faces outwardly and held within the tubular rim by the said rim being compressed and closed inwardly, substantially as set forth.

2. The caster-wheel having a rim composed of a tube-section, a flat centrally-perforated disk within the same, and two centrally-perforated convex disks within said tube-section, one at each side of the central disk and with their convex faces outwardly, said disks being held within the tubular rim by the said rim being compressed and closed inwardly, substantially as set forth.

484,806. MACHINE FOR SIFTING AND SORTING FLOUR OR MEAL. WILLIAM FAHT and JOSEPH FUX, Milwaukee, Wis., assignors to Faht, Kraus & Co., same place. Filed May 1, 1891. Serial No. 391,299. (No model.)



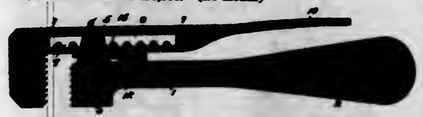
Claim.—1. The combination, with the grader, of a fly-wheel and fan combined and its casing and flexible tubular connections between the casing and the grader.

2. The combination, with the inlet of the main casing, of partitions and ducts leading therefrom to the various sieves and conveyers and a divided inlet-pipe and pivoted gates, substantially as described.

3. In a chop-grader, the combination, with the frame and means for actuating the same, of a stepped conveyer-sieve in the frame, divided into four or more compartments, the steps of the respective adjacent compartments being arranged at opposite inclines, a stepped conveyer below the sieve at the end of the frame, movable slides in the end compartment containing the lower sieve, and troughs above the lower sieves, substantially as described.

4. In a chop-grader, the combination, with the frame, of a stepped conveyer-sieve therein extending across the interior of the frame, conveyers at the ends of the frame, conveyer-sieves above the end conveyers, troughs above the sieve, and means for inducing air-currents through the sieve at the ends and above the troughs, substantially as described.

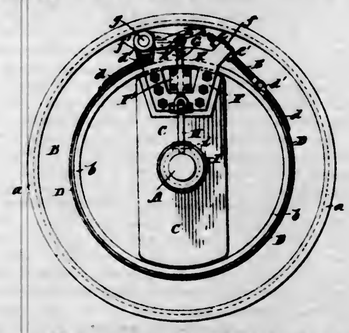
484,807. WRENCH. CHARLES C. FIELDS, Bristol, Tenn., and WILLIAM S. DUVALL, Washington, D. C.; said Fields assignor of three-eighths to Abram D. Reynolds and John B. Childers, Bristol, Tenn. Filed July 13, 1892. Serial No. 439,992. (No model.)



Claim.—1. In a wrench, the combination, with a stock having its outer end shaped to form a jaw and its inner end shaped to form a handle and provided at opposite sides of its jaw with rearwardly-extending lugs, of a lever of L shape, the outer end of which constitutes a jaw overlapping that of the stock and the inner end of which is shaped to form a handle, said lever being provided between its ends with a longitudinal slot whose inner edge is provided with a series of transverse grooves, a pin passed through the ears and slot and adapted to engage the grooves, and a locking device mounted on the stock and adapted to be wedged between the lever and stock, substantially as specified.

2. In a wrench, the combination, with a stock terminating at one end in a jaw, provided at opposite sides of the same with rearwardly-disposed ears connected by a transverse pin, and in rear of the ears, at opposite edges, provided with beads or ways, of a lever of L shape, the outer end of which forms a jaw overlapping that of the stock, said lever being provided with a longitudinal slot whose inner edge is provided with a series of transverse grooves for engaging the pin, a locking-block whose under side is provided with a T-shaped recess for engaging the ways, upon which it is adapted to slide, and a spring having its inner end secured to the block and projecting forward and at its free end bearing against the under side of the lever, substantially as specified.

484,808. CLUTCH. JAMES FITZGERALD, Duluth, Minn. Filed June 2, 1892. Serial No. 435,444. (No model.)



Claim.—1. The combination, with a pulley or drum having a cylindrical flange or rim and with a sliding sleeve, of a link connected to the sliding sleeve, the sliding link-rod connected to the link, a suitable guide for said rod, an elbow-lever connected by its long arm to the sliding link-rod, a gripping-strap connected by one end to the short arm of the elbow-lever and by its other end to an adjusting means, and a supporting spider or plate having a bracket attached to it for supporting the elbow-lever and the adjusting means, substantially as described.

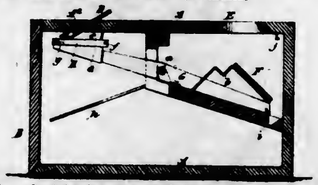
2. In a friction-clutch, the combination, with a pulley or drum having a cylindrical flange or rim, of a flat metal gripping-strap nearly encircling the flat edge or rim of the pulley and formed of a single band and attached by one of its ends to an elbow-lever and by its other end to an adjusting means, a suitable bracket supporting the said adjusting means, and means intermediate of the elbow-lever and sliding sleeve, consisting of a sliding rod and link, for tightening and releasing the gripping-strap from the drum, substantially as described.

3. In a friction-clutch, the combination, with a pulley or drum having a cylindrical flange and a sliding sleeve, of a shaft, a spider keyed on said shaft, a double-armed supporting-bracket attached to the spider, an elbow-lever pivoted to one arm of the bracket, a gripping-strap formed of a single band and connected by one of its ends to another arm of said bracket and by its other end to the short arm of said elbow-lever, a sliding rod pivoted to the long arm of the bell-crank lever, and a link connected to it and to the sliding sleeve, substantially as described.

484,809. EQUALIZER FOR BUGGY-SPRINGS. CHARLES GLATTLY, Rock Creek, Iowa. Filed Feb. 20, 1892. Serial No. 422,302. (No model.)

Claim.—The combination, with a vehicle-body having the side bars B B and the supporting-springs, of the equaliser-bar F, extending transversely of said body above the floor thereof and formed in two sections having means for their connection, end cranks G on said bar, projecting through the sides of said body, journal portions *g*, terminating said cranks, and the upwardly-projecting arms H, having loose bearings in the side bars and forming bearings for the journal *g* shortly below the plane of the body, said arms lying inside the side bars, which serve as lateral guards therefor, substantially as specified.

484,810. BANK. ERWIN M. GOLDSMITH, Philadelphia, Pa. Filed Mar. 1, 1892. Serial No. 423,200. (No model.)



Claim.—1. A bank or receptacle having a balanced lever, a coin slot or chute, an opening E, and a disappearing device on said lever, the ends of said lever being in substantial vertical alignment with said opening E and said slot or chute, so that said device can be brought to view by the action of the coin as it passes into the bank, substantially as described.

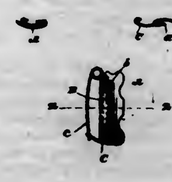
2. A bank or receptacle having a coin slot or chute and an opening E, combined with a balanced lever whose ends are substantially aligned with the opening E and the slot or chute, and a device on said lever arranged to appear at said opening E when the lever is actuated by a coin, and means, substantially as described, to hold the device in view until an attempt is made to grasp it, substantially as described.

3. A bank or receptacle having a coin slot or chute and an opening E, combined with a balanced lever, a device carried thereby to be exhibited in the opening E, the ends of said lever being substantially in vertical alignment with the opening E and the coin slot or chute, a coin-receiver on said lever, and means, substantially as described, to hold the device in the opening E until an attempt is made to grasp it, substantially as described.

4. A bank or receptacle having a coin-slot and an opening E, combined with a lever carrying a device F to appear in the opening E, a plate *d* on the other end of the lever, a pivoted frame *c*, and an abutment to raise said frame to release a coin on the plate *d*, substantially as described.

5. A bank or receptacle having a coin slot or chute and an opening E, combined with a balanced lever, a device F on said lever, the ends of said lever being in substantially-vertical alignment with the opening E and the coin slot or chute, and a spring-holder to hold said lever after the coin has operated it to retain the device F in the opening E until an attempt is made to grasp it, substantially as described.

484,811. MATCH-LIGHTER. GEORGE GERSON, Cambridge, Mass. Filed Dec. 9, 1891. Serial No. 414,888. (No model.)



Claim.—1. In a match-lighting device, a folding or reversible plate, in combination with a pin or hook to which it is hinged.

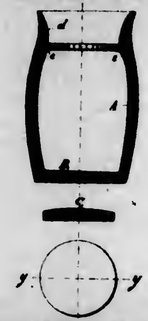
2. In combination with a pin or hook, a reversible plate hinged thereto and provided with a roughened surface.

3. In a device for lighting matches, the combination of a reversible plate having one side ornamented and the other side roughened and a hooking device to which the said reversible plate is pivotally connected, substantially as described.

4. The combination, with a hook or pin for engaging a garment, of a reversible plate hinged thereto and provided with a dentated flange, substantially as described.

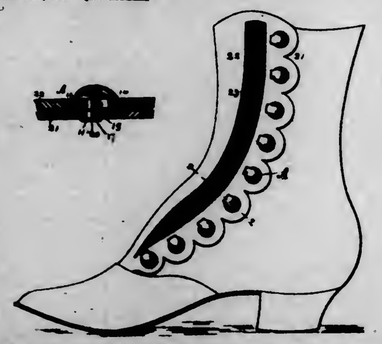
5. The combination of a plate having one side ornamented and the other side provided with a dentated or serrated flange, in combination with a hook or pin device having one of its arms swiveled behind the dentated flange, while the other arm is pointed and adapted to engage the material of the support, substantially as described.

484,812. TUB. LOUIS K. F. GUEBERT and REINER H. KOCH, Eberfeld, Germany. Filed Mar. 20, 1892. Serial No. 425,831. (No model.)



Claim.—A barrel or cask for liquids, consisting of an integral body portion, a continuous flange *c*, projecting from its interior near one end, an independent head C, and the extension *d* of the body portion upset or bent over upon the head and completely encircling the edge thereof, substantially as described.

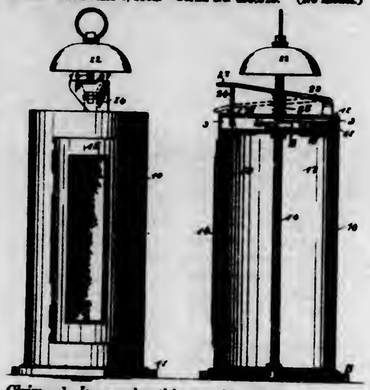
484,818. SHOE-FASTENER. JOSEPH H. HAMILL and PAUL J. JOHNSON, Globe, Ariz. Filed Sept. 12, 1891. Renewed Sept. 8, 1892. Serial No. 445,310. (No model.)



Claim.—1. A fastening of the character described, comprising the receiving-section 10, having a tubular body 13, formed with an overhanging cap 12, the opening through the body being in the form of a keyhole-slot, the contracted end of which is beneath the free end of the cap, and a locking-section formed of a post having a cylindrical head overhanging three sides of its upper end to close the narrow portion of the keyhole-slot, a flange 19 between the ends of the post, and a securing disk or flange 20 for the lower end of the stud, substantially as set forth.

2. The combination, with a boot or shoe constructed with outer and inner flaps adapted to overlap, of fastening devices constructed in two sections, a receiving-section attached to the outer flap, comprising a cylindrical cap and a round hollow base beneath the cap having attached locking-flanges, and a locking-section adapted for attachment to the under flap, comprising a stud having a head extending at an angle beyond one of its sides, the said head being adapted to enter and pass through the hollow base of the receiving-section, substantially as shown and described.

484,814. ADVERTISING DEVICE. PAUL HERRMANN, New York, N. Y. Filed June 7, 1892. Serial No. 436,318. (No model.)



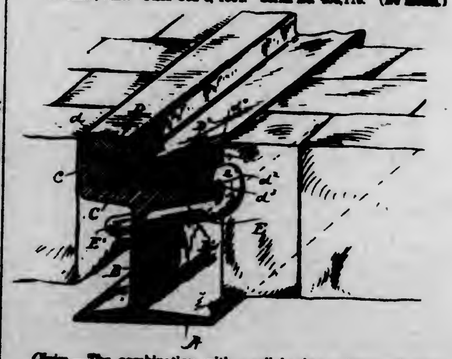
Claim.—1. In an advertising-machine, the combination, with a casing having openings therein and a cylinder held to revolve in the casing and adapted to have advertisements displayed thereon, of a gong or like alarm supported above the casing and a trip-lever arranged to actuate the cylinder and sound an alarm, substantially as shown and described.

2. The combination, with a casing and a cylinder held to turn in the casing, the cylinder being provided with a series of radial bars at one end beveled or inclined in cross-section, of a lever fulcrumed upon the casing and a trip-plate projected downward from the lever, the said trip-plate being of angular construction and adapted to act upon the bars of the cylinder, as and for the purpose specified.

3. The combination, with a casing having openings therein and a cylinder adapted to revolve in the casing and adapted to carry advertisements for display and radial bars connected with the upper end of the cylinder, the bars being beveled or inclined in cross-section, of a spring-pressed lever fulcrumed upon the casing, a trip-plate of angular construction projected downward from the lever and adapted for engagement with the bars of the cylinder, and an alarm device located above the lever in its upward path, as and for the purpose specified.

4. The combination, with a casing having openings therein, a cylinder held to turn in the casing and adapted for the display of advertisements, the cylinder being provided at its upper end with a central hub and bars radiating from the hub, the said bars being beveled or inclined in cross-section, of a spring-pressed lever fulcrumed upon the casing, a trip-plate angular in construction projected downward from the lever to an engagement with the bars of the cylinder, a sprocket-wheel secured upon the hub of the cylinder, a spring-detent attached to the cylinder and having bearing against the sprocket-wheel, and an alarm device located in the path of the upward travel of the lever, as specified.

484,815. TRACK-RAIL. JOHN T. HILL and BERNHARD MEHRING, Cleveland, Ohio. Filed Oct. 3, 1891. Serial No. 408,118. (No model.)



Claim.—The combination, with a rail having a base, web, and

head, of a removable tread fitted to the head, this tread having a groove formed approximately over the web, and securing-bolt hooked over the edge of the tread and extending through the web of the rail, substantially as set forth.

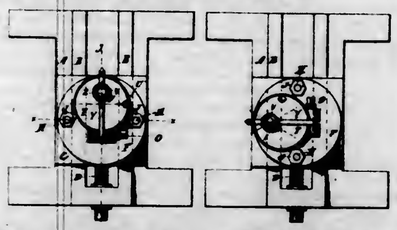
484,816. GAGE-COCK. JAMES F. HOLDAN, Crab Orchard, Ky. Filed Apr. 9, 1892. Serial No. 428,331. (No model.)

Claim.—1. The herein-described improved gage-cock, comprising the tube having an inner right-angular portion, an indicator corresponding to said right-angular portion, and an outlet-valve normally held to its seat by the steam-pressure in said tube and having its handled stem connected with said pointer, as set forth.

2. The herein-described improved gage-cock, comprising the plug or housing, the tube extended therethrough, having a flange against the inner end of said plug, and provided with an inner right-angular portion, an outlet-valve on the outer end of said tube, having a handled stem, a pointer projecting from said tube corresponding to said right-angular portion, and the forked arm projecting from said handled stem and engaging said pointer, as set forth.

3. The herein-described improved gage-cock, comprising the plug or housing, the tube having an inner right-angular portion, the outer end of which is bent or elbowed, the barrel or cylinder connected to said tube and having a valve-seat therein and provided with an outlet hole or port, the outlet-valve having a projecting handled stem, the set-screw binding said barrel or cylinder, the pointer, and the forked rod projecting from said handled stem and engaging said pointer, as set forth.

484,817. TOOL-HOLDER FOR LATHES. WILLIAM C. HOBAN, Meriden, assignor to the Hanley Machine Company, Torrington, Conn. Filed Apr. 4, 1892. Serial No. 427,670. (No model.)

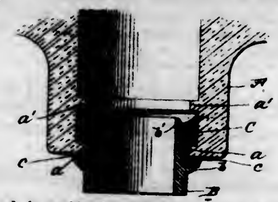


Claim.—1. In an engine-lathe, the combination of the transversely-movable carriage with a turn-table arranged thereon and adapted for circular adjustment, a vertical tubular socket on said turn-table, but eccentric to the axis upon which the turn-table rotates, a tool-post adjustable in said socket, the tool-post constructed with a vertical opening eccentric to the axis of said socket and post, with a tool-clamping spindle through said opening in the post, and means, substantially such as described, for securing the post in the socket, substantially as and for the purpose described.

2. In combination with the transversely-movable carriage of an engine-lathe, a turn-table arranged upon said carriage and adjustable in a circular path, a vertical tubular socket arranged upon said turn-table, but eccentric to the axis upon which the turn-table rotates, the socket divided and provided with means for drawing the divided edges of the socket toward each other, a cylindrical tool-post arranged in said socket and vertically adjustable therein, a vertical opening through the post, but eccentric to the axis of the post, and a tool-clamping spindle through said opening in the post, substantially as and for the purpose described.

3. The combination of the transversely-movable carriage of an engine-lathe with a turn-table arranged upon said carriage and so as to be rotatably adjustable in a horizontal plane, a vertical tubular socket on said turn-table, the axis of the socket being eccentric to the axis on which the turn-table rotates, a cylindrical post arranged in the said socket, a spline and groove between said post and socket, whereby the said post is movable vertically, but prevented from rotation in the socket, the post constructed with a vertical opening through it, and means, substantially such as described, for clamping the post in the socket, substantially as and for the purpose described.

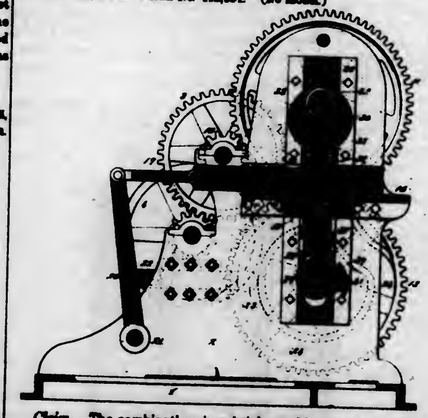
484,818. COUPLING FOR WATER-CLOSETS. GEORGE B. HOWELL, Philadelphia, Pa. Filed June 7, 1892. Serial No. 436,804. (No model.)



Claim.—1. In combination with the water-closet or similar fixture of earthenware provided with an opening having an interior annular projection or flange, the elastic gasket having a conical opening therethrough, and a nipple or coupling-piece adapted to be forced into said conical opening so as to expand the gasket within the opening of the fixture and secure the parts together without other fastening means, substantially as described.

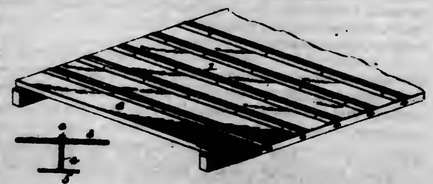
2. In combination with the fixture having an opening therein provided with an interior annular projection or flange, the elastic gasket having a conical opening through the same, and the nipple or coupling-piece having a collar intermediate the ends thereof, and a second collar or lip adapted to overhang the inner end of the gasket when the parts are inserted in the opening of the fixture so as to form a lock-joint, substantially as described.

484,819. BRICK-MACHINE. GEORGE ISAACS, St. Louis, Mo. Filed Nov. 21, 1891. Serial No. 412,631. (No model.)



Claim.—The combination, in a brick machine, of the mold-plungers, an open reciprocating frame carrying the upper plunger, an eccentric 36, located in the opening of the frame, having a circular bearing-surface and actuating the upper plunger, antifriction-rollers at both top and bottom of the opening of the frame, and a cam 40, having a radial part 41 and adapted to raise the lower plunger, said eccentric and cam being so arranged with respect to each other that they force the plungers together in the act of pressing the brick, then they cause the plungers to move together and lift the brick out of the mold, then the upper plunger is given a further upward movement by the eccentric, and finally said lower plunger drops off the radial part 41 of said cam, substantially as and for the purpose set forth.

484,820. ROOFING-JOINT. WILLIAM H. JELLISON, Petrolia, Pa. Filed Mar. 5, 1892. Serial No. 423,991. (No model.)

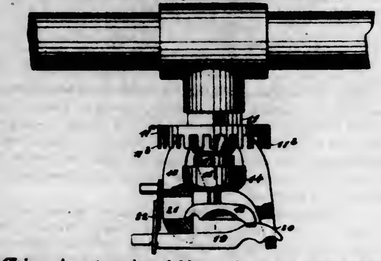


Claim.—1. A sheet-metal joint for roofs, consisting of the head,

the horizontal rib, the webs, and the flanges constructed substantially as described.

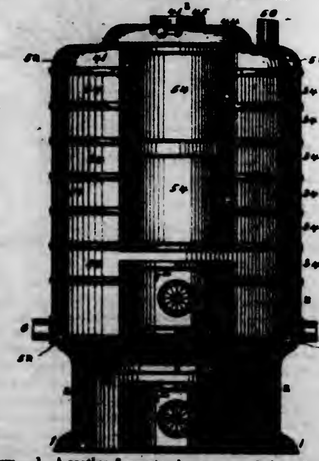
2. In a roof, the combination, with the boards having horizontal slots in their edges, of the joints consisting of the head having the horizontal rib, the webs, and the flanges, substantially as and for the purpose described.

434,821. AUTOMATIC SPRINKLER. JOHN KANE, Philadelphia, Pa. Filed Nov. 13, 1891. Serial No. 411,775. (No model.)



Claim.—An automatic sprinkler consisting in the tube 10, having an external circular flange or plate 11^a, provided with depending peripheral teeth 11^b, an inclined collar 12, screwed upon the lower end of the tube and provided with depending arms 13 14, apertured, as at 21 20, respectively, and connected above the apertures by a cup 15, having a perforated bottom, a valve 17, closing the lower end of the tube and having a stem extending down through the aperture in the cup, a lever 18, on which the stem rests, supported at one end in aperture 21, a second lever 19, supporting the lever 18 and resting at one end in aperture 20, and a link supporting the other end of the lever 19 and formed of two overlapped fusibly-connected sections, substantially as set forth.

484,822. WATER-HEATER. JOHN W. KELLEY, St. Louis, Mo. Filed July 8, 1891. Serial No. 398,720. (No model.)



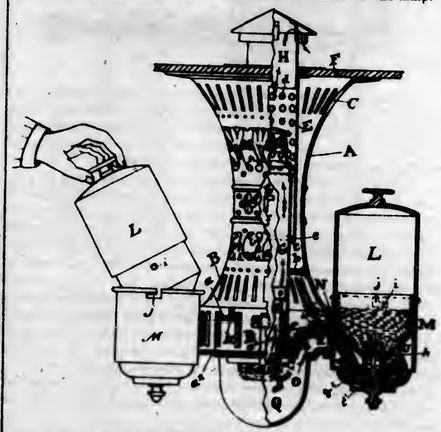
Claim.—1. A section for water-heaters, consisting of a casing-section, outer annular part, arms by which the casing-section is connected with the outer annular part, so as to provide, in connection with the casing-section and the outer annular part, passages for the products of combustion, inner annular part providing a central passage, parallel bars and cross-bars extending from the outer annular part to the inner annular part, and parallel bars extending from the outer annular part to the cross-bars, substantially as described.

2. A combined water-section and casing-section cast integral with arms 23, by which the water-section and casing-section are connected and forming therewith passages 23^a for the products of combustion, substantially as described.

484,823. LAMP. JOHN KIMM, Jr., Dayton, Ohio, assignor to the Dayton Manufacturing Company, same place. Filed Aug. 12, 1891. Serial No. 402,402. (No model.)

Claim.—1. In a lamp, a hanger adapted to be rigidly secured to a car-ceiling or other overhead support and provided with a perforated ring at its lower end, in combination with a perforated coupling-ring adapted to pass over and be detachably secured to said hanger-ring in a manner to put the perforations in both rings in register, and one or more oil-holders attached to and supported by the coupling-ring, substantially as described.

2. In a lamp, a hanger adapted to be rigidly secured to a car-ceiling or other overhead support and provided with a ring at its lower end, in combination with a coupling-ring adapted to pass over and be detachably secured to said hanger-ring, one or more oil-holders attached to and supported by the coupling-ring, and wick-tubes radiating from said oil holder or holders toward the center of the lamp.



3. In a lamp, a hanger adapted to be rigidly secured to a car-ceiling or other overhead support and provided with a ring at its lower end, in combination with a coupling-ring adapted to pass over and be detachably secured to said hanger-ring, one or more oil-holders attached to and supported by the coupling-ring, wick-tubes radiating from said oil holder or holders toward the center of the lamp, a bezel-ring hinged to the coupling-ring, and a bowl forming the bottom of the lamp, carried by the bezel-ring.

4. In a lamp, a hanger adapted to be rigidly suspended from a car-ceiling or other overhead support and provided with a ring at its lower end, in combination with a coupling-ring adapted to pass over and be detachably secured to said hanger-ring, a plurality of oil-holders attached to and supported by the coupling-ring, a plurality of reservoirs located in the oil-holders, a chimney, and wick-tubes radiating from said oil-holders toward the center of the lamp, forming at their meeting-points a circular burner surrounding the lower end of the chimney.

5. In a lamp, a hanger adapted to be rigidly secured to a car-ceiling or other overhead support and provided with a ring at its lower end, in combination with a coupling-ring adapted to pass over and be removably secured to said hanger-ring, a plurality of oil-holders attached to and supported by the coupling-ring, a plurality of reservoirs located in the oil-holders and detachably connected therewith, a chimney, and wick-tubes radiating from said oil-holders toward the center of the lamp, forming at their meeting-points a circular burner surrounding the lower end of the chimney.

6. In a lamp, a hanger adapted to be rigidly secured to a car-ceiling or other overhead support and provided with a ring at its lower end, in combination with a coupling-ring adapted to pass over and be removably secured to said hanger-ring, a plurality of oil-holders attached to and supported by the coupling-ring, a plurality of reservoirs located in the oil-holders and detachably connected therewith, a chimney, wick-tubes radiating from said oil-holders toward the center of the lamp, forming at their meeting-points a circular burner surrounding the lower end of the chimney, a bezel-ring, and a lamp-bottom carried by the bezel-ring.

7. In a lamp, a central hanger adapted to be rigidly suspended from a car-ceiling or other overhead support and provided with an integral ring at its lower end, in combination with a coupling-ring adapted to pass over and be detachably secured to said hanger-ring, a plurality of oil-holders attached to and supported by the coupling-ring, a plurality of reservoirs located in the oil-holders, a chimney, wick-tubes radiating from said oil-holders toward the center of the lamp, forming at their meeting-points a circular burner surrounding the lower end of the chimney, a glass bowl forming the bottom of the lamp, and a bezel-ring carrying said bowl.

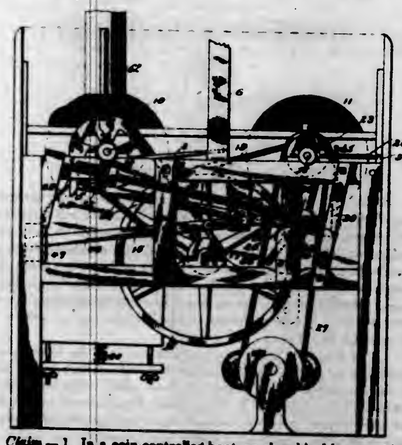
8. In a lamp, a central hanger adapted to be rigidly suspended from a car-ceiling or other overhead support and provided with a ring at its lower end, in combination with a coupling-ring adapted to pass over and be detachably secured to said hanger-ring, a plurality of oil-holders attached to and supported by the coupling-ring, a plurality of reservoirs located in the oil-holders, a chimney, wick-tubes radiating from said oil-holders toward the center of the lamp, forming at their meeting-points a circular burner surrounding the lower end of the chimney, a bezel-ring carrying said bowl, and a deflecting-ring located between the wick-tubes and bezel-ring.

9. In a lamp, a hanger adapted to be rigidly secured to a car-ceiling or other overhead support and provided with a ring at its lower end, in combination with a coupling-ring adapted to pass over and be detachably secured to said hanger-ring, a plurality of oil-holders attached to and supported by the coupling-ring, a plurality of reservoirs located in the oil-holders and detachably connected therewith, a chimney, wick-tubes radiating from said oil-holders toward the center of the lamp, forming at their meeting-points a circular burner surrounding the lower end of the chimney, a bezel-ring, a glass lamp-bottom carried by the bezel-ring, and a deflecting-ring located between the wick-tubes and the bezel-ring.

10. In a lamp of the class herein described, a hollow central hanger adapted to be rigidly suspended from a car-ceiling or other overhead support and having a ring at its lower end, in combination with a coupling-ring adapted to pass over and be removably attached to said hanger-ring, a plurality of oil-holders carried by the coupling-ring, a plurality of reservoirs located in the oil-holders, a chimney within said hollow hanger, wick-tubes radiating from said oil-holders toward the center of the lamp, forming at their meeting-points a circular burner surrounding the lower end of the chimney, and a perforated cap adapted to fit over the open end of said burner and limit the forward movement of the wicks.

11. In a lamp, the combination, with a car-ceiling or other overhead support, of a central hollow hanger provided with an integral ring at its lower end, a coupling-ring adapted to fit over and be detachably connected with said hanger-ring, one or more oil-holders attached to said coupling-ring, wick-tubes radiating from said oil holder or holders toward the center of the lamp and forming at their meeting-points a circular burner, a chimney centrally located above said burner, means for supporting said chimney from above, guides for directing and retaining the chimney in a central position, and an exterior ventilator, through which the products of combustion escape.

484,824. COIN-OPERATED BOOT OR SHOE BLACKING MACHINE. NUTE R. KNIGHT, Dallas, Tex. Filed Mar. 3, 1892. Serial No. 423,679. (No model.)



Claim.—1. In a coin-controlled boot or shoe blacking machine, the combination of a coin-chute, a brush, a rotary shaft for operating the brush, a motor, a clutch for throwing the brush-operating shaft into and out of gear with the motor, a clutch-operating lever connected with a part of the clutch, a device for engaging and holding the clutch-operating lever in position to throw the shaft out of gear with the motor, and a trip-lever operated by a coin deposited in the coin-chute to release the said device from engagement with the clutch-operating lever, substantially as described.

2. In a coin-controlled boot or shoe blacking machine, the combination of a coin-chute, a brush, a rotary shaft for operating the brush, a motor, a clutch mounted on the shaft and composed of two parts, one of which is geared to the motor and the other one of which is movable laterally, a rising and falling clutch-operating lever connected with a part of the clutch, a movable supporting device to engage and hold the clutch-operating lever in position to throw the brush-shaft out of gear with the motor, a trip-lever operated by a coin deposited in the coin-chute to release the movable supporting device from engagement with the clutch-operating lever, and mechanism for resetting the clutch-operating lever into engagement with the movable supporting device, substantially as described.

7. In a coin-controlled boot or shoe blacking machine, the combination of a coin-chute, a brush, a rotary shaft for operating the brush, a motor, a clutch for throwing the brush-operating shaft into and out of gear with the motor, a clutch-operating lever connected with a part of the clutch, a movable supporting device for engaging and holding the clutch-operating lever in position to throw the shaft out of gear with the motor, a trip-lever operated by a coin deposited in the coin-chute to release the movable supporting device from engagement with the clutch-operating lever, and mechanism for resetting the clutch-operating lever into engagement with the movable supporting device, substantially as described.

8. In a coin-controlled boot or shoe blacking machine, the combination of a coin-chute, a brush, a rotary shaft for operating the brush, a motor, a clutch for throwing the brush-operating shaft into and out of gear with the motor, a rising and falling clutch-operating lever connected with a part of the clutch, a dog or pawl for engaging and holding the clutch-operating lever in an elevated position to throw the shaft out of gear with the motor, a trip-lever operated by a coin deposited in the coin-chute to release the pawl or dog from engagement with the clutch-operating lever, a weighted lever, and means whereby the weighted lever is caused to automatically reset the clutch-operating lever into engagement with the pawl or dog at a predetermined time, substantially as described.

9. In a coin-controlled boot or shoe blacking machine, the combination of a coin-chute, a brush, a brush-operating shaft, a motor adapted to gear with the shaft, mechanism for throwing the shaft into and out of gear with the motor, a device for holding said mechanism in position to retain the shaft out of gear with the motor, and a trip-lever operated by a coin deposited in the coin-chute to release the device from the said holding mechanism, substantially as described.

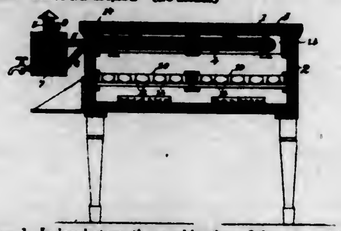
10. In a coin-controlled boot or shoe blacking machine, the com-

bination of a coin-chute, a brush, a brush-operating shaft, a motor adapted to gear with the shaft, mechanism for throwing the shaft into and out of gear with the motor, a device for holding said mechanism in position to retain the shaft out of gear with the motor, a trip-lever operated by a coin deposited in the coin-chute to release the device from the said holding mechanism, and automatic resetting mechanism operating to throw the brush-operating shaft out of gear with the motor at a predetermined time, substantially as described.

11. In a coin-controlled boot or shoe blacking machine, the combination of a coin-chute, a brush, a rotary brush-operating shaft, a motor, a clutch for throwing the brush-operating shaft into and out of gear with the motor, a rising and falling clutch-operating lever, a vertically-movable slide connected with the clutch-operating lever, a horizontally-swinging lever engaged with a part of the clutch and operated by the vertically-movable slide, a device for engaging and holding the clutch-operating lever in an elevated position, and a trip-lever operated by a coin deposited in the coin-chute to release the said device from engagement with the clutch-operating lever, substantially as described.

12. The combination of a case having a foot-rest, a blacking-brush for applying the blacking to a boot or shoe, a brush for polishing the boot or shoe, coin-controlled mechanism for operating the brushes, a vertically-movable block for carrying a supply of blacking, and a pivoted lever having a foot-piece and acting on the block to elevate the blacking-supply into the path of the blacking-brush when the foot-piece is depressed, substantially as described.

484,825. INCUBATOR. LOUIS KNOBBE, Decatur, Ill. Filed June 10, 1892. Serial No. 436,394. (No model.)

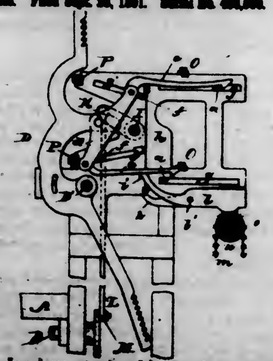


Claim.—1. In incubators, the combination of the removable casing 3, adapted to be placed above the egg-drawers, the pipe 4, secured in the casing, the heat-jacket 7, and the pipes 5 and 6, connecting the jacket with opposite ends of the pipe 4, substantially as set forth.

2. In incubators, the combination of the removable metal-lined casing 3, adapted to be placed above the egg-drawers, the pipe 4, secured in the casing, the heat-jacket 7, and the pipes 5 and 6, connecting the jacket with opposite ends of the pipe 4, substantially as set forth.

3. An incubator-drawer having egg supporting strips lengthwise of the motion of the drawer and a removable egg-stop in an end of the drawer and having a width equal to one-half the circumference of an egg, substantially as set forth.

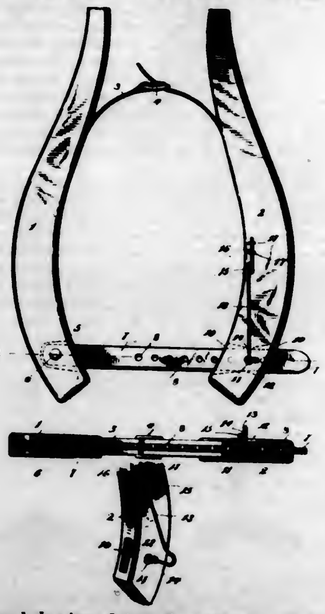
484,826. SEWING MECHANISM FOR LOOMS. FRED LAMEY, Adams, Mass. Filed Sept. 30, 1891. Serial No. 406,969. (No model.)



Claim.—1. In a loom, a series of harness-frames, harness-levers, cording connecting said harness-frames with said harness-levers, a pair of hooked jacks operatively connected to each of said levers, two lifters to engage with the hooks of the said hooked jacks, operating devices for giving to each of the said lifters a full forward and return motion for every revolution of the crank-shaft of the loom, pattern-indicating bars, means for moving the same, and two indicating-fingers for each harness-lever, operated upon by the pattern-bars, all combined substantially as described.

2. In a loom, a series of harness-frames, harness-levers, cording connecting said harness-frames with said harness-levers, a pair of hooked jacks operatively connected to each of said levers, two lifters for engaging with the hooks of the said hooked jacks, operating devices for giving to each of said lifters a full forward and return motion for every revolution of the crank-shaft of the loom, pattern-indicating bars having each pick doubly indicated for open-shed formation and each pick singly indicated for close-shed formation, means for moving said bars, and two indicating-fingers for each harness-lever operated upon by the pattern-bars, all combined and adapted to operate on both the open-shed principle and the close-shed principle at the same pick of the loom, substantially as described.

484,827. HAME-FASTENER. ROBERT LAMBERT, Fayette Springs, Pa. Filed June 20, 1892. Serial No. 437,251. (No model.)

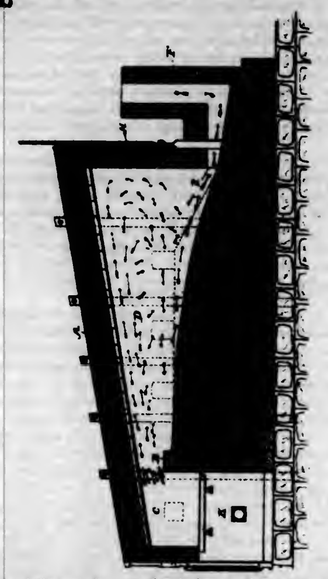


Claim.—1. In a hame-fastener, the combination, with the hames, one of which has an opening and the other an aperture, and a hole intersecting said aperture, of a strap having a longitudinal series of perforations, the strap being pivoted at one end on a transverse pin in said opening in one hame and extending through said aperture in the other hame, and a wire hook secured at one end to the latter hame, having a spring-coil in its body, and its downturned tip being adapted to pass into said hole and through one of said perforations, as and for the purpose set forth.

2. In a hame-fastener, the combination, with the hames, one of which has an aperture, a hole intersecting said aperture, and a cavity in the face of the hame, forming a lateral offset at one extremity of said hole, of a rigid strap having a longitudinal series of perforations, the strap being pivoted to one hame and extending through said aperture in the other hame, and a spring-hook secured at one end to the latter hame, with its tip resting in said offset and adapted to pass into said hole and through one of said perforations, as and for the purpose set forth.

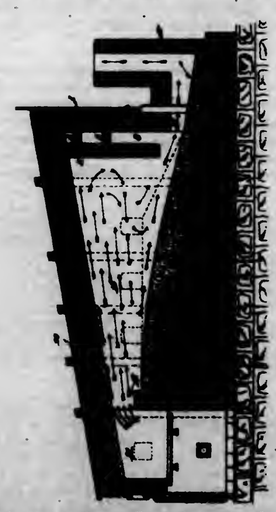
3. A hame-fastener consisting of a strap having a longitudinal series of perforations, the strap being pivoted to one hame and extending through an aperture in the other hame, the latter having a hole intersecting the aperture, a spring-actuated hook, its tip passing normally into said hole and normally through one of the perforations, and means, substantially as described, for holding the tip out of the hole when desired, as and for the purpose set forth.

484,828. FURNACE FOR METALLURGICAL PURPOSES. JOHN E. LAUER, St. Louis, Mo. Filed Dec. 10, 1891. Serial No. 414,967. (No model.)



Claim.—A furnace for metallurgical operations constructed, as herein described, with a fire-chamber, a hearth for the metal, a bridge-wall interposed between the fire-chamber and the hearth, a deflecting-wall at the rear, an exit to the stack below the rear deflecting-wall, and a roof inclined upward from the front wall of the fire-chamber to the rear deflecting-wall, whereby the gases of combustion are carried freely over the bridge and through a combustion-chamber of constantly-increasing area to the rear of the furnace and by contact with the rear deflecting-wall are retarded and more thoroughly mingled with the air and consumed before passing to the stack, as explained.

484,829. FURNACE FOR METALLURGICAL OPERATIONS. JOHN E. LAUER, St. Louis, Mo. Filed May 13, 1892. Serial No. 432,891. (No model.)



Claim.—In a furnace for metallurgical operation, the combination of a fire-chamber, a hearth for the metal, a bridge-wall interposed between the fire-chamber and the hearth, the vertical back wall, beneath which is an exit to the stack of the furnace, a roof inclined upwardly from the front to the back of the furnace, and an independent inner wall located at a distance from the back wall and forming a space between them, substantially as and for the purpose set forth.

484,830. PROTECTIVE BOTTLE-STOPPER. JULIUS LIEBOWITZ, New York, N. Y. Filed Apr. 30, 1892. Serial No. 431,131. (No model.)

Claim.—1. The combination, in a stopper having a central passage, of the movable cap adapted to work on the top thereof, a head on said cap, an elastic block in said cap, a seat on the stopper, adapted to coact with said elastic block, and openings in said cap, substantially as described.

2. The combination, with a bottle, of the stopper having a central passage or opening therein, a movable cap adapted to close the opening through the top of said stopper, openings in said cap, and a ferrule adapted to be secured to the bottle to confine the stopper in the bottle and limit the movement of said cap, substantially as described.

3. The combination, with a bottle, of the stopper having a central passage, a movable seal, and a seat for the same, located in said central passage, devices in said passage for limiting the movement of said seal, a perforated cap adapted to move about the top of said stopper to close the opening in the same, and a ferrule adapted to be secured to the neck of the bottle to retain the stopper within the same, substantially as described.

4. The combination, with the stopper F, having a central passage, of the annular seat K, having an opening therethrough, the ball-stop secured in said passage, having a cup A, stem *f*, and arm *g* for supporting said cup, and the ball L, substantially as described.

5. The combination, with the stopper having a central passage, of the ball L and perforated seat K for the same, located in said passage, the ball-stop having the cup A and cross-bar for supporting the said cup within the passage, and the perforated movable cap M, having the head N, block O within said head, and perforations P, and a seat on the stopper, adapted to coact with the elastic block O, substantially as described.

6. The combination, with the bottle, of the stopper F, having a central passage, the ball L, a perforated seat K within said passage, the ball-stop having the cup A, stem *f*, and cross arm *g* for supporting said cup within the passage, a perforated cap M, having the head N and elastic block O, adapted to coact with a seat on the top of the stopper, and a ferrule Q, adapted to be firmly secured to the neck of the bottle, provided with the flange *k* for confining the stop and cap thereof in the bottle and limiting the movement of said cap, substantially as described.

7. The combination, with the bottle, of a ferrule secured to the bottle and a stopper having a central passage, a movable seal therein, a stop for limiting the movement of said seal, and means for closing the upper portion of said central passage, all being confined within the bottle by said ferrule, substantially as described.

8. In a bottle-stopper, the stopper having a screw-threaded extension I, a central passage through said stopper, a shoulder *i* within said passage, an annular ring K, having the seat *b* located within said passage, the ball L, adapted to close the opening through said annular ring K, the ball-stop having the hemispherical cup A, stem *f*, and cross-bar *g*, adapted to be seated against the shoulder *i*, and an elastic covering J on the conical extension I, substantially as described.

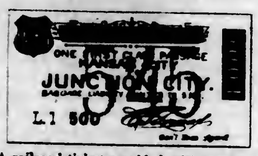
9. The combination, with the stopper having a central passage and screw-threaded extension I, of an elastic covering J about said extension, a shoulder *i* within said passage, an annular lip H about the passage at the top of the stopper, an annular ring K, having the seat *b* located within said passage, the ball L, adapted to be seated in the ring K, the cup A within said passage, the screw-threaded bore G on the upper portion of the stopper, and a cap M, having the slot P, head N, and elastic block O, adapted to move on said bore, substantially as described.

10. The combination of a bottle having the ferrule secured thereto, a flange *k* on the same with a stopper having a passage therethrough, a screw-threaded extension I, an elastic covering J on said extension, a shoulder *i* within said passage, an annular lip H about the passage at the top of the stopper, an annular ring K, having the seat *b* located within said passage, the ball L, adapted to be seated in the ring K, the cup A within said passage, the screw-threaded bore G on the upper portion of the stopper, and a cap M, having the slot P, head N, and

elastic block O, adapted to move on said boss and confined in its movements by the said flange A, substantially as described.

11. The combination, with the stopper having a central passage, said passage having a contracted upper section, of the apertured seat K, a ball L, adapted to close the aperture in the seat, and a stop detachably secured to the contracted portion of said passage, substantially as described.

484,881. RAILROAD-TICKET. EDWARD L. LOMAX, Omaha, Nebr., and BENJAMIN B. ARNEMAN, Chicago, Ill., assignors of one-third to Allen I. Blanchard, Chicago, Ill. Filed Apr. 6, 1892. Serial No. 347,088. (No model.)

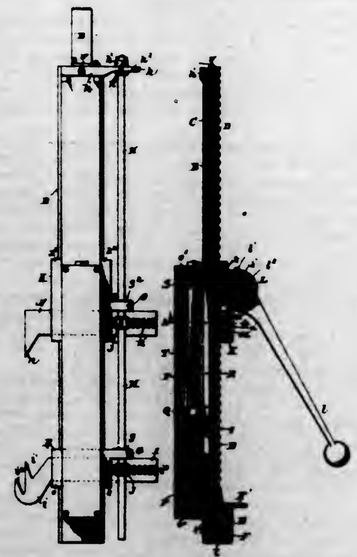


Claim.—1. A railroad-ticket provided with secret ciphers corresponding to the names of the stations between which it is valid, whereby any alteration of such ticket without detection is prevented, substantially as described.

2. A cipher-ticket provided with the names of the two stations between which it is valid and also with two secret-cipher numbers, irregularly chosen and corresponding to the names of such stations, substantially as described.

3. A cipher-ticket provided with the names of the stations between which it is valid and also with two secret ciphers corresponding to such names, the faces of the ciphers being in a different plane from the surface of the ticket, substantially as described.

484,882. SAWMILL-DOG. VANBUREN MARTIN and MICHAEL HAMBA, Clinton, Mo. Filed Apr. 30, 1892. Serial No. 431,261. (No model.)



Claim.—1. In a sawmill-dog, the combination, with an upright mounted upon the carriage and having the vertical face groove or channel, of a sliding rack-bar moving in said channel and carrying a dog-head at its lower end, a dog moving in said lower head, an upper dog-head sliding upon said upright and over said rack bar, a dog moving in said upper head, means for moving said upper and lower head toward each other, and means for simultaneously adjusting said dogs, substantially as set forth.

2. In a sawmill-dog, the combination, with the upright having a longitudinal face groove or channel, of a spring-actuated rack-bar moving vertically in said channel and carrying a dog-head at its lower end, an upper dog-head sliding over said upright above the lower dog-head, laterally-movable dog mounted in both of said heads, and means for simultaneously adjusting the dogs in said heads by a single movement, substantially as set forth.

3. In a sawmill-dog, the combination, with the upright having a face channel or groove, of a spring-actuated rack-bar moving in said channel and provided at its lower end with a head embracing the sides of the upright, a lower dog adjustably mounted in said lower head, an upper head sliding upon said upright over the rack-bar, an upper dog mounted in said upper head, a toothed operating-lever mounted at one end in said upper head and meshing with the rack-bar, and means for simultaneously adjusting the dogs in said heads, substantially as set forth.

4. In a sawmill-dog, the upright having a face groove or channel, a spring-actuated rack-bar moving in said channel and carrying a dog-head at its lower end, an upper dog-head sliding over said upright above the dog, simultaneously-adjustable dogs mounted in said heads, and an operating lever pivotally mounted at one end in said upper head and provided with a partly-toothed circular lever-head meshing with said rack-bar, and circular guide-flanges on each side and extending back of the teeth in the head and adapted to straddle the teeth of the rack, substantially as set forth.

5. In a sawmill-dog, the combination, with the upright having a face-channel, of a sliding rack-bar moving in said channel and carrying a dog-head at its lower end, an adjustable dog sliding within said head and provided with a toothed face, an upper dog-head sliding upon said upright and having a similar toothed face, an upper dog sliding in said upper head, a dog-setting shaft passing through said upper and lower heads, and operating pinions loosely mounted upon said shaft to revolve therewith and meshing with the toothed faces of said dogs to simultaneously adjust the same, substantially as set forth.

6. In a sawmill-dog, the upright having a longitudinal face-groove, a rack-bar moving in said groove and carrying a dog-head at its lower end, said dog-head being provided with a laterally-extending bearing-lug, a bearing-sleeve working in said bearing-lug, a lower dog sliding in said lower head and provided with a rear toothed face, an upper dog-head sliding upon said upright and having a laterally-extending bearing-lug, a bearing-sleeve working in said bearing lug, an upper dog sliding in said upper head and having a rear toothed face, a bearing-plate secured to the rear upper end of said upright, a squared setting-shaft journaled at its upper end to said bearing plate and passing through said bearing-sleeves, and operating-pinions carried by and sliding upon said shaft and meshing with the toothed faces of said dogs to simultaneously adjust the same, substantially as set forth.

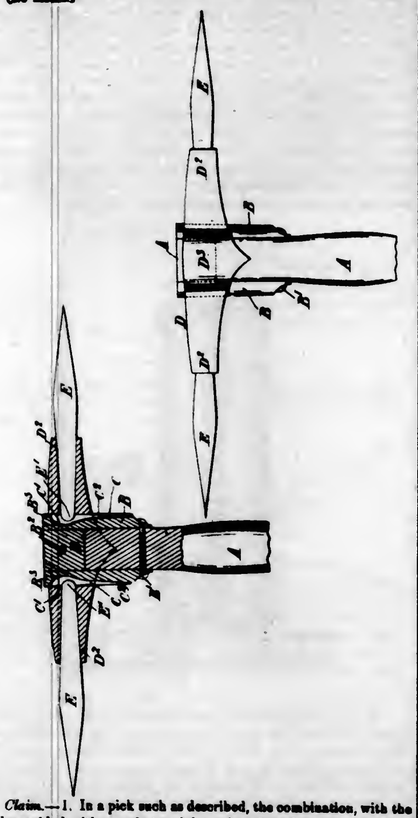
7. In a sawmill-dog, the upright, a sliding rack-bar moving in said upright and carrying a dog-head at its lower end, a lower toothed dog sliding in said dog-head, an upper dog-head mounted to slide upon the upright over the lower dog-head, an upper toothed dog sliding in said upper head, a notched bearing-plate secured to the upper end of said upright, a vertical dog-setting shaft journaled at its upper end in said bearing-plate and working through said dog-heads, operating-pinions carried by said setting-shaft and meshing with said toothed dogs, and an operating-handle pivotally connected to the upper end of said shaft and provided with a locking-lug adapted to engage said notched bearing-plate, substantially as set forth.

8. In a sawmill-dog, the upright having a face groove or channel, a spring-actuated rack-bar moving in said face groove or channel and carrying a lower dog-head, an upper dog-head sliding over said upright, laterally-adjustable dogs sliding in said dog-heads, means for simultaneously adjusting said dogs, and a look-lever pivoted at one end to the top of the upright and adapted to be swung over the top of the spring-actuated rack-bar to hold the same inoperative, substantially as set forth.

9. In a sawmill-dog, the upright having the face groove or channel, a rack-bar moving in said face groove or channel, a lower dog-head carried upon the lower end of said rack-bar, an upper dog-head sliding upon said upright over the lower dog-head, an operating-lever mounted in said upper dog-head and provided with a partially-toothed head meshing with and adapted to be unmeared from said rack-bar, adjustable dogs moving in said dog-heads, means for simultaneously adjusting said dogs, a rod secured in rear of the upright, and a spring-actuated collar sliding upon said rod and connected to said rack-bar, substantially as set forth.

10. In a sawmill dog, the upright having a face-channel, rearwardly-extending lugs, and a slot between said lugs, a rack-bar sliding in said channel and carrying a lower dog-head, an upper dog-head sliding upon the upright, an incased rod mounted between said rearwardly-extending lugs, a sliding collar mounted upon said rod and provided with a securing-arm projecting through said slot and connected with said rack-bar, a spring mounted upon said rod between the lower lug and said collar, and a buffer-spring located at the upper end of said rod, substantially as set forth.

484,883. PICK. JOSEPH HITCHELL, Sheffield, and WILLIAM E. BEESTON, Derby, England. Filed May 6, 1892. Serial No. 432,077. (No model.)



Claim.—1. In a pick such as described, the combination, with the head provided with a socket and lateral sockets for the reception of picks or blades, of a shaft or handle having a head fitting the socket and furnished with inclined or tapered surfaces opposite or in line with the inner ends of the picks or blades for engaging the latter to expel them when the head is shifted upon the shaft or handle, substantially as described.

2. The combination, with the pick-head provided with a socket for the reception of the handle or shaft, and a lateral socket for the reception of the removable blade or pick, and a pick or blade seated in said pick-socket with its inner end projected within the handle-socket, of a handle or shaft fitting the handle-socket and provided with a longitudinal groove for accommodation of the end of the pick and an inclined face opposite the end of the pick to engage the latter and release it when the handle is shifted longitudinally within the handle-socket, substantially as described.

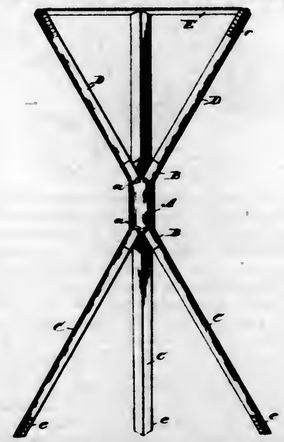
3. The combination, with the head provided with a tapered handle-socket and lateral tapering sockets for the reception of the removable picks or blades, of the handle or shaft provided with a tapered head fitting the handle-socket and reversely-tapered faces opposite the inner ends of the picks or blades, substantially as described, whereby upon releasing and withdrawing the handle from its socket in the head the said inclined surfaces will engage the picks or blades and force them outward from their sockets.

4. The combination, with the pick-head provided with handle and pick or blade removably supported in one of said sockets with its inner end projecting within the handle-socket, of a shaft provided with a head fitting the handle-socket, said head being recessed or cut away to accommodate the pick when in working position and provided with an inclined face or wall for engaging the inner end of the pick to force it outward, substantially as described.

5. The combination, with the pick-head provided with handle and pick-sockets, of the shaft or handle and the strap applied thereto, said shaft being recessed at the end to receive the strap, the latter extending on opposite faces of the handle and provided with grooves, and inclined faces co-operating with the inner ends of the picks, substantially as described.

6. The combination with the pick-head having the tapered handle-socket and lateral pick-sockets, of the handle or shaft provided with a tapered head having a longitudinal recess for the accommodation of the inner end of the pick, said recess terminating at one end in a wall or shoulder and having its bottom inclined outwardly in the opposite direction, the said inclined face or bottom standing in the reverse direction to the surface of the head, substantially as described, whereby when the pick-head is drawn into position on the handle by sliding it over the head or free end toward and onto the head and the pick is inserted the wall at the end of the recess will engage the pick and prevent the head from escaping, and when the handle is forced outwardly through the pick-head the inclined face will engage the end of the pick and force it out of its socket.

484,884. COMBINED CANE AND STOOL. RICHARD T. MORE, Dayton, Ohio. Filed June 10, 1892. Serial No. 436,231. (No model.)



Claim.—1. In a combined stool and cane, the combination, with a central bearing, of arms carrying a flexible seat and legs hinged in said bearing and having their ends shaped to bear against each other in said bearing when opened, substantially as described.

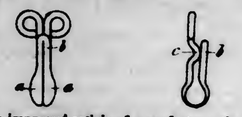
2. The herein-described stool and cane, composed of the central tube A, the sockets B, hinged therein and shaped to bear against each other when opened, the wooden legs C, inserted in the lower sockets, the wooden arms D, inserted in the upper sockets, the ferrules upon the ends of the arms and legs, the seat E, secured to the arms D, the hollow ball F, and cap or ring G, substantially as described.

484,885. SUSPENSION-HOOK. GEORGE A. HOIS, San Francisco, Cal. Filed Feb. 17, 1892. Serial No. 421,982. (No model.)

Claim.—A device for displaying canes, umbrellas, and similar articles of merchandise, consisting of a flat inelastic hook adapted to fit over a horizontal rod and depend therefrom and a continuous or solid elastic ring secured to the lower end of said hook so as to project laterally therefrom and adapted to encircle and bind around the article to be displayed.

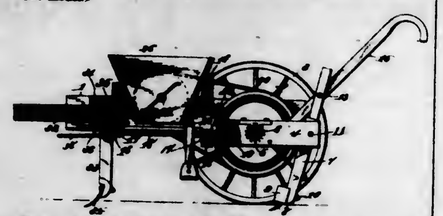
484,886. SPRING-HOOK. JAMES C. SWIFT, Birmingham, England. Filed June 1, 1892. Serial No. 435,149. (No model.) Patented in England May 2, 1892, No. 8,273.

484,886.



Claim.—As an improved article of manufacture, the spring-hook herein shown and described, constructed with the compressed flattened spring portion *a* to give elasticity to the bill of the hook and having one of its parts indented to form a raised portion, as set forth, so that the spring portion will hold one of the parts always in contact with the raised portion of the indentation, substantially as and for the purpose set forth.

484,887. COMBINED COTTON CHOPPER AND PLANTER. FRANCIS H. PARKER, Grapeland, Tex. Filed Oct. 31, 1891. Serial No. 410,381. (No model.)

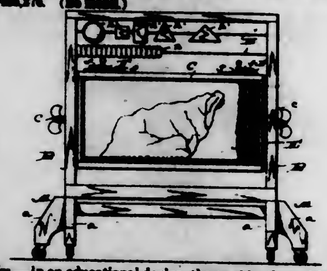


Claim.—1. In a machine of the class described, the combination, with the opposite side bars, of the wheel-carrying axle journaled therein having a bearing portion near its center, a master-pulley mounted on the axle and adapted to turn therewith, the rearwardly-extending beam having an opening for the reception of the axle and at its front end a socket, the opposite plow-standards secured to the sides of the beam, the rotatable chopping-shaft journaled in the framework and having its rear end terminating in the socket of the beam, the chopping-hoes mounted upon the shaft, and the gear mounted on the shaft and engaging the teeth of the main pulley, substantially as specified.

2. In a machine of the class described, the combination, with the framework and a loosely-pivoted beam at the rear end of the same, terminating in handles and provided at its front end with a socket, of the rotatable hoe-carrying chopper-shaft rotatably and loosely connected at its front end to the framework, and having its rear end terminating in the socket of the beam, substantially as specified.

3. In a machine of the class described, the combination, with the framework, the loosely-fulcrumed beam, and the handles at the rear end of the same, of the rotatable chopping-shaft, choppers mounted thereon, said shaft being pivotally journaled at its front end, and loose connections between the rear end of the same and the front end of the beam, substantially as specified.

484,888. COMBINED CHART AND BLACKBOARD. JOHN R. POWELL and MARY C. POWELL, Parker, S. D. Filed Feb. 20, 1892. Serial No. 422,576. (No model.)



Claim.—In an educational device, the combination, with the movable supporting-frame having the upright posts B B, of a rectangular reversible frame C, adjustably supported between said posts, the rollers journaled one near each vertical edge of said frame, the cranks *f* on the upper ends of said rollers, the spring-pressed brakes *g g*, acting against the upper portions of said rollers, and the chart carried by said rollers, substantially as specified.

484,889. STEAM-GENERATOR. WILLIAM J. RAHNER, Syracuse, N. Y. Filed Mar. 9, 1892. Serial No. 424,262. (No model.)

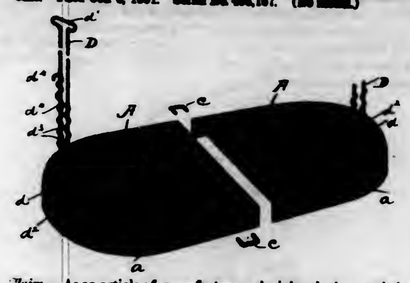
Claim.—1. In a steam-generator, the combination of a combustion-chamber and a fire-passage leading from the combustion-chamber, an outer water-containing shell above said chamber and passage, a head at one extremity of the shell, formed with a central opening connected to the fire-passage, a head formed with an opening aligned with the former opening, said head being secured to said shell at a point considerably within its outer edge, whereby the shell extends beyond the latter head, forming in front of the latter head a draft-chamber, which is partially inclosed by the projecting portion of the shell, and a fire-flue having its opposite extremities registered with said openings for conducting the products of combustion from the fire-passage to the draft-chamber, said fire-flue being composed of a pair of plates having their central portions disposed in substantially-parallel planes and their adjacent longitudinal sides rounded toward each other with their longitudinal edges lapped one upon the other, and rivets for securing said edges together, substantially as set forth.

2. In a steam-generator, the combination of an outer water-containing shell provided near its opposite extremities with heads formed with openings in their central portions, said shell being extended beyond the front head to form a smoke-box, a fire-flue having its extremities mounted in said openings and composed of a pair of plates having their central portions disposed in substantially-parallel planes and their adjacent longitudinal sides rounded toward each other with their longitudinal edges lapped one upon the other, rivets for securing said edges together, and tubes extending through the fire-flue and formed of less length than the vertical distance between the ends of said tubes and the adjacent portions of the water-containing shell, whereby the tubes may be removed without removal of the fire-flue, substantially as and for the purpose described.

3. In a steam-generator, the combination of a combustion-chamber and a fire-passage leading from the combustion-chamber, an outer water-containing shell above said chamber, and a passage provided at its opposite extremities with heads formed with openings in their central portions, a fire-flue having its extremities mounted in said openings and composed of a pair of plates having their central portions substantially parallel and their adjacent longitudinal edges lapped one upon the other, rivets for securing said edges together, tubes extending through the fire-flue with their ends secured to the central portions of the plates composing the fire-flue, and a draft-chamber formed by extending the outer shell beyond the front head for receiving the products of combustion discharged from the fire-flue, substantially as set forth.

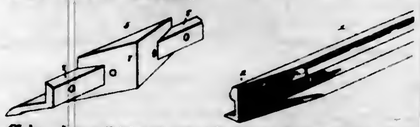
4. In a steam-generator, the combination of an outer water-containing shell provided near its opposite extremities with heads having oval openings in their central portions, said shell being extended beyond the front head to form a smoke-box, an oval fire-flue having its extremities mounted in said openings, the front head having manholes above and below said fire-flue and opening into said smoke-box, plates for closing said manholes, means for holding the plates temporarily in place, and upright tubes extending through the fire-flue and of less length than the vertical distance between their ends and the adjacent portions of the outer shell, whereby said tubes may be removed from the fire-flue and through the manholes, substantially as and for the purpose set forth.

484,840. CLOTHES-DRAINER. ALBERT H. RIEDINGER, Cleveland, Ohio. Filed Oct. 5, 1891. Serial No. 408,167. (No model.)



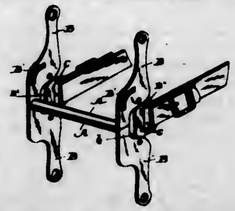
Claim.—As an article of manufacture, a draining device consisting of a sectional perforated body, means for securing the sections together, handles comprising wires bent to form two members, the free ends of which are hinged to the body portion, and hooks formed on these handles, substantially as set forth.

484,841. RAIL-JOINT. JOHN H. ROSSE, Advance, Mo., assignor of one-half to John T. Stratman, Jr., same place. Filed Nov. 27, 1891. Serial No. 413,207. (No model.)



Claim.—In a rail-joint, the combination of the rails having their meeting ends cut diagonally or beveled at their inner sides and forming slightly-shouldered points arranged adjacent to each other, a fish-plate arranged on the outer sides of the rail, and an angle fish-plate arranged at the inner sides of the rails and provided intermediate its ends with a triangular enlargement fitting in and filling the recess or cut-away portions of the rails and having a flat lower face extending below the fish-plate and having its upper face arranged flush with the tread of the rails and forming, practically, one continuous rail, the inner fish-plate being extended at both ends beyond the enlargement, substantially as described.

484,842. BRIDLE-BIT. ARNOLD F. RUHLOW, Pierce, Nebr. Filed Feb. 20, 1892. Serial No. 422,232. (No model.)



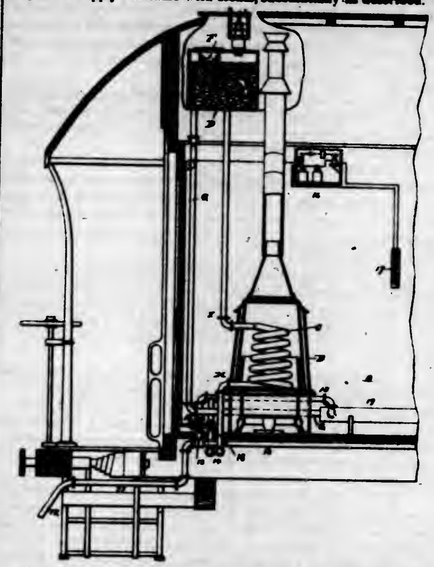
Claim.—1. In a bridle-bit, the combination of arms each of which carries a portion of the bit-bar and having slots therein and a hinge connection in rear of said bit-bar, consisting of connecting-bars having loops with the ends thereof extending into the slots of the arms and pivoted thereto, said loops being adapted to receive reins, substantially as described.

2. In a bridle-bit, the combination of arms each of which carries a portion of the bit-bar and having eyes at their ends, connecting-bars having loops and pivotally connecting said arms in rear of said bit-bars, and chains or straps connected to the upper and lower portions of each arm in pairs and to a ring or eye, substantially as described.

484,843. SYSTEM OF AND APPARATUS FOR HEATING RAILWAY-CARS OR SIMILAR VEHICLES. JOSEPH A. SEIBE, New York, N. Y., assignor, by mesne assignments, to the Safety Car Heating and Lighting Company, of New Jersey. Filed Sept. 3, 1887. Serial No. 248,564. (No model.)

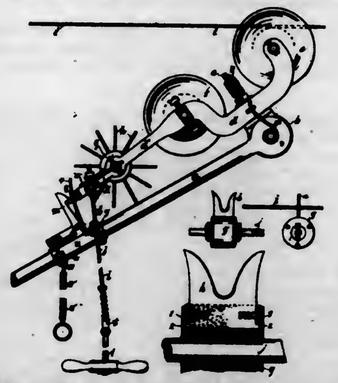
Claim.—1. In a hot-water heating apparatus, the combination, with a successive series of water-vessels, each having a water cell or chamber and a heating coil or chamber, of pipes or ducts connecting the water-chambers to form a circulating system, with a steam or heat supply pipe connected to the said heating-coils of said water-vessels, substantially as described.

2. In a car-heating system, the combination, with a system of water-circulating pipes within the car, of a main steam-pipe attached to the car and means for connecting it with a suitable generator, a steam-radiator within the car and surrounding said water-circulating system, and a branch pipe connecting said steam-pipe with said radiator and adapted to supply the same with steam, substantially as described.



3. In a car-heating system, the combination, with a system of water-circulating pipes within the car, of a main steam-pipe attached to the car and means for connecting it with a suitable generator, a steam-radiator in operative contact with said circulating system or a branch thereof, and a branch pipe connecting said main steam-pipe with said radiator and adapted to supply the same with steam, substantially as described.

484,844. TROLLEY-WIRE CLEANER. HENRY R. SMITH, South Amherst, Mass. Filed Feb. 20, 1892. Serial No. 422,572. (No model.)



Claim.—1. The combination of a trolley-pole with a frame pivotally attached thereto, a contact-pulley mounted in said frame, and a cleaning device mounted in the same frame, substantially as and for the purpose stated.

2. The combination of a trolley-pole *a*, a base *b*, pivoted thereto, and a frame, as *d*, pivotally mounted upon the base *b*, and a guide-pulley and cleaning device mounted in said frame, substantially as and for the purpose stated.

3. The combination, with a trolley-pole, of a frame pivotally mounted thereon, a trolley-wheel mounted therein, an adjustable guide-

pulley, and a clearing device, all mounted in said frame, substantially as and for the purposes stated.

4. The combination of a trolley-pole *a*, provided at its upper end with a plate *v*, a base *b*, arranged with its face against the face of the plate *v*, a pivot extending horizontally through said base and plate, a frame *d*, mounted upon said base, and a spring mounted upon said plate and arranged with its end to engage the frame and turn the base upon its pivot to carry the frame normally toward the wire, substantially as and for the purposes stated.

5. The combination of a trolley-pole *a*, provided with a wide ear, a frame provided with a like ear pivoted thereto, and one or more springs *r* to normally maintain the frame in its elevated position, substantially as and for the purposes stated.

6. The combination of a trolley-pole having a frame pivotally mounted thereon, a latch, as *m*, mounted adjacent to the pole, and means to cause the frame to turn upon its pivot to engage the latch, substantially as and for the purposes stated.

7. The combination of a trolley-pole, a frame pivotally mounted thereon, a collar mounted upon the trolley-pole, a latch *m*, mounted upon the collar, means, as a spring, to cause the frame to turn upon its pivot and engage the latch, and means to release the latch and allow the frame to return to its elevated position, substantially as and for the purposes stated.

8. The combination of a trolley-pole, a frame mounted thereon, a clearing device mounted in said frame upon a shaft, having movement from side to side of said frame, a lever *k*, pivotally mounted upon said frame and arranged to engage the shaft, and means to move said lever to carry the clearer from side to side, substantially as and for the purposes stated.

9. The combination, with a trolley-pole, of a frame, a clearing device mounted in said frame upon a shaft *j*, said shaft being free to be moved to carry the clearing device from side to side of said frame, a lever *k*, pivotally connected to said shaft, and a rod *l*, having one end secured to the lever *k* and its opposite end projecting to a position convenient to be grasped from the car, substantially as and for the purposes stated.

10. The combination of a trolley-pole, a frame pivotally mounted thereon turning upon its pivot in a vertical plane, means to turn said frame upon said pivot, a catch to hold the same in its lowered and elevated position, and guide 4, mounted upon said pole to guide the free end of the frame to a position to be engaged by the catch, substantially as and for the purposes stated.

11. The combination of a trolley-pole *a*, the base *b*, pivotally mounted at the end thereof, springs *r*, arranged to normally maintain the base in one position, a frame *d*, pivotally mounted upon said base, a spring *p*, arranged to normally maintain the frame in line with the trolley-pole, a trolley-wheel *e*, a guide-wheel *f*, a clearing device, means to lower the frame, and means to hold the same in its lowered position, substantially as and for the purposes stated.

12. The combination of a trolley-pole, a frame pivotally mounted between its ends upon the pole, a contact-pulley mounted in said frame, and a clearing device mounted in the frame adjacent to the pole end, substantially as shown.

13. The combination, with a trolley-pole, of a suitable frame and a clearing device consisting of a hub having a central ridge 5 and a series of wings provided with openings, substantially as shown.

484,845. PROCESS OF TREATING CORK. JOHN T. SMITH, New York, N. Y. Filed Mar. 28, 1892. Serial No. 426,145. (Specimens.)

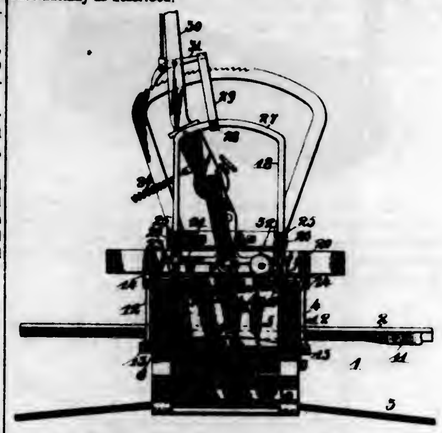
Claim.—1. The process of treating cork, which consists in vaporizing the resinous matter contained therein by heating the cork in a mold or other suitable vessel under pressure, substantially as described.

2. The process of treating cork, which consists in moistening the cork, confining it in a mold or suitable vessel, and subjecting it to heat and pressure, substantially as described.

484,846. AUTOMATIC RELEASE FOR CABLE-GRIPS. FRANK W. SMITH, St. Louis, Mo., assignor of five-eighths to C. W. Cruttinger and Albert D. Smith, same place. Filed May 21, 1892. Serial No. 433,903. (No model.)

Claim.—1. The herein-described automatic release for cable-grips, comprising a removable frame, a lower portion, such as 6, composed of two sections united at their decreased ends, apertures formed in the said ends for receiving the lower ends of the connecting-rods, hooks formed on one end of the said rods, transverse pieces 15, normally in contact with said hooks, a U shaped bar removably attached to the said transverse piece, and means for uniting the said U-shaped bar with the pawl carried by the grip-lever and for restoring the said frame to its normal position, substantially as described.

2. In an automatic release for cable-grips, a movable frame adapted to be attached to the said grip and a transverse piece, such as 15, having hooked ends providing means for attaching the same to the grip, substantially as described.



3. In an automatic release for cable-grips, a frame adapted to be attached to the grip, a U-shaped bar having its ends attached to the transverse piece 15, forming a part of the said frame, collars fixed to the said U-shaped bar, and springs bearing against said collars and operating to cause said frame to assume its normal position after the same has been actuated, substantially as described.

4. In an automatic release for cable-grips, a U-shaped bar the ends of which are fixed to the detachable frame 4 and a plate 29, having a hooked end adapted to receive the curved medium portion of the said U-shaped bar and its opposite end fixed to the pawl carried by the grip-lever, whereby the said pawl is automatically released when the frame is depressed, substantially as described.

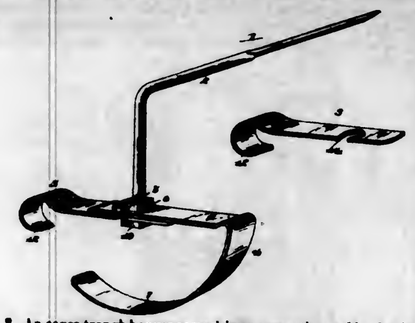
5. In an automatic release for cable-grips, a bar, such as 21, having a curved medium portion 22, adapted to rest upon an extension forming a part of the grip, hooks 23, formed on the ends of the said bar, through which the ends of the U-shaped bar 18 are passed, and coil-springs 26, resting upon the said hooked ends and interposed between the same and the collars carried by the said U-shaped bar, substantially as described.

6. An automatic release for cables, consisting of a frame 4, a lower portion 6, composed of two sections and united at their decreased ends, openings 9, formed in the said ends, through which the screw-threaded ends of the connecting-rods 12 are passed, hooks 14, formed on the opposite ends of the said rods, a transverse piece 15, having hooked ends, the upper edge of which is adapted to be received by the said hooks 14, a U-shaped bar 18, attached to the said transverse piece, collars fixed to the said last-named bar, a bar 21, supported by the grip, coil-springs interposed between said collars and bar, and a plate 29, having a hook carried by the pawl forming a part of the grip-lever and operated by the said U shaped bar, substantially as described.

7. An automatic release for cables, consisting of a plate 29, carried by the pawl of the grip-lever, a hook 28, formed on the free end of the said plate, a U-shaped bar 18, having a curved medium portion received by the said hook, a bar 21, having its medium portion supported by the grip and provided with hooked ends 23, coil-springs 26, encircling the ends of the said U-shaped bar and interposed between the hooks 23 and the collars 26, a transverse piece 15, having hooked ends serving to hold the same upon the grip, loops 17, fixed to the said piece 15 for receiving the ends of the said bar 18, a lower portion 6, forming a part of the frame and supported by connecting-rods 12, and hooks 14, formed on one end of the said rods for receiving the edge of the piece 15, substantially as described.

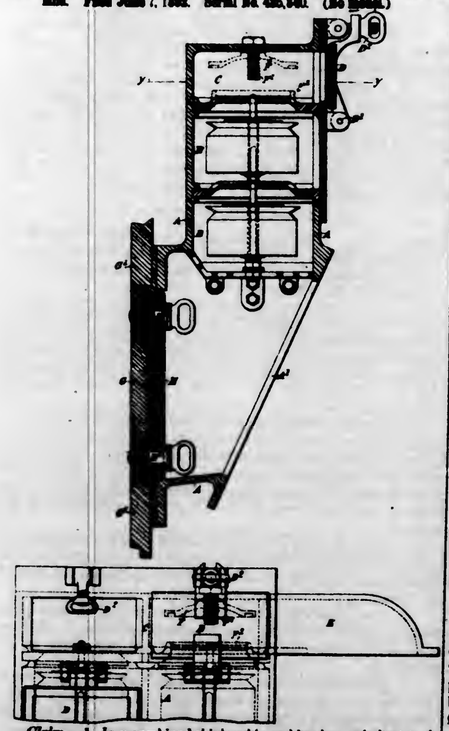
484,847. EAVES-TROUGH HANGER. WILLIS R. TOLLES, Wellsburgh, N. Y., assignor of one-half to Hiram Smith, same place. Filed May 28, 1892. Serial No. 434,013. (No model.)

Claim.—1. An eaves-trough hanger comprising a supporting-rod having its lower end threaded and provided with upper and lower nuts, the eaves-trough receiving-sections engaging the front and rear of an eaves-trough and adapted to hold the same, one of the sections being provided with an opening to receive the rod and the other being provided with a slot arranged at an angle to the length of the section and adapted to receive the rod, substantially as described.



2. An eaves-trough hanger comprising a supporting-rod having its lower ends threaded and provided with upper and lower clamping-nuts, the rear section extending transversely of an eaves-trough and provided with a perforation and having a depending curved portion extending beneath the eaves trough and conforming to the configuration of the same, and the front section provided at its outer end with a bead-receiving hook and having at its inner end a slot arranged at an angle to the length of the section and adapted to receive the rod, substantially as described.

484,848. SHIP'S VENTILATOR. THOMAS UTLEY, Liverpool, England. Filed June 7, 1892. Serial No. 435,840. (No model.)



Claim.—1. In a combined ship's cabin and bunker or ballast-tank ventilator, the combination, with a casing having an air or valve chamber, a valve mechanism, and a pipe or lead for connecting the valve-chamber with a bunker or ballast-tank ventilator, of a seat arranged in juxtaposition to the valve-opening and a screw-down cap adapted to move upon the seat for closing communication between the pipe or lead and the air or valve chamber, substantially as described.

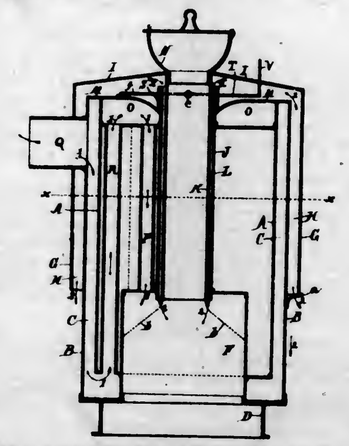
2. In a combined ship's cabin and bunker or ballast-tank ventilator, the combination, with a casing having an air or valve chamber, a ventilating-door, and a pipe or lead for connecting the valve-chamber with a bunker or ballast-tank, of a seat surrounding the valve-opening between the valve-chamber and the pipe or lead and a screw-down cap adapted to close upon the seat for shutting off communication between the pipe or lead and the air or valve chamber, substantially as described.

3. In a combined ship's cabin and bunker or ballast-tank ventilator, the combination, with a casing having an air or valve chamber, a ventilating-door, and a valve mechanism located in the air or valve chamber, of a detachable water-tight lid H for closing the entrance to the casing through the ship's side, substantially as described.

484,849. BOOKBINDING. DANIEL WAIDE, San Francisco, Cal. Filed July 17, 1891. Serial No. 399,883. (No model.)

Claim.—In a temporary binder, the combination of jaws of metal or other suitable material flexibly hinged to the binding of a book, connected by telescoping tubes, each containing a nut and screw flush with the surface of the jaw, the tubes, preferably inseparably connected by means of screws which cannot be withdrawn, and the removable notched leaves, substantially as shown and described.

484,850. BOILER. JOHN H. WATERMAN, Detroit, Mich. Filed June 24, 1891. Renewed Sept. 15, 1892. Serial No. 445,960. (No model.)



Claim.—1. In a boiler, the combination of the combustion-chamber and the magazine communicating with said chamber, said magazine composed of an outer and an inner shell that passes entirely through the boiler, with a single annular air-flue between said shells, said flue being direct and open at each end, its lower end communicating with the combustion-chamber and its upper end with the exterior air, the entire surface of the outer shell of the magazine being surrounded by the water-space in the boiler, whereby the shells of the magazine are prevented from being excessively heated, as specified.

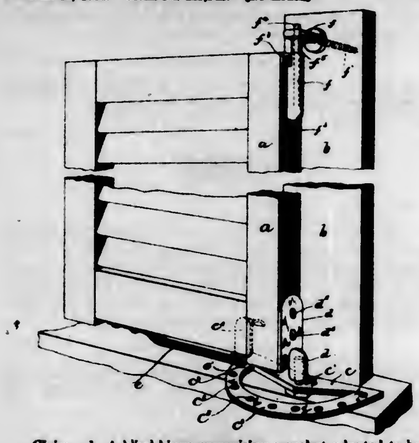
2. In a boiler, the combination of the smoke-sheet, the exterior casing around the smoke-sheet at such distance therefrom as to form an air passage or flue between said casing and sheet, open at its lower end and communicating with the exterior air around said sheet, and the magazine composed of an outer and an inner shell, forming an air-passage between said shells which communicates with the air-passage between the smoke-sheet and the outer casing, substantially as set forth.

3. In a boiler, the combination of the fire-pot, the magazine communicating therewith, said magazine composed of an outer and an inner shell, so as to form a direct air-flue between said shells, the outer shell of the magazine terminating at a point below the upper end of the inner shell, and the sliding annular sleeve controlling the upper end of the outer shell of the magazine and adapted to be actuated to close said air-flue, substantially as set forth.

4. In a boiler, the combination of the outer casing and smoke-sheet forming the outer air-space, the magazine composed of the outer

and inner shells, with an air-space between said shells that communicates with said outer air-space, the sliding collar surrounding the upper end of the outer magazine-shell, the lever pivoted to said collar, and means for actuating said lever, substantially as and for the purposes specified.

484,851. BLIND-HINGE. ANDREW J. AVERY, Lynn, Mass. Filed Mar. 19, 1892. Serial No. 425,545. (No model.)



Claim.—1. A blind-hinge comprising a socket adapted to be attached to the upper portion of the blind and open at its upper end, a pin loosely inserted in said socket and projecting upwardly therefrom, an ear adapted for attachment to a window-casing and provided with an orifice to receive said pin, and a sleeve or collar placed loosely on the pin between the socket and ear, said sleeve bearing on the upper end of the socket and on the under side of the ear and preventing movement of the socket toward the ear, the removal of the pin and socket permitting said movement, as set forth.

2. The combination of a window-casing, a blind having a top hinge comprising an ear or perforated member affixed to the casing, a socket affixed to the blind, a pin removably inserted in said socket and projecting upwardly therefrom sufficiently to pass through the ear, the upper end of the socket being separated from the under side of the ear by a space, a loose sleeve or collar on the pin between the socket and the ear, and means for holding the parts together, substantially as described.

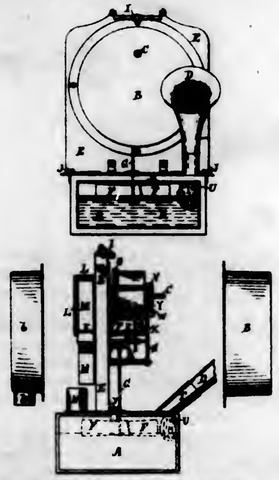
484,852. DUMB-BELL. CHARLES W. ATTON, New York, N. Y. Filed Apr. 11, 1892. Serial No. 428,505. (No model.)

Claim.—1. A dumb-bell consisting of the combination of a central handle, balls attached to and removable from said handle, the said balls being divided into spherical segments of which some are of a material—such as wood—of a given specific gravity and the remainder of another substance—such as iron—of greater specific gravity, the volumes of corresponding segments on the respective balls being equal to each other.

2. A ball for a dumb-bell, consisting of the combination of segments of different specific gravities and means for holding the same together.

484,853. APPARATUS FOR THE VENTILATING, REFRIGERATING, HEATING, &c., OF CARRIAGES, HALLS, OR ROOMS. HENRY GARDEN and THOMAS A. GARDEN, Bristol, England, assignors, by mesne assignments, to the Holmes Manufacturing Company, Providence, R. I. Filed Nov. 4, 1891. Serial No. 410,888. (No model.) Patented in England Dec. 30, 1887, No. 17,393.

Claim.—1. In an air-purifying device, the combination, with a liquid-containing reservoir having an inlet and an outlet, a vertical rotatable shaft journaled in the top of said reservoir, and a horizontal fan secured to the lower end of said shaft, of a standard secured to said reservoir, an air-chamber secured to one side thereof and connected with the reservoir, a vertical rotatable fan carried by a shaft extending through said standard, and a clock mechanism secured on the other side of said standard and adapted to rotate said shafts, as described.



2. The combination, with the liquid-containing reservoir A, having the inlet N and the outlet T, and the standard E, supported thereby, a suitable clockwork secured to said standard, the horizontal shaft *r*, extending through said standard and provided with a gear engaging with the clock mechanism, the vertical shaft G, extending into the reservoir, suitably journaled and provided with a gear intermeshing with the gear R of the clockwork of the fan M, carried on the shaft *r*, a casing *b*, covering said fan and connected with the reservoir A, and a fan F, contained within said reservoir and carried by the shaft G, as and for the purpose described.

484,854. HYDROCARBON-LIGHTING DEVICE. FREDERICK A. CHEY and LYMAN T. LAWTON, Meriden, Conn., assignors to the American Automatic Lighting Company, of New Jersey. Filed Oct. 29, 1890. Serial No. 369,669. (No model.)

Claim.—1. The combination, in a hydrocarbon-lighting device having a siphon-shaped conducting-pipe, of a stop-cock whose plug is connected with the said conducting-pipe at its highest point and whose sleeve is reversible on the plug and an air-tank removably connected with the reversible sleeve at the mouth thereof, substantially as described.

2. The combination of a hydrocarbon-distributing pipe and a stop-cock whose plug is connected with the highest portion of the pipe and provided with an outlet at its upper side and whose sleeve is fitted to rotate upon the plug and is provided with an outlet to register with the said outlet of the plug when the sleeve is in one position and to close the said outlet when in another position, substantially as described.

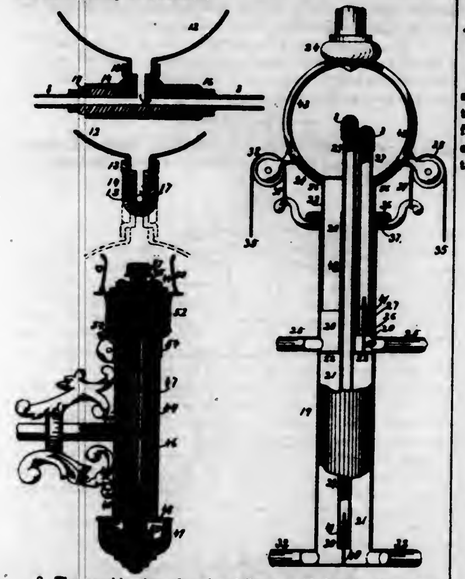
3. The combination of a hydrocarbon-distributing pipe and a transparent air-tank and oil-containing tank removably connected with its highest point, and means for closing the pipe against the entrance of air when the tank is removed, substantially as described.

4. The combination of a hydrocarbon-distributing pipe and a transparent air and oil containing tank provided with means for being refilled and of closing the pipe in the meantime, substantially as described.

5. The combination of a hydrocarbon-distributing pipe and a chandelier telescopically connected therewith, one of the telescoping pipes being provided with a flange and the other with a collar permanently supporting the flange and upon which the same may rotate, substantially as described.

6. The combination of a pendent hydrocarbon-distributing pipe, a chandelier-pipe fitted to telescope therewith and provided with a flange, a loose collar fitted freely beneath the said flange as a support therefor, and a balance-weight connected with the collar, substantially as described.

7. The combination of a hydrocarbon-distributing pipe, a hanger provided with a tube connected with the pipe, a chandelier having a tubular body portion fitted to telescope upon the aforesaid tube and provided with a flange, a collar loosely supporting the flange, pulleys journaled upon a fixture, and cords passing over the pulleys and supporting the said collar at one end and a balance-weight at the other end, substantially as described.



8. The combination of a chandelier provided with oil-compartments on different levels and lamps to each compartment, hydrocarbon supply tanks located on each of the said levels, distributing-pipes connecting the several compartments with the tanks of their respective levels, a tube depending from a hanger and surrounding depending portions of the delivery-pipes and telescoping with the body of the chandelier, and a tube rising from the partition between compartments and telescoping with the supply-pipe of the lower compartment, substantially as described.

9. The combination of a hydrocarbon-distributing pipe connected with a supply reservoir and having a pendent fixed end, a chandelier provided with a receptacle fitted telescopically upon the said end and connected permanently therewith and supported thereby, and a valve in the said fixed pipe provided with a stem adapted to be engaged by the bottom of the said receptacle to be opened by the raising thereof and to be closed by the lowering thereof, whereby the chandelier may be lowered for trimming, &c., without permitting oil to flow from the supply-pipe.

10. The combination of a chandelier having a telescoping body, a hanger supporting one of the telescoping members, a flange and collar forming a portion of the connection between the other member and the hanger, and hydrocarbon-distributing pipes passing through the hanger into the chandelier, substantially as described, whereby the second member and its appurtenances may rotate freely around the first and the pipes therein.

484,855. BANANA-CASE. JOSEPH T. OSBORNE, Denver, Colo. Filed Apr. 22, 1892. Serial No. 430,176. (No model.)

Claim.—1. A case adapted to hold a bunch of bananas and consisting of two rigid polygonal heads to be engaged by the extremities of the stem, staves secured to the heads by nails or screws, and a loose flexible lining for the body of the case, said lining being made fast to the heads beneath the slat extremities, substantially as described.

2. A banana-case composed of two rigid polygonal heads, slats

secured thereto by nails or screws, and a door composed of several slats united by a binding cord and hinged thereby to the body of the case, the extremities of the cord being carried around and united together, forming a brace for the case, substantially as described.

484,856. SPINDLE-SUPPORT. WILLIAM F. DRAPER, Hopedale, Mass., assignor to George Draper & Sons, same place. Filed June 6, 1892. Serial No. 435,822. (No model.)

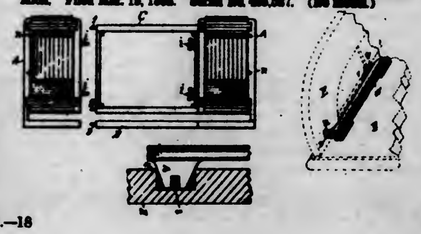
Brief.—The bolster is adapted to be adjusted vertically while the spindle is running, and to this end the upper screw-threaded end of the step fits into a screw-threaded socket in the bolster which is held from rotation, the shank of the step being prolonged below the bolster-case and fitted with a nut which is screwed upon the bolster-case, so that by rotating the nut the bolster is adjusted vertically.

Claim.—1. A spindle-support consisting of a supporting-case and a bolster mounted therein and restrained as against rotation with the spindle and threaded at its lower end, combined with a threaded step, a step-shank extended below the lower end of the supporting-case and having a step-nut attached thereto and adapted to engage screw-threads below the rail, to operate substantially as described.

2. A spindle-support consisting of a supporting case and a bolster mounted therein having a taper-bearing and being capable of vertical adjustment with relation to a step-piece, and means to adjust said bolster while the spindle is running, substantially as described.

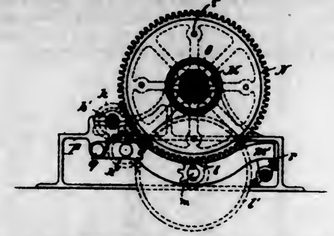
3. A spindle-support consisting of a supporting-case and a bolster mounted therein and restrained as against rotation with the spindle and threaded at its lower end, combined with a threaded step, a step-shank extended below the lower end of the supporting-case and having a step-nut attached thereto and adapted to engage screw-threads below the rail, and a check-nut to hold said step in position, substantially as described.

484,857. SECTIONAL DESK. WILLIAM A. BATCH, Marcellus, Mich. Filed Mar. 19, 1892. Serial No. 425,857. (No model.)



Claim.—A desk comprising separated sheets detachably connected together and having upwardly-extending projections at the ends, a top board having a series of holes fitting over the said projections, said projections being headed, a pigeon-hole compartment having the vertical holes, and the side mortises intercepted by said holes, and a key having the forked projections adapted to enter said mortises and catch beneath the heads of said projections, substantially as set forth.

484,858. HOISTING-MACHINE. Otto Fleer, Buffalo, N. Y. Filed Nov. 28, 1891. Serial No. 413,706. (No model.)



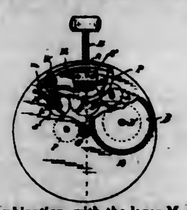
Claim.—1. The hoisting-machine, as described, comprising a suitable framework carrying the engine, a shaft mounted in brackets, a driving-gear secured to said shaft, and a winding-drum mounted loosely thereon and bolted to said driving-gear, the said gear adapted to mesh either with a pinion keyed to a shaft which is rotatably mounted in bearings in a swinging frame, the said frame being loosely journaled to the engine-frame, or with a pinion mounted on and keyed to the engine-shaft, said pinion adapted to mesh with another pinion journaled in one end of the swinging frame, and this pinion in turn meshing with a gear-wheel which is on the same shaft with the pinion which meshes with the driving-gear, and also a cam journaled in the engine-frame supporting the swinging frame and adapted to throw the pinion which meshes with the driving-wheel in or out of gear, substantially as shown and described.

2. In a hoisting-machine, the combination, with the drum-shaft and winding-drum loosely journaled thereon, the said shaft being mounted in brackets and adapted to rotate therein, a driving-shaft having a pinion slidably mounted or keyed thereto, the said pinion adapted to mesh with a pinion mounted in a swinging frame, a gear-wheel carried by said swinging frame and meshing with said last-mentioned pinion, and a pinion carried by the swinging frame fastened to said gear-wheel and adapted to mesh with the driving-gear on the drum-shaft, and means for connecting the driving-gear and winding-drum, substantially as described.

3. In a hoisting-machine, the combination, with the drum-shaft and winding-drum loosely journaled thereon, the said shaft mounted in brackets and adapted to rotate therein, of a driving-shaft having a pinion slidably mounted and keyed thereto, the said pinion adapted to mesh with a pinion mounted in a swinging frame, a gear-wheel carried by said swinging frame and meshing with said last-mentioned pinion, and a pinion carried by said swinging frame fastened to said gear-wheel and adapted to mesh with the driving-gear on the drum-shaft, the said gear on the drum-shaft being provided with four equidistant holes for the reception of screw-bolts for rigidly securing the drum to said driving-gear, substantially as described.

4. In a hoisting-machine, the combination, with the driving and drum shafts and winding-drum mounted on said drum-shaft, of a swinging frame carrying the pinions *h*' and *l* and gear *l*', said frame pivoted at one end to the machine-frame and adapted to move vertically, using its pivot as an axis, together with a cam journaled in the machine-frame for operating said swinging frame, substantially as shown and described.

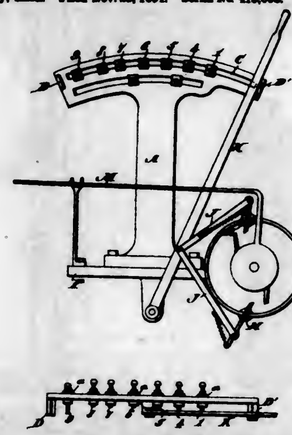
484,859. STEM WINDING AND SETTING WATCH. John R. Fuller, Centerville, Ind. Filed Feb. 20, 1892. Serial No. 422,373. (No model.)



Claim.—1. The combination, with the lever M, pivotally secured to the plate of the works and having an arm M' for the purpose described, of the pendant-rod K, notched to engage the lever, link P, lever D^3, and attached plate D, carrying the wheels D^4, *d*, and *d*', the spring G, and the spring H, with its shoulder A, and the squared arbor *d*, all for the purpose of producing a mechanism that can be changed automatically from a stem-winding to a stem-setting device and the reverse, subject to the control of the pendant-rod.

2. In combination with the oscillating plate D and its wheels D^4, *d*, and *d*', arranged with relation to the hands-arbor and the winding-arbor, and the lever D^3, the lever M, link P, and the pendant-rod K, arranged and operating as shown and set forth.

484,860. SET-WORKS FOR SAWMILLS. Hector Gawley, Le Roy, Mich. Filed Nov. 26, 1891. Serial No. 413,093. (No model.)



Claim.—1. In set-works for sawmills, in combination with the operating-lever, an upright support containing a series of adjustable stop-pins and a series of blocks supporting said stop-pins, adjustable in a slot in said upright frame, substantially as described.

2. In set-works, in combination with an operating-lever, an upright frame containing one or more slots, socket-blocks adjustable in said slots, and pins, one in each socket-block, having a longitudinal motion therein, and said blocks adjustable to any required point in said slots for the purpose of measuring the throw of the lever, substantially as described.

484,861. LOCK-HINGE. Cyrus R. Gillespie, Edwardsville, Ill., assignor of two-thirds to Charles H. Tindall and Charles S. Gillespie, same place. Filed May 31, 1892. Serial No. 435,081. (No model.)

Claim.—1. The combination, in a hinge, of the hinge-eye, elongated as described and squared at its outer corner, with the pintle and the projection of the complemental hinge part, substantially as described.

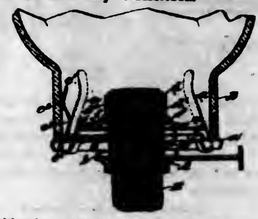
2. The combination, in a hinge, of the hinge-eye, elongated as described and squared at one and rounded at the other of its outer corners, with the pintle and the projection of the complemental hinge part, substantially as described.

484,862. LAMP-EXTINGUISHER. Max Goetze, Sturgis, S. D. Filed May 5, 1892. Serial No. 431,948. (No model.)

Claim.—1. A lamp-extinguisher comprising two pivotally-supported and weighted gates that will inclose the upper end of a wick-tube, a bowed arm one end of which is adapted to lift the gates and close them, and a bent lever extended across the burner-body that when depressed at one end will hold the bowed arm away from the gates, substantially as described.

2. The combination, with a lamp-burner having a flat wick-tube,

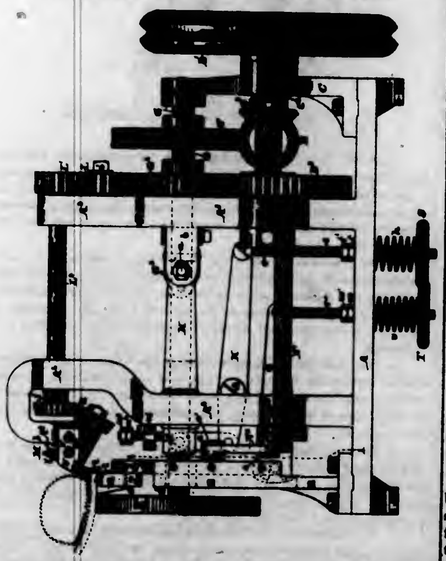
of two weighted pivoted gates boxed at their upper ends and adapted to incline the top of the wick-tube, a bowed spring-arm embracing limbs of the gates and holding said gates normally elevated, and a bent lever holding the spring-arm depressed when pressed by a lamp-chimney at one end, substantially as described.



3. The combination, with the body of a lamp-burner and a flat wick-tube therein, of two gates boxed at their upper ends and each having two depending limbs at their lower ends, weights on the gates, a loop-shaped arm spring-pressed upwardly and embracing the limbs of the gates, and a lever bent double from a wire strand and embracing the wick-tube, one end portion of said lever projecting to impinge upon a lamp-chimney seated on the burner-body and its other end engaging the end of the spring-arm, substantially as described.

4. The combination, with the body of a lamp-burner and a flat wick-tube therein, of two boxed gates, weights on the gates, two depending limbs for each gate lap folded in pairs at their lower terminals, pintle-arms loosely engaging the perforated lower ends of the gates, a looped lifter-arm embracing the wick-tube and gate-limbs, spiral springs on the limbs of the lifter-arm, having their terminals secured to the burner-body, and a double-strand lever passing across the burner-body and fulcrumed therein near one upright end portion of the lever, which end portion is adapted to impinge upon the inner face of a seated lamp-chimney and elevate the other end of the lever that is attached to the spring-pressed arm, substantially as described.

484,868. CHANNELING-MACHINE. John S. Hadaway, Brockton, assignor, by mesne assignments, to Joseph S. Turner, Rockland, Mass. Filed July 15, 1891. Serial No. 399,976. (No model.)



Claim.—1. In a machine for channeling and trimming the edges of soles when secured upon the last, the combination of a work-support to receive the tread-surface of the sole, a conical feed-wheel having an annular ring of hard rubber or other material let into its periphery and mounted upon an inclined revolvable shaft in position to bear upon the upper surface of the sole, a channel-cutting knife located below said feed-wheel, a fixed gage or guard-plate in front of said feed-wheel and adjustable horizontally toward and from said feed-wheel, and a reciprocating trimming-cutter located below said feed-wheel and constructed and arranged to cut against the surface of the ring cut in the feed-wheel.

2. The combination, in a sole-channeling machine, of a vertically-movable and revolvable work-support, a channel-cutting knife, a holder for said knife, provided with trunnions mounted in bearings and adapted to be oscillated in a plane at right angles to the plane of revolution of the work-supports, a vertically-reciprocating support for said knife-holder, a conical feed-wheel mounted on a revolvable inclined shaft, and an adjustable guard-plate in front of said feed-wheel, substantially as described.

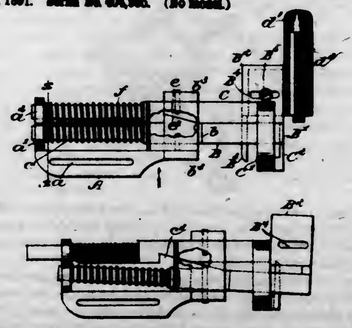
3. In a machine for channeling the soles of boots or shoes when secured upon the last, the combination of the revolvable shafts G and G', connected by the gimbal-ring G^2, the forked lever H, movable about a fixed pivot at one end and forming a bearing at its other end for the shaft G', the work-supporting wheel H' on said shaft G', the link *c*, pivoted at its upper end to the forward end of the lever H, the lever K, pivoted at one end to the lower end of said link *c*, the treadle-rod *e*, connected at its upper end to the lever K and passing through the bed A, the stop-nut *f*, the adjustable nut *g*, and the spring *h*, the feed-wheel M, arranged to bear upon the upper surface of the sole, and a channel-cutting knife located below said feed-wheel, substantially as described.

4. The combination of the conical feed-wheel M, made in two parts, with a ring of hard rubber, rawhide, or other suitable material inserted between said parts to form a cutting-surface and mounted upon an inclined shaft, suitable gears and shafting for revolving the same, the trimming-knife *q*, the trimming-knife stock or holder O, fitted to and movable endwise in a bearing slightly inclined to a perpendicular, the connecting-rod N^2, pivoted at its upper end to the holder O, and the revolvable crank-shaft N', and the crank N^3, mounted on said shaft and connected to the connecting-rod N, all constructed, arranged, and adapted to operate substantially as described.

5. The combination, with a suitable work-support and a feed-wheel, of the vertically-movable bar P, having the offset upper portion provided with the slot *s*, having formed in one wall thereof the segmental groove s^2, and provided on each side of said slot *s* with the semicircular bearings *s' s'*, the knife-holder R, provided with the semicircular trunnions *t t*, the segmental rib s^2, and the slot *t'*, the channeling-knife S and its holder, carried by the bar P, the lever Q, the treadle-rod r^2, the stop-nut *w*, the spring *v*, and the tension adjusting-nut T, all constructed and arranged substantially as described.

6. The combination, with the conical feed-wheel M, the vertically-movable and oscillating channel-knife holder R, and the channel-cutting knife carried by said holder, a horizontally-adjustable guard-plate mounted in front of said feed-wheel, substantially as described.

484,864. LOOM-TEMPLE. Charles J. Hayes, Augusta, Me., assignor to the Dutcher Temple Company, Hopedale, Mass. Filed Sept. 7, 1891. Serial No. 404,905. (No model.)

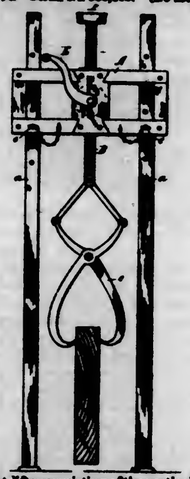


Claim.—1. The temple-stand adapted to be fixed to the breast-beam and the roller-temple having the shank mounted in bearings in said stand and surrounded by a spiral spring to yield to the lay at each forward stroke thereof and adapted to act continuously on and stretch the cloth from selvage to selvage, combined with a vibrator having a projection located normally nearer the lay than the usual heel of the temple-bar and a spring co-operating with the vibrator, the combination being and operating substantially as described, whereby the lay is made at each forward beat to first act upon and move the vibrator to vibrate the roller-temple and stretch the cloth and then slide the temple-bar in advance of it as the reed beats the weft in at the fell, the springs returning the temple-bar and vibrator into their normal position as the lay is moved away from the fell.

2. The temple-stand, its bearings, and the carrier provided with an incline or cam projection and having a heel, combined with a vibrator

having an inclined or cam face to co-operate with the cam or incline on the temple-head carrier and having a head and suitable springs to normally keep the said hooks separated, whereby one may be operated in advance of the other, thereby enabling the vibrator to first receive movement to actuate the temple-head carrier in a lateral direction, substantially as described.

484,365. JOINT-LIFTER. WILLIAM HERRON, Sullivan, Ky., assignor of two-thirds to Peter Reiter and H. B. Whitemeyer, same place. Filed May 16, 1891. Serial No. 392,193. (No model.)



Claim.—The joint-lifter consisting of the vertically-adjustable crosshead and its supporting-standards, in combination with the longitudinally-movable non-rotatable screw carrying at its lower end relatively-fixed grapple-hooks, a nut, a spline or stud adapted to prevent said screw from rotating, a beveled gear on the nut, and a handled shaft having a correspondingly-beveled gear meshing with said nut-gear, substantially as set forth.

484,366. HEM FOLDER AND PRESSER. FRANK KENNY, Philadelphia, Pa., assignor to the Pennsylvania Industrial Development Company, same place. Filed July 6, 1892. Serial No. 439,202. (No model.)

Claim.—1. In a hand hem-folder, a plate having a groove, a stud extending through the plate, and a spring to which said stud is attached, in combination with a hammer provided with a vertical flange and a slot to engage the stud.

2. The combination of a plate, a hammer supported thereby, a two-arm presser having a bar connecting said arms, one of said arms being pivotally supported in bearings beneath the plate and the other arm crossing the plate in rear of the hammer and above the plate, and a spring resting upon said presser.

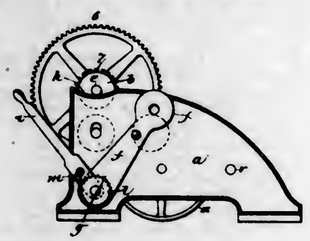
3. The combination of a plate, a hammer supported thereby, a two-arm presser having a bar connecting said arms, one of said arms being provided with a cam and pivotally supported in bearings beneath the plate and the other arm crossing the plate in rear of the hammer and above the plate, and a spring resting upon said cam.

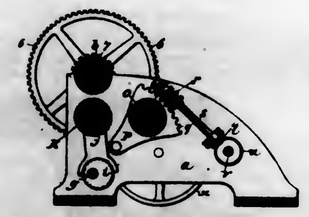
484,367. SEAT. THOMAS H. HAIG, Detroit, Mich., assignor of one-half to George F. Gee, same place. Filed Aug. 17, 1891. Serial No. 402,922. (No model.)

Claim.—1. In a cushion-seat, the combination of the bed D, the spring E, engaged with one end thereof, the base A, engaged with said spring, an inflatable cushion located upon said base, and a spring F, located between said bed and said base at the end of the bed opposite its union with the spring E, substantially as described.

2. In a cushion-seat, the combination of the inelastic base A, an inflatable cushion located thereupon, a bed D, having means of attachment to a seat-support, a spring E, located between said bed and base and having a movable connection with said base, and a spring F, located between said bed and said base at their rear extremities, substantially as described.

484,368. METAL-ROLLING MACHINE. ELWOOD T. HOSIER, Cambridge City, Ind., assignor of one-half to John A. Spence, same place. Filed Feb. 17, 1892. Serial No. 421,881. (No model.)





Claim.—1. In a metal-rolling machine, the combination, with the supporting-standards, of a roller having a journal at one end mounted in one of said standards, a lever pivoted near the lower ends of the opposite standard and provided at its upper end with a bearing adapted to receive the journal at the free end of the roller, and mechanism for operating the said roller.

2. The combination, with the supporting-standards, of a rock-shaft journaled in the lower ends of the standard and provided with eccentrics near the said standards, vertically-movable arms supported by the standards and resting on the eccentrics, a roller journaled in the upper ends of the said arms, and mechanism for operating the rock-shaft.

3. The combination of the standards, the upper roller mounted therein, mechanism for rotating the said roller, vertically-movable arms mounted on the inner sides of the standards, a roller journaled in the upper ends of the said arms, and mechanism for adjusting the said arms vertically.

4. The combination of the standards, the front rollers, plates pivoted on the standards in rear of the front rollers, a roller journaled in the upper ends of the said plates, and mechanism for vibrating said plates on their pivots, whereby the roller journaled therein will be moved to or away from the front rollers.

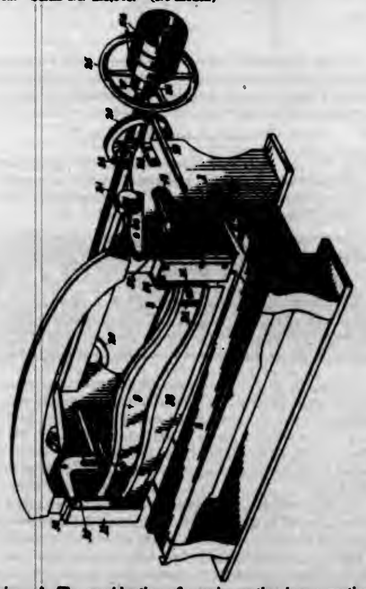
5. The combination of the supporting-standards, the front rollers, plates or arms pivoted to the standards and having their upper edges formed into segmental gears, a roller journaled in the said plates, shafts mounted on the standards and provided with worms engaging the segmental gears, and mechanism for rotating the said shafts.

6. The combination, with the supporting-frame, of the bracket secured on the side of the same, the presser-roller having a journal mounted in the frame and extended into the said bracket, gearing inclosed by the said bracket to impart motion to said roller, and means for operating said gearing.

484,369. COMBINED METAL PUNCHING AND SHEARING MACHINE. ELWOOD T. HOSIER, Cambridge City, Ind., assignor of one-half to John A. Spence, same place. Filed Feb. 15, 1892. Serial No. 421,503. (No model.)

Claim.—The combination of the supporting-standards, a die-block at the upper ends thereof, provided with a die-opening in its top and an escape-opening in its front side, connected with said die-opening by a downwardly and forwardly curved passage, a stationary jaw secured on the lower ends of the standards, a reciprocating jaw having a central opening into which the die-block projects and provided on its rear side at its lower end with a series of rack-teeth, a punch secured in the upper end of the central opening of the reciprocating jaw, a knife secured to the lower end of said jaw, and a driving-shaft mounted in the standards in the rear of the reciprocating jaw and provided with gear-teeth meshing with the rack-teeth on said jaw.

484,370. METAL-SHEARS. ELWOOD T. HOSIER, Cambridge City, Ind., assignor of one-half to John A. Spence, same place. Filed Mar. 1, 1892. Serial No. 423,576. (No model.)



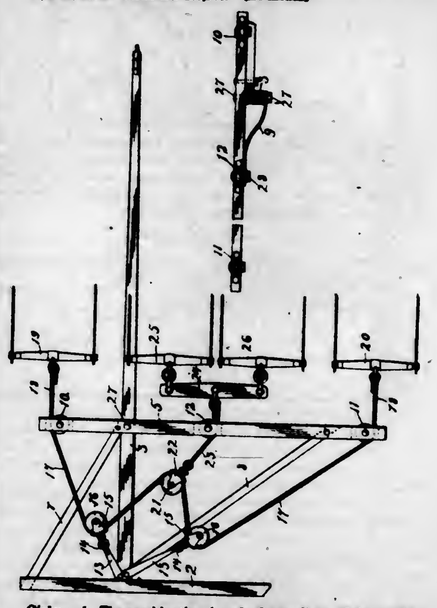
Claim.—1. The combination of a reciprocating jaw, a vertically-movable presser-bar arranged in advance of the said reciprocating jaw, a pair of transverse shafts arranged in the supporting-frame in the rear of the jaw, independent connections between the said shafts and the jaw and between the shafts and the presser-bar, and means for rotating the said shafts.

2. The combination of a reciprocating jaw having guiding-ribs on its front face, a presser-bar having grooves on its rear side, engaging said ribs, and means for operating the said bar and jaw.

3. The combination, with the shearing mechanism, of the presser-bar, rocking arms connected with said presser-bar and having open-ended slots in their lower ends, and operating-shafts provided with double cams playing through the said slots.

4. The combination of the frame, the reciprocating jaw, the presser-bar arranged in advance of said jaw, transverse shafts mounted in the frame, provided with double cams, and having crank-pins at their front ends, engaging elongated bearings in the jaw, means for rotating said shafts, and angle-levers mounted on the frame and having their upper ends connected with the presser-bar and their lower ends provided with notches engaging the double cams.

484,371. DRAFT-EQUALIZER. THEODORE KELLER, Trim Belle, Wis., assignor of one-half to Vincent Reeves, Minneapolis, Minn. Filed Apr. 11, 1892. Serial No. 428,570. (No model.)



Claim.—1. The combination, in a draft-equalizer, of the machine-frame, the pole attached thereto, with the cross-bar arranged on said pole, two fixed sheaves, a traveling sheave arranged between the same, a flexible connection passing from said sheaves, the ends of said connection extending out over the ends of said cross-bar, a flexible connection extending from said traveling sheave over the middle of said cross-bar, and the idlers and the evener and whiffletrees secured to said flexible connections, substantially as described.

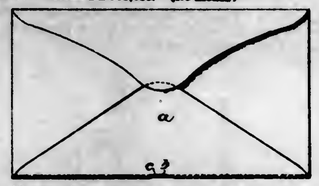
2. The combination, in a draft-equalizer, of the machine-frame and the pole attached thereto, with the cross-bar arranged on said pole and braced with respect thereto, idler-pulleys arranged on said cross-bar at the ends and middle thereof, two fixed sheaves, a traveling sheave arranged between the same, a flexible rope or chain passing around said sheave, the ends of said rope extending around said pulleys on the ends of the cross-bar, a whiffletree attached to each end of the rope, an evener and whiffletree, and a flexible connection extending therefrom over the middle thereof to said traveling sheave, substantially as described.

3. The combination, with the machine-frame and the pole attached thereto, of the cross-bar 5, secured on said pole and braced with respect thereto and said frame, the hooked arms 13, fixed on said frame, the sheave-blocks and sheaves secured thereto, the middle traveling sheave and sheave-block, the rope 17, passing back of the fixed sheaves and around the forward side of the traveling sheave, idler-pulleys arranged at the ends and middle of the cross-bar, a single whiffletree secured to each end of the rope, a short rope or chain 23, extending over the traveling sheave over the middle idler-pulley, and an evener and whiffletrees secured to said short rope, substantially as described.

4. The combination, with the machine-frame and the pole extending therefrom, of the cross-bar 5, secured on said pole, the brace 9, extending from the lower side of the said pole and the under side of said cross-bar, the three idler-pulleys arranged on said cross-bar, the fixed arms 13, arranged at the angle described, the sheave-blocks and sheaves attached to the forward ends of said arms, the flexible rope or chain passing about said sheaves and over the end pulleys on said cross-bar, whiffletrees attached to the ends of said rope or chain, an evener and two whiffletrees attached thereto, the short rope or chain 23, extending from said evener over the middle idler-pulley, and a traveling sheave-block and sheave secured to the rear end of said short

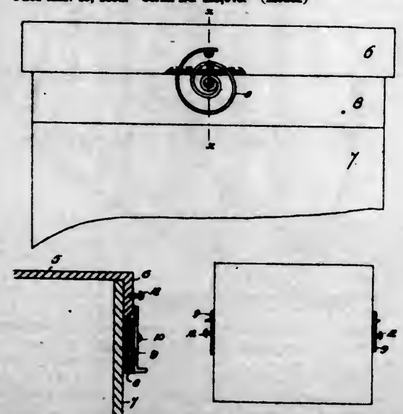
connection and engaging the middle part of the rope or chain 17, substantially as described, and for the purpose specified.

484,372. ENVELOPE. JAMES W. KERR, Newark, N. J. Filed Oct. 20, 1892. Serial No. 449,698. (No model.)



Claim.—The envelope provided with a perforation located midway on a line with the crease or fold of one of the end or side flaps, in combination with the cord or thread which passes through said opening or perforation and has its inner ends gummed or secured to the opposite corners of the envelope, as set forth.

484,373. BOX-FASTENER. CHARLES C. MARTIN, Denver, Colo. Filed Mar. 15, 1892. Serial No. 425,073. (Model.)



Claim.—A box-lid fastener consisting of a coil-spring pivoted to one part of the box, in combination with a rigid pin or lug secured to the other part and adapted to engage the spring, substantially as described.

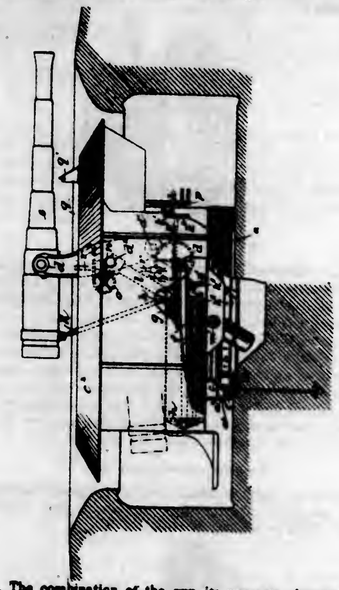
484,374. APPARATUS FOR WORKING DISAPPEARING GUNS. ANDREW NOBLE and CHARLES H. MURRAY, Rowlands upon-Tyne, England, assignors to the Sir W. G. Armstrong, Mitchell & Company, Limited, same place. Filed Nov. 27, 1891. Serial No. 413,313. (No model.)

Claim.—1. The combination of a gun with recoil apparatus operatively connected therewith to absorb the energy of recoil, balancing-springs suitably supported and operatively connected with the gun to act directly upon it to approximately counterpoise the gun in all its positions, and hand-gearing operatively connected with the springs to act thereon to compress or relax them to thereby raise or lower the gun without firing.

2. In a disappearing-gun mounting, the combination of a lever pivoted on a stationary axis, the gun having trunnions with bearings in the upper end of the lever, balancing-springs, connections between the balancing-springs and the lever beneath its pivot, and hand-gearing operatively connected with the springs to act through them upon the lever, the organization being such that without firing the gun can be lowered from the elevated firing position to the concealed loading position, there retained as long as may be desired, and afterward again raised to the firing position.

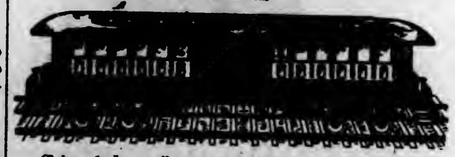
3. In a gun-mounting, the combination, substantially as hereinbefore set forth, of the gun, means for raising and lowering it, a recoil-cylinder having a reservoir without packing or joints suitably supported in the mounting, placed upright, so that the liquid cannot be lost by leakage, and a piston working in the cylinder and operatively connected with the gun.

4. The combination, substantially as set forth, of the gun, its supports, means for raising and lowering the gun, the automatic compound sights having ordinary telescope and mirror sights, all moving together in adjustment as to wind, speed, and distance of the enemy, and gearing between the elevating-gear and the sights, whereby the sights are moved correspondingly with the gun.



5. The combination of the gun, its supports, elevating-gear for raising and lowering the gun, a sight-bar having front and rear sights, and connections between the sight-bar and the elevating-gear, whereby the rear sight is moved correspondingly with the movement of the gun.

484,375. RAILWAY-TRAIN TELEGRAPH. MATTHEW S. RILEY, Washington, D. C., assignor, by direct and mesne assignments, to Melvin D. Peet and James McKendree Bailey, same place. Filed Jan. 4, 1892. Serial No. 417,754. (No model.)



Claim.—1. In a railway-train telegraph, the combination, with magnets supported upon bed beneath the vehicle near its ends and connected by a conductor through the vehicle, of a line conductor having spring-arm connections beneath plates on the road-bed, the magnets resting on said plates, whereby the entire current of the conductor is adapted to be broken by magnets and conducted through the vehicle, as set forth.

2. The combination, with a line conductor having spring-arm connections covered by metal section-plates supported upon the road-bed, of magnets secured to the under side of a vehicle near its ends, a part of which are in continuous contact with and the other part moving over the plates covering the conductor, said magnets being connected by a conductor passing through an instrument in the vehicle, as set forth.

3. The combination, with a pendent beneath the car, having a rock-bar secured to its lower end, of vertically-slotted bearings attached to the bar, one in front of the other, having magnetized wheels journaled in the slots and in contact with metallic plates on a grooved central way, and coil-springs around the bearings resting on the journals, whereby the current is extended through the car from the conductor in the central way, as set forth.

4. The combination, with a rock-bar beneath the car, having vertically-slotted bearings one in front of the other, with magnetized wheels journaled in the slots and in contact with metallic plates on a grooved central way, of depending rods from the rock-bar to the front and rear of each wheel, having magnetic plates secured thereto and carried over and near to the plates of the central way, as set forth.

5. The combination, with a central way having a continuous metallic bed-plate with upwardly-projecting flanges, of a lining in the bed-piece, composed of non-conducting material having a groove with a conductor therein covered with a metallic section-plate, as set forth.

6. The combination, with a central way having a groove therein covered with metallic plates, of a conductor in the groove, having spring-arms adapted to be raised to the plates to break the regular line-circuit, as set forth.

7. The combination, with a central way lined with non-conducting material and having a groove therein containing a conductor, of spring-arms connected with the conductor, adapted to open and close the regular line-circuit, as set forth.

8. In a central way having a groove therein, the combination, with a regular line conductor, of insulated spring-arms independently connected within the groove, adapted to open and close the regular line-circuit, as set forth.

9. The combination, with a central way having a groove therein provided with a conductor, of spring-arms in pairs forming a part of the conductor under section-plates over the grooves, as set forth.

10. The combination, with a central way having a groove with a conductor therein, of insulated spring-arms independently attached within the groove and resting on contact-posts forming part of the regular line conductor, as set forth.

11. The combination, with a central way having a groove with a conductor therein, a part of which is secured to contact-posts, of spring-arms having the other part of the conductor secured to insulated plates thereon resting on the posts, as set forth.

12. In a central way having a groove therein, the combination, with a conductor secured to contact-posts forming part of the line and to insulated spring-arms resting on the posts forming the other part of the line, of a circuit-post connected with the conductor between the arms, adapted to convey the current through the raised arm of the adjoining section into the vehicle over the section, as set forth.

13. The combination, with a central way having a groove with a conductor therein, of arms attached to the bottom of the groove and extending to near a plate covering its top and having spring-arms parallel to said plate, resting on contact-posts connected with and forming part of the conductor, as set forth.

14. In a central way having a groove, the combination, with a conductor, of angle-arms with base-pieces secured to the bottom of the groove having right-angled vertical portions extending to near the top of the groove, the upper part of the arm being bent at right angles to the vertical portion, forming a spring-arm parallel to the plane of the base-piece and resting on a contact-post communicating with the conductor, as set forth.

15. The combination, with a conductor in the groove of a central way secured to contact-posts, of insulated spring-arms extending over and beyond the posts and resting thereon, forming a part of the conductor, the extended portion of the arms being weighted, as set forth.

16. The combination of a central way having part of the conductor attached to contact-posts within its groove and the other part to insulated plates on spring-arms, the lower plates on the arms resting on the contact-posts and united to circuit-posts between each pair of arms, said arms being secured in the groove by pins, as set forth.

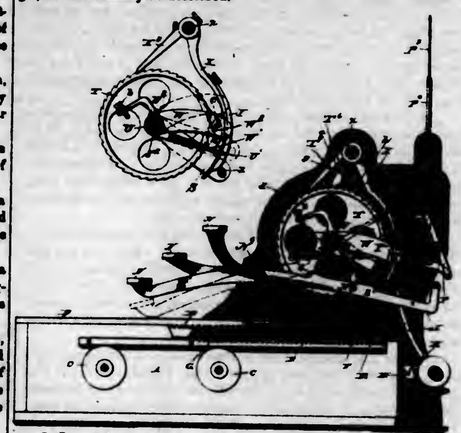
17. The combination, with a central way upon the road-bed, parallel to the path of the vehicle, having a conductor attached to contact-posts and insulated plates on spring-arms resting on the posts, of circuit-posts between each pair of arms connected with the conductor, and projecting pins holding the arms having switch-conductors attached thereto, conveying the current from the regular line conductor through the raised arms to and from the vehicle, as set forth.

18. The combination, with a vehicle having yielding magnetized wheels in pairs supported thereon one in front of the other, said wheels being connected by a conductor through an instrument in the vehicle, of a central way upon the road-bed parallel to the path of the vehicle, having a groove covered with metallic section-plates and containing a conductor therein, one part of which is secured to the contact-posts and the other parts to spring-arms under said section-plates, said arms being secured by projecting pins having switch-conductors attached thereto and communicating with circuit-posts connected with the conductor between the arms and with the contact-posts under the arms whereby the current is conveyed from the regular line conductor through the raised arms to and from the vehicle, as set forth.

484,376. CASH-REGISTER. EDWARD F. ROGERS, Columbus, Ohio, assignor to the Roberts Manufacturing Company, same place. Filed Aug. 11, 1890. Serial No. 361,731. (No model.)

Claim.—1. The combination of a casing, a drawer therein, racks attached to the sides of the drawer, a horizontal shaft journaled in the sides of the casing above the drawer, and the coiled springs on said shaft for revolving the same with the sliding cover above the drawer and shaft, the tongue-and-groove guide-supports for the cover, the racks attached to the cover vertically over the racks on the drawer sides, and a single pinion on and near each end of said shaft, directly meshing with a rack on the drawer and on the cover, all substantially as described.

2. In a cash-register, the combination of the rod carrying a target, a toggle-lever for elevating said rod, and a key-lever adapted to open said toggle with the oscillating bent levers R R, the connecting-plate Q, swinging links S, and connecting-rod Z for knocking down the toggle, all substantially as described.



3. In a cash-register, one or more key-levers provided with shoulders, an oscillating bent or elbow lever secured to a cross-shaft of the frame above the inner or longer end of the key-lever, one side of the bent lever being arranged in the path of the longer end of the key-lever, so as to be oscillated thereby upon the depression thereof and the other side of the bent lever making contact with the shoulder of the key-lever when the elbow-lever is oscillated, whereby the throw of the bent lever is limited, substantially as shown and described.

4. In a cash-register, one or more key-levers, each provided with a shoulder, the bent lever secured so as to turn upon the shaft in the frame, one end of the bent lever arranged in the path of the longer arm of the key-lever, the other end of the bent lever having an adjustable stop for coaction with the shoulder on a key-lever, whereby the throw of the bent lever may be adjusted to a predetermined degree, substantially as shown and described.

5. In a cash-register, one or more key-levers, each having a spring-pressed projection, a bent lever journaled on a cross-shaft, one side of said bent lever being provided with a stop to limit its throw and its outer side adapted to be struck by the spring-pressed projection, a registering-wheel mounted on the shaft beside the bent lever, and a bar connected with the bent lever for carrying a pawl for operating the ratchet of the registering-wheel, substantially as and for the purpose set forth.

6. In a cash-register, one or more key-levers, an oscillating bent or elbow lever arranged in the path of the longer arm of the key-lever and connected to mechanism for operating the register, said bent lever being pivoted above the key-lever, so that it will be both oscillated and stopped by the key-lever when the latter is depressed, substantially as and for the purpose set forth.

7. In a cash-register, a registering-wheel, one or more key-levers, an oscillating bent lever beside the registering-wheel, having one end arranged in the path of the longer arm of the key-lever and the other end provided with stops to limit its movement, and mechanism carried by said lever for operating said registering-wheel, substantially as described.

8. In a cash-register, the combination of a ratchet-wheel operating the register, one or more key-levers, an arm journaled on a cross-shaft and carrying a dog for operating the ratchet-wheel and arranged in the path of the key-lever, in combination with mechanism for moving and simultaneously locking the dog to the ratchet-wheel on the initial movement of a key-lever, substantially as and for the purpose set forth.

9. In a cash-register, a register-wheel, one or more key-levers, an arm journaled on a cross-shaft, carrying the pawl, and arranged in the path of movement of the key-levers, a ratchet-wheel connected with the register-wheel, and a pivoted and curved bar, and mechanism for automatically carrying the free end of this bar inwardly, so as to lock the pawl to the ratchet-wheel, substantially as and for the purpose set forth.

10. In a cash-register, one or more key-levers, a projection journaled upon the main shaft, having an arm arranged in the path of the key-levers, and an arm carrying a pawl, in combination with a

ratchet connected to the register, a bar pivoted at one end having an outer cam-face at its free end, and mechanism for automatically forcing such free end inwardly, so as to cause the pawl to lock the ratchet, substantially as and for the purpose set forth.

11. In a cash-register, one or more key-levers provided each with a shoulder, a bent or elbow lever journaled upon a shaft in the frame, having one arm arranged in the path of the key-lever, a bent arm having its end arranged for contact with the shoulder, a pawl suitably connected with the elbow-lever, a pivoted curved bar having an outer cam-face, and mechanism for automatically actuating the free end of the curved bar, causing the same to lock the pawl in a notch of a ratchet-wheel, which latter is connected to the register, substantially as and for the purpose set forth.

12. In a cash-register, one or more key-levers, a units-register, mechanism connecting the key-lever with the units-register, a pin on the face of the units register, a dogging device T⁵, pivoted to a shaft in the frame and consisting of a single casting having a laterally-extending lug for engagement with the pin, and a spring-tooth *c* and tooth *h* for engagement with the registering device for tens and hundreds, substantially as and for the purpose set forth.

13. The combination, with the ratchet-wheel for operating the registering devices and its actuating pawl or dog, of a key-lever and connections for shifting said dog and mechanism whereby the dog is locked in engagement with the wheel on the initial movement of the key-lever and the dog and wheel caused to move together about a common center, so that the arrest of the motion of the dog shall stop the further movement of the wheel, substantially as described.

14. The combination of the ratchet-wheel for operating the registering mechanism, its actuating pawl or dog, and key-levers and connections for raising said dog to revolve said ratchet-wheel forwardly with the swinging cam-bar and connections for shifting the same, whereby upon the depression of a key-lever the dog is moved to revolve the ratchet-wheel and simultaneously positively interlocked therewith, so as to prevent forward motion of the wheel by momentum when the motion of the dog is arrested, substantially as described.

15. The combination of the pair of registering-wheels and ratchets, the dogging device suspended above the same, formed of a single casting having fixed teeth *g h* and provided with a spring-tooth *c*, substantially as described.

16. The combination of the ratchet-wheel for actuating the registering devices, the actuating-dog therefor, the cam-bar Y, rod Z, and key-levers, all substantially as described.

17. In a register, a ratchet-wheel and its operating mechanism, including a pawl or dog adapted to normally engage said wheel and move therewith, and means for actuating the dog and simultaneously locking the same in engagement with the wheel on the initial movement of said operating mechanism, so as to cause both dog and wheel to move and stop together, substantially as described.

18. In a register, the combination, with a ratchet-wheel and its operating mechanism, including a pawl or dog adapted to engage a tooth of said wheel, a swinging cam-bar, and connections for shifting said bar, so as to cause the latter to lock said pawl or dog in a tooth of said ratchet, substantially as described.

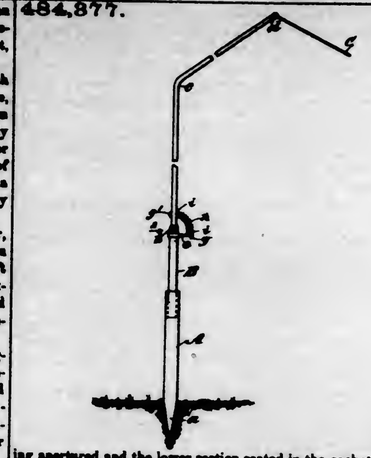
19. In a register, the combination, with a ratchet-wheel and its operating mechanism, of a movable cam-bar and a rod extending across the key-levers, whereby upon the operation of a key said bar is caused to look a dog in a tooth of said ratchet-wheel, substantially as described.

20. In a register, the combination, with a ratchet-wheel and its operating mechanism, of a cam-bar and a rod secured to arms projecting from a shaft journaled in the main frame, said rod extending across the key-levers, whereby upon the initial movement of the key the said bar is caused to lock a pawl or dog in a tooth of said ratchet-wheel, substantially as described.

21. In a register, the combination, with a ratchet-wheel and its operating mechanism, of a cam-bar, a series of key-levers, and a rod secured to arms projecting from a shaft journaled in the main frame, said rod extending across and above the rear ends of said key-levers, whereby upon the initial movement of a key the cam-bar is caused to look a pawl or dog in a tooth of said ratchet-wheel and to retain the dog or pawl so locked during the stroke of said key, substantially as described.

484,877. ANIMAL-TETHER. RALPH R. REDDING, Alvin, Texas, assignor to Leon Robbins, same place. Filed Apr. 12, 1892. Serial No. 428,817. (No model.)

Claim.—In a tether, the combination, with a socketed post, of a standard formed of two sections pivoted together, the upper section bearing apertured and the lower section seated in the socket of the post and provided with a lateral arm, a curved bar having one end secured to the said arm and its other end projecting through the aperture of the upper section of the standard, and a spring surrounding the bar, substantially as herein shown and described.



484,878. FIFTH-WHEEL. STEPHEN H. SEXTON, Tucson, Ariz. Filed Apr. 19, 1892. Serial No. 429,702. (No model.)

Claim.—1. In a wagon running-gear, the combination, with the axle and sand-board formed with an intervening space, a plate on the upper side of the axle, having a forwardly-extending perforated projection, and securing-cars fastened to the axle, of a plate of like construction secured to the under side of the sand-board, a bolt passing through the perforations in the plates, and a wagon-reach between the plates, through which the bolt passes, substantially as described.

2. In a wagon running-gear, the combination, with the axle, of a plate secured thereon having an apertured extension projecting beyond the axle, a sand-board having a like plate thereon, a reach between the plates, a bolt passing through the plate and reach, a bolster, a plate on the under side thereof, a plate on the upper face of the sand-board, formed with curved elongated slots therein, and bolts passing through the bolster-plate and said slots, substantially as described.

484,879. SHEEP-SHEARS. JEFFERSON D. TODD, Chico, Cal., assignor of one-half to John M. Garner, same place. Filed June 9, 1891. Serial No. 395,726. (Model.)

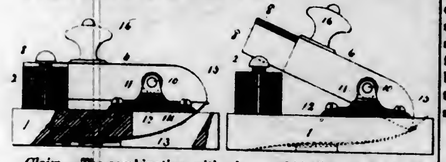
Claim.—1. The combination, in animal-shears, of handles, blades secured thereto, guides projecting from the said handles and sliding past each other in adjacent planes, and a set screw adapted to regulate the distance between said guides, whereby the edges of said blades may be brought closer together or forced further apart, substantially as set forth.

2. The combination, in animal-shears, of handles, blades secured thereto, adjacent guides projecting from said handles, a plate intermediate said guides, and a set-screw acting upon said plate and regulating the space between the guides, substantially as set forth.

3. The combination, in animal-shears, of handles, blades connected therewith, a spring normally opening the same, threaded pins passing

through branches of said spring, and nuts movable along said pins to bring and hold said branches in predetermined positions, substantially as and for the purpose set forth.

484,880. ELECTRIC SWITCH. HILTON R. UTLEY, Minneapolis, Minn., assignor of one-third to Frank P. Seavey, same place. Filed Mar. 5, 1892. Serial No. 423,827. (No model.)



Claim.—The combination, with a base and binding-posts, of a pivoted lever carrying contacts on its longer arm and having the upper portion of the end of its shorter arm rounded and a flat spring arranged to bear against the end of the shorter arm to hold the lever in different positions of adjustment, substantially as set forth.

484,881. SHOE-FASTENING. GEORGE W. WATSON, Boston, Mass. Filed Jan. 18, 1892. Serial No. 418,436. (No model.)

Claim.—A lace-shoe having the top portions of the upper and tongue provided, respectively, with separable parts of a snap-fastening for detachably connecting the tongue and upper independent of the lacing-string, so that the tongue and upper can be connected and the string subsequently tied and tucked between the connected upper and tongue, substantially as described.

484,882. SCREW-PROPELLER. OTHA B. WATTLES, Elizabeth, N. J., assignor of one-half to the Daimler Motor Company, Long Island City, N. Y. Filed Mar. 29, 1892. Serial No. 426,982. (No model.)

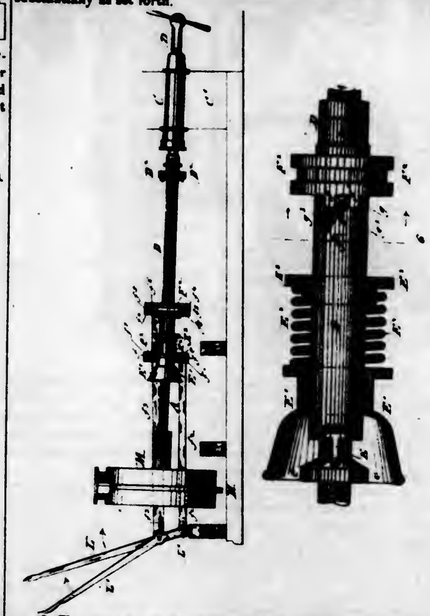
Claim.—1. The combination, with a propeller-shaft provided with bearings at its rear or outer end, of propeller-blades the hubs of which are supported in said bearings, an actuating-sleeve extending over the shaft, provided with an enlarged end extending partially over the hub of the propeller, means for axially turning said sleeve independently of the motion of the shaft, and means by which the sleeve is connected with the hubs of the blades, so as to adjust the same to different angles of inclination to the shaft without changing the direction of the motion of the shaft, substantially as set forth.

2. The combination of a propeller-shaft provided with bearings at its rear end, propeller-blades the hubs of which are supported in the bearings of the shaft, an actuating sleeve extending over the propeller-shaft, provided with an enlarged end extending partially over the hub of the propeller, locking mechanism for connecting the inner end of the sleeve with the shaft, and means for connecting the outer end of the sleeve with the hubs of the blades, substantially as described.

3. The combination of a propeller-shaft having a ring-shaped enlargement or bearing at its rear end, propeller-blades the hubs of which are supported in bearings of said enlargement, an actuating-sleeve having an enlarged rear end extending partly over the enlargement of the shaft and over the hubs, and means for connecting the enlarged end of the sleeve with the hubs of the blades, substantially as set forth.

4. The combination of a propeller-shaft having a ring-shaped enlargement or bearing at the rear end, said enlargement being provided with recessed flanges, propeller-blades having hubs with radial lugs for engaging the flanges of the enlargement, and an actuating-sleeve extending over the shaft and having an enlarged rear end provided with recesses for engaging, respectively, pins in the hubs of the shafts and the inner ends or shanks of the blades, substantially as set forth.

5. The combination of a propeller-shaft A, a ring shaped enlargement or bearing at the rear end of the shaft, said bearing having recessed flanges, propeller-blades the hubs of which are provided with shanks having radial lugs, and an actuating-sleeve on the propeller-shaft, said sleeve having an enlarged rear end provided with recesses for engaging the pins in said hubs and the inner ends or shanks of the blades, the inner edge of the rear end being beveled, so as to fit over the ring-shaped bearing of the shaft and over the hubs of the blades, substantially as set forth.



6. The combination of a propeller-shaft rotating in one direction, an actuating-sleeve on said shaft, a ring-shaped bearing at the rear end of the shaft, propeller-blades having hubs supported in the bearing of the shaft, means for connecting the rear end of the sleeve with the hubs of the blades, a locking mechanism by which the inner end of the sleeve is locked to the propeller-shaft, means for releasing the locking mechanism, and means for shifting the sleeve axially on the shaft on the release of the locking mechanism, so as to adjust the propeller-blades independently of the motion of the propeller-shaft, substantially as set forth.

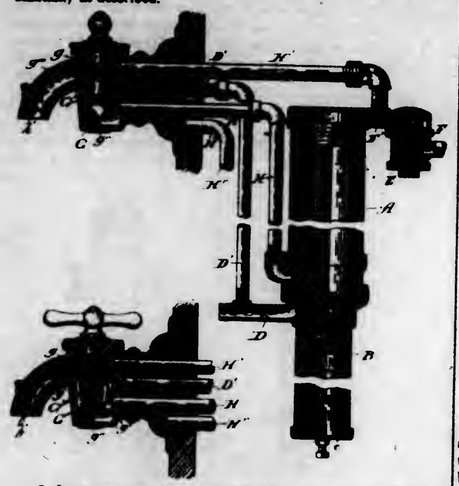
7. The combination of a propeller-shaft, a sleeve on said shaft, propeller-blades supported on bearings with rear end of the shaft, means for connecting the rear end of the sleeve with the blades, means for shifting the sleeve on the shaft, a locking mechanism connecting the inner end of the sleeve with the shaft, said locking mechanism being composed of a collar on the shaft, dogs pivoted to the sleeves, and a sliding and spring-actuated sleeve having a bell-shaped end engaging the dogs, and a lever mechanism adapted to engage the sliding sleeve, so as to apply its bell-shaped end to or release it from the dogs, substantially as set forth.

8. The combination of a propeller shaft, a sleeve extending over said shaft, a fixed tapering collar on the shaft near the inner end of the sleeve, bell-crank-shaped dogs pivoted to the inner end of the shaft, a sliding sleeve having a bell-shaped end for engaging the dogs, a fixed collar on the main sleeve, a helical spring interposed between the sliding sleeve and the collar, and a lever mechanism applied to sliding sleeve for applying the same to or releasing it from the locking-dogs, substantially as set forth.

484,883. PUMP. EDWARD H. WEATHERHEAD, Cleveland, Ohio, assignor to the Cleveland Pneumatic Company, same place. Filed Jan. 23, 1891. Serial No. 378,510. (No model.)

Claim.—1. In an apparatus for pumping liquids by water-power.

the combination of a liquid-chamber connected in use with a cask or liquid-supply and provided with a movable piston-head for one of its ends, a water-chamber connected in use with a water-supply under pressure and having the said movable piston-head for one of its ends, said chambers being arranged on an axial line and of equal diameter, and means for moving the piston-head in that direction that increases the size of the liquid-chamber to cause the liquid to flow into it, substantially as described.



2. In an apparatus for pumping liquids by water-power, the combination of a primary water-chamber connected in use with a water-supply under pressure, a liquid-chamber connected in use with a cask or liquid supply, and a secondary water-chamber connected in use with a water-supply under pressure, said chambers being arranged on an axial line, substantially as described.

3. In an apparatus for pumping liquids by water-power, the combination of a primary water-chamber connected in use with a water-supply under pressure, a liquid-chamber connected in use with a cask or liquid-supply and provided with a movable piston-head for one of its ends, and a secondary water-chamber connected in use with a water-supply under pressure and provided with said last-mentioned movable piston-head for one of its ends, said chambers being arranged on an axial line, substantially as described.

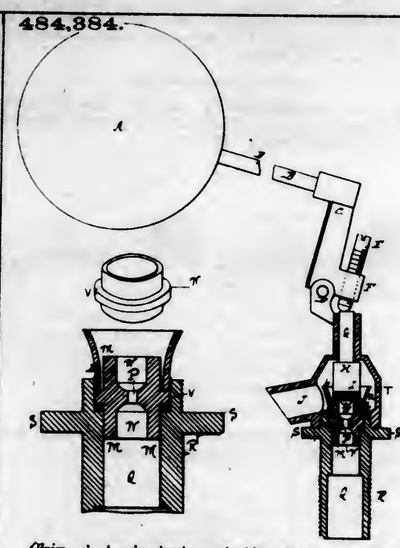
4. In an apparatus for pumping liquids by water-power, the combination of a primary water-chamber connected in use with a water-supply under pressure and provided with a movable piston-head for one of its ends, a liquid-chamber connected in use with a cask or liquid-supply and provided with a movable piston-head for one of its ends, and a secondary water-chamber connected in use with a water-supply under pressure and provided with said last-mentioned movable piston-head for one of its ends, said movable piston-heads being connected together and moving in unison and said chambers being arranged on an axial line, substantially as described.

5. In an apparatus for pumping liquids, the combination of a cylinder A, connected by means of pipes F F' with the vessel containing the liquid, a one-way valve *c*, a piston A', a cock G, connected with the cylinder A by pipes H, H', and F', a cylinder B beneath the cylinder A, connected with the water-supply by a pipe D and with the cock by pipes D and D', and a piston B, connected with and smaller than the piston A', and a waste-pipe H'', all operating substantially as described.

6. An apparatus for pumping liquids by water-power, comprising two cylinders A and B, pistons in each cylinders connected together, the piston in the cylinder A separating the liquid to be drawn from the water used as a motive power, the cylinder A having a liquid inlet and outlet and a water inlet and outlet and the cylinder B having a water inlet and outlet, substantially as described.

7. The combination of the liquid-pipe H', provided with a valve B, water-pipes H and D, waste-pipe H'', and the cock G, the plug G' of each cock having a port *g* to connect the liquid-pipe with the spout, a port *f* to connect the water-pipes, and a port *f'* to connect the pipe H and the waste-pipe, substantially as described.

484,384. VALVE. DAVID L. WHITEHOUSE, Detroit, Mich., assignor to the Ideal Manufacturing Company, of Michigan. Filed Mar. 28, 1892. Serial No. 426,812. (No model.)



Claim.—1. A valve having a double-ended valve-seat provided with a shoulder for packing, a chamber in the inlet-pipe to receive the shoulder of the valve-seat, and a screw-threaded ring engaging with the walls of said chamber above the shoulder on the valve-seat, whereby the valve-seat is removably held in position, substantially as shown and described.

2. In an inlet-valve for flushing tanks, the combination, with the valve, valve-seat, and casing having an outlet-hole, of a ring surrounding and extending above the valve-seat, substantially as shown and described.

484,385. BATTERY COMPOUND. WILLIAM WRIGHT, New York, N. Y., assignor to the Columbian Electric Light, Power, Heat, and Manufacturing Company, of New Jersey. Filed Dec. 2, 1891. Serial No. 413,880. (No specimens.)

Claim.—The process of making a dry chemical sand or granular composition, which consists in subjecting sulphuric acid containing a metallic oxide and a chromium compound to a temperature of 275° Fahrenheit for fifteen minutes and then spreading the same upon a plate cooled to 60° Fahrenheit to become dry and granular.

REISSUES.

11,276. STICKY FLY-PAPER. OTTO THUM and WILLIAM THUM, Grand Rapids, Mich. Filed Aug. 7, 1891. Serial No. 402,049. Original No. 414,608, dated Nov. 5, 1889.

Claim.—1. Sticky fly-paper having a coated portion and uncoated margin and projections extending from the surface, substantially as described.

2. Sticky fly-paper having a series of projections extending from its coated surface and uncoated margin, substantially as described.

3. Sticky fly-paper having a coated portion, a confining-border, and an uncoated margin, and projections extending from the surface of the paper, substantially as described.

4. Sticky fly-paper having a coated portion, a confining-border, an uncoated margin, and projections extending from the entire surface.

5. A sticky fly-paper having projections of granular material embedded thereon.

6. A sticky fly-paper having projections of granular material which are insoluble in the sticky material.

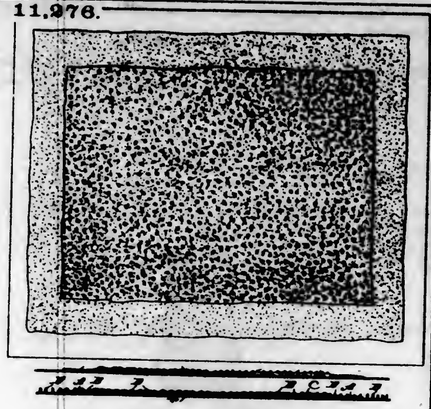
7. A sticky fly-paper provided with granular projections distributed over the sticky portion of the sheet, exceeding or as deep as the sticky material.

8. A sticky fly-paper provided with insoluble projections irregularly disposed over the sheet and surrounded by the sticky material.

9. A sticky fly-paper provided with irregular non-hygroscopic projections disposed over its surface.

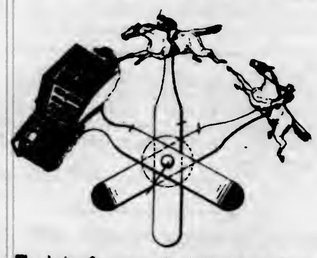
10. A fly-catcher sheet provided with sticky fly-catching material and having insoluble projections, substantially as described, for preventing the flow of the fly-catching material.

11,276.



DESIGNS.

21,885. BADGE. WILLIAM CONNOLLY and ALVIN A. SEALY, Brooklyn, N. Y. Filed Aug. 9, 1892. Serial No. 442,617. Term of patent 7 years.

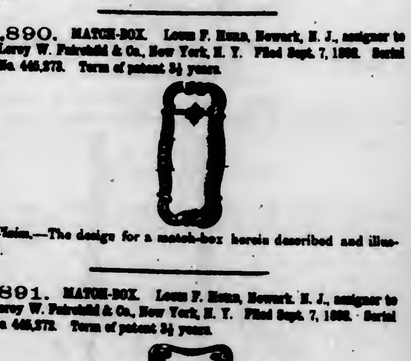


Claim.—The design for a campaign-badge herein shown and described.

21,886. BADGE. CHARLES PETTIBONE, Chicago, Ill. Filed Aug. 27, 1892. Serial No. 444,319. Term of patent 3½ years.

Claim.—The design for a badge, as shown and described.

21,887. ENGINE-FRAME. DAMON, Benz, San Leandro, Cal. Filed Aug. 29, 1892. Serial No. 444,697. Term of patent 14 years.



Claim.—The design for an engine-frame, substantially as shown and described.

21,888. HEEL-PROTECTOR. FRANK J. HERRICK, New Britain, Conn., assignor to the North & Judd Manufacturing Company, same place. Filed Aug. 9, 1892. Serial No. 442,631. Term of patent 7 years.

Claim.—The design for a heel-protector, as herein shown and described.

21,889. HEEL-PROTECTOR. FRANK J. HERRICK, New Britain, Conn., assignor to the North & Judd Manufacturing Company, same place. Filed Aug. 11, 1892. Serial No. 442,815. Term of patent 7 years.

Claim.—The design for a heel-protector, as herein shown and described.

21,890. MATCH-BOX. LOUIS F. HESS, Newark, N. J., assignor to Leroy W. Fairchild & Co., New York, N. Y. Filed Sept. 7, 1892. Serial No. 445,573. Term of patent 3½ years.

Claim.—The design for a match-box herein described and illustrated.

21,891. MATCH-BOX. LOUIS F. HESS, Newark, N. J., assignor to Leroy W. Fairchild & Co., New York, N. Y. Filed Sept. 7, 1892. Serial No. 445,572. Term of patent 3½ years.

Claim.—The design for a match-box herein described and illustrated.

21,892. MATCH-BOX. LOUIS F. HUEB, Newark, N. J., assignor to Leroy W. Fairchild & Co., New York, N. Y. Filed Sept. 7, 1892. Serial No. 445,571. Term of patent 3½ years.

Claim.—The design for a match-box herein described and illustrated.

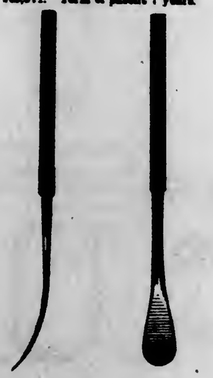
21,893. MATCH-BOX. LOUIS F. HUEB, Newark, N. J., assignor to Leroy W. Fairchild & Co., New York, N. Y. Filed Sept. 7, 1892. Serial No. 445,570. Term of patent 3½ years.

Claim.—The design for a match-box herein described and illustrated.

21,894. SPOON. THEODORE B. MYERS, St. Paul, Minn. Filed Aug. 11, 1892. Serial No. 442,814. Term of patent 3½ years.

Claim.—The design for a spoon, substantially as herein shown and described.

21,895. SPOON. HENRY J. HEINZ, Pittsburg, Pa. Filed Sept. 3, 1892. Serial No. 445,271. Term of patent 7 years.

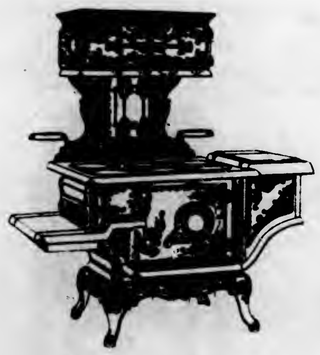


Claim.—The design for a spoon, substantially as herein shown and described.

21,896. STOVE. EARL A. THURSTON and WILLIAM H. WILDER, Florence, Mass. Filed Aug. 12, 1892. Serial No. 442,911. Term of patent 14 years.

Claim.—The design for oil and gas stoves, as herein shown and described.

21,897. COOKING-STOVE. HENRY C. BARNUM, Lansingburg, and FRANCIS RITCHIE, Troy, N. Y., assignors to the Shannon-Emery Stove Company, Quincy, Ill. Filed Aug. 29, 1892. Serial No. 444,455. Term of patent 7 years.



Claim.—1. The design for a cooking stove or range, substantially as herein described and shown.

2. In the design for a cooking-stove, the stove-base, as shown and described.

3. In the design for a cooking-stove, the oven-door, as described and shown.

4. In the design for a cooking-stove, the warming-closet, as shown and described.

5. In the design for a cooking stove, the warming-closet support, as described and shown.

TRADE-MARKS

REGISTERED OCTOBER 11, 1892.

21,856. CANNED FISH, FRUITS, AND VEGETABLES. CHRISTIAN L. BUSSSE, Chicago, Ill. Filed Aug. 27, 1892.

Essential feature.—The pictorial representation of a young woman with head-gear and breast-plate. Used since August 20, 1892.

21,857. PREPARATIONS FOR THE CURE OF PILES AND KINDRED DISEASES. FREDERIC HATCH, Boston, Mass. Filed Sept. 5, 1892.

Essential feature.—The word "KOMCHACIE." Used since May 1, 1892.

21,858. BEER. WILLIAM PFEIFFER, New York, N. Y. Filed July 6, 1892.

Essential feature.—The representation of a woman in Grecian costume, standing with her right hand upon her hip and holding aloft in her left hand a bottle. Used since May 16, 1892.

21,859. BEER. WILLIAM PFEIFFER, New York, N. Y. Filed July 6, 1892.

Essential feature.—The representation of a man seated by a broken column, holding a spear in one hand and extending a bottle with the other to a child standing before him. Used since May 16, 1892.

21,860. OINTMENTS, PILLS, AND MEDICATED SOAP. THE LIVURA MANUFACTURING CO., Nashville, Tenn. Filed Aug. 13, 1892.

LIVURA

Essential feature.—The word "LIVURA." Used since December 12, 1889.

21,861. BREAD, BISCUITS, CAKES, AND CRACKERS. WILLIAM J. MIKELHEAN, Highlands, Colo., and Osborn, N. Y. Filed Sept. 6, 1892.

OLD HOMESTEAD

Essential feature.—The words "OLD HOMESTEAD." Used since July, 1891.

21,862. REMEDY FOR DISEASES OF THE LIVER AND SKIN. OTTO L. MULOT, Astoria, N. Y. Filed Aug. 31, 1892.

DR. MARVILLE'S

GOLDEN LIFE BALSAM

Essential feature.—The representation of an arm and hand with clouds and the words "DR. MARVILLE'S GOLDEN LIFE BALSAM." Used since August 10, 1892.

21,863. FISH, OYSTERS, AND OTHER SHELL-FISH PACKED IN TIN AND GLASS. REDMAN RUSE & SONS, Apalachicola, Fla. Filed June 10, 1892.

ALLIGATOR BRAND

Essential feature.—The representation of an alligator, and the words "ALLIGATOR BRAND." Used since October 1, 1887.

21,864. CHEMICAL PRODUCTS DERIVED FROM SUGAR. SMITH & CLARK, New York, N. Y. Filed Aug. 25, 1892.

Diabetine

Essential feature.—The word "DIABETINE." Used since August 15, 1892.

21,865. ALL-WOOL HENRIETTAS. MAX RIESEL, New York, N. Y. Filed Sept. 12, 1892.

"AM"

Essential feature.—The letters "A M." Used since August 1, 1892.

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DECISIONS
OF THE
COMMISSIONER OF PATENTS
AND OF
UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

GUERRANT *v.* CABLE *v.* COFFEE.

Decided October 3, 1892.

PRACTICE—COMMISSIONER WILL NOT EXTEND LIMIT OF APPEAL IN INTERFERENCE CASES, EXCEPT IN AN UNUSUAL CASE.

While it is within the discretion of the Commissioner to extend the limit of appeal in an interference case, he will not exercise it in a case where a party has deliberately allowed the limit for taking appeal to expire without action and the facts show that his subsequent petition is based upon a mere change of mind.

ON motion.

MACHINE FOR STEMMING TOBACCO.

Application of M. L. Guerrant filed March 29, 1890, No. 345,925. Application of G. W. Cable filed November 25, 1889, No. 331,406. Application of R. W. Coffee filed November 7, 1889, No. 329,500.

Mr. Frank D. Johns for Guerrant.
Mr. L. W. Serrell for Cable.
Messrs. Church & Church for Coffee.

SIMONDS, *Commissioner:*

This is a petition asking for certain relief on behalf of Cable. The Examiner of Interferences has awarded priority to Guerrant, and Coffee has regularly appealed; but Cable, having come to an agreement with Guerrant and being satisfied that Guerrant shall have the patent, did not appeal within the time set for taking the same. Cable now comes and asks:

It is therefore desired that the honorable Commissioner of Patents make an order in substance that if the Examiners-in-Chief discover any ground upon which the decision in favor of Guerrant, that is acquiesced in by Cable, should be disturbed the relative rights of Cable and Coffee should be considered and determined, and a tender is hereby made of a fee of ten dollars, not as an appeal fee, because Cable has nothing from which to appeal, but as covering such a hearing as might be required as between Cable and Coffee should the rights of Guerrant in the premises be questioned by the Examiners-in-Chief.

As an appeal by Cable would put him into the position he desires, and as any action of the Commissioner looking in any other direction would be extraordinary, the petition must be treated as one asking an extension of the limit of appeal, notwithstanding its statement that "Cable has nothing from which to appeal."

Coffee contends that the Commissioner has not legally the power to extend the limit of appeal. It is held that he has. As to matters coming properly before it, this Office has not only all the powers of a court of equity, but the peculiar administrative powers committed to it warrant the Commissioner in departing from strict court practice, at his sound discretion, in exceptional cases.

Cable's failure to take appeal within the time set was a deliberate act. He has now simply changed his mind. It is believed that no properly-conducted court of law or equity would, if such a thing were in its power, extend a limit of appeal for such a reason. It is urged that to deny the appeal may result in issuing the patent to a person who is not the true and first inventor. Suppose that to be true, what of it? The only person injured thereby is Cable, and it is an injury which he could have prevented. So far as this one case is concerned the public would be benefited for the patent would be invalid and the improvement would be thrown open to the public. The underlying motive in the granting of a patent is not the reward of inventors, but the benefit of the public. The Constitution authorizes the grant of patents in order "to promote the progress of science and the useful arts." This goes along with fair and liberal treatment of inventors, but not without reasonable limitations.

To allow Cable's argument on this point to override a healthy and proper rule of procedure is to put this Office in the attitude of doing that which the United States Supreme Court, by its ordinary and oft-repeated action in compelling litigants to abide by its rules to their hurt, says is not a proper thing for a judicial tribunal to do.

The petition is denied.

EX PARTE MAHLECKE.

Decided September 16, 1892.

RULE 65—PRACTICE.

Rule 65 provides that when a case is rejected by an Examiner "the reasons for such rejection will be fully and precisely stated, and such information and references will be given as may be useful in aiding the applicant to judge of the propriety of prosecuting his application or of altering his specification," and when an applicant receives an Office letter stating objections to his application and he, without demanding action under said rule, proceeds to ask for a reconsideration, which ultimately results in a second rejection, he has waived any right he may have had under the rule.

ON petition.

TOOTH-POWDER.

Application of Charles F. Mahlecke filed October 18, 1887, No. 252,685.

Messrs. Elliott & Omohundro for the applicant.

SIMONDS, *Commissioner:*

This is a petition asking that the Examiner in charge of this application be required to make an action in accordance with Rule 65, which is as follows:

Whenever, on examination, any claim of an application is rejected for any purpose whatever, the applicant will be notified thereof. The reasons for such rejection will be fully and precisely stated, and such information and references will be given as may be useful in aiding the applicant to judge of the propriety of prosecuting his application or of altering his specification; and if, after receiving such notice, he shall persist in his claim, with or without altering his specification, the application will be re-examined. If upon re-examination the claim shall be again rejected, the reasons therefor will be fully and precisely stated.

The application was filed October 18, 1887. By Office letter of December 23, 1887, references were cited, and these words were used:

The application is rejected because void of novelty.

On the 27th of January, 1888, an amendment was filed, together with an argument. March 16, 1888, an Office letter was written, citing references, and saying:

There is nothing of patentable novelty in the case.

On the 5th of April, 1889, applicant filed a letter saying:

A reconsideration of last official action is requested,

and made remarks by way of argument. On the 11th of April, 1889, an Office letter was written answering the argument of April 5, 1889. On the 18th of August, 1890, a letter was received from applicant beginning:

We respectfully request a reconsideration of the official action in this case,

and further remarks by way of argument were made. On the 23d of August, 1890, an Office letter was written to applicant, saying this:

The application has been re-examined and is finally rejected on the references to which attention has been directed, particularly Harvey's tooth-powder in *Kilner's Compendium*.

On the 12th of August, 1892, a letter was received from applicant containing an argument and saying that applicant is—

compelled to demand action in accordance with Rule 65.

Whatever rights applicant has under Rule 65 must of course be exercised when he receives an Office letter and before he deliberately prosecutes his application to final rejection. When an applicant receives an Office letter stating objections to his application and he, without demanding action under Rule 65, proceeds to ask a reconsideration and that reconsideration eventuates in a second rejection, he has waived any right he may have under Rule 65.

The petition is denied.

EX PARTE CLARKE.

Decided September 25, 1892.

ABANDONED APPLICATION—REVIVAL OF.

Where an applicant has delayed four years to meet an Office requirement and seeks a revival of his abandoned application, ill health and financial reverses covering only the first year of his neglect do not form a sufficient excuse.

ON petition.

CAR-FENDER.

Application of Alfred L. Clarke filed December 19, 1887, No. 258,896.

Mr. Paul A. Staley for the applicant.

SIMONDS, *Commissioner:*

This is a request for the reinstatement and revival of an application for patent which has become abandoned, upon an affidavit, as follows:

Alfred L. Clarke, the above-named applicant, being duly sworn, deposes and says that he is an engraver by trade; that in the winter of 1888 and 1889 the state of his health was such that he had to practically abandon his business for a period covering almost a year; that he was compelled to seek a different climate, and traveled during the time in Florida and other Southern States; that this abandonment of his business and the expense entailed in search of health, together with other financial reverses, made it practically impossible for him at that time to exploit the said invention and to take out the patent on said application.

The record shows that applicant was informed under date of March 6, 1888, that his case could be allowed when a proper drawing had been furnished. The delay has been more than four years, and applicant only accounts for one; wherefore the request must be denied.

EX PARTE LANGDON AND BATCHELLER.

Decided October 7, 1892.

PRACTICE—TRADE-MARK.

An applicant will not be granted independent registration of a Trade-Mark when it appears that he is one of two or more parties who have a right to use such mark, section 2 of the Trade-Mark act requiring it to appear that than the applicant "no other person, firm, or corporation has the right to such use."

APPEAL from Primary Examiner.

TRADE-MARK FOR CORSETS.

Application of Charles H. Langdon and George C. Batcheller filed February 8, 1890.

Mr. S. D. Cozzens for the applicant.

SIMONDS, *Commissioner:*

This is a petition taken from the action of the Examiner of Trade-Marks finally rejecting petitioners' application for the registration of a Trade-Mark. The Examiner in his answer to the petition says that—

the applicants having been involved in an interference with a registered Trade-Mark, a decision was rendered adverse to their claim. Thereupon the Examiner, following the Office Rule 132, declared that the application was finally rejected.

The petition does not present a reason of appeal; but at the oral hearing it was urged that, assuming both these petitioners and another party to be entitled to the use of the Trade-Mark in question, it is yet the right of these petitioners to register the Trade-Mark, notwithstanding that another party has also the right to use it. The Trade-Mark act, approved March 3, 1881, speaking of an application for the registration of a Trade-Mark says:

Sec. 2. That the application prescribed in the foregoing section must, in order to create any right whatever in favor of the party filing it, be accompanied by a written declaration verified by the person, or by a member of a firm, or by an officer of a corporation applying, to the effect that such party has at the time a right to the use of the Trade-Mark sought to be registered, and that no other person, firm, or corporation has the right to such use, either in the identical form or in any such near resemblance thereto as might be calculated to deceive; that such Trade-Mark is used in commerce with foreign nations or Indian tribes, as above indicated; and that the description and fac-similes presented for registry truly represent the Trade-Mark sought to be registered.

The allegations which this section requires of applicants for the registry of a Trade-Mark are very specific. One is that "such party has at the time a right to the use of the Trade-Mark sought to be registered," and another is "that no other person, firm, or corporation has the right to such use." The words of inclusion and the words of exclusion are about as specific as language can make them. It is held that they do not support applicants' petition, and the petition is denied.

STEWART *v.* EINSTEIN *v.* SAWHILL.

Decided September 30, 1892.

1. PRACTICE—TRADE-MARK—INTERFERENCE.

The dates of adoption as set forth in interfering applications for the registration of a Trade-Mark are not conclusive as to the question of lawful title to the mark.

2. SAME—ADOPTION AND USE—OWNERSHIP.

The main question to be determined in a Trade-Mark interference is priority of such adoption and use as will establish ownership, and this will not be determined in advance of the evidence introduced by the parties in the usual way.

APPEAL from Primary Examiner.

TRADE-MARK FOR MEDICAL COMPOUNDS.

Application of Samuel Stewart filed July 22, 1892. Two applications of Morris Einstein filed June 30, 1892. Application of Alexander F. Sawhill filed June 18, 1892.

Mr. O. D. Levis for Stewart.
Messrs. Kay, Totten & Cooke for Einstein.
Messrs. L. Bagger & Co. for Sawhill.

FROTHINGHAM, *Assistant Commissioner:*

This is an appeal taken from the decision of the Primary Examiner denying a motion brought on behalf of Sawhill to dissolve the above-entitled interference. The ground upon which the said motion is made is stated to be that—

Sawhill adopted and used the Trade-Mark in interference and made his application for registration of the same prior to Einstein and Stewart, the other parties to this interference.

It appears that in the applications for registration filed by both Einstein and Stewart the dates given as the dates when said applicants commenced to use the Trade-Mark sought to be registered are subsequent to the date on which Sawhill filed his application. It is contended on behalf of Sawhill that under this state of facts the appellees can have no standing in the interference and cannot properly claim priority of use before the appellant.

It is well settled that the question presented for consideration in interference proceedings between applications for the registration of a Trade-Mark is substantially the same question as that which would arise in a court of equity if this appellant and these appellees were seeking each to enjoin either of the others from using the Trade-Mark in controversy, and that the right to registration belongs to the party who shall prevail in such litigation.

This right to registration is established by the one who proves that he is the owner of the Trade-Mark, for the statute (act of March 3, 1881) says:

That owners of Trade-Marks used in commerce with foreign nations or with the Indian tribes * * * may obtain registration of such Trade-Marks.

Furthermore, ownership of Trade-Marks is ordinarily established by prior adoption and use, though sometimes it also involves the mere question of title to the Trade-Mark. (See *Manitowoc Mfg. Co.* v. *Dickerman*, 57 O. G., 1721, and cases there cited.)

"Adoption and use" of a Trade-Mark necessarily depend upon the extent to which merchandise with the said Trade-Mark affixed thereon has been actually sold. (See *Schneider* v. *Williams*, C. D., 1888, 606; *Procter & Gamble* v. *Columbia Mfg. Co.*, 44 MS. Dec., 300.)

Such being the law, to dissolve the interference upon the ground relied upon by the appellant would be to assume as true what is set forth in the appellant's application with respect to the question of "use" of this Trade-Mark, whereas the question of priority of use—that is, adoption and use—is the very thing to be determined by the interference proceedings. Whether or not the use of the Trade-Mark by any one of the contestants has been sufficient to establish ownership can be properly and satisfactorily determined only by evidence introduced by the parties in the usual way.

While it is true that the filing of an allowable application for a patent for an invention is considered as a constructive reduction to practice of that invention, yet, in view of what has been said above, it does not follow that the filing of an application for the registration of a Trade-Mark is conclusive that the Trade-Mark has been adopted and used at the time of the filing of said application, the statement of the applicant being a mere conclusion based upon his understanding of what constitutes adoption and use.

The decision of the Primary Examiner is affirmed.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court of Appeals—Second Circuit.

AMERICAN PAPER PAIL & BOX COMPANY *et al. v.* NATIONAL FOLDING BOX & PAPER COMPANY.

Decided July 20, 1892.

1. PATENTS FOR INVENTIONS—PRELIMINARY INJUNCTION—PRIOR ADJUDICATION—APPEAL.

On appeal from a preliminary injunction the prior adjudication on which such injunction was based will, in the absence of some controlling reason, have the same weight with the circuit court of appeals which it should have had with the circuit court which granted the injunction.

2. SAME.

The review of the interlocutory order for an injunction can not be converted into a review of the final adjudication upon which it is based; but while the circuit court, upon a motion for an injunction, might deem itself constrained, contrary to its own judgment, to adopt the rulings of another circuit court upon questions of law made at final hearing, the circuit court of appeals is at liberty to re-examine such rulings, dispose of the questions of law conformably to its own convictions, and accord to the former adjudication such weight as in its own judgment such adjudication was entitled to upon the motion.

3. SAME—IMPROVEMENT IN PAPER BOXES—INFRINGEMENT.

The Circuit Court for the Southern District of New York having adjudicated the validity of the second claim of Letters Patent No. 171,866, for an improvement in paper boxes, (41 Fed. Rep., 189,) thereafter granted a preliminary injunction, based upon such prior adjudication, against a third party, (48 Fed. Rep., 913,) no new defenses having been interposed. *Held*, on appeal to the circuit court of appeals for the second circuit, that the prior adjudication would have the same weight with the circuit court of appeals which it had with the circuit court.

4. SAME—INFRINGEMENT—PAPER BOXES.

The second claim of Letters Patent No. 171,866, issued January 4, 1876, to Reuben Ritter, for an improvement in paper boxes, describes a box consisting of a single sheet of paper and retaining its shape by the interlocking of flaps projecting from the sides into slots in the ends. The slots are perpendicular to the bottom of the box and made longer than the width of the flaps, so that when adjusted the straight edge of the flap engages with the straight edge of the slot and does not merely hook into the corner of it. In defendant's box the projections of the flaps are substantially the same as those of the patent.

The slots, however, are at an angle with the vertical corner of the box, instead of parallel with it; but the straight edge of the projection is also altered, so that its locking-edge and the locking-edge of the slot are parallel with each other. A transverse slot is added at the upper extremity of the locking-slot; but on the examination of models it appears that the projection and slot engage straight edge to straight edge. *Held* that there is infringement, notwithstanding the apparent differences. (48 Fed. Rep., 913, affirmed.)

APPEAL from the Circuit Court for the Southern District of New York.

Bill by the National Folding Box & Paper Company against the American Paper Pail & Box Company and Isador Tahl for infringement of Letters Patent No. 171,866, granted January 4, 1876, to Reuben Ritter, for an improvement in paper boxes. Order granting a preliminary injunction, (48 Fed. Rep., 913,) based on a prior adjudication, (41 Fed. Rep., 139,) from which defendants appeal. Affirmed.

STATEMENT OF THE CASE.

The patent in suit relates to paper boxes and box-covers cut out of a single sheet of paper and known as "knockdown" boxes. They are sold, shipped, and stored flat. When put in use, their sides and ends are bent upward and flaps projecting from the sides are passed around the corners and inserted into slots in the ends. There is thus formed a shallow rectangular box with rectangular sides which is held in shape without the use of rivets, mucilage, or any foreign substance. The slot into which the flap is inserted is located in the end strip perpendicular to the bottom of the box, and therefore parallel with the inner edge of the projection at the end of the flap. The slot is longer than the width of the flap which is to be thrust into it and is located at such a distance from the corner that when the box is set up and the flap thrust in the projection of the latter will just pass within the box. The peculiar feature of this method of locking which complainants rely upon is the circumstance that the projection engages the straight edge of the projection with the straight edge of the slot, such engagement taking place sometimes at one point, sometimes at another. and sometimes, again, throughout the entire length of the projection. One supposed benefit derived from this peculiar mode of engagement is the securing of a greater degree of automatic adjustability, the box more readily accommodating itself to slight variations in the position of the parts relatively to each other, whether caused by imperfect cutting out of the blank or by carelessness in setting it up.

The previously-adjudicated construction and validity of the patent is, on this appeal from an order, as conclusive on this court as upon the learned judge below.

The doctrine is established that on motion for preliminary injunction prior adjudication after contest is, in absence of opposing and cogent evidence by defendant of new defense or of collusive or imperfect presentation of former defense, *res adjudicata* as to construction and validity of patent, and, provided infringement is found, entitles complainant to a preliminary injunction as a matter of substantial right. (*Manufacturing Co.* v. *Hickok*, 20 Fed. Rep., 116; *Refrigerating Co.* v. *Gillett*, 31 Fed. Rep., 809; *Searls* v. *Worden*, 11 Fed. Rep., 501, 502; *Purifier Co.* v. *Christian*, 3 Ban. & A., 42, 43; *Jones* v. *Merrill*, 8 O. G., 401; *Page* v. *Burglar Alarm Tel. Co.*, 2 Fed. Rep., 330; *Blake* v. *Rawson*, 6 Fish. Pat. Cas., 74; *Coburn* v. *Clark*, 15 Fed. Rep., 804; *Coburn* v. *Brainard*, 16 Fed. Rep., 412; *Cary* v. *Spring Bed Co.*, 26 Fed. Rep., 38.)

On the record herein no error was committed below in adopting the construction and validity of the patent established by said unreversed test case. Appellee affirmatively proved herein that all known defenses were tried in said case. Appellant did not deny this. The judge below, being same who tried that case, has expressly found, as a matter of fact, that "no new defenses are interposed herein". By said prior adjudication, under the circumstances, was settled for the circuit judge below and for every circuit in the United States and also for this court of appeals, on mere appeal from order, the construction and meaning of the patent and novelty, utility, and patentability of Ritter's invention in view of the prior state of the art.

Such prior adjudication made on testimony sifted by cross-examination should not be set aside on mere *ex parte* experts' affidavits presenting no new defenses. Complainants are entitled to a cross-examination of defendant's experts before being deprived of the advantage of its previous decree. duly rendered upon final hearing. Contrary practice would practically prevent all preliminary injunctions, (now substantially dependent on prior adjudication,) because interested experts' affidavits sustaining almost any novel and confusing theory are readily attainable; but these should not prevail over the construction and interpretation of an impartial judge. There is, therefore, here no question open for review except infringement.

Mr. Walter D. Edmonds for the complainants.
Mr. R. Bach McMaster for the defendants.

SHIPMAN, *J.*:

This is an appeal by the defendant from an interlocutory order of the Circuit Court for the Southern District of New York, which granted a preliminary injunction against the defendant for an infringement of the second claim of Letters Patent No. 171,866, dated January 4, 1876, to Reuben Ritter, for an improvement in paper boxes which are cut out of a single sheet of paper and in which the sides interlock with each other by means of projecting flaps inserted into slots in the paper. The original adjudication upon the validity of the second claim of the patent was made by Judge Lacombe in *Folding Box Co.* v. *Nugent* (41 Fed. Rep., 139.) The opinion contains a description of the patented device and of the peculiarity of the projection and slots which the court found to be the subject of the claim. Upon the present motion the circuit court followed its previous construction of the patent, "especially in view of the fact that no new defenses are interposed." The appeal calls upon this court to state its position as an appellate court in regard to motions of this character, and particularly with respect to the weight which is to be given to the previous adjudication, which is generally the foundation of a preliminary injunction. The appellate court is to examine the interlocutory decision of the circuit court in the light of the affidavits and of the history of the patent and the adjudications thereon which were presented to that court. The adjudication upon which the motion for preliminary injunction was based not being the subject of the appeal, it is to have the same weight which it should have before the circuit court; but while the circuit court, upon a motion for an injunction, might deem itself constrained, contrary to its own judgment, to adopt the rulings of another circuit court upon questions of law made at final hearing, this court is at liberty to re-examine such rulings, dispose of the questions of law conformably to its own convictions, and accord to the former adjudications such weight as in its own judgment it was entitled to upon the motion. In the absence of some controlling reason

for disregarding it the former adjudication should have the same weight in this court which it has as the foundation for a preliminary injunction before the circuit court. The effect which is to be given such adjudication in the circuit court is well stated in the syllabus of Mr. Justice Miller's opinion in *Purifier Co.* v. *Christian*, (3 Ban. & A., 42,) as follows:

Where a patent has been established by a decision of a circuit court, after careful consideration, that decision is entitled to very great weight in a subsequent application, either before the same court or any other for a preliminary injunction or any preliminary relief.

We concur in this statement of the law. Appeals from orders are not to be confounded with appeals from final decrees, and the rule which we have thus stated will not prevent our review of the adjudication itself whenever it and the record upon which it was made shall be presented upon appeal. The tendency of any different rule would be to produce confusion and convert the review of the interlocutory order into a review of the final adjudication upon which it was founded. Under this statement of the questions upon the appeal we follow upon this hearing the construction of the second claim of the patent which was adopted by Judge Lacombe in the Nugent case and which sustained its novelty and patentability. His theory was that the second claim referred to a method of locking whereby the flap projection is not hooked into a corner of the slot, but where the straight edge of the projection is engaged with the straight edge of the slot—

such engagement taking place sometimes at one point, sometimes at another, and sometimes, again, throughout the entire length of the projection. In other words, as was stated in the decision which was appealed from, the patent was limited to a locking device which operated by the engagement of a hooking device with a slot, not at a single point of contact, but where the hook and slot were so arranged as to be brought in contact straight edge to straight edge.

One advantage of this method is that the fragile material of the box is not so easily torn as it is when the projection is hooked into a corner or end of the slot and a sudden strain is brought to bear upon one angular point. The question of infringement is thus the only substantial one which is to be disposed of upon this appeal.

The projecting portions of the retaining-pieces in the defendant's box are substantially the same as those which are shown in the second claim. One difference in the slots of the two devices is that the slot of the infringing box is at an angle with the vertical corner of the box instead of parallel with it; but the straight edge of the projection having also been altered, so that both the locking-edge and the edge of the slot are parallel with each other, there is no difference in the mode of operation. Another and apparently more important difference is that a transverse slot has been added at the upper extremity of the locking-slot. This change raises the question whether the locking in the defendant's box is not performed by a hooking of the flap into the angle in the slot, so that the engagement is at a single point of contact. But an examination of the box shows that a portion of the defendant's slot is manifestly upon a straight edge with the projection and that the strain is substantially along this portion of the slot which is parallel with the projection and that the idea that the locking is caused by the hooking of the projection into the angle of the slot, though attractive at first sight, is not sustained by the facts. We concur with the circuit court upon the question of infringement, and its order is affirmed.

U. S. District Court—Southern District of New York.

SMITH *v.* WALTON *et al.*

Decided June 20, 1892.

PATENT ON WOODEN DISH—STAMP ON CRATES—REVISED STATUTES, SECTIONS 4900, 4901—IMITATION—NO PENALTY.

The patentee of wooden dishes which might have been marked "Patented," etc., as required by section 4900, Revised Statutes, did not stamp the dishes, but only the crates in which they were packed. Upon a suit for penalties under the second paragraph of section 4901 against the defendants for placing a similar stamp upon crates of similar dishes made by the defendants without license, *Held*, on demurrer to complaint, that sections 4900 and 4901 must be construed together, that the stamping of articles capable of stamping was necessary, and that the stamping of the crates containing them was insufficient and was not protected by sections 4900 and 4901, and that a similar stamping of their own crates by the defendants did not render them liable to any penalty.

ACTION by Seth H. Smith against David S. Walton and George West to recover penalties for alleged violation of the patent laws. Heard on demurrer to the complaint.

Mr. Rush Taggart and *Mr. Almon Hall* for the complainant.
Mr. James P. Foster for the defendants.

BROWN, *J.*:

The above action is brought under section 4901 of the United States Revised Statutes to recover $220,000 penalties alleged to have been incurred by the defendants in marking upon and affixing to 2,200 crates of wooden dishes the word "Patented" and the words "Oval Wooden Dish" with intent to imitate and counterfeit the mark and device of the plaintiff, who was the patentee of said dishes, without his consent and without having obtained any patent therefor. The complaint consists of 2,200 counts, each of which, after the first, charges a similar offense in regard to "a certain other crate of wooden dishes," claiming a penalty of $100 for each offense. The defendants have demurred on the ground that the complaint does not state facts sufficient to constitute a cause of action, and under this head have alleged nineteen specifications of insufficiency. The defendants also demur on the ground that the court has not jurisdiction of the persons of the defendants. The matters specified under the latter head have, however, been previously considered by the court and overruled and need not be further considered here.

The complaint sufficiently avers the obtaining of Letters Patent for an improvement in wooden dishes on March 18, 1883, upon the invention of the plaintiff, and several mesne assignments of interests under the patent, including a subsequent transfer of a part thereof to the plaintiff himself, and the manufacture of wooden dishes thereunder, and that said dishes have been—

uniformly marked by the plaintiff and his assigns as the "Oval Wooden Dish," and are well known to the public as such.

The complaint further states that—

ever since the issue of said Letters Patent the said owners thereof

have manufactured and sold said patented wooden dishes in large quantities and have, pursuant to the requirements of section 4900 of the Revised Statutes of the United States, marked each of the crates or packages containing said dishes "Patented March 13, 1888,"

and that the—

defendants, with intent to imitate and counterfeit the said mark and device of plaintiff and his said assigns, without having the license or consent of the patentee of said wooden dish or of his assigns or legal representatives and without having obtained any patent therefor and wholly without right, did mark upon and affix to a crate of wooden dishes such as are described and claimed in and covered by the plaintiff's Letters Patent the word "Patented" and affixed to the said crate the words "Oval Wooden Dish," contrary to the provisions of said section 4901.

All the subsequent counts in the complaint are to the same effect. They are manifestly all based upon the alleged violation of the second paragraph of section 4901, which makes liable to a penalty every person—

who in any manner marks upon or affixes to any such patented article the word "Patent" or "Patentee," or the words "Letters Patent," or any word of like import, with intent to imitate or counterfeit the mark or device of the patentee, without having the license or consent of such patentee or his assigns or legal representatives.

The only question needful to be considered is whether the complaint sufficiently avers that the defendants have—

in any manner marked upon or affixed to the patented article the word "Patented" with intent to imitate or counterfeit the patentee's mark—

within the meaning of section 4901. The complaint does not aver that the word "Patented" was marked upon the dishes themselves, but only upon the crates containing the dishes. The practice of the plaintiff also was not to stamp the dishes "Patented," but only the crate.

Section 4900 of the Revised Statutes makes it the duty of all patentees making or vending any patented article—

to give sufficient notice to the public that the same is patented either by affixing thereon the word "Patented," * * * or, when from the character of the article this cannot be done, by affixing to it or to the package wherein one or more of them is inclosed, a label containing the like notice.

It is difficult to construe the stamping of the word "Patented" on a crate containing wooden dishes to be either a marking of that word upon the dishes or affixing it to them. The general public, for whom the mark is designed by the statute, never get the benefit of such a stamping. They do not buy by the crate. The case is wholly different from marks on the labels or covers that are attached to articles sold and accompany them to the consumers. A mark on a crate is, therefore, outside of the law, both in letter and in spirit.

Section 4901, moreover, must be construed in connection with section 4900. The second paragraph of section 4901, which is applicable only when the act is done—

with intent to imitate or counterfeit the mark or device of the patentee,

does not apply to any mark or device of the patentee that is not itself within the protection of the law. The mark or device referred to and intended to be protected by the second paragraph of section 4901 is such a mark or device as the patentee is required by the former section to affix upon or to the patented article and which conforms to the requirements of that section. The words of section 4901, "to mark upon or affix to," etc., refer to the two alternative provisions of the preceding section, which are made obligatory upon the patentee. The second paragraph of section 4901 is designed to protect the patentee's mark when made in accordance with section 4900. This is clear from the fact that a necessary ingredient in the offense is the intent "to counterfeit the patentee's mark." But what mark? Evidently the one required by the former section, since there is no reference anywhere to any other. If the patentee puts on no mark at all, manifestly no penalty under the second paragraph of section 4901 could be incurred, and a mark contrary to law or not recognized by the law is the same as no mark. It is not the intent of the law to protect the patentee in disobeying the law. Much less will a strained construction be put on a penal statute for such a purpose. (*Pentlarge* v. *Kirby*, 19 Fed. Rep., 503.)

Upon the complaint it cannot be claimed that the wooden dishes patented were "of such a character" that the word "Patent," with the day and year of the patent, "could not be affixed thereon." On the contrary, the averment of the complaint that—

said dishes have been uniformly marked by the plaintiff and his assigns as the "Oval Wooden Dish"—

shows conclusively that there was nothing in the character of the article to prevent affixing thereon the words "Patent," etc. The plaintiff's mark or stamp upon the crate which he complains of the defendants for imitating was, therefore, not a mark within the protection of the law, but one altogether outside of the statute and not protected by it. The mark might be sufficient to sustain a suit for an injunction; but this is not such a suit.

For this reason, as well as because the marks both of the plaintiff and of the defendants were not made "upon or affixed to the patented article," within the letter or spirit of section 4900 and section 4901, the demurrer is sustained.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 61.—No. 3. TUESDAY, OCTOBER 18, 1892. PRICE—$5 per year.

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Changes in Classification.

(ORDER No. 777.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., October 11, 1892.

A new sub-class is hereby established in Division IX, Class 137, Water-Distribution, to be entitled "Safety-valves;" also, a new sub-class in Division XIX, Class 126, Stoves and Furnaces, to be entitled "116. Dampers, automatic, electrical."

W. E. SIMONDS,
Commissioner.

World's Columbian Exposition.

To the Inventors and Manufacturers of the United States:

It is the intention of the Patent Office to make at the World's Columbian Exposition at Chicago in 1893 an exhibit which will show that great advance in the several arts which is due, in large measure, to the encouragement and support afforded by our patent system. This exhibit is to consist of models of patented inventions, which will be carefully selected, to show as far as is possible the inception of each art, the stages through which the art has advanced, and the final development reached at the present time. This display of typical inventions, embodied in concrete form and properly arranged, will, it is believed, constitute a grand historical exhibit of the progress of the useful arts and one which will be of great interest not only to inventors and manufacturers, but to the public generally.

The Office collection of models has been seriously impaired by fire, and is further incomplete by reason of the fact that models have not generally been required or received during the last ten years. The Office is not, therefore, in possession of the models of many valuable inventions which might properly be included in such an exhibit, and without which, indeed, the exhibit would be incomplete. The limited appropriation for this exhibit will not permit the Office to make such models. An urgent appeal is therefore made to all inventors and manufacturers to come to the assistance of the Office in this matter, either by loans of models already built or by the construction of such models not in the possession of the Office as should properly be placed in such a collection. Of course, where models are loaned to the Office all proper credit will be given both in labels and catalogues to the parties by whom the loans are made, and such disposition will be made of the models after the close of the exhibit as the owners shall direct. Many inventors and manufacturers have already indicated a willingness to co-operate with the Office in this matter, and it is confidently expected that such a response will be made to this general appeal as will assure the unparalleled success of this attempt to graphically and concretely show the development of American invention.

W. E. SIMONDS,
Commissioner.

Protection of Foreign Exhibitors.

DEPARTMENT OF STATE,
Washington, D. C., July 30, 1892.

To the Diplomatic and Consular Officers of the United States:

GENTLEMEN: I subjoin a transcript of the act of Congress approved April 6, 1892, Public No. 20, entitled "An act to protect foreign exhibitors from prosecution for exhibiting wares protected by American patents and trade-marks," which reads as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That no citizen of any other country shall be held liable for the infringement of any patent granted by the United States, or of any trade-mark or label registered in the United States, where the act complained of is or shall be performed in connection with the exhibition of any article or thing at the World's Columbian Exposition at Chicago.

You will transmit copies of this circular to the government of the country to which you are accredited, and ask that it be given the widest possible circulation for the information of those directly concerned.

I am, gentlemen, your obedient servant,

JOHN W. FOSTER,
Secretary of State.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., August 4, 1892.

Official copy to the Commissioner of Patents for his information and guidance.

E. M. DAWSON,
Chief Clerk.

Names of Applicants.

When the full first name of the applicant does not appear either in his signature or in the preamble to the specification, the Examiner will, in his first official letter, require an amendment supplying the omission, and he will not pass the application to issue until the omission has been supplied, unless an affidavit shall have been filed setting forth that the full first name of the applicant is the one originally given by him.

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Issue of October 18, 1892.

Patents	331	No. 484,386 to No. 484,716, inclusive.
Designs	10	No. 21,898 to No. 21,907, inclusive.
Trade-Marks	21	No. 21,886 to No. 21,886, inclusive.
Labels	None.	
Reissues	3	No. 11,277 to No. 11,279, inclusive.
Total issue	415	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama			Nevada		
Arizona Territory	1		New Hampshire	2	
Arkansas	3		New Jersey	20	
California	18		New Mexico Territ'y.		
Colorado	5		New York	42	7
Connecticut	8	1	North Carolina		
Delaware			North Dakota		
District of Columbia	3		Ohio	22	1
Florida			Oregon	1	
Georgia			Pennsylvania	43	5
Idaho			Rhode Island	5	
Illinois	44	1	South Carolina	1	
Indian Territory			South Dakota		1
Indiana	10		Tennessee	3	
Iowa	10		Texas	3	
Kansas	4		Utah Territory		
Kentucky	3		Vermont	2	
Louisiana	2		Virginia	3	
Maine	2		Washington	2	
Maryland	2		West Virginia	1	
Massachusetts	21	2	Wisconsin	3	
Michigan	16	1	Wyoming		
Minnesota	3		U. S Army		
Mississippi			U. S. Navy		
Missouri	16	1			
Montana	2		Total to citizens of the United States	350	20
Nebraska	9				

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Trade-Marks and Labels.	Patents and Designs.	Countries.	Trade-Marks and Labels.	Patents and Designs.
Argentine Republic			Mexico		
Austria-Hungary	2		Netherlands		
Belgium			Newfoundland		
Bermuda			New South Wales		
Brazil			New Zealand		
Canada	4		Norway		
Chile, Republic of			Portugal	1	
Cuba	1		Russia		
Denmark			Scotland	2	1
Ecuador			South Australia		
England	12		Spain		
France	4		Sweden		
Germany	2		Switzerland		
India			Victoria		
Ireland					
Italy			Total to citizens of foreign countries	41	1
Japan					

APPLICATIONS UNDER EXAMINATION.

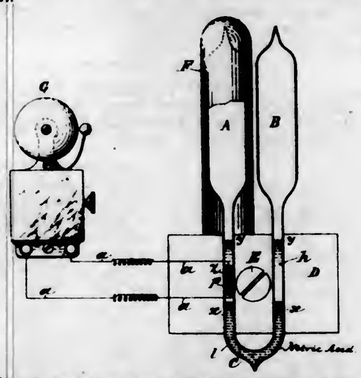
Condition at Close of Business October 11, 1892.

Division No.	Subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended	No. of applications awaiting action.
	Under one month in arrears.			
31	Gas, Painting, Leather, Tanning, Alcohol, Oils, Fats, and Glue, etc.	Sept. 13	Oct. 7	64
	Between one and two months in arrears.			
11	Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting.	Aug. 15	Oct. 8	186
14	Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, etc.	Aug. 13	Sept. 28	101
8	Furniture, Toilet, Umbrellas and Canes, etc.	Aug. 13	Sept. 24	247
21	Textiles, etc.	Aug. 18	Sept. 22	170
35	Instruments of Precision, Acoustics, Optics, etc.	Aug. 13	Sept. 21	216
16	Telegraphy, Telephony, Electric Lighting and Signaling.	Aug. 11	Sept. 21	188
30	Lamps, Gas-Fittings, Type-Writers, Matrix-Making Machines.	Aug. 16	Sept. 17	215
20	Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc.	Aug. 11	Sept. 16	237
9	Hydraulics, Fire-Extinguishers, etc.	Aug. 12	Sept. 12	366
18	Steam-Engineering, etc.	Aug. 11	Sept. 12	181
10	Carriages and Wagons and Railway-Cars	Aug. 12	Sept. 9	436
24	Sewing-Machines and Apparel	Aug. 23	Sept. 8	113
6	Chemistry, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc.	Aug. 20	Sept. 7	196
12	Mechanical Engineering, Stores-Service, etc.	Aug. 19	Sept. 7	216
37	Brushing and Scrubbing, Grinding and Polishing, Laundry, etc	May 21	Aug. 1	519
1	Tillage and Fences	Aug. 17	Aug. 22	239
23	Fire-Arms, Navigation, Signals, etc.	Aug. 12	Aug. 20	185
5	Fine Arts, Stationery, Book-Binding, Music, etc	Aug. 26	Aug. 13	253
15	Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc.	Aug. 11	Aug. 12	266
	Between two and three months in arrears.			
25	Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, etc.	July 16	Sept. 21	234
3	Metallurgy, Metal Founding, Forging, Rolling, Coating, Annealing and Tempering, etc.	Aug. 6	Sept. 10	203
7	Harvesters, Games and Toys	July 11	Sept. 9	538
	Between three and four months in arrears.			
33	Advertising, Baggage, Packing and Storing Vessels, etc.	July 5	Sept. 15	285
4	Civil Engineering, etc.	June 29	Sept. 8	252
2	Farm Stock, Products, etc	June 20	Aug. 25	331
17	Paper-Manufactures and Printing.	June 23	Aug. 9	246
19	Stoves and Furnaces	July 2	Aug. 1	377
	Between four and five months in arrears.			
13	Metal-Working, Arms and Projectiles, etc.	May 19	Oct. 5	267
29	Wood-Working Machines, Carpentry, Coopering and Scoring, etc.	June 1	Sept. 22	412
26	Pneumatics, Refrigeration, Air and Gas Engines, etc.	Aug. 15	Aug. 23	294
	Between five and six months in arrears.			
28	Electricity, Generation, Distribution, etc.	Apr. 29	Sept. 15	491
	Total number of applications awaiting action			8,510
	Under one month in arrears.			
Designs		Oct. 7	Sept. 8	58
Trade-Marks		Oct. 7	Sept. 30	113

PATENTS

GRANTED OCTOBER 18, 1892.

484,386. ELECTRIC FIRE-ALARM. JOAQUIM J. D'ALMEIDA and JOSÉ Y. DA SILVA, Lisbon, Portugal. Filed May 2, 1890. Serial No. 351,466. (No model.) Patented in Germany Oct. 8, 1890, No. 57,218; in France Oct. 8, 1890, No. 208,707; in Spain Nov. 5, 1890, No. 11,307; in Portugal Nov. 13, 1890, No. 1,517, and in England Mar. 21, 1891, No. 5,127.



Claim.—1. An electric alarm comprising a vessel containing an exciting liquid and the electrodes of a galvanic cell out of contact with the exciting liquid, the whole arrangement being such that upon a predetermined rise of the heat the exciting liquid will contact with the electrodes, substantially as described.

2. An electric fire-alarm instrument comprising a hermetically-closed vessel containing an exciting liquid and having two upright branches, one of which is screened from the direct influence of heat in the surrounding air, and the electrodes of a galvanic cell arranged in said screened branch and above the level of the exciting fluid, each of said electrodes having a metallic conductor which projects out through the wall of the inclosing vessel.

3. An electric fire-alarm instrument comprising a hermetically-closed vessel containing nitric acid and a supernatant hydrocarbon, as set forth, and having two upright branches, one of which is screened from the direct influence of heat in the surrounding air, and the electrodes of a galvanic cell arranged in said screened branch above the level of the acid, each of said electrodes having a metallic conductor which projects out through the wall of the inclosing vessel.

4. In an electric fire-alarm apparatus, the combination, with a U-shaped hermetically-closed vessel having enlarged portions or bulbs A and B on its upright branches and containing an exciting liquid *l* in its lower portion C, of the screen over one of said enlarged portions, the electrodes *p* and *z*, arranged in the screened branch of the vessel above the normal level of the exciting liquid, an annunciator G, and a circuit of which the electrodes and the coils of the annunciator form a part, substantially as set forth.

5. The combination, with the hermetically-closed U-shaped vessel having bulbs A and B on its upright branches and containing nitric acid and supernatant hydrocarbon in its lower part, of the electrodes of a galvanic cell arranged in one of said upright branches above the normal level of the acid, an electrical annunciator, a circuit of which said electrodes and the coils of the annunciator form a part, and means for screening the air or gas in the bulb above the said electrodes, substantially as set forth.

6. The combination, with a hermetically-closed vessel having two upright branches containing air or aeriform gas, one of said branches being screened against heat, of an acid excitant in said vessel, electrodes of a galvanic cell in said screened branch and above the acid excitant, and a supernatant hydrocarbon interposed normally between said electrodes and the said excitant, whereby the electrodes are protected from the fumes of the acid, as set forth.

7. In an electric fire-alarm instrument, the combination, with the closed U-shaped vessel containing a liquid excitant in its lower part and having one of its branches screened against a sudden rise in temperature, of the electrodes of a galvanic cell, comprising the platinum coil *p* in the bore of the screened branch of the vessel and the zinc *z*, pendent in said coil, but out of contact therewith, substantially as set forth.

8. An electric alarm comprising a vessel containing an exciting fluid and the element of a galvanic cell normally out of contact with the exciting fluid and so arranged that upon a predetermined rise of heat the said fluid will expand and touch the said elements, thereby generating a current of electricity, substantially as set forth.

484,387. WIRE FENCE. VIRDEN ARNOLD and FRANK R. WETMORE, Marshall, Mich., assignors of one-third to Hiram Ryder, same place. Filed Apr. 7, 1892. Serial No. 428,116. (No model.)

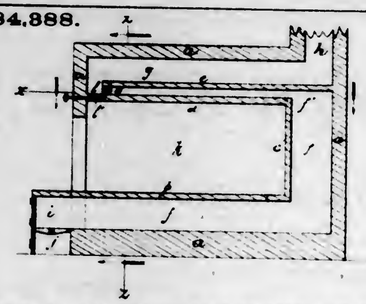
Claim.—1. In a wire fence, the combination, with the line-wires, of a stay comprising two strands of wire twisted together and having openings for the free passage of the intermediate line-wires, and the ends of the strands of said stay-wire being securely twisted around the top and bottom line-wires in opposite directions, for the purpose set forth, substantially as described.

2. The herein-described stay-wire for wire fences, comprising the two strands of wire twisted directly together at intermediate points of their length and forming a series of spaced loops or eyes for the line-wires of the fence, the ends of the stay-strands being free and extended in opposite directions from each other to adapt said strands of the stay-wire to be attached directly and rigidly to the top and bottom line-wires, for the purpose described.

484,388. PROCESS OF MAKING ULTRAMARINE-BLUE. JOHANN BÖTTEL, Newark, N. J. Filed Nov. 10, 1891. Serial No. 412,274. (No specimens.)

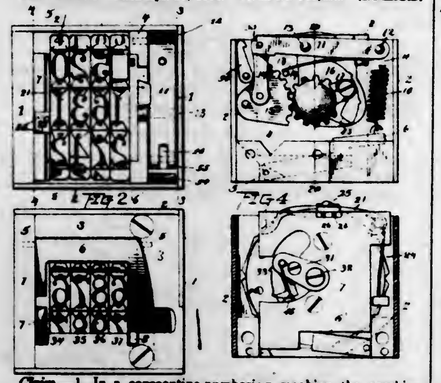
Claim.—In the manufacture of ultramarine-blue, the process herein described of treating the compound after the materials of which

484,388.



it is composed have been primarily mixed and ground, which consists in placing the compound in bulk in an oven and subjecting it for five or six days to a temperature of from 1,500° to 1,800° Fahrenheit, then drawing the fire and closing the oven and allowing the compound to remain therein for about twenty days, then removing, washing, and regrinding it while in a semi-liquid condition until it is sufficiently pulverized, then removing it from the mill, and drying and refining it in the ordinary manner, as set forth.

484,389. CONSECUTIVE-NUMBERING MACHINE. EDWIN G. BATES, New York, N. Y., assignor to the Bates Manufacturing Company, of New York. Filed Apr. 26, 1890. Serial No. 349,452. (No model.)



Claim.—1. In a consecutive-numbering machine, the combination, with the reciprocating printing-wheels, of a system of levers moved inward by the inward movement of the type-wheels and gearing between said levers and printing-wheels for converting the inward movement of said levers into a turning movement of the said wheels, substantially as set forth.

2. In a consecutive-numbering machine, the combination for rotating the printing-wheels, of a lever pivoted on a part stationary relatively to the printing-wheels, a connection between said lever and a part movable with the printing-wheels, a pivoted rack, a connection between said rack and pivoted lever made at a distance from the pivot of the rack, and gearing between said rack and the operating-pawls, substantially as set forth.

3. The combination, with a series of printing-wheels, notched on their inner peripheries, of a hub, detents pivoted to said hub, a spring acting to force said detents out of said notches, and operating-pawls adapted to force said detents in the opposite direction, substantially as set forth.

4. The combination, in a consecutive-numbering machine, of a series of operating-pawls, two sets of detents, one set adapted to prevent movement of the printing-wheels in the increasing direction and the other set adapted to prevent movement in a backward direction, and said printing-wheels provided on their inner peripheries with a set of notches adapted to coact with the pawls and one set of detents and provided on one face with notches for the other set of detents, substantially as set forth.

5. In a consecutive-numbering machine, the combination, with a series of printing-wheels and pawls therefor, of a lock for said wheels, comprising a pivoted shouldered lever, a spring acting thereon and normally holding the same above the periphery of the printing-wheels, and projections on one of said wheels normally out of engagement with said lever, but in position to be engaged thereby, whereby in printing the locking-lever is first moved to lock the wheels, printing is then effected, and the lock is raised by its spring to release the printing-wheels, substantially as described.

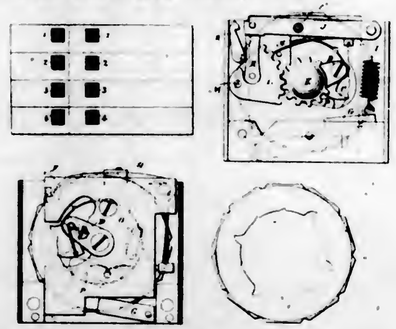
6. In a consecutive-numbering machine, the combination, with a series of printing-wheels and pawls therefor, of a locking device for said wheels to lock said wheels from turning before, after, and while the impression is being taken and comprising a detent and co-operating pins or devices carried by one of the wheels, and a projecting printing-section carried by the framework and overlapping said detent, whereby when the projecting printing-section is pressed in by a printing-platen the detent will be moved, substantially as set forth.

7. In a consecutive-numbering machine, the combination, with a series of printing-wheels and pawls therefor, of a printing-section independently mounted with respect to said wheels and movable in and out in a straight line, a pivoted shouldered lever adapted to be operated by the movement of said printing-section, and pins on one of said printing-wheels, substantially as set forth.

8. In a consecutive-numbering machine, the combination, with the type-wheels and supporting-hub therefor and pawls for advancing the type-wheels, of a pivoted bridge, plates between the bridge and hub, and a spring connected to the bridge for moving it in one direction, substantially as set forth.

9. In a consecutive-numbering machine, the combination, with a box or casing, of a bridge pivoted therein, printing-wheels movable in a direction to depress said bridge, means for advancing the wheels, said wheels having an axis supported in suitable pieces resting on the bridge, and a spring to return the bridge to its normal position, substantially as set forth.

484,390. MACHINE FOR CONSECUTIVELY NUMBERING CHECKS, BONDS, &c., IN SHEETS. EDWIN G. BATES, New York, N. Y., assignor to the Bates Manufacturing Company, of New York. Filed Sept. 15, 1890. Serial No. 365,096. (No model.)



Claim.—1. The combination, in a numbering-machine, of several numbering-heads arranged in the order in which their impressions are desired and adapted to print simultaneously, each numbering-head having several type-carrying wheels or bodies with figure-types, the first figure on the first or units printing-wheel in each head being the number to be first printed by said head, the second figure on said wheel being the same plus the number of numbering-heads, and so on for succeeding figures, the figures on the other wheels of each numbering-head being "0" to "9," consecutively, means for advancing the units-wheels of all the heads one figure at each impression, and means for advancing the other wheels of the numbering-heads successively as the numbers to be printed pass from units to tens, tens to hundreds, and so on, whereby as the numbering-machine is operated all heads will print numbers and will be reset to print by a second operation numbers equal to the first plus the number of heads, substantially as described.

2. The combination, in a numbering-head for printing numbers of checks, &c., in arithmetical progression with a difference of two or more, of several wheels or bodies on which are printing-figure types, the first figure on the first printing-wheel being the number to be first printed, the second figure on said wheel being the same plus the difference in the progression, and means for advancing the first type-wheel one space for each impression and for advancing the other wheels successively as the numbers to be printed change from units to tens, from tens to hundreds, and so on, said means comprising a pawl operating on said first or units wheel, which wheel is provided with a notch for each type, said pawl being adapted to engage in the notches successively, the notch corresponding to each type representing a numeral which is so large that by adding the difference in the progression to it a number of two figures will be obtained, being a deep notch, so that the operating-pawl can advance the succeeding type-wheel, substantially as described.

3. The combination, in a numbering-machine, of several numbering-heads arranged in the order in which their impressions are desired, and adapted to print simultaneously, each numbering-head having several type-wheels on which are figure-types, the first figure on the first or units printing-wheel in each head being the number to be first printed by said head, the second figure on said wheel being the same plus the number of numbering-heads, and so on for succeeding figures, the figures on the other wheels of each numbering-head being "0" to "9," consecutively, and pawls for advancing said units-wheels one figure at each impression, said units-wheels having notches suitably arranged and in which the operating pawl engages, there being a notch corresponding to each type, the notch corresponding to each type representing a numeral which is so large that by adding to it a number equal to the number of heads a number of two figures results, being a deep notch, whereby the pawl can advance the second wheel, substantially as described.

484,391. CONSECUTIVE-NUMBERING MACHINE. EDWIN G. BATES, New York, N. Y., assignor to the Bates Manufacturing Company, of New York. Filed Nov. 14, 1887. Renewed Apr. 12, 1892. Serial No. 428,780. (No model.)

Claim.—1. In a numbering-machine, the combination of a stationary hub, revolving annular type-wheels mounted thereon, notched on their inner peripheries, a yielding or spring support for said hub, an oscillating shaft passing through said hub, pawls carried by said shaft engaging with the notches in said type-wheels, and gearing between said hub and said shaft, whereby the movement of the hub on its spring-support moves the pawls to turn the type-wheels, substantially as set forth.

2. In a numbering-machine, the combination of a spring-supported hub, revolving annular type-wheels on said hub, pawls engaging with the inner edges of said type-wheels, and intermediate gearing, whereby the bodily movement of the wheels moves the pawls to turn said wheels, substantially as set forth.

3. In a numbering-machine, the combination of a spring-supported hub having a recess extending along its length, revolving type-wheels on said hub, an oscillating shaft passing through said hub, pawls carried by said shaft and working back and forth in said recess upon the inner edges of the type-wheels, and gearing between said hub and said shaft, whereby the movement of the hub on its spring-support moves the pawls to turn the type-wheels, substantially as set forth.

4. In a numbering-machine, the combination of the spring-supported hub, the type-wheels thereon, and the oscillating shaft carrying pawls engaging with said type-wheels, the pin on said hub, the toothed segment *m*, with which said pin engages, the toothed segment *n*, the counter-pin, the toothed segment *p*, and the toothed segment *p'* on said shaft, substantially as set forth.

5. In a numbering-machine, the combination, with the revolving type-wheels capable of bodily movement and gearing converting this bodily movement into the turning movement, of a retarding device for retarding the turning movement, substantially as set forth.

6. In a numbering-machine, the combination, with the revolving type-wheels capable of bodily movement, of the oscillating pawl-carrier having pawls engaging with said wheels, intermediate gearing for converting the bodily movement into a turning movement, and a spring bearing on the pawl-carrier and preventing its movement when the wheels are depressed, substantially as set forth.

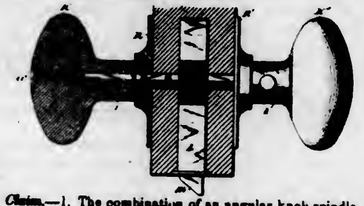
7. In a numbering-machine, the combination of the spring-supported hub, the revolving type-wheels thereon, the oscillating shaft passing through said hub, the pawls on said shaft engaging with the wheels, the gearing between the hub and the shaft, the cam or projection on said shaft, and the stationary spring bearing against it, substantially as set forth.

8. In a numbering-machine, the combination, with a type-wheel, of an adjustable section adapted to be depressed or to be elevated to print a cipher, a spring for elevating said section, and a device affected by the adjacent type-wheel controlling the position of said block, substantially as set forth.

9. In a numbering-machine, the combination, with a type-wheel, of an adjustable section adapted to be depressed or to be elevated to print a cipher, a catch holding said section in its depressed position, a tripping device on the adjacent type-wheel for releasing the catch at the proper point in the revolution of the wheel, and a spring for elevating said section, substantially as set forth.

10. In a numbering-machine, the combination, with a type-wheel having a recess in its periphery, of a turning block in said recess whose dimensions are such that it either presents a printing-surface or a depression, according to its position, a spring for turning said block, a catch holding said block in its depressed position, and a tripping device for said catch on the adjacent type-wheel, substantially as set forth.

484,392. LOCK. ROBERT B. BALL, New York, N. Y., assignor to The Sphere Manufacturing Company, of New Jersey. Filed Jan. 2, 1891. Serial No. 376,548. (No model.)

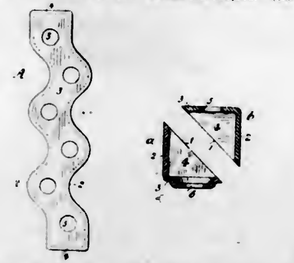


Claim.—1. The combination of an angular knob-spindle, a knob or handle revoluble thereon and provided with a keyhole, and a key to pass through the hole in the knob to directly engage and positively turn the spindle, all substantially as described.

2. In a lock device, the combination of an angular knob-spindle, a sleeve or cylinder free to revolve on said spindle, a knob or handle revoluble on said cylinder, and a key adapted to pass into the cylinder and to directly engage and positively turn the spindle, all substantially as described.

3. In a lock device, the combination of an angular knob-spindle, a rigidly-mounted knob on one end of said spindle, and a knob or handle mounted to revolve on the other end of the spindle and provided with a key hole, and a key adapted to pass through the hole in the revoluble knob to directly engage and positively turn the spindle, all substantially as set forth.

484,393. HEADER FOR STEAM-BOILERS. EDWIN H. BENNETT, Bayonne, N. J. Filed Mar. 26, 1891. Serial No. 386,570. (No model.)



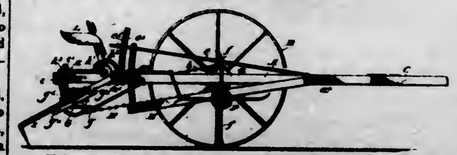
Claim.—1. The method of forming a header in two longitudinal parts, as described, consisting in forming each part of the desired shape in cross-section and producing the respective hand-hole and tube openings at the same operation and subsequently welding the parts together, as set forth.

2. A wrought header composed of separate longitudinal parts joined together on a line inclined to the axis of the header, as described.

3. A wrought header composed of separate parts joined together, each part including two sides and a portion of one or both ends, as described.

4. A wrought header composed of separate parts, each part having two sides provided with welded end plates, as described.

484,394. PEA-VINE RAKE. PIERRE H. BOUTELLE, Lakeland, La. Filed Apr. 16, 1892. Serial No. 429,490. (No model.)



Claim.—1. In a harvester of the class described, the combination, with the main frame of the machine, of a frame hinged within it sup-

porting a revolving rake, a stop on the main frame for preventing the revolution of the rake, an upright standard secured to the main frame, having hooks projecting from one side, and a lever secured to the frame of the revolving rake and adapted to engage the hooks on said standard, whereby the rake may be raised and held at any desired distance from the ground, substantially as described.

2. In a harvester of the class described, the combination, with the main frame supporting a revolving rake, of a cutting-knife pivoted to said frame, having one end extending toward the rear of the machine to support an adjustable weight and having its other end curved from the point of attachment to the frame to extend downward and toward the rear of the machine and provided with a cutting-edge on its forward and under side, substantially as described.

3. In a harvester of the class described, the combination, with the carriage, of a tedder located at the rear end of the same, comprising hooks hinged to the frame of the machine, curved bars extending upwardly from said hooks and extending through and supported in a suitable supporting device, and means for raising and lowering said hooks alternately, substantially as described.

4. In a harvester of the class described, the combination, with the carriage, of a tedder located at the rear of the same, comprising hooks loosely hinged to the carriage, a curved arm extending upwardly from each of the hooks, a supporting device for each of said hooks journaled in the frame of the machine, having slots through which the curved arms pass and in which they are held against removal, a shaft having arms extending from either side thereof, journaled in suitable brackets below the hooks and adapted when revolved to raise and drop the hooks alternately, and suitable driving-gear connecting said shaft with the axle of the machine for imparting motion to the shaft, substantially as described.

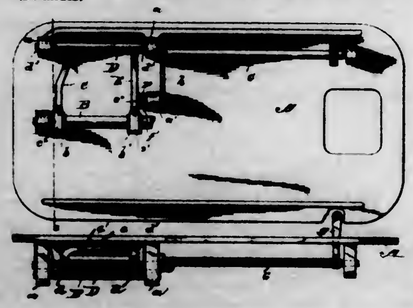
5. In a combined cutting, raking, and spreading machine, the combination, with the carriage, of a weighted knife pivoted thereto, a frame hinged to the carriage, supporting a revolving rake, said frame adapted to be adjusted to desired distances from the ground, a tedder operating as described, located at the rear of the carriage and adjustable to desired distances from the ground, the parts operating substantially as and for the purposes set forth.

484,895. SHUTTLE FOR SEWING-MACHINES. JAMES BOLTON, Chicago, Ill. Filed Feb. 2, 1892. Serial No. 420,096. (No model.)

Claim.—1. A cylindrical sewing-machine shuttle having a straight lower face and provided at its upper side with a heavy longitudinal upwardly-projecting rib, which is centrally-arranged laterally relative to the body of the shuttle and which is curved in the true arc of a circle, so as to intersect the said straight lower face at the point of the shuttle.

2. A cylindrical sewing-machine shuttle having a straight and flattened lower face and provided at its upper side or face with a centrally-arranged heavy longitudinal rib, the outer face of which is curved in the true arc of a circle and which intersects the said lower face at the point of the shuttle.

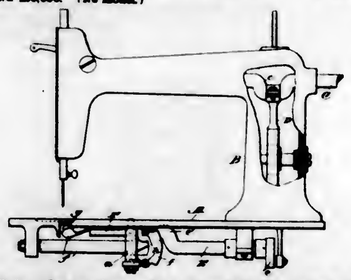
484,896. FEEDING MECHANISM FOR SEWING-MACHINES. JAMES BOLTON, Chicago, Ill. Filed Feb. 2, 1892. Serial No. 420,097. (No model.)



Claim.—1. The combination, with the rotating shaft provided with the quartering feed-cams *b* and *b'*, of the bars C and E, having yokes embracing said cams, the said bar E being provided with a pin or roller-stud, a rocker to the arms of which the said bars are jointed, and an adjustable feed-regulating device provided with a groove in which the said pin or roller stud works vertically.

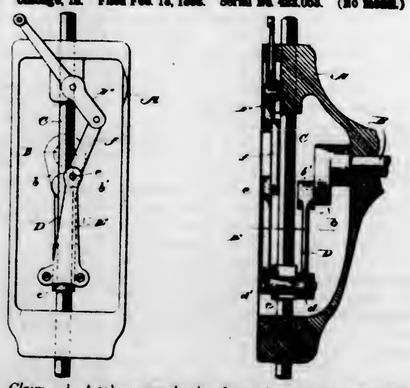
2. The combination of the rotating shaft provided with the cams *b* and *b'*, the rocker D, having arms *d*, the feed-bar C, having a yoke embracing the said cam *b* and provided with a suitable feed-dog, the bar E, having a yoke embracing the cam *b'* and being provided with a pin or roller stud, the feed-regulating block F, having a suitable groove receiving said pin or roller stud, the feed-regulating shaft G, having the operating-arm *g*, and a second arm connected by a link A with the said feed-regulating block F, whereby the position of the latter may be changed to vary the throw of the feed dog.

484,897. SHUTTLE-OPERATING MECHANISM FOR SEWING-MACHINES. JAMES BOLTON, Chicago, Ill. Filed Feb. 2, 1892. Serial No. 420,083. (No model.)



Claim.—In a sewing-machine, the combination, with the main rotating driving-shaft C, of the secondary rotating shaft E, arranged beneath the work-plate of the machine and provided about midway of its length with the inclined crank *c'*, the pitman-lever D, connecting said shafts C and E, and the shuttle-lever F, pivoted between its ends forward of said crank and provided rearward of its pivot or fulcrum point with the yoke *f*, embracing the said inclined crank *c'*, substantially as set forth.

484,898. TAKE-UP FOR SEWING-MACHINES. JAMES BOLTON, Chicago, Ill. Filed Feb. 15, 1892. Serial No. 422,053. (No model.)

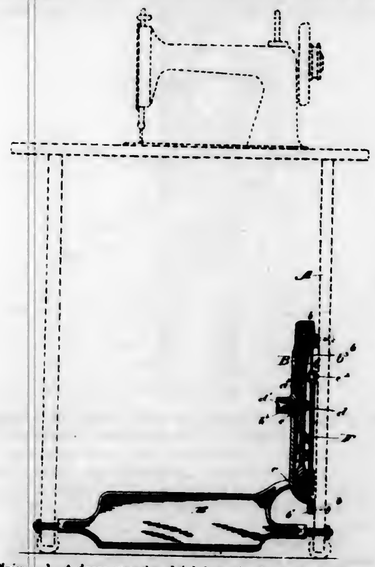


Claim.—1. A take up mechanism for sewing-machines, consisting of the combination, with a vibratory take-up lever pivoted to the head of the machine, of a rotating driving-shaft provided with a crank, a needle-bar, a pitman serving to connect said crank with the said needle-bar, and an arm rigidly connected at its lower end with the lower end of said pitman and provided at or near its upper end with a pin having a loose connection with the said take up lever.

2. A take up mechanism for sewing-machines, consisting of the combination; with a vibratory take-up lever pivoted to the upper portion of the head of the machine, of a rotating driving-shaft provided with a crank, a needle-bar, a pitman serving to connect said needle-bar with said crank, an arm rigidly connected at its lower end with the lower end of said pitman and provided at or near its upper end with a pin, and a link serving to connect said pin with said take-up lever.

3. A take-up mechanism for sewing-machines, consisting of the combination, with a vibrating take-up lever pivoted to the upper portion of the head of the machine, a rotating driving-shaft provided with a crank, a needle-bar, a pitman serving to connect said needle-bar with said crank, a block at the lower end of said pitman and rigid therewith, and an arm rigidly attached at its lower end to said block and provided at or near its upper end with a pin, which, owing to its connections with said pitman, is caused to travel in an elliptical path and which pin has a loose connection with said take-up lever.

484,899. DRESS-GUARD AND DRIVING-WHEEL SUPPORT. JAMES BOLTON, Chicago, Ill. Filed Feb. 20, 1892. Serial No. 422,149. (No model.)



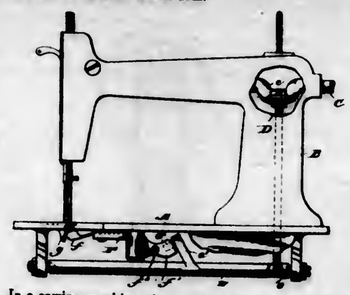
Claim.—1. A dress-guard and driving-wheel support for a sewing-machine stand, consisting of a suitable frame constructed to surround the driving-wheel and formed separate from but adapted to be attached to a side frame of a sewing-machine stand, combined with a driving-wheel journaled in the hub of said dress-guard and wheel-support, the said driving-wheel having a journal consisting of two oppositely-arranged conical portions with their apexes toward each other, one of said conical portions being adjustable to compensate for wear, substantially as set forth.

2. A dress-guard and driving-wheel support for a sewing-machine stand, consisting of a skeleton frame constructed to surround the driving-wheel and formed separate from but adapted to be attached to a side frame of a sewing-machine stand and having a central hub or bearing portion, combined with a driving-wheel journaled in said hub or bearing portion and having a journal consisting of two oppositely-arranged conical parts, with their apexes toward each other, a treadle, and a pitman connecting said driving-wheel with the said treadle, said pitman being arranged on the inner face of said driving-wheel and between the latter and the side frame of the stand.

3. The combination, with the side frame of a sewing-machine stand, of a dress-guard and driving-wheel support formed separate therefrom, but adapted to be secured thereto, and constructed to surround the driving-wheel, which latter is suitably journaled in said dress-guard and wheel-support, a treadle, and a pitman connecting said treadle with said driving-wheel.

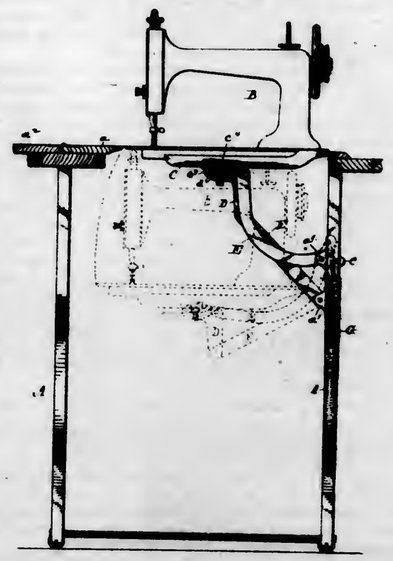
484,400. SHUTTLE-OPERATING MECHANISM FOR SEWING-MACHINES. JAMES BOLTON, Chicago, Ill. Filed Feb. 20, 1892. Serial No. 422,142. (No model.)

Claim.—1. In a sewing-machine, the combination, with a rotating driving-shaft provided with a suitable crank or eccentric, of a rocking shaft arranged beneath the work-plate of the machine and provided with an operating-arm, and an inclined crank-arm provided with a pin or stud projecting therefrom at a right angle thereto, a pitman connecting the said crank or eccentric with the operating-arm of the rocking shaft, and a vibrating shuttle-carrying lever pivoted between its ends and having rearward of its fulcrum a yoke embracing the said pin or stud on the inclined crank-arm.



2. In a sewing-machine, the combination, with the rotating driving-shaft C, provided with the crank *c*, of the rock-shaft E, pivoted beneath the work-plate of the machine and provided about midway of its length with an inclined crank-arm projecting from the upper side thereof and having a pin or stud extending therefrom at a right angle thereto, said rock-shaft being provided at its rear end with an operating-arm, a pitman connecting the said crank with the said operating-arm, and a shuttle-lever pivoted between its ends and provided rearward of its pivot with a yoke embracing the said pin or stud of the said inclined crank-arm.

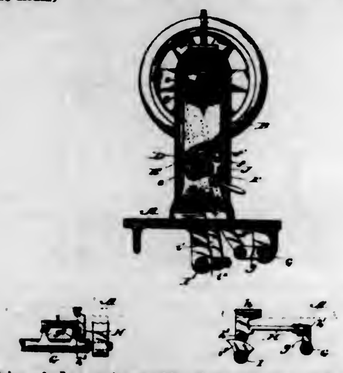
484,401. SEWING-MACHINE STAND. JAMES BOLTON, Chicago, Ill. Filed Feb. 20, 1892. Serial No. 422,144. (No model.)



Claim.—1. The combination, with a sewing-machine stand, of a support provided with a rounded portion, a bracket having a concaved face to fit the said rounded portion, means for securing said bracket to the said support, a lever and a link, both jointed to said bracket and to suitable supports on the sewing-machine stand, and a counterbalancing-spring attached to one arm of the said lever and to said stand and of suitable strength to counterbalance the weight of the sewing-machine placed on said support.

2. The combination, with the stand A, provided with legs *a'*, of the machine-support C, provided with the bracket D, the lever E, and link F, jointed to opposite sides of said bracket and provided, respectively, with the hubs *d'* and *f'*, suitably pivoted in the said legs, the latter being separated from each other, as shown, and the counterbalancing-spring G, attached to the short arm *e* of the said lever E and to said stand and arranged between the vertical bars or ribs *a²* of the stand.

484,402. FEEDING MECHANISM FOR SEWING-MACHINES. JAMES DALTON, Chicago, Ill. Filed Mar. 3, 1892. Serial No. 423,643. (No model.)



Claim.—1. In a sewing-machine, the combination, with the main rotating driving-shaft arranged in the upper part of the arm of the machine and provided with a crank or eccentric, of a feed-operating rock-shaft arranged beneath the work-plate of the machine, a feed-bar connected to the forward end of the rock-shaft and provided with a suitable feed-dog, a pitman-lever operated by said crank or eccentric and provided with a slotted portion, a rocking block embraced by the slotted portion of the said pitman-lever and provided with a slotted rocker, a slide or block arranged in the slot of said rocker and provided with a pin, a link or pitman connecting the said pin with an arm on the rear end of the said feed-operating rock-shaft, a feed-regulating device for adjusting said block or slide in the said rocker, and means for imparting vertical movements to the said feed-bar.

2. In a sewing-machine, the combination, with the main rotating driving-shaft C, journaled in the upper part of the arm of the machine and provided with a crank or eccentric *c*, a feed-operating rock-shaft G, arranged beneath the work-plate of the machine and having arms at its forward and rear ends, a feed-bar connected with the arm or arms at the forward end of the said rock-shaft and provided with a suitable feed-dog, a pitman-lever connected to said crank or eccentric and provided with a slotted portion, a rocking block E, embraced by the slotted portion of the said pitman-lever and provided with a slotted rocker, an adjustable slide received in the slot of said rocker and provided with a pin, a link or pitman jointed to said pin and to the arm on the rear end of said feed-operating rock-shaft, a feed-regulating lever for adjusting said slide in the slot of the rocker, a shuttle operating rock-shaft arranged beneath the work-plate of the machine and provided near its forward end with a feed-bar-lifting cam and at its rear end with a suitable arm, a link or pitman connecting the lower end of the said pitman-lever to the said arm on the rear end of the said shuttle-operating rock-shaft, and a spring for assisting in the downward movements of the feed-bar.

484,403. PIANOFORTE. JOHN W. BRACKETT, Boston, Mass. Filed Feb. 16, 1891. Serial No. 381,698. (No model.)

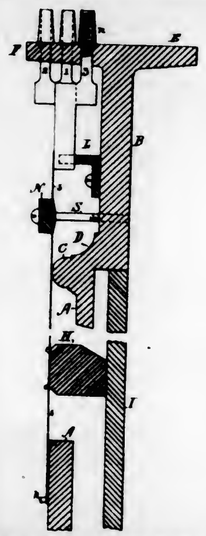
Claim.—1. A pianoforte-plate A, having its head or portion above the bridge offset about an inch and at an angle (preferably about fifteen degrees) sufficient to house three series of tuning devices and obtain each bearing of the strings upon the bridge as will retain them in position without clamping, substantially as described.

2. A pianoforte-plate A, having its head or portion above the bridge offset about an inch and at an angle (preferably about fifteen degrees) sufficient to house three series of tuning devices and obtain each bearing of the strings upon the bridge C as will retain them in position without clamping and having its rim F running parallel with the bridge and wide enough to receive three series of tuning devices and provided with holes for the screw ends of said tuning devices, substantially as described.

3. A screw tuning device for pianofortes, formed with a threaded stem and nut therefor extending by offset or flaring, according to the intended position, into a flat carry, which carry has a groove central with its upper edge from its free end to a hole drilled at right angles across the width of the carry and another groove central with its under edge to another hole drilled obliquely from the stem end about half-way across the width of the carry, so that the wire shall be both securely fastened and wholly housed, substantially as described.

4. The combination, in a pianoforte, of the slotted grouping-bar and two or more carries or tuning devices side by side in the same slot to accord with the number of strings used to produce a tone, substantially as set forth.

5. In a pianoforte, the screw tuning devices of equal width at their string ends and having their string ends in a common plane, in combination with the plate A, having its head offset and rim F perforated, as described, and with the grouping-bar L, substantially as described.



6. In a pianoforte having screw tuning devices, the combination of the series 1 2 3 of flat carries, the string ends of which are of the same width and offset by their screw ends to rest in groups in the same common plane, and means for securing the springs internally and centrally within the carries, and means for obtaining the proper plane of draft of the strings without side of any kind, substantially as described.

7. In a pianoforte having screw tuning devices with screw stems and nuts, the combination of flat carries having the string ends all of the same length to rest all in the same plane in groups, and means for retaining them in position at all times, and means for securing the strings centrally and internally within the carries, the screw ends offset to meet the series of holes in the rim to correspond with the strings in groups, the groups all in the plane of the draft of the strings, and without the use of clamps, substantially as described.

8. A pianoforte constructed with a metal plate whose head or portion above the bridge is offset, as herein described, and having a rim perforated, as described, and adapted to receive and retain the screw ends of the tuning devices, a supporting-bar recess to receive the string ends of the devices in proper series and groups and arranged parallel with and about two inches from the bridge, and carrying devices constructed as described and lying all in a common plane, such that the string thereto attached shall bear upon the bridge sufficiently for the desired results without clamping, substantially as described.

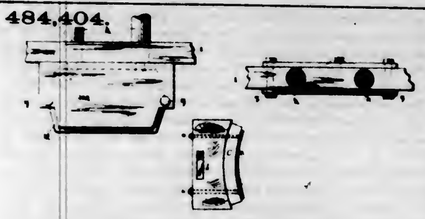
9. In a pianoforte with screw tuning devices, the combination of flat carries offset from their screw ends near the middle to bring their string ends, which are all of the same width, into one common plane and their screw ends to correspond with the method of grouping, as shown, with means for securing the strings centrally and entirely within the carries, the strings to pull from the top edges of the carries and all arranged for the least possible length of wire between the bridge and the carries, the carries in groups, and means for maintaining the groups in position at all times, with wrest-pin-formed heads on their screw ends for obtaining the desired tension on the strings, substantially as and for the purposes described and set forth.

484,404. BRAKE-SHOE. SAMUEL K. DUELL, Worcester, Mass. Filed Apr. 6, 1891. Serial No. 387,720. (No model.)

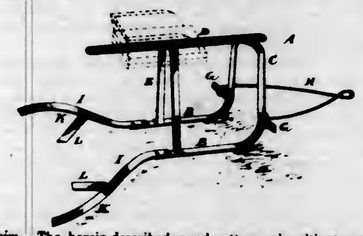
Claim.—1. A brake-shoe consisting of a single block of concrete conglomerate composed of granulated corundum and a binder or cement, substantially as described.

2. A brake-shoe having its entire contact-face formed of a concrete conglomerate composed of granulated corundum and a suitable binding agent, substantially as described.

484,404.

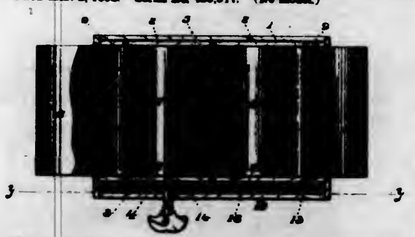


484,405. WEED-CUTTING CULTIVATOR. WILLIAM R. BURGESS, Danbury, Nebr. Filed July 30, 1892. Serial No. 441,723. (No model.)



Claim.—The herein-described weed-cutter and cultivator combined, the same comprising the runners, the seat-supporting arches rising therefrom, the seat, the foot-rests G, the undulating weed-cutting blades I, attached at the rear of the machine, as described, and the auxiliary cultivating-blades L, carried by the weed cutting blades, substantially as shown and described, and for the purpose specified.

484,406. WRITING-TABLET. FRANKLIN D. CADY, Waterbury, Conn. Filed Mar. 2, 1892. Serial No. 423,517. (No model.)



Claim.—1. In a machine of the character described, the combination, with the inclosing case having a lid open at its center, of the paper-carrying rollers, a tablet over which the paper passes from one roller to the other, a sprocket-wheel borne upon the axis of one roller, a sprocket-chain arranged as described, and a slide for the actuation of the sprocket-chain, substantially as specified.

2. The combination, with the case, of the two paper-carrying rollers, one provided with a sprocket-wheel, a sprocket-chain running over suitable wheels journaled to the side of the frame, and a slide provided with a pawl and engaging the sprocket-chain, the whole arranged substantially as specified.

484,407. BELT-SHIPPING DEVICE. WILLIAM P. GARDNER, Lowell, Mass., assignor to the Lowell Machine Shop, same place. Filed July 1, 1892. Serial No. 438,720. (No model.)

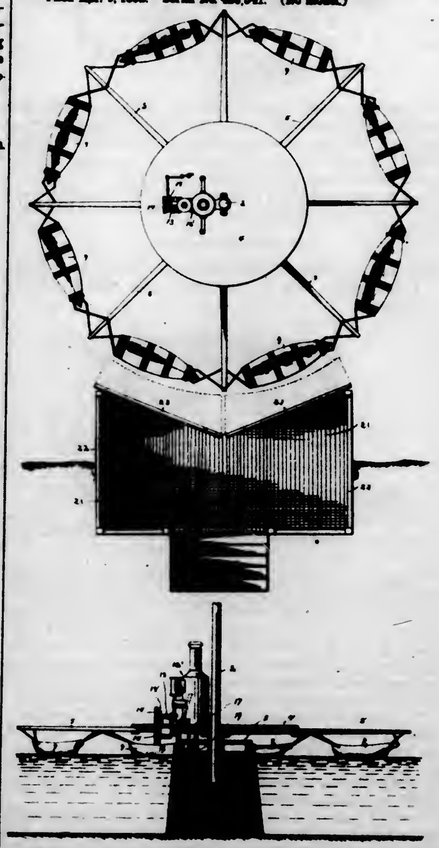
Claim.—1. The combination, with a shipper-rod provided with a projection, of a shipper-handle having a hole to receive the said projection, and also a slot, a stud passing through the said slot and on which the said shipper-handle may both slide and turn, and a snag or retainer carried by the shipper-handle and extending under the shipper-rod to prevent the shipper-handle from being raised, substantially as described.

2. The combination, with a shipper-rod provided with a projection, of a shipper-handle having a hole to receive the said projection, and also a slot extending longitudinally thereof, a stud passing through the said slot and on which the said shipper-handle may both slide and turn, a snag or retainer fitted in a portion of the said slot in the shipper-handle and extending under the shipper-rod to prevent the shipper-handle from being raised, and a screw for holding the snag or retainer in place in the slot, substantially as described.

484,408. APPARATUS FOR CONNECTING PIPES. ANDREW CLARKE, San Diego, Cal. Filed June 1, 1892. Serial No. 435,162. (No model.)

Claim.—In a pipe connection, a pipe threaded at one end and enlarged at the other end by a rectilinear shoulder and terminating in a cylindrically-curved flange or plate adjacent to the shoulder, in combination with a washer having on one side a rectilinear recess, said side being curved cylindrically, and a nut adapted to hold said washer in position on said shoulder, substantially as and for the purpose set forth.

484,409. MARINE ROUNDABOUT. JULIA A. CREES, Akron, Ohio. Filed Apr. 9, 1892. Serial No. 428,841. (No model.)



Claim.—1. In a roundabout, a foundation having an annular rack-bar, a revolving platform, a power mechanism supported thereon, a train of gearing driven by the power, one of the gears meshing with the rack-bar, a clutch-and-brake mechanism for cutting off the power

and frictionally stopping the revolution of the platform, radial arms upon the platform, and boats secured to the arms by crossed flexible connections.

2. In a roundabout, a foundation, a platform supported thereon, mechanism for revolving the platform, radial arms secured to the platform, having resilient buffers interposed between the arms and the fastenings upon the platform, and boats secured to the arms.

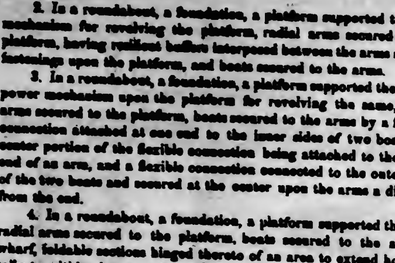
3. In a roundabout, a foundation, a platform supported thereon, a power mechanism upon the platform for revolving the same, radial arms secured to the platform, boats secured to the arms by a flexible connection attached at one end to the inner sides of two boats, the center portion of the flexible connection being attached to the outer end of an arm, and a flexible connection connected to the outer sides of the two boats and secured at the center upon the arms a distance from the end.

4. In a roundabout, a foundation, a platform supported thereon, radial arms secured to the platform, boats secured to the arms, a wharf, foldable sections hinged thereto of an area to extend horizontally to within close proximity to a portion of the boats and when folded at right angles to the wharf to prevent entrance to the boats, and mechanism upon the platform for revolving the same.

484,410. PIPE CLAMP AND HOLDER. JOHN R. DAVIS, Moline, assignor of one-half to Louis Rosenstein, Rock Island County, Ill. Filed May 18, 1891. Serial No. 393,297. (No model.)

Claim.—In a pipe clamp or holder, the combination, with the chimney, of the pipe having an opening, the clamping-band around the pipe and having a space between its adjacent ends coincident with the opening in the pipe, and the brace having one end engaging the chimney and the other end passed through the opening in the pipe and through the space between the ends of the band and engaged by the said ends, said end being bent substantially as shown, and for the purpose specified.

484,411. PRESSURE-RECORDER FOR AIR-BRAKES, &c. WYATT F. DU PUISNE, St. Louis, Mo. Filed Feb. 24, 1892. Serial No. 422,882. (No model.)



Claim.—1. In a pressure-recorder, the combination, with the record-sheet-operating mechanism, of a curved actuating spring, a spring-held oscillating rod carrying a recording-arm, a plate secured to said rod at right angles thereto, a second plate adjustable upon the first-mentioned plate and provided with a longitudinal slot receiving said rod, said plate being adapted to be bound to the first-mentioned plate, and a bar pivotally connecting the free end of the spring with the free end of the slotted plate, substantially as and for the purpose set forth.

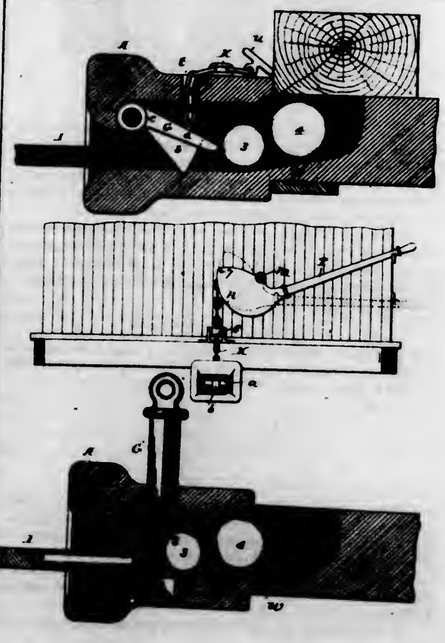
2. In a pressure-recorder, the combination, with the record-sheet-operating mechanism, of a Bourdon spring, a spring-held oscillating rod carrying a recording-arm, a plate carried by said rod and adjustable laterally with relation thereto, and connection between the free end of the Bourdon spring and said adjustable plate, substantially as and for the purpose set forth.

3. In a pressure-recorder, the combination, with the record-sheet-carrying rollers, of an intermediate feed-roller and a longitudinally and laterally movable spring-held arm provided with a plate projecting at right angles thereto and over one end of the feed-roller, said plate carrying a cushion upon its opposing surface, substantially as and for the purpose set forth.

4. A pressure-indicator consisting of a frame, clock-gearing carried by the same, a feed-roller, such as 7, loosely mounted in said frame and provided with a gear-wheel 6, which gear-wheel is in connection with the said clock gearing and adapted to be turned by the same, a roller, such as 10, loosely mounted in the said frame, a roller 14, provided with a pinion 13 and adapted to be rotated in one direction only, a plate 54, carried by the said frame, upon which the record-sheet 22 is adapted to rest, a plate 55, located above said sheet, indicating the number of pounds pressure, a spring 37, provided with an air-space 38 and adapted to be actuated by the pressure of air contained in said space, an arm 40, movably secured to the said spring, a shaft 44, movably mounted or attached to the said frame and having an arm 45 attached to the same, a slotted plate, such as 46, movably secured to said plate 45, to which the said arm 40 is attached, a spring-arm 50, attached to the upper end of the said shaft, a marker carried by the said arm and adapted to be brought in contact with the record-sheet, and a device located to one side of the machine and adapted to be brought in contact with the upper surface of the record-sheet for holding the same against the feed-roller, whereby the same is fed under the said marker, substantially as described.

5. A pressure-indicator consisting of a frame, clock-gearing carried by the same, a feed-roller 7, adapted to be rotated by the said gearing, a record-sheet 22, adapted to be fed by the said roller, a roller 10, to which one end of the said sheet is attached, a second roller 11, to which the opposite end of the said sheet is removably attached, a pinion 13, carried by the said roller, a gear-wheel 16, adapted to mesh with the said pinion, a spring 20 for actuating the said gear-wheel 16 in one direction only, hooks 24, attached to the said rollers, providing means for attaching the said record-sheet to the same, pins, such as 8, carried by the said feed-roller, mechanism carried by the said frame and adapted to be brought in contact with the upper surface of the said record sheet, pressing the same against the said feed-roller, a spring 37, provided with air-space 38 and adapted to be actuated by the air contained in the same, an arm 40, attached to the said spring, an oscillating shaft 44, movably secured to the frame of the device, suitable connections between the said arm 40 and said shaft, a coil-spring 49, encircling said shaft and adapted to press against the connections between said arm 40 and the shaft, and a spring-arm 50, attached to the upper end of the said shaft and carrying a suitable marker which is adapted to be brought in contact with the record-sheet, substantially as described.

484,412. CAR-COUPLING. FOSTER DICKEY, Schuyler, Nebr., assignor to himself, Henry C. Wright, Nathan W. Wells, Henry W. Heman, and Chauncy Abbott, same place. Filed Feb 18, 1892. Serial No. 422,052. (No model.)



Claim.—1. A car-coupling provided with a device for retaining the link with a roller 3 for holding said device in its elevated position and a roller 4 resting on an inclined bearing and bearing on the roller 3, substantially as described.

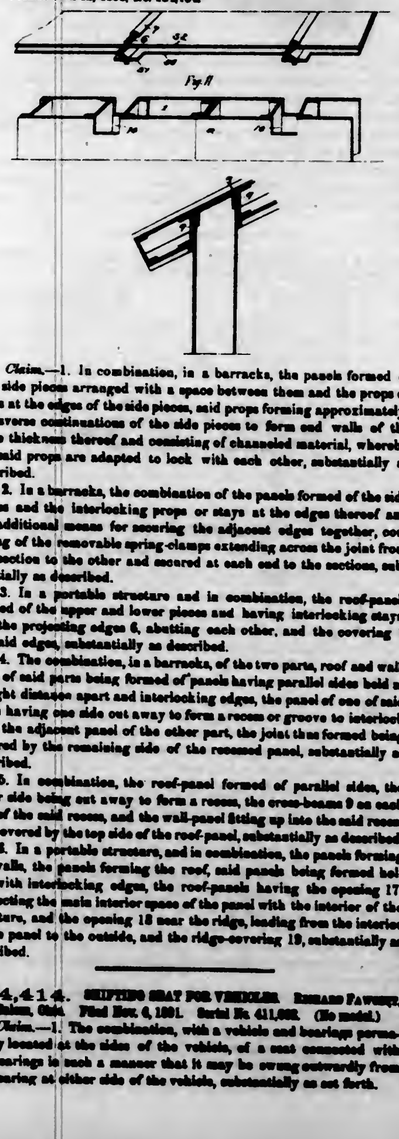
2. The combination, in a car-coupling, of a draw-bar having a retaining device for the link, an inclined bearing *w'*, a roller adapted to engage and hold up the retaining device when elevated, and a second roller bearing on the first and on the bearing *w*, substantially as described.

3. The combination of the draw-head having an inclined face *w* and socket *y*, a dog with its head resting in said socket, and two rollers 3 4, substantially as and for the purpose set forth.

4. The combination of the draw-head, its face *w*, and rollers 3 4, and a dog G, having a tongue *b*, substantially as described.

5. The combination of the draw-bar, dog G, and lever T, having a face *n* concentric with its pivot, substantially as described.

484,413. CARD BARRACKS. GEORGE BUTTALLIER, Chalon, France. Filed Oct. 10, 1891. Serial No. 408,268. (No model.) Patented in France Dec. 12, 1888, No. 194,734.



Claim.—1. In combination, in a barracks, the panels formed of two side pieces arranged with a space between them and the props or stays at the edges of the side pieces, said props forming approximately-transverse continuations of the side pieces to form end walls of the same thickness thereof and consisting of channeled material, whereby the said props are adapted to lock with each other, substantially as described.

2. In a barracks, the combination of the panels formed of the side pieces and the interlocking props or stays at the edges thereof and the additional means for securing the adjacent edges together, consisting of the removable spring-clamps extending across the joint from one section to the other and secured at each end to the sections, substantially as described.

3. In a portable structure and in combination, the roof-panels formed of the upper and lower pieces and having interlocking stays, and the projecting edges 6, abutting each other, and the covering 7 for said edges, substantially as described.

4. The combination, in a barracks, of the two parts, roof and wall, each of said parts being formed of panels having parallel sides held at a slight distance apart and interlocking edges, the panel of one of said parts having one side cut away to form a recess or groove to interlock with the adjacent panel of the other part, the joint thus formed being covered by the remaining side of the recessed panel, substantially as described.

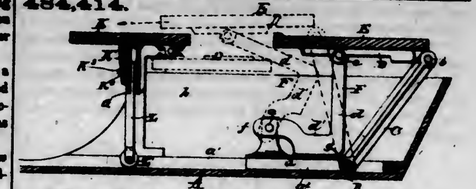
5. In combination, the roof-panel formed of parallel sides, the lower side being cut away to form a recess, the cross-beams 9 on each side of the said recess, and the wall-panel fitting up into the said recess and covered by the top side of the roof-panel, substantially as described.

6. In a portable structure, and in combination, the panels forming the walls, the panels forming the roof, said panels being formed hollow with interlocking edges, the roof-panels having the opening 17, connecting the main interior space of the panel with the interior of the structure, and the opening 18 near the ridge, leading from the interior of the panel to the outside, and the ridge-covering 19, substantially as described.

484,414. SHIFTING SEAT FOR VEHICLES. RICHARD FAWCETT, Salem, Ohio. Filed Nov. 6, 1891. Serial No. 411,082. (No model.)

Claim.—1. The combination, with a vehicle and bearings permanently located at the sides of the vehicle, of a seat connected with the bearings in such a manner that it may be swung outwardly from the bearing at either side of the vehicle, substantially as set forth.

484,414.



2. The combination, with a vehicle, of posts secured to the sides thereof, and a seat connected with said posts in such a manner that it may be swung outwardly from either post, substantially as set forth.

3. The combination, with a vehicle, of posts secured thereto, a plate connected with said posts, whereby said plate may be swung outwardly from either post, and a seat hinged to said plate, substantially as set forth.

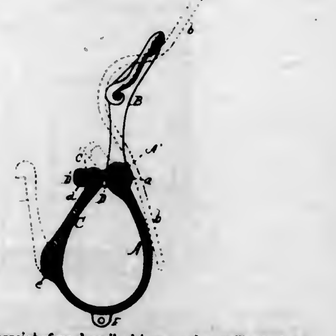
4. The combination, with a post or standard and a pin supported thereby, of a plate having a lip to engage said pin, a sliding lock-plate adapted to prevent the disengagement of the first-mentioned plate from said pin, and a pivoted lever adapted to operate said sliding lock-plate to release the first-mentioned plate from the post, and a seat carried by said plate, substantially as set forth.

5. The combination, with a post, of the plate hinged thereto, a leg secured to said plate, a roller carried by the leg, and a seat hinged to said plate, substantially as set forth.

6. The combination, with a post, of a plate hinged thereto, brackets projecting from said plate, a seat hinged to said brackets, and a plate adapted to lock the seat in position, substantially as set forth.

7. The combination, with a vehicle-body, of posts secured thereto, said posts having arms for the reception of canopy-posts, and a seat removably connected with said posts, substantially as set forth.

484,415. SHAFT-TUG. FRANK FELLOWS, Boston, Mass., assignor of one-half to John Ballard, same place. Filed Mar. 5, 1892. Serial No. 423,856. (No model.)



Claim.—The hereinbefore-described improved metallic shaft-tug, consisting, essentially, of the main portion A, the latch C, hinged at *c* to said main portion, the upper end of said latch being provided with the external lip C', the knuckle A', integral with said main portion A, and a locking-loop consisting of the parallel side arms D, whose inner or free ends are pivoted to said knuckle, and the integral cross-piece D', provided on its inner side with the engaging step or ledge *d*, substantially as described.

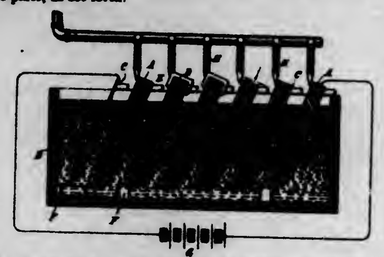
484,416. APPARATUS FOR REFINING METALS BY ELECTRICITY. CHARLES B. FLEMMER, Boston, Mass. Filed Nov. 25, 1891. Serial No. 413,044. (No model.)

Claim.—1. In an electrolytic apparatus for refining metals, the combination, with the vat or tank, of independent plates arranged in series, each, except the first and last of the series, being composed of an anode-plate of the impure metal to be refined and an attached cathode plate or sheet of similar metal in a pure state longer and wider than the impure plates, as set forth.

2. The combination, in an electro-refining apparatus, with a vat or tank for containing an electrolyte, of a series of independent electrode-plates in an inclined position, the upper or anode portions or sides of the same being composed of plates of the impure metal to be refined and the under or cathode portions being composed of thin sheets of the same metal in a pure state and of greater length and width than

the impure portions, the two portions of said plates being secured together, as set forth.

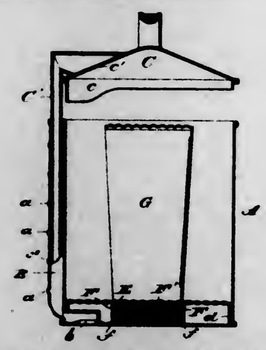
3. In an electro-refining apparatus in which the electrodes or plates are so arranged as to constitute anodes on one side and cathodes on the other, the combination, in each plate, except the first and last of the series, of an impure anode-plate and a thin cathode-plate backing the same and having curved or rounded edges that incase the anode-plate, as set forth.



4. The combination, with the series of inclined compound plates, each consisting of an upper anode surface or plate of impure metal and an under cathode surface or plate of purer thin metal, of nozzles or jets for delivering from above streams of the electrolyte upon the upper or anode surfaces of the plates for cleansing the same, as set forth.

5. The combination, in an electro-refining tank, of two or more electrode-plates, the opposite sides of which constitute anode and cathode surfaces, respectively, the cathode sides or surfaces being formed with edges curved or rounded toward the anode side, as and for the purpose set forth.

484,417. WASH-BOILER. JAMES FULLER, Pawtucket, R. I. Filed June 9, 1892. Serial No. 436,113. (No model.)



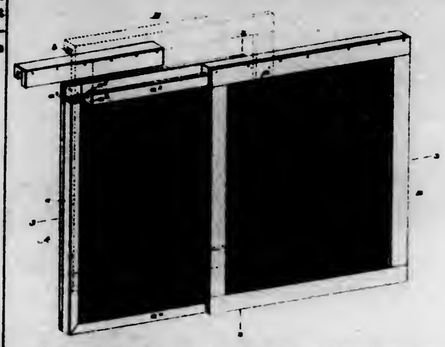
Claim.—1. In combination with a wash-boiler having a vertical flue B, with transverse corrugations formed in the outer walls thereof, a flue C, rigidly attached to the cover C over an opening therein, the lower end of said flue having a projecting portion c^2, which is adapted to engage with the corrugations or recesses in the flue B, so as to maintain the top above the boiler, substantially as shown.

2. In combination with a wash-boiler and cover having flues B and C, with openings b and c', a depending flange c, formed on the cover, said flange being of less depth at the front of the cover than at the rear thereof, so that air may be admitted to the upper end of the boiler when the cover is lifted a little distance, substantially as shown, and for the purpose set forth.

3. In combination with a wash-boiler, a false bottom having end conduits for causing a circulation of water in the boiler, said conduits while increasing in width inwardly decreasing in depth, the rear wall of each conduit being extended and bent over the front wall and corrugated, substantially as shown.

4. In combination with a wash-boiler, a removable bottom having depending rims D D, vertical flanges or walls F F, extending longitudinally between the rims and provided with central cut-away portions and bent or upset end portions f, walls or plates F F, having horizontal and inclined portions, a central space being left between said plates, and conduits G, having open-ended horizontal portions adapted to engage with the depending portions F, substantially as shown, and for the purpose set forth.

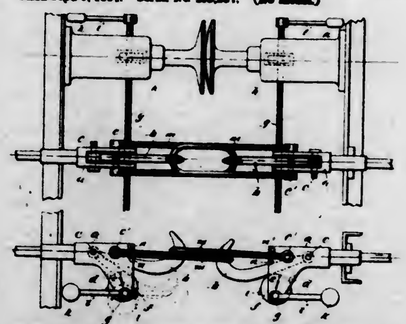
484,418. WINDOW-SCREEN. PETER GABRIEL, Helena, Mont., Elizabeth Gabriel administratrix of the said Peter Gabriel, deceased. Filed Apr. 25, 1892. Serial No. 430,809. (No model.)



Claim.—1. A window-screen consisting of two oblong frames covered with wire-cloth or equivalent material, said frames united by sliding connections and adapted to be moved bodily one upon the other in the direction of their length and also in the direction of their width, whereby the one frame may be extended either transversely or longitudinally beyond the other at will.

2. In combination, two oblong screen-frames connected to slide bodily one upon the other in two directions at right angles to each other, whereby the frames may be extended longitudinally or laterally at will.

484,419. CAR-COUPLING. FRANZ VON GAHL, Cologne, Germany. Filed Sept. 9, 1891. Serial No. 405,237. (No model.)



Claim.—1. The combination, with the bifurcated draw-head a, having a hook b pivotally attached thereto and provided with a cross-piece d, of a cross-bar g, operated from the side of the car by means of the arm i, provided with counter-weight k, the cam f, mounted on the cross-bar g and provided with a tooth l, adapted to collide with the cross-piece d, said cam f being arranged so as to lift and lower the hook b, and the loop-bar m, engaging with the hook b of the adjacent car, substantially as and for the purpose described.

2. The combination, with a main coupling having a cross-bar g, by which the same may be governed from the side of the car, of an auxiliary coupling consisting of a hook p, a loop q, and a bifurcated arm r, mounted on the cross-bar g of the main coupling and adapted to lift and lower the loop k out of or into engagement with the hook p, as set forth.

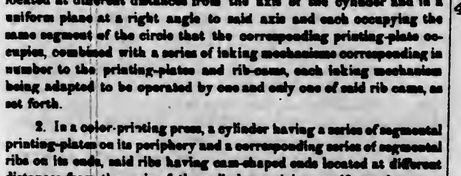
484,420. SECTIONAL PNEUMATIC TIRE. FRANCIS GLEASON, Philadelphia, Pa. Filed Feb. 27, 1892. Serial No. 423,041. (No model.)

Claim.—1. A pneumatic tire for vehicles, consisting of separate and independent hollow sections and an inflating device connected to each of the sections and provided with means for independently closing the communication between the inflating device and each independent section.

2. A pneumatic tire for vehicles, consisting of separate and independent hollow sections, each provided with an inlet-nut secured in the walls of the respective sections, and an inflating device provided with hollow connections between the inflating device and each inlet-nut, substantially as described.

3. A pneumatic tire consisting of a number of independent and separate hollow sections, each provided with an inlet-nut and an inflating-tube for all the sections, and independent hollow connections between the tube and each inlet-nut, substantially as described.

4. A pneumatic tire consisting of the separate and independent hollow sections, each provided with an inlet-nut and an inflating-tube, and hollow screws connected to the tube, fitting the inlet-nuts, substantially as described.



5. In a pneumatic tire, the combination, with the independent sections having an inlet-nut, of a hollow tube, independent hollow screws having an opening in the tube and connected to the nut and serving as a passage-way between the tube and sections, and an independent valve to close the sections, substantially as described.

6. In a pneumatic tire, the combination, with the independent hollow sections having recesses in their sides, of the wires or tubes fitting said recesses, one of which is hollow and serves as an inflating device, and connections between the tube, and independent connections between the tube and each section of the tire, substantially as described.

7. In a pneumatic tire, the combination, with the independent hollow sections having recessed sides, of the wires or tubes fitting the sides of the sections, a cross-bar resting on the wires or tubes and extending between the ends of the adjacent sections, and means for tightening said bar, substantially as described.

8. In a pneumatic tire, the combination, with the independent hollow sections, the inflating-tube extending around one side thereof and having independent connections with each section of the tire, of the tube I, provided with a cap and arranged to inflate the sections, substantially as described.

9. A pneumatic tire comprising the independent hollow sections, the end portions of which are in the form of inward curves forming a space between the adjoining sections permitting the expansion of the end portions, substantially as described.

10. In a pneumatic tire, the combination, with the sections and inflating device, of a connection between the inflating device and the sections, serving both as a passage-way of the air to the sections and a valve to close the sections, substantially as described.

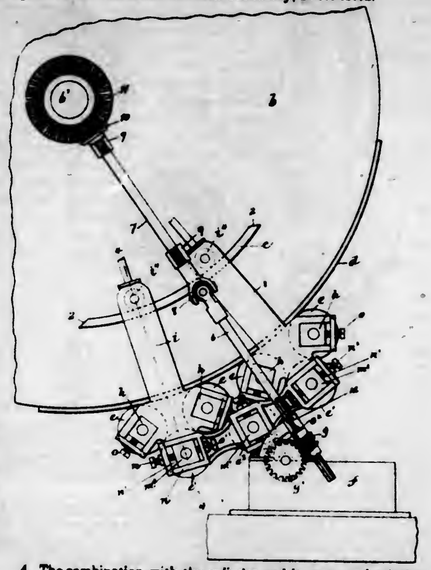
11. In a pneumatic tire, the combination, with the independent sections having an inlet secured in their sides, of an inflating-tube passing around the wheel at the side of the sections and serving to hold the sections in place and connections between the tube and each independent section, substantially as described.

484,421. COLOR-PRINTING PRESS. HENRY B. GRANDY, Somerville, Mass. Filed Sept. 14, 1891. Serial No. 405,632. (No model.)

Claim.—1. In a color-printing press, a cylinder having a series of segmental printing-plates on its periphery and a corresponding series of segmental ribs on its ends, said ribs having cam-shaped ends and located at different distances from the axis of the cylinder and in a uniform plane at a right angle to said axis and each occupying the same segment of the circle that the corresponding printing-plate occupies, combined with a series of inking mechanisms corresponding in number to the printing-plates and rib-cams, each inking mechanism being adapted to be operated by one and only one of said rib cams, as set forth.

2. In a color-printing press, a cylinder having a series of segmental printing-plates on its periphery and a corresponding series of segmental ribs on its ends, said ribs having cam-shaped ends located at different distances from the axis of the cylinder and in a uniform plane at a right angle to said axis, and each occupying the same segment of the circle that the corresponding printing-plate occupies, combined with a series of inking mechanisms corresponding in number to the printing-plates and rib-cams, each inking mechanism including a roll or rolls adapted to apply ink to the periphery of the cylinder and normally held out of contact therewith, and radially-movable slides or arms, each having a projection arranged to co-operate with one and only one of said rib cams, as set forth.

3. In a color-printing press, a cylinder having a series of segmental printing-plates on its periphery and a corresponding series of segmental ribs on its ends, said ribs having cam-shaped ends and located at different distances from the axis of the cylinder and in a uniform plane at a right angle to said axis, and each occupying the same segment of the circle that the corresponding printing-plate occupies, combined with a series of inking mechanisms, each including the slides i i, having rolls at their inner ends arranged to co-operate with one of the rib-cams, guides to direct the movement of said slides, the inking-rolls journaled in boxes at the outer ends of said slides, and the springs arranged to force said slides and rolls outwardly, as set forth.



4. The combination, with the cylinder and its cams and printing-plates, of the slides i i, having the rolls i^4 i^4, the boxes h h, movable in diagonal guides in the outer portions of said slides, the boxes m, movable lengthwise of the slides, the inking-rolls e e, journaled in the boxes h h, the rolls e', journaled in the boxes m, said rolls e e being adjustable at an angle to the adjustment of the rolls e', and the adjusting-screws for adjusting said rolls, as set forth.

5. The combination of the rolls e e and e', the slides i, supporting the boxes of said rolls, the boxes m^2, supported by the shafts of the rolls e', the yoke n, supported by the boxes m^2, and the roll e^2, journaled in boxes, supported by the yoke n, as set forth.

6. The combination of the printing-cylinder, a fixed ink-box having an ink-roll e^3, suitable inking-rolls arranged to receive ink from the roll e^3, and a flexible shaft arranged to communicate motion from the shaft of the cylinder to the roll e^3, as set forth.

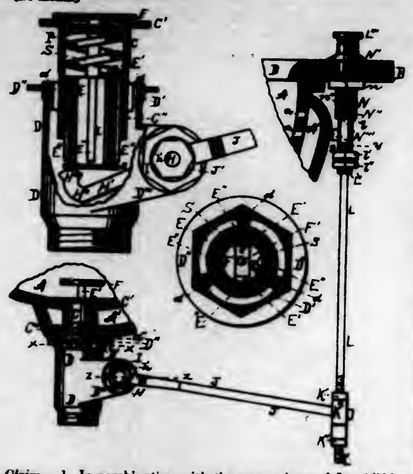
7. The combination, with the cylinder b and the impression-cylinder a, mounted in spring-supported boxes, of the toggle-links t t, engaged with said boxes, the toggle-links u u, engaged with the links t t, the treadles u^4 u^4, and the rods connecting said treadles with the links u u, as set forth.

484,422. TUMBLER-WASHER. JOHN M. GUSS, Findlay, Ohio, assignor to R. S. Taylor and R. C. Taylor, same place. Filed Jan. 2, 1892. Serial No. 416,900. (No model.)

Claim.—1. The combination of the base, the post fitted removably therein, and the sponge attached to the top of the post, substantially as and for the purpose set forth.

2. The combination of the weighted base having a flat bottom and provided with a socket near one side, the post fitted removably therein and having a transverse aperture at its upper end, the sponge, and the fastening-cord, substantially as and for the purpose set forth.

484,423. VALVE MECHANISM FOR WASH-BASINS. JAMES W. HALE, Newburyport, Mass. Filed Apr. 20, 1892. Serial No. 429,673. (No model.)



Claim.—1. In combination with the connecting-rod J and lifting-rod L, the engaging hook consisting, essentially, of the backbone K, lower extension K', and upper downwardly-projecting hook K'', substantially as set forth.

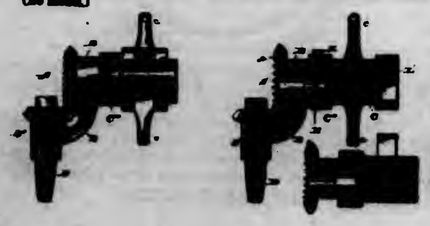
2. In a valve mechanism, in combination, the sliding pipe or tubular valve-stem E, provided with the internal projecting ribs F', the spiral springs S, surrounding said ribs, and the ring P, provided with the projection P' for engaging said ribs, substantially as set forth.

484,424. RAILWAY-RAIL JOINT. GEORGE W. HARRIS, Holbrook, Ariz. Filed Feb. 17, 1892. Serial No. 421,760. (No model.)

Claim.—1. In a rail-joint of the character described, the vertical flanges having end extension flanges resting upon the ties and a bottom plate integral with said flanges and extending across the rails beneath the rail-joint, said plate having oppositely-projecting ends adapted to enter the ties.

2. A rail-joint having opposite vertical flanges, a bottom plate passing beneath the rails and connecting said flanges, and projections upon the bottom plate adapted to enter the opposite surfaces of the ties, the whole formed in one piece.

484,425. COAL OR ROCK DRILLING MACHINE. MARVIN HARMON, Ottumwa, Iowa. Filed Aug. 30, 1892. Serial No. 443,894. (No model.)



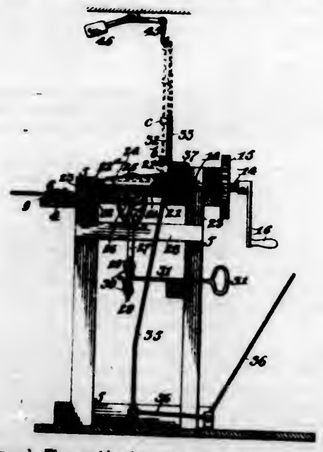
Claim.—1. In a drilling-machine, the combination of a screw-threaded hinged two-jawed clamp provided with arms upon opposite sides thereof, each of said jaws provided integrally at one or both ends with a corresponding jaw having a polygonally-shaped recess therein for a housing, means to hold the jaws of said clamp closed, with a frame provided with a flanged polygonally-shaped head adapted to fit the recessed chamber of said housing, a bevel-wheel with its hub journaled movably in the body of said frame and the interior bore of said hub provided with a spline, and a screw-threaded feed-bar provided with a longitudinal groove to engage said spline, and means to rotate said wheel, all substantially as shown.

2. In a drilling-machine, the combination of a screw-threaded hinged two-jawed clamp, each jaw provided integrally at one or both ends with a corresponding jaw having a polygonally-shaped recess therein for a housing, means for holding the jaws of said clamp closed, with a frame provided with a flanged polygonally-shaped nut or head adapted to be received and held in the recessed chamber of said housing, all substantially as shown.

3. In a drilling-machine, a screw-threaded hinged two-jawed clamp, each jaw provided integrally at one or both ends with a corresponding jaw having a polygonally-shaped recess therein for a housing, adapted when closed to receive and hold in place a polygonally-shaped nut or head, and means for holding the jaws of said clamp closed, all substantially as shown.

4. In a drilling-machine, a bifurcated hinged bracket provided with bearings to carry a drill and feed-bar and rotating mechanism, in combination with a collar provided with a slot to receive the hinged extremities of said bracket detachably and a set-screw to hold and fix the same in position, all substantially as shown.

484,426. WIRE-COILING MACHINE. ASA M. HARTLEY, Bentonville, Ark. Filed Feb. 1, 1892. Serial No. 419,977. (No model.)



Claim.—1. The combination, with oppositely-placed mandrels, of a series of pivoted links having projecting studs adapted to engage the wire, substantially as described.

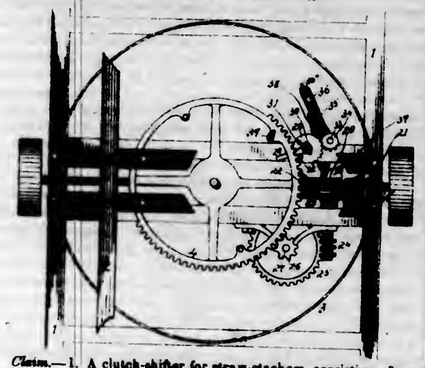
2. The combination, with a plurality of geared shafts having mandrels thereon, of an outer link pivoted to each of the said shafts and a series of intermediate links connecting the said outer links, the connections between the links being formed by projecting studs adapted to engage the wire, substantially as described.

3. In a wire-coiling machine, the combination, with oppositely-placed geared shafts, of a conoidal grooved mandrel carried by each of the said shafts and a spring-pressed roller bearing on each of the said mandrels, substantially as described.

4. In a wire-coiling machine, the combination, with oppositely-placed geared shafts, of a conoidal grooved mandrel carried by each of the shafts, a spring pressed roller bearing on each of the said mandrels, and a series of pivoted links placed between the said mandrels and carrying projecting studs adapted to engage the wire, substantially as described.

5. In a wire-coiling machine, the combination, with oppositely-placed driven mandrels, of a series of pivoted links between the mandrels, carrying projecting studs adapted to engage the wire, and means for varying the position of the links, substantially as described.

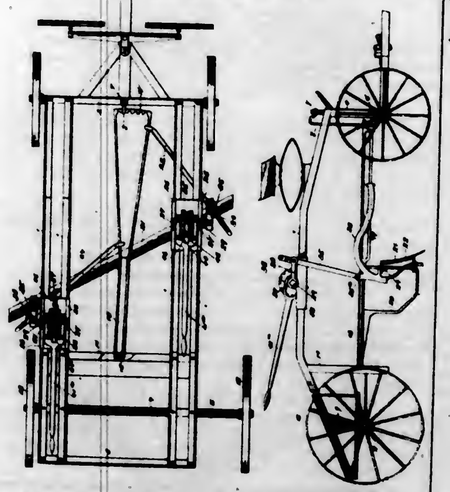
484,427. STRAW-STACKER. MARTIN HERRICK, Springfield, Ill. Filed Oct. 6, 1891. Serial No. 408,090. (No model.)



Claim.—1. A clutch-shifter for straw-stackers, consisting of arm 36, adapted to be moved at intervals by the rotating stacker, shifting-lever 37, pivoted independently on the fulcrum of the arm and normally forming an obtuse angle with such arm, and spring 38, connecting the arm and the lever, as set forth, whereby the shifting-lever remains stationary while the spring is put under extreme tension by the motion of the arms and is thrown solely by the action of the spring after the arm has passed the line of centers.

2. A clutch-shifter for straw-stackers, consisting in the combination of arm 36, fixed on shaft 33, wheel 34, also fixed on said shaft, lever 37, swung loosely on the shaft, spring 38, connecting the swinging end of the arm with the swinging end of the lever, wheel 28, larger than wheel 34 and in mesh therewith, and finger 29, adapted to actuate wheel 28, as set forth.

484,428. ROAD-GRADER. JAMES M. HOLLAND, Mount Pleasant, Iowa, assignor to the Mount Pleasant Road Grader Company, same place. Filed Sept. 7, 1891. Serial No. 404,906. (No model.)



Claim.—1. In a road-scraper, the combination, with the front and rear trucks and a clevis loosely connected to the front truck, of a draft-bar pivoted at its rear end to the rear truck, a toothed curved bar located at the front end of the draft-bar and adapted for removable engagement with the clevis, and a scraper-blade connected with the draft-bar, substantially as specified.

2. In a road-scraper, the combination, with the draft-bar bifurcated at its front end, a transversely-disposed and toothed connecting-bar, diverging ways or guide-rods located under the bifurcations of the draft-bar, front and rear trucks, to the latter of which the bar is pivoted, and a clevis mounted in the front truck and loosely engaging the teeth of the transverse bar, of a bracket depending from the draft-bar, a scraper-blade pivoted to the bar, and a pair of opposite draft-arms pivoted to the scraper-blade at opposite sides of its center and terminating at their front ends in eyes for loosely riding upon the guide rods, substantially as specified.

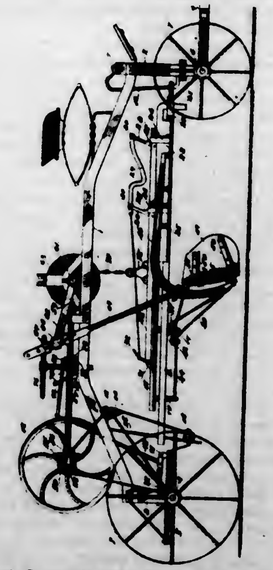
3. In a road-scraper, the combination, with the framework comprising opposite ways and the scraping-blade, of a peripherally-toothed wheel mounted above each way; a shaft for the same, a bearing mounted for reciprocation upon the way and receiving the shaft, a bar connected to the end of the blade, a crank-arm mounted on the shaft and fulcrumed to the bar, means for locking the wheel at any point of its rotation, and a lever loosely fulcrumed at the side of the wheel and having the shoulder adapted to be thrown into engagement with the teeth of the wheel, substantially as specified.

4. In a road-scraper, the combination, with the framework and the scraping-blade, of a shaft loosely journaled above the blade, a peripherally-toothed and annularly-grooved locking-wheel mounted on the shaft, a friction-band embracing the groove of the shaft, a bifurcated lever embracing the wheel and having loops formed in its bifurcations for loosely receiving the shaft and above said loops provided with shoulders for engaging the teeth of the wheel, a crank-arm mounted on the shaft, and a connecting-bar pivoted to the crank-arm and blade, substantially as specified.

5. In a road-scraper, the combination, with the framework comprising the opposite parallel ways, the scraper-blades, and the plates mounted for reciprocation upon the ways and having their edges embracing the same and provided with transversely-opposite bearings, of shafts mounted in the bearings and terminating outside of the same in squared portions, an arm mounted upon the squared portion of each shaft, a bar pivoted to the free end of each arm, connections between the bars and blade, a wheel mounted on each shaft and provided with peripheral notches and a central annular groove, a U-shaped friction-band mounted in the groove and having its terminals passed through perforations in the plates and there provided with binding-nuts, and the locking-levers, one for each wheel, each lever being bifurcated at its lower end and having its bifurcations provided with loops loosely receiving the shaft at opposite sides of the wheel and provided above the loops with shoulders for engaging the notches of the wheel, substantially as specified.

6. In a road-scraper, the combination, with a bolster having a bearing along its under edge, of a pair of axle-sections mounted at opposite ends of the bearings and carrying ground-wheels and binding-screws mounted in the bearings and bearing on the axle, substantially as specified.

484,429. ROAD-SCRAPER. JAMES M. HOLLAND, Mount Pleasant, Iowa, assignor to the Mount Pleasant Road Grader Company, same place. Filed Mar. 14, 1892. Serial No. 424,881. (No model.)



Claim.—1. In a road-scraper, the combination, with the framework comprising the opposite side beams, opposite short shafts mounted on the beams and adapted for rotation, beveled gears mounted on the shafts, rock-arms extending from the ends of the shafts, rear transverse

shafts, hand-wheels mounted thereon, beveled gears mounted at the sides of the hand-wheels, intermediate longitudinal shafts, and gears on the ends of the same, engaging those gears of the front and rear short shafts, of a scraper-blade, means for locking the same, and connections between the blade and the rock-arms, substantially as specified.

2. In a road-scraper, the combination, with the framework comprising the opposite side beams, opposite short shafts mounted on the beams and adapted for rotation, beveled gears mounted on the shafts, rock-arms extending from the ends of the shafts, rear transverse shafts, hand-wheels mounted thereon, beveled gears mounted at the sides of the hand-wheels, intermediate longitudinal shafts, and gears on the ends of the same, engaging those gears of the front and rear short shafts, of a pivoted scraper-blade located under the framework and standards loosely connected to the blade and at their upper ends to the rock-arms, substantially as specified.

3. In a road-scraper, the combination, with the framework comprising the opposite side beams, opposite short shafts mounted on the beams and adapted for rotation, beveled gears mounted on the shafts, rock-arms extending from the ends of the shafts, rear transverse shafts, hand-wheels mounted thereon, beveled gears mounted at the sides of the hand-wheels, intermediate longitudinal shafts, and gears on the ends of the same, engaging those gears of the front and rear short shafts, of a scraper-blade pivoted below the framework, opposite standards loosely connected at their lower ends to the extremities of the blade, the yokes pivoted to each of the rock-arms, the sleeves pivotally mounted in the yokes and provided with keepers receiving the upper ends of the standards, and means for securing the sleeves upon the standard, substantially as specified.

4. In a road-scraper, the combination, with the framework comprising the opposite side beams, opposite short shafts mounted on the beams and adapted for rotation, beveled gears mounted on the shafts, rock-arms extending from the ends of the shafts, rear transverse shafts, hand-wheels mounted thereon, beveled gears mounted at the sides of the hand-wheels, intermediate longitudinal shafts, and gears on the ends of the same, engaging those gears of the front and rear short shafts, of the scraper-blade located under the framework, connections between the ends of the same and the rock-arms, a scraper-bar located above the blade, pivotal connections between the bar and blade, and means for raising and lowering the bar, substantially as specified.

5. In a road-scraper, the combination, with the framework, the vertically-movable scraper-bar, and the scraper-blade pivotally connected to the bar, of the vertical winding-shaft, the wheel on the end of the same, means for laterally adjusting the rear end of the bar, a rod loosely connected with the winding-shaft, terminating at its front end in a bearing and in rear of the same in an eye, grooved pulleys mounted on the bearing and in the eye, a transverse track for the front pulley, and a chain connected with the winding-shaft and passing over the pulley of the eye and having its lower end connected to the scraper-bar, substantially as specified.

6. In a road-scraper, the combination, with the framework having the platform at the rear end of the same, the longitudinally-disposed scraper-bar, the blade pivoted to the bar, and means for oscillating the same, of a winding-shaft, a cross-bar having a bearing for supporting the same, a wheel at the upper end of the shaft, a ratchet-wheel mounted on the shaft, a standard at one side of the ratchet-wheel, a vertical spring-pressed bolt for engaging the wheel, mounted in the standard, a fulcrum-standard at the opposite side of the shaft, a lever pivoted thereon and connected at its front end to the bolt, a foot-lever mounted on the platform, a connecting-rod between the same and the free end of the lever, and a chain connected to the winding-shaft and to the scraper-bar, substantially as specified.

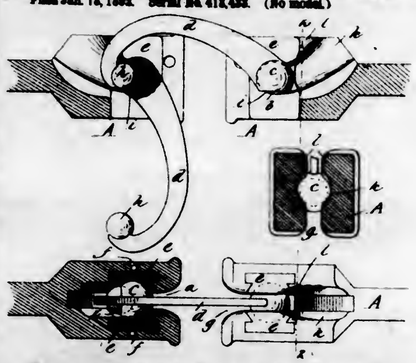
7. In a road-scraper, the combination, with the front and rear trucks and the connecting-framework, of the curved oblong stirrup secured to the under side of the framework in front of the rear truck and provided with upper and lower registering perforations, the scraper-bar pivoted to the front truck and having its rear end provided with openings and overlapping the said stirrup, and the inverted-V shaped pin having the long and short terminals 15 and 16, respectively, adapted to pass through the perforations of the stirrup and scraper-bar, substantially as specified.

8. In a road-scraper, the combination, with the framework and the longitudinally-disposed scraper-bar, of the inverted-U-shaped bar 18, the opposite edges of which combine with the scraper-bar to form opposite longitudinal slots, the opposite latch-plates 23, having transverse keepers 24 for connecting the same, the pivoted scraper-blade located under the bar, beams pivotally connected to the blade and terminating at their front ends in inwardly-disposed and upwardly-bent fingers mounted in the slots between the hood and bar, notches for engaging the fingers, formed at the lower edges of the opposite plates 23, and means for raising and lowering the said plates, so as to disengage the fingers, substantially as specified.

9. In a road-scraper, the combination, with the front and rear trucks and connecting-framework, of the scraper-bar having slots at opposite sides of its front end, bolts passed through the bar, an inverted-U-shaped hood mounted on the bolts and spaced upon the bar and combining therewith to form opposite slots, a scraper-blade pivoted to the under side of the bar, scraper-beams pivotally connected to the blade and having their ends inwardly and upwardly bent, as at 48, to engage the slots between the bar and hood, the opposite plates 23, terminating in depending fingers 21, engaging the slots at the front end of the bar, the transverse keepers 24, connecting the plates 23, the bell-cranks pivoted to the hood in rear of the keepers, said bell-cranks having their lower branches conversed to form cams 27 and above the same provided with locking-lugs 28 for engaging the keepers, the connecting-rod 29, the lever 32, and the connecting rod 33 between the lever and connecting-rod 29, substantially as specified.

10. In a road-scraper, the combination, with the scraper-bar and the scraper located below the same, of the opposite end brackets 39, the beams 45, loosely connected at their front ends to the scraper bar and at their rear ends pivoted in the lower brackets and loosely clipped to the upper brackets, the upper and lower braces 40, pivoted in said brackets, the cross-bar 42, connecting the ends of said braces, the rest-bar 44, over which the scraper-bar passes, bolts connecting the cross-bar to the scraper-bar, the upper and lower centrally-located brackets 35, and the V-shaped brace 37, having its lower ends swiveled in the lower bracket and its front branch pivotally connected to the scraper at its upper bracket and its two branches rigidly bolted to the scraper-bar, substantially as specified.

484,480. CAR-COUPLING. WILLIS HOLLY, Washington, D. C. Filed Jan. 18, 1892. Serial No. 418,432. (No model.)



Claim.—1. A coupling for cars and the like, comprising suitable draw-heads open at the front and top and having recesses, in combination with hooks pivoted at one end in said recesses, the pivoted end of each hook having a socket for the reception of the free end of the opposite hook, substantially as described.

2. In combination with suitable draw-heads open at the front and top and having recesses, hooks pivoted in said recesses, said hooks having a catch formed in their free ends, the pivoted end of each hook being provided with a socket for the reception of the catch on the free end of the hook, substantially as described.

3. In combination with suitable draw-heads open at the front and top and having recesses, hooks having a ball-shaped rear end and fitting in said recesses, said hooks having, also, rounded catches on their free ends, the ball-shaped pivoted end of each hook having a rounded socket for the reception of the rounded catch, substantially as described.

4. In combination with the hooks, the draw-heads having recesses with flaring mouths, contracted central portions, and enlarged lower portions forming sockets in the lower end of said recesses, in which sockets the hooks are pivoted, said recesses being adapted to receive the free ends of the hooks, substantially as described.

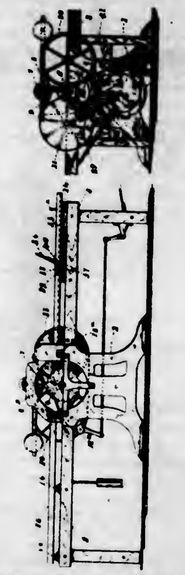
5. In combination with the hooks, the draw-heads having recesses with flaring mouths, contracted central portions, and enlarged lower portions, said lower portions being provided with removable bearings forming sockets in the lower end of said recesses, in which sockets the hooks are pivoted, said recesses being also adapted to receive the free ends of the hooks, substantially as described.

6. In combination with the draw-heads, each provided with a recess having a flaring mouth and having a socket in its lower end, hooks pivoted at one end in the bearing of the draw-head and having a socket in said pivoted end, the free end of each of said hooks being adapted to enter the flaring mouth of the recess in the draw-head and enter the socket in the pivoted end of the hook, substantially as described.

7. In combination with a suitable movable draw-head, a hook pivoted thereto, a pin attached to said draw-head, a shaft journaled

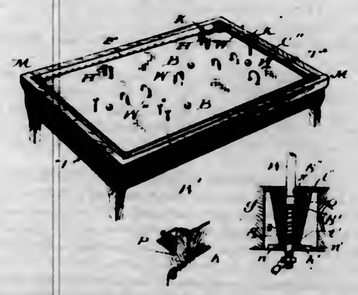
on the car, a segmental gear-wheel on said shaft, the teeth of which engage with the pin when the draw-head is extended, and an arm secured to said shaft and adapted to support the hook when the latter is elevated, said hook being adapted to fall by its own weight when the draw-head is forced in and the pin released from the segmental gear-wheel, substantially as described.

484,481. GANG EDGING MACHINE. EDWARD HOLMES and BENJAMIN HOLMES, Buffalo, N. Y. Filed Feb. 7, 1890. Serial No. 339,577. (No model.)



Claim.—In a gang edging-machine, the combination therewith of the feed-rollers for feeding the material into the machine, two disks 11 and 16, two friction-rollers adapted to roll by frictional contact on each disk and secured at opposite ends of a shaft mounted so as to turn in journals in a supporting-frame, a stationary bar or slideway secured to the frame of the machine and upon which the holding-frame is supported, so as to slide longitudinally back and forth thereon and cause the friction-rollers to bear against the faces of the disks, a hand-lever pivoted to the frame of the machine and to the sliding supporting-frame for moving the friction-rollers to or from the center of each disk, and thereby adjusting the speed of the feed motion, and a means for giving the disk 16 a rotary motion, substantially as described.

484,482. GAME. EDWARD H. HYDE, Lancaster, Wis. Filed Sept. 3, 1891. Serial No. 404,636. (No model.)



Claim.—1. The combination, with a ball, of a table having cushions with scalloped faces, as and for the purpose set forth.

2. In a game apparatus, the combination, with a ball and a table, of cushions located along the edges of said table, each cushion comprising a number of faces of different shapes and different degrees of elasticity, means for permitting the turning of said cushions so as to cause different faces to project inwardly, and means for locking the cushions in different positions, as and for the purpose set forth.

3. A billiard or similar table carrying blocks upon its corners, which blocks are provided with recesses, the edges of the table being raised and passing outside said block, in combination with cushions of triangular cross-section, each comprising a core having pins in its ends engaging said recesses and having different faces on its corners, and clamps of spring metal detachably embracing the cushions and the edges of the table, as and for the purpose set forth.

4. A cushion for billiard or similar tables, the same comprising a core of approximately-triangular cross-section and faces secured on its corners, said faces being respectively of wood, rubber, and of scalloped configuration, and means for securing said cushions to the table-edges with the desired face projecting inwardly, as and for the purpose set forth.

5. The herein-described game apparatus, the same comprising a table having sockets in its face, locking devices located in the said sockets, posts and wickets removably seated in said sockets to form a croquet or similar court and adapted to engage said locking devices, surrounding revolubie cushions of inplastic material, and balls with elastic coverings, as and for the purpose set forth.

6. In a game apparatus, the combination, with a table, tubes seated therein and flush at their upper ends with the upper face of the table, and spring-actuated pins in said tubes held also normally flush with the face of the table, of wickets and posts adapted to be removably seated in the tubes by depressing the pins therein and balls of a size to pass through said wickets, as and for the purpose set forth.

7. In a game apparatus, the combination, with a table, tubes seated therein and flush at their upper ends with the face of the table, their lower ends being reduced and perforated, pins fitting said tubes and having reduced shanks passing through said perforations, nuts at the lower ends of said shank, which when they strike the lower ends of the tubes hold the upper ends of the pins flush with said face, and expansive coiled springs on said shanks within said tubes, of wickets and posts adapted to be removably seated in the tubes by depressing the pins therein and balls of a size to pass through said wickets, as and for the purpose set forth.

8. In a game apparatus, the combination, with a table, tubes seated therein and flush at their upper ends with the face of the table, spring-actuated pins in said tubes, held also normally flush with said face, leaf-springs secured to said tubes, and studs at the upper ends of said springs adapted to be borne thereby into the tubes when the pins are depressed, of wickets and posts adapted to be removably seated in the tubes by depressing the pins therein, said wickets and posts having notches which engage said studs, and balls of a size to pass through the wickets, as and for the purpose set forth.

9. In a game apparatus, the combination, with a table having sockets arranged in pairs and locking devices located in said sockets, of posts seated in said sockets and adapted to be locked therein and having flaring heads, revoluble surrounding cushions, and balls of a size to pass between the posts and beneath their heads, as and for the purpose set forth.

10. The combination, with a table-top in whose upper face is bored a downwardly-tapering hole having offsets at its lower end, of a socket comprising a tabular body whose exterior is conical to fit said hole and is threaded at its smaller end and a nut on said threaded end having wings adapted to engage said offsets, substantially as described.

11. The combination, with a table top in whose upper face is bored a downwardly-tapering hole having diametrically-opposite vertical grooves and at its lower end offsets projecting horizontally from said grooves, of a socket comprising a body shaped to fit said hole and threaded at its smaller end and a nut on said threaded end having radially-projecting wings adapted to pass through said grooves and engage said offsets, substantially as described.

12. The combination, with a table-top in whose upper face is bored a downwardly-tapering hole radially enlarged at its larger end, of a socket comprising a conical body closely fitting said hole, a shoulder fitting the enlargement thereof and adapted to stand flush with the face of the table, and means for removably locking the socket in the hole, substantially as described.

13. The combination, with a table-top having a tapering hole, of a socket in the form of an inverted cone removably inserted in said hole and provided with an axial opening, the body of the socket having a recess communicating with said opening near the larger end of the socket, and a leaf-spring secured in the lower end of the socket and having a stud projecting normally into said opening, of a pin removably fitting said opening and having a notch adapted to receive the tip of said stud, substantially as described.

14. In a game apparatus, the combination, with a table and cushions surrounding the same and having scalloped faces, of wickets rising from said table and balls of a size to pass through said wickets, as and for the purpose set forth.

15. In a game apparatus, the combination, with a ball and a table, of cushions located along the edges of said table, each cushion being

of angular cross-section and having at its corners playing-faces of different shapes and different degrees of elasticity, means for permitting the turning of each cushion, so as to cause the desired face to project inwardly, and clamps of spring metal detachably embracing the cushions and the edges of the table, substantially as described.

16. A billiard, pool, or similar table having raised edges, blocks in the corners of said edges with recesses in their two exposed vertical faces, cushions of triangular cross-section having at their corners

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the other and having a ridge or rib adjacent to one of said shoulders or stops, substantially as set forth.

12. In a seat, the combination, with the seat-frame and back, of a pair of crossed arms pivoted to the seat-frame and back, the shiftable seat-bottom having slots formed therein, and the pins or lugs on the lower ends of said arms, engaging in said slots, each of said arms being provided with a pair of shoulders or stops, substantially as set forth.

to hold the track-rail and the shorter leg engaging the rear face of the beam by being driven into the face thereof, substantially as described.

4. In a log-carrier truck, the combination, with the truck-beams, of bearers consisting of metal bars of U form with legs of unequal length, the longer leg passing across the top of the beam and adapted to hold the track-rail and the shorter leg engaging the rear face of the

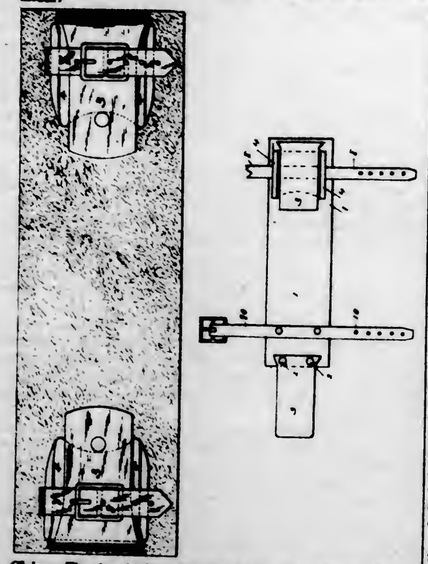
of angular cross-section and having at its corners playing-faces of different shapes and different degrees of elasticity, means for permitting the turning of each cushion, so as to cause the desired face to project inwardly, and clamps of spring metal detachably embracing the cushions and the edges of the table, substantially as described.

16. A billiard, pool, or similar table having raised edges, blocks in the corners of said edges with recesses in their two exposed vertical faces, cushions of triangular cross-section having at their corners playing-faces of different shapes and different degrees of elasticity, pins in the ends of the cushions loosely engaging said recesses, and means for locking the cushions with their desired faces inward, substantially as hereinbefore described.

17. In a game apparatus, the combination, with a socket seated in the base on which the game is played, of a wicket of inverted-U shape, one of its feet being elongated and swivelly mounted in said socket, while the other foot stands above the base, as and for the purpose set forth.

18. In a game apparatus, the combination, with a table and a socket seated therein, of a wicket of inverted-U shape, one of its feet being elongated and provided with a notch, and a catch for engaging the notch and holding this foot swivelly and removably within said socket, while the other foot stands above the base, as and for the purpose hereinbefore set forth.

484,483. ATTACHMENT FOR BREAST-STRAPS. Thomas R. Jackson, Shenandoah, Pa. Filed May 19, 1891. Serial No. 393,344. (No model.)



Claim.—The herein-described attachment for harness breast-straps for holding the latter away from the animal and preventing choking of the latter, comprising a pad 1 of soft material, straps 3, secured thereto and projecting beyond the ends thereof, saddles secured to said pad adjacent to the ends thereof, said saddles being made of an unyielding material and having a rounded end and a curved inner side, said saddles also having grooves to receive the ends of said straps 3, and straps 8 for securing the device to the breast-strap, all substantially as shown and described.

484,484. REVERSIBLE CAR-SEAT. John S. Johnson, Chicago, Ill. Filed Feb. 26, 1892. Serial No. 422,963. (No model.)

Claim.—1. In a reversible seat, the combination, with the seat-frame and back, of two intersecting arms pivoted to each end of said frame and back and each having a shoulder or stop adapted to come against the other on both sides of their point of intersection and a rib arranged between said shoulders or stops on each arm, substantially as set forth.

2. In a reversible seat, the combination, with the back and the seat-frame, of two arms pivoted to each end of said frame and back and each having two shoulders or stops formed thereon and adapted to arrest the movement of and support the other, substantially as set forth.

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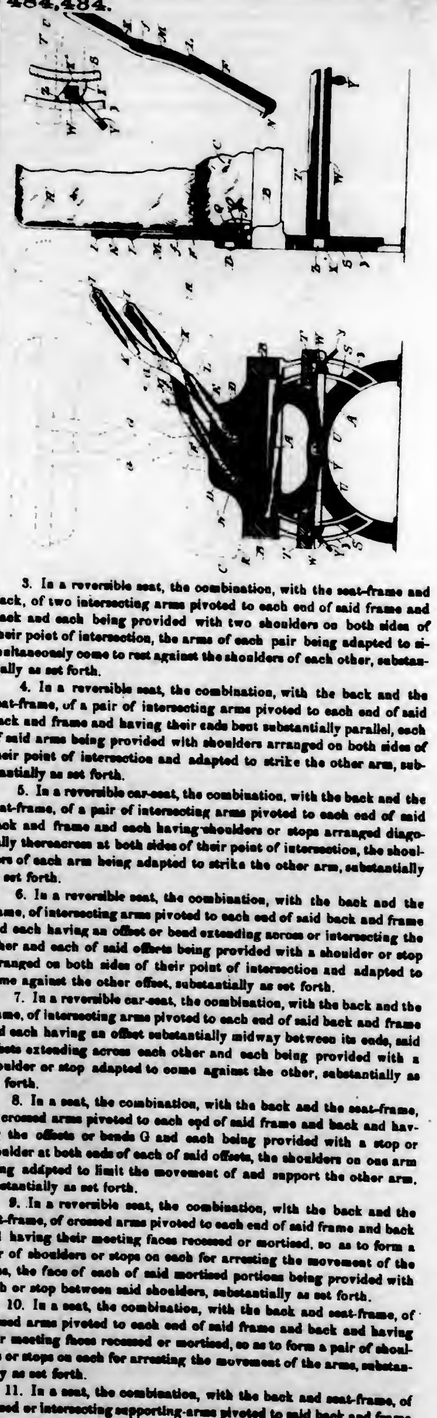


3. In a reversible seat, the combination, with the seat-frame and back, of two intersecting arms pivoted to each end of said frame and back and each being provided with two shoulders on both sides of their point of intersection, the arms of each pair being adapted to simultaneously come to rest against the shoulders of each other, substantially as set forth.

4. In a reversible seat, the combination, with the back and the seat-frame, of a pair of intersecting arms pivoted to each end of said back and frame and having their ends bent substantially parallel, each of said arms being provided with shoulders arranged on both sides of their point of intersection and adapted to strike the other arm, substantially as set forth.

5. In a reversible car-seat, the combination, with the back and the seat-frame, of a pair of intersecting arms pivoted to each end of said back and frame and each having shoulders or stops arranged diagonally thereacross at both sides of their point of intersection, the shoulders of each arm being adapted to strike the other arm, substantially as set forth.

6. In a reversible seat, the combination, with the back and the frame, of intersecting arms pivoted to each end of said back and frame and each having an offset or bend extending across or intersecting the other and each of said offsets being provided with a shoulder or stop arranged on both sides of their point of intersection and adapted to come against the other offset, substantially as set forth.

7. In a reversible car-seat, the combination, with the back and the frame, of intersecting arms pivoted to each end of said back and frame and each having an offset substantially midway between its ends, said offsets extending across each other and each being provided with a shoulder or stop adapted to come against the other, substantially as set forth.

8. In a seat, the combination, with the back and the seat-frame, of crossed arms pivoted to each end of said frame and back and having the offsets or bends G and each being provided with a stop or shoulder at both ends of each of said offsets, the shoulders on one arm being adapted to limit the movement of and support the other arm, substantially as set forth.

9. In a reversible seat, the combination, with the back and the seat-frame, of crossed arms pivoted to each end of said frame and back and having their meeting faces recessed or mortised, so as to form a pair of shoulders or stops on each for arresting the movement of the arms, the face of each of said mortised portions being provided with a rib or stop between said shoulders, substantially as set forth.

10. In a seat, the combination, with the back and seat-frame, of crossed arms pivoted to each end of said frame and back and having their meeting faces recessed or mortised, so as to form a pair of shoulders or stops on each for arresting the movement of the arms, substantially as set forth.

11. In a seat, the combination, with the back and seat-frame, of crossed or intersecting supporting-arms pivoted to said back and frame and each being provided with two shoulders or stops for engaging with the other and having a ridge or rib adjacent to one of said shoulders or stops, substantially as set forth.

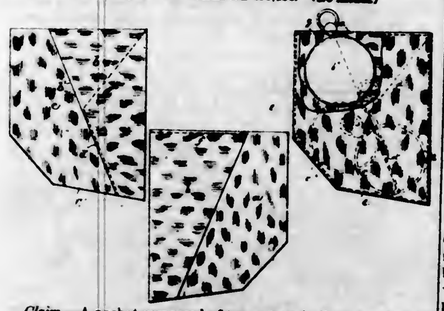
12. In a seat, the combination, with the seat-frame and back, of a pair of crossed arms pivoted to the seat-frame and back, the shiftable seat-bottom having slots formed therein, and the pins or lugs on the lower ends of said arms, engaging in said slots, each of said arms being provided with a pair of shoulders or stops for limiting their movement, substantially as set forth.

13. In a car-seat, the combination of upright segment-racks at both ends of the seat, the plain-edged bars z, arranged parallel with said racks, a foot-rest extending between said racks, pivoted arms secured to the ends of said foot-rest, a shaft journaled in said arms, locking-dogs on the ends of said shaft, located between said racks and bars z and having plain edges Z, adapted to rub against the bars z, and a toe-piece for rotating said shaft, substantially as set forth.

14. In a seat, the combination of upright segment-racks at both ends of the seat, a foot-rest extending between said racks, pivoted arms secured to the ends of said rest, a shaft journaled in said arms, dogs on the ends of said shaft engaging said racks, and a lever or toe-piece for rotating said shaft, substantially as set forth.

15. In a seat, the combination of upright segment-racks at both ends of the seat, the plain-edged bars z, arranged parallel with said racks, a foot-rest extending between said racks, pivoted arms secured to the ends of said foot-rest, a shaft journaled in said arms, locking-dogs on the ends of said shaft, located between said racks and bars z and adapted to engage said racks, and a toe-piece for rotating said shaft located under the foot-rest, whereby the latter will form a stop therefor, substantially as set forth.

484,485. SAFETY-POCKET. Isaac Kleinberger, New Haven, Conn. Filed July 6, 1892. Serial No. 439,136. (No model.)



Claim.—A pocket composed of two external plies *a c* and an inclosed triangular ply *b*, of which the plies *b c* are connected by a diagonal seam *d* and an inner seam *d'*, the plies *b a* by an upper seam *f*, the plies *a c* by an upper seam *g*, and the plies *a b c* by an outer seam *e* at the sides and base, substantially as specified.

484,486. TRACK FOR LOG-CARRIERS. Alfred T. Kellihers, Bethel, Me. Filed Nov. 27, 1891. Serial No. 413,233. (No model.)

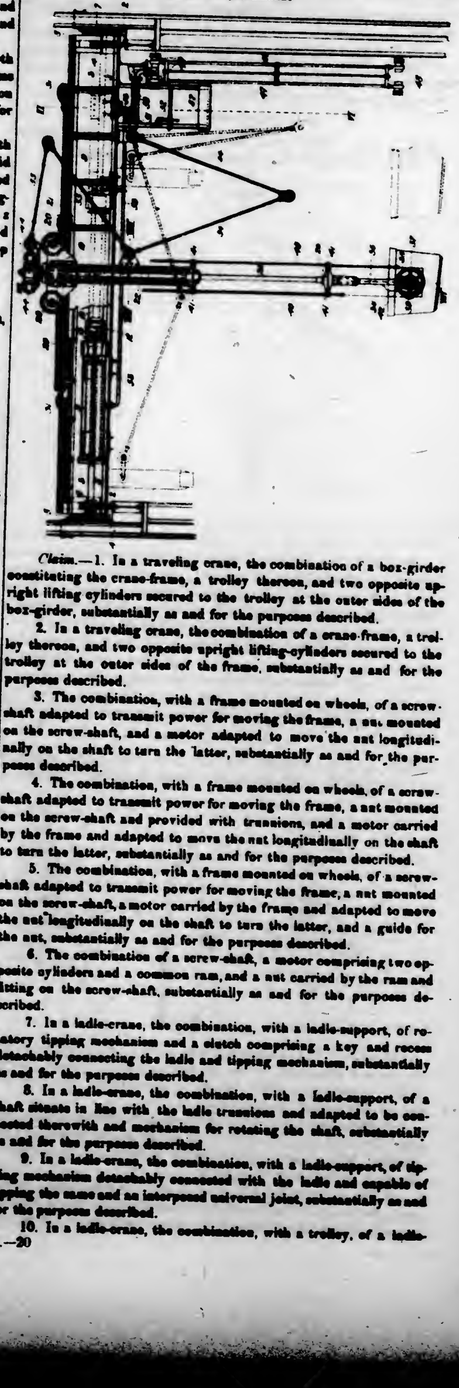
Claim.—1. A log-carrier track comprising a track-beam and track-bearers composed of metal bars having an angular portion thereof inclosing one corner of said beam and secured therewith and their forward ends adapted to hold the track-rail, substantially as described.

2. In a log-carrier track, the combination, with the track-beam, of bearers consisting of metal bars of U form with legs of unequal length, the longer leg passing across the top of the beam and adapted to hold the track-rail and the shorter leg engaging the rear face of the beam, substantially as described.

3. In a log carrier track, the combination, with the track-beam, of bearers consisting of metal bars of U form with legs of unequal length, the longer leg passing across the top of the beam and adapted to hold the track rail and the shorter leg engaging the rear face of the beam by being driven into the face thereof, substantially as described.

4. In a log-carrier track, the combination, with the track-beams, of bearers consisting of metal bars of U form with legs of unequal length, the longer leg passing across the top of the beam and adapted to hold the track-rail and the shorter leg engaging the rear face of the beam and driven into said face and the bearer being spiked to the beam, substantially as described.

484,487. CRANE. Julian Kennedy, Pittsburg, Pa. Filed Mar. 4, 1892. Serial No. 423,742. (No model.)



Claim.—1. In a traveling crane, the combination of a box-girder constituting the crane-frame, a trolley thereon, and two opposite upright lifting cylinders secured to the trolley at the outer sides of the box-girder, substantially as and for the purposes described.

2. In a traveling crane, the combination of a crane-frame, a trolley thereon, and two opposite upright lifting-cylinders secured to the trolley at the outer sides of the frame, substantially as and for the purposes described.

3. The combination, with a frame mounted on wheels, of a screw-shaft adapted to transmit power for moving the frame, a nut mounted on the screw-shaft, and a motor adapted to move the nut longitudinally on the shaft to turn the latter, substantially as and for the purposes described.

4. The combination, with a frame mounted on wheels, of a screw-shaft adapted to transmit power for moving the frame, a nut mounted on the screw-shaft and provided with trunnions, and a motor carried by the frame and adapted to move the nut longitudinally on the shaft to turn the latter, substantially as and for the purposes described.

5. The combination, with a frame mounted on wheels, of a screw-shaft adapted to transmit power for moving the frame, a nut mounted on the screw-shaft, a motor carried by the frame and adapted to move the nut longitudinally on the shaft to turn the latter, and a guide for the nut, substantially as and for the purposes described.

6. The combination of a screw-shaft, a motor comprising two opposite cylinders and a common ram, and a nut carried by the ram and fitting on the screw-shaft, substantially as and for the purposes described.

7. In a ladle-crane, the combination, with a ladle-support, of rotatory tipping mechanism and a clutch comprising a key and recess detachably connecting the ladle and tipping mechanism, substantially as and for the purposes described.

8. In a ladle-crane, the combination, with a ladle-support, of a shaft situate in line with the ladle trunnions and adapted to be connected therewith and mechanism for rotating the shaft, substantially as and for the purposes described.

9. In a ladle-crane, the combination, with a ladle-support, of tipping mechanism detachably connected with the ladle and capable of tipping the same and an interposed universal joint, substantially as and for the purposes described.

10. In a ladle-crane, the combination, with a trolley, of a ladle-

supporting frame depending therefrom, a tipping-motor carried by the trolley, and power-transmitting mechanism extending on said frame from the motor to the position of the ladle and having a detachable connection, substantially as and for the purposes described.

11. In a ladle-crane, the combination of ladle-tipping mechanism carried by the crane, a ladle-lifting motor, and a motor which moves with the lifting-motor and is connected with the tipping mechanism to actuate the same, substantially as and for the purposes described.

12. In a ladle-tipping mechanism, the combination, with a crane and a depending ladle-supporting frame, of a rotatory shaft adapted to be connected with the ladle, tipping mechanism connected to the shaft and adapted to rotate the same, and stops by which the rotatory motion of the shaft is limited, substantially as and for the purposes described.

13. In a ladle-crane, the combination, with the crane, of a frame carrying the ladle, a lifting-motor for the frame, and a ladle-tipping motor carried with the lifting-motor and movable vertically therewith, substantially as and for the purposes described.

484,438. SHOE-LACE FASTENER. ALBERT LEGOTTE, Quincy, Mass. Filed May 10, 1892. Serial No. 432,495. (No model.)

Claim.—1. A lace-holder comprising a slotted holding-stud, a swell having a longitudinal opening adapted to receive the lace, and a set-screw having a longitudinal opening to receive the lace, said screw being tapped into the swell and constructed and arranged to be screwed down upon the lace to clamp it in the swell, as set forth.

2. A lace-holder comprising a slotted holding stud, a swell having a longitudinal opening adapted to receive the lace, a follower or washer loosely fitted in said opening, and a longitudinally-perforated set-screw tapped into the swell at one end and adapted to be screwed down upon the said washer to clamp the lace, substantially as described.

484,439. FISHING-ROD AND REEL. DE WITT C. LOCKWOOD, Shelton, Conn. Filed Apr. 26, 1892. Serial No. 430,964. (No model.)

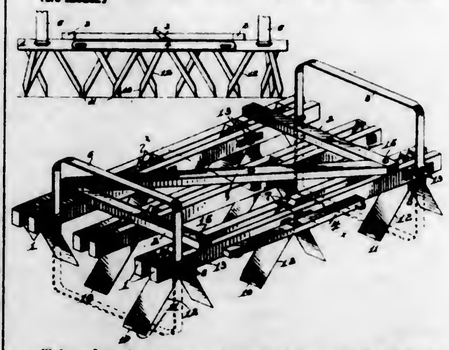
Claim.—1. The combination, with a reel having a socket or similar means of attachment, of the rod having upon its extremity a seat for the reel-socket, whereby the reel is supported in axial line with the rod, substantially as described.

2. The combination, with a rod having two reel-supporting plugs, one in line with its axis and the other at right angles thereto, of a reel provided with a socket and adapted to be supported upon either of the plugs, substantially as set forth.

3. The rod provided with plugs 3 and 7 at right angles to each other, the one upon the end of the rod and the other above the hand-grasp, in combination with a reel having a socket adapted to said plugs.

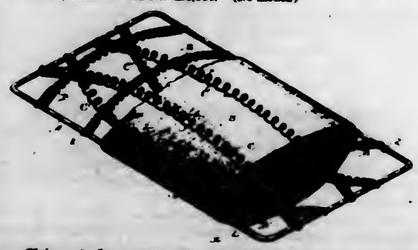
484,489.

484,440. SOD-CUTTING HARROW. FRANK H. LOSE, Manning, Iowa. Filed Feb. 23, 1891. Renewed Aug. 2, 1892. Serial No. 441,971. (No model.)



Claim.—In a harrow, the combination, with a series of pairs of harrow-bars, of a series of teeth having their shanks shouldered and located between the bars, bolts passed through the shanks and bars, and separate binding-bolts passed through the bars between the shanks for the purpose of clamping the shanks between the bars, substantially as specified.

484,441. PILLOW. ANDREW J. LYLE, Hillsborough, Ohio. Filed Feb. 2, 1892. Serial No. 420,099. (No model.)

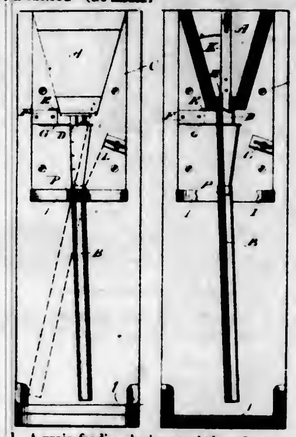


Claim.—1. In a spring-pillow, the combination of a rectangular frame, reversely-arranged top and bottom semielliptical springs, a covering over said springs, longitudinally-arranged top and bottom semielliptical springs, and an outer covering.

2. In a spring-pillow, the combination of a rectangular frame, a

cross-spring having its ends secured to the side bars of the frame, top and bottom semielliptical springs having their ends secured to the side bars of the frame, a covering over said springs, longitudinally-arranged top and bottom semielliptical springs over the said covering, and a covering over the whole frame and springs.

484,442. HORSE-FEEDING DEVICE. MARIUS I. MAGOON, Malone, N. Y., assignor to Egbert R. Magoon, same place. Filed Sept. 11, 1890. Serial No. 363,694. (No model.)

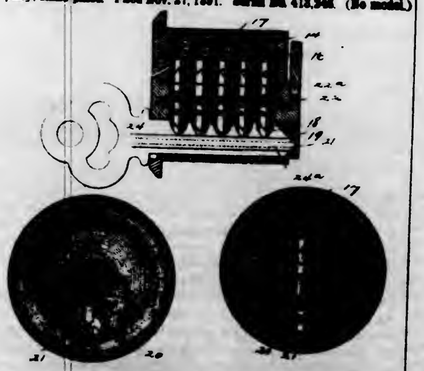


Claim.—1. A grain-feeding device consisting of a hopper, a vibratory spout pivotally supported at one end and having one end exposed, so that it may be struck and vibrated, a cup on the spout, and means for simultaneously opening the hopper and closing the cup, and vice versa, substantially as set forth.

2. A grain-feeding device consisting of a hopper, a vibratory spout pivoted at or near one end and having one end exposed, so that it may be struck and vibrated, a cup on the spout, and an adjustable stop for regulating the throw of the spout, and means for simultaneously opening the hopper and closing the cup, and vice versa, substantially as set forth.

3. The combination, with a hopper, a vibratory spout, and a cup thereon, of a plate on the cup for closing the hopper when the spout is swung in one direction, a stationary plate for closing the cup at the bottom when swung in the opposite direction, and stops for regulating the swing of the spout, substantially as set forth.

484,443. LOCK. LAURENCE MOUAT, Jr., and EDWARD W. PRATT, Chicago, Ill., assignors to the Chicago Hardware Manufacturing Company, same place. Filed Nov. 27, 1891. Serial No. 413,346. (No model.)

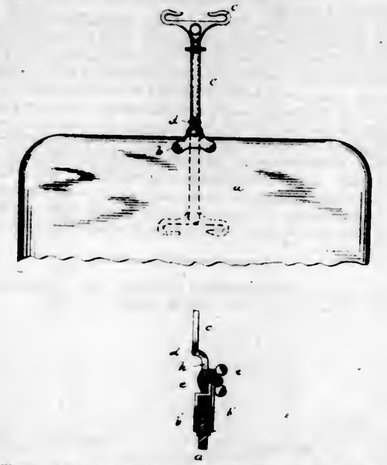


Claim.—1. In a lock of the class described, two sets of lever pins, said sets being of unequal length and the longer set provided with heads overhanging the shorter and adapted to be operated without moving the shorter set and also adapted to be raised by the shorter set when the latter are operated, substantially as described.

2. In a lock of the class described, two sets of lever pins of unequal length, one set having heads overhanging the other, and the sets being arranged in planes parallel to each other and to the keyway, substantially as described.

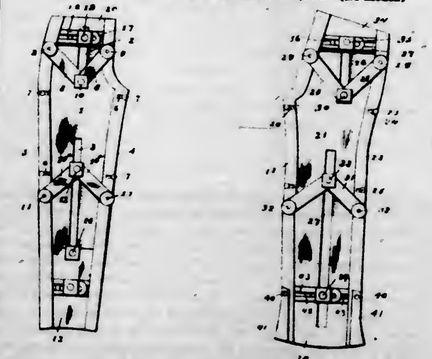
3. In a lock of the class described, the combination, with a cylinder provided with a keyway having parallel side walls each provided between its top and bottom with an inwardly-projecting angular rib, said ribs being oppositely located, of keys each having their edges in the same plane and their bodies offset to provide longitudinal grooves angular in cross-section and corresponding, respectively, with the ribs of the keyway, whereby said keys are adapted for entrance upon opposite sides thereof, substantially as described.

484,444. REIN-SUPPORT. ARCHIE MCILROY, Norwich, Conn. Filed Nov. 2, 1891. Serial No. 410,564. (No model.)



Claim.—In a rein-support, the combination, with a clamp comprising two plates, each provided with an opening in its upper portion, an extensible support, the upper portion of which is formed into a T-head and the lower portion is provided with an opening to correspond with the openings through the plates, and a clamping-bolt through the holes of the support and of the plates at right angles to the clamping-surfaces of the plates, whereby the tightening of the bolt secures the clamps to the dash and also secures the support in its proper position, substantially as set forth.

484,445. TROUSERS-PATTERN. JOHN G. NIEKAMP, Fort Recovery, Ohio. Filed Apr. 7, 1892. Serial No. 428,173. (No model.)



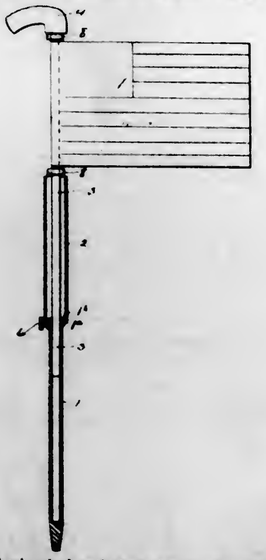
Claim.—1. A trousers-pattern for front or back sections, comprising a base approximating in shape that of the trousers-section and provided with independent slots, oppositely situated inside and outside longitudinal strips forming the outlines of the trousers-leg and expansively mounted, respectively, on the lateral edges of the base, graduated scales on the base at the edges of the slots, located, respectively, opposite the hip and knee portions, toggle-levers pivoted at their outer extremities, respectively, to the expansible strips and movable in the

said respective slots and registering with the respective ends, and pivot-bolts loosely connecting the adjacent inner ends of the toggle-levers and retained in said slots for vertical play therein, substantially as described.

2. A trousers-pattern for fore or back sections, the same consisting of a base approximating in shape the desired section, provided with longitudinal slots, opposite inner and outer longitudinal strips outlining the trousers-leg section, toggle-levers pivoted at their outer ends, opposite the knee and hip portions to said strips, bolts pivotally connecting the inner overlapping ends of the levers and retained in the respective slots for vertical movement therein, upper and lower lengthening-plates interposed between the opposite expansible strips and attached as extensions, respectively, to the upper and lower terminals of the base and perforated, and the bolts passed through the plates and slot, substantially as specified.

3. A trousers-pattern, the fore or back sections of the same consisting of a base approximating in shape the shape of the trousers desired and provided with the upper and lower longitudinal slots 2 and 3, respectively, the inner and outer longitudinal strips 4 and 5, respectively, the toggle-levers 8 and 10ª, pivoted at their outer ends to the strips 4 and 5, opposite the hip and knee portion, the bolts passing through the slots and pivotally connecting the inner ends of the levers, the upper and lower extension-plates forming continuations of the base, the bolts passed through the same and through the slots in the base, the opposite pair of waist-sections, of substantially-T shape, having their inner ends or stems overlapped and slotted to receive the bolt of the upper extension or lengthening plate, and the lower expansible wings pivoted to the lower portion of the strips, substantially as specified.

484,446. WALKING-STICK AND FLAG. JOHN H. HIKINS, Sharon, Pa. Filed Sept. 26, 1891. Serial No. 407,084. (No model.)

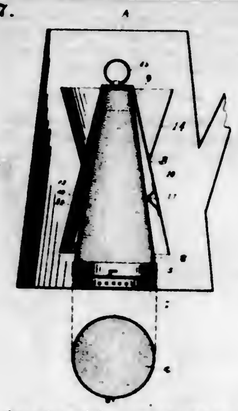


Claim.—The herein-described combined walking-stick and flag, comprising the lower tube 1, closed at its lower end, the upper tube 2 of greater diameter, both internal and external, than said tube 1, the portion 1ª between the same, said portion having an opening of the same diameter as that in said tube 1, and providing a shoulder 1ª at the lower end of the tube 2, a thumb-screw 6, extending through the side of said portion 1ª, the rod 3, extending from end to end of the tubes, said rod being of substantially the same diameter as the internal diameter of said tube 1 and provided at its upper extremity with a cane head, a flag secured to the upper end of said rod, and movable cups in said rod at the top and bottom of said flag, said cups holding the flag when the same is rolled and the lower one resting on the shoulder 1ª when the rod is in its lowermost position and the flag within the tube 2.

484,447. COFFIN-STOPPER. GEORGE H. OVERMAN, Rock Island, Ill. Filed Mar. 5, 1892. Serial No. 424,244. (No model.)

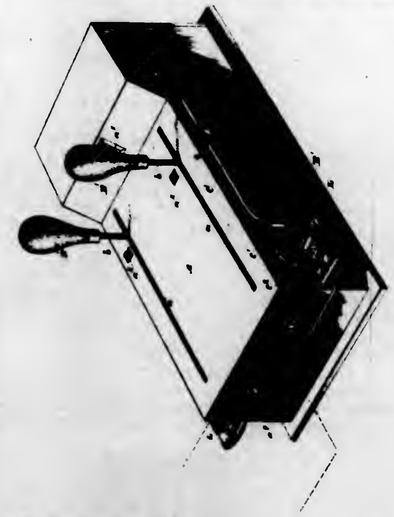
Claim.—In a coffin-stopper, the combination of the hoop, perforated cone, the cone 10, and outer cup or receptacle attached thereto,

484,447.



all secured together substantially as stated, and for the purposes set forth.

484,448. STAMP-AFFIXING MACHINE. EDWIN C. PALMER, Cleveland, Ohio. Filed Sept. 23, 1891. Serial No. 406,906. (No model.)



Claim.—1. In a stamp-affixing machine, the combination of a yieldingly-supported rubbing-pad, an idioelectric stamp-carrier, and a guide for the latter arranged parallel with the rubbing-surface of the rubbing-pad, substantially as set forth.

2. In a stamp affixing machine, the combination of a yieldingly-supported rubbing-pad, a guide parallel with the rubbing-surface of said pad, and an idioelectric stamp-carrier having a cross-bar traveling in said guides and at a distance from the attractive surface of the carrier greater than the normal distance between the rubbing-surface of the pad and the guide, substantially as set forth.

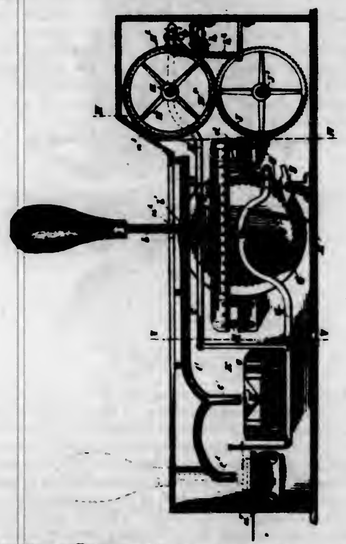
3. In a stamp-affixing machine, the combination of a closed casing, a stamp-receptacle in the same, a letter or envelope support in the casing, a stamp-carrier, a guide for the latter between the stamp-receptacle and the support, and a register having a lever projecting toward the support in the path of the stamp carrier, so as to be operatively engaged by the latter when it is brought against the support, substantially as set forth.

4. In a stamp-affixing machine, the combination of a closed casing having an opening for the insertion of envelopes or letters, stamp-carriers, each carrier movable in said casing toward and from said opening, and a drawer provided with means for locking it in said casing and having stamp-receptacles corresponding to and registering with the carriers and the opening, substantially as set forth.

5. In a stamp-affixing machine, the combination of a set of stamp-

affixing devices, each device affixing one denomination of stamps, a register indicating amounts in money, and intermediate mechanism connected to said affixing devices and register and constructed to move the money-register in degrees corresponding to the values of the stamps affixed, substantially as set forth.

6. In a stamp-affixing machine, the combination of a closed casing, a rubbing-pad, a stamp-receptacle, and an envelope-support arranged within said casing, and a stamp-carrier consisting of a handle guided in said casing, and a knob of idioelectric material, substantially as set forth.



7. In a stamp-affixing machine, the combination of a rubbing-pad, a stamp-receptacle, and an envelope-support, all arranged in a series, with an idioelectric stamp-carrier and a guide for the same arranged to guide said carrier over and to said pad, receptacle, and support, substantially as set forth.

8. In a stamp-affixing machine, the combination of a rubbing-pad, a stamp-receptacle, and an envelope-support, all arranged in a series, with an idioelectric stamp-carrier and a guide for the latter, arranged parallel with the rubbing-pad and with deflections to the stamp-receptacle and envelope-support, substantially as set forth.

9. In a stamp-affixing machine, the combination of a closed casing having an opening for the insertion of an envelope or letter, a locked stamp-receptacle within said casing, and a stamp carrier movable in said casing, substantially as set forth.

10. In a stamp-affixing machine, the combination of a set of stamp-affixing devices, each device affixing one denomination of stamps, a set of registers, each register connected to be operated by one affixing device and to register the number of stamps affixed, a register indicating amounts in money, and connections between said register and the set of stamp-registers, constructed to move the money-register in degrees corresponding to the value of the stamps registered, substantially as set forth.

11. In a stamp-affixing device, the combination of a stamp-receptacle, an envelope-support, a stamp carrier, and a register having an arm projecting in the path of the stamp-carrier, substantially as set forth.

484,449. LANTERN FOR ELECTRIC LIGHTING. DANIEL S. PAGE, Malden, and JOSEPH L. ROBBINS, Cambridge, assignors to said Page and ALBERT H. PAGE, Malden, Mass. Filed Dec. 12, 1891. Serial No. 414,788. (No model.)

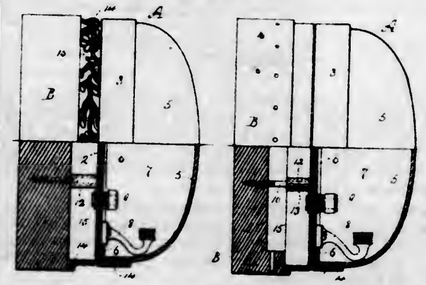
Claim.—1. As a new article of manufacture, a lantern composed of a lantern-head, a lantern-globe, protector-rods to surround the latter, and a removable apertured shield with an adjustable slide to inclose said lantern-globe, substantially as herein set forth.

2. The combination, with a lantern, of a shield composed of an imperforate cylindrical apertured plate, and means whereby said shield may be detachably held in place upon the lantern, and an adjustable slide movable about said shield and adapted to close said aperture in the shield, substantially as explained.

3. In combination with a flanged lantern-head, the globe removably attached thereto, the packing to form a tight joint, and the exterior guard-rods, a removable apertured shield secured to said lantern-head, a slide adjustable about said shield, and a hollow tube to admit electric conductors, as herein set forth and specified.

4. The combination, with a capped lantern-head, its exterior guard-wires, and annular base-ring, of a lantern-globe adapted to form a steam and water tight joint with said head, an apertured shield removably affixed to the lantern-head, its movable slide, and means for operating the same, substantially as stated.

484,450. ELECTRIC-LIGHT FIXTURE. DANIEL S. PAGE, Malden, Mass., assignor to himself and ALBERT H. PAGE, same place. Filed Dec. 12, 1891. Serial No. 414,786. (No model.)

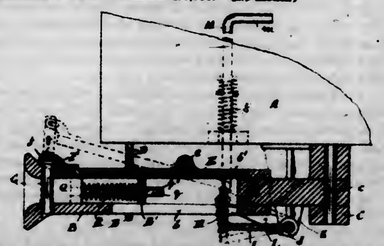


Claim.—1. The combination, with a rimmed or flanged metallic plate adapted to support an incandescent electric lamp and a transparent cup or cover removably secured thereto, of a base or block to which said plate is attached and between which and said plate is formed an air space or chamber, the outer wall of which between said plate and said base or block is provided with transverse openings communicating with said air space or chamber to afford a circulation of air behind said lamp-supporting plate.

2. The combination, with the metallic lamp-supporting plate 2, having the rim or flange 3 at its front side and the open-work flange or web 14 at its rear side, of the transparent cup or cover 5, removably secured to said flange 3 and forming an air-tight chamber, in which the incandescent lamp is placed, and a base or block B, to which said plate is attached and between which and said plate is formed an air-space 15, surrounded by said open-work flange 14.

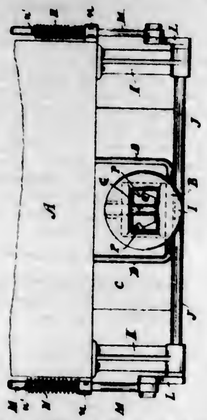
3. In combination with an electric-light fixture having a steam and water-tight chamber composed of a rimmed plate or disk, a cup or cover removably affixed thereto, and an open web or support, a block secured to said fixture and separated therefrom by an air-space, a bracket within said chamber to hold the electric lamp, and means for the entrance and exit of wires conveying the current, substantially as specified.

484,451. CAR-COUPLING. EDWARD W. FARROW, Plymouth, Mass. Filed Mar. 5, 1892. Serial No. 423,995. (No model.)



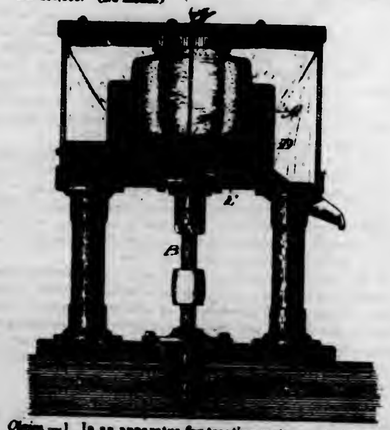
Claim.—1. In a car-coupling, a draw-head fulcrumed to the car at its rear end and having a lever on its upper side fulcrumed as described, a chain and arm for connecting its rear end to a rocking shaft,

arms secured to the ends of said shaft, rods attached to said arms, and spiral springs for keeping the rods in their normal position, in combination with a coupling-pin and a block for retaining same in place when raised, said block being operated by a spring, substantially as set forth.



2. A car coupling consisting of a draw-head B, fulcrumed at *c* to the under side of the car, said draw-head being hollow and having openings *b b'*, and a cross-bar B', in combination with a coupling-pin G, lever F, chain H, arm I, rocking shaft J, arms L, rods M, springs N, and block Q, rod *q*, and spring R, all arranged and operated substantially as set forth.

484,452. APPARATUS FOR SEPARATING MOLTEN MATERIALS OF DIFFERENT SPECIFIC GRAVITY. ORRIN B. PECK, Chicago, Ill., assignor to Malcolm Peck, same place. Filed Jan. 11, 1892. Serial No. 417,698. (No model.)



Claim.—1. In an apparatus for treating molten material containing particles of different degrees of specific gravity, the combination of a rotatable treatment-vessel provided with a chamber or recess F in its bottom, passages or channels communicating with such chamber, and means for forcing water into such chamber and channels or passages, substantially as described.

2. In an apparatus for treating material containing particles of different degrees of specific gravity, the combination of a rotatable treatment-vessel provided with passages or channels through its bottom, open at their ends, a bowl or cup into which water may be introduced and forced through the passages or channels and away by the action of centrifugal force, means for supplying water to the bowl or cup, and means for rotating the vessel, substantially as described.

484,458. APPARATUS FOR FEEDING POULTRY. GUSTAVE PAUMIER, Paris, France. Filed Mar. 2, 1892. Serial No. 423,566. (No model.) Patented in France July 11, 1891, No. 214,877.

Claim.—In combination, the receptacle, the hopper with the passage leading to the receptacle at the rear thereof, a cover for the rear part of the said receptacle, consisting of the partition K, extending forward about midway of the receptacle and forming a rear chamber, and movable covering means for the front of the said receptacle, consisting of the open grating formed by parallel bars arranged to form approximately a continuation of the partition K when in forward position, the side plates Q at the ends of the cross-bars, the said plates being pivotally supported, the movable platform, and the connections therefrom to the plates Q, the said grating being arranged to move back over the rear partition K, substantially as described

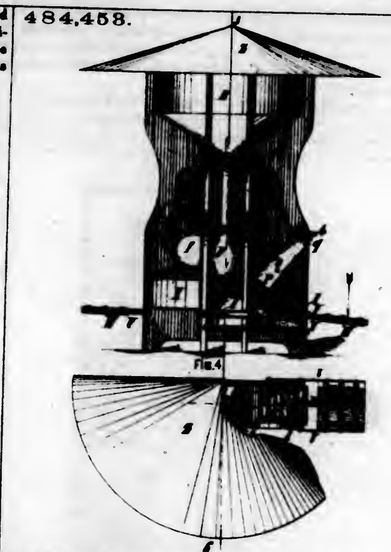
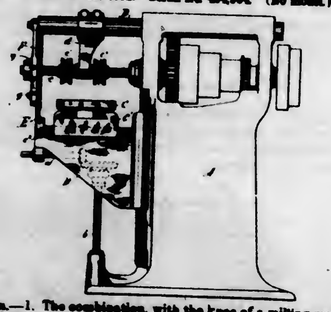


Fig. 4

484,454. WEATHER-STRIP. JOHN PHILLIPS, Williamstown, Pa. Filed Aug. 11, 1891. Serial No. 402,347. (No model.)

Claim.—The weather-strip composed of a basal molding B, attached to the outside of the door by the screws *b*, in combination with the flap C, worked by the spirals E, which are mounted on the guiding-wires F, secured to the knobs *g* and *g'*, and have their ends projecting through the eyes *m* in the plate H, said strip being actuated by the engagement of the plate D with the rabbeted strip on the door-frame, substantially as herein set forth.

484,455. MILLING-MACHINE. CHARLES H. PHILLIPS, Providence, R. I., assignor to the Brown & Sharpe Manufacturing Company, same place. Filed Mar. 15, 1892. Serial No. 424,994. (No model.)

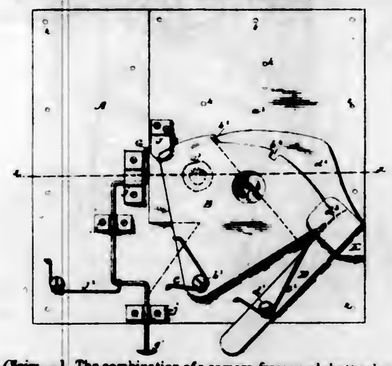


Claim.—1. The combination, with the knee of a milling-machine, of a bracket secured to said knee, a bar secured to the frame of the machine, and a bracket secured to said bar, said last-named bracket being provided with a bearing for the outer end of the cutter-arbor and said two brackets being clamped together, whereby said cutter-arbor will be firmly supported in all directions, substantially as described.

2. The combination, with the knee of a milling-machine, of a bracket adjustably secured to said knee, a bar adjustably mounted in bearings in the frame of the machine, and a bracket secured to said bar, said last-named bracket being provided with a bearing for the outer end of the cutter-arbor and said two brackets being clamped together, whereby said cutter-arbor will be firmly supported in all directions, substantially as described.

3. The combination, with the knee of a milling-machine, said knee being vertically adjustable, of a bracket secured to said knee, a bar mounted in bearings in the frame of said machine, and a bracket secured to said bar, said last-named bracket being provided with a bearing for the outer end of the cutter-arbor and one or both of said brackets being provided with slots for the clamp-bolts, whereby said knee with the bracket secured thereto may be adjusted vertically with relation to the other bracket and the bearing therein, substantially as described.

484,456. CAMERA-SHUTTER. HENRY G. PLATT, Nantucket, Mass. Filed May 4, 1891. Serial No. 391,503. (No model.)



Claim.—1. The combination of a camera-frame and shutter-board, a spring-actuated shutter pivoted to said board and having notches b^3 b^4 in its periphery, the notch b^3 being beveled on one side, and a hole b', adjacent to its curved periphery, and a spring-catch passing through the bottom of the camera and adapted to engage with the notch b^3 for time exposure and with the notch b^4 for instantaneous exposure with the lever D, carrying a cut-off plate and having its pivot independent of the shutter-pivot, substantially as described.

2. The combination of a camera shutter-board and a spring-actuated shutter pivoted thereto and having the hole b' therein with the pivoted lever D, having the cut-off plate d^3, adapted to close the hole b' and guide one side of the shutter, and the front wing d^3, adapted to guide the other side of the shutter, substantially as described.

3. The combination of a camera shutter-board, a triangular shutter pivoted thereto, a spring to actuate it in one direction, and a pivoted lever D to actuate it in the opposite direction, said lever having guide-plates to embrace one corner of the shutter, with the clip J, secured to the shutter-board to guide, also, the shutter, substantially as described.

484,457. DEVICE FOR SUPPORTING AND HOLDING CARTRIDGES IN FIREARMS. ROBERT PFEIFER, Gloversville, N. Y. Filed Sept. 18, 1889. Serial No. 324,234. (No model.)

Claim.—1. A cartridge-holder for firearms, formed by the combination of a metallic body provided at its base end with a rim-flange and at its opposite end with a cartridge-holding device which is integral with said body and has in it the recess *d'* for engagement with the flange form or foot or projection *b* of a cartridge of a firing device working in the body of the said holder, substantially as and for the purposes set forth.

2. A cartridge-holder for firearms, formed by the combination of the metallic body having with its base end a rim-flange and with its opposite end a cartridge-holding device which is integral with the said body and has with it an angular form of holding projection d^3, and an angular recess *d'* between said holding projection and the body of said cartridge-holder, and a firing device or pin having an oblique form of movement in the said body, substantially as and for the purposes set forth.

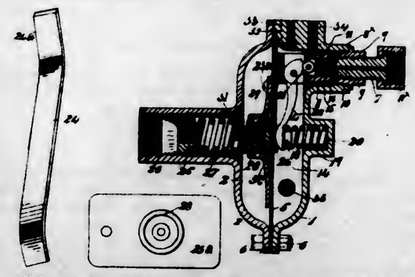
3. In a cartridge-holder for firearms, the combination, with the metallic body of size corresponding with the bore of the barrel of the firearm, and having with its rear end provision for engagement with an extractor and integral with its forward portion a cartridge-holding jaw, of a jointed coacting jaw and a firing-pin, substantially as and for the purposes set forth.

4. In a cartridge-holder for firearms, the combination, with a body-piece of size and form corresponding with the bore of the barrel of the firearm, of cartridge-holding jaws which can be opened and closed at will and by their ends support the base of a cartridge and a firing device, substantially as and for the purposes set forth.

5. In a cartridge-holder for firearms, the combination, with a body-piece of size corresponding with the bore of the barrel of the firearm and provided at its base end with a flange-rim for engagement with an extractor and having integral with its forward end portion a cartridge-holding jaw, of a coacting cartridge-holding jaw jointed with said body and a firing-pin working within said body, substantially as and for the purposes set forth.

6. In an interior cartridge-holder for firearms, the combination, with a body-piece of size and form corresponding with that of the bore of the barrel of the firearm and having on its rear end a flange-rim and on its front end a jaw containing a recess for holding a flange made with the shell of a cartridge, of a coacting movable jaw provided with a corresponding recess, and a firing-pin which can be moved by the action of the mechanism of the firearm toward said recess in said jaws, substantially as and for the purposes set forth.

484,458. FLUID-PRESSURE REGULATOR. CHARLES J. REINDERHOUT, Indianapolis, Ind., assignor to Albert Kopp, Ludwig Jaeger, Julius Schuler, and James R. Curtis. Filed May 25, 1892. Serial No. 434,237. (No model.)



Claim.—1. In a fluid-pressure regulator, the combination, with the front and rear casings thereof and an interposed diaphragm, of a regulating-lever having unequal arms and fulcrumed in said rear casing and having its longer arm operated by said diaphragm and its shorter arm provided with a cam-surface, a valve-seat secured in said rear casing and a valve thereon, a valve-adjusting nut on the stem of said valve, and an antifriction-roller, said valve being operated by the short arm of the lever through the medium of said roller and cam-surface bearing upon said roller, and a suitable pressure-spring opposing said diaphragm and opposite said lever, substantially as described.

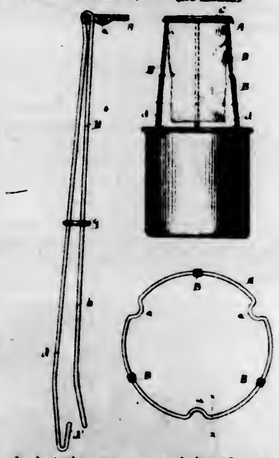
2. In a fluid-pressure regulator, the combination, with the front and rear casings thereof and an interposed diaphragm, of a regulating-lever having unequal arms and fulcrumed in said rear casing and having its longer arm operated by said diaphragm and its shorter arm provided with a cam-surface, a valve-seat secured in said rear casing and a valve thereon, a valve-adjusting nut on the stem of said valve, and an antifriction-roller, said valve being operated by the short arm of the lever through the medium of said roller and cam-surface bearing upon said roller, the curvature of said surface being such as to produce regular increments of distance of the valve from its seat, and a suitable pressure-spring opposing said diaphragm and opposite said lever, substantially as described.

3. In a fluid-pressure regulator, the combination, with the front and rear casings thereof and an interposed diaphragm, of a lever having unequal arms fulcrumed in said casing, a diaphragm counter-spring between said lever and diaphragm, a valve-seat secured in said rear casing and a valve on said seat, and a suitable pressure-spring opposing said diaphragm and opposite said lever, substantially as described.

4. In a fluid-pressure regulator, the combination, with the front and the rear casings thereof and their yielding interposed diaphragm, of a regulating-lever having unequal arms and fulcrumed in said casing, a diaphragm counter-spring fulcrumed between said casing and diaphragm and having its free end interposed between said diaphragm and lever, a valve-seat secured in said rear casing, a valve thereon arranged to engage the shorter arm of said lever, and a suitable pressure-spring opposing said diaphragm, substantially as described.

5. In a fluid-pressure regulator, the combination, with the front and the rear casings thereof and the yielding interposed diaphragm, of a regulating-lever having unequal arms and fulcrumed in said casing, a valve-seat secured in the rear of said casing, a valve thereon arranged to engage the shorter arm of said lever, a concaved plate, a compressed spring pressing upon said diaphragm through the medium of said plate and along the periphery thereof, opposing the fluid-pressure upon the other side of the diaphragm, a screw adjustment for the pressure of the spring, a central disk carried by said plate, abutting against the diaphragm to support the same against the central pressure thereon, and a screw adjustment for said disk, substantially as described.

484,459. STRAINER. MARY B. REYNOLDS, Tacoma, Wash. Filed Dec. 14, 1891. Serial No. 414,967. (No model.)



Claim.—1. A strainer-support consisting of a top ring, legs pivoted on said ring, constructed at their lower ends to bear against opposite sides of the vessel, and a ring to bind said parts against the vessel, substantially as described.

2. In strainers, a frame consisting of a top ring, legs for said ring formed each of two parts movable in respect to one another, and means to clamp said parts upon a vessel, substantially as described.

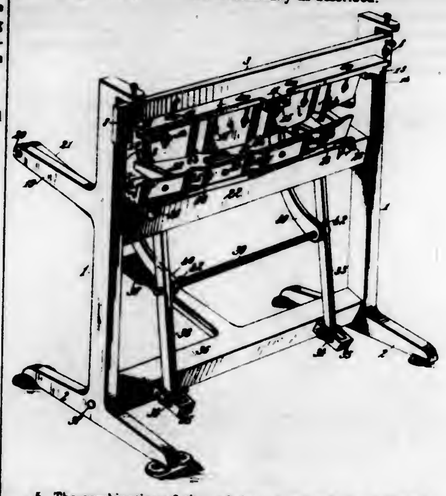
484,460. STAVE TRIMMING OR JOINTING MACHINE. CHARLES W. REID, Summertown, assignor of one-half to Luther L. Frierson, Mount Pleasant, Tenn. Filed Aug. 6, 1891. Serial No. 401,985. (No model.)

Claim.—1. The combination, with a stave-cutting rest, of a knife-bar, a jointing-knife composed of a single continuous strip of elastic metal, a series of independently-adjustable plates carried by and bodily movable back and forth on the knife-bar and secured to the elastic knife to constitute a substantially-continuous support therefor along its length, and adjusting devices carried by the knife-bar and acting upon the adjustable plates to independently adjust them and spring the knife into curves of greater or less radii, substantially as described.

2. The combination of an oscillating table having an adjustable elastic cutting-rest, a knife-bar which is supported in a fixed position during the stave jointing or trimming operation, a series of independently-adjustable plates suspended from and bodily movable back and forth on the knife-bar and secured to the elastic knife to constitute a substantially-continuous support for the same along its length, and adjusting devices carried by the knife-bar and acting upon the adjustable plates to independently adjust them and spring the knife into curves of greater or less radii, substantially as described.

3. The combination, with a stave-cutting rest, of a knife-bar, a jointing-knife composed of a single continuous strip of elastic metal having a series of laterally-projecting cutting portions at its cutting-edge, a series of independently-adjustable plates carried by and bodily movable back and forth on the knife-bar and secured to the elastic knife to constitute a substantially-continuous support therefor along its length, and adjusting devices carried by the knife-bar and acting upon the adjustable plates to independently adjust them and spring the knife into curves of greater or less radii, substantially as described.

4. The combination of an oscillatory table, an elastic cutting-rest, a series of plates adjustable on the table and secured to the elastic cutting-rest to constitute a substantially-continuous support therefor along its length, a knife-bar, an elastic trimming or jointing knife, a series of independently-adjustable plates carried by and bodily movable back and forth on the knife-bar and secured to the elastic knife to constitute a substantially-continuous support therefor along its length, and adjusting devices carried by the knife-bar and acting upon the adjustable plates to independently adjust them and spring the knife into curves of greater or less radii, substantially as described.



5. The combination of the end frames or standards, a knife-bar which stands stationary during the stave trimming or jointing operation, an elastic trimming or jointing knife, a series of angular plates comprising horizontal flanges adjustably secured to the knife-bar and vertical flanges to which the elastic knife is attached, a series of set-screws carried by the knife-bar and acting upon the angular plates to independently adjust them and spring the knife into curves of greater or less radii, a cutting-rest, and means for adjusting the cutting-rest into longitudinal curves of different radii, substantially as described.

6. The combination, with a knife-bar and an elastic stave-jointing knife, of a series of independent adjustable angular plates suspended from and movable back and forth on the knife-bar and connected with the elastic jointing-knife, devices carried by the knife-bar and acting against the angular sections to independently adjust them and spring the knife into curves of greater or less radii, a table, a series of adjustable plates mounted on the table, an elastic cutting-rest secured to and solely supported by the adjustable plates, and devices carried by the table and acting on said plates to independently adjust them and spring the cutting-rest into curves of greater or less radii, substantially as described.

7. The combination, in a stave trimming or jointing machine, of a knife-bar, an elastic trimming or jointing knife, a series of independently-adjustable plates slidable back and forth on the knife-bar connected with the elastic knife and constituting a substantially-continuous support for the latter along its length, and set-screws carried by the knife-bar and acting against the opposite end portions of the plates for independently adjusting them and springing the knives into curves of greater or less radii, substantially as described.

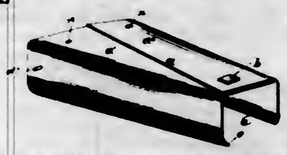
8. The combination, in a stave trimming or jointing machine, of a stave-cutting rest, a knife-bar, a pair of knife supports carried by and adjustable lengthwise and transversely with relation to the knife-bar, and a stave-jointing knife composed of a single continuous strip of elastic metal secured to the lengthwise and transversely-adjustable knife-supports, substantially as described.

9. The combination, in a stave trimming or jointing machine, of a stave-cutting rest, a knife-bar, a pair of knife-supporting plates carried by and movable lengthwise and transversely with relation to the knife-bar, a stave-jointing knife composed of a single continuous strip of elastic metal secured to the lengthwise and transversely-adjustable knife-supporting plates, and a series of set-screws carried by the knife-bar for adjusting the knife-supporting plates lengthwise and transversely with relation thereto, substantially as described.

10. The combination, in a stave trimming or jointing machine, of a knife-bar, an elastic jointing-knife, knife-supports composed of angular plates having horizontal flanges movably secured to the knife-bar and vertical flanges to which the elastic jointing-knife is attached, and devices carried by the knife-bar for adjusting the knife-supports to spring the jointing-knife into longitudinal curves at different radii, substantially as described.

11. The combination, in a stave trimming or jointing machine, of a knife-bar, a trimming or jointing knife, an oscillatory table having a cutting-rest, a rocking treadle-bar having rearwardly-projecting arms, rods or links pivotally connected at their upper ends with the table and adjustable at their lower ends along the rearwardly-projecting arms of the rocking treadle-bar, a rock-shaft journaled to the said connecting rods or links, and a pair of stave-feeding arms rigidly secured to the rock-shaft, so that the latter constitutes a pivotal support for moving both arms in unison and causing them to rise and fall with the oscillatory table, substantially as described.

484,461. GUARD FOR RAILWAY TRACKS AND SWITCHES. MICHAEL RILEY, London, Ohio. Filed Apr. 9, 1892. Serial No. 428,289. (No model.)



Claim.—In a guard for railway-tracks, the combination of the oblong angular overlapping plates a' a^2, jointedly connected at their inner ends, as described, and a spring d, connecting the inner faces of the side pieces of said guard-sections, substantially as and for the purpose specified.

484,462. OSCILLATING HOOK FOR SEWING-MACHINES. ALBERT ROPER, Chicago, Ill., assignor to James Bolton, same place. Filed June 2, 1892. Serial No. 435,204. (No model.)

Claim.—1. The combination, with an oscillating hook provided with a loop-seizing beak, of a loop-spreader provided with a barb or hook arranged to point backward or in a direction opposite to that in which the said beak extends, the point of said barb being within the periphery of the said oscillating hook and rearward of the point of said beak, and said loop-spreader being formed on a carrier which is separate from or independent of the said hook.

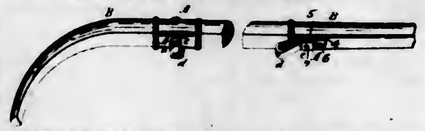
2. The combination, with an oscillating hook provided with a loop seizing beak, of a loop-spreader provided with a barb or hook arranged inside of or beneath the said beak and pointing backward or in a direction opposite thereto, the point of said barb being also rearward of the point of said beak, and a carrier contained in said hook and by which the said loop-spreader is sustained or supported.

3. The combination, with the oscillating hook B, provided with the loop-seizing beak *b*, of the carrier *d*, provided with the loop-spreader D, having a loop-spreading hook or barb arranged to point in a direction opposite to that of said beak, the point of said barb extending rearward of the point of said beak and beneath or inside of the latter, said loop-spreader being constructed to be oscillated by said hook, a stationary bobbin-case provided with a tension device, and a bobbin contained within said case.

484,463. STEAM-BOILER. LEWIS H. ROSENBERG, Philadelphia, Pa. Filed Mar. 1, 1892. Serial No. 423,617. (No model.)

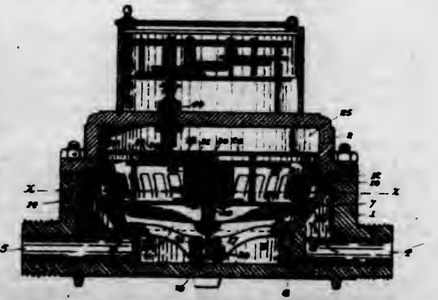
Claim.—In a steam-boiler, the combination of front and rear headers, substantially as described, having enlarged heads or steam-domes extending rearwardly to facilitate the separation of the water and steam, a series of boiler-tubes connecting the headers, an upper larger series of tubes for the same purpose as the enlarged heads, connecting the dome or domes at their rear with the rear headers, a manifold connecting the domes, and a manifold connecting the rear headers, substantially as set forth.

484,464. HOLDBACK FOR CARRIAGES. HENRY R. SCHRADE, Rock Island, assignor of one-fourth to Uriah Bertner, Moline, Ill. Filed Apr. 2, 1891. Serial No. 387,505. (No model.)



Claim.—A clip for holding a loop to the thills, comprising a socketed main part having a seat for one end of the strap, a shallower extension for the other end of the strap, the spurs, and the openings for the screws in the main and extension portions, respectively, substantially as described.

484,465. ROTARY WATER-METER. CARL SIEGE, Toledo, Ohio. Filed Aug. 7, 1891. Serial No. 401,982. (No model.)



Claim.—1. In a water-meter, the combination of an exterior and an interior chamber divided by a circular partition-wall, which is perforated with tangential water-passages, and a circular piston provided with buckets on its exterior, said buckets being deepest at the top and gradually decreasing in depth to nothing at the bottom, substantially as described.

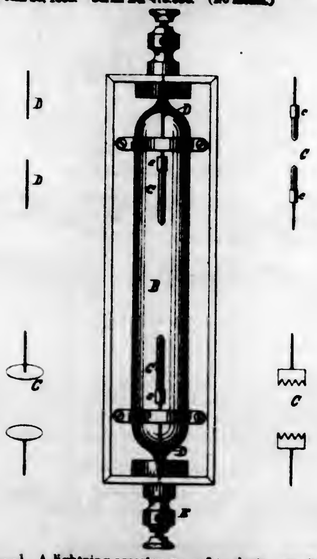
2. In a water-meter, the combination of a closed chamber through which the water is caused to pass, said chamber being divided into two circular chambers, an exterior and interior one, the partition-wall between said chambers being perforated with water-passages, with a circular piston located within the interior chamber and which is revolved by the current of water passing through the water-passages from the exterior to the interior chamber, with a retarding device connected to the piston, which consists of a fan or fans geared to it and revolved in the opposite direction from it in the water within the closed chamber, substantially as described.

3. In a water-meter, the combination of a closed chamber through which the water is caused to flow, with a piston located within said chamber and which is caused to revolve by the current of water passing through the chamber, and means located outside of the closed chamber for registering the number of revolutions of the piston, said

piston and registering mechanism being connected by a shaft passing through the wall of the chamber and which is provided with a head upon its interior end, which bears against the main side of the partition and which under the pressure of water in the chamber will maintain a water-tight joint around the shaft.

4. In a water-meter, the combination of an exterior and interior chamber divided by a circular partition-wall, which is perforated by tangential water-passages, and a circular floating piston not rigidly connected with any other portions of the mechanism, so as to permit vertical, rotary, and side motion of the piston, but connected by a linked fork or other equivalent device to the registering mechanism, substantially as described.

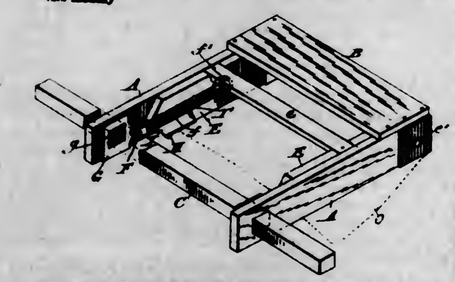
484,466. LIGHTNING-ARRESTER. LEWIS SEARING, Denver, Colo. Filed Jan. 20, 1892. Serial No. 418,690. (No model.)



Claim.—1. A lightning-arrester or safety device consisting of a pair of electrodes inclosed in a tube or reservoir containing a non-striking vacuum, the separation of the electrodes and the rarefaction of the gas being such that there is afforded a high-insulating resistance to currents of normal tension or electro-motive force and a ready path to static and like discharges of excessively-high tension, substantially as and for the purposes set forth.

2. A lightning arrester or safety device for permitting the discharge of lightning or like static charges of high tension and for rupturing the arc so formed when the discharge has passed, consisting of a pair of electrodes inclosed in a tube or reservoir containing a non-striking vacuum, substantially as described.

484,467. WINDOW-JACK. GEORGE F. SHERMAN and DANIEL A. MILLER, Manchester, N. H. Filed Oct. 20, 1891. Serial No. 410,208. (No model.)



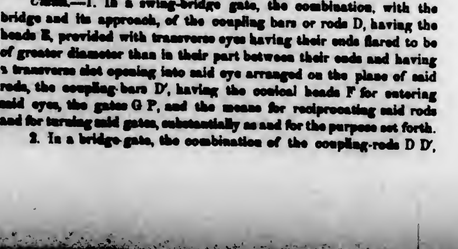
Claim.—1. The herein-described platform for use in connection with work on the outside of windows and window-frames, which consists in the combination of the main frame provided with the seat, the inclined arms having their lower ends wedge-shaped and engaging the window-sills, braces connecting said arms with the main frame, and a horizontal sliding bar passing through slots in the sides of the main frame and adapted to anchor the device at a point inside of the window-frame, substantially as described.

2. The herein-described window-jack, consisting of the side bars, the seat secured thereon, the sliding anchoring-bar, which passes through slots in the side bars of the main frame, the pivoted arms inside the main frame suitably connected together, and the slotted braces pivoted to the main side bars and engaging the movable arms, substantially as described.

3. In a window-jack, the combination of the side bars A A and seat B, the sliding bar C, passing through slots in bars A A, the arms E E, pivoted to the sides A A and having the rectangular wedge-shaped ends I, and the braces F, connected to the bars A and the arms E, substantially as described.

4. The combination, in a window-jack, of the sides A A and seat B, the arms E E, pivoted to the sides A A and connected by the transverse connection *e*, said arms being provided with the bolts I', the sliding bar C, passing through slots in the sides A, and the braces F, slotted at *f* and *f'*, said braces being pivoted to plates G, having slots *g*, and secured to sides A, and said slots *f* and *f'* engaging the bolts I', all substantially as described.

484,468. FENCE. PETER SMITH, Mount Pleasant, Iowa. Filed July 14, 1891. Serial No. 399,494. (No model.)



Claim.—In a fence, the combination of the posts having barbed-wire runners thereon, cross-strips extending transversely across and secured to the upper portions of said posts, inclined braces connected to the ends of said cross-strips and extending inward and bearing against the succeeding cross-strip, and guard-wires secured to said cross-strips, substantially as described.

484,469. FUSIBLE FIRE-ALARM. GEORGE R. SMITH, St. Cloud, Minn., assignor of one-half to Robert Ashworth, same place. Filed May 10, 1892. Serial No. 432,469. (No model.)

Claim.—1. In an electric thermostat, the combination of a non-conductor base-lock, a metallic cover C, having non-metallic fusible insulating material secured to the bottom thereof, two springs pressing against said material and having wires attached to said springs, and a wire connected to and in contact with said cover, substantially as described.

2. In an electric thermostat, the combination of a non-conductor base-lock, metallic covers C, having non-metallic fusible insulating material secured to the bottom of said covers, two coiled springs pressing against said material, the wires of said springs being extended through the base block, and a wire connected to and in contact with each cover, substantially as described.

484,470. BRIDGE-GATE. AUSTIN J. SMITH, Coal City, Ill. Filed June 13, 1892. Serial No. 437,194. (No model.)

Claim.—1. In a swing-bridge gate, the combination, with the bridge and its approach, of the coupling bars or rods D, having the heads E, provided with transverse eyes having their ends flared to be of greater diameter than in their part between their ends and having a transverse slot opening into said eye arranged on the plane of said rods, the coupling-bars D', having the conical heads F for entering said eyes, the gates G P, and the means for reciprocating said rods and for turning said gates, substantially as and for the purpose set forth.

2. In a bridge-gate, the combination of the coupling-rods D D',

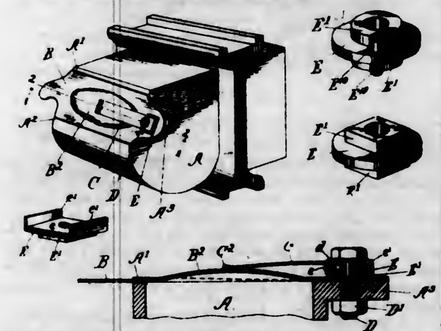
having, respectively, the head E, provided with a transverse eye and the conical head F and adapted to be detachably connected with each other as the bridge opens and closes, substantially as and for the purpose set forth.

3. In a bridge-gate, a reciprocating coupling-rod located on the bridge-approach, having an integral head on its outer end, arranged in a horizontal position transversely to said rod, and having its laterally-extending sides conical or pointed in form for adapting it to enter an eye on the outer end of a corresponding reciprocating rod on the bridge, a gate mounted on said approach and adapted to be turned by said rod as it is reciprocated, a reciprocating coupling-rod located on the swing-bridge in line with the coupling-rod on the approach and having a transversely-arranged integral head on its outer end, provided with a transverse eye and a transverse slot leading to said eye, said eye being funnel-shaped at each end for adapting it to receive said conical head and for detachably connecting said rods as the bridge is moved laterally and for preventing disconnection of said rods by any oscillatory motion of the bridge when said rods are in line with each other and coupled together, and the means for reciprocating said rods to turn said gate, substantially as and for the purpose set forth.

4. In a bridge-gate, the combination of the gate G P, having locking-perforations, and gate G' P', having the hooked arm H, and the means for turning said gates, substantially as and for the purpose set forth.

5. In a bridge-gate, the combination of gate G P, having locking-perforations, and the means for turning said gate, the gate G' P', having the hooked arm H for securing gate G across the roadway, the reciprocating rod D^4, having the friction-roller O, and the latch L', cam L, and box B^3 for locking gate G', substantially as and for the purpose set forth.

484,471. AXLE-BOX LID. ROBERT SOUTTER, Chicago, Ill. Filed May 20, 1892. Serial No. 434,314. (No model.)



Claim.—1. In a car-axle box, a lid pivoted thereto at one end and adapted to swing edgewise about said pivot to uncover the box, the bolt by which it is so pivoted, and a sleeve or bushing thereon extending through the lid of the box, and a spring retained between the bushing and the bolt-head and bearing upon the surface of the lid at a point remote from the pivoted end of the latter, substantially as set forth.

2. In a car-axle box, a lid pivoted thereto at one end and adapted to swing edgewise about said pivot to uncover the box, the bolt by which it is so pivoted, and a sleeve or bushing thereon extending through the lid to the box, and a spring which bears upon the lid only at a point remote from the pivoted end, said spring being engaged by the sleeve or bushing, so as to rotate therewith about the pivot of the lid, substantially as set forth.

3. In a car-axle box, a lid pivoted thereto at one end and adapted to swing edgewise about said pivot to uncover the box, a sleeve or bushing on the pivot-bolt, overhanging the lid, and a spring retained on the bolt between the bushing and the bolt-head and bearing upon the lid at a point remote from the pivoted end of the latter, substantially as set forth.

4. In a car-axle box, a lid pivoted thereto at one end and adapted to swing edgewise about said pivot to uncover the box, a sleeve or bushing on the pivot-bolt, extending through the lid of the box and having a flange which overhangs the lid, and a spring retained on the bolt between the bushing and the bolt-head and bearing upon the lid at a point remote from the pivoted end of the latter, substantially as set forth.

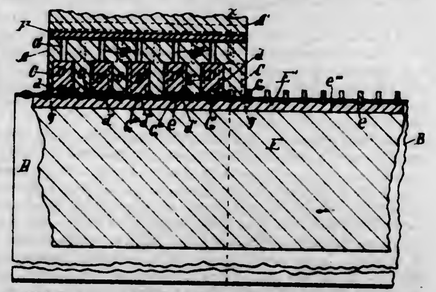
5. In a car-axle box, a lid pivoted thereto at one end and adapted to swing edgewise about said pivot to uncover the box, a sleeve or bushing located and rotatable on the pivot-bolt and extending through the lid to the box and engaged with the lid and non-rotatable relatively thereto, and a spring retained on the bolt between the bushing and the bolt-head and bearing upon the lid at a point remote from the pivoted end of the latter, substantially as set forth.

6. In a car-axle box, a lid pivoted thereto at one end and adapted to swing edgewise about said pivot to uncover the box, a pivot-bolt and a sleeve or bushing thereon which is non-circular at the lower end and extends through a non-circular aperture in the lid, such sleeve being provided at its upper end with a seat to receive the spring, and a spring lodged in such seat and retained thereon by the bolt-head and bearing on the lid at a point remote from the pivoted end of the latter, substantially as set forth.

484,472. METHOD OF PRODUCING DEFINITE PATTERNS ON ZINC-COATED PLATES. WICKHAM R. SPEAR, Philadelphia, Pa. Filed Jan. 27, 1892. Serial No. 419,600. (No specimens.)

Claim.—The method herein described of producing definite patterns on zinc-coated metal plates, which consists in placing the zinc-coated plate, immediately upon its removal from the galvanizing-tank and before the zinc has begun appreciably to set, in contact with metallic spuds or points and supplying said spuds or points with a cooling agent, substantially as described.

484,478. RIVETING-MACHINE. FREDERICK H. STURLOW, Los Angeles, Cal. Filed Oct. 10, 1891. Serial No. 408,361. (No model.)



Claim.—1. In a riveting-machine, the combination of a riveting-die plate provided with a series of rivet-setting dies consisting of a centering and shoving die, a spreading-die, and a heading-die arranged in the order named, and means for causing the several dies to operate successively upon a series of rivets to shove, flatten, and head them in turn, as set forth.

2. The combination, in a riveting-machine, of the mandrel proper provided with an interchangeable plate, such plate being shaped (the entire length of the seam) to the interior curvature of the tube to be riveted and having the rivet-base-seating cavities, die-plate-operating

mechanism, and an interchangeable die-plate having its pressure-face shaped to the exterior diameter of the tube to be riveted, and having a series of dies, each of which is provided with a cavity large enough to chamber the rivet acted upon, whereby the die-plate is adapted to press the laps as well as the rivets and cause every part of the seam to be firmly closed and shaped to the curvature of the tube while being riveted.

3. In a riveting-machine, the combination of the mandrel provided with the rivet-head-seating cavities, die-plate-operating mechanism, and a die-plate provided with a series of five rivet-setting dies arranged in line, the middle one of which is a heading-die, the next one on each side thereof a spreading-die, and those at the ends of the line stoving-dies, each provided with a cavity large enough to completely chamber the rivet each die has acted upon, and each cavity being large enough to chamber the head of the completed rivet, whereby the die-plate is adapted to operate in either direction and to press the sheets together each time a rivet is acted upon.

4. In a riveting-machine, a rivet-setting die-plate provided with the two series of five rivet-setting dies arranged in two parallel lines and in alternating positions, each series comprising the central heading-die, the two intermediate spreading-dies, and the two end centering and stoving dies, each die being provided with a cavity large enough to chamber the rivet each die has acted upon.

5. In a riveting-machine, the combination set forth of a mandrel provided with two rows of rivet-head-seating cavities and having its pressure-face curved to conform to the curvature of the interior of the tube to be riveted and the reciprocating die-plate provided with the rivet-chambering cavities and having its pressure-face curved to conform to the exterior of such tube.

6. In a riveting-machine, the combination set forth of a mandrel provided with two rows of rivet-head-seating cavities and having its pressure-face curved to conform to the curvature of the interior of the tube to be riveted and provided between the center lines of such rows of cavities with a pressure-relieving space, and the reciprocating die-plate provided with the rivet-chambering cavities and having its pressure-face curved to conform to the exterior of the pipe to be riveted.

7. In a riveting-machine, the combination of the frame of the machine, the swinging mandrel, and the spring-clamps arranged on such mandrel and provided with levers arranged to engage the frame of the machine when the mandrel is swung inward and be thereby caused to press the spring-clamps down toward the mandrel.

8. The combination set forth of the frame of the machine, the riveting-head slide-beam secured thereto, the head-frame movably mounted on such beam, the rotating eccentric-driving shaft journaled to the frame of the machine, the eccentric-box in the head-frame, the eccentric journaled in the eccentric-box and mounted to slide on such shaft and rotate therewith, and the thrust-blocks fitted to the under face of the beam to slide therealong and journaled upon the eccentric-driving shaft, the plunger connected with the eccentric-box, the die-plate secured to the plunger, and the mandrel secured to the frame of the machine below the plunger.

9. The combination set forth of the frame of the machine, the riveting-head slide-beam secured thereto, the head-frame movably mounted on such beam, the rotating eccentric-driving shaft journaled to the frame of the machine, the eccentric-box in the head-frame, the eccentric journaled in the eccentric-box and mounted to slide on such shaft and rotate therewith, the thrust-blocks fitted to the under face of the beam to slide therealong and journaled upon the eccentric-driving shaft, the plunger connected with the eccentric-box, the die-plate secured to the plunger, the mandrel secured to the frame of the machine below the plunger, the screw-shaft secured to the head slide-beam, the female screw-traveler connecting the head-frame with the screw-shaft, and intermediate transmitting mechanism connecting the screw-shaft and eccentric-driving shaft to cause them to rotate with relation to each other, substantially as set forth.

10. The combination set forth of the frame of the machine, the riveting-head slide-beam secured thereto, the head-frame movably mounted on such beam, the rotating eccentric-driving shaft journaled to the frame of the machine, the eccentric-box in the head-frame, the eccentric journaled in the eccentric box and mounted to slide on such shaft and rotate therewith, the thrust-blocks fitted to the under face of the beam to slide therealong and journaled upon the eccentric-driving shaft, the plunger connected with the eccentric-box, the die-plate secured to the plunger, the mandrel secured to the frame of the machine below the plunger, intermediate transmitting mechanism connecting the screw-shaft and eccentric-driving shaft to cause them to rotate with relation to each other, substantially as set forth, the reversible pawl-feed mechanism secured to the screw-shaft, the train of cogs Z, Y, X, and W, connecting the screw-shaft with the reciprocating rack, the reciprocating rack arranged to drive such train, and means connecting the driving-shaft and the rack to cause the rotary motion of the shaft to reciprocate the rack.

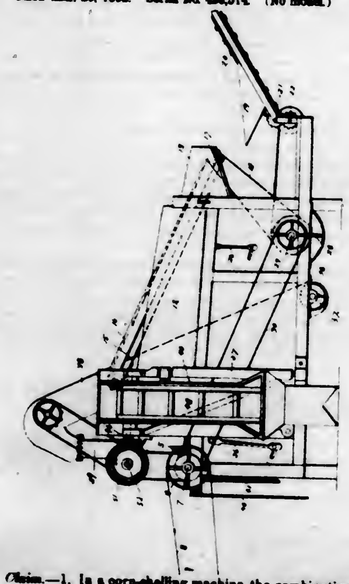
11. In a machine of the class described, the combination of the eccentric-driving shaft, the eccentric, the die-plate, plunger, and eccentric-box actuated by the eccentric, the head slide-beam, and the thrust-blocks journaled upon the driving-shaft and fitted to the under face of the beam to slide therealong and support the shaft against the thrust of the eccentric.

12. The combination of the eccentric-driving shaft provided with the channel, the eccentric mounted on such shaft and arranged to slide therealong and provided with the spline projecting into such channel, the plunger provided with the die-plate, the eccentric-box journaled upon the eccentric and connected with the plunger, means to guide the plunger, and means for moving the eccentric and the box and plunger along such shaft.

13. The combination of the frame provided with the bevel-face 51, the mandrel pivoted to such frame, and the clamp pivoted to the free end of such mandrel and comprising the spring member 53 and the spring member 52, having the engaging end 50 arranged to strike upon the bevel-face 51 when the mandrel is thrown into place, said spring members being secured together and pivoted to the mandrel and arranged to clamp the work in place when the mandrel is closed.

14. The combination of the frame, the mandrel pivoted to such frame, a spring-arm pivoted to such mandrel at the pivot end thereof and arranged to rest upon the work when in place and provided with the protruding end 60, and the auxiliary lever pivoted to the mandrel and having the arms 58 and 59 and arranged to engage the frame and to be thereby operated to engage the protruding end of the spring member to force the spring portion of the clamp down upon the work.

484,474. CORN-SHELLER. SAMUEL STROUP, Elmwood, Nebr. Filed Mar. 30, 1892. Serial No. 426,514. (No model.)

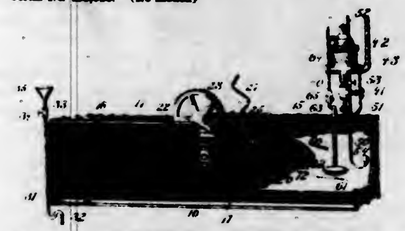


Claim.—1. In a corn-shelling machine, the combination, with the main frame having the hopper, the shaft 52, and the beveled gear 51, of the swinging crane pivotally connected to the main frame, the feeder-trough 45, carried by the crane, the shaft 46, journaled in the upper end of the feeder-trough, the endless conveyer 48, arranged in the trough, taking around the shaft 46, and the beveled gear 50, fixed upon the shaft 46 and adapted to engage the gear 51 when the feeder-trough is swung into a position at right angles to the main frame, substantially as specified.

2. In a corn-sheller, substantially as specified, the combination of a main frame, a hopper, the longitudinal cylinder, the concave, the cob-receptacle at the rear end of the frame, having the screen 14 and a lateral spout, and the endless conveyer traveling beneath the mouth of the spout and adapted to receive the grain from the screen 14 and discharge the same in the hopper, substantially as and for the purpose set forth.

3. A corn-sheller, as described, comprising the following instrumentalities, in combination, viz: a main frame, a hopper, a longitudinally-arranged shelling-cylinder, the concave, the cob-receptacle at the rear end of the frame, having the screen 14, the endless cob-stacker adapted to receive the cobs from the cob-receptacle, the endless conveyer adapted to receive the grains from the screen 14 and discharge the same in the hopper, the shoe arranged beneath the concave, the fan arranged in rear of the shoe, the transverse conveyer arranged in advance of the fan, and the endless elevator adapted to receive the grain from the transverse conveyer, all as and for the purpose specified.

484,475. APPARATUS FOR THE MANUFACTURE OF CARBURETED HYDROGEN. JAMES W. TALLMADGE, Albany, N. Y., assignor to Frank W. Beardsley, Bayonne, N. J. Filed Sept. 12, 1891. Serial No. 405,823. (No model.)



Claim.—1. In a gas apparatus, the combination of a tank for containing an acid solution, bent hinged arms depending into said tank, a tray for containing metal, pivoted to said arms, a gear fixed to said arms, a worm journaled adjacent to and meshing with said gear, and means for rotating said worm to swing said tray into and out of its normal position within said tank.

2. In an apparatus for producing carbureted hydrogen gas, the combination of a reservoir-chamber for containing an acid solution, a generating-chamber open at its lower end into said reservoir-chamber and terminating above the bottom thereof, a tray for holding metal to be acted upon by said solution, supported within said generating-chamber above the lower open end thereof, and an automatic blow-off valve connected with said generating-chamber for regulating the height of the acid solution therein, the outlet-pipe of said blow-off valve being provided with a hood open at its bottom and surrounding the end of said outlet-pipe for guiding the condensation therefrom.

3. In a gas apparatus, the combination of a generating-compartment for containing an acid liquor, a tray for containing metal, supported within said generating-compartment, a dependent tube extending through the top of said compartment, a float-valve adapted to float on said solution and provided with a hollow stem surrounding said dependent tube and with a mercury seal, an offset near the upper end of said tube, and a hood open at its bottom and surrounding said offset and provided with an escape-pipe extending above the hood.

4. In a gas apparatus, the combination of a generating-chamber, an eduction-pipe provided with a governor, and a drip-pipe extending from said governor into said generating-chamber and provided with a trap at its lower end.

5. In a gas apparatus, the combination of a generating-compartment for containing an acid liquor, a tray for containing metal scrap, supported in said compartment, a filling-pipe for hydrocarbon liquid, extending into said compartment and provided with a trap at its lower end, an eduction-pipe for the gas, and a drip-pipe for condensed matter, connecting said eduction-pipe with said filling-pipe.

484,476. PROCESS OF AND APPARATUS FOR FORMING SOLID-METAL INGOTS. ARTHUR J. TROWBRIDGE, Newark, N. J., assignor to Orlando M. Thowless, same place. Filed Apr. 6, 1892. Serial No. 428,310. (No model.)

Claim.—1. The process of forming solid-metal ingots, consisting in filling a mold with molten metal and displacing the metal at the upper portion of the ingot only by pressing it diagonally inward without moving the portions of the ingot near its surface laterally over the metal within, substantially as set forth.

2. An apparatus for forming solid-metal ingots, which consists of a mold or receptacle for retaining the metal provided with lateral compressing means pivoted to the said mold, substantially as described.

3. An apparatus for forming solid-metal ingots, which consists of a mold provided with a flaring mouth and lateral compressors mounted therein, substantially as described.

4. An apparatus for forming solid-metal ingots, which consists of a mold having a side or sides flared at the mouth, the flared portions being of less width than the width of the mold and having lateral compressors adjusted to fit the flaring sides, substantially as described.

484,477. CAR-COUPLING. OLE TWEDDEN, West Superior, Wis. Filed May 10, 1892. Serial No. 432,469. (No model.)

Claim.—1. In a car-coupling, the combination, with a draw-head recessed, as described, of a ball within said recess, said ball serving in coupling to engage said recess and a corresponding recess in a connecting draw-head and lock the draw-heads together, substantially as described.

2. In a car-coupling of the character described, the combination, with two connecting draw-heads, of a ball seated within a chamber in one of said draw-heads and adapted to engage a recess formed between the contacting faces of the two adjacent draw-heads and to lock the same together, substantially as shown and described.

3. In a car-coupling, the combination, with two connecting twin-jaw draw-heads having their inner faces recessed, as described, of a ball engaging said recesses to lock the draw-heads together and a lifting device for moving the ball out of the recesses, substantially as described, and for the purpose specified.

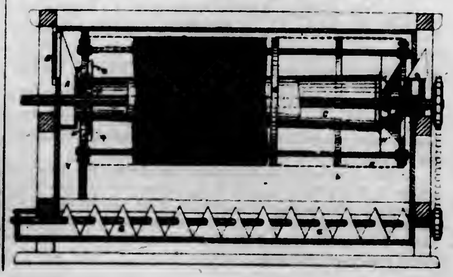
4. The combination, with two connecting draw-heads having their contacting faces recessed, as described, of a ball seated within the recess and serving to lock the draw-heads together, substantially as and for the purpose specified.

5. In a car-coupling, in combination with a draw-head of the class described having a recess or groove in the inner face of one of its arms and a chamber leading to the top of said groove, a ball adapted to be moved into and out of said chamber from and to the groove, substantially as and for the purpose described.

6. In a car-coupling of the class described, in combination with a draw-head having a recess or groove extending partially down the inner face of one of its arms, but not to its lower edge, a ball adapted to be placed in said groove, substantially as described.

7. In a car-coupling of the character described, in combination with the draw-head having a recess or groove extending partially down the inner face of one of its arms and a chamber leading to the top of the groove, a ball adapted to be moved into and out of said chamber from and to said groove, substantially as described.

484,478. FLOUR-REEL MACHINE. JOHN A. WAHLSTROM, Salem, Oreg. Filed Oct. 31, 1891. Serial No. 409,414. (No model.)



Claim.—1. In a rotary bolt, a reel having an internal air-chamber open only at the ends and extending substantially from end to end of the reel, a stock-feeding device, and a fan arranged to cause a current of air to pass through said air-chamber and into the space between the air-cylinder and the cloth of the reel, substantially as described.

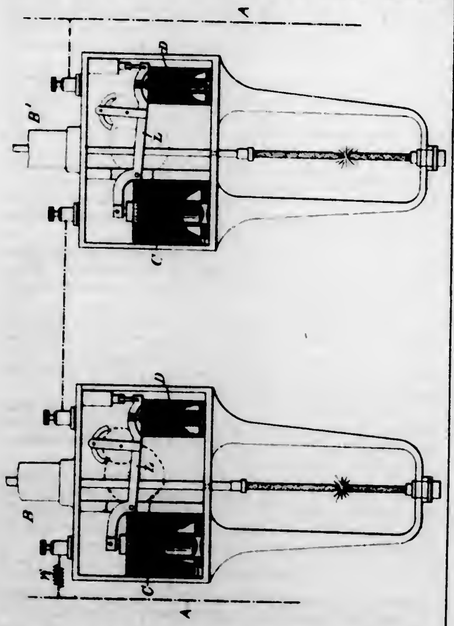
2. In a rotary bolt, a reel having an internal air-chamber open only at the ends and extending substantially from end to end of the reel, a stock-feeding device, and a fan attached to the reel and arranged to draw air through the air-cylinder and drive it into the space between the air-cylinder and the cloth of the reel, substantially as described.

3. In a rotary bolt, a reel R, an air-cylinder C, secured within the same, an air-chamber at one end of said reel, and stock-feeding means at the other, in combination with the fan E, arranged in one end of the reel to draw air from air-chamber A through air-cylinder C and drive it into the space between the air-cylinder and the cloth of the reel, substantially as described.

4. In a rotary bolt, a reel R, having heads L and H, buckets attached to one of said ends for lifting the tailings from reel R, an air-cylinder C, secured in said reel R, an air-chamber at one end of said reel, having means for regulating the amount of air passing through the same, and a stock-feeder at the other end of said reel, in combination with a fan E, arranged to draw air from air-chamber A through the air-cylinder C and into the reel R, substantially as described.

5. In a rotary bolt, a stationary air-chamber A, the reel R, having heads L and H, the conical air-cylinder C, secured to said heads and having spiders N and J, a stock-feeder D, and a fan E for drawing air from air-chamber A through air-cylinder C and into reel R, substantially as described.

484,479. ELECTRIC-LIGHTING SYSTEM. BARTON R. WARD, New York, N. Y. Filed Mar. 1, 1892. Serial No. 423,331. (No model.)

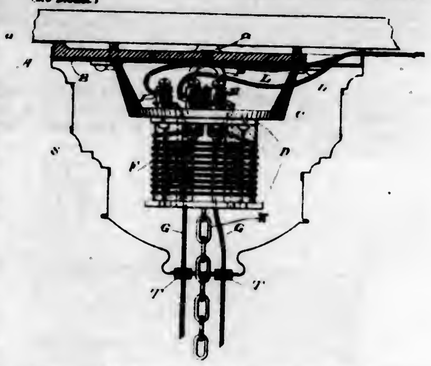


Claim.—1. The combination, with two or more arc lamps run in series on a constant-potential circuit and each having a main and derived circuit magnet, as described, of a mass or body of iron in close proximity to the movable core of the main-circuit magnet in each lamp, as and for the purpose described.

2. The combination, with electric-arc lamps run in series on constant-potential mains and each having a main and a derived circuit magnet with a movable core, of a mass of iron opposite the ends of the cores for both magnets in each lamp of the series.

3. The combination, with the electric-arc lamps run in series from constant-potential mains and each having main and derived circuit magnets with movable cores hung or attached to the opposite ends of a lever having its pivotal point nearer the main-circuit coil, of a mass or body of iron in close proximity to the ends of the cores for the main-circuit magnet of each lamp in series.

484,480. HANGER-BOARD FOR ELECTRIC-ARC LAMPS. BARTON R. WARD, New York, N. Y. Filed Apr. 30, 1892. Serial No. 431,230. (No model.)



Claim.—1. The improved hanger-board herein described, composed of a plate carrying means for supporting the lamp and combined with a resistance-supporting frame or stand, from the lower end of which a resistance-frame having a passage through its center is supported, as and for the purpose described.

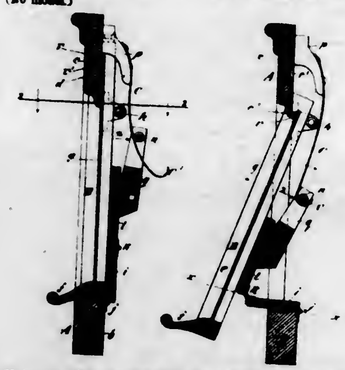
2. In a hanger-board for electric-arc lamps, a metal plate having a hollow resistance-frame supported beneath it and supporting devices for the lamp, extending down from the plate through the hollow resistance-frame.

3. The combination, with a hanger-board having a base-plate A fastened to the ceiling or other support, of a resistance-supporting frame C, fastened to the lower surface of said plate, a frame carrying a resistance and secured to the stand, and an inclosing ornamental canopy or rosette made with open-work, as and for the purpose described.

4. In a hanger-board, a base-plate of iron provided with one or more feet *a* for holding it off the surface of the ceiling, in combination with a resistance-supporting stand C, secured to its lower surface and having a hollow resistance-frame secured to its lower end.

5. In a hanger-board for electric-arc lamps, the combination, substantially as described, of a base-plate A, a resistance supported on a stand away from the lower surface of the plate A, a surrounding perforated canopy, and a lamp-supporting chain or other support K, extending down through the resistance.

484,481. MUSIC-RACK FOR MUSICAL-INSTRUMENT CASES. JOHN A. WEBER, New York, N. Y. Filed May 3, 1892. Serial No. 431,678. (No model.)



Claim.—1. The combination, with a musical-instrument case having a front opening, of a music desk adapted to close said opening, mounted to swing out and slide down and having at its upper part a sliding connection with the case, a link pivoted to the case and to the lower part of the desk for guiding the bottom thereof in its swinging movements, and a spring exerting a tension rearward against the desk in a direction approximately parallel with the position of the link when the desk is fully open, whereby when the desk is partly closed the tension will be effective to close it.

2. The combination, with a musical instrument case having a front opening, of a music-desk adapted to close said opening, mounted to swing out and slide down and having at its upper part a sliding connection with the case and at its lower part means for guiding it in its swinging movement, a bar *a*, connected to the rear of the desk, and a leaf-spring C, mounted on the case and exerting a rearward pressure against said bar.

3. The combination, with a musical-instrument case having a front opening, of a music-desk adapted to close said opening, mounted to swing out and slide down and having at its upper part a sliding connection with the case, a link pivoted to the case and to the lower part of the desk for guiding the bottom thereof in its swinging movements, and a spring exerting a tension rearward against the desk, and a stop applied to said spring for limiting the downward movement of the desk.

4. The combination, with a musical-instrument case having a front opening, of a music-desk adapted to close said opening, mounted to swing out and slide down and having at its upper part a sliding connection with the case and at its lower part means for guiding it in its swinging movement, a bar *a*, connected to the rear of the desk, and a leaf-spring C, mounted on the case and exerting a rearward pressure against said bar and said spring formed with a hooked end C', adapted to engage said bar and form a stop to limit the downward movement of the desk.

5. The combination, with a musical-instrument case having a front opening, of a music-desk adapted to close said opening, mounted to swing out through said opening and slide down and having at its upper part a sliding connection with the case, whereby when open its upper part remains in said opening, and at its lower part means for guiding it in its swinging movement, and a cushion *r*, applied to the front of the upper part of the desk and adapted when the latter is fully open to wedge itself against the rear of the case at the upper margin of the opening.

6. The combination, with a musical-instrument case having a front opening, of a music-desk adapted to close said opening, mounted to swing out and slide down and having at its upper part a sliding connection with the case, a link pivoted to the case and to the lower part of the desk for guiding the bottom thereof in its swinging movements, consisting of a strip *i*, extending longitudinally of the desk, connected by hinges *j j* to the lower margin of the opening and by hinges *k k* to the desk, and a spring arranged to exert a rearward tension against the desk.

484,482. CAKE-GRIDDLE. REUBEN A. WHEELER, Sioux City, Iowa. Filed July 30, 1891. Serial No. 400,163. (No model.)

Claim.—1. A cake-griddle composed of the following parts, in combination, viz: a smooth bed-plate A, provided with semicircular-shaped end extension-pieces C C, which project downward on their under sides to form a slanting rib to the under side of the bed-plate, as C' H', each of said end pieces being provided with a recess having side projections to receive a cover-lifter, the rim-pieces B B, extending along and beyond the sides of the bed-plate A, provided with elongated openings, as E, and the ears D D, provided with openings to receive the ends of a bail, said rim-pieces slanting upward and outward from the bed-plate A and then slanting downward, as shown, a bail, as X, having its ends secured to the ears D D and being bent in a square shape, so that said bail will lie flat against the rim-pieces and across an end of plate A, and ribs, as H, formed on the under side of the main plate and rim-pieces, so as to connect them together to form a support for the rim-pieces, all constructed and arranged substantially as set forth.

2. A cake-griddle composed of a smooth bed-plate A, provided with end pieces, as C C, said end pieces being provided in turn with a recess having side projections, as shown at F, and V-shaped rim-plates extending along and beyond the sides of said bed-plate, said rim-plates having rounded edges, as shown, and elongated openings, as E, formed along their outer sides, and ears, as D, formed on their central portion, said ears being provided with small openings to receive the ends of a suitable bail, as X, all substantially as set forth.

3. The combination of bed-plate A, end pieces C C, provided on their upper faces with a suitable recess to receive a lifter, the inner part of said end pieces extending downward to form a slanting rib on the under side of the bed-plate A, the V-shaped rim-plates B B slanting upward and outward from the bed-plate and then downward and outward and bearing on their downward faces the elongated openings E, the ears D D, provided with openings to receive the ends of a bail, said ears being formed on said rim-plates at their center, a suitable bail, as X, secured to said ears, and the supporting-ribs H, formed on the under side of the bed-plate between the openings in said rim-plates, as shown, all substantially as set forth.

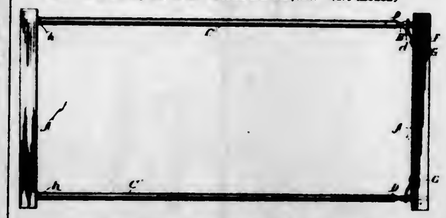
484,488. INSULATING-JOINT. CHARLES WIRT, Chicago, Ill. Filed Aug. 29, 1891. Serial No. 404,069. (No model.)

Claim.—1. The combination of an exterior shell screw-threaded at one end with an interior connecting-piece internally screw-threaded and disposed within the plain end of the interior shell, a diaphragm dividing the shell into parts, and a body of insulation which insulates the connecting portion from the interior of the shell and from the diaphragm, said insulating material hardened in position and holding the two parts together, the said exterior shell and connecting-piece made non-interlocking and adapted to be retained in their relative positions solely by help of the inserted or interposed insulation.

2. The combination of an insulating shell or plug in one piece, an inclosing non-interlocking shell also in one piece, and an insulating-filling between the two, hardened in position and adapted to secure the parts together without further labor than the proper placement, the said exterior shell and connecting-piece made non-interlocking and adapted to be retained in their relative positions solely by help of the inserted or interposed insulation.

3. The combination of an insulating shell or plug in one piece, an inclosing non-interlocking shell also in one piece, and an insulating-filling between the two, introduced in the plastic or powdered state and hardened in position and adapted to secure the parts together without further labor than the proper placement, the said exterior shell and connecting-piece made non-interlocking and adapted to be retained in their relative positions solely by help of the inserted or interposed insulation.

484,484. WIRE BED-BOTTOM. GEORGE WITTER, Storm Lake, Iowa. Filed July 16, 1892. Serial No. 440,290. (No model.)



Claim.—1. In a spring-wire bed-bottom, the combination, with the end bars, of side bars having threaded rods on their ends passing into apertures formed in the end bars, nuts on the rods, and springs sleeved on the rods between the nuts and end bars, substantially as described.

2. In a wire bed-bottom, the combination, with the end bars, of side bars formed of two sections, one of which has a threaded socket thereon engaging the other section, a rod on one section loosely fitting in a bearing on the end bar, and a spring sleeved on the rod between the end bar and socket, substantially as described.

3. In a wire bed-bottom, the combination, with the end bars, of side bars formed with threaded rods on their ends seated in the end bars, nuts on the rods, springs sleeved on the rods between the nuts and end bars, and curved yielding braces on the end bars through which the rods pass, substantially as described.

4. In a wire bed-bottom, the combination, with the end bars, of side bars formed of two sections having engaging screw-threaded extensions on one section engaging an end bar, springs on the extensions, nuts on the extensions, and braces on the end bar extending in between the nuts and springs, substantially as described.

484,485. CHAIN PROPELLER. JOHN G. WARNER, Spring Valley, Ill. Filed Mar. 12, 1892. Serial No. 424,703. (No model.)

Claim.—In a chain propeller for vessels, the combination, with

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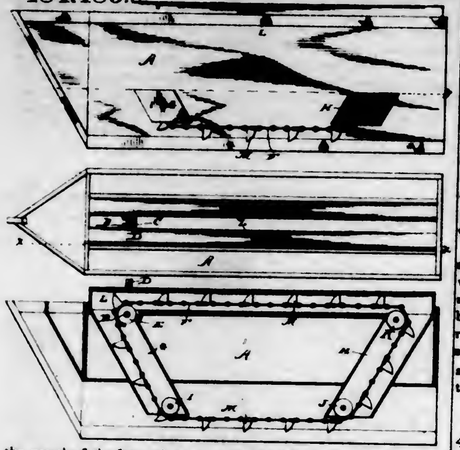
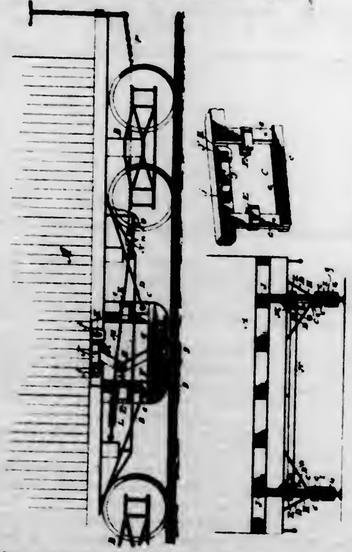


the vessel, of the forward conveyers pitched forwardly and extending through the sides of the vessel adjacent to and upon opposite sides of the keel thereof, the rear conveyers pitched rearwardly and extending through the sides of the vessel adjacent to and upon opposite sides of the keel thereof, the transverse shaft resting at the upper ends of the forward conveyers and having a crank branch at its middle, the sprocket-wheels fixed on the transverse shaft in alignment with the forward conveyers, the sheaves journaled in the lower ends of the forward conveyers and in the lower and upper ends of the rear conveyers, the chain belts taking around the sprocket-wheels and sheaves of the conveyers, the blades connected to said belts at intervals in the length thereof, and the housings covering the upper ends of the conveyers and the chain belts between the forward and rear conveyers, substantially as specified.

484,486. CAR-BRAKE. REMIN C. WRIGHT, Colorado Springs, Colo.

Filed Apr. 30, 1892. Serial No. 431,294. (No model.)



Claim.—1. In a car-brake, a depending guide-frame projecting from the car-body over the rail, a shoe-carrying frame sliding within said guide-frame over the rail, and adjustable toggle-levers connected with said sliding frame and suitable operating mechanism, substantially as set forth.

2. In a car-brake, a braced depending U-shaped guide-frame, a U-shaped shoe-frame sliding within said guide frame, a brake-shoe removably connected with said sliding shoe-frame below the guide-frame, and adjustable operating toggle-levers connected with said shoe-frame and suitable operating mechanism, substantially as set forth.

3. In a car-brake, the depending U-shaped guide-frames having opposite pairs of guide-lugs, U-shaped shoe-frames sliding within said guide-frames and between said guide-lugs, elongated brake-shoes removably connected with said shoe-frames, jointed levers pivotally connected with said shoe-frames and adjustably to the body of the car, and suitable operating mechanism, substantially as set forth.

4. In a car-brake, depending guide-frames, shoe-carrying frames sliding within said guide-frames over the rail, adjusting brackets pivotally connected at one end to the car-body above said frames and radially adjustable from such points of pivot, toggle-levers connected with said sliding frames and said adjustable brackets, and suitable operating mechanism, substantially as set forth.

5. In a car-brake, depending guide-frames, shoe-carrying frames sliding within said guide-frames over the rails, toggle-levers connected with said sliding frames and the body of the car, retractile springs connected with said levers at a suitable point of attachment for normally breaking the hinge of the levers to raise the shoe-frames, opposite stirrups depending from the car-body, an equalizing-lever sliding in said stirrups, connecting rods or wires connected to each end of said bar and to said toggle-levers, and an operating-chain connected centrally to said bar, substantially as set forth.

484,487. GUN-CLEANER. CHARLES W. WUNDERLICH, Washington, Mo. Filed Apr. 6, 1891. Serial No. 387,901. (No model.)

Claim.—1. A gun-cleaner comprising a stock portion formed with an internally-threaded socket, a series of forwardly-extending spring-arms connected to the peripheral face of the stock, their forward ends contracted and bent up to form radial scraper-fingers, and a conical expander having a threaded shank operating in the threaded socket of the stock, said expander having its conical portion disposed between the contracted ends of the spring-arms, all substantially as shown and described.

2. The combination, with the stock A, having a threaded socket *a'* and forwardly-extending spring-arms C, said arms bent inwardly, as at *n*, and back upon themselves, forming scraper-fingers *m*, of the expander *h*, formed with a shank fitting the screw-socket, and a conical portion operating between and bearing in the ends *m*, substantially as and for the purposes described.

3. The combination, with the stock A, formed with a shank *a* and an internal screw-socket and the conical expander *h*, of the spring-arms C, detachably secured at the inner ends on the stock, the front portion bent inward, as at *n*, the outer ends thereof bent back upon themselves forming scraper-fingers *m*, such fingers extended rearward of their bearing-point on the expander and provided with chisel-points on such rear ends, substantially as and for the purpose described.

4. The combination, with the stock A, formed with an annular depression *b* and a reduced portion *a'*, having a series of radial projections having their adjacent faces under-cut, whereby dovetail ways *c' c'* are formed and with a central threaded socket *a'*, of the expander *h*, formed with a screw-shank *t* and a conical head, said shank operating in the socket *a'*, and the spring-arms C, formed of dovetail shank portions fitting the ways *c' c'*, their rear ends bent inward at *k* to fit the depression *b*, their forward portions bent inward at *n* and outward at *m*, forming scraper-fingers, said finger held to bear on the conical portion of the expander, substantially as and for the purposes described.

484,488. FLOOR-CLAMP. ALEXANDER LAUBER, San Antonio, Tex.

Filed Mar. 11, 1892. Serial No. 424,563. (No model.)

Claim.—1. In a floor-clamp, the combination, with a reciprocating clamping-bar and means for operating the same, said clamping-bar being provided at its front edge and lower corner with a transverse rabbet or recess, of a metal plate secured to the under side of the bar, substantially as specified.

2. In a floor-clamp, the combination, with a reciprocating clamping-bar and means for operating the same, said clamping-bar being provided at its front edge and lower corner with a transverse rabbet or recess, of a transverse metal plate let into the under side of the clamping-bar and having its front edge extending under the rabbeted portion thereof and bolts for removably securing the plate to the bar, substantially as specified.

3. In a floor-clamp, the combination, with the clamping-bar and a bolt passed through the rear end of the same, of a handle terminating at its lower end in jaws and provided with perforations for loosely receiving the bolt at opposite sides of the bar, means for opening and closing the jaws and sliding them on the bolt, and fulcrum-points for engaging the joists, extending inwardly from the jaws below the bolt, substantially as specified.

4. In a floor-clamp, the combination, with the clamping-bar and a bolt passed through the rear end of the same, of a handle terminating at its lower end in spring-jaws perforated so as to loosely receive the bolt at opposite sides of the bar, means for increasing the tension of the jaws and for opening and closing the same, and fulcrum-points located at the inner sides and near the lower ends of the jaws, substantially as specified.

5. In a floor-clamp, the combination, with the clamping-bar, the bolt passed therethrough, the handle, and the opposite spring-jaws bent to embrace the bar and perforated to loosely receive the bolt and terminating below the bolt in fulcrum-points, of the lever eccentrically pivoted to one end of the bolt beyond the jaw and having its inner end adapted to bear against said jaw, substantially as specified.

6. In a floor-clamp, the combination, with the clamping-bar, the bolt passed through the rear end of the same, the opposite spring-jaws perforated to loosely receive the bolt, a handle at the upper end of the jaws, and fulcrum-points at the lower ends of the same, of the coiled springs mounted on the bolts between the jaws and bar and the eccentrically-pivoted lever having a lower bearing end for operating on the jaws, substantially as specified.

7. In a floor-clamp, the combination, with the clamping-bar, the transverse bolt, the opposite spring-jaws, means for operating the jaws, and fulcrum-points at the lower ends of the jaws, of the compoundly-carved anchoring-lever pivoted between the jaws, said lever terminating at its rear end in a half-round toothed anchoring head, a stop at the front end of the lever, and a staple mounted over the lever and upon the clamping-bar, substantially as specified.

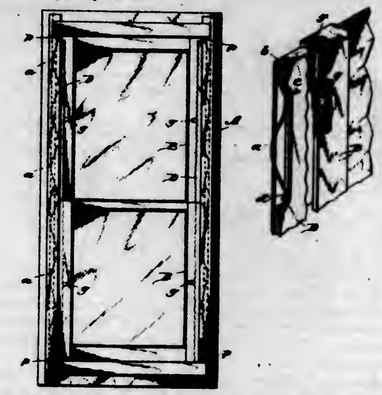
8. In a floor-clamp, the combination, with the clamping-bar, the pivoting-bolt, the handle, and the bayonet-shaped spring-jaws perforated to receive the bolt and embracing the clamping-jaw, of means for opening and closing the jaw and pointed and threaded set-screws adapted to serve as fulcrums, mounted in the lower ends of the jaws, substantially as specified.

484,489. WINDOW. GEORGE H. BLAIKIE, New Carlisle, Ohio. Filed Jan. 25, 1891. Serial No. 419,134. (No model.)

Claim.—1. The combination, with a window sash or blind having longitudinal grooves in its sides, in which are seated rubber blocks, of the window frame having spring-strips occupying grooves therein and whose projecting edges are fluted and confined in the grooves in the sash, substantially as described.

2. The combination, with a window sash or blind having longitudinal grooves in its sides, of the friction-strips engaging said grooves and occupying grooves in the sides of the window-frames and curved bow-shaped springs *c*, occupying grooves in the rear edges of the friction-strips, said springs having one end bent inward and inserted in perforations in said last-named grooves and having their opposite ends reversely bent to ride in said grooves, substantially as described.

3. In a sash-supporting device employing spring-strips occupying grooves in the frame and projecting therefrom into grooves in the sashes, the removable retaining-plates *p*, extending across the tops and bottoms of said strips and secured to the frames, substantially as and for the purpose specified.



4. The combination, with the side pieces of a window-frame grooved from end to end to receive spring friction-strips, of the top and bottom pieces mortised into said side pieces and forming stops for said grooves, substantially as described.

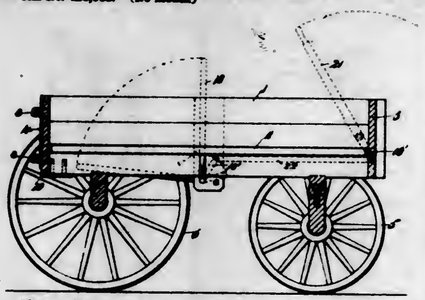
484,490. ROLLER-CASE FOR SAWMILLS, &c. DAVID BURNS, Muskegon, Mich. Filed Jan. 22, 1892. Serial No. 418,902. (No model.)

Claim.—1. In a roller-case for sawmills, the combination of the table H, a frame A, having a projecting bracket B, a roller journaled in said frame at each end, the sockets *b'* and *b²*, formed in the opposite ends of the frame on opposite sides of the roller, the bars G G, supported in said sockets and being of unequal widths, and the drive-shaft supported in the bracket and geared to the roller, substantially as described.

2. In a roller-case for sawmills, the combination of a frame A, a roller C, journaled therein, a projecting bracket at one end of the frame, sockets *b'* and sockets *b²*, located at opposite ends of the frame and on opposite sides of the roller, drive-shaft D, supported in a projecting bracket and carrying bevel-pinions which intermesh with other pinions on the end of the rollers, the bars supported in the aforesaid sockets parallel to the roller, those on opposite sides thereof having unequal widths, and the inclined table H, substantially as described.

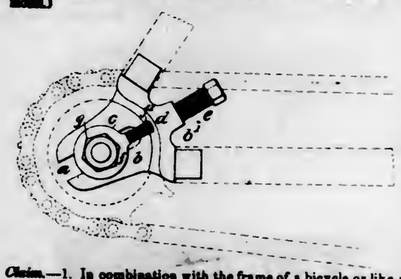
3. The herein-described roller-case for sawmills, which consists in the combination of a series of independent frames A, located at suitable distances apart, said frames being provided each with a projecting bracket, the horizontal rollers journaled in the frames, a driving or line shaft journaled in the brackets and carrying gears that intermesh with gears on the ends of the rollers, the intervening inclined table between the rollers, and the cross-bars supported in brackets in the ends of the intervening frames, those bars on opposite sides of any single roller having an unequal length, substantially as described.

484,491. DUMPING-WAGON. JAMES M. R. CAMPBELL, New Palestine, and ROGERS P. RAMER, Clayton, Ind. Filed Apr. 20, 1892. Serial No. 429,923. (No model.)



Claim.—The combination, with a wagon-body provided with a bottom consisting of slats 11 and 12, pivoted out of center and adapted to swing downwardly in opposite directions, of two separate crank-shafts supported by the wagon sides and provided with cranks adapted to operate the said slats 11 and 12, respectively, the said crank of each crank-shaft being arranged opposite the straight portion of the other crank-shaft, whereby the said slats are operated separately or simultaneously, substantially as set forth.

484,492. CHAIN ADJUSTMENT FOR BICYCLES. JAMES S. COPELAND, Hartford, Conn., assignor to the Pope Manufacturing Company, Boston, Mass. Filed Apr. 20, 1892. Serial No. 429,822. (No model.)



Claim.—1. In combination with the frame of a bicycle or like vehicle, an axle extending through a guide-slot and the adjusting device comprising a compound feed-screw and slide-block attached by intergagging threaded parts or surfaces, all substantially as described.

2. In combination with the driving-wheel of a velocipede or like vehicle, the axle extending through the guide-slot, the feed-screw borne in a threaded socket in the frame, and a guide-block embracing the axle and provided with a threaded shank fitting a threaded lengthwise socket in the feed-screw, the thread on the feed-screw and on the shank being of opposite pitch, all substantially as described.

3. As an improved article of manufacture, a corner-block for a frame for a bicycle or like vehicle, provided with a guide-slot, a guide block extending crosswise of the slot with a threaded shank fitting a lengthwise threaded socket in a feed-screw, and the feed-screw fitting a threaded socket in the corner-block and in alignment with the guide-slot, the threads of the feed-screw and shank of the guide-block being of opposite pitch, all substantially as described.

484,498. COMBINED MOUNTED HAY STACKER AND RAKE. ELIJAH O. BEVIS, New Virginia, Iowa. Filed Apr. 11, 1892. Serial No. 428,671. (No model.)

Claim.—1. In a combined hay rake and stacker, the combination of a suitably-mounted carriage, suitable standards 6, rake-arms 7, pivoted to said standards and having pivoted at their outer ends the rake 8, and a rake-support 11, pivoted near the upper ends of the arms 7 and its lower end arranged to move in guideways on the frame, substantially as described.

2. In a combined hay rake and stacker, the combination of a suitably-mounted carriage, suitable standards 6, rake-arms 7, pivoted to said standards and having pivoted at their outer ends the rake 8, and a rake-support 11, pivoted near the upper ends of the rake-arms 7 and having rollers at their lower ends working in the guideway, a rake-operating lever 13, attached to the rear end of the rake-head by a rope, substantially as described.

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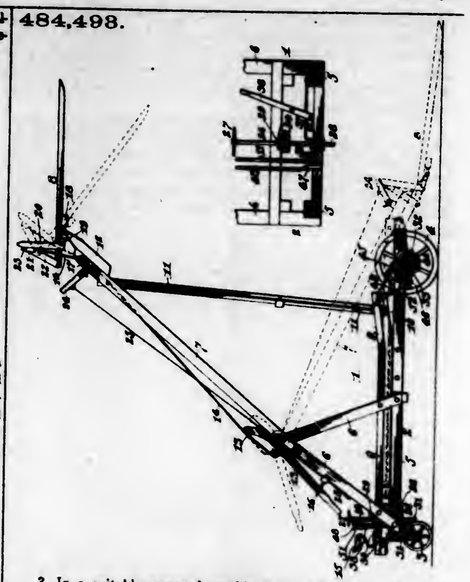


3. In a suitably-mounted combined hay rake and stacker, the combination of the front axle formed of two independently-revoluble short axles having supporting-wheels made fast and loose by ratchet-collars and hubs and carrying a winding-drum which revolves independently of said axles and is provided with an end ratchet disk and a peripheral ratchet, a sliding clutch on one of the short axles, adapted to be moved into and out of engagement with the said end ratchet-disk, a pivoted pawl adapted to move in and out of engagement with the peripheral ratchet, means for operating the pawl, a strap-brake around the winding-drum, a lever for operating the brake, a rake proper, and a swinging and sliding rake-support, substantially as described.

4. In a combined suitably-mounted hay rake and stacker, the combination of a carriage, a swinging and sliding rake-support 11, standard 6, rake-arms 7, pivoted to said standard and having the rake pivoted to their outer ends, rake 8, a rake-operating lever 13, connected to the rake by a rope, and means for adjusting the rake-head to any desired angle and holding it in position, the said means comprising pawl 23, located on the rake head, ratchet-bar 24, pivoted to the rake-arm and working in conjunction with the pawl, and the operating-rope 25, attached to the bar, substantially as described.

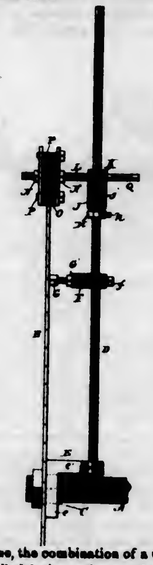
5. In a combined hay rake and stacker, the front axle carrying the winding-drum, which is revoluble independently of said axle and provided with an end disk having internal ratchet-teeth, a sliding clutch on one of the short axles, adapted to be moved in and out of engagement with said ratchet disk, a mounted rake-carriage, the rake proper, a swinging and sliding rake-support, and means for operating the several parts named, substantially as described.

6. In a combined mounted hay rake and stacker, the combination of a swinging and sliding rake-support, a front axle formed with two independently-revoluble short axles having a winding-drum revoluble independent of said axle and provided with an end disk having internal ratchet-teeth and with a peripheral ratchet, a sliding clutch adapted to be moved in and out of engagement with the end ratchet-disk, and the pivoted ratchet-pawl adapted to be moved into and out of engagement with the peripheral ratchet, a strap-brake operating upon the winding-drum to regulate the descent of the rake, and means for operating the parts named, substantially as described.

7. The combined hay rake and stacker, comprising in its construction a suitably-mounted carriage and an elevating-rake pivoted on said frame and to a sliding and swinging support, said rake having some of its teeth extending backward beyond the rake-head bars and strengthened by diagonal braces and also having spaced openings in its rear rake head bar to admit of the front end of the axle or hinging arms being passed to the front rake-head bar, substantially as and for the purpose described.

484,494. SAW-JOINTING MACHINE. ALBERT H. FLOWER, Transfer, Pa. Filed Feb. 24, 1892. Serial No. 422,668. (No model.)

Claim.—1. In a filing-machine, the combination of a vertical rod supported alongside of the saw, a cylindrical interiorly-threaded gage-box vertically adjustable on said rod, a laterally-adjustable gage-screw adapted to be adjusted in one end of said box, an adjustable stop-collar mounted on said rod above said gage box and screw, and a radially-swinging file-clamp movably connected with the rod above said collar, substantially as set forth



2. In a filing-machine, the combination of a vertical rod supported alongside of the saw, a cylindrical gage-box vertically adjustable on said rod, a laterally-adjustable gage-screw adapted to be adjusted in one end of said box, an adjustable exteriorly-threaded stop-collar clamped on said rod above said gage box and screw, a vertically-movable gage and stop sleeve adjustably engaging said threaded collar, and a swinging file-clamp movably connected with the rod above said sleeve, substantially as set forth.

3. In a filing-machine, the combination of a vertical rod supported alongside of the saw, an adjustable gage and stop-collar mounted on said rod, a movable collar loosely working over said rod above said gage and stop-collar, an outwardly-extending threaded shank connected to one side of said collar, opposite file-clamping plates fitted over said threaded shank, opposite binding-nuts working over said threaded shank against said opposite plates, and opposite clamping-bolts passing through the opposite ends of said clamping-plates to clamp the file therein, substantially as set forth.

4. In a filing-machine, the combination, with a saw-arbor having a fixed collar, of a supporting-rest having an angular fork taking over said collar alongside of the saw and an integral offstanding arm extending off from the saw, a vertical rod supported upon said offstanding arm, a vertically-adjustable gage and stop-collar mounted on said rod, and a radially-swinging file-clamp movably connected with the rod above said collar, substantially as set forth.

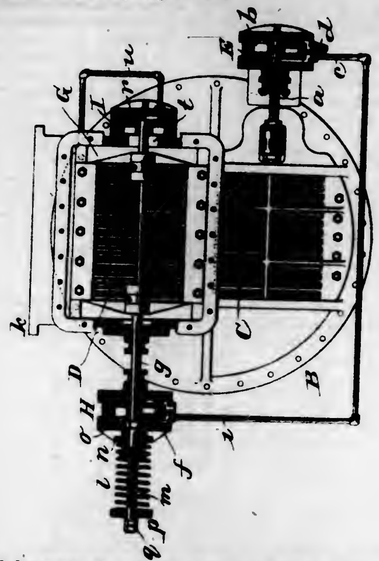
484,495. COMPRESSING OR BLOWING ENGINE. JAMES A. GALVIN, Steelton, assignor of two-thirds to Casper Dull, Harrisburg, and John A. Weimer, Lebanon, Pa. Filed Apr. 8, 1892. Serial No. 428,363. (No model.)

Claim.—1. In a compressing or blowing engine, an air-supply valve, in combination with a fluid-pressure motor for operating said valve, a separate discharge-valve and a fluid-pressure motor attached to said valve to move it in one direction, means independent of the motor for moving said valve in the opposite direction, and motor-fluid-supply pipes communicating with both motors.

2. In a compressing or blowing engine, an air-supply valve, a fluid-pressure motor for opening and closing said valve, a discharge-valve, and a fluid-pressure motor for closing said valve, in combination with means independent of the motor for opening said valve.

3. In a compressing or blowing engine, a supply-valve and operating mechanism therefor, a discharge-valve having a pneumatic pressure-equalizing device attached thereto, and a fluid-pressure motor for closing the valve, in combination with a device separate from the motor for automatically opening the valve.

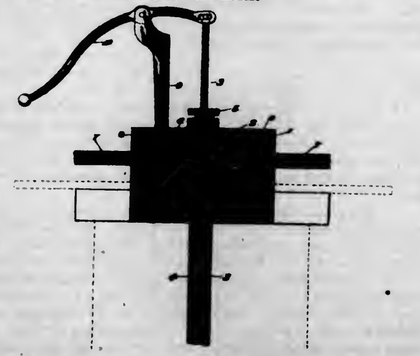
4. In a compressing or blowing engine, an air-supply valve and operating mechanism therefor, in combination with a discharge-valve having at one end a cylinder provided with a piston and communicating with the compressed-air chest or conduit at one end and with the compressing-cylinder at the opposite end, and a fluid-pressure motor connected to the opposite end of said valve for closing the valve, and a separate device for opening the valve.



5. In a compressing or blowing engine, a motor-fluid-supply chamber and a valve for controlling the same, operated from the engine, an air-supply valve, a motor for operating the same, a discharge-valve, and a motor attached thereto, and both motors communicating with said motor-fluid-supply chamber, in combination with a pressure-equalizing device connected to the discharge-valve and suitable means for operating said discharge-valve in one direction independent of its motor.

6. In a compressing or blowing engine, the combination of an air-supply valve, a motor for operating the same and provided with a motor-fluid-supply valve controlled from the main engine, an air-discharge valve, a motor for closing said valve and provided with a motor-fluid-supply valve, also controlled from the main engine, a fluid-pressure equalizing device attached to the discharge-valve, and a positively-operated device for opening said discharge-valve when an equilibrium of pressure is established in the discharge-conduit and in the compressing-cylinder.

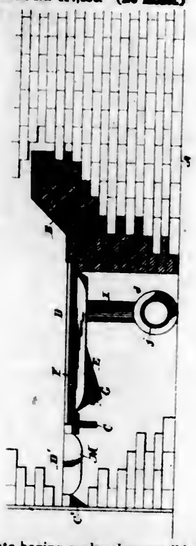
484,496. PUMP. HATTEN GASKINS, Morrisonville, Ill. Filed July 9, 1891. Serial No. 398,858. (No model.)



Claim.—In a pump, the combination of a casting having a central vertical opening entirely through the same and opposite separate independent diverging discharge-passages leading in a curved line from the lower end of said vertical opening to the opposite sides of the block, a packing-box fitted in the upper end of said central opening, the pump-

rod extending through said opening, the uprights seated in said block, and an operating-lever pivoted to said upright and connected with said pump-rod, substantially as set forth.

484,497. FURNACE-GRATE. BLOMO J. GORDON, Greenville, Mich., assignor to the Gordon Hollow Blast Grate Company, same place. Filed Jan. 13, 1892. Serial No. 417,858. (No model.)



Claim.—1. A grate having a closed rear solid blast-section provided with a number of blast-openings and regularly-spaced receptacles or pockets alternating with said blast-openings and a front open draft-section forming a continuation of said solid blast-section, substantially as set forth.

2. In a grate, the combination, with the furnace, of a series of hollow blast grate-bars having blast-openings in the top thereof, a series of intermediate solid grate-blanks regularly separating and spacing said hollow grate-bars and closely meeting the sides thereof to form a solid blast-section, and an open draft-grate section in front of said grate bars and blanks and forming a continuation thereof, substantially as set forth.

3. In a grate, the combination of a series of elongated hollow blast grate-bars having blast-openings in the top thereof and a series of intermediate imperforate grate-blanks closely meeting the sides of said bars and between and below the upper plane of said hollow grate-bars, substantially as set forth.

4. In a grate, the combination of a series of parallel hollow blast grate-bars, a series of intermediate solid grate-blanks between and below the upper plane of said hollow grate-bars and forming intermediate depressions or receptacles and a solid grate-floor or hearth, and a front draft grate-section, substantially as set forth.

5. In a grate, a series of valved hollow blast grate-bars having integral enlarged waste drops or receptacles at one end and extended below the bottom of the bars, substantially as set forth.

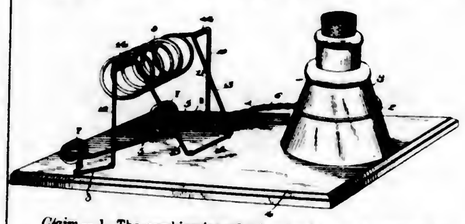
6. In a grate, a series of parallel hollow blast grate-bars having valved outlets and elongated air-receiving ducts, integral enlarged waste drops or receptacles at one end of said air-ducts and dropping or extending below the bottom of the bars and having a front opening, and a drop or slide inclosing said front openings, substantially as set forth.

7. In a grate, a series of valved hollow blast grate-bars having a waste drop or receptacle, a series of intermediate solid grate-blanks between said hollow grate-bars and forming a rear solid grate-floor or hearth, and a front open draft grate-section, substantially as set forth.

8. The combination of a hollow blast grate-bar having shouldered valve-openings and circular gravity-covers having a circumferential series of notches forming, with the edges of said valve-openings, air escapes or outlets, a circular series of under supporting shoulders or ledges resting upon the shoulders of said valve-openings, and a circular series of depending ribs or flanges projecting within said valve-openings below the plane of said supporting-shoulders and working against the edges of the valve-openings, substantially as set forth.

9. In a grate, the combination of the hollow blast grate-bars having depending receiving-collars provided with raised coupling beads or flanges, the main blast-pipe having annularly-beaded collars or T-sections, and vertical connecting-pipes fitting over the raised beads of said collars, substantially as set forth.

484,498. COMBINED INK-BOTTLE HOLDER AND PEN-RACK. JOHN R. GREER and WILLIAM D. THOMAS, ARKANSAS, Mo.; said Thomas assignor to said Greer. Filed May 23, 1892. Serial No. 434,067. (No model.)



Claim.—1. The combination of a base and a spring-actuated securing-tongue having a circular loop at its free end adapted to receive the upper portion of an ink-bottle, whereby the latter is clamped upon the base, substantially as described.

2. The combination of a supporting-base, a spring-actuated securing-tongue provided with an ink-bottle-receiving loop at its free end and having diverging arms at its other end, coils 7, secured to the base and forming an extension of the diverging arms, and a horizontal coil forming a pen-rack and provided with supporting-legs and formed integral with the securing-tongue, substantially as described.

3. The combination of a supporting-base, a securing-tongue constructed of wire and provided at one end with an ink-bottle-receiving loop and at the other end with diverging arms, and having an intermediate twisted portion, coils arranged at the outer ends of the arms and having angular extensions secured to the base, a horizontal pen-rack coil having lateral extensions, legs supporting the coil, and an approximately-rectangular loop secured to the base in advance of the horizontal coil and having its sides secured at the ends of the coil, substantially as described.

484,499. MAIL-POUCH-RELEASING DEVICE. HORACE B. HEWITT, Indianapolis, Ind. Filed Nov. 30, 1891. Serial No. 412,543. (No model.)

Claim.—1. In an automatic mail-pouch releasing device, the combination, with a sustaining-link having a bifurcated end and a suitable spring secured on the face thereof, of a rotative releasing-hook pivoted in said bifurcated end of the link and in the rear of said spring, substantially as set forth.

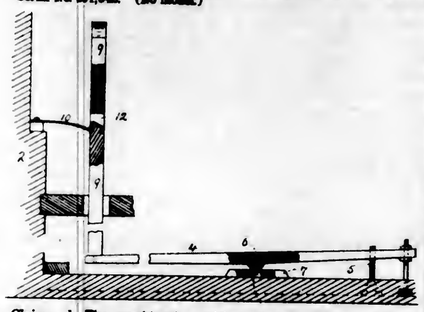
2. In an automatic mail-pouch-releasing device, the combination, with a sustaining-link having a bifurcated end and a suitable spring secured on the face thereof, of a suitable releasing rotative hook pivoted in said bifurcated end of said link and in the rear of said spring, said hook being provided with a series of curved radial arms, substantially as set forth.

3. In an automatic mail-pouch-releasing device, the combination, with a suitable sustaining-link having a pivotal and a bifurcated end, of a rotative retaining and releasing hook pivoted in said link and having its axis transverse to the axis of said link, substantially as set forth.

4. In an automatic mail-pouch-releasing device, the combination, with a sustaining-link having a pivotal and a bifurcated end and a suitable spring secured on the face of said link, of a rotative retaining and releasing hook pivoted in said bifurcated end of the link in the rear of said end of spring, said hook having its axis transverse to the axis of said sustaining hook-link, substantially as set forth.

5. In an automatic mail-pouch-releasing device, the combination, with a sustaining-link having a pivotal and a bifurcated end, of a spring secured on the face of said link, a rotative releasing and engaging hook having a series of curved radial arms pivoted in said bifurcated end of the link and in the rear of said spring with its axis transverse to the pivotal axis of said link, substantially as set forth.

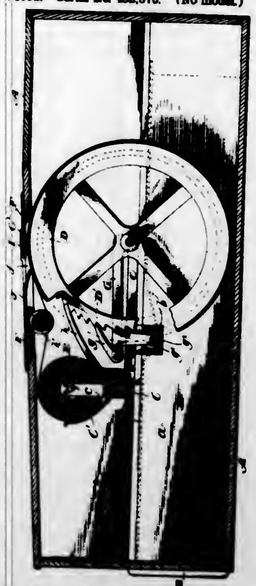
484,500. PIANO-PEDAL. WILLIAM H. IVERS, Dedham, assignor to the Ivers & Pond Piano Company, Boston, Mass. Filed Apr. 26, 1892. Serial No. 431,042. (No model.)



Claim.—1. The combination, with a piano and a reciprocating pedal-stick, of a yielding support one end of which is stationary and fast to the piano, the other connected to and moving with the pedal-stick, substantially as described.

2. In combination with a piano, a pedal-foot and a pedal-lever, a removable pedal-stick mounted at one end of the pedal-lever, and a yielding support or guide, as a plate-spring, adapted to have one end engage in and move with the pedal-stick and to have the opposite end rigidly affixed to the piano, substantially as specified.

484,501. CASH-RECORDER. ABEL C. HOUGH, South Butler, N. Y. Filed May 13, 1892. Serial No. 432,876. (No model.)



Claim.—1. In combination with a casing having a slot, a paper-receiving drum serving to support the paper while an entry is being made through the slot, one edge of the slot being formed by a plate that rests yieldingly upon the drum-periphery to adapt itself to varying thicknesses of paper thereon, substantially as shown and described.

2. In combination with the casing having a slot, a paper-receiving drum serving to support the paper while an entry is being made through the slot, and a spring-plate having a free end that rests upon the drum-periphery and forms an edge of the slot and adapts itself to varying thicknesses of paper thereon, substantially as described.

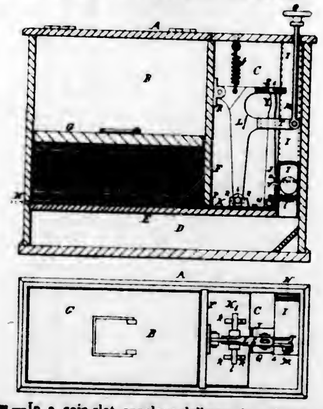
3. A recording mechanism employing a movable record-receiving strip, having an entry-slot affording access to the latter, and a transparent section that is narrower than the width of the record-receiving strip and the entry-slot to disclose only a portion of the strip, substantially as and for the purpose described.

4. In combination with a casing having a slot, a paper-receiving drum having a portion of its periphery adjacent to said slot to serve as a support for the paper while an entry is being made, a yielding plate having its free edge resting on said periphery to form one side of said slot, and a transparent plate forming the other side of said slot, and suitable means for rotating the drum, substantially as described.

5. In a cash-recorder employing a movable record-strip, a drum to receive and move said strip and support the same while a record is being made, and means for rotating the drum, comprising a ratchet-wheel secured thereto, a pawl to co-operate with said wheel, the pivoted arm carrying said pawl, whose pivot is the drum-axis, the downward extension on said arm, and a sliding drawer having a cam-surface to engage said extension to raise said arm, substantially as described.

6. In a cash-recorder employing a movable record-strip, the standards to support the latter in the form of a roll, a spring-plate bearing against the roll, the drum receiving the strip directly from the roll, the roller depending from the casing-top and engaging the strip between the roll and drum, the sliding spring-actuated drawer, and the pawl-and-ratchet mechanism operated by the latter as it moves outward to rotate the drum, substantially as described.

484,502. COIN-SLOT ENVELOPE-DELIVERY BOX. CHARLES E. LEE, Omaha, Nebr., assignor of one-half to Alfred Meinberg, same place. Filed June 15, 1891. Serial No. 396,360. (No model.)



Claim.—In a coin-slot envelope-delivery box having compartments B, C, and D for the envelopes, coin-controlled mechanism, and the coin, respectively, the combination, with the envelope-slide K, the slide-operating lever L, engaging said slide K and provided with an opening *s*, and the push-button connected to said lever, of the coin-guide I and the locking and coin-gaging lever J, projecting into said coin-guide and having one end adapted to register with the opening in lever L upon the insertion of a coin, substantially as set forth.

484,503. BUOYANT PROPELLER. DANIEL W. LOAR, Malden, Mass. Filed June 14, 1892. Serial No. 436,706. (No model.)

Claim.—1. The buoyant propeller having open-mouthed buckets,

substantially as described, with air-passages from those buckets opening a distance in advance of the main mouths of said buckets.

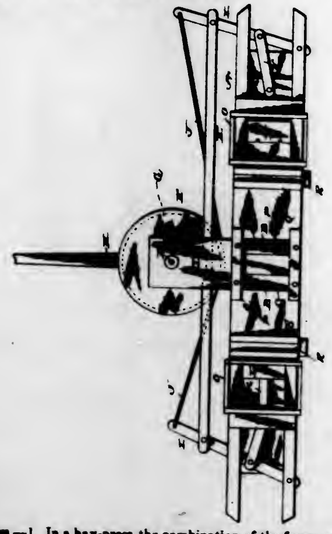
2. The buoyant propeller-wheel of generally-cylindrical form, having open-mouthed buckets around its periphery, each bucket having an air-duct opening in advance of the main mouth.

3. The buoyant propeller-wheel having open-mouthed buckets radial to its shaft and other buckets tangential to said shaft, the series of buckets being side by side in the wheel and overlapping and having openings connecting certain of the buckets in series, substantially as described.

4. The wheel having open-mouthed buckets arranged side by side and air-passages leading from the inside of such buckets to points in advance of the leading edges of the buckets proper, substantially as described.

5. The wheel having water-tight overlapping buckets with their mouths outward and having air-passages connecting certain of the buckets in series, substantially as described.

484,504. HAY-PRESS. JAMES A. MEALER, Lampasas, Tex. Filed Mar. 8, 1892. Serial No. 424,169. (No model.)



Claim.—1. In a hay-press, the combination of the frame provided with a central resistance-block and with hoppers or feed-openings on both sides of the said resistance-block, plungers mounted in the frame and acting against the resistance-block, levers mounted in the ends of the frame, connections between said levers and the plungers, and means for simultaneously operating said levers.

2. The combination, with the frame having the central resistance-block, of plungers mounted in the frame and acting against the resistance-block, levers mounted in the ends of the frame, connections between the said levers and the plungers, a driving-wheel arranged at one side of the frame, a belt passed around said wheel and secured to the levers, and a link connecting the levers.

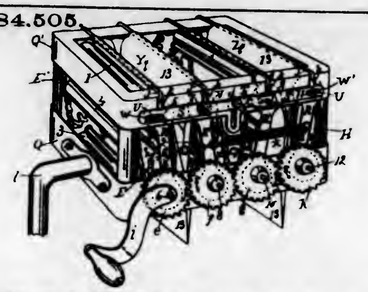
3. The combination, with the frame, of the plungers mounted therein and provided with the outwardly-extending guide-arms bearing against the bottom and sides of the frame and means for reciprocating the plungers.

4. The combination, with the frame having the plates Q, of the cover adapted to be engaged under said plates, parallel cleats on the frame and the cover, and a latch sliding in said cleats.

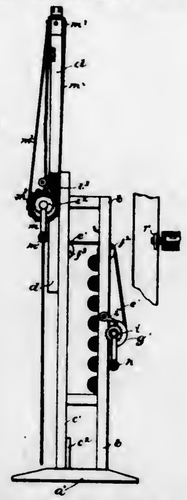
484,505. MILKING-MACHINE. JAMES C. MCCOLLAM, Los Angeles, Cal., assignor of one-half to William Warren Murphy, same place. Filed Nov. 19, 1891. Serial No. 412,468. (No model.)

Claim.—1. The combination of the endless belts arranged in pairs and provided with the teat-compressing rollers, the carriers pivoted at their lower ends, the belt-driving rollers, the belt-carrying rollers journaled in the movable carriers, and springs arranged to press the carriers toward each other.

2. In a milking-machine of the class described, the combination of the belt-carrying rollers, the slotted slides S S', the toggle-joint T, pivoted to the slides, the frame of the machine provided with the vertical slot, and the pin of the toggle-joint arranged to slide in such slot.



484,506. SCENE-SHIFTING APPARATUS. JOHN NEWELL, Chicago, Ill., assignor of one-half to Sweet, Wallach & Co., same place. Filed Apr. 12, 1892. Serial No. 428,842. (No model.)



Claim.—1. The combination, in a scene-holder, of a frame fixed firmly upon a base with hooks or bearings placed at proper distances in the uprights of said frame, said hooks adapted to contain and support the rolls of scenes when not in use, and a vertically-sliding frame adapted to receive and raise said rolls of scenes, and means provided upon said movable frame for rolling and unrolling said scenes, substantially as and for the purpose specified.

2. The combination of a suitable base with a stationary frame and guides permanently fixed thereon, said frame adapted to contain rolls of scenes when not in use, and a sliding frame adapted to slide vertically upon said guides, substantially as described.

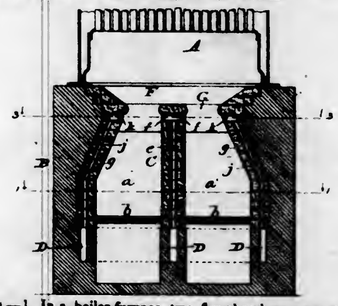
3. The combination of reels *g g'*, fixed upon a common axle *k'*, suitably mounted upon the stationary frame *b*, with ropes *e e'* attached at their ends to each reel separately, passing over pulleys and attached at their other ends to the lower portions of the uprights of the sliding frame *e*, with crank *k* attached to said axle *k'* and adapted to rotate the same and the reels upon it, whereby ropes *e e'* may be wound each upon its respective reel, thus raising the sliding frame *d* and ratchet-wheel *i* and pawl *i'*, whereby the weight of frame *d* may be supported, and means provided upon said sliding frame *d* for rolling and unrolling the scene carried thereon, substantially as described.

4. In a scene-holder, the combination of guides with a frame adapted to slide vertically thereon, a sprocket-wheel, a chain adapted to be turned by means of a crank, said crank being attached to said sprocket-wheel, another sprocket-wheel mounted in suitable bearings turned by the said chain, a roll of scene adapted to be turned by the last-mentioned sprocket-wheel, and a ratchet-wheel and pawl adapted to support the weight of said scene.

5. In a scene-holder, the combination, with a rotating bearing having an angular recess, of a spindle having one end adapted to fit said recess, the other end of said spindle being free to turn in a bearing, a scene adapted to be rolled upon said spindle, mechanism adapted to turn said rotating axle, and a vertically-adjustable support for the bearings of said spindle, substantially as and for the purpose specified.

6. The combination, with reels fixed upon a common axle suitably mounted upon a stationary frame, of ropes attached at their ends to the respective reels passing over pulleys and attached at their ends to a sliding frame, a crank attached to said axle and adapted to rotate the same and the reels upon it, whereby said ropes may be wound upon their respective reels to raise the sliding frame, a ratchet-wheel and pawl adapted to support the weight of the frame when at rest, a sprocket-wheel carried upon said sliding frame, a crank attached to said wheel to rotate the same, a second sprocket-wheel mounted in suitable bearings and turned by a chain traveling over said sprocket-wheels, a roll of scene adapted to be turned by the last-mentioned sprocket-wheel, and a ratchet-wheel and pawl adapted to support the weight of said scene.

484,507. BOILER-FURNACE. EDWIN REYNOLDS, Milwaukee, Wis. Filed May 14, 1892. Serial No. 433,087. (No model.)



Claim.—1. In a boiler-furnace, two fire-chambers separated by an upright division-wall, said wall being provided with an internal vertical air-flue *e* and with a series of lateral openings *f* on both sides thereof throughout the length of the wall, all substantially as shown and described.

2. In a boiler-furnace, two fire-chambers separated by an upright division-wall, said wall being provided with an internal vertical air-flue *e* and with a series of lateral openings *f* on both sides thereof throughout the length of the wall, and a gradually-enlarged combustion-chamber above the upper edge of the wall, all substantially as shown and described.

3. In a boiler-furnace, two fire-chambers separated by a division-wall having lateral air-outlets on both faces, a contracted throat for the two chambers, having lateral air-outlets on its inner face, and a combustion-chamber located above the throat.

4. In a boiler-furnace, two fire-chambers separated by a division-wall having lateral air-outlets on both face, a contracted throat for the two chambers, having air-outlets on its inner face, and a gradually-enlarged combustion-chamber above the throat, all substantially as shown and described.

5. In a boiler-furnace, two fire-chambers separated by a partition-wall and having a transverse bar G to direct the products into the four flues thus formed and means for delivering air from three sides of each of the four flues.

6. In a boiler-furnace, two separated fire-chambers communicating with a common combustion-chamber and provided with hollow side and front walls having air-outlets at their upper (inner) faces and a hollow division-wall also having air-outlets on both faces near its upper end.

7. In a boiler-furnace, two separated fire-chambers communicating with a common combustion-chamber, the inclined hollow side, front, and back walls provided, respectively, with the flues *j l n* and outlets *k*, *m*, and *o*, and the division-wall provided with flue *e* and openings *f*.

484,508. MANUFACTURE OF METALLIC FACING-PLATES. LOBDELL L. RAGSDORFF, Philadelphia, Pa., assignor of one-half to Charles H. Harder, Fishkill, N. Y. Filed Apr. 14, 1892. Serial No. 429,105. (No model.)

Claim.—1. A metallic plate having a series of raised rectangular figures thereon, the face of each figure being reeded, substantially as set forth.

2. A metallic plate having its surface reeded, with longitudinal and alternating transverse grooves formed in said reeded plate, substantially as set forth.

3. A metallic plate having its entire face reeded, with longitudinal and alternating transverse grooves formed therein, said grooves being of a depth greater than said reeds, substantially as set forth.

484,508.

4. The process herein set forth for manufacturing metallic facing-plates, the same consisting of first reeding the entire surface of the plate and afterward forming therein the longitudinal and alternating transverse grooves, as and for the purposes specified.

484,509. VALVE. GEORGE H. F. SCHRADER, New York, N. Y. Filed June 16, 1892. Serial No. 436,954. (No model.)

Claim.—1. In a valve or stopper, the combination of relatively fixed and movable parts, the one constituting a stem or neck and the other a tube or socket and the one having a seat and the other a valve or stopper, said parts constructed to be adjusted the one toward the other to open or close the valve, and a yielding catch on one of said parts constructed to engage the other of said parts and ordinarily resist their separation and to yield under force and permit their separation, whereby normally said parts will be locked together, but under strain they will separate.

2. In a valve or stopper, the combination of relatively fixed and movable parts, the one constituting a stem or neck and the other a tube or socket and the one having a seat and the other a valve or stopper, said parts constructed to be adjusted the one toward the other to open or close the valve and the one having a shoulder and the other a flexible projection in the path of said shoulder and constructed to engage therewith to resist the separation of the parts and under force to yield and permit their separation.

3. In a valve or stopper, the combination of relatively fixed and movable parts, the one constituting a stem or neck and the other a tube or socket and the one having a seat and the other a valve or stopper, screw-threads on said parts for adjusting the valve, and a yielding catch on one of said parts constructed to engage the other of said parts and ordinarily to resist their separation and to yield under force and permit their separation, whereby normally said parts will be locked together, but under strain they will separate.

4. In a valve or stopper, the combination of relatively fixed and movable parts, the one constituting a stem or neck and the other a tube or socket and the one having a seat and the other a valve or stopper, screw-threads on said parts for adjusting the valve, and a yielding catch on one of said parts constructed to engage the other of said parts after said screw-threads are out of engagement and to then resist the separation of the parts and under force to yield and permit their separation, whereby normally said parts will be locked together after they are unscrewed, but under strain they will separate.

5. In a valve or stopper, the combination of relatively fixed and movable parts, the one constituting a stem or neck and the other a tube or socket and the one having a seat and the other a valve or stopper, screw-threads on said parts for adjusting the valve, and the one of said parts having an annular shoulder and the other carrying a flexible ring projecting into the path of said shoulder and constructed to engage therewith to resist the separation of the parts and under force to yield and permit their separation, whereby normally said parts will be locked together, but under strain they will separate.

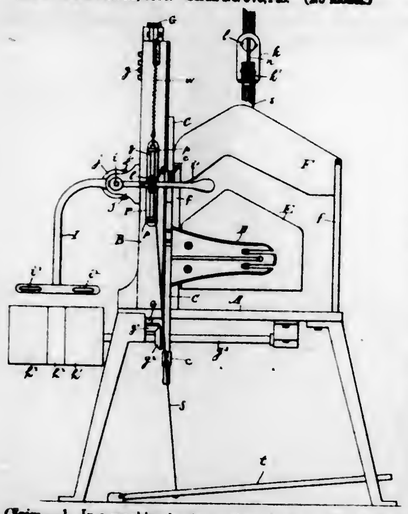
6. In a valve or stopper, the combination, with the socket C, having a valve-seat, a hollow interior, and the screw-thread *b*, of the stem D, having a screw-thread *c*, engaging said screw-thread *b*, a conduit E, and an aperture *g* and adapted at its lower end to engage said seat *c*, and a flexible projection, as *i*, carried by said stem within said hollow interior of said socket and projecting beyond the radius of said screw-thread *b*, whereby said parts can only be separated by distorting said flexible projection.

7. In a valve or stopper, the socket C, having valve-seat *c* and in-

ternal projection *j*, in combination with the stem D, entering said socket, adapted to engage said seat, having conduit E and aperture *g*, and the flexible ring *i*, carried by said stem between its aperture *g* and its end engaging said seat and adapted to engage said projection *j* to resist the separation of the stem and socket.

8. In a valve or stopper, the socket C, having a seat *c* and a projection *j*, in combination with the stem D, entering said socket and adapted to seat against said seat and constructed with a groove *h*, and a flexible ring, as *i*, carried in said groove of said stem and adapted to engage said projection *j* to resist the separation of the stem and socket.

484,510. CRIMPING-MACHINE. WILLIAM H. THOMAS and GEORGE F. REYNOLDS, Lewiston, Me., assignors to William W. Sanborn, same place. Filed Dec. 29, 1890. Serial No. 376,143. (No model.)



Claim.—1. In a machine having reciprocating jaws or members, the combination, with the jaws or reciprocating parts, of stops connected therewith for throwing the shipping-lever in opposite directions, a spring for forcing the shipping-lever to its middle or stopping position, a latch connecting said spring and said lever, arranged to lock when said lever is depressed, and mechanism for releasing said latch from said lever, substantially as described.

2. In a machine having reciprocating jaws or members, the combination, with said jaws or reciprocating parts, of stops connecting with such reciprocating parts for throwing the shipping-lever in opposite directions, a vertical rod adapted to move in guides, a stop on said rod, and a catch on the shipping-lever, adapted to engage said stop and to depress said rod when said shipping-lever moves downward, substantially as shown.

3. The combination of a shipping-lever having thereon a catch, a stop with which said catch is adapted to engage, a spring connected with said stop, and a lever for releasing said catch and at the same time depressing said lever, substantially as described.

4. In a machine having reciprocating jaws or members, the combination, with said jaws or reciprocating parts, of stops connected with such reciprocating parts for throwing the lever in opposite directions, a spring for forcing the shipping-lever to its middle or stopping position, and a latch connected with said spring and said lever, arranged to lock when said lever is depressed, whereby the latter may be drawn back by said spring, substantially as described.

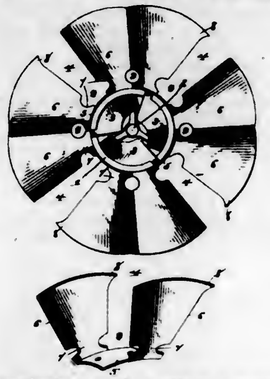
484,511. PROPELLER. JOHN Q. ADAMS, Jamaica, Vt. Filed May 13, 1892. Serial No. 433,581. (No model.)

Claim.—1. In a propeller, the combination of a hub and blades arranged in integral pairs and removably attached thereto, substantially as described.

2. In a propeller, the combination of a hub having blades secured against the interior surface thereof and exterior diagonally-arranged removable blades constructed in integral pairs, substantially as described.

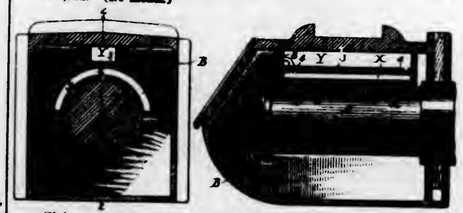
3. In a propeller, the combination of the hub, blades diagonally arranged thereon and constructed in integral pairs having throats between the lower portions thereof, substantially as described.

4. In a propeller, the combination of a hub, exterior removable diagonally-arranged blades constructed in integral pairs having throats between the lower portions thereof and the outer parts of the same flared outwardly from said throats, substantially as described.



5. A blade section for a propeller, consisting of an attaching-plate having blades vertically rising from opposite sides thereof near the ends of the same and at right angles thereto, substantially as described.

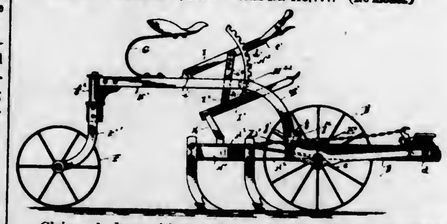
484,512. JOURNAL-LUBRICATOR. WILLIAM H. BACHE and WILLIAM W. SMALLEY, Bound Brook, N. J. Filed Mar. 2, 1891. Serial No. 383,382. (No model.)



Claim.—1. A bearing provided with a valve for regulating the passage of the powdered lubricant through openings in the bearing to the journal, a spring for shifting the valve in one direction, and a knob or projection extending to the outside of the bearing, substantially as set forth.

2. A journal-bearing having a series of openings extending to the bearing-face, and with a recess in the outer face for receiving a slide having openings arranged to register with those in the bearings, a spring moving a slide in one direction, and an adjustable button carried by the slide and extending into an opening at the end of the bearing, substantially as described.

484,513. WHEEL-CULTIVATOR. DELBERT R. BARTON, San Francisco, Cal. Filed Dec. 2, 1891. Serial No. 413,777. (No model.)



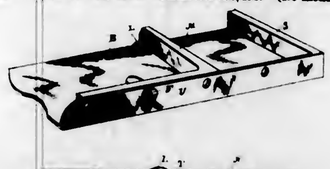
Claim.—1. In a cultivator, the combination, with the supplemental frame, of the main frame connected thereto, swiveling wheel sustaining rear end of main frame, shovel-carrying beam extending transversely between the supplemental frame and swivel-wheel, and mechanism for raising and lowering the shovel-carrying beam at will, as and for the purpose set forth.

2. In a cultivator, the combination, with the front horizontal axle mounted upon ground-wheels, supplemental frame movably secured thereto, main frame movably connected to rear portion of said frame, swivel-wheel for sustaining the rear end of the main frame, shovel-carrying beam suspended between the supplemental beam-frame and swivel-wheel, drag-bars carrying the transverse beam at their rear end and secured to the horizontal axle at their forward end, hand and foot levers, and locking device mounted in the main frame within reach of the driver and connected with the shovel-carrying beam in order to raise or lower same, as and for the purpose set forth.

3. In a cultivator, the combination, with the main frame, of the supplemental frame to which the former is movably secured, swiveled wheel for sustaining rear end of main frame, shovel-carrying beam suspended between supplemental frame and swivel-wheel, driver's seat secured to the main frame, lever-quadrant held between arched braces of the main frame, hand-lever movably secured to said frame and adapted to lock within the quadrant, foot-lever fulcrumed beneath the frame and connected to the hand lever by an adjustable link-rod, and the link connection between rear end of the foot-lever and shovel-carrying beam, said beam adapted to be raised or lowered by the upward or downward movement of the hand and foot lever, each of which is within reach of the operator's hand and foot, as and for the purpose set forth.

4. In a cultivator, the combination, with the supplemental frame movably secured to the axle, of the riding attachment or main frame adjustably secured to the supplemental frame in order to allow for forward or backward adjustment of the same for the purpose of regulating distribution of the operator's weight, as and for the purpose set forth.

484,514. COMPOSING-STICK. JOHN K. BITTENBENDER, Bloomsburg, Pa. Filed Oct. 22, 1891. Serial No. 409,496. (No model.)



Claim.—1. A composing-stick comprising a base having an upturned lower edge, a stationary jaw, a movable jaw, and a fastener for the latter, combined with a lip at the toe of said movable jaw, the lip extending over the upper edge of said base and having a tooth at its extremity, and a strip secured across the bottom of said base parallel with and near its upper edge and having notches with which said tooth positively engages when the fastener is tightened, substantially as and for the purpose set forth.

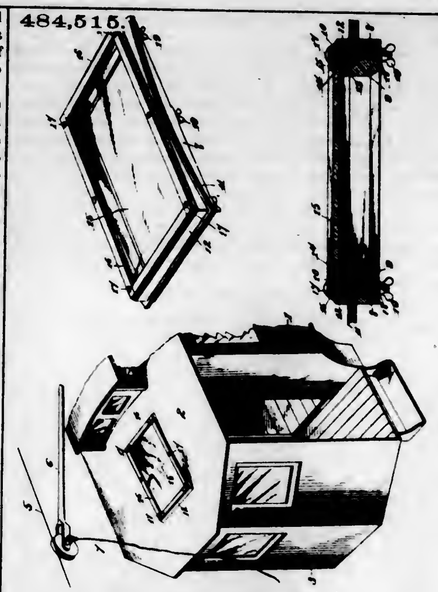
2. A composing-stick comprising a base having an upturned lower edge, a stationary jaw, a movable jaw, and a fastener for the latter, combined with an integral lip at the toe of said movable jaw, the lip extending over the upper edge of said base and having at its extremity pointed teeth with beveled sides, and a metallic strip secured across the bottom of said base parallel with and near said base and having V-shaped notches opening away from said upturned edge and with which the teeth positively engage when said fastener is tightened, substantially as and for the purpose hereinbefore set forth.

484,515. SKYLIGHT FOR ELECTRIC CARS. HENRY COCHRAN, Chester, Pa. Filed Mar. 23, 1892. Serial No. 426,121. (No model.)

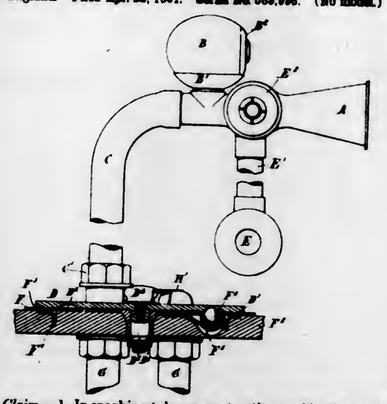
Claim.—1. The combination, with the roof of an electric car provided with an opening, of a lower clamping-frame fitting within said opening and extending above the roof, a packing laid upon the roof and against the outer side of the thus-extended portion of the frame, an upper clamping-frame mounted upon the packing and having its lower inner corner recessed to fit the lower frame, a glass surmounting the upper frame, means for securing the glass, and means for securing the frames together, substantially as specified.

2. The combination, with the roof 2, having the opening, the frame 8, located within the opening and having its outer upper corner recessed to receive the edge of the roof and to form an inclined shoulder 10, extending above the roof, of the packing-strip 11, located upon the roof and secured to the same and to the outer face of the inclined shoulder aforesaid, the upper clamping-frame 12, having its inner lower corner recessed, as at 13, to receive the inclined shoulder, and its upper inner corner recessed, as at 14, the glass panel 15, mounted in the latter recess, the strips 16, overlapping said panel and frame 12, the bolts 17, passing downwardly through the strips, roof, and frames, the washers 18, and the clamping-nuts 19, mounted on the bolts, substantially as specified.

484,515.



484,516. SPEAKING-TUBE. HANSEMANN A. CUTHORE, London, England. Filed Apr. 22, 1891. Serial No. 389,996. (No model.)



Claim.—1. In speaking-tube apparatus, the combination, with the mouth and ear piece and series of tube-terminals G, of an adjustable switch-plate or disk moving over the terminals, the disk having a series of signal devices corresponding to the terminals, substantially as described.

2. In speaking-tube apparatus, the combination, with a series of tube-terminals G, of an adjustable switch-plate or disk moving over the terminals and having a series of signal devices corresponding to the terminals and a mouth and ear piece branch attached to the disk, substantially as described.

3. In speaking-tube apparatus, the combination, with two or more tube-terminals G and fixed plate F, of a rotatable plate or disk D, having recesses D^4, adapted to receive a spring-controlled check-ball F^6, substantially as described, and illustrated in the accompanying drawings.

4. In speaking-tube apparatus, the combination, with a series of tube-terminals G, of an adjustable switch-plate or disk moving over the terminals, a mouth and ear piece branch connected to the disk, a signal device connected to the branch, and a series of signal devices carried by the disk and corresponding to the tube-terminals, substantially as described.

5. In speaking-tube apparatus, the combination, with two or more tube-terminals G, of a rotatable plate or disk having signal devices corresponding to the terminals and a mouth and ear piece carrying

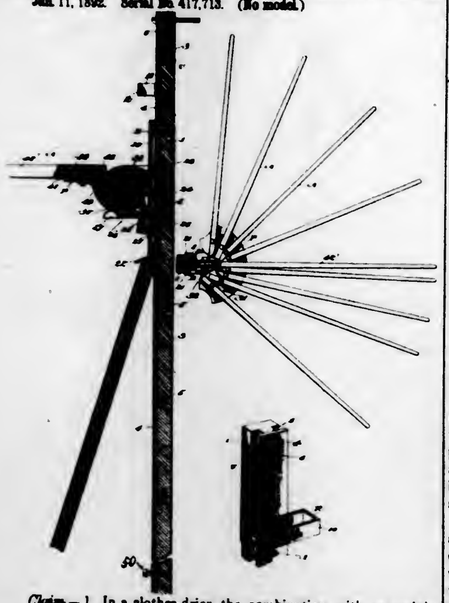
branch, the said branch being connected to the disk by a swivel-joint, substantially as described.

6. In speaking-tube apparatus, the combination, with two or more tube-terminals G, of an adjustable switch plate or disk having a mouth and ear piece carrying branch and provided with a series of hinged doors corresponding to the tube-terminals, substantially as described.

7. In speaking-tube apparatus, the combination, with two or more terminals G, of an adjustable switch plate or disk carrying the mouth and ear piece and provided with a series of audible signal devices, and hinged doors corresponding with the tube-terminals, substantially as described.

8. In speaking-tube-signal apparatus, the combination, with the mouth and ear tube, of a collapsible ball B, having a tube extension B^6, a divided casing B', surrounding the ball, and a signal-carrying tube B^4, having its end extending into the casing of the tube, substantially as described.

484,517. CLOTHES-DRIER. Charles E. Drury, Girard, Pa. Filed Jan. 11, 1892. Serial No. 417,713. (No model.)

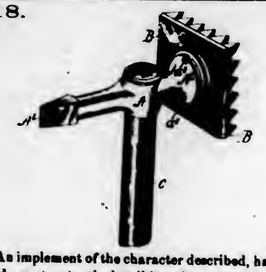


Claim.—1. In a clothes-drier, the combination, with an upright having holes, of a bracket sliding on said upright and having a thumb-piece at its lower end and a slot in its body, clothes-carrying arms supported by said bracket, a catch pivoted to the bracket and having a foot projecting through the slot therein and adapted to engage one of said holes, and an outwardly-projecting arm on said catch having an inverted cup, as and for the purpose set forth.

2. In a clothes-drier, the combination, with a vertically-adjustable bracket having two outwardly-projecting ears connected by a central pivot-rivet and by a stop-rivet below it, of a plate having a deep notch in its rear edge, a web within this notch and connected by braces with the plate, the web being mounted on said pivot-rivet and having a shoulder engaging the stop-rivet when the plate is horizontal, and clothes-carrying arms upon and connected by pivot-rivets with said plates, as and for the purpose set forth.

3. In a clothes-drier, the combination, with a vertically-adjustable bracket having two outwardly-projecting ears connected by a central pivot-rivet and by a stop-rivet below it, of a plate having a deep notch in its rear edge, a web within this notch and connected by braces with the plate, the web being mounted on said pivot rivet and having a shoulder engaging the stop-rivet when the plate is horizontal, a flu on the web above the plate, a lug on the plate in line with said flu, a rigid arm having a notch engaging the flu and a recess engaging the lug, a screw passing through the plate into the arm, and other arms pivotally mounted on the plate each side of the rigid arm, as and for the purpose hereinbefore set forth.

484,518. COMBINED MEAT-TENDERER AND ICE-PICK AND METHOD OF MAKING THE SAME. John W. Ehrlman, Mount Joy, Pa. Filed Dec. 7, 1891. Serial No. 414,260. (No model.)



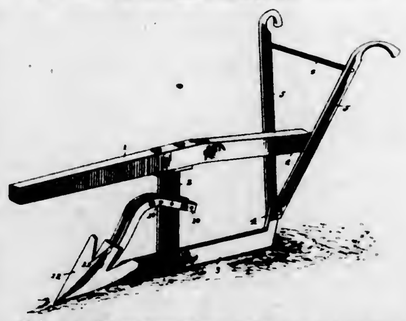
Claim.—An implement of the character described, having, in combination, a body part, a toothed striking-plate, means comprising an integral lug in one of said parts and a corresponding recess in the other for securing said parts together at the centers of their abutting faces, and integral locking-lugs and recesses for preventing turning of said parts upon each other, substantially as described.

484,519. POST-HOLE AUGER. Henry M. Flanders, Ashland, Nebr. Filed Sept. 28, 1891. Serial No. 407,053. (No model.)

Claim.—1. In a post-hole auger, the combination, with the head provided upon its under side near its periphery with studs or pins and with segmentally-curved slots in rear thereof arranged reversely to the periphery of the head, of the cutters or knives provided with inturned arms pivotally mounted on said studs or pins and a binding-bolt passing through each of said arms and working in said slots, substantially as set forth.

2. In a post-hole auger, the combination, with the head carrying a standard and provided with studs or pins and with segmentally-curved slots in rear of said studs or pins, said slots being arranged reversely to the periphery of the head, of cutters or knives provided with inturned arms pivotally mounted on each alternate stud or pin and provided with a removable binding-bolt working in the relative slots, blades or plates correspondingly mounted intermediate said cutters or knives and inclosed by the same, and a handle mounted on the standard, substantially as and for the purpose set forth.

484,520. PLOW-STOCK. Ernst Koehne, Moulton, Tex. Filed May 3, 1892. Serial No. 431,689. (No model.)



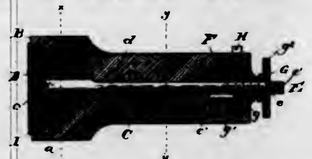
Claim.—1. The combination, with a plow stock or beam, of a permanent depending standard, a horizontal heel-bar secured to the lower end of the standard and extending in advance thereof, the forwardly-concaved brace pivotally connected at its front end to the front end of the heel-bar and arranged at its rear end in contact with the standard, the rear end of the brace being transversely perforated to receive bolts to engage opposite sides of the standard, and the plow attached to the brace, substantially as specified.

2. In a plow, the combination, with a vertical standard and a horizontal heel-plate extending forwardly beyond the standard, of a bifurcated brace pivotally connected at one end to the front end of the heel-plate and having its parallel arms arranged, respectively, upon opposite sides of the standard, bolts engaging perforations in said arms to hold the brace at the desired inclination, and a plow attached to the brace, substantially as specified.

484,521. YELLOW DYE-STUFF. Hans Kehl, Höchst, Germany, assignor to the Farbwerke, vormals Meister, Lucius & Brüning, same place. Filed Aug. 3, 1891. Serial No. 401,483. (Specimens.)

Claim.—As a new article, the coloring-matter derived from diamido-sulphone and oxycarbosic acid, an orange-brown powder difficulty soluble in water, totally insoluble in chloroform, ligroin, bisulphide of carbon, soluble in solutions of alkalies, ether, etayl and methyl alcohol, and most readily soluble in acetone.

484,522. ELECTRODE FOR MEDICINAL PURPOSES. Howard H. McBride, Springfield, Mo., assignor of one-half to Albert W. Mahle. Filed July 21, 1892. Serial No. 440,734. (No model.)



Claim.—1. In an electrode, the combination, with a non-conducting casing provided at one end with a recess, of an electrical conducting disk disposed in said recess and below the outer portion thereof, whereby a receptacle is provided for the purpose described, substantially as set forth.

2. In an electrode, the combination, with a non conducting casing provided at one end with an annular flange, of an electrical conducting-disk carried by said casing and located below said flange, and a soft-rubber washer interposed between said flange and disk and projecting beyond the latter, substantially as and for the purpose set forth.

3. In an electrode, the combination, with a non-conducting casing provided at one end with an annular flange, of an electrical conducting-disk disposed in the recess formed by said flange and means for adjusting the disk longitudinally with relation to the casing, substantially as set forth.

4. In an electrode, the combination, with a non-conducting casing provided at one end with an annular flange and with a central longitudinal bore, of a metallic disk disposed in the recess formed by said flange and carrying a metallic rod passing through the bore, said rod being screw-threaded at its distal end, and a revolubie nut carried at the end of the casing opposite the flange and adapted to receive the threaded end of the rod, substantially as and for the purpose set forth.

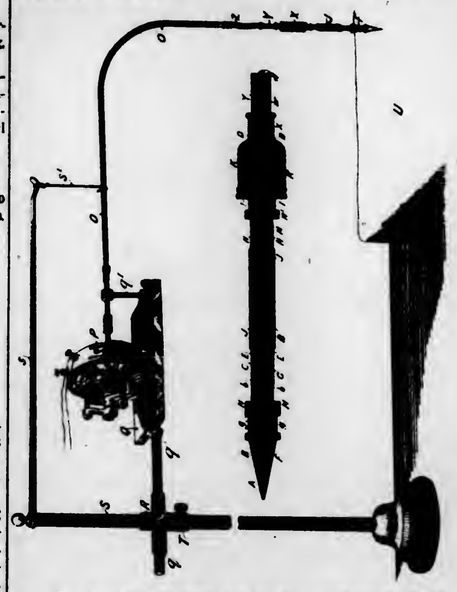
5. In an electrode, the combination, with a non-conducting casing provided at one end with an annular flange and with a central longitudinal bore having its end adjacent to said flange formed angular and its opposite end enlarged and carrying a metallic bushing, of a metallic disk disposed in the recess formed by the flange and provided with an angular stem engaging the corresponding portion of the bore, a rod projecting from said stem and provided with screw-threads and with a bore at its distal end, a nut adapted to engage said threaded end and having a stem fitting within the bushing and said stem being provided with an annular groove, and a screw passing through the casing and bushing and engaging said groove, substantially as and for the purpose set forth.

484,528. DRAWING AND STIPPLING PEN. John Phillips, London, England. Filed Mar. 1, 1892. Serial No. 423,431. (No model.) Patented in France Feb. 27, 1892, No. 219,719.

Claim.—1. A drawing or stippling pen comprising in its construction a needle and needle-bar, a holder and ink-receptacle adapted to guide the said needle-bar and to supply the needle with ink, and mechanism for imparting to the needle-bar a rotary motion around its axis as well as a to-and-fro motion along the same, substantially as described.

2. In a drawing or stippling pen having a reciprocating needle and needle-bar guided in a holder, the combination of the needle-bar and holder with a simultaneously revolving and reciprocating driving-spindle adapted to transmit its rotary motion upon the needle-bar, and a buffer-spring interposed between the needle-bar and the driving-spindle and adapted to transmit the axial motion of the driving-spindle upon the needle bar until the pressure on the point of the needle exceeds a given limit, substantially as described.

3. In a drawing or stippling pen having a reciprocating needle and needle bar guided in a holder, the combination of an annular cam-face or roller-path formed on the holder with a continuously-revolving driving-spindle, a cross-head fixed on the said driving-spindle and carrying a pair of friction-rollers adapted to run on the said cam-face, a spring adapted to keep the friction-rollers in contact, and mechanism for transmitting the motion of the driving-spindle to the needle-bar, substantially as described.



4. In a drawing or stippling pen having a reciprocating needle and needle-bar guided in a tubular holder, the combination of an extensible holder provided with an annular cam-face with a revolving driving-spindle adapted to set in motion the needle-bar, a cross-head fixed on the driving-spindle and carrying a pair of friction-rollers adapted to run on the said cam-face, and a spring adapted to press the said rollers against the cam-face, substantially as described.

5. In a drawing or stippling pen having a reciprocating needle and needle-bar, an extensible holder comprising in its construction a pencil-shaped lower part serving as a needle-guide and ink-receptacle, a tubular middle part serving as a lower guide and packing for the needle-bar and connected with the lower part by a screw-joint, and a tubular upper part serving as a guide for the driving-spindle, substantially as described.

6. In a drawing or stippling pen having a reciprocating needle and needle-bar guided in a holder, the combination of the needle bar with automatic mechanism for imparting to the same an axially-reciprocating motion from the top of the holder and a compensating-spring placed between the said mechanism and the needle-bar, so as to serve as a buffer between the same, substantially as described.

7. In a drawing or stippling pen having a reciprocating needle and needle-bar guided by a holder, the combination of the needle-bar with a driving-spindle receiving a rotary and a reciprocating motion, a coupling-sleeve, and a compensating or buffer spring interposed between the needle-bar and the driving-spindle, the said parts being arranged and connected with each other in such a manner as to transmit the rotary motion of the driving-spindle to the needle-bar through the coupling-sleeve, and the reciprocating motion through the spring, substantially as described.

8. The combination of a drawing or stippling pen with a flexible shaft adapted to transmit rotary motion to the mechanism of the said pen, an electromotor adapted to drive the said flexible shaft, a stand provided with a cylindrical column or post, and a bed-plate or arm supporting the said motor and shaft, the said arm being adapted to pivot or turn on the said column or post and to be secured thereto at various heights, substantially as described.

484,524. HORSE-POWER. WILLIAM B. SWARTS, Buckeye City, Ohio. Filed June 2, 1892. Serial No. 435,286. (No model.)

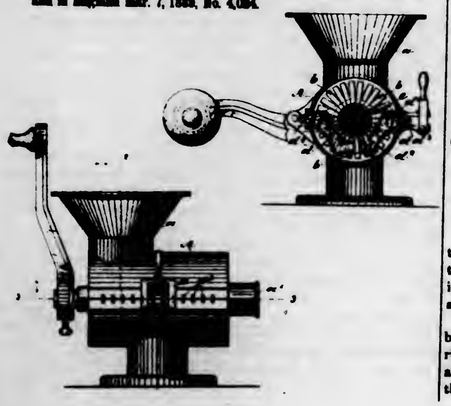
Claim.—1. In a horse-power, a horizontal master-wheel having an annular chain-groove in the rim thereof and a series of link-notches interrupting said groove at intervals, chain adjusting and retainer lugs mounted within said link-notches, and an endless power chain, substantially as set forth.

2. In a horse-power, a horizontal master-wheel having an annular groove, a series of link-notches interrupting the groove at intervals, chain adjusting and retaining lugs mounted within said notches and provided with side flanges, and intermediate flared notches extending to the base of the link-notches, and an endless power-chain, substantially as set forth.

3. In a horse-power, the combination, with the horizontal master-wheel, swiveled guide-wheels located at a suitable point adjacent to the devices to be driven, an endless chain, a guide, a movable tension-wheel mounted on said guide, and a weight-actuated cord connected to said tension-wheel to normally hold the same against one side of the endless chain between said guide-wheels and the master-wheel, substantially as set forth.

4. The combination, with an endless power chain or belt, of a tension-guide having a horizontal slot through which passes said chain or belt and upper and lower guide-slots, a tension-wheel mounted to slide within said horizontal slot and having the journal ends thereof play within said guide-slots, and a weight-controlled tension-cord connected with said tension-wheel to hold the same normally against one side of said chain or belt, substantially as set forth.

484,525. MEAT-CHOPPER. EMIL UHRIG, Westend, near Berlin, Germany. Filed Jan. 20, 1891. Renewed Feb. 18, 1892. Serial No. 421,987. (No model.) Patented in Germany Nov. 30, 1888, No. 48,956, and in England Mar. 7, 1889, No. 4,094.

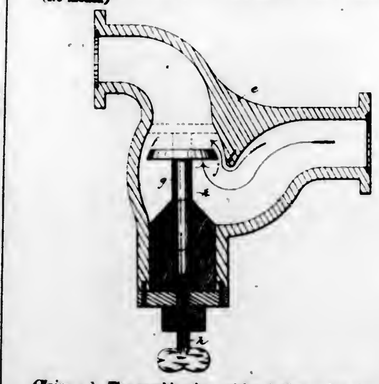


Claim.—1. In a mincing-machine, the combination, with the casing A, provided with an inlet and outlet for the material to be minced, said casing formed in two sections and provided with coinciding apertures D along the joining faces of said sections, of the removable knives *d*, set in said apertures, and the extremities of said knives projecting from said apertures when the sections are separated, whereby they may be readily removed, and the central rotating shaft *e*, provided with pegs or studs *b*, adapted to pass, as the shaft is rotated, between the knives *d*, substantially as set forth.

2. In a mincing-machine, the combination, with the casing A, of the central rotating shaft *e*, provided with pegs or studs *b b*, and the knives *d*, set in the casing and provided with two or more cutting-surfaces, said pegs *b* passing, as shaft *e* is rotated, between the several knives *d*, substantially as and for the purposes set forth.

3. In a mincing-machine, the combination, with the casing A, of the central rotating shaft *e*, provided with pegs *b b*, arranged about its surface, and the knives *d*, set in the said casing, said pegs *b* serving as the shaft *e* is rotated to force the material against and between the several knives *d d*, said knives being provided with two or more cutting-edges $d' d^2$, both of said cutting-edges being arranged at an angle with the path in which said pegs *b* move, as set forth.

484,526. AUTOMATIC VALVE FOR STEAM-HEATERS. CHARLES J. VALENTINE, Newark, N. J. Filed Nov. 19, 1891. Serial No. 412,364. (No model.)



Claim.—1. The combination, with a boiler and a pipe connected therewith, of a casing connected with said pipe and having a valve-seat, a valve in said casing having a stem, a socket adjustable within the casing, in which the valve-stem is loosely guided, and an adjusting-screw in said socket and upon which the lower end of the said stem is supported and by which its downward movement may be regulated and limited, substantially as shown and described.

2. The combination, with a boiler and a pipe therefrom, of a valve-chamber having a valve-seat and provided with a tongue *l* below said seat, whereby the steam is turned downward to impinge against the under side of the valve, and a gravity-valve in the said chamber, substantially as shown and described.

484,527. BADGE. BENJAMIN S. WHITEHEAD, Newark, N. J. Filed May 6, 1892. Serial No. 431,964. (No model.)

Claim.—1. The improved badge herein described, combining with the ribbon *a* a head-piece consisting of a facing having an imprint thereon, a backing having a support for the said ribbon, and a clamping-frame holding the outer edges of said facing upon said backing, substantially as set forth.

2. The improved badge herein described, combining with the ribbon *a* a head consisting of a frame, and means for supporting the said ribbon and attaching the head to the garment, and an interchangeable facing having letter or insignia imprints inseparably formed on the face of said facing, substantially as and for the purposes set forth.

3. The improved badge herein described, combining therein a ribbon *a*, and a heading having a textile fabric with inseparable imprints thereon, and a frame therefor, the said fabric being interchangeable in relation to said frame, substantially as set forth.

4. The improved badge herein described, combining therein a ribbon and a heading therefor consisting of a backing having means thereon to receive and hold the ribbon and to attach the badge to the garment, a fabric arranged on said backing, and a frame bordering said facing and provided with lips *j*, beat around the edge of said facing and backing, substantially as set forth.

5. In a badge, the heading consisting of a backing having means to hold the ribbon and to attach the badge to the garment, a textile facing arranged on said backing, and a frame clamping the bordering edges of said facing to said backing, substantially as set forth.

6. In a badge, the heading consisting of a bordering-frame having lips adapted to be beat, as described, a backing, and a facing having insignia imprinted thereon which appear through the opening in said frame, substantially as set forth.

7. In a badge, the heading consisting of a frame, a facing of textile fabric bordered by said frame, and a forwardly-coavexed backing having means for attachment to the garment and to support the ribbon, said parts being arranged and combined substantially as and for the purposes set forth.

8. In a badge, the combination, with a party-colored ribbon, of a heading having a frame and facing, the latter being party-colored in correspondence with the said ribbon, substantially as set forth.

9. In a badge, the combination, with a ribbon having a high color or colors on one side and another different color on the opposite side, of a heading having a frame, means of attachment and support, and a facing corresponding in color with one of said ribbon-colors, substantially as set forth.

10. The combination, with a ribbon having high color on one side and black on the other, of a heading having high-colored facing corresponding with the high color of the ribbon, the said ribbon being reversible in its relation to the heading, substantially as set forth.

11. The heading pin or piece for badges, consisting of an oblong backing, a textile fabric forming a facing and having imprints thereon, and means for fastening the same to the garment.

12. In combination with a heading, a double ribbon having the looped ends sewed or united together back from the extremities and forming two looped leaves or four pages and having advertisements or imprints thereon, substantially as set forth.

13. In combination, in a badge, a ribbon, an applied flag with waves or wrinkles, and a backing for said flag correspondingly wrinkled, substantially as set forth.

14. In a badge, the combination, with the ribbon *a*, of a textile flag with irregular vertical waves or wrinkles, giving said flag the appearance or shape it assumes when waving in the air, and a backing correspondingly wrinkled and cemented to said flag to support the waves, substantially as set forth.

15. In a badge, the insignia or ornament consisting of an applied shield of textile fabric having stars and stripes or similar insignia thereon and a metallic open-work sheet-metal protecting-frame secured over the face of said shield, substantially as shown and described.

16. In a badge, the combination, with the ribbon *a*, of an applied textile flag or insignia and an overlying sheet-metal open-work protecting-frame embodying an insignia, substantially as set forth.

17. The improved society-badge herein described, combining therein a ribbon *a*, having insignia thereon, and a head-piece carrying said ribbon and consisting of a backing and a silk-ribbon facing having insignia thereon, said ribbon being separable from said backing to admit of an interchange of facings, substantially as set forth.

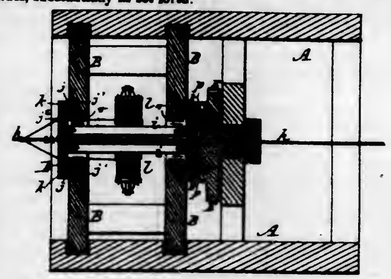
18. The improved society-badge herein described, combining therein a silk suspensory ribbon having imprints and insignia thereon and a head-piece from which said ribbon is suspended, having a width corresponding to that of the ribbon and consisting of a backing providing means of attachment of said head-piece to the garment of the wearer, a bordering, and a facing ribbon or fabric removably held to said backing and having its edges covered by said bordering, substantially as set forth.

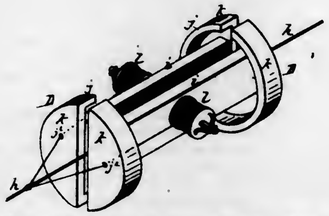
19. The head-piece herein described, combining therein a backing having a pin or bar to receive the ribbon and a pin to enable the device to be secured to the garment, a rim holding a facing, and said facing made of textile fabric and having imprints or symbols thereon, substantially as set forth.

20. The head-piece herein described, combining therein a backing having a pin or other device to admit of the device being secured to the garment and an attachable rim securing the material containing the symbol or imprint, substantially as set forth.

484,528. WIRE-FABRIC MACHINE. WILLIAM D. WHITNEY, Clarendon, N. Y. Filed Apr. 5, 1892. Serial No. 427,949. (No model.)

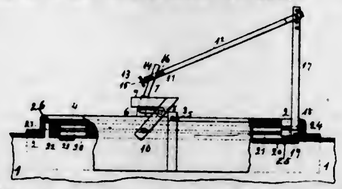
Claim.—1. In a wire-fabric machine, the combination of reversible slides, a set of sectional side twisters connected with each slide by means of concentric ribs on twisters and grooves in the slides, a set of intermeshing gears corresponding in number and position with the longitudinal wires, a set of grooves or ways in each of said gears, and a corresponding set of ribs on each twister, whereby the power is applied directly to one end of the side twisters, the twisters being adapted to be transferred from one gear to another with the reversal of the slides, substantially as set forth.





2. The combination, with the sectional side twisters *D*, provided with double heads *k k*, the slides B, and mechanism for reciprocally moving said slides in opposite directions, of the concentric ribs *j j*, formed on the heads, and the corresponding concentric grooves *j' j'*, formed in the slides, whereby the side twisters are held in the slides in position to be turned by the gears, substantially as set forth.

484,529. DAMPER-REGULATOR. LEON BELLAMY, Arlington, N. J. Filed Oct. 17, 1891. Serial No. 409,085. (No model.)



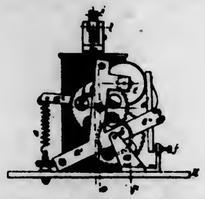
Claim.—1. A damper-regulator in which is comprised a damper-plate pivoted in a surrounding frame, arranged to be fixed to a smoke-pipe or flue, a tube of one metal secured at one of its ends to the interior of the damper-plate, as set forth, and a rod of another metal inclosed in said tube and being fixed to the free end thereof, and a series of levers connected to said rod and to a fulcrum for moving the plate, the whole being combined and arranged to move together, substantially as shown and described.

2. In a device of the character herein specified, a damper-plate pivoted in a surrounding frame, an expansible medium fixed upon the inner side of the damper-plate, a series of levers connected with said expansible medium and a crank-rod connected to the damper, a crank, and a fixed bearing for the extremity of the crank-rod at the side of the surrounding frame, the whole combined and arranged to operate substantially as shown and described.

484,530. ELECTRIC-ARC LAMP. CARL COEPPER, Cosin, Germany. Filed June 13, 1892. Serial No. 437,145. (No model.)

Claim.—1. In an electric-arc lamp, the combination, with a driving-gear, of a frame pivoted on the fixed plate of the lamp and supporting said gear, two electro-magnets on said plate, of which one is in the main circuit and the other in the shunt-circuit, a pivoted armature-lever above said magnets, which lever is connected with the swing-

ing frame supporting the gear, a brake-wheel forming part of the gear, a brake-lever pivoted on the pivoted frame and engaging the brake-wheel, a screw on the fixed base bearing against one end of said brake-lever, a pulley forming part of the gear, and a cord passed over said pulley, from which cord the carbons are to be suspended, substantially as set forth.

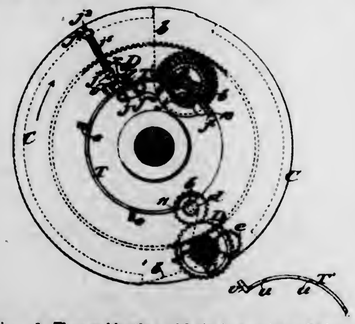


2. In an electric-arc lamp, the combination, with a fixed plate, of a frame pivoted on the same, a train of gearing mounted on said pivoted frame, a spring acting on said pivoted frame, a brake-wheel forming part of said gearing, a lever pivoted on the pivoted frame and bearing against said brake-wheel, a screw on the fixed plate, against which screw one end of the brake-lever can bear, two magnets on the fixed plate, of which one is in the main circuit and the other in the shunt-circuit, a pivoted armature-lever for said two magnets, which lever is connected with the swinging frame carrying the gearing, a pulley forming part of the gear, and a cord passed over said pulley, from which cord the carbons are to be suspended, substantially as set forth.

3. In an electric-arc lamp, the combination, with a reflector having an opening, of a slotted piece secured on the reflector over said opening and a guide-collar on said slotted piece, substantially as set forth.

4. In an electric-arc lamp, the combination, with a reflector having an opening and a downwardly-projecting flange along the edges of said opening, of a slotted piece secured on the top of the reflector above said opening and a guide-collar held on said slotted piece, substantially as set forth.

484,531. OFFSET MECHANISM FOR PRINTING-MACHINES. CALVERT B. COTTRELL, Westerly, R. I. Filed Mar. 9, 1892. Serial No. 424,265. (No model.)



Claim.—1. The combination, with the impression-cylinder, a tympan-delivery roller therein, and a pawl attached to the said cylinder for locking the said roller, of a non-rotating interrupted circular track made in two parts, one of which is adjustable relatively to the other in the direction of the rotation of the cylinder for holding the said pawl out of engagement with the cylinder during a greater or less portion of the rotation of the latter, substantially as and for the purpose herein set forth.

2. The combination, with the impression-cylinder, a tympan-delivery roller in said cylinder, and a pawl attached to said cylinder for locking said roller, of an interrupted circular track for said pawl made in two parts, a support for said track upon which one of the said parts is secured firmly and the other is adjustable, and a screw and nut, one of which is attached to said support and the other to said movable part of said track for adjusting the latter in the direction of the rotation of the cylinder, substantially as and for the purpose herein set forth.

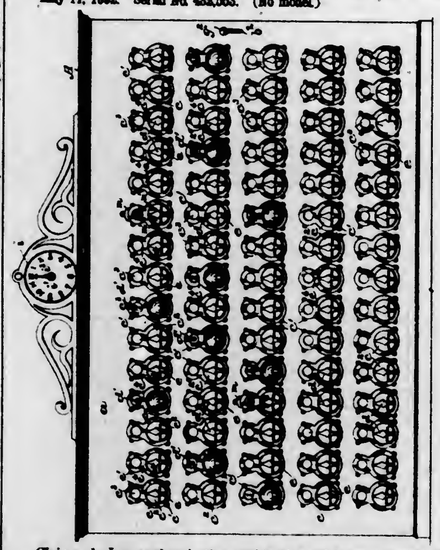
484,532. ELECTRICAL CURLING-IRON. ANDREW D. GARDNER, Lynn, Mass. Filed Oct. 21, 1891. Serial No. 409,404. (No model.)

Claim.—1. In a hair-curling iron, the combination, with a hollow insulated handle, of a hollow cylindrical curling-stem on the handle formed with thin metallic walls, means for heating the stem, consisting of a wire arranged within and coiled spirally in the curling portion of the stem, electrical conductors with which said coil is connected, and a jaw engaging the stem having an insulated thumb-piece thereon, substantially as described.

2. In a curling-iron, the combination, with an insulated handle, of a hollow metallic curling-stem, electrical conductors in the handle, a looped resistance-wire within the stem, having its respective branches coiled parallel with each other and connected to the conductors, and a jaw on the stem, having an insulated thumb-piece, substantially as described.

3. In a curling-iron, the combination, with an insulated handle, of a thin metallic stem having a hollow center, a resistance-wire coiled in the stem, electrical conductors in the handle with which the resistance-wires are connected, binding-posts on the handle, a removable perforated cap on the handle over the posts, and electrical conductors passing through the cap and secured to the posts, substantially as described.

484,533. POOL-RACK. GEORGE F. HALL and HENRY GOTTSCHALK, Newark, N. J.; said Hall assignor to Joseph Finch, same place. Filed May 11, 1892. Serial No. 433,563. (No model.)



Claim.—1. In a pool rack, the combination, with a case provided with openings for the reception of the pool-balls, of mechanism to indicate or record the number of the ball deposited, means for retaining each ball in its deposited position, whereby the indicating or recording mechanism is brought up to and held at the reading-opening in the case, and devices for conveying the balls to a chute or receptacle at the side of the rack, substantially as and for the purposes set forth.

2. In a pool-rack, the combination, with a case provided with openings for the reception of pool-balls, of a pivoted mechanism in each opening adapted to be operated by the ball deposited, conveyers or raceways within the case at the back of said openings for leading said deposited balls to a chute or receptacle at the side of the machine, stop-pieces in said raceways adapted to retain the deposited balls directly in front of the openings, and mechanism for causing the raising and lowering of said stop-pieces, substantially as and for the purposes set forth.

3. In a pool-rack, the combination, with a case provided with openings for the reception of the pool-balls, of a pivoted mechanism in each opening adapted to be operated by the ball deposited, conveyers or raceways within the case at the back of said openings for leading said deposited balls to a chute or receptacle at the side of the machine, pivoted stop-pieces working through slots in said raceways adapted to retain the deposited balls directly in front of the openings, rods adapted to rotate in bearings beneath said raceways, means on said rods to raise and lower said stop-pieces, and mechanism adapted to rotate said rods, substantially as and for the purposes set forth.

4. In a pool-rack, the combination, with a case provided with openings in the face thereof for the reception of the pool-balls, of a pivoted mechanism in each opening adapted to be operated by the ball deposited, conveyers or raceways within the case at the back of said openings for leading said deposited balls to a chute or receptacle at the side of the machine, pivoted stop pieces working through slots in said raceways adapted to retain the deposited balls directly in front of said openings, rods adapted to rotate in bearings beneath said raceways, cam-plates secured on said rods to raise and lower said stop-pieces, and mechanism connected with the ends of said rods for rotating the same, consisting, essentially, of a spring-actuated rod *f*, capable of a vertical movement, a lever *g*, provided with a handle for operating said rod *f*, and connecting links or arms *h*, connecting the end of each rod beneath the raceways with a pin on said rod *f*, whereby when said lever *g* is operated said arms *h* rotate the rods beneath the raceways and cause said stop-pieces to fall through the slots in the raceways to release the pool-balls, substantially as and for the purposes set forth.

5. In a pool-rack, the combination, with a case provided with openings for the reception of the pool-balls, of mechanism constructed and arranged to indicate or record the number of a ball deposited, means for retaining each ball in its deposited position, whereby the indicating or recording mechanism is brought up to and held at the reading opening in the case, devices for conveying the balls to a chute or receptacle at the side of the machine, a game-register on said rack, and mechanism for operating the same, substantially as and for the purposes set forth.

6. In a pool-rack, the combination, with a case provided with openings for the reception of the pool balls, of a pivoted mechanism in each opening adapted to be operated by the ball deposited, conveyers or raceways within the case at the back of said openings for leading the deposited balls to a chute or receptacle at the side of the machine, stop-pieces in said raceways adapted to retain the deposited balls directly in front of the openings, mechanism for causing the raising and lowering of said stop-pieces, and a game-register arranged on said rack, and said mechanism arranged to raise and lower said stop-pieces, also being arranged to operate said register, substantially as and for the purposes set forth.

7. In a pool-register, the combination, with the case provided with openings in the face thereof for the reception of pool-balls, of a pivoted mechanism in each opening adapted to be operated by the ball deposited, conveyers or raceways within the case at the back of said openings for leading said deposited balls to a chute or receptacle at the side of the machine, pivoted stop-pieces working through slots in said raceways adapted to retain the deposited balls directly in front of the openings, rods adapted to rotate in bearings beneath said raceways, cam-plates secured on said rods to raise and lower said stop-pieces, mechanism connected with the ends of said rods for rotating the same, consisting, essentially, of a spring-actuated rod *f*, capable of a vertical movement, a lever *g*, provided with a handle for operating said rod *f*, connecting links or arms *h*, connecting the end of each rod beneath the raceways with a pin on said rod *f*, whereby when said lever *g* is operated said arms *h* rotate the rods beneath the raceways and cause said stop-pieces to fall through the slots in the raceways to release the balls, and a pivoted lever *j*, connected with a registering device, substantially as and for the purposes set forth.

8. In a pool-register, the combination, with the case provided with openings in the face thereof for the reception of pool-balls, of a pivoted mechanism in each opening adapted to be operated by the ball deposited, conveyers or raceways within the case at the back of said openings for leading said deposited balls to a chute or receptacle at the side of the machine, pivoted stop pieces working through slots in said raceways adapted to retain the deposited balls directly in front of the openings, rods adapted to rotate in bearings beneath said raceways, cam-plates secured on said rods to raise and lower said stop-pieces, mechanism connected with the ends of said rods for rotating the same, consisting, essentially, of a spring-actuated rod *f*, capable of a vertical movement, a lever *g*, provided with a handle for operating said rod *f*, connecting links or arms *h*, connecting the end of each rod beneath the raceways with a pin on said rod *f*, whereby when said lever *g* is operated said arms *h* rotate the rods beneath the raceways and cause said stop-pieces to fall through said slots in the raceways to release the balls, and a pivoted lever *j*, connected at one end with said rod *f* and at the other end with a game-register, consisting, essentially, of a spring-actuated rod *k*, having a finger k^4, adapted to strike a gong, a pawl i^3, a ratchet-wheel i^4 on an arbor i^2, and an index-hand or pointer, all arranged substantially as and for the purposes set forth.

9. In the herein-described pool-rack, in combination with a casing having openings *b* in its face, a scoop-shaped shelf *c*, provided with a gutter c^1, a plate *c*, having openings c^3 and c^4, and ears c^5, and an indicating device pivoted in said ears, consisting, essentially, of an arm *d* and an indicator-plate d^1, substantially as and for the purposes set forth.

10. In the herein-described pool-rack, in combination with a casing having openings *b* in its face, a scoop-shaped shelf *c*, provided with a gutter c^1, a plate *c*, having openings c^3 and c^4, and ears c^5, an indicating device pivoted in said ears, consisting of an arm *d* and an indicator-plate d^1, said gutter c^1 being provided with a slot c^6 and downwardly-projecting ears c^7, and stop-pieces c^8, pivoted between said ears c^7, adapted to be forced through said slot c^6, substantially as and for the purposes set forth.

11. In the herein-described pool-rack, in combination with a casing having openings *b* in its face, a series of scoop-shaped shelves *c*, extending through said openings and provided with gutters c^1, plates *c*, secured in front of said openings *b* and provided with openings c^3 and c^4 and having ears c^5, indicating devices pivoted between said ears c^5, consisting of arms *d* and indicator-plates d^1, slots c^6 in said gutters, and downwardly-projecting ears c^7, stop-pieces c^8, pivoted between said ears c^7, adapted to be forced up through said slots c^6, bearings c^9 on said gutters, rods c^4, and devices c^5 on said rods adapted to be forced against said stop-pieces to raise and lower the same, substantially as and for the purposes set forth.

12. In the herein-described pool-rack, the combination, with a casing having openings *b* in its face, of a series of scoop-shaped shelves *c*, extending through said openings and provided with shelves c^1, plates *c*, secured in front of said openings *b* and provided with openings c^3 and c^4 and having ears c^5, indicating devices pivoted between said ears c^5, consisting of arms *d* and indicator-plates d^1, slots c^6 in said gutters, and downwardly-projecting ears c^7, stop-pieces c^8, pivoted between said ears c^7, adapted to be forced up through said slots c^6, bearings c^9 on said gutters, rods c^4, and devices c^5 on said rods adapted to be forced against said stop-pieces to raise and lower the same, and a system of levers provided with a handle-bar extending from the front of the casing and connected with the ends of said rods c^4, all arranged substantially as and for the purposes set forth.

484,534. MARKING-STAMP. RICHARD C. HARRIS, Jr., Roselle, N. J. Filed Feb. 4, 1892. Serial No. 420,257. (No model.)

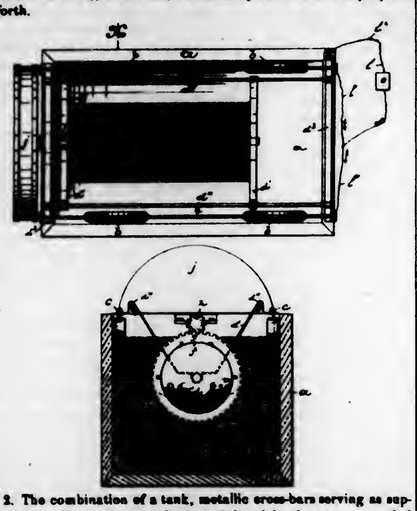
Claim.—1. The combination, with an upright spindle having a handle at its upper end, of a base-plate attached to said spindle, said base-plate having a recess and bent lugs at both sides of said recess, an inking-pad on said base-plate, also provided with a recess registering with a recess on the base-plate, a marking-pad having arms provided with raised letters, figures, or characters at the under side and corresponding characters at the upper side, the hollow hub attached to the center of the marking-plate, and a spring interposed between the marking-plate and the inking-pad, substantially as set forth.

2. A marking-stamp composed of a base-plate provided with a recess and with curved projecting lugs at both sides of said recess, a fixed upright spindle attached to the center of the base-plate and provided with a handle at the upper end, an inking-pad on the base-plate, said inking-pad having a recess registering with the recess on said base-plate, a marking-plate having arms provided with raised figures, letters, or characters at the under side and indicating characters on the upper surface, a spring plate interposed between the marking-plate and the base-plate, and a hollow hub attached to the center of the marking-plate and guided on the spindle, said hub being provided with a grooved or milled upper end for being taken hold of by the fingers, substantially as set forth.

484,535. APPARATUS FOR ELECTROPLATING. FRANK H. HOWARD, Irvington, N. J. Filed Aug. 13, 1890. Serial No. 361,866. (No model.)

Claim.—1. The improved electroplating apparatus herein described, combining therein a tank adapted to contain the electrolytic solution, suitable anodes suspended therein, and a removable open-work drum serving, with its contents, as cathode and revolubly arranged below the edge of the tank, so as to be entirely submerged in the said electrolytic solution, and provided with handles which project upward out from the electrolytic solution, whereby said handles may be grasped by the hand and the said drum elevated from said

tank and solution without bringing the hands in contact with said solution, means for electrically connecting said anodes and cathodes, and means for revolving said drum, substantially as and for the purposes set forth.



2. The combination of a tank, metallic cross-bars serving as supports for the drum and as conductors of electricity, hangers suspended from said cross-bars and providing bearings for the drum, the said hangers being removable from the cross-bars with the drum, a drum arranged to turn in said bearings, means for turning said drum, anodes suspended in said tank, and an electric circuit including the said anodes and drum, all substantially as herein set forth.

3. The combination of a tank, bars d'', serving as conductors of electricity and supports for the hangers, hangers d', suspended from said bars, a drum carried by said hangers, and a gear-wheel g, arranged at one end of said drum, a pinion h on driving-shaft i, said shaft and means for operating the same, anodes b, suspended in said tank, suitable conducting-wires, and means for furnishing an electric current in circuit with said drum and anodes, substantially as set forth and shown.

4. In combination with the tank a, supports c, having anodes b suspended therefrom into said tank, supports d'', hangers in contact with said supports d'' and removable therefrom, a revolving open-work drum journaled in said hangers and removable from said tank with said hangers, a dynamo-electric machine, and electrical connections with said drum and anodes, all arranged and adapted to operate substantially as set forth.

5. The combination of a tank, bars d'', serving as conductors of electricity and as supports or holding devices for the hangers, hooked metallic hangers d', suspended from said bars and provided with journal-bearings, a revolving open-work drum working in said bearings and means for operating the same, a dynamo-machine, and metallic connections uniting in one circuit the said drum, dynamo-machine, anodes, and said holding devices, substantially as set forth.

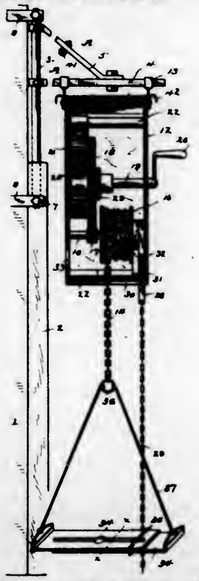
484,536. FIRE-ESCAPE. VIRGIL LESER, Danbury, Conn., assignor of one half to Frederick J. Weichert, same place. Filed May 31, 1892. Serial No. 434,575. (No model.)

Claim.—1. In a fire-escape, the combination, with a suitable chair, a chain connected thereto, and a drum 15, upon which said chain is wound, of a drum 27, made solid with drum 15, a brake-strap, one end of which is secured to a fixed portion of the device and which is passed about the drum, a brake-chain attached to the other end of the strap, and a spring one end of which is connected to the free end of the strap, the other end being connected to a fixed portion of the device so as to counteract the weight of the chain and relieve the friction of the strap on drum 27.

2. The combination, with the chair, chain 14, shaft 16, having pinion 17, and drums 15 and 27, of the brake-strap, shaft 19, having gear-wheel 18 and drum 20, loosely mounted thereon, and a spring, one end of which is connected to drum 20 and which is wound when the chair descends, a ratchet rigidly secured to the shaft, and a pawl carried by the gear-wheel which engages the ratchet, so that the tension of the spring may be increased by turning the shaft, the latter being held against backward movement by the pawl and ratchet.

3. The combination, with bolts 7, having eyes 6 and stay-pieces 8, of a swinging carrier journaled in said eyes and swinging in a horizontal plane, case 12, having hooks for attachment to the carrier, the chair, a chain connected thereto, and mechanism within the case whereby the descent of the chair is controlled and it is drawn back to the case after the load is removed.

4. The combination, with bolts 7, having eyes 6 and nuts 9, and a stay-piece having a set-screw 11, of a swinging carrier journaled in said eyes, a case having hooks for attachment to the carrier, a suitable chair, and winding and brake mechanism within the case, whereby the chair is drawn up and its descent controlled.



5. The combination, with the case shaft 19, gear-wheel 18, a ratchet secured to the shaft, a pawl pivoted to the gear-wheel and engaging the ratchet, drum 20, turning on the shaft, and a spring one end of which is fixed and the other end connected to the drum, of a shaft 16, having a pinion engaging the gear-wheel, drums 15 and 27, a chair having a chain 14 connected to drum 15, a brake-strap passing around drum 27, and a chain 29, connected to the other end of the brake-strap.

6. The combination, with the case, shaft 19, gear-wheel 18, and drum 20, turning thereon, and a spring one end of which is fixed and the other connected to the drum, of shaft 16, having a pinion engaging the gear-wheel, drums 15 and 27, a chair having a chain 14 connected to drum 15, a brake-strap one end of which is fixed, the other passing around drum 27, a chain 29, connected to the lower end of said strap, and a spring 31, one end of which is connected to the strap and the other to the case, whereby the friction of the strap on drum 27 is relieved until chain 29 is pulled downward.

7. The combination, with shaft 19, having gear-wheel 18 and drum 20, mounted and turning freely thereon, spring 21, acting to wind said drum, and shaft 16, carrying a pinion engaging the gear-wheel and drums 15 and 27, of a brake-strap engaging drum 27, a chain 14, connected to drum 15, and a chair consisting of sliding parts 34, having a slot and bolt connection, and a loop 35, by which they are additionally secured.

484,537. WOVEN FABRIC. LUTHER H. MARSDEN, Droylsden, and JAMES H. FRASER, Ruskin, England. Filed Nov. 9, 1891. Serial No. 411,994. (Specimens.) Patented in England Nov. 23, 1890, No. 18,734.

Brief.—The nature and characteristics of the invention are fully set forth in the claim.

Claim.—A ventilating fabric for belts and the like, the same being composed of a series of face-warps, a series of backing warps, the warps of both series being omitted at intervals, weft threads closely interwoven with the face-warps, weft-threads closely interwoven with the backing-warps, both sets of weft-threads extending across the intervals between the groups of warps, binder-warps uniting the two webs thus formed to form strips of double fabric, and warp-threads in the intervals between the strips of double fabric loosely uniting the weft-threads into groups, each of which group contains the corresponding weft-threads of both the upper and lower webs and constituting thereby strips of loosely-woven single fabric alternating with the strips of closely-woven double fabric, substantially as shown and described.

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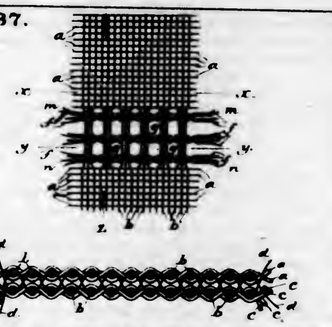
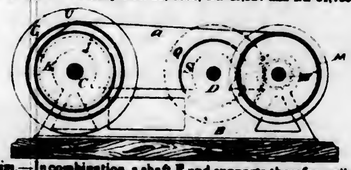
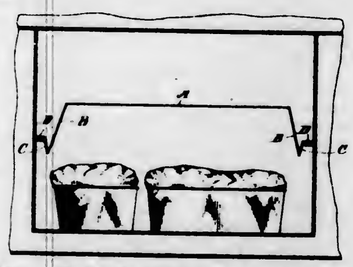


484,538. INTEREST-CALCULATING APPARATUS. GUSTAV MEYER, Prague, Austria-Hungary. Filed June 9, 1892. Serial No. 436,066. (No model.) Patented in Germany Aug. 20, 1891, No. 61,642; in France Oct. 2, 1891, No. 216,498; in Belgium Feb. 20, 1892, No. 93,457, and in Austria-Hungary Feb. 26, 1892, No. 40,267 and No. 81,765.



Claim.—In combination, a shaft E and supports therefor, rollers M and N, mounted on said shaft independently of each other, a shaft C and supports therefor, a roller J, revolubly mounted on the said shaft C and having a slot U therein, a roller K within the roller J and fixedly secured to the shaft C, a ribbon b, having subdivisions denoting the number of days in a year and interest on a given amount for said days, said ribbon being secured at one end to the roller N and at its other end to the roller J, a ribbon a, having subdivisions denoting the days of the months of a year, the said subdivisions corresponding with the subdivisions on the ribbon b, the said ribbon a being secured at one end to the roller M and passing through the slot U in the roller J and secured at its other end to the roller K, and means for locking the roller J at will to the shaft C, substantially as and for the purpose set forth.

484,539. SHIELD FOR BAKING-OVENS. KATHARINE C. MUNSON, Winthrop, Mass. Filed May 27, 1891. Serial No. 394,207. (No model.)



Claim.—1. The described removable shield, formed from a single piece of sheet metal and having the central portion extending across the oven above the articles being baked, and the downwardly-extending sides adjustable in position to different widths and adapted to rest upon lateral supports in the oven, substantially as set forth.

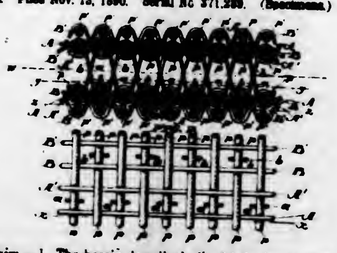
2. As an improved article of manufacture, the oven-shield described, having the flat central body and depending sides terminating in the upwardly-extending wings having outward terminal flanges or rests, substantially as set forth.

484,540. WINDOW-SCREEN. ALEXANDER MCKELLIP, Hamilton, Canada. Filed Apr. 27, 1892. Serial No. 430,899. (No model.) Patented in Canada Mar. 14, 1892, No. 36,474.

484,540.

Claim.—The combination, in a reversible window-screen, of the vertical tube B, having vertical slot C' to act as an opening to allow screen C to operate and provided with lugs B' to fasten said tube to window-frame A, and telescope-cover E, having inner tube with socket F, and the lower socket B^2 to support vertical screen-roller I, the spiral spring H, its lower end fastened to said roller at J and its upper end fastened to said cover at H', the roller-screen C, and its strengthening-rod D, provided with fastening-lug C^2, substantially as described and set forth.

484,541. WOVEN PILE FABRIC. FRED PEARSON, Philadelphia, Pa. Filed Nov. 13, 1890. Serial No. 371,289. (Specimens.)



Claim.—1. The herein-described pile fabric, having two sets of picks, one set formed underneath the other and bound together by binder-threads, and tufts of pile formed in pairs and in series between two parallel warp-threads on each side of every alternate pick of the face series of picks and caught between the upper and under series of picks, the proximate series formed on alternate picks from that of the next series, substantially as described.

2. A pile fabric having a double set of picks, one set formed back of the other and bound together by alternate binding-warps, the upper series bound, also, together by separate binding-warps, and tufts of pile bound and secured between the said two sets of picks, each tuft of pile formed on alternate picks of the face series of picks in series and each tuft bound between two warps, one be one side passing through the entire fabric and the other on the other side passing through the upper series of picks only, substantially as described.

3. A pile fabric having a double set of picks, each set formed back of the other and bound together by alternate binding-warps, the upper series bound, also, together by separate binding-warps, and tufts of pile bound and secured between the two sets of picks, the tufts of pile of each series being formed on every other pick of the face series of picks, said picks on which the tufts are formed having the warps on each side of the tuft passing over the upper or face surface of the upper series of picks and partially depressing the said pick, substantially as described.

4. A pile fabric having two sets of picks, one set formed back of the other and bound together by binder-warps, and tufts of pile formed in pairs and in series between two parallel warp-threads on each side of every alternate pick of the face series of picks and caught between the face and back series of picks, the approximate series of pile tufts formed on alternate picks from that of the next series, one of the parallel warp-threads on one side of the pile tuft passing through the entire fabric and the other on the other side passing through the upper series only of picks, substantially as described.

5. A pile fabric having the double series of picks *p p'*, binding-warps A' B', binding the two series of picks together, and binding-warps A and B for the face series of picks *p*, and pile tufts *a b* caught between the two series of picks *p p'* on every alternate pick of the series of picks *p* in series, said pile-threads *a* formed in series on alternate picks from those on which the series of pile-threads *b* are formed, substantially as described.

6. The herein-described double pile fabric, woven one above the other and connected only by interwoven pile-threads, each fabric having two sets of picks, one set formed underneath the other and bound together by binder-threads, and pile-threads passing from one fabric to the other and formed on the face series of picks in pairs in each fabric and in series between two parallel warp-threads on each side of every alternate pick and caught between the upper and under series of picks of each fabric, substantially as described.

7. The herein-described double pile fabric, woven one fabric above the other, connected only by the pile-threads, each fabric having two sets of picks, one set formed underneath the other and bound together by binder-threads, and the pile-threads passing from one fabric to the other and formed in pairs in each fabric on the upper picks and in series between two parallel warp-threads on each side of every alternate pick, the proximate series formed on alternate picks from that of the next series, substantially as described.

8. A double fabric composed of two bodies or fabrics and connecting interwoven pile-threads, each body having a double set of picks, one formed back of the other and bound by alternate binding-warps, the face series bound, also, together by separate binding-warps, and the connecting pile-threads secured in each body between the two sets of picks, each loop or pile formed on alternate picks in series and each loop bound between two warps, one on one side, passing through the entire body, and the other on the other side, passing through the upper series of picks only, substantially as described.

484,542. FOUNTAIN-PEN. EDWARD G. PECK and GEORGE B. O'MEARA, Seymour, Conn. Filed Mar. 19, 1892. Serial No. 425,531. (No model.)

Claim.—1. In a fountain-pen, the combination, with the reservoir and penholder, of a tube within the penholder having air and ink passages, a feeder within the tube, also having air and ink passages, and a controlling-rod the forward end of which enters the tube and abuts against the feeder, said rod having air and ink passages adapted to register with the passages in the tube and feeder, so that when said passages are in line with each other air will pass into the reservoir through the feeder, rod, and tube and ink will pass to the pen through the rod, feeder, and tube, and when said rod is turned so that said passages are out of line the entrance of air into the reservoir and the passage of ink therefrom are cut off.

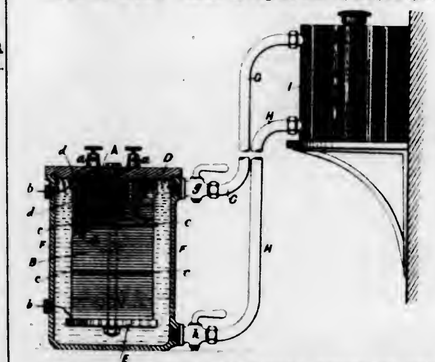
2. In a fountain-pen, the combination, with the feeder, tube, and controlling rod, each of which is provided with an air-passage and an ink-passage adapted to register with similar passages in the other parts, of a plug at the base of the reservoir through which the rod passes and which is provided with a cut-away portion, a pin extending from the rod, adapted to engage the ends of the cut-away portion to limit the oscillation of the rod, and a finger-piece for convenience in manipulating the rod.

3. In a fountain-pen, the combination, with the feeder, tube, and controlling-rod, each of which is provided with an air-passage and an ink-passage adapted to register with similar passages in the other parts, of a plug at the base of the reservoir through which the rod passes and a finger-piece secured to the rod, said finger-piece and plug being provided with suitable marks to indicate when the air and ink passages are in line with each other.

4. In a fountain-pen, the combination, with the penholder and a tube within said holder having air and ink passages at its rear end, of a feeder having air and ink passages, and an oscillatory rod having air and ink passages adapted to register with the passages in the tube and feeder, so that when said passages are in line with each other air will enter the reservoir and ink will pass therefrom and when the rod is partially turned the entrance of air into the reservoir and the passage of ink therefrom are wholly cut off.

5. In a fountain-pen, the combination, with the penholder having slots 20 and a tube within said holder having air and ink passages at its rear end, of a feeder having air and ink passages and an oscillatory rod having air and ink passages adapted to register with the passages in the tube, feeder, and penholder, so that when said passages are in line with each other air will enter the reservoir and ink will pass therefrom and when the rod is partially turned the entrance of air into the reservoir and the passage of ink therefrom are wholly cut off.

484,543. ELECTRICAL INDUCTORIUM. LAZARUS S. M. PYKE and HARRY T. BARNETT, London, England, assignors to said Pyke and Edward Stephen Harris, same place. Filed Feb. 5, 1892. Serial No. 420,441. (No model.) Patented in England Mar. 12, 1890, No. 3,900.



Claim.—1. The herein-described method of insulating and cooling an electrical inductorium (induction-coil or transformer) by conveying to and away from the containing-vessel by a continuous circulation through the coils a dehydrated hydrocarbon, substantially as described, and for the purposes set forth.

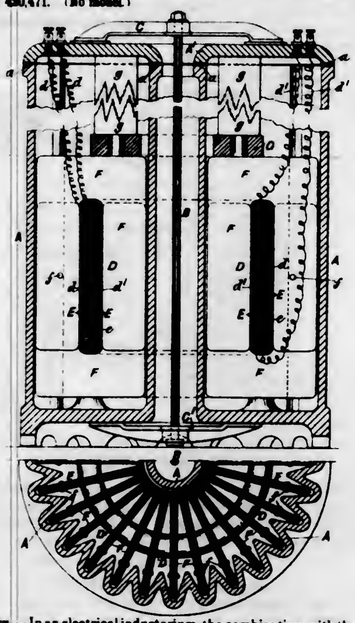
2. The combination, with an electrical inductorium (induction-coil or transformer) whose wires are mechanically insulated or separated by permeable material, of a dehydrated liquid hydrocarbon contained in a vessel surrounding said inductorium, and means for maintaining a continuous flow of the liquid hydrocarbon from, to, and in said vessel, substantially as described, and for the purposes set forth.

3. The combination, with an electrical inductorium (induction-coil or transformer) whose wires are mechanically insulated or separated by permeable material and which is immersed in liquid hydrocarbon contained in a vessel, of a system of circulation-pipes and cooling-vessel connected to the containing vessel, as described, for the purpose of carrying off and radiating the heat generated by the inductorium, as specified.

4. The combination, with an electrical inductorium (induction-coil or transformer) whose wires are mechanically insulated or separated by permeable material and which is immersed in liquid hydrocarbon contained in a vessel, of a system of circulation-pipes and cooling-vessel connected to the containing-vessel, as described, for the purpose of carrying off and radiating the heat generated by the inductorium, as specified, either of the containing-vessel or the cooling-vessel having corrugated sides, so as to expose a relatively-large area of radiating surface, as described.

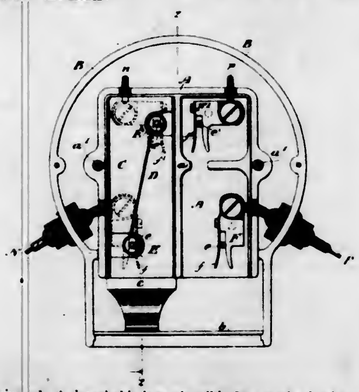
5. The combination, with an electrical inductorium (induction-coil or transformer) whose wires are mechanically insulated or separated by permeable material and which is immersed in liquid hydrocarbon contained in a vessel, of a system of circulation-pipes and cooling-vessel connected to the containing-vessel, as described, and some substance capable of energetically decomposing water for the purpose of continually dehydrating the liquid hydrocarbon, as specified.

484,544. ELECTRICAL INDUCTORIUM. LAZARUS S. M. PYKE and EDWARD S. HARRIS, London, England. Filed Feb. 5, 1892. Serial No. 420,471. (No model.)



Claim.—In an electrical inductorium, the combination, with the annular coil and with U-shaped plates interleaved with porous insulating material and applied alternately to opposite ends of the coil and bolted together in groups, as described, of a containing-vessel having vertical grooves on its sides, in which the groups of plates are held, substantially as specified.

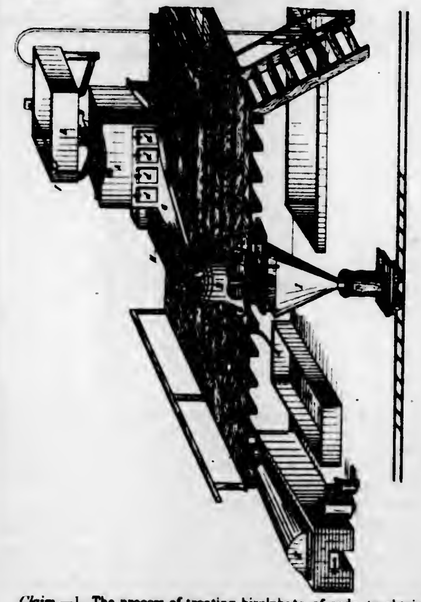
484,545. ELECTRIC-FUSE BOX. WILLIAM STANLEY, Jr., and JOHN H. KELMAN, Pittsfield, Mass. Filed Dec. 21, 1891. Serial No. 415,787. (No model.)



Claim.—1. A detachable incombustible fuse-carrier having upon one of its faces metallic terminals to which the ends of the fuse are attached, pins or studs electrically continuous with said terminals, projecting from its opposite face, and metallic spring-clips affixed to an incombustible inclosing case and adapted to receive and make electrical contact with said pins, as set forth.

2. An outer case of incombustible material and a detachable incombustible fuse-carrier adapted to be inserted into the open end thereof and having an enlarged head for closing said open end, whereby the interior of said case is divided into two non-communicating chambers, one of which contains the fuse and the other the fixed terminals, whereby said fuse is automatically connected with the main conductors, as set forth.

484,546. PROCESS OF TREATING BISULPHATE OF SODA. ROGER J. BARBIER, Paris, France. Filed June 21, 1892. Serial No. 437,456. (No specimens.) Patented in France Sept. 7, 1891, No. 215,864; in Spain Jan. 22, 1892, No. 13,812, and in Belgium Mar. 4, 1892, No. 96,634.



Claim.—1. The process of treating bisulphate of soda to obtain neutral sulphate and sulphuric acid, said process consisting in reducing by refrigeration the temperature of the bisulphate until decomposition takes place and separating the crystallized neutral sulphate from the mother-liquor, substantially as described.

2. The described process of treating bisulphate of soda by reducing the temperature by refrigeration until decomposition is effected, separating the sulphuric acid from the crystallized sulphate, and concentrating the mother-liquor, substantially as described.

3. The process of treating bisulphate of soda by reducing its temperature by refrigeration until decomposition takes place, separating the crystals formed from the mother-liquor, adding to the latter concentrated sulphuric acid to precipitate the undecomposed bisulphate, and removing the latter, substantially as set forth.

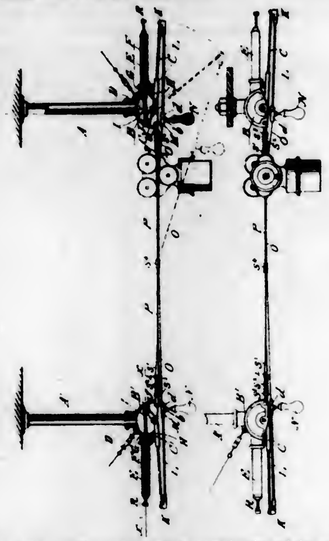
484,547. STORE-SERVICE APPARATUS. THOMAS H. BARROW, Mansfield, Ohio. Filed Dec. 10, 1891. Serial No. 414,632. (No model.)

Claim.—1. In store-service apparatus, the combination of suitable supports or hangers, a track-wire connected to the supports, a propelling-wire, spreading-levers pivoted to the hangers, springs applied to automatically return the levers to their normal position, operating-handles secured to the propelling-wire, and flexible connections between the operating-handles and the spreading-levers, substantially as described.

2. In store-service apparatus, the combination of suitable supports or hangers, a track-wire connected to the supports, a propelling-wire, spreading-levers pivoted to the hangers, springs applied to automatically return the levers to their normal position, operating-handles secured to the propelling-wire, link-like connections pivoted to the lower end of the levers, and flexible connections between the operating-handles and the link connections, whereby a car can be propelled and returned from the same end of the line, substantially as described.

3. A stop or retainer for store-service apparatus, comprising in its construction a longitudinally-slidable and laterally compressible or yielding sleeve tapered at its outer end and provided with a shoulder at its inner end, a stationary collar, and a spring interposed between

the stationary stop and the sleeve, the yielding sleeve being adapted to receive the impact of a car and to retain the car thereon and the car to be gradually stopped by the joint action of the yielding sleeve and the spring, substantially as described.



4. In a store-service apparatus, the combination of the stationary track-wire and the propelling-wire with the slip S^4, which latter comprises in its construction two tubes, through the upper one of which the stationary track-wire is passed and rigidly secured in the same and through the lower tube the propelling-wire loosely passes, substantially as and for the purpose described.

5. In a store-service apparatus, the combination of the stationary track-wire, the propelling-wire, and the guide-wire with the bracket C^6 for a curved or angular portion of a line, said bracket having secured at its upper end two tubes through which the propelling and track wires pass, respectively, and at its lower end a single tube through which the guide-wire passes, substantially as described.

6. A store-service apparatus comprising suitable hangers or supports, a stationary track-wire secured to the hangers, a propelling-wire, spreading-levers pivoted to the hangers, flexible connections between the propelling-wire and the spreading-levers, means for operating the propelling-wire and levers, springs for returning the levers to their normal position, and slip S^4, having two tubes for the passage of the track and propelling-wires, the apparatus being adapted to send and return a car from either station, substantially as described.

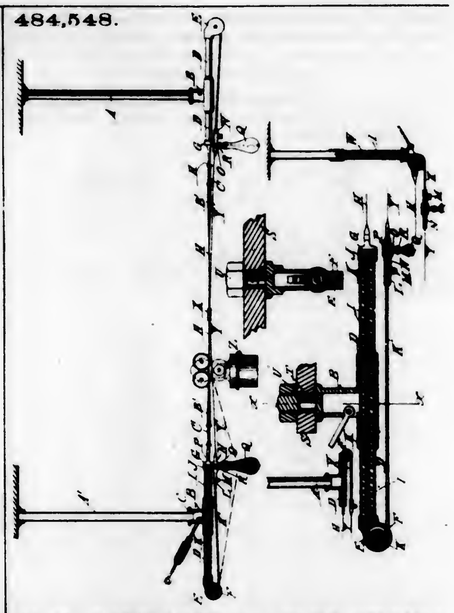
7. In a store-service apparatus, the combination of a suitable hanger or support having a foot and a tubular extension, a spring located in said extension, a plunger to compress the spring, a pivoted spreading-lever, a bar pivotally connected to the plunger and lever, a stationary track-wire, a propelling-wire, and flexible connections between the propelling-wire and the spreading-lever, substantially as described.

484,548. STORE-SERVICE APPARATUS. THOMAS H BARROW, Mansfield, Ohio. Filed Mar. 9, 1892. Serial No. 424,266. (No model.)

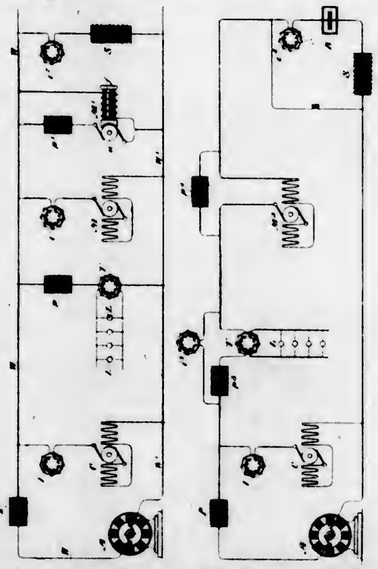
Claim.—1. In store-service apparatus, the combination of a suitable support or hanger having a tubular lateral extension, a stationary track-wire, a spreadable propelling-wire, an operating-handle secured to said propelling-wire, and a flexible cord secured in the lateral extension and connected with the propelling-wire, whereby the propelling-wire may be spread and automatically returned to its normal raised position without the use of spreading-levers, substantially as described.

2. In store-service apparatus, the combination of a suitable support or hanger having a lateral tubular extension, a stationary track-wire, and a spreadable propelling-wire, an operating-handle secured to the said propelling-wire, a spring compressible in said extension, and a cord attached to said spring and to the operating-handle, whereby by pulling on the handle the spring is compressed and by releasing the handle the handle and the propelling-wire are automatically returned to their normal positions, substantially as described.

3. In store-service apparatus, the combination of a suitable support or hanger having a lateral tubular extension, a stationary track-wire, and a spreadable propelling wire, a coil-spring compressible in said tube, a sheave journaled in said extension, and a cord connected to the rear end of the spring, passed over the sheave, and connected to the operating-handle, substantially as described.



484,549. SYSTEM OF ELECTRICAL DISTRIBUTION. DE WITT B. BRAGG, Lincoln, Nebr. Filed Sept. 16, 1891. Serial No. 405,857. (No model.)



Claim.—1. In a system of electrical distribution, the hereinbefore-described method of simultaneously transmitting periodic and continuous currents, which consists in generating periodic currents in one branch and continuous currents in another branch of a given circuit and in causing the same to be superposed in the undivided portion of said circuit by rendering the first branch opaque to continuous and the second branch opaque to periodic currents, substantially as and for the purpose set forth.

2. In a system of electrical distribution, the combination, with a single pair of main conductors, of a generator of periodic currents and translating devices actuated by such currents included in separate parallel branches between said main conductors, an electrolytic condenser offering a higher resistance to continuous than to periodic currents included in each of said branches, a generator of continuous currents and a translating device actuated by such currents, each included in a separate parallel branch between the same main conductors, and an inductor included in each of said branches, which offers a higher resistance to periodic than to continuous currents, substantially as and for the purpose set forth.

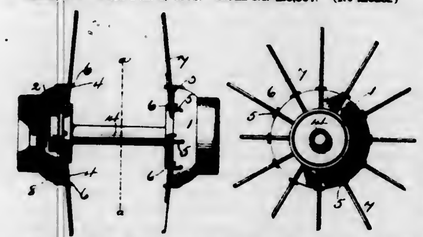
484,550. WITHDRAWN.

484,551. DOOR-JAMB. MATHIAS GLASSER, Kalamazoo, Nebr. Filed Mar. 26, 1892. Serial No. 426,532. (No model.)

Claim.—1. The combination, with a frame, of a jamb strip having its inner edge attached to the frame by hinges, springs interposed between the jamb-strip and the frame, and an abutting strip secured to the frame and projecting over the inner edge of the jamb-strip and serving to conceal and protect the hinges and the inner end of the jamb-strip, substantially as described.

2. The combination, with a frame, of an elastic jamb-strip hinged to the frame, a plate secured to the outer face of the jamb-strip and projecting slightly from it and having its outer end beveled, and a plate designed to be secured to a door and having its inner end beveled, substantially as described.

484,552. ELASTIC CUSHION FOR HUBS. JOHN R. GLENNON, Chico, Cal. Filed Feb. 6, 1892. Serial No. 420,537. (No model.)



Claim.—1. A combined cushion and dust-guard for the hubs and axles of wheels, casters, and the like, consisting of a rubber cap or band having an inner bell-shaped end provided with an interior chamber to receive the hub or axle and a circumferential flange operating as a dust-guard, substantially as and for the purpose set forth.

2. A rubber cushion and shield for the hubs and axles of wheels, casters, and the like, consisting of a cap or band having an enlarged bell-shaped inner end and an inner chamber to receive said hub or axle, a straight-walled outer end, a transverse bore, and a flange or shoulder guarding said chamber, substantially as and for the purpose set forth.

3. A cushion for protecting the hubs and axles of wheels, casters, and the like and feeding said hubs and axles from contact with other objects, consisting of a thick-walled rubber cap having an enlarged inner end adapted to surround said hub or axle and an inner chamber to receive and permit of the free rotation therein of said hub or axle, substantially as and for the purpose set forth.

4. A combined cushion and dust-guard for the hubs and axles of wheels, casters, and the like, consisting of a rubber cap or band having interiorly a shouldered recess to receive the projecting end of said hub or axle and guard against the entrance thereto of dust and the like and means, substantially as described, removably connecting said cushion and the spokes of the wheel, substantially as and for the purpose set forth.

5. A cushion for incasing and protecting the hubs, axles, or spindles of wheels, casters, and the like, consisting of a horizontally-walled rubber cap having a flanged and chambered interior and a connecting device connected with the horizontal circumference of said cap adjacent to the wheel and impinging against the spokes thereof, substantially as and for the purpose set forth.

6. A protective cushion for the projecting hubs of spindles of wheels, consisting of a cap of elastic or pliant soft material, as india-rubber, adapted to surround said hub or spindle and a series of hooks at one end inserted within said cushion and at the other end hooked over the wheel-spokes, substantially as and for the purpose set forth.

484,553. ELECTRODE AND INCANDESCENT ELECTRICAL CONDUCTOR. LEWIS L. JOHNS, Brooklyn, N. Y. Filed Sept. 16, 1886. Serial No. 177,331. (No specimens.)

Claim.—1. In the manufacture of electrodes and incandescent electrical conductors, the process consisting in mixing solutions containing a non-conducting earth and a metal, then drying the mixture, converting into oxides, and forming into an electrode or conductor.

2. In the manufacture of electrodes and incandescent electrical conductors, the improvement consisting in forming a paste composed of a refractory or non-conducting oxide, a metallic or conducting oxide, and a fluid binder consisting of an acid solution of one or more oxides and forming the article therefrom.

3. In the manufacture of electrodes and incandescent electrical conductors, the improvement consisting in forming a paste composed of a refractory or non-conducting oxide, a metallic or conducting oxide, and a fluid binder consisting of the acid solution of two oxides, one refractory or non-conducting, the other metallic and conducting, and forming the article therefrom.

4. The described process of manufacturing electrodes and incandescent electrical conductors, consisting in first forming the article from a paste composed of a refractory and a metallic oxide and an acid solution of one or more oxides, then drying the article, and subjecting it to a high heat.

5. The described process of manufacturing electrodes and incandescent electrical conductors, consisting in first forming the article from a paste composed of a refractory and a metallic oxide and an acid solution of one or more oxides, then drying the article, dipping it in a metallic solution, and finally subjecting it to a high heat.

6. The described process of manufacturing electrodes and incandescent electrical conductors, consisting in first forming the article from a paste composed of a refractory and a metallic oxide and an acid solution of one or more oxides, then drying the article, dipping it in a metallic solution, and finally subjecting it to a high heat in surface contact with a reducing substance, such as carbon.

7. The described electrode or incandescent electrical conductor, composed of a homogeneous mixture of a refractory or non-conducting oxide and a metallic or conducting oxide, forming an integral structure, having near the surface an increased deposit of conducting oxide.

8. The described electrode or incandescent electrical conductor, composed of refractory or non-conducting oxide and metallic or conducting oxide, forming an integral structure, having its pores filled with conducting oxide and its surface coated with a metal.

484,554. WIRE FENCE. JOHN R. KLINE, Salem, Ohio, assignor of one-half to George Wegeman, same place. Filed June 14, 1892. Serial No. 436,889. (No model.)

Claim.—The stay C for wire fences, formed of a single piece of wire bent in two loops equidistant from its center and interlooped with

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ber, the opposite sides of said bowl actuating the valves, substantially as set forth.

2. The combination, in a commode provided with three compartments, the upper one containing a reservoir and measuring-chamber situated under the seat, a tiltable bowl placed in the middle compartment, and a waste-chamber in the lower compartment, the upper and

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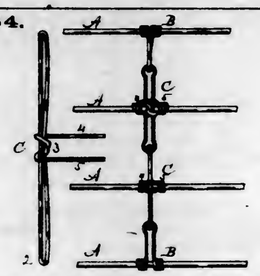
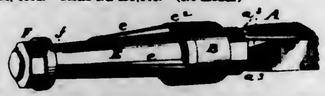


a like stay or stays twisted together near the ends and embracing the center portion or body and terminating in parallel ends adapted to embrace the runner in spiral coils, substantially as set forth.

484,555. LUMBER-MEASURING MACHINE. TELLIS MARCOTTE, Worcester, Mass., assignor of one-half to Charles W. Chamberlin, same place. Filed May 30, 1892. Serial No. 433,773. (No model.)

Claim.—In a measuring-machine adapted to measure the number of square feet in boards of different widths without adjusting or altering the machine, the combination, with a plurality of pulleys over and in contact with the face of which the boards to be measured are passed, a shaft on which said pulleys are fast, and a second shaft geared to the first-mentioned shaft and having a gear fast thereon and having a plurality of registering-wheels loosely mounted on said shaft, one of said wheels connected with and driven by said gear, of said registering-wheels provided with numerals on their peripheries and having ratchet-teeth on one side thereof and a spring-actuated pawl on the other side thereof, and a stationary cam-plate interposed between the ratchet-teeth side and pawl-carrying side of contiguous registering-wheels and adapted to hold the pawl on one wheel out of engagement with the ratchet-teeth on the next wheel and provided with a cam portion to allow the pawl to engage the ratchet-teeth and move the registering-wheel at the proper time for the purpose stated, substantially as set forth.

484,556. AXLE BOX. WEBSTER L. MILLS, Cundit, Ohio. Filed May 16, 1892. Serial No. 433,116. (No model.)



Claim.—The axle A, having a set-screw channel a', thread a^3, and the axle-box B, in combination with the sliding cap B, the nut-collar C, screwing thereon, and the screw D, working through the flanges of said cap and axle-box into the channel a', as shown and described.

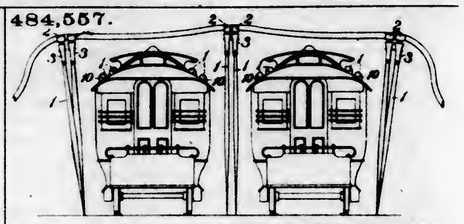
484,557. HOSE-SUPPORT. JOHN A. G. MOSER, Sewickley, Pa. Filed June 10, 1892. Serial No. 436,209. (No model.)

Claim.—1. A hose-support having, in combination, a pole and a pair of spring-jaws constructed to take such a grasp on the hose as will prevent a movement of the jaws along the hose, substantially as set forth.

2. A hose-support having, in combination, a pole provided with a socket, jaws provided with shanks fitting in said socket, and a spring for forcing the shanks outward to permit of the opening of the jaws, substantially as set forth.

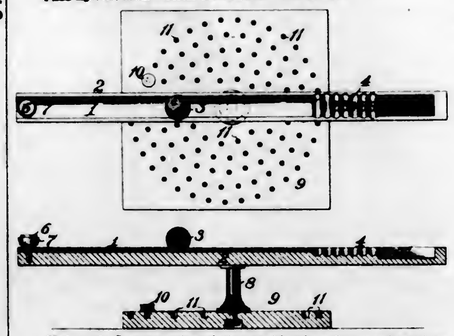
3. A hose-support having, in combination, a pole provided with a

484,557.



a bell-mouthed socket, jaws provided with shanks having inclined outer faces and provided with inclined walls on their inner faces, a spring for forcing the shanks outwardly, and a pin operative on the inclined walls for spreading the jaws apart on the outward movement of the shanks and jaws, substantially as set forth.

484,558. GAME-BOARD. WILLIAM R. NESLEY, Pittsburg, Pa. Filed Apr. 22, 1892. Serial No. 430,211. (No model.)

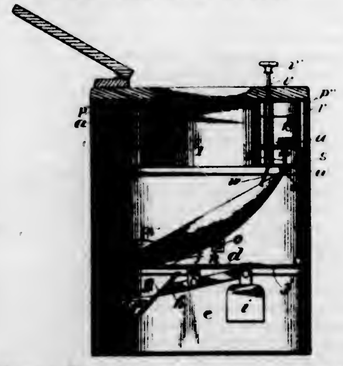


Claim.—1. In a game-board, the combination of a trough stationary as against vertical movement, a series of pockets arranged in line with each other and the trough, a pit behind the pockets, and a ball adapted to be propelled along the trough into the pockets, substantially as set forth.

2. In a game-board, the combination of a trough, a series of pockets arranged in line with each other and the trough, and at one end thereof a cushioned pin located at the opposite end, and a ball adapted to be rolled against the pin and rebound along the trough into the pockets, substantially as set forth.

3. In a game-board, the combination of a trough stationary as against vertical movement, a series of pockets arranged in line with each other and with the trough, a pivotal support for the trough, and a ball adapted to be propelled along the trough into the pockets, substantially as set forth.

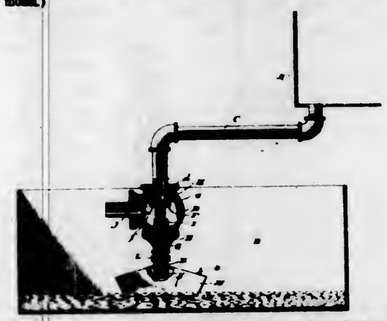
484,559. WATER-CLOSET. ARTHUR J. NILES, Lancaster, N. H. Filed Oct. 15, 1891. Serial No. 408,792. (No model.)



Claim.—1. The combination, in a commode, of a valved reservoir placed below the seat, a valved waste-chamber in the bottom of said commode, and a tilting bowl between the reservoir and waste-chamber, the opposite sides of said bowl actuating the valves, substantially as set forth.

2. The combination, in a commode provided with three compartments, the upper one containing a reservoir and measuring-chamber situated under the seat, a tiltable bowl placed in the middle compartment, and a waste-chamber in the lower compartment, the upper and lower compartments being provided with valves which are actuated by the bowl when it is flushed, all arranged and adapted to operate in the manner and for the purpose set forth.

484,560. FLOAT-VALVE FOR EVAPORATING-PANS. MARCUS J. RHODES, Dayton, N. Y. Filed Dec. 9, 1891. Serial No. 414,512. (No model.)



Claim.—1. In a float-valve, the combination of the valve having a stem projecting beneath the valve-casing and provided with an adjustable tappet and a hollow float working under the lower end of said valve-stem and adapted to engage said tappet, substantially as set forth.

2. In a float-valve, the combination of a reciprocating valve having a threaded stem projecting below the valve-casing, a tappet-nut adjustably engaging the threaded stem, and a hollow float having a central tube secured thereto and engaging beneath said nut, and a vent-tube, substantially as set forth.

3. In a float-valve, the combination of a reciprocating valve having a threaded stem projecting below the valve-casing, a tappet-nut adjustably engaging the threaded stem, and a hollow float or vessel having a central tube secured vertically therein and receiving the lower end of the valve-stem and engaging beneath the tappet-nut thereon, and a vent-tube, substantially as set forth.

4. In a float-valve, the valve-casing having an inwardly-projecting flange-ring valve-seat located directly below the upper inlet-opening, a valve-stem working through the lower end of said casing, a valve-disk upon the inner end of said stem and provided with a cushioned face adapted to bear against said seat, and a float connected with the lower end of said valve-stem, substantially as set forth.

5. In a float-valve, the combination of the valve-casing having an inwardly-projecting flanged ring-valve seat located directly beneath the upper inlet-opening, a removable bonnet secured to the lower end of said casing and having an inwardly-extending stop-sleeve, a valve-stem working through and projecting beneath said bonnet, a valve-disk upon the inner end of said stem and provided with a cushioned face adapted to bear against said seat and limited in movement by said stop-sleeve, and a float connected to the lower end of said valve-stem, substantially as set forth.

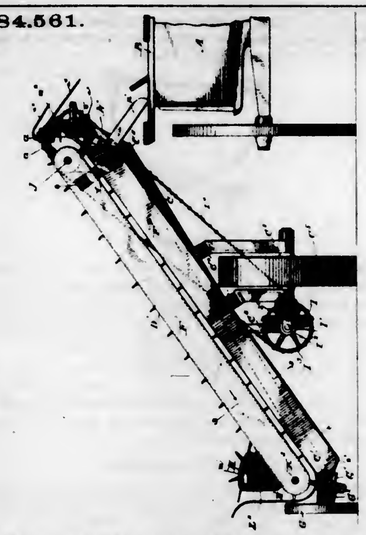
484,561. CORN-HARVESTER. JOHN F. STEWARD, Chicago, Ill. Filed May 19, 1888. Serial No. 274,416. (No model.)

Claim.—1. The wheeled frame provided with the stalk-cutting mechanism, the stalk-elevating mechanism, and the husking mechanism, and a conveying-chute thereunder at the delivery end of the elevator, in combination with the accompanying receptacle located below the delivery end of the elevator and provided with the grated receiving-surface, the said surface constructed to sustain the stalks but permit the passage of the ears into the receptacle, and the said chute leading to a passage through the grating, whereby the said stalks and ears are formed into separate heaps.

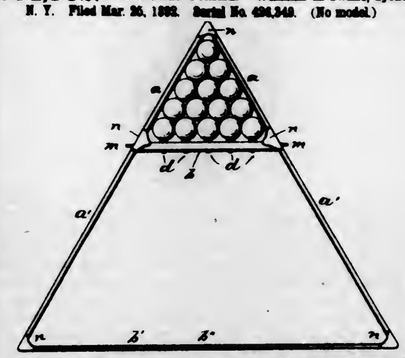
2. In a corn harvesting and husking machine, the wheeled frame and the stalk-cutter at its front, in combination with the stalk-elevator acting transversely to the line of travel, and the husking-rolls lying across the delivery end of the elevator or parallel with the line of travel, and the independent chutes or guides, acting to receive, respectively, the stalks and ears and to direct them sidewise from the machine.

3. In a mechanism for harvesting and husking corn and separating the ears and stalks, the wheeled frame, in combination with a stalk-cutter at its front, an elevator extending from a point in rear of the cutter transversely to the line of travel, husking-rolls at the delivery end of the elevator, a conveying-chute below the husking-rolls, and a wheeled receptacle beneath the delivery end of the chute, said receptacle having an upper stalk-sustaining surface and a lower ear-receiving box or chamber, the said conveying-chute leading to a passage through the stalk-sustaining surface to deliver the ears into the underlying receptacle.

484,561.



484,562. POOL-BALL FRAME. WILLIAM A. SWEET, Syracuse, N. Y. Filed Mar. 26, 1892. Serial No. 426,349. (No model.)



Claim.—1. The combination, with the side rails and cross-bars connecting them, of pressure-plungers mounted in the cross-bar.

2. The combination, with the side rails and cross-bar connecting them, of pressure-plungers mounted in said bar and exerting a joint and several pressure upon the balls in the frame.

3. The combination, with the side rails and cross-bar connecting them and the pressure-plungers mounted in said bar, of a finger-bar engaging with said plungers and adapted to retract them simultaneously.

4. In a pool-ball frame, the combination, with the cross-bar, of horizontally-reciprocating pressure-plungers mounted therein.

5. In a pool-ball frame, the combination, with the cross-bar, of horizontally-reciprocating independently-acting pressure-plungers mounted therein.

6. In a pool-ball frame, the combination, with the cross-bar, of horizontally-reciprocating independently-acting pressure-plungers mounted therein and means to retract them simultaneously.

7. The independent plungers mounted in the frame, each bearing independently against its ball in the rear row of the pyramid and all adapted to be simultaneously retracted from the balls to release the frame from the pyramid.

484,563. SPOOL-HOLDER. ELIAS SULLWASSER, Magdeburg-Neustadt, Germany. Filed June 17, 1892. Serial No. 437,062. (No model.) Patented in Germany Nov. 2, 1891, No. 694.

wheels arranged to move upon the projecting flanges of the T-iron, substantially as described.

gitudinal slideway, in combination with a sliding bar provided with a caliper-head and having a double series of transverse indicating-lines and between the indicating-lines a series of figures indicating thickness, in connection with transverse indicating-lines on the body of the rule at each side of the sliding bar for gaging the size of wire or the thickness of metal, substantially as described.

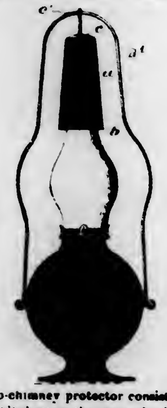
ting shoulder and an incline, one or the other of which is in line with said stop when the slide is inserted into the holder, whereby the slide will pass in one position and in the reversed position be arrested by said stop, substantially as set forth.

484,563. SPOOL-HOLDER. ELISE DELLWARDSHY, Magdeburg-Neustadt, Germany. Filed June 17, 1892. Serial No. 437,062. (No model.) Patented in Germany Nov. 2, 1891, No. 694.

Claim.—1. A rod for supporting a ball of yarn or other thread-like material, in combination with a bent plate or support in which its ends are mounted, a clip for attaching the said support to a table or other article of furniture, and a pivot connecting the said support to the said clip, while allowing the former to turn independently of the latter substantially as set forth.

2. In combination with the spring-clip *a* and its reinforcing strips *f*, the bent plate *b*, the ball-supporting rod *c*, extending across from end to end of the said plate and provided with collars *g g*, and the pivot-stud *e*, whereby the said plate is movably attached to the said spring-clip, substantially as set forth.

484,564. LAMP-CHIMNEY PROTECTOR. JONAS TOMLINSON, Brinkley, Ark., assignor of one half to Edward P. McNally, same place. Filed June 28, 1892. Serial No. 438,322. (No model.)



Claim.—1. A lamp-chimney protector consisting of a cylinder of wire-gauze *a*, having at its bottom the strengthening wire ring *b*, solid metal cap *c*, hook *c'*, extending upwardly from the center of said cap, and bail *d'*, supporting said cap, substantially as shown and described.

2. A lamp-chimney protector consisting of a cylinder of wire-gauze *a*, having at its bottom the strengthening wire ring *b*, solid metal cap *c*, hook *c'*, extending upwardly from the center of said cap, braces *d*, having one end secured to the strengthening-ring *b*, adjustable ring *e*, working in the free ends of said braces, and bail *d'*, supporting the protector, substantially as shown and described, and for the purposes set forth.

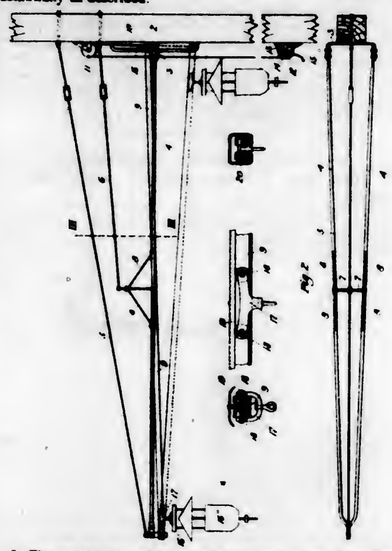
484,565. MAST-ARM FOR ELECTRIC-LIGHT POLES. ALONZO B. ALLISON and GABRIEL B. SCOTT, Pittsburg, Pa. Filed Mar. 21, 1892. Serial No. 425,802. (No model.)

Claim.—1. A mast arm for electric lights, said arm being pivoted at its outer end, guides at its inner end extending above and below the level of the pivot, and a flexible connection for moving said inner end within said guides, substantially as described.

2. A mast-arm for electric lights, said arm being pivoted at its outer end, guides at its inner end extending above and below the level of the pivot, a flexible connection for the inner end, and a shield extending over said arm, substantially as described.

3. A mast-arm comprising two laterally-extending stationary arms, an oscillating arm pivoted at its outer end between the same, guides inclosing the inner end of the oscillating arm, and a flexible connection for moving the arm therein, substantially as described.

4. In an electric-light apparatus, the combination of a mast-arm having a T-iron pivoted at its outer end, guides at its inner end extending above and below the level of the pivot, and a carriage having wheels arranged to move upon the projecting flanges of the T-iron, substantially as described.



5. The combination of a mast-arm having a T-iron pivoted at its outer end, a carriage having wheels arranged to roll upon the projecting lateral flanges, and a shield secured to the vertical web of the iron, substantially as described.

484,566. THILL-COUPLING. PETER BRAABOOKS, Batavia, N. Y. Filed Jan. 30, 1892. Serial No. 419,637. (No model.)

Claim.—1. In a thill coupling, the combination, with a draw-clip provided with ears having openings directly opposite and in a line with each other, of a tubular journal having its ends extend into said openings, a bolt adapted to pass through the tubular journal, provided with a head having a reduced portion adapted to fit closely in the outer side of the opening in the clip ear and a nut at its opposite end having a reduced portion adapted to fit tightly in the outer side of the opposite clip-ear, so as to rigidly connect the bolt with the clip-ears and closely inclose the tubular bearing, and a means, substantially as above described, for rigidly securing the shaft-iron to the tubular bearing, whereby a long dust-proof bearing is secured on the bolt, for the purposes described.

2. In a thill-coupling, the combination, with a draw-clip, of a tubular bearing having its ends extend into the opening in the clip-ears, a shaft-iron rigidly and immovably secured between the clip-ears to the tubular bearing, a bolt adapted to pass through the tubular bearing, and a means, substantially as above described, for securing the ends of the bolt to the clip ears, for the purposes described.

484,567. POCKET-GAGE. PETER BRAABOOKS, Batavia, N. Y. Filed Feb. 25, 1892. Serial No. 422,945. (No model.)

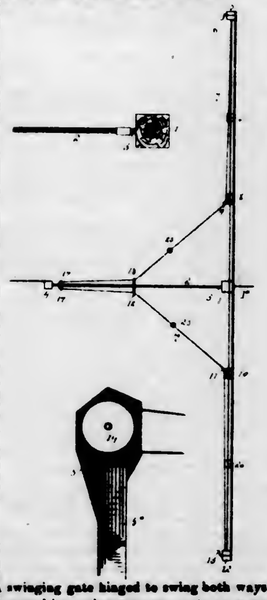
Claim.—1. A pocket-rule having on one side two longitudinal slideways and on the opposite side indicating-lines and figures for indicating measurements, in combination with a sliding bar adapted to move in one slideway and carrying indicating lines and figures for indicating thickness and having a caliper-head adapted to cover one end of the opposite slideway, so as to move to or from one end of the rule, and a sliding bar carrying indicating lines for measurement, adapted to slide in the other slideway and provided with a caliper-head extending in an opposite direction, so as to overlap the opposite end of its opposite slideway, substantially as and for the purposes described.

2. A pocket-rule having on one side of the body or main portion lines indicating ordinary measurements and on the opposite side a longitudinal slideway, in combination with a sliding bar provided with a caliper-head and having a double series of transverse indicating-lines and between the indicating-lines a series of figures indicating thickness, in connection with transverse indicating-lines on the body of the rule at each side of the sliding bar for gaging the size of wire or the thickness of metal, substantially as described.

3. A pocket rule having on one side lines and figures indicating ordinary measurement and on the opposite side two longitudinal slideways, one of the slideways having a series of transverse indicating-lines on each side of the slideway, a sliding bar having a caliper-head and carrying a double series of transverse indicating-lines and between said series of lines a series of figures indicating thickness, whereby it may be used both as a wire and sheet-metal gage, in combination with a bar having a caliper-head and adapted to slide in the other slideway and carrying a series of transverse lines for indicating the usual measurement, to be used as an ordinary caliper, substantially as described.

4. A pocket-rule having two longitudinal slideways and two bars, each having a protecting caliper-head and adapted to slide in opposite directions in the slideways and each having measuring-marks, one of the sliding bars having a screw-cheek and a thumb-nut for moving it in or out and the other a combined compass and inside caliper, substantially as described.

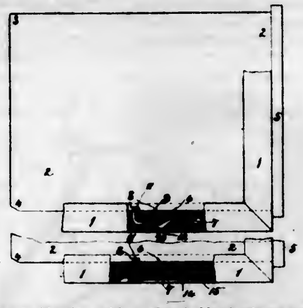
484,568. FARM-GATE. THOMAS A. CHURCHILL, Deland, Ill. Filed Feb. 12, 1892. Serial No. 421,236. (No model.)



Claim.—A swinging gate hinged to swing both ways and having latches held depressed by spring-pressure, posts on opposite sides of the gate, crank-axles on said posts, and pulleys on said axles, posts between the crank-axle posts and the gate, having guides thereon, guides on both sides of said gate about half-way of its length, and a line connecting the pulleys on the crank-axles independently of the gate-post and extending, also, from said pulleys through the guides of the intermediate posts, and thence to the two guides on the sides of the gate and having both ends secured to the latch thereof, all in combination, substantially as set forth.

484,569. PHOTOGRAPHIC-PLATE HOLDER. ANDREW M. PERRIN, Brooklyn, assignor to the Eastman Kodak Company, Rochester, N. Y. Filed Feb. 1, 1892. Serial No. 420,606. (No model.)

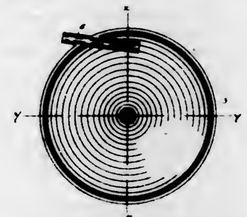
Claim.—1. The combination, with a plate-holder having a movable stop in the path of the slide, of a reversible slide having an abutting shoulder and an incline, one or the other of which is in line with said stop when the slide is inserted into the holder, whereby the slide will pass in one position and in the reversed position be arrested by said stop, substantially as set forth.



2. The combination, with a plate-holder having a movable stop in the path of the slide, of a reversible slide having an abutting shoulder and an incline, one or the other of which is in line with said stop when the slide is inserted into the holder, whereby the slide will pass in one position and in the reversed position be arrested by said stop, the slide being also provided with a locking shoulder or notch whereby it may be retained in the holder, substantially as set forth.

3. A photographic-plate holder, in which is comprised an inclosing frame provided with a catch at one side, the nose whereof projects into the slideway in said frame, and a slide having one of its inner corners square and the other cut away, said slide being also provided with a notch in one edge, the whole combined and arranged substantially as shown and described.

484,570. PROCESS OF SEPARATING MATTE FROM SLAG. EDWIN C. PERLE, Denver, Colo. Filed Jan. 16, 1892. Serial No. 418,206. (No specimens.)



Claim.—The herein-described method or process for separating matte from slag, consisting in causing the molten mass when discharged into the pot or vessel to take a spirally-directed downward course in proximity to the wall of the vessel, whereby the matte is carried to the bottom without disturbing or agitating that which has already collected therein, substantially as described.

484,571. ADJUSTABLE CHAIR. EDWIN PERSONS, Chicago, Ill., assignor to Albert Hoeffer, John C. Shelton, and Aaron P. Gould, Canton, Ohio. Filed Feb. 24, 1892. Serial No. 422,922. (No model.)

Claim.—1. In an adjustable chair, the combination of the chair-frame, with primary legs on which it normally rests, fixed secondary legs on one side of the chair slightly shorter than the primary legs, and hinged secondary legs on the other side of the chair longer than the primary legs, adapted to be turned downward to support the chair or adapted to be folded upward out of the way, so that the chair may rest upon its primary legs, or when the hinged secondary legs are turned down the chair can rest upon all its secondary legs and be supported at an angle.

2. In an adjustable chair, the combination, with the chair-frame, of primary legs, fixed secondary legs at one side of the chair, slightly shorter than the primary legs, hinged secondary legs at the other side of the chair longer than the primary legs, springs to normally fold the hinged secondary legs up under the chair-frame, and a foot lever by the operation of which each secondary legs may be thrown down into position of use.

3. In an adjustable chair, the combination of primary legs with castors on which the chair moves, secondary legs on one side slightly shorter and upwardly extending and external to the primary legs, and

folding secondary legs on one side slightly longer than the primary legs

4. In an adjustable chair, the combination of a seat-frame with a supporting-frame, said seat-frame pivoted at one end to said supporting-frame, bars pivoted to the other end of said seat-frame, pivoted ratcheted sectors on the supporting-frame, said bars being eccentrically pivoted thereto, and locking devices to secure the sectors in any

box of the article to be vended, mounted on the case cover and inclining and leading to the delivery mechanism in the case, a glass cover for the said box, hinged on the support, and locking means on the said glass cover and support co-operating to lock the box between them, substantially as described.

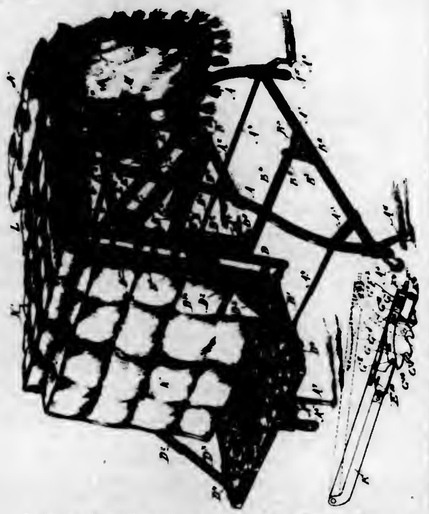
outlet B for the said article and with a coin-insertion slot *r*, of a drawer *r'* below the said slot, a receiver D at the said outlet, and coin-operated delivery mechanism comprising a spring-controlled rotary cylinder H, provided with an arm *l'*, having connected with it a push-rod *l* and provided with a slot H', a rotary cylinder I, having a slot H' co-

a graduated scale on said rounded end, and an index-plate movably secured to said back and adapted to be rotated to register with the scale on said back, substantially as described.

4. A mechanic's square comprising a back, an opening *b*, formed in one end of the same, a portion of which is conical, a blade 10, having a conical shank adapted to fit the said opening, and a nut or nuts

folding secondary legs on one side slightly longer than the primary legs.

4. In an adjustable chair, the combination of a seat-frame with a supporting-frame, said seat-frame pivoted at one end to said supporting-frame, bars pivoted to the other end of said seat-frame, pivoted ratcheted sectors on the supporting-frame, said bars being eccentrically pivoted thereto, and locking devices to secure the sectors in any position, so that the free end of the seat-frame may be adjustably supported.

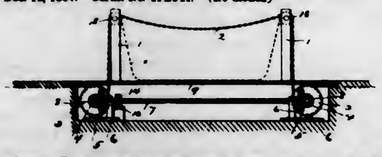


5. In an adjustable chair, the combination of a chair-frame provided with primary legs and with secondary legs slightly shorter than the primary legs adjacent thereto and extending outwardly, so that by raising the opposite side of the chair the tilt will cause the secondary legs to engage the floor and leave the primary legs free, and means for holding said chair in tilted position.

6. In an adjustable chair, the combination of a chair-frame provided with primary legs and on one side with short secondary legs slightly shorter than the primary legs, while the opposite side of the chair is provided with hinged secondary legs longer than the primary legs, which when lowered elevate their side of the chair and cause the secondary legs on the opposite side to engage the floor, so that the primary legs are left free.

7. In an adjustable chair, a knee-rest consisting of a horizontal portion secured at the side of the chair and a vertical portion hinged to the extremity thereof.

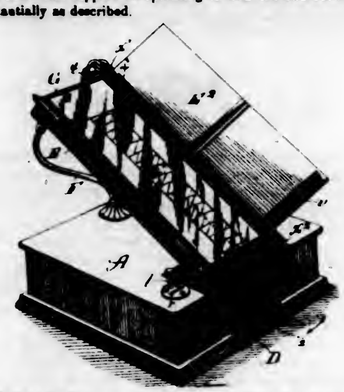
484,572. CHAIN GATE. George K. Rudert, Pittsburg, Pa. Filed Dec. 10, 1891. Serial No. 414,641. (No model.)



Claim.—The herein-described chain gate, consisting of the two posts 1, the chain 2, suspended in sheaves across the same, the large grooved wheels 3, arranged beneath the surface of the ground and geared by means of beveled pinions to a shaft 7, a small spur-wheel 14, attached to the said shaft and in mesh with a sliding rack-bar 13, a crank 10, arranged in bearings above the ground and connected to the rack-bar 13 by a rod 12, and a device whereby the chain-wheels may be locked, all arranged and combined for service substantially as and for the purpose described.

484,573. COIN-OPERATED VENDING APPARATUS. Christian F. Sampson, Cana, Ill. Filed June 26, 1892. Serial No. 437,950. (No model.)

Claim.—1. In a vending apparatus, the combination of a covered case containing coin-operated delivery mechanism, a support for the box of the article to be vended, mounted on the case cover and inclining and leading to the delivery mechanism in the case, a glass cover for the said box, hinged on the support, and locking means on the said glass cover and support co-operating to lock the box between them, substantially as described.



2. In a vending apparatus, the combination, with a case containing coin-operated delivery mechanism, of a support on the case for the box of the article to be vended and inclining and leading to the delivery mechanism in the case, fingers inclining upward and outward from one side of the support near its opposite ends, a glass cover hinged to one side of the support and provided with an inclining finger extending outward from its free edge, and a locking-rod engaging the said support and cover finger and adapted to be locked in place, substantially as described.

3. In a vending apparatus, the combination, with a case containing coin-operated delivery mechanism, of a support on the case for the box of the article to be vended, comprising a bracket F, having a head-piece *p*, provided with an eye x', and a branch *p'* on a lower plane than the head-piece, a bearing F' on the case over an opening *w* therein and having an eye x^2 and fingers *o'*, extending from the said head-piece and bearing, a glass cover G, hinged to one side of the support and provided with a finger *o*, having an eye *x*, and a locking-rod x^2, passing through the said eyes and adapted to be locked in place, substantially as described.

4. In a vending apparatus, the combination, with a case containing coin-operated delivery mechanism, of a support on the case for the box of the article to be vended and inclining and leading to the delivery mechanism in the case, and a box E, having an open end, and a cover E^2, carrying the end piece *v* for the said open end and removably secured on the inclined support with its open end communicating with the delivery mechanism, substantially as described.

5. In a vending apparatus, the combination, with a case containing coin-operated delivery mechanism, of a support on the case for the box of the article to be vended and inclining and leading to the delivery mechanism in the case, fingers *o'*, extending from the support near its opposite ends, a glass cover G, hinged to one side of the support and provided with a finger *o*, a box E, having an open end, and a cover E^2, carrying the end piece *v* for the said open end and imposed on the support with its lid raised against the finger *o'* and the open end communicating with the delivery mechanism, the glass cover extending over the open box with the finger *o* bearing against the box-cover and locked, substantially as described.

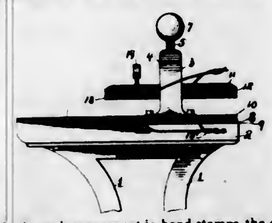
6. In a vending apparatus, the combination, with a case for supporting the article to be vended and provided with an inlet and an outlet for the said article, and with a coin-insertion slot, of coin-operated delivery mechanism having a pair of rotary cylinders H and I, provided with coincident slots H', normally coinciding with the coin-insertion slot, a rotary delivery-receiver K at the said inlet and connected with the cylinder I, and means for turning the cylinder H, substantially as described.

7. In a vending apparatus, the combination, with a case for supporting the article to be vended and provided with an inlet and an outlet for the said article and with a coin-insertion slot, of a drawer below the said slot and coin-operated delivery mechanism comprising a pair of rotary cylinders H and I, provided with coincident slots H', leading into the drawer and normally coinciding with the coin-insertion slot, a stop *m*, extending normally under the slot H' in the cylinder I, a rotary delivery-receiver K at the said inlet and geared to the cylinder I, and means for turning the cylinder H, substantially as described.

8. In a vending apparatus, the combination, with a case for supporting the article to be vended and provided with an inlet *w* and an outlet B for the said article and with a coin-insertion slot *r*, of a drawer *r'* below the said slot, a receiver D at the said outlet, and coin-operated delivery mechanism comprising a spring-controlled rotary cylinder H, provided with an arm *l'*, having connected with it a push-rod *l* and provided with a slot H', a rotary cylinder I, having a slot H' coinciding with its companion slot in the cylinder H, a stop *m*, extending normally under the slot in the cylinder I, and a rotary delivery-receiver K, geared to the cylinder I, substantially as described.

9. A vending apparatus comprising, in combination, a case A, having an inlet *w* and an outlet B, provided with a receiver D, a support on the case inclining toward the said inlet and provided with fingers *o'*, and a glass cover G, having a finger *o*, a box E for the article to be vended, open at an end and having a cover E^2 provided with an end piece *v* for the open end of the box, said box being locked on the support with the glass cover over it, and its open end leading to the inlet *w*, a coin-insertion slot *r* and a drawer *r'* in the case, a rotary delivery-receiver K, supported at the said inlet, and normally-disconnected delivery mechanism in the case geared to the delivery-receiver and operatively connected by a coin inserted through the said insertion-slot, the whole being constructed and arranged to operate substantially as described.

484,574. ELECTRICALLY-HEATED HAND-STAMP. John B. Venner, St. Louis, Mo. Filed Dec. 11, 1891. Serial No. 414,696. (No model.)

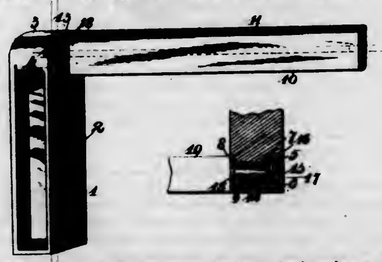


Claim.—1. As an improvement in hand-stamps, the combination, with a base or backing plate and a contact-plate carried thereby, of electric resistance-wires located adjacent to said contact-plate, a non-conducting film disposed over said resistance, a heat-insulating sheet disposed between the film and the base or backing plate, and pins or projections carried by the contact-plate and projecting through the film and into the heat-insulating sheet, substantially as and for the purpose set forth.

2. As an improvement in hand-stamps, the combination, with a base or backing plate and a contact-plate carried thereby, of electrical resistance located at the back of the contact-plate and insulated from the base or backing plate, and inwardly-projecting pins or studs located between the plates and adapted to retain the latter in their proper relative positions, substantially as and for the purpose set forth.

3. The combination of stationary and movable plates 10 and 13, electric resistance-wires 17, carried by said plates, porcelain located on said wires in the form of a film, pins or projections 14, carried by said plates and projecting through said film of porcelain, sheets of asbestos or other heat-insulating material interposed between said film of porcelain and other parts adjacent thereto, and a thermometer located upon one of said plates, substantially as set forth.

484,575. MECHANIC'S SQUARE. Edgard Wetterhahn, St. Louis, Mo. Filed July 5, 1892. Serial No. 438,047. (No model.)



Claim.—1. A mechanic's square having a back and a rotating blade located at one end thereof, substantially as described.

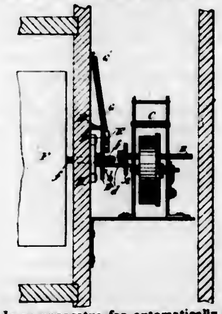
2. A mechanic's square having a back graduated at one end and a rotating index-blade co operating with the scale on said back, substantially as described.

3. A mechanic's square comprising a back having a rounded end, a graduated scale on said rounded end, and an index-plate movably secured to said back and adapted to be rotated to register with the scale on said back, substantially as described.

4. A mechanic's square comprising a back, an opening 5, formed in one end of the same, a portion of which is conical, a blade 10, having a conical shank adapted to fit the said opening, and a nut or nuts screwed upon said shank for securing the blade to said back, substantially as described.

5. A mechanic's square consisting of a back 1, having a flat surface 2, a rounded end 3, a graduated scale 4, formed on said end, an opening 5, formed in said rounded end of the back, a circular opening 6, forming a part of the said opening 5, a conical opening 7, in communication with the said opening 6, a depression 8, a rotating blade 10, having rounded edges 11, a shank 9, formed on one end of the same, having a conical portion or stud 14 and screw-threaded extension 15, a nut or nuts 17, and an index 18, formed on the edge of the blade, adapted to register with the scale on the back, substantially as described.

484,576. AUTOMATIC ADVERTISING APPARATUS. John S. Yule, Glasgow, Scotland. Filed Sept. 11, 1891. Serial No. 405,441. (No model.) Patented in England July 18, 1891, No. 12,225.



Claim.—1. In an apparatus for automatically displaying advertisements, pictures, and the like, the combination, with one or more rollers or drums whereon the matter to be displayed is contained, of a motor mechanism, an escapement mechanism including a cam carried by the main spindle of the motor mechanism and a pivoted lever provided with a pin with which said cam coacts, and a plate secured to the end of the spindle of the display-drum and with which said escapement mechanism co-operates, substantially as set forth.

2. In an apparatus for automatically displaying advertisements, pictures, and the like, the combination, with a drum or roller suitably supported in a frame or casing and having its spindle provided at one end with plate H, studded with pins, as *h*, and a motor mechanism having its main spindle provided with cam A, of lever-arm D, separately centered and provided with a pin, as *d*, a spring or pawl secured to lever-arm D, and a spring operating to restore said lever-arm, when depressed, to the normal position and cause said pawl to give to the drum a partial rotation, substantially as set forth.

3. The combination, with the supported drum or roller F and the clock-work mechanism C, of cam A, keyed upon the main spindle of the clock-work mechanism, the lever-arm D, separately centered and carrying pin *d* in its side and curved at its forward end, spring or pawl E, secured to the side of said lever-arm, with its face projecting beyond the curved end of the lever-arm, the studded plate H, secured to the end of the drum's spindle and having its sides curved to correspond with the curved end of the lever-arm D, and spring G, connected to the lever-arm D at one end and at its opposite end to the frame of the apparatus, substantially as set forth.

484,577. COMBINATION LOCK AND ALARM. Robert Baumann, St. Louis, Mo., assignor to the Electric Alarm Lock Company, same place. Filed Aug. 20, 1891. Serial No. 403,189. (No model.)

Claim.—1. The combination, with a sliding drawer, of a battery and bell contained therein and electrical connections adapted to automatically close the circuit when the drawer is slid from its normal position, substantially as and for the purpose set forth.

2. In a lock and alarm mechanism for drawers, a drawer adapted to slide, a lock for said drawer, a bolt for said lock, means for depressing said bolt located on each side thereof, a battery and bell, and electrical connection between said bolt, battery, and bell, whereby when said bolt is retracted the circuit will be closed and an alarm sounded whether the drawer be pushed in or pulled out, substantially as shown and described.

3. The improved lock and alarm mechanism for drawers, com-

prising a drawer adapted to slide, a lock for said drawer, a battery, a bell, and electrical connections therewith and with portions of said lock, forming a local circuit, all contained within said drawer, and an additional bell also adapted to be included in said circuit, but located at a distance from said drawer and exterior thereof, substantially as shown and described.

from one opening to another, and cords which pass through the said openings and are sunken in the portion of said integument drawn into said grooves, substantially as described.

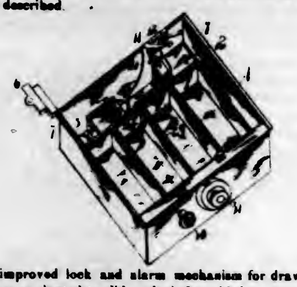
484,579. PROCESS OF MAKING CYANIDES. George T. Bellby, Motherwell, Scotland. Filed Feb. 12, 1892. Serial No. 421,422. (No model.)

4. The combination, in a socket, of an insulating-body, a central socket contact or terminal, an edge socket contact or terminal, a spring on said body movable toward and from one of said socket-terminals, a plunger in a hole passing through said insulating-body, over which the switch-spring extends, a head on said plunger, a wiper adapted to strike said head, and a stop for said wiper, substantially as described.

5. The combination, in a socket, of the contacts or terminals, an record with a deposit of metal by vaporizing metal in a vacuum in which the record is placed, substantially as set forth.

2. The process of forming a matrix or mold for the duplication of phonographic records, consisting, first, in indenting the original record on a phonogram; second, covering the recording-surface of such phonogram with a deposit of metal by vaporizing metal in a vacuum in which such phonogram is placed, backing up such deposit to give

prising a drawer adapted to slide, a lock for said drawer, a battery, a bell, and electrical connections therewith and with portions of said lock, forming a local circuit, all contained within said drawer, and an additional bell also adapted to be included in said circuit, but located at a distance from said drawer and exterior thereof, substantially as shown and described.

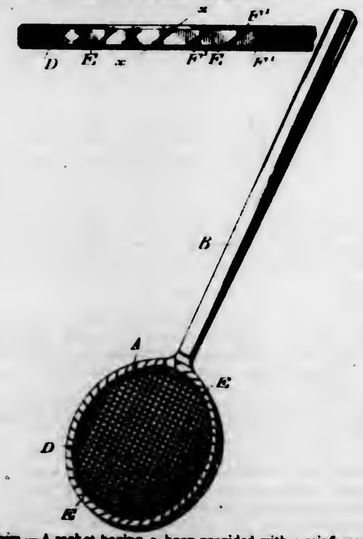


4. The improved lock and alarm mechanism for drawers, comprising a drawer adapted to slide, a lock for said drawer, a battery, a bell, and electrical connections therewith and with portions of said lock, forming a local circuit, all contained within said drawer, and an additional bell also adapted to be included in said circuit, but located at a distance from said drawer and exterior thereof, and a switch for cutting out of the circuit either of said bells, substantially as shown and described.

5. The improved lock and alarm mechanism for drawers, comprising a drawer adapted to slide, a lock for said drawer, a battery, a bell, electrical connections between said battery, bell, and lock, all contained within said drawer and sliding therewith, an additional bell, an additional battery, each adapted to be included in circuit with the bell battery, and lock in said drawer, but located at a distance therefrom, and the switch also located in the drawer and adapted to cut out or in either of said bells and the distant battery, substantially as shown and described.

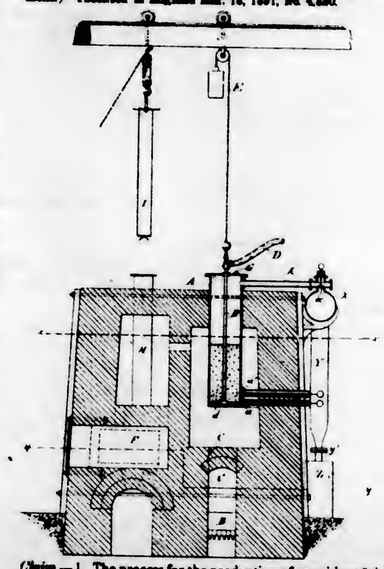
6. In a lock and alarm mechanism for drawers, a drawer adapted to slide, a lock for said drawer, a battery, a bell, and electrical connections between said lock, battery, and bell, and said bell and battery located in a portable box or casing, as 14, said casing being divided vertically by a partition-wall 15, thereby forming a chamber or recess 16 for the bell and a separate chamber or recess 17 for the battery, each chamber being closed upon all sides, except the front side of the chamber in which the bell is located, substantially as shown and described.

484,578. RACKET. CLEMENT DORSEY, Philadelphia, Pa. Filed Feb. 27, 1892. Serial No. 423,000. (No model.)



Claim.—A racket having a hoop provided with a reinforce consisting of a strip of integument wound thereon, openings in the hoop and integument, and grooves on the periphery of the hoop, leading from one opening to another, and cords which pass through the said openings and are sunken in the portion of said integument drawn into said grooves, substantially as described.

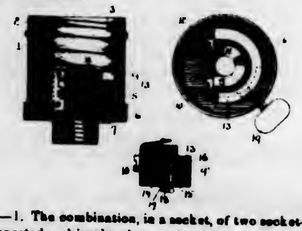
484,579. PROCESS OF MAKING CYANIDES. GEORGE T. BELLBY, Glasford, Scotland. Filed Feb. 15, 1892. Serial No. 421,428. (No specimens.) Patented in England Mar. 18, 1891, No. 4,890.



Claim.—1. The process for the production of cyanides of the fixed alkalies, consisting in bringing ammonia into intimate contact with a liquid-fused mixture of anhydrous alkali, cyanide, and carbon, as described.

2. The process for the production of cyanides of the fixed alkalies, consisting in bringing the vapors of alkaloidal bases into intimate contact with a liquid-fused mixture of anhydrous alkali, cyanide, and carbon, as described.

484,580. LAMP-SOCKET AND CIRCUIT-CLOSER THEREFOR. SIDNEY BURNHAM, New York, N. Y. Filed May 18, 1892. Serial No. 433,411. (No model.)



Claim.—1. The combination, in a socket, of two socket-terminals suitably supported and insulated, one of said terminals being disconnected from the supply-circuit terminals, an insulating-body carrying a spring forming or connected to said circuit-terminal and in position to co-operate with one of the socket-terminals, a plunger movably held by the insulating-body, and a key for moving the plunger and through it the spring, substantially as described.

2. The combination, in a socket, of an insulating-body, on one end of which are two springs, one of which forms or is connected to the central contact or terminal of the socket, the other of which is a switch-spring, a second socket contact or terminal supported in proper relation to the first-mentioned terminal, and means for moving the switch-spring against said second terminal, substantially as described.

3. The combination of an insulating socket-body having a hole through it, a spring on an end of said body extending over the hole, a plunger in said hole having a head, and a key or wiper adapted when turned to strike said head and move it and through it the plunger and spring, and a contact device or terminal in co-operative relation with said spring, substantially as described.

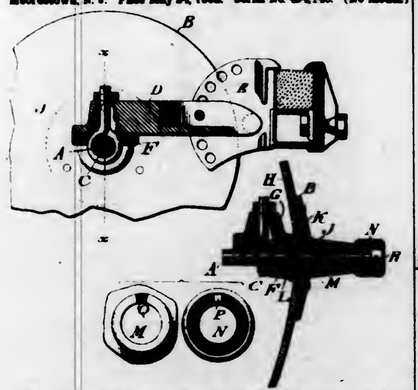
4. The combination, in a socket, of an insulating-body, a central socket contact or terminal, an edge socket contact or terminal, a spring on said body movable toward and from one of said socket-terminals, a plunger in a hole passing through said insulating-body, over which the switch-spring extends, a head on said plunger, a wiper adapted to strike said head, and a stop for said wiper, substantially as described.

5. The combination, in a socket, of the contacts or terminals, an insulating-body, a switch-spring carried thereby and adapted to be moved toward or from one of said terminals, a hole in the insulating-body, a plunger in said hole over which the switch spring extends, a head on the plunger movable in a cavity in the insulating-body of such form as to prevent said head turning therein, said head having a groove or depression in its upper face, and a wiper adapted to strike said head and to be arrested by said depression, substantially as described.

6. The combination, in a socket, of a sleeve-terminal suitably supported, an insulating-body adjacent to the inner end of said terminal, a curved spring secured to said body and extending along an end thereof under the end of the sleeve terminal, and means for raising the free end of the curved spring against the sleeve-terminal, and a second socket-terminal, substantially as described.

7. The combination, in a socket, of the socket-terminals, a shell and body for supporting them, a cap adapted to engage said shell, an insulating-washer in said cap and having a portion cut away to receive a key, a key therein, and a circuit making and breaking device adapted to be operated thereby, substantially as described.

484,581. FURROWER AND COVERER. HENRY W. DOUGHTEN, Moorestown, N. J. Filed May 24, 1892. Serial No. 434,148. (No model.)



Claim.—1. An axle with a bearing, an arm sustaining said bearing, a dust-guard on said bearing, a hub with a peripheral flange and sleeves on opposite sides of the same, and a rotary share secured to said flange, one of said sleeves entering a recess in said dust-guard, said parts being combined substantially as described.

2. An axle with a head, a rotary share whose hub is on said axle and provided with a sleeve having a recess, and a cap with a tooth fitting in said recess, the head of said axle fitting in a recess in said cap, said parts being combined substantially as described.

484,582. PROCESS OF DUPLICATING PHONOGRAMS. THOMAS A. EDISON, Llewellyn Park, N. J., assignor to the Edison Phonograph Company, of New Jersey. Original application filed Jan. 5, 1888, Serial No. 259,805. Divided and this application filed Jan. 30, 1892. Renewed Mar. 30, 1892. Serial No. 427,011. (No specimens.)

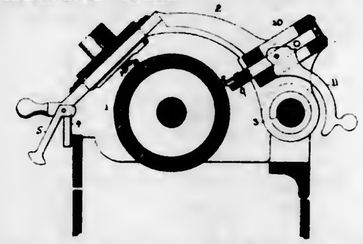
Claim.—1. The process of forming a matrix or mold for the duplication of phonographic records, consisting in covering the phonographic record with a deposit of metal by vaporizing metal in a vacuum in which the record is placed, substantially as set forth.

2. The process of forming a matrix or mold for the duplication of phonographic records, consisting, first, in indenting the original record on a phonogram; second, covering the recording-surface of such phonogram with a deposit of metal by vaporizing metal in a vacuum in which such phonogram is placed, backing up such deposit to give it strength, and then removing the original phonogram, substantially as set forth.

3. The process of forming a matrix or mold for the duplication of phonographic records, consisting, first, in indenting the original record upon a phonogram having a wax-like surface; second, covering the recording-surface of such phonogram with a deposit of metal by vaporizing metal in a vacuum in which such phonogram is placed, backing up such deposit to give it strength, and then removing the original phonogram, substantially as set forth.

4. The process of duplicating phonograms carrying a phonographic record, consisting, first, in indenting the original record upon a phonogram; second, constructing a matrix or mold of such original record by depositing thereon a coating of metal by vaporizing metal in a vacuum in which the record is placed, and, third, producing duplicate phonograms from such matrix, substantially as set forth.

484,588. PHONOGRAPH CUTTING-TOOL. THOMAS A. EDISON, Llewellyn Park, N. J. Filed May 27, 1890. Renewed Mar. 30, 1892. Serial No. 427,012. (No model.)

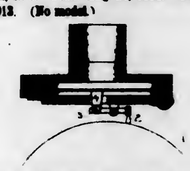


Claim.—1. In a phonograph employing phonogram-blanks of wax-like material, and in combination with a holder for such blanks, a jewel cutting-tool situated with relation to said holder, so as to operate upon the blank held thereby, substantially as set forth.

2. The combination, in a phonograph, with a phonogram-blank of comparatively-soft material, of a jewel recorder, substantially as described.

3. The combination, in a phonograph, with a phonogram-blank of wax-like material, of a sapphire record[illegible] substantially as set forth.

484,584. PHONOGRAPH-REPRODUCER. THOMAS A. EDISON, Llewellyn Park, N. J. Filed May 27, 1890. Renewed Mar. 30, 1892. Serial No. 427,013. (No model.)



Claim.—1. The combination, in a phonograph, with a phonograph-blank of wax-like material, of a jewel reproducer, substantially as described.

2. The combination, in a phonograph, with the phonogram-blank, of a rounded jewel reproducer, substantially as described.

3. A reproducer or bearing-point for phonographs, consisting of a jewel not affected by chemicals or chemical action of the wax-like material of the phonogram-blank, substantially as described.

484,585. PHONOGRAPH. THOMAS A. EDISON, Llewellyn Park, N. J. Filed July 30, 1890. Renewed Mar. 30, 1892. Serial No. 427,014. (No model.)

Claim.—1. In a phonograph, the combination, with a diaphragm suitably supported, of an operating-point connected therewith and supported on a weight pivoted adjacent to its center of gravity, substantially as described.

2. In a phonograph, the combination, with a diaphragm suitably supported, of an operating-point connected therewith and supported

on a plate or block pivoted adjacent to its center of gravity and means for overbalancing the plate, substantially as described.

3. The combination, in a phonograph, of a diaphragm, a reproducer connected therewith, and a counterbalanced plate or block on which said reproducer is supported, substantially as described

nut adapted thereto, a fixed brake-chamber, brake-shoes pivoted to said nut to turn therewith and swing therefrom to engage the walls of the brake-chamber, and a yielding connection between said shoes.

3. In combination, a screw-threaded supporting-rod, a threaded nut adapted thereto, a brake-chamber, brake-shoes adapted to contact with said chamber during the downward movement of the screw, and X shaped links connecting said nut and said brake-shoes.

2. A musical game apparatus composed of a series of independent key-plates provided with staves and notes and being adapted to be placed upon the keys of a musical instrument and a pattern-card representing a keyboard with the notes marked thereon, substantially as and for the purpose specified.

484,590. RAIL FOR SECURING GLASS. WILLIAM HENDERSON, Chicago, Ill. Filed July 9, 1891. Serial No. 398,582. (No model.)

4. In a machine for corking bottles, the combination, with the standard A, the vertically-reciprocating plunger, the revolving multiple-chambered reservoir beside said standard, the feed-plate H', the cork-receptacle H[2] therein, of means for reciprocating said plate and actuating said plunger, and means for rotating said reservoir to bring one of the chambers in line with said receptacle in the forward movement thereof and out of line with said receptacle in the return movement, substantially as described.

5. In a machine for corking bottles, the combination, with the

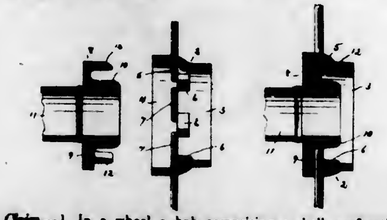
on a plate or block pivoted adjacent to its center of gravity and means for overbalancing the plate, substantially as described.

3. The combination, in a phonograph, of a diaphragm, a reproducer connected therewith, and a counterbalanced plate or block on which said reproducer is supported, substantially as described.

4. In a phonograph, the combination, with a diaphragm, of an operating-point connected therewith, the weight pivoted adjacent to its center of gravity and slotted at one side of the center, a pin carried by the weight, and a link connection between the pin and operating-point, substantially as described.

5. In a phonograph, the combination, with a diaphragm, of an operating-point connected therewith, the weight pivoted adjacent to its center of gravity and slotted at one side of the center, a compensating spring, a pin carried by the weight, and a link connection between the pin and operating-point, substantially as described.

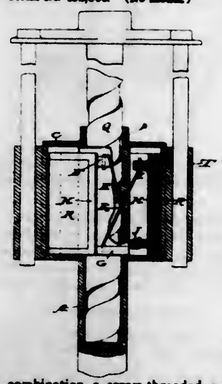
484,586. METAL WHEEL. PETER GELIN, Toledo, Ohio, assignor of one-half to Barney R. Baker, same place. Filed July 5, 1892. Serial No. 438,857. (No model.)



Claim.—1. In a wheel, a hub comprising a shell, perforations circumferentially thereof, spokes passed through the perforations and having a bead within the shell, and a filling-piece formed with tangs to enter the bead of the spokes when inserted in the shell.

2. In a wheel, a shell formed of two diameters and perforated circumferentially, return-bead spokes passed through the perforations with the return bead within the shell, lugs formed upon the inner shell upon the outer side of the row perforations, a filling-piece of a diameter to fit within the largest diameter of the shell having tangs to enter the curve of the spokes, and an annular extension to receive the spindle.

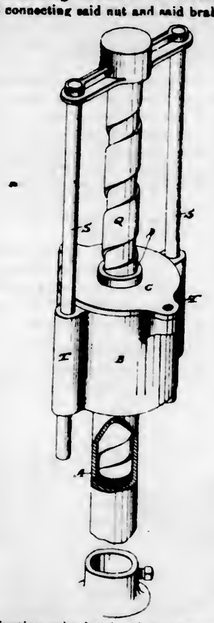
484,587. LOWERING-JACK. AARON P. GOULD, Canton, Ohio. Filed May 13, 1892. Serial No. 432,868. (No model.)



Claim.—1. In combination, a screw-threaded supporting-rod, a screw-threaded nut adapted thereto, convex brake-shoes pivotally secured to said nut, and a fixed brake-chamber, with the walls of which the brake-shoes are brought into frictional engagement by the rotation of the nut.

2. In combination, a screw-threaded supporting-rod, a threaded nut adapted thereto, a fixed brake-chamber, brake-shoes pivoted to said nut to turn therewith and swing therefrom to engage the walls of the brake-chamber, and a yielding connection between said shoes.

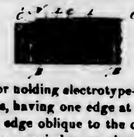
3. In combination, a screw-threaded supporting-rod, a threaded nut adapted thereto, a brake-chamber, brake-shoes adapted to contact with said chamber during the downward movement of the screw, and X shaped links connecting said nut and said brake-shoes.



4. In combination, a brake-chamber, a screw-threaded supporting-rod, a connection between the chamber and the supporting-rod to prevent said rod turning, a nut within said chamber on said rod, and brake-shoes pivoted to said nut to turn therewith and swing therefrom.

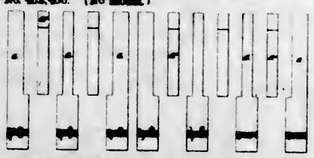
5. In combination, a vertically-movable non-rotatable screw-threaded supporting-rod, a nut adapted thereto, a brake-chamber, and brake-shoes pivoted to said nut to turn therewith and swing therefrom to engage the wall of said brake-chamber.

484,588. PRINTING-PLATE HOLDER. FREDERICK HAINSWORTH, Chicago, Ill. Filed Apr. 18, 1890. Serial No. 348,481. (No model.)



Claim.—A clamp for holding electrotype-plates in position on bed-plates in printing-presses, having one edge at or near right angles with its ends, the remaining edge oblique to the other edges, one portion thereof thinner than the remainder, an elongated hole through the thinner part, and a cap provided with a countersunk hole on the thinner part, and means for fastening the same to the bed-plate.

484,589. MUSICAL-GAME APPARATUS. CARL G. F. HANER, Ratibor, and EMIL RICHTER, Czakiakt, Germany. Filed May 10, 1892. Serial No. 432,450. (No model.)



Claim.—1. A musical-game apparatus composed of a set of independent key-plates provided with staves and notes, a pattern-card representing a keyboard with the notes marked thereon, and a base-plate, substantially as specified.

2. A musical game apparatus composed of a series of independent key-plates provided with staves and notes and being adapted to be placed upon the keys of a musical instrument and a pattern-card representing a keyboard with the notes marked thereon, substantially as and for the purpose specified.

484,590. RAIL FOR SECURING GLASS. WILLIAM HENDERSON, Chicago, Ill. Filed July 6, 1891. Serial No. 398,583. (No model.)

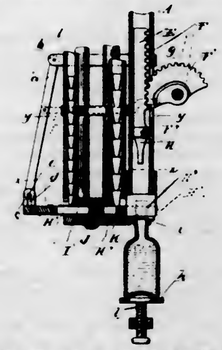
Claim.—1. As an improved article of manufacture, a rail having a longitudinal groove or channel to receive the glass and having a doubled marginal head on each side thereof, and a rib at the rear of said channel connecting the heads to check the glass, and a projecting rear portion to fit in the rabbet of the sash, said projecting portion being of a thickness not greater than the thickness of the exterior of the receiving portion of the rail, substantially as set forth.

2. As an improved article of manufacture, a rail having a longitudinal groove or channel to receive the glass and having doubled marginal heads without seams on their outer surfaces, and a rib at the rear of said channel connecting the heads, and a projecting rear portion to fit in the rabbet of the sash, said projecting portion being of a thickness not greater than the thickness of the exterior of the receiving portion of the rail, substantially as set forth.

3. As an improved article of manufacture, a rail having a longitudinal groove to receive the glass and having a doubled marginal head on each side thereof, and a rib at the rear of said groove connecting the heads, and a projecting rear portion to fit in the rabbet of the sash, said projecting portion being of a thickness less than the thickness of the exterior of the receiving portion of the rail, substantially as set forth.

4. As an improved article of manufacture, a rail having a longitudinal groove to receive the glass and having a doubled marginal head on each side thereof, and a rib at the rear of said groove connecting the heads, and a projecting rear portion to fit in the rabbet of the sash, said projecting portion being wedge-shaped and of a thickness not greater than the thickness of the exterior of the receiving portion of the rail, substantially as set forth.

484,591. BOTTLE-CORKING MACHINE. WILLIAM H. HOLDEN, Detroit, Mich. Filed Oct. 26, 1891. Serial No. 409,882. (No model.)



Claim.—1. In a machine for corking bottles, the combination, with a cork feeding and forcing mechanism, of a cork-receiving reservoir, means for connecting the feed mechanism with the reservoir in its forward movement and disconnecting the same in its return movement, substantially as described.

2. In a bottle-corking machine, the combination, with a standard, of a plunger working in the same, a revolving reservoir carried by the standard, an independent reciprocating feed-plate below the reservoir, and means for simultaneously moving the plunger, feed-plate, and reservoir, substantially as described.

3. In a bottle-corking machine, the combination, with a supporting-standard, of a vertically-movable plunger carried by the standard and having a rack-bar thereon, a pinion meshing with the rack, a movable reservoir supported by the standard, a notched plate on the reservoir, a lever actuated by the pinion, a sliding feed-plate actuated by the lever, and means engaging the notched plate for moving the reservoir, substantially as described.

4. In a machine for corking bottles, the combination, with the standard A, the vertically-reciprocating plunger, the revolving multiple-chambered reservoir beside said standard, the feed-plate H', the cork-receptacle H^2 therein, of means for reciprocating said plate and actuating said plunger, and means for rotating said reservoir to bring one of the chambers in line with said receptacle in the forward movement thereof and out of line with said receptacle in the return movement, substantially as described.

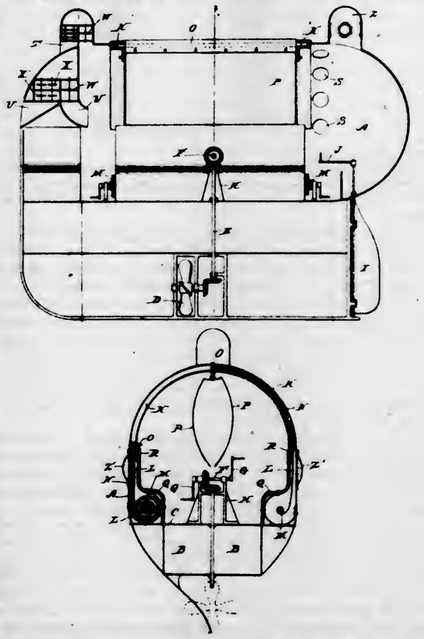
5. In a machine for corking bottles, the combination, with the cork forcing and feeding mechanism, of a multiple-chambered reservoir and means for connecting said feed mechanism with the reservoir in the forward movement thereof and for disconnecting the same in the return movement thereof, substantially as described.

6. In a bottle-corking machine, the combination, with a hollow supporting-standard and means for adjustably securing the same to the support at its upper end, of a vertically-movable plunger in the standard, a revolvable reservoir supported by the standard, a rack on the plunger, a pinion meshing with the rack and supported on the standard, a notched plate on the reservoir, a lever actuated by the pinion, a sliding feed-plate actuated by the lever, and means for rotating the reservoir by the movement of the pinion, substantially as described.

7. In a bottle-corking machine, the combination, with the standard and means for adjustably suspending the same from its upper end, of a plunger carried by the standard, having a rack thereon, a pinion on the standard engaging the rack, a cork-reservoir on the standard, a feed plate below the reservoir, and a lever connecting the plate with the pinion, substantially as described.

8. In a bottle-corking machine, the combination, with a vertically-disposed standard, of means for movably suspending the same from above, a plunger working in the standard, means for reciprocating the plunger, a reservoir carried by the standard, and a reciprocating feed-plate below the reservoir and supported by the standard, substantially as described.

484,592. LIFE-BOAT. PAUL HÜBNER, Milwaukee, Wis. Filed May 19, 1892. Serial No. 433,578. (No model.) Patented in Germany Aug. 1, 1891, No. 61,901.



Claim.—1. In a life-boat, a hull, a semicylindrical cover for the hull, having the greater part thereof in the form of rolling sections arranged amidships, a windlass flexibly connected to these hull-sections, and suitable means for ventilating the closed hull, substantially as set forth.

2. In a life-boat, a hull, a semicylindrical cover for the hull, having the greater part thereof in the form of rolling sections arranged

amidships, a windlass flexibly connected to these sections, hinged supports for the same, and suitable means for ventilating said hull, substantially as set forth.

3. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

4. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

5. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

6. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

7. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

8. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

9. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

10. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

11. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

12. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

13. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

14. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

15. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

16. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

17. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

18. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

19. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

20. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

21. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

22. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

23. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

24. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

25. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

26. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

27. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

28. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

29. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

30. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

31. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

32. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

33. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

34. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

35. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

36. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

37. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

38. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

39. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

40. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

41. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

42. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

43. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

44. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

45. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

46. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

47. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

48. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

49. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

50. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

51. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

52. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

53. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

54. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

55. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

56. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

57. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

58. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

59. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

60. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

61. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

62. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

63. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

64. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

65. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

66. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

67. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

68. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

69. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

70. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

71. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

72. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

73. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

74. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

75. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

76. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

77. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

78. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

79. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

80. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

81. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

82. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

83. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

84. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

85. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

86. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

87. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

88. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

89. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

90. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

91. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

92. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

93. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

94. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

95. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

96. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

97. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

98. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

99. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

100. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said sections by cords passing through the guideways, substantially as set forth.

able to close either to the fuel-supply, and thereby open the other thereto, whereby the course of the products of combustion through the kiln may be reversed at will, substantially as described.

4. In combination, a series of brick-kilns having air-inlet openings and provided with flues intercommunicating with them and with

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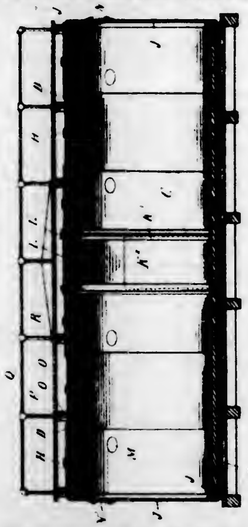
amidships; a windlass flexibly connected to these sections, hinged supports for the same, and suitable means for ventilating said hull, substantially as set forth.

3. In a life-boat, a hull closed at the bow and stern, but having movable side sections amidships, each of these sections consisting of slats arranged on helical spring-supports, guideways for these sections, and a windlass connected to said spring-supports, substantially as set forth.

4. In a life-boat, a hull provided with air-compartments, a propeller, longitudinal seats, and rolling sections, which latter are concealed by the seats when not in use, suitable means for operating these movable hull-sections, and other suitable means for ventilating and lighting the closed hull, substantially as set forth.

484,598. RAILWAY-CAR. CARLETON B. HUTCHINS, Detroit, Mich. Filed Mar. 26, 1892. Serial No. 426,413. (No model.)



Claim.—1. In a railway-car, the combination of a platform and a cylindrical metal body thereon, having its base flat and formed as a chord, and means for securing it to the platform, substantially as described.

2. In a railway-car, the combination of a platform and a cylindrical metal body composed of connected sheets bent to form a cylinder with the base formed as a chord, of end plates secured to the body and means for securing it to the platform, substantially as described.

3. In a railway-car, the combination of a platform, a cylindrical metal body composed of overlapping sheets riveted together in seams around the body, bent to form a base in the shape of a chord, and means to secure the body to the platform, substantially as described.

4. In a railway-car, the combination of a platform, a cylindrical metal body secured thereon, having apertures extending up from the platform, and circumferentially-sliding segmental doors for said apertures, substantially as described.

5. In a railway-car, the combination of a platform, a cylindrical metal body secured thereon, having segmental-shaped doorways at opposite sides, guides beside the doors, circumferentially-sliding doors for closing the lower part of the doorway, and independent means for closing the upper part of the doorway, substantially as described.

6. In a railway car, the combination of a body composed of overlapping metal sheets riveted together in seams around the body and bent at the sides by cutting away a sheet from the base upward, guides inside the body beside the doorway, segmental doors sliding in the ways, partially closing said doorways, and the sliding door L, sliding in outer guides extending over the top of the car and of a length to normally overlap the top of the lower doors, substantially as described.

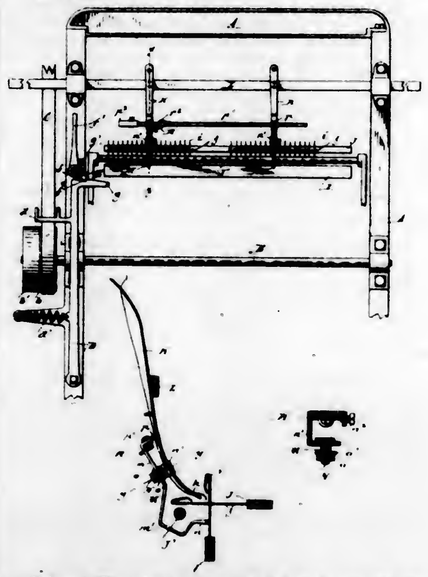
7. In a railway-car, the combination, with the cylindrical body, of the cross-bars O', legs O^3, and securing flanges O^2, and the run-boards on the cross-bars, substantially as described.

8. In a railway-car, the combination, with the cylindrical body, of the T-shaped cross-bars bent to form legs O^3 at the ends and the securing-flanges O^2, formed by cutting off the stem of the T-bar and bending the head in line with the car-body, substantially as described.

9. In a railway-car, the combination, with the cylindrical body, of the T-metal cross-bars secured at the top, supporting the run board and having apertures at each end on opposite sides of the stem of the T, standards bifurcated at their lower ends, engaging said apertures, a bolt or rivet passing through the bifurcations of the standard and the stem, and connecting railings between the standards, substantially as described.

10. A freight-car consisting of a truck, a horizontal cylindrical metal body having a flat base, means for securing the body to the truck, and a reinforcement for the inner face of the flat base, substantially as described.

484,594. STOP-MOTION FOR KNITTING-MACHINES. FRANK B. KLOCK, Little Falls, N. Y. Filed Dec. 31, 1891. Serial No. 416,657. (No model.)



Claim.—1. The combination, with the belt-shifter and the knitting-needles, of a finger having one end arranged near the needles, a trip-bar connected with the finger, and intermediate mechanism whereby the belt-shifter is released upon the catching of the finger, substantially as set forth.

2. The combination, with the belt-shifter and the knitting-needles, of a trip pawl engaging with said shifter, a finger having one end arranged near the needles, and a trip-bar connected with the finger and adapted to strike the trip-pawl, substantially as set forth.

3. The combination, with the belt-shifter, the knitting-needles, and the reciprocating yarn-guide, of a finger pivoted upon said guide and having one end arranged near the needles and intermediate mechanism whereby the belt-shifter is released upon the catching of the finger, substantially as set forth.

4. The combination, with the belt-shifter, the knitting-needles, and the reciprocating yarn-guide, of a trip-pawl engaging with said shifter, a finger pivoted upon the yarn-guide and having one end arranged near the needles, and a trip-bar attached to the finger and provided with an adjustable portion which is adapted to strike the trip-pawl, substantially as set forth.

5. The combination, with the belt-shifter and the knitting-needles, of a finger having one end arranged near the needles, a trip-bar attached to the finger, a catch connecting the trip-bar with the finger, and intermediate mechanism whereby the belt-shifter is released upon the catching of the finger, substantially as set forth.

6. The combination, with the belt-shifter and the knitting-needles, of a finger having one end arranged near the needles, a trip-bar attached to the finger a catch pivoted to the trip-bar and provided with a notch having abrupt and inclined sides which engage with the finger in the normal position of the parts, and a notch having two abrupt sides which engage with the finger when the trip-bar is shifted, and intermediate mechanism whereby the belt-shifter is released upon the catching of the finger, substantially as set forth.

7. The combination, with the belt-shifter, the knitting-needles, and the yarn-guide, of a bracket secured to said guide, a perforated pivot-bolt arranged on said bracket, a finger secured to said bolt and having its lower end arranged near the needles, a trip-bar pivotally attached to the upper end of the finger, and intermediate mechanism whereby the belt-shifter is released upon the catching of the finger, substantially as set forth.

8. The combination, with the knitting-needles, the yarn-guide, and the belt shifter provided with a notched nose, of a trip-pawl yieldingly held in engagement with said notch, a feeling-finger pivoted upon said yarn-guide and having its lower end arranged near the needles, a trip-bar pivoted upon the upper end of the feeling-finger and adapted to engage against the trip of the pawl and release the belt-shifter, and a catch pivoted upon the shifting-bar and engaging with the upper end of the feeling-finger, substantially as set forth.

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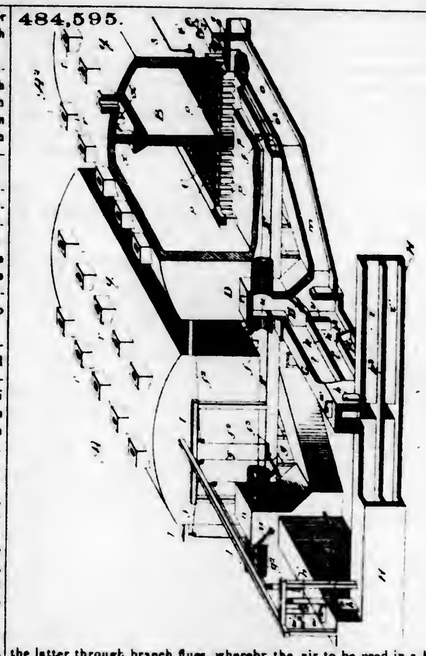

484,595. BRICK-KILN. WILLIAM A. KOHEMAN, Chicago, Ill. Filed May 8, 1891. Serial No. 392,096. (No model.)

Claim.—1. In combination, a brick-kiln containing a partition B, dividing it into compartments intercommunicating over the partition, flues *o* and *o'* at opposite sides of the base of the kiln and communicating through ports o^3 with the compartments, a distributing-chamber D at the end of the kiln, flues *m* and *m'*, leading from opposite sides of the said chambers into the flues *o* and *o'*, an exhaust-flue leading from the chamber D and common to all the other flues, a fuel-supply conduit E, leading into the said chamber, and a valve D' in the chamber between the flues *m* and *m'* and adjustable to close either at will to the fuel-supply, and thereby open the other to the exhaust-flue, whereby the course of the products of combustion through the kiln may be reversed, substantially as described.

2. In a brick-kiln, the floor comprising piers *p*, disposed with their corners diagonally opposing each other, with perforate fire-brick imposed thereon, substantially as described.

3. In combination, a brick-kiln containing a partition B, dividing it into intercommunicating compartments, each having its floor formed with piers *p*, disposed with their corners diagonally opposing each other and perforate fire-brick imposed thereon, flues *o* and *o'* at opposite sides of the base of the kiln and communicating through ports o^3 with the compartments, a distributing-chamber D between and communicating with said flues, a fuel-supply conduit E, leading into said chamber, and a valve D' in the chamber between the flues and adjustable to close either to the fuel-supply, and thereby open the other thereto, whereby the course of the products of combustion through the kiln may be reversed at will, substantially as described.

4. In combination, a series of brick-kilns having air-inlet openings and provided with flues intercommunicating with them and with the fuel-supply, and a main air-flue for the kilns, communicating with the latter through branch flues, whereby the air to be used in a kiln to be burned may be introduced therein in a heated condition through a previously-burned kiln into the main air-flue, substantially as described.

5. In combination, a series of brick-kilns provided with vent-openings and each containing a partition dividing it into intercommunicating compartments, fuel-flues communicating with the said compartments at opposite sides of the kiln and surmounted by similarly-communicating branch air-flues, a main air-flue for the kilns, into which the branch air-flues lead, a fuel-supply conduit communicating with the said fuel-flues, and a valve between the fuel supply conduit and fuel-flues of each kiln and adjustable to reverse at will the fuel-supply to the kiln, substantially as and for the purpose set forth.

6. In combination, a series of brick-kilns, each containing a partition B, dividing it into intercommunicating compartments, flues *o* and *o'* at opposite sides of each kiln and communicating with the compartments therein, a distributing-chamber D at one end of each kiln, flues *i* and *i'*, extending across the chambers D, the flue *i'*, leading to the stack, flues *l* and *l'*, leading from each distributing-chamber into the flue *i'*, a branch flue i^3, leading from the flue *i* across and controllably communicating with the flues *o* and *o'* at the ends of the kilns opposite those having the distributing-chambers, a fan K between the flues *i'* and i^3, a fuel-supply conduit E, controllably communicating with the chambers D, a valve D' in each said chamber, adjustable to direct the fuel-supply into either side of the kiln at will, and valves for the several flues, substantially as and for the purpose set forth.

7. In combination, a series of brick-kilns provided with vent-openings and each containing a partition B, dividing it into intercommunicating compartments, flues *o* and *o'* at opposite sides of each kiln and communicating with the compartments therein, a distributing-chamber D at one end of each kiln, flues *i* and *i'*, extending across the chambers D, the flue *i'*, leading to the stack, flues *l* and *l'*, leading therefrom into the flue *i'*, a branch flue i^3, leading from the flue *i* across and controllably communicating with the flues *o* and *o'* at the ends of the kilns opposite those having the distributing-chambers, a fan K between the flues *i'* and i^3, a fuel-supply conduit E, controllably communicating with the chambers D, a valve D' in each said chamber, adjustable to direct the fuel-supply into either side of the kiln at will, and valves for the several flues, substantially as and for the purpose set forth.

8. In combination, a series of brick-kilns provided with vent-openings in their roofs and each containing a partition B, dividing it into intercommunicating compartments, flues *o* and *o'* at opposite sides of the base of each kiln and leading into the said compartments through ports o^3, a main air-flue F for the several kilns, having branch flues o^3 and o^4, surmounting the flues *o* and *o'* and leading into said compartments through ports o^5, a distributing-chamber D in front of each kiln, having lateral flues *m* and *m'*, leading obliquely into the flues

o and *o'*, a fuel-supply conduit E, controllably communicating with the chambers D, a valve D' in each said chamber, adjustable to direct the fuel into either flue *m* or *m'* at will, an exhaust-flue *i'*, common to all the kilns surmounted by a flue *i'*, and having a branch flue i^3, communicating with the flues *o* and *o'* at the rear of the series of kilns, a fan K between the flue *i'* and branch flue i^3, flues *l* and *l'*, leading from each chamber D into the flue *i*, and a flue *l'*, leading therefrom into the flue *i'*, and valves for controlling the several flue-passages at will.

3. The combination of the dead-lever of railway-car-brake mechanism, a rack-and-pawl compensating device for retaining said dead-lever in its successive positions of advancement, one element of said device being hung to the dead-lever, and a momentum-weight serving to aid the take-up movements of the lever and to prevent rapid reversing of the same, substantially as specified.

4. The combination of the dead-lever of railway-car-brake mechanism, an operating-rod extending toward the end of the car and serv-

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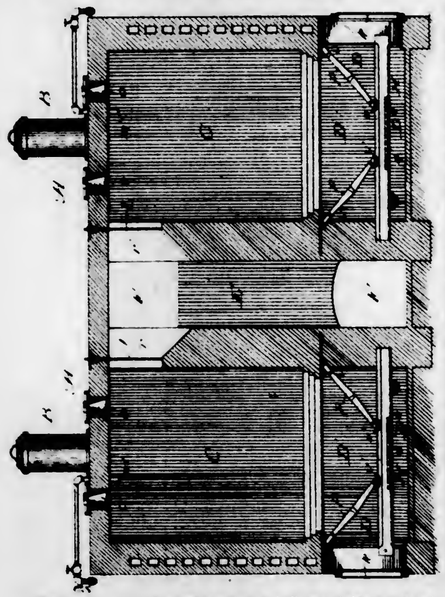
its bottom upon the upper margin of the vessel, said steamer being provided with an apertured bottom provided with an annular rim made of cylindric form and of proper size to fit within the body of the steamer at the lower edge of the latter, and interlocking parts or surfaces upon the lower margin of the steamer and the rim of the bottom for detachably securing the bottom in the steamer, substantially as described.

being pitched to correspond with the different types of buckets in the wheel above.

3. An upflow turbine wheel having its buckets in plural concentric series of differential vertical reaction or resistance and water-guides in the flume beneath the wheel in corresponding series, said guides being pitched to correspond with the different types of buckets in the wheel above and the inlets to the inner series of said guides occupying

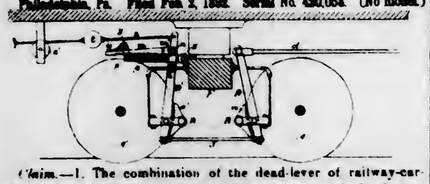
e and e', a fuel-supply conduit E, controllably communicating with the chambers D, a valve D' in each said chamber, adjustable to direct the fuel into either flue m or m' at will, an exhaust-flue i', common to all the kilns surmounted by a flue i', and having a branch flue i^3, communicating with the flues e and e' at the rear of the series of kilns, a fan K between the flue i' and branch flue i^3, flues l and l', leading from each chamber D into the flue i, and a flue l^3, leading therefrom into the flue i', and valves for controlling the several flue-passages at will, the whole being constructed and arranged to operate substantially as and for the purpose set forth.

484,596. GAS-PRODUCER. WILLIAM A. KOSEMAN, Chicago, Ill. Filed Sept. 18, 1891. Serial No. 406,112. (No model.)



Claim.—In a gas-generator having a shell containing a generating chamber provided with an outlet for the resultant gas, a feeding device B, an air-blast, and doors k, a grate D for supporting the fuel-bed, said grate being formed in parts D' and D^2, the former comprising bars p, supported to incline downward toward a common center, and the latter comprising horizontal sliding sections l, supported below and forming a bottom for the open base of the part D' and movable by sliding on their support in and out through the said doors, the parts D' and D^2 having ample space between them for the removal of ashes and clinkers without disturbing the sliding bottom, substantially as described.

484,597. CAR-BRAKE MECHANISM. JACOB R. LOUGHRIDGE, Philadelphia, Pa. Filed Feb. 2, 1892. Serial No. 420,058. (No model.)



Claim.—1. The combination of the dead-lever of railway-car-brake mechanism with a rack-and-pawl compensating device for retaining said lever in its successive positions of advancement, one element of said device having a slotted connection with the lever, whereby movement of said lever to a limited extent independently of the compensating device is permitted, substantially as specified.

2. The combination of the dead-lever of railway-car-brake mechanism, an operating-rod extending toward the end of the car and serving as a means of adjusting said lever to take up slack, and a rack-and-pawl compensating device for retaining the lever in its successive positions of advancement, one of the elements of said device being hung to the lever, substantially as specified.

3. The combination of the dead-lever of railway-car-brake mechanism, a rack-and-pawl compensating device for retaining said dead-lever in its successive positions of advancement, one element of said device being hung to the dead-lever, and a momentum-weight serving to aid the take-up movements of the lever and to prevent rapid reversing of the same, substantially as specified.

4. The combination of the dead-lever of railway-car-brake mechanism, an operating-rod extending toward the end of the car and serving as a means of adjusting said lever to take up slack, a weight mounted upon said rod, and a rack-and-pawl compensating device for retaining the lever in its successive positions of advancement, one of the elements of said device being hung to the lever, substantially as specified.

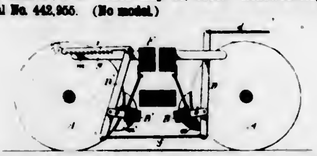
5. The combination of the dead-lever of railway-car-brake mechanism, a rack-and-pawl compensating device for retaining said dead-lever in its successive positions of advancement, one element of said device being hung to the dead-lever by a slotted connection, and an operating-rod connected to the dead-lever independently of said element of the compensating device, substantially as specified.

6. The combination of the dead-lever of railway-car-brake mechanism, a rack-and-pawl compensating device for retaining said dead-lever in its successive positions of advancement, one of the elements of said device being hung to the dead-lever by a slotted connection, and an operating-rod connected to the dead-lever independently of said element of the compensating device, said rod having a weight mounted upon it, substantially as specified.

7. The combination of the dead lever of railway-car-brake mechanism, a rack hung to the free end of said dead-lever, and a guide for said lever, said guide having at its outer end a pawl-tooth for engaging with the teeth of the rack, substantially as specified.

8. The combination of the dead-lever of railway-car brake mechanism, a rack hung to the lever, and a guide for said lever having at the outer end a pawl-tooth for engaging with the teeth of the rack, and a yoke carrying a spring which presses upon the rack and holds it in engagement with the pawl-tooth, substantially as specified.

484,598. BRAKE MECHANISM FOR CARS. JACOB R. LOUGHRIDGE, Philadelphia, Pa., assignor to the Loughridge Brake and Car Company, Camden, N. J. Filed May 21, 1891. Renewed Aug. 13, 1892. Serial No. 442,955. (No model.)



Claim.—1. The combination of the dead-lever of railway-car brake mechanism with an engaging rack and pawl for retaining the fulcrum end of said lever in its successive positions of advancement, one or both of said engaging portions having undercut teeth, substantially as specified.

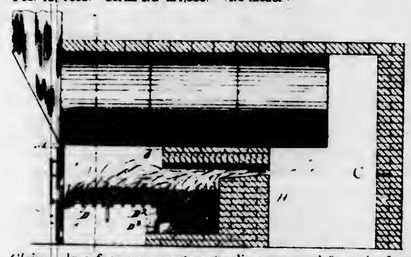
2. The within-described device for compensating for wear or looseness of parts of car-brake mechanism, said compensating device comprising elements with undercut engaging portions, whereby after each successive advance or movement of compensation there will be a slight backing off to prevent the locking of the brake-shoes against the wheels, substantially as specified.

484,599. CULINARY APPARATUS. MAGGIE MARSHFIELD, Chicago, Ill. Filed Aug. 3, 1891. Serial No. 401,533. (No model.)

Claim.—1. The combination, with a steam-generating vessel, of a steamer the body of which is of cylindric form and adapted to fit at its bottom upon the upper margin of the vessel, said steamer being provided with an apertured bottom provided with an annular rim made of cylindric form and of proper size to fit within the body of the steamer at the lower edge of the latter, and interlocking parts or surfaces upon the lower margin of the steamer and the rim of the bottom for detachably securing the bottom in the steamer, substantially as described.

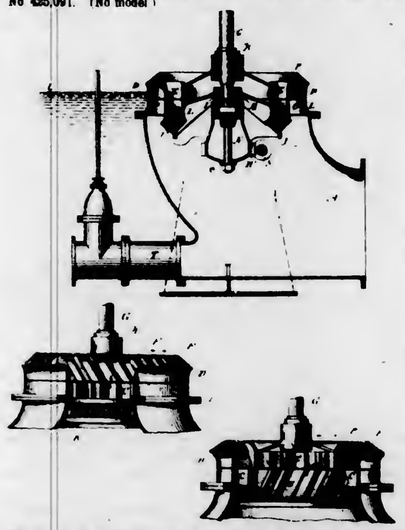
2. A steamer comprising a cylindric body provided at its lower edge with a flange to fit upon the top margin of a steam-generating vessel and provided with an apertured bottom, a second apertured bottom removably supported in the body about midway of its height, and a removable cover fitting the top of the vessel and provided with valve-openings and controlling-valves, substantially as described.

484,600. FURNACE. THOMAS E. MARTIN, Des Moines, Iowa. Filed Feb. 12, 1892. Serial No. 421,333. (No model.)



Claim.—In a furnace, a grate extending rearward from the front wall between the side walls, a wall extending downward at the rear end of the grate and provided with a door at its bottom portion, a floor extending rearward from said wall at the rear of the grate, adapted to serve as the closed bottom of a fire-pot, and a bridge-wall at the rear of said closed bottom, and an inverted bridge-wall or deflector above the two transverse walls, all constructed and arranged and combined and adapted to maintain a continuous fire extending in a horizontal plane below the deflector and also below the top of the bridge-wall to the bridge-wall, in the manner set forth, for the purposes stated.

484,601. AXIAL-FLOW DOUBLE-WHEEL TURBINE. ANDREAS MEDWART, Buda-Pesth, Austria-Hungary. Filed Mar. 16, 1892. Serial No. 425,091. (No model.)



Claim.—1. An upflow turbine water-wheel provided with a double series of buckets of differential vertical reaction or resistance and a governing-valve for controlling the supply of water to the series of said buckets having the lowest vertical reaction or resistance.

2. An upflow turbine wheel having its buckets in plural concentric series of differential vertical reaction or resistance and water-guides in the flume beneath the wheel in corresponding series, said guides being pitched to correspond with the different types of buckets in the wheel above.

3. An upflow turbine wheel having its buckets in plural concentric series of differential vertical reaction or resistance and water-guides in the flume beneath the wheel in corresponding series, said guides being pitched to correspond with the different types of buckets in the wheel above and the inlets to the inner series of said guides occupying differential radial distances from the axis of the wheel.

4. An upflow turbine wheel having a double series of buckets and water-guides in the flume beneath the wheel, constructed in corresponding series, the said series of buckets and their respective water-guides comprising a compound turbine having differential vertical reaction or resistance, and a governing-valve for controlling the supply of water to the part of the wheel offering the lowest reaction or resistance.

5. An upflow turbine wheel having its buckets in plural concentric series of differential vertical reaction or resistance and water-guides in the flume beneath in corresponding series, the inlets of said water-guides occupying differential radial distances from the axis of the wheel, and a governing-valve for controlling the supply of water to the part of the wheel offering the lowest vertical reaction or resistance.

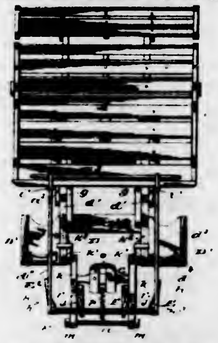
6. An upflow turbine water-wheel having its buckets in plural concentric series of differential vertical reaction or resistance, water-guides beneath the same in corresponding series, and a governing slide-valve seated upward on the under face of the guide of the series of buckets having the lowest vertical reaction or resistance, whereby the confining pressure of the water is counteracted by the weight of the valve, for the purpose described.

7. An upflow turbine water-wheel having its buckets in plural concentric series, the overflow-walls of the respective series being located at different levels, for the purpose described.

484,602. BOUQUET-HOLDER. ERNEST L. MCDOWELL, Arkansas City, Kans., assignor of one-half to Kittie B. McDowell, same place. Filed Mar. 5, 1892. Serial No. 423,899. (No model.)

Claim.—In a bouquet-holder, the combination, with the compound hinge consisting of the coiled springs c c', wound around each other in opposite directions with their ends projecting at opposite sides and ends and provided with perforations, of the spring-jaws A and B, having the curved legs b b, overlapping each other and passing through the perforations in the ends of the springs c c' and having their ends pointed, substantially as and for the purpose described.

484,603. FAN ATTACHMENT FOR CHAIRS. ABEL P. NICHOLS, Jordan Village, assignor of one-half to William H. Troth, Vandalia, Ind. Filed Nov. 6, 1891. Serial No. 411,089. (No model.)

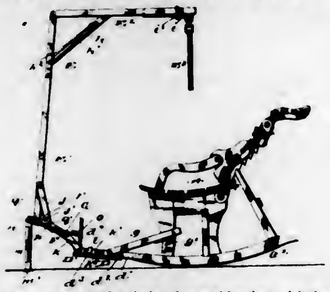


Claim.—1. In a fan attachment for chairs, the combination, with the foot-rest support connected to the chair rockers, of the treadle-carrying bars connected to slides clamped or held to said foot-rest support, substantially as set forth.

2. In a fan attachment for chairs, the combination, with the foot-rest support connected to the rockers of the chair, of the treadle-carrying bars having the inwardly-projecting pins or projections and the binding levers or clamps, and the fan-supporting standards adapted

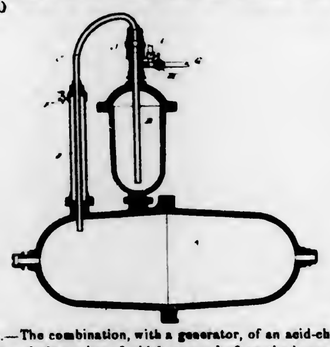
with their braces to be engaged by said pins or projections and levers or clamps, substantially as set forth.

3. In a fan attachment for chairs, the combination, with the treadle or fan-actuating contrivance, of the standards carrying fan-bearing arms provided with braces adapted to be adjustably connected to said standards and with springs adapted to engage said standards and hold the braces upon said standards, substantially as set forth.



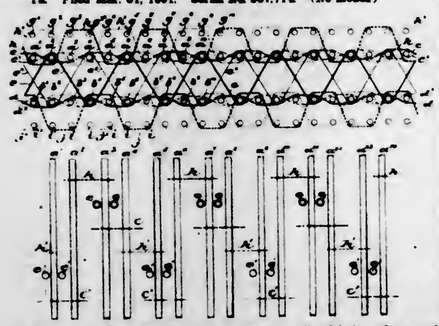
4. In a fan attachment for chairs, the combination, with the treadle or fan-actuating contrivance, of the standards carrying the fan-bearing arms provided with the spring loop-ended bearings, in combination with the fan and its shaft, and the rings engaging said arms and bearings, substantially as set forth.

484,604. ACID-FEEDER FOR SODA-WATER APPARATUS. JOHN ORMEROD, Brooklyn, N. Y., assignor to the American Soda Fountain Company, of New Jersey. Filed Aug. 5, 1891. Serial No. 401,776. (No model.)



Claim.—The combination, with a generator, of an acid-chamber, a siphon-shaped pipe, a leg of which proceeds from the lower part of the acid-chamber to or near its top and thence downward to the generator, a check-valve located in said pipe, and a gas-supply pipe connected with the top of the acid-chamber, substantially as described.

484,605. WOVEN PILE FABRIC. FRED PEARSON, Philadelphia, Pa. Filed Mar. 31, 1891. Serial No. 387,114. (No model.)



Claim.—1. The combination, to form a pile fabric, of ground weft-threads, ground warp-threads interwoven with said weft threads and crossed at regular intervals, tufts of pile engaged with picks of the ground weft-thread, tuft or loop holding weft-thread the picks of which are immediately behind the picks of ground weft with which the tufts of pile are engaged, and supplementary warp-threads, independent of the ground warp-threads, which bind the picks of tuft-holding weft-thread to the picks of ground weft-thread, substantially as set forth.

2. The combination, to form a pile fabric, of ground weft-threads, ground warp-threads interwoven with said weft-threads and crossing at regular intervals, tufts of pile engaged with picks of the weft-thread, tuft or loop holding weft-thread the picks of which correspond in number with and are situated respectively immediately behind the picks of ground weft thread, and supplementary warp-threads, independent of the ground warp-threads, which bind the picks of tuft-holding weft-thread to the picks of ground weft-thread and cross at regular intervals, substantially as set forth.

3. The combination, to form a pile fabric, of ground warp and weft threads, series of tufts of pile each held by a single pick of weft, the tufts composing each longitudinal series being held by picks of weft intermediate between the picks which hold the tufts of the two laterally-adjacent series, tuft or loop holding weft-threads applied to the rear of the fabric, and supplementary warp-threads interwoven with the ground weft and tuft holding weft-threads, substantially as set forth.

4. The combination, to form a pile fabric, of ground warp and weft threads, series of tufts of pile engaged with the ground weft-threads, the individual tufts of adjoining longitudinal series not existing side by side but being staggered with respect to each other, tuft-holding weft-threads applied to the rear of the fabric, and supplementary warp-threads interwoven with the ground weft and tuft holding weft-threads, substantially as set forth.

5. The combination, to form a pile fabric, of ground warp and weft threads, series of tufts of pile engaged with the ground weft-threads, the individual tufts of adjoining longitudinal series being staggered with respect to each other, tuft-holding weft-threads corresponding in number with the ground weft-threads, applied to the rear of the fabric, and supplementary warp-threads interwoven with the ground weft and tuft holding weft-threads, substantially as set forth.

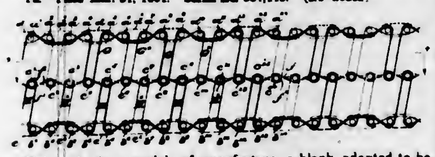
6. The combination, to form a pile fabric, of ground warp and weft threads, the ground warp-threads being crossed after every second pick of ground weft, series of tufts of pile, each held by a single pick of weft, the tufts composing each longitudinal series being held by picks of weft intermediate between the picks which hold the tufts of the two laterally-adjacent series, tuft-holding weft-threads applied to the rear of the fabric and corresponding in number with the ground weft-threads, and supplementary warp-threads passing outside the ground weft-threads and outside the tuft-holding weft-threads, which warp-threads are crossed after every second pick of ground weft and tuft holding weft-threads, the crossings of the adjoining ground warp and supplementary warp-threads occurring between different pairs of ground weft-threads, substantially as set forth.

7. The combination, to form a pile fabric, of ground warp and weft threads, series of tufts of pile, each held by a single pick of weft, the tufts composing each longitudinal series being held by picks of weft intermediate between the picks which hold the tufts of the two laterally-adjacent series, tuft-holding weft-threads applied to the rear of the fabric, and supplementary warp-threads interwoven with the ground weft and tuft holding weft-threads, both the ground warp and supplementary warp threads being crossed after every second pick of ground weft, but said respective crossings occurring respectively between different pairs of ground weft picks, and the members of each pair of supplementary warp-threads existing one on each side of a ground warp-thread, substantially as set forth.

8. A blank adapted to be cut or split to form two pile fabrics and consisting of two webs, each composed of ground warp-threads and ground weft-threads, pile warp-threads common to both webs and engaged with picks of weft-thread of both, and tuft or loop holding weft threads bound to the respective fabrics by supplementary warp-threads, substantially as set forth.

9. A blank adapted to be cut or split to form two pile fabrics and consisting of two webs, each composed of ground warp threads and ground weft-threads, pile warp-threads common to both webs, tuft or loop holding weft threads corresponding in number and distribution with the ground weft-threads and applied to the rear faces of the respective fabrics, and supplementary warp-threads which bind the tuft-holding weft-threads to the ground weft-threads, substantially as set forth.

10. A blank adapted to be cut or split to form two pile fabrics and consisting of two webs, each composed of ground warp-threads and ground weft-threads, pile warp-threads passing from one web to the other and being engaged by single picks of weft in each, each pile warp-thread engaging in a given web with picks of weft intermediate between those engaged by the next adjacent pile warp-thread, tuft or loop holding weft-threads corresponding in number and distribution with the ground weft-threads and applied to the rear faces of the respective fabrics, and supplementary warp-threads which bind the tuft-holding weft-threads to the ground weft-threads, substantially as set forth.

484,606. WOVEN PILE FABRIC. FRED PEARSON, Philadelphia, Pa. Filed Mar. 31, 1891. Serial No. 387,115. (No model.)

Claim.—1. As an article of manufacture, a blank adapted to be split or cut to form three pile fabrics, said blank consisting of three ground webs—an upper, a central, and a lower—the upper and central webs being united by a set of pile warp-threads common to both and the lower and central webs being united by an independent set of pile warp-threads common to both, substantially as set forth.

2. As an article of manufacture, a blank adapted to be split or cut to form three pile fabrics, said blank consisting of three independent ground webs—two exterior and one central—one exterior web and the central web being united by a set of pile warp-threads common to both, which pile warp-threads are each caught in the central web by single picks of weft therein, the other exterior web and the central web being united by an independent set of pile warp-threads common to both, substantially as set forth.

3. As an article of manufacture, a blank adapted to be cut or split to form three pile fabrics, said blank consisting of three independent ground webs—two exterior and one central—one exterior web and the central web being united by a set of pile warp-threads common to both, which pile warp-threads are each caught in the central web by single picks of weft therein and in the exterior web by a plurality of picks of weft therein, the other exterior web and the central web being united by an independent set of pile warp-threads, substantially as set forth.

4. As an article of manufacture, a blank adapted to be split or cut to form three pile fabrics, said blank consisting of three independent ground webs—two exterior and one central—one exterior and the central web being united by a set of pile warp-threads and the other exterior web and the central web being united by an independent set of pile warp-threads, all the pile warp-threads being caught in the central web by single picks of weft therein and each caught in an exterior web by a plurality of picks of weft therein, substantially as set forth.

5. As an article of manufacture, a blank adapted to be split or cut to form three pile fabrics, said blank consisting of three independent ground webs—two exterior and one central—one exterior web and the central web being united by a set of pile warp-threads common to both, which pile warp-threads each, in going from the exterior web to and returning from the central web, pass between the same pair of weft-threads of said exterior web, the other exterior web and the central web being united by an independent set of pile warp-threads, substantially as set forth.

6. As an article of manufacture, a blank adapted to be split or cut to form three pile fabrics, said blank consisting of three independent ground webs—two exterior and one central—one exterior web and the central web being united by a set of pile warp-threads common to both and the other exterior web and the central web being united by an independent set of pile warp-threads common to both, the pile warp-threads each, in going from their respective exterior webs to and returning from the central web, passing between the same pair of weft-threads of the exterior webs, substantially as set forth.

7. As an article of manufacture, a blank adapted to be cut or split to form three pile fabrics, said blank consisting of three independent ground webs—two exterior and one central—one exterior web and the central web being united by a set of pile warp-threads common to both, each pile thread being in the central web engaged with a pick of weft intermediate between the picks of weft with which the next adjacent pile threads of the same set are engaged, the other exterior web and the central web being united by an independent set of pile warp-threads, substantially as set forth.

8. As an article of manufacture, a blank adapted to be cut or split to form three pile fabrics, said blank consisting of three independent ground webs—two exterior and one central—one exterior web and the central web being united by a set of pile warp-threads and the other exterior web and the central web being united by an independent set of pile warp-threads, each pile warp-thread being in the central web engaged with a pick of weft intermediate between the picks of weft with which the adjoining pile threads of the same set are engaged, substantially as set forth.

9. As an article of manufacture, a blank adapted to be cut or split to form three pile fabrics, said blank consisting of three independent ground webs—two exterior and one central—each consisting of ground warp-threads and ground weft-threads, the ground warp-threads being in the exterior webs crossed after every second pick of weft and in the central web crossed after each pick of weft, the upper and central webs being united by a set of pile warp-threads common to both and the lower and central webs being united by an independent set of pile warp-threads common to both, substantially as set forth.

484,607. DOUBLE PILE FABRIC. FRED PEARSON, Philadelphia, Pa. Filed Apr. 2, 1892. Serial No. 427,442. (No model.)

Claim.—1. A blank adapted to be cut or split to form two pile fabrics and consisting of two webs, each composed of ground warp and weft threads and of pile warp-threads interwoven with both webs, each pile warp-thread alternately engaging with a single pick of weft of the first web and with a plurality of picks of weft of the second web, tuft-holding weft-threads applied to the rear face of the first web, and supplementary warp-threads by which said tuft-holding weft-threads are bound to the ground weft-threads of the first web, substantially as set forth.

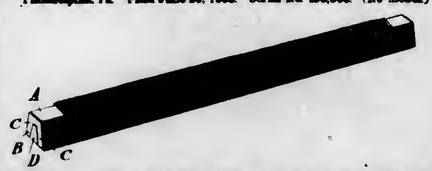
2. A blank adapted to be cut or split to form two pile fabrics and consisting of two webs, each composed of ground warp and weft threads and of pile warp-threads interwoven with both webs, each pile warp-thread engaging alternately with a number of picks of weft of the second web and a single pick of weft of the first web, and each when returned to the second web passing beneath that pick of weft thereof next succeeding the last preceding pick of weft thereof beneath which it passed, tuft-holding weft-threads applied to the rear face of the first web, and supplementary warp-threads by which said tuft-holding weft-threads are bound to the ground weft-threads of said first web, substantially as set forth.

3. A blank adapted to be cut or split to form two pile fabrics and consisting of two webs, each composed of ground warp and weft threads and of pile warp-threads interwoven with both webs, each pile warp-thread passing under one, then over two, then under one, pick of weft of the second web, passing then to the first web and around a pick of weft thereof, passing then to the second web and under one, then over two, then under one, pick of weft thereof, passing then to the first web and around a pick of weft thereof, and so on, each pile warp thread engaging with all the picks of weft of the second web, tuft-holding weft-threads applied to the rear face of the first web, and supplementary warp-threads by which said tuft-holding weft-threads are bound to the ground weft-threads of said first web, substantially as set forth.

4. A blank adapted to be split or cut to form two pile fabrics and consisting of two webs, each composed of ground warp and weft threads and of pile warp-threads interwoven with both webs, each pile warp-thread alternately engaging with a single pick of weft of the first web and with a plurality of picks of weft of the second web, tuft-holding weft-threads the picks of which are immediately behind those picks of ground weft of the first web with which the pile threads are engaged, and supplementary warp-threads by which said tuft-holding weft-threads are bound to the ground weft-threads of the first web, substantially as set forth.

5. A blank adapted to be cut or split to form two pile fabrics and consisting of two webs, each composed of ground warp and weft threads and of pile warp threads interwoven with both webs, each pile warp thread alternately engaging with a single pick of weft of the first web and with a plurality of picks of weft of the second web, tuft-holding weft-threads corresponding in number and distribution with the picks of ground weft of the first web, applied to the rear face of said first web, and supplementary warp-threads by which said tuft-holding weft-threads are bound to the ground weft threads of the first web, substantially as set forth.

484,608. HOLDER FOR METALLIC STAPLES. GEORGE L. PROUTY, Philadelphia, Pa. Filed June 29, 1892. Serial No. 438,388. (No model.)



Claim.—1. A bar provided with a recess and a key entering said recess for expanding the sides or legs of said bar formed by said re-

cess, the parts named being combined substantially as described, forming an improved holder for metallic staples.

2. A bar provided with a recess on one side thereof, forming flexible legs, and a wedging-key adapted to enter said recess and expand said legs, combined substantially as described

3. A holder for a staple, formed of a bar with side pieces or legs thereon, and a device adapted to expand said legs, whereby the staple straddling said bar may be firmly retained thereon, substantially as described

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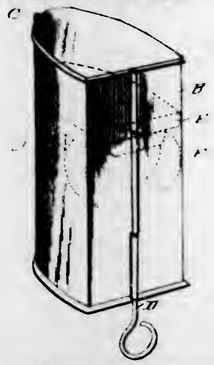
484,609. HEEL-PACKER. ICHABOD R. ROGERS, Lynn, Mass. Filed Dec. 17, 1891. Serial No. 415,388. (No model.)



Claim.—1. In combination with an open-ended receptacle heel-shaped in cross-section, adapted to be filled with lifts of heels, and a freely-movable block within the same, adapted to form a support for the lifts, and frictional means carried thereby for supporting it within the cylinder, substantially as described.

2. A packer consisting of a cylinder composed of two sections hinged together and provided with a suitable fastening device, and a movable block or bottom sliding within the cylinder, substantially as described.

3. A packer consisting of a cylinder open at both ends, a block or bottom sliding within said cylinder, and means for insuring frictional contact between the block and the walls of the cylinder, consisting of a spring having its central portion embedded in the block and its ends bearing against the sides of the cylinder, substantially as described

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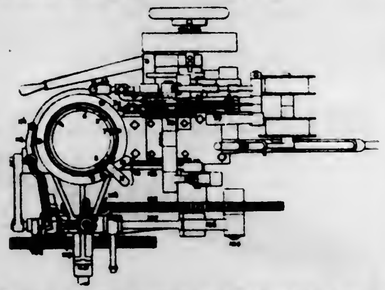
484,610. KNITTING-MACHINE. ROBERT W. SCOTT and LOUIS N. D. WILLIAMS, Philadelphia, Pa. Filed Mar. 14, 1892. Serial No. 424,872. (No model.)

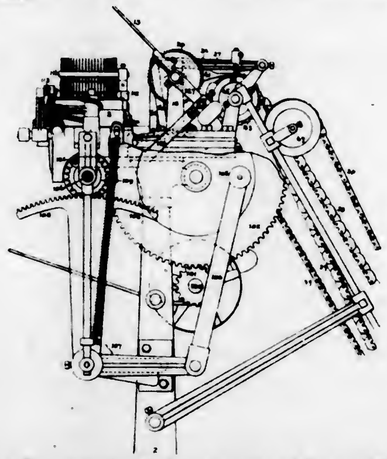
Brief.—The invention is an improvement upon that contained in Patent No. 419,565, January 14, 1890, and comprises an improved construction and arrangement of the knitting-cams, means for moving in and out of operative position the special depressing-cam forming one of the set of knitting-cams, means for operating the segmental plates, whereby the needles of the fashioning-set are moved into operative position during to-and-fro knitting, certain supplementary presser-plates, and the special mounting of a thread guide and latch-guard ring, so as to provide for the proper lead of the guide in to-and-fro knitting, and for getting the guard-ring out of the way when it is desired to detach the needle-cylinder from the machine.



Claim.—1. The combination of the double-inclined lift-cam with the right and left drawing-down cams so located in respect to said lift-cam that their backs act upon the bits of the needles as the latter leave the central lift-cam, and thereby further lift said needles, substantially as specified.

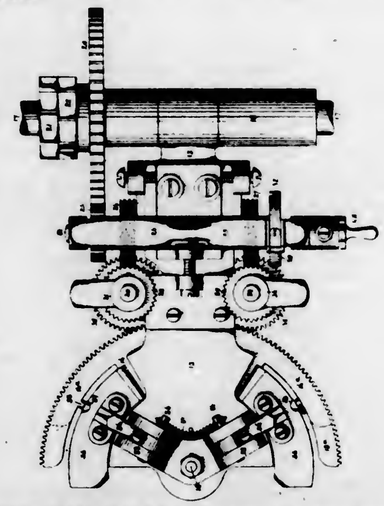
2. The combination of the supplementary drawing-down cam mounted so as to move radially in the cam-box with a lever for actuating said cam, said lever having two arms, stops for engaging said arms in order to move the lever in one direction or the other, and means for alternately operating said stops, substantially as specified.

3. The combination of the presser-plate and its presser-slides, shafts geared to said slides and carrying worm-wheels, a shaft having worms for engaging with said worm-wheels, and means for intermittently moving said shaft and for vibrating the presser, substantially as specified.



4. The combination of the presser-plate and its presser-slides, shafts geared to said slides and carrying worm-wheels, a shaft having worms meshing with said worm-wheels, and means for intermittently moving said shaft and for vibrating the presser, each of the worm-wheels having threads straight throughout the greater part of their length, but deflected at one point, and the deflection in the threads of one worm being diametrically opposite that of the threads of the other worm, substantially as specified.

5. The combination of the presser-plate and its slides, the shafts geared to said slides and carrying worm-wheels, a shaft having worms engaging with said wheels and carrying a notched disk, a spring-retainer engaging with said notched disk, and means for intermittently moving said worm shaft and for vibrating the presser, substantially as specified



6. The combination of the presser-plate and its slides, means for vibrating the said presser-plate, gearing for operating the slides, having as its primary element a spur-wheel mounted concentric with the axis of vibration of the presser plate, and means for locking said spur-wheel during either the rising or falling movement of the presser-plate, substantially as specified.

7. The combination of the presser-plate and its slides, means for vibrating said presser-plate, gearing for operating the slides, having as its primary element a spur-wheel mounted concentric with the axis of vibration of the presser-plate, right and left ratchet-wheels secured to said spur wheel, pawls for engaging with said ratchet-wheels, and pattern mechanism for moving said pawls, substantially as specified.

8. The combination of the presser-plate and its slides, means for vibrating said plate, gearing for operating the slides, having as its primary element a spur-wheel mounted concentric with the axis of vibration of the plate, means for locking the said spur-wheel in position during either the upward or downward movement of the vibrating presser-plate, and means for releasing the spur-wheel during both movements, substantially as specified.

9. The combination of the presser-plate and its adjustable slides, means for vibrating said plate, and supplementary plates for bringing all of the fashioning-needles into operation when the narrowing of the web has been completed, substantially as specified.

10. The combination of the presser-plate and its adjustable slides, means for vibrating said plate and moving the slides, and the supplementary presser-plates hung to the vibrating plate and normally free to rise on contact with the needles, said supplementary presser-plates having portions for engaging with the adjustable presser-slides at certain points in the movements of the latter, whereby the supplementary presser-plates are locked to the slides and caused to act upon the needles, substantially as specified.

11. The combination of the cam-box, reciprocating devices therefor, a supplementary drawing-down cam, the two-armed lever for acting upon said cam, the presser-plate and its vibrating devices, the adjustable presser-slides, gearing for moving the same, levers for controlling the operation of said gearing, pattern mechanism for actuating said levers, and secondary levers connected thereto and adapted to act, respectively, upon the two arms of the lever which controls the drawing-down cam of the cam-box, substantially as specified.

12. The combination of the cam-box of the machine, reciprocating devices therefor, a thread-guide frictionally mounted upon the cam-box, and a lever movable into and out of range of a portion of said thread-guide, whereby when in range it strikes said portion of the thread-guide before each limit of reciprocation of the cam-box is reached, and thereby effects the proper shifting of the guide in respect to the cams, substantially as specified.

13. The combination of the cam-box, rotating and reciprocating devices therefor, the thread-guide frictionally mounted upon the cam-box, a lever having a portion for engaging with the thread-guide, and means for moving said lever so as to cause it to serve as a stop for the movement of the thread-guide during to-and-fro knitting, but free it from engagement with the guide during round-and-round knitting, substantially as specified.

14. The combination of the cam-box of the machine with the latch-guarding ring hung to the cam-box on an axis occupying an acute angle in respect to the diametrical line of the box, whereby when thrown upward it is at the same time caused to swing rearwardly, substantially as specified.

484,611. REGULATOR FOR DYNAMO-ELECTRIC MACHINES. CHARLES R. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed May 5, 1890. Serial No. 350,547. (No model.)

Claim.—1. The combination, with the shaft of a dynamo-electric machine, of an armature presented thereto and controlled by the magnetic force thereof, said armature being connected with a driven mechanical device and the brush-carrier, whereby the action of the driven mechanical device upon the brush-carrier is controlled by the movement of the said armature to maintain the current strength, substantially as and for the purpose specified.

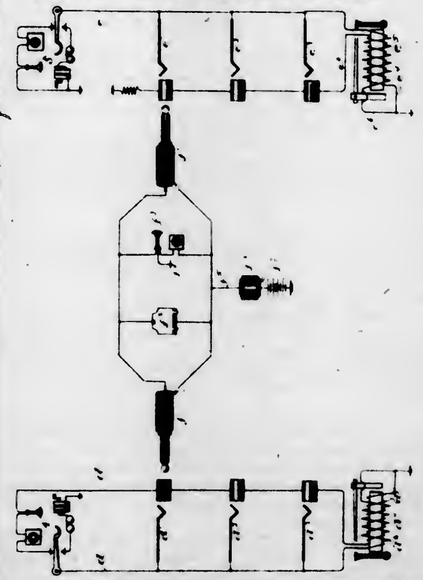
2. The combination, with the shaft of the revolving armature of a dynamo-electric machine, of a mechanical device in engagement therewith and connected with the brush-carrier to impart a step-by-step movement to the brush-carrier, and an armature controlled by the magnetic force of said armature-shaft, said armature being connected with a device for controlling the action of the step-by-step acting mechanism upon the brush-carrier to maintain the current strength, substantially as and for the purpose specified.

3. The combination, with the driven armature-shaft of a dynamo-electric machine, of a worm provided thereon in engagement with a cam-rotating device, a ratchet device adapted to be reciprocated by said cam device, and an armature within the influence of the magnetic force of the revolving shaft, said armature controlling a catch or trigger device, whereby the current strength is maintained practically uniform in response to changes in the magnetic force of the armature-shaft.

4. A driven mechanism acting upon the brush-carrier in opposition to mechanism adapted to exert a constant force, said mechanism tending to move the brush carrier backward, said driven mechanism being provided with adjustable stops *p q*, in combination with a magnetically-operated catch responding to changes in the magnetic force of the shaft of the armature, whereby the action of said driven mechanism upon the brush-carrier is caused to move the brush-carrier forward to counterbalance the force tending to move the brush carrier backward or to disengage the driven mechanism from the brush-carrier to permit the same to be moved back ward by said constant force, thereby maintaining practically uniform the current strength responsively to variations in the magnetic force of the shaft of the revolving armature.

5. The combination, with the brush carrier, of the armature of a dynamo-electric machine, an armature shaft presented thereto and tripping mechanism connected therewith, and mechanism whereby increase of the magnetic force of the armature-shaft will cause the brushes to be moved in a direction to diminish the electro-motive force, while decrease of the magnetic force of the armature-shaft will cause the brushes to be moved in a direction to increase the electro-motive force, whereby the strength of the current, and consequently the magnetic force of the armature-shaft, is maintained practically uniform, substantially as and for the purpose specified.

484,612. MULTIPLE-SWITCHBOARD SYSTEM. CHARLES R. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Jan. 21, 1892. Serial No. 418,833. (No model.)



Claim.—1. The combination, with a telephone-line extending from the subscriber's station to the central office, of two or more switches,

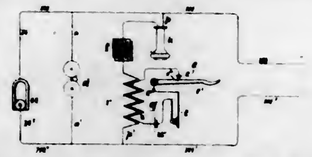
one portion of the line being permanently connected with the springs of said switches and the other portion or branch thereof being connected with the test-pieces of said switches, and an individual annunciator included between said branches or portions of the telephone-lines, said individual annunciator being wound differentially and provided with a branch connection to ground, substantially as specified.

2. A telephone-line connected with an individual annunciator at the central office in two branches or limbs, each branch or limb including a different differential winding of said individual annunciator, whereby current sent over one limb will operate the annunciator, while current sent over both limbs will render said individual annunciator neutral and prevent the operation thereof, substantially as specified.

3. A telephone-line extending from the subscriber's station to the central office, one portion thereof being connected with the spring or springs of one or more switches and the other portion thereof connected with the test piece or test pieces of the same switches, and an individual annunciator wound differentially, one differential winding being included in one portion of the telephone-line and the other differential winding thereof being included in the other portion thereof, said differential coils being provided with a ground connection, in combination with a connecting device for insertion in one of the switches and a clearing-out annunciator connected in a bridge between the contacts of said connecting device, whereby current sent to line from subscriber's station will be directed through both the differential windings of the individual annunciator, substantially as specified.

4. The combination, with two telephone-lines, each connected with switches on different switchboards, and each including a different individual annunciator wound differentially and provided with a ground connection, as described, of an operator's outfit including a pair of double-pointed plugs and cords and an individual annunciator bridged between the two sets of said cords, whereby on connecting two lines together current sent from either subscriber's station will be sent in derived circuit through both of the windings of each of the individual annunciators to render the same neutral while the clearing-out annunciator will be operated, substantially as specified.

484,618. SUB-STATION APPARATUS FOR TELEPHONE SYSTEMS. CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Jan. 21, 1892. Serial No. 418,894. (No model.)



Claim.—1. The combination, with a line extending to a sub-station, of signal-receiving apparatus and a telephone at the sub-station, said signal-receiving apparatus and said telephone being in permanently-closed independent parallel branches between the two sides of said line, substantially as described.

2. The combination, with a telephone-line extending to a sub-station, of a telephone and a signal-receiving device in separate permanently-closed parallel branches between the two sides of said line, said signal receiving device being of high retardation, substantially as described.

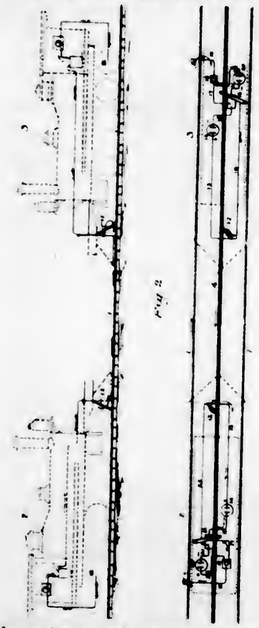
3. In combination with a telephone-line extending to a sub-station, a telephone and a signal receiving device in separate parallel permanently-closed branches between said line, said signal-receiving device being of high retardation, and a condenser included in the branch containing the telephone, substantially as described.

4. The combination, with a telephone-line extending to a sub-station, of a signal-receiving device and a signal-sending device, both of high resistance and retardation, and a telephone in separate permanently-closed parallel branches between the two sides of said line, and a condenser in that branch including the telephone, substantially as described.

5. The combination, with a telephone-line extending to a sub-station, of a signal-sending and a signal-receiving device, both of high resistance and retardation, in two permanently-closed parallel branches between the two sides of said telephone-line, and a telephone, the secondary of a transmitter induction-coil, and a condenser in a third parallel permanently-closed branch between the two sides of said line, substantially as described.

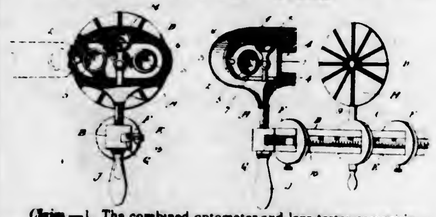
6. The combination, with line-wires, of a signal-receiving device adapted to receive undulatory or alternating currents of comparatively low frequency and a receiving device adapted to receive or respond to telephonic or undulatory currents of high frequency in separate parallel branch circuits between said line wires, said slow pulsation-receiver being of high retardation, and a condenser in circuit with said telephonic receiver, whereby pulsating currents of low frequency and telephonic currents upon the line are directed each through its appropriate receiving device and prevented each from traversing the receiving device adapted to the other, substantially as described.

484,614. ELECTRICAL RAILWAY-SIGNAL. BENJAMIN C. SEATON, Nashville, Tenn. Filed Mar. 1, 1892. Serial No. 423,373. (No model.)



Claim.—In an electrical railroad signal, the combination, with the railroad-bed, of the supports or bracket thereon, the conductor formed of the strips supported on said brackets and insulated from each other, the electric generator, and magneto signal, and switch electrically connected with said conductor, the vertical rod carried by the car, the shoe carried by the rod for engaging the conductor, and the wire leading from said shoe to the brake-shoe of the car, whereby a circuit may be formed through the conductor and the wheels of the car to sound the alarm or signal, as described.

484,615. OPTOMETER. JACOB S. SHERMAN, Cassopolis, Mich. Filed May 28, 1892. Serial No. 434,757. (No model.)



Claim.—1. The combined optometer and lens-tester comprising a lens-holder, adjustable design, adjustable scale, a frame, and a slide with eye-testing lenses, substantially as described and set forth.

2. The combined optometer and lens-tester comprising a lens-holder, a frame, adjustable design, scale, a slide movable about a pivot, with eye testing lenses, and a disk adjustable to cover either eye-aperture, as and for the purposes set forth.

3. In a combined optometer and lens-tester, a lens-holder, a slide with eye-testing lenses, in combination with a frame, disk to cover either eye aperture, adjustable scale, a design, and a hood to protect the eyes, substantially as described and set forth.

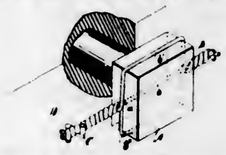
4. In an optometer, the combination of a lens-holder, a slide with eye testing lenses, a frame, a design, an adjustable scale, a disk adjustable to cover either eye-aperture, substantially as described and set forth.

5. An optometer comprising a lens-holder, a slide with eye-testing lenses, a frame, an adjustable design, an adjustable scale, and a hood to protect the eyes, as and for the purposes set forth.

6. In an optometer, a lens-holder, and a slide with eye-testing lenses, in combination with a frame, an adjustable and changeable design, adjustable scale, a disk to cover either eye-aperture, and a hood to protect the eyes, substantially as described and set forth.

7. The combination of a lens-holder A, provided with an eye-protecting hood, and a disk adjustable to cover either eye-aperture, an adjustable design, a frame, and an adjustable scale, substantially as described and set forth.

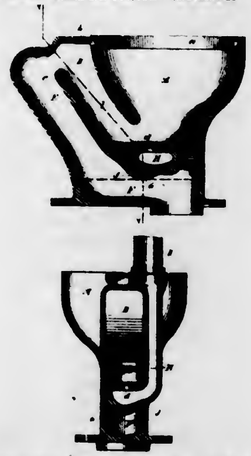
484,616. BOLT AND NUT LOCK. CHARLES O. SMITH, Detroit, Mich. Filed Apr. 29, 1891. Serial No. 390,857. (No model.)



Claim.—1. The wire bolt or nut lock consisting of the twisted shank B, in combination with the wire arm *b*, passing through the bolt-head A, the wire arms b' b^3, which pass around the bolt-head, the three being twisted together to lock the bolt-head, and the perforated bolt-head, all substantially as described.

2. In a wire bolt and nut lock, the combination of the twisted wire shank with the wires encircling the bolt-head or nut and the means for preventing the bolt or nut from revolving in the encircling wire arms.

484,617. WATER-CLOSET. BENJAMIN C. SMITH, Brooklyn, N. Y. Filed June 29, 1891. Serial No. 397,764. (No model.)



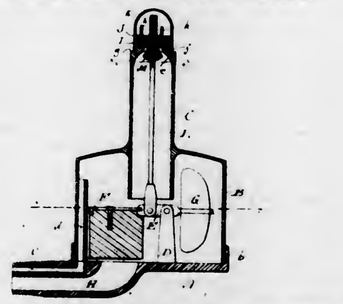
Claim.—A water-closet having a trap substantially horizontal, a discharge-passage leading therefrom, and a jet tube or pipe leading to the bowl, one wall of said tube or pipe extending into said passage-way to form a depression in said passage-way to cause water flowing through the latter to shut off the air-supply, substantially as described.

484,618. ELECTRIC APPLIANCE FOR CANES. STEPHEN D. SMITH, Milwaukee, Wis. Filed Dec. 7, 1891. Serial No. 414,271. (No model.)

Claim.—1. The combination, with a cane or analogous article, of a suitable source of electric current, wires leading from opposite poles thereof, a current-interrupter connected with said wires, metallic portions located at suitable points upon the outside of the cane or other article, a switch for throwing said interrupter into or out of circuit, and switches for establishing or breaking the connections between said source of current and said metallic portions, substantially as described.

2. The combination, with a cane or analogous article, of metallic pieces upon opposite ends thereof and an intermediate tubular metallic portion, a suitable source of electric current located within said tubular portion, connections between said source of current and said metallic end pieces and tubular portion, a current-interrupter also located within said tubular portion, and switches for throwing said interrupter into or out of circuit and for establishing or breaking the connections between said source of current and said metallic parts, substantially as and for the purposes set forth.

484,619. STEAM-RADIATOR ATTACHMENT. HENRY E. STAGER, Milwaukee, Wis., assignor of one-half to James E. Woodworth, same place. Filed May 21, 1891. Serial No. 393,580. (No model.)



Claim.—1. An attachment for steam-radiators that comprises a shell having an air-escape opening, a standard arranged within the shell, a counterbalanced float-controlled lever fulcrumed to the standard, a rod-valve connected to the lever in opposition to the air-escape opening, and suitable means for obtaining a compression of air within said shell when the latter is flooded to an extent sufficient to actuate the float, substantially as set forth.

2. An attachment for steam-radiators that comprises a shell having its top provided with a depending tube, a valve seat in the upper end of the tube, a standard arranged within the shell, a counterbalanced float-controlled lever fulcrumed to the standard, and a rod-valve connected to the lever to oppose said seat, substantially as set forth.

3. An attachment for steam-radiators that comprises a shell having its top provided with a depending tube, a counterbalanced float-controlled valve for the outlet of the tube, a water-channel, and an air-channel, these channels being open to a radiator, of which said attachment may form a part and the upper end of the air-channel extended above the lower end of said tube, substantially as set forth.

4. An attachment for steam-radiators that comprises a shell provided at the top with a depending tube having a valve-seat in its up-

per end, a tubular branch at the bottom of the shell, a channel in the branch having an extension leading up into said shell, and a counterbalanced float-controlled valve opposed to said seat, substantially as set forth.

5. An attachment for steam radiators that comprises a suitable shell having its top provided with a depending tube that has an internal flange adjacent to its outer end, an elastic valve-seat supported on the flange, a retaining-plug for the valve-seat, a standard arranged within the shell, a counterbalanced float-controlled lever fulcrumed to the standard, a rod connected to the lever, and a valve adjustably secured to the rod to oppose said seat and extend through the latter and its retaining plug, substantially as set forth.

6. An attachment for steam-radiators that comprises a suitable shell having its top provided with a depending tube that has an internal flange adjacent to its outer end, an elastic valve-seat supported on the flange, a retaining-plug for the valve-seat, a perforated cap fitted to the tube, a standard arranged within the shell, a counterweighted float controlled lever fulcrumed to the standard, a rod connected to the lever, and a valve adjustably secured to the rod to oppose said seat and extend through the latter and its retaining-plug, substantially as set forth

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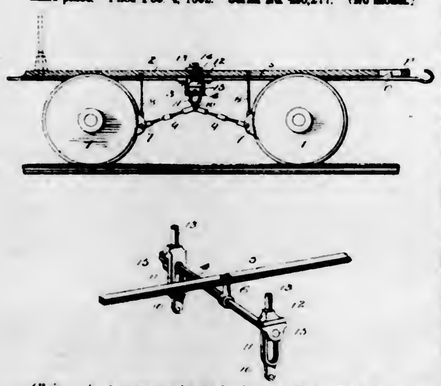
484,620. AUTOMATIC CAR-BRAKE. MILLARD E. STOCKWELL, Grand Rapids, Mich., assignor of one-half to Seymour W. Peregrine, same place. Filed Feb 4, 1892. Serial No. 420,277. (No model.)

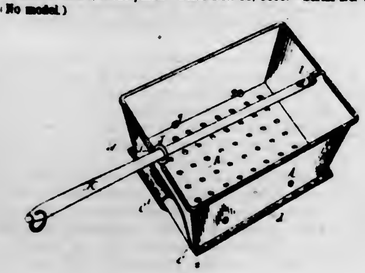


Claim.—1. An automatic car-brake consisting of the blocks suspended from the car, toggle-levers connected with the blocks, a cap under spring-pressure connected with the toggle-levers, a shaft journaled beneath the car, a pressure-block rigidly mounted thereon beneath the pressure-cap, and a connection between the shaft and draw-bar, whereby the pull upon the draw-bar operates to rotate the shaft and pressure-block to raise the cap and release the brake.

2. In combination, the brake-blocks, the toggle-levers, a pressure-cap on a rod carried by the car-body, a spring for forcing the cap downward, a link connection between the cap and levers, a shaft journaled beneath the car, having a block rigidly secured thereto beneath the cap, and a lever connection between the shaft and draw-bar.

3. In combination, the brake-blocks, the transverse shaft 4, the vertically movable blocks 12, operated by said shaft and connected to the brake-blocks, the draw-bar connected to the shaft 4, and the hand-lever for operating the brakes independently of the draft of the car.

484,621. COMBINED ASH PAN AND SIFTER. CHARLES W. WALL, Buffalo, N. Y., assignor of two-thirds to Ellsworth E. Fitch and William P. Kirst, same place. Filed Dec. 31, 1891. Serial No. 416,671. (No model.)



Claim.—1. The combination, with a pan having its side walls bent outwardly and inwardly to form external ledges or ways projecting outwardly from the lower ends of the side walls, of a perforated bottom secured between the inner bent ends of said walls and a removable closed bottom or slide provided with upturned marginal flanges which overlap the exterior ledges of the pan, substantially as set forth.

2. The combination, with the body of the pan having opposite walls, preferably provided on their outer sides with projecting flanges or ledges and on their inner sides with supporting-lips, both formed integrally with said walls, of a perforated bottom arranged in the pan and resting upon the interior supporting-lips of said walls and a slide provided with flanges which overlap the exterior ledges of said walls, substantially as set forth.

3. The combination, with the body of the pan having the lower portions of its side walls bent outwardly to form external ledges or ways and inwardly and upwardly to form upright lips within the pan, of a perforated bottom arranged in the pan and provided with depending flanges fitted between said upright lips and the adjacent walls of the pan and a slide provided with marginal flanges which overlap the exterior ledges of the pan, substantially as set forth.

4. The combination, with the body of the pan having the lower portions of its side walls bent outwardly to form external ledges or ways and inwardly and upwardly to form upright lips within the pan, of a perforated bottom arranged in the pan and provided with depending flanges fitted between said upright lips and the adjacent walls of the pan, a slide provided with marginal flanges which overlap the exterior ledges of the pan, and projections arranged over the walls of the pan, whereby the perforated bottom is held against upward displacement, substantially as set forth.

5. An ash-pan provided at its rear end with a hook and at its front end with a ring or loop for the attachment of a removable handle, substantially as set forth.

6. The combination, with the pan provided at its rear end with a downwardly-projecting hook and at its front end with a ring or loop, of a detachable handle adapted to be passed through said ring and provided at its rear end with an opening adapted to engage with said hook, substantially as set forth.

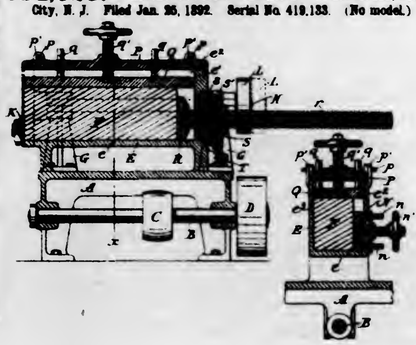
7. The combination, with the pan provided at its rim with a stiffening-wire having a hook formed integrally therewith at the rear end of the pan, of a ring or loop arranged at the front end of the pan, substantially as set forth.

8. The combination, with the pan provided at its rim with a bead, of a hook arranged at the rear end of the pan and a ring arranged at the front end of the pan and having pivot extensions journaled in the bead of the pan, substantially as set forth.

484,622. SWITCH-CLIP. ABRAM W. WRIGHT, Hillburn, N. Y., assignor to the Ramapo Iron Works, same place. Filed Nov. 19, 1891 Serial No. 412,394. (No model.)

Claim.—The herein-described clip, consisting of a plate having a portion *a* bent to form a flange 1 and a neck 2, a portion *b* bent to form a socket, the portion *a* being perforated for attachment to the rail, and the socket being open at one side to permit of the insertion or removal of a switch-bar, substantially as described.

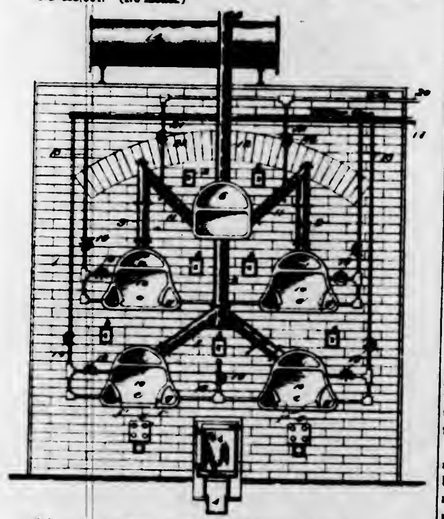
484,623. VENEER-CUTTING MACHINE. ELKAN ADLER, Jersey City, N. J. Filed Jan. 25, 1892. Serial No. 419,133. (No model.)



Claim.—1. In a machine for cutting veneers, the combination, with the knife and means to actuate it, of a box for receiving the block to be cut and having a removable cover, means to lock said cover in position, a screw-actuated follower engaging said cover and adapted to bear upon the top of said block, a screw-actuated follower engaging the side of said box and adapted to bear upon the side of said block, and means to advance the block, substantially as shown and described.

2. In a machine for cutting veneers, the combination, with the box for receiving the block to be cut and mechanism to move said block forward with an intermittent motion, of a lateral follower having guide-pins, a screw to press upon said follower, a cover removably secured to said box a vertical follower having guide-pins passing through holes in said cover, and a screw threaded into said cover and adapted to press upon said follower, substantially as shown and described.

484,624. APPARATUS FOR THE MANUFACTURE OF GAS. ADDISON L. ALLEN, Poughkeepsie, N. Y. Filed June 7, 1892. Serial No. 435,901. (No model.)



Claim.—1. A retort adapted for solid carbons said retort having side chambers oppositely placed on its interior, each of said side chambers perforated at or near the floor of the retort and provided with an overhang or projection which guards the perforations in the walls of the side chambers, substantially as and for the purposes specified.

2. A retort adapted for solid carbons, said retort provided with inner walls or partitions arranged across the lower angles of the retort to form oppositely-placed side chambers, and said side chambers provided at or near the bottom of the retort with perforations of general angular shape, substantially as hereinbefore shown and described, and for the purposes specified.

484,625. ORDER-HOLDER. FRANK F. AUSTIN, Chicago, Ill., assignor of one-fourth to H. R. Lyford, same place. Filed Dec. 21, 1891. Serial No. 415,720. (No model.)

Claim.—In an order-holder, the combination of the backs A and B, connected by a flexible hinge C, a stop-rod D inside the hinge, and a spring-clamp E, embracing the hinge and rod, the said rod and clamp co-operating to retain each other in place on the hinge, substantially as and for the purpose set forth.

484,626. TELEPHONE-EXCHANGE APPARATUS. JOHN J. CARTY, New York, N. Y., assignor to the Western Electric Company, Chicago, Ill. Filed Nov. 30, 1889. Serial No. 331,906. (No model.)

Claim.—1. The coil of a telephone apparatus, connected between the strands of a flexible cord, and a branch connection to ground at the center of said coil, in combination with a metallic circuit including the strands of said cord in different sides thereof, substantially as and for the purpose specified.

2. A pair of loop-plugs and their cords for connecting together and testing telephone-lines, the strands of said cords including a loop-key, said loop-key having contacts with different sides of the coil of a telephonic apparatus, said coil being provided with a ground connection at its center substantially as and for the purpose specified.

3. The combination of a pair of loop-plugs and their cords for connecting together and testing telephone-lines and a switching device connecting with the strands of said cords, said switching device having contacts with different sides of the coils of a telephonic apparatus, said coil being provided with a ground connection at its center, substantially as and for the purpose specified.

484,627. PACKAGE OF CORRUGATED PACKING MATERIAL. WILLIAM G. CRAPIN, Brooklyn, N. Y., assignor to the Thompson & Norris Company, same place. Filed Oct. 31, 1891. Serial No. 410,532. (No model.)

Claim.—1. The combination, with a flexible corrugated packing material, of pieces or braces fitted to opposite corrugations of the corrugated material, substantially as specified

2. A package having a body consisting of flexible corrugated packing material and having partitions or braces fitted to the corrugations of each body, substantially as specified.

3. The combination, with corrugated packing material, of end pieces composed of several sections of corrugated material, the adjacent sections having their corrugations crossed, the said end pieces supported by corrugations of the packing material, substantially as specified.

4. A package having a body consisting of flexible corrugated

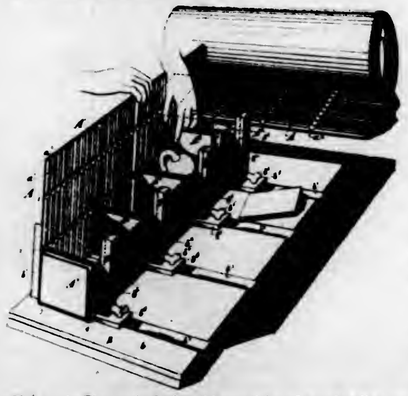
packing material and having end pieces fitted to slide between the corrugations of such body, substantially as specified.

5. The combination, with corrugated packing material, of end pieces composed of two sections made of such relative sizes that the one section will extend beyond the other and between corrugations of the packing material, substantially as specified.

6. The combination, with corrugated packing material, of end pieces composed of two sections of corrugated material having their corrugations crossed and made of such relative size that the one section would extend beyond the other between corrugations of the packing material, substantially as specified.

7. A package having a body consisting of corrugated packing material and having end pieces fitted to engage between corrugations and constructed to slide along the corrugations, substantially as specified.

484,628. METHOD OF PACKING GOODS. WILLIAM G. CHAPIN, Brooklyn, N. Y., assignor to the Thompson & Norris Company, same place. Filed Oct. 31, 1891. Serial No. 410,553. (No model.)



Claim.—1. The method of packing articles of merchandise, consisting in taking a strip of elastic packing material, bending or folding it suitably to partially form the body of a box, introducing the article to be packed within it, bending or folding the material still further to complete the body of the box, and inserting cross-pieces during the process of making the body of the box, substantially as specified.

2. The method of packing articles of merchandise, consisting in taking a strip of elastic packing material, bending or folding it suitably to partially form the body of a box, introducing the article or articles to be packed within it, bending or folding the material still further to complete the body of the box, and inserting in the process of making the body of the box cross-pieces and cross-pieces intermediate of the first-named cross-pieces, substantially as specified.

3. The method of packing articles of merchandise, consisting in taking a strip of elastic packing material, bending or folding it suitably to partially form the body of a box, fitting it in a holder while thus bent or folded, introducing the article or articles to be packed within it while it remains in the holder, bending or folding the material still further to complete the body of the box, and inserting, in the process of making the body of the box, cross-pieces, and cross-pieces intermediate of the first-named cross-pieces, substantially as specified.

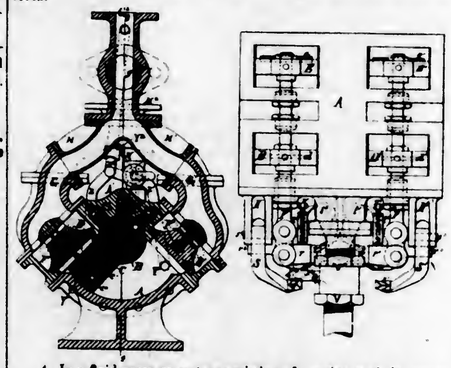
4. The method of packing articles of merchandise, consisting in taking a strip of corrugated packing material, bending or folding it suitably to partially form the body of a box, fitting it in a holder while thus bent or folded, introducing the article or articles to be packed while it remains in the holder, bending or folding the material still further to complete the body of the box, and in the process of making the body of the box inserting cross-pieces into the corrugations of the material forming the body of the box, substantially as specified.

484,629. MOTIVE-POWER ENGINE. JOACHIM R. DA COSTA, Havre, France. Filed Aug. 4, 1891. Serial No. 401,730. (No model.)

Claim.—1. A fluid-pressure motor consisting in the combination of a casing made in two or more parts A A', a shaft B, a piston C, having a vibrating or reciprocating angular movement, four slide-valves—namely, two admission-valves D D' and two exhaust-valves E E'—with suitable means for effecting the distribution of the fluid to the two sides of the piston, substantially in the manner and for the purpose hereinbefore set forth.

2. In a fluid-pressure motor consisting of a casing made in two or more parts, a shaft B, and a piston C, the combination of the slide-valves D E on the one hand and D' E' on the other hand, respectively, with valve-rods F F', made in one or more parts, and with suitable means for effecting the distribution of the fluid to the two sides of the piston, substantially in the manner and for the purpose set forth.

3. In a fluid-pressure motor consisting of a casing, a shaft, and a vibrating radial piston, the combination of a steam-supply passage leading to each side of the piston with a valved pipe leading from the steam-supply to the casing to reverse the engine, substantially as set forth.



4. In a fluid-pressure motor consisting of a casing made in two or more parts, a shaft B, and a radial piston C, the combination of the said piston with a steam-supply passage G^3, divided into two branches G G', and the valved pipe Z^3, divided into two branches Z Z', communicating with opposite extremities of the casing A, for the purpose of reversing the engine, substantially as hereinbefore described.

5. In a motor with a piston having an angular reciprocating motion, the combination of an arm Q, fixed upon the piston-shaft, with a main valve lever R, the extremities of which are connected to the valve-rods, with two levers S S', and with two small two-armed levers T T', substantially in the manner and for the purpose hereinbefore set forth.

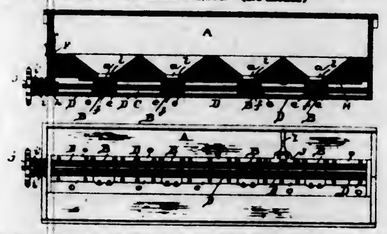
6. In a motor with a piston having an angular reciprocating motion, the combination of the arm Q, keyed upon the piston-shaft and capable of adjustment, with a main valve-lever R, vibrating upon a center O, carried by a bracket L, attached to the casing, the said valve-lever being provided with cam-surfaces r^4 r^5 at the front part and being connected to the valve-rods, and vibrating levers S S' and T T', acted upon by the arm Q, all substantially in the manner and for the purpose hereinbefore set forth.

7. In a motor with a piston having an angular reciprocating motion, the combination of an arm Q, fixed upon the piston-shaft and provided at its lower extremity with a tooth q, with a valve lever R, vibrating upon a center O, carried by a bracket L, attached to the casing and connected to the valve-rods, and with two levers T T' and two levers S S', vibrating on centers s^3 s^3, carried by lugs N N', attached to the casing, the said levers S S' carrying projections s s', acted upon by the tooth q on the arm Q, and the said levers S S' being provided with elongated openings or slots for the reception of the arms r^3 of the valve-lever R, substantially in the manner and for the purpose hereinbefore set forth.

8. In a motor with a piston having an angular reciprocating motion, the combination of an arm Q, fixed upon the piston-shaft and capable of adjustment, with a valve-lever R, vibrating upon a center O, carried by a bracket L, attached to the casing and connected with the valve-rods, and with two small two-armed levers T T', vibrating on centers t^3 t^3, carried by lugs M M', attached to the casing, the said two-armed levers T T' having upper arms t^4 t^5, the said arms t^4 t^5 acting upon the back of the said lever R, and the said two-armed levers T T' being provided at their lower parts with arms t t', which are acted on alternately by the arm Q and two vibrating levers S S', all substantially in the manner and for the purpose hereinbefore set forth.

9. In a motor with a piston having an angular reciprocating motion, the combination of an arm Q, fixed upon the piston-shaft and capable of adjustment, with a valve-lever R, vibrating upon a center O, carried by a bracket L, attached to the casing and connected with the valve-rods, and with two small two-armed levers T T' vibrating on centers t^3 t^3, carried by lugs M M', attached to the casing, the said two-armed levers T T' having upper arms t^4 t^5, with adjusting-screws v v', the said arms t^4 t^5 acting upon the back of the said lever R, and the said two-armed levers T T' being provided at their lower parts with arms t t', which are acted on alternately by the arm Q and two vibrating levers S S', all substantially in the manner and for the purpose hereinbefore set forth.

484,630. GRAIN-DRILL. THOMAS R. CRANE, Smithville, Va. Filed Feb. 12, 1892. Serial No. 421,238. (No model.)



Claim.—The combination of the feed boxes or cups secured to the bottom of the hopper below the discharge-openings thereof and having sides with circular openings therethrough, a feed-shaft extending through the said boxes and having collars which snugly fit the openings in the sides of the latter and include between them the grain depressions, and semi-tubular casings covering the shaft between the boxes and having their inside surfaces flush with the openings in the sides of the boxes or cups, substantially as and for the purpose described.

484,631. NITROGENOUS FERTILIZER AND PROCESS OF MAKING THE SAME. JOHN J. DUNNE, Philadelphia, Pa. Filed Feb. 18, 1891. Serial No. 381,964. (Specimens.)

Claim.—1. In the art of making fertilizers, the improvement consisting in first coagulating the soluble albuminoids and other nitrogenous matters in tank-waters or similar liquids by heating the same with phosphates and an acid or acids and then separating the precipitated matter and drying the same, all substantially as described.

2. In the art of making fertilizers, the improvement consisting of first coagulating the soluble albuminoids and other nitrogenous matters in tank-waters or similar liquids by heating the same with phosphates and an acid or acids, then treating them with a neutralizing agent, and then separating the precipitated matter and drying the same, all substantially as described.

3. In the art of making fertilizers, the improvement consisting in first coagulating the soluble albuminoids and other nitrogenous matters in tank-waters or similar liquids by heating the same with phosphates of lime, iron, or alumina or mixtures thereof, in conjunction with sulphuric, hydrochloric, or phosphoric acid or mixtures thereof, neutralizing the acid by a further addition of calcined phosphates of lime, iron, or alumina or mixtures thereof, and then separating the precipitated matter and drying the same, all substantially as described.

4. The herein-described fertilizing material, consisting of a bulky flocculent pulverulent impalpable precipitate composed of coagulated nitrogenous albuminoids of tank-waters and similar liquids, combined with phosphatic material insoluble in water, but highly soluble in citrate of ammonia, substantially as set forth.

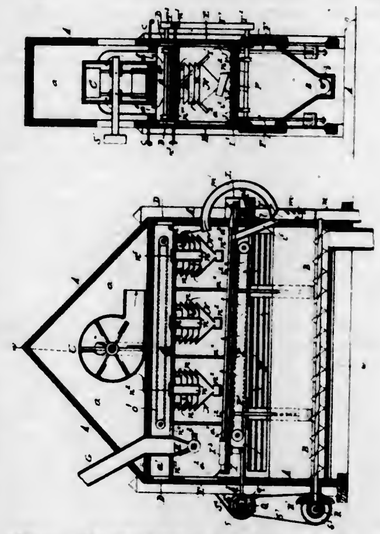
484,632. SLED. HARRY C. GARRETSON, Akron, Ohio. Filed Apr. 25, 1892. Serial No. 430,489. (No model.)

Claim.—1. In a bicycle coaster, the combination, with a front runner, of a rear runner normally in the same plane and a connecting-frame adapted to carry a rider and provided with a hinge to allow the balance and guidance of the machine by the rider, the acceleration of the motive impulse being effected solely by the gravity of the balanced machine and rider on an inclined sliding surface.

2. In a bicycle-coaster, the combination, with a front runner and a rear runner, of a connecting-frame pivoted to said runners at its ends and consisting of a front head-stock having handle-bars and a rear seat-carrying frame pivoted to said stock, a pair of dog-levers pivoted on opposite sides of the rear runner, a brake-lever near the handles, and a connection between said dog-levers and said brake-lever acting equally on the dog-levers to retard the coaster.

3. In a bicycle-coaster, the combination, with side bars arched and braced in their separated position to form a bifurcated rear end, a clamping-bracket for the forward ends to secure them firmly together, a bracing-piece at the top of said side bars, adapted to carry the seat, and a bracket-piece at the forward end of said bracing-piece, of a front post having handle-bars and adapted to be pivoted to said bracket and clamping-pieces, respectively, and bifurcated at its lower end, a forward runner pivotally mounted in said bifurcated end of the post, and a rear runner pivoted to the rear ends of said side bars in line with the said forward runner and adapted to track in the same path.

484,633. MIDDLINGS-PURIFIER. JOSHUA H. GOODALL, Castleford, England. Filed May 17, 1892. Serial No. 433,234. (No model.) Patented in England Feb. 10, 1892, No. 2,575, and May 2, 1892, No. 8,226.



Claim.—1. The combination, in a middlings-purifier, of an inclosing casing, the main sieve having side trays communicating with a second short sieve carried by the same framework as the main sieve, but at a distance therefrom, the superimposed grid of troughs, the Venetian dust-catchers, and means, substantially as described, for inducing the air-currents and actuating the moving parts of the machine.

2. The combination, with the feeding-roller and supply-trough, of an interposed reciprocating and divided main sieve having side trays, a second short sieve lineal with the main sieve, but at a little distance therefrom, a superimposed grid of troughs, means for reciprocating said sieves from the driving-shaft, an inclosing casing, and means for producing an upward air-current through the sieve and casing.

3. In a middlings-purifier, the combination, with the framework, of a main sieve divided into sections and having side trays running parallel with its reticulated covering, said sieve being interposed between a dust-chamber and an Archimedean screw, a second sieve lineal with the main sieve, but a little distance therefrom, a grid of troughs mounted above said sieves, arranged to reciprocate therewith and to deliver their contents onto said second sieve, means for reciprocating the same, an inclosing casing, and means for producing an upward air-current through the sieve and casing.

4. In a middlings-purifier, a reciprocating frame I, mounted within the framework A, having a main sieve i^3, divided into sections, and a short sieve K, mounted thereon, as described, in combination with side trays I' I', a grid of troughs J, as described, suspended on rods $j^{\times}$ above main sieve for delivering their contents onto said second sieve, an inclosing casing, and means for producing an upward air-current through the sieve and casing, all substantially as set forth.

5. In a middlings-purifier, a reciprocating frame I, interposed on framework A between an Archimedean screw B and a dust-chamber a', a main sieve i^3, divided into sections, a second sieve K, mounted in frame I, side trays I' I', a grid of troughs J, substantially as described, and Venetian dust-catchers N, armed with cloth-boxes n^3, said dust-catchers communicating with the dust-chamber a' by a tube n', means

for reciprocating said sieves, an inclosing casing, and means for producing an upward air-current through the sieve and casing, all substantially as set forth.

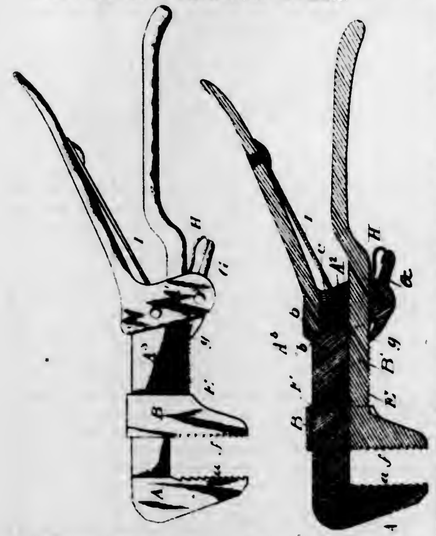
6. In a middlings-purifier, the combination of sieves i^3 and K, mounted in the same reciprocating frame I at a small distance apart, said frame I being interposed between the dust-chamber a' and Archimedean screw B on framework A, side trays I' I', the grid of troughs J, as described, for directing the air-current to both sides of the machine at the same time, chamber a^3, divided into compartments, Venetian dust-catchers N, provided with clack-boxes n^3, dust-chamber a', divided box L, worms l^3 l^4, fan C, and chamber a, all substantially as set forth.

7. The combination of sieves i^3 and K, frame I, troughs J, conical louvers n, tube n', clack-boxes n^3, clacks n^3 n^4, division-board $n^{\times\times}$, having openings $n^\times$, communicating with tube n', dust-chamber a', and brushes O and P, substantially as set forth.

8. In a middlings-purifier, the combination of sieves i^3 and K, mounted in the same reciprocating frame I at a small distance apart, said frame I being interposed between the dust-chamber a' and Archimedean screw B on framework A, side trays I' I', the grid of troughs J, as described, for directing the air-current to both sides of the machine at the same time, chamber a^3, divided into compartments, Venetian dust-catchers N, armed with clack-boxes n^3, dust-chamber a', divided box L, worms l^3 l^4, fan C, chamber a, spout i^3, tailings gravitating exhaust M, and brushes O and P, all substantially as specified.

9. The combination, in a middlings purifier, of framework A, having windows D and E and louver-frames F F, Archimedean screw B, trough b, chambers a a' a^3, fan C, spout G, feed roller and hopper H, frame I, having recesses i i, main sieve i^3, divided into sections, side trays I' I', spout i^3, troughs J, sieve K, box L, worms l^3 l^4, trailings gravity exhaust M, louvers m, pipe m', conical louvers n, tube n', clack-box n^3, clacks n^3 n^4, division-boards $n^{\times\times}$ and a^4, having openings a^3 and $n^\times$, brushes O and P, valves c and n^4, shafts Q and R, cranks Q^3, connecting-rod Q^3, pulleys Q' S S^2 S^3 S^3 S^4 S^5, belting S^2 S^7 S^8, chain-wheels T T^2 T^3 T^5 T^6 T^4 T^5, and endless chains T^4 T^7 T^8, all substantially as specified.

484,634. RATCHET PIPE AND NUT WRENCH. ISAAC C. GRAY, Ilion, Ind., assignor of one-half to Josephus S. Tilton, Norwalk, Ohio. Filed June 24, 1892. Serial No. 437,900. (No model.)



Claim.—1. A pipe and nut wrench having a fixed jaw A and a shank A^5, formed integral, the latter provided with the inclined shoulder b, said shank thereof being pivoted at its end within downwardly-extended lugs formed integrally upon the end of the upper operating-handle, said handle having the corresponding shoulder b' and the spring adapted to bear against the shoulder c, a spring-actuated dog located and pivoted within the extreme lower end of said lugs, and the sliding jaw having the teeth E, engaging the pawl, whereby when the handles are operated the sliding jaw will move forward and be held in position by the pawl, substantially as described.

2. The combination, with the sliding jaw having its shank integral with the lower operating-handle thereof and a spring-actuated pawl or dog pivotally secured in the extreme lower end of the lugs of the upper operating-handle, of the fixed jaw having the end of its shank pivotally secured in the downwardly-extending lugs of the upper operating-handle and the operating-spring secured to the upper operating-handle for engagement with the end of the shank of the stationary jaw, substantially as described, and for the purpose set forth.

484,635. LUBRICANT. SALOMON HEIMANN, New York, N. Y., assignor to Edward B. Amend, same place. Filed May 12, 1892. Serial No. 432,804. (No specimens.)

Claim.—A composition of matter for lubricating, insulating, and other purposes, composed of powdered magnesia, hydrocarbon jelly, water-glass, glycerine, and talc, about in the same proportion given, substantially as set forth.

484,636. COVERING FOR FIRE-DOOR OPENINGS. WILLIAM H. HOAG, Amsterdam, N. Y. Filed Apr. 18, 1892. Serial No. 429,547. (No model.)

Claim.—1. A frame for supporting cement-holding anchors, composed of a series of plates adjustably secured together, provided with apertures between said plates, a series of bars extending across said plates from one end to the other thereof, and a series of anchor-holding frames suspended from said bars by means of suitable hooks, substantially as described, and for the purpose set forth.

2. In an apparatus for retaining fire-resisting substance above the fire-door opening of a furnace, consisting of a plate in contact with the top of said opening, a frame beneath said plate and separated therefrom, an air-chamber between said frame and said plate, said air-chamber communicating with the interior of said furnace, communication between said air-chamber in the outside of said furnace, with a series of adjustable sections suspended from the lower one of said frames carrying a heat-resisting substance, substantially as described, and for the purpose set forth.

3. In an apparatus for covering the fire-door opening of a furnace, an air-chamber communicating with the outside of the furnace, provided with a plate between the interior of the furnace and said chamber capable of being removed from the interior of the furnace, the bottom of said air-chamber having a frame supporting adjustable sections of cement-carriers, substantially as described, and for the purpose set forth.

4. An apparatus for covering the fire-door opening of a furnace, consisting of an anchor-holding frame provided with a longitudinal slot through its side, said slot having near the center of said anchor-holding frame a squared opening, said frame suspended by means of suitable hooks from a frame placed across said fire-door opening, and an anchor provided with a shank upon which two lugs are placed slightly separated from each other, the shank between the said lugs fitting snugly within said longitudinal slot, one of these lugs being upon either side of said anchor-holding frame, said anchor provided with outwardly-projecting arms separated from each other, said anchors embedded in the fire-resisting substance, substantially as described, and for the purpose set forth.

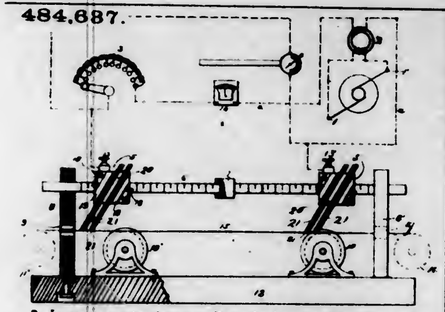
5. An apparatus for covering the fire-door opening of a furnace, composed of a series of adjustable sections of anchor-holding frames suspended from a horizontal frame placed across said fire-door opening, in combination with a series of bolts passing through said sections from one side of the opening to the other, by the operation of which said anchor-holding frames may be drawn toward each other, with an air-chamber placed above said suspending-frame communicating with the interior of said furnace, substantially as described, and for the purpose set forth.

484,637. APPARATUS FOR ANNEALING WIRE OR METALLIC RODS BY ELECTRICITY. JOSEPH H. HUNTER, Pittsburg, Pa. Filed June 2, 1891. Serial No. 394,260. (No model.)

Claim.—1. The brush-holders, each comprising two lugs 19 and an intermediate lug 20, located at some distance from the lugs 19, leaving a space between them, and the brushes 21, clamped in each space, in combination with the circuit connections and means for feeding the wire along in contact with said brushes, substantially as set forth.

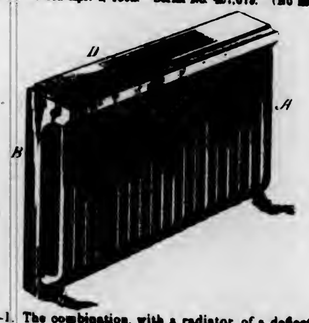
2. In an apparatus for annealing wire by electricity, the slotted standards 8 and 8', the graduated rod secured in the said standards, and the guides 10 and 10', in combination with the brush-holders located on the said rod, the brushes 21 and 21', the binding-posts 13 and 13', located upon the brush-holders, and the electrical connections to the said binding-posts, substantially as and for the purposes set forth.

484,687.



3. In an apparatus for annealing wire by electricity, in combination, a graduated rod having mounted thereon adjustable brush-holders, said rod being supported by standards provided with guides for the passage of the rod or ribbon to be annealed, and reels for said rod or ribbon, substantially as described.

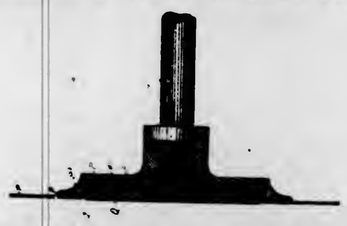
484,638. DEFLECTOR FOR RADIATORS. EDWARD KIRK, Jr., Chicago, Ill. Filed Apr. 4, 1892. Serial No. 427,679. (No model.)



Claim.—1. The combination, with a radiator, of a deflector having a hood overhanging said radiator and provided with a false roof which arches over the top of the radiator and connects the front and rear walls of said hood, and a water-pan secured to the top of the hood above said false roof, from which the vapor arises and escapes through said hood, as set forth.

2. The combination, with a radiator, of a deflector consisting of a vertical wall interposed between said radiator and the adjacent walls of the room, the hood supported by said vertical wall and overhanging said radiator, the top of which is provided with a suitable opening therein, a false roof arching over the top of said radiator and connecting the front and rear walls of said hood, a water-pan secured to the top of said hood beneath said opening, and a fretwork cover for said opening, as set forth.

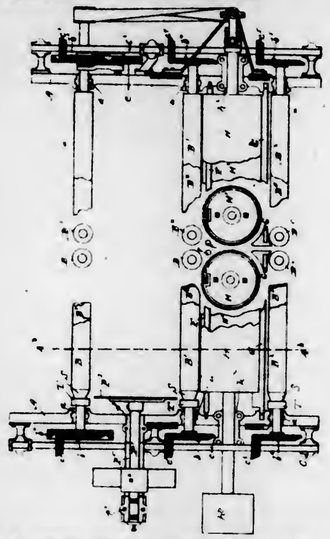
484,639. JOINTING AND SANDING MACHINE. WILBUR F. LARUE, Oshkosh, Wis. Filed Apr. 22, 1891. Serial No. 389,963. (No model.)



Claim.—1. In a jointing and sanding machine, the combination, with a sanding device for one surface of the material, such as a sanding-drum, of a circular jointing-saw provided with a sanding head or disk and situated in a plane at an angle to that in which the said sanding device operates, substantially as set forth.

2. In a jointing and sanding machine, the combination, with the jointing-saw having a sanding disk or head, of the feed-rolls, the upper sand-drum H, the lower sand-drum H', shafts parallel with each other carrying said operating parts, and the feed mechanism connecting and actuating said shafts, substantially as set forth.

3. In a jointing and sanding machine, the combination, with the circular jointing-saw having an opening for the sanding material, extending continuously in the direction of rotation of the saw, and a backing-plate for the said material, of the feed-rolls, the upper sand-drum H, the lower sand-drum H', shafts parallel with each other, carrying said operating parts, and the feed mechanism connecting and actuating said shafts, substantially as set forth.

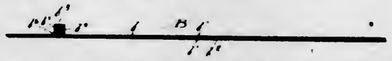


4. In a jointing and sanding machine, the combination of the circular saw having an opening extending continuously in the direction of rotation of the saw, adapted to receive the edge of a sanding material, and a clamp for the latter, substantially as set forth.

5. In a jointing and sanding machine, the combination, with the jointing saw and sanding devices, of the feed-rolls having the loose collars S, substantially as set forth.

6. In a jointing and sanding machine, the combination, with the jointing-saw, of the upper and lower sanding-drums, the feed-rolls, the longitudinal parallel shafts C C^2, situated at right angles to the axis of the rolls and on opposite sides of the machine, one for the upper and one for the lower set of rolls, beveled gears connecting said shafts with the rolls, and a through-shaft connecting said longitudinal shafts, substantially as set forth.

484,640. SHEET-METAL ROOFING. EDWIN NORTON, Maywood, assignor to himself and Oliver W. Norton, Chicago, Ill. Filed Apr. 18, 1892. Serial No. 429,532. (No model.)

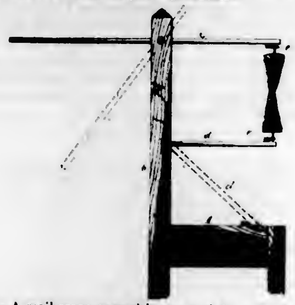


Claim.—1. The improved roof herein shown and described and consisting of thin soft pliable sheets of steel or iron coated with tin, lead, or other suitable metal and furnished on the under side with a flexible coating of enamel formed by coating the sheets with paint and then baking the same, the meeting edges of said sheets being united by a soldered seam, substantially as specified.

2. The combination, with the roofing-boards or bed-surface A, of roofing-plates B, composed of iron or steel sheets b, having the metallic coating b' of tin, lead, or other metal, and provided with a flexible enameled coating b^2 on the under side of said sheets formed by coating the sheets with paint and then baking the same, said roofing-plates having at their meeting edges overlapping flanges b^4 b^5, substantially as specified.

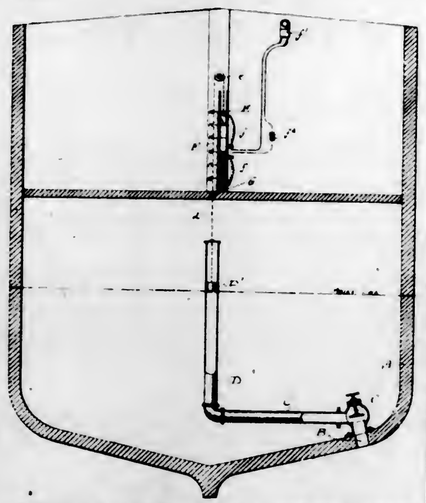
3. The improved roofing-plates herein shown and described, consisting of thin soft iron or steel sheets b, coated with tin or other metal b' and provided with a flexible enameled coating b^2 on the under side of the sheet formed by coating the sheets with paint and then baking the same, substantially as specified

484,641. MAIL-CRANE. ROBERT A. CRUM, Walton, Kans. Filed July 22, 1892. Serial No. 440,980. (No model.)



Claim.—A mail-crane comprising an upright, arms pivoted thereto, each of which is provided with a lug, a hook on each arm having a vertical portion pivotally connected to the arm, a collar on said portion, part of which is cut away to form shoulders for engagement with the lug to limit the movement of the hook, and a horizontal portion having a part of its end cut away to form a shoulder for the ring, and a horizontally-extending spring secured to the hook and extending over said shoulder, substantially as described.

484,642. DRAFT-INDICATOR FOR VESSELS. WILLIAM R. PATTERSON, Manistee, Mich. Filed July 18, 1892. Serial No. 440,390. (No model.)



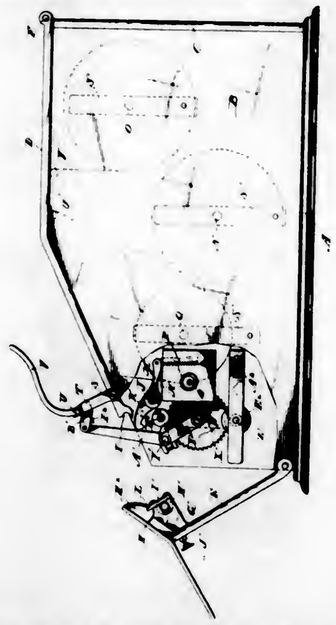
Claim.—1. A draft-indicator for vessels, comprising a stand-pipe located within the hull of the vessel and communicating with the water outside of the hull, a float located within said stand-pipe, a signal, and suitable means for operating said signal when said float shall have reached a predetermined position in the stand-pipe, substantially as described.

2. A draft-indicator for vessels, comprising a stand pipe located within the hull of the vessel and communicating with the water outside of the hull, a float located in said stand-pipe, a visual indicator operatively connected with said float, an audible signal, and suitable means for operating said audible signal when said float shall have reached a predetermined position in the stand-pipe, substantially as described.

3. A draft-indicator for vessels, comprising a stand-pipe located within the hull of the vessel and communicating with the water outside the hull, a float located in said stand-pipe, a slide operatively engaged with said float, a stop adjustably supported in the path of said slide, an audible signal, and suitable means for operating said signal when the slide reaches said stop, substantially as described.

4. A draft-indicator for vessels, comprising a stand-pipe located within the hull of the vessel and communicating with the water outside of the hull, a float located within said stand-pipe, a slide operatively connected with said float, an adjustable stop located in the path of the slide, suitable means for operating said signal when the slide comes against the stop, and suitable means for intermittently operating said signal as the slide approaches said stop, substantially as described.

484,643. AUTOGRAPHIC REGISTER. JOHN PFEIFER, Dayton, Ohio, assignor to the National Cash Register Company, same place. Filed Feb. 26, 1892. Serial No. 422,739. (No model.)



Claim.—1. In an autographic register, the combination of the casing having the hinged lid D, the hinged front wall E, having the glass-covered window G, the locking-dog K, co-operating with a catch upon the hinged wall E, and a lock N, co-operating with the dog K and accessible to a key from the exterior of the machine, substantially as described.

2. In an autographic register, the combination of the casing having the hinged lid D, the hinged front wall E, having the plate H, whose rear edge fits in notches I in the lid D, the rock-shaft J, the locking-dogs K, fast thereon and co-operating with the catches upon the hinged front wall E, and a lock N, co-operating with the rock-shaft J and accessible to a key from the exterior of the machine, substantially as described.

3. In an autographic register, the combination of a storage-reel for the record-strip, a movable knife-bar for severing the check-strip, and driving mechanism for the storage-reel actuated by the movements of the knife-bar.

4. In an autographic register, the combination of a storage-reel for the record-strip, a hinged knife-bar for severing the check-strip, and driving mechanism for the storage-reel, actuated by the movements of the knife-bar.

5. In an autographic register, the combination of a storage-reel for the record-strip, a driving-gear therefor, an actuating-pawl for the gear, a movable knife-bar for severing the check-strip, and connections between the knife-bar and pawl for actuating the gear from the movements of the knife-bar.

6. In an autographic register, the combination of a storage-reel for the record-strip, a driving-gear therefor, a swinging arm carrying a pawl for actuating the gear, a hinged knife-bar for severing the check-strip, and connections between said bar and the swinging arm for transmitting the movements of the bar to said arm.

7. The combination of the storage-reel Z', the driving-gear X, the arm Y, carrying the pawl Z, engaging the gear X, the hinged knife-bar T, provided with an operating-handle V, and the link A', connecting the arm Y and knife-bar T.

8. The combination of the storage-reel Z', the driving-gear X, the arm Y, carrying the pawl Z, engaging the gear X, the lid D, the knife-bar T, hinged thereto, and the link A', connected to the arm Y at its lower end and detachably connected to the bar T at its upper end.

9. The combination of the storage-reel Z', the driving-gear X, the arm Y, carrying the pawl Z, engaging the gear X, the hinged knife-bar T, the link A', pivoted to the arm Y at its lower end and detachably connected to the bar T at its upper end, and the spring C', acting on the link A' to yieldingly maintain its connection with the bar T.

10. In an autographic register, the combination of feeding-rollers for the record strip, a movable knife-bar for severing the check-strip, and driving mechanism for the feeding-rollers, actuated by the movements of the knife-bar.

11. In an autographic register, the combination of a storage-reel and feeding-rollers for the record-strip, a movable knife-bar for severing the check-strip, and driving mechanism for the storage-reel and feeding rollers, actuated by the movements of the knife-bar.

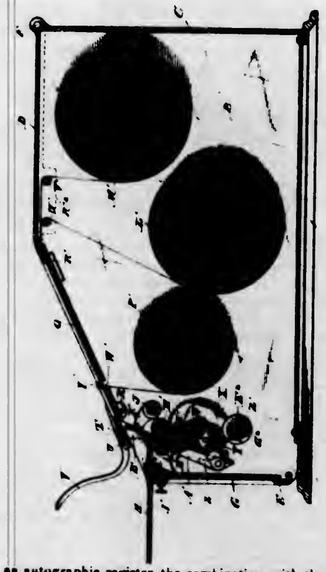
12. In an autographic register, the combination of a storage-reel and feeding-rollers for the record-strip, a hinged knife-bar provided with an operating-handle for severing the check-strip, and driving mechanism for the storage-reel and feeding-rollers, actuated by the movements of the knife-bar.

13. In an autographic register, the combination of a storage-reel and feeding-rollers for the record-strip, a single driving-gear for the storage-reel and one of the feeding-rollers, an actuating-pawl for the gear, a movable knife-bar for severing the check-strip, and connections between said bar and the actuating-pawl for the driving-gear.

14. In an autographic register, the combination of a storage-reel and feeding-rollers for the record-strip, a single driving-gear for the storage-reel and one of the feeding-rollers, a swinging arm carrying a pawl engaging said gear, a hinged knife-bar for severing the check-strip, and a link connecting said bar with the swinging pawl-arm.

15. In an autographic register, the combination, with the casing and the fixed feeding-roller E', journaled therein, of the hinged front wall E, carrying the roller H', adapted to bear against the roller E' when the wall E is swung up into position.

16. In an autographic register, the combination, with the casing and the feeding-roller E', journaled therein, of the hinged front wall E, having rearwardly-projecting lugs or brackets G', the roller H', adjustably journaled therein and adapted to bear against the roller E' when the wall E is swung up into position, and adjusting-screws J', co-operating with the roller H' to regulate the pressure of the latter against the roller E'



17. In an autographic register, the combination, with the casing and the fixed feeding-roller E', journaled therein, of the hinged front wall E, carrying the roller H', adapted to bear against the roller E' when the wall E is swung up into position, and the locking-dogs K, co-operating with the catches upon the front wall E to hold the latter in position, with the roller H' bearing against the roller E'.

18. In an autographic register, the combination, with the casing and the feeding-roller E', journaled therein, of the swinging front wall E, having rearwardly-projecting lugs G', the roller H', journaled therein and adapted to bear against the roller E' when the wall E is swung up into position, the rock-shaft J, the locking-dogs K, fast thereon and arranged to co-operate with the catches L upon the lugs G', and means controlled by a key from the exterior of the casing for actuating the rock-shaft and locking-dogs.

19. In an autographic register, the combination of the casing having the fixed feeding roller E' journaled therein, the hinged front wall E, having the rearwardly-projecting lugs G', the roller H', journaled in slots in said lugs, the plate I', secured upon said lugs, the adjusting-screws J', co-operating with the roller H' to regulate its pressure against the roller E', the rock shaft J, the locking-dogs K, fast thereon and co-operating with the upper ends L of the plates I', the arm M, fast upon the rock-shaft J, and the spring P and lock N, co-operating with the arm M to move the dogs K into and out of locking position.

20. In an autographic register, the combination of the casing having the hinged lid D, the hinged front wall E, adapted to lock the lid D when swung up into position, the fixed feeding-roller E', journaled in the casing, the roller H', journaled in bearings carried by the front wall E and adapted to bear against the roller E' when the front wall is swung up into position, the knife-bar T, hinged to the lid D, and driving mechanism for the feed-rollers, actuated by the movements of said bar.

21. In an autographic register, the combination of the tablet-plate Q, the plate H, having the depression or bowl H^3 at the lower end of the plate Q, and the hinged knife-bar T, having its edge overlying the bowl H^3, whereby when said knife-bar is raised the check strip may be easily grasped and drawn out and when it is depressed the strip may be severed against its edge.

22. In an autographic register, the combination of the casing, the tablet-plate Q, supported therein, the hinged lid D, having an opening P above the plate Q, the hinged front wall E, having the plate H provided with the bowl or depression H^3, and the knife-bar T, hinged to the lid D and adapted to overlie the bowl H^3 when the front wall E is swung up into position.

23. In an autographic register, the combination of the hinged front wall E, provided with a glass covered window G, the feeding-roller E' and storage reel Z', journaled in approximately the same vertical plane behind the window G, the roller H', carried by the hinged front wall E and co-operating with the roller E', and driving mechanism for the feed rollers, whereby the record-strip is exposed to view through the window G as it passes from the feeding-rollers to the storage-reel

24. In an autographic register, the combination of a pair of feeding-rollers for the record-strip, feeding forward substantially the same length of strip at each operation of the machine, a storage-reel for the record-strip, a movable knife-bar for severing the check-strip, driving mechanism for the storage-reel, actuated by the movements of the knife-bar, and a yielding connection between said driving mechanism and reel.

25. In an autographic register, the combination of a pair of feeding-rollers for the record-strip, a movable knife-bar for severing the check-strip, driving mechanism for the feeding-rollers, actuated by the movements of said knife-bar, a storage reel for the record strip, driving mechanism for said reel having a defined movement at each operation of the machine, and a yielding connection between said driving mechanism and reel.

26. In an autographic register, the combination of a pair of feeding-rollers and a storage-reel for the record-strip, a movable knife-bar for severing the check-strip, driving mechanism for both the storage-reel and feeding-rollers, actuated by the movements of the knife-bar, and a yielding connection between said driving mechanism and the storage-reel.

27. In an autographic register, the combination of the gear-wheel X, the swinging arm J, the pawl Z, carried thereby and engaging the wheel X, means for giving the arm Y a definite movement at each operation of the machine, the feeding-rollers E' H', driven by the wheel X, the storage-reel Z', its driving-pin C^3, geared to the wheel X, and a yielding connection between said pinion and reel.

28. In an autographic register, the combination of the gear-wheel X, arm Y, pawl Z, knife-bar T, link A', feeding-rollers E' H', driven by wheel X, storage-reel Z', its driving-pinion C^3, geared to wheel X, and a yielding connection between said pinion and reel.

29. In an autographic register, the combination, with the feeding-rollers for the record-strip and driving mechanism therefor, of a detaining-pin actuated by the driving mechanism and arranged to pass through the check-strip to prevent movement of the same and to be withdrawn therefrom when the driving mechanism is operated to actuate the feeding-rollers, whereby the check-strip cannot be withdrawn until the feeding rollers are actuated to feed the record strip.

30. In an autographic register, the combination of the feeding-rollers for the record-strip, a driving mechanism, and an operating-handle therefor, a detaining-pin moved by the operating-handle and adapted to pass through the check-strip at one stroke of the handle and to be withdrawn therefrom at its opposite stroke, for the purpose described.

31. In an autographic register, the combination of a storing-reel for the record-strip, a driving mechanism, and an operating-handle therefor, a detaining-pin moved by the operating-handle and adapted to pass through the check-strip at one stroke of the handle and to be withdrawn therefrom at its opposite stroke, for the purpose described.

32. In an autographic register, the combination of a storage-reel for the record-strip, a movable knife-bar for severing the check-strip, a driving mechanism for the storage-reel, actuated by the movements of the knife-bar, and a detaining-pin moved by the knife-bar and adapted to pass through the check-strip during the movement of the bar in one direction and to be withdrawn therefrom by its movement in the opposite direction, for the purpose described.

33. In an autographic register, the combination of a pair of feeding-rollers for the record-strip, a movable knife-bar for severing the check-strip, a driving mechanism for the feeding-rollers, actuated by the movements of the knife-bar, and a detaining-pin moved by the knife-bar and adapted to pass through the check-strip during the movement of the bar in one direction and to be withdrawn therefrom by its movement in the opposite direction, for the purpose described.

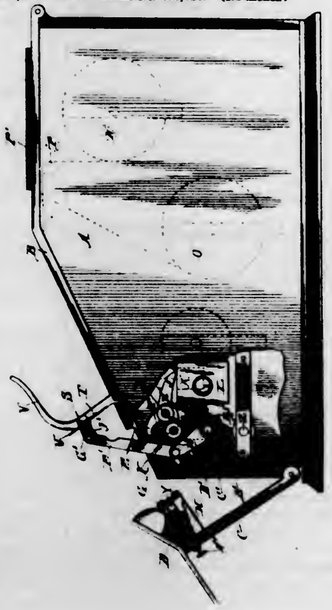
34. In an autographic register, the combination, with the storing-reel and its driving mechanism, of the hinged bar T, actuating said driving mechanism and provided with the pins I^3, adapted to pass through the check-strip when the bar is depressed and to be withdrawn therefrom when the bar is lifted, for the purpose described.

35. In an autographic register, the combination, with the feeding-rollers for the record-strip and their driving mechanism, of the hinged bar T, actuating said driving mechanism and provided with the pins I^3, adapted to pass through the check-strip when the bar is depressed and to be withdrawn therefrom when the bar is lifted, for the purpose described.

36. In an autographic register, the combination of the tablet Q, the hinged knife-bar T at the lower edge of the same, having the operating-handle V and provided with the pins I^3, the driving-gear X, the swinging arm Y, carrying the pawl Z, engaging the gear X, and the link A', connecting the arm Y and bar T.

37. In an autographic register, the combination, with the casing having a hinged lid D, provided with a depending flange K^3 at one side, of the guide-rods U' V', passed through holes in the side wall of the casing adjacent the depending flange K^3 of the lid and provided with cross-pins J^3 to prevent their complete withdrawal, whereby when said rods are in proper position the flange K^3 prevents their withdrawal and whereby when the lid is raised and the rods are partially withdrawn the engagement of the flange K^3 with the rods will prevent closing of the lid.

484,644. AUTOGRAPHIC REGISTER. JOHN PFEIFER, Dayton, Ohio, assignor to the National Cash Register Company, same place. Filed Apr. 26, 1892. Serial No. 430,729. (No model.)



Claim.—1. In an autographic register having one or more check-strips and a record-strip led over a writing tablet beneath an opening in the casing and having manifolding material interposed between the strips, the combination, with the casing, of a door or lid required to be opened to permit access to the record-strip, a lock for holding the door or lid closed, having a reciprocating bolt capable of being thrown by a key from the exterior of the casing, a pin for puncturing the record-strip, moved in one direction by the reciprocating lock-bolt when the latter is thrown by the key, and a spring for moving it in the opposite direction, whereby the record-strip is punctured at each operation of the lock to preserve a record of the lockings and unlockings of the door or lid, substantially as described.

2. In an autographic register in which the record-strip is drawn by feed-rollers X Y from a roll W, over a writing-tablet Q, and thence wound upon a storage-reel Z, the combination of the hinged front wall or door C, the rock-shaft I, locking-dog F, fast upon the rock-shaft and co-operating with a catch upon the wall C, the puncturing-pin K' and arm J, carried by the shaft I, and the locking-bolt K and spring M, co operating with said shaft, substantially as described.

3. In an autographic register, the combination of a hinged knife-bar for severing the check-strips, a storage-reel connected to and actuated by the movements of the knife-bar to wind up the record-strip, and a resetting-spring for the knife-bar, substantially as described.

4. In an autographic register such as described, the combination of the hinged knife-bar S, provided with a handle V, the gear B' for driving the storage-reel, the pawl-arm D', and pawl E', co-operating with the gear and connected with the knife-bar S, and the resetting-spring M, substantially as described.

5. In an autographic register having a tablet-plate over which the paper strips are drawn and an opening in the casing above said tablet-plate, through which opening memoranda may be written upon the outer strip, the combination, with the casing, of the guard bar or bars projecting from the edge of said opening over the right-hand portion of the paper strips for the purpose of preventing the insertion of a card or plate beneath the outer strip, substantially as described.

6. In an autographic register, the combination of the tablet Q, over which the paper strips are drawn, the lid of the casing having the opening R above said plate, and the guard-bars N', extending across said opening, substantially as and for the purpose described.

484,645. MECHANICAL MOVEMENT. JOHN B. PRICE, Wollaston, Mass. Filed Mar. 30, 1892. Serial No. 427,113. (No model.)

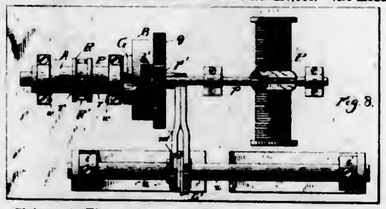


Fig. 8.

Claim.—1. The combination of a tubular shaft, a radially-slotted disk carried thereby, a wrist-pin fitted in said disk to slide in the radial slot therein, an endwise-movable stem extending through said shaft and connected to the shaft to rotate therewith, and connections between the stem and the wrist-pin to move the latter radially of the disk when the stem is moved lengthwise, as and for the purpose described.

2. The combination of the tubular shaft carrying the radially-slotted disk, a slide fitted in the guide slot or way of the disk and provided with a wrist-pin, an endwise-movable stem extending through and keyed to the tubular shaft, and gear connections between said stem and the radially-movable slide, for the purpose described.

3. The combination of a tubular shaft, the disk rigidly secured to the shaft and provided with the recess in rear of the radial guide slot or way, the slide fitted in said radial guide-slot and carrying the wrist-pin, the endwise-movable stem keyed to the tubular shaft and extending through the same, and an intermediate connection in the recess of the disk and operating to adjust the slide when the stem is moved, as and for the purpose described.

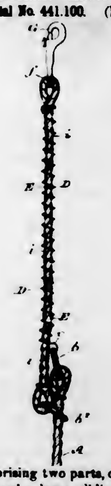
4. The combination of a tubular shaft, a radially-slotted disk carried thereby, a slide fitted to move radially in the guide slot or way of the disk and carrying a protruding wrist-pin, an endwise-movable stem keyed within the tubular shaft, and a gear or pinion journaled in the disk and meshing with rack-teeth on the slide and stem, as and for the purpose described.

5. The combination of a shaft, a crank-disk carried thereby and having a radially adjustable wrist pin, a revolable shaft, as I, and pawl-and-ratchet mechanism on the shaft I and connected to the wrist-pin, as and for the purpose described.

6. The combination of a shaft, a crank-disk thereon, a radially-adjustable wrist-pin carried by said disk and having means connected thereto, whereby said wrist-pin may be adjusted at all times without arresting the shaft, another shaft having two fixed ratchets, pawl-carriers loosely fitted on the last-mentioned shaft and having pawls which engage with ratchets, and connections between the wrist-pin and pawl-carriers, substantially as described.

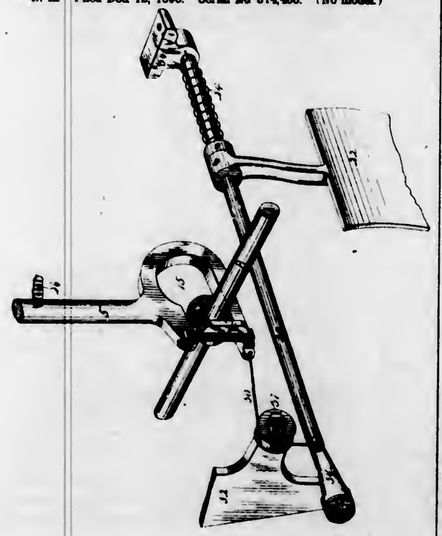
7. The combination of a revolable disk carrying a radially-adjustable wrist pin, a rotary shaft I and transmitting mechanism, substantially such as described, intermediate of the adjustable wrist-pin, and the rotary shaft to turn the latter continuously in one direction, substantially as and for the purpose described.

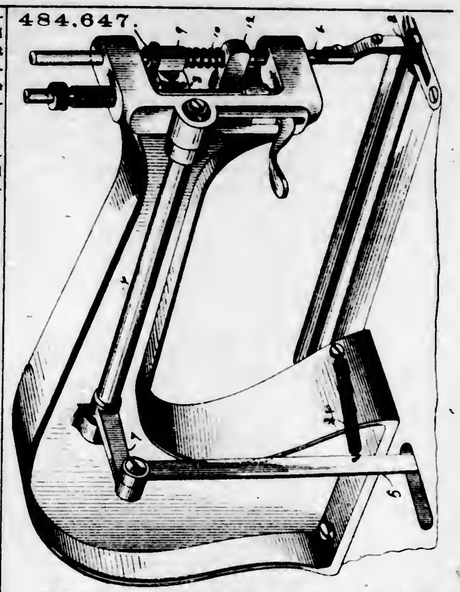
484,646. HITCHING-STRAP. EDGAR SHAW, Swampscott, Mass. Filed July 25, 1892. Serial No. 441,100. (No model.)



Claim.—A tie-rope comprising two parts, one part having suitable attaching means at one end and a loose sliding connection with the other part at its other end, and a spiral spring uniting said two parts and encircling a portion of the first mentioned, the whole constructed, arranged, and operating in substantially the manner and for the purposes set forth.

484,647. MACHINE FOR OVERSTITCHING BUTTONHOLE-THRUMS. ROBERT W. THOMSON and EUGENE M PHELPS, Lynn, Mass., assignors to the Hand Method Finishing Machine Company, Nashua N. H. Filed Dec. 12, 1890. Serial No. 374,433. (No model.)

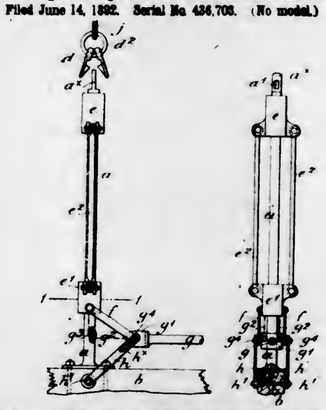




Claim.—1. A folder to bear upon the material and force it into the groove of the work-receiver, a work-receiver provided with a groove to receive said material, a folder-actuator, and connections between said actuator and folder to operate the latter, and a shifter co-operating with the folder and its actuating devices to prevent operation of the folder, combined with work-feeding devices and mechanism for actuating the same and with an eye-pointed thread-carrying needle and complemental stitch-forming devices, for the purpose set forth.

2. A folder to bear upon the material and force it into the groove of the work-receiver, a work-receiver provided with a groove to receive said material, devices to actuate said folder, and a shifter co-operating with the folder and its actuating devices to prevent operation of said folder, combined with work feeding devices to operate upon the material through the groove of the work-receiver, mechanism for actuating the same, an eye-pointed thread-carrying needle, and complemental stitch-forming devices, for the purposes set forth.

484,648. BOAT-DETACHING APPARATUS. THOMAS TURK, London, England, assignor of one-half to William Gordon Crow, same place. Filed June 14, 1892. Serial No. 436,703. (No model.)



Claim.—1. In boat lowering and detaching gear, the means, substantially as described, for enabling both ends of the boat to be simultaneously detached, consisting of sliding sockets or ferrules carried by vertical uprights situated at the fore and aft of the boat and adapted to be simultaneously raised or lowered by suitable lever mechanism,

in combination with divided coupling-pieces adapted to engage with slots or eyes formed in the upper ends of the uprights, whereby when said sliding sockets or ferrules are elevated they will embrace the coupling-pieces and keep them in engagement with the uprights, but when said sliding sockets or ferrules are lowered they will uncover the coupling-pieces and allow the weight of the boat to cause the coupling-pieces to open and so disengage themselves from the uprights.

2. In boat lowering and detaching gear, the means, substantially as described, for enabling the lowering of the boat to be controlled, consisting in the combination, with the divided coupling-pieces, of suspension-lines *j*, furnished with eyes or loops $j' j^3$ and passing over pivoted conical guide-pulleys *k* and around a roller *l*, furnished with pins $l' l^3$, adapted to receive the eyes or loops $j' j^3$ of the suspension-lines *j*, the said roller *l* being, also, provided with a line *n*, one end of which is made fast to the roller and the other end passed around a cleat *o* and held by the man in charge of the boat, so as to permit him to regulate the speed of rotation of the roller *l* and the paying out of the suspension-lines.

3. In a boat lowering and detaching gear, the combination, with the sliding sockets or ferrules *e*, connected to sleeves *d'*, of links *f*, pivoted to the sleeves *d'* and to the heads of the connecting-rods *g*, of links *h*, pivoted to the keelson and formed with slots h^x, engaging with pins g^4 on the said connecting-rods, and of lever mechanism for operating the connecting-rods, substantially as herein described and shown, and for the purpose specified.

4. In a boat lowering and detaching gear, the combination, with a hooking device connected to the boat's falls, of rigid piece attached to the boat and having an eye in the upper end thereof adapted to engage said hooking device, of a ferrule adapted to slide up and down on said rigid piece and to lock and unlock said hooking device, a sleeve attached to said ferrule and adapted to move therewith, a toggle-joint having its ends secured to the said sleeve and to the boat, respectively, and a hand-rod for actuating said toggle-joint and so raising and lowering said sleeve and ferrule, substantially as and for the purposes described.

5. In a boat lowering and detaching gear, the combination, with a hooking device connected to the boat's falls, of rigid piece attached to the boat and having an eye in the upper end thereof adapted to engage said hooking device, of a ferrule adapted to slide up and down on said rigid piece and to lock and unlock said hooking device, a sleeve attached to said ferrule and adapted to move therewith, a toggle-joint having its ends secured to the said sleeve and to the boat, respectively, and a hand-rod for actuating said toggle-joint and so raising and lowering said sleeve and ferrule, and a chain connected at one end to said hand-rod and at the other to said sleeve and passing beneath a pulley secured beneath said sleeve, thus relieving or assisting said toggle-joint in lowering said sleeve and ferrule, as and for the purposes described.

484,649. WASHSTAND. Nathan O. Bond, Fairfax Court-House, Va., assignor of one-half to Samuel J. Meeks, Washington, D. C. Filed Feb. 4, 1892. Serial No. 420,250. (No model.)

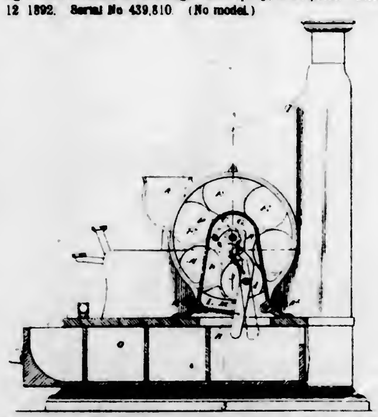
Claim.—1. In combination with a washstand provided with a rolling pitcher and a suitable basin, the side pieces having the rounded upper ends, the tapering arms pivoted to said pieces, the board connecting the front ends of said arms, and the flexible cover secured to the rear end of the board and adapted to fit closely over the rounded ends of the side pieces when the arms are lowered, substantially as shown and described.

2. In combination with a washstand provided with a rolling pitcher and a suitable basin, the side pieces having the rounded upper ends, the arms pivoted to said pieces, the board connecting the front ends of said arms and provided on its under side with a looking-glass, and the flexible cover secured to the rear end of the board and adapted to fit closely over the rounded ends of the side pieces when the arms are lowered.

3. In combination with a washstand provided with a rolling pitcher and a suitable basin, the side pieces having the rounded upper ends, the arms pivoted to said pieces, the board connecting the front ends of said arms and provided on its under side with a looking-glass, and a flexible cover secured to the rear end of the board and adapted to fit closely over the rounded ends of the side pieces when the arms are lowered and the weight attached to the rear end of the flexible cover, substantially as shown and described.

4. In combination with a washstand provided with a rolling pitcher and a suitable basin, the side pieces having the rounded upper ends, the arms pivoted to said pieces, the board connecting the front ends of said arms, and a flexible cover secured to the rear end of the board and adapted to fit closely over the rounded ends of the side pieces when the arms are lowered and the weight attached to the rear end of the flexible cover, substantially as shown and described.

484,650. COIN-DISPLAYER. Thomas Carney, Dayton, Ohio, assignor to the National Cash Register Company, same place. Filed July 12, 1892. Serial No. 439,810. (No model.)



Claim.—1. A coin displayer consisting of a frame or casing provided with receiving and discharging openings, a revolving disk journaled therein and provided with receptacles for the coins, adapted to receive them at the receiving-opening and deliver them at the discharging-opening, and a transparent covering for the receptacles at one side of the disk, through which the coins contained in them may be observed, and means for revolving the disk to bring its coin-receptacles successively to the receiving and discharging openings, substantially as described.

2. A coin displayer consisting of a frame or casing provided with receiving and discharging openings for the coins, a revolving disk journaled therein and provided with receptacles for the coins, adapted to receive them at the receiving-opening and deliver them at the discharging-opening, and a transparent covering for the receptacles, secured at one side of the disk, through which the coins carried by the latter may be seen, and means for revolving the disk to bring its coin-receptacles successively to the receiving and discharging openings, substantially as described.

3. A coin-displayer consisting of a frame or casing provided with receiving and discharging openings for the coins, a revolving disk journaled therein and provided with a series of holes or recesses intersecting its periphery and adapted to receive the coins at the receiving-opening and deliver them at the discharging-opening, a transparent covering at one side of said disk, through which the coins carried by it may be seen, and means for revolving the disk to bring its coin-receptacles successively to the receiving and discharging openings, substantially as described.

4. A coin-displayer consisting of a frame or casing provided with receiving and discharging openings, a revolving disk journaled therein and provided with a series of holes intersecting its periphery and adapted to receive the coins at the receiving-opening and deliver them at the discharging-opening, and two transparent plates secured upon the opposite sides of the disk, through which the coins carried by the latter may be seen, and means for revolving the disk to bring its coin-receptacle successively to the receiving and discharging openings, substantially as described.

5. The herein-described coin-displayer, consisting of the casing having the receiving and discharging openings, the disk D, journaled therein and provided with the circular openings E, intersecting its periphery and co-operating with the receiving and discharging openings, the glass plates F, secured upon opposite sides of the disk D, the ratchet G, applied to the disk, the pawl H, and means for actuating the pawl to turn the ratchet and disk, substantially as described.

6. The combination, with a cash-register provided with a movable money-drawer, of a coin-displayer consisting of a suitable frame or casing provided with receiving and discharging openings, a revolving disk journaled therein and provided with receptacles adapted to receive the coins at the receiving-opening and deliver them at the discharging-opening, and a transparent covering for the receptacles at one side of the disk, through which the coins contained in them may be seen, and connections between the movable money-drawer and the revolving disk for turning the latter by the movements of the former, substantially as described.

7. The combination, with a cash-register having a backwardly and forwardly sliding money-drawer, of a coin-displayer consisting of a suitable frame or casing provided with receiving and discharging openings, a revolving disk journaled therein and provided with receptacles adapted to receive the coins at the receiving-opening and deliver them at the discharging-opening, a transparent covering for the receptacles at one side of the disk, through which the coins contained in them may be seen, a ratchet for turning the disk, an actuating-pawl for the ratchet, and a lever co-operating with said pawl and with the sliding money-drawer, substantially as and for the purpose described.

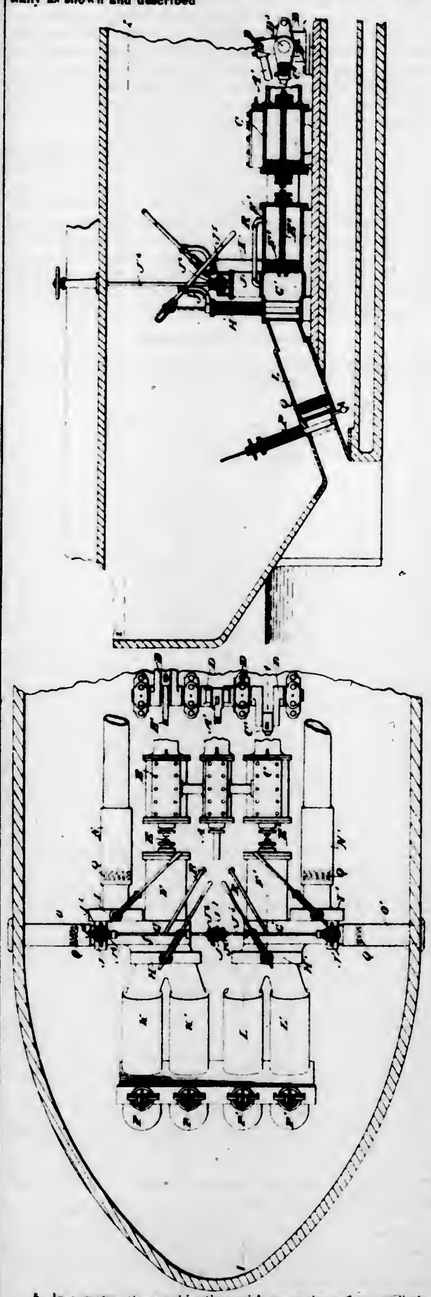
484,651. HYDRAULIC PROPELLER. John T. Carstairs, Wellington, Canada. Filed Nov. 10, 1891. Serial No. 411,453. (No model.)

Claim.—1. A hydraulic propeller comprising two parallel cylinders having pistons operating in opposite directions, gate-boxes into which the rear ends of the cylinders open and provided with gates, two pipes leading rearward from each gate-box, each containing a check-piston, and a gate for the outer end of each pipe, substantially as set forth.

2. In a motor, the combination, with an engine, of two cylinders containing pistons operated simultaneously by the said engine, but driven in opposite directions, gate-boxes connected with the rear ends of the said cylinders and containing gates, and pipes leading from the said gate-boxes and containing check-pistons, substantially as shown and described.

3. In a motor, the combination, with an engine, of two cylinders containing pistons operated simultaneously by the said engine, but driven in opposite directions, gate-boxes connected with the rear ends of the said cylinders and containing gates, pipes leading from the said gate-boxes and containing check-pistons, and a fluid held in the said pipes, gate-boxes, and cylinders, substantially as shown and described.

4. In a motor, the combination, with an engine, of two cylinders containing pistons operated simultaneously by the said engine, but driven in opposite directions, gate-boxes connected with the rear ends of the said cylinders and containing gates, pipes leading from the said gate-boxes and containing check-pistons, and a fluid held in the said pipes, gate-boxes, and cylinders, one set of the said pipes discharging at the bow of the vessel, the other at the stern of the vessel, substantially as shown and described



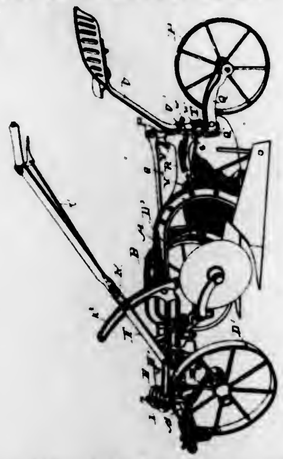
5. In a motor, the combination, with an engine, of two cylinders containing pistons operated simultaneously by the said engine, but driven in opposite directions, gate-boxes connected with the rear ends of the said cylinders and containing gates, pipes leading from the said gate-boxes and containing check-pistons, a fluid held in the said pipes,

gate-boxes, and cylinders, and a set of pipes leading from the said gate-boxes to the sides of the vessel for steering the latter, substantially as shown and described.

6. In a motor, the combination, with an engine, of two cylinders containing pistons operated simultaneously by the said engine, but driven in opposite directions, gate-boxes connected with the rear ends of the said cylinders and containing gates, pipes leading from the said gate-boxes and containing check-pistons, a fluid held in the said pipes, gate-boxes, and cylinders, one set of the said pipes discharging at the bow of the vessel, the other at the stern of the vessel, and a set of pipes leading from the said gate-boxes to the sides of the vessel for steering the latter, substantially as shown and described.

7. In a motor, the combination, with an engine, of two cylinders containing pistons operated simultaneously by the said engine, but driven in opposite directions, gate-boxes connected with the rear ends of the said cylinders and containing gates, pipes leading from the said gate boxes and containing check-pistons, a fluid held in the said pipes, gate-boxes, and cylinders, one set of the said pipes discharging at the bow of the vessel, the other at the stern of the vessel, a set of pipes leading from the said gate-boxes to the sides of the vessel for steering the latter, and means, substantially as described, for manipulating the gates in the said gate-boxes, substantially as shown and described.

484,652. WHEEL-PLOW. JOHN CLAYTON, Minneapolis, Minn. Filed Dec. 31, 1891. Serial No. 416,623. (No model.)



Claim.—1. In a wheel-plow, the combination, with the land-beam and the bracket secured thereto, of the rod having bearings in said bracket, an operating-lever connected to one end of said rod, a connection between said rod and the rear wheel, and means for operating the land and furrow wheel axles connected to said lever, the parts being so arranged that the operation of said lever will simultaneously raise or depress said rear wheel and the land and furrow wheels, substantially as specified.

2. The combination, with the land-beam having the bracket secured thereto, of the operating-lever connected to a rod having bearings in said bracket, an arm secured to said rod, and a rod or link resting loosely in an aperture in said arm and provided with a shoulder adapted to engage said arm, said rod or link being connected to the oscillating hanger carrying the rear wheel, substantially as specified.

3. The combination, with the operating-lever and with the axle-arm of the land-wheel, of the link or arm secured to said axle-arm and having a cam slot or aperture therein, a connection between said link or arm and the operating-lever, and an arm secured to the axle-arm of the furrow-wheel and carrying a roller actuated by said cam-slot, substantially as specified.

4. The combination, with the axle-arm, of the land-wheel shaft and its bearings, the link or arm secured to said shaft and having a cam-slot therein, and the arm secured to the axle-arm of the furrow-wheel, and the operating-lever and its link connection with said link, substantially as specified.

5. The combination, with the axles of the land and furrow wheels loosely hung in bearings secured to the land and furrow beams and provided each with the rearwardly-turned arm, on which land and furrow wheels are respectively journaled, of the arm or link secured to said land-wheel axle and having a cam-edged slot therein, an arm secured to said furrow-wheel axle and carrying a wheel or roller at its upper portion, adapted to be engaged by said slot to operate said arm, and thereby the furrow-wheel axle, and the operating-lever connected to said cam-link, substantially as specified.

6. The combination, with the axles of the land and furrow wheels loosely hung in bearings secured to the beams and provided each with a rearwardly-turned arm, on which are journaled, respectively, the land and furrow wheels, of the arm or link secured to the axle of said land-wheel and having a cam-edged slot therein, an arm secured to the furrow-wheel axle and carrying a roller engaged by the said cam-slot, an operating-lever connected by links to the cam-arm, and a connection between said operating-lever and a hanger of the rear wheel, whereby the depression of said lever will depress said wheel simultaneously with the movement of the land and furrow wheels through said lever and said cam-links and arm, substantially as specified.

7. The combination, with the link or arm connected to the land-wheel axle and having the cam-slot therein, the ...m connected to the furrow-wheel axle and carrying the roller engaged by said slot, and the operating-lever connected to said link, of the pivoted dog and dog-plate adapted to lock said arm in its positions, substantially as specified.

8. The combination, with the link or arm connected to the land-wheel axle and having a cam-slot at its upper portion, the arm connected to the furrow-wheel axle and carrying a roller or wheel engaged by said slot, and the operating-lever connected to said link, of the dog-plate carried by an arm of the land-wheel-axle bearing, and the dog pivoted to said plate, said dog and plate being provided with means for holding said arm in the position to which it is thrown by the movement of said link, and means on said link for releasing said dog, substantially as specified.

9. The combination, with the cam link or arm and the cam carrying the wheel or roller engaged by the cam-slot of said link, of the adjustable dog-plate, the dog pivoted thereto, the projections on said plate for holding said dog and for serving as stops for said arm, and a projection on said arm adapted to be engaged by said dog, and means on said link for releasing said dog, substantially as specified.

10. The combination, with the mechanism for leveling up the land and furrow wheels and the operating-lever for said mechanism, of the arm connected to the pivot-rod of said lever and the rod or link having a loose connection with said arm and connected with the hanger of the rear wheel, whereby the latter will be operated simultaneously with the land and furrow wheels, substantially as specified.

11. The combination, with the rear wheel carried by an oscillating hanger and a connection between said hanger and the operating-lever, of the means for operating the land and furrow wheel axles also connected with said lever, whereby the operation of said lever will simultaneously raise or depress said rear wheel and the land and furrow wheels, substantially as specified.

12. The combination, with the hanger pivotally secured in a bracket-arm of the plow-beam, a bearing-block fast on said hanger, and the rear wheel bearing in a yoke connected to said bearing-block, of a connection between said hanger and the operating-lever for the land and furrow wheel axles, whereby the operation of said lever will simultaneously raise or depress said rear wheel and the land and furrow wheels, substantially as specified.

13. In a plow, the combination, with the bracket-arm of the plow-beam, provided with a vertical slot or chamber therein, of a hanger pivoted and oscillating in said chamber, a bearing-block fast on the lower portion of said hanger, the yoke connected to said block and carrying the rear wheel, the stud or projection on said block adapted to swing into and out of engagement with a slot or socket in the bracket-arm, the corners of said slot or socket and of said stud being rounded, and means for effecting the vertical adjustment of said hanger, substantially as specified.

14. In a plow, the combination, with a bracket-arm of the plow-beam, having a rounded socket or seat therein, of a hanger pivoted in said arm, said hanger having a bearing-block fast on its lower portion, to which the yoke for the rear wheel is connected, and a stud or projection on said block adapted to swing into and out of connection with the rounded socket in said bracket-arm when said hanger is oscillated and under excess of lateral strain on the rear wheel, substantially as specified.

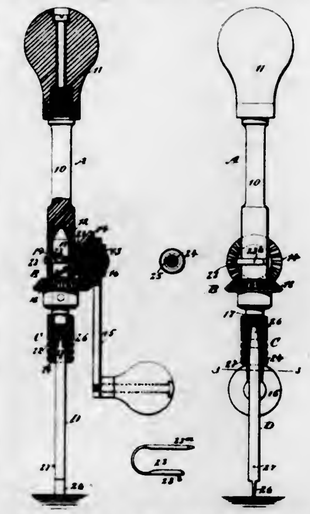
15. The combination, with the land and furrow beams, the operating-lever, and its connections, of the axle arms on which the land and furrow wheels are journaled, said arms having loose bearings on said beams and having thereon collars, and springs connecting the two axles and seated in said collars, substantially as specified.

484,653. FOLDING BOOK-BACK. ELLEN CLERK, Jefferson City, Mo. Filed May 31, 1892. Serial No. 435,082. (No model.)

Claim.—1. As an improved article of manufacture, a book having a back or cover having a stiff rounded supporting back portion and the front and back leaf covers made in sections which are flexibly connected with each other and are adapted to be folded, substantially as described.

2. In a book, the combination of a back or cover having a stiff rounded supporting back portion and the front and back leaf covers made in sections, and independent strips connecting said sections to hinge one to the other to adapt the same to be folded, substantially as described.

484,654. SCREW-DRIVER. WILLIAM R. DAILY, Morristown, Tenn. Filed Sept. 10, 1891. Serial No. 405,271. (No model.)



Claim.—1. In a screw-driver, the combination, with the upper or shank section provided with a branch or offset at one side and a chamber in its lower end, said chambered end being provided with two apertures extending through, of a post one end of which is located in the chamber of the upper section and is provided with an annular groove and a through aperture, the lower end of the post being threaded, a bevel-gear secured to the post, a similar gear meshing with the post-gear and provided with an attached handle mounted to turn upon the offset or branch of the upper section, a chuck adjustably located upon the lower threaded end of the post, provided with a vertical groove at its lower end intersecting the interior annular groove, and a removable key adapted to have one of its members passed through either aperture in the upper section, as and for the purpose specified.

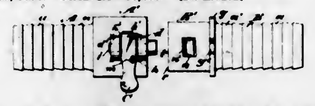
2. The combination, with the shank-section having a socket provided with transverse apertures, of the tool-post entering said socket and provided with an annular groove to register with one of the apertures and with an aperture to register with the other socket-aperture, and a key adapted to pass into the registering apertures and lock the post against rotation or to pass through the other aperture into the groove and permit the post to rotate in the socket, and means for rotating the post, substantially as set forth.

3. The combination, with the double-pointed bit D, having a transverse stud near each point, of the solid post having one end provided with a slot corresponding in shape with and adapted to receive either point of the bit to rotate it and provided with exterior threads, and the internally-threaded chuck or sleeve screwed upon the post and having an internal annular groove near its outer end to engage either bit stud, and an intersecting longitudinal groove to admit the stud into the annular groove, substantially as set forth.

484,655. LIFTING-JACK. MASON B. DOOLEY, Decatur, Mo. Filed Apr. 13, 1892. Serial No. 429,019. (No model.)

Claim.—In a lifting-jack, the combination of a base, a standard, a slotted lever fulcrumed to the upper end of the standard, a stop extending across the forward portion of the slot of said lever, and a curved arm having notches on its concave side, which arm is pivoted to the standard at its lower end and which at its upper end projects through the slot in the lever, where its notches engage said stop when the arm is pushed inward against the latter, substantially as shown and described.

484,656. COUPLING. IRVIN P. DOOLITTLE, Redlands, Cal. Filed Dec. 29, 1891. Serial No. 416,460. (No model.)



Claim.—1. In a coupling, a spiral cam locking-lever which is pivoted in a slot on the female coupling-section and has an adjustable interlocking connection with a channel-shoulder on the other or male coupling-section, substantially as described.

2. The combination, with a male coupling-section and a female coupling-section, of a spiral-ribbed cam-lever pivoted to vibrate transversely on the female section and adapted to interlock its rib with a transverse shoulder on the male section, substantially as described.

3. The combination, with a male coupling-section having a diagonal channel on it near one end and a female coupling-section whereon two parallel transverse ears are formed with a slot between, of a lever having a hub enlargement on one end pivoted between the ears, a spiral rib on the hub, and a joint-washer between the coupling-sections, substantially as described.

4. The combination, with a male coupling-section having a diagonal channel formed near one end and a radial collar near said end having a single scalloped notch, of a female coupling-section having two parallel transverse ears thereon and slotted between said ears, a lever having a hub on one end, a spiral cam-rib on the hub, a fulcrum-bolt passing through the ears and hub, and a head on said bolt which enters the scalloped notch of the collar when the sections are assembled, substantially as described.

5. A coupling comprising a male section diagonally channeled near one end, a female section, two transverse ears thereon near one end, spaced apart and slotted between, a locking-lever, a cylindrical hub on said lever, which is pivoted between the ears, and a spiral cam-rib on said hub which merges into a radial flange along one side edge of the hub, substantially as described.

6. The combination, with a cylindric male coupling-section having a diagonally-transverse channel in it near one end and a radial collar on this section near the same end, having a single scallop in its edge, of a female coupling-section, a pair of spaced ears thereon between which a slot is formed, a bent lever pivoted between the ears and provided with a hub at one end, a spiral rib on the hub which merges into a radial flange on one side of the hub, a fulcrum-bolt passing through the ears and hub, and a head on the fulcrum-bolt, which engages the scallop on the male coupling-section when the coupling-sections are connected, substantially as described.

484,657. DEVICE FOR SECURING DESKS AND SEATS TO THE FLOOR. GEORGE A. HAMMOND, Bennett, Mich. Filed May 6, 1892. Serial No. 431,902. (No model.)

Claim.—1. The combination, with a desk having projecting legs at each of its ends and a pivotal support for one of the said ends, of a strip secured to the legs at the opposite end, a roller journaled in the said strip, and a cleat secured to the floor which is provided with a depression in which the said roller rests, substantially as shown and described.

2. The combination of a desk, legs therefor, a strip secured to one of the legs, a strip secured to the floor to which the said leg-strip is

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necessarily stopping the spinning mechanism, as and for the purposes set forth.

6. The combination, with a torpedo-barrel, of a fly-wheel torpedo contained therein, a clutch for engaging with the fly-wheel, spinning mechanism whereby the fly-wheel can be spun up, and mechanism for engaging and disengaging the spinning mechanism with the clutch, the disengagement occurring without necessarily stopping the running of the spinning mechanism, substantially as described.

7. The combination, with a tube, gun, or barrel containing a piston open at its forward end and provided at its rear end with a clutch for engaging with and turning the projectile or a part thereof, of means for engaging and disengaging with the clutch, substantially as described.

with respect to the longitudinal axis of the torpedo is maintained, and a fluid-pressure device for operating and releasing the safety device, substantially as described.

15. A sliding sleeve or vessel within the tube, constituting a torpedo-holding device located in the torpedo-barrel to engage with the torpedo, whereby the relative vertical position of the torpedo with respect to the shorter axis of the torpedo-barrel is maintained, that is to say, whereby the torpedo will be retained in the tube with its axis

ton open at its front end and provided at its rear end with a clutch for engaging with and turning the projectile or a part thereof, of means for engaging and disengaging with the clutch, substantially as described.

26. The combination, with a tube, gun, or barrel containing a piston open at its forward end and provided at its rear end with a clutch for engaging with and turning the projectile or a part thereof, of means for engaging and disengaging with the clutch and a spinning device

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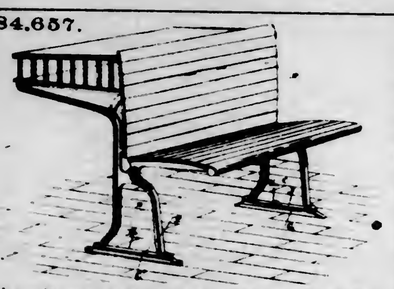
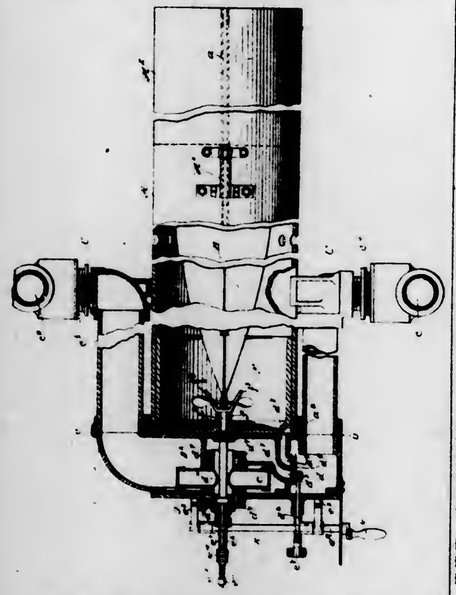


pivoted, a strip secured to the legs of the opposite end of the desk, a roller journaled in an opening in the said strip, a strip secured to the floor, which is provided with an opening into which the said roller rests, inclined rib I, and a corresponding inclined depression L on the adjacent faces of the last-named strips, substantially as shown and described.

484,658. TORPEDO-LAUNCHING APPARATUS. JOHN A. HOWELL, Washington, D. C. Filed Sept. 16, 1891. Serial No. 406,129. (No model.)



Claim.—1. The combination, in apparatus for giving motion to projectiles, of a tube, gun, or barrel suitable for containing a projectile, spinning mechanism, and means for connecting the spinning mechanism and the projectile, substantially as described.

2. The combination, with any tube, gun, or barrel suitable for containing a fly-wheel torpedo, of means for spinning or speeding up the fly-wheel of the torpedo, as and for the purposes set forth.

3. The combination, in torpedo-launching apparatus, with a torpedo tube, gun, or barrel for fly-wheel torpedoes, of spinning mechanism and a clutch to connect the spinning mechanism with the torpedo-driving gear, whereby the fly-wheel of an inserted torpedo can be spun up to the requisite velocity, substantially as described.

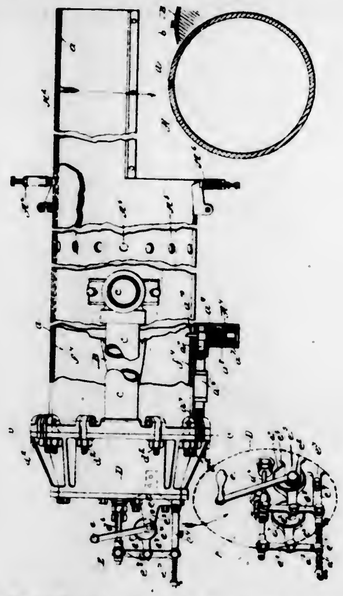
4. The combination, in torpedo-launching gear or apparatus, with a torpedo-barrel, of a fly-wheel torpedo contained therein and a clutch for engaging with the driving-gear of the torpedo, substantially as set forth.

5. The combination, with a tube, gun, or barrel suitable for containing a fly-wheel torpedo, of a clutch for engaging with the driving-gear of the torpedo, spinning mechanism whereby the fly-wheel can be spun up, and mechanism for engaging and disengaging the spinning mechanism with the clutch, the disengagement occurring without necessarily stopping the spinning mechanism, as and for the purposes set forth.

6. The combination, with a torpedo-barrel, of a fly-wheel torpedo contained therein, a clutch for engaging with the fly-wheel, spinning mechanism whereby the fly-wheel can be spun up, and mechanism for engaging and disengaging the spinning mechanism with the clutch, the disengagement occurring without necessarily stopping the running of the spinning mechanism, substantially as described.

7. The combination, with a tube, gun, or barrel, of a horizontally-revolvable stand or mount on which the tube, gun, or barrel is placed, whereby the tube may be traversed, as and for the purposes set forth.

8. The combination, with a tube, gun, or barrel, of a horizontally-revolvable stand or mount on which the tube, gun, or barrel is pivoted, whereby the tube, gun, or barrel may be traversed and also elevated and depressed, thus is trained, as set forth.



9. The combination, with a tube, gun, or barrel, of a horizontally-revolvable stand or mount on which the tube, gun, or barrel is pivoted, whereby it may be trained, and conduits or conductors which pass through the pivot at the tube carrying power to the tube, gun, or barrel to drive the spinning mechanism and perform other operations as and also exhausting through the training-pivot, whereby the conveyers or conductors will be free from strain and be protected.

10. A stand or mount for a torpedo tube, gun, or barrel, consisting of a frame composed of supply and exhaust pipes, a curved pipe into which the supply-pipe leads at one end, the other end opening into a pivotal pipe connecting with one hollowed trunnion of the tube, gun, or barrel and opening into a further curved pipe diametrically opposite the first and leading to the exhaust-pipe, the frame being completed by curved pipes diametrically opposite each other, closed at both ends, and the supply and exhaust pipes supplying, with the frame, a vertical pivot for traversing, and the pipes at the trunnions, a horizontal pivot for elevating and depressing, as and for the purposes set forth.

11. The combination, with the torpedo tube, gun, or barrel, of a latch safety device to engage with the torpedo, substantially as described.

12. The combination, with the torpedo-barrel, of a torpedo contained therein and a latch safety device located on the torpedo-barrel and engaging with the torpedo notched to take the latch, whereby the relative longitudinal location of the torpedo with respect to the longitudinal axis of the torpedo-barrel is maintained, as set forth.

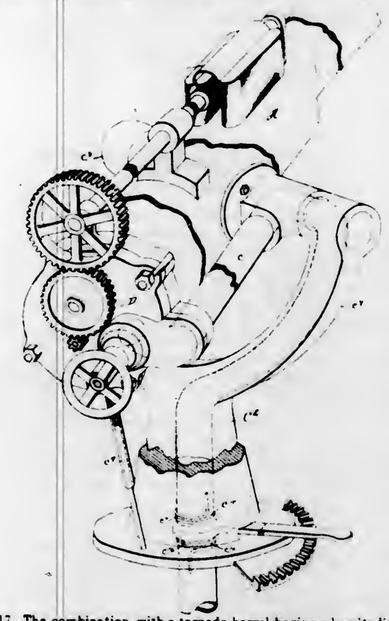
13. The combination, with a torpedo tube, gun or barrel, of a safety device located on the torpedo tube, gun, or barrel and a fluid-pressure device for operating and releasing it, substantially as described.

14. The combination, with the torpedo-barrel, of the torpedo contained therein, a safety device located on the torpedo-barrel and engaging with the torpedo, whereby the relative position of the torpedo

with respect to the longitudinal axis of the torpedo is maintained, and a fluid-pressure device for operating and releasing the safety device, substantially as described.

15. A sliding sleeve or vessel within the tube, constituting a torpedo-holding device located in the torpedo-barrel to engage with the torpedo, whereby the relative vertical position of the torpedo with respect to the shorter axis of the torpedo-barrel is maintained, that is to say, whereby the torpedo will be retained in the tube with its axis coincident with that of the tube, as set forth.

16. The combination, with the torpedo-barrel, of a torpedo-holding device located in the torpedo-barrel to engage with the torpedo, whereby the torpedo will be retained in the tube with its axis coincident with that of the tube, and a latch safety device to engage with the torpedo, assist in retaining it in proper position, and restrain it from falling out of the tube, as described.



17. The combination, with a torpedo-barrel having a longitudinal retaining-groove at its top within, of a torpedo contained in the tube and provided with a tenon at its top of suitable form to be retained in the groove, as described.

18. In a torpedo-launching apparatus for fly-wheel torpedoes, a torpedo gun, tube, or barrel provided with a longitudinal retaining-groove at its top within, as set forth.

19. The combination, with the torpedo-barrel having a longitudinal retaining-groove at its top within, of the torpedo contained in the tube and provided with a tenon at its top of suitable form to be retained in the groove, of a holding device in the tube and a safety-pin therein.

20. The combination, with the torpedo-tube having the longitudinal groove, of the torpedo having the lug or vertical fin, whereby the torpedo is inserted in a determined position with respect to the tube, substantially as described.

21. The combination, with the torpedo-tube, of the projecting safety-pin having a piston-head working in the cylinder-box, a port, a spiral or other suitable spring, and an adjusting-nut, as set forth.

22. The combination, with the torpedo-barrel provided with a receptacle for the expelling agent, of the torpedo contained in the barrel, a safety device located on the torpedo-tube for centering the torpedo, a device for operating and releasing the centering device, and connections between said receptacle and the centering device, whereby on the release of the centering device the torpedo is automatically fired, as described.

23. The combination, with a torpedo tube, gun, or barrel, of a removable internal vessel for holding the projectile, the vessel in use being always wholly within the tube, substantially as described.

24. The combination, with a tube, gun, or barrel, of a piston provided with a clutch for engaging with and turning the projectile or a part thereof.

25. The combination, with a tube, gun, or barrel containing a piston open at its front end and provided at its rear end with a clutch for engaging with and turning the projectile or a part thereof, of means for engaging and disengaging with the clutch, substantially as described.

26. The combination, with a tube, gun, or barrel containing a piston open at its forward end and provided at its rear end with a clutch for engaging with and turning the projectile or a part thereof, of means for engaging and disengaging with the clutch and a spinning device for turning the shaft of the engaging and disengaging means with the clutch, the engagement and disengagement occurring without necessarily stopping the spinning device, substantially as described.

27. The combination, with a tube, gun, or barrel, of a piston provided with a clutch and having a chamber behind it, means for engaging and disengaging with the clutch, means for spinning the engaging and disengaging means, and fluid-pressure ports connected with the spinning mechanism and with the chamber, whereby a contained projectile may be spun and then driven out or fired, substantially as described.

28. The combination, with a tube, gun, or barrel, of a piston provided with a clutch and having a chamber behind it, engaging and disengaging means to the clutch, spinning mechanism, fluid-pressure ports to connect with the spinning mechanism and with the chamber, and hand-gear for opening and shutting off supply of fluid to the spinning mechanism, to the chamber, and to both, substantially as described.

29. The combination, with a shaft e^8, of eccentrics or cranks, bars e^9 e^{10}, to which the eccentrics or cranks are suitably connected, rigid supports e^6 e^{11}, in one of which a bar at one end is fixedly pivoted and in the other of which a bar is also at one end movably pivoted, the other ends of the bar being pivoted, respectively, to rods set at an angle to the bars from the same shaft and from the same eccentric or crank or from eccentrics and cranks of the same size, whereby when a rod having a shorter length of movement has completed its movement a rod having a greater length of movement may move on, substantially as described.

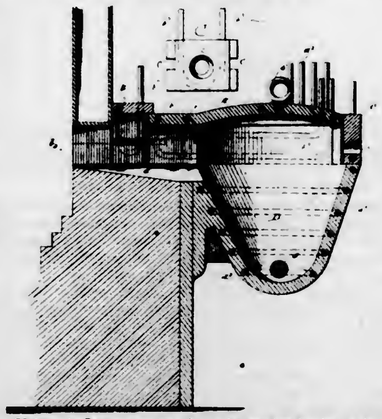
30. A tube, gun, or barrel provided with an opening or with openings in its body in advance of the original receptacle for the expelling agent, whereby pressure will be diminished upon a projectile fired from it before the projectile leaves the tube.

31. The combination, with a tube, gun, or barrel provided with an opening or with openings in its body, of a piston adapted to be projected outward by fluid pressure and to push a projectile, and a stop or catching device for the piston, the stop being in advance of the openings and these being in advance of the position of the piston before firing, whereby pressure will be diminished upon the piston and this will be arrested before it reaches the end of the gun and the projectile will continue onward by its inertia, substantially as described.

32. In a mount or stand for a tube, gun, or barrel, the traversing device, in combination with spring c^{18}, attached to the movable standard and to a stationary plate, substantially as described.

33. In a mount or stand for a tube, gun, or barrel mounted upon a rotatable support, a spring-support, as c^6, attached to the tube, gun, or barrel and to the support, substantially as described.

484,659. SLAG-SEPARATOR. JOHN F. KEIPER, Denver, Colo. Filed July 30, 1889. Serial No. 319,232. (No model.)



Claim.—1. In a separator, the main portion having at its lower end an outlet-spout carrying in its end the adjustable piece for limit-

ing the outflow of the metal, the waste-discharge opening above the level of the said outlet-spout, and the spirally-arranged cooling-pipes in the cover and the separater, substantially as described.

2. In a separator, the main body portion, the removable cover having secured in its end the detachable piece containing the waste-opening, and the lower outflow-pipe, the end of which is below the level of the waste-opening, substantially as described.

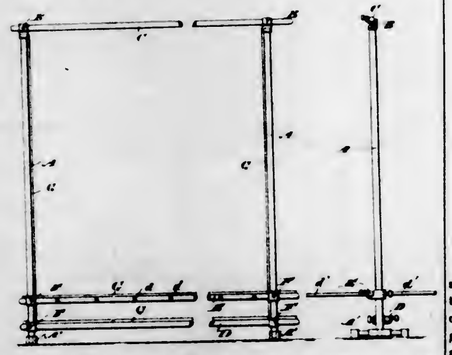
3. In a separator, the main body portion, the removable cover having secured in its end the detachable piece containing the waste-opening, and the lower outflow-pipe, the end of which is below the level of the waste-opening, having secured therein the adjustable piece for limiting the outflow of metal, substantially as described.

4. In a separator, the main body portion, the removable cover having secured in its forward end the detachable piece containing the waste-opening, the lower outflow-pipe, the end of which is below the level of the waste-opening, having secured therein the adjustable piece for limiting the outflow of metal, and the spirally-arranged cooling-pipes in the cover and body portion, substantially as described.

5. In a separator, the cover having a removable piece at its rear end for connecting it to the furnace and a detachable piece at its forward end having a waste-opening therein, and the body portion having the outflow-pipe connected therewith at its lower end, substantially as described.

6. In a separator, the main body portion, the removable cover having secured in its forward end the detachable piece having a waste-opening therein, the removable piece at its rear end for connecting it with the furnace, the body portion having the outflow-pipe connected therewith at its lower end, in the end of which pipe is secured the adjustable piece for limiting the outflow of metal, and the spirally-arranged cooling-pipes in the cover and body portion of the separator, substantially as described.

484,660. COMBINED CURTAIN-STRETCHER AND CLOTHES-HORSE. EDWARD H. KENWORTHY, Oldham, England. Filed Apr. 13, 1892. Serial No. 428,810. (No model.) Patented in England Feb. 21, 1891, No. 3,182.

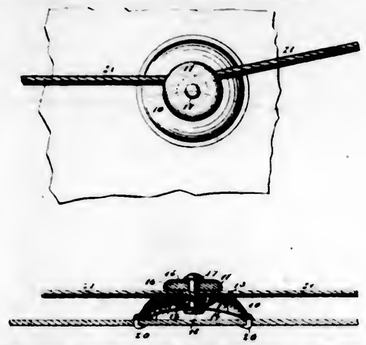


Claim.—1. A combined curtain-stretcher and clothes-drier comprising standards, a top bar to which the standards are adjustably secured, and two stretcher-bars on opposite sides of the standards, the standards being adjustably secured to the bars and the bars vertically adjustable on the standards, substantially as described.

2. A combined curtain-stretcher and clothes-drier comprising standards provided with feet, a top bar to which the standards are adjustably secured, and two stretcher-bars provided with lateral arms, the said bars being adjustable on the standards and the standards adjustable on the bars, substantially as described.

3. In a combined curtain-stretcher and clothes-drier, the combination, with two standards, of sockets fitting on the upper end of the standards and provided with concave seats and binding-screws, brackets adjustably secured on the standards and provided with curved arms projecting from opposite sides of the standards and forming seats and with binding-screws, a top bar secured in the seats of the sockets, and stretcher-bars secured in the seats of the brackets, substantially as herein shown and described.

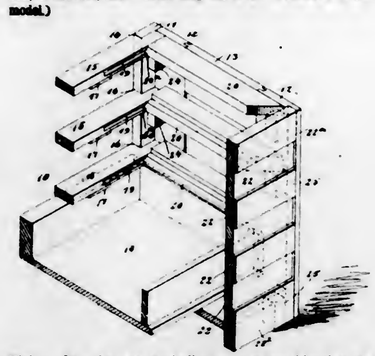
484,661. LACE-FASTENER. JUSTUS W. KIRK, Helena, Mont. Filed Sept. 10, 1891. Serial No. 405,284. (No model.)



Claim.—1. The combination, in a lace-fastener, with the hollow base having a centrally-apertured depression or well, of the button-head having a stem extending through said aperture and a spring concealed within the base and connected to said stem to draw the button-head toward said depression, substantially as set forth.

2. A lace-fastener consisting in a hollow base 10, provided with attaching-prongs 20 and a centrally-apertured depression or well 12, the button-head formed of an apertured shell 11, having an inner facing 16, of rubber or like material, a stem or post 17, passed through the button-head and base, and the plate-spring 19 within the base and connected between its ends with the inner end of said stem, substantially as set forth.

484,662. CONSTRUCTION OF BUREAUS, &c. EDWARD P. LOBKER, Evansville, Ind. Filed May 14, 1892. Serial No. 432,907. (No model.)

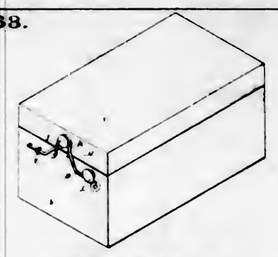


Claim.—In a bureau or similar case, in combination, the front stiles 11, the parting-rails 15, having their ends rabbeted to fit upon the said stiles, whereby such rails are adapted for vertical adjustment on the stiles, said rails being, also, provided with horizontal extended grooves 19, the drawer-bearers 20, having tenons fitting such grooves and adapted for lateral movement therein, and the face-pieces 12 and 13, all arranged substantially as shown, and for the purpose described.

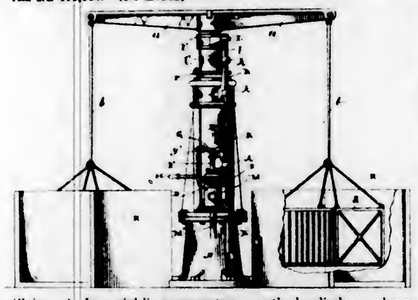
484,663. BOX-FASTENER. CHARLES C. MARTIN, Denver, Colo. Filed Aug. 3, 1892. Serial No. 442,009. (No model.)

Claim.—In a box-lid fastener, the combination of a spring-wire having one end bent at right angles to its axis and pressed into the body of the box and a staple, screw, or clip embracing the wire near its end and rigidly securing it to the box, said wire bent at its central portion in the form of a triangle and having formed at the apex of the triangle a loop adapted to embrace a projecting button or screw attached to the lid of the box, the other end of said wire provided with a loop or flattened portion operating as a handle, and a projecting button or screw attached to the body of the box near this end, operating as a lock for the wire, as herein set forth.

484,668.



484,664. APPARATUS FOR PICKLING AND WASHING METAL PLATES, &c. GEORGE MEHTA, Pittsburg, Pa. Filed Jan. 2, 1892. Serial No. 416,907. (No model.)



Claim.—1. In a pickling apparatus, a vertical cylinder, a plunger therein, spiders or arms secured to the upper protruding end of the plunger, crates suspended from the arms, vats for the crates, and a mechanism operated by the plunger for regulating the flow to the cylinder to impart a vertical movement to the plunger, the parts combined substantially as described.

2. A pickling apparatus comprising a vertical cylinder, a plunger therein carrying arms, crates suspended therefrom, a rod carried by the plunger, a valve for regulating the flow to the cylinder, and a connection between the said valve and the plunger-rod, substantially as specified.

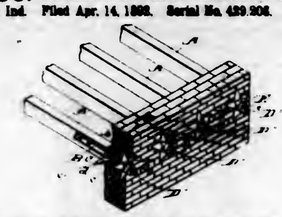
3. A pickling apparatus comprising a vertical cylinder carrying a plunger, supporting-arms carried by the upper end of the plunger, crates suspended therefrom, a rod carried by the plunger, a valve for regulating the flow to the cylinder, a device carried by the valve-rod engaging the said plunger-rod, and a lever for operating the said device to disengage it from the plunger-rod, substantially as set forth.

484,665. CHECK-HOOK. DAVID W. MICKEY, White City, Kans. Filed Feb. 12, 1892. Serial No. 421,948. (No model.)

Claim.—1. The combination of a hook, a dog pivoted near its hook-ended portion to the upper forward end of said hook and having its rear end portion adapted to rest upon the rear end of said hook, and a latch pivoted to said hook and having its free end adapted to engage the under side of the upper portion of said dog and its pivoted end provided with a cam to engage the lower forward end of the dog, substantially as set forth.

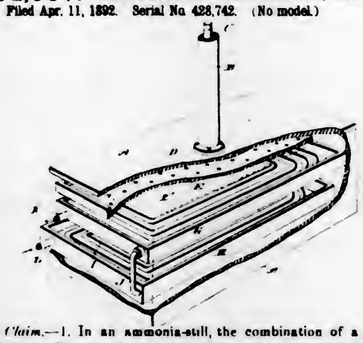
2. The bridle or check rein holder having the bifurcated hook, in combination with the hook-ended dog having a flat inner end portion provided with a greater inclined surface and a lesser reversely-inclined surface at its extreme rear end and the latch or guard pivoted between and about centrally of the arms of said hook and having its extreme inner end provided with a rounded shoulder or cam-like portion adapted to be engaged by said dog, substantially as set forth.

484,666. ANCHOR FOR JOISTS. MARCELL W. MITCHELL, New Albany, Ind. Filed Apr. 14, 1892. Serial No. 429,206. (No model.)



Claim.—In an anchorage for joists and beams, the combination, with the joist or beam and the wall forming the support therefor, of the strap or plate secured to said joist or beam and having a shank projecting within the wall, a depending acute-edged hook terminating said shank, and the anchor-rod D, secured in the wall and terminating in an eye *d* at its inner end, which receives said hook, the connection between said hook and eye being within the socket or seat in which said beam or joist is held, substantially as and for the purpose specified.

484,667. AMMONIA-STILL. HENRY NADORFF, Louisville, Ky. Filed Apr. 11, 1892. Serial No. 428,742. (No model.)



Claim.—1. In an ammonia-still, the combination of a suitable shell, the shallow tray therein having a steam-heated coil within itself, a liquid-supply pipe, a perforated diaphragm or plate between the supply-pipe and tray, and a suitable means for leading the gas or vapor from the still, as and for the purpose described.

2. In an ammonia-still, the combination of a suitable shell, the shallow trays arranged therein one above the other, the overflow-pipe extending through the bottom of the upper tray, the connected steam-coils within said trays, the liquid-supply pipe, the perforated diaphragm or plate between the liquid-supply pipe and the upper tray, and a suitable means for leading the gas or vapor from the still, as and for the purposes described.

3. In an ammonia-still, the combination of a suitable shell, the stand-pipe erected thereon, the supply-pipe extending through said stand-pipe and having the openings near its upper end and the perforated cap at its lower end, the trays arranged within the inclosure, the heating-coils within said trays, the perforated diaphragm supported above the upper tray, and a suitable means for leading the gas or vapor from the still, as and for the purposes described.

4. In an ammonia-still, the combination of a suitable shell, a tray arranged therein, a heating-coil arranged within the tray, the stand-pipe erected on the shell, and the supply-pipe extending through the stand-pipe and having the openings near its upper end and also having perforations in its lower end, substantially as specified.

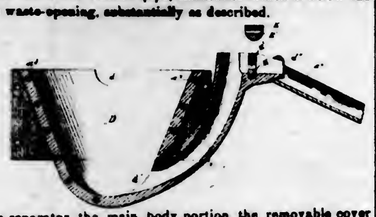
5. In an ammonia-still, the combination, with a suitable shell and the shallow tray arranged therein and having a steam-heated coil within itself, of a liquid-supply pipe, the perforated cap at the lower end of said pipe, and a perforated diaphragm arranged between the supply-pipe and the tray, substantially as specified.

484,668. LATHE-DOG. RICHMOND PARSONS, Philadelphia, assignor, by direct and mesne assignments, to John C. Palmer, Ridley Park, Pa. Filed Nov. 18, 1890. Renewed Jan. 16, 1892. Again renewed Aug. 17, 1892. Serial No. 443,209. (No model.)

Claim.—1. A lathe-dog comprising the body formed by the yoke-piece and the sides, the said sides having teeth on their inner faces, the bridge-piece having teeth on the opposite sides of its upper end, said bridge-piece being adapted to be passed laterally into and out of the body, and the clamping screw.

ing the outflow of the metal, the waste-discharge opening above the level of the said outlet-spout, and the spirally-arranged cooling-pipes in the cover and the separator, substantially as described.

2. In a separator, the main body portion, the removable cover having secured in its end the detachable piece containing the waste-opening, and the lower outflow-pipe, the end of which is below the level of the waste-opening, substantially as described.



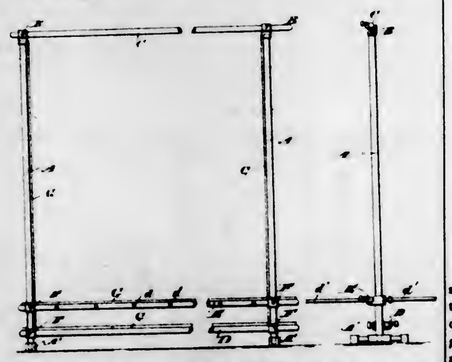
3. In a separator, the main body portion, the removable cover having secured in its end the detachable piece containing the waste-opening, and the lower outflow-pipe, the end of which is below the level of the waste-opening, having secured therein the adjustable piece for limiting the outflow of metal, substantially as described.

4. In a separator, the main body portion, the removable cover having secured in its forward end the detachable piece containing the waste-opening, the lower outflow-pipe, the end of which is below the level of the waste-opening, having secured therein the adjustable piece for limiting the outflow of metal, and the spirally-arranged cooling-pipes in the cover and body portion, substantially as described.

5. In a separator, the cover having a removable piece at its rear end for connecting it to the furnace and a detachable piece at its forward end having a waste-opening therein, and the body portion having the outflow-pipe connected therewith at its lower end, substantially as described.

6 In a separator, the main body portion, the removable cover having secured in its forward end the detachable piece having a waste-opening therein, the removable piece at its rear end for connecting it with the furnace, the body portion having the outflow-pipe connected therewith at its lower end, in the end of which pipe is secured the adjustable piece for limiting the outflow of metal, and the spirally-arranged cooling-pipes in the cover and body portion of the separator, substantially as described.

484,660. COMBINED CURTAIN-STRETCHER AND CLOTHES-HORSE. EDWARD H. KENWORTHY, Oldham, England. Filed Apr. 12, 1892. Serial No. 428,810. (No model.) Patented in England Feb. 21, 1891, No. 3,182.

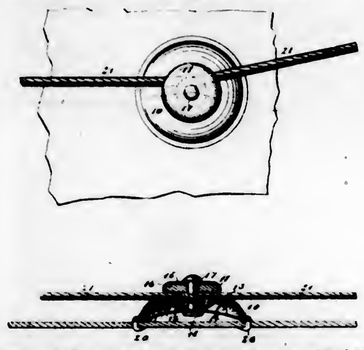


Claim.—1. A combined curtain-stretcher and clothes-drier comprising standards, a top bar to which the standards are adjustably secured, and two stretcher-bars on opposite sides of the standards, the standards being adjustably secured to the bars and the bars vertically adjustable on the standards, substantially as described.

2. A combined curtain-stretcher and clothes-drier comprising standards provided with feet, a top bar to which the standards are adjustably secured, and two stretcher-bars provided with lateral arms, the said bars being adjustable on the standards and the standards adjustable on the bars, substantially as described.

3. In a combined curtain-stretcher and clothes-drier, the combination, with two standards, of sockets fitting on the upper end of the standards and provided with concave seats and binding-screws, brackets adjustably secured on the standards and provided with curved arms projecting from opposite sides of the standards and forming seats and with binding-screws, a top bar secured in the seats of the sockets, and stretcher-bars secured in the seats of the brackets, substantially as herein shown and described.

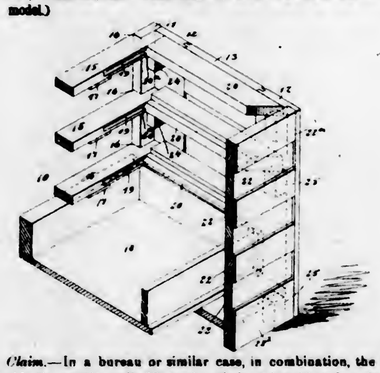
484,661. LACE-FASTENER. JUSTUS W. KING, Helena, Mont. Filed Sept. 10, 1891. Serial No. 405,284. (No model.)



Claim.—1. The combination, in a lace-fastener, with the hollow base having a centrally-apertured depression or well, of the button-head having a stem extending through said aperture and a spring concealed within the base and connected to said stem to draw the button-head toward said depression, substantially as set forth.

2. A lace-fastener consisting in a hollow base 10, provided with attaching-prongs 20 and a centrally-apertured depression or well 12, the button-head formed of an apertured shell 11, having an inner facing 16, of rubber or like material, a stem or post 17, passed through the button-head and base, and the plate-spring 19 within the base and connected between its ends with the inner end of said stem, substantially as set forth.

484,662. CONSTRUCTION OF BUREAUS, &c. EDWARD P. LURKER, Evansville, Ind. Filed May 14, 1892. Serial No. 432,997. (No model.)

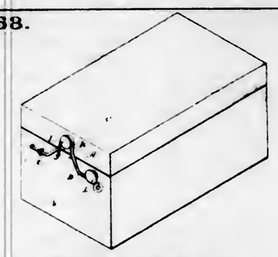


Claim.—In a bureau or similar case, in combination, the front stiles 11, the parting-rails 15, having their ends rabbeted to fit upon the said stiles, whereby such rails are adapted for vertical adjustment on the stiles, said rails being, also, provided with horizontal extended grooves 19, the drawer-bearers 20, having tenons fitting such grooves and adapted for lateral movement therein, and the face-pieces 12 and 13, all arranged substantially as shown, and for the purpose described.

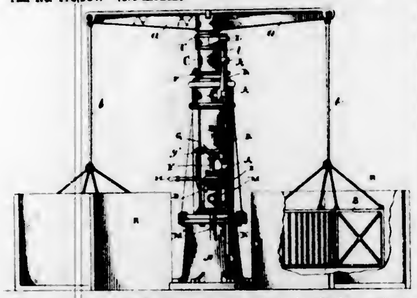
484,663. BOX-FASTENER. CHARLES C. MARTIN, Denver, Colo. Filed Aug. 3, 1892. Serial No. 442,005. (No model.)

Claim.—In a box-lid fastener, the combination of a spring-wire having one end bent at right angles to its axis and pressed into the body of the box and a staple, screw, or clip embracing the wire near its end and rigidly securing it to the box, said wire bent at its central portion in the form of a triangle and having formed at the apex of the triangle a loop adapted to embrace a projecting button or screw attached to the lid of the box, the other end of said wire provided with a loop or flattened portion operating as a handle, and a projecting button or screw attached to the body of the box near this end, operating as a lock for the wire, as herein set forth.

484,668.



484,664. APPARATUS FOR PICKLING AND WASHING METAL PLATES, &c. GEORGE MESTA, Pittsburg, Pa. Filed Jan. 2, 1892. Serial No. 416,907. (No model.)



Claim.—1. In a pickling apparatus, a vertical cylinder, a plunger therein, spiders or arms secured to the upper protruding end of the plunger, crates suspended from the arms, vats for the crates, and a mechanism operated by the plunger for regulating the flow to the cylinder to impart a vertical movement to the plunger, the parts combined substantially as described.

2. A pickling apparatus comprising a vertical cylinder, a plunger therein carrying arms, crates suspended therefrom, a rod carried by the plunger, a valve for regulating the flow to the cylinder, and a connection between the said valve and the plunger-rod, substantially as specified.

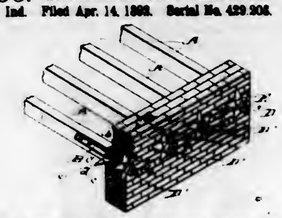
3. A pickling apparatus comprising a vertical cylinder carrying a plunger, supporting-arms carried by the upper end of the plunger, crates suspended therefrom, a rod carried by the plunger, a valve for regulating the flow to the cylinder, a device carried by the valve-rod engaging the said plunger-rod, and a lever for operating the said device to disengage it from the plunger-rod, substantially as set forth.

484,665. CHECK-HOOK. DAVID W. MICKEY, White City, Kans. Filed Feb. 12, 1892. Serial No. 421,948. (No model.)

Claim.—1. The combination of a hook, a dog pivoted near its hook-ended portion to the upper forward end of said hook and having its rear end portion adapted to rest upon the rear end of said hook, and a latch pivoted to said hook and having its free end adapted to engage the under side of the upper portion of said dog and its pivoted end provided with a cam to engage the lower forward end of the dog, substantially as set forth.

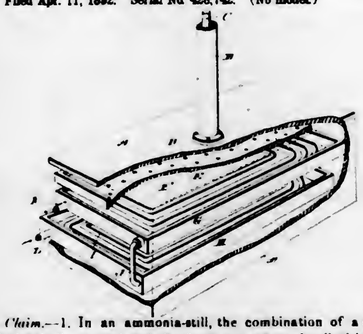
2. The bridle or check rein holder having the bifurcated hook, in combination with the hook-ended dog having a flat inner end portion provided with a greater inclined surface and a lesser reversely-inclined surface at its extreme rear end and the latch or guard pivoted between and about centrally of the arms of said hook and having its extreme inner end provided with a rounded shoulder or cam-like portion adapted to be engaged by said dog, substantially as set forth.

484,666. ANCHOR FOR JOISTS. MARCELL W. MITCHELL, New Albany, Ind. Filed Apr. 14, 1892. Serial No. 429,208. (No model.)



Claim.—In an anchorage for joists and beams, the combination, with the joist or beam and the wall forming the support therefor, of the strap or plate secured to said joist or beam and having a shank projecting within the wall, a depending acute-edged hook terminating said shank, and the anchor-rod D, secured in the wall and terminating in an eye *d* at its inner end, which receives said hook, the connection between said hook and eye being within the socket or seat in which said beam or joist is held, substantially as and for the purpose specified.

484,667. AMMONIA-STILL. HENRY NADORFF, Louisville, Ky. Filed Apr. 11, 1892. Serial No. 428,742. (No model.)



Claim.—1. In an ammonia-still, the combination of a suitable shell, the shallow tray therein having a steam-heated coil within itself, a liquid-supply pipe, a perforated diaphragm or plate between the supply-pipe and tray, and a suitable means for leading the gas or vapor from the still, as and for the purpose described.

2. In an ammonia-still, the combination of a suitable shell, the shallow trays arranged therein one above the other, the overflow-pipe extending through the bottom of the upper tray, the connected steam-coils within said trays, the liquid-supply pipe, the perforated diaphragm or plate between the liquid-supply pipe and the upper tray, and a suitable means for leading the gas or vapor from the still, as and for the purposes described.

3. In an ammonia-still, the combination of a suitable shell, the stand-pipe erected thereon, the supply-pipe extending through said stand-pipe and having the openings near its upper end and the perforated cap at its lower end, the trays arranged within the inclosure, the heating-coils within said trays, the perforated diaphragm supported above the upper tray, and a suitable means for leading the gas or vapor from the still, as and for the purposes described.

4. In an ammonia-still, the combination of a suitable shell, a tray arranged therein, a heating-coil arranged within the tray, the stand-pipe erected on the shell, and the supply-pipe extending through the stand-pipe and having the openings near its upper end and also having perforations in its lower end, substantially as specified.

5. In an ammonia-still, the combination, with a suitable shell and the shallow tray arranged therein and having a steam-heated coil within itself, of a liquid-supply pipe, the perforated cap at the lower end of said pipe, and a perforated diaphragm arranged between the supply-pipe and the tray, substantially as specified.

484,668. LATHE-DOG. RICHMOND PARSONS, Philadelphia, assignor, by direct and mesne assignments, to John C. Palmer, Ridley Park, Pa. Filed Nov. 18, 1890. Renewed Jan. 16, 1892. Again renewed Aug. 17, 1892. Serial No. 443,269. (No model.)

Claim.—1. A lathe-dog comprising the body formed by the yoke-piece and the sides, the said sides having teeth on their inner faces, the bridge-piece having teeth on the opposite sides of its upper end, said bridge-piece being adapted to be passed laterally into and out of the body, and the clamping-screw.

2. A lathe dog comprising the ∩-shaped body having transverse teeth on the inner faces of its legs, and the part B, having teeth on the opposite sides of its upper end, said part B being adapted to be passed laterally into and out of the ∩-shaped body, and a clamping-screw, substantially as set forth.

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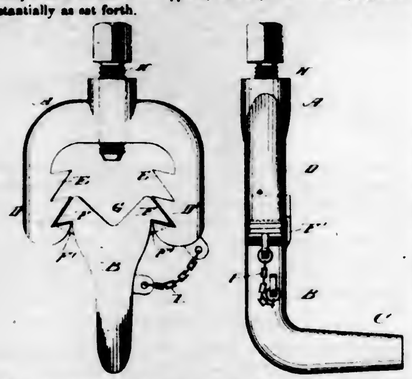
block having a longitudinal groove or recess within the path of movement of the needle and at right angles to the plane in which the needle reciprocates, and thrum-gathering devices arranged in front of the needle and of the said guide-block, the said work-holder operating to bend the material into the groove or recess of the said guide-block, and pivotally secured thereto by a central pin *f*, said pin extending beyond the top of the cover and provided with a turning-handle, brushes carried by said pin, so as to come in contact with the base of the receptacle, and an arm rigidly attached to the cover, said arm passing through an aperture in the top of the cover, the parts being

2. A lathe dog comprising the ∩-shaped body having transverse teeth on the inner faces of its legs, and the part B, having teeth on the opposite sides of its upper end, said part B being adapted to be passed laterally into and out of the ∩-shaped body, and a clamping screw, substantially as set forth.



3. A lathe dog consisting in the ∩ shaped body having transverse teeth E, and the part B, having oppositely-projecting teeth F on the outer faces of its upper end, to be passed laterally into the spaces or notches between the teeth E and the legs F', closing at one side the notches or spaces formed by the teeth F and adapted to engage the teeth E and limit the movement of part B, and a clamping-screw, substantially as shown and described.

484,669. CUFF BUTTON AND FASTENER. James F. Poage, Kirksville, Mo. Filed May 13, 1892. Serial No. 432,853. (No model.)

Claim.—A cuff-holder consisting in the flat shank 11, having an outward projecting end 12, provided with a cuff-button, jaws 13 in the plane of the shank and projecting at an angle from its opposite end, and a U shape clasp 15, pivoted at the juncture of the jaws with the shank in the plane thereof and embracing the jaws along one edge to hold them from springing apart, substantially as set forth

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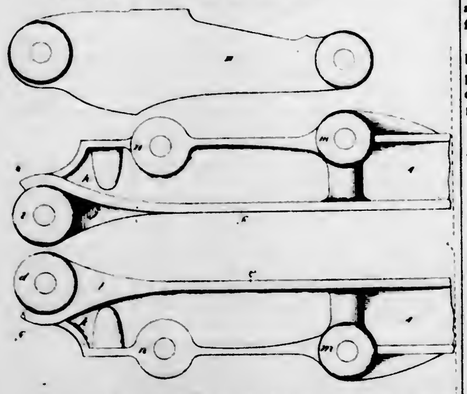
484,670. BOLT-CLIPPER. Henry K. Porter, Boston, Mass. Filed May 18, 1892. Serial No. 433,449. (No model.)



Claim.—1. In bolt clipper handles formed, respectively, with the inside ear *i* and the outside ears *d*, arranged to be united by rivet *e*, as the joint of the handles, the rib *f*, arranged at the inner edge of the handle, bet curved outward and then inward at its forward end to conform to said ears *d i*, and the rib *e*, also formed at the inner edge of the handle and broadened at its forward portion to embrace ear *d*, so that the terminals *g h* of said ribs serve as straps to arrest

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the opening of the handles before parts C are brought together, substantially as specified.

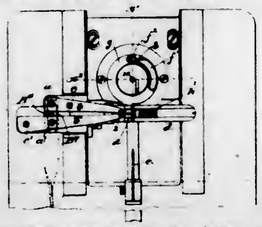
2. In a bolt-clipper, and in combination with cutting-jaws C and handles A, the adjusting-levers B B, pivoted to said handles and jaws and formed with an internal cavity or space, and said handles formed with a corresponding size, so as to enter within the adjusting-levers, substantially as specified.

3. In combination with the adjusting-levers B, to which jaws C are pivoted, the handles A, formed with the flattened bosses *n* and eyebolts *p*, so constructed and arranged that said bosses will enter the slots in said levers and the eyebolt will pass out through said levers to be engaged by a nut, substantially as specified.

4. In a bolt clipper, the combination of handles A and the levers B, pivoted to said handles and to cutters C, the eyebolts *b*, pivoted in handles A and extended through said levers, and screws *q*, arranged to adjust said levers relatively to said handles, all substantially as specified.

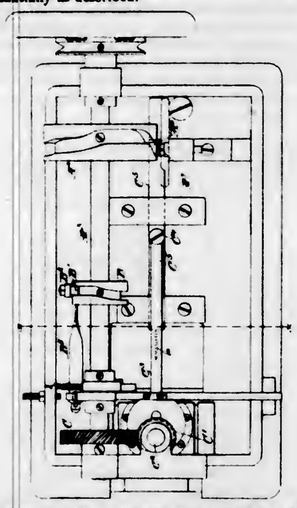
5. The combination of cutting-jaws C, bolts 3, the pins 5, interlocked with the bolts and plate 6, nuts 4, secured on said bolts and provided with teeth, and locking-plate 7, engaging said nuts and secured in place by bolt 8, passing through strap 9 and plate 7, substantially as specified.

484,671. SEWING-MACHINE. John Reece, Boston, Mass. Filed Sept. 25, 1888. Serial No. 286,327. (No model.)



Claim.—1. In a sewing machine for stitching thrum ends, the combination of the following instrumentalities, viz: a feeding device to engage the material, an eye-pointed needle and complemental stitch-forming devices, devices to actuate the said feeding and stitch-forming devices to form an overseaming or zigzag stitch, a work-holder movable longitudinally in a plane at right angles to the plane of reciprocation of the needle and having a narrow or thin acting edge, a guide-

block having a longitudinal groove or recess within the path of movement of the needle and at right angles to the plane in which the needle reciprocates, and thrum-gathering devices arranged in front of the needle and of the said guide-block, the said work-holder operating to bend the material into the groove or recess of the said guide-block, thus enabling the needle at one thrust to enter and pass out from the material at the same side and between the right face of the material and the stay-cord and thrum ends, the needle at another thrust or descent passing by the material outside the stay-cord and thrum ends, thus making a stitch to cross and hold the stay-cord and thrum ends in place, substantially as described.



2. In a sewing machine, stitch-forming mechanism, the guide-block grooved to receive the material of the buttonhole-piece in the line of the stay-cord and thrum ends, the presser foot or holder *n'*, the thrum-gatherer having jaws provided with points, and a feed bar and operating mechanism therefor, combined with the slotted gatherer, throat-plate, and lifting block to lift the thrum-gatherer and enable its points to rise through the slots in the said throat-plate, substantially as described.

3. In a sewing-machine for stitching thrum ends, the combination of the following instrumentalities, viz: a feeding device to engage the material, an eye-pointed needle and complemental stitch-forming devices, devices to actuate the said feeding and stitch-forming devices to form an overseaming or zigzag stitch, a work-holder movable longitudinally in a plane at right angles to the plane of reciprocation of the needle, a guide-block having a longitudinal groove or recess within the path of movement of the needle and at right angles to the plane in which the needle reciprocates, and thrum-gathering devices arranged in front of the needle and of the said guide-block, the said work-holder operating to bend the material into the groove or recess of the said guide-block, thus enabling the needle at one thrust to enter and pass out from the material at the same side and between the right face of the material and the stay cord and thrum ends, the needle at another thrust or descent passing the material outside the stay-cord and thrum ends, thus making a stitch to cross and hold the stay-cord and thrum ends in place, substantially as described.

4. In a sewing-machine, the rotating shuttle-carrier, the race and rotating shuttle, and the horizontally-reciprocating needle-bar and needle, combined with the link O^3, connected directly to the said bar, and the crank pin O^2, carried by the said shuttle-carrier, to operate substantially as described.

5. In a sewing machine, the bed-plate, a guide-block, a presser or holder to bear upon the material resting upon the guide-block, a horizontally-reciprocating needle-bar and needle, and a shuttle and shuttle-carrier, and a link to connect the needle-bar and shuttle-carrier, combined with a feed bar slotted for the passage through it of the said link, and with a shaft and cams thereon to actuate the said feed-bar to move the material after each stitch, substantially as described

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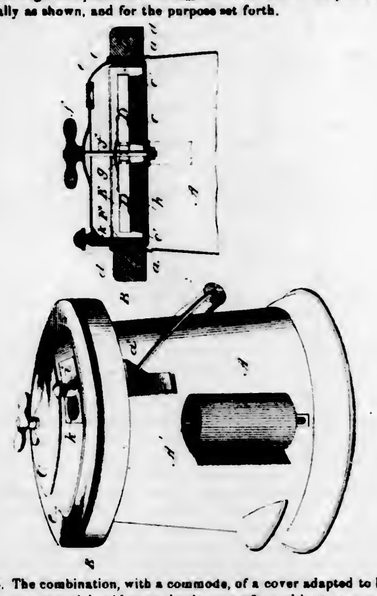
484,672. COMMODE. Reese T. Reese and David Williams, Scranton, Pa. Filed May 14, 1892. Serial No. 433,045. (No model.)

Claim.—1. In a commode, the combination of a cover consisting of a top and bottom portion, the bottom portion being perforated, a receptacle adapted to contain disinfectant, located within the cover and pivotally secured thereto by a central pin *f*, said pin extending beyond the top of the cover and provided with a turning-handle, brushes carried by said pin, so as to come in contact with the base of the receptacle, and an arm rigidly attached to the cover, said arm passing through an aperture in the top of the cover, the parts being organized substantially as shown, and for the purpose set forth

2. The combination, in a cover for commodes, of a receptacle having a perforated bottom, a receptacle adapted to contain disinfectant material, located within the cover, said receptacle being pivotally attached to the cover and provided with an operating-bar which extends through an aperture in the cover to one side of the pivot, substantially as shown, and for the purpose set forth.



3. The combination, with a commode, of a cover adapted to hold disinfectant material, said cover having a perforated bottom, a receptacle E, located within the cover and provided with a correspondingly-perforated bottom and upwardly-projecting side walls, an operating-bar attached to the periphery of the receptacle, said bar passing through the top and provided with a grasping-knob for moving the bar and receptacle to cause the perforations in the receptacle and bottom of the cover to register, a brush or agitator mounted on the pin which serves as a pivot for the receptacle, said pivot extending beyond the top of the cover and provided with means for turning the same, the parts being organized substantially as shown, and for the purpose set forth.

4. The combination, with a hollow cover provided with a perforated bottom *c*, the upper part of said cover having a slot one edge of which is bent in, of a recess or notch *k* at each end of the slot, and a bar F, carried by the disinfectant-receptacle contained within the hollow cover, substantially as shown, and for the purpose set forth.

5. In combination with a hollow cover having a perforated bottom and a top with a slot, a disinfectant receptacle pivotally secured within said cover and provided with a rod F, said rod passing through the slot in the cover and carrying a slide i, substantially as shown, and for the purpose set forth.

484,673. CLOCK-LATHE. Francis H. Richards, Hartford, Conn. Filed Mar. 18, 1892. Serial No. 426,422. (No model.)

Claim.—1. In a lathe, the combination, with the spindles and with a tool-rest having a stop, of a revolubie gage, substantially as described, supported for lateral and longitudinal movements and having one or more tool-provided gage-arms constructed with gage-faces adapted to bear against said stop while the tool on said arm bears upon the rest bar, substantially as described.

2. In a lathe, the combination, with the spindles and with a revolubie gage, substantially as described, supported for lateral and longitudinal movements and having one or more tool-provided gage arms constructed with gage-faces for limiting the movements of the tool, of a tool-rest having a vertically-adjustable rest-bar and a stop for engaging the gage-faces of the gage-arm, substantially as described.

3. In a lathe, the combination, with the spindles and with the revolubie gage supported, substantially as described, for lateral and lon-

gitudinal movements, of the tool-rest base adjustably fixed in the lathe, the vertically-adjustable rest-bar, means for elevating and clamping said bar, and the gage-stop on said bar, substantially as described.

4. In a lathe, the combination, with the spindles and with a tool-rest provided with a gage-stop, of the feed shaft having bearing-arms for the gage, and a gage, substantially as described, revolubly supported in said bearing-arms and having a series of gage-arms con-

three pairs of slots, while the transverse member 18^b is of greater width than the said slots, substantially as and for the purpose set forth.

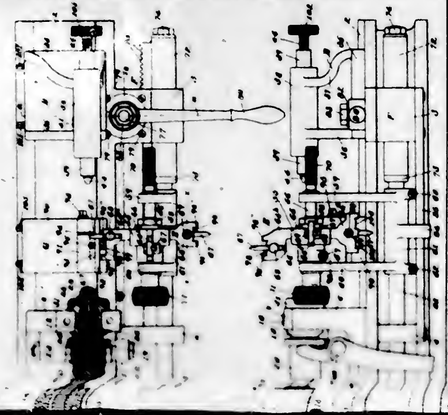
side one face thereof, the said cribwork being provided with a flume at one end below the upper level of the dam and a flume at the opposite end extending above the top level of the dam, a fishway or channel leading from an entrance-opening produced in the bottom of the cribwork and terminating in a connection with the lower flume, and a second fishway or channel in communication at its lower end with the

which the barbless prongs project and work back and forth in reverse directions, substantially as described.

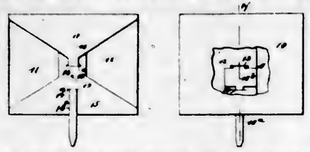
3. A fish-hook consisting of two rectilinear crossing shanks pivoted together at their intersection and provided at one end with eyes and at the opposite end with barbless prongs extending at right angles to the shanks and in the normal position of the parts lying beside

gitudinal movements, of the tool-rest base adjustably fixed in the lathe, the vertically-adjustable rest-bar, means for elevating and clamping said bar, and the gage-stop on said bar, substantially as described.

4. In a lathe, the combination, with the spindles and with a tool-rest provided with a gage-stop, of the feed shaft having bearing-arms for the gage, and a gage, substantially as described, revolubly supported in said bearing-arms and having a series of gage-arms constructed to engage said stop, substantially as described.



three pairs of slots, while the transverse member 18^b is of greater width than the said slots, substantially as and for the purpose set forth.



2. An envelope provided through its rear side with upper and lower transverse slots and with a closing flap having a cruciform tongue 18, adapted to be passed inwardly through the upper slot and outwardly through the lower slot, the transverse arm 18^b being adapted to be folded to pass through upper slot and then unfolded to prevent withdrawal of the tongue, substantially as set forth.

484,675. VEHICLE OR OTHER WHEEL. ARTHUR W. ROBINSON, Sheldon, England. Filed Apr. 9, 1892. Serial No. 428,479. (No model.) Patented in India May 20, 1889. No. 14/1,045.

Claim.—1. In a wheel, the combination with the rim of a series of perforated radially disposed sections of elastic material secured to said rim and an elastic core engaging the perforations of all of said sections, substantially as described.

side one face thereof, the said cribwork being provided with a flume at one end below the upper level of the dam and a flume at the opposite end extending above the top level of the dam, a fishway or channel leading from an entrance-opening produced in the bottom of the cribwork and terminating in connection with the lower flume, and a second fishway or channel in communication at its lower end with the lower flume and having communication at its upper end with the upper flume, as and for the purpose set forth.

3. In the construction of fishways, the combination, with a dam, of a cribwork erected at one side of the dam, parallel therewith and provided with an entrance-opening near one end at the bottom, the said cribwork having a flume formed therein at one end below the upper edge of the dam and a second flume at the opposite end and extending beyond the upper level of the dam, a lower fishway or channel, the lower end of which communicates with the lower entrance-opening in the crib, the upper end of said fishway or channel being in direct communication with the lower flume, a second and upper fishway or channel, the lower end of which is in communication with the lower flume and the upper end of the lower fishway or channel, the upper end of the upper fishway or channel being carried above the upper level of the dam to a direct communication with the upper flume, and both of the fishways or channels being provided with baffle-plates arranged diagonally in a staggered order, as and for the purpose set forth.

484,677. SALE-CARD FOR BUTTONS. CHARLES F. G. R. SHUTTLEWORTH, London, England. Filed June 30, 1892. Serial No. 438,092. (No model.) Patented in England Nov. 11, 1891, No. 19,849; in France Nov. 23, 1891, No. 217,889; in Switzerland Jan. 22, 1892, No. 4,416, and in Italy Feb. 9, 1892, LXI, 127.

which the barbless prongs project and work back and forth in reverse directions, substantially as described.

3. A fish-hook consisting of two rectilinear crossing shanks pivoted together at their intersection and provided at one end with eyes and at the opposite end with barbless prongs extending at right angles to the shanks and in the normal position of the parts lying beside and parallel with each other, a yoke shaped bait-holder suspended from the pivot of the shanks and comprising two substantially-parallel arms, between which the barbless prongs project and work back and forth in reverse directions, rings pivotally engaged with the eyes of the shanks, and a line having a loop which loosely passes through the pivoted rings, substantially as described.

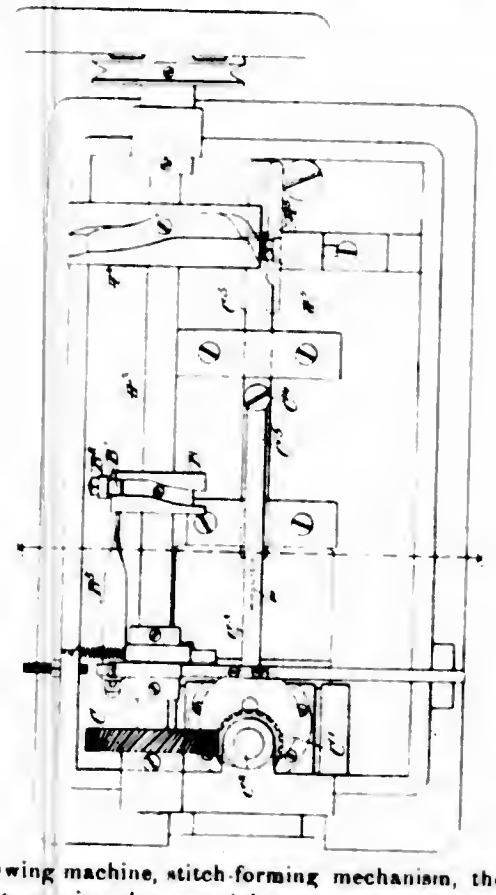
484,679. FERTILIZING COMPOSITION. JAMES D. SIMMONS, Hagerstown, Md. Filed Dec. 19, 1891. Serial No. 415,629. (No specimens.)

Claim.—The fertilizer herein described, consisting of sulphuret of iron, sulphate of potash, wood-ashes, and phosphate of lime, the whole combined in the proportions and for the purpose set forth.

484,680. WATCHMAKER'S TOOL. CHARLES SMITH, Mount Carmel, Ill. Filed Mar. 15, 1892. Serial No. 425,046. (No model.)

Claim.—1. The combination, with a box or case having rubbeted edges, of the rings adapted to fit said box and rest upon said edges

block having a longitudinal groove or recess within the path of movement of the needle and at right angles to the plane in which the needle reciprocates, and thrum-gathering devices arranged in front of the needle and of the said guide-block, the said work-holder operating to bend the material into the groove or recess of the said guide-block, thus enabling the needle at one thrust to enter and pass out from the material at the same side and between the right face of the material and the stay-cord and thrum ends, the needle at another thrust or descent passing by the material outside the stay-cord and thrum ends, thus making a stitch to cross and hold the stay-cord and thrum ends in place, substantially as described.



2. In a sewing machine, stitch-forming mechanism, the guide-block grooved to receive the material of the buttonhole-piece in the line of the stay-cord and thrum ends, the presser foot or holder n', the thrum-gatherer having jaws provided with points, and a feed bar and operating mechanism therefor, combined with the slotted gatherer, throat-plate, and lifting block to lift the thrum-gatherer and enable its points to rise through the slots in the said throat-plate, substantially as described.

3. In a sewing-machine for stitching thrum ends, the combination of the following instrumentalities, viz. a feeding device to engage the material, an eye-pointed needle and complemental stitch-forming devices, devices to actuate the said feeding and stitch-forming devices to form an overseaming or zigzag stitch, a work-holder movable longitudinally in a plane at right angles to the plane of reciprocation of the needle, a guide-block having a longitudinal groove or recess within the path of movement of the needle and at right angles to the plane in which the needle reciprocates, and thrum-gathering devices arranged in front of the needle and of the said guide-block, the said work-holder operating to bend the material into the groove or recess of the said guide-block, thus enabling the needle at one thrust to enter and pass out from the material at the same side and between the right face of the material and the stay cord and thrum ends, the needle at another thrust or descent passing the material outside the stay-cord and thrum ends, thus making a stitch to cross and hold the stay-cord and thrum ends in place, substantially as described.

4. In a sewing-machine, the rotating shuttle-carrier, the race and rotating shuttle, and the horizontally-reciprocating needle-bar and needle, combined with the link O^8, connected directly to the said bar, and the crank pin O^9, carried by the said shuttle-carrier, to operate substantially as described.

5. In a sewing machine, the bed-plate, a guide-block, a presser or holder to bear upon the material resting upon the guide-block, a horizontally-reciprocating needle-bar and needle, and a shuttle and shuttle-carrier, and a link to connect the needle-bar and shuttle-carrier, combined with a feed bar slotted for the passage through it of the said link, and with a shaft and cams thereon to actuate the said feed-bar to move the material after each stitch, substantially as described

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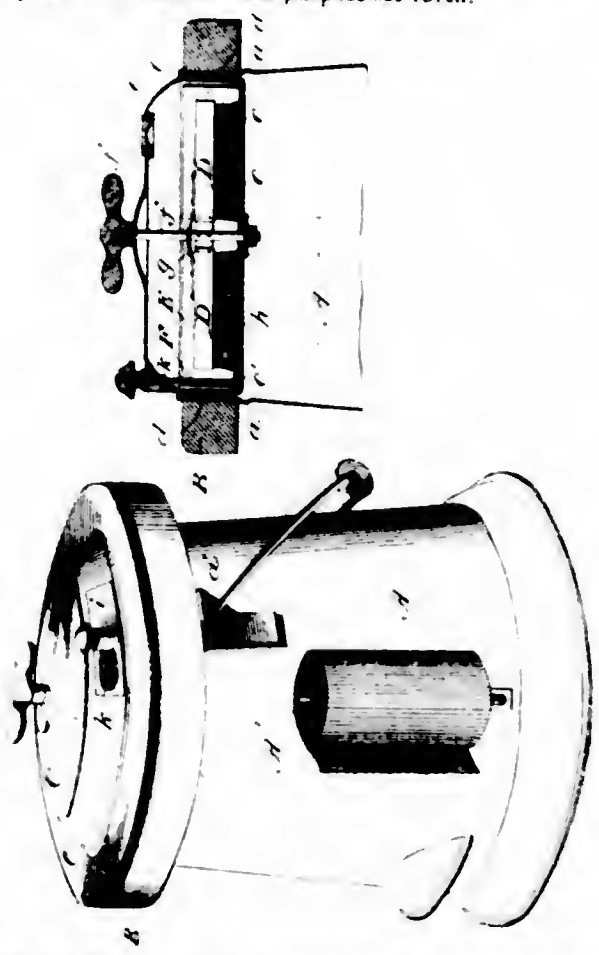
484,672. COMMODE. REESE T. REESE and DAVID WILLIAMS, Scranton, Pa. Filed May 14, 1892. Serial No. 433,045. (No model.)

Claim.—1. In a commode, the combination of a cover consisting of a top and bottom portion, the bottom portion being perforated, a receptacle adapted to contain disinfectant, located within the cover and pivotally secured thereto by a central pin *f*, said pin extending beyond the top of the cover and provided with a turning-handle, brushes carried by said pin, so as to come in contact with the base of the receptacle, and an arm rigidly attached to the cover, said arm passing through an aperture in the top of the cover, the parts being organized substantially as shown, and for the purpose set forth

2. The combination, in a cover for commodes, of a receptacle having a perforated bottom, a receptacle adapted to contain disinfectant material, located within the cover, said receptacle being pivotally attached to the cover and provided with an operating-bar which extends through an aperture in the cover to one side of the pivot, substantially as shown, and for the purpose set forth.



3. The combination, with a commode, of a cover adapted to hold disinfectant material, said cover having a perforated bottom, a receptacle E, located within the cover and provided with a correspondingly-perforated bottom and upwardly-projecting side walls, an operating-bar attached to the periphery of the receptacle, said bar passing through the top and provided with a grasping-knob for moving the bar and receptacle to cause the perforations in the receptacle and bottom of the cover to register, a brush or agitator mounted on the pin which serves as a pivot for the receptacle, said pivot extending beyond the top of the cover and provided with means for turning the same, the parts being organized substantially as shown, and for the purpose set forth.

4. The combination, with a hollow cover provided with a perforated bottom *c*, the upper part of said cover having a slot one edge of which is bent in, of a recess or notch *k* at each end of the slot, and a bar F, carried by the disinfectant-receptacle contained within the hollow cover, substantially as shown, and for the purpose set forth.

5. In combination with a hollow cover having a perforated bottom and a top with a slot, a disinfectant receptacle pivotally secured within said cover and provided with a rod F, said rod passing through the slot in the cover and carrying a slide *i*, substantially as shown, and for the purpose set forth.

484,673. CLOCK-LATHE. FRANCIS H. RICHARDS, Hartford, Conn. Filed Mar. 18, 1892. Serial No. 425,422. (No model.)

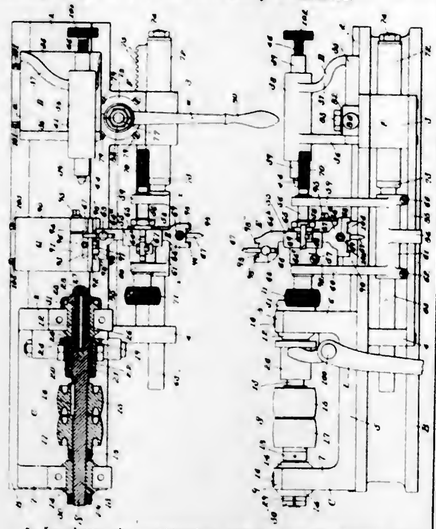
Claim.—1. In a lathe, the combination, with the spindles and with a tool-rest having a stop, of a revoluble gage, substantially as described, supported for lateral and longitudinal movements and having one or more tool-provided gage-arms constructed with gage-faces adapted to bear against said stop while the tool on said arm bears upon the rest bar, substantially as described.

2. In a lathe, the combination, with the spindles and with a revoluble gage, substantially as described, supported for lateral and longitudinal movements and having one or more tool-provided gage arms constructed with gage-faces for limiting the movements of the tool, of a tool-rest having a vertically-adjustable rest-bar and a stop for engaging the gage-faces of the gage-arm, substantially as described.

3. In a lathe, the combination, with the spindles and with the revoluble gage supported, substantially as described, for lateral and lon-

gitudinal movements, of the tool-rest base adjustably fixed in the lathe, the vertically-adjustable rest-bar, means for elevating and clamping said bar, and the gage-stop on said bar, substantially as described.

4. In a lathe, the combination, with the spindles and with a tool-rest provided with a gage stop, of the feed shaft having bearing-arms for the gage, and a gage, substantially as described, revolubly supported in said bearing-arms and having a series of gage-arms constructed to engage said stop, substantially as described.



5. In a lathe, the combination, with the laterally-movable gage-carrying bearing-arms, of the gage-shaft journaled in said arms, the gage-hub on said shaft, and a series of gage-arms removably fixed in said hub and adapted to carry cutting-tools, substantially as described.

6. In a lathe, the combination, with the spindles and with a tool-rest, substantially as described, having a gage-stop, of a revoluble gage, substantially as described, supported for lateral and longitudinal movements in the machine and having a series of tool-provided arms having gage-faces adapted to engage the sides of said stop for limiting said longitudinal movements, substantially as described.

7. In a lathe, the combination, with the stock bored to receive the sliding spindle, of the sliding spindle 39, having the slot 49 extending longitudinally of the same and having within it a conical seat for the spindle-expander and the spindle-expander stem 46, having a screw-thread to mesh in a threaded portion of said spindle and having a conical point 47 bearing on said conical expander-seat, means for preventing rotation of the sliding spindle, and means for turning the threaded expander 46, whereby the spindle may be clamped and unclamped and longitudinal movements imparted thereto, substantially as described.

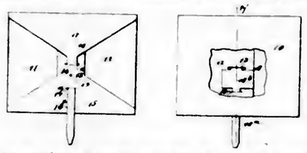
8. In a lathe, the combination, with the spindles, the tool-rest and its stop, and the slide 72, of the oscillating shaft journaled in said slide and provided with gage-carrying bearings, a gage, substantially as described, carried in said bearings and adapted to engage said stop, and means for imparting longitudinal movements to said slide 72, substantially as shown and described.

9. In a lathe of the class specified, the combination, with the bed B, having the bearing 3, of the slide 72, the shaft 63, furnished for carrying the gage of the lathe, the hand-lever 80, and connecting-shaft and gearing intermediate to said lever and said slide for actuating the gage, substantially as described

10. In a lathe of the class specified, the combination, with the bed having the bearings 3 and 4, of the slide 72, means for imparting longitudinal movements to said slide, the shaft 63, journaled in said slide and in the bearing 4, the bearing-arms fixed to the shaft 63 for carrying the gage of the lathe, a stop-arm fixed on said shaft, and a stop-bar limiting the swinging movement of said gage-bearings through said stop-arm, substantially as described.

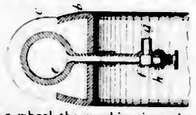
484,674. ENVELOPE Hugo R. y Fernandes, Havana, Cuba. Filed May 31, 1892. Serial No. 435,101. (No model.)

Claim.—1. An envelope-blank comprising body 10, having bottom and end flaps, each provided with a pair of slots to register when the flaps are folded, and the top flap having a cruciform tongue 18, the vertical member 18ª of which is adapted to pass through the said three pairs of slots, while the transverse member 18ᵇ is of greater width than the said slots, substantially as and for the purpose set forth.



2. An envelope provided through its rear side with upper and lower transverse slots and with a closing flap having a cruciform tongue 18, adapted to be passed inwardly through the upper slot and outwardly through the lower slot, the transverse arm 18ᵇ being adapted to be folded to pass through upper slot and then unfolded to prevent withdrawal of the tongue, substantially as set forth.

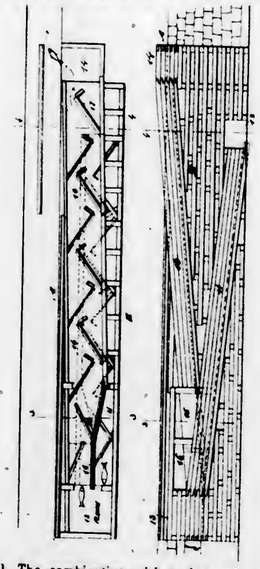
484,675. VEHICLE OR OTHER WHEEL. Arthur W. Robinson, Sheldon, England. Filed Apr. 9, 1892. Serial No. 428,479. (No model.) Patented in India May 20, 1889, No. 14/1,048.



Claim.—1. In a wheel, the combination, with the rim, of a series of perforated radially-disposed sections of elastic material secured to said rim and an elastic core engaging the perforations of all of said sections, substantially as described.

2. In a wheel, the combination, with the rim, of a series of perforated radially-disposed sections of elastic material secured to said rim, a hollow elastic core for engaging the apertures of all of said sections, and a pipe connected with said hollow core for inflating the same, substantially as described.

484,676. FISHWAY. William H. Rogers, Amherst, Canada. Filed Mar. 26, 1892. Serial No. 426,549. (No model.)

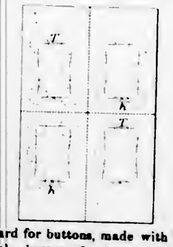


Claim.—1. The combination, with a dam, of a crib-work arranged at one side thereof, the said cribwork containing two fishways or channels, one rising from an opening in the bottom of the crib upward to about half the height of the dam and a second fishway or channel in communicatioo with the upper end of the lower channel or fishway, the upper end of the upper fishway or channel extending above the top of the dam, substantially as shown, and for the purpose specified.

2. The combination, with a dam, of a cribwork constructed alongside one face thereof, the said cribwork being provided with a flume at one end below the upper level of the dam and a flume at the opposite end extending above the top level of the dam, a fishway or channel leading from an entrance-opening produced in the bottom of the cribwork and terminating in a connection with the lower flume, and a second fishway or channel in communication at its lower end with the lower flume and having communication at its upper end with the upper flume, as and for the purpose set forth.

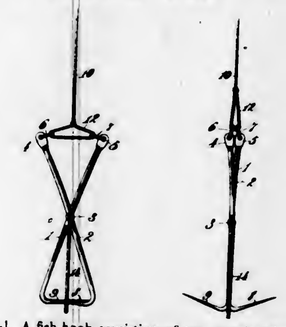
3. In the construction of fishways, the combination, with a dam, of a cribwork erected at one side of the dam, parallel therewith and provided with an entrance-opening near one end at the bottom, the said cribwork having a flume formed therein at one end below the upper edge of the dam and a second flume at the opposite end and extending beyond the upper level of the dam, a lower fishway or channel, the lower end of which communicates with the lower entrance-opening in the crib, the upper end of said fishway or channel being in direct communication with the lower flume, a second and upper fishway or channel, the lower end of which is in communication with the lower flume and the upper end of the lower fishway or channel, the upper end of the upper fishway or channel being carried above the upper level of the dam to a direct communication with the upper flume, and both of the fishways or channels being provided with baffle-plates arranged diagonally in a staggered order, as and for the purpose set forth.

484,677. SALE-CARD FOR BUTTONS. Charles F. G. R. Schwerdt, London, England. Filed June 30, 1892. Serial No. 438,632. (No model.) Patented in England Nov. 11, 1891, No. 19,510; in France Nov. 25, 1891, No. 217,660; in Switzerland Jan. 22, 1892, No. 4,419, and in Italy Feb 6, 1892, LXI, 127.



Claim.—A sale-card for buttons, made with lines of perforations separating groups of the buttons from each other or from the head-space, each such line extending at least one way to the edge of the card, and the said card having the buttons of each separate group stitched or fastened to it independently of the other groups, substantially as described.

484,678. FISH HOOK. Louis Shults, Brownville, N. Y. Filed Apr. 2, 1892. Serial No. 427,536. (No model.)



Claim.—1. A fish-hook consisting of two crossing shanks 1 and 2, pivoted together at their intersection and provided at one end with loosely-pivoted rings 6 and 7 and at the opposite end with barbless prongs extending at right angles to the shanks and normally lying beside and parallel with each other, a bait-holder suspended from the pivot of the shanks, and a line 10, having a loop 12, loosely passing through the two pivoted rings, substantially as described

2. A fish-hook consisting of two crossing shanks pivoted together at their intersection and provided at one end with barbless prongs, which in the normal position of the parts lie beside and parallel with each other, and a yoke shaped bait-holder suspended from the pivot of the shanks and comprising two substantially-parallel arms between which the barbless prongs project and work back and forth in reverse directions, substantially as described.

3. A fish hook consisting of two rectilinear crossing shanks pivoted together at their intersection and provided at one end with eyes and at the opposite end with barbless prongs extending at right angles to the shanks and in the normal position of the parts lying beside and parallel with each other, a yoke shaped bait-holder suspended from the pivot of the shanks and comprising two substantially-parallel arms, between which the barbless prongs project and work back and forth in reverse directions, rings pivotally engaged with the eyes of the shanks, and a line having a loop which loosely passes through the pivoted rings, substantially as described.

484,679. FERTILIZING COMPOSITION. James D. Simmons, Hagerstown, Md. Filed Dec. 19, 1891. Serial No. 415,622. (No specimens.)

Claim.—The fertilizer herein described, consisting of sulphuret of iron, sulphate of potash, wood-ashes, and phosphate of lime, the whole combined in the proportions and for the purpose set forth

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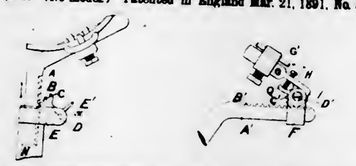
484,680. WATCHMAKER'S TOOL. Charles Smith, Mount Carmel, Ill. Filed Mar. 15, 1892. Serial No. 425,046. (No model.)

Claim.—1. The combination, with a box or case having rabbeted edges, of the rings adapted to fit said box and rest upon said edges and the adjustable screw passing through the bottom of said box, substantially as shown and described.

2. The combination, with a box having rabbeted edges, of the elevated bottom having a central threaded aperture, and the adjustable screw having an anvil-face and the spacing-ring adapted to fit the box and rest upon the rabbeted edge, substantially as shown and described.

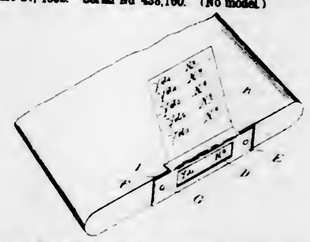
3. As an improved article of manufacture, a movement-holder having a key in the lower edge of the same, substantially as and for the purpose described.

484,681. ADJUSTABLE SEAT-SUPPORT FOR BICYCLES. George H. Smith, Rhodes, Richard K. Hartley, Chadderton, and Isaac S. McDougall, High Broughton, England. Filed Oct. 29, 1891. Serial No. 410,233. (No model.) Patented in England Mar. 21, 1891, No. 5,053.



Claim.—In combination with a rack bar and a rider's seat supported thereby, an eccentric rack-segment in engagement with said bar and so arranged with relation thereto that the weight of the rider will firmly lock the seat in position, substantially as described.

484,682. TAG-HOLDER. Conrad Speck, Jr., Detroit, Mich. Filed June 27, 1892. Serial No. 438,160. (No model.)



Claim.—In a tag-holder, the combination, with a cloth-board having a bevel on its upper outer edge at the end, of a metallic holder formed with reinforced attaching ends, an open center, a flange on the lower edge closely fitting on the under side of the board, and a flange on its upper edges extending above and out of contact with the board at the bevel, substantially as described.

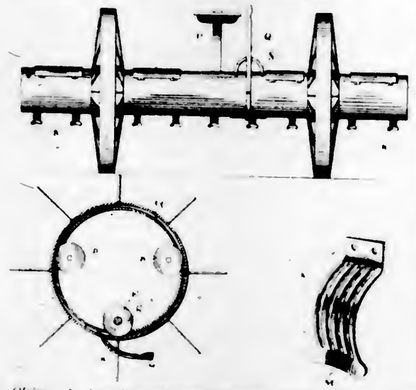
484,683. BROADCAST-SEEDER. Alonso Stassel, Yorkville, Ill. Filed Sept. 11, 1891. Serial No. 405,410. (No model.)

484,685. CENTRIFUGAL MILK-TESTER. Ralph Stoddard, Rutland, Vt. Filed May 12, 1892. Serial No. 432,747. (No model.)

tongue, draft ropes or chains secured to the brake-beam, which draft ropes or chains are led forward and are connected at their forward ends, and another rope or chain connected with the connected draft-ropes and passed over the friction-pulley above the tongue and secured to the pole or tongue rearward of the pulley, as and for the purpose specified.

484,688. MOP-WRINGER. Jerome B. Sweetland, Pontiac, Mich. Filed Mar. 30, 1892. Serial No. 427,124. (No model.)

484,683. BROADCAST-SEEDER. ALONZO STARKEL, Yortville, Ill. Filed Sept. 11, 1891. Serial No. 405,410. (No model.)



Claim.—1. A seeder comprising a hopper, driving and supporting wheels having hubs which surround the hopper, a feeding shaft in the bottom of the hopper, carrying a friction-wheel which projects through a slot in the hopper and engages the inner periphery of the said driving-wheel hubs, and two guide wheels supported by the hopper above a horizontal line drawn through the center of said hubs and engaging the said hubs at this point, whereby substantially all the weight of the hopper is upon said friction wheel and lateral movement of the hopper prevented, substantially as specified.

2. In a seeder of the character described, a hopper, driving-wheels which have hubs surrounding the said hopper, a driving-wheel for each feeding-shaft, a wheel secured to the said feeding shaft, which extends through slots in the hopper and engages the inner side of the hub, guide-wheels at opposite sides of the said hopper, the said hubs having inwardly extending annular flanges between which the feeding-shaft wheel and the guide-wheels revolve, all combined substantially as set forth.

3. In a seeder of the character described, a hopper, driving-wheels having hubs which surround the said hopper, the hopper having a series of openings in its bottom, a feed-shaft journaled in the bottom adjacent to the said openings, stirrers upon the shaft above the openings, a series of bell-crank levers pivoted between their ends to the hopper, carrying a plate which extends over the said openings, and a rod connecting the opposite ends of the said bell crank levers, all combined to operate in the manner shown and described.

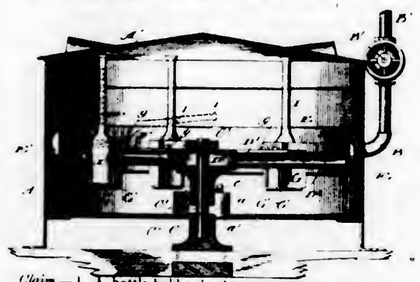
4. A seed spreader for seeding-machines, consisting of a plate having a series of longitudinal ribs and a convex portion at its lower end, which extends beyond the side of the said ribs, whereby the seed are guided to the convex portion and then spread thereby, substantially as described.

484,684. COMPOUND WIRE-FENCING TOOL. DANIEL D. STETLER, Minneapolis, Kans. Filed Mar. 22, 1892. Serial No. 426,901. (No model.)

Claim.—1. The combination of handle B, having recess E at its forward end, vertical shoulder *b* at one side of the recess, and horizontal shoulder *f* at its opposite side with handle A, having depending rounded head H at its forward end, which is pivoted eccentrically in the recess E, and horizontal shoulder *c* to the rear of said head, substantially as shown and described.

2. An improved wire-fencing tool consisting of a handle B, having a curved end *a* cut out to form a clamping-shoulder *b*, and a handle A, substantially of the same length as the handle B, and having a jaw pivoted in rear of said shoulder, the said jaw having its forward end formed on the arc of a circle eccentric to the said pivotal point, the handle A being on the same side of the tool as the concaved side of the said curved end *a* and separate from the handle B, for the purpose described, whereby a pull can be exerted on the handle A independent of the handle B when clamping and tightening the wire, substantially as specified.

484,685. CENTRIFUGAL MILK-TESTER. RALPH STODDARD, Rutland, Vt. Filed May 12, 1892. Serial No. 432,747. (No model.)

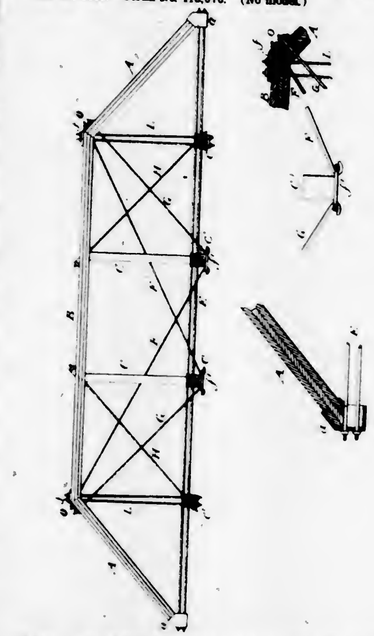


Claim.—1. A bottle-holder having strengthening-wires secured thereto and extended along one side across the bottom and upon the opposite side and terminating in hooks, by means of which the holder is designed to be pivotally supported, substantially as specified.

2. A rotatably-mounted skeleton wheel provided with a rim having buckets and adapted for rotation by a steam-jet impinging thereagainst, combined with test-holding bottles provided with hooks, by which they are pivoted and detachably mounted upon said wheel between the periphery and hub thereof, substantially as specified.

3. The combination, with the case having a central flanged opening, of the step located beneath said opening, the spindle supported in said step, the spider through the hub of which the spindle passes, a nut on the spindle above the hub and a collar on the spindle below the hub, and a rim provided with buckets carried by said spider, as set forth.

484,686. TRUSS-BRIDGE. JOEL H. STONE, Dallas City, Ill. Filed Jan. 20, 1892. Serial No. 418,676. (No model.)

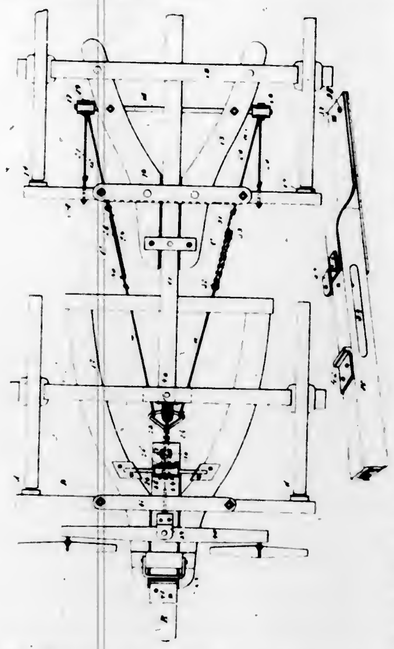


Claim.—The diagonal rods F G and the plates *f f'*, combined, as shown, with the braces A, chords B, posts C, and floor-beams C', for the purpose set forth.

484,687. WAGON-BRAKE. VARDIMAN T. SWEENEY, Springfield, Ky. Filed Apr. 21, 1892. Serial No. 430,140. (No model.)

Claim.—1. In a wagon-brake, the combination, with the running-gear of a vehicle and a tongue or pole having lateral sliding movement in the running-gear, of a brake-beam suspended in front of the wheels, a pulley located over the rear or inner end of the pole or tongue, draft ropes or chains secured to the brake-beam, which draft ropes or chains are led forward and are connected at their forward ends, and another rope or chain connected with the connected draft-ropes and passed over the friction-pulley above the tongue and secured to the pole or tongue rearward of the pulley, as and for the purpose specified.

2. The combination, with the running-gear of a vehicle, a tongue having sliding movement in the running-gear, and a brake-beam the draft ropes or chains of which are connected with the tongue, the beam being operated from the tongue, of a keeper located upon the tongue and a pivoted latch located upon the running-gear, the latch being adapted for engagement with the keeper, whereby when the latch and keeper engage the tongue will be prevented from moving, as and for the purpose set forth.



3. The combination, with the running-gear of a vehicle, a tongue having lateral sliding movement in the running-gear and provided at its inner end with a fastening device, and a pulley supported by the running-gear above the rear end of the tongue, of a brake-beam suspended by vertical connections from the running-gear, ropes or chains connected with the brake-beam and carried rearward, the said ropes or chains being capable of free end movement and being provided at their forward ends with a link connection, and another rope or chain attached to the link, carried over the friction-pulley, and secured to the fastening device of the tongue, which device is rearward of the friction pulley, as and for the purpose set forth.

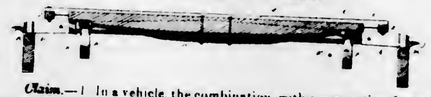
4. The combination, with the running gear of a vehicle, a tongue having lateral movement therein, and a brake-beam suspended from the running-gear, of ropes or chains connected with the brake beam and adapted to assist in its application, the said ropes or chains being made in sections and the said sections united by tension devices, and a third rope or chain connected with both of the draft ropes or chains and carried over guide devices secured to the hounds, the third rope or chain being also attached to the tongue at the rear of the guide devices, as and for the purpose specified.

5. The combination, with the running-gear of a vehicle, a tongue having sliding movement therein and provided with a keeper, and a latch carried by the running gear and adapted for engagement with the keeper, of a brake-beam having a link connection with the running-gear and a draft chain or rope attached to the brake-beam and passed over guide devices also attached to the running gear, one of the guide devices being forward of the inner end of the tongue, the said rope or chain after passing over the latter device being attached to the rear end of the tongue, as and for the purpose specified.

484,688. MOP-WRINGER. JEROME B. SWEETLAND, Pontiac, Mich. Filed Mar. 30, 1892. Serial No. 427,124. (No model.)

Claim.—In a mop wringer, the combination of a mop-receptacle consisting of the sides *a' a'*, the bottom, the front wall a^{iv}, and the rear wall a^{ii}, connecting the bottom and side walls, the downwardly-extending hooks a^{ii}, extending from the rear upper edge of the side walls of the mop receptacle, adapted to fit over the upper edge of the mop pail or tub, with a presser consisting of the front wall *b'''*, rear wall *b'*, the curved plate *b'''*, connecting these walls, rearwardly-extending teeth or corrugations formed on the lower edge of the rear wall *b'* of the presser, cylindrical lugs or pins projecting outwardly from the rear upper edge of the presser and adapted to fit under the hooks a^{ii} of the mop-receptacle and bear on the upper edge of the mop-pail, and operating-handle secured to the upper side of the presser, substantially as described.

484,689. SIDE BAR VEHICLE. PEMBROKE S. TARTT, Wingo, Ky. Filed July 5, 1892. Serial No. 439,017. (No model.)



Claim.—1. In a vehicle, the combination, with a supporting-frame, of a body-bed, a body-spring attached longitudinally to said bed and having round terminals, and a series of spring-levers arranged transversely of the body-bed, the inner ends of said levers being hooked for engagement with the terminals of the body-spring and their outer ends pivotally connected to the supporting-frame.

2. In a vehicle, the combination, with a supporting-frame, of a body-spring curved upward from its middle portion and having round terminals, a body-bed having a longitudinal center rail to which said spring is secured, and a series of spring-levers arranged transversely of the body-bed, the inner ends of said levers being hooked for engagement with the terminals of the body spring and their outer ends pivotally connected to the supporting-frame.

3. In a vehicle, the combination, with a supporting-frame, of a body-spring curved upward from its middle portion and having round terminals, a body bed having a longitudinal center rail to which said spring is secured, said rail being shaped to fit the upper side of the spring, and a series of spring levers arranged transversely of the body-bed, the inner ends of said levers being hooked for engagement with the terminals of the body spring and their outer ends pivotally connected to the supporting frame.

4. In a vehicle, the combination, with a supporting-frame, of a body-spring curved upward from its middle portion and having round terminals, a body bed having a longitudinal center rail to which said spring is secured, said rail being shaped to fit the upper side of the spring, a series of spring levers arranged transversely of the body-bed, the inner ends of said levers being hooked to engage with the terminals of the body spring and their outer ends pivotally connected with the supporting frame, hangers depending from the body-bed below the plane in which the levers engage with the spring, and longitudinal rods journaled in said hangers and serving as fulcrums for the levers.

484,690. AGRICULTURAL MACHINE. JOHN B. WILKINS, Farmington, Mo., assignor of one-half to Thomas W. Stringer, Vicksburg, Miss. Filed Apr. 16, 1892. Serial No. 429,395. (No model.)

Claim.—1. In a machine of the class described, the combination, with the rectangular framework the opposite sides of which are made sectional and detachably connected, of an axle supporting the front section, ground-wheels for the same, plow-carrying standards supported by the rear detachable portions of the frame, and a seat carried by the stationary portion of the frame, substantially as specified.

2. In a machine of the class described, the combination, with the

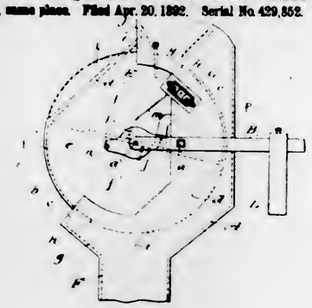
rectangular plow-carrying frame, the axle located in front of the plows and having ground-wheels, of the caster shank and wheel, the former being pivoted to the rear corner of the frame and adapted when lowered to raise the plows from the ground, and the hooks for removably engaging the shank when turned up and pivoted to the side and end of the frame, substantially as specified.

3. In a machine of the class described, the combination, with the rectangular frame and the intermediate cross-bar, of the axle and wheels, the pair of beams terminating at their rear ends in handles beyond the rear cross-bar of the frame, having their front ends pivoted to the intermediate cross bar, the transverse keeper-bar mounted on the rear cross-bar and loosely spanning the beams, and the standards depending from the beams, substantially as specified.

4. In a machine of the class described, the combination, with the oblong framework comprising the front and rear cross-bars, the longitudinal plow-beams connected to and mounted upon the bars and carrying depending plow-standards, of the inverted L-shaped hangers depending from the rear cross-bar, the transverse shaft mounted therein and carrying agitators, the cylindrical hopper mounted for rotation upon the shaft and having seed-openings, and front and rear standards removably connected to the rear bar above the hopper, the front standard terminating in a furrow-opening point and the rear standard in a furrow-closing end, substantially as specified.

5. In a machine of the class described, the combination, with the oblong framework the opposite side bars of which are formed in front and rear sections detachably connected and the seat supported by the framework for the accommodation of the driver, of the axle loosely supporting the framework and provided with perforations, the wheels loosely mounted on the axle and having their hubs provided with perforations agreeing with those of the axle, pins for inserting through the hub and into the axle, rotatable chopping mechanism, and gears connecting the same with the axle, substantially as specified.

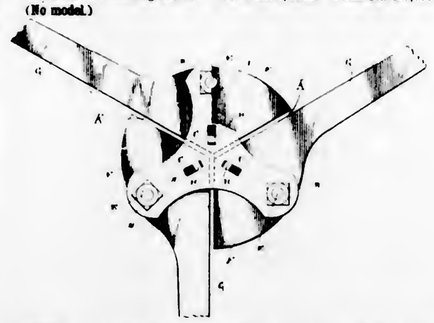
484,691. ROTATING GRAIN-METER. GEORGE E. WILSON, Stillwater, Minn., assignor to the Minnesota Thresher Manufacturing Company, same place. Filed Apr. 20, 1892. Serial No. 429,852. (No model.)



Claim.—1. The combination, with a weighing-beam, of a rotary weighing-cylinder divided into two compartments extending diametrically from side to side, dividing-board *e*, and strips *j*, and the sides *c* and *d*, substantially as described and for the purpose set forth.

2. The combination, with the body portion or trunk, a weighted beam, and a gravity-pawl pivoted to said trunk, of a rotary weighing-cylinder pivoted to the inner end of said weighing-beam and divided into compartments, each of greater capacity at one side the axis of rotation than at the other side, and a registering device having an operating lever and pins located upon the end of the cylinder diametrically opposite, the said operating-lever and the gravity-pawl being within the path of travel of said pins, substantially as set forth.

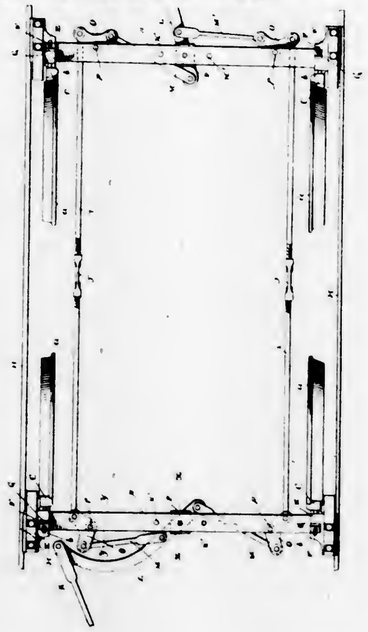
484,692. ADJUSTABLE WIRE-TWISTING WRENCH. CHARLES E. WINTRODE, Huntington, Ind. Filed June 8, 1892. Serial No. 435,995. (No model.)



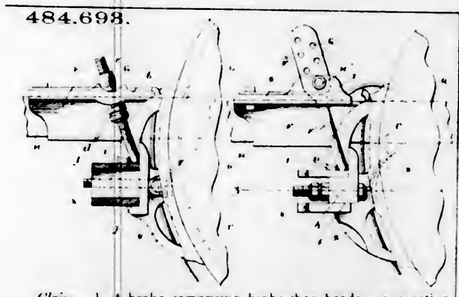
Claim.—1. A wire twister consisting of a plate, radially-sliding jaws having angular inner ends, the plate and jaws having, respectively, radial slots, and clamping-bolts and guides for the said jaws, substantially as described.

2. A wire-twister consisting of a plate provided with radial slots and bolt-holes, jaws having angular inner ends and provided with projections entering the said radial slots and radial slots registering with the said plate bolt-holes, and clamping-bolts passing through said bolt-holes and the registering slots, substantially as described.

484,693. CAR-BRAKE. JOHN E. ANGER, Green Island, N. Y. Filed June 7, 1892. Serial No. 435,866. (No model.)



484,693.



Claim.—1. A brake comprising brake-shoe heads, a connection therefor, a lever pivotally supported upon the said connection, a bell-crank lever pivotally supported by the said brake-head connection at each side of the said lever, connections between the outer ends of the said bell-crank levers and the inner and outer portions, respectively, of the said operating-lever, and connections between the inner ends of the bell-crank levers and the brake-head connection at the opposite end of the car, substantially as specified.

2. A brake comprising brake-shoe heads, a connection therefor, an operating-lever pivotally connected between its ends in a movable bearing upon the said connection, bell-crank levers pivoted between their ends upon the said connection at opposite sides of the operating-lever, connections between the outer ends of the said bell-crank levers and the inner and outer portions, respectively, of the operating-lever, and connections between the inner ends of the bell-crank levers and the brake-head connection at the opposite end of the car, substantially as set forth.

3. A brake mechanism comprising brake-shoe heads, a connection therefor, an operating-lever pivoted between its ends upon the said connection, bell-crank levers pivoted upon the said connection at opposite sides of the operating-lever, stops for the bell-crank levers, whereby they are allowed a limited movement, and connections between the inner ends of the levers and the brake-head connections at the opposite end of the car, substantially as described.

4. A brake mechanism comprising brake-heads, a connection therefor, an operating mechanism upon the said connection, a connection between the said mechanism and the brake-head connection at the opposite end of the car, castings upon the car or truck frame, and adjustable hangers suspended at their upper ends from the said castings and having their lower ends loosely connected with the brake-heads, substantially as set forth.

5. A brake mechanism comprising brake-shoe heads, a connection therefor, a lever pivoted between its ends upon the said connection, a bell crank lever at each side of the operating lever and each bell-crank lever having a stop formed thereon outside of the connection and which engage therewith for the purpose specified, connections between the outer ends of the bell-crank levers and the inner and outer portion of the operating-lever, respectively, and connections between the inner ends of the bell-crank levers and the brake head connection at the opposite end of the car, substantially as set forth.

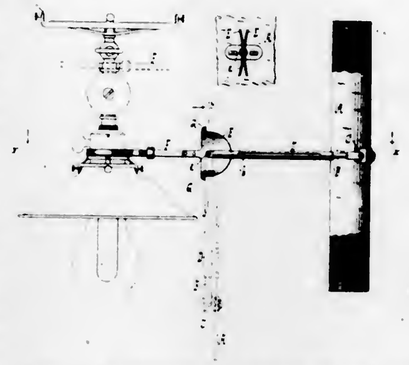
6. A brake mechanism comprising brake-shoe heads, two parallel connecting bars connecting the said brake-shoe heads and separated a suitable distance, an operating-lever, a sliding pivotal connection for the lever between the said connecting-bars, bell-crank levers pivoted between the bars at each side of the said operating-lever, connections between the outer ends of the bell-crank levers and the outer and inner portion of the operating lever, respectively, and connections between the inner ends of the said bell-crank levers and the brake-head connection at the opposite end of the car, substantially as described.

484,694. STOVEPIPE-THIMBLE. WILLIAM BALM, Clinton, Ind. Filed Mar. 19, 1890. Serial No. 344,511. (No model.)

Claim.—1. In a stovepipe connection, the combination of the stovepipe having at one end a circumferential outstanding bead with a pipe collar having in the opening at the outer end a circumferential bevel to hold the pipe-bead and on the other recessed and provided with oppositely disposed lugs, and the chimney-pipe thimble having at its outer end cams with suitable openings to receive the same, all as and for the purposes set forth.

2. In a stove thimble, a recessed pipe-collar having outstanding lugs or catches on its base and at one edge of its recess a circumferential bevel, combined with a beaded stovepipe and a chimney thimble having a cam flange on its end suitably notched to receive the said lugs and beveled upon its inner edge, the beveled surfaces forming a cavity to receive the stovepipe-head, all substantially as and for the purposes set forth.

484,695. LAMP-SHADE SUPPORT. MAX BAUER, LOUIS HARRY, and JOHN BUNGER, Greenville, N. J. Filed Dec. 10, 1891. Serial No. 414,581. (No model.)

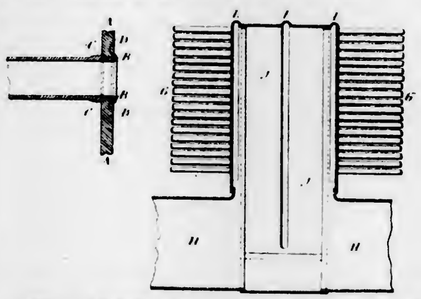


Claim.—1. The combination of a clamp provided with a pair of laterally-compressible friction-plates E, a tube D, jointed to and made to straddle said elastic friction-plates, a bar B, slidable in the tube and having a friction-spring *b* for holding it in its adjusted position, and a shade A, provided with a pair of laterally-compressible elastic friction-plates C, said sliding bar having a forked end jointed to and made to straddle the elastic friction-plates of the shade, substantially as described.

2. The combination, with a clamp comprising two clamping portions of different sizes and provided with friction plates, of a tube jointed to and made to straddle said plates, a bar provided with a friction-spring and made to slide in said tube, and a shade provided with friction plates, said bar being jointed to and made to straddle the friction-plates of the shade, substantially as described.

3. The combination, with a clamp provided with friction-plates having one or more stops, of a tube jointed to and made to straddle said plates, a bar made to slide in said tube, and a shade provided with friction-plates, said bar being jointed to and made to straddle the friction-plates of the shade, substantially as described.

484,696. TUBULAR BOILER. HENRY BENBOW, Plymouth, England. Filed Aug. 29, 1892. Serial No. 444,429. (No model.)



Claim.—1. In boilers, the combination of a shoulder near one end of the tube, a seat for the shoulder, formed on the inner surface of the tube plate around the hole through it, and means for securing the end of the tube to the outer side of the tube-plate.

2. In boilers, the combination of a shoulder near one end of the tube, a seat for the shoulder, formed on the inner surface of the tube-

plate around the hole through it, and a groove on the outer surface of the tube-plate, into which the end of the tube is beaded.

3. In boilers, the combination of tubes a tube-plate to which the tubes are rigidly attached, and a corrugation in the tube-plate around the outer row of tubes.

4. In boilers, the combination of tubes, a tube-plate to which the tubes are rigidly attached, and a corrugation in the curved face of the combustion chamber, extending below the lowest tube.

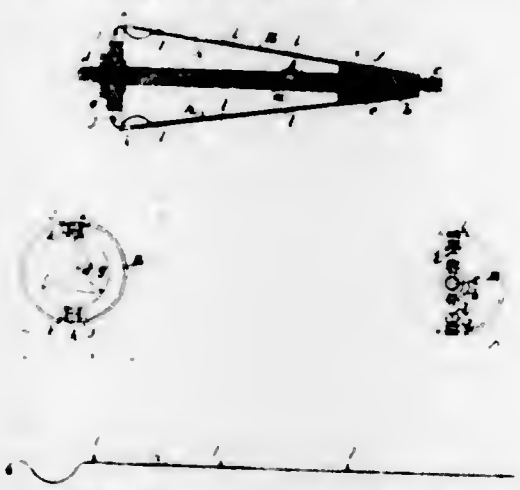
484,697. BLUE DYE. RENÉ BOHN, Mannheim, assignor to the Badische Anilin and Soda Fabrik, Ludwigshafen, Germany. Filed Mar. 17, 1892. Serial No. 425,242. (No specimens.) Patented in Germany Jan. 27, 1891, No. 59,868, and in France Mar. 2, 1891, No. 211,806.

Claim.—1. The new blue dye, which can be derived from tetraalkyldiamido benzophenone and dihydroxynaphthaline and which is slightly soluble in cold water, more readily in hot water, giving greenish to violet-blue solutions, soluble in alcohol, practically insoluble in benzine; soluble in aqueous alkalies, giving blue solutions, soluble in concentrated sulphuric acid, and giving either a green or a brown solution, all substantially as described.

2. The process of manufacturing coloring-matter, which consists in combining tetraalkyldiamido-benzophenone with dihydroxynaphthaline by the aid of a condensing agent, such as phosphorus oxychloride, substantially as described.

484,698. SPINDLE. ARTHUR A. BRIGHAM, Weston, Mass. Filed Dec. 26, 1891. Serial No. 416,234. (No model.)

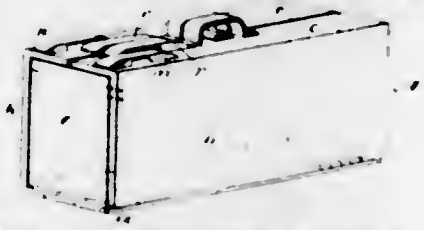
Brief.—The object is to make a cone-shaped spindle for use with straw-board cop-tubes, which will be light and yet not swell or shrink on account of moisture. The spindle is provided with collars *f g*, to which is fastened the thin metal shell B. In the shell are springs A with points *l*, which project through holes in the shell and pierce the cop-tube to hold it in place. At the base of the shell are recesses *j*, through which the springs can be operated.



Claim.—1. In combination with a hollow spindle, a spring within said spindle and provided with pointed projections to extend through the outer surface of the spindle, substantially as and for the purpose set forth.

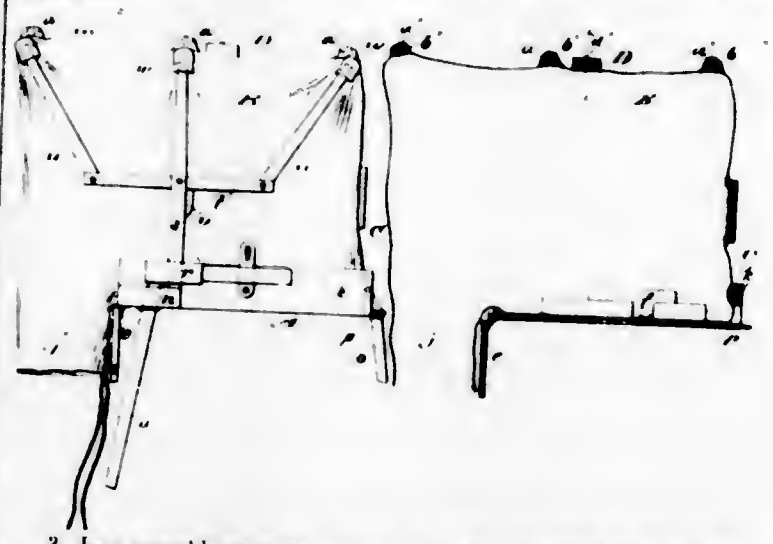
2. The combination of a central spindle, collars thereon, an outer shell, and a spring within said shell provided with projections to extend through said shell, one of the collars and the shell being provided with openings whereby the springs may be operated, substantially as described.

484,699. PHOTOGRAPHIC DARK-CHAMBER. ISAAC BRYNER, Callaway, Nebr. Filed July 7, 1892. Serial No. 439,216. (No model.)



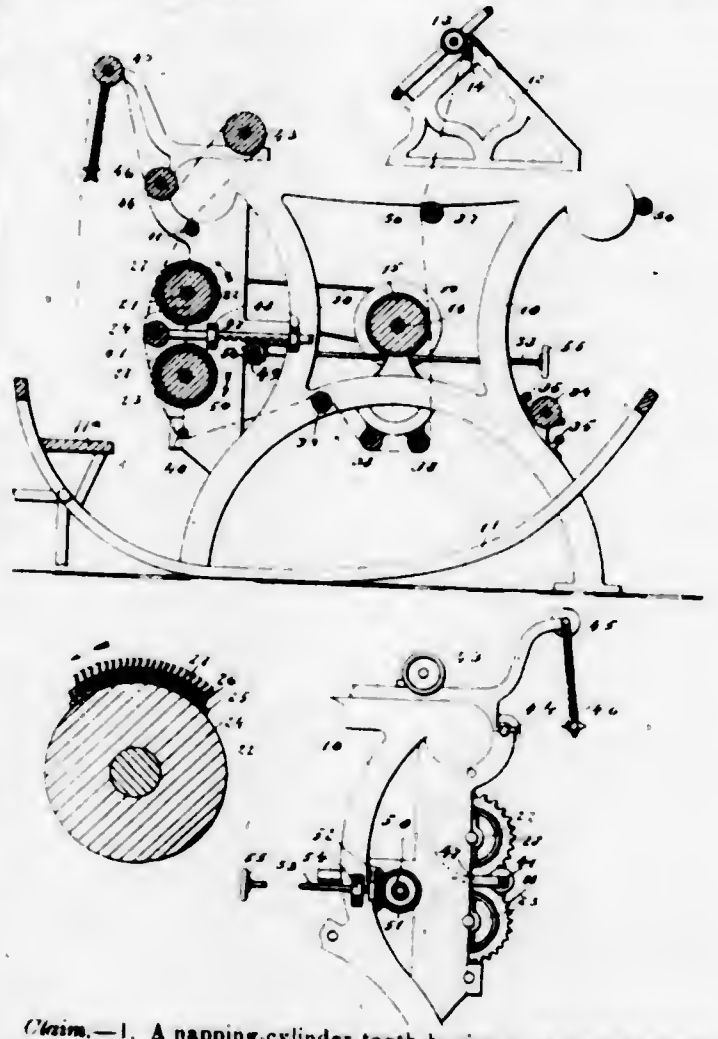
Claim.—1. In a portable dark-room, a folding box formed of a base board *a*, side boards *b*, hinged to the base-board and provided with the top pieces *c*, attached at right angles to the side boards *b*, end pieces *d*, attached to the top pieces and side pieces at one end of the box, an end piece *e*, hinged to the base-board *a* and arranged to fold in between the side pieces, and a hood of flexible material secured to the bottom of the box and provided with skirt for surrounding the body of the operator and furnished with a window for admitting non-actinic light, substantially as specified.

2. In a portable photographic dark-room, the combination of the folding box A, provided with the sockets *r*, the standards *s*, cross-arms *t*, pivoted to the standards, the arms *u*, pivoted to the ends of the cross-arm *t*, and the hood B, provided with the pockets *w*, substantially as described.



3. In a portable photographic dark-room, the combination of the folding box A provided with the sockets *n r*, the hood B, provided with the non-actinic window C and ventilator D, the standards *s*, provided with the arms *t u* for supporting the hood, and the legs *o*, inserted in the sockets *n* and staple *p*, substantially as specified.

484,700. MACHINE FOR NAPPING CLOTH. GEORGE W. BURR and MICHAEL MALONY, Webster, Mass. Filed Feb. 1, 1892. Serial No. 419,917. (No model.)



Claim.—1. A napping-cylinder tooth having a rearward-projecting outer end and a burr or hook ground on the end thereof and projecting forwardly at an angle from said outer end, substantially as set forth.

2. In a machine of the character described, the combination, with the two parallel napping-cylinders having needles inclined in a direction opposite to their direction of rotation and terminating in burrs or points ground on the ends thereof and projecting at an angle therefrom in the direction of rotation of said cylinders, of mechanism for rotating the cylinders in opposite directions, and suitable guides for holding the fabric in proper relation to said cylinders to be acted upon by said burrs or points, substantially as set forth.

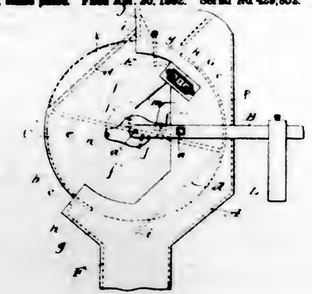
484,701. HORSE-SHIELD. AMOS P. CHASE, Burgh Hill, Ohio. Filed Apr. 5, 1892. Serial No. 427,906. (No model.)

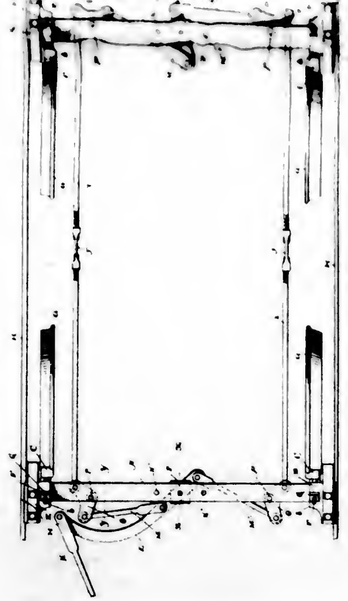
Claim.—The herein described improved horse shield, comprising

and carrying agitators, the cylindrical hopper mounted for rotation upon the shaft and having seed openings, and front and rear standards removably connected to the rear bar above the hopper, the front standard terminating in a furrow-opening point and the rear standard in a furrow-closing end, substantially as specified.

5. In a machine of the class described, the combination, with the oblong framework the opposite side bars of which are formed in front and rear sections detachably connected and the seat supported by the framework for the accommodation of the driver, of the axle loosely supporting the framework and provided with perforations, the wheels loosely mounted on the axle and having their hubs provided with perforations agreeing with those of the axle, pins for inserting through the hub and into the axle, rotatable chopping mechanism, and gears connecting the same with the axle, substantially as specified.

484,691. ROTATING GRAIN-METER. George R Wilson, Stillwater, Minn., assignor to the Minnesota Thresher Manufacturing Company, same place. Filed Apr. 20, 1892. Serial No. 429,852. (No model.)





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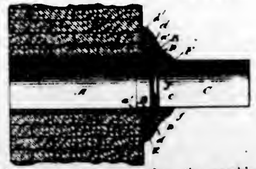
theretor, a lever pivoted between its ends upon the said connection, a bell-crank lever at each side of the operating lever and each bell-crank lever having a stop formed thereon outside of the connection and which engage therewith for the purpose specified, connections between the outer ends of the bell-crank levers and the inner and outer portion of the operating-lever, respectively, and connections between the inner ends of the bell-crank levers and the brake-head connection at the opposite end of the car, substantially as set forth.

6. A brake mechanism comprising brake-shoe heads, two parallel connecting bars connecting the said brake-shoe heads and separated a suitable distance, an operating-lever, a sliding pivotal connection for the lever between the said connecting-bars, bell-crank levers pivoted between the bars at each side of the said operating-lever, connections between the outer ends of the bell-crank levers and the outer and inner portion of the operating lever, respectively, and connections between the inner ends of the said bell-crank levers and the brake-head connection at the opposite end of the car, substantially as described.

484,694. STOVEPIPE-THIMBLE. William Balm, Clinton, Ind. Filed Mar. 19, 1890. Serial No. 344,511. (No model.)

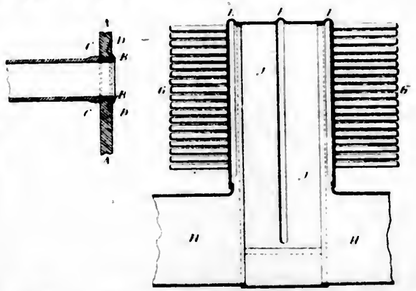


Claim.—1. In a stovepipe connection, the combination of the stovepipe having at one end a circumferential outstanding bead with a pipe collar having in the opening at the outer end a circumferential bevel to hold the pipe-bead and on the other recessed and provided with oppositely disposed lugs, and the chimney-pipe thimble having at

friction-spring and made to slide in said tube, and a shade provided with friction-plates, said bar being jointed to and made to straddle the friction-plates of the shade, substantially as described.

3. The combination, with a clamp provided with friction-plates having one or more stops, of a tube jointed to and made to straddle said plates, a bar made to slide in said tube, and a shade provided with friction-plates, said bar being jointed to and made to straddle the friction-plates of the shade, substantially as described.

484,696. TUBULAR BOILER. Henry Benbow, Plymouth, England. Filed Aug. 29, 1892. Serial No. 444,429. (No model.)



Claim.—1. In boilers, the combination of a shoulder near one end of the tube, a seat for the shoulder, formed on the inner surface of the tube plate around the hole through it, and means for securing the end of the tube to the outer side of the tube-plate.

2. In boilers, the combination of a shoulder near one end of the tube, a seat for the shoulder, formed on the inner surface of the tube-

plate around the hole through it, and a groove on the outer surface of the tube-plate, into which the end of the tube is beaded.

3. In boilers, the combination of tubes, a tube-plate to which the tubes are rigidly attached, and a corrugation in the tube-plate around the outer row of tubes.

4. In boilers, the combination of tubes, a tube-plate to which the tubes are rigidly attached, and a corrugation in the curved face of the combustion chamber, extending below the lowest tube.

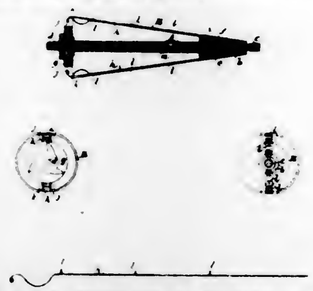
484,697. BLUE DYE. RENÉ BOHN, Mannheim, assignor to the Badische Anilin and Soda Fabrik, Ludwigshafen, Germany. Filed Mar. 17, 1892. Serial No. 425,942. (No specimens.) Patented in Germany Jan. 27, 1891, No. 59,863, and in France Mar. 2, 1891, No. 211,806.

Claim.—1. The new blue dye, which can be derived from tetra-alkyldiamido-benzophenone and dihydroxynaphthaline and which is slightly soluble in cold water, more readily in hot water, giving greenish to violet-blue solutions, soluble in alcohol, practically insoluble in benzine, soluble in aqueous alkalies, giving blue solutions, soluble in concentrated sulphuric acid, and giving either a green or a brown solution, all substantially as described.

2. The process of manufacturing coloring-matter, which consists in combining tetraalkyldiamido-benzophenone with dihydroxynaphthaline by the aid of a condensing agent, such as phosphorus oxychloride, substantially as described.

484,698. SPINDLE. ARTHUR A. BRIGHAM, Weston, Mass. Filed Dec. 26, 1891. Serial No. 416,234. (No model.)

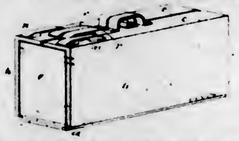
Brief.—The object is to make a cone-shaped spindle for use with straw-board cop-tubes, which will be light and yet not swell or shrink on account of moisture. The spindle is provided with collars *f g*, to which is fastened the thin metal shell B. In the shell are springs A with points *l*, which project through holes in the shell and pierce the cop-tube to hold it in place. At the base of the shell are recesses *j*, through which the springs can be operated.



Claim.—1. In combination with a hollow spindle, a spring within said spindle and provided with pointed projections to extend through the outer surface of the spindle, substantially as and for the purpose set forth.

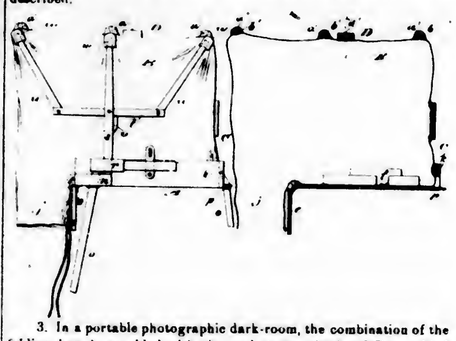
2. The combination of a central spindle, collars thereon, an outer shell, and a spring within said shell provided with projections to extend through said shell, one of the collars and the shell being provided with openings whereby the springs may be operated, substantially as described.

484,699. PHOTOGRAPHIC DARK-CHAMBER. ISAAC BRYNER, Calhway, Nebr. Filed July 7, 1892. Serial No. 439,216. (No model.)



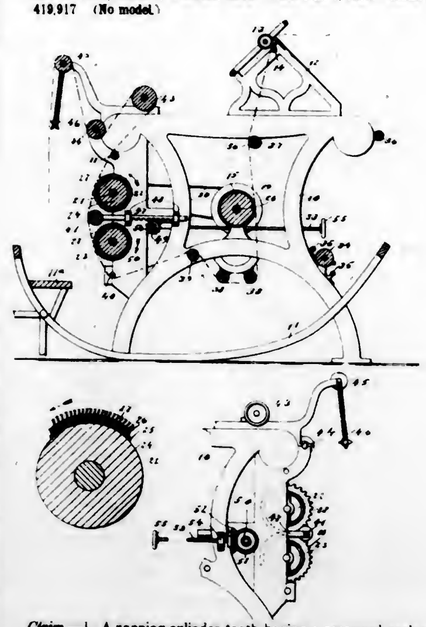
Claim.—1. In a portable dark-room, a folding box formed of a base board *a*, side boards *b*, hinged to the base-board and provided with the top pieces *c*, attached at right angles to the side boards *b*, and pieces *d*, attached to the top pieces and side pieces at one end of the box, an end piece *e*, hinged to the base-board *a* and arranged to fold in between the side pieces, and a hood of flexible material secured to the bottom of the box and provided with skirt for surrounding the body of the operator and furnished with a window for admitting non-actinic light, substantially as specified.

2. In a portable photographic dark-room, the combination of the folding box A, provided with the sockets *r*, the standards *s*, cross-arms *l*, pivoted to the standards, the arms *u*, pivoted to the ends of the cross-arms *l*, and the hood B, provided with the pockets *w*, substantially as described.



3. In a portable photographic dark-room, the combination of the folding box A, provided with the sockets *n r*, the hood B, provided with the non-actinic window C and ventilator D, the standards *s*, provided with the arms *l u* for supporting the hood, and the legs *o*, inserted in the sockets *n* and staple *p*, substantially as specified.

484,700. MACHINE FOR NAPPING CLOTH. GEORGE W. BURR and MICHAEL MALONY, Webster, Mass. Filed Feb. 1, 1892. Serial No. 419,917. (No model.)



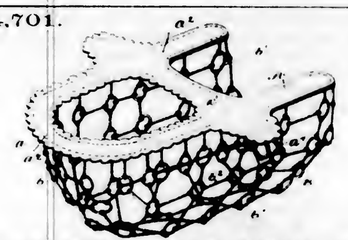
Claim.—1. A napping-cylinder tooth having a rearward-projecting outer end and a burr or hook ground on the end thereof and projecting forwardly at an angle from said outer end, substantially as set forth.

2. In a machine of the character described, the combination, with the two parallel napping-cylinders having needles inclined in a direction opposite to their direction of rotation and terminating in burrs or points ground on the ends thereof and projecting at an angle therefrom in the direction of rotation of said cylinders, of mechanism for rotating the cylinders in opposite directions, and suitable guides for holding the fabric in proper relation to said cylinders to be acted upon by said burrs or points, substantially as set forth.

484,701. HORSE-SHIELD. AMOS P. CHASE, Burgh Hill, Ohio. Filed Apr. 5, 1892. Serial No. 427,906. (No model.)

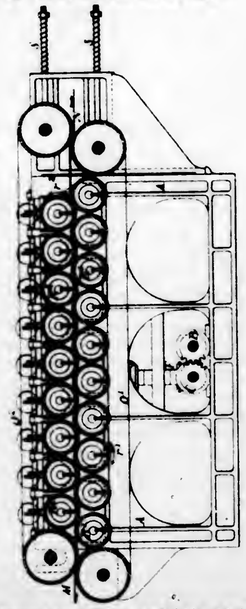
Claim.—The herein described improved horse shield, comprising

484,701.



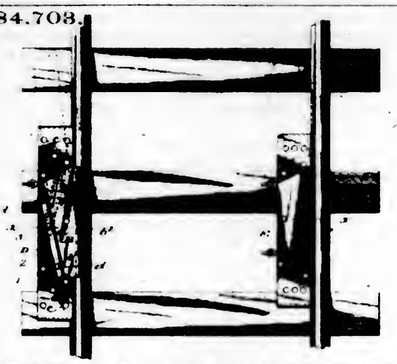
the frame and the flexible pocket depending therefrom for some distance and composed of a series of links loosely connected together, said pocket being closed at its forward end and open at its rear end, substantially as set forth.

484,702. MACHINE FOR PRESSING AND FINISHING FABRICS. JAMES S. CRITCHLEY, Ilkley, IGNATIUS SUTCLIFFE, Keighley, and HENRY A. A. DOMBRAIN, Addingham, near Leeds, England. Filed Aug. 27, 1891. Serial No. 403,871. (No model.) Patented in England May 6, 1891, No. 7,837; in France Aug. 17, 1891, No. 215,554; in Belgium Aug. 17, 1891, No. 96,037; in Germany Aug. 18, 1891, No. 63,458, and in Austria-Hungary May 13, 1892, No. 2,063 and No. 14,691.



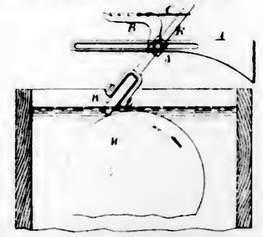
Claim.—An apparatus for pressing and finishing fabrics, consisting of a framework, a gang of upper rollers and a gang of lower rollers journaled on the framework, the guide and stretcher rollers at the end of the framework, means for heating some of the rollers and cooling others of each gang, an adjustable weight for pressing each upper roller toward a lower roller, a pair of endless flexible metallic aprons engaging the guide and stretcher rollers and one of which passes under the upper rollers while the other passes over the lower rollers, and gearing for positively rotating each upper and each lower roller, substantially as described.

484,703.



said guard-rail to the frog at angles reverse to each other, substantially as described, and for the purpose set forth.

484,704. APPARATUS FOR THE MANUFACTURE OF METALLIC ARTICLES BY ELECTROLYSIS. ALEXANDER S ELMORE, Leeds, assignor to Elmore's American and Canadian Patent Copper Depositing Company, Limited, London, England. Filed July 23, 1891. Serial No. 400,414. (No model.) Patented in England Aug. 15, 1888, No. 11,778, and Sept. 16, 1890, No. 14,634; in France July 4, 1891, No. 214,641; in Belgium July 4, 1891, No. 95,573; in Switzerland July 8, 1891, No. 3,803; in Norway July 13, 1891, No. 2,416; in Luxemburg July 14, 1891, No. 1,473; in Italy July 27, 1891, LIX, 75; in Victoria Aug. 14, 1891, No. 3,359; in New South Wales Aug. 17, 1891, No. 3,196; in South Australia Aug. 17, 1891, No. 2,014; in Queensland Aug. 17, 1891, No. 1,825, in New Zealand Aug. 24, 1891, No. 5,153; in Spain Aug. 28, 1891, No. 12,303; in India Oct. 26, 1891, No. 238; in Canada Nov. 14, 1891, No. 37,787; in Austria-Hungary Jan. 31, 1892, No. 51,818 and No. 83,592, and in Western Australia Mar. 8, 1892, No. 324.



Claim.—1. In an apparatus for burnishing the metal deposited by electrolysis on a mandrel, the combination, with a tank and a mandrel arranged to revolve therein, of a traveling arm and a burnisher-roller supported by said arm and revolving on an axis lying in a plane perpendicular to the axis of the mandrel.

2. In an apparatus for burnishing the metal deposited by electrolysis on a mandrel, the combination, with a tank and a mandrel arranged to revolve therein, of a traveling arm and a burnisher-roller pivotally supported by said arm and revolving on an axis lying in a plane perpendicular to the axis of the mandrel.

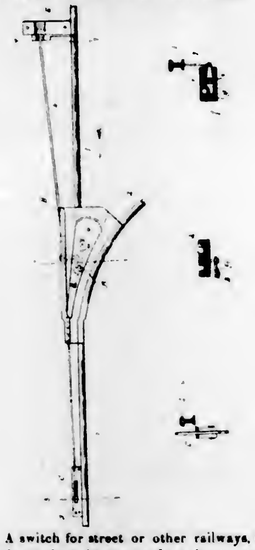
3. In an apparatus for burnishing metal deposited by electrolysis on a mandrel, the combination, with a tank and a mandrel arranged to revolve therein, of a traveling arm, a bracket secured to said arm and provided with a pivoted socket, a burnisher-roller carried by said socket, and means for holding the burnisher-wheel against the mandrel.

484,705. COVER FOR SHOES. JOHN FAVETE, London, England. Filed Apr. 21, 1892. Serial No. 430,025. (No model.) Patented in England Feb 22, 1892, No. 3,406.

Claim.—The herein-described improved mud protector or guard for attachment to boots or shoes, said protector or guard having an open bottom and consisting of a portion to cover and fit closely to the

rear of the boot or shoe, means for securing the upper part thereof to the wearer above the ankle, a strap *d*, connected to the edges of the guard or protector below the ankle, said strap engaging the front portion of the heel of the boot or shoe, and a strap *f*, secured to said guard or protector at a point intermediate the strap *d*, and the means for securing the protector or guard to the wearer above the ankle, substantially as described.

484,706. TRAMWAY-SWITCH. JOHN H. GAGLE, Seattle, Wash. Filed Dec. 18, 1891. Serial No. 415,481. (No model.)



Claim.—1. A switch for street or other railways, comprising a suitable frog having a pivoted tongue and a spring to retain the tongue in its normal position, mechanism, substantially as described, for automatically opening the tongue, comprising an oscillating lever adapted to be actuated by a foot-piece or tappet on the moving car, a reciprocating rod pivoted at one end to said lever, a bell-crank lever pivotally connecting said rod and tongue, and a locking device whereby the tongue will be held open during the passage of the car and automatically released by the action of the car as the latter leaves the switch, substantially as described.

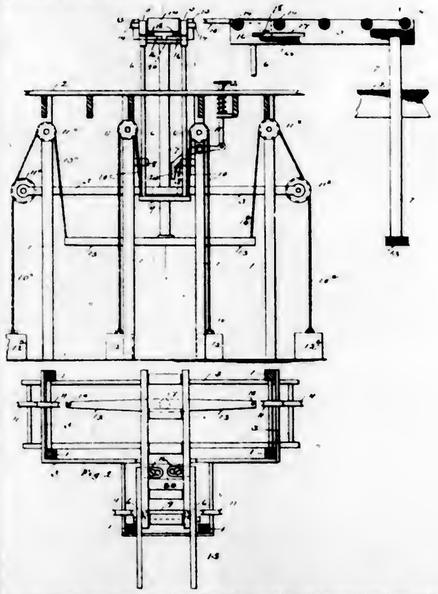
2. In a switch for street or other railways, the combination, with the pivoted tongue, of the spring bearing thereon, the oscillating lever adapted to be actuated by a tappet on the moving car, the reciprocating rod having one end connected to said lever, the bell-crank lever connecting said rod and tongue, the stop block adapted to engage one end of said rod, so as to lock the tongue when thrown open, the tilting lever, and the plunger-rod pivoted to said tilting lever and adapted to be depressed by the car-wheel, so as to unlock the tongue as the car leaves the switch, substantially as described.

3. In a switch for street or other railways, the combination, with the pivoted tongue, of the bell-crank lever having one arm pivoted to said tongue, the longitudinally-reciprocating rod pivoted intermediate its ends to another arm of said lever, the oscillating lever connected to one end of said rod, the stop-block for engaging the free end of said rod when the tongue is thrown open, the tilting lever or pawl, the vertically-sliding plunger pivoted to said pawl, and the spring which tends to restore said tongue and rod to their normal positions, substantially as described.

4. In combination with the pivoted spring-pressed tongue, the bell-crank lever, the longitudinally-sliding rod pivoted intermediate its ends to one arm of said bell-crank lever, the oscillating lever pivoted to one end of said sliding rod, the grooved stop-block adapted to receive the free end of said rod, and the tilting lever having one end arranged beneath the free end of the sliding rod and provided with a vertically-sliding plunger rod at its opposite end, adapted to be depressed by the car-wheel, for the purpose set forth.

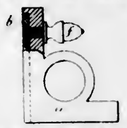
484,707. DEVICE FOR HANDLING SEWER-PIPE. ALBERT GABEL, New Cumberland, W. Va. Filed May 19, 1891. Serial No. 393,395. (No model.)

Claim.—1. In an apparatus for handling sewer-pipe, the combination, with the table, of an extension-frame projecting from one end thereof, said extension-frame being adjustable longitudinally of the table to connect the latter with the press and the sides thereof being adjustable laterally toward and from each other, thereby permitting said extension-frame to accommodate pipes of different diameters, substantially as described.



2. In an apparatus for handling sewer-pipe, the combination, with the table having slots, of a sliding extension-frame consisting of side bars having inward projections received by said slots, and a sliding block 20, secured to said inward projections in a manner to permit said bars to slide longitudinally of the table to connect the latter with a press and laterally toward and from each other to accommodate pipes of different diameters, substantially as described.

484,708. STAIR-ROD AND SECURER. WILLIAM GATES, Upton Manor, England. Filed Nov 9, 1891. Serial No. 411,305. (No model.)



Claim.—1. The combination of a holding plate for attachment to part of a stairway and a carpet-rod eye of ordinary outward form for the reception of an ordinary carpet-rod, the said eye having recesses to engage said holding-plate, substantially as described.

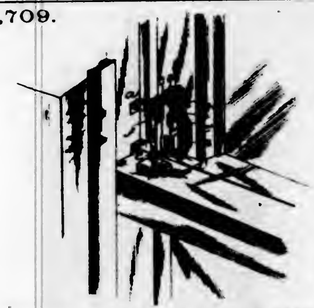
2. The combination of a holding-plate for attachment to the riser of a stair and a carpet-rod eye of ordinary outward form for the reception of an ordinary carpet-rod, the said eye having recesses to engage said holding-plate, said holding-plate and eye formed with coincident holes or recesses for the reception of a pin or screws, whereby the eye may be locked to the holding-plate, substantially as described.

484,709. SASH-FASTENER. GEROLT GIBSON, St. Louis, Mo. Filed Feb. 23, 1892. Serial No. 423,447. (No model.)

Claim.—1. A sash-lock having one member provided with a latch and in rear of said latch with a slot having an inner beveled bottom edge, a second member having a beveled stud, and a third member having its hook portion provided with a tooth having a beveled surface, said member also having opposite the beveled surface of said hook a plain offset portion, substantially as specified.

2. A sash lock having one member provided with a latch, a beveled catch *d*, and a stop *d'*, spaced off from said catch, a second member having a beveled stud *e*, and a concave stud *d'*, adapted to engage said beveled catch and be received between it and said stop, and

484,709.



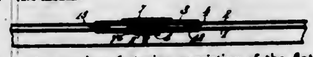
means to effect engagement between the latch and said beveled stud, substantially as specified.

484,710. SASH-FASTENER. GEROLT GIBSON, St. Louis, Mo. Filed Mar. 10, 1892. Serial No. 424,392. (No model.)

Claim.—1. The combination of a member fixed to the casing, having an offset-arm provided with a hook and a slot in rear of said arm and said arm having a latch whose forward end is adapted to stand at the entrance to the space between said arm and hook, a member fixed to the upper sash and having a stud to engage that portion of said latch at the entrance of said space, and a member fixed to the lower sash to enter the slot of the member fixed to the casing and to engage said latch with the stud of the member fixed to the upper sash, substantially as set forth.

2. A sash-lock having one member provided with a latch and a hook having its lower free end beveled upon the inner edge outward and downward, a second member having a stud beveled upon its upper and lower edges, and a third member having a horizontal portion adapted to enter a slot in the first-named part and engage said latch, causing the latch to act upon said stud and move it upward with the upper sash, substantially as set forth.

484,711. SAFETY FASTENING OR SEAL FOR ENVELOPES. EDWIN W. HALL, Whitehall, N. Y. Filed Apr. 22, 1892. Serial No. 430,255. (No model.)

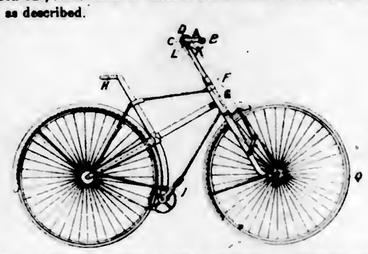


Claim.—1. An envelope-fastening consisting of the flat plate 3, having projecting attaching points or strips 4 at its edge and formed with a central eyelet 5, and the flat plate 12, having projecting attaching points or strips 13 and provided with a central perforation 14, through which the eyelet passes and is then upset against the perforated plate, substantially as described.

2. The combination, with the sealing or fastening parts of an envelope or wrapper, of a seal or fastening consisting of the flat plate 3, having projecting attaching points or strips 4 and formed with a central eyelet 5, the flat plate 12, having projecting attaching points or strips 13 and provided with a central perforation 14, and a rivet entering the eyelet and having a flat head lying against the outer face of the plate which carries the eyelet, the end of said rivet being swelled or enlarged to retain it in position, substantially as described.

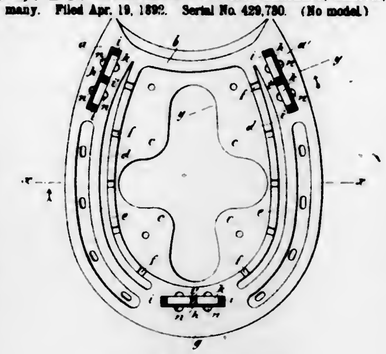
484,712. BICYCLE. RICHARD K. HARDLEY, Chadderton, England. Filed Aug. 31, 1891. Serial No. 404,208. (No model.) Patented in England Sept. 6, 1889, No. 14,045.

Claim.—1. In a bicycle, tricycle, or similar machine, the combination, with pedal-driving mechanism, of an auxiliary driving mechanism and a combined steering and auxiliary driving mechanism operating cranked bar, the cranks of which are in line with each other, substantially as described.



2. In a bicycle, tricycle, or similar machine, the combination, with pedal-driving mechanism, of an auxiliary driving mechanism consisting of a wheel or pulley connected therewith, a cranked bar having a wheel or pulley thereon, each of said wheels or pulleys provided with a clutch-gear, and a connection gearing said wheels or pulleys together, the cranks of the cranked bar being in line with each other, whereby said bar serves the functions of a steering-bar and a bar for operating the auxiliary driving mechanism, substantially as described.

484,713. HORSESHOE. CHRISTIAN HARTMANN, Hanover, Germany. Filed Apr. 19, 1892. Serial No. 429,780. (No model.)



Claim.—1. The herein-described horseshoe-calk, consisting of a bent or curved spring-metal plate having the vertical ribs at the ends of one side face, as and for the purpose substantially such as set forth.

2. The calk composed of a curved spring-metal plate having the beveled ribs thereon, substantially as set forth.

3. The horseshoe having an elongated socket, in combination with the calk composed of the curved spring metal plate having the vertical ribs on one side thereof sprung into said socket and held therein by friction, substantially as described.

4. The horseshoe having an elongated socket, in combination with the calk formed of a curved spring metal plate having ribs *i i'* and apertures *m m*, substantially as described.

5. The horseshoe provided and integral with the inwardly-projecting horizontal checks *c*, and the vertical rib *e*, divided into separate lugs, for the purpose stated, by vertical transverse slots or openings *f*, as described.

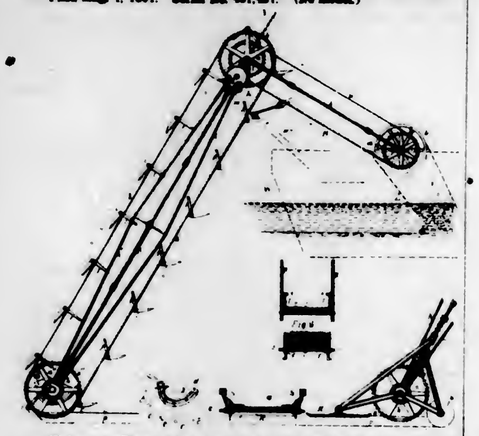
484,714. FIREPROOF PAINT. WALTER S. HILL, Boston, Mass. Filed Jan. 28, 1892. Serial No. 419,564. (No specimens.)

Claim.—1. The herein-described paint, composed of zinc hydrate, an alkaline salt, a non-combustible material, and an oil-paint, substantially as specified.

2. The herein-described paint, composed of zinc hydrate, an alkaline salt, a non-combustible substance, white lead, and linseed-oil, substantially as specified.

3. The herein-described paint, composed of zinc hydrate, an alkaline salt, asbestos, white lead, linseed-oil, and a pigment, substantially as specified.

484,715. CLAM OR OYSTER RAKE OR DREDGE. HENRY R. HILTON, Jersey City, N. J., and JAMES R. WILSON, New York, N. Y. Filed Aug. 1, 1891. Serial No. 401,457. (No model.)



Claim.—1. The combination, with a self-propelled scow, of a rotary submarine rake or dredge having the frames, substantially as shown and described, with endless chains armed with tines which engage the water bed in the direction of travel of the scow constructed and operated substantially as set forth.

2. The combination of the hinged frame A A' with a rotary dredge or elevator in which the positions of the buckets, rakes, or combs are controlled by the cam or cams D within the boot of same, substantially as described.

3. In a rotary dredge or elevator, the combination of the hinged frame A A', the endless elevator having teeth adjustable in pitch or angular presentation with the adjustable cam or cams, substantially as described.

4. In a rotary dredge or elevator, the combination, with a scow, of the hinged frame A A', the endless chain or belts B, armed with tines, rakes, or combs *c c*, pointed in direction of travel of the scow, and the adjustable cam or cams D', substantially as described.

5. In a rotary dredge or elevator, the combination of hinged frame A A', endless chain or belts B, the forwardly-directed rakes or combs *c*, cam or cams D' D', operating-gears A and A', shaft H, pinion *i*, and segment *j*, substantially for the purpose as described.

6. In a submarine dredge or elevator, the combination of the frame A A', endless chain or belt B, and forwardly-directed rakes, teeth, or combs *c*, with the arms *f* and the stops *c'*, substantially as described.

7. In a submarine dredge or rake, the combination of the frame A A' and the endless revolving chains armed with tines, with the foot or drag attached to the lower end of the frame, for the purposes set forth.

8. In a submarine dredge or rake, the combination, with a scow, of the frame A A', rotatable endless chains armed with tines, and the cutting disks or colters, substantially as described.

9. In a submarine dredge, the combination, with a supporting and dragging scow provided with frame A A' and belt B, of the boot or outer hinged frame having the forward and downward projection T, in combination with the rake-bearing chains B', the driving sprocket-wheel *b'*, and the "idlers" *b''' b*.

10. In a submarine dredge having the supporting and dragging scow, the combination of the frame A A', the belt B, the endless elevator B', having forwardly-directed teeth or tines C, shaft *c''*, loosely-vibrating arm *s*, rod *p*, nut *q*, and screw-threaded shaft H *r*.

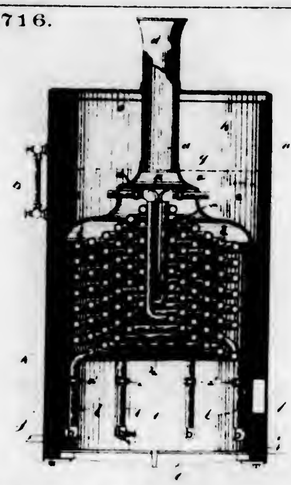
11. In an oyster-dredge, the combination of the frame A A', belt B, endless chains B', having the forwardly-directed teeth or tines C, the attached sockets *e*, having stops or lugs *c''*, and the vibratable rakes C, having arms *f*.

12. In combination with the oyster-dredge, substantially as hereinbefore shown, the boot, and the foot R, having transversely-concave sole *r*.

484,716. STEAM-GENERATOR. FRANCIS E. HOMER, Boston, Mass. Filed Apr. 14, 1892. Serial No. 429,096. (No model.)

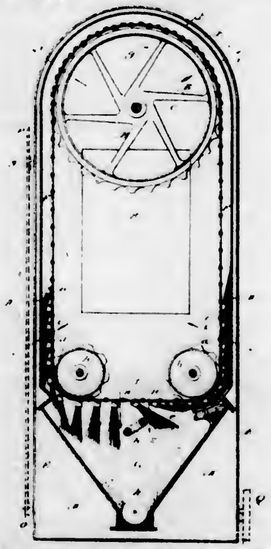
Claim.—In a steam-generator, the combination of the fire-pot having an uptake in upward continuation thereof, the casing surrounding the fire-pot and uptake and forming the water-space and the upper steam-space around the uptake, and the vertical series of closely-arranged coils, the convolutions of each coil extending from the outside

484,716.



inwardly and upwardly to form the coil truncated cone-shaped, the outer ends of the coils extending down and detachably connected by separate unions with a bend extending into the lower portion of the water space, the inner ends of the coils extending up through the open centers of the coils to the upper end of the combustion-chamber and detachably connected with bends extending into the water or steam space by separate unions, as described.

484,717. DUST-COLLECTOR. WILLIAM INCE, Hayle, England. Filed Aug. 4, 1892. Serial No. 442,160. (No model.) Patented in England Mar. 22, 1888, No. 4,386, and in Austria Hungary Nov. 9, 1889, No. 2,963 and No. 2,763.



Claim.—1. In a dust-collecting apparatus, the combination of a spider-frame, flexible filtering brushes pivoted thereto, a covering of perforated metal or gauze approximately surrounding said spider-frame, in contact with said brushes, and a fan for drawing or blowing the air filtered through the brushes.

2. In a dust-collecting apparatus, the combination of a spider-frame, a brush-holder hinged to said frame, and a brush in said holder.

3. In a dust collecting apparatus, the combination of a spider-frame, an endless traveling belt, brush-holders hinged to said belt, brushes in said holders, and a perforated metal or wire gauze cover approximately surrounding said traveling belt, in contact with said brushes.

4. In a dust collecting apparatus, the combination of an outer covering, an inner perforated covering, brush-carrying mechanism within said perforated covering, brush-holders hinged to said brush-carrying mechanism, brushes in said holders in contact with said perforated covering, and a knocker adapted to strike said brushes.

5. In a dust collecting apparatus, the combination of an outer covering, an inner perforated covering, and brush carrying mechanism within said perforated covering, substantially as described

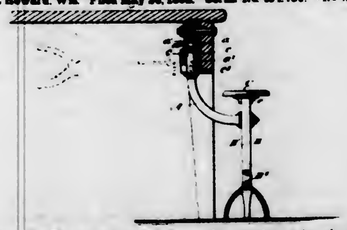
484,718. COMBINED WORK-STAND, DESK, GAME-BOARD, AND TABLE. JACOB L. ISAACS, St. Louis, Mo. Filed Dec. 28, 1891. Serial No. 416,339. (No model.)

Claim.—1. A combination-desk comprising the legs 1, the body 3, the desk-body surmounting the body 3, and the stand-top consisting of the side pieces 42 and the rear piece 43, having grooves 44, the front piece 45, and the reversible board 46, secured to the front piece, having tenon edges 47 and a dividing strip 48 on one side, one side of the board being flush with the stand-top and the other side of the board being flush with the tenon edges, substantially as described.

2. The combination, with a stand, of the stand-top consisting of the side pieces 42 and the rear piece 43, having grooves 44, the front piece 45, and the reversible board 46, secured to the front piece, having tenon edges 47 and a dividing-strip 48 on one side, one side of the board being flush with the stand-top and the other side of the board being flush with the tenon edges, substantially as described

3. The combination, with a stand, of the stand-top having the upper rabbets 52^a, lower rabbets 52^b, and tenons 52, the reversible board having corresponding rabbets and tenons sliding in the stand-top, and the table-top consisting of two leaves provided with L-shaped cleats 55, having flanges 56, which enter the lower rabbets of the stand top and board beneath the tenons in either position of the board, substantially as described.

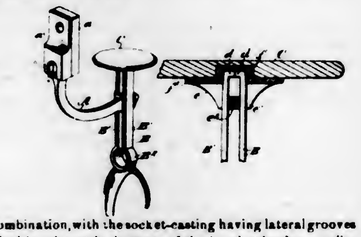
484,719. STOOL FOR TABLES, COUNTERS, &c. JACOB JACKSON, Fort Howard, Wis. Filed May 23, 1892. Serial No. 434,739. (No model.)



Claim.—1. The combination of a socket-casting, a bracket hav-

ing a cylindrical portion at one end journaled in the socket and adapted to swing therein at right angles to its axis of rotation, a forked standard having a lengthwise sliding connection with the other end of the bracket and adapted to swing thereupon in the arc of a circle, and means for retaining the bracket in a fixed position when its cylindrical portion is swung in the socket-casting at right angles to the axis of rotation of said cylindrical portion, substantially as described.

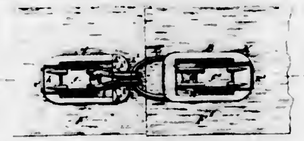
2. The combination, with the socket casting adapted to be secured to a fixture and having vertical grooves, of the bracket having a cylindrical end portion provided with a cross-pin or lateral studs to engage the vertical grooves in the socket of the casting and a seat having a bifurcated standard which is slidable lengthwise on the bracket, substantially as described.



3. The combination, with the socket-casting having lateral grooves and a cylindrical bearing at its bottom, of the bracket having a cylindrical end portion provided with lateral studs and a reduced extremity to engage said grooves and cylindrical bearing, respectively, a seat, and its standard connected to said bracket, substantially as set forth

4. The combination, with the bifurcated standard having its arms or branches adapted to yield laterally and provided with meeting toes or studs and means for its attachment to a table or other fixture, of a seat having its socket terminating in a rectangular extension whose longitudinal axis is at right angles to the depth of said socket and provided with a stop across its lower side arranged between the laterally yielding branches of the standard, substantially as described

484,720. HOOK AND EYE. FREDERICK MEYERS, Brooklyn, N. Y., and MATTHIAS STOVEKEN, Hoboken, N. J. Filed Mar. 31, 1892. Serial No. 427,354. (No model.)



Claim.—1. A hook and eye composed of the members A B, the member A being composed of a hook having two penetrating prongs and of a locking-plate having an opening for the fabric and a recess adapted to engage the neck of the hook, and the member B being composed of an eye having two penetrating-prongs and of a locking-plate having an opening for the fabric and a hook adapted to engage the eye, substantially as described.

2. The hook provided with two penetrating-prongs and shoulders at the junctions of the prongs with the neck of the hook, in combination with a locking-plate having a recess adapted to engage the neck of the hook and an opening for the fabric to which the hook is to be attached, substantially as described.

3. A hook provided with two penetrating-prongs and shoulders at the junctions of the prongs with the neck of the hook, in combination with a locking-plate having a recess adapted to engage the neck of the hook, a point protecting lip, and an opening for the fabric to which the hook is to be attached, substantially as described.

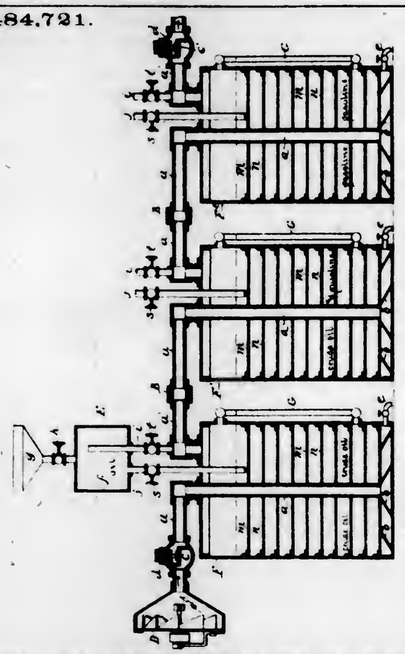
4. An eye provided with two penetrating prongs extending parallel to each other and at a small distance apart, in combination with a locking-plate provided with a hook adapted to engage the eye and with an opening for the fabric to which the eye is to be attached, substantially as described.

5. An eye provided with two penetrating-prongs extending parallel to each other and at a small distance apart, in combination with a locking-plate provided with a hook adapted to engage the eye, a point-protecting lip, and an opening for the fabric to which the eye is to be attached, substantially as described

484,721. CARBURETING APPARATUS. JAMES J. PARKS, Beaver Falls, Pa. Filed July 28, 1891. Serial No. 400,511. (No model.)

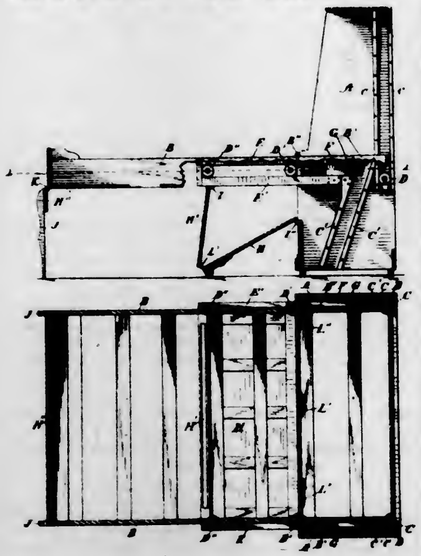
Claim.—In a carbureting apparatus, the combination of the tank

484,721.



or casing, a series of diaphragms *m* and *n*, extending across the tank, the diaphragms *m* being perforated near their centers and the diaphragms *n* near their outer edges, an inlet-pipe leading into the tank and opening near the bottom thereof below the lowest diaphragm *n*, means for forcing a current of gas under pressure through the inlet-pipe, and the inclined perforated partitions *b*, placed between the lowest diaphragm and the bottom of the casing and extending between the open end of the inlet pipe and the perforated edge of the diaphragm *n*, whereby the gas is broken up or divided before reaching the perforations in the first diaphragm, substantially as described.

484,722. FOLDING BED. JOSEPH PERRET, Grand Rapids, Mich. Filed Feb. 25, 1892. Serial No. 422,765. (No model.)



Claim.—1. In a folding bed, the combination of an upright case, a bed-body provided with a fulcrum which travels in a folding frame, and a folding frame supporting two or more panels, said bed-body adapted to fold within the upright case and said frame adapted to fold within the case, so as to cover or conceal the bed-body by means of the folding panels, substantially as described.

2. In a folding bed, the combination of an upright case, a bed-body having an upper and a lower section hinged together, a frame pivoted to the upright case and provided with ways, one on either side, rollers attached to the outward section of the bed-body, adapted to move in these ways and serve to fulcrum the lower section of the bed-body, and a panel hinged to the upright case and to a support or panel, which support or panel is also hinged to the frame, said frame adapted to fold up into the case, so as to conceal the folded bed-body by means of the panels, substantially as described.

3. In a folding bed, the combination of a bed-body, a folding frame provided with ways for supporting the fulcrum of the bed-body, and a frame consisting of two panels, one of said panels hinged to the upright case and the other of said panels hinged to the frame, and said panels hinged together and adapted to support the frame bearing the ways and to be folded up in front of the upright case as the frame is folded, substantially as described.

4. In a folding bed, the combination of the upright case provided with oblique and perpendicular ways, a frame hinged to the upright case provided with ways, panels hinged to this folding frame, a bed-body having its upper section provided with a roller adapted to move in perpendicular ways in the upright case, and a lower section provided with a roller adapted to move horizontally in ways in the folding frame, and also with a roller adapted to move in the oblique ways in the upright case, said bed-body composed of two sections adapted to fold within the case and to unfold and extend, substantially as described.

5. In a folding bed, the combination of an upright case, a folding frame bearing ways for the fulcrums of the folding bed, and panels hinged to said frame, to each other, and to the upright case, adapted to form a support for the frame when lowered and as a cover for the bottom of the bed body when folded, substantially as described.

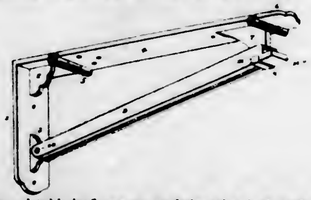
6. In a folding bed, the combination of an upright case, a bed-body provided with a fulcrum which travels in a folding frame, and a folding frame supporting the fulcrum of the bed-body and the bed when unfolded and adapted to fold into the upright case, substantially as described.

7. In a folding bed, the combination, with an upright case, of a folding supporting frame pivoted to the case and having guideways and a folding bed portion having supporting guide-rollers adapted to engage said guideways and some of which form the fulcrum of the bed portion, while the others are capable of traveling to and fro across the pivotal point of the bed portion in folding and unfolding the latter, substantially as described.

8. In a folding bed, the combination, with a stationary case having inclined guideways open at their upper ends, of a folding supporting-frame pivoted at one end to the case and having guideways which communicate with the open upper ends of the inclined guideways when said supporting frame is unfolded, and a folding bed portion having guide rollers or bearings which form the fulcrum of the folding bed portion, and other rollers or bearings which travel across the pivotal point of the bed portion in folding and unfolding the same, substantially as described.

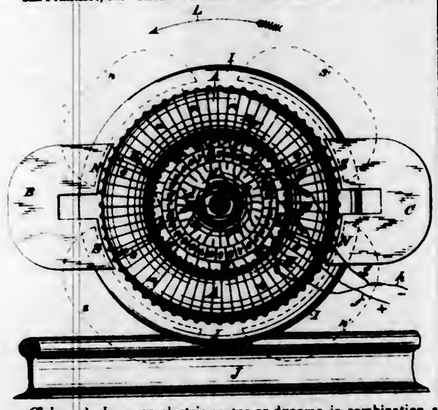
9. In a folding bed, the combination, with a stationary case, of a folding supporting-frame pivoted to said case, a folding bed portion supported by the folding supporting-frame and a jointed or hinged frame pivoted at one end to said supporting-frame and at the opposite end pivotally connected with the stationary case at a point below the pivotal point of the supporting-frame, said parts turning on their respective pivotal connections to fold up within and against the stationary case, substantially as described.

484,728. TABLE-LEAF SUPPORT. EDWIN G. PHILLIPS, Charleston, S. C., assignor of one-half to Samuel Weinkopf, same place. Filed Jan. 23, 1892. Renewed Sept. 27, 1892. Serial No. 447,063. (No model.)



Claim.—A table-leaf support consisting of an L-shaped casting, an arm hinged at its inner end thereto and having near its outer end a downward projection with a transverse head, a brace pivotally connected to said casting and having a slotted body sliding astride said projection with a transverse notch in its lower edge near its outer end engaging said head, a lip at the outer end of the brace, and a wing hinged to the outer end of the arm and swinging above said lip when the notch engages the head.

484,724. ELECTRIC MOTOR OR DYNAMO. ALBERT W. SMITH, San Francisco, Cal. Filed Jan. 26, 1892. Serial No. 419,209. (No model.)



Claim.—1. In an an electric motor or dynamo, in combination, a ring-armature wound with a Gramme winding, and two field-magnets having their respective unlike poles in close proximity, placed at diametrically-opposite points of the armature, the poles alternating around the armature in the order N S N S, as set forth.

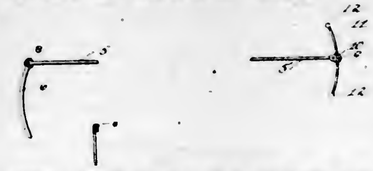
2. In an electric motor or dynamo, in combination, a ring-armature wound with a Gramme winding, a commutator the bars of which are cross-connected with those diametrically opposite, and two field-magnets having their respective unlike poles in close proximity placed at diametrically-opposite points of the armature, the poles alternating around the armature in the order N S N S, as set forth.

3. In an electric motor or dynamo, in combination, a ring-armature wound with a Gramme winding, a commutator the bars of which are cross-connected with those diametrically opposite, and two field-magnets having their respective unlike poles in close proximity placed at diametrically opposite points of the armature, the poles alternating around the armature in the order N S N S, the space between two unlike poles belonging to the same magnet being shorter than the space between two unlike poles belonging to the two different magnets, as set forth.

4. In an electric motor or dynamo, in combination, a ring-armature wound with a Gramme winding, a commutator the bars of which are cross-connected with those diametrically opposite, and two field-magnets having their respective unlike poles in close proximity placed at diametrically-opposite points of the armature, the poles alternating around the armature in the order N S N S, the space between two unlike poles belonging to the same magnet being shorter than the space between two unlike poles belonging to the two different magnets, and two connected brushes of one sign embracing a single brush of opposite sign placed between unlike poles belonging to the same magnet, as set forth.

5. In an electric motor or dynamo, in combination, a ring-armature wound with a Gramme or closed-circuit winding connected to a commutator, the equipotential parts of which are in electrical connection, and inducing field-magnets having their respective unlike poles in close proximity, said field-magnets being symmetrically arranged with relation to the armature circumference or working surface, the poles alternating around the armature in the order N S N S, the space between two unlike poles belonging to the same magnet being shorter than the space between two unlike poles belonging to different magnets, two electrically-connected brushes of one sign placed one on each side of a single brush of opposite sign bearing on the commutator at a point which is in electrical connection with that part of the armature-winding between two unlike poles belonging to the same inducing-magnet, and the two connected brushes of one sign being placed at such an angular distance each side from the single brush of opposite sign that all the armature-wire which is passing through the magnetic field will be included in the circuit or circuits from the two brushes of one sign to the single brush of opposite sign, as set forth.

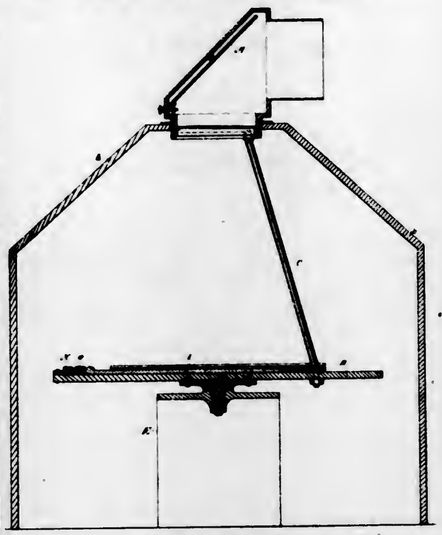
484,725. SPECTACLES. JOHN F. SUMNER, Marblehead, Mass. Filed June 23, 1892. Serial No. 437,701. (No model.)



Claim.—1. A pair of spectacles having the temples thereof composed of a straight portion and the curved or ear portion with a folding connection between said parts, said ear portion being held at right angles to the straight portion when in use, substantially as described.

2. A pair of spectacles having the temples consisting of the straight portion 5, a piece 9, hinged thereto and provided with an opening or passage-way therein, and a curved portion 11, carried in said opening, substantially as described.

484,726. RANGE-FINDER. CHARLES M. ALLEN, San Francisco, Cal. Filed Oct. 2, 1891. Serial No. 407,563. (No model.)



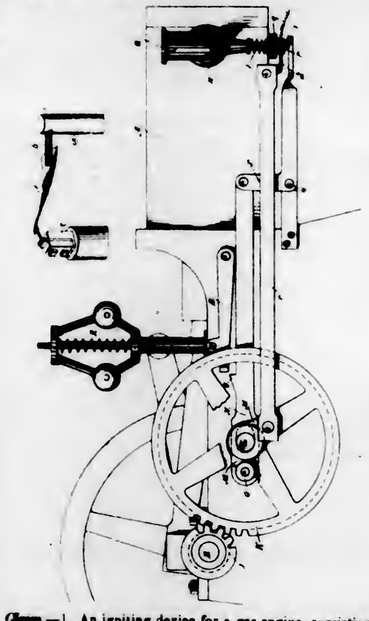
Claim.—1. A range-finger consisting of a camera obscura, a receiving-table with which it is connected, the two being movable about the common vertical axis, scales having a curvature upon radii from the points of observation upon the base-line, and straight-edges connected with slides movable over said curved scales, crossing the surface of reflection upon the table and movable so as to intersect each other at the point where the object to be located is reflected upon the surface, substantially as herein described.

2. A range-finder consisting of the camera obscura, a receiving-table with which the camera is connected, and a vertical axis common to the two, about which they may be turned to face in any direction, an observation and a base line crossing the surface of reflection at right angles, curved perspective scales fixed upon the table upon each side of the surface of reflection, straight-edges movable over said scales, so as to cross the surface of reflection and intersect each other above the reflection of the desired object, whereby readings may be taken from the two scales, a plotting-chart upon which is represented the true position and length of the base-line, straight-edges pivoted at each of the observing-points on the base line and movable over its surface, and scales graduated in degrees from these points of observation, said scales being graduated in plan to correspond with the perspective scales of the receiving-table, whereby the position of the object is accurately located upon the chart by the intersection of the straight edges when the latter are moved to positions upon the scales corresponding with those of the scales of the receiving-table, substantially as herein described.

3. A range-finder consisting of a camera obscura, a receiving-table with which it is connected, so that the two are movable in uni-

ses about a common vertical axis, a base and an observation line crossing each other at right angles upon the surface of reflection, a straight scale fixed to the table at one side of the reflected picture, a curved scale with screws by which it is moved and adjusted upon the fixed scale with relation to the line of observation, and a transparent scale fitting the curved scale and adjustable with relation thereto, said scale having the line of trajection of the guns to be used marked upon it, whereby these lines are made to intersect the reflection of the object and its distance ascertained by the readings upon the scale, substantially as herein described.

484,727. GAS-ENGINE. Daniel Best, San Leandro, Cal. Filed June 10, 1891. Serial No. 396,811. (No model.)



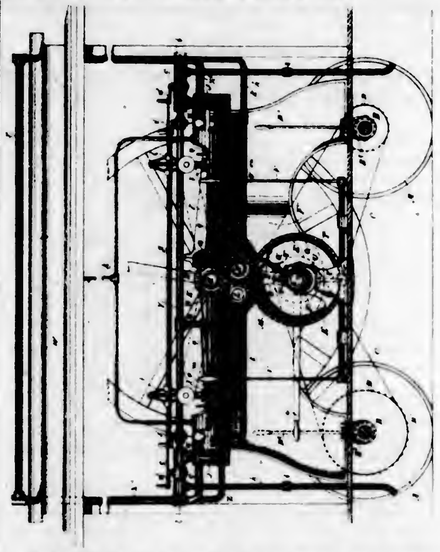
Claim.—1. An igniting device for a gas-engine, consisting of opposing fixed and movable electrodes whose meeting ends overlap one of said electrodes being formed of a warped elastic plate adapted to yield upon contact with the opposing electrode and to sweep across the upper and lower surfaces of the said opposing electrode in planes transverse of its line of projection.

2. In a gas engine, the electrical igniting device consisting of a stationary insulated pin or finger connected with one of the electrodes, an insulated shaft with mechanism connecting it with the engine shaft, whereby it is oscillated, and an elastic plate having a warped surface fixed to the inner end of said shaft and projecting toward and in line with the opposing electrode and beyond the plane of its end, whereby said elastic plate is adapted to sweep across the overlapping end of the opposing fixed electrode in planes at right angles to the line of projection of the fixed electrode on one of its oscillations and to return in like manner across the opposite face of the fixed electrode on the reverse oscillation, substantially as herein described.

3. In a gas-engine, a cylinder, reciprocating piston, crank-shaft, an inlet-valve through which the explosive mixture is drawn by the movement of the piston, an independent spring closed exhaust valve, a cam-shaft and intermediate mechanism and a governor by which the exhaust valve is opened and its movements regulated, an igniter consisting of a fixed and an oscillating electrode, a crank upon the cam-shaft, and connections, substantially as described, between it and the movable electrode, and gearing upon the cam-shaft and the main engine shaft, whereby the exhaust-valve is opened and a spark produced by the igniter at each second revolution of the main shaft.

484,728. GAS-ENGINE MOTOR FOR CARS. Daniel Best, San Leandro, Cal. Filed Apr. 1, 1892. Serial No. 427,366. (No model.)

Claim.—1. A car having mounted upon it the horizontal gas-engines, an interposed crank-shaft to which the connecting-rods of these engines are united from opposite sides, a pinion mounted upon the engine-shaft, a supplemental shaft having a gear-wheel mounted upon it, and intermediate movable pinions and reversing mechanism whereby the car may be driven in opposite directions without reversing the motion of the engines, substantially as herein described.



2. A car having the horizontal cylinders mounted upon opposite sides of a crank-axle, to which their pistons are connected by connecting-rods, a pinion K, mounted upon the engine shaft, a shaft journaled beneath the engine-shaft, and a gear-wheel M, turning loosely upon said shaft and adapted to be engaged by either one or the other of two pinions movable between the gears K and M, a drum connected with the gear M, a clutch mechanism, and a means for actuating the same, whereby the drum may be temporarily connected with the shaft or disengaged therefrom, sprocket-wheels upon this shaft, chains passing around said sprocket-wheels, and other sprocket-wheels D upon the axles of the car, whereby power is transmitted to the car, substantially as herein described.

3. A car or motor having engines connected with a crank-shaft, a pinion K, fixed upon the shaft, a second transverse shaft journaled parallel with the engine-shaft and having a gear-wheel M fitted upon it, with a space intervening between the peripheries of the gear M and pinion K, an arm or yoke fulcrumed upon the gear-shaft, and a lever by which it is turned about its fulcrum, in combination with pinions L and N, journaled upon the yoke and movable with it about the gear-shaft, whereby either the pinion L or N is engaged with the pinion K, while the pinion N remains constantly engaged with the gear M, substantially as herein described.

4. A car or motor having engines connected with a crank-shaft, a pinion fixed upon the crank-shaft, a second shaft F parallel with the crank-shaft, having a gear-wheel M and drum P turning loosely upon it, intermediate pinions movably journaled to transmit and reverse motion from the crank-shaft pinions to the gear M, and a hand Q, fixed to the shaft F concentric within the drum and having the inclined separated ends, in combination with the wedge S, the lever T, connected with it, and the sliding cone U, movable upon the shaft and engaging the lever to move the wedge and expand the band to form a frictional driving-contact between itself and the drum or to release it therefrom, substantially as herein described.

5. A car having horizontal engines mounted thereon, the connecting rods of said engines uniting with the crank of a shaft journaled transversely upon the car, a second shaft journaled below the engine-shaft with sprocket-wheels, and chains connecting the sprocket wheels with the axles of the car, a gear M, mounted loosely upon the second shaft, a pinion K upon the engine-shaft, a yoke turning about the second shaft, intermediate-engaged pinions L N, journaled upon the yoke and movable therewith, so that either of the pinions L or N may be engaged with the pinion K to propel or reverse the motion of the car, the clutch mechanism, and shifting-lever whereby the loose gear M is connected with the shaft or disengaged therefrom, substantially as herein described.

6. The car having the oppositely-placed horizontal gas-engines, intermediate connection between said engines and the car-axles, whereby they may be driven in either direction, a gasoline tank and vaporizer situated in the roof of the car, posts by which the roof is supported, a pipe adjacent to one of said posts and connecting with the vaporizer, a horizontal pipe situated within the body of the car and connected with the vertical pipe, pipes connecting said horizontal pipe with the two cylinders, valves by which the supply to the cylinders is controlled, and a rod connecting said valves, so that they may be opened or closed simultaneously from either end of the car, substantially as herein described.

7. A car having the oppositely-placed horizontal engines connected with a crank-shaft, intermediate mechanism through which power is transmitted from the engines to drive the car in either direction, a gasoline tank and vaporizer situated in the upper part of the car, a pipe leading therefrom delivering vapor into a horizontal reservoir-pipe, connections from said reservoir-pipe to the engine-cylinders, controlling-cocks suited and movable together, and air-supply cocks similarly connected and controlled, whereby the air to be mixed with the gasoline vapor is delivered with the latter to the engine-cylinder, substantially as herein described.

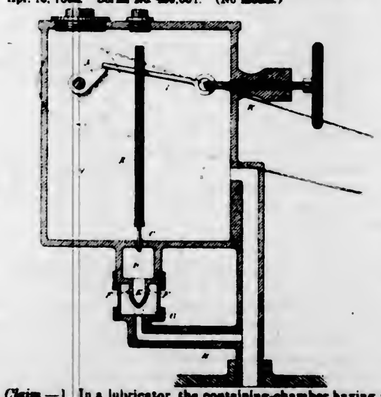
8. In a car or motor, the wheel-axles, sprocket-wheels, chain-driving shaft, and intermediate gearing, a gas-engine from which power is derived, posts supporting the car-roof, adjacent pipes and connection between said pipes and the exhaust-ports of the engine, and a perforated horizontal pipe supported above the roof and connected with the exhaust-pipes, so that the exhaust-gases are subdivided before escaping into the open air, substantially as herein described.

9. In a car or motor, the bearing-wheel axles having sprocket-wheels D D′ of different sizes turning loosely upon them and carrying one member each of a clutch, other clutch members moving upon longitudinal feathers and turning with the axles, and levers whereby one clutch is engaged with its sprocket-wheel and the other disengaged to change the speed of the car, connecting-chains and corresponding sprocket-wheels E E′ upon a counter-shaft extending across the car beneath the engine-shaft and centrally between the axles, a loose gear-wheel M upon this shaft, through which motion is derived from the engine-shaft, and a frictional clutch by which the gear-wheel is connected to turn with the shaft or disengaged therefrom, substantially as herein described.

10. The sprocket-wheels D D′ upon the bearing-wheel axles and corresponding sprocket-wheels E E′ upon a counter-shaft driven from the engine of a car or motor, in combination with the web or frame F′, formed with a central rectangular housing through which the counter-shaft passes and within which the sprocket-wheels E E′ are inclosed and protected, substantially as herein described.

11. In a car or motor, the bearing-wheels, a counter-shaft, and intermediate driving-gear, engines from the crank-shaft of which the counter-shaft is driven, engine-valves, and connecting-rods m, driven by rotating lugs carried by the engine-shaft attachments, and governors connected with hook-rods o, which engage with or are disengaged from the rods m, in combination with supplemental controlling device consisting of the rotary wedge-shaped disks l′, upon which the rods o bear, and means for turning the disks so as to allow the hook-rods o to engage with or be disengaged from the rods m, substantially as herein described.

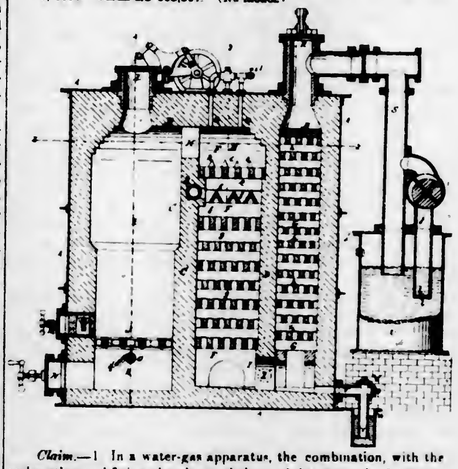
484,729. LUBRICATOR. Daniel Best, San Leandro, Cal. Filed Apr. 13, 1892. Serial No. 429,051. (No model.)



Claim.—1. In a lubricator, the containing-chamber having a discharge-opening in the bottom, a receiving-chamber beneath said opening and discharge-openings from this chamber, a vertically-moving rod, the lower end of which enters and fills the discharge-openings of the chamber, an adjustable arm I for regulating the lift of the valve and by which the rod is allowed to remain normally in position to close the opening, and a rotary lever-arm J, moving within the chamber and engaging the arm I, whereby the latter and the rod are raised at each rotation of the arm J, substantially as herein described.

2. A lubricator consisting of a containing-chamber having a discharge-opening in the bottom, a valve fitting said opening having a stem extending vertically upward through the chamber, a transverse arm I, engaging the stem, a horizontal shaft passing through the side of the chamber, means by which motion is communicated to rotate said shaft, an arm fixed to its inner end, adapted to engage the arm I or attachment to the stem to raise the latter and open the valve, and a screw K, whereby the amount of engagement and the corresponding lift to the valve are regulated, substantially as herein described.

484,730. WATER-GAS GENERATOR. Reinhold Boeklen, Omaha, Nebr., assignor of one-half to Ira S. Elkins, New York, N. Y. Filed June 6, 1891. Serial No. 395,361. (No model.)



Claim.—1. In a water-gas apparatus, the combination, with the carbureting and fixing chamber and the wash-box or seal, of the gas-return pipe from the gas-space beyond the seal in said wash-box to the carbureting and fixing chamber to aid the air-blast.

2. In a water-gas generating and carbureting apparatus, the combination, with the carbureting-chamber having the oil-inlet nozzles located in the upper portion, as shown, the brick checker-work, and the gas-outlet, of a horizontal perforated cross-partition extending from wall to wall and located below the oil-nozzles and the water-gas inlet and above the checker brick work, the overflow-pipe connected to the base of said chamber, and the open oil and tar well, substantially as and for the purposes herein shown and described.

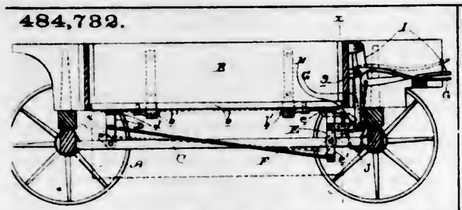
484,731. NUT-LOCK. Julius C. Brown, Kansas City, Mo., assignor of one half to Thomas R. Dawe, Santa Barbara, Cal. Filed June 3, 1892. Serial No. 435,392. (No model.)

Claim.—The combination of the bolt and nut C, having the rabbets c′, key E, having raised part E′ to fit in said rabbet, enlarged heel e′ and spring e at the opposite extremity from the heel, and fish-plate having a flange to fit under said key to keep it up in said rabbet, substantially as shown and described, and for the purposes set forth.

484,732. DUMPING-WAGON. Leopold Burr, San Francisco, Cal. Filed July 5, 1892. Serial No. 439,097. (No model.)

Claim.—1. In a dumping-wagon, and in combination with its swinging bottom boards and underlying reach, arms pivoted to said reach and bearing under the bottom boards to support them and connections for swinging said arms from under the bottom boards, whereby said boards are relieved, substantially as herein described.

484,782.



2. In a dumping wagon, and in combination with its swinging bottom boards and underlying reach, supporting-arms pivoted to said reach and bearing up under the bottom boards, whereby they are held up in a closed position, a connection between said supporting-arms, whereby they move in unison, and connections with one of said arms, whereby both are swung to and from place to support and to relieve the bottom boards, substantially as herein described.

3. In a dumping-wagon, and in combination with its swinging bottom boards and underlying reach, the supporting-arms D and E, pivoted to the reach and bearing with their upper ends under the bottom boards of the wagon to support said boards, the connecting-rod F, extending between the two arms on opposite sides of their pivotal centers, whereby they are moved in opposite directions, and a lever and connections with one of said arms for swinging them to and from place to support and relieve the bottom boards, substantially as herein described.

4. In a dumping-wagon, and in combination with its swinging bottom boards and underlying reach, the supporting-arms D and E, pivoted to the reach and bearing with their upper ends under the bottom boards of the wagon to support said boards, the connecting-rod F, extending between the two arms on opposite sides of their pivotal centers, whereby they are moved in opposite directions, the bell-crank or elbow lever G at the front of the wagon, and the link H, connecting said lever with one of said supporting-arms, substantially as herein described.

5. In a dumping-wagon, the swinging bottom boards of the bed and underlying reach, in combination with the connected and oppositely-moving supporting-arms pivoted to the reach and bearing under the bottom boards, the lever G and connections with one of said arms, and the lever I and chains J, connecting said lever I with the bottom boards, substantially as herein described.

6. In a dumping-wagon, the combination of the swinging bottom boards of the bed, the reach of the running-gear, consisting of two separated angle-irons, the oppositely-moving supporting-arms bearing up under the bottom boards and pivoted between the angle-irons of the reach, the connecting rod F, joining said arms and passing between the angle-irons of the reach, and a lever and connections for operating said arms, substantially as herein described.

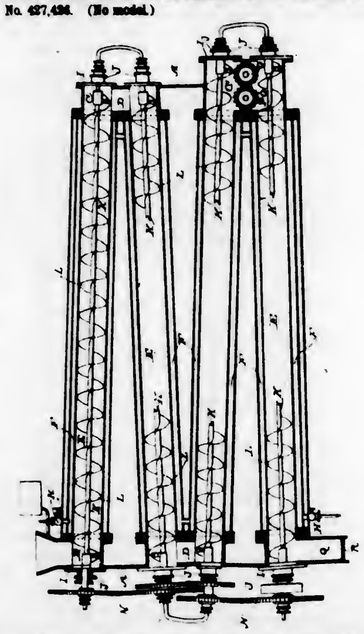
484,733. ENVELOPE. PETER H. FLYNN, Syracuse, N. Y., assignor to the Flynn Business Envelope Company, same place. Filed Nov. 11, 1891. Serial No. 411,590. (No model.)

Claim.—An envelope having one of its lateral edges reduced in strength and an opening in said edge at or adjacent to the end of the envelope for the purpose of producing a leverage against said edge when the inclosed letter is seized.

484,734. SHUTTER-WORKER. JOSHUA A. HADLEY, Brazil, assignor of one-half to Rufus L. Kennedy, Center Point, Ind. Filed Apr. 30, 1892. Serial No. 431,261. (No model.)

Claim.—The combination, with the jointed rod or bar and a spring-clasp H for securing said rod or bar, of the curved spring L, located in a cut-away portion of the sill through which said rod or bar passes, said spring having a bow portion arranged to bear against said rod, whereby the shutter may be held open at any angle, and screws for regulating the tension of said spring, substantially as specified.

484,735. BITUMINOUS-ROCK REDUCING MACHINE. SAMUEL P. HALL and JAMES W. WOOD, Oakland, Cal. Filed Apr. 1, 1892. Serial No. 427,426. (No model.)



Claim.—1. The bituminous-rock apparatus comprising the vertical frames, each of which is formed with integral chambers with intermediate connecting-passage, the imperforate oppositely-inclined steam-jacketed tubes having their ends in line with the chambers and fitted thereto, so as to make steam-joints, a supply-hopper, spiral conveyers in said tubes for transferring the material from one tube to another, and means for rotating the conveyers, substantially as herein described.

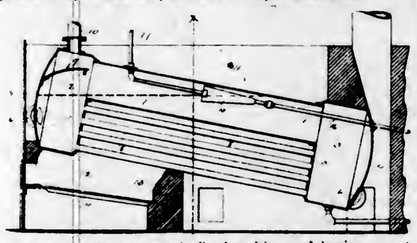
2. The bituminous-rock apparatus comprising the series of oppositely-inclined tubes, the main frame having connecting-chambers in line with the ends of said tubes and receiving and supporting said ends, steam jackets surrounding the tubes, having their ends fixed in said heads to form steam-tight joints, hollow axle-shafts in said tubes provided with spirally-disposed blades for conveying the material through the tubes, and steam pipes for admitting steam into the interior of the shafts and into the casing outside of the tubes, substantially as herein described.

3. A bituminous-rock machine consisting of the oppositely-inclined steam jacketed tubes, chambered heads within which the ends of these tubes are fixed, hollow axial shafts having spirally-arranged propeller-blades or conveyers by which the material is carried from end to end of the tubes, gears fixed upon the exterior ends of these shafts, through which power is derived to rotate the propellers and transport the material, and toothed pulverizing-rollers inclosed within a casing at the lower end of the machine and adapted to receive the material directly from the final conveyer and pulverize it before it is exposed to the open air, substantially as herein described.

4. In a bituminous-rock machine, a series of oppositely-inclined heated tubes, chambered heads within which the ends of the tubes terminate and through which the material is transferred from any tube to the succeeding one, means by which the material is moved from end to end of the tubes, and a device whereby oil is introduced into the tubes to be conveyed and mixed with the contents, substantially as herein described.

484,736. STEAM-BOILER. WILLIAM M. HAMILTON, Pittsburg, Pa. Filed Sept. 28, 1891. Serial No. 407,061. (No model.)

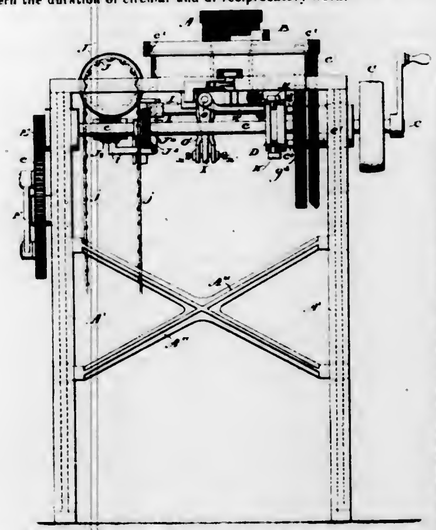
Claim.—1. A steam-boiler consisting of the chambers located at each end, the front chamber having an exit-pipe leading from its top, a pipe or tube connecting the said chambers above the centers, a series of small tubes or pipes connecting the chambers beneath the said tube, and a deflector in the front chamber, said deflector consisting of an imperforate plate secured at one end to the outer wall of the chamber below the top thereof, but above the water-line and extending thence toward the tube 1 and beyond the mouth of the exit-pipe, said deflector thereby compelling the steam to travel around its innermost edge on its way to the exit pipe, substantially as described.



2. A steam boiler set in an inclined position and having a grate correspondingly inclined, said boiler having chambers at each end and pipes connecting said chambers, a portion of which pipes is exposed directly to the fire, the front chamber having an exit-pipe and a deflector, said deflector consisting of an imperforate plate secured at one end to the outer wall of the chamber below the top thereof, but above the water-line, and extending thence incliningly to a point beneath and beyond the mouth of the exit-pipe, said deflector thereby compelling the steam to travel around its innermost edge on its way to the exit-pipe.

484,737. AUTOMATIC CIRCULAR-KNITTING MACHINE. HARRY A. HOUSEMAN, Philadelphia, Pa., assignor to the Standard Machine Company, same place. Filed Sept. 1, 1891. Serial No. 404,459. (No model.)

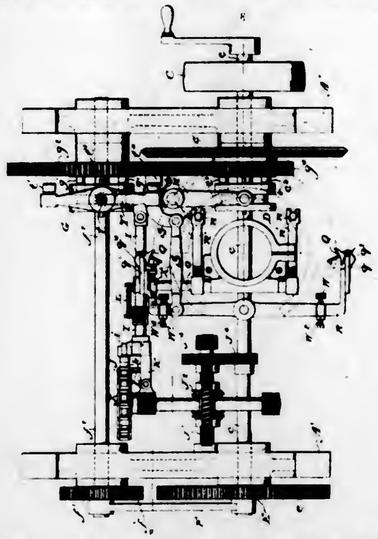
Brief.—This is an entirely automatic machine, and includes improved means for forming the heels and toes of stockings and for changing from circular to reciprocating work and the reverse. The needles are swung out of or into action by bell-crank levers, while two clutches, controlled from a pattern-chain by a single clutch-lever, govern the duration of circular and of reciprocatory work.



Claim.—1. In a knitting-machine, in combination, a main driving-shaft, a segmental gear, intermediate connection, substantially as described, between said shaft and segmental gear, a shaft adapted to oscillate, a clutch upon said shaft, a gear-wheel, a clutch-lever adapted to operate said clutch, a connecting-rod, as I, a sprocket-wheel, intermediate connection between said wheel and the driving-shaft, a sprocket-chain upon said wheel, and lugs upon said sprocket-chain adapted to act upon said rod and force said clutch into engagement with said gear-wheel.

2. In a knitting-machine, in combination, a main driving-shaft, a segmental gear, intermediate connection, substantially as described, between said shaft and segmental gear, a shaft adapted to oscillate, a clutch upon said shaft, a gear-wheel, a clutch-lever adapted to operate said clutch, a connecting-rod, as I, a sprocket-wheel, intermediate connection between said wheel and the driving-shaft, a sprocket-chain upon said wheel, a lug upon said sprocket-chain adapted to act upon said rod and force said clutch into engagement with said gear-wheel, and means to retain said rod in position after being acted upon by the lug.

3. In a knitting-machine, in combination, a main driving-shaft, a segmental gear, intermediate connection, substantially as described, between said shaft and segmental gear, a shaft adapted to oscillate, a clutch upon said shaft, a gear-wheel, a clutch-lever adapted to operate said clutch, a connecting-rod, as I, a sprocket wheel, intermediate connection between said wheel and the driving-shaft, a sprocket-chain upon said wheel, lugs upon said sprocket-chain adapted to act upon said rod and force said clutch into engagement with said gear-wheel, means to retain said rod in position after being acted upon by the lug, and means, substantially as described, to release said rod.



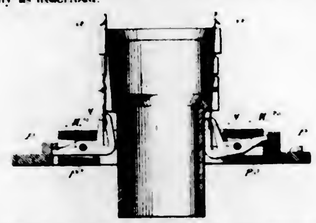
4. In a knitting-machine, in combination, a main driving-shaft, a clutch, as D, upon said shaft, a bevel-gear adapted to be connected with said clutch, a knitting-cylinder, a rack upon said cylinder operated by said bevel-gear, a segmental gear, intermediate connection between the shaft and the segmental gear, a shaft adapted to oscillate, intermediate connection between said shaft and the segmental gear, a clutch, as G, upon said shaft, a gear-wheel, as g^4, adapted to be connected with said clutch, and intermediate connection between said gear and the bevel-gear, a clutch-lever pivoted in the center and adapted to operate upon both of said clutches, and mechanism, substantially as described, to operate said lever, whereby when one clutch is thrown into action the other is released.

5. In a knitting-machine, in combination, a main driving-shaft, a clutch, as D, upon said shaft, a bevel-gear adapted to be connected with said clutch, a knitting-cylinder, a rack upon said cylinder operated by said bevel-gear, a segmental gear, intermediate connection between the shaft and segmental gear, a shaft adapted to oscillate, intermediate connection between said shaft and the segmental gear, a clutch, as G, upon said shaft, a gear-wheel, as g^4, adapted to be connected with said clutch, and intermediate connection between said gear and the bevel gear, a clutch-lever pivoted in the center and adapted to operate upon both of said clutches, a sprocket-wheel, means to rotate said wheel, a sprocket-chain carried by said wheel, a connecting-rod connected to said clutch-lever, a lug connected to said connecting-rod, and a lug on the sprocket-chain in line with said lug connected to the connecting rod, whereby when the lug is struck the connecting-rod is moved and clutch G engaged and clutch D disengaged, and means to retain and to release said connecting rod I.

6. In a knitting-machine, in combination, a main driving-shaft, a clutch, as D, upon said shaft, a bevel-gear adapted to be connected with said clutch, a knitting-cylinder, a rack upon said cylinder operated by said bevel-gear, a segmental gear, intermediate connection between the shaft and segmental gear, a shaft adapted to oscillate, intermediate connection between said shaft and the segmental gear, a clutch, as G, upon said shaft, a gear-wheel, as g^4, adapted to be connected with said clutch, and intermediate connection between said gear and the bevel gear, a clutch-lever pivoted in the center and adapted to operate upon both said clutches, a sprocket-wheel, means to rotate said wheel, a sprocket-chain carried by said wheel, a connecting-rod connected to said clutch-lever, a lug connected to said connecting-rod,

and a lug on the sprocket-chain in line with said lug connected to the connecting-rod, whereby when the lug is struck the connecting-rod is moved and clutch G engaged and clutch D disengaged, a notch-rest adapted to secure one end of connecting-rod, and a lug on the sprocket-chain in line with the said notch-rest.

7. In a knitting-machine, the combination of a cylinder, needles sliding in grooves therein, a circular cam outside of the cylinder, and angular needle-shifting levers pivoted between the cam and cylinder, the horizontal outer portions of the levers engaging and being oscillated in a direction lengthwise of the needles by the cam and the inner vertical portions having jaws to receive the butt-ends of the needles, substantially as described.



8. In a knitting-machine, the combination of a cylinder, needles sliding in grooves therein, a circular cam outside of the cylinder, angular needle-shifting levers pivoted between the cam and cylinder, and connections between the levers and the needles, the outer horizontal portions of the levers being engaged and oscillated by the cam in a direction lengthwise of the needles and the inner vertical portions oscillating in a direction transverse to the movement of the needles, substantially as described.

9. In a knitting-machine, in combination, a needle-cylinder provided with slots, needles in said slots, pivoted levers provided with jaws adapted to hold the shanks of said needles, and means, substantially as described, to simultaneously rock the tails of the levers corresponding to the needles in the front half of the needle-cylinder.

10. In a knitting machine, in combination, a needle-cylinder provided with slots, needles in said slots, pivoted levers provided with jaws adapted to hold the shanks of said needles, a plate upon which the tails of said levers corresponding to the needles in the front half of said needle-cylinder rest, and means, substantially as described, to elevate said plate.

11. In a knitting-machine, in combination, a needle-cylinder provided with slots, needles in said slots, pivoted levers provided with jaws adapted to hold the shanks of said needles, a plate upon which the tails of said levers corresponding to the needles in the front half of said needle-cylinder rest, pins connected to said plate, a rock-shaft and intermediate connection between said shaft and said pins, and means, substantially as described, to operate said shaft when the means for imparting reciprocating motion to the knitting-cylinder is thrown into action.

12. In a knitting-machine, in combination, a needle-cylinder provided with slots, needles in said slots, pivoted levers provided with jaws adapted to hold the shanks of said needles, a plate upon which the tails of said levers corresponding to the needles in the front half of said needle-cylinder rest, pins connected to said plate, a rock-shaft and intermediate connection between said rock-shaft and said pins, the clutch connecting-rod I, mechanism, substantially as described, to operate said rod, and intermediate connection between said rod and the rock-shaft, whereby when the rod is moved the rock-shaft is rocked.

13. In a knitting-machine, in combination, a needle-cylinder provided with slots, needles in said slots, pivoted levers provided with jaws adapted to hold the shanks of said needles, a plate upon which the tails of said levers corresponding to the needles in the front half of said needle-cylinder rest, pins connected to said plate, a rock-shaft and intermediate connection between said rock-shaft and said pins, the clutch connecting-rod I, mechanism, substantially as described, to operate said rod, a lever on said rock-shaft, a stand connected to said connecting-rod, and set-screws passing through said stand, one on each side of said lever in line with said lever, whereby when said rod is operated one of said screws strikes said shaft to rock it.

14. In a circular-knitting machine, in combination, a knitting-cylinder, a rack on said cylinder, a gear-wheel adapted to operate said rack, a main driving-shaft, a clutch upon said shaft adapted to be connected with said gear-wheel, an oscillating shaft, a clutch upon said shaft, a gear-wheel adapted to be engaged by said clutch, connection between said gear and the knitting-cylinder-rack gear-wheel, a clutch-lever common to both clutches, and means, substantially as described, to operate said clutch-lever, whereby one clutch is released and the other brought into action.

15. In a circular-knitting machine, in combination, a knitting-cylinder, a rack on said cylinder, a gear-wheel adapted to operate said rack, a main driving-shaft, a clutch upon said shaft adapted to be connected with said gear-wheel, an oscillating shaft, a clutch upon said shaft, a gear-wheel adapted to be engaged by said clutch, connection between said gear-wheel and the knitting cylinder-rack gear-wheel, a clutch-lever common to both clutches, a connecting-rod connected to said clutch-lever, a lug connected to said connecting-rod, a sprocket-wheel, a sprocket-chain driven by said sprocket wheel, and a lug upon said sprocket-chain in line of travel of said lug connected to the connecting-rod.

16. In a circular knitting machine, in combination, a knitting cylinder, a rack on said cylinder, a gear-wheel adapted to operate said rack, a main driving-shaft, a clutch upon said shaft adapted to be connected with said gear-wheel, an oscillating shaft, a clutch upon said shaft, a gear-wheel adapted to be engaged by said clutch, connection between said gear-wheel and the knitting-cylinder-rack gear-wheel, a clutch-lever common to both clutches, a connecting-rod connected to said clutch lever, a lug connected to said connecting-rod, a sprocket-wheel, a sprocket-chain driven by said sprocket-wheel, a lug upon said sprocket-chain in line of travel of said lug connected to the rod, and means to lock said rod when moved by the lugs striking.

17. In a circular knitting machine, in combination, a knitting-cylinder, a rack on said cylinder, a gear-wheel adapted to operate said rack, a main driving-shaft, a clutch upon said shaft adapted to be connected with said gear-wheel, an oscillating shaft, a clutch upon said shaft, a gear-wheel adapted to be engaged by said clutch, connection between said gear-wheel and the knitting-cylinder-rack gear-wheel, a clutch lever common to both clutches, a connecting-rod connected to said clutch-lever, a lug connected to said connecting-rod, a sprocket-wheel, a sprocket-chain driven by said sprocket-wheel, a lug upon said sprocket-chain in line of travel of said lug connected to the rod, means to lock said rod when moved by the lugs striking, and means, substantially as described, to release said rod.

18. In a knitting-machine, in combination, a needle-cylinder provided with slots, needles in said slots, pivoted levers provided with jaws adapted to hold the shanks of said needles, needle-shifting cams in line of travel of the tails of said levers, a needle-cylinder mechanism, substantially as described, to reciprocate said knitting-cylinder, and intermediate connection between said cams and needle-cylinder-reciprocating motor.

19. In a knitting-machine, in combination, a needle-cylinder provided with slots, needles in said slots, pivoted levers provided with jaws adapted to hold the shanks of said needles, needle-shifting cams in line of travel of the tails of said levers, racks by which said cams are carried, pivoted pawls adapted to work in said racks, a pivoted lever to which said pawls are connected, a main driving-shaft, a clutch upon said shaft, a reciprocating shaft, a clutch upon said shaft, a clutch-lever common to both clutches, a lever pivoted to said clutch-lever, connection between said pivoted lever and lever pivoted to clutch-lever, lugs upon the lever pivoted to clutch-lever, a gear-wheel adapted to be connected with the clutch on the reciprocating shaft, and lugs upon said gear-wheel in line with said lugs on the lever pivoted to clutch-lever when said clutch is in connection with the gear wheel but out of line when said clutch is out of connection with said gear-wheel.

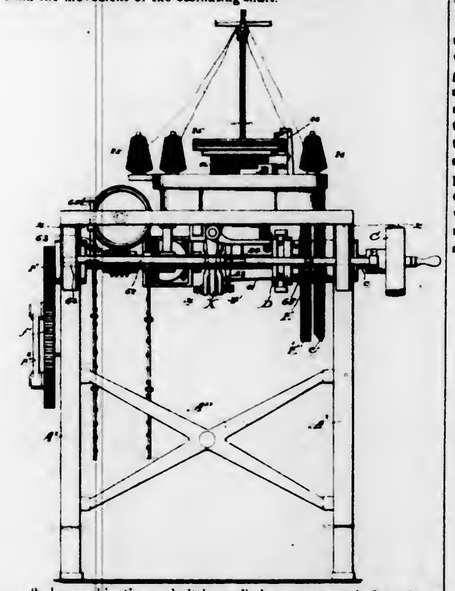
20. In a knitting machine, in combination, a needle-cylinder provided with slots, needles in said slots, pivoted levers provided with jaws adapted to hold the shanks of said needles, needle-shifting cams in line of travel of the tails of said levers, racks by which said cams are carried, pivoted pawls adapted to work in said racks, a pivoted lever to which said pawls are connected, a main driving-shaft, a clutch upon said shaft, a reciprocating shaft, a clutch upon said shaft, a clutch-lever common to both clutches, a lever pivoted to said clutch-lever, connection between said pivoted lever and lever pivoted to clutch-lever, lugs upon the lever pivoted to the clutch lever, a gear-wheel adapted to be connected with the clutch on the reciprocating shaft, lugs upon said gear-wheel in line with said lugs on the lever pivoted to the clutch-lever when the clutch is in connection with the gear-wheel but out of line when said clutch is out of connection with said gear-wheel, and guards to limit the movement of said pivoted lever.

21. In combination, a knitting cylinder, a rotary shaft, a clutch on said shaft, an oscillating shaft, a clutch on said shaft, a gear-wheel adapted to be engaged by the clutch on the rotary shaft, and a gear-wheel adapted to be engaged by the oscillating shaft-clutch, connection between said gear-wheels and knitting-cylinder, a clutch-lever common to both clutches, and means, substantially as described, to operate said clutch-lever, whereby one clutch is released and the other brought into action.

484,738. CIRCULAR-KNITTING MACHINE. HARRY A. HOUSEMAN, Philadelphia, Pa., assignor to the Standard Machine Company, same place. Filed Apr. 15, 1892. Serial No. 429,271. (No model.)

Brief.—This is an automatic machine for the production of stockings, and comprises improved means for changing from circular to reciprocatory work and the reverse, improved means for feeding a supplemental thread during knitting of the heel and toe, improved means for operating the sinkers, improved means for stopping the machine, and improved narrowing and widening devices.

Claim.—1. In combination, a knitting-cylinder, a rotary shaft, a clutch upon said shaft, an oscillating shaft, a clutch upon said shaft, a gear-wheel adapted to be engaged by said clutch upon the rotary shaft, a gear-wheel adapted to be engaged by the clutch on the oscillating shaft, connections between said gear-wheels and the knitting-cylinder, a clutch-lever common to both clutches, a connecting-rod connected to said lever, a gear upon said oscillating shaft, a gear-wheel loose upon its shaft, with which said last-mentioned gear meshes, a clutch upon said shaft, means, substantially as described, to operate said clutch, and intermediate connections between said clutch and the connecting-rod of the clutch-lever, whereby when said shaft is operated the connecting-rod is moved.



2. In combination, a knitting-cylinder, a rotary shaft, a clutch upon said shaft, an oscillating shaft, a clutch upon said shaft, a gear-wheel adapted to be engaged by said clutch upon the rotary shaft, a gear-wheel adapted to be engaged by the clutch on the oscillating shaft, connections between said gear-wheels and the knitting-cylinder, a clutch-lever common to both clutches, a connecting-rod connected to said lever, a gear upon said oscillating shaft, a gear-wheel loose upon its shaft, with which said last-mentioned gear meshes, a clutch upon said shaft, means, substantially as described, to operate said clutch, and intermediate connections between said clutch and the connecting-rod of the clutch-lever, whereby when said shaft is operated the connecting-rod is moved.

3. In combination, a knitting-cylinder, a rotary shaft, a clutch upon said shaft, an oscillating shaft, a clutch upon said shaft, a gear-wheel adapted to be engaged by said clutch upon the rotary shaft, a gear-wheel adapted to be engaged by the clutch on the oscillating shaft, connections between said gear-wheels and the knitting-cylinder, a clutch-lever common to both clutches, a connecting-rod connected to said lever, said connecting-rod being provided with a frame portion, as *k'*, a clutch-roller, as f^9, which said frame surrounds, a shaft for said clutch-roller, a clutch upon said shaft, a gear-wheel loose on said shaft, a gear-wheel upon the oscillating shaft in engagement with said last-mentioned gear-wheel, and mechanism, substantially as described, to operate said clutch.

4. In combination, a knitting cylinder, a rotary shaft, a clutch upon said shaft, an oscillating shaft, a clutch upon said shaft, a gear-wheel adapted to be engaged by said clutch upon the rotary shaft, a gear-wheel adapted to be engaged by the clutch on the oscillating shaft, connections between said gear-wheels and the knitting-cylinder, a clutch-lever common to both clutches, a connecting-rod connected to said lever, a gear upon said oscillating shaft, a gear-wheel loose upon its shaft, with which last gear meshes, a clutch upon said shaft, intermediate connection between said clutch and connecting-rod, a pattern-chain operated by the rotating shaft, lugs upon said chain, and lugs upon the clutch mechanism, adapted to be struck by the lugs on the pattern-chain.

5. In combination, a knitting-cylinder, a rotary shaft, a clutch upon said shaft, an oscillating shaft, a clutch upon said shaft, a gear-wheel adapted to be engaged by said clutch upon the rotary shaft, a gear-wheel adapted to be engaged by the clutch on the oscillating shaft, connections between said gear-wheels and the knitting-cylinder, a clutch-lever common to both clutches, a connecting-rod connected to said lever, said connecting-rod being provided with a frame portion, as *k'*, a clutch-roller, as f^9, which said frame surrounds, a shaft to which said clutch-roller is secured, a clutch upon said shaft, a gear-wheel loose on said shaft, a gear-wheel upon the oscillating shaft in engagement with said last-mentioned gear-wheel, a pattern-chain operated by the rotating shaft, lugs upon said chain, and lugs upon the clutch mechanism, adapted to be struck by the lugs on the pattern-chain.

6. In combination, a knitting-cylinder, a rotary shaft, a clutch upon said shaft, an oscillating shaft, a clutch upon said shaft, a gear-wheel adapted to be engaged by said clutch upon the rotary shaft, a gear-wheel adapted to be engaged by the clutch on the oscillating shaft, connections between said gear-wheels and the knitting-cylinder, a clutch-lever common to both clutches, a connecting-rod connected to said lever, said connecting-rod being provided with a frame portion, as *k'*, a clutch-roller, as f^9, which said frame surrounds, spring-seated pins in said clutch-roller, a gear-wheel loose on said shaft, a pin connected to said gear, a segmental shield, as f^{10}, between said clutch-roller and said gear-wheel, a gear upon said oscillating shaft, which meshes with said last-mentioned gear, lugs upon said clutch-roller, a pattern-chain operated by the rotary shaft, and lugs upon said chain adapted to strike the lugs upon the clutch-roller.

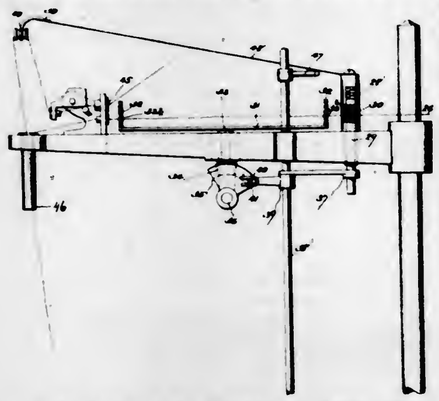
7. In a knitting-machine, in combination, a knitting-cylinder, a rotary shaft, a clutch upon said shaft, an oscillating shaft, a clutch on said shaft, a gear-wheel adapted to be engaged by the clutch on the rotary shaft, a gear-wheel adapted to be engaged by the clutch on the oscillating shaft, a clutch-lever common to both clutches, an arm connected to said clutch-lever, a rock-shaft, an arm 43 from said rock-shaft, to which the arm connected to said clutch-lever is connected, a rod supported so as to be adapted to move vertically, an arm connected to said rock-shaft in line of movement of said rod, a plunger connected to said rod, and a tube in which said plunger moves, said plunger being provided with a slot and the walls of said tube having a slot, through which slot the thread is adapted to pass.

8. In a knitting machine, in combination, a thread-spool, a tube the walls of which are provided with slots, a plunger adapted to move in said tube, said plunger being provided with a slot, the thread being adapted to pass through said slots, and means, substantially as described, to give said plunger a movement independent of the movement of the thread.

9. In a knitting-machine, in combination, a knitting-cylinder, a rotary shaft, a clutch upon said shaft, an oscillating shaft, a clutch on said shaft, a gear-wheel adapted to be engaged by the clutch on the rotary shaft, a gear-wheel adapted to be engaged by the clutch on the oscillating shaft, a clutch-lever common to both clutches, a thread-

spool, a tube, a plunger adapted to move in said tube, said plunger being provided with a slot and the walls of said tube having slots through which the thread passes, and intermediate mechanism between said clutch-lever and plunger, whereby when the clutch-lever is moved the plunger moves up or down.

10. In a knitting-machine, in combination, a knitting-cylinder, a rotary shaft, a clutch upon said shaft, an oscillating shaft, a clutch on said shaft, a gear wheel adapted to be engaged by the clutch on the rotary shaft, a gear-wheel adapted to be engaged by the clutch on the oscillating shaft, a clutch-lever common to both clutches, an arm connected to said clutch-lever, a rock-shaft, an arm 43 from said rock-shaft, to which the arm connected to clutch-lever is connected, a rod supported so as to be adapted to move vertically, an arm connected to said rock-shaft in line of movement of said rod, a forked arm connected to said rod, a segmental gear provided with a pin which rests in the forked end of said arm, a bevel-gear meshing in said segmental gear, and a frame on the shaft of said bevel-gear, said frame being provided with slots through which a thread is adapted to pass.



11. In a knitting-machine, in combination, a knitting-cylinder, a rotary shaft, a clutch upon said shaft, an oscillating shaft, a clutch on said shaft, a gear-wheel adapted to be engaged by the clutch on the rotary shaft, a gear-wheel adapted to be engaged by the clutch on the oscillating shaft, a clutch-lever common to both clutches, an arm connected to said clutch-lever, a rock-shaft, an arm 43 from said rock-shaft, to which the arm connected to clutch-lever is connected, a rod supported so as to be adapted to move vertically, an arm connected to said rock-shaft in line of movement of said rod, a plunger connected to said rod, a tube in which said plunger moves, said plunger and tube being provided with transverse slots, and uprights attached to said frame, said uprights being provided with slots through which thread is adapted to pass.

12. In a knitting-machine, in combination, a thread-spool, and a frame secured so as to be rotatable horizontally, said frame being provided with slots through which thread is adapted to pass.

13. In a knitting machine, in combination, a thread-spool, a frame secured so as to be rotatable, said frame being provided with slots through which the thread is adapted to pass, and means, substantially as described, to rotate said frame independent of the movement of the thread.

14. In a knitting-machine, in combination, a frame secured so as to be rotatable horizontally, and uprights attached to said frame, said uprights being provided with slots through which the thread is adapted to pass.

15. In a knitting-machine, in combination, a frame secured so as to be rotatable, uprights attached to said frame, said uprights being provided with slots through which the thread is adapted to pass, and means, substantially as described, independent of the thread to rotate said frame.

16. In a knitting-machine, in combination, a knitting-cylinder, a rotary shaft, a clutch upon said shaft, an oscillating shaft, a clutch on said shaft, a gear-wheel adapted to be engaged by the clutch on the rotary shaft, a gear-wheel adapted to be engaged by the clutch on the oscillating shaft, a clutch-lever common to both clutches, a frame secured so as to be rotatable, said frame being provided with slots through which the thread is adapted to pass, an intermedial mechanism, substantially as described, between the frame and clutch-lever, whereby when the clutch-lever is moved the frame is revolved.

17. In a knitting-machine, in combination, a knitting cylinder, a rotary shaft, a clutch upon said shaft, an oscillating shaft, a clutch on said shaft, a gear-wheel adapted to be engaged by the clutch on the rotary shaft, a gear-wheel adapted to be engaged by the clutch on the oscillating shaft, a clutch-lever common to both clutches, a frame secured so as to be rotated, uprights attached to said frame, said uprights being provided with slots through which the thread is adapted to pass, and intermedial mechanism, substantially as described, between the frame and clutch-lever, whereby when the clutch-lever is moved the frame is revolved.

18. In a knitting machine, in combination, a knitting-cylinder, a rotary shaft, a clutch upon said shaft, an oscillating shaft, a clutch on said shaft, a gear-wheel adapted to be engaged by the clutch on the rotary shaft, a gear-wheel adapted to be engaged by the clutch on the oscillating shaft, a clutch-lever common to both clutches, an arm connected to said clutch-lever, a rock-shaft, an arm 43 from said rock-shaft, to which the arm connected to clutch-lever is connected, a rod supported so as to be adapted to move vertically, an arm connected to said rock-shaft in line of movement of said rod, an arm, as 47, connected to said rod, a spring-arm, as 48, in line of movement of said arm 47, and a thread-guide, as 49, in the line of movement of the end of said spring, whereby when said rod is elevated the spring acts on the thread-guide, increasing the tension on the thread.

19. In a knitting-machine, in combination, a knitting-cylinder, a rotary shaft, a clutch upon said shaft, an oscillating shaft, a clutch on said shaft, a gear-wheel adapted to be engaged by the clutch on the rotary shaft, a gear-wheel adapted to be engaged by the clutch on the oscillating shaft, a clutch-lever common to both clutches, a thread-guide, a spring-arm, and intermediate connections between said spring-arm and the clutch-lever, whereby the movement of the clutch-lever in one direction renders the spring-arm active and in the other direction allows said spring arm to become inactive.

20. In a knitting-machine, in combination, a sinker-cam formed of two parts, one part formed with an inset and said parts overlapping each other at the point of juncture.

21. In a knitting-machine, in combination, a sinker-cam formed in two parts, one part formed with an inset, the part formed with the inset being adjustably secured to the sinker-cam plate.

22. In a knitting-machine, in combination, a sinker-cam formed in two parts, one part formed with an inset, and a cam-plate provided with slots, through which slots the inset part of the sinker-cam is secured to the cam-plate and the other part being fixedly connected to said cam-plate.

23. In a knitting-machine, in combination, a main shaft, a driving pulley or wheel loose on said shaft, a clutch on said shaft adapted to engage said pulley, a clutch-rod to operate said clutch, the frame of the machine being provided with a slot, and a spring, one end attached to said rod and the other end to the frame of the machine above the slot, whereby said spring holds said clutch-rod fixed in the slot or against the frame of the machine.

24. In a knitting-machine, in combination, a main shaft, a driving pulley or wheel loose on said shaft, a clutch on said shaft adapted to engage said pulley, a clutch-rod to operate said clutch, the frame of the machine being provided with a slot, and a spring, one end attached to said rod and the other to the frame of the machine above the slot, a rod in line with said clutch-rod projecting through the bed of the machine, and a handle connected to said clutch-rod.

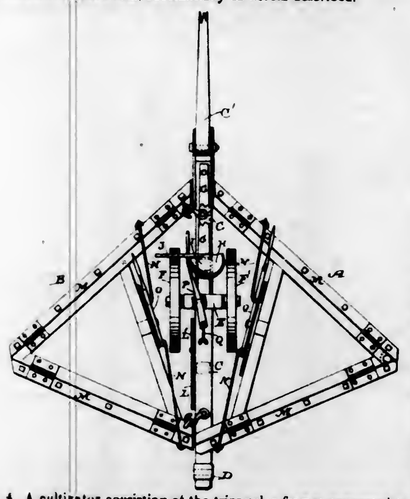
25. In a knitting-machine, in combination, a needle-cylinder provided with slots, pivoted levers provided with jaws adapted to hold the shanks of said needles, needle-shifting cams in line of travel of the tails of said levers, racks by which said cams are carried, pivoted double pawls adapted to work in said racks, means, substantially as described, to operate said pawls, springs adapted to press against said pawls, one at each end, a rock-shaft projecting through the frame of the machine, a rod attached to said shaft, pins upon said rod adjacent to each of said springs, a depeoding rod from said rock-shaft, and lugs attached to said rack-plates, whereby when the shaft is rocked one of the springs of each pawl is rendered inactive and the other active and the corresponding ends of the pawl rendered active or inactive.

484,739. HARROW AND CULTIVATOR. THOMAS J. HUBBELL, San Bernardino, Cal., assignor of one third to George H. Smith, same place. Filed Nov. 11, 1891. Serial No. 411,624. (No model.)

Claim.—1. A cultivator consisting of a triangular frame, a draft-pole attached thereto in line with one of the sides, supplemental tooth-carrying bars hinged to the other sides of the triangle, a lever and connection by which they may be turned about their hinges, and swivel and steering wheels upon which the angles of the frame are supported, substantially as herein described.

2. A cultivator consisting of a triangular tooth-carrying frame a draft-pole attached thereto in line with the longer side of the triangle, swivel-wheels upon which the front and outer angles of the frame are supported, an axle having a flanged bearing-wheel at one end and the opposite end adapted to swivel about a vertical axis and support at the rear of the frame a lever connected with the axle, whereby it may be turned, and a rack which is engaged by the lever to hold it at any desired angle, substantially as herein described.

3. A cultivator consisting of the triangular frame, with supplemental tooth and cutter bars hinged to the front and rear bars of the triangle, and a lever and connecting-rods, whereby said hinged bars may be turned up or down and the teeth and cutters thrown out of or into the ground, a guiding-blade Q, pivoted to the side of the central timber C, and the lever whereby it may be thrown into the ground or withdrawn therefrom, substantially as herein described.



4. A cultivator consisting of the triangular frames connected together upon a central line, a short axle detachably connected with the central frame-timber, a vertical swiveled post attached to the rear end of said timber, having the upper end adapted to receive one end of the axle from which the wheel has been removed, a lever-arm projecting from said axle, and a rack extending outwardly from the side of the seat-post and engaged by the lever-arm, whereby the wheel may be turned to travel more or less parallel with the line of travel of the machine and act as a rudder-wheel therefor, substantially as herein described.

5. A harrow consisting of the sections arranged longitudinally in line of travel with the draft and draft-tongue, a short axle connected with the longitudinal central timber, and wheels mounted upon the ends of said axle within the exterior projecting frames of the harrow, a lever fulcrumed upon the axle and connected with the central frame-timber, whereby the latter may be raised or depressed, supplemental bars M, carrying cultivator-teeth and hinged to the front and rear of the triangular frames, respectively, levers fulcrumed upon said frames, and rods connecting said levers with the hinged bars, whereby the latter may be turned up or down about their hinges to throw the cultivator-teeth in or out of the ground, substantially as herein described.

6. A harrow and cultivator consisting of the triangular frames connected together upon a central line, with a draft-tongue secured to the front end of the frame, an axle removably attached to the central timber, and a lever fulcrumed upon said axle and connected with the central timber of the harrow, substantially as herein described

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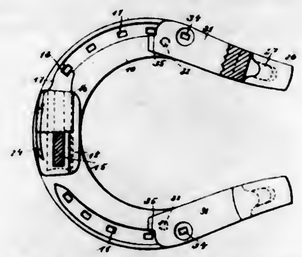
484,740. HORSESHOE WITH REMOVABLE CALKS. CHARLES B HULBERT, Ironia, assignor of one half to Caleb S. Hughson, Randolph, N. J. Filed Feb. 18, 1892. Serial No. 421,968. (No model.)

Claim.—1. As an improved article of manufacture, a horseshoe having a recessed toe and recessed heels and detachable calks having tongues to fit the recesses of the toe and heels and having prolonged ends with holes therein adapted to register with the nail-holes of the shoe, substantially as described.

2. The combination, with the shoe having a thickened toe with a dovetail groove or recess therein, of a toe-calk having a tongue adapted to slide into the recess and having a notch in the outer end of the tongue, which notch is adapted to register with a nail-hole of the shoe, substantially as described.

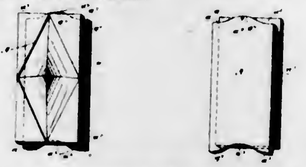
3. As an improved article of manufacture, a horseshoe having a dovetail vertically-tapering recess in its toe, a detachable toe-piece adapted to fit in the said recess, and a removable toe-calk adapted to overlap the under side of the recess and toe-piece, substantially as described.



4. The combination, with the horseshoe having thickened heels with forwardly-opening recesses therein, of the detachable heel-calks having rearwardly-extending tongues to enter the heel-recesses and having forwardly-extending ends with studs thereon adapted to enter recesses in the body of the shoe, said forwardly-extending ends having nail-holes therein to register with the shoe nail-holes, substantially as described.

5. The combination, with the shoe having thickened heels with forwardly-opening recesses therein and recesses in its under side and in front of the heels, of the detachable calks having rearwardly-extending tongues to enter the heel-recesses and forwardly-extending portions adapted to fit against the bottom of the shoe, said forwardly-extending portions having studs thereon to enter the shoe recesses, holes therein to register with the nail-holes of the shoe, and notched front ends arranged adjacent to the nail-holes of the shoe, substantially as described.

484,741. TILE. ROBERT H. HUSH, Vallejo, Cal. Filed July 1, 1891. Serial No. 398,176. (No model.)



Claim.—1. As a new article of manufacture, a tile having one side of its obverse and reverse faces formed with a flange and having one end of its reverse face provided with two reversely-curved rabbet-flanges forming an intervening groove on the contiguous end of the obverse face, while the opposite end of said reverse face is provided with a central tongue forming rabbet-flanges a^2 on the obverse face, said flanges, tongue, and grooves serving as keys or bonds to hold adjacent tiles together, substantially as herein described.

2. As a new article of manufacture, a tile having one side of its obverse and reverse faces formed with a flange and having one end of its reverse face provided with two reversely-curved flanges forming an intervening groove on the contiguous end of the obverse face, while the opposite end of said reverse face is provided with a central tongue forming rabbet-flanges a^2 on the contiguous obverse face, said side flange having grooves A^7, substantially as herein described.

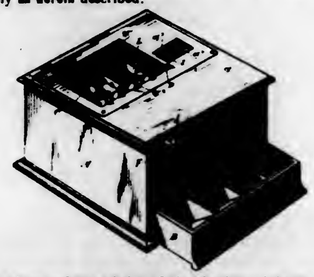
3. As a new article of manufacture, a tile formed with the flanges, tongues, and grooves a, a', a^3, a^4, a^5, and a^6 on the edges of its obverse and reverse faces, the flanges a having the grooves a^7 and the tongue a^4 having the nail-holes a^8, substantially as herein described.

484,742. MANUAL CASH-RECORDER. HERMANN KIESEL, Halle-on-the-Saale, Germany, assignor to Jesse Meyerfeld, San Francisco, Cal. Filed June 30, 1892. Serial No. 438,506. (No model.) Patented in Germany Jan. 16, 1887, No. 38,086.

Claim.—1. A cash-recorder consisting of a box having a sight-aperture and an entrance slot or opening for the money, a tilting tray within the box under the sight aperture and in communication with the entrance slot or opening, and a movable paper within the box accessible over a limited portion of its surface from without, whereby the amount of money deposited in the tray may be written on the pa-

per, said paper being connected with and advanced simultaneously with and by the movement of the tray, substantially as herein described.

2. A cash-recorder consisting of a box having a sight-aperture and an entrance slot or opening for the money, a tilting tray within the box under the sight-aperture and in communication with the entrance slot or opening, a movable paper within the box accessible over a limited portion of its surface from without, whereby the amount of money deposited in the tray may be written on the paper, and suitable mechanism for simultaneously tilting the tray and moving the paper, substantially as herein described.



3. A cash-recorder consisting of a box having a sight-aperture and an entrance slot or opening for the money, a tilting tray within the box under the sight-aperture and communicating with the entrance-slot, a periodically-advancing paper within the box observable and accessible from without over a limited portion of its surface, a lever or handle projecting from within the box to the outside, and power-transmitting connections from said lever or handle to simultaneously tilt the tray and advance the paper, substantially as herein described.

4. In a cash-recorder, the combination of the tilting tray therein and means for operating the same, consisting of the rock-shaft on which the tray is mounted, said rock-shaft having a crank, a spring-controlled slide connected with the crank and having the downwardly-extending arm, and a bell-crank lever having a vertical arm slotted on the slide arm and having a horizontal arm extending through the front of the case, so that it may be actuated from the outside, substantially as herein described.

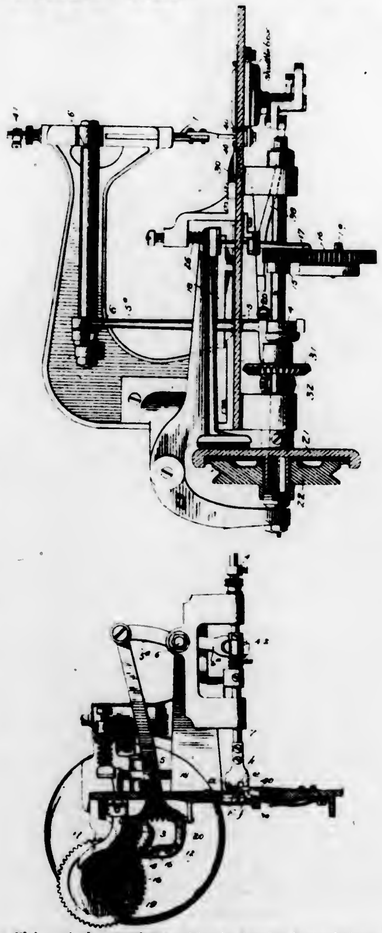
5. In a cash-recorder having a box provided with the sight apertures and openings described, the combination of the tilting tray within the box, the traveling paper, and the means for simultaneously tilting the tray and advancing the paper, consisting of the rock-shaft on which the tray is mounted, the crank on one end of the rock-shaft, the spring-controlled slide-bar connected with the crank, and the bell-crank lever connected with the slide-bar and extending through the front of the box, the winding-drum of the paper having the ratchet, the actuating-pawl on the opposite end of the rock-shaft, and the retaining-pawl, substantially as herein described.

484,748. CURLING-IRON. WILLIAM LOMBDALE and RICHARD A. LOMBDALE, Chicago, Ill. Filed Oct. 5, 1891. Serial No. 407,682. (No model.)

Claim.—1. A curling-iron provided with a sustaining-hook supported at a point midway between the handles to project from the face thereof, substantially as described.

2. A curling-iron provided with a sustaining-hook supported at a point midway between the handles, said hook formed at one end into the hook portion proper and at its other end divided into a fish-tail having one part thereof on one side of one jaw and the other on the opposite side of the other jaw, whereby the hook is maintained normally at all times in the same position, substantially as described.

484,744. SEWING-MACHINE FOR OVERSTITCHING BUTTON-HOLE-THRUMS. EUGENE M. PHELPS, Lynn, Mass., assignor to the Hand Method Finishing Machine Company, Nashua, N. H. Filed Feb. 6, 1891. Serial No. 380,431. (No model.)



Claim.—1. In a sewing-machine for barring buttonholes, a folder having a projection to enter the buttonhole and a portion to bear upon the material at the end of the buttonhole, combined with a lifter to lift the material as the folder retreats or is moved from the material, a straightener, as *f*, to bear upon the under side of the material at the end of the buttonhole and prevent crimping of the material while the folder is in retracted position and the material is elevated to permit of the formation of the understitch, a grooved throat-plate, in the groove of which the straightener operates, and stitch-forming mechanism, substantially as described.

2. In a sewing-machine for barring buttonholes, a folder to bear upon the material at the end of the buttonhole, devices to actuate said folder, and a shifter co-operating with the folder and its actuating devices to vary the movement of the folder, combined with a throat-plate and stitch-forming mechanism substantially as described.

3. In a sewing-machine for barring buttonholes, a driven shaft, a clutch member fast on said shaft, a co-operating clutch member loose on said shaft and having longitudinal movement thereon, devices

operating to cause engagement of the clutch members, stitch-forming mechanism, a work-folder, and a slotted throat, combined with devices to limit the number of barring stitches to be made before stoppage of the machine and connections between said devices and the clutch members, including a support or member to maintain engagement of the clutch members, and a trip for said support to permit disengagement of said clutch members when the required number of barring-stitches at the end of a buttonhole shall have been made, substantially as described.

4. A folder to bear upon the material at the end of a buttonhole, devices to actuate said folder, and a shifter co-operating with the folder and its actuating devices to vary the movement of the folder, combined with a grooved throat-plate, stitch-forming mechanism, and devices, including a trip, to limit the number of barring-stitches to be made at the end of a buttonhole before release of the material by variation in the movement of the folder and to determine the time of variation of movement of the folder, substantially as described.

5. In a sewing-machine provided with a grooved throat-plate and stitch-forming mechanism, substantially as described, a folder, a driving-shaft, a connecting mechanism between the said shaft and folder for imparting reciprocating movements to the folder in order to bend the material in the throat-plate, and an automatically-operating shifter and stop mechanism whereby the folder-operating mechanism is shifted to vary the movement of the folder and the machine stopped, as described.

6. In a sewing-machine provided with a grooved throat-plate and stitch-forming mechanism, as described, a driver-shaft, a folder, a connecting mechanism between the shaft and folder for moving the folder to bend the material in the throat-plate, and a shifter mechanism for shifting the folder-operating mechanism to vary the length of movement of the folder, combined with a clutch mechanism and intermediate devices actuated by the shifter mechanism as it shifts the folder-operating mechanism to simultaneously stop the machine, substantially as described.

484,745. NUT-LOCK. JOHN W. PUGH, Grand Rapids, Mich., assignor of one-third to Thomas J. Haynes, same place. Filed Apr. 30, 1892. Serial No. 430,986. (No model.)

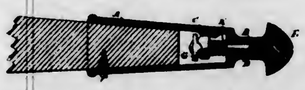
Claim.—1. The combination, in a nut-lock, of a washer having extended ends provided with locking devices, and a cap having an aperture to fit over the nut, and extended ends provided with locking devices, each end of both the cap and the washer to be bent at right angles and to interlock with the corresponding end of the other, substantially as and for the purpose set forth.

2. The combination, in a nut-lock, of a washer having extended ends and provided with backwardly-projecting points and a cap fitted over the nut, the ends of each bent at right angles and interlocked with the corresponding end of the other, substantially as specified.

3. The combination, in a nut-lock, of a washer having extended ends, one of which is provided with a slot, the other with any suitable locking device, and a cap having an aperture to fit over the nut and both ends extended beyond the nut, one end of said cap fitted to enter the slot in the washer and the other end with a locking device corresponding with the opposite end of the washer, the ends of each bent at right angles and interlocked with the corresponding end of the other, substantially as and for the purpose set forth.

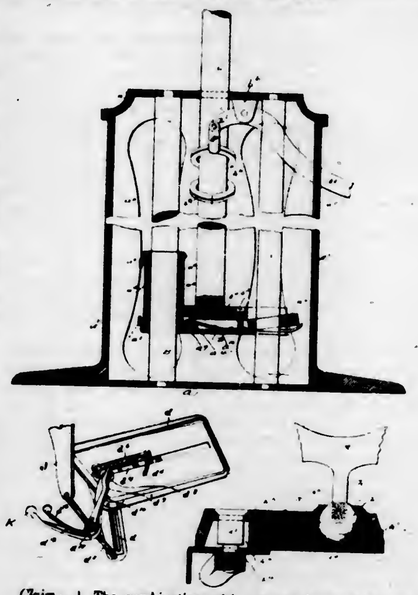
4. The combination, in a nut lock, of a washer having extended ends, one end provided with a slot, the other with an aperture for a rivet, and points bent back from the surface of the washer, and a cap provided with an aperture to fit over the nut, and projecting ends fitted to interlock with the ends of the washer, and a rivet, substantially as and for the purpose set forth.

484,746. WHIFFLETREE-HOOK. EDWIN G. QUICKEL, York, Pa. Filed May 7, 1892. Serial No. 432,129. (No model.)



Claim.—A whiffletree-hook comprising a socket A, button B, provided with a stem D, projecting through a neck formed on the end of the socket, a locking device comprising the two members G I, one fixed to the stem and the other movable thereon, spring K, and the spur C, mounted in the socket and engaging a groove in the movable member.

484,747. DENTAL CHAIR. LEVI BROCK, Bad Axe, Mich., assignor to Aaron P. Gould, John C. Straiton, and Albert Hoefler, Canton, Ohio. Filed Sept. 4, 1890. Serial No. 363,866. (No model.)



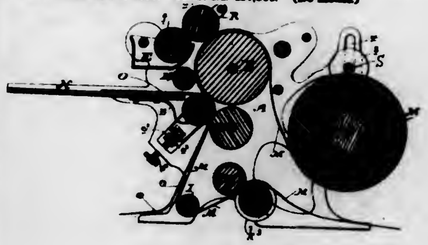
Claim.—1. The combination, with a supporting-base, of bars B and C, secured therein, a yoke D, having a sleeve portion to embrace the bar B, a link pivotally secured to the yoke to normally bite or clamp the bar C, a body-supporting stem G, supported by said yoke, and means for releasing the biting engagement of the link with said bar C, substantially as set forth.

2. The combination, with the base A, of the bars B and C, a yoke D, having a collar or sleeve a^2 embracing one of said bars, a link pivoted to said yoke and normally clamping or biting the other bar, a stem G, having secured to its lower end a block b^4, seated in said yoke and engaging with one end the collar or sleeve a^2, whereby when the stem is raised the block will lift said yoke with it and free the link from its biting engagement with its bar, and a screw b^4, whereby said parts may be adjusted one to the other.

3. The combination, with a chair-body, of foot-rest supporting legs having guideways, a foot-rest having projections to slide in said ways, a track d^6 on the under side of said foot-rest, a rack d^8 adjacent thereto, a cross-bar d^7, secured to the lower end of said legs, a foot-lever K, supported thereon, the inner end of which is provided with a roller d^9 to travel on said track, a dog to engage said rack, and a trip carried by the foot-lever to disengage said dog from said rack.

4. The combination, in a head-rest, of the supporting-arm composed of the plate or cap B, having an aperture A^3 and perforations A^4, and at its other end an aperture A^2, a plate R, adapted to fit within the cap S, said plate having at one of its ends a socket A^5 and outwardly-projecting pin or pins to pass into the perforations A^4, a ball A^3 to rest in the socket A^5, and perforation A^2, and a pad frame secured thereto, and a bolt A^7 to clamp said cap and plate on said ball and to the head-rest support.

484,748. COPYING-PRESS. EDGAR F. VERRILL, San Francisco, Cal. Filed Oct. 2, 1891. Serial No. 407,566. (No model.)



Claim.—1. In a copying-press, the combination of copying-rollers, between which the papers pass and are pressed, feed-rollers for one of said papers, and the guide-roller I, about which said paper abruptly turns, whereby the other paper separates from it, substantially as herein described.

2. In a copying-press, the combination of copying-rollers, between which the papers pass, feed-rollers for drawing the copying-paper from the copying-rollers, a guide-roller I, about which the copying-paper turns and is separated from the other paper, and power-transmitting connections for driving the feed-rollers faster than the copying-rollers, consisting of the large pulley on one of the copying-rollers, the smaller pulleys on the feed-rollers, and the intervening slip or yielding belt, substantially as herein described.

3. In a copying-press, the combination of the copying-rollers, the feed-rollers, and the means for operating them, consisting of the crank having the pinion, the gear *b*, pinion *c*, pulley *d*, pulleys *j* and *k*, and the single belt Q, passing around the pulleys *d*, *j*, and *k*, substantially as herein described.

4. In a copying-press, the combination of a roller over which the copying-paper passes, a water-supply roller, and a swinging moistening-roller adapted while remaining in contact with the water supply roller to be thrown into or out of contact with the copying-paper, substantially as herein described.

5. In a copying-press, the combination of roller B, over which the copying-paper passes, a water-supply roller, the moistening-roller G, and the swinging arms R, in which said moistening-roller is mounted, substantially as herein described.

6. In a copying-press, the combination of copying-rollers, a movable moistening-roller, mechanism for operating the copying-rollers, and a mechanism operated thereby for moving the moistening-roller into and out of contact with the copying-paper as the machine is started and stopped, substantially as herein described.

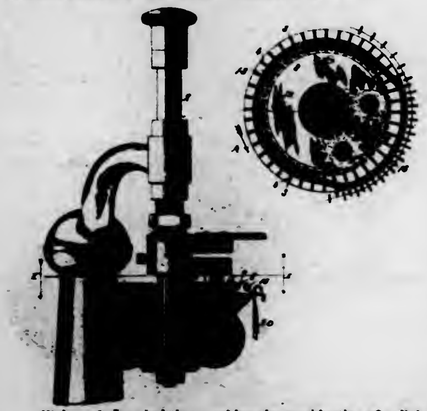
7. In a copying-press, the combination of the swinging moistening-roller, the power-crank of the copying-rollers, the pinion of said crank, and the pawl operated on by the pinion to throw the moistening-roller into and out of contact with the copying-paper as the machine is started and stopped, substantially as herein described.

8. In a copying-press, the combination of the copying-roller B, the moistening-roller G, the swinging arms carrying said roller, the crank or operating roller B, the pinion of the crank, and the pawl *r*, connected with the swinging arm and operated on by the pinion, substantially as herein described.

9. In a copying-press, the combination of the roller B, water supply roller, moistening-roller, arms R, carrying the moistening-roller, crank *p*, and connections to operate the roller B, pinion *p'* of the crank, and the pawl *r*, connected with the swinging arm and operated on by the pinion, substantially as herein described.

484,749. ATTACHMENT FOR KNITTING-MACHINES. James Whitelaw, St. Louis, Mo., assignor to the St. Louis Polar Plush Lined Sock Company, same place. Filed Aug. 4, 1892. Serial No. 442,161. (No model.)

Brief.—Dial-pins are employed in conjunction with the cylinder-needles for the production of the goods described in the United States patent to Bickford, No. 84,473, dated December 1, 1868, said dial-pins being forced outwardly at the proper time by one of two pinions, between which is a projection adapted to hold said pins in their outward position during a portion of the revolution of the dial.



Claim.—1. In a knitting-machine, the combination of a dial, pins arranged to move endwise on the dial, a pinion having a fixed relation to the dial and adapted to be turned upon its center to force the pins outwardly on the dial, independent means for holding the pins in their outward position during a portion of the revolution of the dial, and means for retracting the pins, substantially as and for the purpose set forth.

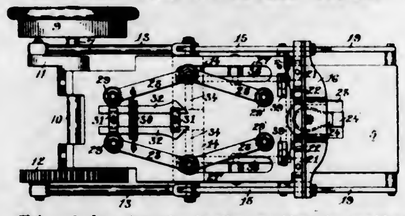
2. In a knitting-machine, the combination of a dial, pins arranged to move endwise on the dial, a fixed spindle or arbor upon which the dial is loosely mounted, an arm fixed to said spindle, a pinion journaled to the arm, a projection on the arm, and means for retracting the pins, said pinion being adapted to force the pins outwardly on said dial, and said projection being adapted to retain the pins in their outer position during a portion of the revolution of said dial, substantially as and for the purpose set forth.

3. In a knitting-machine, the combination of a dial, pins arranged to move endwise on the dial, a pair of pinions having a fixed relation to the dial and adapted to turn upon their centers to force the pins outwardly on the dial, means for holding the pins in their outer position while passing from one pinion to the other, and means for retracting the pins, substantially as and for the purpose set forth.

4. In a knitting-machine, the combination of a dial, pins arranged to move endwise on the dial, a spindle or arbor upon which the dial is loosely mounted, an arm rigidly secured to the spindle, a pair of pinions journaled on said arm, a projection on said arm between said pinions, and means for retracting the pins after they have passed said pinions and projection, substantially as and for the purpose set forth.

5. In a knitting-machine, the combination of a dial provided with studs, pins arranged to move endwise on the dial, pinions having a fixed relation to the dial and adapted to be turned upon their centers by said dial-studs to cause them to engage said pins and move them outwardly, means for holding the pins in their outer position while they pass from one pinion to the other, and means for moving the pins inwardly after they have passed said pinions, substantially as and for the purpose set forth.

484,750. HORSESHOE-BENDING MACHINE. John Wike, Providence, R. I., assignor to the Standard Horse Shoe Company, Wareham, Mass. Filed Mar. 23, 1892. Serial No. 426,067. (No model.)



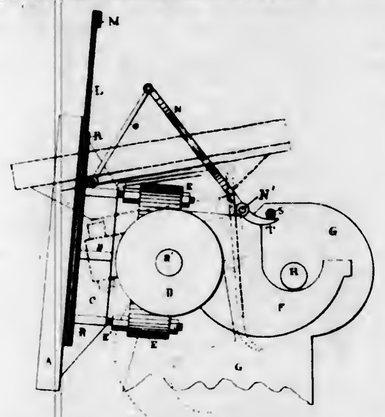
Claim.—1. In a horseshoe-bending machine, the combination therewith of depressible stops for holding the blank, a reciprocating yoke, swage-blocks carried by said yoke, and means for operating the same, as described.

2. In a horseshoe-bending machine, the combination, with depressible stops and means for automatically operating the same, of a reciprocating yoke, swage-blocks carried thereby, and means for elevating said yoke during its reciprocation, as described.

3. The combination, with the table 5, supported by the legs 6 6, the shaft 7, carrying the pulley 9, and gear 8, journaled in the frame formed thereby, the shaft 10, carrying the gear 12, intermeshing with the gear 8 and the crank 11, driving-rods pivoted at the rear ends to said gear and crank, the cross-arm 14, pivotally secured to the forward ends of said drive-rods and movable in the guides 25, formed in the sides of the table-frame, the wing 33, having the transverse rods 34, depending from said cross-bar, and the pivoted levers 36, having cam-slots 35, engaging said rods 34 and pivoted to the vertically-movable rods 38, carrying blocks 39, movable through perforations in the table, of the connecting-rods 15, pivoted to the forward ends of the drive-rods 13, the yoke 16, having the opening 20, secured to the forward ends of said connecting rods, swage-blocks carried by said yoke, depending slotted arms 17, formed in part with said yoke, bearing-disks 18, journaled in said slotted arms, and guide-bars 19, on which said rolls are adapted to travel, as described.

4. The combination, with the table 5, the cross-bar 14, having the depending tongue 33, and rods 34, reciprocatable in the guides 25, and means for reciprocating the same, the vertical studs 36, secured to said cross-arm and movable in slots cut through the table, the bent arms 28, pivoted to such studs and provided with rolls 29 and 29', journaled in the ends thereof, a spring 30 for contracting the rear ends of said arms, adjustable forms 32 for separating said ends, and a die-block 24, supported in the opening 23 in said table, of the pivoted levers 36, having cams 35, engaging the ends of the rods 34, the vertically-movable rods 38, carrying blocks 39 extending through perforations in the table pivoted to the forward end of said levers, a yoke 16, carrying the swage-blocks 22 and having the arched opening 16 and depending slotted arms 17, carrying rotatable disks 18, the bent guide-bars 19, secured to studs on the table-frame on which said rolls travel, and the connecting-rods 15, by which the reciprocation of the cross-arm 14 is transmitted to said yoke, as and for the purpose described.

484,751. SAFETY-GUARD FOR PRINTING-PRESS PLATENS. Alonzo Bell, New York, N. Y., assignor to Charles T. Bell, same place. Filed June 9, 1892. Serial No. 436,074. (No model.)

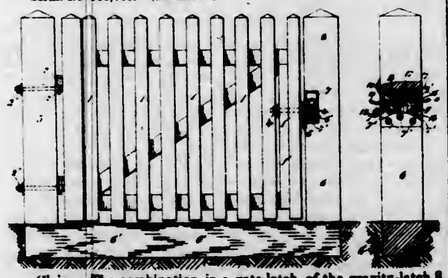


Claim.—1. In a printing-press, in combination with an oscillating platen and supporting-frame therefor, a movable safety-guard resting on the back of said platen at or near the top thereof, rods for supporting said guard, guides for said rods to slide in, and operating mechanism for imparting a reciprocating motion to said guard, substantially as set forth.

2. In a printing-press, in combination with a platen and a supporting-frame therefor, a movable safety-guard consisting of a horizontal bar or plate having an up-and-down movement above the upper edge of said platen and back of a line on the plane of the face thereof, rods for supporting said guard, and operating mechanism for imparting a reciprocating movement to said guard, substantially as set forth and described.

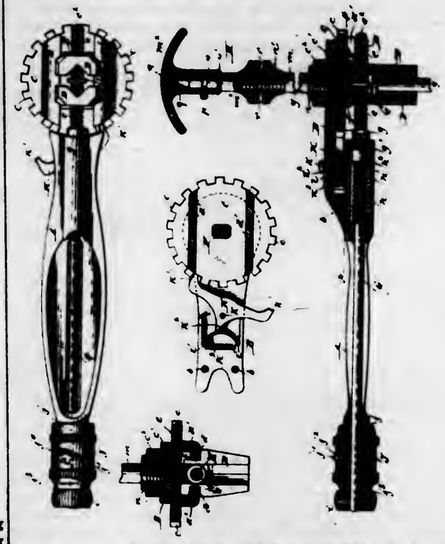
3. In an oscillating press, in combination with a platen and supporting-frame, the movable safety-guard M, supporting-rods for said guard, guides for said rod to slide in, a lever for lifting and lowering said guard through said rods, a tripping-pawl on said lever, and a stop-pin for actuating the lever through said pawl, substantially as set forth and described.

484,752. GATE-LATCH. Henry C. Hoffman, Mound City, Ill., assignor of one-half to Daniel Hogan, of same place. Filed July 16, 1891. Serial No. 399,778. (No model.)



Claim.—The combination, in a gate-latch, of the gravity-latch 8, comprising a thumb-latch 10, the engaging-toe 12, intermediate eye or pivotal bearing 8', and an inwardly-inclined T-formed finger 16, providing notches 16', the gravity-latch 9, comprising a thumb-latch 11, engaging-toe 13, intermediate eye or pivotal bearing 9', and inwardly-projecting forcated fingers 17, loosely engaging in notches 16', whereby the simultaneous rising and falling of said latches is caused to disengage and engage the gate-bolt when either thumb-latch is depressed or released, and the latch-casing 7, having pins 14 and 15, received by the eyes or pivotal bearings 8' and 9' of the latches, substantially as set forth.

484,753. RATCHET-WRENCH. Silvanus Hussey, Brant, N. Y. Filed July 23, 1891. Serial No. 400,409. (No model.)



Claim.—1. The combination, with the ratchet-disk and the handle movably attached thereto, of clamping-jaws supported on said disk, an adjusting screw engaging with the clamping-jaws, and an adjusting-rod supported on the handle and adapted to be connected with the adjusting screw of the clamping-jaws, substantially as set forth.

2. The combination, with the ratchet-disk provided with a central hub and a handle supported on said hub, of the adjustable clamping-jaws supported on guides formed on said disk, an adjusting-screw engaging with said jaws, and a separate adjusting-rod extending through the handle and adapted to be connected with the adjusting-screw, substantially as set forth.

3. The combination, with the ratchet-disk provided with a central hub and a handle supported on said hub, of the adjustable clamping-jaws supported on guide rails formed on the ratchet-disk, an adjusting-screw engaging with said jaws and provided with end slots, and an adjusting-rod extending through the handle and provided at one end with a socket and a transverse rib adapted to engage with one end of the adjusting-screw, substantially as set forth.

4. The combination, with the ratchet-disk provided with a central hub and a handle supported on said hub, of the adjustable jaws movably supported on guide-rails formed on said disk, an adjusting-screw engaging with said jaws, an adjusting-rod engaging with said adjusting-screw, and a spring whereby the rod is held in engagement with said screw, substantially as set forth.

5. The combination, with the ratchet-disk, a handle or shank pivotally secured to said disk, and clamping-jaws movably supported on said disk, of an adjusting-screw engaging with said jaws, an adjusting-rod journaled in said handle and adapted to be connected with the adjusting-screw, and a sleeve arranged on the handle and engaging with said adjusting-rod, substantially as set forth.

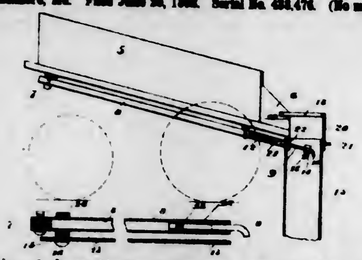
6. The combination, with the ratchet-disk, a handle or shank pivotally secured to said disk, and adjustable clamping-jaws supported on the disk, of an adjusting screw engaging with said jaws, an adjusting-rod movably supported in the handle and adapted to be connected with the adjusting-screw, a rotating sleeve arranged on said handle and provided with an inclined slot, and a pin secured to the adjusting-rod and engaging in the slot of the sleeve, substantially as set forth.

7. The combination, with the ratchet-disk, a handle or shank pivotally secured to said disk, and adjustable clamping-jaws supported on said disk, of an adjusting-screw engaging with said jaws, an adjusting-rod movably supported in said handle, a spring whereby the adjusting-rod is held in engagement with the adjusting-screw, a thumb piece or collar secured to the adjusting-rod, and a cam-sleeve surrounding the handle and engaging with the thumb-piece, whereby the

adjusting-rod is disengaged from the adjusting-screw, substantially as set forth.

8. The combination, with the ratchet-disk, a handle or shank pivotally secured to said disk, and adjustable clamping-jaws movably supported on said disk, of an adjusting-screw engaging with said jaws, an adjusting-rod supported in said handle and adapted to be connected at one end with the adjusting-screw, a thumb-piece secured to the opposite end of said rod, a rotating sleeve bearing against said thumb-piece and provided with a cam-slot, and a pin secured to said handle and engaging with said cam-slot, substantially as set forth.

484,754. CHUTE FOR COAL-WAGONS. Reuben A. McCauley, Baltimore, Md. Filed June 20, 1892. Serial No. 436,476. (No model.)



Claim.—1. In combination with a wagon, the tube 8, free to be vibrated on a pivot near the front end of the wagon, a bar 9, placed in the free end of said tube and free to be moved inward and outward therein, a sleeve 14, free to be moved along the said tube and along said bar 9, and the chute 13, the front end of which is pivoted to said sleeve, for the purpose set forth.

2. In combination with a wagon, the tube 8, free to be vibrated on a pivot near the front end of the wagon, the said tube provided with the slot 12 near the free end thereof, a bar 9, placed in the free end of the tube and free to be moved inward and outward therein, the said bar being provided with the pin 11, which, traveling in the said slot 12, limits this movement of the bar, a sleeve 14, free to be moved along the said tube and along the said bar 9, and the chute 13, the front end of which is pivoted to said sleeve, for the purpose set forth.

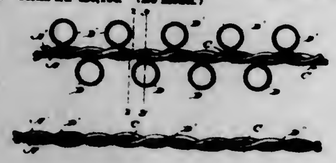
484,755. RAILROAD NUT-LOCK. Gaston Olliver, Coleman's Falls, Va., assignor of three-fourths to L. U. Mayo, same place. Filed May 31, 1892. Serial No. 435,013. (No model.)

Claim.—1. In a railroad nut-lock, a fish-bar having the adjacent sides of two of its bolt-holes grooved and the inner ends of said grooves connected by a horizontal channel provided with outward apertures, as described, in combination with a spring-bar having outwardly-projecting ends to fit the channel and grooves of the fish-bar and the connecting-bolts with radially-grooved nuts, substantially as and for the purpose specified.

2. In a railroad nut-lock, a spring-bar having outwardly-projecting ends and pins, as described, with the rails and fish-bars, one of the latter channeled, grooved, and perforated, as specified, to receive the aforesaid spring-bar, and the securing-bolts having nuts provided with grooved inner faces, substantially as and for the purpose set forth.

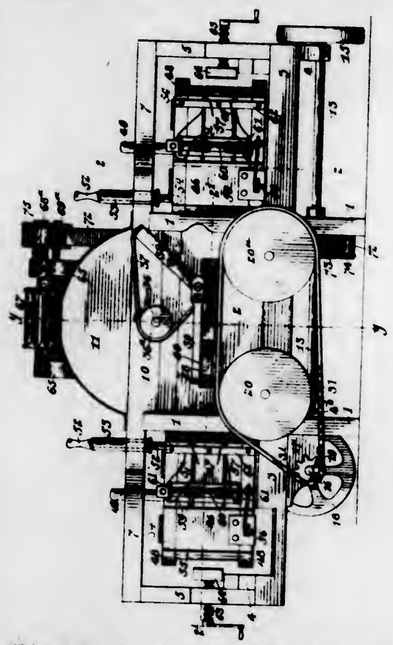
3. In a railroad nut-lock, a fish-bar having the adjacent sides of each outer pair of bolt-holes grooved, channels connecting the inner ends of said grooves, and perforations through the channeled part of the fish-bar, as set forth, in combination with two spring-bars having outwardly-projecting ends to fit the aforesaid channels and grooves and securing-bolts with nuts grooved, substantially as and for the purpose specified.

484,756. WIRE FENCE. Richard B. Perkins, Hornellsville, assignor of one-half to Charles A. Bell, Wellsville, N. Y. Filed Feb. 3, 1892. Serial No. 420,196. (No model.)



Claim.—As an article of manufacture, an ornamental fence-wire consisting of two longitudinally-entwined strands and a third ornamental strand having its inclined parts passing in straight lines through the eyes formed by the twisted central strands and which is coiled upon itself on opposite sides of said central strands to form a series of eyes or loops, substantially as described, for the purpose specified.

484,757. HAY-PRESS. John T. Russell and Jefferson D. Williams, Rogers, Ark. Filed Feb. 13, 1892. Serial No. 421,422. (No model.)



Claim.—1. In a press, the combination, with a plunger and with a press-screw mounted in a suitable bearing, of a baling-box having oppositely-opening compartments pivoted between the screw and plunger, each of the said compartments having a slotted and a pivoted side, and a drum mounted on the said box near each of the said compartments, substantially as described.

2. In a press, the combination, with a plunger and a baling-box, of a driving-shaft having a pinion thereon, oppositely-disposed gear-wheels mounted upon a common shaft and driving a sprocket-wheel, a sprocket-chain passing over the said sprocket-wheel and attached to the plunger, and a rocking plate connected to the driving-shaft and adapted to alter the position of the said pinion and to be rocked by the said plunger, substantially as described.

3. In a press, the combination, with a plunger and a baling-box, the said plunger having an arm projecting therefrom, of two oppositely-placed gear-wheels mounted upon a common shaft, a sprocket-wheel mounted on the said shaft, and a sprocket-chain carried by the said sprocket-wheel and connected to the said arm of the plunger, a pivoted rocking lever having latches at its opposite ends and having springs projecting upwardly into the path of the plunger-arm, a link connecting the pinion and rocking lever, and fixed projections which the said latches engage and from which they are adapted to be disengaged by contact with the said arm, substantially as described.

4. In a press, the combination, with a plunger and a baling-box, the said plunger having an arm projecting therefrom, of two oppositely-placed gear-wheels mounted upon a common shaft, a sprocket-wheel carried by the said shaft, a chain passing over the said sprocket-wheel and connected to the said plunger-arm, a pivoted rocking lever having springs at its ends projecting into the path of the plunger-arm, whereby the said lever will be rocked, and a driven pinion adapted to engage either of the said gear-wheels and connected to the said rocking lever, substantially as described.

5. In a hay-press, the combination, with a feeding dome, of a double-headed plunger reciprocating below the said dome and a striker centrally pivoted and rotated within the said dome by the motion of

the said plunger, the direction of the motion of the two parts being opposite to each other, substantially as described.

6. In a hay-press, the combination, with a feeding-dome, of a double-headed plunger having an arm projecting therefrom provided with a stud, a transverse shaft passing through the said dome and carrying a striker therein and having a drum upon its end, a belt passing over the said drum, a pivoted lever having its opposite ends attached to the opposite ends of the said belt, and a link secured to one end of the said lever and being engaged by the stud upon the plunger-arm, substantially as described.

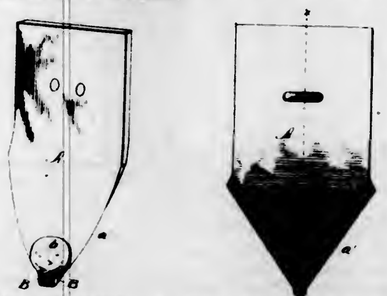
7. A pivoted baling-box having its opposite ends open and having its interior divided into two compartments by a transverse partition, the opposite ends of the opposite sides and both ends of the bottom of the said box being hinged, substantially as described.

8. A pivoted baling box having its opposite ends open and having its interior divided into two compartments by a transverse partition, the opposite ends of the opposite sides and both ends of the bottom of the box being hinged, the pivoted portions forming the sides and bottom of each compartment being secured closed by a single common fastening opposite to their hinged sides, substantially as described.

9. The combination, with a baling-box having slotted sides, of a windlass upon one side thereof, and an upright rod joining the fingers formed in the opposite side by the said slots, and wires bent around the said rod and secured to the said windlass and passing through the said slot, substantially as described.

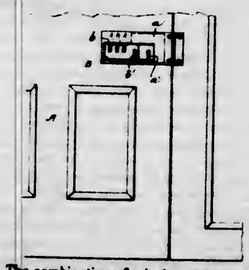
10. The combination, with a baling-box having a door upon one of its sides and a slot in the other, of a windlass upon the same side of the box as the said door, a vertical rod joining the fingers of the opposite side, formed by the said slots, and wires bent around the said rod and secured to the windlass and passing through the said slots and between the door and the contiguous side of the compartment, substantially as described.

484,758. PLOW-POINT. George Sears, Onslow, Iowa, assignor of one-half to William H. Underwood, same place. Filed June 25, 1892. Serial No. 438,095. (No model.)



Claim.—An attachable self-sustaining plow-point made from a single blank of metal and bent at its center to form a composite plate comprising two substantially-circular members coincident and coextensive, occupying parallel horizontal planes in the same vertical plane, and each rearwardly reduced to a thin edge, the bend forming the plow-point, and the two members by their mutual inward tension serving to hold the point temporarily during attachment.

484,759. LOCK. Clarence M. Stiner, New York, N. Y., assignor to the Reminder Lock Company, of New York. Filed Apr. 30, 1891. Serial No. 391,006. (Model.)



Claim.—1. The combination of a lock and key and a second lock permanently attached to or adjacent to the first lock and bodily movable with relation thereto and a stop adapted to be locked or released by the second lock and bar the keyway of the first lock, substantially as described.

2. The combination of a lock and key and a second lock attached to or adjacent to the first lock, the second lock having a stop for barring the keyway of the first lock, a key for the second lock, and a detent for retaining the key in the lock when the bolt is in one of its positions, substantially as described.

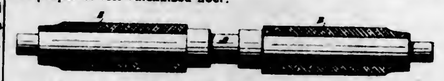
3. The combination, with a lock, of a guideway permanently attached to or adjacent thereto and a second lock connected with and adapted to slide in said guideway, the second lock being provided with a bolt barring the keyway of the first lock, as set forth.

4. The combination of a lock and key and a second lock and key bodily movable with respect to the first lock, the said second lock having a keyway and means for retaining a key therein and having, also, a stop to permit the operation of the other lock.

5. The combination, with a lock-holder and a lock fitted thereto and removable therefrom, of means carried by the lock for preventing its operation when removed from the holder and co-operating means carried by the holder and secured in fixed position relative thereto for permitting the lock to be operated by its key when said lock is placed in the holder.

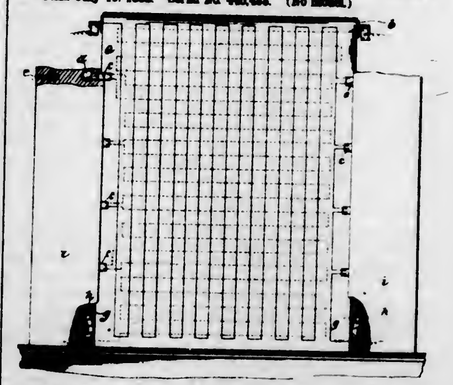
484,760. TOP ROLL FOR SPINNING-MACHINES. John F. Strange, New Bedford, Mass., assignor to himself and Joshua B. Winslow, same place. Filed May 19, 1892. Serial No. 433,596. (No model.)

Brief.—The shaft is composed of hard vulcanized fiber and the roll proper of soft vulcanized fiber.



Claim.—A top roll composed of a shaft made of hard vulcanized fiber and a covering formed by a tube of soft vulcanized fiber, substantially as described.

484,761. BURGLAR-ALARM. Alfred Strohberg, Chicago, Ill. Filed July 19, 1892. Serial No. 440,483. (No model.)



Claim.—1. In a flexible covering for the protection of openings against the entrance of burglars, the combination, with a curtain carrying a circuit which when opened or crossed is adapted to sound an alarm, of a metal clip attached to said curtain and forming part of the said circuit and a groove within the frame forming the side or sides of said opening, said clip adapted to slide in said groove in the direction in which the curtain is adapted to move, but to prevent motion in any other direction.

2. In burglar-alarm protection, in combination, with curtain *a*, of the circuits carried thereon, frame *i*, containing the grooves *e*, the metal clips *c c c c*, attached to the sides of the curtain and adapted to move in said grooves, the contact-spring A, adapted to make engagement with the said curtain and to connect said circuit with the conductor upon the frames surrounding the opening, substantially as and for the purpose specified.

3. In a burglar-alarm protection, the combination, with the flexible covering, of a circuit carried thereon, a contact-making device adapted to close said circuit with the main conductor leading to the central station, and clips attached to the side of said flexible covering and adapted to move freely therewith, but to open the circuit when an attempt is made to draw the curtain aside, substantially as and for the purpose specified.

484,762. ELECTRIC BELL. John R. Tenon, Philadelphia, Pa. Filed June 18, 1892. Serial No. 437,177. (No model.)

a stop to limit the movement of the hammer toward the bell, a pivoted pawl carried by the armature and extending up through a slot in the pivoted arm and having its end provided with a cam-face, a spring to press the pawl into locking position with the pivot-arm, and an adjustable part over which the cam moves for the purpose of controlling the action of the pivoted trip to release the pivot-arm carrying the hammer.

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combination with a suction-pipe and the ladder constructed and arranged to swing in vertical and lateral planes, as described.

13. In combination, the ladder, as described, suction-pipe, and a hollow excavator that delivers its spoil inwardly through itself to and rotates independently of said pipe.

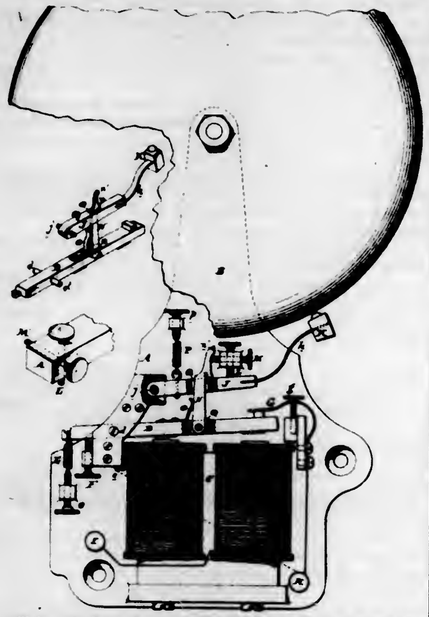
14. A rotary excavator with inward delivery through itself, in combination with a suction-pipe.

25. In combination, a ladder, suction-pipe, and hollow rotary excavator with inward delivery through itself to said pipe.

26. In combination, a suction-pipe, ladder, and hollow rotary excavator with inward delivery through itself to said pipe, said excavator being provided with side cutting-edges and devices that effect a side feed.

27. In combination, a suction-pipe, ladder, and hollow rotary

484,762. ELECTRIC BELL. JOHN R. TRIMM, Philadelphia, Pa. Filed June 16, 1892. Serial No. 437,177. (No model.)



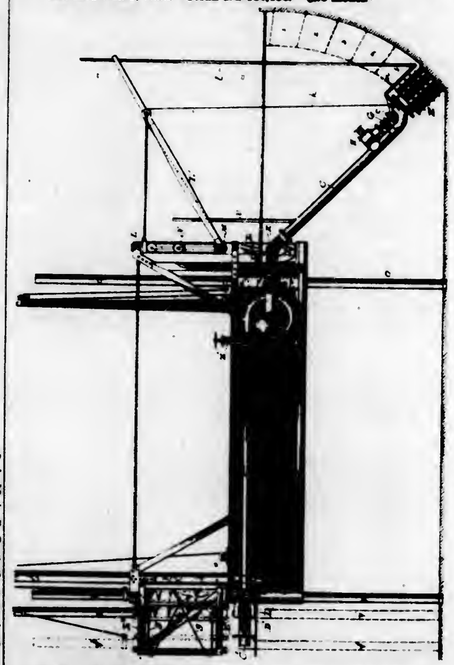
Claim.—1. In an electric bell, the combination of the main frame, the bell, an electro-magnet, an armature operated by the electro-magnet, a circuit-interrupter controlled by the armature for interrupting the circuit through the electro-magnet, a pivoted arm having a hammer flexibly connected thereto at its free end, a spring to move the arm away from the armature, a stop to limit the movement of the hammer toward the bell, a trip between the armature and pivot-arm whereby the movement of the armature toward the electro-magnet moves the pivot-arm from the bell, a spring to press the pivot-arm into locking position, and a cam device between the pivot-arm and main frame for operating the trip device to cause it to release the pivoted arm and hammer from the action of the armature and permit it to be drawn toward the bell by the spring.

2. In an electric bell, the combination of the main frame, a bell, an electro-magnet, an armature operated by the electro-magnet, binding-posts upon the main frame, an electric circuit extending between the binding-posts and including the electro-magnet, a pivoted arm having a hammer flexibly connected thereto at its free end, a spring to move the arm away from the armature, a stop to limit the movement of the hammer toward the bell, a trip between the armature and pivot-arm whereby the movement of the armature toward the electro-magnet moves the pivot-arm away from the bell, a spring to press the pivot-arm into locking position, and a cam device between the pivot-arm and main frame for operating the tripping device to cause it to release the pivot-arm and hammer from the action of the armature and permit it to be drawn toward the bell by the spring.

3. In an electric bell, the combination of the main frame, a bell, an electro-magnet, an armature operated by the electro-magnet, binding-posts upon the main frame, an electric circuit extending between the binding-posts and including the electro-magnet, a pivot-arm having a hammer flexibly connected thereto at its free end, a spring to move the arm away from the armature, a stop to limit the movement of the hammer toward the bell, a trip between the armature and pivot-arm whereby the movement of the armature toward the electro-magnet moves the pivot-arm away from the bell, a spring to press the pivot-arm into locking position, a cam device between the pivot-arm and main frame for operating the tripping device to cause it to release the pivot-arm and hammer from the action of the armature and permit it to be drawn toward the bell by the spring, and means to adjust the time of action of said cam device for the purpose of liberating the hammer at different times relatively to the movement of the armature toward the electro-magnet.

4. In an electric bell, the combination of a main frame, an electro-magnet carried thereby, an armature pivoted thereto and operated by the electro-magnet, a bell, a pivot-arm carrying a hammer upon its end to strike the bell, means to move the hammer toward the bell, a stop to limit the movement of the hammer toward the bell, a pivoted pawl carried by the armature and extending up through a slot in the pivoted arm and having its end provided with a cam-face, a spring to press the pawl into locking position with the pivot-arm, and an adjustable part over which the cam moves for the purpose of controlling the action of the pivoted trip to release the pivot-arm carrying the hammer.

484,763. APPARATUS FOR DREDGING AND TRANSPORTING SPOIL. ALPHONSO B. BOWERS, Washington, D. C. Original application filed Dec. 9, 1878. Renewed Apr. 16, 1879. Divided and application filed Apr. 20, 1885, Serial No. 162,883. Again divided and this application filed Jan. 5, 1886. Serial No. 187,638. (No model.)



Claim.—1. A hollow rotary excavator with inward delivery, in combination with a suction-pipe, said excavator being provided with a dished end constructed to guide the spoil toward the mouth of said pipe.

2. A hollow rotary excavator with inward delivery and uncased hub, in combination with a suction-pipe and a shaft having a bearing close to said hub.

3. A rotary excavator mounted on a shaft provided with a collar and grooved thrust-bearing, in combination with a suction-pipe.

4. A rotary excavator mounted on a non-rotative suction-pipe and provided with anti-friction roller-bearings, said bearings being constructed substantially as shown and described.

5. A hollow rotary excavator with inward delivery through itself to a suction-pipe, said excavator being mounted on a shaft provided with a device for washing out grit from the bearing of said shaft.

6. In combination, a hollow rotary excavator with inward delivery through itself, mounted on a shaft provided with a device for excluding grit from the bearing of said shaft, and a suction-pipe.

7. A rotary excavator mounted on a shaft having a bearing within a tube passing from the hub of said excavator to a point outside of the suction-pipe and in combination with said pipe.

8. A rotary excavator mounted on a shaft provided with a long tubular bearing, said shaft having a reduced portion within said tube and a pipe for introducing water to said reduced portion.

9. In combination, a suction-pipe, a hollow rotary excavator with inward delivery through itself to said pipe and mounted on a shaft driven by a motor acting directly on said shaft.

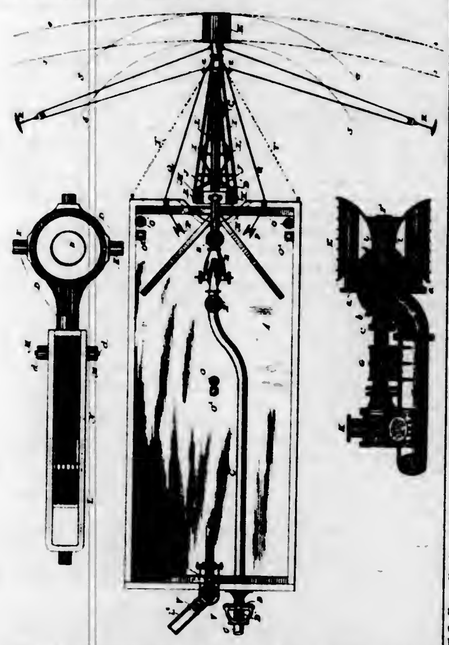
10. A hollow rotary excavator with inward delivery through itself, in combination with a suction-pipe and a motor mounted on said pipe.

11. A hollow rotary excavator with inward delivery through itself, in combination with a suction-pipe mounted on the yoke J or equivalent joints.

12. A rotary excavator with inward delivery through itself, in combination with a suction-pipe and the ladder constructed and arranged to swing in vertical and lateral planes, as described.

13. In combination, the ladder, as described, suction-pipe, and a hollow excavator that delivers its spoil inwardly through itself to and rotates independently of said pipe.

14. A rotary excavator with inward delivery through itself, in combination with a suction-pipe.



15. A rotary excavator with inward delivery through its side and arranged to work with a side feed, in combination with a suction-pipe and the rigid connection I, hinged to swing in a vertical plane.

16. A rotary excavator with inward delivery through itself, in combination with a suction-pipe mounted on a device that swings in a vertical plane, said pipe being provided with a flexible section D' to accommodate said swinging.

17. A hollow rotary excavator with inward delivery through itself, in combination with a non-rotating suction-pipe mounted to swing independently of the boat in a vertical plane and in planes perpendicular to said vertical plane, with means for making said swings.

18. A suction-pipe mounted to swing on trunnions or equivalent joints and provided with a flexible section D' to accommodate said swing.

19. In combination, a dredge-boat, pump, and a suction-pipe having an outer-swinging section mounted on a universal joint and a flexible section to accommodate said joint.

20. In combination, a dredge-boat, exhausting apparatus, and a swinging section of suction-pipe connected with said apparatus by a flexible section D', provided with a joint constructed and arranged to hold (and to relieve said flexible section from the strain of holding) the swinging section in proper position.

21. In combination, a dredge-boat, exhausting apparatus, and a swinging section of suction-pipe connected with said apparatus by a flexible section and provided with a universal joint constructed and arranged to relieve said flexible section from the strain of holding the swinging section.

22. In combination, a dredge-boat, pump, and a discharge-pipe having outside of said boat a section of said pipe mounted on a universal joint and provided with a flexible section D' to accommodate said joint.

23. In combination, a dredge-boat, non-rotating suction-pipe, and a hollow rotary excavating device with inward delivery through itself to said pipe, said excavator being arranged to swing in a lateral plane in front of and independently of a swing of the boat, with means for making said swing.

24. In combination, a dredge-boat, the ladder described, a non-rotating suction-pipe, a hollow rotary excavating implement that delivers its spoil inward through itself to said pipe.

25. In combination, a ladder, suction-pipe, and hollow rotary excavator with inward delivery through itself to said pipe.

26. In combination, a suction-pipe, ladder, and hollow rotary excavator with inward delivery through itself to said pipe, said excavator being provided with side cutting-edges and devices that effect a side feed.

27. In combination, a suction-pipe, ladder, and hollow excavator with side cutting edges, and devices that effect a side feed.

28. In combination, a dredge-boat provided with the ladder described, suction-pipe, and an excavating implement constructed to swing in vertical and lateral planes independently of said boat, with means for making said swing.

29. In combination, a dredge-boat, a ladder mounted to swing vertically and laterally on a crane, a suction-pipe supported by said ladder, an excavating implement connected by said pipe with a pump on the boat, said pipe being provided with a flexible section to accommodate the movements of the ladder and crane, means for raising and lowering the ladder, and means for swinging it and the crane.

30. In combination, a dredge-boat, a ladder mounted to swing vertically and laterally on a crane, a suction-pipe supported by said ladder, an excavator that delivers its spoil inward through itself to said pipe, by which it is connected with a pump on the boat, said pipe being provided with a flexible section to accommodate itself to the movements of the ladder and crane.

31. In combination, a dredge-boat, a ladder mounted to swing vertically on a crane, a suction-pipe supported by said ladder and connecting a rotary excavator with a pump on the boat, said pipe being provided with a flexible connection to accommodate the movements of the ladder and crane.

32. A dredge-boat, a swinging crane connected thereto, a jointed suction-pipe mounted to swing with said crane and carrying an excavator, a pump connected to said suction-pipe, and means for raising, lowering, and swinging said suction-pipe, all combined substantially as described.

33. In combination, a dredge-boat, a suction-pipe mounted to swing vertically and laterally on a swinging crane, a pump on the boat, connected with the suction-pipe, said pipe being provided with a flexible section D', that yields to its vertical and lateral movements, means for raising, lowering, and holding, and warping-lines connected with the outer end of said pipe and passing to winding-drums for laterally swinging said end.

34. In combination, a dredge-boat, a suction-pipe mounted to swing vertically on and laterally with a swinging crane, a rotary excavator connected by said pipe with a pump on the boat, said pipe being provided with a flexible section D' to accommodate its vertical and lateral movements, and means for making these movements.

35. In combination, a dredge-boat, a rotary excavator mounted on a suction-pipe constructed to swing in vertical and lateral planes on a stationary universal joint, a laterally-swinging device for supporting the outer end of said pipe, and means for swinging the pipe and its swinging support.

36. In combination, a dredge-boat, a suction-pipe mounted to swing vertically and laterally on a universal joint, said pipe being provided with a flexible section D' to accommodate these movements, a rotary excavator connected by said pipe with a pump on the boat, a motor that actuates said excavator and swings with it and the pipe, and means for laterally swinging the same.

37. In combination, a dredge-boat, a suction-pipe mounted to swing vertically and laterally on a universal joint, said pipe being provided with a flexible section B' to accommodate these movements, a hollow rotary excavator with inward delivery through itself, connected by said pipe with a pump on the boat, a motor for actuating said excavator, and means for giving to said pipe and excavator said vertical and lateral swings.

38. In combination, a dredge-boat, a suction-pipe arranged to swing vertically and laterally in front and independently of the boat, detachable tie-rods arranged to hold said pipe from swinging laterally independently of said boat, and means for laterally swinging the pipe and boat together.

39. In combination, a dredge-boat, a suction-pipe and rotary excavator mounted to swing vertically and laterally in front of said boat, detachable ties to prevent said pipe and excavator from swinging laterally independently of the boat, and means for swinging the whole together.

40. In combination, a dredge-boat, an excavating device mounted to swing in front of the boat, means for preventing said device from swinging laterally independently of said boat, and means for swinging said device with the boat, said means being also adapted at will to swing the pipe independently of the boat.

41. In combination, a dredge-boat, excavating device, and a cable passing from a winding device to a block or sheave near the outer end of the apparatus that supports said excavating device and thence to an anchor in position to give a side swing as the cable is drawn inboard.

42. In combination, a dredge-boat, excavating device, and a cable passing from a winding device to a block or sheave near the excavator or point of resistance, thence to an anchored block in position to give a side swing as the cable is drawn inboard, and from said anchored block to near the end of the apparatus on which said excavating device is mounted, where the end of said cable is made fast.

43. In combination, a dredge-boat, a suction-pipe, and excavating device mounted on the outer end of a rigid support I, hinged to a swinging device L to swing in vertical and lateral planes, means for raising, lowering, and holding the outer end of this support, and means for laterally swinging the same.

44. In combination, a dredge-boat, a swinging arm L', a suction-pipe, a rotary excavator mounted on the outer end of a rigid support I, hinged at its inner end to the swinging device L to swing in vertical and lateral planes, means for raising, lowering, and holding the outer end of this support, and means for laterally swinging the same.

45. In combination, a dredge-boat, a rotary excavating device, and non-rotating suction-pipe, said excavator being provided with a rigid support, said support being connected with the boat by a universal joint, and means for raising, lowering, and laterally swinging the outer end of said support.

46 In combination, a dredge-boat, a rotary excavator mounted on a non-rotating suction-pipe, said pipe being connected with the boat by a universal joint on which the pipe swings when at work, and means for raising, lowering, holding, and swinging the excavator and outer end of said pipe.

47. In combination, a dredge-boat, a rotary excavating device with inward delivery through itself, mounted on a non-rotating suction-pipe, said pipe being connected with the boat by a universal joint, and means for raising, lowering, holding, and swinging the outer end of said pipe.

48. In combination, a dredge-boat having a contained pivot or center of oscillation, a crane, a suction-pipe mounted on said crane and having a vertical and lateral swing, a pump on the boat connected with said pipe, this pipe being provided with a flexible section that yields to and permits said vertical and lateral movements.

49. In combination, a dredge-boat that carries a pivot or center of oscillation, a ladder that swings in a vertical plane and supports an excavating device, cables connected with said ladder, and means, in connection with said cables, for laterally swinging said boat on said pivot.

50. In combination, a dredge-boat that carries a pivot or center of oscillation, a ladder that swings in a vertical plane and supports an excavating device that works with a side feed, cables connected with said ladder, and means, in connection with said cables, for continuously swinging said boat from side to side on said pivot while said excavator is at work.

51. In combination, a dredge-boat, a swinging frame, and a floating spud carried by said frame for feeding the boat forward as the work progresses.

52. In combination, a dredge-boat, a swinging derrick provided with a vertical anchor, means for raising, lowering, and holding said anchor, and means for moving it along the arm of said derrick.

53. In combination, a dredge-boat, a derrick having a hollow post, through which passes a vertical anchor, and means for raising, lowering, and holding said anchor.

54. In combination, a suction-pipe mounted to swing in a vertical plane, a rotary excavator that delivers its spoil inward through itself to said pipe, and a motor that actuates said excavator and swings with it and the pipe.

55. In combination, a suction-pipe mounted to permit its outer end to swing in a vertical plane and in planes perpendicular to said vertical plane, said pipe being provided with a flexible section D' to accommodate these movements, a rotary excavator connected by said pipe with a pump on the boat, a motor which actuates said excavator, and means for vertically and laterally swinging the same.

56. In combination, a suction-pipe which swings in a vertical plane, a rotary excavator that delivers inward through itself to said pipe, and a motor that actuates the excavator and swings therewith.

57. In combination, a suction-pipe mounted on a dredge-boat to swing in a vertical plane, said boat having a contained center of oscillation, means for swinging said boat on said center, a rotary excavator in connection with said pipe, and a motor that actuates said excavator and swings with it and the pipe.

58. In combination, an exhausting apparatus, a suction-pipe connected with this apparatus and mounted to swing with the device L', a rotary excavator in connection with said pipe, and means for actuating said excavator.

59. In combination, an exhausting apparatus, a suction-pipe connected with this apparatus and mounted to swing on an arm, spar, jib, beam, or boom L', a rotary excavator connected with said pipe, and a hydraulic motor that actuates said excavator.

60. In combination, a swinging derrick or crane, a suction-pipe provided with a rotary excavator, means for actuating said excavator, means for raising, lowering, and holding it, and means for swinging it and the crane.

61. In combination, a derrick or crane, a suction-pipe provided with a rotary excavator that delivers its spoil inward through itself to said pipe, means for raising, lowering, and holding the excavator, means for rotating it, and means for swinging it and the crane.

62. In combination, a dredge-boat, pump, suction-pipe, hollow rotary excavator with inward delivery through itself, and a motor for actuating the excavator independently of the pump.

63. A swinging frame for dredging purposes, consisting of an upright open-centered post, an arm borne by said post, a frame or ladder pivoted to the post to swing in a vertical arc or plane, tackle connected to said arm to raise, lower, and hold the outer end of said ladder, and bearings constructed to hold the post in its upright position and permit the frame to swing in a lateral arc or plane.

64. In combination, a dredge-boat, a swinging crane with hinged support carried thereby, a suction-pipe connecting a pump on the boat with the excavator, at the end of the ladder, and having a flexible section to accommodate the vertical movement of the ladder and the lateral movement of the crane.

65. In combination, a dredge-boat, a swinging crane having the ladder, frame, or carrier of the excavating or dredging implement mounted thereon, a pipe having a universal joint in its length connecting the excavator with apparatus on the boat, so as to have movement in a vertical arc on the hinge of the carrier and in a lateral arc from side to side by the swing of the crane, winding-drum, and tackle connected with said drum and supporting the hinged carrier from the boom of the crane.

66. In combination, a dredge-boat, a swinging frame or ladder having adjustment in both vertical and lateral planes, a rotary excavator carried thereon, a suction-pipe extending from a pump on the dredge to the excavator, and provided with a joint or flexible section which permits said pipe to accommodate itself to the movements of the ladder or frame and to follow the same in the vertical and lateral planes, and a driving-shaft connected with actuating mechanism on the dredge, permitting movement and rotation of the excavator in unison with the movements of the ladder or frame.

67. In combination, an excavating implement, a swinging frame or excavator-carrier having adjustment in a vertical plane and a swinging movement in lateral planes, and a suction-pipe supported by the swinging carrier and having a flexible joint or section at the center of movement of the carrier.

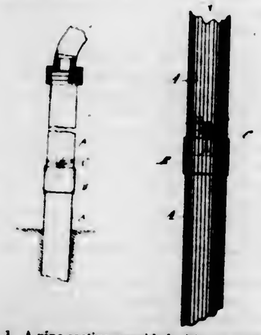
68. In combination, a dredge-boat, anchoring devices to hold said boat in position for working, a swinging frame having movement and adjustment in vertical and lateral planes, an excavator at the outer end thereof, and a suction-pipe connecting the suction-chamber of the excavator with a suction-pump below the water-line, whereby the suction space and passages are submerged when the pump is in operation.

69. In combination, an excavator that works with a side feed, a suction-pipe, and means to sever from the bank the material undercut by said excavator as it swings from side to side.

70. In combination, an excavator, suction-pipe, and the cutting-bar *l*, substantially as and for the purpose specified.

71. In combination, an excavator, suction-pipe, and the cutting bar and scale *l*.

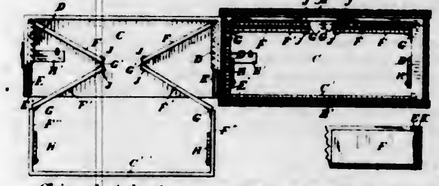
484,764. APPARATUS FOR BORING ARTESIAN WELLS. BENJAMIN W. BLAKE, New Orleans, La. Filed Oct. 24, 1891. Serial No. 409,686. (No model.)



Claim.—1. A pipe-section provided with a recess in the end edge and a groove extending for some distance along the exterior surface to carry off the water and excavated matter, substantially as specified.

2. A pipe-section having a recessed edge and a longitudinal groove, in combination with a second section having a coupling, the groove in the first section extending above the coupling, substantially as and for the purpose specified.

484,765. COMBINED FOLDING BED AND DRESSING-CASE. WILLIAM L. KIMBELL, Grand Rapids, Mich. Filed Sept. 21, 1891. Serial No. 406,242. (No model.)

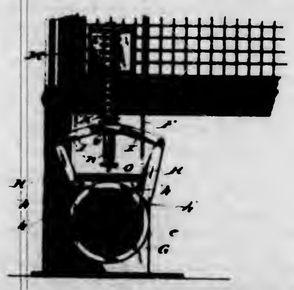


Claim.—1. A dressing-case or other similar article of furniture, in combination with an extensible bedstead received thereby, said bedstead comprising a tray C, having an open forward end, grooves in its bottom, and stripe projecting inward from the upper ends of its sides, said stripe having grooves in their under sides, said grooves having outturned ends, a detached front to said tray, and side rails hinged to the ends of said detached front and having on their inner ends pivot-pins engaging and adapted to travel in said grooves, and a bar adapted to engage said side rails at the hinged parts thereof and serving to crowd said hinges outward and the pivot-pins into the outturned ends of the grooves, substantially as described, and for the purposes specified.

2. A dressing-case or other similar article of furniture, in combination with an extensible bedstead received thereby, said bedstead comprising a tray having an open front and adapted to slide into and out of the dressing-case and to receive the other portions of the bedstead, said tray having grooves in its bottom and inwardly-projecting grooved strips, said grooves having outturned outer ends, a detached front to said tray, and the side rails made in sections F, F', and F'', said sections F'' being secured at their forward ends to the ends of said detached front, said sections F' hinged at their forward ends to said sections F'', and said sections F hinged at their forward ends to said sections F' and provided at their opposite ends with pins engaging and adapted to travel in the grooves in the bottom of the tray and under side of said strips, the hinges of the sections F' and F opening in opposite directions, transverse bars adapted to engage said side rails opposite said hinges, and pivoted legs for said bedstead.

3. A dressing-case or other similar article of furniture having the usual drawers B and a blind or stationary false drawer B' beneath said drawers B, in combination with a tray C, adapted to slide outward from behind said false drawer through the end of the dressing-case, said tray being of substantially the same size as a drawer and having an open front side, grooves in its bottom, and grooved strips projecting inward from its top, said grooves having outturned outer ends, the detached front to said tray, and folding sectional side rails connecting said front and tray, the inner section of each side rail having pivot-pins engaging the grooves in the under side of the inwardly-projecting strip and in the bottom of the tray and adapted to travel therein, and transverse bars adapted to engage said side rails and lock the same in open position.

484,766. ELEVATOR. WALTER J. ROCHFORD and ERNEST W. KUPFFER, Chicago, Ill. Filed Feb. 1, 1892. Serial No. 419,970. (No model.)



Claim.—1. In an elevator, the combination, with the shaft having doors, of a cable suspended in said shaft and connected to each of said doors, a weight secured to said cable, a power-controlling shaft, a drum on said power-controlling shaft, means for rotating said drum from the elevator-car, a brake for locking said drum against rotation, and a lever actuated by said weight for releasing said brake, substantially as set forth.

2. In an elevator, the combination, with the shaft having doors, of a cable suspended in said shaft and connected to each of said doors, a weight secured to said cable, the power-controlling shaft, a brake for locking said power-controlling shaft against rotation, means for actuating said power-controlling shaft from the elevator-car, and a compound lever for releasing said brake arranged in the line of movement of said weight, substantially as set forth.

3. In an elevator, the combination, with the elevator-shaft having doors, of a cable suspended in said shaft and connected to each of said doors, a weight secured to said cable, the power-controlling shaft, means for actuating said power-controlling shaft from the elevator-car, a brake for locking said power-controlling shaft against rotation, toggles for actuating said brake, a spring for actuating said toggles to hold the brake normally in engagement, and a compound lever for releasing said brake arranged in the line of movement of said weight, substantially as set forth.

4. In an elevator, the combination, with the elevator-shaft having doors, of a weight box, a cable suspended in said box and connected with each of said doors, a weight secured to said cable, the power-controlling shaft, a brake for locking said shaft against rotation, and a compound lever for releasing said brake and projecting through said weight-box in the line of movement of said weight, substantially as set forth.

5. In an elevator, the combination, with the elevator-shaft having doors, of a suspended cable, branch cables connecting said doors with said suspended cable, a weight secured to said suspended cable, the power controlling shaft, a brake for locking said shaft, and a lever for disengaging said brake arranged in the line of movement of said weight, substantially as set forth.

6. In an elevator, the combination, with the elevator-shaft having doors, of a suspended cable, branch cables connecting said first cable with said doors, pulleys over which said branch cables pass, a weight secured to said first cable, the power-controlling shaft, a brake for locking said shaft, and a lever for disengaging said brake arranged in the line of movement of said weight, substantially as set forth.

7. In an elevator, the combination, with the elevator shaft having doors, of a non-circular weight-box, a cable suspended in said box and being connected with each of said doors, a non-circular weight secured to said cable in said box, the power-controlling shaft, and a brake for locking said shaft adapted to be disengaged by the movement of said weight, substantially as set forth.

8. In an elevator, the combination, with the elevator-shaft having doors, of the box P, a cable suspended in said box, the hollow slotted frames S, lugs on said doors, projecting into said hollow frames S, branch cables connecting said lugs with said first cable, pulleys over which said branch cables pass, a weight secured to said first cable, the power-controlling shaft, and a brake for locking said shaft adapted to be disengaged by movement of said weight, substantially as set forth.

9. In an elevator, the combination, with the elevator-shaft having doors, of a weight for holding said doors closed, the power-controlling shaft, a drum on said shaft, the rope F, passing around said drum, brake-shoes arranged to impinge said drum, toggles for actuating said brake-shoes, a spring for forcing said toggles in one direction, and a compound lever for forcing said toggles in an opposite direction arranged in the line of movement of said weight, substantially as set forth.

10. In an elevator, the combination, with the power-controlling shaft having a drum thereon, of the pivoted brake-shoes H, having elongated arms arranged to impinge said drum, toggles connecting said arms, the fixed bracket L, the telescopic pin or shaft having one end secured to said bracket and its other end to said toggles, a spring sleeved on said telescopic shaft for forcing said brake-shoes into engagement, and means for disengaging said brake-shoes, substantially as set forth.

11. In an elevator, the combidation, with the elevator-shaft having doors, of a weight connected with said doors for closing them, an anti-friction-roller on said weight, means for preventing the rotation of said weight, a brake for preventing the movement of the elevator-car, and a lever for disengaging said brake and arranged to be impinged by said antifriction-roller, substantially as set forth.

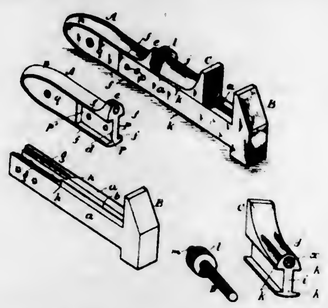
12. In an elevator, the combination, with a weight for closing the doors and a brake for preventing the movement of the elevator-car, of a pivoted lever O for disengaging said brake, the standard *t*, through which said lever passes, the lever T, pivoted in said standard *t* and resting upon the end of the lever O and being arranged in the line of movement of said weight, and a guide for said lever T, substantially as set forth.

13. In an elevator, the combination, with the elevator-shaft having doors, of a weighted cable suspended in said shaft, antifriction devices arranged between said cable and door, and a pulley secured to the door and adapted to engage the cable between said antifriction devices, substantially as set forth.

14. In an elevator, the combination, with the elevator-shaft having a door, of a weighted cable suspended in said shaft, antifriction-rollers journaled one above the other between said cable and door, a bracket or lug on said door projecting between said antifriction-rollers, and a pulley on said bracket or lug adapted to engage said cable, substantially as set forth.

REISSUES.

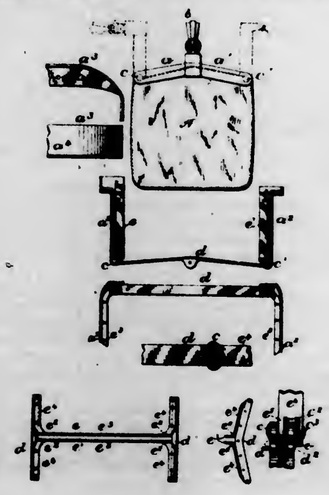
11,277. WRENCH. HENRY HARROUD, Ashbourne, Pa., assignor, by direct and mesne assignments, to J. H. Williams & Co., Brooklyn, N. Y. Filed July 18, 1892. Serial No. 440,419. Original No. 410,940, dated Sept. 3, 1889.



Claim.—1. The handle A, having the side rabbets *p* and the socketed lug *e*, combined with the jaw B, having the parallel bars *a*, provided in their edges with the grooves terminating in the shoulders *h*, as described, said bars fitting and secured by their outer end portions in said handle-rabbets, the sliding jaw having a longitudinal screw-socketed shank *x*, said shank being of H shape in cross-section and engaging and movable on said parallel jaw-bars, and an operating-screw engaging said sliding-jaw screw-socket, provided with the enlarged thumb-rim *l*, confined against endwise movement between said handle-lug and bar-shoulders and provided with the axial stud-bearing in the said handle-leg socket, substantially as described.

2. The combination, with a fixed jaw and two bars therewith connected, of a sliding jaw between the two bars, and a screw to actuate said sliding jaw, and a handle recessed at its sides for the ends of the two bars and to which said bars are connected, substantially as specified.

11,278. FRAME FOR TRAVELING-BAGS. WILLIAM ROSNER, Newark, N. J. Filed June 15, 1892. Serial No. 436,863. Original No. 378,630, dated Feb. 28, 1888.



Claim.—1. In a bag-frame, distending braces or bars ∩-shaped in cross-section, inlays hinged at the ends thereof, and outer sections riveted to said inlays, all parts being combined and arranged substantially as set forth and shown.

2. In a bag-frame, the combination, with the jaw-inlays thereof, of outer sections provided with a flange a^{10}, bent at or approximately at right angles to form the flange a^9, substantially as and for the purposes herein set forth.

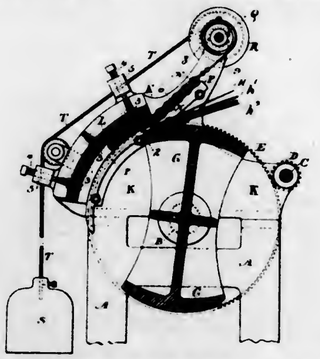
3. In a bag, the combination, with distending bars or braces ∩-shaped in cross-section and outer sections, of inlays hinged at their ends to said bars or braces and bent to form a considerably-elongated ⊓-shaped section, substantially as set forth.

4. In a bag-frame or bag, the combination of distending bars or braces adapted to be attached at the mouth of the bag-body with strap-like inlays consisting of parts c^3 c^4, of which parts the former c^3 are adapted to assume vertical positions in the frame and rest perpendicularly on the distending-bars and the parts c^4 closing down upon said distending-bars when the bag is closed, and with outer sections riveted to said parts c^3 c^4, of which outer sections those riveted to said parts c^4 are adapted to secure the body material of the bag to said inlay part c^4, so that the said body material will cover the hinges of the frame and will lie flat upon both inlay and outer section and parallel to distending-bars when the bag is closed, substantially as described.

5. In a bag or satchel, the combination, with the jaws *a a'*, of distending-bars ∩-shaped in cross-section, substantially as and for the purposes set forth.

6. In a bag-frame, the combination, with distending-bars and suitable outer sections, of inlays hinged to said distending-bars and bent or formed as at c^3 c^4 and again bent at said angles to cause the portions c^3 of said inlays to lie in planes at or approximately at right angles to the planes of the portions c^4 thereof, substantially as and for the purposes set forth.

11,279. MACHINE FOR BENDING ELECTROTYPE AND STEREOTYPE PLATES. WALTER SCOTT, Plainfield, N. J. Filed Dec. 3, 1890. Serial No. 373,996. Original No. 415,521, dated Nov. 26, 1889.



Claim.—1. The combination, with the cylinder or segment G, shaft B, and mechanism for rotating the same, of the plate H, of thin sheet metal, attached at one edge to the cylinder or segment, the stationary concave L, and the belt of bending-rolls N, having links O, that connect such rollers together to form the belt, substantially as set forth.

2. The combination, with the cylinder or segment G, shaft B, and mechanism for partially rotating such cylinder or segment, of the concave L, the frame of the machine, the bolts 3, passing through slotted holes in the frame, and the set-screws 4 for attaching and holding the concave, the range of rolls N, links O for connecting the same together to form a belt, the shaft Q, pulleys 8, and straps 9, connected to the links O, and the counter-weight S, rope T, and rope-wheel R, substantially as set forth.

3. The combination, with the bending cylinder or segment G, shaft B, and frame for supporting the same, of the stationary concave L, the plate H, and cross-bar 2, connected to the bending cylinder or segment, a range of rolls N, connected together by the links O to form a belt between the concave L and the plate H, and the switch-bars P, connected to the frame of the machine and serving to hold the belt of rolls away from the bending-cylinder when the parts are in position for receiving the straight plate to be bent, substantially as set forth.

4. The combination, with a bending-cylinder, of a concave partially around the same and a series of rolls rolling upon the inner surface of the concave and acting upon a plate of metal or other material to bend the same against the cylinder, substantially as specified.

5. The combination, with a bending-cylinder and a covering-sheet of metal, of a concave at one side of the bending-cylinder and a train of rolls rolling upon the inner surface of the concave and against the covering sheet, whereby a plate is bent by the rolls and against the cylinder and protected by the sheet, substantially as specified.

6. The combination, with a bending-cylinder, of a sheet-metal plate and card-board or similar material between the plate to be bent and the bending-plate, a train of rolls, and a concave against which the rolls move, whereby a plate introduced between the card-board and cylinder is bent against such cylinder, substantially as specified.

7. The combination, with the bending-cylinder and a belt or range of rollers, of the concave having a rounded edge where the rollers enter, so that the bending operation is gradual, substantially as set forth.

8. The combination, with the bending-segment having a cylindrical surface and the concave, of a sheet of metal attached at one edge to the cylinder and a sheet of card-board or similar material between the stereotype or electrotype to be bent and the sheet of metal, substantially as specified.

9. The combination, with the concave and the bending-segment and mechanism for partially revolving the cylinder, of screws to vary the position of the concave to the bending-cylinder, as set forth.

10. The combination, with the bending-cylinder, of a concave partially around the same and a series of rolls rolling upon the inner surface of the concave and acting upon a plate of metal or other material to bend the same against the cylinder and screws for adjusting the position of the concave, substantially as specified.

11. In a machine for bending electrotype or similar plates, the combination of a normally-flat resilient plate adapted to resist a bending action, means for applying a bending pressure to the back of the electrotype, and means, substantially as described, for bending the plate against the face of the electrotype.

12. In a machine for bending electrotype or similar plates, the combination of a normally-flat resilient plate adapted to resist a bending action, means for applying a bending pressure to the back of the electrotype, and means, substantially as described, for bending the plate against the face of the electrotype and an intermediate sheet of paper or similar non-metallic material.

13. In a machine for bending printing-plates, the combination of means for subjecting the back of the type-plate to the pressure of a continuous curved surface with means for simultaneously guiding and supporting the face of the said plate against a resistance of gradually-changing curvature, whereby the plate is bent into the required form for the printing-cylinder, substantially as described.

DESIGNS.

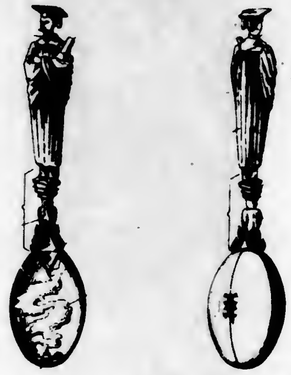
21,898. BADGE. HENRY F. G. FUCHS, Jersey City, N. J. Filed Mar. 31, 1892. Serial No. 427,283. Term of patent 7 years.

Claim.—The design for the badge, substantially as herein shown and described.

21,899. BADGE. EDWIN L. MILLER, Scranton, Pa. Filed Aug. 25, 1892. Serial No. 444,114. Term of patent 14 years.

Claim.—The design for a badge, substantially as shown and described.

21,900. SPOON. THEODORE C. COMBES, Philadelphia, Pa. Filed June 24, 1892. Serial No. 437,915. Term of patent 7 years.

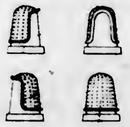


Claim.—1. In the design for a spoon, the obverse, as shown and described.

2. In the design for a spoon, the reverse, as shown and described.

3. The design for a spoon, substantially as described and shown.

21,901. THIMBLE. WILLIAM A. WOOD, Montreal, Canada. Filed June 14, 1892. Serial No. 436,720½. Term of patent 7 years.

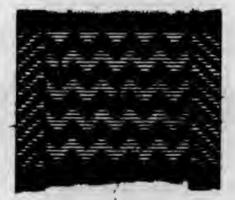


Claim.—The design for a sewing-thimble, substantially as shown and described.

21,902. CUFF-BUTTON. JULIUS A. BIDWELL, Pomona, Cal. Filed Aug. 16, 1892. Serial No. 443,266. Term of patent 7 years.

Claim.—The design for a button, substantially as herein shown and described.

21,903. TAPE. GEORGE H. STEBBE, Wickford, R. I. Filed Aug. 13, 1892. Serial No. 443,040. Term of patent 7 years.



Claim.—The design for tape, substantially as herein shown and described.

21,904. RUG. THOMAS L. LAWTON, Philadelphia, Pa., assignor to the Burlington Carpet Company, of New Jersey. Filed Sept. 23, 1892. Serial No. 446,734. Term of patent 3½ years.

21,904.

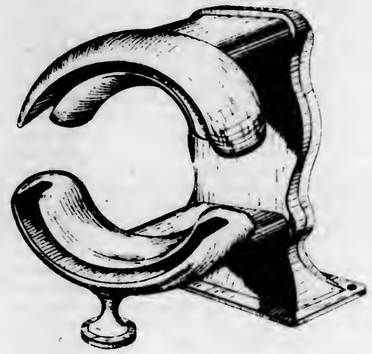
Claim.—The design for rugs consisting of the design substantially as shown.

21,905. RUG. THOMAS L. LAWTON, Philadelphia, Pa., assignor to the Burlington Carpet Company, of New Jersey. Filed Sept. 23, 1892. Serial No. 446,735. Term of patent 3½ years.

Claim.—The design for rugs, consisting of the design substantially as shown.

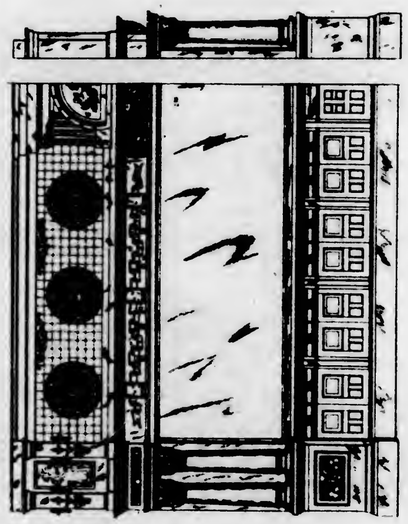
21,906. FRAME FOR ELECTRIC DYNAMOS. GEORGE B. FRALEY, San Francisco, Cal. Filed Aug. 16, 1892. Serial No. 443,267. Term of patent 3½ years.

21,906.



Claim.—The design for the frame of an electric dynamo, substantially as herein described.

21,907. WALL-FIXTURE FOR COUNTERS. WILLIAM C. HUSS, Cincinnati, Ohio. Filed Sept. 21, 1892. Serial No. 446,477. Term of patent 3½ years.



Claim.—The design for a wall-fixture for counters, substantially as herein shown and described.

TRADE-MARKS

REGISTERED OCTOBER 18, 1892.

21,866. ANIMAL-SHOES. BOYDEN HORSE SHOE COMPANY, Catasauqua, Pa. Filed Aug. 27, 1892.

BOSS

Essential feature.—The word "BOSS." Used since August 1, 1889.

21,867. ALE. SAMUEL P. BURNS, New York, N. Y. Filed Aug. 27, 1892.

OLDE ENGLYSHE

Essential feature.—The words "OLDE ENGLYSHE." Used since September 8, 1890.

21,868. IMPRESSION-PAPER. HENRY C. DAVISON, New York, N. Y. Filed Sept. 2, 1892.

IMPERIAL FIBRE

Essential feature.—The words "IMPERIAL FIBRE." Used since January, 1892.

21,869. DRIED CURRANTS. WILLIAM H. DOBLE, Quincy, Mass. Filed Aug. 8, 1892.

ROYAL

CLEANED

Essential feature.—The words "ROYAL CLEANED" and the representation of a series of crowns in a curved line. Used since January 1, 1892.

21,870. ORNAMENTAL WATCH AND NECK CHAINS. OSCAR M. DRAPER, North Attleborough, Mass. Filed June 18, 1892.

NONPAREIL

Essential feature.—The word "NONPAREIL." Used since May 1, 1892.

21,871. FLOUR. SHIPTON GREEN, New York, N. Y. Filed July 23, 1892.

MINHO

Essential feature.—The word "MINHO." Used since July 11, 1892.

21,872. FLOUR. SHIPTON GREEN, New York, N. Y. Filed July 23, 1892.

DOURO

Essential feature.—The word "DOURO." Used since July 11, 1892.

21,873. BICYCLES, VELOCIPEDES, AND ACCESSORY ARTICLES. THE MCINTOSH-HUNTINGTON COMPANY, Cleveland, Ohio. Filed Sept. 17, 1892.

Essential feature.—The representation of a horse, and the words "NANCY HANKS." Used since August 20, 1892.

21,874. CHEWING-GUM. RUBBER PAINT COMPANY, Chicago, Ill. Filed Aug. 20, 1892.

FORBIDDEN FRUIT

Essential feature.—The words "FORBIDDEN FRUIT." Used since August 1, 1892.

21,875. WHEAT-FLOUR. WILLIAM H. STOKES, Watertown, S. D. Filed Aug. 23, 1892.

GARLAND

Essential feature.—The word "GARLAND." Used since December 1, 1882.

21,876. TIN-PLATE, TERNE-PLATE, AND SHEET METAL, COATED AND UNCOATED. H. & G. TAYLOR CO., Philadelphia, Pa. Filed Sept. 13, 1892.

BRILLIANT

Essential feature.—The word "BRILLIANT." Used since May 1, 1891.

21,877. TIN-PLATE, TERNE-PLATE, AND SHEET METAL, COATED AND UNCOATED. H. & G. TAYLOR CO., Philadelphia, Pa. Filed Sept. 13, 1892.

ROYAL

Essential feature.—The word "Royal." Used since May 1, 1891.

21,878. PROPRIETARY MEDICINE FOR THE CURE OF RHEUMATISM, DYSPEPSIA, AND DISEASES OF THE BLOOD. Maynard D. Brown, Glasgow, Scotland. Filed July 9, 1892.

HALL'S INFALLIBLE SCOTCH CURE

Essential feature.—The words "Hall's Infallible, Scotch Cure" Used since January 1, 1892.

21,879. LIQUID-PIGMENT FILLER. David B. Crockett Company, Bridgeport, Conn., and New York, N. Y. Filed June 20, 1892.

Essential feature.—The letters "L. P. F." Used since February 15, 1892.

21,880. MONTHLY FASHION PAPER OR MAGAZINE. Domestic Sewing Machine Company, New York, N. Y. Filed Sept. 12, 1892.

STYLE

Essential feature.—The word "Style." Used since 1880.

21,881. LAGER-BEER. Eberhardt & Ober Brewing Company, Allegheny, Pa. Filed June 10, 1892.

Essential feature.—The representation of a circular disk bearing upon its face the figure of an eagle seated upon an anchor resting among barley and hop vines, the remainder of the upper half of said disk being filled with lines converging toward the center of said disk. Used since September 1, 1892.

21,882. DENTAL RUBBER. Excelsior Rubber Works, New York, N. Y. Filed Sept. 13, 1892.

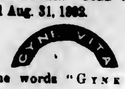
Ideal

Essential feature.—The word "Ideal." Used since February 15, 1892.

21,883. MEN'S HATS. Goodbar, White, Branch & Co., St. Louis, Mo. Filed Sept. 12, 1892.

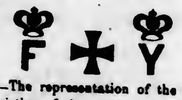
Essential feature.—The representation of a beaver and the word "Beaver." Used since May, 1885.

21,884. MEDICINES FOR THE LOCAL TREATMENT OF DISEASES PECULIAR TO WOMEN. Gyne Vita Manufacturing Co., Philadelphia, Pa. Filed Aug. 31, 1892.



Essential feature.—The words "Gyne Vita." Used since April 1, 1892.

21,885. FINGER-RINGS. Frank H. Osborne, New York, N. Y. Filed Sept. 12, 1892.



Essential feature.—The representation of the insignia of Ferdinand and Isabella, consisting of the capital letters "F" and "Y," a heraldic cross arranged between them, and crowns surmounting the letters. Used since September 1, 1892.

21,886. GRAHAM FLOUR. Fred. T. Stimson, Ann Arbor, Mich. Filed June 29, 1892.

Essential feature.—The representation of the "Golden Gate," or the entrance to San Francisco harbor or bay, representing the fort as seen from the background when looking across the channel. Used since May 30, 1892.

THE NORRIS PETERS CO.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

Hunter v. Knight.

Decided October 10, 1892.

Practice—Motion to Vacate an Interference Judgment—Remissness of Applicant.

On a motion to vacate a judgment rendered in an interference, based upon a misunderstanding as to what applications were included, and where it appears that the Office action was clear and unequivocal, *Held* the Office will not interfere to cure mere remissness and inadvertence of an applicant, and the motion denied.

Appeal on motion.

Electric Railway.

Applications of R. M. Hunter, No. 290,302, filed November 8, 1888, and No. 171,625, filed July 14, 1885. Application of W. H. Knight, filed May 11, 1885, No. 165,102,

Mr. R. M. Hunter pro se.

Messrs. Bentley & Knight for Knight.

Simonds, *Commissioner:*

This is an appeal from the decision of the Examiner of Interferences denying a motion brought by Hunter for a vacation of the judgment rendered February 27, 1891, so far as it affected his application, No. 290,302, filed November 8, 1888.

It appears that the interference as originally declared included only an application of Knight, No. 165,102 and the application of Hunter referred to above. On June 19, 1889, the Primary Examiner requested a suspension of the interference for the purpose of adding—

a prior application of one of the parties to the interference,

and on June 28, 1889, the following notice was forwarded by the Primary Examiner to the Examiner of Interferences:

The application of Rudolph M. Hunter, No. 926 Walnut street, Philadelphia, Pa., for electric railway, filed July 14, 1885, No. 171,625, is hereby added to the interference *Hunter* v. *Knight*, declared May 23, 1889, (Interference "F," No. 13,560.) This application claims the issues as claims 22 and 23.

Notwithstanding the addition of this earlier application Hunter still remained the junior party, and as he failed to take testimony the question of priority was decided in favor of Knight February 27, 1891. The limit of appeal expired March 21, 1891. The present motion was filed August 2, 1892.

Hunter alleges that—

it was not understood by him that the Interference No. 13,560 was prosecuted with the understanding that his application of November 8, 1888, was included, or he would have made a motion similar to the one which was granted in the contemporaneous interference, No. 13,559, for a dissolution of the interference as to his said application.

He presents as a reason for his impression respecting the particular application, included in the interference that in redeclaring or reinstating the interference the Primary Examiner—

did not include the overhead-trolley application of 1888 of said Hunter directly in his declaration of interference.

Reference to a decision by the Commissioner denying a motion to dissolve brought in behalf of Knight, rendered April 8, 1890, is pertinent in this connection. No one could retain the impression that the 1888 application was excluded from the interference after reading that decision, even though such an impression previously existed.

The Examiner of Interferences denied the present motion for the following reason:

If Hunter had such an impression or understanding in regard to the case, he alone is responsible for it. The action of the Office in redeclaring the interference was clear and explicit, and a mistake by him as to its purport and meaning would seem to be due to lack of care and attention on his part. The Office should not, at this late date, reopen the case to permit him to correct his own error, if error there be.

The conclusion reached by the Examiner of Interferences is held to be correct. This Office is overburdened with work and is in no condition to cure the mere remissness and inadvertence of applicants.

The decision of the Examiner of Interferences is affirmed.

Ex parte Williams.

Decided October 8, 1892.

Practice—Functional Claim—Course of Appeal.

The question whether or not a claim for a so-called "process" is a claim for the function of a particular machine is one relating to the merits. The Examiner's action in such a case should take the form of a *rejection*, and appeal therefrom will lie to the Examiners-in-Chief. (Citing *ex parte McClellan*, 59 O. G., 1763.)

On petition.

Method of Operating Diamond-Stone-Sawing Machines.

Application of George N. Williams, Jr., filed March 7, 1892, No. 423,978.

Mr. Henry Connett for the applicant.

Frothingham, *Assistant Commissioner.*

This is a petition taken from the action of the Examiner, as hereinafter set forth.

The application as originally filed contained three so-called "method" claims. These claims were objected to by the Examiner in the following language in his letter of April 19, 1892:

The operation performed is purely a mechanical one, as much so as any of the operations given as instances of processes, improperly so-called, in *Corning* v. *Burden*, (U. S. S. C., 15 Howard, 252.) The functions of the parts are purely mechanical, and the

"result" is that of a mechanical combination, which all of the claims necessarily outline more or less distinctly. Applicant therefore in claiming methods appears to have placed his invention under the wrong category, although apparently entitled to broad mechanical claims, so far as the search made in the prior art shows. It is therefore suggested that the applicant substitute claims for mechanical combinations, omitting such accidents of construction as are not necessary to the practice of his invention.

In response to this action by the Examiner the applicant canceled the original claims and inserted in place thereof three so-called "method" claims and a claim for a mechanical combination. The Examiner in his letter of May 24, 1892, objected to the three method claims in the following language:

In the Examiner's opinion the so-called "improvement" in the art covered by the first three claims is unmistakably the "result," use, or function of a mechanical combination distinctly defined in each of said claims. * * *

Every one of the limitations of claims 1, 2, and 3 simply represents the function of a mechanical element of a combination directed to the single end of sawing stone The Examiner must therefore adhere to his former views that the invention resides in the *machine* and not in the method, which would cover any and every mechanical means for obtaining the result. (*O'Reilly v. Morse*, 15 Howard, 253.)

Thereupon the applicant, on August 20, 1892, filed an appeal to the Examiners-in-Chief.

On August 26, 1892, the Examiner wrote as follows:

In the proposed appeal, filed August 20, 1892, applicant has mistaken his remedy, an objection holding that claims are functional not being a rejection, and therefore not appealable to the Board of Examiners in Chief. (*Ex parte Barrett*, 45 O. G., 125.)

The case should be taken to the honorable Commissioner on petition.

Thereupon the applicant abandoned his appeal to the Examiners-in-Chief and filed the present petition, requesting—

that the Examiner be instructed that the claims in controversy are legitimate method claims.

In the case of *ex parte McClellan* (59 O. G. 1763) the present Commissioner stated as follows:

Under the well-settled practice of the Office an objection that a claim covers nothing but the function of a machine involves the merits, from which appeal lies to the Board.

The following cases also indicate that the question whether or not a so-called "method" is merely the function of a machine is a question relating to the merits of the case. (See *ex parte Young*, 46 O. G., 1635; *ex parte Jaeger*, 46 O. G., 1637, and *ex parte Kerr*, 53 O. G., 919.)

In view of the above decisions, it is clear that the *objection* of the Examiner should be made a *rejection*. The Examiner should also recite to the applicant all other reasons, if any exist, for rejecting the claims, in order that one appeal may carry the whole case forward to the appellate tribunals.

The petition is dismissed and the case is remanded to the Primary Examiner for action in conformity herewith.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Northern District of Ohio, Eastern Division.

CANTON STEEL ROOFING COMPANY *v.* KANNEBERG *et al.*

Decided May, 1892.

1. PATENT—INFRINGEMENT—SHEET-METAL ROOFING.
Letters Patent No. 188,079, issued March 6, 1877, to Henry W. Smith, for improvement in sheet-metal roofing, sustained and held infringed by Kanneberg's patent, No. 403,844, issued May 21, 1889.

2. SAME—PARTIES COMPLAINANT NEED NOT INCLUDE HOLDERS OF TERRITORIAL RIGHTS.
The holder of a specified territorial right in a patent, either as licensee or assignee, is not a necessary party complainant to a suit for infringement outside his own territory.

3. SAME—BILL QUIA TIMET.
The right to an injunction rests on anticipated and threatened infringements, and where a bill avers reasonable ground for fearing such future infringements a failure to show prior infringements is unimportant except on question of damages.

BILL by the Canton Steel Roofing Company against Alvin C. and William Kanneberg, doing business as the Kanneberg Roofing Company, to restrain infringement and for an accounting as to Letters Patent No. 188,079, issued March 6, 1877, to Henry W. Smith, for an improvement in sheet-metal roofing. Decree for complainant.

Mr. Bond and *Mr. M. D. Leggett* for the complainant.

Mr. Charles R. Miller and *Messrs. Sherman, Hoyt & Dustin* for the defendants.

Before TAFT and RICKS, Judges.

TAFT, *J.*:

This is a bill in equity to enjoin the alleged infringement of a patent for an improvement in sheet-metal roofing. The defenses raised by the answer and on the proofs are: first, that complainant has not title to the patent relied on; second, that no manufacture of the alleged infringement by the respondents occurred previous to the filing of the bill; third, that the patented device relied on by complainant has no novelty; fourth, that the improvement in sheet-metal roofing manufactured by respondents since the filing of the bill is not an infringement of the patent sued on, but is a new and different device, itself protected by a patent.

Of these defenses in their order:

1. The bill avers that the patented device relied on was invented by one Henry W. Smith, and that from Smith, by mesne assignments duly recorded, the title to it became vested in the complainant. The answer denies the title. On page 7 of complainant's record is this stipulation:

It is stipulated by counsel for the parties that the above-mentioned Letters Patent is owned by the complainant, except the county of Knox, State of Ohio.

It is argued by respondents' counsel that this does not show a sufficient title in complainant to maintain its bill. We cannot agree with the contention. Even if the stipulation be taken to mean that complainant or one of its predecessors in the title to the patent conveyed not merely a license, but the entire and exclusive right to the monopoly in the county of Knox, so that it was *pro tanto* a complete assignment, there remains in the complainant full title to the patent, with that exception. (*Gayler* v. *Wilder*, 10 How., 494.) The exception is simply a failure of title so far as infringements in Knox county, Ohio, are concerned, and cannot destroy complainant's right to enjoin infringements everywhere else. Nor is the assignee for Knox county a necessary party. He and the complainant are not joint owners nor owners in common. Their interests in the patent are distinct and separable.

2. The second defense has no more merit than the first. The bill alleges that respondents made sundry specimens of sheet-metal roofing containing complainant's device, and that they have made large amounts thereof; and, further, that it fears, and has reason to fear, that unless the respondents are restrained by a writ of injunction they will continue to make and

vend large amounts of said metal roofing, and thereby will cause irreparable injury to complainant's rights. The infringement is denied by the answer. The agreement of counsel as to respondents' manufacture was as follows:

It is also stipulated and agreed that Exhibit A represents the different parts of the roof now manufactured by respondents before the seam is formed; that Exhibit B represents the different parts of the roof and their relation to each other when the first fold or hem is formed, and that Exhibit C represents the seam of the roof, together with its different parts, properly formed. It is also stipulated and agreed that the respondents had distributed samples like this Exhibit D now produced, and had solicited orders, but had not, in fact, completed any roof prior to the filing of the bill in this cause, but have since made roofs like Exhibits A, B, and C

It is said that even conceding that sample Exhibit D was a sample of a roof which when made would be an infringement of complainant's patent roof, and that A, B, and C, made after the filing of the bill, were such infringements, nevertheless the manufacture of a mere sample was not an infringement, and, no such roofs having been made before the filing of the bill, the averment of the bill is not sustained as to infringements, and it must be dismissed and a new bill filed. The bill prays: first, for an injunction; second, an accounting for profits and damages, and, third, general relief. The right to an injunction rests, not on past infringements, but on anticipated and threatened infringements. The bill avers reasonable ground for fearing such future infringements, and the stipulation fully sustains the averment. A failure to show infringements prior to the filing of the bill is unimportant in its effect upon complainant's rights, except upon the question of damages. The right to recover damages for infringements between the filing of the bill and the final injunction is incidental to the right to an injunction and is required to make the remedy complete. The view we take of the bill and the sufficiency of the proof upon the point mooted is fully sustained by Judge Jackson's opinion in *Page Woven Wire Fence Co.* v. *Land*, (49 Fed. Rep., 936.) The bill is a bill *quia timet*, and does not depend upon actual damage, but on anticipated injury to the right sought to be protected.

3. It is said the device of the complainant's patent has no novelty. The device is for making a watertight joint between the successive metal sheets to constitute the roof and for securing them firmly to the roof-boards. This is done with the aid of a small rectangular piece of the sheet metal called the "anchor," which is bent so that its two parts make a right angle. One part, or the base, is nailed to the roof-board, giving the other a vertical position. Flanges are turned on the sheets to be jointed, so that when the sheets are laid upon the roof flange to flange with the vertical part of the anchor inserted between the flanges the top line of one flange shall be higher than the anchor and that of the other flange shall be lower. Thus laid, one of the sheets will cover the base of the anchor and its securing-nails. The vertical part of the anchor is split centrally from its top line down to a point opposite the top line of the lower flange. One of the divisions of the anchor thus made is folded completely over the lower flange, while the higher flange, running up above the other half of the anchor, is folded over that half. The fold or hem of the anchor over the lower flange holds the flange and the sheet of which it is a part to the roof. The fold or hem of the higher flange, however, is folded over the anchor, and is, of course, not held down thereby, for any upward pressure on the sheet would lift the hem off the anchor. To secure the sheet with the higher flange to the roof, one more fold is necessary. The higher flange, with the part of the anchor which it embraces in its fold or hem, is bent or folded over the other half of the anchor and the lower flange. This turn reverses the relative positions of the first hem of the higher flange and the anchor end it embraces, so that now the hem opens upward and the anchor end is turned downward into the hem, thereby holding the hem, flange, and sheet to the roof. The second turn of the higher flange does not bend or change the positions of the lower flange and the half of the anchor folded over it. Thus both sheets are secured to the roof, the nails of the anchor are concealed, and the six or seven thicknesses of the metal folded together prevent all longitudinal motion, except enough to allow for expansion and contraction without breaking the joint.

The claim of the complainant in the patent sued on (No. 188,079, dated March 6, 1877) is as follows:

In sheet-metal roofs, the sheets A, having flanges *a b* of unequal width, and the wider turned at *c*, in combination with anchor *d*, having divisions *e f*, the one, *e*, bent over flange *b*, and the other, *f*, bent with flange *a* over flange *b*, substantially as and for the purpose specified

The claim is for a new combination of parts which were all old at the time of the patent. Split anchors like those here described had been used before. Flanges of unequal width, turned on the sheets like these, had been used in connection with a split anchor before. The question is whether the present combination had ever been used before. There are three patents only which need to be examined in this connection. The first is the Boesch patent, No. 2,850, dated November 12, 1842. In this patent the anchor was not split. The flanges were of unequal width, one wider and one narrower than the anchor. The anchor was folded over the narrower or lower flange and the wider or higher flange was folded over these two, and then the whole joint—*i. e.*, both flanges and the anchor—are folded over again. This made eight thicknesses of metal in the joint. The higher flange was folded twice, the anchor was folded twice, and the lower flange was folded once. In complainant's patent the thicknesses of metal in the joint are six, or, at the most, seven. The higher flange is folded twice, the anchor is folded once, and the lower flange not at all. It is not necessary to point out that the formation of the joint in complainant's patent is much less clumsy than that in Boesch's patent. In Boesch's patent the final fold was of all the material in the joint, while in the complainant's patent it is of one leg of the anchor and the higher flange. The difference in the force required for the one and the other must be very marked. The strain on the metal in the Boesch patent in the more frequent folds must be greater than in complainant's patent, and its effect can only be avoided, it would seem, by making the flanges and the anchor higher, and thus using more metal. I am quite clear that, while there is some similarity between the two patents, the patent of the complainant is simpler, more

useful, than the Boesch patent, and involves a different combination of the elements.

The next patent is that of Trissler and Stewart, No. 15,988, dated October 28, 1856. In this patent the edge of one sheet is formed into a scroll. A solid anchor, with a similar scroll, is inserted into the scroll of the sheet and nailed down. The next sheet has its edge slightly turned twice in oblique angles to itself, so as to permit its insertion under the scrolls of the other sheet and the anchor and its resting against the inside top of the scroll of the anchor. The joint thus made is an open, or, rather, a tubular, one. This joint has given us more trouble than any other on the claim of anticipation. In a certain sense the anchor exerts its holding-down power on the two sheets in the same way as in the complainant's patent. It operates by one fold directly on the lower sheet and by what is perhaps equivalent to two folds on the other. It is not, however, a closely-locked joint like complainant's; it has not the bifurcated anchor. Nor could it be made a closely-locked joint like complainant's by simply compressing the scrolls into a flat fold. The bifurcation of the anchor seems necessary to accomplish the same operation of the anchor on both sheets in a flat joint. We are of opinion, therefore, that the combination in the Trissler and Stewart patent is not an anticipation of complainant's combination. The construction and form are both quite different and the resulting joint is not the same.

The only other patent which it seems necessary to comment on is the Diehl patent, (No. 99,656, dated February 8, 1870.) In this device the flanges of the adjoining sheets are of unequal width and the anchor is a split anchor. When in position, however, the anchor in one leg is higher than the wider flange and in the other leg is higher than the lower flange. The higher leg is folded over the higher flange and the lower leg over the lower flange. The higher leg and flange are then folded over the lower leg and flange. This does not secure the higher flange and sheet to the roof, for it can be lifted out of the embrace of the higher leg. It is necessary, therefore, to turn the whole joint over on itself once. This makes a joint of eight thicknesses of metal, to produce which the anchor is folded three times, the higher flange twice, and the lower flange once, or six folds in all. The only difference between this joint and the complainant's is that the higher leg of the anchor is long enough to be folded over the higher flange, while in the complainant's joint it is shorter and the higher flange is folded over it. This seems a small difference; but the result is that the complainant does not turn the whole joint over at all, makes only six, or at most seven, thicknesses of metal in the joint, while the folds of metal are only three instead of six. This is a wide difference so far as concerns danger of breaking or straining the metal, ease of manipulation in making the folds, and simplicity in the resulting joint. The resulting combination in complainant's device is certainly very different from that of the Diehl patent, although the difference begins in so slight a change. Nor can it be said that the turning of the higher flange over the anchor, instead of the reverse, is a change of the combination of parts in the Diehl patent which does not involve patentable invention. The discovery or perception that a slight change in a known combination will produce a wide and valuable difference in results necessarily involves the inventive faculty, which it was the object of the patent laws to encourage.

On the whole, then, we think that complainant's combination patent is not void for want of novelty or patentable invention. It has been in general and successful use for more than ten years, which tends to show its value as an invention.

4. We come now to the question of infringement. The defendants were employés of the complainant and were entirely familiar with the complainant's device and its operation. The defendants' patent was No. 403,844, dated May 21, 1889. The claim for the patent is as follows:

> In devices for securing sheet-metal roofing in position, the combination, with two adjacent upturned flanges of the sheets of metal of different heights, of an anchoring-piece secured at one end to the roof and projecting up between the said adjacent flanges of the sheets of metal, the anchoring piece having a tongue partially severed therefrom, the base of the tongue being located at the upper edge of the lowermost of the two upturned flanges, the top of the anchoring-piece being embraced by a folded over edge of the higher of the two upturned flanges, and the opening formed in the anchoring-piece by the partial severing of the tongue therefrom being free to receive the tongue of the finished seam, substantially as set forth.

The sole difference between this device and the complainant's is in the anchor. The unequal flanges and the anchor higher than one flange and lower than the other are folded in the same way and the same joint is made. The anchor is bifurcated in both cases. In defendants' one leg is punched out of the middle of the vertical piece, while in complainant's it is cut out of the side. The two parts of the anchor in holding down the two sheets by their flanges perform exactly the same functions in exactly the same way. It is said that defendants' form of anchor makes the joint but six thicknesses of metal, while in complainant's device there are seven. This is an error. If the legs of the anchor of the complainant's patent were of equal length from the point of splitting, undoubtedly the leg folding over the lower flange would not in the completed joint resume its place in the same plane with the other leg, enfolded by the higher flange, for the lip of the higher flange would prevent. This would make seven thicknesses of metal. But in the drawings which accompany the complainant's specifications it is perfectly evident that the legs of the anchor when inserted in the joint are of unequal length, so as to permit the leg enfolding the lower flange to be pressed under the lip of the higher flange and to take its position in the same plane as that of the other leg, making the thicknesses of the metal only six. The separate figure of the anchor in complainant's drawings does not show the difference in length of the legs of the anchor; but the other figures showing the combination do, and the evidence is that the model did. Moreover, it is indisputable that for twelve years complainant has been making its anchor with legs of different lengths to attain the very result which defendants claim as the ground for a patentable difference between their device and that of the complainant's. It is true that complainant has made its anchors both ways, and does still, which would show that the difference is not material. But if there is

any value in this feature it was known and used long before defendants patented it, and cannot now make the difference between the two combinations which shall prevent infringement. It is further urged that the tongue form of bifurcation permits the whole width of the anchor to be applied to holding down the hem of the wider flange, while in the split form only one-half of the anchor is so applied. In practical operation it will probably be found that in the split form of anchor the parts of the joint will be so pressed together that the shorter leg of the anchor would press down on the lip of the higher flange, and thus that the whole width of the anchor would be applied to holding down the fold of the higher flange. However this may be, the difference in operation, if any, is simply one of degree, which might have been compassed in the split form of anchor by widening the anchor used. Moreover, this change, if it be one, does not remedy any known defect in the complainant's device. In the use of the latter there never has been any complaint that the holding-down strength of the split anchor was not ample for all purposes. In our opinion, therefore, the defendants' device is, in effect, the same combination as that patented to the complainant's assignor. The variations are produced by merely slight changes in form without any real difference in function or operation or result.

The decree will be for a perpetual injunction, and as it is in evidence that actual infringements have taken place since the filing of the bill there will be a reference to a master to take evidence and report on the damages to complainant.

U. S. Circuit Court—Eastern District of Missouri, Eastern Division.

H. TIBBE & SON MANUFACTURING COMPANY *v.* LAMPARTER.

Decided September 5, 1892.

1. PATENT—INFRINGEMENT—CORN-COB PIPE.
   Letters Patent No. 205,816, granted July 9, 1878, to Henry Tibbe, for a pipe made of corn-cob, *Held* infringed.
2. SAME—CONSTRUCTION OF CLAIM.
   The claim for "A new article of manufacture, a smoking-pipe made of corn cob, in which the interstices are filled with a plastic self-hardening cement, substantially as and for the purposes set forth," *Held* infringed when any plastic mixture—such as ground corn cob and starch or ground corn-cob and shellac—which will set or harden is applied as a filler to the exterior surface of the bowl of a corn-cob pipe, and that it makes no difference whether the plastic self-hardening mass is moistened and mixed before it is applied or in the act of applying.

Mr. Paul Bakewell, with whom is *Mr. R. A. Baketell*, for the complainant.

Mr. J. Hugo Grimm for the defendant.

THAYER, *J.*:

The patent involved in this suit was considered and sustained in the case of *H. Tibbe & Son Manufacturing Company* v. *Heineken*, (43 Fed Rep., 75.) It was there held that the claim of the patent should be interpreted as one for a corn-cob pipe in which the exterior interstices of the cob are filled with a plastic self-hardening cement; that the making of such a pipe did not involve invention of a very high order. Nevertheless, as the result had been to convert a poor article into a good one and to supply something to the trade which was new and the merits of which were generally recognized, there was enough of invention to sustain the patent. The views thus expressed in the Heineken case commend themselves to this court, and they are accordingly adopted.

With reference to the plea that the patent is void because the patentee was not the original and first inventor of such a corn-cob pipe as is described and claimed in the Letters Patent it will suffice to say that the evidence before the court is not adequate to maintain that defense. There is considerable testimony in the record tending to show that many years prior to the application for the patent in suit corn-cob pipes had been made the bowls of which were varnished on the outside with shellac to protect them from dirt and to give them a more-finished appearance; but even conceding that to be the fact it does not show that Tibbe's invention was anticipated. His invention, as before stated, consisted in filling the exterior interstices of the corn-cob bowl of the pipe with a plastic self-hardening mass or cement to make it more durable. A coat of shellac unmixed with other substances and laid on with a brush in the manner described by the defendant's witnesses cannot be regarded as the equivalent of the process described in the plaintiff's Letters Patent and did not anticipate that process in any such sense as to render the patent void. The practice of varnishing or painting articles is so common that a patent could not be sustained which merely covered or was so worded as to broadly cover the application of a coat of varnish to an article of manufacture. Complainant's patent will not be so construed, therefore, as to cover the application of a coat of varnish or paint to the bowl of a corn-cob pipe, and, on the other hand, the fact that corn-cob pipes had occasionally been varnished with shellac before the date of complainant's invention to make them more presentable and to protect them from dirt will not be regarded as anticipating the invention.

The testimony found in the record to the effect that in a few instances plaster-of-paris had been used before the date of the patent to fill such small cavities or cracks as were occasionally found in the cob is also insufficient to establish the plea of anticipation. No samples of pipes in the manufacture of which plaster-of-paris had thus been used were produced, and it is not pretended that plaster was so applied to the whole exterior surface of the bowl with a view of improving the quality of pipes. It appears to have been applied, if at all, solely with a view of remedying defects that were sometimes found in the cob. (*The Barbed Wire Patent*, 58 O. G., 1555; 143 U. S., 275; *Haughey* v. *Meyer*, 48 Fed. Rep., 679.)

The question of most importance is whether defendant has infringed.

It is admitted by the answer that on some occasions prior to the commencement of this suit the defendant made corn-cob pipes, and in so doing filled the exterior interstices of the cob, after it was turned and bored, with a mixture of finely-pulverized corn-cob and corn-starch. His contention is that the mixture in question was pressed into the interstices in a per-

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 61.—No. 4. TUESDAY, OCTOBER 25, 1892. PRICE—$5 per year.

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World's Columbian Exposition.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 8, 1892.

To the Inventors and Manufacturers of the United States:

It is the intention of the Patent Office to make at the World's Columbian Exposition at Chicago in 1893 an exhibit which will show that great advance in the several arts which is due, in large measure, to the encouragement and support afforded by our patent system. This exhibit is to consist of models of patented inventions, which will be carefully selected, to show as far as is possible the inception of each art, the stages through which the art has advanced, and the final development reached at the present time. This display of typical inventions, embodied in concrete form and properly arranged, will, it is believed, constitute a grand historical exhibit of the progress of the useful arts and one which will be of great interest not only to inventors and manufacturers, but to the public generally.

The Office collection of models has been seriously impaired by fire, and is further incomplete by reason of the fact that models have not generally been required or received during the last ten years. The Office is not, therefore, in possession of the models of many valuable inventions which might properly be included in such an exhibit, and without which, indeed, the exhibit would be incomplete. The limited appropriation for this exhibit will not permit the Office to make such models. An urgent appeal is therefore made to all inventors and manufacturers to come to the assistance of the Office in this matter, either by loans of models already built or by the construction of such models not in the possession of the Office as should properly be placed in such a collection. Of course, where models are loaned to the Office all proper credit will be given both in labels and catalogues to the parties by whom the loans are made, and such disposition will be made of the models after the close of the exhibit as the owners shall direct. Many inventors and manufacturers have already indicated a willingness to co-operate with the Office in this matter, and it is confidently expected that such a response will be made to this general appeal as will assure the unparalleled success of this attempt to graphically and concretely show the development of American invention.

W. E. SIMONDS,
Commissioner.

Protection of Foreign Exhibitors.

DEPARTMENT OF STATE,
Washington, D. C., July 30, 1892.

To the Diplomatic and Consular Officers of the United States:

GENTLEMEN: I subjoin a transcript of the act of Congress approved April 6, 1892, Public No. 29, entitled "An act to protect foreign exhibitors from prosecution for exhibiting wares protected by American patents and trade-marks," which reads as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That no citizen of any other country shall be held liable for the infringement of any patent granted by the United States, or of any trade-mark or label registered in the United States, where the act complained of is or shall be performed in connection with the exhibition of any article or thing at the World's Columbian Exposition at Chicago.

You will transmit copies of this circular to the government of the country to which you are accredited, and ask that it be given the widest possible circulation for the information of those directly concerned.

I am, gentlemen, your obedient servant,

JOHN W. FOSTER,
Secretary of State.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., August 4, 1892.

Official copy to the Commissioner of Patents for his information and guidance.

E. M. DAWSON,
Chief Clerk.

Indexes to Patents on Electricity.

Indexes to patents relating to electricity, covering the period of time from July 1, 1882, to June 30, 1890, have been issued, and are for sale. These indexes, arranged alphabetically, numerically, and by classes, comprise the following volumes, the prices of which are given below:

Vol. 1. Index to patents relating to electricity granted by the United States prior to June 30, 1881, with an appendix, July 1, 1881, to June 30, 1882. One volume, 250 pages. In paper covers, $3; bound, $5.

Vol. 2. Appendix No. 2, July 1, 1882, to June 30, 1883. One volume, 50 pages. In paper covers, $1.50.

Vol. 3. Appendix No. 3, July 1, 1883, to June 30, 1884. One volume, 60 pages. In paper covers, $1.50.

Vol. 4. Appendix No. 4, July 1, 1884, to June 30, 1885 One volume, 60 pages. In paper covers, $1.50.

Vol. 5. Appendix No. 5, July 1, 1885, to June 30, 1886. One volume, 54 pages In paper covers, $1.50.

Vol. 6. Appendix No. 6, July 1, 1886, to June 30, 1887. One volume, 52 pages. In paper covers, $1.50.

Vol. 7. Appendix No. 7, July 1, 1887, to June 30, 1888. One volume, 68 pages. In paper covers, $1 50.

Vol. 8. Appendix No. 8, July 1, 1888, to June 30, 1889. One volume, 72 pages. In paper covers, $1.50.

Vol. 9. Appendix No. 9, July 1, 1889, to June 30, 1890. One volume, 84 pages. In paper covers, $1.50.

Vol. 10. Appendix No. 10, July 1, 1890, to June 30, 1891. One volume, 98 pages. In paper covers, $1.50.

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Issue of October 25, 1892.

Patents	392—No. 484,767 to No. 485,158, inclusive.
Designs	28—No. 21,908 to No. 21,935, inclusive.
Trade-Marks	13—No. 21,887 to No. 21,899, inclusive.
Labels	None.
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Total issue	434

TO CITIZENS OF THE UNITED STATES.

States	Patents and Designs.	Trade-Marks and Labels.	States	Patents and Designs.	Trade-Marks and Labels.
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Arizona Territory	1	.....	New Hampshire	.....	.....
Arkansas	1	.....	New Jersey	16	.....
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Colorado	2	1	New York	80	7
Connecticut	13	1	North Carolina	2	.....
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TO CITIZENS OF FOREIGN COUNTRIES.

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APPLICATIONS UNDER EXAMINATION.

Condition at Close of Business October 18, 1892.

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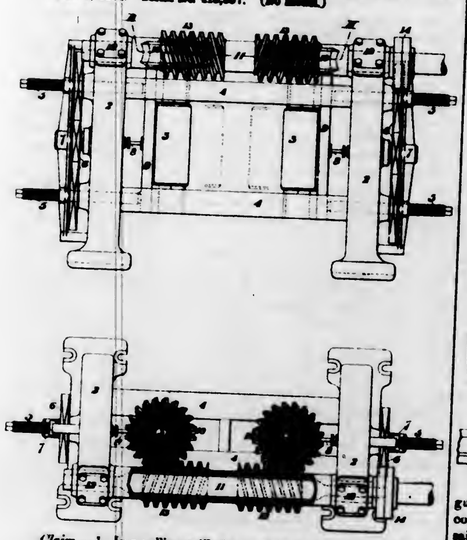
PATENTS

GRANTED OCTOBER 25, 1892.

484,767. ROLLING-MILL. HENRY AIKEN, Pittsburg, Pa. Filed Dec. 3, 1891. Serial No. 413,897. (No model.)



Claim.—1. In a rolling-mill, the combination, with the rolls, of a driving-shaft provided with two sets of worms of opposite pitch and of sufficient length to permit adjustment of the rolls, worm-wheels on the rolls in gear with said worms, bearings for both ends of the respective rolls movable laterally in right lines toward and from each other, and adjusting mechanism operative to move laterally the rolls with their worm-wheels, substantially as and for the purposes described.

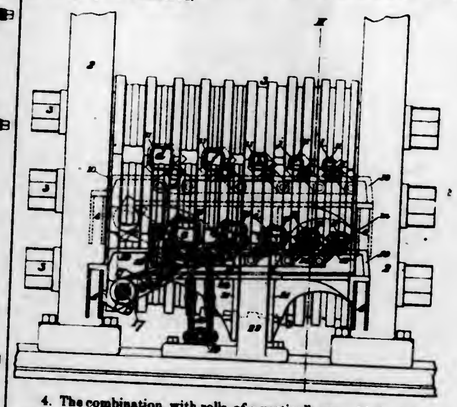
2. In a universal rolling-mill, the combination, with the vertical rolls, of a driving-shaft provided with two sets of worms of opposite pitch and of sufficient length to permit adjustment of the rolls, worm-wheels situate at the upper ends of the rolls in gear with said worms, bearings for both ends of the respective rolls movable laterally in right lines toward and from each other, and adjusting mechanism operative to move laterally the rolls with their worm-wheels, substantially as and for the purposes described.

484,768. GUIDE DEVICE FOR ROLLING-MILLS. HENRY AIKEN, Pittsburg, Pa. Filed Dec. 5, 1891. Serial No. 414,081. (No model.)

Claim.—1. The combination, with rolls and a feed-table, of a guide situated over the table and adapted to be turned and a feed-roller beneath the guide, the guide having a gap situated opposite to the roller and adapted to expose the piece to contact therewith in both positions of the guide, substantially as and for the purposes described.

2. The combination, with rolls and a feed-table comprising driven feed-rollers, of a guide pivotally and eccentrically mounted on the table and constructed to be turned radially on its pivot to shift the metal laterally on the rollers of said table, and mechanism for so turning the guide, substantially as and for the purposes described.

3. The combination, with rolls and a vertically-movable feed-table comprising driven feed-rollers, of a guide pivotally and eccentrically mounted on the table and constructed to be turned radially on its pivot to shift the metal laterally on the rollers of said table, and a connection between the guide and a point off the table constructed to cause the turning of the guide when the table is moved, substantially as and for the purposes described.

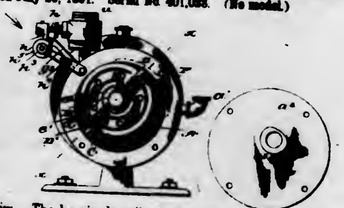


4. The combination, with rolls, of a vertically-movable feed-table, guides mounted thereon and pivoted eccentrically, and mechanism connecting the guides and adapted to cause their simultaneous motion, said mechanism being connected with a point off the table and adapted to be moved by the vertical motion of the latter, substantially as and for the purposes described.

5. The combination, with rolls, of a feed-table, guides mounted thereon and pivoted eccentrically, and arms and a rod connecting the guides and adapted to cause their simultaneous motion, substantially as and for the purposes described.

6. The combination, with rolls, of a feed-table, guides mounted thereon and pivoted eccentrically, arms and a rod connecting the guides and adapted to cause their simultaneous motion, levers pivotally connected with the feed-table and with a point off the table, so that on vertical motion of the table they shall swing laterally, and a connection between the levers and the guide-arms, adapted to transmit to the latter the motions of the levers, substantially as and for the purposes described.

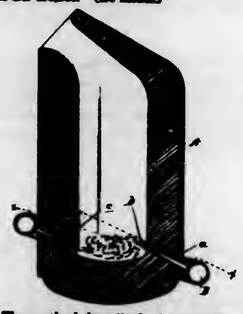
484,769. ROTARY ENGINE. FRANK M. BAILEY, Lima, N. Y., assignor of one-half to J. A. McKenzie and J. T. Gordon, same place. Filed July 20, 1891. Serial No. 401,038. (No model.)



Claim.—The herein-described improved rotary engine, compris-

ing the casing or cylinder having the steam inlet and outlet ports, the cylindrical piston-head arranged eccentrically therein and provided with diametrical slots and centrally at each end with a recess, as at d^2, outwardly-yielding plates or wings disposed in said slots and provided one with a rod projecting from its inner longitudinal edge and the other with a hole or opening for said rod, a spring located in said hole or opening, and the cylinder-heads provided with cams entering said recesses and having their extreme outer portions corresponding with said steam-inlet port and with which the ends of said plates or wings are designed to engage as they pass said steam-inlet port, whereby they are forced outwardly by said cams, as set forth.

484,770. CONVERTER. WILLIAM A. BALDWIN, New York, N. Y., assignor of one-half to Roswell D. Sawyer, same place. Filed Oct. 10, 1891. Serial No. 408,988. (No model.)



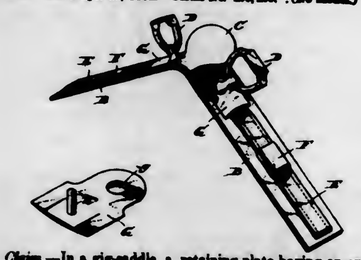
Claim.—1. The method described of converting crude iron into malleable iron or steel, consisting in violently agitating or imparting a gyratory motion to the molten mass by simultaneously projecting air-currents upon the molten mass from one side of the vessel upwardly at an angle thereto and from the opposite side of the vessel into the mass and downwardly at an angle, substantially as specified.

2. The combination, with a suitable vessel adapted to hold molten metal, having tuyeres entering the interior from one side and upwardly at an angle and tuyeres entering from the opposite side downwardly at an angle, of a suitable air box or pipe connected with the tuyeres, substantially as specified.

3. The combination, with a suitable vessel adapted to hold molten iron, of tuyeres entering the vessel from one side and arranged upwardly at an angle, tuyeres entering the opposite side of the vessel and arranged downwardly at an angle, and the air-pipe of a spiral form connected with the tuyeres, substantially as specified.

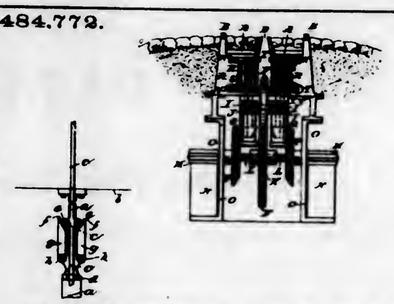
4. The combination, with a converter-vessel, of tuyeres in opposite sides thereof, said tuyeres entering the opposite sides at different angles to a horizontal plane, and a suitable air-pipe connected with the tuyeres, substantially as specified.

484,771. HARNESS-SADDLE. PETER BALLANTYNE, Cincinnati, Ohio. Filed Apr. 16, 1892. Serial No. 429,429. (No model.)



Claim.—In a gig-saddle, a retaining-plate having an opening in its upper end, with turret passing through same and burr with side wings to secure said turret to the frame without tacking to the band, in combination with a skirt having a rectangular opening therein and back-band having a small opening in its upper end, with pin on the retaining-plate to be inserted therein, and thus secure the parts so that the trimmings can be readily changed when desired, substantially as shown and described.

484,772. CABLE-CROSSING. HIRAM A. BURNHAM, New York, N. Y. Filed Apr. 9, 1892. Serial No. 428,462. (No model.)



Claim.—1. The combination, in a cable-crossing device, of two cables in different horizontal planes, the upper one being depressed and passing around a pulley, a shaft geared to the shaft of said pulley and having a sprocket-wheel and a friction-pulley upon it, other shafts arranged parallel thereto, each having a sprocket-wheel and a friction-pulley, and a sprocket-chain passing about all of said sprocket-wheels, substantially as set forth.

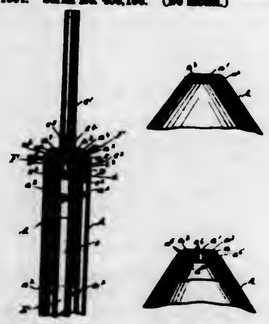
2. The combination, in a cable-crossing device, of two cables in different horizontal planes, the upper one being depressed and passing around a pulley mounted upon a shaft, two sets of sprocket-wheels, and friction-pulleys located between the two rails of the same track and mounted upon shafts which are connected to and driven by the shaft of said pulley, substantially as set forth.

3. The combination, in a cable-crossing device, of two cables in different horizontal planes, the upper one being depressed and passing around a pulley mounted upon a shaft, two sets of sprocket-wheels and friction-pulleys located between the rails of the same track and mounted upon shafts which are connected to and driven by the shaft of said pulley, and a single sprocket-chain, the said devices being so constructed and arranged that the chain engages the teeth of all of the sprocket-wheels, substantially as set forth.

4. The combination, in a cable-crossing device, of two cables, continuously-rotating friction-wheels driven by one of the cables, and adjustable laterally-expanding plates attached to the grip-arm of the car, and means attached to the car whereby the gripman may laterally expand the plates to bring them into contact with said frictional wheels, substantially as set forth.

5. The herein-described improvement in cable-grippers, comprising two plates pivoted at their lower ends to the grip-arm of the car and a vertically-movable bar adapted to be operated by the gripman or conductor, which engages with said pivoted plates, whereby they may be swung apart laterally, substantially as set forth.

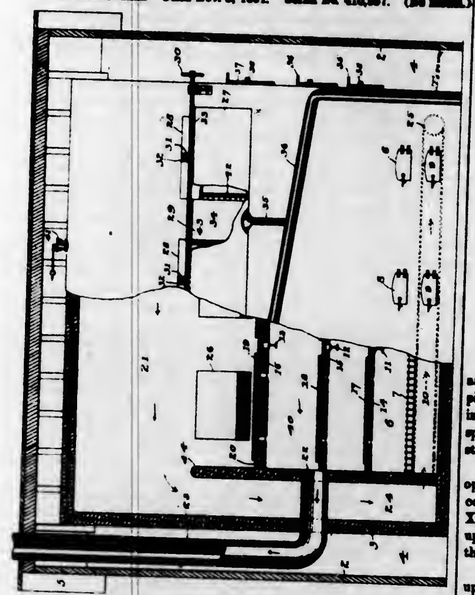
484,773. UMBRELLA. FELIBER A. BURHAM, Medina, N. Y. Filed Sept. 19, 1891. Serial No. 406,166. (No model.)



Claim.—1. As an improved article of manufacture, the herein-described umbrella, the same consisting of a cover provided with a central opening and with hinged ribs, an umbrella-stick comprising a main section e and a removable section e', passed through the opening of the cover with its outer end projecting beyond the cover and its inner end formed with a shoulder engaged with the inner face of the portion of the cover surrounding said opening, and a notch secured to the stick-section e and adapted to support the inner ends of said ribs, substantially as described.

2. As an improved article of manufacture, the herein-described umbrella, the same comprising a cover provided with a central ring c' and with ribs B, having their outer ends secured to the cover, a main stick-section e, having a hand-engaging portion at its outer end and an annular shoulder at its inner end, said stick-section being provided at said inner end with a nipple projecting beyond said annular shoulder and formed with an annular shoulder, and with screw-threads above said shoulder and a plane face beneath the same, a notch for supporting the inner ends of said ribs rigidly secured to the spindle and interposed between said shoulders with its lower end resting upon the lower shoulder, and a detachable stick-section or extremity e', passed through said ring with its outer end projecting beyond the same and provided at its inner end with a central socket for receiving the screw-threaded end of the spindle and with an enlarged shoulder F, bearing against the top face of said notch and the under face of said ring, substantially as and for the purpose specified.

484,774. GARBAGE DRIER AND BURNER. FREDERICK CAIN, St. Paul, Minn. Filed Nov. 5, 1891. Serial No. 410,957. (No model.)



Claim.—1. In a device of the class described, the combination, with the furnace, of the closed horizontal partition arranged above its fire-box and forming a combustion-chamber beneath and a drying-chamber above, dumping-platforms arranged in and forming part of said partition, means for conveying garbage onto said platforms, and other dumping-platforms arranged in the combustion-chamber, adapted to receive the material from the first platforms and to hold it in contact with the products of combustion and to deliver it directly upon the grate, substantially as described.

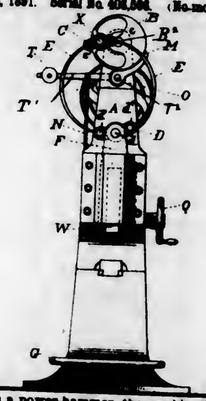
2. In a device of the class described, the combination, with the furnace, of the horizontal dumping-platforms arranged above the fire-box and constituting a closed partition, thereby forming a combustion-chamber beneath and a drying-chamber above, each of said chambers being provided with suitable outlets for the gases, and a series of smaller dumping-platforms arranged in the combustion-chamber beneath said first platforms, substantially as described.

3. In a device of the class described, the combination, with the furnace, of the horizontal dumping-platforms arranged therein above the fire-box and forming a partition, the space beneath serving as a combustion-chamber and the space above as a drying-chamber, the hoppers upon the outer walls of said furnace adapted to receive garbage, means in said hoppers for draining liquids from said garbage, means for conveying said garbage from the hoppers onto said dumping-platforms, the series of successively-smaller dumping-platforms arranged in the combustion-chamber beneath said first platforms, and means for operating said platforms, substantially as described.

4. The combination, with the furnace, of the hoppers in the side walls thereof, gates for closing the outlets of said hoppers to the furnace, strainers in said hoppers and their pipes for drawing off the liquids from said hoppers, the partition between the drying and combustion chambers of said furnace, dumping-platforms in said partition, similar platforms beneath said first platforms, and flues connecting said drying-chamber with said combustion-chamber through the fire-box, substantially as described.

5. In a furnace, the combination of the fire-box and combustion-chamber communicating with the smoke-pipe, the drying-chamber above said combustion-chamber communicating with the combustion-chamber through the fire-box, dumping-platforms arranged in the partition between the chambers, means for conveying garbage onto said platforms, similar smaller dumping-platforms arranged in the combustion-chamber beneath said first platforms, and means for operating said platforms and for securing them in their normal position, substantially as described.

484,775. POWER-HAMMER. JAMES CARRIES, Montpelier, Vt. Filed Oct. 13, 1891. Serial No. 408,868. (No model.)



Claim.—1. In a power-hammer, the combination of the hammer and its operating mechanism, including a disk, an adjustable crank-pin on said disk, a casting loosely mounted on said pin, another casting loosely mounted at the upper end of the hammer, and curved springs pivotally connected at each end to the aforesaid castings, substantially as described.

2. In a power-hammer, the combination of the hammer and its operating mechanism, including a disk B, the crank-pin X, adjustably connected to the disk B, the casting C, having lugs and mounted on pin X, the casting D, likewise having lugs and pivotally supported in the upper end of the hammer, and the springs E, pivoted to the lugs on the casting C and those on the casting D, substantially as described.

3. In a power-hammer, the combination of the main column, the upper sliding frame carrying a shaft having a friction-wheel and a crank-disk, means for adjusting said frame, a connection between the crank-disk and the hammer, and the main drive-shaft carrying the friction-wheel adapted to be in or out of contact with the aforesaid friction-wheel, and means for moving the friction-wheel into or out of contact with the friction-disk, substantially as described.

4. In a power-hammer, the combination of the hammer, the main column, the upper sliding frame carrying a shaft having a friction-wheel and a crank-disk thereon, means for adjusting said sliding frame, the yielding or spring connection between the crank-disk and the hammer, and a friction-wheel for transmitting motion to the friction-disk, substantially as described.

5. In a power-hammer, the combination of the main column, the upper sliding frame carrying a shaft having a friction-wheel and a crank-disk thereon, operating means for lifting and lowering said sliding frame, a connection between the crank-disk and the hammer, the yoke supported by the sliding frame and adjustable relatively thereto, the yoke carrying the main driving-shaft having thereon the friction-wheel arranged to come in contact with the friction-wheel aforesaid, and means for adjusting the yoke, substantially as described.

6. In a power-hammer, the combination of the main column, the upper sliding frame carrying a shaft having thereon a friction-wheel and a crank-disk, means for lifting and lowering said sliding frame, a yoke adjustable on the sliding frame, said yoke carrying a driving-shaft having a friction-wheel thereon, a hammer connected to the crank-disk, a cam arranged below the adjustable yoke, a brake-rod connected to the cam and the brake, and the brake-shoe arranged to bear on the crank-disk, substantially as described.

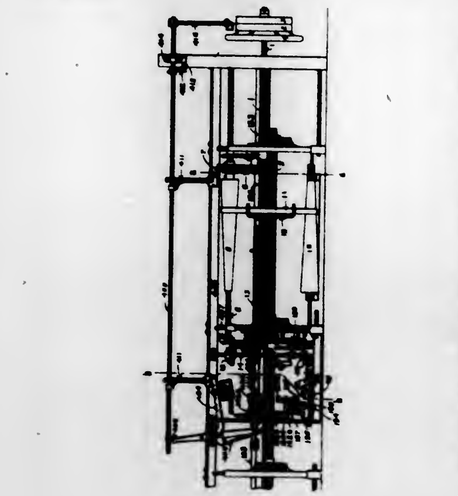
7. The combination of the main column, the vertically-adjustable frame having a horizontal shaft carrying a friction-wheel and a crank-disk, means for adjusting said frame, a hammer, connections between the hammer and crank-disk, an adjustable yoke, a cam beneath the latter for adjusting it, said cam being connected to a cam-lever, a

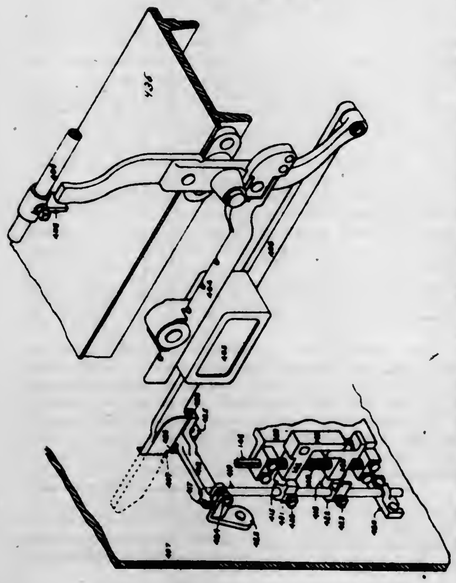
brake-shoe arranged to operate against the periphery of the crank-disk, said shoe being rigid on a crank-shaft, and the cam and brake rod pivotally connected to the brake-shoe shaft and the cam-lever, substantially as described.

8. The combination of the main column, the vertically-adjustable frame, its lifting-screw, worm mechanism, and hand-wheel, the horizontal shaft carried by said frame and having a friction-pinion and a crank-disk, an adjustable yoke on the sliding frame carrying the main driving-shaft having thereon a pulley and a friction-wheel, the hammer, and the springs E E, pivotally connecting the hammer with the crank-disk, substantially as described.

484,776. STOP-MOTION DEVICE FOR FLY-FRAMES. William P. Cammen, Lowell, Mass., assignor to the Lowell Machine Shop, same place. Filed July 19, 1892. Serial No. 440,866. (No model.)

Brief.—The driving-belt is shifted from the fast pulley to the loose pulley, and the machine is stopped in case of excessive traverse in either direction of the taper-motion head forming part of the builder mechanism and also upon the completion of the winding of a set of bobbins.





Claim.—1. The combination, with the retaining-latch of a fly-frame stop-motion and the reciprocating taper-motion head, of tripping devices operating to release the latch in case of excessive traverse of the head in either direction, substantially as described.

2. The combination, with the retaining-latch of a fly-frame stop-motion and the reciprocating taper-motion head, of tripping devices intermediate the said latch and head and operating to release the latch in case of excessive traverse of the head in either direction, substantially as described.

3. The combination, with the retaining-latch of a fly-frame stop-motion, the reciprocating taper-motion head, and the taper-motion jaws applied to the latter, of projections extending from said jaws and devices engaged by the said projections to trip the latch in case of excessive traverse of the head in either direction, substantially as described.

4. The combination, with the retaining-latch of a fly-frame stop-motion, the reciprocating taper-motion head, the taper-motion jaws, and the taper-motion screw, of projections extending from said jaws and devices engaged by the said projections to trip the latch in case of excessive traverse of the head in either direction, substantially as described.

5. The combination, with the retaining-latch of a fly-frame stop-motion, the reciprocating taper-motion head, and the taper-motion jaws, of the studs 415 416, carried by the jaws and differing in their diameters and lengths, as described, the rod 419, carrying the blocks 421 and 422, and a device operated by the said rod for releasing the latch, the whole operating to release the latch in case of excessive traverse of the head in either direction, substantially as described.

6. The combination, with the retaining-latch of a fly-frame stop-motion, the reciprocating taper-motion head, and the taper-motion jaws, of the studs 415 416, carried by the jaws and differing in diameters and lengths, as described, the rod 419, carrying the blocks 421 and 422, and the safety-rocker to which one end of the rod is connected, the whole operating to release the latch in case of excessive traverse of the head in either direction, substantially as described.

7. The combination, with the retaining-latch of a stop-motion for a fly-frame, of the cone-rack, a bracket applied thereto, and a trip carried by said bracket and adapted to pass under the end of the latch, a striker whereby said trip is moved to disengage the latch, the lifting-shaft, a gear-wheel on the lifting-shaft, and a gear-wheel meshing with said gear-wheel on the lifting-shaft and with which the said striker is connected and caused to rotate, substantially as described.

8. The combination, with the retaining-latch of a stop-motion for a fly-frame, of the cone-rack, a bracket applied thereto, and a trip carried by said bracket and adapted to pass under the end of the latch, a striker whereby the said trip is moved to disengage the latch, the lifting-shaft, a gear-wheel on the lifting-shaft, a gear-wheel meshing with said gear-wheel on the lifting-shaft, and means for connecting the striker thereto with capacity for rotary adjustment about the axis thereof, substantially as described.

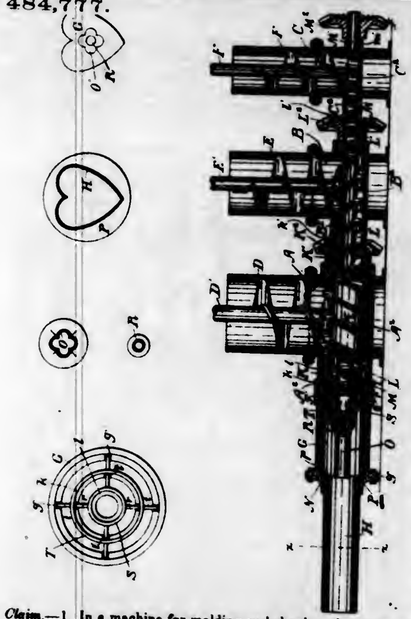
9. The combination, with the cone-rack and devices for moving the same endwise as required for shifting the cone-belt, the said devices embracing a series of two or more intermeshing transmitting gear-wheels, of a movable gear-wheel support, stop-motion devices, and a rod and spring interposed between a movable member of the said stop-motion devices and the said movable support, the whole providing for moving the support to disconnect the gear-wheels when the stop-motion devices are caused to act and the spring yielding when the gear-wheel fails to re-enter into mesh properly, substantially as described.

10. The combination, with the cone-rack and devices for moving the same endwise as required for shifting the cone-belt, the said devices embracing a series of two or more intermeshing transmitting gear-wheels, of a movable gear-wheel support, stop-motion devices, and a rod connecting with a movable member of the stop-motion devices and passing through a hole in the movable support, a collar on the said rod above the movable support, a spring interposed between the said collar and the said support, and a collar on the rod beneath the support, substantially as described.

11. The combination, with the cone-rack and devices for moving the same endwise as required for shifting the cone-belt, the said devices embracing a series of two or more intermeshing transmitting gear-wheels, of a movable gear-wheel support, a weighted lever forming part of the stop-motion devices, a rod connected with an arm of the said lever and passing through a hole in the movable support, a collar on the said rod above the movable support, a spring interposed between the said collar and the said support, and a collar on the rod beneath the support, substantially as described.

484,777. MACHINE FOR SHAPING AND MOLDING PLASTIC MATERIALS. Oliver B. Chase, Boston, Mass., assignor to the Algonquin Manufacturing Company, Portland, Me. Filed Feb. 17, 1892. Serial No. 421,990. (No model.)

484,777.



Claim.—1. In a machine for molding and shaping plastic materials, the combination of a hollow cylinder, a feed-screw revoluble in said cylinder, and an outlet-forming burnishing and shaping tube having a forming-nozzle entering its rear end, substantially as described.

2. In a machine for molding and shaping plastic materials, the combination, with a hollow vertical feed-cylinder, of a vertical feed-screw revoluble therein, a hollow horizontal cylinder in axial line with said vertical cylinder and communicating therewith, a horizontal feed-screw revoluble in said horizontal cylinder, and an outlet-forming burnishing and shaping tube of uniform diameter, with a forming-nozzle entering its rear end, substantially as and for the purposes described.

3. In a machine for molding and shaping plastic materials, the combination of a hollow cylinder, a series of feed-screws, each revoluble in the one next larger, and a series of contracted passage-ways forming independent outlets to each screw, said passage-ways having tubular extensions, each extension being of uniform area for a considerable distance back from the outlet thereof, substantially as and for the purposes described.

4. In a machine for molding and shaping plastic materials, the combination of a hollow cylinder, a series of feed-screws, each revoluble in the one next larger, and a series of nozzle-holding and passage-forming dogs, each dog having arms seated in recesses in the passage next larger, all arranged and constructed substantially as and for the purposes described.

5. In a machine for molding and shaping plastic materials, the combination of a hollow cylinder provided with a recessed outlet-passage, a hollow cylindrical feed-screw revoluble in said cylinder, a second inner feed-screw revoluble in said hollow cylindrical feed-screw, and a passage-forming and nozzle-holding dog provided with arms seated in the recesses of said outlet-passage, said inner screw having bearings in said dog, substantially as described.

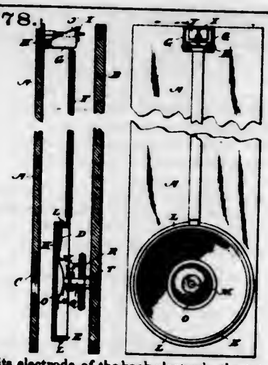
6. In a machine for molding and shaping plastic materials, a hollow cylinder provided with a feed-screw and an outlet-forming burnishing and shaping tube having compacting and pressing shoulder *p*, substantially as shown and described.

484,778. TELEPHONIC TRANSMITTER. Arthur T. Collins, St. Albans, England. Filed Dec. 8, 1891. Serial No. 414,426. (No model.) Patented in England June 11, 1891, No. 9,267.

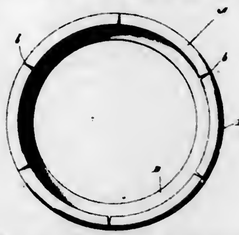
Claim.—1. In a telephonic receiver, the combination, with the diaphragm secured upon an annular framing suspended upon a rod depending from a support pivoted to the frame of the transmitter and having an inclined plane on its upper side, of the wing-nut and screw whereby said rod may be adjusted to adjust the diaphragm and its electrode with respect to the back electrode, substantially as described.

2. In a telephonic transmitter, the combination, with the diaphragm and its electrode, of the back electrode, the tubular stud upon which said electrode is mounted, the gimbals secured to the back of the frame, and the cross-bar secured to the inner ring of the gimbals and carrying the tubular stud upon which the back electrode is mounted, substantially as described.

484,778.



484,779. SELF-FASTENING RIM FOR JARS OR VESSELS. Henry Cone, Alameda, Cal. Filed Jan. 6, 1892. Serial No. 417,131. (No model.)



Claim.—The ring A, consisting of the wide lower flat rim B, the integral upper lip portion B' for securing the ring to the cover of the vessel, and the cuts or notches *b* for enabling the ring to be easily adjusted upon the vessel, substantially as shown and described

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484,780. FLOUR BIN AND SIFTER. Jeptha P. Davis and George B. Harwell, Mansfield, Ark. Filed Apr. 5, 1892. Serial No. 427,892. (No model.)

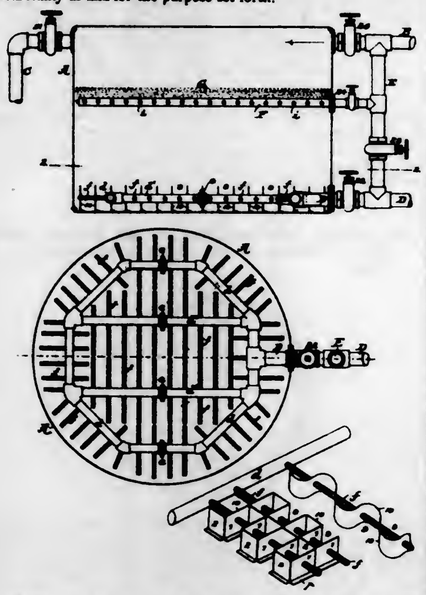
Claim.—The combination of a casing provided with opposite cylindrical bearings, a sifter arranged in the bottom of the casing, a sleeve mounted in one of the bearings and provided at its inner end with a polygonal portion and at its outer end with a polygonal portion and having an intermediate rounded portion journaled in the said bearing, a crank-handle having a polygonal opening and removably mounted on the outer polygonal portion of the sleeve, a cylindrical shaft passed removably through the sleeve and having its opposite end terminating in the adjacent bearing of the casing and provided at the other end beyond the sleeve with a head larger than the sleeve and securing the handle thereon, and the rotary agitator-frame provided at its axis with opposite openings, one of which is cylindrical to receive the shaft and the other of which is polygonal and removably receives the inner end of the sleeve, substantially as described.

484,781. FILTER. William M. Deutsch, Elizabeth, N. J. Filed May 1, 1891. Serial No. 391,295. (No model.)

Claim.—1. The combination, with the filter and the filtering-bed,

of a conduit arranged within the filter and connected with an external discharge or delivery pipe, a plurality of perforated branches extending out of said conduit, and partitions arranged across such perforated branches, so as to form independent pockets, chambers, or inclosures around said branches, substantially as and for the purpose set forth.

2. The combination, with the filter and the filtering-bed, of a number of branch pipes leading to different parts of the filter-bed, a plurality of smaller perforated pipes extending laterally from the said branch pipes, and a plurality of partitions arranged across the said perforated pipes to subdivide the filter-bed in proximity to each such pipe into a number of separate independent pockets, chambers, or inclosures, and a body of coarse material located within the said pockets, chambers, or inclosures in contact with the said perforated pipes, substantially as and for the purpose set forth.



3. The combination, with the filter and the filtering-bed, of a discharge-pipe therefor having perforated branches within the filter and a plurality of partitions associated with said branches and forming supports therefor, substantially as described.

4. The combination, with the filter and the filtering-bed, of a discharge-pipe therefor having a plurality of perforated branches within the filter, a plurality of partitions associated with said branches and forming supports therefor, and a body of coarse material located in the spaces formed by the partitions, substantially as described.

5. The combination, with the filter and its discharge-pipe, of the continuous branch pipe *d*, arranged within the filter and having perforated branches, and the transverse connection *d'*, also having perforated branches, the branch pipe and the transverse connection being assembled in two separate substantially-equal portions, and couplings *e*, uniting the said separate portions of said pipes, the whole arranged so as to cover a maximum of the horizontal area of the filtering-bed, substantially as described.

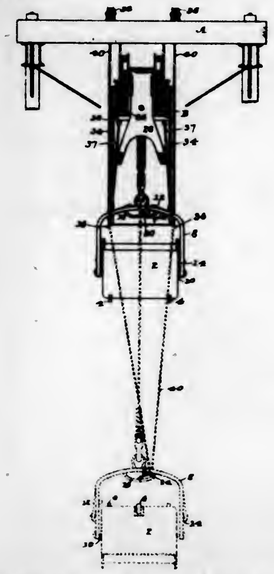
6. In a filter, the combination, with a perforated branch pipe, of a partition supporting the same and extending on both sides to divide the branch pipe into separate areas, substantially as described.

7. The combination, with a perforated branch pipe, of a continuous partition supporting the same and bent from side to side thereof alternately to divide the branch pipe into separate areas, substantially as described.

484,782. AUTOMATIC LATCH-OPENER FOR BUCKETS. CHARLES P. DOLE, West Superior, Wis., assignor of one-half to Charles R. Hosmer, St. Paul, Minn. Filed June 20, 1891. Serial No. 397,022. (No model.)

Claim.—1. In a device of the class described, the combination, with the bucket, of a rope loop suspended across the path of the bucket at or near its terminus, adjustable tension devices for said rope, the latches upon said bucket, and a latch-tripping mechanism carried by said bucket, adapted to engage said rope loop as the bucket descends and to be actuated by the tension of the rope to trip said latches at a predetermined point in the descent of the bucket, substantially as described.

2. The combination, with a hoisting-bucket, of a depending rope loop adjacent thereto, weights upon the depending ends of said rope, and devices upon said bucket for tripping its latches, adapted to engage said loop as the bucket descends and to be operated by the tension of said rope caused by said weights, substantially as and for the purposes set forth.



3. The combination, with the hoisting-bucket having a latch-tripping device attached thereto, of a rope running over sheaves and depending in a loop adjacent thereto, weights attached to the depending ends of said rope, and means connected to the latch-tripping device for engaging said loop with the descent of the bucket, whereby the said weights serve to operate said device, substantially as and for the purposes set forth.

4. The combination, with a hoisting-bucket having a latch-tripping mechanism, of a rope running over a sheave and depending in a loop adjacent to said bucket, counterbalancing-weights carried by the depending ends of said rope, other weights attached to said depending ends at such points that they will be lifted when said loop has been drawn downward a predetermined distance, and means connected to said tripping mechanism for engaging said rope and operating said mechanism, substantially as and for the purposes set forth.

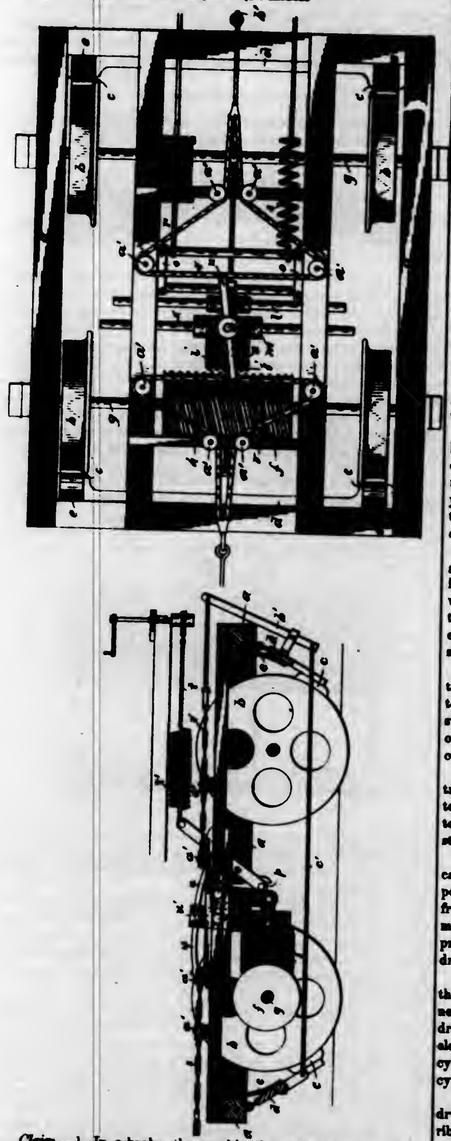
5. In a device of the class described, the combination, with the hoisting-bucket, its carriage and carriage-tramway, and the stop for said carriage adjustable along said tramway, of sheaves supported on either side of said tramway adjacent to said stop, a rope running over said sheaves and depending in a loop beneath said tramway, counterbalancing-weights secured to the depending ends of said rope, other weights connected to said depending ends at a distance from said counterbalancing-weights, and a latch-tripping mechanism carried by said bucket, adapted to engage said loop as the bucket descends and to be operated by the tension of said second weights upon said loop, substantially as and for the purposes set forth.

6. The combination, with the bucket, its carriage, carriage-tramway, and adjustable carriage-stop, of a rope depending in a loop adjacent to said stop and beneath said tramway, guides for said rope adjustable along said tramway, a latch-tripping mechanism carried by said bucket and adapted to engage said loop, and means for automatically applying tension to said rope to operate said latch-tripping mechanism when said loop has been drawn downward a predetermined distance, substantially as and for the purposes set forth.

7. In a device of the class described, the combination, with a hoisting-bucket and the latch-tripping mechanism attached thereto, of a rope loop dependent adjacent to said bucket adapted to be engaged by said tripping devices, and means for applying tension to said rope to operate said tripping mechanism when the bucket has descended to a predetermined point, substantially as and for the purposes set forth.

8. The combination, with the bucket, its carriage, the tramway, and the adjustable stop, of the rope running over suitable supports and depending in a loop beneath said tramway and adjacent to said stop, guides for said rope connected to said stop and adjustable along said tramway, a latch-tripping device carried by said bucket and adapted to engage said loop, and tripping-weights connected to the depending ends of said rope, whereby tension is applied to said rope to operate said tripping mechanism when the bucket has descended to a predetermined point, substantially as and for the purposes set forth.

484,788. CAR-BRAKE. GILBERT R. ELLIOTT, Boston, Mass. Filed Jan. 6, 1892. Serial No. 417,198. (No model.)



Claim.—1. In a brake, the combination, with the rotary drum having a continuous thread in one direction throughout its length, of the transverse movable traveler movable toward or from the drum and operated by the drum, substantially as set forth, and connections from the traveler to the braking mechanism, substantially as and for the purposes set forth.

2. A car-brake comprising a drum connected with a car-axle and threaded throughout its length, a single traveler adapted to engage and be moved by said drum, brake-shoes connected with said traveler, and means, substantially as described, for moving the traveler into engagement with the drum.

3. A car-brake comprising a drum threaded throughout its length and connected with a car-axle, a transversely-movable traveler constructed to intermesh with said drum and move the length thereof, and means to move said traveler to the drum, substantially as described.

4. A car-brake comprising the combination of a rotary drum continuously threaded and of the same diameter throughout, connected with a car-axle, with a rocking traveler arranged to be moved to intermesh with the drum and be moved transversely the length of the drum, substantially as described.

5. The combination, in a brake, with a threaded drum connected with a car-axle, of a traveler having a threaded or grooved face conforming to the drum, said traveler being connected to the braking apparatus, and means, substantially as described, to move the traveler to the drum and yieldingly hold the same into engagement therewith, substantially as described.

6. In a car-brake, the combination of the threaded drum on a car-axle, the transversely-movable traveler having a concave threaded or grooved face formed to mesh with the drum, said traveler being supported to move transversely, hangers supporting the traveler to allow movement toward and from the drum, connections from the traveler to the braking apparatus, and means, substantially as described, to move the traveler to the drum and yieldingly hold the same in engagement therewith.

7. In combination, a threaded drum on a car-axle, a traveler having a threaded or grooved face conforming to the drum, supports in the car-truck for said traveler, allowing movement parallel with the drum and to and from the drum, means, substantially as described, to move the traveler to the drum and hold the same yieldingly in engagement therewith, braking devices, and connections from the traveler to said devices to operate the same, substantially as set forth.

8. In a car-brake, the combination of the drum on the car-axle, having exterior V-shaped spiral threads, the traveler having a concave face correspondingly threaded to intermesh with said drum, and means, including a spring, to move said traveler to the drum and to yieldingly hold the traveler in engagement with the drum, so that the traveler will slip from thread to thread when it is stopped and the drum continues to revolve.

9. In combination, in a car-brake, the threaded drum on the car-axle, the traveler having a face to conform therewith, the parallel hangers supporting said hangers to permit horizontal movement toward and from the drum, supports from the traveler, whereby longitudinal movement of the drum is permitted, means to move the traveler to the drum, and connections from the traveler to the brake-shoes.

10. In a car-brake, the combination of the threaded drum, the traveler formed to intermesh therewith, means to move the traveler to the drum, and an equalizer carried by the traveler, consisting of a swinging bar or lever, and connections from opposite ends of said bar or lever extending to brake-shoes at opposite ends of the car or in opposite directions, substantially as described.

11. In a car-brake, the combination of the threaded drum, the traveler adapted to be moved transversely thereby, connections extending in opposite directions to the brake-shoes, and an equalizer interposed between said connections and secured to the traveler, substantially as set forth.

12. In a car-brake, the combination of the threaded drum on a car-axle, the traveler constructed to intermesh therewith and supported to swing into and out of engagement therewith, connections from the traveler to the brake-shoe, a swinging lever arranged to move the traveler into engagement with the drum, and means, comprising a spring connected to said lever, to move the traveler to the drum.

13. In a car-brake, the combination of the drum connected with the car-axle, a traveler adapted to intermesh with said drum and connected with the braking apparatus, means to move the traveler to the drum, and a pressure-cylinder and its piston connected with said traveler to hold the same from the drum when there is pressure in the cylinder, whereby the brakes will be applied when the pressure in the cylinder is relieved.

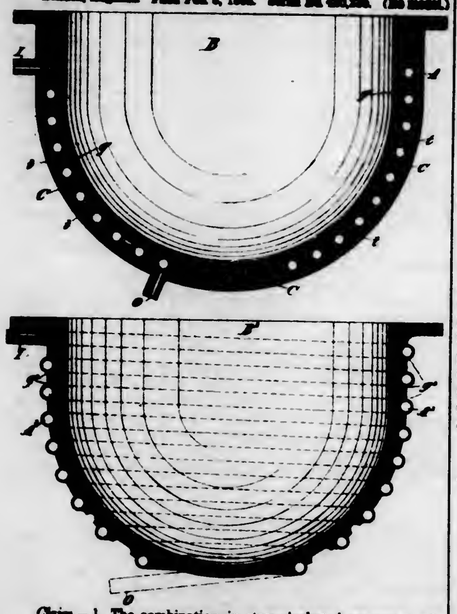
14. In a car-brake, the combination of a continuously-threaded drum connected to an axle, a single traveler having a threaded or ribbed face to intermesh with said drum and thereby move the traveler longitudinally of the drum, braking mechanism connected with and operated by the movement of said traveler toward either end of the drum, and means, substantially as described, to throw the traveler toward or from the drum, substantially as described.

15. In a brake, the combination of a drum continuously threaded in one direction throughout its length and connected with a shaft, a

traveler formed to intermesh with said drum and move toward either end thereof, a spring connected with said traveler to yieldingly hold the same to the drum, and operating connections, substantially as described.

16. In a brake, the combination of a threaded drum on an axle, a traveler consisting of a block having a concave ribbed face to engage and mesh with said drum, a sliding support carrying said traveler, means, substantially as described, controlling the movement of the traveler toward or from the drum, and connections from the traveler to a braking mechanism, substantially as described.

484,784. STEAM-JACKETED KETTLE. Stephen H. Rhodes, London, England. Filed Feb. 3, 1892. Serial No. 420,556. (No model.)

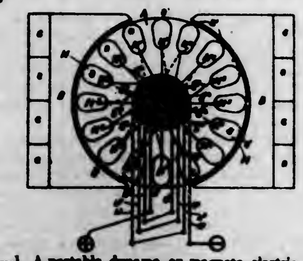


Claim.—1. The combination, in steam-jacketed apparatus, of a body having external grooves and a jacketing pipe or pipes fitted to said grooves and applied within the same, substantially as hereinbefore specified.

2. In steam-jacketed apparatus, the combination, with a jacketing pipe or pipes, of a body having external grooves fitted to receive said pipe or pipes and lined with a metal of greater conductivity, substantially as hereinbefore specified.

3. The combination, with a jacketing-pipe in half-rings, of a body having external grooves in concentric circles, connected by diametrically-opposite cross-grooves and the within-described double-T couplings, and screw-sleeves for uniting the half-rings within said circular grooves and connecting the successive rings of pipe with each other, substantially as hereinbefore specified.

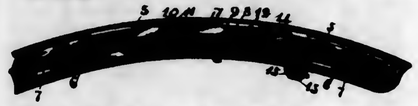
484,785. MAGNETO-ELECTRIC GENERATOR. Sydney Evershed, London, England. Filed Jan. 8, 1892. Serial No. 417,494. (No model.)



Claim.—1. A portable dynamo or magneto electric generator consisting of an armature having a core closely fitting pole-pieces energized by permanent magnets, the said armature-core having holes therethrough parallel to the axis and narrow slots extending from periphery to the said holes to effect the winding of the coils, the said coils being connected up independently to as many two-part commutators as there are coils and brushes rubbing on the said commutator to connect the said armature-coils in series and with the terminals of the generator, substantially as described.

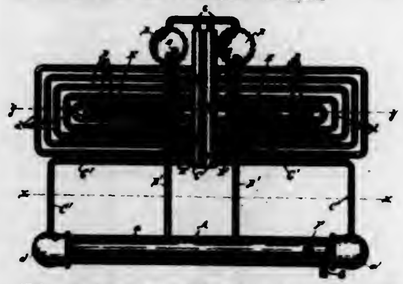
2. In an electric generator, the combination of an armature-core having holes therethrough and narrow slots extending from the periphery to the said holes to effect the winding of the coils in the holes, the said core closely fitting between pole-pieces energized by permanent magnets with as many two-part commutators as there are independent coils on the armature, and brushes rubbing on the commutators and connected so that the total electro-motive force at the terminals of the generator is equal to the sum of the electro-motive forces of all the coils, substantially as described, and for the purposes set forth.

484,786. TIRE FOR CYCLES. Thomas Fabe and Charles F. Lavender, Toronto, Canada. Filed Nov. 18, 1891. Serial No. 412,230. (No model.)



Claim.—A tire for a wheel, consisting of an air-tube provided with the usual means of inflation, an outer tube or covering having each edge enlarged or beaded, in combination with the rim of the wheel and an annular plate located therein to grip the beaded or enlarged edges of the outer tube or covering and securely hold all parts in place, a lug cast on the under side of each end of said annular plate, and a lug secured to the under side of the rim of the wheel, a tightening-bolt passing through all of said lugs, having its inner end riveted or enlarged to prevent it passing through said lugs, and a tightening-nut on its outer end for the purpose of drawing the ends of said annular plate tightly together, substantially as described.

484,787. STEAM-HEATER. Thomas Pearon, Yonkers, N. Y. Filed May 1, 1891. Serial No. 391,515. (No model.)



Claim.—1. A water-containing base, a series of upwardly-extending separate tubular heads or manifolds mounted above the substantially-central portion of the base, and projecting heating-pipes extending from opposite sides of said heads, substantially as and for the purpose set forth.

2. In combination, a steam-drum, a water-containing lower shell, a series of heads or manifolds supported above the substantially-central portion of the base and having one extremity connected to the steam-drum and the other to the lower shell, and heating-pipes extending from opposite sides of said heads, substantially as and for the purpose described.

3. In combination, a rectangular horizontal water-containing shell, a series of separate tubular vertically-extending heads or manifolds mounted above the substantially-central portion of said shell, a connection between the lower extremity of said vertical heads and the horizontal shell, and a series of projecting heating-pipes extending from the sides of said heads, substantially as and for the purpose set forth.

4. In combination, a horizontal water-containing base, a series of separate tubular vertically-extending heads or manifolds mounted above the water-containing base, a connection between the lower extremities of the vertical heads and the horizontal water-containing base, a series of U-shaped pipes projecting from the heads and arranged with both extremities opening from the same head, a steam-drum above the U-shaped pipes at one side of the heads, and steam connections between the separate heads and the steam-drum, substantially as and for the purpose described.

5. In combination, a water-containing base, upright heads arranged above the base, L-shaped connections having one arm connected to the lower extremity of the heads and the other to the base, heating-pipes projecting from the heads and consisting of a series of U-shaped pipes arranged one within the other with both extremities communicating with the heads, a steam-drum extending from front to back at the upper extremities of the heads, and connections between said steam-drum and heads, and a connecting-pipe between the steam-drum and the water-containing base, substantially as set forth.

6. In a steam-heater, the combination of a water-containing lower shell, a series of heads arranged alternately with each other, heating-pipes projecting from the opposite faces of said heads, and removable plugs in said heads, arranged oppositely with the extremity of said heating-pipes for permitting the entrance of an expanding-tool, substantially as specified.

7. In a sectional steam-boiler, the combination of two vertical drums arranged alternately, two series of pipes bent in any suitable form or outline, the pipes in one series communicating at both ends with one of said vertical drums and the pipes of the other series communicating at both ends with the other of said vertical drums, both series projecting over and nearly to the outer side of the grate, and a horizontal steam-drum located over the series of pipes and fire-box and extending from the front to the rear and connected to each vertical drum by a separate pipe, the latter pipes extending by and laterally overlapping each other, substantially as described.

8. In a sectional steam-boiler, the combination of two vertical drums arranged alternately, two series of U-shaped pipes, the pipes in one series communicating at both ends with one of said vertical drums and the pipes of the other series communicating at both ends with the other of said vertical drums, both series projecting over and nearly to the outer side of the grate, and a horizontal steam-drum located over the series of pipes and fire-box and extending from the front to the rear of the same and connected to each vertical drum by a separate pipe having one or more bends, the several pipes extending by and laterally overlapping each other, substantially as described.

9. A steam-boiler composed of a base, a series of sections each consisting of two vertical drums arranged centrally in relation to the base, two series of pipes bent into any suitable form or outline, the pipes in one series communicating at both ends with one of said vertical drums and the pipes of the other series communicating at both ends with the other of said vertical drums, both series projecting over and nearly to the outer side of the grate, and a horizontal steam-drum located over the series of pipes and fire-box and extending from the front to the rear and connected to each vertical drum by a separate pipe having one or more bends, the latter pipes extending by and laterally overlapping each other, substantially as and for the purpose specified.

10. A steam-boiler composed of a base, a series of sections each consisting of two vertical drums arranged centrally in relation to the base, two series of U-shaped pipes, the pipes in one series communicating at both ends with one of said vertical drums and the pipes of the other series communicating at both ends with the other of said vertical drums, both series projecting inward over and nearly to the opposite side of the grate, and a horizontal drum located over the series of pipes and fire-box and extending from the front to the rear of the same and connected to each vertical drum by a separate pipe having one or more bends, the several pipes extending by and laterally overlapping each other, substantially as set forth.

11. In combination, a water-containing base, upright heads arranged alternately with each other, and heating-pipes projecting from the opposite faces of said heads, substantially as and for the purpose specified.

12. In combination, a water-containing base, tubular upright heads or manifolds arranged alternately with each other in two rows or series, and heating-pipes projecting from the opposite faces of said heads, substantially as and for the purpose described.

13. In combination, a water-containing base, tubular upright heads or manifolds arranged alternately with each other in two rows or series, heating-pipes projecting from the opposite faces of said heads, and a steam-drum connected with said pipes, substantially as set forth.

14. In combination, a water-containing base, tubular upright heads or manifolds arranged alternately with each other in two rows or series, heating-pipes projecting from the opposite faces of said heads, a pair of steam-drums on opposite sides of the heads or manifolds, and connecting-pipes between said heads and drums, substantially as described.

15. In combination, a water-containing base, tubular upright heads or manifolds arranged alternately with each other in two rows or series, heating-pipes projecting from the heads and consisting of a series of U-shaped pipes arranged one within the other, substantially as and for the purpose set forth.

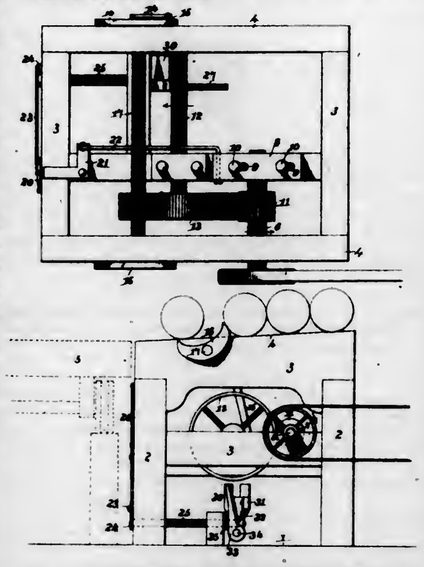
16. In combination, a water-containing base, tubular upright heads or manifolds arranged alternately with each other in two rows or series, heating-pipes projecting from the heads and consisting of a series of U-shaped pipes arranged one within the other, and a superheater mounted between the arms of one of said projecting pipes, substantially as specified.

17. In combination, a rectangular frame, a steam-drum, a series of heads or manifolds arranged alternately with each other in two rows, heating-pipes having their opposite ends opening from said drums and their central portion projecting outwardly therefrom, and plugs oppositely arranged with the heating-tubes, substantially as described.

18. In combination, a rectangular water-containing shell, two rows or heads arranged alternately with each other, steam-drums on opposite sides of the upper extremities of said heads, U-shaped heating-pipes projecting from the outer faces of the heads, and a superheater connected with the steam-drum and passed through the opposite extremities of one of said heating-pipes, substantially as and for the purpose described.

19. In combination, a water-containing base, tubular upright heads or manifolds arranged alternately with each other in two rows or series, heating-pipes projecting from the heads and consisting of a series of U-shaped pipes arranged one within the other, a superheater consisting of coils mounted between the arms of one of said projecting pipes, and a series of baffle-plates bent over said superheater-coils, substantially as and for the purpose set forth.

484,788. LOG-LOADER. Elisha J. Fuldeon, Traverse City, Mich., assignor of one-half to Lorin Roberts, same place. Filed Nov. 25, 1891. Serial No. 413,065. (No model.)



Claim.—1. In a log-loader, the combination, with inclined tracks, an oscillating shaft journaled across them, and crescent-shaped dogs or stops mounted on said shaft with their points uppermost, of a crank-shaft, a pitman connecting its crank with one of said feeders, means for rotating this shaft frictionally in one direction, a transversely-movable trigger having a finger, and a pin in the crank-shaft adapted to normally engage said finger, as and for the purpose set forth.

2. In a log-loader, the combination, with inclined tracks, an oscillating shaft journaled across them, and dogs or stops mounted on said shaft, of a crank-shaft, a pitman connecting its crank with said oscillating shaft, a pin in the crank-shaft, means for turning this shaft frictionally in one direction, a transversely-movable trigger having at one edge a shoulder and a lug, a finger pivoted to the body of the trigger, and a spring secured to the lug and bearing the finger normally against the shoulder, over which latter the tip of the pin is adapted to pass, as and for the purpose set forth.

3. In a log-loader, the combination, with inclined tracks, an oscillating shaft journaled across them, dogs or stops mounted on said shaft, a crank-shaft connected with said oscillating shaft, a pin in this

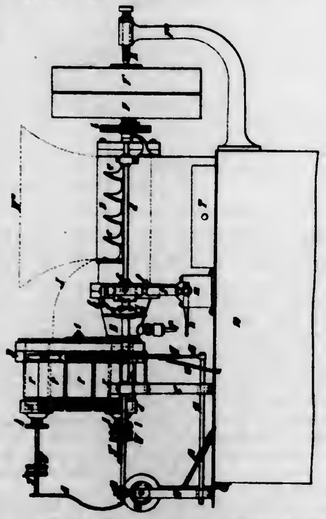
crank-shaft, and a friction-wheel thereon, of a swinging power-shaft having a friction-wheel, an operating-lever connected with said swinging shaft, an oscillating trigger-shaft also connected with said operating-lever, and a trigger on said trigger-shaft adapted to be borne astride the tip of said pin when the friction-wheels are out of contact, as and for the purpose set forth.

4. In a log-loader, the combination, with the tracks, the feeders, a shaft having a friction-wheel and connected with said dogs or stops, a pin in this shaft, a swinging power-shaft having a friction-wheel, an operating-lever, and connections between this lever and the power-shaft, of an oscillating trigger-shaft having a crank, a rod connecting this crank with the operating-lever, a trigger on said shaft having a slotted body adapted to pass astride the tip of said pin, and a spring-actuated finger pivoted to said body, the whole constructed and operating substantially as and in the manner hereinbefore set forth.

484,789. CULTIVATOR-SHOVEL. SOLOMON M. GRABELIEH, Duval, Ohio. Filed Feb. 5, 1892. Serial No. 420,413. (No model.)

Claim.—A cultivator-shovel consisting of a shank and a body made integral or of a single piece of metal, the shank having parallel sides 4 and 5, curved outwardly at their lower ends, and the body having curved sides 8 and 9, converging to a point 10 in line with the side 4 of the shank, forming an outwardly-projecting wing 12, the side of the body and side of the shank being joined by the inclined edge, substantially as and for the purpose described.

484,790. APPARATUS FOR AUTOMATICALLY COMPRESSING CHOCOLATE, &c. PAUL GUBIN, Paris, France. Filed Mar. 28, 1892. Serial No. 426,743. (No model.)



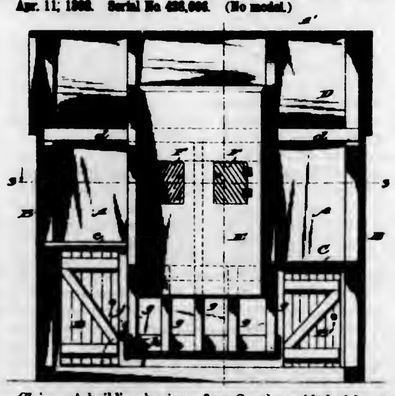
Claim.—1. In a chocolate-condensing apparatus, the combination, with the feed-hopper containing the spiral conveyer, of the rotating frame carrying a series of cylinders adapted to be successively brought into alignment with the discharge-tube, and a yielding plug in the latter, and connections for operating a clutch device to move the cylinder when an excess of chocolate lodges in the discharge-tube, substantially as set forth.

2. In combination, in a chocolate-condensing apparatus, the hopper provided with a conveyer, a rotating frame having a series of cylinders adapted to be successively supplied therefrom, a shaft *d*, with means driven therefrom for intermittently rotating said frame, an ejecting-plunger, and clutch mechanism also operated from the shaft *d* for successively emptying said cylinders when they arrive at a predetermined position, substantially as set forth.

3. The combination, with the hopper, its spiral conveyer, the discharge-tube, and a yielding plug *p*, of a rotating cylinder-frame, a clutch device *f g*, a vertical rod 3, having a projection *k*, and a step *n*, connected thereto in the path of the plug *p* and operated thereby to throw in the clutch, substantially as described.

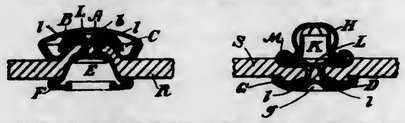
4. The combination, with the hopper and the spiral conveyer, of the rotating cylinder-frame, the plungers carried by the cylinders, means for rotating the frame, an ejecting-rod 11, extending vertically and adapted to operate on the spindles of the ejecters, and means for forcing said rod forward, substantially as described.

484,791. FEED-STABLE. DAVID HAIFLEY, Amboy, Ind. Filed Apr. 11, 1892. Serial No. 428,666. (No model.)



Claim.—A building having a floor C and provided with a tapered central chute open at the top and having a plurality of air-outlet openings and its smaller end at the top and flared outwardly, doors to the chute above said floor C, supports *g* for the trough, and a trough supported by the lower ends of said supports *g* at a distance from the floor and provided with a hinged side, the chute being open near its lower end above the said trough, all substantially as and for the purpose specified.

484,792. GLOVE AND GARMENT FASTENER. FRANK R. HALL, Newton, Mass., assignor to the Consolidated Fastener Company, Portland, Me. Filed Dec. 7, 1891. Serial No. 414,236. (No model.)



Claim.—1. The buttonhole member of a spring-fastener assembled in two parts, one of which consists of a stud-receiving bell-shaped socket, provided with a stud-grasping flanged lip, and having a separate flanged two-pronged rivet attached thereto, while the other part consists of a cover provided with an anvil and retaining-pieces, substantially as described.

2. A spring button-fastener member provided with a separate flanged rivet L, having a concave head and two wedge-shaped prongs *l* faced off at *l'* on the inner faces thereof, substantially as described.

3. A spring-button fastener consisting of a stud member and a socket member, the stud member consisting of a flanged stud provided with a separate two-pronged flanged rivet and the socket member consisting of a socket provided with a separate flanged two-pronged rivet and a cover provided with an anvil and retaining-pieces, substantially as described.

484,793. FINGER-RING. LEWIS J. HEMER, Buffalo, N. Y. Filed July 26, 1892. Serial No. 441,103. (No model.)

Claim.—1. A ring provided with a rim 2, having a series of hollow outward projections having their inner sides filled or partly filled with solder or other suitable material, so as to bring the inner surface substantially even, for the purposes described.

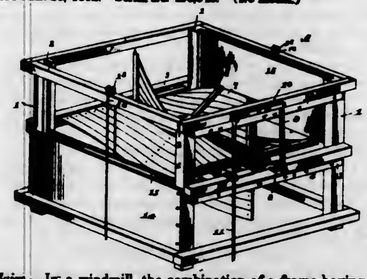
2. A ring provided with a rim 2, having a series of hollow outward projections filled or partly filled with some suitable material, substantially as above described, so as to bring the surface even or nearly even on the inner sides, in combination with a stone having a corresponding series of depressions adapted to come substantially opposite the filled inner depressions 4, for the purpose described.

3. The herein-described mode of securing a stone to a ring, consisting in providing the receiving-rim 2 with a series of depressions 4, thereby forming the hollow projections 5, then filling or partly filling the depressions 4 with a suitable material even or nearly even with the inner surface of the rim 2, then inserting a stone adapted to fit the rim 2 and having a corresponding series of depressions 7, and then pressing the projections 5, so that their inner filled sides will project or partly project into the depressions 7 in the stone, for the purposes described.

484,794. ROOFING COMPOUND. SAMUEL HERBERT, Detroit, Mich. Filed July 14, 1892. Serial No. 439,998. (No specimens.)

Claim.—The roofing composition hereinabove described, and consisting of tar, rosin, hair, and graphite, in the proportions substantially as set forth.

484,795. WINDMILL. SAMUEL M. HOPKINS, Frankfort, Kans. Filed Mar. 26, 1892. Serial No. 426,548. (No model.)



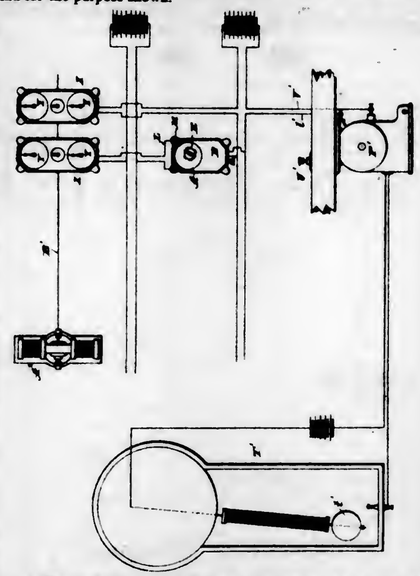
Claim.—In a windmill, the combination of a frame having open ends and reversely-situated openings in the opposite sides thereof and corner-posts with vertical grooves in the opposing sides thereof, an elongated spirally-bladed wheel extending from end to end of said frame and having a crank in connection with one end thereof, cross-beams at the ends of said frame, arranged at bottom and top and intermediately, curtains carried by said beams and arranged in pairs, shutters adjustably mounted in connection with said grooved corner-posts and adapted to be operated to open and close said side openings, a walking-beam secured to one of said beams, a pitman connected to the crank of the wheel and to one end of the said walking-beam, and a plunger-rod connected to the opposite end of said walking-beam, substantially as described.

484,796. SYSTEM FOR ADJUSTING TO TEMPERATURE WATCH-BALANCES AND HAIR-SPRINGS. GEORGE E. HOOPER, Elgin, assignor to the Elgin National Watch Company, Chicago, Ill. Filed Jan. 26, 1892. Serial No. 419,271. (No model.)

Claim.—1. The method employed for testing balances and hair-springs, which consists in vibrating the same a predetermined number of times in connection with a standard that is actuated for an interval of time which an accurate balance or spring would take to make such number of vibrations and noting the relation between the balance or spring and the standard at the conclusion of the vibrations and the interval of time, respectively, substantially as and for the purpose described.

2. The method employed for testing balances and hair-springs, which consists in vibrating the same the number of times which a standard balance or spring would vibrate during a predetermined interval of time, simultaneously starting two registering devices and actuating one of the same during the vibration of the balance or hair-spring and the other during the predetermined interval of time, substantially as and for the purpose specified.

3. The method employed for testing balances and hair-springs, which consists in vibrating the same the number of times which a standard balance or spring would vibrate during a predetermined interval of time in connection with a registering device, stopping the latter when such number of vibrations is made, and actuating in connection with the vibration of said balance or spring a second registering device for the predetermined interval of time, substantially as and for the purpose shown.



4. The method employed for testing balances and hair-springs, which consists in vibrating the same the number of times which a standard balance or spring would vibrate during a predetermined interval of time, simultaneously starting two similar registering devices and actuating them at the same speed and stopping one of said devices simultaneously with the completion of the number of vibrations of the balance or spring and stopping the other simultaneously with the expiration of the predetermined interval of time, substantially as and for the purpose set forth.

5. The method employed for testing balances and hair-springs, which consists in vibrating the same in connection with a registering device the number of times which a standard balance or spring would vibrate during a predetermined interval of time and simultaneously operating a standard timepiece during such interval of time in connection with a separate registering device and then comparing the registrations of the devices, substantially as and for the purpose shown and described.

6. The method employed for testing balances and hair-springs, which consists in vibrating the same the number of times which a standard balance or spring would vibrate during a predetermined interval of time simultaneously with the operation of a standard timepiece during such interval and in connection with two registering devices whose operation is commenced simultaneously and one of which is stopped when the number of vibrations has been made, while the other is stopped at the expiration of the predetermined interval of time, substantially as and for the purpose specified.

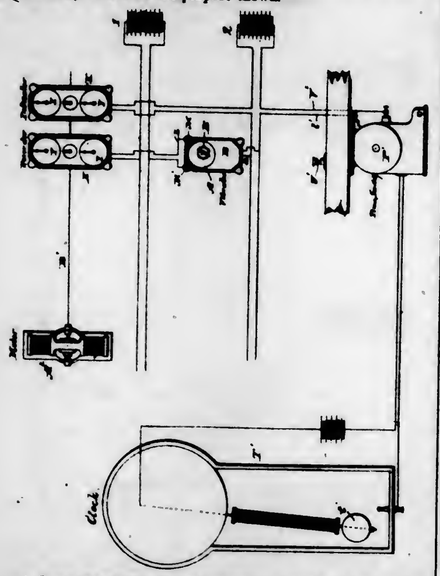
484,797. MECHANISM FOR TIMING AND ADJUSTING WATCH-BALANCES AND HAIR-SPRINGS. GEORGE E. HOOPER, Elgin, assignor to the Elgin National Watch Company, Chicago, Ill. Filed Jan. 26, 1892. Serial No. 419,272. (No model.)

Claim.—1. In combination with means for vibrating a balance or hair-spring, an indicating or registering device having a definite relation to said balance or spring and a second indicating or registering device controlled by a standard timepiece, substantially as and for the purpose shown.

2. In combination with two registering devices having a predetermined relation, mechanism for vibrating a balance or hair-spring a predetermined number of times, means for stopping the latter and

one of said registering devices simultaneously, and means for stopping the other registering devices at the expiration of a predetermined interval of time having relation to the number of vibrations given the balance or hair-spring, substantially as and for the purpose specified.

3. In combination with two registering devices, means to operate them at the same speed, mechanism connected with one of such registering devices for vibrating a balance or hair-spring a predetermined number of times, means for simultaneously stopping said vibrating and registering devices, and means for stopping the other registering device at the expiration of a predetermined interval of time having a relation to the number of vibrations given the balance or hair-spring, substantially as and for the purpose shown.



4. In combination with two registers, means for simultaneously operating them at the same speed, means for vibrating a balance or hair-spring a predetermined number of times connected with one of said registers, a standard timepiece connected with the other register, means for simultaneously stopping said vibrator and its register on the completion of the predetermined number of vibrations of the balance or hair-spring, and means for stopping the other register at the expiration of a predetermined interval of time having a relation to said vibrations as determined by the timepiece, substantially as and for the purpose set forth.

5. In combination with two registers, means for operating them at the same speed, means for vibrating a balance or hair-spring a predetermined number of times, which is adapted to control the time of operation of one of such registers, and a standard timepiece electrically connected with the other register and adapted to control the time of operation of the same, substantially as and for the purpose shown and described.

6. In combination with two registers, a balance or hair-spring vibrator in an electric circuit with one of such registers and a switch which is in a circuit which enables it to control both registers and said vibrator and operating by closing such circuit to simultaneously start all three and by breaking the circuit to cause them to stop, substantially as and for the purpose specified.

7. In combination with two registers, a balance or hair-spring vibrator, a time mechanism, and electric connections between said parts whereby said time mechanism may control the period of operation of one register and said vibrator the period of operation of the other register, substantially as and for the purpose shown.

8. In combination with two registers, a balance or hair-spring vibrator in electric circuit with one of the same and provided with a make-and-break device, a time mechanism in circuit with the other of said registers and said vibrator, means to simultaneously throw said vibrator, its register, and the other register in circuit, means for breaking the circuit between the vibrator and its register to simultaneously stop their operation, and means for breaking the circuit between said time mechanism and the other register, substantially as and for the purpose set forth.

9. In combination with two registers, a balance or hair-spring vibrator adapted for simultaneous operation with one of the registers, a time mechanism in electric circuit with such vibrator and the other register, a switch to simultaneously close said circuit between the time mechanism, its register, and the vibrator and to simultaneously break the same, and means for simultaneously stopping the vibrator and the register in connection therewith, substantially as and for the purpose shown and described.

10. In combination with two registers, a balance or hair-spring vibrator, an electric circuit provided with a circuit-breaker connecting such vibrator and one of said registers to enable them to operate in unison, a magnet to operate the circuit-breaker, a time mechanism in circuit with said magnet and the other register, and a switch in such circuit to simultaneously operate said circuit-breaker through said magnet and start said second register, substantially as and for the purpose specified.

11. In combination with two registers, a balance or hair-spring vibrator, an electric circuit connecting the latter and one of such registers to enable them to operate in unison and having in it a circuit-breaker, a magnet to operate the latter, a time-switch in circuit with said magnet and the other register, and a timepiece to actuate such switch a predetermined length of time to control the operation of the said other register, substantially as and for the purpose shown.

12. In combination with a balance or hair-spring vibrator, a part to be driven by the same to determine the period of its operation and means for simultaneously connecting said part with the vibrator and starting a register and for simultaneously disconnecting said parts and stopping said register, substantially as and for the purpose set forth.

13. In combination with a mechanism for vibrating a balance or hair-spring, a part to be operated thereby to determine the period of its operation, a register in electric circuit with such vibrating mechanism, and means for closing such circuit to start said register and simultaneously connect the vibrating mechanism with said controlling part and to stop such register and disconnect the latter and the vibrating mechanism, substantially as and for the purpose shown and described.

14. In combination with the registering mechanism of a balance and hair-spring testing apparatus, a watch-movement for vibrating a balance or hair-spring, a rotary disk or piece, and means for connecting the latter with such movement and for separating them after a predetermined number of revolutions of the disk, substantially as and for the purpose specified.

15. In combination with a watch-movement for vibrating a balance or hair-spring, a notched disk or piece, a clutch to connect the latter to said movement, a vibratory lever to co-operate with said disk and clutch, and means for operating the same, substantially as and for the purpose shown.

16. In combination with a watch-movement for vibrating a balance or hair-spring, a notched disk, a clutch for connecting such disk with the movement, a register in electric circuit with the vibrator, and a vibratory lever to co-operate with said notched disk and the clutch and to close and open said circuit, substantially as and for the purpose set forth.

17. In combination with a watch-movement for vibrating a balance or hair-spring, a disk provided with a notch and adapted to be connected with such movement, an arm adapted to be moved into and out of such notch, a stop device for preventing said arm from returning to said notch immediately after its removal, and means for simultaneously starting and stopping a register upon the removal and return, respectively, of said arm, substantially as and for the purpose shown and described.

18. In combination with a watch-movement, a disk provided with a notch and adapted to be connected with such movement, an arm adapted to be moved into and out of such notch, a pivoted plate adapted to be engaged by such arm on its outward movement and to be projected across said notch, and a pin upon said disk to engage said plate and remove it from said notch, substantially as and for the purpose specified.

19. In combination with a watch-movement, a disk carried by one of its arbors, a second notched disk arranged below and in line axially with the other, a split spring-ring carried by the lower disk in position to embrace the periphery of said upper disk with its split portion opposite the notch thereof, and a pivoted arm adapted to be moved into and out of said notch to open said split ring, and thereby free the upper disk, and to cause the latter to be clamped, and thereby rotate said notched disk, substantially as and for the purpose shown.

20. In combination with a register, a watch-movement in an electric circuit therewith, a disk provided with a notch and adapted to be engaged with and driven by said movement, an arm made movable into and out of said notch and adapted to open and close the circuit, a push-rod adapted to move such arm into said notch to effect the disengagement of said disk and movement and to open said circuit, and means for withdrawing said arm, so as to re-engage said disk and movement and to close said circuit simultaneously with the starting of a second register, substantially as and for the purpose shown and described.

21. In combination with a register, a watch-movement in an electric circuit therewith, a disk provided with a notch and adapted to be connected with and driven by said movement, an arm made movable into and out of such notch and adapted to open and close the electric circuit, a push-rod to move said arm into said notch to effect the disengagement of said disk and movement and to open said circuit, and a second electric circuit, including a magnet to withdraw said arm from the notch in the disk, a second register, and a switch which is adapted to simultaneously effect the connection of the notched disk with the watch-movement, the closing of the circuit between the latter and its register, and the closing of its own circuit, which includes the second register, substantially as and for the purpose specified.

22. In combination with a rotary circuit closing and opening disk or part, the magnet-operated devices to rotate the same, adapted to be actuated by a timepiece in circuit with the magnet, said circuit being independent of the one controlled by said disk, substantially as and for the purpose shown.

23. In combination with a rotatable disk which is adapted to close and open a circuit, a ratchet-wheel for revolving such disk, a pawl to actuate the ratchet-wheel, and means to disengage the pawl and ratchet-wheel to render the latter inoperative to move the disk at a certain point in the revolution of the latter, substantially as and for the purpose specified.

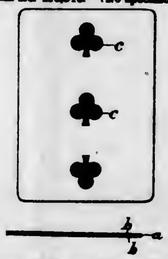
24. In combination with a rotatable disk which is adapted to close and open a circuit, a ratchet-wheel and pawl to revolve said disk and a pin or projection carried by the disk to disengage the pawl from its wheel at a certain point in its revolution, substantially as and for the purpose shown.

25. In combination with a rotatable disk forming part of an electric circuit and having in its periphery an insulator, a contact-piece resting on said periphery and adapted at each revolution of the disk to have contact with said insulator, a ratchet-wheel connected with said disk to rotate the same, a pawl to actuate the ratchet-wheel, means to operate the pawl, a pin or projection on the disk to engage the latter to prevent it from actuating the ratchet-wheel, and suitable means to release the pawl from engagement by said pin, substantially as and for the purpose set forth.

26. In combination with a device for vibrating a balance or hair-spring, two registers simultaneously operated by the same motor and having independent stopping mechanisms, substantially as and for the purpose shown and described.

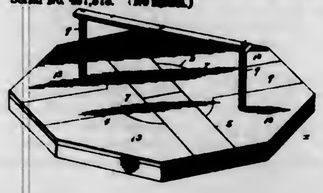
27. In combination with means for vibrating a balance or hair-spring, two registers, a shaft connected with both registers and adapted to simultaneously operate them at the same rate of speed, and means for stopping said registers independently of each other, substantially as and for the purpose specified.

484,798. PLAYING-CARDS. JOHN W. HYATT, Newark, N. J. Filed Oct. 20, 1891. Serial No. 410,316. (No specimens.)



Claim.—As a new article of manufacture, the playing-card herein described, consisting in a single layer of vegetable parchment having upon its flat sides a coating of white pigment and drying-oil, substantially as herein set forth.

484,799. ANIMAL-TRAP. MICAJAH JOHNSTON, Evergreen, Ala., assignor of one-half to Lemuel W. Savage, same place. Filed June 24, 1892. Serial No. 437,573. (No model.)



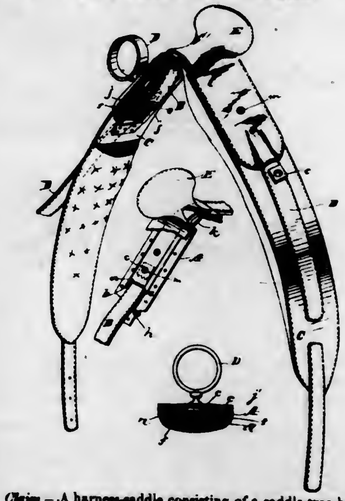
484,799.

Claim.—An animal-trap comprising a base having a central circular opening and provided in its upper face with diametrically-disposed recesses extending from the central opening, the pivoted trap-doors mounted in the recesses and having heavier outer portions and having inner portions extending over the central opening and completing the base, the trap-doors 4 being provided with segmental inner portions conforming to the central opening and arranged at opposite sides thereof and the inner ends of the trap-doors 5 being arranged between the segmental portions, and a bait-supporting frame extending over the central opening, substantially as described.

484,800. RUBBER-DAM CLAMP. NATHANIEL KIRK, Fairbury, Nebr. Filed Apr. 11, 1892. Serial No. 428,760. (No model.)

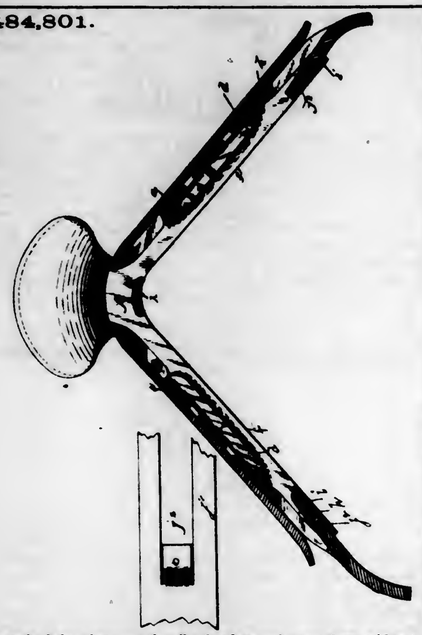
Claim.—In a device of the character set forth, the combination of a main frame-bar, adjusting-bars adjustably connected at right angles to said frame-bar and having right and left screw-threads on opposite ends thereof, a clamping-bar vertically adjustable in said frame-bar and having the lower end thereof bent inward and struck up, supporting-bars connected to the outer ends of said adjusting-bars, and a ring or loop held between the lower ends of said supporting-bars and formed with indented lips at the upper and lower portions of the same, substantially as described.

484,801. HARNESS-SADDLE. STEWART S. KURTZ, Canton, Ohio. Filed Feb 8, 1892. Serial No. 420,654. (No model.)



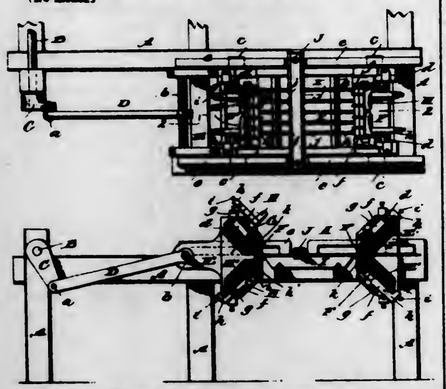
Claim.—A harness-saddle consisting of a saddle-tree having side wings or flanges *e*, channels or grooves *b* and *i*, one above and the other below said flanges, said channels opening or facing in opposite directions, ledges *d* on the opposite inner walls of the upper channel *b*, ribs *f*, depending from said flanges and extending the entire length of the channels *b* and *i*, webs connecting said ribs and provided with an extension *j*, a bridge *k* at the apex of the tree, a skirt slitted to form the prongs *j*, which rest upon said flanges and to form the tongues j^3, which are riveted to said webs, a jacket secured to the prongs of the skirt and flanges of the tree by rivets, terret-nuts located between the ledges, terrets screwed into said nuts, and a back-band strap resting

484,801.



upon the ledges between the ribs *f* and spaced apart from said nuts, substantially as set forth.

484,802. SLATE-SHAVING MACHINE. HENRY KEHES and EPHRAIM KEHES, Bangor, Pa. Filed May 23, 1892. Serial No. 434,206. (No model.)



Claim.—1. The combination, with the reciprocating bed with its knives and slatted bed and independently-adjustable pressure-pins, of a transverse bar having its edges beveled, as and for the purpose specified.

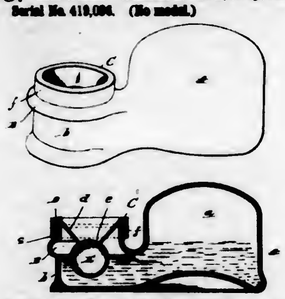
2. The combination, with the reciprocating carrier with its knives and bed and independently-adjustable inclined pins, of inclined guides on the knife-bed and a transverse bar having beveled edges, as and for the purpose specified.

3. The combination, with the reciprocating carrier with its knives and independently-adjustable inclined pressure-pins, of the transverse bar fixed between the knives and having its edges beveled and notched, as shown and described.

4. The combination, with the carrier provided with knife-bed, knife, and guide, of the lever having cam portion and an arm at right angles thereto and provided with right-angled portion with set-screw, as and for the purpose specified.

5. The combination, with the frame, of the carrier and its operating means, a transverse beveled bar, oppositely-arranged knives on the carrier to set upon both sides of a slate, a slatted bed between the knives, and inclined independently-adjustable pressure-pins on the knife-bed, as and for the purpose specified.

484,808. INK-WELL. WILLIAM B. LEWIS, Corry, Pa. Filed Jan. 23, 1892. Serial No. 419,096. (No model.)



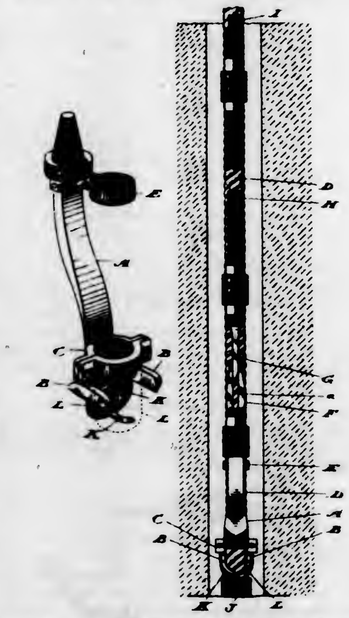
Claim.—1. An ink well or holder having a chamber adjacent its mouth to receive the rise of ink caused by expansion and a screw-cap for closing said mouth air-tight and having a dipping-aperture, substantially as specified.

2. An ink well or holder having a chamber adjacent its mouth to receive the rise of ink caused by expansion, and also having a screw-cap for closing the mouth air-tight and provided with a pen or dipping-aperture, and a buoyant stopper arranged in the holder to close the dipping-aperture, substantially as specified.

3. The ink well or holder having the large reservoir, the small reservoir in communication therewith, and the chamber adjacent the mouth of the small reservoir to receive the rise of ink caused by expansion, in combination with the screw-cap having the depending pen-aperture, and the buoyant stopper arranged in the small reservoir, so as to close said pen-aperture, substantially as specified.

4. The ink well or holder having the large reservoir, the small reservoir in communication therewith, and the chamber in the small reservoir and adjacent its mouth to receive the rise of ink caused by expansion, substantially as specified.

484,804. KNIFE FOR CUTTING THE ROPE USED IN BORING ARTESIAN AND OIL WELLS. WILLIAM A. LLOYD, Pittsburg, Pa. Filed Jan. 21, 1892. Serial No. 418,930. (No model.)



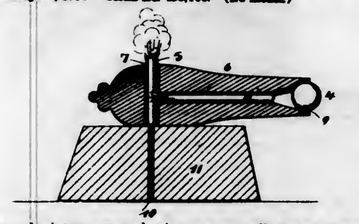
Claim.—1. An inwardly-curved knife hung upon a pivot on the end of a knife-head loosely held to the main rope and attached to a string of tools, substantially as and for the purpose specified.

2. A knife having an inwardly-curved finger extending below it, the said knife being hung upon a pivot on the end of a knife-head to the main rope and attached to the string of tools, substantially as and for the purpose specified.

3. An inwardly-curved knife hung upon a pivot on the end of a knife-head loosely held to the main rope and attached to a string of tools, in combination with a shield attached to the knife-head and arranged to protect the knife, substantially as and for the purpose specified.

4. A pair of knives, each knife provided with an inwardly-curved finger and each knife hung upon a pivot opposite to each other on the knife-head, in combination with a shield or shields arranged to protect the said knives, substantially as and for the purpose specified.

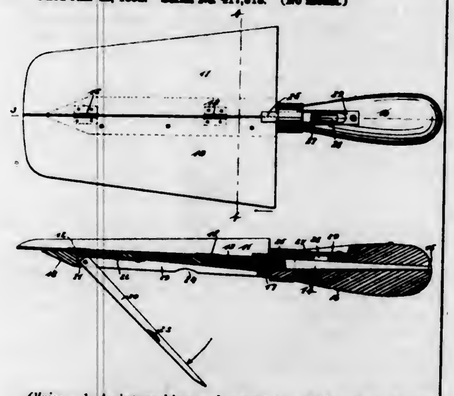
484,805. TOY CANNON. CHARLES W. LOCKE, Hartwell, Ohio. Filed May 16, 1892. Serial No. 433,163. (No model.)



Claim.—1. A toy cannon having an outwardly-tapering muzzle adapted to hold a ball, a contracted bore communicating with this tapering muzzle, and a combined touch-hole and receiver communicating with the bore and passing completely through the barrel of the cannon, all as substantially shown and described.

2. A toy cannon having an outwardly-tapering muzzle adapted to receive a ball, a contracted bore communicating with this tapering muzzle, a combined touch-hole and receiver communicating with the bore and perforating completely the barrel of the cannon, a base-block upon which the cannon is supported, and a passage through this base-block communicating with the touch-hole and receiver, all as substantially shown and described.

484,806. INTRENCHING-TOOL. MARTIN A. LUTHER, U. S. Army. Filed Jan. 12, 1892. Serial No. 417,818. (No model.)



Claim.—1. An intrenching-tool comprising a folding blade having a suitable handle and a fastening device to secure the blade in an open or folded position, substantially as described.

2. An intrenching-tool comprising a longitudinally-divided folding blade, a strengthening-rib secured to the back of the blade and provided with a handle, a pick secured to the rib, and a fastening device to hold the blade-sections in an open or folded position, substantially as described.

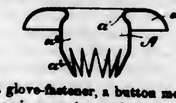
3. In an intrenching-tool comprising a rib having a suitable handle, a folding blade having one member fixed to the rib and the other member hinged to the fixed member, and a fastening device to hold the blade in open or folded position, substantially as described.

4. An intrenching-tool comprising a folding blade, a grooved rib secured to the back of the blade and provided with a handle, a swinging pick pivoted in the groove of the rib, and a fastening device to hold the blade in an open or folded position, substantially as described.

5. In an intrenching-tool, the combination, with the folding blade and the handle of the blade, of a sliding bolt mounted in the handle and adapted to overlap the blade, substantially as described.

6. The combination, with the folding blade and the handle thereof, of a sliding bolt mounted in the handle and adapted to overlap the blade, said bolt having a rib on the under side, substantially as described.

484,807. GLOVE-FASTENER. ALBERT G. MEAD, Boston, assignor to W. R. H. Dewes, trustee, Newton, Mass. Filed Nov. 7, 1892. Serial No. 330,903. (No model.)



Claim.—1. In a glove-fastener, a button member consisting of a flanged stud having spring-ears integral with the flange and a tubular eyelet struck up from said flange within the head of the stud, in combination with a flanged tubular rivet, substantially as described.

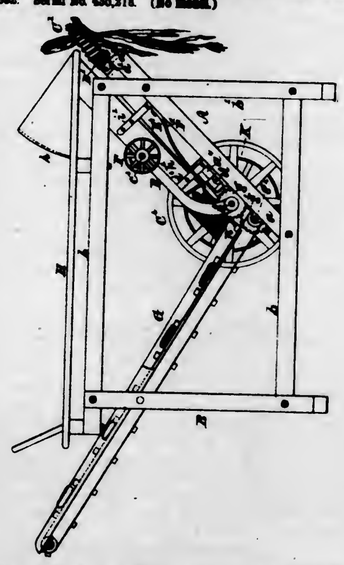
2. In a glove-fastener, a button member consisting of a one-piece spring-flanged stud having a tubular eyelet struck up from said flange within the head of the stud, in combination with a tubular-flanged rivet and a dome or cap clinched around the flange of said rivet, substantially as described.

3. In a glove-fastener, the combination, with a one-piece flanged spring-eared stud having a tubular eyelet *b* struck from the flange of the stud within the head thereof, of a flanged tubular rivet passing through the said eyelet and clinched at the inner end thereof within the head of said stud, substantially as described.

4. In a glove-fastener, a female member consisting of a flanged eyelet having a serrated or slitted shank, the serrated or slitted portion being closed inward at the bottom to form a point adapted to punch the glove material, substantially as described.

5. In a glove-fastener, a female member consisting of a flanged eyelet A, having a rolled-in contracted mouth *a'* at the flanged end thereof and a stud-receiving chamber of larger diameter than the contracted mouth, the said eyelet having a serrated or slitted shank, the serrated or slitted portion being closed inward at the bottom to form points adapted to punch the glove material, substantially as described.

484,808. CORN-HUSKING MACHINE. SAMUEL R. MORRAL, JOHN MORRAL, and WILLIAM W. MORRAL, Morral, Ohio. Filed June 1, 1892. Serial No. 435,218. (No model.)



Claim.—1. In a corn-husking machine, two slightly-tapering main rolls mounted upon inclined shafts, the latter terminating at their free ends in oppositely-pitched worm-spirals, eccentrics on said shafts having teeth or corrugations thereon, serrated plates coincident with the

faces of said eccentrics and operating therewith, and a transverse roller having a spiral flange suspended over said main rolls, substantially as and for the purpose set forth.

2. In a corn-husking machine, the two slightly-tapering main rolls having inclined shafts, tapering worm-spirals on the ends of the latter, corrugated eccentrics on said shafts between said worm-spirals and said main rolls, and serrated plates having their teeth coincident with the faces of said eccentrics, said serrated plates having means for adjustment, as described, in combination with a spiral flanged roller over said main rolls and having its plane of rotation crossing the plane of rotation of the latter.

3. In combination with a pair of inclined rolls having their shafts in the same plane, the devices for seizing the ear and snapping it from the stalk, consisting of the tapering spiral worms, eccentrics having longitudinal teeth or corrugations on their faces, serrated plates co-acting with said eccentrics, and a spiral flanged roller having its axial line crossing the axial lines of said inclined rolls, with the means described for supporting said spiral flanged roller over said inclined rolls and for its co-operative adjustment therewith, substantially as and for the purpose hereinbefore set forth.

4. In a corn-husking machine, the two inclined main rolls, the devices for stripping the husk from the ear and separating the latter from the stalk, consisting of the terminal screw-worms and eccentrics on the shafts of said inclined main rolls, and the spiral flanged roller suspended transversely over said main rolls, the means for driving said transverse roller, in connection with the means for driving said main rolls, and the devices described for pivotally suspending said transverse roller over the latter and for bringing it into co-operative adjustment therewith.

5. In a corn-husking machine having its main rolls mounted upon parallel shafts, one of the latter being made adjustable, the combination, with said shafts, said main rolls, and their husking devices, of the frame-plates composed of a fixed and a movable section and having the box of the adjustable shaft partly in each of said sections, with the means described for the adjustment of the latter, substantially as set forth.

6. In a corn-husking machine, the rectangular frame B, the table H, having the hood *h* on its front end supported over said frame, and the inner frame A supporting the mechanism and consisting of the inclined rails *a a*, having their ends connected by a cast-iron frame-plate having a fixed and a movable box thereon, the latter being made adjustable by the means described, for the purpose set forth.

7. The combination, in a corn-husking machine, of a frame-plate having a fixed and a movable box for the shafts of the main rolls and their accessories, means for the adjustment of the movable box, as described, said frame-plate having a rectangularly-extended part, with a box thereon supporting one end of the main driving-shaft, and having a lateral curved arm, with a box thereon supporting said main driving-shaft at or near the point of the greatest deflective strain on the latter, substantially as set forth.

8. The combination, with the main driving-shaft, the transverse roller-shaft, and the gearing connecting them, of the long bracket having a lateral sleeve at each end, one end of said bracket being pivoted upon said main driving-shaft, and the opposite end supporting said transverse roller-shaft, substantially as and for the purpose set forth.

9. In combination with the pivotally-suspended transverse roller, the bracket supporting the latter, and the inner frame, of the long bar-spring having its best end bolted to the inclined rail *a* and having its resilient end connected with said bracket by an adjustable screw-bolt, substantially as described, for the purpose set forth.

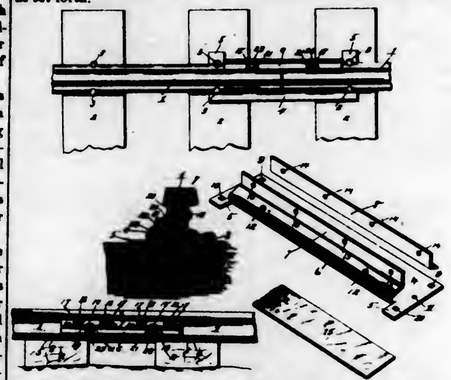
10. In a corn-husking machine, the combination, with the husking devices used for the initial part of the process, of rubber rolls or rolls having a rubber covering for husking green corn, substantially as set forth.

11. In a corn-husking machine having the two inclined coacting rolls, the combination, with a roll provided with circumferential grooves, of a roll coacting therewith having rows of pins tapering outwardly from the surface of the roll to their ends, said pins being adapted to engage said circumferential grooves, as set forth.

12. In a corn-husking machine, the combination of the devices for loosening the husk from the ear and for forcing the latter toward the rolls at the same time, the eccentrics and serrated plates operating to separate the husks and silk, the coacting inclined rolls forming a slide for the ears, and the transverse roller having a spiral flange operating to turn the ears over as they pass under it and thus allow the inclined rollers to complete the process of removing the husk and silk from the ears, substantially as hereinbefore set forth.

484,809. RAILWAY FISH-PLATE, SET-SCREW, AND NUT-LOCK THEREFOR. JAMES P. MCGUIRE, Atchison, Kans. Filed Feb. 26, 1892. Serial No. 422,856. (No model.)

Claim.—1. A fish-plate composed of a member having an elongated horizontal base portion provided at its ends with integral ears extending outwardly from one of its margins, and provided, also, at its said margin with an integral upward and inward extension terminating at its ends at the ears and having a vertically-prolonged integral upper portion corresponding in length with the extension, substantially as set forth.



2. A fish-plate comprising a member having an elongated horizontal base having at its ends outwardly-projecting integral ears at the ends of one of its margins, and provided, also, at said margin with an upwardly and inwardly projecting integral extension terminating at its ends at said ears and having a vertically-prolonged integral upper portion corresponding in length with the extension, and a companion member of elongated form, substantially as set forth.

3. A fish-plate comprising an integral member formed to extend beneath the rail-base and integrally above said base, and also flatly against the corresponding side of the rail-web, and provided with an internally-screw-threaded opening through its extension, and with a set-bolt entering said opening and pressing upon the base of the rail, openings formed through the ends of the base of the fish-plate member, and an elastic cushion placed upon said base of the said member, substantially as set forth.

4. A fish-plate comprising an integral member to lie beneath the base of the rail and to extend integrally upwardly over the base and against the side of the rail-web, and provided with an internally-screw-threaded opening, a set-bolt working in said opening, and a nut-locking bar comprising an elongated body portion through which the set-bolt passes, having inverted-U-shaped ends to embrace the fish-plate bolt-nuts, and provided, also, with an extension having a spring-lip, substantially as set forth.

484,810. BUTTON. ALBERT B. NEWCOMB, Philadelphia, Pa. Filed Dec. 28, 1889. Serial No. 335,184. (No model.)

Claim.—1. In a button, in combination, a head having a tubular shank slightly flared, and a backing-plate having a tubular shank slightly flared, and a recess surrounding the orifice in the plate, and a pin having a head at one end and a flange at the other, the said pin being adapted to be inserted in the head through the shanks of the head and backing-plate, and the said flanged head of the pin being adapted to engage in the recess surrounding the orifice in the backing-plate.

2. In a button, in combination, the head a^2, having the shank *a*, the backing-plate *c'*, having the shank *c*, and the pin B, having the spring-flange *b*, adapted to engage in the recess *d* of the backing-plate *c'*.

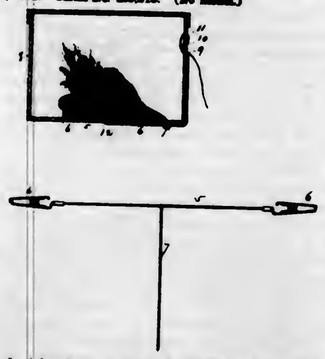
3. In a button, in combination, the head a^2, having the recess *a'* and the shank *a*, the backing-plate *c'*, having the shank *c*, and the pin B, having the spring-flange *b* and the head *b'*, said pin B being adapted to connect together the head a^2 and the backing-plate *c'* and the head *b'* being adapted to engage in the recess *a'*, and the spring-flange *b*, adapted to engage in the recess *d*.

484,811. NURSING-BOTTLE. OTIS K. NEWELL, Boston, Mass. Filed Mar. 7, 1892. Serial No. 423,967. (No model.)

484.811.

Claim.—The combination, with a nursing-bottle A, provided with an opening having an outwardly-extended lip or flange, of a vented cap consisting of a body portion *b*, inserted into the bottle through the opening and provided with a normally-closed vent or opening and a rim fitted over the flange or lip, substantially as described.

484,812. HAT-BOX. HORACE J. NEWMAN, Fort Wayne, Ind. Filed Feb. 29, 1892. Serial No. 423,315. (No model.)

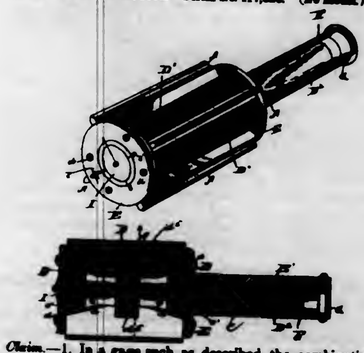


Claim.—1. A hat-box provided with a central perforation in one side, a string or strings passing through said perforation and removably attached to the rim or lining of the hat, a frame rest or support for a hat, placed on said side and having its surface adapted to conform to the contour of the hat, and means to secure said string or strings in place to hold a hat firmly against said frame-rest and said side of the box.

2. In a hat-box, the combination of a perforation in one of its sides, with a string or strings passing through said perforation and provided with means of removable attachment to the rim or lining of a hat, and means to secure said string or strings in place to hold a hat firmly against said side of the hat-box.

3. In a hat-box, the combination of a string or strings provided with means of attaching the same to the rim or lining of a hat, means to confine the pull of the string to a given place or places on one side of the hat-box, and means to secure said string or strings in place to hold a hat firmly against said side of the hat-box.

484,818. INSIDE CALIPERS. RICHARD C. NUSBAUM, Harrisburg, Pa., assignor of two-thirds to James Jenkins and Alfred Harbold, same place. Filed Jan. 12, 1892. Serial No. 417,826. (No model.)



Claim.—1. In a gage such as described, the combination, with the frame having the slots or ways therein and the gage-plates working in said slots or ways and having the oppositely-inclined inner edges, of the oppositely-arranged expanders movably connected with the inner edges of the plates and the shaft co-operating with both said expanders, substantially as described.

2. In a gage such as described, the combination, with the frame having the slots or ways and central cylindrical openings and the gage-plates working in said slots or ways and having the oppositely-inclined inner edges, of the oppositely-arranged expanders movably connected with the inner edges of the plates and working in the central cylindrical opening and the shaft having the right and left hand threads co-operating with said expanders, substantially as described.

3. In a gage such as described, the combination, with the frame having the radial slots or ways formed by side pieces and the central connecting-ring and the gage-plates working in said slots or ways and having their centers cut out to accommodate the connecting-ring, of the expanders co-operating with the inner edges of the plate and the single shaft for moving said expanders, substantially as described.

4. In a gage such as described, the combination, with the frame having the radial slots or ways and the handle at one end and the series of radially-movable gage-plates carried by the frame, of the expanders co-operating with the plates and the shaft for moving the expanders, extending out through the handle, substantially as described.

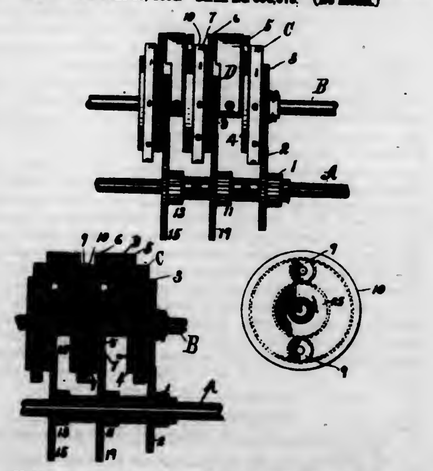
5. In a gage such as described, the combination, with the frame having the tubular handle at one end and the series of radially-movable gage-plates carried by the frame, of the oppositely-arranged expanders for moving the plates, the shaft for moving the expanders extending out through the handle and the cap for closing the end of the handle and covering the end of the shaft, substantially as described.

6. In a gage such as described, the combination, with the frame having the slots or ways, the gage-plates working in said slots or ways, the end plates, and the tubular handles secured to one of the end plates, of the expanders co-operating with the gage-plates, the shaft having the right and left hand screw-threads co-operating with the expanders, the shoulders on the shaft engaging the end plates, and the end extension passing out through the tubular handle, substantially as described.

7. In a gage such as described, the combination, with the frame having the slots or ways therein and the end plates, of the gage-plates working in the slots or ways, the expanders co-operating with the gage-plates, and the screw-threaded shaft having the shoulders engaging the end plates to prevent longitudinal movement of the shaft, substantially as described.

8. In a gage such as described, the combination, with the frame having the end plates, the radially-movable gage-plates carried by the frame, and the oppositely-arranged expanders co-operating with the gage-plates, of the shaft for moving the expanders, passing through the end plates and provided with means at one end whereby it is turned, and an indicator carried by the opposite end, substantially as described.

484,814. CALCULATING-MACHINE. FRANCIS C. OSBORN, Detroit, Mich. Filed June 16, 1891. Serial No. 396,673. (No model.)



Claim.—1. A calculating-machine having for each order of units

adapted to operate in unison with said carrying-gear and to produce in said registering-wheels an aggregate movement equal to the combined movement of all of said actuators, all of said registering-wheels, gear-wheels, and actuators being adapted to movement in either direction, substantially as and for the purpose described.

3. In a calculating-machine, the combination of a registering-wheel with two independent actuating-wheels, one of which is adapted to impart to said registering-wheel a constant motion continuous with its own motion and the other of which is adapted to impart to said registering-wheel an intermitting motion equal to an aliquot part of its own motion, both of said actuating-wheels being adapted to act simultaneously and to rotate in either direction and to impart to said registering-wheel an aggregate motion due to the continuous motion of one wheel and the aliquot part of the motion of the other wheel.

4. In a calculating-machine, the combination of two or more registering-wheels, each operated by a leading-wheel, an epicyclic gear meshing with the leading-wheel directly actuating one of said registering-wheels and mounted on a moving wheel adapted to be actuated by the other of said registering-wheels, substantially as and for the purpose described.

5. In a calculating-machine, the combination of a supporting-arbor, a registering-wheel adapted to indicate one order of units, a leading-wheel and a registering-wheel for another order of units, all journaled on said arbor, and an epicyclic wheel meshing with said leading-wheel and with one of said registering-wheels and adapted to have motion of rotation from said leading-wheel and an intermittent motion of translation from the other of said registering-wheels and adapted to transmit to one of said registering-wheels the resultant of both its rotation and translation, substantially as and for the purpose described.

6. In a calculating-machine, a registering-disk and an epicyclic pinion meshing therewith and driving said registering-disk, said pinion receiving motion of translation and motion of rotation, respectively, from two independent actuators, one continuous, the other intermittent.

7. In a calculating-machine, two or more registering-disks registering units of orders higher than the first, two or more epicyclic pinions, one for each disk, meshing with and driving said disks, each of said epicyclic pinions receiving a motion of translation and a motion of rotation from two independent actuators, one continuous and the other intermittent, and a carrying-pinion meshing with the first of said registering-disks and constituting the said intermittent actuator of the epicyclic pinion proper to the second or higher one of said registering-disks.

8. In a calculating-machine, a registering-disk actuated by an intermittent carrying-pinion and by its own proper actuating-wheel, neither of said actuators meshing directly with said registering-wheel, but each having interposed between it and said registering-wheel an epicyclic pinion, the same pinion engaging both actuators.

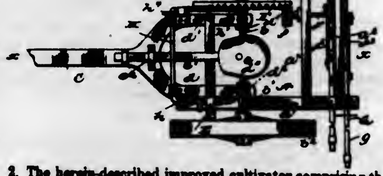
9. In a calculating-machine, a registering-disk, a primary actuating-wheel therefor, a wheel receiving motion from a lower registering-disk and constituting a secondary actuator for said registering-disk, and an epicyclic pinion, each of said actuators communicating its motion to said registering-disk through said epicyclic pinion.

10. In a calculating-machine, the combination of two registering-disks, a carrying-pinion receiving motion from the first of said disks, and an actuating-wheel for the second of said disks, said actuating-wheel constituting the primary actuator for said second disk, both of said actuators transmitting their motion to said second registering-disk through the same epicyclic pinion, one of said actuators giving said pinion a motion of rotation, the other giving it a motion of translation, substantially as and for the purpose described.

11. In a calculating-machine, the registering-disk 10, epicyclic pinion 9, engaging therewith, leading-wheel 26, and the intermittent wheel 7, both arranged to engage with said registering-wheel indirectly, carrying-pinions 5 6, and registering-disk C, all combined and operating as and for the purpose described.

484,815. CULTIVATOR. WILLARD H. PERKINS and WILLIAM L. GREENWOOD, Long Beach, Cal. Filed Feb. 17, 1892. Serial No. 421,966. (No model.)

Claim.—1. The herein-described improved cultivator comprising the axle and the carrying-wheels secured thereon, the frame pivotally

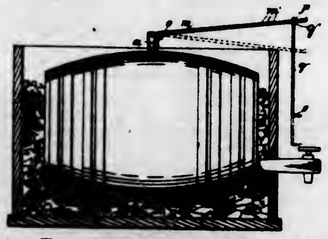


2. The herein-described improved cultivator comprising the axle and carrying-wheels secured thereon, the gear-wheel on said axle, the frame loosely hung on said axle, the cultivating-bars, the crank-shaft for operating the same, having a pinion thereon, the tongue having bars or hounds secured to said axle, the bracket attached to one of said bars or hounds and having outwardly-curved arms, and the rock-shaft for depressing the forward end of said frame, whereby the latter will be tilted and moved laterally, disengaging the pinion from contact with said gear-wheel, substantially as set forth.

3. The combination, with the axles and wheels, of the gear-wheel on said axle, the frame loosely hung on said axle, the bars or hounds having curved guide-arms extending therefrom on each side of one of the side bars of said frame, the cultivating-bars, the rock-shaft for operating the same, having a pinion in engagement with said gear-wheel, and means for depressing the forward end of said frame, whereby the pinion can be thrown out of engagement with said gear-wheel, substantially as set forth.

4. The herein-described improved cultivator, comprising the axle and carrying-wheels secured thereon, the gear-wheel on said axle, the frame loosely hung on said axle, the cultivating-bars loosely secured to the rear end of said frame, the double crank-shaft, the pitmen connected thereto and to said cultivating-bars, the pinion on said shaft normally in engagement with said gear-wheel, the bars or hounds secured to said axle, the curved arms or guides projecting from one of said bars or hounds and between which one of the side bars of said frame is passed, the rock-shaft secured on said bars or hounds and having its cranked end bearing on said side bar, the lever extending from the other end of said rock-shaft, the toothed plate, and the spring-pressed bolt, substantially as set forth.

484,816. VENT FOR LIQUID-RECEPTACLES. FREDERICK W. POLLS, Washington, D. C. Filed Apr. 13, 1892. Serial No. 429,033. (No model.)

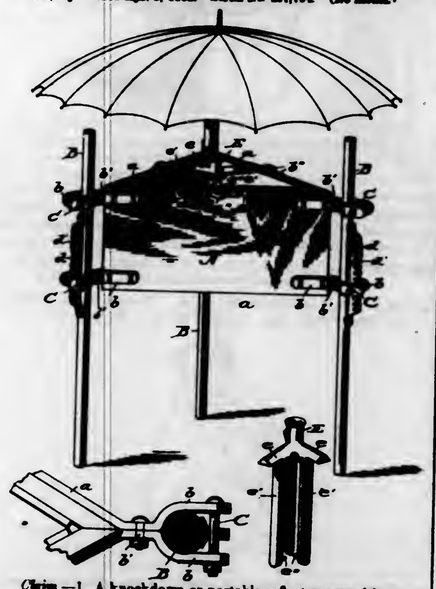


Claim.—The combination, with a vent-plug containing a central vent-channel having a reduced portion, of a valve located in the channel and provided with a stem, a threaded socket portion attached to the inner end of the stem, a spring for normally holding the valve in closed adjustment, the valve proper being composed of elastic material formed with a convex wearing-surface, and a shank adapted to enter said threaded socket, and a concaved seat surrounding the throat of the reduced part of the channel, in the manner and for the purpose substantially as described.

484,817. POTATO-DIGGER. ASHER A. PRATT, Independence, Oreg. Filed Dec. 31, 1891. Serial No. 416,600. (No model.)

Claim.—In a potato-digger, opposite standard-beams, a flat shield-shaped shovel secured at its rear edge to the lower ends of said beams in an approximately-horizontal plane, parallel landside-runners secured beneath the shovel and extending to the rear of the same in a direct line with the point thereof to travel directly upon the ground, a vibrating shaker pivoted beneath the rear edge of the shovel and comprising a series of parallel beating-fingers and having a central strike-plate, a shaft journaled in said parallel landside-runners, a traveling spur-wheel mounted on said shaft and adapted to intermittently engage said strike-plate, and a series of guard and mold-board fingers secured to the opposite rear corners of the shovel and arranged at an inwardly-extending angle arising from the outer fingers of the shaker, substantially as set forth.

484,818. PORTABLE MIRROR. WILLIAM G. PREWITT, Lexington, Ky. Filed Apr. 5, 1892. Serial No. 427,704. (No model.)



Claim.—1. A knockdown or portable reflector comprising separable mirrors adapted to be arranged in the form of a prism with their reflecting-surfaces inward, brackets or clips attached to their edges for securing the mirrors together and constructed to form sockets for supporting-posts, substantially as described.

2. A knockdown or portable reflector comprising separable mirrors adapted to be arranged in the form of a prism with their reflecting-surfaces inward, brackets or clips attached to their edges for securing the mirrors together and constructed to form sockets for supporting-posts, and the posts, the said posts and clips being apertured to receive a bolt or pin, substantially as described

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484,819. CATCH FOR GARMENT-SUPPORTERS. JOHN M. RABBITT, Boston, Mass., assignor to the Ball and Socket Fastener Company, of New Hampshire. Filed Aug. 22, 1891. Serial No. 403,626. (No model.)

Claim.—A garment-supporting catch consisting of the head G and of two branches or legs C and F, integral therewith, the front outwardly-springing branch or leg F being shorter than the back branch or leg C and the latter having as an integral part thereof at its bottom the incline D, terminating in the upwardly-extending lip E, the top of

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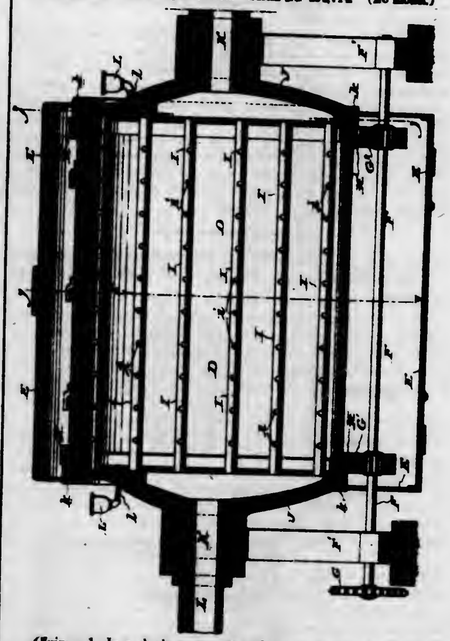
484,821. DRYING APPARATUS. HANNIBAL W. RAFFLETY, Philadelphia, Pa. Filed Sept. 4, 1891. Serial No. 404,714. (No model.)



Claim.—1. In a quarter-boot for horses, the body *a*, terminating at the top in a roll *c* and having one or more pockets *d* in the base of said body, in combination with one or more flexible movable weights within the pockets, in the manner substantially as and for the purpose set forth.

2. In a quarter-boot for horses, the body *a*, having one or more pockets for the reception of adjustable weights at the base and the roll *c* at the top, in combination with a lap having the openings *g g'*, and *h* therein, the strap *j*, and loops *k* and *l*, in the manner substantially as and for the purpose set forth.

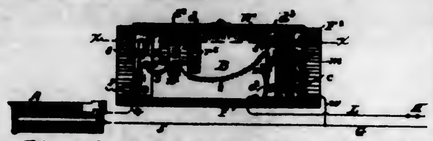
Claim.—1. In a drying apparatus, the combination of a rotary cylinder, pipes passing through the cylinder, and a stationary head recessed or cut away, except at its upper part, to form a heat-chamber communicating with the pipes.

2. In a drying apparatus, the combination of a rotary cylinder having closed ends, perforated pipes passing through the cylinder, and a stationary head fitting against the end of the cylinder, said head recessed or cut away, except at its upper portion.

3. In a drying apparatus, the combination of a rotary cylinder, pipes passing through the cylinder, and a stationary head recessed or cut away, except at its upper part, to form a heat-chamber communicating with the pipes, the upper portion of said head being substantially flush with said cylinder.

4. In a drying apparatus, the combination of a rotary cylinder having closed ends, perforated pipes passing through said cylinder, and a stationary head fitting against the end of the cylinder, said head recessed or cut away, except at its upper portion, the upper portion of said head being substantially flush with said cylinder.

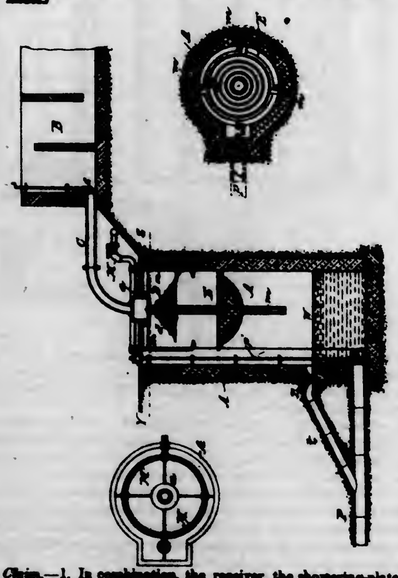
484,822. THERMAL CIRCUIT-CHANGER AND PROTECTIVE APPLIANCE. Harry A. Ritson, Denver, Colo. Filed Mar. 11, 1892. Serial No. 424,809. (No model.)



Claim.—1. In a thermal protective appliance, a main conductor of an electric circuit, an earth or return conductor of the said electric circuit, a hollow cylinder or chamber of hard rubber or like material closed at one end and made of any desired normal capacity by a plug of the same material, an attenuated and concentrated section of the main conductor of said electric circuit—such as a coil of fine insulated wire of relatively-high resistance—inclosed within said chamber, a globule or drop of mercury placed, also, within said chamber upon and around said coiled conductor, an elastic, flexible, and expansible diaphragm closing the remaining end of said chamber and suitably secured thereto, a conducting-plate extending from the return-conductor to a point opposite to said expansible diaphragm, and a normally-discontinuous branch of the main conductor in the form of a light spring carrying a contact-point extending between the said plate and the said diaphragm and adapted upon the expansion of the latter to be moved into contact with the former, and thereby to unite the main and return conductors directly and short-circuit the inclosed coil of fine wire, substantially as described.

2. In a thermal protective appliance, a vulcanite inclosing cell closed at one end by a tightly-fitting plug whose depth of insertion regulates the capacity of said cell and closed at its other end by a diaphragm of thin sheet-rubber or equivalent substance, a heat-concentrating section of an electric circuit compressed into small bulk inclosed in said cell and extending therefrom by suitable connecting-wires, a drop of mercury also inclosed therein upon and around said heat-concentrating section and capable of being heated and expanded thereby and of exerting pressure upon said rubber diaphragm, and a switch bar, lever, or spring resting upon said diaphragm and moving therewith, substantially as described.

484,823. APPARATUS FOR PURIFYING SEWAGE. Ernest R. Suvery, Hyde, England. Filed Aug. 7, 1891. Serial No. 400,927. (No model.)



Claim.—1. In combination, the receiver, the showering-plate D at the upper end thereof, the pipe C, opening centrally over said plate the annular oxygen-main M about the upper part of the receiver, and a series of nozzle-pipes *m*, depending therefrom and opening below the edge of the showering-plate, the said receiver having an outlet at its lower end and a conduit leading therefrom, substantially as described.

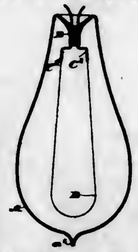
2. In an apparatus for purifying sewage, &c., a gas-tight receiver, a pipe connecting the same with the supply for such material, a showering device in the upper part of the receiver, a perforated bowl below the same, an oxygen-supply pipe, branch pipes for conducting oxygen to the interior of the receiver, an overflow-trap, a discharge-pipe, and a valve controlling the same, substantially as set forth.

3. In combination, the receiver, the showering-plate D at the upper end thereof, the pipe C, opening centrally over said plate, the oxygen-main extending about the upper end of the receiver, the series of nozzle-pipes *m*, depending from said annular main, and the perforated bowl below the showering-plate, some of the nozzles extending to a point intermediate of the showering-plate and bowl and the remainder extending below the bowl, substantially as described.

484,824. KETTLE-COVER. James Shilling, Jr., Troy, Ohio. Filed Apr. 30, 1892. Serial No. 431,204. (No model.)

Claim.—A cover for kettles or other vessels, provided with a curved spring-arm pivoted or hinged thereto, said arm consisting of a spring-wire bent to have substantially the same curve as the bail of the vessel and extending in the same direction or parallel therewith when the cover is in position and having its outer or free end extending laterally to the length of the arm and curved to form a seat, whereby the seat can be sprung under the bail when the latter is elevated, and thus hold the cover securely in place, substantially as and for the purpose set forth.

484,825. INCANDESCENT LAMP. Frank S. Smyth, Pittsburg, Pa. Filed Feb. 29, 1892. Serial No. 423,372. (No model.)



Claim.—1. An incandescent lamp consisting of a filament, leading-in wires, and an inclosing chamber consisting in part of glass and in part of a soluble substance.

2. An incandescent lamp consisting of a filament and leading-in wires and an inclosing chamber composed of two sections, one consisting of glass and the other consisting of soluble compound surrounding the leading-in wires.

3. An incandescent lamp consisting of a filament and leading-in wires and an inclosing chamber consisting of two sections, one consisting of glass and the other consisting of a compound of one or more members of the alkaline group of elements with one or more members of the silicon group.

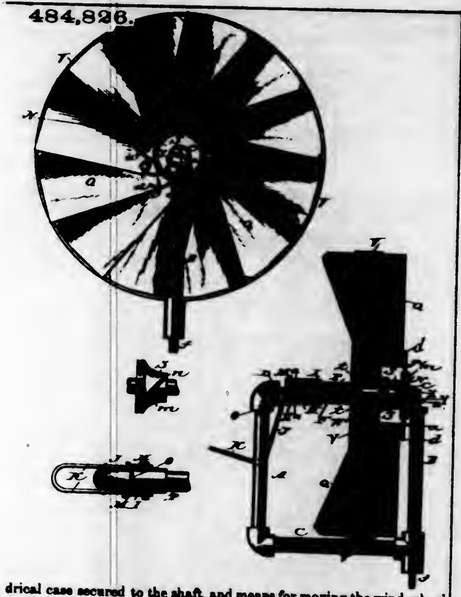
4. In an incandescent electric lamp, a soluble stem.

5. In an incandescent electric lamp, a chamber consisting in part of glass and in part of a soluble substance.

484,826. WINDMILL. Benjamin T. Starbird, Concordia, Kans. Filed Oct. 10, 1891. Serial No. 408,266. (No model.)

Claim.—An improvement in windmills, consisting of the U-shaped supporting-frame, the wind-wheel mounted thereon and vertically within the frame, a disk rigidly mounted on the wheel-shaft and curved arms mounted on the disk, the wheel-hub having an oscillating reciprocating movement on the wheel-shaft, and the wings provided with eyes engaging the curved arms, in combination with a coil-spring mounted on the shaft and having its resistance against the larger portion of the shaft, and a disk secured to the shaft, a cylindrical case secured to the shaft, and means for moving the wind-wheel from the fixed disk to deflect the wings, as and for the purpose specified.

484,826.



484,827. LINK BELT. David S. Stewart, Morris, Wis. Filed Dec. 21, 1891. Serial No. 415,711. (No model.)

Claim.—1. A link belt comprising a series of side bars arranged in pairs and provided at their ends with openings, each pair of side bars being brought nearer together at one end than at the other, so as to fit within the ends of the next pair of side bars in the series, in combination with independent transverse portions extending over the said side bars and having perforated projections fitting between the inner side-bar ends, and bolts extending through said perforations and uniting the said projections and side bars, substantially as set forth.

2. A link belt comprising a series of side bars arranged in pairs and loosely linked to transverse portions having flat surfaces bearing against the united ends of said side bars and sharp longitudinal traction edges, substantially as set forth.

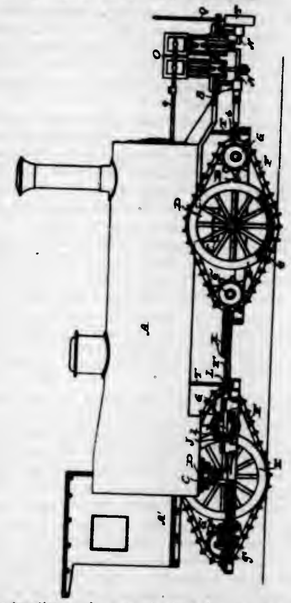
3. A link belt comprising a series of side bars arranged in pairs and the adjacent ends of each pair offset to come within the adjacent ends of the next pair of the series, in combination with transverse portions having projections fitting between the inner ends of each pair of side bars, flat portions bearing against the ends of the side bars, and sharp longitudinal traction edges, and bolts passing through openings in the said side-bar ends and intermediate projections, whereby the said parts are all loosely linked together, substantially as set forth.

4. A link belt provided with traction-blocks and right-angular projections extending from the blocks and having openings therethrough, in combination with link-bars having openings in their ends in line with those in said projections and bolts for connecting said projections with the link-bars of said bolt, substantially as set forth.

484,828. TRACTION-ENGINE. David S. Stewart, Morris, Wis. Filed Dec. 21, 1891. Serial No. 415,712. (No model.)

Claim.—1. In a traction-engine, one or more trucks, each provided with a single traction-wheel upon each side, traction-chains trained over said traction-wheels, and means for giving independent longitudinal motion to said chains, substantially as set forth.

2. A traction-engine comprising one or more trucks, each provided with a single traction-wheel upon each side thereof, traction-chains trained over said traction-wheels, and driving mechanism comprising suitable gearing and independently-actuated sprocket-wheels adapted to engage with said traction-chains and to give a longitudinal movement thereto, substantially as set forth.



3. In a traction-engine, a truck pivotally engaged with the boiler-support, traction-wheels located upon opposite sides of said truck, sprocket-wheels located in advance and in rear thereof, traction-chains trained over said traction and sprocket wheels upon each side of said truck, and means for giving an independent rotation to one of the sprocket-wheels upon each side of the truck, substantially as and for the purposes set forth.

4. In a traction-engine, a truck pivotally engaged with the boiler-support, said truck being provided upon each side with a traction-wheel loosely mounted upon an axle, said traction-wheels being provided with peripheral grooves or channels, toothed traction-chains trained over said wheels and arranged to lie within said grooves or channels, sprocket-wheels located in advance and in rear of said traction-wheels and engaging with said chains, and suitable means for giving independent rotation to one of said sprocket-wheels upon each side of the truck, substantially as set forth.

5. In a traction-engine, a truck pivotally engaged with the boiler-support, said truck being provided on each side with a traction-wheel loosely mounted upon an axle, said traction-wheels being provided with peripheral grooves or channels, toothed traction-chains trained over said wheels and arranged to lie within said grooves or channels, sprocket-wheels located in advance and in rear of said traction-wheels and engaging with said chains, one of said sprocket-wheels upon each side of the truck being mounted upon a stud-shaft slidingly engaged with the truck-frame, and suitable means for giving independent rotation to the other sprocket-wheel upon each side of the truck, substantially as set forth.

6. A traction-engine comprising trucks pivotally engaged with the boiler-supports, each of said trucks provided with independently-actuated traction devices upon its opposite sides, and mechanism for transmitting motion from the traction device upon each side of one truck to the traction device upon the opposite side of the adjacent truck, substantially as set forth.

7. A traction-engine comprising trucks pivotally engaged with the boiler-supports, each of said trucks provided with independently-actuated traction devices upon its opposite sides, and mechanism for transmitting motion from the traction device upon each side of one truck to the traction device upon the opposite side of the adjacent truck, said mechanism comprising revolvable shafts composed of two or more sections slidingly engaged with each other and having uni-

versal-joint connections with said traction devices at its front and rear ends, substantially as set forth.

8. A traction-engine comprising trucks pivotally engaged with the boiler-supports, each of said trucks provided with independently-actuated traction devices upon its opposite sides, mechanism for transmitting motion from the traction device upon each side of one truck to the traction device upon the opposite side of the adjacent truck, and means for preventing vertical oscillation or play of said trucks, substantially as described.

9. In a traction-engine, the combination, with the boiler and a truck pivotally engaged therewith, of a platform secured to the boiler and provided with independently-operating engines, independent traction devices located upon opposite sides of said truck, and flexible connections between said independent engines and said traction devices, substantially as described.

10. In a traction-engine, the combination, with the boiler and a truck pivotally engaged therewith, of a platform secured to the boiler and provided with independently-operating engines, independent traction devices located upon opposite sides of said truck, flexible connections between said independent engines and said traction devices, and means for retarding the motion of one of said engines without affecting the operation of the other, substantially as described.

11. A traction-engine comprising trucks pivotally engaged with the boiler-supports, each of said trucks provided with independently-actuated traction devices upon its opposite sides, mechanism for transmitting motion from the traction device upon each side of one truck to the traction device upon the opposite side of the adjacent truck, a platform secured to the boiler and provided with independently-operating engines, and flexible connections between said engines and the traction mechanism upon one of said trucks, substantially as described.

12. In a traction-engine, the combination, with the boiler and a truck pivotally engaged therewith, of a platform secured to the boiler and provided with independently-operating engines, independent traction devices located upon opposite sides of said truck, flexible connections between said independent engines and said traction devices, and a reciprocating bar provided with friction devices at its opposite ends adapted for engagement with the engine upon either side of the platform, and a lever for throwing said friction devices into or out of operation, substantially as described.

13. A traction device for road-engines, comprising a traction-wheel, sprocket-wheels arranged to revolve in the same plane with and upon opposite sides of said traction-wheel, one of said sprocket-wheels being operatively engaged with suitable driving mechanism, and a traction-chain trained over said traction and sprocket wheels, substantially as set forth.

14. A traction device for road-engines, comprising a traction-wheel loosely journaled upon an axle and provided with a circumferential groove, two sprocket-wheels arranged to revolve in the same plane with but upon opposite sides of said traction-wheel and one of said sprocket-wheels being operatively engaged with suitable driving mechanism, and a traction-chain trained over said traction and sprocket wheels, substantially as set forth.

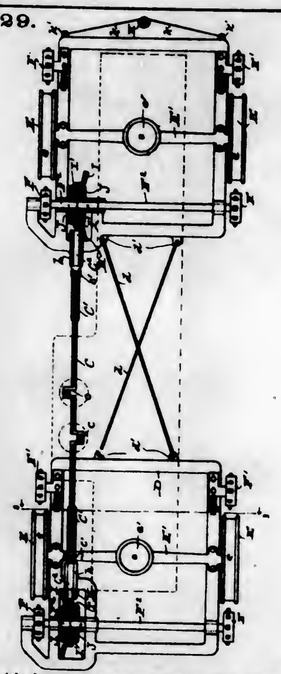
484,829. TRACTION-ENGINE. DAVID S. STEWART, Morris, Wis. Filed May 11, 1892. Serial No. 432,854. (No model.)

Claim.—1. In a traction-engine, the combination, with the boiler and actuating-engine, of one or more trucks provided upon opposite sides with suitable traction devices, each comprising a suitable traction-wheel, a traction-chain trained over the same, and a drive-wheel for operating said chain, two shafts upon which said drive-wheels are mounted, and a differential gear between the crank-shaft of the engine and said shafts, substantially as and for the purpose described.

2. In a traction-engine, the combination, with the boiler, the engine, and its crank-shaft, of two trucks connected together at their adjacent ends by diagonal rods, traction devices upon opposite sides of each of said trucks, each of said devices comprising a traction-wheel, a chain trained over said wheel, and a drive-wheel for giving a longitudinal motion to said chain, two shafts extending transversely and arranged end to end in each truck and each carrying the drive-wheel at one side of the truck, and a differential gear connecting the adjacent ends of the said transverse shafts in each truck with one end of the crank-shaft of the engine, substantially as described.

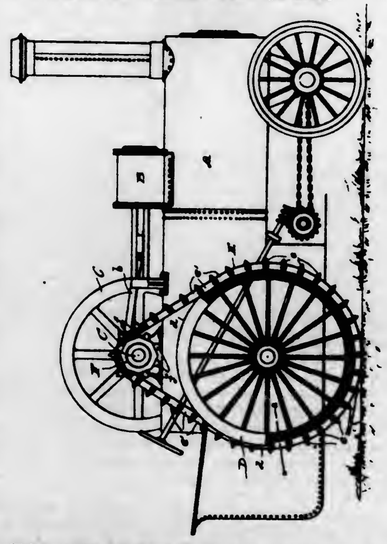
3. In a traction-engine, the combination, with the boiler, the engine, and its crank-shaft, of two trucks flexibly connected together at their adjacent ends by diagonally-arranged rods, traction devices located upon opposite sides of each of said trucks and each comprising a traction-wheel, a traction-chain trained over said wheel and an actuating-wheel engaged with said chain, transverse shafts arranged end to end and in line with each other in each truck and each carrying at its outer end one of the said drive-wheels, sleeves having sliding engagements with opposite ends of the crank-shaft of the engine, but non-rotative thereon, and a differential gear connecting each of

484,829.



said sleeves with the transverse shafts in one of the trucks, substantially as and for the purpose described.

484,830. TRACTION-ENGINE. DAVID S. STEWART, Morris, Wis. Filed May 23, 1892. Serial No. 434,016. (No model.)



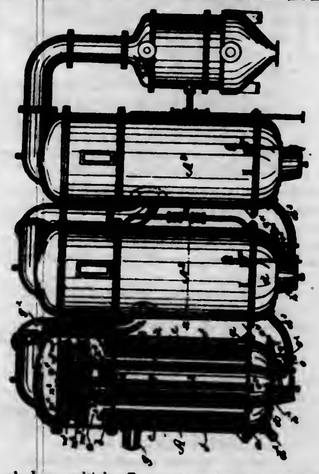
Claim.—1. The combination, with the traction-wheels of a traction-engine, of a traction-chain passed around the lower part of the peripheries of said wheels and suitable actuating-gears mounted directly upon the crank-shaft of the engine and adapted for engagement with said chains, substantially as described.

2. The combination, with the traction-wheels of a traction-engine, of traction-chains passed around the lower part of the peripheries of said wheels, said chains comprising links provided with projecting teeth and with openings between said teeth, and suitable actuating-

gears mounted directly upon the crank-shaft of the engine and adapted for engagement with the said links, substantially as described.

3. The combination, with the traction-wheels of a traction-engine, of traction-chains passed around the lower parts of the peripheries of said wheels, flanges on said wheels, between which said chains are arranged to run, and suitable actuating-gears mounted directly upon the crank-shaft of the engine and adapted for engagement with the teeth of said traction-chains, substantially as described.

484,831. EVAPORATING APPARATUS. OSCAR B. STILLMAN, Natick, Mass. Filed Apr. 26, 1892. Serial No. 430,502. (No model.)



Claim.—1. In a multiple-effect evaporating apparatus, the main vessel containing the heating-chamber comprising a vapor-space and tubes in which the liquor to be evaporated is exposed to the heating effect of said vapor, combined with a collecting-passage contained within the vessel and adjacent to said heating-chamber, through which collecting-passage a portion of said liquid is caused to pass after traversing the tubes of the heating-chamber, and the collecting-chamber at the lower end of said collecting-passage and extending through and below the bottom of the main vessel, substantially as described.

2. In a multiple-effect evaporating apparatus, the vessel provided with a heating-chamber comprising a vapor-space and tubes in which the liquid to be evaporated is exposed to the heating effect of said vapor, combined with a collecting-passage extending from the space above the said heating-chamber to the lower part of the vessel and a distributer by which the liquid above the heating-chamber is delivered into the said collecting-passage in the form of a shower, substantially as described.

3. In a multiple-effect evaporating apparatus, the vessel provided with transverse tube-sheets and tubes connecting the space below the lower with the space above the upper tube-sheet, said tubes being provided with extensions above the upper tube-sheet, and a collecting-passage extending from the space above the upper tube-sheet and communicating with the liquid-receiving space of the next vessel, said collecting-passage having its mouth or inlet-opening at a lower level than the orifices of the extensions of the tubes above the upper tube-sheet, substantially as described.

4. In a multiple-effect evaporating apparatus, the vessel provided with transverse tube-sheets and tubes connecting the space below the lower with the space above the upper tube-sheet, a collecting-passage extending from the space above the upper tube-sheet to the lower part of the vessel, and a distributer at the upper end of said collecting-passage, the said tubes being provided with extensions above the upper tube-sheet and above the level of the liquid flowing over the distributer, substantially as described.

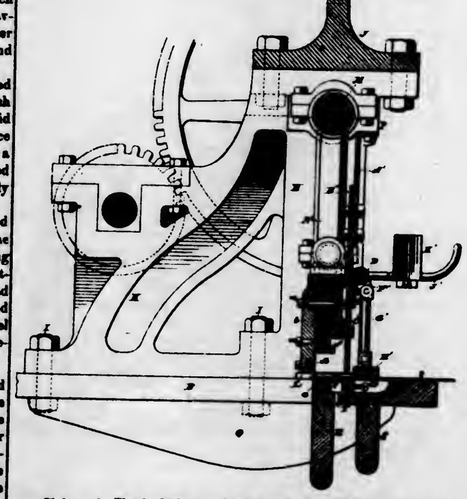
5. In a multiple-effect evaporating apparatus, the vessel provided with a heating-chamber comprising a vapor-space and tubes in which the liquid to be evaporated is exposed to the heating effect of said vapor, a collecting-passage extending from the space above the said heating-chamber to the lower part of the vessel, and a distributer at the upper end of said collecting-passage, the said tubes being provided with extensions above the upper tube-sheet and above the level of the liquid flowing over the distributer, and a shield or apron interposed between the said distributer and the delivery ends of said tubes, substantially as described.

7. In a multiple-effect evaporating apparatus, the vessel provided with a heating-chamber comprising a vapor-space and tubes in which the liquid to be evaporated is exposed to the heating effect of said vapor, a collecting-passage extending from the space above the said chamber to the lower part of the vessel, and a duct connecting the lower part of the said collecting-passage with the liquid-receiving space of the next vessel of the series, and means for controlling the flow of liquid through said duct, substantially as described.

8. In a multiple-effect evaporating apparatus, the vessel provided with a heating-chamber comprising a vapor-space and tubes in which the liquid to be evaporated is exposed to the heating effect of said vapor, and a duct connecting the space above the said chamber with the space around the tubes in the heating-chamber of the next receptacle, forming the vapor-passage from one vessel to the next, combined with a series of perforated plates forming partitions through which the vapor must pass, the perforations of said plates being provided with tubes and said tubes of one plate being out of line with the tubes of the next plate, substantially as and for the purpose set forth.

9. The main vessel of a multiple-effect evaporating apparatus provided with transverse tube-sheets and tubes connecting the space below the lower with the space above the upper tube-sheet, a collecting-passage extending from the space above the upper tube-sheet to the lower tube-sheet, and a collecting-chamber A^3 at the lower end of said passage, extending below the lower tube-sheet, and a removable annular hood or bonnet extending from the outer wall of said collecting-chamber to the outer wall of the main vessel and inclosing the liquid-inlet chamber communicating with the lower ends of the tubes, substantially as described.

484,832. COMBINED SHEARING AND PUNCHING MACHINE. GEORGE VAN WAGENEN, New York, N. Y. Filed July 14, 1890. Serial No. 358,741. (No model.)



Claim.—1. The bed-plate and the standards H thereon, combined with the crank-shaft M, journaled in said standards, the links N, carrier O, cutters *d e*, presser-bar H', rock-shaft E', links G', and arm J', and weight K', the whole being arranged and operating substantially as and for the purposes set forth.

2. The carrier O, suspended by links from the crank-shaft M, and the cutters *d e*, secured, respectively, to said carrier and the bed-plate, combined with the plates A' B', the latter carrying the bearings D', the rock-shaft journaled in said bearings and carrying the weighted arm J' and links G', and the presser-bar H', suspended by said links, substantially as and for the purposes set forth.

5. The reciprocating carrier O, provided with the series of punches, combined with the bed having the recess V, recesses *x*, and discharge-opening T, the die-bar secured in said recess V by bolts *w*, and the stripper L', substantially as and for the purposes set forth.

4. The bed B, having the platforms C D, perforated over substantially their entire surfaces, the adjustable gages G thereon, and the bolts F, by which said gages are secured at any desired angle, combined with the standards H, the crank-shaft M, journaled in said standards, the links N, the carrier O, the knife *d*, secured to said carrier O, and the knife *e*, secured to said bed B, substantially as and for the purposes set forth.

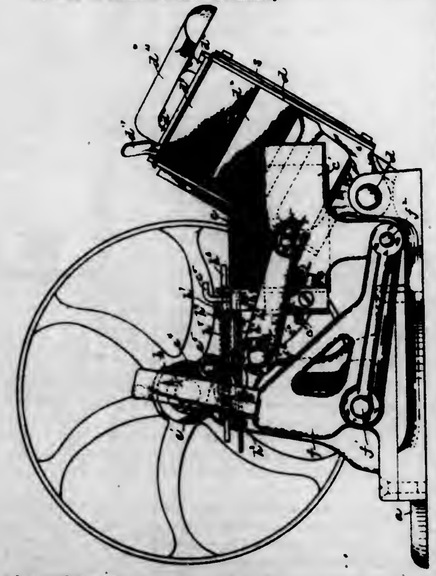
5. The bed-plate B, the standards H thereon, the crank-shaft M, journaled in said standards, the links N, the carrier O, having the longitudinal recess *f* at its lower front portion, the punch-bar *g*, detachably secured in said recess, and the series of detachable punches carried by said bar *g*, combined with the die-bar W, seated in the recess V of said bed-plate, the series of dies X, seated in said bar W, the discharge-opening T, leading from said recess V, the removable stripper L', having the series of apertures N', and the bar M', carrying said stripper, substantially as and for the purposes set forth.

6. In the combined shearing and punching machine, the reciprocating carrier O, the removable punch-bar secured to said carrier, the series of punches connected with said punch-bar, and the knife *d*, secured to said carrier O, combined with the bed B, the series of dies X, supported therein, and the knife *e*, secured to said bed, substantially as and for the purposes set forth.

7. The reciprocating carrier O, having the recess *f*, the punch-bar secured in said recess and carrying the punches, the knife-bar *b*, secured to said carrier, and the knife *d*, secured to said bar *b*, combined with the bed B, the series of dies X, supported therein, and the knife *e*, secured to said bed, substantially as and for the purposes set forth.

8. The reciprocating carrier O, the series of punches carried along one edge thereof, and the knife *d*, carried at the other edge thereof, combined with the bed B, the series of dies X, seated in said bed in line with said punches, the knife *e*, secured to said bed in operative line with said knife *d*, and the stripper L', having the series of apertures N' in line with said punches and dies, substantially as and for the purposes set forth.

484,833. MACHINE FOR BEVELING HEEL-BLANKS. Frank R. Wilder, Salem, assignor to O. M. Angier, Boston, Mass. Filed Dec. 17, 1891. Serial No. 415,400. (No model.)



and provided with a knife, a continuously-running driving-shaft, a normally-inoperative clutch on said shaft, clutch-operated mechanism through which the knife-carrier is reciprocated when the clutch is engaged with the shaft, a blank-holder which is movable toward and from the path of the knife, and mechanism for engaging the clutch with the shaft actuated by the movement of the blank-holder, as set forth.

2. The combination of a knife-carrier normally at rest and provided with a knife, a continuously-running shaft, a clutch normally loose on said shaft, connections between said clutch and the knife-carrier, whereby the latter is moved when the clutch is engaged with the driving-shaft, a blank-holder movable relatively to the path of the knife, and a clutch-shipper arranged to be operated by the movement of the blank-holder to its operative position, as set forth.

3. In a skiving or beveling machine, the combination of a movable blank-holder, a movable knife-carrier provided with a knife, a continuously-running driving-shaft, a clutch normally loose on said shaft, a clutch-shipper comprising a slide or rod, such as A^4, normally projecting into the path in which the blank-holder moves and adapted to be moved in one direction by said carrier, and connections between said slide or rod and the clutch, whereby the clutch is engaged with the shaft by said movement of the rod, and connections between the clutch and knife-carrier, whereby the knife is moved to act on a heel-blank in the holder, as set forth.

4. A skiving or beveling machine comprising in its construction a continuously-operated driving-shaft, a clutch normally loose on said shaft and adapted to be engaged therewith, a movable knife-carrier provided with a knife, connections between said carrier and the clutch, through which movement is imparted to the knife when the clutch is engaged with the shaft, a blank-holder consisting of a movable frame provided with blank grasping or clamping devices, and a clutch-shipper consisting of a spring-impelled rod arranged to be moved endwise by contact with said holder, a plate engaged with said rod and adapted to be moved endwise thereby, guides which give said plate an oblique movement, and lugs or ears on the plate, engaged with a flange on the clutch, as set forth.

5. In a skiving or beveling machine, the combination of a continuously-rotated driving-shaft having a tooth affixed to it, a clutch-sleeve loosely mounted on said shaft and having at one end a tooth adapted to engage the shaft-tooth and at the other end a crank, a movable knife-carrier provided with a knife, devices actuated by the clutch-crank for moving the knife when the clutch is engaged with the driving-shaft, a movable blank-holder adapted to present a blank to the knife, and a clutch-shipper operated by the blank-presenting movement of said holder to engage the clutch with the driving-shaft and cause a movement of the knife, as set forth.

6. In a skiving or beveling machine, the combination of a continuously-rotated driving-shaft having a tooth affixed to it, a clutch-sleeve loosely mounted on said shaft and having at one end a tooth adapted to engage the shaft-tooth and at the other end a crank, a movable knife-carrier provided with a knife, and a bell-crank lever pivoted to a fixed support and connected at one end with the knife-carrier, the other end of said lever being arranged to be moved by the clutch-crank, as set forth.

7. In a skiving or beveling machine, the combination of a knife-carrier mounted to reciprocate on a supporting-frame and provided with a knife, means for reciprocating said knife-carrier, a blank-holder pivotally connected to the supporting-frame and provided with a blank rest or support which is inclined relatively to the movement of the knife so that the knife forms a diagonal or beveled end on the blank, a clamping-plate pivoted at one end to said blank-holder and adapted to swing at its other end, and an operating-lever also pivoted to the holder at one point and to the swinging end of the clamp at another point, as set forth.

8. In a skiving or beveling machine, the combination of a knife-carrier mounted to reciprocate on a supporting-frame and provided with a knife and with an arm or projection, such as c^3, means for reciprocating said knife-carrier, a blank-holder pivotally connected to the supporting-frame and provided with a blank rest or support which is inclined relatively to the movement of the knife, so that the knife forms a diagonal or beveled end on the blank, a clamp to hold a blank on said support, and a gage pivoted to the blank-holder and provided with an arm, such as d^{11}, adapted to be displaced by the projection or arm c^3, as set forth.

9. In a skiving or beveling machine, the combination of a knife-carrier mounted to reciprocate on a supporting-frame and provided with a knife, means for reciprocating said knife-carrier, a blank-holder pivotally connected to the supporting-frame and provided with a blank rest or support which is inclined relatively to the movement of the knife, and an offset-bar arranged to engage one end of the knife-carrier to prevent springing of the knife when the blank-holder is in its operative position, as set forth.

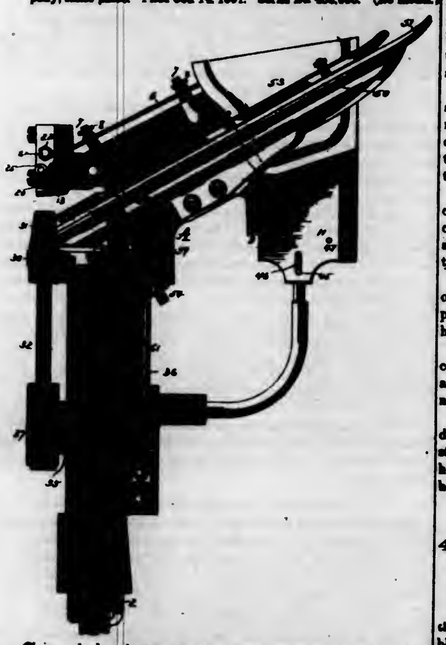
484,834. SIPHON FOR WATER-CLOSET TANKS. Charles L. Weems and Augustus F. Rassel, Columbus, Ohio. Filed Apr. 8, 1891. Serial No. 388,126. (No model.)

Claim.—1. A siphon for water-closets, consisting of two sections the edges of which are permanently secured together to form a hollow case, one of said sections being longer than the other and provided with an inlet-opening, the upper ends of said sections being even and provided with a cover rigidly secured thereto, a partition extending from the lower end of the longest section nearly to the cover, and a valve for closing the inlet-opening, substantially as set forth.

2. A siphon for water-closets, consisting of two sections the longest edges of which are flanged inwardly and secured together to form a substantially-cylindrical case, one of said sections being longer than the other one and provided with an inlet-opening, the upper ends of said sections being even and provided with a cover rigidly secured thereto, a partition extending from the bottom of the longer section nearly to the cover, and a valve for closing the inlet-opening, substantially as set forth.

3. A siphon for water-closets, consisting of two sections of unequal length, the edges of which sections are flanged inwardly, and one of said flanges is wider than the others and has its edge secured to the flange upon the opposite side of the same section, the extended portion of said wide flange being of less length at its upper end than the section of which it forms a part and the flanges of the shorter section being secured to the flanges of the longer section from the top downward, an inlet-opening in the side of the longer section, a cover for the two sections, rigidly secured thereto, a base for the longer section, and a valve for the inlet-opening, substantially as set forth.

484,835. BUTTON-SETTING MACHINE. Alexander G. Wilkins, Meadville, Pa., assignor to the Wilkins Shoe Button Fastener Company, same place. Filed Oct. 14, 1891. Serial No. 408,660. (No model.)



Claim.—1. In a button-machine, the combination, with a frame having a button-chute therein, of a clamping-lever pivoted to the frame at the lower end of the chute, said clamping-lever having a groove formed in its upper edge adapted to receive the head of a button and guide it to its lower end and an inclining upper edge formed on the lever adjacent to the groove and parallel therewith, upon which the eye of the button slides, said groove having a pocket formed at its lower end, substantially as set forth.

2. In a button-machine, the combination, with a frame having a button-chute formed therein, said chute straight throughout the greater portion of its length and twisted at the lower end, so as to throw the button descending in the chute upon its side, and a die-holder, of a clamping-lever pivoted to the frame and provided with a grooved upper edge adapted to receive the head of a button and provided with an inclining edge adjacent to the groove, the upper end of this inclining edge beginning at the point where the groove terminates and the lower end terminating in a clamping portion adapted to hold the button-eye between it and the die-holder, substantially as set forth.

3. In a button-machine, the combination, with a button-chute, of a clamping-lever pivoted in proximity to the chute and adapted to receive buttons therefrom, the chute and clamping-lever being constructed to turn the buttons to approximately the position desired for attachment to the stock, said lever having a pocket formed at its lower end, a die, and means adapted to strike the lever to force the button-shank against the die, substantially as set forth.

4. The combination, with a clamping-lever and means for holding the latter in position, of a die-holder beveled on its lower end to throw the eye of the button into position, a die, and means for forcing the staples against the die, whereby they are clinched, substantially as set forth.

5. The combination, with a frame having a die-holder thereon, a die, and a pivoted clamping-lever adapted to receive and clamp a button in position with its eye beneath the die, of a detent pivoted at the outer end of the clamping-lever for preventing the button or buttons in the lever from dropping out of the latter, substantially as set forth.

6. The combination, with a frame having a button-chute, a die-holder, die, and a clamping-lever leading from the chute to the die and forming a continuation of the former, of a hollow rod located in position to yieldingly engage the clamping-lever, whereby a button contained therein and being operated upon is forced into position to receive the pin by which the button is fastened to the stock, and means for driving the fastener, substantially as set forth.

7. The combination, with a die and die-holder, the latter having a beveled lower end constructed to throw the eye of a button into position, of a button-chute, a clamping-lever forming a continuation of the chute and leading from the chute to the die, an anvil located in position to force the pin or staple against the outer edge of the button, whereby it is deflected against the die preparatory to its being turned by the latter into the eye of the button, and means for operating the anvil, substantially as set forth.

8. The combination, with a button-chute, a button-hopper located at the upper end of the chute, a die, and a clamping-lever, of a reciprocating cross-head, a spring-cushioned hollow rod carried by the cross-head, adapted to engage and hold the clamping-lever in position, and an anvil connected with the cross-head and passing loosely through the hollow rod, substantially as set forth.

9. The combination, with a die and clamping-lever, of a reciprocating cross-head, a spring-cushioned hollow tube connected with the cross-head, said tube having a recessed upper end adapted to receive a fastener and disk, and an anvil fitted to the hollow rod and adapted to operate therein, substantially as set forth.

10. The combination, with a die-holder having a groove therein, of a die located in the groove, a slotted post through which the die passes, and means for drawing the post endwise, whereby the die is held securely in place, substantially as set forth.

11. The combination, with a button-hopper and a gate or plunger constructed to reciprocate in the hopper, of a reciprocating cross-head and a stem extending from the latter and having a yielding-joint connection with the gate or plunger, substantially as set forth.

12. The combination, with a chute, of a stop comprising a notched disk, a stem, a spring for throwing the stop into its normal position, stop-pins, a laterally-projecting arm on the stem, a reciprocating cross-head, and a loose connection extending from the arm to the cross-head, substantially as set forth.

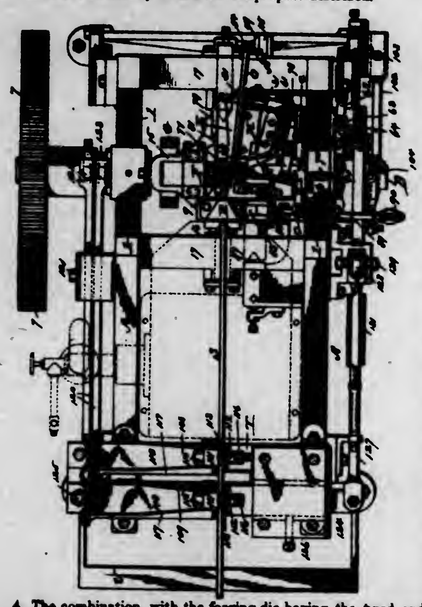
484,836. MACHINE FOR MAKING HORSESHOE-NAILS. David F. Williams, Albany, N. Y., assignor to the Albany Nurse Rod Company, same place. Filed Jan. 8, 1892. Serial No. 417,572. (No model.)

Claim.—1. In a horseshoe-nail machine, the combination, with the preliminary shaping-dies, the shearing-die, a punch for forcing a blank through the latter, and means for holding said blank in position for operation thereon by said punch, the same consisting of a fixed guide, as N, and a guide, as O, movable to and from the latter, substantially as and for the purpose specified.

2. In a horseshoe-nail machine, the combination, with the preliminary shaping-dies, the shearing-die *e*, the former P, consisting of a bar movable horizontally relative to the shearing-die and placed below the shearing-die opening, the punch for forcing a blank through the latter and to said former P, and means to move the former P to

discharge the nail from the machine, substantially as and for the purpose described.

3. In a horseshoe-nail machine, the combination, with the mechanism for preliminarily shaping a nail from a rod or stock, a shearing-die having a wedge-shaped opening for the point of the nail to be forced through, the cutter for severing the nail from said stock, a punch for forcing the blank through the shearing-die and into contact with said cutter, a former consisting of a bar beneath the die-opening and movable horizontally relative thereto, and means to move said former, substantially as and for the purpose described.



4. The combination, with the forging-die having the fixed and the movable parts for operating to form the sides of the nail, the shearing-die, the reciprocating punch for co-operation with the latter, the guides for use with said shearing-die, consisting of a fixed and a movable member, the movable nail-stock-guiding piece for moving a partially-formed nail into position for the action of the shearing-die, and the series of cams mounted on one shaft to actuate the above-enumerated movable parts, substantially as and for the purpose described.

5. In combination, the forging-die having the fixed and movable parts for forming the sides of the nail, the shearing-die, the reciprocable punch for co-operation with the latter, the guides for use with the shearing-die, consisting of a fixed and movable member, the movable nail-stock-guiding piece R, the rod-feeding mechanism, and the series of cams for actuating the above-enumerated movable parts, substantially as described.

6. In combination with a rotary hammer, the anvil, the fixed and the movable dies on the sides of the latter, the cam mechanism for moving the movable die, the shearing-dies, the punch, the cam mechanism for moving the same, the guides for use with said shearing-dies and punch, having a movable part, the cam mechanism for operating the latter, and the cam-operated mechanism for moving a blank from the anvil to the shearing-dies.

7. In combination, the rotary hammer, the anvil, the nail-side-shaping dies, the shearing-die and punch, the guide for use with these latter, consisting of a fixed member N and a vertically and laterally movable member O, the former P, immediately below the movable member, the vertically and laterally movable nose-piece R, and the rod-feeding devices, substantially as and for the purpose described.

8. In combination, the rotary hammer, the anvil, the fixed and the movable nail-side-shaping dies, the spring-actuated rod-rest 79, the shearing-die and punch, the laterally-movable scraper Q for said shearing-die, the former P beneath the shearing-die, the lever 73, engaging said former and said scraper to move them in opposite directions, the former from beneath the shearing-die and the scraper over it, and suitable means for operating said lever 73, substantially as described.

9. In combination, the nose-piece R, the vertically-movable holder 83, the carriage 86, to which the same is pivoted, the vertically-movable rod engaging said holder to raise it, and the cam, the lever 102, link 101, bell-crank 100, and rod 106 for actuating said rod.

10. In combination, the nose-piece R, the pivoted vertically-movable holder 83, the pivoted laterally-movable carriage 86, carrying said holder, the rod 106, engaging the latter to raise it, the bell-crank lever pivoted to the carriage 86 and connected to said rod and to suitable actuating mechanism to raise it, and the spring to lower said rod, substantially as described.

11. In combination with the pivoted nose-piece carriage 86, the vibratory lever 91, connected thereto, the cam for actuating the latter, and the spring-arm 98, having the cam-engaging part which is attached to said lever 91, substantially as and for the purpose described.

12. In combination with the pivoted nose-piece carriage 86, the double-armed vibratory lever 91, connected thereto, and the double cam engaging the two arms of said lever, substantially as described.

13. In combination with the nose-piece R, the pivoted vertically-movable holder 83, the carriage 86, the rod 106, engaging the holder, the bell-crank lever pivoted to the carriage and connected to said rod and to actuating mechanism, the double-armed vibratory lever 91, connected to said carriage 86, and the double cam acting on both of said arms, substantially as and for the purpose described.

14. In combination with a punch-carrier, as K, the two-part punch-holder M, having a recess for the punch, the block 40 in said recess to abut against the punch, having heads to retain the block in said recess, the parts 39, engaging said heads, the screws 38 to move the parts 39, and the screw 42, engaging the holder M, opposing the screws 38.

15. In combination with a punch-carrier K, having an offset forming a head, the punch-holder M, placed in a dovetailed recess, the gibs 39 on the upper and lower sides of said holder, the block 40 between the ends of said gibs and the punch, a screw for each gib, and a screw engaging the holder M, opposing the gib-screws, substantially as and for the purpose specified.

16. In combination, the shearing-dies, the punch, the punch-carrier K, the L-shaped arm 44, having one member connected adjustably with said carrier, and a cam engaging the other member, substantially as shown and described.

17. In combination, the shearing-dies, the punch, the punch-carrier K, having a dovetailed recess, the L-shaped arm 44, having its vertical member in said recess, the adjusting-screw engaging said member, and suitable actuating means engaging the other member of said arm, substantially as set forth.

18. In combination with the shearing-die and punch, the guide consisting of a fixed and a movable member, the vertical rod 54, pivoting the latter, the cam-actuated lever 56, connected to said rod to lower it and said member, and the cam-actuated devices connected to said member to move it laterally, substantially as and for the purpose described.

19. In combination with the shearing-die and punch, the movable guide O, the rod 54, pivoting it, the lever 62 for swinging said guide laterally, the lever 56 and spring 60 for moving it vertically, and the nut on said rod, having a spring 69, engaging said lever 56 to restore and yieldingly maintain the normal horizontal position of said guide O, substantially as described.

20. In combination, the movable guide O, the vertical rod 54, pivoting it, the lever 62 for swinging it laterally, provided with a stop-screw 68, the lever 56 and spring 60, encircling rod 54, for moving said guide vertically, and cams to actuate said levers 62 and 56, substantially as and for the purpose described.

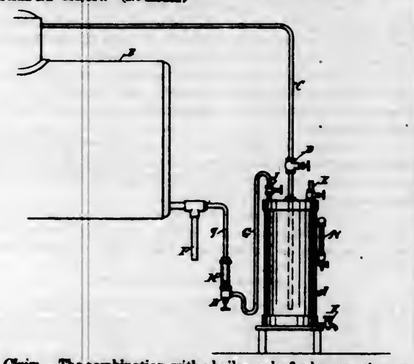
21. In combination with the laterally-movable guide O, the vertical pivot-rod 54, the forked lever 56, and the nut on said rod adjacent to said lever, having a spring 69 engaging the same, substantially as described.

22. In combination, the gripping-blade, the flat spring 110, attached thereto and operating to force it downward, the lever 117, having a stop or projection engaging the under side of said spring, the pivoted lever 124, the cam-actuated lever 128, connected to the latter by a link 127 to move said lever 124 and the gripping device forward, and a coiled spring 131, connected to the lever 128 to move said parts rearwardly, substantially as shown and described.

23. In combination with a rod-gripping device composed in part of a blade forced normally against the rod, the rocker-lever 117, the link 119, connecting the same to an automatically-operating lever, the treadle, the link 123, connecting the same to the link 119, and the spring for normally raising said lever, substantially as described.

24. In combination with the rotary hammer C and the anvil, the vertically-movable nail-rod-carrying device, as R, and the guard *d* carried by the hammer C to limit the raising of the nail-rod.

484,887. INCRUSTATION-PREVENTER. WILLIAM H. WILSON, Indianapolis, Ind., assignor of two-thirds to Alexander P. Sprunace and Charles H. McCormick, same place. Filed Nov. 9, 1891. Serial No. 411,417. (No model.)



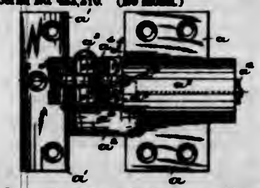
Claim.—The combination, with a boiler and a feed-water pipe connected thereto, of a reservoir for oil, a steam-pipe connecting the upper part of the boiler with the lower part of the reservoir, oil-pipes connecting the upper part of the reservoir with the said feed-water pipe, and a sight-feed device arranged in the said oil-pipes, substantially as and for the purpose set forth

484,888. DOOR SPRING AND CHECK. JOSEF WOLF, Newark N. J., assignor to Albert V. Wilmans and John Coppersmith, same place. Filed Feb 20, 1892. Serial No 422,308. (No model.

Claim.—1. The herein-described door-spring, comprising therein, in combination, a leaf adapted to be secured to the door-frame, and a cylinder c', provided with an opening or slot c^1, a piston-rod e and a piston c' in said cylinder, and a coiled spring c^3, encircling said rod, means for pivotally connecting said rod with the leaf secured to the door-frame, a follower or slide provided with a pin extending up into said slot c^1 to limit its movement, a backwardly-extending pin k' on said follower or slide, and a spring k^3, encircling said pin k' to force said follower or slide forward when the piston c' has moved forward, substantially as and for the purposes set forth.

2. The herein-described door-spring, comprising therein, in combination, a leaf adapted to be secured to the door-frame, and a cylinder c', provided with an opening or slot c^1, a piston-rod e and a piston c' in said cylinder, and a coiled spring c^3, encircling said rod, means for pivotally connecting said rod with the leaf on the door-frame, a follower or slide provided with a pin extending up into said slot c^1 to limit its movement, a backwardly-extending pin k' on said follower or slide, said follower or slide and said pin k' being tubular and said rod e having a backwardly-extending arm e^4 projecting into said tubular follower or slide and pin, and a spring encircling said pin on the follower or slide to force the same forward when the piston c' moves forward, substantially as and for the purposes set forth.

484,889. SPRING-HINGE. JOSEF WOLF, Newark, N. J., assignor to Albert V. Wilmans and John Coppersmith, same place. Filed Feb. 20, 1892. Serial No. 422,310. (No model.)

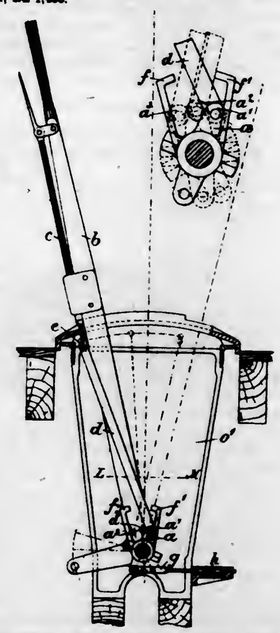


Claim.—1. In a spring-hinge, the leaf a, provided with a cylinder having a spring-actuated rod projecting therefrom and provided with a finger and an upwardly-projecting pintle, a cam-plate pivoted on the finger of said spring-actuated rod, provided with an elongated opening embracing said pintle, and a stop d^3 on said cam-plate, in combination with a leaf a', having a perforated ear provided with a scalloped edge with which said stop d^3 engages, substantially as and for the purposes set forth.

2. In a spring-hinge, in combination, a leaf a, provided with a cylinder and a spring-actuated rod therein, a leaf a', provided with a perforated ear having scallops, means for pivotally connecting said hinge-leaves, a cam-plate connected with said spring-actuated rod, and a stop d^3 thereon adapted to engage with said scallops, substantially as and for the purposes set forth.

3. The herein-described spring-hinge, comprising therein a leaf a, having a cylinder, a spring-actuated rod in said cylinder, provided on its end with a finger, a leaf a', having ears provided with scallops, an upwardly-projecting pintle on said leaf a, to which said leaf a' is hinged, and a cam-plate d, pivotally arranged on said spring-actuated rod, provided with an elongated opening embracing the pintle, and stop-pieces d^3 on said cam-plate adapted to engage with said scallops, substantially as and for the purposes set forth.

484,840. INTERLOCKING RAILWAY POINT AND SIGNAL APPARATUS. FREDERICK A. ATKINSON, Worcester, England. Filed Feb. 16, 1892. Serial No. 421,677. (No model.) Patented in England Jan. 27, 1891, No. 1,663.



Claim.—1. The combination, with the pivoted main operating-lever and its catch-rod, of an oscillatory motion-piece a, a plunger g, pivoted to the motion-piece and adapted to actuate the locking devices, and a link pivoted to the said catch-rod and to the upper end of the said motion-piece, whereby the upper end of the said motion-piece is moved from the central line of the said operating-lever when the catch-rod is released and is placed on the said center line when the catch-rod is raised to permit the said lever to be operated, substantially as set forth.

2. The combination, with the pivoted main operating-lever and its catch-rod, of an oscillatory motion-piece a, a plunger g, pivoted to the motion-piece and adapted to actuate the locking devices, stops arranged at the opposite sides of the motion-piece and adapted to prevent it from sticking in a central position, and a link pivoted to the said catch-rod and to the upper end of the said motion-piece, whereby the upper end of the said motion-piece is moved from the center line of the operating-lever when the catch-rod is released and is placed on the said center line when the catch-rod is raised to permit the said lever to be operated, substantially as set forth.

484,841. WHEEL-SCRAPER. THOMAS L. AVELING, Rochester, England. Filed May 14, 1892. Serial No. 433,012. (No model.)

Claim.—1. The combination of an axis, a projection upon the

axis, a scraping-blade free to turn about the axis, a rod turning with the scraping-blade but free to move radially to the axis, a projection upon the rod bearing upon the projection on the axis, and a spring carried by the scraping-blade and bearing on the radial rod.

Claim.—1. The combination, in compression-joints, of a conical frustum on one compression-surface and a tensional ring set with capacity of lateral movement on the other compression-surface concentric to the said frustum, substantially as described.

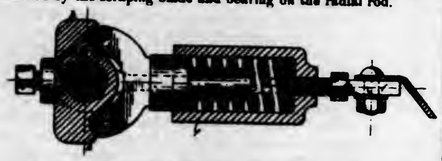
2. In valves and in combination with the valve-disk, a ductile ring, a conical frustum in the valve-body, adapted to enter said ring, and an overhanging shoulder parallel to the slope of said frustum and

484,845.

arm of the said lever and extending to the side of the roadway for operating the gate, substantially as set forth.

2. The combination, with the gate, of the Y-shaped lever G, fulcrumed to the post to which the gate is hinged, the cross-bar K, secured to the rear piece a of the gate and having the flat portion k' lying against the face of this piece, and the horizontally-arranged por-

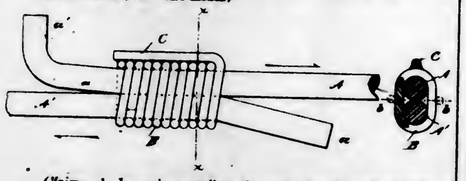
axis, a scraping-blade free to turn about the axis, a rod turning with the scraping-blade but free to move radially to the axis, a projection upon the rod bearing upon the projection on the axis, and a spring carried by the scraping-blade and bearing on the radial rod.



2. The combination of an axis, a pair of projections upon the axis, a scraping-blade free to turn about the axis, a rod turning with the scraping-blade but free to move radially to the axis, a pair of projections upon the rod bearing upon the projections upon the axis, and a spring carried by the scraping-blade and bearing on the radial rod.

3. The combination of an axis, a pair of projections upon the axis, a scraping-blade free to turn about the axis, a cylinder carried by the scraping-blade, a spring in the cylinder, a piston also in the cylinder and bearing upon the spring, and a pair of projections carried by the piston and bearing upon the projections on the axis.

484,842. WIRE COUPLING. WILLIAM E. BARTA, Springfield, Ohio. Original application filed June 11, 1890. Serial No. 354,864. Divided and this application filed Sept. 29, 1890. Renewed July 1, 1892. Serial No. 438,697. (No model.)



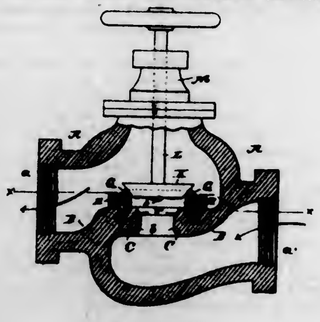
Claim.—1. In a wire coupling, the combination, with the ends of the line-wires bent outwardly, of a connector or coupling composed of encircling coiled wires joined together and adapted to bite onto said line-wires under the coupling strain.

2. The combination, with the ends of the line-wires bent outwardly, of a coupling consisting of surrounding portions and a longitudinal portion integral with and connecting together the said surrounding portions, whereby the said surrounding portions bite upon and grip the line-wires under the coupling strains.

3. In a wire coupling, the combination, with the ends of the line-wires bent outwardly, of a connector composed of encircling coiled wires embracing said line-wires and a connecting bar or piece secured to said encircling coiled wires substantially in line with the axis of the same, whereby all of the encircling wires move in one direction at the part to which said connection is connected and move in the opposite direction at the diametrical part when the coupled line-wires are put under strain, whereby a gripping action is secured.

4. As an improved article of manufacture, a wire-coupling composed of encircling coiled wires and a longitudinal connection joining the encircling portions of said wire, whereby one part of each encircling portion is adapted to move in one direction and the diametrically-opposite part in the opposite direction under the coupling strain, thereby gripping the inclosed line-wires.

484,843. VALVE AND JOINT. CHARLES B. RAVEN, New York, N. Y. Filed Sept. 14, 1891. Serial No. 405,686. (No model.)



Claim.—1. The combination, in compression-joints, of a conical frustum on one compression-surface and a tensional ring set with capacity of lateral movement on the other compression-surface concentric to the said frustum, substantially as described.

2. In valves and in combination with the valve-disk, a ductile ring, a conical frustum in the valve-body, adapted to enter said ring, and an overhanging shoulder parallel to the slope of said frustum and circumferential thereto, substantially as described.

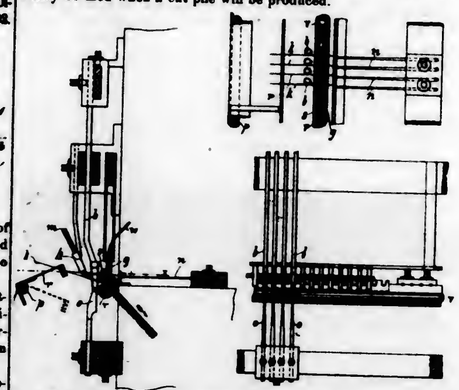
3. In valves, the combination of a conical valve-disk, a ductile ring fixed by one edge on the valve-body, and a tensional reinforcing-ring set on the ductile ring and capable of lateral movement, substantially as described.

4. In valves, the combination of a conical valve-disk having a hardened periphery, a ductile ring set in a groove in the valve-body, and a tensional ring set on the ductile ring and capable of lateral movement, substantially as described.

5. In valves and joints, the combination of a ductile ring, a reinforcing tensional ring on the ductile ring, and a conical frustum adapted to enter and expand said ductile ring, substantially as described.

484,844. WARP-KNITTING MACHINE. GEORG BUHLMANN, Berlin, Germany. Filed May 12, 1892. Serial No. 433,760. (No model.)

Brief.—Loops of pile-thread are formed about the stationary loopers *b*, sliding off at the lower ends of the same. Stationary knives *o* may be used when a cut pile will be produced.

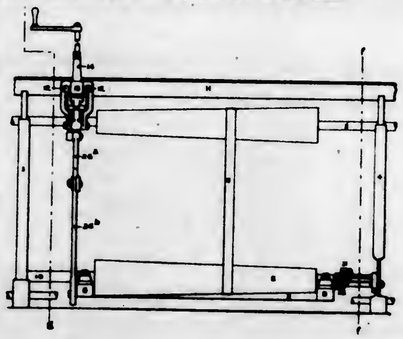


Claim.—1. In a warp-knitting machine, the combination, with the needles *n*, warp-guides *r*, and weft-guides *g*, of the movable pile-thread holders *h* and the stationary loopers *b*, for the purpose as described.

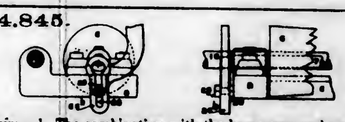
2. In a warp-knitting machine, the combination, with the needles *n*, warp-guides *r*, and weft-guides *g*, of the movable pile-thread holders *h*, the stationary loopers *b*, and stationary knives *o*, for the purpose as described.

484,845. BOTTOM-CONE-LIFTING DEVICE FOR FLY-FRAMES. WILLIAM P. CABBURN, Lowell, Mass., assignor to the Lowell Machine Shop, same place. Filed July 1, 1892. Serial No. 438,730. (No model.)

Brief.—The invention consists of a device for raising the bottom cone so that the belt can be easily slid back to its starting-point. The specific means employed are pointed out in the claims.



484,845.



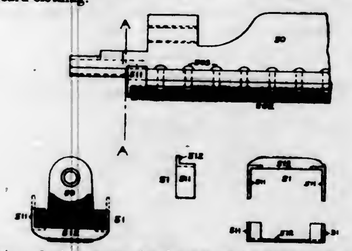
Claim.—1. The combination, with the lower cone and a movable bearing-support for the shaft thereof, of a cone-raise rod or shaft having a handle by which it may be turned, a cone-raise crank mounted on said rod or shaft, a bell-crank lever acted upon by the said crank, a connecting-rod intermediate the bell-crank lever and movable bearing-support and having a buttonhole-slot in its lower end, and a screw passing through the said slot and entering the movable bearing-support, substantially as described.

2. The combination, with the lower cone and a movable bearing-support for the shaft thereof, of a cone-raise rod or shaft having a handle by means of which it may be turned, a cone-raise crank mounted on said rod or shaft, a bell-crank lever acted upon by the said crank, an extensible connecting-rod intermediate the bell-crank lever and movable bearing-support made in two pieces, having means for adjustably connecting them together, the lower of said pieces being formed with a buttonhole-slot, and a screw passing through the said slot and into the bearing-support, substantially as described.

3. The combination, with the lower cone and a movable bearing-support for the shaft thereof, of a cone-raise stand, the cone-raise rod or shaft having a handle by means of which it may be turned and mounted in a bearing in the said stand, a collar on said rod or shaft above the bearing, a cone-raise crank attached to the said rod or shaft below the bearing, a bell-crank lever acted upon by the said crank and pivoted on a projecting part of the stand, an extensible connecting-rod intermediate the bell-crank lever and bearing-support made in two pieces, having means for connecting them together adjustably, the lower of said pieces being formed with a buttonhole-slot, and a screw passing through the said slot and into the bearing-support, substantially as described.

484,846. PROTECTOR FOR THE ENDS OF THE CLOTHING OF THE FLATS OF CARDING-ENGINES. WILLIAM P. CABBURN, Lowell, Mass., assignor to the Lowell Machine Shop, same place. Filed July 20, 1892. Serial No. 440,615. (No model.)

Brief.—The invention covers a protector for the ends of the clothing of flats of carding-engines, the protector having end portions adapted to be clasped around the edges of the flat and an intermediate protecting web or plate adapted to stand parallel with the teeth of the card-clothing.



Claim.—1. A protector for the ends of the clothing of the flats of carding-engines, having end portions adapted to be clasped around the edges of a flat, and an intermediate protecting web or plate adapted to stand parallel with the teeth of the clothing, all substantially as described.

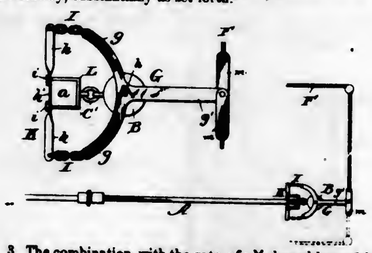
2. A protector for the ends of the clothing of the flats of carding-engines, having broad end portions adapted to be clasped around the edges of a flat, and an intermediate protecting web or plate standing in a plane crossing at right angles the planes of the material of the end portions and thereby adapted to stand parallel with the teeth of the clothing, all substantially as described.

3. The combination, with a flat having notched edges and the card-clothing, of a protector having clasping end portions fitting around the edges of the flat within the notches and an intermediate protecting web or plate standing parallel with the teeth of the clothing, substantially as described.

484,847. SWINGING GATE. CHARLES M. CLARY, Lewistown, Mont. Filed May 17, 1892. Serial No. 433,312. (No model.)

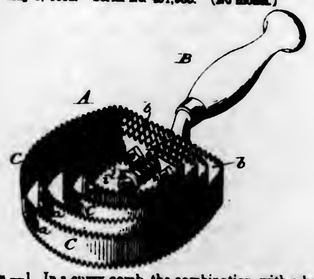
Claim.—1. The combination, with the gate, of a Y-shaped lever fulcrumed beside the gate, a cross-bar or arm extending from the gate in opposite directions, connections between two of the arms of the lever and the said cross-bar, and means connected with the third arm of the said lever and extending to the side of the roadway for operating the gate, substantially as set forth.

2. The combination, with the gate, of the Y-shaped lever G, fulcrumed to the post to which the gate is hinged, the cross-bar K, secured to the rear piece *a* of the gate and having the flat portion *k'* lying against the face of this piece, and the horizontally-arranged portions *k'*, the connections I between the ends of said cross-bar and diverging arms of the lever, and the flexible cords F, secured to the rearwardly-extending arms of the lever and extending to the sides of the roadway, substantially as set forth.



3. The combination, with the gate, of a Y-shaped lever fulcrumed beside the gate, a cross-bar or arm extending from the gate in opposite directions, connections between two arms of the lever and the said cross-bar, the bars or plates *m*, secured to the third arm of the lever, and the cords connected with the said bars or plates and extending to side of the roadway, substantially as set forth.

484,848. CURRY-COMB. ALEXANDER C. DECKER, Keokuk, Iowa. Filed May 5, 1892. Serial No. 431,935. (No model.)

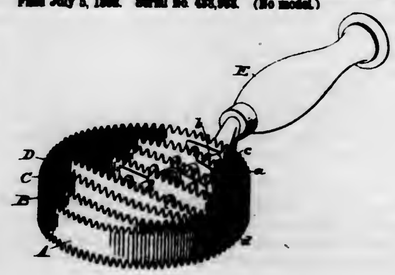


Claim.—1. In a curry-comb, the combination, with a handle, of a body portion made up of a series of D-shaped loops or bands located one within another and fastenings *c*, uniting the bands at their straight sides.

2. In a curry-comb, the combination, with a handle, of a body portion comprising a series of D-shaped loops or bands located one within another and having overlapping ends and the bolts or fastenings *c*, passing through said overlapping ends, serving the twofold purpose of fastening said ends and uniting the loops or bands, all substantially as shown and described.

3. In a curry-comb, the combination, with the body portion made up of a series of D-shaped loops or bands located one within another and connected at their straight sides by the bolts or fastenings *c*, of the reversible handle B, journaled in the straight portions between the bolts *c c*, all substantially as shown and described.

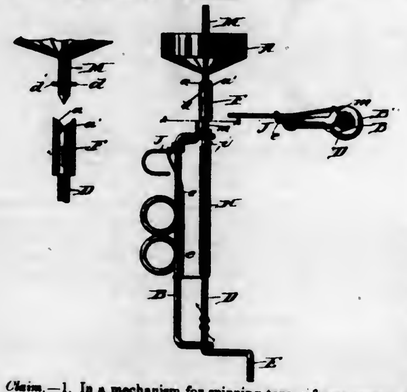
484,849. CURRY-COMB. ALEXANDER C. DECKER, Keokuk, Iowa. Filed July 5, 1892. Serial No. 438,968. (No model.)



Claim.—1. The herein-described curry-comb, comprising an outer band and a series of bands located one within the other and arranged within the outer band, all of the said bands being united one to the other at two opposite edges, and a handle.

2. In a curry-comb, the combination, with the outer band, of a series of smaller bands located within the same and secured thereto and to each other at two opposite edges and a handle passing through the bands at an angle to their longer axis, whereby tipping of the bands upon their rivets or fastenings is prevented.

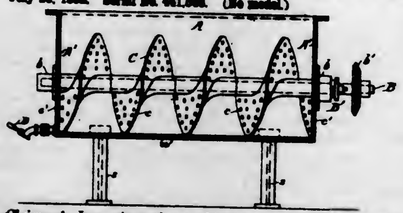
484,850. TOY. SAMUEL F. REVELL, Chicago, Ill. Filed Dec. 21, 1891. Serial No. 415,770. (No model.)



Claim.—1. In a mechanism for spinning tops, a frame composed of a single piece of wire, the central portion whereof is formed in loops, its ends bent and terminating in rings adapted for shaft-bearings, in combination with an actuating-spring H and a crank-shaft having on one extremity suitable provision for engaging and discharging the top, substantially as specified.

2. In a top and spinning mechanism for same, a frame B, crank-shaft D, spring H, and part F, in combination with top A, the latter being provided with extensions *d d'* between its body and the pivotal point of its spindle, substantially as set forth.

484,851. PAINT-MIXER. PETER FAHY, Brooklyn, N. Y. Filed July 20, 1892. Serial No. 441,066. (No model.)



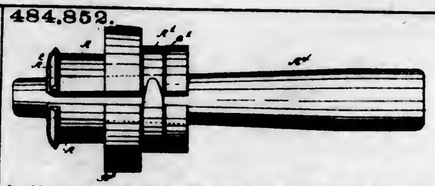
Claim.—1. In a mixer, the combination, with a water-tight tank provided with a semicircular bottom, of a worm formed of a continuous spiral blade provided with a series of perforations, and driving mechanism for revolving the worm in the tank, whereby the material is squeezed repeatedly through the said perforations, substantially as set forth.

2. In a mixer, the combination, with a water-tight tank provided with a semicircular bottom, of a worm formed of a continuous spiral blade provided with a series of perforations, the periphery and ends of the worm operating to scrape the bottom and ends of the tank, respectively, and driving mechanism for revolving the worm in the tank, substantially as set forth.

3. In a mixer, the combination, with a tank, of a worm formed of a continuous spiral blade provided with a series of perforations, driving mechanism for revolving the worm in the tank, and automatic reversing mechanism operating to change the direction of the motion of the worm at periodic intervals, substantially as set forth.

484,852. BOILER-TUBE CUTTER. JOHN W. FLEMING, Brooklyn, N. Y. Filed June 10, 1892. Serial No. 436,196. (No model.)

Claim.—The combination of the segmental blocks having the longitudinal taper-hole, the cutters integral with said blocks, the



shoulders in the rear of the cutters and integral with the blocks, the spring-collar seated in the annular recesses in the rear of the shoulders, and the tapered expander, substantially as specified.

484,853. BUTTON-FASTENING. EDWIN A. GILES, Chicago, Ill. Filed Mar. 21, 1892. Serial No. 426,796. (No model.)

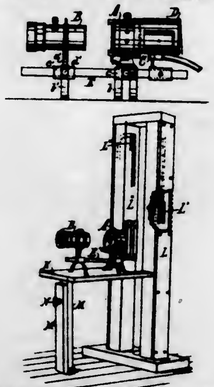
Claim.—1. In a button, the combination, with the bottom plate or back thereof, of a fastening-shank consisting of a piece of spring metal bent to a substantially-U shape, so that both ends may pass into the bottom plate, one end being permanently engaged to the said plate, while the opposite end is provided with a barb, said shank so constructed that its resiliency will be exerted in a plane parallel with the length of the same, thereby causing the barb to engage the bottom plate and complete the fastening, substantially as described.

2. In a button, the combination, with the bottom plate or back thereof, of a fastening-shank consisting of a piece of spring metal bent to a substantially-U shape, so that both ends may pass into the bottom plate, one end being permanently engaged to said plate, while the opposite end has on its outer face a barb, said shank so constructed that its resiliency will tend to force the ends away from each other and in a plane parallel with the length of the same, causing the barb to engage the bottom plate, substantially as described.

3. The combination, with the metallic back *b* of a button provided with the openings *b' b'*, of the pointed spring-shank *c*, having barb *j*, shoulder *f*, bent neck *e*, and enlargement *d*, substantially as described.

4. The combination, with the metallic back *b* of a button provided with the openings *b' b'*, of the pointed shank *c*, having barb *j*, flattened and widened portions *c*, shoulder *f*, bent neck *e*, and enlargement *d*, substantially as shown and described.

484,854. MAGIC LANTERN. EMANUEL I. S. HART, New York, N. Y. Filed Feb. 26, 1891. Serial No. 382,732. (No model.)



Claim.—1. A magic lantern in which the condenser and objective shells or mountings are adjustably and solely connected by a single bar extending longitudinally through the standards supporting each, the bar angular in shape and fitted to an angular opening through each standard, as set forth.

2. In a magic lantern, the combination of condenser-shell A, provided with a bottom standard *a*, having legs *b*, sleeve *c*, and set-screw *d*, objective-shell B, provided with standard *a'*, having legs *b'*, sleeves *c'*, and set-screw *d'*, and longitudinal connecting-bar E, of angular cross-

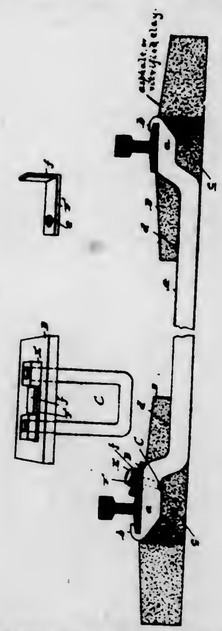
section, extending through sleeves *c* and *c'*, essentially as shown and described.

3. In combination with the sustaining standards of a magic lantern, a hollow connecting-bar extending longitudinally through said standards and having in its hollow a sectional worm, the sections formed and arranged to be operated individually or collectively, as set forth.

4. The combination of a magic lantern with a lighting device suspended by a counter-balance, whereby the light and center or axis of all the lenses in the lantern are brought and adjustably kept in direct line, as set forth.

5. The combination of a magic lantern with a lighting device suspended by a counter-balance, the lantern resting upon a table or shelf K, and the table supported at one end by hollow standards L and its other end by adjustable leg formed in two parts M and M', united by screw N, and the standards L, provided with cords L^3 and weights L', whereby a lighting device held thereby can be raised and lowered to enable the operator to bring the light to coincide with the center of all the lenses of the lantern in longitudinal line at whatever slope the table K may be placed, as set forth.

484,855. RAILROAD CROSS-TIE. WILLIAM M. HEWITT, Chattanooga, Tenn. Filed Jan. 29, 1892. Serial No. 419,051. (No model.)



Claim.—1. The blocks having openings therein, in combination with the cross-tie having its ends elevated and passing into said openings, the yokes embracing the elevated ends of the tie within the blocks, and means for securing the yokes in position, substantially as specified.

2. The cross-tie formed from a bar of metal with its ends bent in elevated positions and terminating in inwardly-directed hooks, in combination with asphalt blocks receiving said elevated ends and suitable means for securing the tie therein, substantially as specified.

3. The combination, with a railway-tie and a railway-rail, of blocks receiving the ends of the tie so as to seat the rail, a yoke embracing the tie within the blocks, a plate receiving the threaded ends of the yoke, nuts on said threaded ends, and the angular plate for securing the nuts on the ends of the yoke, substantially as specified.

484,856. TONGUE-SUPPORT. WILLIAM B. JOHNSON, Peoria, Tex., assignor of one-half to John S. Yates, same place. Filed Apr. 19, 1892. Serial No. 429,091. (No model.)

Claim.—A tongue-support consisting of the two wires provided intermediate their ends with coils and twisted together at opposite sides of the coils to provide the spring-arms, substantially as described.

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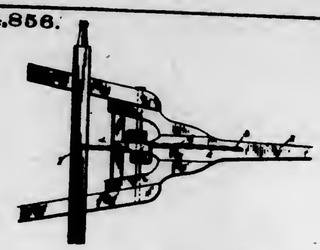
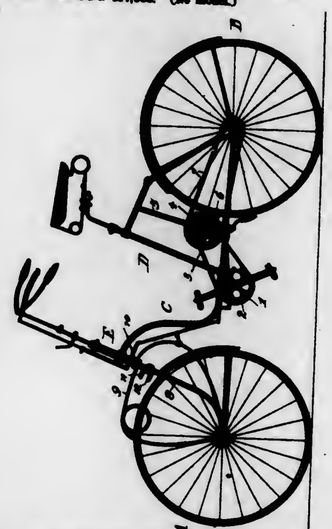
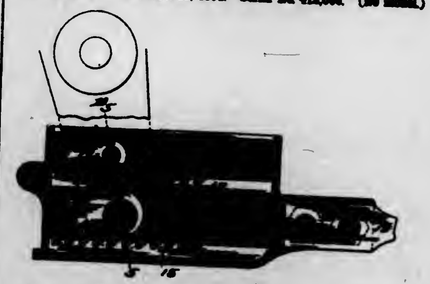


484,857. BICYCLE. ARNOLD H. KEMPF, Oakland, Cal. Filed Jan. 8, 1892. Serial No. 417,062. (No model.)



Claim.—In combination with the main frame carrying the crank-shaft, the seat-standard thereon having a forked brace connecting with the rear axle, the standards 5, extending between the brace and the frame in rear of the seat-standard and having an auxiliary shaft journaled thereon, a large sprocket-wheel on the crank-shaft connecting with a small wheel on the auxiliary shaft, and a second large wheel on the auxiliary shaft, connected with a smaller wheel on the rear hub, all substantially as and for the purpose set forth.

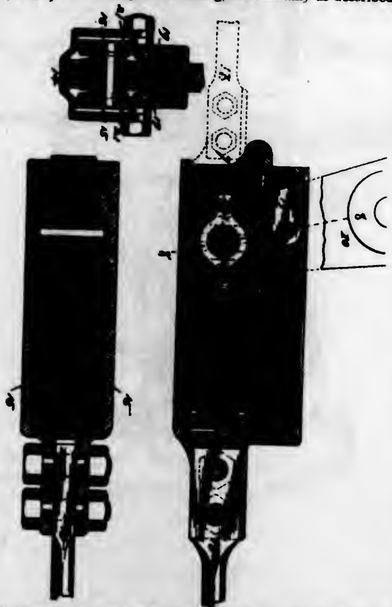
484,858. SLACK-ADJUSTER FOR CARS. WALDO H. MARSHALL, Chicago, Ill., assignor to the Consolidated Brake Adjuster Company, same place. Filed Nov. 16, 1891. Serial No. 412,008. (No model.)



Claim.—1. In a slack-adjuster for car-brakes, the combination, with a brake-rod and a lever forming part of the brake-gear, of a casing secured to the brake-rod and having rack-teeth thereon, a locking-pawl carried by the lever and adapted to engage the rack-teeth, and an adjusting-pawl also connected with the lever and adapted to

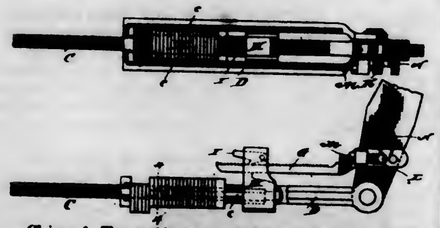
engage rack-teeth within or upon the casing, substantially as described.

2. In a slack-adjuster for car-brakes, the combination, with the live-lever and brake-rod, of a casing connected to the brake-rod and apertured for the reception of the lower end of the brake-lever, said casing having rack-teeth, a locking-pawl carried by the lower end of the brake-lever and adapted to engage the teeth of the casing, and an adjusting-pawl pivotally connected to the brake-lever and adapted to engage rack-teeth upon the casing, substantially as described.



3. In a slack-adjuster for car-brakes, the combination, with the live-lever and brake-rod, of a casing connected to the brake-rod and apertured for the reception of the lower end of the brake-lever, said casing having rack-teeth upon its vertical walls at each side of the aperture, pawls or detents carried by said lever and normally thrust therefrom by the action of suitable outwardly-forcing springs, and an adjusting-pawl pivoted to the brake-lever and adapted to engage rack-teeth upon the casing, substantially as described.

484,859. SLACK-ADJUSTER FOR CAR-BRAKES. WALDO H. MARSHALL, Chicago, Ill., assignor to the Consolidated Brake-Adjuster Company, same place. Filed Nov. 16, 1891. Serial No. 412,087. (No model.)



Claim.—1. The combination, with the operating-rod of a slack-adjuster for car-brakes and an actuating-lever for said rod, of an adjustable connection between said lever and said rod, substantially as described.

2. The combination, with the operating-rod of slack-adjusters for car-brakes, of an actuating-lever for said rod, said rod and said lever having a sliding connection, and means for limiting the sliding movement of said parts with relation to each other, substantially as described.

3. In a slack-adjuster for car-brakes, the combination, with the actuating-lever thereof and an operating-rod therefor, of means for operatively connecting said lever and said rod in different positions, substantially as described.

4. In a slack-adjuster for car-brakes, the combination, with a lever of the brake-gear and one of the brake-rods having wings thereon, of a series of washers riding on said wings and through which said brake-rod slides, a rack-bar pivotally connected to the actuating-lever and sliding through a box carried by said rod, and a pawl engaging the teeth of the rack and adapted to lock it with the box, substantially as described.

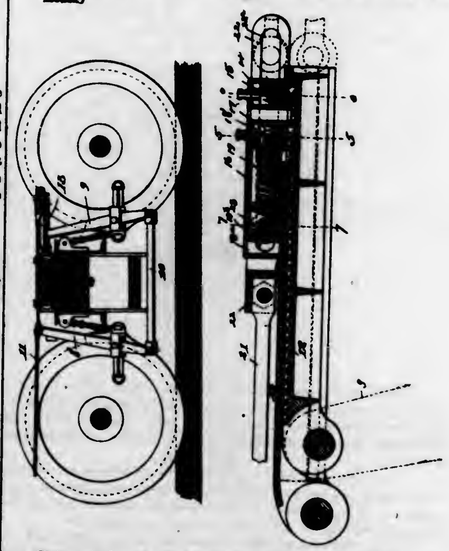
5. In a slack-adjuster for car-brakes, the combination, with a lever of the brake-gear and one of the brake-rods having wings thereon, of a series of washers riding on said wings and through which said brake-rod slides, a rack-bar having an adjustable connection with the actuating-lever and sliding through a box carried by said rod, and a pawl engaging the teeth of the rack and adapted to lock it with the box, substantially as described.

6. In a slack-adjuster for brakes, the combination, with mechanism for taking up the slack, of an operating-rod for actuating the take-up mechanism and a lever for actuating the operating-rod, said rod and lever having an adjustable connection whereby the operating-rod may be arranged or adjusted for different degrees of movement of its actuating-lever, substantially as and for the purposes specified.

7. In a slack-adjuster for brakes, the combination, with mechanism for taking up the slack, of an operating-rod for actuating the take-up mechanism, a lever for actuating the operating-rod, said rod and lever having an elongated slot and pin connection, and means for limiting the movement of the pin in the slot, substantially as and for the purposes specified.

8. In a slack-adjuster for brakes, the combination, with mechanism for taking up the slack, of an operating-rod for actuating the take-up mechanism, a lever for actuating the operating-rod, said rod and lever having an elongated slot and pin connection, means for limiting the movement of the pin in the slot, and a spring for controlling the movement of the operating-rod, substantially as and for the purposes specified.

484,860. SLACK-ADJUSTER FOR CAR-BRAKES. WALDO H. MARSHALL, Chicago, Ill., assignor to the Consolidated Brake-Adjuster Company, same place. Filed Nov. 16, 1891. Serial No. 412,088. (No model.)



Claim.—1. In a slack-adjuster for brakes, the combination, with the live and dead levers thereof, said levers having a connection of unvarying length at their lower ends, of a box secured to the truck-frame and provided with a pawl adapted to engage a rack secured to the dead-lever, a rack arranged to slide in said box and secured to the dead-lever, a second pawl arranged in said box and adapted to engage said rack, and means for actuating said second pawl from the live-lever, substantially as and for the purposes specified.

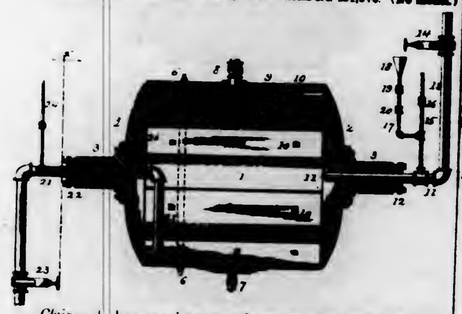
2. In a slack-adjuster for car-brakes, the combination, with the live and dead levers thereof pivotally connected to the brake-beams and having their lower ends connected at a fixed distance from each other, of a ratchet mechanism applied to the dead-lever and comprising a rack secured to said lever and two gravity-pawls adapted to engage the teeth of said rack, one of said pawls being movable along the rack, and a rod pivotally connected to the live-lever and adapted to move said pawl along the rack, whereby to automatically take up the slack, substantially as described.

3. In a slack-adjuster for car-brakes, the combination, with the live and dead levers thereof pivotally connected to the brake-beams and having their lower ends connected at a fixed distance from each other, of a ratchet mechanism applied to the dead-lever and comprising a rack secured to said lever, gravity-pawls adapted to engage the teeth of said rack, a sliding part, as 16, containing a case for said movable pawl, and a rod pivotally connected to the live-lever and having a sliding connection with said part 16 to permit a normal travel of the rod, and also a locking connection therewith whereby to move said pawl and take up the slack when the travel is abnormal, substantially as described.

4. In a slack-adjuster for car-brakes, the combination, with the live and dead levers thereof pivotally connected to the brake-beams and having their lower ends connected at a fixed distance from each other, of a ratchet mechanism applied to the dead-lever and comprising a rack secured to said lever, gravity-pawls adapted to engage the teeth of said rack, a sliding part, as 16, containing a case for said movable pawl, and a rod pivotally connected to the live-lever and having a sliding connection with said part 16 to permit a normal travel of the rod, and also a locking connection therewith whereby to move said pawl and take up the slack when the travel is abnormal, and a spring bearing upon the sliding part, substantially as described.

5. In a slack-adjuster for brakes, the combination, with the live and dead levers thereof, said levers having a connection of unvarying length at their lower ends, of a box secured to the truck-frame and having a pawl adapted to engage a rack secured to the dead-lever, a rack arranged to slide in said box and secured to the dead-lever, a spring-supported pawl arranged in said box and adapted to engage said rack, and means for moving the spring-supported pawl from the live-lever, substantially as and for the purposes specified.

484,861. APPARATUS FOR TREATING ORES. HARRISON B. MEECH, Chicago, Ill. Filed May 5, 1892. Serial No. 431,976. (No model.)

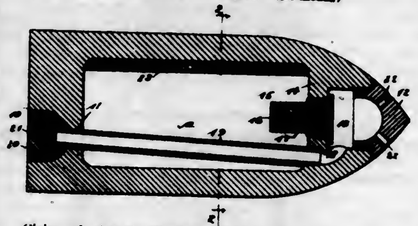


Claim.—1. In an amalgamator, the combination of the cylinder 1, closed at both ends and having hollow trunnions 3, the series of shelves 9, secured to the inner periphery of the cylinder, the valved inlet and outlet pipes 11 and 21, extending into the interior of the cylinder through packing-glands 12 and 22, the outlet-pipe being extended downward to near the bottom of the cylinder, the valved water-inlet pipe 15, communicating with the interior of the cylinder, and the quicksilver-inlet pipe 17, having the valves 19 and 20 and communicating with the interior of the cylinder, substantially as set forth.

2. In an amalgamator, the combination of the cylinder 1, closed at both ends and having hollow trunnions 3, the series of shelves 9, secured to the inner periphery of the cylinder, the valved inlet and outlet pipes 11 and 21, extending into the interior of the cylinder through packing-glands 12 and 22, the outlet-pipe being extended downward to near the bottom of the cylinder, the valved water-inlet pipe 15, communicating with the interior of the cylinder, the quicksilver-inlet pipe 17, having valves 19 and 20, and the valved air-vent pipe extending in through the main outlet-pipe and provided with a vertical branch 25, extending to near the top of the cylinder, substantially as set forth.

3. In an amalgamator, the combination of the cylinder 1, closed at both ends and having hollow trunnions 3, the series of shelves 9, secured to the inner periphery of the cylinder, the valved inlet and outlet pipes 11 and 21, extending into the interior of the cylinder through packing-glands 12 and 22, the outlet-pipe being extended downward to near the bottom of the cylinder, the valved water-inlet pipe 15, communicating with the interior of the cylinder, and the valved air-vent pipe extending in through the main outlet-pipe and provided with a vertical branch 25, extending to near the top of the cylinder, substantially as set forth.

484,862. PROJECTILE. JOSEPH J. MELVITTER, Brooklyn, N. Y. Filed Jan. 16, 1892. Serial No. 418,161. (No model.)



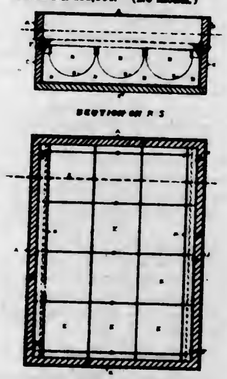
Claim.—1. A projectile provided at one end with a fuse-plug and also provided with a tube which establishes communication between the base of the shell and a space formed above the fuse-plug, substantially as shown and described, whereby the fuse-plug may be ignited by a flame passed through the tube, as and for the purpose specified.

2. A shell provided with a charge-chamber, a fuse-plug one portion of which extends within the charge-chamber, and a firing-tube establishing communication between the outer end of the fuse-plug and the base of the shell, which plug passes through the charge-chamber, but has no communication with it, substantially as shown and described.

3. The combination, with the fuse-plug and fuse of a projectile and a plug located in the base of the projectile and provided with a through-aperture, of a tube connected at one end with the base-plug, said tube being of much greater diameter than the aperture in said base-plug, the opposite end of the tube being in communication with the fuse and fuse-plug, as and for the purpose specified.

4. The combination, with a projectile provided with a pocket in its base, an interior charge-chamber, an air or fuse chamber, and a fuse located between the air or flame chamber and the charge-chamber, of a plug located in the base-pocket of the projectile, provided with an aperture extending through from its inner to its outer face, a tube connected with the base-plug at one end and connected at its opposite end with the fuse or air chamber, and a packing fitting the space between the base-plug and the walls of the pocket in the base of the projectile, substantially as and for the purpose specified.

484,868. EGG-BOX. DAVID NEEVIN, Jr., Elizabeth, N. J. Filed Dec. 4, 1891. Serial No. 413,906. (No model.)



Claim.—1. A rectangular parallelopipedal tray made from suitable materials and practically air-tight, a cap or cover for the open top of this tray and having a form and character like unto it and closely overlapping and embracing the sides of the said tray, in combination with a well-known nest of cells formed by interweaving a slotted sheet of paper and a number of notched plates of paper, arranged within the tray, and means, as the buffer B, to secure the nest of cells in place and attached to the inner walls of the tray in a position to overhang the ends of the said nest of cells, substantially as shown and described.

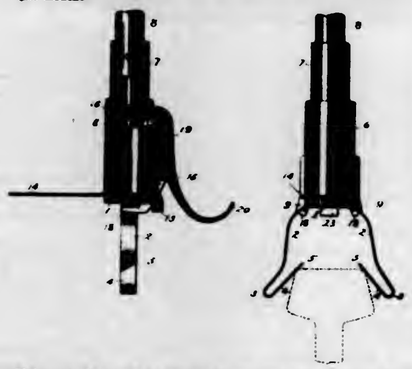
2. The combination of a suitable tray of rectangular shape, a cap or cover of rectangular form arranged upon and about the open

top of the said tray, a slotted sheet of paper and notched plates of paper interwoven, making a nest of well-known cells within the tray, and a V-shaped buffer, of elastic material, arranged between the nest of cells and the walls of the tray, substantially as shown and described.

3. The combination of a rectangular-parallelopipedal tray made practically air-tight, a cap, of form and character like unto the tray, covering its open top and closely embracing its sides, a well-known nest of cells arranged within the tray and made from a slotted sheet of paper interwoven with a number of notched plates of paper, and an elastic buffer situated within and attached to the walls of the tray contiguous to the nest of cells and above their ends, substantially as shown and described.

484,864. TORPEDO-PLACER.

George W. Pieper, Jr., and Robert Johnston, Wilkes-Barre, Pa. Filed Apr. 8, 1892. Serial No. 428,269. (No model.)



Claim.—1. In a torpedo-placer, the combination of the head having side lugs with a clamping-lever pivoted to the head, said lever being arranged to swing in a plane at right angles to the plane of the lugs and having prongs arranged to co-operate with the lugs to hold the torpedo, substantially as described.

2. In a torpedo-placer, the head having opposite projecting lugs with beveled faces and shoulders, in combination with a pivoted clamping-lever having prongs arranged to co-operate with the lugs to hold the torpedo, substantially as described.

3. In a torpedo-placer, the combination, with the head and its downwardly-projecting lugs, of a pivoted clamping-lever and a releasing-lever arranged to act upon the clamping-lever to disengage the torpedo, substantially as described.

4. In a torpedo-placer, the combination, with the head and clamping-lugs, of a forked clamping-lever and a releasing-lever united at their upper ends and connected to the body by a single pivot, substantially as described.

5. In a torpedo-placer, the head having a horizontal trailing-plate rigidly connected thereto, substantially as described.

6. In a torpedo-placer, the head provided with means for holding a torpedo and a bumper at the forward side of the head and extending below the torpedo to protect the same, substantially as described.

7. In a torpedo-placer, the combination of the head having lugs and a bumper extending downwardly therefrom, the forked clamping-lever having two prongs, the releasing-lever, and the rearwardly-extending trailing-plate, substantially as described.

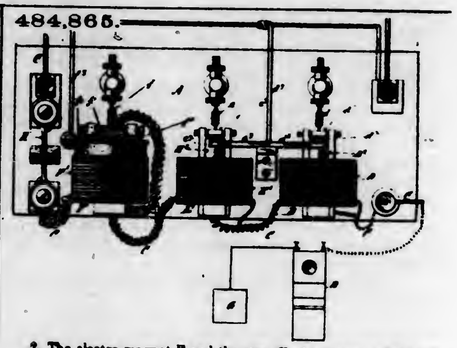
8. In a torpedo-placer, the combination, with the head having lugs and a bumper, of a forked clamping-lever having two prongs extending downward and rearward and a releasing-lever connected to the clamping-lever and curved downward, forward, and then upward, substantially as described.

484,865. AUTOMATIC CUT-OUT.

Charles R. Sanford, Brooklyn, N. Y. Filed May 17, 1890. Serial No. 352,172. (No model.)

Claim.—1. The herein-described self-protecting telephone and telegraph instrument protector, which consists of three or more electro-magnets, the helices of which respectively vary in resistance in prescribed degrees and are connected in series in the main circuit, which includes the telephone or telegraph instrument to be protected, a number of normally-open branch circuits to the ground or shunts around the telephone or other instrument to be protected, equaling the number of electro-magnets employed, and a like number of armatures for respectively closing said branch or shunt circuits successively when the helices of the magnet become charged with abnormal currents of prescribed strength.

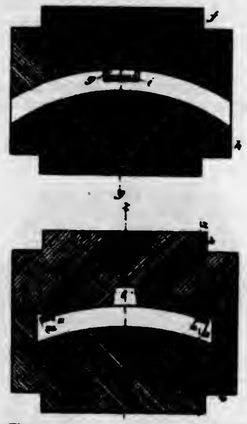
484,865.



2. The electro-magnet F and the stop f^3, the same consisting of a metallic plate electrically connected with the ground and projecting across the end of the electro-magnet F and having a perforation immediately opposite the core of the said electro-magnet, in combination with the armature f' and the disk f^4, carried upon said armature for closing the branch circuit f^3 by the contact of its periphery with the face of the said stop f^3, as set forth.

484,866. ART OF AND APPARATUS FOR MAKING BRAKE-SHOES.

Charles T. Simons, Allegheny, Pa. Filed Apr. 27, 1892. Serial No. 430,836. (No model.)



Claim.—1. The improvement in the art of manufacturing brake-shoes, which consists in forming parallel cavities in a heated blank of greater length than the finished shoe by displacing the metal laterally, at the same time bending the blank into approximate final shape, then inserting in such cavities a clip, forcing back the displaced metal around the clip's ends and thereby connecting the clip and blank, and finally bending the blank into final shape and compressing it longitudinally and forming the ends of the shoe, substantially as described.

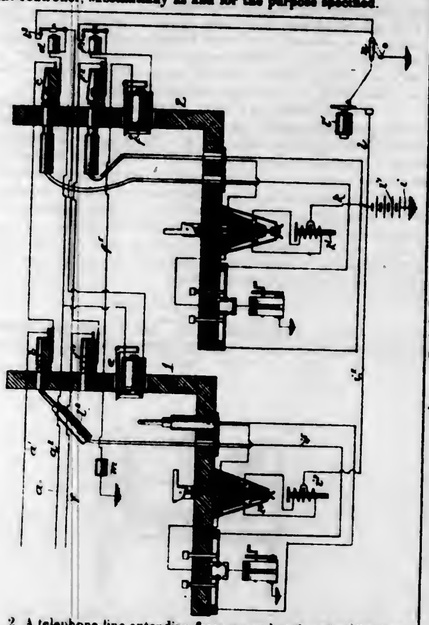
2. Apparatus for forging brake-shoes, comprehending a pair of first-operation dies, the male die having the lateral-displacement and cavity-forming projections *g* and the female die having its matrix provided with cavities in line with the projections of the male die, the co-operating faces of the dies being described on an arc of a circle differing from that of the finished shoe, substantially as described.

3. Apparatus for forging brake-shoes, comprehending a pair of finishing-dies consisting of a male die provided with a walled cavity to encompass the clip, cavities for forming the end lips, and projections for forming the end lugs and a female die whose matrix is of less length and width than the extreme length and width of the blank to be treated and described on an arc of a circle of different radius than the blank, substantially as described.

484,867. TEST-CIRCUIT FOR MULTIPLE-SWITCHBOARD SYSTEMS.

Charles R. Scribner, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Mar. 1, 1890. Serial No. 342,276. (No model.)

Claim.—1. Telephone-lines extending from ground at the subscribers' stations thereon to multiple switchboards at the central office, each line including a circuit-controller after passing through its switches on the switchboards, an operator's telephone connected with a test-battery at each board, and means for connecting the circuit, including said telephone and battery, with the test-piece of any of the telephone-lines and branch circuits, one for each telephone-line, and adapted to be intermittently interrupted by the influence of the circuit-controller, substantially as and for the purpose specified.



2. A telephone-line extending from ground at the subscriber's station through the springs and contacts of switches on different multiple switchboards and through a circuit-controller and thence to the test-rings of said switches, a telephone connected with a ground branch at each of the switchboards, with means for closing said ground branch to the test-ring of any of the switches of its board, in combination with a branch circuit from the same battery through a circuit-interrupter to contacts of the different circuit-controllers, whereby when the ground branch, including the battery and telephone, is closed to the test-ring of the switch of a line at any board the operator by listening at the telephone may determine whether the line tested is in use.

3. The test-battery in a ground branch connected with several operators' telephones and to connecting-plugs, in combination with a branch / from said battery containing a circuit-interrupter, said branch after passing through said circuit-interrupter being extended to circuit-controllers of the different telephone-lines, and the said telephone-lines normally provided with ground connections at the subscribers' stations thereon, whereby the different lines may be tested, substantially as and for the purpose specified.

4. In a telephone-exchange system, lines connecting with different switches upon multiple switchboards, each line including a circuit-controller between the switch at the last board and the test-ring of the switch, a ground connection from each circuit-controller, adapted to be closed with the telephone-line by the circuit-controller, a test-battery included in the circuit with the operator's telephone, and a test-plug whereby the circuit-controller may be operated to close the ground branch when the test-plug is applied to a test-ring to indicate whether a line is in use.

484,868. CARTRIDGE-CRIMPING MACHINE.

Myron A. Twitchell, Moville, assignor of three-fifths to Joseph S. Wheeler, Sioux City, Iowa. Filed Apr. 30, 1892. Serial No. 431,251. (No model.)

Claim.—1. A cartridge-crimper formed of two sections, one of which has formed in it a bell-shaped orifice and a central passage, the other section being adapted to fit into the said passage and extend through to the apex of the orifice, each of the sections having serrations formed on those surfaces which are adapted to engage the cartridge, substantially as described.

2. In a cartridge-crimping machine, the combination of a holder

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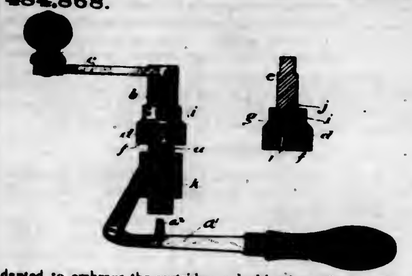
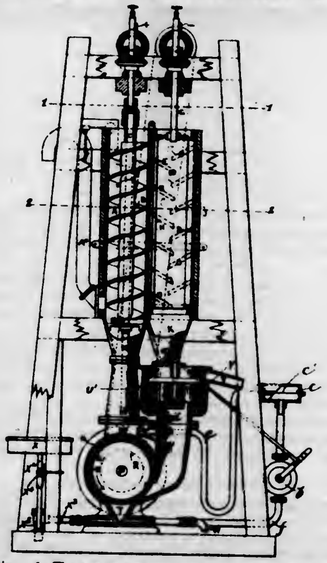


adapted to embrace the cartridge, a locking-lever for securing the cartridge therein and feeding the same, a crimper-head formed of two sections and having a crimping-chamber substantially frusto-conical in shape, and a crank or handle for rotating the crimper-head, all substantially as described.

3. In a cartridge-crimping machine, the combination of a holder adapted to embrace the cartridge, a locking-lever for securing the cartridge therein, a crimper-head journaled in a portion of the frame, said head being formed of two sections, one of which has a bell-shaped orifice, the other section being adapted to extend through the first to the apex of the orifice, and a crank or handle for rotating the head, all substantially as described.

484,869. PROCESS OF SEPARATING GOLD AND OTHER METALS FROM THEIR ORES.

George J. Atkins, London, England. Filed Apr. 26, 1891. Serial No. 390,395. (No specimens.) Patented in England Sept. 23, 1886, No. 12,985; in France Nov. 24, 1887, No. 187,179; in Germany Nov. 27, 1887, No. 46,774; in Cape of Good Hope Dec. 9, 1887, No. 426; in Natal Dec. 19, 1887; in Canada Dec. 20, 1887, No. 26,913; in Victoria Dec. 21, 1887, No. 5,623; in New South Wales Dec. 23, 1887, No. 403; in South Australia Dec. 24, 1887, No. 961; in Queensland Dec. 29, 1887, No. 373; in Tasmania Dec. 30, 1887, No. 880/10; in New Zealand Jan. 4, 1888, No. 3,722; in India Jan. 4, 1888, No. 236; in Spain Apr. 27, 1888, Nos. 12,412 and 7,697; in Austria-Hungary May 13, 1888, No. 11,508 and No. 49,944, and in Transvaal Nov. 22, 1889, No. 140.

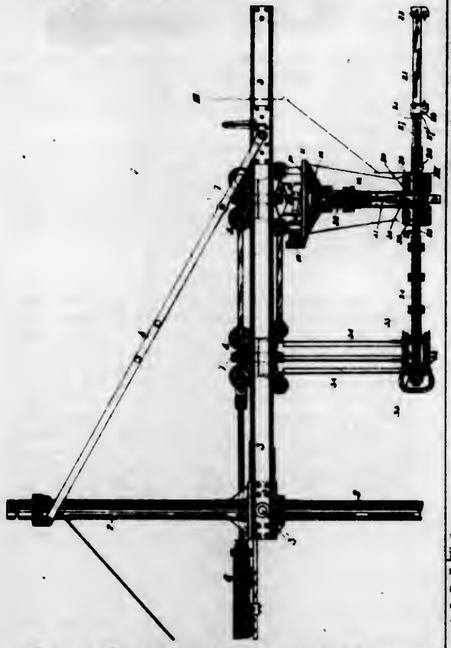


Claim.—1. The continuous process of separating gold and other metals from their ores, which consists in passing such ore through the anode-compartment of an electrolytic apparatus in contact with the anode and retarding the descent of the ore in the said anode-compartment while such ore is kept in contact with the anode-pole of such compartment, so as to form a more or less soluble portion of such anode-pole, and then subjecting the ore to the process of amalgamation, substantially as and for the purpose set forth.

2. The continuous process of separating gold and other metals

from their ores, which consists in passing such ore through the anode-compartment of an electrolytic apparatus, retarding the descent of the ore in the said anode-compartment while such ore is kept in contact with the anode-pole of such compartment, so as to form a more or less soluble portion of such anode-pole, then passing the ore through the cathode-compartment, in retarding the descent thereof in the said cathode-compartment, and then subjecting the ore to the process of amalgamation, substantially as and for the purpose set forth.

484,870. CRANE. SEWARD S. BARRETT, Pittsburg, Pa., assignor of one-half to Henry Aiken, same place. Filed June 13, 1892. Serial No. 436,476. (No model.)



Claim.—1. The combination of grippers, a motor for operating them, and mechanism adapted to rotate the grippers and motor axially, substantially as and for the purposes described.

2. The combination of grippers, a bearing permitting axial rotation thereof, and a gripper-actuating motor connected with the grippers through the bearing, substantially as and for the purposes described.

3. The combination of grippers, a bearing permitting axial rotation thereof, a gripper-actuating motor connected with the grippers through the bearing, and a motor adapted to effect such axial rotation, substantially as and for the purposes described.

4. The combination of grippers, separated bearings permitting axial rotation thereof, and a motor having a power connection with the grippers between the bearings, substantially as and for the purposes described.

5. The combination of a jointed gripper-bar, a gripper-head, an actuating-motor, and a freely-detachable connection between the actuating-motor and the head, substantially as and for the purposes described.

6. The combination of a frame having a circular base, a second interfitting frame set below the same and vertically swiveled thereto, a metal support carried by the second frame, and a motor on the first-named frame mechanically connected with the swiveled frame and adapted to rotate the same, substantially as and for the purposes described.

7. The combination of a frame having a circular base, a second interfitting frame set below the same and vertically swiveled thereto, a metal support carried by the second frame, and a motor on the first-named frame mechanically connected with the swiveled frame and adapted to rotate the same, a jib, and a trolley which is mounted on the jib and which carries the said frames and metal support, substantially as and for the purposes described.

8. The combination of a jib or carriage, a trolley mounted thereon, a frame carried by the trolley, a second frame vertically swiveled thereto, axially-rotatory grippers, and a rotating motor carried by the second frame, a second motor adapted to rotate said frame on its swivel-axis, and gripper-actuating mechanism, substantially as and for the purposes described.

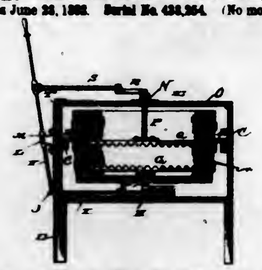
9. A crane-trolley formed of horizontally-divided parts and having upper and lower wheel-bearings on the jib, a motor adapted to move it vertically, and means for drawing said parts together, substantially as and for the purposes described.

10. The combination of a metal support or grippers, a vertically-turning support therefor, a track by which the metal support or grippers is upheld during its radial motion, a jib or carrier, and means by which said turning support and track are movable on the jib or carrier, substantially as and for the purposes described.

11. The combination of a metal support or grippers, a vertically-turning support therefor, a track by which the metal support or grippers is upheld during its radial motion, a jib or carrier, a trolley by which said turning support and track are carried, and a motor for moving the trolley, substantially as and for the purposes described.

12. The combination of a vertically-turning frame, a metal support or grippers rotatory in bearings thereon, a motor carried by said frame and adapted to rotate the metal support or grippers, an upper frame to which said turning frame is swiveled, and a motor mounted on the upper frame and connected with the turning frame, substantially as and for the purposes described.

484,871. WASHING-MACHINE. JOHN H. RAYN, Santa Barbara, Cal. Filed June 28, 1892. Serial No. 438,264. (No model.)

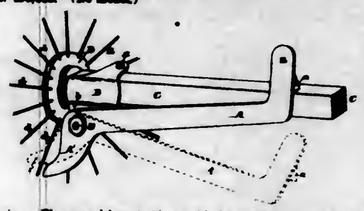


Claim.—In a washing-machine, the combination of a frame, a washing-tub supported on the frame by means of lugs, a rock-shaft journaled in the bottom of the tub, carrying an uneven or scrubbing surface, a rock-shaft journaled in the frame above the tub, carrying an uneven or scrubbing surface, crank-arms on the rock-shafts, an oscillating lever pivoted on the frame, and links connecting the crank-with the lever, substantially as described.

484,872. FENCE. HENRY J. BEAN, Lebanon, Va. Filed Dec. 21, 1891. Serial No. 415,780. (No model.)

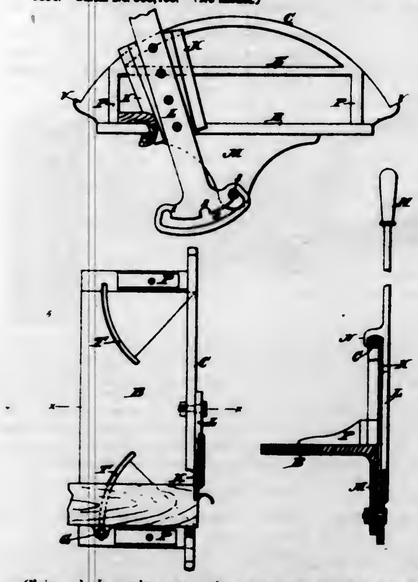
Claim.—In a fence, the combination, with the rails, of a plurality of posts arranged all upon one side of the fence and lying flat against the rails and a binding-wire secured by a loop at its lower end to one of the posts beneath the bottom rail and its upper end looped around the upper rails, then looped around the upper ends of all of the said posts, and secured between the two upper and lower loops, substantially as shown and described.

484,873. LOCK FOR THE WHEELS OF CHILDREN'S CARRIAGES. JOSEPH A. BERNDES, Racine, Wis. Filed Apr. 30, 1892. Serial No. 431,022. (No model.)



Claim.—The metal bar A A', provided at its inner end with pedal *z* and catch or notch *a*, in combination with the carriage-axle *c*, the wheel-spokes *d d* D, and clip and hanger B *b*, as shown and described.

484,874. MITER-CUTTING MACHINE. DAVID H. BRESSLER, Grand Rapids, Mich., assignor to James T. Phillips, same place. Filed May 28, 1891. Serial No. 393,703. (No model.)



Claim.—1. In a miter-cutter, the combination of a bed provided with stationary posts having their rear faces in the same plane as the rear face of the bed, a projection depending from the bed, and a knife-carrying lever pivoted adjustably to said projection at a point below the bed, substantially as described.

2. In a miter-cutter, the combination of a bed provided with stationary posts for supporting the end of the material to be acted upon, adjustable gages for the opposite end only of the material in front of the posts, being independent thereof, and a knife-carrying lever adjustably pivoted at a point below the bed, substantially as described.

3. In a miter-cutter, the combination of a bed provided with stationary posts having their rear faces in the same plane as the rear face of the bed, a projection depending from the bed, a knife-carrying lever pivotally connected to said projection and having a series of recesses for the adjustment of its lower end upon its pivot, and a guide to maintain the knife in close proximity to the posts and bed, substantially as described.

4. In a miter-cutter, the combination of a bed provided with stationary posts having their rear faces in the same plane as the rear face of the bed, a projection depending from the bed, a lever, a knife carried thereby, and an adjustable connection between the lower end of said lever and said projection, whereby in the adjustment of the lever the knife is also adjusted to change the character of the cut, substantially as described.

484,875. METHOD OF TREATING MINERALS CONTAINING NICKEL. JEAN DE CUPPER, Paris, France. Filed May 20, 1892. Serial No. 433,720. (No specimens.) Patented in France Feb 26, 1892, No. 219,696.

Claim.—1. The method of separating cobalt from minerals, mattes, speiss, and other substances containing cobalt, nickel, and copper, which consists in reducing the cobalt of the mineral to the metallic state and separating the metallic cobalt from the nickel and copper by means of an acid solution of copper having the temperature of the surrounding atmosphere, substantially as and for the purposes set forth.

2. In the art of treating minerals, mattes, speiss, and other substances containing nickel, the process of separating nickel from copper, which consists in reducing the nickel to a metallic state and separating the metallic nickel from the copper by means of a hot-acid solution of copper, substantially as and for the purposes set forth.

484,876. EGG CARRIER AND HOLDER. CHARLES W. COSTELLOW, Waterborough, Me. Filed Mar. 2, 1892. Serial No. 423,489. (No model.)

Claim.—1. In an egg-carrier, the frames A, the sheets B, secured thereon and having a series of intersecting slots forming the series of projections, and the spacing-frame having the side strips c, adapted to receive the holding-frames and keep them at a suitable distance from each other, substantially as described.

2. In an egg-carrier, the combination of a spacing-frame, the two holding-frames adapted to be held a suitable distance apart by said spacing-frame and having the sheets B, extending entirely across the holding-frames and provided with the projections *b'*, arranged in vertical alignment to form pliable beds adapted to receive the eggs, substantially as described.

3. In an egg-carrier, the combination of the holding-frame A, the spacing-frame C, having side strips c to receive the holding-frames and space them apart, the spacing-frame inclosing the adjacent edges of the holding-frames to prevent their displacement, and the sheets B, secured to the face of the holding-frames, which rest against the side strips of the spacing-frame, said sheets having the series of intersecting slots *b*, forming projections *b'*, which are bent to provide an elastic bed for the eggs, substantially as described.

484,877. PROCESS OF SEPARATING IRON FROM ORE. HENRY H. HARDY, Baltimore County, Md., assignor, by direct and mesne assignments, to the Hames Purifying and Separating Company, of West Virginia. Filed Apr. 6, 1889. Serial No. 306,294. (No specimens.)

Claim.—1. The method or process of extracting iron from gangues, ores, or sponges containing it by grinding or otherwise dividing the material and bringing the same in contact with or proximity to a conductor through which a current of electricity is passing, whereby the iron particles therein are caused to adhere to the conductor.

2. The method or process of extracting or separating iron from gangues, ores, or sponges containing it by grinding or otherwise dividing the material, bringing the same in contact with or proximity to a conductor through which a current of electricity is passing, gathering the iron particles upon the conductor, and then detaching them by shutting off the current through the conductor.

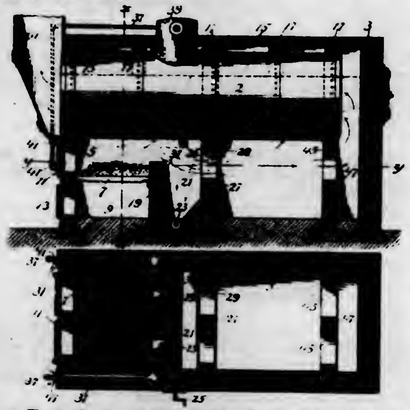
484,878. BOILER-SETTING. MARSHALL P. HAYES, Chicago, Ill. Filed Aug. 21, 1891. Serial No. 403,270. (No model.)

Claim.—1. The combination of the boiler and the combustion-chamber provided with the transverse wall 19, the wall 27, provided with the arch or arches 29, the transverse settling-chamber 21, arranged between the wall 19 and the wall 27, and the conveyer 23, arranged at the bottom of said settling-chamber for withdrawing the cinders from the same, substantially as described.

2. The combination, with the boiler and the furnace provided with a combustion-chamber and the wall 19, of the air-pipes 31, extending from the front of the furnace longitudinally through the side walls thereof, to be heated, into the transverse wall 19 and having an opening through the rear thereof, the pipes 35, extending through

the side walls of the furnace and opening into the combustion-chamber from opposite sides thereof at the rear of and above the wall 19, and smaller steam-pipes extending into said pipes 31 and 35, whereby heated air and steam are discharged into the furnace back of the wall 19, substantially as described.

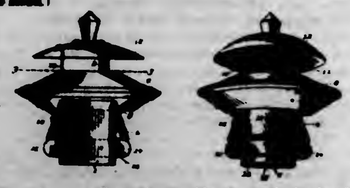
3. The combination, with the boiler, of the combustion-chamber provided with the transverse wall or bridge 19, the wall 27, provided with the annular openings or arches, the lower parts of which lie below the line of the top of said wall 19, the pipes 31, extending through the side walls of the combustion-chamber, and openings into the combustion-chamber at the rear of the wall 19 and midway in front of said arches 29, and the pipes 35, opening into the combustion-chamber through the side walls thereof and in front of the arches 29, substantially as described.



4. The combination, with the boiler, of the combustion-chamber, the transverse wall 19, forming the bridge, the wall 27, arranged back of the same, the settling-chamber 21, formed between the wall 19 and 27, having the hopper-shaped bottom, the rear wall arranged beneath the rear end of the boiler, whereon the same is adapted to rest, the chamber provided between the same and the rear wall of the furnace, and the annular opening or openings or arches 29 and 45, arranged in said wall 27 and the wall supporting the rear end of the boiler, the top of said transverse or bridge wall 19 being considerably above the level of the lower parts of said openings, whereby the gases and flames from the combustion-chamber are forced down just back of the bridge-wall and again at the rear end of the boiler, and means for removing cinders from the bottom of the settling-chamber, substantially as described.

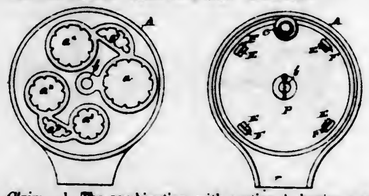
5. The combination, with the boiler, of the furnace having the combustion-chamber, the inclosing front, side, and rear walls and top, spaces 15, divided by partitions 17, being formed transversely about the boiler, the transverse or bridge wall 19, the settling-chamber formed back of the same, the wall 27, provided in its upper rear part with the arches 29, the rear wall 47, having the arches 45, said walls 27 and 47 having upward extensions adapted to close the spaces between the sides of the boiler and the side walls, large air-pipes contained in the side walls of the furnace and opening through the front thereof, said pipes having transverse portions extending within the wall 19 and having inner ends opening at points midway between the sides and the arches 19, large air-pipes 35, contained in the side walls above the pipes 31 and opening through said side walls and in front of the arches 29, and small steam-pipes projecting into the open forward ends of said air-pipes, all as and for the purpose specified.

484,879. VENTILATOR. GEORGE H. REED, Troy, N. Y., assignor to Jessie D. Reed, same place. Filed Mar. 30, 1892. Serial No. 426,966. (No model.)



Claim.—In a ventilator, the combination, with the double frustum S, consisting of two single frusta united at their bases or larger diameters and freely open at their smaller diameters, of the discharge-pipe 1, extending upwardly through and above the lower opening of said frustum nearly to the plane of meeting of the single frusta, the deflecting-frustum 4, encircling said discharge-pipe and extending from its summit to a point below the double frustum, the hood 12, extending over the upper opening of the double frustum, and braces for holding the parts rigidly together, substantially as described.

484,880. NUTMEG-GRATER. HENRY G. GILBERT, Dayton, Ohio. Filed Mar. 11, 1892. Serial No. 424,489. (No model.)



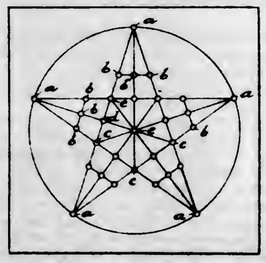
Claim.—1. The combination, with portion A, having a spindle *b* and different-sized tapering toothed sockets for holding nutmegs, of rotating disk B, provided with a handle on the outer surface and a grinding-disk C on the inner surface, as set forth.

2. The combination, with dished disk A, having spindle *b*, shoulder *g*, exit *r*, and tapering toothed sockets for holding nutmegs, of disk B, having handle *c* and openings F and provided underneath with grating-disk C, having fastening-clips E, as set forth.

484,881. WIRE STRETCHER AND SPLICER. JOSEPH F. PRICE, Exeter, Nebr. Filed May 21, 1892. Serial No. 433,853. (No model.)

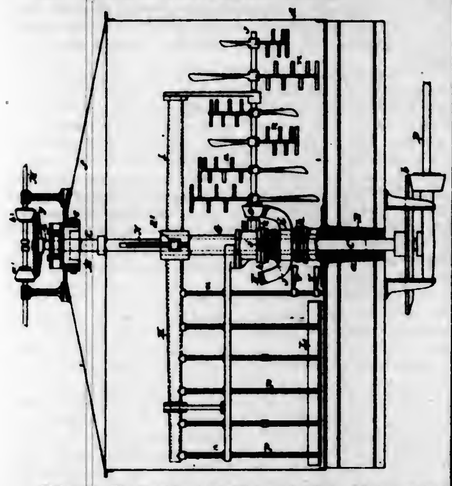
Claim.—In a wire-stretcher, the combination, with the frame consisting of two curved side bars, an end bar having an eye thereon, and a recessed end bar at the opposite end, the end walls of the recess being serrated, of a winding-drum, means for actuating the drum, a rope on the drum, passing through the eye on the end bar, a clamp on the rope, and a pivoted dog in the recess of the forward end bar, having oppositely-inclined gripping-faces, and projections extending above the end walls of the recess, substantially as described.

484,882. PUZZLE. CHARLES H. RICKERT, Reading, Pa. Filed May 10, 1892. Serial No. 432,417. (No model.)



Claim.—The herein-described puzzle, consisting of a star-shaped figure having a pocket or pin-hole at the end of each of the triangles forming the points thereof, similar holes at the junctions of said triangles, holes *d d* midway between the said junctions, series of three holes *b b b* between the end and base of each triangular point, and a central hole *c*, in combination with a set of pins for said holes, substantially as set forth.

484,888. MASH-STIRRER. GUSTAV SIEBEL, New York, N. Y. Filed May 16, 1892. Serial No. 433,067. (No model.)



Claim.—1. The combination of the mash-tub A and the vertical central shaft C therein and mechanism, substantially as described, for rotating said shaft from the lower end thereof with the non-rotating socket *a*, extending downwardly from the bottom of the mash-tub, non-revolving sleeve B, contained within said socket and surrounding said shaft C, and with the stuffing-box *h*, said stuffing-box being placed above the bottom of the mash-tub against the outside of the sleeve B, all arranged so that no part of the body of the rotating shaft comes in contact with the mash in the tub, as specified.

2. The combination of the mash-tub A and its vertical central shaft C with the non-revolving sleeve B, surrounding the lower part of said shaft, and with stuffing-box *h*, placed above the bottom of the mash-tub, screws or connecting-rods *j*, non-revolving ring *k*, and rotary sleeve G, and mechanism, substantially as described, for revolving the sleeve G, all arranged so that the non-revolving ring *k* and the non-revolving sleeve B are connected with the revolving sleeve G for the purpose of vertical adjustment, substantially as herein shown and described.

3. In a mash-stirring apparatus, the combination of a scraper-blade L with vertical carrying-arms *p*, pivot *r*, and spring *s*, the scraper-blade extending above the pivot *r* farther than below said pivot, so as to be capable of automatic adjustment, substantially as herein shown and described.

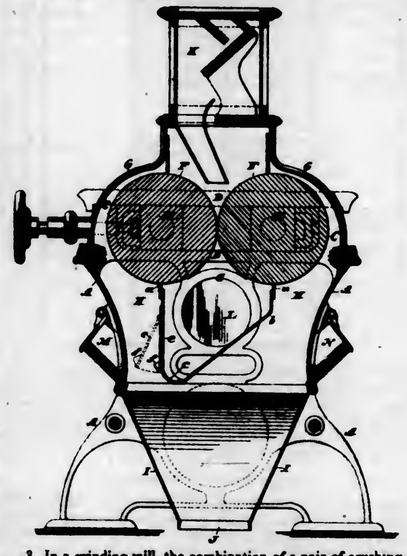
4. The combination, in a mash-stirring apparatus, of the mash-tub A, vertical central shaft C, and horizontal and vertically-adjustable arm H with the scraper L and pendent rod *u*, the latter being rigidly attached to said arm intermediate of the said scraper L and shaft C, and with the blades *b*, projecting therefrom toward the shaft C and in close proximity thereto, so as to prevent the material collecting around said shaft C, substantially as and for the purpose herein shown and described.

5. The combination of the vertical shaft C and mechanism, substantially as described, for revolving it with the vertically-movable sleeve G and scraping mechanism carried by said sleeve G, nuts d^3, also carried by the said sleeve G, screws N N, engaging said nuts, pinions *w w*, carried by said screws, central pinion *x*, mounted on the main vertical shaft C and engaging the pinions *w w*, frictional wheel *y*, carried by the central pinion *x*, and frictional cones c^4 b^3, and means for engaging said cones with the frictional wheel *y*, whereby the sleeve G can be raised or lowered, substantially as described.

484,884. GRINDING-MILL. GUSTAV SIEBEL, New York, N. Y. Filed May 27, 1892. Serial No. 434,661. (No model.)

Claim.—1. In a grinding-mill, the combination of the incased crushing-rolls and the chamber H below said rolls with a plate *b*, forming an interior receiving-chamber *c*, having an outlet above its bottom, but below said rolls, and with a self-closing door or valve N in the outer wall of the chamber H, all arranged to allow the valve to open under pressure within said chamber H and to close in the absence of such pressure, substantially as described, and for the purposes set forth.

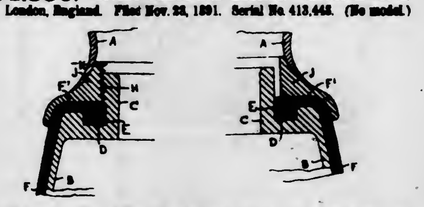
2. In a grinding-mill, the combination, with the incased crushing-rolls, of a lower hopper-chamber H, a plate *b*, forming an interior receiving-chamber *c* within said hopper-chamber H, and a self-closing door-valve *e* in said interior receiving-chamber *c*, adapted to permit the ground material to pass into the receiving-hopper, substantially as described, and for the purposes set forth.



3. In a grinding-mill, the combination of a pair of crushing-rolls and a casing inclosing same with a self-closing door in said casing, adapted to open outwardly under pressure from within, and with an interior receiving-chamber *c*, having outwardly-opening self-closing door *e*, substantially as herein shown and described.

4. In a grinding-mill, an explosion-preventive chamber *c*, secured to the frame within the chamber H and provided with self-closing valve-door *e*, in combination with self-closing valve-doors M and N in the outer chamber H, all said parts being adapted to operate and be operated substantially as described.

484,885. DIVING DRESS AND HELMET. ALFRED E. STOVE, London, England. Filed Nov. 23, 1891. Serial No. 413,443. (No model.)



Claim.—1. In a diving-suit, the combination, with the helmet, of the breast-plate provided with a groove, inwardly-projecting flange on the collar of the dress, and a lip on said flange, said groove adapted to be engaged by said lip, substantially as set forth.

2. In a diving-suit, the combination, with the helmet, of the breast-plate provided with a groove, inwardly-projecting flange on the collar of the dress, a lip on said flange, said groove adapted to be engaged by said lip, exterior screw-threads on said breast-plate, said screw-threads being divided into sections, and interior screw-threads on said helmet, said screw-threads being divided into sections, and said screw-threads adapted to engage with each other to bind the flanged collar of the dress tightly upon the breast-plate, substantially as set forth.

484,886. HAT-RACK. ADELBERT L. VAN BENSCHOTEN, Danbury, Conn. Filed Apr. 4, 1892. Serial No. 427,690. (No model.)

Claim.—1. A hat-rack consisting of side pieces formed from continuous strips of wood bent to shape and rounded at the corners, uprights in each side piece, cross-pieces connecting the two side pieces, diagonal braces at the ends, and longitudinal strips extending from end to end of the side pieces and passing through the uprights.

2. The combination, with the side pieces, uprights, cross-pieces, and

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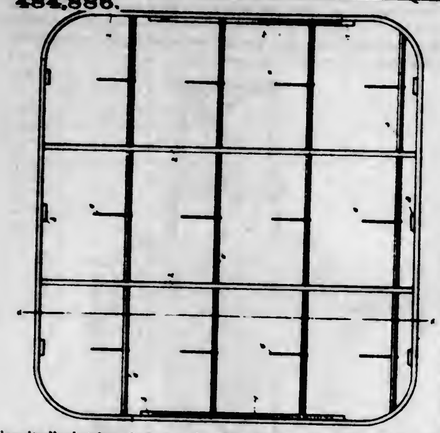
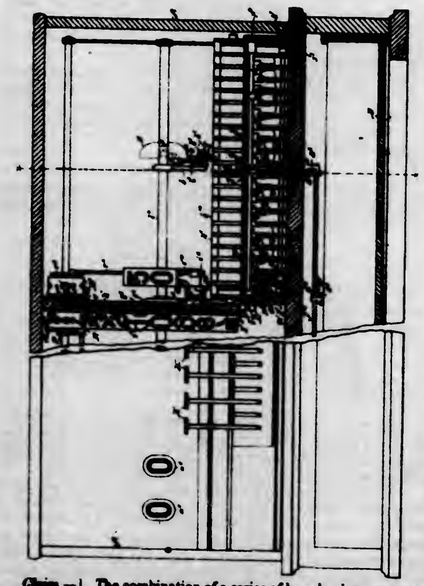


longitudinal strips of a hat-rack, of hat-holders extending from each longitudinal strip across to the opposite longitudinal strip, said holders extending upward from one strip and then across and down to the other strip, the ends of said holders being high enough to engage the interior of the hat and prevent it from slipping off should the rack be moved quickly or tilted.

484,887. CASH REGISTER AND INDICATOR. JEROME J. WILSON, Somerville, Mass., assignor, by mesne assignments to the Boston Cash Register Company, Portland, Me. Filed Jan. 2, 1889. Serial No. 295,137. (No model.)



Claim.—1. The combination of a series of keys having a common fulcrum and each having an arc-shaped rack concentric with said fulcrum, a wing or pawl adapted to engage the rack of any partially-depressed key and to prevent the return of such key until such key is fully depressed, and a rocking plate having the same fulcrum with said keys and rocked by the depression of any of said keys and adapted when any such key is fully depressed to strike said wing or pawl and move it out of engagement with the rack of such key, as and for the purpose specified.

2. The combination of a series of keys having a common fulcrum and each having an arc-shaped rack concentric with said fulcrum, a wing or pawl adapted to engage the rack of any partially-depressed key and to prevent the return of such key until such key is fully depressed, and a rocking plate having the same fulcrum with said keys and rocked by the depression of any of said keys and provided with backwardly-extending downhanging arms adapted when any such key is fully depressed to strike said wing or pawl and move said pawl out of engagement with the rack of such key, as and for the purpose specified.

3. The combination of a series of keys, each provided with a rack and having a common fulcrum, a pivoted pawl adapted to engage any one of said racks when its key is partially depressed to prevent a return of said key or to be turned out of engagement with said racks, said pawl having a downhanging arm, a spring pressing against the lower end of said arm to hold said pawl in either of said positions, and a rocking plate adapted to be rocked by the depression of any of said keys and when any key is fully depressed to strike said pawl above its pivot and throw the same out of engagement with the rack of such key to allow said key to return to its normal position and then to strike said pawl below its pivot and to throw said pawl into position to engage the rack of the key next depressed, as and for the purpose specified.

4. The combination of a series of keys, each provided with a rack and having a common fulcrum, a pivoted pawl adapted to engage any one of said racks when its key is partially depressed to prevent a return of said key or to be turned out of engagement with said racks, said pawl having a downhanging arm, a leaf-spring pressing against the lower end of said arm and having an upward projection to hold said pawl in either of its positions, and a rocking plate adapted to be rocked by the depression of any of said keys and having an arm adapted when any key is fully depressed to strike said pawl above its pivot and throw the same out of engagement with the rack of such key to allow said key to return to its normal position and then to strike said pawl below its pivot and to throw said pawl into position to engage the rack of the key next depressed, as and for the purpose specified.

5. The combination of the case, the drawer sliding therein, a series of pivoted keys, the rocking plate adapted to be rocked by the depression of any of said keys and having a downhanging hook secured thereto, the bell-crank lever pivoted on said case and having a lower horizontal arm provided with a hook, and a catch secured on the top of said drawer and adapted to be engaged by said last-named hook to hold said drawer closed, the upper arm of said lever being arranged to be struck by said hook on said rocking plate when said plate is so rocked to release said drawer and allow the same to be opened, as and for the purpose specified.

6. The combination of the case, the drawer sliding therein, a series of pivoted keys, the rocking plate adapted to be rocked by the depression of any of said keys and having a downhanging hook secured thereto, the bell-crank lever pivoted on said case and having a lower arm provided with a hook, a catch secured to the top of said drawer and adapted to be engaged by said last-named hook to hold said drawer closed, the upper arm of said lever being arranged to be struck by said hook on said rocking plate when said plate is so rocked to release said drawer, and a spring to throw said drawer open when so released, as and for the purpose specified.

7. The combination of the case, the drawer sliding therein, a series of pivoted keys, the rocking plate adapted to be rocked by the depression of any of said keys and having a downhanging hook secured thereto, the bell-crank lever pivoted on said case and having a lower arm provided with a hook, and a catch secured to the top of said drawer and adapted to be engaged by said last-named hook to hold said drawer closed, the end of said lower arm being beveled to allow said catch and drawer to be pushed under said lower arm and the upper arm of said lever being arranged to be struck by said hook on said rocking plate when said plate is so rocked to turn said lever on its fulcrum to release said drawer and allow the same to be opened, as and for the purpose specified.

8. The combination of the case, the drawer sliding therein, a series of pivoted keys, the rocking plate adapted to be rocked by the depression of any of said keys and having a downhanging hook secured thereto, the bell-crank lever pivoted on said case and having a lower arm provided with a hook, and a catch secured to the top of said drawer and adapted to be engaged by said last-named hook to hold said drawer closed, the end of said lower arm being beveled to allow said catch and drawer to be pushed under said lower arm and to raise the same, the upper arm of said lever being provided with a hook adapted to engage the hooks secured to said rocking plate when said drawer is open and at such times to prevent the rocking of said plate and the depression of said keys, but to be thrown out of engagement therewith by the closing of said drawer, as and for the purpose specified.

9. The combination of the case, the drawer sliding therein, a series of pivoted keys, the rocking plate adapted to be rocked by the depression of any of said keys, the bell-crank lever pivoted on said case and having a lower arm provided with a hook, a catch secured to the top of said drawer and adapted to be engaged by said hook to

hold said drawer closed, the end of said lower arm being beveled to allow said catch and drawer to be pushed under said lower arm, and a downhanging hook adjustably secured to said rocking plate and normally arranged to engage a hook with which the upper end of said bell-crank lever is provided and to prevent said rocking plate from being rocked and said keys from being depressed when said drawer is open, but adapted to be moved aside to clear said last-named hook and allow said rocking plate and keys to be operated at all times, as and for the purpose specified.

10. The combination of the case, the drawer sliding therein, a series of pivoted keys, the rocking plate adapted to be rocked by the depression of any of said keys and provided with a slot, the bell-crank lever pivoted on said case and having a lower arm provided with a hook, a catch secured to the top of said drawer and adapted to be engaged by said hook to hold said drawer closed, the end of said lower arm being beveled to allow said catch and drawer to be pushed under said lower arm, and a downhanging hook arranged in said slot and having below said plate a shoulder and normally arranged to engage a hook with which the upper end of said bell-crank lever is provided and to prevent said rocking plate from being rocked and said keys from being depressed when said drawer is open, but adapted when said nut is loosened to be moved aside to clear said last-named hook and allow said rocking plate and keys to be operated at all times, as and for the purpose specified.

11. The combination of a series of keys having a common fulcrum, a rocking plate having the same fulcrum with said keys and extending across all of said keys, a series of bolts sliding in said plate, parallel with the fulcrum of said plate, and normally drawn into said plate, but each adapted to be projected beyond said plate by the depression of some one of said keys, and an arm pivoted on a horizontal fulcrum back of all of said bolts and provided with a slot arranged to receive the projecting ends of said bolts when said bolts are in their lowest position and prevent the simultaneous depression of two keys, as and for the purpose specified.

12. The combination of a series of keys having a common fulcrum, a rocking plate having the same fulcrum with said keys and extending across all of said keys, a series of bolts sliding in said plate and arranged in a common plane parallel with the fulcrum of said plate and normally drawn into said plate, but each adapted to be projected beyond said plate by the depression of some one of said keys, and an arm pivoted on a horizontal fulcrum back of all of said bolts and provided with a slot arranged in the plane of said bolts when said bolts are in their lowest position to receive the projecting ends of said bolts and prevent the simultaneous depression of two keys, as and for the purpose specified.

13. The combination of a series of keys having a common fulcrum, a rocking plate having the same fulcrum with said keys and extending across all of said keys, a series of bolts sliding in said plate, parallel with the fulcrum thereof at different distances from said fulcrum, and normally drawn into said plate, but each adapted to be projected beyond said plate by the depression of some one of said keys, a segmental gear provided with an arm and turning upon a horizontal pivot back of said bolts, said arm having a slot arranged to receive the projecting ends of all of said bolts when said bolts are in their lowest position at right angles with said slot, a pinion engaging said segmental gear, a pawl carried by said pinion, an indicating-wheel, and a single-toothed ratchet concentric with and turning with said indicating-wheel and engaged by said pawl, whereby the depression of any key will rotate said indicating-wheel, as and for the purpose specified.

14. The combination of a series of keys, a rocking plate having a common fulcrum with all of said keys and extending across all of said keys and adapted to be raised by the depression of any of said keys, a series of bolts sliding in said plate, parallel with the fulcrum thereof, and each provided with an incline adapted to be struck by one of said keys when the same is depressed, whereby said bolt is caused to project beyond said plate, and an arm pivoted back of said plate and provided with a slot adapted to receive the ends of all said bolts when said rocking plate is in its lowest position, whereby the depression of a single key will raise said plate and arm and whereby the complete simultaneous depression of two or more keys is rendered impossible, as and for the purpose specified.

15. The combination of a series of keys, a rocking plate having a common fulcrum with all of said keys and extending across all of said keys and adapted to be raised by the depression of any of said keys, a series of bolts sliding in said plate parallel with the fulcrum thereof, and each provided with an incline adapted to be struck by one of said keys when the same is depressed, whereby said bolt is caused to project beyond said plate, an arm pivoted back of said plate and provided with a slot adapted to receive the ends of all of said bolts when said rocking plate is in its lowest position, a segmental gear secured to or formed in one piece with said arm, a pinion engaging said segmental gear, a pawl carried by said pinion, an indicating-wheel, and a single-toothed ratchet concentric with and turning with said indicating-wheel and engaged by said pawl, whereby the depression of any key will rotate said indicating-wheel, as and for the purpose specified.

16. The combination of the frame provided with windows, the rocking plate, a bolt sliding in said plate and having a projection extending back of said plate and having an incline, a numbered key adapted when depressed to strike said incline and to move said bolt endwise and when further depressed to raise said rocking plate and bolt until said projection strikes a lever pivoted at one end to the frame, said lever, an indicating-wheel normally arranged to display "0" indications at said windows, and a link pivoted at one end to said wheel outside the center thereof and at the other end to the free end of said lever to give a partial rotation to said wheel and to expose indicating-numbers corresponding with the numbers on said key, as and for the purpose specified.

17. The combination of a series of keys having a uniform range of motion and a common fulcrum, a rocking plate having the same fulcrum with said keys and extending across all of said keys, a series of bolts sliding in said plate, parallel with the fulcrum of said plate, and normally drawn into said plate, but each adapted to be projected beyond said plate by the depression of some one of said keys, an arm pivoted on a horizontal fulcrum back of all of said bolts and provided with a slot arranged to receive the projecting ends of said bolts when said bolts are in their lowest position and prevent the simultaneous depression of two keys, and a pawl or wing pivoted at its lower edge and extending back of all of said keys and having a rib or projection which reaches over the free edge of said rocking plate and prevents said plate from being rocked until said bolts are projected, said keys being provided with upward projections adapted to strike and turn said wing to release said rocking plate after said bolts have engaged said slot, as and for the purpose specified.

18. The combination of a series of keys numbered with odd multiples of five, an equal series of keys numbered with "10" and multiples of ten or even multiples of five, the rocking plate extending over all said keys and having a common fulcrum with all of said keys, a series of bolts sliding in said plate, parallel with the fulcrum thereof, and lying at different distances from said fulcrum and equal in number to the keys of either of said series, each of said bolts being provided with two inclines, one arranged above a key designating a multiple of ten and the other arranged above the key which designates the next greater odd multiple of five, a registering-arm provided with a slot adapted to receive the ends of any of said bolts when said bolts are in their lowest position, whereby the complete depression of any one of said keys will project one of said bolts into said slot and will thereafter raise said registering-arm an angular distance depending upon the distance of said bolt from the fulcrum of said rocking plate, indicating devices adapted to indicate "10" or a multiple thereof and operated by the movement of said registering-arm, and another bolt sliding in said plate and provided with a backward projection and with as many inclines as there are keys of said first-named series, each of said inclines being arranged over one of said last-named keys, whereby the depression of any of said first-named series of keys will cause said last-named bolt to be moved endwise, a lever turning at one end upon a fixed pivot, and a link connecting the other end of said lever to a units-indicating wheel outside the center of said wheel, said last-named indicating-wheel being normally arranged to display "0" indications and by a partial rotation thereof on the depression of any key of said first-named series to display a "5," whereby by depressing any of said first-named series of keys the number designated by such key will be registered, the tens of said number by said first-named indicating devices and the fives or units of said number by said units-indicating wheel, as and for the purpose specified.

19. The combination of a series of numbered keys, indicating-wheels normally displaying "0" indications, connecting mechanism whereby said indicating-wheels are partially rotated upon the depression of any key to display numbers corresponding to the numbers on said key, ratchets turning with said indicating-wheels, a pawl-lever having separate upper arms, a horizontal stud projecting from the lower arm of said pawl-lever, retaining-pawls pivoted on the upper arms of said pawl-lever and engaging said ratchets to prevent said indicating-wheels from returning to their 0-indicating positions, a vertical releasing-rod free to turn about its axis, a releasing-plate secured to said releasing-rod and extending over the rear ends of all said keys, a lever or arm secured to said releasing-rod, and a leaf-spring secured to said lever or arm and having a lateral ear adapted when said releasing plate is raised by any key to strike said stud and to swing said pawl-levers and disengage said pawls from said ratchets, as and for the purpose specified.

20. The combination of a series of numbered keys, indicating-wheels normally displaying "0" indications, connecting mechanism whereby said indicating-wheels are partially rotated upon the depression of any key to display numbers corresponding to the numbers on said key, ratchets turning with said indicating-wheels and having as many teeth as there are numbers to be displayed by said wheels, a

pawl-lever having separate upper arms, a horizontal stud projecting from the lower arm of said pawl-lever, retaining-pawls pivoted on the upper arms of said pawl-lever and engaging said ratchets to prevent said indicating-wheels from returning to their 0-indicating positions, a pivoted releasing-rod free to turn about its axis, a releasing-plate secured to said releasing-rod and extending over the rear ends of all said keys, a lever or arm secured to said releasing-rod, a leaf-spring secured to said lever or arm and having a lateral ear adapted when said releasing-plate is raised by any key to strike said stud and to swing said pawl-levers and disengage said pawl from said ratchets, and springs to return said indicating-wheels to their "0" positions when said pawls are disengaged therefrom, said ratchets each being provided with a tooth longer than the other teeth of said ratchet and said longer teeth being adapted to strike said pawls when said indicating-wheels return to their 0-indicating positions and to prevent said indicating-wheels from passing by said last-named positions in their return movements, as and for the purpose specified.

21. The combination of a series of numbered keys, indicating-wheels normally displaying "0" indications, connecting mechanism whereby said indicating-wheels are partially rotated upon the depression of any key to display numbers corresponding to the numbers on said key, ratchets turning with said indicating-wheels, a pawl-lever having separate upper arms, a horizontal stud projecting from the lower arm of said pawl-lever, retaining-pawls pivoted on the upper arms of said pawl-lever and engaging said ratchets to prevent said indicating-wheels from returning to their 0-indicating positions, a pivoted releasing-rod free to turn about its axis, a releasing-plate secured to said releasing-rod and extending over the rear ends of all of said keys, a lever or releasing-arm secured to said releasing-rod, a leaf-spring secured to said releasing-arm and having a lateral ear adapted when said releasing-plate is raised by any key to strike said stud and to swing said pawl-levers and disengage said pawls from said ratchets, springs to return said indicating-wheels to their 0-indicating positions, said pawls having each a projection, and springs to engage said projections and to hold such pawls out of engagement with said ratchets, said ratchets each being provided with a tooth longer than the other tooth thereof to strike said pawls and prevent said indicating-wheels from passing their 0-indicating positions in their return movements and to throw said pawls into engagement with said ratchets, as and for the purpose specified.

22. The combination of an indicating-wheel provided with a ratchet concentric therewith and having a series of shorter teeth of uniform length and a tooth longer than a tooth of said series, a pawl-lever, a retaining-pawl pivoted to said lever and adapted to engage said teeth and provided with a projection, and a spring to engage said projection when said pawl-lever is thrown out of engagement with said shorter teeth to hold said pawl out of engagement with said ratchet until said pawl is struck by said longer tooth, as and for the purpose specified.

23. The combination of an indicating-wheel, a cam-wheel secured thereto concentrically therewith, the registering-lever, and the unlocking-lever bearing against said cam-wheel and arranged in the path of said registering-lever when said registering-lever is in its normal position, except when said indicating-wheel is in its 0-indicating position, said unlocking-lever being moved by said cam-wheel when said indicating-wheel returns to its last-named position out of said path, as and for the purpose specified.

24. The combination of an indicating-wheel, a cam-wheel secured thereto concentrically therewith, the registering-lever, the unlocking-lever, and a spring holding said unlocking-lever against said cam-wheel and in the path of said registering-lever when said registering-lever is in its normal position, except when said indicating-wheel is in its 0-indicating position, said unlocking-lever being moved by said cam-wheel when said indicating-wheel returns to its last-named position out of said path, as and for the purpose specified.

25. The combination of an indicating-wheel, a cam-wheel secured thereto concentrically therewith, the registering-lever provided with a projection, an unlocking-lever pivoted above said projection, and a spring holding the upper end of said unlocking-lever against said cam-wheel, the lower end of said unlocking-lever being adapted to be held out of the path of said projection by said cam-wheel when said indicating-wheel is in its 0-indicating position, but at all other times when said registering-lever is in its normal position to be drawn by said spring over said projection to prevent the rising of said registering-lever, as and for the purpose specified.

26. In a registering-machine, the combination of a series of registering-wheels, registering-numbers in different decimal places, each independently of the other, adapted to register from "0" to "9," and connecting mechanism whereby a complete revolution of any wheel will cause the wheel registering numbers of the next higher denomination to make one-tenth of a revolution, thereby adding one of the lower denomination to the total registration, and whereby the movement of any wheel due to the action of a wheel of the next lower denomination is delayed until its independent operation has been completed, as and for the purpose specified.

27. The combination of the units-registering wheel, a cam-wheel rotating therewith, a cam-lever having a projection to rest against said cam-wheel, a pawl-lever movable with said cam-lever, a pawl pivoted thereto, a spring to hold said projection against said cam-wheel, the tens-registering wheel, a ten-toothed ratchet rotating therewith and adapted to be engaged by said pawl and to be rotated thereby the distance measured by one tooth thereof when said cam-lever is allowed by said cam-wheel to move forward, a pawl-carrying plate, a pawl pivoted thereon and engaging another ten-toothed ratchet concentric with and rotating with said tens-registering wheel, said pawl-carrying plate having an annular flange provided with a slot and said cam-lever having an arm which rests against said flange and prevents the forward movement of said cam-lever until said slot is presented to said arms, and connecting means whereby said pawl-carrying plate is rotated to operate said tens-registering wheel and before another registration by said last-named wheel presents said slot to said arm of said cam-lever, as and for the purpose specified.

28. The combination, with an operating-key provided with a rack, of a wing or pawl arranged to engage said rack when the key is partially operated and to be disengaged therefrom when the key has been fully operated, means, as a spring-catch, for holding the pawl and rack out of engagement while the key is being reset, and means, as a rocking plate, for resetting the pawl.

29. In a cash-register and indicator, the combination, with a series of operating-keys, each provided with a rack, of a wing or pawl extending across the entire series of keys and arranged to engage and act as a pawl for each of said racks to prevent any key of the series being reset when only partially operated and to be disengaged therefrom when the key has been fully operated and means for holding the pawl and rack out of engagement while the key is being reset, substantially as described.

30. In a cash register and indicator, the combination, with a series of operating-keys, each provided with a rack, of a wing or pawl extending across the entire series of keys and arranged to engage and act as a pawl for each one of said racks when its key is partially operated and to be disengaged from the rack of said key when the latter has been fully operated, means for holding said pawl and rack out of engagement while the key is being reset, and means, as a rocking plate, to release the holding means, substantially as described.

31. In a cash register and indicator, the combination, with a series of operating-keys of different values, each provided with a rack, and a registering-wheel actuated to different degrees by the different keys to register their respective values, of a wing extending across the entire series of keys and arranged to engage and act as a pawl for each one of said racks when its key is partially operated to compel its full operation and the registration of its full value and to be disengaged from said rack when the key has been fully operated and means for holding the pawl or wing and rack out of engagement while the key is being reset, substantially as described.

32. In a cash register and indicator, the combination, with a series of operative keys, of a horizontal wing or bar extending across said keys and arranged to engage a partially-operated key and prevent its being reset and to be disengaged therefrom when the key has been fully operated, means for holding said bar out of engagement with the key while the latter is being reset, and means, as a rocking plate, to release the holding means, substantially as described.

33. The combination of a series of keys, each provided with an arc-shaped rack, a pawl engaging the rack of any such key when said key is partially depressed to prevent the return of said key to its normal position, and a rocking plate operated by the depression of any such key and having a projection adapted to throw said pawl out of engagement with the rack of such key when said key is fully depressed to allow said key to return to its normal position, as and for the purpose specified.

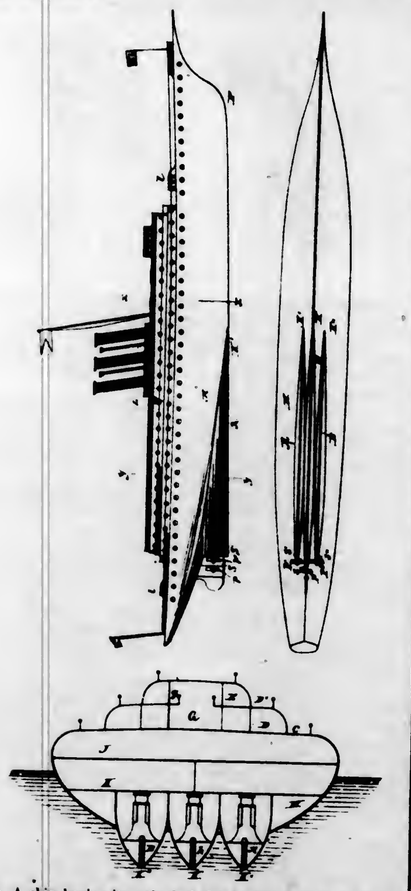
484,888. CONSTRUCTION OF SHIPS. ALCESO P. BLIVEN, Brooklyn, N. Y. Filed Mar. 17, 1892. Serial No. 425,238. (No model.)

Claim.—1. A ship having a fore-body of the usual form and an after-body beginning at or near the midship-section, subdivided into three distinct hulls, each provided with a separate keel and stern-post, the said hulls uniting a short distance below the water-line into one hull, substantially as set forth.

2. A ship having a fore-body of the usual form and an after-body beginning at or near the midship-section, subdivided into three distinct hulls A A B, the two outer hulls A B terminating some distance forward of the center hull in the stern-posts S' S', which form independent supports for the propeller-screws p' p', the said three hulls uniting with and merging into the main hull H some distance below the water-line, substantially as set forth.

3. A ship having the lower portion of its after-body subdivided into three distinct hulls and whose top sides tumble inward on a circular curve to join the deck C, the whole surmounted by one or more deck-houses D E, one above the other, said deck-houses having their ends rounded and the upper portion of their walls curved inward to form arched decks above, substantially as described.

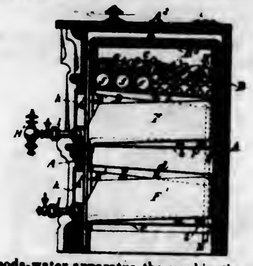
4. A ship having the lower portion of its after-body subdivided into three distinct hulls A A B and whose top sides tumble home on a curve to join the deck C, and one or more houses D E, surmounted by curved decks D' E', in combination with one or more curved collision bulk-heads r r, extending from the spar-deck C to the keel, substantially as described.



5. A ship having its main deck J unbroken by any openings, a spar-deck C, penetrated only by two water-tight companion-ways l l', and the oval bulk-head L, extending from the upper promenade-deck E' to the hold and inclosing all funnels, ventilators, and ladders from the lower portion of the ship, the said decks and bulk-head inclosing a space exceeding in buoyancy the entire displacement of the loaded hull, substantially as and for the purpose set forth.

484,889. SODA-WATER APPARATUS. WILLIAM H. COLLINS, Malden, Mass. Filed June 13, 1892. Serial No. 436,886. (No model.)

Claim.—1. In a soda-water apparatus, the combination of an outer casing having a door in its top and two rectangular openings in its front, an inner casing divided horizontally into three compartments, the upper compartment having a removable cover and an inclined floor and each of the other compartments having a rectangular opening in its front, cooling-pipes arranged in said upper chamber, a draft-cock or cocks for drawing liquid from said cooling-pipes, arranged below the level thereof, a series of syrup-tanks arranged in each of the chambers D and E and adapted to be each withdrawn through openings in the front of the outer and inner casings, separating-ribs attached to the floors of the compartments D and E, and two series of cocks for drawing syrups from said tanks, the upper series being on the same level as the soda-draft cock or cocks.

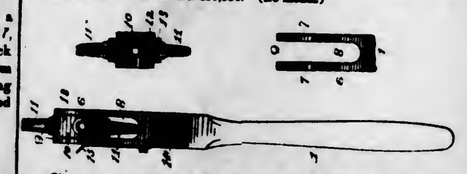


2. In a soda-water apparatus, the combination of the casings A and B, provided with the front openings A' and A² and B' and B², respectively, the casing B being divided horizontally into three compartments or chambers C, D, and E, the cooler-pipes e f in the chamber C, the soda-draft cocks arranged below the bottom of said chamber C, the ribs m and n in the chambers D and E, the two series of syrup-tanks F and F', arranged in the chambers D and E, respectively, and adapted to be withdrawn through the openings A' B' and A² B² and each provided with the neck j, the cock I, and the plate k, secured to the neck of each tank, substantially as described.

484,890. BARBED WIRE. JOHN D. GURTS, Worcester, Mass. Filed Jan. 15, 1892. Serial No. 418,162. (No model.)

Claim.—The combination, with a strand of wire, of a four-point wire barb, made of wire non-circular in cross-section, having divided ends which form the barb and a solid center portion which is spirally wrapped around the wire strand, substantially as and for the purposes hereinbefore set forth.

484,891. PUNCH. JOHN M. FAIRFIELD, Hartford, Conn. Filed Oct. 22, 1891. Serial No. 409,236. (No model.)



Claim.—1. A punch comprising the two pivoted arms, one of which carries a die and the other bifurcated and provided with perforations to form bearings, a rotatable punch-carrier consisting of a collar mounted on a sleeve, the ends of which sleeve project beyond the collar and are journaled in the perforations, and the punches having a screw-threaded engagement with the sleeve and collar, substantially as described.

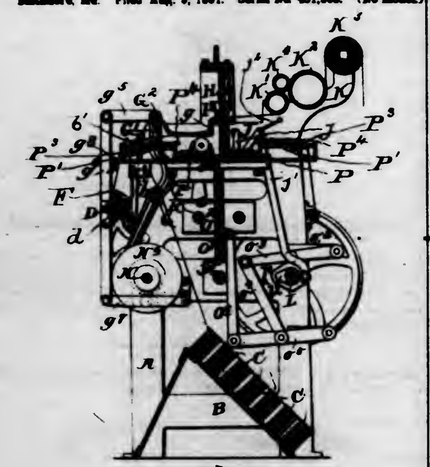
2. A punch comprising the two pivoted arms, one of which carries a die and the other bifurcated and provided with perforations to form bearings, a rotatable punch-carrier consisting of a collar mounted on a sleeve, the ends of which sleeve project beyond the collar and are journaled in the perforations, punches having a screw-threaded engagement with the sleeve and collar, and a spring secured to one

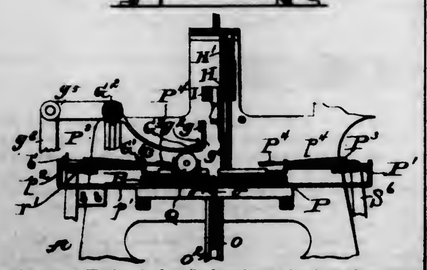
of the arms with an end projecting into a socket of one of the sleeves, substantially as described.

484,892. Washing-Machine. David Gardner, White Wright, Tex. Filed Oct. 16, 1891. Serial No. 408,910. (No model.)

Claim.—In a washing-machine, the combination of a frame comprising the legs 2, the rounds connecting the legs, and the parallel horizontal side bars connecting the upper ends of the legs at each side of the frame, the ends of the frame being open at the top, a diamond-shaped washing-machine body journaled between the sides of the frame, the spiral springs arranged at each end of the horizontal bars and attached to the same and to the body, and the elastic stops arranged at each end of the body and on opposite sides of the same and adapted to engage the side bars, substantially as described.

484,893. Machine for Making Nets. William J. Hoover, Baltimore, Md. Filed Aug. 6, 1891. Serial No. 401,963. (No model.)



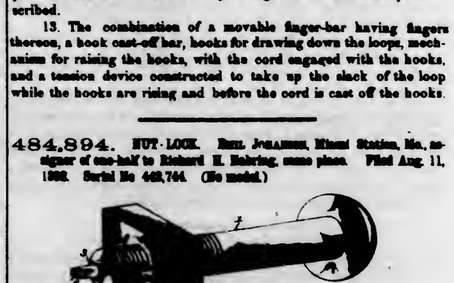


Claim.—1. The herein-described cord-receiving finger for netting-machines, having two fixed sides with a space between them and also having in front thereof a notch or depression into which a portion of the cord wrapped around the finger may be laid and thereby placed in position to be engaged and drawn down by a loop-forming device passed up within the finger, substantially as described.

2. The herein-described cord-receiving finger for netting-machines upon which the cord is wrapped, having a knot-controlling point below that portion of the finger on which the cord is wrapped.

3. The herein-described cord-receiving finger for netting-machines, having three sides or being of U shape in cross-section.

4. The herein-described cord-receiving finger for netting-machines, having three sides or being of U shape in cross-section and having a cord-controlling point below that portion of the finger whereon the cord is wrapped, substantially as described.



5. The herein-described cord-receiving finger for netting-machines, provided with a spring cord-support.

6. The herein-described cord-receiving finger for netting-machines around which the cord is wrapped, having fixed sides provided with a cord-holding projection preventing displacement of the cord by moving upward on the finger.

7. The combination, with the finger-bar and finger, of the spring cord-support having a cam projection extending outward beyond one of the sides of the finger and the finger cast-off bar having a projection lying adjacent to the same side of said finger, one of said bars being movable, substantially as described.

8. The combination, with the cord-receiving finger having two sides with a space between them and a cord-notch, of the latched drawing-down hook, substantially as described.

9. The herein-described cord-receiving fingers for a netting-machine, having two sides, and two spring-cord supporters within said finger having projections extending outward through apertures in said sides.

10. In a netting-machine, the combination, with cord-receiving fingers, drawing-down hooks, and shuttles equal in number, of a series of cord-guides, one less in number, and operating means therefor, substantially as described.

11. In a netting-machine, the combination, with the loop-forming devices, of shuttles, two shuttle-drivers, and operating mechanism for moving one shuttle-driver before the loops are formed and the other for moving the shuttle through the loops, substantially as described.

12. In a netting-machine, the combination, with the loop-forming devices including drawing-down hooks among its members, of the pivoted hook cast-off bar and operating means, substantially as described.

13. The combination of a movable finger-bar having fingers thereon, a hook cast-off bar, hooks for drawing down the loops, mechanism for raising the hooks, with the cord engaged with the hooks, and a tension device constructed to take up the slack of the loop while the hooks are rising and before the cord is cast off the hooks.

484,894. Nut-Lock. Ezel Johannes, Mount Station, Va., assignor of one-half to Richard H. Rohring, same place. Filed Aug. 11, 1892. Serial No. 442,744. (No model.)

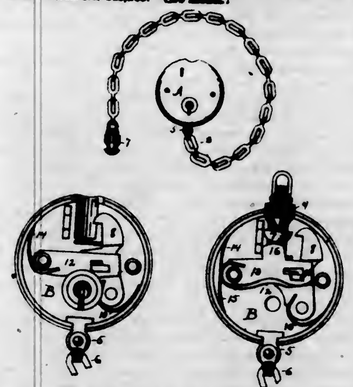
Claim.—1. In a nut-lock, the combination of a bolt having a longitudinal bore and provided with a longitudinal slot communicating with the bore, a pawl arranged outside of the bolt and provided with a web extending through the slot, a nut arranged on the bolt and adapted to be engaged by the pawl, and a screw arranged in the longitudinal bore and adapted to advance the pawl and force the same in engagement with the face of the nut, substantially as described.

2. In a nut-lock, the combination of a bolt having a longitudinal bore and provided with oppositely-disposed longitudinal slots extending inward from the end of the bolt and communicating with the bore, a nut arranged on the bolt, a plate arranged in the slots and provided at its end with pawls arranged outside of the bolt and engaging the outer face of the nut, and a screw arranged in the bore and adapted to advance the plate in the slots, substantially as described.

3. In a nut-lock, the combination of a bolt having a threaded longitudinal bore and provided with oppositely-disposed longitudinal slots extending inward from the end of the bolt and communicating with the bore, a nut arranged on the bolt, a screw arranged in the bore, and a plate centrally swiveled to the ends of the screw and arranged in the slots and provided with pawls arranged outside of the bolt and engaging the outer face of the nut, substantially as described.

4. In a nut-lock, the combination of a bolt provided with a threaded longitudinal bore and having the oppositely-disposed slots extending inward from the ends of the bolt and communicating with the bore and forming expansible portions, a nut arranged on the bolt, a plate having a central socket and provided at its ends with pawls arranged outside of the bolt and engaging the nut at the outer face thereof, said plate being provided between the pawls and the socket with web portions arranged in two of the slots, and a locking-screw arranged in the bore and having the plate swiveled to its inner end and provided near its outer end with a tapered portion adapted to expand the end of the nut, whereby the parts are locked, substantially as described.

484,895. Padlock. Edward A. Judd, New Britain, Conn., assignor to the Corbin Cabinet Lock Company, same place. Filed July 16, 1892. Serial No. 440,905. (No model.)



Claim.—The combination of the shouldered head 7, the swinging lock-bolt 8, its tumbler 12 for holding said lock-bolt in engagement with said head, and the holding-dog 13 for holding said bolt out of engagement from said head, substantially as described, and for the purpose specified.

484,896. Nut-Lock. Joseph J. Kulage, St. Louis, Mo. Filed Jan. 9, 1891. Serial No. 377,201. (No model.)

Claim.—1. The combination of the cross-head, links, pitmen, levers, and an adjustable guide for said cross-head, said guide being a separate part from said cross-head, links, and pitman, substantially as described.

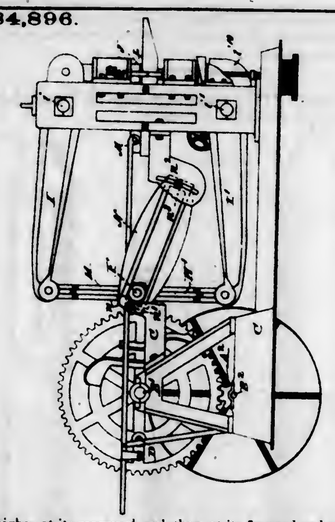
2. In a press having upper and lower plungers and molds, as described, the combination of the cross-head and its guide, the said guide being vertically adjustable at its rearward end, substantially as and for the purpose described.

3. In a press having upper and lower plungers and molds, as described, the combination of the cross-head and its guide, said guide being vertically adjustable at its forward end, substantially as described.

4. In a press having upper and lower plungers and molds, as described, the combination of the cross-head and its guide, said guide being higher at its rearward end than at its forward end and being vertically adjustable at said rearward end, substantially as described.

5. In a press having upper and lower plungers and molds, as described, the combination of the cross-head and its guide, said guide being higher at its rearward end than at its forward end and being vertically adjustable at said forward end, substantially as described.

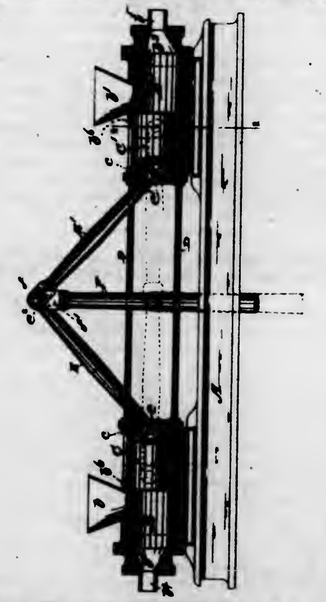
6. In a press having upper and lower plungers and molds, as described, the combination of the cross-head and its guide, said guide



being higher at its rearward end than at its forward end and being vertically adjustable at both said ends, substantially as described.

7. The combination of the lower lever, lower plungers, and interposed toggle, said toggle at its lower end resting loosely in a recess in said lower lever, substantially as described.

484,897. Brick and Tile Machine. Joseph J. Kulage, St. Louis, Mo. Filed Nov. 30, 1891. Serial No. 413,504. (No model.)



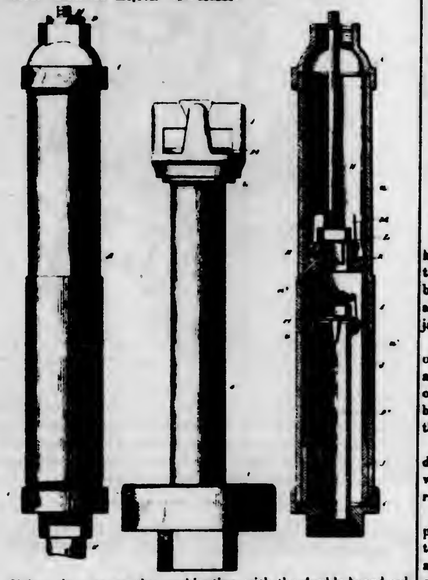
Claim.—1. The combination of the chambers, plungers, and the toggle-links or pitmen centrally connected together and one connected to each plunger, substantially as set forth.

2. The combination of the chambers, plungers, and the toggle-links or pitmen centrally connected together and one connected to each plunger and independently arrested at the terminus of the stroke, substantially as specified.

3. The combination of the chambers, plungers, and the toggle-links or pitmen centrally connected together and one connected to each plunger, said plungers having shoulders near their outer ends

upon the upper surface to engage shoulders upon the chambers to arrest independently the plungers at the terminus of the stroke, substantially as specified.

484,898. PUMP. JOHN P. LAIRD, Reynoldsville, Wis. Filed Apr. 11, 1892. Serial No. 428,672. (No model.)

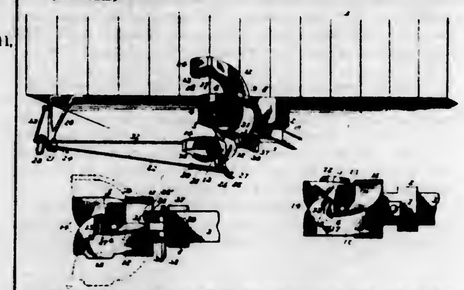


Claim.—In a pump, the combination, with the double-bored cylinder, the hollow valved plunger moving therein, and the top and bottom caps removably secured to each end of the cylinder, of a valve-supporting tube removably secured at its lower end in the bottom cap and provided with a threaded upper end projecting within the cylinder, an exteriorly and interiorly threaded valve-seat bushing or collar having the inner threads thereof removably engaging the upper threaded ends of the said tube and adapted to form a valve-seat, an interiorly-threaded valve-cage removably engaging the exterior threads of said bushing or collar, and the disk valve inclosed by said valve-cage and seated upon said bushing or collar, substantially as set forth.

484,899. SHOE-LACE FASTENER. BERNARD F. LYNCH, Brooklyn, N. Y. Filed July 11, 1892. Serial No. 439,662. (No model.)

Claim.—A lace-fastener comprising one member composed of a single piece of sheet metal, having a cross-bar *a'* bent to form an eye, a cross-bar *a* bent to form a rod, and a connecting-shank, and a second member composed of a single piece, having at one end a tongue *b* and at the other end three tongues b' b^2 b^3, the tongues *b* and b' being bent in one direction from the body to be passed through the material of the shoes or other article, and the tongues b^2 and b^3 being bent in the opposite direction to form parallel hooks, substantially as shown and described.

484,900. CAR-COUPLING. HENRY OAKES, Silver City, N. Mex., and BEN OAKES, Chicago, Ill. Filed Oct. 27, 1891. Serial No. 409,966. (No model.)



Claim.—1. In a car-coupling, the combination, with a draw-bar having at its front end a draw-head whose front face is slightly curved transversely, said draw-head being provided with a mouth intersected by a pin-opening and exteriorly with a groove, of a ring turning in said groove, arms projecting forward and outward from said ring, and jaws at the outer ends of said arms, having oppositely-beveled faces.

2. In a car-coupling, the combination, with the car-body, a block on the end thereof, having a slot extended laterally at the upper end, and a draw-bar extending through said slot and having a draw-head, of a vertical bolt through said bar and a plate secured upon the bar by the bolt and projecting laterally from the draw-bar and moving in the extensions of the slot.

3. In a car-coupling, the combination, with a draw-bar having a draw-head and a plate secured beneath said bar and having a forwardly-projecting tongue, of a rotary jaw mounted on said head and resting normally against said tongue.

4. In a car-coupling, the combination, with a draw-bar and a plate secured beneath the same and having a forwardly-projecting tongue, of a rotary jaw connected with said bar and resting normally against said tongue, this jaw having a beveled face at its front end, and means for drawing the jaw away from said tongue.

5. In a car-coupling, the combination, with a draw-bar, a plate of inverted-U shape secured beneath the same and having a forwardly-projecting tongue at one side, a rod journaled horizontally through said plate and having a handle, and a dog fast on the rod between the sides of the plate, of a rotary jaw connected with said bar and resting normally against the tongue, said jaw having a notch in normal alignment with the dog, and means for drawing the jaw away from said tongue.

6. In a car-coupling, the combination, with a draw-bar, a vertical bolt passing therethrough, a bearing held by said bolt beneath the bar, a rod journaled in said bearing and having a handle, and a dog fast on said rod, of a rotary jaw connected with said bar forward of the bearing and having a notch in normal alignment with the dog and means for turning the jaw.

7. In a car-coupling, the combination, with a draw-bar and a stop beneath the same, of a rotary jaw mounted on said bar and having a beveled face, a weight bearing the jaw normally against said stop, and means for turning the jaw in the opposite direction.

8. In a car-coupling, the combination, with a draw-bar having a stop, a rotary jaw on said bar having a beveled front face and a weight holding the jaw normally against said stop, of a slotted ear depending from the jaw and a rod passing through the slot, having a head beyond the same extending to the side of the car and having a handle.

9. In a car-coupling, the combination, with a draw-bar having a stop, a rotary jaw on said bar, and means for holding it normally against the stop, of a bracket on the car-body, having a slot, a rod connected with the jaw and passing through the slot, and a block depending from the rod, as and for the purpose set forth.

10. In a car-coupling, the combination, with a draw-bar having a stop, a rotary jaw on said bar, and means for holding it normally against the stop, of a slotted ear depending from the jaw, a rod passing through said slot, having a head beyond the same and extending to the side of the car, a stop on said rod at the back of the ear, and an expansive spring between the ear and stop.

11. In a car-coupling, the combination, with a draw-bar having a stop, a rotary jaw on said bar, and means for holding it normally against the stop, of a slotted ear depending from the jaw, a rod passing through said slot, having a head beyond the ear and extending to the side of the car, a stop on the rod at the back of the ear, an expansive spring between the ear and stop, and means for locking said rod at the side of the car in one of two positions.

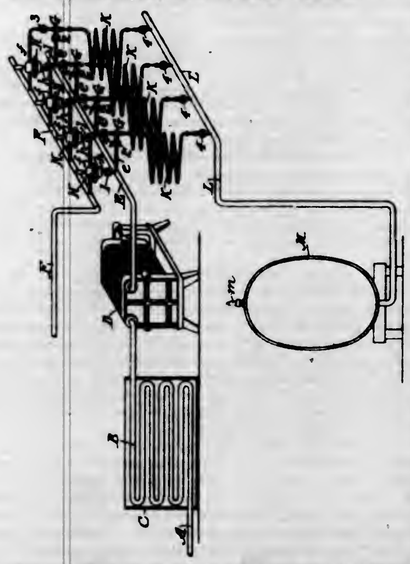
12. In a car-coupling, the combination, with a draw-bar having a stop, a rotary jaw on said bar, and a weight holding it normally against the stop, of a perforated ear depending from the jaw, a rod passing through the ear, having a head beyond it and extending to the side of the car, a stop on the rod at the back of the ear, an expansive spring between the stop and ear, a slotted bracket supported by the car and through whose slot the rod passes, and a block on the rod of a size to pass through the slot, as and for the purpose set forth.

13. In a car-coupling, the combination, with a draw-bar having a stop, a rotary jaw on said bar, a weight holding it normally against the stop, of a slotted bracket on the car-body, a rod passing through the slot therein, a block depending from the rod and of a size to pass through said slot, and a yielding connection, substantially as described, between the rod and the jaw permitting the latter to move from said stop, but limiting its movement in the other direction.

14. In a car-coupling, the combination, with a draw-bar having a stop, a rotary jaw mounted thereon and having a notch, and a weight holding the jaw normally against the stop, of a bearing beneath the bar, an oscillating rod journaled therein, a dog fast on the rod and adapted to engage said notch, a second rod connected with said jaw, and a bracket on the car-body through which said rods extend.

15. In a car-coupling, the combination, with a draw-bar having a bearing, a rotary jaw mounted on the bar and having a notch, an oscillating rod turning in said bearing, and a dog fast thereon and adapted to engage said notch, of a second rod connected with said jaw and a bracket on the car-body through which both rods extend.

484,901. ART OF AND APPARATUS FOR CARBONATING LIQUIDS. CARL A. SCHNEIDER, New York, and JOSEPH SCHNEIDER, Brooklyn, N. Y. Filed Mar. 24, 1892. Serial No. 426,300. (No model.)



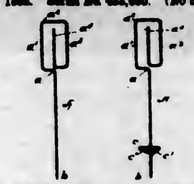
Claim.—1. The herein-described method of treating liquids poor in or wholly devoid of carbonic-acid gas, which consists in supplying the liquid to be treated under pressure, cooling it, filtering the cooled liquid and regulating the pressure thereon, introducing gas into and incorporating it with the cooled and filtered liquid without agitation, and maintaining pressure upon the charged liquid, substantially as described.

2. In an apparatus for treating liquids for beverages, the combination of a main liquid-supply pipe, a series of branch pipes connected thereto and adapted to divide the volume of liquid carried by the supply-pipe, a gas-supply pipe communicating with each branch pipe, a common delivery-pipe connected to said branch pipes, and a closed receiving-tank having a blow-off valve, substantially as described.

3. In an apparatus for treating liquids for beverages, the combination of a main liquid-supply pipe, a series of branch pipes connected thereto and adapted to divide the volume of liquid carried by the supply-pipe, a gas-supply pipe communicating with each branch pipe, an independent pressure regulator or governor for each branch pipe and adapted to regulate the supply of gas to each branch pipe, a common delivery-pipe, and a closed receiving-tank having a blow-off valve, substantially as described.

4. In an apparatus for treating liquids for beverages, the combination of a cooler, a filter connected thereto, a pipe for conducting the liquid from the filter, a series of branch pipes connected with said pipe, a gas-supply pipe communicating with each branch pipe, a common delivery-pipe, and a closed receiving-tank having a blow-off cock, substantially as described.

484,902. LABEL-HOLDER. HENRY H. SMITH, Palo Alto, Cal. Filed May 20, 1892. Serial No. 433,695. (No model.)

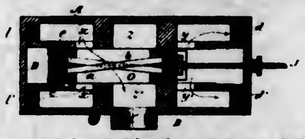


Claim.—1. A label-holder having its support or shank formed integral with it from a single piece of wire and provided with the opposing sides and tongue connected as described, whereby the torsional strength of the wire is exerted to grasp the card or label, substantially as described.

2. A label-holder formed with its shank from a single piece of rod or wire and having the loop-holder formed with parallel or substantially-parallel sides and an intermediate tongue connected to said sides to exert a torsional action on the connecting portion of the loop, substantially as described.

3. The combination, in a label-holder, of the loop-shaped holder portion having the sides and intermediate opposing tongue and the shank portion adapted to engage the article or support to which the label is to be applied, said loop-holder and supporting-shank being formed from a single piece of wire, substantially as described.

484,908. SLIDE-VALVE FOR ENGINES. JOHN D. STARR, New York, N. Y. Filed Aug. 3, 1891. Serial No. 401,615. (No model.)



Claim.—1. A balanced slide-valve made in two similar parts or halves which are connected together by means of cross bars or links pivoted to each, so as to secure accurate parallel motion, substantially as set forth.

2. A steam slide-valve composed of two similar parts, which are connected together by cross-pieces that produce parallel action of said parts over the seam, between which is a flexible ribbon, substantially as set forth.

3. The double slide-valve, in combination with the double set of steam-ports and valve-seats, the ribbon over the joint between the two parts, and the parallel connection of the same, as and for the purpose set forth.

4. The double steam slide-valve, in combination with the double valve-seat, the cross-bars which produce parallel action of the two parts of the valve, the ribbon over the seam between the same, and the springs and packing, substantially as specified.

5. The twin valves with spring between the two parts of the valve, in combination with the ribbon over the joint between the same and their parallel connection, and also the double valve-seat with ports extending through it from face to face, as and for the purpose specified.

6. The combination of the double slide-valve with its opening or chamber passing through it from one face to its opposite face, the parallel connection of the two parts of the valve by means of cross-bars, the ribbon over the seam between the said parts, the double valve-seats, and the double set of ports, all substantially as set forth.

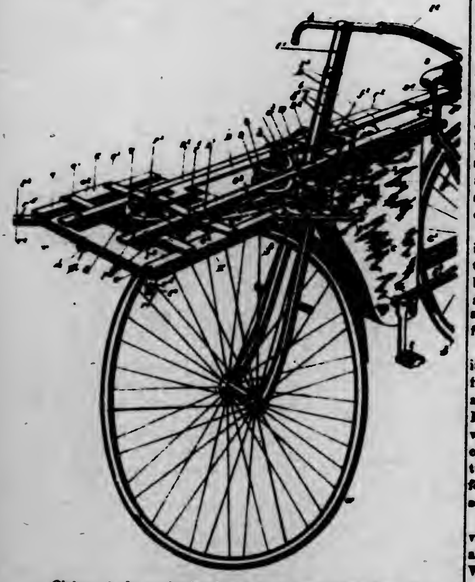
484,904. BILL-HOLDER. ERNEST F. WEEST, Kansas City, Mo. Filed July 9, 1891. Serial No. 398,804. (Model.)

Claim.—1. A bill-holder consisting of leaves and covers thereto, pivoted together at one of their inner corners, and a strip of flexible material secured to the covers at the other inner corner and to the inner edges of the leaves near their outer ends, the outer edges and ends of the leaves being separated to receive the folded bills, substantially as described and shown.

484,904.

2. A bill-holder consisting of leaves having scalloped outer edges and ends and the covers thereto, pivoted together at one of their inner corners, and a strip of flexible material secured to the covers at the other inner corner and to the inner edges of the leaves near their outer ends, the outer edges and ends of the leaves being separated to receive the folded bills, substantially as described.

484,905. APPARATUS FOR DRAWING MAPS AND PLOTS OF GROUND. ANDER BOGSTAD, Drammen, Norway. Filed Nov. 10, 1891. Serial No. 411,494. (No model.) Patented in Norway Feb. 26, 1891, No. 2,169.



Claim.—1. In a plotting-instrument, the combination of a vehicle, a pencil, a plotting-table, means to rotate the same about the vertical axis of the pencil, and gearing driven from a revolvable element of the vehicle and adapted to impart a rectilinear motion to the pencil over the plotting-table, for the purposes set forth.

2. In a plotting-instrument, the combination of a vehicle, a pencil, a plotting-table, means to rotate the same about the vertical axis of the pencil on an independent pivot, and gearing driven from a revolvable element of the vehicle, adapted to impart a rectilinear motion to the pencil, for the purposes set forth.

3. In a plotting-instrument, the combination of a vehicle having a revolvable steering-bar, a pencil, a plotting-table adapted to revolve about the vertical axis of the pencil, and gearing operated from the steering-bar, adapted to revolve the table about the pencil when the said steering-bar is revolved to change the direction of motion of the vehicle, for the purposes set forth.

4. In a plotting-instrument, the combination, with a vehicle, the steering-wheel thereof, and a revolvable steering-bar for said wheel, of a plotting-table adapted to revolve on a vertical journal supported from the drive wheel or wheels of the vehicle, and gearing driven from the steering-bar and adapted to revolve the plotting-table in a direction the reverse of that of the steering-bar, and means for disengaging the steering-bar from the gearing, for the purposes set forth.

5. In a plotting-instrument, the combination, with a vehicle, the steering-wheel thereof, and a revolvable steering-bar for said wheel, of a plotting-table mounted on a vertical pivot supported from the drive wheel or wheels of the vehicle, a pencil about the vertical axis of which said table is adapted to revolve, and gearing operated from the steering-bar for imparting a partial revolution to the table about the pencil, for the purposes set forth.

6. In a plotting-instrument, the combination, with a vehicle, the steering-wheel thereof, and a revolvable steering-bar for said wheel, of a plotting-table mounted on a vertical pivot supported from the drive-wheel of the vehicle, a pencil about the vertical axis of which said table is adapted to revolve, gearing operated from the steering-bar for imparting a partial revolution to the table about the pencil, and gearing driven from a revolvable element of the vehicle and adapted to impart to the pencil a rectilinear motion over the table, for the purposes set forth.

7. The combination of a bicycle with a plotting or mapping apparatus comprising a plotting-table adapted to revolve on a vertical journal supported from the drive-wheel of the vehicle, a pencil adapted to move over the table in the direction of motion of the vehicle, and gearing operated from the steering-bar of the vehicle and adapted to revolve the plotting-table when said bar is turned to change the direction of motion of the vehicle.

8. The combination, with a bicycle, its steering wheel and bar, and a toothed sector on said bar, of a plotting-table adapted to revolve on a vertical journal supported from the drive-wheel of the vehicle, gearing connecting the table with the toothed sector on the steering-bar and adapted to revolve said table in a direction opposite to that of the steering-bar, and shifting devices for shifting the gearing out of gear with the toothed sector, for the purposes set forth.

9. In a plotting-instrument, the combination of a vehicle, a plotting-table adapted to revolve on a vertical journal supported thereon, a pencil-carrier and gearing driven from a revoluble element of the vehicle and adapted to impart a rectilinear motion to said carrier over the plotting-table with a pencil extending through a longitudinal slot in the carrier, a spring to hold said pencil at the outer end of said slot, a gear-wheel connected with the table and adapted to revolve about the pencil, two rack-bars in gear with the wheel on opposite sides, and a sliding connection between the rack-bars and the pencil-carrier, for the purpose set forth.

10. The table T, the carriages E and G, having motion thereon in opposite directions, and a pencil having a rectilinear motion over the table, in combination with the frame M, having an axial journal-bearing, the ring R, having an annular groove r', and radial arms adapted to be locked to the table T and the clamp N, said parts being arranged for co-operation substantially as and for the purpose set forth.

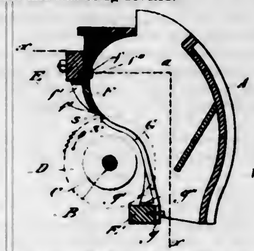
11. The table T, the carriages E and G, having motion thereon in opposite directions, the wheel W, secured to the carriage G, the frame M, having an axial journal-bearing, the ring R, provided with an annular groove, the clamp N, adapted to lock the ring to the frame M, and means for locking the ring R to the table T, in combination with a pencil-carrier having a rectilinear motion over the table, a pencil connected with the carrier and arranged axially on the wheel W, two rack-bars in gear with the wheel W on opposite sides, and guides for said rack-bars, connected with the pencil-carrier, for the purpose set forth.

12. The combination, with a bicycle and its steering-bar provided with a toothed sector, of the plotting-table T, the carriages E and G, having motion on the table in opposite directions, the wheel W, secured to the carriage G, the table-supporting frame M, provided with an axial bearing, a journal for said bearing supported above the steering-wheel from the drive-wheel axle, the adjusting-ring R, provided with an annular groove and adapted to be locked to the plotting-table T, a locking device for locking the adjusting-ring to the supporting-frame, two rack-bars engaging the wheel W on opposite sides, a pencil-carrier adapted to move in a rectilinear direction over the plotting-table, guides secured to the carrier in which the rack-bars have motion, a pencil supported in a longitudinal slot in the carrier, a spring to normally hold said pencil in the forward end of the slot, said pencil extending through the hub of the wheel W, a gear-wheel adapted to be moved into and out of gear with the rack-bars to impart a reciprocal motion thereto, and an actuating gear-wheel on the shaft of the rack-bar gear-wheel and in gear with the sector on the steering-bar, substantially as and for the purposes set forth.

13. The combination, with the rack-bars R' R^2, the steering-bar 5, carrying the toothed sector 10, the spindle 4, the wheel 9, rigidly secured to said spindle and in gear with sector 10, and the wheel 8, loose on said spindle, of the lever L, from which said wheel 8 is supported, an actuating-lever fulcrumed to the steering-bar or its handle, and a rod connecting the actuating-lever with the lever L for moving wheel 8 into or out of gear with the rack-bars, substantially as and for the purpose set forth.

484,906. SAW-GIN. BENJAMIN F. BROWER, Anderson, S. C., assignor of one-half to A. C. Strickland, same place. Filed Apr. 2, 1892. Renewed Apr. 11, 1892. Serial No. 428,769. (No model.)

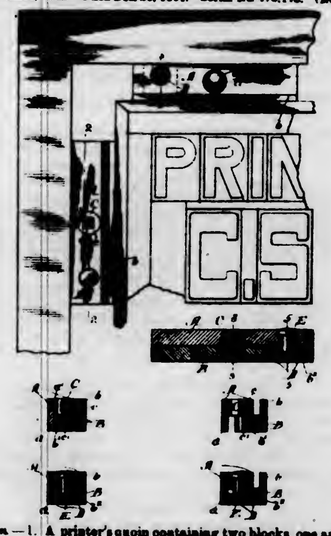
Brief.—The grid is composed of a plate F, secured to a cross-piece E, adjustably secured to the upper part of the roll-box, which plate F extends down nearly to the saws, and a series of ribs secured to a cross-piece F at the lower part of the roll-box and extending upward so as nearly to contact with the plate F, the adjacent surfaces of the plate and ribs being beveled.



Claim.—1. In a saw-gin, the combination of the roll-box A, the saws D, and the grid composed of the plate F and the ribs G, disposed as specified, the adjacent edges of the said plate and ribs being beveled, substantially as shown and described.

2. In a saw-gin, the combination, with the saws D and the grid composed of the plate F and the ribs G, disposed as specified, of the cross-piece E, having slots e', the lugs A, carried on the heads e of the roll-box, and the bolt e, all arranged substantially as shown and described.

484,907. PRINTER'S QUOIN. ANGUS CAMERON, Chicago, Ill., assignor, by mesne assignments, to the Cameron Manufacturing Company, Milwaukee, Wis. Filed Dec. 26, 1891. Serial No. 416,175. (No model.)



Claim.—1. A printer's quoin containing two blocks, one arranged above the other and provided with means for sliding them laterally one upon the other, one of said blocks having a flange or L adapted to extend over the edge of the other block and form a continuous bearing-surface upon the edge of the quoin, substantially as shown and described.

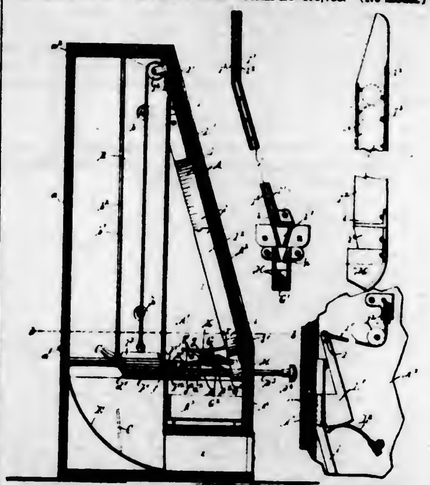
2. A printer's quoin containing two blocks, one above the other, and an eccentric-pin passing through said blocks and adapted by rotation to slide the same one upon the other, substantially as shown and described.

3. A printer's quoin containing two blocks, one above the other, and provided with means for sliding them laterally one upon the other, and also for clamping them together, substantially as shown and described.

4. A printer's quoin containing two blocks, one above the other, provided with means for sliding them laterally one upon the other, and also with a wedging-clamp adapted to bind the two together and to offer a greater resistance to a contraction of the quoin than to an extension thereof, substantially as shown and described.

5. In a printer's quoin, the combination of the two L-shaped blocks A B, the eccentric-pin C, the wedge-shaped block D, and the screw E, substantially as shown and described.

484,908. COIN-CONTROLLED MACHINERY. WILLIAM H. DUTTON, Rochester, assignor to the Buffalo Automatic Machine Company, Buffalo, N. Y. Filed Jan. 2, 1892. Serial No. 416,783. (No model.)



Claim.—1. In combination, a coin-chute having an exit, vertical coin-supports H, having at their upper extremities inwardly-inclining shoulders A A for centering the coin between said supports, and a support G for the coin, supported normally beneath the shoulders A, substantially as and for the purpose set forth.

2. In combination, a coin-chute having an exit, vertical coin-supports H, having at their upper extremities inwardly-inclining shoulders A A for centering the coin between said supports, and a pivoted support G, having one extremity normally supported between the supports H and beneath the inclining shoulders A A and movable away from and between said shoulders A A, substantially as described.

3. The combination of a support, a plunger guided on the face of said support and formed with engaging teeth, a hollow spring-case mounted on said support at one side of the plunger and provided with a longitudinal slot in its wall, a spring within the spring-support, a projecting arm on the plunger movable in said slot and engaged by the spring, a coin-chute, and a hinged lever having one end adapted to engage the teeth of the plunger and prevent rearward or inner movement thereof and the other provided with a coin-support in the path of the coin, whereby the coin automatically depresses the coin-support and disengages the opposite end of the lever from the said teeth for permitting movement of the plunger against the action of the spring within said case, substantially as and for the purpose specified.

4. The combination of a movable plunger having engaging teeth, a lever J, having one end adapted to engage the plunger-teeth for preventing retrograde movement thereof, a second lever formed with coin-support with which the coin is adapted to engage for rocking the lever downwardly, and an arm on the latter lever detachably engaging the former lever for normally rocking the same out of engagement with the plunger-teeth, substantially as and for the purpose herein described.

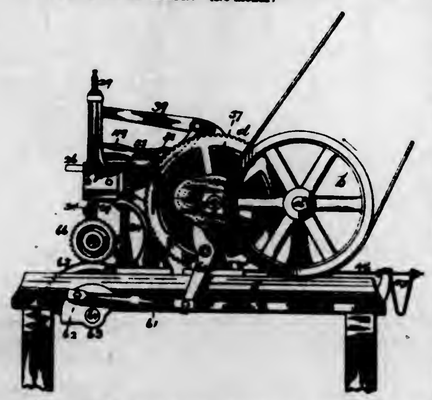
5. The combination of a movable plunger having engaging teeth, a lever J, having one end adapted to engage the plunger-teeth for preventing retrograde movement thereof, a second lever formed with a coin-support with which the coin is adapted to engage for rocking the lever downwardly, and an arm on said lever detachably engaging the former lever for normally rocking the same out of engagement with the plunger-teeth, and a spring supported within the casing and arranged with one end disconnected from the second lever and arranged in the path of movement of said lever for returning the same to its normal position, whereupon said lever forces the former lever out of engagement within the plunger, substantially as and for the purpose described.

6. The combination, with a casing, of a movable plunger having one end projecting beyond said casing, a series of teeth on the plunger, a pivoted lever having one end adapted to engage the teeth and

prevent rearward or inner movement of the plunger and the other provided with a coin-support, whereby the lever is disengaged from the teeth upon the plunger to permit said movement thereof, a second hinged lever for engaging the plunger and preventing return movement thereof, and an arm on the former hinged lever for elevating said second hinged lever out of operative position, substantially as and for the purpose described.

7. The combination of a movable plunger, a spring in proximity to said plunger, a hinged lever having one end adapted to engage the plunger and prevent retrograde movement thereof, a second hinged lever having a coin-support thereon, a depending arm on the second lever, and an arm on the plunger for engaging the depending arm and forcing said second lever against the action of the spring, said arm on the plunger being movable beyond said depending arm for permitting retraction of the hinged lever by said spring, substantially as and for the purpose set forth.

484,909. CHAIN-MAKING MACHINE. FERDAND F. ELLIS, Oneida, assignor to the Oneida Community, Limited, Kenwood, N. Y. Filed Feb. 3, 1892. Serial No. 420,143. (No model.)



Claim.—1. In a chain-making machine, the combination of the vertical rotating shafts and the link-eye-forming arms secured thereon and parallel thereto and carried around by the rotation of said shafts, substantially as described, for the purposes set forth.

2. In a chain-making machine, a vertically-movable shaft provided with a link-eye-forming arm and supported above the table, in combination with another rotating vertical shaft erected upon the table and provided with a link-eye-forming arm, both shafts being in parallel vertical planes, and means to rotate both shafts simultaneously in opposite directions, substantially as and for the purposes set forth.

3. In a chain-making machine, the combination of a vertically-movable shaft and a link-eye-forming arm thereon with a rotating shaft and a link-eye-forming arm thereon, and means to rotate both shafts simultaneously in opposite directions and to return them to their normal positions, both shafts being at all times in parallel vertical planes, substantially as set forth.

4. In a chain-making machine, the combination of vertical rotating link-eye-forming arms and vertically-movable eye-forming mandrels, all erected and movable in parallel vertical planes, substantially as set forth.

5. In a chain-making machine, the combination of vertical rotating link-forming arms with vertically-movable eye-forming mandrels, one of which is provided with corrugations, said arms and mandrels being and operating in parallel vertical planes, substantially as set forth.

6. In a chain-making machine, the combination of a vertical rotating shaft and a link-forming arm mounted upon it, a conical pointed mandrel movable vertically into and out of engagement with said shaft, and a rotating mandrel-shaft conical-pointed and movable vertically into and out of engagement with a pivot-block, and a link-forming arm upon said mandrel, substantially as set forth.

7. In a chain-making machine, link-gripping jaws, one stationary and the other movable vertically and adapted to grip and hold the link after the eyes are formed until it is finished, a cam, and a pivotally-mounted lever connected to the movable jaw and engaging with said cam, in combination with vertical link-eye-forming mandrels and bending-arms parallel to said jaws, substantially as set forth.

8. In a chain-making machine, tuckers reciprocated vertically in opposite directions, a cam, and levers engaging therewith and connected to said tuckers, in combination with link-gripping jaws between the tuckers, substantially as set forth.

9. In a chain-making machine, tuckers reciprocated vertically in opposite directions and provided with beveled and rounded points, a cam, and levers engaging therewith and connected to said tuckers, in combination with link-gripping jaws between the tuckers, substantially as set forth.

10. In a chain-making machine, oscillating rotating wrappers and cams eccentric thereto upon their inner ends, engaging with the tucked ends of the incomplete link, in combination, and means for holding the blank while being bent, substantially as set forth.

11. In a chain-making machine, oscillating rotating wrappers mounted upon horizontally-journaled shafts and eccentric thereto, and means to rotate them forward in engagement with the tucked ends of the incomplete link and back out of engagement therewith, in combination.

12. In a chain-making machine, oscillating rotating wrappers mounted upon horizontally-journaled shafts and eccentric thereto, and cams upon their inner ends, and means to half rotate them forward in engagement with the tucked ends of the incomplete link and back out of engagement therewith, in combination.

13. In a chain-making machine, oscillating rotating wrappers and cams upon the inner ends thereof eccentric to their operating-shafts, one of said wrappers being provided with a notch 71, and means to half rotate them forward in engagement with the tucked ends of the incomplete link and back out of engagement therewith, in combination.

14. In a chain-making machine, the combination, with the forward-and-back rotated link-forming arms, of a stationary and a vertically-reciprocating jaw gripping the incomplete link.

15. In a chain-making machine, the combination, with a stationary and a reciprocating jaw, of vertically-reciprocating tuckers on opposite sides of said jaws.

16. In a chain-making machine, the combination, with a stationary and a reciprocating jaw, of vertically-reciprocating tuckers mounted in guideways upon opposite sides of said jaws.

17. In a chain-making machine, the combination, with the jaws for gripping the incomplete link, of reciprocating tuckers mounted in guides on opposite sides of said jaws and provided with beveled points.

18. In a chain-making machine, the combination, with the link-gripping jaws, of oscillating rotating wrappers on either side thereof and engaging with the tucked ends, the one above and the other below the plane of the link.

19. In a chain-making machine, the combination, with the link-gripping jaws, of oscillating rotating wrappers eccentric to the shafts by which they are carried and rotated and engaging with the tucked ends, the one above and the other below the plane of the link.

20. In a chain-making machine, the combination, with the link-gripping jaws, of oscillating rotating wrappers eccentric to the shafts by which they are carried and rotated, and cams upon their inner ends adjacent to said jaws.

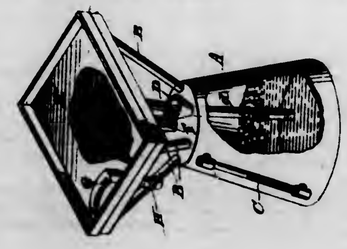
21. In a chain-making machine, the combination, with the oscillating link-forming arms and the link-gripping jaws, of vertically-reciprocating tuckers mounted upon opposite sides of said jaws.

22. In a chain-making machine, the combination, with the oscillating link-forming arms, the link-gripping jaws, and the vertically-reciprocating tuckers, of the oscillating wrappers on either side of said jaws.

23. In a chain-making machine, central link-holding jaws, in combination with oscillating link-bending arms and vertically-reciprocating mandrels, vertically-reciprocating tuckers, and oscillating end wrappers.

24. In a chain-making machine, central link-holding jaws, in combination with oscillating reciprocating tuckers and oscillating end wrappers.

484,910. FRUIT-EVAPORATOR. WILLIAM C. GILMAN, Morristown, Ohio, assignor to John V. Fisher, same place. Filed Mar. 19, 1891. Serial No. 386,015. (No model.)



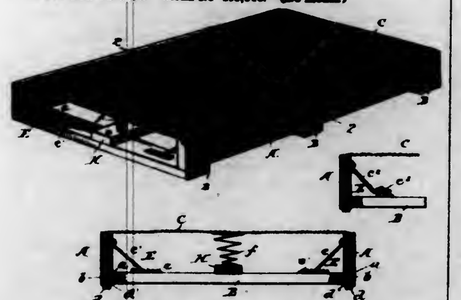
Claim.—1. An evaporator consisting of a steam-generator, a hollow shallow pan having its bottom constructed to carry the water of condensation to a central point, upwardly-diverging steam-pipes B, leading from the steam-generator and forming the support for and constructed to supply steam to the said pan, and the pipe F, of larger diameter than the pipes B, connecting the central portion of the pan with the generator and adapted to return the water of condensation to the generator, substantially as described.

2. An evaporator consisting of a steam-generator, a hollow shallow pan having its bottom constructed to deliver the water of condensation to a central opening provided therein and having channels radiating from the said opening, steam-pipes B for supporting the outer portion of the pan and supplying steam thereto, the pipe F, of larger diameter than the pipes B, connected with the bottom of the pan and constructed to support the same at its middle portion and return the water of condensation to the generator, a relief-valve attached to the said pan, and a tortuous deflecting-strip *f* within the said steam-space, substantially as shown, for the purpose described.

484,911. CEILING-BLOCK. JOHN J. GREEN, Boonton, assignor to the Security Insulator Company, Elizabeth, N. J. Filed May 17, 1892. Serial No. 433,207. (No model.)

Claim.—In a fuse-block for electric wires, the combination of the hollow base inclosing the terminals of the main wires, the cap fitted thereto carrying the terminals of the consumption-wires, the compressible packing inserted between said base and cap, the interlocking projections upon said base and cap for securing them together, and the interlocking terminals of the main and consumption wires, whereby the electric circuit is completed by the act of rotating the cap laterally into position to compress the packing, as set forth.

484,912. BED-BOTTOM. LEONARD RIDDLE, Indianapolis, Ind. Filed Dec. 14, 1891. Serial No. 415,016. (No model.)

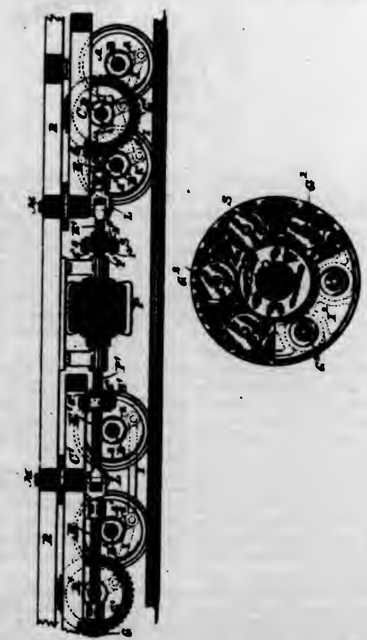


Claim.—A bed-bottom consisting of slats extending across the frame, side rails yieldingly connected at their lower edges to the slats, adjustable braces extending between the slats and the upper edges of the side rails, a fabric connected to the upper edges of the side rails, a strip extending across the slats and along the middle of the frame, and springs interposed between said strip and the fabric, substantially as described.

484,913. REFRIGERATING APPARATUS. DANIEL L. HOLDEN, New York, N. Y. Filed Dec. 12, 1891. Serial No. 414,816. (No model.)

Claim.—The combination, with the still, the condenser, and the refrigerator and their connecting pipes and cocks in a refrigerating apparatus, of an absorber and a pipe by which the ammonia-vapors are conveyed from the refrigerator, and a pipe and cock to the still, and a secondary receiver for the weak solution at a higher elevation than the absorber, a pipe and cock connecting the same to the absorber, and a pipe and cock connecting the secondary receiver to the lower part of the still, so that the contents of the still can be forced by the pressure in the still up into the secondary receiver for the weak solution, and then the contents of the absorber can be transferred to the still by gravity, and then the contents of the secondary receiver are allowed to flow by gravity into the absorber, substantially as set forth.

484,914. DRIVING MECHANISM FOR CARS. CHARLES W. HUNT, West New Brighton, N. Y. Filed Oct. 6, 1891. Serial No. 407,836. (No model.)



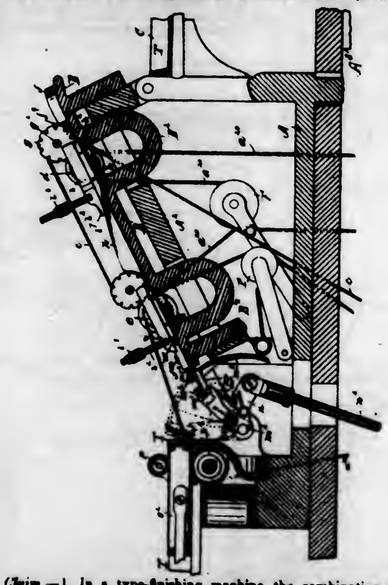
Claim.—1. The combination, with the driving-wheels upon a car, of a motor, a motor-shaft, line-shafting and connections between the same and the driving-wheels, and a coupling at the end of the driving-shaft that is elastic longitudinally, laterally, and circumferentially for connecting the driving-shaft and line-shaft, substantially as set forth.

2. The combination, with the car and driving-wheels, of an electric motor supported by the car, shafting in line with the armature-shaft and gearing between the line-shaft and the driving-wheels, and a coupling that is elastic longitudinally, laterally, and circumferentially

for connecting such armature-shaft and line-shaft, substantially as set forth.

3. The combination, with the car and driving-wheels, of a motor upon the car, a shaft in line, or nearly so, with the motor-shaft, gearing connecting the line-shaft and the driving-wheels, a universal joint in the line-shaft, and a coupling that is elastic longitudinally, laterally, and circumferentially for connecting the line-shaft and the motor-shaft, substantially as set forth.

484,915. TYPE-FINISHING MACHINE. THOMAS H. KENNEY, Cambridge, Mass., assignor to Charles S. Conner and Benjamin F. Conner, New York, N. Y. Filed Aug. 20, 1891. Serial No. 403,184. (No model.)



Claim.—1. In a type-finishing machine, the combination of a guideway constructed to receive the type longitudinally with a pair of parallel-faced rotary cutters having cutting-edges at their periphery, said cutters being fixed at a distance apart equal to the thickness of the body of the type between one pair of its opposite faces, and supports engaging the intermediate faces of the type while passing between said cutters, substantially as and for the purpose described.

2. The combination, with the pairs of rotary cutters adapted to receive the type between them, of the feed-wheels adjacent to said cutters operating to feed the type one at a time longitudinally to the cutters, substantially as described.

3. The combination of the two pairs of cutters with a type-guideway having guide-surfaces arranged to guide the type longitudinally between them and a type-turning portion between said pairs of cutters, whereby the type is turned axially in passing longitudinally from one pair of cutters to the next for the purpose of presenting different faces to the two pairs of cutters, substantially as described.

4. The combination of the type-guideway and cutters for acting upon the type as they move longitudinally on said guideway with an oscillating carrier having a platform provided with adjustable side supports, between which said type are received one at a time endwise from the guideway after passing the cutters, and a receiver to retain the type in column as they come from the carrier, substantially as described.

5. The combination of the type-guideway and cutters for acting upon the type as they move longitudinally on said guideway with an oscillating carrier by which said type are taken one at a time from the guideway after passing the cutters, a receiver to retain the type in column as they come from the carrier, a yielding-faced rotating presser acting on the face of the column of type, and a cutter at the opposite end of the type from the said presser, substantially as described.

6. The type-supporting bed provided with a recess and a pair of rotating cutters the plane of rotation of which is at right angles to the plane of said bed, said cutters operating in said recess, combined with a bridge-piece extending across said recess between the cutters, substantially as described.

7. The combination of the type-supporting bed provided with a recess and cutters operating therein, which act upon the type as they pass between said cutters, with the bridge for supporting the type as they pass between the cutters and the hold-down piece *i*, co-operating with the type as they pass between the said cutters, substantially as described.

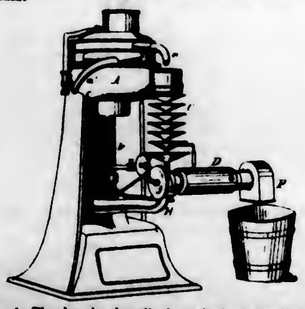
8. The combination of the type-finishing cutters and type-supporting guideway with the feed-wheels having yielding notched peripheries between which the type-bodies are received, substantially as described.

9. The combination of the type-supporting guideway constructed to receive the type longitudinally with a pivoted oscillating type-carrier comprising a platform to receive the type endwise from said guideway, and a curved apron or guard extending from the end of said platform concentric with the axis of oscillation of the carrier, and a type-receiver into which the type are delivered by the carrier after being received thereon from the guideway, substantially as described.

10. The combination of a type-supporting guideway with the pivoted oscillating carrier and actuating mechanism therefor and the type-receiver, the said carrier being located to oscillate from a position in which it receives the type from the guideway to the position in which it delivers the said type to the receiver, and a stop *w*, adapted to engage with the type in the guideway, substantially as and for the purpose described.

11. The combination of the type-supporting guideway, the pivoted oscillating carrier *m*, the stop pivoted thereon, and the receiver provided with spring-fingers *o*, substantially as described.

484,916. METHOD OF SEPARATING BUTTER FROM MILK. CARL G. P. DE LAVAL, of Stockholm, Sweden, assignor to the Aktiebolaget Separator, same place. Filed Apr. 22, 1890. Serial No. 348,999. (No model.)



Claim.—1. The herein-described method of obtaining butter, which consists in subjecting a continuous current of cream to the action of a cooling agent and subjecting the cooled cream to continuous agitation while passing from the inlet to the outlet of the churn and discharging the product composed of butter and churn-milk continuously from the churn, substantially as set forth.

2. The herein-described method of obtaining butter from milk, which consists in continuously separating the cream from the blue milk, thereby establishing a continuous current from the separator to the final receiver, subjecting the continuous current of separated cream to the action of a cooling agent, and finally subjecting the current of cooled cream to continuous agitation, whereby a continuous product of butter is obtained, substantially as set forth.

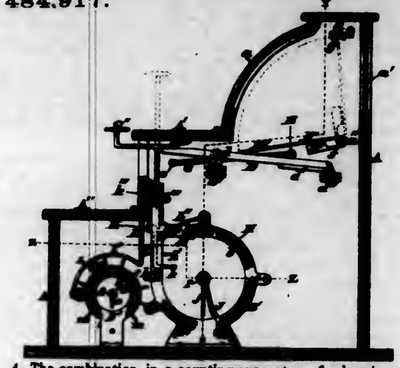
484,917. CASH REGISTER AND INDICATOR. EDWIN H. MUNSON, Cincinnati, Ohio. Filed July 5, 1892. Serial No. 439,093. (No model.)

Claim.—1. The within-described method of counting, which method consists in intermittently advancing a single set of disconnected numbered pieces along an endless circuit by an impulse imparted successively to each piece and indicating the passage of a certain piece at a definite place in said circuit, substantially as herein described.

2. The within-described method of counting, which method consists in intermittently advancing a single set of disconnected numbered pieces along an endless circuit by an impulse imparted successively to each piece and indicating said impulses, substantially as herein described.

3. The within-described method of counting, which method consists in intermittently advancing a single set of disconnected numbered pieces along an endless circuit by an impulse imparted successively to each piece, indicating the passage of a certain piece at a definite place in said circuit and indicating each of said impulses, substantially as described.

484,917.



4. The combination, in a counting apparatus, of a housing provided with an endless circuit, a single set of disconnected numbered pieces inserted within said housing-circuit, a single plunger that advances said pieces successively, and a numbered tablet operated by said plunger, substantially as herein described.

5. The combination, in a counting and registering apparatus, of a housing provided with a pair of annular grooves *b b'*, a single series of numbered counters H, traversing said grooves, a reciprocating plunger C, that advances said counters one at a time, a lever D, operated by said plunger, and a swinging tablet-lifter F, actuated by said lever, substantially as herein described.

6. The combination, in a counting and registering apparatus, of a housing provided with a pair of annular grooves *b b'*, a single series of numbered counters H, traversing said grooves, a reciprocating plunger C, that advances said counters one at a time, a pin *h*, projecting outwardly from one of said counters, and a registering mechanism, consisting of a series of numbered pieces M, traversing a pair of annular grooves *n n'*, which pieces are successively operated by said pin *h*, for the purpose described.

7. The combination, in a counting and registering apparatus, of a housing provided with a pair of annular grooves *b b'*, a single series of numbered counters H, traversing said grooves, a reciprocating plunger C, that advances said counters one at a time, a lever D, operated by said plunger, a swinging tablet-lifter F, actuated by said lever, and a registering mechanism, consisting of a series of numbered pieces M, traversing a pair of annular grooves *n n'* and operated by one of said counters H, substantially as described.

8. The combination, in a counting and registering apparatus, of a set of housings each of which is provided with a pair of annular grooves *b b'*, a single series of numbered counters H, traversing each of said grooves, means for advancing said counters one at a time, a pin *h'*, projecting inward from one counter of each series, and a longitudinally shiftable and revolving shaft I, having levers *j* that strike said pins when said shaft is operated, as herein described.

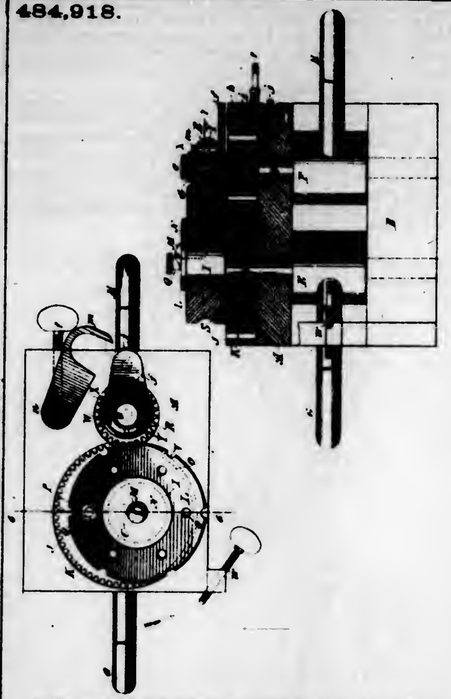
9. The combination, in a counting and registering apparatus, of a set of housings each of which is provided with a pair of annular grooves *b b'*, a single series of numbered counters H, traversing each of said grooves, means for advancing said counters one at a time, a pin *h'*, projecting inward from one counter of each series, a longitudinally shiftable and revolving shaft I, having long levers *J J'* near its ends and a set of shorter levers *j* between them, and a vertically-reciprocating bar K, having lugs *k k'*, adapted to be operated by said long levers *J J'*, in the manner described.

10. The within-described method of counting, which method consists in intermittently advancing a single set of disconnected numbered pieces along an endless circuit by an impulse imparted successively to each piece, substantially as herein described.

484,918. MACHINE FOR MARKING OR STAMPING FINGER-RINGS. WILLIAM H. FREEMAN, Jersey City, N. J., assignor to the Peckham Seamless Ring Manufacturing Company, New York, N. Y. Filed June 18, 1892. Serial No. 437,102. (No model.)

Claim.—1. The spindle, the eccentric carried thereby, the pressure-roller on said eccentric, the gear-wheel on said spindle, and a connection between the pressure-roller and gear-wheel, combined with the additional spindle, the pinion thereon, the post, and the die carried by said post, substantially as and for the purposes set forth.

2. The revolvable post and the die carried thereby, combined with the pressure-roller, the eccentric on which said roller is mounted, and means for first moving said roller against the ring and then rolling the die against the ring while under the pressure of said roller, substantially as set forth.



3. The revolvable post and the die carried thereby, combined with the pressure-roller having a groove conforming to the exterior of the ring and means, substantially as described, for moving said roller against the ring and rolling the die against the ring while under pressure, substantially as set forth.

4. The revolvable post and the die carried thereby, combined with the pressure-roller having a plurality of grooves adapted to the different rings, means for adjusting said roller to bring the appropriate groove to the ring, and means, substantially as described, for moving said roller against the ring and rolling the die against the ring while under pressure, substantially as set forth.

5. The revolvable post, the die carried thereby, the table to receive the ring, and the clamp to hold the ring upon the table, combined with the pressure-roller and means, substantially as described, for moving said roller against the ring and rolling the die against the ring while under pressure, substantially as set forth.

6. The revolvable post, the die carried thereby, the vertically-adjustable table to support the ring, and the vertically-adjustable and horizontally-movable clamps to hold the ring upon the table, combined with the pressure-roller and means, substantially as described, for moving said roller against the ring and rolling the die against the ring while under pressure, substantially as set forth.

7. The revolvable post and the die removably seated in a slot in said post, combined with the eccentric, the pressure-roller mounted on said eccentric, and means, substantially as described, for moving said roller against the ring and rolling the die against the ring while under pressure, substantially as set forth.

8. The connected revolvable post, pinion, spindle, and handle, and the die carried by said post, combined with the connected eccentric, spindle, and handle, the gear-wheel on said spindle, the pressure-roller on said eccentric, and the pin connecting said roller and gear-wheel, substantially as set forth.

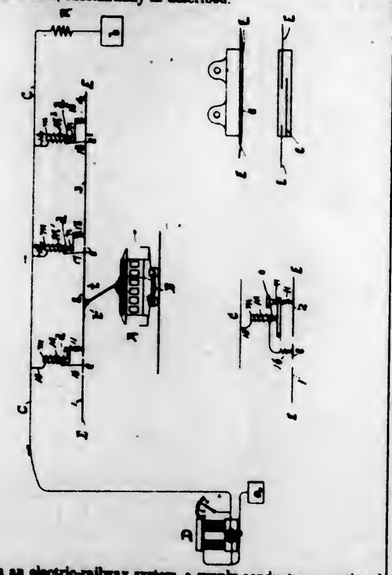
484,919. ELECTRIC-RAILWAY SYSTEM. JAMES H. PRESLEIGH, Brooklyn, N. Y. Filed Aug. 1, 1891. Serial No. 401,411. (No model.)

Claim.—1. In an electric-railway system, a supply-conductor, a sectional working conductor, interposed energizing-sections, a primary branch for each section of the working conductor, leading from the supply-conductor and including an electro-magnet, and a secondary branch for each energizing-section, leading from the main branch to the energizing-section, the coil of the electro-magnet being included in both branches, substantially as described.

2. In a single-track electric-railway system, a supply-conductor,

a sectional working conductor, two adjacent interposed energizing-sections, an electro-magnet for each energizing-section, and electrical connections, substantially as described, whereby the car can be run in either direction and will cause the circuit to be established in the working sections, substantially as described.

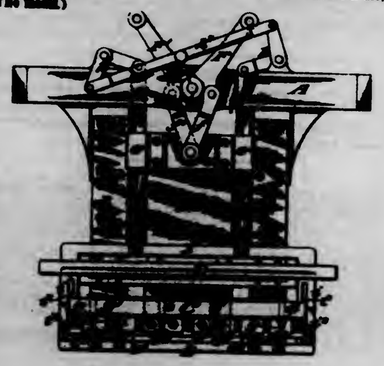
3. In an electric-railway system, a supply-conductor, a sectional working conductor, interposed energizing-sections, a primary branch for each section of the working conductor, leading from the supply-conductor and including an electro-magnet located in an accessible position to permit of its armature being operated by hand, and a secondary branch for each energizing-section, leading from the main branch to the energizing-section, the coil of the magnet being included in both branches, substantially as described.



4. In an electric-railway system, a supply-conductor, a sectional working conductor, interposed energizing-sections, an electro-magnet for each working section, and wires leading from the conductor to the coils of said electro-magnets and through contacts formed by the same to the working sections, and wires leading from the ends of the coils and connected with the respective energizing-sections, substantially as described.

5. In an electric-railway system, a supply-conductor, a sectional working conductor, interposed energizing-sections, and wires leading from the supply-conductor and coiled about cores and branched at the opposite ends of the cores, one set of branches being connected with the energizing-sections and the other branches through contacts formed by the attraction of the armatures with the working sections, substantially as described.

484,920. GRIP MECHANISM FOR CABLE RAILWAYS. JOHN H. RENNINGER, New York, N. Y. Filed Mar. 21, 1892. Serial No. 426,788. (No model.)



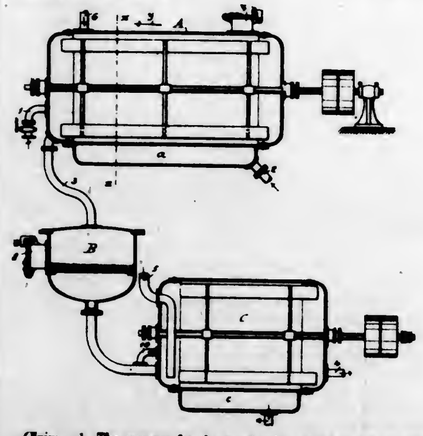
Claim.—1. A grip-jaw provided with a laterally-extended base, a gripping-die set within the jaw, and adjusting devices engaged with the die and seated upon the base of the jaw for adjusting the die relatively to the jaw to take up wear, substantially as set forth.

2. The grip-jaw provided with seats on the upper sides of the flanges extending laterally from its base, a gripping-die seated in the jaw, and screws engaged with the die and resting at one end on the said seats on the base for forcing the die toward the opposite jaw to take up wear, substantially as set forth.

3. In combination, a grip-frame, the grip-jaws, and the throw-out, the latter comprising a vertically-reciprocating frame having arms depending from its ends and provided with slanting-faced projections for engaging the cable, said depending arms with the slanting-faced projections being independent in their movement of the movements of the movable gripping-jaw, substantially as set forth.

4. In combination, a grip-frame, grip-jaws, and a throw-out, the latter comprising a vertically-reciprocating frame having depending arms at its ends, the depending arms having slanting-faced projections and a tongue-and-groove connection with the movable gripping-jaw, whereby the movement of the throw-out is wholly independent of the movable gripping-jaw, substantially as set forth.

484,921. PROCESS OF MAKING POTASSIUM CARBONATE. PETER RÖSSLER, Bernburg, Germany. Filed Feb. 12, 1892. Serial No. 421,294. (No specimens.)



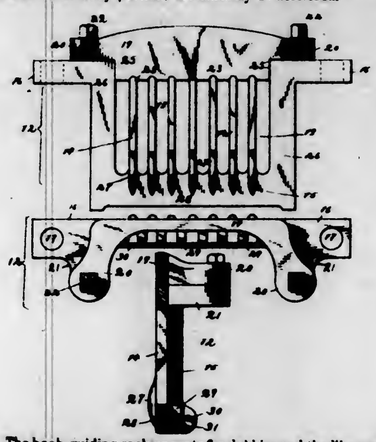
Claim.—1. The process for the production of potassium carbonate from potassium sulphate, consisting in, first, converting a mixture of equal molecules of potassium sulphate and potassium bichromate in aqueous solution below 100° centigrade by means of calcium hydrate or barium or strontium hydrate into potassium chromate, then saturating with carbonic acid the potassium-chromate solution in a concentrated and cooled condition, after separating therefrom the gypsum or barium or strontium sulphate, then separating the precipitated potassium bichromate from potassium bicarbonate produced, separating the potassium bichromate remaining in solution, and, lastly, obtaining from the remaining final lye by further evaporation a potassium carbonate containing chromium, substantially as described.

2. The process hereinbefore described, consisting in, first, converting a mixture of equal molecules of potassium sulphate and potassium bichromate in aqueous solution into potassium chromate, then saturating with carbonic acid the potassium-chromate solution, separating the precipitated potassium bichromate, obtaining from the final lye by evaporation potassium carbonate containing chromium, purifying the potassium carbonate by saturating with carbonic acid the cold aqueous solution, whereby potassium bicarbonate is separated, while the chromate remains in solution, and, finally, converting the potassium bicarbonate into carbonate by heating, substantially as described.

484,922. SHEDDING MECHANISM FOR LOOMS. GEORGE W. STAFFORD, Providence, R. I. Filed July 6, 1892. Serial No. 439,159. (No model.)

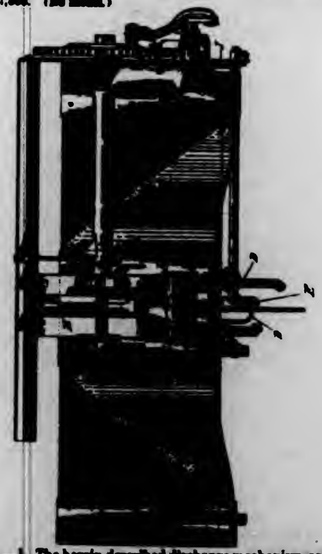
Claim.—1. The hook-guiding rack or grate for dobbies and the like mechanisms, comprising the lower or body portion provided with side pieces 26 26 and with dents or bars 14 14, having free or separated upper ends, the cap-bar having an offset portion fitting between said side pieces and also fitting against the free ends of said dents or bars, and means for securing the said cap-bar in place upon the upper ends of the said side pieces, substantially as described.

2. The hook-guiding rack or grate for dobbies and the like mechanisms, comprising the lower or body portion provided with dents or bars 14 14, having free or separated ends, the cap-bar formed with notches to receive the said upper ends of the dents or bars and provide seats therefor, and means for securing the said cap-bar in place upon the lower or body portion, substantially as described.



3. The hook-guiding rack or grate for dobbies and the like mechanisms, comprising the lower or body portion formed with side pieces 26 26 and provided with dents or bars 14 14, having free or separated upper ends, the cap-bar having lugs 20 20 and the offset or depressed portion formed with shoulders at the opposite ends thereof, which fit between the side pieces 26 26, the said portion being also formed with notches 23 23, which receive the upper ends of the dents or bars and provide seats therefor, and means for securing the said cap-bar in place upon the body portion, substantially as described.

484,923. DISCHARGE MECHANISM FOR HARVESTERS. WILEY H. STROUD, Waxahachie, Tex., and ROYAL H. CHENEY, Auburn, N. Y., assignors to D. M. Osborne & Co., Auburn, N. Y. Filed Apr. 6, 1891. Serial No. 387,986. (No model.)

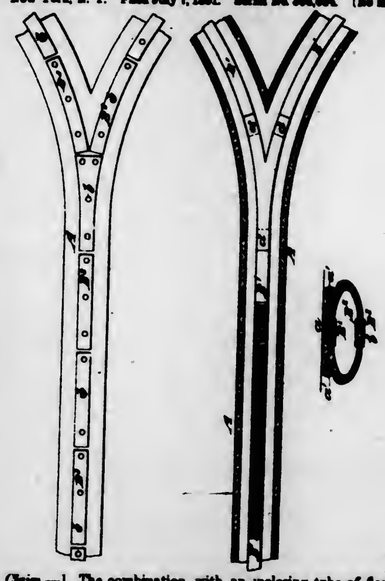


Claim.—1. The herein-described discharge mechanism, consisting of the combination of the binder-deck having the movable middle portion, the fixed ends, the flexible intermediate portions, and means for automatically raising and lowering said middle portion, all substantially as shown and described.

2. The herein-described discharge mechanism for harvesters, consisting of the combination of the binder-deck A, having its middle portion hinged at its upper edge and free at its lower edge, said deck having its ends fixed, and a flexible intermediate portion, the links D, crank E, spring-link I, cam J, and discharge-arms B, arranged to co-operate with one another to lower said deck as said discharge-arms pass over it, all substantially as shown and described.

3. The herein-described discharge mechanism consisting of the combination of the binder-deck having the middle portion *b* hinged at its upper edge and free at its lower edge, and the end portions *a a*, attached to the frame of the machine, and the flexible intermediate portions *c c* joining them, and means for automatically raising and lowering the middle portion, all substantially as shown and described.

484,924. CLOSED CONDUIT FOR ELECTRIC RAILWAYS. BENJAMIN F. SUTTON, Brooklyn, N. Y., assignor to Parker, Stearns & Sutton, New York, N. Y. Filed July 7, 1891. Serial No. 398,694. (No model.)



Claim.—1. The combination, with an inclosing tube of flexible insulating material, of a main conductor extending along the inner wall of the tube and a series of conducting-plates extending along the interior of the tube opposite the main conductor, the adjacent faces of the main conductor and the series of conductors being provided with transverse corrugations adapted to interlock when the parts are brought into contact, substantially as set forth.

2. The combination, with an inclosing tube of flexible insulating material, of a main conductor extending along the inner wall of the tube, a series of conducting-plates extending along the interior of the tube opposite the main conductor, and a second series of conducting-plates extending along the exterior of the tube and electrically connected with the series extending along the interior, the plates of said series being arranged to alternately overlap the portion of the tube intervening between two successive ends of the plates, substantially as set forth.

3. The combination, with an inclosing tube of flexible insulating material, comprising in itself a holder and retainer for the conductors, of a main electric conductor within the tube and dovetailed into the wall of the tube and an interrupted electric conductor attached to the tube opposite the main conductor and exposed to contact within and without the tube, substantially as set forth.

484,925. IRONING-MACHINE. LEWIS H. WARNER, Bennett, N. J. Filed May 1, 1891. Serial No. 391,261. (No model.)

Claim.—1. In an ironing-machine, the combination of a lower movable roller mounted in a pivoted bearing at one end and at or near the center of its length journaled in a swinging bearing or box A, a bracket *c*, attached at one end to the top of the frame or bracket *b* and extending downward and outward therefrom and in front of said box A, the latter being supported by said bracket *c* by means of a pivot, and a stationary upper roller *f*, mounted in journal-boxes upon

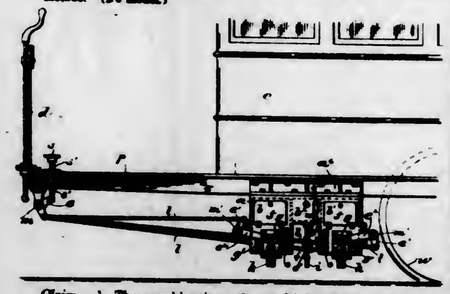
the bracket *b* of the machine and operating as described, and for the purpose stated.

2. In combination, the legs, the bracket secured to said legs at or near each end, bearings located at the center and near the ends of said bracket, the heated roller mounted in said bearings, the padded roller mounted in movable bearings, and means, substantially as described, for operating said movable roller.

3. The ironing-machine herein described, combining therein the legs *a*, the bracket *b*, secured to said legs at or near each end, the boxes or bearings located at or near the center and at the ends of said bracket, the roll *f*, mounted in said bearings, the roll *g*, mounted in the movable bearings, the bell-crank *k*, the rods *j* and *l*, and means for operating said machine, substantially as and for the purpose set forth.

484,926. APPARATUS FOR SANDING RAILROAD-TRACKS.

ALBERT A. WHIPPLE, Providence, R. I. Filed Feb. 29, 1892. Serial No. 423,266. (No model.)



Claim.—1. The combination of a multiple-chambered box arranged to be mounted beneath the car, delivery-tubes communicating with said chambers, provided with self-closing valves or gates, and a series of independently-movable valve-operating devices, each having a push-rod extending upwardly through the car-platform, substantially as hereinbefore described, and for the purpose set forth.

2. In a track-treating device arranged to be secured to the under side of the car and operated from the front platform, a multiple-chambered box provided with means for filling and emptying the same and having the walls of said chambers provided with glass-covered openings, as *o*, substantially as hereinbefore described, and for the purpose set forth.

3. The combination, with a track-sanding or treating apparatus provided with a series of self-closing valves or gates operated by vertically-movable pedal levers or stops from the car-platform, of a movable locking-block arranged when in use to prevent the said levers from being depressed, substantially as described.

484,927. STERILIZER FOR SURGICAL INSTRUMENTS, &c.

EDWARD BUSHNELL, St. Paul, Minn. Filed Mar. 21, 1892. Serial No. 425,703. (No model.)

Claim.—1. In a sterilizing apparatus, the combination of the outer boiler and inner sterilizing-chamber sealed from the boiler, a hollow cover closing both boiler and chamber, tubes leading from boiler, chamber, and cover to the exterior, and hinged and adjustable steam-conductors attachable to said tubes from said boiler and cover and to said tubes from cover and chamber, substantially as specified, whereby steam generated in the boiler may be conveyed around said chamber for the purpose of ante-heating, post-heating, or drying said chamber and contents or through said chamber for the purpose of sterilization.

2. In a sterilizing apparatus, an outer boiler or water-receptacle, a sterilizing-chamber within said boiler and sealed therein near the top, a hollow cover closing both boiler and inner chamber, tubes opening outside of said boiler, communicating, respectively, with the interior of said chamber, cover, and boiler, a discharge-tube for said cover, and hinged and adjustable steam-conductors adapted to connect said boiler-tube with the tube leading from said cover or with the tubes leading from said cover and chamber, or both, substantially as and for the purpose specified.

3. In a sterilizing apparatus, an outer boiler or water-receptacle, a sterilizing-chamber within said boiler and sealed therein near the top, a hollow cover closing both boiler and inner chamber, tubes opening outside of said boiler and communicating, respectively, with the interior of said cover, with said inner chamber at the top, and with said boiler above the water-line, discharge-tubes opening from said cover and chamber, and adjustable steam-conductors adapted to connect said boiler-tube with the tube leading from said cover and the tubes leading from said cover and chamber, substantially as and for the purpose specified.

4. In a sterilizing apparatus, an outer boiler or water-receptacle, a sterilizing-chamber within said boiler and sealed therein near the top, a hollow cover closing both boiler and inner chamber, tubes opening outside of said boiler, communicating, respectively, with the interior of said chamber and with said boiler above the water-line, the tube leading from said chamber passing through said cover, but closed with reference to the interior thereof, tubes opening from the interior of said cover, an annular wall surrounding the outer end of each of said tubes, forming a groove for holding cotton packing, and two adjustable steam-conductors adapted to connect said cover-tubes with said boiler and chamber tubes, respectively, each conductor having depending annular flanges adapted to enter said packing-grooves, substantially as specified.

5. In a sterilizing apparatus, the combination of the outer boiler and inner sterilizing-chamber sealed from the boiler, a hollow cover closing both boiler and chamber, tubes leading from the top of said boiler, chamber, and cover to the exterior, a discharge-tube leading from the bottom of said chamber, and hinged steam-conductors attachable to said boiler and cover tubes or to said upper chamber and cover tubes, or both, substantially as specified, whereby steam generated in the boiler may be conveyed either around or through the chamber.

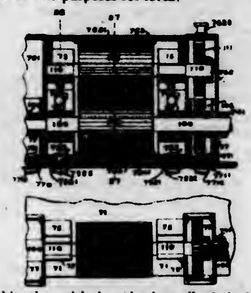
6. In a sterilizing apparatus, the combination of the outer boiler and inner sterilizing-chamber sealed from the boiler, a hollow cover closing both boiler and chamber and having a depending flange fitting and adapted to close down into a circumferential cotton-filled groove at the top of said boiler, tubes leading from boiler, chamber, and cover to the exterior, and hinged steam-conductors attachable to said boiler and cover-tubes or to said cover and chamber-tubes, or both, and adapted to close down and fit into cotton-filled grooves surrounding said tube-openings, whereby the steam generated in the boiler may be conveyed around or through the chamber without escaping through interstices between said cover and boiler or between tubes and conductors.

484,928. CARDING-ENGINE.

WILLIAM P. CAMPBELL, Lowell, Mass., assignor to the Lowell Machine Shop, same place. Filed July 14, 1892. Serial No. 439,902. (No model.)

Claim.—1. The combination, with the doffer-gear, the calender-rolls, and intermediate gearing including a rifle-gear, of a rifle-sleeve, a rifle-stud, a pivoted rifle-stud plate carrying the said rifle-stud, and means for securing the said plate in adjusted position after it has been swung upon its pivot, substantially as described.

2. The combination, with the calender-rolls, their shafts, the gears on said shafts, the coiler-driving gear, and the nut by which said gear is held on the lower shaft, of the bottom covers, each having notches in the upper edges of the side walls thereof and adapted to be applied at either end of the rolls, as described, and the top covers, all substantially as and for the purposes set forth.



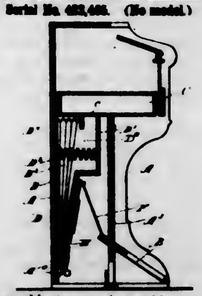
3. The combination, with the calender-rolls, their shafts, the gears on said shafts, the coiler-driving gear, the nut by which said gear is held on the lower shaft, and the sleeve 741, inclosing the said lower shaft, of the bottom covers, each having notches in the upper edges of the side walls thereof and adapted to be applied at either end of the rolls, as described, and the top covers, all substantially as and for the purpose set forth.

4. The combination, with the calender-rolls, their shafts, and the gears on said shafts, of the stands having open-top bearings for the said shafts and the projections for the support of the trumpet, a trumpet constructed to hook over the said projections, the bottom covers having notches in the upper edges of the side walls thereof, and the top covers, all arranged substantially as described and providing for the ready removal and separation of the parts.

5. The combination, with the calender-rolls, their shafts, and the gears on said shafts, of the stands having open-top bearings for the said shafts and the projections for the support of a trumpet, caps for the bearings of the shaft of the lower roll, means for holding said caps in place, a trumpet constructed to hook over the said projections, the bottom covers having notches in the upper edges of the side walls thereof, and the top covers, all arranged substantially as described and providing for the ready removal and separation of the parts.

484,929. CABINET-ORGAN.

MELVILLE CLARK, Chicago, Ill. Filed Feb. 23, 1892. Serial No. 422,405. (No model.)



Claim.—1. In a cabinet-organ, in combination with the cabinet-framework and the exhaust-chamber supported thereon, the exhaust-bellows below the exhaust-chamber, having the oscillating side at the rear, the back of the organ cabinet-case being open substantially over the area of the said oscillating side of the bellows to permit the latter to play therein, substantially as and for the purpose set forth.

2. In a cabinet-organ, in combination with a horizontally-extending exhaust-chamber, the exhaust-bellows extending vertically beneath the same and communicating at its upper edge therewith, the forward side of said bellows being fixed and the rear side oscillating over its lower horizontal edge, and the pumper or pumping-bellows having its oscillating side at the front and hinged at its lower edge to the forward side of the exhaust-bellows, said forward side constituting the rear side of the pumping-bellows, the pedals, and links therefrom connected to the oscillating side of the pumpers toward the upper edge of the latter, substantially as set forth.

3. In a cabinet-organ, in combination with the exhaust-bellows and the receiving-bellows, each having their oscillating sides hinged at the lower horizontal edge and oscillating backward and forward at the upper edge, a rigid partition between them constituting the forward side of the exhaust-bellows and the rear side of the pumping-bellows, both said oscillating sides being hinged to the lower edge of said rigid side, substantially as set forth.

4. In a cabinet-organ, the back D, the front A^2, and the pedals fulcrumed forward of said front, in combination with the exhaust-bellows between said front and back, having its rigid side extending from the back of the organ-case in inclined direction upward and forward and its oscillating side hinged at its lower horizontal edge to said rigid side, the links which connect the pedals to the upper part of the oscillating side of the pumping-bellows being pivotally connected to the pedals at a point which is forward of the front A^2 when the pedals are at their highest position and best to pass back of said front, substantially as set forth.

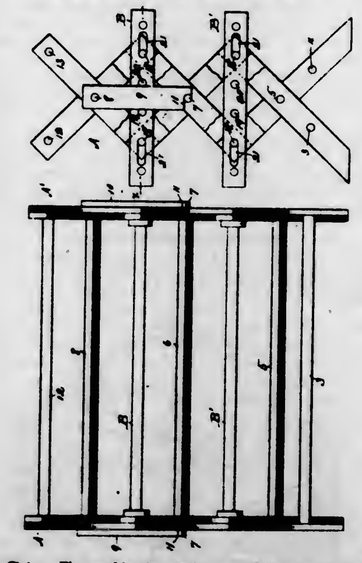
484,930. HAND OF LEAF-TOBACCO.

GUSTAV FOLK, New York, N. Y. Filed June 21, 1892. Serial No. 437,437. (No model.)

Claim.—A hand of leaf-tobacco arranged together in flat form so that the stem of one leaf will be directly above the stem of the leaf below, all of said leaves secured together by longitudinal stitching, the stems of the leaves forming supports for such stitching, substantially as described.

484,931. CLOTHES-DRIER.

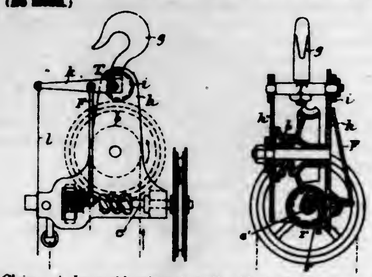
FRANK P. HENDRICKS, Winterburn, assignor of two-thirds to John S. Hoy and G. W. Tozier, Penfield, Pa. Filed Jan. 28, 1892. Serial No. 419,099. (No model.)



Claim.—The combination of the extensible frames A A', the connecting-rods 16 and 17, uniting the ends of each set of levers of said frames, said connecting-rods being formed with bearings 18, adjacent to the inner faces of the end frames, and the frame horizontally arranged between the extensible frames, having end pieces formed with

slots 21 to engage the bearings of the connecting-bars of the end frames, substantially as described.

484,982. SELF-LOCKING HOISTING DEVICE. OSCAR HELLESSENBERG, Berlin, Germany. Filed Feb. 20, 1892. Serial No. 422,502. (No model.)



Claim.—1. In combination, the pulley-block, the chain-wheel carried thereby, a loosely-journaled rotary brake device, also carried by the said block, a brake-lever normally in connection with the said rotary device and under tension of the load, whereby the said device will be held stationary normally, and a pawl-and-ratchet connection between the said rotary brake device and the chain-wheel and arranged to turn the said device upon the fall of the load when the pressure of the brake-lever is relieved, and the means for operating the brake-lever to release the rotary brake device and allow it to turn more or less freely under the action of the pawl-and-ratchet connections, substantially as described.

2. In combination, the pulley-block and its chain-wheel, the brake-lever, and the rotary brake device in connection with each other normally, the said rotary part being loosely mounted on the block, the chain having one end supported on the brake-lever to apply a tension thereto, and the pawl-and-ratchet connection between the rotary brake device and the chain-wheel and arranged to turn the brake device as the load descends upon the release of the brake-lever, and means for controlling the pressure of the brake-lever on the rotary brake device, substantially as described.

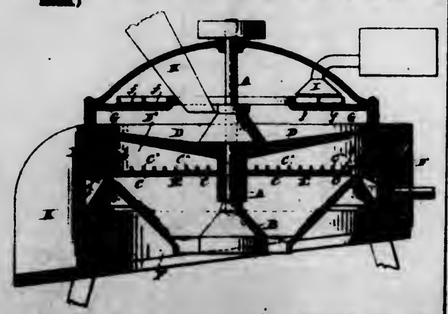
3. In combination, the pulley-block, the chain-wheel, the brake device independent thereof, the lever having one arm connected with the brake device, the hoisting-chain supported on the other arm, and the manual operating means for the lever, substantially as described.

4. In combination, the pulley-block and brake device, the pivoted lever connected with said brake device, the hoisting-chain connected with the lever, and the means for adjusting the leverage, substantially as described.

5. In combination, the pulley-block and brake device, the pivoted lever connected with the brake device, the chain connected with the lever, and the screw *w* for adjusting the said lever, substantially as described.

6. In combination, the pulley-block, the shaft *c'*, carrying a toothed wheel and a loose pawl-support, the brake-block to bear against said support, the pivoted lever connected with the brake-block, the hoisting-chain connected with said lever, and the manual connections for operating the lever, substantially as described.

484,983. ORE SEPARATOR AND AMALGAMATOR. FRED J. HOYT, Chicago, Ill. Filed Dec. 15, 1891. Serial No. 415,144. (No model.)



Claim.—1. In an ore separator and amalgamator for treating powdered ore, the combination, with a central rotary vertical shaft, of an amalgamating-pan secured to said shaft, and provided with annular walls *c*, having rounded tops and dividing the pan into annular sections *c* for containing the amalgam, an outer narrower annular section *b*, and a peripheral rim *a*, whereby when powdered ore is fed to said pan and motion is given to said shaft the sand and other light refuse are thrown over the rim by centrifugal action and the amalgam displaced by said action from sections *c* is caught in section *b*, substantially as described.

2. In an ore separator and amalgamator for treating powdered ore, the combination, with a central vertical shaft, of an amalgamating-pan secured to said shaft and on which the quicksilver is distributed, an ore-screen above said pan and also secured to said shaft, inclining upwardly from the shaft and extending outwardly above the periphery of the pan, an inclined trough extending around the apparatus and around and below the peripheries of said pan and screen, a stationary water-distributer provided with openings located above said screen and adapted to distribute the water over its surface, a water-spout to conduct water to the said water-distributer, said trough provided with a discharge-spout, and the apparatus also provided with a hopper or chute to conduct the powdered ore onto the ore-screen, substantially as described.

484,984. SPECTRUM COLORED STONE OR BODY. JOHN JACOBSON, Boston, Mass. Filed June 26, 1892. Serial No. 437,942. (No model.)

Claim.—1. As an improved article of manufacture, the herein-described stone or body composed of transparent or translucent material and provided with a metallic backing or covering having its surface contiguous to the said body provided with fine lines or edges, whereby the said stone is provided with diffraction colors, substantially as described.

2. As an improved article of manufacture, the herein-described stone or body, provided with a substantially-cone-shaped rear portion or back and having a metallic covering or backing applied to the said back and provided with fine lines or slits, substantially as described.

3. As an improved article of manufacture, the herein-described stone or body, composed of transparent or translucent material and provided with a metallic backing or coating deposited on said stone or body and having fine lines or slits cut into and through it, substantially as described.

484,985. SPLIT PULLEY. CHARLES C. LOCKHARDT, Chicago, Ill. Filed Feb. 16, 1892. Serial No. 421,773. (No model.)

Claim.—1. A pulley having double-flanged spokes, an open slot between said spokes extending from the center to the rim, and a block embracing a web 8, side flanges 9, rim portion 10, and hub end 11, located within said slot and adapted to be secured therein by bolts passing through said flanges, substantially as described.

2. A pulley having double-flanged spokes, an open slot between said spokes, extending from the center to the rim and having rabbets formed at the juncture of said spokes and rim, and a block embracing a web 8, side flanges 9, hub end 11, and rim portion 10, having lugs 13, located within said slot and adapted to be secured therein by bolts passing through said flanges, substantially as described.

484,986. CAN. CHARLES C. LOCKHARDT, Chicago, Ill. Filed Mar. 21, 1892. Serial No. 425,864. (No model.)

Claim.—1. A can having a cover secured thereto, a cut or slit in said cover extending from about the center to the periphery thereof, and a winding-key having its spindle portion secured to said cover adjacent to said slit or cut.

2. A can having a cover secured thereto, a radial cut or slit in said cover, and a winding-key having its spindle portion secured to said cover adjacent to said cut or slit.

3. A can having a cover secured thereto, a radial cut or slit in said cover, and a winding-key having its spindle portion secured to said cover and overlapping said slit or cut.

4. A can having a cover secured thereto, a cut or slit in said cover extending from about the center to the periphery thereof, and a winding-key having a tapered-spindle portion secured to said cover adjacent to said slit.

5. A can having a cover secured thereto, a cut or slit in said cover extending from about the center to the periphery thereof, and a winding-key having a spindle portion secured to said cover and overlapping said cut or slit.

6. A can having a circular cover secured thereto, a radial slit or cut in said cover extending from about its center to its periphery, and a winding-key having a tapered-spindle portion secured to said cover and overlapping said slit.

7. A can having a cover secured thereto, a cut or slit in said cover extending from about the center to the periphery thereof, a winding-key having a spindle portion secured to said cover adjacent to said cut or slit, and an angular handle located along the side of the can.

8. A can having a cover secured thereto, a cut or slit extending from about the center to the periphery thereof, and a winding-key having its spindle portion secured to said cover and overlapping said cut or slit, said spindle portion being so located, practically as described, that it extends to a greater extent upon the cover on one side of said slit than on the other side.

9. A can having an upwardly-facing shoulder and surrounding flange at one end, a cover resting upon said shoulder and secured within said flange, a cut or slit extending from about the center to the periphery of the cover, and a winding-key having its spindle portion secured to said cover adjacent to said cut or slit.

10. A can having an upwardly-facing shoulder and surrounding flange at one end, a cover resting upon said shoulder and secured within said flange, a cut or slit extending from about the center to the periphery of said cover, and a winding-key having its spindle portion secured to said cover and overlapping said cut or slit.

11. A can having an upwardly-facing shoulder and surrounding flange at one end, a cover resting upon said shoulder and secured within said flange, a cut or slit extending from about the center to the periphery of said cover, and a winding-key having a tapered-spindle portion secured to said cover and overlapping said cut or slit.

12. A can having an upwardly-facing shoulder and surrounding flange at one end, a cover resting upon said shoulder and secured within said flange, a cut or slit extending from about the center to the periphery of said cover, and a winding-key having a tapered-spindle portion secured to said cover and overlapping said cut or slit, said tapered-spindle portion being located, practically as described, so that it extends to a greater extent upon the cover on one side of said slit or cut than on the other side thereof.

13. A can having a cover secured thereto, a cut or slit in said cover extending from about the center to the periphery thereof, and a winding-key having its spindle portion soldered to said cover adjacent to said slit.

14. A can having a cover secured thereto, a cut or slit in said cover extending from about the center to the periphery thereof, and a winding-key having its spindle portion soldered to said cover and overlapping said cut or slit.

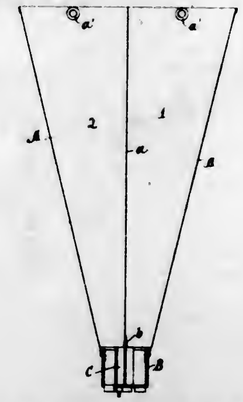
15. A can having a cover secured thereto, a cut or slit in said cover extending from about the center to the periphery thereof, and a winding-key having a tapered-spindle portion soldered to said cover adjacent to said slit.

16. A can having a cover secured thereto, a cut or slit in said cover extending from about the center to the periphery thereof, and a winding-key having a tapered-spindle portion soldered to said cover and overlapping said cut or slit.

17. A can having a cover secured thereto, a cut or slit in said cover extending from about the center to the periphery thereof, and a winding-key having its spindle portion soldered to said cover and overlapping said cut or slit, said spindle portion being located, practically as described, so that it extends to a greater extent upon the cover on one side of said cut or slit than on the other side thereof.

18. A can having a cover secured thereto, a cut or slit in said cover extending from about the center to the periphery thereof, and a winding-key having a tapered-spindle portion soldered to said cover and overlapping said cut or slit, said tapered-spindle portion being located, practically as described, so that it extends to a greater extent upon the cover on one side of said cut or slit than on the other side thereof.

484,987. BAKER'S AND CONFECTIONER'S DEPOSITING APPARATUS. RICHARD MERSON, Cambridge, Mass. Filed June 25, 1892. Serial No. 437,947. (Model.)



Claim.—1. A tube having a series of outlets and a partition or partitions, in combination with a partitioned bag or hopper, whereby the contents of one compartment of the bag or hopper will be conducted to a series of openings and the contents of the other compartments to another series of openings, so that the colors will be alternating, as set forth.

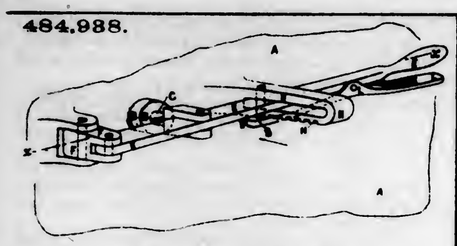
2. A tube for bakers' and confectioners' use, consisting of an outer tube having an internal screw-thread at its upper end, and a former having a series of openings upon its face and a partition or partitions, whereby the contents from a partitioned bag or hopper can be deposited in the manner as set forth.

3. In a cake-machine, tubes or design-plates, each having a partition or series of partitions inclosed therein and a series of openings in the face of said tubes or design-plates communicating with compartments formed by said partition or partitions, whereby cakes each consisting of sections of more than one color are produced, as set forth.

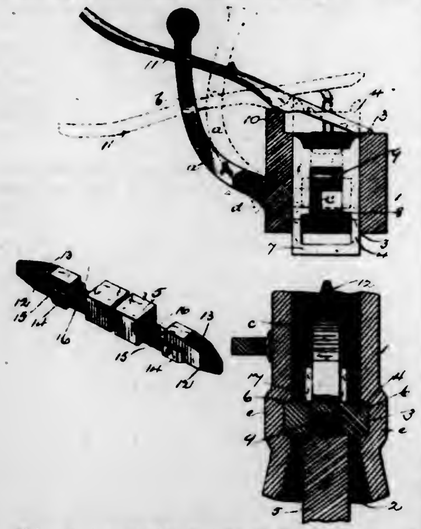
484,988. STOP FOR THROTTLE-VALVE LEVERS. GEORGE E. MERRIAM, Concord, Mass. Filed July 30, 1892. Serial No. 441,705. (No model.)

Claim.—An automatic safety-stop for throttle-valves, consisting of the boiler A, having a stuffing-box B, through which the valve-stem C is operated by means of the pivoted hand-lever E, the rack-bar H, provided with notches, and the extending hand-lever L, pivoted to the said lever E and having a spring K, its opposite end being bent upward and adapted to engage with said notches and enter a hole provided in the said bar H, whereby the throttle is held in a closed position, substantially as described, as and for the purposes set forth.

484,988.



484,989. CAR-COUPLING. WILLIAM MIGGERT, Philadelphia, Pa. Filed Feb. 10, 1892. Serial No. 421,069. (No model.)



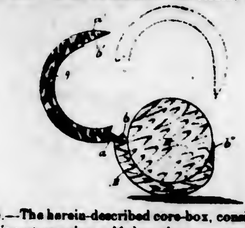
Claim.—1. A car-coupling consisting of a draw-bar having a vertical passage-way therein, a locking slide or bolt adapted to reciprocate vertically within said way and having side wings on its inner walls, a hand-lever connected with said slide for the purpose of raising the same, and a coupling-bar having a notched portion and side wings adapted to engage with said locking slide or bolt, substantially as and for the purpose set forth.

2. The combination, with a draw-bar having rearwardly of the draw-head a vertical guideway, a vertically-reciprocating and automatically-operating bar-locking slide or bolt having top and bottom cross-bars, depending side wings on its inner sides, and a friction-roller journaled in its upper portion, a lever secured to said slide and adapted to raise the same to uncouple the bolt and bar, and a coupling-bar having beveled nose, lugs, or wings on its respective sides, and a notched or recessed portion rearwardly of said wings to adapt the same to engage said locking slide or bolt, substantially as and for the purpose set forth.

3. The automatic car-coupling herein described, consisting of a draw-bar having vertical openings in its upper and lower portions, a bar-locking slide having top and bottom cross-bars, inwardly-extending side wings, and a friction-roller, a sidewise-extending lever adapted to raise said slide out of locking position, and a coupling-bar having a notched portion adapted to engage said locking-slide and shouldered side wings to engage the side wings on said locking-slide, substantially as and for the purpose set forth.

4. The automatic car-coupling herein described, consisting of a draw-bar having vertical openings in its upper and lower portions, a bar-locking slide or bolt having top and bottom cross-bars, inwardly-extending side wings, and a friction-roller, a sidewise-extending lever adapted to raise said locking slide or bolt out of locking position, a lever adapted, as explained, to hold said slide-actuating lever in depressed position, and a coupling-bar having a notched portion adapted to engage said locking-slide and securing-lever and having shouldered side wings to engage the side wings on said locking slide or bolt, substantially as and for the purpose set forth.

484,940. CORE-BOX. MELVIN A. HILLS, Lawrence, Mass. Filed July 8, 1892. Serial No. 439,391. (No model.)



Claim.—The herein-described core-box, consisting of two parts A and B, having at one place a V-shaped or concavo-convex longitudinal joint *a b* and having diametrically opposite thereto tangential or inclined meeting edges *a' b'*, substantially as and for the purpose set forth

484,941. BICYCLE-SUPPORT. JOSEPH J. MÜLLER, Locarno, Switzerland. Filed Jan. 12, 1892. Serial No. 417,866. (No model.) Patented in Germany June 7, 1891, No. 68,865, and in England June 8, 1891, No. 9,695.

Claim.—1. In a bicycle-support, the combination, with two standards, of vertically-adjustable plates on the same provided at their upper ends with forks for receiving the crank-shaft of a cycle and means for adjusting said standards a greater or less distance from each other, substantially as set forth.

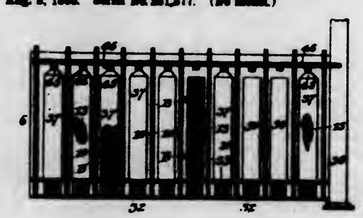
2. In a bicycle-support, the combination, with two standards, of vertically-adjustable plates on the same provided at their upper ends with forks for receiving the crank-shaft of a bicycle and of a rod having its lower end supported by the standard and its upper end engaging the front part of the bicycle, substantially as set forth.

3. In a bicycle-support, the combination, with two standards, of vertically-adjustable plates on the same provided at their upper ends with forks for receiving the crank-shaft of the bicycle and an extensible swinging hook-bar on a bolt uniting the standards, substantially as set forth.

4. In a bicycle-support, the combination, with two standards, of vertically-sliding plates in the same provided at their upper ends with forks for receiving the crank-shaft of the cycle, a swinging extensible bar composed of two sections mounted on one of the bolts uniting the standards, and a hook on the upper end of said extensible bar, substantially as set forth.

5. In a bicycle-support, the combination, with two standards, of vertically-adjustable plates on the same, a tubular extension on each plate, a rod held in each extension and provided at its upper end with a fork, and a screw for locking each rod in the extension, substantially as set forth.

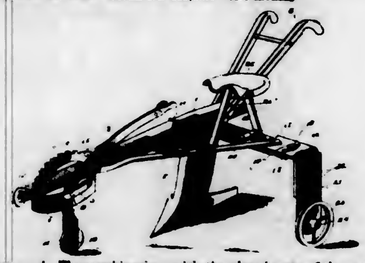
484,942. SMELTING OR REDUCING PLANT. JOHN ROURKE, Denver, Colo., assignor of one-half to Ames C. Giltner, same place. Filed Aug. 3, 1889. Serial No. 321,577. (No model.)



Claim.—1. A condensing and depositing chamber having the outer side walls communicating with the external air and formed mainly of screens, suitable supporting-piers between the screens, hoods covering said screens and also secured to the supporting-piers, and a flue with which said hoods are connected, said flue leading to a suitable stack, substantially as described.

2. A condensing and depositing chamber having its sides provided with a plurality of open spaces between supporting-piers, screens and metal shutters adapted to be removably attached to the said piers hoods covering said screens, furnaces underneath the floor of the said chamber, transverse flues leading therefrom, a longitudinal flue with which the transverse flues are connected, and a suitable stack connected with the top of the said hoods and into which the longitudinal flue opens, substantially as described.

484,948. PLOW ATTACHMENT. CHESTER A. THORNTON, Kaintuck, Idaho, assignor of one-half to William R. Thornton, same place. Filed Dec. 21, 1891. Serial No. 415,812. (No model.)



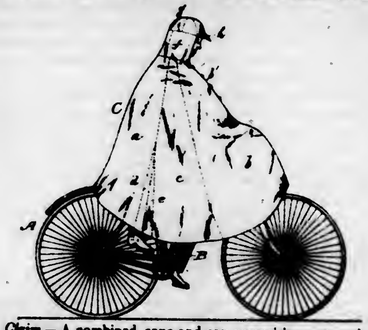
Claim.—1. The combination, with the plow-beam, of the removable arch secured at its inner end thereto and comprising an inner and an outer section, the latter pivoted on the former, means for locking the outer section, and a standard carrying a supporting-wheel pivoted to the outer section, substantially as specified.

2. The combination, with the plow-beam, of the inner and outer arch-sections, the latter having a curved slot and concentrically pivoted to the former, an adjusting-bolt passed through the former and through the slot of the latter and provided with a nut, the perforated standard carrying a supporting-wheel, and bolts for adjusting the standard to the outer arch-section, substantially as specified.

484,944. INHALER. MARY S. WOODWARD, Chicago, Ill. Filed July 18, 1892. Serial No. 440,416. (No model.)

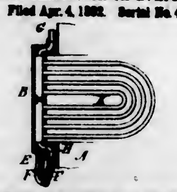
Claim.—In an inhaler, the combination of flaring pipe *a* with conical chamber *b*, divided by perforated diaphragm *c*, with circular cover *d*, provided with central opening *e* and rim *f*, turned inward around its edge, substantially as set forth.

484,945. COMBINED CAPE AND CAP. ALBERT T. ALDRICH, Worcester, Mass. Filed May 16, 1892. Serial No. 433,103. (No model.)



Claim.—A combined cape and cap comprising a sleeveless cape close-fitting at the shoulder portions and having wide flaring skirts and a placket-opening in front, and a neck portion secured to the upper edge of the cape and provided with a front opening forming a continuation of the placket-opening in the cape, and a cap secured to the neck portion, substantially as set forth.

484,946. STEAM GENERATOR OR EVAPORATOR. GEORGE W. BAIRD, U. S. Navy. Filed Apr. 4, 1892. Serial No. 427,771. (No model.)



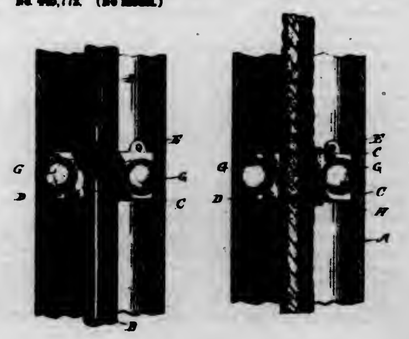
Claim.—1. In a steam generator or evaporator, the combination of the chambered door and the tubes attached thereto with the linked hinge, whereby the tubes will be removed when the door is swung open, substantially as shown and described.

2. In a steam generator or evaporator, the combination of the chambered door and the tubes attached thereto with the ports leading through the flange into the chamber, substantially as shown and described.

3. In a steam generator or evaporator, the combination of the chambered door and tubes attached thereto with the ports leading through the flange into the chamber with the linked hinge attaching the door to the generator, substantially as shown and described.

4. In a steam generator or evaporator, the combination of the chambered door, the tubes attached thereto with the circulating-cylinder supported on the tubes, and the linked hinge, substantially as shown and described.

484,947. ANTIFRICTION-CLASP. WILLIAM L. BLACK, Fort McKavett, Tex. Filed Oct. 12, 1891. Renewed Sept. 13, 1892. Serial No. 445,772. (No model.)

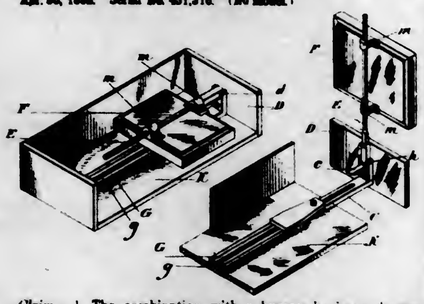


Claim.—1. An antifriction-clasp for inclosed traveling rods or ropes, said clasp having a series of friction balls or rollers mounted therein and projecting from the periphery thereof and being divided into sections adapted to be clamped at any point around the rod or rope, substantially as described.

2. An antifriction-clasp for inclosed traveling rods or ropes, said clasp having a series of friction balls or rollers mounted therein and projecting from its periphery and being divided into two sections hinged together at one side and having a fastening device at the other, whereby the clasp may be clamped at any point around the rod or rope, substantially as described.

3. An antifriction-clasp for inclosed traveling rods or ropes, formed in sections hinged together parallel with its axis and divided transversely into halves, the meeting faces of each section having half-sockets therein registering with those in the other section and forming spherical sockets, in combination with friction balls or rollers retained in said sockets and projecting from the sides of the clasp, substantially as described.

484,948. BUREAU. HERMAN H. CLARK, Philadelphia, Pa. Filed Apr. 30, 1892. Serial No. 431,316. (No model.)



Claim.—1. The combination, with a bureau having a drawer-space therein, of the channeled guide G, secured therein, the extension-arm C, working in said groove and provided with an intermediate supporting device *c*, the vertical supporting-bar E, hinged to said supporting device at right angles to the extension-arm C, and a mirror F, with supporting devices to adapt it to be adjustably reciprocated upon said supporting-post, substantially as described.

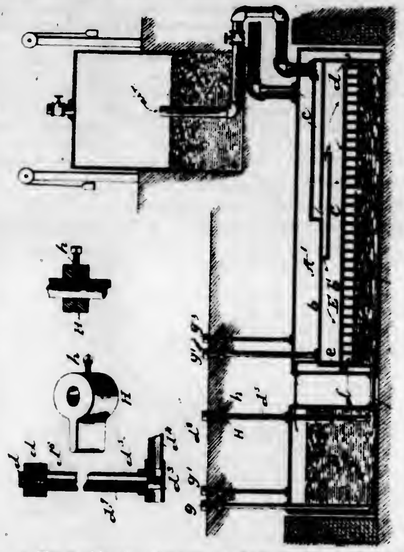
2. The combination, with a bureau having a drawer-space therein, of the base K of a false drawer, channeled guide G, secured thereto, the extension-arm C, working in said groove, and the drawer-front D, secured to said arm C, the vertical supporting-post E, hinged to the arm C, with an intermediate supporting-spring *c* between them, and the mirror F, with recessed supporting-brackets adapted to be vertically reciprocated upon said supporting-post, substantially as described.

484,949. CARBURETOR. JOHN CLINGMAN, Dayton, Ohio. Filed Feb. 4, 1892. Serial No. 420,261. (No model.)

Claim.—1. In a device for carbureting air, the combination, with the inclosing casing, of a carbureting-chamber within said casing, so constructed as to leave a space between the two surrounding the carbureting-chamber and constituting the carbureted-air chamber, the said carbureting-chamber having a liquid-receptacle, an air-chamber above said liquid-receptacle, having a series of outlets for discharging air within said liquid-receptacle, a hollow perforated disk for distributing the air, having outlet-passages discharging into the air chamber, and means for supplying air to said air-distributing disk, substantially as described.

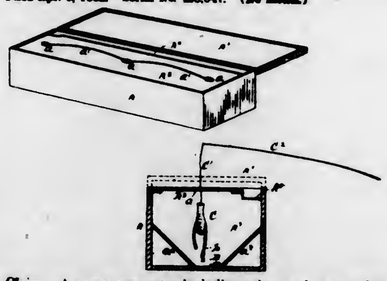
2. In a device for carbureting air, the combination, with the inclosing casing, of the carbureting-chamber within the same, so constructed as to leave a space between the two surrounding the carbureting-chamber and forming the carbureted-air chamber, said carbureting-chamber having a liquid-receptacle, an air-chamber above said liquid-receptacle, a series of discharge-pipes extending from said air-chamber to near the bottom of said liquid-receptacle, an air-distributing disk located within and having perforations discharging into said air-chamber, an air-supply pipe connected with said air-distributing disk, and openings in said liquid-receptacle communicating with said carbureted-air chamber, substantially as described.

3. In a device for carbureting air, the combination, with the carbureting-chamber, of a liquid-supply pipe for the same, located beneath the surface of the ground, a valve located in said pipe for controlling the liquid-supply, a valve-stem extending from said valve to a point adjacent to the surface of the ground, an inclosing casing for said valve-stem provided with a closing-cap, and a construction secured to said casing to prevent its movement in the ground when the cap is removed to give access to the valve-stem, substantially as described.



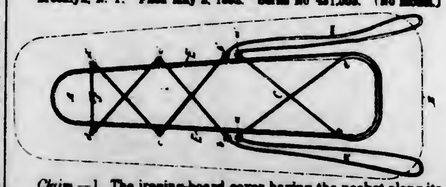
4. The combination of a carburetor adapted to be placed below the surface of the ground, a pipe leading thereto provided with a screw-threaded closing-cap, and a device for preventing the turning of said pipe, consisting of a part constructed to rigidly engage said pipe, having laterally-extending portions for engaging the surrounding earth, substantially as described.

484,950. GAME APPARATUS. EDWARD DUGGEY, Detroit, Mich. Filed Apr. 6, 1892. Serial No. 428,047. (No model.)



Claim.—A game apparatus including a box and a cover having slots and holes therein, in combination with a line having a magnet on the end thereof and figures provided with projecting metal attractable by said magnet, substantially as set forth.

484,951. COVER FOR IRONING-BOARDS. MARY S. EVERETT, Brooklyn, N. Y. Filed May 2, 1892. Serial No. 431,563. (No model.)



Claim.—1. The ironing-board cover having the pocket along its edges, combined with the cord passing along said pocket with its sections extending beyond each other and escaping from said pocket at opposite edges of the cover, substantially as and for the purposes set forth.

2. The ironing-board cover having the pocket and eyes along its edges, combined with the cord passing along said pocket with its sections extending beyond each other and then laced through said eyes, substantially as and for the purposes set forth.

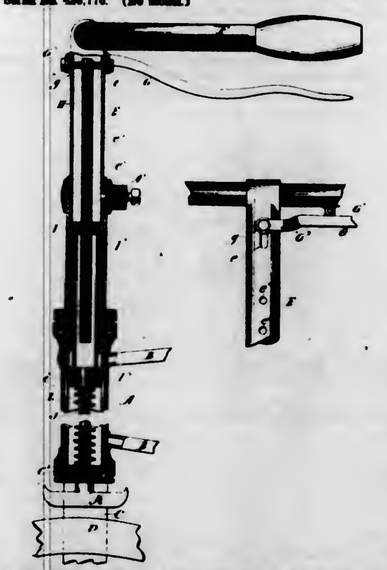
3. The ironing-board cover overlapping the edges of the board, combined with a draw-cord extending along the edges of the cover and leaving free ends to be tied together across the board, substantially as set forth.

4. The ironing-board cover having the eyes at opposite sides, combined with the draw-cord applied to the edges of the cover and laced through said eyes, leaving loops to be tied across the board, substantially as set forth.

484,952. WHEEL FOR CYCLES. RIBBON C. FAY, Ilion, N. Y., assignor to the Remington Arms Company, same place. Filed Mar. 28, 1892. Serial No. 426,775. (No model.)

Claim.—The combination, with a wheel-rim having a threaded opening in its inner periphery, of a removable threaded bushing inserted into the said opening and having its inner face concaved to form a socket and its outer face cut away for clearance, a spoke having its outer end threaded, and a threaded nipple applied to the said spoke and having its outer end shaped to fit the socket of the bushing, substantially as set forth, and whereby the nipple is free to accommodate itself in the bushing to the line in which the spoke is strained within the limits of movement afforded by the clearance-space formed by cutting away the outer face of the bushing.

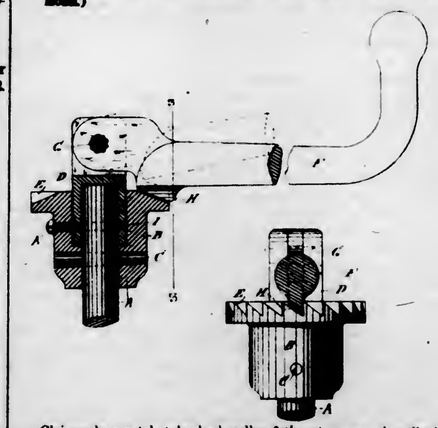
484,953. BICYCLE-BRAKE. RIBBON C. FAY, Ilion, N. Y., assignor to the Remington Arms Company, same place. Filed Mar. 28, 1892. Serial No. 426,776. (No model.)



Claim.—1. In a bicycle, the combination, with a steering-head, of a fork provided at its upper end with a plug which is inserted into the lower end of the said head and thereby secured thereto, a vertically-adjustable sleeve located in the upper end of the said head, a handle-bar mounted on the upper end of the said sleeve, an operating-lever pivoted to the said handle-bar, an adjustable rod located within the said sleeve and head, pivotally connected at its upper end with the inner end of the said lever and having its lower end threaded, a coupling-tube located within the said head and longitudinally movable therein, a nut located in the upper end of the said tube to receive the threaded lower end of the adjustable rod, a guide-block attached to the lower end of the tube and fitting within the head, a brake-rod located within the lower end of the said head and having its inner end flexibly connected with the said guide-block and its outer end passed through the plug of the steering-fork, a brake-shoe attached to the projecting outer end of the said brake-rod, and a spring encircling the said rod and interposed between the said guide-block and the plug of the fork for holding the shoe in a normally-retired position, substantially as set forth.

2. In a bicycle, the combination, with a steering-head, of a fork provided at its upper end with a plug which is inserted into the lower end of the said head and thereby secured thereto, a vertically-adjustable sleeve located in the upper end of the said head, a handle-bar mounted on the upper end of the said sleeve, an operating-lever pivoted to the lower face of the handle-bar and constructed at its inner end with a yoke, an adjustable rod located within the said sleeve and head, a transverse pin connecting the arms of the said yoke with the upper end of the said rod and passing through elongated slots formed in the upper end of the sleeve to receive its ends, a coupling-tube located within the said head and longitudinally movable therein, a nut located in the upper end of the tube to receive the lower end of the adjustable rod, which is threaded, a guide-block attached to the lower end of the tube and fitting in the head, a brake-rod located within the lower end of the said head and connected with the said guide-block by a transverse pin entering the same and having bearing at its outer end in the plug of the fork, a brake-shoe attached to the projecting outer end of the said rod, and a spiral spring encircling the said rod and interposed between the said guide-block and the plug of the fork for holding the brake-shoe in a normally-retired position, substantially as described.

484,954. BRAKE-HANDLE. ROBERT L. FOSDICK and JOHN F. HILLMAN, St. Louis, Mo. Filed Feb. 4, 1892. Serial No. 420,207. (No model.)



Claim.—In a ratchet brake-handle of the character described, the combination, with the brake-shaft, of a ratchet head-piece bored out concentrically to two different diameters fitted and rigidly secured to the brake-shaft, the upper end of said brake-shaft projecting into the relatively-enlarged hollow space in said head-piece, and a hollow pivotal ping to which the handle is pivotally secured, revolubly fitted in said relatively-enlarged hollow space within the said head-piece and around the inwardly-projecting end of said brake-shaft, combined and operating substantially in the manner and for the purposes specified.

484,955. LIQUID-COOLER. HORACE C. GARDNER, Chicago, Ill., assignor to himself and Gustavus F. Swift, same place. Filed Nov. 20, 1890. Serial No. 372,000. (No model.)

Claim.—1. In an apparatus for cooling fluids, the combination, with a tank for containing water, of a pipe coiled into spiral form

and arranged horizontally to be partially immersed in the water in the tank, said coiled pipe having its end portions extended into journals, pillow-blocks or supports for the said journals, and means for rotating the coiled pipe, substantially as described.

2. In an apparatus for cooling fluids, the combination of a water-tank, a coiled pipe partially immersed in the water in the tank, pillow-blocks or supports for the end portions of the coiled pipe, means for rotating the coiled pipe, and an air-pipe for delivering air longitudinally along the portion of the coiled pipe which is exposed to the atmosphere, substantially as described.

484,956. WASH-STAND. Gunnar H. Gunn, Grand Rapids, Mich. Filed June 24, 1891. Serial No. 397,284. (No model.)

Claim.—1. In a wash-stand, a bowl having an annular flange on the bottom, a central discharge-opening, a sink or cup having a flange adapted to encircle the flange on the bowl, and a central flaring opening beneath the opening in said bowl, and a pipe or goose-neck having a flared upper end resting in said opening in the sink and engaging the opening in the bottom of the bowl, whereby said parts are removable, substantially as described.

2. The combination of the stationary bowl and a swinging tank having arms pivoted at each side of said bowl, one of which arms is tubular and extends from the bottom of the tank to the top of the bowl, substantially as described, whereby when said tank is swung upward its contents may flow into said bowl through said hollow arm.

3. The combination, with a wash-bowl, of a tank having arms embracing and pivoted at each side of said bowl, one of which arms is tubular, connects at its lower end with the bottom of said tank, and has a T-head overhanging the bowl at its inner end and serving as a pivot at its outer end, substantially as described.

4. The combination, in a wash-stand, of the casing, a stationary bowl therein, a discharge-spout leading from the lower end of said bowl, a valve for closing said discharge-pipe, and a swinging tank having arms pivoted at each side of said bowl, one of said arms being tubular and serving as a spout to conduct the contents of the tank into the bowl when said tank is elevated.

5. In combination with a wash-bowl, a tank having arms pivoted at each side of said bowl, one of said arms being adapted to serve as a spout to conduct the contents of the tank into the bowl when the tank is elevated, a table or frame within which said parts are located, and a gravity-latch pivoted to said tank and adapted to engage the table or frame and hold the tank in its elevated position.

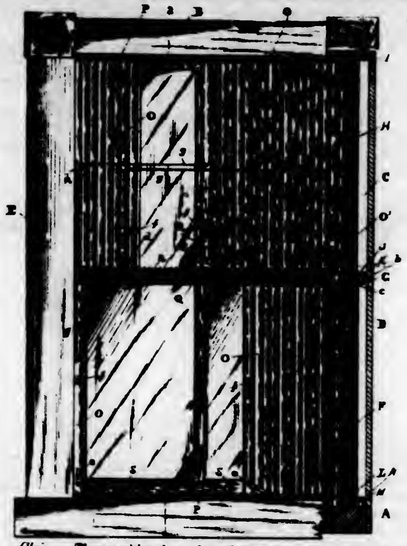
6. The combination of the table or frame A, stationary bowl D, having a discharge-opening in its lower end, exit-spout G, leading from the lower end of said bowl, a swinging tank located in said frame beside said bowl, and a gravity-latch pivoted to said tank and adapted to engage said table or frame and hold the tank in its elevated position.

7. The combination of the table or frame A, stationary bowl D, having a discharge-opening in its lower end, and an exit-spout G, leading from said discharge-opening, with a tank located in said frame beside said bowl, arms rigidly secured to said tank at their inner ends and pivoted to said frame at their outer ends, one of said arms being tubular and adapted to serve as a spout to conduct the contents of the tank into said bowl when said tank is elevated, and a latch for holding said tank in its elevated position.

8. The combination, with the bowl having an annular flange on its bottom and a central discharge-opening, of a sink or cup having a flange adapted to encircle the flange on the bowl and a suitable opening through it, said sink or cup being removably engaged with said bowl, and a removable goose-neck having its flared upper end inserted through said opening in the sink and engaging the opening in the bottom of the bowl, all substantially as described.

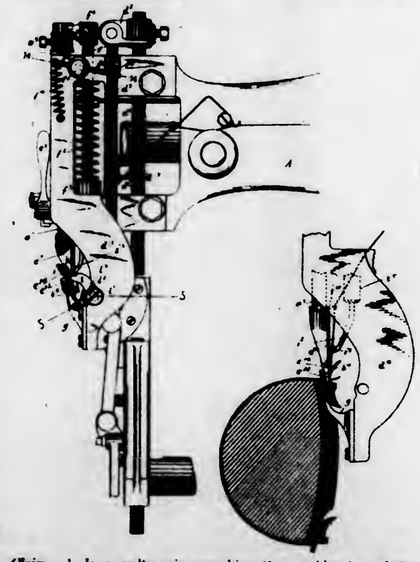
9. The combination, with the frame having an upper and a lower compartment, of a bowl removably located in said upper compartment and having a central discharge-opening and an annular flange, a sink having a flange adapted to encircle the flange on the bowl and a suitable opening through it, said sink or cup being removably engaged with said bowl, a removable goose-neck extending from said bowl into the lower compartment and having its upper end flared and inserted through said opening in the sink and engaging the opening in the bottom of the bowl, and a waste-basket at the discharge end of said goose-neck.

484,957. BLIND WINDOW-BLIND. John W. T. Gillian, Baltimore, Md. Filed Apr. 20, 1892. Serial No. 431,305. (No model.)



Claim.—The combination of a window frame or casing having horizontal slideways, one side of one of which constitutes a rack, a spring-roller mounted vertically in bearings at one side of the said window-frame, a flexible blind secured to and winding on said roller and fitting said horizontal slideways of the window-frame, and a pawl carried by the flexible blind and adapted to automatically engage the said rack, and thereby hold the blind at various positions to which it may be drawn out against the action of the spring-roller.

484,958. BOOT OR SHOE SEWING-MACHINE. Charles S. Goodine, Brookline, and Thomas K. Keith, Boston, Mass., assignors to the Seaver Sewing-Machine Company, of Maine. Filed Nov. 20, 1891. Serial No. 412,515. (No model.)

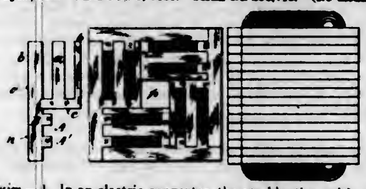


Claim.—1. In a welt-sewing machine, the combination of the stitch-forming mechanism including an oscillating curved needle, a welt-guide arranged to guide the welt to the needle, a presser-foot arranged to bear directly on the welt between the welt-guide and needle at a point where the welt bears directly on the upper, and a channel-gage arranged to support the work against the downward pressure of the presser-foot, as set forth.

2. In a welt-sewing machine, the combination of the stitch-forming mechanism including an oscillating curved needle, a welt-guide arranged to guide the welt to the needle, and a presser-foot formed to bear on the welt between the needle and welt-guide and provided with an arm or offset formed to bear on the welt-guide, as set forth.

3. In a welt-sewing machine, the combination of the stitch-forming mechanism including an oscillating curved needle, a welt-guide arranged to guide the welt to the needle, a presser-foot formed to bear on the welt between the needle and welt-guide and provided with an arm or offset formed to bear on the welt-guide, and mechanism, substantially as described, for locking the presser-foot, as set forth.

484,959. ELECTRIC CONVERTER. Ludwig Gutmann, Fort Wayne, Ind. Filed Feb. 5, 1889. Serial No. 298,712. (No model.)



Claim.—1. In an electric converter, the combination, with energizing-coils, of a core composed of superposed insulated plates and a conductor connecting electrically plates separated from one another by others.

2. In an electric converter, the combination, with primary and secondary coils, of a core composed of superposed metallic plates separated by insulation, one or more conductors connecting electrically plates separated from one another by others.

3. In an electric converter, the combination, with primary and secondary coils, of a core composed of superposed plates, one or more conductors connecting electrically plates separated and insulated from one another by others, and means for connecting one or more of said sets of connected plates to ground.

4. In a magnetic core for electric converters or generators, the combination of plates provided with perforations or recesses and extensions providing means for an electric connection.

5. In a system of distribution, the combination, with a suitable source of electricity, of a converter having one or more primary coils in circuit therewith, one or more secondary coils in circuit with translating devices, and a core for said converter some of whose plates are electrically connected with one another.

6. In a system of electrical distribution and in combination with a suitable source of alternating, pulsating, or intermittent electric currents, a converter having the energizing coil or coils connected with said source, the secondary coil in circuit with translating devices, and a core having some of its plates connected electrically to one another and to ground.

7. In an electric converter, the combination, with primary and secondary conductors, of a core divided into two or more sets of plates, a plate of one set placed alternately with one or more plates of another set, and electric conductors connecting electrically the plates of one set or more.

8. In an electric converter, the combination, with primary and secondary coils, of a subdivided core whose laminæ are insulated from one another, and an electric conductor connected to some of said laminæ.

9. In an electric converter, the combination, with primary and secondary energizing-coils, of a laminated core common to both and one or more conductors connecting alternate plates with one another.

10. In an electric converter, the combination, with primary and secondary energizing-coils, of a laminated core common to both and one or more conductors each connecting two or more plates separated from one another by other plates and insulated from the latter.

11. In a system of distribution, the combination, with a suitable source of electricity, of one or more converters having each one or more primary coils in circuit with said source, one or more secondary coils in circuit with translating devices, and a laminated core, some of whose elements are electrically connected with one another.

12. In a system of distribution and in combination with a suitable source of electricity, an electro-magnetic translating device having a laminated core and one or more windings, one of the latter in circuit with said source, and an electric conductor connecting two or more laminæ insulated from others and surrounded by said windings to one another.

13. In a system of distribution and in combination with a suitable source of electricity, an electro-magnetic translating device having a laminated core and one or more windings, one of the latter being in circuit with said source, and an electric conductor connecting two or more laminæ insulated from others and surrounded by said winding to one another and to ground.

14. In an electric converter, a core therefor consisting of a plate or shank *c*, having three projections *b a b* in one direction from the shank and one projection from the same shank in a different direction from that of the said three projections.

15. In an electric converter, the combination of primary and secondary coils and a core consisting of plates of iron, each plate having the combination of a shank provided with three projections, and a fourth projection which itself has two extensions A and A', both pointing in the same direction.

16. In an electric converter, a core consisting of the combination of plates formed in layers and the layers superposed, each layer having two or more plates, three of the projections of one plate overlapping the end of one projection of another, and electric coils, primary and secondary, inserted in the spaces between the projections.

17. In an electric-converter system, the combination of primary and secondary windings, a core for said windings, one or more ground plates or terminals located in said converter and insulated from the high-tension winding, a second earth plate or terminal located externally of said converter, making contact with the earth, and a conductor connecting the inclosed ground-terminal with the external earth-terminal.

18. In an electro-magnetic device, the combination, with a winding or windings, of a subdivided core, a ground-terminal, and an electric conductor connected electrically to one or more core laminæ and to said ground-terminal.

19. In an electric converter, a core composed of superposed plates and one or more interposed plates of metal of good conducting material between the said plates and connected to ground.

20. An electric converter consisting of separated plates of iron arranged around a common center, coils passing through said plates, the axes of two of the coils being parallel to each other and at an angle to the axes of the remaining coils and all the plates of one layer lying in the same plane.

484,960. GYROSCOPIC TOP. John J. Hardy, Chicago, Ill., assignor of one-half to Christian Repp, same place. Filed Jan. 19, 1892. Serial No. 418,548. (No model.)

Claim.—1. The gyroscopic top described, comprising an outer continuous shell having a rounded or spherical head projecting therefrom and rigid therewith and a top mounted therein with its axial rotative shaft in line with said projecting head, said shaft extending through the shell at a point opposite the head and being provided externally to the shell with a rigidly-attached spool or drum for a spinning-cord, substantially as described.

2. The gyroscopic top described, comprising an outer continuous shell having a rounded or spherical head projecting therefrom and rigid therewith and a top mounted therein with its axial rotative shaft in line with said projecting head, said shaft extending through the shell at a point opposite the head and being provided externally to the shell with a rigidly-attached spool or drum for a spinning-cord and an axial bearing-point at the outer end of the spool, substantially as described.

484,961. HOSE-PIPE CARRIER. James M. Harper, Peoria, Ill. Filed Jan. 7, 1892. Serial No. 417,941. (No model.)

Claim.—1. In a hose-carrier, the circular clamp A, provided with perforated lugs at its free ends, and having the screw *b*, carried in the said perforations, as a clamping means, and having the hand-hold A', substantially as described.

provided with the hooks A" A", all substantially as described and set forth.

2. The combination, in a hose-clamp, of the clamp A, provided with suitable lugs at its extremities, perforated, and one of the same threaded, with the hand-hold B, provided with the hook B', and with the hand-hold provided with the perforation designed to bear, in connection with the perforations in the lugs, upon the clamp A, and the screw *b*, designed to secure the parts together and to provide a clamping means, all substantially as described and set forth.

484,962. ATTACHING WINDOW-SHADES TO ROLLERS.

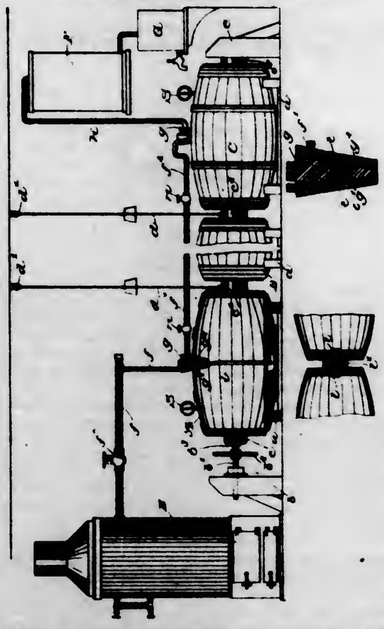
Benno F. Hagenbuch, Newark, assignor to Stewart Hartshorn, Short Hills, N. J. Filed Mar. 11, 1891. Serial No. 384,553. (No model.)

Claim.—1. In a fastening for attaching shades to rollers, the two pieces fastened together and lapping one upon the other to form jaws to receive and retain the edge of a shade between them, said pieces being of substantially-corresponding curvature to each other and adapted to be secured to a shade-roller the upper piece being extended back of the lower piece to embrace the roller, whereby the forward end of said piece will be closed down upon the lower piece, substantially as and for the purposes described.

2. In a fastening for attaching shades to rollers, the metal pieces A B, lapping one upon the other and hinged together, so as to open and receive the edge of the shade between the hinged jaws thus formed, said pieces being adapted to be sprung on the roller, thereby to press the jaws together to grasp and hold the shade between them, substantially as described.

484,963. APPARATUS FOR AND METHOD OF RECOVERING WASTE ALCOHOL FROM LIQUOR-CASKS.

Michael Hickey, Boston, Mass. Filed Aug. 5, 1892. Serial No. 442,379. (No model.)



Claim.—1. In an apparatus for recovering waste alcohol from empty liquor-casks, a steam-generator, a series of supports to sustain the casks to be treated, connections between the casks, and a connection between the generator and the series of casks, combined with a condenser and a connection between it and said casks, whereby the heating medium passes from the generator through all of the casks successively to the condenser to volatilize and carry over the alcohol absorbed by the wood of said casks, substantially as described.

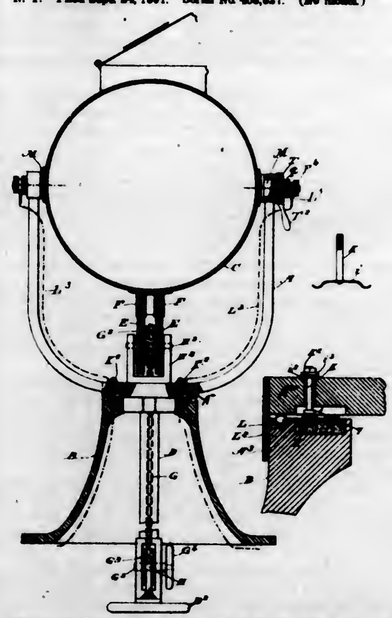
2. In an apparatus for recovering waste alcohol from empty liquor-casks, a steam-generator, a series of head-blocks in alignment to receive the casks therebetween, and abutments at the ends of the series, a bung for each cask having an inlet and an outlet passage, connections between the outlet-passage of one and the inlet-passage of the next cask, and a connection between the generator and casks, combined with a condenser connected to the endmost of the several casks and a pressure-regulator carried by one of the abutments to adjust the external pressure on the heads of the casks, substantially as described.

3. The herein-described method of recovering waste alcohol from empty liquor-casks, which consists in circulating a heating medium through and in direct contact with the interior of the cask, volatilizing the contained alcohol and partially condensing the medium, withdrawing the medium and combined volatilized alcohol, and condensing the same, continuing the operation until all the alcohol has been recovered, substantially as described.

4. The herein-described method of recovering waste alcohol from empty liquor-casks, which consists in circulating a heating medium through successive casks of a series and simultaneously cooling their exteriors, volatilizing the contained alcohol, condensing the medium and combined volatilized alcohol, and distilling the product, continuing the operation until no more alcohol is obtained, and recovering the water of condensation in each cask as a by-product, substantially as described.

484,964. ELECTRIC SEARCH-LIGHT.

Louis Hilia, New York, N. Y. Filed Sept. 24, 1891. Serial No. 406,627. (No model.)



Claim.—1. In a projector or search-light, the combination, substantially as described, of the horizontally-rotatable frame, the projector pivoted thereon to swing in a vertical plane, a gear wheel or wheels carried by said frame, a segmental gear upon the bottom of the projector, engaging directly with said wheels, and an operating chain or cord passing over a wheel upon the same shaft with said gear-wheel and extending down beneath the support for said rotatable frame, as and for the purpose described.

2. The combination, with the projector pivoted to turn in a vertical plane, of a horizontally-rotatable frame carrying the same, a gear wheel or wheels mounted on a horizontal shaft on said frame and engaging directly with a segment upon the projector, a stem or rod extending downward from said rotatable frame for rotating the same, a wheel mounted upon said stem to turn in a vertical plane, and a chain or cord connecting the same with a wheel attached to the shaft of said gear-wheel.

3. In a projector or search-light, the combination, substantially as described, with the vertical stem or rod extending downward from the horizontal rotatable frame, of a wheel mounted at the lower end thereof to turn in a vertical plane, a chain or belt passing around the

same and connected with mechanism for turning the projector in a vertical plane, and a catch or lock engaging with said wheel or belt, as and for the purpose described.

4. The combination, substantially as described, in a search-light or projector, of rings I I, mounted upon the upper face of a support or standard, but insulated therefrom, a rotatable support for the projector, carrying rods K, passing down through openings provided with insulating bushings in the said frame, plate-springs *i*, attached directly to the lower ends of said stems and bearing upon the rings, and clamping devices at the upper ends of said stems or rods, as and for the purpose described.

5. In a search-light or projector, the combination, with the pivots therefor, of binding-posts projecting from the ends of said pivots, but insulated therefrom, as and for the purpose described.

6. The combination, with an electric search-light, of the hollow pivots M and binding-posts projecting from the ends of said pivots and having a stem or shank arranged in line with the opening through the pivot, as and for the purpose described.

7. The combination, in a search-light or projector, of the hollow pivots M, binding-posts P, having flanges P^2, and the insulating-bushings R, as and for the purpose described.

8. The combination, with the hollow pivot M, of a binding-post P, projecting from the end of the pivot in line with its axis and having the threaded shank P^3, seated in the insulation R, a flange P^2, and a binding-nut P^4.

9. The combination, in an electric search-light, of the rotatable frame carrying the pivoted projector, suitable binding-posts or clamps mounted on the base of said frame and in electrical connection with traveling or movable contacts engaging with contacts upon the support for the apparatus, insulated binding-posts secured upon the projecting ends of the pivots for the projector, and flexible electrical conductors having their terminals clamped, respectively, by the latter binding-post and by the post carried on the base of the frame.

484,965. TABLE.

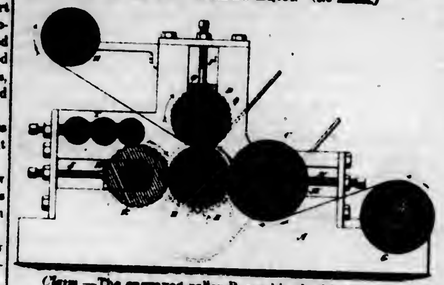
John B. Jordan, Baltimore, Md., assignor to The Jordan Multiplex Table Manufacturing Company, same place. Filed July 21, 1892. Serial No. 440,739. (No model.)

Claim.—1. In a table, the combination of a pedestal, a rectangular-shaped central top part fixed rigidly on the pedestal, four leaves, each hinged to a different one of the rectangular sides of the said central top part, four brace-bars F, each bar having one end attached to a different leaf by a pivot *g*, and each of said bars having a longitudinal slot extending to its other end and said slot provided at each extremity with a lateral or upward extending offset h' h^2, and a screw *i*, passed through the slot of each bar and into the side of the pedestal.

2. In a table, the combination of a pedestal, a rectangular-shaped central top part fixed rigidly on the pedestal, four leaves, each hinged to a different one of the rectangular sides of the said central top part, four brace-bars F, each being pivoted to a main leaf nearer to one end of the leaf than the other, and each of the four brace-bars extending past a different side of the pedestal, an auxiliary leaf hinged to each main leaf at the end thereof most remote from the brace-bar, and stop devices on the several sides of the pedestal, co-acting with the brace-bars and serving when said bars are extended to prevent them from retracting.

484,966. MACHINE FOR THE MANUFACTURE OF LACE-PAPER.

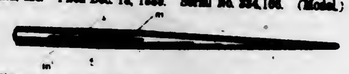
Reuben Kaspar, New York, N. Y., assignor, by mesne assignments, to the Kartiel Lace Paper Company, same place. Filed Aug. 27, 1890. Renewed Apr. 12, 1892. Serial No. 428,781. (No model.)



Claim.—The engraved roller B, combined with the cutting-roller C, the embossing-roller D, and the ink-roller E, the said rollers being arranged to first cut and then emboss and ink the paper passing over the roller B, substantially as and for the purposes set forth.

484,967. PERFORATED PENHOLDER.

Frederic M. Libby, Portland, Me. Filed Dec. 12, 1889. Serial No. 334,166. (Model.)

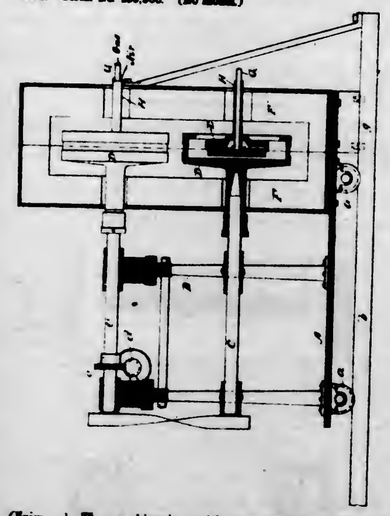


Claim.—1. As an improved article of manufacture, a penholder of homogeneous material, slitted transversely for a portion of its length and slitted longitudinally in the parts lying between the series of transverse slits, whereby increased elasticity and durability to the holder are imparted by obtaining flexibility in two directions, as herein set forth.

2. As an improved article of manufacture, a homogeneous penholder made hollow for a portion of its length and provided with short transverse slits, combined with a longitudinally-slitted plug to fit into the outer end of said hollow portion, and said hollow portion having, also, longitudinal slits, as herein set forth, and for the purposes specified.

484,968. APPARATUS FOR HARDENING STRIPS OF METAL.

John Logan and Milton H. Stevens, Waltham, Mass. Filed Oct. 30, 1891. Serial No. 409,860. (No model.)



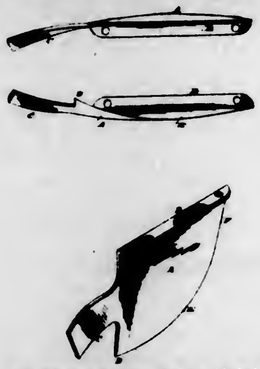
Claim.—1. The combination, with a divided housing provided with openings for the passage of a strip or ribbon of material, of one or more revolving drums, each having a burner within it arranged within the housing, as set forth.

2. The combination, with a divided housing provided with openings for the passage of a strip or ribbon of material, of one or more

revolving drums, each having a burner within it arranged within the housing, and a movable carriage with which a divided part of the housing is connected, as set forth.

3. The combination, with a divided housing provided with openings for the passage of a strip or ribbon of material, of one or more revolving drums, each having a burner within it arranged within the housing, an apron or table over which the strip of material passes, and a pipe for discharging a continuous stream of oil or other liquid upon the material, as set forth.

484,969. HARROW AND PULVERIZER BLADE. RICHARD L. LOCKRIDGE, Peoria, Ill. Filed Feb. 16, 1892. Serial No. 421,899. (No model.)



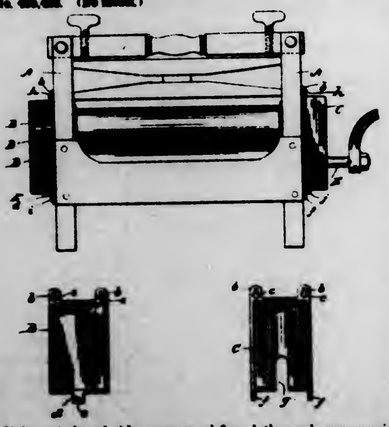
Claim.—1. In a pulverizing-blade, the thin blade having a general triangular shape and curved throughout its main portion and coming to a rounded point in front and cut off square at the back portion to the central portion, from which central portion projects the leveling-tail curved backward, substantially as described.

2. A blade for pulverizing-harrows and the like, having the main portion curved outward and widening from the lower portion to the heel and straight at the upper portion, having the tail projecting from the center of the heel, curved backward, substantially as described.

3. A blade for pulverizing, having the main blade portion curved throughout and widening from the point to the heel and having the leveling-tail projection from the central portion of the heel, substantially as described.

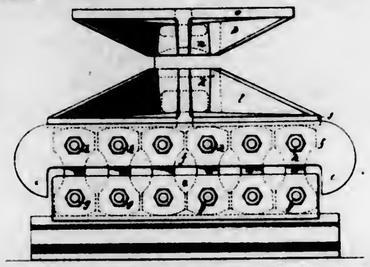
4. In a pulverizing-blade, the main portion of the blade, triangular in general form and curved throughout its entire length and having the spiral tail projection from the heel and having a flange at the upper portion of the blade, substantially as described.

484,970. GEAR-GUARD FOR WRINGERS. LOUIS MOSHURG and WILLIAM F. DALLMANN, Milwaukee, Wis. Filed June 3, 1892. Serial No. 435,020. (No model.)



Claim.—A detachable gear-guard for clothes-wringers, consisting of a box-like device open at one side and provided with keyhole-hangers for engagement with pins on a wringer-frame and a depending leg for loose engagement with a retaining device on said wringer frame, substantially as set forth.

484,971. EXPANSION-BEARING FOR BRIDGES. GEORGE S. MORISON, Chicago, Ill. Filed May 31, 1892. Serial No. 435,061. (No model.)



Claim.—1. In an expansion-bearing, in combination, a base-plate, a series of rollers resting thereon, two bearings surmounted upon said series of rollers, and a rocker-plate interposed between said bearings, substantially as described.

2. In an expansion-bearing, in combination, a base-plate, a series of rollers resting thereon, two bearings surmounted upon said series of rollers, and a rocker-plate interposed between said bearings, said rocker-plate being provided with cylindrical upper and lower bearing-surfaces, respectively, at right angles with each other, substantially as described.

3. In an expansion-bearing, in combination, a base-plate composed of a series of parallel T-rails secured together, a series of segmental rollers resting transversely upon said rails in such position that their vertical diameters exceed the horizontal distance between their centers, and a bearing-plate resting upon said rollers, substantially as described.

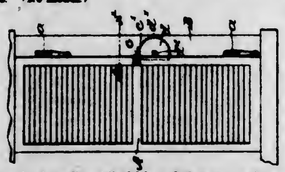
4. In an expansion-bearing, in combination, a base-plate, a series of rollers resting thereon, two parallel or approximately-parallel plates journaled to the ends of said rollers on opposite sides of the centers thereof, and a bearing-plate resting on the tops of said rollers, substantially as described.

5. In an expansion-bearing, in combination, a base-plate, a series of rollers resting thereon, two parallel or approximately-parallel plates journaled to the ends of said rollers on opposite sides of the centers thereof, and a bearing-plate resting on the tops of said rollers, one of said end plates being provided with a projection overlapping the other, substantially as described.

6. In combination, two bearings and a rocker interposed between the same, said rocker being provided on opposite sides with cylindrical bearing-surfaces, respectively, at substantially right angles with each other, as set forth.

7. In an expansion-bearing, in combination with the rollers thereof, two plates, one provided with a projection overlapping the other, and connections between said plates and rollers, whereby the movement of the rollers causes the plates to move with respect to each other, substantially as described.

484,972. SHUTTER-WORKER. CHARLES F. HICKMOTT, Reading, and LINDLEY M. FLINT, Boston, Mass. Filed Sept. 1, 1891. Serial No. 404,266. (No model.)



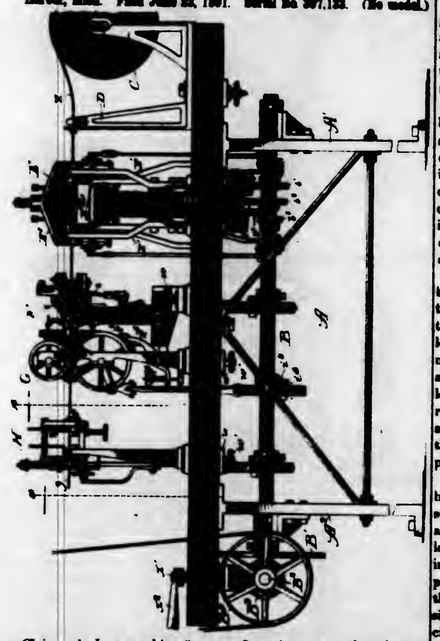
Claim.—1. A wall, a blind hinged thereto, and a curved rack attached to the inner edge of said blind, combined with a toothed sector mounted on a shaft journaled in said wall, the pitch-line of the teeth of said sector and rack extending farther from said wall at one point than another, substantially as and for the purpose set forth.

2. The combination, with a shaft extended through the wall of a building and a blind operated thereby, of a support *f* for the inner end of said shaft, having legs f^x, substantially as described.

3. The combination, with a shaft extended through the wall of a building and a blind operated thereby, of a support for the inner end of said shaft, the lever *e*, inclined faces e^2, recess e^3, and pawls *f* and f^3, substantially as described.

4. A wall, a blind hinged thereto, and a curved rack attached to the inner edge of said blind, combined with a toothed sector mounted on a shaft journaled in said wall, the said sector at one side of its center being thinned and thereby made wedge-shaped to permit the blind to swing close against the wall without removing any of the material of the blind, substantially as described.

484,973. TAG-MAKING MACHINE. ALFRED C. HOUCK, Benton Harbor, Mich. Filed June 22, 1891. Serial No. 397,133. (No model.)



Claim.—1. In a machine for manufacturing tags and analogous articles from a continuous web, the combination, with the main frame and driving-power, of intermittingly-actuated web feed and cutting mechanisms on the said frame connected with the driving-power, washer-applying mechanism connected with the driving-power, and a support for the said washer-applying mechanism, mounted upon the said frame and adjustable thereon crosswise of the frame, substantially as described.

2. In a machine for manufacturing tags and analogous articles from a continuous web, the combination, with the main frame and driving-power, of intermittingly-actuated web feed and cutting mechanisms on the said frame connected with the driving-power, washer-applying mechanism connected with the driving-power, and a support for the said washer-applying mechanism, mounted upon the said frame and adjustable thereon crosswise of the frame and to different angles with relation to the frame, substantially as described.

3. In a washer-applying and eye-forming mechanism, the combination, with the support and driving-power, of co-operating levers connected with the driving-power carrying cutters and washer-compressing mechanism, a punch-die in one lever, a punch pivotally mounted upon the other lever and actuated by the driving-power to reciprocate into and out of the die, and intermittingly-acting washer-stock feed mechanism operated from the driving-power to feed the washer-stock to the cutters and punch, substantially as described.

4. In a machine for manufacturing printed tags or analogous articles from a continuous web, the combination, with the main frame and driving-power, of a printing-press on the frame operative to print upon the web, washer-applying, eye-forming, and web-severing mechanisms upon the frame, adjustable intermittent feed mechanism for the web, and a variable-speed mechanism between the printing-press and the mechanisms for feeding the web, forming the eye, applying the washer, and severing the web, substantially as described.

5. In a machine for manufacturing printed tags or analogous articles from a continuous web, the combination, with the main frame and driving-power, of a printing-press on the frame operative to print upon the web, washer-applying, eye-forming, and web-severing mechanisms upon the frame, adjustable intermittent feed mechanism for the web, and separable variable-speed mechanisms between the press and the mechanisms for feeding the web, applying the washer, forming the eye, and severing the web operative at will to change the speed of the press with relation to the other said mechanisms or to disconnect the press therefrom, substantially as described.

6. In a machine for manufacturing printed tags or analogous articles, the combination of a frame A, a shaft B, mounted on the frame and extending longitudinally thereof, a printing-press on the frame geared to the shaft and operative to print upon a continuous web, an adjustable intermittent feed for the web upon the frame geared to the shaft B, a washer-applying and eye-forming mechanism and a corner-cutting and tag-severing mechanism, each mounted upon and adjustable along the frame, and eccentrics on the shaft B, longitudinally adjustable thereon, with which the said mechanisms are connected, substantially as described.

7. In a washing-applying and eye-forming mechanism, the combination, with the support and driving-power, of a standard F^3 on the support, levers *l s*, fulcrumed on the standard connected with the driving-power and provided each with a cutter and washer compressing mechanism, an oscillating lever l^6, fulcrumed on the lever *l* and connected with the driving-power, carrying a punch which reciprocates through a guide on the lever *l*, a punch-die on the lever *s*, and intermittingly-acting washer-stock-feed mechanism operated from the driving-power to feed the washer-stock to the cutters and punch, substantially as described.

8. In a washer-applying and eye-forming mechanism, the combination, with the support and driving-power, of a standard F^3 on the support, levers *l s*, fulcrumed on the standard and carrying cutter-knives, a toggle-lever *d*, connected at its ends with the ends of the levers *l s*, a bell-crank lever s^3, fulcrumed on the support and connected at one arm with the toggle-lever joint and at the opposite arm with the driving-power, an oscillating lever l^6, fulcrumed on the lever *l* and connected with the driving-power, carrying a punch which reciprocates through a guide on the lever *l*, a punch-die on the lever *s*, and intermittingly-acting washer-stock-feed mechanism operated from the driving-power to feed the washer-stock to the cutter-knives and punch, substantially as described.

9. In a washer-applying and eye-forming mechanism, the combination, with the support and driving-power, of a standard F^3 on the support, levers *l s*, fulcrumed on the standard and provided each with a cutter and washer compressing mechanism, a punch-die on the lever *s*, a punch mounted on the lever *l* and operated from the driving-power to reciprocate through a guide on the lever *l* into the punch-die, and mechanism for feeding the webs of washer-stock to the cutters and punch, comprising friction-rollers engaging opposite sides of the webs, ratchet-wheels connected with the rollers, and reciprocating rods mounted in guides on the standard connected with the driving-power and carrying pawls to engage the ratchet-wheels and turn them and the feed-rollers intermittingly, substantially as described.

10. In a washer-applying and eye-forming mechanism, the combination, with co-operating levers carrying the cutter-knives and punch and with the intermittent feed mechanism for the webs of gummed washer-stock Y Y', of guides r^4 for the outer surfaces of the said webs and guide-blades r^5 for the inner gummed surfaces thereof, and a gum-softening medium between the guide-blades r^4, substantially as and for the purpose set forth.

11. In a machine for manufacturing tags and analogous articles from a continuous web, the combination, with the main frame and drive-shaft, of intermittingly-operated feed mechanism mounted in a frame adjustable upon the main frame crosswise thereof and comprising the feed-rollers *k' P*, a ratchet-wheel connected with the roller *k'* and a pawl-carrying lever to engage the ratchet, connected eccentrically with the drive-shaft, substantially as described.

12. In a machine for manufacturing tags and analogous articles from a continuous web, the combination, with the intermittent feed mechanism for the web, of an eccentric I upon the driving-shaft of the machine and with which the feed mechanism is connected, comprising a collar i^2, secured upon the shaft, a revolving center i^7, pivotally secured near its periphery to the collar and provided with a central segmental opening i^3, through which the shaft extends, and an outer segmental opening i^3, through which it is adjustably secured to the collar by a bolt i^7, both segments describing an arc of which the said pivotal connections form the center, and a rim *i*, in which the center rotates, substantially as described.

13. In a machine for manufacturing tags and analogous articles from a continuous web, the combination, with the driving-shaft and intermittent feed for the web, of a gang-cutter comprising a stationary arm *f*, provided with the shearing-edge *f'*, a vertically-oscillating lever *g*, connected eccentrically with the driving-shaft and provided with the angular shearing-edge g^2, a shaft f^2, journaled on the arm *f*

and carrying a ratchet-wheel f^5, and a disk f^4, having a recess f^5 in its periphery, an oscillating lever f^7, fulcrumed on the shaft f^2 and connected with the driving-shaft, carrying a pawl to engage the ratchet-wheel intermittingly and turn the disk f^4 part of a revolution, and a step g^3 on the lever *g* to engage the periphery of the disk f^4 in each downward oscillation of the lever *f* to limit the descent thereof, substantially as and for the purposes set forth.

Claim.—In a crib, the combination of a bottom with folding ends and a folding side, having hollow posts at each end, hooks for attaching the bottom to a bed-rail, telescoping legs adapted to be received by and locked within the hollow posts, and with means for connecting the side to the ends, substantially as specified.

484,977. ELASTIC WOVEN FABRIC. MAX PRIOU, Paris, France. Filed Aug. 12, 1891. Serial No. 402,404. (Specimens.) Patented in Belgium May 16, 1891, No. 94,770, and in Germany Feb 20, 1892, No. 62,243.

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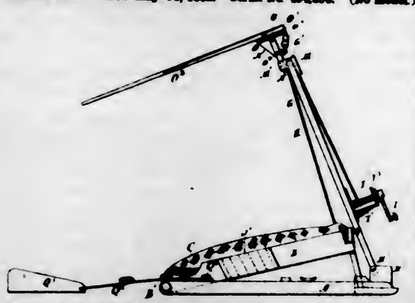
and carrying a ratchet-wheel f^3, and a disk f^4, having a recess f^5 in its periphery, an oscillating lever f^7, fulcrumed on the shaft f^6 and connected with the driving-shaft, carrying a pawl to engage the ratchet-wheel intermittingly and turn the disk f^4 part of a revolution, and a stop f^8 on the lever g to engage the periphery of the disk f^4 in each downward oscillation of the lever f to limit the descent thereof, substantially as and for the purpose set forth.

14. In a machine for manufacturing tags and analogous articles from a continuous web, the combination, with the main frame A and driving-shaft B, of power-transmitting and speed-regulating mechanism, comprising a friction-disk B' on the shaft B, a bar z, pivoted at one end to the frame A, hangers z' z^2 on the pivotal bar, a shaft B^2, journaled in the said hangers, carrying a drive-pulley B^3, a longitudinally-adjustable friction-pulley B^5 on the shaft B^2, and a lever-actuated eccentric on the frame A, connected with the bar z and operative at will to cause the pulley B^5 to engage or release the disk B', substantially as and for the purpose set forth.

484,974. INVALID'S ADJUSTABLE BACK-REST. John Parkin, Clinton, Conn. Filed May 31, 1892. Serial No. 434,856. (No model.)



Claim.—1. In an invalid's adjustable back-rest, the combination, with a body, of an upright hinged to the outer end thereof, a suspension-frame hinged to its inner end, a rope attached to the free outer end of the said frame and running over a pulley in the upper end of the upright, and a winch applied to the said upright for taking up and paying out the rope which is attached to it to raise and lower the suspension-frame as desired, substantially as described.

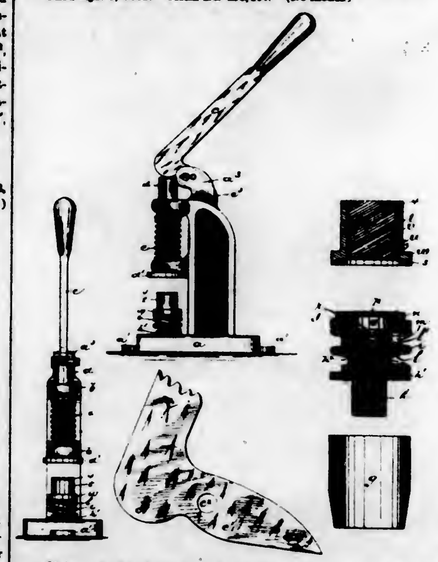
2. In an invalid's adjustable back-rest, the combination, with a body, of an upright hinged to its outer end, a suspension-frame hinged at its inner end to the inner end of the said body, adjustable connection between the free outer end of the frame and the upright, whereby the frame is raised and lowered as desired, and a tray-support constructed for removable attachment to the said body and comprising two arms, an open frame having the outer ends of the arms pivoted to its opposite ends to swing in the same plane with it, a table suspended at its ends within the said frame and adapted to support a tray, and means for locking the table at different inclinations within the said frame, substantially as described.

3. In an invalid's adjustable back-rest, the combination, with a body, of an upright hinged to the outer end thereof, a suspension-frame hinged at its inner end to the inner end of the said body, adjustable connections between the free outer end of the said frame and the upright, and a canopy-frame removably attached to the upper end of the upright and comprising a bifurcated post which enters a socket in the said upright, a vertical plate pivoted within the bifurcated end of the said post, a horizontal bearing-plate applied to the upper edge of the vertical plate, folding arms having their inner ends hinged and having bearing upon the upper face of the said bearing-plate, and means for coupling the said post and vertical plate in different inclinations of the latter, substantially as described.

484,975. FOLDING CRIB. James Perry, Brooklyn, N. Y. Filed May 26, 1892. Serial No. 434,402. (No model.)

Claim.—In a crib, the combination of a bottom with folding ends and a folding side, having hollow posts at each end, hooks for attaching the bottom to a bed-rail, telescoping legs adapted to be received by and locked within the hollow posts, and with means for connecting the side to the ends, substantially as specified.

484,976. BUTTON-MACHINE. Augustus Perlee, Newark, N. J. Filed Apr. 9, 1892. Serial No. 428,447. (No model.)



Claim.—1. In a button-machine, the combination, with the bed a and lever c, of a shaft d, the piece r, and its collar adapted to receive the covering disk and shell, and a die adapted to receive the collet, and having thereon a collar l, having a sliding relation thereto, and a slot m therein, and a pin or screw l', arranged in said die and extending into said slot to limit the movement of the collar, all substantially as set forth.

2. In a button-machine, the combination, with the recessed or perforated bed adapted to receive the shank h and having a standard a^2 and bearings b b, of a shaft arranged in said bearings, a lever fulcrumed on said standard and having a bearing on said shaft, a spring p for holding the shaft in its elevated position, a die removably arranged in the recess or perforation of the bed-plate and having a shank h, flange h', collet-head h^3, having the recess j and central recess k, a sliding collar l, held on said head by a pin or screw l', arranged in a slot m of said collar and having a bearing n, a spring i, arranged between the flange h' and bearing n, the said collar l being held by said spring above the recessed extremity of the collet-head, as shown, a piece r, having the shoulder 4 and vertical slot v, and a collar held on said piece by a set-screw u and having a flange to engage the bearing n to prevent lateral displacement, all substantially as and for the purposes set forth.

3. The combination, in a button-machine, with the standard having bearings a^2 and the shaft d and dies for assembling and uniting the parts of the button, of a lever c, having a foot c', providing a stop c^3, and a fulcrumal center or perforation c^2, disposed in said foot out of the line of the handle, and also a curved bearing c^4 in line with the handle, substantially as set forth.

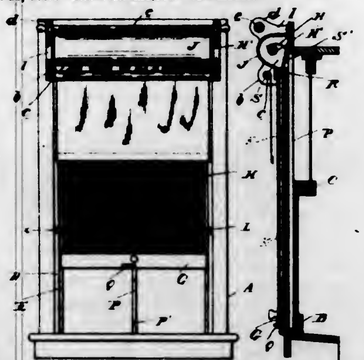
4. In combination, in a button-making machine, a bed and compression means, a collet-head and its collar separable from the bed and the shell-piece r, and its collar separable from the said compression means, both the collet-head and its collar and the shell-piece r and its collar being held together by pins l' u, respectively, when removed from the machine to admit of ready readjustment, substantially as and for the purposes set forth.

5. In a button-machine, substantially as described, the combination of a head having a shank h, adapted to be inserted in the bed-plate of the machine, a shoulder h', a collet-recess j, a collar l, sliding on said head and having a shoulder or bearing n, a spring interposed between said shoulders, and means for holding the head and collar together, and a shell-piece r and its collar, substantially as set forth.

484,977. ELASTIC WOVEN FABRIC. Max Prost, Paris, France. Filed Aug. 13, 1891. Serial No. 402,494. (Specimens.) Patented in Belgium May 16, 1891, No. 94,778, and in Germany Feb. 20, 1892, No. 62,243.

Claim.—A longitudinally-elastic woven fabric having a warp consisting of a series of yarns to which are given the ordinary amount of twist and a second series of yarns to which are given an excessive amount of twist, substantially as described, and a filling to which is given the ordinary amount of twist, substantially as set forth.

484,978. WINDOW-SCREEN. Jurgen Rasi, Jackson, Mich. Filed Apr. 30, 1892. Serial No. 430,993. (No model.)



Claim.—1. In a window-screen, the combination, with the supporting-roller and vertically-grooved side guides, of a foraminated screen on the roller and rollers mounted in the guides on opposite sides, having radial pins thereon projecting beyond the path of and through the screen as the latter is moved down, substantially as described.

2. In a window-screen, the combination, with a foraminated screen, of guiding and retaining rollers journaled at the sides of the screen and formed with a series of radial pins on their peripheries, arranged to engage and project through the edges of the screen, substantially as described.

3. In a window-screen, the combination, with a frame and screen, of vertical side guides for the screen and a series of rollers journaled in the guides on opposite sides, having radial pins on their peripheries, projecting into and across the path of the screen, substantially as described.

484,979. RETURN-AIR COOLER. Hugo R. Roelker, New York, N. Y. Filed Aug. 3, 1891. Serial No. 401,549. (No model.)

Claim.—1. In a dynamic refrigerating apparatus, a return-air cooler composed of an exterior shell, longitudinal tubes open at one end and closed at the other end, supported in said shell, a tube-head for supporting the open end of said tubes, a compartment at one end of said shell next to said tube-head, interior pipes open at both ends and extending into said tubes, and a tube-head in said compartment for supporting the interior pipes, substantially as set forth.

2. In a dynamic refrigerating apparatus, the combination of an exterior cylinder or shell, longitudinal tubes open at one end and closed at the opposite end, tube-heads for supporting said tubes, said tube-heads having openings, a compartment arranged at one end of the shell, interior pipes open at both ends and extending from the compartment into the longitudinal tubes, exterior longitudinal strips interposed between the longitudinal tubes, and interior longitudinal strips interposed between the outer tubes and interior pipes, so as to furnish a large number of small longitudinal channels or passage-ways

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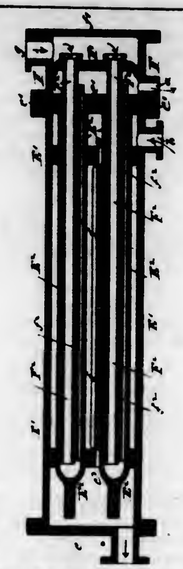
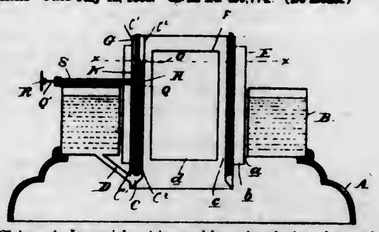


for the passage of the compressed air and of the return-air, substantially as set forth.

484,980. FLOUR-SIFTER. Loyd Scribner, Dalton City, Ill. Filed Jan. 18, 1892. Serial No. 418,362. (No model.)

Claim.—In sifters, the combination of sieve-band 1, having the flange 2, the loops 5, and the ring 6, the ring 3, encircling the band through the loops, the handle 4, connected with ring 3, and the agitator 7 8, slightly above the sieve-cloth and connected with the handle, as set forth.

484,981. WICK-RAISING DEVICE. Hugh L. Smith, Jackson, Mich. Filed July 12, 1892. Serial No. 439,774. (No model.)



Claim.—1. In a wick-raising and lowering device, the combination of the wick and the wick-raising sleeve upon which it is secured, of a U-shaped frame embracing the wick-raising sleeve at the lower end, a rack-bar on one arm of the frame, an offset portion engaging the top of the raising-sleeve on the other arm, and a pinion engaging the rack, substantially as described.

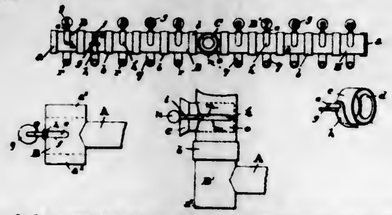
2. In a wick-raising and lowering device, the combination, with the oil-tube having a guideway therein, the wick-raising sleeve and wick secured thereto, the rack and spring-arm forming a U-shaped frame extending below the wick-raising sleeve at its lower end, the offset at the upper end of the spring-arm, engaging the top of the wick-raising sleeve, the pinion engaging the rack-bar, and the shaft for turning said pinion, substantially as described.

484,982. SPEAKING-TUBE. Leopold Strauss, Baltimore, Md. Filed July 6, 1892. Serial No. 439,133. (No model.)

Claim.—1. In a speaking-tube exchange, the combination of speak-

ing-tubes having ends each provided with a cross-tube section having side branches which connect together and form a continuous exchange-tube and a valve in each tube-section to open and close the speaking-tubes to the exchange-tube and at all times leave the exchange-tube open throughout.

2. In a speaking-tube exchange, the combination of speaking-tubes having ends each provided with a cross-tube section having side branches which fit together and form a continuous exchange-tube, rings or collars holding said tube-sections together, and valves controlling communication between the speaking-tubes and the exchange-tube.



3. In a speaking-tube exchange, the combination of speaking-tubes, an exchange-tube common to all said speaking-tubes, and an oscillatory valve for each speaking-tube located in the exchange-tube and controlling communication between the speaking-tube and the exchange-tube.

4. In a speaking-tube exchange, the combination of speaking-tubes, an exchange-tube common to all said speaking-tubes, and oscillating ring-shaped valves fitting the bore of the exchange-tube, one for each speaking-tube, and each valve having an opening to register with the speaking-tube.

5. In a speaking-tube exchange, the combination of speaking-tubes, an exchange-tube common to all said speaking-tubes, and oscillatory valves fitting the bore of the exchange-tube, one for each speaking-tube, and controlling communication between the speaking-tubes and exchange-tube, each of said valves having a stem projecting through the exchange-tube and provided with an indicating finger-piece or knob.

6. In a speaking-tube exchange, the combination of speaking-tubes, an exchange-tube common to all said speaking-tubes, and oscillatory valves fitting the bore of the exchange-tube, one for each speaking-tube, and controlling communication between the speaking-tubes and exchange-tube, each of said valves having a stem projecting through a slot in the exchange-tube, and a shield attached to it and covering the said slot.

7. In a speaking-tube exchange, the combination of speaking-tubes, an exchange-tube common to all said speaking-tubes and having a mouth and ear piece, an oscillatory valve fitting the bore of said exchange-tube and controlling the communication therewith of the mouth and ear piece, and a valve for each speaking-tube.

484,988. REFRIGERATING COMPOUND. WILBURT C. TRUSSELL, Boston, Mass., assignor to the Trussell Automatic Freezer Company, of Maine. Filed Nov. 2, 1891. Serial No. 410,601. (No specimens.)

Claim.—A refrigerating agent composed of muriate of ammonia, bicarbonate of soda, permanganate of potash, nitrate of potash, brine, and ice, as set forth.

484,984. MACHINE FOR CUTTING PRINTERS' RULES AND LEADS. FERDINAND WEBER, New York, N. Y. Filed July 19, 1892. Serial No. 440,690. (No model.)

Claim.—1. The combination, with a stationary cutting-knife, of an oscillating knife-holder provided with a fixed cutting-knife and with an adjustable cutting-knife adjacent thereto, said latter being adapted to be adjusted parallel with or at an angle of inclination to the edge of the stationary cutting-knife, substantially as set forth.

2. The combination, with a supporting-standard having a stationary cutting-knife attached thereto, of an oscillating knife-holder pivoted to said standard, an actuating-lever also pivoted to said standard and connected by pivot-links with the upper part of the knife-holder, means for retaining and guiding the outer end of the knife-holder, a fixed knife attached to the knife-holder, and an adjustable knife arranged adjacent to the fixed knife on the knife-holder, substantially as set forth.

3. In a machine for cutting printers' rules and leads, an oscillating knife-holder with a fixed cutting-knife secured thereto and an adjustable cutting-knife arranged adjacent to the fixed knife, said adjustable knife being pivoted to the knife-holder and adjusted to different inclinations on the same by set-screws that engage the upper edge of the adjustable knife, substantially as set forth

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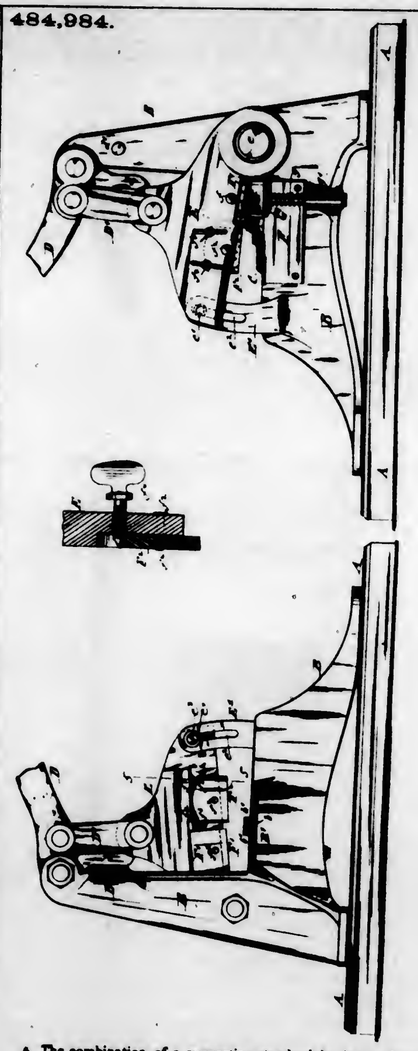


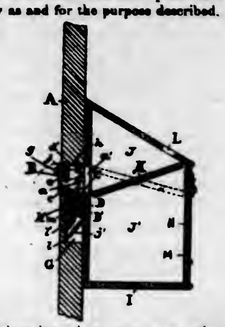
4. The combination of a supporting-standard having a slotted quadrantal arm, a stationary cutting-knife attached to said standard, an inclined guide-plate extending from the arm to the stationary cutting-knife, means for adjusting said guide-plate to different inclinations on the quadrantal arm, a vertically-guided and spring-actuated follower arranged alongside of the edge of the stationary cutting-knife, and an oscillating cutting-knife above the follower, substantially as set forth.

5. In a machine for cutting printers' rules and leads, a supporting-frame composed of an upright standard, a laterally-extending horizontal guide-arm, a quadrantal arm connecting the upper end of the vertical standard with the guide-arm, and an upwardly-extending slotted guide-lug, all made integral with each other, substantially as set forth.

484,985. HOUSE-DOOR LETTER-BOX. JOEL H. WOLFENBARGER, Leesburg, Va. Filed June 30, 1892. Serial No. 438,002. (No model.)

Claim.—1. In a house-door letter-box arrangement, the combination of the door having an opening, an electric battery, a bell in the circuit thereof, a spring-arm in the circuit and arranged to make and break the same, a hinged flapper in the opening through the house-door and spring-actuated to an open position, said flapper controlling the said make and break arm, and a latch to hold said flapper closed and operated from the exterior of the door to release the flapper.

2. In a house-door letter-box arrangement, the combination of the door having an opening, an electric battery, a bell in the circuit thereof, a spring-arm in the circuit and arranged to make and break the same, a hinged flapper in the opening through the house-door and spring-actuated to an open position, said flapper controlling the said make and break arm, and a sliding spring-actuated bolt arranged to hold the flapper closed, said bolt having a projection extending to the outside of the house-door and there provided with a button or knob, substantially as and for the purpose described.

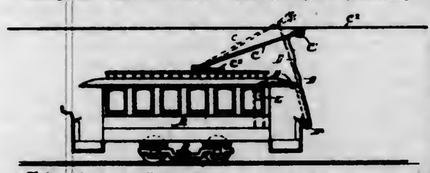


3. In a house-door letter-box arrangement, the combination of the house-door having an opening, an electric battery, a bell in the circuit of said battery, a spring-arm constituting the terminal of a wire of said battery and arranged to contact with another terminal and thereby close the circuit, a sliding pin bearing on said spring-arm, a hinged flapper in the opening through the house-door and having a part which bears against the said sliding pin when the flapper is closed and thereby holds the said arm out of contact with the other terminal, a spring for throwing the flapper open, and a latch for holding it closed, said latch operated from the outside of the house-door to release the flapper.

4. In a house-door letter-box arrangement, the combination of the house-door having an opening, an electric battery, a bell in the circuit of said battery, a spring-arm located below the said opening in the house-door and constituting the terminal of a wire of said battery and arranged to contact with another terminal, and thereby close the circuit, a sliding pin bearing on said spring-arm, a flapper hinged at the lower side of the opening in the house-door and having a part which bears on the said sliding pin when the flapper is closed and thereby holds the said arm out of contact with the other terminal, a spiral spring in a pocket in the house-door and fitting around the sliding pin and depressed by the said part of the flapper which bears on said pin, and a latch for holding the flapper closed, said latch operated from the outside of the house-door to release the flapper.

5. In a house-door letter-box arrangement, the combination of the house-door having a horizontal slot or opening and a flapper to close the same, a box secured to the door and having a receiving-slot in its upper part, and a horizontal tilting partition dividing said box into two compartments and pivoted at its middle part, said partition so located that its front edge may be at the lower or the upper side of the opening in the house-door and may constitute a slideway from the receiving-slot in the box to the said opening in the door.

484,986. TROLLEY-POLE CATCHER. MONTRAVILLE M. WOOD, Chicago, Ill. Filed June 4, 1891. Serial No. 395,074. (No model.)



Claim.—1. In a trolley-catcher, the combination of a normally upwardly-bearing trolley-pole with a rope attached thereto and normally loose, a reel for such rope, and a motor to wind the reel, and a catch normally locking the reel from rotation, but adapted to be released by tension on the rope.

2. In a trolley-catcher, the combination of a normally upwardly-bearing trolley-pole with a rope attached thereto and normally loose, a reel for such rope, and a motor to wind the reel, and a catch normally locking the reel from rotation, but adapted to be released by tension on the rope, said catch consisting of two opposing levers and a dog controlled thereby, said levers connected with the rope.

3. In a trolley-catcher, the combination of a normally upwardly-bearing trolley-pole with a rope attached thereto and normally loose, a reel for such rope, and a motor to wind the reel, and a catch normally locking the reel from rotation, but adapted to be released by tension on the rope, said catcher consisting of a pivoted dog and two rope-levers, connected at one end to the dog and at the other end to the rope and oppositely fulcrumed.

4. In a trolley-catcher, the combination, with the trolley and its flexible connection, of the spring-actuated winding cylinder or drum and the holding or releasing mechanism thereto, substantially as specified.

5. The trolley-catcher comprising the box or casing, the winding drum or cylinder journaled therein, an actuating-spring in said drum or cylinder, a ratchet on the end of the drum-shaft, and a pawl in engagement therewith, a trip for said pawl, and a flexible connection with the trolley-rope, substantially as specified.

6. In a trolley-catcher, the combination of a spring-actuated winding cylinder or drum for the trolley-rope slack and a device for setting said spring and drum in operation.

7. In a trolley-catcher, the combination of a normally upwardly-bearing trolley-pole with a rope attached thereto and normally hanging loose and a motor adapted to be set into operation to wind the rope and pull down the trolley when the trolley-wheel escapes from the wire.

484,987. MEAT-CUTTER. OLIVER D. WOODBURY, Southington, and LEVI T. SNOW, New Haven, Conn. Filed Mar. 28, 1892. Serial No. 426,770. (No model.)

Claim.—1. The combination of a case provided with a hopper at one end, the opposite end open, the interior of the case constructed with spiral ribs and so as to form grooves terminating near the open end of the case, a feed-screw arranged longitudinally within the case and so as to revolve therein, the periphery of the feed-screw corresponding in shape to the ribbed interior of the case, the blades or ribs of the screw forming grooves which terminate near the end of the feed-screw, the end of the feed-screw beyond the termination of the said grooves fitting closely within the case, and a plate adapted to close the end of the case, its inner face corresponding to and so as to fit closely upon the surface of the end of the feed-screw, the plate perforated, and the screw constructed with openings from its grooves, the said openings terminating upon the inner surface of said perforated plate, substantially as described.

2. The combination of a case provided with a hopper at one end, the opposite end open, the interior of the case constructed with spiral ribs and so as to form grooves terminating near the open end of the case, a feed-screw arranged longitudinally within the case and so as to revolve therein, the periphery of the feed-screw corresponding in shape to the ribbed interior of the case, the blades or ribs of the feed-screw forming grooves which terminate near the end of the feed-screw, the end of the feed-screw beyond the termination of the said grooves fitting closely within the case, the end of the screw concentrically recessed so as to form a chamber within the screw, and the screw constructed with openings from its grooves through into said chamber, and a cup-shaped plate held stationary in the open end of the case and serving to close that end, the exterior of the cup-shaped plate corresponding to and so as to fit closely within the chamber in the end of the feed-screw, the plate constructed with perforations through its sides into its interior and so as to coact with the said openings through the feed-screw, substantially as described.

3. The combination of a case provided with a hopper at one end, the opposite end open, the interior of the case constructed with spiral ribs and so as to form grooves terminating near the open end of the case, a feed-screw arranged longitudinally within the case and so as to revolve therein, the periphery of the feed-screw corresponding in shape to the ribbed interior of the case, the blades or ribs of the screw forming grooves which terminate near the end of the feed-screw, the end of the feed-screw beyond the termination of the said grooves fitting closely within the case, and a plate adapted to close the end of the case, its inner face corresponding to and so as to fit closely upon the surface of the end of the feed-screw, the plate perforated, and the screw constructed with openings from its grooves, the

said openings terminating upon the inner surface of said perforated plate, with means, substantially such as described, for adjusting the said plate with relation to the feed-screw, substantially as described.

4. The combination of a case provided with a hopper at one end, the opposite end open, the interior of the case constructed with spiral ribs and so as to form grooves terminating near the open end of the case, a feed-screw arranged longitudinally within the case and so as to revolve therein, the periphery of the feed-screw corresponding in shape to the interior shape of the case and constructed with spiral cutting-ribs adapted to coact with the cutting-ribs within the case, the end of the follower adapted to close the delivery end of the case, the case constructed with openings J in rear of the said delivery end and with passages K, leading from the said openings, the said passages terminating in openings L in the end of the case, with a disk on the end of said follower and so as to revolve therewith, constructed with perforations N, adapted to work across the said open-

5. The combination, with a railway-car, rods upon the car, having lodges for retaining a feeder in a raised position above the track, and a feeder supported by and movable up and down upon the rods, of a lever whereby the feeder may be released from the lodges and allowed to drop to its lowest position, for the purpose set forth.

484,990. ELECTROLYTIC PROCESS AND APPARATUS. HENRY

ing liquid product of greater specific gravity than the electrolyte is directed outwardly, and continuously discharging the respective products through distinct conduits.

6. The improved process of making caustic soda and chlorine, which consists in subjecting brine to electrolysis and to centrifugal action.

7. The improved process of making caustic soda and chlorine,

said openings terminating upon the inner surface of said perforated plate, with means, substantially such as described, for adjusting the said plate with relation to the feed-screw, substantially as described.

4. The combination of a case provided with a hopper at one end, the opposite end open, the interior of the case constructed with spiral ribs and so as to form grooves terminating near the open end of the case, a feed-screw arranged longitudinally within the case and so as to revolve therein, the periphery of the feed-screw corresponding in shape to the ribbed interior of the case, the blades or ribs of the screw forming grooves which terminate near the end of the feed-screw, the end of the feed-screw beyond the termination of the said grooves fitting closely within the case, and a plate adapted to close the end of the case, its inner face corresponding to and so as to fit closely upon the surface of the end of the feed-screw, the plate perforated, and the screw constructed with openings from its grooves, the said openings terminating upon the inner surface of said perforated plate, with a bolt through the perforated plate and through the feed-screw, one end of the bolt adapted to engage the plate and the other end provided with an adjusting-nut, the bolt constructed to engage with the feed-screw and so as to partake of its revolution, whereby said plate may be longitudinally adjusted with relation to the feed-screw, substantially as described

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484,988. MEAT-CUTTER. OLIVER D. WOODRUFF, Southington, and LEVI T. SNOW, New Haven, Conn. Filed June 6, 1892. Serial No. 435,707. (No model.)

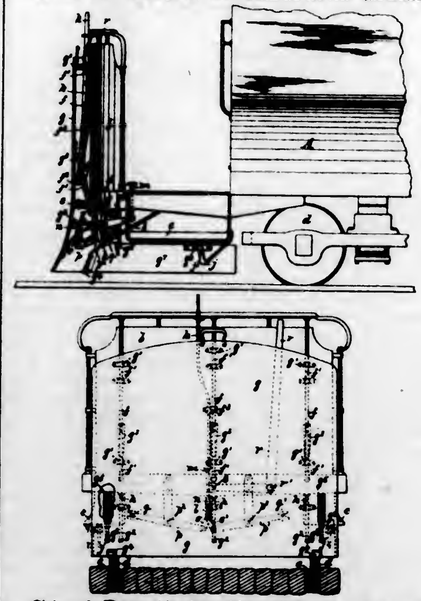
Claim.—1. In a meat-cutter, the combination of a casing having a hopper at one end, the opposite end open, the interior of the case provided with a series of spiral cutting-ribs from the hopper toward the delivery end, a follower arranged to revolve upon a longitudinal axis within the case, the follower having a spiral blade adapted to force the meat from the hopper forward within the case, and that portion of the follower from the hopper forward corresponding in shape to the interior of the case and provided on its surface with series of cutting-ribs adapted to coact with the corresponding ribs within the case, the follower at the delivery end of a diameter substantially the same as the internal diameter of the case, passages leading from the interior of the case from a point back of the delivery end forward and outward, and a disk upon the end of the follower and adapted to revolve therewith, the disk constructed with perforations arranged to work across the outer end of the said passages, which open from the case, and thereby produce a supplemental cutting, substantially as described.

2. In a meat-cutter, the combination of a case having a hopper at one end for the introduction of meat, the case open at both ends and contracting in diameter from the hopper forward toward the delivery end, that portion of the case between the hopper and the delivery end constructed upon its inside with a series of spiral cutting-ribs, combined with a follower arranged to revolve within the case and constructed with a head to close the hopper end of the case and with a spiral blade at that end to operate as a forcer for the meat within the case, and that portion of the follower from the hopper forward contracted corresponding to the interior of the case and provided upon its periphery with spiral cutting-ribs adapted to coact with the spiral cutting-ribs within that portion of the case, the follower at the delivery end of the machine of a diameter to substantially close that end, the case constructed with passages leading from its interior in rear of said closed delivery end outward, and a disk on the delivery end of the follower and so as to revolve therewith, the disk perforated, its perforations being adapted to work across the outer end of said passages, substantially as described.

3. In a meat-cutter, the combination of a case having a hopper at one end for the introduction of meat, the case constructed upon its inside from the hopper forward toward the delivery end with spiral cutting-ribs, and a follower constructed with a spiral blade to operate to force the meat forward from the hopper, the surface of the follower from the hopper toward the delivery end of a shape corresponding to the interior shape of the case and constructed with spiral cutting-ribs adapted to coact with the cutting-ribs within the case, the end of the follower adapted to close the delivery end of the case, the case constructed with openings J in rear of the said delivery end and with passages K, leading from the said openings, the said passages terminating in openings L in the end of the case, with a disk on the end of said follower and so as to revolve therewith, constructed with perforations N, adapted to work across the said openings L in the end of the case, substantially as and for the purpose described.

4. In a meat-cutter, a case having a hopper at one end for the introduction of meat and a follower arranged upon a longitudinal axis within the case and so as to revolve therein, the follower constructed with a spiral blade to force the meat forward, the periphery of the follower and the corresponding surface of the case between the hopper and the delivery end constructed with spiral cutting-ribs, combined with a conical disk on the end of the follower and adapted to revolve therewith, the case constructed with a conical bearing-surface for said disk and with passages leading from its interior in rear of its delivery end to the inner surface of said conical disk, the disk constructed with perforations which under the revolution of the disk will work across the outer ends of said passages, substantially as described.

484,989. CAR FENDER OR GUARD. WHITFIELD W. BAXTER, Boston, Mass. Filed Apr. 26, 1892. Serial No. 430,718. (No model.)



Claim.—1. The combination, with a railway-car, rods upon the forward end thereof, a fender supported by and movable up and down upon the rod, brackets upon the fender, and ledges upon the rods upon which the brackets rest to hold the fender in its upper position, of a spring to draw the fender forward and to hold the brackets upon the ledges with a yielding pressure, for the purpose set forth.

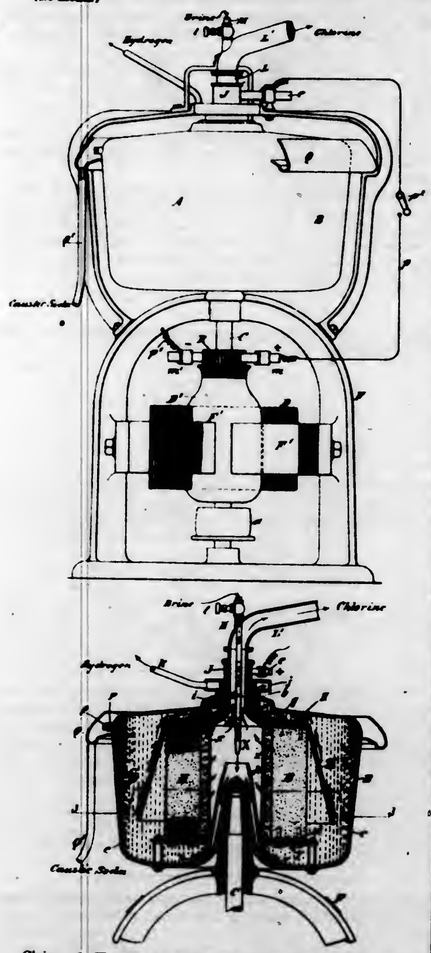
2. The combination, with a railway-car, rods upon the car, and a fender supported by and movable up and down upon the rods, of a push-pin projecting through a perforation in the platform of the car and a series of levers between the push-pin and the fender, whereby the fender is held in its lowest position by pressure exerted upon the push-pin, for the purpose set forth.

3. The combination, with a railway-car, rods upon the car, having ledges for the purpose set forth, and a fender supported by and movable up and down upon the rods, of springs interposed between the fender and car to accelerate the downward movements of the fender and to hold the same downward with a yielding pressure, for the purpose set forth.

4. The combination, with a railway-car, rods upon the car, and a fender supported by and movable up and down upon the rods, of side wings upon the fender extending backward under the steps and brackets upon the steps, upon which the wings are supported and movable up and down, for the purpose set forth.

5. The combination, with a railway-car, rods upon the car, having ledges for retaining a fender in a raised position above the track, and a fender supported by and movable up and down upon the rods, of a lever whereby the fender may be released from the ledges and allowed to drop to its lowest position, for the purpose set forth.

484,990. ELECTROLYTIC PROCESS AND APPARATUS. HENRY BLACKMAN, New York, N. Y. Filed Jan. 15, 1892. Serial No. 418,099. (No model.)



Claim.—1. The improved electrolytic process consisting in subjecting the electrolyte to centrifugal action during the electrolysis, whereby the resulting products of different specific gravities are separated.

2. The improved electrolytic process consisting in subjecting a liquid simultaneously to electrolysis and centrifugal action and discharging the products thereby separated through distinct conduits.

3. The improved electrolytic process consisting in subjecting a liquid simultaneously to electrolysis and centrifugal action, whereby a gaseous product of the electrolysis is separated from the electrolyte, and discharging the separated gas.

4. The improved electrolytic process consisting in subjecting simultaneously to electrolysis and centrifugal action a liquid from which two gaseous products are liberated at the respective electrodes, and discharging said gases through distinct conduits to prevent their recombination.

5. The improved electrolytic process consisting in subjecting a liquid simultaneously to electrolysis and centrifugal action, whereby the resulting gaseous products are directed inwardly and the resulting liquid product of greater specific gravity than the electrolyte is directed outwardly, and continuously discharging the respective products through distinct conduits.

6. The improved process of making caustic soda and chlorine, which consists in subjecting brine to electrolysis and to centrifugal action.

7. The improved process of making caustic soda and chlorine, which consists in subjecting brine to electrolysis while under the influence of centrifugal action, whereby the resulting caustic soda is thrown outwardly and the chlorine gas directed inwardly, so that both are separated from the electrolyte, and continuously conducting away the disengaged chlorine.

8. The improved process of making caustic soda and chlorine, which consists in subjecting brine to electrolysis while under the influence of centrifugal action, whereby the resulting caustic soda is thrown outwardly and the chlorine gas directed inwardly, so that both are separated from the electrolyte, and continuously discharging the caustic soda and conducting away the chlorine.

9. The improved process of making caustic soda and chlorine, which consists in subjecting brine to electrolysis while under the influence of centrifugal action, whereby chlorine and hydrogen are generated and thrown inwardly and caustic soda is generated and thrown outwardly, and maintaining the separation of the chlorine and hydrogen and conducting them away through distinct conduits.

10. A centrifugal machine provided with an anode and cathode, and means for passing an electric current through them, whereby the contents of the machine may be subjected to electrolysis while whirling.

11. A centrifugal electrolytic cell consisting of a cylinder mounted to revolve, an anode and cathode therein arranged to be in contact with an electrolyte while revolving, and separate outlets for the liquid and gaseous products resulting from the electrolysis.

12. A centrifugal electrolytic cell consisting of a cylinder mounted to revolve, an anode and cathode therein arranged to be in contact with an electrolyte while revolving, and a gas-discharge conduit leading from the center of the cylinder.

13. A centrifugal electrolytic cell consisting of a cylinder mounted to revolve, an anode and cathode therein arranged to be in contact with an electrolyte while revolving, and two distinct gas-discharge conduits leading from the center of the cylinder, the one adapted to conduct away the gases liberated from the anode and the other those liberated from the cathode.

14. A centrifugal electrolytic cell consisting of a cylinder mounted to revolve and an anode and cathode therein arranged to be in contact with an electrolyte while revolving, whereby a liquid of greater specific gravity than the electrolyte is thrown to the outer portion of the cylinder, and an outlet for said liquid from said outer portion.

15. A centrifugal electrolytic cell consisting of a revolving cylinder provided with an anode and cathode, and a partition within said cylinder arranged to receive on its opposite sides the gases liberated from the anode and cathode, respectively, and to prevent the commingling of said gases.

16. A centrifugal electrolytic cell consisting of a revolving cylinder provided with an anode and cathode, a partition within said cylinder arranged to receive on its opposite sides the gases liberated from the anode and cathode, respectively, and to prevent the commingling of said gases, and two distinct gaseous outlets from said cylinder leading from the spaces on opposite sides of said partition.

17. A centrifugal electrolytic cell consisting of a revolving cylinder provided with an anode and cathode, outlets for continually discharging the products of electrolysis from said cell, and an inlet for continuously admitting the electrolyte thereto.

18. The combination, with a centrifugal electrolytic cell, of a dynamo for generating the electric current passed through said cell, connected together to be driven from the same source of power at proportionate speeds.

19. The combination, with a centrifugal electrolytic cell, of a dynamo for generating the electric current passed through said cell, having its armature mounted on the same revolving shaft as said cell, whereby the two are revolved at the same speed.

20. The combination, with a centrifugal electrolytic cell having terminal electric connections leading to its anode and cathode, of a dynamo the armature of which is mounted on the same revolving shaft as said cell, the stationary commutator-brushes of said dynamo, and electric connections joining the positive brush thereof to the terminal communicating with the anode and the negative brush thereof to the terminal communicating with the cathode.

484,991. CORN-PLANTER. OTTO BELL, Lehigh, Iowa. Filed June 3, 1892. Serial No. 435,493. (No model.)

Claim.—The combination, with the hopper, the shoe in two parts, one movable over the other, and means for adjusting the lower part,

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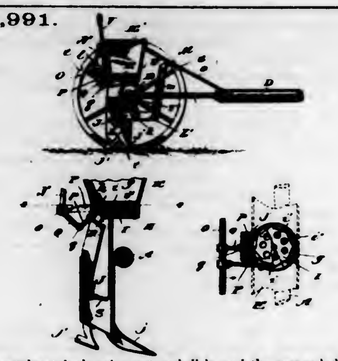
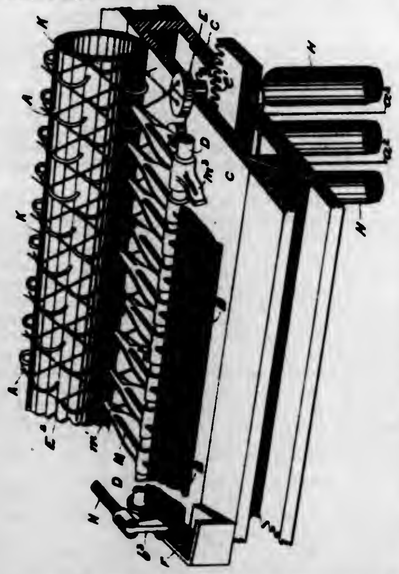


the horizontal notched and apertured disk, and the suspended shaft, of the arm carried thereby to engage said disk, the pivotal connections between said shaft and a valve in the shoe, the hooked arm on the shaft, the lever connected with said arm, and the horizontal notched wheel on the axle, substantially as specified.

484,992. DETECTOR STOP-MOTION FOR WIRE-NETTING MACHINES. EDWARD S. BOND, Birmingham, England. Filed Feb. 19, 1892. Serial No. 422,136. (No model.) Patented in England Oct. 26, 1891, No. 18,380.



Claim.—1. In a break-detector for wire-netting machines, the combination, with pivoted droppers engaging the wire, of a rocking table arranged to be actuated by said droppers and a series of levers operated by said table to stop the machine, substantially as set forth.

2. In a break-detector for wire-netting machines, the combination, with levers P, arranged to engage the wires, of a sliding table operated by said levers and belt-shifting devices actuated by said table to stop the machine, substantially as set forth.

3. In a break-detector for wire-netting machines, the combination, with pivoted levers engaging the wire, of a reciprocating ram having a pivoted tumbler mounted thereon, connecting devices between said levers and said tumbler, whereby the latter is raised and lowered, and belt-shifting devices which are operated by said levers, substantially as set forth.

4. In a break-detector for wire-netting machines, the combination, with pivoted levers arranged to engage and actuate a rocking table, of such table and levers connected thereto for stopping the machine, an auxiliary pivoted lever supported by a sliding arm, a lever pivoted to said arm for actuating it, and a rotary disk provided with a projecting stud adjustably mounted thereon, all substantially as set forth.

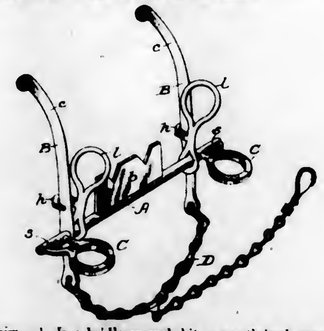
5. In a break-detector for wire-netting machines, the combination, with pivoted levers arranged to engage the wire, of a reciprocating table actuated by said levers, a cam-actuated ram, a pivoted tumbler attached to said ram, a buffer arranged to be struck by said tumbler, a belt-shifting device, and levers connecting said device with said buffer, substantially as set forth.

484,998. MACHINERY BEARING. JAMES DE S. BROWN, Philadelphia, Pa. Filed Mar. 20, 1892. Serial No. 426,060. (No model.)

Claim.—1. A machinery bearing composed of Scheel-lac combined with plumbago and fiber in the manner and substantially the proportions herein specified.

2. The process described of producing machinery bearings, which consists in intimately mixing dry fiber, pulverized Scheel-lac, and pulverized graphite, compressing at a temperature of from 200° to 300° Fahrenheit, holding under pressure until cool, and subsequently releasing it and raising it uncompressed to between 300° and 400° Fahrenheit, all substantially as herein specified.

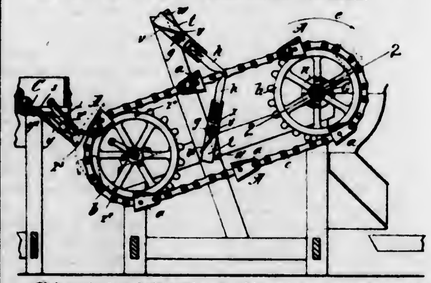
484,994. BRIDLE-BIT. LINCOLN F. BROWN, Xenia, Ohio. Filed June 30, 1892. Serial No. 438,369. (No model.)



Claim.—1. In a bridle or curb bit, a mouth-barb provided with a gag-plate, the levers B B, connected with the mouth-bar and adapted to be operated by the reins to turn the bar, and snap-loops C C, located, substantially, in line with the bar and the direction of pull, and also constructed to receive the reins and to permit their release upon the application of unusual force to the reins, substantially as shown and described.

2. A bridle or curb bit having a mouth-bar, cheek levers or arms B, and rings or loops *l*, loose on the mouth-bar and having hooks A to engage the levers B, substantially as shown and described.

484,995. FRUIT-CUTTING MACHINE. JOHN BURNS, Los Angeles, Cal. Filed Jan. 8, 1892. Serial No. 417,341. (No model.)



Claim.—1. In a fruit-cutting machine, the combination, with a movable receptacle adapted to receive and convey the fruit to the cutting mechanism, of a hopper located adjacent to the course of travel of said receptacle and having a movable section, and mechanism for moving said section periodically for permitting the delivery of fruit from the hopper into the conveyer-receptacle, substantially as and for the purpose set forth.

2. In a fruit-cutting machine, the combination, with a carrier-receptacle adapted to receive and convey the fruit to the cutting mechanism, of a hopper located adjacent to the course of travel of the carrier and having a fixed jaw and a movable jaw, the latter being provided with an abutment portion or member, and a rotatable part of the machine having a concurrent movement with the carrier and provided with a tappet or contacting-piece for periodically effecting the operation of the movable hopper-jaw, substantially as described.

3. In a fruit-cutting machine, the combination, with the work-table and the carrier-chains having the receptacle-cups and the sprocket-wheels on which said chains are carried, and certain of said wheels being provided with the tappet-pins z^4, of the fixed hopper-jaw *y*, secured at the forward under portion of the table and downwardly and forwardly inclined, and the movable jaw *z*, pivoted thereon and provided with the abutment-arm z^3 and the spring z^5, substantially as described.

4. In a fruit-cutting machine, the combination, with the separated carrier-chains and the separated cup-shells thereon, substantially as described, of the rods *g g*, ranging across said chains at either side of their course of travel and having cutter-holders mounted thereon to swing independently thereof, springs applied upon and relative to said rods and said knife-holders for securing a maintenance of the knives in positions adjacent to each other and permitting their separation against said springs, and the dogs *w w*, adjustably mounted on the said rods adjacent to the knife-holders and having portions against which the holders abut, whereby the approach of the knives may be limited, for the purposes set forth.

5. In a fruit-cutting machine, the combination, with the separated carrier-chains and the separated cup-shells thereon, substantially as described, of the fixed cross-rods *g g* and the knife-holders *t t* thereon and each carrying the cutting-blade *k*, the dogs *w*, having the angularly-turned extremities w^2, and the set-screws *w'* for adjustably fixing said dogs on the rods, the collars *u* and the set-screws for fixing them on the rods, and the coil-springs *v*, encircling said rods and each having its one end fixed to one of said collars *u* and having its other extremity in engagement with one of the knife-holders, substantially as and for the purposes described.

6. In a fruit-cutting machine, the combination, with a pair of separated shells to constitute a split forwardly and upwardly flaring conveyer-cup, and carriers therefor mounted to travel in an inclined plane coincident with the axis or common median line of the conveyer-cups, of cutters mounted for presentation at the cleft between the shells and at corresponding distances from the said plane of travel, substantially as and for the purposes set forth.

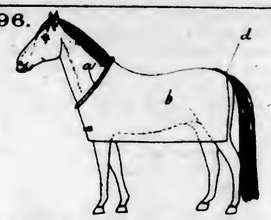
7. In a fruit-cutting machine, a pair of separated shells or sections which together conduce to form cups, carriers therefor having uniform movements, the said shells being arranged on their carriers with their mouths forwardly disposed relative to their direction of travel, and one or more cutters located in the plane of the split between the cups, in combination with mechanism for periodically further separating the one shell from the other, for the purpose set forth.

8. In a fruit-cutting machine, a series of paired separated shells which together conduce to form a series of cleft fruit-holder cups, and chains on which the cut sections are mounted at corresponding intervals, supporting and drive wheels around which the chains are mounted, the wheel of one opposing pair being loosely mounted on its shaft, a spring applied for effecting the further separation of the one wheel from the other, a member mounted adjacent a part of the movably mounted wheel, having an abated portion for permitting of the further separation and a prominent portion to restore the wheel to its normal degree of proximity to its fellow, and a cutting device mounted for presentation at the cleft between the shells, substantially as and for the purposes set forth.

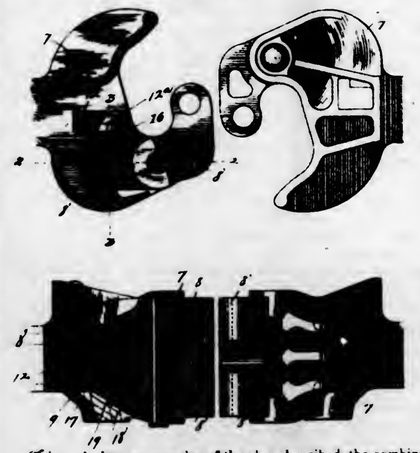
9. In a fruit-cutting machine, the combination, with the separated carrier-chains and the separated cup-shells thereon, substantially as described, of the fixed cross-rods *g g*, and the knife-holders *t t*, mounted thereon for a swinging movement and each having in its side the groove *x*, the cutting-blades *k k*, fitted in said side grooves and having slotted shanks, and the set-screws *x'*, the dogs *w*, having the angular extremities w^2 and the set-screws *w'* therefor, the collars *u* and the set-screws *u'* therefor, and the coiled springs *v*, encircling said rods *g* and each having its one extremity connected to one of the collars *u* and its other in engagement with one of said knife-holders, as and for the purposes set forth.

484,996. HORSE-BLANKET. EPHRAIM CHAMBERLAIN, Medfield, Mass. Filed May 9, 1892. Serial No. 361,163. (No model.)

Claim.—A horse-blanket having a neck-yoke formed in two separate rigid parts permanently connected with said blanket at the neck end thereof, the said blanket and neck-yoke having a breast-opening and means for closing said opening, and a crupper connected to the rear end of the blanket.



484,997. CAR-COUPLING. WALTER R. CLARK, Chicago, Ill., assignor to the Clark Car Coupler Company, same place. Filed May 10, 1892. Serial No. 432,626. (No model.)



Claim.—1. In a car-coupler of the class described, the combination, with a pivoted knuckle having a downwardly inclined or beveled surface at its rear end, of a lock-pin having on its lower end a projecting cam adapted to engage the beveled surface of the knuckle and arranged within a recessed head, and said head having a beveled surface above its bottom, and the pin being adapted when the knuckle is locked to rest in an inclined position and its lower end when the pin is raised passing from an oblique to a vertical position during the uncoupling movement and then to lift vertically with its cam in contact with the cam-surface of the knuckle, said cam-surfaces being of such construction as to remain in operative contact during the entire opening of the knuckle, substantially as described.

2. In a car-coupler of the class described, the combination, with a recessed head having an inclined seat in its rear portion above its bottom, of a pivoted knuckle the heel of which works within the recess of the head and is provided with a downwardly-inclined cam-surface and a lock-pin having on its side at its lower end a cam adapted to engage the inclined or beveled surface of the knuckle and to stand in an inclined position when locked, said lock-pin having on its side opposite the cam an inclined groove and a rib on the wall of the head to enter said groove, whereby during the initial movement of the pin in the act of uncoupling its lower end is deflected from an oblique into a vertical position, substantially as described.

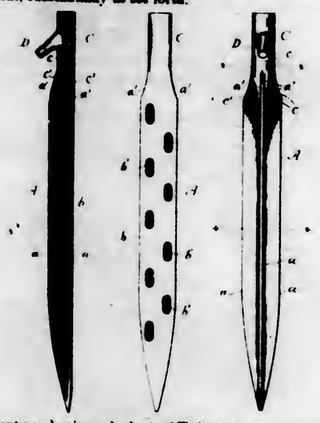
3. In a car-coupler of the class described, the combination, with a recessed head having a beveled seat above its bottom and at its rear end, of a pivoted knuckle having on its heel a cam-surface and a lock-pin having a projecting cam adapted to engage the cam-surface of the knuckle, said lock-pin being cut away on its vertical corner next to the knuckle and its lower end beveled in conformity to the beveled seat of the head, substantially as described.

484,998. TENT-PIN. ALPHEUS S. COMSTOCK, Evanston, Ill. Filed July 25, 1892. Serial No. 441,311. (No model.)

Claim.—1. A tent-peg having a body A, having radiating flanges, a head C, a spur D, projecting laterally therefrom, and a rounded throat *c*, located below said spur, substantially as set forth.

2. A tent-peg having a body A of angular cross-section, a head C, a spur D, projecting laterally therefrom, and a rounded throat *c*, located below said spur and having the tapering extension *c'*, merging with the surface of the body of the peg, substantially as set forth.

3. A tent-peg having the body portion A of angular shape in cross-section, the head C, having the spur D, projecting laterally therefrom, the rounded throat *c*, located below said spur, and the tapering extension *c'*, merging with the surface of the body of the peg, the flanges of said body being tapered at *a'*, merging with the surface of the throat, substantially as set forth.



4. A tent-peg having a body A of T shape in cross-section, forming a broad back *b*, a head C, a spur D, projecting laterally from said head, and a rounded throat *c*, located below said spur, substantially as set forth.

484,999. PAPER-PULP DIGESTER. CHARLES CURTIS, Newton, Mass., and NATHANIEL M. JORDS, Bangor, Me. Filed Dec 19, 1891. Serial No. 415,899. (No model.)

Claim.—1. A pulp-digester comprising a metal shell and a cement lining composed of an outer and an inner layer, both layers being made of sections formed to overlap at their edges, the inner and outer sections being of substantially-uniform size and shape and all laid flatwise with the joints of the inner layer alternating with those of the outer layer, as set forth.

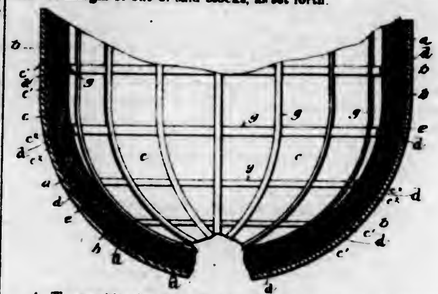
2. A pulp-digester comprising a metal shell and a carbonized cement lining composed of sections having tongues and recesses at their edges, the sections having their inner surfaces recessed to form packing-receiving grooves or seats adapted to hold packings or joint-protectors across the seams or joints formed by the sections, as set forth.

485,000. PAPER-PULP DIGESTER. CHARLES CURTIS, Newton, Mass., and NATHANIEL M. JORDS, Bangor, Me. Filed Apr. 18, 1892. Serial No. 429,259. (No model.)

Claim.—1. A digester comprising in its construction an external metal shell, a lining of blocks or sections of artificial stone, and an inner lining composed of independent plates or sheets of acid-resisting material, each of said plates or sheets being engaged independently with one of the said blocks or sections, as set forth.

2. A digester composed of an external metal shell, a lining of blocks or sections of artificial stone, and an inner lining composed of plates or sheets *c*, having their edges bent to form flanges which are interposed between the said blocks or sections, as set forth.

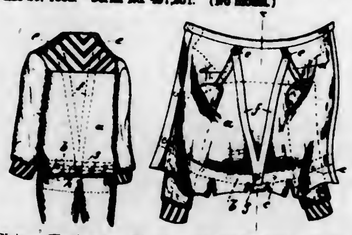
3. A digester comprising in its construction an external metal shell, a lining of blocks or sections of artificial stone, and an inner lining composed of independent plates or sheets of acid-resisting material, each of said lining plates or sheets being engaged at its margin with the margin of one of said blocks, as set forth.



4. The combination, in a digester, of the blocks or sections of artificial stone having grooves b^3 in their abutting edges and the lining plates or sheets having beaded flanges the beads of which are engaged with said grooves, as set forth.

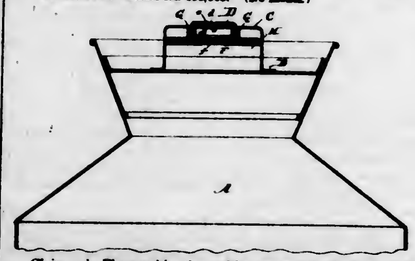
5. A digester comprising an external shell, a lining composed of blocks or sections of artificial stone, acid-resisting lining-plates placed on the inner surfaces of said blocks, and strips of acid-resisting material covering the joints between said plates.

485,001. WAIST. ZACHARIAH DEHARBE, Paterson, N. J. Filed June 20, 1892. Serial No. 437,351. (No model.)



Claim.—The improved boy's waist herein described and shown, combining therein a waistband with its center portion downwardly curved, shoulder-seams, a button secured to each of said seams, a button secured to the center of the downwardly-curved portion of the waistband, and elastic bands connecting said buttons on the shoulder-seams with the buttons on the waistband, all said parts substantially as described, and for the purposes set forth.

485,002. TICKET-HOLDER. ALVIS P. DEWEY, Gilbert's, Ill. Filed Jan. 19, 1892. Serial No. 418,605. (No model.)



Claim.—1. The combination, with a support C, of a frame D, having its end portions extending through and movable lengthwise in the support, a pair of springs G, acting, respectively, on the lengthwise-movable ends of the frame which extend through the support, and a ticket-engaging point *d*, which is caused to engage a ticket when the ends of the frame are forced inward through the support, substantially as described.

2. The combination, with a handle C, of a frame D, having a ticket-engaging point *d* and movable in the handle, a cross-bar F, connecting the ends of the frame below the ticket-engaging point, and springs G, acting to move the frame inward and cause the projecting point to engage a ticket, substantially as described.

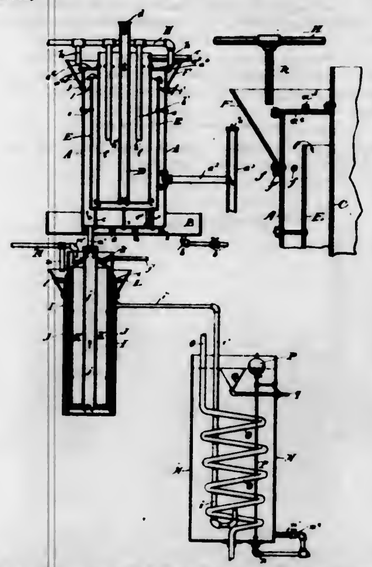
3. The combination, with the handle C, of the frame D, provided with the inward-projecting point *d*, the cross-bar F, provided with the finger-piece *f*, and springs G G, adapted to keep the frame D in contact with the handle C, substantially as described.

4. The combination, with the handle C, of the frame D, provided with the inward-projecting point *d*, the cross-bar F, provided with the finger-piece *f*, the springs G G, adapted to keep the frame D in contact with the handle C, and the guard H, substantially as described.

485,008. WHIFFLETREE-COUPLING. BERNARD D. DEERE, New Haven, Conn. Filed July 25, 1892. Serial No. 441,126. (No model.)

Claim.—The herein-described coupling, consisting of the socket composed of two parts E F, the one part E extending rearward and adapted for attachment to the whiffletree-bar, the other part F arranged over the part E, with a corresponding extension toward the whiffletree-bar, the adjacent faces of the two parts constructed with cavities together corresponding to the ball to be inclosed, the two parts constructed with laterally-projecting ears on opposite sides, with bolts through said ears, and a screw I through the projection at the rear of the two parts, the screw being threaded into both parts, combined with a ball M, corresponding to the cavity in the socket, the ball M, constructed with a neck projecting through an opening in the front of the socket formed for the purpose, and the said neck fitted for attachment to the part to be carried by the ball, substantially as described.

485,004. STEAM CONDENSER AND PURIFIER. ELIJAH W. DUGAN, Covington, Ky. Filed June 20, 1891. Serial No. 396,980. (No model.)



Claim.—1. In a condenser, the combination of the closed steam-vessel A, provided with a perforated cover, the water-vessel C, centrally secured therein, the steam-pipe D, centrally within said water-vessel and provided with relief-valve *d*, the intermediate open-top vessel E, having discharge-pipe *e'*, the funnel F, surrounding the upper portion of the steam-vessel A, the steam-pipe leading to vessel A, and discharge-pipe *a'*, leading from the steam-vessel and water-pipe H and having branches discharging into the water-vessel C and funnel F, substantially as shown and described.

2. The combination of the closed steam-vessel supported within and above the bottom of the pan B and having its top perforated at a^4, the steam-pipe leading to said vessel, a discharge-pipe leading therefrom through bottom of pan B, the water-vessel C, centrally secured within the steam-vessel, having steam-pipe D through it and discharge-pipe *c* leading from its upper portion, the open-top vessel E, and stay-bolts *e*, securing it between the vessels A and C, and a discharge *e'*, leading from bottom of vessel E, and the water-pipe H, having branches discharging into the vessel C and funnel, substantially as shown and described.

3. In a device for condensing and purifying water, the combination of the outer vessel having a perforated top, a cold-water vessel suspended therein and having a steam-opening through it, water-pipes discharging into said inner vessel, an overflow-pipe leading therefrom, a steam-pipe leading into the outer vessel, and a water-discharge pipe leading therefrom, substantially as shown and described.

4. The combination, substantially as hereinbefore set forth, of a condenser, a cooler, a discharge-pipe leading from the condenser to the cooler, said cooler consisting of an outer closed vessel I, an inner vessel J, closed at the bottom and having a central pipe *j*, connecting at the top with the discharge-pipe from the condenser and opening into the outer vessel I, the jacket K, surrounding said pipe, having a contracted top and serrated or notched base resting on the bottom of the vessel J, a funnel L, surrounding the top of the vessel I, the discharge-pipe *i'*, leading from the upper portion of the vessel I, the discharge-pipe *j'*, leading from the top of the jacket K and through the vessel J, and the water-pipe M, having branches discharging into the funnel L and vessel J.

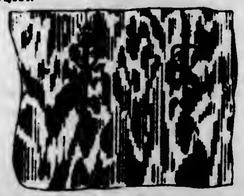
5. In a condenser for ice-machines, the combination, substantially as hereinbefore set forth, of the steam-condensing vessel, a central vessel secured therein for the cooling liquid and having a central pipe passing through it and provided with a relief-valve at its upper end, a funnel surrounding the upper portion of said steam-vessel to cause the cooling liquid to pass down and around the outside of the steam-vessel and the intervening vessel to cause the steam to pass first in contact with the outer vessel and thence around the inner cooling-vessel, the cooler consisting of an outer closed vessel, the vessel for the cooling liquid secured within it and having a central pipe connecting the condenser and outer cooling-vessel, the funnel surrounding the outer part of the outer vessel, and water-pipes discharging into the funnel and said inner vessel, the jacket K, surrounding the central pipe within the vessel J, having a contracted top and notched base, the discharge-pipe *j'*, leading from the top of the jacket, the fore cooler consisting of the vessel N, the pipe *i'* to conduct the discharged water from the cooler to near the bottom of the fore cooler, the ammonia-pipe O, leading from the ice-machine through the bottom of the vessel N and coiled within said vessel, the discharge-pipe leading from bottom of vessel N, and a valve controlling said discharge and controlled by a float P, substantially as shown and described.

6. The combination, substantially as hereinbefore set forth, of a boiler, a condenser, a cooler, and a fore cooler, substantially as shown and described.

7. In a device for condensing and purifying water, the combination of the steam-condensing vessel, a steam-supply pipe for said vessel, a branch steam-pipe connecting the steam-supply pipe below the top of both vessel and supply-pipe, an opening or nipple at the top of said supply-pipe for the escape of the gases driven off in the process of evaporation, means, such as shown, for cooling and condensing steam in said vessel, and a discharge-pipe for the condensed water, substantially as hereinbefore set forth.

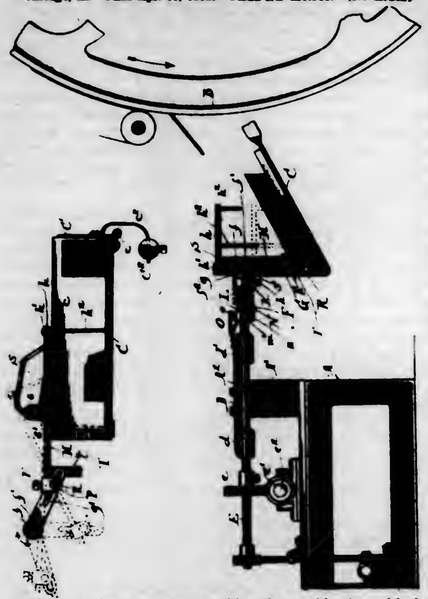
8. In a device for condensing and purifying water, the combination of the condenser, the steam-supply pipe a^3, having its top end perforated at a^4, and the branch pipe a^2, connecting the steam-supply pipe and condenser below the top of each, substantially as shown and described.

485,005. PIN-FASTENING. THEODOR FABRIER, Pforzheim, Germany. Filed Mar. 11, 1892. Serial No. 424,491. (No model.) Patented in Germany Apr 23, 1891, No. 66,146, and in Belgium Apr. 25, 1891, No. 94,067.



Claim.—A pin provided with a downwardly-curved guard that crosses the pin-shank twice to form an upper closed loop and a lower open loop, substantially as specified.

485,006. MECHANISM FOR DELIVERING BAGS FROM PAPER-BAG MACHINES AND FOR OTHER PURPOSES. ALBERT C. GETTEL, Chicago, Ill. Filed Apr. 18, 1892. Serial No. 429,502. (No model.)



Claim.—1. In a paper-bag machine, the combination, with the mechanism for continuously feeding the bags and with a stationary table whereon said bags are fed, of an ejector for moving said bags across said table and out of the line of feed and intermittently-actuated mechanism adapted to remain out of action while the mass of bags is being accumulated, but arranged to operate said ejector at intervals to propel the mass of bags out of the line of feed, substantially as described.

2. In a paper-bag machine, the combination, with the mechanism for feeding out the finished bags and a stationary table whereon said bags may be accumulated, of an ejector for moving the accumulated bags at predetermined intervals transversely to and across the line of feed, a spring for imparting a quick motion to said ejector in one direction, and means for retracting said ejector, substantially as described.

3. In a paper-bag machine, the combination, with the mechanism for feeding out the finished bags and a stationary table whereon said bags are accumulated, of an ejector for moving said bags out of the line of feed, means for forcing said ejector across the line of feed to impel the accumulated bags therefrom, and mechanism for retracting said ejector out of the line of feed to prevent its contact with the bags as they are fed onto the table, substantially as described.

4. In a paper-bag machine, the combination, with the mechanism for feeding out the finished bags and with a stationary table whereon said bags are accumulated, of an intermittently-operating ejector for moving said bags transversely to and out of the line of feed, mechanism for imparting a quick motion to said ejector across the line of feed, and mechanism for lifting and retracting the ejector outside of said line of feed into position for again traveling across said line of feed, substantially as described.

5. In an apparatus of the character described, the combination, with mechanism for feeding the articles—such, for example, as paper bags—and a table whereon said articles may be accumulated, of an ejector for moving said articles out of the line of feed, a continuously-moving shaft for retracting said ejector, a spring for imparting forward movement to said ejector, a lock mechanism for connecting said ejector positively to said shaft, and a trip for releasing said lock mechanism to permit the spring to operate the ejector, substantially as described.

6. In apparatus of the character described, the combination, with mechanism for feeding the articles—such, for example, as paper bags—and a table whereon said articles may be accumulated, of an ejector for moving said articles out of the line of feed, a rocking arm to which said ejector is connected, a drive-shaft upon which said rocking arm is loosely mounted, a spring for imparting movement to said ejector in one direction, a locking-bar for temporarily connecting said rocking arm to said shaft, and a trip for releasing said locking device to permit the ejector to be operated independently of the drive-shaft, substantially as described.

7. In apparatus of the character described, the combination, with mechanism for feeding the articles—such, for example, as paper bags—and a table whereon said articles may be accumulated, of an ejector for moving said articles out of the line of feed, a rocking arm to which said ejector is pivotally connected, a cam for lifting said ejector out of the line of feed, a drive-shaft upon which said rocking arm is loosely mounted, a spring for imparting forward movement to said ejector, a lock mechanism for connecting said ejector positively to said shaft, and a trip for releasing said lock mechanism to permit the spring to operate the ejector, substantially as described.

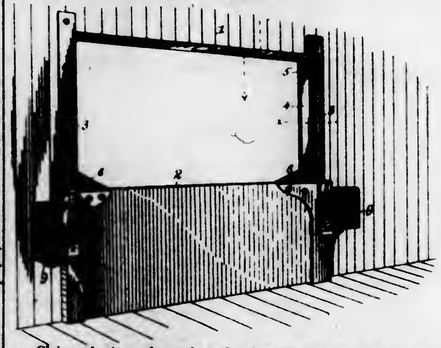
8. In apparatus of the character described, the combination, with mechanism for feeding the articles—such, for example, as paper bags—and a table whereon said articles may be accumulated, of an ejector for moving said articles out of the line of feed, a rocking arm to which said ejector is pivotally connected, a sleeve to which said rocking arm is fastened, a drive-shaft whereon said sleeve is loosely mounted, a collar fixed to said shaft, a lock for effecting the engagement of said sleeve with said collar, and a spring connected to said sleeve for imparting quick movement thereto to operate the ejector, substantially as described.

9. In apparatus of the character described, the combination, with mechanism for feeding the articles—such, for example, as paper bags—and a table whereon said articles may be accumulated, of an ejector for moving said articles out of the line of feed, said ejector comprising an arm having depending fingers and provided with a projection, a cam over which said projection will ride to lift the ejector-arm, means for forcing said ejector-arm across the line of feed to expel the accumulated articles therefrom, and mechanism for retracting said ejector-arm, substantially as described.

10. In apparatus of the character described, the combination, with mechanism for feeding the articles—such, for example, as paper bags—and a table whereon said articles may be accumulated, of an ejector for moving said articles out of the line of feed, a spring for imparting a quick motion to said ejector in one direction, a yielding buffer for moderating the final movement of said ejector, and means for retracting said ejector, substantially as described.

11. In apparatus of the character described, the combination, with mechanism for feeding the articles—such, for example, as paper bags—and an ejector for moving said articles out of line of feed, of means for forcing said ejector across the line of feed and for retracting said ejector and a table whereon said articles may be accumulated, said table being provided with a yielding end plate, substantially as described.

485,007. CAR-DOOR. SILAS W. GREEN, Decatur, Ill. Filed Mar. 5, 1892. Serial No. 423,926. (No model.)



Claim.—1. A car-door adapted to bear against the inner surface of the door-casings, outwardly-projecting guide-rails parallel with the side casings, flush with the inner surface thereof, and having the outer portions of their upper ends cut away or recessed, and guides on the upper corners of the door, having hooked slides above the door embracing the outer edges of the rails, all in combination, as set forth.

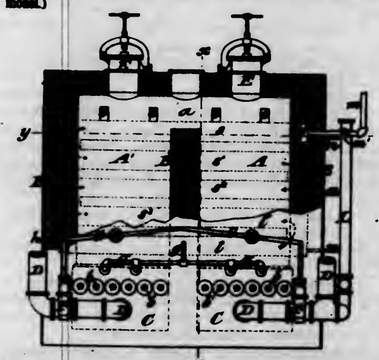
2. A car-door adapted to bear against the inner surface of the door-casing, L-shaped rails, each having one part attached to a side casing flush with the inner surface thereof and the other part projected outwardly and cut away or recessed at its upper end, and guides on the upper corners of the door, having hooked slides above the door, embracing the outwardly-projecting parts of the rails, all in combination, as set forth.

485,008. PORTABLE SAFETY-HEATER. JOHN HOUSE, Chestertown, Md., assignor of two-thirds to Mr. V. CRIBB, same place, and JOB SMITH, Annapolis, Md. Filed Dec. 2, 1891. Renewed Sept. 20, 1892. Serial No. 447,107. (No model.)

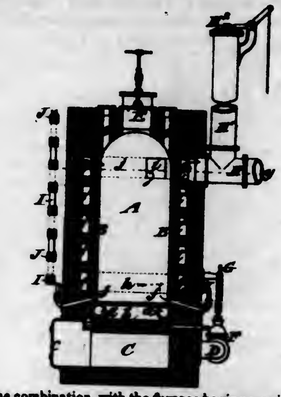
Claim.—1. A stove consisting of a base adapted to hold a lamp and provided with a standard *e*, an adjustable bracket *f* on the standard, formed with a central opening *k*, having a vertical annular flange *g* surrounding it and an outer vertical flange *h* higher than the flange *g*, and the skeleton frame C, adapted to rest on the outer flange *h*, substantially as specified.

2. A stove consisting of a base adapted to hold a lamp and provided with a standard *e*, an adjustable bracket *f* on the standard, formed with a central opening *k*, having a vertical annular flange *g* surrounding it and an outer vertical annular flange *h* higher than the flange *g*, the skeleton frame C, adapted to rest on the outer flange of the bracket, and the plate B, formed with the circular rim *t*, all arranged and combined substantially as and for the purpose specified.

485,009. APPARATUS FOR GENERATING GAS. CHARLES W. ISSELL, New York, N. Y. Filed May 6, 1892. Serial No. 432,026. (No model.)



Claim.—1. The combination, in a gas-generating apparatus, of a combustion-chamber or furnace having in each of two of its opposite walls a series of passages arranged one above another and communicating one with another at opposite ends alternately and having, also, within its walls a cross-passage from one of the passages of one of said series to one of the passages of the other of said series, one of said series of passages communicating at its upper end with the combustion-chamber and the other of said series of passages communicating at its upper end with the final outlet of the apparatus, an oil-vaporizer outside of the furnace, and a pipe for introducing the vapor from said vaporizer into the upper passage of that series which is in communication with the combustion-chamber, substantially as herein set forth.



2. The combination, with the furnace having a series of communicating passages one above another in its opposite side walls, those of said passages on one side constituting a flue with a descent from the combustion-chamber and those on the opposite side constituting a flue with an ascent to its final outlet, and an air-supply pipe with branches entering said passages at numerous intervals at different distances from the furnace and final outlet, substantially as and for the purpose herein set forth.

485,010. DENTAL INSTRUMENT. CHARLES W. JOHNS, St. Paul, Minn. Filed Feb. 4, 1892. Serial No. 420,868. (No model.)

Claim.—1. A dental tool of shell-like form, the inner face of which is formed for abrading or cutting teeth, in combination with a shield which covers the exterior face of the said tool, thereby preventing it from coming in contact with the gum, said shield, however, not extending beyond the end of the tool, whereby the entire inner face thereof is exposed for cutting or abrading, substantially as set forth.

2. A gum-protecting shield supported upon an elastic or spring arm, substantially as set forth.

3. A gum-protecting shield supported by a hinged elastic arm, substantially as set forth.

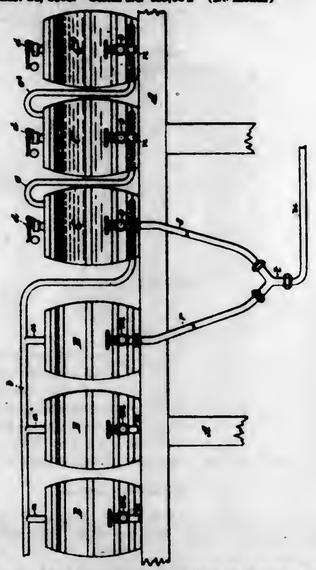
4. The combination, with a dental handpiece and the tool operated thereby, of the shell D, adapted to be slipped upon the end of the handpiece, having the elongated bearing *d* for the mandrel of the tool, the gum-protecting shield, the elastic arm carrying the shield, and the rod G, mounted in bearings *g*, to which the elastic arm is secured, substantially as set forth.

485,011. BUTTER-PACKAGE. CHARLES L. KNEELAND, Lansing, Mich. Filed Apr. 27, 1892. Serial No. 430,897. (No model.)

Claim.—In a butter-package, the combination, with the jar, of the outer casing and supports therein, consisting of metal bars having their upper ends secured to the casing and extending inwardly and down the sides thereon, and semi-elliptic springs secured at their upper ends within said casing and bent at its bottom and adapted to support said jar, said casing being provided with ears having upwardly-

extending notches, and a lever bent centrally to engage with the cover for the purpose of securing it yieldingly and adapted to engage with the notches in the ears, as set forth.

485,012. PROCESS OF TREATING BEER. ARNOLD KRESSLER, Kreischerville, assignor to himself and August Stamer, New York, N. Y. Filed Mar. 21, 1892. Serial No. 425,664. (No model.)



Claim.—1. The process herein described of treating fermented liquors, which consists in conducting the gas escaping from the kraeusen casks into and through liquid in other casks, thereby aerating the same, and in then uniting the contents of both sets of casks in the desired proportions simultaneously and in the presence of the gas, substantially as specified.

2. The process herein described of making beverages, which consists in fermenting one portion, aerating another portion of such beverage, flavoring the aerated portion, and then uniting the fermented and the aerated and flavored portions before the mixture of the two reaches the final receiving-vessel, substantially as herein shown and described.

3. The process herein described of producing a fermented beverage of two liquids, which process consists in first fermenting at least one of said liquids, in then continuously mixing both said liquids while flowing with each other and with carbonic-acid gas and under pressure of said gas, substantially as described.

485,013. SECONDARY BATTERY. WILLIAM MAIN, Brooklyn, N. Y. Filed Feb. 15, 1892. Serial No. 421,515. (No model.)

Claim.—1. A secondary-battery cell having a hydrogen electrode consisting of a vertical conductive support inactive in the liquid, having an affinity for but not penetrated by mercury, and a coating of zinc and mercury on the surface of the support, forming the active material, substantially as described.

2. A secondary-battery cell having a hydrogen-electrode consisting of a vertical conductive support inactive in the liquid, having an affinity for but not penetrated by mercury and covered with a deposit of zinc, the cell containing a supply of mercury, substantially as described.

3. A secondary-battery cell having a hydrogen-electrode consisting of a vertical conductive support inactive in the liquid, having an affinity for but not penetrated by mercury and covered with a deposit of zinc, and a supply of mercury in the bottom of the cell in contact with the support, substantially as described.

4. A secondary-battery cell having a hydrogen-electrode consisting of a series of vertical conductive supports inactive in the liquid, having an affinity for but not penetrated by mercury and covered with a deposit of zinc, the cell containing a supply of mercury, substantially as described.

5. A secondary-battery cell having a hydrogen-electrode consisting of a series of vertical conductive supports inactive in the liquid, having an affinity for but not penetrated by mercury and covered with a deposit of zinc, the cell containing a supply of mercury, and an oxygen-electrode consisting of a series of vertical plates, substantially as described.

6. A secondary-battery cell having a hydrogen-electrode consisting of a vertical conductive support inactive in the liquid and having an affinity for but not penetrated by mercury, and a supply of zinc and mercury, whereby a deposit of zinc is formed on the support and the deposit amalgamated by capillary action, substantially as described.

7. A secondary-battery cell having a hydrogen-electrode consisting of a vertical conductive support inactive in the liquid and having an affinity for but not penetrated by mercury, an oxygen-electrode of lead, and a supply of zinc and mercury, substantially as described.

8. A secondary-battery cell having a hydrogen-electrode consisting of a vertical conductive support inactive in the liquid and having an affinity for but not penetrated by mercury, a supply of mercury, and one or more sheets of amalgamated zinc, forming a zinc-supply, substantially as described.

9. A secondary-battery cell having a hydrogen-electrode consisting of a vertical perforated conductive support inactive in the liquid and having an affinity for but not penetrated by mercury, and a supply of zinc and mercury, substantially as described.

10. A secondary-battery cell having a hydrogen-electrode consisting of a series of vertical perforated conductive supports arranged in pairs, said supports being inactive in the liquid and having an affinity for but not penetrated by mercury, a supply of mercury, and sheets of amalgamated zinc between the pairs of supports, forming a zinc-supply, substantially as described.

11. A secondary-battery cell having a hydrogen-electrode consisting of a vertical copper support and a coating of zinc and mercury on the surface of the support, forming the active material, substantially as described.

12. A secondary-battery cell having a hydrogen-electrode consisting of a vertical copper support covered with a deposit of zinc, the cell containing a supply of mercury, substantially as described.

13. A secondary-battery cell having a hydrogen-electrode consisting of a series of vertical copper supports covered with a deposit of zinc, the cell containing a supply of mercury, substantially as described.

14. A secondary-battery cell having a hydrogen-electrode consisting of a series of vertical perforated copper supports covered with a deposit of zinc, the cell containing a supply of mercury, substantially as described.

15. A secondary-battery cell having a hydrogen-electrode consisting of a series of vertical copper supports covered with a deposit of zinc, the cell containing a supply of mercury, and an oxygen-electrode consisting of a series of vertical plates, substantially as described.

16. A secondary-battery cell having a hydrogen-electrode consisting of a vertical copper support, an oxygen-electrode of lead, and a supply of zinc and mercury, substantially as described.

17. A secondary-battery cell having a hydrogen-electrode consisting of a vertical copper support, a supply of mercury, and one or more sheets of amalgamated zinc forming a zinc-supply, substantially as described.

18. A secondary-battery cell having a hydrogen-electrode consisting of a series of vertical perforated copper supports arranged in pairs, a supply of mercury, and a sheet of amalgamated zinc between each pair of supports, substantially as described.

19. A secondary-battery cell having a hydrogen-electrode consisting of a vertical perforated conductive support inactive in the liquid and an electro-deposit of zinc thereon, substantially as described.

20. A secondary-battery cell having an element consisting of a vertical copper plate supporting electro-deposited zinc, substantially as described.

21. A secondary-battery cell having an electrode consisting of a series of connected vertical copper plates supporting electro-deposited zinc, substantially as described.

22. A secondary-battery cell having a hydrogen-electrode consisting of a conductive support inactive in the liquid and not penetrated by mercury, zinc amalgam forming an active deposit thereon, and a supply of zinc consisting of one or more sheets of amalgamated zinc, substantially as described.

23. A secondary-battery cell having a hydrogen-electrode consisting of a series of conductive supports inactive in the liquid and arranged in pairs, zinc amalgam forming an active deposit thereon, and sheets of amalgamated zinc between said pairs of supports, forming the zinc-supply, substantially as described.

24. A battery-plate consisting of a series of lamine of such material as to be increased in thickness in the action of the battery and having soluble material between the lamina, whereby space is provided for the increase in thickness of the lamina, substantially as described.

25. An oxygen battery-plate consisting of a series of lamina with soluble material between the same, whereby space is provided for increase in thickness of the lamina by oxidation, substantially as described.

26. An oxygen battery-plate consisting of a series of lamina with soluble material and conducting material between the lamina, whereby space is provided for increase of thickness of the lamina by oxidation and the conductivity of the lamina increased, substantially as described.

27. An oxygen battery-plate consisting of a series of lamina with soluble material containing zinc between the same, substantially as described.

28. An oxygen battery-plate consisting of a series of lamina with soluble material and graphite between the lamina, substantially as described.

29. An oxygen battery-plate consisting of a series of lamina with oxide of zinc and graphite between the lamina, substantially as described.

30. The combination, with a battery terminal or terminals consisting of a core of high conductivity and a covering of conducting material non-corrodible by the battery acids, of a connector consisting of a collar of conducting material non-corrodible by the battery acids and constructed to receive the terminal or terminals and a wedge of similar material for securing the terminal or terminals in the collar, said collar and wedge being constructed to engage the terminal or terminals by surfaces conforming in shape thereto, whereby larger surfaces of contact are provided and a high conductivity secured with material of low specific conductivity, substantially as described.

31. An electric-battery connector consisting of a collar of conducting material non-corrodible by the battery acids and constructed to receive the conductor or conductors and a wedge of similar material for securing a conductor or conductors in the collar, said collar and wedge being constructed to engage the conductor or conductors by surfaces conforming in shape thereto, whereby large surfaces of contact are provided and a high conductivity secured with material of low specific conductivity, substantially as described.

32. The method of making a battery-plate, which consists in superposing a series of lamina with soluble material between them and dissolving out the soluble material, substantially as described.

33. The method of making a battery-plate, which consists in superposing a series of lamina with soluble material and conductive material between them and dissolving out the soluble material, substantially as described.

34. The method of making a battery-plate, which consists in superposing a series of lamina with soluble material required in the battery between them and dissolving out the soluble material in the battery liquid, substantially as described.

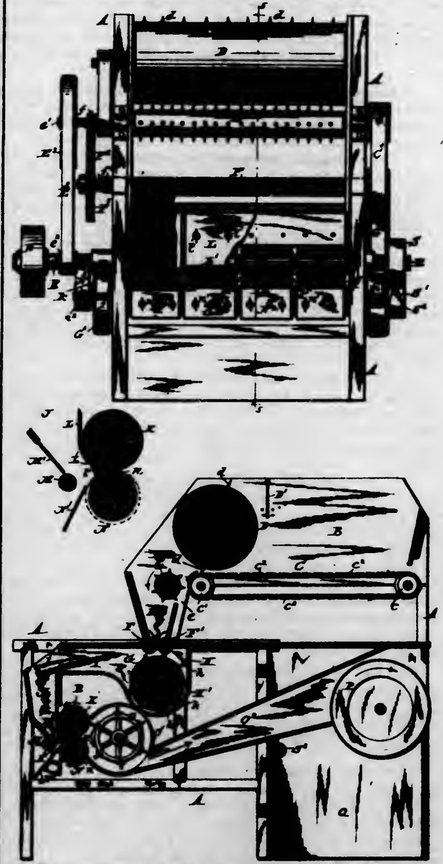
485,014. PATTERN FOR DRAFTING TROUSERS. ARMANALD F. MEAR, Philadelphia, Pa. Filed Aug. 31, 1891. Serial No. 404,357. (No model.)

Claim.—1. An adjustable chart for drafting trousers, consisting of an upper and lower pair and a section pivoted to one section of the upper pair and adapted to have its free end movable across a rearwardly-projecting portion of the other section of said pair, the sections of the lower pair being connected at their lower ends and longitudinally adjustable on the upper pair and one of the sections of the upper pair having a projecting arm adapted to be adjusted on the other section of the said upper pair, substantially as described.

2. An adjustable chart for drafting patterns for trousers, consisting of upper and lower pairs and a section pivoted to one of the sections of the upper pair, the sections of the lower pair having a connecting neck integral therewith and said sections being longitudinally adjustable on said upper sections and one of the sections of the upper pair having a slotted projecting arm for adjusting it on the other section of the upper pair, substantially as described.

485,015. ROLLER COTTON-GIN. JOHN B. MONTAGUE and JOHN A. PENN, Syracuse, N. Y. Filed Nov. 2, 1891. Serial No. 410,641. (No model.)

Brief.—The machine includes a feed-apron C, from which the seed-cotton is taken by a spiked roller D and transferred to a hopper F, the transfer being aided by a second spiked roller E. From the hopper it is fed through two elastic-surfaced rollers to a rapidly-revolving beater-cylinder G in a chamber partly inclosed by a screen, through which dirt, &c., may fall. The cotton is then delivered by the beater-cylinder through a chute I to a hopper J and is then acted upon by the larger elastic-surfaced ginning-roller B and the smaller hard-surfaced ginning-roller K', the latter being supported by several bearings placed a short distance apart to prevent its yielding. The lint is removed from the ginning-rolls by a clearer N, covered with overlapping ribs or wings of elastic material, and is finally stripped by a brush-wheel O, which blows it to a suitable receptacle.



Claim.—1. The combination, substantially as hereinbefore set forth, of a hopper, a carrier-belt traversing it, a feed-cylinder revolving thereover to lift a portion of the feed-cotton therefrom, an adjustable gate which regulates the quantity so lifted over the cylinder, a lifting-roller near the carrier, a discharge-opening between the carrier-belt and lifting-roller, a second hopper below the lifting-roller, feed-rolls in the bottom of this hopper beneath the lifting-roller, and a beater-cylinder below the feed-rolls.

2. The combination, substantially as hereinbefore set forth, of a

carrier-belt, a feed-cylinder revolving thereover, a lifting-roll near the carrier, feed-rolls beneath the lifting-rolls, a beater-cylinder below the feed-rolls, ginning-rolls, a tunnel connecting these rolls and the beater-cylinder, and screens at each end of the tunnel for the escape of foreign matters and to prevent the formation of eddy currents in the tunnel, as set forth.

3. The combination, substantially as hereinbefore set forth, of an elastic-surfaced ginning-roll of comparatively-large diameter, a spirally-grooved hard-surfaced ginning-roll of smaller diameter, running in contact therewith at a much higher velocity and in an opposite direction at its point of contact with the larger roll, a chute in front of the rolls, and a vertically-arranged guard-plate in the chute in front of the larger roll, curved, as described, to conform to the curvature of said roll and to cover that side of the roll next the chute and having one edge arranged between the two rolls and provided with a series of openings to allow the cotton-seed to come in contact with the surface of the larger roll without passing between it and the smaller roll.

4. The combination, substantially as hereinbefore set forth, of a ginning-roll with a guard-plate provided with ovoid-shaped perforations or slots flaring outward on the seed side to facilitate the entrance of the seed therein and the removal of the lint therefrom.

5. The combination, substantially as hereinbefore set forth, of an elastic-surfaced ginning-roll of comparatively-large diameter, a hard-surfaced spirally-grooved ginning-roll of smaller diameter running at high speed in contact with the larger roll, and a clearer-roll provided with parallel overlapping elastic ribs, arranged to revolve in contact with both the larger and smaller rolls and to clear the cotton therefrom.

6. The combination, substantially as hereinbefore set forth, of an elastic-surfaced ginning-roll, a perforated guard-plate, a clearer-roll in contact with the ginning-roll, and an interposed small spirally-grooved ginning-roll running in contact with both the other rolls.

7. The combination, substantially as hereinbefore set forth, of a clearer-roll, its elastic overlapping ribs or wings, a chute-board consisting of a series of plates tangential to the clearer-roll, and means for adjusting these plates endwise relatively to the clearer-roll to vary its active surface.

8. The combination, substantially as hereinbefore set forth, of a smooth-surfaced ginning-roll, an adjacent perforated guard-plate conforming to its curvature, a hard-surfaced spirally-grooved ginning-roll, a ribbed clearer-roll in contact with both these rolls, a chute-board consisting of a series of plates tangential to the clearer-roll, and means for adjusting these plates endwise relatively thereto to overlap more or less of the clearer-roll, to vary the active surface of the clearer-roll.

9. The combination, substantially as hereinbefore set forth, of an open-bottomed feed-chute, ginning-rolls adjacent thereto, a perforated guard-plate conforming in curvature to one of the ginning-rolls, a ribbed clearer-roll revolving in contact with the ginning-rolls, a grating on the opposite side of the chute, and a feed-roll beneath the grating.

10. The combination, substantially as hereinbefore set forth, of an open-bottomed feed-chute, ginning-rolls adjacent thereto, a perforated guard-plate conforming in curvature to one of the ginning-rolls, a ribbed clearer-roll revolving in contact with the ginning-rolls, a chute-board adjustable across the clearer-roll, a grating or grate on the opposite side of the chute, and a feed-roll beneath the grating.

11. The combination, substantially as hereinbefore set forth, of an elastic-surfaced ginning-roll of comparatively-large diameter, a hard-surfaced spirally-grooved ginning-roll of small diameter, and a ribbed clearer-roll (all revolving in contact) with a brush-wheel acting on the large ginning-roll and clearer-roll.

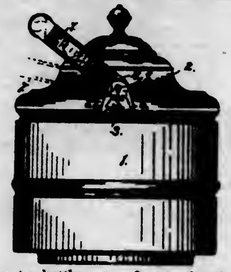
12. The combination, substantially as hereinbefore set forth, of ginning-rolls, a clearer-roll revolving close thereto, its elastic overlapping ribs or wings, a brush-wheel acting on one of the ginning-rolls and the clearer-roll, a hood, and a reticulated drum or screen rotating therein to carry over and discharge lint blown thereon by the brush-wheel.

13. The combination, substantially as hereinbefore set forth, of an open-bottomed hopper, feed-rolls revolving therein, a beater-cylinder beneath the feed-rolls, an open-bottomed chute connected with the beater-chamber ginning-rolls adjacent thereto,, a perforated guard-plate contiguous to the ginning-rolls, and a clearer-roll having elastic overlapping ribs or wings, acting upon the ginning-rolls.

14. The combination, substantially as hereinbefore set forth, of an open-bottomed hopper, feed-rolls revolving therein, a beater-cylinder beneath the feed-rolls, an open-bottomed chute connected with the beater-chamber, ginning-rolls adjacent thereto, a perforated guard-plate abutting against the ginning-rolls, a grating or gate on the opposite side of the chute, and a feed-roll beneath the grating.

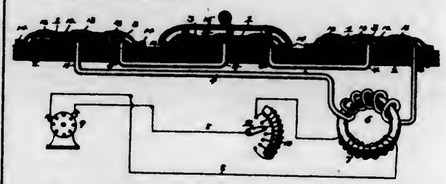
15. The combination, substantially as hereinbefore set forth, of a hopper, feed-rolls therein, a beater-cylinder beneath them, a chute connected with the beater-chamber, ginning-rolls near the discharge end of the chute, a perforated guard-plate co-operating with the ginning-rolls, a clearer-roll in contact with the ginning-rolls, a chute-board adjustable across the discharge-opening and clearer-roll, a grating in the chute, and a feed-roll in the discharge-opening.

485,016. TEA-KETTLE. JOSEPH HARRIS, Jr., Ramsburg, N. Y. Filed June 7, 1892. Serial No. 435,892. (No model.)



Claim.—In a tea-kettle, an ear for carrying the bail, consisting of a flat piece of metal devoid of projections and having its upper edge of the shape of the segment of a circle whose center is below the point at which the bail is pivoted, the sides being formed by diverging tangents of the segment to act in conjunction with shoulders on the bail, as and for the purpose stated.

485,017. ELECTRIC SOLDERING. ELIAS H. RICE, Baltimore, Md., assignor to Rice & Henderson, same place. Filed July 17, 1891. Serial No. 399,853. (No model.)



Claim.—1. The method of soldering metallic articles together, which consists in fusing the solder at the point or line of union by heat radiated from an electrically-heated body, substantially as described.

2. The method of soldering metallic articles together, which consists in fusing the solder at the point or line of union by heat radiated from an electrically-heated body to one of said articles and conducted to the solder, substantially as described.

3. A soldering apparatus consisting of a heat-radiator and a support made of a refractory poor conductor of heat for holding the article to be operated upon in effective heat-radiating proximity to the radiator, substantially as described.

4. A soldering apparatus consisting of a heat-radiator the surface of which approximately corresponds to the surface of the article operated upon and a support made of a refractory poor conductor of heat for holding the article in effective heat-radiating proximity to the radiator-surface, substantially as described.

5. A soldering apparatus consisting of an electric heater and a support of insulating refractory material for holding the article to be operated upon in effective heat-radiating proximity to the radiator, substantially as described.

6. A soldering apparatus consisting of an electric heater the radiating-surface of which approximately corresponds to the surface of the article operated upon and a support of insulating refractory material for holding the article in effective heat-radiating proximity to the radiating-surface, substantially as described.

7. A soldering apparatus consisting of a wire or thread of electric conducting material of high resistance disposed in devious lines upon an insulating refractory base, a support of insulating refractory material for holding the article to be operated upon in proximity to the wire or thread, an electric circuit, including the said wire or thread, and a generator for heating the latter by the passage of current therethrough, substantially as described.

8. An electric soldering apparatus consisting of a number of electric radiators, each provided with a support for holding the articles to be soldered within effective radiating proximity to the same, in combination with a source of current common to all the radiators, a regulator for determining the maximum current admitted to the radiators,

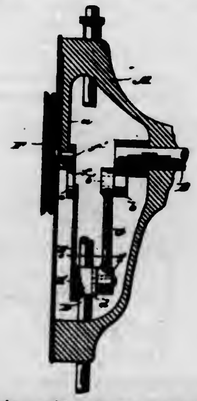
and a switching apparatus for including the radiators in succession in the charging-circuit, substantially as described.

9. A soldering apparatus consisting of a heat-radiator, a support for holding the article operated upon in effective heat-radiating proximity of the radiator, and a removable transparent cover for the radiator and article for preventing heat radiation into the ambient air, substantially as described.

485,018. RADIATOR. WILLIAM SCOTT, Detroit, Mich. Filed Nov. 3, 1890. Serial No. 370,249. (No model.)

Claim.—The combination of three or more radiator-loops, each having two coincident openings in its base, one of which is larger in diameter than the other, the said loops being assembled so that the larger openings in two of them are adjacent and so that the smaller opening in one of the two and the larger opening of the third are adjacent, and a tie-rod extending through all of the openings of the loops and consisting of tubes, each having internal screw-threads and a flange or enlargement at one end and external screw-threads at the other end, two of said tubes being within the two loops aforesaid, having their flanges or enlargements engaging the opposite faces of the said loops and joined by a coupling which is interiorly screw-threaded at each end to receive the externally-screw-threaded ends of the tubes, said coupling fitting exteriorly the larger adjacent openings of the loops, and the third tube screwing at its smaller end into the screw-threads of the larger end of one of the other tubes and having its flange or enlargement engaging the outer side of the third loop, the said tie-rod having openings coincident with steam-passages formed in the several loops and adapted by virtue of the internal screw-threads in the remote tubes to receive steam supply and discharge pipes.

485,019. TAKE-UP FOR SEWING-MACHINES. DIRKUS SNYDER and MICHAEL KUHNS, St. Louis, Mo. Filed Feb. 16, 1892. Serial No. 421,732. (Model.)



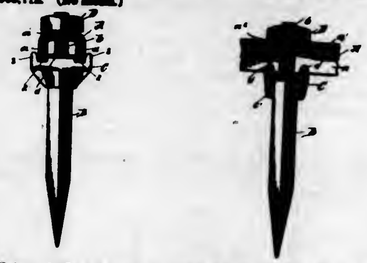
Claim.—1. A sewing-machine take-up mechanism consisting of the combination, with a rotating driving-shaft provided with a crank, of a needle-bar, a pitman serving to connect said needle-bar with said crank, a rotary take-up, a shaft by which said take-up is carried and which is provided with an operating-arm, the axis of the said take-up shaft being in line with the axis of said driving-shaft, or approximately so, as shown and described, and a pin operated from said pitman and having a loose connection with the arm of said take-up shaft, and thereby serving to impart a differential rotary motion to said take-up.

2. A sewing-machine take-up mechanism consisting of the combination, with a rotating driving-shaft provided with a crank, of a needle-bar, a pitman serving to connect said needle-bar with said crank, a rotary take-up, a shaft by which said take-up is carried and which is provided with a slotted operating-arm, the axis of said take-up shaft being in line with the axis of said driving-shaft, or approximately so, as shown and described, and a pin operated from said pitman and engaging the said slotted arm of said take-up shaft, and thereby serving to impart a differential rotary motion to said take-up.

3. A sewing-machine take-up mechanism consisting of the combination, with a rotating driving-shaft provided with a crank, of a needle-bar, a pitman serving to connect said needle-bar with said crank, a rotary take-up, a shaft by which said take-up is carried and which is provided with an operating-arm, the axis of the said take-up shaft being in line with the axis of said driving-shaft, or approximately so, an arm rigidly attached at its lower end to the lower end of said pitman and provided at its upper end with a pin having a loose connection with the said arm of the take-up shaft.

4. A sewing-machine take-up mechanism consisting of the combination, with a rotating driving-shaft provided with a crank, of a needle-bar, a pitman serving to connect said needle-bar with said crank, a rotary take-up, a shaft by which said take-up is carried and which is provided with a slotted operating-arm, the axis of said take-up shaft being in line with the axis of said driving-shaft, or approximately so, an arm rigidly attached at its lower end to the lower end of said pitman and provided at its upper end with a pin engaging the said slotted arm of the take-up shaft.

485,020. HARROW. WILLIAM SCOTT, Racine, Wis., assignor to the J. I. Case Plow Works, same place. Filed Sept. 22, 1890. Serial No. 365,712. (No model.)



Claim.—1. In a harrow, a tooth-bar of channel form, having two sides with integral connecting-back, and a series of individual clamp-plates for the harrow-teeth, formed separate from the harrow-teeth, each of said clamp-plates having a suitable projection or projections to engage the side plate or plates of the tooth-bar and adapted to hold the harrow-tooth against rotation, in combination with the harrow-teeth passing through said separate individual clamp-plates and the back of said bar and fastening devices directly engaging the ends of the harrow-teeth and binding the individual clamp-plates against the tooth-bar, substantially as described.

2. In a harrow, a tooth-bar of channel form, having two sides with integral connecting-back, said back being perforated to receive the shanks of the harrow-teeth, a series of individual clamp-plates formed separate from the harrow-teeth and provided each with an angular seat to receive a harrow-tooth and adapted to engage said bar, and a series of harrow-teeth projecting through said individual clamp-plates and through said bar, and fastening devices directly engaging the ends of the harrow-teeth and binding the individual clamp-plates against the tooth-bar, substantially as described.

3. The combination, with a perforated tooth-bar formed of channel form with integral sides and back, of a series of perforated clamp-plates having each a projection or projections to engage said bar and adapted, also, to engage the sides of the harrow-tooth and lock said tooth against rotation, and a series of harrow-teeth, each having its shank or upper portion extending through its individual clamp-plate, and fastening devices directly engaging the upper ends of the harrow-teeth and binding the individual clamp-plates against the tooth-bar, substantially as described.

4. In a harrow, a tooth-bar of channel form, having two sides with integral connecting-back, and a series of individual perforated clamp-plates adapted to embrace said sides of the tooth-bar, in combination with the harrow-teeth passing through said individual clamp-plates and the back of said tooth-bar and fastening devices directly engaging the ends of the teeth and binding the clamp-plates against the tooth-bar, substantially as described.

5. In a harrow, a tooth-bar of channel form, having two sides with a connecting-back, and a clamp-plate having flanges adapted to abut against the inside of said sides, in combination with a tooth passing through said plate and the back of said bar and means, substantially as specified, for securing the same thereon, as and for the purposes set forth.

6. In a harrow, a tooth-bar of channel form, having two sides and a connecting-back, and a clamp or plate having grooves adapted

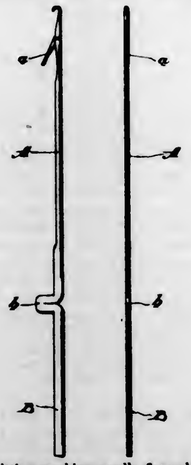
to receive said sides, in combination with a tooth passing through said plate and the back of said bar and means, substantially as described, for retaining said tooth and plate removably in position, as and for the purpose set forth.

7. In a harrow, a tooth-bar of channel form, having two sides with integral connecting-back, a series of individual perforated clamps or plates, one for each of the harrow-teeth, said clamps or plates being adapted to engage the sides of the tooth-bar, and a series of harrow-teeth, each having its upper end adapted to pass through its individual clamp or plate and the back of the tooth-bar and having a shoulder adapted to abut against the under side of its clamp or plate, and a screw-thread and nut at the upper end of each of said teeth at the outside of said back, substantially as and for the purpose specified.

8. In a harrow, the combination of a tooth-bar of channel form, having two sides with integral connecting-back, a series of perforated clamps or plates adapted to engage said sides, said plates and back having circular apertures therein for the insertion of the teeth and said plates having each an angular seat or countersink on its under side around said aperture, a series of teeth having each an upper cylindrical portion and adapted to pass through said apertures, the lower angular portion terminating in a shoulder adapted to fit said seat or countersink, and a screw-thread and nut at said cylindrical end, substantially as and for the purpose specified.

9. The combination, with a U-shaped tooth-bar of a harrow, of a flanged clamp-plate fitting the bottom and sides thereof, said tooth-bar and clamp-plate being provided with a circular aperture therethrough and the said clamp-plate having an angular seat or countersink around said aperture on the under side thereof, and a tooth having an upper cylindrical portion adapted to fit said aperture and a lower angular portion terminating in a shoulder adapted to fit said seat or countersink, and a screw-thread and nut on said upper portion, substantially as and for the purpose herein specified.

485,021. KNITTING-MACHINE NEEDLE. CHRISTIAN B. M. STRAWLER, Philadelphia, Pa. Filed May 24, 1892. Serial No. 434,313. (No model.)



Claim.—1. A knitting-machine needle formed throughout in a unitary structure, the tail-piece of which is of a width greater than the remainder of the needle.

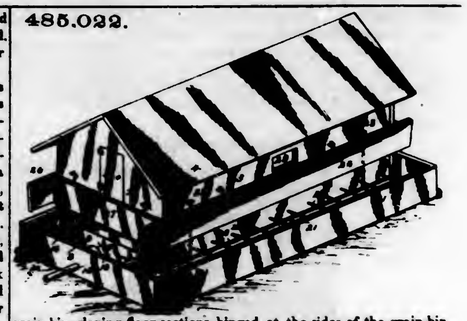
2. The hereinbefore-described method of manufacturing an improved knitting-machine needle, which consists in forming the tail-piece and upper portion of said needle in a unitary structure of substantially the same width throughout and then reducing the width of the upper portion of said needle.

485,022. FEED-TROUGH. IRVIN S. SWIGLARD, Glenolpin, Nebr. Filed June 10, 1892. Serial No. 436,944. (No model.)

Claim.—1. In an apparatus of the class described, a water-tank 8, situated beneath said bin, feed-troughs 11 at the side and below said bin, water-troughs 13, connecting the ends of said feed-troughs, nozzles 17, connecting said water-tanks with said feed-troughs, and stop-cocks 18 on said nozzles, the mouths of said nozzles being covered with a screen, shutters 20 in said feed-troughs, and lids 26 and 27 for said feed-troughs, substantially as and for the purpose set forth.

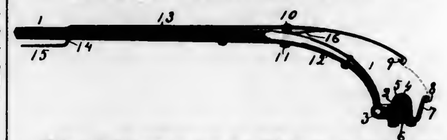
2. In an apparatus of the class described, the combination of a

485,022.



grain-bin, sloping floor-sections hinged at the sides of the grain-bin and rising toward the center, and a removable central vertical partition in the grain-bin, substantially as described.

485,028. THILL-SUPPORT. THEODORE B. WOODWARD, Norway, Pa. Filed May 26, 1892. Serial No. 434,261. (No model.)

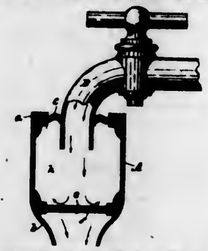


Claim.—1. The combination, in a thill-supporter, of a hook permanently fixed to the axle of a vehicle, another hook pivoted to a thill to engage with the fixed hook and having a handle extending forward of its pivot, and a spring acting between the pivoted hook and thill to impel the hook normally out of engagement with the fixed hook, substantially as described.

2. The combination, in a thill-supporter, of a hook permanently fixed to a vehicle-axle, another hook pivoted on top of a thill to engage the said fixed hook and provided with a handle extending below the thill, substantially as described, whereby the handle and thill may be both operated to raise and secure the thill by a single movement.

3. The combination, in a thill-supporter, of a hook fixed to a vehicle-axle, another hook pivoted on top of the thill and having a forwardly-extending lever, which passes down through the thill and is bent to form a handle below the thill, substantially as described.

485,024. FAUCET-FILTER. GEORGE F. ABBOTT, Rochester, N. Y. Filed Mar. 26, 1892. Serial No. 426,579. (No model.)



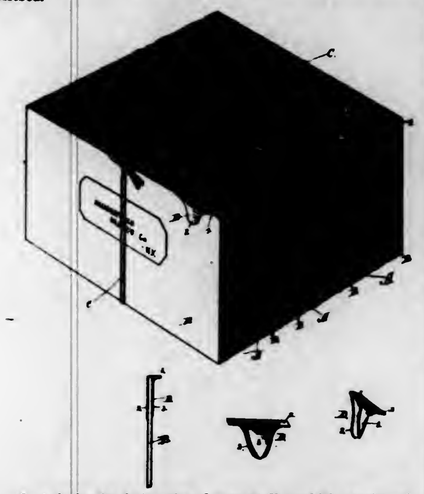
Claim.—The combination, with the body A and a nozzle *b*, having a flange provided with seats *g*, of a filtering-diaphragm *c*, held between flanges on the body and nozzle, and the diaphragm-support consisting of two wires at right angles to each other and crossed and bent at the center of the diaphragm, with their ends resting in the seats *g* in the nozzle, substantially as shown and described.

485,025. MEANS FOR AND METHOD OF DESIGNATING DOCUMENT-FILES. GEORGE H. BALL, Menands, N. Y. Filed Nov. 27, 1891. Serial No. 413,261. (No model.)

Claim.—1. The method of designating document-files, which consists in forming the files into packages corresponding to the several subject-matters thereof, labeling the edge of each package, and arranging the packages side by side, so that the labels shall mark the boundaries of the respective packages, substantially as specified.

2. A device for designating document-files, which consists of a

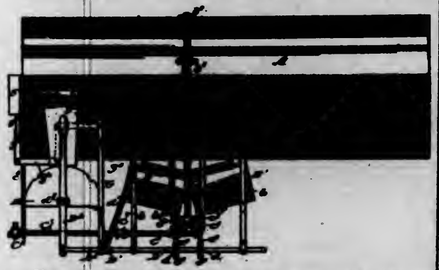
panel arranged to carry a suitable legend, said panel being bent at right angles to itself at one side to form one finger of a clip and at the other side bent first back upon itself and then outwardly to form a second finger converging toward the first finger, substantially as described.



3. A device for designating document-files, which consists of a panel arranged to carry a suitable legend for indicating the subject-matter of the contents of a package to which the device is applied, said panel being bent perpendicularly to form a finger which is integral therewith and having its other face flush with the corresponding edge of said panel, the latter being arranged to overlap onto the edge of a package of documents, so that its outer edge will define the boundary of said package, substantially as described.

4. In a means for arranging and designating packages of document-files, the combination of a supporting-board therefor and a clip attached thereto, having its outer finger flush with the board and carrying at right angles to the board a panel arranged to carry a suitable legend and to overlap the package and mark the boundary thereof, substantially as described.

485,026. LIQUID-MEASURING DEVICE. WALTER H. BRIGGS, Cincinnati, Ohio. Filed Jan. 28, 1892. Serial No. 419,194. (No model.)



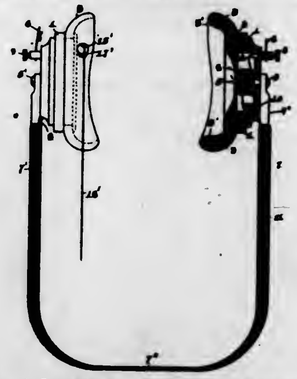
Claim.—1. The combination, substantially as hereinbefore set forth, of the tank, the measuring-vessels supported below the tank, a branch supply-pipe connecting the tank, the measuring-vessels, and a discharge-pipe, the three-way cocks interposed between the supply and discharge branches of pipes, and the lever and connecting-bar to simultaneously open the supply to one of the measuring-vessels and the discharge from the other measuring-vessel.

2. The combination of the tank, the two measuring-vessels below it, the discharge-pipe and faucet for both measuring-vessels, the branched pipe leading from the tank and connecting the discharge-pipe and measuring-vessels, the three-way cocks arranged within the branches of said pipe between the supply and discharge branches of the measuring-vessels, the lever and connecting-rod bar to simultaneously open the supply to one vessel and the discharge from the other vessel, a register at the rear of the tank, and levers and links connecting the register and the mechanism for operating the three-way cocks, so as to automatically and simultaneously record the amount drawn from the tank, substantially as shown and described.

3. The combination of the tank, two inclined measuring-vessels B B', arranged below the tank, the supply-pipe C for the measuring-vessels, having cross branches c' c', the three-way cock c^3 c^3 at the ends of said cross branch, the supply-pipes c^4, connecting the three-way-cock cases c^3 and the measuring-vessels, the discharge branches c^5, connecting the cases of the three-way cocks and the discharge-pipe, the discharge-pipe C', having faucet C^2 at its end, levers c^6 for turning the three-way cocks, and the lever D^2 and sliding bar D for connecting the lower end of said lever D^2 and the levers of the three-way cocks, substantially as and for the purpose set forth.

4. The combination of the tank, the measuring-vessels below it, the discharge-pipe and faucet, the branch pipes and three-way cocks for supplying one of the measuring-vessels while the other is being emptied, the shifting-lever D^2 and bar connecting said lever and the three-way cocks, the case E, the rock-shaft d^2 upon which the lever is secured, the arm d^3, secured to the rock-shaft, the spring-pressed double pawl d^4, pivoted upon the upper end of the bar d^3 and adapted to engage the circular side walls of the case and vibrate the pawl in opposite directions, and the notched sector *e* to engage alternately the opposite detents of the pawl and prevent the return of the shifting-lever until it has made its full stroke.

485,027. TELEPHONE-SUPPORT. GEORGE V. BENJAMIN, Ithaca, N. Y. Filed Mar. 19, 1892. Serial No. 426,572. (No model.)



Claim.—1. In a telephone, the combination of receivers adapted to be applied to both ears with a horseshoe-magnet having two limbs of soft iron, joined together by a piece of spring-steel integral therewith, substantially as set forth.

2. In a telephone, the combination of receivers with a horseshoe-magnet having two limbs of soft iron, joined together by a piece of steel, said limbs being hollow for the reception of a conductor, substantially as set forth.

3. In a telephone, the combination of receivers with a horseshoe-magnet having two limbs of soft iron, joined together integrally by a piece of spring-steel having a thinner and wider transverse sectional area than a limb, substantially as set forth.

4. In a telephone, the combination of receivers with a horseshoe-magnet having two limbs of soft iron, joined together integrally by a piece of spring-steel having a thinner and wider transverse sectional area than a limb and having said area enlarged toward its longitudinal center, substantially as set forth.

5. In a telephone, the wire coil having a core extending through the back of the receivers and grooved to receive both ends of the wire, substantially as set forth.

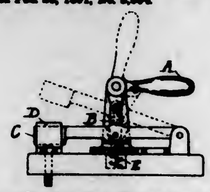
6. A telephone-receiver, a conducting-wire, a suspending cord or wire, and movable cord-support consisting of a slotted tube, the cord being provided with a carriage fitted in the tube, whereby said support of a suspending-cord of a conducting-wire of a telephone may be moved horizontally, substantially as set forth.

7. A telephone-receiver, devices for supporting said receiver in operative position on the head, a conducting-wire, a supporting-rod, a suspending cord or wire, and a freely-movable cord-supporting ring, whereby said telephone and cord-support and conducting-wire may be moved to various positions with and by the operator's head, substantially as set forth.

8. A telephone-receiver, a conducting-wire, a suspending cord or wire, and movable cord-support consisting of a slotted tube, the cord being provided with a carriage fitted in the tube, whereby said sup-

part of a suspending-cord of a conducting-wire of a telephone may be moved horizontally, substantially as set forth.

485,028. ELECTRICAL SWITCH. GERSAV BROWARDER, London, England. Filed May 6, 1892. Serial No. 432,014. (No model.) Patented in England Feb. 26, 1891, No. 3,994.

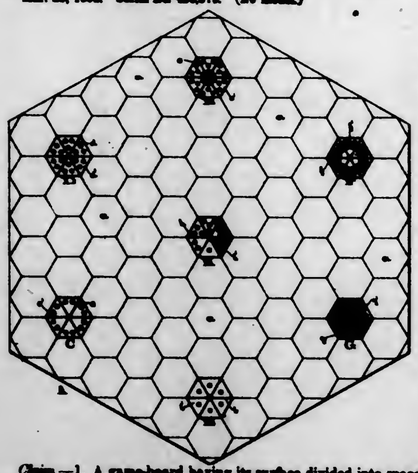


Claim.—1. In an electric switch, the combination of one or more bars, a rocking handle, and a link pivoted to both, the rocker-axis of the handle lying between its knob and its link-joint and the length of the link admitting of the said joint being straightened out on closing the switch, substantially as described.

2. In an electrical switch, the combination of a contact-bar, a rocking handle, a cam thereon bearing upon the bar, a spring to lift the bar, and a link loosely connecting the bar and handle, substantially as described.

3. In an electrical switch, the combination of a contact-bar, a rocking handle, a cam thereon bearing upon the bar, a link attached to one of them, and a stop on the link, engaging with the other, substantially as described.

485,029. GAME-BOARD. IRA L. CONKLING, Philadelphia, Pa. Filed Mar. 28, 1892. Serial No. 426,578. (No model.)

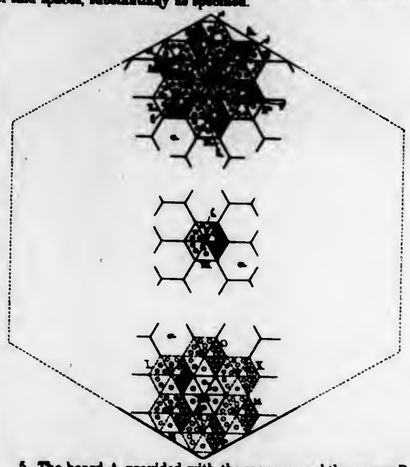


Claim.—1. A game-board having its surface divided into spaces certain of which are different from the others and a number of pieces or men provided with corresponding parts or sections and movable on said board in such manner as to attain the registry of said parts or sections and the ultimate surrounding of said spaces, substantially as specified.

2. A game-board having its surface divided into spaces certain of which are different from the others, and a number of pieces or men similarly provided, having a section to match the sections of each of said spaces and movable on said board in such manner as to attain the registry of their corresponding parts and the ultimate surrounding of and registry with similar parts of such spaces, substantially as specified.

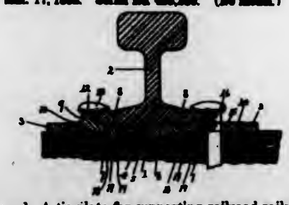
3. A game-board having its surface divided into polygonal spaces certain of which are provided with parts or sections, the sections of each space being different from those of the others, and a number of polygonal pieces or men similarly provided, having a section to match the sections of each of said spaces and movable on said board in such manner as to attain the registry of their corresponding parts and the ultimate surrounding of and registry with similar parts of such spaces, substantially as specified.

4. A game-board having its surface divided into polygonal spaces certain of which are divided by lines extending from their corners to their centers into parts or sections, the sections of each subdivided space being different from those of the others, and a number of polygonal pieces or men similarly subdivided, having a section to match the sections of each of the subdivided spaces and movable on said board in such manner as to attain the registry of their corresponding parts and the ultimate surrounding of and registry with similar parts of said spaces, substantially as specified.



5. The board A, provided with the spaces *a* and the spaces B, C, D, E, F, G, and H, the parts or sections *b'*, *c'*, *d'*, *e'*, *f'*, *g'*, and *h'* of said spaces having the dots shown therein and a number of the pieces or men K, L, M, N, O, and P having in their parts or sections dots of a number corresponding with those of said spaces and provided with the knobs *k'*, *l'*, *m'*, *n'*, *o'*, and *p'*, said pieces or men being adapted for straight and rotary movement on said board in such manner as to attain the registry of their corresponding parts and the ultimate surrounding of and registry with similar parts of said spaces, substantially as specified.

485,080. TIE-PLATE. WILLIAM GOLDIE, West Bay City, Mich. Filed Mar. 17, 1892. Serial No. 425,260. (No model.)



Claim.—1. A tie-plate for supporting railroad-rails and having a middle portion for carrying the rail and provided on its upper side with a transverse depression and with a transverse convexity on its under side and having lateral portions extending on each side of said middle portion and provided with spike-openings, substantially as set forth.

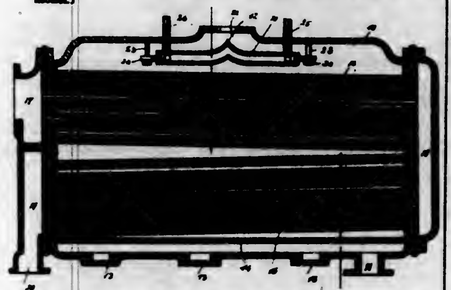
2. A tie-plate for supporting railroad-rails, having its middle portion bent transversely to form a transverse depression on its upper side and a convex depression on its under side and provided with laterally-extending portions having spike-openings, substantially as set forth.

3. A plate for supporting railroad-rails upon the tie and provided on its central portion beneath the rail with a depressed portion, having a concave upper and a convex under side and with laterally-extended portions for resting on the tie-surface, substantially as set forth.

4. A tie-plate for railroad-rails, consisting of a plate of metal having spike-holes on its lateral end portions and having a portion between the spike-holes provided with a transversely-concave upper side and a convex under side, substantially as and for the purpose set forth.

5. The combination of a railroad rail and tie with a tie-plate between the rail and tie and having its middle portion beneath the rail provided with a transverse concave depression on its upper side presented toward the rail, and with a convex under surface and transverse ribs 17 embedded into the tie, and with the rib 9 against the lateral outer edge of the rail-flange and having the lateral portions 10 and 14 resting on the tie and provided with spike-openings, and the spikes driven through said openings and into the tie, substantially as set forth.

485,081. CONDENSER AND FEED-WATER HEATER. CHARLES GOODMAN, Cortlevt, N. J. Filed Aug. 20, 1892. Serial No. 443,896. (No model.)



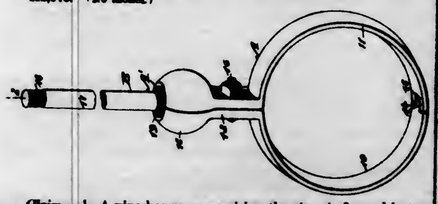
Claim.—1. The combination, with the main case having openings for steam or water connections at the top and bottom and the condensing-tubes extending longitudinally through the case and having an inlet and outlet independent of the openings in the top and bottom of the case, of a hollow deflector arranged beneath the top opening of the case and feed-water pipes connected with the deflector, substantially as described.

2. The combination, with the main case having openings for steam or water connections at the top and bottom and the condensing-tubes leading longitudinally through the case and having an inlet and outlet independent of the connection openings of the case, of a hollow deflector supported within the case above the tubes, the deflector being curved upward at a point beneath the top opening of the case, and feed-water pipes connected with the deflector, substantially as described.

485,082. ORNAMENTAL PRESSED GLASSWARE. JONATHAN HALEY, Pesterin, Ohio. Filed Nov. 17, 1891. Serial No. 412,189. (No model.)

Claim.—As a ornamental tile comprising a plate of homogeneously-colored glass having its exterior or front service plain and having a design impressed within its rear surface with lines of varying depths in different portions, whereby the deeper lines of the design gradually slope into the more shallow lines to form different thicknesses of the colored glass between the lines of the design and the front surface of the tile to impart a blended appearance of color when backed by a contrasting color, substantially as herein described.

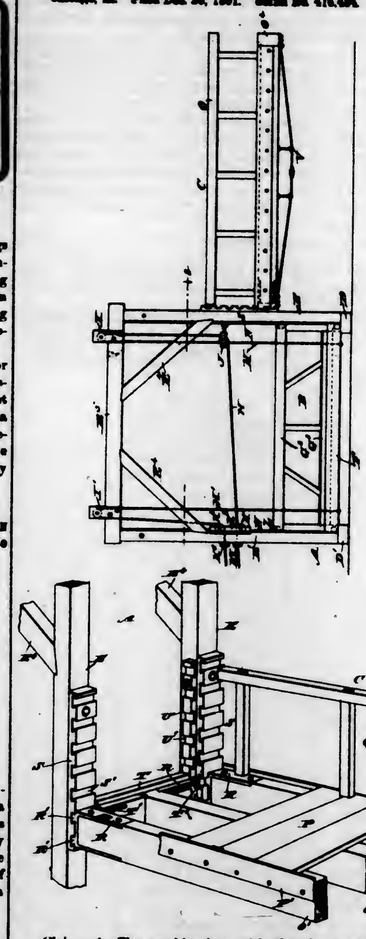
485,088. PIPE-HANGER. MANUEL J. HAMMA, New York, assignor to William H. Quick, Brooklyn, N. Y. Filed Nov. 24, 1891. Serial No. 412,978. (No model.)



Claim.—1. A pipe-hanger comprising the ring A, formed in two parts 10 11, having apertured shanks lying face to face and each terminating in a cup, forming the socket A', the shanks being bolted together through their apertures, and the ball within the socket and having an attaching device, substantially as set forth.

2. The combination, with the attaching-screw 17, having an adjustable ball on its lower end, of the ring A in two sections 10 11, each having a shank, the shanks lying face to face and terminating in a cup, forming a socket A', inclosing the ball, and a bolt passing through the said shanks and securing the two ring-sections together, substantially as set forth.

485,084. ELEVATOR. HARRY HAMMS and JOHN B. BURNHAM, Chicago, Ill. Filed Dec. 29, 1891. Serial No. 416,494. (No model.)



Claim.—1. The combination, with the elevator-frame having transversely-dovetailed vertical plates U on opposed inner faces of two uprights E E and two similarly-grooved plates S S on the outer faces of the uprights, of a bridge comprising the longitudinal beams $O' O^2 O^2$, the side beams $O' O^2$ having end caps R on their inner ends, formed with parallel horizontal flanges or members embracing said beams and formed with dovetail projections R', fitting the similar grooves of the plates S, the transverse end bar T, having transverse end dovetails T' entering the grooves of the plates U, and the central beam O^2 having a vertical dovetail engaging a dovetail groove in the transverse bar T, substantially as set forth.

2. The combination, with the elevator-frame having transversely-dovetailed vertical plates U on opposed inner faces of two uprights E E and two similarly-grooved plates S S on the outer faces of the uprights, of a bridge comprising the longitudinal beams $O' O^2 O^2$, the side beams $O' O^2$ having end caps R on their inner ends, formed with parallel horizontal flanges or members embracing said beams and formed with dovetail projections R', fitting the similar grooves of the plates S, the transverse end bar T, having transverse end dovetails T' entering the grooves of the plates U, and the central beam O^2 hav-

ing a vertical dovetail engaging a dovetail groove in the transverse bar T and longitudinal metallic plates P on the outer faces of the side beams $O' O^2$, the said plates projecting above the upper surface of said beams to form guards for the removable flooring-boards P, said plates also at their inner ends projecting beyond their beams, and thus forming steps for limiting the inward lateral movement of the latter in their supports, as set forth.

485,085. CAR-COUPLING. JOHN HARRIS, Jr., Pittsburgh, Pa. Filed Aug. 15, 1892. Serial No. 443,009. (No model.)

Claim.—1. In a car-coupling, the draw-heads having spring-pressed bumpers arranged therein, the spring locking-latches adapted to engage said bumpers, the gravity-pin suitably connected with said latches, and the link-elevating arm automatically operated by said bumper, substantially as and for the purpose described.

2. In a car-coupling, the combination, with the draw-heads, of the spring-pressed bumpers arranged therein, said bumpers having

of a size to close the opening and provided with two shelves projecting one above the other from its inner surface, substantially as described.

Claim.—1. In a car-coupling, the draw-heads having spring-pressed bumpers arranged therein, the spring locking-latches adapted to engage said bumpers, the gravity-pin suitably connected with said latches, and the link-elevating arm automatically operated by said bumper, substantially as and for the purpose described.

2. In a car-coupling, the combination, with the draw-heads, of

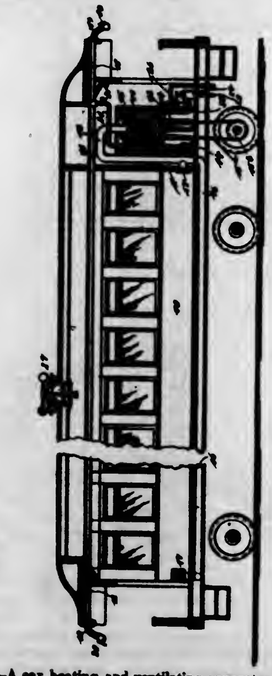
ing a vertical dovetail engaging a dovetail groove in the transverse bar T and longitudinal metallic plates P' on the outer faces of the side beams O' O², the said plates projecting above the upper surface of said beams to form guards for the removable flooring-boards P, said plates also at their inner ends projecting beyond their beams, and thus forming stops for limiting the inward lateral movement of the latter in their supports, as set forth.

485,085. PROCESS OF SEPARATING TIN FROM TIN-PLATE WASTE. HANS C. W. HARRMEN, Lauenburg, Germany. Filed May 4, 1892. Serial No. 431,893. (No specimens.)

Claim.—1. The process of freeing the tin held in solution as tin sulphate, as stated, which consists in mixing the said tin sulphate with a heated mixture of nitric acid and water, whereby the dissolved tin is precipitated as stannic acid, substantially as described.

2. The process of utilizing tinned waste, which consists in separating the tin from tinned waste by subjecting the latter to the action of a diluted mixture of sulphuric acid and nitric acid, whereby the iron is freed from the tin and the tin is dissolved into tin sulphate, and bringing the latter into a vessel containing a heated mixture of diluted nitric acid, whereby the dissolved tin is precipitated as stannic acid, as set forth.

485,086. CAR HEATING AND VENTILATING SYSTEM. JAMES A. HEALY, Hankville, Tenn. Filed Feb. 24, 1892. Serial No. 422,620. (No model.)



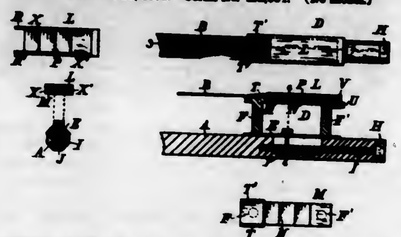
Claim.—A car heating and ventilating apparatus comprising a train-pipe for the steam, extending through the upper part of the car and having suitable couplings at its ends, a chamber in one end of the car, into which a branch pipe leads from said train-pipe, a coil connected to said branch pipe in front of the air-inlet or window of said chamber, two valved pipes leading from the coil through the bottom of the car and one of them provided with a steam-trap, and a blower in said chamber operated from the car-axle and receiving the air after it passes the coil and provided with a hot-air pipe discharging into the lower portion of the car, substantially as set forth.

485,087. SNAP-HOOK. FRANK J. HIGGINS, New Britain, Conn., assignor to the North and Judd Manufacturing Company, same place. Filed May 24, 1892. Serial No. 434,170. (No model.)

Claim.—1. The herein-described snap-hook, consisting of the hook, the seamless cylindrical barrel, spring, and bolt, and the separately-formed ring or loop having a shank which is secured within the outer end of said barrel, substantially as described, and for the purpose specified.

2. A swivel snap-hook having the annular grooved shank 12 of its ring or loop secured within the outer end of the cylindrical barrel, with the metal in that portion thereof which surrounds the groove of said shank swaged inwardly and loosely filling said groove, substantially as described, and for the purpose specified.

485,088. VIOLIN-BOW FROG. JOHN A. HOGLIHAN, Rochester, N. Y. Filed Feb. 26, 1892. Serial No. 422,931. (No model.)



Claim.—1. The combination, with the bow, of the hair-clamp D, consisting of the notched plate M, the notched clamp-plate L, and means for attaching the plates to each other, substantially as described.

2. The combination, with the bow, of the notched plate M, having inclined flanges T T', the notched clamp-plate L, and means for attaching the plates together, substantially as described.

3. The combination, with the bow, of the notched plate M, the notched clamp-plate L, provided with hooks R R', and the plate U, substantially as described.

485,089. COMBINED FORCEPS AND TRACTOR. EDWIN J. HOWE, Newark, N. J., assignor of one-half to Franklin Conklin, same place. Filed Mar. 11, 1892. Serial No. 424,870. (No model.)

Brief.—Two half-hooks serve as forceps when opened and closed. The half-hooks are plane upon one side and convex upon the other, forming when brought together a single rounded hook

Claim.—1. As an improvement in surgical instruments, a tractor which is composed of two sections pivoted together, that when closed constitute at one end a single hook and when spread apart at such end two separate hooks, and said sections having handle portions, which when brought toward each other move the sections to form the single hook and when spread apart to form the two hooks, substantially as and for the purpose specified.

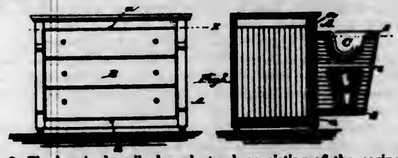
2. As an improvement in surgical instruments, a combined forceps and tractor consisting of two sections, which are pivoted together and at one end of each are adapted to be grasped by the hand and at their opposite ends are curved and have their contiguous faces serrated, substantially as and for the purpose set forth.

3. As an improvement in surgical instruments, a tractor composed of two pivoted sections, each of which has a hook at its end having a plane and a convex face, the plane faces of the two sections being adjacent to each other to enable the two hooks to be brought together to form a single hook, substantially as and for the purpose described.

485,040. WASH-STAND. ARNDT JAHNS, Chicago, Ill. Filed Aug. 12, 1891. Serial No. 402,851. (No model.)

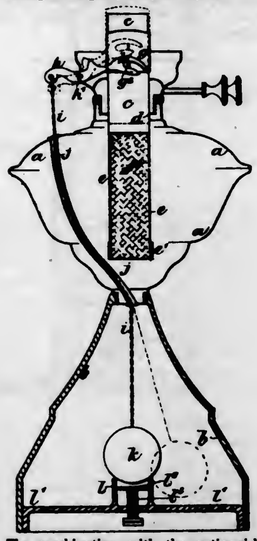
Claim.—1. A wash-stand comprising a casing having its entire front open and provided with a front plate pivoted at its center by top and bottom pivots in the said opening, the said front plate being

of a size to close the opening and provided with two shelves projecting one above the other from its inner surface, substantially as described.



2. The herein-described wash-stand, consisting of the casing A, having its entire front open, and the front plate B, pivoted at its center by top and bottom pivots in the said opening and closing the same and provided with the semicircular shelves c d, secured to its inner surface one above the other and connected together by the vertical boards a, the shelf c being apertured, as specified.

485,041. SELF-EXTINGUISHING HYDROCARBON-LAMP. SAMUEL A. JOHNSON, London, England. Filed Feb. 25, 1892. Serial No. 422,791. (No model.) Patented in England June 6, 1891, No. 9,631; in Germany Aug. 21, 1891, No. 64,425; in France Aug. 22, 1891, No. 215,633, and in Belgium Aug. 22, 1891, No. 96,139.

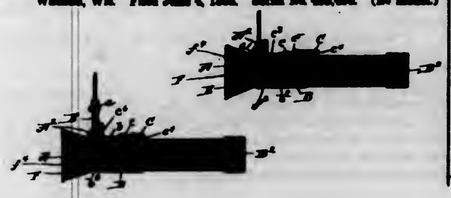


Claim.—1. The combination, with the extinguisher-lever, the reservoir, and the base, of a guide-tube extending from the top of the reservoir adjacent to the lever to a point beneath the center of the reservoir, a chain or cord extending from the lever through the guide-tube provided with a weight at its lower end, and a cross-bar having a cylindrical cup, the rim of which cup provides a seat for the weight beneath the lower end of the guide-tube, substantially as described.

2. The support for the operating-weight, consisting of a cylindrical cup and an adjusting-screw working through the cup, having a disk at the top thereof for supporting the weight, substantially as described.

3. An adjustable seat or cup for the operating-weight, formed of a cylinder *f*, containing a disk *f*², fixed to the top of an adjusting-screw *f*³, substantially as described.

485,042. CAR-COUPLING. ORRIN JOHNSON and NILS OLANDER, Weston, Wis. Filed June 4, 1892. Serial No. 435,692. (No model.)



Claim.—1. In a car-coupling, the draw-heads having spring-pressed bumpers arranged therein, the spring locking-latches adapted to engage said bumpers, the gravity-pin suitably connected with said latches, and the link-elevating arm automatically operated by said bumper, substantially as and for the purpose described.

2. In a car-coupling, the combination, with the draw-heads, of the spring-pressed bumpers arranged therein, said bumpers having notches adapted to be engaged by spring locking-dogs, the rods sliding through apertures of said dogs and provided with inclined portions, the connections between said rods and the gravity-pins, and the pivoted link-elevating arms having oppositely-inclined ends and adapted to be automatically operated by an inclined portion of said bumper, substantially as and for the purpose set forth.

3. In a car-coupling, the draw-heads A, the bumpers B, having notches *b*, the springs B², the latches C, comprising the apertured dogs *c* and the rods *c*¹, the springs *c*², the chain connections *c*³, and the pull-loys *c*⁴, in combination with the gravity-pin E, having lugs *e e*, the elevating-arms F, having oppositely-inclined extremities, the inclined slotted portions *f*⁵ of said bumpers engaging said extremities to automatically elevate and support the link in a horizontal position, substantially as described.

485,048. LOCK FOR FIREARMS. LARS JOHNSON, Escanaba, Mich. Filed Mar. 5, 1892. Serial No. 423,871. (No model.)

Claim.—1. In a gun-lock, the combination, with a pivoted trigger having a shelf extending from front to rear thereof, located between the pivot and the finger-piece, of a catch secured to the trigger at the forward side adjacent to the shelf, a firing-bolt having a catch adapted to engage with the catch upon the trigger and provided with a rear extension beyond the catch, adapted to engage with the shelf, and a spring by which the firing-bolt is normally forced forward, substantially as shown and described.

2. In a gun-lock, the combination, with a firing-bolt, of a spring adapted to keep the same normally pressed forward, engaging such bolt at the forward end thereof, a catch located near the other end of the firing-bolt, a pivoted trigger, a catch secured to the trigger near the forward edge thereof, located between the pivot and the finger-piece and adapted to engage with the catch upon the firing-bolt in such manner as to draw back the firing-bolt when the trigger is retracted, and means attached to the trigger for lifting the rear end of the firing-bolt, so as to release the catches from one another when the trigger is fully retracted, substantially as shown and described.

3. In a gun-lock, the combination, with a pivoted trigger having a shelf extending from front to rear thereof, located between the pivot and the finger-piece, of a catch attached to the trigger adjacent to the forward end of the shelf, a firing-bolt having a catch adapted to engage with the catch upon the trigger and provided with an extension to the rear of the catch, a spring engaging with the firing-bolt and adapted to keep the same normally pressed forward, and a spring engaging with the firing-bolt in such manner as to keep the same normally in contact with the shelf of the trigger, substantially as shown and described.

4. In a gun-lock, the combination, with a pivoted trigger having a shelf extending from front to rear thereof, located between the pivot and the finger-piece, of a catch attached to the trigger adjacent to the forward end of the shelf, a firing-bolt having a catch adapted to engage with the catch upon the trigger and provided with an extension to the rear of the catch, a spring engaging with the firing-bolt and adapted to keep the same normally pressed forward, a spring engaging with the firing-bolt in such manner as to keep the same normally in contact with the shelf of the trigger, and a spring engaging with the trigger in such manner as to keep the same normally pressed forward, substantially as shown and described.

5. In a firearm the breech mechanism of which is operated by movement of the trigger-guard, the combination, with the trigger-guard, of a trigger having a rear extension and a movable stop adapted to engage the end of the trigger-guard and the end of the extension, so as to lock both the trigger and the trigger-guard in position in such manner as to prevent movement thereof when desired, substantially as shown and described.

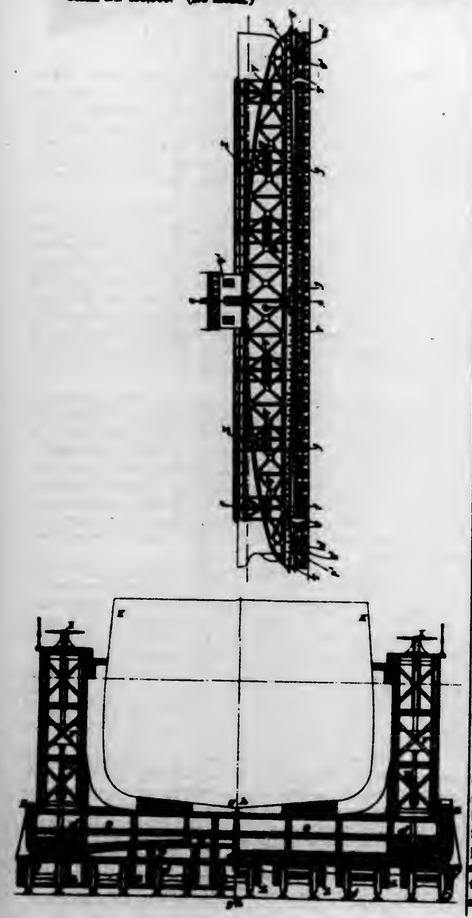
6. In a firearm the breech mechanism of which is operated by movement of the trigger-guard, the combination, with the trigger-

guard, of a trigger having a rear extension and a movable stop adapted to lock both the trigger and the trigger-guard in position so as to prevent movement thereof when desired, such stop being capable of four positions—viz., one in which both trigger and trigger-guard are locked, one in which both are unlocked, one in which the trigger is locked and the trigger-guard is free, and one in which the trigger-guard is locked and the trigger is free, substantially as shown and described.

7. In a gun-lock, the combination, with a sliding firing-bolt, of a spring by which the same is normally pressed forward, a trigger pivoted above the firing-bolt, a catch upon the firing-bolt, and a catch upon the trigger adapted to engage with the catch upon the firing-bolt, the construction and arrangement being such that the two catches will be released from one another and the firing-bolt forced forward when the trigger is fully retracted, substantially as shown and described.

8. In a gun-lock, the combination, with a sliding firing bolt the rear end of which is capable of vertical movement, of a trigger pivoted above the firing-bolt, a spring by which the firing-bolt is normally pressed forward, a spring by which the rear of the firing-bolt is normally pressed in a direction substantially at right angles to its sliding movement, a catch upon the firing-bolt, and a catch upon the trigger adapted to engage with the catch upon the bolt, the construction and arrangement being such that the two catches will be released from one another and the firing-bolt forced forward when the trigger is fully retracted, substantially as shown and described.

485,044. APPARATUS FOR CARRYING SHIPS, &c., UPON RAILWAYS. Walter B. Kinipple, London, England. Filed June 2, 1892. Serial No. 435,300. (No model.)



Claim.—1. In apparatus of the kind described, the combination, with suitable trucks and framework for holding a vessel, of one or more supporting-bellows interposed between the trucks and framework and adapted to compensate for deviations in the railway, substantially as described.

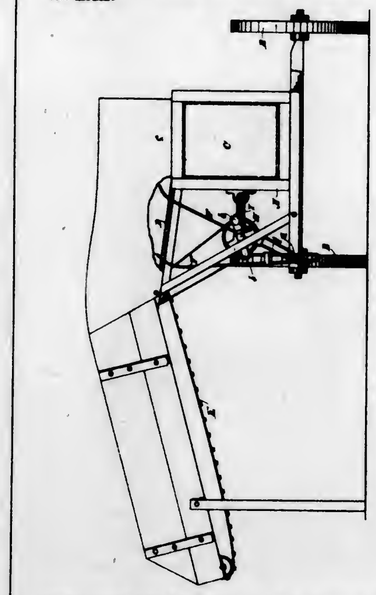
2. In cars or apparatus for carrying ships or other large and heavy bodies upon railways, bellows which are arranged, as hereinbefore described, to support the structure carrying the ship or body and compensate for changes of gradient, substantially as hereinbefore described.

3. The combination, with the framework for holding the vessel, hydraulic bellows, a structure upon which the same rests, and trucks, of a swinging framework consisting of cross-girders forming guides for blocks secured on the trucks, pivoted to the under side of the said structure, substantially as described.

4. In apparatus of the kind described, the combination, with the framework for holding the vessel and a flexible structure resting on the trucks and having a pivotal connection with the framework, of a compensating bellows interposed between said framework and structure, including the pivotal connection, substantially as described.

5. The combination, with the trucks and framework for carrying the vessel, the bottom of which framework forms the upper wall, of a compensating bellows, a flexible structure resting upon the trucks and forming the lower wall of the bellows, and flexible material for connecting the bottom of the framework or upper wall with the flexible structure or lower wall, thereby forming a water-tight compartment, substantially as described.

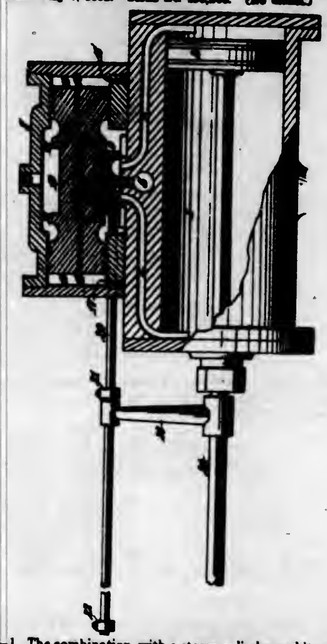
485,045. FEEDER FOR BALING-PRESSES. John H. Kruse and Milton K. Shipley, Oswego, Oreg. Filed Feb. 2, 1892. Serial No. 420,108. (No model.)



Claim.—1. In a feeding mechanism for baling-presses, the combination of the slotted table upon which the material is deposited, the series of rake-arms consisting of rods having upper ends passing through said slots and having their lower ends bent upon themselves and carried upwardly to form the slotted guides, a fixed pin or lug upon which said slotted portions are guided, and a shaft having crank-arms to which the bent ends of the arms are secured, substantially as herein described.

2. In a feeding mechanism for baling-presses, the combination of the slotted table upon which the material is deposited, the series of rake-arms having curved upper ends passing through said slots and having their lower ends bent upwardly to form a short arm separated from the long arm by a space which forms a slotted guide, a fixed pin or lug entering said slotted guide, a shaft having cranks to which said short arms are secured, a counter-shaft, a yielding joint between the same and the crank-shaft, and gearing to operate the counter-shaft, substantially as herein described.

485,046. STEAM-ACTUATED VALVE. Thomas S. Lacey, Lima, Ohio. Filed July 7, 1892. Serial No. 439,202. (No model.)



Claim.—1. The combination, with a steam-cylinder and its piston having a piston-rod provided with an arm, of a steam-chest having cylinder-ports controlled by a main slide-valve and exhaust-ports controlled by an exhaust-valve having a valve-rod provided with collars arranged to be alternately struck by the arm on the main piston-rod, a valve-piston arranged in the steam-chest and having collars or shoulders to engage and actuate the main slide-valve and provided with steam-admission ports that lead through said valve-piston to its opposite ends, and a pin that is secured to the valve piston and loosely engaged with the main slide-valve to prevent the valve-piston from turning on its axis, substantially as described.

2. The combination of the steam-cylinder 1, having ports 3 and 4, the steam-chest 8, having ports 17 and 18, the main exhaust-ports 5, having connecting ports or passages 6 and 7, the main slide-valve 9 for controlling the cylinder-ports, the exhaust-valve 19 for controlling the ports 17 and 18, means for actuating said exhaust-valve from the main piston, the valve-piston 10, having collars or shoulders 11 and 12 to actuate the main slide-valve and provided with steam-admission ports 13 and 14, that lead through said valve-piston to opposite ends of the steam-chest, said ports being controlled by contact of said shoulders or collars with the opposite ends of the main slide-valve, and a pin 25 for preventing said piston-valve from turning on its axis, substantially as described.

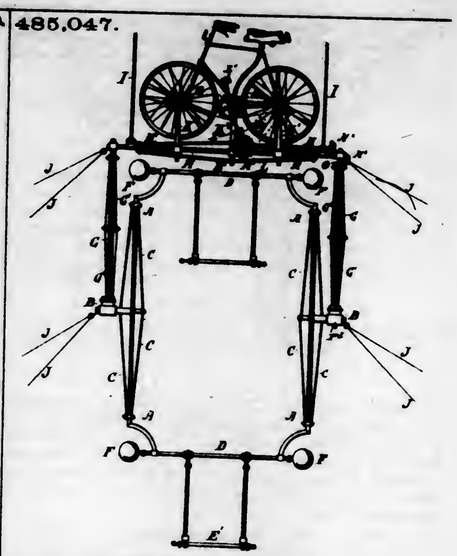
3. The combination of the cylinder 1, having ports 3 and 4, the piston 2, having a piston-rod provided with an arm 23, the steam-chest 8, having ports 17 and 18, the main exhaust-port 5, the main slide-valve 9, the valve-piston 10, provided with shoulders 11 and 12 and ports 13 and 14, the exhaust-valve 19, having a valve-rod 20, provided with collars 21 and 22, and the pin 25, connecting the main slide-valve and valve-piston, substantially as described.

485,047. EXERCISING-MACHINE. Edward Leahy, Syracuse, N. Y. Filed Mar. 26, 1892. Serial No. 426,891. (No model.) Patented in England Oct. 6, 1891, No. 16,955.

Claim.—1. The combination, with a revolving trapeze and a horizontal shaft geared to the trapeze, of a suspended velocipede and gearing between the driving mechanism of the velocipede and the horizontal shaft for operating the latter to impart a revolving motion to the trapeze, substantially as described.

2. The combination, with a revolving trapeze and a horizontal shaft geared to the trapeze, of a wheel I, geared to the horizontal shaft, and a suspended velocipede or bicycle having one of its axles geared to said wheel for transmitting a revolving motion to the trapeze, substantially as described.

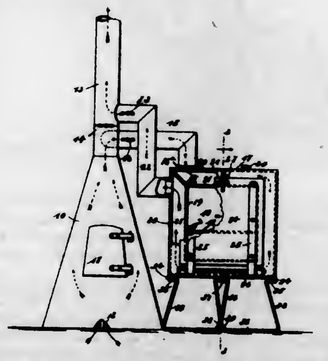
485,047.



485,048. APPARATUS FOR CLEANING FORKS. Fritz Lehmann, Berlin, Germany. Filed Feb. 29, 1892. Serial No. 423,163. (No model.)

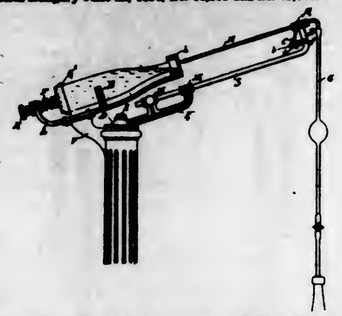
Claim.—In combination with the spring-frame having arms *a a*, provided with grooves *d d*, and the brush-frame *b b' c*, supported by said arms, substantially as described.

485,049. COOKING-STOVE. John Marcer, U. S. Army. Filed Mar. 5, 1892. Serial No. 423,866. (No model.)



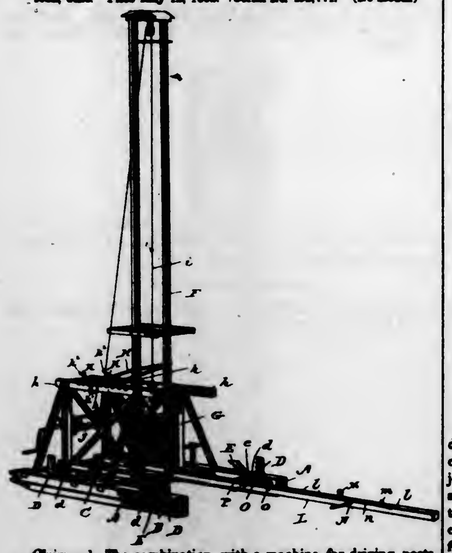
Claim.—The combination of the heater 10, having the damper 14 in its smoke-stack, the inlet and outlet pipes 15 and 22, connecting on opposite sides of such damper with the stove 17, having the flue 21 extending around four sides of its oven, and the transverse plate dividing the flue, the aforesaid pipes connecting with the latter above and below the division-plate but contiguous thereto, as shown and described.

485,050. APPARATUS FOR DECANTING BOTTLES. Peter Moos, Hillesheim-on-the-Hessel, Germany. Filed Jan. 29, 1892. Serial No. 419,696. (No model.) Patented in Germany May 20, 1890, No. 56,795, and in Austria-Hungary June 30, 1891, No. 10,269 and No. 39,677.



Claim.—In a machine for decanting bottles in a lying position, the combination of a bottle-holder consisting of the knob K, the spring F, the cap G', the hoop B, and the arm V with the suction-tube H of a decanting-siphon, guided by means of guide-rod S in the guide-bearings M M, attached to plate D and held by tube A, turning in the bifurcated bent-up end E and provided with tongue C, pin *b*, screw *c*, and spring *f*, as and for the purpose specified.

485,051. POST-DRIVER. Joseph McLaughenover, Station Fifteen, Ohio. Filed May 12, 1892. Serial No. 432,771. (No model.)



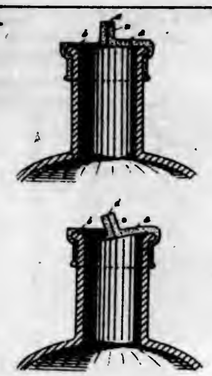
Claim.—1. The combination, with a machine for driving posts, of a graduated guide projected therefrom and having a series of openings, a hook having a shank, a pin for connecting the hook with the guide, and a stop to brace the shank of the hook, substantially as described.

2. The combination, with a machine for driving posts and a guide projected therefrom and having a hook to anchor the machine and properly space the posts, of a brace-hook between a side beam of the machine-base and having its outer end constructed to embrace the said guide, substantially as described, for the purpose set forth.

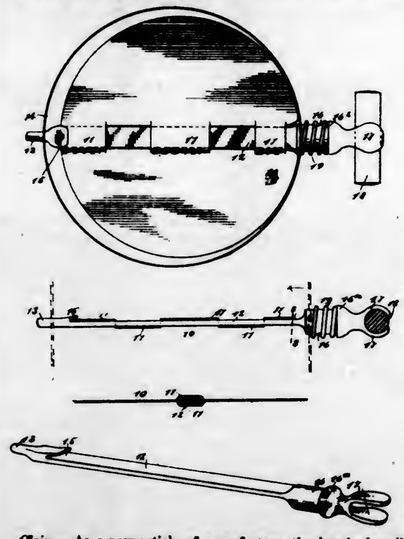
485,052. CLOSURE FOR BOTTLES. Carl Clemmert, Bonn, Germany. Filed Jan. 29, 1892. Serial No. 419,795. (No model.)

Claim.—A closure for bottles, consisting of a caoutchouc cap constructed to be pulled over the mouth of the bottle, having one half *b* of its top made thinner than the other half and having a vent *c*, provided with a slit *d*, arranged on the line between the two halves, substantially as described.

485,053.



485,058. DAMPER. William H. Packham, Buffalo, N. Y., assignor of one-half to William H. Bright, same place. Filed Aug. 4, 1891. Serial No. 401,660. (No model.)

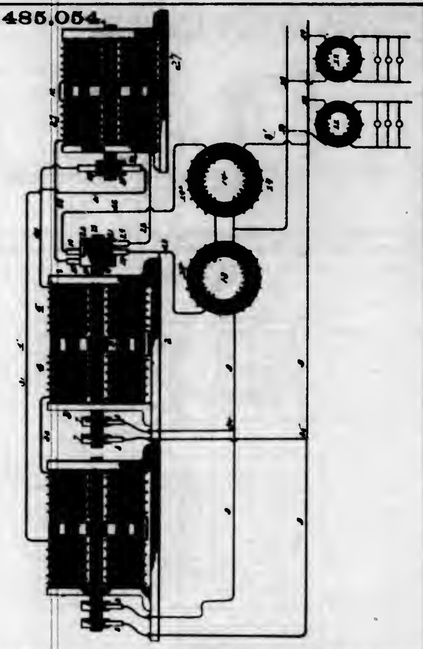


Claim.—As a new article of manufacture, the herein-described damper, consisting of the damper-disk having a slideway produced centrally therein, the shank 12, having at one end a stud forming a journal for one end thereof and recessed, as at 15, adjacent to the stud, said recess forming an integral overhanging lug or hook adapted to overlie the peripheral edge of the damper-disk received in the recess, the opposite end of the shank having a suitable handle and formed with a shoulder, and a coiled spring on the handle end of the shank, normally tending to press the overhanging lug at the recessed end of the shank into engagement with the peripheral edge of the disk, thereby serving to maintain the engagement of such lug irrespective of any warping of the disk, substantially as described.

485,054. REGULATION OF ALTERNATING-CURRENT GENERATORS. Gustav Pfannkuch, Cleveland, Ohio, assignor to the Brush Electric Company, same place. Filed Nov. 30, 1887. Serial No. 256,512. (No model.)

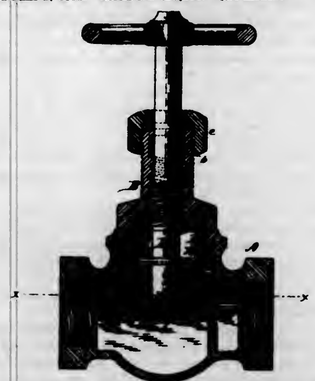
Claim.—The combination, with a separate exciting-dynamo and a number of alternating-current dynamos having their field-coils connected in series and their armatures in multiple arc and a main or trunk line supplied by said armatures, of two inductoriums having their coarse-wire coils included in circuit with the field-coils of said exciting-dynamo and their fine-wire coils included one in the main or trunk line and the other in a branch derived therefrom in multiple arc with the working devices in the said main or trunk line and a

485,054.



commutator in the circuit from the last-mentioned inductoriums to the field-coils of the exciting-dynamo, substantially as described.

485,055. GLOBE-VALVE. William J. Guess, Baltimore, Md., assignor to the Henry Maillaire Manufacturing Company, same place. Filed June 2, 1892. Serial No. 435,266. (No model.)



Claim.—In a globe-valve, the combination, with the spindle, of a valve through which said spindle passes and upon which the valve may be rotated, said valve consisting of a cylindrical block or head having like recesses in its upper and lower faces containing reversible and interchangeable packing-disks, substantially as described.

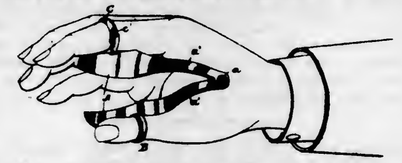
485,056. FEED APPARATUS FOR LOCOMOTIVES. Irwin H. Rayner, Cleburne, Tex., assignor of one-half to Charles O. Furgason, same place. Filed June 20, 1892. Serial No. 437,425. (No model.)

Claim.—1. In a feed-water apparatus for boilers, the combination, with a valve-casing containing a valve and having pipes or tubes for connecting, respectively, with a tank or tender and an injector or boiler, of a strainer having steam-jet orifices arranged round its base for the purpose of causing jets of steam to strike the exterior surface of the strainer while steam flows from the interior through the perforated wall thereof, substantially as described.

485,056.

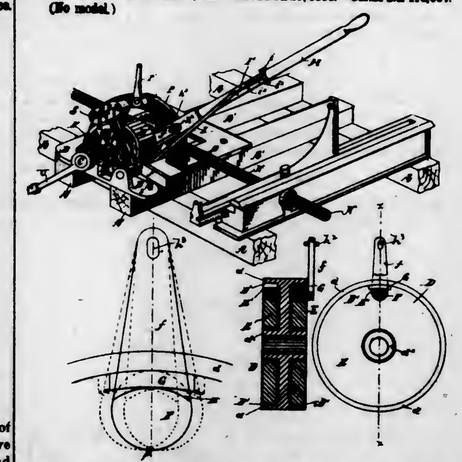
2. In a feed-water apparatus for boilers, the combination, with a valve-casing containing a three-way valve and having pipes or tubes for connecting, respectively, with a tank or tender and an injector or boiler, of a conoidal or conical strainer located in the valve-casing and having a collar or ring at its base which is provided with steam-jet orifices for causing jets of steam to strike the exterior surface of the strainer approximately at right angles to jets of steam flowing from the interior of the strainer through the perforations in the wall thereof, substantially as described.

485,057. BERRY-PICKER. Charles C. Read, Mandarin, Fla. Filed Nov. 9, 1891. Serial No. 411,317. (No model.)



Claim.—In a fruit-picker, the combination of the blades pivoted together at their inner ends and having a rearwardly-extending curved shank resting upon the back of the hand, a continuous ring secured to one of said blades and adapted to receive the thumb, and an adjustable forefinger-ring secured to the opposite blade and provided at one end thereof with a groove having a series of notches or teeth and at the opposite or opposing end with a raised tongue having a series of notches or teeth adapted to be sprung into and adjustably engage the notches or teeth in said grooved end, substantially as set forth.

485,058. INTERMITTENT GRIP DEVICE FOR MACHINERY. Thomas J. Reamy, Auburn, Ind. Filed Dec. 23, 1891. Serial No. 416,001. (No model.)



Claim.—1. The drum D, flange *d*, disk E, having suitable opening therein, and friction-plate G, in combination with the cam F, adapted to be inserted and to operate in the opening in the said disk, said cam being attached to an arm *f*, whose opposite end is slotted and pivotally secured to a lever H, the lever H, and adjustable rod I, by which the ring to which the rod I is attached may be shifted to change the action of the cam, substantially as described and specified.

2. The combination of the flanged drum, a disk placed therein, a cam-support by the said disk, an arm connected with the cam and projecting beyond the drum, an operating-lever to which the arm is connected, and a movable rod connected with the disk, for the purpose described.

3. The combination of the doubled flanged drum, a disk placed in each flanged side, a cam carried by each disk, an arm connected

with one cam, an operating-lever, a lever connected with the other cam and pivoted between its ends, and a weighted lever adapted to rest upon opposite sides of the pivotal point of the said cam-lever, substantially as described.

4. The combination of the doubled flanged drum, a disk placed within each flanged side, a cam carried by each disk, an arm con-

485,061. CAR-COUPLING. Frankis T. Russell, Minneapolis, Minn. Filed Feb. 19, 1892. Serial No. 422,096. (No model.)

485,062. CAR-COUPLING. Asher Sommerer, Weston, W. Va. Filed June 8, 1892. Serial No. 435,946. (No model.)

and recovering paint-pigments, which consists in breaking or partly crushing the ore, subjecting the ore to the action of streams of water, and thereby collecting the dust produced by such breaking, and separating the impalpable or fine portion of such dust, substantially as

with one cam, an operating-lever, a lever connected with the other cam and pivoted between its ends, and a weighted lever adapted to rest upon opposite sides of the pivotal point of the said cam-lever, substantially as described.

4. The combination of the doubled flanged drum, a disk placed within each flanged side, a cam carried by each disk, an arm connected with one cam, an operating-lever with which the arm is connected, and a lever connected with the other cam for locking it, substantially as specified.

5. The combination of the flanged drum, a disk placed within the flanged drum, a cam to engage the said flange, an operating-lever, an arm connected with the cam and with the said operating-lever, a rod connected with the said disk and the said lever, and a means upon the said lever for moving the said rod, for the purpose specified, substantially as set forth.

6. An intermittent gripping device comprising a flanged drum, an operating-lever pivotally supported at a suitable point, a disk placed within the flanged drum and having an opening, a cam supported in said opening, and a lever having one end connected to the cam and its opposite end connected with the operating-lever, the cam and its lever being so constructed and arranged and their relative positions to the operating-lever being such that when the operating-lever is in one position the cam is at its neutral point to allow a free revolution of the drum in either direction, but when the operating-lever is moved in either direction from the neutral point the cam will be applied, substantially as described.

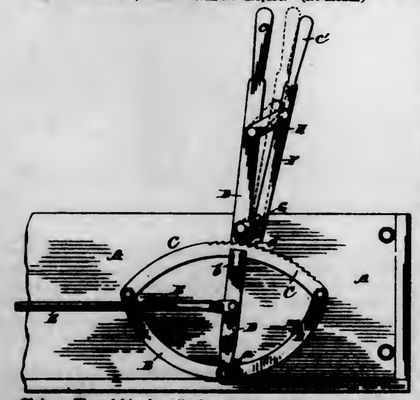
485,059. VENTILATOR. CHARLES RESPATH, Pembina, N. D. Filed Feb 24, 1892. Serial No. 422,611. (No model.)

Claim.—1. The combination, with the smoke-pipe 10, of the open-ended ventilating-tube 11, contained wholly within the pipe and opening through one wall thereof, and the vertically-swinging dampers pivoted transversely in the ventilating-tube, substantially as described.

2. The combination, with the smoke-pipe 10, of the ventilating-tube 11, held within the pipe and having one end opening through the pipe, the deflecting-plate 16, held opposite the inner end of the tube, so as to shield the same, and vertically-swinging dampers pivoted transversely in the tube, substantially as described.

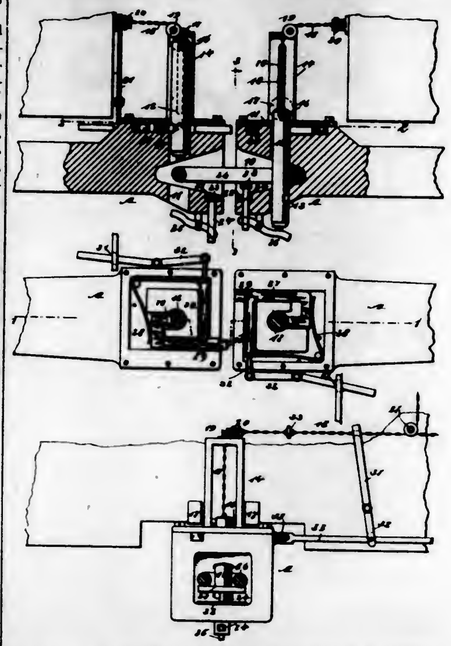
3. The combination, with the pipe 10, of the tube 11, fixed to the pipe, the tube having one end opening through the pipe and the other end cut off diagonally at 12, the deflecting-plate 16, held to the pipe above the inner end of the tube, and the sliding door 18, held to move in slideways on the pipe, substantially as described.

485,060. WAGON-BRAKE LEVER. GEORGE P. RISHER, Salem, Ind. Filed Mar. 18, 1892. Serial No. 425,666. (No model.)



Claim.—The within-described wagon-brake lever, comprising the main lever D and the auxiliary lever F, having the sidewise-extended pawl-toe *d* and the upper link H and the lower link G, all constructed and applied in connection with a toothed arc O, substantially as and for the purpose described.

485,061. CAR-COUPLING. FRANKLIN T. RUSSELL, Minneapolis, Minn. Filed Feb 19, 1892. Serial No. 422,096. (No model.)



Claim.—1. The combination, with a draw-head, of a coupling-pin held to slide in the draw-head and a shoe located in the link-opening of the draw-head and operated from the coupling-pin, substantially as shown and described.

2. The combination, with a draw-head and the coupling-pin thereof, of a shoe held to slide vertically in the link-opening of the draw-head and a lever connection between the shoe and the coupling-pin, as and for the purpose set forth.

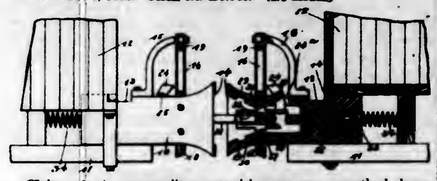
3. In a car-coupler, the combination, with a draw-head and its coupling-pin, of a spring-pressed angular latch held to slide in the draw-head and engaging the coupling-pin to hold it elevated, said latch being provided with a recess, and a spring-pressed bolt in the front of the draw-head and adapted to engage the recess of the latch to hold it out of engagement with the coupling-pin, substantially as herein shown and described.

4. In a car-coupler, the combination, with the draw-head and a coupling-pin held to slide in the draw-head, weights attached to the upper end of the coupling-pin, and an elevating mechanism connected with the said pin, of a spring-controlled latch, the inner end of which is adapted for constant engagement with the coupling-pin, and a bolt acting in conjunction with the latch, substantially as and for the purpose specified.

5. In a car-coupler, the combination, with a draw-head and a weighted coupling-pin having movement in the draw-head and provided with a slot near one end, of a shoe having vertical movement in the link-opening of the draw-head, a lever connection between the shoe and the coupling-pin when the latter is in its lower position, a spring-controlled latch, one end of which is in constant engagement with the coupling-pin, and a spring-controlled bolt operating in conjunction with the latch, as and for the purpose specified.

6. In a car-coupler, the combination, with a draw-head and a weighted pin having vertical movement in the draw-head and provided with a recess in one face between the center and its ends, of a mechanism for elevating the coupling-pin, a shoe capable of vertical movement in the link-chamber of the draw-head, a lever connection between the shoe and the link, a latch having sliding movement in the top of the draw-head, the inner end of which latch is in constant engagement with the coupling-pin, a bolt engaging with the latch, and a means, substantially as shown and described, for operating the bolt when the coupling-pin is at its highest or elevated position, as and for the purpose specified

485,062. CAR-COUPLING. ARNOLD SCHRAMM, Weston, N. J. Filed June 8, 1892. Serial No. 435,946. (No model.)



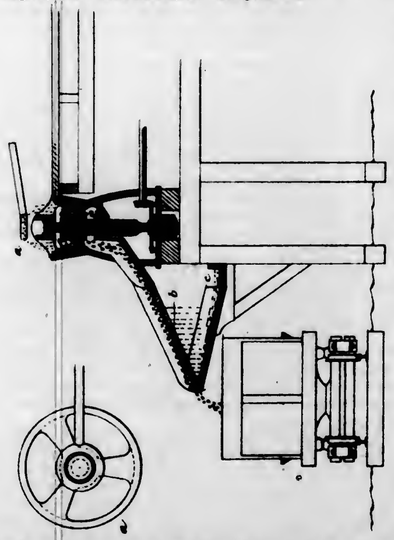
Claim.—1. A car-coupling comprising an open-mouthed draw-head, a vertically-movable pin held to move in a hole in the draw-head, a pair of vertically-swinging link-holding jaws pivoted in the upper and lower portions of the draw-head, a fastening device to hold the pin in a raised position, and means for tripping the pin by the movements of the jaws, substantially as described.

2. A car-coupling comprising an open-mouthed draw-head having a vertical pin held therein, a pin held to slide in the pin-hole, link-holding jaws pivoted in the upper and lower portions of the draw-head and having openings for the passage of the pin, said jaws being adapted to lie in recesses in the draw-head, and a fastening device to hold the coupling-pin in a raised position, said device being operated by the movement of the upper jaw, substantially as described.

3. A car-coupling comprising an open-mouthed draw-head having a vertical pin held therein, a coupling-pin held to slide in the pin-hole and having a notch in one side, vertically-swinging jaws pivoted in the upper and lower portions of the draw-head and having central openings for the passage of the coupling-pin and to receive thickened adjacent portions of the draw-head walls, and a pawl carried by the upper jaw and adapted to engage the notch in the coupling-pin, substantially as described.

4. The combination of the hollow draw-head having a vertical pin-hole therein, the sliding pin held to move in the hole and having a notch in one side, the recessed jaws pivoted in the upper and lower portions of the draw-head, said jaws having openings for the passage of the pin and the upper jaw having a lip to engage the lower end of the pin, and the pawl pivoted on a leg of the upper jaw and held to engage the notch in the coupling-pin, substantially as described.

485,068. PROCESS OF PRODUCING PAINT-PIGMENT FROM ORES. NOAH B. SMITH and CARL P. LUDWIG, Birmingham, Ala. Filed Aug. 29, 1891. Serial No. 404,139. (No specimens.)



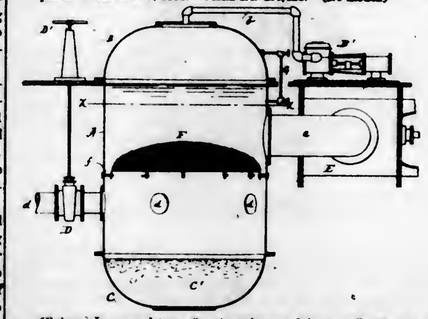
Claim.—1. The herein-described mode of recovering ore dust and preparing it for paint-pigment, which consists in separating the dust produced in the ordinary methods of partly crushing and preparing the ore for the smelting-furnace by streams of water, and subsequently settling and recovering said dust in a dried condition, substantially as set forth.

2. The herein-described method of preparing ore for smelting and recovering paint-pigments, which consists in breaking or partly crushing the ore, subjecting the ore to the action of streams of water, and thereby collecting the dust produced by such breaking, and separating the impalpable or fine portion of such dust, substantially as set forth.

3. The herein-described method of preparing ore and recovering paint-pigments, which consists in breaking or partly crushing the ore, arresting the dust thereby produced by a spray or stream of water, causing the deposit or settlement of the suspended material from the water in different grades, substantially as set forth.

4. The herein-described method of preparing ore and recovering paint-pigments, which consists in breaking or partly crushing the ore, arresting the dust thereby produced by a spray, causing the deposit from the liquid of the suspended material, drying the latter, disintegrating or pulverizing the dried material, and mixing the latter with oil, substantially as set forth.

485,064. SAND-TRAP FOR ARTESIAN WELLS. BENJAMIN F. SMITH, Somerville, Mass., assignor of one-half to Charles G. Smith, same place. Filed Feb 5, 1892. Serial No. 420,623. (No model.)



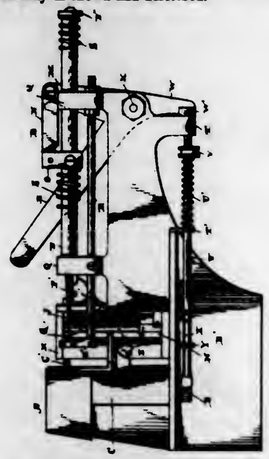
Claim.—In a sand-trap for Artesian or driven wells, the combination of a closed shell A, having a series of radiating valved well-tubes *d* and containing a screen F, arranged to provide an annular water-passage *f* between the periphery of the screen and the internal surface of the shell, a pump E, having a pipe *e* connected with the shell at a point above the screen, and a vacuum-pump B', having a pipe *b* connected with the air-chamber in the top portion of the shell, substantially as described.

485,065. HARNESS-MACHINE. GEORGE STEINBACH and HENRY SHAFER, Bethel, Mo. Filed June 8, 1892. Serial No. 436,096. (No model.)

Claim.—1. The combination, with a frame and a lever journaled thereto, of a punch-carrying bar mounted in the frame, an arm pro-

jecting from said lever, a link secured to the arm, and an adjustable connection between the link and the said bar, substantially as shown and described.

2. The combination, with a frame and an elongated hub projecting therefrom, of a lever mounted on the said hub, a spring coiled around the hub and secured at one end to the lever, a punch-carrying bar in the frame, and a suitable connection between the said lever and bar, substantially as shown and described.



3. The combination, with a frame, a feed-roll, and a punch-carrying bar, of a lever journaled to the frame, oppositely-extending arms projecting laterally from the said lever, a suitable connection between one of the said arms and the said bar, and a mechanism whereby the said roll is operated by the other arm, substantially as shown and described.

4. The combination, with a frame, a feed-roll journaled therein, and a punch-carrying bar, of a spring-actuated lever journaled to the rear end of the frame, oppositely-extending arms projecting laterally from the fulcrum-point of said lever, a suitable connection between one of the said arms and the punch-bar, and a longitudinally-movable bar which is operated by the other arm for rotating the feed-roll, substantially as shown and described.

5. The combination, with a frame and a feed-roller journaled in said frame, of perforated guides projecting from the frame, a longitudinally-movable rod which engages the roll, a spring, and a screw-nut adjustably secured to said rod between the guides, a lever, and an arm projecting therefrom which engages the end of said rod, substantially as shown and described.

6. The combination of a frame, a feed-roll journaled therein, a punch-carrying bar, perforated guides projecting from the frame, a rod adapted to move longitudinally in said guides and which engages the roll at its inner end, a spring, and a screw-nut adjustably secured to said rod between the guides, a lever journaled to the frame, arms projecting laterally from opposite sides of the lever, and a suitable connection between one of the arms and the punch-carrying bar, the other arm being adapted to engage the outer end of the said rod, substantially as shown and described.

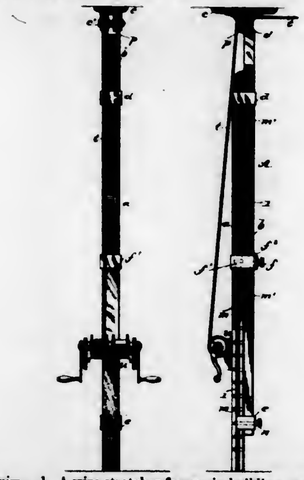
7. The combination of a frame, a feed-roll journaled therein, a peripherally-serrated wheel secured to the said roll, guides projecting from the frame, a punch-carrying rod adapted to move longitudinally in said guides, a dog on one end of the rod, which engages the said wheel, a means for holding the same in contact with the wheel, a spring, and a nut adjustably secured to the rod between the said guides, a lever journaled to the frame, and an arm projecting therefrom which is adapted to move longitudinally the said rod, substantially as shown and described.

8. The combination of a frame, a punch, a feed-roll, a serrated wheel on the end thereof, a rod carrying a dog at its inner end, which engages the said wheel, a spring secured to the outer side of the rod, loop Y, surrounding the spring and rod, and a means for moving longitudinally the said rod, substantially as shown and described.

9. The combination, with a frame, a table thereon, a horizontally-moving punch-carrying bar, and a means for operating the same, of a laterally-extending projection on the frame, an inwardly-extending frame pivoted to the outer end of the said extension, and a spring journaled around the axial point of said frame, one end of said spring adapted to bear on said frame and the opposite end being secured adjustably to the said lateral extension, substantially as shown and described.

10. The combination of a frame, a punch, a means for operating the same, a work-support, a lateral extension on the frame, a spring-actuated frame pivotally supported on said extension, the free end of which projects normally toward the work-support, substantially as shown and described.

485,066. WIRE-STRETCHER. LEWIS W. STOKELY, Memphis, Tenn., assignor of one-half to Samuel T. Carnes, same place. Filed July 21, 1892. Serial No. 440,949. (No model.)



Claim.—1. A wire-stretcher for use in buildings, consisting of an extensible standard adapted to be clamped between the ceiling and floor and power mechanism connected with said standard, whereby to strain the wire, substantially as and for the purposes set forth.

2. A wire-stretcher for use in buildings, comprising an extensible standard having its upper member provided with an adjustable bearing formed to rest against the ceiling and power mechanism connected with said standard to strain the wire, substantially as set forth.

3. An improved wire-stretcher comprising an extensible standard having its upper member provided with an adjustable bearing formed to rest against the ceiling, a windlass connected with said standard, and a guide-pulley, substantially as set forth.

4. A wire-stretcher for use in buildings, having a standard adapted to be clamped between the floor and ceiling and provided with a bearing to rest against the ceiling, said bearing being pivotally connected with the upper end of the standard, and power mechanism whereby to strain the wire, substantially as set forth.

5. In a wire-stretcher, substantially as described, the combination, with the standard and the bearing, of the shaft forming a hinge-like connection between said parts and the guide-pulley on said shaft, substantially as set forth.

6. In a wire-stretcher for use in houses, the combination of the extensible standard formed in a plurality of members, a guide-pulley secured to the upper member, and a windlass secured to the lower member, substantially as set forth.

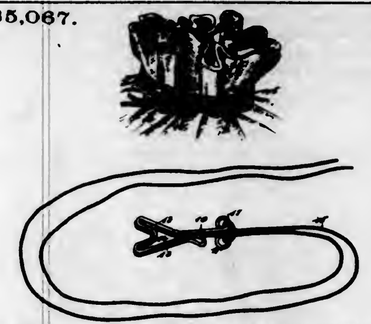
7. The improved wire-stretcher for use in buildings, comprising the extensible standard formed of members adjustable substantially as described, the windlass secured to the lower member, the bearing, a shaft forming a hinge connection between said bearing and the upper standard member, and the guide-pulley supported on the said shaft, substantially as set forth.

8. The improved wire-stretcher herein described, consisting of the extensible standard formed with members *a* and *b*, the member *a*, having grooves *l* and sockets *m*, a box-loop *d*, secured to the upper end of the member *a* and embracing the member *b*, the box-loop *e*, secured to the member *b* and having lugs entering the grooves *l*, the intermediate box-loop *f*, having a screw *f*, the pin *n* to enter the sockets *m*, the adjustable bearing *c* at the upper end of the member *b*, the windlass, and guide-pulley, all substantially as and for the purposes set forth.

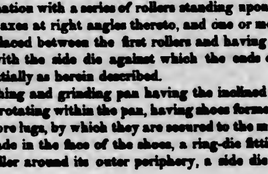
485,067. TIE FOR BAGS, BOXES, &c. DUDLEY G. STONE, Hegansee, Mich. Filed Jan. 2, 1892. Serial No. 416,987. (No model.)

Claim.—As an improved article of manufacture, a bag-tie consisting in an M-shaped body the side arm 12 being extended into a shank 10 and the two arms 12 13 converging, as shown, with the free end of the arm 13 resting alongside said shank to form a snap under which a cord may be passed, substantially as set forth.

485,067.



485,068. FOLDING BOOK-RACK. WILLIAM H. SIMS, Tuscaloosa, Ala. Filed Nov. 21, 1891. Serial No. 412,631. (No model.)



Claim.—1. The combination, with sectional shelves, the top one being provided with mortises and the sections of the shelves being connected by rods secured to one and sliding in recesses in the other, of a back provided with apertured links adapted to enter the mortises and to be engaged by the said rods, substantially as described.

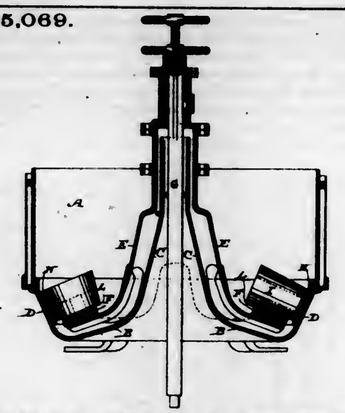
2. A folding book-rack consisting of a series of shelves, each formed of longitudinal sections connected by rods secured to one section and sliding in recesses in the other, cross-slats pivoted together and having their ends pivoted to the sections of two adjacent shelves, and a back provided with apertured links fitting in mortises of one section of the top shelf and adapted to be engaged by the rods connecting the said sections, substantially as herein shown and described.

485,069. GRINDING-PAN. ALBERT J. TAYLOR, Silver City, Nev. Filed May 31, 1892. Serial No. 435,080. (No model.)

Claim.—1. A crushing and grinding pan having the inclined bottom and sides and a muller rotating within the pan above the bottom, having a circular die upon the top around its periphery and a circular inclined die around the inner periphery of the lower sides of the pan, in combination with a series of rollers standing upon the bottom die with their axes at right angles thereto, and one or more intermediate rollers placed between the first rollers and having the axes at right angles with the side die against which the ends of the roller travel, substantially as herein described.

2. A crushing and grinding pan having the inclined bottom and sides, a muller rotating within the pan, having shoes formed in sections with two or more lugs, by which they are secured to the muller, and inclined slots made in the face of the shoes, a ring-die fitting upon the top of the muller around its outer periphery, a side die around the interior of the lower inclined sides, standing approximately at right angles with the muller-die, a series of rollers placed on end upon the muller-die with their axes at right angles thereto, and one or more rollers intermediate between the first-named rollers, having their ends abutting against the side dies with their axes at right angles thereto and the sides traveling upon the muller-die, substantially as herein described.

485,069.



485,070. CAR-SEAL. ALBERT P. TRAVIS, Grundy Centre, Iowa. Filed June 12, 1891. Serial No. 396,015. (No model.)

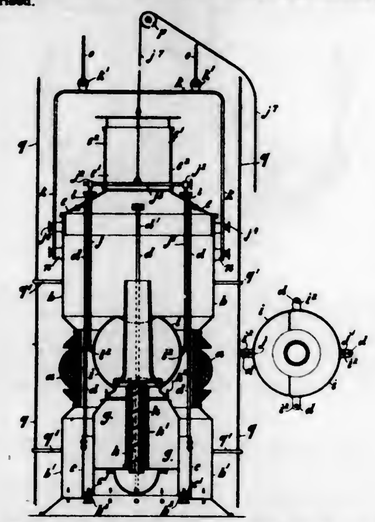
Claim.—1. The combination, with a bracket and a hasp having a boss thereon, of a pin adapted to enter openings in the bracket and boss and a seal adapted to enter a recess in the pin and lock the latter in place, substantially as set forth.

2. The combination, with a bracket and a hasp having a boss formed thereon, of a pin adapted to enter openings in the bracket and boss and a seal adapted to enter a slit in one of said parts and drop into a notch in the pin, whereby the latter is locked in place, substantially as set forth.

485,071. SIGNAL-LANTERN. JOSEPH WALL, Sunderland, England. Filed Nov. 16, 1891. Serial No. 412,205. (No model.)

Claim.—1. In a lantern for signaling, the combination, with an outer casing having a lens, a lamp within said casing, and an opaque exposing and obscuring screen composed of two or more parts, of vertical rods connected with said screen, and a horizontal rod connecting said vertical rods, whereby all the parts of said screen may be raised and lowered simultaneously, substantially as described.

2. In a lantern for signaling, the combination, with an outer casing having a lens, a lamp within said casing, and an opeque exposing and obscuring screen composed of two or more parts, of vertical rods connected with said screen, and a removable horizontal rod connecting said vertical rods, whereby all the parts of said screen may be raised and lowered simultaneously or independently, substantially as described.



3. In a lantern for signaling, the combination, with an outer casing having a lens and a removable cover, of an inner casing, rods *d*, connecting said inner casing to said removable cover, a lamp within said inner casing, a divided screen for said lamp, vertical rods *j j'*, connected with said divided screen and sliding on the rods *d*, and a cord or rope connected with the rods *j j'*, substantially as described.

4. The combination, with a casing *b*, of a removable cover *c*, and handle *k*, pivoted at *n*, and fixing-screws j^3, substantially as set forth.

5. In a lantern for signaling, the combination of a lamp and an exposing and obscuring screen of spherical form and of two parts, the division of the screen being in the vertical plane and the back screen adapted to allow a beam of light to pass through the lens equal in radius to twenty points of the horizon, substantially as set forth

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485,072. BALING-PRESS. Charles B. Whitman, St. Louis, Mo. Filed Apr. 22, 1892. Serial No. 430,256. (No model.)

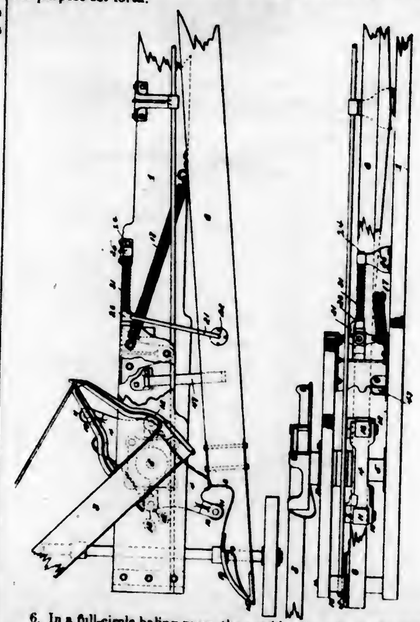
Claim.—1. In a full-circle baling-press, the combination of a baling-chamber, a plunger, a pitman having a cam and a plurality of shoulders on its outer end, a sweep, and a power-head having means to engage said cam and having a plurality of bearing-points on each side of its center, which are arranged to successively engage the shoulders of the pitman, said cam being out of the line of movement of said bearing-points, substantially as and for the purpose set forth.

2. In a full-circle baling-press, the combination of a baling-chamber, a plunger, a pitman having an inner and an outer shoulder and a point 15, a sweep, and a power-head, said power-head having an inner and an outer bearing-point on each side of its center and having surfaces *a* and projections 18, substantially as and for the purpose set forth.

3. In a full-circle baling-press, the combination of a baling-chamber, a plunger, a pitman having an inner and an outer shoulder, a cam secured to the pitman at the outer shoulder, a sweep, and a power-head, said power-head having an inner and outer bearing-point on each side of its center and having a part *b* for engaging said cam of the pitman, substantially as and for the purpose set forth.

4. In a full-circle baling-press, the combination of a baling-chamber, a plunger, a pitman having an inner and outer shoulder, and a cam on the pitman secured thereto at the outer shoulder, a spring-actuated arm connecting the pitman to the frame of the press, a sweep, and a power-head, said power-head having an inner and outer bearing-point on each side of its center and having a part *b* for engaging said cam, substantially as and for the purpose set forth.

5. In a full-circle baling-press, the combination of a baling-chamber, a plunger, a pitman having an inner and an outer shoulder, and a cam located at the outer shoulder, an arm pivoted to the pitman, a spring-actuated rod to which the arm is connected, a sweep, and a power-head having inner and outer bearing-points on each side of its center, and a part *b* for engaging said cam, substantially as and for the purpose set forth.



6. In a full-circle baling-press, the combination of a baling-chamber, a plunger, a pitman having an inner and an outer shoulder, an arm pivoted to the pitman at one end, a rod upon which the other end of said arm is mounted, a spring 31, located on said rod, a sweep, and a power-head having inner and outer bearing-points for engaging the shoulders on the pitman, substantially as and for the purpose set forth.

7. In a baling-press, the combination of a baling-chamber, a plunger, means for moving the plunger, an extension pivoted to the plunger, a leaf hinged to the extension and provided with cam-shaped sides, and cleats against which the cams of the leaf impinge, substantially as and for the purpose set forth.

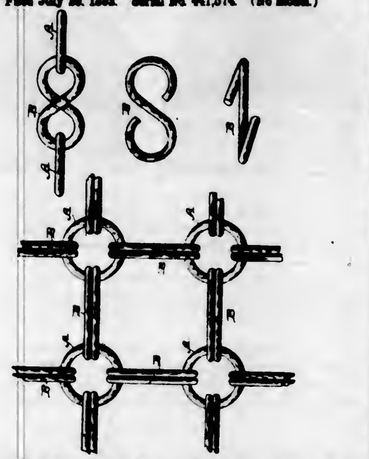
485,073. KNITTED STOCKING. Louis H. D. Williams, Philadelphia, Pa., assignor of one-half to Robert W. Scott, same place. Filed June 23, 1890. Serial No. 356,443. (No specimens.)

Claim.—1. A stocking in which a leg and foot are combined with a heel, having a seamless bottom, shaped seamless corner, selvage edges seamed together at the rear, and front selvage edges united to the heel end of the lower or sole portion of the foot, substantially as specified.

2. A stocking having a foot the body portion of which consists of upper and lower selvage-edged webs, having said selvage edges united along the opposite sides of the foot and having at the inner or instep end upper and lower tapering gussets seamlessly united along the meeting line, substantially as specified.

3. A stocking having a foot with body portion consisting of upper and lower selvage-edged webs united along the sides of the foot, the central wales of the web being continuous and extending around the point of the toe, and the other wales in each web being graduated in length and united to the corresponding wales of the other web by a seamless union on opposite sides of the foot to form a seamless toe, the body of the foot having at the instep end upper and lower tapered gussets seamlessly united along the meeting line, substantially as specified.

485,074. TORPEDO-NET. William W. Wheelip, Washington, D. C. Filed July 20, 1892. Serial No. 441,574. (No model.)



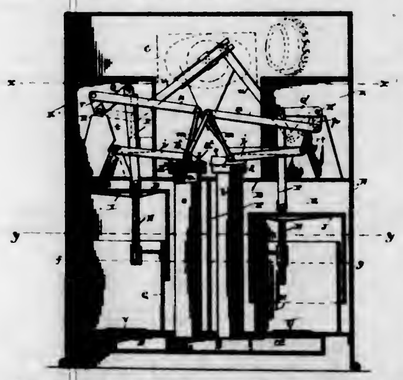
Claim.—1. A flexible metallic torpedo-net consisting of meshes, each mesh composed of rings forming the corners thereof and connections composed of wires having each end doubled upon itself to form loops which receive the rings, thus forming a net, as described.

2. A flexible separable metallic torpedo-net composed of rings and connections composed of wires having their ends doubled back upon themselves to form a loop at each end, the ends of the loops being movable in relation to the adjacent part of the wire, as and for the purpose specified.

3. A flexible metallic torpedo-net consisting of meshes composed of rings forming the corners of the meshes, the sides thereof being formed of two S-hooks placed together with the ends of the hooks in reversed positions.

4. A flexible metallic torpedo-net consisting of rings, the connections therefor composed of a wire or rod having its ends doubled back upon itself in opposite directions to form substantially an S, the loops thus formed catching the rings.

485,075. AIR OR GAS METER. Fred R. Young, Allegheny, Pa. Filed Dec. 19, 1891. Serial No. 415,672. (No model.)



Claim.—1. A valve mechanism comprising two or more valves which are fulcrumed one upon the other and an operating mechanism connected therewith, as described.

2. A valve mechanism comprising two valves fulcrumed one upon the other, which respectively control ports communicating with opposite sides of a piston, and a mechanism for alternately opening and closing the said valves, substantially as described.

3. In a valve mechanism comprising four valves connected in pairs, the valves of each pair being fulcrumed upon each other, and an operating means for and connected with each pair, which reciprocates in a line therewith, whereby the valves of each pair are alternately rocked upon the other valves of the same pair, substantially as specified.

4. A valve mechanism comprising four valves connected in pairs, the valves of each pair being fulcrumed upon each other, and an operating means for and connected with each pair for rocking them, which reciprocates in a line with each pair of valves, the two reciprocating means moving in opposite directions, substantially as described.

5. A valve mechanism for two cylinders, comprising two pairs of valves for each cylinder, the valves of each pair controlling ports which communicate, respectively, with opposite sides of a piston, and a reciprocating operating mechanism connected with the valves for alternately opening and closing the valves of each pair, respectively, substantially as set forth.

6. A valve mechanism for two cylinders, comprising valves for each cylinder, which are connected in pairs by links having one end connected with the valves and their other ends connected together, and an operating mechanism connected with the links of each pair, which reciprocates the links back and forth for rocking the valves of each pair alternately upon each other, substantially as set forth.

7. A meter comprising a casing divided into cylinder and valve chambers, the valve-chamber being divided into inlet and outlet chambers, a piston within the cylinder-chamber, ports communicating, respectively, with opposite sides of the piston and with the inlet and outlet chambers, valves connected in pairs for controlling the said ports, and an operating mechanism connected with the valves and the piston for alternately opening and closing the valves of each pair, respectively, substantially as specified.

8. A meter comprising a casing divided into cylinder and valve chambers, the valve-chamber being divided into inlet and outlet chambers, a piston within the cylinder-chamber, ports communicating, respectively, with opposite sides of the piston, valves connected in pairs and fulcrumed upon each other for controlling the said ports, and an operating mechanism connected with the valves and piston, which reciprocates with the pair of valves, whereby they are rocked one upon the other and alternately opened and closed, substantially as described.

9. A meter comprising an inlet and outlet chamber, a piston, ports communicating, respectively, with opposite sides of the piston, valves controlling the ports, connected in pairs and fulcrumed upon each other, and an operating means connected with the piston and the valves, which reciprocates with the pairs of valves for rocking the valves of each pair upon each other and alternately opening and closing them, substantially as specified.

10. A meter comprising a valve-chamber divided into an inlet and an outlet chamber, two cylinder-chambers, pistons therein, boxes in the valve-chamber, communicating with the cylinder-chambers, ports communicating with opposite sides of the pistons, valves for controlling the said ports, rock-shafts in the valve-chambers, passing through the said boxes, the pistons connected with the rock-shafts within the boxes, and connections between the shafts and the valves outside of the boxes for operating them, substantially as set forth.

11. A meter comprising a circular casing having inlet and outlet chambers, two cylinder-chambers, crescent-shaped pistons therein, passages below the cylinder-chambers, communicating, respectively, with the under sides of the pistons, ports between the crescent-shaped pistons, communicating with the passages, ports communicating with the cylinder-chambers, valves for controlling the said ports, and an operating mechanism for the said valves, substantially as specified.

485,076. AIR OR GAS METER. Fred R. Young, Allegheny, Pa. Filed Dec. 19, 1891. Serial No. 415,673. (No model.)

Claim.—1. A valve mechanism comprising two or more pairs of valves connected and fulcrumed one upon the other and a means connected therewith for operating them.

2. A valve mechanism for cylinders, having a piston, the said mechanism comprising four valves which are connected in pairs to move together, a means connecting the said pairs, which is fulcrumed thereon for alternately moving them in pairs, the valves closing ports at opposite sides of the said piston, and an operating means connected with the said connecting means, substantially as specified.

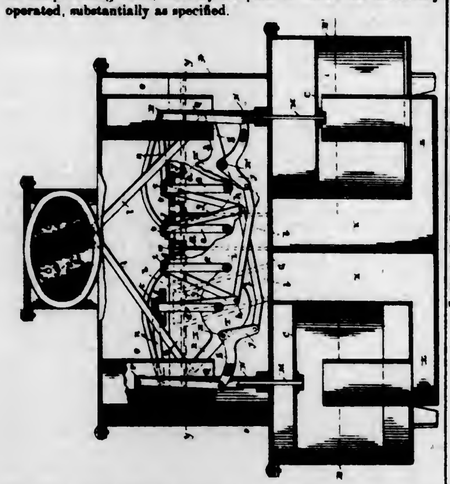
3. A valve mechanism for two cylinders, having pistons, the said mechanism comprising two pairs of valves for each cylinder, the valves of each pair moving together and closing, respectively, ports leading to opposite sides of the pistons, and a means connected with the piston of one cylinder for alternately operating each pair of valves which coact with the other cylinder, substantially as specified.

4. A valve mechanism for cylinders, having pistons, the said mechanism comprising four or more valves connected to move in

pairs, a means connecting the said pairs of valves and fulcrumed thereon, and a connection between the piston and the said fulcrumed connections, substantially as shown.

5. A valve mechanism for cylinders, comprising four valves connected and moving in pairs, links connected loosely at one end to each pair, and an operating mechanism connected with the links at their opposite ends for reciprocating them, whereby the valves are alternately operated, substantially as set forth.

6. A valve mechanism for cylinders, having pistons, the said mechanism comprising four valves connected and moving in pairs, the valves of each pair closing, respectively, ports leading to opposite sides of the piston, links loosely connected at one end to the valves and inclining toward each other and loosely connected together at their opposite ends, and an operating mechanism connected with the links for reciprocating them, whereby the pairs of valves are alternately operated, substantially as specified.



7. A meter comprising inlet and outlet chambers, two cylinders having piston-valves connected in pairs and in fours for each cylinder, the valves of each pair closing, respectively, ports which lead to opposite sides of the cylinder-pistons, and opening, respectively, into the inlet and outlet chambers, and connections between the pistons of one cylinder for operating the valves of the other cylinder, substantially as specified.

8. A meter comprising a casing having a well carrying a liquid, a partition extending downward from the top of the casing into the liquid, forming inlet and outlet chambers, and a cylinder, valves in the inlet and outlet chambers communicating, respectively, with opposite ends of the cylinder, yokes extending under the said partition and connecting the valves in pairs, and a means connected with the valves for alternately operating them in pairs, substantially as shown.

9. A meter comprising a casing having a well carrying a liquid, a partition extending downward from the top of the casing into the liquid and having a space between its lower edge and the bottom of the well, forming inlet and outlet chambers, valves in the said chambers communicating, respectively, with opposite ends of the cylinder, connections extending under the said partition for connecting the valves in pairs and in fours, and an operating mechanism connected with the connection which connects the valves in fours, substantially as described.

10. A meter comprising inlet and outlet chambers, two cylinders carrying pistons, two pairs of valves for each cylinder, opening into the inlet and outlet chambers, rock-shafts carrying counter-weights connected with the pistons, and a connection between the rock-shafts and the pairs of valves for operating the two pairs of valves for each cylinder alternately, substantially as set forth.

11. A meter comprising inlet and outlet chambers, valves placed in the said chambers, two cylinders, ports connecting the valves and opposite ends of the cylinders, pistons carrying piston-rods, a well below the inlet and outlet chambers, containing a liquid, a tube surrounding the piston-rod, extending above the liquid-level, a hood surrounding the tube, which extends into the liquid, and a connection between the valves and the piston-rods, substantially as specified.

12. A meter comprising two pistons, inlet and outlet chambers, ports connecting the said chambers and opposite sides of the pistons, a rock-shaft for each piston, which is connected therewith, valves for closing the said ports, an operating connection between the valves and pistons, consisting of a crank and pitman-link, and connecting-arms upon the said rock-shafts, whereby the pistons are held in their proper relative positions throughout their strokes, substantially as set forth.

485,077. INSECT-TRAP. WILLIAM ARNS, Providence, R. I. Filed July 9, 1892. Serial No. 439,496. (No model.)

Claim.—1. The combination, with the base-plate and the rings connected by suitable standards, of the raveled wire-gauze secured to the rings, with the uncovered wires of the gauze arranged to project inwardly from the rings to form an inlet-opening at the ends of the wires, substantially as described.

2. The combination, with the base-plate, of the rings connected by suitable standards and provided with the wires projecting inwardly from the rings to form an annular inlet-opening, substantially as described.

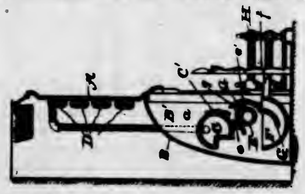
3. The combination, with the base-plate and the rings connected by suitable standards and provided with the wires projecting inwardly from the rings to form an annular inlet-opening, of the wire-gauze funnel and the cover forming the trap-chamber, substantially as described.

485,078. EXPANDING DEVICE FOR USE IN MAKING WASH-BOILERS. GEORGE W. ANDERSON and GEORGE M. HUNTINGTON, Ludoga, Ind. Filed Nov. 21, 1891. Serial No. 412,690. (No model.)

Claim.—1. An expanding device for use in the manufacture of wash-boilers, &c., consisting of two bars, each carrying a clamping-jaw upon its outer end, the inner ends of which are formed to slide one within or upon the other, and a lever pivoted to one and arranged to engage with the other for securing the desired adjustment, the handle of said lever being adjustable toward or from said bars, whereby it may be forced to impinge upon one to hold said parts in the desired adjustment, substantially as set forth.

2. In an expanding device for use in the manufacture of wash-boilers, &c., the combination of the two parts B and B', each having a clamping-jaw upon its outer end, the part B being provided with the ears b^3 on its sides near its inner end, the inner end of the bar B', formed with a rack on its upper face and mounted between said ears, the rack B^2, pivoted between said ears and arranged to engage with said rack on the bar B', the shank extending up from said rack with a screw-threaded upper end, and a handle provided with a screw-threaded perforation mounted on said shank, and the collar b^4, with its lower face arranged to engage with the upper edges of the ears b^3, all substantially as described, and for the purpose as specified.

485,079. GAS-LOG FIRE-PLACE. FREDERICK H. RACKUS, Philadelphia, Pa. Filed Mar. 12, 1892. Serial No. 424,892. (No model.)



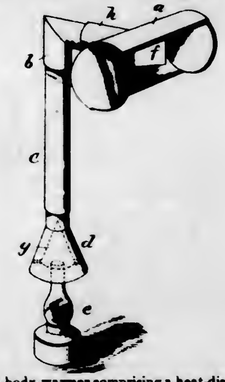
Claim.—1. The combination, with the supported water-log, of a burner supported thereby, a water-receptacle supported beneath said burner, and a portion depending from said burner into said water-receptacle for conducting heat to the water contained therein, substantially as described.

2. The combination, with the supported water-log, of the burner supported from said water-log and having a series of burner-orifices, a water-receptacle supported beneath said burner, and a removable plate having portions adapted to engage said burner adjacent to said burner-orifices, said plate having a depending portion extending into said water-receptacle, substantially as described.

3. The combination, with the supported water-log, of the burner supported therefrom and provided with brackets or projections, a water-receptacle supported beneath said burner, and a removable plate supported by said burner, having portions adapted to engage said brackets and a depending portion extending into said water-receptacle, said plate being adapted to conceal said burner and conduct heat to said water-receptacle, substantially as described.

4. The combination, with a radiator adapted to be placed within a chimney-niche and having a face-plate provided with a fireplace-recess, said plate having portions adapted to engage the chimney-breast and close said niche, of a water-log connected with said radiator and a heater therefor separated from said radiator by a deflector, said plate being provided with apertures for the admission of air to said radiator in rear of said face-plate and deflector, substantially as described.

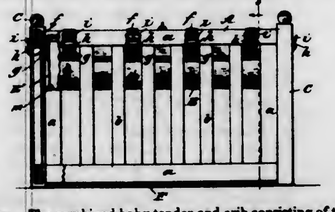
485,080. BODY-WARMER. GEORGE D. BAILY, Spiceland, Ind. Filed Dec. 4, 1891. Serial No. 414,080. (No model.)



Claim.—1. A body-warmer comprising a heat-distributer, a lamp, a conductor to convey the heat from the lamp to the said heat-distributer and terminating in a flaring mouth, and an inverted-funnel-shaped guard closed at its upper end, supported within the said flaring mouth above the lower edge thereof and having its walls parallel with the walls of the said flaring mouth and having an annular space between the said parallel walls for the passage of the heated air, the said guard being adapted to receive the upper end of the lamp or lamp-chimney to prevent the flame being extinguished by back-draft through the said conductor and arrest any sparks, substantially as specified.

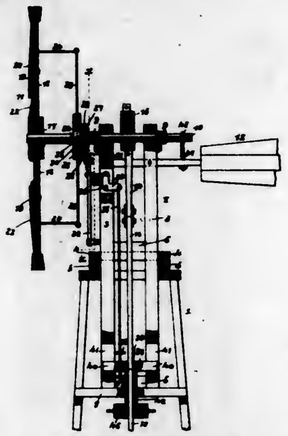
2. A heat-distributer having an approximately-cylindrical form, closed at its ends and open on one side and having a nipple projected from the closed side midway of its ends to receive the heat-conductor and having a deflector located opposite the said nipple and flaring in opposite directions from a medial line, substantially as described.

485,081. COMBINED BABY TENDER AND CRIB. ARISTUS BAIRD, Riverhead, N. Y. Filed Mar. 15, 1892. Serial No. 424,977. (No model.)



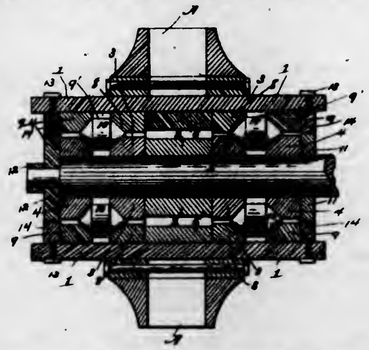
Claim.—The combined baby tender and crib consisting of the two detachable and folding frame-sections A B and A' B', the hammock consisting of the flexible bottom part E and flexible end sections F, the curved stiffening-bow m, arranged in the hem or seam between the bottom and end sections, and the straps f, with fastenings and loops g, connected to a seam s of the hammock on its outer side and below its upper edge, substantially as and for the purpose described.

485,082. WINDMILL. EDWIN J. BARBER, Gove City, Kans., assignor of two-thirds to William F. Kyle, same place, and Herman Ripley, Page City, Kans. Filed Sept. 30, 1890. Serial No. 366,673. (No model.)



Claim.—In a windmill, the combination of the tower 1, a frame 2, with slots in the lower part thereof and supporting a shaft having a wheel thereon with adjustable blades and also having a vane attached thereto, a pump-rod or plunger connected to said shaft of the wheel, a tube 42, surrounding said pump-rod or plunger and having extensions secured to the upper end thereof adjustably extending into said slots in the lower part of frame 2, one of said extensions having a vertical hole therethrough, a disk 46, connected to the lower part of the said tube 42 to operate the latter, and a vertical rod 36, connected to the blades of the wheel and movably extending through the said extension having the opening therein and provided with tappets 37, located above and below said latter extension to operate the same, substantially as described.

485,083. ROLLER-BEARING. SAMUEL B. BARTLETT, Camden, N. C. Files Apr. 6, 1892. Serial No. 427,901. (No model.)

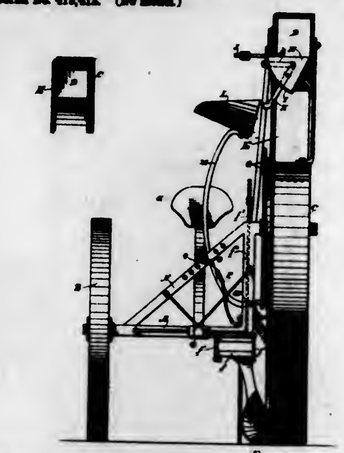


Claim.—1. In a roller-bearing, a box provided with a central collar, an axle with a corresponding collar, and two series of beveled rings provided with spaces between each series, and a series of loose rollers in each of said spaces.

2. In a roller-bearing, a box provided with a central collar, an axle with a corresponding collar, and two series of beveled rings provided with oblong spaces between them, and a series of oblong rollers, and means at the end of the box for holding the parts in position.

3. In a roller-bearing, a box provided with a central collar, an axle with a corresponding collar, and two series of beveled rings provided with spaces between each series, and a series of loose rollers in each of said spaces, all of said collars and rollers being loosely mounted in the box or casing, and means secured to the ends of the casing and to the axle or shaft for holding said parts in position.

485,084. EXCAVATOR. HENRY P. BENNETT, Phœnix, Ariz., assignor of one-half to S. C. Symonds, same place. Filed Jan. 27, 1892. Serial No. 419,412. (No model.)



Claim.—1. In an excavating-machine having a rotating wheel provided with means for elevating the dirt, a vibrating shovel for receiving the dirt from said wheel and provided with a pivotally-secured lever, and a cam-wheel on the axis of the rotating wheel for actuating the shovel to cause it to throw the dirt to one side of the machine, substantially as herein described.

2. In an excavating-machine, the combination of a plow, a rotating wheel provided with a series of elevating-buckets adapted to successively receive the dirt from the plow and to carry it upwardly, a cam-wheel on the axis of the rotating wheel, and a vibrating discharge-shovel actuated by the cam-wheel and adapted to receive the dirt from successive buckets and to throw it to one side, substantially as described.

3. In an excavating-machine, the combination of the rotating wheel provided with the series of elevating-buckets, the discharge-shovel adapted to receive the material from the buckets successively, and the means for vibrating said shovel to bring it to position to receive its load and to discharge the same, consisting of the pivoted spring-controlled lever, upon which said shovel is mounted, and the series of inclined planes or cams carried by the wheel and acting on the pivoted lever, substantially as described.

4. In an excavating-machine, the combination of the rotating wheel provided with the series of elevating-buckets, the discharge-shovel adapted to receive the material from the buckets successively, and the means for vibrating said shovel to bring it to position to receive its load and to discharge the same, consisting of the pivoted lever, upon which said shovel is mounted, the series of inclined planes or cams carried by the wheel, acting on the pivoted lever to force it in, the spring to return it, and a buffer for limiting the stroke of the lever, substantially as described.

5. In an excavating-machine, the combination of the rotating wheel having the series of elevating-buckets, the confining-casing through which said buckets pass during a portion of their revolution, the receiving-hopper at the upper end of the casing, provided with a normally-closed gate, the vibrating discharge-shovel, and contact-levers connected with the gate of the receiving-hopper and operated by the vibrating shovel, whereby the gate is opened when the shovel is in position to receive the dirt from the hopper, substantially as described.

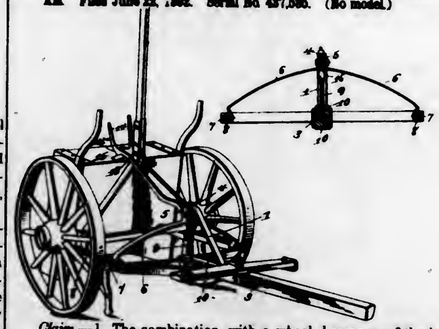
6. In an excavating-machine, the combination of the rotating wheel provided with a series of elevating-buckets, a receiving-hopper into which said buckets discharge the dirt, a gate controlling said hopper, a vibrating discharge-shovel, and contact-levers connected with the gate and operated by the shovel to offset the opening of the gate when the shovel is in position under the receiving-hopper, substantially as described.

7. In an excavator, the combination of the rotating wheel provided with the series of elevating-buckets, the receiving-hopper into which said buckets successively discharge the dirt, the pivoted weighted gate controlling said hopper, the vibrating discharge-shovel, and the pivoted trip-lever connected with the gate and lying in the path of the vibrating discharge-shovel, whereby it opens the gate, substantially as described.

8. In an excavator, the combination of a plow, a rotating wheel beside the plow and having on its rim the series of elevating-buckets, the confining-casing through which said buckets pass during a portion of their revolution, the receiving-hopper into which the buckets discharge their contents, said hopper having a trip-gate, the vibrating shovel for opening the gate and receiving the dirt from the receiving-hopper, the pivoted spring-controlled lever of said shovel, and the inclined planes or cams on the wheel, acting on the lever, substantially as described.

9. An excavating-machine consisting of an axle having on one end the large wheel provided with the series of buckets, the vertically-adjustable plow carried by said axle and arranged to throw the dirt into the buckets of the wheel, the confining-casing through which the buckets pass during a portion of their revolution, the receiving-hopper into which the buckets discharge the dirt, the trip-gate of said hopper, the vibrating discharge-shovel, the pivoted lever of said shovel, the series of inclined planes or cams on the wheel, operating on said lever to throw the shovel inwardly under the receiving-hopper and to open its gate, the spring to throw the lever and shovel outwardly, and the adjustable contact buffer-pin for limiting the stroke of the lever, substantially as described.

485,085. WHEELED SCRAPER. PETER M. BROADFOOT, Decatur, Ala. Filed June 22, 1892. Serial No. 437,595. (No model.)



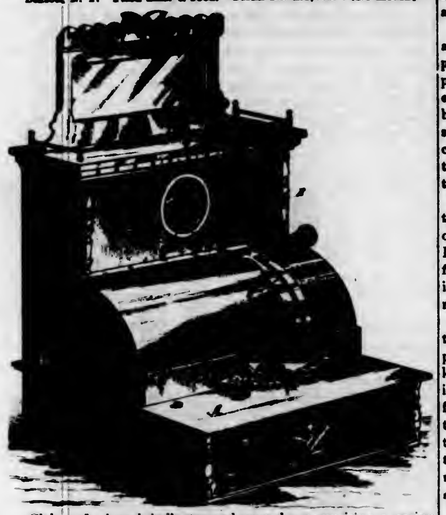
Claim.—1. The combination, with a wheeled scraper, of the inclined longitudinal and transverse braces having their upper ends connected together and their lower ends secured, respectively, to the tongue and to opposite sides of the scraper-frame, and the supporting-rod extending vertically from the tongue and passing through the longitudinal brace, substantially as described.

2. The combination, with a wheeled scraper, of the inclined transverse braces constructed of a single piece of metal, having its ends secured to the sides of the scraper-frame and provided intermediate its ends with a vertically-disposed bend, the longitudinal brace having its ends bent horizontally, the front one being secured to the tongue and the rear one to the bend of the transverse braces, plates secured to the upper and lower faces of the tongue, and a vertical rod passing through the tongue and through the longitudinal brace, substantially as described.

3. The combination, with a two-wheeled scraper, of inclined transverse braces constructed of a single piece of metal, having its ends secured to the sides of the scraper-frame and provided intermediate its ends with a vertical bend, a longitudinal brace extending upward from the tongue and having its rear end secured to the transverse braces at the bend, a vertical rod, and a bar pivoted at its front end in the bend of the transverse braces and provided at its rear end with a hook adapted to engage the scoop of the scraper to hold the same in an elevated position, substantially as and for the purpose described.

4. The combination, with a two-wheeled scraper, of inclined transverse braces constructed of a single piece of metal, having its ends secured to the side of the scraper-frame and provided intermediate its ends with a vertical bend, the inclined longitudinal brace having its rear end secured to the bend and its front end secured to the tongue, the vertical rod, and the bar having its front end pivoted in the bend and provided with a hook arranged at its rear end to engage the scoop and having a handle, said bar having its rear end engaging the rod, whereby the bar is held in an inclined position, substantially as described.

485,086. CASH INDICATOR AND RECORDER. GEORGE H. DUNT, Dalton, N. Y. Filed Mar. 4, 1892. Serial No. 423,772. (No model.)



Claim.—1. A cash indicator and recorder comprising a casing having a sight-opening, a dial-section, an adjusting key or lever movable on the dial, a series of independently-movable indicators, an indicator-operating device for engaging any one of the indicators, intermediate mechanism connecting the said device with the dial-key, such mechanism arranged to move the indicator-operating device proportionately to its adjustment on the dial, whereby it is set to operate the desired indicator, and a lever for operating such device, substantially as and for the purposes described.

2. In a cash indicator and recorder, an indicator-operating mechanism comprising a fixed dial held on the outside of the casing, a lever or pointer-arm movable thereon, a series of indicator-plates having the same axial bearing, a single operating-lever having a movable bearing, whereby it can be set for engagement with any one of the indicator-plates, lever connections between such bearing and the dial-lever, whereby the bearing is shifted proportionate to the movement of the dial-lever, and means for operating the indicator-operating lever, substantially as and for the purposes described.

3. In a cash indicator and recorder, the combination of a fixed dial-plate, a pointer or dial-lever movable thereon, a series of independently-movable swinging indicator-plates, a rocker-arm for engaging any one of such plates, movable longitudinally parallel with the axis of such plates, lever connections between such bearing and the dial-lever, whereby a longitudinal movement is imparted to the bearing as the dial-lever is adjusted over the dial, and means for operating the rocker-arm from the outside of the casing, substantially as and for the purposes described.

4. In a cash indicator and recorder, the combination, with the casing having a single sight-opening, a series of indicator-plates having the same axial bearing, but independently movable, such plates having lateral crank portions, lever mechanism for operating the plates to swing them over the sight-opening, the dial, the dial-lever, and the intermediate connections, whereby such mechanism is set by the movement of the dial-lever, of the main operating-lever hinged at its rear end within the casing, its front end projected beyond the front thereof, the tripping-lever held normally from contact with the indicator-plates, and devices adapted to interlock the tripping mechanism and the main lever, whereby the tripping mechanism is operated at the beginning of the movement of such main lever, and means for automatically disconnecting such devices from the main lever, substantially in the manner and for the purpose described.

5. In a cash indicator and recorder, the combination, with the dial, the dial-lever or pointer, the movable rocker-arm G^2, the connecting-levers E and F, and the sight-opening B^x, of the transverse shaft I, disposed to one side of the center of the opening B^x, the plates H, pivoted therein, their upper ends adapted to be swung over the opening B^x and formed with lateral extensions H′ at their lower ends, the lever K, and the tripping mechanism, all arranged substantially as and for the purposes shown and described.

6. The combination of the lever K, having a catch-lug K′, the swinging plates having extensions H′, the rocker-arm G^2, the tripper-levers L L' L^2, the standard M, and the gravity-pawl N, pivoted on the lower member L, its lower end held in engagement with the standard M, its upper end formed with a lip which engages the lug K′, all arranged substantially as and for the purposes described.

7. In a cash indicator and recorder, in combination, the casing, a dial-plate projected from the outer face thereof, a dial-lever or pointer journaled to traverse the dial and formed with a rearwardly-projecting portion having a flexible segmental type-section at its inner end, an impression-block, a recording-ribbon interposed between the block and the type-section, an operating-lever projected to the outside of the casing, and an impression-lever mounted inside of such casing, having an impression member and adapted to be engaged by the operating-lever, whereby to engage the type-section, all substantially as and for the purpose described.

8. In a cash indicator and recorder, substantially as described, the combination, with the main lever K, of the dial-plate C^x, the pivoted lever or disk D, having a forwardly-extending pointer member D′ and a segmental type-section at its rear end, the ribbon T, the feed devices for moving the ribbon, the printing-lever having an impression member, and an adjustable stop to limit its downward movement, all arranged substantially as and for the purpose described.

9. In a cash indicator and recorder, substantially as described, the combination, with the main operating-lever K, the indicator-plates, the printing-lever, the recording-ribbon, and the dial, of a lever plate or disk D, journaled on the dial-plate, its front end formed into a pointer or adjusting-lever, its rear end carrying a segmental flexible type-section, the indicator-operating mechanism, the connections between such mechanism and the disk D, all arranged substantially as shown, whereby the indicator mechanism and the type-section are moved into their proper operative positions by the adjustment of the dial-lever on the dial, substantially as shown and described.

10. In a cash indicator and recorder, substantially as described, the combination, with the casing, the fixed plate C, its forward end projected beyond the front of the casing and formed into a dial member, the plate or disk D, journaled in such plate C, formed with a rear segmental member D^3, having an annular series of apertures d^3, the segmental flexible type-section R, carried by such member D^3, the impression-block, the ribbon, and the ribbon-feed devices, of the lever P, having an impression member P′, a lock-pin p^3, adapted to engage the apertures d^3 when the lever is depressed, and the main lever K, all arranged as shown, and for the purposes described.

11. In a cash indicator and register of the kind described, the combination, with the base-section A, having a recess a, of the ribbon-spool carrier formed of a pocket or casing T, adapted to fit in said recess and having ears or extensions t t, adapted to lap the end edges of such recess, and formed with side notches t', forming the bearings for the spool-axles, substantially as shown, and for the purposes described.

12. In a cash indicator and register, substantially as described, comprising a casing having a single sight-aperture, a horizontal dial member projected to the front of the casing, a printing mechanism, a recording-ribbon, the ribbon-feed devices, a series of swinging indicators, a differentially-movable indicator-operating rocker-lever, a single adjusting key or lever journaled in the dial-plate, connected with the rocker-lever and the printing mechanism, said adjusting-lever adapted when moved over the dial to set the rocker-lever and the printing mechanism to their proper operative position, and a single operating-lever having its handle extended without the casing and adapted when depressed to operate the indicator rocker-arm, the printing mechanism, and the feed devices, all arranged in the manner substantially as herein shown and described.

13. In a cash recorder and indicator, the combination, with the main casing having a drawer-compartment formed with inclined guide-rails D^4 D^4, a stop member f^4, and an automatically-operating locking-trigger, of a drawer having a guide-roll E^3, engaging the upper face of one of such rails D^4, and guide-rolls E^4 and f^3, arranged to embrace the opposite rail D^4, said roll f^3 projected below such rail and operating to engage the stop f^4 when the drawer is released, whereby to limit the outward movement of such drawer, substantially as and for the purpose described.

485,087. BOILER. JOHN CABALL, Mansfield, Ohio, assignor, by mesne assignments, to H. R. Caball and W. H. Caball, same place. Filed Aug. 3, 1892. Serial No. 443,031. (No model.)

Claim.—1. In a boiler of the class described, the combination of an external shell, a mud-drum arranged in the lower portion of the shell and provided with a central vertical flue or passage, a series of concentric water-tubes communicating with the mud-drum, and a steam-drum supported on the upper ends of the water-tubes within and out of contact with the external shell, substantially as described.

2. In a boiler of the class described, the combination of an external shell, a mud-drum arranged within the shell at the bottom thereof and provided with a central vertical passage, a steam-drum arranged

within and out of contact with the external shell, and a series of water-tubes connecting the mud and steam drums, said tubes being inclined inwardly from their lower to their upper ends, substantially as described.

3. In a boiler of the class described, the combination of an external shell, a mud-drum arranged within the lower portion of the external shell and provided with a central vertical passage, a steam-drum arranged in the upper portion of and out of contact with the external shell, a series of tubes connecting the mud and steam drums, said tubes being inclined inwardly from their lower to their upper ends to form a central conical combustion-chamber, and a deflector arranged in said combustion-chamber a short distance above the upper end of the central vertical passage in the mud-drum, substantially as described, for the purpose specified.

4. In a boiler of the class described, the combination of an external shell, a mud-drum arranged in the lower end of said shell and provided with a central vertical passage, a steam-drum arranged within and separated from the external shell, a series of tubes connecting the mud and steam drums, said tubes being inclined inwardly from their lower to their upper ends to form a central conical combustion-chamber, a vertical rod arranged in said combustion-chamber and attached at its upper end to the steam-drum, a deflector attached to the lower end of said rod, and a series of transverse braces connecting said central depending rod with the inner circle of tubes, substantially as described.

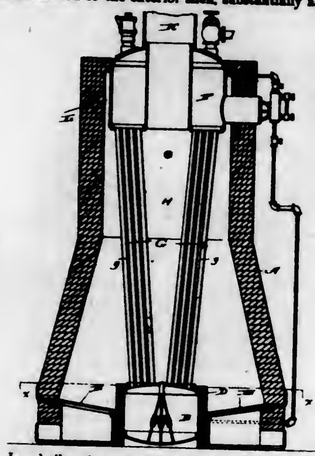
5. In a boiler of the class described, the combination of an external shell, a mud-drum arranged in the lower part of said shell and provided with a central vertical passage, a steam-drum arranged within the main shell, and a series of tubes of different diameters or sizes connecting the mud and steam drums, said tubes being inclined inwardly from their lower to their upper ends, substantially as described, for the purpose specified.

485,088. BOILER. JOHN CAHALL, Mansfield, Ohio, assignor, by mesne assignments, to H. R. Cahall and W. H. Cahall, same place. Filed Aug. 3, 1892. Serial No. 442,082. (No model.)

Claim.—1. In a boiler, the combination of an exterior shell, a mud-drum arranged within and at the lower end of said shell, a series of grates arranged within the shell around the mud-drum, a steam-drum situated in the upper portion of the shell and provided with a central vertical smoke-flue, and a series of water-tubes connecting the mud and steam drums, substantially as described.

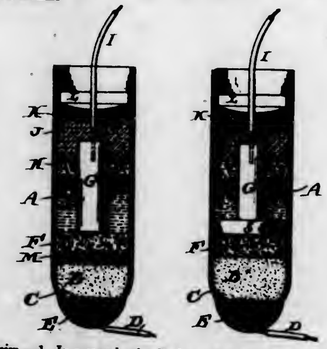
2. In a boiler, the combination of an exterior shell, a mud-drum arranged centrally within the shell at the bottom thereof, a series of grates arranged between the mud-drum and exterior shell, a steam-drum arranged within the exterior shell and provided with a central vertical smoke-flue which communicates with the stack of the boiler, and a series of water-tubes connecting the steam and mud drums, said tubes being inclined inwardly from their upper to their lower ends to form a central space which communicates with the smoke-flue in the steam-drum, substantially as described.

3. In a boiler, the combination of a tapering inclosing shell, a mud-drum arranged within said shell near the bottom thereof, a series of grates arranged between the mud-drum and exterior shell, a steam-drum arranged in the upper portion of the exterior shell and provided with a central vertical smoke-flue which communicates with the stack of the boiler, and a series of water-tubes connecting the steam and mud drums, said tubes being inclined in a reverse direction to the inclination of the exterior shell, substantially as described.



4. In a boiler, the combination of an exterior shell, a mud-drum arranged centrally within the shell at the bottom thereof, a series of grates arranged between the mud-drum and exterior shell, a steam-drum arranged within the exterior shell and provided with a central vertical smoke-flue, and a series of tubes of different diameters connecting the mud and steam drums, substantially as described.

485,089. STANDARD CELL FOR ELECTRIC BATTERIES. HENRY S. CARHART, Ann Arbor, Mich. Filed July 11, 1892. Serial No. 439,591. (No model.)



Claim.—1. In a standard cell, the combination of a vessel, a mercury salt therein connecting with one terminal of the cell, a zinc element connecting with the other terminal, an electrolytic fluid in contact with the zinc and mercury salt, and a porous partition or diaphragm between the zinc and mercury salt.

2. In a standard cell, the combination of a vessel, a mercury salt and mercury therein connecting with one terminal of the cell, a zinc element connecting with the other terminal, an electrolytic fluid in contact with the zinc and mercury salt, a porous partition or diaphragm between the zinc and mercury salt, and an absorbent and neutral substance arranged below the porous partition or diaphragm to prevent the mercury salt shifting its position in the vessel and becoming mixed with the mercury.

3. In a standard cell, the combination of a vessel, a mercury salt at the bottom, a wire terminal electrically connected with said salt, a zinc element arranged within the vessel above the mercury salt, a porous inert or neutral diaphragm between the zinc and mercury salt, an electrolyte surrounding the zinc, a sealing-diaphragm arranged above the electrolyte to hold the zinc in place, a terminal wire leading from the zinc, and an impervious sealing material arranged above the zinc and sealing-diaphragm adapted to adhere closely to the vessel.

4. In a standard cell, the combination of a vessel, a mercury salt at the bottom, a wire terminal electrically connected with said salt, a zinc element arranged within the vessel above the mercury salt, a porous inert or neutral diaphragm between the zinc and mercury salt, an electrolyte surrounding the zinc, a sealing-diaphragm arranged above the electrolyte to hold the zinc in place, a terminal wire leading from the zinc, and an impervious sealing material consisting of gutta-percha and pitch arranged above the zinc and sealing-diaphragm, and an outer covering of zinc oxide and alkaline silicate adapted to adhere closely to the vessel.

5. In a standard cell, the combination of a glass vessel, a mercury salt and zinc as elements, an electrolyte, a sealing-diaphragm, a sealing material consisting of zinc oxide and alkaline silicate, and a covering of alkaline silicate alone above said sealing material to adhere to the glass and prevent the zinc sulphate creeping up the glass by capillary action.

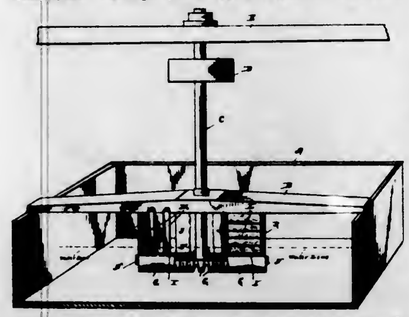
6. A standard cell having its elements and electrolyte sealed in a vessel by a compound consisting of a neutral non-conducting adhesive wax and a paste of a silicate of an alkali and zinc oxide.

7. The herein-described method of constructing a standard cell having a low temperature coefficient, which consists in forming a saturated solution of zinc sulphate at a lower temperature than that at which the cell is to be used and sealing the said saturated solution of zinc sulphate in a vessel in contact with a mercury salt and metallic zinc contained within the cell.

8. The herein-described method of constructing a standard cell having a low temperature coefficient, which consists in forming a saturated solution of zinc sulphate at a temperature lower than any at which the cell will be used and sealing the said saturated solution of zinc sulphate in a vessel in contact with a salt and a metal contained within the cell.

9. The herein-described method of constructing a standard cell having a low temperature coefficient, which consists in forming a saturated solution of an electrolyte at a temperature lower than that at which the cell will be used and sealing the said electrolyte in a vessel in contact with the elements of the cell.

485,090. APPARATUS FOR PRODUCING PULP. JOHN B. CARTER, Kokomo, Ind. Filed Apr. 2, 1891. Serial No. 387,413. (No model.)



Claim.—1. A machine for producing pulp, comprising a tank, a revolving wheel having a wire fabric on its upper surface, troughs under the said fabric having inlet and outlet openings, and a feeding chamber or box adjacent to the wheel in which the wood to be reduced is placed, substantially as shown.

2. A machine for producing pulp, comprising a tank, a revolving rubbing-wheel having radial troughs with open ends, a wire fabric placed over the troughs, and a feeding-box in which the material to be operated upon is placed, substantially as described.

3. In a machine for producing pulp, a tank, a revolving wheel within the tank having troughs which have open ends, a rubbing fabric placed over the troughs, and a feeding-box in which the material to be fed is placed, all combined substantially as set forth.

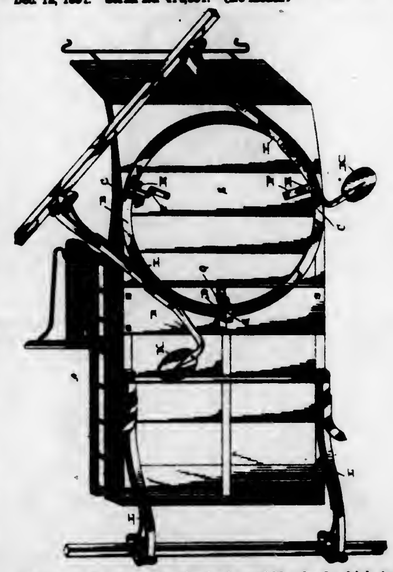
4. In a machine for producing pulp, a tank, a rubbing-wheel within the tank having a central portion, troughs extending outward from its periphery, a rubbing fabric placed over the troughs, and a feeding-box in which the material to be operated upon is placed, combined substantially as specified.

5. In a machine for producing pulp, a tank, a revolving wheel having a central portion, troughs extending below the said central portion and provided with rubbing fabric placed over the troughs, and a feed-box in which the material to be operated upon is placed, combined substantially as described.

6. A machine for producing pulp, comprising a tank containing water, a horizontal revolving wheel having a rubbing-surface, and a feed-box around the wheel-shaft, the said wheel and the lower end of the feed-box being below water-line, substantially as shown and described.

7. A rubbing-wheel for the pulp-producing machine, consisting of a central horizontal portion, troughs extending from the periphery of the horizontal portion having open ends, and a rubbing fabric placed over the troughs, substantially as set forth.

485,091. VEHICLE. CHARLES CONSTOCK, Richmond, Va. Filed Dec. 12, 1891. Serial No. 414,951. (No model.)



Claim.—1. In a vehicle, the body, a fifth-wheel which is substantially the same diameter as the width of the body, and springs which are secured at their inner ends to opposite sides of the fifth-wheel and at their outer ends to the axle, and rear springs which have their inner ends connected with the body and their outer ends connected with the axle, the parts combined substantially as set forth.

2. In a vehicle, the body, a fifth-wheel consisting of a ring which is substantially the same diameter as the width of the body, vertical and horizontal rollers upon which it is supported and guided, springs which have their inner ends connected with opposite sides of the said fifth-wheel and their outer ends connected with the front axle, and rear springs, all combined substantially as specified.

3. A king-boltless fifth-wheel for a vehicle, comprising a ring which is substantially the same diameter as the width of the vehicle, horizontal rollers supported by the body above the ring and vertical rollers supported by the body inside of the ring and which engage the inner edge thereof, and springs secured to the fifth-wheel, substantially as specified.

4. In a vehicle, a fifth-wheel comprising a ring formed of flat metal, horizontal rollers above the ring at the under side of the body, a substantially U-shaped plate at the inner side of the ring, having a horizontal roller below the ring and a vertical roller at the inner edge of the ring, and vertical rollers at the inner edges of the ring, supported by L-shaped plates secured to the body inside of the ring, all combined substantially as specified.

5. In a vehicle, the body, a fifth-wheel comprising a ring, rollers which support and guide the ring, heavy boards at the under side of the body, to which the rollers are secured, front springs secured to the ring and to the front axle, and rear springs, all combined substantially as described.

485,092. CISTERN CLEANING DEVICE. EDGAR C. DAVIS, Bartville, Ill. Filed May 27, 1892. Serial No. 434,091. (No model.)

Claim.—In a cistern-cleaning device, the combination, with the

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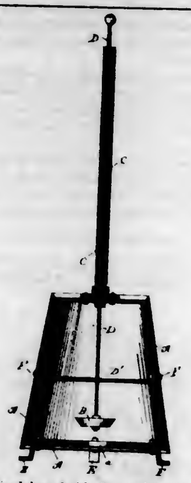


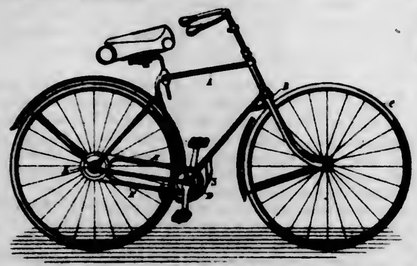
casing A, having flanged detachable feet and a valve-opening *a*, of the tubular handle C, cross-bar D', the valve-rod D, and valve B, the valve-rod extending through the handle and through a central aperture in the cross-bar, which serves as a guide to center the valve to its seat, substantially as specified.

485,093. BOTTLE-STOPPER. JOSEPH DE MARS, Albuquerque, N. Mex., assignor of one-fourth to Frederick R. McKinley, same place. Filed Mar. 31, 1891. Serial No. 387,092. (No model.)

Claim.—1. The bottle-stopper consisting of the elastic disk and retaining-buttons having upwardly-projecting divergent shanks bent to form loops at the upper ends with four sections or legs disposed, as described, to bear equally against the inner periphery of the bottle-mouth, substantially as shown and described.

2. The bottle-stopper consisting of the elastic disk and retaining-buttons having upwardly-projecting divergent shanks bent to form loops at the upper end with four sections or legs disposed, as described, to bear equally against the inner periphery of the bottle-mouth and terminating at the lower end in loop *b* and free ends *a a*, the whole being made of one piece of spring-wire, substantially as described.

485,094. BICYCLE. HARRY R. DEY, Brooklyn, N. Y., and FREDERICK R. GRISWOLD, Hartford, Conn. Filed Mar. 5, 1892. Serial No. 423,808. (No model.)



Claim.—1. The combination, with the pedal-shaft and driving-axle of a cycle, of a rotary fluid-motor mounted on the driving-axle, a rotary fluid-pump of variable capacity mounted on the pedal-shaft, and pipes or tubes forming direct passage of communication between the eduction and induction ports of the pump and induction and eduction ports, respectively, of the motor.

2. The combination, with the driving-axle and pedal-shaft of a cycle, of a rotary fluid-motor on the driving-axle, a rotary fluid pump or engine having two pistons of unequal capacity mounted on the pedal-shaft, means for bringing one or both of said pistons into operation, and thereby varying the capacity of the pump, and eduction and induction pipes or passages connecting the motor and pump, as set forth.

3. The combination, with the driving-axle and pedal-shaft of a cycle, of a rotary motor mounted on the driving-axle, a rotary pump mounted on the pedal-shaft, pipes or tubes forming direct passages of communication between the eduction and induction ports of the pump and induction and eduction ports, respectively, of the motor, and a brake-valve located in one of said pipes, as set forth.

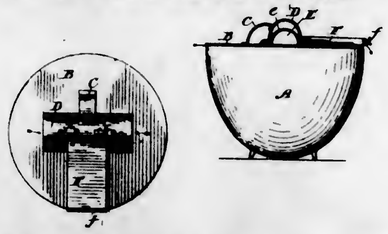
4. The combination, with the driving-axle and pedal-shaft of a cycle, of a rotary motor on the driving-axle, a rotary pump or engine on the pedal-shaft, eduction and induction pipes connecting the same, a brake-valve located in one of said pipes, a compression-bulb connected with the chamber of said valve and adapted to move and operate the same by the pressure of a fluid contained therein, as set forth.

5. The combination, with the rotary motor on the driving-axle, of a pump or engine on the pedal-shaft, consisting of a casing having two compartments or chambers of unequal capacity, eduction and induction pipes between the same and the motor, pistons connected with the pedal-shaft and located in the two chambers of the pump-casing, respectively, a by-pass in one of said chambers, and a valve for controlling the same, as set forth.

6. The combination, with the driving-axle and pedal-shaft of a cycle or other vehicle, of a rotary fluid-motor on the driving-axle, a rotary fluid pump or engine connected with the same through eduction and induction pipes, said engine being composed of separate chambers or compartments and pistons or vanes connected with the pedal-shaft and working in the chambers, respectively, a by-pass in one of the chambers, and a valve for controlling the same, as set forth.

7. In a bycicle provided with a rotary motor on the driving-axle, a rotary engine of variable capacity on the pedal-shaft, and a series of pipes connecting the same, the combination of a brake-valve in one of the connecting-pipes, a valve for controlling the action of the motor-pistons for varying the capacity of the engine, and compression-bulbs attached to the yoke or handle of the bicycle and connected with pipes or tubes containing a fluid with the said valves, as and for the purpose set forth.

485,095. COVER FOR KETTLES, &c. JAMES DOTY, Marion, Wis., assignor of one-half to August Trossen and Ambrose S. McDonald, same place. Filed Mar. 3, 1892. Serial No. 423,640. (No model.)



Claim.—1. A cover for kettles, provided with a central opening covered by a hood having openings at each end and a perforated top, substantially as shown.

2. A cover for kettles, provided with a central opening covered by a cylindrical hood having openings at each end and inclosing a perforated condensing-plate, substantially as described.

3. A cover for kettles, having perforations near the edge leading to an air-supplying duct connected with a hood covering a central opening in the cover and provided with lateral openings, substantially as described.

485,096. DOUGH-KNEADING MACHINE. LOUIS DURAND, New York, N. Y. Filed Mar. 11, 1892. Serial No. 424,566. (No model.)

Claim.—1. The dough-kneading machine having frame F H and casing J, removable therefrom, the pan A, having the bridge B, and the main shaft U, arranged to interlock with the pan at *u*, as and for the purpose set forth.

2. In a dough-kneading machine, the combination of the casing J, having a cover Z, supporting-piece Y, and shafts P and U, as and for the purpose set forth.

3. The combination of the removable casing J, the frame F H, to which the said casing is arranged to be attached, and the thumb-screws K for securing the casing to the frame, as and for the purposes set forth.

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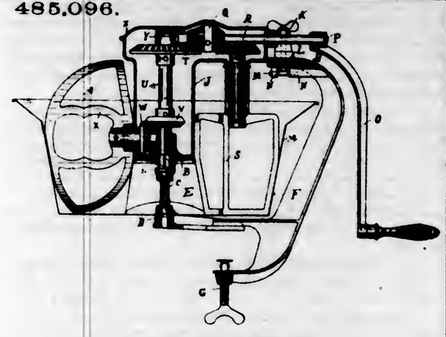
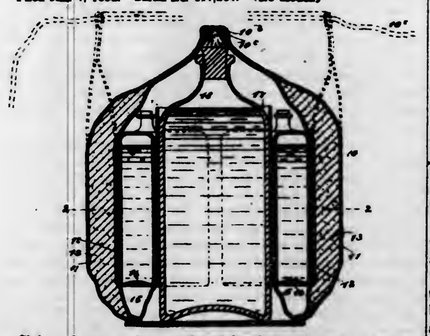


485,097. RAIL-FASTENING. THORNTON W. FAY, Philadelphia, Pa. Filed Oct. 20, 1891. Serial No. 409,259. (No model.)

Claim.—1. A rail-fastening consisting in an oblong flat plate bent up transversely from its under side at both ends from edge to edge of the plate to form the two pairs of raised ribs 13 13 on its upper side and corresponding grooves across its lower side, flat surfaces for the rail-bases being formed between each pair of ribs and provided with bolt or spike apertures 11 to align those in the rail-bases, substantially as set forth.

2. As an improved article of manufacture, a rail-fastening comprising a plate having surface ribs near its ends, said ribs being placed at an angle with each other and adapted to clasp the flanges of the rails, substantially as described.

485,098. NURSERY-BAG. MARY J. FORSHEW, New York, N. Y. Filed Jan. 7, 1892. Serial No. 417,367. (No model.)



Claim.—1. As an improved article of manufacture, a nursery bag having a main central pocket and pockets arranged around it substantially as described.

2. A nursery-bag having double walls with a suitable filling between them, a central main pocket, and a plurality of pockets arranged around it and within the inner wall of the bag, substantially as described.

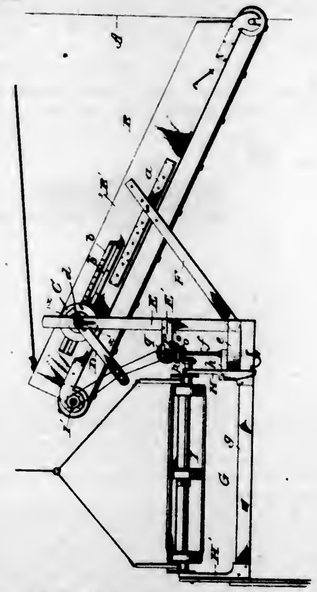
3. A nursery-bag comprising a rigid bottom, flexible sides having a stuffing of non-conducting substance, a puckering-string arranged at one end to close the bag, a central inside pocket to hold a heating-vessel, and a plurality of pockets arranged around the central pocket, substantially as described.

4. A nursery-bag having a flat base, double side walls with filling between them, a main central pocket, a plurality of pockets disposed around the main pocket, and an end closure, substantially as described.

485,099. STRAW-CARRIER FOR THRASHING-MACHINES. JOSEPH H. FELTON, West Lebanon, Pa. Filed June 30, 1892. Serial No. 438,570. (No model.)

Claim.—1. In a straw-carrier, an elevator-frame B, having sides B', and a floor, shafts connected to the sides and provided with pulleys over which the carrier-apron passes, sprocket-wheels mounted centrally on said shafts between the central pulleys of the shafts, the floor of the frame having a longitudinal groove or recess within which the sprocket-chain lies, so as to be located within the carrier-apron, substantially as shown, and for the purpose set forth.

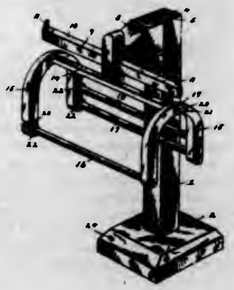
2. In a straw-carrier for thrashing-machines, a coupling for the carrier-sections, consisting of two plates, one of which has a central projection and a lug *l* to one side of said projection and the other having a slot and a recess *l'*, the slot being adapted to receive the projection and the recess the lug, substantially as shown, and for the purpose set forth.



3. The combination, in a straw-carrier, of coupling-plates carried by the ends of the sections which make up the same, the plates carried by one end of each section having central projections L and lugs *l*, adjacent thereto, the coupling-plates on the opposite end of each section being provided with open-ended slots which receive the projections L and with recesses *l'*, which are concentric with the slots for a short distance and then open into the same, said recesses being adapted to receive the lugs, substantially as shown, and for the purpose set forth.

4. In a straw-carrier, the combination of a frame which is adapted to be pivotally attached to a thrashing-machine, bars E and F, adjustably connected to said frame, the bar E having an arm and foot-piece with bearings for a vertical shaft *f*, the arm also carrying a horizontal shaft, gear-wheels mounted on said shafts, a frame G, adapted to be secured to the foot-piece *e*, said frame having a shaft with pulleys, and a gear-wheel which meshes with the gear-wheel mounted on the vertical shaft *f*, substantially as shown, and for the purpose set forth.

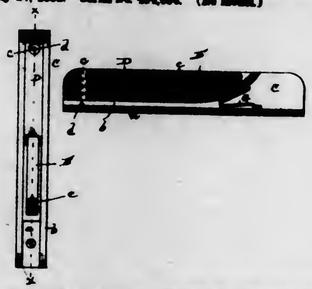
485,100. QUILTING ATTACHMENT FOR SEWING-MACHINES. JOHN C. GALLOWAY, Ballinger, Tex. Filed May 24, 1892. Serial No. 434,121. (No model.)



Claim.—1. In a quilting-frame, the combination of a standard supporting a track-bar, a hanger carrying a wheel movably mounted on said track-bar, a bar swiveled to said hanger and having end journals, and curved end yokes or arms movably connected to said end journals of the latter bar and supporting-rollers, said curved end yokes or arms having the said bar connected to the central part of the upper portions of the same and open at their lower ends to form an unobstructed passage-way, substantially as described.

2. In a quilting-frame, the combination of a standard supporting a track-bar and a quilting-frame proper having a hanger carrying a grooved wheel engaging said track-bar and curved end yokes or arms with upper connecting-arches and depending legs with a clear space between the same, said legs being parallel and unconnected at the bottom thereof, substantially as described.

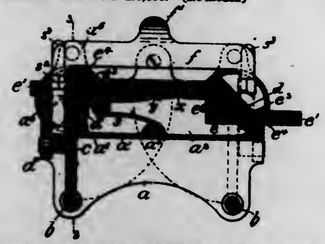
485,101. BURGLAR-ALARM. FRANK A. GOHLER, Chicago, Ill. Filed May 27, 1892. Serial No. 434,636. (No model.)



Claim.—1. In a burglar-alarm, the combination, with the casing having a base-plate, a hammer provided with a longitudinal slot therein and fulcrumed in the casing, and a spring connected to the hammer and base-plate, of a trigger pivoted in said slot and normally flush with the hammer when the implement is not set for explosion, substantially as specified.

2. In a burglar-alarm, substantially as described, the combination, with the casing adapted to be connected to a sliding sash and having a pointed stud, a hammer fulcrumed in said casing and having a bore adjacent to its upper end and a longitudinal slot adjacent to its lower end, a spring interposed between the lower end of the hammer and the base-plate of the casing, and a trigger pivotally mounted in the longitudinal slot of the hammer, of a finger adapted to be connected to a sash-frame so as to engage the trigger when the sash is raised, substantially as specified.

485,102. COMBINED PORTABLE BILL AND LETTER FILE AND PERFORATING APPLIANCE. JOHN W. GRAFFLAND, Philadelphia, Pa., assignor to Arthur J. Ingraham and William L. Boggs, same place. Filed Apr. 14, 1892. Serial No. 429,099. (No model.)



Claim.—1. A combined portable bill and letter file and perforating appliance comprising a main frame provided with receiving-pins and a covered chamber provided with dies, transfer-wires connected with crank-arms and having a rotary movement about the axes of their vertical shanks, an operating-rod accessible from the exterior of the chamber, and a swinging frame pivotally connected with said cover and having a spring, and punches, substantially as and for the purposes set forth.

2. A combined portable bill and letter file and perforating appliance provided with a main frame having receiving-pins, transfer-wires provided with crank-arms and having a rotary movement about the axes of their vertical shanks, and an operating-rod connected with the respective crank-arms and accessible from the exterior of the device, substantially as and for the purposes set forth.

3. A combined portable bill and letter file and perforating appliance provided with a main frame having receiving-pins and a chamber, crank-arms journaled in said chamber and having transfer-wires, pins projecting from said crank-arms, and a recessed operating-rod mounted in said chamber and accessible from the exterior thereof substantially as and for the purposes set forth.

4. A combined portable bill and letter file and perforating appliance provided with a main frame having a covered chamber, receiving-pins provided with sockets, transfer-wires having a rotary movement about the axes of their vertical shanks, a spring-actuating swinging frame pivotally connected with the cover of said chamber and one extremity of the spring adapted to operate as a stripper, and complemental dies and punches interposed between said swinging frame and the cover of said chamber, substantially as and for the purposes set forth.

5. A combined portable bill and letter file and perforating appliance provided with a main frame having receiving-pins, transfer-wires having a rotary movement about the axes of their vertical shanks, and crank-arms connected therewith, an operating-rod, pins and slots interposed between said operating-rod and crank-arms, and one of said pins afforded a range of play in its slot to prevent collision of the transfer-wires when the same are turned inward, substantially as and for the purposes set forth.

6. In a portable bill and letter file and perforating appliance having a main frame provided with receiving-pins and transfer-wires having a rotary movement about the axes of their vertical shanks, an operating-rod accessible from the exterior of the main frame, and suitable connections between said rod and transfer-wires, substantially as and for the purposes set forth.

7. A combined bill and letter file and perforating appliance provided with receiving-pins and transfer-wires having a movement about the axes of their vertical shanks and a spring-controlled and slotted operating-rod suitably connected with said transfer-wires and accessible from the exterior of the housing, substantially as and for the purposes set forth.

8. A combined bill and letter file and perforating appliance provided with a main frame having a covered chamber and receiving-pins, transfer-wires, means for affording said transfer-wires a range of rotary movement about the axes of their vertical shanks, a swinging frame pivotally connected with trunnions formed integral with the cover of said chamber, and a spring-stripper, and complemental dies and punches interposed between the swinging frame and cover of said chamber, substantially as and for the purposes set forth.

9. A combined portable bill and letter file and perforating appliance having a main frame provided with receiving-pins and a chamber, crank-arms mounted in said chamber and provided with offsets forming bearings, which are journaled in seats formed in the main frame, transfer-wires connected with said crank-arms, and an operating-rod accessible from the outside of said chamber, substantially as and for the purposes set forth.

10. A combined bill and letter file and perforating appliance having a covered chamber provided with trunnions and dies, crank-arms mounted therein and provided with transfer-wires having a range of rotary movement about the axes of their vertical shanks, and a spring-controlled frame connected with said trunnions and provided with punches, substantially as and for the purposes set forth.

11. In a combined bill and letter file and perforating appliance having a covered chamber provided with guides, transfer-wires having means for permitting the same to be afforded a range of rotary movement on or about the axes of their shanks, and a spring-controlled operating-rod concealed within said chamber and accessible from the exterior thereof for actuating said transfer-wires, substantially as and for the purposes set forth.

12. A combined bill and letter file and perforating appliance provided with receiving-pins, transfer-wires, a chamber for the reception of the working parts of the device, provided with a detachable cover having trunnions, guides, and dies, and a spring-controlled swinging perforator-frame provided with punches, and said frame detachably connected with the trunnions of said cover, substantially as and for the purposes set forth.

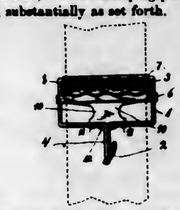
485,103. MATCH-HEADING COMPOSITION. JACOB KLEIN, New York, N. Y. Filed Apr. 30, 1892. Serial No. 431,342. (No specimens.)

Claim.—A compound for heading matches, consisting of dextrine, water, phosphorus, minium, lamp-black, and nitric acid combined in about the proportions stated.

485,104. BUCKLE. GEORGE LA CHAPELLE, Williamsport, Pa., assignor of one-half to Charles R. Devine, same place. Filed June 9, 1892. Serial No. 436,189. (No model.)

Claim.—1. In a buckle, the combination, with a frame having a cross-bar, of a movable piece adapted to clamp against the edge of the cross-bar, the adjacent edges of said clamping-piece and cross-bar being correlatively smoothly indented or of correspondingly-serpentine form, so as to form when closed a single wavy line of demarcation between the two, substantially as set forth.

2. In a buckle, the combination, with a frame having a cross-bar, of a movable piece adapted to clamp against the edge thereof, the adjacent edges of said clamping-piece and cross-bar being correlatively smoothly indented, and the clamping-piece and cross-bar lying in the same planes, substantially as set forth.

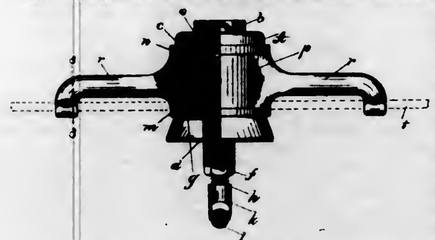


3. In a buckle, the combination, with a frame having a cross-bar, of a clip folded around the frame to form a hinge and having its clamping end separated from its main body, so as to be in the same plane with the cross-bar when the clip is closed, substantially as specified.

4. In a buckle, the combination, with the frame having a cross-bar, of a clip made of a piece of metal bent around the upper part of the frame and having a groove or depression in the metal to define the hinge thereof, said groove serving, also, to provide for the separation from the main body of the clip, of a clamping edge adapted to come in juxtaposition with the bar when the clip is closed, as in use, substantially as set forth.

5. In a buckle, the combination, with the frame, of a movable piece carried thereon and provided with catches on its lower end adapted to grasp the lower side to the frame and support it, substantially as and for the purpose specified.

485,105. INSULATOR FOR ELECTRIC-RAILWAY CONDUCTORS. CHARLES T. LEE, Boston, Mass., assignor to the Johns-Pratt Company, Hartford, Conn. Filed Mar. 17, 1892. Serial No. 425,371. (No model.)



Claim.—1. An insulator comprising a case A, an insulating-block within said case, a connecting-stem insulated from said case by said block, a collar surrounding said case and loosely secured thereto, and means for securing said collar to the insulator-support, whereby the case and the insulation and insulated parts contained therein may be rotated within the collar, for the purposes and substantially as shown and described.

2. The combination, in an insulator, with the case A, having the projections *m n*, one of which is removably connected with the body of the case, of the collar *p* and means for securing the collar to its support, substantially as shown and described.

3. The combination, in an insulator, of a case A, having a projection *b* to receive a wrench and projections *m n*, and a collar *p*, provided with securing-arms *r*, substantially as shown and described.

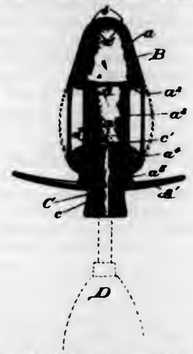
4. The combination, in an insulator, of a case A, having a projection *b* to receive a wrench, and annular projections *m n*, one of which is screwed upon the case and made removable, and a collar *p*, provided with securing-arms *r*, substantially as described.

485,106. INSULATOR. CHARLES T. LEE, Boston, Mass., assignor to the Johns-Pratt Company, Hartford, Conn. Filed Mar. 17, 1892. Serial No. 425,372. (No model.)

Claim.—1. An insulator comprising an insulating-block composed of a series of sheets of mica and means whereby said sheets are suitably secured together, combined with a spindle or support therefor passing partially through said block, substantially as shown and described.

2. The combination, in an insulator, of the insulating-block *f*, the securing-bolts *k*, and the spindle *b*, substantially as set forth.

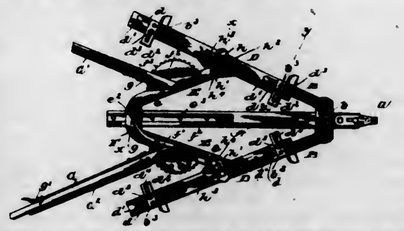
485,107. VAGINAL SYRINGE. THOMAS H. MADDUX, Baker, La. Filed Apr. 7, 1892. Serial No. 428,237. (No model.)



Claim.—1. A vaginal syringe consisting of a tube having a tapering head with holes in the end thereof and a groove at the base of said tapering head, with holes from the interior of the tube to the exterior thereof in said groove, a stopper adapted to close said holes and also to close the mouth of the tube, and a rubber pouch or jacket having holes in its base, adapted to fit over said tube tightly at each end, but loose in the middle, substantially as and for the purposes described.

2. A vaginal syringe consisting of a tube having a tapering head with holes in the end thereof and a groove at the base of said tapering head, with holes from the interior of the tube to the exterior thereof in said groove, a perforated stopper with a check-valve preventing the return of liquid through said stopper, the said stopper being adapted to close said holes and also to close the mouth of the tube, and a rubber pouch or jacket having holes in its base, adapted to fit tightly at each end and loosely in the middle over said tube, substantially as and for the purposes described.

485,108. CULTIVATOR. WINFIELD S. MILLER, Milpitas, Cal. Filed May 3, 1892. Serial No. 431,683. (No model.)



Claim.—1. The herein-described improved cultivator, comprising the draft-bar, the divergent beams pivotally connected thereto at their forward ends, the movable plates on said beams, the shovels having their shanks engaged by or connected with said movable plates, and the adjustable connecting-plates connecting said draft-bar with said divergent beams and movable plates, and means for locking said connecting-plates to said draft-bar, substantially as set forth.

2. The herein-described improved cultivator, comprising the draft-bar, the divergent beams pivotally connected thereto at their forward ends and having holes or openings therein, the movable plates on said beams having slots therein, the cultivator-shovels having their shanks projected through said holes or openings and slots, the holding-plates connected to said shanks, and means for adjusting said beams and movable plates with relation to said draft-bar substantially as set forth.

3. The herein-described improved cultivator, comprising the draft-bar, the divergent beams pivotally connected thereto at their forward ends and having holes or openings therein, the movable plates

plate and the bearing-balls arranged between the said base and plate, the vertical standard attached to one side of the base, the vertically-adjustable rod connected with the standard, the horizontal arm arranged upon the adjustable rod, centering-block carried upon the free end of the arm and in axial alignment with the center of revoluble plate, and set-screw, all arranged substantially as shown and described.

485,110. TIRE FOR VEHICLE-WHEELS. LOUIS E. MCGLYNCHEY, [illegible]

at their inner ends and afford air-space between the flue-tubes and thimbles above their inner ends, said air-spaces being largest at the outer ends which are farthest above the surface of the water in the boiler, substantially as and for the purposes set forth.

3. In combination with the flue-tubes 9, the protecting shields or thimbles 12, supported therein and provided with radial lugs 13, seated in the expanded ends of said flue-tubes, and formed with flaring or increasing diameters from their outer ends inward, so as to fit

nation, with a pulley-frame, of a driving-pulley having a small on one face and provided with a cylindrical brake-shoulder, a ratchet-wheel which is rotated by the small, a hoisting-pulley rotated by the ratchet-wheel, a pawl for engaging the ratchet-wheel, a brake-band for acting on the brake-shoulder of the driving-pulley, and devices for disengaging the pawl from the ratchet-wheel and forcing the brake-band against the said brake-shoulder, substantially as described.

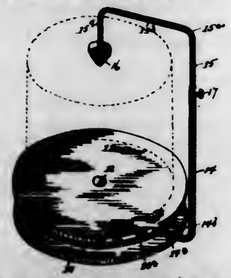
forward ends and having holes or openings therein, the movable plates on said beams having slots therein, the cultivator-shovels having their shanks projected through said holes or openings and slots, the holding-plates connected to said shanks, and means for adjusting said beams and movable plates with relation to said draft-bar substantially as set forth.

3. The herein-described improved cultivator, comprising the draft-bar, the divergent beams pivotally connected thereto at their forward ends and having holes or openings therein, the movable plates on said beams having slots therein, the cultivator-shovels having their shanks projected through said holes or openings and slots and provided each with a flange or collar and an upper squared end, the holding-plates pivotally connected to said movable plates and having square slots for said squared ends of said shanks, the adjustable connecting-plates connected to said beams and movable plates, and means for locking said connecting-plates to said draft-bar, substantially as set forth.

4. The herein-described improved cultivator, comprising the draft-bar having holes or openings therein, the divergent beams pivotally connected to said draft-bar and carrying the cultivator-shovels, the movable plates, the holding-plates secured thereto and engaging the shanks of said cultivator-shovels, the connecting-plates pivotally secured at their outer ends to said beams and movable plates and having inner-apertured overlapping ends, the locking rod or lever having a hooked end for projecting through said overlapping ends and the holes or openings of draft-bar, the pivoted handle-bars, and the lever fulcrumed on one of said handle-bars and connected to said locking rod or lever, substantially as set forth.

5. The herein-described improved cultivator, comprising the draft-bar having holes or openings therein, the divergent beams pivotally connected to said draft-bar and carrying the cultivator-shovels, the movable plates, the holding-plates secured thereto and engaging the shanks of said cultivator-shovels, the connecting-plates composed of upper and lower members pivotally secured at their outer ends to said beams and movable plates and having inner-apertured overlapping ends, said upper members having curved toothed portions, the locking rod or lever fulcrumed on one of said upper members, the pivoted handles having spring-held pawls engaging said toothed portions, and the lever fulcrumed on one of said handle-bars and engaging said locking rod or lever, substantially as set forth.

485,109. SHOW-STAND. FRANK M. MORROW, Altoona, Pa. Filed Feb. 18, 1892. Serial No. 422,091. (No model.)



Claim.—1. The combination, with a revoluble plate, of a stationary standard arranged adjacent thereto, the horizontal arm connected with the standard, and the centering-block attached to the free end of said arm in axial alignment with the center of the plate, substantially as and for the purpose described.

2. The combination, with a stationary base, of a revoluble plate arranged upon said base, the vertical standard attached to said base at one side of the same, the horizontal arm secured to the standard, and centering-block secured to the free end of arm and in axial alignment with the center of plate, substantially as shown and described.

3. The combination, with a stationary base, of the revoluble plate, the vertically-adjustable rod attached to the base at one side of the same, the horizontal arm secured to the adjustable arm, and the centering-block secured to the free end of the arm and in axial alignment with the center of revoluble plate, substantially as shown and described.

4. The combination, with the stationary base having an annular groove, the revoluble plate having a mating annular groove, the bearing-balls arranged in the groove, the vertical standard attached to the base at one side of the same, the horizontal arm secured to the free end of the standard, and the centering-block secured to the free end of the arm and in axial alignment with the center of revoluble plate, substantially as shown and described.

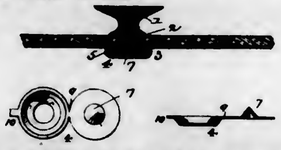
5. The combination, with the stationary base, of the revoluble plate and the bearing-balls arranged between the said base and plate, the vertical standard attached to one side of the base, the vertically-adjustable rod connected with the standard, the horizontal arm arranged upon the adjustable rod, centering-block carried upon the free end of the arm and in axial alignment with the center of revoluble plate, and set-screw, all arranged substantially as shown and described.

485,110. TIRE FOR VEHICLE-WHEELS. LOUIS K. MCCLYMONDS, Cleveland, Ohio, assignor to the Peerless Manufacturing Company, same place. Filed July 22, 1891. Serial No. 400,350. (No model.)

Claim.—1. The combination, with the rim of a vehicle-wheel, said rim formed with a large peripheral groove having smaller grooves in its sides, of a yielding and elastic tire formed with annular ribs upon its sides corresponding to said side grooves and a covering-strip upon the tread of said tire, having its side edges clamped between the ribs of the tire and the side grooves of the rim, substantially as set forth.

2. The combination, with the rim of a vehicle-wheel, said rim being formed with a large peripheral groove having smaller grooves in its sides, of a yielding and elastic tire formed with annular ribs upon its sides corresponding to said side grooves and a covering-strip upon the tread of the tire, having its side edges clamped between the ribs and grooves and having enlarged edges fitting inside of the ribs and grooves, substantially as set forth.

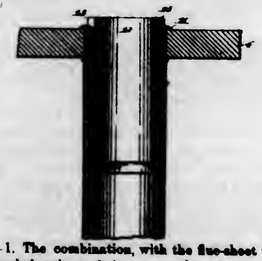
485,111. BUTTON. HERSHEL M. HEFNER, Hendricks, W. Va., assignor of one-half to Dilworth & Poling, same place. Filed May 4, 1892. Serial No. 431,784. (No model.)



Claim.—1. A button comprising a head with a tubular tapering shank and a securing-disk having a central recess, an overlapping flange, and a cone or wedge, substantially as described.

2. A securing-disk for buttons, consisting of two connected plates, one of which is formed with a cone, while the other is provided with an aperture and a tongue, said plates being folded over upon each other and the tongue folded over the edge of the opposite plate, substantially as described.

485,112. FLUE-PROTECTOR FOR STEAM-BOILERS. HIRAM H. HIRMAN, Cincinnati, Ohio, assignor to the American Fire Engine Company, Seneca Falls, N. Y. Filed May 17, 1892. Serial No. 433,346. (No model.)



Claim.—1. The combination, with the flue-sheet 6 and the flue-tubes 9, secured therein at their upper ends, of the protecting shields or thimbles 12, supported in the flue-tubes 9 and fitting therein snugly at their lower or inner ends and forming air-spaces between the flue-tubes and their outer ends, which air-spaces communicate with the space above the flue-sheet, substantially as and for the purpose set forth.

2. In combination with the flue-tubes 9, the protecting shields or thimbles 12, supported therein and flaring or increasing in diameter from their outer ends inward, so as to fit the flue-tubes snugly

at their inner ends and afford air-space between the flue-tubes and thimbles above their inner ends, said air-spaces being largest at the outer ends which are farthest above the surface of the water in the boiler, substantially as and for the purposes set forth.

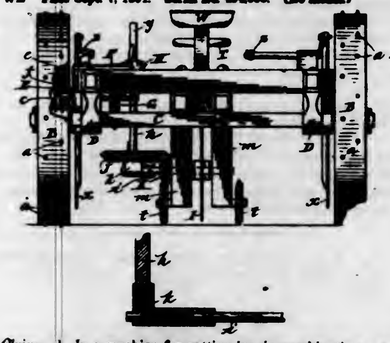
3. In combination with the flue-tubes 9, the protecting shields or thimbles 12, supported therein and provided with radial lugs 13, seated in the expanded ends of said flue-tubes, and formed with flaring or increasing diameters from their outer ends inward, so as to fit the flue-tubes snugly at their inner ends and afford air-spaces at their outer ends, said air-spaces being in communication with the space above the expanded ends of the flue-tubes, substantially as and for the purpose set forth.

485,113. SOAP. JULIUS HESS, St. Louis, Mo., assignor to Ellen Hess, same place. Filed Apr. 27, 1892. Serial No. 430,895. (No specimens.)

Claim.—1. The above-described soap, composed of about equal proportions of common soap and powdered calcined bone-dust.

2. The above-described soap, composed of about equal proportions of ordinary soap and powdered calcined bone-dust and about one-twentieth part of powdered sulphur.

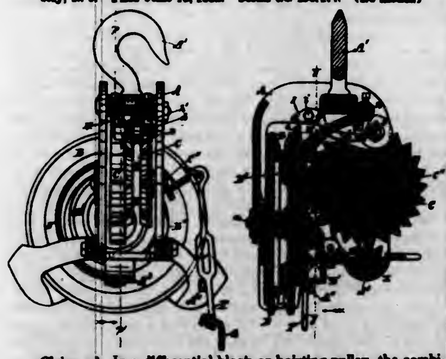
485,114. ICE-CUTTING MACHINE. WILBUR J. FISH, Waukau, Wis. Filed Sept. 7, 1891. Serial No. 404,969. (No model.)



Claim.—1. In a machine for cutting ice, in combination, a suitable supporting-frame, a revoluble saw which is adapted to be revolved and moved vertically, operating-shaft A, saw-shaft *i*, and a two-way vertically-moving bearing-box *k*, receiving shafts A and *i* and provided internally with a projection which turns in a groove near the lower end of the shaft A, whereby said shaft is prevented from rising out of the box, substantially as described.

2. In a machine for cutting ice, in combination, a suitable supporting-frame, a revoluble saw which is adapted to be moved vertically by means of the saw-frame *m m*, boxes *n*, moving in grooves in the saw-frame, rods *o*, cog-wheels *r*, cog-wheel S, meshing with the cog-wheels *r*, and the operating hand-wheel T, and means for revolving the saw, substantially as described.

485,115. DIFFERENTIAL BLOCK. HENRY W. RUSSELL, Brockton, Mass., assignor to the Boston and Lockport Block Company, Jersey City, N. J. Filed June 13, 1892. Serial No. 436,477. (No model.)



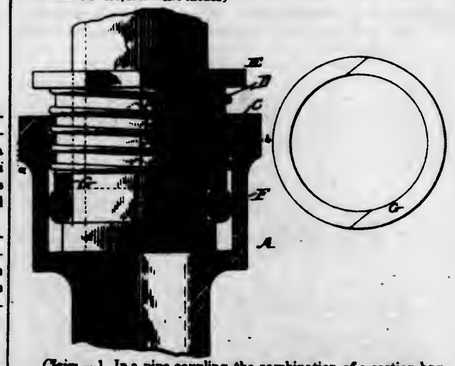
Claim.—1. In a differential block or hoisting-pulley, the combination, with a pulley-frame, of a driving-pulley having a snail on one face and provided with a cylindrical brake-shoulder, a ratchet-wheel which is rotated by the snail, a hoisting-pulley rotated by the ratchet-wheel, a pawl for engaging the ratchet-wheel, a brake-band for acting on the brake-shoulder of the driving-pulley, and devices for disengaging the pawl from the ratchet-wheel and forcing the brake-band against the said brake-shoulder, substantially as described.

2. In a differential block or hoisting-pulley, the combination, with a pulley-frame, of a driving-pulley having a snail on one face and provided with a brake-shoulder, a ratchet-wheel which is rotated by the snail, a hoisting-pulley at one side of the ratchet-wheel, a pawl pivoted to the pulley-frame to engage the ratchet-wheel, a brake for acting on the said brake-shoulder, means for pressing the brake toward the brake-shoulder, and a rocking lever connected with the pawl and operated by the movement of the brake toward the brake-shoulder to disengage the pawl from the ratchet-wheel, substantially as described.

3. In a differential block or hoisting-pulley, the combination, with a pulley-frame, of a driving-pulley having a snail on one face and a cylindrical brake-shoulder in juxtaposition to the snail, a ratchet-wheel having a hoisting-pulley and rotated by the snail, a pawl engaging the ratchet-wheel and carried by a shaft supported in the pulley-frame, and devices connected with the pawl-shaft for throwing the pawl into and out of engagement with the ratchet-wheel, substantially as described.

4. In a differential block or hoisting-pulley, the combination, with a driving-wheel having a snail and a brake shoulder or wheel and a ratchet-wheel rotated by the snail and having a hoisting-pulley, of a pawl carried by a shaft mounted on the pulley-frame, a brake-band extending round the brake shoulder or wheel, a rocking lever connected with the pawl-shaft and having an elastic connection with the brake-band, and means for moving the brake-band upon the brake-shoulder or brake-wheel, substantially as described.

485,116. JOINT OR COUPLING FOR PIPES AND PIPE-FITTINGS. CHARLES R. SCHMIDT, Baltimore, Md., assignor to the Henry McShane Manufacturing Company of Baltimore, same place. Filed July 9, 1892. Serial No. 439,497. (No model.)



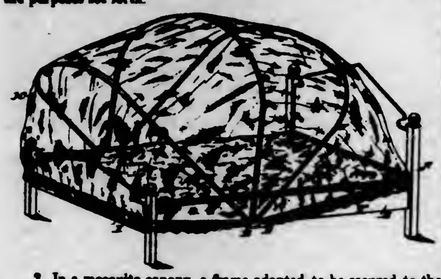
Claim.—1. In a pipe-coupling, the combination of a section having an interiorly-screw-threaded integral bowl and a section having a beaded spigot end with an elastic gasket fitted on the spigot end behind the bead, a split ring surrounding the spigot end adjacent to the gasket, and an exteriorly-screw-threaded split thimble or nut screwing into the bowl and abutting against the said split ring, substantially as described.

2. In couplings for cast-iron pipes, the combination, with the beaded spigot end B, gasket F, and threaded split thimble or hollow nut D, of the bowl end or section A, formed with mutilated or discontinuous threads on its inner surface for the engagement of the threaded thimble, substantially as described.

485,117. MOSQUITO-CANOPY. ARMEN T. VERNON, Greensborough, N. C., assignor of one-half to Obed W. Carr and Dred. Peacock, same place. Filed July 30, 1891. Serial No. 401,193. (No model.)

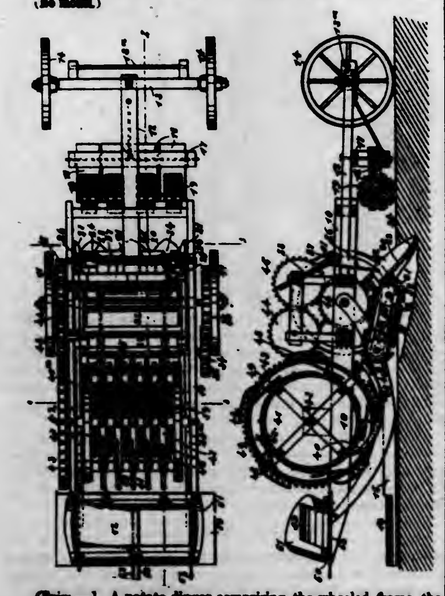
Claim.—1. A canopy-frame composed of a series of bows adapted to be pivotally connected with the side rails of a bed-frame in a manner to permit the bows to be folded in the direction of the foot of the bed-frame to remove the canopy from over the bed and unfolded in the direction of the head-board of the bed to elevate the canopy over the bed, the bow next to the head-board having its transverse portion substantially straight and formed with a sharp bend where it will join

the side portions of the bed to adapt the transverse portion to lie close to the head-board and the parallel portions close to the side rails of the bed, for the purposes set forth, and a netting secured to the several bows of the frame, said netting being secured to the bow next to the head-board throughout the length of said bow, whereby it may be brought close to the head-board and the side rails, said netting being also extended below the bow next to the foot-board and adapted to be secured to the bed-frame at that point, substantially as and for the purposes set forth.



2. In a mosquito-canopy, a frame adapted to be secured to the side rails of a bed-frame and composed of a series of pivotal bows, one of said bows being constructed to lie adjacent to the side rails with its transverse portion adjacent to the head-board and side rails when the canopy-frame is unfolded to cover the bed with the canopy, and a netting secured to said canopy-frame, a portion of said netting extending from the bow next to the foot-board to a point below the foot-board and side rails and provided with a cord extending from one side to the other of the frame to hold it close to the bed-frame and another portion of said netting being secured to the bow next to the head-board, whereby said bow will hold the netting close to the head-board and side rails of the bed next to the head-board, substantially as and for the purposes set forth.

485,118. POTATO-DIGGER. SAMUEL H. WASHBURN, Little Falls, Wash. Filed Sept. 11, 1891. Renewed Sept. 26, 1892. Serial No. 446,999. (No model.)



Claim.—1. A potato-digger comprising the wheeled frame, the plow, a rearwardly-extending endless slotted carrier upon which the plow discharges, a concave separator below the frame at the delivery end of said carrier, and a lifting-wheel having two series of fingers or hooks working between the bars of the concave separator, one series of fingers serving to lift the potatoes and the other series acting in connection with the rear ends of the separator-bars to free the machine from the vines and weeds, substantially as set forth.

2. A potato-digger comprising the wheeled frame, a transverse frame suspended therefrom and provided with forks carrying a series of rolls, a plow, a rearward-extending carrier in rear thereof, a series of longitudinally-extending concave bars behind the carrier and upon which it discharges, a rotary lifting-wheel having fingers or hooks working between the rear ends of the bars, and a bag-holder or receptacle-support on the rear end of the frame, substantially as set forth.

3. The combination, with the main frame, of the clod-crusher comprising a frame suspended beneath the main frame, a series of forks pivoted in the crusher-frame, and a series of rollers pivoted in the forks, substantially as described.

4. A potato-digger comprising a main frame mounted in suitable wheels, an inclined plow mounted in the frame, a carrier adapted to receive the potatoes from the plow, a concaved separator to receive the potatoes from the carrier, a lifting-wheel mounted above the separator and provided with two series of hooks, one for potatoes and one for vines, a potato-box arranged in the rear of the lifting-wheel, and a gear mechanism for turning the lifting-wheel and moving the carrier, substantially as described.

5. In a potato-digger, the combination, with the separator having a series of parallel curved bars, of the revoluble lifting-wheel having potato-lifting hooks adapted to project between the bars, a series of oppositely-arranged vine-hooks, hooks secured to the circumference of the lifting-wheel, and a potato-box arranged in the rear of the lifting-wheel, substantially as described.

6. The combination, with the main frame and the lifting-wheel mounted therein, of a bottomless potato-box arranged in the rear of the wheel and provided with a transversely-swinging guide-board pivoted at its inner edge in the center of the box to swing over either half of the open bottom and close it and direct the potatoes through the other half, and a supporting-platform arranged beneath the box, substantially as described.

7. In a potato-digger, the combination, with a revoluble lifting-wheel having oppositely-arranged hooks upon its face, of the concaved separator arranged beneath the lifting-wheel, said separator having its rear end curved upward to a point adjacent to the face of the wheel, substantially as described.

485,119. REINFORCED SHIPPING-CAN. FREDERICK WESTHEIMER, St. Louis, Mo. Filed June 30, 1892. Serial No. 438,506. (No model.)

Claim.—1. In a reinforce shipping-can, the combination of the metal can 1, the wooden reinforce drum-case 8, the wooden reinforce-bottom 9, the wooden reinforce base-hoop 11 and top hoop 12, and the top 13, the said top having peripheral expansion-rim 14, that surmounts both said drum-case and head-hoop and having the projecting pendent stopper 15, that constitutes a tight stopper for the metal can, and an internal reinforce to said can and drum-case, substantially as described.

2. In a reinforce shipping-can, the combination of the metal can 1, the perforate anchor-straps 2 and 6, respectively secured to near the bottom and top of the side of said can, the reinforce drum-case 8, bottom 9, and hoops 11 and 12, the top 13, having the peripheral expansion-rim 14, provided with the slots 16, the said anchor-straps 2, passing around the lower edge of said drum-case 8 and hoop 11, the nails 17, that anchor said straps to said hoop, drum-case, and bottom, and the said anchor-straps 6, that pass upward through said slots 16 in the lid and are bent around on the top of said lid, and the nails by which said straps are anchored to said lid, substantially as described.

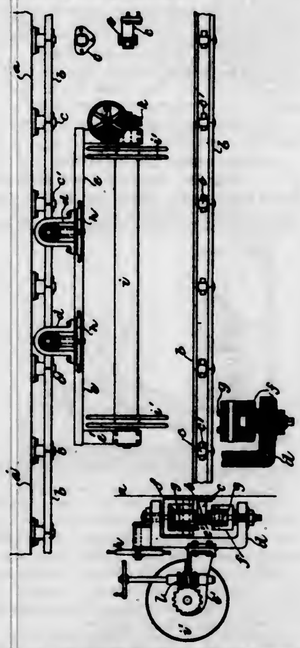
3. In a reinforce shipping-can, the combination of the metal can 1, the bottom perforate anchor-straps 2, secured to said can, the top perforate anchor-straps 6, also secured to said can, the reinforce drum-case 8, the reinforce-hoops 11 and 12, the reinforce-bottom 9, the reinforce-lid 13, the said lid having the pendent center stopper 15, and the rim of said lid provided with the slots 16, the said anchor-straps 2 being bent outward around the bottom of said reinforce drum-case and said hoop 11, so as to effect a clutch-hold thereof, and the anchor-nails 17, that secure said straps 2 and said metal can to said reinforce-hoop 11, drum-case 8, and bottom 9, the perforate projecting ends of said straps 6 being passed up through said slots 16 in the lid and bent around on top of said lids, and the nails 19, that secure said straps to said lid, substantially as described.

485,120. NUT-LOCK. ISAAC WOLFE, Goshen, Ind. Filed June 25, 1892. Serial No. 438,022. (No model.)

Claim.—1. The combination, with the washer-plate E, having offset *e'*, of the locking-plate F, having the overlapping part G and provided with the outwardly-projecting finger-piece H, and inwardly-projecting lugs or catches *f f*, adapted to engage under the lower edge of the washer-plate, substantially as and for the purpose shown and set forth.

2. The combination, with the rails of a railway-rail joint, of the bolts, nuts, washer-plate E, having offset *e'*, forming side shoulder *c c*, and the removable locking-plate F, made of spring metal, having the overlapping bent part G and provided with the finger-piece H, and inwardly-projecting catches *f f*, adapted to engage with the under side of the offset on the washer-plate, substantially as and for the purpose shown and set forth.

485,121. LEAK-STOPPER. WILLIAM P. BRADY, Cedmanchester, England. Filed July 30, 1892. Serial No. 441,714. (No model.) Patented in England Oct. 27, 1891, No. 18,807.

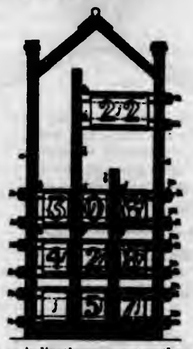


Claim.—1. A ship provided with a guideway around it outside the bulwarks, in combination with a carriage supported on the guideway and traveling thereon and a collision-mat carried by the carriage.

2. A ship provided with a guideway around it, in combination with a carriage supported on the guideway and adapted to travel thereon outside the bulwarks, a roller on the carriage, and a collision-mat mounted on the roller.

3. A ship provided with a guideway around it outside the bulwarks, in combination with a carriage supported on the guideway and traveling thereon, a roller on the carriage, a collision-mat mounted on the roller, gearing for moving the carriage, and gearing for operating the roller.

485,122. HYMN-INDICATOR. JOHN H. BOOHARAN, Ilkeston, England. Filed Mar. 10, 1892. Serial No. 424,670. (No model.) Patented in England Sept. 8, 1891, No. 15,947.



Claim.—1. In an indicating apparatus, the combination of a suitable frame or case longitudinally divided by partitions *l l*, as described, rollers having bearings in the side of the frame and one of the partitions *l* only, a series of inner and outer rollers having bearings in the side of the frame and the partitions *l l*, the spindle of the outer series passing through the center of the central or inner series, and a flexible band secured upon each pair of rollers, as set forth.

2. In an indicating apparatus, the combination of a suitable frame or case longitudinally divided by partitions *l l*, as described, rollers having bearings in the side of the frame and one of the partitions *l* only, a series of inner and outer rollers having bearings in the side of the frame and the partitions *l l*, the spindle of the outer series passing through the center of the central or inner series, a flexible band secured upon each pair of rollers, and an auxiliary set of rollers arranged above the lower rollers and having bearings in one side of the frame or case and one of the partitions *l*, as set forth.

3. In an indicating apparatus, the combination of a suitable frame or case longitudinally divided by partitions *l l*, as described, a series of rollers having bearings in the sides of the frame and the partitions *l l*, the spindle of the inner series passing through the center of the outer series, a flexible band secured upon each pair of the series of rollers, and an auxiliary set of rollers arranged above the lower series of rollers and having bearings in one side of the frame or case and one of the partitions *l*, substantially as described.

485,123. SUSPENDER. BERT DAVIS, New York, N. Y. Filed June 10, 1892. Serial No. 436,265. (No model.)

Claim.—As an improved article of manufacture, suspenders consisting in the two shoulder-straps united by a cross-strip at the back, the cross-strip being located at that point where the shoulder-straps cross the wearer's shoulder-blades, a single button-tab at the forward end of each shoulder-strap, a tubular loop or eye at the rear end of each strap and open from end to end with the said opening extending in the direction of the width of the shoulder-strap, and a single cord rendering freely in each tubular loop or eye and provided with button-tabs at both ends, the said two cords being disconnected one from the other, substantially as set forth.

485,124. PIPE-ELBOW. CHARLES H. LAWRENCE, Waverly, N. Y. Filed Mar. 5, 1892. Serial No. 423,894. (No model.)

E F, &c., whose upper surfaces are provided with networks of lodges F F, forming systems of shallow basins J J, the bottoms of which are provided, respectively, with one or more holes surrounded by raised dams H H, the said systems of basins being staggered or arranged to break line vertically, substantially as specified.

2. In a column or tower, superposed perforated plates whose upper surfaces are provided with networks of lodges E F, and whose

with the carriage and means thereon for grasping the grid, of the rotative disk concave as to the central portion of its lower surface and beveled as to its extreme edge, a shaft secured to and adapted to carry said disk, and means for rotating said shaft.

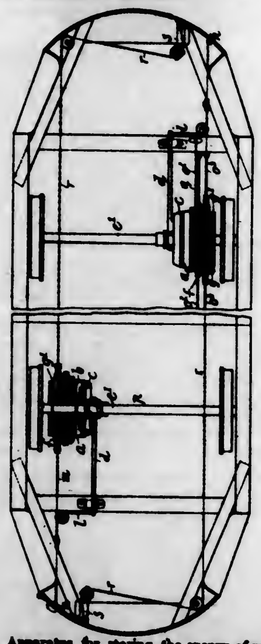
vertically, a folder movable forward and backward for carrying material to be folded beneath the presser, and means, substantially such as described, for moving the above-named presser down upon the fold of the material after the folder shall have been removed from beneath the presser, substantially as specified.

485,124. PIPE-ELBOW. CHARLES H. LAWRENCE, Waverly, N. Y. Filed Mar. 5, 1892. Serial No. 423,894. (No model.)

Claim.—1. A sheet-metal elbow formed from a tube having corrugations and bent into final shape by compressing the corrugations upon one side thereof, substantially as described.

2. A sheet-metal elbow provided with circumferential corrugations, the said corrugations compressed together to form the throat of the elbow, substantially as described.

485,125. VEHICLE-STARTER. JOSEPH W. LEE, Cambridge, assignor of one-half to Samuel Buckingham, Hitchin, England. Filed Mar. 16, 1892. Serial No. 424,419. (No model.)



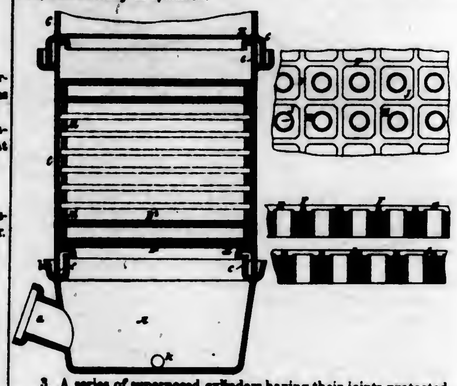
Claim.—1. Apparatus for storing the energy of momentum of tramway and other vehicles, comprising a spring located within and having its outer end attached to a drum loose on the shaft or axle carrying it, the other end of the spring being attached to a boss or sleeve, also loose on the shaft or axle, and means for preventing the rotation of the boss or sleeve for connecting the drum with the shaft, so that the spring will be wound up by the movement of the vehicle and for releasing the spring and holding the drum stationary, substantially as and for the purpose hereinbefore described.

2. In combination with the spring-drum of a friction-clutch adapted to engage therewith, a boss or sleeve loose on the axle, the inner end of the spring being attached thereto, a brake-pulley on the boss, brake-straps with operating connections, and a ratchet-wheel on the axle engaged by a pawl on the brake-pulley, substantially as described.

485,126. APPARATUS FOR TREATING LIQUIDS WITH GASES. GUSTAV LUNGE, Zurich, Switzerland. Filed Feb. 16, 1892. Serial No. 421,703. (No model.) Patented in France Aug. 20, 1888, No. 190,897, and July 23, 1890; in Belgium Sept. 4, 1888, No. 79,124, and July 23, 1890, No. 91,042; in Germany June 6, 1889, No. 49,659, and in England Aug. 4, 1888, No. 10,897, and Apr. 23, 1890, No. 6,262.

Claim.—1. In a column or tower, superposed perforated plates E E', &c., whose upper surfaces are provided with networks of ledges F F, forming systems of shallow basins J J, the bottoms of which are provided, respectively, with one or more holes surrounded by raised dams H H, the said systems of basins being staggered or arranged to break line vertically, substantially as specified.

2. In a column or tower, superposed perforated plates whose upper surfaces are provided with networks of ledges F F and whose lower surfaces are provided with grooves K K around each perforation, substantially as specified.

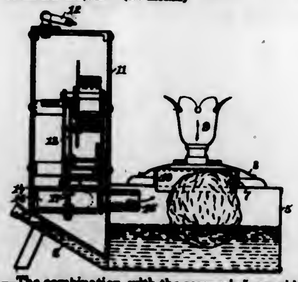


3. A series of superposed cylinders having their joints protected by liquid seals, each of said cylinders containing a series of superposed plates provided with systems of perforations, the said systems being so arranged as to be out of vertical alignment with each other, substantially as set forth.

4. In apparatus for making sulphuric acid, the combination of a series of plate columns with an interplaced series of lead chambers, substantially as and for the purposes herein set forth.

5. In apparatus for making sulphuric acid, the combination, as herein set forth, of a series of plate columns with an interplaced series of lead chambers and a Glover tower at one end and a Gay-Lussac tower at the other end, the whole connected to form a continuous system, substantially as set forth.

485,127. VAPORIZER. GEORGE D. LYNDE, Providence, assignor to the Haines Manufacturing Company, Auburn, R. I. Filed Feb. 24, 1892. Serial No. 422,943. (No model.)

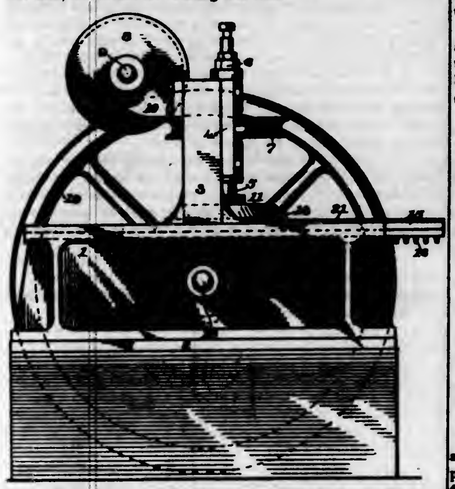


Claim.—The combination, with the reservoir 5, provided with the perforated cover 8, having a hollow ornament 9 and supporting a sponge, of the case 11, a spring-operated mechanism contained therein, a fan-chamber 16, formed in the lower portion of said case, having an inlet and an outlet 15, extending into said reservoir, and a fan 16, contained within said fan-chamber and carried by the shaft 17, suitably journaled and adapted to be driven by the mechanism contained within said case 11, as and for the purpose described.

485,128. FIREBRICK GRID FOR SECONDARY BATTERIES. ALBERT P. MADDOX, Newark, N. J. Filed June 17, 1891. Serial No. 396,698. (No model.)

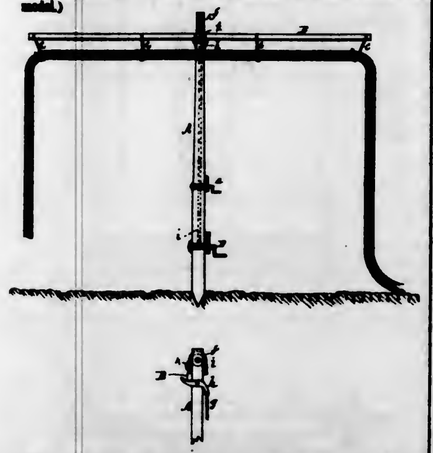
Claim.—1. In a machine of the character described, the combination, with the reciprocating carriage having means for the support of the grid, of the vertical shaft, a concave surfacing-disk supported upon said shaft, with its face parallel with the carriage, means for rotating said shaft, and additional means for actuating the carriage, substantially as described.

2. In a machine of the character described, the combination, with the carriage and means thereon for grasping the grid, of the rotative disk concave as to the central portion of its lower surface and beveled as to its extreme edge, a shaft secured to and adapted to carry said disk, and means for rotating said shaft.



3. In a machine of the character described, the combination, with the reciprocating carriage and means for operating the same, of the L-shaped levers fulcrumed upon said carriage and spring-actuated away from each other, a pair of plungers connected to said levers and adapted to impart to them their closing movement, a concave finishing-disk with its face parallel with the surface of the carriage, a shaft whereon said disk is borne, and means for rotating said shaft.

485,129. APPARATUS FOR ELEVATING HOSE. ADOLPH O. MUELLNER, Pittsburg, Pa., assignor to the Mackintosh Manufacturing Company, same place. Filed Dec. 15, 1891. Serial No. 415,147. (No model.)

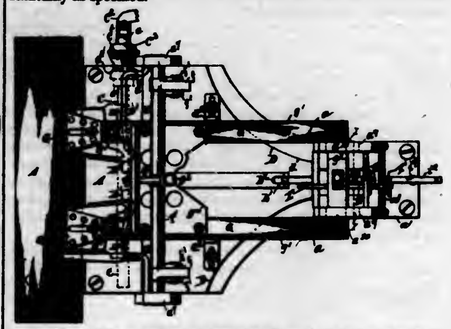


Claim.—A post or supporting-frame provided with upwardly-adjustable cross arm or arms, a pulley and cord for raising and lowering said adjustable cross arm or arms, and a series of loosely-pivoted rings or hooks attached to said cross arm or arms for supporting sections of hose over and above a railway-track.

485,130. FOLDING-MACHINE. SAMUEL C. MCKINNEY, West Troy, N. Y., assignor of one-half to William S. Rust, Washington Wilcox, Arthur B. Wilcox, and Edgar K. Bates. Filed Sept. 11, 1889. Serial No. 324,033. (No model.)

Claim.—1. In a machine for folding the edges of collars and like articles, the combination of a presser, means for moving the presser vertically, a folder movable forward and backward for carrying material to be folded beneath the presser, and means, substantially such as described, for moving the above-named presser down upon the fold of the material after the folder shall have been removed from beneath the presser, substantially as specified.

2. In a folding-machine, the combination of a table or platform, a presser movable toward and from the same, and a folder movable toward and from the table or platform and movable forward and backward for carrying material to be folded beneath the presser, substantially as specified.



3. In a folding-machine, the combination of a table or platform, a presser movable toward and from the same and having plate-like portions whose edges correspond to the outline of the parts to be folded, and a folder movable forward and backward for carrying material to be folded beneath the presser and movable toward and from the table or platform and having plate-like portions whose edges also conform to the outline of the parts to be folded, substantially as specified.

4. In a folding-machine, the combination of a table or platform, a presser movable toward and from the same, a folder movable forward and backward for carrying material to be folded beneath the presser, and also movable toward and from the table, and a spring or equivalent counter-balance for the folder, substantially as specified.

5. In a folding-machine, the combination of a table or platform, a presser movable toward and from the same, a folder movable forward and backward for carrying material to be folded beneath the presser and also movable toward and from the table or platform, a spring or equivalent counter-balance for the folder, and a handle for depressing the folder, substantially as specified.

6. In a folding-machine, the combination of a table or platform, a presser movable toward and from the same, a rock-shaft, arms extending from the rock-shaft, links connecting the rock-shaft with the presser, and a folder movable forward and backward for carrying material to be folded beneath the presser, substantially as specified.

7. In a folding-machine, the combination of a table or platform, a presser movable toward and from the same, a folder movable forward and backward for carrying material to be folded beneath the presser, a rock-shaft, an arm extending from the rock-shaft and engaging with the folder, and an arm for oscillating the rock-shaft, substantially as specified.

8. In a folding-machine, the combination of a table or platform, a presser movable toward and from the same, and a folder movable forward and backward for carrying material to be folded beneath the presser and comprising a cross-bar which is fitted to rock and slide relatively to the table or platform, substantially as specified.

485,131. SASH-HOLDER. JOSEPH R. GRAY, Indianapolis, Ind., assignor of one-half to James W. Redmon, same place. Filed July 16, 1892. Serial No. 440,219. (No model.)

Claim.—1. The swinging detent, in combination with a carrier to the upper side of which it is pivoted at its inner end and a spring

cushion for sustaining said carrier against pressure of the nosh upon the outer engaging end of the detent, substantially as described.

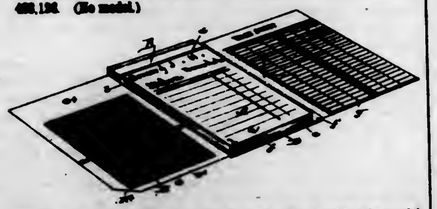
2. The combination, with a fixed part having a slot, of a slide part seated within said slot, a nosh-engaging swinging detent pivotally hung upon one end of said slide part, a spring cushioning said slide part, and a screw-bolt connecting the fixed and the slide parts for setting the detent in or out against the pressure of said spring, substantially as described.

3. The combination, with the fixed part having a slot in its top side, of a slide part seated in said slot, having its inner end standing above said top part formed with pivot-bearings and its other end standing below said top part, a screw-bolt in the outer end of the fixed part, passing through the downward-standing slide part, a nut on said bolt between the nut and the slide part through which said screw passes, and a nosh-engaging swinging detent pivotally hung upon the pivots of said slide part, substantially as described.

4. A nosh-stop comprising a fixed L-shaped casting having a slot in its upper side, a slide part dovetailed in said slot, having its inner end standing above said slot formed with horizontal pivots, its other end standing below said slot, a screw-bolt in the fixed part, passing through this lower slide part, a nut and a spring-cushion on said bolt behind said lower slide part, and a U-shaped detent pivotally hung upon said pivots and having a convex nosh-engaging end, substantially as described.

5. The combination of a swinging detent having a friction-engaging end with spring-sustained pivot-bearings upon which said detent is hung and a stop to limit the descent of the engaging end of said detent, substantially as described.

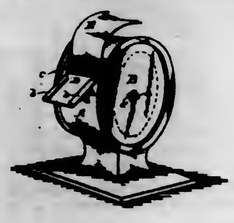
485,182. DUPLICATING CHECK-BOOK. JOSEPH OLDFIELD, Toronto, Canada, assignor, by direct and mesne assignments, to Frederick Bennet James and Rees Jones Oldfield, same place, and Richard Hosken, Chatham, New Brunswick, Canada. Filed Feb. 20, 1892. Serial No. 422,192. (No model.)



Claim.—1. In a duplicating check-book, the combination, with the book provided with a stub B and stiff back *f*, of the portion of the cover *c*, provided with a single carbon-sheet E, so secured on the inside of the portion *c* as to leave a broad margin *c'* at the top and the narrow margins *c²* and *c³* at the sides and bottom, the portion *c* having its left-hand bottom corner cut away, as shown, and being arranged to fold transversely across the leaf *b* at right angles to the lines of printing and lines for the particulars of the sale on the leaf *a*, as and for the purpose specified.

2. The combination, with the book provided with a stub B and stiff back *f*, of the portion of the cover *c*, provided with a single carbon-sheet E, so secured on the inside of the portion *c* as to leave a broad margin *c'* at the top and the narrow margins *c²* and *c³* at the sides and bottom, the portion *c* having its left-hand bottom corner cut away, as shown, and being arranged to fold transversely across the leaf *b* at right angles to the lines of printing and lines for the particulars of the sale on the leaf *a*, and the portion *g*, containing the tally-sheet, which portion is arranged to lie flat when the particulars of the sale are being entered, but is intended when closed to be folded transversely across the sheet *a* and at right angles to the lines of printing and lines for the particulars of the sale, as and for the purpose specified.

485,183. COMBINED PAPER-WEIGHT AND CALENDAR. ARTHUR B. PALMER, Coshocton, Ohio. Filed Mar. 17, 1892. Serial No. 425,204. (No model.)



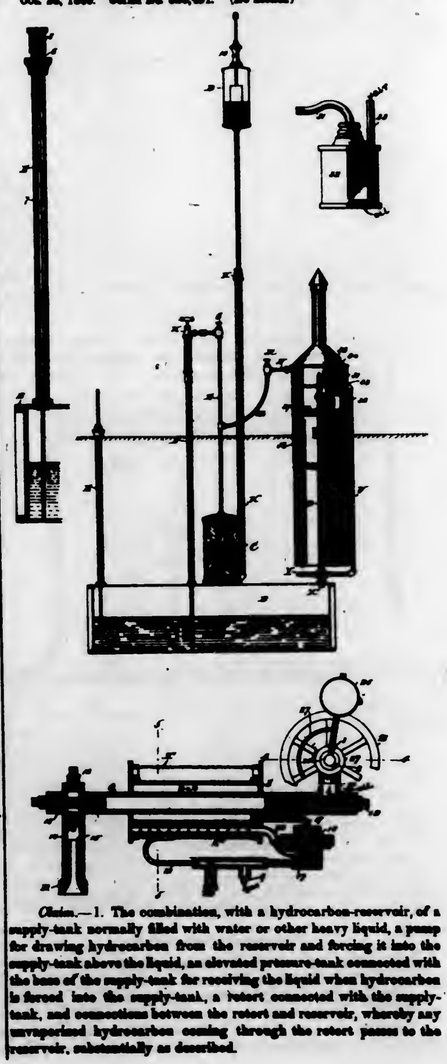
Claim.—1. In a combined weight and calendar, a heavy base having secured thereto a cylinder provided with an opening and a flap or apron extending out from said opening and provided with guide-strips, substantially as shown and described.

2. In a combined weight and calendar, a heavy base having secured thereto a cylinder provided with an opening, a rod across said opening, and a flap or apron extending out from said opening and provided with guide-strips, substantially as shown and described.

3. In a combined weight and calendar, a heavy base having secured thereto a cylinder provided with an opening, a rod across said opening, and a flap or apron extending out from said opening and provided with guide-strips and said flap inclined downward, substantially as shown, and for the purpose specified.

4. In a combined paper-weight and calendar, a hollow case provided with an opening near its top, a small rod running horizontally across the center of this opening, and a flapped metal apron secured on an inclined angle to the end of said opening, said case being mounted upon a heavy weighted base and provided with sides and bolt and nut for securing said sides, substantially as described.

485,184. GAS-MACHINE. LEMUEL J. PHELPS, Passaic, N. J. Filed Oct. 26, 1889. Serial No. 328,451. (No model.)



Claim.—1. The combination, with a hydrocarbon-reservoir, of a supply-tank normally filled with water or other heavy liquid, a pump for drawing hydrocarbon from the reservoir and forcing it into the supply-tank above the liquid, an elevated pressure-tank connected with the base of the supply-tank for receiving the liquid when hydrocarbon is forced into the supply-tank, a retort connected with the supply-tank, and connections between the retort and reservoir, whereby any unvaporized hydrocarbon coming through the retort passes to the reservoir, substantially as described.

2. The combination of a hydrocarbon-reservoir, a supply-tank receiving hydrocarbon from the reservoir, means for holding the hydrocarbon in the supply-tank under pressure, a retort connected with the supply-tank, and connections between the retort and reservoir, whereby any hydrocarbon coming through the retort passes directly to the reservoir, substantially as described.

3. In a gas-machine, the combination of a hydrocarbon-reservoir, a supply-tank receiving hydrocarbon from the reservoir, means for holding the hydrocarbon in the supply-tank under pressure, a retort connected with the supply-tank, a gas-holder, a pipe for conducting the gas from the retort to the holder, and connections independent of the holder between the retort and the reservoir, substantially as described.

4. In a gas-machine, the combination, with a vaporizing apparatus, of a vertically-movable gas-holder, a pipe conducting the gas from the vaporizing apparatus and entering the base of the holder, and a main connecting with the side of the conducting-pipe at right angles to the flow of gas at that point, whereby the gas passes to the holder at right angles to the main and an even pressure of gas is maintained in the main, substantially as described.

5. The combination, with a gas-holder and vaporizing apparatus located directly above the same, of a single casing A, inclosing both the gas-holder and vaporizing apparatus, and the diaphragm 23 between the gas-holder and vaporizing apparatus, separating the casing into two parts and constructed to permit the passage of air and gas, but to prevent the passage of fire, substantially as described.

6. In a gas-machine, the combination, with the supply-pipe, retort, and gas-holder, of a valve in the supply-pipe, controlling the hydrocarbon-supply to the retort, a weighted lever for operating said valve, and a pulley for operating the weighted lever, said pulley being mounted with its rim directly above the center of the holder and having a direct connection thereto, substantially as described.

7. In a gas-machine, the combination, with the supply-pipe, retort, and gas-holder, of the valve 5 in the supply-pipe, the screw-rod 4, operating said valve and having the stud 3, adjustable weighted lever 28, constructed and arranged to engage the stud 3, a pulley for operating the weighted lever to open or close the valve, and connections between the pulley and gas-holder, substantially as described.

8. In a gas-machine, the combination, with the retort, of the water-jacket surrounding the retort, the wire-gauze outside the water-jacket, the burner feeding a flame upon the inside of the gauze, and the pipe 21, feeding a permanent flame to light the burner, substantially as described.

9. In a gas-machine, the combination, with the retort and the water-jacket surrounding the same, of the wire-gauze surrounding the water-jacket and forming a chamber between it and the jacket, the valved burner located outside of the gauze and adapted to deliver its vapor through the gauze, and a pipe 21, terminating inside the gauze to feed a permanent flame, substantially as described.

10. In a gas-machine, the combination, with a vaporizing apparatus and the pipe R for conducting the gas from said apparatus, of the pipes 31 33 for admitting air and a trap-box 32, provided with a liquid seal through which air is drawn in, but which prevents the escape of gas, substantially as described.

11. The combination, with the vaporizing apparatus and the pipe R for conveying the gas from said apparatus, of the trap-box 32 for admitting air and the adjustable injector 14, opposite the trap-box, whereby the amount of air drawn in may be adjusted, substantially as described.

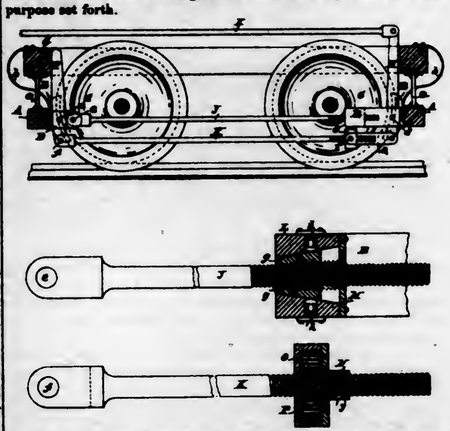
12. The combination of a hydrocarbon-reservoir constructed to contain gas under pressure and a sealed pipe entering the reservoir and constructed to be lowered and raised by hand, so as to be inserted into and withdrawn from the hydrocarbon, whereby the level of the hydrocarbon in the reservoir may be determined by the sound of the gas escaping through the pipe when the latter is raised above the level of the hydrocarbon, substantially as described.

13. In a gas-machine, the combination of the hydrocarbon-reservoir B, connected with the gas-holder and constructed and arranged to contain gas under pressure, and a sealed pipe entering the reservoir through a gas-tight bushing and constructed to be lowered and raised by hand, so as to be inserted into and withdrawn from the hydrocarbon, whereby the level of the hydrocarbon in the reservoir may be determined by the sound of the gas escaping from the pipe when the latter is raised above the level of the hydrocarbon, substantially as described.

485,185. CAR-BRAKE. FRANK I. REED, Alston, Mass. Filed May 12, 1892. Serial No. 432,894. (No model.)

Claim.—1. In combination with the brake-beams and brake-shoes of a car-truck, two levers by which the power is applied, each of which is pivoted to one of the brake-beams, a threaded rod pivoted to one brake-beam, a nut on said rod secured to the other brake-beam, and a threaded rod pivoted to one of said levers and having a nut which is pivoted to the other of said levers, said nuts being adapted to move freely in one direction on the rods, but restrained from moving in the other direction, substantially as and for the purpose set forth.

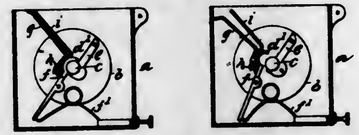
2. In combination with the brake-beams and brake-shoes of a car-truck, two levers by which the power is applied, each of which is pivoted to one of the brake-beams, a threaded rod pivoted to one of the brake beams, a nut on said rod, secured to the other brake-beam and composed of a casing and threaded blocks to slide therein to move into or out of engagement with said rod, a rod pivoted to one of said levers, having a nut thereon, a casing for the latter nut, pivoted to the other of said levers, there being a spring between and secured to this nut and casing therefor, substantially as and for the purpose set forth.



3. A connection between two brake-beams of a car-brake, consisting of a rod pivoted to one of said beams and threaded at the other end, blocks on said rod, and a casing in which said blocks may slide and be brought into and out of engagement with the thread on said rod, said casing being secured to the other of said beams, substantially as described.

4. In a car-brake, a connection between the two levers thereof, consisting of a threaded rod pivoted to one of said levers and having a nut thereon revoluble in a casing which is pivoted to the other lever and a spring between and secured to said nut and casing, substantially as described.

485,186. THREAD-UNWINDING DEVICE FOR SEWING-MACHINES. MARK B. REED, Boston, Mass., assignor to the Willimantic Linen Company, Hartford, Conn. Filed May 26, 1892. Serial No. 434,402. (No model.)



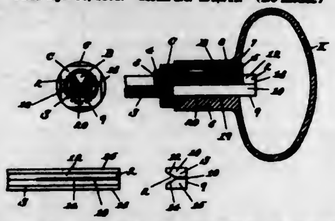
Claim.—1. In a thread-unwinder, in combination with the frame for supporting a mass of thread, socket-pieces secured to the frame and having formed therein a portion of the socket for the spindle of the bobbin, the yielding clutch parts, each containing a portion of the bobbin-socket and mounted in operative relation to the fixed portions of the socket, and the thread-guide attached to and having a yielding movement independent of the movement of the clutch parts and extending from end to end of the mass of thread, all substantially as described.

2. In an unwinder, in combination with the frame or support, the socket parts secured thereto, the yielding clutch parts adapted to grasp the spindle of the bobbin, the thread-guide pivoted at its opposite ends to the respective clutch parts and having a limited swinging movement independent of the movements of the clutch part, and the springs whereby the yielding thread-guide is held at one limit of its play, all substantially as described.

3. In an unwinder, in combination with the frame or support for a mass of thread, socket-pieces secured to the frame and having formed therein a portion of the socket for the spindle of the bobbin, the yielding clutch parts containing a portion of the socket for the spindle, the thread-guide attached to and having a yielding move-

ment independent of the movement of the clutch parts and extending from end to end of the mass of thread, and the offset portions located on the clutch parts, all substantially as described.

485,187. KNOB ATTACHMENT. FRANCIS H. RICHARDS, Hartford, Conn. Filed Apr. 30, 1892. Serial No. 431,941. (No model.)

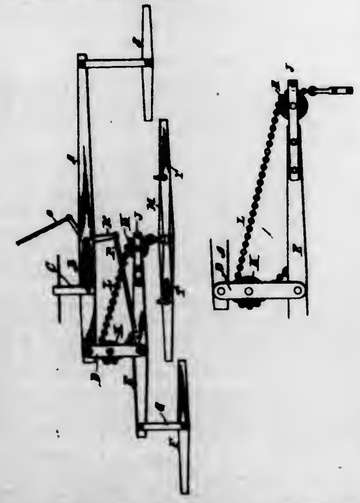


Claim.—1. In an adjustable knob attachment, the combination, with the knob-stem and with the expansible spindle constructed to receive a spindle-expanding wedge, of the spindle-expanding wedge adapted for longitudinal movement within the knob-stem and constructed to act in two directions, and means for actuating the wedge, whereby the spindle may be simultaneously clamped and expanded, substantially as set forth.

2. In an adjustable knob attachment, the combination, with the knob-stem and with the expansible spindle, of the spindle-expanding wedge projecting beyond the knob-stem, and the conical nut engaging the end of the knob-stem and actuating said wedge, whereby the spindle is clamped and expanded and the end of the knob-stem held against lateral play, substantially as set forth.

3. In an adjustable knob attachment, the combination, with the spindle having the V-groove in one side thereof and slotted from the bottom of said groove toward the opposite side thereof, of the knob-stem over said spindle, the wedge V-shaped in cross-section and having the longitudinal wedge-face bearing against the knob-stem, and means for actuating the wedge longitudinally of the knob-stem, whereby the spindle is simultaneously clamped and expanded, substantially as shown and described.

485,188. DRAFT-EQUALIZER. CHARLES S. REED, Dixon, Ill., assignor to the Grand Detour Plow Company, same place. Filed July 28, 1892. Serial No. 441,494. (No model.)



Claim.—1. The combination of the evener A, provided at its inner end with the singletree S, the clevis R, the pivotal plates D, the pulley K, the whiffletree E, provided with the pulley H, the singletree F, the doubletree M, provided with singletrees T T, and a chain L, attached centrally at its front end to the rear of the doubletree M and passed backward over the pulley H and behind the pulley K and brought forward and attached at its opposite end to the rear end of the whiffletree E between the pivot R of the latter and said pulley H, substantially as shown, and for the purpose described.

2. The combination of the evener A, singletree S, yoke N, rods O and P, plates D, pulley K, pivotally seated between said plates, evener E, provided with pulley H, singletree F, doubletree M, provided with singletrees T T, and the chain L, attached at its forward end to the center of the rear of the doubletree M and passed backward over said pulley H and behind pulley K and brought forward and attached at its rear or opposite end to the whiffletree E between the pivot R of the latter and said pulley H, substantially as shown, and for the purpose described.

485,189. BOTTLE-STOPPER. BENJAMIN F. SAMSON, Flatlands, assignor to Abram V. Whiteman, Port Chester, N. Y. Filed Dec. 30, 1891. Serial No. 416,868. (No model.)

Claim.—The combination of a neck-wire, an eccentric lever pivoted thereto, a stopper proper, the outer portion of which covers the mouth of the bottle and having a depressed portion surrounding the inner portion of the mouth and a central raised portion flush with the outer portions, a tube secured to the stopper, whose length corresponds with the diameter of said stopper and whose ends rest on the outer portion of the said stopper, a cap-piece fastened to the top of the stopper and encircling the tube and holding said tube in position, and a bail having a straight portion extending through the said tube, bent downwardly, and pivotally connected to the eccentric lever, as shown and described.

485,140. COIN-CONTROLLED VENDING-MACHINE. GEORGE L. SLATER, Buchanan, Mich., assignor to Louisa G. Tong, South Bend, Ind. Filed June 18, 1892. Serial No. 437,194. (No model.)

Claim.—1. The combination of the casing, the swinging holder therein, the adjustable stationary ejector-plate in rear of said holder, the stop-bar in front thereof, the rock-shaft for moving said holder backward, and the spring for returning the holder to original position, substantially as specified.

2. The combination of the swinging holder, the stationary ejector, the casing, the notched coin-guide attached to the casing, and the pawl attached to the holder, engaging said guide, all constructed and arranged to operate substantially as described.

3. The combination of the holder, the casing, the notched coin-guide attached to casing, and the slotted coin-guiding pawl attached to the holder and engaging said notched guide, substantially as described.

4. The combination, with a fixed and a movable part, of a coin-guide G, having notch *g*, and a slotted coin-guiding pawl, said guide and pawl being respectively connected to one of said parts, substantially as specified.

5. The combination of a fixed and a movable part with a coin-guide tube having a notch *g* and pocket *g'* opposite said notch, and a slotted coin-guiding pawl adapted to engage said notch, said pawl and guide, respectively, attached to one of said parts, substantially as described.

6. The combination of the casing, the swinging holder therein having retaining strips and flanges, the stop-bar, the armed rock-shaft, and the spring with the stationary ejector and the coin-controlled devices for locking or releasing said holder, substantially as described.

7. The combination of the casing, the swinging holder, and the ejector with the combined coin-guide and pawl attached to the holder and the combined coin-guide and pawl-keeper attached to the casing, all constructed and arranged to operate substantially as and for the purpose set forth.

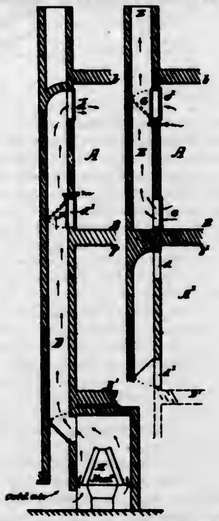
8. A holder and casing, substantially as described, in combination with a combined pawl-keeper and coin-guide and a pawl connected, respectively, to one of said parts and a coin-detent for said guide, adapted to be released by the pawl, substantially as set forth.

9. The combination, with a fixed and a movable part, of a coin-guide G, having notch *g*, and a pawl, said guide and pawl being, respectively, connected to one of said parts, and the coin-detent in said guide, adapted to be released by said pawl, substantially as described.

10. The combination of the movable holder and casing with the coin-guide attached to said casing, having a notch, and a pawl attached to said holder, adapted to engage said notch when the holder is in normal position and be locked thereby, but to be released by a coin in said guide, and a coin-detent adapted to hold said coin in position until it is moved back by the pawl after the holder is moved sufficiently to discharge the package, substantially as specified.

11. The combination of the holder, the casing, the notched coin-guide attached to the casing, and the coin-guide pawl attached to the holder and engaging said notched guide and the bent spring-controlled coin-detent, substantially as set forth.

485,141. SYSTEM OF HOUSE VENTILATION. FRED P. SMITH, Worcester, assignor to the Smith Heating and Ventilating Company, Boston, Mass. Filed Apr. 23, 1892. Serial No. 430,153. (No model.)



Claim.—1. In a system of house ventilation, an ingress-flue or air-duct having an opening for delivering air into the room at or near the ceiling and another opening for delivering air into the room at or near the floor and a stop gate or valve disposed within said flue and controlling the passage for directing the air-current for delivery through either said upper or said lower opening, substantially as set forth.

2. In the system of house ventilation, the egress-flue or air-duct having an opening thereinto from the room at or near the floor and another opening from the room at or near the ceiling and a stop gate or valve disposed within said flue adjacent to said upper opening and adapted for closing the same and opening the flue below or to swing back, obstructing the flue from the lower opening and permitting air to pass through said upper opening, substantially as and for the purpose set forth.

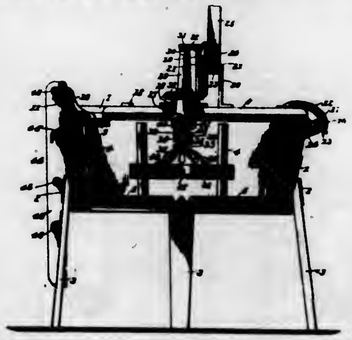
3. In a system of house ventilation, the combination, with the apartment or room, of the ingress-flue having two openings for the delivery of air into said room, respectively located one at the upper and the other at the lower part of the room, and a cut-off or valve controlling the delivery of air through either one or the other of said openings, the egress-flue provided with an upper opening and a lower opening, respectively located at or near the ceiling and floor of the room, and a cut-off or valve controlling the passage to afford exit of air through either one or the other of said openings, and means for operating said valves to change the delivery and exit to either upper or lower positions, substantially as and for the purpose set forth.

4. The combination of the ingress-flue having the upper and lower openings or air-delivery registers, the hinged cut-off valve arranged therein to swing over said lower opening and backward across the ingress-flue, the egress-flue having the upper and lower openings or air-exit registers, the hinged cut-off valve arranged therein to swing over said upper opening and backward across said egress-flue, and valve-operating devices whereby an attendant can adjust said valves at any desired position, for the purposes set forth.

485,142. DEVICE FOR FEEDING SALT TO ANIMALS. THOMAS R. STEVENS, Sedalia, Mo. Filed Oct. 3, 1891. Serial No. 407,498. (No model.)

Claim.—The stock-salter comprising a base-trough having downwardly-inclined end pieces and unobstructed from side to side and a truncated salt-reservoir supported firmly and immovably on standards, and having fixed sides and ends diverging from its top to its bottom edge, the said trough being as long and of greater width than the base of the reservoir and the reservoir being supported a considerable distance above the bottom of the trough, whereby the column of salt may rest upon the bottom of the trough from side to side and be conveniently reached beneath the trough by animals in case the salt should not flow in sufficient quantity to the edges, substantially as described.

485,148. WASHING-MACHINE. JOHN C. THOMAS, Jamestown, N. Y., assignor of one-half to Burnett H. Benson, same place. Filed Dec. 31, 1891. Serial No. 416,640. (No model.)



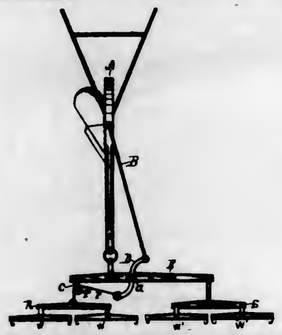
Claim.—The combination of the wooden agitator-shaft terminating at its lower end in a reduced tenon and provided above the same with a head or shoulder, provided at their under sides with openings, the rubber head having a central opening, the superimposed concavo-convex metal frame having an opening, and the opposite cast-metal sections for embracing the tenon of the shaft, said sections being passed upwardly through the openings in the metal frame and secured to the tenon and provided at their lower ends with lateral lugs or projections for engaging the frame and at their upper ends with studs or pins for entering the shoulders of the shaft, substantially as specified.

485,144. DRAFT-EQUALIZER. SAMUEL H. THOMAS, Morris, Ill., assignor to the Morris Manufacturing Company, same place. Filed June 20, 1892. Serial No. 437,603. (No model.)

Claim.—1. A draft-equalizer comprising the doubletree E, having its point of attachment to a plow or other object at one side from its center, the lever D, pivotally connected at about its center to the said doubletree in its longer section near its point of attachment to

the plow, the cord or chain B for connecting the rear end of said lever with the rear part of a plow or other object attached to said doubletree, the pulley P, attached to the outer end of the short section of doubletree R, the doubletree R and its whiffletrees W W, the cord or chain F, passing over pulley P and connecting the forward end of lever D with doubletree R, and the doubletree S and its whiffletrees W' W', connected to the outer end of the longer section R, all combined and adapted to operate substantially as and for the purpose set forth.

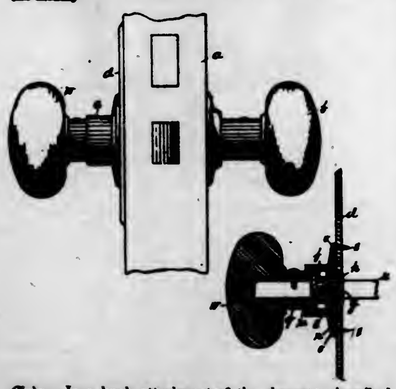
2. In a draft-equalizer, the combination of the doubletree E, having the pulley P, lever D, cords or chains B F, doubletrees R S, and whiffletrees W W W' W', all arranged to operate substantially as and for the purpose set forth.



3. In a draft-equalizer, the combination of a doubletree having its point of attachment to a plow or other object located at one side from its center, a lever pivoted at about its center to and across said doubletree in its longer section, a cord or chain for connecting the rear end of said lever with a plow or other object connected with said doubletree, a pulley connected to said doubletree at the end of its shorter section, and a cord or chain for passing over said pulley and connecting the inner end of said lever with a doubletree or other object, substantially as and for the purpose set forth.

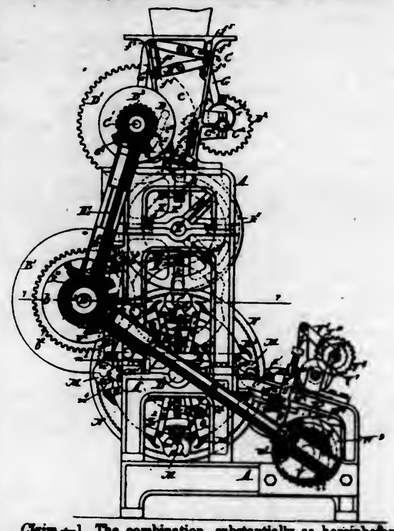
4. In a draft-equalizer, the combination, with the doubletree, of a lever pivotally connected to and across said doubletree at one side from its point of attachment to a plow or other object and having its rear end connected with the plow or other object and its forward end connected with an auxiliary doubletree, substantially as and for the purpose set forth.

485,145. KNOB ATTACHMENT. WILLIAM A. G. ASHLEY, New Bedford, Mass., assignor of two-thirds to James M. Lawton, Jr., and Austin T. Rowland, same place. Filed June 23, 1892. Serial No. 437,551. (No model.)



Claim.—In a knob attachment of the character described, an internally-screw-threaded rose having a hub adapted to loosely embrace the knob-shank, and an externally-screw-threaded sleeve fitting in said rose, having its inner end provided with an open-ended slot, in combination with an escutcheon having an opening adapted to loosely receive the screw-threaded sleeve and provided with an inwardly-projecting lug adapted to fit in the open-ended slot in the sleeve, substantially as shown and described.

485,146. CIGARETTE-MACHINE. VICTOR H. RAMBOUR, Washington, D. C., assignor of one-twentieth to Bellamy Storer, Cincinnati, Ohio. Filed Apr. 20, 1892. Serial No. 431,130. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of a feed-hopper, a series of groups of tobacco-rolling and wrapper-applying devices, a supporting-frame on which they are mounted and by which they are carried around in a circular path, and a filler-carrier interposed between the feed-hopper and the rolling devices, comprising a frame, a series of pockets or tobacco-receptacles carried around by the frame in a circular path, a series of plungers in the tobacco-receptacles, means for moving one of the plungers outwardly while another is moving radially inward, and means for moving the rolling devices into the path of the outwardly-moving plunger, whereby charges of tobacco to form the fillers are successively taken from the feed-hopper and successively delivered to the rolling devices located below them as they are carried past.

2. The combination, substantially as hereinbefore set forth, of a feed-hopper, means therein for delivering tobacco therefrom, rolling devices, a frame which carries them around a single horizontal axis, a filler carrier or conveyer having a pocket or receptacle carried around a single horizontal axis in a circular path, a plunger, means for actuating it to move it into the inside of the group of rolling devices to deliver a charge of tobacco thereto, wrapper-supplying devices, and means for actuating the tobacco-feeding, filler-carrying, and wrapper supplying and rolling devices.

3. The combination, substantially as hereinbefore set forth, of a feed-hopper, two alternate sets of tooth-carrying bars arranged therein on opposite sides thereof, and means for actuating one set of bars at a higher speed than the other set.

4. The combination, in a cigarette-machine, of a hopper, a set of tooth-carrying bars on each side of the hopper, a second set of tooth-carrying bars on each side alternating with the first-mentioned set, and means for moving one set of bars on each side faster than the other set.

5. The combination, in a cigarette-machine, of a feed-hopper, two sets of tooth-carrying bars arranged therein, shafts on opposite sides of the hopper, eccentrics thereon connected with the two sets of tooth-carrying bars, and means for actuating the shafts at different speeds to move one set of tooth-carrying bars faster than the other alternate set.

6. The combination, substantially as hereinbefore set forth, of a hopper, a series of tooth-carrying bars arranged on each side thereof and provided with lugs extending through slots in the hopper-casing, rods connecting the lugs and moving vertically in guide-slots in the hopper-frame, shafts carrying eccentrics to which the rods are connected, and means for driving the shafts, whereby one set of tooth-carrying bars on each side of the hopper is caused to move at a different speed from the other set on the same side.

7. The combination, substantially as hereinbefore set forth, of a hopper having an open bottom or mouth, a pair of blades arranged at the mouth of the hopper, a cross-head, pivot-links connecting the blades to the cross-head, a cam, means for rotating it, and connections between the cam and the cross-head for reciprocating the blades.

8. The combination, substantially as hereinbefore set forth, of a series of groups of rolling devices, each comprising rollers, and a pair of hinged frame-plates in which they are mounted, means for moving both frame-plates on their pivots, means for rotating the rollers, devices for feeding tobacco to the rolling devices, mechanism for supplying wrappers thereto, and means for moving the groups of rolling devices from the tobacco-feeding to the wrapper-supplying devices.

9. The combination, substantially as hereinbefore set forth, of a series of groups of rolling devices, each comprising a series of rollers mounted in hinged frames, links connected to the frames for opening and closing them, an arm, a stop which which it engages, connections between the arm and the links, means for actuating the arm, and mechanism for rotating the rollers and revolving the groups of rolling devices.

10. The combination, substantially as hereinbefore set forth, of the hinged frame-plates, a group of rollers carried thereby, means for revolving them and carrying them around a single horizontal axis, the bell-crank levers, links connecting the bell-crank levers to the frame-plates, the dogs carried by the bell-crank levers, links connecting them to the frame-plates, a stop-bar, an arm engaging therewith, a shaft on which the arm is mounted, arms connecting this shaft with the bell-crank levers, and springs connected to the bell-crank levers and to the arm which engages with the stop-bar.

11. The combination, substantially as hereinbefore set forth, of the sets of hinged frame-plates m m^1, a group of rollers mounted therein, the roller-carrying plates n, secured to one set of the frame-plates and movable relatively thereto, and means for actuating the plates.

12. The combination, substantially as hereinbefore set forth, of the frame-wheels, the hinged frame-plates mounted thereon and carrying a group of rollers, means for opening the frame-plates to permit the group of rollers to receive a charge of tobacco, the spring-controlled plates n, hinged to the frame-plates, means for moving the frame-plates on one side to open the group of rollers, means for moving the hinged plates n to receive a wrapper, and means for supplying the wrapper to the group of rollers.

13. The combination, substantially as hereinbefore set forth, of the frame-wheels, the hinged plates mounted thereon, rollers carried by these plates, means for rotating the rollers and for revolving the group, the stop-bar and stops, the links connecting the frame-plates for opening and closing them, a lever engaging with the stops, connections between this lever and the links, the plates n, hinged to the frame-plates, means for opening and closing them, and means for supplying wrappers to the rollers.

14. The combination, substantially as hereinbefore set forth, of the paper-feed rollers, means for actuating them, the reciprocating knife, means for actuating it, the clamp having the vertically-moving members, one of which is hinged, means for moving the hinged member about its pivot, and devices for reciprocating the clamp, whereby the wrapper is fed to the clamp while the hinged member is lowered and whereby the clamp is moved forward or reciprocated while the clamp members are closed or parallel with each other and the hinged member is again moved on its pivot to release the wrapper.

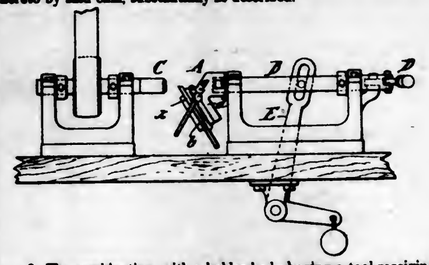
15. The combination, substantially as hereinbefore set forth, of the paper-feed rollers, means for actuating them, the reciprocating knife, means for actuating it, the clamp having a hinged member, means for reciprocating the clamp, means for moving the hinged member on its pivot, a paste-brush, and means for revolving it, the organization being such that the wrapper is cut and received by the clamp, while the hinged member is separated from the other member, the clamp is reciprocated and moved forward while the clamp members are together, and the hinged member is depressed or moved away from the other member to release the wrapper and to allow the paste-brush to pass without applying paste to the clamp.

16. The herein-described rolling devices, comprising an uneven number of rollers, the central one of which is a pivot-roller, frame-plates supporting the rollers and hinged on said pivot-roller, means for revolving the rollers, and devices for opening and closing the group.

17. The rolling devices herein described, comprising a group of rollers, hinged frames in which they are mounted, and supplemental plates n, hinged to the frames, and means for revolving the group of rollers, opening and closing the frame-plates and actuating the supplemental plates, whereby the group is left partially open when the wrapper is supplied to allow the pasted wrapper to enter without applying paste to the rolling devices.

485,147. TOOL-HOLDER FOR BUTTON-CUTTING MACHINES, &c. FRANCIS H. BURGESS, Jr., Springfield, Mass., assignor to the Howell Brothers Manufacturing Company, same place. Filed Apr. 19, 1892. Serial No. 429,716. (No model.)

Claim.—1. The combination, with a holder-body having a tool-receiving groove a extended along and within one side thereof and the socket f extended transversely within the body, adjacent the groove, which has an enlarged section or area f' that merges into the groove, as described, of a spindle g, having a shank fitted to turn within the base of said socket and having the cam-formed section h, which is within said socket enlargement, and a suitable extension whereby the spindle may be turned, and the tool x, adapted to be set within said groove and to have a sidewise binding pressure imparted thereto by said cam, substantially as described.

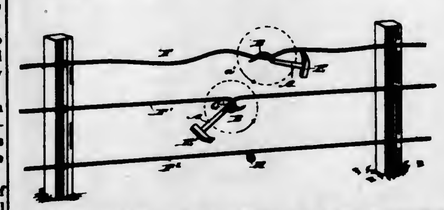


2. The combination, with a holder-body having a tool-receiving groove a extended along and within one side thereof and the socket f extended transversely within the body adjacent the groove, which has an enlarged section or area f' that merges into the groove, as described, of a spindle g, having a shank fitted to turn in the base of said socket and provided with the peripheral groove g^2 and having the cam-formed section h disposed within said socket enlargement, and a suitable extension whereby the spindle may be turned, the stud i penetrating the body between its sides and engaging said peripheral groove of the spindle, and the tool adapted to be set within said receiving-groove and to have a binding pressure imparted thereto by said cam, substantially as described.

3. The combination, with a holder-body having a tool-receiving groove and a socket within the body adjacent the groove, which has an enlarged section or area that merges into the groove, as described, of a spindle having a shank provided with the peripheral groove and fitted for a rotational movement and having the cam-formed section h disposed within said socket enlargement, and a suitable extension whereby the spindle may be turned, the stud i penetrating the body and engaging said peripheral groove of the spindle, and the tool adapted to be set within said receiving-groove and to have a binding pressure imparted thereto by said cam, substantially as described.

4. The combination, with a body having a tool-receiving groove a extended along and within one side thereof and the socket f extended transversely within the body adjacent the groove and having the enlarged section or area f', of the spindle fitted to turn in said socket and having the cam-formed section h next to the groove, the tool and gib b within the groove, and a screw passed through a portion of the body between its sides and transversely engaging the gib near one end thereof, substantially as described.

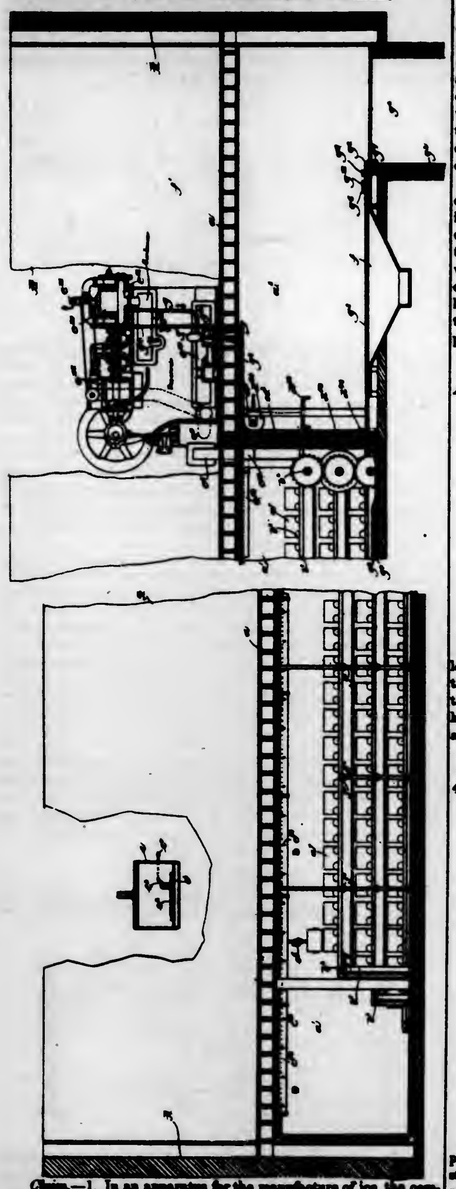
485,148. TOOL. JACOB BOATNER, Township 1, Range 2, East, County of Amite, Miss. Filed May 14, 1892. Serial No. 432,867. (No model.)



Claim.—1. A tool for tightening wires of wire fences, provided with a handle having a tapering end extending from the shank of the said handle, the said tapering end being formed with the curved part C, terminating in the point D, extending inwardly and forwardly approximately in line with the shank of the handle, substantially as shown and described.

2. A tool for tightening wires of wire fences, comprising a handle and a tapering end extending from the shank of the said handle, the said tapering end being formed with the curved part C, terminating in the point D, extending inwardly and forwardly approximately in line with the shank of the handle, and a claw-hammer body secured on the other end of the handle, substantially as shown and described.

485,149. APPARATUS FOR MANUFACTURING ICE. JAMES BOOMER, Boston, Mass., assignor of one-half to George W. Hollis, same place. Filed July 28, 1892. Serial No. 441,497. (No model.)



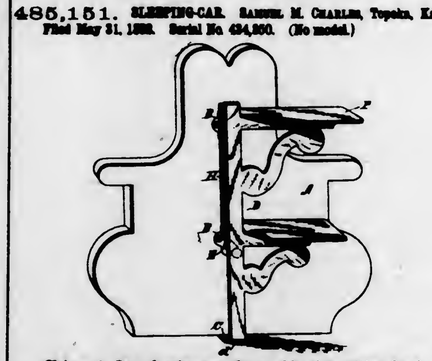
Claim.—1. In an apparatus for the manufacture of ice, the combination, with a building provided with a refrigerating-room d' and a chamber c^2, separated therefrom by a wall c^3, provided with doors or openings, and a bath in the room c^2, of a cold-air engine connected to said refrigerating-room, a carrier in said room, and a plurality of pans or receptacles to contain water, secured to said carrier, substantially as described.

2. In an apparatus for the manufacture of ice, the combination, with a building provided with a refrigerating-room d' and a receiving-chamber c^2, separated therefrom by a wall c^3, provided with doors or openings, and a bath in the room c^2, of a cold-air engine connected to said refrigerating-room, a tier of endless carriers in said room, a plurality of independent pans or receptacles to contain water, secured to said carriers, and an elevator in the chamber c^2, adjacent to the separating-wall, substantially as described.

3. In an apparatus for the manufacture of ice, the combination, with a building provided with a refrigerating-room d' and a receiving-chamber c^2, separated therefrom by a wall c^3, provided with doors or openings, and a bath in the room c^2, of a cold-air engine connected to said refrigerating-room, shafts b^2 b^3, arranged one above the other and supported upon uprights in the refrigerating-room, wheels mounted on said shafts, a series of parallel endless carriers passed about said wheels of each tier, the upper surface of said carriers being opposite the openings in the wall c^3, and a plurality of pans or receptacles to contain water, detachably connected to said carriers, substantially as described.

4. The combination, with a cold-air engine comprising an air-compressing cylinder having a water-jacket and an air-expanding cylinder, and a cold-air outlet-pipe leading from the said expanding-cylinder into a refrigerating-chamber, of circulation-pipes extended through the said chamber, stop-cocks in said pipes, a tank or reservoir with which each circulation-pipe communicates, a branch pipe connecting each circulation-pipe to the other tank, and a pump to exhaust fluid from one tank and force it through the water-jacket into the other tank through the circulation-pipes to cool the water in its passage through the refrigerating-room, substantially as described.

485,150. METAL BOX-STRAP. SYMMES C. GARY, Baldwin, assignor to William H. Vanderbilt, Brooklyn, N. Y. Filed May 31, 1892. Serial No. 435,117. (No model.)



Claim.—A box-strap composed of a metal band of indefinite length which is recessed flatwise at intervals throughout its length, the bottoms of said recesses constituting webs which are of a less thickness than the body of the band, and which said bottom webs have, respectively, within their area a slit or puncture, substantially as and for the purpose set forth.

485,151. SLEEPING-CAR. SAMUEL M. CHARLES, Topeka, Kans. Filed May 31, 1892. Serial No. 434,800. (No model.)

Claim.—1. In a sleeping-car, the combination, with a fixed support, of a bracket removably supported thereby, having a series of steps arranged on different horizontal and vertical planes, hinged directly thereto and extending out therefrom, substantially as described.

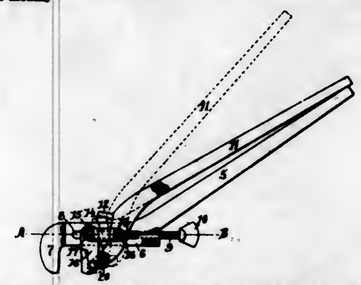
2. In a sleeping-car, the combination, with the seat and floor eyes in the seats, and a slotted plate in the floor, of a bracket having attaching means engaging the eyes and a tongue engaging the slot in the plate on the floor and hinged steps on the bracket, substantially as described.

3. In a bracket, the combination, with the arms thereof, and means for securing the bracket in position, of steps hinged at their inner edges to the arms and having their outer edges projecting laterally beyond the arms, substantially as described.

4. In a platform-bracket for sleeping-cars, the combination, with the arms of the bracket, of steps hinged to the arms and a connection between the steps independent of the bracket, substantially as described.

5. In a platform-bracket, the combination, with the arms of the bracket, of steps hinged to the arms, having extensions arranged to engage the bracket when the steps are in a horizontal position, substantially as described.

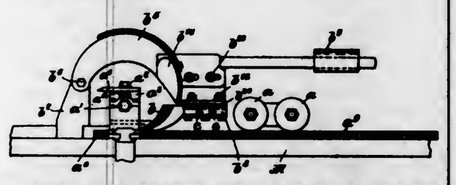
485,152. WRENCH. SIDNEY COOK, Pensacola, Fla., assignor to Arthur C. Simpson, same place. Filed Aug. 24, 1892. Serial No. 443,992. (No model.)



Claim.—1. In a wrench, the combination, with a stationary lever, a frame having a longitudinal transverse slot and a grasping-jaw formed in one piece, and a fulcrum-bolt working through a threaded perforation in the rear end of said frame, of a movable lever having a stop adapted to strike the edge of the frame, members extending from this lever, and a movable grasping-jaw pivotally connected at its base and upper end to the members of the movable lever by links and pivots, one of said pivots forming a bearing-block resting against the fulcrum-bolt, as described.

2. The combination, with the stationary lever 5, having the frame 6 and jaw 7 formed integral therewith, said frame having the slot 8, and the fulcrum-bolt 9, working in a threaded perforation in the rear portion of the frame and extending into the slot, of the movable lever 11, having the stop 12 and members 13 13, the jaw 16, having the members 15, the links 14 14, connecting the members 15 15 with the members 13 13 on a line with the slot 8, the pivots 17 and 18 for securing the links and members together, and the toggle-link 20, pivotally secured at the rear end between the ends of the members 13 13 and at its forward end in a recess in the upper end of the jaw 16, as and for the purpose described.

485,153. PRESSER FOOT OR BAR FOR MOLDING-MACHINES. FREDERICK L. CHESTERTON, Somerville, Mass. Filed Feb. 1, 1892. Serial No. 419,894. (No model.)



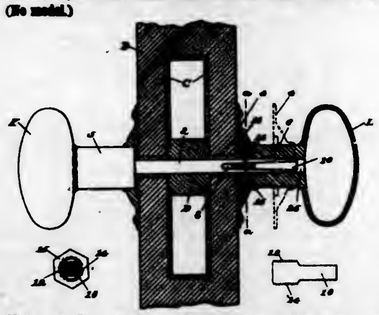
Claim.—1. In a molding-machine, a bed-plate and a rotary cutter-head supported thereon and provided with a plurality of knives arranged on the cutter-head to effect cuts of varying depths in the wood or material being acted upon, combined with a presser-foot carrier having a fixed or stationary position in a substantially-horizontal plane above the bed-plate with relation to the said cutter-head and a presser-foot composed of independent sections adjustable in a substantially-horizontal plane toward and away from the cutter-head independent of the said carrier, whereby a presser-foot section co-operating with the long knife on the cutter-head may be moved back away from the said cutter-head and a presser-foot section co-operating with a shorter knife on the cutter-head may be moved forward toward the cutter-head to expose the same surface of wood to be acted on by the different knives, substantially as described.

2. In a molding-machine, the combination, with a bed-plate and a rotary cutter-head supported thereon and provided with one or more knives, of a hollow presser-foot carrier secured above the bed-plate in a fixed position in a horizontal plane with relation to the cutter-head and a presser foot or bar composed of independent sections secured in said hollow carrier and each consisting of a main portion or member b and an arm b', extended rearwardly from the upper part of the member b in a substantially-horizontal plane and adjustable toward and from the cutter-head independent of the cutter-carrier.

3. In a molding-machine, the combination, with a bed-plate and a rotary cutter-head supported thereon and provided with one or more knives, of a lever b^5, pivoted above the bed-plate, a hollow presser-foot carrier secured to the said lever, and a presser foot or bar composed of independent sections consisting of a main portion or member b and an arm b', extended rearwardly from the member b and adjustably secured in the hollow presser-foot carrier, substantially as described.

4. The herein-described presser-foot section, consisting of the main portion or member b and the arm or member b', extended rearwardly in a substantially horizontal plane from the upper part of the member b.

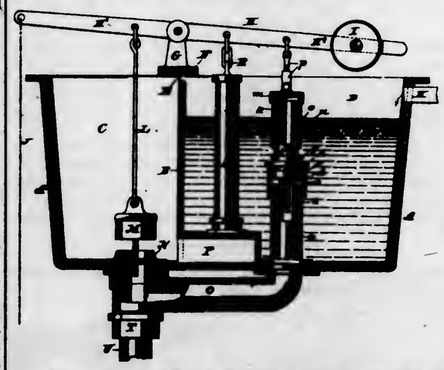
485,154. KNOB ATTACHMENT. CHARLES F. DOOLITTLE and CHARLES E. BRYANT, Hartford, Conn. Filed Feb. 16, 1892. Serial No. 421,676. (No model.)



Claim.—1. In a knob attachment, the combination, with the knob-stem and the wedge-receiving spindle, of the wedge within said spindle and stem and a wedge-actuating nut engaging the wedge and drawing against the stem, substantially as described.

2. In a knob attachment, the combination, with the knob-stem and with the knob-spindle slotted diagonally thereof, of the spindle-expanding wedge in the spindle-slot and threaded on the projecting angles thereof and a nut engaging the threaded angles of the wedge for drawing the same longitudinally of the spindle, substantially as described.

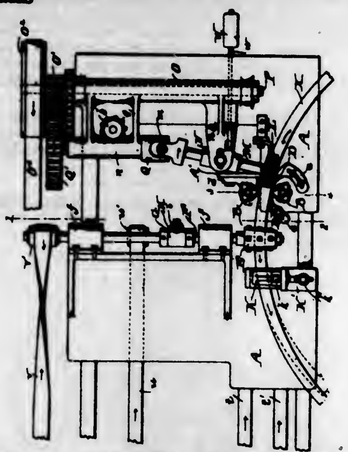
485,155. FLUSH-VALVE FOR WATER-CLOSETS. EDUARD HERRMANN, New York, N. Y., assignor to Cumsty & Adler, same place. Filed May 11, 1892. Serial No. 432,671. (No model.)



Claim.—1. The combination of tank A, having partition B and chambers C, P, and D, with the water-discharge pipe U, valve M thereon, branch pipe O, carrying upwardly-extending pipe a, shell k, valve g, loosely carried therein, whereby said valve g will not be seated until after the shell k and lever-arm attached thereto have regained their normal position, and valve-chamber S, having a valve mounted therein, substantially as herein shown and described.

2. The combination of the pipe a with the valve g, adapted to close its upper end, shell k, valve-stem j, adapted to slide therein, and lever H, attached thereto, all arranged so that the valve g will be unseated after the shell k has regained its normal position, substantially as herein shown and described.

485,156. MACHINE FOR TRIMMING WHEEL-RIMS. RUSSELL HOOPES, West Chester, Pa., assignor of one-half to Hoopes Bro. & Darlington, same place. Filed Apr. 27, 1892. Serial No. 430,905. (No model.)



Claim.—1. In a wood-working machine, the combination of a support for a carved piece of wood, feeding devices for feeding said wood, a rotating and movable cutter-head for trimming said wood, and guiding devices controlled by the wood to shift the cutter-head to insure the same portions of the cutter acting upon the wood irrespective of its variations in curvature.

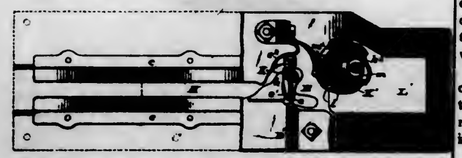
2. In a wood-working machine, the combination of a pair of vertical cutter-heads, a feed device arranged to feed a strip of wood between the cutters, a pair of horizontal cutter-heads having their cutting-edges arranged obliquely to each other and movable longitudinally upon their axes, a movable guide adapted to bear against the face of the wood first trimmed or planed, and connections between the guide and movable cutter-heads, whereby the latter move with the former.

3. In a wood-working machine, the combination of two longitudinally-movable rotary cutting-heads, between which the strip of wood to be trimmed is to be fed, and a movable guide-piece connected with said longitudinal movable rotary cutter-heads and held in contact with the strip of wood, so as to move therewith, whereby the cutting-heads are moved longitudinally by any variation of the curvature of the strip.

4. The combination of the longitudinally-movable rotary cutter-heads E E, having their cutting-edges arranged to make a tapering space between the adjacent cutters, the longitudinally-movable rod or guide I, adapted to rest against the wooden strip as it passes between the heads E E, a connection between the rod or guide I and the cutter-heads, and the spring J to press the end of the rod against the edge of the strip.

5. In a wood-working machine, the combination of the cutters E E, the longitudinally-movable shafts F F, carrying said cutters, the sleeves G G, sleeved in the shafts F F, the link H, connecting said sleeves, and the spring-pressed rod or guide I, carried by the link H and bearing against the wooden strip as it is fed between the cutters E E.

485,157. GRAIN-BINDER. ERWIN M. KELLOGG, Chicago, Ill. Filed Feb. 26, 1892. Serial No. 422,832. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, with the cord-knotter, of the crown-disk holder revolving upon an axis oblique to the axis of the knotter-spindle, so as to bring the inner side of the holder relatively higher than the outer side.

2. The combination, substantially as hereinbefore set forth, with the knotter and its spindle and with the cord-carrying arm, of the crown-disk holder mounted upon a spindle oblique to the knotter-spindle and flaring away from the tying-jaws, whereby the crown-disk is brought into a plane oblique to the line of the cord stretched between the knotter and the eye of the binder-arm when the latter has finished its encircling movement with the outer side of the disk farthest from that line and the inner side elevated toward the chin of the knotter, so that the cord-strands will be laid in the notch adjacent to said knotter.

3. The combination, substantially as hereinbefore set forth, of the tying-bill and its spindle, the clamping-shoe, and the crown-disk mounted at the foot of a spindle, which flares away from the knotter-spindle, so as to bring its head at a greater distance from the head of the knotter-spindle than is its foot from the foot of the latter, whereby the side of the crown-disk adjacent to the knotter is raised relatively to the other side.

4. The combination, substantially as hereinbefore set forth, of the tying-bill and its spindle, the binder-arm, the crown-disk mounted at the foot of a spindle which flares away from the foot of the tyer-spindle, and a clamping-shoe embracing the rim of the crown-disk on the side adjacent to the knotter, whereby the disk-holder is brought into inclination with the line of the cord between the tying-bill and the nose of the binder-arm when the latter has finished its encircling movement.

5. The combination, substantially as hereinbefore set forth, of the tying-bill, the crown-disk mounted upon the foot of a spindle which flares away from the foot of the knotter-spindle, the shoe embracing the rim of the crown-disk on the side adjacent to the knotter and the stationary knife bearing against the outer side of said shoe, whereby the cord is severed in the continued revolution of the crown-disk after the tying operation is completed.

6. The combination, substantially as hereinbefore set forth, with the tying-bill, of the crown-disk mounted upon a spindle that is set in a plane farther from the plane of movement of the binder-arm than is the knotter-spindle, the shoe embracing the rim of the crown-disk on the side adjacent to the knotter, and the stationary knife bearing against the outer side of said shoe between it and the knotter.

7. The combination, substantially as hereinbefore set forth, of the tying-bill, the crown-disk mounted upon the foot of a spindle that flares away from the foot of the knotter-spindle and is set in a plane farther from the plane of movement of the binder arm than is the knotter-spindle, the shoe saddling the rim of said disk on the side adjacent to the knotter, and the stationary knife between the holder and the knotter.

8. The combination, substantially as hereinbefore set forth, of the crown-disk, its spindle, the socketed bearing adjacent to said crown-disk, the shoe having a hub which sits into said socket and receives the spindle, and means for preventing the rotation of said shoe, whereby the shoe is secured by the disk and its spindle.

9. The combination, substantially as hereinbefore set forth, of the crown-disk, its spindle, the socketed bearing for said spindle adjacent to the crown-disk, the shoe having a hub fitting into said socket and receiving the spindle, and a dowel-pin passing through the hub and into a seat in the web, connecting the shoe and the hub.

10. The combination, substantially as hereinbefore set forth, of the crown-disk, its spindle, the socketed bearing for said spindle adjacent to the crown-disk, the shoe having a hub fitting in the socket in said bearing and receiving the spindle of the crown-disk, the coiled spring encircling the spindle above said bearing, and the adjusting-nut turning upon a screw-thread cut in said spindle beyond the spring, whereby the crown-disk, the spindle, and the shoe are all retained in position by said spring and nut.

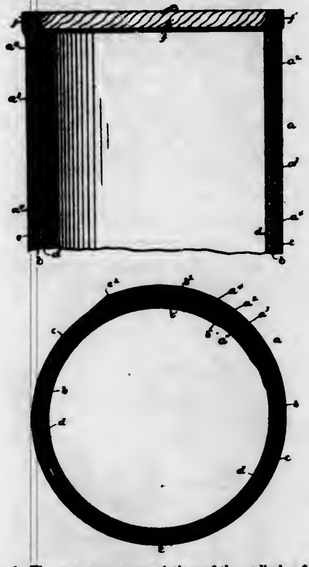
11. The combination, substantially as hereinbefore set forth, with a crown-disk holder, of a shoe saddling its notched rim and having the inner flap cut away in advance of the outer flap, whereby the flag ends of cord will be first released by the inner flap that they may be thrown to the exterior of the holder by the further clamping action of the outer flap.

12. The combination, substantially as hereinbefore set forth, of the tying-bill, the cord-holder, the slotted breast-plate, the ribs at each side of said slot beneath the breast-plate, formed with a curve, as set forth, practically concentric with the axis of the binder-arm, and the shoulder on the shank or stock of said binder-arm, arranged to sweep the slot along and in close proximity to said curved portion to push the second strand of the band before it.

13. The combination, substantially as hereinbefore set forth, with the knotter, crown-disk holder, and the holder-spindle, of a pinion fixed to the head of said spindle, and the cam-flange at the periphery of the tyer-cam, having the concentric reach *n*, whereby the pinion is held against revolution, and the spiral or outsetting reaches $n' n^2$, whereby said pinion is given two successive movements to operate the disk.

14. The combination, substantially as hereinbefore set forth, with the tying-bill, its pinion, the intermeshing teeth and delay-ledges upon the tyer-cam, whereby said bill is revolved to a position trending outwardly to form the knot and is then stopped and finally carried forward to its starting position and stopped, of the crown-disk holder, its shoe, the holder-spindle flaring outwardly from the foot of the knotter-spindle, the pinion upon the head of said holder-spindle, having double the number of interdental spaces that there are notches in the crown-disk, and the flange upon the periphery of the tyer-cam, engaging with the interdental spaces of said spindle and having a long delay-reach to hold said pinion and disk stationary while the knotter is at rest, an oblique reach to revolve said pinion one notch to clamp the cord at the time the knotter begins to revolve, and a second oblique reach to revolve said pinion another notch after the tying-bill has laid the knot to carry the strands against the stationary knife and sever them.

485,158. PAPER CAN. ALFREDUS T. OWENDENKEL, Chicago, Ill. Filed Dec. 15, 1891. Serial No. 415,112. (No model.)



Claim.—1. The can or case consisting of the cylinder formed of the continuous piece of paper wound upon itself and interleaved parafine-paper between the inner convolutions and the interleaved parchment-paper exterior to the convolutions between which the parafine-paper is placed, in combination with rigid heads or end pieces inserted in the ends of the cylinder and forming tight joints therewith, substantially as specified.

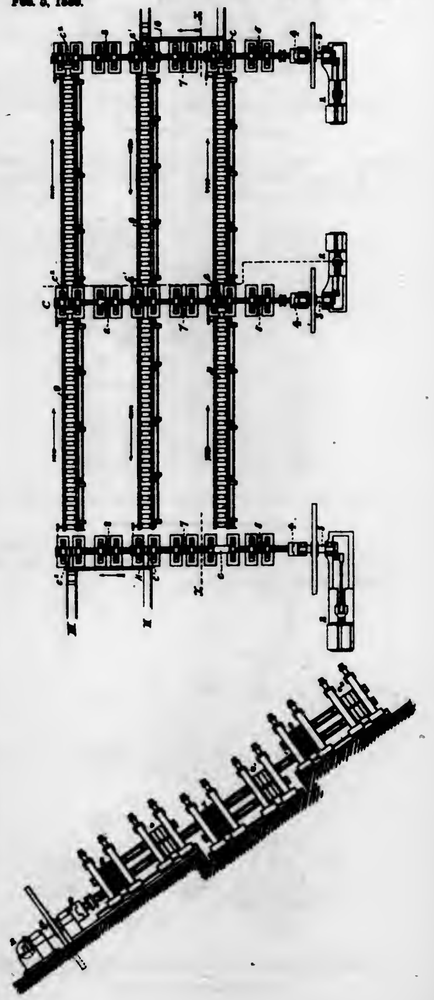
2. As an article of new manufacture, a paper can or case consisting of a cylindrical portion having the body or main portion *a* thereof formed of a piece of stiff paper wound in convolutions upon itself, the inner convolution *a'* being cemented for a distance to the next convolution a^2, the interposed enveloping convolution of parafine-paper *b*, and the parchment *c*, exterior to the parafine-paper and separated therefrom by a convolution of the said stiff paper, and a lining *b*, of parchment-paper, in combination with end pieces adapted to be inserted in said cylinder to close the same, substantially as specified.

3. The head or stopper *e*, parafined upon its under surface *e'*, in combination with the disk *f*, having its edge *f'* overlapping the rounded inner edge of said stopper, said stopper being inserted in the end of the cylinder and cemented at its outer edge directly to the inner edge of the cylinder, said outer edge of the stopper being slightly larger than the inner diameter of the cylinder to enlarge the same when inserted, as specified.

4. The cylinder adapted to form the sides of a can, said cylinder consisting of layers of stiff paper, in combination with a layer of parafined paper inclosed between the layers of stiff paper, said parafined paper being surrounded by a convolution of parchment-paper placed exterior thereto and separated therefrom by the stiff paper, substantially as specified.

REISSUES.

11,280. ROLLING-MILL PLANT. EDWARD L. CLARK, Pittsburg, Pa. Filed Sept. 3, 1891. Serial No. 404,684. Original No. 397,230, dated Feb. 5, 1889.



Claim.—In a rolling-mill plant, the combination of two or more lines of rolls, the laterally-adjacent sets of which are driven by common engines, intermediate feed-rollers, and laterally-acting transfer mechanism to transfer the metal from the end of one line of rolls to the next, substantially as and for the purposes described.

DESIGNS.

21,908. WALL-PAPER. CHARLES BOOER, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Sept. 29, 1892. Serial No. 447,329. Term of patent 3½ years.

Claim.—The design for wall-paper herein shown and described.

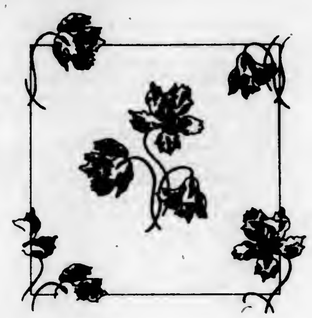
21,909. WALL-PAPER. CHARLES BOOER, Buffalo, N. Y. assignor to M. H. Birge & Sons, same place. Filed Sept. 29, 1892. Serial No. 447,330. Term of patent 3½ years.

Claim.—The design for wall-paper herein shown and described.

21,910. WALL-PAPER. CHARLES BOOER, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Sept. 29, 1892. Serial No. 447,331. Term of patent 3½ years.

Claim.—The design for wall-paper herein shown and described.

21,911. WALL-PAPER. CHARLES BOOER, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Sept. 29, 1892. Serial No. 447,332. Term of patent 3½ years.

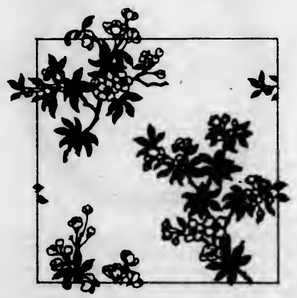


Claim.—The design for wall-paper herein shown and described.

21,912. WALL-PAPER. CHARLES BOOER, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Sept. 29, 1892. Serial No. 447,333. Term of patent 3½ years.

Claim.—The design for wall-paper herein shown and described.

21,913. WALL-PAPER. CHARLES BOOER, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Sept. 29, 1892. Serial No. 447,334. Term of patent 3½ years.

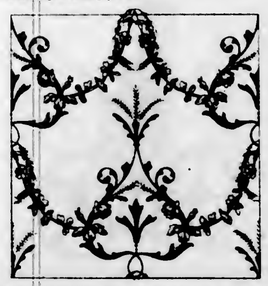


Claim.—The design for wall-paper herein shown and described.

21,914. WALL-PAPER. CHARLES BOOER, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Sept. 29, 1892. Serial No. 447,335. Term of patent 3½ years.

Claim.—The design for wall-paper herein shown and described.

21,915. WALL-PAPER. CHARLES BOOER, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Sept. 29, 1892. Serial No. 447,336. Term of patent 3½ years.

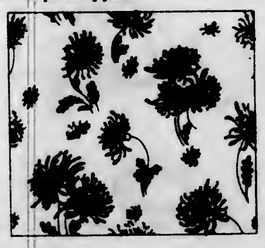


Claim.—The design for wall-paper herein shown and described.

21,916. WALL-PAPER. CHARLES BOOER, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Sept. 29, 1892. Serial No. 447,337. Term of patent 3½ years.

Claim.—The design for wall-paper herein shown and described.

21,917. WALL-PAPER. CHARLES BOOER, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Sept. 29, 1892. Serial No. 447,338. Term of patent 3½ years.



Claim.—The design for wall-paper herein shown and described.

21,918. GLOVE. JULIUS KAYSER, New York, N. Y. Filed July 27, 1892. Serial No. 441,419. Term of patent 7 years.

Claim.—The design for a glove, substantially as herein shown and described.

21,919. HANDLE FOR SPOONS, &c. ALBERT H. ULLRICH, Evanston, Ill. Filed May 23, 1892. Serial No. 434,801. Term of patent 7 years.

Claim.—The design for the handles of spoons, &c., substantially as herein shown and described.

21,920. SPOON. RUSSELL H. BLACK, Harper's Ferry, W. Va. Filed Aug. 30, 1892. Serial No. 444,592. Term of patent 3½ years.

Claim.—The design for spoons herein shown and described.

21,921. SUGAR-BOWL. HENRY BERRY, Shelton, Conn., assignor to the Derby Silver Company, same place. Filed Sept. 15, 1892. Serial No. 446,022. Term of patent 14 years.

Claim.—1. In the design for a sugar-bowl or other article, the design for the cover, substantially as shown and described.

2. The design for a sugar-bowl or other article, substantially as shown and described.

21,922. SUGAR-BOWL. HENRY BERRY, Shelton, Conn., assignor to the Derby Silver Company, same place. Filed Sept. 15, 1892. Serial No. 446,023. Term of patent 14 years.

Claim.—1. In the design for a sugar-bowl or other article, the design for the cover, substantially as shown and described.

2. The design for a sugar-bowl or other article, substantially as shown and described.

21,923. BOX-COVER. SAMUEL D. LEE, New York, N. Y. Filed Sept. 9, 1892. Serial No. 445,487. Term of patent 3½ years.

21,928.

Claim.—The design for a box-cover herein shown and described.

21,924. MATCH-BOX. SIMON ZEIS, New York, N. Y. Filed Aug. 31, 1892. Serial No. 444,705. Term of patent 7 years.

Claim.—The design for a match-box, substantially as shown and described.

21,925. PERFUMERY-HOLDER. JACOB MARKELL, Brooklyn, assignor to Herman Tappan, New York, N. Y. Filed Sept. 24, 1892. Serial No. 446,840. Term of patent 3½ years.

Claim.—The design for a perfumery-holder, as herein shown and described.

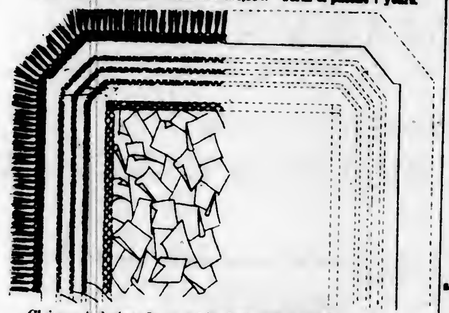
21,926. FINGER-RING. JOSEPH H. FISK, New York, N. Y. Filed Sept. 16, 1892. Serial No. 446,101. Term of patent 3½ years.

Claim.—The design for a finger-ring, substantially as herein shown and described.

21,927. BANNER. JOHN M. JOY, Waterbury, Conn. Filed Aug. 1, 1892. Serial No. 441,879. Term of patent 3½ years.

Claim.—The design for a banner, substantially as shown and described.

21,928. TABLE-CLOTH. FREDERICK S. FISHER, New York, N. Y. Filed Sept. 19, 1892. Serial No. 446,287. Term of patent 7 years.



Claim.—A design for a table-cloth, substantially as shown and described.

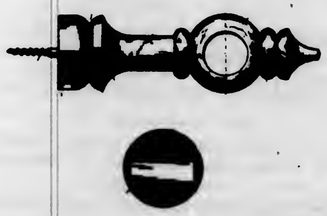
21,929. CURTAIN-ROLLER BRACKET. MARSHALL J. MATTHEWS, Ocean, N. Y. Filed Aug. 23, 1892. Serial No. 443,802. Term of patent 3½ years.

Claim.—A design for a curtain-roller bracket, substantially as herein shown and described.

21,930. CURTAIN-POLE BRACKET. CHARLES W. SMITH, Norwalk, Ohio. Filed Sept. 26, 1892. Serial No. 446,963. Term of patent 7 years.

Claim.—The design for a curtain-pole bracket, substantially as shown and described.

21,931. CURTAIN-POLE BRACKET. CHARLES W. SMITH, Norwalk, Ohio. Filed Sept. 26, 1892. Serial No. 446,964. Term of patent 7 years.



Claim.—The design for a curtain-pole bracket herein shown and described.

21,932. CURTAIN-POLE BRACKET. CHARLES W. SMITH, Norwalk, Ohio. Filed Sept. 26, 1892. Serial No. 446,965. Term of patent 7 years.

Claim.—The design for a curtain-pole bracket, substantially as shown and described.

21,933. VALVE FOR BASINS AND BATH-TUBS. WILLIAM H. GRAHAM, St. Louis, Mo., assignor to the H. O. Nelson Manufacturing Company, same place. Filed Mar. 1, 1892. Serial No. 423,429. Term of patent 14 years.

Claim.—The design for a valve for basins and bath-tubs, as herein described and shown.

21,934. FORK FOR POTATO-DIGGERS. HENRY O. PUTNAM, Sunfield, Mich., assignor of one-half to Stephen W. Perkins, same place. Filed Aug. 24, 1892. Serial No. 443,961. Term of patent 7 years.

Claim.—The design for a fork for potato-diggers, substantially as herein shown and described.

21,935. CARRIAGE-BODY. CHARLES H. PALMER, Jr., Amesbury, Mass. Filed June 27, 1892. Serial No. 438,213. Term of patent 7 years.

Claim.—The design for a carriage-body, substantially as described and shown.

TRADE-MARKS

REGISTERED OCTOBER 25, 1892.

21,887. PAINTER'S SMALT. Werner G. Smith, New York, N. Y. Filed Sept. 15, 1892.

ESTES'

Essential feature.—The word "Estes'." Used since September 15, 1847.

21,888. STRAIGHT PINS. The Plume & Atwood Manufacturing Company, Waterbury, Conn., and New York, N. Y. Filed Sept. 14, 1892.

COLUMBIA

Essential feature.—The word "Columbia." Used since September 1, 1892.

21,889. ITALIAN CLOTHS, MOHAIR SERGES, AND SIMILAR GOODS. J. W. Goddard & Sons, New York, N. Y. Filed Aug. 5, 1892.

Sable

Essential feature.—The word "Sable." Used since July 1, 1892.

21,890. CIGARS. The Silver State Cigar Company, Denver, Colo. Filed Sept. 3, 1892.

Essential feature.—The words "Brown Palace," and the representation of a palace. Used since June 1, 1892.

21,891. LUBRICATING-OIL FOR BICYCLES. Adam Cook's Sons, New York, N. Y. Filed Aug. 27, 1892.

Essential feature.—The representation of two winged wheels connected by a chain, and the word "Bicline." Used since July 1, 1892.

21,892. ELECTRO-CURATIVE APPARATUS. Electro-Liberation Company, Birmingham, Ala. Filed Nov. 16, 1889.

ELECTROPOISE

Essential feature.—The word "Electropoise." Used since May 1, 1888.

21,893. CIGARS. Charles Daehn, Milwaukee, Wis. Filed Sept. 29, 1892.

Essential feature.—The words "Juneau Bouquet." Used since August 20, 1892.

21,894. CIGARETTES. National Cigarette and Tobacco Company, New York, N. Y. Filed Sept. 22, 1892.

ADMIRAL

Essential feature.—The word "Admiral." Used since July 12, 1892.

21,895. PIANOS. Frederick G. Smith, New York, N. Y., Jersey City, N. J., Washington, D. C., Saratoga Springs, N. Y., Chicago, Ill., Brooklyn, N. Y., Philadelphia, Pa., and Kansas City, Mo. Filed Oct. 1, 1892.

Rogers Brothers.

Essential feature.—The name "Rogers Brothers." Used since August 1, 1889.

21,896. CIGARS. The Hollenden Hotel Company, Cleveland Ohio. Filed Sept. 26, 1892.

Hollenden

Essential feature.—The word "Hollenden." Used since November 15, 1890.

21,897. SEWING-MACHINES. The New York Sewing Machine and Manufacturing Company, Plattsburg, N. Y. Filed Sept. 24, 1892.

INCOMPARABLE

Essential feature.—The word "Incomparable." Used since August 26, 1891.

21,898. EARTHEN SANITARY PIPES. Henry Knowles, London, England. Filed July 22, 1892.

Essential feature.—The representation of a Maltese cross having the horizontal limbs longer than the vertical and containing the word "Paragon," with one additional letter "P" situated in the upper vertical limb and one in the lower vertical limb. Used since November 12, 1890.

21,899. METAL SPOONS, FORKS, KNIFE-HANDLES, AND THE LIKE. Ferdinand G. Lahy, Saranac Lake, N. Y. Filed Aug. 31, 1892.

Essential feature.—The word "Adirondack." Used since August 1, 1891.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

SIBBALD *v.* CASSIDY AND SMITH.

Decided October 15, 1892.

INTERFERENCE—ABANDONMENT—FACTS WHICH SAVE FROM.

Sibbald filed application for a patent in September, 1887, which passed to issue in October, 1888, and became abandoned in October, 1890. Meanwhile Cassidy and Smith filed an application in February, 1890, and took a patent in June, 1890. Sibbald filed his second application in January, 1891. The proofs established priority of conception for Sibbald, and while satisfactorily accounting for his delay on the score of poverty showed that he took steps to file his second application before the two years' limit had expired. *Held* the facts save Sibbald's case from abandonment and judgment of priority in his favor.

APPEAL from Examiners-in-Chief.

KNITTING-MACHINE STOP MECHANISM.

Application of Charles J. Sibbald filed January 21, 1891, No. 378,566. Application of James W. Cassidy and Edward M. Smith filed February 18, 1890; Patent No. 430,512, granted June 17, 1890.

Mr. M. D. Peck for Sibbald.

Mr. W. G. Henderson for Cassidy and Smith.

SIMONDS, *Commissioner:*

This is an appeal from a decision of the Examiners-in-Chief awarding priority of invention to Sibbald upon the following interference issue:

The combination, with a knitting mechanism, of a belt shipping device, a detector-rod adapted to travel to and fro in close proximity to the needles for the purpose specified, and suitable mechanism between the detector-rod and the belt-shipping device whereby the latter may be operated by the former, substantially as and for the purpose described.

The improvement involved is a stop-motion attachment for knitting-machines.

Cassidy and Smith do not claim to have had a conception of the invention in controversy until August, 1889.

Sibbald shows by eight or nine witnesses, the majority of whom were familiar with knitting machinery, that he used the improvement practically from the early part of 1887 to the early part of 1888, when he took it off the machine where it had thus been used because he was leaving that particular place of employment. He filed an application for patent upon this improvement September 22, 1887, which passed to issue October 27, 1888, and became abandoned October 27, 1890. Meanwhile Cassidy and Smith filed their application for patent February 18, 1890, and took their patent June 17, 1890. Sibbald filed his second application—the present application—January 21, 1891, and its drawings are a duplicate of the drawings used in his first application, already referred to.

It is contended on the part of Cassidy and Smith that the use of the improvement by Sibbald from the early part of 1887 to the early part of 1888 did not constitute a reduction to practice. Eight or nine witnesses, the majority of whom were familiar with the art, testify that it was a practical successful use. It had reached that degree of perfection in Sibbald's mind which induced him to file his application for a patent thereon September 22, 1887, and the drawings of Sibbald's present application are duplicates of those filed with his first application. The contention of Cassidy and Smith is based, practically, upon two points. One of these is that one Hornby attempted to reproduce Sibbald's improvement in another mill and failed to make it work practically. Being pressed as to why it did not work, he says it was because a certain bar was too light, and he also says that he never tried it again. That testimony is entitled to little weight. The second point made by Cassidy and Smith in this regard is that Sibbald's subsequent delay in prosecuting his application for patent and in taking steps for the commercial development of the invention are inconsistent with the idea that he had reduced to practice in 1887. The testimony upon which that reduction to practice rests is so strong that it can only be overcome by testimony or probabilities of most extraordinary weight. They do not exist in this case. Sibbald had no means aside from his daily wages. He had a family consisting of himself, his wife, and two children. There was sickness in the family. Their expenses were from seventy-five to eighty dollars a month. He had assigned a part of this invention to one Sheridan and had contracted a loan of $250 for the purpose of experimenting with this invention and taking out patent thereon upon Sheridan's promise to see the money repaid. Sheridan did not keep his promise, and Sibbald entered upon the repayment of the two hundred and fifty dollars by instalments. Meanwhile the application for patent had passed to issue, with claims which were not satisfactory to Sibbald. He knew that he had until October 27, 1890, in which to renew his application. In the month of October, 1890, and before the 27th he applied to Charles Cooper to help him, and Cooper undertook to do so. Cooper sent to Washington for a copy of Sibbald's drawings. Not satisfied with them,

he sent for a copy of the specification. Then satisfied, he entered into an arrangement with Sibbald, and the present application was filed January 21, 1891. Up to October 27, 1890, Sibbald had a right to renew his first application under the law. The interval between that date and the filing of his second application of January 21, 1891, was practically occupied by Cooper in making his investigations.

It is contended on the part of Cassidy and Smith that Sibbald knew of Cassidy and Smith's invention and that his second application was the outcome of this knowledge. Sibbald, Cassidy, and Smith were all working in neighboring mills. There is a probability amounting to a practical certainty that each knew, at least by hearsay, what the other was doing, and it helps Sibbald more than it does Cassidy and Smith, for Sibbald was first in the field.

It is also contended that if Sibbald did use the improvement, as he contends, from the early part of 1887 to the early part of 1888 abandonment and two years' public use have both intervened. It is held that neither of these contentions is well founded.

The decision of the Examiners-in-Chief is affirmed.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court of Appeals—Second Circuit.

EDISON ELECTRIC LIGHT COMPANY *v.* UNITED STATES ELECTRIC LIGHTING COMPANY.

Decided October 4, 1892.

1. PATENTS FOR INVENTIONS—ELECTRIC LAMP—SUBSTITUTION OF MATERIAL.
The substitution of a carbon filament for a platinum wire as the burner of an incandescent electric lamp in a peculiar lamp chamber involved invention, although pencils of carbon had before been used in other lamp chambers.

2. SAME—SUFFICIENCY OF SPECIFICATION.
The word "filament," used as descriptive of the size of the burner, is sufficiently definite in view of illustrations in the specification, and it is not necessary that its maximum and minimum dimensions should be specified, especially since defendant's burners indisputably lie wholly on one side of the dividing-line between rods and filaments.

3. SAME—PATENTABILITY—INFRINGEMENT.
The second claim of Letters Patent No. 223,898, issued to Thomas A. Edison, January 27, 1880, for an incandescent electric lamp consisting of a combination of carbon filaments with a receiver made entirely of glass, from which the air is exhausted, and conductors passing through the glass is valid, in view of the state of the art, and is infringed by defendant's lamps.

4. SAME—SUPPLEMENTING DESCRIPTION BY PRIOR ART.
The specification of a patent may be supplemented by processes of the prior art, although the precise results of such processes have since been discovered.

5. SAME—LIMITATION BY FOREIGN PATENT.
A prior Canadian patent issued for five years and extended for the further period of ten years should be regarded as having a continuous term for the entire period and as not limiting the United States patent to any shorter term.

6. SAME—SAME.
The Canadian patent act which provides that "When a foreign patent exists, the Canadian patent shall expire at the earliest date at which any foreign patent for the same invention expires" refers only to foreign patents which exist before the issue of the relevant Canadian patent.

7. SAME—LIMITATION ON FACE OF PATENT.
The failure to limit the patent on its face to a shorter term than seventeen years, so as to expire at the same time with the prior foreign patent having the shortest term, does not affect its validity.

8. SAME—CERTIFICATE OF CORRECTION BY COMMISSIONER.
The Commissioner of Patents has no jurisdiction to alter the patent by a certificate of correction, and such certificate is wholly void.

9. SAME—ABATEMENT BY DISSOLUTION OF COMPLAINANT.
Notwithstanding the merger of the complainant with another company into a new corporation, the law of the State of New York providing that pending suits shall not be deemed to have been abated or discontinued by reason of any such consolidation is effective to accomplish that end.

APPEAL from a decree of the Circuit Court, Southern District of New York, granting an injunction with accounting for profits and damages. The suit was originally brought on three patents: No. 223,898, dated January 27, 1880; No. 227,229, dated May 4, 1880, and No. 265,777, dated October 10, 1882.

By stipulation the bill was amended by withdrawing the last two patents. The cause came on for a hearing before Judge Wallace on pleadings and proofs, with the result above indicated, and defendant appealed. The facts are sufficiently indicated in the opinion.

Messrs. Eaton & Lewis, Mr. Clarence A. Seward, Mr. Grosvenor Lowry, and *Mr. Richard N. Dyer* for the complainant.

Messrs. Kerr & Curtis, Mr. Samuel A. Duncan, Mr. Frederic H. Betts, and Mr. Edmund Wetmore for the defendant.

Before LACOMBE and SHIPMAN, Judges.

LACOMBE, *J.*:

On January 27, 1880, under application filed November 4, 1879, Letters Patent No. 223,898 were issued to Thomas A. Edison, and by subsequent assignments passed to the complainant. The four claims of the patent are as follows:

1. An electric lamp for giving light by incandescence, consisting of a filament of carbon of high resistance, made as described, and secured to metallic wires, as set forth.
2. The combination of carbon filaments with a receiver made entirely of glass and conductors passing through the glass, and from which receiver the air is exhausted, for the purposes set forth.
3. A carbon filament or strip coiled and connected to electric conductors so that only a portion of the surface of such carbon conductors shall be exposed for radiating light, as set forth.
4. The method herein described of securing the platina contact-wires to the carbon filament and carbonizing of the whole in a closed chamber, substantially as set forth.

In the lamp made by defendant the carbon conductor is not coiled as indicated in the third claim, nor is it secured as indicated in the fourth, nor does complainant contend that either of these claims is infringed. The circuit court held that the first claim was by its phraseology limited to lamps in which (among other things) the leading-in wires are —

secured to the filament according to the method of the patent—that is, by cement carbonized *in situ*,

and that as defendant uses clamps for this purpose it does not infringe. This construction of the first claim has been acquiesced in by the complainant, which has not appealed from the decision. There remains for consideration only the second claim.

The defendant's burner is of carbon so small in cross-section that by the ordinary usage of common speech it may be fairly called a "filament." The re-

ceiver, which contains the burner, is made entirely of glass; the conductors, which connect with the burner, pass through the glass, and from the receiver the air is exhausted. Defendant contends, however, that the specifications of the patent and the prior state of the art require that this second claim be so limited in construction that defendant's apparatus will not fall within its terms, and that unless so limited such claim is directly anticipated or untenable as not involving patentable novelty.

Lamps devised to give light by means of the electric current are broadly divided into the two groups, arc and the incandescent. In the former two conductors or electrodes are so arranged that when in operation they are slightly separated with their axes in the same vertical line. The current leaps across the intervening space, tearing off and partially vaporizing particles from the opposed ends of the electrodes and developing heat and light in the ends of the electrodes and in the flying particles between them. In order to provide a current which shall be as effective as possible at the place where it develops light, not only the conductors, which bring it from the source of supply, but also the electrodes themselves, forming part of the conducting-circuit, are devised to present but small resistance to the passage of the current. The effective resistance begins when the break in the circuit is reached. In an incandescent lamp there is no break in the circuit, but there is introduced into it a piece of poorly-conducting material, which is so arranged that its resistance to the passage of the current will develop heat sufficient to bring it to a state of incandescence. The wires which conduct the current to the place where it is thus developed by resistance are so devised as to present but small resistance to its passage. The effective resistance begins where the piece of poorly-conducting material (the burner or illuminant) is placed, and the lamp expires when the burner is consumed, breaks, or wears away. The longer the life of the burner the longer the life of the lamp and the more available it becomes for practical electric lighting.

The selection of materials for the various part of the circuit thus formed, their manipulation, arrangement, and operation have for many years occupied the attention of experimenters, and the results of their labors made public from time to time, constitutes the state of the art of incandescent electric lighting.

The patent sets forth that—

the object of the invention is to produce electric lamps giving light by incandescence, which lamps shall have high resistance, so as to allow of the practical subdivision of the electric light.

By the phrase "subdivision of the electric light" is meant such a subdivision of the electric current that at several illuminating foci supplied from the same source of electricity there shall be developed lights of moderate intensity, comparable to those given out by ordinary gas-jets, and the problem to be solved required a system and apparatus which would admit of the development of these moderate lights in sufficient number and at so low a cost as to be commercially useful.

Prior to 1879 experimenters seemed to have reached the conclusion that success was to be attained, if at all, by modifications of the arc lamp; but up to that time no lamp—arc or incandescent—had been given to the public which with the means then existing for generating and distributing the electric current accomplished this result. Since the date of the patent in suit electric lighting by lights of moderate intensity has become a commercial success. Subsequent improvements in the lamps and in other parts of the system have undoubtedly contributed materially to its development; but the record abundantly shows that with lamps such as the patent describes, constructed with the skill then known to the art and operated under the conditions admitted by the generating and conducting apparatus then existing, it became practical for one generator to operate a considerable number of lamps located at reasonable distances from it, and which at the same time were economical, durable, and cheap enough to be commercially useful and so simple and reliable that they could be manipulated by the public. In view of the utter failure of the prior art to produce any such subdivision of the electric light, a lamp of this kind which was capable of economical use in factories, large buildings, and in smaller buildings contiguous to each other—in other words, available for isolated lighting—should be considered commercially successful though further development were needed to enable it to compete with gas for domestic lighting on even approximately-equal terms. What, then, was the contribution to this solution of the problem which Edison gave to the world by the patent in suit?

Commercial and domestic exigencies required that the lamps should be so arranged that each derived its power independently from a common source, and not through another lamp, so that they could be individually lighted or extinguished at will and the breaking down of a single lamp would not break the circuit. This is effected by what is called the "multiple-arc" arrangement, the wires leading to and from each light being so connected with the main conductors as to form a separate circuit for each light. In this arrangement no greater electro-motive force is required for a large number of translating devices than for a single one, the current being graduated to the number employed. The lower the resistance of each illuminating-conductor the greater the current it requires, and as their number is increased, their individual resistances remaining constant, the size of the main conductors must be likewise increased—an increase which in the prior art soon involved such an expense for main conductors as to preclude commercial success.

The amount of heat developed by the passage of an electric current is greater as the flow of the current is greater; it is also greater as the resistance of the conductor is greater, and all electric conductors vary in resistance directly as their lengths and inversely as their cross-sections. Conductors of different materials have also different specific resistances. The quantity of heat developed in a translating device is independent of—but the degree of heat (*i. e.*, the temperature) is dependent on—the extent of radiating-surface. In the lamp shown in the patent these laws are availed of, the ratios of resistance of the burner to the resistance of the entire circuit and to its own radiating-surface

being so graduated that a light of the required intensity is produced by the expenditure of so small an amount of current at each illuminant focus as to admit of main conductors sufficiently small, and therefore sufficiently low-priced to warrant the introduction of the system into public use.

It is not necessary to enter into any elaborate discussion of the prior state of the art so far as it bears upon the question of the patentable novelty of such embodiment of the principle of high resistance and small radiating-surface. Irrespective of all patents or publications of others, the philosophy of this method of producing light is undoubtedly found stated clearly and sufficiently and applied to the production of an incandescent platinum burner in Edison's French patent No. 130,910, taken out May 28, 1879. Whether under section 4887 of the Revised Statutes that patent, embodying, as it does, his own invention, is or is not, so far as Edison is concerned, a part of the prior art, and to what extent, in view of the prior art, that patent discloses patentable invention need not be determined upon this appeal, inasmuch as we are satisfied that there was invention in the substitution of the carbon of the patent in suit for the platinum of the French patent, even though all knowledge as to what should be the ratio of resistance to radiating-surface were pointed out, either in the French patent or elsewhere in the art.

As stated above, conductors of different materials have different specific resistances. Without going into details, it may be stated that among the metals platinum (including its alloys) is the only one which seems to have given promise of success for incandescent-lamp burners. With a method of preparation intended to remedy some of its defects it is the material of the French patent, although the first claim of that patent is generally for a continuous metallic conductor. The specific resistance of platinum is sufficiently high to admit of its being raised to incandescence by the electric current. When so raised it is not consumed in the presence of oxygen, but is fusible at a temperature slightly higher than that at which it becomes incandescent. To produce light it has to be maintained so near the melting-point that a slight fluctuation of the current above the normal strength destroys it, and a large part of the French patent is devoted to the description of methods and a complicated apparatus called the "thermal regulator," intended to regulate the current so as to avoid any such raising of the temperature.

In his invention, as described in the French patent, Edison departed from the existing idea of burners of low resistance, declared the commercial and scientific necessity of burners of high resistance, although they must be slender and presumably fragile, and attempted to find a method of protecting them from the effects of heat and of the atmosphere. It is said that the theretofore-known laws of electricity should have taught every one that an electrical incandescent lamp must have a burner of small cross-section and small radiating-surface. The electrical laws had been known and had been recognized, but they did not tell how to protect the materials which would make efficient burners from the destructive effect of other forces than electricity to which they must be subjected. In other words, they did not tell how to construct a lamp. Edison, in his French specification, followed the principle of high resistance to an extreme, made platinum burners with a resistance of two hundred to three hundred ohms, and described the method by which they were to be prevented from speedy deterioration, "by destroying or intercepting the atmospheric action." He freed them from occluded gases by subjecting them to a high degree of electrical heat in a vacuum and subsequently sealed them also in a vacuum. The platinum lamp, however, did not achieve success.

Inasmuch as carbon has a specific resistance from two or four hundred times that of platinum, (hard dense carbon having a lower resistance than porous carbon,) is practically infusible, had been long before suggested as a translating device and used as such in many of the lamps devised by the prior art, it might be supposed that when one skilled in that art was seeking a substitute for the platinum wire—something which would, by reason of high resistance and small radiating-surface, apply the philosophy disclosed in the French patent and yet admit of operation at higher temperature without melting—he would have turned to carbon.

But the record in this case clearly establishes the converse of that proposition. Carbon when exposed to the air at a temperature sufficient to produce incandescence undergoes combustion. To remedy this difficulty, earlier inventors suggested inclosing the carbon burner in a glass globe from which air and moisture were to be excluded. Their globes were separable to allow of replacement of interior parts. We do not find in the words "suitably sealed," used in the King patent (British, 1845, No. 10,919) to describe a modification of his lamp for use under water, sufficient warrant for the contention that its structure was to be so radically changed as to substitute a light and compact all-glass globe with irremovable burner for the cumbrous apparatus with its column of mercury which he describes in detail. Neither the inclosing chamber of Crookes nor the Geissler tubes—though, being all of glass with wires sealed in, they would not leak—were used by the prior art to protect incandescent burners. By reason, in part, of that mode of construction—with separable chambers—the vacua which the earlier experimenters sought to secure could not be maintained. Though subsequent improvements in exhaust-pumps might give their apparatus a higher initial vacuum, it would rapidly disappear in the leaking globe. It was against the oxygen or other carbon-consuming gases that all prior inventors sought to protect the burner, and later inventors tried to accomplish the result by filling the chamber with nitrogen or some other gas which was inert—*i. e.*, did not combine with the carbon. The carbons themselves were also subjected to processes for making them harder and more tenacious, and series of carbons were arranged to be brought into operation successively without opening the chamber. But one and all of these devices failed to secure stability in the carbon. A deterioration, variously described as a "disintegration," a "wearing away," a

"kind of evaporation," was soon fatal to the life of the burner. The record abundantly established the proposition that, so far from turning to carbon for his burner, which was to have so high a ratio of resistance to radiating-surface, one skilled in the art would have been led by the teachings of that art to suppose that its instability would prove fatal to its use, irrespective of the size of the burner. Especially is it true that the use of small carbons in the attenuated or filamentary form, which Edison had indicated in the platinum patent, would not have been thought of. Nor do we find in the suggestions of Lane-Fox, either in his patents (British Nos. 3,988, 4,043, 4,626, of 1878, and 1,122 of 1879) or his other publications, any such appreciation of the cause of the disintegration of carbon or any such proposed method of preventing it as would controvert the conclusion that the art was looking elsewhere than to carbon for the burner which should have a future. Certainly Lane-Fox himself seems to have looked for success rather to his metallic alloys and his compounds operated in nitrogen or other suitable gases than to carbon in a perfect vacuum. The literature of the art fully sustains the statement of Mr. Schwendler, quoted in the *Telegraphic Journal* in 1879, that "we can scarcely expect that the principle of incandescence will be made use of for practical illumination" unless there be discovered a conductor without the defects of platinum and "which does not combine at high temperature with oxygen."

In June, 1878, and January, 1879, (U. S. Patents Nos. 205,144 and 211,262,) Sawyer and Man indicated one of the causes which operated to produce this disintegration of the carbon—viz., that "some oxygen or other element or compounds remain in the lamp," the carbon "occluding sufficient air or oxygen to render its consumption a mere question of time," as "the least quantity of oxygen in a sealed lamp is sufficient to combust an indefinite quantity of carbon." This they sought to remedy by heating the carbon pencils, immersed in a hydrocarbon liquid, to an extremely-high temperature, thus producing a hard and dense carbon, (and one whose specific resistance was lowered by that very process.) They also, while the globe was on the pump and nitrogen flowing in and out of it, heated the "carbon to incandescence, thus driving out all the impurities and occluded gases, which are carried out of the lamp by the current of nitrogen." Believing that the deterioration of the carbon burner was due to the presence of occluded oxygen which escaped into the sealed chamber and promoted "combustion," they sought to secure stability by substituting for the oxygen they had forced out by heating on the pump an atmosphere of nitrogen; that done, they sealed their chamber, which seems to have been a separable one.

Edison had experimented with carbon before he devised the platinum lamp of his French patent. Subsequently to the date of that patent, apparently because that lamp did not seem to promise the success he hoped for, he again turned to carbon. In the course of his investigations he made a discovery as to the cause of "disintegration," of which he availed himself to devise a lamp in which carbon, even in the filamentary form required for a burner whose ratio of resistance to radiating-surface was such as to apply the philosophy pointed out in his French patent, could be maintained for a sufficient length of time to become a commercial success.

At the date of the application for the French patent he had apparently reached only the point that—

pencils (not filaments) of carbon can also be freed from air in this manner and be brought to such a temperature that the carbon becomes pasty, and if it is then allowed to cool it is very homogeneous and hard.

The knowledge that practical stability could be given to a carbon filament was not gained until October, 1879.

The patent in suit sets forth that theretofore—

light by incandescence has been obtained from rods of carbon of one to four ohms resistance, placed in closed vessels, in which the atmospheric air has been replaced by gases that do not combine chemically with the carbon.

The vessel holding the burner has been composed of glass cemented to a metallic base, [or, as the evidence in this case shows, sometimes to a glass base.] * * * The leading-wires have always been large, so that their resistance shall be many times less than the burner, and, in general, the attempts of previous persons have been to reduce the resistance of the carbon rod. The disadvantages of following this practice are that a lamp having but one to four ohms resistance cannot be worked in great numbers in multiple arc without the employment of main conductors of enormous dimensions; that, owing to the low resistance of the lamp, the leading-wires must be of large dimensions and good conductors, and a glass globe cannot be kept tight at the place where the wires pass in and are cemented; hence the carbon is consumed, because there must be almost a perfect vacuum to render the carbon stable, especially when such carbon is small in mass and high in electrical resistance.

The use of a gas in the receiver at the atmospheric pressure, although not attacking the carbon, serves to destroy it in time by "air-washing," or the attrition produced by the rapid passage of the air over the slightly-coherent highly-heated surface of the carbon. I have reversed this practice. I have discovered that even a cotton thread properly carbonized and placed in a sealed glass bulb exhausted to one-millionth of an atmosphere offers from one hundred to five hundred ohms resistance to the passage of the current, and that it is absolutely stable at very high temperatures. * * * [Here follow further statements as to other carbon substances and their manipulation.] * * * By using the carbon wire of such high resistance I am enabled to use fine platinum wires for leading-wires, as they will have a small resistance compared to the burner, and hence will not heat or crack the sealed vacuum-bulb. * * * [The burner being placed on the glass holder,] a glass bulb [is] blown over the whole with a leading-tube for exhaustion by a mercury-pump. This tube, when a high vacuum has been reached, is hermetically sealed * * * The invention consists of a light-giving body of carbon wire or sheets coiled or arranged in such a manner as to offer great resistance to the passage of the electric current, and at the same time present but a slight surface from which radiation can take place. The invention further consists in placing such burner of great resistance in a nearly-perfect vacuum, to prevent oxidation and injury to the conductor by the atmosphere. The current is conducted into the vacuum-bulb through platina wires sealed into the glass

Edison's invention was practically made when he ascertained the heretofore-unknown fact that carbon would stand high temperature, even when very attenuated, if operated in a high vacuum, without the phenomenon of disintegration. This fact he utilized by the means which he has described—a lamp having a filamentary-carbon burner in a nearly-perfect vacuum.

Although all-glass globes with leading-wires passing through the glass and sealed into it had been used before to preserve the condition of the interior of a chamber from the effects of leakage at the joints, and although the prior art, including the French patent, indicated that subdivision of the electric light was to be obtained by the use of burners of high resistance and small radiating-surface, and although pencils of carbon had been tried in imperfect vacua—and found wanting—it was invention, in view of the teachings of the art, as to disintegration of carbon under the action of an electric current, to still select that substance as a suitable material from which to construct a burner much more attenuated than had ever been used before—reduced in size to the filamentary form, in which economy of construction requires that it

must be used in order to avail of the philosophy of high resistance and small radiating-surface—and so to combine old elements that the disintegration due to "air-washing" should be practically eliminated, and the burner thus become commercially stable. It is true that carbon burners still break down; that the improvements neither of Edison nor of other inventors have made them absolutely stable, and in a sense it may be said that Edison only made them more stable than they were before—that is, a mere matter of degree. But the degree of difference between the carbons that lasted one hour and carbons that lasted hundreds of hours seems to have been precisely the difference between failure and success, and the combination which first achieved the result "long desired, sometimes sought, and never before attained" is a patentable invention.

It is also true that the combination and manipulation which secured a practically-perfect vacuum by heating the burner while the exhaust-pump was at work, and subsequently sealing the globe without introducing a foreign gas, is set out by Edison in his French patent as a means of effecting such a change in the condition of platinum as would permit of its being raised to higher temperatures without rupture, cracking, or diminution of weight by volatilization; but the evidence shows that the platinum lamp did not achieve success, and we think there was manifest invention in the substitution of carbon freed from occluded gases and placed in a nearly-perfect vacuum. The change of material involved a reorganization of the lamp, dispensing with the thermal regulator which was an essential part of the structure of the French patent; it developed new properties in the lamp by reason of the enormous differences between the resistances and the melting-points of the two materials; it utilized the discovery of that cause (air-washing) of the instability of carbon which seemed to preclude all hope of its future usefulness as an incandescent illuminant; finally, and principally, by the substitution there was presented the complete combination of elements which for the first time in the art produced a practical electric light. We are of the opinion that on principle and under the authorities such a substitution of material is invention.

Experts called for the defendant have testified that such change of material involved no invention, because the use as a substitute for platinum of carbon of any size operated in a vacuum would be obvious to one skilled in the art. To this proposition we cannot assent. Sawyer and Man were skilled in the art; but even after they had learned how to force out the occluded gases and withdraw them from the lamp-chamber they turned away from the vacuum, thus ready to their hands, feeling, no doubt, that they were following the teachings of the art in seeking stability by the use, not of a vacuum, but of a nitrogen atmosphere. Edison was skilled in the art; but after he had the nearly-perfect vacuum of the French patent, secured against leaking by the all-glass globe of Geissler and Crookes, it was only after months of patient and persistent experiment that he found in the substitution for his platinum of a filament of carbon the success he had long sought for but not till then attained.

The second claim of the patent is broad enough in its phraseology to cover the invention above set forth—at least when the burner is a carbon filament. This last word is not specifically defined in the patent, though it therein appears for the first time in the art. It was a common English word with a meaning sufficiently plain to indicate that the cross-section of any article which it was used to qualify must be so small as to be thread-like, and we think a sufficient indication of what that size is would be afforded by an examination of the ordinary threads in common use. An examination of the patent, however, indicates its dimensions with more exactness. It is to be fragile, so small in cross-section that, compared with earlier carbon rods, its use is a "reversal" of former practice. One of the substances suggested in the patent to be used as a burner is to be reduced to .007 of an inch in diameter. Ordinary cotton thread, also suggested in the patent, has varying diameters, the largest in common use being one sixty-fourth of an inch in diameter. The Patent Office model has a diameter of about one sixty-sixth of an inch. The evidence fails to satisfy us that the prior art furnished any burners less than twice this size. In contradistinction to these earlier burners, Edison called his burner a "filament." The term is apt and we do not think he was required to specify, by thousandths of an inch, its precise maximum and minimum. Surely no one could doubt that burners nearly approaching in size the examples of his filament shown in the patent would be filaments, nor that burners nearly approaching in size the earlier rod-burners would be rods. The defendant's burners are smaller in cross-section than the cotton thread or the Patent Office model and indisputably lie wholly on one side of the dividing-line between rods and filaments, which, therefore, for the purposes of this suit need be no more closely defined. The carbons which defendant operates in a high vacuum, in all-glass chambers with platinum wires sealed in, and which by such method are not exposed to air-washing, and are thus rendered practically stable, are filamentary in size, and therefore filaments within the meaning of the second claim, unless that word is to be qualified as defendant suggests. That it is to be so qualified by importing into it a "coiling" of the burner is unwarranted in view of the fact that the patent refers to both coiled and uncoiled threads, and the third claim specifically covers the coiled form. The first claim is the comprehensive one, intended to include, and by its use of the words "made as described," in fact, including the principal invention, as the draftsman understood it—to wit, the burner, which was to subdivide the electric light by its ratio of resistance to radiating-surface—and also the subsidiary inventions (1) of coiling, when desired, either as effecting that ratio or as a protection against flickering, (2) of securing the burner to the wires, and (3) of providing a place for its operation—to wit, the exhausted all-glass globe—which would insure practical stability. To cover each of these inventions, a separate specific claim is made, and the second claim seems clearly intended to cover the combination of parts which secures the stability of the burner, irrespective of the fact whether it is coiled or uncoiled, is clamped

to the leading-in wires, or secured by the plastic combination of the fourth claim, is made out of one or other of the varieties of carbon mentioned in the patent, or even out of some other known variety not mentioned therein; irrespective, also, of the fact whether its resistance is higher or lower, except so far as its filamental character and its designed function would determine the measure of that resistance.

This conclusion seems plainly indicated by the peculiar phraseology of the claim. It is for "the combination of carbon filaments with a receiver made entirely of glass, &c., and from which the air is exhausted for the purposes set forth"—that is, for the purpose of preventing the disintegration of the burner resulting from air-washing. All the experts and all the counsel agree that the words "carbon filaments" should be read "a carbon filament," because the combination of the patent contemplated only the incandescence of a single filament in each lamp. This is quite correct; but the words thus altered found their place in the claim through no mere clerical error. Inapt though they may be to describe the individual concrete combinations which were to be protected against infringement, they are illuminative of the efforts of the draftsman to secure his exhausted all-glass receivers in combination with carbon filaments of all kinds, and he used the plural, omitting the phrases "of high resistance" and "made as described," used in the first claim, in order to make sure that he should not, as to this second claim, be confined by construction to any one variety of filament. For this reason the further limitation which defendant seeks to read into this claim—viz., that the filament must be one of high specific resistance, or of at least 100 ohms resistance—cannot be accepted.

The second claim may be thus paraphrased:

The combination of carbon filamentary or thread-like in size and properly carbonized, used as an illuminant in an incandescent electric lamp, with a receiver made entirely of glass and conductors passing through the glass, and from which receivers the air is exhausted to such an extent that disintegration of the carbon due to the air-washing action of surrounding gases or to any other cause is so far reduced as to leave the carbon practically stable.

Defendant's lamps are plainly infringements of the second claim as thus construed.

Defendant further contends that the patent is invalid because it does not so describe the lamps as to enable a person skilled in the art at the date of the patent to make a practically-useful structure. The evidence of the witness Howell seems to us a conclusive answer to this contention. He made, as he testifies, according to the directions of the patent and using only processes known to the art before its date, incandescent lamps such as the patent describes, which lasted 600 hours. Defendant criticises this evidence, because the witness subjected the filaments made by him to the action of the electric current during the process of exhaustion; but the patent repeatedly directs that the vacuum shall be high and nearly perfect. Sawyer and Man had prior to the date of the patent shown that there were occluded in the carbon itself and in the various internal parts of lamp-chambers gases and impurities which are set free by the passage of the current. Manifestly if they were not removed before sealing the nearly-perfect vacuum would soon disappear. Edison's French patent also details a process for forcing them out of platinum and removing them while exhausting is going on. A person who was sufficiently skilled in the art to know of these earlier publications and was carefully solicitous to conform to the directions of the patent would naturally have resorted, as Howell did, to this method to secure a vacuum free, so far as might be, from the intrusion of such occluded gases. It is contended, however, that this process of "electric heating on the pumps" in effect produces a carbonization of the filament; that it is now used as a part of the process of carbonization, and that, therefore, because the patent simply directs that the filament be "properly carbonized," because electrical heating is now used with the understood object of supplementing the work of the carbonizing-furnace, because Edison has always thus heated his filaments, and because such additional carbonization is necessary to make a practical lamp under his patent—therefore he has either purposely suppressed an essential element of his process or has failed to give the full, clear, and exact description of it which the statute calls for. To this proposition we cannot assent. It is immaterial that the philosophy of electric heating on the pumps is better understood to-day than it was in 1879, so long as the requirements of the patent would not be complied with by one skilled in the art, unless he did, in fact, so heat the filaments. Whether he heated to carbonize or to secure a nearly-perfect vacuum, the result would be the same—an operative lamp produced by following the directions of the patent with the ordinary skill of the art, and that is all the patentee was required to show.

The other defenses interposed by defendant may be more briefly noticed.

The patent in suit was issued January 27, 1880. A patent for the same invention was issued in Canada November 17, 1879, No. 10,654, the term of which expressed on its face was five years; but the Canadian statute gave to the owner of the patent the right to an extension at his option, on the payment of a required fee, for the further period of ten years. On May 4, 1883, the owner paid the fee required, and on October 30, 1883, obtained a certificate of extension.

In *Bate Refrigerating Co.* v. *Hammond* (46 O. G., 689; 129 U. S., 164) it was held that, so far as the term of a Canadian patent thus extended under the Canadian statute operated to curtail the term of a United States patent under section 4887, United States Revised Statutes, it should be regarded as a continuous term for the entire period. It appears, however, that on March 5, 1880, a patent for the same invention was granted in Sweden, the grantee of which subsequently failed to prove, as required by the law of that country, that the invention was "being constantly practiced within the kingdom." Thereupon on March 5, 1883, the Swedish patent-right was lost and forfeited. Defendant contends that in consequence the Canadian patent expired on the same day, March 5, 1883; or, if it continued till the expiration of the first five years expressed on its face—viz., November 17, 1884—it could

not by the payment of fees or the certificate of the Canadian Commissioner of Patents be extended for the additional ten years. For that reason defendant contends that the case at bar is distinguishable from *Bate Refrigerating Co.* v. *Hammond*, and that the patent in suit expired with the Canadian patent, either on March 5, 1883, or on November 17, 1884, prior to the beginning of this action.

The Canadian statute provides as follows:

An inventor shall not be entitled to a patent for his invention if a patent therefor in any other country shall have been in existence in such country more than twelve months prior to the application for such patent in Canada; and if during such twelve months any person shall have commenced to manufacture in Canada the article for which such patent is afterwards obtained such person shall continue to have the right to manufacture and sell such article notwithstanding such patent; and under any circumstances, when a foreign patent exists, the Canadian patent shall expire at the earliest date at which any foreign patent for the same invention expires.

The soundness of the defendant's contention depends on the meaning under Canadian law of the phrase "when a foreign patent exists" as used in this statute. If that phrase is confined to foreign patents which exist before the relevent Canadian patent is issued, the loss and forfeiture of the Swedish patent-right in no way affected the Canadian patent to Edison. The meaning of this phrase has not been declared by the Canadian courts; but a careful examination of the evidence given by the Canadian lawyers who have testified as to its practical construction by the Canadian Government and have given their professional opinions as to its meaning in Canadian law satisfies us that it is there used as covering only foreign patents which exist before the issue of the relevent Canadian patent. We are of opinion, therefore, that neither directly (*Pohl* v. *Anchor Co.*, 49 O. G., 1695; 134 U. S., 381) nor indirectly through the Canadian patent is the patent in suit affected by what happened to the Swedish patent.

The failure to limit the patent in suit on its face to a shorter term than seventeen years, so as to expire at the same time with the prior foreign patent having the shortest term, does not affect its validity. (*Bate Refrigerating Co.* v. *Hammond*, 46 O. G., 689; 129 U. S., 151.) Nor do we think that validity is in any way affected by the attempted certificate of correction. The patent as originally issued being in every respect a regularly-executed document, and the statute providing for no subsequent alteration thereof by the Patent Office (except in cases of reissue, which this is not,) the action of the Commissioner in indorsing it with an attempted "correction" was without jurisdiction and wholly void; and in the absence of any provision of law contemplating the surrender of an original patent by the grantee or holder (except for reissue) we cannot find in the request to have such unauthorized correction made, any reason for holding that the patent was by that act surrendered.

It is further urged by the defendant that the suit abated on December 31, 1886, by reason of the dissolution of the complainant consequent upon its merger at the date named in the corporation "Edison Electric Light Company." Except for the statute of the State of New York permitting consolidation, the original companies could not have thus merged themselves into a new corporation. The State, which thus provided for the consolidation of the creatures of its own creation, undoubtedly had the power to regulate the manner of that consolidation and the extent to which the functions inherent in their former life should be thereby suspended or destroyed. Among those functions was the conducting of suits, actions, and proceedings in courts of justice. The right to appear as a party litigant was one which the corporation or artificial person obtained by the act of the State which created it, and it certainly has never been contended that because that creation was under State law such artificial person could not be a party litigant in federal courts. When the State undertook to regulate the matter of consolidation and the extent to which it should terminate the life of the artificial persons it had created, by destroying their functions, it expressly provided (Laws of New York, chap. 367 of 1884, sec. 6) that—

no suit, action, or proceeding then pending before any court or tribunal, in which any corporation that may be so consolidated is a party, or in which any such stockholder is a party, shall be deemed to have abated or been discontinued by reason of any such consolidation; but the same may be prosecuted to final judgment in the same manner as if the said corporations had not entered into the said agreement of consolidation; or the said new corporation may be substituted, etc.

The State by this act expressly avoided interfering with the continued exercise of the artificial person's functions as a litigant in cases when such functions were already in use. Therefore, being properly a party litigant in this suit before consolidation, it would remain so afterward, not because the State statute is operative to regulate the practice and procedure of Federal courts in equity suits, but because, so far as the litigant life of the artificial person—properly a party to the suit when brought—is concerned, there has been no change, the only power which could destroy it having scrupulously refrained from doing so. As by the consolidation all the property and rights of the old company were transferred to and invested in the new (Consolidation act, *supra*, sec. 5) and the new company succeeded to all the obligations and liabilities of the old one, the fruits of any recovery belong to the new company, and the provisions of an adverse judgment can be enforced only against it. The survival for purposes of pending suits is therefore merely nominal; but that is no anomaly provisions of law allowing personal representatives to continue suits in the name of the original party after his death are common.

Nor do we find any bar to the maintenance of this suit in the provisions of section 4889, United States Revised Statutes, that—

every patent or interest therein shall be assignable in law by an instrument in writing.

Whether the bare legal title to the patent in suit passed with all beneficial interest in the patent by the consolidation to the new company, or whether some instrument in writing must still be executed to make such transfer complete, (the life of the old company continuing sufficiently to consummate the devolution which the Consolidation act provided for,) (see *Edison Electric Light Co.* v. *New Haven Electric Co.*, 35 Fed. Rep., 236,) the new company would have the right to continue under the name of the old one the pending litigation to enforce rights, which are in fact its own, with the same force and effect as if it were itself complainant. We do not find in the various contracts introduced in evidence sufficient warrant for holding that the complainant was—

without such interest in the subject of the controversy as to enable it to maintain the bill in its own name without joining other parties—

nor do the facts make out such a case that injunction should be refused on any theory of laches or equitable estoppel by reason of undue delay in bringing suit or acquiescence in known infringements.

The decree of the circuit court is therefore affirmed, with costs.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 61.—No. 5. TUESDAY, NOVEMBER 1, 1892. PRICE—$5 per year.

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Convention between the United States and Denmark for the Reciprocal Protection of Trade-Marks and Trade-Labels.

Concluded at Copenhagen June 15, 1892.
Ratification advised by the Senate July 21, 1892.
Ratified by the President of the United States July 29, 1892.
Ratified by the King of Denmark September 23, 1892.
Ratifications exchanged at Copenhagen September 28, 1892.
Proclaimed October 12, 1892.

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA.

A PROCLAMATION.

Whereas a Convention between the United States of America and the Kingdom of Denmark for the reciprocal protection of Trade-Marks and Trade-Labels was signed by their respective Plenipotentiaries at the City of Copenhagen on the fifteenth day of June, one thousand eight hundred and ninety-two, the original of which Convention, being in the English and Danish languages, is word for word as follows:

CONVENTION.

With a view to secure for the manufacturers in the United States of America, and those in Denmark, the reciprocal protection of their Trade-Marks and Trade-Labels, the Undersigned, duly authorised to that effect, have agreed on the following dispositions.

ARTICLE I. The subjects or citizens of each of the High Contracting Parties shall in the Dominions and Possessions of the other have the same rights as belong to native subjects or citizens, in everything relating to Trade-Marks and Trade-Labels of every kind.

Provided, always, that in the United States the subjects of Denmark, and in Denmark, the citizens of the United States of America, cannot enjoy these rights to a greater extent or for a longer period of time than in their native country.

ART. II. Any person in either country desiring protection of his Trade-Mark in the Dominions of the other must fulfil the formalities required by the law of the latter; but no person, being a subject or citizen of one of the contracting States, shall be entitled to claim protection in the other by virtue of the provisions of this convention, unless he shall have first secured protection in his own country in accordance with the laws thereof.

ART. III. This arrangement shall go into effect immediately on or after the exchange of the ratifications and shall be in force until a year after it has been recalled by the one or the other of the two High Parties.

ART. IV. The present convention shall be ratified by the President of the United States of America by and with the advice and consent of the Senate thereof and by His Majesty the King of Denmark, and the ratifications shall be exchanged at Copenhagen as soon as may be within ten months from the date hereof.

In witness whereof the Undersigned have signed the present convention and have affixed thereto the seal of their arms.

Done at Copenhagen in double expedition the 15 June, 1892.

CLARK E. CARR. [L. S.]
REEDTZ THOTT. [L. S.]

And whereas the said Convention has been duly ratified on both parts, and the ratifications of the two Governments were exchanged in the City of Copenhagen, on the twenty-eighth day of September, one thousand eight hundred and ninety-two;

Now, therefore, be it known that I, BENJAMIN HARRISON, President of the United States of America, have caused the said Convention to be made public to the end that the same and every article and clause thereof may be observed and fulfilled with good faith by the United States and the citizens thereof.

In witness whereof, I have hereunto set my hand and caused the seal of the United States to be affixed.

Done at the City of Washington, this 12th day of October, in the year of our Lord one thousand eight hundred and [SEAL.] ninety-two and of the Independence of the United States the one hundred and seventeenth.

BENJ. HARRISON.

By the President:
JOHN W. FOSTER,
Secretary of State.

Protection of Foreign Exhibitors.

To the Diplomatic and Consular Officers of the United States:

GENTLEMEN: I subjoin a transcript of the act of Congress approved April 6, 1892, Public No. 29, entitled "An act to protect foreign exhibitors from prosecution for exhibiting wares protected by American patents and trade-marks," which reads as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That no citizen of any other country shall be held liable for the infringement of any patent granted by the United States, or of any trade-mark or label registered in the United States, where the act complained of is or shall be performed in connection with the exhibition of any article or thing at the World's Columbian Exposition at Chicago.

You will transmit copies of this circular to the government of the country to which you are accredited, and ask that it be given the widest possible circulation for the information of those directly concerned.

I am, gentlemen, your obedient servant,

JOHN W. FOSTER,
Secretary of State.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., August 4, 1892.

Official copy to the Commissioner of Patents for his information and guidance.

E. M. DAWSON,
Chief Clerk.

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Issue of November 1, 1892.

Patents	440	No. 485,159 to No. 485,598, inclusive.
Designs	23	No. 21,936 to No. 21,957, inclusive.
Trade-Marks	31	No. 21,900 to No. 21,930, inclusive.
Labels	None.	
Reissue	1	No. 11,281.
Total issue	494	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	3	...	Nevada	...	...
Arizona Territory	...	1	New Hampshire	...	1
Arkansas	4	...	New Jersey	11	1
California	15	...	New Mexico Territ'y	1	...
Colorado	4	...	New York	71	13
Connecticut	8	...	North Carolina	...	...
Delaware	1	...	North Dakota	...	...
District of Columbia	4	...	Ohio	32	...
Florida	1	...	Oregon	3	...
Georgia	3	...	Pennsylvania	48	2
Idaho	...	...	Rhode Island	3	...
Illinois	45	...	South Carolina	1	...
Indian Territory	...	...	South Dakota	...	1
Indiana	8	1	Tennessee	7	...
Iowa	7	...	Texas	7	...
Kansas	2	...	Utah Territory	...	...
Kentucky	6	...	Vermont	...	...
Louisiana	2	...	Virginia	4	...
Maine	3	...	Washington	1	...
Maryland	3	...	West Virginia	2	...
Massachusetts	46	2	Wisconsin	10	...
Michigan	20	...	Wyoming	...	...
Minnesota	7	...	U. S Army	...	...
Mississippi	1	...	U. S. Navy	...	...
Missouri	21	1			
Montana	2	...	Total to citizens of the United States	420	23
Nebraska	3	...			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	...	...	Mexico	...	...
Austria-Hungary	2	...	Netherlands	...	...
Belgium	...	...	Newfoundland	...	...
Bermuda	...	...	New South Wales	...	...
Brazil	...	...	New Zealand	...	...
Canada	5	...	Norway	...	...
Chile, Republic of	...	...	Portugal	...	...
Cuba	...	...	Russia	...	...
Denmark	...	...	Scotland	...	...
Ecuador	...	...	South Australia	...	...
England	16	5	Spain	1	...
France	3	2	Sweden	3	...
Germany	13	...	Switzerland	...	1
India	...	...	Victoria	...	...
Ireland	...	...			
Italy	...	...	Total to citizens of foreign countries	43	8
Japan	...	...			

APPLICATIONS UNDER EXAMINATION.

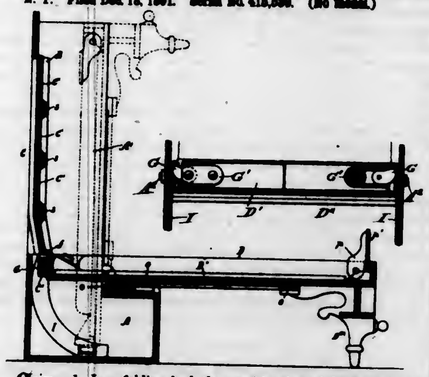
Condition at Close of Business October 25, 1892.

Division No.	Subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended.	No. of applications awaiting action.
	Between one and two months in arrears.			
31	Gas, Painting, Leather, Tanning, Alcohol, Oils, Fats, and Glue, etc.	Sept. 23	Oct. 17	98
11	Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting.	Aug. 27	Oct. 13	260
16	Telegraphy, Telephony, Electric Lighting and Signaling.	Aug. 25	Oct 13	209
14	Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, etc.	Aug. 26	Oct. 10	140
8	Furniture, Toilet, Umbrellas and Canes, etc.	Aug. 27	Oct. 8	252
21	Textiles, etc.	Sept. 1	Oct. 6	172
12	Mechanical Engineering, Stores-Service, etc.	Aug. 26	Sept. 29	198
10	Carriages and Wagons and Railway-Cars.	Aug. 31	Sept. 24	409
30	Lamps, Gas-Fittings, Type-Writers, Matrix-Making Machines.	Aug. 25	Sept. 24	175
20	Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc.	Aug. 25	Sept. 24	273
24	Sewing-Machines and Apparel	Aug. 30	Sept. 14	109
6	Chemistry, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc.	Aug. 25	Sept. 12	346
1	Tillage and Fences	Aug. 25	Sept. 9	252
5	Fine Arts, Stationery, Book-Binding, Music, etc.	Sept. 1	Sept. 1	249
27	Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	Aug. 26	Sept. 1	247
15	Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc.	Aug. 27	Aug. 25	268
	Between two and three months in arrears.			
25	Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, etc.	Aug. 20	Oct. 14	169
23	Instruments of Precision, Acoustics, Optics, etc.	Aug. 24	Oct. 1	217
32	Advertising, Baggage, Packing and Storing Vessels, etc.	Aug. 11	Oct. 1	268
9	Hydraulics, Fire-Extinguishers, etc.	Aug. 19	Sept. 21	460
4	Civil Engineering, etc.	Aug. 2	Sept. 15	360
3	Metallurgy, Metal Founding, Forging, Rolling, Coating, Annealing and Tempering, etc.	Aug. 19	Sept. 10	222
18	Steam-Engineering, etc	Aug. 18	Sept. 5	211
19	Stoves and Furnaces	July 27	Aug. 26	403
22	Fire-Arms, Navigation, Signals, etc.	Aug. 12	Aug. 24	239
	Between three and four months in arrears.			
7	Harvesters, Games and Toys	July 18	Sept. 19	585
2	Farm Stock, Products, etc	July 1	Sept. 15	808
	Between four and five months in arrears.			
13	Metal-Working, Arms and Projectiles, etc.	June 6	Oct. 17	251
29	Wood-Working Machines, Carpentry, Coopering and Roofing, etc.	June 1	Oct. 4	425
17	Paper-Manufactures and Printing.	June 24	Sept. 1	249
26	Pneumatics, Refrigeration, Air and Gas Engines, etc.	June 6	Aug. 1	519
	Between five and six months in arrears.			
28	Electricity, Generation, Distribution, etc.	Apr. 29	Sept. 15	538
	Total number of applications awaiting action			8,961
	Under one month in arrears.			
	Designs	Oct. 20	Oct. 20	23
	Trade-Marks	Oct. 12	Oct. 12	69

PATENTS

GRANTED NOVEMBER 1, 1892.

485,159. FOLDING BEDSTEAD. OSCAR ALEXANDER, New York, N. Y. Filed Dec. 18, 1891. Serial No. 415,599. (No model.)



Claim.—1. In a folding bed, the combination of the head-frame, the bed-bottom hinged thereto, the friction-cams pivoted to the bed-bottom at its sides to swing transversely to the bottom, and the friction-surfaces firmly attached to the sides of the base of the head-frame opposite the cams for engaging therewith, said cams and friction-surfaces co-operating to retard and thereby regulate the motion of the bed-bottom when it is unfolded, substantially as herein described.

2. In a folding bed, the combination of the head-frame, the bed-bottom hinged thereto and formed of two hinged sections divided longitudinally, the mirror-frame upon the outside of the bed-bottom with cross-pieces removably secured to the sections of the bottom, the foot-board hinged to the bed-bottom and formed of hinged sections, which are divided in the line of the sections of the bottom, the sliding back hinged to the bed-bottom and formed of hinged sections divided horizontally, and the vertical guideways for said back on the head-frame, the whole adapted for use substantially as herein described, for the purpose set forth.

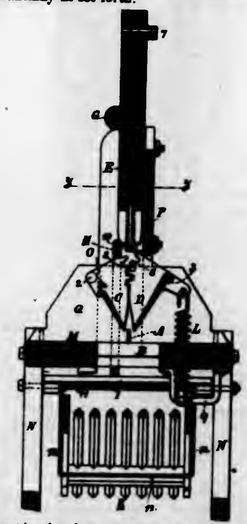
485,160. POTATO-CUTTER. LEWIS A. ASPINWALL, Three Rivers, assignor to the Aspinwall Manufacturing Company, Jackson, Mich. Filed May 24, 1892. Serial No. 434,162. (No model.)

Claim.—1. The combination, in a potato-cutter, of a longitudinal knife having its cutting-edge upwardly with a series of transverse knives crossing below the same and having their upward cutting-edges at the same level and at increasing inclinations from the center, so that the opening through which the potato-sections pass will be as wide near the backs of the knives as at their edges, a hopper for guiding the potatoes to the knives, and a vertical plunger passing between the knives, substantially as set forth.

2. The combination, in a potato-cutter, of a table, transverse knives received at their ends into recesses in the table, a longitudinal cutter, hopper-jaws pivoted near their upper edges and having interlocking gear-segments, a spring to press the lower edges of the jaws toward each other, a plunger and handle for moving the same, and vertical slideways for supporting the plunger, substantially as set forth.

3. The combination, with the handle and plunger having a slotted lower end forming fingers, of vertical slideways for the plunger, a table and frame for supporting the same, stationary hopper ends, hopper-jaws pivoted between the stationary ends, a spring to press the lower edges of the jaws toward each other, a longitudinal knife and transverse knives, and a screen below the table for receiving the cut potato-sections, substantially as set forth.

4. The combination, in a potato-cutter, with the stationary knives, of a movable plunger slotted at its lower end to form fingers, hopper-jaws having rounded ends and interlocking gear-segments, and a spring to press the lower edges of the jaws toward each other, the upper edge of the front jaw being removed to facilitate the insertion of the potato, substantially as set forth.



5. The combination, in a potato-cutter, with the stationary knives and movable plunger, of a yielding hopper into which the potato is passed and a stop for the end of the potato to determine the position of the same in relation to the stationary knives, substantially as set forth.

6. The combination, in a potato-cutter, of a hopper, longitudinal and transverse knives, a plunger slotted at its lower end to form fingers for pressing the potato against and between the cutting-knives, an inclined screen upon which the potato-sections fall, and an agitating device receiving its motion from the plunger for shaking the screen, substantially as set forth.

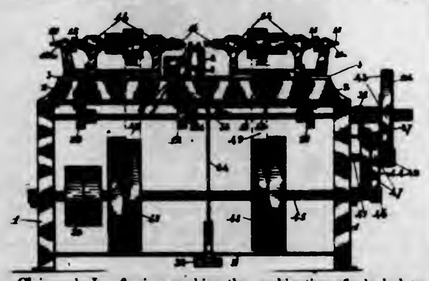
485,161. SOLDERING-TOOL. ERWIN L. BARNES, Chicago, Ill. Filed Jan. 30, 1892. Serial No. 419,762. (No model.)

Claim.—1. In a self-heating soldering-tool, the combination of a tubular shell P, a soldering-point having its heel centrally recessed and fitted within the shell, a fuel-reservoir adjusted to the opposite end of the shell, a solid annular diaphragm adapted to fit within the tubular shell and having an arm extending toward the reservoir and inclined to the central line of the shell, said diaphragm having a passage through it from a point on its arm adjacent to the side of the shell to a point adjacent to the remote side of the diaphragm and returning through the arm and opening in both directions substantially upon the median line of the shell, a tube leading from the reservoir

to the side opening of said passage, a needle-valve adapted to close the two central openings, and a burner-tube having both ends open and fitted within the central orifice of the diaphragm, substantially as described.

2. The combination, with a self-heating soldering-tool, of a vapor-burner, a fuel-reservoir, and a service-pipe leading from the reservoir to the burner, said pipe being extended into the interior of the reservoir and having openings at its end and also at its side within the reservoir, substantially as described.

485,162. FRAMING-MACHINE. ALEXANDER A. BARTHELME, Toronto, Canada. Filed Dec. 24, 1891. Serial No. 416,095. (No model.)

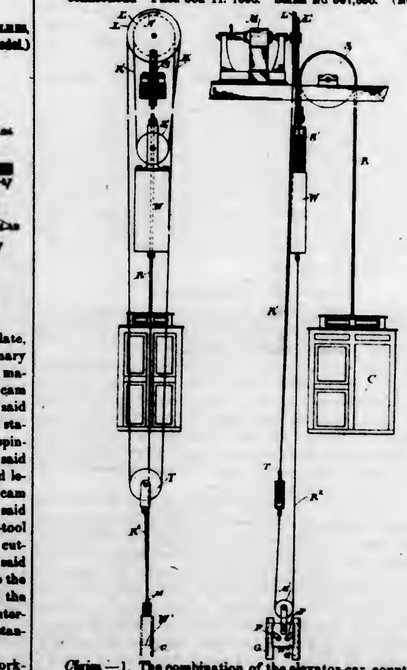


Claim.—1. In a framing-machine, the combination of a bed-plate, a vise mounted upon said bed-plate, said vise comprising a stationary jaw and a movable jaw, a lever pivoted to the framework of the machine and engaging with the movable jaw, a counter-shaft, a cam mounted upon the counter-shaft and engaging with said lever, said cam and lever arranged to move the movable jaw toward the stationary jaw to engage with the work in the vise, cutting-tools, spindles upon which the cutting-tools are mounted, means for rotating said spindles and cutting-tools, a lever connected to said spindles, said lever pivotally connected to the framework of the machine, a cam mounted upon a counter-shaft, engaging with the second lever, said second lever and cam adapted to move the spindle and cutting-tool toward the work in the vise, means for moving the spindle and cutting-tool back again, a main shaft, a power transmission between said main shaft and said counter-shaft, and a dog pivotally connected to the framework of the machine, said dog engaging with the cam on the counter-shaft, said dog and cam adapted to throw the said counter-shaft into and out of engagement with the driving-power, substantially as described.

2. In a framing-machine, the combination of a bed-plate, a work-rest mounted thereon, said work-rest consisting of a stationary jaw, a movable jaw, cutter-heads adapted to be moved longitudinally into engagement with the work in the rest and out again, mechanism for moving said cutter-heads, mechanism for transmitting to said cutter-heads a rotary motion, a counter-shaft journaled in the framework of the machine, a cam mounted on said counter-shaft, a pivoted lever, one end of which engages with said cam and the other end with said movable jaw, a second cam mounted on said counter-shaft, a second pivoted lever, one end of which engages with said cam and the other end with said cutter-head, the engagement of said second lever with said second cam and cutter-head moving said cutter-head longitudinally into engagement with the work in the rest, a friction-clutch mounted on said counter-shaft, a shaft on which is mounted pulleys for transmitting a rotary motion to the said cutter-heads, a spindle intermediate between the said shaft and said counter-shaft, reduction-pulleys mounted on said shaft and on said spindle, motion transmitted to said spindle from said shaft, reduction-pulleys mounted on said counter-shaft and on said spindle, and a dog and cam to throw said counter-shaft into and out of engagement, substantially as described.

3. In a framing-machine, the combination of a suitable bed-plate, a work-rest mounted thereon, consisting of a stationary jaw and a movable jaw, cutter-heads adapted to move longitudinally into engagement with the work in the rest, mechanism for transmitting to said cutter-heads a rotary motion, a spindle mounted in suitable bearings in the framework of the machine, a cam mounted on said spindle, a pivoted lever one end of which engages with said cam and the other end with said movable jaw, a second cam mounted on said spindle, and a second pivoted lever one end of which engages with said cam and the other with said cutter-head, the engagement of said levers with said cam and cutter-head moving said cutter-head longitudinally into engagement with the work in the rest, a friction-clutch mounted on said spindle, a counter-shaft on which is mounted the pulleys for transmitting a rotary motion to said cutter-heads, a spindle intermediate between said counter-shaft and first-mentioned spindle, reduction-pulleys mounted on said counter-shaft and on said second-mentioned spindle, motion transmitted to said second spindle from said counter-shaft, reduction-pulleys mounted on said first and second spindles, and mechanism mounted on said first-mentioned spindle for permitting the disengagement of the said friction-clutches when said spindle has completed its revolution, substantially as described.

485,163. GEARING FOR ELEVATORS. NORMAN C. RABBETT, Lynn, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Oct. 11, 1890. Serial No. 367,836. (No model.)



Claim.—1. The combination of the elevator-car, counter-weight, slow-running sheave, and cable passing around the sheave and attached to the car and weight, whereby the main portion of the total load divides into two portions balanced upon and carried by said sheave, with a motor, a fast-running differential drum driven thereby, and a rope power-transmitting mechanism driven by the drums and communicating a slow speed to the car, whereby only the unbalanced portion of the total load is brought upon the drum, substantially as described.

2. The combination of a cable passed around a sheave at the upper end of the hatchway and the car and counter-weight attached to the opposite ends of the said cable, with a motor, a differential drum operated by said motor, and rope power-transmitting mechanism driven by said drum and furnishing means for positively moving the said car and weight in either direction.

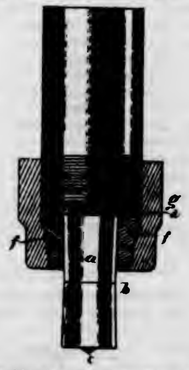
3. The combination, with an elevator-car and counter-weight attached to the opposite ends of a cable passed around a slow-running sheave, as described, of a motor, a differential drum operated by said motor and driving a rope power-transmitting device connected with the counter-weight for moving the car and weight, for the purpose set forth.

4. The combination, with an elevator-car and counter-weight attached to the opposite ends of a supporting-cable, as described, of a motor and a differential rope power-transmitting device having two connections with the counter-weight, and thereby furnishing means for moving the said weight and car positively in either direction, as described.

5. The combination, with an elevator-car and counter-weight suspended by a cable from a sheave journaled at the upper end of the hatchway, of an electric motor, differential drums driven thereby, the traveling pulleys, and an endless rope passing around said drums and pulleys, as described, and thereby furnishing means for moving the said car and weight in either direction.

6. The combination, with an elevator-car, counter-weight, slow-running sheave, and cable passing around said sheave and attached to the car and counter-weight, of a motor and intermediate rope power-transmitting connections adapted to overcome the resistance of the unbalanced portion of the load, and a take-up device for keeping the connections taut, consisting of a weight provided with a pawl, and a rack with which said pawl engages, as described.

485,164. PUNCH. ALONZO A. RAUBENHEIMER and JESSE B. HARTING, Roanoke, Va. Filed Mar. 4, 1892. Serial No. 423,696. (No model.)



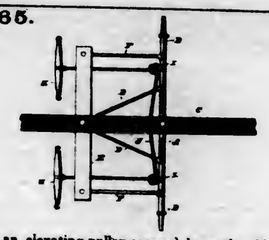
Claim.—1. In combination with the tapering shank of a tool, a series of tapering segmental grippers adapted to surround the shank and a base-plate upon which the shank and grippers rest, substantially as described.

2. In combination with the tapering shank of a tool, a series of tapering segmental grippers adapted to surround the shank, a base-plate upon which the shank and grippers seat, and a screw-threaded holder adapted to force the grippers upon the shank, substantially as described.

485,165. ATTACHMENT FOR CULTIVATORS. ZINA A. BOSSERD, Marysville, Ohio. Filed Nov. 14, 1891. Serial No. 411,874. (No model.)

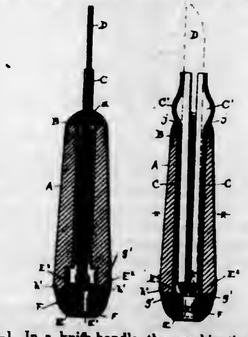
Claim.—In an attachment for cultivators, the combination, with the arch-axle and draft-frame and the forwardly-extending tongue secured to the top and center of said arch, of a cross-beam fixedly secured to said tongue at right angles thereto, rearwardly-extending brace-rods secured to the opposite ends of said cross-beam and the axles to hold the beam rigid, V-shaped swinging supporting and retaining ropes pivotally connected at their upper ends to each end of said cross-beam and adapted to swing only in a straight line without

485,165.



lateral play, an elevating-pulley secured beneath said tongue at its point of connection with the arch, opposite guide and draft pulleys rigidly connected with said axles at an angle pointing to the central elevating-pulley, a draft rope or chain passing evenly over said central and the lower opposite guide and draft pulleys and loosely passing through and resting in the depending apices of said swinging loops, which readily swing and yield to the uneven tendencies of the draft, and singletrees connected to the ends of said draft rope or chain outside of said loops, substantially as set forth.

485,166. KNIFE-HANDLE. JOHN H. BARRETT, Worcester, Mass. Filed July 5, 1888. Serial No. 279,151. (No model.)



Claim.—1. In a knife-handle, the combination, with a pair of grooved jaws for holding a blade, of a screw connected with said jaws and an actuating-nut on said screw, by which the screw and connected jaws are given a longitudinal movement in the handle, said screw having an opening lengthwise the screw to allow the blade to pass through, substantially as described.

2. In a knife-handle, the combination, with a knife and a shell forming the body of the handle, of a pair of jaws having inclined sides by which the jaws are pressed against the edges of the blade, a screw having an interior chamber, and a slot opening into said chamber, the end wall of said interior chamber being conical, and said jaws and said screw being connected by means of the ends of said jaws entering the inner chamber in said screw and being expanded so as to rest against the conical end wall of said inner chamber, whereby the inner ends of said jaws are carried toward each other as they are moved lengthwise the handle, and an actuating-nut on said screw and acting against the end of the shell, substantially as described.

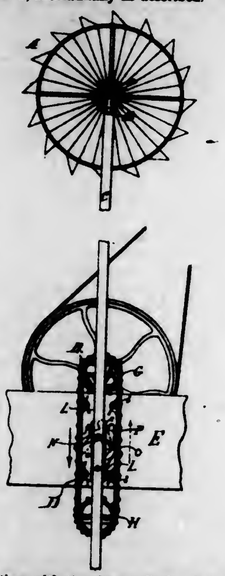
3. In a knife-handle, the combination, with a knife, of a pair of jaws having the bent tips *h h* and shoulders C^2 C^2, a screw slotted to receive the tips *h h*, and an actuating-nut by which said screw and connected jaws are drawn lengthwise the handle, and a shell A, forming the handle, substantially as described.

485,167. POWER-TRANSMITTER. JOSEPH M. BURGOLD, Canton, Ohio. Filed Jan. 30, 1892. Serial No. 419,799. (No model.)

Claim.—1. The combination, with the pitman C, the detent-bar secured thereto, and the detents N and O, pivoted to said detent-bar, of the chain-frame D, the adjustable box E' in said chain-frame, the sprocket-wheel G, journaled in said adjustable box, the sprocket-wheel H, journaled on a post extending from the chain-frame, and the link chain L, trained over the sprocket-wheels G and H, substantially as described.

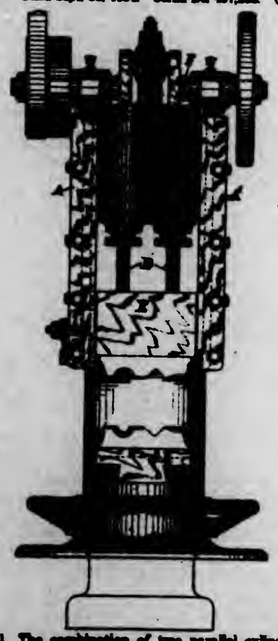
2. The combination, with the pitman C, the chain-frame D, the sprocket-wheel H, the adjustable sprocket-wheel G, and the link chain L, of the detent-bar M, secured to the pitman C, the detent N, pivoted to the pitman C and having the counter-balance P, the de-

tent O, pivoted to the pitman C, the stop *f* for the pitman N, and the stop *g* for the pitman O, substantially as described.



3. The combination, with the pitman C, the chain-frame D, and the sprocket-wheel H, of the adjustable box F in said chain-frame, the sprocket-wheel G, journaled therein, the link chain L, trained over the sprocket-wheels G H, the detent-bar M, secured to the pitman C, the counterbalanced detent N, and the detent O, pivoted to the detent-bar M and extending from opposite sides thereof, and the stops *f* and *g* for said detents, substantially as described.

485,168. POWER-HAMMER. FREDERICK C. BECCHBANK, Cleveland, Ohio. Filed Sept. 30, 1891. Serial No. 407,262. (No model.)

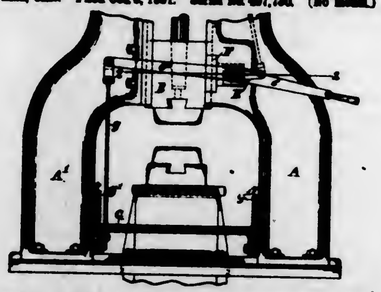


Claim.—1. The combination of two parallel cylinders having open ports connecting them at both ends, a piston in each cylinder, a hammer-head, and a piston-rod connecting each piston with the hammer-head, substantially as and for the purpose specified.

2. The combination, in a pneumatic hammer, of two rigidly-connected parallel cylinders having open ports connecting them at both ends, means for imparting to said cylinders a reciprocating movement, a piston movable in each cylinder, a hammer-head, and a piston-rod connecting each piston with said hammer-head, substantially as and for the purpose specified.

3. The combination, in a pneumatic hammer, of two rigidly-connected parallel cylinders having open ports connecting them at both ends and having each an inlet-port in its upper end, which unite to form a single port, a check-valve for closing said port, an inlet-port in the lower end of each cylinder, which ports unite to form a single port, a check-valve for closing said port, a suitable outlet-port in each cylinder, which unite to form a single port, and a suitable valve whereby said port may be opened and closed by mechanism outside of said cylinders, substantially as and for the purpose specified.

485,169. POWER-HAMMER. FREDERICK C. BECCHBANK, Cleveland, Ohio. Filed Oct. 5, 1891. Serial No. 407,720. (No model.)

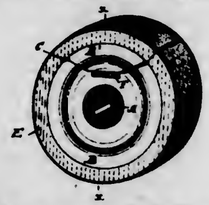


Claim.—1. In a power-hammer, the combination of the standards, reciprocating tup, and a friction brake-block set into one of said standards at the side of the tup with a rectangular pressure-piece set into the standard behind said brake-block and having an eccentrically-placed cylindrical orifice, a rock-shaft journaled in said standards, and an eccentric secured thereto passing through said orifice, substantially as and for the purpose specified.

2. The combination of a reciprocating part, its guides, and a friction brake-block bearing against said part with a square pressure-piece having a transverse cylindrical orifice placed at unequal distances from all four sides, a rock-shaft, and an eccentric secured to said rock-shaft and passing through said orifice, substantially as and for the purpose specified.

3. The combination of a reciprocating part, its guides, and a friction brake-block bearing against said part with a rectangular pressure-piece bearing against the rear side of said brake-block and having a cylindrical orifice set at unequal distances from all four sides, a rock-shaft, and an eccentric secured to said rock-shaft and passing through said orifice, substantially as and for the purpose specified.

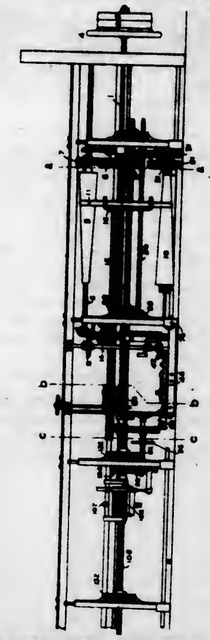
485,170. BUFFING-ROLL. JAMES BOUTELL, Haverhill, Mass. Filed June 12, 1891. Serial No. 396,975. (No model.)



Claim.—A cylindrical scouring and buffing roll consisting of a nearly-cylindrical body, a hub therein, a segmental strainer-piece hinged to the body, a lock-bolt swiveled at its inner end to the hub and projecting radially therefrom through the body and the outer end of said bolt being provided with shoulders and an opening, said shoulders being adapted to enter and engage with the strainer-piece and lock it to the body portion, the body of the roll being cut away on one side to form a slot to register with the opening in the bolt, whereby a wire may be inserted into the opening of the bolt through the slot and the bolt may be operated, and means for detachably securing a piece of material to the roll, substantially as set forth.

485,171. MECHANISM CONNECTED WITH THE LIFTING OR TRAVERSE RAILS OF FLY-FRAMES. WILLIAM P. CAMPBELL, Lowell, Mass., assignor to the Lowell Machine Shop, same place. Filed July 6, 1892. Serial No. 439,377. (No model.)

Brief.—The invention comprises improvements in the mechanism for controlling the rotation of the tumbling-shaft, in the mechanism for determining the rotations of the reverse-shaft, in the mechanism for controlling the movement of the tumbler-head, in the construction of the lay-shaft, in the manner of imparting movement to the lifting-shaft, in the mountings for various shafts and gearing, in the mechanism for controlling the movement of the cone-rack, in the mechanism for imparting movement to the taper-motion screw, and in the means for supporting the taper-motion guide-bar.



Claim.—1. The combination, with the upper cone-shaft, a gear thereon, the tumbling-shaft, and the segment-gear thereon, which is engaged by the said gear on the upper cone-shaft, of the reverse-shaft, starting devices operating to communicate impulses to said reverse-shaft and comprising a disk on said shaft having projecting portions and a spring-actuated arm acting against such portions, and intermeshing miter-gears carried by the tumbling-shaft and reverse-shaft and formed, as described, with gaps and large teeth, substantially as and for the purposes set forth.

2. The combination, with the reverse-shaft of a builder mechanism for spinning-machines, of starting devices comprising a cam carried by the said shaft and having projecting noses, an arm having a portion which bears upon the cam and acts against the noses thereof, a rotatable stud, upon which said arm is loosely pivoted, a spring surrounding said stud and reacting against the same, and also acting by one end thereof against the arm to bear it against the cam, and means for holding the stud in the desired position of rotary adjustment, substantially as and for the purposes set forth.

3. The combination, with a traverse-rail of a spinning-machine, a reversing gear-wheel, operating connections intermediate the said traverse-rail and reversing gear-wheel, through which the latter serves to communicate movement to the former, and a rotating shaft carrying a driving gear-wheel, of a tumbler-head having gears for transmitting movement from said driving gear-wheel to said reversing gear-wheel in reverse directions, a reverse-shaft operatively connected with said tumbler-head and serving to shift the same to alter the engagement of the transmitting-gears with the reversing gear-wheel, the tumbling-shaft, gearing between the same and the reverse-shaft, means for giving to the tumbling-shaft movements of partial rotation at intervals, and taper-motion devices determining when the tumbling-shaft and reverse-shaft shall be rotated, substantially as described.

4. The combination, with a traverse-rail of a spinning-machine, a reversing gear-wheel, operating connections intermediate the said traverse-rail and reversing gear-wheel, through which the latter serves to communicate movement to the former, and a rotating shaft carrying a driving gear-wheel, of a tumbler-head having gears for transmitting movement from said driving-gear to said reversing gear-wheel in reverse directions, a reverse-shaft carrying a crank engaging with said tumbler-head and serving to shift the same to alter the engagement of the transmitting-gears with the reversing gear-wheel, a tumbling-shaft to which the reverse-shaft is geared, means for imparting to the tumbling-shaft and reverse-shaft movements of partial rotation at intervals, and taper-motion devices for determining when the said shafts shall be given their movements of partial rotation, substantially as described.

6. The combination, with a rotating shaft and reversing transmitting-gearing operated therefrom, of means for shifting the said gearing to reverse the direction of the movement which is transmitted, a reversing gear-wheel actuated through the said transmitting gearing, a lay-shaft on which said reversing gear-wheel is mounted and which is made in separate portions united by a coupling, a traverse-rail, a lifting-shaft engaging therewith to move the same, and operating connections between the lay-shaft and lifting-shaft, connecting with the latter at or near mid-length thereof, substantially as described.

7. The combination, with a lifting-shaft and the gear-wheel on said shaft, of the rail-link having the sides thereof provided with bearings fitted to the said shaft on opposite sides of the said gear-wheel, a short shaft mounted in bearings with which the sides of the said rail-link are provided, a gear-wheel fixed to said short shaft between the bearings therefor and engaging the gear-wheel on the lifting-shaft, a rotating shaft, change-gear connections intermediate said shaft and the short shaft, and means for holding the rail-link in the required position of adjustment around the axis of the lifting-shaft, substantially as described.

8. The combination, with the lifting-shaft and a gear-wheel on said shaft, of the rail-link having the sides thereof provided with bearings fitted to the said shaft on opposite sides of the said gear-wheel, bearing-pieces mounted upon the opposite sides of the said rail-link, devices for setting the said bearing-pieces in the desired position of adjustment upon the sides of the said rail-link and for holding the same in adjusted position, a short shaft mounted in bearings in the said bearing-pieces and carrying a gear between the said bearing-pieces in engagement with the gear on the lifting-shaft, a rotating shaft, change-gear connections intermediate said shaft and the said short shaft, and means for holding the rail-link in the required position of adjustment around the axis of the lifting-shaft, substantially as described.

9. The combination, with the lifting-shaft and a gear-wheel on said shaft, of the rail-link having the sides thereof provided with bearing-pieces fitted to the same on opposite sides of the said gear-wheel, the said bearing-pieces having bearings for a shaft therein and also slots above said bearings, a short shaft mounted in the said bearings, a gear-wheel fixed to the said shaft between the bearing-pieces and engaging the gear-wheel on the lifting-shaft, another gear-wheel turning with the short shaft, a connected pair of carrier gear-wheels, one of which is in mesh with the last-mentioned gear-wheel on the short shaft, a stud adjustably secured in the slot of one of the bearing-pieces and on which said pair of carrier gear-wheels is free to turn, a connected pair of gear-wheels turning loosely upon the short shaft and one of which meshes with one of the carrier gear-wheels, a rotating shaft, a change-gear thereon with which meshes the other of the loose gear-wheels on the short shaft, and means for holding the rail-link in the required position of adjustment around the axis of the lifting-shaft, substantially as described.

10. The combination, with the wind-up shaft, the cone-rack gear fixed thereon, and the rack, of the middle wind-up stand with a plurality of slots therein, a stud adjustably fixed in one of the said slots, and a pair of connected change gear-wheels mounted to turn upon the said stud, one of the said gear-wheels being in engagement with the rack and the other with the cone-rack gear, substantially as described.

11. The combination, with the machine-framing, the rack, and a guide-rod, of the guide-piece which is affixed to the rack and fitted to slide upon the guide-rod and rack-guides fixed to the framing and

shaped to receive and support the rack as it slides along, substantially as described.

12. The combination, with the machine-framing, the rack, and a guide-rod, of the forked or claw-shaped guide-piece or saddle which is affixed to the rack and fitted to slide upon the guide-rod, a stand for one end of the guide-rod, bolted to the framing, and guides for the rack, also bolted to the framing, shaped to receive and support the rack as it slides along, and assisting to support the guide-rod, substantially as described.

13. The combination, with the rack, the taper-motion screw, and the gear-wheels through which the rack serves to impart rotation to the screw, of a pivoted support for the carrier gear-wheels, capable of being swung on its pivot, and means for securing the pivoted support in desired position, substantially as described.

14. The combination, with a slotted frame-piece, of a stand having slots therein at right angles to those in the frame-piece and also having guide-lips on a horizontal portion thereof, bolts passing through both sets of slots and serving to hold the stand adjustably in place upon the frame-piece, a supporting-piece placed between the said lips and formed with a longitudinal slot, a bolt passing through the said slot and a hole in the horizontal portion of the stand, and the taper-motion screw guided in its upper portion by passing through the said supporting-piece, substantially as described.

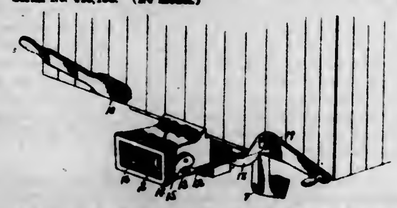
15. The combination, with the rack, the taper-motion screw, and a slotted frame-piece, of a stand having slots therein crossing at right angles those in the frame-piece and also having guide-lips on a horizontal portion thereof, bolts passing through both sets of slots and serving to hold the stand adjustably in place upon the frame-piece, a supporting-piece placed between the said lips and formed with a longitudinal slot and an arc-shaped slot, a bolt passing through the said longitudinal slot and through a hole in the horizontal portion of the stand, a support having a hub fitted to an opening through the supporting-piece and thereby pivoted to said supporting-piece, a bolt passing through the arc-shaped slot in the latter and a hole in the support, a gear-wheel having a sleeve fitted within the hub of the support and keyed or feathered to the taper-motion screw, and a connected pair of carrier gear-wheels meshing with the gear just mentioned and the rack and carried by the pivoted support, substantially as described.

16. The combination, with the machine-framing, of the taper-motion guide-bar, the stand at the upper end of the said guide-bar, means for securing the said stand to the machine-framing and holding it adjustably thereto, as described, to enable the center line of the guide-bar to be brought into a plane that is square with the foot of the stand, and adjusting-screws whereby the center line of the guide-bar may be moved in the said plane into the desired position, substantially as described.

17. The combination, with the lifting-shaft and a gear thereon, of a taper-motion guide-bar, the taper-motion head fitting three sides of the said bar, the taper-motion rack bearing against the fourth side of the said bar, and means for securing the said rack to the said head, substantially as described

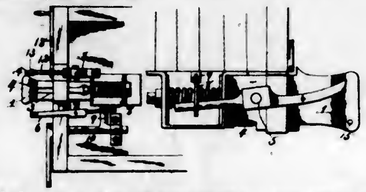
18. The combination, with the lifting-shaft, a gear thereon, the tumbling-shaft and its dog, the taper-motion screw having the right-hand and left-hand threaded portions, and means for rotating the said screw from the tumbling-shaft, of the taper-motion guide-bar, the taper-motion head fitting three of the sides of the said bar, the taper-motion rack bearing against the fourth side of the said bar, means for securing the said rack to the said head, and the taper-motion jaws having parallel plane-surfaced sides, substantially as described.

485,172. CAR-COUPLING. CHARLES CORNER, Red River, Ohio, assignor of one-half to Levi BRINDNER, same place. Filed July 15, 1892. Serial No. 440,188. (No model.)



Claim.—1. In a car-coupling, the combination of a draw-head, a coupling-hook pivotally mounted therein, a transverse pin carrying the coupling-hook and projecting from the draw-head, a longitudinal lever fixed thereon, and a longitudinally-disposed rock-shaft having an arm connected with the rear end of the longitudinal lever and provided at its front end with an arm, substantially as described.

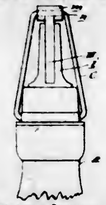
2. In a car-coupling, the combination of a draw-head provided in its bottom with a longitudinal slot, a transverse pin passing through the draw-head, a coupling-hook arranged within the draw-head and mounted on the transverse pin and arranged in the slot, a spring secured to the bottom of the draw-head and engaging the coupling-hook, a longitudinally-disposed lever fixed on the pin and having a forwardly-extending weighted arm, a rock-shaft disposed longitudinally and provided with an arm, a link pivoted to the arm of the rock-shaft and receiving the rear end of the longitudinally-disposed lever, and a handle-arm secured to the front end of the rock-shaft, substantially as described.



3. In a car-coupling, the combination of a draw-head, a link-lifting plate mounted in the mouth thereof and having an extended pintle provided with an arm, a weighted lever fulcrumed on the draw-head and connected with the said arm, and an operating-lever connected with and adapted to actuate the weighted lever to raise and lower the link-lifting plate, substantially as described.

4. In a car-coupling, the combination of a draw-head, a link-lifting plate arranged in the mouth of the same, a pintle mounted in the draw-head and carrying the link-lifting plate and provided with an arm, a bell-crank lever fulcrumed on the draw-head and having one arm weighted and its other arm connected with the pintle-arm, and a bell-crank-operating lever connected with the weighted lever, substantially as described.

485,178. BOTTLE-STOPPER FASTENER. FINLEY Y. CLARK, Saratoga Springs, N. Y. Filed Feb. 10, 1892. Serial No. 420,964. (No model.)



Claim.—1. A bottle-stopper fastener comprising a pivoted locking-bail, a cap hinged to the mouth of the bottle, and a lever pivotally connected with both the bail and cap and adapted to lock the cap and bail together, substantially as specified.

2. The combination, with a bottle, of a bail pivoted thereto, a cap detachably hinged to the mouth of the bottle and having its top forked or bifurcated, and the lever having the beveled heel and pivoted near said bevel within the fork of the cap and pivoted at its outer end on the bail, substantially as specified.

3. The combination, with a bottle, of a cap hinged thereto, a lever pivoted on said cap and having a beveled heel and also a toe adapted to extend forwardly and downwardly beyond the pivoted point, and a bail connecting the outer end of said lever with the bottle-neck, substantially as specified.

4. The combination, with a bottle, of the flanged and shouldered band secured to the mouth thereof, a cap detachably hinged to said band, the lever having the beveled heel and pivoted to the cap, and the bail carrying the pivoted lever and journaled at opposite ends in said band, so that its branches may rest upon the base-flange of the band and the heel of the lever may bear on the cap below the pivotal point therewith, substantially as specified.

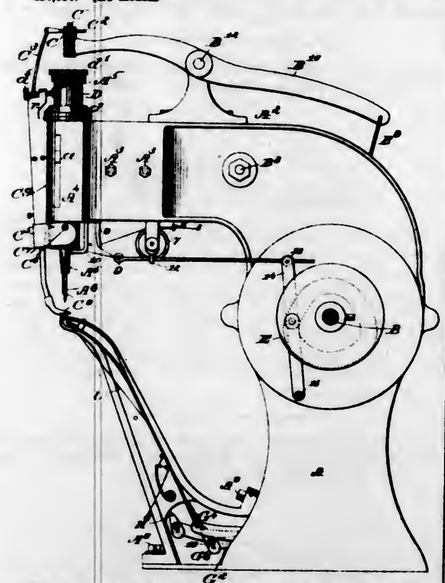
5. The combination, with a bottle, of the band secured thereto and having the base-flange, the annular shoulder above the same, and the vertically-disposed flange, and also having diametrically-arranged apertures in the shouldered portion, and a hook on the vertical flange, the cap having a socket to receive a cork and an aperture to receive the hook of the band and also having a bifurcation in its top and aligned apertures in the branches of the bifurcation at a point out of the vertical center of said branches, the bail journaled in the band above the horizontal base-flange, and the lever pivoted in the bifurcation of the cap and having the beveled heel and the forwardly-extending toe and pivoted at its outer end on the bail, so that when the toe of the lever has been brought to bear upon the cap the bail will assume a position out of a perpendicular, so as to lock the lever on the cap, substantially as specified.

485,174. NUT-LOCK. ANDREW G. COX, Grafton, Va. Filed Jan. 28, 1892. Serial No. 419,582. (No model.)

Claim.—1. As an improved article of manufacture, a nut-lock consisting of a washer transversely corrugated and adapted when applied to have one of its edges bent up against the nut to be locked, substantially as set forth.

2. As an improved article of manufacture, a nut-lock consisting of a washer corrugated transversely and formed with a smooth uncorrugated edge parallel with the corrugations, said washer being adapted when applied to have said smooth edge bent up against the side or sides of the nut to be locked, substantially as and for the purpose set forth.

485,175. FEEDING MECHANISM FOR SEWING-MACHINES. ALFRED A. CUMINS, Bingham, Mass. Filed Jan. 11, 1892. Serial No. 417,859. (No model.)

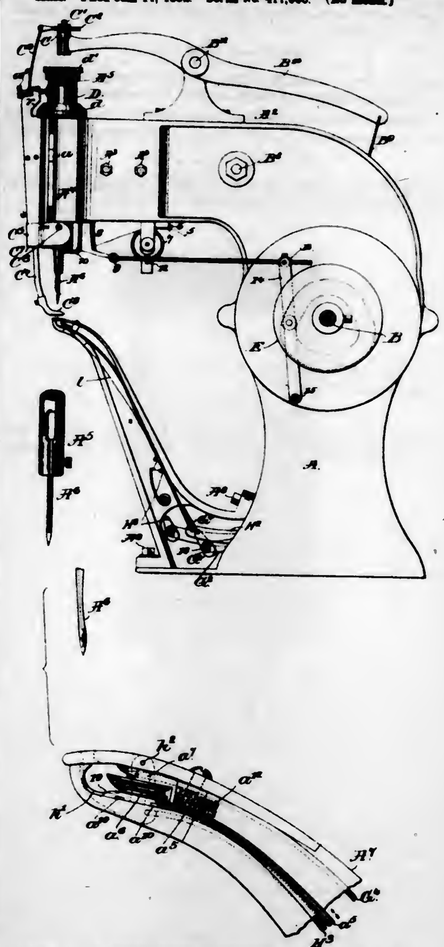


Claim.—1. A head to receive and guide a needle-bar and provided with journals, a yoke having collars mounted loosely on said journals and adapted to be rotated partially in one or the other direction about said journals, a bar-carrying frame pivoted upon one of the collars of the said yoke and provided with an incline, as r, and screw or projection a^4, the said pivot being in line with the longitudinal center of the needle-bar, a needle-bar adapted to be moved in said head, a rod provided with a foot, a spring to normally depress said rod, and a feeding-cone adapted to be moved vertically by the needle-bar, combined with means to lift the said needle-bar and the bar-carrying foot, and with a work-support, substantially as described.

2. The frame C^3, provided with a projection r, a yoke upon which the said frame is pivoted, vertically-arranged journals about which the said yoke may be turned in one or the other direction, a bar C^4, having a foot C^{3x} to bear upon the material, a feeding-cone, means to move it vertically, a lever, as B^{10}, connections between it and the said bar C^4, and means to move the said lever B^{10}, combined with a work-support, substantially as described.

3. A feeding mechanism for sewing-machines containing the following instrumentalities, viz: a feeding-cone, means to move the same vertically, a yoke-like frame having ears and adapted to be rotated more or less about the longitudinal center of the needle-bar, a guiding-frame, as C^3, a feeding-bar mounted in said frame and provided with a feeding-foot, a work-support, and devices to lift the said feeding-bar, the journals of the frame being connected with the yoke at right angles to the longitudinal center of the needle-bar and in the vertical line of the longitudinal center of the needle-bar, substantially as described.

485,176. SEWING-MACHINE. ALFRED A. CUMINS, Bingham, Mass. Filed Jan. 11, 1892. Serial No. 417,860. (No model.)



Claim.—1. A sewing-machine containing the following instrumentalities, viz: an eye-pointed thread-carrying needle to penetrate the material, a work-support, a thread-carrying looper located below the material and co-operating with the said needle, a thread-carrier to contain and present a third thread, and a loop-detainer to enter and detain temporarily the loop of third thread, whereby the latter is retained in doubled form in the loop of looper-thread during the time that the needle-bar rises to draw the loop of looper-thread into the material, substantially as described.

2. The work-support, a needle, and a feeler to contact with the needle, combined with a looper having its fulcrum on said feeler and adapted to co-operate with the needle, substantially as described.

3. The reciprocating eye-pointed needle, a thread-carrying looper adapted to put a loop of its thread through the loop of needle-thread, and a third thread-carrier adapted to enter the loop of looper-thread, combined with a loop-catcher to hold the loop of third thread and cause the latter to hold the loop of looper-thread while the said loop of looper-thread is being drawn into and concealed in the work by the loop of needle-thread, substantially as described.

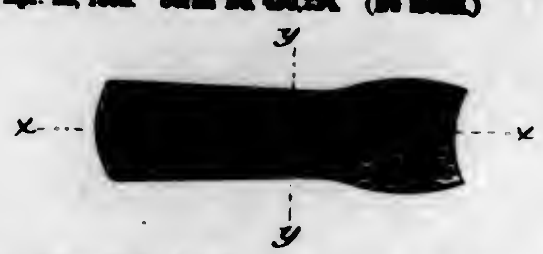
4. The horn constituting a work-support, the movable carriage or feeler thereon, the circularly-moving thread-carrying looper having its fulcrum on the said carriage, and an eye-pointed needle and needle-bar, combined with devices to actuate the said needle, looper, and carriage, substantially as described.

8. The overhanging arm, the carriage adjustable thereon and having bearings for the needle-bar, the needle-bar therein, its attached needle, means to actuate the needle-bar, and the horn-like work-support, combined with the feeler and the circularly-movable thread-carrying looper mounted thereon, a carrier for a third thread, and devices to move the said feeler-looper and third thread-carrier, substantially as described.

485,177. WALL-PLASTER. Charles L. Dunnson, Corning, N. Y. Filed June 20, 1892. Serial No. 437,288. (No specimens.)

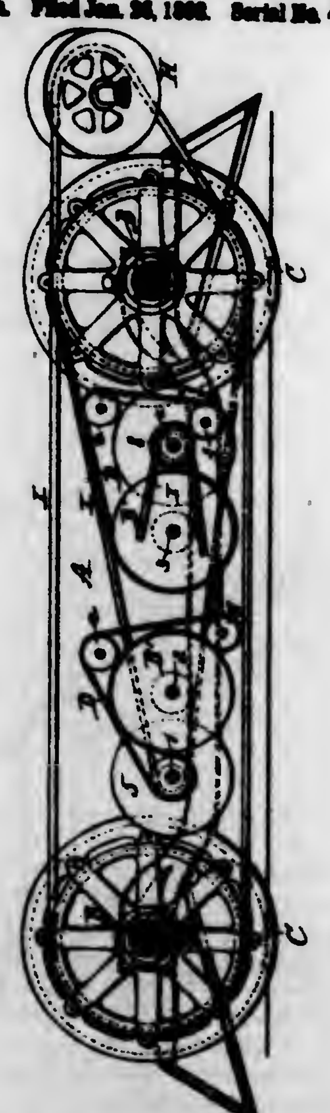
Claim.—The herein-described composition of matter, consisting of lime, cotton-seed meal, plaster-of-paris, borax, and cream of tartar.

485,178. SURGICAL SPLINT. Edwin Dunsmore, Coronado, Cal. Filed Apr. 22, 1892. Serial No. 430,234. (No model.)



Claim.—A surgical splint formed of a sheet of yucca-stem, substantially as described.

485,179. GEARING FOR PROPELLING CARS. Will W. Dunlap, Detroit, Mich. Filed Jan. 26, 1892. Serial No. 419,233. (No model.)



Claim.—1. The combination, with a car and a driving-cone, of a driven cone, devices connecting said cones, whereby the motion of the driving-cone is imparted to the driven cone, and devices connecting the driven cone and car-wheels, the said cones and devices connecting them being so constructed that the speed of the driven cone can be regulated without changing the speed of the driving-cone, substantially as set forth.

2. The combination, with a car and wheels, of a pair of cones, means for transmitting motion to one of said cones, means for transmitting motion from one of said cones to the other, and multiple-wound rope gearing for transmitting motion from the driven cone to the car-wheels, substantially as set forth.

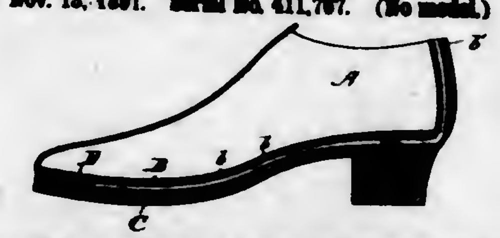
3. The combination, with a car and car-wheels, of two pairs of cones, means for transmitting motion to one cone of each pair, means for transmitting motion from the driving-cones to the driven cones, multiple-wound rope gearing connecting one of the driven cones with the car-wheels at one side of the car, and multiple-wound rope gearing for connecting the other driven cone with the wheels at the opposite side of the car, substantially as set forth.

4. The combination, with a car and wheels, of grooved drums carried by said wheels, a loose pulley, a driving-cone, a driven cone adapted to receive motion from the driving-cone, a grooved pulley on the shaft of the driven cone, a multiple-wound rope gearing passing around the grooved pulley on the cone-shaft, the drums on two or more car-wheels, and the loose pulley, substantially as set forth.

5. The combination, with a car and car-wheels, of a pair of cones, means for transmitting power to one of said cones, a loose pulley carried by the shaft of the other or driven cone, a band for transmitting motion from the driving-cone to the driven cone, and means for shifting said band to regulate the speed of the driven cone or to stop the rotation of said driven cone by shifting the band onto the loose pulley, and means for transmitting motion from the driven cone to the car-wheels, substantially as set forth.

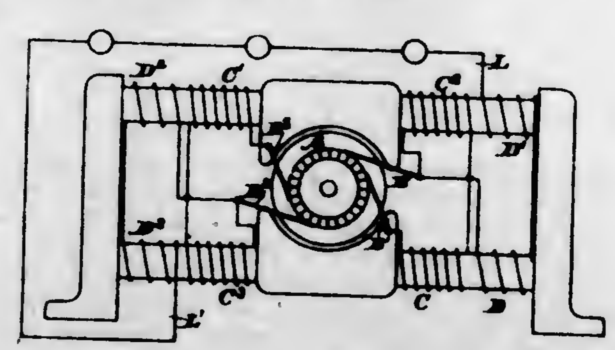
6. The combination, with a car and wheels, of a driving and a driven cone, means for transmitting motion to the driving-cone, two shafts, a loose pulley on each shaft, a band passing about said loose pulleys and the two cones for transmitting motion from the driving to the driven cone, and devices for moving said loose pulleys to shift the band and regulate the motion of the driven cone, and gearing connecting the driven cone with the car-wheels, substantially as set forth.

485,180. VENTILATED SHOE. Louis R. Eastman, Boston, Mass. Filed Nov. 13, 1891. Serial No. 411,767. (No model.)



Claim.—In a ventilated shoe, the combination of an insole having perforations *b* with a single piece of wire bent at the toe and heel, forming lengths, said lengths placed lengthwise between the inner and outer soles to form an air-space, the outside lengths conforming to the contour of the sole, all of the lengths contracted at the shank, and a portion bent nearly at right angles and inserted in a space formed by removing a part of the counter, forming an air-inlet passage *b′*, with its opening at the top of the counter for the admission of air, all constructed and adapted to operate substantially as described, and for the purpose set forth.

485,181. DYNAMO. William H. Blakie, Cambridge, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Oct. 7, 1891. Serial No. 407,968. (No model.)

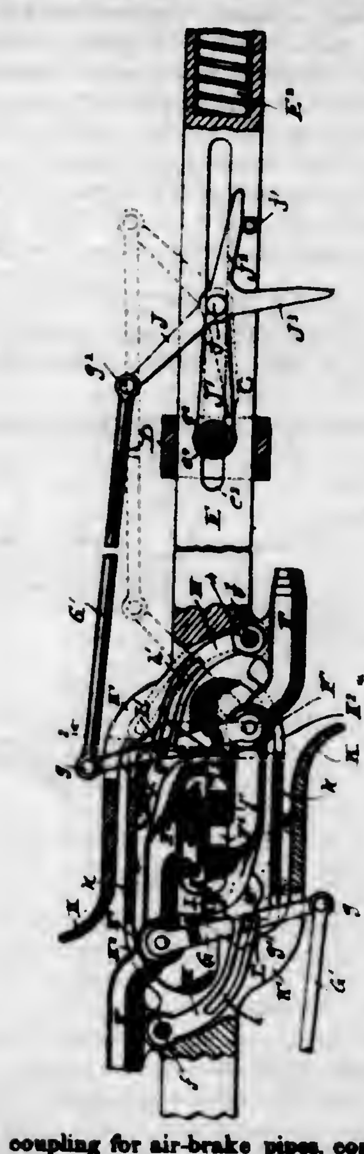


Claim.—1. A dynamo-electric machine having two sets of brushes on its commutator, a set of field-coils connected to one set of brushes and to the work-circuit, and a set of field-coils connected between the two sets of brushes, the two sets of coils having substantially-equal ampère-turns under full load.

2. A dynamo-electric machine having two sets of brushes on its commutator, each set being so arranged as to normally take up a definite fraction of the normal line-current, and a field-magnet with two or more core portions, each of which has two coils belonging to different sets, the coils of one set being connected to one set of brushes and to the line and the coils of the other set being connected between the two sets of brushes.

3. A dynamo-electric machine having two sets of brushes placed at points of normally-different potential on the commutator and taking equal current at full load and two sets of field-magnet coils, one being connected to one set of brushes and to the work-circuit and the other being connected between the brushes.

485,182. COUPLING FOR AIR-BRAKE PIPES. Gallo D. Fairbey, Manitowoc, Wis. Filed Feb. 15, 1892. Serial No. 421,680. (No model.)



Claim.—1. A coupling for air-brake pipes, comprising a pair of opposing bars provided upon their ends with sections of pipe pivotally secured to said bars and having laterally-directed openings adapted to come into engagement with each other, and levers for moving said sections into engagement with each other, substantially as described.

2. A coupling for air-brake pipes, comprising a pair of opposing bars movably engaged with suitable hangers and provided with suitable housings on their ends, sections of pipe pivotally secured to said bars and arranged to have a lateral movement within said housings, laterally-directed openings in said sections of pipe, adapted to be moved into or out of engagement with each other, and suitable actuating-levers pivotally supported upon said hangers or bars and operatively engaged with said movable sections of pipe, substantially as described.

3. A coupling for air-brake pipes, comprising a pair of opposing longitudinally-movable bars engaged with suitable hangers and provided with suitable housings upon their ends, adapted to come into engagement with each other when the cars are coupled together, sections of pipe carried by said bars and pivotally engaged therewith, said sections of pipe being each arranged to communicate at one end with the air-brake pipe and provided at its other end with a laterally-directed opening adapted to be moved into a position to register with a similar opening in the opposing pipe, suitable packings on the abutting surfaces of said pipes, valves in said pipes, levers for operating said valves, and suitable pivoted arms movably engaged with said levers and adapted to bear upon the ends of said sections of pipe to crowd them toward each other, and suitable actuating-levers pivotally secured to the hangers or bars and operatively engaged with said first-mentioned levers, substantially as described.

4. A coupling for air-brake pipes, comprising a pair of opposing longitudinally-movable bars provided with suitable housings upon their ends, sections of pipe pivotally engaged with said bars and arranged to have a lateral movement within said housings, laterally-directed openings in said pipe-sections, adapted to be brought into register with each other, valves in said pipes, levers for operating said valves, pivoted arms adapted to engage with the ends of said pipe-sections to crowd the same toward each other, slots in said arms movably engaged with pins upon said valve-operating levers, rocking levers pivotally supported upon the hangers for said bars and adapted to engage with suitable projecting pins upon said bars, and rods connecting said actuating-levers with said valve-operating levers, substantially as described.

5. A coupling for air-brake pipes, comprising a pair of opposing longitudinally-movable bars supported within suitable hangers depending from the cars and provided with suitable housings upon their ends, sections of pipe having laterally-directed apertures and pivotally engaged with said bars, the ends of said pipe-sections being arranged to have a lateral movement within said housings, suitable packings located around said apertures, valves in said pipe-sections, levers for operating said valves and provided with studs or pins upon their sides, pivoted arms arranged to move into engagement with projections upon the ends of said pipe-sections and provided with slots for engaging with said pins or studs upon said levers, springs for normally extending said bars beyond the ends of the cars, and suitable actuating-levers having operative connections with said valve-operating levers, substantially as described.

485,183. STEAM-GENERATOR. Patrick Fitzgibbons and Henry K. Bassu, Oswego, N. Y. Filed June 1, 1892. Serial No. 425,165. (No model.)

Claim.—1. In a steam-generator, the combination of an upright water-containing shell formed with a contracted hollow drum, flues extending upwardly through said shell, and a horizontal water-containing shell supported upon and connected to said drum with its extremities directly above said flues, substantially as and for the purpose specified.

2. In a steam-generator, the combination of an upright water-containing shell having a contracted upwardly-extending drum, a horizontal water-containing shell supported above the lower shell upon said drum and connected thereto, and flues extending lengthwisely through the latter shell, substantially as and for the purpose specified.

3. In a steam-generator, the combination of an upright hollow water-containing shell, a horizontal water-containing shell above the former, an upright connection or drum between said shells, formed with an inner chamber for receiving the products of combustion, and flues extending through the wall of said upright connection or drum, substantially as and for the purpose set forth.

4. In a steam-generator, the combination of a water-containing shell having a top wall, tubes extending through said wall, a second water-containing shell above the top wall of the former shell, a connection between said shells, and flues extending lengthwisely through the upper shell, substantially as and for the purpose described.

5. In a steam-generator, the combination of an upright water-containing shell having a top wall, tubes extending through said top wall, and a second substantially-horizontal water-containing shell mounted above said top wall and having its extremities projecting above said tubes, substantially as specified.

6. In a steam-generator, the combination of an upright water-containing shell having a top wall, tubes extending through said top wall, a second substantially-horizontal water-containing shell mounted above said top wall and having its extremities projecting above said tubes, and tubes extending through the latter shell in substantially-horizontal planes, substantially as described.

7. In a steam-generator, the combination of an upright water-containing shell having a top wall, tubes extending through said top wall, a second substantially-horizontal water-containing shell mounted above said top wall and having its extremities projecting above said tubes, tubes extending through the latter shell, a connection between the top wall of the lower shell and the upper shell, and tubes extending through the wall of said connection, substantially as set forth.

8. In a steam-generator, the combination of an upright water-containing shell having a top wall, a water connection or drum extending above the top wall and formed with an inner chamber for receiving the products of combustion and provided with a top wall, and a second chamber supported above the former upon said connection and formed of greater diameter than said connection, substantially as described.

9. In a steam-generator, the combination of a lower water-containing shell formed with a top wall, a heating-chamber above the top wall, tubes extending through said top wall for conveying the products of combustion to the heating-chamber, an upper water-containing shell mounted above the former within said heating-chamber, an outlet-chamber at one end of the latter water-containing shell, and flues extending through the latter water-containing shell for conveying the products of combustion from the latter heating-chamber to the outlet-chamber, substantially as specified.

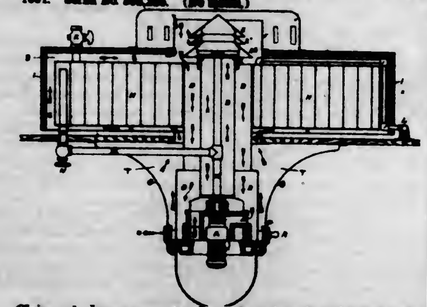
10. In a steam-generator, the combination of a lower water-containing shell formed with a top wall, a heating-chamber above the top wall, tubes extending through the said wall for conveying the products of combustion to the heating-chamber, an upper water-containing shell mounted above the former within said heating-chamber, an outlet-chamber at one end of the latter water-containing shell, flues extending through the latter water-containing shell for conveying the products of combustion from the latter heating-chamber to the outlet-chamber, a connection between said water-containing shells for producing a circulation from one to the other, formed with an internal chamber for the products of combustion and provided with a top wall, and flues extending through said connection beneath its top wall, substantially as and for the purpose specified.

485,184. RIDING ATTACHMENT FOR PLOWS, HARROWS, &c. CYRUS D. FOX, Roscoe, Ill. Filed May 23, 1892. Serial No. 434,009. (No model.)

Claim.—1. In an apparatus of the class described, the combination of a shaft, a large and small wheel mounted thereon, a forked frame embracing the larger wheel and supported by the shaft, and a seat carried by the shaft over the larger wheel, and means for securing the wheels and frame at any desired position on the shaft, substantially as described.

2. In an apparatus of the class described, the combination of a shaft, a large and small wheel mounted thereon, a forked frame embracing the larger wheel and supported by the shaft, an upwardly-curved reach secured to said frame terminating in an attaching device, and a seat over the larger wheel, substantially as described.

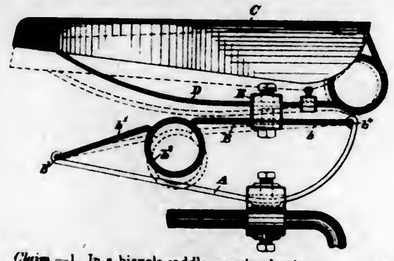
485,185. APPARATUS FOR CARBURETING AIR OR GAS. EDWARD J. PERRY and WILLIS G. SIMMS, Philadelphia, Pa. Filed May 9, 1891. Serial No. 392,326. (No model.)



Claim.—1. In an apparatus for carbureting air and burning the product, a carburetor H, a casing I, surrounding the carburetor, with an air-space S between them, a burner A, and pipe M, connecting the burner and carburetor, combined with a chimney B, an air-shaft D, encircling the chimney, and a casing O, surrounding the lower part of the air-shaft D and communicating with said air-space S, said casing being provided with openings for the admission of air, substantially as described.

2. In an apparatus for carbureting air and burning the product a carburetor H, a casing surrounding said carburetor, with an air-space S between them, a burner, a pipe connecting the carburetor and burner, a chimney, and an air-shaft encircling said chimney and having communication with the burner and the open air, combined with a casing O, surrounding the burner and the lower part of the air-shaft D, said casing having openings for the admission of air and being in communication with said air-space S, a register to control said openings, cone-deflectors surmounting the chimney and air-shaft, a collar surrounding the deflectors, and a cap G, having openings in its side arranged over the deflectors and the collar, substantially as described.

485,186. VELOCIPEDE-SADDLE. ARTHUR L. GARFORD, Elyria, Ohio. Filed Jan. 9, 1892. Serial No. 417,569. (No model.)



Claim.—1. In a bicycle-saddle, a spring having two arms which lie in different planes at an angle with each other, and an intermediate loop, a bar to which the ends of said springs are pivotally connected, a clip for securing the bar to the saddle-support of a velocipede, and a seat secured to one arm of said spring, substantially as set forth.

2. In a velocipede-saddle, in combination, a spring having two arms lying in different planes, one substantially horizontal, the other extending downward and rearward, and an intermediate loop, suitable supports to which the ends of said springs are connected, and a seat secured to the horizontal arm of said spring with its rear end over the inclined arm, substantially as set forth.

3. In a velocipede-saddle, in combination, a spring having two arms lying in different planes, one substantially horizontal, the other extending downward and rearward, and a connecting integral loop, a bar to which the ends of said spring are pivoted, a clip adapted to connect said bar to the saddle-support, and a seat secured to the horizontal arm of said spring with its rear end over the inclined arm, substantially as set forth.

4. In a velocipede-saddle, in combination, a spring having two arms, one lying in a substantially-horizontal plane, the other in a plane inclined downward and rearward therefrom, and an integral connecting-loop, a curved bar supporting said spring from its ends, a clip adapted to connect said bar with the saddle-support, a seat, and a clip for adjustably securing the seat to the horizontal arm of said spring, substantially as set forth.

5. In a velocipede-saddle, a spring consisting of one piece of wire having the arms b b', each consisting of two parallel strands, the connecting-loops b^3 b^4, the horizontal part b^2, and the horizontal ends b^4 b^4 in line with each other, combined with the bar A, having eyes in its ends, a seat, and a clamp adapted to secure the seat to the arm b and to hold the two parts of said arm in fixed relation to each other, and means for securing the bar A to the saddle-support, substantially as set forth.

485,187. BICYCLE. FRANK M. GOODELL and JAMES E. GOODELL, St. Charles, Ill. Filed Feb. 16, 1892. Serial No. 421,670. (No model.)

Claim.—1. The combination of bicycle wheels and frame with a driving-chain, two driving-wheels adapted to be connected therewith, driving connections from each driving-wheel to the pedal shaft, and means for throwing the two driving-wheels alternately but not simultaneously in or out of driving connection with the chain.

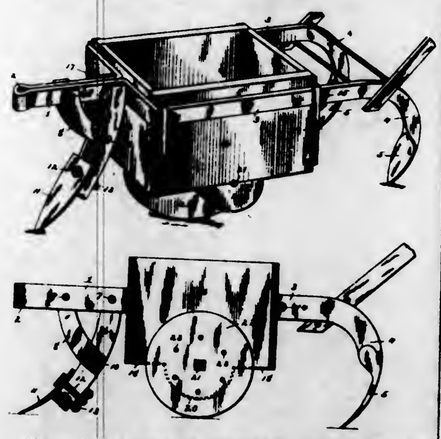
2. The combination of bicycle wheels and frame with a driving-chain, two driving-wheels adapted to be connected therewith, driving connections from each driving-wheel to the pedal-shaft, and means for throwing the two driving-wheels alternately but not simultaneously in or out of driving connection with the chain, said driving-wheels adapted to impart different speeds to the driving-wheels, while the speed of the pedal-shaft remains constant.

3. The combination of bicycle-wheels and a frame therefor with a driving-chain, two driving-wheels continuously in engagement therewith, driving connections from the same to the pedal-shaft, and means for alternately but not simultaneously operatively connecting the driving-wheels with the pedal-shaft.

4. The combination of bicycle-wheels and a frame therefor with a driving-chain, two driving-wheels continuously in engagement therewith, driving connections from the same to the pedal-shaft, and means for alternately but not continuously operatively connecting the driving-wheels with the pedal-shaft, said driving-wheels adapted to impart different speeds to the bicycle-wheels, while the speed of the pedal-shaft remains constant.

5. In a bicycle, the combination of the pedal-shaft with two wheels thereon, one loose on the shaft, the other adapted to slide along but rotate with the shaft, with a second shaft carrying two wheels, one adapted to be put into engagement with the sliding wheel on the pedal-shaft, a driving-chain continuously in contact with the two remaining wheels and with a sprocket-wheel on the axle of the bicycle, a clutch device on the opposed surfaces of the two wheels on the pedal-shaft, and means for moving the sliding wheel so that it is alternately in engagement with the other wheel of the pedal-shaft or with the opposed wheel on the shaft, whereby power is communicated from the pedal-shaft to the bicycle-wheels by either of two transmitting connections.

485,188. PLANTER. WILLIAM T. GOODSON, Homer, La., assignor of one-half to Rufford F. Allen, same place. Filed July 6, 1892. Serial No. 439,126. (No model.)

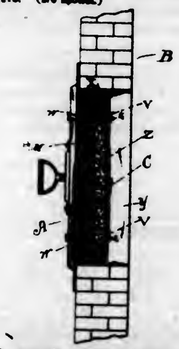


Claim.—1. In a planter, the combination, with the rectangular frame provided at its front end with a beam, a standard depending from the beam and carrying a furrow-opening shovel, and a pair of standards connected to the rear corners of the frame and carrying furrow-closing shovels, of a hopper loosely fitting in the frame and having a slotted bottom, a shaft journaled in the walls of the hopper, and a wheel provided with agitating-pins, mounted on the shaft and extending through the slot in the bottom, substantially as specified.

2. In a planter, the frame formed integral and consisting of the opposite terminals combined to form the beam, in rear of which they are diverged and rearwardly disposed to form side bars, bent at their rear ends to form standards, the shovels on the standards, the standard depending from the beam and carrying a furrow-opening shovel, a transverse bar connecting the standards, of the rectangular hopper, mounted in the frame and adapted for vertical movement therein, opposite pairs of vertical straps or keepers connected to the sides of the hopper and loosely embracing the said side bars, said hopper having its bottom provided with a slot, the axle or shaft in bearings above the slot, the wheel mounted on the axle and having radiating pins projecting from its faces, and the metal keepers connected to the walls of the hopper and embracing the side bars of the frame, substantially as specified.

3. The combination, with the rectangular frame terminating at its rear end in permanent shovel-standards and adapted to receive and loosely support a hopper, of bolt-openings located at the front corners of the frame and adapted to removably receive additional shovel-standards, substantially as specified.

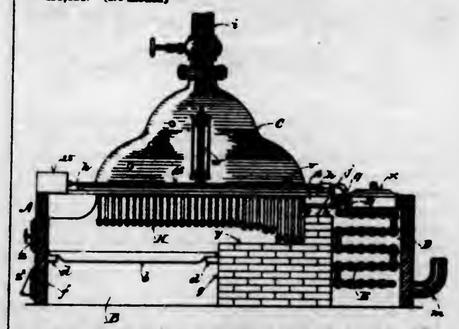
485,189. FURNACE-DOOR. ASTON GRAF, Georgetown, Mass., assignor of one-half to Stephen Osgood, same place. Filed May 2, 1892. Serial No. 431,473. (No model.)



Claim.—1. A furnace-door having a box connected therewith by bolts, said box being filled with insulating material, leaving an air-space between said door and box, and insulating material on the bolts between the door and box.

2. A furnace-door having a box connected therewith by bolts, said box being open at the top and filled with insulating material and leaving an air-space between said box and door, and insulating-sleeves on the bolts between the door and box.

485,190. HEATER. ASTON GRAF, Georgetown, Mass., assignor of one-half to Stephen Osgood, same place. Filed June 6, 1892. Serial No. 436,021. (No model.)



Claim.—1. The furnace A, provided with the box D, having the stack m, and the wall g, in combination with the dome C, the feed-water-heating coil E, disposed behind said wall and opening into said dome, the flue k at the top of said wall, and a receptacle for containing an oxygen-generating compound disposed adjacent said flue and opening against said coil, substantially as described.

2. In a heater, a furnace and steam or water dome, in combination with a circulation feed-water-heating coil disposed in said furnace between its fire-box and stack, and a receptacle for containing an oxygen-generating compound disposed adjacent said coil.

3. The furnace A and dome C, in combination with the supply feed-water-heating coil E, leading into said dome, and an apparatus disposed within the furnace adjacent said coil for generating oxygen and an inflammable gas by the heat from the fire-box, substantially as described.

4. The furnace A, provided with the flue k and stack m, in combination with the dome C, the feed-water-heating coil E, opening into said dome, the receptacle 16, disposed adjacent said flue and opening against said coil, and the shield or guard 18 for said receptacle, all being arranged to operate substantially as described.

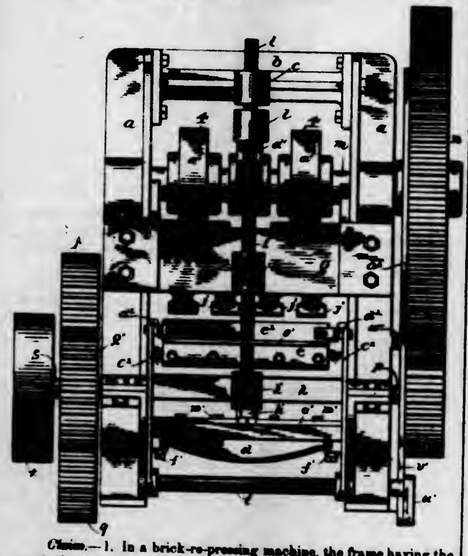
5. The combination, with the furnace A, dome C, and circulation feed-water-heating coil, of the oxygen-generating receptacle 16, hav-

ing a discharge-opening against said coil, and the oil-tank 25, having the discharge-opening adjacent the oxygen-discharge, substantially as described.

6. The combination, with a furnace and boiler, of a supply-pipe for said boiler, disposed in the furnace in the draft from its fire-box, and an oxygen-generating compound so disposed that the oxygen given off will be ignited by the heat from said box and superheat said supply.

7. The combination, with a furnace and boiler, of a supply-pipe for the boiler, passing through the fire-box draft, an oxygen-generator disposed adjacent such supply-pipe, and an inflammable gas-generator, all being arranged substantially as described.

485,191. MACHINE FOR RE-PRESSING BRICKS. FRANK GRANT and ALEXANDER H. MURRAY, Middleport, Ohio, assignors of one-half to J. S. Duggan, agent of the Ohio Machine Company, same place. Filed July 7, 1891. Serial No. 398,699. (No model.)



Claim.—1. In a brick-re-pressing machine, the frame having the vertical sides, the mold-frame secured between said sides, having the molds, the lower presser sliding between said sides, having the dies to enter said molds, the upper presser above the mold-frame, sliding between said sides and having the dies to enter the upper ends of the molds, the upper presser having recesses in its upper face, in the slots of which vertical rollers are mounted, the cam-shaft having cams to engage said rollers and depress the presser, and rods secured to said upper presser and arranged to lift the lower presser, a cross-bar connecting said rods, and a lifting-cam on the cam-shaft, arranged to engage said cross-bar and lift the two pressers.

2. In a brick-re-pressing machine, the vertical sides of the frame, the mold-frame, the lower reciprocating presser and the upper reciprocating presser, a cam-shaft having cams to force down the upper presser, rods extending down and rigidly secured to the upper presser to lift the same and loosely joined to the lower presser to lift the same and move down independently thereof, and a cam on said shaft to lift said rods and thereby raise the two pressers.

3. The combination of the two parallel uprights, upper and lower rigid cross-bars connecting the same, the upper cross-bar having lateral sockets or guides, the mold-frame rigid with the uprights and between said cross-bars, the reciprocating pressers on opposite sides of the mold-frame, having their ends formed to slide on said uprights, said pressers having lateral sockets, the two lifting-bars passing loosely through the sockets of said upper cross-bar and the lower presser and rigid in the upper presser-sockets and arranged to lift the presser, a lifting cross-bar connecting said bars above the upper presser, and a shaft mounted in the uprights between said upper presser and lifting cross-bar and having cams to lift the pressers and to force down the upper presser.

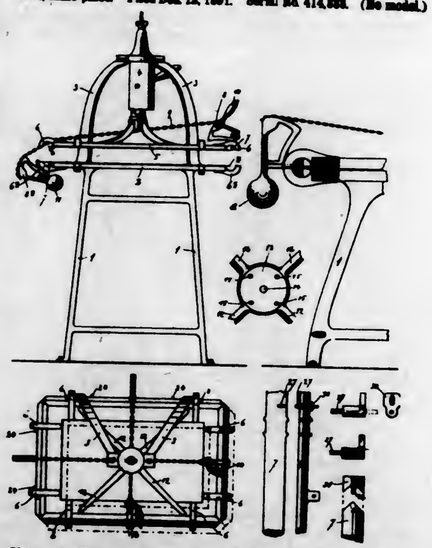
4. In a brick-machine, the combination of the frame comprising uprights, a mold-frame, upper and lower reciprocating pressers, a single shaft mounted in the upper portion of the uprights and constructed and provided with means to force down the upper presser, and a lifting-frame arranged to lift both pressers, said frame being loosely connected with one of the pressers to move independently thereof in one direction, substantially as described.

5. In combination, the uprights, the mold-frame, the upper and lower reciprocating pressers, the horizontal rotary cam-shaft, cams on said shaft, arranged to engage and force down the upper presser, the lifting-frame arranged to lift both of the pressers, as described, and the double elliptical cam on the shaft, arranged to engage and lift said frame, as set forth.

6. In combination, the two parallel uprights, the cross-bars rigidly securing their opposite ends together, the mold-frame at its ends rigidly secured to the uprights between their ends, the upper and lower pressers, respectively, between the mold-frame and cross-bars and formed at their ends to slide on the uprights, the horizontal shaft at its ends mounted in the uprights and extending between the same and between the upper presser and upper cross-bar, cams on said shaft to engage and force down the upper presser, and the lifting-frame arranged to lift both pressers and extending up from said shaft and operated by a cam thereof, said lifting-frame extending down beside and through sockets of the pressers and arranged to operate as set forth.

7. In a brick-pressing machine, the combination of the uprights, a mold-frame, upper and lower pressers and operating mechanism, a rigid cross-bar between said uprights beneath the lower presser, vertical bolts passing up through said cross-bar, the bed resting loosely on and vertically adjustable by said bolts, the cushions—such as elastic disks—on said bed, the plate on said cushions, and the bolts passing through the bed and said plate and loosely confining said plate in place, as described.

485,192. SHEET-METAL-FOLDING MACHINE. MATTHEW R. MASTERS, New York Mills, N. Y., assignor of one-half to W. Stuart Walcott, same place. Filed Dec. 12, 1891. Serial No. 414,693. (No model.)



Claim.—1. The combination, in a sheet-metal-folding machine, of a table, a presser-plate, turning-brakes working around the edges of the table, having V-shaped ends, and an extension piece adapted to be applied to the end of the brake, substantially as set forth.

2. The combination, with the turning-brake of a sheet-metal-folding machine, of a gage mounted on the brake, consisting of a spring-actuated pin mounted in an adjustable gage-body, and a screw for adjustably securing the body to the brake, substantially as set forth.

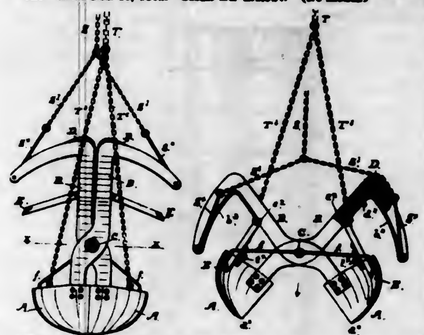
3. The combination, with the turning-brake of a sheet-metal-folding machine, of a gage mounted on the brake, consisting of a movable pin, a spring for actuating the pin, and a gage-body containing the pin and spring having slotted projection, and a screw for securing the gage-body to the brake, substantially as set forth.

4. In a sheet-metal-folding machine, the combination of a table, a presser-plate adjustably mounted upon a carrier-post by means of a cup-shaped socket adapted to receive the end of the post and having a central opening for receiving a securing-bolt, and adjusting set-screws adapted to act against the end of the post, substantially as set forth.

5. The combination, in a sheet-metal-folding machine, of a table,

a presser-plate adapted to descend upon the table, turning-brakes, a carrier post or frame on which the presser-plate is mounted, a guide-head, an eccentric or cam engaging in an opening in the post having a round lower side and parallel vertical sides, and a spring secured at one end to the upper end of the frame and at the other to an upward extension of the head, substantially as set forth.

485,193. DREDGING IMPLEMENT. JOHN HASEN, San Francisco, Cal. Filed Feb. 15, 1892. Serial No. 421,867. (No model.)



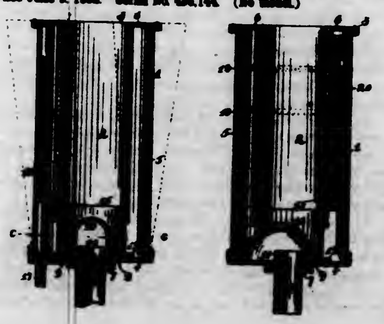
Claim.—1. In a dredge of the character herein described, the scrapers E on the arms of levers that carry the scoops, placed for operation as set forth.

2. The herein-described dredging implement, consisting of the excavating-scoops having beveled cutting-edges a^x, the cross arms or levers B B, having outwardly-turned ends above the pivot, the scrapers E on the levers, and the hoisting and operating chains S T and slings S' T', constructed and combined for operation as set forth.

485,194. THILL-COUPLING. EDWIN F. HOPKINS, Cleveland, Ohio, assignor to Samuel De Grey, same place. Filed Jan. 26, 1892. Serial No. 419,267. (No model.)

Claim.—In a thill-coupling, a dog D, provided with a flange-spring E, said dog D pivoted to the hooked draw-bar A, and the spring E, operating through an opening in said draw-bar, in combination with the draw-bar G, bolt I, and spring K, substantially in the manner and for the purpose set forth.

485,195. EXHAUST-HEAD. JULIUS L. HOERNER, St. Louis, Mo. Filed June 9, 1892. Serial No. 436,144. (No model.)



Claim.—1. In an exhaust-head, the combination, with an external shell 1, of an internal shell 2, fitted thereto and forming an annular chamber 5 between said shells, said shell 2 being open at each end, and an exhaust-pipe connection fitted to impart a whirling movement to the steam entering the chamber 5, substantially as and for the purpose set forth.

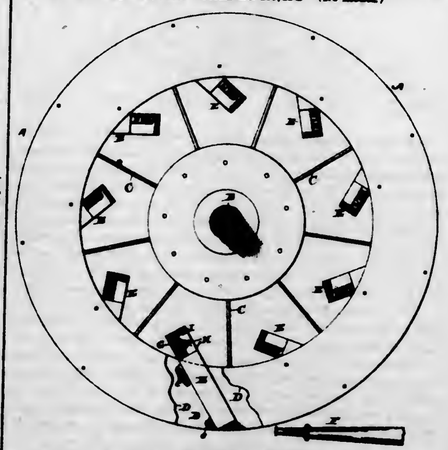
2. The improved exhaust-head constructed with an external shell 1, an internal shell 2, open at its upper end direct to the atmosphere and having a straight vertical air-passage extending through it unobstructed, an upper head 3, connecting the upper ends of both shells, a lower head 4, fitted for connection with the exhaust-pipe and closing the steam-space between the two shells, and a deflecting-elbow 10, mounted upon said lower head and arranged to impart a whirling movement to the steam as it enters the steam-space between the shells, substantially as specified.

3. An exhaust-head having external and internal shells, an upper head 3, having steam-exit passages 6 and connecting said shells at their upper ends, a lower head 4, fitted for connection with an exhaust-pipe and closing the steam-space between said shells at their lower ends, and a deflecting-elbow 10, having its upper end closed by a curved wall and provided with a lateral opening 11, leading into said steam-space, said deflecting-elbow being located upon said lower head and surrounded by said external shell, substantially as specified.

4. An exhaust-head constructed with external and internal shells having vertical parallel walls, a U-shaped drain-channel 16, mounted vertically upon the interior surface of said external shell, a U-shaped drain-channel 20, projecting from and secured to the external surface of the internal shell, a deflecting-elbow arranged to impart a whirling movement to steam in the space between said shells, and a drain-pipe arranged to carry drip-water from said steam-space, substantially as specified.

5. An exhaust-head constructed with external and internal shells having vertical parallel walls, an upper head 3, having steam-exit openings 6 and connecting said shells at their upper ends, a lower head 4, provided with a central opening 7, constructed to be engaged by the exhaust-pipe, a projection upon the inner side of said head, surrounding the opening 7, and said head also provided with an air-inlet opening 9, and a deflecting-elbow 10, having its upper end closed by a curved wall and provided with a lateral opening 11, leading into the chamber or steam-space between said shells, said elbow being located upon said lower head and surrounded by said external shell, a circular flange 15, cast integral with the upper portion of said elbow, and the lower end of said internal shell connected to said flange, substantially as specified.

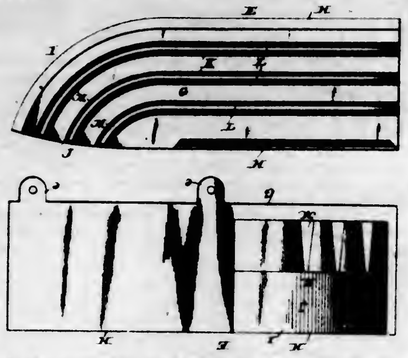
485,196. WATER-WHEEL. CORNELIUS W. HUSON, Nevada City, Cal. Filed Apr. 16, 1892. Serial No. 429,404. (No model.)



Claim.—1. In a water-wheel, the combination, with the inclosing rims, of the flat-bottom buckets clamped between said rims at an angle with the jet or stream and provided with inclosing side walls and inner projecting ends in which is formed a lateral discharge-opening opening on one side of the wheel and in from the rims thereof to direct the water away from the wheel, substantially as set forth.

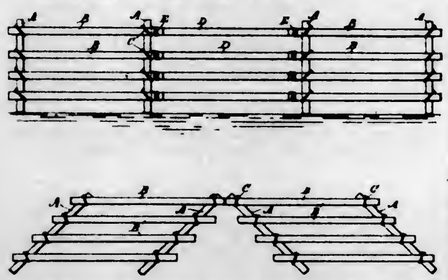
2. In a water-wheel, the bucket set at an angle to the jet or stream and provided with opposite inclosing walls forming between the inner ends thereof a lateral discharge-opening opening on one side of the wheel from the center thereof and a series of parallel ribs or

flanges projecting from the flat bottom of the buckets and extending from their outer ends to said lateral discharge-openings, substantially as set forth.



3. In a water-wheel, the combination, with the opposite rims, of the buckets clamped between said rims at an angle to the jet or stream and projecting beyond the inner edges of said rims, said buckets being provided with flat bottoms, opposite inclosing side walls, one of said walls terminating short of the inner bucket and the other longer wall having an extended end curved opposite the inner end of said short wall to form an inner lateral discharge-opening, and a series of parallel ribs or flanges arising from the flat bottom parallel with the opposite walls and curved to the edge of said lateral discharge-opening, substantially as set forth.

485,197. FENCE. WILLIAM J. JACOBS, Bargersville, Ind. Filed July 29, 1892. Serial No. 441,559. (No model.)



Claim.—1. That method of constructing a post-and-rail fence which consists in arranging two panels, each consisting of two posts and a series of rails, so that the posts cross the rails at an angle of about forty-five degrees, the posts of one panel being inclined oppositely to the posts of the other panel, then binding the posts and rails of each panel together at their points of intersection, then causing the posts and rails of each panel to assume a position at right angles to each other, and then connecting the two panels together, so that the reactive force of one panel in a longitudinal direction is opposed to the like reactive force in the other panel, substantially as set forth.

2. A fence-section consisting of the two end panels, each consisting of two posts and a series of rails crossing said posts at right angles, the rails being bound to the posts at the points of intersection by bands passing diagonally across the rails and the posts, the bands of one panel crossing in a direction opposite to the bands of the other panel, and an intermediate panel, consisting of rails only, which abut between the opposed posts of the end panels and are secured to the rails of said panels at their opposite ends, substantially as set forth.

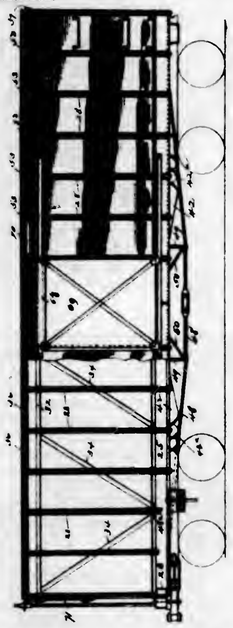
485,198. CAR CONSTRUCTION. STEPHEN A. JOHNSON, Evanston, Ill., assignor to Arthur S. Kirk, same place. Filed June 30, 1891. Serial No. 398,008. (No model.)

Claim.—1. In car construction, sills composed of channel-beams having their flanges offset or marginally bent and face-plates secured to said flanges, substantially as described.

2. In car construction, the combination, with sills composed of channel-beams presenting outwardly and having the margins of their flanges angularly bent or offset, of face-plates riveted or otherwise secured to said flanges, said face-plates being continuous around the corners of the car, substantially as described.

3. In car construction, the combination, with side sills composed of flanged metal beams, of transverse floor-beams composed of T-bars having portions of the ends of their webs cut away and the bifurcations thereof embracing the side sills and secured to the side sills by bolts or rivets, substantially as described.

4. In car construction, the combination, with sills composed of flanged metal beams, of tie-rods having their ends forked and secured with the side sills by being passed through the flanges thereof, substantially as described.



5. In car construction, the combination, with the frame of the car, of a draw-gear composed of metal beams disposed edgewise and having their outer ends projecting beyond the ends of the car and bent to engage the dead-wood, substantially as described.

6. In car construction, the combination of a draw-gear composed of two metal plates separated toward their forward ends to provide between them a spring-pocket and having their inner ends spread apart and connected to the side sills, respectively, substantially as described.

7. In car construction, the combination of a draw-gear composed of metal plates disposed edgewise and separated toward their forward ends to provide a spring-pocket and having their rear ends spread and connected to the side sills and having their bodies twisted, substantially as described.

8. In car construction, the combination of a draw-gear composed of plates vertically disposed, their forward ends being separated and parallel to each other and their rear ends spread and connected to the side sills, and diagonal bracing-rods interposed between the bodies of the draw-gear plates and the side sills, substantially as described.

9. In car construction, the combination, with the floor-frame, of a draw-gear composed of two metal plates, disposed edgewise, and a transverse floor-beam 40, having its middle portion recessed and provided with shoulders to form side bearings for the draw-gear plates, substantially as described.

10. In car construction, the combination, with metallic side sills, of combined posts and carlings constructed integrally from tubes bent into arched form, the legs of the arch forming two posts for opposite sides of the car and the middle forming a carling, and the ends of the posts projecting along the faces of the side sills and inturned beneath said sills, substantially as described.

11. In car construction, the combination of the frame posts or uprights composed of metal tubes having their lower ends cut away to provide a scarf-joint with the side sill and their extremities inturned to engage the lower edge of the side sill, substantially as described.

12. In car construction, frame-posts composed of metal tubes cut away toward their lower ends to provide one member of a scarf-joint and the remaining portion being provided with a core or filler of metal, the parts being fused together and the extremities of the posts inturned to engage the lower edge of the side sills, substantially as described.

13. In car construction, the combination, with posts composed of metal tubes, of an outer covering and an inner sheathing or lining for the side walls, composed of metal plates fluted to embrace the posts, substantially as described.

14. In car construction, the combination, with posts composed of metal tubes, of longitudinal plates passing through apertures in said posts and keyed thereto, substantially as described.

15. In car construction, the combination, with posts composed of metal tubes, of plates connecting said tubes, and struts or braces secured at their lower ends to the side sills and at their upper ends to said plates, the joints being filled with Babbitt metal, substantially as described.

16. In car construction, the combination, with the frame of the car, of an outer covering of metal plates secured to the frame by means of rivets or bolts passing through elongated apertures in the plates, and a continuous strip 55, through which the securing means also pass, substantially as described.

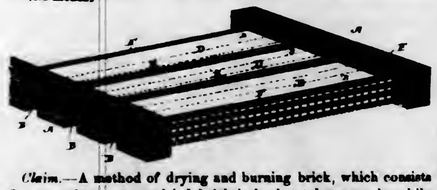
17. In car construction, the combination, with posts composed of metal tubes, of an outer wall covering and an interior sheathing fitted to said posts and an intermediate filling or lining of straw pulp or equivalent material, substantially as described.

18. In car construction, the combination, with posts and carlings composed of metal tubes bent into an arched form, of a tie-rod for the roof structure passing through the carlings and through interposed separating or spacing tubes, substantially as described.

19. In car construction, the combination, with the side sills composed of metal beams, of body truss-rods, a bearing interposed between the truss-rods and the sills, transverse tie-rods connecting said bearings, and diagonal struts 50, connected at their lower ends to the truss-rod bearing and at their upper ends to the side sill, substantially as described.

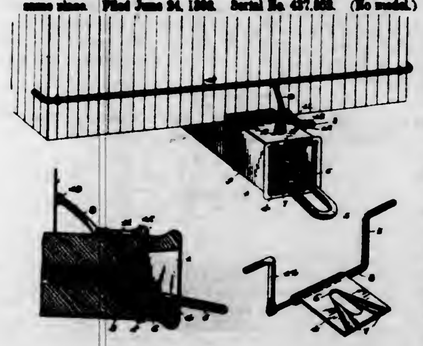
20. In car construction, the combination, with posts composed of metal tubes and an outer covering and a sheathing composed of metal plates, of an interposed filling and a fastening consisting of a split key passed through apertures in the covering and sheathing plates and having its ends spread, substantially as described.

485,199. METHOD OF DRYING AND BURNING BRICK. JOHN C. KIMBEL, Knoxville, Tenn. Filed Mar. 21, 1892. Serial No. 426,767. (No model.)



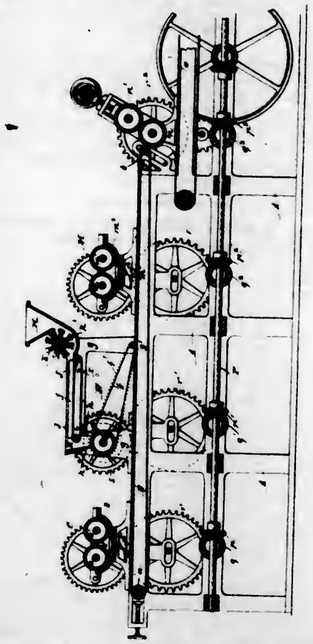
Claim.—A method of drying and burning brick, which consists in first coursing green undried brick in horizontal courses in a kiln to form a layer thereof, capping the layer with metallic coverings to spread the heat, firing the kiln, then after the first layer is dried removing said metallic covering, and successively coursing and capping separate layers of green undried brick upon the last-dried layer until the operation is complete, substantially as set forth.

485,200. CAR-COUPLING. WILLIAM R. KINNEY and WILLIAM R. OWNBY, Rector, Ark., assignors of one-third to Daniel W. McPherson, same place. Filed June 24, 1892. Serial No. 437,892. (No model.)



Claim.—In a car-coupling, the combination of a draw-head, a coupling-pin, a rock-shaft journaled in the bottom of the draw-head and provided at one end with a crank-handle having perforations in its horizontal arm, said rock-shaft being arranged in rear of the coupling-pin, a link-lifting plate arranged on the bottom of the draw-head and provided in its upper face with grooves and having a longitudinal coupling-pin slot and secured at its rear end to the rock-shaft, a rock-shaft 10, provided with an arm 9, a link pivoted to the arm 9 and provided with an eye receiving the horizontal arm of the crank-handle, keys arranged in the perforations of said crank-handle and securing the link to the same, and a detachable crank-handle secured to the other end of the rock-shaft 3, substantially as described.

485,201. CAKE-MACHINE. JUSTIN J. LABOULIS, New Orleans, La., assignor to the American Biscuit and Manufacturing Company, of Illinois. Filed Sept. 12, 1890. Serial No. 364,749. (No model.)



Claim.—1. The combination, with a traveling apron and a dough-delivery device whereby a sheet of dough is delivered upon the apron, of a fruit-receptacle and a fruit-carrier arranged above the apron, whereby the fruit is delivered upon the dough on the traveling apron, substantially as set forth.

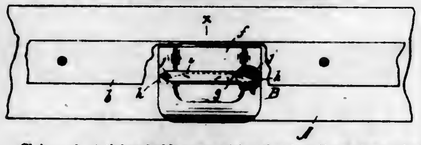
2. The combination, with the main traveling apron and a dough delivery device whereby a sheet of dough is delivered upon the apron, of an endless fruit-carrier arranged above the apron, a distributer whereby the fruit is delivered to the fruit-carrier, and a feed-hopper, substantially as set forth.

3. The combination, with the main traveling apron and a dough-delivery device whereby a sheet of dough is delivered upon the apron, of a main hopper or primary fruit-receptacle, a revolving brush whereby the discharge of the fruit from the same is facilitated, a distributing-apron receiving the fruit from the primary fruit-receptacle, a secondary receptacle into which the fruit is delivered by the distributing-apron, and an endless fruit-carrier receiving the fruit from the secondary receptacle and delivering the same upon the dough on the main apron, substantially as set forth.

4. The combination, with the main traveling apron and a dough-delivery device whereby a sheet of dough is delivered upon the apron, of a main hopper or primary fruit-receptacle, a traveling brush whereby the discharge of fruit from the same is facilitated, a distributing-apron receiving the fruit from the primary receptacle, a series of guide-bars whereby the fruit is guided on said distributing-apron, a secondary receptacle into which the fruit is delivered from said distributing-apron, and an endless fruit-carrier receiving the fruit from the secondary receptacle and delivering the same upon the dough on the apron, substantially as set forth.

5. The combination, with the main apron, of a primary dough-delivery device whereby a sheet of dough is delivered upon the main apron, a fruit-receptacle, an endless fruit-carrier arranged over the main apron in rear of the primary dough-delivery device, whereby loose fruit is delivered upon the sheet of dough, and a secondary dough-delivery device arranged over the main apron in rear of the endless fruit-carrier, whereby the loose fruit is covered with a layer of dough, substantially as set forth.

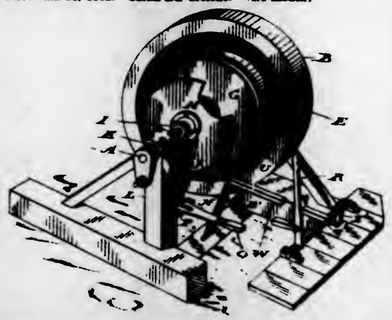
485,202. TICKET-HOLDER. MARSHALL LINCOLN, Boston, Mass. Filed July 11, 1892. Serial No. 439,613. (No model.)



Claim.—1. A ticket-holder comprising the plate B and depression *f*, in combination with the spring-bar *i*, secured to said plate across said depression, and the movable spring-bar *g*, arranged in parallelism with the first bar with a space between, substantially as described.

2. The combination, with the seat-back A, of the plate B, having the lip *d* secured to said back and channeled at *f*, the spring-bar *i*, secured to said plate by rivets *j*, and the hooked spring-bar *g*, taking on said rivets, substantially as set forth.

485,203. SAND-ROPE REEL. WILLIAM A. LLOYD, Pittsburg, Pa. Filed Jan. 21, 1892. Serial No. 418,899. (No model.)



Claim.—1. The pulleys B C and friction-disk E, held upon the angular-shaped end of the shaft A, the band-pulley G, and reel H, fixed together and loosely journaled on the shaft A, in combination with the slotted plates N and P, the pivoted lever J, its upper end fitted into the groove in the hub I, which is fixed to the face of the reel H, its other end extending through the slots in the plates, and the hand-lever R, substantially as and for the purposes specified.

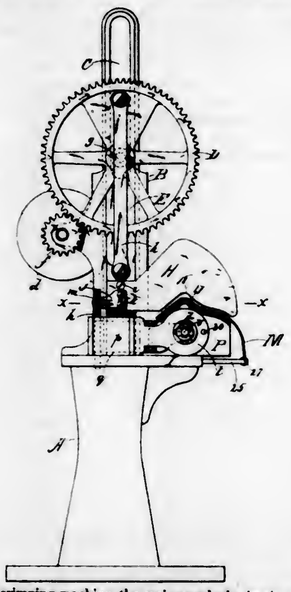
2. In a sand-rope reel, the band U, having one end stationary and its other end connected to a rock-shaft, in combination with a hand-lever R, rod Q, movable plate N, having a diagonal slot and fixed slotted plate P, and the pivoted lever passing through both slots, substantially as and for the purpose specified.

485,204. CRIMPING-MACHINE. JOSEPH C. LOCKETT, Boston, assignor to Charles S. Pierce, Brockton, Mass. Filed Sept. 16, 1891. Serial No. 405,994. (No model.)

Claim.—1. In a crimping-machine, a body, two spring-tensioned crimping-jaws mounted on rods in alignment on said body, a spring-pushed horizontal lever playing loosely on one of said rods, a vertically-moving crimping-blade adapted to work between said jaws, and a wheel on said blade in position to engage the free rear end of said lever and automatically increase the tension on the corresponding crimping-jaw, substantially as specified.

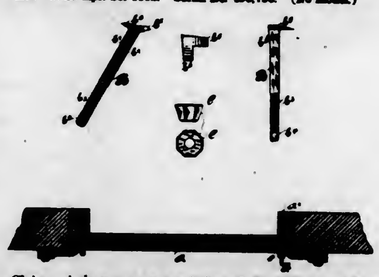
2. In a crimping-machine, the combination of a table, a vertically-arranged way, a crank-actuated block mounted to slide therein, a vertically-arranged crimping-blade secured to said block, two spring-pushed rods mounted in alignment on said table and respectively bearing crimping-jaws, a roll mounted on said blade, a horizontal lever pivoted on said table and having its forward end loose on one of the jaw-rods and its rear end normally disposed in the path of said roll, and a push-spring interposed between said jaw and the adjacent end of said lever, substantially as described.

3. In a crimping-machine, the body and table, in combination with a crank-actuated slide E, the crimping-blade H, and roller *m*, mounted thereon, the spring-tensioned crimping-jaws P P', fitted to slide on said table, and a spring-pushed lever *g*, pivoted on said table and adapted to actuate said jaw P, the free end of said lever being normally disposed in the path of said wheel *m*, substantially as described.



4. In a crimping-machine, the spring-pushed crimping-jaws P P', in combination with the table, the rod 25, and the curve-slotted carriage fitted to slide on said rod and registering with said jaws, substantially as described.

485,205. DOOR-SECURER. JEREMIAH H. MATTHEWS, South Bend, Ind. Filed Apr. 26, 1892. Serial No. 430,798. (No model.)

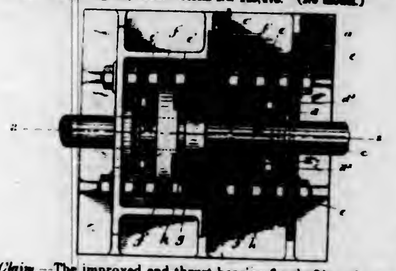


Claim.—A door-securer consisting of the bolt or rod B, having the narrow and the wide parallel sides *b'* and *b²*, the thread *b³*, the hole *b⁴*, and the beveled ends *b⁵*, with the ending spurs *b⁶ b⁶*, in combination with the exterior beveled nut, substantially as shown and described.

485,206. SPOOL-HOLDER. ALFRED F. MORGAN, Clinton, Wis. Filed Mar. 31, 1892. Serial No. 427,206. (No model.)

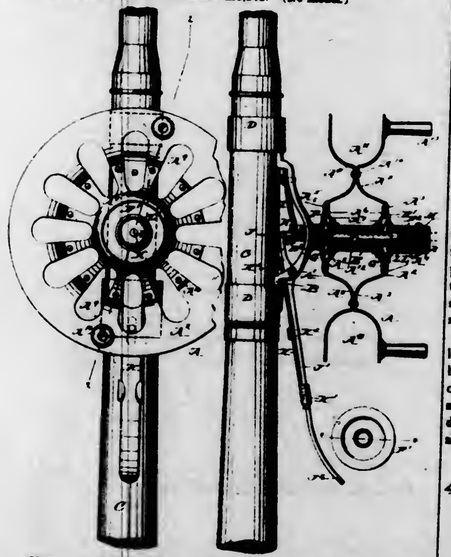
Claim.—In a spool-holder, substantially as described, the combination, with the friction plate or strip, of a spool-holder formed from a piece of wire secured midway of its length to the rear side of the plate or strip adjacent to the upper end thereof and having the coils *d*, arranged upon the forward side of the strip or plate and extending forwardly therefrom, the downwardly-converging branches *e*, and the inwardly-extending journal branches *f*, the said coils *d* being designed and adapted to press the branches *e* toward the friction plate or strip, so as to press the cotton of the spool against said plate, substantially as and for the purpose specified.

485,207. THRUST-BEARING FOR SHAFTING. CHARLES D. MORRIS, New York, N. Y., assignor of one-half to William Gardner, same place. Filed Aug. 19, 1892. Serial No. 443,473. (No model.)



Claim.—The improved end-thrust bearing for shafting, the same comprising a casing having an oil-chamber, shaft-receiving orifices in two sides of said casing, and stuffing-boxes arranged to prevent the leakage of oil through said orifices around the shaft, screw-threaded through-bolts affixed to said casing and extending through the oil-chamber parallel with the shaft, bearing-plates adjustably secured to said through-bolts and provided with orifices through which the shaft passes, a collar affixed to the shaft between said plates, and anti-friction rollers or balls interposed between the said collar and bearing-plates, said rollers being in contact with the oil contained in the chamber, as set forth.

485,208. FISHING-REEL. JAMES H. MOUNT, Jamesburg, N. J. Filed Mar. 3, 1892. Serial No. 423,575. (No model.)



Claim.—1. In a fishing-reel, the combination of instrumentalities herein represented as follows, to wit: a base-plate, a tubular bobbin-journal projecting at substantially a right angle from the base-plate, a bobbin, a bobbin-governing device, including a spindle, working axially in said tubular journal, and an operating-lever pivoted to the base-plate to work in the plane of the axis of the rod and having an arm to engage and work said spindle, as set forth.

2. A reel for fishing-rods, the axes of whose bobbin is to be in the plane of but substantially perpendicular to the axis of the rod, provided with a base-plate sprung outward medially to form a bridge, and a bobbin-governing device including a part working beneath said bridge, substantially as described.

3. A reel comprising in its make-up the following instrumentalities, to wit: a base-plate, a bobbin-journal, a bobbin formed with friction-surfaces on its opposite sides, non-rotatable friction-plates corresponding thereto, adjustable relatively toward and from each other, and means for so adjusting the friction-plates.

4. A reel comprising in its make-up the following instrumentalities, to wit: a base-plate, a bobbin-journal, non-rotatable friction-plates thereon adjustable relatively toward and from each other, a bobbin having friction-surfaces corresponding to said friction-plates, and take-up springs between said friction-plates and friction-surfaces.

5. A reel comprising in its make-up the following instrumentalities, to wit: a base-plate, a tubular bobbin-journal, a friction-plate fixed thereon, a non-rotatable friction-plate movable axially on the said journal, a bobbin having friction-surfaces, and a spindle movable axially in the tubular journal and carrying the movable friction-plate.

6. A reel comprising in its make-up the following instrumentalities, to wit: a base-plate, a tubular bobbin-journal, a bobbin having friction-surfaces, a spindle movable axially in the bobbin-journal, a friction-plate carried by said spindle, a lever to work said spindle, and a spring opposing said lever.

7. A reel comprising in its make-up the following instrumentalities, to wit: a base-plate, a tubular bobbin-journal, a bobbin having friction-surfaces, a spindle movable axially in the tubular journal and carrying a friction-plate, and means for adjusting the position of said friction-plate axially on its carrying-spindle.

8. A reel comprising in its make-up the following instrumentalities, to wit: a base-plate, a tubular bobbin-journal, a bobbin having friction-surfaces, a spindle movable axially in the tubular journal, a friction-plate movable axially on said spindle, a collar on said spindle, and a coiled spring on said spindle retained by said collar and exerting pressure upon the said friction-plate.

9. A reel comprising in its make-up the following instrumentalities, to wit: a base-plate, a tubular bobbin-journal, a bobbin having friction-surfaces, a spindle movable axially in said journal, a friction-plate playing axially on said spindle, a spring on the spindle pressing said friction-plate, and a collar screwing on said spindle to retain said spring and adjust the limit of play of the friction-plate.

10. A reel comprising in its make-up the following instrumentalities, to wit: a base-plate, a tubular bobbin-journal, a bobbin having friction-surfaces, a spindle movable axially in the tubular journal, a friction-plate playing on said spindle, a spring acting on the friction-plate, and a nut screwing on said spindle and serving as an adjustable stop for limiting the movement of said spindle in the friction-plate.

11. A reel comprising in its make-up the following instrumentalities, to wit: a base-plate, a tubular bobbin-journal, a bobbin having friction-surfaces, a spindle movable axially in said journal, a friction-plate incapable of rotation, but axially adjustable on said journal, and having a flange, a nut screwing on said spindle and having a flange to move axially but turn on that on the friction-plate, a spring holding the friction-plate toward said nut, and a retaining-collar for said spring.

12. A reel comprising in its make-up the following instrumentalities, to wit: a base-plate, a tubular bobbin-journal, a bobbin having friction-surfaces, a spindle movable axially in said journal, a friction-plate carried by said spindle, a spring acting on said spindle, a lever to move said spindle against the spring, and a bearer adjustable on said lever to engage a fixed bearing, as the rod, and adjust the said spindle, as set forth.

13. A reel-bobbin whose construction is represented herein as follows, to wit: two plates of sheet metal struck up alike and united back to back, so as to show in cross-section the winding-groove A^{11} outside, the opposite plates meeting and united immediately within said groove A^{11} and then diverging and forming opposite central disks A^{4}, which are separated by and fixed to the respective ends of a sleeve or cylinder A^{12}, as set forth.

485,209. CAR-HEATING. WILLIAM W. MORRELL, Dodge City, Kans. Filed Nov. 13, 1891. Serial No. 411,789. (No model.)

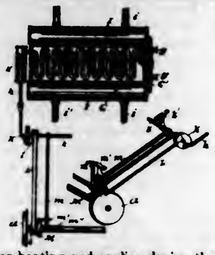
485,209.

Claim.—1. The combination, with the draw-bar having a swinging coupler part, of means for locking said part and a spring arranged in said draw-bar, said spring being of a spiral form coiled in a single plane and having its free end in engagement with said coupler part, substantially as described.

Claim.—1. The combination of a frame having hinged platforms and provided with track-bars, sliding gates suspended from the track-bars, gate-levers having their upper ends fulcrumed on the frame and their lower ends connected with the gates, and the transversely-disposed platform-supporting levers provided with depending arms

Claim.—1. In an adding-machine, the combination, with the registering and ratchet wheels, of a pair of long levers engaging said ratchet-wheels and extending in a direction substantially parallel to the axes of the wheels, key-levers for actuating the long levers, each

485,209.

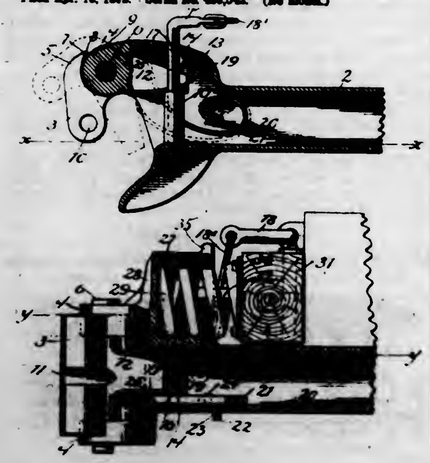


Claim.—In a car heating and cooling device, the combination of the box F, situated under the car, coil-pipe G, situated in said box, storage-reservoirs I, one on each side of said box, pipes *i i'* to conduct heated or chilled air into said coach, pump H, adapted to force air through said coil G and through said pipes, and means for operating said pump, substantially as shown and described.

485,210. FLOUR BIN AND SIFTER. FRANK K. MCCAGUE, Shell Rock, Iowa. Filed Sept. 26, 1891. Serial No. 406,822. (No model.)

Claim.—The combination of a bin having a lower conical portion 2 and provided with an outer casing 4, surrounding the conical portion 2 and secured to the bin and having its lower end of greater diameter than the lower end of the conical portion 2 and terminating at the lower end thereof, a sifter-casing detachably secured to and supported by the lower end of the outer casing 4 and arranged beneath the same, and a reciprocating sifter mounted in and supported by the sifter-casing and arranged beneath the conical portion 2, said conical portion 2 forming a discharge-opening for the bin, substantially as described.

485,211. CAR-COUPLING. GEORGE C. MCMICHAEL, St. Paul, Minn., assignor to the Eureka Coupler and Buffer Company, of West Virginia. Filed Apr. 18, 1892. Serial No. 430,542. (No model.)



Claim.—1. The combination, with the draw-bar having a swinging coupler part, of means for locking said part and a spring arranged in said draw-bar, said spring being of a spiral form coiled in a single plane and having its free end in engagement with said coupler part, substantially as described.

2. The combination, with the draw-bar having the coupler-head and a swinging knuckle, of a spirally-wound spring 21, arranged therein, one end of said spring being fastened and the other end having an upturned arm adapted to engage the finger of said knuckle, a post or lug 24, and a locking device, substantially as described.

3. The combination, with the draw-bar, of the head and the swinging knuckle thereof, a stop formed upon said knuckle, a locking device to engage the finger of the knuckle, and the spiral spring arranged within the draw-bar and having one end fast therein, said spring being coiled in a single plane, the free and upturned end of the spring adapted to engage the rear side of said finger, and the arrangement of the finger and knuckle and spring being such that when said finger is in its open position the spring still presents a curved side thereto, whereby damage to the spring upon the return of the finger is prevented, substantially as described.

4. As an article of manufacture, the car-coupler spring, of the irregular-curved form described, coiled in a single plane and having the long outward projection or arm 21, substantially as described.

5. As an article of manufacture, the car-coupler spring herein described, coiled in a single plane and of a single turn, consisting of the short straight inner part, the short curve, the intermediate portion formed upon a larger curve, and the long projecting end formed in a still larger curve and provided with the projection 25, substantially as described.

6. The combination, with the car-coupler having the barrel, of the cushion spring or springs in said barrel and a chafing-plate arranged on the car, substantially as described.

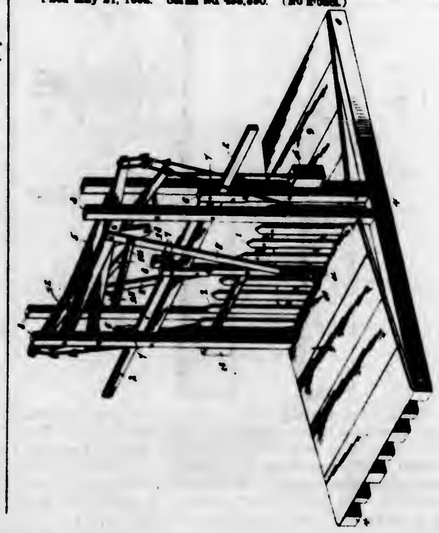
7. The combination, with the draw-bar provided with the barrel or hood, of a cushion spring or springs arranged in said barrel, a chafing-plate on the car, and a stud projecting from said chafing-plate, substantially as and for the purpose specified.

8. The combination, with the car, of a draw-bar and the swinging knuckle thereof, the gravity locking-block, the transverse shaft upon which said block is secured, the downwardly-turned crank-arm 15 thereof, the operating-bar arranged on the car and having the crank-arm 18, and the link or links extending between the arms 15 and 18, whereby the draw-bar is attached to the car regardless of the tail-fastening of said bar, substantially as described.

9. The combination of the draw-bar having the integral spring-barrel 27 and its strengthening rib or ribs 28 with a buffer spring or springs provided in said barrel, as and for the purpose specified.

10. The combination, with a draw-bar, of the coupler part thereof, the barrel formed integrally therewith and having the strengthening-rib 35, and a buffer spring or springs arranged in said barrel, substantially as described.

485,212. SLIDING GATE. JAMES A. NEWTON, Kingston, Tenn. Filed May 21, 1892. Serial No. 433,390. (No model.)



Claim.—1. The combination of a frame having hinged platforms and provided with track-bars, sliding gates suspended from the track-bars, gate-levers having their upper ends fulcrumed on the frame and their lower ends connected with the gates, and the transversely-disposed platform-supporting levers provided with depending arms connected with the gate-levers and each having one end connected with and supporting the platforms and its other end weighted, substantially as described.

2. The combination of a frame provided with track-bars, sliding gates suspended from the track-bars, hinged platforms arranged on opposite sides of the gates, gate-levers fulcrumed on the frame and connected with the gates, the transversely-disposed platform-supporting levers, each fulcrumed near one end and provided with a depending arm, bars connecting the arms with the gate-levers, rods connecting one end of each platform-supporting lever with the platforms, and a weight suspended from the other end of each lever, substantially as described.

485,213. JOURNAL-BOX. JOHN S. HYDNEY, Tacoma, Wash. Filed July 13, 1892. Serial No. 439,539. (No model.)

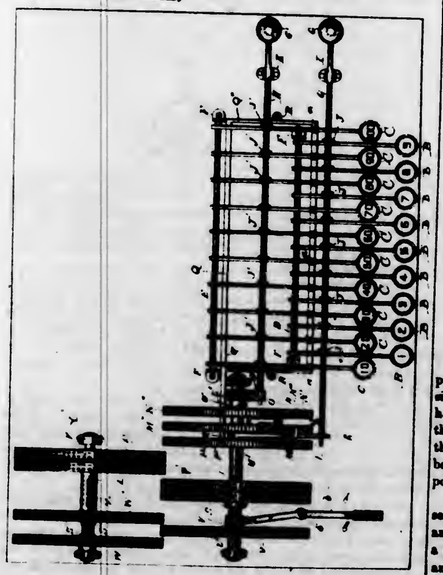
Claim.—1. A journal-box having its base or bed plate and its cap-plate provided with parallel ears arranged to lie in contact and provided with inclined intersecting slots, said slots being engaged in pairs by through-bolts, substantially as specified.

2. In a journal-box, the combination, with a base or bed plate provided with perpendicular ears having inclined slots, of a cap-plate provided with lateral ears in contact with the ears upon the bed-plate and having slots inclined to intersect the before-mentioned slots and bolts engaging said intersecting slots, substantially as specified.

3. In a journal-box, the members provided with parallel ears adapted to lie in contact and having oppositely-inclined slots which register with each other at different points, according to the proximity of the members, substantially as specified.

4. A journal-box having independent members provided with parallel ears having oppositely-inclined slots engaged by adjusting-bolts, substantially as specified.

485,214. ADDING-MACHINE. CHANDLER A. OAKES, New York, N. Y., and JOHN H. JACKSON, Pen Argyl, Pa. Filed Dec. 16, 1891. Serial No. 415,396. (No model.)



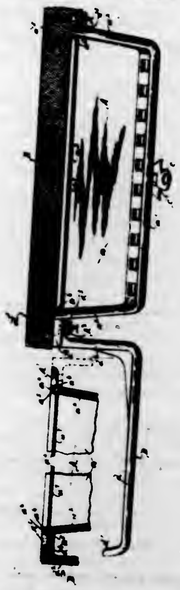
Claim.—1. In an adding-machine, the combination, with the registering and ratchet wheels, of a pair of long levers engaging said ratchet-wheels and extending in a direction substantially parallel to the axes of the wheels, key-levers for actuating the long levers, each of said key-levers having a link connected thereto and a slot in the link, which embraces the long levers, substantially as set forth.

2. In an adding-machine, the combination, with the registering and ratchet wheels, of a pair of long levers extending in a direction substantially parallel with the axes of the said registering-wheels and engaging said ratchet-wheels, key-levers arranged to actuate the long levers, whereby the registering-wheels are rotated or partially rotated, and a pivoted frame, a carry and a stop pawl operating in conjunction with the same, substantially as described.

3. In an adding-machine, the combination of a pair of long levers provided with weights and connected to a set of ratchet-wheels having their axes substantially parallel with the levers, said ratchet-wheels being connected to co-operate by means of pawls secured to one and engaging the other, a rack and pinion with which one of the levers is connected, numbered disks or wheels actuated by said ratchet-wheels, key-levers connected to the long levers by slotted links, and a rock-frame provided with a pawl adapted to engage said ratchet-wheels at the termination of a stroke of one of the keys, all arranged and adapted to operate in the manner and for the purpose substantially as described.

4. In an adding-machine, primary registering and ratchet wheels, a pair of long levers engaging said ratchet-wheels and extending substantially parallel with the axes of the registering-wheels, and key-levers actuating said long levers, in combination with secondary registering-wheels mounted on an independent shaft and a gear-wheel V, connected to the primary wheels and provided with a lever for throwing it in or out of engagement with the secondary registering-wheels, substantially as specified.

485,215. BRACKET. HUGH J. O'NEIL, Rochester, N. Y. Filed Dec. 30, 1891. Serial No. 416,521. (No model.)



Claim.—1. In a bracket adapted to be attached to the backs of pews, seats, &c., the combination of a frame having a front wall and side walls formed with cut-outs in their rear edges and a rear side bar having hooks at its ends arranged in said cut-outs and engaged with the inner edge thereof and having its central portion depressed within the plane of its extremities for separating the same from the seat-back and permitting the insertion of cards, &c., between said central portion and the seat-back, substantially as specified.

2. In a bracket adapted to be attached to the backs of pews, seats, &c., the combination of a removable frame having a front wall, and side walls formed with cut-outs or notches in their rear edges, and a rear bar having hook-shaped extremities arranged in said cut-outs and removably engaged with the inner edges thereof and having its

central portion depressed within the plane of its extremities for separating the same from the seat-back and permitting the insertion of cards, &c., between said central portion and the seat-back, substantially as and for the purpose set forth.

485,216. BELT-STRETCHER. ENOCH PAGE, Lancaster, Pa. Filed Apr. 27, 1892. Serial No. 430,917. (No model.)

Claim.—1. The combination, with the draw-bar having a swinging coupler part, of means for locking said part and a spring arranged in said draw-bar, said spring being of a spiral form coiled in a single plane and having its free end in engagement with said coupler part, substantially as described.

2. The combination, with the draw-bar having the coupler-head and a swinging knuckle, of a spirally-wound spring 21, arranged therein, one end of said spring being fastened and the other end having an upturned arm adapted to engage the finger of said knuckle, a post or lug 24, and a locking device, substantially as described.

3. The combination, with the draw-bar, of the head and the swinging knuckle thereof, a stop formed upon said knuckle, a locking device to engage the finger of the knuckle, and the spiral spring arranged within the draw-bar and having one end fast therein, said spring being coiled in a single plane, the free and upturned end of the spring adapted to engage the rear side of said finger, and the arrangement of the finger and knuckle and spring being such that when said finger is in its open position the spring still presents a curved side thereto, whereby damage to the spring upon the return of the finger is prevented, substantially as described.

4. As an article of manufacture, the car-coupler spring, of the irregular-curved form described, coiled in a single plane and having the long outward projection or arm 21, substantially as described.

5. As an article of manufacture, the car-coupler spring herein described, coiled in a single plane and of a single turn, consisting of the short straight inner part, the short curve, the intermediate portion formed upon a larger curve, and the long projecting end formed in a still larger curve and provided with the projection 25, substantially as described.

6. The combination, with the car-coupler having the barrel, of the cushion spring or springs in said barrel and a chafing-plate arranged on the car, substantially as described.

7. The combination, with the draw-bar provided with the barrel or hood, of a cushion spring or springs arranged in said barrel, a chafing-plate on the car, and a stud projecting from said chafing-plate, substantially as and for the purpose specified.

8. The combination, with the car, of a draw-bar and the swinging knuckle thereof, the gravity locking-block, the transverse shaft upon which said block is secured, the downwardly-turned crank-arm 15 thereof, the operating-bar arranged on the car and having the crank-arm 18, and the link or links extending between the arms 15 and 18, whereby the draw-bar is attached to the car regardless of the tail-fastening of said bar, substantially as described.

9. The combination of the draw-bar having the integral spring-barrel 27 and its strengthening rib or ribs 28 with a buffer spring or springs provided in said barrel, as and for the purpose specified.

10. The combination, with a draw-bar, of the coupler part thereof, the barrel formed integrally therewith and having the strengthening-rib 35, and a buffer spring or springs arranged in said barrel, substantially as described.

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bifurcated and extending rearward beyond the coupling-pin on opposite sides of the same, substantially as described.

485,219. CAR-AXLE BOX. EDGAR PEIRCE, New York, N. Y. Filed Aug. 18, 1891. Serial No. 402,601. (No model.)

Claim.—1. In an adding-machine, the combination, with the registering and ratchet wheels, of a pair of long levers engaging said ratchet-wheels and extending in a direction substantially parallel to the axes of the wheels, key-levers for actuating the long levers, each of said key-levers having a link connected thereto and a slot in the link, which embraces the long levers, substantially as set forth.

2. In an adding-machine, the combination, with the registering and ratchet wheels, of a pair of long levers extending in a direction substantially parallel with the axes of the said registering-wheels and engaging said ratchet-wheels, key-levers arranged to actuate the long levers, whereby the registering-wheels are rotated or partially rotated, and a pivoted frame, a carry and a stop pawl operating in conjunction with the same, substantially as described.

3. In an adding-machine, the combination of a pair of long levers provided with weights and connected to a set of ratchet-wheels having their axes substantially parallel with the levers, said ratchet-wheels being connected to co-operate by means of pawls secured to one and engaging the other, a rack and pinion with which one of the levers is connected, numbered disks or wheels actuated by said ratchet-wheels, key-levers connected to the long levers by slotted links, and a rock-frame provided with a pawl adapted to engage said ratchet-wheels at the termination of a stroke of one of the keys, all arranged and adapted to operate in the manner and for the purpose substantially as described.

4. In an adding-machine, primary registering and ratchet wheels, a pair of long levers engaging said ratchet-wheels and extending substantially parallel with the axes of the registering-wheels, and key-levers actuating said long levers, in combination with secondary registering-wheels mounted on an independent shaft and a gear-wheel V, connected to the primary wheels and provided with a lever for throwing it in or out of engagement with the secondary registering-wheels, substantially as specified.

485,215. BRACKET. HUGH J. O'NEIL, Rochester, N. Y. Filed Dec. 30, 1891. Serial No. 416,521. (No model.)

Claim.—1. In a bracket adapted to be attached to the backs of pews, seats, &c., the combination of a frame having a front wall and side walls formed with cut-outs in their rear edges and a rear side bar having hooks at its ends arranged in said cut-outs and engaged with the inner edge thereof and having its central portion depressed within the plane of its extremities for separating the same from the seat-back and permitting the insertion of cards, &c., between said central portion and the seat-back, substantially as specified.

2. In a bracket adapted to be attached to the backs of pews, seats, &c., the combination of a removable frame having a front wall, and side walls formed with cut-outs or notches in their rear edges, and a rear bar having hook-shaped extremities arranged in said cut-outs and removably engaged with the inner edges thereof and having its

485,218. JOURNAL-BOX. JOHN S. HYDNEY, Tacoma, Wash. Filed July 13, 1892. Serial No. 439,539. (No model.)

Claim.—1. A journal-box having its base or bed plate and its cap-plate provided with parallel ears arranged to lie in contact and provided with inclined intersecting slots, said slots being engaged in pairs by through-bolts, substantially as specified.

2. In a journal-box, the combination, with a base or bed plate provided with perpendicular ears having inclined slots, of a cap-plate provided with lateral ears in contact with the ears upon the bed-plate and having slots inclined to intersect the before-mentioned slots and bolts engaging said intersecting slots, substantially as specified.

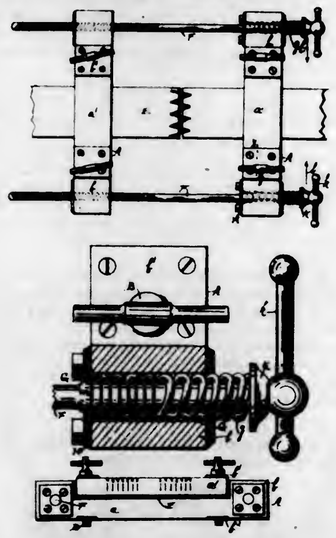
3. In a journal-box, the members provided with parallel ears adapted to lie in contact and having oppositely-inclined slots which register with each other at different points, according to the proximity of the members, substantially as specified.

4. A journal-box having independent members provided with parallel ears having oppositely-inclined slots engaged by adjusting-bolts, substantially as specified.

485,214. ADDING-MACHINE. CHANDLER A. OAKES, New York, N. Y., and JOHN H. JACKSON, Pen Argyl, Pa. Filed Dec. 16, 1891. Serial No. 415,396. (No model.)

central portion depressed within the plane of its extremities for separating the same from the seat-back and permitting the insertion of cards, &c., between said central portion and the seat-back, substantially as and for the purpose set forth.

485,216. BELT-STRETCHER. ENOCH PAGE, Lancaster, Pa. Filed Apr. 27, 1892. Serial No. 430,817. (No model.)



Claim.—1. In a belt-stretching device, the combination, with clamps for holding the ends of the belt, of rigid tightening-screws connecting the clamps, springs having a bearing for one end on said screws and for the other end on one of the clamps, and indicators on the tightening-screws adapted to show the pressure on the springs by the distance said indicators are drawn from one of the clamps, substantially as and for the purpose specified.

2. In a belt-stretcher, the combination, with clamps for holding the ends of the belt, of rigid tightening-screws connecting the clamps and having a series of circumferential grooves cut in the parts thereof engaged in one of the clamps, and springs having a bearing for one end on said screws and for the other end on one of the clamps, substantially as and for the purpose specified.

3. In a belt-stretching device, the combination, with recessed clamps for holding the ends of the belt, of tightening-screws passing through said recesses, springs coiled about said tightening-screws and having one end bearing against plates covering the ends of the recesses and the other against bosses on said screws, and a device for registering the pressure on the springs, substantially as and for the purpose specified.

4. In a belt-stretching device, the combination, with the tightening-screws, of clamps formed of two perforated pieces, stationary nuts inserted in the outer ends of the perforations and extending but partially through the same, the diameter of the nut-openings being less than that of said perforations, and set-screws adapted to engage the nuts and having the threads formed externally thereon, said screws being threaded only at their lower ends and having elongated necks above the threaded portions, substantially as and for the purpose specified.

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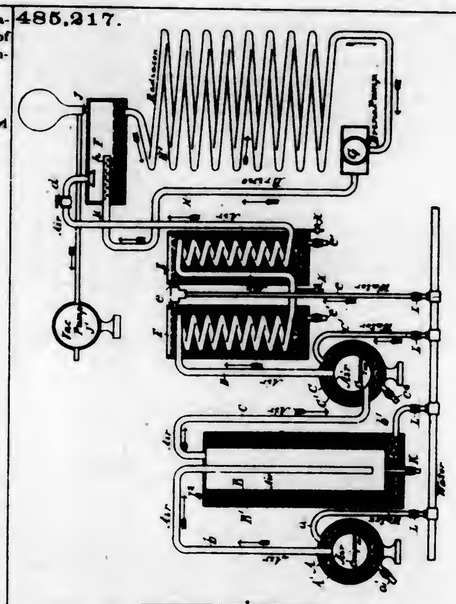
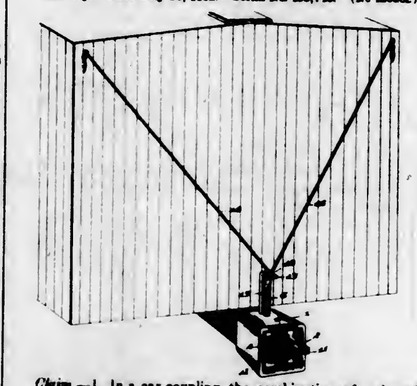


485,218. CAR-COUPLING. CHARLES W. PATTON, Clarksville, Ind., assignor of two-thirds to John J. Ramsey and Thomas J. Ramsey, Shelbyville, Ky. Filed May 30, 1892. Serial No. 433,740. (No model.)



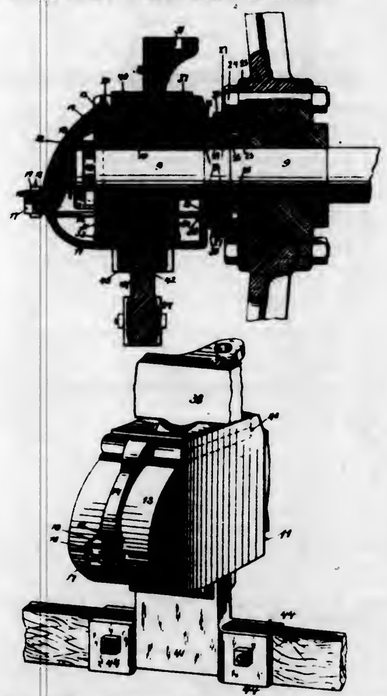
Claim.—1. In a car-coupling, the combination of a draw-head provided in its sides with longitudinal grooves, an approximately-U-shaped pin-support comprising parallel sides arranged in the grooves, and a cross-piece connecting the inner ends of the sides and adapted to support a pin, and a spring for moving the pin-support forward, substantially as described.

2. In a car-coupling, the combination of a draw-head provided in its sides with longitudinal grooves, an approximately-U-shaped pin-support comprising parallel sides arranged in the grooves and having extended ends projecting beyond the draw-head, a cross-piece connecting the inner ends of the sides and adapted to support a coupling-pin, and a spring for moving the pin-support forward, substantially as described.

3. In a car-coupling, the combination of a draw-head, a coupling-pin, a pintle-rod arranged transversely of the draw-head at the top thereof, a plate hinged to the draw-head by the pintle-rod and having its rear end bifurcated and adapted to engage the link, and a spring disposed on the pintle-rod and pressing the plate downward, substantially as described.

4. In a car-coupling, the combination of a draw-head provided in its sides with horizontal grooves, a pin-support provided with side bars arranged in the grooves and having a cross-piece connecting the side bars, a coupling-pin arranged in advance of the cross-piece, and a plate hinged to the top of the draw-head and having its rear end bifurcated and extending rearward beyond the coupling-pin on opposite sides of the same, substantially as described.

485,219. CAR-AXLE BOX. EDGAR PRESCOTT, New York, N. Y. Filed Aug. 18, 1891. Serial No. 403,001. (No model.)



Claim.—1. The combination, with the axle-box provided with a slotted horizontal projection on its surface near the bottom, of a lid provided with a hooking device at its upper end adapted to engage with the axle-box and with a perforated projection at its lower end and co-operating with the projection on the axle-box, and means for fastening said projections together, substantially as set forth.

2. The combination, with the axle-box provided with a slotted horizontal projection, as 17, of the lid provided with a hooking device at its upper end engaging with the axle-box and with a horizontal projection at its lower end having a bolt-hole and coacting with said projection 17, and a bolt and nut co-operating with said projections, substantially as and for the purpose set forth.

3. The combination, with an axle-box, of a lid having rib or projection 14, with arms 15, adapted to engage with the walls of a recess in said box, and a bolt engaging with another part of said box and adapted to draw said arms toward their bearing-surfaces, substantially as set forth.

4. The combination, with an axle-box provided at its rear end with an annular projection, of a wheel-hub provided with annular projections, between which said annular projection of the axle-box extends, an annular packing interposed between the outer surface of the annular projection of the axle-box and the inner surface of the exterior annular projection of the wheel-hub, and a second annular packing interposed between the inner surface of the annular projection of the axle-box and the car-axle, substantially as set forth.

5. The combination, with an axle-box provided with a suitable lid, of an annular packing placed between said box and a revolving part of the truck, such a packing made of a substance suitable for arresting and absorbing the lubricating-oil, and a passage for reconducting lubricating-oil from such packing back into the main body of the axle-box, substantially as set forth.

6. The combination, with an axle-box having a recess in its under side, of a device comprising horizontal arms provided with bolt-holes for attaching the device to the truck-frame, and a vertical member, as 41, which is adapted to enter said recess in the axle-box and thus form a yielding connection between the bottom of the axle-box and the truck-frame, substantially as set forth.

7. The combination, with an axle-box having recesses in its top and bottom surfaces, of a bearing-piece, as 38, attached to the truck-frame and projecting therefrom at right angles to its longitudinal beams and co-operating with the recess in the top of the axle-box, and a device comprising horizontal attaching-arms and a vertical member, as 41, which is adapted to enter the recess in the bottom surface of the axle-box, the combination providing yielding connections between the truck-frame and the top and bottom surfaces of the axle-box, substantially as set forth.

8. The combination, with a car-axle, axle-boxes provided with recesses in their tops, and bearing-pieces provided with curved surfaces and removably held in said recesses of the axle-boxes, of bearing-pieces, as 38, adapted to be secured to the truck-frame, and likewise provided with curved surfaces co-operating with the removable bearing-pieces in the tops of the axle-boxes, whereby axles of a given length are adapted to support truck-frames of varying widths, substantially as set forth.

9. The combination, with an axle-box, of a bearing-piece with curved bearing-surface interposed between the outer surface of said box and a bearing-piece provided with a corresponding surface adapted to connect with the truck or car frame, and an elastic bolster between said axle-box and the first-named bearing-piece, substantially as set forth.

10. The combination, with an axle and its bearing, of a reservoir for containing lubricating-oil underneath said axle and a continuous wick having a V-shaped support for maintaining said wick in contact with the oil in said reservoir and with the under side of the axle, substantially as set forth.

11. The combination, with an axle and its bearing and a reservoir for containing lubricating-oil underneath such axle, of a continuous wick having a V-shaped hinged support for the purpose of allowing the wick to adjust itself to the under side of the axle, substantially as set forth.

12. The combination, with an axle and its bearing, of a reservoir for containing lubricating-oil, an annular packing between the axle-box and a wheel-hub made of an absorbent substance, and a conduit for conducting surplus oil from such packing into the oil-receptacle, substantially as set forth.

485,220. DYNAMO-ELECTRIC MACHINE. DAVID PEPPER, Jr., Philadelphia, Pa. Filed Mar. 28, 1892. Serial No. 426,674. (No model.)

Claim.—1. In an armature-ring, sections F', adapted to abut at the ends and form the ring, and each section having an inwardly-extending arm or spoke F^3, the end F^4 of which is adapted to extend around and grasp the armature-shaft on the side farthest from the section.

2. In an armature-ring, sections F', adapted to abut at the ends and form the ring, the abutting ends being formed to interlock with each other, as described, and each section having an inwardly-extending arm or spoke F^3, the end F^4 of which is adapted to extend around and grasp the armature-shaft on the side farthest from the section.

3. The field-magnet C, made of a series of sections C', abutted together and provided with oblique registering grooves c c' on their abutting faces, in combination with splines D, adapted to enter said grooves and lock the sections together.

4. The field-magnet C, made of a series of sections C', abutted together and provided with oblique registering grooves c c' on their abutting faces, in combination with splines D, adapted to enter said grooves and lock the sections together, said splines or some of them having threaded ends, as described, for securing the field to a frame.

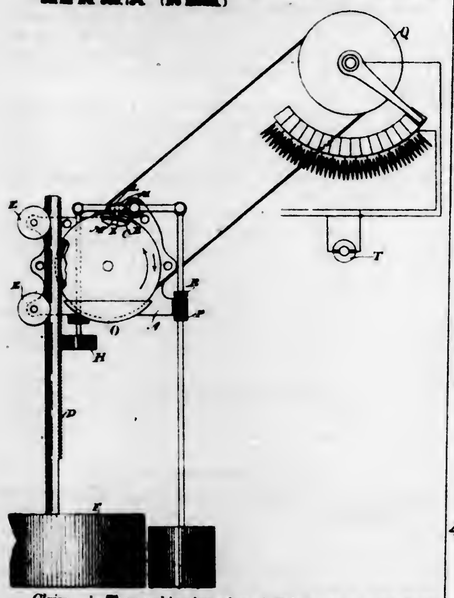
5. In a motor, the combination of an armature made of sections

485,217. REFRIGERATING APPARATUS. CHARLES H. FARNHAM, Detroit, Mich. Filed Nov. 17, 1891. Serial No. 412,200. (No model.)

Claim.—A refrigerating system consisting of brine-circulating pipes with a small expansion-chamber located on the line of said pipes and a pump adapted to circulate the brine through the said pipes, said brine being of a quantity to rest at a level in the expansion-chamber below that of the brine-inlet pipe, said brine-inlet pipe provided with perforations adapted to spray the entering brine, in combination with air-compressors, means for cooling the compressed air, and a conduit whereby said compressed air is led to and discharged through a pressure-regulator into said expansion-chamber in contact with the brine circulated by the pump, and an exit-passage for conveying away from the chamber the expanded air, substantially as described.

F, abutted together at their ends, and each having an arm F^1, extending in and around the shaft, and a field-magnet core, also made in sections, the abutting parts of which are provided with oblique registering grooves, and splines adapted to enter the grooves and lock the field-sections together.

485,221. AUTOMATIC GOVERNING DEVICE FOR ELECTRIC PUMPS. FRANCIS A. POTTER, Lynn, Mass., assignor to the Thomson Van Depoele Electric Mining Company, of Maine. Filed Mar. 20, 1891. Serial No. 385,734. (No model.)



Claims.—1. The combination of an electric pump or other mechanism with a starting and stopping mechanism therefor and a float connected with and serving as a motor to operate said mechanism, and controlling mechanism therefor, holding the float against movement until the liquid has reached predetermined higher and lower levels, at which, respectively, it is desired to have the mechanism stopped and started.

2. The combination, with an electric pump or similar mechanism, of a starting and stopping device therefor, a float connected with and serving to operate said starting and stopping mechanism, and locking devices controlled by a rising and falling liquid at a determined high and low level, respectively.

3. The combination, with an electric pump or similar mechanism, of stopping and starting devices therefor, an actuating-float, high and low level floats, and locking devices controlled thereby to hold the actuating-float at its high or low position, respectively.

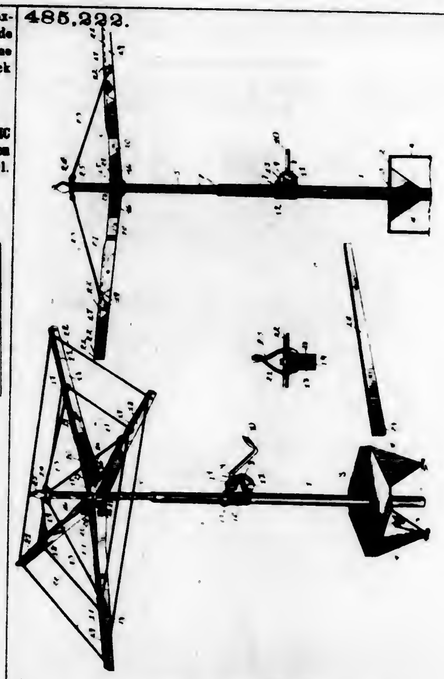
4. An automatic controlling device for an electric pump or similar mechanism, consisting of a wheel and an operating-float therefor, a connection from said wheel to the resistance or other motor-regulating device, a lock for the said float at its upper and lower levels, respectively, and high and low water floats connected with the said lock.

485,222. CLOTHES-DRIER. LYMAN A. POWERS, Persimmon, Wis. Filed Dec. 3, 1891. Serial No. 413,668. (No model.)

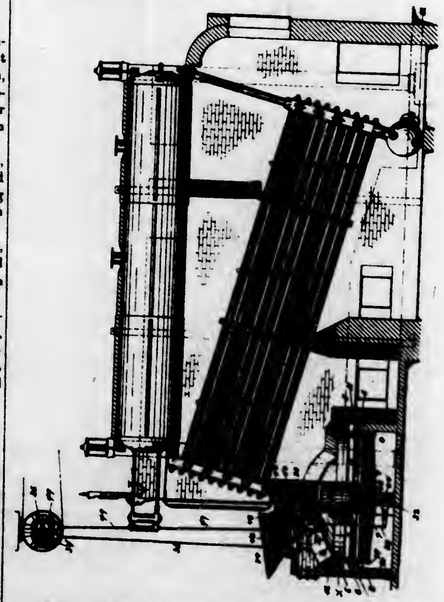
Claim.—1. The combination of a tubular standard, a rod arranged within the standard, a reel carried by the rod and composed of a hub having extensions, arms consisting of side bars secured to the extensions, and intermediate bars arranged between the side bars and projecting beyond the upper edges of the same and provided with recesses, and the clothes-line wires arranged in the recesses, and supporting-wires connected to the upper end of the rod, substantially as described.

2. In a clothes-reel, the combination of a standard, a hub having horizontal extensions, arms each consisting of a pair of side bars pivoted on opposite sides of an extension and provided with a vertical slot and being capable of adjustment on its pivot, and bolts passing through the extensions and arranged in the vertical slots and securing the arms in their adjustment, substantially as described.

485,222.



485,223. REVOLVING STOKER. NAT. W. PRATT, Brooklyn, N. Y. Filed Mar 5, 1889. Serial No. 301,950. (No model.)



Claim.—1. In a revolving grate, the combination of a rotary carrying-frame, a series of sectoral grate-sections journaled therein on radial axes aside from their centers of gravity, and an interrupted stationary track concentric with the axis of rotation of the frame, upon which the preponderating sides of the grate-sections bear during a part of their circuit.

2. In a revolving grate, the combination of a rotary carrying-frame, a series of sectoral grate-sections journaled therein on radial axes aside from their centers of gravity, a stationary track concentric with the axis of rotation of the said frame, upon which the preponderating sides of the grate-sections bear, a fuel-feeder at one side of the sectional grate, and a depression or interval in the surface of the track at a point in the order of rotation preceding the position of the feeder between the same and the incandescent body of fuel.

3. The combination, with a horizontally-revolving grate and a vertical cylindrical side wall at its periphery, of an upturned peripheral flange on the grate, having a non-perforated surface, whereby combustion of the fuel adjacent the side wall is checked.

4. In a revolving fire-grate, the combination of a horizontal supporting-frame having a central hub and a concentric rim, grate-sections composing sectors of a circle, trunnioned in said hub and said rim upon axes that are aside from the center of gravity of the said grate-sections, a circular track concentric with said supporting-frame and upon which it rotates, a depression, substantially as shown, of the circular track at the dumping-point of the grates, and at the outer margins of the said grates rollers that are adapted to travel upon the said circular track, to normally sustain the sections in a level position, to permit their gravitation at the point of said depression, and to restore their normal position by passage out of said depression upon an incline of the same, substantially as and for the purposes set forth.

5. In an automatic furnace-stoker, the combination, with a horizontally-revolving circular grate having movable dumping-sections, of a feeding-hopper located vertically above said grate at a point succeeding the dumping-point of said sectors in the direction of rotation and adapted to supply fuel continuously and distribute the same to the grate at a portion of the surface of the latter having a motion approaching the fire.

6. The herein-described means for driving the rotary circular grate at variable surface speeds from a source of given speed, consisting of a pawl-and-ratchet mechanism circumferential to the grate and a pawl-carrying lever engaging therewith, actuated by a pawl-and-ratchet eccentric, (or equivalent,) the eccentric-actuating pawl being connected with its carrying-lever at alterable distances from the fulcrum thereof, whereby the said eccentric-actuating pawl is caused to engage with a greater or less number of ratchet-teeth, in the manner set forth.

7. The combination, with a rotary grate, of a domed crown having an opening above one side of the grate for the exit of hot gases and an opening above the other side of the grate for the supply of fuel, said crown presenting a reflecting-surface of refractory material immediately over the fuel during a part of its circuit.

8. The combination, in a boiler-furnace, of a revolving grate, a domed crown thereof partly within and partly without the front wall of the boiler, and a flanged circular frame confining the thrust-blocks of the crown.

9. The combination, in a boiler-furnace, of a revolving grate having automatic dumping-sectors, a domed crown partly within and partly without the front wall of the boiler, a fuel-feeder and an opening therefor through the exterior part of the crown, a bridge covering the sectors at an interval of their circuit immediately preceding their passage under the feeder, and mechanism, substantially as described, whereby the sectors are dumped and restored to a horizontal position under the bridge.

10. The combination, with a rotary furnace-grate the frame whereof is cored at the center, of a central pier composed of refractory material projecting vertically through and above the said cored center, adapted to direct the fuel upon the grate and about the said pier from a feeding-point to a clearing-point, as described.

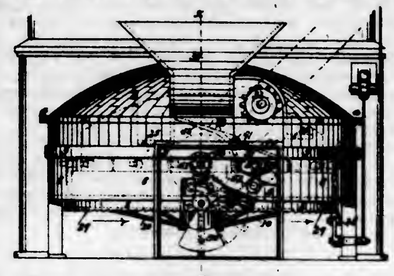
11. The combination, with the central pier and concentric side walls of a furnace and a rotary grate having dumped sectors, as described, of a bridge extending radially from said pier to said side walls above the dumping-point.

485,224. REVOLVING STOKER. NAT. W. PRATT, Brooklyn, N. Y. Filed May 14, 1890. Serial No. 351,773. (No model.)

Claim.—1. The combination, in a rotary grate, of trunnioned sectors and mechanism for automatically imparting to said sectors a complete half-revolution about their trunnions at a given point in the revolution of the grate.

2. The combination, in a rotary grate, of trunnioned sectors, mechanism for automatically imparting to the same a half-revolution about their trunnions at a given point of revolution of the grate, and a bridge covering such dumping-point of the sectors, having a vertical cavity to clear the said dumping movement, and sides proximate to the grate-surfaces, for the purposes set forth.

3. The combination, in a rotary grate, of trunnioned dumping-sectors component of the same, a bridge covering the dumping-point, a vertical gravity-hopper above the bridge, and an inclined surface of the bridge, extending from the base of the hopper to the surface of the grate, approaching the same in the direction of its rotation.



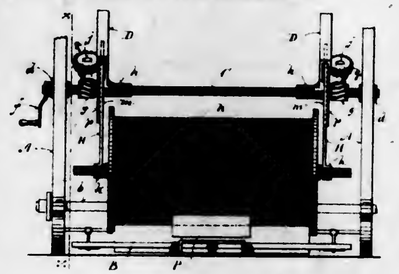
4. The combination, in a rotary grate, of trunnioned dumping-sectors, a bridge covering the dumping-point, a gravity-hopper, an inclined surface of the bridge beneath the hopper, and a hinged plate terminating the inclined surface, resting at its free edge on the grate.

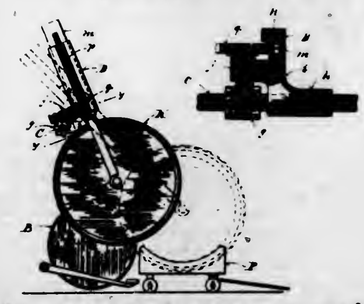
5. The combination, in a rotary grate, of a carrying-frame, dumping-sectors trunnioned radially therein, squared trunnion-heads projecting from the periphery of the frame, a transversely-grooved rotary disk facing the frame in the path of the said squared heads, a pinion, a segment, a tumbling-bob, and a tilting lever connected thereto, as described, the lever intercepting the path of the said trunnions or other projections upon the frame, whereby the groove in the disk is moved to a horizontal position reversed from its normal horizontal position and then released when the head of the trunnion is at its center.

6. In a rotary grate, the combination of a peripheral frame, a central hub, and radial suspending-rods supporting the hub from the periphery.

485,225. BEAM-DOFFER FOR WARPERS. JOHN R. PABST, Whitinsville, Mass. Filed June 6, 1892. Serial No. 435,637. (No model.)

Brief.—In order to doff the beam when filled, the journals of the beam are supported by racks which are fitted to slide in brackets, said racks being engaged by pinions to which motion is imparted from a crank-shaft journaled in the machine-frame.





Claim.—1. A beam-doffing mechanism for warping-machines, comprising a crank-shaft journaled in the machine-frame, a worm on said shaft, a bracket loose on said shaft, a beam-supporting rack fitted to slide in said bracket, a pinion journaled on the bracket and meshing with said rack, and a worm on the pinion-journal meshing with said shaft-worm, substantially as described.

2. The beam-supporting shaft and mechanism for rotating the

same, in combination with two worms on said shaft, brackets loose on said shaft adjacent said worms, racks fitted to slide longitudinally in said brackets and adapted to support the beams, pinions on said brackets meshing with said rack, and connecting mechanism for driving said pinion from said worm, substantially as described.

3. A beam-doffing mechanism comprising the shaft supported in the warper-frame, brackets loose on said shaft, beam-supporting arms fitted to slide longitudinally in said brackets, and mechanism actuated by the rotation of the shaft for moving said arms, substantially as described.

4. The combination, with the frame, crank-shaft C, and worms *g* thereon, of the loose sleeves *h* on said shaft, provided with ways *d*, rack-arms H, fitted to slide in said ways and support the beam, the worm-shafts *j*, journaled on said sleeves and meshing with the worms *g*, and the pinion *q* on said shaft, meshing with said rack, all being arranged to operate substantially as described.

485,226. SEED-PLANTER. SILAS G RANDALL, Greene, New York, assignor to Amelia A. Randall, same place. Filed Mar. 5, 1892. Serial No. 423,805. (No model.)

Claim.—1. A combined seed-planting and harrowing machine comprising seed-feeding devices, and obliquely-inclined teeth constructed, shaped, and arranged to lift the soil without turning it and provided with means for scattering and delivering the seed beneath the uplifted soil and constructed to drop the loosened pulverized soil upon the seed thus deposited, substantially as described.

2. A combined seed-planting and harrowing machine comprising a main frame, a seed-box supported on standards and held above the main frame, seed-feeding devices, teeth constructed, shaped, and arranged to lift the soil without turning it and to drop the loosened pulverized soil upon the seed thus deposited, means for scattering and delivering the seed beneath the upturned soil, and tubes or conduits leading from the seed-feeding devices to the lower ends of the teeth, substantially as described.

3. A combined seed-planting and harrowing machine comprising a main frame, a seed-box supported on standards and held at an elevation above the frame, force-feed devices in the seed-box for delivering seed therefrom, obliquely-inclined harrow-teeth constructed, shaped, and arranged to lift, loosen, and pulverize the soil without turning it and provided with means for scattering the seed beneath the uplifted soil, and pipes, tubes, or conduits leading from the seed-feeding devices of the seed-box to the harrow-teeth.

4. A seed-feeding device comprising a longitudinally-divided shaft, a series of pairs of serrated collars mounted thereon, one collar of each pair being secured to a longitudinally-adjustable member of the shaft and the other collar to a non-adjustable member thereof, and a slotted feed-tube within which the shaft and its collars are arranged.

5. The herein-described seed-feeding devices, comprising a hopper provided with a longitudinal opening at the bottom, a feed-tube having a series of pairs of openings and secured to the open bottom of the hopper, a longitudinally-divided shaft within the tube, a series of pairs of feed-collars carried thereby, and means for adjusting one member of the shaft to adjust the feed-collars relatively to each other.

6. The herein-described seed-feeding devices, comprising a longitudinally-divided shaft carrying a series of pairs of feed-collars, one collar of each pair being secured to a stationary or non-adjustable member of the shaft and the other collar of each pair being secured to a longitudinally-adjustable member thereof, a sleeve secured to the non-adjustable member of the shaft, a sleeve adapted to turn about said first-mentioned sleeve, and a pin or bolt extending through a longitudinal slot in the first sleeve and through an inclined slot in the second sleeve, whereby one member of the shaft may be adjusted longitudinally relatively to the other to vary the distance between the feed-collars.

7. The herein-described seed-planting devices, comprising a longitudinally-divided shaft carrying a series of pairs of feed-collars, a sleeve secured to one member of the shaft, a sleeve surrounding the first-mentioned sleeve, a pin or bolt extending through slots in both sleeves, a pointer secured to one member of the shaft, and a dial carried by the other member, whereby the quantity of grain sown may be determined.

8. A cultivator-tooth having an inwardly-inclined hollow shank and a wide flat substantially-horizontal point or shovel *m*⁴ and provided with means for distributing the seed delivered through the hollow shank of the tooth.

9. A cultivator-tooth having a hollow skeleton shank tubular at top and bottom, cut away between its ends, having a wide flat point or shovel, and provided with a sheet-metal tube within the shank.

10. A cultivator comprising a main frame, teeth carried thereby, carrying-wheels for supporting the frame, hinged arms to which the wheels are connected, pivoted lifting-arms adapted to rest on the ground, carried by the frame for raising the frame and teeth, means for operating the lifting-arms, and means for holding the frame and wheels in their elevated positions.

11. A cultivator comprising a frame, teeth carried thereby, carrying-wheels, hinged arms to which the wheels are connected, vertical toothed bars connected with the wheels, devices for holding the toothed bars in the desired vertical position, lifting-arms for raising the frame with the teeth, and means for operating the lifting-arms.

12. The combination, substantially as hereinbefore set forth, of the main frame, a series of teeth carried thereby, carrying-wheels, hinged arms to which the wheels are connected, vertical rack-bars connected to the wheels, means for holding the rack-bars in the desired vertical position, a shaft operated by the driver, and means operatively connected with the shaft for connecting and disconnecting the vertical rack-bars from the devices which hold them in the position to which they are set.

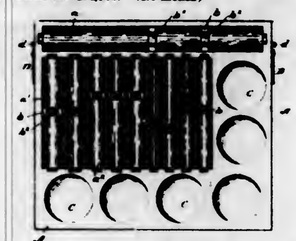
13. The combination, substantially as hereinbefore set forth, of a transverse shaft, radial outwardly-inclined lifting-arms carried at opposite ends thereof, a ratchet-wheel connected to the shaft, and a foot-lever carrying a pawl engaging said ratchet-wheel.

14. The combination of a feed-shaft, a sprocket-wheel carried thereby, the carrying-wheels, the pivoted arms to which they are connected, a sprocket-wheel the axis of which is in line with the pivots of the wheel-carrying arms, and driving connections between said sprocket-wheel, the carrying-wheels, and the sprocket-wheel of the seed-feed shaft.

485,227. BARREL-COVER. GEORGE E. RAYMOND and GEORGE E. RAYMOND, Jr., Chicago, Ill. Filed Nov. 23, 1891. Serial No. 412,891. (No model.)

Claim.—In a barrel or box cover, a movable portion provided with a suitable prop and a fixed portion secured to a barrel or box by means of clamps, and a barrel or box, combined with a spring-hinge for operating the movable portion of the lid and a strip of metal or wood secured over the said spring to protect the same, all substantially as and for the purpose set forth and described.

485,228. COIN-TRAY. JAMES A. READ, Norfolk, Nebr. Filed Mar. 11, 1892. Serial No. 424,562. (No model.)

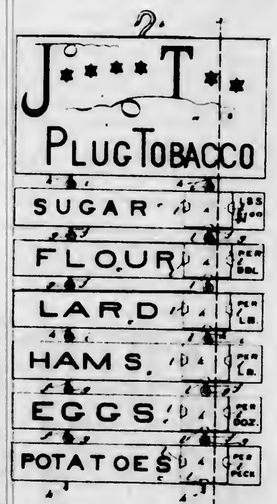


Claim.—1. A coin tray or drawer provided with series of semicylindrical coin-grooves of different diameters forming receptacles for coins of different sizes or denominations, in combination with partitions adjustable in said grooves for forming separate compartments therein adjustable in length, substantially as described.

2. A coin tray or drawer having horizontal semicylindrical grooves or coin-receptacles the side walls of which are provided with longitudinal grooves or ways, in combination with partitions engaging and movable in said ways, substantially as described.

3. The combination, with a coin tray or drawer having semicylindrical coin-grooves of different diameters, of movable partitions adjustable in said grooves and provided with lips or ribs engaging ways in said grooves and held in place thereby, substantially as described.

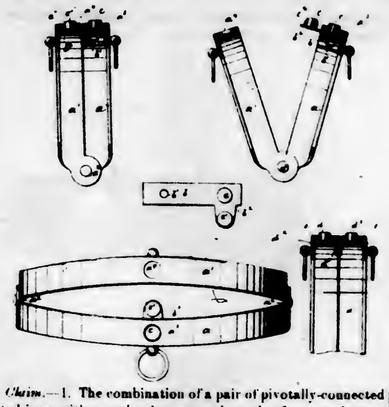
485,229. COMBINED SIGN AND PRICE-CURRENT. JOSEPH V. RENO, Jeffersonville, Ind. Filed May 12, 1892. Serial No. 432,743. (No model.)



Claim.—1. A combined sign and price-current comprising a main sign containing a permanent or standing advertisement and a number of price-currents composed of strips containing permanently the names of goods or merchandise and also having movable price-cards, such strips being flexibly connected together and forming sections of substantially the dimensions of the main sign, said sections being interchangeable with one another and with the main sign, substantially as described.

2. A combined permanent sign and movable or changeable price-current composed of a number of sections separably connected together, one of the sections being solid and the others constructed of a series of flexibly-connected strips, all of the sections being of essentially equal length and width to admit of the formation of a compact and even package for transportation and storage purposes, substantially as described.

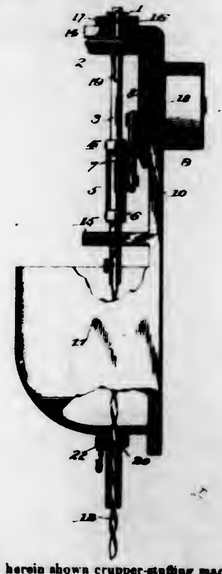
485,230. FRAME FOR POCKET-BOOKS, PURSES, OR SATCHELS. SIMON SOMMER, New York, N. Y. Filed June 26, 1892. Serial No. 437,989. (No model.)



Claim.—1. The combination of a pair of pivotally-connected perforated jaws with a spring-bar secured to the frame and extending underneath both jaws and with two buttons upon the spring-bar, of which each one is adapted to engage one of the perforated jaws, substantially as specified.

2. The combination of a pair of pivotally-connected jaws, of which each is perforated, with a spring-bar connected to one of the jaws and having a laterally-extending arm, and with two buttons, of which one is secured to the free end of the spring-bar and the other is secured to the arm, substantially as specified

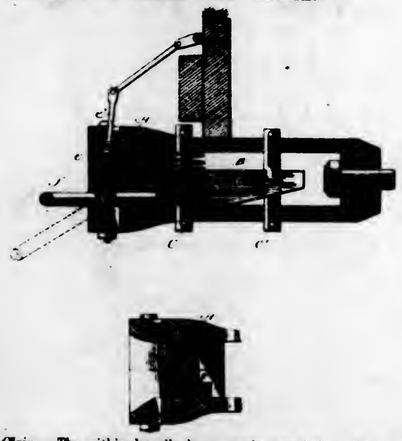
485,231. CRUPPER-STUFFING MACHINE. BARTHOLOMEW A. SCHEIBLE, Chicago, Ill. Filed Apr. 22, 1892. Serial No. 430,260. (No model.)



Claim.—The herein shown crupper-stuffing machine, comprising a hopper having a vertical extension 10 and portions 14 and 15, projected horizontally from the said vertical extension 10, shaft 18, journaled in the extension 10 and having drive-pulley 9 on its outer end, the gear-wheel 8, secured to the inner end of the said shaft, the pinion 2, having hub 16, which is journaled in the portion 14, washer 17, mounted on the projecting end of the hub 16, rod 3, having slot 19

and having bearings in the portion 15 and the hub 16, pin 1, connecting the washer 17 and hub 16 and extending through slot 19, sleeve 5, held between collars on rod 3, and a pitman connection between the gear-wheel 8 and the said sleeve to reciprocate the said rod 3 simultaneously with the rotary movement, substantially as and for the purpose set forth.

485,282. CAR-COUPLING. JOSEPH H. SMIDEL, Philadelphia, Pa. Filed June 1, 1892. Serial No. 435,150. (No model.)



Claim.—The within-described car-coupler, consisting of the two-part draw-head perforated in vertical line and provided with a flaring mouth terminating on the lower part of the draw-head in side grooves for the holding of the link, in combination with a coupling-hook having perforations and secured in the rectangular opening formed between the two sections of the draw-head by bolts and held to normal position by a suitable spring, substantially as described

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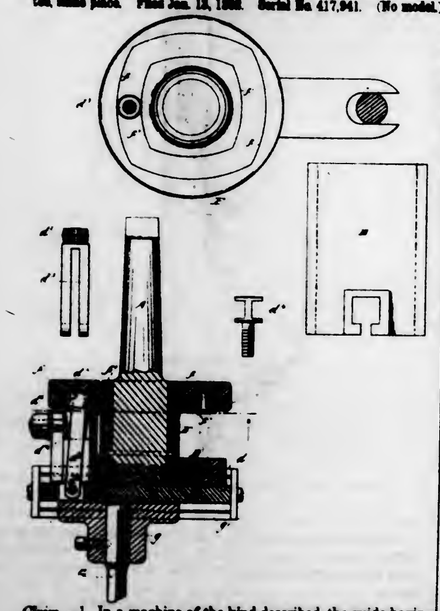
485,288. MACHINE FOR BORING NON-CIRCULAR HOLES. WILLIAM J. SMITH, Boston, Mass., assignor to Charles S. Larrabee, trustee, same place. Filed Jan. 13, 1892. Serial No. 417,941. (No model.)



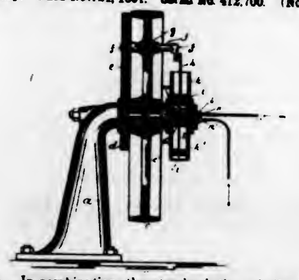
Claim.—1. In a machine of the kind described, the guide having two walls, in combination with the tool-stock, the carrier moved positively both toward and from its axis of revolution by the guide, and the tool-holder carried by the carrier, all combined and operating substantially as described.

2. In combination, the tool-stock, the carrier, the tool-holder, the guide, and a lever connecting the carrier and guide, all substantially as described.

485,284. CIGAR-CUTTER. FRANK H. SMITH, Chicago, Ill., assignor to the Keane Novelty Company, same place. Filed Apr. 27, 1892. Serial No. 430,962. (No model.)

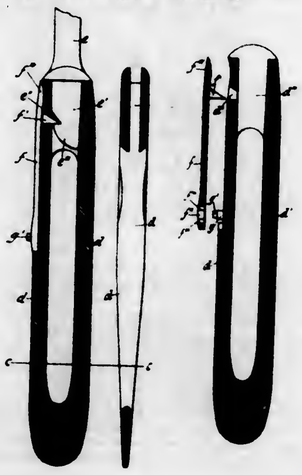
Claim.—In a cigar-cutter consisting of a box forming a base therefor, a lid pivotally secured to said box, said lid having a portion thereof curved to the segment of a circle concentric to the pivots of said lid, perforation through the curved portion of said lid for the purpose described, and a cutter T, bearing against the under concave surface of said lid, the several parts operating in combination for the purpose described.

485,285. ROTATING MOTOR. ANTON SPRINGER, Kaaden, Austria-Hungary. Filed Nov. 21, 1891. Serial No. 412,700. (No model.)



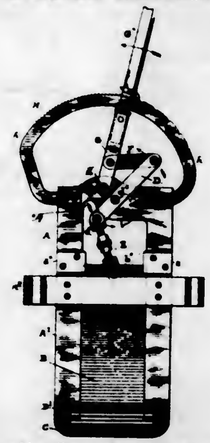
Claim.—In combination, the standard, the spindle *b*, the wheel C thereon, the gearing between the said wheel C and the standard, the radial cylinders and pistons connecting with the gearing, and the means for supporting said cylinders and feeding the steam thereto, consisting of the prolongations of the spindle having ports extending inwardly from its end and then laterally, the said prolongation being fixed and connecting directly with the steam-pipes at its end and the said cylinders revolving freely about the fixed prolongations, substantially as described.

485,286. SCALPEL. RUDOLF STEHLE, Philadelphia, Pa. Filed Apr. 30, 1892. Serial No. 431,290. (No model.)



Claim.—A spring for a metallic handle for surgical or veterinary instruments with interchangeable blades, provided with slots at lower end, fitting cleat of handle, and tooth or pawl at lower side of other end, all substantially as set forth.

485,287. CABLE-RAILWAY GRIP. PHILLIPS T. TAYLOR, San Francisco, Cal. Filed Dec. 9, 1891. Serial No. 414,477. (No model.)



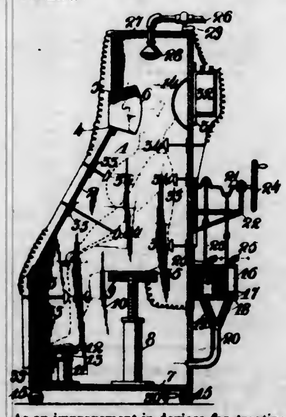
Claim.—1. In a cable-railway grip, the frame composed of the part A, having perpendicular side bars with grooved or rabbeted ends and provided with a recess A^6 in one upper corner, and the part A', formed of perpendicular side bars united by a bottom cross-bar, the ends of the side bars being fitted to the grooved ends of the top part A, and bolts or fastenings securing said parts together at the joints, in combination with the grip-jaws, the hand-lever, the pivoted lever D, and links, as described.

2. In a cable-railway grip, the combination, with the stationary frame carrying a fixed jaw and a slide or part carrying a movable jaw, of the hand-lever G, the lever D, and the links or connections E F, applied for operation substantially as described.

3. In a cable-railway grip, a hand-lever having its fulcrum on the grip-frame and a secondary lever also fulcrumed on the grip-frame and connected at the upper end to the hand-lever and at its lower end to the slide or part carrying the movable jaw by an adjustable link.

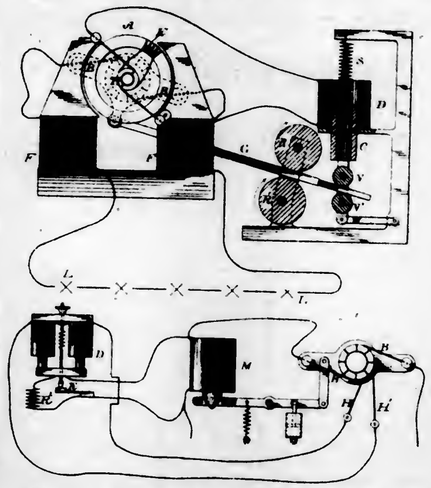
4. In a cable-railway grip, the combination, with the grip-frame carrying a stationary jaw and the slide or part carrying the movable jaw, of the levers G D, link F, and the adjustable link or part E, constructed and applied for operation substantially as described.

485,238. DEVICE FOR TREATING PATIENTS BY ELECTRICITY. EDMUND M. THOMAS, Little Rock, Ark. Filed Jan 11, 1892. Serial No. 417,710. (No model.)



Claim.—As an improvement in devices for treating patients by electricity, the combination, with the air-tight receptacle provided with air-exhausting means and at its front and back with a vertical series of insulated openings, of electrodes 34, passing through said openings and adjustable therein, and a source of electricity in circuit with said electrodes, substantially as and for the purpose set forth.

485,239. REGULATOR FOR DYNAMO-ELECTRIC MACHINES. ELIHU THOMSON, Lynn, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Apr. 6, 1888. Serial No. 269,873. (No model.)



Claim.—1. In a regulator for constant current, means for taking current from a section only of the armature-winding irrespectively of the main-current connections, a device responding to the current so taken up, and electro magnetic mechanism controlled thereby for shifting the brushes of the machine connected to the main circuit to positions on the commutator at which constant currents are taken up.

2. In a direct-current dynamo-electric machine in which the main current is passed through the field-magnet coils for excitation, a shifting commutator therefor with mechanism for shifting the commutator to positions at which the brushes take up a constant or standard current, in combination with mechanism responsive to the variations of current in a circuit independent of the main circuit of the machine, said mechanism controlling the shifting commutator, so that the current flowing in the circuit as fed from the brushes of the commutator shall be substantially constant.

3. The combination, in a dynamo-electric machine, of an accessory armature-circuit taken from a portion only of the armature-winding, devices responding to variations of current taken from said section, and mechanism controlled by said responsive device to shift the brushes on the commutator to positions at which the current taken up and carried to the main circuit shall be constant.

4. In a dynamo-electric machine, in addition to the ordinary armature-winding and commutator, a separate coil or section of wire wound on the armature, with means for collecting current therefrom independent of the main circuit, a device responding to the current in said separate section, and mechanism controlled thereby for shifting the brushes on the main commutator or collector, so that the current taken up therefrom shall be constant.

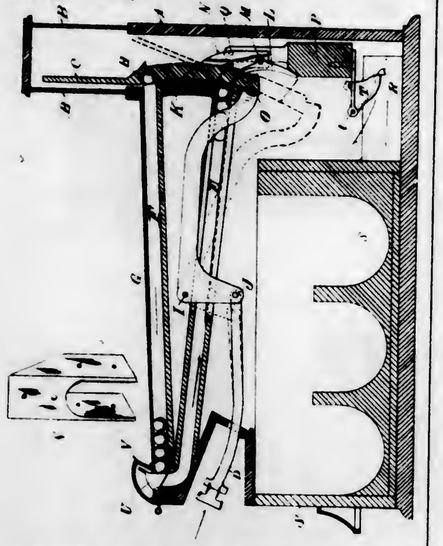
485,240. CASH REGISTER AND INDICATOR. RALPH F. THOMPSON, Greenfield, Ohio, assignor to the John M. Waddel Manufacturing Company, same place. Filed Apr. 9, 1892. Serial No. 428,491. (No model.)

Claim.—1. In a cash register and indicator, the combination, with a casing, of keys mounted therein, indicator-cards having figures adapted to be shown at sight-slots in said casing, inclined troughs, and registering-balls therefor, a magazine for said registering-balls, and shifting means operatively connected to said keys and indicator-cards to shift said register-pieces from the magazine to the register-trough.

2. In a cash register and indicator, the combination, with a casing, of keys mounted therein, a shifting device connected to each key and carrying an indicator-card adapted to be shown at sight-slots in said

casing, a register-trough opposite each shifter and a magazine-trough for the same, and registering-balls adapted to travel in said troughs and be transferred by said shifting device from said magazine to said trough under the operation of the corresponding key.

3. In a cash register and indicator, the combination, with a casing and numbered keys mounted therein, of inclined register-troughs, registering-balls adapted to travel therein, a magazine for said balls, and a shifting device operatively connected to said keys to transfer said balls successively from the magazine to the register-trough corresponding to said key.



4. In a cash register and indicator, the combination, with a casing and numbered keys mounted therein, of an inclined register-trough, registering-balls adapted to travel therein, a gate at one end of said trough, a magazine-trough reversely inclined to said register-trough and communicating therewith through said gate, and a shifting device operatively connected to said key, adapted to receive the balls successively from the other end of the said magazine-trough and transfer them to the upper end of the said register-trough.

5. The combination, with a casing, keys mounted therein, a magazine, and a registering device corresponding to each of said keys, of registering-balls used in connection with said registering device and a shifting device having a pocket to receive said registering-balls successively from said magazine and adapted to be operated by said key to deliver said registering-balls to the registering device.

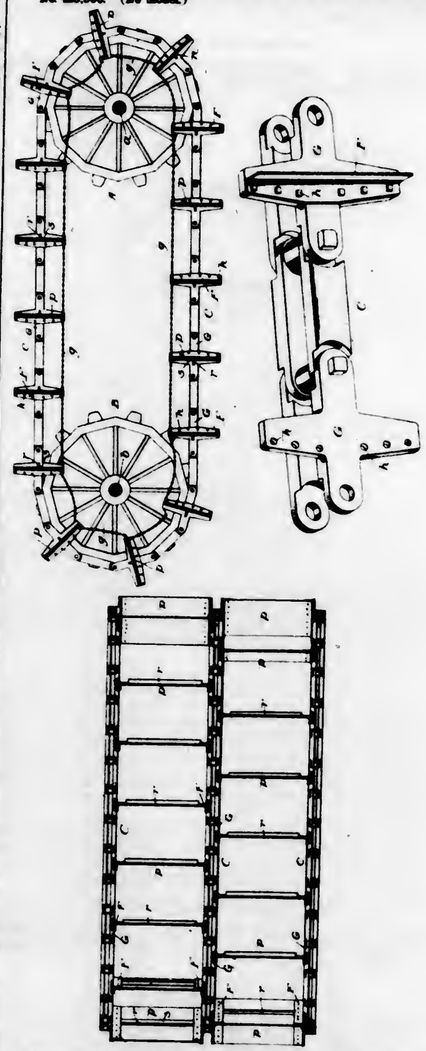
6. The combination, with weights or balls, a magazine for said weights or balls, and a register located higher than said magazine and adapted to receive and register said balls or weights, of a traveling shifting device having a pocket to receive one ball at a time from said magazine and transfer it bodily from a lower to a higher plane and deliver it to said register.

7. In a register and indicator, the combination, with a registering device, of a magazine and registering-balls therein, a gate at one end of said register, adapted to obstruct the return of the balls to the magazine communicating therewith, and a shifter at the other end of said magazine and registering device to effect the transfer of said balls from said magazine to said register.

8. In a cash register and indicator, the combination, with an inclined register-trough and an inclined magazine-trough communicating therewith, of a gate to obstruct the return of the balls to said magazine and a shifter at the other end of said troughs, having a pocket to receive the balls successively from said magazine and provided with an extension to operate said shifter, whereby said balls are transferred from the magazine to said register-trough.

9. In a cash register and indicator, the combination, with an inclined register-trough and an inclined magazine-trough communicating therewith, of a gate to obstruct the return of the balls to said magazine from said register and a shifter at the other end of said troughs, adapted to receive the balls successively from the said magazine and bearing an indicator-card and adapted to be operated to show said indicator and transfer said balls automatically.

485,241. CHAIN PROPELLER. CALVERT W. TERHUNE and COLIN H. TERHUNE, Alfred Centre, N. Y. Filed Mar. 17, 1892. Serial No. 425,360. (No model.)



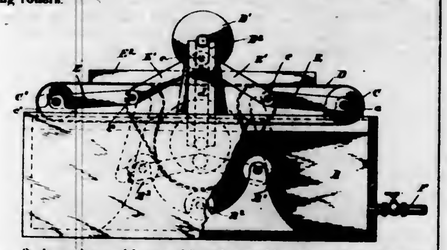
Claim.—1. In a chain propeller for vessels, the combination, with the sprocket-wheels, of the outer and inner rows of links pivoted together, each alternate link of the inner rows being formed with opposite projecting extensions provided with bolt-holes, the propeller-blades having their ends bent at right angles and provided with bolt-holes coinciding with the holes in the extensions, and the securing-bolts, as described.

2. In a chain propeller for vessels, the combination, with the sprocket-wheels, of the outer and inner rows of pivoted links, each alternate link of the inner rows being formed with oppositely-projecting extensions provided with bolt-holes, the propeller-blades provided with strengthening-ribs and having their ends bent at right angles, the securing-bolts, and the flexible chain secured to said extensions, substantially as described.

485,242. PIPE-MAKING MACHINE. WILLIAM A. TIPPER, San Francisco, Cal. Filed Apr. 11, 1892. Serial No. 428,631. (No model.)

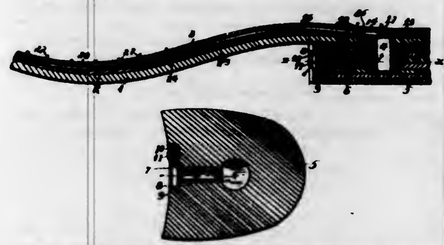
Claim.—1. In a pipe-making machine, the combination, with the heating-chest, of the longitudinal traveling rollers, endless traveling

belt secured thereover, vertically-moving pressure-roll, and the connecting mechanism between the pressure-roll and longitudinally-traveling rollers.



2. In a pipe-making machine, the combination, with the heating-chest, of supporting-rolls located therein, longitudinal guide-pieces secured thereto, movable bearing-boxes working within guideways, rollers rotating within bearing-boxes, endless belt working thereover, vertically-traveling pressure-roll, and mechanism between pressure-roll and longitudinally-traveling rollers.

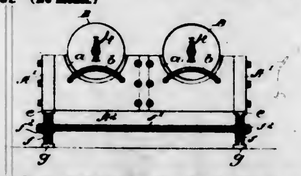
485,243. VENTILATED BOOT OR SHOE. JAMES W. TURNER and JOHN H. HOLLE, Louisiana, Mo. Filed Apr. 22, 1892. Serial No. 430,217. (No model.)



Claim.—1. The combination, with the heel and sole of a boot or shoe provided with ventilating-channels, channels 4 and 6, communicating therewith and with the exterior of the boot or shoe, and a valve at the exterior end of the channel 6, of the insole provided with a vertical opening in the heel thereof and above the heel-channel 4, said opening having inclined walls, and a tapered plug 14, loosely disposed in said opening above the channel 4, substantially as and for the purpose set forth.

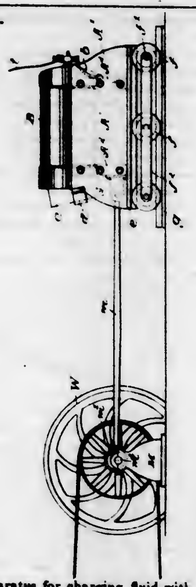
2. As an improvement in boots or shoes, the combination, with the sole provided with ventilating-channels and the heel provided with channel 6 and the channel 4, connecting the latter with the sole-channels, of an insole provided with a vertical opening in the heel thereof and above the channel 4 and a plug loosely disposed in said opening above the point of intersection of the sole-channel and said channel 4, said plug being provided with ventilating-apertures, substantially as and for the purpose set forth.

485,244. METHOD OF AND APPARATUS FOR CHARGING SODA-WATER. JOHN H. VINTON, Boston, Mass. Filed July 11, 1891. Serial No. 398,131. (No model.)



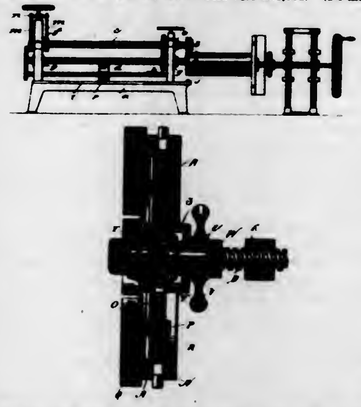
Claim.—1. In an apparatus for charging fluid with gas, a horizontally-movable frame consisting of side members joined by supporting members containing a seat or rest for the fountain or receptacle containing fluid to be charged, an upwardly and outwardly inclined support against which one end of the fountain or receptacle is placed, a strap attached to the opposite end of the frame, and a wedge to enter between said strap and fountain to hold the fountain in place, rails on the under side of said frame, a connected series of grooved wheels or rolls on which said rails rest, supporting-rails for the wheels or rolls, and means to reciprocate said frame on the series of wheels or rolls, substantially as described.

485,244.



2. In an apparatus for charging fluid with gas, a horizontally movable frame consisting of side members joined by supporting members containing a seat or rest for the fountain or receptacle containing fluid to be charged, an upwardly and outwardly inclined support against which one end of the fountain or receptacle is placed, a strap attached to the opposite end of the frame, and a wedge to enter between said strap and fountain to hold the said fountain in place, and means to reciprocate the said frame, substantially as described.

485,245. SCREW-THREADING MACHINE. FERDINAND F. VOSS, Chicago, Ill. Filed Mar. 22, 1887. Serial No. 231,902. (No model.)



Claim.—1. In a screw-threading machine, a pipe-holder having a series of slidable quadrant-plates provided with gripping-flanges of differing size, in combination with devices for adjusting said flanges, whereby the holder may be adjustable to and rigidly gripped by sections substantially varying in diameter.

2. In a screw-threading machine, screw-thread-forming devices, in combination with a holder having quadrant-plates provided with gripping-flanges radially adjustable independently of each other, substantially as described.

3. In a screw-threading machine, screw-thread-forming devices, in combination with a holder having quadrant-shaped plates provided with gripping-flanges and radially adjustable from a common center, substantially as described.

4. Screw-thread-forming devices, in combination with a holder having radially-adjustable quadrant-plates provided with gripping-

flanges and means for simultaneously adjusting said plates, substantially as described.

5. In a machine for screw-threading sheet-metal pipe, the table *a*, the adjustable base *i*, the pivot connection *j* between said base and table, the standard *k*, the rotatable shafts *c d*, the beading-rollers *b*, mounted thereon, and the fixed bearings *g* thereof, in combination with the sliding bearings *e f*, the supporting-spring *k*, the hand-screw *l*, the stirrups *m*, and the hand-wheel, substantially as described.

6. In a machine for screw-threading sheet-metal pipe, the combination, with screw-thread forming devices, of a threaded carrying-shaft and a pipe-holder mounted upon the end of said shaft, substantially as described.

7. In a machine for threading sheet-metal pipe, the combination, with screw-thread-forming devices, of a vertically-adjustable threaded carrying-shaft and a pipe-holder mounted upon the end of said shaft, substantially as described.

8. In a machine for screw-threading sheet-metal pipe, the combination, with screw-thread-forming devices, of a rotatable shaft, a bearing therefor, a screw-thread connection between said shaft and bearing, a hand-screw working through for vertically adjusting said bearing, and a pipe-holder mounted upon the end of said shaft, substantially as described.

9. In a machine for threading sheet-metal pipe, the combination, with screw-thread-forming devices, of a rotatable threaded carrying-shaft and a pipe-holder mounted upon the end of said shaft and provided with adjustable quadrant-plates having gripping-flanges of different size, substantially as described.

10. In a machine for screw-threading sheet-metal pipe, the combination, with screw-thread-forming devices, of a vertically-adjustable threaded carrying-shaft and a pipe-holder mounted upon the end of said shaft and provided with adjustable quadrant-plates having gripping-flanges of different size, substantially as described.

11. In a machine for screw-threading sheet-metal pipe, the combination, with screw-thread-forming devices, of a vertically-adjustable threaded carrying-shaft, a pipe-holder mounted upon the end of said shaft, the adjustable quadrant-plates thereof, having gripping-flanges of different size, a sliding connection between said plates and the holder, and means for actuating said plates, substantially as described.

12. In a machine for threading sheet-metal pipe, the combination, with screw-thread-forming devices and the vertically-adjustable threaded carrying-shaft, of a pipe-holder mounted upon the ends of said shaft, comprising a disk provided with radial slots, adjustable quadrant-plates having gripping-flanges of different size, a sliding connection between said plates and the disk, eyes on said plates projecting through the slots in said disk, screw-threaded shafts working through said eyes, and means for rotating said shafts, substantially as described.

13. In a machine for screw-threading sheet-metal pipe, the combination, with screw-thread-forming devices and a vertically-adjustable threaded carrying-shaft, of a pipe-holder mounted upon the end of said shaft, comprising a disk provided with radial slots, adjustable quadrant-plates provided with gripping-flanges of different size, screw-threaded eyes on said plates projecting through said slots, radial screw-threaded shafts working through said eyes and bearing in the disk, a hand-wheel sleeved upon the carrying-shaft, and a gear connection between said wheel and the radial screw-threaded shafts, substantially as described.

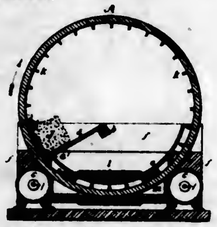
14. In a machine for screw-threading sheet-metal pipe, the combination, with screw-thread-forming devices, of a pipe-holder comprising a rotatable disk provided with radial slots, adjustable quadrant-plates having flanges of different size, a sliding connection between said plates and disk, screw-threaded eyes on said plates projecting and working through the slots in said disk, radial screw-threaded shafts working through said eyes, and means for rotating said shaft, substantially as described.

15. In a machine for screw-threading sheet-metal pipe, the combination, with screw-thread-forming devices, of a pipe-holder comprising a rotatable disk provided with radial slots, adjustable quadrant-plates provided with gripping-flanges of different size, screw-threaded eyes on the said plates projecting and working through these slots in said disk, radial screw-threaded shafts working through said eyes and bearing in the disk, a hand-wheel sleeved on the support of the disk, and a gear connection between said wheel and the radial screw-threaded shafts, substantially as described.

485,246. MACHINE FOR DISINTEGRATING JUTE, &c. PHILIP H. WADE, Sandy Hill, N. Y. Filed Jan. 2, 1892. Serial No. 416,756. (No model.)

Brief.—The bale of jute is fed by a reciprocating traveling carriage into an open-ended rotating cylinder interiorly provided with spikes. When inside the cylinder the bale is tipped against the interior wall thereof, torn to pieces by the spikes, and the disintegrated material thrown on an endless apron moving through the cylinder and carried off.

Claim.—1. In a disintegrating-machine, the combination of the rotative cylinder provided with interior pins and sliding and tilting bale-carriers arranged to reciprocate into and out of the cylinder, substantially as described.



2. In a disintegrating-machine, the combination of the rotative cylinder provided with interior pins, a stationary floor in the cylinder, and a sliding and tilting bale-carrier adapted when in the cylinder to engage with its free side the edge of the floor and rest thereon, substantially as described.

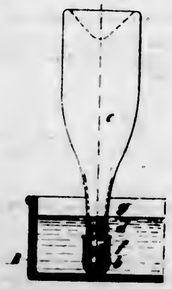
3. The combination of the rotative cylinder provided with interior pins, a stationary floor in the lower part of the cylinder, and a carrying-belt arranged with its upper line over the floor, substantially as described.

4. The combination of the open-end rotative cylinder, the stationary floor in the cylinder, the carrying-belt passing over the floor, and the sliding and tilting bale-carrier arranged to reciprocate into and out of the cylinder, substantially as described, and for the purposes specified.

485,247. LACE-FASTENING HOOK. JOSEPH WALDEN, Orange N. J. Filed Oct. 28, 1891. Serial No. 410,088. (No model.)

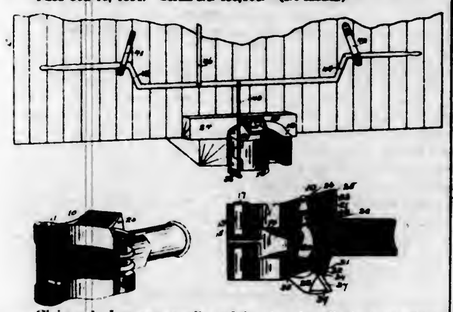
Claim.—As an improved article of manufacture, a lace-fastener for shoes, consisting of a body portion with attaching-prongs and projecting laterally from the body portion and three arched or corrugated arms or sections, the two outer ones lying in the same plane and the central one in a different but parallel plane, forming a spring-tongue to hold the lace, substantially as described.

485,248. TREATMENT OF SPARKLING WINE. ARMAND WALFARD, Rheims, France. Filed June 5, 1891. Serial No. 395,382. (No model.) Patented in Germany May 3, 1891, No. 60,361.



Claim.—The herein-described method of removing sediment from wine in bottles, which consists in inverting the same in a non-freezing liquid at a very low temperature, whereby a small cake of ice is formed in the bottle-neck, then restoring the bottle to an upright position, then removing the slip, and then agitating the bottle so that the gases generated will eject the cork, sediment, and ice, substantially as specified.

485,249. CAR-COUPLING. BENJAMIN D. WHIPPLE, Creston, Iowa. Filed Oct. 10, 1891. Serial No. 408,101. (No model.)



Claim.—1. In a car-coupling of the class described, the combination, with a vertically-hinged knuckle normally tending to assume an open position, of an impact-arm secured to and extending rearwardly from said knuckle within a cavity in the draw-head to a point approximately at the center line of the draw-head, a gravity locking-block pivoted at its upper end in such a manner as to depend normally vertical and in the plane of the impact-arm, engaging the end of the impact-arm to lock the knuckle, and a pivoted trigger manually actuated to disengage the locking-block from the end of the impact-arm.

2. In a car-coupling of the class described, the combination, with a vertically-hinged knuckle normally tending to assume an open position, of an impact-arm secured to the said knuckle, extending rearwardly within a cavity in the draw-head to a point approximately at the center line of the said draw-head, a removable and replaceable hanger held within the draw-head, a locking-block hinged to the hanger and depending normally vertical within the cavity of the draw-head and in the plane of the end of the impact-arm, and a manually-actuated gravity-trigger adapted to disengage the locking-block from the impact-arm.

3. In a car-coupling, the combination, with a vertically-mounted knuckle acted upon by yielding pressure devices to normally tend to assume an engaging position, of an impact-arm secured to and extending from said knuckle within a cavity in the interior of the draw-head to a point approximately at the center of the draw-head, a hanger extending from the exterior of the draw-head to the interior thereof and removably secured thereto in position, a locking-block hinged to said hanger and adapted to engage and hold the impact-arm, and a gravity-trigger adapted to be manually actuated to withdraw and withhold the locking-block.

4. In a car-coupler, the combination, with a vertically-hinged knuckle acted upon by yielding pressure devices to normally tend to assume an open position and a rearwardly-extended impact-arm, of a hanger removably depending within a cavity in the draw-head approximately at the center thereof, and a locking-block detachably secured to said hanger and adapted to describe an upward arc, the end of said arm engaging the side faces of the locking-block to lock the knuckle, together with a gravity-trigger pivoted to the draw-head and manually operated by a system of levers from the sides or top of the car to impact against and withdraw the locking-block from engagement with the impact-arm.

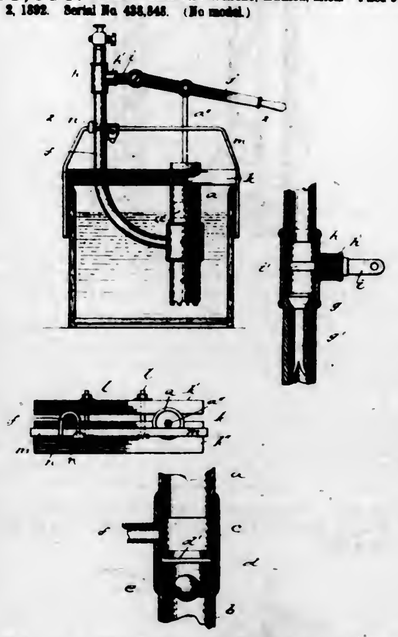
5. In a car-coupling, the combination, with a knuckle vertically hinged and having a rearwardly-extending impact-arm, of a locking-block hinged within the draw-head approximately at the center thereof and adapted to engage the end of the impact-arm, a gravity-trigger also hinged within the draw-head, and a lifting-finger operated by a system of levers to rotate the gravity-trigger, which latter impinges against and withdraws the locking-block from engagement with the impact-arm, the arc described by the lifting-finger being concentric with the arc of gravity-trigger.

6. In a car-coupling, the combination, with a vertically-hinged knuckle from which extends rearwardly to a point approximately at the center of the draw-head an impact-arm, of a locking-block vertically hinged within the draw-head approximately at the center thereof and adapted to engage the end of the impact-arm, a gravity-trigger manually operated to withdraw the locking-block from engagement with the end of the impact-arm, a transverse bar constituting the pivot for said gravity-trigger and also for a bent lever, operated by a system of levers from the side or top of the car, and a lifting-finger adapted to impinge against and cause the gravity-trigger to describe an upward arc.

7. In a car-coupling, the combination, with a vertically-hinged knuckle having a rearwardly-extending impact-arm, of centrally-located locking devices comprising a removable hanger extending through an aperture in the upper face of the draw-head, said hanger being removably secured by means of a key, and a locking-block detachably hinged to said hanger and adapted to engage the end of the impact-arm when in its normal vertical position, together with a gravity-trigger manually operated to impinge against and withdraw the locking-block from engagement with the end of the impact-arm.

8. In a car-coupler, the combination, with a vertically-hinged knuckle having a rearwardly-extending impact-arm, of a hanger extended through a centrally-located aperture in the draw-head, and a locking-block hinged to said hanger, against one side of which block the end of the impact-arm bears when the knuckle is locked, the said block being so positioned as that the side thereof opposite to that against which the impact-arm bears rests against the side of the draw-head.

485,250. PUMP. BENJAMIN WRIGHT, Hudson, Mich. Filed July 2, 1892. Serial No. 438,848. (No model.)



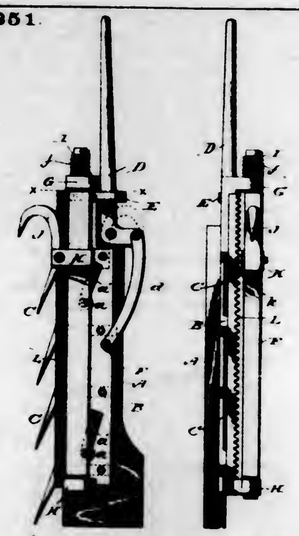
Claim.—1. A pump consisting of a pump-cylinder, a discharge-pipe connected to said cylinder, a valve-casing secured to the upper end of the discharge-pipe, an outlet-valve located in said casing, an outwardly-projecting bar secured in said valve-casing, its inner end forming a stop for the outlet-valve, an operating-lever pivoted on its outer end, and a piston working in the cylinder, its rod being connected to the operating-lever, and an inlet-pipe and valve connected to the pump-cylinder, substantially as described.

2. A portable pump consisting of a pump-cylinder, a coupling or casing secured to the lower end of said cylinder, an inlet-pipe removably secured to the lower end of said casing, an inlet-valve secured in the said inlet-pipe, said valve consisting of a cup *d*, removably secured in said pipe, said cup being open at its upper end and provided with a circular opening in its bottom, and a ball automatically closing said opening, and a removable pin secured across the top of said cup and held in place when in operation by the wall of the casing, thereby preventing the accidental displacement of said pin, and a piston working in the pump-cylinder and means for operating it, substantially as described.

3. In a portable pump, the combination of a pump-cylinder provided with an inlet pipe and valve, a discharge-pipe connected at its lower end to said cylinder, a removable and adjustable platform secured to said cylinder and discharge-pipe, a transporting bail or handle secured to said platform, the vertical sides of said bail extending a suitable distance below said platform, and a clamp connecting said bail and discharge-pipe, and a piston working in the pump-cylinder and means for operating it, substantially as described.

485,251. SAWMILL-DOG. MATHIAS M. APPLEMAN, Rehrsburg, Pa. Filed Feb. 20, 1892. Serial No. 422,909. (No model.)

485,251.

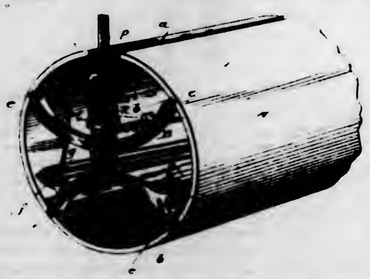


Claim.—1. In a sawmill-dog, the combination, with the sliding pronged plate, of the turn-post provided with a log-hook and the spring for turning said post so as to carry the log-hook back out of the way, substantially as described.

2. In a sawmill-dog, the combination, with the sliding pronged plate, of the turn-post and the log-hook adjustable on the said post and held in the located position by engaging with the said plate, substantially as set forth.

3. In a sawmill-dog, the combination, with the sliding pronged plate, of the turn-post, the spring for turning the post back, the log-hook adjustable on the turn-post and having a lip, and the rack-bar to be engaged by the said lip and hold the log-hook in the located position, substantially as set forth.

485,252. UNDERGROUND ELECTRIC TROLLEY SYSTEM. ROBERT B. AYERS, New York, N. Y. Filed Mar. 30, 1892. Serial No. 426,112. (No model.)



Claim.—1. In an underground electric trolley system, a supporting-frame for the trolley-wire, having an upward extension in which a roller is held or mounted, a spring fitting said extension so as to admit a trolley-wire, and a ring embracing said spring, substantially as shown and described.

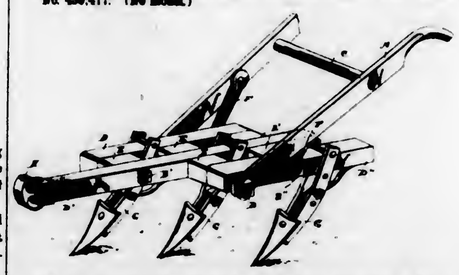
2. In an underground electric trolley system, the combination of the trolley-wire, a supporting-frame therefor having an upward extension, a roller held by said extension, a spring fitting down over the wire, the ends of which are received into the sides of the extension, and a ring passing down over the spring, substantially as shown, and for the purpose set forth.

3. In an underground electric trolley system employing a conduit slotted longitudinally throughout its length, the frame B, constructed on the main body, having lateral limbs or branches reaching out and bearing against the inner sides of the conduit, one or more of such branches being formed or provided with brackets for the support of wires or conductors independently of the trolley-wire, substantially as shown, and for the purpose described.

485,253. BALE-TIE. CURTIS B. BRAINARD, Joliet, Ill. Filed Feb. 8, 1892. Serial No. 420,648. (No model.)

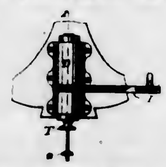
Claim.—In a wire bale-tie and in combination with the wire of the tie, the plate B, having the triangular recess S, the base thereof being approximately on a line with the longitudinal center of the plate and having its apex extend out through one side of the plate for access to said recess and to form the hooks *a c*, adapted to be turned laterally to open and close said recess, the base angles of said recess forming seats for the bale-wire, and the said plate being pointed at its forward end for passing it forward around a bale and its rear end being V-shaped to form, in conjunction with the angles of said recess, a seat for the end of the bale-wire secured on said plate, substantially as and for the purpose set forth.

485,254. PLOW-STOCK. TEXAS BROOKS, Harwood, assignor of one-half to George W. Brooks, Lulling, Tex. Filed July 9, 1892. Serial No. 439,477. (No model.)



Claim.—In a plow, the combination, with a central beam, of supplemental beams located at opposite sides thereof and arranged one in advance of the other, space-blocks located at the ends, intermediate the ends, and interposed between the sides of the central beam and supplemental beams, a series of bolts passed through the space-blocks and beams, handles pivoted to the bolts and embracing the supplemental beams, adjusting-straps secured to the handles and at their lower ends to the bolts, and a shovel carrying bifurcated standards embracing each of the supplemental and the central beams and located intermediate the space-blocks and diagonal to the line of draft, substantially as specified.

485,255. MUSIC-LEAF TURNER. JAMES H. CAMP, Atlanta, Ga. Filed Mar. 19, 1891. Serial No. 385,670. (No model.)



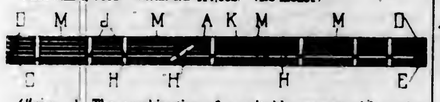
Claim.—1. In a music-leaf turner, the arms I, each having on its free end a snap to engage a music-leaf and having an annular slot *i* in the other end, and the semi-revolving disk H, carrying the spring L, projecting into the said annular slots in the arms and having a shoulder *l*, for the purpose described.

2. In a music-leaf turner, the disk H, having automatic connection with a series of arms attached to the music-leaves and shoulders *h'*, and the pin *h* in the stationary sleeve G for the purpose of limiting the movement of said disk to one-half of a revolution.

3. In a music-leaf turner, a disk journaled on the stationary sleeve G and having automatic connection with a series of arms connected to leaves of music and carried by the downwardly-projecting pin *n'*, the disk N, the spiral faces *g* and *g'* on the sleeve and disk, respectively, the upwardly-projecting pins *n*, the holes *r*, the spring-pressed plunger R, connected to a key, and the spring W, substantially as shown and described, and for the purpose specified.

4. In a music-leaf turner, the disk H, having automatic connection with a series of arms connected to leaves of music and carrying downwardly-projecting pin *n'*, the disk N, carrying upwardly-projecting pins *n* and connected with the sleeve F by the spline S, the ratchet connection with the shaft E, and the spring J.

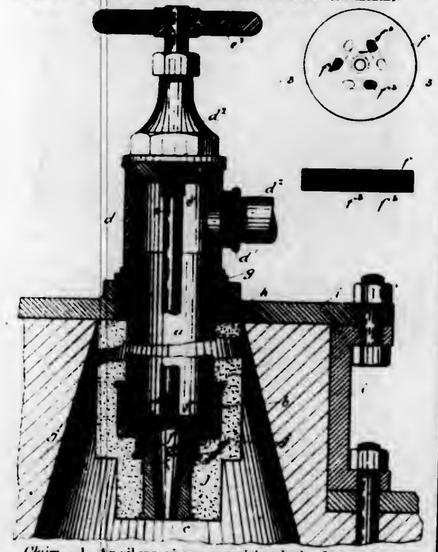
485,256. APPARATUS FOR WINDING WIRE. FRANK B. CRANE, Chicago, Ill., assignor to the Standard Electric Company, of Illinois. Filed Jan. 4, 1892. Serial No. 417,002. (No model.)



Claim.—1. The combination of a suitable support with a wire-securing device at the ends, arranged in such manner as that a series of wires may be stretched across such support in parallel with and in close proximity to each other, and stretching-bridges loose on such support and adapted to be turned up on edge, and thus to stretch the wires, and grooves across the stretching-bridges of the right width to exactly receive the series of wires so placed side by side, and pivoted covers on such bridges, whereby the wires may be securely held in such grooves.

2. A combination of a support with the ribs at either end, a wire-securing device on such ribs, arranged so that wires may be stretched from rib to rib and arranged in parallel groups in the same plane with and in close proximity to each other, and a groove across such bridge, whereby the wires may be conveniently cut at the ends when the process is completed.

485,257. OIL-SPRAYING DEVICE. CHARLES R. COLLINS, Philadelphia, Pa., assignor to the United Gas Improvement Company, same place. Filed June 22, 1892. Serial No. 437,553. (No model.)



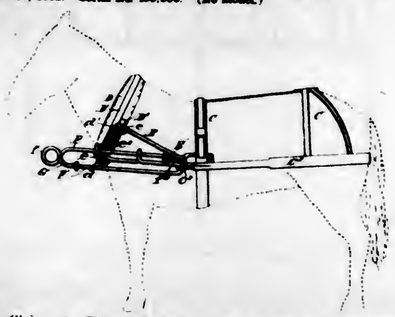
Claim.—1. An oil spraying or atomizing device for gas apparatus, comprising a tube having a nipple connected therewith and a nozzle applied to the nipple, a thimble mounted on the tube and provided with a stuffing-box and union, a spindle, and a diaphragm or plate provided with transversely ranging and inclined apertures for imparting rotary motion to jets or streams issuing from the device, substantially as and for the purposes set forth.

2. The combination, with a carbureting-chamber, a casing extending into said chamber, an oil-supply, and pipe-connections between said oil-supply and casing, of a diaphragm or plate provided with inclined apertures ranging transversely of said plate or diaphragm for imparting rotary motion to jets or streams of a liquid and a spindle detachably connected with said diaphragm, substantially as and for the purposes set forth.

3. An oil spraying or atomizing device for gas apparatus, comprising a tube, a nipple detachably connected with one extremity of the tube, a nozzle applied to the nipple, a thimble mounted upon the other extremity of the tube and provided with a stuffing-box and a T-union, an adjustable spindle, and a diaphragm provided with inclined apertures for imparting rotary motion to jets or streams of liquid hydrocarbon, substantially as and for the purposes set forth.

4. In combination, a carbureting-chamber, a casing extending into said chamber, an asbestus covering applied to said casing, an oil-supply, pipe connections between the oil-supply and casing, and a diaphragm provided with inclined apertures for imparting rotary motion to jets or streams of oil, substantially as and for the purposes set forth.

485,258. HARNESS. RICHARD CONDON, Lyons, Iowa. Filed May 10, 1892. Serial No. 433,006. (No model.)



Claim.—1. The combination, with a harness, of independent draft-arms, each consisting of parallel bars having eyes on their outer ends and engaging portions on their rear ends, hame-tugs on the harness formed with hooks with which said engaging portions engage, and eyes on the tugs for holding the arms in position, substantially as described.

2. The combination, with a harness, of a metallic hame-tug formed of two bars, eyes, and a hook on the lower bar, and a draft-arm consisting of two bars united and formed at their ends into an eye, the upper bar passing through the eye of the hame-tug and the lower bar formed with a hook engaging the hook of the tug, substantially as described.

3. The combination, with a harness, of hame-tugs on the harness, and removable sliding draft-arms independent of each other, pivotally secured on the hame-tugs, and hooks on the tugs for holding the arms in place, substantially as described.

4. In a harness, the combination, with longitudinally-movable and pivoted draft-arms extending forward, of engaging means on the ends of the draft-arms, and connections between the draft-arms and the holdback-straps of the harness, substantially as described.

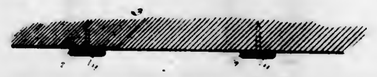
5. The combination, with a harness, of removable tugs thereon formed of two united bars arranged at an angle to each other, eyes on the harness, eyes on the bars, pintles passing through the eyes, connections between the saddle-strap of the harness and hame-tugs, and slidable draft-arms on the tugs, substantially as described.

6. In a harness, the combination of forwardly-projecting draft-arms removably secured in the harness, connections between the draft-arms and holdback-straps of the harness, and a cross-over piece H for connecting the harness of adjacent animals, substantially as described.

7. In a harness, the combination, with hame-tugs formed with outwardly, forwardly, and upwardly extending hooks, of draft-arms pivoted to the tugs and formed with hooks engaging said other hooks, substantially as described.

8. The combination, with a harness, of hame-tugs on the harness, draft-arms slidingly and pivotally secured to the hame-tugs, and hooks on the tugs engaging the arms to prevent the rearward movement of the arms, substantially as described.

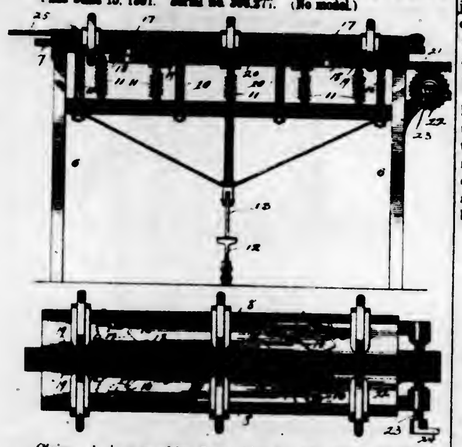
485,259. ENAMELED-IRON WAINSCOTING. FREDERICK D. COOK, Sharpsburg, Pa. Filed May 11, 1892. Serial No. 432,616. (No model.)



Claim.—1. As wainscoting, the combination of sheets of thin enameled iron having a return-bend at one end and a plain edge at the other, and vertical cleats secured to the wall, over which the said return-bend is hooked, the plain end of the adjacent sheet being secured beneath said cleats, thus permitting of adjustment for length in said wainscoting, substantially as described and shown.

2. As wainscoting, the combination of sheets of thin enameled iron having a return-bend at one end and a plain edge at the other, and vertical cleats secured to the wall, over which the said return-bend is hooked, the plain end of the adjacent sheet being secured beneath said cleats, thus permitting of adjustment for length in said wainscoting and moldings for the base and top of said sheets, substantially as described and shown

485,260. HARNESS-MACHINE. CHARLES J. COOPER, Moline, Ill. Filed June 15, 1891. Serial No. 396,377. (No model.)



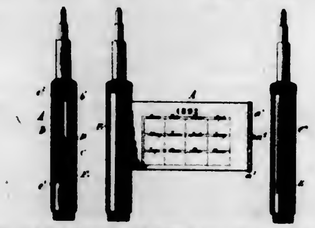
Claim.—1. In a machine for making harness-straps, the combination, with a horizontal vertically-movable bed-plate on which the leather is to be placed, of a flat form of the shape desired to be placed upon the leather and over which it is to be folded, laterally-movable folding and stretching blades adapted to engage the margins of the leather and by their continued movement toward each other to press the leather over the margins of the form, said bed-plate being yieldingly sustained, whereby it may be depressed by the folding action of the jaws to accommodate itself thereto, means, substantially as described, for positively moving the bed-plate, and independent means for moving the blades, substantially as described.

2. In a machine for stretching and folding leather, the combination, with a bed-plate and folding-blades, of a form consisting of a thin strip or plate of metal having one or both of its edges flanged, whereby to produce a tubular marginal bead, substantially as described.

3. In a machine for stretching and folding leather, the combination, with a frame, a form, and a bed, of folding-blades movable to and from each other and means for moving said blades, comprising eccentrics and a lever for moving said eccentrics, substantially as described.

4. In a machine for stretching and folding leather, the combination, with a suitable bed-plate, of a form having flanged marginal edges and folding-blades having grooves in their lower surfaces and marginal folding-lips, substantially as described.

485,261. PENCIL-CASE. GEORGE W. CROWE and WALTER K. MARSAH, Hull, England. Filed Aug. 22, 1891. Serial No. 403,493. (No model.) Patented in England Mar. 17, 1890. No. 4,123.

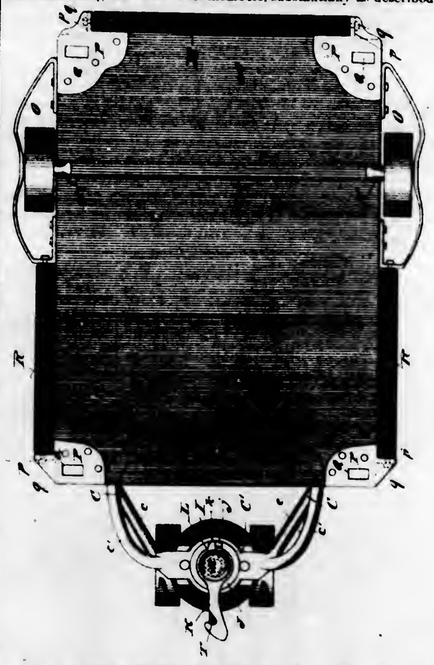


Claim.—A pencil-case or the like having, in combination, a hollow drum journaled in the case and having a pin arranged in the interior of the same, pins arranged in the case adjacent to the ends of the drum, and a rubber band having connections with said pins, whereby when the ribbon shall have been drawn out by hand it shall be automatically rewound by the torsional action of the rubber band, substantially as described.

485,262. TRUCK. JAMES C. A. DEAN, Chicago, Ill., assignor of one-half to William B. Nielsen, same place. Filed Feb. 18, 1892. Serial No. 421,982. (No model.)

Claim.—1. In a truck of the class described, the combination, with a low-hung bed or body, of a supporting wheel or wheels for the front end of the truck, a standard to which said wheel or wheels is journaled, a hanger-support connected at its lower end to the front end of the body, a fifth-wheel having one member connected to the upper end of the hanger and the other to the upper end of the standard, and a king-bolt pivotally connecting the members of the fifth-wheel, substantially as described.

2. In a truck of the class described, the combination, with a bed hung low between the rear supporting-wheels, front wheels journaled upon a stationary axle, a standard having a seat in its lower end for the axle and rising from said axle and bearing at its upper end one member of a turn-table or fifth-wheel, a hanger-support the lower end of which passes beneath and is secured to the front end of the bed and the upper end of which carries a fifth-wheel member, and a king-bolt connecting the fifth-wheel members, substantially as described.



3. In a truck of the class described, the combination, with a bed supported below the journal of the ground-wheels, of a hanger-support for the front end of said bed, the front supporting-wheels, a standard rising therefrom, a fifth-wheel device connected with the standard and the support, said standard being longitudinally apertured to receive the axle and transversely apertured to receive the bounds, and means for wedging them beneath the axle, whereby to prevent the rotation of the latter, substantially as described.

4. In a truck, the combination, with the fifth-wheel members, of a king-bolt for coupling said members together, a spring-controlled latch axially mounted with reference to said king-bolt, and stops provided on the fifth-wheel and on the latch, whereby to maintain the latter always in position to receive the tongue, substantially as described.

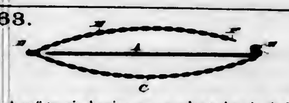
5. In a truck of the class described, the combination, with a cranked axle for the rear supporting-wheels, of a wheel-guard consisting of a bar having its ends secured with the edge of the truck and its middle adapted to confine the wheels upon the journal, substantially as described.

6. In a truck of the class described, the combination, with the corner-pieces and wheel-guards, of rollers journaled in said corner-pieces and guards parallel to the side margins of the truck-bed, substantially as described.

7. In a truck of the class described, the combination, with corner-pieces provided with stake-pockets and projecting lugs, of a roller journaled parallel to the rear margin or edge of the bed, said journals being mounted in or upon projections of the corner-pieces, substantially as described.

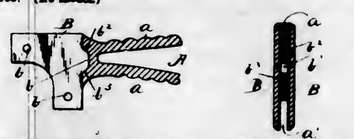
485,263. SAFETY-PIN. ANNA R. DIVINE, Devon, Pa. Filed July 24, 1891. Serial No. 400,661. (No model.)

485,263.



Claim.—A safety-pin having a cap adapted to be held upon the point of the pin or loosened therefrom by a chain connected to the cap and detachably connected to the head of the pin and a second chain attached to the cap and to the head of the pin to retain the first-named chain and cap.

485,264. KNIFE. JOHN J. EBERHARD, Fremont, Ohio, assignor to the Clauss Shear Company, same place. Filed Nov. 4, 1891. Serial No. 410,863. (No model.)



Claim.—As an article of manufacture, a knife-handle terminating at its forward end in a clip comprising a pair of jaws formed by splitting the end of the handle, the crotch of the split end having a recess *b'* formed therein and shoulders b^2 adjacent to the ends of the recess, the members of the clip terminating in two projections extending substantially at right angles to each other and triangularly arranged relative to the recess, said projections having holes formed therein adapted to receive screws, nails, or rivets for securing the clip to the blade held by them, substantially as set forth.

485,265. LUBRICATING-PACKING. BUTLER EDGAR, Sunbury, Pa. Filed May 23, 1892. Serial No. 434,100. (No model.)

Claim.—1. As a new article of manufacture, lubricating-packing consisting of sections of loose strands or ropes of fiber knotted or tied to form compressed portions and intermediate expansive portions, substantially as described.

2. In car-axle lubrication, the combination, with the axles and axle-boxes, of fibrous lubricating-packing arranged to bear upon the journals, said packing being knotted or tied to form compressed portions and expansive portions, which enlarge to compensate for wear when the fibers are worn through by the journals, substantially as described.

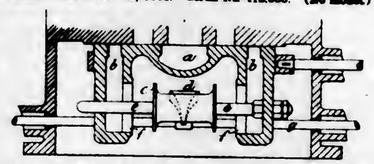
485,266. TOP ROLL FOR TWISTING-MACHINES. JAMES R. FITZGERALD, Fall River, Mass. Filed Mar. 22, 1892. Serial No. 426,062. (No model.)

Brief.—The top roll is provided with notches in the edge of its periphery which catch the thread as it slips from the roll and restores it to the periphery thereof.

Claim.—1. A top roll for a twisting-machine, provided with one or more notches, as E, in the edge of its periphery, whereby a strand which has slipped over the edge will be engaged and restored to its position on the periphery by the rotation of the roll, substantially as set forth.

2. A top roll for a twisting-machine, provided with one or more notches, as E, in the edge of its periphery, each of said notches consisting of the abrupt side E' and the gradually-inclined side E", formed at an obtuse angle, as shown, whereby a strand which has slipped over the edge will be engaged and restored to its position on the periphery by the rotation of the roll, substantially as described.

485,267. CUT-OFF MECHANISM FOR SLIDE-VALVES. GEORGE FLETCHER, Derby, England, and WILLIAM P. ABELL, Essequebo, British Guiana. Filed Nov. 18, 1891. Serial No. 412,333. (No model.)



Claim.—1. The combination of a main valve provided with steam-passages and having ports facing each other with a cut-off valve carried by such main valve and retarded in its movements by a tappet whose position is controlled by the governor and whereby when said ports are severally sufficiently near the cut-off valve the differential pressure of the steam will cause the cut-off valve to move and close the port.

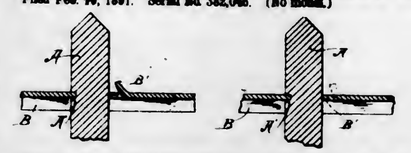
2. The combination of the main valve having passages *b b* therein and openings *f f*, a spindle *e*, on which is the cut-off valve *c c*, and an adjustable tappet *d*, the combination being and operating substantially as set forth.

3. In combination with the main valve having the described passages and openings therein and with the spindle and an adjustable tappet, a double cut-off valve between the two openings or ports, all substantially as set forth.

4. In combination, the main valve having the described passages and openings or ports therein, the spindle carrying a double cut-off valve between the two ports, and an adjustable tappet having double cam-faced surfaces, substantially as set forth.

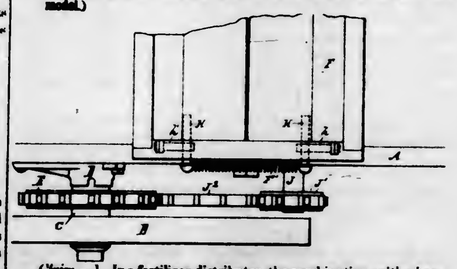
5. The combination, with a slide-valve having cut-off valves adapted to be operated as described, of flanges for directing the motive fluid into the openings covered by the said cut-off valves, substantially as described

485,268. IRON RAILING. THOMAS H. FLYNN, Cleveland, Ohio. Filed Feb. 10, 1891. Serial No. 382,046. (No model.)



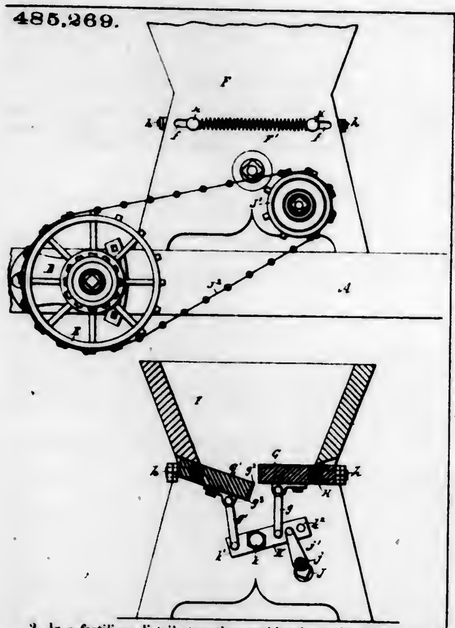
Claim.—The combination, with a supporting-rail having elongated slots with parallel edges formed therein and an integral lip formed by a continuation of the edges of the slots, of pickets adapted to enter the slots, said pickets being of greater thickness than the length of the slots and each picket provided on one edge with a transverse slot of a depth equal to the difference between the thickness of a picket and length of a slot, substantially as set forth.

485,269. FERTILIZER-DISTRIBUTER. JOHN FRASER, Bouton, Canada, assignor to the American Harrow Company, Detroit, Mich. Filed Sept. 3, 1890. Renewed Sept. 29, 1892. Serial No. 447,239. (No model.)



Claim.—1. In a fertilizer-distributer, the combination, with a hopper, of the vertically-oscillating bottom boards pivoted below the hopper and constituting the bottom thereof and means for oscillating the bottom boards in a vertical plane, substantially as described.

485,269.



2. In a fertilizer-distributer, the combination, with a hopper, of the vertically-oscillating bottom boards pivoted at each end below the hopper and constituting the bottom wall thereof and means for imparting an alternating oscillating motion to the bottom boards in a vertical plane, substantially as described.

3. In a fertilizer-distributer, the combination, with a hopper, of pivoted oscillating boards constituting the bottom of the hopper and having adjacent serrated edges which rise and fall past each other in a vertical plane and mechanism for oscillating the bottom boards, substantially as described.

4. In a fertilizer-distributer, the combination, with a hopper, of pivoted oscillating boards constituting the bottom of the hopper and having their adjacent edges rising and falling past each other and provided with serrations that increase in depth from their upper to their lower ends and means for oscillating the bottom boards, substantially as described.

5. In a fertilizer-distributer, the combination, with a hopper, of oscillating boards constituting the hopper-bottom and pivoted at each end, a vertically-oscillating lever pivoted intermediate its ends below the boards, pitmen connecting the opposite ends of the lever with the boards, and a rotary crank-shaft connected with the oscillating lever, substantially as described.

6. In a fertilizer-distributer, the combination, with a hopper provided with the bottom pieces G G', of the pintles H for pivoting the bottom pieces to the hopper, said pintles resting in slots F and connected by the coil-spring F', and the set-screws h for varying the distance between the pintles, and consequently between the adjoining edges of the bottom pieces, substantially as described.

7. In a fertilizer-distributer, the combination, with a hopper, of pivoted boards oscillating in a vertical plane and constituting the hopper-bottom, a vertically-oscillating lever pivoted intermediate its ends, pitmen connecting the opposite extremities of the lever with the pivoted boards, a crank-shaft connected with the lever and having a sprocket-wheel at one end and a sprocket-wheel on the axle of the machine, and a chain connecting the two sprocket-wheels, substantially as described.

8. In a fertilizer-distributer, the combination, with a hopper, of vertically-oscillating boards pivoted below the hopper and constituting the bottom thereof, a vertically-oscillating lever pivoted below the bottom boards, pitmen connecting the lever with the bottom boards, and a rotary crank-shaft journaled below and connected with the lever, substantially as described.

485,270. CURTAIN-FIXTURE. MICAIAH D. GAITER, Colorado Springs, Colo. Filed Feb. 20, 1892. Serial No. 422,230. (No model.)

Claim.—A curtain-fixture consisting of a plate 6, adapted to be secured to one side of the window-frame, having a perforation 8 formed therein, a flange, such as 9, formed around said perforation, a

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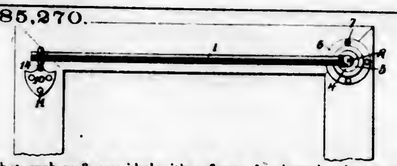
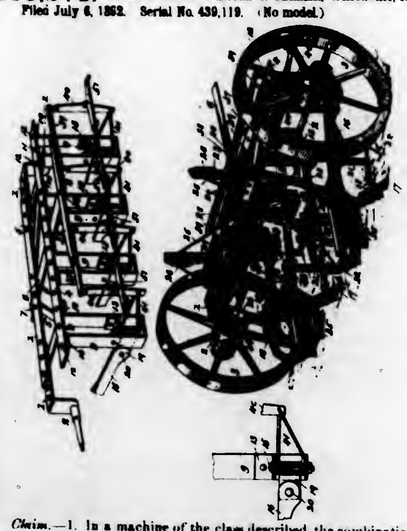


socket, such as 3, provided with a flange 5, adapted to be movably secured to said plate, an opening, such as 4, formed in the said socket, through which the pole 1 is adapted to be inserted, and a plate secured to the opposite side of said window-frame, having a U-shaped bar movably secured thereto for receiving the free end of the curtain-pole, substantially as set forth.

485,271. CULTIVATOR. SAMUEL S. GERRISH, Wilsonville, Nebr. Filed July 6, 1892. Serial No. 439,119. (No model.)



Claim.—1. In a machine of the class described, the combination, with the transverse axle, the cross-bar in front of the same, a series of perforations in the cross-bar, and connections between the cross-bar and axle, of a series of depending U-shaped stirrups having their upper ends bent to form securing-plates, bolts for adjustably connecting the stirrups to the cross-bar, a draft-pole extending forwardly from the cross-bar, a series of cultivator-beams loosely connected to the stirrups, an equalizing-bar pivoted on the draft-bar, doubletrees pivoted to the ends of the equalizing-bar, rods loosely depending from the ends of the doubletrees opposite the stirrups, connections between the lower ends of the rods and the stirrups, and singletrees loosely connected to the depending bars, substantially as specified.

2. In a machine of the class described, the combination, with the transverse axle, the ground-wheels, the transverse cross-bar connected with the axle, the draft-pole projecting forwardly from the cross-bar, and the series of depending U-shaped stirrups secured to the cross-bar, of the equalizing-bar pivoted to the pole, the doubletrees pivoted to the ends of the equalizing-bar, singletrees carried by the doubletrees, connections between the same and the stirrups, and a series of cultivator-beams loosely connected at their front ends to the stirrups, substantially as specified.

3. In a machine of the class described, the combination, with the framework and the series of depending U-shaped stirrups, of a draft-equalizer located on the framework in advance of the stirrups, doubletrees carried by the equalizer, singletrees carrying rods depending from the ends of the doubletrees, connections between the same at their lower ends and those of the stirrups, and cultivator-beams connected loosely at their front ends to the said stirrups, substantially as specified.

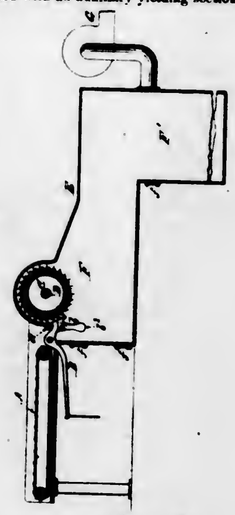
4. In a machine of the class described, the combination, with the framework and the series of cultivator-beams, of means for adjustably connecting the front ends of the cultivator-beams to the front of the framework, pulley-carrying standards rising from the framework, opposite pairs of inverted-U-shaped sectional frames having their upper ends overlapping, perforated, and adjustably connected and their lower ends connected to the cultivator-beams, ropes connected to the upper ends of the frames and passed over the pulleys, and

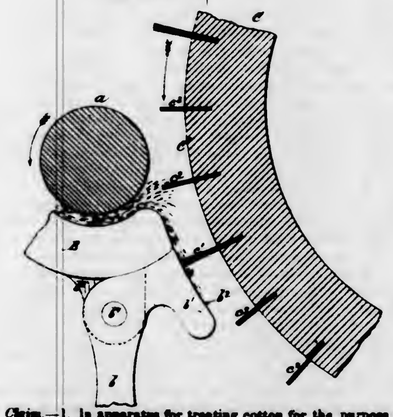
levers pivoted at their front ends to the frame, located between the frames, connected to the ropes, and adapted for locking, substantially as specified.

5. In a machine of the class described, the combination, with the framework, the supporting-wheels, the series of pairs of shovel-carrying cultivator-beams, and means for adjustably connecting the same at their front ends, of the inverted-U-shaped beam suspension-frames overlapping at their inner ends and formed in sections, the upper ends of which are perforated and adjustably connected by bolts and the lower ends of which are adjustably connected to the beams, means for raising and lowering the suspension-beams, straps adjustably connected to the frames, and feeders located between the outer pairs of beams and connected to the lower ends of the straps, substantially as specified.

485,272. MACHINE FOR OPENING AND CLEANING COTTON. WALLACE P. GROSS, Brooklyn, N. Y. Filed Feb. 20, 1892. Serial No. 422,185. (No model.)

Brief.—The invention includes a rotating beating or opening cylinder provided with several series of openers, each series consisting of an elastic resilient brush, a flexible whipper, of leather or similar material, somewhat shorter than the brush, and a rigid opener shorter than the flexible whipper, the three openers acting on the material in the order named. The invention also includes a series of feed-levers, each lever formed with an auxiliary yielding section.





Claim.—1. In apparatus for treating cotton for the purpose set forth, the combination, with suitable feed mechanism, of a rotating whipper formed with series of elastic resilient brushes of a prescribed degree of radial projection and with series of flexible openers of a degree of radial projection less than that of the brushes, substantially in the manner and for the purpose described.

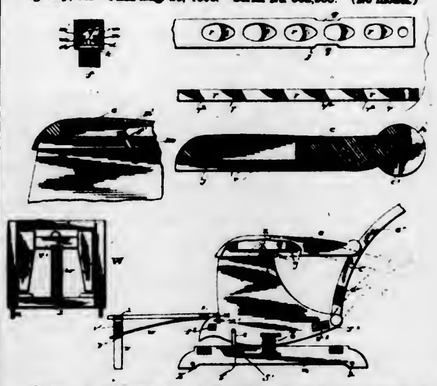
2. In apparatus for treating cotton for the purpose set forth, the combination, with suitable feed mechanism, of a rotating whipper formed with a series of elastic resilient brushes of a prescribed degree of radial projection, with series of flexible openers of a degree of radial projection less than that of the brushes, and with a series of rigid openers of a degree of radial projection less than that of the said flexible openers, for the purpose and substantially in the manner described.

3. In apparatus for treating cotton for the purpose set forth, the combination, with suitable feed mechanism, of a rotating whipper formed with openings consisting of a series of saw-teeth arranged eccentric to the shaft and a series of flexible resilient openers arranged concentric to the shaft, substantially in the manner and for the purpose described.

4. In apparatus for treating cotton for the purpose set forth, the combination, with suitable feed mechanism, of a rotating whipper formed with a series of segments provided with radial openers, said segments being arranged so that those adjoining break joints with each other, substantially in the manner and for the purpose set forth.

5. In apparatus for treating cotton for the purpose set forth, the combination, with a rotating whipper, of a feed-roller and a series of feed-levers formed with auxiliary pieces for presenting cotton to the whipper, said auxiliary extension-pieces being pivotally connected to the feed-levers and being adapted to yield under pressure and to return automatically to their normal positions, substantially in the manner and for the purpose set forth.

485,273. RECLINING-CHAIR. CHARLES H HACKLANDER, Allegheny, Pa. Filed Aug. 20, 1890. Serial No. 362,555. (No model.)



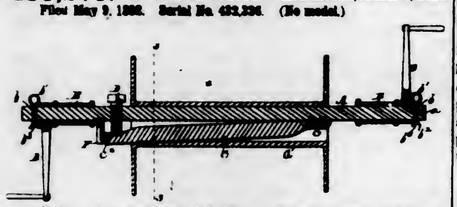
Claim.—1. The combination, in a reclining-chair, of the standards and the pivoted back with projections f' and m, extending upward from said standards, said projections m being located on either side of said projections f' and having inwardly-exteading heads, arms pivotally attached to said back and having recesses, and plates stretching across said recesses and formed with series of openings to engage the projections f' and with lateral recesses to permit them to pass beneath the heads of said projections m, all substantially as shown and described.

2. In a reclining-chair, the combination, with the standards and the pivoted back, of projections f' and m, extending upward from said standards, said projections m being located on either side of said projection f and having inwardly-extending heads, arms pivotally attached at their rear ends to the vertical standards of the back, said arms also having flanges e^4, engaging opposite sides of the standards of the back and formed with recesses in their under sides, and plates stretching across said recesses in the arms and having series of openings to receive said projections f' and lateral openings to permit them to pass beneath the heads of said projections m, all substantially as shown and described.

485,274. CLOTHES-PIN. JOHN H. HAMILTON, Eureka Springs, Ark., assignor of one-half to Benjamin R. Woodruff, same place. Filed Apr. 23, 1892. Serial No. 430,233. (No model.)

Claim.—A clothes pin or holder constructed of a single piece of wire consisting of central coils forming an eye adapted to loosely receive a line-wire, horizontally-disposed loops forming a continuation of the coils and having their outer ends bent upward slightly and their opposite sides spaced apart, so as to slightly embrace the line-wire, and the vertical handle-loops arranged at an angle to and at the inner ends of the arm-loops and forming continuations of the same, substantially as described.

485,275. WIRE-REEL HOLDER. HANS HANSON, Mankato, Minn. Filed May 9, 1892. Serial No. 432,336. (No model.)



Claim.—1. In a wire-reel holder, a shaft, as A, in combination with a retaining-bar secured thereto at one end and means interposed between the free end of the bar and the shaft to force outwardly the said free end of the bar, substantially as set forth.

2. In a wire-reel holder, a shaft, as A, in combination with a retaining-bar secured thereto at one end and a set-screw threaded into the shaft and bearing against the free end of the retaining-bar, substantially as set forth.

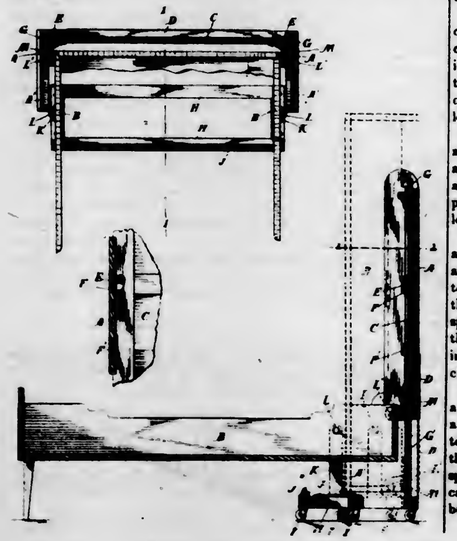
3. In a wire-reel holder, a shaft, as A, in combination with a squared bar secured thereto at one end and a set-screw threaded into the shaft and bearing against the free end of the squared bar, substantially as set forth.

4. In a wire-reel holder, a shaft, as A, having a retaining-bar secured thereto at one end and a set-screw between the shaft and the retaining-bar, in combination with a wire-reel spool and a wedge interposed between the spool and the shaft, substantially as set forth.

5. In a wire-reel holder, a shaft, as A, a retaining-bar secured thereto at one end and means for forcing the free end of the retaining-bar from the shaft, in combination with the sleeves, as E, loosely mounted on the ends of the shaft, substantially as set forth.

6. In a wire-reel holder, a shaft, as A, a retaining-bar secured thereto at one end and means for forcing the free end of the retaining-bar away from the shaft, in combination with the sleeves, as E, loosely mounted on and cranks secured to the ends on the shaft, substantially as set forth.

485,276. FOLDING BED. EDWARD R. HERRINTON and ISRAEL C. SMITH, Grand Rapids, Mich., assignors to the Grand Rapids Folding Bed Company, same place. Filed Dec. 17, 1891. Serial No. 415,427. (No model.)

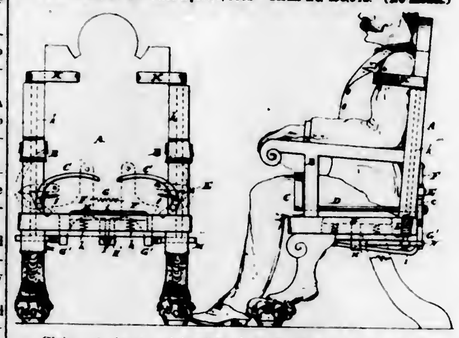


Claim.—1. In a folding bed, a stationary case, an independently supported and movable platform, posts upon said platform, a folding section pivoted to said posts and separately movable with said platform, and a vertically-movable weight in said case detachably connected to said folding section, substantially as described.

2. In a folding bed, a stationary case, a folding section, a vertically-movable head-board, pawls on said head-board engaging notches in said case, downwardly-open bearings on said head-board engaging pivot-pins on the folding section, and a movable and independent platform having posts at each side, provided with open bearings at their upper ends engaging pivots on said folding section, substantially as described.

3. In a folding bed, a stationary case, a vertically-movable head-board, weights attached to the same, stops on said head-board to hold the same in an elevated position, brackets having downwardly-open bearings attached to said head-board, a folding section having pivots engaging said bearings, a platform beneath said section, posts at each side of said platform, having open bearings engaging pivot-pins on said folding section, and a stop on said platform to engage the corner of said section, substantially as described.

485,277. CHAIR FOR THEATRICAL OR OTHER PURPOSES. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor to Eva M. Florence, New York, N. Y. Filed Apr. 27, 1892. Serial No. 430,912. (No model.)



Claim.—1. In an article of furniture for theatrical or other purposes, the combination of the stationary frame of an article of furniture provided with one or more movable clamping parts secured thereto and operating in connection with the stationary frame to clasp the person, a lock to hold the movable or clamping part out of clamping position, and a movable portion controlled by the person sitting or reclining on the article of furniture to operate the lock to liberate the clamping or movable portion and permit it to clasp the person to the frame of the article of furniture.

2. In an article of furniture for theatrical or other purposes, the combination of the article of furniture with one or more movable or clamping parts secured thereto, a lock to hold the movable or clamping part out of clamping position, a movable portion controlled by the person sitting or reclining on the chair or article of furniture to operate the lock to liberate the clamping or movable portion, and a lock to lock the movable or clamping portion in its clamping position.

3. The combination of an article of furniture adapted to receive a person, a movable clamping part movably connected to the said article of furniture and adapted to clamp the person therein, a movable part operated by the person to automatically cause the clamping part to be brought into clamping position, and an automatic lock to lock the movable or clamping part in its clamped position.

4. The combination of an article of furniture adapted to receive a person, a movable clamping part movably connected to the said article of furniture and adapted to clamp the person therein, a spring to move the said movable part into clamping position, a lock to hold the movable part out of clamping position against the action of the spring, a movable part operated by the person to automatically cause the lock to be liberated and permit the clamping part to be brought into clamping position, and an automatic lock to lock the movable or clamping part in its clamped position.

5. The combination of an article of furniture adapted to receive a person, a movable clamping part movably connected to the said article of furniture and adapted to clamp the person therein, a spring to move the said movable part into clamping position, a lock to hold the movable part out of clamping position against the action of the spring, and a movable part operated by the person to automatically cause the lock to be liberated and permit the clamping part to be brought into clamping position.

6. The combination of an article of furniture with one or more

independently-movable clamping parts, springs to move said clamping parts into clamping position toward the frame of the article of furniture to clasp the person, a lock to hold said clamping parts out of clamping position with the frame, and a movable portion of the article of furniture, adapted to be operated by the person in sitting or reclining upon it to liberate the lock.

7. The combination of an article of furniture with one or more movable clamping parts, springs to move said clamping parts into clamping position, a lock to hold said clamping parts out of clamping position, a movable portion of the article of furniture, adapted to be operated by the person in sitting or reclining upon it to liberate the lock, and an automatic lock to lock the movable clamping part in its clamped position.

8. The combination of an article of furniture with two movable clamps adapted to move over the seat portion to clamp the limbs of the person sitting or reclining on the article of furniture, a lock to hold the clamping parts out of clamping position, a movable portion of the article of furniture to operate the said lock to liberate the clamping parts and permit them to come into clamping position, and locking devices to lock the clamping parts in their clamping positions.

9. The combination of a chair with movable clamping parts arranged adjacent to the seat portion and also to the upper part of the back portion, a lock device to cause the said clamping parts to be held out of clamping position, and a movable part of the chair, adapted to be operated by the person occupying it to liberate the said lock and permit the clamping parts to move into clamping position.

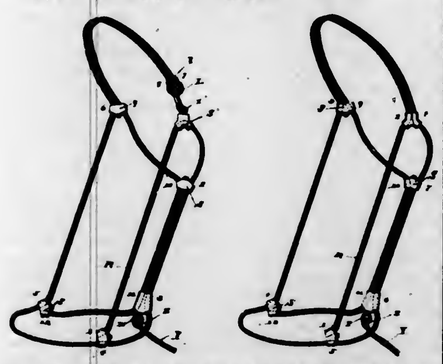
10. The combination of a chair with movable clamping parts arranged adjacent to the seat portion and also to the upper part of the back portion, a lock device to cause the said clamping parts to be held out of clamping position, a movable part of the chair, adapted to be operated by the person occupying it to liberrte the said lock and permit the clamping parts to move into clamping position, and locking mechanism for locking the several clamping parts in their clamping positions.

11. In an article of furniture for theatrical or other purposes, the combination of the frame of the article of furniture, adapted to receive a person, with an automatic movable clamping part movably connected with the frame of the article of furniture and arranged to automatically clasp a portion of the person to the frame of the article of furniture when the person sits or rests upon it.

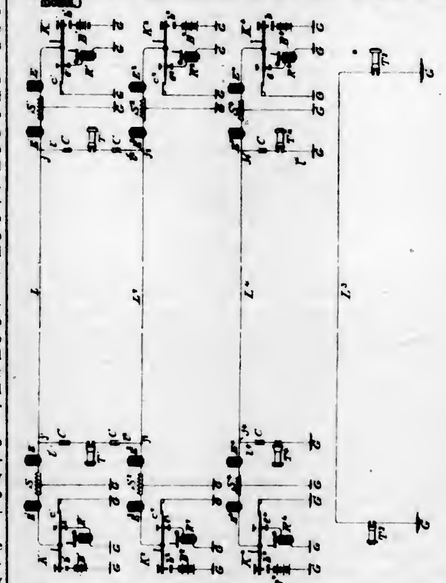
12. In an article of furniture for theatrical or other purposes, the combination of the frame of the article of furniture, adapted to receive a person, with an automatic movable clamping part movably connected with the frame of the article of furniture and arranged to automatically clasp a portion of the person to the frame of the article of furniture when the person sits or rests upon it, and a lock to lock said clamping part in its clamping position.

13. In an article of furniture for theatrical or other purposes, the combination of the frame of the article of furniture with one or more movable or clamping parts secured thereto and adapted to move to or from the frame to clasp a person thereto and a lock to hold the movable or clamping parts out of clamping position, but adapted to liberate them and permit them to clamp a person to the chair.

485,278. HALTER. HOMER F. HUTTON, Basin, Mont. Filed Mar. 31, 1890. Serial No. 346,046. (No model.)



Claim.—The improved halter herein described, comprising a single piece of rope forming the nose-band, cheek-pieces, headstall, and throat-strap, the nose-band having socket-pieces at each side, with converging apertures therethrough, and a binding-screw, a similar socket-piece, with an eye connecting the nose-band and the throat-piece at the bottom, and a similar piece at the top, without the eye, connecting the headstall, and the latter connected at one side by a socket-piece with an eye and a segmental aperture, a converging socket-piece with a screw at the opposite side, and a socket snap-hook on the doubled end of the headstall, substantially as described.

485,279. COMBINED TELEGRAPHY AND TELEPHONY. WILLIAM W. JACQUES, Newton, assignor to the American Bell Telephone Company, Boston, Mass. Filed Apr. 8, 1892. Serial No. 428,399. (No model.)

Claim.—1. The combination of an electrostatic inductive resistance and an electro-magnetic inductive resistance in an electric circuit, substantially as described.

2. The combination, with a telegraph line-wire at each end, of telegraph apparatus, and an electrostatic inductive resistance, and an electro-magnetic inductive resistance, substantially as described.

3. The combination, with a line-wire, telegraph apparatus at each end of said line-wire, grounded branch wires, and telephone apparatus and condensers in said branch wires, of, also at each end of said line-wire, an electrostatic inductive resistance and electro-magnetic inductive resistance between the source of electric energy of the telegraph apparatus and the junction of the said line-wire with one of said branch wires, substantially as described.

4. The combination, with two line-wires and telegraph apparatus at each end of one or both, two telephone-loops, and telephone apparatus and condensers in said loops, of an electrostatic inductive resistance and an electro-magnetic inductive resistance interposed at each end of one or both of said line-wires between the source of electrical energy of the telegraph apparatus at that end and the junction with one of said loops, substantially as described.

5. The combination, with a line-wire or line-wires, telegraph apparatus therein, and a telephone-circuit imposed thereon by branch wires or loops, substantially as described, of combined electrostatic and electro-magnetic inductive resistances between the sources of electrical energy in said telegraph apparatus and the junctions, or either of them, of said telephone-circuit and said line wire or wires, substantially as described.

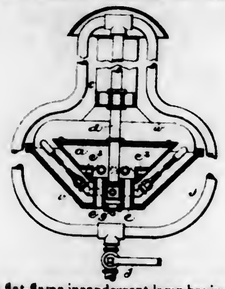
6. The combination, with a line-wire or line-wires, telegraph apparatus therein, and a telephone-circuit imposed thereon by branch wires or loops, substantially as described, of combined electrostatic and electro-magnetic inductive resistances between the sources of electrical energy in said telegraph apparatus and the junctions, or either of them, of said telephone-circuit and said line wire or wires, the transmitting-keys of said telegraph apparatus being each provided with battery-relay and earth contacts, substantially as described.

485,280. AMALGAM FOR DENTISTS' USE. GUSTAV JÜTTERSON, Berlin, Germany. Filed Jan. 4, 1892. Serial No. 417,607. (No specimens.)

Claim.—The method of manufacturing a gold-covered alloy, con-

sisting in rolling an alloy of silver and tin into thin sheets and forming on the same a galvanic deposit of pure gold, for the purpose as described.

485,281. INCANDESCENT LIGHTING. JOHN LANDIN, Stockholm, Sweden. Filed June 10, 1891. Renewed Sept. 19, 1892. Serial No. 446,316. (No model.) Patented in Belgium Dec. 31, 1890, No. 93,169; in England Feb. 23, 1891, No. 7,335; in France Mar. 17, 1891, No. 210,043; in Spain Mar. 31, 1891, No. 11,572, and in Sweden Apr. 30, 1891, No. 2,973.

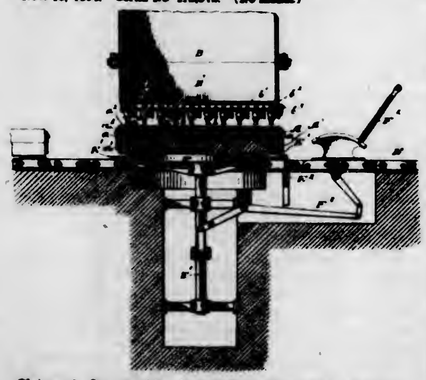


Claim.—1. A flat-flame incandescent lamp having the burners and their respective combs arranged in the same plane and disposed above and behind said burners and combs, a closed vessel having its outer perimeter with a reflecting-surface and on a plane parallel with that of the burners and combs and said vessel containing within it a passage for the gas before it reaches the burner or burners, whereby said vessel may be subjected to the action of the heat of the burners and combs and the gas within said vessel heated before it reaches the burners, all as set forth.

2. A flat-flame incandescent lamp having the burners and their respective combs arranged in the same plane and disposed above and behind said burners and combs, a closed vessel having its outer perimeter with a reflecting-surface and on a plane parallel with that of the burners and combs and said vessel containing within it passage-ways for the gas and air before the former reaches the burner or burners, whereby said vessel may be subjected to the action of the heat of the burners and combs and the gas and air within said vessel heated before they have reached the burners, all as set forth.

3. A flat-flame incandescent lamp having the burners and their respective combs arranged in the same plane and disposed above and behind said burners and combs, a closed vessel having its outer perimeter with a reflecting-surface and on a plane parallel with that of the burners and combs and said vessel containing within it passage-ways for the gas and air before the former reaches the burner or burners, and auxiliary air-tubes in which are valves leading to the burners, all as and for the purposes set forth.

485,282. MACHINE FOR MOLDING MARBLES OR OTHER ARTICLES FROM CLAY, &c. MATTHEW LAHR, East Akron, Ohio. Filed Nov. 12, 1891. Serial No. 412,373. (No model.)



Claim.—1. In a machine for molding articles from plastic material, a distributing-receptacle provided with a nozzle and a mold having a correspondingly-shaped registering gate into which said nozzle may snugly fit and find a tight seat, substantially as set forth.

2. In a machine for molding articles from plastic material, a distributing-receptacle provided with a nozzle, and a mold having a correspondingly-shaped registering gate into which said nozzle may fit tightly, and a vent-opening for the outlet of air and overflow of material cut off by said tight fit in the gate, substantially as set forth.

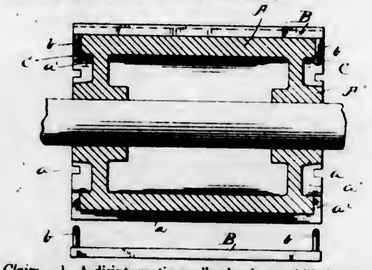
3. In a machine for molding articles from plastic material, a distributing-receptacle having a number of nozzles in its bottom provided with connected cocks and a mold having a corresponding and registering number of gates shaped corresponding to the nozzles, so as to form tight seats for the latter, substantially as set forth.

4. In a machine for molding articles from plastic material, a distributing-receptacle formed with parallel sides and provided with nozzles in its bottom, a plunger within the receptacle, and a mold having gates corresponding and registering with the nozzles and shaped to correspond to and form tight seats for the latter, substantially as set forth.

5. In a machine for molding articles from plastic material, a distributing-receptacle having nozzles in its bottom, a mold having gates registering with and corresponding to said nozzles, a conveyer beneath said receptacle and adapted to convey the mold, and an elevator beneath the conveyer and adapted to raise the mold to the nozzles, substantially as set forth.

6. In a machine for molding articles from plastic material, a mixing-receptacle, a distributing-receptacle connected to said mixing-receptacle by a tube, a reciprocating plunger in the distributing-receptacle, a mold, a conveyer for said mold, and an elevator for said mold and registering with the distributing-receptacle, substantially as set forth.

485,288. DISINTEGRATING-ROLLER. WILLIAM H. LARMAN, Sligo, Md., assignor to J. W. Penfield & Son, Willoughby, Ohio. Filed Feb. 13, 1892. Serial No. 421,426. (No model.)



Claim.—1. A disintegrating-roller having a chilled or hardened external surface and disintegrating-bars secured in the periphery and extending from end to end of the roller and having inwardly-projecting portions extending through the outer shell of the roller, substantially as and for the purpose set forth.

2. A disintegrating-roller having longitudinal peripheral grooves and grooves in the ends of the roller in open communication with said longitudinal grooves, metallic bars seated within said longitudinal grooves, said bars at either end terminating in arms extending into the grooves in the ends of the roller, and suitable means for locking said bars in place, substantially as set forth.

3. A disintegrating-roller having a chilled or hardened external surface, longitudinal peripheral grooves, and grooves or recesses in the ends of the roller in open communication with said longitudinal peripheral grooves, said grooves or recesses being all cast in, and disintegrating-bars secured within said grooves, substantially as and for the purpose set forth.

4. A disintegrating-roller having a chilled or hardened external surface, longitudinal peripheral grooves, an annular groove or recess in the respective ends of the roller, and grooves connecting said annular grooves or recesses with the aforesaid longitudinal peripheral grooves, and disintegrating-bars secured within said grooves, substantially as and for the purpose set forth.

5. A disintegrating-roller having a chilled or hardened external surface, longitudinal peripheral grooves, and an annular groove or recess in the respective ends of the roller and in open communication with said longitudinal peripheral grooves, and metallic disintegrating-bars seated within said longitudinal peripheral grooves, said disintegrating-bars at either end being provided with an arm extending into the annular groove or recess in the respective end of the roller, the free ends of said arms being screw-threaded and having a nut mounted thereon, respectively, substantially as and for the purpose set forth.

6. A disintegrating-roller comprising an externally chilled or hardened cylindrical shell closed at its ends, the ends of the roller being centrally perforated and having each an annular groove or recess, substantially as indicated, the roller having longitudinal peripheral grooves in open communication with the annular grooves or recesses aforesaid and having metallic disintegrating-bars seated within said longitudinal grooves, said disintegrating-bars at either end terminating in an arm projecting into the annular groove or recess in the respective end of the roller, and suitable means connected with said arms for locking the disintegrating-bars in place, substantially as set forth.

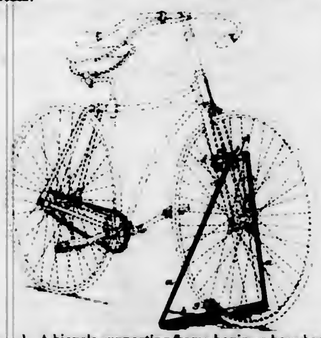
485,284. ARMATURE-CORE FOR ELECTRIC MOTORS AND DYNAMOS. ANTON J. LEHMAN, New York, N. Y. Filed Jan. 30, 1891. Serial No. 379,738. (No model.)

Claim.—1. An armature-core for motors, dynamos, or electro-magnetic machines, composed of magnetic gauze, cloth, netting, or the like rolled upon itself, the last or peripheral layer or layers of which are bent on themselves at an angle to the core-body to form lugs or projecting arms, substantially as described.

2. An armature-core for motors, dynamos, or electro-magnetic machines, composed of magnetic gauze, cloth, netting, or the like rolled upon itself, the meshes of which are filled with a paste composed of any magnetic powder, combined with a binder, the last or peripheral layer or layers of which are bent at an angle to form lugs or arms that project, substantially as described.

3. An armature-core for motors, dynamos, or electro-magnetic machines, composed of magnetic gauze, netting, or the like rolled upon itself and soaked in a solution of shellac or hot ozocerite or the like, substantially as described.

485,285. SUPPORTING AND LOCKING ATTACHMENT FOR BICYCLES. WALTER LEWIS, Philadelphia, Pa., assignor of one-half to George T. Turner, same place. Filed Dec. 18, 1891. Serial No. 415,529. (No model.)



Claim.—1. A bicycle-supporting frame having a base-bar extending on each side of the machine, said frame being hung at its upper end to the steering-frame and having below said upper end a bearing on said steering-frame, whereby the rearward swinging of the supporting-frame is limited, substantially as described.

2. A bicycle-supporting frame having a base-bar extending on each side of the machine, said frame being hung to the steering-frame at a point above the projecting foot-rests thereon, whereby when the supporting-frame swings rearward said foot-rests will serve as stops to limit such rearward movement, substantially as specified.

3. The combination of the supporting-frame with the links to which the upper ends of said frame are hung and blocks to which the links are pivoted, said blocks being adapted for application to the steering-frame of the bicycle, substantially as specified.

4. The within-described supporting device for bicycles, the same consisting of a frame pivoted at its upper end to the frame of the bicycle and having at the lower end a transverse supporting-bar with socket extending along the rim of the wheel, substantially as specified.

5. The within-described supporting device for bicycles, the same consisting of a frame pivoted at its upper end to the frame of the machine and having at the lower end a transverse supporting-bar with socket pivoted thereto and adapted to receive the rim of the wheel, substantially as specified.

6. The within-described supporting device for bicycles, the same consisting of a frame hung at its upper end to the frame of the machine and having at the lower end a transverse supporting-bar shod upon the under side with rubber or like material to prevent slipping, substantially as specified.

7. The within-described supporting and locking device for bicycles, the same consisting of a frame having opposite bars hung at their upper ends to the frame of the machine and connected at their lower ends by a transverse supporting-bar, said frame having a cross-bar adapted to pass between the spokes of the wheel, and also having a locking device for said cross-bar, substantially as specified.

8. The within-described supporting and locking device for bicycles, the same consisting of a frame comprising opposite side bars pivoted at their upper ends to the frame of the machine and having at their lower ends a transverse supporting-bar, in combination with a locking-bar adapted to pass transversely between the spokes of the wheel, said locking-bar being pivoted to the supporting-frame on one side of the wheel and engaging with a locking device on said frame on the opposite side of the wheel, substantially as specified.

9. The within-described supporting and locking device for bicycles, the same consisting of a frame comprising opposite side bars hung to the frame of the machine at their upper ends and having a transverse supporting-bar at their lower ends, in combination with a locking-bar hung to one of said side bars by a universal joint and a locking device on the other side bar for engaging with and retaining said locking-bar after the same has been passed transversely between the spokes of the wheel, substantially as specified.

485,286. CAR-TRUCK. ALEXANDER T. LOYD, Chicago, Ill. Filed Feb 13, 1892. Serial No. 421,407. (No model.)

Claim.—1. A railroad-truck provided with a plurality of axles rotatably fixed in the same horizontal plane and carrying wheels arranged in different vertical planes, the tread of all the wheels on the truck being in a common horizontal plane, as set forth.

2. A railroad-truck provided with a plurality of rotatably-fixed axles arranged in the same horizontal plane and wheels on the said axles and alternately arranged in different vertical planes with the treads of all the wheels in the same horizontal plane, as set forth.

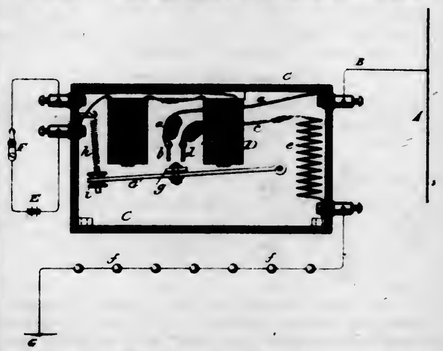
3. The combination, with a four-rail track, of a truck having a plurality of axles arranged in the same horizontal plane and wheels on the said axles in different vertical planes to at all times travel on said track, substantially as specified.

4. A railroad-truck provided with a plurality of long and short axles arranged in a common horizontal plane and wheels on the said axles arranged in different vertical planes, substantially as specified.

5. A railroad-truck provided with a plurality of long and short axles arranged in a common horizontal plane and fixedly rotatable and wheels on the said axles alternately arranged in the same horizontal plane, but in different parallel vertical planes, substantially as specified.

6. A truck-frame provided with a series of long axles extending from side to side thereof and intermediate short axles journaled upon intermediate rails of the truck-frame, the journals of all the axles being arranged in a common plane and all of the axles being provided with wheels of a common diameter and adapted to run on a road-bed comprising two parallel rails at each side thereof, substantially as specified.

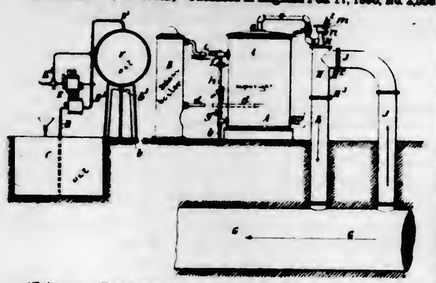
485,287. ELECTRIC-LIGHTING SYSTEM. WILLIAM H. MACKAY, Roanoke, Va. Filed June 13, 1892. Serial No. 436,547. (No model.)



Claim.—In combination with the railway line or circuit A, the circuit B, branching therefrom and comprising the wires *a c*, electrodes

b d, coil *e*, and lamps *f*, the electro-magnet D, armature G, provided with plate *g* and the local circuit and switch.

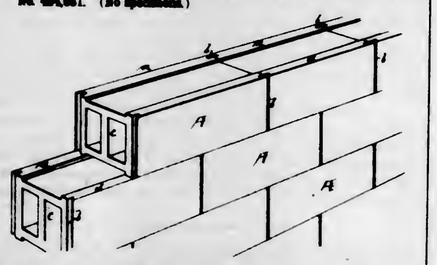
485,288. METHOD OF AND APPARATUS FOR CARBURETING GAS. HIRAM S. MAXIM, London, England, assignor to the Gas Lighting Improvement Company, Limited, same place. Filed Jan. 19, 1891. Serial No. 378,314. (No model.) Patented in England Feb. 17, 1890, No. 2,550.



Claim.—1. The improvement in methods of carbureting or enriching gas, which consists in generating a hydrocarbon vapor under pressure, inducing in a branch or by-pass of a gas-main a draft by the injector action of a jet of such vapor, whereby a portion of such gas will be drawn from the main, mixed with the jet, and then forced back into the main, and regulating the force of the jet of hydrocarbon vapor escaping in the said branch or by-pass according to the velocity of the gas flowing through the main and according to the desired illuminating power of the enriched gas, as set forth.

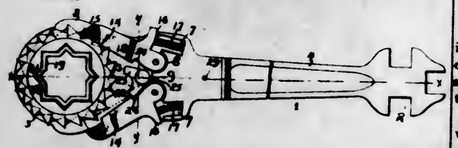
2. The combination, with a gas-main, of a by-pass connected therewith, an injector having the passage for the induced current connected with the said by-pass, an evaporator for generating hydrocarbon vapor under pressure, a pipe for conducting the hydrocarbon vapor from the said evaporator to the passage in the said injector for the inducing current, and a valve in the said pipe for controlling the flow of the hydrocarbon vapor from the evaporator to the injector, substantially as and for the purposes above specified.

485,289. BUILDING-BLOCK. ARNOLD A. MILLER, Canton, Ohio, assignor to Henry Bodeman, same place. Filed Mar. 12, 1892. Serial No. 424,661. (No specimens.)



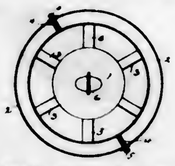
Claim.—As an article of manufacture, a hollow building-block provided upon its top and bottom outside faces with parallel ribs *a* and vertical V-shaped grooves formed in the end of said blocks and ribs, as and for the purpose described and shown.

485,290. COMBINED RIMD AND RATCHET WRENCH. JOHN A. MILLER, St. Louis, Mo. Filed Jan. 4, 1892. Serial No. 416,960. (No model.)



Claim.—The herein-described wrench, consisting of a handle 1, formed at one end with a circular opening 5, a socket 6, disposed in the latter and consisting of two sections 10 and 11, the latter of which having an angular extension 12, fitting within the corresponding opening of the section 10, said sections being provided with reversely-arranged ratchet-teeth 13, pawls 14, engaging the respective series of said teeth, a cam 22, having arms 23, adapted to engage the pawls, and a removable cap-plate 26, provided with an opening for the reception of the outer end of the socket-section 10, all arranged and adapted to operate substantially as and for the purpose set forth.

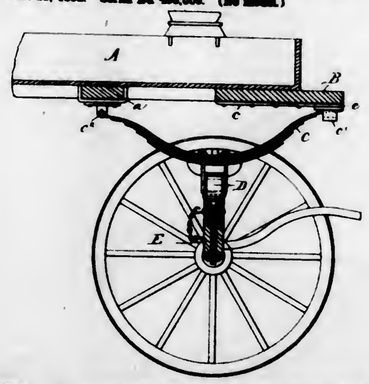
485,291. STEAM-GENERATOR. JAMES F. MORRISON and JACOB GRIFF, Pittsburg, Pa. Filed Dec. 26, 1891. Serial No. 416,223. (No model.)



Claim.—1. In a steam-generator, the combination of the boiler, series of external tubes connecting the upper and lower portions of said boiler, an annular jacket encircling said boiler, and tubes connecting the upper and lower portions of said jacket with the upper and lower portions of said boiler, with a grate adjacent to the lower end of said boiler, a dap covering the space between the top of said jacket and the sides of the boiler, brackets supporting said boiler from said annular jackets, a feed-water connection to said jacket, and a drain-pipe connection from said boiler.

2. The herein-described steam-generator, consisting of a boiler having a reduced extension, tubes connecting said boiler and extension, an annular jacket encircling said boiler and extension and extending to a lower plane than the bottom of said extension, tubes connecting said jacket with said boiler and extension, a feed-water connection to said jacket, a drain-pipe connection to said boiler, the covering 9, connecting the upper end of the jacket with the upper or main portion of the boiler, brackets supporting said boiler from said jacket, and a grate supported below the lower end of said extension and encircled by said jacket, all substantially as shown and described.

485,292. WAGON. THEODORE R. MASON, Jr., Boston, Mass. Filed June 25, 1892. Serial No. 438,009. (No model.)



Claim.—In a wagon, the combination of the foot-board B with the half-springs C C and curved rocker-bed D, substantially as set forth.

485,293. ELECTRIC-ARC LAMP. JOHN A. MOSHER, Chicago, Ill. Filed Jan. 2, 1892. Serial No. 416,933. (No model.)

Claim.—1. The combination, with the carbon-rod, of a fiber plug in the upper end thereof and a spring-contact carrying the lighting-current, having a portion in contact with the rod, as set forth, the spring co-operating with the plug to cut out the lamp at the end of the movement of the rod.

2. In an arc lamp, a spring-contact and a carbon-rod provided with a fiber plug with a portion extended beyond the end of the rod and of greater diameter than the rod and having a circumferential groove above the end of the rod, as and for the purpose specified.

3. The combination, with a carbon-rod provided with a fiber plug having a groove, of a contact adapted to move in electrical contact with the rod and engage said groove, as set forth.

4. The combination, with the carbon-rod having a fiber plug with groove, of a spring-contact carrying the lighting-current and having its free end held against said rod, the spring co-operating with the plug to cut out the lamp at the end of the movement of the rod, as and for the purposes specified.

5. The combination, with the carbon-rod having a fiber plug with groove and of greater diameter than the rod outside the same, of a spring-contact with its free end held against the rod and provided with a stop, as and for the purpose specified.

6. The combination, with the frame, the carbon-rod, and the trip-lever and block embracing said carbon-rod, of a plate-spring having its free end resting against the said block, as and for the purposes specified.

7. The combination, with the lower-carbon holder, of a plate to which it is attached, provided with a plurality of arms, the casting beneath said plate, the interposed insulation, and means for holding and adjusting each arm independent of the other to tilt the plate and holder, as and for the purposes specified.

8. The combination, with the frame and the rotatable switch-block, of a spring-arm having a prong substantially parallel therewith to engage the frame, as and for the purposes specified.

9. The combination, with the rotatable fiber switch-block, of the spring-arm arranged to engage said block, and having a prong substantially parallel therewith to engage the frame, as and for the purpose specified.

10. The combination, with the main and derived circuit magnets and their cores, of the walking-beam carrying the cores, a cushioning device for the same, the carbon-rod, the spring-contact engaging the same, the trip-lever and grip-pin, and the spring bearing directly against the grip-block, as set forth.

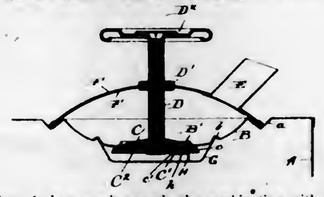
485,294. DUMPING-WAGON. CHARLES H. MCROBERTS, St. Louis, Mo. Filed June 13, 1892. Serial No. 436,846. (No model.)

Claim.—1. In a dumping-receptacle, the combination, with the bed composed of two sections hinged together at the top, of means for both opening and closing said sections independent of one another, substantially as and for the purpose set forth.

2. In a dumping-receptacle, the combination, with the bed composed of two longitudinal sections hinged together at the top, of two longitudinal shafts arranged above said bed and ropes wound reversely on each of said shafts and attached to the respective bed-sections in substantially the manner and for the purpose described.

3. A dumping-receptacle having a base-frame composed of side pieces 2 and 3, connected together by cross-pieces, upright supporting-posts 4, secured to the corners of said base-frame and connected at the tops by cross-pieces 5 and 6, provided with bearings 14, in which main shafts 12 and 13 are constructed to fit and revolve, spools 15, 16, 17, and 18, mounted relatively on said shafts 12 and 13, gear-wheels 19, mounted upon the projecting ends of said shafts 12 and 13, counter-shafts 24, secured in suitable bearings 25, a pinion 26, keyed upon said counter-shaft 24, and the projecting end of said counter-shaft 24 fitted to receive a crank 28, by means of which the entire dumping mechanism is manipulated, substantially as set forth.

485,295. POURING-NOZZLE FOR CANS. EDWIN HORTON, Maywood, assignor to himself, and Oliver W. Horton, Chicago, Ill. Filed Apr. 7, 1892. Serial No. 428,118. (No model.)



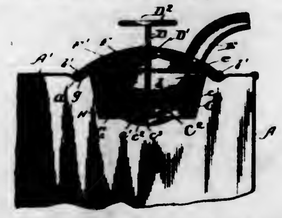
Claim.—1. In a pouring-nozzle, the combination, with a valve C, of a nozzle or cap disk B, having a central valve-opening B' therein adapted to be closed by said valve C, and a thin hermetically-sealing disk G, adapted to be automatically cut or broken open by the movement of the valve, said valve C fitting between said sealing-disk G and said nozzle or cap disk B, so that the movement of the valve to open the same will also cut or break open the sealing-disk G, thus enabling both the valve and sealing-disk to be utilized in closing the can for shipment or storage, substantially as specified.

2. In a pouring-nozzle, the combination, with valve-disk B, of a thin hermetically-sealing disk G and a screw-valve furnished with a cutter, said valve having a metal disk C', furnished with a slot or opening c^3, and through which the point of the cutter projects, substantially as specified.

3. In a pouring-nozzle, the combination, with valve-disk B, of a thin hermetically-sealing disk G and a screw-valve furnished with a cutter, said valve having a metal disk C', furnished with a slot or opening c^3, and through which the point of the cutter projects, said valve-disk C having a recess c', and the cutter having a shank *h*, fitting in said recess, substantially as specified.

4. In a pouring-nozzle, the combination, with a valve-disk B, of a thin hermetically-sealing disk *g* and a screw-valve furnished with a cutter, said valve having two metal disks C C', and a cutter having beat shank *h*, fitting between said disks C C', the lower disk being furnished with a slot through which the point of the cutter projects, substantially as specified.

485,296. POURING-NOZZLE FOR CANS. EDWIN HORTON, Maywood, assignor to himself, and Oliver W. Horton, Chicago, Ill. Filed July 16, 1892. Serial No. 440,233. (No model.)



Claim.—1. In a pouring-nozzle, the combination, with the nozzle or cap disk B, having valve-opening B' and valve-seat *b*, of a thin hermetically-sealing disk G and a revoluble screw-valve located between said valve-seat and sealing-disk and furnished with a cutter, substantially as specified.

2. The combination, with a can having a head furnished with a

cap-groove, of a valved nozzle having a rim fitting in said cap-groove and a hermetically-sealing disk also having a rim fitting in said cap-groove, substantially as specified.

3. The combination, with a can having a head furnished with a cap-groove, of a valved pouring-nozzle having a rim fitting in said groove and provided with a cap-disk B, furnished with valve-seat *b*, and valve C, furnished with cutter H, and a thin hermetically-sealing disk G, having a rim *g* fitting in said cap-groove, substantially as specified.

4. In a pouring-nozzle, the combination, with the nozzle or cap disk B, having valve-opening B' and valve-seat *b*, of a thin hermetically-sealed disk G and a revoluble screw-valve located between said valve-seat and sealing-disk and furnished with a cutter, said valve having a sheet-metal valve-disk C', and said cutter being formed integral with said disk C', substantially as specified.

5. In a pouring-nozzle, the combination, with cap or nozzle disk B, having valve-seat *b*, of a thin hermetically-sealing disk G and a revoluble valve furnished with a cutter projecting out beyond the rim of the valve so as to form an opening in said sealing-disk G of larger diameter than the valve, substantially as specified.

6. The combination, in a pouring-nozzle, of the valve-seat disk B and dome-disks F F' and nut D', of screw-threaded valve-stem D valve C, and valve-disks C' C², the latter furnished with socket *c*² to receive the end of the valve-stem, substantially as specified.

7. In a valved pouring-nozzle, the combination, with the valve and valve-seat, of a sealing-disk G and a cutter H on said valve made integral with the metal disk thereof, said cutter consisting of an integral lip cut and turned on the sheet-metal disk of the valve, substantially as specified.

485,297. SIGNAL-BELL. ENGELBRECHT OLSEN, Walkerville, Mont. Filed Jan. 4, 1892. Serial No. 416,973. (No model.)

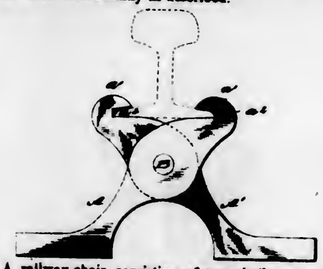
Claim.—1. The combination, with the spring-pressed striking-lever, of an operating-lever suitably pivoted at one end, a trip-lever pivoted thereto and engaging the striking-lever, and a lever on the bell-post, with a spring and ratchet and pawl for regulating the tension of the spring on the operating-lever, as set forth.

2. The combination, with the bell, the striking-lever having slot and the operating-lever, of the trip-lever pivoted to the operating-lever and having hooked end working in said slot, the arm sleeved on the bell-post and connected with the operating-lever, the spring on the hub of the bell and connected with the said arm, and the ratchet on said hub with a pawl engaging therewith, substantially as specified.

3. The combination, with the operating-lever, the pull-rod adjustably connected therewith, the trip-lever pivoted to the operating-lever, the spring-actuated striking-lever and the arm on the bell-post and adjustably connected with the operating-lever, of the hub of the bell, the ratchet-wheel thereon, the spring connected at one end to said hub and at the other end to said arm, and the spring-pawl engaging said ratchet, as and for the purpose specified.

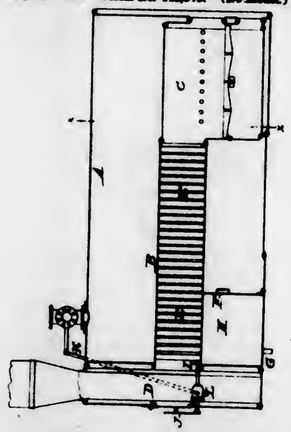
485,298. RAILWAY-CHAIR. BENJAMIN H. PAYNE, Elmira, N. Y. Filed Oct. 3, 1891. Serial No. 407,606. (No model.)

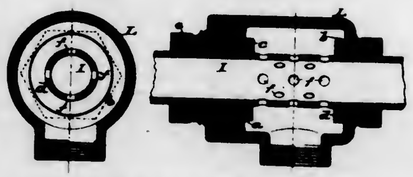
Claim.—1. A railway-chair consisting of two similar plates pivoted to each other side by side with a shorter portion above the pivot and a longer portion below the pivot and each plate terminating at its upper end in a hook constructed and arranged to embrace the edge of the base of a rail and terminating at a distance from the web and its under surface extended to form a bearing on the bottom of the base of a rail at points between the web and the end of the hook above the base, substantially as described.



2. A railway-chair consisting of two similar plates pivoted to each other side by side and each terminating at its upper end in a hook constructed and arranged to embrace the edge of the base of a rail and terminating at a distance from the web and having its under surface extended to form a bearing on the bottom of the base of a rail at points between the web and the end of the hook, substantially as described.

485,299. STEAM-BOILER. EDWIN REYNOLDS, Milwaukee, Wis. Filed July 20, 1892. Serial No. 441,575. (No model.)





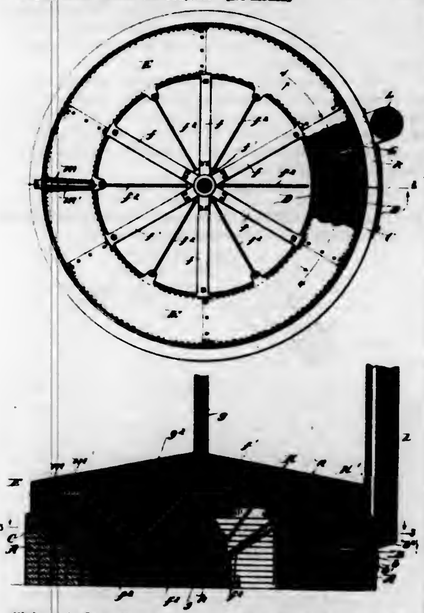
Claim.—1. In combination with shell A, the flue B, the water-tubes disposed in an upright position and opening at opposite ends into the spaces above and below the flue, and an upright diaphragm or plate beneath the flue, serving to direct the feed-water up through the upright tubes, all substantially as shown and described.

2. In combination with boiler-shell A, flue B, and tubes E, the fixed casing L, provided with a steam-inlet pipe K, and the perforated pipe I, journaled in the shell or casing L and having perforations *f* within the casing, all substantially as shown and described.

3. In combination with shell or casing L, having a steam-inlet pipe K, and the valve-seats *a* and *b*, the oscillating pipe I, provided with the valves or valve-rings *c* and *d*.

4. In combination with shell or casing L, provided with a steam-supply pipe K, and with the valve-seat *b*, the removable plug *e*, provided with the valve-seat *c*, and the perforated oscillating pipe I, provided with valves or valve-rings *c* and *d*.

485,800. ROTARY OVEN. PIERRE C. H. RENOU, Chicago, Ill. Filed July 6, 1891. Serial No. 398,467. (No model.)



Claim.—1. In a rotary oven, the combination, with a rotary plate or platform provided with depending sealing-flanges and grooves or troughs beneath said plate or platform, into which said flanges extend, of a furnace or fire-box located at one side of the said rotary plate or platform, a draft-flue or vent adjacent to said furnace or fire-box, and a circular flue beneath said rotary plate or platform extending from said furnace or fire-box to said draft-flue or vent, whereby the products of combustion will be confined in place and will be caused to travel entirely around beneath said rotary plate or platform.

2. The combination, with the circular rotary plate or platform E, having the depending flanges *e e'*, of the stationary circular plate C, having the circular grooves or troughs D D', into which said flanges extend and which are adapted to hold a sealing material, as sand, to confine the heat in the circular flue or passage between said plates.

3. In a rotary oven, a rotating roller supported above a revolving plate for the purpose of pricking or perforating the dough or other substance thereon, substantially as described.

485,801. OPEN-FIREPLACE HEATER. GEORGE R. SCATES, Knoxville, Tenn. Filed Apr. 20, 1892. Serial No. 431,286. (No model.)

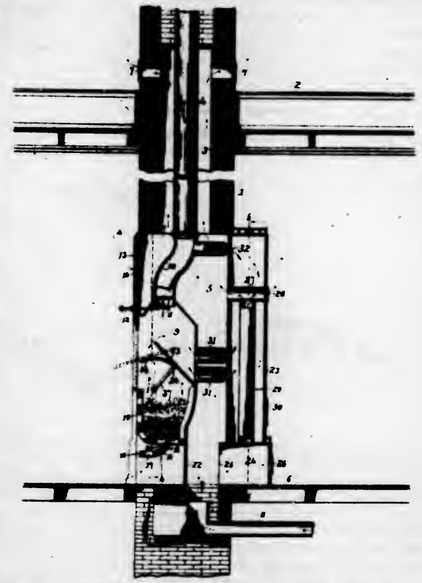
Claim.—1. In a heater of the class described, the combination, with the fire-box, of the hot-air box located in rear thereof, the smoke-pipe leading from the upper end of the fire-box and communicating with the upper end of the hot-air box, cold-air inlets for the hot-air box, transverse pipes through the hot-air box, vertical pipes leading from the cold-air inlets to the transverse pipes, pipes between the fire-box and the hot-air box, and a movable deflecting-plate pivotally supported below the pipes between the fire and hot-air boxes, substantially as specified.

2. In a heater of the class described, the combination, with the fire-box, the hot-air box, pipes between the same, air-pipes located in the hot-air box, and smoke-pipes leading from the box, of opposite curved ways secured to the inner walls of the fire-box, a shaft having its ends resting in the ways, a deflecting-plate connected to the shaft, and arms pivoted concentric to the ways and to the shaft, substantially as specified.

3. The combination, with the fire-box having the smoke-pipe and the damper located in the lower end of the smoke-pipe, of the hot-air box mounted on the hollow base, having air-inlets, a pipe connecting the upper end of the hot-air box with the smoke-pipe, and pipes leading from the hollow base to the front and upper end of the air-box, substantially as specified.

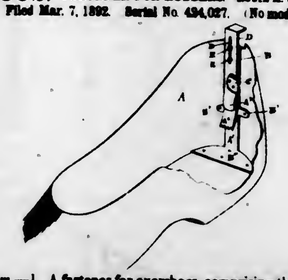
4. The combination, with the fire-box having the smoke-pipe and the damper located in the lower end of the smoke-pipe, of the hot-air box mounted on the hollow base, having air-inlets, a pipe connecting the upper end of the hot-air box with the smoke-pipe, transverse pipes extending through and through the upper end of the hot-air box, and pipes leading from the hollow base to the transverse pipes, substantially as specified.

5. In a heater of the class described, the combination, with the fire-box having the smoke-pipe, of the hot-air box provided with a hollow base, air-pipes leading from the base to the upper end of and discharging from the hot-air box, and adjustable pipe-sections leading from the backs of the fire and hot-air boxes and from the smoke-pipe and telescopically connected with each other, substantially as specified.



6. The chimney having the chimney-opening 5, the internal flue having register-boxes 7, the smoke-pipe 4, and the floor 6, having the opening 7, and the cold-air pipe 8, communicating with the opening, combined with the facing-frame 13, having the perforations 14 and the opening, the hot-air box 9, located in the chimney-opening in rear of the opening in the facing-frame and communicating with the pipe 4 by the elbow 10, the damper 11, located in the elbow, the perforations located in the back of the fire-box below the grate, the hot-air box 23, the pipes 31, connecting the same with the fire-box, the pipe 22, connecting the upper end of the hot-air box with the elbow, the hollow base having the opening 25, the transverse pipes 27, located in the hot-air box, and the vertical pipes 29, connecting the hollow base with the transverse pipes 27, the latter having their ends opened, substantially as specified.

485,802. FASTENER FOR RUBBERS. LOUIS A. SHERMAN, Peoria, Ill. Filed Mar. 7, 1892. Serial No. 424,027. (No model.)



Claim.—1. A fastener for overshoes, comprising the upright piece A', rigidly attached in the heel of an overshoe the clutch A^2, rigidly attached at its upper extremity to the upper extremity of A', its lower extremity fitted to engage and springing into engagement with the inshoe, and the finder A^3, movably attached over the clutch A^2, as stated and shown.

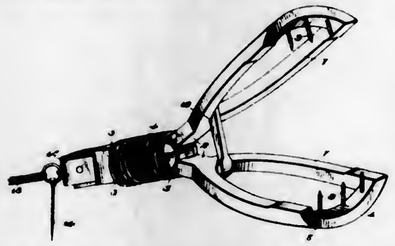
2. A fastener for overshoes, comprising the upright piece A', rig-

idly attached inside the heel of an overshoe, the clutch A^3, rigidly attached at its upper extremity to the part A', its lower extremity springing into engagement with the inshoe, and the feader A^3, having a slot D' and attached by rivets through said slot over said clutch, as stated and shown.

3. A fastener for overshoes, comprising the upright piece A', rigidly attached in the heel of an overshoe, the clutch A^3, rigidly attached at its upper extremity to the upper extremity of A', its lower extremity springing into engagement with the inshoe, and the feader A^3, movably attached over the clutch A^3 and having its upper extremity bent rearward, as stated and shown.

4. A fastener for overshoes, comprising the clutch A^3, rigidly attached at its upper extremity in the heel of an overshoe, its lower extremity springing into engagement with the inshoe, and the feader A^3, having a slot D' and fastened by rivets through said slot over the clutch A^3 and also having its upper extremity bent rearwardly.

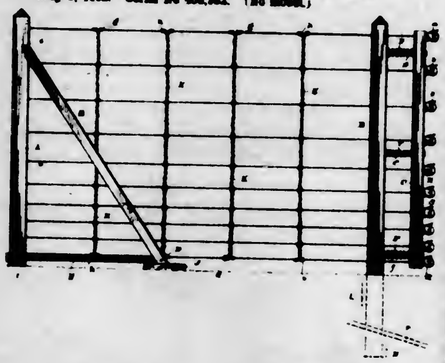
485,303. ANIMAL-TRAP. MARCUS D. SLAWSON, Grayling, Mich. Filed June 30, 1892. Serial No. 438,614. (No model.)



Claim.—1. In a trap, the combination of a shank, the similar jaws each pivoted to the shank and having diverging sides, a curved end bar connecting the sides, and vertical points extending inward from the end bar, a trigger pivoted at one end to one of the jaws in the crotch formed by the diverging sides and provided at its other end with a shoulder adapted to engage the other jaw to hold the jaws separated, and a spiral spring disposed on the shank and engaging the jaws and adapted to close the same, substantially as described.

2. A trap comprising a shank, jaws pivoted to the shank and having diverging sides and curved ends provided with points, a trigger pivoted to one of the jaws and adapted to engage the other jaw to set the trap, a spiral spring disposed on the shank and engaging the jaws, a chain attached to the shank, and a pin connected to the chain, substantially as described.

485,304. FENCE. JOSEPH SPILLINGER, Philadelphia, Pa. Filed July 5, 1892. Serial No. 438,982. (No model.)



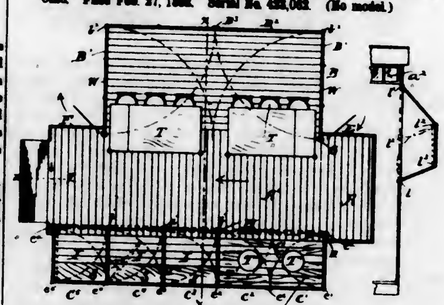
Claim.—1. A fence comprising end posts having anchors, consisting of the strips L N P Q, the block C, the intermediate posts, the wires passed loosely through said posts and fastened to the block C, the winders or ratchets *a b, &c.*, for giving the wires any desired tension, the springs *d e f*, the mid-stays K K K, and the post-braces G, substantially as described.

2. The combination, in a wire fence, of the corner or end post, the wires mounted on said post and attached to winders or ratchets *a b c*, said winders being mounted on block C, the rods D E F for retaining block C in the plane of the fence, and the springs *d e f*, mounted on said rods and interposed between the post and said block, substantially as described.

485,305. HARNESS-PAD. EDWARD A. STEPHENS, Jonesville, Mich. Filed Sept. 30, 1891. Serial No. 407,333. (No model.)

Claim.—In a pad of the class described, the combination, with the base, the superimposed strap, and the opposite interposed transversely-corrugated D carrying plates, of the series of wire strands terminating at their ends under the plates and interposed between the strap and base and the rivets passed through the edges of the straps, through the plates at each side of the corrugation, and at opposite sides of the wires.

485,306. PORTABLE BUILDING. JAMES H. VAN DORN, Cleveland, Ohio. Filed Feb. 27, 1892. Serial No. 423,062. (No model.)



Claim.—1. A portable building comprising a central section and side sections, the side and end walls of the latter being adapted to be folded against each other and against or within the central section, the roofs and floors of said side sections being hinged to the central section and adapted, respectively, to fold against the folded end and side walls of the respective side sections, substantially as set forth.

2. A portable building comprising a central section and side sections, the side and end walls of the latter comprising a number of parts hinged together and adapted to be folded against or within the central section, the roofs and floors of the side sections being hinged to the central section and adapted, respectively, to fold outside the folded end and side walls of the respective side sections, substantially as set forth.

3. A portable building comprising a central section and two side sections, one of said side sections being divided into two or more stalls or chambers separated by partition-walls, the end walls and partition-walls of said side sections being detachably connected with the central section and the side walls of said side sections being composed of two or more parts detachably connected with the end and partition walls of said side sections, the roofs and floors of said side sections being hinged to the central section, and the arrangement of parts being such that by disconnecting and removing the end, side, and partition walls of said side sections the roof and floor of said side sections can be tilted toward each other against the respective side of the central section, substantially as set forth.

4. A portable building comprising a central section and side sections, one of said side sections being divided into two or more stalls or chambers separated by partition-walls, the end walls, partition-walls roofs, and floors of said side sections being hinged to the central section and the side walls of said side sections comprising two or more parts hinged, respectively, to the end and partition walls, the arrangement of parts being such that the end, side, and partition walls aforesaid are adapted to be folded inward and the roofs and floors of the side sections folded against the folded end, side, and partition walls, substantially as set forth.

5. A portable building comprising a central and a side section, upright posts or rods at a side of the central section, the end walls of said side section being hinged, respectively, to one of said upright posts, and the side wall of said side section being divisible into two parts hinged, respectively, to the adjacent end wall of said side section, the roof and floor of said side section being hinged to the central section outside of said upright posts or rods, whereby when the side and end walls of the side sections are folded inward the roof and floor of said section may be tilted toward each other to externally cover the folded side and end walls aforesaid, substantially as set forth.

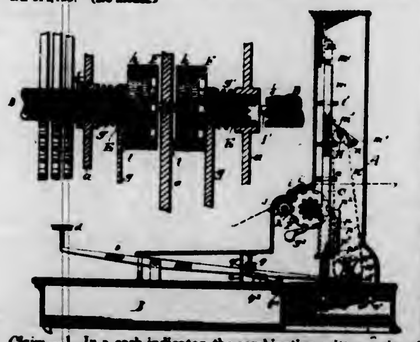
6. A portable building comprising a central and a side section, upright posts or rods at a side of the central section, the side section comprising a number of chambers or stalls, the partition-walls and end walls of said side section being hinged, respectively, to one of said upright posts, the side wall of said side section being divisible into parts hinged to the partitions and end walls aforesaid, the roof and floor of said side section being hinged to the central section outside said upright posts or rods, whereby when the side, end, and partition walls are folded inward within the central section the roof and floor of said side section are adapted to fold outside the folded side, end, and partition walls aforesaid, substantially as set forth.

7. A portable building comprising a central section and a side section, upright posts or rods at a side of the central section, said side section comprising two or more stalls or chambers, the partition-walls and end walls of said side section being hinged or detachably connected, respectively, to one of said upright posts, the side wall of said side section comprising a number of parts hinged or detachably connected, respectively, to the partition and end walls aforesaid, the roof and floor of said side section being hinged or detachably connected to the central section outside said upright posts, a blind or apron hinged to said roof and extending lengthwise said side section, the arrangement of parts being such that the side and end and partition walls are adapted to be folded inward, and the roof with attached blind or apron and the floor are adapted to be folded outside the folded end, side, and partition walls aforesaid, substantially as set forth.

8. A portable building comprising a central section and side sections, the latter being provided with one or more windows and one of said side sections being divided into two or more stalls or chambers separated by partition-walls, upright posts or rods at either side of the central section, the end and partition walls of the side sections being hinged, respectively, to one of said upright posts or rods, the side walls of the side sections comprising two or more parts hinged, respectively, to the end and partition walls of the side sections, the roofs and floors of said side sections being hinged to the central section outside said upright posts or rods, said an apron or blind hinged to and extending lengthwise one of said side sections, the arrangement of parts being such that the end, side, and partition walls are adapted to be folded inward and the roofs and floors of the side sections are adapted to be folded outside the folded end, side, and partition walls aforesaid, substantially as set forth.

9. A portable building comprising a central section, sides, front, and rear end walls, the rear end wall of said central section comprising several parts or pieces hinged together horizontally, substantially as and for the purpose set forth.

485,307. CASH REGISTER AND INDICATOR. HENRY G. WALTER and CHARLES F. WALTER, Scranton, Pa. Filed Dec. 11, 1891. Serial No. 414,705. (No model.)



Claim.—1. In a cash-indicator, the combination, with a series of key-bars, of a bar disconnected from and resting normally on each key-bar, a target-bar normally resting upon said disconnected bars, a pawl for maintaining a target-bar elevated after the corresponding key-bar has been operated, an eccentric-shaft in proximity to said pawls, and devices adapted to be operated by the key-bars for releasing said pawls from the target-bars when the machine is again operated, substantially as set forth.

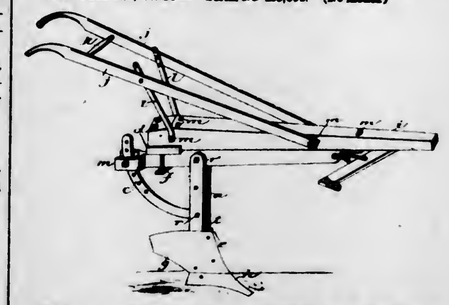
2. In a cash-indicator, the combination, with a series of key-bars, of a bar disconnected from and resting normally on each key-bar, target-bars normally resting on said disconnected bars, pawls for maintaining the target-bars elevated after the corresponding key-bar has been operated, an eccentric-shaft in proximity to said pawls, devices adapted to be operated by the key-bars, sprocket-chain extending from said devices to the eccentric-shaft, and devices adapted to be operated by the drawer of the machine for resetting the devices which operate the eccentric-shaft, substantially as set forth.

3. In a cash-indicator, the combination, with several series of key-bars, a bar disconnected from and adapted to normally rest on each key-bar, and a target-bar adapted to normally rest on each of said disconnected bars, of pawls adapted to engage said target-bars when they are elevated and maintain them in their elevated position when the corresponding key-bar is operated, an eccentric-shaft extending from one end of the machine to the other in proximity to all the series of target-bars, and mechanism for rotating said eccentric-shaft when the machine is again operated and cause any and all the target-bars of any and all the series of target-bars to be released and permitted to drop, substantially as set forth.

4. In a cash-indicator, the combination, with a series of key-bars and a series of vertical bars adapted to rest normally thereon, of a series of target-bars adapted to normally rest on the vertical bars, pawl adapted to engage said target-bars when they are elevated, an eccentric-shaft, a revoluble bar, gearing connecting said eccentric-shaft and revoluble bar, arms projecting from said revoluble bar and adapted to be engaged by a key-bar to rotate it and transmit motion through the connecting-gearing to the eccentric-shaft to release the pawls from the target-bars, and devices adapted to be operated by the drawer of the machine for resetting said revoluble bar and eccentric-shaft, substantially as set forth.

5. In a cash-indicator, the combination, with a series of key-bars and a series of vertical bars adapted to rest normally thereon, of a series of target-bars adapted to normally rest on the vertical bars, pawls adapted to engage said target-bars when they are elevated, an eccentric-shaft, a revoluble bar, gearing connecting said eccentric-shaft and revoluble bar, arms projecting from said revoluble bar and adapted to be engaged by a key-bar, a money-drawer, a rod projecting therefrom, a lug on said rod, and a pivoted lever adapted to be engaged by said lug and caused to operate the revoluble bar to reset it, substantially as set forth.

485,308. GRUB-PLOW. JAMES P. WEATHERMAN, Highlandville, Mo. Filed Feb. 27, 1892. Serial No. 423,096. (No model.)



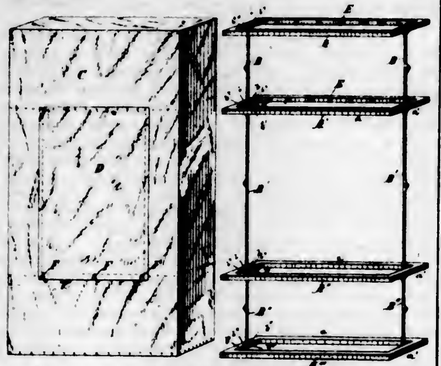
Claim.—1. The combination, with a tongue, of a plow-beam pivoted thereto at its front end, a land gage or plate *d*, secured between the rear end of the tongue and plow-beam for the lateral adjustment of the rear end of said beam, and the clamp *f*, substantially as shown and described.

2. A plow-beam having a forked rear end and a bevel edge *p*, the pivoted shank *a*, the adjusting-brace *c*, the land-gage *d*, and the undercut recess for the draft-clevis, in combination with the tongue pivoted to the front end of the plow-beam and adjustable on the beam at the gage-plate, substantially as shown and described.

3. The plow-beam *b*, having the forked rear end, the bevel-edge section *p*, and the undercut draft-recess *b'*, substantially as shown and described.

4. The land gage or plate *d*, having the slot *e* and the notches *n* upon the under side, substantially as shown and described.

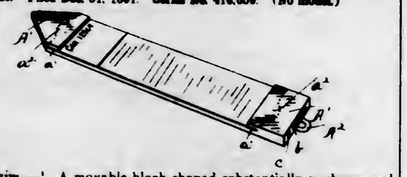
485,309. WARDROBE. DAVID R. WHEELMAN, Grand Rapids, Mich. Filed Jan. 26, 1891. Renewed Apr. 4, 1892. Serial No. 427,769. (No model.)



Claim.—1. A wardrobe of the class herein described, comprising a series of parallel rectangular frames, each formed of rigid side and end bars rigidly secured together at their ends, and a series of props connecting said frames, each of said props formed at its center with a rule-joint and having at its extremities diverging projections received by eyes projecting from the end bars of the frames, substantially as described.

2. A wardrobe of the class herein described, comprising a series of parallel rectangular frames, each formed of rigid side and end bars rigidly secured together at their ends, and a series of props connecting said frames, each of said props being formed at its center with a rule-joint and having at its extremities diverging projections received by eyes projecting from the end bars of the frames, hooks projecting inward from the rectangular frames, and an inclosing cover, of canvas or other suitable material, secured to said frame, all substantially as shown and described.

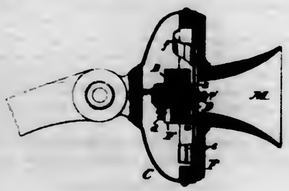
485,310. LABEL-HOLDER. CHARLES E. WHEELER, Cleveland, Ohio. Filed Dec. 31, 1891. Serial No. 416,659. (No model.)



Claim.—1. A movable block shaped substantially as shown and enlarged at opposite ends, as at A', said enlarged portions being slitted to receive the ends of a card or cards and the block bearing the number of the car whose record the block is adapted to receive and bearing a mark, letter, design, or other character to indicate whether the car is a box, flat, stock, or coal car, substantially as and for the purpose set forth.

2. A movable block having enlarged ends, the enlarged portions being horizontally slitted at the inner end, said slits being enlarged endwise the block at their central portion, the block bearing the number of the car whose record the block is adapted to receive and bearing a mark, letter, design, or other character to indicate whether the car is a box, flat, stock, or coal car, substantially as and for the purpose set forth.

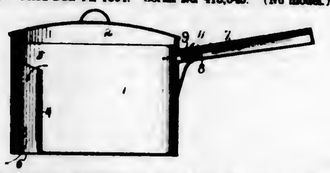
485,311. TELEPHONE. ANTHONY C. WHITE, Boston, Mass., assignor to the American Bell Telephone Company, same place. Filed Mar. 24, 1892. Serial No. 426,271. (No model.)



Claim.—1. The combination, with the sound-receiving diaphragm D and a supporting-frame therefor, of the independently-supported heavy chambered block W and electrode B, secured thereto, the flexible disk *m*, and piston-electrode E, carried thereby, and the finely-divided conducting material within the chamber in said block and extending about the periphery of said piston-electrode E, substantially as described.

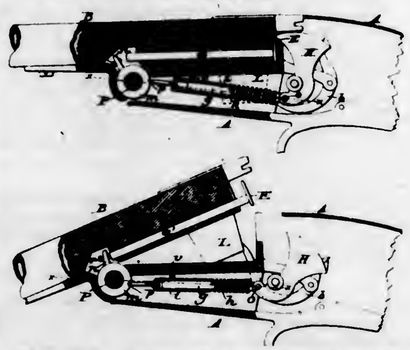
2. In a granular button for a transmitting-telephone, the combination, with the heavy chambered block W, electrodes B and E, and finely-divided conducting material P, of the mica spring-disk *m*, carrying the electrode E and confining said granulated material within the chamber in said block W, substantially as described.

485,312. KITCHEN UTENSIL. HORACE B. WILEY, St. Louis, Mo., assignor of two-thirds to Thomas W. Wiley and John J. Newport, same place. Filed Dec. 14, 1891. Serial No. 415,045. (No model.)



Claim.—As an improved article of manufacture, a culinary utensil consisting of a receptacle 1, having the contour of its sides unbroken, a U-shaped cleat 4, secured to one side of said receptacle within the interior thereof and forming a passage 5, terminating below the upper end of the receptacle, the bottom of the receptacle having an opening 6 communicating with said passage, a hollow handle 7, secured to the receptacle diametrically opposite to the passage and provided with a partition 8, and apertures 9 between said partition and the receptacle, said apertures affording communication between the passage 5 and the exterior atmosphere, substantially as and for the purpose set forth.

485,313. AUTOMATIC EJECTING MECHANISM FOR BREAK-DOWN GUNS. CHARLES R. WITHINGTON, Janesville, Wis. Filed June 22, 1892. Serial No. 437,634. (No model.)



Claim.—1. In a tip-barrel gun, the combination of a sliding extractor, a pivoted striker arranged to operate said extractor, and a mainspring arranged to operate the hammer and also exert its force first on one and then on the opposite side of the center of the pivot or axis of the striker by the cocking of the hammer and the tipping movement of the barrels, substantially as shown and described.

2. The pivoted striker *m*, provided with an arm or projection having a set-screw *r* arranged to operate in connection with the stem of the sliding extractor for adjusting the movements of the striker, substantially as shown and described.

3. In combination with a sliding extractor and a pivoted striker, with means, substantially such as described, for operating the same, a set-screw arranged to operate as a stop to limit the movement of the striker when adjusted for that purpose, whereby the ejecting devices may at will be made to operate as an ordinary extractor, as set forth.

485,314. PUZZLE. ALFRED R. WOOLF, St. Louis, Mo. Filed Feb. 3, 1890. Serial No. 339,366. (No model.)

Claim.—1. In a puzzle, the combination of a transparent closed receptacle containing a translucid liquid, an interiorly-projecting pin

D, and one or more punctured impervious bodies G, adapted to be placed upon said pin D, substantially as described.

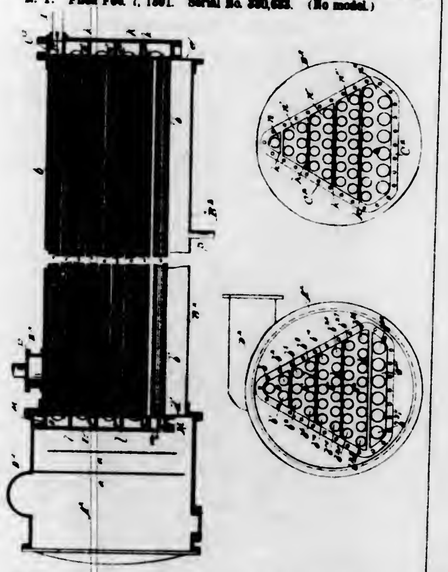
2. A toy or puzzle comprising a closed receptacle containing fluid and a fixed and a movable object within the receptacle, the movable object being of a permanent shape and having a hole therein corresponding to the shape of the fixed object, whereby it is adapted by the agitation of the fluid to be placed over the fixed object.

3. A toy or puzzle comprising a receptacle containing fluid and a fixed and a movable object within the receptacle, the movable object having a hole whereby it is adapted to be placed upon the fixed object.

4. In a toy, a closed receptacle for fluid, formed with a neck having an opening and a closure for said opening having an object fixedly secured thereto, in combination with an object floating on the liquid and adapted to be placed upon the object by the manipulation of the receptacle.

5. A toy or puzzle comprising a receptacle containing fluid and a fixed and a movable object within the receptacle, the movable object being perforated, whereby it is adapted to be placed upon the fixed object.

485,315. VACUUM EVAPORATING APPARATUS. HOMER T. YARYAN, Toledo, Ohio, assignor to the Yaryan Company, Mechanicsville, N. Y. Filed Feb. 7, 1891. Serial No. 380,683. (No model.)



Claim.—1. In an evaporating apparatus, evaporating-tubes arranged in sections in a heating-cylinder, the initial tube connecting with and discharging its contents into a section composed of two or more branch tubes, which in turn connects with and discharges its contents into a section composed of an increased number of branch tubes, and so on in progression, whereby any desired relation may be established between the heating-surface of each section and its capability to accommodate the flow and discharge of its contents, substantially as set forth.

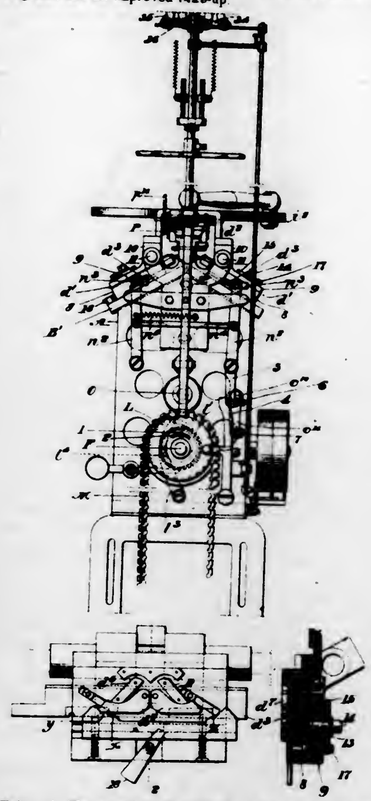
2. In an evaporating apparatus, an evaporating-coil composed of parallel tubes arranged in sections in a heating-cylinder, the initial tube connecting with and discharging its contents into a section composed of two or more tubes parallel to the initial tube, which in turn connects with and discharges its contents into a section composed of an increased number of tubes also parallel to the initial tube, substantially as and for the purpose set forth.

3. In combination with the return-bend heads having cells of progressively-increasing size, the series of evaporating-tubes connecting in successively-increasing number with such cells from the single liquid-supply pipe at the top toward the discharge-tubes at the bottom.

4. In combination with the return-bend heads divided into suitable cells, the series of evaporating-tubes connecting in successively-increasing number with the successive cells from the inlet to the outlet end of the series, a liquid-supply pipe connecting with a cell at the inlet end, a separating-chamber connecting with the discharge end of the series of tubes, and a heating-chamber surrounding the tubes, substantially as described.

485,316. KNITTING-MACHINE. JOSEPH BENNOR, Philadelphia, Pa. Filed Mar. 17, 1892. Serial No. 425,296. (No model.)

Brief.—This is a straight machine of the automatic variety, and is adapted for the production of fashioned goods. It comprises improved mechanism for controlling the action of the knitting-cams, an improved needle-controlling cam, an improved safety-cam situated beneath the knitting-cams, an improved yarn-guiding mechanism and yarn-guide, and an improved take-up.



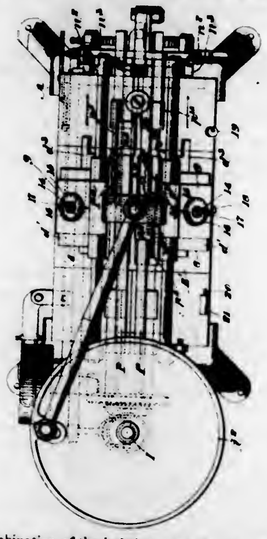
Claim.—1. The combination, with the pattern mechanism, the block-bearing arms, and means for maintaining said arms in a normal position, of the pivoted arm or lever 4, interposed between said pattern mechanism and the block-bearing arms, the free end of said pivoted arm or lever acting upon the block-bearing arms, substantially as described.

2. The combination, with the pattern mechanism, the block-bearing arms, and means for maintaining said arms in a normal position, of the pivoted arm or lever 4, interposed between said pattern mechanism and the block-bearing arms, the free end of said pivoted arm or lever acting upon the block-bearing arms, together with the set-screw on the lower end of one of said latter arms, substantially as described.

3. The combination, with the pattern mechanism, the clutch-operating shaft, and the arm on the latter, of the pivoted arm or lever 4, interposed between the said pattern mechanism and the former arm, substantially as described.

4. The combination, with the pattern mechanism, the clutch-operating shaft, and the arm on the latter, of the pivoted arm or lever 4, interposed between the said pattern mechanism and the former arm, together with the set-screw on the end of the latter, substantially as described.

5. The combination, with the pattern mechanism, the block-bearing arms, and means for maintaining them in a normal position, and the clutch-operating shaft and its end arm, of the pivoted arm or lever engaging the pattern mechanism and acting upon one of the block-bearing arms and the said end arm, substantially as described.



6. The combination of the knitting-cams, the sectional carriage therefor, and devices adapted to guide the carriage in its longitudinal traverse, one of the sections of the carriage supporting the knitting-cams and being movable transversely in respect to the other section and the latter being confined to a longitudinal path, together with means for the transverse adjustment of the cam-supporting section, substantially as described.

7. The combination of the sectional carriage and its guiding and operating devices, of the knitting-cams on the lower section of the carriage, the eccentric in one of said sections, and means for connecting said eccentric with the other section, together with devices for locking said eccentric in positions of adjustment, substantially as described.

8. The combination, with the knitting cams and their supporting parts, of a needle-controlling cam pivotally mounted below said cams and a spring tending to press the said needle-controlling cam in contact with the lower end of one of the lateral knitting-cams, substantially as described.

9. The combination, with the knitting-cams and their supporting parts, of the needle-controlling cam formed in sections pivotally mounted below said cams and a spring tending to press the said sections in contact with lower ends of the lateral knitting-cams, substantially as described.

10. The combination, with the knitting-cams and their supporting parts, of a needle-controlling cam pivotally mounted below said cams and a spring tending to press the said needle-controlling cam in contact with the lower end of one of the lateral knitting-cams, together with the sliding safety-cam disposed below the said needle-controlling cam, substantially as described.

11. The combination of the transverse slide-plate and means for supporting and actuating the same, the knitting and needle-controlling cams mounted upon said plate, and the sliding safety-cam supported below said cams and provided with the end stops, substantially as described.

12. The combination of the transverse slide-plate and means for supporting and actuating the same, the knitting and needle-controlling cams mounted upon said plate, the sliding safety-cam supported below said cams, and the lever engaged with said safety-cam and adapted to be operated toward the end of each stroke of the cams, together with end stops to operate said lever, substantially as described.

13. The combination of the transverse slide-plate and means for supporting and actuating the same, the knitting and needle-controlling cams mounted upon said plate, the sliding safety-cam supported below said cams and provided with the end stops, and the lever engaged with said safety-cam and adapted to operate the same, together with the end stops to actuate said lever, one of these stops being yielding longitudinally, substantially as described.

14. The combination of the slide-block or carrier and its supporting and operating parts, of the yarn-guide, means whereby it is connected with said block or carrier, and provisions whereby said guide is deflected from its direct path at the end of each reciprocation of the slide-block or carrier, substantially as described.

15. The combination of the slide-block or carrier, the supporting-bar therefor, the spring-controlled arm mounted on said block, and the yarn-guide head depending from said arm, together with means for laterally deflecting said head from its direct path at the end of each reciprocation of the slide block or carrier, substantially as described.

16. The herein-described yarn-guide and latch-controller for straight-knitting machines, said guide comprising a centrally-perforated end-pointed head provided with the lateral lug at its upper end and with the securing-rod projecting from said lug, substantially as described.

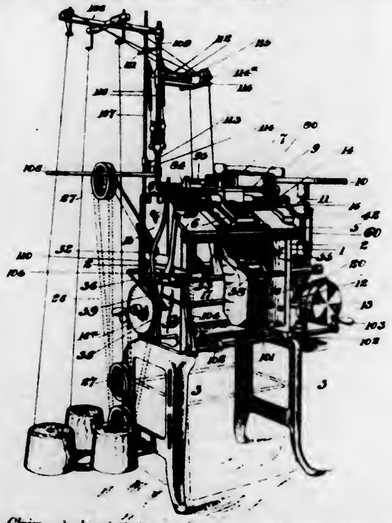
17. The combination, with the needle-beds, the needles, and the knitting-cams, of the slide-blocks or carriers mounted above the needles in the respective beds, the longitudinal guide devices for said blocks or carriers, the laterally-movable yarn-guides connected with the latter, so as normally to be in line with each other longitudinally, and the end device adapted to deflect said yarn-guide laterally at predetermined intervals, substantially as described.

18. The combination, with the take-up lever and the vertical supporting-rod therefor, of the separate oppositely-inclined fingers 35, supported in proximity to said lever, substantially as described.

19. The combination, with the take-up lever and the vertical supporting-rod therefor, of the inclined fingers 35, adjustably supported in proximity to said lever, and means for adjustably securing said fingers in place, substantially as described.

485,317. KNITTING-MACHINE. JOSEPH BENSON, Philadelphia, Pa. Filed May 25, 1892. Serial No. 434,341. (No model.)

Brief.—This is an automatic straight machine for knitting fashioned goods, and comprises improved shifting devices for throwing the knitting-cams into and out of action, an improved guard-cam mounted beneath the knitting-cams, improved means for narrowing and widening, an improved yarn-supplying device whereby either of two yarns may be fed to the machine, an improved stop mechanism, and improved means for operating the sinkers.

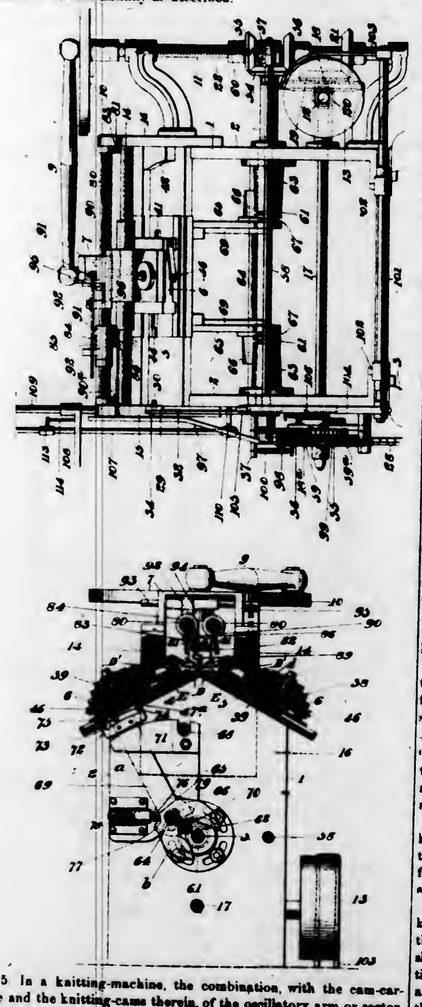


Claim.—1. In a knitting-machine, the combination, with the needle-beds, the needles, the knitting-cams, and shifting devices therefor, of the sliding abutment-bar so disposed that its ends normally project into the paths of said shifting devices, respectively, and provided with the openings or offsets, the pattern mechanism, and provisions intermediate the same and the abutment-bar whereby the latter may be moved endwise at predetermined intervals, substantially as described.

2. In a knitting-machine, the combination, with the needle-beds, the needles, the knitting-cams, and shifting devices therefor, of the sliding abutment-bar provided with the openings or offsets, the pivoted lever connected with said bar, and the pattern mechanism for operating said lever, substantially as described.

3. In a knitting-machine, the combination, with the needle-beds, the needles, the cam-carriage, and the knitting-cams, of the oscillatory arm or sector mounted in the cam-carriage and provisions whereby said arm or sector is operatively connected with the knitting-cams, together with means for operating said arm or sector, whereby the knitting-cams may be thrown into and out of action, substantially as described.

4. In a knitting-machine, the combination, with the cam-carriage and the knitting-cams therein, of the oscillatory sector provided with the operating-arm, provisions whereby the sector is operatively connected with said cams, and the tappet-pin adapted to act upon said sector, substantially as described.



5. In a knitting-machine, the combination, with the cam-carriage and the knitting-cams therein, of the oscillatory arm or sector, means whereby it is operatively connected with said cams, means whereby it is oscillated, and means whereby it is locked in positions of adjustment, substantially as described.

6. In a knitting-machine, the combination, with the cam-carriage and the knitting-cams therein, of the oscillatory arm or sector provided on one edge thereof with notches or recesses, means whereby this arm or sector is operatively connected with the cams, and means whereby it is oscillated, together with the spring-controlled locking-pin adapted to engage the said notches or recesses, substantially as described.

7. In a knitting-machine, the combination, with the cam-carriage and the knitting-cams therein, of the vibratory guard-cam mounted below the knitting-cams and means for operating said guard-cam during the traverse of the carriage, substantially as described.

8. In a knitting-machine, the combination, with the cam-carriage and the knitting-cams therein, of the guard-cam pivotally mounted below the knitting-cams and the studded slide-bar adapted to operate said guard-cam, substantially as described.

9. The combination, with the supporting-frame, the needle-beds, the needles, and the knitting-cams, of the fixed nut or boss secured to the frame, the shaft, the traveling screw thereon engaged with said nut or boss, the vibratory needle-actuating lever fulcrumed in proximity to the screw, provisions whereby this lever is impelled by and with the screw, and provisions whereby it is vibrated in its traverse, substantially as described.

10. The combination, with the supporting-frame, the needle-bed, the needles, and the knitting-cams, of the fixed nuts or bosses, the shaft, the traveling oppositely-pitched screws thereon, the vibratory needle-actuating levers fulcrumed in proximity to the screws, respectively, provisions whereby the levers are impelled by and with said screws, and provisions whereby they are vibrated in their traverse, substantially as described.

11. The combination, with the supporting-frame, the needle-bed, the needles, and the knitting-cams, of the fixed nuts or bosses, the parallel shafts, the traveling screws on one of said shafts, the vibratory needle-actuating levers fulcrumed on the other shaft, the plates mounted on said latter shaft, provisions whereby these plates and the levers are impelled by and with the screws, and provisions whereby the levers are vibrated in their traverse, substantially as described.

12. The combination of the supporting-frame, the fixed nut or boss, the shaft, the screw provided with the grooved head and the end pin or roller, the plate engaging said groove, a supporting device for said plate, and the needle-actuating lever fulcrumed in respect to said plate and pin or roller, substantially as described.

13. The combination of the supporting-frame, a shaft, a lever supported thereon and provided with a pair of needle-operating teats or projections, means for reciprocating said lever lengthwise of the shaft, and means for oscillating said lever, substantially as described.

14. The combination of the supporting-frame, a shaft, a lever thereon, one of the arms of said lever being provided with needle-operating teats or projections and the other arm being bifurcated, means for acting upon the said latter arm in a manner to oscillate the lever, and means for maintaining said lever in a normal position, substantially as described.

15. In a knitting-machine, the combination, with the supporting-frame, a shaft, a needle-actuating lever thereon, and means for operating said lever, of the spring-pressed plunger supported in proximity to said lever and adapted to act upon a V-shaped cam-surface on the edge thereof, together with means for supporting said plunger, substantially as described.

16. The combination of the rock-shaft, the yarn-carrier thereon, means for reciprocating said carrier, and means for rocking or oscillating said shaft at predetermined intervals, substantially as described.

17. The combination of the shaft, the sleeve or block thereon, the yarn-guide head depending from said sleeve or block, and means for oscillating said sleeve or block at predetermined intervals, substantially as described.

18. The combination, with the rock-shaft, the yarn-carrier thereon, and means for reciprocating said carrier, of the spring operating to maintain said rock-shaft in a normal position and the end device adapted to act upon said carrier to deflect it laterally, substantially as described.

19. The combination, with the needle-beds, the needles, and the knitting-cams, of the rock-shafts mounted above the respective beds, the yarn-carriers on said shafts, the depending pins, the stop therefor, the spring, and the end deflecting device, substantially as described.

20. The combination, with the needle-beds, the needles, and the knitting-cams, of the rock-shafts mounted above the respective beds, the sleeves or blocks on said shafts, the depending projections on said sleeves or blocks, the yarn-guide heads connected with said projections, the spring adapted to maintain said shafts in a normal position, and the end pin adapted to act upon the said projections to deflect the guide-heads and their connections laterally against the action of the said spring, substantially as described.

21. The combination, with the needle-beds, the needles, the knitting-cams, the yoke connecting the same, the yarn-carrier, and its supporting parts, of the transverse slide rod or bar mounted in respect to the path of said carrier and means for operating the said rod or bar to engage it with or disengage it from said carrier, substantially as described.

22. The combination, with the needle-beds, the needles, the knit-

ting-cams, the yoke connecting the same, the yarn-carrier, and its supporting parts, of the transverse slide rod or bar mounted in the said yoke and adapted to be engaged with and disengaged from said carrier, the horizontal lever mounted in proximity to said rod or bar and connected therewith, and means for operating said lever, substantially as described.

23. The combination, with the needle-beds, the needles, the knitting-cams, the yoke connecting the same, the yarn-carrier, and its supporting parts, of the transverse slide rod or bar mounted in the said yoke and adapted to be engaged with and disengaged from said carrier, the horizontal lever mounted in proximity to said rod or bar, connected therewith, and provided with the bifurcated end, the vertical lever extending into the path of said bifurcated end, and the pattern mechanism adapted to operate said vertical lever, substantially as described.

24. The combination of the needle-beds, the needles, the knitting-cams, the yoke connecting the same, the yarn-carrier provided with the up-projecting studs, the transverse slide-bar provided with the depending lug, and means for operating said bar to move its lug between and away from said studs, substantially as described.

25. The combination, with the needle-beds, the needles, the knitting-cams, and their supporting parts, of the reciprocative yarn-carriers mounted above the respective beds, a transverse rod or bar, a support therefor, and means for operating said rod or bar at predetermined intervals to engage it with and disengage it from said carriers, respectively, substantially as described.

26. The combination of the needle-beds, the needles, the knitting-cams and the yoke connecting the same, the reciprocative yarn-carriers, their supporting parts, and means for laterally deflecting said carriers at one end of the machine, said carriers having each provisions whereby they are impelled toward this end of the machine by the action of the yoke-frame and having provisions whereby they are impelled in the opposite direction by the action of a movable member supported on the yoke, together with said member and means for operating the same, substantially as described.

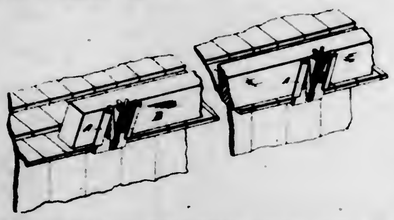
27. In a knitting-machine, the combination of the driving mechanism, a rock-shaft mounted in proximity thereto and equipped with means whereby said mechanism may be thrown into or out of action, a locking-lever, an arm upon the rock-shaft adapted to be engaged by said lever, a drop-rod adapted to operate said lever to release the rock-shaft, means for conditionally supporting said rod, together with the take-up lever through which the yarn passes, and means, such as a spring, for maintaining said rock-shaft in a normal position, substantially as described.

28. In a knitting-machine, the combination of the fast and loose pulleys, the rock-shaft, the belt-shipping frame thereon, the vertical arm on said shaft, the notched lever adjacent to said arm, the drop-rod, means for conditionally supporting the same, the take-up lever adapted to operate said drop-rod, and means, such as a spring, for maintaining the rock-shaft in a normal position, substantially as described.

29. In a knitting-machine, the combination, with the needle-beds, the needles, the knitting-cams, the sinkers, and their supporting parts, of a grooved end-beveled sinker-actuating head and means for supporting and operating the same in respect to the knitting-cams, substantially as described.

30. The combination, with the cam-carriage and the arm extending therefrom, of the sinker-actuating head having a sliding connection with said arm, substantially as described.

485,318. ROOF-SCAFFOLD. JAMES B. COTTON, Dayton, Ohio, assignor of one-half to Lovin C. Cottom, same place. Filed Apr. 2, 1892. Serial No. 427,692. (No model.)



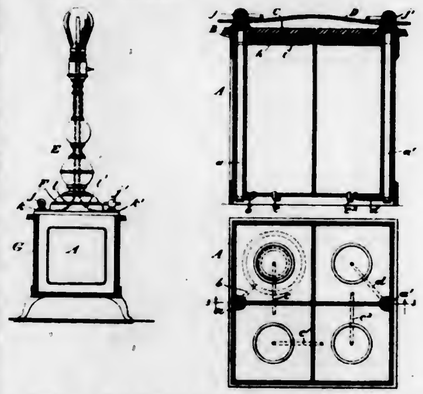
Claim.—1. A two-part scaffold-support, each of the parts of which is formed with a main body and a laterally-projecting jaw, hook-shaped guides on one of the parts, adapted to engage with suitable ways on the other part, laterally-projecting bosses or flanges on each of said parts on the opposite side thereof from the projecting jaw, a clamping-bolt arranged adjacent to and parallel with the main body of each of said parts and adapted to extend through said bosses or jaws, a spring about said clamping-bolt, and an adjusting-nut on the screw-threaded part of said bolt, the projecting jaws of the respective parts being arranged at an angle to each other, so that their nearest approach shall be at their outer extremities, substantially as specified.

2. A two-part scaffold-support, each of the parts of which consists of a main body and a laterally-projecting jaw, one of the parts being provided with hook-shaped guides to engage with similar ways on the other part, projecting spurs on one of said parts to engage a scaffold bar or beam, backwardly-projecting bosses on each of the parts, which bosses are arranged in line with each other, a connecting-bolt extending through said bosses, a spring about said bolt arranged between said bosses, an adjusting-nut on the screw-threaded portion of said bolt, coincident openings through the respective parts, and a flanged recess on one of said parts to receive the head of said bolt, substantially as specified.

3. In a support for a roofing-scaffold, a stationary part having a forwardly-projecting jaw and a backwardly-extending flange or boss, a recess under said flange or boss, a slotted opening through said flange or boss, a movable part having hook-shaped guides or ways adapted to engage the edges of said stationary part, a forwardly-projecting jaw and a backwardly-projecting boss on said movable part, a connecting-bolt adapted to pass through the respective bosses and rest in the recess in said stationary part, a spring on said bolt between said bosses, and a thumb-nut screw-threaded on said bar, and coincident openings through the respective parts, substantially as specified.

4. A clamping-support for a roofing-scaffold, consisting of a stationary and movable part, each having forwardly-projecting jaws arranged at an angle to each other and backwardly-extending perforated bosses coincident with each other, a spring between the respective bosses and a connecting-bolt extending through said bosses and spring and provided with a thumb-nut screw-threaded thereon, coincident openings through the respective parts, and projecting spurs or points on one of said parts, substantially as specified.

485,319. GALVANIC BATTERY. WALTER A. CROWDUS, Memphis, Tenn., assignor to B. M. Stratton, same place. Filed Dec. 18, 1891. Serial No. 415,445. (No model.)



Claim.—1. In a galvanic battery, a battery-case provided with metal rods *a a'*, extending through it from top to bottom and connected at their bottom ends to the respective electrodes of the battery.

2. In a galvanic battery, a battery-case provided with metal rods *a a'*, extending through it from top to bottom and connected at their bottom ends to the respective electrodes of the battery, a cover C for said case, fitting over the upper ends of said rods, and nuts screwing thereon to clamp the cover to the battery-case.

3. The combination, with a galvanic battery comprising a battery-case A, having rods *a a'*, and cover C, of a device to be fed with current from said battery, having a base F and fastening-ears *k k'*, constituting the opposite terminals of its electric circuit, and nuts *j j'*, screwing on the threaded ends of said rods to clamp said ears thereto, whereby said device is simultaneously connected both mechanically and electrically to the battery.

4. An electric-lamp stand consisting of the combination of a base-receptacle G, a galvanic battery comprising a battery-case A, having rods *a a'*, and cover C, and a lamp-standard E, the base of which is provided with fastening-ears *k k'*, constituting the terminals of the circuit connections to the lamp-socket, and nuts *j j'*, screwing on the ends of said rods to clamp said ears thereto, whereby the lamp-standard is fastened removably to the battery simultaneously with the making of its circuit connection therewith and serves as a handle for lifting out the battery from said base.

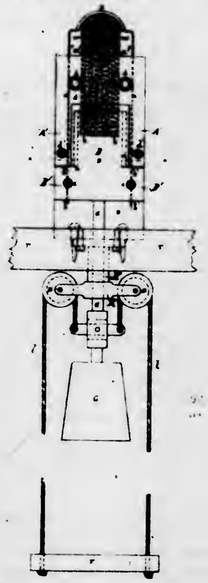
5. In a galvanic battery, the combination of a battery-case divided into compartments, a cover fitting thereover, and an intervening tray B, formed with a bottom of flexible sheet rubber *h*, resting directly over the cells of the battery-case.

485,320. LINK ATTACHMENT FOR BUTTONS, &c. WILLIAM C. ENOS, Montrose, N. J. Filed Apr. 26, 1892. Serial No. 430,457. (No model.)

Claim.—1. A link attachment for buttons, combining therein a framing *a*, having open loops *b*, slotted tube *c*, containing therein a spring *d*, and sliding rods *e*, adapted to enter the eye of the button and hold the same in position when inserted from either side through the loops *b*, substantially as described.

2. In a link attachment, the combination of a framing *a*, having loops *b b*, and slotted tube *c*, having flanges *j*, with the rods *e*, having cross-bars *f* and saddles *g*, and with the spring *d*, all substantially as described, and for the purposes set forth.

485,321. MACHINE FOR SECURING INCANDESCING BODIES FOR GAS-BURNERS IN THEIR HOLDERS. OTTO B. FAHRENHOLM, Stockholm, Sweden, and CARL DELLWIK, Rogers Park, Ill. Filed June 21, 1890. Serial No. 356,312. (No model.)



Claim.—1. The crown-piece A, having a series of longitudinal holes or channels, in combination with the plunger B, provided with a series of corresponding rods or wires *b b* and *b' b'*, and means for raising and lowering said plunger, substantially as described.

2. The combination of the crown-piece A, with suitable holes or channels, the plunger B, with the corresponding rods or wires *b b b' b'*, the standard C, the weight G, the pulleys E E, and the treadle F, or their equivalents, substantially as described.

485,322. MACHINE FOR MANUFACTURING LAMELLÆ OR NEEDLES FOR INCANDESCENT GAS-BURNERS. OTTO B. FAHRENHOLM, Stockholm, Sweden, and CARL DELLWIK, Rogers Park, Ill. Filed June 21, 1890. Serial No. 356,313. (No model.)

Claim.—1. The combination of the press A, the carrier-belt B, the gas-burners C C, and a flame-deflector, substantially as described.

2. The combination of the carrier-belt B, the gas-burners C C, the cutter D, and means for delivering to said belt a strip or lamella of plastic material to be cut into short lengths, substantially as described.

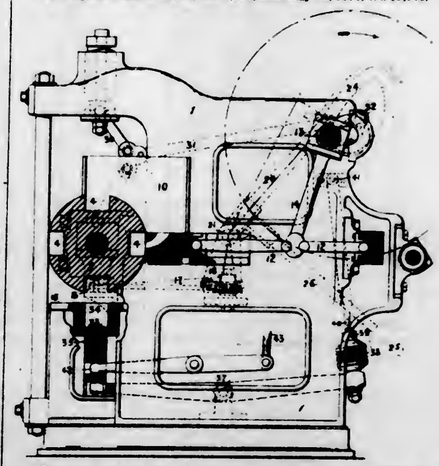
3. The combination of the carrier-belt B, the cutter D, and a delivery-spout *e*, set a short distance beyond the carrier-belt at the end of the machine and leaving a space E to act as an assorter, substantially as described.

4. In combination with press A and cutter D, the carrier-belt B, driving-pulley H, and the yielding-tension pulley I, said belt passing over said pulleys and the parts being so adjusted with reference to each other that the combination shall expel, receive, and transmit the material *z* so as not to stretch or wrinkle the same, substantially as described.

5. The cutter D, consisting of upper and lower revolving shafts C C, carrying the knives *c c*, the spool or roller K, and operating-gears connecting the same, in combination with a carrier-belt passing in contact with roller K and the cutter, substantially as described.

6. In combination with the cutter D, having revolving shafts, as spool K and operating-gears, the carrier-belt between the cutter-shafts and spool K, and the belt-shifting lever *l*, having spools or rollers *p p* for bearing upon the belt, substantially as described.

485,323. BRICK-MACHINE. THOMAS C. FAWCETT, Leeds, England. Filed Aug. 8, 1892. Serial No. 442,496. (No model.) Patented in England June 17, 1890, No. 9,357, and Aug. 20, 1890, No. 13,078.



Claim.—1. In a brick-making machine, the combination of an intermittently-revolving molding-cylinder 2, having open ends, together with the pusher 16, operated by toothed segment 18 and cam 24 on the shaft 13, for the purposes described.

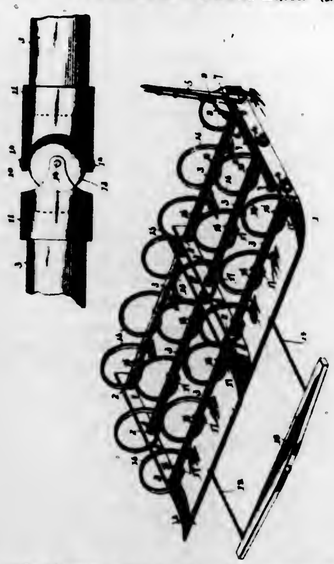
2. In a brick-making machine, the combination of an intermittently-revolving molding-cylinder 2, having open ends, of a pusher 16, operated by toothed segment 18 and cam 24 on the shaft 18, and an intermittent rammer 11, operated by toggle-jointed levers 12 and connecting-rod 14, the latter of which causes the toggle-joints to give two squeezes for one revolution of the shaft 13, all as described.

3. In a brick-making machine, the combination, with an open-ended mold, of a rammer for pressing the clay into the mold, a pusher for forcing the brick out of the mold, and driving mechanism operating to move the said mold, rammer, and pusher intermittently, the rammer being moved twice as often as the pusher and the mold being moved alternately with the two movements of the rammer, substantially as set forth.

4. In a brick-making machine, the presser 29, moved up and down by toggle-jointed levers 30 and connecting-rod 31, the latter of which is of such a length as to cause the presser to impart two squeezes to the brick for one revolution of the shaft 13, in combination with the inner piston 33 and outer piston 35, the said piston 33 yielding to pressure of clay when forced into the die through the medium of lever 36 and cushion 38, together with lever 42 for lifting both pistons 33 and 35 when removing the brick from the die 34, all as described.

5. A brick making and pressing machine comprising an open-ended revolving molding-cylinder 2, brick-pusher 16, intermittent revolving pug-mill 44, clutch-boxes 46 and 50, operated by lever 51, and cam 53, rammer 11, toggle-jointed levers 12, and connecting-rod 14, all as described.

485,324. SPRING-TOOTH HARROW. FRED H. FERRIS, Ketchum's Corners, N. Y. Filed Mar. 26, 1892. Serial No. 426,559. (No model.)



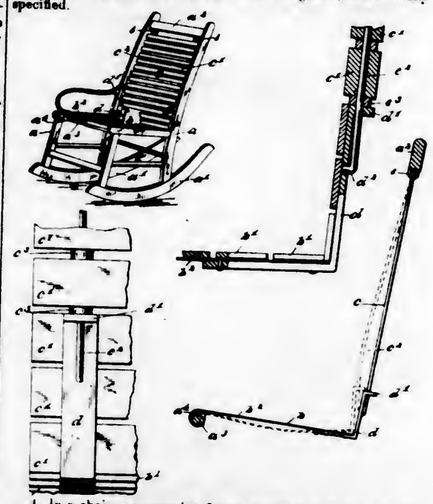
Claim.—In a harrow, the combination of the independent rectangular harrow-sections arranged side by side, the rock-shafts pivoted in the side bars of the sections, the spring-teeth carried by said shafts, the gimbal-joints connecting adjoining ends of the rock-shafts to connect the sections, said joints being located between the adjacent side bars of the sections, the rock-arms attached to the projecting ends of the shafts at the outer side of one of the sections, a lever attached to one of the rock-shafts, and a connecting-rod fulcrumed to said rock-arms and lever, all substantially as and for the purpose specified.

485,325. CHAIR. JOHN W. HAMILTON, Springfield, Ohio. Filed Mar. 21, 1892. Serial No. 425,689. (No model.)

Claim.—1. In a chair, a supporting-frame and a flexible back and seat joined together by rigid angular connecting-pieces and supported in said frame at the top and front only of said back and seat, respectively, substantially as specified.

2. In a chair, a supporting-frame, a flexible seat and back arranged at an angle to each other and connected together by rigid angular connecting-pieces, a supporting-bar on said frame, from which the back is suspended at the top, and a cross-bar from which the front of said seat is suspended, substantially as specified.

3. In a chair, a supporting-frame having the top and front cross-bars, as described, a flexible back suspended from said top cross-bar, said back being composed of a series of slats and flexible supporting-wires, rigid angular connecting-bars attached to said wires, and a flexible seat attached at one end to the front cross-bar of said frame and at the other to said angular connecting-bars, substantially as specified.



4. In a chair, a supporting-frame having a cross-bar at or near the top, flexible supporting-wires connected to said cross-bar, connecting pieces or slats attached to said flexible wires, rigid angular connecting-pieces below said slats, also connected to said wires, flexible seat-supporting strips connected to said angular connecting-pieces, and cross bars or slats on said flexible supporting-strips, said flexible supporting-strips being connected to a cross-bar at the front of said seat in said frame, substantially as specified.

5. In a chair, a flexible back and a flexible seat and rigid angular connecting-pieces forming a connection between said back and seat, said connecting-pieces being provided with projecting ears or flanges to which the back is connected, substantially as specified.

6. In a chair, a flexible back formed with transverse slats and supporting flexible wires, rigid angular connecting-pieces having ears or flanges perforated to receive said wires, said wires being bent and secured in the body of said angular pieces, and a flexible seat connected to said back by said angular connecting-pieces, substantially as specified.

485,326. MACHINE FOR APPLYING CHOCOLATE TO CREAM-DROPS. DANIEL M. HOLMES, Arlington, N. J., assignor to John R. Van Derveer, New York. Filed Mar. 21, 1892. Serial No. 425,664. (No model.)

Claim.—1. A machine for applying chocolate to cream-drops, in which is comprised a chocolate-tank, a vertically-reciprocatable cream-drop holder, a paper-reel, a carrying-belt, and means for imparting movement to the paper and carrying-belt, the whole combined and arranged to operate substantially as shown and described.

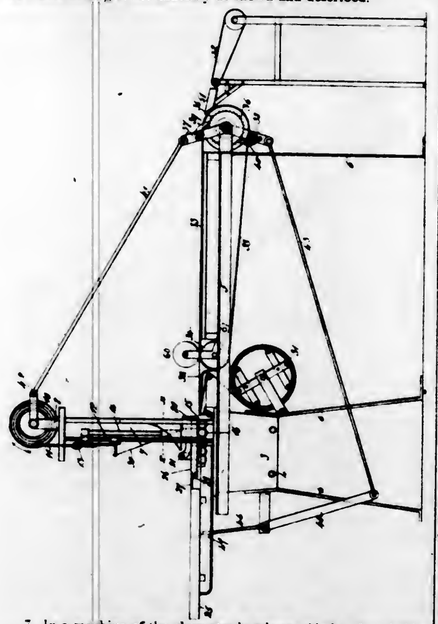
2. A machine for applying chocolate to cream-drops, in which is comprised a chocolate-tank, a vertically-reciprocatable cream-drop holder, means for removing the surplus melted chocolate from the drops after dipping, a paper-reel, an endless carrying-belt, and means for imparting an intermittent movement to the paper and carrying-belt, the whole combined and arranged substantially as shown and described.

3. In a machine of the character herein specified, a cream-drop holder consisting of a fixed portion and a hinged portion, as set forth, in combination with a bottom or support for the creams, consisting of a series of movable rollers, substantially as shown and described.

4. In a machine of the character herein specified, the combination, with the cream-drop holder, of a series of rollers located therebeneath, the shafts of said rollers bearing pinions, and racks adapted and arranged to cause said rollers to rotate, substantially as shown and described.

5. In a machine of the character herein specified, a cream-drop holder and agitator, in combination with a receiving-shelf, a paper-reel, and means for causing the paper to move over the receiving-shelf as the drops are deposited thereon, substantially as shown and described.

6. In a machine of the character herein specified, the combination, with the chocolate-tank, the frame supported thereabove, and the vertically-movable cross-bar mounted in said frame, of arms extending downward from said cross-bar and supporting a series of rollers, the shafts whereof are provided with pinions, a cream-drop-holding device being also supported by said cross-bar, and racks engaging with the pinions and connected to a horizontally-reciprocatable table, the whole arranged substantially as shown and described.



7. In a machine of the character herein specified, a drop holder consisting of two portions hinged together, as set forth, the upper portion having inverted-cone-shaped passages therethrough, substantially as shown and described.

8. In a machine of the character herein specified, the combination, with the paper-reel and paper, of a guide-plate beneath the paper, having a lip projecting upward between the paper-supporting shelf and the chocolate-tank, substantially as shown and described.

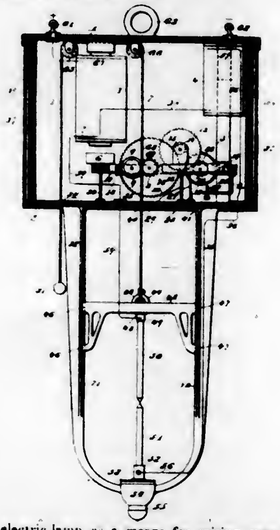
9. In a machine of the character herein specified, the combination, with the carrying-belt, its supporting-roller, and the paper carried by said belt, of the bearing-wheels mounted above the said supporting-roller, substantially as shown and described.

485,327. ELECTRIC-ARC LAMP. EDWARD R. KNOWLES, Middletown, Conn. Filed Nov. 24, 1891. Serial No. 412,916. (No model.)

Claim.—1. In an electric lamp, a frame movable to establish the arc, a main magnet, an armature therefor by which the movement of the arc-establishing frame is controlled, a train of gearing terminating in a friction-wheel, a supporting-frame therefor pivoted in and carried by the arc-establishing frame, a magnet in a derived circuit for controlling the movement of the gearing-frame, a friction-screw carried by the arc-establishing frame for the purpose of controlling the movement of the friction-wheel, and a vertically-moving perforated flexible ribbon or band engaging with the train of gearing and supported on the frame of the lamp.

2. In an electric lamp, a frame movable to establish the arc, a main magnet, an armature therefor by which the movement of the arc-establishing frame is controlled, a train of gearing terminating in a friction-wheel, a supporting-frame therefor pivoted in and carried by the arc-establishing frame, a magnet in a derived circuit for controlling the movement of the gearing-frame, a friction-screw carried by the arc-establishing frame for the purpose of controlling the movement of the friction-wheel, and a vertically-moving perforated flexible ribbon or band engaging with the train of gearing and supported on the frame of the lamp, substantially as described.

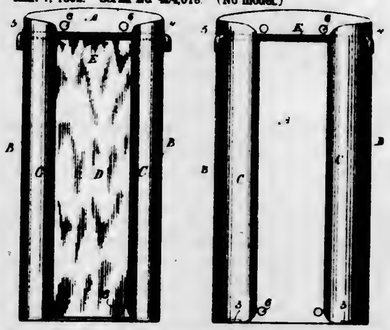
3. In an electric lamp, a train of gearing, a frame for supporting the same, a vertically-moving perforated flexible ribbon or band engaging with the train of gearing and supported on the frame of the lamp, and a roller pivoted in the gearing-frame and in contact with the perforated flexible band or ribbon, whereby it is kept in engagement with the train of gearing and prevented from slipping therefrom, substantially as described.



4. In an electric lamp, as a means for raising, supporting, and feeding the upper carbon, a vertically-moving perforated flexible ribbon or band supported on the frame of the lamp, one end of said ribbon or band being attached to the upper carbon or a frame carrying the same and the other end passing out through the base of the lamp-frame and terminating in a ball or weight, substantially as described.

5. In an electric lamp, as a means for raising, supporting, and feeding the upper carbon, a vertically-moving perforated flexible ribbon or band supported on the frame of the lamp, one end of said ribbon or band being attached to the upper end of said carbon or a frame supporting the same and the other end passing out through the base of the lamp, substantially as described.

485,328. SALT-HOLDER. HENRY A. LEE, Plainfield, N. J. Filed Mar. 7, 1892. Serial No. 424,018. (No model.)



Claim.—1. A holder for a block or brick of salt or similar material, having a back and two vertical sides and inwardly-extending front edges, and a rigid ledge at the lower end of the holder, upon which the bottom end of the block or brick of salt rests, the opening at the bottom and in the front of the holder being wide enough for the tongue of the animal to pass to the said brick or block when licking the same and sufficiently narrow to protect such block or brick from the teeth of the animal, substantially as set forth.

2. A holder for a block or brick of salt or similar material, having a rigid ledge at the bottom of the holder for the lower end of the brick to rest upon, and a back and vertical sides that are inclined toward each other at the front, with an opening at the bottom and

between the sides, by which the tongue of the animal is permitted to reach the block or brick, substantially as set forth.

3. A holder for a block or brick of salt or similar material, having a rigid ledge at the bottom of the holder for the lower end of the brick to rest upon, a back and vertical sides that are inclined toward each other at the front, and provided with inwardly-projecting front edges with an opening at the bottom and between the sides, by which the tongue of the animal is permitted to reach the block or brick, substantially as set forth.

4. A holder for a block or brick of salt or similar material, having a back, vertical sides, and inwardly-projecting and rounding front edges, and a ledge at the bottom of the holder for the block or brick to rest upon, the opening between the inwardly-projecting rounding front edges being sufficiently wide for allowing the tongue of the animal to reach the block in licking the same, substantially as set forth.

5. The holder for a block or brick of salt, having an opening in the front and closed sides and a movable cross-bar passing through the sides for holding the brick down in position, substantially as set forth

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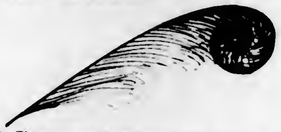
485,329. PROCESS OF MAKING IMITATION LONG HERON-FEATHERS. SIMON LEWISOHN, Berlin, Germany. Filed June 28, 1892. Serial No. 438,276. (No specimens.)



Claim.—1. The process of producing imitation long heron-feathers, consisting in the following steps: first leaching peacock tail-feathers to remove the fluff from the individual plumes or sprays, then bleaching and dyeing the said feathers, and finally bending or curling them and stripping the sprays from one side only of each stem, as set forth.

2. An imitation long heron-feather consisting of a peacock's feather free from fluff, colorless, and having a curly form, as described and shown

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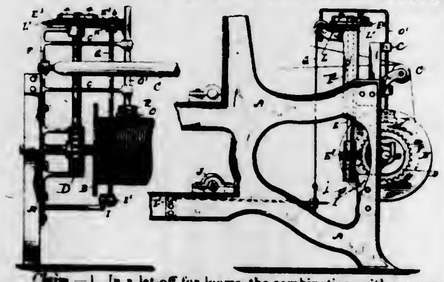
485,330. LET-OFF MOTION FOR LOOMS. JOHN M. LINCOTT, Worcester, Mass. Filed Jan. 28, 1890. Serial No. 338,344. (No model.)



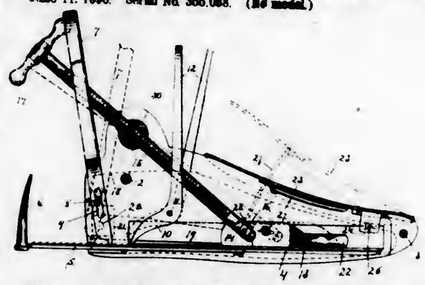
Claim.—1. In a let-off for looms, the combination, with a warp-beam, of a worm-gear and worm-shaft, said shaft having an intermittent motion corresponding with the picks of the loom, substantially as described, through connected operating mechanism, a plate upon the warp on the warp-beam, and an oblique bar raised and lowered by said plate, said oblique bar being operatively connected with the worm-actuating mechanism, substantially as described, whereby the angular motion of said worm is varied as the warp is unwound from said beam, substantially as described.

2. In a let-off for looms, the combination, with a warp-beam, of a worm-gear and a worm-shaft, as described, by which said beam is turned, a disk provided with a radial arm and pivoted upon said shaft and operatively connected therewith, substantially as described, a vibrating treadle, a cam actuating said treadle, a band connecting said treadle and said radial arm, and a flanged guide-pulley, over which said band passes, said guide pulley or roll having a sliding motion, whereby the position of said band is changed relatively to said radial arm, substantially as described.

3. In a let-off for looms, the combination, with the disk E^3, provided with a radial arm E^4, of a band G, connecting said arm with a vibrating lever or treadle, a vibrating treadle, and an actuating-cam, a flanged guide-roll having a sliding motion by which the position of said band is changed relatively to said radial arm and the angular motion of said disk is varied, and an oblique bar supported by the warp upon the warp-beam and operating to slide said roll as the oblique bar is allowed to fall by the removal of the warp from the warp-beam, substantially as described.

4. In a let-off for looms, the combination, with the warp-beam, of a worm-gear D, a worm-shaft E, provided with a worm E', ratchet-wheel E^3, disk E^2, carrying pawls *a a a a* and provided with a radial arm E^4, treadle I, cam J, connecting-band G, connecting said treadle with said radial arm and adjustably attached to said treadle, a flanged guide-roll capable of a sliding motion, an oblique bar *c*, with its edge operating to slide said guide-roll, a standard O', carrying said oblique bar, and a plate O, resting upon the warp upon the warp-beam, substantially as described.

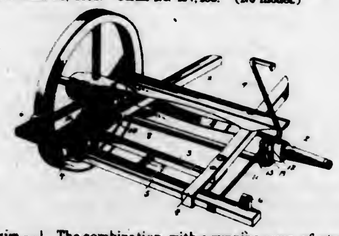
485,331. BOOT-STRETCHER. JOEL LYONS, Buffalo, N. Y. Filed June 11, 1890. Serial No. 355,088. (No model.)



Claim.—1. In a boot or shoe stretcher, the combination of a heel-plate secured to a rack-bar, said rack-bar sliding into the base of the stretcher and operated by a reciprocating lever and pivoted pawl having an upwardly-extending arm, spring side plates secured to the sides of the frame by their spring connections alone and having inwardly-projecting lugs operated upon by a reciprocating wedge or block, and a plate resting over the top of the frame, having a pivoted lever on its under side adapted for temporary engagement with a reciprocating wedge or block, said top plate further provided with a downwardly-projecting lug adapted to be raised by the reciprocating wedge or block, all combined and operating substantially as described.

2. In a boot or shoe stretcher, a frame having a movable top plate provided on its under side with a pivoted lever and a depending lug, in combination with a reciprocating wedge which operates against the pivoted lever and the depending lug, substantially as and for the purpose stated.

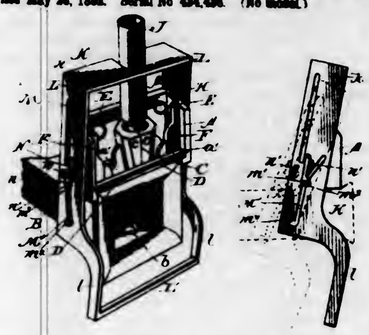
485,332. WAGON-BRAKE. JAMES NEWBILL, Treesvant, Tenn. Filed June 21, 1892. Serial No. 437,463. (No model.)



Claim.—1. The combination, with a running-gear, of a transverse bar connecting the rear ends of the front hounds, rearwardly-extending loops projecting horizontally from the rear ends of the front hounds, a brake-bar carrying brake-shoes and arranged in the loops, a centrally-arranged spiral spring interposed between the brake-bar and the transverse bar, clips secured to the front axle and provided at their rear sides with bearings, a rock-shaft journaled in the bearings and provided with arms, one of which is extended to form a handle or lever, and rods connecting the brake-bar with the arms of the rock-shaft, substantially as described.

2. The combination, with a running-gear, of a transverse bar connecting the rear ends of the front hounds, the loops extending rearwardly from the front hounds, a brake-bar arranged in the loops and carrying brake-shoes, a spring interposed between the brake-bar and the transverse bar, clips mounted on the front axle and having clip-plates provided at their front ends with hooks and at their rear ends with bearing-eyes, a rock-shaft journaled in the bearing-eyes and provided with arms, one of the latter being extended to form an operating-lever, and the rods connecting the brake-bar with the arms of the rock-shaft, substantially as described.

485,333. CAR-COUPLING. JOSEPH W. PEARCE, Holly Springs, Miss. Filed May 26, 1892. Serial No. 434,426. (No model.)



Claim.—1. An attachment for pin-and-link car-couplings, comprising a stationary frame adapted to be mounted on the draw-head, a pin-supporting shoe consisting of two spring-held sliding sections normally locked in contact, and means for automatically releasing said sections when two cars come together, substantially as set forth.

2. An attachment for pin-and-link car-couplings, comprising a stationary frame adapted to be mounted on the draw-head, a pin-supporting shoe consisting of two spring-held sliding sections normally locked in contact, catches for locking said sections, and a sliding frame adapted to automatically fall and release said catches when two cars come together, substantially as set forth.

3. An attachment for pin-and-link car-couplings, comprising a stationary frame adapted to be mounted on the draw-head and provided with guides, a pin-supporting shoe consisting of two spring-held sections, sliding plates carrying said sections and provided with recesses, catches adapted to engage the latter to lock said sections in contact, vertical spring-held rods controlling said catches, and a sliding frame adapted to fall upon said rods when the cars come together and release the catches, substantially as set forth.

4. An attachment for pin-and-link car-couplings, comprising a stationary frame adapted to be mounted on the draw-head and provided with guides, a pin-supporting shoe consisting of two spring-held sections provided in their opposing faces with dowewardly-convergent recesses, a tubular pin-guide carried by said frame and arranged above the shoe, and means for automatically releasing the shoe-sections when the cars come together, substantially as set forth.

5. The combination, with a stationary frame carrying a pin-supporting shoe consisting of two spring-held sections and means for locking the latter in contact, said frame being provided at each side with two outwardly-projecting trunnions, of a sliding frame provided in each side, respectively, with a straight and a curved slot receiving said trunnions, said curved slots terminating at their lower ends in offsets, substantially as and for the purpose set forth.

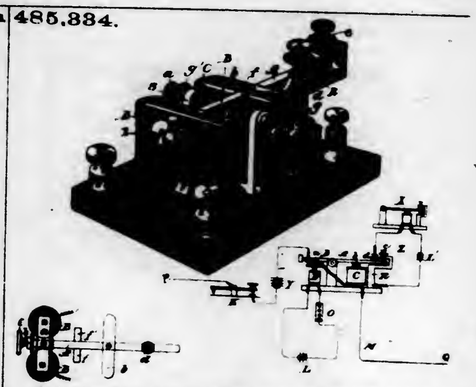
6. The combination, with a stationary frame carrying a pin-supporting shoe consisting of two spring-held sections and means for locking the latter in contact, of a sliding frame provided with a link-supporter, said frame being adapted when released to release the shoe-sections and carry the link-supporter downwardly and inwardly, substantially as and for the purpose set forth.

7. The combination, with a stationary frame carrying a pin-supporting shoe consisting of two spring-held sections and means for locking the latter in contact, said frame being provided at each side with two outwardly-projecting trunnions, of a sliding frame provided in each of its sides, respectively, with a straight and a curved slot receiving said trunnions, said curved slots terminating at their lower ends in offsets and having oppositely-located offsets about midway their length, and plates pivoted at their upper ends between the straight and curved slots and provided at their lower ends with curved recesses, the latter being adjacent to the upper end of said offsets, substantially as and for the purpose set forth.

485,334. ELECTRO-MAGNETIC TELEGRAPH APPARATUS. ALFRED G. RAPPARD, Washington, D. C. Filed Mar. 16, 1892. Serial No. 425,101. (No model.)

Claim.—1. In electro-magnetic telegraph apparatus operated by intermittent impulses from the transmitting-station, the reciprocating armature A, limited in its motion by the stops *c* and *d*, provided with the permanently-attached cores of the electro-magnet B in apposition to the electro-magnet D, and the inductive cross-piece *b* in apposition to the electro-magnet C, as and for the purpose intended, substantially as described.

485,334.

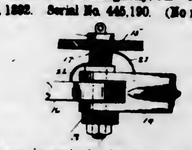


2. In electro-magnetic telegraph apparatus, the combination of the electro-magnets B and C, arranged and connected in series and receiving their energizing-current from the main line in intermittent impulses, the cores of the former being attached to the reciprocating armature A and the cores of the latter acting upon the inductive cross-piece *b*, also attached to the armature A, with the electro-magnet D constantly excited by the local battery L in apposition to the cores of electro-magnet B and so arranged that it shall be of the same polarity as magnet B, as and for the purpose intended, substantially as set forth

3. In electro-magnetic telegraph apparatus, the combination of the electro-magnet B, permanently attached to the reciprocating armature A, connected in series with the stationary electro-magnet C, controlling the cross-piece *b*, also attached to the armature *a* and the main line, the electro-magnets B and C, receiving the same intermittent electrical impulses from the transmitting-station, with an adjustable permanent magnet N, the electro-magnet D, underlying the electro-magnet B and receiving its electrical energy from a local battery of such polarity that the cores of said magnet D will be energized similarly to the cores of magnet B, which are directly opposite to each other, the pressure of the current from the battery L within the magnet D being regulated and controlled by the rheostat O, as and for the purpose intended, substantially as described.

4. In electro-magnetic telegraph apparatus, the combination of the electro-magnets B and C, operating in conjunction with the electro-magnet D under control of the rheostat O to impart motion to the armature A, as hereinbefore described, and the contact-points *d* and *e*, the former upon the armature A and the latter upon the stand R, said armature and contact-points being a part of the independent circuit Z, as and for the purpose intended, substantially as described.

485,335. ICE-VELOCIPEDE. GEORGE SEMMOX, Pittsburg, assignor of one-half to John Schollstein, Allegheny, Pa. Filed Dec. 2, 1891. Renewed Sept. 6, 1892. Serial No. 445,190. (No model.)



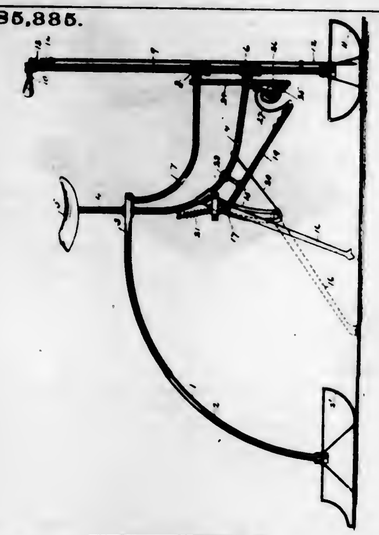
Claim.—1. In an ice-velocipede, the combination of a frame, treadle-guide attached to said frame, treadles moving in said guide, a fore leg having one end loosely connected with said treadle and the other end connected to said frame, a hind leg loosely connected with said treadle, and a spring to retract said hind leg, substantially as set forth.

2. In an ice-velocipede, the combination of a frame, a treadle-guide attached to said frame, a shaft moving in said guide, a treadle turning on said shaft, a fore leg having one end fast on said shaft and the other end connected to said frame, a hind leg having one end fast on said shaft, and a spring to retract said hind leg, substantially as set forth.

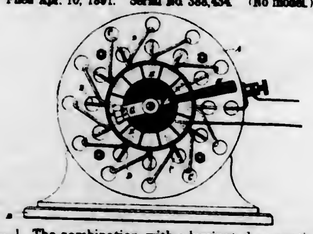
3. In an ice-velocipede, the combination of a frame provided with runners, a treadle-guide attached to said frame, treadles moving therein, and pushing-legs actuated by said treadles, substantially as set forth.

4. In an ice-velocipede, the combination of a frame, the leg 19, the spring 27, attached thereto and to the shaft 26, said shaft 26, and the sleeve-bearing 25, supported from the frame, substantially as set forth.

485,885.



485,886. SELF-INDUCTION DEVICE. WILLIAM STANLEY, Jr., Pittsfield, Mass., assignor to the Stanley Laboratory Company, same place. Filed Apr. 10, 1891. Serial No. 388,454. (No model.)



Claim.—1. The combination, with a laminated magnetic core, of a continuous magnetizing-coil the sections of which are wound through perforations in said core, a series of contact-plates to which the said sections are looped, and a contact-lever for including more or less of said sections in a circuit of alternating currents, as set forth.

2. The combination of an annular laminated magnetic core, a continuous magnetizing-coil the sections of which are wound through perforations in the core, a circular series of contact-plates to which the said sections are looped, a contact arm or lever mounted to sweep over said plates, and a handle for turning the same, as set forth.

3. In a self-induction device, the combination of a series of convolutions or coil-sections, and means, substantially as described, for including more or less of the same in a circuit of alternating current with a magnetic core common to all of said convolutions or coil-sections and surrounding each individually, as herein set forth.

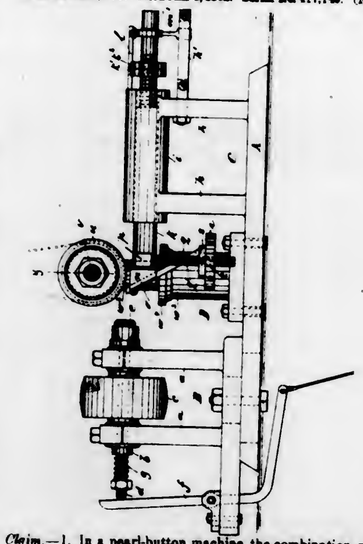
485,887. CIRCUIT-SWITCH. MARVIN R. SULLIVAN and JOHN DEAN, Denver, Colo. Filed Apr. 2, 1892. Serial No. 427,557. (No model.)

Claim.—1. The combination, with the main circuit, of the switch composed of a suitable insulating-base, two contacts to which the wires from the dynamo lead, arms pivoted in said contacts, two other contacts to which the main-circuit terminals lead and with which the pivoted arms are normally respectively connected, and an intermediate contact adapted to engage the pivoted arms as they are shifted from their normal position, and a branch-circuit wire leading from any point of the main circuit to said last-named contact, whereby either part of the circuit may be cut out or in at will without affecting the other part, substantially as described.

2. The combination, with the main circuit, of a switch consisting of an insulating-base, two contacts secured to said base and to which the mains from the dynamo respectively lead, arms pivoted in said contacts, two other contacts to which the main-circuit terminals lead and with which the pivoted arms are connected when the current passes through the entire main circuit, and two or more intermediate contacts adapted to be engaged by the pivotal arms when shifted, and branch-contact wires leading from different parts of the main circuit to said intermediate contacts, substantially as described.

3. The combination, with the main circuit, of the switch composed of the insulating-base, two contacts 9 and 9ª, to which the dynamo-mains lead, arms 10 and 12, movably connected with said contacts, contacts 15 and 16, to which the main-circuit terminals lead and adapted to engage the movable arms, intermediate contacts 22 22ª, &c., adapted to engage said arms when shifted, auxiliary contacts 29 and 30, located in proximity to the intermediate contacts, movable arms 27 28, &c., connecting each pair of the last two sets of contacts, and branch-circuit wires 21 21ª, &c., leading from the auxiliary contacts to different points of the main circuit, substantially as described.

485,888. PEARL-BUTTON MACHINE. HARRY TOWER and THOMAS TOWER, Newark, N. J. Filed Jan. 6, 1892. Serial No. 417,149. (No model.)

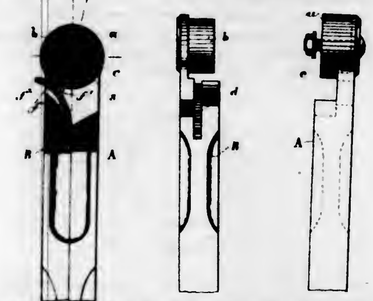


Claim.—1. In a pearl-button machine, the combination, with the chuck and its carrier, of a lever operating said chuck, a cutting-tool arranged opposite said chuck and adapted to be moved to and from said chuck, a lever operating said cutting-tool, means for raising and lowering said cutting-tool, a sharpening-wheel arranged at right angles to the cutting-tool, a spindle carrying said sharpening-wheel, a threaded rod provided at its top with a bearing for said spindle, and means for raising or lowering said rod, all said parts being arranged and adapted to operate substantially as described, and for the purposes set forth.

2. In a pearl-button machine, the combination, with the chuck and its carrier, of a guide arranged opposite said chuck, a rod *k* in said guide and provided at its forward end with a cutter-head, a cutter arranged at an oblique angle to and in said cutter-head, a screw extending downward from said rod *k* and behind the cutter-head, an internally-threaded wheel arranged on said screw, a disk arranged upon said wheel and provided with a recess and adapted to receive the lower end of the cutter, nuts *k*⁷ *k*⁸, adjustably secured to the rod *k* and adapted to limit said rod in its forward motion, and a hand-lever for operating said rod and cutter, all said parts being arranged and adapted to operate substantially as described, and for the purposes set forth.

3. In a pearl-button machine, a sharpening device combining therein a spindle, a sharpening or emery wheel secured to said spindle, a threaded rod provided with a top, adapted to form the bearing for said spindle, an internally-threaded hand-wheel arranged on and adapted to operate said threaded rod, a groove arranged in said threaded rod, and a hollow post receiving said rod and provided with a screw, said screw being adapted to serve as a guiding and tightening device for said threaded rod, all said parts being arranged and adapted to operate substantially as described, and for the purposes set forth.

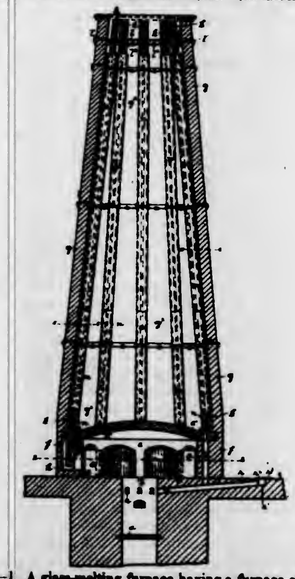
485,889. CALIPER-JOINT. MORITZ ULLMANN, Stuttgart, Germany. Filed July 1, 1892. Serial No. 438,701. (No model.)



Claim.—1. In dividers, the combination, with a divider-leg provided with a hollow head or thimble integral therewith and a central stud, of a second divider-leg provided with a hollow head or thimble integral therewith and fitting into the thimble of the first divider-leg, a spring connected to the stud and to the thimble of the second divider-leg, and means for holding the divider-legs in any position of adjustment, substantially as set forth.

2. In dividers, the combination of two divider-legs having thimbles fitting one within the other, with a spiral spring connected with its respective ends to the two divider-legs, and a spring-dog attached to the one divider-leg and bearing against the thimble of the other divider-leg, substantially as set forth.

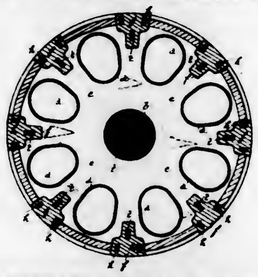
485,340. GLASS-FURNACE. RICHARD M. ATWATER, Pittsburg, Pa. Filed June 28, 1892. Serial No. 438,309. (No model.)



Claim.—1. A glass-melting furnace having a furnace-chamber, a crown extending over the same, a stack extending above said crown, a series of waste-product flues leading from the furnace-chamber and extending upwardly through the stack-chamber without communicating with the stack-chamber, and an air-entrance and air-discharge communicating with the stack-chamber, substantially as and for the purposes set forth.

2. A glass-melting furnace having a furnace-chamber, a crown over the same, a stack extending above the crown, waste-product flues leading from the furnace-chamber and extending upwardly through the stack-chamber, a mantel in the upper portion of the stack, through which such waste product flues extend, and an air-entrance and air-discharge communicating with the stack-chamber, substantially as and for the purposes set forth.

3. A glass-melting furnace having a furnace-chamber, a crown extending over the same, a stack extending up from the furnace, waste-product flues extending upwardly through the stack-chamber, and downtake air-heating flues inclosing one or more of such waste-product flues, substantially as and for the purposes set forth.



4. A glass-melting furnace having a furnace-chamber, a crown extending over the same, a stack extending up from said furnace and having a mantel or cross-wall in its upper portion, waste-product flues leading from the furnace-chamber through the stack-chamber and said mantel and opening above the mantel, an air-entrance communicating with the stack-chamber, and downtake or heating flues, each inclosing one or more waste-product flues, substantially as and for the purposes set forth.

5. A glass-melting furnace having a furnace-chamber, a series of pillars supporting the crown and stack, downtake air-heating flues formed in such pillars, and flues leading therefrom to the fire-chamber, substantially as and for the purposes set forth.

6. A glass-melting furnace having a furnace-chamber, a series of pillars supporting the crown and stack, downtake air-heating flues formed in such pillars, and uptake waste-product flues formed in the same, substantially as and for the purposes set forth.

7. A glass-melting furnace having a furnace-chamber, pillars supporting the crown and stack and having waste-product flues and downtake air-heating flues therein, extensions of the waste-product flues formed within the stack and downtake air-flues surrounding such extensions and communicating with the downtake air-heating flues in the pillars, substantially as and for the purposes set forth.

8. A glass-melting furnace having a furnace-chamber, pillars supporting the crown above the same, downtake air-heating flues extending through said pillars, and flues leading therefrom to the entrance-port of the furnace, said entrance-flues having, also, extensions leading directly to and communicating with the outside of the furnace, substantially as and for the purposes set forth.

9. A glass-melting furnace having a furnace-chamber, pillars surrounding the same, supporting the crown and stack, an air port or passage between the inner and outer arches from said pillars, a stack having a mantel at the upper end thereof, waste-product flues leading from the furnace-chamber and having extensions through the stack-chamber and through the mantel, and downtake air-heating flues, each surrounding one or more of such extension-flues and having their inlets within the stack-chamber and near said mantel, substantially as and for the purposes set forth.

485,341. PROCESS OF AND APPARATUS FOR PURIFYING AND MATURING LIQUORS OR DISTILLED SPIRITS. IRA B. CUSHING, Brookline, Mass. Filed Jan. 13, 1892. Serial No. 417,964. (No model.)

Claim.—1. The herein-described process of purifying and maturing liquors or distilled spirits, which consists in first forcing atmospheric air alone through the spirits being treated for the purpose of removing therefrom the obnoxious gases and other impurities, then commingling in a separate vessel oxygen gas with the unused atmospheric air employed in the process, whereby it is energized and rendered more active, and then forcing the atmospheric air and oxygen so commingled through the spirits being treated and permitting the same to escape after its passage through the liquor, substantially as and for the purpose set forth.

coupled vehicles and a pair of longitudinal coupling-beams which are pivotally connected to the bolster on each side of its central pivot and connected by their opposite ends to the other coupled vehicle, said beams having the capacity for independent lateral movement relatively to the engine or tender, substantially as set forth.

2. A locomotive engine and tender coupled together by means of a bolster centrally and pivotally connected to one of the coupled vehicles and a pair of longitudinal coupling-beams which are pivotally connected by universal joints to the bolster on each side of its central pivot and connected by their opposite ends to the other coupled vehicle, whereby independent vertical and lateral movement of the frames is permitted relatively to the engine or tender, substantially as set forth.

3. The combination, with a locomotive engine and tender, of a transverse beam rigidly attached to the frame of one of said vehicles, a bolster centrally and pivotally connected to the other vehicle, and a pair of longitudinal coupling-beams which are pivotally connected to the bolster on each side of its central pivot and connected by their opposite ends to the transverse beam, said coupling-beams having the capacity for independent lateral movement in relation to the engine or tender, substantially as set forth.

4. The combination of a tender, a locomotive having its fire-box located behind the rear driving-axle and laterally extended to a width greater than the distance between the wheels, a transverse beam rigidly attached to the frame of one of the vehicles aforesaid, a bolster centrally and pivotally connected to the other vehicle, and a pair of longitudinal coupling-beams which are pivotally connected to the bolster on each side of its central pivot and connected by their opposite ends to the transverse beams, said coupling-beams having the capacity for independent lateral movement relatively to the engine or tender, substantially as set forth.

5. The combination, with a locomotive engine and tender, of a bolster centrally and pivotally connected to one of said vehicles, a pair of longitudinal coupling-beams which are pivotally connected to the bolster on each side of its central pivot and connected by their opposite ends with the frame of the other vehicle and are adapted to support part of the weight of said vehicle, and movable connections, supports, or bearings between the coupling-beams and said vehicle, whereby part of the weight of the latter is supported by the coupling-beams and they are adapted to have independent lateral movement relatively thereto, substantially as set forth.

6. The combination, with a locomotive engine and tender, of a bolster centrally and pivotally connected to one of said vehicles, a pair of longitudinal coupling-beams which are pivotally connected to the bolster on each side of its central pivot and connected by their opposite ends with the frame of the other vehicle, posts, pillars, or supports attached to said vehicle, and swing links or hangers pivotally connected to the supports and to the coupling-beams and adapted to support part of the weight of said vehicle and to allow said beams and said vehicle to move laterally in relation to each other, substantially as set forth.

7. The combination, with a locomotive engine and tender, of a bolster centrally and pivotally connected to one of said vehicles and a pair of coupling-beams which are pivotally connected to the bolster on each side of its central pivot and connected by their opposite ends to the frame of the other vehicle, with the capacity of lateral motion relatively to said last-named vehicle and of supporting and transmitting part of the weight thereof to wheels which carry part of the weight of both vehicles, substantially as set forth.

8. The combination of a locomotive engine and tender, a fire-box located between the rear driving-axle and the tender, a transverse bolster centrally and pivotally connected to one of the vehicles aforesaid, and longitudinal coupling-beams pivotally connected to the other vehicle on each side of a longitudinal center line thereof and to the transverse bolster-beam, said coupling-beams having capacity for independent lateral movement relatively to said last-named vehicle and for supporting part of the weight thereof and transmitting it to wheels adapted to carrying part of the weight of both vehicles, substantially as set forth.

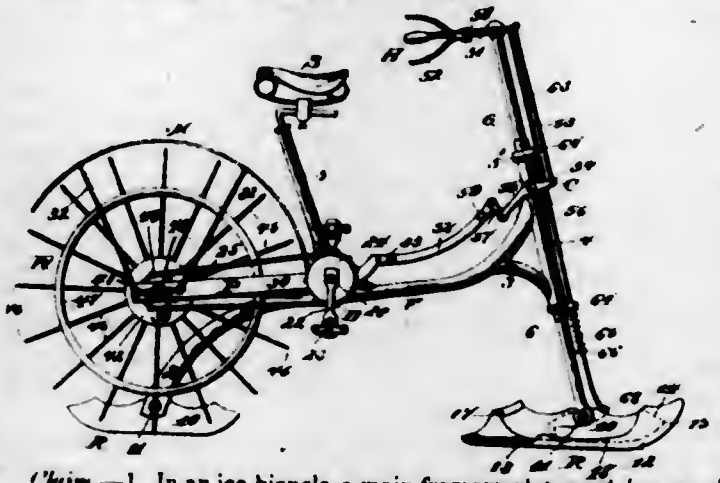
9. The combination of a locomotive-engine having main frames inside of its driving-wheels and outside supplemental frames which project rearwardly back of the driving-wheels, a tender having a main frame which is located below and extends in front of the back end of the supplemental engine-frame, a supplemental tender-frame located above the main tender-frame and abutting against the rear end of the supplemental engine-frame, a transverse bolster pivoted centrally to one of the vehicles aforesaid, and longitudinal coupling-beams pivotally connected to the bolster and with the main frame of the other vehicle, substantially as set forth.

10. The combination of a locomotive-engine having a fire-box located behind its rear driving-axle and having main frames inside of the driving-wheels and outside supplemental frames which project in rear of the driving-wheels, a tender having a main frame which is located below and extends in front of the back end of the supplemental engine-frame, a supplemental tender-frame located above the main tender-frame and abutting against the rear end of the supplemental engine-frame, a transverse bolster pivoted centrally to one of the vehicles aforesaid, and longitudinal coupling-beams pivotally connected to the bolster and with the main frame of the other vehicle, substantially as set forth.

11. The combination of a locomotive-engine having main frames inside of its driving-wheels and outside supplemental frames which project in rear of the driving-wheels, a tender having a main frame which is located below and extends in front of the back end of the supplemental engine-frame, a supplemental tender-frame located above the main tender-frame and abutting against the rear end of the supplemental engine-frame, a transverse bolster-beam pivoted centrally to the frame of one of the vehicles aforesaid, and longitudinal coupling-beams pivotally connected to the bolster-beam and with the main frame of the other vehicle, and wheels adapted to carry part of the weight of both vehicles, substantially as set forth.

12. The combination of a locomotive-engine having main frames inside of its driving-wheels and outside supplemental frames which project in rear of the driving-wheels, a tender having a main frame which is located below and extends in front of the back end of the supplemental engine-frame, a tender-frame located above the main tender-frame and abutting against the rear end of the supplemental engine-frame, and a guard or guards connected with a frame of one of the vehicles aforesaid and adapted to engage with a frame of the other vehicle, substantially as set forth.

485,345. ICE-VELOCIPEDE. MYRON R. GIBSON, Ukiah, Cal. Filed Dec. 7, 1891. Serial No. 414,323. (No model.)



Claim.—1. In an ice-bicycle, a main framework turned down and forked at its rear end, a double driving-wheel supported by the framework, and a guide-rod journaled in a steering-head at the front end of the framework and having a forked lower end, in combination with a runner pivotally mounted in each of said forks, the driving-wheel standing astride the rear runner, substantially as described.

2. In an ice-velocipede, the combination of the main framework, the guide-rod journaled therein, said framework and guide-rod being forked at their lower ends, the driving mechanism, and runners at the lower ends of said framework and guide-rod, each runner comprising a skate-shoe, the said driving mechanism consisting of a propelling-wheel having two sets of spokes, substantially as described.

3. In an ice-velocipede, the combination, with the main framework, the guide-rod journaled therein, and propelling mechanism, of runners at the lower ends of the framework and guide-rod, each comprising a skate-shoe secured to said lower end and having a pointed front end, a sled-shoe having a deep groove in which the skate-shoe fits removably, the front end of said groove having a socket engaging said point and the rear end thereof being open, and a fastening-pin removably passing across said open end for holding the shoes together, substantially as described.

4. In an ice-bicycle, the combination, with the main framework, the guide-rod journaled therein, said members being forked at their lower ends, and propelling mechanism, of runners at the lower ends of the framework and guide-rod, each comprising a skate-shoe pivoted in said fork, a sled-shoe having a deep groove in which the skate-shoe removably fits, and means for detachably connecting said shoes, the sides of the sled-shoe being cut away to permit the pivotal movements of the fork, substantially as described.

5. In a velocipede, the combination, with the main framework, the guide-rod, supports therefor, and the propelling mechanism mounted on said framework, of a pivoted framework mounted on the shaft of the driving mechanism and projecting therefrom, means for turning this pivoted framework, a driving-wheel journaled in bearings in the outer end of the pivoted framework, a lever or handle for operating said pivoted framework, located in the forward part of the machine, and connections between the driving mechanism and the hub of the wheel for rotating the latter, substantially as described.

6. In a bicycle, the combination, with the main framework, the guide-rod, supports therefor, and the driving mechanism mounted on said framework, of a pivoted framework mounted on the shaft of the driving mechanism and projecting to the rear, means for turning this pivoted framework, a driving-wheel formed in duplicate halves and journaled in bearings in the rear end of the pivoted framework, the halves standing astride the main framework, and connections between the driving mechanism and the wheel for rotating the latter, substantially as described.

7. In a bicycle, the combination, with the main framework, the guide-rod, supports therefor, and a transverse crank-shaft mounted on said framework, of a U-shaped pivoted framework whose sides are journaled on said shaft and whose ends project to the rear, foot-rests carried by the bent center of this pivoted framework, a driving-wheel formed in duplicate halves and journaled in bearings in the rear end of the pivoted framework, the halves standing astride the main framework, and connections between the crank-shaft and the wheel for rotating the latter, substantially as described.

8. In an ice-bicycle, the combination, with the main framework, the guide-rod, runners at the lower ends thereof, and a transverse crank-shaft journaled in bearings on said framework and having a sprocket-wheel, of a pivoted framework mounted on said shaft and having slots in its outer ends, means for turning this pivoted framework, a shaft adjustably mounted in said slots, a driving-wheel whose hub is journaled on said shaft and whose body is formed in duplicate halves standing normally astride the rear runner, a sprocket-wheel on the hub, connected by a chain belt with that on the crank-shaft, and a mud-guard supported by the pivoted framework, substantially as described.

9. In a velocipede, the combination, with the main framework, the guide-rod, supports therefor, the pivoted framework, the driving-wheel journaled in said pivoted framework, and means for rotating this wheel, of an arm leading from said pivoted framework, a lever pivoted to the handle-bar, connections between said lever and arm, and foot-rests supported by the arm, as and for the purpose set forth.

10. In a velocipede, the combination, with the main framework, the guide-rod, supports for said framework and guide-rod, the pivoted framework, the driving-wheel journaled in said pivoted framework, and means for rotating this wheel, of an arm leading forwardly from said pivoted framework, a lever pivoted to the handle-bar and having its outer end branched, a loop surrounding the steering-head and pivoted at its sides thereto, a link connecting the loop with the front end of said arm, a stiff rod leading from the inner end of said lever, and a ball-and-socket joint between said rod and the front end of the loop, substantially as described.

11. In a velocipede, the combination, with the main framework, the guide-rod, and supports therefor, of movable bearings, means for raising and lowering them, and a double driving-wheel mounted in said bearings, the wheel comprising a hub, stiff spokes radiating therefrom and having sharpened outer ends, and a ring connecting the bodies of said spokes concentric with the hub, as and for the purpose set forth.

12. In a velocipede, the combination, with a main framework, the guide-rod, and supports therefor, of a driving-wheel mounted in bearings supported by said framework, the wheel comprising a double hub, two sets of spokes radiating therefrom and having sharpened outer ends, and rings connecting the spokes in the sets concentric with the hub, substantially as and for the purpose set forth.

13. In an ice-bicycle, the combination, with the main framework, the guide-rod, and runners supporting them, of a driving-wheel mounted in bearings carried above the rear runner, the wheel comprising a double hub, and a set of spokes radiating from each end of the hub and adapted to move alongside the rear runner, substantially as described.

14. In an ice-bicycle, the combination, with the main framework, the guide-rod, runners supporting them, and another framework projecting to the rear from the main framework, of the driving mechanism on the main framework and a driving-wheel journaled in said other framework and connected with the driving mechanism, said wheel comprising duplicate halves adapted to stand astride the main framework and the rear runner, as and for the purpose hereinbefore set forth.

485,846. WEFT-FORK FOR LOOMS. ESTEP L. HIMMON, New Bedford, Mass. Filed July 17, 1891. Serial No. 399,869. (No model.)

Claim.—The combination, in a weft stop-motion for looms, of the slide *e*, having the stop-rest *f* and the pivot for the weft-fork, with the weft-fork pivoted thereon, and the adjustable stop-wire *d d'*, forming a part of the shank of the weft-fork, the free end *d* of the said stop-wire extending under the said pivot and adapted to be beat to

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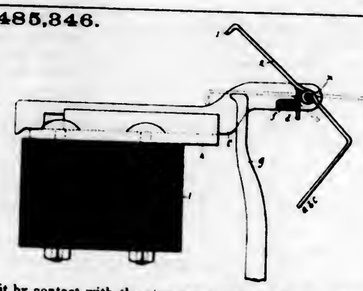
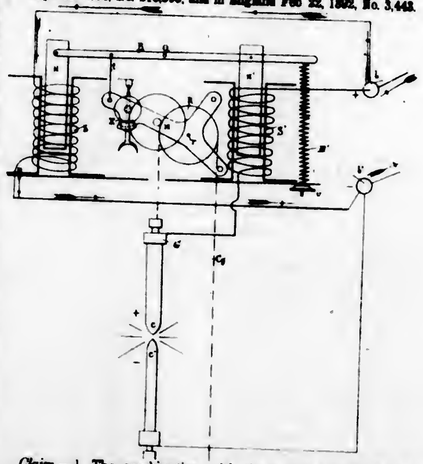


limit by contact with the stop-rest *f* the rocking movement of the fork, substantially as shown and described.

485,847. ELECTRIC-ARC LAMP. HENRI JAPY, Beaucourt, and OSCAR HELMER, Paris, France. Filed Mar. 22, 1892. Serial No. 426,029. (No model.) Patented in Belgium June 12, 1891, No. 96,340; in France Sept. 28, 1891, No. 216,393, and in England Feb. 22, 1892, No. 3,443.



Claim.—1. The combination, with the carbon-carriers and supports adapted to slide on vertical columns, of regulating devices comprising a low-resistance solenoid in them ain circuit, a high-resistance solenoid in a derived circuit, a balance-beam to the ends of which are attached the cores of said solenoids, a series of gear-wheels, a pivoted frame in which the arbors of said wheels are supported, a link connecting said frame and balance-beam, a stationary detent engaging an escapement-lever pivoted on said frame, a motor-wheel whose axis is concentric with the pivot of said frame, and flexible suspensories actuated by said wheel and supporting the carbon-carriers, substantially as described.

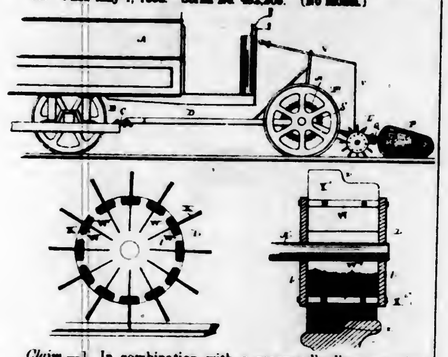
2. The combination of the sliding carbon-carriers, a flexible drive-chain attached at each end to one of said carriers, a toothed motor-wheel over which said chain passes directly from said suspensories, a clock-movement geared to said wheel, a frame pivoted on the axis of said wheel and carrying said clock-movement, an escapement-lever adapted to engage a stationary serrated surface, and means, as indicated, for oscillating the frame to release and engage said escapement, substantially as described.

3. The combination of the sliding carbon-carriers, the drive-chain attached at each end to one of said carriers, the toothed motor-wheel over which said chain passes directly from said carriers, a clock-movement pivoted on the axis of said motor-wheel, a low-resistance solenoid in a derived circuit, a high-resistance solenoid in a derived circuit, a balance-beam to the ends of which the cores of said solenoids are attached, a connection between said frame and balance-beam, and escapement mechanism, substantially as described.

4. The combination of the pivoted clock-movement provided with escapement mechanism, a toothed motor-wheel concentric with the pivot of said clock-movement, a chain passing over said motor-wheel direct to the carbon-carriers, one of which is attached to each end, a balance-beam connected to said pivoted movement, and two solenoids, one in the main circuit and one in a derived circuit, for oscillating said beam, substantially as described.

5. The combination of the tubular vertical columns, an upper carbon-holder sliding exteriorly on said columns, a lower carbon-holder having rods guided within said tubes, a toothed motor-wheel, a drive-chain passing over said wheel directly to said carbon-holders, to which its opposite ends are respectively attached, a clock-movement in a frame pivoted on the axis of said motor-wheel, and means, as specified, for oscillating said frame and releasing said clock-movement as the carbons are consumed, substantially as described.

485,848. TRACK-SWEEPER. WILLIAM H. LEIGH, Beaver Falls, Pa. Filed May 7, 1892. Serial No. 432,208. (No model.)



Claim.—1. In combination with a rearwardly-divergent plow, the rearwardly-convergent rotary brushes arranged approximately at right angles to the sides of the plow and projecting at their front ends beyond the same, substantially as specified.

2. In combination with a plow, the rearwardly-convergent brushes and rotary scrapers or cleaners arranged to operate in contact with the rails, substantially as specified.

3. The rotary scrapers or cleaners provided with offsets to conform to the shape of the rails, in combination with the plow-frame and brushes preceding said scrapers or cleaners and arranged at a prescribed angle thereto, substantially as specified.

4. The rotary scrapers or cleaners provided with clamping blocks or bars and metallic teeth or plates engaged between said blocks or bars, in combination with a rotary shaft, operating means for said shaft, and a wheeled truck-frame carrying said shaft and actuating means, substantially as specified.

5. The rotary scrapers or cleaners having parallel disks, clamping blocks or bars W W', connecting said disks, and teeth or plates engaged between said blocks or bars, in combination with a wheeled truck-frame and scraper-shaft carried by said frame, substantially as specified.

6. The combination of the supporting-frame adapted to be connected to the front end of a truck, as described, and carrying a main shaft provided with traction-wheels, the scrapers or cleaners carried by a counter-shaft which is geared to the main shaft, the plow, and the rotary brushes arranged upon opposite sides of the plow and geared to the main shaft, substantially as specified.

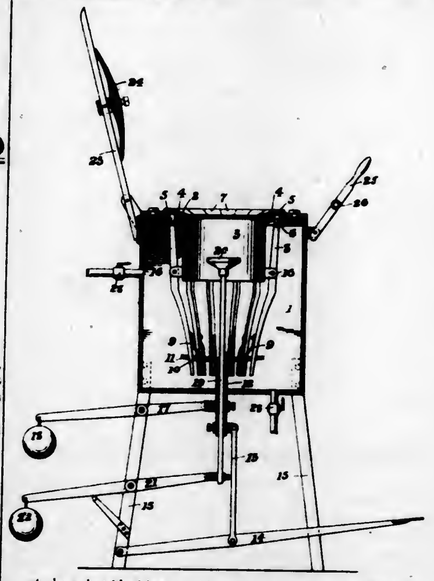
7. The combination of the main shaft carrying traction-wheels, the brush-frame provided with stirrups to bear on the main shaft, latches to engage the main shaft when the brush-frame is elevated, and the plow and brushes carried by the brush-frame, said brushes being geared to the main shaft, substantially as specified.

485,849. HAT-BLOCKING MACHINE. JAMES MARSHALL, Fall River, Mass. Filed Jan. 26, 1892. Serial No. 419,373. (No model.)

Claim.—1. In a hat-blocking machine, the combination, with the steam-chest, of a series of thin overlapping metallic plates forming a pressure-surface on top of the steam-chest, levers connected to said plates and adapted to move them radially, a plate for the actuation of said levers, springs interposed one between each lever and the plate, and means for actuating said plate vertically, whereby the inward movement of the overlapping plates may cause them to conform to hats of different sizes, substantially as described.

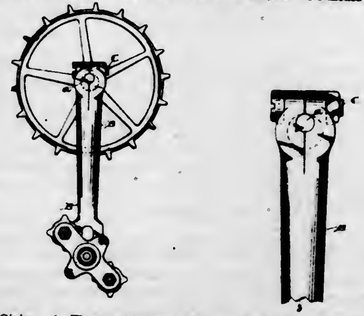
2. In a hat-blocking machine, the steam-chest, in combination with the series of overlapping metallic plates, the slide-blocks whereon said plates are supported, the levers connected to and adapted to actuate said blocks, the springs secured to the inner sides of the levers, the slotted plate 11, engaging said levers and springs, a foot-lever for operating said plate in one direction, and a counter-balance for returning it to its normal position, substantially as specified.

3. In a hat-blocking machine, the combination of the following elements, namely: the steam-chest, the blocking-ring mounted thereon and consisting of a series of thin overlapping metal plates having their edges beveled, a series of blocks upon which said plates are mounted, levers connected to said blocks and fulcrumed and extending downward within the steam-chest, a vertically-movable slotted plate having connection, as described, with the ends of the levers and adapted to actuate them, a treadle for the operation of said plate in one direction, a counter-balance for actuating said plate in the other direction, and a vertically adjustable head within the chest, adapted to engage the crown of the hat, the whole arranged substantially as and for the purpose set forth.



4. In a hat-blocking machine, the steam-chest, in combination with a series of radially-movable slide-blocks mounted in the top of said chest, a series of thin overlapped bevel-edged metallic plates secured one on top of each block and having its inner edge projecting beyond the inner edge of the block, and a series of levers secured one to each block and extending downward within the chest, whereby the radial movement of the blocks and plates may be effected, substantially as specified.

485,850. CRANK ARM AND SHAFT. ALEXANDER P. MORROW, Indianapolis, Ind., assignor to the Eclipse Bicycle Company, Beaver Falls, Pa. Filed Aug. 30, 1892. Serial No. 444,505. (No model.)

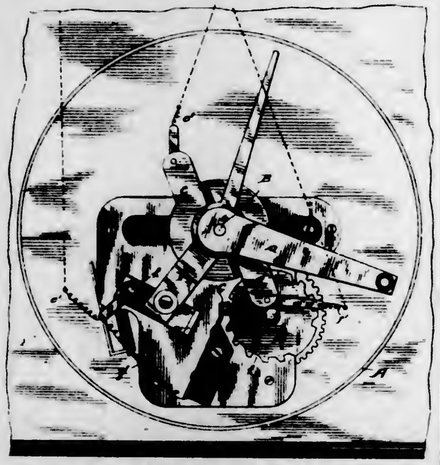


Claim.—1. The combination of a crank-shaft having an eccentric projection and a crank-arm having a socket to receive the end of the shaft and a deeper socket or hole to receive said projection.

2. The combination of a crank-shaft having an eccentric projection and a crank-arm slitted at the end and provided with a socket for the end of the shaft and a deeper socket or hole for said projection and a bolt whereby the two parts of the arm may be clamped tightly onto the shaft.

3. The combination of the crank-shaft having a transverse groove, the crank-arm slitted at the end and provided with a socket or hole to receive the shaft, and a hole transversely thereof and intersecting said socket or hole to receive a connecting-bolt, a groove in the shaft corresponding to said transverse hole, and a bolt passing through the same, which thus serves both as a pin to prevent longitudinal movement and as a clamp-bolt to clamp the arm firmly onto the shaft, substantially as set forth.

485,351. DISTRICT ALARM-BOX. CHARLES W. MCCLELLAN, Chicago, Ill. Filed Aug. 1, 1891. Serial No. 401,306. (No model.)



Claim.—1. The combination, in a district alarm-box, with the clockwork, spindle B, and arm F, closed to an electrical circuit, of the segmental plates surrounding said spindle, but insulated therefrom and from each other, with one or the other of which said arm is always in contact, the main wire and loop-wire respectively connected to said plates, as described, and an electrically-actuated signal closed to said loop-wire, as set forth.

2. The combination, in a district alarm-box, with the positive post A, brush G, notched circuit-breaking wheel H, clockwork C, spindle B, and arm F, of the segmental plates surrounding said spindle, but insulated therefrom and from each other, with some one of which said arm is always in contact, the main-line wire and the loop-wire respectively connected to said plates, as described, and an electrically-actuated signal closed to said loop-wire, as set forth.

3. The combination, in a district alarm-box, with the positive post A, brush *g*, connected thereto, brush G, notched circuit-breaking wheel H, clockwork C, spindle B, and arm F, of the segmental plates surrounding said spindle, but insulated therefrom and from each other, and with some one of which said arm is always in contact, the main-line wire and the-loop wire respectively connected to said plates, as described, and an electrically-actuated signal closed to said loop-wire, as set forth.

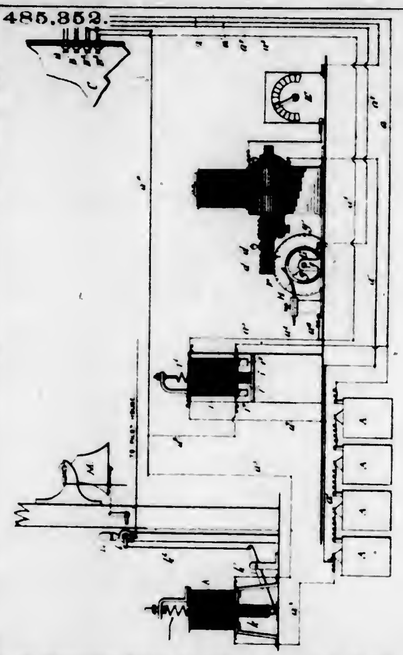
4. The combination, in a district alarm-box, with the positive post A, brush *g*, connected thereto, brush G, notched circuit-breaking wheel H, clockwork C, spindle B, and arm F, and pin J, depending downwardly therefrom, of two segmental plates surrounding said spindle, but insulated therefrom and from each other, and with some one of which said arm is always in contact, the main-line wire and the loop-wire respectively connected to one of said plates, as described, and an electrically-actuated signal closed to said loop-wire, as set forth.

485,352. ELECTRIC SIGNAL. CHARLES HOLTZER, Stonington, Conn. Filed Mar. 10, 1892. Serial No. 424,302. (No model.)

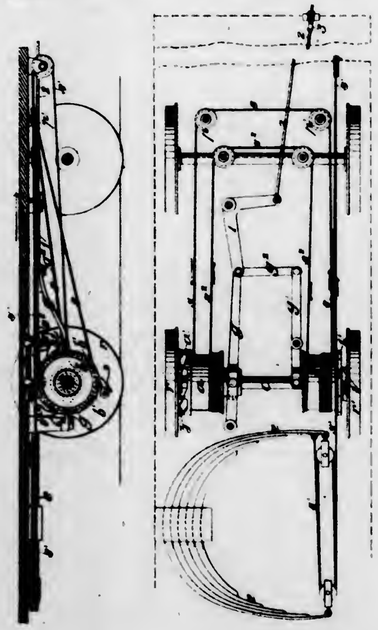
Claim.—1. In combination, the signal, the electro-magnet of greater amprage for operating the signal, an auxiliary electro-magnet of lesser amprage, a commutator, a switch, a source of electricity, an electric circuit complete through the signal-operating magnet, and a circuit-closer under the control of the core of the auxiliary magnet, a second circuit complete through the auxiliary magnet, the commutator, and the switch, and a motor for operating the commutator, substantially as set forth.

2. In combination, a signal, an electro-magnet for operating the signal, an auxiliary electro-magnet, a plurality of circuit-closers under the control of said auxiliary electro-magnet, a commutator, a motor for continuously moving the commutator, a source of electricity, an electric circuit complete through the signal-operating magnet, and one of the circuit-closers under the control of the auxiliary magnets, a second circuit complete through the auxiliary magnet and commutator, and a third circuit complete through the motor, substantially as set forth

485,352.



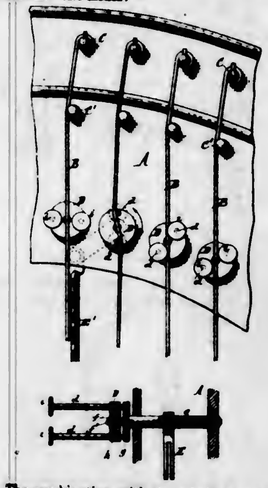
485,353. CAR STARTER AND BRAKE. WILHELM PRIESLAU, Hamburg, Germany. Filed June 23, 1892. Serial No. 437,570. (No model.)



Claim.—1. In combination with one of the axles of a car and wheels thereon, a spring attached to the car, two drums loose upon the said axle, a rope wound on said two drums, and guiding-pulleys therefor to cause the turning of said drums in opposite directions, a second rope connecting one of said drums with the spring, and engaging devices for engaging one of said drums with one of said wheels and the other of said drums with the other of said wheels, all substantially as described, whereby one of the wheels is caused to turn the axle and drums to wind up the second rope to produce tension of the spring and the other of said wheels is caused to be operated by the spring to propel the car, substantially as herein set forth.

2. The combination, for the purpose set forth, of the wheels *r r'* with the drums *a b* and spring *c*, the cables *s s' s²*, shaft with arms *n m*, spring *v*, and lever-gear for operating the drums, as described.

485,354. HARP. [illegible] RATH, Jackson, Mich. Filed Dec. 7, 1891. Serial No. 414,345. (No model.)



Claim.—1. The combination, with the spindle having a flange or collar and a screw-stem projecting outwardly beyond said flange or collar, of an adjustable sharping-disk having a threaded opening engaging with the screw-stem of the spindle and a stop-screw whereby the adjustable sharping-disk is held away from the flange or collar and prevented from turning on the screw-stem of the spindle, substantially as set forth.

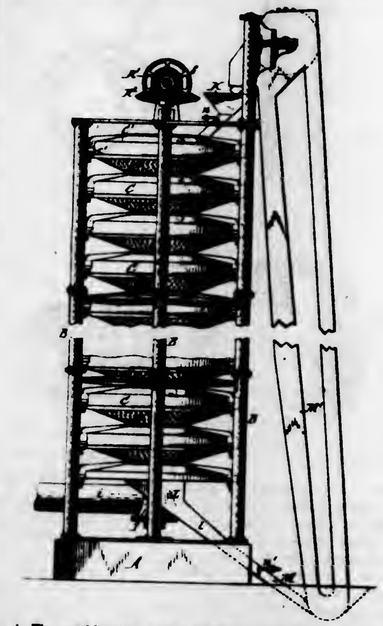
2. The combination, with the spindle having a flange or collar and a screw-stem projecting outwardly beyond said flange or collar, of an adjustable disk arranged upon said screw-stem and sharping-pins having screw-threads engaging in threaded openings in the sharping-disk and bearing with their inner ends against the flange or collar of the spindle, substantially as set forth.

485,355. APPARATUS FOR DRYING AND GERMINATING MALT. JOHANN H. R. RATHMANN, Buffalo, N. Y. Filed June 20, 1892. Serial No. 437,337. (No model.)

Claim.—1. The combination, with a chamber or compartment having an inlet in its top near its center and a similarly-located outlet in its bottom, of a rotary table arranged in said compartment, stationary blades arranged above said table and secured to the top of the compartment and inclined to move the material outwardly over said table, oblique rotary blades arranged above the bottom of the compartment and adapted to move the material inwardly over said bottom, and a central air-supply tube, substantially as set forth.

2. The combination, with a chamber or compartment having an inlet at its top near its center and a similarly-located outlet in its bottom, of a rotary table arranged in said compartment, oblique stationary blades secured to the under side of the top of the compartment and adapted to move the material outwardly over said table, oblique rotary blades secured to the under side of the table and adapted to move the material inwardly over the bottom of the compartment, and a central air-tube carrying said table, substantially as set forth.

3. The combination, with a chamber or compartment having an inlet in its top near its center and a similarly-located outlet in its bottom, of a central air-tube, a rotary table arranged in said compartment and carried by said air-tube, oblique stationary blades secured to the under side of the top of the compartment and adapted to move the material outwardly over said table, oblique rotary blades secured to the under side of the table and adapted to move the material inwardly over the bottom of the compartment, and a downwardly-darting shield arranged upon the table around the central air-tube and deflecting the incoming material outwardly within reach of the stationary blades, substantially as set forth.



4. The combination, with a horizontal chamber or compartment provided in its top near its center with an inlet and in its bottom with a similarly-located outlet, of a rotary horizontal table arranged in said compartment and receiving the material from the inlet of the compartment, and oblique stationary blades or deflectors arranged above said table and set at a gradually-diminishing angle from the central portion of the table toward its periphery, substantially as set forth.

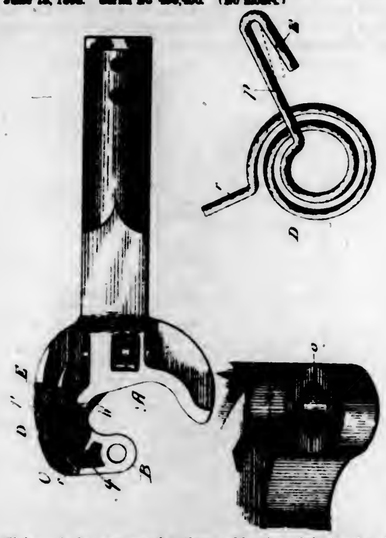
5. The combination, with a horizontal chamber or compartment provided in its top near its center with an inlet and in its bottom with a similarly-located outlet, of a rotary horizontal table arranged in said compartment, oblique, stationary blades or deflectors arranged above said table and set at a gradually-diminishing angle from the center toward the periphery of the table, whereby the material upon the table is moved outwardly with gradually-diminishing speed, and rotary oblique blades or conveyers arranged above the bottom of the compartment and set at a gradually-diminishing angle from the center toward the periphery of said bottom, whereby the material on said bottom is conveyed inwardly with gradually-increased speed, substantially as set forth.

6. The combination, with a horizontal chamber or compartment having an inlet in its top near its center and a similarly-located outlet in its bottom, of a rotary table arranged in said compartment, oblique stationary blades or deflectors arranged above said table, and oblique rotary blades arranged above the bottom of the compartment, both of said stationary and rotary sets of blades being arranged in spiral lines winding outward from the center of the compartment and placed at a gradually-diminishing angle from the center toward the periphery of the compartment, substantially as set forth.

7. The combination, with a horizontal compartment having an inlet in its top near its center, a perforated bottom, and an outlet in said bottom near its center, of an upright hollow shaft or air-tube extending through said compartment and communicating with the same, a perforated rotary table secured to said hollow shaft, stationary oblique blades depending from the top of the compartment, arranged in a spiral line and at a gradually-diminishing angle from the center toward the periphery of the table, and oblique conveyers or blades depending from the under side of the rotary table and arranged in a spiral line and at a gradually-diminishing angle from the center to-

ward the periphery of the bottom of the compartment, substantially as set forth.

485,356. CAR-COUPLING. PAUL M. REAGAN, Chicago, Ill. Filed June 13, 1892. Serial No. 436,462. (No model.)



Claim.—1. In a car-coupler, the combination of the head A, having a recess *n*, a pivotal jaw B, a lock, and a coiled spring D, surrounding the journal of the coupler and having one end provided with a wedge extension E, confined in the said recess, substantially as and for the purpose set forth.

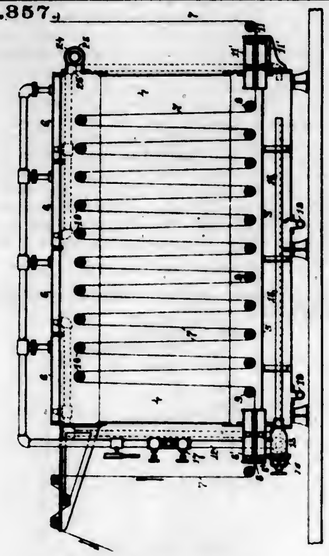
2. In a car-coupler, the combination of the head A, having a backward flaring recess *n* in its face adjacent to the bolt-hole *o* and a guide-recess *m* at the base of the recess *n*, a pivotal jaw B, a lock, and a coiled spring D, surrounding the journal of the coupler and having one end provided with a wedge extension E, confined in the recess *n*, substantially as and for the purpose set forth.

3. In a car-coupler the combination of the head having a recess *n*, a pivotal jaw B, having a recess *q*, a lock, and a coiled spring D, surrounding the journal of the coupler and having one bent end *r* inserted into the said jaw-recess *q* and its other end provided with a wedge extension E, confined in the recess *n*, substantially as and for the purpose set forth.

485,357. OXIDIZING APPARATUS. BYRON BRADLEY A. RUSSELL, Providence, R. I. Filed May 21, 1891. Serial No. 393,561. (No model.)

Claim.—In an oxidizing apparatus for textile fabrics, the combination, with a jacketed chamber through which the fabric is passed, and the injector 13, connected therewith and provided with air and steam supply pipes governed by valves, of an ejector-condenser connected with said chamber, in which suction may be created to draw the steam and gases therefrom.

485,357.



485,358. RULING-PEN. JONAS S. SUDDUTH, New York, N. Y., assignor to C. W. Stuart, same place. Filed Apr. 11, 1891. Serial No. 388,450. (No model.)

Claim.—1. In a drawing-pen, the point-carrying legs having the hollow semicylindrical upper portions, in combination with the holding-socket, said semicylindrical portions being fitted relatively to said socket to be secured by inserting them therein, substantially as described.

2. In a drawing-pen, the point-carrying legs having the hollow semicylindrical upper portions and the intermediate bulged and shouldered portions, in combination with the holding-socket, said semicylindrical portions being fitted relatively to said socket to be secured by inserting them therein, substantially as described.

3. In a drawing-pen, the point-carrying legs having the hollow semicylindrical upper portions and intermediate bulged and shouldered and downwardly-converging portions, in combination with the holding-socket, said semicylindrical portions being fitted relatively to said socket to be secured by inserting them therein, substantially as described.

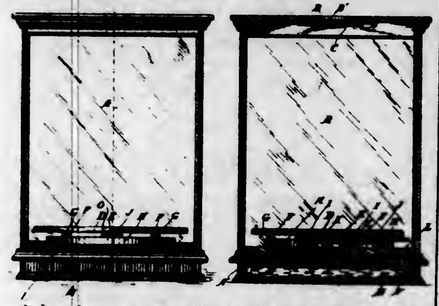
4. In a drawing-pen, a holding-socket, the point-carrying legs having the hollow semicylindrical upper portions tightly fitting in said socket, and a handle adjustably secured in said socket and arranged to act on the point-carrying legs, substantially as described.

5. In a drawing-pen, a holding-socket, the point-carrying legs having the hollow semicylindrical upper portions tightly fitting in said socket, the upper portion of one of said legs having an inwardly-projecting spiral rib, and a handle fitted in said socket, having a groove to engage with said rib and arranged to act on the point-carrying legs, substantially as described.

6. In a drawing-pen, the point-carrying legs having the semicylindrical upper portions, in combination with the socket and fitted therein as described, said legs having the transverse slits in the edges, as set forth.

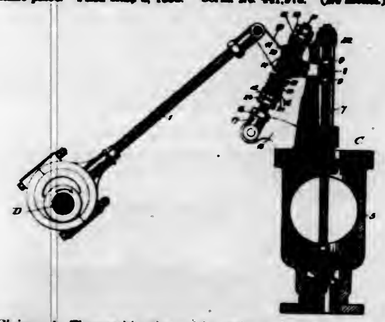
485,359. CHEESE-CASE. HENRY D. STRATTON, Galesburg, Mich. Filed May 10, 1892. Serial No. 432,302. (No model.)

Claim.—1. In a cheese-case, in combination with a case having a top opening and a water-tray beneath said case, a turn-table, a center pin, a ring beneath said table having rolls supporting said turn-table, parallel openings in the bottom of the case at each side of said pin, strips covering said openings, and a bar attached to said strips having an opening engaging said pin, said bar also extended above and outside of said ring, substantially as described.



2. In a cheese-case, in combination with a case having top openings and a water-tray beneath said case, a turn-table having a center pin, parallel elongated openings at each side of said pin, strips covering said openings, and a transverse bar attached to said strips and having an opening engaging said pin, said bar also prolonged at one end beyond the edge of said turn-table, substantially as described.

485,360. VALVE-GEAR. REINHARD UHLHORN and THEODORE MASSI, Chicago, Ill.; said Massi assignor to The Chicago Iron Works same place. Filed Aug. 2, 1892. Serial No. 441,973. (No model.)



Claim.—1. The combination, with a valve, valve-seat, and stop to limit the opening of said valve, of a vibrating member connected with said valve to close the same as said member moves in one direction and to open the same as said member moves in the opposite direction, the connection between said valve and member embracing a lost motion, substantially as described.

2. The combination, with a valve, valve-seat, and stop to limit the opening of said valve, of a vibrating member yieldingly connected with said valve to close the same as said member moves in one direction and to open the same as said member moves in the opposite direction, substantially as described.

3. The combination, with a valve, valve-seat, and stop to limit the opening of said valve, of a vibrating member yieldingly connected with said valve to open and close the same and having a greater extent of movement than is necessary to open and close said valve, substantially as described.

4. The combination, with a valve, valve-seat, and stop to limit the opening of said valve, of a vibrating member connected with said valve to open and close the same and having a greater extent of movement than is necessary to open and close said valve, the connection between said member and valve embracing a lost motion, substantially as described.

5. The combination, with a valve, valve-seat, and stop to limit the opening of said valve, of a vibrating member connected with said valves to open and close the same and having a greater extent of movement than is necessary to open and close the valve and two cushions interposed in the connection between said valve and member, substantially as described.

6. The combination, with a valve, valve-seat, and stop to limit the opening of said valve, of a vibrating member connected with said valve to open and close the same and having a greater extent of movement than is necessary to open and close the valve and two spring-cushions interposed in the connection between said member and valve, substantially as described.

7. The combination, with a valve, valve-seat, and stop to limit the opening of said valve, of a vibrating member connected with said valve to open and close the same and having a greater extent of movement than is necessary to open and close the valve and two adjustable cushions interposed in the connection between said valve and member, substantially as described.

8. The combination, with a valve, valve-seat, and stop to limit the opening of said valve, of a vibrating member connected with said valve to open and close the same and having a greater extent of movement than is necessary to open and close the valve and two adjustable spring-cushions interposed in the connection between said member and valve, substantially as described.

9. The combination, with a valve, valve-seat, a stop to limit the opening of said valve, and valve-stem, of a vibrating member and a pivoted lever having its ends pivotally connected with said valve-stem and member, one of the pivots of said lever being located between two spring-cushions, substantially as described.

10. The combination, with a valve, valve-seat, a stop to limit the opening of said valve, and valve-stem, of a vibrating member and a pivoted lever having its ends pivotally connected with said valve-stem and member, one of the pivots of said lever being located between two adjustable spring-cushions, substantially as described.

11. The combination, with a valve, valve-seat, a stop to limit the opening of said valve, and valve-stem, of a vibrating member and a pivoted lever having its ends pivotally connected with said valve-stem and member, one of said pivots being located between two spring-cushions of adjustable tension, substantially as described.

12. The combination, with a valve, valve-seat, a stop to limit the opening of said valve, and valve-stem, of a vibrating member, a pivoted lever having its ends pivotally connected with said valve-stem and member, one of said pivots being located between two spring-cushions, and an adjustable connection between one end of said lever and one of said parts, substantially as described.

13. The combination, with a valve, valve-seat, a stop to limit the opening of said valve, and valve-stem, of a vibrating member and a lever pivotally connected at its ends with said valve-stem and member, said lever being supported between its ends by a yielding pivot, substantially as described.

14. The combination, with a valve, valve-seat, a stop to limit the opening of said valve, and valve-stem, of a vibrating member and a lever pivotally connected at its ends with said valve-stem and member and having an adjustable connection with said valve-stem, said lever being pivotally supported between its ends by a yielding pivot, substantially as described.

15. The combination, with a valve, valve-seat, a stop to limit the opening of said valve, and valve-stem, of a vibrating member, a lever pivotally connected at one end with said member, and a collar pivotally connected with the other end of said lever and located upon said valve-stem between two nuts 9, adjustably secured to said valve-stem, substantially as described.

16. The combination, with a valve, valve-seat, a stop to limit the opening of said valve, and valve-stem, of a vibrating member and a lever pivotally connected at its ends with said valve-stem and member and supported between its ends upon a yielding pivot, substantially as described.

17. The combination, with a valve, valve-seat, a stop to limit the opening of said valve, and valve-stem, of a vibrating member and a lever pivotally connected at its ends with said member and valve-stem and supported between its ends upon a yielding spring-supported pivot, substantially as described.

18. The combination, with a valve, valve-seat, a stop to limit the opening of said valve, and valve-stem, of a vibrating member and a lever pivotally connected at its ends with said valve-stem and member and supported between its ends upon an adjustable yielding pivot, substantially as described.

19. The combination, with a valve, valve-seat, a stop to limit the opening of said valve, and valve-stem, of a vibrating member and a lever pivotally connected at its ends with said valve-stem and member and supported between its ends upon a yielding pivot located between cushions, substantially as described.

20. The combination, with a valve, valve-seat, a stop to limit the opening of said valve, and valve-stem, of a vibrating member and a lever pivotally connected at its ends with said valve-stem and member, and supported between its ends upon a yielding pivot located between spring-cushions, substantially as described.

21. The combination, with a valve, valve-seat, a stop to limit the opening of said valve and valve-stem, of a vibrating member and a lever pivotally connected at its ends with said valve-stem and member and supported between its ends upon a yielding pivot located between spring-cushions of adjustable tension, substantially as described.

22. The combination, with a valve, valve-seat, a stop to limit the opening of said valve, and valve-stem, of a vibrating member, a lever pivotally connected at its ends with said valve-stem and member, and a block or collar pivoted to said lever between its ends and hav-

ing a sliding connection with a laterally-movable guide-rod and located between cushions upon said guide-rod, substantially as described.

23. The combination, with a valve, valve-seat, a stop to limit the opening of said valve, and valve-stem, of a vibrating member, a lever pivotally connected at its ends with said valve-stem and member, and a block or collar pivoted to said lever between its ends and having a sliding connection with a laterally-movable guide-rod and located between spring-cushions upon said guide-rod, substantially as described.

24. The combination, with a valve, valve-seat, a stop to limit the opening of said valve, and valve-stem, of a vibrating member, a lever pivotally connected at its ends with said valve-stem and member, and a block or collar pivoted to said lever between its ends and having a sliding connection with a laterally-movable guide-rod and located between spring-cushions of adjustable tension upon said guide-rod, substantially as described.

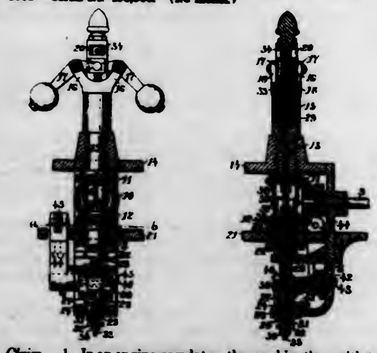
25. The combination, with a valve, valve-seat, a stop to limit the opening of said valve, and valve-stem, of a vibrating member, a lever pivotally connected at its ends with said valve-stem and member, and a block or collar pivoted to said lever between its ends and having a sliding connection with a pivoted guide-rod, and springs secured upon said guide-rod, located on opposite sides of said block or collar, substantially as described.

26. The combination, with a valve, valve-seat, a stop to limit the opening of said valve, and valve-stem, of a vibrating member, a lever pivotally connected at its ends with said valve-stem and member, and a block or collar pivoted to said lever between its ends and having a sliding connection with a pivoted guide-rod, and springs secured upon said guide-rod and located between washers, substantially as described.

27. The combination, with a valve, valve-seat, a stop to limit the opening of said valve, and valve-stem, of a vibrating member, a lever pivotally connected at its ends with said valve-stem and member, and a block or collar pivoted to said lever between its ends and having a sliding connection with a longitudinally-adjustable pivoted guide-rod, and springs secured to said guide-rods on opposite sides of said block or collar, substantially as described.

28. The combination, with a valve, valve-seat, a stop to limit the opening of said valve, and valve-stem, of a vibrating member, a lever pivotally connected at its ends with said valve-stem and member, and a block or collar pivoted to said lever between its ends, having a sliding connection with a pivoted guide-rod, and springs adjustably secured to said guide-rods on opposite sides of said block or collar and located between washers, substantially as described.

485,361. ENGINE-GOVERNOR. FRANK J. WATERS, Providence, R. I., assignor of one-half to George Howe, same place. Filed Apr. 25, 1892. Serial No. 430,803. (No model.)



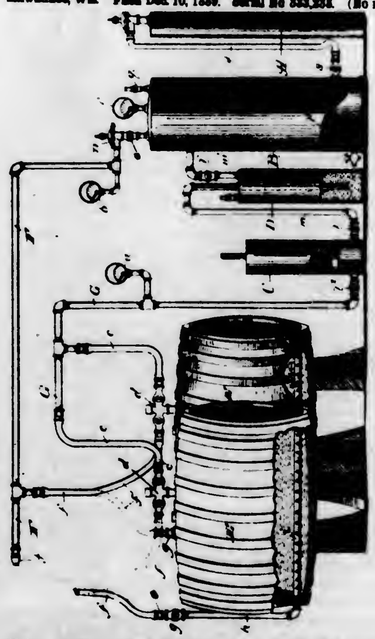
Claim.—1. In an engine-regulator, the combination, with two oppositely-driven gears having friction-cavities formed therein and a double adjustable clutching device located between said gears and adapted to engage the cavity in either, of a sleeve adapted to be driven by the clutching device in the direction of its travel and provided with a screw-thread, a threaded nut working on said threaded portion of the sleeve and pivotally secured to a frame pivoted to a rock-shaft, and a shifting-arm carried by said rock-shaft, as described.

2. The combination, with a governor having two oppositely-rotatable gears and means for driving the same, a clutching device located between said gears and adapted to engage either of them, and a rod secured to said clutching device, of a sleeve adapted to be turned in the direction of travel of the clutching device and having a screw-threaded surface and longitudinal slots, a ring surrounding the end of said sleeve, an interior sleeve contained within said first-mentioned sleeve and having a flanged end, being secured to the ring by pins passing through the slots in the outer sleeve, a nut secured to the end of the clutch-rod and bearing against the plunger end of the interior sleeve, and a nut working on the threaded portion of the sleeve and adapted to be driven against the ring secured to the interior sleeve to draw the clutch-rod in this direction, as described.

3. A governing device consisting of a vertical shaft supported in a suitable bearing and having bracket-arms, weighted levers pivoted to said arms and to a vertical spring-lifted plunger partially contained within a socket at the upper end of said shaft, a beveled gear having a friction-cavity in its lower surface, secured to the lower end of said shaft, and meshing with the beveled gear of a drive-shaft, a beveled gear centrally perforated, having a collar journaled in a bearing parallel to the gear on the vertical shaft, and having a friction-cavity in its upper surface, a rod extending through central vertical perforations in said shaft and plunger, a double adjustable clutching device secured to said rod, located between said parallel gears, and adapted to engage either of them and to be rotated thereby, a rock-shaft suitably journaled, and means intermediate said clutching device whereby the said shaft may be rocked in opposite directions, as described.

4. The combination, with the centrally-perforated spindle 13, vertically journaled in a bearing, provided with the socket 15, and having the arms 16, the spring-lifted plunger 18, partially contained within said socket, the weighted levers 17, pivoted to the arms 16 and having their short ends pivotally secured to the plunger 18, a beveled gear 11, secured to the lower end of the spindle 13 and having a cavity in its lower surface, a beveled gear 12, having a tubular collar journaled in a suitable bearing, a drive-gear 10, intermeshing with the gears 11 and 12, and means for driving the same, of the independently-rotatable rod 33, extending through the central perforations in the spindle and plunger and supported at the upper end, the clutches 36 and 37, supported by said rod between the gears 11 and 12 and adjustable to each other, downwardly-extending fingers 38 on said clutch 37, a sleeve 22, surrounding the lower end of said rod 33 and having an upper cross-arm 23, adapted to be engaged by the fingers 38, a screw-thread 28 on said sleeve, a threaded nut 39, swiveled in the frame 40, working on said screw-thread, and a rock-shaft 43, suitably journaled and pivotally secured to said frame and adapted to be rocked by the raising and lowering of the same, as described.

485,362. METHOD OF IMPREGNATING BEER, &c., WITH CARBONIC-ACID GAS AND APPARATUS THEREFOR. OTTO EWERTSEN, Milwaukee, Wis. Filed Dec. 10, 1889. Serial No. 333,238. (No model.)



Claim.—1. The method of impregnating with carbonic-acid gas uncharged or inadequately-charged beer or other liquid, which consists in holding the liquid to be carbonated in a closed vessel, injecting extraneous carbonic-acid gas into the lower part of the liquid, exhausting injected carbonic-acid gas from above the liquid to a pressure lower than the injecting pressure, reinjecting the exhaust carbonic-acid gas, together with additional extraneous carbonic-acid gas, into the lower part of the liquid, and continuing the circulation until the desired degree of impregnation is obtained, substantially as described.

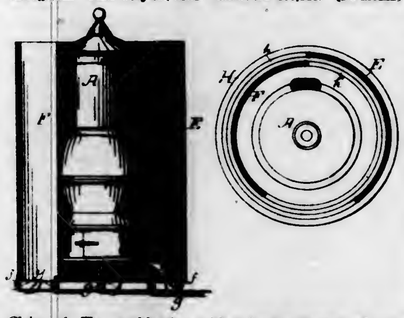
2. The method of carbonating and keeping beer or other liquid, which consists in holding the liquid in a closed vessel, injecting extraneous carbonic-acid gas into the lower part of the liquid, exhausting injected carbonic-acid gas from the liquid to a pressure lower than the injecting pressure, reinjecting the exhaust carbonic-acid gas, together with additional extraneous carbonic-acid gas, into the lower part of the liquid, and continuing the circulation until the liquid is sufficiently impregnated, then stopping the injection and exhaust and substituting for the latter a constant pressure upon the surface of the liquid, substantially as described.

3. In combination with a vessel E, having an internal perforated pipe *i* at or near its base, and with a double-branch faucet *d* at its top, a pipe A, communicating through the vessel with the perforated pipe *i* and provided with a valve *g*, a carbonic-acid-gas reservoir B, surmounted by a pressure-regulating valve *n*, a pipe F, leading from the pressure-regulating valve *n*, a flexible pipe *f*, having a valve *e*, for connecting the pipe F with the pipe *n* or the faucet *d*, as may be required, an exhaust-pump C, and a pipe G *e*, having valves and connecting the pump C with the faucet *d*, substantially as described.

4. In combination with a vessel for containing liquid, a carbonic-acid-gas reservoir, a gas-conduit leading from the gas-reservoir into the base of the vessel, an exhaust-pump, a gas-conduit leading from the top of the vessel to the exhaust-pump, and a gas-conduit leading from the discharge side of the pump into the gas-reservoir, the conduits having valves, substantially as described.

5. In combination with a vessel E for containing liquid, a cylinder A for containing liquefied carbonic-acid gas, a gas-reservoir B, a conduit connecting the two, a pressure-regulating valve upon the reservoir B, a gas-conduit leading from the pressure-regulating valve into the base of the vessel E, an exhaust-pump C, a gas-conduit leading from the top of the vessel E to the pump, and a conduit, including a gas-purifier D, leading from the discharge side of the pump into the reservoir B, the conduits having valves, substantially as described.

485,363. STOVE SCREEN AND FENDER. JOHN ADELMANN, Chicago, Ill. Filed July 20, 1891. Serial No. 400,113. (No model.)



Claim.—1. The combination, with a heat-generator, of a segmental screen and adjustable tracks independent of and disconnected from said heat-generator, upon which said screen travels, so as to have a definitive course around said heat-generator.

2. The combination, with a heat-generator, of an independent movable frame encircling but disconnected from said generator and a segmental screen supported by said frame and adjustable thereon around said generator.

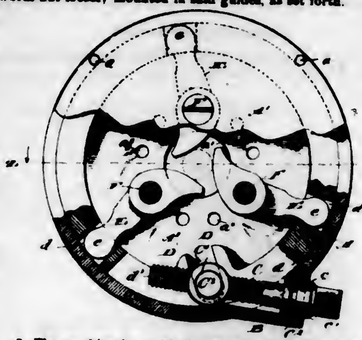
3. The combination, with a heat-generator, of two separate and distinct screens, each of which is movable in a definite course of its own around said generator, as set forth.

4. The combination, with a heat-generator, of an independent frame encircling the same and two screens adjustable in either direction on said frame, so as to wholly or partially encircle said generator.

5. The combination, with a heat-generator, of an independent frame encircling the same, consisting of the two parts hinged together and provided with casters, so that they may be rolled on the floor, and a screen on said frame, as and for the purposes set forth.

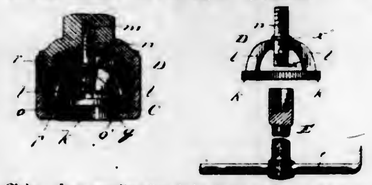
485,364. CHUCK. DANA A. BARBER, Schenectady, N. Y., assignor to the Westinghouse Company, same place. Filed Mar. 31, 1892. Serial No. 427,290. (No model.)

Claim.—1. The combination, with the outer fixed shell and the inner rotatable ring with guides, of the gripping-jaws, the worm, and a worm-nut loosely mounted in said guides, as set forth.



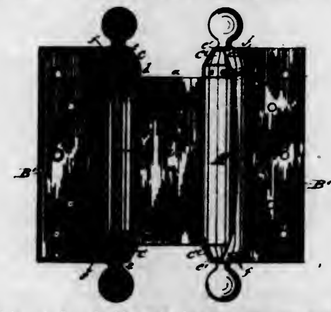
2. The combination, with the outer fixed shell and the inner rotatable ring with guides with space therebetween, of the worm-nut loosely mounted between said guides and having portions working in the guides, and a worm suitably mounted in the outer shell and engaging said nut, as set forth.

485,365. COUPLER-HEAD FOR AIR-BRAKE HOSE. SAMUEL M. BERRY, Chicago, Ill., assignor of one-half to John H. Brown, same place. Filed July 19, 1892. Serial No. 440,443. (No model.)



Claim.—In a coupling for air-brake hose, the combination, with a hollow head A, having openings in its back and face, of a nut B, screwed into the back opening and having a threaded socket *m* in its inner face, and an adjustable clamp D for a gasket C, said clamp being operative through the face-opening in the gasket-packed coupler-head and comprising a rotary screw-stem *n* in the nut-socket *m* and a spider *l*, carrying a clamping-ring *k* and confined and swiveled on the stem *n* to rotate freely thereon, said ring bearing outwardly against the gasket-flange about the inner margin of the face-opening in the coupler-head, substantially as and for the purpose set forth.

485,366. SPRING-HINGE. LORENZ BOEHLER, Brooklyn, N. Y. Filed Apr. 10, 1891. Renewed Apr. 9, 1892. Serial No. 428,464. (No model.)

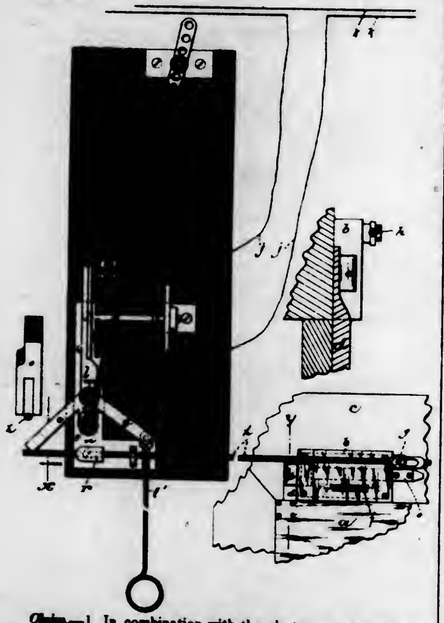


Claim.—1. In a double-spring-hinge, a web connection for the barrels of the hinge, made of three layers, an intermediate layer connecting the opposite ends of the barrels and two outer overlapping layers forming extensions of the opposite ends of the barrels, the layers and barrels being made from one integral piece of spring-steel, substantially as set forth.

2. The combination, with the spring-barrel and pintle of a spring-hinge, of a leaf having a longitudinal stop-flange at its inner edge and perforated ears bent up at right angles to the body of the leaf, pintle-sockets interposed between the ears and barrels, and pins connecting

the said stop-flange with the pintle-sockets, said pintle-sockets having bushings extending into the perforations of the ears, substantially as set forth.

485,867. ELECTRICAL DOOR-TRIP FOR ENGINE-HOUSES. ADAM BEHR, Newark, N. J. Filed Mar. 14, 1892. Serial No. 424,736. (No model.)



Claim.—1. In combination with the electro-magnet and door-catches and connecting-rod *A*, an armature-lever having a hammer to engage said rod or a bearing thereon, and an eccentric bearing for a spring, and said spring, all substantially as set forth.

2. In combination with a door and its catch, a co-operating catch and its rod *A*, an armature-lever and its hammer and eccentric bearing, the latter being connected with a source of power and a magnet controlling said armature, substantially as and for the purposes set forth.

3. In combination with the trip-connecting rod *h* and its anvil or bearing *r*, an armature-lever having arms *o p q*, the first serving as a hammer, the second as a bearing for a spring or similar means for exerting power, and the last to receive a handle *t*, an electro-magnet, and fire-alarm electric-circuit wires, and a spring or means for exerting power, all arranged and combined substantially as and for the purposes set forth.

4. In combination with the door-catches and rod connecting therewith, adapted to receive the blow of the hammer, an armature-lever *l*, arranged on a fulcrum *m*, a spring *t*, having a bearing on said lever eccentric to the fulcrum center, the line of power of said spring being a little to one side of said center, and an electro-magnet, and fire-alarm-circuit wires, substantially as set forth.

485,868. THILL-COUPLING. CHRISTOPHER C. BRADLEY, Syracuse, N. Y. Filed July 13, 1891. Serial No. 399,270. (No model.)

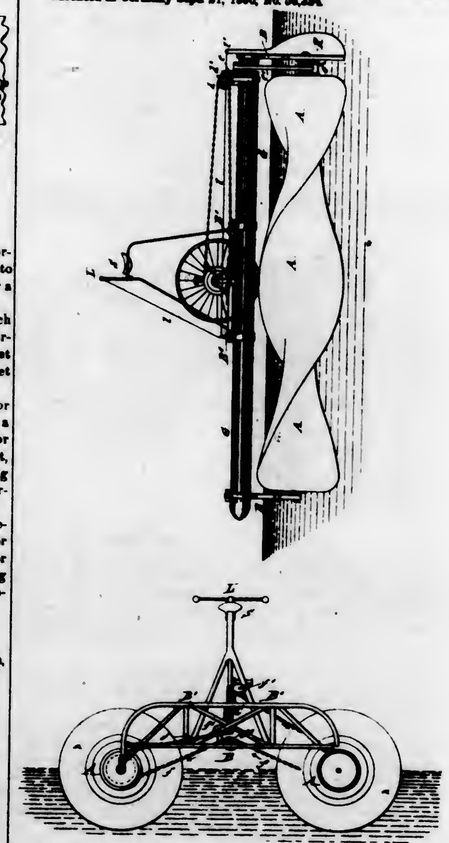
Claim.—1. The combination, with the thill-iron provided with a rearwardly-projecting rigid eye-section and a movable eye-section hinged to the rear end of the rigid section, of a loop detachably connected with its upper end to the front end of said movable section, a clamping-lever connected with the lower end of said loop, and a tension-spring secured at its front end to the thill-iron and pivotally attached at its rear end to said clamping-lever, substantially as set forth.

2. The combination, with the thill-iron provided with a rearwardly-projecting rigid eye-section, of a movable eye-section hinged to the rear end of said rigid eye-section and provided at its front end with a lip, a loop detachably connected with its upper end to said lip, a clamping-lever connected with the lower end of said loop, and a tension-spring secured at its front end to said thill-iron and pivotally connected at its rear end to said clamping-lever, substantially as set forth.

3. The combination, with the axle provided with a journal, of a thill-iron provided with a rearwardly-projecting rigid eye-section and a movable eye-section hinged to the rear end of the rigid section, both sections embracing said journal, a loop detachably connected at its upper end with the front end of the movable eye-section, a clamping-lever connected with the lower end of the loop, and a spring which is secured to the thill-iron and to which the clamping-lever is pivoted, substantially as set forth.

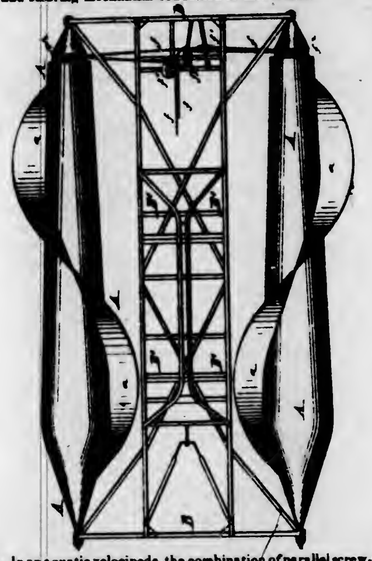
4. The combination, with the axle provided with a journal having the middle of its bearing-surface arranged at a greater distance from the center of the axle than the end portions of the bearing-surface, of a thill-iron provided with a rigid and a movable eye-section having correspondingly-shaped bearing-surfaces, and a clamping device whereby the eye-sections are closed upon the journal, substantially as set forth.

485,869. AQUATIC VELOCIPEDE. JOHANNES F. BREYER, Hamburg, Germany. Filed Nov. 27, 1891. Serial No. 413,367. (No model.) Patented in Germany Sept. 31, 1890, No. 56,294.



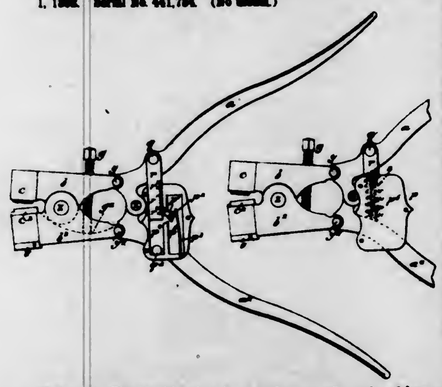
Claim.—1. In an aquatic velocipede, the combination of parallel screw-propellers, floats connected by arms to said propellers, a transverse frame connected to said floats, a seat on said frame, cranks connected to the end of said propellers, bevel-gears on the end of said frame, one of said gears being provided with a crank, rods connecting the bevel-gear crank with a crank on the propeller, and means for rotating said gears.

2. In an aquatic velocipede, the combination of parallel screw-propellers, floats connected by arms to said propellers, a transverse frame connected to said floats, a seat on said frame, cranks connected to the end of said propellers, bevel-gears on the end of said frame, one of said gears being provided with a crank, rods connecting the bevel-gear crank with a crank on the propeller, means for rotating said gears, and steering mechanism connected to said frame.



3. In an aquatic velocipede, the combination of parallel screw-propellers, floats connected by arms to said propellers, a transverse frame connected to said propellers, a rudder attached to said frame, seats on said frame, a steering-bar also on said frame connected by suitable mechanism to a rudder, a sprocket-wheel on said frame, and mechanism connecting said sprocket-wheel with said propellers.

485,870. SEAL-PRESS. EDWARD J. BROOM, East Orange, N. J., assignor to the R. J. Broom & Company, New York, N. Y. Filed Aug. 1, 1892. Serial No. 441,794. (No model.)

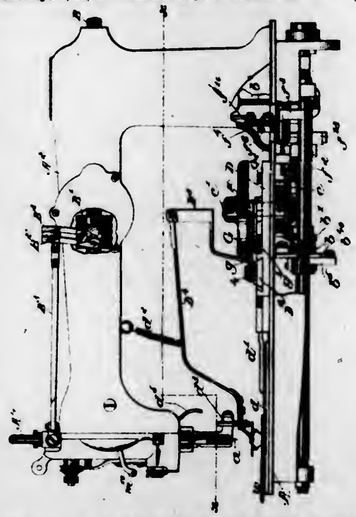


Claim.—1. The combination, in a seal-press, of a pair of lever-handles connected by a toggle, a pair of short levers connected with said handles and with each other by pivots, a pair of dies carried by the free ends of said levers, a reopening-spring acting on said handles and levers, a gage-screw, which limits the separation of the dies, and a pawl-carrier and ratchet part attached to the respective handles, substantially as hereinbefore specified.

2. The combination, in a seal-press, of a pair of lever-handles, a pair of seal fastening and stamping dies, means for transmitting the movements of said handles to said dies, a rack part attached to one handle and having a ratchet-rack and a reversing-notch at each end of said rack, and a pawl-carrier attached to the other handle and inclosing a reversing-pawl and its spring, substantially as hereinbefore specified.

3. In a seal-press, the combination, with a pair of lever-handles connected with each other by a toggle, including a pintle *x*, a pair of short levers connected with said handles and with each other by pivots *y*, *y*^{4}, and *z*, and a pair of dies carried by said levers, of a pawl-carrier attached to one of said handles by said pintle *x* and one of said pivots *y y*^{4}, and having as parts thereof a reversing-pawl, its spring, and a periphery concentric with said pintle, and a rack part rigidly attached to the other handle and provided with a rack conformed to said periphery of the pawl-carrier coacting with said pawl and having reversing-notches at its respective ends, substantially as hereinbefore specified.

485,871. SEWING-MACHINE. JAMES H. CLARK, Chicago, Ill. Filed Sept. 7, 1891. Serial No. 404,966. (No model.)



Claim.—1. In a machine for staying, the following instrumentalities, viz: overseaming-stitch-forming mechanism, a clamp to hold the material to be stayed, the said clamp having an extended bearing-surface, a roller-presser acting upon the said surface, a fulcrum-lever, a heart-cam, and lever mounted upon the said fulcrum-lever and actuated by the said cam and connected with the said clamp, to operate substantially as described.

2. In a machine for staying, the following instrumentalities, viz: overseaming-stitch-forming mechanism, a clamp to hold the material to be stayed, the said clamp having an extended bearing-surface, a roller-presser acting upon the said surface, a fulcrum-lever, a heart-cam, a lever mounted upon the said fulcrum-lever and actuated by the said cam and connected with the said clamp, and a clutch mechanism and gear intermediate it and the said cam, and means to move the said clutch, to operate substantially as described.

3. The shaft, the bevel-gear loose thereon and having ratchet-teeth, the pawl and pawl-carrier, means to move the said pawl, the bevel-gear *e*, the shaft *d*, and the cam G, combined with the two-part clamp having a cross-slide intermediate lever *g*, connected to and moved by the cam to reciprocate the cross-slide to which it is pivoted to thereby move the two-part clamp, and the base-plate having guideways to receive the said cross-slide, the combination being and operating substantially as described.

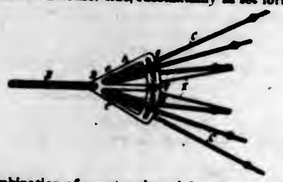
485,872. HAND CULTIVATOR-HOE. GEORGE S. DUNHAM, Kalamazoo, Mich. Filed May 28, 1892. Serial No. 434,714. (No model.)

Claim.—1. A hand cultivator-hoe consisting of a handled frame and the wings comprising a series of diverging rearwardly-extending bars bearing teeth, said wings being pivotally attached at the same point by a single pivot to the handled frame at their forward end and adjustably attached to the rear end of the frame, so as to be swung laterally, substantially as set forth.

2. A hand cultivator-hoe comprising a handled frame, wings consisting of a series of rearwardly-extending diverging bars bearing

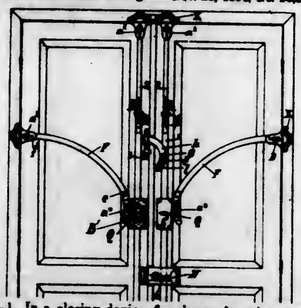
teeth, said wings being attached at their forward ends to the frame by the same pivot and adjustably and detachably attached to the rear end of said frame, and a shield attached to the rear end of the frame between said wings, substantially as set forth.

3. The combination of a handled frame and two wings bearing teeth, said wings being fulcrumed at their forward end to the frame by the same pivot and detachably connected to the rear end of the frame, whereby one of the wings may be swung laterally to the opposite side of the cultivator and the other wing swung around beneath the handle to the other side, substantially as set forth.



4. The combination of a sector-shaped frame provided with the integral prong, a handle attached to said prong, the rear side of said frame being provided with the slots, wings consisting of a series of bars bearing teeth, said bars converging to the forward end and fulcrumed to the frame by the same pivot, and thumb-screws passed through the slots of the frame and the wings adjustably and detachably connecting said wings with the frame, substantially as set forth.

485,878. BOLT. GUSTAVE DROUET, Paris, France. Filed Apr. 11, 1892. Serial No. 429,741. (No model.) Patented in France Sept. 2, 1891, No. 214,671; in Belgium Nov. 17, 1891, No. 97,227; in Spain Nov. 20, 1891, No. 12,693, and in England Nov. 28, 1891, No. 20,535.



Claim.—1. In a closing device for doors, &c., the combination, with the main bolts, of side bolts, curved rods by which the side bolts are connected to the main bolts, and a means for throwing the main bolts.

2. In a closing device for doors, &c., the combination, with sectional rods A A′, of bolts carried thereby and a pinion arranged to engage racks carried by the inner sections of the rods, substantially as described.

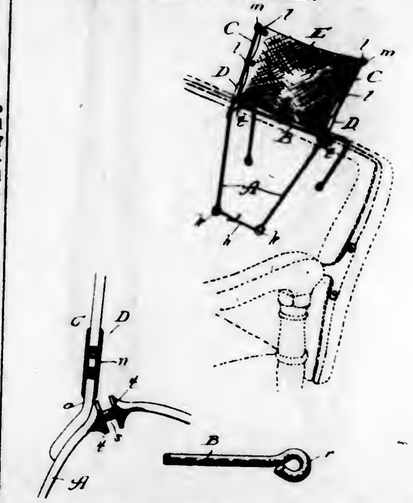
3. In a closing device for doors, &c., the combination, with rods A A′, of bolts carried thereby, a means for throwing the rods, curved rods F, adjustable connections between the rods A A′ and the rods F, and bolts carried by the rods F, substantially as described.

4. A closing device for doors and shutters characterized by the following principal parts: the straight bars A A′, carrying racks at their inner ends, gearing with a pinion mounted on the pin *b*, manipulated by the handle *b′* and provided with the connecting-plates E, to which are screwed the curved rods F, said straight bars being composed of two parts sliding into each other and equipped with a collar G, the straight and curved bars being provided with bolt-shaped end pieces engaging with catches Z and guided by guiding devices passed through slots a^3, arranged in the bolts, the bent H, keyed upon the pin *b* and equipped with the lever-arm A, which acts by means of a small chain upon the lock-bolt, the second bent H′, mounted loosely upon the pin *b′*, but which can be made rigid by the key K, and thus firmly connected to the pinion B, and the piece M, formed at the rear end of the lock-bolt and provided with a slot *m*, the square part of which fits snugly around the square b^2, keyed upon the pin *b*, substantially as described.

5. In a closing device for doors and shutters, a straight bar A, formed in two pieces sliding into each other and kept in place by a collar G, a similar straight bar A′, provided with a little side notch *n*, which engages with a stud N, arranged on the rear end of the lock-bolt, a curved rod F, provided at its outer end with a bolt a^3, equipped with a slot a^2, guided by the guiding-stud *d* and engaging with the catch Z, said rod being connected at its inner end to a projection of the straight bar, a pinion gearing with the toothed inner ends of the straight bars A and A′ and acted upon by a key Q, and a curved bar having at its outer end a bolt and jointed to the straight bar by means of a connecting-piece E′, substantially as described.

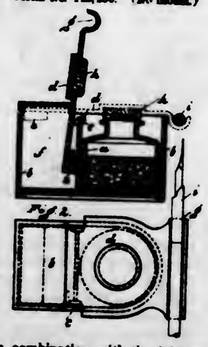
6. In a closing device for doors and shutters, in combination with the straight bars equipped with racks and bolts acted upon by a pinion, curved bolts L, pivoted at *l* and guided by a stud O, fixed upon the straight bar sliding in slot *l′*, so that these bolts engage with catches Z′, substantially as hereinbefore described and set forth.

485,874. HEAD-REST. EDWARD H. DURAND, Kenosha, Wis. Filed Feb. 2, 1892. Serial No. 420,035. (No model.)



Claim.—A folding detachable head-rest for car-seats and the like, made of wire and comprising the following elements: a lower portion comprising similar wires A, curved at their upper ends to the form of hooks, short extensions secured to said wires and projecting upward from each at about the point of curvature, a brace-rod joining the two wires at their hook portion and revolubly connected to each, wires C, having a hinged connection with the short wires and projecting upward therefrom and having sleeves thereon capable of moving over the hinged joint to render the same inflexible, a strip of flexible material looped upon the upward-extending wires to extend between them, and means for connecting the lower extremities of the wires A, whereby the wires C may be maintained in a distended condition, substantially as described.

485,875. INKSTAND. MATTHEW FABER, Munich, Germany. Filed Aug. 8, 1892. Serial No. 442,436. (No model.)

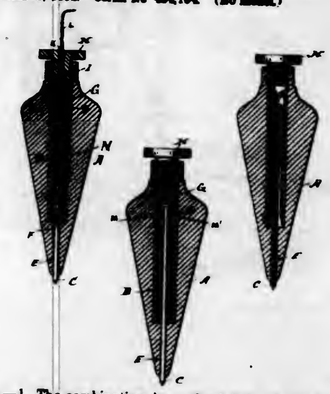


Claim.—1. In combination with the inkstand, a cover pivoted thereto and adapted to receive a pen or pencil to close the same and the means arranged within the stand for automatically opening the cover, substantially as described.

2. In combination, the stand and the cover pivoted thereto and adapted to close the stand, said cover having a weighted extension within the stand, substantially as described.

3. In the stand having a permanent covering portion extending partially over it, a cover hinged at the edge of said permanent top and adapted to receive the weight of the pen or the like, said cover having an extension within the stand adapted to fit against the under side of the permanent cover, substantially as described.

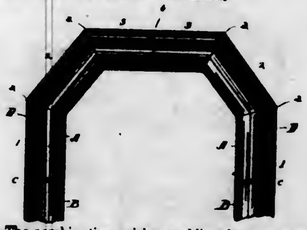
485,876. PLUMB-BOB. HERBERT M. PULLEN, Philadelphia, Pa. Filed Mar 5, 1892. Serial No. 424,134. (No model.)



Claim.—1. The combination, in a plumb-bob, of a body and a spindle within and projecting from said body and means, substantially as set forth, for advancing said spindle as its point wears away.

2. The combination, with a plumb-bob, of a spindle within and projecting beyond said plumb-bob, a head on said spindle, a threaded hole, and a screw within said hole engaging the head of said spindle and adapted to move said spindle forward, and a spring surrounding said spindle and bearing against said head and the bottom of said hole, substantially as set forth.

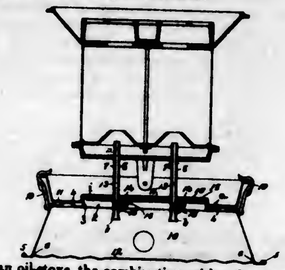
485,877. MOLDING. JAMES M. GLOVER, Richmond, Ind. Filed Apr. 7, 1892. Serial No. 428,134. (No model.)



Claim.—The combination, with a molding for a casket or coffin, of a fabric for covering the same, said fabric being cut to a pattern corresponding to the angles of the molding for one-half of the longitudinal dimensions of the casket or coffin at one end and applied thereto by an adhesive preparation, thereby producing a smooth unbroken surface over the angle-corners of the molding, substantially as described.

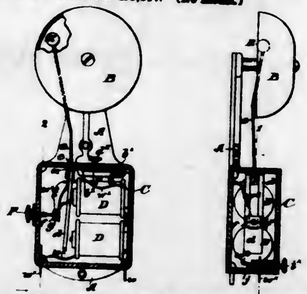
485,878. OIL-STOVE. JOSEPH GOLDSMITH, New York, N. Y. Filed Mar. 4, 1892. Serial No. 423,993. (No model.)

Claim.—1. A wick-tube formed of two pieces of sheet metal that are united by a flat seam and one of said pieces having struck-up ears 16, which serve as bearings for the spindle 15, carrying the wick-raising ratchets 14, and openings *a*, adapted to receive said wick-raising ratchets 14, substantially as described.



2. In an oil-stove, the combination, with a fount or oil-reservoir 10, formed with the struck-up supporting projections 4, open on all sides, a central opening that is surrounded with an upwardly-extending substantially-vertical flange 3, having bead *i*, and slots *d d*, adapted to receive spindle 15, of a tube-supporting pan having central flat depressed portion 17, adapted to receive said flange 3, so as to prevent the displacement of the liquid in said oil-reservoir, substantially as described.

485,879. ELECTRIC BELL. JOHN R. HARE, New York, N. Y. Filed June 7, 1892. Serial No. 436,017. (No model.)



Claim.—1. In an electric bell, the combination, with the casing, the magnet mounted therein, and the vibrating armature, of the armature-spring secured to the armature at one end and to a fixed part at its other end, the tension-regulating screw which bears on said spring, and a bearing for the spring, arranged between the point of attachment of the latter to the armature and the point where the tension-regulating screw bears thereon, substantially as set forth.

2. In an electric bell, the combination, with the metal casing, the magnet mounted therein, the vibrating armature, and the contact-spring carried by the latter, of the contact-plate mounted on said spring and insulated therefrom, the contact-piece on the casing, connected electrically with the latter, and the terminal wires of the magnet-coils, said wires being connected one to the casing, but insulated therefrom, and the other electrically with the said contact-plate near the contact-point, whereby said wire serves to measurably retard the spring and prevent undue vibrations in the same, as set forth.

3. In an electric bell, the combination, with the casing having a contact-piece in the circuit, the magnet mounted in the casing, its vibrating armature, and the spring *f″*, carried by the armature, of the metallic contact-plate *f*, mounted on the back of said spring near its free end and insulated therefrom, said plate being in and forming a part of the circuit, as set forth.

4. In an electric bell, the combination, with a casing having in it a small aperture with a thin margin for the passage of the hammer-arm, of the inclosed electro-magnet, its armature secured rigidly to one arm or branch of an L-shaped spring *d′*, the other arm or branch of which is secured to the casing, the said spring having its angle or bend, about which the armature vibrates, arranged closely adjacent to the said aperture in the casing, the said hammer-arm secured to the armature at the point where the latter approaches nearest to the aperture in the casing, whereby the arm is permitted to practically close said aperture and exclude insects and dust, and the hammer and gong, as set forth.

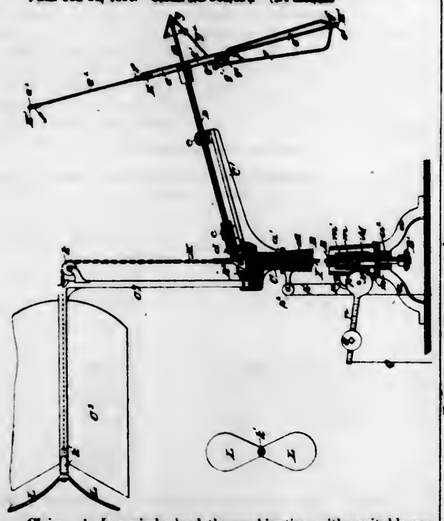
5. In an electric bell having in it an aperture for the passage of the hammer-arm and a thin fixed plate c^{x}, applied over said aperture, said plate having in it an aperture through which the hammer-arm loosely plays, of the inclosed electro-magnet, its armature secured rigidly to one branch of an L-shaped spring *d′*, the other branch of which

is fixed, the said spring having its angle or bend about which the armature vibrates arranged closely adjacent to the aperture in the plate c^x, the said hammer-arm secured to the armature at the joint where the latter approaches nearest to the plate c^x, the hammer, and the gong, all arranged to operate substantially as set forth.

6. In an electric bell, the combination, with a metal casing C, having in it holes to receive the terminals of the circuit-wires, of binding-screws set in said casing in position to bind the wires in said holes, as set forth.

7. The combination, with the metallic casing C, having a hole with an insulated lining to receive a circuit-wire, of the screws i^x and j, mounted from the casing and adapted to clamp the circuit-wire between their tips, as set forth.

485,880. WIND-WHEEL. THOMAS J. HARRISON, Brooklyn, N. Y. Filed Oct. 20, 1890. Serial No. 368,634. (No model.)



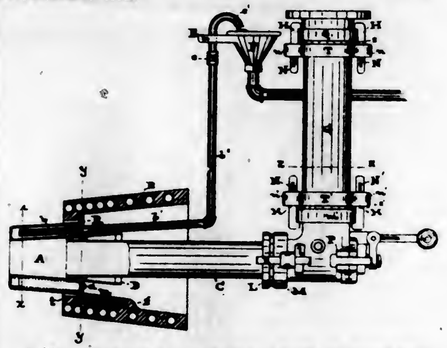
Claim.—1. In a wind-wheel, the combination, with a suitable support, a wind-wheel shaft radiating therefrom, a wind-wheel secured on the shaft, and a vane for holding the wind-wheel toward the wind, of a longitudinally-movable rod for adjusting the fans on the wind-wheel, a vertically-sliding operating-rod having a cam engagement with the fan-adjusting rod, a pair of wings located at the rear end of the vane, a sliding rod or plunger forming a support for the wings, and a flexible connection between the said sliding rod or plunger and the vertically-sliding operating-rod, substantially as set forth.

2. The combination, with the hollow support, the driving-shaft journaled therein, a vertically-movable operating-rod seated within the shaft and connected with the wings, the wind-wheel, and means for communicating the movements of said operating-rod to the fans of the wind-wheel, of a rack-bar secured to the vertically-movable operating-rod, a toothed sector pivoted to the supporting-frame in engagement with the rack-bar and provided with a graduated arm, a weight adapted to slide along the graduated arm, a gravity-pawl in engagement with teeth upon the sector, and means for positively operating the gravity-pawl, substantially as set forth.

485,881. TUYERE. JOHN M. HARTMAN, Philadelphia, Pa. Filed Apr. 21, 1887. Serial No. 235,503. (No model.)

Claim.—1. In combination with a tuyere having a double shell forming an annular water-space, the straight longitudinal partition extending the entire length at the top of the tuyere and completely dividing said space at that point, the water-inlet pipe projecting inward on one side of said partition to a point in close proximity to the nose, the water-exit pipe similarly arranged upon the opposite side of said partition, and the straight partition arranged diametrically to the first one and extending from the butt to a point in close proximity to the nose, substantially as set forth, whereby the fresh water is delivered without previous contact with the tuyere metal directly against the upper portion of the nose and is compelled to travel to the point of discharge around the metal of the nose.

2. The combination, with the tuyere, of a removable partition *f*, extending longitudinally partly along the bottom, and an opening *a* in the butt and extending on each side of said partition, as and for the purposes set forth.



3. The combination of a tuyere-breast having an inwardly-projecting annular flange at its front end, a tuyere of less external diameter than the opening of said flange and having an outwardly-projecting flange around its butt, and means, substantially as set forth, whereby said flanges are secured in contact and an annular chamber is formed between the exterior of the tuyere and the corresponding end portion of the tuyere-breast, substantially as and for the purposes set forth.

4. The combination, with the tuyere, of the packing-cup D, removably secured to its rear end, and the water supply and discharge pipes of the tuyere, arranged externally to said packing-cup, as set forth.

485,882. NURSERY-CHAIR. FREDERICK L. HEBNER, Poughkeepsie, N. Y., assignor to Charles H. Arnold, same place. Filed June 10, 1892. Serial No. 436,260. (No model.)

Claim.—The combination of a chair having arms containing slots and a seat having pins projecting laterally from the sides thereof with a detachable table having rearward and downward extending arms, said table-arms having at their upper ends pins co-operating with the slots in the chair-arms and at their lower ends slots co-operating with the pins on the chair-seat, and a lock carried by the chair-seat to engage the table-arm at a point opposite to the slot therein to hold the table in position for use, substantially as set forth.

485,883. DENTAL CHAIR. SAMUEL T. HENKLE, Baltimore, Md., assignor to the Henkle Dental Chair Company, Chicago, Ill. Filed Jan. 22, 1891. Serial No. 378,666. (Model.)

Claim.—1. In a dental chair, a vertically-adjustable frame composed of vertical side bars connected by cross-braces, a seat pivoted to and supported through suitable devices by said adjustable frame in such a manner as to be capable of being folded on said frame, a folding supporting-frame composed of legs pivoted to each other at the top and having cross-braces so secured to the legs as to be capable of being folded therewith, the front legs of said supporting-frame having suitable guides, in which said adjustable frame moves, an operating rod or shaft journaled to the front legs of said supporting-frame, with suitable devices secured to said adjustable frame and to said shaft, whereby the adjustable frame may be raised and lowered on the supporting-frame, and a ratchet rigidly secured to one of the front legs of the supporting-frame and adapted to receive a locking-pin operated by a lever pivoted to the operating-crank of said rod, whereby said adjustable frame may be locked at any desired point, substantially as shown and described.

2. In a dental chair, the vertically-adjustable frame E, provided with lugs having depressions in the shape of a segment of a circle, braces G, pivoted at their lower ends to the frame E and having slots *g'*, with offsets at the upper ends of the slots, the seat A, pivoted at its front to the frame E and having at its rear pins *h* rigidly secured thereto and adapted to enter the offset of the slots *g'*, of the braces G, by means of which the seat is supported at its rear end, a supporting-frame carrying on the inner faces of its front legs guiding-rods for the adjustable frame, a cross-shaft having bearings in the supporting-frame and carrying suitable gearing adapted to connect it with the adjustable frame, the handle S for operating said cross-shaft, whereby the adjustable frame can be raised and lowered, and the lever S', pivotally connected to the handle S and having at one end a locking-pin o^3, and the ratchet T, rigidly secured to said supporting-frame and adapted to engage with the locking-pin o^3, so that the adjustable frame can be locked at any desired point, substantially as shown and described.

3. In a dental chair, the back B, link N, pivoted to the back at a short distance from its lower end, with suitable devices for making the link rigid with the back when desired, the seat A, to which said link is also pivoted, the bars H, having rack-teeth on their free ends and pivoted at their upper ends to the supporting-piece I, which is pivoted to the seat at its lower end and to the arm proper M at its upper end, M being pivoted to the chair-back, the lugs K, having pins *k*, secured to the seat and adapted to fit in said rack-teeth, the rod L', passing through the chair from side to side, and the cams L, rigidly secured thereto, with suitable devices for operating the same and so arranged under and with reference to the bars H as to hold said bars in contact with the pins *k* or withdraw them from contact with the pins and allowing the back to be adjusted at any point and to be folded onto the seat, substantially as shown and described.

4. In a dental chair, the combination of the back, links pivoted to the back a short distance from its lower end, with suitable devices for making the link and back rigid with each other when desired, a seat to which the link is also pivoted, and arms pivoted to the back and to their supports with suitable devices whereby the back can be adjusted and secured at any desired angle with the seat whenever the link and back are made rigid and arranged so that the back and seat can be folded on each other whenever the link has a pivotal connection only with the back, and an adjustable folding frame supporting said seat through suitable devices, substantially as shown and described.

485,884. COMBINED RAIL-BRACE AND TIE-PLATE. DANIEL F. HOLMAN, Chicago, Ill. Filed June 22, 1891. Serial No. 397,116. (No model.)

Claim.—A tie-plate provided with a sharpened or beveled end and having its lower face concaved from its outer edge and having a depressed bed of about the width of the flange of a rail and adapted

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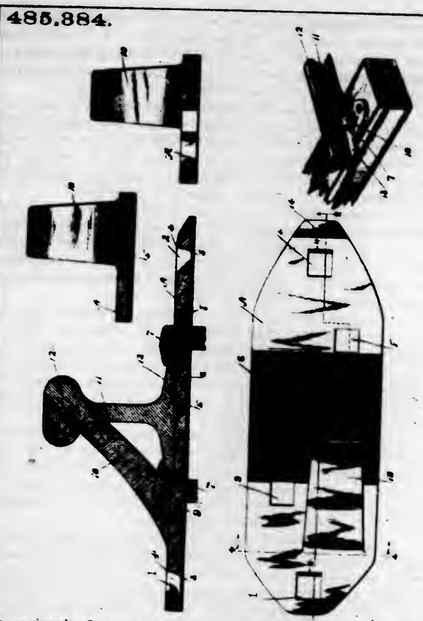
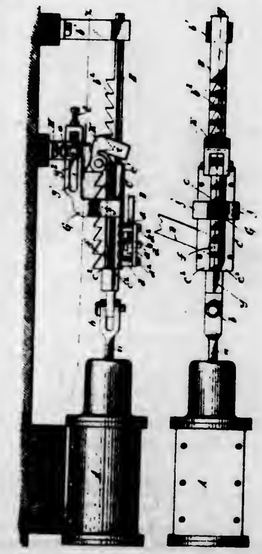


to receive the flange of a rail, holes or openings 8 and 9 in said tie-plate adjacent the sides of said depressed bed, an uprising arm rising from one side of said bed and located to engage the under face of the tread of the rail, and holes or openings 2 in said tie-plate near the outer ends of the same, said holes or openings 2 having straight vertical walls, with the upper portion of the walls located toward the inside of the track chamfered to admit the head of a spike.

485,885. CAR-BRAKE. JAMES HOWARD and HERBERT R. HOWARD, New York, N. Y. Filed June 13, 1892. Serial No. 436,453. (No model.)



Claim.—1. The combination, with the ratchet-bar, the sliding block, and the brake-lever connected with the sliding block, of a pawl connecting the sliding block with the ratchet-bar and provided with a bifurcated or divided weight or wing which straddles the ratchet-bar, substantially as set forth.

2. The combination, with the ratchet-bar, the sliding block, and the brake-lever connected with the sliding block, of a pawl pivoted to the sliding block and engaging with the ratchet-bar and having a depending wing formed with a stop, which extends underneath the ratchet-bar, substantially as set forth.

3. The combination, with the ratchet-bar, the sliding block provided with a flange and a row of teeth, the pawl connecting the sliding block with the ratchet-bar, and the brake-lever connected with the sliding block, of a detent-pawl engaging with the teeth of the sliding block and formed with a depending wing having a stop, which extends underneath said flange, substantially as set forth.

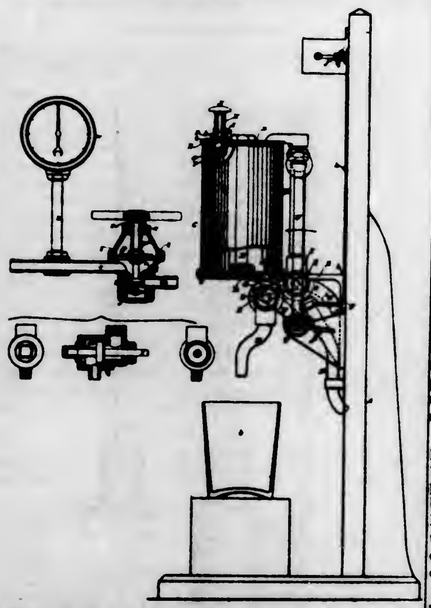
4. The combination, with the ratchet-bar, the sliding block, the pawl connecting the sliding block with the ratchet-bar, and the brake-lever, of a detent-pawl engaging with the sliding block and having a longitudinal slot and an adjustable bearing-piece, whereby the effective length of the slot can be regulated, and a supporting-pin passing through said slot, substantially as set forth.

5. The combination, with the ratchet-bar, the sliding block, the pawl connecting the sliding block with the ratchet-bar, and the brake-lever, of a detent-pawl engaging with the sliding block and having a longitudinal slot, an adjustable bearing-piece arranged in said slot, an adjusting-screw arranged in the detent-pawl and connected with the bearing-piece, and a supporting-pin passing through said slot, substantially as set forth.

6. The combination, with the ratchet-bar, the sliding block, the pawl connecting the sliding block with the ratchet-bar, and the brake-lever, of a detent-pawl engaging with the sliding block and having a slot on its rear end, a transverse supporting-pin arranged in said slot, and hangers provided with vertical slots which receive the ends of said pin, substantially as set forth.

7. The combination, with the ratchet-bar and the brake-lever, of a sliding block connected with the ratchet-bar and provided on its under side with depending lugs, between which the brake-lever is arranged, and a plate secured to said lugs and supporting the brake-lever, and a pin connecting the brake-lever with said plate, substantially as set forth.

485,886. MACHINE FOR MANUFACTURING AND DISPENSING AERATED WATER. JOHN P. JAMESON, Liverpool, England. Filed June 17, 1892. Serial No. 436,764. (No model.) Patented in England Dec. 30, 1890, No. 20,988, and Feb. 27, 1892, No. 3,117.



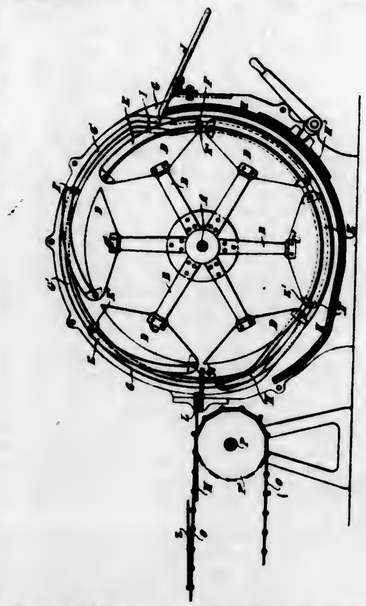
Claim.—1. An apparatus for dispensing aerated water, provided with a measuring-vessel having inlet and outlet passages and a shift-valve and a spring to control the shift-valve, in combination with a floating valve, all substantially as set forth.

2. An apparatus for dispensing aerated water, provided with a measuring-chamber having inlet and outlet passages and a spring shift-valve, in combination with a floating valve and a spindle to operate at will either both the said valves or only the shift-valve, substantially as and for the purpose set forth.

3. In an apparatus for dispensing aerated water, a glass dispensing-cylinder provided with outlet and inlet valves and a lever having a to-and-fro movement to operate the inlet and outlet valves, in combination with a cover for the cylinder, provided with a shift-valve opening directly to the atmosphere and provided with a knob or handle to operate the shift-valve separately and independently from the other valves and at the will of the operator to allow the escape of air, all substantially as and for the purposes set forth.

4. In an apparatus for dispensing aerated water, the combination of a measuring and dispensing cylinder, a reservoir, and a pipe connecting the cylinder with the reservoir with a valve in the said pipe, a valve-stem, and two diaphragms on opposite sides of the valve to regulate the supply-pressure from the reservoir to the measuring-vessel, all as and for the purpose set forth.

485,887. APPARATUS FOR CLEANING TIN AND THERE PLATES. THOMAS JENKINS, Llanelly, England, assignor to John Henry Regers, same place. Filed Apr. 25, 1892. Serial No. 430,898. (No model.)



Claim.—1. The combination of the carrier M, the tipping feed-table L at the inner end thereof, the revolving drum, carriers or holders mounted thereon and carried around thereby, a cleaning-trough, means for revolving the drum, means for opening and closing the holders, and means for actuating the carrier and for tipping the table, the organization being such that the carrier delivers the plate to the feed-table, which is tipped by the drum at the proper time to cause it to drop the plate into a holder, by which it is carried through a cleaning-trough.

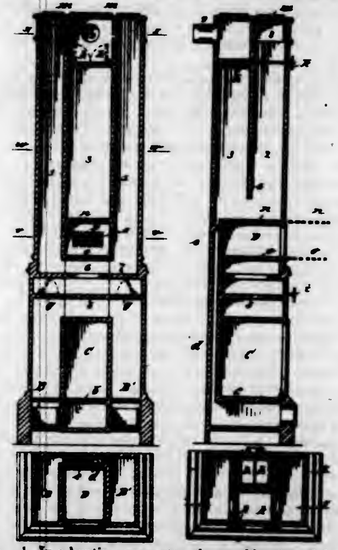
2. The combination of a continuously-revolving horizontal drum provided with a series of holders, each consisting of a member D, which is fixed to the frame of the drum, and a member E, which is pivoted to the drum at one end, endless cam-grooves G', connections between these grooves and the outer ends of the movable members E of the clamps, and a cleaning-trough, the organization being such that each holder is closed as soon as a plate has entered it, is kept closed while the plate is carried through the cleaning-trough, and opened at the proper time to permit the cleaned plate to fall out.

3. The plate-holders herein described for carrying plates through a trough of cleaning material, comprising parallel plates D and hinged bars E, having hooks on their outer ends, the hooked ends of said bars being arranged to alternately enter between and to move away from the plates D, so as to first take hold of and subsequently release a plate, substantially as described.

4. The combination of the shaft A, plates D, hooked bars E, cam-grooves G', and trough H, substantially as described.

5. The combination of a revolving drum and a series of plate-holders, each comprising a series of parallel plates D, a series of bars E, hinged at one end and provided with hooks at their outer ends, and means for moving the bars on their hinges toward and from the plates D, substantially as described.

485,888. HEATING APPARATUS. HENRY P. H. KRAFFT, Oldenburg, Germany. Filed Feb. 8, 1892. Serial No. 420,982. (No model.)



Claim.—1. In a heating apparatus, the combination of the independent fireplaces B B' and intermediate air-chamber C, having a perforated front and bottom, the front of the apparatus containing an air-induction below the bottom of said chamber C, substantially as set forth.

2. In a heating apparatus, the combination, with the independent fireplaces B B' and intermediate air-chamber C, having a perforated front and bottom, of the upper chamber D, having front and rear openings, the latter communicating with a vertical air-passage, the front of said apparatus containing an air-induction below the bottom of chamber C and communicating with said vertical air-passage, substantially as set forth.

3. In a heating apparatus, the combination of the independent fireplaces B B' and intermediate air-chamber C, having a perforated front and removable perforated bottom, together with upper chamber D, having removable top and bottom and openings and communications, substantially as set forth.

4. The combination, with the furnaces, intermediate chamber C, and upper chamber D, constructed and operating as described, of the upper compartments 2 3 and extended side combustion-passages communicating with the compartment 2, said compartments and passages having top openings closed by cap-plates, substantially as set forth.

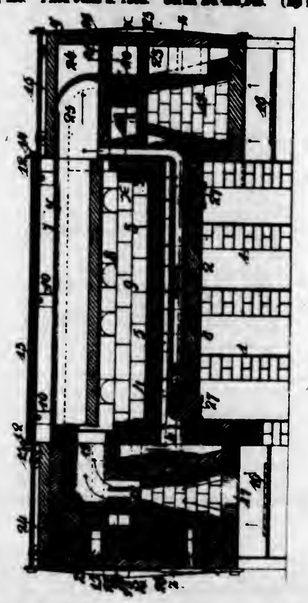
5. The combination, with the furnaces and intermediate chamber C, of the upper chamber D and horizontal partitions 5 7 beneath the same, the former having side openings closed by pivoted plates and the latter having an opening centrally beneath the chamber D, substantially as set forth.

485,889. GARMENT-HOOK. JOHN KILLINGER, Wayne, Pa. Filed July 25, 1892. Serial No. 441,036. (No model.)

Claim.—1. In a garment-hook, the combination, with the shank, of a spring-tongue having therein an offset projecting toward the bill, said tongue terminating in substantially the plane of said shank and having its free end provided with a laterally-extended shield adapted to abut from the rear against the side bars, substantially as specified.

2. In a garment-hook, the combination, with the shank, of a spring-tongue having therein an offset projecting toward the bill, said tongue terminating in an eye which lies in substantially the plane of said shank at or near the bend of the hook and affords a separate fastening medium for the forward end thereof, substantially as specified.

485,890. FURNACE FOR MELTING GLASS. JOHN KYNOCH, St. Louis, Mo. Filed June 2, 1892. Serial No. 435,245. (No model.)



Claim.—1. A melting-furnace comprising a producer or producers with openings 20 formed in the walls of the same above the fire-chamber, a partition 23, located below the same openings and arranged on the outside of said fire-chamber, a partition 21, arranged above said openings 20 and having openings 22 for the passage of hot air before the same is deflected into openings 20, a passage 19, in communication with said fire-chamber and the melting-tank, and means for heating and delivering air to said openings 22, substantially as described.

2. A melting-furnace comprising a melting-tank, a foundation for the same, columns located between the bottom of said tank and the said foundation, forming an air-space, air-flues located within said space, one end of which is in communication with the outside air through the said foundation, producers located on each side of said tank, air-chambers surrounding said producers in communication with said air-flues, partitions in said chambers at the bottom thereof for deflecting the air entering said chambers, partitions 21, located above the bottom, having openings 22 for dividing the air-currents before entering the producers, and openings 20, formed in the neck of the producers below the passage 19, leading to the melting-tank, substantially as described.

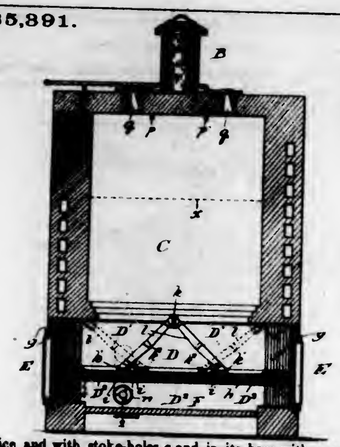
485,891. GAS PRODUCER. WILLIAM A. KOSSMAN, Chicago, Ill., assignor to the Chicago Heat Storage Company, same place. Filed Sept. 13, 1891. Serial No. 404,111. (No model.)

Claim.—1. In a gas-generator, the combination of a shell containing the generating-chamber provided with an outlet for the resultant gas and a grate D, formed in parts D' and D^2, the former comprising stationary inclined grate-bars *l* and the latter being supported and forming a horizontally-sliding bottom below the open base of the said stationary part, the parts D' and D^2 having ample space between them for the removal of ashes and clinkers without disturbing the sliding bottom, substantially as described.

2. In a gas-generator, the combination of a shell containing the generating-chamber provided with an outlet for the resultant gas and a grate D, formed in parts D' and D^2, the former comprising stationary grate-bars inclining downward and outward from a common center and the latter forming a horizontally-sliding bottom supported at a distance below the part D', affording between the two parts ample space for the removal of ashes and clinkers without disturbing the sliding bottom, substantially as described.

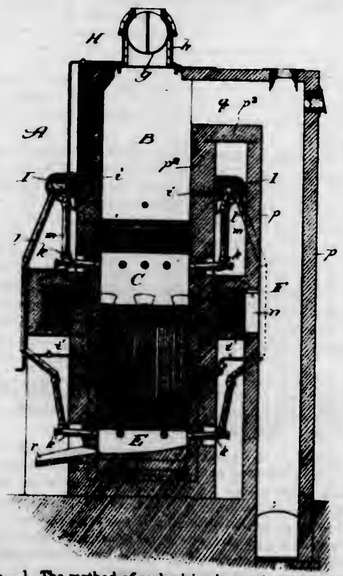
3. A gas-generator comprising, in combination, a shell containing a generating-chamber provided at its upper end with a coal-feed-

485,391.



ing device and with stoke-holes *q* and in its base with a grate D, formed in parts D' and D^2, the former comprising stationary inclined grate-bars *l* and the latter being supported and forming a horizontally-sliding bottom at a distance below the part D', affording between the two parts ample space for the removal of ashes and clinkers without disturbing the sliding bottom, air and steam supply pipes leading into the chamber below the grate, a steam-supply pipe *p*, leading downward into the same from above, and an outlet above the plane of the fuel-bed for leading off the resultant gas, substantially as described.

485,392. METHOD OF AND APPARATUS FOR RECARBURIZING METALS. WILLIAM A. KOHNMAN, Chicago, Ill., assignor of one-half to Charles G. Stager, same place. Filed Sept. 18, 1891. Serial No. 406,113. (No model.)



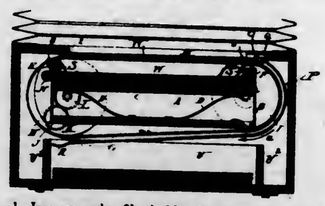
Claim.—1. The method of carburizing iron or iron-bearing compounds, which consists in forming and confining a deep bed of carbonaceous fuel, blasting it with air near its base, introducing air or steam and air into the bed toward its upper end, leading off the generated gases, respectively, from a point between the top and base of the bed and from the top of the bed introducing the material to be treated upon the incandescent bed and allowing it to sink therewith by the consumption of fuel until the mass of said material is melted, and causing the molten mass to percolate downward through the lower portion of the incandescent bed of fixed carbon and through the protoxide of carbon gas rising therein, substantially as described.

2. In a metal recovering and recarburizing furnace, the combination of a shell A, divided into vertical chambers B and D for burning solid carbonaceous fuel and forming, respectively, a preparing and a percolating chamber having converting ends, an intermediate melting-chamber C, and a receptacle E below the chamber D, a downtake F, communicating through a passage *q* with the chamber B, an external gas-channel G below the chamber B, communicating with the interior of the furnace and with the downtake, a suitable number of tuyeres for air-blasts leading, respectively, into the base of the chamber D and into the furnace above the channel G, and a steam-supply pipe to the chamber B, the whole being constructed and arranged to operate substantially as described.

3. In a metal recovering and recarburizing furnace, the combination of a shell A, divided into vertical chambers B and D for burning carbonaceous fuel and forming, respectively, a preparing and a percolating chamber for the metal and provided with laterally-converging upper and lower ends, an intermediate melting-chamber C, and a receptacle E for the molten metal below the chamber D and provided with an outlet, the said chambers having unobstructed vertical communication with each other and with the said receptacle, a suitable feed-hopper at the upper end of the structure, a downtake F, communicating through a passage *q* with the chamber B near its upper end, an external circumferential gas-channel G, surrounding the shell at the chambers C and D and communicating therewith and with the downtake, tuyeres *k* and *k'*, leading from an air-blast supply, respectively, into the chamber C and base of the chamber D, and a steam-supply pipe leading to the chamber B, the whole being constructed and arranged to operate substantially as described.

4. A metal recovering and recarburizing furnace comprising, in combination, a shell A, divided into vertical chambers B and D for burning carbonaceous fuel and forming, respectively, a preparing and a percolating chamber for the metal and provided with laterally-converging upper and lower ends, an intermediate melting-chamber C, and a receptacle E for the molten metal below the chamber D, the said chambers having unobstructed communication with each other and with the said receptacle, a feed-hopper H, surmounting the structure and comprising a case *h*, open at top and bottom and rounded laterally toward its upper end, a rotary drum *g*, journaled therein and open along one side, an external wall p^3, forming, with the outer wall p' of the shell, the base of the gas-outlet passage *q*, a downtake F outside the wall p' and communicating at its upper end with the chamber B through outlet *g*, a gas-channel G around the adjacent ends of chambers C and D and communicating therewith and with the downtake, tuyeres *k* and *k'*, leading from an air-blast supply, respectively, into the upper part of chamber C and base of chamber D, and steam-supply pipes leading, respectively, into the chambers B and D, the whole being constructed and arranged to operate substantially as described.

485,393. FILM-HOLDER FOR CAMERAS. GUSTAVE D. MILBURN, Rochester, N. Y., assignor to the Photo Materials Company, same place. Filed Jan. 23, 1892. Serial No. 418,964. (No model.)



Claim.—1. In a magazine film-holder for a camera, the combination of a case to receive flexible unexposed films in a series, means for moving the films forward by spring-pressure, means for releasing and separating the films from the front of the case one at a time, a traveling flexible septum, and means for introducing it behind the foremost film previous to the exposure and for transferring said exposed film to the rear of the case by flexing it around one side thereof, substantially as described.

2. In a film-holder for a camera, a box or case to receive films in series, a follower or pressure device to urge them forward, a flexible septum or curtain, endless carriers to which said curtain is attached and by which it may be moved from front to rear of the case at will, and means, substantially as described, for releasing and separating the front film that the septum may be passed thereunder.

3. In a magazine film-holder for a camera, the combination of a case to receive flexible unexposed films in series, means for moving the films forward by spring-pressure, means for releasing and separating the films from the front of the case one at a time, a traveling flexible septum, and means for introducing it behind the foremost film previous to the exposure, and a gripper device adapted to engage with one edge of the said film, whereby it is transferred to the rear of the case by being flexed around one side thereof, substantially as described.

4. In a magazine-holder for a camera, a case or receptacle for the unexposed films a follower to press the films forward in series, a flexible septum, and means for carrying the same, substantially as described, rolls overlying the ends of the film, roll N to act on the back of the forward film, and gearing, substantially as described, for turning the rolls differentially to and fro to release the films one at a time, and means for separatiag the released films.

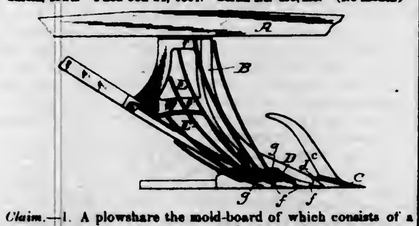
5. In a magazine film-holder for a camera, the combination of a case to receive flexible unexposed films in series, means for moving the films forward by spring-pressure, means for releasing and separating the films from the front of the case one at a time, a traveling flexible septum, and means for introducing it behind the foremost film previous to the exposure, and an oblique projecting ledge attached to the front edge of the septum and adapted to engage with the film, substantially as described.

6. In a magazine film-holder for a camera, the combination of a case to receive flexible unexposed films in series, means for moving the films forward by spring-pressure, means for releasing and separating the films from the front of the case one at a time, a traveling flexible septum, and means for introducing it behind the foremost film previous to the exposure, a gripper device adapted to engage with one edge of the said film, and an oblique projecting ledge at the front of the septum adapted to engage with the opposite edge of the said film, substantially as described.

7. In a magazine film-holder for a camera, the combination of a case to receive flexible unexposed films in series, means for moving the films forward by spring-pressure, means for releasing and separating the films from the front of the case one at a time, a traveling flexible septum, and means for introducing it behind the foremost film previous to the exposure and for transferring said exposed film to the rear of the case by flexing it around one side thereof, and a rear storage-chamber adapted to receive and retain the exposed films, substantially as described.

8. In a film-holder for a camera, a box or case to receive flexible films in series, a follower or pressure device to urge them forward, a traveling flexible septum, carriers on opposite sides of the case, connected to move in unison, means for releasing and separating the films from the front of the case one at a time, and means for introducing the septum behind the foremost film previous to exposure and for transferring said exposed film to the rear of the case by flexing it around one side thereof, substantially as described.

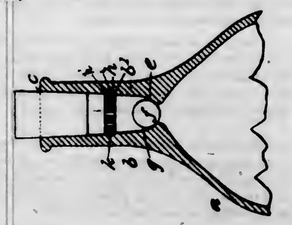
485,394. PLOW. JOHN R. MITCHELL and ELSIA M. MITCHELL, Salem, Iowa. Filed Oct. 21, 1891. Serial No. 409,425. (No model.)



Claim.—1. A plowshare the mold-board of which consists of a series of bars suitably disposed and which has a continuous cutting-edge that is provided with two or more projecting points.

2. A plowshare with longitudinal openings therein, having a continuous cutting-edge provided with longitudinal projecting points, and provided with a mold-board consisting of a series of bars suitably disposed, as set forth.

485,395. ANTI-FILLING VALVE FOR BOTTLES. PRESTON B. MOORE, North Wilbraham, Mass. Filed June 20, 1892. Serial No. 437,412. (No model.)

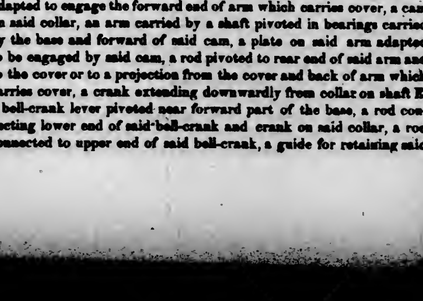


Claim.—1. In combination with a bottle having an outlet the walls of which are shaped to form a contracted throat, a perforated disk having an annular groove and located within the opening, the locking-spring located in the groove in the disk, and the ball-valve located within the valve-chamber, all substantially as described.

2. In combination with a bottle having an outlet the walls of which are shaped to form a contracted throat and provided with a shoulder forming a disk-seat, a groove in the wall above the disk-seat, a perforated disk having an annular groove and located within the opening, a locking-spring located between the edge of the disk and the neck of the bottle, and the ball-valve located within the valve-chamber, all substantially as described.

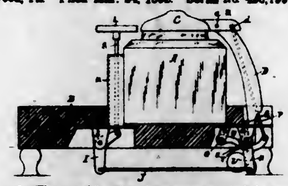
3. In combination with a bottle having an outlet the outer walls of which are tapered from a contracted throat toward the mouth, a shoulder formed in the wall above the contraction, a groove in the wall above the shoulder, forming a spring-socket, a perforated disk seated on the shoulder, a locking-spring located in said socket, and a ball-valve located within the valve-chamber below the perforated disk, all substantially as described.

485,396. ATOMIZER. CHARLES L. MORRISON, Brooklyn, assignor to McKesson & Robbins, New York, N. Y. Filed Feb. 12, 1892. Serial No. 421,349. (No model.)



Claim.—In a vaporizer, the combination, with an air-forcing tube having a side aperture, of an ejector-tube connected with said air-forcing tube and a vessel into which said ejector-tube projects, which vessel has a pin-aperture in its top end adjacent to the side aperture of the air-forcing tube, substantially as set forth.

485,397. SELF-CLOSING INKSTAND. CHARLES R. STRADDEN, Fernwood, Pa. Filed Mar. 24, 1892. Serial No. 426,190. (No model.)

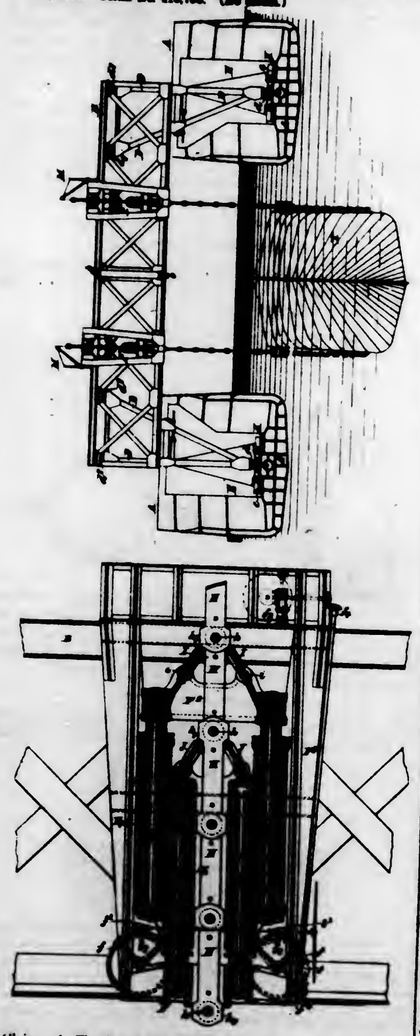


Claim.—1. The combination, in an automatic inkstand, of the ink-well and cover and an arm rigidly secured to and projecting backward from said cover, a supporting-arm pivoted to said arm on said cover, as at *e*, and supported upon a shaft carried in suitable bearings by the base of the inkstand, a rod the upper end of which is pivoted to arm on said cover, as at *d*, and the lower end of which is secured to the outer end of a lever, the rear end of which is carried by a shaft pivoted to the base, as shown, and devices, substantially as shown, operated by the hand and adapted to first draw down said rod and lift said cover from the ink-well and then to move said cover and its supporting-arm backward.

2. The combination, in an inkstand, of the ink-well and cover, an arm pivoted to the rear of said cover, a counter-weight on bottom of said arm, a shaft E, carried in bearings carried by the base, a collar loose on this shaft, an arm extending upwardly from said collar and adapted to engage the forward end of arm which carries cover, a cam on said collar, an arm carried by a shaft pivoted in bearings carried by the base and forward of said cam, a plate on said arm adapted to be engaged by said cam, a rod pivoted to rear end of said arm and to the cover or to a projection from the cover and back of arm which carries cover, a crank extending downwardly from collar on shaft E, a bell-crank lever pivoted near forward part of the base, a rod connecting lower end of said bell-crank and crank on said collar, a rod connected to upper end of said bell-crank, a guide for retaining said

rod in a vertical position, and an operating-button on upper end of said rod.

485,398. APPARATUS FOR RAISING SUNKEN VESSELS. ALFRED H. TYLER and JOHN S. R. DE VISMAR, London, England. Filed Jan. 21, 1892. Serial No. 418,768. (No model.)



Claim.—1. The herein-described apparatus for raising sunken vessels, &c., consisting of the combination of floating vessels with bridge-like structures extending from one such vessel to another and supported thereon with pivotal connections between said structures and vessels to maintain the said structures practically steady notwithstanding the pitching and rolling movements of the vessel, substantially as set forth.

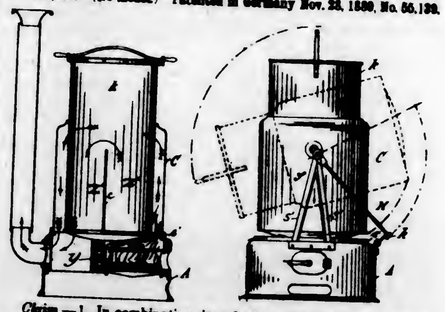
2. The herein-described apparatus for raising sunken vessels, &c., consisting of the combination of floating vessels with bridge-like structures extending from one vessel to another, legs upon which the said bridge-like structures are mounted, with pivotal joints to allow for the pitching movements of the vessels, and pivotal joints between the said legs and the supporting-vessels to allow for the rolling motion of the vessels, all substantially as set forth.

3. The herein-described apparatus for raising sunken vessels, &c., consisting of the combination of floating vessels with bridge-like structures extending from one vessel to another and supported thereon with pivotal connections between said structures, and vessels to maintain said structures practically steady notwithstanding the pitching and rolling movements of the vessels, with saddle-like structures upon the bridge-like structures, and lifting-jacks and compensating cylinders, all substantially as and for the purpose set forth.

4. The herein-described apparatus for raising sunken vessels, &c., consisting of the combination of floating vessels with bridge-like structures in separable parts adapted to be joined between the said vessels legs mounted upon the latter, with pivotal joints to allow for the rolling motion of the vessel, pivotal joints between the legs and the said bridge-like structures to allow for the pitching movements of the vessels, supports for the said legs, and hydraulic cylinders to tilt the said structures, all substantially as and for the purpose set forth.

5. The herein-described apparatus for raising sunken vessels, &c., consisting of the combination of floating vessels with bridge-like structures extending from one vessel to another, and supports thereon, lifting-chains having links with bearing-surfaces, and hydraulic jacks carried by the bridge-like structures and provided with lifting-pawls to act upon the said bearing-surfaces of the links, all substantially as and for the purposes set forth.

485,399. FEED-STEAMING APPARATUS FOR ANIMALS. AUGUST J. VERTEKI, Graudenz, Germany. Filed Feb. 1, 1892. Serial No. 420,003. (No model.) Patented in Germany Nov. 23, 1889, No. 55,139.



Claim.—1. In combination, in a feed-steamer, the stove open at the top, the kettle having a closed bottom, the heating-case carried by the kettle and forming a space *s*, said casing being open at the bottom and having its space communicating with the open stove, the pivotal support for the kettle, and the flanged joint between the kettle and the stove, said kettle forming a closure for the stove by the flanged joint and arranged to be tilted, substantially as described.

2. In combination, the stove having an open top with the interior wall *y*, the kettle having the closed bottom, the heating-case about the stove, forming a space *z*, which communicates with the open-top stove, and the plates *c* on the opposite sides of the kettle, said plates being in line with the wall *y* and forming therewith the circuitous passage *z'*, said case, with its kettle, being arranged to be tilted and forming a closure for the stove when it is in upright position, substantially as described.

3. In combination, the stove, the kettle having the casing open at its lower end and communicating with the stove, the supporting-frame, and the means for raising and lowering the kettle from and to its seat, consisting of the levers H, pivoted in the frame and carrying the bearings of the kettle at one end, said kettle having pivotal movement on the said bearings, and the means for locking the lever H in its lowest position, substantially as described.

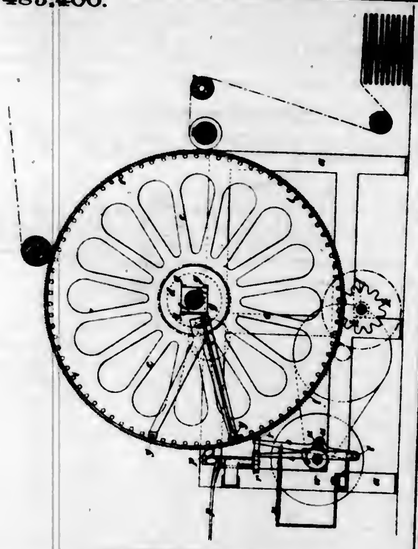
485,400. MACHINE FOR RAISING THE PILE OF WOVEN FABRICS. WILLIAM D. WARDS, Rochdale, England. Filed June 17, 1891. Serial No. 396,559. (No model.) Patented in England Aug. 23, 1890, No. 13,192.

Brief.—The cloth is stretched upon two diverging and rotating disks armed with pins or hooks upon their peripheries, and while under tension the nap of the cloth is raised by transverse overlapping batting-sticks that are caused to act thereon.

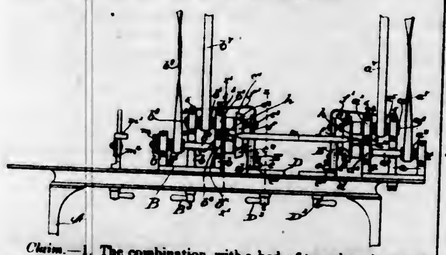
Claim.—1. In an apparatus for raising the pile of woven fabrics, the combination of two diverging rotary disks of large diameter, having hooks or pins upon their peripheries, with transverse overlapping batting-sticks to act upon the whole surface of the cloth and means for operating the batting-sticks, substantially as and for the purposes set forth.

2. In an apparatus for raising the pile of woven fabrics, the combination of two diverging disks having hooks or pins upon their peripheries with transverse batting-sticks, and means for operating the same, and supporting-bars between the disks to support the material while it is being batted, substantially as set forth.

485,400.



485,401. SHIPING-MACHINE. NELSON J. WHITE, Lawrence, Mass. Filed Aug. 22, 1891. Serial No. 403,408. (No model.)



Claim.—1. The combination, with a bed, of two plates longitudinally adjustable thereon, upwardly-extended guide-ears at the outer end of each plate, a two-part supporting-table carried by the plates and movable vertically on said guide-ears, and independent adjusting devices for each part of said table, and two rotating beveled cutting-heads located one above the other at one side of and to co-operate with said table, substantially as described.

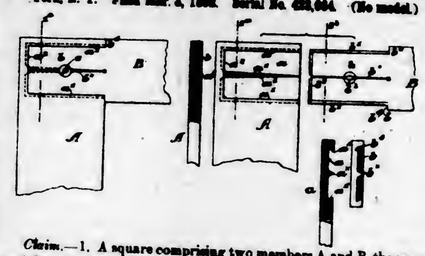
2. The combination, with a bed, of a pair of vertically-arranged rotating beveled cutting-heads at one end of said bed, a carriage movable longitudinally on said bed and having standards to support a second pair of vertically-arranged cutting-heads, means to hold said carriage in adjusted position on the bed, and a two-part supporting-table longitudinally movable on the bed between said pairs of cutting-heads, and means for adjusting independently the two parts of the table vertically, the work being supported by the table between the cutting-heads at each end, substantially as described.

3. The combination, with a bed, of plates longitudinally adjustable thereon, guide-ears on each of said plates, a supporting-table carried by and movable on said ears, lugs on said table, and adjusting-screws extended therethrough and bearing against the plate to adjust the table vertically, two rotating beveled cutting-heads located one above the other, and an adjustable spring-supported presser-roll above said table and axially on one side of the upper cutting-head, substantially as described.

4. In a machine for siping and molding boards, a bed, a carriage supported thereby and having uprights or standards, a pair of rotating shafts in said standards, and a beveled cutter on one end of each shaft, and a grooved molding-cutter mounted upon the opposite end of one of said shafts, combined with independent supporting-tables movable on said bed and on opposite sides of the carriage, substantially as described.

5. The combination, with a longitudinally-slotted base, of the plate D, movable thereon, a guiding rib or projection on said plate, adapted to slide in the bed-slot, a depending threaded stud, a clamping-handle, vertical ears *d* on the outer end of the plate, and a table having channels to receive and be guided by said ears, and means to raise and lower said table, substantially as described.

485,402. SEPARABLE SQUARE. FREDERICK W. WORLFREY, New York, N. Y. Filed Mar. 3, 1892. Serial No. 423,694. (No model.)

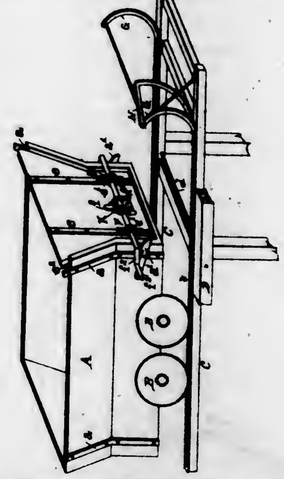


Claim.—1. A square comprising two members A and B, the member A being provided with a recess *a*, undercut at its sides and end, and a wedge $a^{\times}$ in said recess, and the member B, provided with a tenon *b*, beveled at its edges and end, and having a slit $b^{\times}$ to engage the wedge $a^{\times}$, and means, substantially as described, for securing the two members together when the tenon on one occupies the recess in the other.

2. A square comprising two members A and B, the member A being provided with a recess *a*, undercut at its sides and end, and a wedge $a^{\times}$ in said recess, which is wedge-shaped or tapered both longitudinally and vertically, the member B being provided with a tenon *b*, beveled at its sides and end and having a slit $b^{\times}$, which engages the wedge $a^{\times}$ in the recess when the tenon occupies the recess, and a screw *c* to hold the parts together, said screw being situated in the line of said wedge and slit, substantially as set forth.

3. A square comprising two members A and B, the member A being provided with an undercut recess *a* to receive a tenon *b* on the other member, the member B, provided with said tenon, which latter is slitted longitudinally and provided with a countersink in said slit to receive a conical screw-head, and the screw *c*, of the form shown, for securing the parts together and expanding said tenon.

485,408. AUTOMATIC LATCH FOR DUMP-CARS. IRVING BARKER, Springfield, Ill. Filed Feb. 2, 1892. Serial No. 420,130. (No model.)



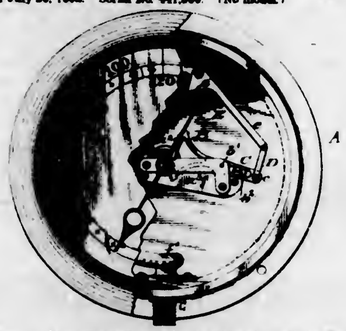
Claim.—1. A car-door adapted to swing and a latch-bar pivotally mounted on the front of the car-door, said bar having at its ends integral hooks, one of said hooks being provided with a projecting finger, and said bar also having a central stop adapted to prevent the bar from turning too far backward, in combination with a stop adapted to engage with said projecting finger and hooks on the car sides, adapted to be engaged by the hooks on the latch-bar, as set forth, and for the purpose stated.

2. In an automatic latch for dump-cars and a latch-bar having at its ends hooks at right angles to said bar, said hooks having inclined lower edges, and one of said hooks being provided with a projecting pin, and said bar also having an integral stop and on each side of said stop a collar, in combination with boxes secured to the car-door, a spring inclosing said bar and acted against by said stop, a socket secured to the car-door and retaining the ends of said spring, and inclined hooks secured to the sides of the car, with which the hooks on said bar engage, as set forth, and for the purpose stated.

3. In an automatic latch for dump-cars, the combination of the horizontal latch-bar supported in bearings on the car-door, the hooks, and the projecting finger on said latch-bar, the spring acted against by a stop on the latch-bar, the inclined hooks secured to the car, and the inclined trip supported on the tipple near the end and at one side of the tramway as set forth, and for the purpose stated.

4. The combination of the car-door hinged at its upper end, the vertical straps, the spring-socket secured to the car-door, the boxes secured to the car-door and supporting the latch-bar, the latch-bar provided with collars, a projecting finger, and an integral stop, the spring acted against by the stop and reacting to engage the hooks, the hooks secured to the sides of the car, and the inclined trip engaging with the projecting finger, as set forth, and for the purpose stated.

485,404. PRESSURE-GAGE. CHARLES B. BOSWORTH, Everett, assignor to the Crosby Steam Gage and Valve Company, Boston, Mass. Filed July 29, 1892. Serial No. 441,569. (No model.)



Claim.—1. In a steam-gage, the combination of the Bourdon tube and the pointer with intervening mechanism connecting the two, one part of such mechanism consisting of a V-shaped link connected at its apex to the Bourdon tube, one arm connected with the pointer and the other arm having a slotted connection with the gage-case, as set forth.

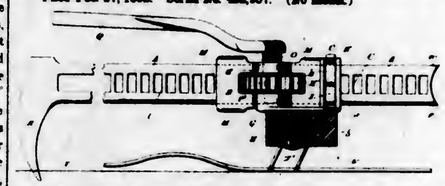
2. In a steam-gage, the combination of the Bourdon tube and the pointer with intervening mechanism connecting the two, one part of such mechanism consisting of a link, one arm of which is connected to the free end of the Bourdon tube and the other arm having a slotted connection with the gage-case and by an arm is attached to the pointer, as set forth.

485,405. LATHE-DOG. JOHN H. BRINTON Jr., Philadelphia, Pa. Filed Feb 10, 1892. Serial No 421,003. (No model.)

Claim.—1. The combination of the segmental body, the concave latch pivoted at one end to said body, means, substantially as set forth, whereby the free end of said latch may be adjustably secured to said body, and a bearing-screw mounted in the apex of said body independent of the latch-securing devices, the projecting axis of said screw being in a line which intersects said latch in proximity to the center of its concavity, whereby in all operative positions of the latch the direction of pressure of said screw is in a line between two bearing-surfaces upon the latch, substantially as set forth.

2. The combination, with the body having radial grooves arranged at intervals thereon, of the latch pivoted to the end thereof, said latch having a wide V-shaped inner face and a flat surface along its outer edge adapted to bear upon the proximate face of the body, and the lug adapted to engage in said grooves, substantially as set forth.

485,406. CARPET-STRETCHER. HORACE G. CADY, Scott, N. Y. Filed Feb 27, 1892. Serial No. 422,807. (No model.)

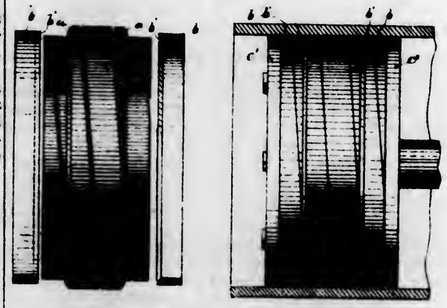


Claim.—1. The spiked stretcher-bar S, pivoted to the stud R, in combination with the casting D, having the foot G, the bearing E, step F, loops M M, guide-flanges J J, and shaft K, the rack-pawl L, having the hook *c*, the beveled tooth *a*, the stop *d*, and the arm *b*, the rack-pinion N, post O, handle Q, and rack-bar A, having the spur B, and cibs *e e*, arranged in the manner, for the purpose, and operated as described.

2. The spiked stretcher-bar S, pivoted to the stud-pin R, in combination with the casting D, having the bearing E, step F, loops M M, shaft K, the rack-pawl L, having the hook *c*, beveled tooth *a*, stop *d*, and arm *b*, the rack-pinion N, secured to the post O to be operated by a lever, and the rack-bar A, arranged in the manner and for the purpose as described.

3. The spiked stretcher-bar S, pivotally secured to the casting D, said casting D having the bearing E, step F to receive the post O, to which is secured the rack-pinion N, also having the loops M M, the guide-flanges J J, and shaft K, in combination with the rack-pawl L, having the hook *c*, the beveled tooth *a*, the stop *d*, arm *b*, and the rack-bar A, which engages with the rack-pinion and rack-pawl and which when placed in position through said loops M M in the casting D serves to lock them in their respective places, arranged in the manner and for the purposes as described.

485,407. PISTON-PACKING. FRANK H. ETHERIDGE, Boston, Mass., assignor of one-third to George A. Peterson, same place. Filed Aug. 19, 1892. Serial No. 443,473. (No model.)

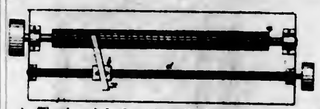


Claim.—1. A packing composed of a normally-compressed helical strip having a cylindrical portion provided with beveled shoulders and the continuous rings having beveled inner edges bearing against said shoulders and adapted to prevent lateral separation of the coils of the strip between said shoulders, as set forth.

2. A packing composed of a normally-compressed helical strip having a cylindrical portion provided with beveled shoulders and reduced end portions outside of said shoulders and the continuous rings inclosing said reduced end portions and having beveled inner edges bearing on the beveled shoulders, as set forth.

3. The combination, with a piston having heads or flanges, of a packing composed of a normally-compressed helical strip surrounding the piston between said flanges and provided with a cylindrical portion having beveled shoulders and the continuous rings interposed between the said shoulders and heads and provided with beveled inner edges bearing against the shoulders, as set forth.

485,408. MANUFACTURE OF PARCHMENTIZED-FIBER TUBES. ROGER P. PEET, Wilmington, Del., assignor, by mesne assignments, to The Delaware Hard Fibre Company, same place. Filed May 5, 1892. Serial No. 360,551. (No model.) Patented in England Jan. 19, 1892 No. 1,084.



Claim.—1. The hereinbefore-described method of making tubes or conduits, which consists in subjecting a strip of paper or fiber to a chemical bath and while it is in a soft and pasty condition winding it spirally upon a mandrel.

2. The hereinbefore-described method of making tubes of parchmentized fiber, which consists in winding moistened strips of the treated fiber in spiral form, so that its edges shall closely abut, and cementing said edges by pressure, as set forth.

3. The hereinbefore-described method of making tubes of parchmentized fiber, which consists in winding moistened strips of the treated fiber in spiral form one upon the other with their edges closely abutting and cementing and consolidating the edges and the surfaces of the strips together by pressure, as set forth.

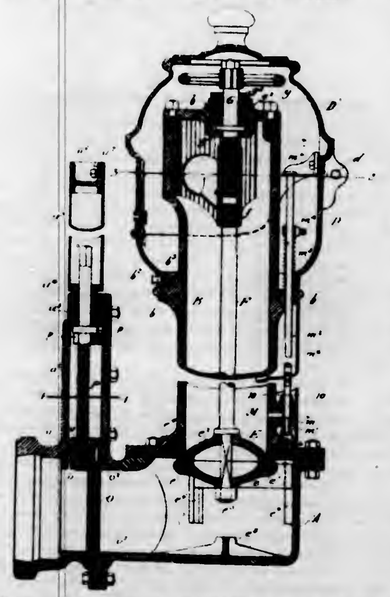
4. The hereinbefore-described method of making tubes of parchmentized fiber, which consists in winding moistened strips of the treated fiber in spiral form one upon the other with closely-abutting edges, those of one strip being parallel with but overlapping or breaking joints with the others, and cementing and consolidating the abutting edges and surfaces by pressure, as set forth.

5. As a new article of manufacture, parchmentized-fiber tubes composed of spirally-wound strips with their abutting edges consolidated and cemented together, so as to form a continuous fabric, as set forth.

6. As a new article of manufacture, parchmentized-fiber tubes composed of superimposed spirally-wound strips with their abutting edges and surfaces consolidated and cemented together so as to form a continuous fabric, as set forth.

7. A tube or conduit composed of homogeneous parchmentized fiber or paper having a spiral structure.

485,409. FIRE-HYDRANT. HENRY F. HAYDEN, Washington, D. C. Filed Oct. 27, 1891. Serial No. 409,992. (No model.)



Claim.—1. In a fire-hydrant, the combination, with the stand-pipe provided with a lateral outlet or nozzle, of a shaft extending through the stand-pipe, a lever-handle fixed to the outer end of said shaft, a cross-head fixed to its inner end, a valve-plate provided with an opening of larger dimensions than those of the cross-head and applied to the same to turn therewith, and a fastening device to hold said valve-plate in place, whereby the valve-plate is compelled to turn with the shaft, but is capable of a limited play at its inner end transversely to the shaft in a vertical and horizontal direction and also longitudinally of the same.

2. In a fire-hydrant, in combination with the stand-pipe provided with a valve-seat in its base, the main valve comprising two plates *e e*, having in their contiguous peripheral faces annular grooves, an annular packing-ring seated in said grooves and clamped between the plates, with its upper surface exposed to the valve-seat, a valve-stem connected to said plates, and means, substantially as described, for operating the same.

3. In a fire-hydrant, in combination with the stand-pipe provided with a valve-seat in its base, a main valve comprising a lower supporting-plate having in its peripheral edge a curved channel, an upper plate provided in its peripheral edge with a correspondingly-formed channel, and a packing-ring of circular form in cross-section seated in said channels and clamped between the plates, with its upper edge exposed to the valve-seat, a valve-stem extending through said plates, and a fastening device applied to the stem beneath the lower plate and serving to hold the parts together.

4. In combination with the stand-pipe having the flattened sides and outlet-necks, the external casing, the valves to close the necks, their horizontal rock-shafts, and the operating-handles arranged to contact alternately with the necks and the casing to limit the motion of the valves.

5. In a fire-hydrant, the combination, with the stand-pipe and its main valve, of a base-chamber provided with a vertical valve-seat, an outlet-neck made separate from and attached to the base-chamber, a gate between the said base-chamber and inlet-neck, and a chamber to receive the gate when the latter is opened, the said chamber being made in two parts, one of which is integral with the base-chamber and the other with the inlet-neck, substantially as shown and described.

6. In a fire-hydrant, the combination, with the stand-pipe and its main valve, of a base-chamber provided with a vertical valve-seat, an inlet-neck made separate from and attached to the base-chamber, a gate between the base-chamber and inlet-neck, a chamber to receive the gate when the latter is opened, the said chamber being made in two parts, one of which is integral with the base-chamber and the other with the inlet-neck, and a screw for operating the gate, supported between the parts of said chamber, substantially as shown and described.

7. In a hydrant, and in combination with the valve-operating screw, its support, and the encircling gland or collar A^4, the inclosing tube A^5, fixed upon and sustained by the collar, and the removable plug seated in the top of the tube and secured by a lateral screw located in a cavity in the plug, as described.

485,410. MACHINE FOR TRUING JEWEL-SETTINGS. THOMAS GILL, Waltham, Mass., assignor of one-half to John Stark, same place. Filed Mar. 28, 1892. Serial No. 426,742. (No model.)

Claim.—1. In a machine for truing jewel-settings, the combination, with two jewel grasping and rotating spindles in line with each other, of a centering device supported by one of said spindles and adapted to engage the orifice of a jewel and cause the same to coincide with the axis of rotation of the said devices and a cutter to which the setting is presented by said devices, as set forth.

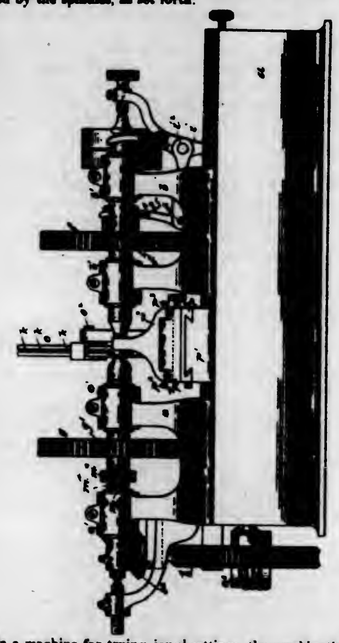
2. In a machine for truing jewel-settings, the combination of two spindles adapted to grasp between them and rotate a jewel-setting, a centering-pin supported by one of said spindles and adapted to engage the orifice of a jewel, the spindle supporting the centering-pin having no other projection outside the radial line of the end of the said pin, and a cutter arranged to act on a setting rotated by said spindles, as set forth.

3. In a machine for truing jewel-settings, the combination of a spindle, a centering-pin longitudinally movable in said spindle and yieldingly projected therefrom, another spindle arranged in a line with the first-mentioned spindle and adapted to co-operate therewith in grasping and rotating a jewel-setting and in engaging the orifice in the jewel with said centering-pin, and a cutter arranged to act on the rotating setting, as set forth.

4. In a machine for truing jewel-settings, the combination of a spindle, a centering-pin longitudinally movable in said spindle and yieldingly projected therefrom, a longitudinally-movable spindle arranged to co-operate with the centering-pin in centering a jewel and its setting and with the other spindle in grasping and rotating the centered setting, and a cutter to which the setting is presented by said spindle, as set forth.

5. In a machine for truing jewel-settings, the combination of a spindle, a centering-pin longitudinally movable in said spindle and yieldingly projected therefrom, a longitudinally-movable spindle arranged to co-operate with the centering-pin and with the other spin-

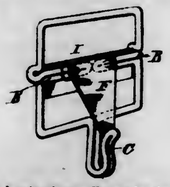
dle, as described, a carrier, substantially as described, for presenting the settings to said spindles, and a cutter to which the settings are presented by the spindles, as set forth.



6. In a machine for truing jewel-settings, the combination of a hollow spindle, a spring-pressed centering-pin movable longitudinally in said spindle and located in the axial line thereof, another spindle movable longitudinally with its axis in line with the centering-pin, mechanism for rotating said spindles, a pivoted chute adapted to contain a series of settings, a cutter arranged to act on a setting rotated by said spindles, and operating devices, substantially as described, whereby the chute is oscillated, the movable spindle is moved lengthwise toward and from the hollow spindle, and the cutter is moved along the work.

7. The combination, with the spindle having the centering-pin, of the co-operating spindle having a rocking or self-adjusting tip adapted to conform to the inclined sides of a setting, said tip having a tapered cavity fitting over the end of its spindle, and springs interposed between the sides of the spindle and the inside of the cavity.

485,411. WIRE BUCKLE. CHARLES R. HARRIS, Williamsport, Pa. Filed Oct. 30, 1891. Serial No. 410,361. (No model.)

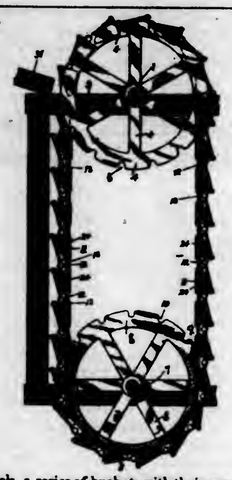


Claim.—A buckle having inwardly-projecting arms integral with the sides of the buckle-frame, a swinging clamping-bar located in rear of said arms, a hook at the lower end of said frame, and a snap connecting the adjacent ends of the inwardly-projecting arms and engaging the hook, substantially as set forth.

485,412. HYDRAULIC MOTOR. FERDINAND JOHNSON, New London, Pa. Filed Feb. 1, 1892. Serial No. 419,982. (No model.)

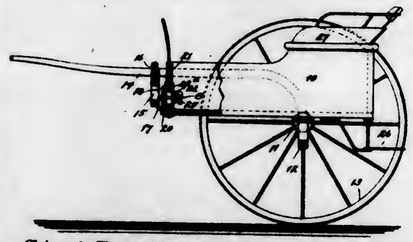
Claim.—In a hydraulic motor, the combination of the upper and lower horizontal shafts, the carrying-wheels mounted on the shafts and provided on their peripheries with circumferential grooves and with a series of transverse recesses, the endless cables resting in said grooves with a series of horizontal shafts secured by their end portions to said cables and adapted to engage with said transverse re-

485,412.



cesses in the wheels, a series of buckets with their upper portions pivotally secured to said shafts at a point nearly central from front to rear, and the diagonal braces with their upper ends pivoted to the outer upper edge of the buckets and with their lower ends pivoted to one of the shafts above the buckets, substantially as set forth.

485,418. ROAD-CART. CHARLES H. KALLBRUNER, Tell City, Ind. Filed Dec 2, 1891. Serial No. 413,757. (No model.)



Claim.—1. The combination, with the cart-body and its supporting-gear, of the transverse front end spring supported by the shafts and the hinged connection between the middle of the spring and the middle of the front of the body, substantially as described.

2. The combination, with the cart-body, its supporting-gear, and the transverse front end spring, of a plate hinged to the middle of the under side of the spring and a clamping device for securing the plate to the middle of the front end of the body, substantially as described.

3. The combination, with the cart-body, its supporting-gear, and the transverse front end spring carried by the shafts, of a vertically-extending plate hinged to the middle of the spring, vertically-slotted plates secured to the front end-board of the body, a bolt fixed to the spring-plate and extending through the end-board and the slotted plates, and a fastening device for holding the bolt and plate in place, substantially as described.

4. The combination, with the cart-body, its supporting-gear, and the end transverse elliptical spring carried by the shafts, of a plate hinged to middle of the lower member of the spring and vertically-adjustable means for fastening the plate to the body at the middle of its front, substantially as described.

5. The combination, with the transverse elliptical spring adapted to be suspended between the shafts and having a vertically-extending plate hinged to the middle of its lower member and carrying at its upper end a rearwardly-extending bolt 19, of a vertically-slotted plate through which the bolt passes and provided with notches in its vertical edges, the transverse locking-plate having end lugs to enter said notches, and the nut on the bolt to hold the locking-plate in its adjusted position on the front of the body, substantially as set forth.

485,414. UPRIGHT PIANO OR ORGAN. CHARLES KEIDEL, Jr., Baltimore, Md., assignor to the Wm. Knabe & Co. Manufacturing Company, same place. Filed Aug. 26, 1892. Serial No. 444,091. (No model.)

Claim.—1. In an upright piano or organ, the combination, with

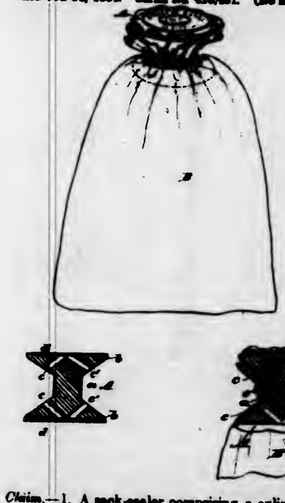
a keyboard and a base, of a bracket adapted to engage the under side of the keyboard and a scroll connected to the bracket by a screw and resting on the base, substantially as set forth.

2. In an upright piano or organ, the combination, with a keyboard and a base, of an extensible bracket and scroll connecting the keyboard and base, substantially as set forth.

3. In an upright piano or organ, the combination, with a keyboard having holes therein and a base, of an extensible bracket and scroll, the bracket being provided with tapering pins for entering the holes in the keyboard, substantially as set forth.

4. In an upright piano or organ, the combination, with a keyboard and a base, of a bracket having a nut therein and a cavity below said nut, and a scroll having a screw engaging the nut in the bracket, and a neck adapted to rest in the cavity in said bracket, substantially as set forth.

485,415. SEAL FOR BAGS. WILLIAM D. KENYON, Omaha, Nebr. Filed Oct. 31, 1891. Serial No. 410,481. (No model.)

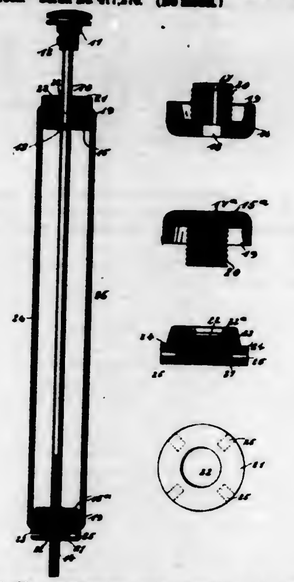


Claim.—1. A sack-sealer comprising a cylindrical body portion adapted to be secured in the mouth of a sack and provided with a flange recessed on its outer surface to receive sealing-wax and apertured to receive the ends of the string employed in tying the sack, substantially as described.

2. A sack-sealer comprising a cylindrical body portion adapted to be secured in the mouth of a sack and provided with a flange beveled from the body portion outwardly and having oblique apertures to receive the ends of the string employed in tying the sack, substantially as herein shown and described.

3. As a new article of manufacture, a sack-sealer consisting of a spool having a central cylindrical portion and a flange at each end, the said flanges being beveled from the central portion outwardly and each provided with a recess in its outer surface and with inclined apertures, said apertures meeting at the center of the spool, as set forth.

485,416. BURNISHER. THOMAS LLOYD, Boston, Mass. Filed Jan. 7, 1892. Serial No. 417,270. (No model.)



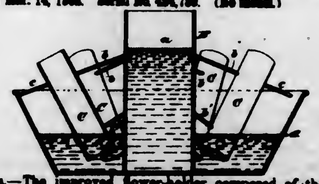
Claim.—1. The combination, with a burnisher-tube of flexible material having a head separate and independent thereof secured concentrically in each of its ends, of a screw-tension mechanism for forcing the heads apart and stretching the tube to increase its tension, substantially as set forth.

2. The combination, with a burnishing-tube having a two-part clamping-head at each end, the members or jaws of each head clamping between them one edge of the tube, the said two heads being provided, respectively, with a threaded and a plain aperture, of the shouldered rod passed through said apertures and threaded to engage the threaded aperture to force the two heads apart to stretch the tube, substantially as set forth.

3. In a burnisher, a holder comprising a rod having a shoulder near one end and screw-threaded at its opposite end, a clamp on the threaded end of the rod, formed of two nuts adjustable one upon the other to clamp one end of the burnisher, and a second clamp on the other end of the rod outside of the collar and comprising, also, two parts adjustable one upon the other to clamp the opposite end of a burnisher, substantially as set forth.

4. A burnisher comprising a handled rod having one end screw-threaded and having a collar near the opposite end, inner nuts mounted, respectively, on the collar and on the threaded end of the rod, said nuts having cup-like recesses in their outer faces and having, also, exteriorly-screw-threaded hubs, jam-nuts having projections to fit the recesses of the inner nuts and having bores threaded to fit the hubs of the inner nuts, and a flexible body having its ends held between the jam-nuts and inner nuts, substantially as described.

485,417. FLOWER-HOLDER. SILVIS LOEB, New York, N. Y. Filed Mar. 14, 1892. Serial No. 424,732. (No model.)



Claim.—The improved flower-holder composed of the water-holding vessel A, the vertical water-holding compartment *a*, arranged centrally in said vessel and having a closed bottom, the series of elongated open-ended tubes C, arranged equidistantly around such central compartment, and the wires arranged as shown, whereby the said tubes are supported rigidly in the space between the central compartment and the side of the vessel with their open lower ends near the bottom of said vessel, all as hereinbefore specified.

485,418. FENCE WEAVING MACHINE. WILLIAM LOUDEN, Middleville, Mich. Filed June 13, 1892. Serial No. 436,913. (No model.)

Claim.—1. In a fence-weaving machine, a sprocket-wheel having a hollow hub with channels within it and on opposite sides and rollers journaled at one end of the hub, substantially as described.

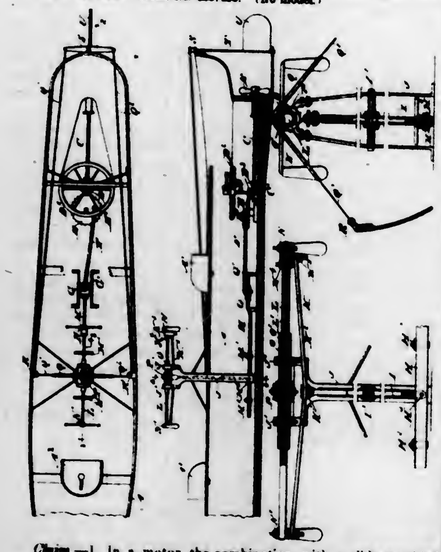
2. In a fence-weaving machine, the sprocket-wheel having a hollow hub with parallel ribs within and on opposite sides of it, said ribs merging at one end of the hub in protruding lips, and rollers journaled between the lips and near opposite sides thereof, substantially as described.

3. A fence-weaving machine comprising a frame, a series of sprocket-wheels journaled in the frame and provided with hollow hubs having longitudinal channels within them and on opposite sides, spreading-rollers journaled near the ends of the channels, and a crank-and-chain mechanism for simultaneously revolving the sprocket-wheels, substantially as described.

4. The combination, with the frame having wire-twisting mechanism thereon, of the swinging lever parallel with the frame and having inwardly-extending arms at its upper and lower ends pivoted to the frame and adapted at their inner ends to strike the fence-pickets, substantially as described.

5. The combination, with the frame having wire-twisting mechanism thereon, of the swinging lever held on one side of the frame and carved arms arranged at the upper and lower ends of the lever, the arms being fulcrumed on the frame and arranged to extend opposite the fence-pickets, substantially as described

485,419. MOTOR. JOHN C. LUNEBURG, Lakefield, Minn. Filed Mar 18, 1892. Serial No. 425,425. (No model.)



Claim.—1. In a motor, the combination, with a slide provided with foot-rests and connected with the machinery to be driven, of a lever pivotally connected with the said slide and a frame extending longitudinally and pivotally connected with the said lever, substantially as shown and described.

2. In a motor, the combination, with a slide provided with foot-rests and connected with the machinery to be driven, of a lever pivotally connected with the said slide, a frame extending longitudinally and pivotally connected with the said lever, and handle-bars arranged on the ends of the said frame to be taken hold of by the operator engaging with his foot the said foot-rests on the slide, substantially as shown and described.

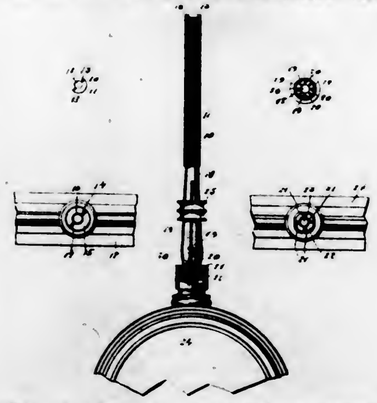
3. A motor comprising a main driving-shaft and gear-wheels for imparting a rotary motion to the said shaft, a pitman connected with a wrist-pin on one of the said gear-wheels, a cross-head connected with the said pitman, a slide attached to the said cross-head and provided with foot-rests, a lever extending vertically and pivotally connected with the said slide, and a frame provided with handle-bars and pivotally connected with the said lever, substantially as shown and described.

4. A motor comprising a main driving-shaft and gear-wheels for imparting a rotary motion to the said shaft, a pitman connected with a wrist-pin on one of the said gear-wheels, a cross-head connected with the said pitman, a slide attached to the said cross-head and provided with foot-rests, a lever extending vertically and pivotally connected with the said slide, a frame provided with handle-bars and pivotally connected with the said lever, a shaft mounted to turn in the said frame, and a steering mechanism actuated from the said shaft, substantially as shown and described.

5. In a motor, the combination, with a shaft mounted to slide and to turn and provided with a longitudinal keyway, of a sleeve mounted to turn and provided with a key engaging the said keyway, a sprocket-wheel secured to the said sleeve, a sprocket-chain passing over the said sprocket-wheel, ropes or chains connected with the ends of the said sprocket-chain, and a rudder provided on its shaft with an arm connected with the said ropes or chains, substantially as shown and described.

6. In a motor, the combination, with a slide adapted to actuate the machinery to be driven and provided with foot-rests adapted to be engaged by the feet of the operators, of a lever arranged vertically and pivotally connected with the said slide, a frame extending longitudinally and connected with the said lever, a shaft mounted to turn in bearings on the said frame, a handle-bar held on the said frame and forming a bearing for the said shaft, a second handle-bar attached to the said shaft for turning the latter, a sleeve through which passes the said shaft and provided with a key engaging a longitudinal groove in the said shaft, a sprocket-wheel held on the said sleeve, and a sprocket-chain passing over the said sprocket-wheel and connected by ropes with the rudder, substantially as shown and described.

485,420. PENDANT SET SCREW-DRIVER. DAVID MENDELSON, New York, N. Y. Filed May 20, 1892. Serial No. 433,674. (No model.)

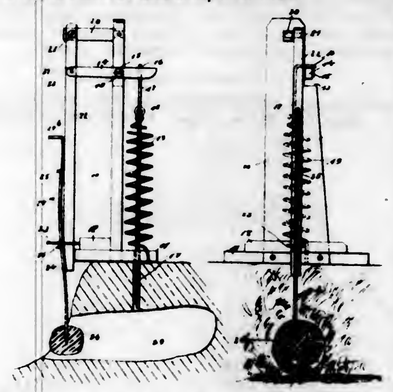


Claim.—As an improved article of manufacture, the pendant set screw-driver hereinbefore described, the same consisting of a handle 11 and an aligned end portion or stem provided with four spring-arms 19, which stand normally apart at their free ends, each arm having a terminal blade 20, adapted to enter a slot in a watch-stem sleeve, and the clamping-ring 25, adapted to slide on the divided stem, all as shown and described.

485,421. GOPHER-TRAP. GEORGE MOSS, La Fayette, Oreg. Filed Apr. 19, 1892. Serial No. 429,719. (No model.)

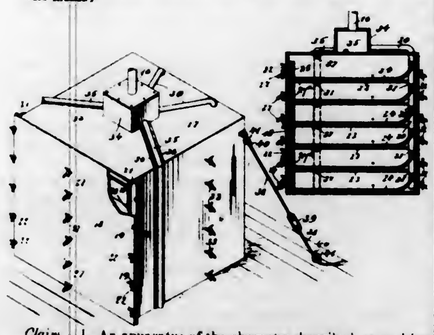
Claim.—1. A gopher-trap comprising an upright, a trigger pivoted on the upright and extending from opposite sides thereof, a spring-pressed spear held parallel with the upright and having one end adapted to engage the trigger, and a swinging bait-lever pivoted in front of the upright and having means for attachment to the front end of the trigger with said bait-lever carrying a device which holds the bait in the outer end of the gopher-hole, substantially as described.

2. A gopher-trap comprising an upright, a spring-pressed spear held on one side of the upright and having a bent upper end, a bait-lever held to swing on the opposite side of the upright and having a bait-holding device at its lower end, which is adapted to project into the front end of the gopher-hole, and the trigger 14, pivoted horizontally on said upright and having one end arranged to engage the bent spear end and the opposite end provided with a stud to engage the stud on the bait-lever, substantially as described.



3. A gopher-trap comprising a base and an upright secured to the base, a spring-pressed spear held on one side of the upright and adapted to move through the base, a swinging lever pivoted on the opposite side of the upright, a vertically-movable bait-rod mounted on the swinging lever and having a bent upper end, and a trigger pivoted on the upright, the trigger having one end adapted to engage the spear and the opposite end detachably secured to the swinging bait-lever, substantially as described.

485,422. APPARATUS FOR SHIPPING LOBSTERS. ARTHUR MCGRAY, Yarmouth, Canada. Filed Feb. 18, 1892. Serial No. 421,965. (No model.)



Claim.—1. An apparatus of the character described, comprising a tank having a detachable door, a series of shelves in the tank, a plurality of feed-pipes connecting with several sides of the tank and discharging onto the several shelves, exhaust valves or cocks opening from the tank, and a pumping apparatus to supply water to the feed-pipes, substantially as described.

2. An apparatus of the character described, comprising a tank having a plurality of shelves therein and exhaust valves or cocks opening therefrom, a reservoir held on a higher plane than the tank, a pipe connection between the reservoir and the tank and discharging onto the several shelves thereof, and a pump for raising water to the reservoir, substantially as described.

3. The combination, with a tank having a detachable door and having exhaust-cocks and supply-pipes, of shelves removably mounted in the tank, said shelves having upwardly-extending front and rear portions, substantially as described.

4. In an apparatus of the character described, the combination, with a tank provided with a door and with shelf-supports on the inside, of shelves having upwardly-projecting front and rear portions, the rear portion being notched, and vertical supply-pipes entering the notches of the shelves and discharging onto each of the said shelves, substantially as described.

5. In a shell-fish-preserving apparatus, a tank, shelves therein, supply-pipes discharging directly upon each shelf, and valves to draw water from each shelf, whereby the fish on each shelf are kept supplied with fresh water, substantially as described.

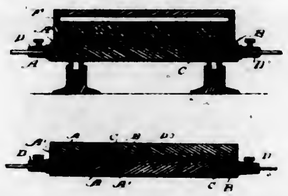
6. An apparatus of the character described, comprising a tank, a water-chest on its top, a series of shelves held in said tank, two pipes leading from the chest down the inside of one side of the tank and discharging onto the shelves, two pipes leading from the chest down on the inside of the tank and discharging through openings in the side of the tank onto the shelves, and a row of cocks on each side of the tank, substantially as described.

485,423. ALLOY. HENRY G. O'NEILL, Louisville, Ky., assignor, by direct and mesne assignments, to the Standard Electric Heat, Light, and Power Company, of Maine. Filed Jan. 30, 1892. Serial No. 419,809. (No specimens.)

Claim.—1. The alloy having qualities of anti-fusion and great electrical resistance, consisting of copper, tin, silicon, nickel, and zinc in the proportions substantially as specified.

2. The composition consisting of copper, tin, silicon, nickel, zinc, and platinum, substantially in the proportions and for the purpose specified.

485,424. ELECTRICAL HEATER. HENRY G. O'NEILL, Louisville, Ky., assignor, by direct and mesne assignments, to the Standard Electric Heat, Light, and Power Company, of Maine. Filed Feb. 2, 1892. Serial No. 420,126. (No model.)



Claim.—1. In electric-heating apparatus, the steatite heater-body having grooves or depressions, and a high-resistance wire or wires seated in said grooves or depressions and sealed and insulated therein except at their terminals, and a non-conducting cement of steatite composition for effecting such sealing and insulation, substantially as specified.

2. In apparatus for the conversion of electric energy into heat, the combination, with the steatite body and its spring-supports, of the high-resistance wires embedded in said body and a non-conducting cement for effecting the sealing and insulation of said wires, substantially as specified.

3. In apparatus for the conversion of electric energy into heat, the combination, with the heater-body of steatite, of the wires of high resistance seated therein and having proper terminals, and the inclosing composition of powdered steatite and an alkaline silicate or silicates, substantially as specified.

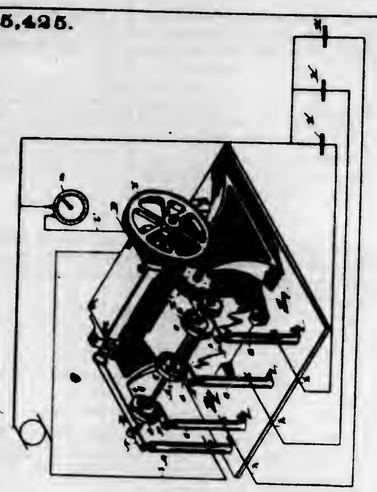
4. In an electrical heater, the combination, with a steatite heater-body and resistance-wires, of a non-conducting cement whereby said wires are attached to said heater-body and covered for purposes of insulation and anti-oxidation, substantially as specified.

5. In electric-heating apparatus, the steatite heater-body having grooves or depressions, and a high-resistance wire or wires sealed and insulated therein except at their terminals, a non-conducting cement of steatite composition for effecting such sealing and insulation, and a heat-storing attachment in connection with said steatite body, substantially as specified.

485,425. ELECTRIC INTERMUTATOR. HENRY G. O'NEILL, Louisville, Ky., assignor, by direct and mesne assignments, to the Standard Electric Heat, Light, and Power Company, of Maine. Filed Feb 9, 1892. Serial No. 420,883. (No model.)

Claim.—The herein-described electric intermutator, comprising a base or support, a rotary conducting-shaft journaled thereon in insulated bearings, a series of disks arranged at intervals along said shaft, each of said disks having a conducting-segment electrically connected with said shaft, said segments being arranged complementary to each other with a slight overlap, a brush contacting with each of said disks, an electric motor also supported on said base and having its shaft parallel with said conducting-shaft, a gear-wheel on said motor-shaft and on said conducting-shaft, an intermediate insulated multiplying gear between said wheels, and a current-supply for said conducting-shaft and for said motor, substantially as specified.

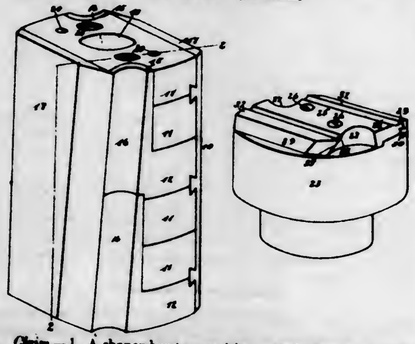
485,425.



485,426. THILL-COUPLING. JAMES K. PFLIEGER, Richland Centre, Pa. Filed June 6, 1892. Serial No. 435,951. (No model.)

Claim.—In a thill-coupling, the combination, with the axle A and clips B B, of the projection or stud *b* upon the under side of the clip-bars, clip jaws or extensions F, flaps H H, locking-latches or loops F, springs C, blocks D, and shafts or thills G G, all operated substantially as herein described, and for the purposes set forth.

485,427. SHAPER AND CUTTER HEAD. JOHN J. QUINN, Rochester, N. Y., assignor of one-half to Thomas Mulcahy, same place. Filed Nov. 25, 1891. Serial No. 413,022. (No model.)

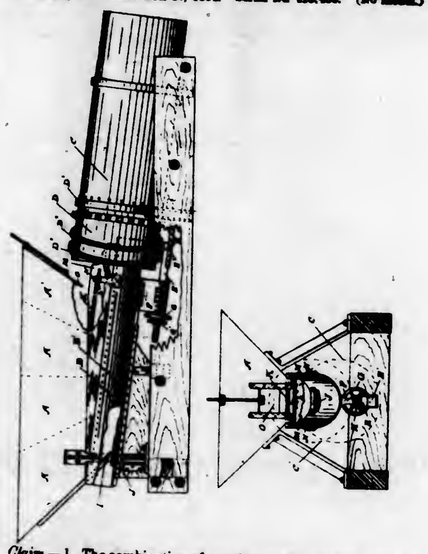


Claim.—1. A shaper-head comprising a body having a central bore and having clearance-ways on opposite sides, the said body being made up of a series of united collars, one of the outer and one of the inner collars being provided with longitudinally-aligned keys 16, which fit in grooves in adjacent collars and provided with clearance-grooves in their outer faces, knives mounted on the sides of the body, said knives having dovetail tongues which fit in corresponding grooves in the body, and clamping-screws adapted to fasten the collars of the body, substantially as described.

2. In a device of the character described, the combination of a series of collars lying face to face having dovetail grooves therein, the grooves being made at the joints of the collars, knives held to the sides of the collars and having dovetail tongues to fit the collar-grooves, and binding-screws extending longitudinally through the collars and arranged butts and points, said screws being each formed in several diameters, thereby forming shoulders 22, abutting, respectively, against one collar of the middle pair of collars and against the inner collar of one outer pair, substantially as described.

3. In a device of the character described, the body portion of the head comprising a series of collars having central bores therein, each collar having a projection adapted to fit in a depression in an adjacent collar, and a portion of the collars having on opposite sides projecting keys which fit grooves in adjacent collars, and a clamping device to hold the collars together, substantially as described.

485,428. CONCRETE-MIXING MACHINE. HENRY I. RAMSOME, Oakland, Cal. Filed Dec. 17, 1891. Serial No. 415,409. (No model.)

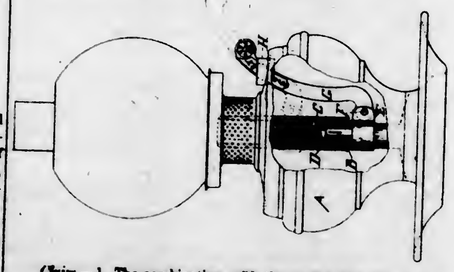


Claim.—1. The combination of a reciprocating traveler with stationary chambers having regulating-gates from which the traveler when in operation draws the material for mixing in regulated proportions, substantially as described.

2. The combination of the reciprocating traveler and stationary chambers from which it draws the material for mixing in regulated proportions with a mixer, substantially as described.

3. The means for operating a reciprocating traveler from a mixer, consisting of the cam-faces upon the rotary mixer, in combination with the sliding and guide bars, the wheel-nuts, and lug, whereby the reciprocating movement is increased, lessened, or stopped at will, substantially as described.

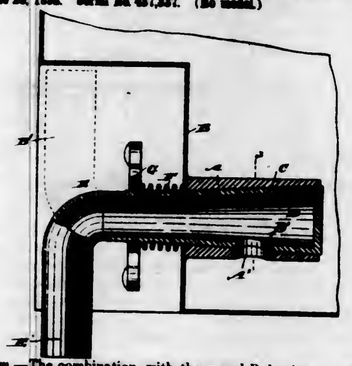
485,429. WICK-LIFTING DEVICE. FRANK REIER, Meriden, Conn., assignor to the Edward Miller & Company, same place. Filed Sept. 29, 1887. Serial No. 251,012. (No model.)



Claim.—1. The combination, with the wick-holder of a central-draft lamp, of an outwardly-curved draw-bar secured thereto by a connection which permits the upper end of the draw-bar to move away from the burner of the lamp as the wick is raised, substantially as set forth.

2. The combination, with the wick-holder of a central-draft lamp, of an outwardly-curved draw-bar pivoted thereto to permit the upper end of the draw-bar to move away from the burner of the lamp as the wick is raised, substantially as set forth.

485,430. FAUCET. WILLIAM W. REMIS, Los Angeles, Cal. Filed June 20, 1892. Serial No. 437,357. (No model.)



Claim.—The combination, with the vessel B, having a recess B' in its lower portion, said recess being open at its front and lower sides, of the faucet comprising a seat A, secured within the vessel and having a tapering bore and a lateral opening A', the angular spout E, the inner member of which is tapered to fit the seat A and provided with a lateral opening D', a nut G on the spout E, and a spring F between the nut and the rear wall of the recess B', the outer end E' of the spout being adapted to swing in the recess B' and of a length to extend below the lower end of the recess B', substantially as set forth.

485,431. MACHINE FOR POINTING PICKETS AND SHINGLES. GEORGE B. RUSSELL, Fort Payne, Ala. Filed Sept. 30, 1891. Serial No. 407,347. (No model.)

Claim.—The herein-described machine for pointing pickets, shingles, &c., said machine comprising a table or support having near its forward edge a longitudinal slot *a*, an inclined box or guide B, pivotally secured at its lower portion in said slot, the post C of said table forming an adjustable support for the upper end of said box, the parallel angular shoulders *d d* on the lower ends of the side portions of the box, the opening H in the lower portion of the bottom of said box, the post D, supported on said table at the rear of the slot *a* and back of the lower portion of the guide-box, a cutter-carrying lever pivoted at one end in a slot in said post, a spring in said slot arranged to elevate said lever, the guides *g g'*, secured to the table for said lever, and the cutter on said lever, substantially as specified.

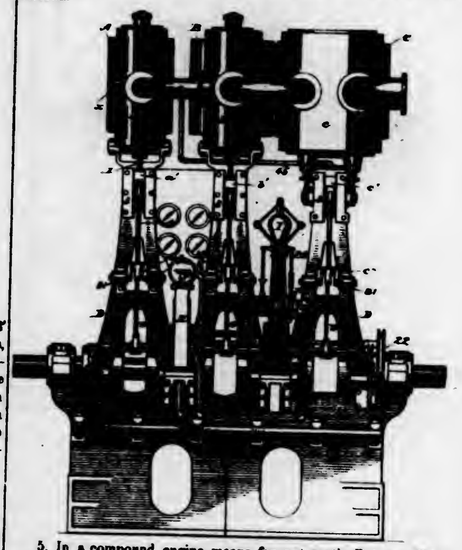
485,432. STEAM-ENGINE. JOHN W. SARGENT, Scranton, Pa. Filed Feb. 10, 1892. Serial No. 422,107. (No model.)

Claim.—1. In a compound engine, the cylinders each having a valve and valve-gear provided with an adjustable fulcrum-guide, in combination with the governor, a rock-shaft controlled by the governor, and connections between the rock-shaft and each fulcrum-guide, constructed to impart different amounts of movement to the different guides, substantially as described.

2. In a compound engine, the cylinders each having a valve and valve-gear provided with an adjustable fulcrum-guide, in combination with the governor, a rock-shaft controlled by the governor, arms of different lengths upon the rock-shaft, and connections between said arms and the fulcrum-guides, substantially as described.

3. In a compound engine, the cylinders each having a valve and valve-gear provided with an adjustable fulcrum-guide, in combination with the governor, a rock-shaft controlled by the governor, arms of different lengths upon the rock-shaft, and an adjustable connection between each fulcrum-guide and its corresponding arm, substantially as described.

4. In a compound engine, the cylinders each having a valve and valve-gear provided with an adjustable fulcrum-guide, in combination with a rock-shaft, a hydraulic motor for actuating the rock-shaft, a governor driven by the engine and arranged to control said motor, arms of different lengths upon the rock-shaft, and a link connecting each fulcrum-guide with its corresponding arm, substantially as described.



5. In a compound engine, means for automatically controlling the expansion of the several cylinders, consisting of a rock-shaft having arms connected to the valve-gear of the several cylinders, a hydraulic motor for rocking the shaft, a valve for controlling said motor, a governor, and a floating lever connected with the valve-stem, the governor-slide, and the rock-shaft, said parts being arranged to operate substantially as described.

6. In a compound engine, the combination, with the cylinders having their axes in a common plane and the valves and valve-stems located at different distances from said plane, of the valve-stem cross-head, guides located in a plane parallel to plane of the cylinders, and the cross-heads running in said guides, one or more of said cross-heads being provided with laterally-extending arms to which the valve-stems are connected, substantially as described.

7. The combination, with the low-pressure valve and valve-gear, of a balance-piston upon the valve-stem, a cylinder in which said piston slides, and a pipe connecting the lower end of the cylinder with a source of steam under suitable pressure, substantially as described.

8. The combination, in a steam-engine provided with valve-gear such as described, of the fulcrum-guide, the columns or main frame, and the indicator arranged to show the relative position of the fulcrum-guide and the degree of expansion, substantially as described

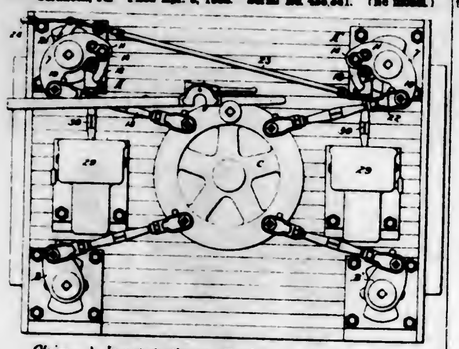
9. The combination of the fulcrum-guides, the rock-shaft, the adjustable connections between the rock-shaft and the guides, and the indicators to show the positions of the guides and the degrees of expansion, substantially as described.

10. The combination of the column or support, the fulcrum-guide having a bearing on the column, the arm connected to said column and provided with a scale, and the index upon the fulcrum-guide, substantially as described.

11. In a steam-engine having a variable cut-off, the combination of the valve-stem cross-head, the slotted arm connected to said cross-head, a rocking arm having a pin passing through said slot, and a revolution-counter connected to said rocking arm, substantially as described.

12. In a steam-engine having a variable cut-off, the combination of the valve-stem cross-head, the arm extending in the direction of the cross-head guides and provided with a slot having straight ends and a reversely-curved middle portion, the rocking arm having a pin passing through said slot, and the revolution-counter connected to and operated by said arm, substantially as described.

485,433. STEAM-ENGINE VALVE-GEAR. JOHN W. SARGENT, Scranton, Pa. Filed Apr. 8, 1892. Serial No. 428,361. (No model.)



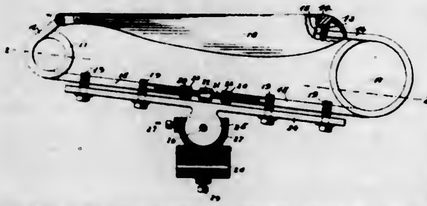
Claim.—1. In automatic cut-off-valve gear, the combination, with the bonnet and the valve-spindle projecting from the bonnet, of a driving-arm having a laterally-extending hub keyed to the valve-spindle, a rocker journaled upon the said hub and provided with a latch-link, and a trip-collar journaled upon the bonnet, substantially as described.

2. In automatic cut-off-valve gear, the combination, with the bonnet and the valve-spindle projecting from the bonnet, of a driving-arm adjacent to the end of the bonnet and provided with a hub extending laterally in front of the arm, a rocker journaled upon said hub and retained thereon by suitable means, and a trip-collar journaled upon the bonnet in the rear of the driving-arm, substantially as described.

3. In automatic cut-off-valve gear, the combination, with the bonnet and the valve-spindle projecting from the bonnet, of a trip-collar journaled upon the end of the bonnet, a driving-arm keyed to the spindle adjacent to the bonnet and provided at its outer end with a boss or arm extending rearwardly past the trip-collar and connected to the dash-pot, and a rocker in front of the driving-arm, said rocker being connected with the wrist-plate and provided with a latch-link having one arm in the plane of the driving-arm and a second offset arm in the plane of the trip-collar, substantially as described.

4. In automatic cut-off-valve gear, the combination, with the bonnet and valve-spindle, of a driving-arm keyed to the spindle adjacent to the bonnet, said arm having a laterally-extending hub and at its outer end a shoulder 31 upon the forward side and a boss 5 upon the opposite side, a rocker journaled upon the hub in position to engage the shoulder 31, said rocker being provided with a latch-link having arms 16 and 17 for engagement, respectively, with the driving-arm and the trip-collar, and a trip-collar journaled upon the bonnet at the rear of the driving-arm, substantially as described.

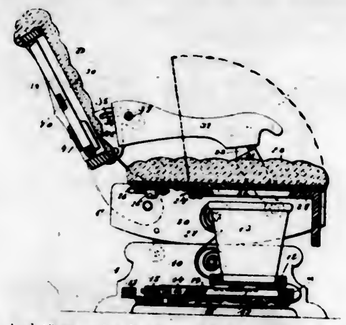
485,434. BICYCLE-SADDLE. CHARLES STEIN, Meadville, Pa. Filed Dec 2, 1891. Serial No. 413,796. (No model.)



Claim.—The combination, with the tilting supporting-plate 24 and the right and left screw 21, journaled in blocks 19 on the supporting-plate, of the bicycle-springs held to slide in the guide-blocks, and the yokes 20, connecting the ends of the springs and threaded to fit the threads of the screw, substantially as described.

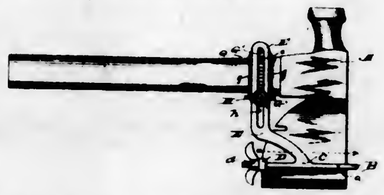
485,435. COMBINED BABY, ROCKING, AND INVALID CHAIR. HARRIS W. STONE, La Salle, Ill. Filed Mar. 12, 1892. Serial No. 424,892. (No model.)

Claim.—1. The combination, with a platform-rocker, of a sliding frame B, mounted in the platform to swing vertically at its outer end when slid outward, a rest 18, pivoted at its inner end to the outer end of said frame, latches to secure the rest when folded on the said frame, and folding legs 19, pivoted to the forward end of the rest and adapted at their lower ends to rest on the floor, substantially as set forth



2. A platform-rocker having a commode-support 12 within its platform or base and a top board 21 on the seat-frame and having an opening 22, a seat-cushion independent of the chair-back and hinged between its ends to the rear edge of the top board to swing vertically, and latches on the lower side of seat-cushion in rear of the hinges and engaging the sides of the seat-frame to lock the cushion to the frame, substantially as set forth.

485,436. ADJUSTABLE SHINGLE-GAGE. JOHN B. SYKES, Dawson, Pa. Filed Feb. 29, 1892. Serial No. 423,266. (No model.)



Claim.—1. A shingle-gage for hatchets and slaters' hammers, comprising the gage proper, the clamp for securing it to the blade, and the clamp for securing it to the handle, substantially as specified.

2. A shingle-gage for hammers and hatchets, having a slot to receive the edge of the blade, a clamping-arm and adjustable clamp for securing it to the blade, and an adjustable clamp for connecting it to the handle, substantially as specified.

3. An adjustable shingle-gage for hammers and hatchets, having an adjustable clamp for holding it to the blade, an arm connected thereto, and an adjustable clamp designed to be secured to the handle on which said arm is held, substantially as specified.

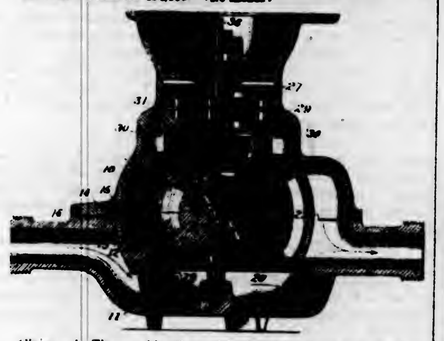
4. In a shingle-gage attachment for hammers and hatchets, the combination, with the gage, the clamping device for adjustably securing it to the blade, and the curved arm connected thereto and having an elongated slot, of the adjustable handle-clamp comprising the block, the rod connected to said block, and the thumb-nut engaging said rod and serving to clamp the curved arm to the block, the meeting faces of said arm and block being corrugated, substantially as specified.

5. In a shingle-gage attachment for hammers and hatchets, the combination, with the handle-clamp, of the gage having the slot therein to receive the blade, the arm connected thereto, the washer therein having a slot to receive the opposite edge of the blade, the thumb-nut, and the slotted arm adjustably connected to the handle-clamp, substantially as specified.

6. The combination, with a hammer or hatchet, of a shingle-gage attachment therefor, said attachment comprising a gage having a recess or slot therein to receive one edge of the blade, the transverse arm having a threaded end, the washer thereon recessed to receive the opposite edge of the blade, the thumb-nut thereon, the clamp adjustably secured to the handle, and the curved arm of the gage adjustably held in said clamp, substantially as specified.

7. The combination, with the gage and means for its adjustable and detachable connection with the blade of a hatchet or slater's hammer, of the handle-clamp to which said gage is adjustably connected, said clamp comprising a block clamped to the handle by a curved rod and thumb-nut, flanges on said block forming a seat for an arm of the gage held thereto by said nut, and corrugations on the meeting faces of said arm and block, substantially as specified.

485,437. DISK WATER-METER. JOHN THOMSON, Brooklyn, N. Y., assignor to the Thomson Hydraulic Company, Newark, N. J. Filed May 31, 1892. Serial No. 434,909. (No model.)



Claim.—1. The combination, with the disk suitably mounted, of the diaphragm having a raised bearing-rib, substantially as described.

2. The combination, with the disk-chamber casing having a slot 25 formed in the spherical wall thereof, of a disk mounted in the casing and provided with a bearing-pin acting within the slot, substantially as described.

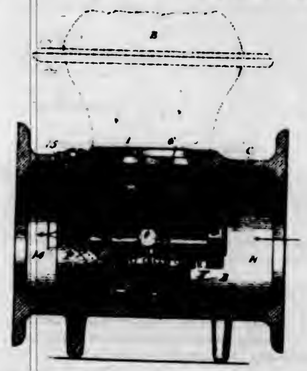
3. In a disk water-meter, a disk provided with a ball having cylindrical openings on opposite sides of the ball and a rigid central partition between the openings and a disk-spindle rigidly mounted in said partition, substantially as described.

4. In a disk water-meter, a disk having grooves in its peripheral surface, as and for the purpose set forth.

5. In a disk water-meter, a disk provided with a ball having grooves in its surface, substantially as described.

6. In a disk water-meter, the combination, with the main upper recessed casing forming a portion of the spherical contour of the disk-chamber, of the free differential gear 27, provided with a journal 28, mounted in a bearing in the main casing and connected to the stuffing-box spindle, and the fixed differential gear 29, fitting the recess in said casing and secured thereto and provided with a journal 32, for the controlling-block 33 and for the pivot 34 of the primary driving-pinion 35, substantially as described.

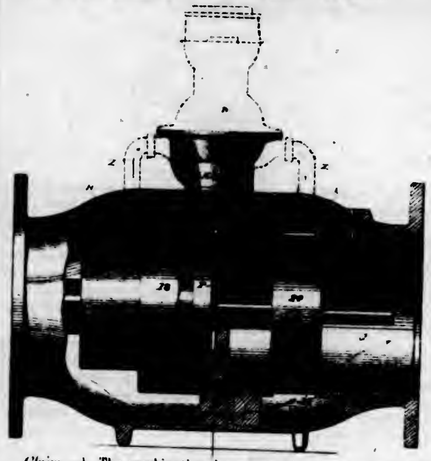
485,438. POSITIVE PROPORTIONAL WATER-METER. JOHN THOMSON, Brooklyn, N. Y., assignor to the Thomson Hydraulic Company, Newark, N. J. Filed July 1, 1892. Serial No. 438,692. (No model.)



Claim.—1. In combination, the measuring mechanism, the main casing, the valve-casing having a series of radial ports, the valve having an inclined face, the plunger connected to the valve, having its end exposed to the pressure of the main inlet-chamber, and the displacing-channel to connect the space back of the valve with the outlet-chamber, substantially as described.

2. In a proportional meter, a controlling-valve adapted to be operated to open a series of ports against a resilient resistance by the impact of the volume discharged through the ports when said volume is directed upon an inclined face of the valve and at approximately a right angle to its axis, substantially as described.

485,439. MULTIPLE PROPORTIONAL METER. JOHN THOMSON, Brooklyn, N. Y., assignor to the Thomson Hydraulic Company, Newark, N. J. Filed July 16, 1892. Serial No. 440,944. (No model.)

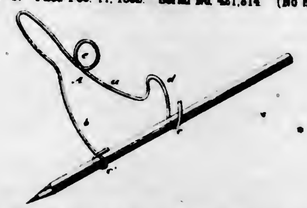


Claim.—1. The combination, in a proportional meter, of a plurality of measuring mechanisms, the main casing, and a controlling valve device, the inlets to the measuring mechanisms being directly connected with the inlet-chamber of the main casing, but the several discharges from the measuring mechanisms being connected with the positive chamber of said valve device, substantially as described.

2. The combination, in a proportional meter, of the proportional valve device, the controlling-chamber, and a plurality of channels leading therefrom, each of said channels being adapted to connect with the discharging end of a separate measuring mechanism, whose inlets are in connection with the inlet-chamber of the main casing, substantially as described.

3. A plurality of separate measuring mechanisms connected with the main casing of a proportional meter, the inlet of all the measuring devices being connected with the inlet-chamber of the main casing, and the outlets of all the measuring mechanisms in connection with the positive chamber of the valve device and with a discharge port or ports formed in a device for effecting the proportional control of the flow.

485,440. PEN OR PENCIL CARRIER. HERBERT R. THORNHILL, Lyons, N. Y. Filed Feb. 17, 1892. Serial No. 421,814. (No model.)



Claim.—1. A pen or pencil carrier formed with two arms, one provided with a loop for the forefinger and an eye for the fourth finger and the other arm being arranged as a rest for the ends of all of the fingers, the two arms being adapted to receive and hold a pencil or penholder, substantially as specified.

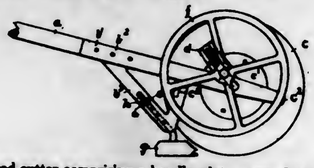
2. A pencil-carrier formed of a loop having at the extremities of its arms eyes for receiving the pencil or penholder and provided with a loop for receiving the forefinger and an eye for receiving the fourth finger, substantially as specified.

3. A pen or pencil carrier formed of a loop for the forefinger, an eye for the fourth finger, and provided with a downwardly-turned end having at the extremities of its arms holes for the pencil or penholder, substantially as specified.

485,441. SOD-CUTTER. GEORGE F. WAGNER, Philadelphia, Pa. Filed July 26, 1892. Serial No. 441,236. (No model.)

Claim.—1. A sod-cutter comprising the combination of a main frame having a disk cutter journaled thereto, a gage-wheel afforded a range of radial adjustment in respect to the axis of the disk cutter,

and means for clamping the gage-wheel to place, the construction being such that the gage-wheel is substantially concentric in respect to the axis of the disk cutter, whereby the machine is permitted to operate on curves of short radius, as described.

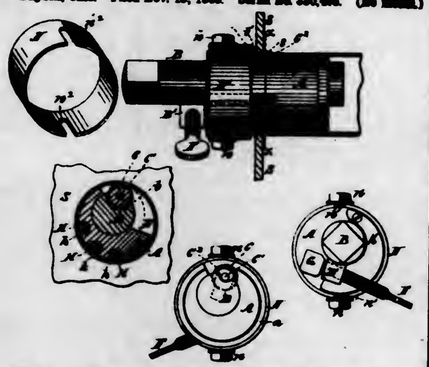


2. A sod-cutter comprising a handle, plates secured to said handle, a disk cutter journaled to said plates, an arm on one of said plates, a gage-wheel, and means for adjustably connecting said wheel and arm, substantially as and for the purposes set forth.

3. A sod-cutter comprising a handle, plates secured to said handle and provided with depending brackets, a disk cutter journaled to said plates, an arm on one of said plates, a gage-wheel adjustably connected to said arm, and a deliverer adjustably connected with said brackets, substantially as and for the purposes set forth.

4. A sod-cutter comprising a handle, plates secured to said handle and provided with depending brackets, a disk cutter journaled to said plates, lugs for supporting the disk cutter, an arm on one of said plates, a gage-wheel adjustably connected to said arm, and a deliverer pinned to said brackets, substantially as and for the purposes set forth.

485,442. CUT-OFF AND FLUE-TIGHTENER. GREAVE WEBSTER, Dayton, Ohio. Filed Nov. 15, 1892. Serial No. 392,493. (No model.)



Claim.—1. The combination of a cylindrical plug, a shaft eccentrically situated therein, stops for limiting the rotation of the shaft, and mechanism, substantially as described, for increasing or diminishing the distance between the said stops, and thereby adjustably regulating the amount of rotation of the said shaft, and a device carried by the shaft for operating on the tube or flue, substantially as and for the purposes specified.

2. The combination of a cylindrical plug, a shaft eccentrically situated therein, stops for limiting the rotation of the shaft, and mechanism, substantially as described, for increasing or diminishing the distance between the said stops, and thereby adjustably regulating the amount of rotation of the said shaft, and a roller carried by the shaft, substantially as and for the purposes specified.

3. In a flue-tightening device, the combination of a cylindrical plug A, provided with a projecting lug, and a shaft B, eccentrically located in said plug and provided with a stop adjustable on it, the said shaft in a direction transverse to the length of the shaft and in the line of travel of the lug, and a roller carried by the shaft, substantially as and for the purposes specified.

4. The combination of the plug A, provided with recess D, shaft B, eccentrically situated in plug A, lugs G and B', attached, respectively, to the plug A and the shaft B, set-screw F, and devices mounted in shaft B for operating on the tube or flue, substantially as and for the purposes specified.

5. In a flue-tightening device, the combination of a cylindrical plug A, provided with a projecting lug, and a shaft B, eccentrically located in said plug and provided with a stop adjustable in relation thereto in a direction substantially transverse to the plane of the axis of the shaft and substantially coincident with the periphery of the latter, the stop being in the line of travel of the lug, and a roller carried by the shaft, substantially as and for the purposes specified.

6. The combination of the plug A, provided with enlarged head *a* and with recess D, shaft B, eccentrically situated in plug A, and lugs G B', attached, respectively, to the plug A and shaft B, set-screw F, and devices mounted in shaft B for operating on the tube or flue, and regulating-band N, substantially as and for the purposes specified.

7. The combination of the plug A, provided with recess D, shaft B, eccentrically situated in plug A, lugs G and B', attached, respectively, to the plug A and shaft B, set-screw F, and roller C, provided with beads C^3 and C^3 and mounted in shaft B, substantially as and for the purposes specified.

8. The combination of the plug A, provided with enlarged head *a* and with recess D, shaft B, eccentrically situated in plug A, and lugs G and B', attached, respectively, to the plug A and shaft B, set-screw F, and devices mounted in shaft B for operating on the tube or flue, and regulating-band N, and friction-rollers H, substantially as and for the purposes specified.

9. The combination of the plug A, provided with enlarged head *a* and with recess D, shaft B, eccentrically situated in plug A, and lugs G and B', attached, respectively, to the plug A and the shaft B, set-screw F, roller C, provided with beads C^3 and C^3 and mounted in shaft B, and regulating-band N, substantially as and for the purposes specified.

10. The combination of the plug A, provided with enlarged head *a* and with recess D, shaft B, eccentrically situated in plug A, and lugs G and B', attached, respectively, to the plug A and the shaft B, set-screw F, roller C, provided with beads C^3 and C^3 and mounted in shaft B, and regulating-band N, and friction-rollers H, substantially as and for the purposes specified.

11. The combination of the plug A, provided with recess D, shaft B, eccentrically located in the plug, stops for limiting the rotation of said shaft in said plug, and a device mounted on said shaft for operating on the tube or flue, and friction-rollers H, located when within the tube in the plane of the tube-sheet of the boiler, substantially as and for the purposes specified.

12. The combination of the plug A, provided with recess D, shaft B, eccentrically located in the plug, stops for limiting the rotation of said shaft in said plug, and a device mounted on said shaft for operating on the tube or flue, and friction-rollers H, located in cylindrical grooves in the plug and retained in place by a strip, as *k'*, substantially as and for the purposes specified.

13. The combination of the plug A, provided with recess D, shaft B, eccentrically located in the plug, stops for limiting the rotation of the said shaft in said plug, and a band N, provided with slots N^3, and respective securing-bolts, respectively received into said slots, substantially as and for the purposes specified.

14. The combination of the plug A, provided with recess D, shaft B, eccentrically located in the plug, stops for limiting the rotation of the said shaft in said plug, and a band N, adjustable without reversal, and, substantially as described, to find from the radial frame in which the device for directly operating on the flue rotates, substantially as and for the purposes specified.

15. The combination of the plug A, provided with recess D, shaft B, eccentrically located in the plug, stops for limiting the rotation of the said shaft in said plug, and the roller having means for directly operating on the flue or tube, and journal-bearings C^4 C^4, provided with shanks received into the shaft, substantially as and for the purposes specified.

485,443. AUTOMATIC BOTTLE-STOPPER. RICHARD C. WILLIAMS, L'Anse, Mich. Filed July 30, 1892. Serial No. 441,376. (No model.)

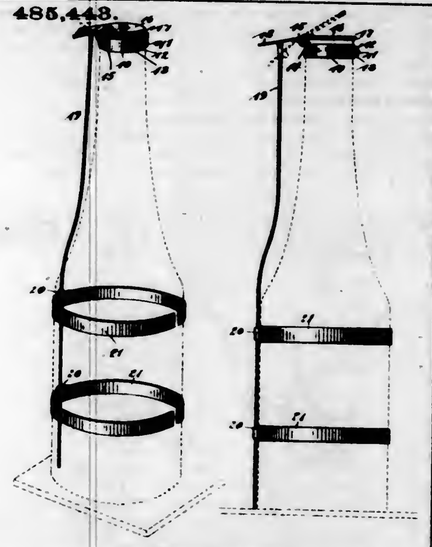
Claim.—1. The combination, with a bottle, of a swinging lid to close the same and a sliding rod held on one side of the bottle and connected with the lid, so as to close the same when pressure is applied to the lower end of the rod, substantially as described.

2. The combination, with a bottle, of a lid hinged to the bottle top, so as to close the bottle, a laterally-projecting extension produced on one side of the lid, and a sliding rod secured to the extension and extending downward on one side of and adapted to extend below the bottle, substantially as described.

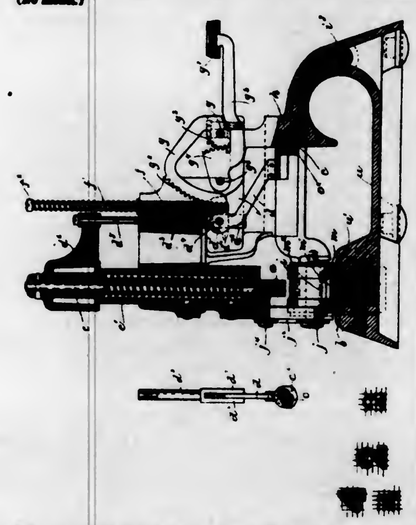
3. The combination, with a bottle, of an adjustable band secured to the bottle-neck, a swinging lid hinged to the band and adapted to close the bottle, and a sliding rod held to move in keepers on the side of the bottle and adapted to extend below the bottle, the rod being connected with the lid, so that when pressure is applied to its lower end the lid will be closed, substantially as described.

4. The combination, with a bottle, of a band secured to the bottle-neck, keepers formed on arms or clasps which embrace the bottle, a swinging lid hinged to the neck-band and adapted to close the bottle, the lid having an outwardly-projecting extension, and a sliding rod held to move in the keepers and adapted to extend below the bottle-bottom, the upper end of the rod being secured to the extension of the lid, substantially as described.

485,443.



485,444. CHECK PUNCHING AND MARKING MACHINE. GILBERT WEBSTER, Newton, Mass. Filed Jan. 4, 1892. Serial No. 416,991. (No model.)



Claim.—1. A check printing and marking device comprising a printing type or character, a series of punches connected with said type and arranged to penetrate the paper while the type is printing the same, said punches being formed to cut out pieces of the paper and arranged in such relation to the printing-type as to identify the holes made by their action with the character printed and prevent alteration of the latter, and a bed adapted to co-operate with the punches in cutting out pieces of the paper, as set forth.

2. The combination of a fixed punch-bed having a series of holes and a printing and punching device comprising a printing type or character and a series of punches connected with said type and movable with the latter toward and from the bed, the punches being formed and arranged to co-operate with the holes in the punch-bed in cutting out pieces from a slip of paper on said bed while the piece is being printed by the type, and thereby forming ineffaceable holes which are identified with the character printed, as set forth.

3. In a check-marking machine, the combination of a fixed punch-bed having a series of holes, a printing and punching device comprising a printing type or character and a series of punches connected with said type and adapted to co-operate with the holes in the punch-bed in cutting out pieces from a slit of paper, and thereby forming ineffaceable holes, means for forcing said device against a check on the bed, and a fixed guide arranged to insure the proper position of the printing and punching device relatively to the holes in the bed when said device is approaching the bed, as set forth.

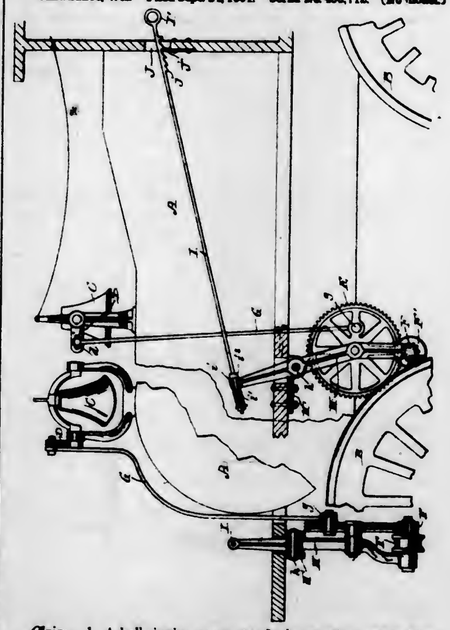
4. In a check-marking machine, the combination of a movable support, such as a plunger d^3, an arm or bar pivotally connected to said support and provided with a printing and punching device at its swinging end, a plunger *e*, connected with said support, a movable device, such as the rack *f*, whereby said arm may be given first an independent swinging motion and then a rectilinear motion with its support, and means for operating said rack, as set forth.

5. In a check-marking machine, the combination of a check-supporting bed or table, a plunger movable toward and from said bed, feed-rolls arranged to move a check along the bed, a series of printing and punching devices, each having a swinging movement radially toward and from said plunger and a rectilinear movement with the plunger, means for depressing the plunger to force it downwardly with a printing and punching device, and feed-roll-operating mechanism actuated by the movements of said plunger, as set forth.

6. In a check-marking machine, the combination of a pivoted lever or bar carrying at its swinging end a printing and punching device and at its pivoted end a series of gear-teeth, a plunger d^3, to which said lever is pivoted, a rack-bar engaged with said teeth, a key-lever and connections between it and said rack-bar whereby the latter may be depressed, the depression of said rack-bar first swinging the lever, then giving it and the plunger d^3 a rectilinear movement, and a plunger *e*, connected with the plunger d^3 and moved thereby, the printing and punching device being presented to the plunger *e* by the swinging movement of the lever and caused to operate by the said plunger *e* during the said rectilinear movement, as set forth.

7. In a check-marking machine, the combination of a pivoted lever or bar carrying at its swinging end a printing and punching device and at its pivoted end a series of gear-teeth, a plunger d^3, to which said lever is pivoted, a rack-bar engaged with said teeth, a pivoted key-lever having a gear-segment, and a pivoted intermediate lever having at one end a gear-segment engaged with the gear-segment on the key-lever and at the other end a gear-segment engaged with said rack-bar, as set forth.

485,445. BELL-RINGER FOR LOCOMOTIVES. EDWIN D. BABCOCK, Milwaukee, Wis. Filed Sept. 24, 1891. Serial No. 406,712. (No model.)



Claim.—1. A bell-ringing apparatus for locomotives, comprising a pitman engaged at one end with the crank-arm of the bell, a hanger pivotally connected with the locomotive and carrying at its free end

a friction-roller and a pinion keyed to a common shaft, a gear-wheel loosely journaled upon a stud carried by said hanger and meshing with said pinion, a wrist-pin carried by said gear-wheel and operatively connected with the other end of said pitman, and a rod engaged with said hanger and extending into the cab and adapted to be operated to move said hanger, so as to carry said roller into or out of engagement with the periphery of the locomotive drive-wheel, substantially as described.

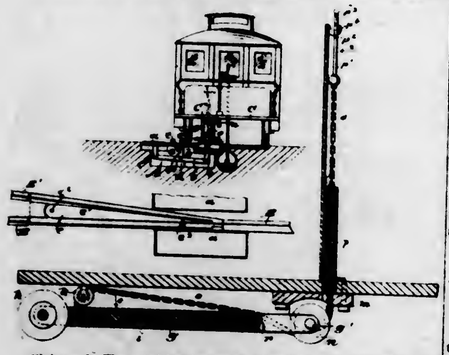
2. A bell-ringing apparatus for locomotives, comprising a pitman engaged at one end with the crank-arm of the bell, a hanger pivotally connected with the locomotive and carrying at its free end a friction-roller and a pinion keyed to the same shaft, a gear-wheel loosely journaled upon a stud carried by said hanger and meshing with said pinion, a wrist-pin carried by said gear-wheel and operatively engaged with the other end of said pitman, and a rod having an elastic connection with said hanger and extending into the cab and adapted to be operated to move said hanger, so as to carry said roller into or out of engagement with the periphery of the locomotive drive-wheel, substantially as described.

3. A bell-ringing apparatus for locomotives, comprising a pitman having an adjustable connection with the crank-arm of the bell, a hanger pivotally connected with the locomotive and carrying at its free end a friction-roller and a pinion keyed to the same shaft, a gear-wheel loosely mounted upon a stud-shaft carried by said hanger and meshing with said pinion, a wrist-pin carried by said gear-wheel and operatively engaged with the other end of the pitman, and a rod engaged with said hanger and extending into the cab and adapted to be operated to move said hanger, so as to carry said roller into or out of engagement with the periphery of the locomotive drive-wheel, substantially as described.

4. A bell-ringing apparatus for locomotives, comprising a pitman adjustably engaged with the crank-arm of the bell, a hanger pivotally engaged with the locomotive and carrying at its free end a friction-roller and a pinion keyed upon a common shaft, a gear-wheel loosely journaled upon a stud carried by said hanger and meshing with said pinion, a wrist-pin carried by said gear-wheel and operatively engaged with the other end of said pitman, and a rod having an elastic connection with the hanger and extending into the cab and adapted to be operated to move the hanger, so as to carry said friction-roller into or out of engagement with the periphery of the locomotive drive-wheel, substantially as described.

5. A bell-ringing apparatus for locomotives, comprising a pitman adjustably engaged with the crank-arm of the bell at one end, a hanger pivotally connected with the locomotive and carrying at its free end a friction-roller and a pinion keyed to a common shaft, a gear-wheel loosely journaled upon a stud carried by said hanger and meshing with said pinion, a wrist-pin carried by said gear-wheel and operatively engaged with the other end of said pitman, and a rod having an elastic connection with said hanger and extending into the cab and adapted to be operated to move said hanger, so as to carry said roller into or out of engagement with the periphery of the locomotive drive-wheel, and provided with notches adapted for engagement with a stop in the cab to retain the device in its adjusted positions, substantially as described.

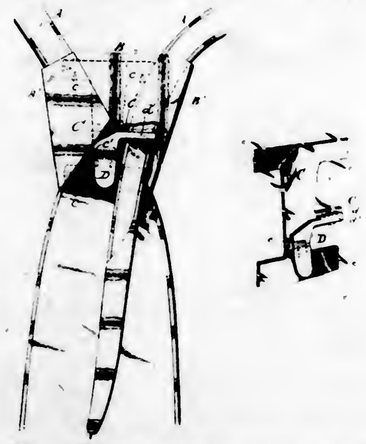
485,446. SWITCH-OPERATING DEVICE. BENJAMIN BARTELMES, Brooklyn, N. Y. Filed Apr. 30, 1892. Serial No. 431,312. (No model.)



Claim.—1. The combination, with a car-platform and a forward extension therefrom, of a vibratable weighted arm, a rotatable wheel at its outer end, and a flexible connection extended from the arm over a pulley on the extension and thence to the car-platform, substantially as described.

2. The combination, with a car-platform, a forward extension thereon, a pivoted weighted arm below, extending from the platform, and a tubular upright case on the platform, of a grooved pulley on the outer end of the extension, a bracket-box on the car-platform below, a grooved pulley in the box, a weighted arm pivoted by one end to the bracket-box and extending outwardly, a presser-wheel rotatably mounted on the outer end of said arm, a chain on the outer end of the arm, extended over the pulley on the extension and below the pulley on the platform and thence up through the case thereon, and a lifter-rod above on the chain, adapted for detachable connection with the platform dash-board, substantially as described.

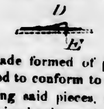
485,447. NECKTIE. JACOB B. BEAM, Big Run, Pa., assignor to Amanda L. Beam, same place. Filed June 16, 1892. Serial No. 436,934. (No model.)



Claim.—1. The combination, with a necktie having the upper and lower portions X and Y, of a plate provided with a series of spurs along its upper edge, which engage with one end of the section X, spurs at the lower edge of the plate, which engage with the section Y, scarf-engaging means at the side edges of the plate, the neckband, means for securing it to the plate, and a device carried by the plate for securing the outer end of the neckband in position.

2. The combination, with the necktie having the upper and lower portions X and Y, of a plate provided with spurs along its upper edge and spurs along its lower edge and with folding laterally-projecting arms at top and bottom, the neckband, means for securing it to the plate, and devices for holding the end of the neckband in position.

485,448. EYE-SHADE. FREDERICK BEILMANN, Philadelphia, Pa. Filed Apr. 4, 1892. Serial No. 427,625. (No model.)



Claim.—1. An eye-shade formed of pieces of opaque material, each having its edge curved to conform to the anatomy of the eye-socket, a bridge connecting said pieces, and side springs passing through the shades and having hooks on the under ends, substantially as described.

2. An eye-shade formed of pieces of opaque material having opening and closing spring-catches connected with the sides thereof, substantially as described.

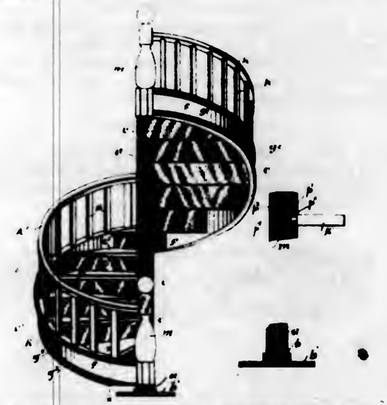
3. In an eye-shade, a catch connected with the shade-piece thereof and adapted to have a spectacle-bow engaged therewith, substantially as described.

485,449. SPIRAL STAIRWAY. HERMAN F. A. BORNEMAN and JACOB DAAB, Columbus, Ohio. Filed Apr. 2, 1892. Serial No. 427,431. (No model.)

Claim.—1. In a winding or spiral stairway, the combination, with the central tubular standard and the slotted openings *e* therein, of the step portions having projecting studs *d* adapted to engage with said openings *e*, top step-plates *c'*, and side beam, substantially as and for the purpose specified.

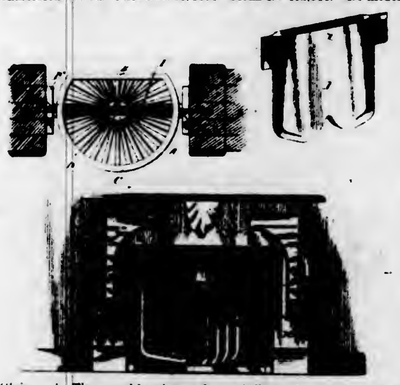
2. In a winding or spiral stairway, the combination of the central tubular standard *a*, keyhole-shaped openings *e*, arranged spirally therein, step portions *c*, and studs *d*, projecting from the ends thereof

and having enlarged heads, said studs adapted to engage, as described, with said slotted openings *e*, substantially as and for the purpose specified.



3. In a spiral or winding stairway, the combination of the central tubular standard *a*, openings *e* therein, step portions *c* and *c'*, studs *d*, projecting through said portions *c* and adapted to engage, as described, within said openings *e*, and spiral side beam *f*, consisting of two or more connected wood layers and intervening metallic plates *f*², the latter being secured to the steps, substantially as and for the purpose specified.

485,450. GRATE. FREDERICK CAREL and WAYLAND F. DAVIDSON, Charleston, W. Va. Filed Nov. 16, 1891. Serial No. 412,011. (No model.)



Claim.—1. The combination, substantially as herein described, of the base having grooves in its upper side, the grate journaled centrally upon the said base, the plates G, held at their lower edges in said grooves, and the plates H, arranged to close the spaces between the plates G and the grate, all substantially as and for the purpose set forth.

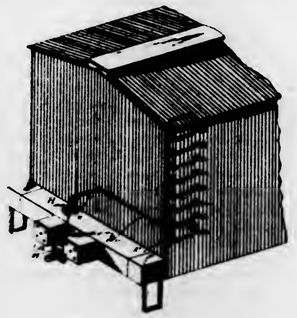
2. The combination, substantially as herein described and shown, of the grate, the base, the plates G, the lap-plates H, arranged to close the spaces between the plates G and the grate, and the partition fitted in and extended above the grate and having its edges above the grate arranged to lap against the plates G, substantially as and for the purpose set forth.

3. The improvement in grates, substantially as herein described and shown, comprising the base having grooves in its upper side, the plates G, held at their lower edges in said grooves, the grate journaled on the said base and provided with flange-like plates H, arranged to lap against the plates G, and the partition fitted in the grate and projected above the same, the edges of the said partition above the grate being arranged in line with the flange-plates H and to lap against the plates G, all substantially as and for the purpose set forth.

485,451. REFLECTOR FOR WATER-GAUGES. SERA C. CARLTON, Port Huron, Mich. Filed Mar. 23, 1892. Serial No. 426,019. (No model.)

Claim.—As a new article of manufacture, a shield or reflector consisting of a curved strip of sheet metal and the curved wire-frames at its top and bottom, around which is bent the upper and lower edge of said strip, said wires projecting out and flared to form the spring retaining-arms for holding the shield in place, substantially as set forth.

485,452. CAR-COUPLING. FRANK J. CASE and GEORGE T. CHALLEN, Atchison, Kans. Filed May 17, 1892. Serial No. 433,351. (No model.)



Claim.—1. In a car-coupling, the combination, with the draw-head having therein the link-receiving cavity or chamber B and the intersecting pin-aperture E, of the swinging pin-support and link-holder comprising a block slotted or cut away at its upper central portion, forming the arms *c*, which project obliquely, upwardly, and forwardly and are pivoted in recesses in the upper wall of said chamber, one on each side of the pin-aperture, said recesses having their rear walls cut obliquely, the lower front body of the block being somewhat rounded or convex and inclined backward and the upper rear portion of angular form, a shoulder or seat I on said block forming a support for the pin, an angular recess K in the upper wall of the chamber to receive said block, and a stop on the lower wall to limit its forward movement, substantially as specified.

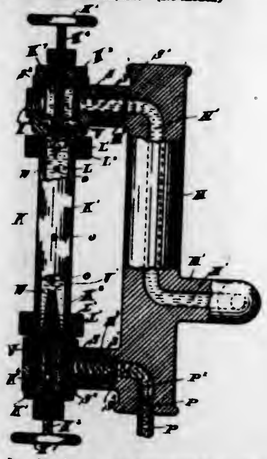
2. In a car-coupling, the combination, with a coupling-pin, of an attachment for the head thereof, said attachment comprising a plate or body portion perforated to receive the pin and fitting against the

under surface of the shoulder on the head thereof, and the side flanges bent around the head of the pin, substantially as specified.

485,453. CHEMICAL REAGENT FOR USE IN THE MANUFACTURE OF ALLOYS. SHERWOOD B. CHEESEMAN, Kansas City, Mo. Filed May 19, 1892. Serial No. 433,602. (No specimens.)

Claim.—A new composition of matter for the purpose set forth, consisting of an alkaline liquid and an arsenite.

485,454. LUBRICATOR. JOSEPH V. CLARK, Cincinnati, Ohio. Filed Feb. 26, 1891. Serial No. 382,897. (No model.)



Claim.—1. In a lubricator, the combination of the reservoir F, the sight-feed lubricator independent of the reservoir, and the column M, intervening between the reservoir F and the sight-feed K and containing in its lower part the conduit P^0, whereby the pipe P is connected to the lower chamber of the sight-feed and the conduit N' connected to the upper chamber of the sight-feed and the said conduit extending into the column and down into the same and provided with outlet at the side of the column, substantially as and for the purposes specified.

2. In a lubricator, in connection with an oil-reservoir, a sight-feed and column M, having arms S' S', to which are respectively secured the upper and lower portions S S of the sight-feed, the conduit through the upper chamber K^1 of the sight-feed being connected to the conduit N' of the arm M^3, the said conduit N' being also continued in the column and extending down in said column and having its point of exit located below the said exit-way of the upper chamber K^1, the said passage-way and the lower arm or portion S of the sight-feed connecting the pipe P with the passage-way P^3, located in the column M and connected to the oil-supply reservoir, substantially as and for the purposes specified.

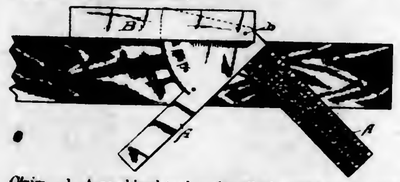
3. In a lubricator, the combination of a steam-supply pipe B, steam-pipe D, connected thereto, regulating-valve E, located in pipe D, oil-reservoir F, having pipe D connected to its interior space at the lower portion of the latter, provided with exit-orifice G, indicator-glass J, oil-exit pipe P for supplying oil to the sight-feed, the reservoir having an inlet filling-orifice H, column M, having elbow M', provided with the passage-way N', extending into and through the elbow M' and conduit P^2 in its lower portion, the sight-feed, the interior space of whose lower end is connected to the conduit P^2 and the interior space of its upper end connected to the conduit N' aforementioned, the elbow M' being connected to the steam-chest or other machinery to be lubricated, substantially as and for the purposes specified.

4. In a lubricator, the column M, provided at the upper end with the arm M^3 and at its lower end with a similar arm M^3, provided with the conduit N' and conduit P^2, separated from one another, the sight-feed having upper arm S, provided with the screw-threaded portion S', and the lower arm S, provided with the screw-threaded portion S', each of the arms M^3 of the column having screw-threaded recesses, each recess receiving its respective adjacent screw-threaded portion S' of the adjacent arm S of the sight-feed, the exit-conduit N' being connected to the chamber or interior space of the sight-feed and extending downward and having its exit at the bottom of it, the said passage-way, and also at a point below the exit passage-way of the upper chamber, and conduit P^2, connected with the oil-supply pipe from the oil-reservoir and at the other end with the chamber or oil-space in the lower end of the sight-feed, substantially as and for the purposes specified.

485,455. SLATING COMPOUND. JOHN R. COLES, Bayonne, N. J. Filed Apr. 2, 1892. Serial No. 427,892. (No specimens.)

Claim.—The herein-described slating compound, which consists of soluble glass, alumina, water, and pearlash, mixed in substantially the proportions stated and in the manner set forth.

485,456. COMBINED TRY-SQUARE AND BEVEL. THOMAS R. COOK, Irvington, assignor of one-fourth to Harry M. Barnard, Heber S. Parmenter, and George A. Topp, Indianapolis, Ind. Filed Dec. 7, 1891. Serial No. 414,377. (No model.)



Claim.—1. A combined tool, as described, consisting of a square having a projection upon the outer edge of one of its blades, provided with markings corresponding to the various pitches of roof, and a stock pivoted to and adapted to swing over said blade and its projection, whereby rafters can be marked for any required pitch of roof by the use of said tool without calculation, substantially as set forth.

2. In a combination-tool, a square having a sector-like projection on the outer edge of one blade, provided with markings, as specified, a stock pivoted thereto and adapted to swing over the same, and a table on the other blade of the square, bearing the same markings in a vertical column, the widths of the building in a horizontal row and the lengths of the required rafters at intersecting points of lines projected from said vertical column and horizontal row, substantially as set forth.

3. As a new article of manufacture, the tool described, consisting of a combined try-square, bevel, and rafter-gage, the two blades whereof are integral and extend out at right angles with each other and wherein one blade has a projection on its outer edge upon which are desired markings, and a stock pivoted thereto and adapted to swing over said projection and in varying relations to said blade, substantially as set forth.

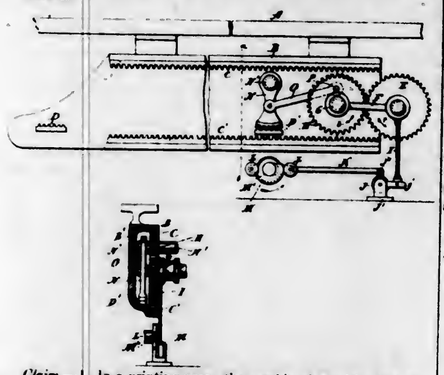
485,457. PLOW. JOHN P. COSBY, Henrietta, Tex. Filed Apr. 11, 1892. Serial No. 428,733. (No model.)

Claim.—1. The combination, with the main standard, of the mold-board secured thereto and the bifurcated landside secured to the side of the standard, one member of which is arranged above the mold-board and the other below the same, substantially as shown and described.

2. The combination, with a beam, of a main standard, the horizontal arm integral therewith, having a slotted pendent end, the auxiliary standard slotted longitudinally, and the brace-rods secured at one end to the beam and at the other to the auxiliary standard at its juncture with the bolts connecting the rods, arm, and auxiliary standard, substantially as shown and described.

3. The combination, with the stock or beam, of the main standard, the horizontal bar integral therewith and having a slotted pendent outer end, the auxiliary standard adjustably attached to the pendent end, the brace-rods and bolts connecting the beam and auxiliary standard, and the adjustable brace connecting the main standard and beam, substantially as shown and described.

485,458. BED-MOTION FOR PRINTING-PRESSES. JOHN W. CRIDDLE, Shelton, Conn. Filed June 13, 1892. Serial No. 436,512. (No model.)

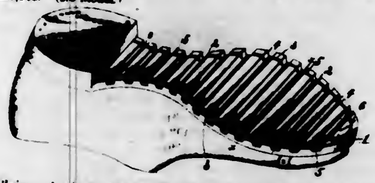


Claim.—1. In a printing-press, the combination, with a bed having a depending hanger furnished with two long corresponding parallel main racks located opposite each other in the same vertical plane and with two secondary or interval racks located in line and in the same horizontal plane and arranged to be brought into play at the respective ends of the stroke of the bed, of a pinion located in line with and substantially between the said main racks, means for driving the said pinion and for moving it to engage the said racks alternately, an oscillating rack arranged to engage with the said secondary racks, which are respectively brought under it when the bed is at the ends of its stroke, and means for actuating the said oscillating rack, substantially as set forth.

2. In a printing-press, the combination, with a bed having a depending hanger furnished with two long corresponding parallel main racks located opposite each other in the same vertical plane and two secondary or interval racks located in line and in the same horizontal plane and arranged to be brought into play at the respective ends of the stroke of the bed, of a driving-pinion, a driven pinion meshing thereinto and located in line with it and substantially between the said main racks, a carrying-arm swung on the shaft of the driving-pinion and having the driven pinion mounted in its outer ends, means for raising and lowering the driving-pinion to engage it with the main racks alternately, an oscillating rack arranged to engage with the said secondary racks, which are respectively brought under it when the bed is at the ends of its throw, and means for actuating the said oscillating rack, substantially as set forth.

3. In a printing-press, the combination, with a bed having a depending hanger and two long corresponding parallel main racks located opposite each other in the same vertical plane and two secondary or interval racks located in line in the same horizontal plane and arranged to be brought into play at the respective ends of the stroke of the bed, a driving-pinion, a driven pinion meshing thereinto and located in line with and substantially between said racks, a carrying-arm swung on the center of the driving-pinion and having a driven pinion mounted in its outer end, means for raising and lowering the driving-pinion to engage it with the main racks alternately, an oscillating rack arranged to engage with the said secondary racks, which are successively brought under it when the bed is at the ends of its throw, and a crank-arm connecting the said oscillating rack with the driving-pinion, substantially as set forth.

485,459. SOLE. GEORGE H. CROCKER, Campello, assignor of one-half to George C. Hall, Greenfield, Mass. Filed July 7, 1892. Serial No. 439,305. (No model.)

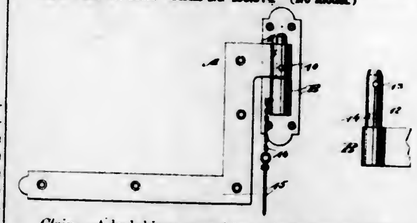


Claim.—1. As an improved article of manufacture, a sole for a boot or shoe having grooves extending across the same to form ribs, with a front and rear contacting angular edge and a channel or groove following the outline of the sole to locate the attaching means beyond the contacting surface of the ribs, said ribs extending from the toe to the breast of the heel and presenting unyielding contacting surfaces, substantially as described.

2. As an improved article of manufacture, a sole for a boot or shoe having a series of grooves across the same to form ribs, with angular contacting edges at the front and rear of the same, and a groove or channel following out the outline of the sole adjacent thereto and of less depth than the said grooves which form the ribs, whereby the stitches are preserved from contact with wearing-surfaces and the opposite end portions of the ribs are reinforced, substantially as described.

3. As an improved article of manufacture, a sole for boots or shoes having a series of grooves extending across the same to form ribs, with angular contacting edges, and a recess at the toe portion thereof, having a front curved wall to form an additional contacting edge, substantially as described.

485,460. LOCK-HINGE. JAMES W. DEARING, Brooklyn, N. Y. Filed June 29, 1892. Serial No. 438,374. (No model.)



Claim.—A lock-hinge comprising a leaf provided with a pintle having upper and lower transverse apertures 13 14, extending at an angle to each other, a leaf provided with a knuckle, exposed upper and lower apertures 11 10 at an angle to each other to register with the respective pintle-apertures, and a pin 15, separate and independent from the hinge and adapted to be passed into either pair of registering apertures and through the pintle and knuckle, substantially as set forth.

485,461. PROCESS OF OBTAINING ALUMINA AND ACETIC ACID. FREDERIC P. DEWEY, Washington, D. C., assignor to the Chemical Supply Company, of New York. Filed Apr. 9, 1890. Serial No. 347,364. (No specimens.)

Claim.—1. The process of manufacturing alumina and acetic acid by a single operation, which consists in subjecting a solution of acetate of alumina to destructive distillation, driving off the acetic acid as a vapor, collecting this acid in a condenser, and recovering the alumina precipitated in the boiling-chamber, substantially as described.

2. The herein-described process resulting in the manufacture of alumina, which consists in subjecting a solution of acetate of alumina to destructive distillation, driving off the acetic acid, and recovering the precipitated alumina, as set forth.

3. The herein-described process, which consists in subjecting a solution of acetate of alumina to destructive distillation, precipitating the alumina, driving off the acetic acid as a vapor, and collecting this acid in a condenser, as set forth.

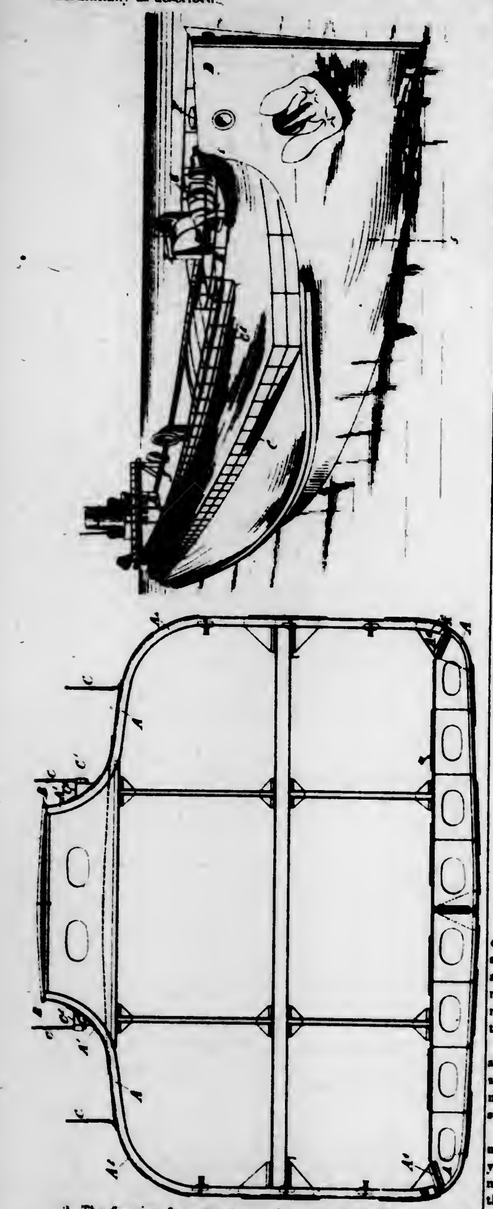
4. The process of manufacturing alumina and acetic acid by a single operation, which consists in mixing a solution of a salt of alumina with a solution of an acetate the base of which will form an insoluble combination with the acid of the salt of alumina, separating the precipitate thus formed from the solution of acetate of alumina, subjecting this solution of acetate of alumina to destructive distillation, driving off the acetic acid as a vapor, collecting the acid in a condenser, and recovering the alumina precipitated in the boiling-chamber, substantially as described.

5. The process of manufacturing alumina and acetic acid, which consists in mixing a solution of sulphate of alumina with a solution of acetate of lime, separating the precipitate thus formed from the solution of acetate of alumina, subjecting the solution of acetate of alumina to destructive distillation, driving off the acetic acid as a vapor and collecting it in a condenser, and recovering the alumina precipitated in the boiling-chamber, substantially as described.

485,462. CONSTRUCTION OF HULLS OF VESSELS. CHARLES D. DEFFORD, Sunderland, England. Filed Nov. 19, 1891. Serial No. 412,394. (No model.)

Claim.—1. A steam-vessel having the vertical sides extending to about the water-line, the platform-deck J, extending longitudinally of the vessel, in which are the hatchways, and the sloping covering rising from the vertical sides and connecting them with the said deck,

the said covering having the concave and the convex exterior curves, substantially as described.



2. The framing for a steam-vessel, consisting of the vertical portions, rising to about the water-line, and the top or upper portions, formed with the reverse transverse curves A' A^3, and the hatchway-combings at the upper edges of the said top or vertical portions of the framing, substantially as set forth.

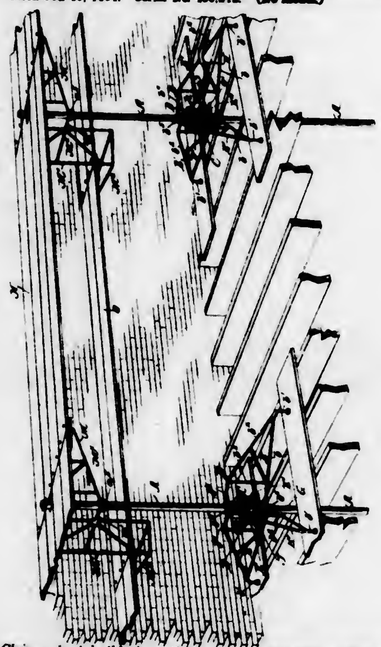
3. A steam-vessel having a bow and a stern portion of ordinary construction, the straight vertical side walls between the bow and stern portions extending up to about the water-line, the hatchways arranged centrally of the vessel between the bow and stern portions and forming a platform-deck, and the curved sloping covering connecting the side walls of the vessel with the hatch-combings, substantially as set forth.

4. A steam-vessel having a sloping upper portion between the bow and the stern and below the hatchway-combings formed with a concave exterior curve A' on either side of the vessel and having rail-protected platforms C^3 upon such concave portions of the covering, substantially as set forth.

5. A steam-vessel having a platform-deck J between the bow and stern portions of the vessel and formed of the hatchway-covers and having the curved covering extending from said platform-deck to about the water-line and having, also, a superstructure K, located at the stern portion of the vessel, substantially as set forth.

6. A steam-vessel having a centrally-disposed platform-deck J, arranged longitudinally of the vessel, the curved sloping covering-walls extending from said deck to about the water-line, the forecastle-deck above the said deck J, and the elevator bow D, substantially as set forth.

485,468. BUILDER'S SCAFFOLD. JOHN R. BEGIN, Duluth, Minn. Filed Oct. 19, 1891. Serial No. 409,212. (No model.)



Claim.—1. A builder's scaffold support comprising a main frame or support, a shaft having a collar near one end reversibly mounted on said frame, a bracket loosely mounted on the shaft, and a clutch mechanism adjustably mounted on the shaft, said mechanism including reversible clutch members, whereby such mechanism is adapted to move the shaft and the bracket or be movable on the shaft to raise the bracket, substantially as and for the purpose described.

2. In a builder's scaffold, in combination with a main frame or support, a shaft movable vertically in such frame, a platform-bracket supported on the upper end of the shaft to turn thereon, and a clutch mechanism located within the main frame, engaging the shaft, substantially in the manner and for the purpose described.

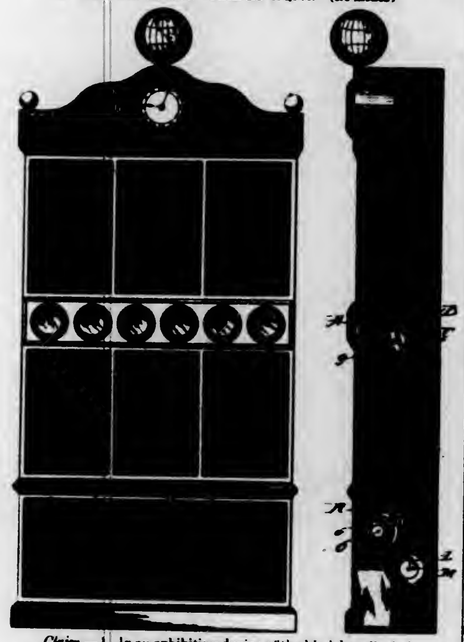
3. In a builder's scaffold, substantially as described, the combination, with the shaft A, of the lifting mechanism consisting of the yoke C, the lever D, pivoted therein, the oppositely-inclined clutch members G and J, having screw-shanks projected from opposite sides thereof, the link-arms E and E', the screw-nuts F, and the detachable weights, all arranged substantially as shown, and for the purpose described.

4. The combination, with the base B, formed of the swinging sections B', having upper and lower apertured bearing members b^4 b', of the shaft A, vertically movable in the members b^4 b', the yoke C, held about the shaft between the members b^4 b', the oppositely-inclined clutch-collars G and J, the lever D, pivoted in the yoke, and the link-arms E and E', connected at their upper ends with the lever D on opposite sides of the pivot and with the opposite ends of the collars G and J, substantially as shown and described.

5. In a scaffold-support, substantially as described, the combination, with the shaft A, of the bracket M^x, supported thereon, consisting of an upper section M, a downwardly-extending portion M', and an outwardly-extending section M^2, as and for the purpose described.

6. The combination of a pair of supporting-shafts, the brackets held thereon, the plates P, having concaved portions adapted to fit the bearing-bars of the said brackets and upwardly-projecting lugs p', and the planks held on said plates P, all arranged as shown and described.

485,464. PICTURE-EXHIBITOR. WILBERT G. FAWKES, Chicago, Ill. Filed Dec. 10, 1891. Serial No. 414,578. (No model.)



Claim.—1. In an exhibiting device of the kind described, the combination, in a case, of an endless chain or belt bearing both transparent and opaque cards and presenting the same regularly before a series of lenses with a reflector, light, semi-transparent screen, and mirror so arranged that the same light will illuminate the back of the transparencies and also be reflected upon the front of the opaque cards, substantially as and for the purposes set forth.

2. In a device of the kind described, the combination, in a case, of the vertical endless chain or belt and the upper wheel around which it revolves with a horizontally-adjustable bearing for the shaft of said upper wheel and the screw-threaded rod g^3 and its fixed nut g^4, adapted to adjust said bearing back and forth and hold it in its adjusted position, substantially as set forth.

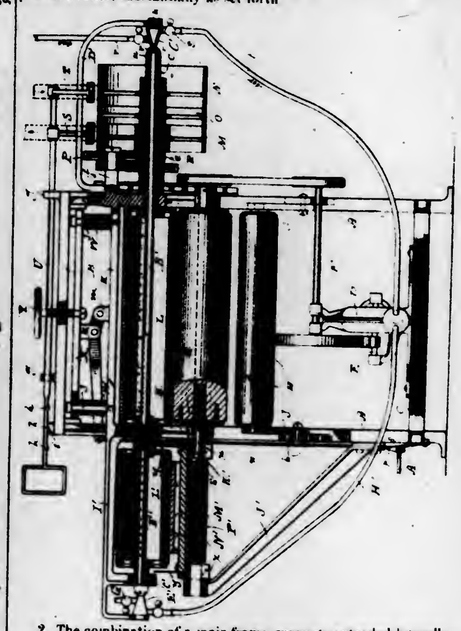
3. The combination, with the sprocket-wheel p, the pinion o for intermittently driving said sprocket-wheel, the ratchet-wheel O, the wheel K, an arm extending from a wrist-pin on the latter wheel and engaging with the ratchet to intermittently move the same, and the reinforcing-weight M, arranged to aid the wheel K in performing its work, substantially as set forth.

4. The combination of the endless chain or belt T, the stationary wheel g, over which the upper end of the chain or belt passes, the vertically-adjustable wheel p, around which the lower end of the chain or belt passes, the pinion P, the pinion o, the driving-wheel K, the bar L, the ratchet O, and the weight M, substantially as set forth.

5. In a device of the kind described, the combination of the endless chain or belt T, the wheel p, and its pinion P at the lower end of the chain or belt, and the plates R R, having formed therein the circular slots r, concentric with the pinion o, said slots serving as the bearings for the shaft of the pinion P, with the pinion o meshing with the pinion P and revolving in the direction which tends to automatically force the pinion P and its shaft downward in the slots r r, and thus tighten the chain or belt, substantially as and for the purposes set forth.

485,465. IRONING-MACHINE. AXEL R. GUSTAFSON, Chicago, Ill., assignor of one-half to William F. Anderson, Hegeuese, Mich. Filed Dec. 18, 1891. Serial No. 415,602. (No model.)

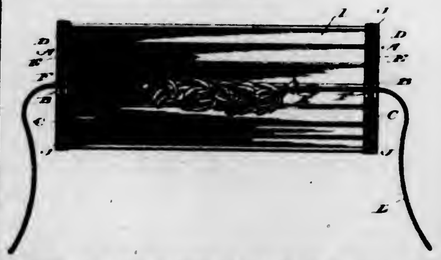
Claim.—1. The combination of a main frame, an auxiliary frame loose in the main one, a pressure-roller journaled in the auxiliary frame, spiral springs opposed to this latter frame, bolts extended through the springs, a bar loose on the bolts in opposition to said springs, a tension-screw having its bearings in the main frame and connected to the bar, a block depending from said bar, a lever fulcrumed to the block and connected to said auxiliary frame, a treadle connected to the lever, and a supporting-surface opposed to said pressure-roller, substantially as set forth



2 The combination of a main frame, supports extended laterally from the same, a track-frame arranged on the supports, a press-board reciprocative on the track-frame and having a removable raised portion, a clamping-frame surrounding the raised portion of the press-board, and a pressure-roller in opposition to said press-board, substantially as set forth.

3. The combination of a main frame, a spring-and-treadle-controlled auxiliary frame loosely arranged in the main one, a hollow pressure-roller journaled in the auxiliary frame, gas-burners provided with atmospheric inlets and having jet-pipe continuations extended into opposite ends of the pressure-roller, a blower supported on the main frame, air-conveyers connecting the blower and gas-burners, an endless apron arranged beneath a portion of the pressure-roller, a track-frame arranged on supports that are laterally extended from said main frame, a press-board reciprocative on the track-frame beneath another portion of said pressure-roller, and suitable means for simultaneously actuating the pressure-roller, endless apron, and blower in either direction, substantially as set forth.

485,466. CRATE. ELISHA A. JEANES, Lampasas, Tex. Filed Apr. 13, 1892. Serial No. 429,023. (No model.)



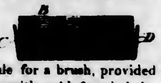
Claim.—1. A crate consisting of slats forming its sides, ends or heads divided into two parts, and fastening-bolts passed diametrically through the said heads or ends.

2. The combination, with the crate, of the suspending-straps passed centrally through the ends of the same and means for securing said straps at any desired point of their length in the said ends of the crate.

3. The combination of the crate having its ends in two separable portions, the suspending-straps passed centrally through the ends of the crate, and the fastening-bolts passed diametrically through the said ends and through the suspending-straps.

4. A crate provided with separable ends, having engaging-studs and recesses and fastening-bolts passed diametrically through said ends.

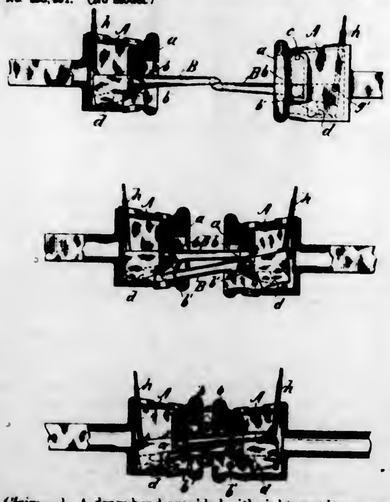
485,467. FERRULE FOR BRUSHES. LANCASTER S. JENKINS, Philadelphia, Pa. Filed Jan. 9, 1892. Serial No. 417,481. (No model.)



Claim.—1. A ferrule for a brush, provided with hooks for connection of a bridle therewith, said ferrule being formed of a coil of wire and said hooks being continuous of and integral with the body of the ferrule, substantially as described.

2. A ferrule for a brush, formed of a coil of wire, one end being bent up from the bottom on the outside of the body and the other end being bent down from the top on the inside of the body and again turned up on the outside of the body, forming hooks which are integral with the body, said parts being combined substantially as described.

485,468. CAR-COUPLING. JOHN MASON, Providence, R. I., assignor to Welcome B. Darling, same place. Filed June 4, 1892. Serial No. 435,481. (No model.)



Claim.—1. A draw-head provided with right-angular grooves in its opposite interior faces for the reception of a trunnioned coupling-link, substantially as described.

2. The combination, with a draw-head provided with right-angular grooves upon its opposite interior faces, of a coupling-link provided with trunnions formed integral therewith and set-screws projecting one into each of said grooves to prevent the withdrawal of said coupling-link, substantially as described.

3. A coupling-link provided with trunnions and having a counterbalanced portion in rear of said trunnions and a hook or projection for engaging a fellow link, the engaging-face of said projection being likewise in the rear of said trunnions, substantially as described.

4. A coupling-link provided with trunnions and having a counterbalanced portion, the bottom edge of which is formed on an incline, substantially as and for the purposes described.

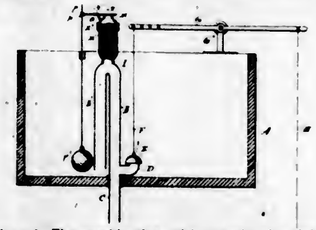
5. A coupling-link provided with trunnions and having a counterbalanced portion, the bottom edge of which is formed on an incline and cut away so as to provide two separate projections, one in the front and the other at the rear of said counterbalanced portion of the link, substantially as described.

6. A coupling-link provided with trunnions and having a counterbalanced portion and an engaging hook or projection, said trunnions being provided with bearing edges in front of the axis of said trunnions, substantially as described.

7. A coupling-link provided with trunnions and having a counterbalanced portion and an engaging hook or projection, said link being provided at its outer rear end with a recess, and a bar extending across said recess for the engagement of a rod for operating said link, substantially as described.

8. The combination, with two opposing draw-heads, of two trunnioned coupling-links, one mounted in each of said draw-heads, each of said coupling-links being provided with a coupling-slot and a counterbalanced portion and with a hook or projection for engaging its fellow link, the engaging-face of said hook or projection being in the rear of the trunnions, whereby the uncoupling of said links may be effected by raising the rear end of either of said links, substantially as described.

485,469. WATER-CLOSET CISTERN. JOHN MEEHLIS and ROBERT MORGAN, New Haven, Conn. Filed June 20, 1892. Serial No. 437,306. (No model.)



Claim.—1. The combination, with a tank, of a siphon located therein and having a starting-valve, an air-retarding chamber applied to the upper end of the siphon, and a body of retarding material located in the said chamber and adapted to break up and retard the passage of air through the same, substantially as set forth, whereby the siphon is broken gradually and the force of the water flowing through it correspondingly abated.

2. The combination, with a tank, of a siphon located therein and having a starting-valve, an air-retarding chamber applied to the upper end of the siphon, a body of retarding material located in the said chamber and adapted to break up and retard the passage of air through the same, a valve applied to the open end of the said chamber, and a float located in the tank and connected with the said valve, the operation whereof it controls, substantially as described.

3. The combination, with a tank, of a siphon located therein and having a starting-valve, an air-retarding chamber applied to the upper end of the siphon, a body of retarding material located in the said chamber to break up and retard the passage of air through the same, and two perforated regulating-disks, combined with the said chamber for controlling the passage of air through the same.

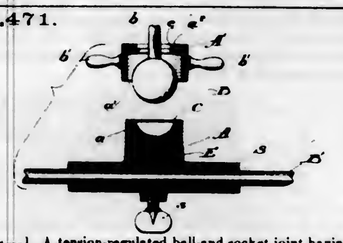
485,470. HORSESHOE. WILLIAM J. MORAN and MICHAEL J. MORAN, Covington, Ky. Filed Dec. 26, 1891. Serial No. 416,166. (No model.)

Claim.—1. In a horseshoe, the combination, with the body of the shoe having a groove, of a calk having a tenon fitted to said groove, and also a lip, securing means passing through the tenon and lip into the body, and a plate extending across the opening in the shoe and detachably secured to the body of the shoe, as set forth.

2. In a horseshoe, the combination, with the body of the shoe having a rectangular mortise extending through the shoe lengthwise thereof, of a calk having a rectangular tenon fitted to said mortise, and a clip upon each side of said tenon to embrace the sides of the shoe, and securing means passed through the body of the shoe, the tenon, and clips, substantially as shown and described.

485,471. BALL-AND-SOCKET JOINT FOR BOOK-SUPPORTS. WILLIAM H. MONTGOMERY, Philadelphia, Pa. Filed Apr. 2, 1892. Serial No. 427,630. (No model.)

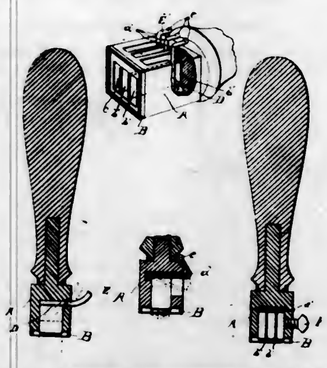
485,471.



Claim.—1. A tension-regulated ball-and-socket joint having the adjustable casing-sections A A', adjustable upon each other through the medium of the screw-threads *a a'*, and lugs *b'*, provided on the casing A' for regulating the adjustment-ball B, having rigid shank *b* secured thereto, provided within the casing, and elastic concaved seat C, supported upon the elastic cushion or bed E, provided in the casing A, substantially as described.

2. In a book-support, in combination with a supporting-arm B' and clamp *d*, a tension-regulated ball-and-socket joint having the adjustable sections A A', adjusted upon each other through the medium of the screw-threads, and the rigid lugs *b'*, ball B, having rigid shank *b* provided thereon, said shank protruding through orifice a^3, provided in the upper section A', said shank *b* secured at its upper end to the book-support F, elastic concaved seat C, and supporting elastic cushion E, provided within the casing A, and washer *c*, secured within the casing A' above the ball B, substantially as and for the purposes set forth.

485,472. CANCELING AND DATING STAMP. WILLIAM G. MORSLEY, Grain Valley, Mo. Filed Dec. 3, 1891. Serial No. 413,929. (No model.)



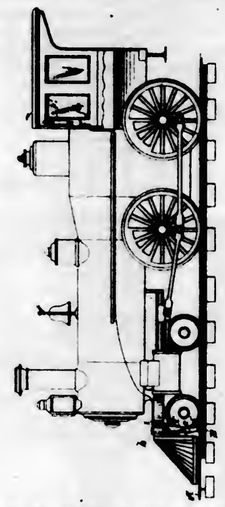
Claim.—1. In a stamp of the character described, the main portion provided with a recess and pivoted levers for dislodging the characters of the stamp one at a time at will, substantially as described.

2. In a stamp of the character described, the main portion provided with a recess and pivoted levers for dislodging the characters of the stamp, the free ends of which are located within the line of the outside of a projection on the stamp in close proximity to the ends of the levers and above them, and a set-screw for tightening the characters of the stamp, substantially as described.

3. In a stamp of the character described, the main portion provided with a recess and movable pivotally-supported partitions and pivoted levers for dislodging the characters of the stamp, and a set-screw for tightening the characters of the stamp, substantially as described.

485,478. ELECTRIC DANGER-SIGNAL FOR MOVING TRAINS. JAMES MCCART and ARTHUR G. JOSKINS, Trenton, Mich. Filed Sept. 26, 1891. Serial No. 406,943. (No model.)

Claim.—4. In an electrical alarm for moving trains, the combination of the conductors along the track, the car, the vertically-adjustable conducting-rods mounted in insulated bearings on the car, the spring-stems depending from said rods, the contact-shoes attached to said stems and bearing upon the track-conductors, the coiled springs environing the vertical conducting-rods and attached thereto, whereby said shoes are held in yielding contact with the track-conductors, the bell in electrical circuit with said vertical rods, and the auxiliary circuit in the car, adapted to be placed in electrical circuit with said rods.



2. In a device for the purpose set forth, the combination of the continuous and unbroken track-conductors normally in open circuit, the vehicle having the vertically-adjustable conducting-rods mounted thereon, the spring-stems depending from said rods and having the contact-shoes on their lower ends, that bear upon the track-conductors, the circuit in the vehicle, in which is located a source of electricity and a switch and which is connected with the vertically-adjustable rods, and the bell-circuit in the vehicle, having a switch and adapted to be cut into and out of circuit with the contact-shoes independently of the battery-circuit, whereby provision is made in the vehicle for sending and receiving a communication at any point on the track, whether the train be in motion or standing upon the track, as set forth.

485,474. SASH-FASTENER. ALBERT A. FAGE, New Haven, Conn., assignor to the Sargent & Company, same place. Filed July 11, 1892. Serial No. 439,582. (No model.)

Claim.—A window-spring consisting of a case A, having a spring-chamber therein, an angular opening through the face of the case, a bolt B, set through the face of the case and adapted to move longitudinally therein, the head of the bolt of angular shape, corresponding to the shape of the said opening in the case, and the bolt constructed with a tail F, extending through the spring-chamber and through a corresponding hole in the bottom of the spring-chamber, the hole in the spring-chamber constructed with one or more notches opening laterally therefrom and the tail constructed with projections J, corresponding to the said notches I, a spring within the spring-chamber, adapted to yieldingly hold the bolt in its thrown position, the tail of the bolt twisted, so that the said projections when the parts are assembled stand in a position out of the plane of the notches I in the case, all substantially as described.

485,475. CENTRIFUGAL ORE-SEPARATOR. ORRIN S. PEEK, Chicago, Ill., assignor to Melinda Peek, same place. Filed Jan. 11, 1892. Serial No. 417,660. (No model.)

Claim.—1. In an apparatus for separating powdered or finely-divided particles containing mineral-bearing substances of different degrees of specific gravity, the combination of a rotatable vessel, rotatable rollers arranged within such vessel, having their lower ends nearer to its axis of rotation than their upper, belts or canvases arranged on such rollers and caused to travel by their rotation, and means for rotating the vessel and the rollers, substantially as described.

2. In an apparatus for separating powdered or finely-divided particles containing mineral-bearing substances of different degrees of specific gravity, the combination of a rotatable vessel, rotatable rollers arranged within such vessel, having their lower ends nearer to its axis of rotation than their upper, belts or canvases arranged on such rollers, means for supplying material and water to the surface of such belts or canvases, and means for rotating the vessel and the rollers, substantially as described.

particles containing mineral-bearing substances of different degrees of specific gravity, provided with a surface adapted to engage a pulley and a separating-surface over which the material to be treated is passed, substantially as described.

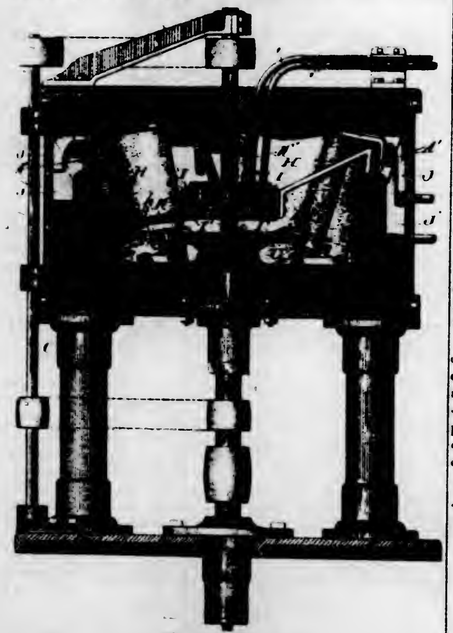
glass to fuse the powder or leaf thereon, and finally pinching the walls of the tube together while hot to form the seal, substantially as described.

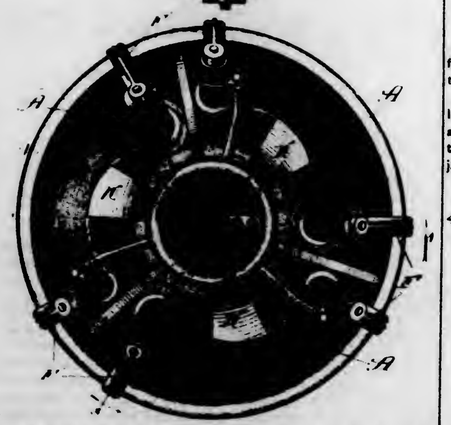
3. The described method of forming a sealed conductor for incandescent lamps, consisting in depositing two lines of metallic powder or leaf upon the interior of the filament-supporting tube or tubes, heating the glass to cause the powder to adhere thereto, pinching the lower portion of the tube while hot to form the seal, and com-

485,480.

means for rotating the vessel and the rollers, substantially as described.

2. In an apparatus for separating powdered or finely-divided particles containing mineral-bearing substances of different degrees of specific gravity, the combination of a rotatable vessel, rotatable rollers arranged within such vessel, having their lower ends nearer to its axis of rotation than their upper, belts or canvases arranged on such rollers, means for supplying material and water to the surface of such belts or canvases, and means for rotating the vessel and the rollers, substantially as described.





3. In centrifugal ore-separators, one or more belts having simultaneously traveling and rotary motions and forming, approximately, the arc of the circle described by their rotation, substantially as described.

4. In centrifugal ore-separators, one or more belts having simultaneously traveling and rotary motions and each forming, approximately, the arc of the circle described by their rotation and mounted on rollers having their lower ends nearer the axis of rotation than their upper, substantially as described.

485,476. BELT. OSMER B. PEAK, Chicago, Ill., assignor to Melinda Peak, same place. Filed Jan. 11, 1892. Serial No. 417,609. (No model.)

Claim.—1. A belt for use in separating powdered or finely-divided particles containing mineral-bearing substances of different degrees of specific gravity, provided with a surface adapted to engage a pulley and a separating-surface over which the material to be treated is passed, substantially as described.

2. A belt for use in separating powdered or finely-divided particles containing mineral-bearing substances of different degrees of specific gravity, provided with a surface adapted to engage a pulley and an inwardly-extending flange or rib, and a separating-surface over which the material to be treated is passed, substantially as described.

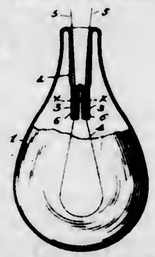
3. A belt for use in separating powdered or finely-divided particles containing mineral-bearing substances of different degrees of specific gravity, provided with one or more surfaces adapted to engage a pulley or pulleys, an inwardly-extending flange or rib, a separating-surface over which the material to be treated is passed, and holes or perforations along the edge of the separating-surface for the discharge of the lighter particles of the matter being treated, substantially as described.

485,477. WATER-WHEEL BUCKET. JOHN B. PITCHFORD, San Francisco, Cal. Filed Oct. 19, 1891. Serial No. 409,123. (No model.)

Claim.—1. A water-wheel bucket having a V-shaped rear wall, a front wall cut away on each side of its central line, and curved bottoms connecting said front and rear walls.

2. A water-wheel bucket having front and rear walls and curved bottoms connecting the same, the said bottoms meeting in a central apex and having their outer ends extended to form discharge-walls, the rear-wall being V-shaped and the front walls being cut away adjacent to the said central apex.

485,478. INCANDESCENT ELECTRIC LAMP. EDWARD POLLARD, Cambridge, Mass.; Martha W. Pollard administratrix of said Edward Pollard, deceased. Filed Mar. 2, 1892. Serial No. 423,509. (No model.)



Claim.—1. The herein-described method of forming a conducting-seal for incandescent lamps, consisting in depositing powdered silver or other metal upon the filament-supporting tube or tubes, heating the glass to cause the metal to become fused upon or embedded in the glass, and then bringing the adjacent edges of the glass together while hot to form the seal, substantially as described.

2. The described method of forming a conducting-seal for incandescent lamps, consisting in depositing metallic powder or leaf upon the interior of the filament-supporting tube or tubes, heating the glass to fuse the powder or leaf thereon, and finally pinching the walls of the tube together while hot to form the seal, substantially as described.

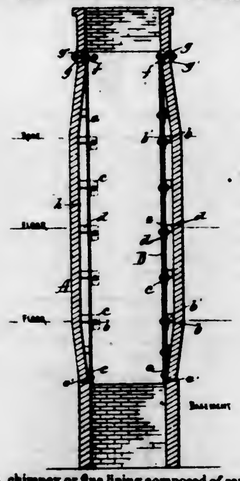
3. The described method of forming a sealed conductor for incandescent lamps, consisting in depositing two lines of metallic powder or leaf upon the interior of the filament-supporting tube or tubes, heating the glass to cause the powder to adhere thereto, pinching the lower portion of the tube while hot to form the seal, and compressing the portion of the tube between the strips of powder to form seats or recesses for the ends of the filament, substantially as described.

4. The described method of forming a sealed conductor for incandescent lamps, consisting in painting a line of size upon the tube or tubes, depositing thereon powdered silver, heating the glass to cause the powder to adhere thereto, and uniting the opposite faces of the glass while hot to form a seal, substantially as described.

5. In combination with the filament-supporting tube closed to form a seal, two bands or deposits of silver or other metal upon said tube, extending through the seal and forming an electrical connection between the filament and conducting-wires, substantially as described.

6. In combination with the sealed supporting-tubes 3 3 of an incandescent lamp, a filament supported in the lower ends thereof, conducting-wires leading to the upper portions of said tubes, and a conducting medium for conveying the current from the conducting-wires to the filament, consisting of powdered silver or other metal within the tubes and extending through the seal, substantially as described.

485,479. CHIMNEY OR FLUE LINING. ELIJU RATHBUN, Cable, Ill. Filed Jan. 7, 1892. Serial No. 417,908. (No model.)



Claim.—1. A chimney or flue lining composed of several plates of sheet metal secured together at the edges, at which point reinforced corners are formed by the overlapping of the edges, and plates secured at the corners of the lining, the ends of said plates extending outwardly at angles to each other and in planes substantially parallel to adjacent plates of the lining, substantially as set forth.

2. A chimney or flue lining composed of several plates of sheet metal secured together at the edges, at which points reinforced corners are formed by the overlapping of the edges, and split plates secured at the corners of the lining, the ends of said split plates bent outwardly at angles to each other and in planes substantially parallel to adjacent plates of the lining, substantially as set forth.

485,480. FOOT-GUARD FOR RAILWAY-TRACKS. MICHAEL RILEY, London, Ohio. Filed July 5, 1892. Serial No. 438,890. (No model.)

Claim.—1. In a foot-guard for railways, the combination, with the pivoted sections *a* and *b*, one adapted to pass within the other, as described, of the longitudinal side extensions *d*, projecting upwardly from each of said sections, as described, and having inclined outer faces, substantially as and for the purpose specified.

2. In a foot-guard for railways, the combination, with the pivoted sections *a* and *b*, one adapted to pass within the other, as described, of an arm *g*, connected with the pivot connecting said sections, and a suitable pin or spike adapted to pass through the outer end of said arm, substantially as and for the purpose specified.

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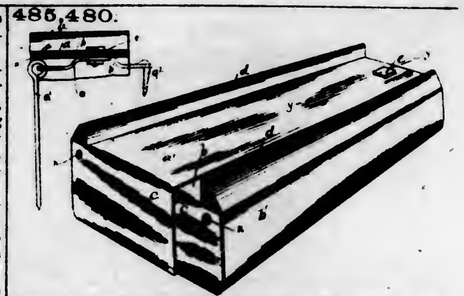

485,481. GIRTH-FASTENER. HENRY M. TILESTON, Kansas City, Mo. Filed Jan. 4, 1892. Serial No. 417,040. (No model.)

Claim.—1. The combination, with a girth, cinch, or band having the loops B, of a fastening consisting of two plates, rings, or loops, a keeper passed transversely across the plates, rings, or loops for connecting them with the girth and providing for their free longitudinal sliding movement one on the other, and a securing strap or connection adapted to have its bight passed around the free ends of the plates, rings, or loops, whereby said strap is cramped or pinched between the latter, substantially as herein described.

2. The combination, with a girth, cinch, or band, of a strap-fastening comprising two rings or loops, one or both of which may be attached to a strap, and a transverse keeper secured to said girth, cinch, or band and adapted to hold the loops together and permit them to slide one upon the other to pinch a strap between them, substantially as herein described

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485,482. BAND-FASTENER. HENRY M. TILESTON, Kansas City, Mo. Filed June 17, 1892. Serial No. 437,026. (No model.)

Claim.—1. A fastening device consisting of a plate or shield having lugs on its outer opposite sides near the ends and other lugs on its inner sides at points between said outer lugs, and a second plate seated on the first-named plate or shield, said lugs being reversely bent over the superposed plate to embrace the same and form a keeper and guide therefor.

485,482.

485,484. BAND-TIGHTENER. DANIEL J. C. ARNOLD, New London, Ohio. Filed Sept. 7, 1891. Serial No. 405,067. (No model.)

Claim.—The combination, substantially as hereinbefore set forth, of a main frame, a guide-roller, a revolable countersinking-roller secured upon a shaft mounted in a movable bearing on the main frame, a bed movable parallel with and at right angles to the length of the machine, and expansion-gearing between said shaft and bed, movable longitudinally upon said shaft.

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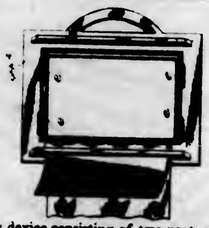
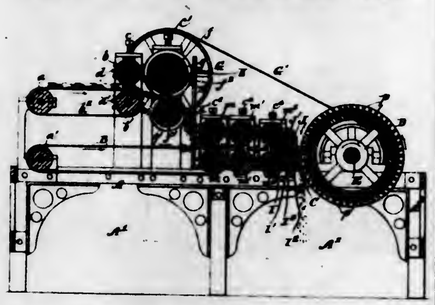


2. A fastening device consisting of two parts seated one on the other, one of said parts having its outer side portions near the ends provided with projecting inwardly-curved lugs and its inner side portion between said lugs having projecting outwardly-curved lugs, said inwardly and outwardly curved lugs embracing the superposed part to form a keeper and guide therefor, and a connection adapted to be passed between the end walls of said parts, so that it may be cramped or pinched between them, substantially as and for the purpose described.

485,483. MACHINE FOR PREPARING OR REDUCING AND COMMINUTING TOBACCO FOR CIGARETTES. SEBASTIAN ARIJADOR, Madrid, Spain. Filed June 16, 1892. Serial No. 436,916. (No model.)



Claim.—1. In a machine for preparing and cutting tobacco for cigarettes and the like, the combination of the rear pair of feeding and pressure and squeezing cylinders, the grooved pressure and slitting cylinders, both pairs mounted in standards of a frame, the gears for connecting said pairs of cylinders, means for introducing the tobacco to the cylinders, and means for driving the grooved cylinders directly and setting the other cylinders in motion, a spirally-bladed cylinder, a stationary blade, and one or more intermediate pressing-cylinders, substantially as described.

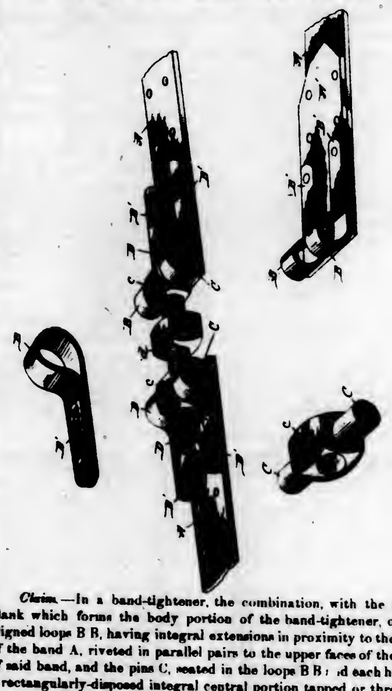
2. The combination of the rear pair of feeding and pressing and squeezing cylinders, the grooved pressing, squeezing, and slitting cylinders, both mounted in standards of a frame, the gears for connecting said pairs of cylinders, a feed-apron, and an endless catching and conveying apron, a third pair of pressing and squeezing cylinders, a spirally-bladed cylinder, a stationary blade, and means for operating said three pairs of cylinders and the spirally-bladed cylinder and the catching and conveying apron, substantially as described.

3. In a machine for preparing and cutting tobacco for cigarettes, the combination of an upper large grooved cylinder, a smaller lower grooved cylinder, toothed clearing-comb, a rear pair of pressure and squeezing cylinders, gears for connecting the pairs of cylinders, means for operating the cylinders and gears, means for feeding the tobacco to the cylinders, and an apron for catching and conveying the tobacco passed through the pairs of cylinders, substantially as described.

4. In a machine for preparing and cutting tobacco for cigarettes, the combination of the section A', comprising pressing-cylinders and squeezing and slitting cylinders in pairs, and section A^2, comprising pressing and squeezing cylinders in pairs, a frame for supporting the parts named, a stationary cutting-blade, pressing-bars, and a rotary spirally-bladed cutting-cylinder, an endless catching and conveyer apron, and means for driving the cylinders and apron, all arranged upon said frame, substantially as described.

5. In a machine for cutting tobacco for cigarettes, the combination of the spirally-bladed cylinder, the stationary adjustable blade, driven pressure-cylinders in rear of said blade and cylinder, pressure-bars I J, and means for operating said spirally-bladed cylinder and the pressing and squeezing cylinders, substantially as described.

485,484. BAND-TIGHTENER. DANIEL J. C. ARNOLD, New London, Ohio. Filed Sept. 7, 1891. Serial No. 405,067. (No model.)

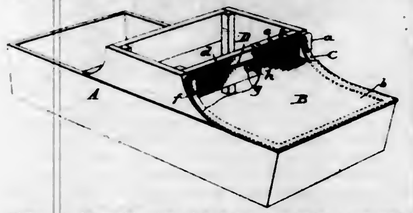


Claim.—In a band-tightener, the combination, with the metal blank which forms the body portion of the band-tightener, of the aligned loops B B, having integral extensions in proximity to the ends of the band A, riveted in parallel pairs to the upper faces of the ends of said band, and the pins C, seated in the loops B B; and each having a rectangularly-disposed integral central portion tapped or threaded for the reception of the right and left screws D D', seated at their contiguous ends in the head *d*, which joins said screws together, whereby the screw-bearings may be adjusted to work smoothly upon circumferences of varying sizes, substantially as specified.

485,485. COUNTERSINKING-MACHINE. CHARLES BRADA, Chicago, Ill., assignor to Goetz & Brada, same place. Filed Aug. 3, 1891. Serial No. 401,587. (No model.)

Claim.—The combination, substantially as hereinbefore set forth, of a main frame, a guide-roller, a revolubly countersinking-roller secured upon a shaft mounted in a movable bearing on the main frame, a bed movable parallel with and at right angles to the length of the machine, and expansion-gearing between said shaft and bed, movable longitudinally upon said shaft.

485,486. BUGGY-BOOT. JOHN W. CRANDELL, Fort Atkinson, Wis., assignor to the Northwestern Manufacturing Company, same place. Filed Apr. 11, 1892. Serial No. 428,643. (No model.)



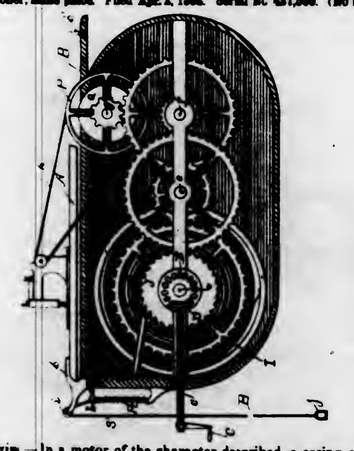
Claim.—1. In combination with the carriage-body, a boot and a spring secured to the carriage-body and acting as a hinge for the boot.

2. In combination with the carriage-body A and the boot B, a torsion-spring hinging the body to the boot, all substantially as shown and described, whereby the spring is adapted to act not only as a hinge for the boot, but also to keep the boot closed.

3. In combination with body A, a boot B, having a frame C, provided with the bent ends *a* and a cover *b*, and a torsion-spring D, secured to the body and provided with bent ends *f*, adapted to be inserted under the bent ends of the frame C, all substantially as shown and described.

4. In combination with body A and boot B, the spring D, provided with an eye *g* and secured at its ends to the boot-frame, and a screw *h*, passing through the eye and connecting the spring to the carriage-body.

485,487. MOTOR FOR SEWING-MACHINES. ASHA H. CLAYTON, Louisville, Ky., assignor of one-half to Robert B. Claggett and John H. Stoner, same place. Filed Apr. 2, 1892. Serial No. 427,569. (No model.)



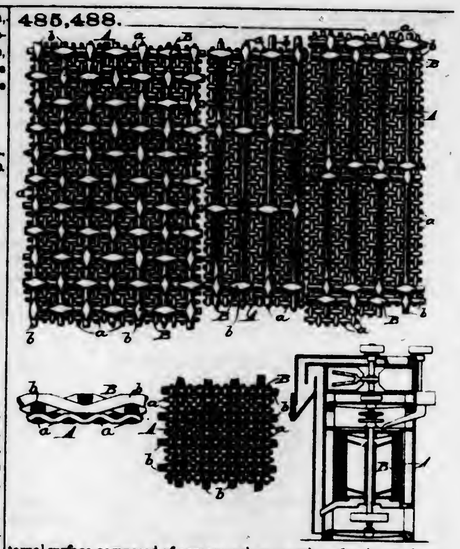
Claim.—In a motor of the character described, a casing, a driving-spring, and means for winding the same, in combination with a brake-wheel, a brake-rod having a shoe which engages said brake-wheel, said rod pivotally supported between its ends within the casing, a spring which keeps the brake-shoe normally into contact with the brake-wheel, a cord running over a pulley outside of the casing, and a stirrup at the end of said cord, by the use of which the brake may be released to allow the motor to run, substantially as described.

485,488. GRAIN-SCOURER. WILLIAM A. CONNELL, Mount Perry, Ohio. Filed June 15, 1892. Serial No. 436,894. (No model.)

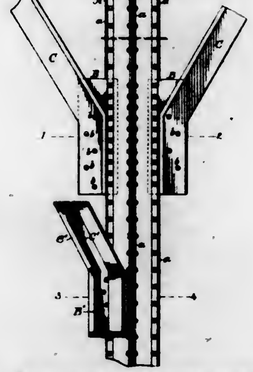
Claim.—1. In a grain-scouring machine, the combination, with the fine woven-wire fabric flattened or compressed, of the inner coarse woven-wire fabric secured thereto and flattened or compressed.

2. In a grain-scouring machine, the combination, with an external surface composed of compressed woven wire, of an internal surface of compressed woven wire secured thereto, the internal surface being composed of larger wires and having larger mesh than the external surface.

485,488.



485,489. STRUCTURAL METAL WORK. ANDRY COFFIN, Phœnixville, Pa., assignor to The Phœnix Iron Company, same place. Filed May 17, 1892. Serial No. 433,272. (No model.)



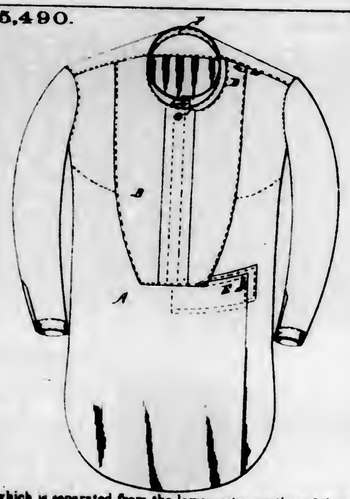
Claim.—1. The combination of the sectional column made up of a series of segments secured together and the plate B, secured to said column with a brace C, secured to the said plate, substantially as described.

2. The combination of the sectional column, filling-plates between each section, and a plate B, forming a continuation of the filling-plates and secured to the column and projecting beyond the same with a brace or braces C, secured to the plate, substantially as described.

485,490. SHIRT. ELIJAH COLVIN, Grand Rapids, Mich., and CHARLES A. HASKALL, Hurley, Wis. Filed Dec. 28, 1891. Serial No. 416,368. (No model.)

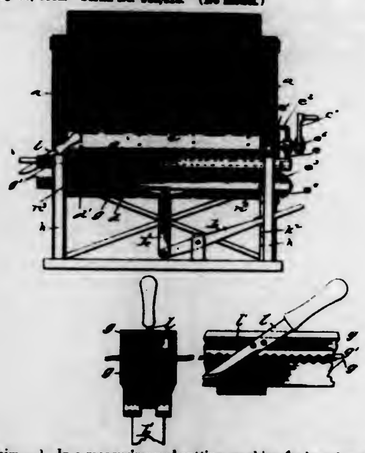
Claim.—A shirt open in front from top to bottom and having an overlapping bosom attached to one of the flaps and adapted to overlap the opposite flap and provided with means for securing the free edge of the bosom to the side opposite the side to which it is permanently secured, the skirt of the shirt having an overlapping-flap por-

485,490.



tion E, which is separated from the lower outer portion of the bosom by a notch, said flap portion E adapted to overlap and be secured to the opposite side of the skirt, substantially as described.

485,491. BAGGING-MEASURING MACHINE. DAVID J. DENTON, WILLIAM L. SIMPSON, and SAMUEL W. DENTON, Brunswick, Ga. Filed July 18, 1892. Serial No. 440,418. (No model.)



Claim.—1. In a measuring and cutting machine for bagging, &c., the combination of a frame, a pair of measuring-rollers, a clamping device consisting of a pair of jaws between which the fabric passes as it is measured off, one or both of said jaws being provided with transverse serrations in its clamping-face for the reception of the warp-threads of the fabric, whereby slipping or gathering of the fabric while being cut is avoided, substantially as described.

3. In a fabric-cutting machine, the combination of a pair of jaws and means for bringing them together, said jaws being provided with transverse serrations in their adjacent faces, the projections of one jaw coming opposite the cut-out portions of the other, whereby the fabric will be securely clamped and prevented from gathering or slipping while being cut, and a sliding knife carried by one of the jaws, substantially as described.

3. The combination of a frame, a bagging-roller, and measuring-rollers journaled thereon, suitable indicating and alarm mechanism, transverse boards for guiding the fabric between the roller and supporting it as it issues therefrom, a clamping device consisting of a pair of jaws slotted longitudinally and vertically and transversely serrated on their adjacent faces, an inclined sliding knife rigidly secured to a block working in the upper stationary jaw, provided with a handle projecting upwardly between the parts of the upper jaw, means for guiding and supporting the lower jaw, an operating-lever pivotally connected to the lower jaw midway its length, and means for locking this lever, substantially as described.

485,492. CRANK-AXLE FOR FORWARD WHEELS OF WAGONS. MELVILLE L. DE WITT, Boston, Mo. Filed July 27, 1892. Serial No. 441,263. (No model.)

Claim.—1. In a crank-axle for forward wheels, an axle proper having a set-off therein, bars attached to said axle and at right angles thereto, metal plates attached to the sides of said bars and having their forward ends turned up, and a pole pivotally attached to the forward ends of said bars, substantially as and for the purposes set forth.

2. In a crank-axle for forward wheels, an axle proper having a set-off therein, parallel bars rigidly secured to said set-off portion of the axle and at right angles thereto and having on top thereof circle-irons for supporting the vehicle-body, metal plates attached to the sides of said bars and having their forward ends turned up, a rod set in said forward ends, and a pole pivotally attached to said rod between said bars, substantially as and for the purposes set forth.

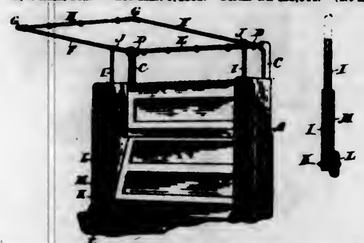
3. In a crank-axle for forward wheels, an axle proper having a set-off therein, parallel bars rigidly secured to said set-off portion of the axle and at right angles thereto and having on top thereof circle-irons for supporting the body, metal plates attached to the sides of said bars and having their front ends turned upward, a rod set in said turned-up portions, a pole pivotally attached to said rod, a metal plate passing over said bars, firmly attached thereto, and securely fastened at each end to the axle-bed, forming a rocker-plate, and curved braces extending from the upright parts of said axle to and firmly attached to said turned-up ends of said side metal plates by means of said rods, substantially as and for the purposes set forth.

485,493. SPRING-TOOTH HARROW. HENRY W ROSENHART, York, Pa., assignor to Arthur B. Farquhar, same place. Filed Feb. 4, 1892. Serial No. 420,264. (No model.)

Claim.—1. The harrow or harrow-section consisting of the side runners formed of shoe-bars A, of L or equivalent cross-section, and the vertical metallic webs B, riveted to the upright members of the shoe-bars, the cross stay or brace rods connecting said runners, the sockets or bearings D, secured to the interior opposite faces of the webs, the tooth-bars supported at their ends in said sockets, spring-tooth mounted on the tooth-bars, and the lever *m*, ratchet *n*, crank-arm *o*, and connecting-bar *p*, all constructed and arranged in the manner shown and set forth.

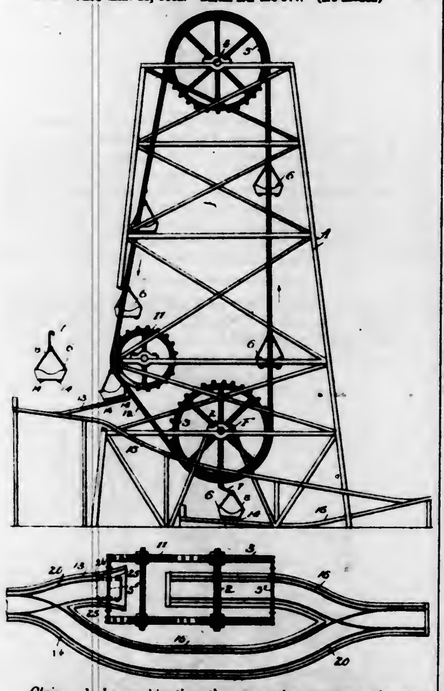
2. The tooth-holder composed of the ring-section H', provided with ears *h h'*, and the ring-section H, having an ear h^2 and a tooth-seat *i* and formed or provided with the clamp-plate I, having at its free end an ear h^3, and bolts and nuts for securing the two sections and the tooth, substantially as and for the purposes hereinbefore set forth.

485,494. MOSQUITO-CANOPY FOR FOLDING BEDS. ARDEEN H. EVA, Austin, Tex. Filed Mar. 3, 1892. Serial No. 423,611. (No model.)



Claim.—In a folding bed, the combination of a canopy-frame hinged to the top of the bed-casing, a raising-frame consisting of vertical rods pivoted directly to the canopy-frame at the top, a slidable connection on said rods which permits an initial lost motion upon the opening of the bed, a stop which comes into contact with said vertical rods at the limit of the lost motion and elevates them, a bed-casing, and a folding bed hinged thereto, to which the raising-frame is pivoted.

485,495. ROUNDABOUT. JOSEPH F. FRALINGER, Atlantic City, N. J. Filed Mar. 23, 1892. Serial No. 426,077. (No model.)



Claim.—1. In combination, the supporting structure, the cars, the carrying means for said cars, the detachable connection between the cars and the carrying means, and the platform extending across the downward path of the cars for arresting the same and causing them to be detached from the carrying means, substantially as described.

2. In combination, the supporting structure, the carrying means, the cars with detachable connections thereto, the platform extending across the downward path of the cars for arresting and detaching them from the carrying means, and the incline for automatically leading the car away from the platform, substantially as described.

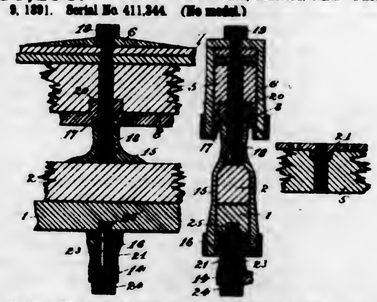
3. In combination, the supporting structure, the carrying means consisting of the wheels and the flexible carrier passing about the same, with a portion running at an inclination, to provide an overhanging portion, the cars with detachable connections to the flexible carrier, and the platform extending across the down path of the cars under the overhanging part of the carrier, substantially as described.

4. In combination, the tower, the upper and lower wheels, the idler-wheel, the flexible carrier passing over the wheels and having an overhanging section between the idler and the lower wheel, the cars with detachable connections to the flexible carrier, and the platform extending under the said overhanging part, substantially as described.

5. In combination, the tower, the elevating means, the discharge-station on the "down" side of the elevating means, the gravity-way leading from the discharge-station to the starting-point, the cars, and the detachable connections from the same to the elevating means, substantially as described.

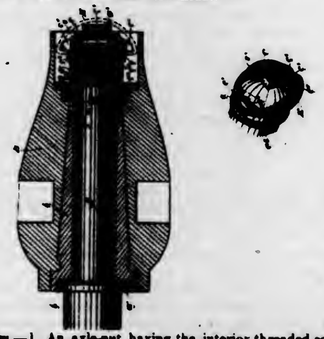
6. In combination, the tower, the flexible carrier and drums, the cars, the detachable connections therefrom to the carrier, the discharge-station, and the gravity-way leading from said discharge-station, said way consisting of the reversely-inclined sections with switches between, whereby the cars are returned to the starting-point, facing in the proper direction, substantially as described.

485,496. KING-BOLT. JOHN FRIAR, Hartford, Conn. Filed Nov. 9, 1891. Serial No. 411,344. (No model.)



Claim.—The combination, with the head-block 5, the axle 1, and the bed 2, of clips 6 and 15, the latter of which is provided with an apertured extension and the former with a bolt-hole at its upper end, a yoke 8, having a hub 20, with an angular aperture, and a seat 17 for the upper end of the extension of the clip 15, a pivot held by its head in said extension and having a polygonal portion in the angular aperture of the yoke 8, and a screw-threaded end for a nut 19, a yoke 16, having a hub 21, nuts for screwing the yoke to the clip 15, a bridle-iron 14, having an angular aperture, a headed pivot 23, held in said yoke and pivoted with a polygonal portion to take into the angular aperture of the bridle-iron, and a nut 24 for the screw-threaded end of said bolt, substantially as set forth.

485,497. AXLE-NUT. JOHN GARIBOTTA, Stockton, Cal. Filed Feb. 19, 1892. Serial No. 422,131. (No model.)



Claim.—1. An axle-nut having the interior threaded socket to receive the axle-tip, the main shoulder forming the washer-seat and fitting over the spindle, and the intervening shoulder c^2, with which the threaded socket terminates, substantially as herein described.

2. In combination with the axle-spindle having the threaded tip and the wheel-hub having the box, the nut formed with a threaded socket receiving the axle-tip, the main shoulder fitting over the axle-spindle and forming the seat for the washer which bears against the hub-box, and the intervening shoulder c^2, in which the threaded socket terminates, substantially as herein described.

3. In combination with the axle-spindle having the threaded tip and the wheel-hub having the box, the nut formed with a threaded socket receiving the axle-tip, the main shoulder fitting over the axle-spindle and forming the seat for the washer which bears against the hub-box, and the intervening shoulder e^3, in which the threaded socket terminates, and a lock to hold the nut on the spindle-tip and keep it from turning, substantially as herein described.

4. An axle-nut having the washer-seat and formed with an inwardly-extending lip on its inner end to confine the washer, substantially as herein described.

5. The combination of a nut having the holes opening into its interior socket, a threaded piece on which the nut is seated and having grooves, and a bail-shaped catch on the nut, having bent ends extending through the holes in the nut and engaging the grooves in the threaded piece, substantially as herein described.

6. The combination of a nut having the holes opening into its interior socket, a threaded piece on which the nut is seated and having grooves, a bail-shaped catch on the nut, having bent ends extending through the holes in the nut and engaging the grooves in the threaded piece, and the inclined cams on the nut-surface over which the catch swings, whereby its ends are withdrawn from their engagement, substantially as herein described.

7. The combination of a nut having the holes opening into its interior socket, a threaded piece on which the nut is seated and having grooves, a bail-shaped catch on the nut, having bent ends extending through the holes in the nut and engaging the grooves in the threaded piece, and the inclined cams on the nut-surface over which the catch swings, whereby its ends are withdrawn from their engagement, said cams being arranged in opposing pairs, substantially as herein described.

8. The combination of a nut having the holes opening into its interior socket, a threaded piece on which the nut is seated and having grooves, a bail-shaped catch on the nut, having bent ends extending through the holes in the nut and engaging the grooves in the threaded piece, and the inclined cams on the nut-surface over which the catch swings, whereby its ends are withdrawn from their engagement, said cams being arranged in opposing pairs with an intervening notch to hold said catch when swung outwardly, substantially as herein described.

9. The axle-nut having the interior threaded socket, the main washer-seat shoulder, and the intervening shoulder with which the threaded socket terminates, in combination with the locking device consisting of the swinging bail-shaped catch with bent ends passing through the nut and engaging the spindle-tip, substantially as herein described.

10. The axle-nut having the interior threaded socket, the main washer-seat shoulder, and the intervening shoulder with which the threaded socket terminates, in combination with the locking device consisting of the swinging bail-shaped catch with bent ends passing through the nut and engaging the spindle-tip and the inclined cams on the nut for relieving the ends of the catch from their engagement, substantially as herein described.

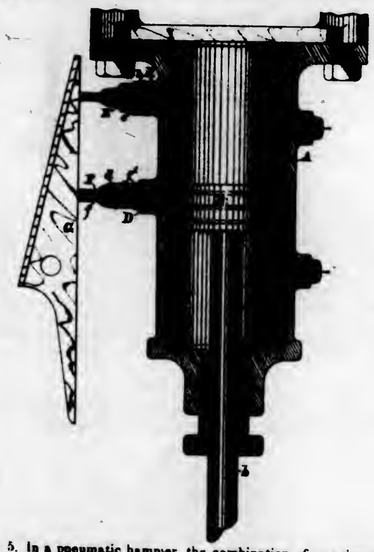
485,498. PNEUMATIC HAMMER. GILBERT GLOSSOP, Sheffield, England, assignor to Frederick Clement Brookshank and Jacob B. Perkins Cleveland, Ohio. Filed Aug. 24, 1891. Serial No. 403,503. (No model.)

Claim.—1. In a pneumatic hammer, in combination, a reciprocating cylinder having a suitable port or ports for admitting air both above and below the piston, means for reciprocating the cylinder, a piston, a piston-rod, a tup, an exhaust-port, a valve for closing said port, arranged to move outward to its seat, and a pressure-piece whereby said valve may be moved inward away from its seat while the cylinder is in motion, substantially as and for the purpose specified.

2. In a pneumatic hammer, the combination of a reciprocating cylinder having suitable air-inlet ports, means for reciprocating the cylinder, a piston, piston-rod, and tup with an air-exhaust port near the upper end of said cylinder, an air-outlet port near the middle of said cylinder, a valve which is normally seated over said last-named port, and mechanism for opening said valve while the cylinder is in motion, for the purpose specified.

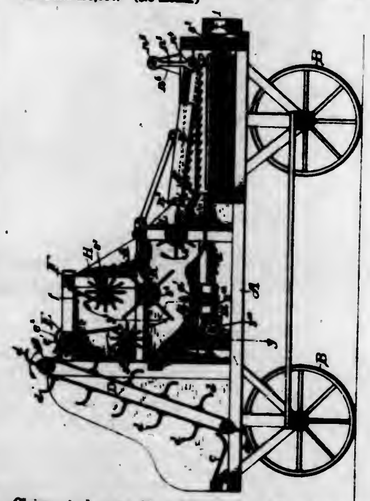
3. In a pneumatic hammer, the combination of a reciprocating cylinder having suitable inlet-ports, means for reciprocating the cylinder, a piston, piston-rod, and tup with an exhaust-port near the top of the cylinder, a second exhaust-port near the middle of said cylinder, valves for closing both of said ports, and mechanism for simultaneously opening the lower of said valves and closing the upper while the cylinder is in motion, substantially as and for the purpose specified.

4. In a pneumatic hammer, the combination of a reciprocating cylinder, means for reciprocating the cylinder, a piston, a piston-rod, and tup, said cylinder having suitable inlet-ports, an outlet-port, a valve-chamber covered over said port, a valve contained therein, a spring arranged to force said valve outward to its seat, a valve-stem, and a movable pressure-piece engaging with said stem, whereby said valve may be opened while the cylinder is in motion, for the purpose specified.



5. In a pneumatic hammer, the combination of a reciprocating cylinder having suitable inlet-ports, means for reciprocating the cylinder, a piston, piston-rod, and tup with an exhaust-port near the top of said cylinder, a valve, a spring pressing said valve inward to its seat, an exhaust-port near the middle of the cylinder, provided with a valve, a spring pressing said valve outward to its seat, and a movable wedge adapted simultaneously to increase the resistance of the spring which closes the upper valve and to open the lower valve in opposition to its spring, substantially as and for the purpose specified.

485,499. BAND-CUTTER AND FEEDER FOR THRASHING-MACHINES. FRANK R. HILL, Ross Station, Tex. Filed May 23, 1892. Serial No. 433,907. (No model.)



Claim.—1. In a machine of the character described, a device for feeding and distributing the unthrashed straw onto a feed-carrier, consisting of a plurality of beams N and N', placed nearly horizontal over said carrier and carrying teeth n' on their lower sides, the said teeth sloping, as shown, the said beams being each suspended at one end and connected at the other end to a crank-pin on a revolving crank-shaft, whereby the said beams are given an up-and-down and a horizontal motion, substantially as and for the purposes described.

2. In a band-cutter and feeder for thrashing-machines, the combination, with the framework A, having the bed a, with the slot a' made transversely therein, of the toothed rollers K and L, pushing the sheaves transversely over said slotted bed, and means for feeding said sheaves to said toothed rollers, a knife for cutting the bands, revolving in said slot, and a carrier leading to the thrashing-machine, with means for spreading the loosened sheaves on said carrier, substantially as described.

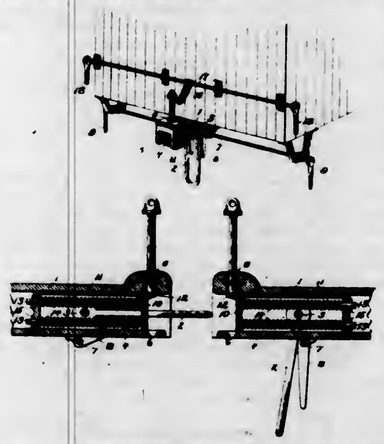
3. In a band-cutter and feeder for thrashing-machines, the combination, with the frame-work A, having the bed a, with the slot a' made transversely therein, of a plurality of toothed rollers G, H, K, and L for guiding the sheaves and carrying them transversely over said slotted bed and means for feeding said sheaves to said toothed rollers, a knife for cutting the bands, revolving in said slot, and a feed-carrier leading to the thrashing-machine, with means for spreading the loosened sheaves on said carrier, substantially as described.

4. In a band-cutter and feeder for thrashing-machines, the combination, with the framework A, having the bed a, with the slot a' made transversely therein, of a carrier D and toothed rollers G, H, K, and L for guiding said sheaves, carrying them transversely over said slot, and pushing them onto a feed-carrier leading to the thrashing-machine, and a revolving knife passing upward through said slot and cutting the bands from said sheaves as they pass over said slot, substantially as and for the purposes described.

5. In a band-cutter and feeder for thrashing-machines, the combination, with the framework A, having the fixed cross-beam F, carrying the curved bars f, and the pivoted cross-beam E, carrying the bars e and the spring e^2, and the bed a, with the slot a' made transversely therein, of a plurality of toothed rollers G, H, K, and L for guiding the sheaves and carrying them transversely over said slotted bed and means for feeding said sheaves to said toothed rollers, a knife for cutting the bands, revolving in said slot, and a carrier leading to the thrashing-machine, with means for spreading the loosened sheaves on said carrier, substantially as described.

6. In a band-cutter and feeder for thrashing-machines, the combination, with the framework A, having the fixed cross-beam F, carrying the curved bars f, and the pivoted cross-beam E, carrying the bars e and the spring e^2, and the bed a, with the slot a' made transversely therein, of a carrier D and toothed rollers G, H, K, and L for guiding said sheaves, carrying them transversely over said slot and pushing them on a feed-carrier leading to the thrashing-machine, and a revolving knife passing upward through said slot and cutting the bands from said sheaves as they pass over said slot, substantially as and for the purposes described.

485,500. CAR-COUPLING. JOHN M. KNOX, Duluth, Minn., assignor of one-half to Byron George Sayre, same place. Filed Apr. 26, 1892. Serial No. 430,736. (No model.)



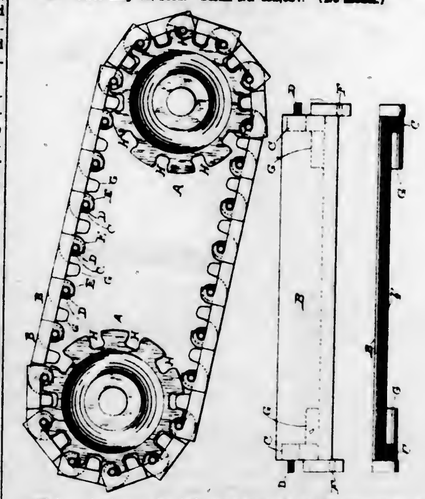
Claim.—1. In a car-coupling, the combination of a draw-head having a longitudinal bottom tongue and bottom openings on each side thereof open at the coupling end of the draw-head and extending back of the coupling and a coupling-pin with a link pivoted in the draw-head back of said coupling-pin and a link-lifter pivoted in said draw-head back of said coupling-pin, substantially as described.

2. In a car-coupling, the combination of a draw-head having a longitudinal bottom tongue and bottom openings on each side thereof open at the coupling end of the draw-head and extending back of the coupling and a coupling-pin with a link pivoted in the draw-head back of said coupling-pin, a link-lifter pivoted in the draw-head back of said coupling-pin, and a spring-sustained slide rising from said tongue to form a support for said pin, substantially as described.

3. In a car-coupling, a draw-head having a longitudinal central bottom tongue and openings on each side thereof open at the coupling end of the draw-head, in combination with a coupling-pin, a coupling-link pivoted in the draw-head back of said coupling-pin, and suitable means for lifting and holding said link in position for coupling, substantially as described.

4. In a car-coupling, the coupling-link pivoted in the draw-head and a link-lifter pivoted to the bottom of the draw-head and formed of two arms corresponding in position to the sides of the link, in combination with a draw-head having bottom openings corresponding to the arms of said link, as shown and described.

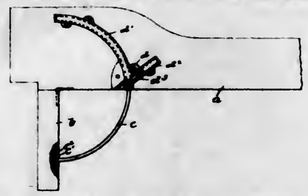
485,501. ORE-FEEDER. ERNEST A. LANGFORD, Grass Valley, Cal. Filed May 11, 1892. Serial No. 432,627. (No model.)



Claim.—1. A carrying-belt consisting of metallic sections having the opposite edges of the central portion respectively concave and convex and the ends rectangular and lugs and pins beneath the sections about which the end curves turn in passing around the supporting-pulleys, substantially as herein described.

2. An ore-feeder consisting of pulleys journaled upon the feeder-frame, having grooves made in their periphery, a belt formed of metallic sections the ends of which are rectangular in cross-section and the central portion having convex and concave edges which overlap and fit together, lugs formed on the lower surfaces of the sections, and pins by which said lugs are connected to form a complete endless belt and about which as centers the overlapping concave and convex edges of the belt-sections move when the belt passes around the pulleys, substantially as herein described.

485,502. FOLDING BEDSTEAD. TRAFFLEY LA PURL, Medford, Mass. Filed May 17, 1892. Serial No. 433,375. (No model.)

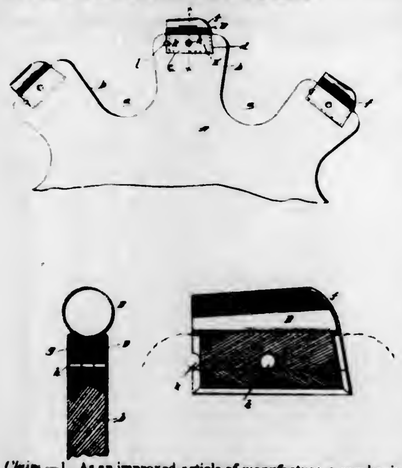


Claim.—1. The part a, movable into a horizontal or vertical position, the leg b, hinged thereto, curved brace-rod c, connected to said leg, curved guideway d' for said brace-rod c, the raceway d^3, arranged at an angle with relation to the guideway d', and the dog d^2, contained in the said raceway, which serves as a locking device for the

brace-rod *c*, said leg *b*, brace-rod *c*, and dog d^3 all being movable in either direction by gravity according as the part *a* is raised or lowered, substantially as described.

2. A part *a*, movable into a horizontal or vertical position, the leg *b*, hinged thereto, curved brace-rod *c*, having a head or enlargement *c'* at one end, which enters a socket in the leg, plate c^3, secured to said leg and inclosing said enlarged end of the brace-rod, curved guideway *d'* for said brace-rod *c*, and a raceway d^3, arranged at an angle with relation to the guideway *d'*, and dog d^2, contained in said raceway and serving as a locking device for said brace-rod, said leg *b*, brace-rod *c*, and dog d^2 all being movable in either direction by gravity according as the part *a* is raised or lowered, substantially as described.

485,503. TUBULAR INSERTED SAW-TOOTH. LORENZO L. LEWIS, Orange City, Fla., assignor of one-half to Richard D. Coulter, same place. Filed Oct. 23, 1891. Serial No. 409,605. (No model.)



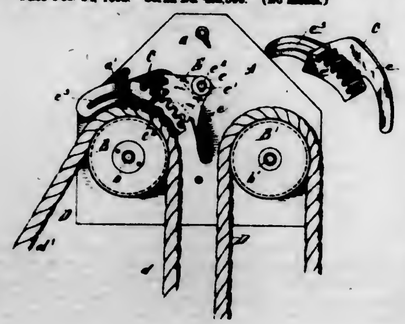
Claim.—1. As an improved article of manufacture, a saw having only tubular saw-teeth, substantially as specified.

2. A saw having only tubular teeth, which teeth have their forward or cutting edges beveled rearwardly and their rear ends of less diameter but deeper than their cutting ends or edges, substantially as specified.

3. The tubular saw-tooth having the attaching-flange, in combination with a slotted brace receiving said flange and adapted to be secured in the opening of a saw-blade, substantially as specified.

4. A circular saw-blade having the alternate recesses and projections in its periphery and the projections having openings to receive insertible teeth, one wall of the opening being pitched or inclined and the opposite wall provided with a key-groove, in combination with an insertible tubular or hollow tooth having an attaching-flange and a slotted brace receiving said flange and also having a key-groove, and a key adapted to enter said grooves and lock the tooth in the blade, substantially as specified.

485,504. TACKLE-BLOCK. RANDOLPH S. MERRIAM, Detroit, Mich. Filed Feb. 24, 1892. Serial No. 422,569. (No model.)



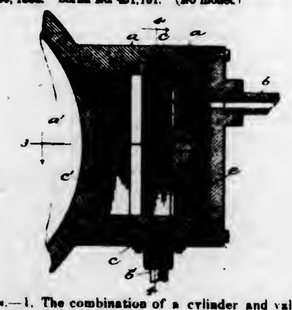
Claim.—1. In a tackle-block, the combination of a sheave, a wedge adapted to press against a rope between itself and said sheave, and a bearing *c*, adapted to hold said wedge against said rope, the said wedge being provided with an incurved concave surface adapted to press against said rope and provided with diagonal corrugations across said concave, the said wedge being also provided with rack-teeth adapted to engage with a segment-wheel made fast to said bearing, substantially as and for the purpose described.

2. In a tackle-block, the combination of a sheave, the supporting-framework, a bearing *c*, and a segment-wheel connected therewith, and a curved wedge provided with faces adapted to bear against said bearing and a rope on said sheave and provided, also, with a curved slot adapted to engage with a guiding-pin, substantially as and for the purpose described.

3. In a tackle-block, the combination of a sheave, the bearing *c*, and segment-wheel E, the curved wedge C, provided with the bearing part *c*, the toothed part *c'*, the incurved corrugated concave face, and a slotted extension, substantially as and for the purpose described.

4. In a tackle-block, the combination of a sheave, a bearing *c*, and segment-wheel, a curved wedge having the bearing part *c*, the incurved bearing-face, and the toothed part *c'*, and the lever E', with the counter-weight e^3, substantially as and for the purpose described.

485,505. SLIDE-VALVE. HERRON MOON, Grove City, Pa. Filed Apr. 29, 1892. Serial No. 431,161. (No model.)



Claim.—1. The combination of a cylinder and valve-chest, exhaust and inlet openings in the chest, a hollow sliding valve therein, said valve having a long inlet-port in its inner wall and two circular openings in its outer wall, and a wearing-plate provided with a piston working in one of said openings, an inlet-slot being formed in the plate and said piston and another piston working in the other opening and bearing against the plate, substantially as described.

2. The combination of a cylinder and valve-chest, said chest being on the side of the cylinder, an inlet-port entering the chest near its upper end, and exhaust-ports communicating with its lower end, a vertical hollow slide-valve working in said chest and having two long inlet-slots in its inner wall and two circular openings of unequal area in its outer wall, one being near each end of the valve, pistons working in these openings, and a wearing-plate secured to one of these pistons and bearing against the inner side of the outer wall of the valve-chest, a horizontal inlet-slot being formed in the outer plate and larger piston, as and for the purpose described.

3. The combination of a cylinder and the valve-chest thereon, a hollow reciprocating valve working therein and provided with a steam-port in its inner wall and two separated circular openings in its outer wall, a piston working in each of these circular openings, a pressure-plate secured at one end rigidly to one of the pistons and having its other end resting loosely against the outer side of the other piston, and an inlet-port, substantially as described.

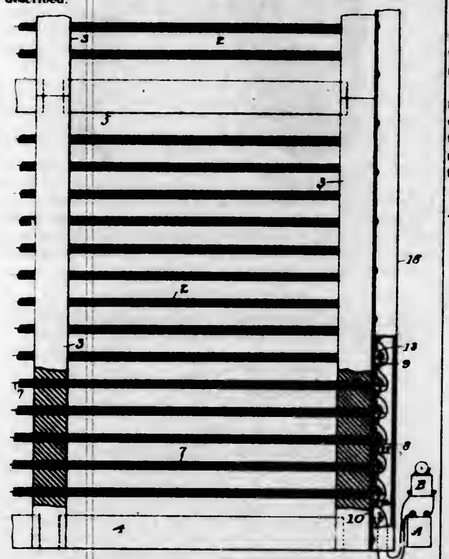
485,506. JAIL OR VAULT CONSTRUCTION. DAVID K. OSBOURN, St. Paul, Minn. Filed Sept. 8, 1891. Serial No. 405,116. (No model.)

Claim.—1. In a structure of the class described, the combination, with the metallic pipes, of wires threaded therethrough, insulated springs holding said wires under tension, contacts for said springs, and an open-circuit battery provided with a signaling apparatus and having one pole connected with said springs and the other with said contacts, substantially as described.

2. In a device of the class described, the combination, with the pipes, of wires inclosed in said pipes under tension, electric attachments connected to said wires and to an open-circuit battery, and a signaling apparatus in circuit with said battery, whereby a variation in the tension of any of said wires serves to close the circuit and sound an alarm, substantially as described.

3. In a device of the class described, having a tubular metallic

structure, the combination therewith of an open-circuit battery having one pole connected to said structure, bare electric wires under tension arranged in but out of contact with the tubes of the structure and connected to the other pole of said battery, and means whereby upon the severing of any of said wires or a variation in its tension the circuit is closed between it and said structure, substantially as described.



4. The combination, with the tubular metallic structure, of bare electric wires inclosed in but out of contact with the tubes thereof, means for applying tension to said wires, and open-circuit electrical connections for said wires, and said structure having an included signaling apparatus, whereby the variation of the tension of said wires or contact between any of them and its inclosing tube will serve to close the circuit and give an alarm, substantially as described.

5. In a device of the class described, the combination, with the tubular metallic structure, of an open-circuit battery and signaling apparatus, contacts upon said structure electrically connected, respectively, with the poles of said battery, and wires under tension inclosed in said tubes, so connected to said contacts as normally to hold the circuit open, but to cause or permit the circuit to be closed by a variation in the tension or severing of any of said wires, substantially as described.

6. The combination, with the tubular metallic structure, the battery, and signaling apparatus, of connected series of terminals for said battery upon said structure and wires under tension through the tubes, holding said terminals normally out of contact with each other, said terminals being adapted to make contact with each other upon a variation of tension or severing of said wires, substantially as described.

7. The combination of a tubular metallic structure, a signaling apparatus, and an open-circuit battery having one of its poles electrically connected to said structure, of a series of springs insulated from said structure and electrically connected to the other pole of the battery and electric wires threaded through the tubes of the structure and held normally under tension and out of contact with the same by said springs, substantially as described.

8. The combination, with the tubular metallic structure, the signaling apparatus, and the battery having one pole connected to said structure, of the series of springs electrically connected to the other pole of the battery and having insulated support upon said structure, the series of contacts for said springs electrically connected to the structure, the wires threaded through said tubes and having adjustable connection to said springs, whereby the wires are held out of contact with the tubes by the tension of the springs, and the springs separated from the contacts by the tension of the wires, substantially as described.

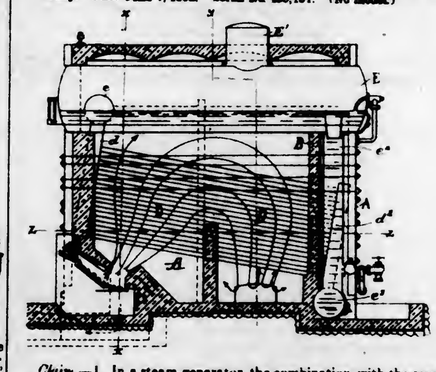
9. In a device of the class described, the combination, with the inclosing walls of the structure, of the series of metallic pipes arranged therein, the battery and signaling apparatus, the terminals for the poles of the battery connected with said structure, the wires threaded through said pipes and normally holding said terminals out of contact with each other, and adjustable means for applying tension to said wires, substantially as described.

10. In a structure of the class described, the combination, with the tube in electrical connection with one pole of an open-circuit battery, of the electrical conductor supported rigidly in said tube, but not in contact therewith, and connected to the other pole of said battery, substantially as described.

11. In a structure of the class described, the combination, with the tube in electrical connection with one pole of an open-circuit battery, of the insulated conductor supported within said tube and connected with the other pole of said battery, substantially as described.

12. In a structure of the class described, the combination, with the tube connected with one pole of an open-circuit battery, of the electrical conductor rigidly supported in said tube, but not in contact therewith, and connected with the other pole of said battery, and a signaling apparatus included in said battery-circuit, substantially as described.

485,507. MULTITUBULAR BOILER. MAX SKIPP, Berlin, Germany. Filed June 1, 1892. Serial No. 435,151. (No model.)



Claim.—1. In a steam-generator, the combination, with the combustion-chamber and the groups of water-tubes arranged on either side thereof, of the inner and outer walls of the combustion-chamber and the feed-water-heating pipes in the space between the inner and outer walls of the combustion-chamber, substantially as described.

2. In a steam-generator, the combination, with the combustion-chamber and the groups of water-tubes arranged on either side thereof, of the inner and outer walls of the combustion-chamber and the feed-water-heating pipes in the space between the inner and outer walls of the combustion-chamber, through which space the heated gases ultimately pass, bathing the said heating-pipes, substantially as described.

3. In a steam-generator, the combination, with the combustion-chamber, double walls surrounding said combustion-chamber, the groups of water-heating tubes D and D', arranged on either side within said water-chamber, the drum E, water-chambers *d d'*, extending downward from the drum and connecting with the front upper ends of the water-heating tubes, water-drum c^3, connected with the drum E, and pipes d^3 and d^4 from the water-drum c^3, connecting with the rear lower ends of the water-heating tubes D D', of the feed-water-heating tubes in the space between the double walls of the combustion-chamber, through which space the heated gases ultimately pass, substantially as described.

4. In a steam-generator, the combination, with the combustion-chamber, double walls surrounding said combustion-chamber, the groups of water-heating tubes D and D', arranged on either side within said water-chamber, the drum E, water-chambers *d d'*, extending downward from the drum and connecting with the front upper ends of the water-heating tubes, water-drum c^3, connected with the drum E, pipes d^3 and d^4 from the water-drum c^3, connecting with the rear lower ends of the water-heating tubes D D', the steam-dome E', and the superheating-pipes *f*, connected with the said steam-dome and arranged within the upper part of the combustion-chamber, of the feed-water-heating tubes in the space between the double walls of the combustion-chamber, through which space the heated gases ultimately pass, substantially as described.

485,508. STUMP-EXTRACTOR. GEORGE W. SHEAL, Osceola Mills, Pa. Filed May 27, 1892. Serial No. 434,673. (No model.)

Claim.—In a stump-extractor, the combination, with a pulley, of a swivel-block connected thereto and having a hook at one end and

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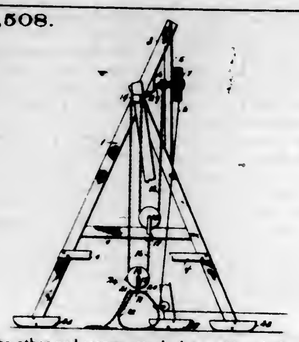
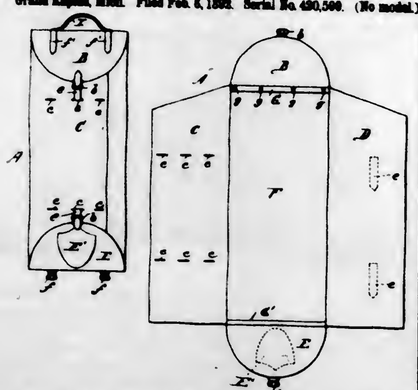


a fork at the other and means attached to said ends for extracting purposes, substantially as and for the purposes specified.

485,509. ENVELOPMENT FOR CLOTHING. ANNA G. SPEAD, Grand Rapids, Mich. Filed Feb. 6, 1892. Serial No. 420,599. (No model.)



Claim.—1. An envelopment for clothing, having the following parts in combination, viz: back F, parallel side flaps D and C and end flaps B and E, and bar G, having one or more hooks *g*, arranged substantially as described, and for the purpose set forth.

2. In an envelopment for clothing, in combination with a back portion F, provided with a stretching-bar G, having hooks *g*, side flaps C and D, having slits *c* and straps *e*, respectively, and end flaps B and E, having buckles *b*, engaging said straps when the flaps are closed, substantially as and for the purposes set forth.

3. As an improved article of manufacture, an envelopment for clothing, constructed of paper, cloth, rubber, or other suitable material, having a back portion F, provided with bars G and G', arranged, respectively, at upper and lower ends thereof, the bar G, having hooks attached thereto, as set forth, side flaps C and D, having slits, and straps passing through said slits, as described, end flaps B and E, having buckles *b*, engaging said straps *e* for holding the said flaps closed, and buckles *f* and straps *f'*, engaging therewith, attached to the outside of and near the intersection of flaps B and E with said back F for holding the envelopment folded when closed and folded, substantially as set forth.

485,510. SPOON-HOLDING ATTACHMENT. JOSEPH STARBS, Chicago, Ill. Filed July 8, 1892. Serial No. 439,498. (No model.)

Claim.—1. The combination, with the holder C, of a lateral arm D, extending upward therefrom sufficiently to reach the top of the glass and terminating in an overhanging fork *d'*, open laterally in a position to receive a spoon as it slides along the interior of the glass, substantially as described.

2. The combination, with a holder C, of a lateral arm D, pivoted thereto between its ends and having its lower end extending through the holder so as to rest against the vessel within the same and extending at its upper end over the edge of the vessel and adapted to furnish a rest for a spoon within the latter, substantially as described.

3. The combination, with the holder C, adapted to receive a glass or similar vessel, of an arm D, pivoted at one side of said holder and having its lower end extending through the latter to rest against the

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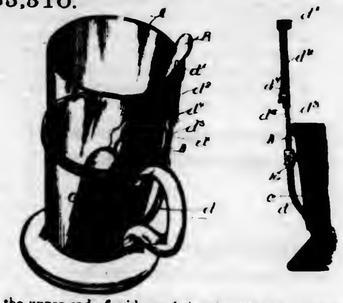


glass, the upper end of said arm being furnished with means for extending it within certain limits and clamping it at any desired height and being provided with a laterally-projecting rest at its upper end adapted to extend over the edge of the glass and furnish a support for a spoon therein, substantially as described.

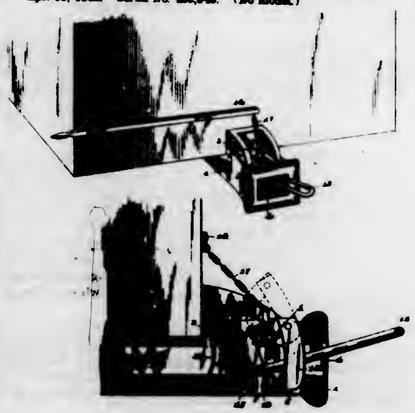
485,511. TRIP-FASTENER. FRED A. STEVENS, Brockton, N. Y. Filed July 1, 1892. Serial No. 438,696. (No model.)

Claim.—1. The combination, with the main portion of the fastener, provided with a longitudinal bar on one side of it and having an eye at one end and a hook at the other, of a hook provided with a shank pivoted to the said main portion and adapted to close against the aforesaid hook, and a retractible spring-pressed lock-piece resting on said bar and shank and provided with a projection normally holding the said two hooks together, substantially as set forth.

2. The combination, with the main portion of the fastener, provided with an eye at one end and a hook at the other and having circular end flanges and a longitudinal bar on one side of it between the said flanges, of the cylindrical case secured over the said flanges, a pivoted hook provided with a shank, and a retractible spring-pressed lock-piece resting on said bar and shank inside the casting and provided with a projection normally holding the said two hooks together, substantially as set forth.

3. The combination, with the main portion of the fastener, provided with the eye *a*, the flange *a'*, the bar D, the slotted flange *b'*, and the hook *b*, of the hook pivoted in the said slotted flange and provided with the shank *c'*, the lock-piece provided with a projection normally resting between the said shank and bar, the spiral spring, a cord for pulling back the lock-piece against the pressure of the spring, and thereby liberating the hook B, and the cylindrical case inclosing the middle portions of the fastener, substantially as set forth.

485,512. CAR-COUPLING. BENJAMIN F. STONE, East Las Vegas, N. Mex., assignor of one-half to Madison M. Milligan, same place. Filed Apr. 15, 1892. Serial No. 429,249. (No model.)



Claim.—1. In a car-coupling, the combination, with a link, of a draw-head having a longitudinal opening and provided in its top with a slot and having the lever and pin openings in its bottom, a bell-crank lever mounted in the draw-head, and fulcrumed at its angle and provided thereat with a heel adapted to depress the inner end of the link to elevate the outer end of the same, a pin pivoted to the front end of the lever, and a spring engaging the heel and holding the lever in engagement with the link, substantially as described.

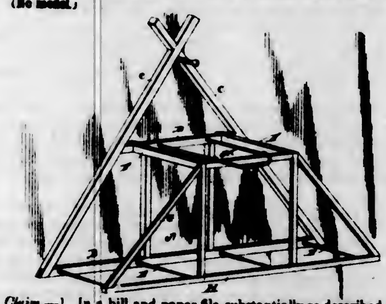
2. In a car-coupling, the combination, with a link, of a draw-head having a longitudinal opening and provided with an inclined face at the bottom of the same, a bell-crank lever fulcrumed in the draw-head and having its vertical arm beveled and provided with a shoulder adapted to engage the link to depress the inner end of the latter and elevate the outer end thereof, a spring engaging the lever, and a pin connected to the lever, substantially as described.

3. In a car-coupling, the combination, with a link, of a draw-head having a longitudinal opening and provided with an inclined face at the bottom of the same, a bell-crank lever fulcrumed in the draw-head and having its vertical arm beveled and provided with a shoulder adapted to engage the link, a spring engaging the lever, and means for lifting the bell-crank lever, whereby the outer end of the link is adjusted vertically, substantially as described.

485,518. POWER-TRANSMITTING FRICTION CLUTCH-PULLEY. CARLYLE W. THOMAS, Boston, Mass., assignor to Thos. Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Filed June 6, 1892. Serial No. 435,696. (No model.)

Claim.—In a power-transmitting friction or clutch pulley, a hollow pulley part, as *d*, having an inturned flange d^{w}, combined with a co-operating pulley part having a curb extended from one face thereof into the open side of the other pulley beyond said flange, as and for the purpose set forth.

485,514. FILE FOR BILLS, PERIODICALS, &c. ALBERT A. THOMPSON, Leadville, Colo. Filed May 27, 1892. Serial No. 434,005. (No model.)

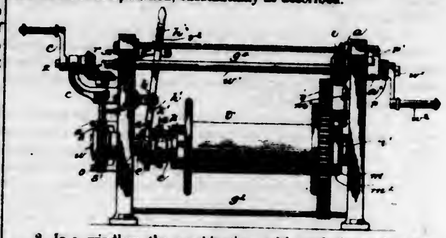


Claim.—1. In a bill and paper file, substantially as described, the combination, with the main frame and a series of forwardly-extending pins, of the vertically-disposed frame, arms fixedly connected to said frame and flexibly connected to the main frame, and a spring connected to the main frame and bearing upon the vertically-disposed frame, substantially as specified.

2. In a bill and paper file, substantially as described, the combination, with the main frame and a series of forwardly-extending pins, of the vertically-disposed frame having slots to seat the ends of the pins, arms fixedly connected to said frame and flexibly connected to the main frame, and a bail-spring connected to the main frame and bearing upon the vertically-disposed frame, substantially as and for the purpose set forth.

485,515. HAULING-WINDLASS. FRANZ URBAS, Teplowitz, near Bodenbach, Austria-Hungary. Filed July 7, 1892. Serial No. 439,373. (No model.)

Claim.—1. In a windlass, the combination, with a shaft and a drum mounted on said shaft, of two independent sets of mechanism for driving said drum and mechanism for throwing said mechanisms into and out of operation, substantially as described.

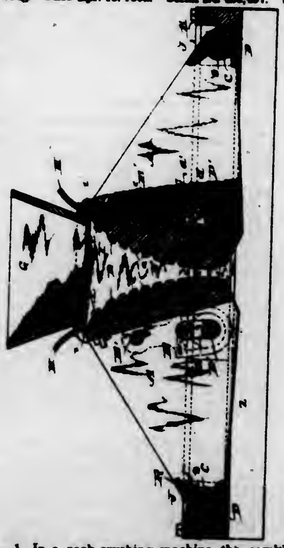


2. In a windlass, the combination, with a shaft *w*, of a drum mounted to turn on said shaft, a spur gear-wheel secured to said drum, a laterally-movable shaft, a driving-gear carried by said shaft gearing with said spur gear-wheel, devices engaging the laterally-movable shaft to secure the driving-gear in or out of engagement with the spur gear-wheel, a screw-wheel on the shaft *w*, a cog-driven screw engaging said screw-wheel, a clutch for throwing the drum into and out of operative connection with its shaft, and a friction-brake mechanism connected to the shaft *w*, substantially as described.

485,516. ROOF. GEORGE F. ULLMANN, Brooklyn, N. Y. Filed May 16, 1892. Serial No. 433,208. (No model.)

Claim.—The combination, with the roofing-boards A A' A^2 A^3, of sheet-metal plates B B' B^2 B^3, secured to the successive roofing-boards at one edge of each board, leaving one edge of each board detached from said plates, substantially as described.

485,517. ROCK-CRUSHING MACHINE. GILES W. WELLER, Baker City, Oreg. Filed Apr. 16, 1892. Serial No. 429,457. (No model.)



Claim.—1. In a rock-crushing machine, the combination, with the frame having the bearing-blocks D D at each end thereof, of the triangular jaws A A, pivoted at their rear angles in said blocks, the curved slots in the lower forward portions of said jaws, the transverse shafts having bearings in the frame and passing through said slots,

the eccentrics on said shafts, the links connected to the jaws at their upper ends and receiving said eccentrics in bearings at their lower ends, the crushing-plates on said jaws, and the driving-gear, substantially as specified.

2. In a rock-crushing machine, the combination, with the pivoted oscillating jaws, their crushing-plates, and driving mechanism, of the side plates I I, secured to the frame, the hopper secured to said side plates, and the guard-plates H H, secured to the upper portions of the jaws, substantially as specified.

3. In a rock-crushing machine, the combination of the frame, the bearing-blocks D D, rigidly held in the end portions of said frame, the shafts C, having bearings in said block, the triangular jaws working on said shafts, and the inclined transversely-corrugated crusher-plates secured to the forward portions of said jaws, said plates being curved on a radius from the shafts C, of the shafts D' D', their driving-gear, the eccentrics on said shafts, the links connected to said jaws, and bearings in said link which receive said eccentrics, substantially as specified.

485,518. COTTON-SEED PLANTER. WILLIAM S. WEST, Temple, Ga. Filed May 26, 1892. Serial No. 434,337. (No model.)

Claim.—A cotton-seed planter comprising the side beams A, having notches *a* in their under side and connected at their front ends by piece B, a combined clevis and plow attached to the said piece B by pin *l* and having the end of the plow approximately in the same vertical line with pin *l*, the hopper C, mounted on the rear ends of the beams A and having the centrally-disposed opening *j* and having the deflected portion J, the feed-roller journaled in the hopper and provided with right and left spirally-arranged teeth, cut-offs K for regulating the size of opening J, the drive-wheel having its journals let into the notches *a* and adapted to operate in the aforesaid feed-roller, and the coverers F, secured to the beams A and extending across the notches *a* and constructed to yield at their rear ends, substantially as and for the purpose set forth

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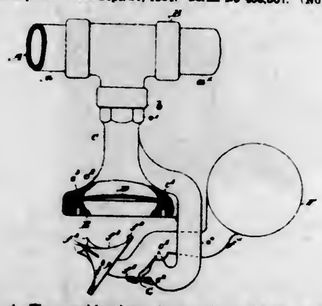
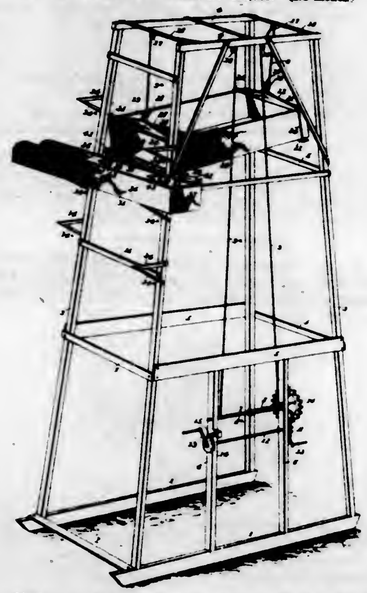
485,519. AUTOMATIC FIRE-EXTINGUISHER OR SPRINKLER. JAMES H. WILSON, Lowell, Mass., assignor of one-half to Alonzo A Coburn, same place. Filed Sept. 21, 1891. Serial No. 406,307. (No model.)



Claim.—1. The combination of a nozzle or discharge-pipe, a stopper or fragile material normally closing said nozzle, a breaker capable of rending said stopper, a fusible connection normally holding said breaker from acting on said stopper, said breaker being provided with a conical deflector arranged to enter said nozzle and larger than the outlet of said nozzle, and stops to prevent said deflector from entirely closing said nozzle, as and for the purpose specified.

2. The combination of a nozzle or discharge-pipe, a stopper of fragile material normally closing said nozzle, a breaker capable of rending said stopper, a fusible connection normally holding said breaker from acting on said stopper, said breaker being provided with a conical deflector arranged to enter said nozzle and larger than the outlet of said nozzle and having projections arranged to strike against the sides of said nozzle to prevent said deflector from entirely closing said nozzle, as and for the purpose specified.

485,520. GRAIN-ELEVATOR. JOHN A. L. WILSON, Woodland, Ill. Filed Oct. 10, 1891. Serial No. 408,305. (No model.)

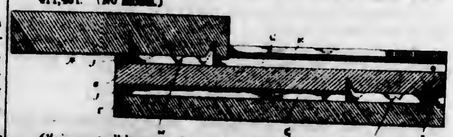


Claim.—1. In a grain-elevator, the combination, with the frame and the hoisting devices mounted within said frame, of a series of chute-rests secured upon one end of the frame in pairs in different inclined planes with respect to each other and a chute adapted to removably rest upon any one of the pairs of said chute-rests at one end of the frame, substantially as set forth.

2. The combination of a clamp detachably connected to the wagon body or bed, the same comprising an upper cross bar or head having an eye adapted to be engaged by said hoisting-ropes and perforations at each end, clamping-rods journaled in said perforations and provided with lower arrow-head or shouldered ends and upper squared portions, operating-levers keyed upon said squared ends, and a lower parallel supporting-bar adapted to rest beneath the bottom of the bed or body and provided at each end with slots adapted to be engaged by the shouldered ends of said clamping-rods, substantially as set forth.

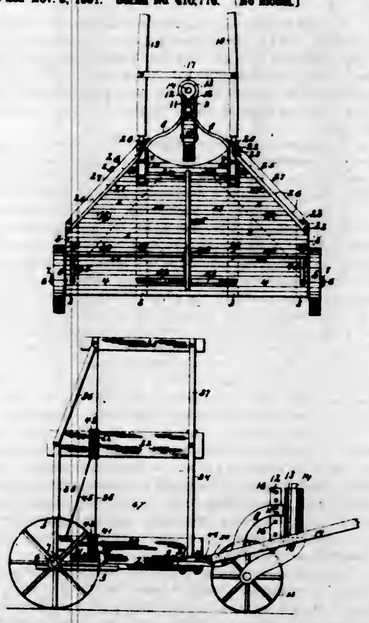
3. In a grain-elevator, the combination, with the frame and hoisting devices within said frame, of an elongated grain-chute removably supported upon one end of said frame and provided with an inclosing end and sides, a table or leaf hinged to the upper edge of one side of said chute and provided with an enlarged flanged end, said leaf being designed to take beneath the tilted end of the elevated grain-receptacle, and braced rests secured upon the outer and inner faces of one side of said chute and adapted to support said leaf or table in its open or closed position, substantially as set forth.

485,521. SLIDE FOR EXTENSION-TABLES. BURR BAIRD and THOMAS O. JOHNSON, Newark, Ohio. Filed Nov. 10, 1891. Serial No. 411,461. (No model.)



Claim.—A slide extension comprising two or more sections having, respectively, interlocking grooves and projections, the adjacent edge of one section having a guiding-groove and the adjacent edge of the other section a guiding, supporting, and stopping projection, which consists of a flat piece of metal having projections to be driven or inserted into the said section, and transverse stopping-pins which extend across the said guiding-groove at its ends and entirely through the end of the section, for the purpose set forth, substantially as shown and described.

485,522. CORN-HARVESTER. JOHN BARRILL, Grant Park, Ill. Filed Nov. 3, 1891. Serial No. 410,776. (No model.)



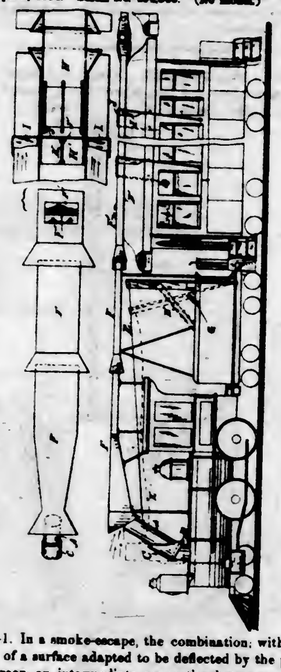
Claim.—1. In a corn-harvester, the combination of the stacking platform, the rearwardly-inclined knife-holder secured to the projecting forward ends of the sills of said platform, the smooth-edged knives countersunk in said holders, the edges of said knives having an upward incline to facilitate the cutting of the stalks, and the tongues 29 on the bevel ends of the platform-boards, said knife-holders being provided with rear grooves 28 to receive said tongues, substantially as set forth.

2. In a corn-harvester, the combination of the stacking-platform, the combined axle and heel-brace mounted on said platform, the wheels mounted on the axle, the base-divider board 30, the foot-guard board 39, the said boards 30 and 39 having a half-cut-away cross-junction joint, the spider-clamp 43, having the sprawl-legs 42, that hold the joint, the surmounting divider-board 35, the intermediate divider-board 32, and the braces that sustain said boards and secure them to said stacking-platform, substantially as described.

3. In a corn-harvester, the combination of the stacking-platform, the combined axle and heel-brace mounted on said platform, the rearwardly-inclined knife-holders secured to the projecting forward ends of the sills of said platform, the smooth-edged knives countersunk in said holders, the edges of said knives having an upward incline to facilitate the cutting of the stalks, the said knife-holders being provided with the rear grooves 28, the tongues 29 on the bevel ends of the platform-boards that engage in said grooves 28, the divider-boards that partition between the compartments 47 and 48 on said stacking-platform, the studs 38, the toe-guard 39, the breast-guard 44, the said guards secured to said studs 38, and the rear braces 45, that hold said breast-guard against the pressure of the corn-stalks, substantially as described.

4. In a corn-harvester, the combination of the stacking-platform, the combined axle and heel-brace mounted on said platform, the divider-boards 30, 32, and 35, the toe-guard and breast-guard boards, respectively, 39 and 44, the said guard-boards 39 and 44 having cross-junction half-cut-away joints with said divider-boards 30 and 32, the draft-shafts 19, and the spider-clamps 43, having the sprawl-legs 42, that clamp said cross-joints, substantially as described.

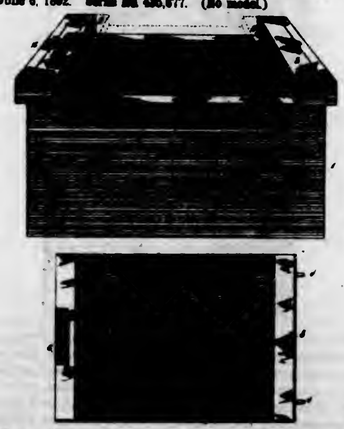
485,523. SMOKE-ESCAPE. SIMEON L. BARRETT, Springfield, Ohio, assignor to John W. Dunean and Thomas B. Gatsby, Onancock, Va. Filed Sept. 2, 1891. Serial No. 404,809. (No model.)



Claim.—1. In a smoke-escape, the combination, with a pivoted smoke-stack, of a surface adapted to be deflected by the pressure of the wind thereon, an intermediate connection between said surface and said track, and a conducting-pipe to receive the smoke delivered from the said stack when deflected by the action of the wind on said surfaces.

2. In a smoke-escape, the combination, with a pivoted smoke-stack and counterbalancing-weight therefor and pivoted deflecting-surfaces adapted to receive the pressure of the wind when the train is in motion, of a connection between said stack and said deflector and a conducting-pipe to receive the smoke from said stack when the latter is in its tipped-back position, whereby the smoke will be delivered into the conducting-pipe when the train is in motion and be discharged outside of the same when the train is at rest.

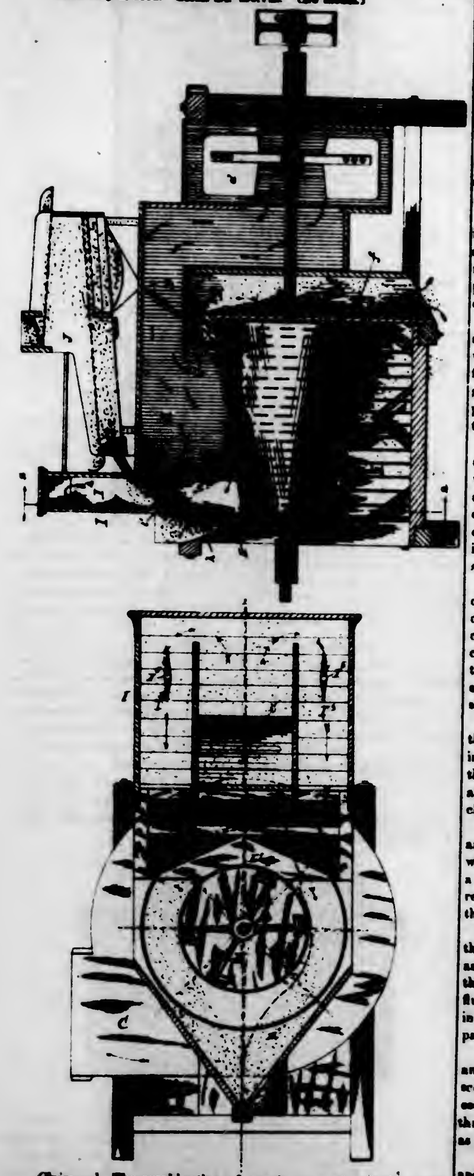
485,524. BOX-FASTENER. SAM S. BARRETT, Salem, Mo. Filed June 6, 1892. Serial No. 436,677. (No model.)



Claim.—The combination, with a box having a recess in one end

and a catch with spring-curves located in said recess and having lateral play therein, of a lid having a corresponding recess adapted to automatically receive the curves, whereby the same are wholly inclosed within the recesses of the box and lid, substantially as and for the purposes specified.

485,525. GRAIN-SCOURER. HIRAM A. BARNARD, Moline, Ill., assignor to the Barnard & Leas Manufacturing Company, same place. Filed July 2, 1892. Serial No. 438,762. (No model.)



Claim.—1. The combination of an air separating device, a settling-chamber having openings for the admission of air-currents containing screenings or other impurities derived from said separating device and separate openings for the escape of the said current and deposited screenings with a scouring device located in said chamber, means for separating the screenings from said current within said chamber, and a fan for creating said current, substantially as described.

2. In a grain-scourer, the combination of an air separating device, a settling-chamber having openings for the admission of an air-current containing screenings and other impurities derived from said separating device, and separate escape-openings for the deposited screenings and air-current with a scouring device in said chamber into which the grain from the air separator is passed for scouring such grain and discharging the scouring-dust in said chamber and means for separating the screenings from the air-current while passing through said chamber, substantially as and for the purpose set forth.

3. In a combined grain separator and scourer, the combination of an air-trunk and a fan for separating the heavy impurities or screenings by a current of air with a chamber having openings for the admission of the air-current from said trunk and for the exit of the screenings and air-current separately and a scouring device in said chamber receiving the grain passed through said trunk, substantially as described.

4. In a grain-scourer, the combination of an air-current separating device, a settling-chamber into which the air-current from said separating device is discharged, and a grain-scourer in said chamber receiving the grain from said device, substantially as described.

5. In a grain-scourer, the combination of an air-current separating device, a settling-chamber into which the air-current from said separating device is discharged, and a grain-scourer in said chamber receiving the grain from said device, and means for causing the deposit of screenings from said current in said chamber and for withdrawing the same separately therefrom, substantially as specified.

6. In a combined grain separator and scourer, the combination of an air-trunk, a settling-chamber communicating therewith, and a fan with a scouring device in said chamber and a device in said chamber for separating the heavy from the light impurities drawn out of the grain in the air-trunk, whereby the grain and heavy and light impurities are separately discharged and the dust, &c., are drawn into the fan and discharged therefrom, substantially as described.

7. In a grain-scouring machine, the combination of a settling-chamber, a scouring-case therein, a fan-chamber communicating therewith, and an air separating-trunk communicating with said settling-chamber and adapted to discharge screenings downwardly in said chamber, with means, substantially as described, whereby a portion of the air-current entering through the trunk is permitted to escape into the chamber above the main discharge from the trunk thereinto, substantially as set forth.

8. In a grain-scouring machine, the combination of a settling-chamber, a scouring-case therein, a vertical air-trunk receiving the discharge from said case and communicating with said chamber, a fan-chamber, an air-passage connecting said fan-chamber and settling-chamber, and a partition provided with openings interposed between the trunk and air-passage, so as to prevent the free passage of the entire air-current from the trunk to the passage, substantially as described.

9. The combination of a settling-chamber, the scouring-case therein, the air-trunk above the same, having ascending and descending flues, means, substantially as described, for passing grain through the ascending flue and into the scouring-case, and a fan for producing an air-current through the flues of the trunk into and through the chamber, substantially as and for the purpose described.

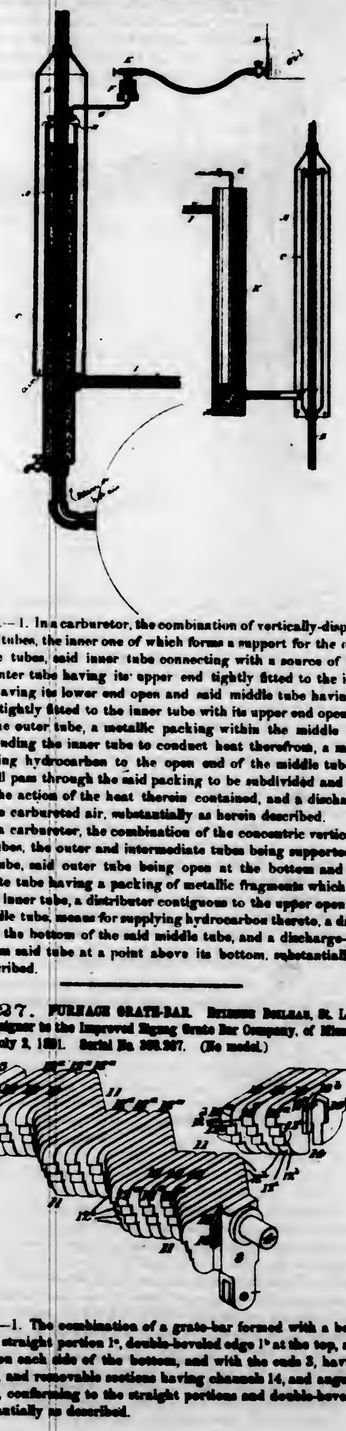
10. The combination of the settling-chamber, the scourer therein, and air separating-trunks communicating with said chamber, through which the grain is passed, respectively, before and after scouring, and a fan communicating with said chamber adapted to produce air-currents through said trunks into said chamber, substantially as and for the purpose described.

11. The combination of the scouring-case, the air-trunk above the same, having ascending and descending flues, means, substantially as described, for passing grain through the ascending flue and into the scouring-case, and a fan for producing an air-current through the flues of the trunk, and a settling-chamber surrounding said case and interposed between the fan and trunk and forming part of the air-passage, substantially as described.

12. The combination of the settling-chamber, the scourer therein, an air separating-trunk located at one end of the chamber above the scourer and having lateral openings near its lower end for the partial escape of air into the chamber, and a fan for creating air-currents through said trunk and into and through said chamber, substantially as described.

13. The combination of the settling-chamber, the scourer therein, and air separating-trunks communicating with said chamber, through which the grain is passed, respectively, before and after scouring, and a fan communicating with said chamber adapted to produce air-currents through said trunks into said chamber, and means, substantially as described, whereby the air-currents in said trunks are weakened before they fully enter the chamber, and the screenings thereby more effectively deposited, substantially as set forth.

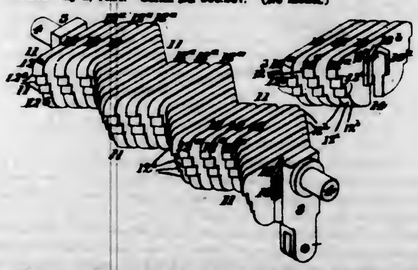
485,526. CARBURETOR. DANIEL BEST, San Leandro, Cal. Filed Apr. 25, 1892. Serial No. 430,602. (No model.)



Claim.—1. In a carburetor, the combination of vertically-disposed concentric tubes, the inner one of which forms a support for the outer and middle tubes, said inner tube connecting with a source of heat and said outer tube having its upper end tightly fitted to the inner tube and having its lower end open and said middle tube having its lower end tightly fitted to the inner tube with its upper end open and entering the outer tube, a metallic packing within the middle tube and surrounding the inner tube to conduct heat therefrom, a means for supplying hydrocarbon to the open end of the middle tube, so that it shall pass through the said packing to be subdivided and subjected to the action of the heat therein contained, and a discharge-pipe for the carbureted air, substantially as herein described.

2. In a carburetor, the combination of the concentric vertically-disposed tubes, the outer and intermediate tubes being supported by the inner tube, said outer tube being open at the bottom and said intermediate tube having a packing of metallic fragments which surrounds the inner tube, a distributer contiguous to the upper open end of the middle tube, means for supplying hydrocarbon thereto, a draw-off cock at the bottom of the said middle tube, and a discharge-pipe leading from said tube at a point above its bottom, substantially as herein described.

485,527. PURLOCK GRATE-BAR. BENJAMIN BELLAIR, St. Louis, Mo., assignor to the Improved Zigzag Grate Bar Company, of Missouri. Filed July 2, 1891. Serial No. 398,207. (No model.)



Claim.—1. The combination of a grate-bar formed with a body 1, having a straight portion 1^a, double-beveled edge 1^b at the top, and ribs 2, one on each side of the bottom, and with the ends 3, having gudgeons 4, and removable sections having channels 14, and angular recesses 14^a, conforming to the straight portions and double-beveled edge, substantially as described.

2. A grate-bar having a zigzag body or spine and a supporting-bar secured at the ends to the body of the grate-bar and having bearing beneath the lower edge of the body, substantially as described.

3. The combination, in a rocking grate-bar, of the gudgeons, the zigzag body, and the supporting-bar secured to the ends of the grate-bar and bearing against the bottom of the grate-bar, substantially as described.

4. A rocking grate-bar deeper at the middle portion than at the ends, having a zigzag spine or body provided with side projections, and a supporting-bar running from end to end of the grate-bar beneath the zigzag spine or body, substantially as described.

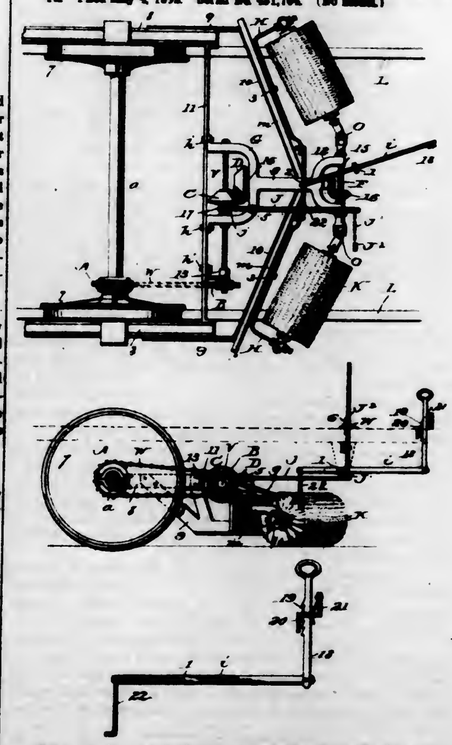
5. The combination of a grate-bar having a zigzag body and obliquely-arranged cross-leaves having their ends parallel with the body providing cutting-edges, substantially as described.

6. The combination of the zigzag grate-bar formed with a body 1, having straight portions 1^a and a double-beveled edge 1^b, and the oblique cross-leaf 12, having ends 12^a, parallel with the body, the neck 13, and the oblique channel 14 and angular recesses 14^a, substantially as described.

7. The combination of the zigzag grate-bar formed with a body 1, having straight portions 1^a and double-beveled edge 1^b, and the sections 11, formed with oblique cross-leaves 12, having ends 12^a, parallel with the body, the necks 13, and the oblique channels 14 and angular recesses 14^a, substantially as described.

8. The combination, with the grate-bar, of the cross-leaves 12, each leaf being formed with beveled ends 12^a, parallel with the grate-bar, providing inwardly and downwardly inclined edges 12^b and cutting-edges 12^d, the curved upper corners 12^e, and the teeth 12^c, substantially as described.

485,528. TRACK-CLEANER. CHARLES E. BOSTWICK, Du Bois, Pa. Filed May 4, 1892. Serial No. 431,704. (No model.)



Claim.—1. In a track-cleaner, the combination, with the oppositely-disposed brushes K K and means for supporting them at their inner ends, of levers H, pivotally supported between their ends and having their outer ends constructed to form supports for the said brushes, and an equalizer-bar connecting the inner ends of the said levers, substantially as set forth.

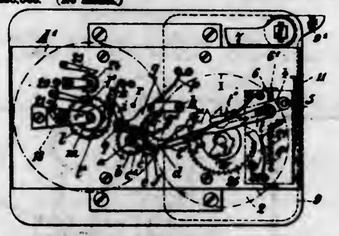
2. In a track-cleaner, the combination of oppositely-disposed brushes K K, supported and receiving motion at their inner ends, levers H H, pivotally connected between their ends to the pilot-boards and

having their outer ends constructed to form supports for the outer ends of the said brushes, and an equalizer-bar 23, connecting the inner ends of the levers H, substantially as set forth.

3. In a track-cleaner, the combination of the shaft F, the oppositely-disposed brushes K K, universal joints connecting the inner ends of the brushes with the ends of the shaft F, the levers H, pivoted between their ends and having their outer ends constructed to support the outer ends of the said brushes K K and having the inner ends of the said levers connected together, and actuating mechanism for rotating the shaft F and adjusting the said levers H, substantially as and for the purpose specified.

4. A track-cleaner comprising the following elements, which are combined and arranged to operate substantially in the manner hereinbefore set forth, consisting of a frame 9 10, which is secured to the truck-frame of a car, a frame G *g* 12, attached to the cross-bar of the truck-frame and having its inner and outer ends bifurcated, the shafts V and F, journaled in the bifurcated portions of the said frame, the shaft 14, geared at its outer end with the said shaft F, the pinions C and D, adapted to connect the inner end of shaft 14 with the shaft V, means for moving the pinion C on the shaft V, the levers H H, connected with the bars 10 by bolts 3, the brushes K K, supported at their outer ends by the levers H and connected by universal joints to the shaft F, means for adjusting levers H, and means for actuating shaft V from the axle of the truck, substantially as hereinbefore specified.

485,529. FARE-REGISTERING APPARATUS FOR VEHICLES. FRIEDRICH W. G. BRUHN, Hamburg, Germany. Filed Apr. 6, 1892. Serial No. 428,063. (No model.)



Claim.—1. In a fare-registering apparatus, the combination of a clockwork A, the spindle *a*, actuated by the clockwork and having a ratchet-wheel *b* secured thereon, the arm *c*, mounted on said spindle, the pawl *d*, pivoted to said arm and adapted to engage the ratchet-wheel, the lever *g*, provided with a spring *p* and extended into the path of a pin *c'*, carried by the arm *c*, the pawl *i*, pivoted to the lever *g* and provided with a pin *i'*, the spring *k*, bearing on said pin, the toothed wheel *l*, the spindle *m*, provided with pointer *o*, and the dial-plate *o*, substantially as described.

2. In a fare-registering apparatus, the combination of the spindle *a*, having the ratchet-wheel *b* secured thereon, the arm *c*, mounted on said spindle, the pawl *d*, carried by said arm and adapted to engage the ratchet-wheel, the fixed stop *r*, supported in the path of the pawl *d* on one hand, the lever *t*, provided with a stop *t'* on the other hand, and the stepped cam-disk *w*, substantially as described.

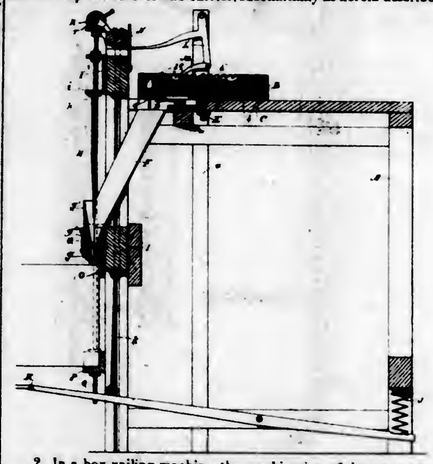
3. In a fare-registering apparatus, the combination, with the fixed guide-bars 10 to receive the casing of the apparatus, of the pivotally-supported signaling-flag 9, adapted to be turned down over the keyhole of the apparatus and provided with a nose 9' to engage one of the guide-bars and prevent the hoisting of the flag until the apparatus has been moved to a prescribed position on said guide-bars, substantially as described.

4. In a fare-registering apparatus, the combination of the fixed guide-bars 10, the stepped cam-disk *w*, the cam 3, connected with said disk, the signaling-flag 9, provided with nose 9' and finger 7, the bar 6, the spring 11, and the pin 12, substantially as described.

5. In a fare-registering apparatus, the combination, with the count-controlling mechanism, of the plate A', the spindle 1, the ratchet-wheel 26, mounted on said spindle and provided with large teeth and small teeth, the pawl 27, pivoted to the plate A' and provided with the spring 29, the stepped cam-disk *w*, and the arm *t*, substantially as described.

485,530. BOX-NAILER. JAMES A. CASE, Markham, Cal. Filed Dec. 26, 1891. Serial No. 416,251. (No model.)

Claim.—1. In a box-nailing machine, the combination of a centrally-pivoted horizontal carrier having a concentric row of nail-sockets and a row of ratchet-teeth upon the upper surface of its rim, a directing-passage under the carrier to receive the nails successively from the sockets thereof, a nail-holder to receive the nails from the passage, a vertically-reciprocating sash, a hammer carried by said sash, a swinging two-armed lever above the carrier and having a feed-pawl on one arm engaging the ratchet-teeth of said carrier and its other arm lying in the path of the uprising sash, whereby it is raised, and a catch-arm carried by said sash and lying above the lever-arms, whereby it is depressed, said catch-arm being pivoted to the sash, whereby it may be thrown back out of engagement with said lever-arm to stop the feed of the carrier, substantially as herein described.



2. In a box-nailing machine, the combination of the rotary carrier having a plurality of concentric rows of nail-sockets, a fixed solid plate lying under said carrier, forming a rest and support for the points of the nails in the carrier-sockets, and an adjustable slide in said fixed plate, having a hole adapted by the movement of said slide to be brought into line successively with the several rows of nail-sockets in the carrier, substantially as herein described.

3. In a box-nailing machine, the combination of the rotary carrier having a plurality of concentric rows of nail-sockets, a fixed solid plate lying under said carrier, forming a rest and support for the points of the nails, the adjustable perforated slide in said plate, and the lever for moving said slide to bring its hole into line successively with the several rows of nail-sockets in the carrier, substantially as herein described.

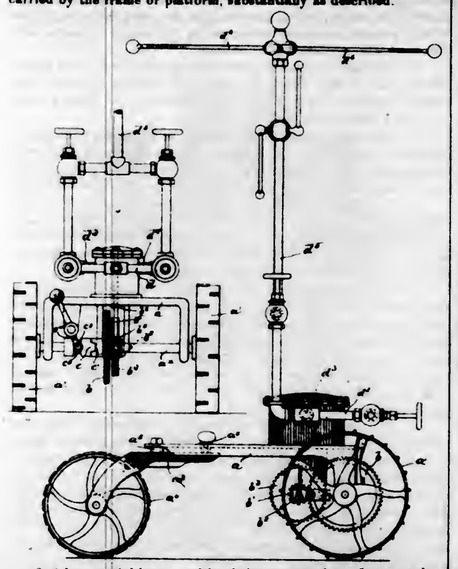
4. In a box-nailing machine, the combination of the rotary carrier having a plurality of concentric rows of nail-sockets, the fixed solid plate lying under said carrier and forming a rest and support for the points of the nails, the adjustable slide in said plate, having a hole adapted to be brought into line successively with the several rows of nail-sockets, the fixed chute under the slide, the nail-holder at the lower end of the chute, the hammer, the vertically-movable sash carrying the hammer, and the pawl-and-ratchet connection between the sash and carrier, substantially as herein described.

485,531. CORN-HUSKING MACHINE. MILTON COLTON and BYRON COLTON, Lamont, Iowa. Filed Apr. 12, 1892. Serial No. 428,868. (No model.)

Claim.—In a corn-husking machine, the combination, with the frame A, of the roller E, journaled therein, the pinion *b*, mounted on a journal of said roller, the hand-wheel *c*, mounted upon one of the said journals, the standards C, rising from the frame A, the bifurcated bearing-boxes D, pivoted to said standards, and the fluted roller E, journaled in said boxes, and the springs F, whereby the fluted roller will be held with a yielding pressure against the roller B to prevent crushing the corn as it is fed between the rollers, substantially as specified.

485,532. TRAVELING LAWN-SPRINKLER. HENRY T. CRISPAR, Portland, Me. Filed Aug. 15, 1892. Serial No. 443,186. (No model.)

Claim.—1. A lawn-sprinkler comprising in its construction a frame or platform mounted on wheels, a water-motor carried thereby and having connections with the wheels to drive the same and propel the entire machine, a pipe receiving the water discharged from the motor and leading from said motor to a suitable sprinkler, also carried by the frame or platform, substantially as described.



2. A lawn-sprinkler comprising in its construction a frame or platform mounted on wheels, a water-motor carried thereby and having connections with the wheels to drive the same and propel the entire machine, a pipe receiving the water discharged from the motor and leading from said motor to a suitable sprinkler, also carried by the frame, and means for connecting and disconnecting the motor and driving-wheels of the machine, for the purpose set forth.

3. A lawn-sprinkler comprising in its construction a frame or platform mounted on wheels, a water-motor carried thereby and having connections with the wheels to drive the same and propel the entire machine, a pipe receiving the water discharged from the motor and leading from said motor to a sprinkling device, also carried by the frame, and a movable clutch connecting the gearing with the axle of the driving-wheels, substantially as described.

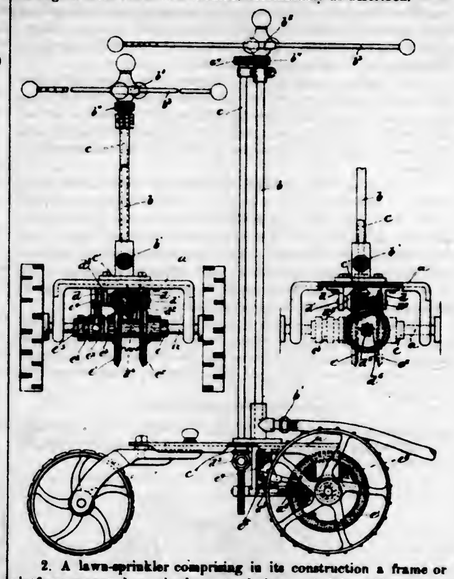
4. A lawn-sprinkler comprising in its construction a frame or platform mounted on wheels, a water-motor carried thereby and having connections with the wheels to drive the same and propel the entire machine, a pipe receiving the water discharged from the motor and leading from said motor to a suitable sprinkler, also carried by the frame or platform, and double pipe connections and valves therein for reversing the direction of operation of the motor, for the purpose set forth.

5. A lawn-sprinkler comprising in its construction a frame or platform mounted on wheels, a water-motor carried thereby and having connections with the wheels to drive the same and propel the entire machine, a pipe receiving the water discharged from the motor and leading from said motor to a suitable sprinkler, also carried by the frame, and means for steering the machine, a clutch for throwing the motor into or out of connection with the driving-axle, and means for reversing the direction of the flow of water through the motor, substantially as described.

6. A traveling lawn-sprinkler comprising in its construction a water-motor geared to the driving-axle, a suitable sprinkling device, a pipe connected at one end with said sprinkling device and at the other end with branch pipes which are connected with opposite sides of the motor, a pipe having a coupling for connection with a hose, and having, also, branch pipes connected with opposite sides of the motor, and suitable valves in the pipes for causing the water to flow in either direction through the motor, substantially as and for the purpose set forth.

485,533. TRAVELING LAWN-SPRINKLER. HENRY T. CRISPAR, Portland, Me. Filed Aug. 15, 1892. Serial No. 443,154. (No model.)

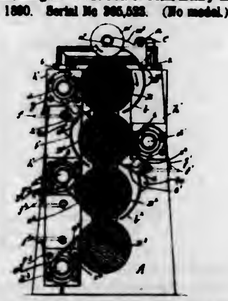
Claim.—1. A lawn-sprinkler comprising in its construction a frame or platform mounted on wheels, a stand-pipe carried by said frame or platform, rotary sprinkling-arms at the upper end of the stand-pipe, a gear or pinion above the stand-pipe, secured to the said sprinkling-arms, gearing outside of the stand-pipe, connecting the said pinion with the traveling wheels of the machine, and means for reversing the motion of the machine, substantially as described.



2. A lawn-sprinkler comprising in its construction a frame or platform mounted on wheels, a stand-pipe carried by said frame or platform, rotary sprinkling-arms at the upper end of the stand-pipe, a gear or pinion above the stand-pipe, secured to the said sprinkling-arms, a shaft outside of and parallel with the stand-pipe and having a gear at its upper end meshing with the sprinkling-arm gear, said shaft being connected at its lower end with the wheels of the machine to drive the same, substantially as described.

3. In a traveling lawn-sprinkler, the combination, with a stand-pipe and sprinkling-arms, of a shaft outside of the stand-pipe and geared to said arms, gearing connecting the said shaft with the driving-wheels of the machine, and means for disconnecting the said gearing or reversing its connections, for the purpose set forth.

485,534. PAPER-CALENDERING MACHINE. PETER DILLON, Lawrence, Mass., assignor of one-half to John Henry Horne, same place. Filed Sept. 19, 1890. Serial No. 365,523. (No model.)



Claim.—1. A calendering-machine containing the following instrumentalities, viz: a series of calendering-rolls, a feed-roll, vibrating arms having bearings for and carrying said feed-roll, and a directing-plate connected to the said arms and adapted to direct the end of a web into the nip or bite between two of said calendering-rolls, substantially as described.

2. A calendering-machine containing the following instrumentalities, viz: a series of calendering-rolls, a feed-roll, movable arms having bearings for said feed-roll, a rocking support for said arms, a directing-plate connected to the said arms to direct the end of a web into or between the nip of two calendering-rolls, a treadle, and connecting mechanism between it and said rocking support, to operate substantially as described.

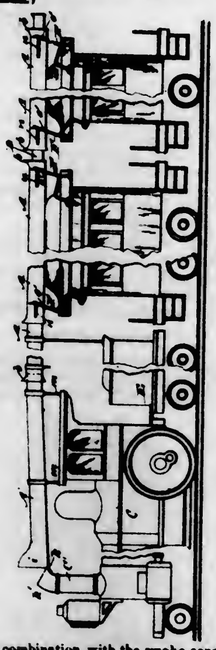
3. In a calendering-machine, a series of calendering-rolls, a rock-shaft, a treadle, connections between the said rock-shaft and treadle, and arms connected to the rock-shaft, combined with a feed-roll having its bearings in said arms and normally standing with its periphery somewhat elevated above the top calendering-roll, the said rock-shaft by its movement enabling the feed-roll to approach the top calendering-roll when it is desired to introduce a web of paper into the calendering-machine, substantially as described.

4. Calendering-rolls, rocking supports, arms connected thereto and carrying angle-bars, scrapers or clearers attached to said angle-bars, collars fixed to said supports, and springs connected to said collars, combined with catches to engage said springs, and thereby cause the scrapers to be held against the calendering-rolls, substantially as described.

5. In a calendering-machine, the following instrumentalities, viz: a series of calendering-rolls, a series of perforated air-pipes adjacent to but on opposite sides of successive calendering-rolls, valves on said pipes to control the delivery of air therefrom, and a series of directing-plates for the rolls, located opposite said pipes, the air being delivered from the pipes upon the exposed surface of the adjacent rolls at the side opposite the directing-plates to cool the rolls and prevent unequal expansion thereof, substantially as described.

6. In a calendering-machine, the following instrumentalities, viz: a series of calendering-rolls, a series of pipes, and a series of valves on said pipes, the said valves being movable independently to thereby control the discharge of air upon the rolls at any point, substantially as described.

485,585. SMOKE STACK AND CONDUCTOR. JOHN W. DUNCAN and THOMAS B. GRIMBY, Onancock, Va. Filed Feb. 13, 1892. Serial No. 421,402. (No model.)



Claim.—1. The combination, with the smoke-conductor section, of a pneumatically-operated junction-pipe constructed with a portion or connection to receive the impact of the air and slide said pipe, substantially as set forth.

2. The combination, with the smoke-conductor section and its pneumatically-operated junction-pipe constructed with a portion or connection to receive the impact of the air and slide said pipe, of a lever mechanism for positively operating said junction-pipe, substantially as set forth.

3. The combination, with the smoke-conductor section, of a junction-pipe having internal and external wings or projections to receive the impact of the air and slide the junction-pipe, substantially as set forth.

4. The combination, with the smoke-conductor section, of the pneumatically-operated junction-pipe constructed with a portion or connection to receive the impact of the air and slide said pipe and interposed antifriction devices between the two, substantially as set forth.

5. A smoke-conducting apparatus comprising a rearward-curved stack-section *k'*, a section *k''*, having an upward-flared end *i* adjacent to section *k'*, a section for the tender, and a car-section having a pneumatically-operated sliding junction-pipe for each end, constructed with a portion or connection to receive the impact of the air and slide said pipe, substantially as set forth.

6. A smoke-conducting section having flared ends and a sliding junction-pipe in each end of the said section and having flared ends and an impact portion or connection to slide it by the impact of the air, substantially as set forth.

7. In a smoke-conductor for cars, the combination, with a semielliptical conduit-section, of a semielliptical junction-pipe in the conduit-section, having flared ends and an interior depending curtain, and antifriction-rollers beneath its bottom wall, substantially as described.

8. In a smoke-conductor for cars, the combination, with a semicylindrical conduit-section flared at its ends, of a semicylindrical junction-pipe in the conduit-section, also flared at its ends and having antifriction-rollers beneath its bottom wall, and means for manually moving the junction-pipe longitudinally, substantially as described.

9. In a smoke-conductor for cars, the combination, with a car, a semicylindrical conduit-section supported thereon, flared at its ends, and longitudinally slotted near each end at one side, of a semicylindrical junction-pipe within the conduit-section, also flared at its ends and having antifriction-rollers beneath its bottom wall, and a bell-crank lever fulcrumed on the car and pivotally connected at one end with the junction-pipe through the side slot in the conduit-section, substantially as described.

10. In a smoke-conductor for cars, the combination, with a semicylindrical conduit-section flared at its ends and having central longitudinal slots in its side near each end, of a semicylindrical junction-pipe in each end of said conduit-section, and also flared at its ends, depending curtains within said junction-pipes, antifriction-rollers beneath the bottom walls of the said junction-pipes, and lateral bars connected to the junction-pipes and extending horizontally through the slots in the conduit-section and having wings on their outer ends, substantially as described.

11. In a smoke-conductor for cars, the combination, with the smoke-conductor section, of a sliding junction-pipe and surfaces and connections adapted to be deflected by the impact of air and slide said pipe, substantially as described.

12. The herein-described means for carrying the smoke over the space between the cars, consisting of movable guides on the ends of each car and wind-boards mounted adjacent thereto and adapted to be moved by the pressure of the wind and operatively connected to said guides, whereby one guide is operated automatically to bridge over the intervening space and the other guide is actuated to operate therewith, substantially as described.

13. In a smoke-escape, the combination, with conductor-sections mounted on the respective cars and adapted to facilitate the passage of smoke therethrough, of guides at each end of said sections, adapted to guide the smoke from one section to the adjacent section, and automatic means for operating said guides, consisting of surfaces adapted to be deflected by the wind and intermediate connections between said guides and surfaces, whereby said automatic action is effected, substantially as described.

14. In a smoke-escape, the combination, with conducting-pipes formed in sections adapted to be mounted on the respective cars, of guides for the smoke, consisting of sliding pieces adapted to bridge over the space from one section to the adjacent one and wind-boards adapted to be moved by the pressure of the wind thereon and operatively connected to said sliding guides, whereby the guide in one section will be operated outward to bridge over the intervening space and the adjacent guide will be operated inward to give place thereto, substantially as described.

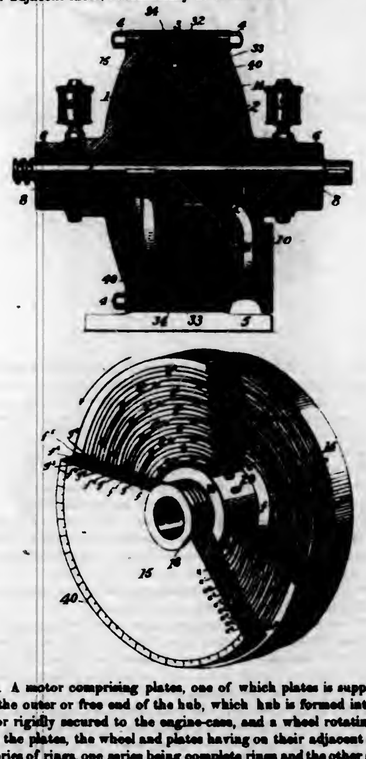
485,586. STEAM-MOTOR. EDGAR A. EDWARDS, Cincinnati, Ohio. Filed Nov. 21, 1891. Serial No. 412,692. (No model.)

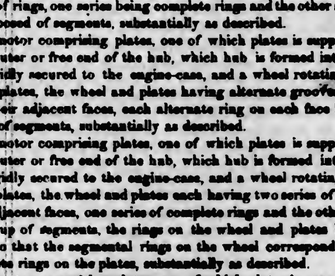
Claim.—1. A motor comprising plates, one of which plates is supported upon the outer or free end of the hub, which hub is formed integral with or rigidly secured to the engine-case, and a wheel rotating between the plates, the wheel and plates having grooves in their adjacent faces, substantially as described.

2. A motor comprising plates, one of which plates is supported upon the outer or free end of the hub, which hub is formed integral with or rigidly secured to the engine-case, and a wheel rotating between the plates, the wheel and plates having grooves on their adjacent faces, which grooves correspond in radial distance from the center of the wheel and plates, substantially as described.

3. A motor comprising plates, one of which plates is supported upon the outer or free end of the hub, which hub is formed integral with or rigidly secured to the engine-case, and a wheel rotating between the plates, the wheel and plates having rings in their adjacent faces, the rings in the wheel and plates corresponding in radial distance from the centers of the wheel and plates, substantially as described.

4. A motor comprising plates, one of which plates is supported upon the outer or free end of the hub, which hub is formed integral with or rigidly secured to the engine-case, and a wheel rotating between the plates, the wheel and plates having alternate rings and grooves in their adjacent faces, substantially as described.





5. A motor comprising plates, one of which plates is supported upon the outer or free end of the hub, which hub is formed integral with or rigidly secured to the engine-case, and a wheel rotating between the plates, the wheel and plates having on their adjacent faces two series of rings, one series being complete rings and the other series being composed of segments, substantially as described.

6. A motor comprising plates, one of which plates is supported upon the outer or free end of the hub, which hub is formed integral with or rigidly secured to the engine-case, and a wheel rotating between the plates, the wheel and plates having alternate grooves and rings on their adjacent faces, each alternate ring on each face being composed of segments, substantially as described.

7. A motor comprising plates, one of which plates is supported upon the outer or free end of the hub, which hub is formed integral with or rigidly secured to the engine-case, and a wheel rotating between the plates, the wheel and plates having two series of rings on their adjacent faces, one series of complete rings and the other series made up of segments, the rings on the wheel and plates being arranged so that the segmental rings on the wheel correspond with the complete rings on the plates, substantially as described.

8. A motor comprising plates, one of which plates is supported upon the outer or free end of the hub, which hub is formed integral with or rigidly secured to the engine-case, and a wheel rotating between the plates, the wheel and plates each having segmental rings on their adjacent faces, the segments of one having inclined ends arranged in a direction reverse to the inclined ends of the segments on the other, substantially as described.

9. A motor comprising plates, one of which plates is supported upon the outer or free end of the hub, which hub is formed integral with or rigidly secured to the engine-case, and a wheel rotating between the plates, the wheel and plates being provided on their adjacent faces with annular grooves and rings, and inclined grooves connecting two adjacent annular grooves, substantially as described.

10. A motor comprising plates, one of which plates is supported upon the outer or free end of the hub, which hub is formed integral with or rigidly secured to the engine-case, and a wheel rotating between the plates, the wheel and plates each having a series of annular grooves corresponding to each other and each having two series of rings, one series of complete annular rings and a second series of rings composed of segments, the arrangement being such that the segments on the wheel correspond with the complete rings on the plates, and vice versa, substantially as described.

11. A motor comprising plates, one of which plates is supported upon the outer or free end of the hub, which hub is formed integral with or rigidly secured to the engine-case, and a wheel rotating between the plates, the wheel and plates being each provided with two series of rings on their adjacent faces, one series of complete rings and an intermediate series of rings composed of segments, the ends of the segments being inclined, the arrangement being such that the segmental rings on the wheel correspond to the complete rings on the plates and the end of the segments on the wheel are inclined in an opposite direction to the ends of the segments on the plates, substantially as described.

12. In a motor, a case, plates supported in said case, one of which plates is supported upon the outer or free end of a hub, which hub is formed integral with or rigidly secured to the engine-case, a rotating shaft, and a wheel carried by said shaft and rotating between the plates, substantially as described.

13. In a motor, a case, plates supported in said case, one of which plates is supported upon the outer or free end of a hub, which hub is formed integral with or rigidly secured to the engine-case, a shaft supported in said case, and a wheel connected to said shaft and rotating between the plates, the plates and wheel being provided with grooves on their adjacent faces, substantially as described.

14. A motor comprising plates, a shaft, a carrier having radially-extending portions mounted on the shaft, and a wheel connected to the carrier and rotating between the plates, substantially as described.

15. In a motor, a case, plates supported in said case, a shaft, a carrier mounted on said shaft and having a laterally-extending flange, and a wheel connected to said flange and rotating between the plates, substantially as described.

16. A motor comprising plates, a wheel rotating between the plates, and supports for the wheel at or near the periphery thereof, substantially as described.

17. A motor comprising plates, a wheel rotating between the plates, and rings mounted on the plates and laterally adjustable thereon and arranged to control the clearance between the rotating wheel and plates, substantially as described.

18. In a motor comprising stationary and rotating parts, means for accurately adjusting the clearance between the parts, comprising a ring or rings screw-threaded and having division-marks, whereby a practical micrometer adjustment between the parts and ring or rings may be obtained, substantially as described.

19. In a motor, a case having heads, a hub connected to one of the heads, plates mounted on the hub, a shaft passing through the hub, and a wheel supported on said shaft and rotating between the plates, substantially as described.

20. In a motor, a case having heads, a hub connected to one of the heads, a steam-inlet passage in the head, a steam-passage through the hub, plates carried by the hub, a shaft and wheel carried thereby and rotating between the plates, and steam-passages arranged in the adjacent faces of the wheel and plates, substantially as described.

21. In a motor, a case having heads provided with bearings for the shaft, a hub connected to one of the heads, a plate formed integral with the hub, a second plate mounted on the hub, steam-passages through the hub, connected with an inlet-passage to the case, a wheel mounted on the shafts and rotating between the plates, and steam-passages arranged in the adjacent faces of the wheel and plates, and adjusting devices for controlling the clearance between the wheel and plates, substantially as described.

22. In a motor, the fixed plates having steam-passages in their faces, a wheel rotating between the plates and having steam-passages in its faces adjacent the plates, a carrier for the wheel, and adjustable clearance devices on the plates, the arrangement being such that the rotating wheel will automatically adjust itself in accordance with the difference in pressure of the steam on its opposite sides to compensate for lateral displacement, substantially as described.

485,587. ELECTRIC-ARC LAMP. EDGAR A. EDWARDS, Cincinnati, Ohio. Filed Nov. 28, 1891. Serial No. 413,094. (No model.)

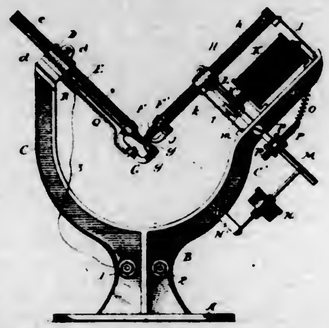
Claim.—1. In a focusing electric-arc lamp, the combination of a positive electrode and a positive refractory stop against which it normally rests, of a negative electrode and a detaining-finger bearing against said electrode, substantially as described.

2. In a focusing electric-arc lamp, the combination, with the carbon-holders arranged at an angle to each other of a positive carbon normally resting against a fixed refractory axial stop and the negative carbon normally resting on a detaining-finger, substantially as described.

3. In a focusing electric-arc lamp, the combination, with a positive

carbon normally resting on an insulated metallic stop, of a negative carbon normally resting against a detaining-finger, substantially as described.

4. In a focusing electric-arc lamp, the combination, with the positive-carbon holder, of an axial metallic stop supported thereby, but insulated therefrom, and a negative-carbon holder carrying a detaining-finger for supporting the negative carbon, substantially as described.



5. In a focusing electric-arc lamp, the combination, with the electrode-holders arranged at an angle to each other, a positive electrode normally bearing against a fixed refractory stop, a negative electrode normally bearing against a detaining-finger, a magnet, and connections for establishing and maintaining the arc, substantially as described.

6. In a focusing electric-arc lamp, the combination, with the electrode-holders arranged at an angle to each other, a positive electrode normally bearing against a fixed refractory stop, a negative electrode normally bearing against a detaining-finger, a magnet, and connections between the magnet and the negative-electrode holder for establishing and maintaining the arc, substantially as described.

7. In a focusing electric-arc lamp, the combination, with the supporting-frame, of an electrode-holder, flat spring connecting the holder to the frame, a magnet, a bar connecting the core of the magnet to the holder, a lever pivotally connected to the bar, a dash-pot connected to the lever, and an adjustable spring, also connected to the lever, substantially as described.

8. In a focusing electric-arc lamp, the combination, with an electrode normally resting on a fixed refractory stop and an electrode normally held by a detaining-finger at an angle to the first electrode, of a magnet arranged adjacent to the electrodes for directing the arc, substantially as described.

9. In a focusing electric-arc lamp, the combination of the positive electrode resting against the fixed refractory stop and a negative electrode resting against a detaining-finger and arranged at an angle to the positive electrode, of a magnet, the coils of which are included in the circuit of the lamp, the magnet being arranged in axial line with the negative electrode, substantially as described.

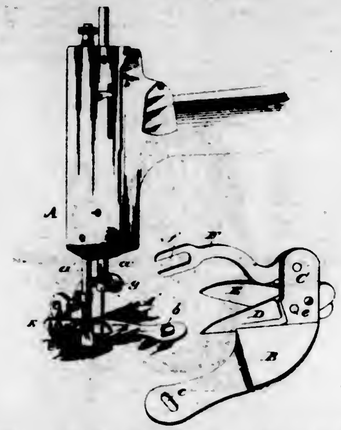
10. In a focusing electric-arc lamp, the combination, with the electrode-holder having a yoke supporting a stop, of another electrode-holder arranged at an angle thereto and having a detaining-finger for the electrode, and a magnet supported by the yoke adjacent to the point of contact of the electrodes, substantially as described.

11. In an electric head-light, the combination, with the sliding board, of a reflector, a support mounted on the sliding board, connections to the rear end of the reflector and adjustable in said support, a lamp, also mounted on the sliding board, and electrodes mounted on said arms and arranged at an angle to each other in the focal point of the reflector, substantially as described.

12. In an electric head-light, the combination, with the sliding board, of a reflector, a support mounted on the sliding board, connections to the rear end of the reflector and adjustable in said support, a lamp, also mounted on the sliding board and having bifurcated arms embracing the reflector, and electrodes mounted on said arms and arranged at an angle to each other in the focal point of the reflector, substantially as described.

13. In an electric head-light, the combination, with the sliding board, a support mounted thereon, and devices connected thereto for vertically adjusting the reflector, of a support for the lamp, having bifurcated arms and provided with means for lateral and longitudinal adjustment of the lamp, the electrodes being arranged at an angle to each other and passed through openings in the reflector and extending to the focal point thereof, whereby the lamp and the reflector may be adjusted with relation to each other, substantially as described.

485,588. TRIMMING ATTACHMENT FOR SEWING MACHINES. ALEXANDER G. FORBES and GEORGE W. KEMP, Montgomery, Ala. Filed Feb. 18, 1892. Serial No. 422,094. (No model.)



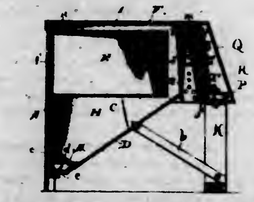
Claim.—1. In a trimming or cutting device for sewing-machines, the combination of a fixed or stationary blade carried by a support which is adapted to be secured to the bed-plate of the machine, an oscillating blade pivoted to the stationary blade so as to cut in conjunction therewith, said oscillating blade having portions which project on each side of its pivot, and a lever adapted to be oscillated from the needle-bar, said lever having cam-faces which contact with projecting portions of the oscillating blade on opposite sides of its pivot, substantially as shown, and for the purpose set forth.

2. In combination with a stationary blade and an oscillating blade having projecting portions on each side of its fulcrum, a lever F, having cam-faces on opposite sides and above the pivot-point or fulcrum of the movable blade, said lever having a slotted end for engagement with a vertically-reciprocating part of the machine, substantially as shown, and for the purpose set forth.

3. In a trimming or cutting attachment for sewing-machines, the combination of a plate having means for adjustably attaching the same to the bed-plate of a sewing-machine, said plate B having a vertical portion to which is secured a stationary blade, a movable blade having a portion extending rear of the pivot thereof, and a lever carried by the upwardly-projecting portion of the base-plate above the blade, said lever having cam-faces located at different distances from its pivot and adapted to engage with the upper edge of the movable blade for elevating and depressing the same, substantially as shown, and for the purpose set forth.

4. In a cutting or trimming attachment for sewing-machines, the combination of a stationary blade and an oscillating blade pivoted thereto, of a lever pivoted to a base-plate or carrying-frame above the movable blade and adapted for engagement with a reciprocating part of the sewing-machine, said lever having cam-faces which contact with the oscillating blade on opposite sides of its pivot, said cam-faces being at different distances from the fulcrum of the lever, substantially as shown, and for the purpose set forth.

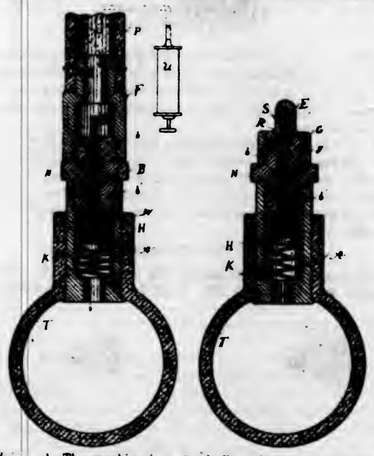
485,589. OIL-STOVE. GEORGE GARDNER, Bolivar, Mo. Filed Feb. 4, 1892. Serial No. 420,836. (No model.)



Claim.—1. In an oil-stove, substantially as described, the combination, with the casing, the oven, the chamber H, arranged beneath the oven, the lamp in said chamber, the horizontal flue I above the oven, and the vertical flue J, connecting the chamber H and flue I, of the transverse wall G, the transverse wall G', the chamber T, the lamp in said chamber, the vertical flue S, and a damper pivotally mounted at the upper edges of the walls G G', substantially as and for the purpose set forth.

2. In an oil-stove, substantially as described, the combination, with the casing, the oven, the chamber H, arranged beneath the oven, the lamp in said chamber, the horizontal flue I above the oven, and the vertical flue J, connecting the chamber H and flue I, of the transverse wall G, the transverse wall G', the chamber T, the lamp in said chamber, the vertical flue S, the partition-wall U, dividing the flue S into halves, and the dampers pivotally mounted at the upper edges of the walls G G' and adapted to be independently actuated or manipulated, substantially as specified.

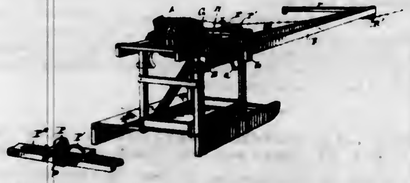
485,540. VALVE FOR PNEUMATIC TIRES. WILLIAM R. GIBBS, New York, N. Y. Filed May 3, 1892. Serial No. 431,713. (No model.)



Claim.—1. The combination of a hollow tire or other chamber adapted for the reception of compressed air with a combined valve and plug provided with an elastic packing or gland adapted to operate as a valve during the filling of the chamber and as a plug when permanently compressed longitudinally and expanded laterally, substantially as shown and described.

2. In a combined valve and plug, the combination of a tube A, a tubular collar D, of yielding material, inserted in the tube A, whereby a space is formed between the said tubular collar and tube A, so that the parts will operate as a valve, and means, substantially as shown and described, for transforming the valve into a plug by compressing the collar D longitudinally and expanding it laterally, so as to fill the space between it and the tube A, as set forth.

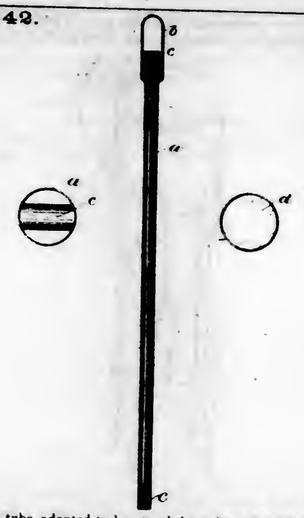
485,541. WIRE REELING AND STRETCHING MACHINE. JOHN HARPER, Fairfield, Iowa. Filed June 22, 1891. Serial No. 397,081. (No model.)



Claim.—The combination, with the frame of a reel-carrier, of an arm removably secured to one side thereof and projecting in front of the same, a guide-pulley at the front end of the arm, a brace secured to the side of the frame opposite the arm and to the front of the arm, and a jockey-stick at the front end of the arm, adapted to be secured to the harness of a horse hitched to the frame, substantially as described.

485,542. MUSICAL INSTRUMENT. JOHN HARRINGTON, Coventry, England, assignor to Walter H. Durfee, Providence, R. I. Filed Dec. 16, 1891. Serial No. 415,217. (No model.)

Claim.—In a musical sounding apparatus of the class described,

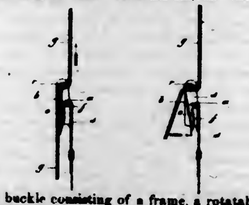


a suspended tube adapted to be struck by a hammer and caused to vibrate to produce by its vibration a musical sound of a certain pitch combined with one or more stiffening devices in said tube between its point of suspension and its end to affect the vibrations of the metal of the tube and the quality of the tone produced by such vibrations substantially as described.

485,543. SHOE. GEORGE P. HERNDON, Birmingham, Ala. Filed May 28, 1892. Serial No. 434,751. (No model.)

Claim.—A boot or shoe having its quarters each composed of a front piece, a heel-piece, and an intermediate approximately-V-shaped ankle brace or support consisting of leather or other flexible but somewhat-rigid non-elastic material inserted between the said front piece and heel-piece of each quarter, the said parts secured together substantially as described, and for the purposes specified.

485,544. CLASPING-BUCKLE. CARL HOLLWEG, Barmen, Germany. Filed Aug. 11, 1892. Serial No. 442,765. (No model.)



Claim.—A buckle consisting of a frame, a rotatable roller journaled in the frame and provided with a series of wings, a swinging clamping leaf or arm pivoted intermediate its upper and lower ends to the frame and having its upper end arranged to clamp a belt against the winged roller, a spring acting upon the lower end of the leaf or arm to throw its upper end into clamping position, and a brace secured to the frame at a point above the pivot of the leaf or arm, so that the upper end portion of the latter strikes said brace when a belt is clamped against the roller, substantially as described.

485,545. COMBINED MEASURE AND FUNNEL. DUDLEY T. HALL, Harrold, Tex. Filed May 20, 1892. Serial No. 434,313. (No model.)

485,547. PERFORATOR FOR PRINTING-PRESSES. WILLIAM P. LAMPHERSON, PHILIP H. WILLSMORE, and ROBERT I. STATES, Jersey City, N. J. Filed Dec. 17, 1891. Serial No. 415,416. (No model.)

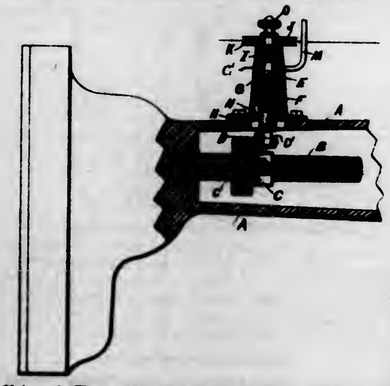
expedited for the purpose of producing a percussive pressure upon the contents of said molds.

Claim.—As a new article of manufacture, a water-filter consisting of a block of tripoli-rock having a large interior opening or chamber with a contracted outlet, a plate secured to the block and having a perforated threaded neck, and a flexible hose connected to said plate by a threaded nut, substantially as set forth.

485,545. COMBINED MEASURE AND FUNNEL. DUDLEY T. HOLT, Harrold, Tex. Filed May 23, 1892. Serial No. 434,313. (No model.)

Claim.—A measure provided with a funnel at its lower end, grooves at opposite inner sides of the said measure, a plate which is detachably held in said grooves, and a rod which passes through the said plate and carries a stopper at its lower end, the rod extending to the top of the measure to be operated, whereby the rod can be detached from the measure by removing the said plate from the grooves and the measure cleaned, substantially as specified.

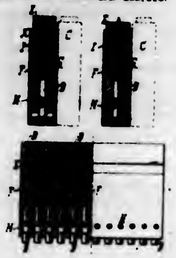
485,546. TENSION DEVICE FOR SEWING-MACHINES. CHARLES B. HUNT, London, England. Filed July 26, 1892. Serial No. 441,185. (No model.) Patented in England June 11, 1892, No. 11,089.



Claim.—1. The combination, with a machine-arm, of a post or pedestal provided with upper and lower chambers separated by an intermediate shoulder, an upper shaft provided with a nose-cam, a vertically-movable rod disconnected from the cam and provided at its lower end with a roller adapted to be struck and suddenly elevated by the nose-cam, a pair of springs located, respectively, in the upper and lower chambers of the post or pedestal and constructed of different power or tension, and a pair of tension-disks through which the vertical rod extends, the under one of said disks resting upon the upper and weaker spring, substantially as described.

2. The combination, with a machine-arm A and an upper shaft B, having a nose-cam C, of a post or pedestal G, rising from the machine-arm and having an internal shoulder G', the springs F and I, constructed of different power or tension and located, respectively, below and above the internal shoulder of the post or pedestal, the vertically-movable rod E, extending through said springs and having a roller D at its lower end, adapted to be struck and suddenly elevated by the nose-cam, a pair of tension-disks J and K, mounted on the vertically-movable rod, and the lower disk bearing against the uppermost spring, and a thumb-piece O, adjustable on the vertically-movable rod and acting upon the upper disk for varying the gripping action on the thread, substantially as described.

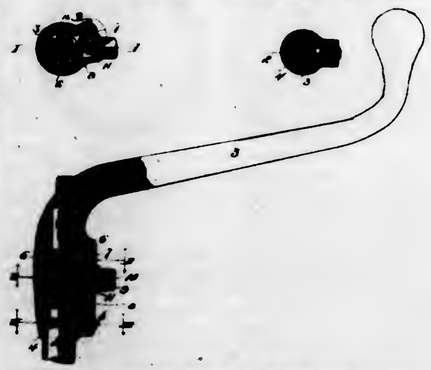
485,547. PERFORATOR FOR PRINTING-PRESSES. WILLIAM P. KASTENHUBER, PHILIP H. WILLMOTT, and ROBERT I. SPATES, Jersey City, N. J. Filed Dec. 17, 1891. Serial No. 415,416. (No model.)



Claim.—1. In a perforator for printing-presses, the combination, with a series of independent or isolated solid fixed perforating-instruments or needles, of a guard common to said needles and elastically supported on each of them and a fixed guide for the guard, substantially as described.

2. In a perforator for printing-presses, the combination, with a series of independent or isolated solid fixed perforating-instruments or needles, of an elastically-supported guard surrounding the perforating-instruments and a guide for the guard, said perforating-instruments and guard being connected by a pin-and-slot connection, substantially as described.

485,548. RATCHET-BRAKE FOR CARS. PETER M. KLING, St. Louis, Mo. Filed July 6, 1892. Serial No. 439,157. (No model.)



Claim.—1. In a ratchet-brake, the combination of the brake-rod having elongated ratchet-teeth, a handle having a socket end with an enlarged recess, a block fitting in the recess of the handle and having a bearing at 12, a hollow plug fitting in the handle, and a spring in said plug for forcing the block into engagement with the ratchet-teeth, substantially as set forth.

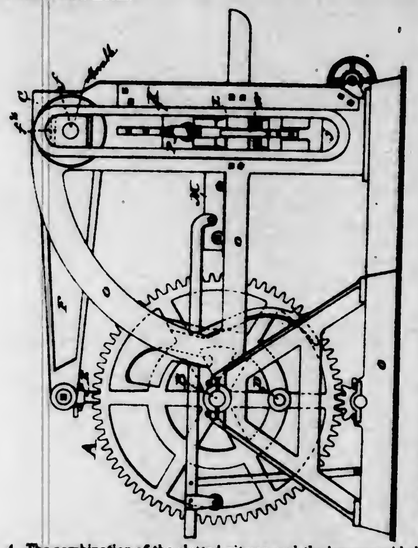
2. In a ratchet-brake, the combination of a brake-rod having elongated ratchet-teeth, a socketed handle having a recess, a block in said recess having a bearing 12, a hollow plug fitting in the handle, a spring fitting in said plug, and a cap fitting over the spring, substantially as and for the purpose set forth.

485,549. BRICK-PRESS. JOSEPH J. KULAGE, St. Louis, Mo. Filed Jan. 9, 1891. Renewed Oct. 6, 1892. Serial No. 448,074. (No model.)

Claim.—1. The combination, in a press, of the uprights C C', the lever F, the vertically-movable bearings f^6, the links G, the upper plungers J, the links K K, the molds L, and the lower plungers J', said links G being jointed at the upper end to the arms f' of said lever and at the lower end being jointed to said upper plungers, and said links K K at the upper end thereof being connected directly with said lever and at the lower end thereof with said lower plungers, and said bearings f^6 being movable in said uprights, substantially as described.

2. The molds L, consisting of the side linings P, the end linings l^9, and the partitions P, and clamped in a mold-table, substantially as described.

3. In a press, the combination of molds, plungers for working in said molds, and a lever for pressing said plungers into said molds, said lever during a portion of its stroke having its downward movement expedited for the purpose of producing a percussive pressure upon the contents of said molds.



4. The combination of the slotted pitman and the lever provided with the wrist-pin and the abutments, substantially as and for the purpose described.

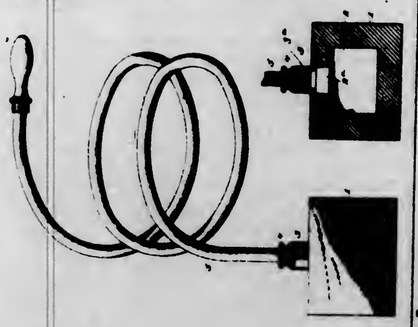
5. The combination, in a press, of the crank for operating the pitman, the pitman, and the pivoted lever F, said lever having its motion expedited during a portion of its stroke, for the purpose described.

6. The pivoted lever F, having the adjustable abutments and wrist-pin, in combination with the slotted pitman, substantially as described.

485,550. HOLDBACK FOR VEHICLES. HOWARD W. LARSEN and ROSCOE PETERSON, Diamond Bluff, Wis.; said Peterson assignor to said Larsen. Filed Apr. 26, 1892. Serial No. 430,660. (No model.)

Claim.—A holdback attachment for thills, composed of a base-plate having screw-holes 3 for screwing it to a thill, a pendent pin 10, and lateral ears 4, provided with a pivot-pin 5, a jaw or lever 6, having a pin-hole 13 at one end, a handle portion 16 at the opposite end and provided intermediate its ends with pendent ears 7, mounted on the pivot-pin, and a spring 14, carried by the pivot-pin and acting upon the jaw or lever to press its pin-hole in engagement with the pin on the base-plate for holding a breeching-strap in engagement with such pin, substantially as described.

485,551. FILTER. THOMAS T. LOUDENBECK, Carthage, Mo., and WILLIAM O. LOUDENBECK, Chicago, Ill. Filed Apr. 23, 1892. Serial No. 430,495. (No model.)



Claim.—As a new article of manufacture, a water-filter consisting of a block of tripoli-rock having a large interior opening or chamber with a contracted outlet, a plate secured to the block and having a perforated threaded neck, and a flexible hose connected to said plate by a threaded nut, substantially as set forth.

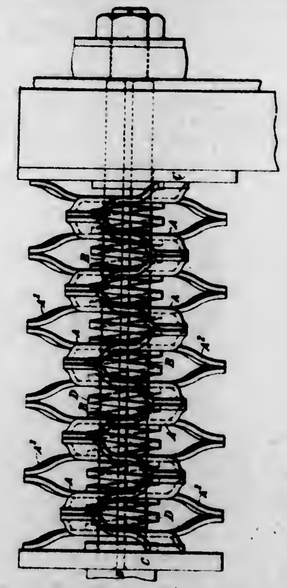
485,552. PEN AND PENCIL HOLDER. ALVIN A. LITTLE, Grand Rapids, Mich., assignor of one-half to Andrew Allgier, same place. Filed May 23, 1892. Serial No. 434,022. (No model.)

Claim.—1. In a pocket-penholder, a body having a flexible back and front united to form a loop, in combination with a plush lining upon each, the projecting ends thereof inclining downward and pressed closely together, and a metallic spring having a downwardly-inclined bow B to form a guard and downwardly-projecting parallel arms extending the entire length of the holder, substantially as and for the purpose set forth.

2. In a pocket-penholder, a body having a flexible back and front formed as a continuous loop, in combination with a plush lining covering the entire inner surface, the projecting threads thereof inclined downward, an upward projection on the back, a stiffening material inserted and secured between the fabric of said projection, and a metallic spring having a downwardly-inclined guard B and downwardly-projecting parallel arms *b b* of sufficient tensile strength to hold the holder firmly to position with the back and front pressed snugly together, substantially as and for the purpose set forth.

3. The combination, in a pocket-penholder, of a body having a back of flexible material, with an elastic web inserted between its edges to form a continuous loop, a plush lining with the projecting threads inclining downward, and a metallic spring, a loop, and downwardly-projecting parallel ends with sufficient tensile strength to stretch the elastic web so that the holder will adjust itself to the width of various-sized pockets, substantially as and for the purpose set forth.

485,553. CAR-SPRING. WILLIAM MARRIOTT, Norfolk, England. Filed June 1, 1892. Serial No. 435,142. (No model.) Patented in England Oct. 20, 1890, No. 17,160.



Claim.—1. A spring built up of stellated plates A, the alternate arms A^3 of which are bent laterally in one direction and the interme-

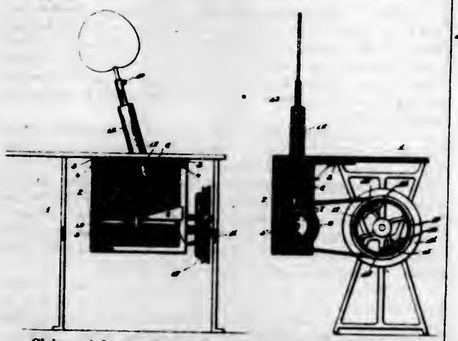
diate arms in the opposite direction and arranged to abut against each other, substantially as described.

2. The combination, with the stellated plates A, having their arms A^2 bent laterally in alternate directions, of the central holes A′ in the said plates and the central square or like bar B, on which the plates are strung, substantially as described.

3. The combination of the stellated plates A, having arms A^2 bent laterally in alternate directions, the central bar B, on which the plates are strung, and clips A^3, formed on the arms A^2, substantially as described.

4. The combination of the stellated plates A, having arms A^2 bent laterally in alternate directions and abutting against each other, the central bar B, on which the plates are strung, and the reinforcing intermediate springs D, substantially as described.

485,554. FAN ATTACHMENT FOR SEWING-MACHINES. GEORGE W. MILLER, Bryan, Tex. Filed Nov. 4, 1891. Serial No. 410,867. (No model.)



Claim.—A fan attachment for sewing-machines, comprising a casing provided with horizontally-disposed slotted arms and secured to a sewing-machine adjustably by bolts arranged in the slots, said casing being provided at its top with an incline cylindrical extension, a horizontally-extending bracket-plate arranged within the casing and projecting from one side thereof and having its upper face inclined, an inclined shaft journaled in the bracket-plate and in the inclined extension and provided with a fan-socket, a horizontally-disposed shaft journaled in the sides of the casing, beveled gear-wheels connecting the shaft, and a pulley mounted on one end of the horizontal shaft and arranged outside of the casing and connected with a drive-wheel of a sewing-machine and with a horizontal shaft, substantially as described.

485,555. UNDERGROUND ELECTRIC CONDUIT AND TROLLEY-BAR FOR ELECTRIC RAILWAYS. JOHN S. HOBB, Martinsburg, W. Va. Filed Apr. 16, 1892. Serial No. 429,452. (No model.)

Claim.—1. The combination, with a casing having a longitudinal opening or slot, of an elastic lining formed integral with a pair of compressible cushions which normally rest in contact with each other, a conductor-support in the casing, a conductor arranged on the support, and a trolley-bar which operates to separate the cushions, substantially as described.

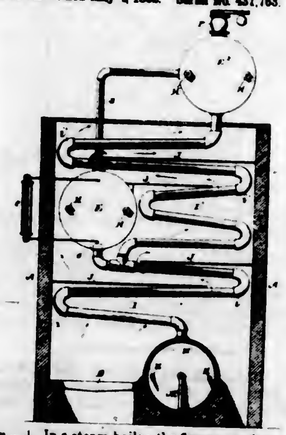
2. The combination, with a single casing having a longitudinal opening or slot, of a rubber formed integral with a pair of hollow compressible cushions which normally rest in contact with each other, an insulating-support in the casing, and an electric conductor arranged on the support, substantially as described.

3. The combination, with a casing having a longitudinal opening or slot and comprising hinged sections susceptible of being opened and closed, of an elastic lining formed integral with a pair of compressible cushions which normally rest in contact with each other, a conductor-support in the casing, a conductor arranged on the support, substantially as described.

4. The combination, with an underground conduit containing an electric conductor, of a trolley bar or rod composed of upper and lower sections, the upper section consisting of a hollow shank having a bifurcated lower extremity, the arms of which have lateral flanges and the lower section consisting of cheek-pieces carrying an axle or shaft and having lateral flanges at their upper ends to connect with the lateral flanges of the upper section, an insulating material interposed between the lateral flanges of said upper and lower sections, and a trolley mounted on the axle or shaft between the cheek-pieces of the lower section, substantially as described.

5. The combination, with a casing having a longitudinal opening and an elastic lining having compressible cushions which normally rest in contact with each other, of a trolley bar or rod formed with tapering opposite edges to facilitate separating the cushions as the trolley bar or rod moves between the same, substantially as described.

485,556. SECTIONAL STEAM-BOILER. CHARLES T. MCLELLAN, Easton, Pa. Filed May 4, 1892. Serial No. 431,763. (No model.)



Claim.—1. In a steam-boiler, the furnace-casing, an intermediate sectional water-drum within said casing, an upper and lower sectional steam and mud drum above and below said water-drum, respectively, and out of line therewith and each other, and continuous water-coils connecting said steam and mud drums at the upper and lower ends thereof and intermediately connected to the water-drum, substantially as set forth.

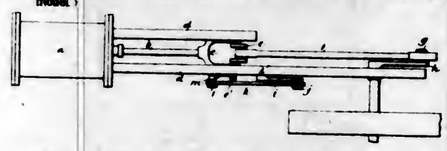
2. In a steam-boiler, an intermediate sectional water-drum, a sectional steam and a mud drum arranged above and below said intermediate water-drum, respectively, and parallel water-coils connected with each corresponding section of said drums, substantially as set forth.

3. In a steam-boiler, the furnace-casing having the fire-grate at one side, a sectional water-drum arranged above said grate within the casing, a lower sectional mud-drum arranged at one side of the fire-grate and out of line with the water-drum, lower parallel water-coils connected with each section of the water and mud drums, a sectional steam-drum supported above the furnace and said water-drum and connected with the latter, and upper parallel water-coils connected with said lower water-coils and each section of the upper steam-drum, substantially as set forth.

4. In a steam-boiler, the furnace-casing, a sectional water-drum supported within said casing, the lower sectional mud-drum out of line with and below the water-drum, lower parallel water-coils connected with each section of the water and mud drums and inclining from side to side of the furnace-casing to the latter drum, a sectional steam-drum supported above the furnace-casing, a steam-pipe connected to said water-drum and said steam-drum, an upper parallel series of water-coils similarly inclined and disposed as said lower water-coils and connected therewith and each section of the upper steam-drum, and draft-plates arranged horizontally within the furnace-casing and extending alternately from opposite sides thereof between the water-coils, substantially as forth.

5. In a steam-boiler, an intermediate sectional water-drum, a sectional steam and mud drum arranged above and below said intermediate water-drum, respectively, each sectional drum comprising a series of separate and independent drum-rings having annular beveled tongues at one edge and opposite annular grooves in the other edge, which receive the tongue of the adjacent ring, asbestos or other fireproof packing placed in each groove, opposite parallel clamping-bolts, passing from the opposite heads of each drum through opposite sides of the same to clamp the several ring-sections together, parallel water-coils connecting the corresponding rings of each drum, and an agitator-shaft mounted horizontally within the lower mud-drum and having a swinging agitator-blade extending the entire length of the drum and adapted to be limited to a movement through the lower half of the drum by the opposite clamping-bolts therein, with which said blade contacts at the limit of its movement in either direction, substantially as set forth.

485,557. CONNECTION FOR STEAM-ENGINES. ARTHUR H. MCMASTER, Fowler, Colo. Filed Feb. 19, 1892. Serial No. 422,140. (No model.)



Claim.—1. In an engine, the combination of the cross-head and its operating mechanism, a driving-crank having a throw greater than the stroke of the piston, a rod connected at one end with said driving-crank, and a crank journaled in the cross-head and having an independent movement and having connection with the other end of the rod, substantially as described, and for the purposes set forth.

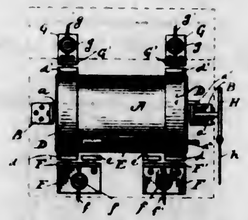
2. In an engine, the combination of the cross-head and its operating mechanism, a driving-crank having a throw greater than the stroke of the piston, a rod connected at one end with said driving-crank, a crank journaled in the cross-head and having connection with the other end of the rod, and mechanism for limiting the throw of the piston, substantially as described.

3. In an engine, the combination of a cross-head and its operating mechanism, a crank journaled in the said cross-head, a driving-crank having a throw greater than the stroke of the piston, a rod connecting said driving-crank and the crank on the cross-head, and an auxiliary crank having rod connection with the cross-head, all for the purposes set forth.

4. In an engine, the combination of a cross-head and its operating mechanism, a crank journaled in said cross-head, a driving-crank having a throw greater than the stroke of the piston, a rod connecting the driving-crank and the crank in the cross-head, and means, substantially as described, connected with the crank in the cross-head for overcoming its dead-centers.

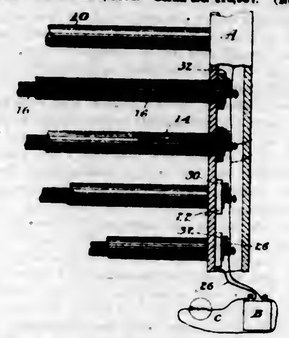
5. In an engine, and in combination with a cross-head, a crank journaled therein and having its shaft extending beyond the head, a spring connected with the shaft and the head, a driving-crank having a throw greater than the stroke of the piston, a rod connecting the driving-crank and the crank in the cross-head, and an auxiliary crank and a rod connecting the same with a pin on the cross-head, all for the purposes set forth.

485,558. ELECTRIC SWITCH. JAMES C. O'NEIL, Cleveland, Ohio. Filed Oct. 14, 1891. Serial No. 408,708. (No model.)



Claim.—In an electrical switch, the combination, with a non-conducting cylinder, of a metallic strip on the periphery of said cylinder at or near each end thereof, a metallic strip on the periphery of the cylinder intermediate of its ends and electrically separated from the strips at the ends of the cylinder, brackets arranged at one side of the cylinder and carrying contact-plates adapted to engage the end metallic strips, brackets at the other side of the cylinder, and two contact-plates carried by each of said last-mentioned brackets, one contact-plate of each bracket being adapted to engage one of the end strips and the other contact-plate of each bracket being adapted to engage the intermediate strip, whereby when the cylinder is oscillated all of said strips will be electrically connected by one set of contact-plates before the other set engages or disengages any of said strips, substantially as set forth.

485,559. CONSTRUCTION OF JAILS. DAVID K. OSBOURNE, St. Paul, Minn. Filed Jan. 4, 1892. Serial No. 416,937. (No model.)



Claim.—1. The combination of the series of metallic tubes, the insulated cylindrical cores arranged loosely therein, and the source of electrical energy connected in open circuit, respectively, with said tubes and cores, substantially as described.

2. The combination, with the tubular metallic structure, of an open-circuit battery having one pole connected to said structure, the series of insulated cores arranged loosely in the tubes of the structure and connected to the other pole of said battery, and signaling devices included in said circuit, substantially as described.

3. In a structure of the class described, the combination, with the tubes thereof, of insulated cylindrical cores arranged loosely therein, contact devices arranged upon said tubes, and said cores for closing the circuit between the same in case said cores are rotated, an open-circuit battery having its poles connected, respectively, to said tubes and said cores, and a signaling apparatus included in said circuit, substantially as described.

4. In a structure of the class described, the combination, with the tubes thereof, of insulated cylindrical cores arranged loosely therein, projections upon the ends of said tubes, fingers arranged upon the ends of said cores and adapted to make contact with said projections, and wires connecting said tubes and said cores, respectively, with an open-circuit battery and signaling apparatus, substantially as described

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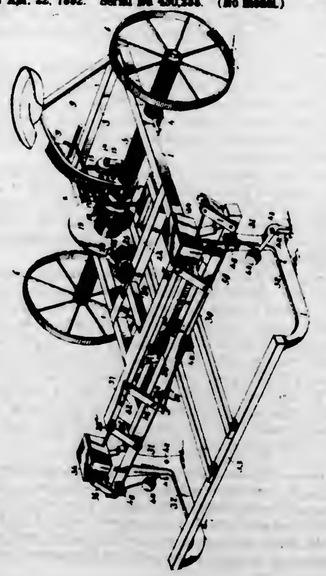
485,560. CORN-PLANTER. THOMAS W. OVERLIN, Benjamin, Mo. Filed Apr. 22, 1892. Serial No. 430,238. (No model.)



Claim.—1. In a corn-planter, the combination, with the framework, the opposite hoppers, and the intermediate reciprocating bar for operating the seed-disks of the hoppers and provided with teeth, of the axle carrying ground-wheels, the rock-shaft arranged at right angles to the axle and carrying at its front end a segment to engage the teeth upon the reciprocating bar and at its rear end a head provided with a lug, a spring connected to the reciprocating bar to return it after each lateral movement, the disk loosely mounted upon the axle and having lateral lugs to successively engage the lug upon the head of the rock-shaft, and clutch mechanism to lock the disk to the axle, substantially as specified.

2. In a corn-planter, the combination, with the framework, the opposite hoppers, the intermediate reciprocating bar for operating the disks of the hoppers and provided with teeth, and a spring for drawing the bar in one direction, of an axle, a disk mounted thereon and provided with lugs and teeth, a toothed clutch-sleeve mounted on the axle, a bearing-sleeve mounted loosely on the axle inside of the clutch-sleeve and provided with a perforated lug, a reciprocating pin mounted with the lug and connected with the clutch-sleeve and having a notch, bearings located in rear of the lug, a lever fulcrumed between the bearings and provided with a spiral flange engaging the notch of the pin, an intermediate rock-shaft terminating at its rear end in a trip-lug arranged in the path of the lugs on the disk, and a toothed segment located on the front end of the rock-shaft and engaging the teeth of the reciprocating bar, substantially as specified.

3. In a corn-planter, the combination, with the framework, the dropping mechanism, the axle, a loose disk thereon provided with teeth, and means for communicating motion from the disk to the planting or dropping mechanism, of the collar loosely mounted on the axle, a clutch-sleeve at one side of the collar, a perforated lug on the collar, a pin mounted in the lug and engaging the clutch-sleeve and provided with a notch, bearing-lugs in rear of the pin formed upon the collar, a spirally-flanged lever pivoted in the bearing-lugs and engaging the notch of the pin, and an upwardly and rearwardly disposed seat-supporting standard projecting over the rear end of the framework and oppositely-inclined braces between the free end of the standard and the framework, substantially as specified.

4. In a corn-planter, the combination, with the hopper-carrying frame and rear hinged frame, the opposite hoppers, and the axle mounted upon said rear frame and provided with ground-wheels, of a laterally-reciprocatory seed-disk-operating bar arranged between said hoppers, the links mounted upon the frame and connected to said bar, a longitudinal rock-shaft carrying at its front end a segment engaging teeth upon said bar and provided at its rear end with a lateral lug, the disk mounted upon and rotatable with the axle and provided with lugs to engage successively the lug upon the rock-shaft to move the seed-bar laterally at intervals, and a spring connected to said bar to return it to its normal position after each lateral movement, substantially as specified.

5. In a corn-planter, the combination, with the supporting-framework, the opposite hoppers, and the depending seed-tubes, of a reciprocating seed-disk-operating bar, means for reciprocating said bar, the weighted marking-arms pivotally connected to the frame, and cords traveling over guide-pulleys and connecting said marking-arms to the seed-bar, substantially as specified.

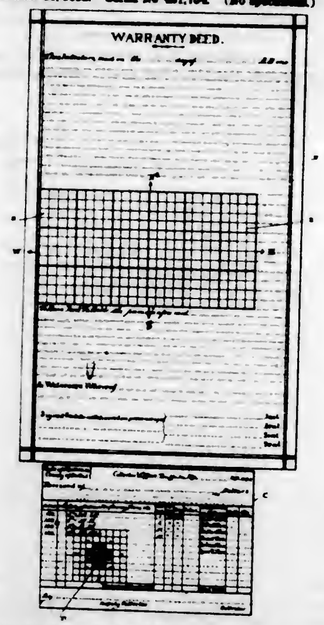
6. In a corn-planter, the combination, with the seed-tubes and the framework supported thereby, of the centrally-located lever fulcrumed on the framework, means for vibrating the same, pulleys, cords passing over the pulleys, and marking-levers fulcrumed at the sides of the tubes and in front of their pivots connected to the cords, substantially as specified.

7. In a corn-planter, the combination, with the seed-tubes, the opposite L-shaped pivoted marking-levers at the side of each tube, the hoppers, seed-slides, and mechanism for operating the same, of devices between the slide-operating mechanism and the pivoted markers for operating the slides and simultaneously vibrating the markers, substantially as specified.

8. In a corn-planter, the combination, with the framework, the seed-tubes, the opposite hoppers, and the intermediate reciprocating bar for operating the disks of the hoppers, of a lever pivoted on the framework, pulleys located at the opposite ends of the framework and at one side of the lever, cords leading from the outer ends of the framework over the outer pulleys and one being passed under the intermediate pulley, beyond which the cords are connected with the lever, a lever pivoted to the reciprocating bar and connected to the upper end of the oscillating lever for oscillating the cords, and marking-levers pivoted to the seed-tubes and having their outer ends connected with cords, substantially as specified.

9. In a corn-planter, the combination, with the framework, the seed-tubes, the opposite hoppers, and the intermediate reciprocating bar for operating the disks of the hoppers, of a lever pivoted on the framework, pulleys located at the opposite ends of the framework and at one side of the lever, cords leading from the outer ends of the framework over the outer pulleys and one being passed under the intermediate pulley, beyond which the cords are connected with the lever, a lever pivoted to the reciprocating bar and removably connected to the upper end of the oscillating lever for oscillating the cords, and marking-levers pivoted to the seed-tubes and having their outer ends connected with cords, substantially as specified.

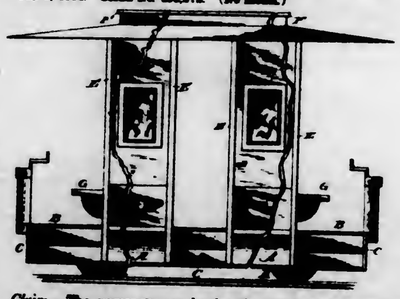
485,561. BLANK FORM FOR WARRANTY-DEEDS, TAX-RECEIPTS, &c. JOHN T. PENDLETON and JOHN S. WILSON, Buffalo, Mo. Filed Feb 16, 1892. Serial No. 421,754. (No specimens.)



Claim.—1. A blank form for warranty-deeds, tax-receipts, or other similar instruments, having a space for the description of the property, cross-lines printed thereon representing an assemblage of sections or lots of land on which the section or lot forming the subject of the instrument may be indicated, and its relative position thus ascertained, substantially as shown and described.

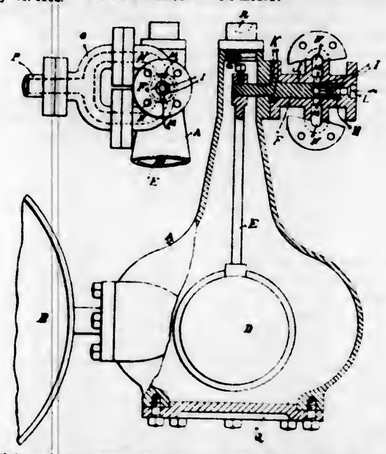
2. A blank form for warranty-deeds, tax-receipts, or other similar instruments, having a space for the description of the property, cross-lines printed thereon to represent a block of land divided into sections or lots on which the section or lot forming the subject of the transfer may be indicated, and its relative position thus ascertained, and lines at right angles to each other, crossing the said cross-lines, to represent north, south, east, and west, substantially as shown and described.

485,562. RAILWAY-CAR. THOMAS B. POPE, Oakland, Cal. Filed Oct. 9, 1891. Serial No. 408,272. (No model.)



Claim.—The passenger-car having the usual-sized main central compartment having the opposite rows of seats and two longitudinal side compartments on the same floor with said central compartment, adapted to provide thereat additional seating capacity, said side compartments having at their longitudinal edges rests or supports for the feet of the passengers occupying said side compartments, substantially as shown and described.

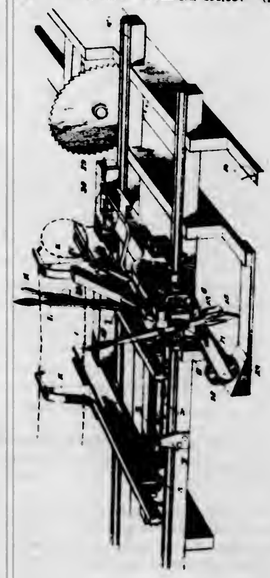
485,563. LIQUID-REGULATOR. MATHIAS POSCHINGER, Louisville, Ky., assignor to the Sulzer Vogt Machine Company, same place. Filed July 18, 1892. Serial No. 440,422. (No model.)

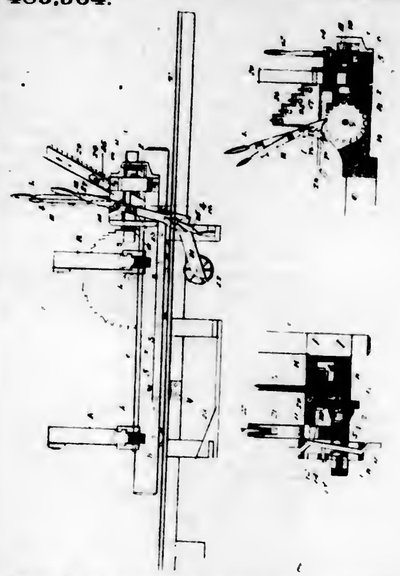


Claim.—1. An automatic regulator consisting of a casing A, a rotatable valve F in the upper end thereof, having passages H and I, pipes normally connecting said passages with the vessel, communicating pipes C C', the floating ball D, and stem E, connecting said ball and the inner end of the valve, all substantially as and for the purposes set forth.

2. An automatic regulator consisting of a casing A, communicating pipes C C', a valve-seat in the upper end of the casing, having outlets M, passages N, leading from said outlets to a pipe P, a valve F, journaled in the seat and having the passages H and I and ball-bearing K, a floating ball within the casing, and a stem connecting said ball with the inner end of the valve, all substantially as and for the purposes set forth.

485,564. SAWMILL SET-WORKS. JOEL T. RICE, Hot Springs, Ark., assignor of one half to Charles Cutter and John J. Sumpter, same place. Filed Oct. 16, 1891. Serial No. 408,887. (No model.)





Claim.—1. In a saw-carriage set-works, the combination, with the carriage moving on tracks, the transversely-moving toothed knees, the shaft having gears engaging the said teeth, and a wheel on said shaft having teeth on one side, of a shaft carried by the carriage, a clutch thereon, one of whose members has a gear engaging the teeth on said wheel and the other of whose members has a toothed hub, an upright rack-bar engaging said hub, an inclined rail for raising the rack-bar as the carriage goes back, and means for disengaging and then engaging the clutch members when the carriage is near the other end of its movement.

2. In a saw-carriage set-works, the combination, with the carriage moving on tracks, the transversely-moving toothed knees, the shaft having gears engaging the said teeth, and a wheel on said shaft having teeth on one side, of a shaft carried by the carriage, a clutch thereon, one of whose members has a gear engaging the teeth on said wheel, means for turning the other member as the carriage goes back, this member having a groove, a slide-bar engaging said groove, a lever connected with the slide-bar, and a stud tripping the lower end of the lever when the carriage is near the other end of its movement.

3. In a saw-carriage set-works, the combination, with the carriage moving on tracks, the transversely-moving toothed knees, the shaft having gears engaging the said teeth, and a wheel on said shaft having teeth on one side, of a shaft carried by the carriage, a clutch thereon, one of whose members has a gear engaging the teeth on said wheel and the other of whose members has a toothed hub with an annular groove, an upright rack-bar engaging said hub, an inclined rail for raising the rack-bar as the carriage goes back, a slide-bar engaging said groove, a lever connected with said bar, and a stud tripping the lower end of the lever when the carriage is near the other end of its movement.

4. In a saw-carriage set-works, the combination, with the reciprocating carriage, the knees thereon, a box on the carriage, a clutch therein, one of whose members has a groove, means for turning this member, and connections between the other member and the knee, of a horizontal slide-bar having angular portions standing oblique to its body and sliding in said box, a pin projecting from this bar, a depending lever pivoted to the box and having a slot engaging the pin, a trigger on said lever, and a stud adapted to trip said trigger.

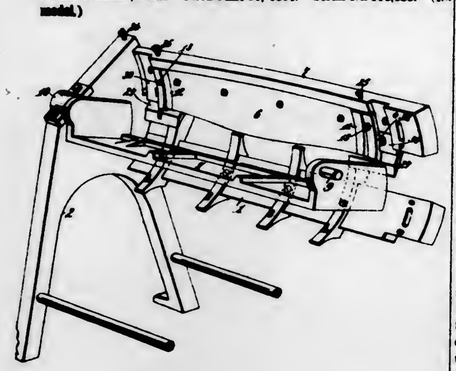
5. In a saw-carriage set-works, the combination, with the reciprocating carriage, the knees thereon, a box on the carriage, a clutch therein, one of whose members has a toothed hub, connections between the other member and the knee, and means for engaging and disengaging the members, of an upright rack-bar sliding through the box, engaging said hub, and having a longitudinal slot in its body, means for automatically raising this rack-bar to a certain height as the carriage goes back, and an adjustable stop in said slot, substantially as described.

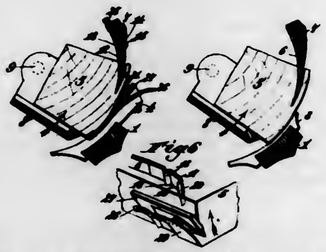
6. In a saw-carriage set-works, the combination, with the reciprocating carriage, the knees, a box on the carriage, a gear therein

connected with the knees, an upright slotted rack-bar sliding through said box in engagement with said gear, and means for automatically raising the rack-bar to a certain height as the carriage goes back, of a stop standing within said slot, moving over the box, and having steps on its upper edge, set-screws through said steps, and means for adjusting the stop longitudinally.

7. In a saw-carriage set-works, the combination, with the reciprocating carriage, the knees, a box on the carriage, a gear therein connected with the knees, an upright slotted rack-bar sliding through said box in engagement with said gear, and means for automatically raising the rack-bar to a certain height as the carriage goes back, of a stop within said slot and having steps on its upper edge, a dial on the carriage having a scale, a lever pivoted to said dial, and a rod leading from the lever to the stop.

485,565. MACHINE FOR CUTTING BARREL-STAVES. CHARLES W. RICH, Summertown, assignor to himself, and Luther L. Frierson, Mount Pleasant, Tenn. Filed June 30, 1891. Serial No. 398,055. (No model.)





Claim.—1. The combination, with a knife-bar, a cutting-knife for severing a stave from a stave-bolt, and crozing-knives for crozing the staves, of residual rib-removing knives or planes connected with and supported by the knife-bar which carries the stave cutting and crozing knives and arranged in proximity to the latter to provide a space between the stave-cutting knife and the rib-removing knives or planes for the passage of the stave being severed, substantially as described.

2. The combination, with a table for supporting a stave-bolt, a knife-bar, a stave-cutting knife secured to the knife-bar, and crozing-knives for crozing the staves, of residual rib-removing knives or planes arranged in proximity to the crozing-knives to provide a space between the stave-cutting knife and the rib-removing knives or planes for the passage of the stave being severed, substantially as described.

3. The combination, with a table for supporting a stave-bolt, of a knife-bar and a stave-cutting knife secured to the knife-bar and having cutting end portions, constituting continuations of the main cutting-edge and fashioned to such shape that with a single cut of the stave-knife there is severed from the stave-bolt a stave which is chamfered, crozed, and equalized, substantially as described.

4. The combination, with a table for supporting a stave-bolt, of a knife-bar, a stave-cutting knife secured to the knife-bar and having cutting end portions constituting continuations of the main cutting-edge and fashioned to such shape that with a single cut of the stave-knife there is severed from the stave-bolt a stave which is chamfered, crozed, and equalized, and knives or planes arranged in rear of the stave-cutting knife and which as the stave is being cut removes the residual ribs left on the stave-bolt by the formation of the croze in the preceding stave, substantially as described.

5. The combination, with a table for supporting a stave-bolt, of a knife for severing a stave from the stave-bolt, crozing and chamfering cutters for crozing and chamfering the staves, and residual rib-removing knives or planes arranged in proximity to the crozing and chamfering cutters to provide a space between the stave-cutting knife and the rib-removing knives or planes for the passage of the stave being severed, substantially as described.

6. The combination, with an oscillating table for supporting a stave-bolt, of a stationary knife-bar and a stave-cutting knife secured to the knife-bar and having cutting end portions constituting continuations of the main cutting-edge and fashioned to such shape that with a single stroke there is severed from the stave-bolt a stave which is chamfered, crozed, and equalized, substantially as described.

7. In a stave-cutting machine, the combination of a stave-knife whose extreme cutting end edges constitute continuations of the main cutting-edge of the knife and are turned laterally to equalize the stave at the same stroke it is severed from the stave-bolt with rear cutting knives or planes which plane off the end elevations left on the stave-bolt and are arranged in such proximity to the stave-severing knife as to provide a space for the passage of the stave being severed, substantially as described.

8. In a stave-cutting machine, the combination, with a table which carries the stave-bolt, of a lengthwise and transversely curved stave-cutting knife having crozing and chamfering edges, which constitute continuations of the main cutting-edge, and provided with laterally-projecting end edges, which equalize the stave at the same stroke it is severed from the stave-bolt, substantially as described.

9. In a stave-cutting machine, the combination of a stave-cutting knife having its end portions fashioned with chamfering, crozing, and equalizing cutting-edges constituting continuations of the main cutting-edge of the knife to chamfer, croze, and equalize the stave at the same stroke it is severed from the stave-bolt, with cutting knives or planes, which plane off the ribs left by the formation of the croze and chamfer in the preceding stave, substantially as described.

10. The combination of a table for supporting a stave-bolt, a stave severing, chamfering, and crozing knife provided at each end with a lateral cutting-edge, and residual rib-removing knives located at the rear of the stave-severing knife and provided with angular portions co-operating with the lateral cutting-edges of the stave-severing knife to equalize the staves and bevel their end edges at the same stroke that the stave is severed from the stave-bolt, substantially as described.

11. The combination of a table for supporting a stave-bolt, a stave-severing knife provided at each end with a lateral cutting-edge, and a knife or plane arranged in rear of the stave-severing knife and provided with an angular portion which co-operates with the lateral cutting-edge of the stave-severing knife to equalize the stave and bevel its end edges at the same stroke that the stave is severed from the stave-bolt, substantially as described.

12. The combination, with an oscillating table for supporting a stave-bolt, of a vertically-adjustable knife-bar, a stave-severing knife secured to the knife-bar, a vertically-adjustable crozing, chamfering, and equalizing cutter arranged at each extremity of the stave-severing knife and having the cutting-edges constituting continuations of the main cutting-edge of the stave-severing knife, so that at each cut there is severed from the stave-bolt a stave which is chamfered, crozed, and equalized, substantially as described.

13. In a stave-cutting machine, the combination, with a table which carries the stave-block, of a stave-cutting knife the end portions and edges of which are fashioned to such shape that with a single stroke of the stave-knife there is severed from the stave-block a stave which is chamfered, equalized, and crozed, substantially as described.

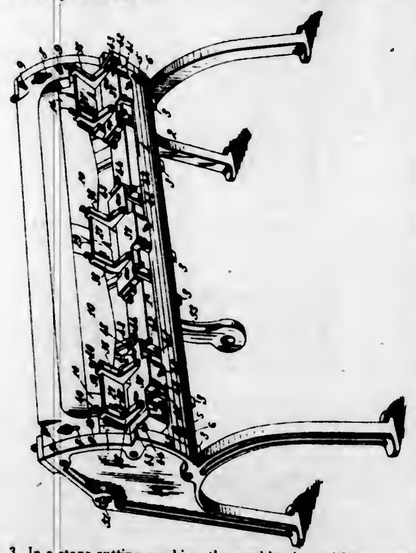
14. A stave-machine provided with a stave-cutting knife having cutting end portions constituting continuations of the main cutting-edge and formed to chamfer, croze, and equalize the staves at the stroke which severs the stave-body from the stave bolt or block, substantially as described.

15. The combination, with an oscillatory table for supporting a stave-bolt, of a vertically-adjustable knife-bar, a knife secured to the adjustable knife-bar for severing a stave from the stave-bolt, a vertically-adjustable crozing and chamfering cutter at each extremity of the stave-severing knife, and a vertically-adjustable knife or plane arranged in rear of the stave-severing knife and which as the stave is being cut removes the residual rib left on the stave-bolt by the formation of the croze in the preceding stave, substantially as described.

485,566. MACHINE FOR CUTTING BARREL-STAVES. CHARLES W. RICH, Summertown, assignor to himself, and Luther L. Frierson, Mount Pleasant, Tenn. Filed Oct. 6, 1891. Serial No. 407,962. (No model.)

Claim.—1. In a stave-cutting machine, the combination, with a table on which the stave-bolt is placed, of a knife adapted to cut at one operation a plurality of staves and provided at its ends and intermediate thereof with crozing, chamfering, and equalizing knives to cut, chamfer, croze, and equalize a plurality of staves at a single operation, substantially as described.

2. In a stave-cutting machine, the combination, with a table on which the stave-bolt is placed, of a knife adapted to cut from the stave-bolt a plurality of staves at one operation, chamfering, crozing, and equalizing cutters arranged at the ends of said knife and intermediate thereof, and rib-removing knives arranged to remove the residual ribs formed on the stave-bolt by the crozing of the staves cut therefrom, substantially as described.



3. In a stave-cutting machine, the combination, with a table on which is placed the stave-bolt, of a knife adapted to cut therefrom at one operation a plurality of staves, crozing, chamfering, and equalizing knives arranged at the ends of said knife and intermediate of said ends, and rib-removing knives to remove the residual ribs formed on the stave-bolt by crozing the staves cut therefrom, said rib-removing knives having equalizing or severing and shaping cutters, which act in conjunction with the equalizing or severing cutters on the crozing and chamfering knives, substantially as described.

4. In a stave-cutting machine, the combination, with a table on which the stave-bolt is placed, of a knife consisting of a plurality of stave-cutting sections to cut from the stave-bolt a plurality of staves at one operation, crozing and chamfering knives having equalizing-cutters and arranged at the two outer or extreme ends of said knife and between the stave-cutting sections thereof, and rib-removing knives arranged to remove the residual ribs from the stave-bolt and to act conjointly with the equalizing-cutters on the crozing and chamfering knives to shape and sever the ends of the staves, substantially as described.

5. In a stave-cutting machine, the combination, with a stave-cutting knife consisting of a plurality of stave-cutting sections, of crozing and chamfering knives and shaping or end-forming knives arranged at suitable points relatively to the crozing and chamfering knives, whereby a plurality of staves are severed from the stave-bolt at each single operation and simultaneously crozed and chamfered at one end and suitably shaped at the other end, substantially as described.

6. In a stave-cutting machine, a knife consisting of a plurality of stave-cutting sections, each curved longitudinally to correspond with the bilge of the barrel or other article formed from said stave and adapted to cut in a curved line corresponding with the circular body of said barrel or article, crozing and chamfering knives having equalizing-cutters at the two extremities of said knife and intermediate thereof, and suitable rib-moving knives, substantially as described.

7. In a stave-cutting machine, the combination, with a plurality of stave-cutting knives arranged to act simultaneously upon a stave-bolt, of adjustable crozing and chamfering knives and adjustable shaping-knives to act upon the ends of the staves, substantially as described.

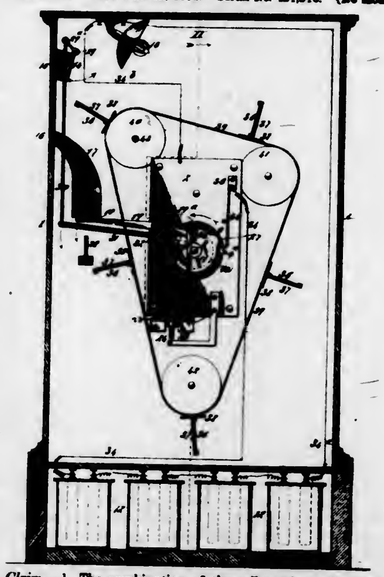
8. In a stave-cutting machine, the combination, with a series of stave-cutting knives, each longitudinally and transversely curved and acting simultaneously to sever from a stave-bolt a plurality of longitudinally and transversely curved staves, of crozing and chamfering knives arranged at the ends of each stave-cutting knife and having a suitable longitudinal curve to cut in the same line of transverse curvature with the stave-cutting knives, substantially as described.

9. In a stave-cutting machine, the combination, with a plurality of stave-cutting knives arranged to act simultaneously on a stave-bolt, of crozing and chamfering knives arranged at the ends of the stave-cutting knives and having equalizing-cutters, adjustable rib-removing knives mounted on brackets on a guide-supporting-bar, and means for giving a vertical and a universal horizontal adjustment to said knives, substantially as described.

10. In a stave-cutting machine, the combination, with a knife consisting of a plurality of stave-cutting portions, of crozing and chamfering knives arranged at the ends of the outer or extreme stave cutting portions, each having a chamfering-cutter and a trimming cutter, the latter continuous with the stave-cutting knife and the former arranged at an angle therewith, a crozing-cutter being interposed between, forming an integral part of said cutters, the chamfering cutter being, also, provided with an equalizing and severing cutter, and a duplex knife arranged between the contiguous ends of said stave-cutting knives and consisting of a central equalizing and severing cutter joined to blades which extend laterally, substantially as described.

11. In a stave-cutting machine, the combination, with a knife consisting of a plurality of stave-cutting portions adapted to act simultaneously upon a stave-bolt, of a crozing and chamfering knife having a trimming and a chamfering cutter arranged at a suitable relative angle and provided with a crozing-cutter lying between and connecting said cutters, the chamfering-cutter having an equalizing and severing cutter, a duplex knife arranged between the ends of the adjacent stave-cutting sections and having a central equalizing and severing cutter and two chamfering and two trimming cutters, with two crozing-cutters intermediate the chamfering and trimming cutters, and a table on which the stave-bolt is placed, substantially as described.

485,567. COIN CONTROLLED STEREOSCOPE. JOHN RIDGES, St. Louis, Mo. Filed Feb. 12, 1892. Serial No. 421,318. (No model.)



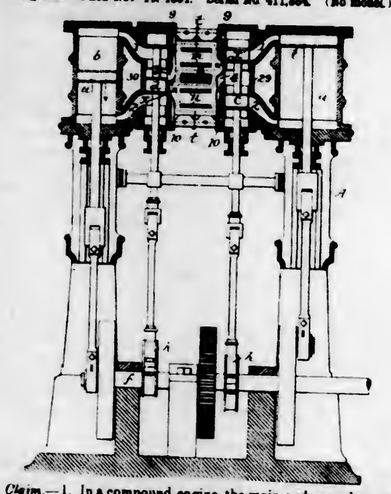
Claim.—1. The combination of the rollers, the endless belt carried by the rollers, and the picture-brackets having secured to the belt flat bases extending in both directions, substantially as described.

2. The combination of the casing having a coin-slot, the coin-chute, the clock mechanism having fan-arms, the shaft rotated by the clock mechanism, having cam-disk 11 formed with a notch, the coin-lever having one end normally closing the lower end of the coin-chute and the other end provided with a stud normally occupying the notch of the cam-disk, the standing pin located beneath the outer end of the coin-lever, and means for releasing the clock mechanism for rotating the cam-disk, substantially as described.

3. The combination of the casing having a coin-slot, the coin-chute, the coin-lever, the object-glass, the pivoted cover having an arm, the connecting-rod, the cover-lever, the clock mechanism, the shaft rotated by the clock mechanism, the cam-disks 11 and 10, secured to the shaft, the rollers, the endless belt, the picture-brackets

on the belt, and means for releasing the clock mechanism for rotating the cam-disks, substantially as described.

485,568. COMPOUND ENGINE. RUDOLPH C. SMITH, Yonkers, N. Y., assignor, by mesne assignments, to the National Company, Chicago, Ill. Filed Nov 14, 1891. Serial No. 411,864. (No model.)



Claim.—1. In a compound engine, the main and secondary cylinders, reversing-valve to control the flow of motor fluid to and from said cylinders, intermediate chamber, and ports arranged to permit the direct-acting fluid to pass to either cylinder when the engine is moving in either direction, substantially as set forth.

2. The combination, with the cylinders of a compound engine, of passages permitting the exhaust-steam of either engine to flow into the other, valves controlling said passages, and a reversing-valve, substantially as set forth.

3. The combination, in a compound engine, of the cylinders *a b*, intermediate chamber *c*, valves and ports between the valve-chambers and the chamber *c*, and a reversing-valve and ports arranged, substantially as described, between the reversing-valve chamber and the cylinders, chamber *c*, and the exhaust to permit the exhaust of either engine to pass to the other, substantially as set forth.

4. The combination, in a compound engine, of large and small cylinders and pistons, intermediate chamber, and valves and ports constructed and arranged to change the flow of the motor fluid to act directly on either piston and when descending to direct the exhaust from the large cylinder into the small cylinder and intermediate chamber and the exhaust from the small cylinder to the atmosphere, substantially as described.

5. The combination, with the cylinders and pistons of a compound engine, of means for reversing and for admitting the direct-acting motor fluid to the large cylinder to reverse and descend and for compressing the exhaust from the large cylinder into the small cylinder and intermediate spaces, substantially as described.

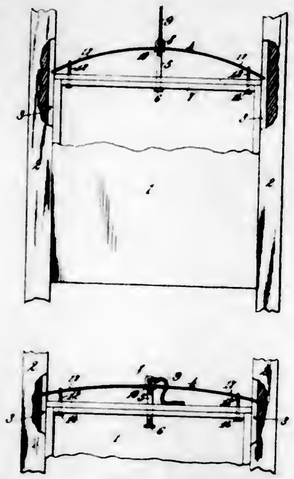
6. The combination, in a compound engine, of the cylinders, valves, intermediate chamber, reversing-valve, passages *x x'* between the reversing-valve casing and said chamber, and a port or ports in the reversing-valve arranged to coincide with one of said passages when the valve is in its extreme position in either direction, substantially as set forth.

7. The combination of the cylinders, intermediate chamber, reversing-valve, ports leading from the valve-chamber to the intermediate chamber and controlled by said valve, and automatic means for setting back the reversing-valve from either extreme position to an extent sufficient to close said ports, substantially as specified.

8. The combination, with the cage of an elevator, of a compound hoisting-engine having a chamber intermediate of the cylinders, a reversing-valve with ports in communication with said chamber when the valve is in its extreme position, valve-shifting means extending to the cage, and automatic valve set-back appliances, substantially as described.

9. The combination, in a hoisting apparatus, of a cage or platform and a compound engine provided with channels and ports between the cylinders, reciprocating valves arranged to control said ports to permit the exhaust of either cylinder to pass to the other cylinder, and a reversing-valve and ports and passages, substantially as set forth.

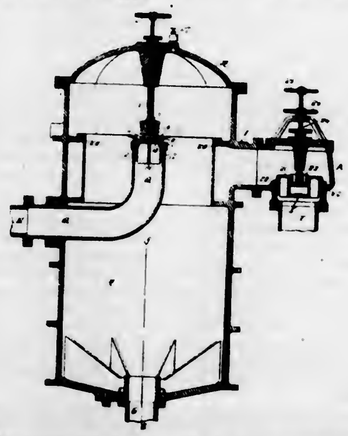
485,569. SAFETY-CATCH FOR DUMB-WAITERS. HARRIS K. SMITH, Brooklyn, N. Y. Filed Feb. 29, 1892. Serial No. 423,906. (No model.)



Claim.—1. The combination, with a dumb-waiter, of a bolt or rod slidable in the top cross bar or frame thereof and secured to the hoisting rope or cable, a half-elliptic clutch-spring located wholly above the waiter, attached at its center to the upper end of the bolt or rod to be held under tension by strain thereon and having toothed ends for engaging the guideways of the waiter, and guides rising from the top cross bar or frame of the waiter, engaging the half-elliptic clutch-spring and serving to sustain the waiter if the hoisting rope or cable breaks and the toothed ends of the spring are projected into engagement with the guideways, substantially as described.

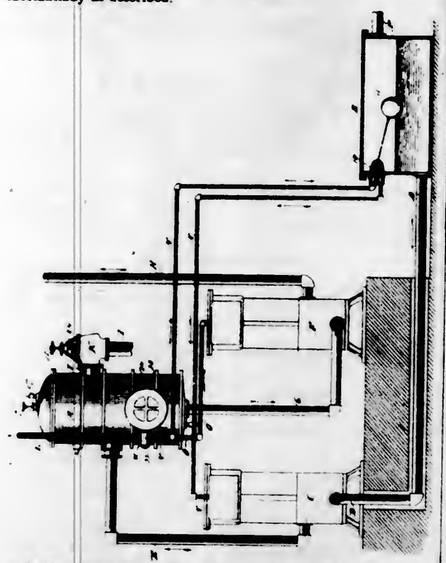
2. The combination, with a dumb-waiter, of a bolt or rod slidable in the top cross bar or frame thereof and secured to the hoisting rope or cable, a half-elliptic clutch-spring arranged above the waiter, attached at its center to the upper end of the bolt or rod and having its end portions provided with recesses to form offsets, and guide staples or yokes secured to the top cross bar or frame, engaging the spring between the offsets thereof and serving to sustain the dumb-waiter if the hoisting rope or cable breaks and the spring is projected at its ends into engagement with parts of the well, substantially as described.

485,570. FEED-WATER HEATER FOR STEAM-BOILERS. CHARLES C. WORTHINGTON, Irvington, N. Y. Filed Apr. 4, 1892. Serial No. 427,745. (No model.)



Claim.—1. The combination, with a feed-water heater and a supply-tank and supply and delivery pumps therefor, of independent valves controlling the supply of steam to the supply-pump and controlled by floats in the heater and supply-tank, substantially as described.

2. The combination, with a feed-water heater and a supply-tank and supply and delivery pumps therefor, of a float in said heater, controlling the supply of steam to both the supply and delivery pumps, substantially as described.



3. The combination, with a feed-water heater and a supply-tank and supply and delivery pumps therefor, of a float in said heater, controlling the supply of steam to both the supply and delivery pumps, and a float in the supply-tank, controlling the supply of steam to the supply-pump, substantially as described.

4. In a feed-water heater, the combination, with a water-spray, of a perforated plate surrounding the spray, said spray and plate being constructed and arranged to admit the sprayed water and fine jets of steam to the same space from opposite directions and located in such adjacency to each other that the steam and water meet under pressure from opposite directions, substantially as described.

5. The combination, with central vertical pipe Q, extending upward, and valve 13 thereon engaging said pipe by inclined surfaces and having wings 15 and curved surfaces 2, of perforated plate 20, surrounding the valve, through which the steam is admitted from the side of the casing, substantially as described.

6. In a feed-water heater, the combination, with central vertical pipe Q, extending upward, and valve 13 thereon engaging said pipe by inclined surfaces and having wings 15 and curved surfaces 2, of perforated plate 20, surrounding the valve, through which the steam is admitted, steam-pipe I, entering the side of the casing, and delivery-pipe G, entering the lower part of the casing, substantially as described.

7. In a feed-water heater, the combination, with central vertical pipe Q, extending upward, and a spray thereon by which the water is thrown outward transversely to the pipe, of perforated plate 20, surrounding the spray through which the steam is admitted, steam-pipe I, entering the side of the casing, and delivery-pipe G, entering the lower part of the casing, substantially as described.

8. The combination, with pipe Q, of valve 13, engaging said pipe by inclined surfaces and having wings 15 and curved surfaces 2, substantially as described.

9. The combination, with the pipe Q, of valve 13, engaging said pipe by inclined surfaces and having wings 15 and curved surfaces 2, spring 16 on said valve, and means for adjusting the tension of said spring, substantially as described.

10. A spray-valve consisting of the plate 13, having wings 15 and curved surfaces 2, substantially as described.

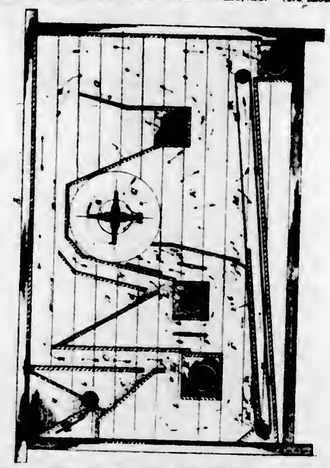
11. The combination, with float R, rod 29, connected to and rocked by said float, and a valve actuated by said rod, of means extending through the wall of the casing for rocking said rod from outside the casing and adapted to be disengaged inside the casing from said rod, substantially as described.

12. The combination, with float R, of rod 29, connected to and rocked by said float, a valve actuated by said rod, and rod 33, engaging said rod and projecting outside the casing, said rod being mounted to slide into or out of position to engage rod 29, substantially as described.

13. The combination, with valve 21, having opening 5, of plug 23, forming a dash-pot outside said valve, and adjustable rod 24, connected to said plug and extending outside the casing, substantially as described.

14. The combination, with conical valve *a*, having neck 36 and cap 37, of screw-plug 38, recessed to receive said cap and having shoulders 4, by which the cap is withdrawn with the plug, substantially as described.

485,571. AIR-BELT PURIFIER. HERAN A. BARNARD, Moline, Ill., assignor to the Barnard & Leas Manufacturing Company, same place. Filed Mar. 28, 1892. Serial No. 426,728. (No model.)



Claim.—1. The combination, in an endless air-belt purifier, of a pair of air-trunks, a hopper between the same receiving from one and delivering to the other, receptacles for the material falling through said trunks, an air-chamber below and supplying air to said trunks, a fan-chamber communicating with said air-chamber, and a settling-chamber communicating with said fan and receiving air from air-trunks, and means for removing the matters deposited in the receptacles and dust-chamber, substantially as described.

2. The combination, in an endless air-belt purifier, of a pair of air-trunks, a hopper between the same receiving from one and delivering to the other, receptacles for the material falling through said trunks, an air-chamber below and communicating with said trunks, a fan-chamber communicating with said air-chamber, and a settling-chamber communicating with said fan and receiving air and dust from said air-trunks, a hopper interposed between the second trunk and dust-chamber, valves for independently regulating the passage of air through said trunk, and means for removing the material deposited in said receptacles, hopper and dust-chambers, substantially as set forth.

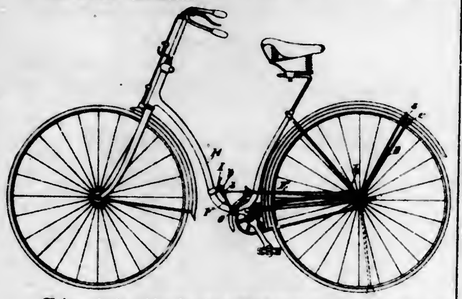
3. The combination of the fan-chamber, the air-chamber at one side thereof, the separating device in said air-chamber, and the settling-chamber below said fan-chamber and air-chamber, with the traveling brushes or scrapers arranged to alternately sweep the floor of the air-chamber and dust-chamber, substantially as described.

4. The combination of the separating devices, the fan-chamber, the chamber F, and the chamber E, extending beneath chamber F, with the pulleys and endless belts thereon, substantially as described, arranged so that the upper parts thereof extend through the chamber F and the lower parts of said belts are in chamber E, with the brushes or scrapers connected to said belts and adapted to alternately sweep the floor of chamber F and chamber E, substantially as described.

5. The herein-described air-belt purifier, consisting of the casing, a feed-hopper therein, an air-trunk beside said hopper receiving material therefrom, a trough and conveyer below said trunk, a hopper communicating with the upper end of said trunk, a second air-trunk receiving material from the latter hopper, a trough and conveyer below said second trunk, a third hopper communicating with the upper end of said second trunk, a fan-chamber and fan interposed between the second trunk and last hopper, an air-chamber below and supplying air to said trunks and their troughs, communicating with said

fan-chamber, and a dust-chamber below the air-chamber, fan-chamber, and hoppers, communicating with said fan-chamber, the valves, and devices for removing material deposited in said troughs and chambers, all substantially as and for the purpose set forth.

485,572. BICYCLE-SUPPORT. CHARLES F. BEEBE, Orion, assignor of one-half to Otis F. Knowles, Oxford, Mich. Filed Sept. 10, 1891. Serial No. 405,262. (No model.)



Claim.—1. In a bicycle, the combination of the frame, the rear axle supported thereby, the extension-nuts having the angle-journal formed integral therewith, said nuts being secured on the outer ends of said axle, the swinging legs having the arms secured to the hubs thereof mounted on said journals, the operating-lever mounted on the frame, and the connecting-rods coupled to the arms of said legs and to the operating-lever, as set forth.

2. In a bicycle, the combination of the frame, the rear axle supported thereby, the extended angle-journals secured on the outer ends of said axle, the swinging legs having arms secured to the hub thereof mounted on said journals, said legs having a rubber ball at their free ends, the operating-lever mounted on the frame, and the connecting-rods coupled to the arms of said legs and to the operating-lever, substantially as specified.

485,573. EAVES-TROUGH. LEWIS S. BOSBRAKE, Waynesburg, assignor to the Pastoria Steel Roofing Company, Pastoria, Ohio. Filed Oct. 16, 1891. Serial No. 408,853. (No model.)

Claim.—1. In an eaves-trough, the combination of the section 2, having a bead, and the section 1, folded to form a groove and having the outer or lower portion 7 of the fold extended beyond the latter and providing a tapering rest 8, gradually increasing in width from front to rear, said section 1 having a bead provided with a segmental extension 9, forming a tapering end, which, with the tapering rest, enables the section 2 to be readily inserted in the section 1, substantially as described.

2. In an eaves-trough, the combination of the section 2, provided at its outer edge with a bead and having a slot at its inner edge, the section 1, provided at its outer edge with a bead and folded to form a groove and having the outer portion of the fold, forming a curved extension, arranged above the bead, said section 1 having at its inner edge registering slots, forming an opening through the folded portion of the section, and also registering with the slot of the section 2, which is received within the fold, and a transverse brace having a curved hook engaging the beads and provided with a tongue engaging the slots of both sections and locking the latter against separation, substantially as described.

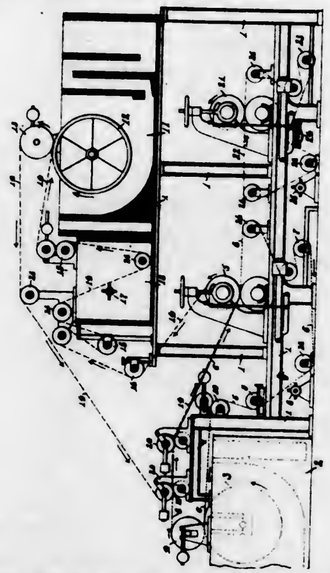
3. In an eaves-trough, the combination of the section 2, provided with a bead, the section 1, folded to form a groove and provided with a bead, the outer portion of the fold being provided with a curved tension arranged over the bead, and means for securing the sections together, substantially as described.

485,574. ENAMEL FOR METAL ARTICLES. HERBERT CLAUS, Thale, Germany. Filed Sept. 30, 1892. Serial No. 447,266. (Specimens.)

Claim.—A glaze or enamel for metal articles, having its surface

covered with groups A of spots that are lighter in the middle than at their margin, said groups A being separated by blank spaces B, having clouds C, substantially as and for the purpose herein shown and described.

485,575. PAPER-MAKING MACHINE. LIBUS P. CLAWSON, Hamilton, Ohio, assignor to the Black & Clawson Company, same place. Filed Aug. 26, 1891. Serial No. 403,836. (No model.)

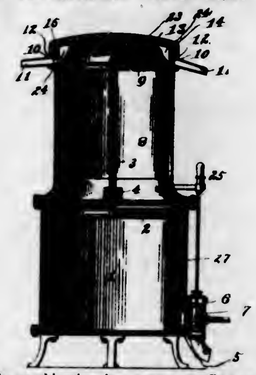


Claim.—1. In a paper-making machine, the combination, substantially as set forth, with two paper-making devices, each arranged to produce a web of pulp, and a pair of press-rolls, of a felt arranged to remove the web from one of said paper-making devices and carry it upon its upper surface to and between said press-rolls and a felt arranged to remove the web from the other of said paper-making devices and carry it upon its upper surface to and against the web carried upon the first-mentioned felt, whereby both webs have bottom support from the time of production to the time of reaching press-rolls.

2. In a paper-making machine, the combination, substantially as set forth, of a first cylinder, a first couching-roll, a pair of press-rolls, a first felt engaging said first couching-roll and arranged to carry the make of said first cylinder upon the upper surface of its upper member forwardly to and between said press-rolls, a second cylinder, a second couching-roll, and a second felt engaging said second couching-roll and arranged to carry the make of said second cylinder rearwardly upon the upper surface of its upper member and deliver it upon the make of the first cylinder at a point between the first couching-roll and the press-rolls.

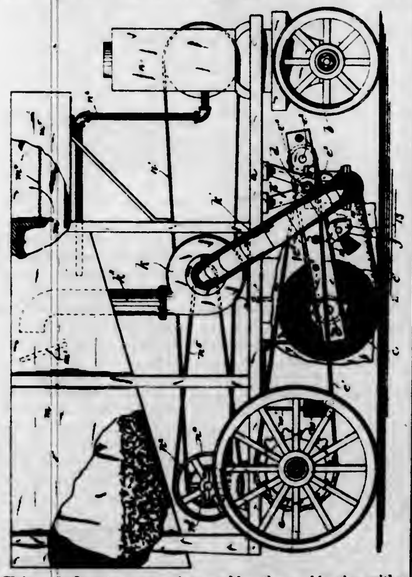
3. In a paper-making machine, the combination, substantially as set forth, of a first cylinder, a first couching-roll, a second cylinder, a second couching-roll, a pair of press-rolls, a pair of squeezing-rolls, a first felt engaging the first couching-roll and arranged to carry the make of the first cylinder upon the upper surface of its upper member forwardly between said squeezing-rolls and then between said press-rolls, and a second felt engaging the second couching-roll and arranged to carry the make of the second cylinder upon the upper surface of its upper member rearwardly toward the first couching-roll and then to pass between said squeezing-rolls and then between said press-rolls.

485,576. SAUSAGE-STUFFING MACHINE. JOHN EPPLER, Philadelphia, Pa. Filed Dec. 23, 1891. Serial No. 415,964. (No model.)



Claim.—The combination, in a sausage-stuffing machine, of the cylinders 8 and 1, entirely separated by a partition having a packing-box, the cylinder 1, having steam-ports 5 and 6 and a vertical steam-channel 27, the cylinder 8, provided with openings 10 and meat-tubes 11, the piston-rod 3, working through the said box, the piston 9, secured to one end of the said rod in the cylinder 8, a similar piston attached to the other end of the said rod in the cylinder 1, and the follower 23, secured to the piston 9 and having grooves 24 located opposite each other in the same vertical plane with the said openings and through which meat is forced into the said meat-tubes when the cylinders are raised, substantially as shown and described.

485,577. STREET-SWEEPING MACHINE. MARTIN V. B. BRYDER, Everett, assignor to the Boston Street Sweeping Machine Company, Lynn, Mass. Filed Oct. 24, 1891. Serial No. 409,649. (No model.)



Claim.—1. In a street-sweeping machine, the combination, with a brush and an apron upon which dirt is swept by the brush, of a trunk arranged at the rear of said apron and provided with a movable door arranged to permit the transference of material from the apron to the trunk, an air-forcing apparatus connected with the trunk, and means for alternately opening and closing said door, as set forth.

2. In a street-sweeping machine, the combination, with a brush and an apron upon which dirt is swept by the brush, of a trunk arranged at the rear of said apron and provided with a movable door arranged to permit the transference of material from the apron to the trunk, an air-forcing apparatus connected with the trunk, means for alternately opening and closing said door, and a wiper adapted to force a charge of material from the apron to the trunk when the door is opened, as set forth.

4. In a street-sweeping machine, the combination, with a brush and an apron upon which dirt is swept by the brush, of a trunk arranged at the rear of said apron and provided with a movable door arranged to permit the transference of a charge of material from the apron to the trunk, an air-forcing apparatus connected with said trunk, a valve adapted to open and close one end of said trunk and means for opening and closing said valve, as set forth.

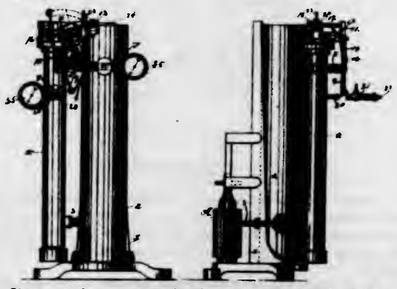
5. In a street-sweeping machine, the combination, with a brush and an apron upon which dirt is swept by the brush, of a trunk arranged at the rear of said apron and provided with a movable door arranged to permit the transference of material from the apron to the trunk, an air-forcing apparatus connected with the trunk, means for alternately opening and closing said door, a valve adapted to open and close one end of said trunk, and means for operating said valve, the arrangement being such that the valve is closed when the door is opened and opened when the door is closed, as set forth.

6. The trunk composed of a bottom portion 7 and the movable portion or door 8, hinged to the portion 7, combined with the apron arranged to present material to the trunk, the lever i^7, connected with the door, and the cam 1, arranged to act on said lever, as set forth.

7. The combination of the trunk having the movable side or door 8, the valve o at one end of the trunk, the arm o', attached to said valve, the pivoted lever o^8, connected with said arm, and the cam o^9, arranged to act on said lever, as set forth.

8. In a street-sweeping machine, the trunk having a loose flexible supplemental bottom, combined with air-forcing apparatus and with means for shaking or agitating said bottom to facilitate the removal of the contents of the trunk by the air-blast, as set forth.

485,578. PRESSURE-REGULATOR FOR COMPRESSED-AIR MACHINES. ERNST C. FASOLDT, Albany, N. Y., assignor of one-half to John Boyd Thacher, same place. Filed May 5, 1890. Serial No. 350,600. (No model.)

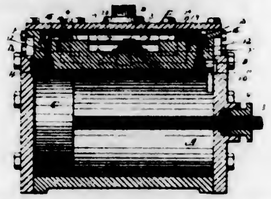


Claim.—1. In a regulator for air-compressing machines, the combination, with a principal receiver 2 and an auxiliary receiver 4, which are connected by a pipe 5, provided with an automatic stop-valve 8, said auxiliary receiver having a flexible diaphragm 15 fixed therein, an arm 9, attached to said stop-valve and connected to an arm 11, having a graduated upper edge, the arm 11 being secured to a rocker-shaft 12, the latter being connected with a lever 18, which is fulcrumed to a fixture at the upper end of said auxiliary receiver, and a loosely-fitted piston 17, connected to said lever and fitted to bear upon said diaphragm, of a spring 14, fitted to be adjustably connected to the arm 11, and an adjustable set-screw 23, fitted to take against the lever 18, whereby the rising movement of the latter may be limited, as and for the purpose herein specified.

2. In a receiver for air-compressing machines, the combination, with a principal receiver 2, an auxiliary receiver 4, a pipe 5, which connects said receivers together, an automatic stop-valve 8, fixed in said pipe, an arm 9, secured to the stem of said valve and connected

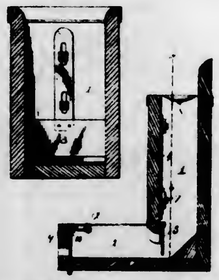
to an arm 11, having graduations in its upper edge, a rocker-shaft 12, to which the arm 11 is secured, a lever 18, connected with said rocker-shaft and fulcrumed to a fixture at the upper part of said auxiliary receiver, and a loosely-fitted piston 17, connected to said lever and fitted to bear upon a flexible diaphragm 15, fixed in said auxiliary receiver, of a spring 14, adjustably attachable to said graduated arm, as and for the purpose herein specified.

485,579. VALVE-OPERATING MECHANISM FOR ENGINES. HENRY G. FADDLEY, Albany, N. Y., assignor of one-half to John Boyd Thacher, same place. Filed July 20 1892. Serial No. 440,651. (No model.)



Claim.—The combination, with a principal steam-cylinder provided with induction and eduction passages of the usual forms, supplementary steam-cylinders on the side of said principal cylinder and having their center lines arranged parallel to that of the principal cylinder, each of said supplementary cylinders being provided with a piston which is connected to a slide-valve which governs the admission of steam into the principal cylinder, and a piston fitted to move reciprocally in said principal cylinder, of a pair of crank-arms arranged at opposite ends of said principal cylinder and having their free ends lying in the path of the piston of said cylinder, said arms being secured to arbors fitted to oscillate in the body of said cylinder, said arbors being each provided with a vibratile valve which governs the induction and eduction ports leading into and from said supplementary cylinders, as and for the purpose herein specified.

485,580. FEED-TROUGH. JAMES FLUREY and ARTHUR O'LEARY, Lindsay, Canada; said O'Leary assignor to John Charles O'Brien. Filed Jan. 15, 1892. Serial No. 418,132. (No model.) Patented in Canada Oct. 21, 1891, No. 37,663.



Claim.—1. In a feed-box, the combination, with the feed-receptacle having a sloping bottom and an open front, of the trough and the vertically-adjustable slide located inside of the feed-receptacle, provided at its lower end with a swinging gate, substantially as described.

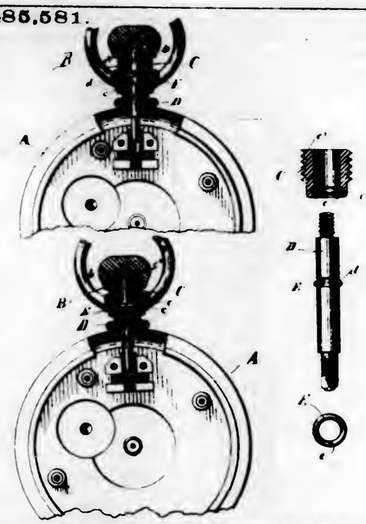
2. In a feed-box, the combination, with the feed-receptacle having a sloping bottom and an open front, of the feed-trough, the vertically-adjustable rods having their upper ends bent over, forming loops, the screw-threaded studs, the nuts, and the gate pivotally connected with said rods, substantially as described.

3. In a feed-box, the combination, with the feed-receptacle having a sloping bottom and an open front, and the vertically-adjustable swinging gate, of the feed-trough having a hinged door at its front, substantially as described.

485,581. WATCHCASE-PENDANT. THOMAS A. HOPKINS, Elgin, assignor to H. C. Eppenstein & Co., Chicago, Ill. Filed Aug. 6, 1892. Serial No. 442,330. (No model.)

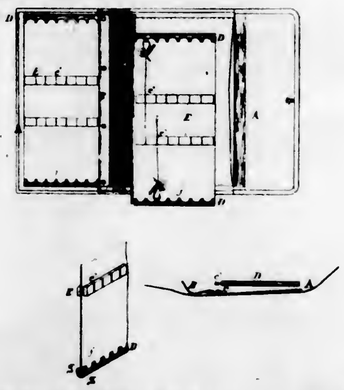
Claim.—As an improvement in pendants for watchcases, in combination with a hollow pendant, a bushing adjustably secured therein, provided with an internal step-groove, a compressible ring mounted loosely on the stem-arbor and adapted to spring in and out of said

485,581.



groove, and the longitudinally-rotatable stem-arbor carrying the compressible ring, substantially as described.

485,582. FISHING-FLY BOOK. DANIEL K. HOWE, Portland, Oreg., assignor of one-half to John Gill, same place. Filed June 2, 1891. Serial No. 394,580. (No model.)



Claim.—1. In a fly-book, a leaf the upper and lower edges of which are provided with catches D, consisting, substantially, of frames of metal or like suitable material folded over the edges, to which they are fastened in the form of a double loop *g g'* and scalloped, so as to leave projecting loops *f*, adapted to receive and hold the fly-hooks, so that the same will lie flat on the page and not be subjected to injury from crushing, and said leaf being further provided with means for holding the snells of said hooks, all substantially as set forth.

2. In a fly-book, a leaf the upper and lower edges of which are provided with catches D, consisting, substantially, of frames of metal or like suitable material folded over the edges, to which they are fastened in the form of a double loop *g g'* and scalloped, so as to leave the projecting loops *f*, adapted to receive and hold the fly-hooks, so that the same will lie flat on the page and not be subjected to injury from crushing, and said leaf being further provided with a strip of rubber or like suitable material having grooves *e'* in which to hold the snells, all substantially as set forth.

3. The combination, in a fly-book, of a series of stubs the edges of which are provided with a seam *c*, suitably fastened to said stubs, a series of leaves adapted to hold the flies and their snells and provided with a seam *c'* on their back edges, adapted to engage with the said seam *c* of the stubs when such leaves are to be attached to the latter, and a suitable contrivance adapted to prevent the said seams from becoming disengaged, all substantially as set forth.

485,588. BICYCLE. OWEN R. KENNEY and FRANK D. GABEL, Toledo, Ohio, assignors to the Toledo Bicycle Company, same place. Filed Sept. 14, 1891. Serial No. 405,612. (No model.)

Claim.—1. In a bicycle, the steering-head, toggle-arms upon which said steering-head rests, spring-bars connected to said toggles, and a tension device spanning said spring-bars, and a combined tension device and foot-rest adjustably secured upon said bars.

2. The combination, in a bicycle, of a steering-head provided with a projection, toggle-arms upon which said head rests, spring-bars connected to said toggle-arms, and a stop on one of the toggles, adapted to engage said projections.

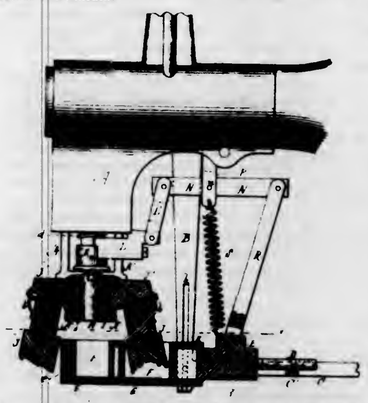
3. In a bicycle, the combination of a steering-head, toggles upon which said steering-head rests, spring-arms connected to said toggles, foot-pieces adapted to engage the wheel-axle, and each provided with a socket, the ends of the spring-bars being secured in the foot-pieces by brazing.

4. In a bicycle, a steering-head provided with a projection, toggles upon which said head rests, spring-arms connected to said toggles, a stop adapted to contact with the projections on the steering-head, and a combined foot-rest and tension device clamping the spring-arms together.

5. A combined tension device and foot-rest consisting of clamping-pieces adapted to embrace the fork-arms, and a bar having a threaded end adapted to pass through said clamping-pieces, and a nut on said threaded end.

6. In a bicycle, a steering-head, a spring-fork upon which said steering-head is mounted, said fork comprising toggles, and spring-bars below the toggles, clamps embracing the fork on each side of the wheel, a foot-rest passing through the clamps and provided with means for securing the clamping-sections together, said clamp-pieces having projections at their ends adapted to embrace the spring-bars.

485,584. TOOL-HEATING DEVICE. JOHN B. MORGAN, Middleborough, assignor, by mesne assignments, of one-half to the Rotary Steam Joint Company, Rockland, Mass. Filed Mar. 5, 1892. Serial No. 423,939. (No model.)



Claim.—1. In a device for heating tools, the combination of the vertically-reciprocating heating-reservoir E, the shell of which is formed into depressions or indentations for the reception of the tool to be heated, and the rotative tool-holder above described, whereby the heating-reservoir is raised into position to receive the tools and the tools moved circularly into coincidence with the depressions in the reservoir, substantially as described.

2. In a device for heating tools, the combination of the arm A, provided with the vertical guide-arms or hanger B, frame C, supported by said hanger, heating-reservoir E, provided with the indentations F and extension E', lever N, pivotally suspended from the arm A, connecting-bar R, spring S, whereby the reservoir is held normally in a raised position, and a rotary tool-holder sustained by said frame A', substantially as set forth.

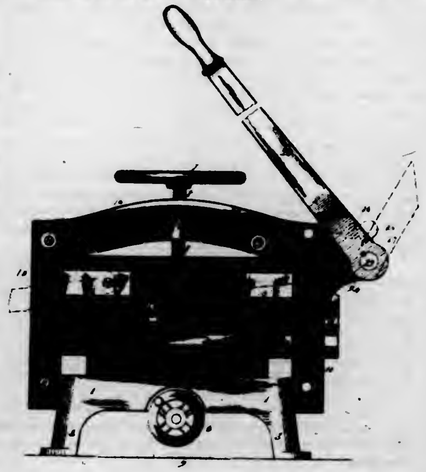
3. The combination of the arm A, frame A', supported thereby, post H, reciprocating vertically therein and supporting a rotary tool-holder, hub K, rigid on said post and held normally down by a spring, projection L, lever N, pivotally suspended from the arm A, link L', connecting said lever N and projection L, and a vertically-reciprocating heating-reservoir provided with indentations for the reception of the tools supported by the rotary tool-holder, substantially as described.

485,585. HORSESHOE-CALK-SHARPENING DEVICE. ANDREW J. NEAL, Miles, Iowa, assignor of one-half to Lemuel H. Swaney and Charles M. Neal, same place. Filed Feb. 12, 1892. Serial No. 421,317. (No model.)

Claim.—1. The hereinbefore-specified horseshoe-calk-sharpening machine, composed of the legs A and B, having jaws *a* and *b* at their upper ends, the jaw *b* extending laterally on each side of leg B and curving in its length and having a projecting edge *b'*, the jaw *a* having grooves *a'* and *a²*, the ogee-shaped link C, connected with the leg B, the bar L, the treadle F, connected with bar L, the elbow-lever D, pivotally connected with the leg A, and having link C, connected therewith, and an adjustable coupler connecting lever D with the treadle F, substantially as shown and described.

2. A horseshoe-calk-sharpening machine comprising the legs A and B, having the jaws *a* and *b*, respectively, the jaw *b* curving and having the projecting edge *b'*, and the jaw *a* having its upper face beveled and provided with the groove *a²* and with the curved groove *a'* in the face opposite the jaw *b*, and means for operating the said legs, substantially as described.

485,586. PAPER-CUTTER. BENJAMIN J. PAYNE and THOMAS BURNS, St. Louis, Mo.; said Burns assignor to said Payne. Filed July 7, 1890. Serial No. 357,948. (No model.)



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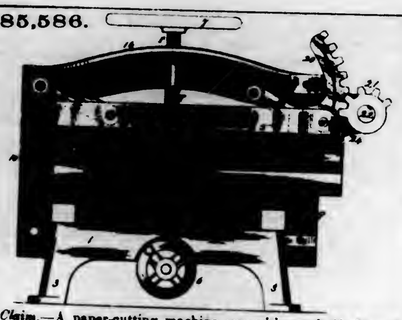
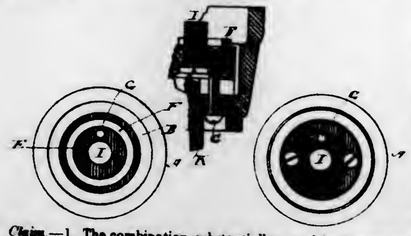


Claim.—A paper-cutting machine comprising a knife-frame 5, having slots 19, the inner link 15, the outer link 14, formed with the upwardly-projecting cog-segment 20, the main frame having the projections 24, the shaft 22, journaled in the projections, the segment-wheel 21, keyed to the shaft and meshing with the cog-segment, and the lever 23, substantially as described.

485,587. SOCKET FOR INCANDESCENT ELECTRIC LAMPS.

JOHN S. POTTER, Newton, and DAVID J. CARTWRIGHT, Boston, Mass.; said Cartwright assignor to said Potter. Filed Oct. 6, 1890. Serial No. 367,237. (No model.)



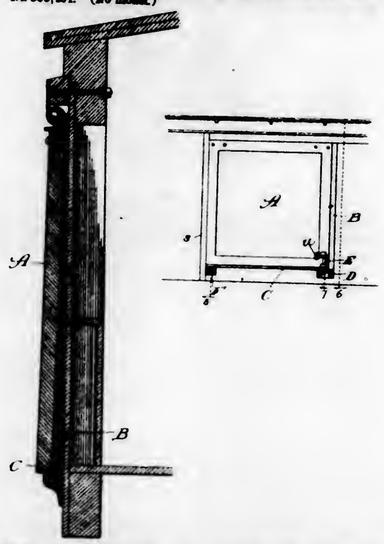
Claim.—1. The combination, substantially as and for the purpose set forth, of a block of insulating material impervious to moisture, recesses in opposite ends of this block, one of the recesses being adapted to receive the base of an incandescent electric lamp and the other recess having the conducting-wires cemented therein, a metallic contact in the recess which receives the lamp, mechanically secured without cement to the partition and electrically connected with one of the conducting-wires, a metallic pin insulated from said contact mechanically attached to the partition, connected with the other conducting-wire, and adapted to make electrical contact with the filament terminal contact on the base of the lamp, and a filling of a cement of a waterproof insulating material around the conductors on the other recess.

2. The combination, substantially as and for the purpose set forth, of a block of insulating material impervious to moisture, recesses in opposite ends of the block, separated by a partition, one of the recesses being adapted to receive the base of the lamp and the other recess having the conducting-wires cemented on it by a waterproof insulating material, a block of hard rubber or other similar insulating material capable of holding a screw placed in the recess which receives the lamp and clamped to the partition by a screw or screws, metallic contacts fixed to this block, electrically connected to one of the conducting-wires, and adapted to make electrical contact with one of the filament terminals on the lamp, a metallic contact fixed in this block, insulated from the other contacts and electrically connected to the other conducting-wire and adapted to make electrical contact with the filament terminal contacts in the center of the base of the lamp, a filling of cement of a waterproof insulating material around the conductors in the other recess.

3. The combination, substantially as and for the purpose set forth, of the block A, of porcelain or other insulating material, impervious to moisture, recesses B and C in opposite ends of the block, separated by a partition, the block E, of hard rubber or other similar insulating material, capable of holding a screw placed in the recess B and firmly clamped to the partition by a screw or screws passing through the partition, the metallic ring F, fixed on the face of the block E, the conducting-wire H, electrically connected to this ring and passing through this partition, the central metallic pin I, fixed in the block E and projecting into the recess B, the conducting-wire K, electrically connected to the pin, and the cement of waterproof insulating material between the block E and the walls of the recess B and in the recess C

485,588. CAR-DOOR.

ALBERT B. PULLMAN, Chicago, Ill., assignor to the A. B. Pullman Company, same place. Filed June 16, 1891. Serial No. 396,461. (No model.)



Claim.—1. In combination with a car-wall and a sliding door thereon pivotally suspended from its upper end, whereby it may be swung outward below the line of suspension, a bracket provided with a beveled shoulder *f*, secured to the sill near the jamb and operating to engage the door and force it inward as it approaches the jamb, and a locking device at or near the lower rear corner of the door and doorway for securing the rear portion of the door against the wall of the car, substantially as described.

2. In combination with a car-wall and a sliding door thereon pivotally suspended from its upper end, whereby it may be swung outward below the line of suspension, a bracket secured to the sill near the jamb and provided with a beveled shoulder operating to engage the door and force it inward as it approaches the jamb, a projection from the wall of the car at the rear of the doorway, operating to maintain the door while opening and closing out of contact with the wall of the car below the line of suspension, and a locking device at or near the lower rear corner of the door and doorway, substantially as described.

3. In combination with a car-wall, a sliding door thereon pivotally suspended from its upper end, whereby it may be swung outward below the line of suspension, and a tapering cleat B at the rear edge of the doorway, an inclined guide upon the wall, operating to engage the forward part of the door and force it inward as it approaches the jamb, and a locking device at or near the lower rear corner of the door and doorway for securing the rear portion of the door against the wall of the car, substantially as described.

4. In combination with a car-wall and suspended sliding door A thereon, having the plate C projecting from its lower inner edge, tapering cleat B, and bracket D, the bracket F, secured to the wall at the base of the jamb and provided with the beveled shoulder *f*, engaging the plate C as the door approachee the jamb, and a fastening device E at the lower rear corner of the door and doorway, substantially as described.

485,589. ADJUSTABLE BRACKET.

DANIEL RAVENEL, Jr., and ROBERT P. MILES, Charleston, S. C. Filed Mar. 16, 1892. Serial No. 425,190. (No model.)

Claim.—1. A folding and adjustable bracket consisting of a longitudinally-slotted back having a forwardly-projecting lug on its upper end, an arm hinged to the said lug, and a folding brace formed of two parts hinged together and respectively pivotally connected to said arm and to a sliding plate adjustably attached to the back by a bolt working in said slot, and a thumb-nut on the bolt, substantially as and for the purpose set forth.

2. A folding and adjustable bracket consisting of a longitudinally-slotted back, an arm hinged to a forwardly-projecting lug on the upper end of said back, and a two-part folding brace pivotally connected to said arm and to a sliding plate adjustably attached to the back by a bolt working in said slot, and a thumb-nut on the bolt, said

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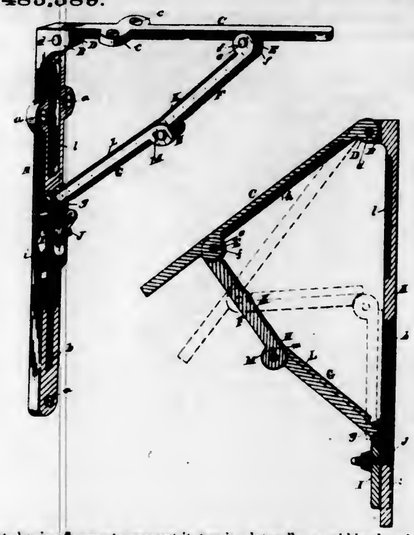
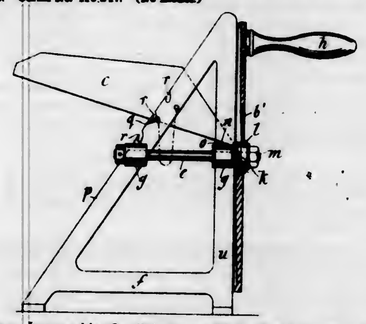


plate having flanges to prevent it turning laterally on said back, substantially as described.

485,590. MACHINE FOR CUTTING OR SLICING VEGETABLES.

WILLIAM SMITH and JAMES CLAYDON, London, England. Filed Oct. 20, 1891. Serial No. 410,247. (No model.)



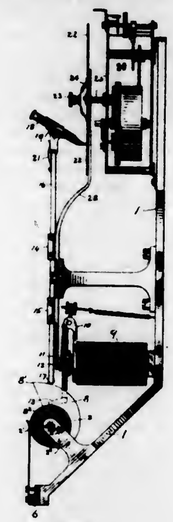
Claim.—In a machine for slicing vegetables and other similar substances, the combination of a disk O, mounted upon a spindle attached to the frame *f* and having a slot extending diametrically across it, the rear surface of the disk being inclined in two directions, one from the upper edge of the slot on one side of the center to the upper edge on the other side, the other at the opposite sides of the lower edge, two radial knives K, and a sloping tray, substantially as described, and shown in the accompanying drawings.

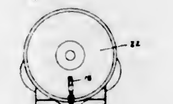
485,591. WATCHMAN'S ELECTRIC TIME-RECORDER.

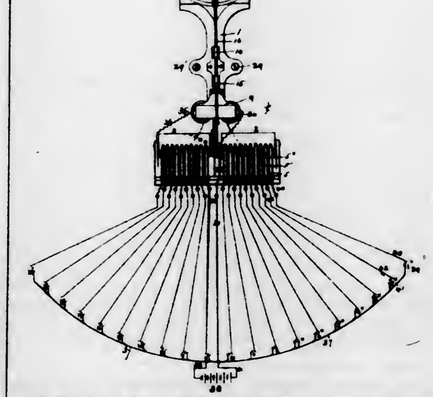
JAMES A. TILDEN, Hyde Park, assignor to the Hervey Manufacturing Company, Boston, Mass. Filed June 23, 1892. Serial No. 437,671. (No model.)

Claim.—1. The combination of a cylinder operated by a motor controlled by electrical contact, the said cylinder being in contact with a series of spring-current brushes and provided with a series of insulating-points which pass under, successively, said spring-brushes, whereby the motor is devitalized by the cutting out of the current and the cylinder caused to stop at the point determined by the spring so cut out, and a marking device controlled by said cylinder, which will indicate the relative location to each other of the several insulated-points on the cylinder as they become cut out and the cylinder comes to rest, substantially as set forth and described.

2. The herein-described electric time and station recording apparatus, composed of an electro-magnetic motor in electrical connection with a series of circuit-closers, a series of insulated circuit-breakers located in the circuit of said station-keys and controlled by the operation of said motor, a cam controlled by said motor to operate a marking pen or pencil, a clock-movement carrying a recording-dial in such relation to the pen or pencil, so combined that a diagram will be traced upon the dial representing the operation of the station-keys and the time of their operation, substantially as set forth and described.







3. The herein-described time and station recording apparatus, composed of an electro-magnetic motor controlled by circuit-closing keys, a series of circuit-breakers arranged to interrupt the motor-circuit in successive order by the operation of said motor, and a cam arranged to rotate with said circuit-breakers and formed to lift a recording-pen which traces upon a dial mounted upon a clock-movement the exact movement of the arm and also the movement of the dial, substantially as set forth and described.

4. A watchman's electric time and station recording apparatus composed of an electro-magnetic motor, a cylinder or cylinders rotated by the action of said motor, spirally-arranged contact-breakers forming part of said cylinder or cylinders, a series of separately-insulated springs in contact with said cylinder or cylinders, an arm carrying a recording-pen governed by a rotating cam, and a clock-movement carrying a dial in such relation to the marking-arm that a record is made of the movement of the marking-arm and the rotation of the dial, substantially as set forth and described.

5. An electric-time and station recording apparatus composed of an electro-magnetic motor adapted to rotate a cylinder having spi-

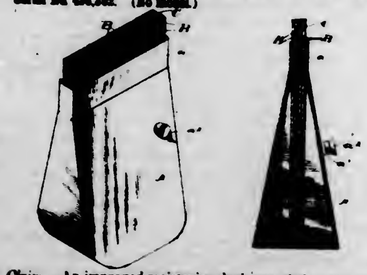
rally-arranged circuit-breakers upon its surface and carrying a cam formed to lift an arm upon which is a marking-pen, a series of insulated springs or arms in electrical contact with said cylinder and arranged to be insulated from the cylinder in successive order as it revolves by means of spirally-arranged contact-breakers, and a clock-movement carrying a recording-dial in such relation to the recording-pen that a diagram will be traced upon the dial corresponding to the movement of the pen and the rotation of the dial, substantially as set forth and described.

6. The combination, in a watchman's time and station recording apparatus, of an electro-magnet, a vibrating armature controlled by said magnet, a ratchet mounted upon the end of said armature, a ratchet-wheel mounted upon a shaft and engaging with said ratchet so that the operation of the vibrating armature causes a rotation of said shaft, a cylinder or cylinders mounted upon said shaft to rotate with it, a series of circuit breakers spirally arranged upon said cylinder or cylinders, a series of separately-insulated contact-springs in electrical connection with said cylinders, a series of circuit-closers respectively in electrical connection with said contact-springs, a cam mounted upon the cylinder-shaft and rotating therewith, a sliding arm arranged to rest upon said cam to be lifted by its movement, and a marking pen or pencil mounted upon the opposite end of said arm, a clock-movement set in relation to the marking pen or pencil so that a diagram will be traced upon a dial secured to and operating with said clock, said diagram representing by a step-by-step movement the operation of the several station-keys and time of their operation, substantially as set forth and described.

7. The combination, in a time and station recording apparatus, of a battery one terminal of which is connected with a series of circuit-closers, a series of electric wires leading from said circuit-closers to a series of separately-insulated circuit-breaking springs, a cylinder or cylinders mounted upon a shaft and in electric contact with said circuit-breaking keys, a series of insulated points arranged spirally upon said cylinder and in line with said springs, an electro-magnet one terminal of which is connected with said cylinder, the other terminal of which returns through a vibrating armature-spring to the battery, a ratchet-wheel mounted upon the cylinder-shaft and arranged to engage with a ratchet mounted upon the magnet-armature, a cam mounted upon the cylinder-shaft to rotate with it, a sliding arm resting upon said cam to move in accordance with the form of the cam, a pen or pencil hinged upon the opposite end of said arm, and a clock-movement and dial, the whole organized and assembled as described, so that by the operation of one of said circuit-closers the magnet would be caused to vibrate and rotate the cylinder until its corresponding circuit-breaker engages with the insulated point upon the cylinder and causes an interruption of the circuit, at the same time causing the marking-pen to be moved by the cam a distance corresponding to the circuit-closers operated and at the same time indicating by the diagram the interval of space between the operation of other circuit-closers, substantially as set forth and described.

8. The combination, in a time and station recording apparatus, of an electrically-controlled motor adapted to rotate a cylinder having spirally-arranged circuit-breakers upon its surface, a series of circuit-brushing springs in contact with said cylinder and arranged to come in successive contact with said breakers, a series of slow contact-keys in electrical connection with said brushes, constructed to occupy sufficient time in their operation to equal the time consumed in the complete revolution of the cylinder, a marking device controlled by said cylinder and arranged to record upon a dial placed upon a clock-movement the relative location to each other of the said circuit-breakers as they interrupt the passage of the current from the brushes to the motor, substantially as set forth and described.

485,592. **DEVICE FOR MOISTENING THE LEAVES OF PRESS-COPY BOOKS.** OWEN K. TRUITT, Washington, D. C. Filed June 11, 1892. Serial No. 436,362. (No model.)



Claim.—An improved moistening device consisting of a reservoir having a broad flat side, a contracted mouth arranged opposite the flat side, a series of moistening-wicks inserted in the mouth and projecting inward into the reservoir, and a non-conducting cloth inserted between the layers of the wicks, substantially as described.

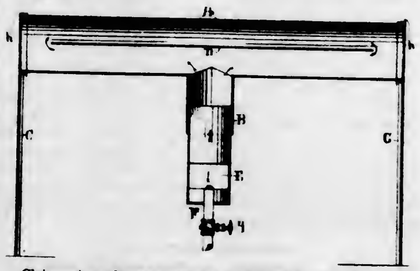
485,593. **TYPE-WRITING MACHINE.** LOUIS H. VAUGHAN and WILLIAM R. EVANS, London, England. Filed Oct. 29, 1891. Serial No. 410,366. (No model.)

Claim.—1. In a type-writer, the combination of a cylinder *a*, shaft *a'*, having extensions a^3, with bearings *c*, formed of two arms between which the extensions rest, and springs *c c'*, bearing on the extensions, substantially as described, and for the purposes specified.

2. In a type-writer, the combination of a cylinder *a* and shaft *a'* with extensions a^3, having two notches *i i* in each extension, one of which is deeper than the other, and springs *c c'*, bearing either in the notches *i* or *i'*, substantially as and for the purpose described.

3. In a type-writer, the combination of a cylinder supported in the manner above described with a feed-roll *d*, having pivoted bearings *k*, screws *l*, and blocks *j*, substantially as described, and for the purposes specified.

485,594. **BURNER FOR BURNING GASEOUS FUEL.** HENRY ADLER, Allegheny, Pa. Filed Nov. 30, 1891. Serial No. 412,582. (No model.)



Claim.—A gas-burner comprising a sheet-metal air and gas chamber having a perforated top and provided with a spreader located centrally therein, an adjustable telescopic mixer adapted to supply air and gas to the burner, and detachable flanged supports for the said chamber.

485,595. **INK-WELL FOR SCHOOL-DESKS.** WALTER H. MORDEN and ALEXANDER J. GILMOUR, Toronto, Canada. Filed Aug. 28, 1891. Serial No. 403,986. (No model.)

Claim.—1. A spherical ink-well for school-desks, provided at or near the top of its vertical axis with an opening, the edge of said opening provided with an outwardly-extending lug or ear adapted to engage the edges of the opening in the desk-top, in combination with suitable means for securely holding said ink-well in place and allowing it a partially longitudinally revoluble movement, substantially as described.

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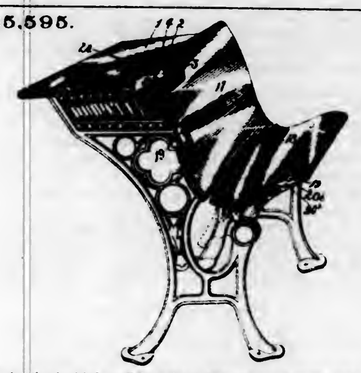


2. A spherical ink-well for school-desks, located in the under side of the desk-top and provided at or near the top of its vertical axis with an opening and at one side of the latter with an outwardly-extending lug adapted to engage the opening in said desk-top, a longitudinal groove encircling said ink-well, in combination with a support located within said groove and connected to some convenient part of the desk, said support allowing the ink-well a partially-revoluble movement, substantially as described.

3. A spherical ink-well for school-desks, provided at or near the top of its vertical axis with an opening, the edge of which opening is fitted with an outwardly-extending lug or ear adapted to engage the opening in the desk-top, a longitudinal groove or channel encircling said ink-well, in combination with suitable support located within said groove or channel, said support allowing the ink-well a longitudinally-revoluble movement, which movement is arrested by means of the aforesaid lug or ear, substantially as described.

4. A spherical ink-well for school-desks, provided at or near the top of its vertical axis with an opening, the edge of which opening is fitted with an outwardly-extending lug or ear adapted to engage the opening in the desk-top, a longitudinal groove or channel encircling said ink-well, in combination with a support or bearing consisting of a U-shaped band, the ends of which band are connected to the under side of the desk-top and the curved portion located within said groove or channel, said support allowing the ink-well a longitudinally-revoluble movement, which movement is arrested by means of the aforesaid lug or ear, substantially as described.

5. A spherical ink-well for school-desks, provided at or near the top of its vertical axis with an opening the edge of which is fitted with a lug or ear, and a longitudinal groove or channel encircling said ink-well, in combination with a support or bearing consisting of a U-shaped band the ends of which are connected to the under side of the desk-top, and the curved or rounded portion located within said groove or channel, forming a semispherical bearing for said ink-well and allowing said ink-well a longitudinally-revoluble movement, which movement is arrested by means of the aforesaid lug or ear coming in contact with the edge of the opening through the desk-top, substantially as described.

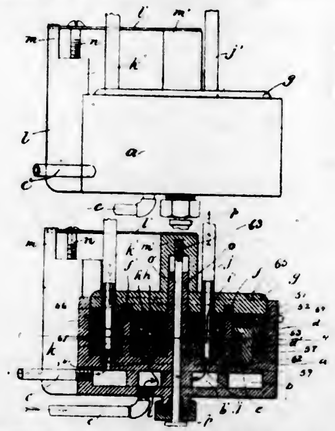
6. A spherical ink-well for school-desks, provided at or near the top of its vertical axis with an opening, the edge of which opening is provided with an outwardly-extending ear or lug, a longitudinal groove or channel encircling said ink-well, in combination with a support or bearing consisting of a U-shaped band the ends of which are connected to a top plate supported on a shoulder extending inwardly from the side of the opening through the desk-top, the curved or rounded portion of said band located within said groove or channel in the ink-well, an opening through said top plate to correspond with the opening in said ink-well, said support allowing said ink-well a longitudinally-revoluble movement, which movement is arrested by means of the aforesaid lug or ear coming in contact with the edge of the opening through said top plate, substantially as described.

485,596. **CONCENTRIC STEAM-JOINT.** JOHN B. MORGAN, Middleborough, Mass. Filed Dec. 14, 1891. Serial No. 414,881. (No model.)

Claim.—1. A steam-joint comprising in its construction a casing provided with the concentric chambers *b b'* and 62 26, movable covers to the latter chambers, ports communicating between the chambers *b* 62 and *b'* 26, supply or inflow pipes communicating with the chambers *b'* 26, and return-pipes communicating with the chambers *b* 62, as set forth.

2. A steam-joint comprising in its construction a casing provided with concentric chambers *b b'* and 62 26, movable covers to the latter chambers, ports communicating between the chambers *b* 62 and *b'* 26, supply-inflow-pipes communicating with the chambers *b'* 26, return-pipes communicating with the chambers *b* 62, and flanges and packing separating the said pipes between the base of the said casing and the cover to the chambers 62 26, as set forth.

3. A steam-joint comprising in its construction a casing provided with the concentric chambers *b b'* and 62 26 and having the annular flange *f* between the chambers 62 26, the ring *d*, having the flange *d'*, forming a cover for the chamber 62, the ring *h*, having the flange *h'*, forming a cover for the chamber 26, the movable cover *g*, provided with a groove *f'*, into which the flange *f* extends, ports communicating between the chambers *b* 62 and *b'* 26, supply-pipes communicating with the chambers *b'* 26, and return-pipes communicating with the chambers *b* 62, as set forth.



4. A steam-joint comprising in its construction a casing provided with the concentric chambers *b b'* and 62 26 and having the annular flange *f* between the chambers 62 26, the ring *d*, having the flange *d'*, forming a cover for the chamber 62, the ring *h*, having the flange *h'*, forming a cover for the chamber 26, the movable cover *g*, provided with a groove *f'*, into which the flange *f* extends, ports communicating between the chambers *b* 62 and *b'* 26, supply-pipes communicating with the chambers *b'* 26, and return-pipes communicating with the chambers *b* 62, and packing interposed between said casing, cover, rings, pipes, and flanges, as set forth.

5. A steam-joint comprising in its construction a casing provided with concentric chambers or reservoirs *b b'* and concentric packing-chambers and having a solid face 59 and a raised seat, and provided, also, with chambers 62 26, ports communicating between the reservoirs *b b'* and steam-chambers 62 26, the interior rings *d h*, provided, respectively, with the flanges *d' h'*, extending into the steam-chambers 62 26, and provided with ports, and a movable cover provided with direct and return pipes communicating with the ports in the flanges *d' h'*, as set forth.

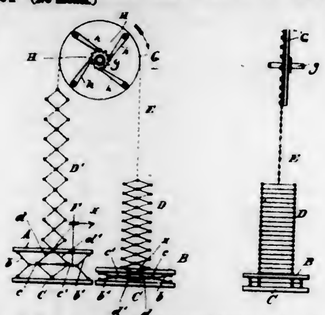
6. A steam-joint comprising in its construction a casing provided with chambers or reservoirs *b b'* and flange *f* and having a solid face 59 and a raised seat, and provided, also, with the steam-chambers 62 26, ports communicating between the reservoirs *b b'* and steam-chambers 62 26, the interior rings *d h*, provided, respectively, with flanges *d' h'*, extending into the chambers 62 26, and provided with ports, a movable cover provided with an annular groove *f'*, into which the flange *f* extends, and having direct and return pipes communicating with the ports in the flanges *d' h'*, and a spring bearing on the cover, as set forth.

7. A steam-joint comprising in its construction a casing *a'*, provided with concentric chambers or reservoirs *b b'* and annular flange *f* and having a solid face 59 integral with a raised seat, and provided, also, with the annular steam-chambers 62 26, ports communicating between the reservoirs *b b'* and steam-chambers 62 26, the interior rings *d h*, provided, respectively, with flanges *d' h'*, extending into the chambers 62 26, and provided with ports, a movable cover provided with an annular groove *f'*, into which the flange *f* extends, and having direct and return pipes communicating with the ports in the flanges *d' h'*, packing on opposite sides of the flanges, disks, and pipes, and a spring bearing on the movable cover, as set forth.

8. A steam-joint comprising in its construction a casing provided with one or more concentric reservoirs *b b'*, solid face 59, integral with a raised seat, annular chambers 62, and ports communicating between the reservoirs *b b'* and steam-chambers 62, the sleeve *e* at the center, the flanges *d h*, provided, respectively, with the flange projections *d'*

h', extending into the annular chambers 62, and provided with ports communicating with the ports leading from the supplies or reservoirs *b b'* to the steam-chambers 62, a ring adapted to turn on the sleeve *e*, a groove 52 in the outer casing, with drip attached, packing between the face 50 and ring, a spring-bearing comprising the rotary disk, and packing with spring and screw, and the belt *d'*, and coupling for connecting joints in either direction, as set forth.

485,597. APPARATUS FOR TRANSMITTING MOTION. CLAUS H. F. RENNEBURG, Hamburg, Germany. Filed Feb. 3, 1892. Serial No. 420,904. (No model.)

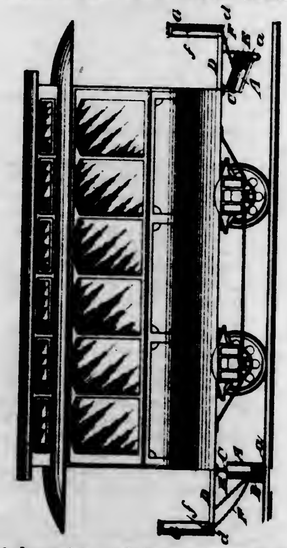


Claim.—1. In apparatus for converting motion, the combination of the two platforms, each vertically movable on pivoted levers, and lazy-tongs connected to and operated by the movement of said levers when the platforms are moved, substantially as set forth.

2. In apparatus for converting motion, the combination of the two platforms, each vertically movable on pivoted levers, hand-lever F, connected to the latter, and lazy-tongs connected to and operated by the movement of said lever when the platforms are moved, substantially as set forth.

3. In apparatus for converting motion, the combination, with the two platforms mounted on pivoted levers, of lazy-tongs connected to and operated by the movement of said levers, induced by the movement of the platforms, a shaft and pulley provided with clutch devices, and a belt engaging said pulley and connected to the lazy-tongs, substantially as set forth.

485,598. SAFETY GUARD FOR CARS. JULIUS SIMONS, New York, N. Y. Filed Oct. 22, 1891. Serial No. 409,490. (No model.)



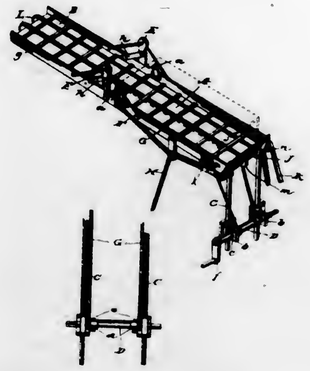
Claim.—1. In a safety-guard for cars, the combination, with a curved guard-piece hinged to the car-platform, so as to have a swinging movement toward and away from the track, of chains for limiting the movement of the guard-piece, an insulating-cushion secured to the convex side of the guard-piece at its bottom and extending below the bottom of the guard-piece, and a chain for operating the guard-piece, substantially as set forth.

2. In a safety-guard for cars, the combination, with a curved guard-piece of wood or analogous material secured to the car so as to have a swinging movement toward and away from the track, of a rubber cushion secured to the guard-piece, wheels mounted in the guard-piece and in position to engage in the grooves along which the flanges of the car-wheels are intended to travel when the guard is in its lowered position, and a chain for operating the guard-piece, substantially as set forth.

3. In a safety-guard for cars, the combination, with the curved guard-piece hinged to the car-platform and having an elastic cushion secured thereto, of a lever secured to the car and a chain adapted to engage one arm of the lever when in its raised position, substantially as set forth.

REISSUES.

11,281. ATTACHMENT FOR STRAW-STACKERS. SAMUEL G. SCHOLL, Billings, Mo. Filed May 17, 1892. Serial No. 433,394. Original No. 461,899, dated Oct. 27, 1891.



Claim.—1. In a stacker, the combination, with two sections hinged together, of a windlass, a rope secured to said windlass, eyes secured to the front section, through which said rope passes, said rope then secured to the rear section of the stacker, and means secured to said rear section for supporting the rope at a point above its attachment with said rear section, whereby said rear section may be folded up, forward, and down upon the front section, substantially as set forth.

2. In a stacker, the combination of two hinged sections, the rear section of which is adapted to fold upwardly and down upon the front section, arms secured to the folding section and projecting upwardly therefrom at approximately-right angles, guide-eyes secured to the front section near its rear end, guide-rollers secured near its forward end, a windlass, and a rope leading from said windlass over said rollers through said guide-eyes and the arms and secured to said rear section, substantially as set forth.

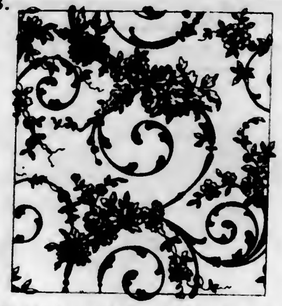
3. A stacker comprising the sections A and B, the hinge *a*, arms E, eyes F, rope G, and windlass D, arranged and operated substantially as set forth.

4. A stacker comprising the sections A and B, a hinge by which said sections are secured in hinged relation, arms E, secured to the rear section, eyes F, guide-rollers *k*, rope G, supports C, and windlass D, having lugs or pins *e* projecting therefrom, substantially as described, and for the purpose set forth.

DESIGNS.

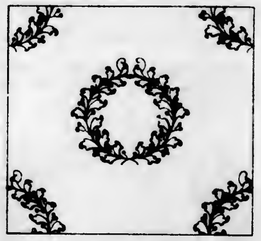
21,936. WALL-PAPER. CHARLES BOOSE, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 3, 1892. Serial No. 447,731. Term of patent 3½ years.

21,936.



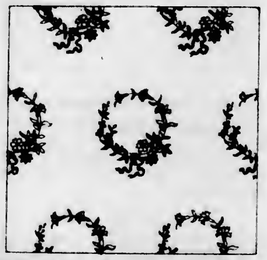
Claim.—The design for wall-paper herein shown and described.

21,937. WALL-PAPER. CHARLES BOOSE, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 3, 1892. Serial No. 447,732. Term of patent 3½ years.



Claim.—The design for wall-paper herein shown and described.

21,938. WALL-PAPER. CHARLES BOOSE, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 3, 1892. Serial No. 447,733. Term of patent 3½ years.



Claim.—The design for wall-paper herein shown and described.

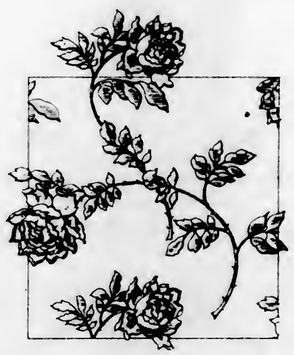
21,939. WALL-PAPER. CHARLES BOOSE, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 3, 1892. Serial No. 447,734. Term of patent 3½ years.

Claim.—The design for wall-paper herein shown and described.

21,940. WALL-PAPER. CHARLES BOOSE, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 3, 1892. Serial No. 447,735. Term of patent 3½ years.

Claim.—The design for wall-paper herein shown and described.

21,941. WALL-PAPER. CHARLES BOOSE, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 3, 1892. Serial No. 447,736. Term of patent 3½ years.



Claim.—The design for wall-paper herein shown and described.

21,942. WALL-PAPER. CHARLES BOOSE, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 3, 1892. Serial No. 447,737. Term of patent 3½ years.

Claim.—The design for wall-paper herein shown and described.

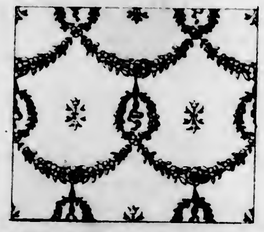
21,943. WALL PAPER. CHARLES BOOSE, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 3, 1892. Serial No. 447,728. Term of patent 3½ years.

Claim.—The design for wall-paper herein shown and described.

21,944. WALL-PAPER. CHARLES BOOSE, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 3, 1892. Serial No. 447,729. Term of patent 3½ years.

Claim.—The design for wall-paper herein shown and described.

21,945. WALL-PAPER. CHARLES BOOSE, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 3, 1892. Serial No. 447,730. Term of patent 3½ years.



Claim.—The design for wall-paper herein shown and described.

21,946. WALL-PAPER. CHARLES BOOSE, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 3, 1892. Serial No. 447,731. Term of patent 3½ years.

Claim.—The design for wall-paper herein shown and described.

21,947. WALL-PAPER. CHARLES BOOSE, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 3, 1892. Serial No. 447,732. Term of patent 3½ years.

Claim.—The design for wall-paper herein shown and described.

21,948. WALL-PAPER. CHARLES BOOSE, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 3, 1892. Serial No. 447,733. Term of patent 3½ years.

Claim.—The design for wall-paper herein shown and described.

21,949. WALL-PAPER. CHARLES BOOSE, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 3, 1892. Serial No. 447,734. Term of patent 3½ years.

Claim.—The design for wall-paper herein shown and described.

21,950. POSTAL-CARD. CHARLES W. GIBSON, New York, and CHARLES P. ROSSITER, Brooklyn, N. Y. Filed Sept. 15, 1892. Serial No. 445,690. Term of patent 3½ years.

Claim.—The design for a postal-card, as herein shown and described.

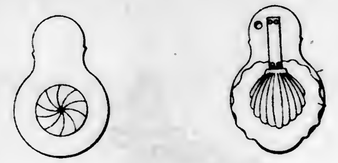
21,951. BADGE. MARY C. SHAFER, Elgin, Ill. Filed Sept. 2, 1892. Serial No. 445,567. Term of patent 3½ years.

Claim.—The design for a badge, substantially as herein shown and described.

21,952. SPOON. THOMAS H. BATES and ALBERT O. GRIMBY, Fresno, Cal. Filed Aug. 6, 1892. Serial No. 443,390. Term of patent 3½ years.

Claim.—The design for a spoon herein shown and described.

21,953. CASTANET. GORDON W. HILL, Wallingford, Conn. Filed Aug. 23, 1892. Serial No. 443,911. Term of patent 7 years.

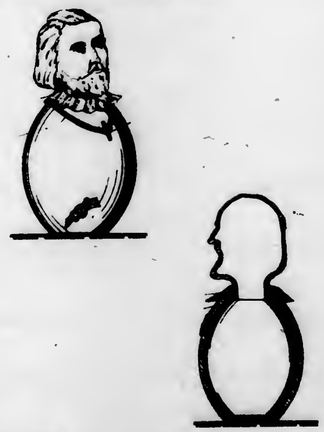


Claim.—The design for a castanet, substantially as shown in the accompanying drawings, and substantially as described in the accompanying specification.

21,954. LADY'S BOOT. HENRY C. RICHARDSON, Merrimac, Mass. Filed July 18, 1892. Serial No. 440,413. Term of patent 14 years.

Claim.—The design for ladies' and misses' boots, substantially as shown and described.

21,955. BOX. LOUIS SONWARE, Brooklyn, N. Y. Filed Sept. 2, 1892. Serial No. 444,905. Term of patent 3½ years.



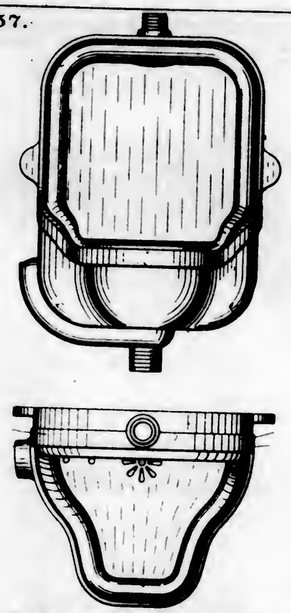
Claim.—The design for a box for candy or other articles, substantially as herein shown and described.

21,956. MONUMENT. Karl I. Lehmann, Chicago, Ill. Filed Sept. 6, 1892. Serial No. 445,382. Term of patent 14 years.

Claim.—The design for a monument, substantially as herein shown and described.

21,957. URINAL. Edward Hanham, Brooklyn, assignor to The J. L. Mott Iron Works, New York, N. Y. Filed Oct. 7, 1892. Serial No. 448,150. Term of patent 7 years.

21,957.

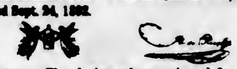


Claim.—The design for a urinal, substantially as described and shown.

TRADE-MARKS

REGISTERED NOVEMBER 1, 1892.

21,900. MINT-ALCOHOL. H. De Ricqlès et Cie, Lyons and Paris, France. Filed Sept. 24, 1892.



Essential feature.—The design of two winged female figures (renommées) holding a bottle and the fac-simile signature of "H. de Ricqlès." Used since January 1, 1838.

21,901. KNITTING AND MENDING COTTON YARNS. Tucker & Cook Manufacturing Company, Conway and Springfield, Mass. Filed Sept. 20, 1892.

Essential feature.—The figure of a crow. Used since January 1, 1891.

21,902. SAWS. William B. Barry, Indianapolis, Ind. Filed Oct. 3, 1892.

NANCY HANKS

Essential feature.—The words "Nancy Hanks." Used since September 15, 1892.

21,903. WASHING-BLUE. Patrick Diamond, Philadelphia, Pa. Filed Oct. 4, 1892.

Essential feature.—The word "Kuttyhunk." Used since August 1, 1892.

21,904. FILES, CHISELS, SCORERS, GRAVERS, AND SIMILAR TOOLS. Grosjean Frères, Vallorbe, Switzerland. Filed Oct. 3, 1892.

Essential feature.—The representation of a hare or rabbit. Used since January 1, 1883.

21,905. BOXES, BOTTLES, ATOMIZERS, TUBES, AND DISTRIBUTERS FOR DISPENSING POWDERS, LIQUIDS, AND SEMI-LIQUIDS. McKesson & Robbins, New York, N. Y. Filed Oct. 1, 1892.

VAPOFLATOR

Essential feature.—The word "Vapoflator." Used since September 24, 1892.

21,906. WHEAT-FLOUR. Buffalo Milling Company, Limited, Lewisburg, Pa. Filed Sept. 6, 1892.

CREMONA

Essential feature.—The word "Cremona." Used since October, 1891.

21,907. STEEL AND OTHER PENS. H. B. Cuttriss & Co., New York, N. Y. Filed Sept. 24, 1892.

AGATE

Essential feature.—The word "Agate." Used since March 1, 1889.

21,908. STEEL AND OTHER PENS. H. B. Cuttriss & Co., New York, N. Y. Filed Sept. 24, 1892.

AMETHYST

Essential feature.—The word "Amethyst." Used since March 1, 1889.

21,909. STEEL AND OTHER PENS. H. B. Cuttriss & Co., New York, N. Y. Filed Sept. 24, 1892.

DIAMOND

Essential feature.—The word "Diamond." Used since March 1, 1889.

21,910. STEEL AND OTHER PENS. H. B. Cuttriss & Co., New York, N. Y. Filed Sept. 24, 1892.

EMERALD

Essential feature.—The word "Emerald." Used since March 1, 1889.

21,911. STEEL AND OTHER PENS. H. B. Cuttriss & Co., New York, N. Y. Filed Sept. 24, 1892.

MALACHITE.

Essential feature.—The word "Malachite." Used since March 1, 1889.

21,912. STEEL AND OTHER PENS. H. B. Cuttriss & Co., New York, N. Y. Filed Sept. 24, 1892.

PEARL.

Essential feature.—The word "Pearl." Used since March 1, 1889.

21,913. STEEL AND OTHER PENS. H. B. Cuttriss & Co., New York, N. Y. Filed Sept. 24, 1892.

RUBY.

Essential feature.—The word "Ruby." Used since March 1, 1889.

21,914. STEEL AND OTHER PENS. H. B. Cuttriss & Co., New York, N. Y. Filed Sept. 24, 1892.

SAPPHIRE.

Essential feature.—The word "Sapphire." Used since March 1, 1889.

21,915. STEEL AND OTHER PENS. H. B. Cuttriss & Co., New York, N. Y. Filed Sept. 24, 1892.

21,915. SEMPER IDEM.

Essential feature.—The title "SEMPER IDEM." Used since March 1, 1889.

21,916. STEEL AND OTHER PENS. E. R. CRITTENDEN & CO., New York, N. Y. Filed Sept. 24, 1892.

Essential feature.—The figure of a female in a sitting posture, holding in one hand a bundle of fasces and grasping with the other hand the tiller of a rudder. Used since March 1, 1889.

21,917. SOAP. WM. GOSSAGE & SONS, Widnes and Liverpool, England. Filed May 27, 1892.

Essential feature.—A circular device comprising a plain circle inclosing a wreath. Used since 1862.

21,918. SOAP. WM. GOSSAGE & SONS, Widnes and Liverpool, England. Filed May 27, 1892.

GOSSAGES'

Essential feature.—The word "GOSSAGES'" and the device of a ship's steering-wheel. Used since 1868.

21,919. SOAP. WM. GOSSAGE & SONS, Widnes and Liverpool, England. Filed May 27, 1892.

THE RIGHT SORT

Essential feature.—The words "THE RIGHT SORT." Used since 1888.

21,920. SOAP. WM. GOSSAGE & SONS, Widnes and Liverpool, England. Filed May 27, 1892.

THE RIGHT SORT

Essential feature.—The words "THE RIGHT SORT" and the representation of a ship's steering-wheel. Used since 1888.

21,921. SOAP. WM. GOSSAGE & SONS, Widnes and Liverpool, England. Filed May 27, 1892.

Essential feature.—The representation of a ship's steering-wheel. Used since 1868.

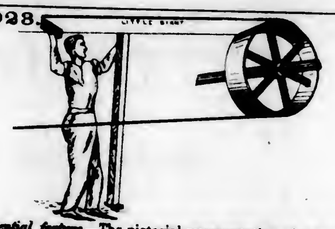
21,922. MEDICINAL HERB-TEAS. MOKI HERB REMEDY COMPANY, Tempe, Ariz. Filed May 20, 1892.

MOKI

Essential feature.—The word "MOKI." Used since December, 1891.

21,923. SOAP FOR HAIR-DRESSING. RUSSELL F. DELBOW, Lynn, Mass. Filed July 9, 1892.

21,928.



Essential feature.—The pictorial representation of a man applying a bar of dressing to a machine-belt and the words "LITTLE GIANT." Used since February 1, 1891.

21,924. CERTAIN NAMED RUBBER AND LEATHER GOODS. PAGE BELTING COMPANY, Concord, N. H. Filed Sept. 15, 1892.

EXTRA

Essential feature.—The representation of a crown and the word "EXTRA." Used since January, 1889.

21,925. FLOUR AND MEAL. DOBBSTEIL & TURNER, Springfield, S. D. Filed Sept. 19, 1892.

Essential feature.—The representation of an Artesian well and a flour-mill. Used since January 1, 1891.

21,926. PILLS. MAURICE LEFRINCE, Bourges, France. Filed June 22, 1892.

Essential feature.—The fac-simile signature "M. LEFRINCE." Used since February 1, 1891.

21,927. BOYS' AND CHILDREN'S SUITS. A. LEVY & CO., New York, N. Y. Filed Aug. 5, 1892.

Essential feature.—The representation of a group or crew of three men seated in a row and pulling upon one leg of trousers, and a similar group of men similarly seated and pulling in the opposite direction upon the other leg, with a flag arranged intermediately and above the trousers. Used since June 25, 1884.

21,928. WEEKLY PERIODICALS. LEWIS ROSENTHAL, New York, N. Y. Filed Sept. 16, 1892.

"Broadway."

Essential feature.—The word "BROADWAY." Used since September 14, 1892.

21,929. BRONZING LIQUID OR GOLD PAINT. W. H. WYTHE & CO., Orange, N. J. Filed Sept. 17, 1892.

GOLDENGLOSS.

Essential feature.—The word "GOLDENGLOSS." Used since July 15, 1892.

21,930. MEDICATED SNUFF. ALEXANDER M. FRIERE, Chillicothe, Mo. Filed Apr. 20, 1892.

BOOMERANG

Essential feature.—The word "BOOMERANG." Used since February, 1892.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

STUART *v.* ELLIOTT *v.* PATTISON.

Decided October 20, 1892

PRACTICE—MOTION TO EXTEND TIME FOR FILING PRELIMINARY STATEMENT—RULE 104.

The provision of Rule 104 which gives the Examiner of Interferences discretion to dispense with service on an opposing party of notice of motion to extend time for filing preliminary statement does not contemplate a case where such service can be reasonably effected, and it should not be exercised in such a case.

APPEAL on motion.

PENCIL-HOLDER.

Application of Tom R. Stuart filed September 4, 1888, No. 284,563. Application of Robert M. Elliott filed June 4, 1888, No. 275,904. Application of Allen S Pattison filed March 2, 1888, No. 265,938.

Mr. M. Bailey for Stuart.
Mr. William C. McIntire for Elliott.
Mr. F. A. Lehmann for Pattison.

SIMONDS, *Commissioner:*

This is an appeal from the decision of the Examiner of Interferences allowing a motion for extension of time for filing preliminary statements, the affidavit upon which the motion is based being as follows:

Ewell A Dick, being duly sworn, doth depose and say as follows: That Marcellus Bailey, Esq , who is attorney for Stuart, is absent from the city on account of sickness and has been absent for about a month last past; that said Dick is in charge of the business of said Bailey during his absence; that the interference hereinbefore mentioned was declared on the 29th day of July, 1892, and official notices were mailed to the parties hereto on the 5th day of August, 1892; that within a few days thereafter Mr. Bailey, attorney for Stuart, left the city and requested me, the said Dick, to attend to the filing of the preliminary statement of said Stuart; that within a day or two after the departure of said Bailey I made diligent search for Stuart at his place of business and at his residence and was informed that he was out of town, and it was not known when he would return. This was about the 13th of August. Since that time I have called frequently to ascertain whether Stuart had returned or his whereabouts and have on each occasion been informed that he was expected back to the city in a few days. I have also to-day visited the place where he last was employed and was informed that he has not been there for about a month last past. I have also to-day visited the house where he last resided and was informed that he was no longer residing there, and was informed by the people in the house that they were not aware of his whereabouts. That I have advices from Mr Bailey, attorney for Stuart, that he will return to the city within ten days, and the matter will then be looked after by him personally. Deponent therefore asks that the time asked for in the motion for these reasons be granted.

On this paper is the following indorsement:

As attorney for Elliott I do not oppose the foregoing request, but, on the contrary, request that it be granted.

WM. C. MCINTIRE.

The Examiner of Interferences allowed the extension, and Pattison appeals from that decision in these words:

Hon. Commissioner of Patents:

Sir: I hereby appeal to you in person from the decision of the Examiner of Interferences in the above-entitled interference, made September 14, 1892, wherein he granted a motion for an extension of time for filing a preliminary statement on the part of Stuart without proper notice to the said Pattison and without a proper showing why the notice was dispensed with.

The Examiner of Interferences acted under the closing sentence of Rule 104, that rule being as follows:

104. If either party require a postponement of the time for filing his preliminary statement, he will present his motion, duly served on the other parties, with his reasons therefor, supported by affidavit, and such motion should be made, if possible, prior to the day previously fixed upon. But the Examiner of Interferences may, in his discretion, dispense with service of notice of such motion.

It is understood that Stuart's procedure and the decision of the Examiner of Interferences are in line with the previous practice of the Office; but the practice is not a proper one.

The opening clause of Dick's affidavit is this:

That Marcellus Bailey, Esq., who is attorney for Stuart, is absent from the city on account of sickness and has been absent for about a month last past.

This allegation gives no information as to who is sick or whether the degree of illness is material or immaterial. It, moreover, appears that Pattison's attorney is a resident in the city of Washington and could have readily been served with notice.

The closing clause of Rule 104, to the effect that "the Examiner of Interferences may, in his discretion, dispense with service of notice of such motion," ought not to mean, and does not mean, that he shall permit service of notice to be dispensed with where it can reasonably be effected. The "discretion" mentioned in the rule means a sound discretion and one to be used in a real emergency. There was no showing in this case which justified the Examiner of Interferences in allowing the service of notice to be dispensed with; but as both he and the moving party simply followed the practice which they found in existence his decision is affirmed and the appeal is dismissed.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court of Appeals—Seventh Circuit.

ILLINOIS WATCH COMPANY *v.* ROBBINS AND AVERY.

Decided October 1, 1892.

1. PATENT FOR INVENTION — INFRINGEMENT — STEM-WINDING WATCH.

The first, third, fourth, fifth, and sixth claims of Letters Patent to Duane H. Church, July 3, 1883, No. 280,709, reissued August 4, 1885, No. 10,631, for stem-winding watch, construed and held valid and infringed by watch-movements manufactured by the appellant under and in accordance with Letters Patent to Thomas F. Sheridan, January 3, 1888, No. 376,015, reissued August 5, 1890, No. 11,100.

2. CONSTRUCTION OF CLAIMS.

The claims being for combinations expressed in broad and general terms, they are to be construed in the light of the specification and each claim is to be "regarded as including such devices and combinations as are necessary to meet the requirements of the general terms in which it is expressed."

3. SAME.

While the five claims in suit are all to the same devices, arranged in a single combination, being only different expressions of that combination, and it may be that there is no essential difference between them, the court does not deem it necessary to consider how far they may be distinguished from each other, but holds them all valid.

4. COMBINATION—WHAT DOES NOT CONSTITUTE ANTICIPATION OF.

A combination producing a group of useful results *Held* not to be anticipated by several prior combinations of some of the elements, each producing some, but not all, of said results, the superiority of the patented device over the prior devices resulting not from any particular part or element, but rather from the combination and arrangement of the parts as a whole.

(Affirming 50 Fed. Rep., 542.)

ON appeal from the United States Circuit Court for the Northern District of Illinois.

STATEMENT OF THE CASE.

By the decree of the circuit court the appellant was held to have infringed the first, third, fourth, fifth, and sixth claims of reissued patent No. 10,631, issued August 4, 1885, to the appellees as assignees of the original letters, No. 280,719, granted July 3, 1883, to Duane H. Church. Here, as in the court below, the appellant, besides denying infringement, disputes both the validity of the reissue and the novelty of the claims. Only the first and second claims of the original patent are relevant to the question of the validity of the reissue, and they are as follows:

1. In a pendant winding and setting watch, a movement having winding and setting mechanism adapted to be operated by the endwise movement of a winding bar or key, and normally in position to operate the hands, whereby a positive connection between the movement and the winding-bar is avoided, as set forth.

2. In a pendant winding and setting watch, a movement having winding and setting mechanism normally in position to operate the hands, a winding bar or key having no positive connection with said mechanism, and a loose or sliding device adapted to communicate the inward end-thrust of the winding-bar to the devices for engaging the winding portion of said mechanism with the main winding-wheel, as set forth.

The following are the reissued claims:

1. As an improvement in stem winding and setting watches, a winding and hands-setting train which is adapted to be placed in engagement with the winding-wheel or the dial-wheels by the longitudinal movement of a stem-arbor that has no positive connection with said train, substantially as and for the purpose specified.

* * * * * * *

2. As an improvement in stem winding and setting watches, a winding and hands-setting train which is adapted to be placed in engagement with the winding-wheel or the dial-wheels by the longitudinal movement of a stem-arbor, and is normally in engagement with said dial-wheels, substantially as and for the purpose set forth.

4. As an improvement in stem winding and setting watches, a winding and hands-setting train which is normally in engagement with the dial wheels, in combination with a rotatable stem-arbor that has no positive connection with said train, and is adapted to be moved longitudinally within the case stem to cause said winding and hands-setting train to engage with the winding-wheel and to be simultaneously disengaged from said dial wheels, substantially as and for the purpose shown and described.

5. As an improvement in stem winding and setting watches, a winding and hands-setting train which is normally in engagement with the dial-wheels, in combination with a rotatable longitudinally-movable stem-arbor that has no positive connection with the watch-movement, and when moved longitudinally to the inner limit of its motion will cause said winding and setting train to be disengaged from said dial-wheels and engaged with the winding-wheel, and when moved longitudinally to the outer limit of its motion will permit said train to be disengaged from said winding-wheel and engaged with said dial-wheels, substantially as and for the purpose specified.

6. As an improvement in stem winding and setting watches, the combination of a winding and hands-setting train which is normally in engagement with the dial-wheels, a stem-arbor having no positive connection with said train, and an intermediate device which is adapted to communicate the longitudinal inner movement of said stem-arbor to said winding-train and cause the same to engage with the winding-wheel, substantially as and for the purpose shown and described.

The original letters contained this statement:

My invention has for its object to obviate a positive connection between the winding-bar and the intermediate mechanism in a watch of the class above named, and thereby make the movements and cases freely interchangeable without special adaptation of any movement to any case.

To this end my invention consists in making the intermediate mechanism above referred to normally in position to operate the hands, so that only an inward movement of the winding-bar will be required to change the connection of said intermediate mechanism, the winding-bar having only to exert a pushing-pressure against said mechanism, and requiring no positive connection therewith.

The reissue contains the following:

The object of my invention is to render watch movements and cases readily interchangeable, to which end said invention consists, principally, as an improvement in stem winding and setting watches, in a winding and hands-setting train which is adapted to be placed in engagement with the winding-wheel or the dial-wheels by the longitudinal movement of a stem-arbor that has no positive connection with said train, substantially as and for the purpose hereinafter described.

And besides this there are added statements of what the invention consists in, substantially in the language of the several claims respectively. The illustrative cuts, letters indicating parts, and the explanations of the respective uses of the parts are not essentially different in the two instruments.

In deciding this case the judge below reaffirmed his own ruling and opinion in the case of the same plaintiffs against the *Aurora Watch Co.*, (43 Fed. Rep., 521,) and as a convenient mode of presenting clearly and comprehensively the questions to be considered we quote at length from that opinion:

The improvement covered by the Church patent is applicable to the class of watches where the watch is wound and the hands set by means of the stem, and consists of an oscillating yoke, carrying upon its under side, pivoted at or near its longitudinal center, a pinion, which is so set as to engage with smaller pinions carried at each end of the yoke, this central wheel or pinion having beveled cogs on the under side thereof, which engage with the beveled pinion, which is set in the line of the stem and into which the inner end of the stem-arbor enters a short distance by a square or octagonal opening, so that this beveled pinion can be rotated by the stem-arbor. By rotating the stem-arbor motion is imparted to the central pinion of the yoke, whereby such motion is communicated to the two pinions at the end of the yoke. Passing the small beveled pinion, with which the stem-arbor engages, is a loose sliding block or bar, which meets the inner end of the stem-arbor, for the purpose of a thrust or push motion of the stem-arbor, and acts as an extension or prolongation of the stem-arbor. By pressing the stem-arbor inward this sliding bar acts upon a spring, which throws the stem winding and setting train into engagement with the winding-wheel, which is done by swinging the yoke so as to bring the pinion on one end of it into contact with the winding-wheel, when by rotating the stem-arbor the watch can be wound up, there being a latch in the sheath or case of the stem, which is arranged to hold the stem-arbor at the extreme of its inward movement, whereby the winding-wheels are kept in winding engagement, while when it is desired to set the hands the stem is drawn outwardly, which allows a spring arranged for that purpose to swing the yoke out of winding and into setting engagement. It will be seen that a latch or catch in the stem, which shall hold the stem-arbor safely at the points of its extreme inward and outward movement, is necessary to the stem-winding and stem hand-setting device, and the patent shows a latch or retaining device in the stem to lock the arbor in either the winding or setting position, of which Church claimed to be the inventor, and for which claims were allowed him in his original patent; but on the application for a reissue an interference was declared between himself and Colby as to these claims, on the hearing of which Colby was decided to be the prior inventor of the locking device in the stem, and Church's claims for that part of his device were disallowed, and the patent for that feature awarded to Colby. The Church patent, therefore, while it contains a description of the latch or retaining device in the stem-sheath, has no claims covering it; but the stem-winding and stem-setting devices of his patent are adapted to be used only with some device for locking the stem-arbor in its inward and outward positions, and perhaps this comment will hold true as to all practical stem-winding and stem-setting watches. Infringement is charged in this case of the first, third, fourth, fifth, and sixth claims of the reissued patent, which are as follows, [given above.] * * * The defenses insisted upon are (1) that the patent is void for want of novelty; (2) that the claims sued upon are too general and do not describe with sufficient certainty the device by which the results are effected; (3) that defendant does not infringe.

The distinctive characteristic of the Church device is that the winding and hands-setting engagements are not effected by the direct force of the push and pull upon the stem-arbor, which is objectionable, because the force of the hand of the operator directly applied is liable to injure the delicate cog-wheel mechanisms which are thus forced into contact with each other. These winding and hands-setting engagements are brought about by longitudinal movements of the stem-arbor, which bring into action certain light springs arranged to swing the yoke which carries the winding and setting trains. For instance, the watch, as ordinarily carried in the pocket, is always in winding engagement, and this is effected by pushing the stem-arbor inwardly to the limit of its movement in that direction, when it is caught and held by the latch in the sheath of the stem. This inward movement of the stem-arbor carries inward the loose sliding bar or "block" N, as it is called in the specification, which by such inward movement comes in contact with and swings inwardly an arm, which by such inward movement causes a spring to bear upon the end of the yoke which carries the winding train, and thereby brings the winding-pinion in contact with the winding-wheel of the mainspring. This spring being light, if the cogs of these wheels meet on end or do not mesh they rest in contact until the winding-pinion has revolved, when its cogs come at once into engagement with the cogs of the winding-wheel, when they are kept in winding engagement so long as the stem-arbor is held at its inward limit. When the stem-arbor is released from its inward movement and drawn outwardly, it releases the arm upon which the bar N has been pressing and another spring is brought into action, which swings the yoke out of the winding engagement and brings the end carrying the hand-setting pinion into contact with the dial-wheels, and the cogs of the respective wheels mesh if they happen to meet in the proper relation, and if not they are retained in contact until the rotation of the pinions brings the cogs into engagement.

It will be seen from this description, if I have made it clear, that the engagements of the pinions of this yoke with the winding and dial wheels are effected by the operation of springs, which are brought into operation by the inward and outward movements of the stem-arbor. It is because these springs are in their natural positions and not constrained when the parts are in the hands-setting engagements that the inventor says "that the hands-setting engagement is the normal condition of the mechanism." It is not claimed that Church was the first to make a stem-winding and stem hands-setting device for a watch. The English patent shown in this case, granted in 1844 to Adolphe Nicole, shows a device for winding a watch and setting its hands by the stem-arbor, the winding and hands-setting train consisting in a V-shaped metal plate with a pinion pivoted near its center, having cogs or teeth on its outer periphery and beveled cogs on the under side of its rim. The beveled cogs engage with the beveled pinion attached to the inner end of the stem-arbor, which has an endwise movement. This V shaped metal plate carries upon its point a small pinion which gears with the large central pinion, so that by rotating the stem-arbor motion is transmitted to this small pinion on the end of the plate. This V-shaped metal plate is pivoted to the rim which holds the movement at its right hand corner in such a position that the small pinion on its point rests between the winding-wheel and dial-wheels of the watch, and by pressing on the stem-arbor this small pinion is swung into contact with the winding-wheel, while when the stem-arbor is drawn outwardly it brings the pinion into engagement with the dial wheels. Here, then, is shown a device for winding and setting the hands of the watch by a longitudinal movement of the stem-arbor, and the V-shaped plate shown operates substantially in the same manner as the oscillating yoke in the Church patent; but the stem-arbor was positively connected with the winding and setting train, and these two engagements for winding and setting were brought about by the direct pull and push of the operator upon the stem-arbor, which was liable to injure the delicate structure of the small wheels if they happened to come in contact in such a way as not to directly engage or mesh into each other. In the Lehman American patent of July, 1866, a stem-winding and stem hands-setting device is shown in which a rotating and longitudinally-moving stem-arbor is made to work the winding and hands-setting mechanism without the oscillating yoke or plate, the winding and hand-setting engagements being brought about by clutches arranged upon the stem-arbor within a movement, so that this stem-arbor has a positive connection with the movement or works of the watch, and with the hands-setting and winding train. The engagements of the winding and hands-setting train are also effected by the pull and push of the stem-arbor, which makes the mechanism liable to be injured in bringing about these engagements, as I have already described. These two patents seem to me to be fair representative types of the different classes of stem-setting and stem-winding watches which are shown in the art from the proofs in the case. The Carnahan patent of October, 1881, shows an oscillating yoke carrying the wheels at each end, which are respectively brought into engagement with the winding and setting wheels by longitudinal movements of the stem-arbor. The patent granted to Charles V. Woerd, February 9, 1863, also shows an oscillating yoke carrying a winding-pinion at one end, and the hands-setting pinion at the other end, by means of which the winding and hands-setting engagements are obtained through the instrumentality of a longitudinally-moving stem-arbor; but in both the latter devices, as in the Nicole patent, the force of the pull or push, to effect these engagements, is expended upon the wheels, and is therefore liable to injure the wheels in the manner which has been described, so that Church seems to have been first in the art to obtain the winding and setting engagements by means of springs which were brought into action by the inward and outward movements of the stem-arbor, thereby avoiding the liability to injure the wheels.

It is true there is but little difference, mechanically speaking, between the operations of the Carnahan and Woerd devices and the device of Church. Both Carnahan and Woerd show the winding engagement as the normal condition of their watch, and the hands-setting engagement to be the exceptional or constrained condition; but, as I have already said, their mechanism and arrangement of operative parts are such that the pull and push upon the stem-arbor is transmitted directly to the wheels which are to be brought into engagement, and therein they differ from the Church device. The advantages claimed by the Church device are: (1) that the movement can be removed from the case of the watch without taking the movement apart so as to remove the stem-arbor; (2) that there is no liability to injure the wheels in effecting either the setting or winding engagements.

As to the first advantage insisted upon, it appears clearly from the proof that Church was by no means the first to show a device whereby the movement could be taken from the watch without removing the stem-arbor or disturbing the same. It is shown in the Brez patent, of July, 1875, in the Fitch patent, of April, 1879, in the Eisen patent, of December, 1880, and in the Woerd patent, which I have already cited, besides in several other patents which appear in evidence in the case and which it is unnecessary to refer to; but I find in none of the patents cited any mechanism which effects the winding and setting engagements by means of springs which are brought into action in such a manner as to relieve the wheels from the direct force of the pull and push upon the stem-arbor. As I have said, Church did not invent the short stem-arbor which allowed of the removal of the movement from the case of the watch, nor did he invent the latch or lock in the sheath of the stem-arbor by means of which the stem-arbor is retained at the limit of its inward and outward movement; but he has adjusted and attached what he did invent to be used with such a stem-arbor, and I, therefore, think he has the right to claim that his winding and hands-setting train has no positive connection with the stem-arbor, as he has, by means of his sliding block N within the movement, secured all the results which would be accomplished by a longer stem-arbor. This sliding block or bar, while it has no positive connection with the stem-arbor, being so arranged in connection with the stem-arbor that it is pushed inwardly by the inward movement of the stem, and follows the stem-arbor outwardly, when the stem is withdrawn to (from) its inward limit, by reason of the action of the springs belonging to the winding and hands setting trains.

As to the criticism that the claims of the plaintiff's patent are too broad and include results rather than devices, I will merely say it is one of the settled canons for the construction of the claims of a patent that they must be so construed, if possible, as to uphold the patent, and in the light of this rule, when the first claim is in terms, for a winding and hands-setting train that is adapted to be placed in engagement with the winding and dial wheels of the watch by a longitudinal movement of the stem-arbor that has no positive connection with the train, the claim cannot be held to mean any kind of a winding and hands-setting train but such a one as is shown in the specification and drawings of the patent. If the claim is held to mean any winding and setting train adapted to be put into winding and setting engagement by a longitudinal movement of the stem-arbor, which has no positive connection with the train, then it would manifestly be anticipated by the Woerd and Carnahan patents, and perhaps other inventors who show winding and setting trains adapted to be placed in winding and setting engagements by endwise movements of stem-arbors that have no positive connection with such trains; and this explanation applies to all the claims. If they are to be read in the broadest sense of which their language is capable of being understood, then they are obnoxious to the criticism that they are claims for results and not devices; but the words "substantially as and for the purpose shown" take us back to the specifications and drawings and bring the devices there shown into the claims, and I construe the claims as for the devices there shown. Therefore, while these claims are broad, I think they can be sustained as for the devices which are described. (*Corn-Planter Patent*, 6 O. G., 392; 23 Wall., 218.)

In respect to infringement in this case the court below, after giving a list of patents in proof which had not been adduced in the *Aurora Company Case*, said:

A careful study of these additional patents, as well as a re-examination of those considered in the former case, has failed to change the conclusion announced in that case as to the novelty and validity of the device covered by the Church patent as reissued. There is, therefore, no question left in this case but that of infringement.

A comparison of the Church patent with the defendants' watches shown in evidence and a consideration of the expert testimony in the case satisfy me that the defendants' watches embody all the essential elements of the Church watch, as covered by this reissued patent. Both use a pivoted yoke to effect the engagement of the winding and setting wheels. In each case this yoke is acted upon by two opposing springs, one to obtain the winding and the other the setting engagement. In both the spring producing the setting engagement is the stronger of the two. Hence when they are equally free to act this stronger spring controls the action of the train—automatically puts it into setting engagement. In other words, the watch would normally be in setting engagement if these two springs were left to the operation of their respective forces. In each watch the winding engagement is effected by restraining the action of the stronger spring and allowing the weaker one only to act without restraint. In both watches this stronger spring is held out of action by pressing the stem-arbor inward and locking it at the innermost position. In both the restraining force upon the stronger spring is applied by means of a short pin or nib upon the sliding stem-arbor, and in each the inward movement of the stem-arbor bends and holds the strong spring from its normal work, and the withdrawal of the stem-arbor releases this spring, so that it at once brings the train into setting engagement. It is true that in defendants' watch there are some slight changes in the shape and location of the operative parts, and by reason of these changes intermediate levers and pins are interposed at some points and dispensed with at others to effect the connections and movements of the operative parts, which, as I think, is quite tersely stated by the complainants in their brief: "The operative parts of each watch receive power from the same source, under the same conditions, transmit it to the same destination for the same purpose, and with the same result."

The Church patent has been upheld by Judge Sage of the sixth circuit in a case of the same plaintiffs against the Columbus Watch Company, not yet reported.

In respect to the question of infringement the appellant insists that the evidence establishes the following propositions:

First. That the normal of appellant's shifting-train is with the winding-wheels, instead with the dial-wheels, as in Church's.
Second. That the stem-arbor has no thrust operation in effecting a winding connection, as the Church has.
Third. That it has the improvement for preserving the teeth on both sides of the watch, as stated by Hoyt to be the object of his improvement, which Church does not mention, and has only on one side.
Fourth Appellant overcomes a weak spring by a stronger one, while Church overcomes a strong spring by a hand-thrust on the knob or crown of the stem.
Fifth. That appellant's shifting-spring acts direct on the yoke, while the single Church spring acts on one arm of the four-pronged rock-shaft.
Sixth. That appellant's train has no block N. as the Church has.
Seventh. That appellant does not have the four-armed rock-shaft that Church has
Eighth. That appellant does not have the three-wheeled yoke which is essential to the Church combinations.
Ninth That appellant's combinations are new and radically different from the Church.

Messrs. Bond, Adams & Pickard for the appellants.
Mr. Lysander Hill and *Messrs. Prindle & Russell* for the appellees.

Before HARLAN, WOODS, and JENKINS, Judges.

WOODS, *J.*, (after making the foregoing statement:)

In conformity with the ruling of the Supreme Court in the case of the *Corn-Planter Patent*, (6 O. G., 392; 23 Wall., 181, 218,) it was right, we think, to construe the claims of the patent in question as embracing the devices shown in the specifications, each claim being regarded as including such devices and combination as are necessary to meet the requirements of the general terms in which it is expressed. When the claims are so construed it may be said of each of them, in the language of that case:

The claim th s limited is considerably narrowed in its operation. It is substantially for a combination of the material parts of the entire machine, and no one can be said to infringe it who does not use the entire combination.

This of course does not exclude the doctrine of equivalents, of which Church was careful in explicit terms to reserve the benefit. How far, when properly construed, the several claims may be distinguished from each other, the court below did not indicate, and we do not deem it necessary now to consider. It may be that there is no essential difference, since the reference in all is to the same devices as arranged in a single combination.

The devices and combination described in the reissued letters are not different from those of the original patent, and as the corresponding claims of both must be regarded as limited by the devices we do not perceive that in any of the reissued claims there appears or is asserted an invention different from or which is expanded beyond what was originally claimed. There is therefore no reason for pronouncing the reissue invalid.

In respect to Church's invention and its advantages, the court below declared its "distinctive characteristic" to be—

that the winding and hands-setting engagements are not effected by the direct force of the push and pull upon the stem-arbor; that Church seems to have been the first in the art to obtain the winding and setting engagements by means of springs which were brought into action by the inward and outward movements of the stem-arbor, thereby avoiding the liability to injure the wheels;

that while Church did not invent the short stem-arbor with its latch or lock—

he has adjusted and attached (adapted) what he did invent to be used with such stem-arbor, and * * * has the right to claim that his winding and hands-setting train has no positive connection with the stem-arbor, as he has, by means of his sliding block N, within the movement, secured all the results which would be accomplished by a longer stem-arbor.

After a careful examination of the patents exhibited in proof of the prior art, and especially in view of the Woerd patent, which, it is conceded, differs but little, mechanically, from the Church, we are not able to see that in the broad sense stated Church was the first to obtain the winding and setting engagements by means of springs, or so as to avoid liability of injury to the wheels. In the Woerd watch the winding or normal engagement is effected by the operation of a spring *e*, and the same spring is in some measure effective, manifestly, to prevent injury to the wheels when the opposite engagement is accomplished, as it must be, by an outward pull of the stem-arbor, whereby the lever T is pressed upon the arm *f* of the plate *b*, pushing it inwardly and swinging the yoke V so as to effect the setting engagement. As it is here used the spring plays an important part in respect to both engagements, being the active force that produces one and a resisting force which tends to prevent undue and sudden violence to the injury of the wheels in the production of the other. Besides, there being one spring in the device, whereby one of the engagements is effected, with all the advantages of that mode of operation, it requires no invention to introduce into that device another spring to subserve the same ends in respect to the other engagement. Such a spring might be located at some point between the end of the lever T and the yoke V, in connection with or perhaps without some of the parts shown; but, what is simpler still, the lever itself might be so reduced in thickness as to become a spring, more or less strong, but not so strong but that with the resisting force of the spring *e* the meshing of the hands-setting wheels would occur without shock or injury. Turning to Hoyt's patent, No. 206,674, we find two springs in use for effecting the respective engagements, one of which acts automatically and the other under the pressure of a lever. There is, therefore, as it seems to us, no element of invention in the mere introduction of springs into the Church device, nor was any new use or new kind of advantage in watch construction obtained thereby.

Church's invention, however, has superiority over Woerd's, Hoyt's, Carnahan's, or any other which has come under our notice, resulting, not from any particular part or element of the device, but rather from the combination and arrangement of the parts as a whole. That combination is new and useful, and its peculiar usefulness consists, as we think, not so much in the springs and consequent protection of the wheels, as in the fact that the declared object of the invention—namely, "to render watch-movements and cases readily interchangeable"—is better accomplished than by any preceding construction. By transferring Carnahan's lever from the works to the case Woerd achieved a short stem-arbor and made the movements and cases interchangeable; but, to say nothing of other differences, the placing of the lever, which is one of the movement devices, in the case is a marked disad-

vantage, since it requires a special form of case, and that, too, of awkward and unmechanical arrangement. One of the features of the Church patent, expressly mentioned in all the claims but the first and implied, perhaps, in that, is that the winding and setting train is normally in engagement with the dial-wheel; and it is to be observed that in the patents of Woerd, Carnahan, and others which show the closest approximation in construction to Church's device the normal engagement is with the winding-wheel.

It is, of course, easy, and does not involve invention, to change such engagements if nothing more than the change is sought, and in some of the designs in evidence normal setting engagements are found, but they are in lever-set watches, of which the Wheeler is an example, and which, as the evidence shows, may readily be constructed with the normal engagement in one wheel or the other; but in stem-winding and stem-setting watches it is not so, and as an element in the combination shown in Church's claims the normal hands-setting engagement plays an important and indispensable part.

In respect to the question of infringement a number of propositions are pressed upon our consideration. In the comparison made of the two devices by the court below it is asserted or assumed that of the two springs in each the stronger produces the setting engagement, and resulting similarities of construction and operation are pointed out. It is now insisted that Church's patent does not show or describe a weaker and a stronger spring; that there is only one spring in his device, and that the restraining of the action of a stronger spring, and thereby allowing the weaker one only to act without restraint, is shown in the Hoyt and Wheeler patents, which both belong to the appellant and are older than the appellee's patent. In this respect the court fell into verbal inaccuracy; but not, we think, into material error. There are certainly two springs in Church's device, which are brought into action in producing the respective engagements. They are described as springs and designated K and i^3, K when unrestrained effecting the setting engagement, and the other when brought into action, as it must be, by the inward thrust of the stem-arbor effecting the winding engagement. They were not improperly called opposing springs, because K resists the movement of the stem-arbor, which brings i^3 into operation; but, on the other hand, i^3 does not resist the counter action of K when the stem-arbor is drawn out. Whether or not one of these springs is stronger than the other is not stated and need not be considered, because the normal operation of K is not resisted by the other spring. In the defendant's watch it is true the two springs are in constant and direct opposition, and consequently the one producing normal engagement is and must be the stronger. It would, therefore, be more accurate, instead of the corresponding expressions in the opinion quoted, to say that in "both watches the spring producing the setting engagement is not controlled in its action by the other spring, and, when otherwise unrestrained, puts the train into that engagement," and that "in each watch the winding engagement is effected by restraining the action of one spring and allowing or causing the other alone to act, the spring so restrained in both watches being held out of action by force of the stem-arbor, locked at its innermost position."

There is, as stated, a plain difference in the operation of the two springs which effect the winding engagements in the respective devices. In Church's watch that spring is forced into operation by the pressure of the stem-arbor on an arm of the rock-shaft of which the spring itself is another arm, while in the defendant's watch the corresponding spring is automatic, effecting the engagement by its own force whenever the opposing strength of the other spring is overcome by the pressure of the stem-arbor. Is this an essential difference in construction or operation? We think not. Starting with the Church device, it requires only ordinary skill, and certainly not invention, to effect the change. It is necessary only to sever the spring i^3 from the rock-shaft and attach it to the plate A in such position as that it shall constantly press on the same end of the yoke E as now in order to produce a complete correspondence between the two devices in respect to the location, character, and operation of their springs. This simple mechanical change, requiring no other alteration whatever in the Church device to make it operative, would entirely eliminate the differences, whether of construction or operation, mentioned in appellant's second, third, fourth, fifth, and seventh propositions, and with that alteration there would remain of the mechanism between the stem-arbor and the winding and hand-setting train in the Church construction a three-pronged rock-shaft, which for all its functions finds a full equivalent in the defendant's slide-bar *i* with its projecting arm and pin, as they are shown in the Sheridan patent, under which the defendant's watch is made. Another "projection" or "end," as it is called, of that slide-bar is a plain substitute for the movable block N of the Church combination.

Instead of the three-wheeled yoke of Church the defendant employs a yoke with two wheels, one of which meshes with either the winding or setting wheels as the yoke oscillates. It is one of "the well-known forms of intermediate mechanism" which Church said might be substituted for the mechanism shown in his patent.

But the first and chief difference insisted upon is that the normal of appellant's shifting-train is with the winding-wheels, and not with the dial-wheels, as in Church's patent. There is only a semblance of truth in this. In the defendant's stem-setting and stem-winding watch the normal engagement is really with the dial-wheels. The assertion to the contrary is specious. It is based on the fact that in the Sheridan patent there is introduced a setting-lever *l'*, so arranged that it may be put in engagement with the end of the spring *l*, which is thereby placed under tension, and by reason of its greater strength overcomes the opposing spring and produces the setting engagement; but when the lever *l'* is thrown out of engagement the spring *l* swings freely upon its pivot without tension and leaves the opposing spring to produce the winding engagement, which is described as normal. But when the device is placed in a stem-winding and stem-setting case the lever *l'* cannot be shifted, but is kept

unchangeably in engagement with the spring *l*, holding it firmly in the position of tension and causing it to act exactly as does the spring K in Church's watch. Whatever, therefore, may be the uses and effect of that lever in other forms of construction, in a stem-winding and stem-setting watch it serves no purpose except to fix the spring in the position of tension, and that spring when left to act as freely as it can act in that position produces the stem-setting engagement. In that form of construction, therefore, that is the normal engagement, and the two devices are not different in that respect.

The necessary conclusion is that the appellant's watch, though made in conformity with the Sheridan patent, is modeled after the device of Church, and contains substantially the same combination of parts or well-known equivalents arranged to accomplish the same result by the same mode of operation.

The decree of the circuit court is therefore affirmed.

U. S. Circuit Court—District of New Jersey.

BRUSH ELECTRIC COMPANY *et al. v.* ACCUMULATOR COMPANY *et al.*

Decided March 16, 1892.

1. PATENTS FOR INVENTIONS—PRELIMINARY INJUNCTION—EFFECT OF DECISIONS IN OTHER CIRCUITS.

Where Letters Patent have been twice sustained in another circuit, a preliminary injunction against infringers will issue as a matter of course, and such injunction will not be denied because of *ex parte* affidavits of alleged new evidence in respect to anticipation, especially when it appears doubtful whether such evidence was not known to the defendants in such prior cases, and that the defendant corporation herein was closely allied with the corporations defendant in the prior litigation and contributed to the expenses thereof, either directly or through its individual stockholders.

2. SAME—WHEN BOND REQUIRED.

Where, however, such injunction will seriously affect defendants' business, and it appears that an appeal has been taken from the decisions in the other cases, the court will require complainants to give bond to secure payment of damages in case the injunction is subsequently dissolved.

BILL for infringement of patents. On motion for preliminary injunction.

Mr. R. N. Kenyon, *Mr. W. C. Witter*, and *Mr. Charles E. Mitchell* for the complainants.

Mr. F. H. Betts and *Mr. H. G. Ward* for the defendants.

GREEN *J.*:

After careful consideration of the matters presented by counsel upon the argument of this cause I am constrained to grant the motion of the complainants for a preliminary injunction upon the terms hereafter stated. The Letters Patent which it is charged in the bill of complaint the defendants have infringed have been, as to all their claims now in controversy in this suit, twice sustained, after protracted and desperately-fought contests, by the Circuit Court for the Southern District of New York, and the reasons for the conclusion reached have been fully and clearly given by Judge Coxe, who heard the argument of the causes, in very able and learned opinions. (*Brush Electric Co.* v. *Julien Electric Co.*, 41 Fed. Rep., 679; *Brush Electric Co.* v. *Electrical Accumulator Co.*, 47 Fed. Rep., 48.) The rule is well established that where, as the result of a contested controversy, Letters Patent have been sustained preliminary injunctions will be granted against infringers as a matter of course by the court which has adjudged the Letters Patent valid and as a matter of comity by the federal courts in other circuits. The defendants seek to avoid the operation of this rule in the case at bar by alleging that they have discovered new evidence since the litigation in the New York circuit which will effectually destroy the validity of the Letters Patent which they are charged with violating. This evidence they set forth at length in *ex parte* affidavits. It relates to the alleged anticipating invention of an electric battery by a Doctor Blanchard, of Vermont, claimed to be in all respects similar to the invention of Brush, secured to him by the Letters Patent in controversy. This alleged invention, it is said, antedates the invention of Brush nearly twenty years. Whether it can properly be called "new evidence" is a question of serious import. It is not denied that, although the present defendants were not the defendants upon the record in the New York causes, they were, nevertheless, closely allied in interest with those defendants through the greater part of that litigation and did, either as a corporate body or through the individual stockholders in the present defendant corporation, contribute to the expenses of those suits, or one of them. It is also admitted that this "new evidence" was in some degree and to some extent at least known to those who were defending the New York cases before the close of that litigation, but for reasons considered satisfactory was not presented then to the consideration of the court. It is offered now in opposition to the motion for a preliminary injunction. These patents having been twice sustained as valid, I do not think it proper, or, indeed, necessary to discuss upon the pending motion the probable effect of the alleged new evidence or whether laches in its production will deprive the defendants of the right to offer it as a part of their defensive case, to be considered on final hearing, or whether they are not estopped from attacking in any way the validity of the Letters Patent by reason of their alleged privity with the defendants in the New York litigation. It is enough to say that, whatever may be the defendants' rights in the premises or whatever may be the legal effect of this evidence, these questions must wait for settlement, under the circumstances, until the cause comes before the court on final hearing, and ought not now to be permitted to deprive the complainants of the fruits of the victory which they have gained.

It was stated upon the argument of this motion that an appeal had been duly taken from the decree of the circuit court in New York to the Circuit Court of Appeals for the Second Circuit, and that such appeal would be speedily heard and determined. As the motion for the preliminary injunction is granted in the case at bar solely upon the ground of the adjudications in the circuit court in New York, if the circuit court of appeals should reverse the decree of the circuit court defendants may apply immediately for a dissolution of this injunction. As the preliminary injunction now granted will, of necessity, seriously affect the operations and business of the defendants, and as there is a possibility that the appellate court in New York may reverse the decree of the circuit court sustaining the validity of these Letters Patent, it is equitable, in my judgment, that before the writ of injunction issue the complainants shall execute and file with the clerk of this court a bond in the penal sum of $10,000, with sureties to be approved by the court, conditioned to pay to the defendants all such pecuniary damage as the defendants may sustain or suffer in their business or operations by reason of the granting of this writ if the same shall be dissolved for the cause stated or for other good and sufficient causes.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 61.—No. 6. TUESDAY, NOVEMBER 8, 1892. PRICE—$5 per year.

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World's Columbian Exposition.

To the Inventors and Manufacturers of the United States:

It is the intention of the Patent Office to make at the World's Columbian Exposition at Chicago in 1893 an exhibit which will show that great advance in the several arts which is due, in large measure, to the encouragement and support afforded by our patent system. This exhibit is to consist of models of patented inventions, which will be carefully selected, to show as far as is possible the inception of each art, the stages through which the art has advanced, and the final development reached at the present time. This display of typical inventions, embodied in concrete form and properly arranged, will, it is believed, constitute a grand historical exhibit of the progress of the useful arts and one which will be of great interest not only to inventors and manufacturers, but to the public generally.

The Office collection of models has been seriously impaired by fire, and is further incomplete by reason of the fact that models have not generally been required or received during the last ten years. The Office is not, therefore, in possession of the models of many valuable inventions which might properly be included in such an exhibit, and without which indeed, the exhibit would be incomplete. The limited appropriation for this exhibit will not permit the Office to make such models. An urgent appeal is therefore made to all inventors and manufacturers to come to the assistance of the Office in this matter, either by loans of models already built or by the construction of such models not in the possession of the Office as should properly be placed in such a collection. Of course, where models are loaned to the Office all proper credit will be given both in labels and catalogues to the parties by whom the loans are made, and such disposition will be made of the models after the close of the exhibit as the owners shall direct. Many inventors and manufacturers have already indicated a willingness to co-operate with the Office in this matter, and it is confidently expected that such a response will be made to this general appeal as will assure the unparalleled success of this attempt to graphically and concretely show the development of American invention.

W. E. SIMONDS,
Commissioner.

61 O G—6—1

Protection of Foreign Exhibitors.

DEPARTMENT OF STATE,
Washington, D. C., July 30, 1892.

To the Diplomatic and Consular Officers of the United States:

GENTLEMEN: I subjoin a transcript of the act of Congress approved April 6, 1892, Public No. 29, entitled "An act to protect foreign exhibitors from prosecution for exhibiting wares protected by American patents and trade-marks," which reads as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That no citizen of any other country shall be held liable for the infringement of any patent granted by the United States, or of any trade-mark or label registered in the United States, where the act complained of is or shall be performed in connection with the exhibition of any article or thing at the World's Columbian Exposition at Chicago.

You will transmit copies of this circular to the government of the country to which you are accredited, and ask that it be given the widest possible circulation for the information of those directly concerned.

I am, gentlemen, your obedient servant,

JOHN W. FOSTER,
Secretary of State.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., August 4, 1892.

Official copy to the Commissioner of Patents for his information and guidance.

E. M. DAWSON,
Chief Clerk.

Withdrawal of Cases from Issue.

Hereafter all amendments proposed to allowed applications which involve a withdrawal from issue, and all petitions and requests relating thereto, shall be filed with the docket clerk, Mr J. M. Emory, and transmitted by him to the Primary Examiner for report. If the Examiner shall report favorably to the admission of such amendment, the matter will be laid before the Commissioner for immediate determination. If the Examiner shall report unfavorably, the case will be docketed and will be heard and decided by the Commissioner in regular course, unless good reasons shall appear for immediate action.

Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subclassified in the Scientific Library for convenient and ready reference.

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Issue of November 8, 1892.

Patents	468—No. 485,599 to No. 486,066, inclusive.
Designs	29—No. 21,958 to No. 21,986, inclusive.
Trade-Marks	40—No. 21,931 to No. 21,970, inclusive.
Labels	None.
Reissues	None.
Total issue	537

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	3	.....	Nevada	.....	.....
Arizona Territory	.....	.....	New Hampshire	1	.....
Arkansas	.....	.....	New Jersey	20	.....
California	8	.....	New Mexico Ter	.....	.....
Colorado	6	.....	New York	98	12
Connecticut	15	1	North Carolina	1	.....
Delaware	.....	1	North Dakota	.....	.....
District of Columbia	3	.....	Ohio	33	2
Florida	2	.....	Oregon	1	.....
Georgia	2	.....	Pennsylvania	45	2
Idaho	1	.....	Rhode Island	3	.....
Illinois	47	5	South Carolina	3	.....
Indian Territory	.....	.....	South Dakota	.....	.....
Indiana	17	2	Tennessee	5	1
Iowa	8	.....	Texas	7	.....
Kansas	12	.....	Utah Territory	.....	.....
Kentucky	8	3	Vermont	.....	.....
Louisiana	4	.....	Virginia	1	.....
Maine	6	1	Washington	2	.....
Maryland	3	1	West Virginia	.....	.....
Massachusetts	41	3	Wisconsin	13	.....
Michigan	13	.....	Wyoming	1	.....
Minnesota	7	2	U. S. Army	.....	.....
Mississippi	.....	.....	U. S. Navy	.....	.....
Missouri	15	.....			
Montana	.....	.....	Total to citizens of the United States	458	37
Nebraska	3	1			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	.....	.....	Netherlands	.....	.....
Austria-Hungary	1	.....	Newfoundland	.....	.....
Belgium	.....	.....	New South Wales	.....	.....
Bermuda	.....	.....	New Zealand	.....	.....
British Guiana	.....	.....	Norway	.....	.....
Canada	7	.....	Porto Rico	.....	.....
Chile Republic of	.....	.....	Portugal	.....	.....
Cuba	.....	.....	Russia	.....	.....
Denmark	.....	.....	Scotland	1	.....
England	11	3	South Australia	.....	.....
France	5	.....	Spain	.....	.....
Germany	12	.....	Sweden	.....	.....
Guatemala	.....	.....	Switzerland	.....	.....
India	.....	.....	Victoria	1	.....
Hawaii	.....	.....	West Indies	.....	.....
Ireland	.....	.....			
Italy	.....	.....	Total to citizens of foreign countries	39	3
Mexico	1	.....			

APPLICATIONS UNDER EXAMINATION.

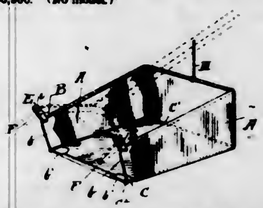
Condition at Close of Business November 1, 1892.

Division No.	Subjects of Invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended.	No. of applications awaiting action.
	Under one month in arrears.			
31	Gas, Painting, Leather, Tanning, Alcohol, Oils, Fats, and Glue, etc.	Oct. 3	Oct. 26	99
	Between one and two months in arrears.			
25	Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, etc.	Sept. 1	Oct. 24	157
8	Furniture, Toilet, Umbrellas and Canes, etc.	Sept. 5	Oct. 20	201
16	Telegraphy, Telephony, Electric Lighting and Signaling.	Sept. 1	Oct. 20	176
12	Mechanical Engineering, Stores-Service, etc.	Sept. 1	Oct. 20	211
14	Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, etc.	Sept. 2	Oct. 19	123
11	Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting.	Sept. 1	Oct. 14	241
23	Instruments of Precision, Acoustics, Optics, etc.	Sept. 1	Oct. 12	190
21	Textiles, etc	Sept. 3	Oct. 8	170
24	Sewing-Machines and Apparel	Sept. 2	Oct. 1	92
30	Lamps, Gas-Fittings, Type-Writers, Matrix-Making Machines.	Sept. 1	Oct. 1	171
20	Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc.	Sept. 3	Sept. 24	255
10	Carriages and Wagons and Railway-Cars.	Sept. 2	Sept. 24	403
6	Chemistry, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc.	Sept. 8	Sept. 23	241
3	Metallurgy, Metal Founding, Forging, Rolling, Coating, Annealing and Tempering, etc.	Sept. 5	Sept. 10	204
5	Fine Arts, Stationery, Book-Binding, Music, etc.	Sept. 3	Sept. 9	251
1	Tillage and Fences	Sept. 1	Sept. 9	278
15	Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc.	Sept. 1	Sept. 2	278
	Between two and three months in arrears.			
18	Steam-Engineering, etc	Aug. 19	Oct. 3	183
32	Advertising, Baggage, Packing and Storing Vessels, etc.	Aug. 15	Oct. 1	246
9	Hydraulics, Fire-Extinguishers, etc.	Aug. 26	Sept. 28	415
19	Stoves and Furnaces	Aug. 23	Sept. 21	361
4	Civil Engineering, etc	Aug. 17	Sept. 15	341
17	Paper-Manufactures and Printing.	Aug. 1	Sept. 13	210
27	Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	Aug. 30	Sept. 8	282
22	Fire-Arms, Navigation, Signals, etc.	Aug. 25	Sept. 1	222
	Between three and four months in arrears.			
2	Farm Stock, Products, etc	July 20	Oct. 13	312
7	Harvesters, Games and Toys	July 25	Oct. 3	570
28	Pneumatics, Refrigeration, Air and Gas Engines, etc.	July 2	Aug. 17	497
	Between four and five months in arrears.			
13	Metal-Working, Arms and Projectiles, etc.	June 14	Oct. 22	261
29	Wood-Working Machines, Carpentry, Coopering and Roofing, etc.	June 14	Oct. 4	434
	Between six and seven months in arrears.			
26	Electricity, Generation, Distribution, etc.	Apr. 29	Sept. 17	545
	Total number of applications awaiting action			8,650
	Under one month in arrears.			
	Designs	Oct. 28	Oct. 28	25
	Trade-Marks	Oct. 26	Oct. 29	23

PATENTS

GRANTED NOVEMBER 8, 1892.

485,599. GRASS-CATCHING ATTACHMENT FOR LAWN-MOWERS. WILLIAM J. O. ASTRUP, Cleveland, Ohio. Filed Apr. 26, 1892. Serial No. 430,980. (No model.)

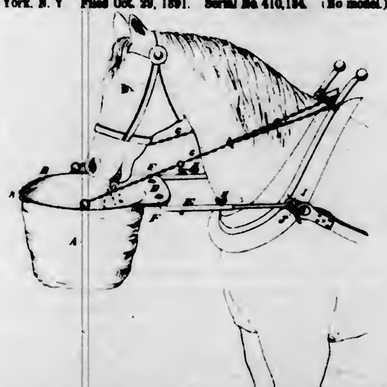


Claim.—1. In a grass receiver or receptacle for lawn-mowers, upper and lower supporting-frames suitably connected with each other, the one frame at each side of the forward end of the receiver or receptacle being bent inward and the one of said inwardly-bent members terminating in a tubular member or sleeve adapted to inclose the free end of the other inwardly-bent member, substantially as and for the purpose set forth.

2. In a grass receiver or receptacle for lawn-mowers, upper and lower supporting-frames, the one frame terminating in eyes or loops embracing the other frame, and a tubular member or sleeve adjustable endwise, inclosing the free end or ends of the last-mentioned frame, substantially as and for the purpose set forth.

3. In a grass receiver or receptacle for lawn-mowers, upper and lower supporting-frames shaped substantially as shown, the lower frame at the forward end of the grass receiver or receptacle terminating in eyes or loops embracing the upper frame and one of the free ends of the upper frame terminating in a tubular member or sleeve adapted to inclose the other free end of said frame, substantially as and for the purpose set forth.

485,600. ADJUSTABLE FEED-BAG. FRANCIS F. ATKINSON, New York, N. Y. Filed Oct. 29, 1891. Serial No. 410,184. (No model.)

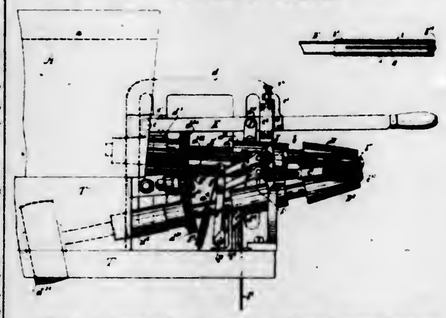


Claim.—1. A feed-bag provided with supporting chains or cords G G and the bent arms E E, pivoted to the bag-frame and adapted to horizontally swing and close the mouth of the feed-bag under the frame, substantially as described.

2. A feed-bag A, provided with supporting chains or cords G G and the telescopic arms E E, bent as described and pivoted to the bag-frame and adapted to swing horizontally and close the mouth of the feed-bag, as described.

3. A feed-bag A, provided with supporting chains or cords G G and the pivoted telescopic arms E E and the spring-clips K K, substantially as and for the purpose specified.

485,601. MACHINE FOR STIFFENING HATS. WILLIAM H. RAMSON, Danbury, Conn., assignor to Charles H. Merritt, same place. Filed Nov. 7, 1891. Serial No. 411,192. (No model.)



Claim.—1. In a machine for applying stiffening material to hats, the combination of a tube provided with a slot and adapted to engage and directly impinge at its portion which contains said slot upon a hat-brim to deposit stiffening material thereon, a support, and a roller adjacent said support for applying pressure to the material after it has been deposited, substantially as specified.

2. In a machine for applying stiffening material, the combination of a tube for depositing the material, provided with a longitudinal slot, a sleeve having a series of slots of different lengths fitted to the portion of the tube where the slot is located, a roller for applying pressure to the material after it has been deposited, and a support adjacent said roller, substantially as specified.

3. In a machine for applying stiffening material to hats, the combination of a slotted tube adapted to engage and directly impinge at its portion which contains the slot upon a hat-brim to deposit stiffening material thereon, a valve for controlling the passage of the material through the tube, a roller for applying pressure to the material after it has been deposited, and a support adjacent said roller, substantially as specified.

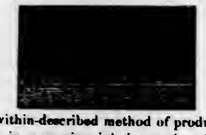
4. In a machine for applying stiffening material to hats, the combination of a slotted tube adapted to engage and directly impinge at its portion which contains the slot upon a hat-brim to deposit stiffening material thereon, a valve for controlling the passage of the material through the tube, a treadle for operating the valve, a support, and a roller for applying pressure to the material after it has been deposited, substantially as specified.

5. In a machine for applying stiffening material to hats, the combination, with feed-pressure rollers, of longitudinally-slotted tubes for simultaneously applying stiffening material to both sides of a hat-brim, and a vat or reservoir communicating with said tubes, substantially as specified.

6. In a machine for applying stiffening material to hats, the combination of a tube provided with a slot and adapted to engage and directly impinge at its portion which contains said slot upon a hat-brim

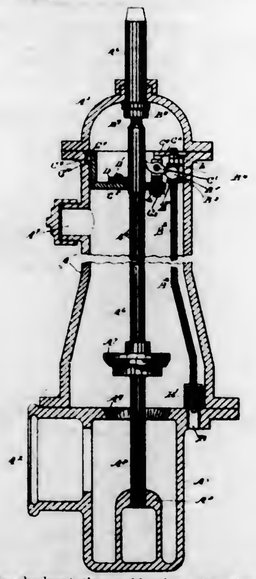
to deposit stiffening material thereon, a guide for directing the article to be stiffened toward the said tube, a support, and a roller for applying pressure to the material after it has been deposited, substantially as specified.

485,602. METHOD OF PRODUCING STENCILS. WILLIAM H. BELL, San Francisco, Cal. Filed Apr. 4, 1892. Serial No. 427,774. (No specimens.)



Claim.—The within-described method of producing a stencil for printing, consisting in arranging ink impressions between an alum-soaked sheet of paper and the described gelatinous plate, then by pressure causing the alum to penetrate the gelatine, thereby hardening the gelatine not covered with the ink, and then removing the sheet of paper and washing the plate, thereby removing the gelatine beneath the ink and producing the stencil, substantially as described.

485,603. HYDRANT. WILLIAM H. BOUTHAM, Waterford, assignor to John Knickerbacker, Troy, N. Y. Filed May 19, 1890. Serial No. 352,316. (No model.)



Claim.—1. In a hydrant, the combination, with a drip-lever actuated by the main valve-stem and fulcrumed upon a fixed support, a drip-valve, and a drip-valve stem threaded at its upper end, of an adjustable drip-nut provided with flanges and adapted to fit the threaded portion of the drip-valve stem and engageable with the drip-lever to adjust the length of the drip-rod to properly operate the drip-valve when all parts are in position, substantially as described.

2. In a hydrant, the combination, with a drip-lever fulcrumed intermediately of its ends upon a fixed support, engageable at one end with the main-valve stem and provided at its other end with bifurcate arms having disk-like terminals, of a drip-valve, drip-valve stem, and annular flanges upon the upper end of the drip-valve stem adapted to inclose and alternately engage the disk-like terminals of the lever, that portion of the stem between such flanges being adapted to enter the space between the bifurcate arms, substantially as described.

3. In a hydrant, the combination, with the main-valve stem, stem-actuated drip-lever, and drip-valve stem actuated by such lever, of a bearing-plate secured to a fixed support to bear against the main-valve stem on the side opposite the side engaged by the drip-lever, substantially as described.

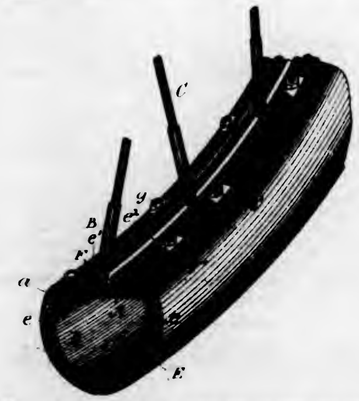
4. In a cap-hydrant having a main valve and stem and a drip-valve and stem and connecting mechanism for operating the drip-valve by the main-valve stem, the combination, with the lever which connects the two valve-stems and the lever-fulcrum, of a plate for supporting such fulcrum, a vertical annular flange upon one edge of such plate, a horizontal exterior projection on the flange, adapted to enter and fit a recess in the upper end of the hydrant, the hydrant-cap, and cap-fastenings, substantially as described.

485,604. COUNTER-STIFFENER. EDWIN BRAKER, North Topeka, Kans., assignor to Eleanor J. Frazier and Mary R. Watt, same place, and Thomas R. Peacock, Topeka, Kans. Filed Jan. 26, 1892. Serial No. 419,333. (No model.)

Claim.—1. A counter-stiffener for boots and shoes, consisting of a metallic counter having the inwardly-projecting segments and the upwardly-projecting segments and the leather upturn seated on the inwardly-projecting segments having slits through which the upwardly-projecting segments extend, substantially as described.

2. A counter-stiffener for boots and shoes, consisting of a metallic counter having its upper edge beaded and notched and a segmental lower edge, the inturned alternate segments providing a seat for the upturn and the leather upturn secured to the counter by means of the alternate segments 3 3, substantially as shown and described.

485,605. INFLATABLE TIRE FOR VEHICLE-WHEELS. KIRK BROWN, Philadelphia, Pa. Filed Nov. 10, 1891. Serial No. 411,438. (No model.)



Claim.—1. An inflatable tire comprising an inner tube applied to the face of the felly or rim of a wheel and a covering surrounding the inner tube and supported on the back of said felly or rim by sectional rails provided with detachable clamping devices, for the purposes set forth.

2. An inflatable tire comprising an inner compressible or soft elastic material tube applied to the face of the felly or rim of a wheel and a covering of tougher material surrounding the inner tube and supported on the back of the felly or rim by sectional rails provided with clamping means, substantially as shown, and for the purposes set forth.

3. A tire consisting of an inner tube composed of compressible or soft elastic material applied to the face of the rim of a wheel, a covering of tougher material surrounding and supported on the back of the rim by sectional rails provided with detachable clamping devices, and means for inflating said tire, substantially as shown, and for the purposes set forth.

4. An inflatable tire provided with an inner tube secured to the rim of a wheel and having a surrounding covering increasing in thickness from the tread to about the rim supporting the same and provided with enlargements at the extremities thereof, and sectional rails mounted on said covering and suitably secured thereto and to said rim, substantially as and for the purposes set forth.

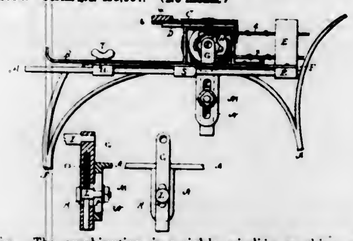
5. An inflatable tire composed of an inner tube secured to a rim of a wheel and having a surrounding covering applied thereto and thickened from the tread to about the points of contact of the same with the rim, sectional rails applied thereto, and means for clamping and unclamping the rails, substantially as and for the purposes set forth.

6. An inflatable tire provided with an inner tube secured to the rim of a wheel, a surrounding covering applied thereto and thickened from the tread portion thereof and with enlargements at the extremital parts thereof, sectional rails supported on said rim, and means for clamping and unclamping the same, substantially as and for the purposes set forth.

485,606. FASTENER FOR THE MEETING-RAILS OF SASHES. IRVING A. BROWN, Cleveland, Ohio, assignor to the Malta & Company, same place. Filed Mar. 26, 1892. Serial No. 426,406. (No model.)

Claim.—The combination, with an upper and a lower window-sash, of a wedge-shaped stop movably supported in the upper sash to be withdrawn into the same or to project beyond the face of the sash with its narrow portion downward, substantially as set forth.

485,607. MACHINE FOR GRINDING THE TEETH OF HARVESTER-SICKLES. DAVID CARRIER, Fond du Lac, Wis. Filed May 23, 1892. Serial No. 433,991. (No model.)



Claim.—The combination, in a sickle-grinding machine, of the carriage B, having slots F F for adjustment and guides, and arched rests and guards C D, with the emery wheel or stone H, resting on yielding bearings as to its axle I I, and doubly beveled with slopes to correspond with the basils of the teeth or knives *b b* of the sickle.

485,608. METHOD OF PRODUCING LETTERS OR DESIGNS IN RELIEF. Moloy J. D. CARTER, London, England. Filed June 11, 1892. Serial No. 436,302. (No model.) Patented in England Aug. 31, 1891, No. 14,682.

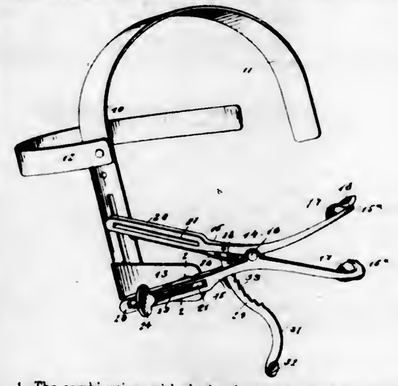
Claim.—The herein-described method of forming letters or designs, consisting in taking a sheet of plastic material, cutting the letters or designs therefrom by means of a die, removing the waste material from the die, coating the remaining portions while still in the die with adhesive material, and applying the tablet or surface to receive the letters to the portions so coated, and thus transferring them from the die to said surface, thereby fixing them permanently to the tablet, substantially as described.

485,609. MOUTH-HOLDING APPARATUS FOR DENTISTS AND SURGEONS. HOWARD M. CASSIDER, Lincoln, Nebr. Filed Mar. 16, 1892. Serial No. 425,286. (No model.)

Claim.—1. An apparatus of the character described, comprising a support in the form of a spring-clasp adapted to be sprung upon a patient's head and provided with an adjustable holder at one side to extend forwardly along the jaw and provided at the forward ends of its members with mouthpieces to engage the upper and lower teeth, substantially as set forth.

2. The combination, with a support adapted to be secured to the patient's head, of a holder formed of members pivoted together between their ends, provided at their forward ends with mouthpieces to engage the upper and lower teeth, and connections for adjustably connecting the rear end of either member with said support.

3. An apparatus of the character described, comprising a spring head-band composed of a main curved band adapted to fit a head, a supplemental curved band secured to the main band, a forwardly-extending arm secured to the main band, and a holder carried by the arm and having mouthpieces thereon to fit between the teeth of a patient, substantially as described.



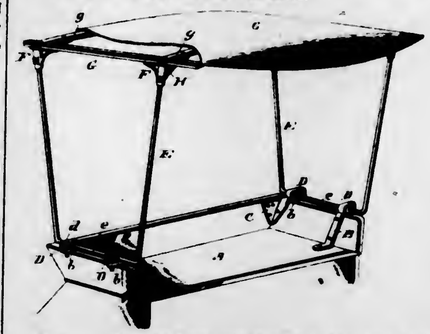
4. The combination, with the head-support, of a holder secured thereto, the latter comprising two similar members pivoted centrally together and having curved forward ends carrying concave mouthpieces, substantially as described.

5. The combination, with the head-support, of a holder secured thereto, said holder comprising members pivoted centrally together and having curved forward ends terminating in concave corrugated mouthpieces and longitudinally-slotted rear ends, substantially as described.

6. The combination, with the head-support, of a holder comprising two similar members having their forward ends terminating in concave mouthpieces and their rear ends in slotted handles and a screw mechanism for fastening the handles to the support, substantially as described.

7. In a device of the character described, the holder comprising similar spring-pressed members pivoted together near the center and having their forward ends terminating in concave corrugated mouthpieces and a spring-pressed notched blade pivoted to one member and extending through the other member, the said blade being adapted to engage a tooth on one of the members, substantially as described.

485,610. VEHICLE-TOP. ISAAC N. COOL, Auburn, Ind. Filed Mar. 5, 1892. Serial No. 423,906. (No model.)



Claim.—1. The combination, with the irons B and C, having horizontal portions, a canopy, and approximately-U-shaped supports, of clutches embracing the horizontal portions of the said supports and bolts for securing the clutches to the horizontal portions of the said irons and clamping the said supports therein, substantially as described.

2. The combination of the seat, the irons B and C, having horizontal portions, the clutches D, the approximately-U-shaped supports adapted to be shifted longitudinally in the said clutches, bolts to clamp the supports in the clutches and secure the latter to the irons

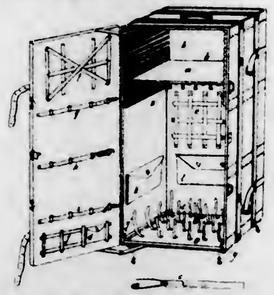
B and C, and the canopy attached to the said supports, substantially as described.

3. The combination, with the canopy-frame and the supports, of brackets fitted on the upper ends of the said supports and secured to the side bars thereof, and braces extending across the angle between the said supports and the cross-bars of the canopy-frame and secured at their upper ends to the said cross-bars and fastened at their lower ends to the brackets by the same bolts which secure the brackets to the said supports, substantially as set forth.

485,611. WIRE-STRETCHING TOOL. GEORGE C. COPPER and DAVID P. COX, Sandborn, Ind. Filed July 12, 1892. Serial No. 439,766. (No model.)

Claim.—The handle B, having the fork A at one end, the hook D and chain C, suspended therefrom near the fork, and at the other end the pivoted link E and hook-rod G F, all substantially as shown and described.

485,612. TRUNK. LEMUEL C. COMBS, Philadelphia, Pa. Filed Nov. 14, 1891. Serial No. 411,963. (No model.)



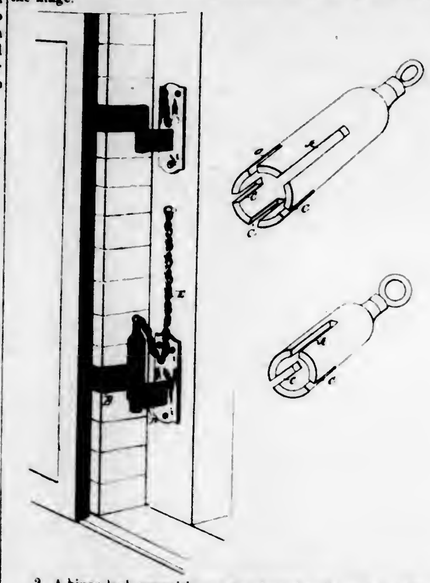
Claim.—1. The combination, in a trunk, of two boards or shelves *a* and D, one at each end of the trunk, the one *a* sliding in a series of slots or grooves *b b'* at one end of the trunk, the other D sliding in slots or grooves *y y'* at the extreme of the other end of the trunk, with a series of hooks B on the inner or lower side of the board or shelf *a* and a series of straps C on the inner or upper side of the other board or shelf D, whereby is provided an independent support for each garment, thereby preventing it from being mussed or crushed by the other garments, all substantially as set forth.

2. The combination, in a trunk, of two parallel sliding boards or shelves *a* and D, placed at each end of trunk and movable in slots or grooves *b b'*, with a series of hooks B, fastened upon the board or shelf *a*, and a series of straps C, fastened upon the board or shelf D, providing independent support for each garment, so that by partially pulling the shelves or boards *a* and D out of the slots or grooves *b b'* one or more garments may be removed without the necessity of removing or disturbing the others, substantially as described.

3. The combination, in a trunk, of the racks or boards containing grooves or slots *b b'* at one end of the trunk, in or upon which the board or shelf *a* rests and slides, so that said board or shelf *a* may be lowered or moved nearer to the board or shelf D or raised or moved farther from the board or shelf D as the case may be, in order to accommodate the size of the greater number of garments, the shelf *a*, which slides and rests in the said grooves *b b'*, upon the under side of which are fixed the series of hooks B, the grooves or slots *y y'*, in which slides the shelf or board D at the extreme of the other end of the trunk, the board or shelf D, upon which are fastened the series of straps C, so that from said series of straps C and said series of hooks B may be fastened the various garments, thus providing each garment with independent support, substantially as described.

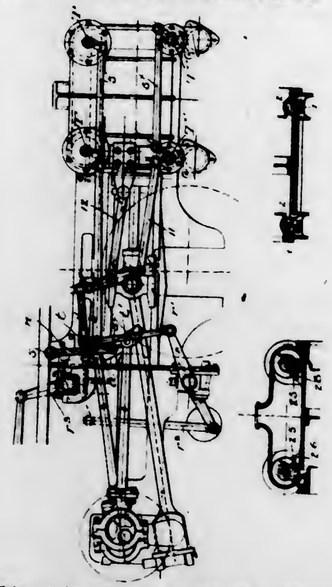
485,613. HINGE-LOCK. ROBERT DEANS, Brooklyn, N. Y. Filed Feb. 23, 1892. Serial No. 422,775. (No model.)

Claim.—1. A hinge-lock for shutters, blinds, or doors, comprising a tube adapted to slide over the hinge-joint and provided with a series of longitudinal slots in its walls, one of said slots being symmetrically placed with reference to the walls of the tube, the other slots being at different angles to permit the hinge to be locked at different angles of adjustment, and a flexible support for securing the tube near the hinge.



2. A hinge-lock comprising a tube adapted to slide over the hinge-joint and provided with a long slot to embrace both the strap and the hook and symmetrically-placed shorter slots to admit of the use of the device on either right or left hinges.

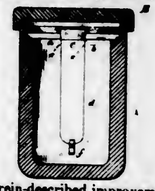
485,614. STEAM-ENGINE. LÉON DURANT and ALEXANDRE LEBLANCHER, Paris, France. Filed Jan. 9, 1891. Serial No. 377,292. (No model.) Patented in France Mar. 4, 1887, No. 181,973.



Claim.—1. In combination, the inlet and exhaust valves and the valve-gear therefor, consisting of the pivoted link, the crank-shaft with connections to the link, the sliding block movably carried by the link, the rods *b b'*, both connected thereto, and means for adjusting the block on the link and the rods simultaneously, and the connections from the rods *b b'* to the inlet and outlet valves, respectively, substantially as described.

2. In combination, the cylinder, the inlet and exhaust valves, the eccentric on the crank-shaft, the link *a*, the pivoted support for the link *a*, consisting of the depending pivoted arm *n*, the block sliding in the link, the rods *b b'*, with connections to the valves, both of said rods being connected to the block, and the means for adjusting the block, consisting of the rod *c'*, connected to the rod *b*, substantially as described.

485,615. MANUFACTURE OF CARBON FILAMENTS. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Dec. 15, 1886. Renewed Apr. 12, 1892. Serial No. 428,783. (No specimens.)



Claim.—1. The herein-described improvement in the method of making incandescent conductors for electric lamps, consisting in suspending detached filaments of carbonizable material in a closed chamber out of contact therewith, suspending weights upon said filaments to place them under strain, and heating said chamber to carbonizing heat, and breaking off said filaments below the point of suspension, substantially as described.

2. The herein-described improvement in the method of making incandescent conductors for electric lamps, consisting in suspending filaments of carbonizable material in a closed chamber, exposing said chamber to carbonizing heat, and breaking off said filaments below the point of suspension, substantially as set forth.

3. The combination, with the carbonizing-chamber, of the recessed bridge-pieces and the wedges for holding the filaments, substantially as set forth.

485,616. MANUFACTURE OF CARBON FILAMENTS. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Dec. 15, 1886. Renewed Apr. 12, 1892. Serial No. 428,784. (No specimens.)

Claim.—1. Incandescent conductors for electric lamps, formed of carbonized asphaltine, substantially as set forth.

2. The process of making filaments for incandescent electric lamps, consisting in heating a suitable hydrocarbon until the volatile constituents are driven off, then forming filaments from the dry carbon residuum directly by heat and pressure—that is, without the addition of any binding material—and then carbonizing the filaments thus formed, substantially as set forth.

485,617. INCANDESCENT-LAMP FILAMENT. THOMAS A. EDISON, Llewellyn Park, N. J. Filed July 17, 1888. Renewed Apr. 12, 1892. Serial No. 428,785. (No specimens.)

Claim.—1. The method of making carbon filaments from asphalte or hydrocarbon residues, which consists in dehydrogenizing said material and after dehydrogenizing the material carbonizing the filaments, substantially as described.

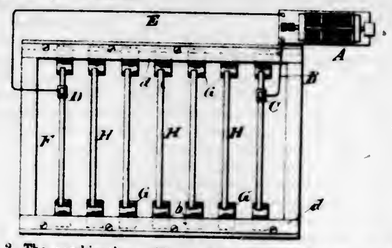
2. The method of making carbon filaments, consisting in forming the filament from plastic asphaltic hydrocarbon residues, then dehydrogenizing the filament to the point where it can be carbonized without melting, and then carbonizing such filament, substantially as set forth.

3. The method of making carbon filaments, consisting in forming the filament from plastic asphaltic hydrocarbon residues, then dehydrogenizing the filament by chemical action to the point where it can be carbonized without melting, and then carbonizing the filament, substantially as set forth.

4. The method of making carbon filaments, consisting in forming the filament from plastic asphaltic hydrocarbon residues, then dehydrogenizing the filament by immersion in a chlorine compound, and then carbonizing the filament, substantially as set forth.

485,618. APPARATUS FOR AND PROCESS OF REFINING COPPER BY ELECTRICITY. FRANKLIN FARREN, Ansonia, Conn. Filed Apr. 30, 1892. Serial No. 430,999. (No model.)

Claim.—1. The method of refining copper by electrical action, which consists in suspending plates of impure copper in vertical or substantially-vertical series in an electrolytic bath and wholly submerging them therein and providing a free circulation of the bath around and in contact with the top, bottom, and sides of the plates, then passing a current of electricity through the plates in series, and forming by electro-deposition plates of refined metal, the bearing-surfaces of such refined plates being formed upon and supported by the devices by which the impure plates were originally supported, substantially as set forth.

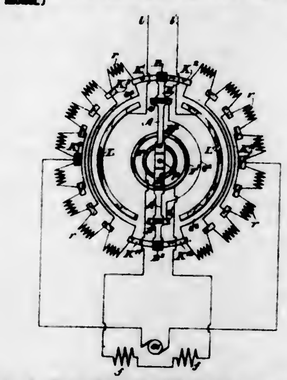


2. The combination, with an electrical refining-tank and supports of sufficient width to serve as a support for an impure plate and for a refined plate, of a vertically or substantially-vertically arranged series of impure plates wholly submerged in the electrolytic bath and supported therein by said supports, the construction being such that the top, bottom, and side edges of the plates are in contact with the bath, and electrical connections for electrically connecting the plates at the opposite ends of the tank with the poles of a current-generator, whereby the current may be passed through the plates in series, substantially as set forth.

3. An electrolytic apparatus consisting of a tank, supports having hooked ends depending from the sides of the tanks and adapted to engage seats or shoulders at or near the upper ends of the impure plates, said hooked ends being sufficiently wide to afford a support not only for the impure plates, but for the refined plates, the supporting seats or shoulders of which are electrically deposited on said hooked ends, and suitable electric conductors for connecting the plates at the opposite ends of the tank with the poles of a current-generator, whereby the current may be passed through the impure plates in series, substantially as set forth.

4. An electrolytic apparatus consisting of a tank, supports depending from the top thereof, said supports having hooked lower ends of sufficient width to support not only the impure plates, but the refined plates as well, and electrical connections for connecting the plates at the opposite ends of the bath with the poles of a current-generator, in combination with impure plates, each of which is provided with outwardly-projecting ears, which are adapted to rest upon the hooked ends of the said supports, substantially as set forth.

485,619. RHEOSTATIC CONTROLLER FOR ELECTRIC MOTORS. JONATHAN P. B. FISKE, Lynn, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Feb. 6, 1892. Serial No. 420,837. (No model.)



Claim.—1. The combination, with the shunt-wound motor, of the rheostatic controller having a rheostat connected to the armature, a short circuit connected to the field-magnet and containing a circuit-breaker, and a circuit-reverser in the field-magnet connections.

2. The combination, with a shunt-wound motor, of the rheostatic controller having line-contacts, short-circuiting contacts connected together, brushes connected, respectively, to opposite motor-terminals and bearing alternately on said line-contacts and short-circuiting contacts and breaking contact with the former before making with the

latter, and a rheostat having regulating connections to the armature.

3. The combination, with a shunt-wound motor, of the rheostatic controller having line-contacts, short-circuiting contacts connected together, brushes connected, respectively, to the field magnet terminals and bearing alternately on said line-contacts and short-circuiting contacts, but breaking contact with the former before making with

to the field of the motor and a switch-contact connected to the supply-line and passing over contacts connected to different points of said set of resistances, so that the same set of resistances and contacts serves for regulation of both field and armature.

forth by a screw-thread upon the shaft, a pair of loose pulleys turning in opposite directions upon the shaft, a clutch between them which connects either of them with the shaft, a pair of revolving centers for the last-block, mounted on the swinging frame, and a pair of revolving centers for the model, directly or nearly above those for the block, in combination with each other and with a revolving cutter and re-

tween the crank-shaft and the swinging frame, a sprocket-wheel upon the crank-shaft, a sprocket-wheel upon the loose sleeve connected by a chain with the wheel upon the crank-shaft, a second sprocket-wheel upon the sleeve, which turns with the sleeve and is attached to the sliding frame, and a sprocket-wheel upon the shaft that turns the rough block connected by a chain with the second wheel upon

latter, and a rheostat having regulating connections to the armature.

3. The combination, with a shunt-wound motor, of the rheostatic controller having line-contacts, short-circuiting contacts connected together, brushes connected, respectively, to the field magnet terminals and bearing alternately on said line-contacts and short-circuiting contacts, but breaking contact with the former before making with the latter, and a rheostat having regulating connections to the armature.

4. The combination, with a shunt-wound motor, of a rheostatic controller having two line-contacts, short-circuiting contacts interposed between the same and connected together, contacts connected through resistances to the armature, and a lever carrying brushes connected, respectively, to the field-magnet terminals and bearing on the line-contacts, short-circuiting contacts, and resistance-contacts.

5. The combination, with a shunt-wound motor, of a rheostatic controller connected to and varying the resistance of the armature-circuit, a reversing-switch co-operating therewith to reverse the relations of the armature and field-circuits, and retarding devices connected to the operating-lever of the controller and reversing-switch and retarding motion of the same away from the central position in either direction, and releasing devices for the retarding devices operative on the return of the lever, substantially as described.

6. The combination, with a circuit-controlling lever movable both ways from a middle position, of a piston connected to said lever, a chamber wherein the piston moves, and having a continuous circulatory passage on each side and a check-valve in each of such passages, so as to retard the motion of the lever in either direction from a central position, but to permit its free return.

7. The combination, with a series of contacts having circuit connections, of a contact-arm traversing the same and carrying a magnet with its poles in proximity to the contacts, so as to blow out the arc at each of said contacts successively.

8. The combination, with a series of contacts having circuit connections, of a contact-arm traversing the same and carrying an electro-magnet and terminals for said magnet on the arm and connecting with the circuit of the contacts.

9. The method of reversing an electric motor, which consists in closing a shunt-circuit around its field-magnet, reversing the connections of said field-magnet while so shunted, and then breaking such shunt-circuit.

10. The method of reversing a shunt-wound electric motor wherein a resistance is connected in series with the armature, which consists in establishing a short circuit around the field-magnet, so as to form a closed circuit including said magnet and the short circuit and another closed circuit including the armature, resistance, and short circuit, reversing the connections of the field-magnet while maintaining the above circuits closed, and then breaking such short circuit.

11. The combination, with a shunt-wound motor, of an adjustable resistance connected in series with the armature, a short circuit around the field-magnet, reversing-contacts for the field-magnet connections, and contacts in said short circuit mechanically connected together, so as to reverse the field-magnet connections while maintaining such short circuit closed.

12. The combination, with an electric motor, of an adjustable resistance connected in series with the armature, a short circuit around the field-magnet, reversing-contacts for the field-magnet connections, and contacts in said short circuit mechanically connected together, so as to reverse the field-magnet connections while maintaining the short circuit closed.

13. The method of reversing an electric motor, which consists in establishing a shunt-circuit around its field-magnet, then relatively reversing the connections of the field-magnet and armature, and then breaking such shunt-circuit.

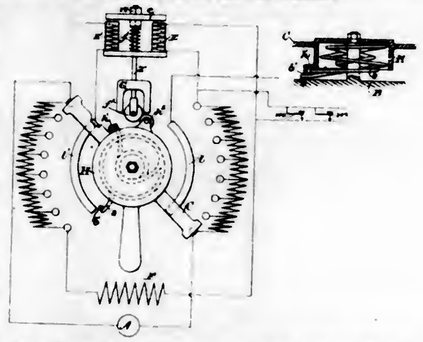
14. The method of reversing an electric motor, consisting in establishing a shunt-circuit around its field-magnet and armature, reversing their relative connections while such shunt-circuit exists, and then interrupting such shunt-circuit.

15. The method of reversing a shunt-wound electric motor, consisting in disconnecting the motor from the line-circuit, establishing a shunt-circuit around its field-magnet, reversing the relative connections of the field-magnet and armature while such shunt-circuit exists, then interrupting such shunt-circuit, and completing the line connections.

485,620. ELECTRIC-MOTOR CONTROLLER. JONATHAN P. B. FISKE, Lynn, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Feb. 5, 1892. Serial No. 420,888. (No model.)

Claim.—1. The combination of an electric motor, a resistance, a permanently-closed continuous circuit including in series said resistance and the field-magnet and armature of the motor, and a rheostatic switch having connections to said resistance and motor.

2. The combination, with an electric motor, of a set of resistances having one end connected to the armature and the other end to the field of the motor and a switch-contact connected to the supply-line and passing over contacts connected to different points of said set of resistances, so that the same set of resistances and contacts serves for regulation of both field and armature.



3. The combination, with an electric motor having its field-magnet and armature in derivation, of resistances and contacts connected to the field-magnet and resistances and contacts connected to the armature and contacts co-operating with the aforesaid contacts, connected to the supply-lines and connected mechanically together, so as to simultaneously and reversely vary the resistances in the field-magnet and armature-circuits.

4. The combination, with an electric motor, of two electro-responsive devices, each controlling its operative connection with the circuit and connected, respectively, in circuit with the armature of the motor and in a branch independent of the armature-circuit.

5. The combination, with an electric motor, of a circuit-breaker for the connections of its armature and electro-responsive controlling means for the circuit-breaker, connected to the motor-circuit and responsive both to abnormal increase and to abnormal diminution of current in the motor connections.

6. The combination, with an electric motor having its armature and field-magnet in derivation, of a circuit-breaker in the connections from the armature to the line, an electro-magnetic device in a shunt around the armature and maintaining the circuit-breaker closed, and an electro-magnetic device included in circuit with the armature and operating to neutralize or oppose the action of the other electro-magnetic device, substantially as set forth.

7. The combination, with an electric motor having its armature and field-magnet in derivation, of a circuit-breaker in the connections from the armature to the line and two electro-magnetic devices oppositely controlling such circuit-breaker and connected, respectively, in the field branch and in circuit with the armature.

8. The combination, with an electric motor having its armature and field-magnet in derivation, of a circuit-breaker in the connections from the armature to the line, an actuator and a detent for such circuit-breaker, an electro-magnet acting on such detent to hold the circuit-breaker closed and included in the field-magnet circuit, and another electro-magnet acting on such detent oppositely to the other electro-magnet and included in circuit with the armature.

9. The combination, with an electric motor, of a circuit-breaker controlling the connections thereof, an actuator and a detent for said circuit-breaker, a magnet controlling said detent, a circuit connected to said magnet and to a source of electric current, and one or more circuit-controllers in said circuit.

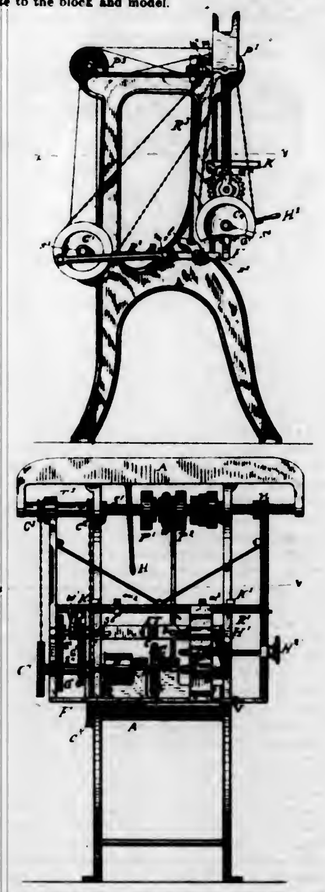
10. The combination, with an electric motor having its field-magnet and armature in derivation, of a circuit-breaker controlling the connections of the armature, an electro-magnet maintaining such switch closed and included in the field-magnet branch, and a shunt around said field-magnet, and one or more circuit-closers in such shunt.

11. The combination, with the pivoted switch-lever, the base, and the retractor, of the detent consisting of a roller on the lever, a reciprocating detent-part and a roller carried thereby, and a guide on the base, engaging with the detent-roller.

12. The combination, with an electric motor, of a circuit for its armature connections, a coil in shunt to the armature-circuit for maintaining said switch in its operative position, and a coil in connection with the armature-circuit, acting to release said switch upon the existence of abnormal current therein.

485,621. LATHE FOR ROUGHING LASTS. ABEL G. FYFE, Auburn, Me. Filed July 2, 1891. Serial No. 398,020. (No model.)

Claim.—1. In a lathe for roughing last-blocks, a swinging frame suspended from a revolving overhead shaft and traversed back and forth by a screw-thread upon the shaft, a pair of loose pulleys turning in opposite directions upon the shaft, a clutch between them which connects either of them with the shaft, a pair of revolving centers for the last-block, mounted on the swinging frame, and a pair of revolving centers for the model, directly or nearly above those for the block, in combination with each other and with a revolving cutter and revolving model-wheel which are mounted upon a stationary frame and are opposite to the block and model.



2. The combination of a swing-frame carrying the block to be turned, means of controlling its swinging movement, a revolving screw-threaded shaft which supports and traverses the frame, a pair of loose pulleys upon the shaft, a sliding clutch which connects them with the shaft, a shifting rod which controls the clutch, stops upon the shifting rod which throw the clutch out of gear when struck by the traversing frame, and a handle connected with the shifting-rod for putting the clutch in gear with the other pulley.

3. The combination of a swinging frame carrying a rotating block, a pushing-rod for moving the frame outward, a crank upon a revolving shaft, a connecting-rod which connects the crank with a sliding piece upon the pushing-rod, a catch attached to the pushing-rod which when released falls in front of the sliding piece, and means for releasing this catch when the frame reaches the end of its traverse, all as set forth.

4. In a lathe in which the block to be turned revolves in a swinging frame, the combination of a shaft to which the block is attached, a counter-shaft from which it derives its motion, a connection between the two shafts which insures their revolving in precisely the same time, a crank attached to the counter-shaft, and means for making and breaking connection between the crank and the swinging frame, all as and for the purpose set forth.

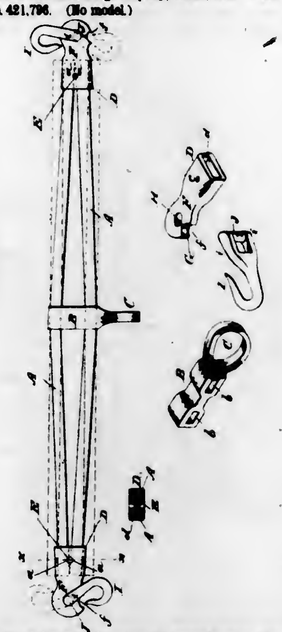
5. The combination of a swinging frame suspended from a revolving shaft, a loose sleeve upon this shaft, a crank-shaft from which the swinging frame derives its outward motion, means of connection between the crank-shaft and the swinging frame, a sprocket-wheel upon the crank-shaft, a sprocket-wheel upon the loose sleeve connected by a chain with the wheel upon the crank-shaft, a second sprocket-wheel upon the sleeve, which turns with the sleeve and is attached to the sliding frame, and a sprocket-wheel upon the shaft that turns the rough block connected by a chain with the second wheel upon the loose sleeve, all proportioned and used substantially as and for the purpose set forth.

6. The combination of a relatively-small model-wheel with a model enlarged in diameter at every point as much as the point where it strikes the small model-wheel falls back from the point where it would have struck the larger one, all as and for the purpose set forth.

7. The combination of a swinging frame carrying the rough block and the model, a pushing-rod which moves the swinging frame outward, a crank-disk which imparts motion intermittently to the pushing-rod, a clutch on the crank-shaft which is disengaged by an endwise motion of the shaft, and corresponding projections upon the pushing-rod and upon the crank-disk, which coact to give an endwise motion to the shaft when the pushing-rod has reached the end of its traverse.

8. The combination of a shaft for imparting motion to a rough block which is mounted in a swinging frame, a second shaft which imparts motion to the model, a gear upon the block-shaft which turns a loose gear upon the model-shaft by direct contact, a second gear upon the block-shaft which turns a loose gear upon the model-shaft by means of an intermediate gear, a clutch upon the model-shaft, which is put in and out of action by a sliding rod, adjustable rollers upon the rod, and projecting pieces whose curved outer ends strike the rollers and shift the clutch when the frame is swung outward at the end of its traverse.

485,622. WHIFFLETREE. LOUIS S. PLATAU, Pittsburg, assignor to the Platau Manufacturing Company, Dallas, Tex. Filed Feb. 17, 1892. Serial No. 421,796. (No model.)



Claim.—As an improved article of manufacture, the whiffletree comprising the metal bars A A, having registering end recesses *a a*, middle brace B, having apertures *b b*, end caps D, having heads F, hooks I, and cross-bar or pivot J, and rivets E, constructed and combined substantially as and for the purpose herein shown and set forth.

485,623. HARROW. EDWARD P. FORD and AARON B. MOFFITT, Irving College, Tenn. Filed Feb. 29, 1892. Serial No. 423,239. (No model.)

Claim.—The combination, with the series of transverse harrow-bars, the independent metal straps pivotally connected to the end of the bars and having their ends overlapping, and the bolts passed through the straps and into the ends of the bars, of the series of ver-

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485,625. MECHANICAL MOVEMENT. JOSEPH C. GITTENS, New York, N. Y. Filed May 5, 1892. Serial No. 431,883. (No model.)

5. A reciprocating carriage, a rotating shaft, connections for transmitting motion from said shaft to said reciprocating carriage, a gear loosely mounted on said shaft, means for constantly rotating said gear at a relatively-high speed, a clutch for engaging said gear, loosely splined on said shaft, a clutch-rod for operating said clutch, and a cam for governing the operation of said clutch-rod, in combination with a slow-moving gear mounted upon said shaft and means for trans-

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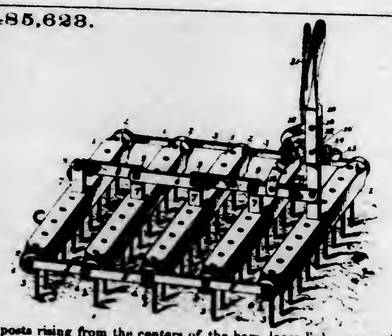
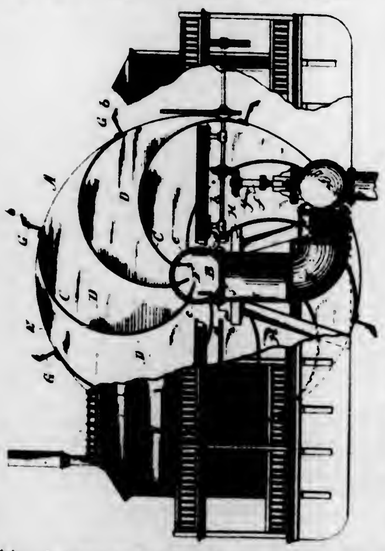


tical posts rising from the centers of the bars, loose links connecting each pair in a pivotal manner and applied to alternately-opposite sides thereof, a vertical rigid standard rising from the center of the rear bar and provided with a recess having a transverse perforation, a link pivotally connecting the standard with an adjacent post, a curved locking-bar pivoted to the link and having its free end extending rearwardly through the recess of the standard, said locking-bar having its outer edge notched and below the same provided with corresponding bolt-openings registering with the transverse perforation in the standard, a removable locking-bolt for said perforations of the locking bar and standard, and the bell-crank lever pivoted to the standard, the lower end of the same being notched to engage the notches of the locking-bar and embrace said bar, and a spring interposed between the upper end of the lever and standard, substantially as specified.

485,624. CURRENT-WHEEL. HENRY C. GARDNER, Nashville, Tenn. Filed Oct. 14, 1891. Serial No. 408,673. (No model.)

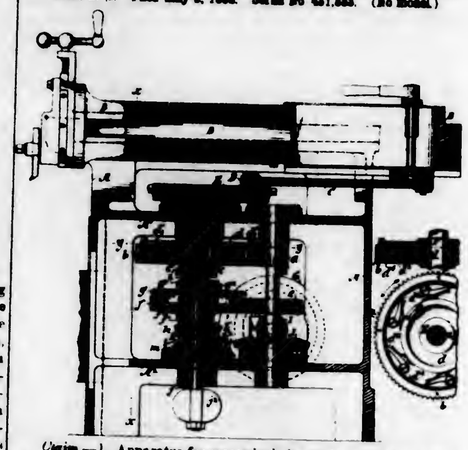


Claim.—1. A current-wheel divided into a series of compartments, a hollow axle or shaft communicating with said compartments, and automatic valves to alternately open and close communication during the operation of the said wheel, substantially as described.

2. A scoop-wheel divided into a series of compartments adapted to discharge into the axle of the wheel, automatic flap-valves for preventing the return of the water to said compartments, and paddles through which the wheel is propelled, substantially as described.

3. A current-wheel comprising a hollow cylindrical axle or shaft formed with peripheral openings, curved partitions radiating from said axle or shaft, disks forming the ends of said wheel, and valves acting automatically to open and close each of said peripheral openings once during each revolution of the wheel, substantially as described.

485,625. MECHANICAL MOVEMENT. JOSEPH C. GITTENS, New York, N. Y. Filed May 5, 1892. Serial No. 431,883. (No model.)



Claim.—1. Apparatus for successively imparting to a reciprocating object two different velocities of motion, the same consisting of a rotating shaft, means for transmitting motion from said shaft to the said reciprocating object, a slow-moving gear loosely mounted upon said shaft, means for constantly rotating said gear at a prescribed relatively-low speed, a wheel keyed to said shaft, a pawl-and-ratchet system acting in one direction only for transmitting rotatory motion to said shaft from said slow-moving gear, a quick-moving gear loosely mounted upon said shaft, means for constantly rotating said gear at a prescribed relatively-high speed in the same direction as that of said slow-moving gear, a clutch splined to said shaft, means for moving said clutch into engagement with said quick-moving gear at a prescribed stage in the revolution of said shaft, and thereby imparting relatively-rapid rotatory motion to said shaft, and means for throwing said clutch out of engagement with said quick-rotating gear at another prescribed stage in the revolution of said shaft, and thereby leaving said shaft to be driven by said slow-moving gear.

2. In apparatus for successively imparting to a reciprocating object two different velocities of motion, the combination, as herein set forth, of a rotating hollow shaft closed at one end and open at the other, means for transmitting motion from said shaft to said reciprocating object, a slow-moving gear loosely mounted upon said shaft, means for constantly rotating said gear at a prescribed relatively-slow speed, connections for enabling said slow-moving gear to impel said shaft when said shaft is not otherwise impelled, a quick-moving gear loosely mounted upon said shaft, means for constantly rotating said quick-moving gear at a prescribed relatively-high speed in the same direction as that of the slow-moving gear, a clutch adapted to slide on said shaft, a clutch-rod inserted in the hollow portion of said shaft, a pin extending transversely through said clutch-rod and through longitudinal slots in the shell of said hollow shaft and through the hub of said clutch for fastening said clutch to said clutch-rod and at the same time operating to spline said clutch to said shaft, a spring for forcing said clutch-rod endwise in the appropriate direction to carry said clutch into engagement with said quick-running gear, and a cam for moving said clutch-rod in the appropriate direction to disengage said clutch from said quick-moving gear, substantially as and for the purposes described.

3. The combination, as herein set forth, of the reciprocating carriage B, the hollow crank-shaft F, connections for transmitting motion from said crank-shaft to said carriage, the slow-moving gear b, loosely mounted upon said crank-shaft, the wheel b', keyed to said crank-shaft, connections for impelling said shaft from said gear b when said crank-shaft is not otherwise impelled, the quick-moving gear f, loosely mounted upon the said crank-shaft, the clutch g, the transverse pin g^4, the clutch-rod j, the sleeve k, the transverse pin k', the cam k^3, and the antifriction-roller l, and means for constantly rotating the gears b and f in the same direction and at prescribed relatively-different velocities.

4. The hollow crank-shaft F, the clutch-rod j, loosely inserted in said hollow crank-shaft and projecting downward from the lower end thereof, the constantly-rotating gear f, loosely mounted upon said crank-shaft, the clutch g, adapted to slide on said hollow crank-shaft and secured to said clutch-rod by the transverse pin g^4, extending through vertical slots formed in the shell of said hollow crank-shaft and through said clutch-rod, the cam k^3, connected to and rotating with said clutch-rod, and the roller l, affording the bearing for said cam.

5. A reciprocating carriage, a rotating shaft, connections for transmitting motion from said shaft to said reciprocating carriage, a gear loosely mounted on said shaft, means for constantly rotating said gear at a relatively-high speed, a clutch for engaging said gear, loosely splined on said shaft, a clutch-rod for operating said clutch, and a cam for governing the operation of said clutch-rod, in combination with a slow-moving gear mounted upon said shaft and means for transmitting motion from said slow-moving gear to impel said shaft when said shaft is not otherwise impelled.

485,626. VALVE. SAMUEL F. GOLD, Englewood, N. J. Filed Mar. 17, 1892. Serial No. 425,202. (No model.)

Claim.—1. In a valve, the valve-shell having a seat and a screw-threaded extension beyond said seat, in combination with a valve proper seating on the ingress side of said seat and a handle for operating said valve proper, arranged at the egress side thereof, having screw-threads engaging those of said extension and constructed when rotated to move relatively to said valve proper, the latter and said handle having reciprocal shoulders engaging each with the other and constructed to permit independent longitudinal movement of said parts and to lock them together rotatively, whereby when said handle is manipulated said valve proper is rotated on its seat prior to the operation of the valve.

2. In a valve, the valve-shell having a seat and a screw-threaded extension beyond said seat, in combination with a valve proper seating on the ingress side of said seat, having a tail passing therethrough, and a handle at the egress side of said valve proper, having screw-threads engaging those of said extension, constructed with a recess engaging said tail, and adapted when rotated to operate the valve, said tail and recess constructed to lock said valve proper and handle together rotatively and to permit their relative longitudinal movement, whereby when said handle is manipulated said valve proper is rotated on its seat prior to the operation of the valve.

3. In a valve, the valve-shell having a seat and a screw-threaded outlet, in combination with a valve proper seating against said seat, having a tail F, constructed with flat faces f', and a tubular sleeve at the egress side of said seat, having screw-threads engaging those of said outlet, having a recess i, adapted to receive said tail and having flat sides adapted to engage said faces f', and constructed when rotated to rotate said valve proper and to move said valve proper to operate the valve, and constructed internally as a discharge-conduit for the valve.

4. In a valve, the valve-shell having a seat and a screw-threaded outlet beyond said seat, in combination with a valve proper seating on the ingress side of said seat, a tubular sleeve constituting a passage through said outlet, and a handle for operating said plunger, arranged at the egress side of said seat, having screw-threads engaging those of said outlet and constructed when rotated to move relatively to said valve proper, said plunger and sleeve having reciprocal shoulders adapted to engage with the other and constructed to permit independent longitudinal movement of said parts and to prevent their relative rotative movement, whereby when manipulated said sleeve rotates said valve proper prior to opening the valve and thereafter serves as a discharge for the latter.

5. In a valve, the combination, with the shell A, having seat b and threaded extension j, of the cap E, the sleeve G, screwed to said extension j, constructed with the perforated lower end I, having the recess i and face m, and the valve proper C, having guiding-wings g, entering and guided by said cap and constructed with tail F, having shoulders f, adapted to be engaged by said face m, and faces f', entering and engaged by said recess i, substantially as and for the purpose set forth.

485,627. FOLDING PLANT-STAND. FLOYD HASELTINE, Hoboken, N. Y. Filed May 26, 1892. Serial No. 434,494. (No model.)

Claim.—The herein-described folding plant-stand, the same comprising, in combination, the standards, recessed as described, the shelf-supporting arms hinged to the standards within the recesses, the shelves carried by said arms, the braces G, pivoted at their upper ends to the inner faces of the upper ends of the standards, the bar B, connecting the rear edges of the standards, and the frame I, having its side bars pivoted at one end to the braces and its opposite ends notched to engage the bar B, all arranged and operating substantially as shown and described.

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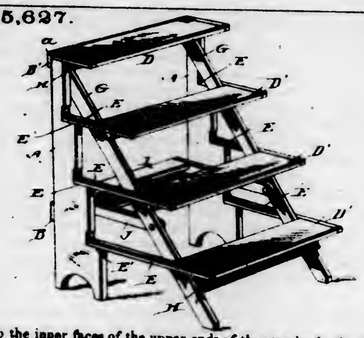
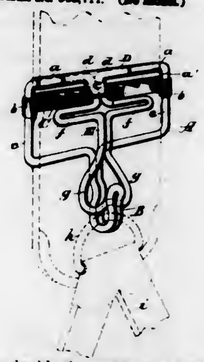


485,628. BUCKLE. CHARLES R. HARER, Williamsport, Pa. Filed Sept. 1, 1890. Serial No. 363,711. (No model.)



Claim.—1. In a buckle, the combination, with a frame having a hook at its lower end and a sliding cross-bar mounted on said frame, of a front or presser bar connected to the top of the frame, the lower end of said front engaging the hook and held in position thereby, substantially as set forth.

2. In a wire buckle, the combination, with wire frame having a hook at its lower end and a toothed cross-bar slidingly mounted on the sides of said frame, of a front or presser bar connected to the top of the frame and engaging and held in position by the hook at the lower end of said frame, the lower or depending portion of the front or presser bar forming a snap for the hook, substantially as set forth.

485,629. CENTER SEAL. JOHN HEARNE, New York, N. Y., assignor of one-half to Walter P. Elliott, New Brunswick, N. J. Filed July 2, 1891. Serial No. 398,278. (No model.)

Claim.—1. In a center seal, the combination, with a valve-shell closed at one end and open at the other and having inlet and outlet ports and divided into pairs of compartments, of inlet and outlet ports for each of said pairs of compartments, a cock superposed upon the valve-shell and comprising two parts constructed and arranged to be rotated in unison or independently of each other, the one of said parts next the valve-shell being provided with the gas-passage J and the ribs i^4 and the other of said parts being provided with the ribs n^2, a gas-passage to the outlet-port of the valve between them, the ribs n^4, and gas-passages arranged intermediate of the ribs n^4 and affording communication between adjacent pairs of compartments, the ribs n^4

i^4 forming gas-tight joints arranged the one above the other, substantially as specified.

2. In a center seal, the combination of a closed casing, inlet and outlet pipes, a passage divided by partitions into a plurality of chambers communicating with the purifiers, a skeleton valve working gas-tight in said casing and divided by partitions, corresponding to those in the casing, into a plurality of chambers, and a cock superposed upon the valve-shell and comprising two parts constructed and arranged to be rotated in unison or independently of each other, the one of said parts next the valve-shell being provided with the gas-passage J and the ribs i^4 and the other of said parts being provided with the ribs n^2, a gas-passage to the outlet-port of the valve between them, the ribs n^4, and gas-passages arranged intermediate of the ribs n^4 and affording communication between adjacent pairs of compartments, the ribs n^4 forming gas-tight joints arranged the one above the other, substantially as specified.

485,630. BELT-STOP. JOHN HOLLAND, Jr., Brooklyn, N. Y. Filed Apr. 18, 1892. Serial No. 429,284. (No model.)

Claim.—1. A belt-stop consisting of a plate having a slot therein, the edges of which lips taper inwardly downwardly, the block being arranged to ride lightly on the belt when running in one direction and to engage the belt when running in the opposite direction and thereby to be forced into the aperture in the plate and made to grip the belt on opposite sides and stop it, substantially as described.

5. The combination of a tire formed with the intermediate portion of its periphery of less diameter than the sides, a strip of elastic material, as d, stretched from side to side, and a raised tire mounted outside the latter, substantially as shown.

6. The combination of a tire formed with annular side recesses

Claim.—1. In an oyster-dredge windlass or winch, a spool or drum loosely mounted on a cam-fitted shaft, in combination with an intermediate carrier-wheel provided with locking-levers, and pawl J, adapted to engage with teeth of carrier-wheel, so arranged that the spool and shaft will be automatically locked together by frictional

ing gas-tight joints arranged the one above the other, substantially as specified.

2. In a center seal, the combination of a closed casing, inlet and outlet pipes, a passage divided by partitions into a plurality of chambers communicating with the purifiers, a skeleton valve working gas-tight in said casing and divided by partitions, corresponding to those in the passage, into an equal number of chambers with those connected with the purifiers and having a separate passage-way whereby communication may be established between the inlet-pipe and any one of the chambers connected with the purifiers, and an auxiliary skeleton valve overlying the main valve and working gas-tight between it and the top of the casing, said auxiliary valve being divided into chambers by partitions corresponding with alternate partitions in the main valve and having a separate passage-way whereby communication may be established between the outlet and any one of the chambers connecting with the purifiers, substantially as described.

3. In a center seal, the combination of a closed casing, concentric inlet and outlet chambers, an annular concentric passage divided by radial partitions into a plurality of chambers communicating with the purifiers, a rotary skeleton valve working gas-tight in said casing and divided by radial partitions corresponding to those in the concentric passage into an equal number of chambers with those connected with the purifiers and having a separate passage-way whereby communication may be established between the inlet-pipe and any one of the chambers connected with the purifiers, and an auxiliary rotary skeleton valve overlying the main valve and working gas-tight between it and the top of the casing, said auxiliary valve being divided into chambers by partitions corresponding with alternate partitions in the main valve and having a separate passage-way whereby communication may be established between any one of the chambers connecting with the purifiers and the outlet-pipe, substantially as described

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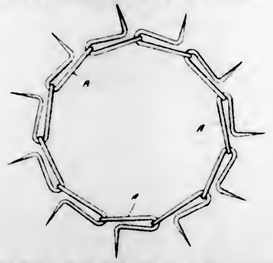
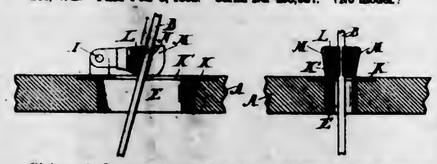
485,630. COLLAR FOR ANIMALS. JOHN W. HULL, Dublin, Ind. Filed Mar. 29, 1892. Serial No. 426,859. (No model.)



Claim.—The herein-described collar for the purpose specified, consisting of a series of links, each made of a single piece of metal bent to form an end bar *a*, slightly-converging side bars *b b*, loop portion *h*, return-bars *c c* above said bars *b*, and the sharpened projections *d*, extending from the ends of said bars *c* and at an angle thereto, said links being removably engaged with each other in substantially the manner described.

485,631. SEWING-MACHINE BRAKE. EDA F. HUNTH, Milwaukee, Wis. Filed Feb. 8, 1892. Serial No. 420,857. (No model.)



Claim.—1. In a sewing-machine, the combination, with the table and the driving-belt running through the table in a suitable aperture therefor, of a swinging brake-block split centrally vertically longitudinally at its free end, forming flexible lips straddling the belt and tapering inwardly downwardly on their outer surfaces, the block being adapted to ride lightly on the belt when running in one direction and to engage the belt and be forced into the aperture in the table and thereby gripped on opposite sides to the belt when the belt starts in the reverse direction, substantially as described.

2. In a sewing-machine, the combination, with the table having a belt-aperture, the driving-belt running through the aperture, and a metal plate fixed to the table about the aperture, which plate is provided with a lug, of a rubber brake-block hinged to the lug, vertically-disposed lips opposite each other on the free end of the block, which lips taper inwardly downwardly, the block being arranged to ride lightly on the belt when running in one direction and to engage the belt when running in the opposite direction and thereby to be forced into the aperture in the plate and made to grip the belt on opposite sides and stop it, substantially as described.

485,632. GRAIN-WEIGHER. JOHN A. JAMES and DAVID JAMES, Coffeyville, Kans. Filed May 2, 1891. Renewed Apr. 19, 1892. Serial No. 429,797. (No model.)

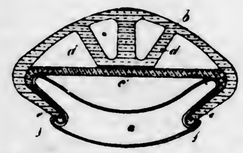
Claim.—1. In an automatic grain-weigher, the combination, with the grain-elevator, of a rectangular frame supported thereon, two hoppers within the frame, hinged chutes on the bottoms of the hopper, a hanger below the frame, slotted uprights on the hanger, a scale-beam fulcrumed on the frame having a cylindrical end located within the slots of the uprights, a lever pivoted on the cylindrical end of the beam, supporting-pins on the ends of the lever engaging the bottoms of the chutes, and a cut-off at the spout of the elevator, substantially as described.

2. In an automatic grain-weigher, the combination, with two vertically-movable hoppers, of chutes hinged to the hoppers and forming the bottoms thereof, a scale-beam, a lever pivoted on the end of the beam, and supporting-pins on the ends of the lever engaging the under side of the chutes, substantially as described.

3. In an automatic grain-weigher, the combination, with a frame, of two vertically-movable hoppers, chutes hinged to and forming the bottoms of the hoppers, teeth on the chutes, flaps on the hoppers with which the teeth engage, a scale-beam, a lever pivoted on the end thereof, and supporting-pins on the end of the lever, engaging the bottoms of the chutes at or about the center thereof, substantially as described.

4. In an automatic grain-weigher, the combination, with an elevator-spout having projecting lips at its discharge end, of a frame supported by the lips, vertically-movable hoppers within the frame, a scale-beam pivoted to the frame, a cross-lever pivoted on the end of the scale-beam, supporting-pins on the ends of the lever engaging the under sides of the hoppers, a shaft journaled in the lips, a cut-off on the shaft between the lips, and actuating-arms connected to the shaft and the hoppers, substantially as described.

485,633. CUSHION-TIRE AND RIM THEREFOR. ROBERT M. KEATING, Springfield, Mass. Filed Aug. 24, 1891. Serial No. 403,575. (No model.)



Claim.—1. The combination of a rim having the periphery lowest in the center with an elastic tire formed with a part *c* to extend across the rim-face and an outer raised portion *b*, substantially as shown.

2. The combination of a rim having its periphery lowest in the central portion with an elastic tire formed with a straight base portion, a raised outer portion, and with ribs extending from the one to the other, substantially as shown.

3. The combination of a rim lowest in the center of its periphery with an elastic tire having a straight base portion to rest on the raised side portions of the rim and formed with a raised outer portion and having depending parts *e* and means to secure the parts *e* to the rim, substantially as shown.

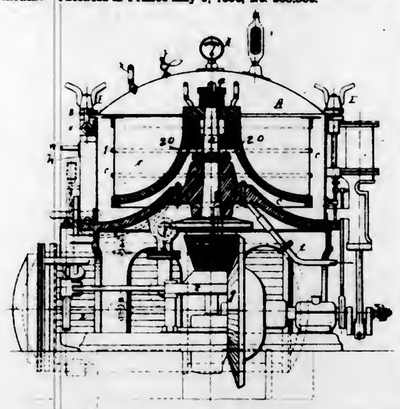
4. The combination of a rim having the side portion of its periphery raised above the intermediate portion with an elastic tire having a base portion of less width normally than the space between the sides of the rim and having a raised outer portion, and means to secure the rim and tire together, substantially as shown.

5. The combination of a tire formed with the intermediate portion of its periphery of less diameter than the sides, a strip of elastic material, as *d*, stretched from side to side, and a raised tire mounted outside the latter, substantially as shown.

6. The combination of a tire formed with annular side recesses with an overhanging wall with a tire mounted on said rim and provided with side parts *e*, whose edges are adapted to enter said recesses, and rods arranged in said recesses and embedded in the parts *e* therein, substantially as shown.

7. A hollow rim consisting of an outer tire-receiving part curved inwardly in cross-section, the side parts being bent downwardly, then backwardly substantially parallel with the upward curve, then carried downwardly again, and then formed in the central portion in a curve approximating the curve of the tire-receiving part, substantially as shown.

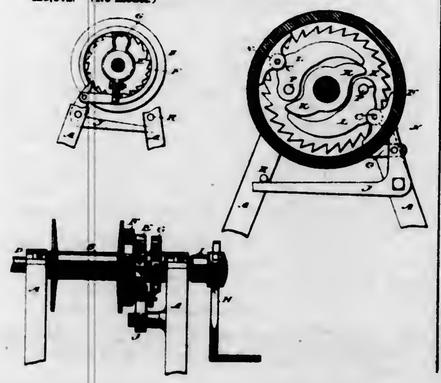
485,634. APPARATUS FOR EXTRACTING SULPHUR. LÉON LABOR, Paris, France. Filed July 11, 1891. Serial No. 399,258. (No model.) Patented in France May 6, 1890, No. 205,502.



Claim.—1. In combination, the tank having a conical bottom, the revolving receptacle therein having a corresponding bottom, the latter being placed above the former to provide a space between the said bottoms, the said receptacle having perforated sides, and the steam-pipe extending into the tank and opening into the inclined space C between the conical bottoms, said receptacle having inlet-passages 20 at the upper part thereof, substantially as described.

2. The described apparatus, consisting of a tank, a centrifugal receptacle within the same, a receiver having a steam-jacket, a jacketed discharge from the tank to the receiver, and a jacketed discharge from the receiver, said jackets of the discharge connections being connected with the jacket of the receiver and the valve extending through the jacket of the receiver-discharge, substantially as described.

485,635. OYSTER-DREDGE WINDLASS. JOHN C. LAKE and SIMON LAKE, Baltimore, Md., assignors to the J. C. Lake & Son Company, of Baltimore City, same place. Filed Apr. 18, 1892. Serial No. 429,072. (No model.)



Claim.—1. In an oyster-dredge windlass or winch, a spool or drum loosely mounted on a cam-fitted shaft, in combination with an intermediate carrier-wheel provided with locking-levers, and pawl J, adapted to engage with teeth of carrier-wheel, so arranged that the spool and shaft will be automatically locked together by frictional contact on a forward movement of the shaft and automatically released on a backward movement of said shaft, substantially as described.

2. A flanged winding-drum loosely mounted on a shaft, a toothed wheel, levers provided with wearing-shoes pivoted thereto, and cams for operating same, in combination with a pawl and a friction device for holding same from contact with teeth of wheel on the forward movement of shaft, substantially as shown and described.

3. In an oyster-dredge windlass, the combination, with a shaft, a drum loosely mounted thereon, a ratchet-wheel also loosely mounted on the shaft, and means for limiting the independent rotation thereof, of a pawl and a friction device bearing against a revoluble part of the machine, whereby the pawl is automatically lifted out of contact with the ratchet-wheel when the shaft is turned forward and allowed to come in contact on a backward movement of same.

4. In an oyster-dredge windlass, the combination, with a shaft and a flanged drum loosely mounted thereon, of a ratchet-wheel, a pawl to engage therewith, pivoted locking-levers provided with wearing-shoes adapted to engage the inner surface of the flange, and cams secured to the shaft for operating said levers, and thereby causing the ratchet-wheel and drum to revolve with the shaft when the same is turned forward, substantially as shown and described.

5. In an oyster-dredge windlass, the combination of a flanged spool or drum, a cam-fitted shaft, a ratchet-wheel or carrier-levers pivoted thereto and provided with wearing-shoes, and a frictional device for holding a pawl from contact with teeth of carrier and restraining forward movement of carrier, thereby causing locking-levers to act more positively, together with a handle holder secured to ends of shaft, provided with a radial slot to allow adjustment of handle, substantially as shown and described.

485,636. CLAY DRYING AND SIFTING APPARATUS. EBERIEL C. LITTLE, St. Louis, Mo., assignor of one-half to Milton F. Williams. Filed Mar. 27, 1891. Serial No. 386,663. (No model.)

Claim.—1. A clay drying and sifting apparatus having a central and perforated tubular shaft and a tubular framework supported on and revolvable by said shaft, the hollow arms *f* of said framework connecting with the said perforations in said shaft, and a conical wire frustum-shaped screen fitting upon and over said frame and fixed thereto, said tubular frame constituting the means by which the clay

is pulverized, dried, and shaken, substantially as shown and described.

2. In a clay drying and sifting apparatus, as described, the combination of a hollow shaft B, the tubular arms connected therewith, the pipes G, and the longitudinally-extended strips I I', having the wire screen between them and secured on the outside of the said pipes, substantially as set forth.

3. In an apparatus as described, the combination of a central tubular and perforated shaft having interiorly a central partition b^3 and a steam inlet and outlet, as set forth, with the hollow arms connected to said shaft and the perforated pipes secured to the outer ends of said arms, whereby an even and effectual circulation of steam throughout the entire structure is effected, all as set forth and described.

4. In an apparatus as described, the hollow arms connected at one end with the hollow perforated shaft and the other connected and combined with the hollow T's H, the frustum-shaped screen A, and the longitudinal strips I I', respectively, outside and inside of said screen and secured to and upon the outer ends of said arms, all as and for the purposes set forth.

485,637. COMBINED SOFA AND BED. CHARLES C. LOCKHARDT, Chicago, Ill. Filed Feb. 8, 1892. Serial No. 420,807. (No model.)

Claim.—1. A lounge comprising a base, a seat hinged at one edge to one side of said base, a back hinged at its lower edge to the opposite side of said base, arms pivoted to said back, and levers pivoted to the sides of said base and pivotally connected at one end with said arms and having their other ends free, the said free ends of said levers being located to engage said seat when said back and seat are extended.

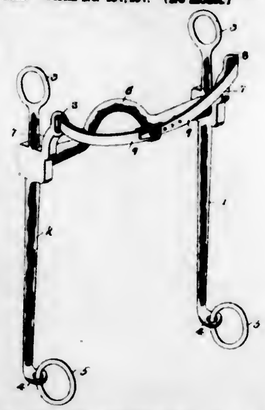
2. A lounge comprising a base, a seat hinged at one end to one side of said base, a back hinged at its lower edge to the opposite side of said base, arms pivoted to said back, and levers pivoted to the sides of said base and pivotally connected at one end with said arms, the free ends of said levers being forked and located to engage pins on said seat when said back and seat are extended.

3. A lounge comprising a base, a seat hinged at one edge to one side of said base, a back hinged at its lower edge to the opposite side of said base, legs or supports pivoted to the rear side of said back, arms pivoted to said back and said legs or supports, and levers pivoted to the sides of said base and pivotally connected with said arms, the connection between said legs or supports and levers being arranged practically as described, so that when the back and seat are extended said legs or supports will sustain said back and the ends of said levers will engage said seat.

4. A lounge comprising a base, a seat hinged at one edge to one side of said base, a back hinged at its lower edge to the opposite side of said base, legs or supports pivoted to the rear side of said back, arms pivoted to the said back, rods pivoted to said arms and to said legs or supports, and levers pivoted to the sides of said base and pivotally connected at one end to said arms, said parts being arranged practically as described, so that when the back and seat are extended said legs or supports will sustain said back and the free ends of said levers will engage said seat.

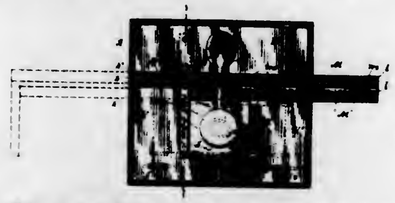
5. A lounge comprising a base, a seat hinged at one edge to one side of said base, a back hinged at its lower edge to the opposite side of said base, arms pivoted to said back, levers pivoted to said arms and to said base, and projections 30 on said base located to engage the rear edges of said levers when the back stands in an upright position.

485,638. BRIDLE-BIT. JACOB MADDOX, Jr., ALEXANDRIA, Mo. Filed June 20, 1892. Serial No. 437,407. (No model.)



Claim.—In a bridle-bit, the combination of a pair of side jaws of straight form, having rings at the upper and lower ends thereof and connected by a cross-bar adjacent to the upper ends of the same and provided with supplemental jaws extending outward at an oblique angle in parallel planes from said jaws in a plane at right angles to the said cross-bar and having upper looped ends and a curb connected to the upper looped ends of said supplemental jaws, substantially as described.

485,639. TIME-STAMP. WILLIAM H. MARTIN, Providence, R. I., assignor to The Accurate Time Stamp Company. Filed Feb. 5, 1891. Serial No. 380,291. (No model.)

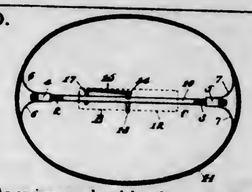


Claim.—1. The clock mechanism, a casing for inclosing the same, a top plate to said casing, having an opening formed therein, a stamp-plate held in line with said opening, and type-wheels held in said opening within the casing and operated by said clock mechanism, in combination with an adjustable gage arranged on the top plate parallel with the type-wheels and adapted to receive a regular sequence of graduated adjustments, substantially as and for the purposes set forth.

2. The casing A of the time-stamp, provided with a way parallel with the plane of the type-wheels and a gage held by said way and formed with a series of holes or detents, in combination with a stop attached to the casing for locking the gage at its various adjustments, substantially as described.

3. The angular gage having its longer member formed with an outer and inner flange, the outer flange having a regular series of holes or detents formed thereon, substantially as and for the purposes described.

485,640. HAT AND BRUSH THEREFOR. ALFRED MAURER, Oberndorf, Germany. Filed Mar. 16, 1892. Serial No. 425,102. (No model.)

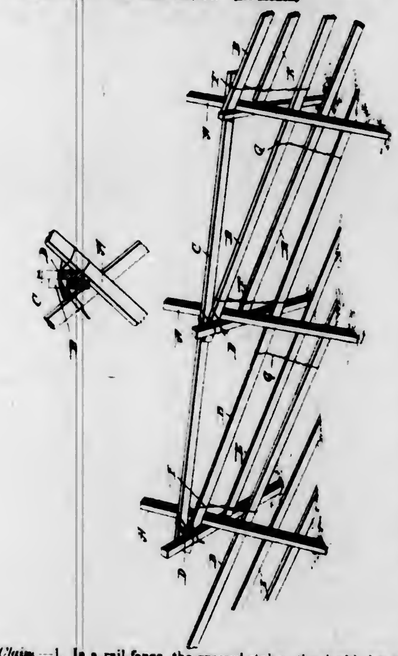


Claim.—1. As an improved article of manufacture, the herein-described brush-carrier for hats, it consisting of a bar comprising two parts in sliding engagement and each furnished with a hat-engaging terminal and means, substantially as described, for adjusting one of said rods longitudinally of the other, substantially as described.

2. The combination, with the brush-carrying rod provided with means for removably fixing the same in a hat, of a brush grooved to receive said rod and furnished with a rod-engaging catch, substantially as described.

3. The combination, with the brush-carrying rod fixable in a hat immediately adjacent to the crown thereof, of a brush having in the back thereof the rod-receiving space and a spring-catch on the brush normally holding the brush in place on the rod contiguous to the hat-crown, substantially as set forth.

485,641. FENCE. EVAN B. MAXWELL, Pinckneyville, Ill. Filed May 12, 1892. Serial No. 433,784. (No model.)



Claim.—1. In a rail fence, the crossed stakes, the double-length inclined rails, and the rider-rails supported thereon and suitably wired, and the intermediate inclined rails secured centrally of said double-length rails by suitable ties, substantially as and for the purpose described.

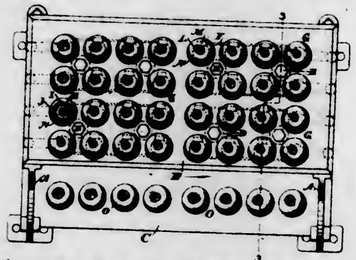
2. In a rail fence, the crossed stakes, the double-length inclined rails supported in the upper crotch thereof, the rider-rails being also supported in the upper crotch of said crossed stakes, the whole being wired by a single-length tie, and the inclined intermediate rails secured centrally of said double-length rails and adjacent the upper ends thereof by single ties F G, substantially as and for the purpose described.

485,642. BRUSH. WALTER MERLIN, Albany, assignor to the Empire Portable Purge Company, Leasingburg, N. Y. Filed June 3, 1892. Serial No. 435,498. (No model.)

Claim.—1. The combination, with a knot of bristles, of a head-band and handle formed integral with each other and provided with a transverse slot formed at the junction of the same and a cap provided with a laterally-extending lip engaging said slot and secured to the under side of the handle, substantially as shown and described.

2. The combination, with a knot of bristles, of a head-band and handle formed integral with each other and provided with a transverse slot formed at the junction of the same and a cap provided with a laterally-extending lip engaging said slot and secured to the under side of the handle by means of retaining-lips formed on said handle, substantially as shown and described.

485,648. SWITCHBOARD FOR ELECTRIC-LIGHT CIRCUITS. JOHN J. MOSES and CATHARINE M. HENRY, administratrix of Darwin A. Henry, deceased, New York, N. Y., assignors to the Thomson-Houston Electric Company, of Connecticut. Filed Apr. 9, 1890. Serial No. 347,174. (No model.)



Claim.—1. In an electric-light switchboard comprising two plates of insulating material supported at a distance apart, a set of wires or bars on each plate, the set on one plate crossing the set on the other plate at an angle, and connection-sockets inserted in each plate at the crossing-points, substantially as described.

2. An electric-light switchboard having a metallic frame supporting at a distance apart two plates of slate or similar non-combustible insulating material, and a set of wires or bars on each plate, crossing each other at an angle and provided with connection-sockets at the crossing-points.

3. An electric-light switchboard having two plates of slate or similar non-combustible insulating material with separating-pillars of porcelain or similar material, and a set of terminals for each plate with connection-sockets adapted to be connected by plugs reaching from one plate to another.

4. An electric-light switchboard having two sets of wires or bars crossing each other at an angle and provided with connection-sockets at the crossing-points, having insulating-caps whereby false connections are avoided.

5. In an electric-light switchboard, the combination, with two plates of slate or similar insulating material, of a set of wires or bars for each plate and connection-sockets on said wires at the crossing-points, the said sockets on the upper plate having insulating-caps.

6. In an electric-light switchboard, the combination, with two parallel separated plates, of a set of contact-sockets on each plate, each socket consisting of a tube extending through the plate and adapted to receive a contact-plate, and a series of insulating-caps for the contact-sockets of the upper plate.

7. In an electric-light switchboard, the combination, with a plate having a series of contact-sockets, of a separate insulating-cap for each for preventing false connections.

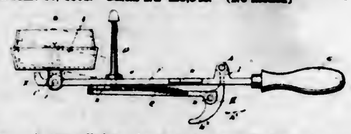
8. In an electric-light switchboard, the combination, with a plate of insulating material, of a connection-socket composed of a tube inserted in a hole in said plate, the inner end of the tube being split and the outer end having a cap of insulating material, substantially as described.

9. The combination, in an electric-light switchboard, of two plates of slate or similar non-combustible insulating material, separating-posts of porcelain or similar substance, a series of wires or rods on each plate, provided with connecting-sockets adapted to be connected by means of plugs, the said sockets on the upper plate being provided with insulation to prevent false contacts upon the insertion of the plugs.

10. In an electric-light switchboard, the combination, with two plates of slate or similar insulating material separated a distance apart,

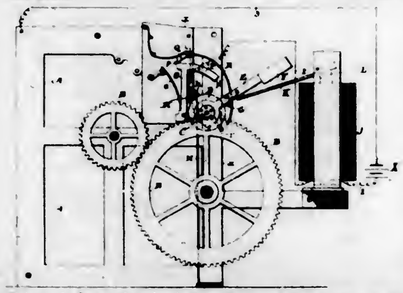
of corresponding sets of wires or bars having connection-sockets and a supplementary set of contact-sockets upon one of said plates, substantially as described.

485,644. FIRE-KINDLER. PIERRE MORRISSY, Montreal, Canada. Filed Mar. 17, 1892. Serial No. 425,348. (No model.)



Claim.—A stove-lighter having the metallic box A, provided with the projections B, piece C, lever F, having the forked projection I and handles G and H, lever K, connecting-rod L, spring Q, crank M, and T-shaped piece O, all substantially as described, and for the purposes set forth.

485,645. ELECTRIC CLOCK. JAMES D. MCAULIS and HARVEY B. FLEMING, Beaver Falls, Pa. Filed June 7, 1892. Serial No. 435,877. (No model.)



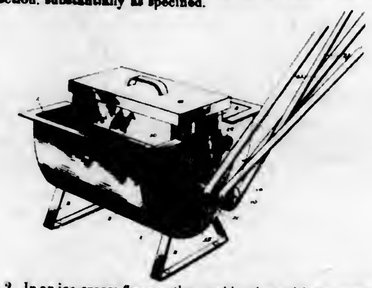
Claim.—1. In an electric clock, the combination, with a springless clock mechanism, of a ratchet-wheel fixedly secured to a shaft of the mechanism, a swinging weight-arm loosely mounted upon the same shaft and carrying a spring-actuated pawl engaging said ratchet-wheel and also having an eccentrically-disposed pin, a motion-retaining spring carrying a pawl at its upper free end normally engaging said ratchet-wheel, said spring being engaged by said pin while the weight-arm is falling, a circuit-closing device arranged adjacent to said arm and opened and closed at the upper and lower limits of movement of the same, respectively, an electro-magnet in circuit with said circuit-closer, and a lifting-arm controlled by said magnet and arranged under said weight-arm, substantially as set forth.

2. In an electric clock, the clock mechanism, a swinging weight-arm connected with and moving the mechanism and provided with a strike-arm and a strike-lug, a circuit-closing pin mounted in and insulated from the metallic frame of the mechanism, a spring-actuated circuit-closing arm mounted adjacent to said pin and provided with a notched shoulder and strike-arm engaged by said lug, a spring-actuated securing-pawl engaging said shoulder, a pawl-wire connected with said securing-pawl and engaged by the strike-arm of said weight-arm to disengage the pawl from said shoulder, an electro-magnet in circuit with said circuit-closing pin, and a lifting-arm controlled by said magnet and arranged under said weight-arm, substantially as set forth.

3. The combination, with the metallic frame, of the swinging weight-arm mounted within said frame and provided with a strike-arm and a strike-lug, a circuit-closing pin insulated from said frame, a spring-pressed circuit-closing arm mounted adjacent to said pin and provided with an upper-curved head having a notched shoulder at one end and extended into a strike-arm engaged by said strike-lug, a spring-pressed securing-pawl engaging said shoulder, a pawl-wire connected with said securing-pawl and engaged by the strike-arm of said weight-arm, and an electrically-controlled lifting device in circuit with said pin and arranged under said weight-arm, substantially as set forth.

485,646. ICE-CREAM FREEZER. JOHN E. NEWBOUSE, Magnetic Springs, Ohio. Filed May 7, 1892. Serial No. 432,178. (No model.)

Claim.—1. In an ice-cream freezer, the combination, with the outer casing and the inner freezing-chamber, the latter having a curved bottom and the end walls of the chamber and casing having vertical slots terminating at their lower ends in bearings, said chamber and casing combining to form an intermediate ice-space and provided with a discharge, of a hollow freezing-cylinder provided at one end with a hollow axle and at its opposite end with an axle, a frame comprising opposite side and end bars mounted on the axles and adapted to revolve, beaters extending from the frame, and means for rotating the frame in one direction and the cylinder in the opposite direction, substantially as specified.



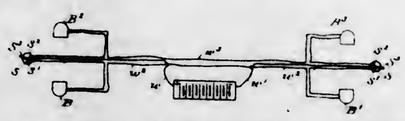
2. In an ice-cream freezer, the combination, with the outer casing and the inner freezing-chamber, the latter having a curved bottom and the end walls of the chamber and casing having vertical slots terminating at their lower ends in bearings, said chamber and casing combining to form an intermediate ice-space and provided with a discharge, of a hollow freezing cylinder provided at one end with a hollow axle and at its opposite end with an axle, a frame comprising opposite side and end bars, mounted on the axles, a sleeve extending from one end of the frame and receiving loosely the slotted axle, pulleys, and belts for driving them in opposite directions, substantially as specified.

3. In an ice-cream freezer, the combination, with the outer casing comprising opposite slotted end walls, a curved connecting bottom, an inner casing located in the outer casing and provided in the bottom with slotted end walls and with a discharge communicating with that of the inner casing, of a hollow cylinder having opposite axles extending from its ends, one of said axles being hollow, a beater-frame loosely mounted on the axles, means for operating the frame and cylinder in opposite directions, a tray surmounting the freezing-chamber and provided with a series of perforations, and a cover for the tray, substantially as specified.

4. In an ice-cream freezer, the combination, with the outer casing and the inner freezing-chamber, the same having a discharge and forming an intermediate ice-space, the end walls of the casing and chamber being slotted and having their edges connected, of a hollow freezing-cylinder having opposite axles, one of which is hollow, mounted in the slots, means for revolving the cylinder, and opposite blocks having their edges grooved to embrace the edges of the slots of the end walls and having their lower ends recessed to form half-bearings, substantially as specified.

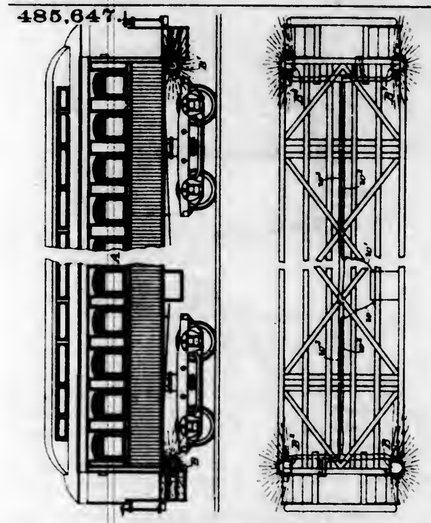
5. In an ice-cream freezer, the combination, with the outer casing the inner freezing-chamber, the same having a discharge, and a superimposed distributing device, the end walls of the casing and chamber being provided with bearings, of a hollow freezing-cylinder having axles, one of which is hollow, a rectangular frame, the end bars of which are provided with bearing-openings for the reception of the axles, means for rotating the cylinder and frame in opposite directions, and inclined blades or paddles, a series of which extend inwardly from one of the side bars of the frame and terminate adjacent to the surface of the cylinder, a second series of which extend upwardly from the remaining side bar of the frame and extend adjacent to the curved inner surface of the refrigerating-chamber, substantially as specified.

485,647. SYSTEM OF LIGHTING RAILWAY CARS AND PLATFORMS. DANTON H. NICHOLS, Boston, and CHARLES L. COTTON and CHARLES A. COTTON, Dedham, Mass. Filed Sept. 7, 1891. Serial No. 404,979. (No model.)

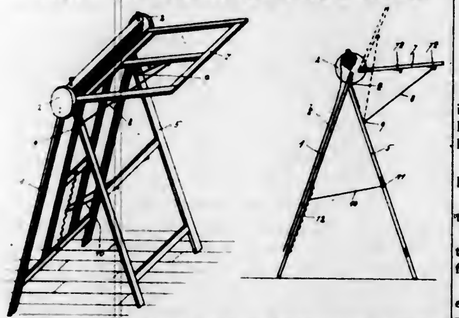


Claim.—The system of lighting railway-cars by two electric lamps at opposite ends but on the same side of a car, a circuit for the lamps, two switches in the circuit, one near one end and the other near the other end of the car, and reflectors, one for each lamp, each constructed and arranged to distribute the light along the steps and side of the car and outwardly and downwardly, all substantially as described.

485,647.



485,648. WALL-PAPER EXHIBITOR. AUGUSTUS F. PAYNE, Hamilton, N. Y. Filed May 16, 1892. Serial No. 433,077. (No model.)



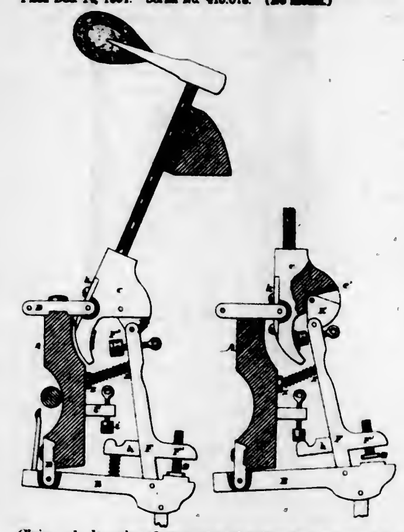
Claim.—1. The combination, in a wall-paper exibitor, of the main frame, a supporting-frame hinged at its upper end to the main frame, a rack 12, secured on the main frame, and a swinging brace hinged to the supporting-frame and surrounding and running on the rack 12, substantially as set forth.

2. The combination, in a paper-exhibitor, of the main frame having circular heads 2 2, having vertical slots, a removable clamp 3, having tongues or tenons on the ends adapted to be received in the slots, a hinged leaf 7, the supporting-frame hinged to the main frame, a rack 12, secured on the main frame, and a V-shaped brace hinged at its forked end on the supporting-frame and having its pointed end running on the rack 12, substantially as set forth.

485,649. VEHICLE-SPRING. CORNELIUS R. PEARL, North Bangor, N. Y. Filed Feb 13, 1892. Serial No. 421,421. (No model.)

Claim.—In a vehicle, the combination, with a body and a running-gear, of the longitudinally-disposed leaf-springs secured to the body and provided at their ends with bearing-eyes, the transversely-disposed rods journaled in the eyes and provided with crank-bends and having at their ends arms secured to the running-gear, and the conical spirally-coiled springs secured to the body and interposed between the same and the crank-bends and connected to the latter, substantially as described.

485,650. PIANO-ACTION. JOSEPH R. PERRY, Wilkes Barre, Pa. Filed Dec. 14, 1891. Serial No. 415,073. (No model.)



Claim.—1. In a pianoforte-action, the vibrating jack-lever F, having arms F' and A, said lever F pivoted to the actuating-bar B and having regulating-screw *g*, and springs acting against the said jack-lever, in the manner shown and to produce the results specified

2. In a pianoforte-action, the vibrating disk E, pivoted to the hammer-butt C, in the manner and for the purposes specified.

3. In a pianoforte-action, the vibrating disk E, combined with the jack-lever F, in the manner and for the purpose specified.

4. In a pianoforte-action, the vibrating disk E, combined with the actuating-bar B by means of the jack-lever F, in the manner and for the purpose specified.

5. In a pianoforte-action, the metal strap *k*, so formed as to fit an extended portion of the hammer-butt C, passing below its pivot, said portion suitably curved and the strap *k* secured thereto, in the manner and for the purposes specified.

6. In a pianoforte-action, the hammer-butt C, having an extended part below its pivot and flange-support suitably routed to receive the vibrating disk E and its packing *c'*, in the manner and for the purpose named.

7. In a pianoforte-action, the hammer-butt C, having a part extended below its pivot suitably curved and shaped to form a bearing to receive the buffer of the jack-lever F or such check-damper as its equivalent thereto, the said hammer-butt being routed to receive the vibrating disk E and packed in said routing, and the metal strap *k*, formed to fit the said extended portion of the hammer-butt and rest upon and against its pivot, the same being secured by means of a screw on both sides of said pivot, for the purpose described.

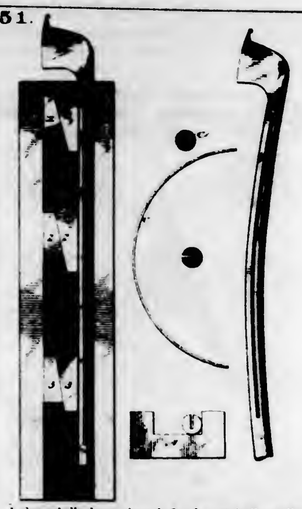
8. In a pianoforte-action, a jack-lever F, pivoted to the actuating-bar B and having arms F' and A, and a spring or springs operating against said jack-lever, a regulating-screw in arm F' and pivoted to the vibrating disk E, said disk E pivoted to the hammer-butt C, in the manner and for the purposes described.

9. In a pianoforte-action, the vibrating jack-lever F, pivoted to the actuating-bar B, having arms F' and A and reacting springs, in combination with the strip *i'* and buffer *i*, for the purpose specified.

10. In a pianoforte-action, the longitudinal strip or bar M, formed with a groove, said groove cut in cross-sections at suitable spaces to correspond with the keys and packed with cloth or other materials, said groove and cross-sections to receive the wire loops N at their right-angle bends, the said loops secured to the split pitman by their other ends, the strip or bar M, secured to the action-rail L, all in the manner and for the purposes specified.

485,651. VIOLIN-BOW. JOSEPH R. PERRY, Wilkes-Barré, Pa. Filed June 15, 1892. Serial No. 436,862. (No model.)

485,651.



Claim.—1. In a violin-bow, the reinforcing-strip C, applied thereto, for the purpose named.

2. In a violin-bow, the strip C, inserted within the groove *c'*, in the manner and for the purpose specified.

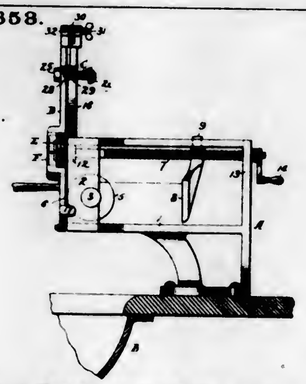
3. The violin-bow suitably grooved, having a flat strip of steel or other suitable material C inserted therein, the remaining portion of said groove fitted by a wooden veneer inclosing the steel or other strip C within the body of the stick laterally, in the manner and for the purpose specified.

485,652. CAR-SPRING. LOUIS PYDEOT, Boston, Mass. Filed May 23, 1892. Serial No. 434,044. (No model.)

Claim.—A spring comprising a spirally-wound rod, that portion of the rod forming the lower portion of the spring being of one-nine throughout and wound with its interior and exterior diameters, respectively, equal throughout, and that portion of the rod forming the upper portion of the spring being tapered from its point of connection with the lower portion continuously throughout, the interior diameter of the spiral coils of both upper and lower portions being uniform throughout the entire spring and the exterior diameter of the lower portion being greater than that of the upper portion.

485,653. TOILET-SOAP SERVER. HARRY J. PORTER, Hilburn, N. Y. Filed July 29, 1891. Serial No. 401,099. (No model.)

485,658.



Claim.—1. The combination of the frame A, a soap-feeder, and a reciprocating frame D, and connections for operating the feeder at each movement of the frame D, and a knife on said frame having two cutting-edges, substantially as set forth.

2. The combination of a stationary frame A, soap-feeder, and knife-carrying frame D, and adjustable bearing 30, arranged above the pivot of the frame D, substantially as set forth.

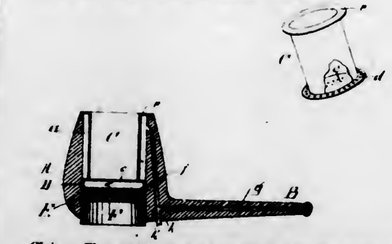
3. The combination of the frame A, feeder, knife-frame D, and pin pivoting the frame D to the frame A and longitudinally movable to permit the frame D to slide forward, and a locking device for the pin, substantially as described.

4. The knife-frame D, pivoted to the frame A to swing laterally and movable to and from the said frame to a limited extent, in combination with a locking device for normally restricting said movement, substantially as set forth.

5. The combination of the frame A, swinging frame D, and knife, feed-plate 8, and screw-shaft carrying said plate and having a plain forward end, for the purpose set forth.

6. The combination, with the frames A and D, of the feed-plate 8, feed-screw 7, and ratchet-wheel E, having two circular racks, and a pawl F, pivoted to the frame D and having lugs arranged to engage the teeth of said racks, substantially as described.

485,654. TOBACCO-PIPE. WILBUR M. PRATT, New York, N. Y. Filed May 16, 1892. Serial No. 433,086. (No model.)

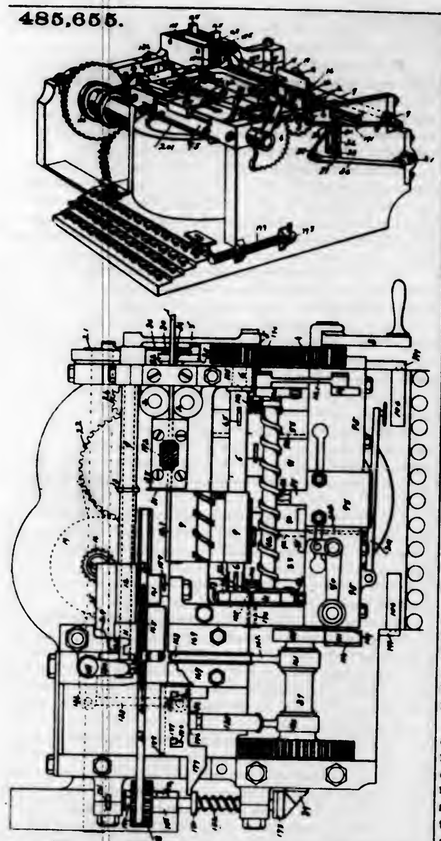


Claim.—The combination of the bowl A, having located to one side thereof a stem B, provided with a central bore *g*, the bore *h*, located within the bowl, the cup C, located within the bowl and provided with the disk *c*, having a perforated flange, the smoke-chamber *a*, located between the inner periphery of the bowl and the outer periphery of the cup, the smoke-chamber *a'*, located below the cup, the disk *f*, located above the chamber E, the ring D between the disks *e* and *f*, the chamber E below the perforated disk *f*, and the stopper F at the bottom or lower end of the bowl, all arranged substantially as and for the purpose specified.

485,655. TYPE-LINE-FORMING MACHINE. LOUIS RAMSEN and ALEXANDER W. MAYER, of Akron, Ohio, assignors, by direct and mesne assignments, to Charles W. Seiberling, trustee, same place. Filed Sept. 3, 1891. Serial No. 404,612. (No model.)

Claim.—1. In a type-forming machine, a composing-stick or holder adapted to receive a strip of compressible and non-elastic material, keys representing characters, mechanism for impressing said characters one by one upon said material, and means for automatically justifying the formed line subsequent to the forming of characters thereon, substantially as set forth.

485,655.



2. In a type-forming machine, character-keys and connections therewith adapted to move character-dies adjacent to a piece of compressible non-elastic material, means for impressing said dies upon said material, and means for justifying the impression after the same has been taken, substantially as set forth.

3. In a type-forming machine, mechanism for forming characters upon a compressible non-elastic material and means for elongating said material subsequent to the forming of characters thereon, substantially as set forth.

4. In a type-forming machine, mechanism for forming characters—such as words and the like—upon suitable compressible non-elastic material, means for forming spaces between such words, and suitable mechanism adapted to enlarge said spaces, if desired, subsequent to the forming of said characters, substantially as set forth.

5. In a type-forming machine, mechanism for forming characters—such as words and the like—upon compressible non-elastic material, suitable means for spacing said words, and mechanism for elongating said material at said spaces, substantially as set forth.

6. In a type-forming machine, mechanism for forming characters—such as words and the like—upon impressible material and mechanism adapted to notch said material either before or after a word formed or to be formed thereon, so as to make portions of said material not occupied by any word or character blank, substantially as set forth.

7. In a type-forming machine, type-forming dies, mechanism for operating same against suitable impressible material, space-forming mechanism adapted to notch said material between words or the like, and a suitable actuating mechanism adapted to likewise notch the body of said material when the width of said notch exceeds an ordinary space, substantially as set forth.

8. In a type-forming machine, mechanism for forming characters on suitable material, comprising a compressible and non-elastic blank and mechanism adapted to compress said blank to elongate the same, substantially as set forth.

9. In a type-forming machine, mechanism comprising periodically-actuated feed-rollers adapted to feed intermittently line-blanks of impressible material upon a holder, a pivotal support for said holder, and means adapted to vibrate said holder upon its pivotal support, and thereby deliver the same adjacent to an impression-orifice, mechanism for impressing said line with characters, as words and the like, and means for variably feeding said line over said orifice, and other means for delivering said holder, with its formed line, contiguous to a justifying mechanism, substantially as set forth.

10. In type-forming machines, a vibrating holder or carriage, a line of impressible material thereon, and means for vibrating said carriage, thereby delivering the line, first, adjacent to character-dies, and, second, to a justifying mechanism, substantially as set forth.

11. A carriage or composition-stick adapted to vibrate upon its support, means for feeding thereon a blank of impressible material, and means for moving the said carriage adjacent or contiguous to an orifice or opening, feeding mechanism in operative relation to said carriage, character-dies and key-operating mechanism therefor, means in connection with said key mechanism adapted to variably actuate the carriage-feeding device and subsequently moving the said character-dies consecutively into the said orifice, and means for impressing the same upon said blank, substantially as set forth.

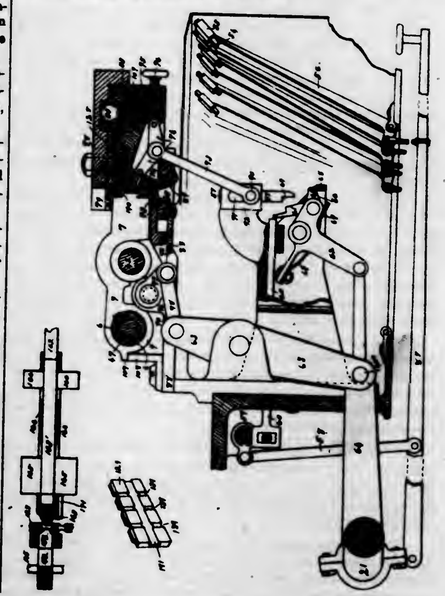
12. A continuous length of impressible material, feed-rollers periodically operative, thereby adapted to feed said material intermittently upon a holder, and mechanism set in motion by the movement of said material adapted to sever the same adjacent to the holder therefor, substantially as set forth.

13. A continuous band of impressible material provided with a groove, a carriage or composition-stick and a projection upon the same, and an intermittent feeding device adapted to feed the said material upon the said projection, substantially as set forth.

14. A suitable carrier or composing-stick, a dovetail projection thereon, impressible blanks having a dovetail groove thereon, and an intermittent feeding device adapted to feed said blanks upon the projection of said carrier, substantially as set forth.

15. A carrier or composing-stick supporting a line of impressible material having formed characters thereon, means for vibrating said carrier, thereby delivering the same contiguous to justifying and feeding devices, a continuous band of blank impressible material, and means for feeding the same upon the carrier, thereby delivering the formed line to the adjacent justifying mechanism, substantially as set forth.

16. Character-forming devices, feeding and justifying mechanism, a carrier supporting a line of impressible material, a pivotal support for said carrier, and means whereby said carrier is vibrated, thereby delivering the said line from the character-formers to the feeding mechanism, in combination with means for periodically feeding upon said carrier a new blank from a continuous band, thereby delivering the formed line to the justifying mechanism, and other means set in action by the movement of said band adapted to sever the same into required lengths, substantially as set forth.



17. In a type-forming machine, a suitable blank and means for pressing successive character-dies upon one of its edges to form words upon said blank, spacing mechanism adapted to separate the words of the composition, and means adjacent to the opposite edge of said blank adapted to notch the same in duplication and in opposite relation to the respective word-spacing, substantially as set forth.

18. An impressed blank comprising the line of composition upon one edge thereof and spaces separating the words of said composition, niches or notches directly opposite the spaces upon the opposite edge of said blank, justifying-compressors and means for operating the same, a projecting toe or the like from one of the said compressors adapted to engage the impressed blank upon its under side, means for feeding the blank between such compressors, and mechanism for moving the projecting toe and its compressor into the notches of the said line, thereby making operative the justifying-compressor to compress the blank opposite each of the spaces of the said blank, substantially as set forth.

19. An impressed blank comprising a line of composition upon one edge thereof, spaces separating the words of said composition, and means for elongating or compressing the said line opposite said spaces, thus justifying the same, substantially as described.

20. In a type-forming machine, mechanism for forming characters upon a compressible non-elastic material and means adapted to change the form of said material without disturbing the characters thereof, thereby justifying the same subsequent to the forming of characters thereon, substantially as described.

21. In a type-forming machine, mechanism for forming characters upon a compressible non-elastic material and means for justifying the same subsequent to the forming of characters, substantially as described.

22. In a type-forming machine, a justifying-chamber and means adapted to move into the same a formed line of composition, justifying-compressors contiguous to said chamber, and means in connection therewith adapted to automatically justify said line, substantially as described.

23. In a type-forming machine, a justifying mechanism comprising justifying-compressors contiguous to the formed line and operating means in operative connection with the line, said means being adapted to make said compressors operative or inoperative, as directed by the varying lengths of line to be justified, substantially as described.

24. In a type-forming machine, a justifying mechanism comprising suitable dies contiguous thereto and adapted to justify a line of composition and means in connection therewith adapted to make said dies operative upon said line in a variable manner in accordance with the varying length of the lines to be justified, substantially as described.

25. A formed line of composition comprising characters, as words and the like, upon its one edge and suitable notches on its opposite edge, said notches occurring at the end of each word of said composition, substantially as described.

26. A formed line of composition comprising characters and the like upon its one edge and suitable notches on its opposite edge, said notches occurring at the end of each word of said composition, and a justifying mechanism regulated by said notches, substantially as set forth.

27. A formed line of composition upon a compressible non-elastic material, comprising characters, as words and the like, thereon, spaces between said words of a minimum width, and means adapted to increase this width, and thus justify the same, substantially as described.

28. A compressible and non-elastic formed line of composition comprising characters, as words and the like, thereon, spaces between said words of a maximum width, and means adapted to decrease this width, and thus justify the same, substantially as described.

29. A formed line of composition upon a compressible and non-elastic material, comprising characters, as words and the like, thereon, spaces between said words, and means whereby said spaces may be increased or decreased to justify the line, substantially as described.

30. A formed line of composition upon compressible non-elastic material, comprising characters thereon, said line being of a length dissimilar to that of a newspaper-column width or other arbitrary size, and means adapted to justify said line, so as to be of a similar length as a predetermined size, by lengthening or shortening the same, substantially as described.

31. In a type-forming machine, a formed line of composition upon a suitable blank, the length of said blank being greater than that of the composition, means for severing off said blank, and mechanism for subsequently lengthening said line to a predetermined size, substantially as set forth.

32. In a type-forming machine, a justifying mechanism comprising suitable compressors adapted to compress formed lines of composition and means in operative relation therewith adapted to make said compressors operative in a variable manner, according to the varying number of words or the like upon said lines and the varying length of the lines themselves, substantially as set forth.

33. In a type-forming machine, a justifying mechanism, suitable compressors adapted to justify formed lines of composition comprising words and the like, mechanism in operative relation therewith adapted to variably cause said compressors to become operative upon said lines to compress the same according to the variation in the length and number of spaces of said lines, substantially as set forth.

34. In a type-forming machine, a justifying mechanism comprising suitable compressors adapted to justify lines of composition and mechanism in connection therewith adapted to vary the operation of said compressors in proportion to the varying slack of said lines and the variable number of words or spaces thereon, substantially as set forth.

35. In a type-forming machine, key-operating mechanism in operative connection with suitable character-dies, a feeding device and a key-actuating mechanism therefor, and suitable power connections adapted to impress suitable dies of said character devices upon a strip of compressible and non-elastic material, carried upon said feeding device when so directed by the key-operating mechanism, substantially as set forth.

36. In a type-forming machine, justifying mechanism and means in operative connection therewith adapted to variably regulate suitable justifying-compressors, a movable support or plate upon the lower side of said justifying mechanism, and mechanism in connection therewith adapted upon the movement of said plate to retract or withdraw the justifying-compressor-regulating mechanism, substantially as set forth.

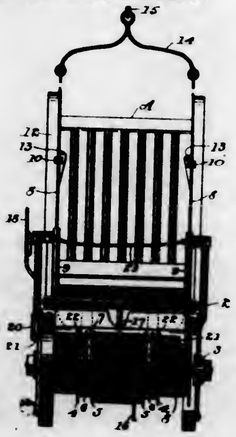
37. In a type-forming machine, a feeding device, a carrier, a line of impressible material therein, a severing-knife, and mechanism in operative relative thereto adapted to cause said severing-knife to become operative by the movement in one direction of the line of material and to cause the same to become inoperative by a reverse movement of the feed device, substantially as set forth.

38. In a type-forming machine, a stick or carrier adapted to detachably hold a blank of suitable material, a feed-screw adapted to operate or move said carrier in one direction by the movement of a suitable key-operated mechanism, suitable power connections in operative relation with the said screw, and means in connection therewith adapted to move the said feed-screw in an opposite direction, substantially as set forth.

39. In a type-forming machine, a carrier or carriage, a pivotal support therefor, feeding mechanism adapted to feed a blank line of impressible material upon said carrier, means for vibrating said carrier upon its support, a carriage-feed mechanism to which the carrier is thereby delivered, power connections for operating said feed mechanism in one direction, a key for connecting said power feed mechanism, whereby said carriage is automatically moved in one direction, and keys for moving said carriage in the opposite direction, substantially as set forth.

40. In a type-forming machine, feed-rollers, means for periodically actuating the same, impressible blanks, each having a dovetail groove, a holder, means for feeding said blank upon said holder, and means comprising a dovetail formation thereon for retaining the blanks, substantially as set forth.

485,656. FIRE-ESCAPE. ERDMANN RANK, St. Paul, Minn. Filed May 31, 1892. Serial No. 434,880. (No model.)



Claim.—1. The combination, with the chair having a hinged seat, of a drum journaled underneath said seat, the ropes wound upon said drum and adapted to be carried upward and connected to a supporting device, the hoisting-rope wound oppositely upon said drum, brakes fixed to said chair-seat and bearing upon said drum, the spring for applying said brakes, and means for releasing said brakes at will, substantially as described

2. The combination, with the chair having a hinged seat, of the drum journaled underneath the same, having circumferential ribs subdividing it into a series of annular spaces, the supporting-ropes wound thereon, the guides for said ropes, means for attaching the same to a suitable support, the hoisting-rope wound oppositely upon said drum, the brake-blocks bearing upon said drum, the spring for holding the brakes normally in contact with said drum, and means for releasing said brakes, substantially as described.

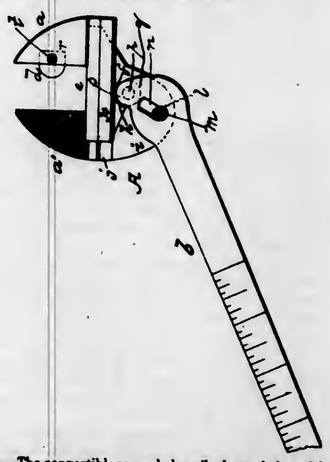
3. The combination, with the chair having a hinged seat, of the drum journaled underneath the same, the supporting-ropes wound upon said drum and carried through suitable guides to support the device, the hoisting-rope wound oppositely upon said drum, the brake-blocks carried by said chair-seat, and means independent of the weight of the seat and occupant for automatically applying the same, the pressure being increased by the weight of the occupant, and means for releasing said brakes, substantially as described.

4. The combination, with the chair A, having the hinged seat, of the drum journaled transversely underneath the seat, the supporting-ropes wound near the ends of said drum, the guides for said ropes, means for securing said ropes to a suitable support, the hoisting-rope wound oppositely upon said drum, the spring-actuated brakes carried by said seat adapted to bear upon said drum, the hand-lever, and the means interposed between the same and said brakes, whereby the brakes may be released from said drum at will, substantially as described.

5. The combination, with the carrying device, of the suspending and hoisting ropes wound oppositely thereon, the automatic brakes actin independently of the weight of the seat and occupant, and the means for releasing said brakes, substantially as described.

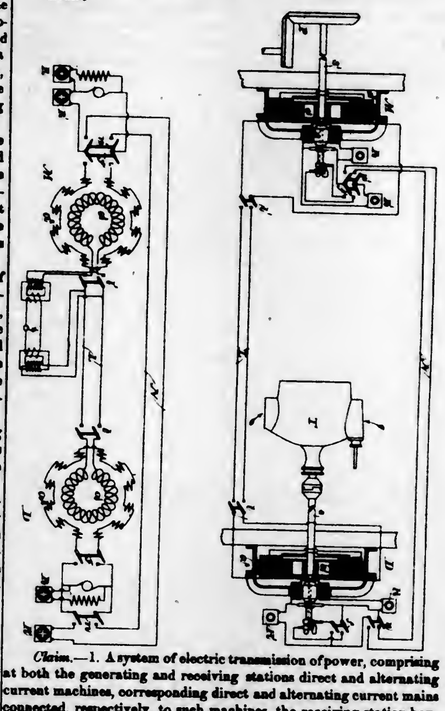
6. The combination, with the carrying device, of the drum journaled thereon, the suspending and hoisting ropes wound oppositely upon said drum, automatic means independent of the weight of the seat and occupant for applying the brakes to said drum, means actuated by the weight of the occupant for increasing proportionately the pressure of the brakes, and means for releasing said brakes, substantially as described.

485,657. WRENCH. OSCAR R. H. H. REICHLING, Marion, Ind. Filed Feb. 2, 1892. Serial No. 420,111. (No model.)



Claim.—The convertible wrench described, consisting of the movable jaw *a*, having the slot *r*, the inverted-T-shaped sliding bar *e*, and a shouldered transversely-perforated lug or projection *f*, and a female-screw-threaded perforation *s*, intersecting the slot in the sliding jaw, and a tightening-screw *t*, the jaw *a'*, having the side flanges transversely perforated and pin therefor and provided with the horizontal slideways or grooves *j j*, the handle constructed with the oblique slot and with the shouldered extension or lug projection *e*, provided with the pin *p* for engagement with the perforation in the shouldered lug of the sliding bar *e* of the jaw *a*, and the graduating-marks on the handle, whereby the tool may be used as a pipe-cutter, a pipe-turner, or tongs, a wrench, and a rule for measuring, all as shown and for the purposes set forth.

485,658. ELECTRIC TRANSMISSION OF POWER. EDWIN W. RICE, Jr., Lynn, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Sept. 18, 1891. Serial No. 406,118. (No model.)



Claim.—1. A system of electric transmission of power, comprising at both the generating and receiving stations direct and alternating current machines, corresponding direct and alternating current mains connected, respectively, to such machines, the receiving-station having its direct and alternating machines mechanically connected and having a connection separable from the direct-current mains and leading from the direct-current machine to the field of the alternating-current machine.

2. The combination of an alternating-current motor connected to alternating-current-supply mains, a direct-current motor connected to direct-current-supply mains and mechanically connected to said alternating-current motor, a connection from such direct-current motor to the field-magnet of the alternating-current motor, and a circuit-breaking switch adapted to open the connection from the direct-current motor to the direct-current-supply mains without disturbing the connection between the said direct motor and the field-magnet of the alternating motor.

3. The combination of an alternating-current motor, connections from such motor to alternating-current-supply mains, a direct-current motor or dynamo mechanically connected to such alternating-current motor, connections therefrom to direct-current-supply mains, a circuit-breaking switch in such direct-current connections, and a connection independent of such switch from the direct-current motor or dynamo to the field-magnet of the alternating motor.

4. The combination, with alternating and direct current supply mains, of an alternating motor and a direct-current motor or dynamo respectively connected to such mains and mechanically connected together, a switch in the connection for the direct-current-supply mains, and a connection independent of such switch from the direct-current motor or dynamo to the field-magnet of the alternating motor.

485,659. ELECTRIC TRANSMISSION OF POWER. EDWIN W. RICE, Jr., Lynn, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Sept. 18, 1891. Serial No. 406,119. (No model.)

Claim.—1. In a system of electric-power transmission, the combination of generating and receiving stations, each having a direct-current machine and an alternate-current machine, supply connections

between the machines of the two stations, connections at the receiving-station between the direct-current machine and the field of the alternating machine, and switching devices at such station, one in the connections from the direct-current machine to the supply-line and another in the connections from said direct-current machine to the field-magnet of the alternating machine.

2. An alternating-current motor having connections from its armature to a source of alternating-current supply, in combination with a direct-current machine having connections, including switching devices, to a source of direct-current supply, and connections, including other switching devices, to the field-magnet of the alternating motor, the said machines being mechanically connected together.

3. An alternate-current motor having an alternating-current armature and a direct-current field-magnet, in combination with a direct-current machine mechanically connected with the alternating motor and having connections with the field-magnet of said motor, a switch controlling said connections, direct-current-supply lines connected with the direct-current machine, and a switch adapted to open and close said connection without disturbing the connection of the direct-current machine and the motor.

4. A system of electric-power transmission, comprising a set of mains, connections from such mains to alternating-current and direct-current generators, connections from such mains to an alternate-current motor and a direct-current motor, such motors being mechanically connected together, and switching devices in such connections, whereby the same set of mains may connect together the two alternating machines or may connect together the two direct-current machines.

5. The combination of a set of supply-mains, alternating and direct current generators, and means for connecting either of them to such mains, an alternating-current motor having connections from its armature to such mains and having a direct-current field-magnet, and a direct-current machine mechanically connected to such alternating-current motor and having connections, including switches, to such mains and to said field-magnet.

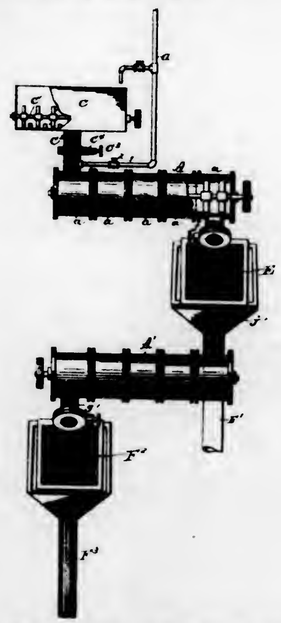
6. The combination of a set of supply-mains, alternating and direct current generators, and means for connecting either of them to such mains, an alternating-current motor having connections through switching devices from its armature to such mains and having a direct-current field-magnet, and a direct-current machine mechanically connected to such alternating motor and having connections, including switches, to such mains and to said field-magnet.

7. The combination, with a set of supply-mains, of an alternating-current generator having connections through switching devices to such mains and having a direct-current field-magnet and a direct-current generator having connections including switching devices and leading, respectively, to such mains and to said field-magnet.

8. The combination of a set of supply-mains, alternating and direct current generators, and means for connecting either of them to such mains, an alternating-current motor having connections from its armature to such mains and having a direct-current field-magnet and a direct-current machine mechanically connected to such alternating-current motor and having connections including switches to such mains and to said field-magnet, and a speed-responsive device actuated by such motors and controlling such switches.

9. The combination of a set of supply-mains, alternating and direct current generators, connections, including switches, from such generators to the mains, an electro-magnetic device in one of such connections and controlling said switches, and distant circuit-breaking devices for such mains.

485,660. PROCESS OF AND APPARATUS FOR WASHING AND DRYING PHOSPHATE ROCK, &c. Reuen R. Ross, Kissimmee, Fla. Filed Apr. 26, 1891. Serial No. 390,422. (No model.)



Claim.—1. The combination of a cylinder provided with segmental stops or flanges substantially the shape of segments of a circle, these flanges extending approximately at right angles to the axis of the cylinder and rotated around the interior in a spiral arrangement, the cylinder also provided with a series of flanges extending parallel with the axis, and a shaft arranged to rotate in the cylinder and furnished with beaters adapted to rotate between the flanges, substantially as set forth.

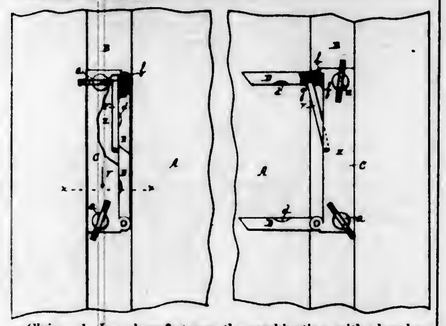
2. The combination of a cylinder comprising sections secured together, said cylinder provided with segmental stops or flanges arranged spirally in the interior of the cylinder and approximately at right angles to the axis of the cylinder and having flanges extending parallel with the axis, substantially as set forth.

3. The combination, with washing-cylinders arranged one above another and hoppers on each of the cylinders, of screens extending from the discharge of one cylinder to the hopper of the cylinder next below and water pipes discharging into the hoppers and over the screens, substantially as set forth.

4. The combination, with washing-cylinders and screens, said parts arranged diagonally, of a drier and means for conducting the material from the washers to the drier, whereby the process of washing, screening, and drying is rendered successive and continuous, substantially as set forth.

5. The combination, with two or more washing-cylinders and screens arranged diagonally and the cylinders so constructed that adjacent ones discharge at opposite ends and the screens located at corresponding positions to receive the material as it is discharged from the cylinders, of pipes leading from the screens and pipes discharging into the screens, substantially as set forth.

485,661. DOOR-SECURER. Joseph B. Boyer, Lancaster, Pa., assignor to Milton S. Boyer, same place. Filed July 30, 1892. Serial No. 441,849. (No model.)



Claim.—1. In a door-fastener, the combination, with a box having an open side, of a locking-lever hinged to said open side and adapted to close the same and a removable device for securing the fastener in place, substantially as and for the purpose specified.

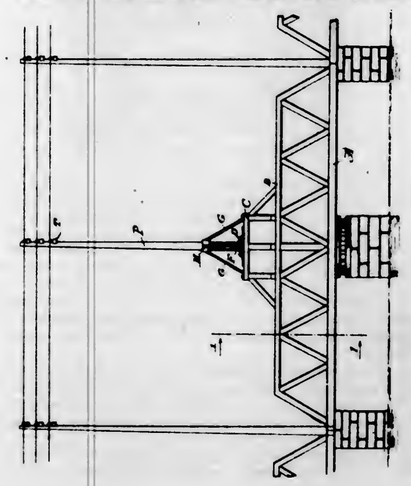
2. In a door-fastener, the combination, with a box having an open side, of a locking-lever hinged at each end of said open side of the box, the locking-levers being adapted to fold toward each other and close said open side and having their meeting ends beveled and constructed to lap each other, substantially as and for the purpose specified.

3. In a door-fastener, the combination, with a box having an open side, of a locking-lever hinged at each end of said open side of the box, the locking-levers being adapted to fold toward each other and close said open side, and a device for retaining the upper locking-lever in a horizontal position when opened out, substantially as and for the purpose specified.

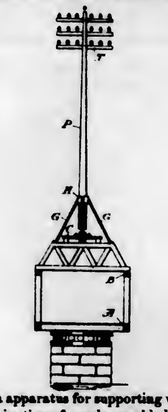
4. In a door-fastener, the combination, with a box having an open side, of a locking-lever hinged at each end of said open side of the box, the locking-levers being adapted to fold toward each other and close said open side, and a strut pivoted in the box and having its free end adapted to engage a shoulder in the upper locking-lever when opened out in a horizontal position, substantially as and for the purpose specified.

5. In a door-fastener, the combination, with a box having an open side and openings through opposite sides, of locking-levers hinged at the ends of said open side, adapted to fold together and close the same, the meeting ends of the locking-levers being beveled and constructed to lap each other, a pivoted strut constructed to hold the upper locking-lever in a horizontal position when opened out, and screws adapted to engage said openings through the opposite sides of the box and hold the fastener in place, substantially as and for the purpose specified.

485,662. WIRE-SUPPORT OR DRAW-BRIDGE. John B. Shaw, Albany, N. Y. Filed June 22, 1892. Serial No. 437,673. (No model.)



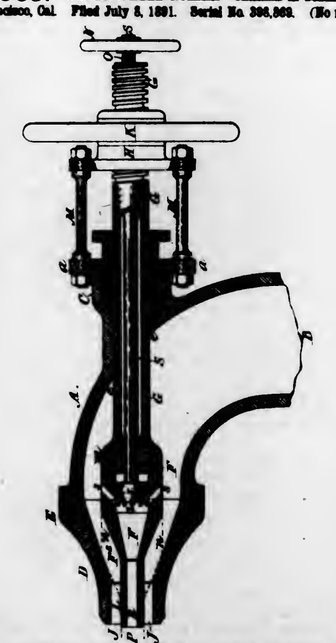
485,662.



Claim.—1. In an apparatus for supporting wires over a draw of a drawbridge, the combination of a pole provided at its lower end with a pivot, a suitable bearing for said pivot, supports for said pole, with wires connected with the pole near the top, substantially as described, and for the purpose set forth.

2. In an apparatus for supporting wires over the draw of a drawbridge, the combination of a pole, a pivot attached to the lower end of said pole, a collar placed about said pole, a bearing in which said pivot is placed, with arms connecting said collar with suitable supports, substantially as described, and for the purpose set forth.

485,663. WATER-WHEEL NOZZLE. Charles A. Scharpf, San Francisco, Cal. Filed July 8, 1891. Serial No. 398,869. (No model.)



Claim.—1. In a water-wheel nozzle, the adjustable internal core-piece or nozzle F, with a parallel or nearly-parallel section L and a conical section F^3, made hollow, to discharge a central jet and provided with inlets *s s* and a valve I, so arranged as to discharge a central stream and at the same time by adjustment of this nozzle control the amount of water passing at the orifice J J of the main nozzle, substantially in the manner and for the purposes described.

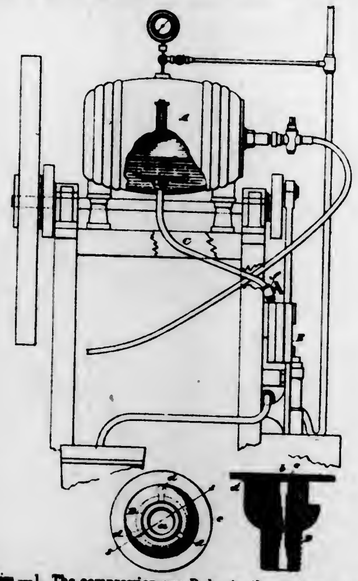
2. In a water-wheel nozzle, as herein described, the main nozzle D, the internal regulating-nozzle F, hollow screw-stem G, valve I, and control screw-stem S, so arranged as to discharge and control an annular jet from the main nozzle D and a central or core jet from the

inner nozzle F, substantially in the manner and for the purposes described.

485,664. BELT-REEL. CHARLES W. SCHUBERT, Cottonwood, Iowa. Filed Nov. 27, 1891. Serial No. 413,231. (No model.)

Claim.—In a belt-reel, the combination, with a frame A, formed with bearings, of a roller longitudinally recessed and provided with end disks, a removable pin 7, a box B, secured to the frame A, and a cover hinged to the frame, substantially as set forth.

485,665. PROCESS OF AND APPARATUS FOR AERATING LIQUIDS. CARL H. SCHULTZ, New York, N. Y. Filed Feb. 13, 1892. Serial No. 421,291. (No model.)



Claim.—1. The compression-cup D, having lower bore *a*, upper cup *b*, placed over the end of the bore *a*, and narrow outlet-passage *c* below the cup *b* and at about right angles with the bore *a*, substantially as and for the purpose herein shown and described.

2. In an apparatus for aerating liquids, the combination of the pump B and its gas and water discharge pipe C with the compression-cup D, placed on the discharge end of the pipe C, said compression-cup having narrow lateral outlets *c* beneath a solid cap *b*, all as and for the purpose herein shown and described.

3. The process herein described of aerating liquids, which process consists in forcing air and liquid from separate receptacles through a single conduit into a receiver and in constipating said air and liquid within said receiver and simultaneously changing the direction of their flow below the water-line of and within said receiver, so that said constipation, change of direction, and pressure within the receiver will cause the aeration of the liquid, as specified.

485,666. DISK HARROW. CHARLES S. SHARP, Auburn, N. Y., assignor to the D. M. Osborne & Company, of New York. Filed Feb. 4, 1892. Serial No. 420,317. (No model.)

Claim.—1. In a disk harrow, the combination of a draft-frame, two disk gangs jointed thereto, and devices operated by the end-thrust of the gangs and acting to apply a downward pressure to the gangs at one end.

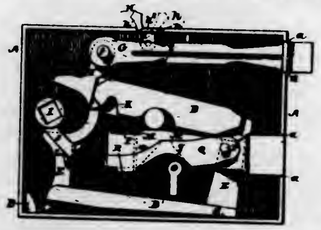
2. In a disk harrow, a draft-frame, gangs connected thereto by laterally-swinging draft devices, so that the gangs may be moved endwise, and pressure devices operated by the end motion of the gangs and acting to hold the gangs down at one end.

3. In a disk harrow, the draft-frame, the forwardly-diverging gangs, their boxes, the upright shafts having crank-arms at their upper and lower ends, the lower arms connected with the axle-boxes, the levers N, connected with the upper crank-arms, and the bearing-plates carried by the gangs and acted upon by the levers, substantially as described and shown.

4. In a disk harrow, the combination of a draft-frame, an axle provided with a series of disks, a box on the axle, a vertical shaft mounted in the frame and having crank-arms at both ends, a direct connection between the lower crank-arm and the axle-box, and a lever connection between the upper crank-arm and the end of the axle, whereby pressure is applied by the longitudinal movement of the axle.

5. The combination of the draft-frame, the axles, and rotatable disks, boxes for the axles, vertical crank-shafts mounted in the frame and having their crank-arms connected directly to the axle-boxes, and means for controlling the angular relation of the axles, substantially as shown and described.

485,667. COMBINED LATCH AND LOCK. WILLIAM H. SMITH, Bolivar, Mo. Filed Feb. 20, 1892. Serial No. 422,278. (No model.)



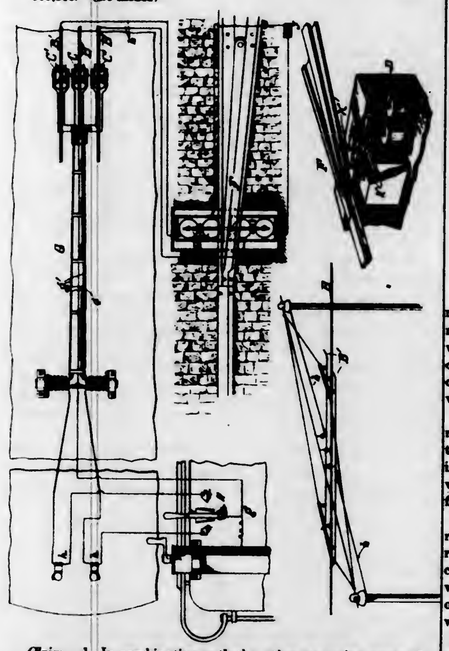
Claim.—1. In a lock, the combination, with the casing having a rounded bearing-block in one corner, of a horizontally-sliding latch-bolt and an approximately-rectangular gravity or weight frame comprising upper and lower weighted pieces connected at their ends by lighter end pieces, the lower piece being beveled and adapted to normally rest on the bottom of the casing and provided at its upper inner corner with a projecting pivot-arm carrying an integral pivot-stud loosely engaging one end of said latch-bolt and an offstanding bearing-stud projecting from its corresponding lower corner and loosely bearing upon said rounded bearing-block in the casing, substantially as set forth.

2. In a lock, the combination, with the casing, of a horizontally-sliding latch-bolt, a rectangular weight-frame loosely connected at its upper inner corner to said latch-bolt and loosely bearing upon the lock-casing at its corresponding lower corner, said frame being provided with a curved angular notch or recess in the upper side of the same and an extended stop-pin or stud at a point below and out of line with said notch, and the spindle-hub provided with an offstanding arm having a curved pointed end registering with and working in said notch or recesses and limited in its backward movement by said lower stop-pin or stud, substantially as set forth.

3. In a lock, the combination, with the casing having a top opening, of a weight-controlled latch-bolt sliding beneath the top of the casing and provided with a locking-notch, and a bolt-catch pivoted to said casing alongside of said bolt and provided with a thumb-grasp extending through said opening, and a locking-flange adapted to be thrown into engagement with said locking-notch, substantially as set forth.

4. In a lock, the combination, with the casing having a keyhole and parallel projecting guide-lugs, of a sliding bolt adapted to move between said lugs and provided at one end with an elongated limiting-notch, which receives and slides over one of said guide-lugs, and an angular key-receiving recess adapted to be arranged near said keyhole, and a locking-tumbler working between said guide-lugs, said tumbler being pivoted at one end to said bolt and provided with an offstanding locking-tongue near its other end, adapted to normally drop behind the other lug in both positions of the bolt, and a recess or notch arranged over the angular recess in the bolt and adapted to receive the wing of a key, substantially as set forth.

485,668. ELECTRIC-RAILWAY SWITCH. CHARLES A. STONE and EDWIN S. WEBSTER, Boston, Mass. Filed Oct. 30, 1890. Serial No. 369,819. (No model.)



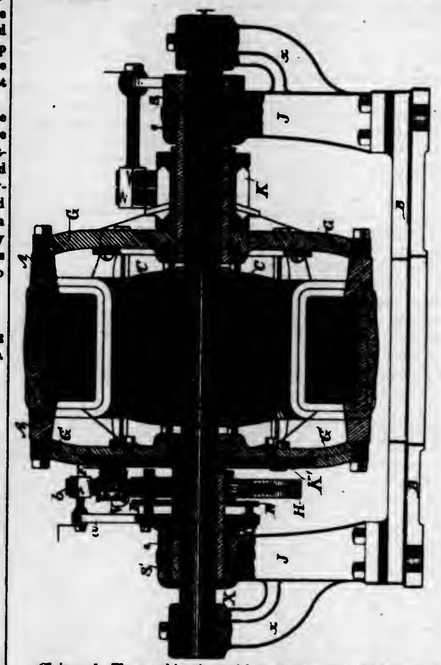
Claim.—1. In combination with the other operating parts of a railway system, a vehicle thereon, a current-switch H upon the said vehicle, an electrically-controlled track-switch, and a source of electric power connected in circuit with the said current-switch and an alarm-bell or other current-indicator included in such circuit, substantially as and for the purposes set forth.

2. A railway-switch-operating mechanism consisting of a bell-crank lever K, having an arm *k'*, for moving the switch-tongue and one or more arms *k*, and one or more solenoids or long-pull magnets for operating the said arms *k*, substantially as and for the purposes set forth.

3. In combination with the main trolley-arm, a supplemental trolley and means, as L, for separately controlling the same, substantially as set forth.

4. In combination with the trolley-arm of an electrically-propelled vehicle, a supplemental trolley and means for pressing the said supplemental trolley with yielding pressure against its trolley-wire or other conductor, and a supplemental trolley-wire for the said supplemental trolley, and a track-switch electrically controlled and connected with the said supplemental trolley-wire, substantially as and for the purposes set forth.

485,669. CONTINUOUS-CURRENT TRANSFORMER. ELIHU THOMSON, Swampscott, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Aug. 28, 1891. Serial No. 403,863. (No model.)



Claim.—1. The combination, with a circuit supplying direct current, of a rotary transformer having an armature with a winding connected through commutating devices to such circuit and a secondary winding connected to independent commutating devices, and additional commutating devices rotatable relatively to the aforesaid commutating devices and connected with a separate circuit and with the secondary winding, and means for rotating said additional commutating devices.

2. The combination, with a circuit supplying direct current, of a rotary transformer having a field-magnet and a rotary armature with two insulated windings, a commutator connecting one of such windings to the supply-circuit, and a commutator connected to the other winding and having two sets of collecting devices, one of which is fixed, while the other is rotatable relatively to said commutator.

3. The combination, with a circuit supplying direct current, of a rotary transformer having a field-magnet and a rotary armature carrying two separate windings, each having a commutator, one of which connects its winding with the supply-circuit, two sets of collecting devices bearing on the other commutator, one set being fixed and the other rotatable, and means for driving said rotatable collecting devices, substantially as described.

4. The combination, with a circuit supplying direct current, of a rotary transformer having a field-magnet and a rotary armature with two insulated windings, a commutator connecting one of such windings to the supply-circuit, and a commutator connected to the other winding and having two sets of collecting devices, one of which is fixed, while the other is rotatable and is mechanically connected to the rotating armature through speed-reducing mechanism.

5. An electro-magnetic induction-machine having a fixed field-magnet mounted on a central shaft, an exterior rotary armature surrounding said field-magnet and carrying two windings, sleeves surrounding said shaft, but supported out of contact therewith, and carrying said armature, a commutator for each winding, and two sets of current-collecting devices bearing on one of said commutators, substantially as set forth.

6. An electro-magnetic induction-machine comprising a fixed field-magnet and a rotating armature having interior radial projections clearing the field-magnet by only a small air-space and having two sets of coils superposed in the spaces between the projections, substantially as described.

7. The combination, with the rotary armature of an electro-magnetic induction-machine, of a commutator connected to the winding thereof and two sets of collecting devices bearing on said commu-

tator, one of which is rotatable relatively to the other, each set being connected with an independent circuit.

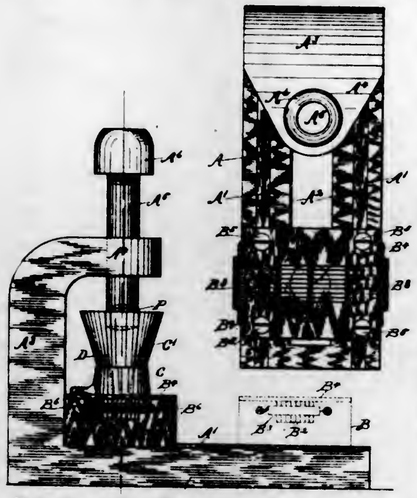
8. The combination, with the rotary armature of an electro-magnetic induction-machine, of a commutator connected to the winding thereof and two sets of collecting devices bearing on said commutator, one of which is rotatable relatively to the other, each set being connected with an independent circuit, and means for driving such rotatable collecting devices.

9. The combination, with the rotary armature of an electro-magnetic induction-machine, of a commutator connected to the winding thereof and two sets of collecting devices bearing on said commutator, one of which is rotatable relatively to the other and is connected to the armature through speed-reduction mechanism, each set being connected with an independent circuit.

10. A current-collecting apparatus comprising a rotary commutator mounted on a shaft and current-collecting devices bearing on said commutator and supported on a ring surrounding said shaft and fixed wheels engaging with said shaft and ring to support the latter and drive it at a reduced speed.

11. A rotary transformer comprising an interior cylindrical field-magnet having its winding in two diametrically-opposite notches, and a ring-armature surrounding such field-magnet and having interiorly-projecting teeth extending close to the periphery of the field-magnet, and primary and secondary coils wound around the armature and in each space between such teeth and commutating devices for such coils.

485,670. APPARATUS FOR INSERTING PLUGS IN BRUSH-HEADS. CHARLES R. THOMPSON, Lansingburg, N. Y., assignor to Stephen Palmer, same place. Filed Jan. 18, 1892. Serial No. 418,408. (No model.)



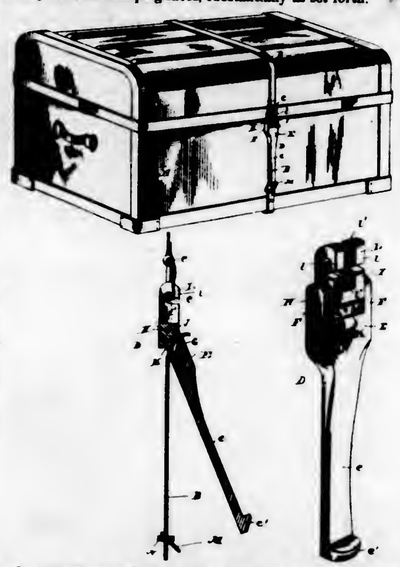
Claim.—1. An apertured bed-plate and an apertured brush-support comprising an apertured block and two series of spring-controlled slide-plates having the inner ends of the individual plates in one series contiguous to the inner ends of the individual plates in the other series and movable to and from each other, in combination with a leader-pin, a follower-support, a follower movable in a fixed support toward and from the brush-support, and an adjustable stop for regulating its movements, substantially as described.

2. In an apparatus for inserting plugs in brush-heads, a support for the brush-head, comprising an apertured block and two series of spring-controlled slide-plates having the inner ends of the individual plates in one series contiguous to the inner ends of the individual plates in the other series and movable to and from each other, substantially as described.

485,671. TRUNK-STRAP FASTENER. WILLIAM J. WEBB, Saint Paul, Tex. Filed May 4, 1892. Serial No. 431,774. (No model.)

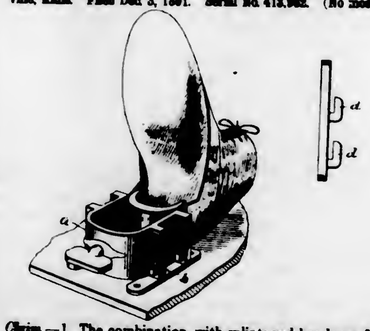
Claim.—1. In a strap-fastener, a hook-securing member receiving the buckle at one end of the strap and a lever member pivoted at one end to said securing member and adapted to clamp the other end of the strap between one end of the same and said securing member, substantially as set forth.

2. A trunk-strap fastener comprising a fixed securing member having a bifurcated hook portion adapted to receive the buckle at one end of a strap, an opposite toothed beveled clamping-face, a swinging lever member having opposite arms at one end pivotally connected with said fixed member, and a beveled clamping-face at the base of said arms and between the same, said lever member being designed to clamp the other end of the strap between said oppositely-beveled clamping-faces, substantially as set forth.



3. A trunk-strap fastener comprising a fixed securing member having a bifurcated hook portion adapted to receive the frame and tongue of the buckle at one end of the trunk-strap and an opposite toothed beveled clamping-face, a lever member provided with a securing-knob at one end, opposite arms, and a beveled clamping-face between and at the base of said arms at the other end, said arms embracing and pivotally connected with said fixed securing member, a securing-loop sliding upon the trunk-strap and adapted to engage the securing-knob of said lever member, and a loop-rest and check sliding upon the trunk-strap adjacent to said securing-loop, substantially as set forth.

485,672. FRACTURE APPARATUS. CHARLES S. WEBSTER, Marysville, Kans. Filed Dec. 3, 1891. Serial No. 413,962. (No model.)



Claim.—1. The combination, with splints and bandages for fractured or injured limbs, of a U-shaped bed-plate having side bars to receive and hold in place one end of the splints.

2. The combination, with a supporting splint or platform, of a U-shaped bed-plate having side bars and plates or catches screwed to the splint and having hooks to engage side bars and hold the bed-plate firmly to the platform.

3. The combination, with a U-shaped bed-plate, of a curved stretcher fitting and moving therein, a thumb-screw passing through the bed-plate and engaging the stretcher, and a shoe fitted to the ankle and foot and having an extension or strap to pass around the stretcher and hold it to the limb.

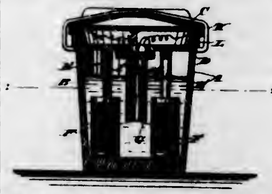
4. The combination, with side splints having shouldered ends, of a U-shaped bed-plate having side bars to receive said splints, a curved stretcher fitting into the bed-plate, a thumb-screw passing through the bed-plate and engaging the stretcher, and adhesive straps passing down the limb and around the stretcher.

5. The combination, with splints and bandages for fractured limbs, of a U-shaped bed-plate having side bars, catches fastened to a supporting splint or platform having tongues engaging the side bars and holding the bed-plate in position, a curved stretcher fitting into and movable in the bed-plate, a thumb-screw passing through the bed-plate and engaging the stretcher, and a shoe fitting the ankle and foot and having a strap or extension passing around the stretcher and holding it to the limb, all substantially as and for the purposes shown and described.

485,673. RUNNING-GEAR FOR VEHICLES. PHILIP WEIBEL, Cedar Springs, Ill. Filed July 30, 1892. Serial No. 441,722. (No model.)

Claim.—The combination, with the front and rear axles and the elliptic springs supported thereon and the bars on the springs, of the longitudinal bars having vertical end portions with their ends journaled in bearings on the said bars and the main portions of the longitudinal bars journaled on the under side of the body, as set forth.

485,674. SURGICAL ANTISEPTIC THREAD-HOLDER. HOSEAH WHITE, Bay Ridge, N. Y. Filed Mar. 4, 1892. Serial No. 423,717. (No model.)



Claim.—1. An antiseptic thread-holder comprising a jar, a plate or disk fitted in the neck of the jar, vertical spindles projecting from the under side of the said plate or disk and adapted to carry the bobbins, and a central tube extending from the under side of the said plate or disk down between the spindles, and formed in its upper closed end with an opening for the passage of the threads from the bobbins, substantially as shown and described.

2. An antiseptic thread-holder comprising a jar, a plate or disk fitted in the neck of the jar, spindles projecting from the under side of the said plate or disk and adapted to carry the bobbins, a central tube extending from the under side of the said plate or disk and formed in its upper closed end with an opening for the passage of the threads, and a suitable material held in a recess in the top of the said plate or disk, and through which the threads pass, substantially as shown and described.

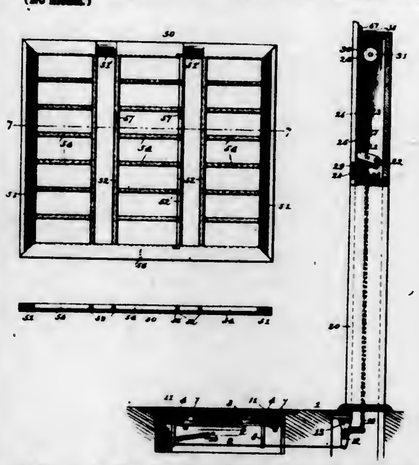
3. An antiseptic thread-holder comprising a jar filled with an antiseptic preserving liquid and a cover for closing the mouth of the said jar, a disk or plate fitted in the neck of the said jar, spindles projecting from the under side of the said disk or plate and placed equal distances apart and arranged in a circle, and a central tube projecting from the under side of the said plate and provided in its closed end with an aperture for the passage of the threads, substantially as shown and described.

485,675. BAG-FASTENER. ELKANAH G. WILLIAMS, Harpster, Ohio, assignor of one-half to Cyrus Sears, same place. Filed Jan. 2, 1892. Serial No. 416,944. (No model.)

Claim.—1. The herein-described bag-fastener, the same consisting of a strap, a staple for securing the strap between its ends to one side of the mouth of a bag, rings attached to the ends of the strap, and a rectangular looped cross-bar engaging one ring and having offsets at the centers of its sides, and a chain engaged in the other ring, as and for the purpose set forth.

2. The herein-described bag-fastener, the same consisting of a strap, two rings, through each of which one end of the strap is passed and then turned over on its body, eyelets securing each ends to the body, one of the rings being given a quarter-twist at its outer end, a rectangular looped cross-bar engaging the twist and having offsets at the centers of its sides, and a chain engaged in the other ring, all as and for the purpose hereinbefore set forth.

485,676. ADVERTISING DEVICE. JAMES A. WRIGHT and JOHN B. WRIGHT, Rockingham, N. C. Filed Dec. 7, 1891. Serial No. 414,332. (No model.)



Claim.—1. An advertising-frame having the rear faces of its side bars beveled and beveled notches in the rear face of its upper cross-bar, vertical strips in said frame having their opposite faces grooved and arranged in pairs beneath the edges of said notches, one of said strips having a beveled rear face, horizontal grooved strips connecting the outer vertical strips with the side bars and the inner vertical strips with each other, the grooves opening in line with the bevels on the side bars and on said vertical strips, and pieces of card-board removably located in said grooves, as and for the purpose set forth.

2. In a device of the character described, the combination, with a treadle or platform located in a hole in the sidewalk, rock-shafts journaled below said platform and having projecting arms supporting it, depending levers from the shafts, and a spring bearing one of said levers in a direction to hold the platform normally raised, of an upright standard, a shaft journaled across the upper end thereof, and connections between said treadle and shaft for causing the latter to turn intermittently when the former is depressed, brake mechanism for preventing a retrograde movement of the shaft, and an endless series of advertising-panels mounted on said shaft and by the motion thereof successively exposed through an opening in the front of said standard, substantially as described.

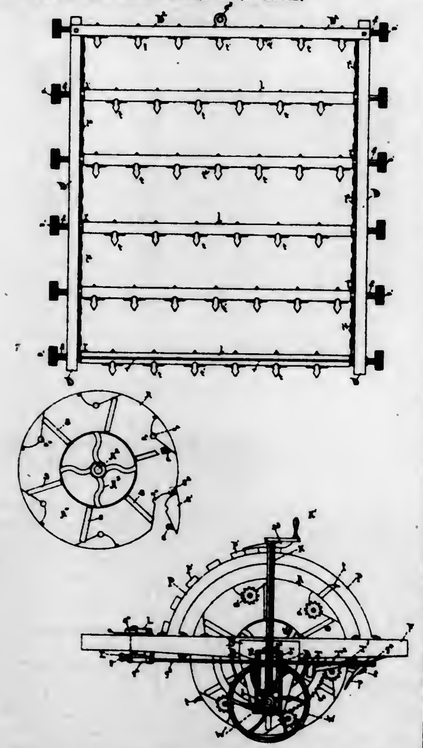
3. In a device of the character described, the combination, with a treadle, an upright standard having its front cut away and having

a vertical partition, a lever pivoted at one end to the partition, and a chain connecting the treadle with the lever between its ends, of a shaft journaled through the partition and one side of the standard and having notches, a ratchet-wheel journaled on the shaft and having a spring-actuated pawl engaging said notches, a chain leading from the other end of said lever around the wheel to a contractile spring, endless series of advertising-panels mounted on said shaft and by the motion thereof successively exposed through said cut-away portion, and retaining devices for said shaft, substantially as described.

4. In a device of the character described, the combination, with an upright standard having an opening in its face, a horizontal shaft across the standard near the upper end of said opening, and means for turning the shaft intermittently in one direction, the latter being flattened near one journal, of a series of advertising-panels successively exposed through said opening, a lever pivoted at one end to the standard and bearing between its ends on said flattened portion, a chain leading from the other end of the lever to a contractile spring, and a bell connected with the chain, substantially as hereinbefore described.

5. In an advertising device, the combination, with an upright standard rectangular in cross-section and with the upper portion of its front cut away on a horizontal line, and advertising mechanism, substantially as described, within the standard, of a frame having hooks in its back removably seated in holes in the upper end of the casing, and a pin rising from said horizontal line and removably entering a hole in the lower end of the frame, the latter having an opening in front of said cut-away portion adapted to expose the advertising matter, all substantially as and for the purpose hereinbefore set forth.

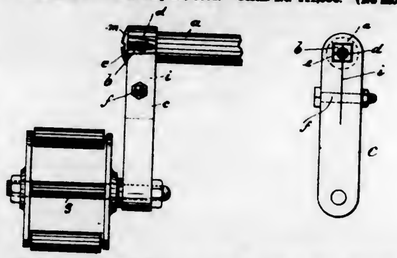
485,677. HARROW. NIELS ANDERSON, Sioux City, Iowa. Filed July 16, 1892. Serial No. 440,214. (No model.)



Claim.—1. In a revolving riding-harrow, drive-wheels A A, caps S' S', with catch *e* on the under side thereof, forming a part of said wheels and secured by hinge on the circumference thereof, springs S S and *v*, holding caps in place, lever L, lever-arms f f^3 f^3 f^4 and g g^5 g^1 g^5, connecting lever L with trips T^3 T^3, by means of which springs, lever, and trips caps S' S' may be opened, harrow-shafts *l l*, journaled through drive-wheels by means of rounded shafts a^1 a^2, cogged wheels *a' a'* on the ends of said shafts, and semicircular bars a^3 to receive wheels *a' a'*, by which a circular motion may be communicated to shafts *l l*, substantially as set forth.

2. In a revolving riding-harrow, drive-wheels A A, harrow-shafts *l l*, journaled through said wheels and supported in position by caps S' S', which form a part of drive-wheels and are secured by hinges on the circumference of same, trips T^3 T^3, which act upon springs S S and *v*, operated by means of lever L, and lever-arms f f^3 f^3 f^4 and g g^5 g^1 g^5, releasing caps S' S', together with shafts *l l*, in succession, by which shafts *l l* may form part of and be converted into a flat harrow, as specified.

485,678. TREADLE-CRANK FOR BICYCLES. WALTER V. ASH, Newark, N. J. Filed July 20, 1892. Serial No. 441,568. (No model.)

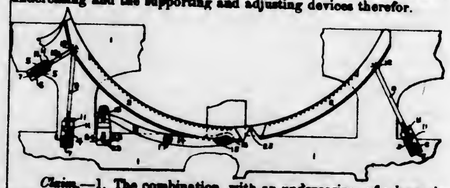


Claim.—1. In a treadle-crank-fastening device for a bicycle, the combination, with the axle, of a squared and crosswise split projection arranged at the outer end of the axle and integral therewith, said projection being provided with an internally-threaded hole, a treadle-crank provided with a squared tapered opening and adapted to engage said projection, and a tapered screw arranged in said internally-threaded hole, all said parts substantially as described, and for the purposes set forth.

2. In a treadle-crank-fastening device for a bicycle, the combination, with the axle, of a squared and split projection integral with the axle, said projection being provided with an internally-threaded hole, a crank carrying at its lower end the treadle and at its upper end provided with a squared tapered opening, part of said crank being split longitudinally and adapted to engage with its squared tapered opening the squared projection of the axle, a screw arranged in the internally-threaded hole of said projection, and a bolt passing crosswise through the split portion of the crank, all said parts substantially as described, and for the purposes set forth.

485,679. DEVICE FOR SUPPORTING AND ADJUSTING SCREENS OR UNDERCASINGS FOR THE CYLINDERS OR ROLLERS OF CARDING-ENGINES. WILLIAM P. CABMING, Lowell, Mass., assignor to the Lowell Machine Shop, same place. Filed July 1, 1892. Serial No. 438,731. (No model.)

Brief.—The invention resides in the construction of the screen or undercasing and the supporting and adjusting devices therefor.



Claim.—1. The combination, with an undercasing, of a lever in operative connection therewith and an adjusting-screw whereby to move the lever and set the undercasing, substantially as described.

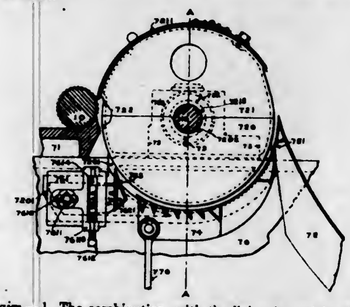
2. The combination, with an undercasing, of hangers and adjusting devices therefor at the front and rear sides of the said undercasing, a lever in operative connection with the said undercasing intermediate the said hangers, and a screw whereby to move the lever in setting the undercasing, substantially as described.

3. The combination, with an undercasing made in sections and hinged together, of hangers connected with the undercasing and provided with adjusting devices, as described, a lever in operative connection with the undercasing intermediate the hangers, and a screw whereby to move the lever in setting the undercasing, substantially as described.

4. The combination, with the undercasing, of a lever in operative connection therewith, an adjusting-screw passing through a threaded opening in the said lever, and a stand having bearings for the opposite ends of said screw, substantially as described.

485,680. CARDING-ENGINE. WILLIAM P. CABMING, Lowell, Mass., assignor to the Lowell Machine Shop, same place. Filed July 19, 1892. Serial No. 440,666. (No model.)

Brief.—The invention resides in the improved construction of the licker-in shrouds and of the bearings and boxes for the licker-in shaft; also, in the means for supporting and adjusting the licker-in blade or knife.



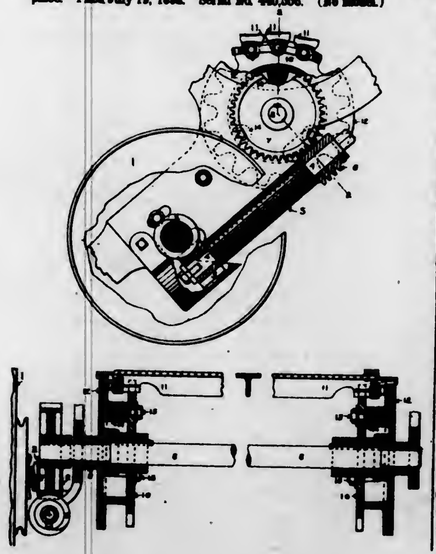
Claim.—1. The combination, with the licker-in and its shaft or journal, of the licker-in shroud formed in two parts and each provided with a half-bearing, as described, the box having a removable cap, and devices for holding the said box in place on the framing of a carding-engine and setting it into the desired position thereon, substantially as described.

2. The combination, with the licker-in, its shroud provided with a wing, as described, and the licker-in blade, of a blade stand or bracket mounted upon the said wing and means for connecting the blade to the said bracket, substantially as described.

3. The combination, with the licker-in, its shroud provided with a wing, as described, and the licker-in blade, of a blade stand or bracket mounted upon the said wing and provided with means for connecting it adjustably with the latter in order to permit the stand or bracket and blade to be moved relatively to the surface of the licker-in, substantially as described.

4. The combination, with the licker-in, its shroud provided with a wing, as described, and the licker-in blade, of a blade stand or bracket mounted upon the said wing and provided with means for connecting it adjustably with the latter in order to permit the stand or bracket and blade to be adjusted toward and from the licker-in, and with means whereby the blade may be adjusted edgewise relatively to the surface of the licker-in, substantially as described.

485,681. TRAVELING-FLAT CARDING-ENGINE. WILLIAM P. CABMING, Lowell, Mass., assignor to the Lowell Machine Shop, same place. Filed July 19, 1892. Serial No. 440,556. (No model.)



Claim.—1. The combination, with a series of flats of a traveling-flat carding-engine and a shaft, of sprocket-wheels mounted on the said shaft and securing means whereby the said sprocket-wheels are fixedly held upon the shaft and caused to rotate therewith with capacity for angular adjustment around the axis of the shaft, substantially as described.

2. The combination, with the series of flats of a traveling-flat carding-engine, a block-shaft, and blocks mounted upon the said shaft to turn therewith, of sprocket-wheels and securing means whereby the said sprocket-wheels, respectively, are held in position with capacity for angular adjustment relatively to the shaft, substantially as described.

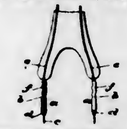
3. The combination, with a series of flats of a traveling-flat carding-engine, a block-shaft, and blocks mounted upon the said shaft to turn therewith, of sprocket-wheels connected with the said blocks and respectively having capacity for angular adjustment relatively to the shaft and blocks, substantially as described.

4. The combination, with the series of flats of a traveling-flat carding-engine, a block-shaft, and blocks mounted upon said shaft to turn therewith, of sprocket-wheels placed beside the said blocks and securing bolts or screws passing through elongated openings and clamping the sprocket-wheels to the blocks with capacity for angular adjustment, substantially as described.

5. The combination, with the series of flats of a traveling-flat carding-engine, a block-shaft, and a block mounted on the said shaft to turn therewith, of a sprocket-wheel at the side of said block and securing means for the said wheel, holding the same in position with capacity for angular adjustment, substantially as described.

6. The combination, with the series of flats of a traveling-flat carding-engine, a block-shaft, and a block mounted on the said shaft to turn therewith, of a sprocket-wheel at the side of said block and a bolt or screw passing through an elongated opening and clamping the sprocket-wheel to the block with capacity for angular adjustment, substantially as described.

485,682. INCANDESCENT ELECTRIC LAMP. AUGUSTUS C. CAREY, Lake Pleasant, Mass. Filed Jan. 15, 1892. Serial No. 418,133. (No model.) Patented in England Mar. 3, 1892, No. 4,578.



Claim.—1. The combination, with the leading-in wires and carbon or filament of an incandescent electric lamp, of couplings constructed as tubes constricted between their ends and applied to the ends of such wires by crimping or bending them together transversely and cemented to the carbon or filament, substantially as described.

2. In an incandescent electric lamp, the combination, with the leading-in wires and the filament or carbon, of couplings therefor constricted between their ends and connected with the leading-in wires by crimping said wires and couplings together transversely, substantially as described.

485,688. ARMOR-PLATE. HENRY CLAY, Philadelphia, Pa., assignor to Harrison Snyder, trustee, same place. Filed Mar. 3, 1892. Serial No. 423,643. (No model.)

Claim.—1. An improved armor-plating consisting of inner and outer plates separated from each other, one of said plates having a series of openings formed therein, each provided with an air-vent, and the other plate having a series of projections or pistons integral therewith and adapted to be forced into the openings in the other plate and compress the air therein when the outer plate is struck, substantially as specified.

2. As an improvement in armor-plating, an inner plate secured to the body to be protected and an outer plate suspended at its upper end upon suitable supports attached to the body to be protected, the said plates being separated and one having a series of openings formed therein and the other a series of projections or pistons integral therewith registering with the said openings in the other plate and adapted to compress the air in said openings when the outer plate is struck, substantially as described.

3. As an improvement in armor-plating, an inner plate secured to the body to be protected, an outer plate suspended at its upper end upon suitable supports attached to the body to be protected, springs interposed between the said plates to separate them from each other, one of said plates having a series of openings formed therein, each provided with an air-vent, and the other plate having a series of projections integral therewith registering with the openings and

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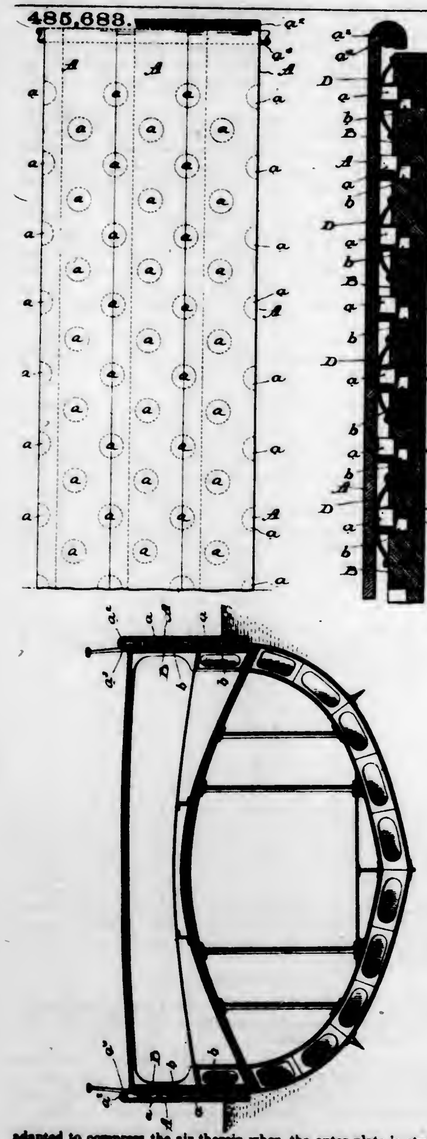

adapted to compress the air therein when the outer plate is struck, substantially as specified

485,684. GRATE. EDWARD PALM, Beachmont, Mass. Filed Nov. 27, 1891. Serial No. 412,809. (No model.)

Claim.—1. A box-grate having its bars parallel to each other, but arranged in several adjacent series alternately elevated above and depressed below a mean level, and a series of parallel unperforated partitions interposed between and cast integral with the successive series of bars and subdividing the grate into deep and shallow longitudinal pockets, substantially as set forth.

2. A box-grate made in detachable sections and having a bottom zigzag in cross-section formed of grate-bars arranged in parallel series, two or more bars D and E, alternating with each other in different horizontal planes, and interposed unperforated partitions F between adjacent series, in combination with end walls G, integral with each bars and partitions, substantially as and for the purpose set forth.

3. A box-grate having marginal walls G G' and a bottom zigzag

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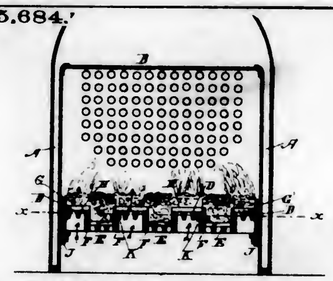
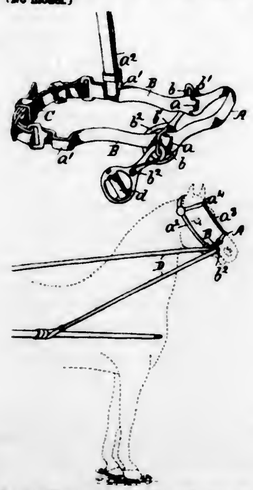


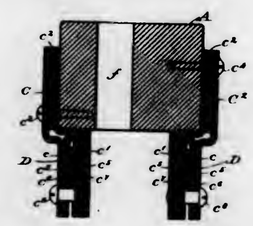
in cross-section formed of bars arranged in series D E at different heights, with interposed unperforated partitions F, rigidly united to the grate bars and walls, in combination with beveled offset strips H at the junction of said bars and wall, substantially as and for the purpose set forth.

485,685. BRIDLE. GORHAM B. GOODELL, Cheyenne, Wyo., and BYRON S. HOPKINS, Lexington, Ky. Filed Aug. 17, 1891. Serial No. 402,980. (No model.)



Claim.—In a bridle attachment, the combination of the nose part, the companion side bars hinged thereto, the loops *b*, the strap C, and the straps a^3 a^3, substantially as described.

485,686. PICKER-CHECK FOR LOOMS. SAMUEL GREENWOOD, Lowell, Mass. Filed Nov. 17, 1891. Serial No. 412,157. (No model.)



Claim.—The combination of the picker-sticks with the leather straps passing around the tops of the picker-sticks, means for connecting together the corresponding ends of the said straps, and the clamps engaging with the opposite sides or limbs on each of the loops of the said straps, substantially as described.

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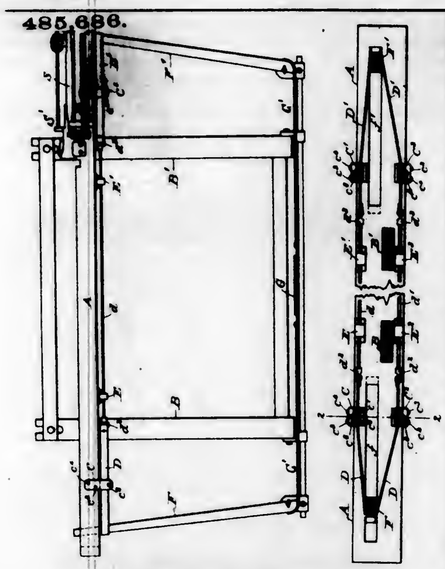
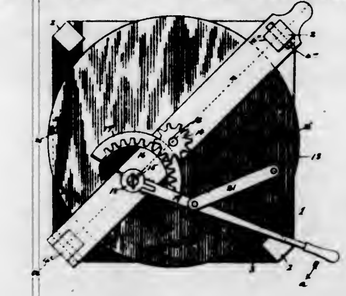
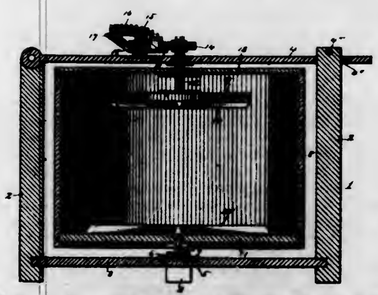


485,687. WASHING-MACHINE. KARL W. HAGEN, Dürrheim, Germany, assignor of two-thirds to E. M. Tillmann and H. Tillmann, Dallas, Tex. Filed Feb. 13, 1892. Serial No. 422,044. (No model.)





Claim.—1. In a washing-machine, the combination, with a vertically-reciprocated and horizontally-rotatable stirring device provided with a vertical shaft and pinion, of a spirally-formed segment-gear having an outwardly-projecting flange formed on its bottom portion, meshing with said pinion, and means for operating the same, substantially as described.

2. In a washing-machine formed with a pivotally-supported and rotatable cylinder, the combination, with the stirring device provided with a vertical shaft and pinion, of a spirally-formed segment-gear having an outwardly-projecting flange formed on its bottom portion and engaging said pinion, a horizontal lever attached thereto, and means for connecting said lever with the cylinder, substantially as described.

3. A washing-machine composed of the frame 1, tub cylinder 8, pivotally supported thereon and provided with the lifting-arm 4 and cover 13, the rotary and vertically-reciprocated twirl or stirring device 9, and means for operating the same, said means consisting of the vertical shaft 12, pinion 14, spiral segment-gear 16, having an outwardly-projecting flange 17 formed on its bottom portion, meshing with said pinion, and the levers 19 and 21, pivotally secured to said cylinder, substantially as described.

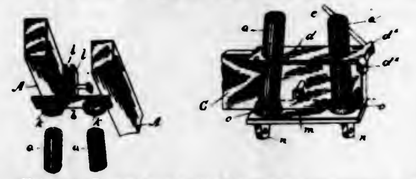
485,688. COMPOSITION OF MATTER FOR JOURNAL-BEARINGS. ABRAHAM G. HALEY, Gardiner, Me. Filed June 20, 1892. Serial No. 437,240. (No specimens.)

Claim.—1. The herein-described composition of matter for journal-bearings, &c., consisting of graphite, metallic pigment, fiber, and a cementing or binding substance, substantially as described.

2. The herein-described composition of matter for journal-bearings, &c., consisting of graphite, lead pigment, and a binding or cementing substance substantially as described.

3. The herein-described composition of matter for journal-bearings, &c., consisting of graphite, metallic pigment, and a binding or cementing substance, substantially as described.

485,689. TRUSS-BRIDGE. JAMES F. HARDESTY, Cambridge, Ohio. Filed Mar. 24, 1892. Serial No. 426,186. (No model.)



Claim.—1. The upper post-plate *b*, having the parts *k* and *l*, substantially as described.

2. The lower post-plate *m*, with the parts *n* and *o*, substantially as described.

3. The floor-beam brace-rod plate *d*, with the part *d'*, substantially as described.

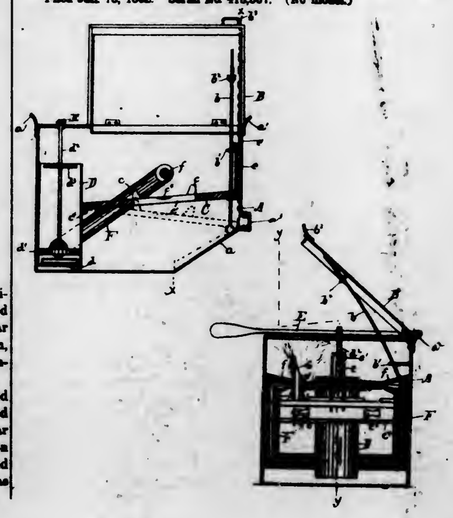
4. The combination of the upper post-plate *b* with a plain post *a*, as described.

5. The combination of the lower post-plate *m* with a plain post *a*, as described.

6. The combination of the floor-beam brace-rod plate *d* with the plain post *a*, as described.

7. The combination of the upper post-plate, the lower post-plate, the floor-beam brace-rod plate, as described, and a plain post *a*, for the purposes as substantially set forth herein.

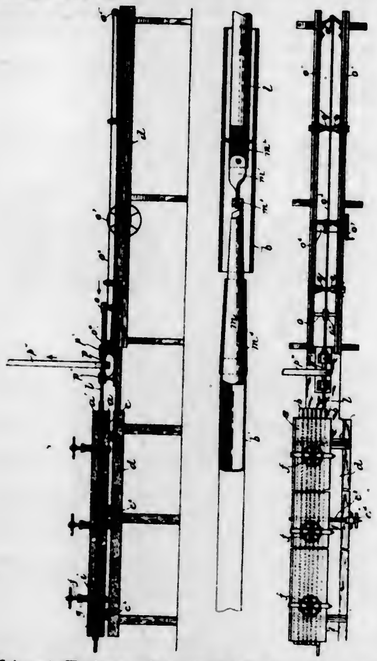
485,690. DISH-CLEANER. FRED D. HARDING, Baldwin, Me. Filed Jan. 18, 1892. Serial No. 418,367. (No model.)



Claim.—1. In a machine for washing dishes, pipes for delivering jets of water toward each other, a rack for supporting flat dishes between said jets, said racks being provided with a slot having at each end a V-shaped tongue projecting into the slot, substantially as described.

2. In a machine for washing dishes, pipes for delivering jets of water toward each other, a rack for supporting dishes between said jets, one end of said rack being vertically adjustable, whereby dishes of varying size may be brought centrally in line with the jets of water, substantially as described.

485,691. METHOD OF AND APPARATUS FOR LINING PIPES WITH LEAD. GEORGE W. HARRINGTON, Wakefield, Mass., assignor of one-half to D. H. Darling, same place. Filed Aug 31, 1891. Serial No. 404,375. (No model.)



Claim.—1. The improved method of lining iron pipe, consisting in simultaneously and equally compressing and holding all portions of a length of pipe and while the pipe is so held expanding a length of lead lining into firm and intimate union with the inside thereof, substantially as described.

2. In a machine for lining iron pipe, the combination of pipe-holding jaws or clamps, means for adjusting the pressure of the jaws, a tool-carrying rod or spindle arranged in line with said jaws, means for rotating said spindle, and means for moving the spindle endwise while it is rotating and thereby inserting said spindle in a pipe held by said jaws, as set forth.

3. In a machine for lining iron pipe, the combination of pipe-holding jaws or clamps, means for adjusting the pressure of the jaws, a tool-carrying rod or spindle located in line with said jaws, a traveling carriage having a bearing for the rear end or portion of said spindle, a sleeve or rotary bearing engaged with said spindle by a feather-and-groove connection, whereby the spindle is permitted to move endwise independently while rotating with the said sleeve, means for rotating the sleeve and spindle, and means for moving the spindle endwise to insert it in a pipe held by said jaws, as set forth.

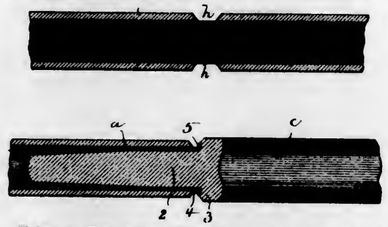
4. In a machine for lining iron pipe, the combination of pipe-holding jaws or clamps, a tool-carrying rod or spindle located in line with said jaws, a traveling carriage having a bearing for the rear end or portion of said spindle, a sleeve or rotary bearing engaged with said spindle by a feather-and-groove connection, whereby the spindle is permitted to move endwise independently while rotating with the said sleeve, a driven pulley affixed to said sleeve, a cord or chain engaged with said carriage, guides for said cord, and a shaft engaged with said cord and adapted to impart endwise motion thereto, as set forth.

5. The combination, with the tool-carrying rod or spindle and means for moving it endwise, of the pivoted yieldingly-supported guides for laterally sustaining said spindle, as set forth.

485,692. SWAGE FOR FORMING BEADS ON THE ENDS OF LEAD-LINED PIPES. GEORGE W. HARRINGTON, Wakefield, Mass., assignor of one-half to D. H. Darling, same place. Filed Nov. 20, 1891. Serial No. 412,491. (No model.)

Claim.—The improved swage for forming lead beads on the ends of lead-lined hard-metal pipes, the same comprising a plug adapted to closely fit the interior of the lead lining and an annular recess surrounding the plug to form a die for converting the projecting end of the lead lining into an annular bead on the end of the hard-metal pipe, the stock of the tool outside said recess being beveled to form an annular cutting edge or knife surrounding the said recess or die, whereby said cutting-edge is adapted to trim off the surplus lead at the outer edge of the bead by cutting against the end of the hard-metal pipe, substantially as described.

485,693. METHOD OF FORMING BEADS ON THE ENDS OF LEAD-LINED IRON PIPES. GEORGE W. HARRINGTON, Wakefield, Mass., assignor of one-half to D. H. Darling, same place. Filed Feb. 19, 1892. Serial No. 422,063. (No model.)



Claim.—1. The method of forming beads on the ends of lead-lined pipes, the same consisting in first causing the end of the lead lining to project outside of the pipe, then swaging the projecting portion of the lining back onto the end of the pipe to form a bead, and rounding or beveling off the outer portion of the bead and trimming off its outer edge at a point not exceeding the outer circle of the pipe, substantially as described.

2. The method hereinbefore described of forming beads on the ends of sections of lead-lined pipe, the same consisting in first severing the pipe into sections without cutting the lining, then separating the sections and at the same time stretching the lining, then severing the lining between the separated ends of the sections, and finally forming the projecting ends of the lining into beads or flanges on the ends of the sections, as set forth.

485,694. MACHINE FOR DRYING WARPS. FRANK HASKELL, Westbrook, Me. Filed Mar. 2, 1891. Serial No. 383,419. (No model.)

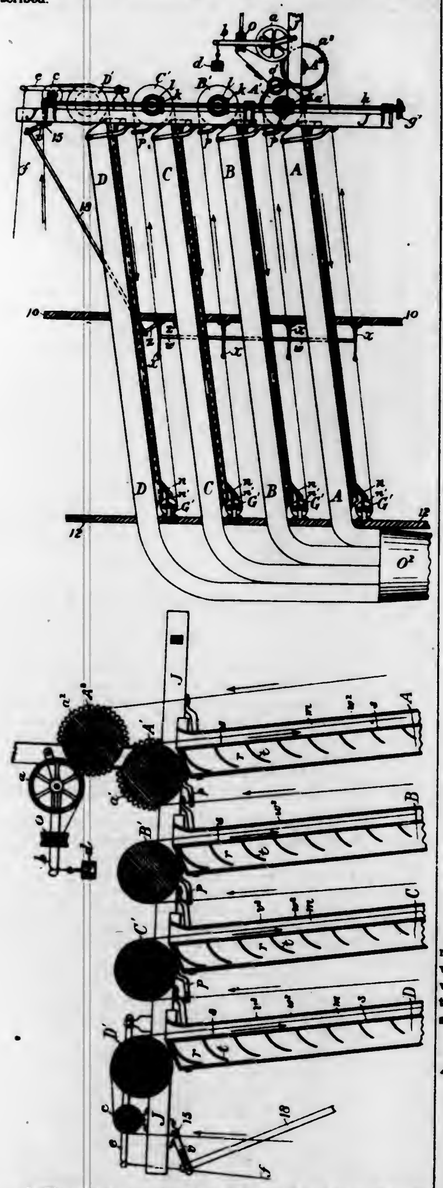
Brief.—The warps are drawn through chambers at the side of heated pipes, the latter having openings and deflectors whereby the hot air is forced into the chambers. These chambers are also perforated at the side opposite the pipes, thus permitting the hot air to pass through the chamber and into the space between the chamber and the next pipe, the warps also being drawn through such space.

Claim.—1. A chamber or pipe closed at one end and open at the other, having in one of its sides narrow transverse openings, from the edges of which openings nearer the closed end of the chamber extend toward said open end and within the chamber curved pieces or wings which gradually increase in length as they approach said closed end, in combination with a passage extending the entire length of the pipe and open at both ends, with which said passage said transverse openings directly connect, substantially as described.

2. A device for drying warps, &c., consisting of a chamber closed at one end and open at the other, having openings in one of its sides, and a conduit or passage, one side of which conduit is formed by the side of the chamber having the openings aforesaid, said conduit being open at both ends and having openings in its wall directly communicating with the space outside said wall and opposite the openings in said chamber, substantially as described.

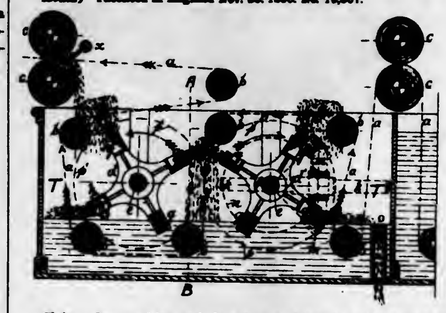
3. The combination of a series of pipes united with a hot-air supply and having conduits connected by repeated openings with said pipes, said conduits also having openings communicating directly with the air external to said pipe on the side next the neighboring pipe, substantially as described.

4. In a machine for drying warps, &c., the combination of a series of pipes or chambers having between said pipes bars and a device for giving said bars a reciprocating motion, substantially as described.



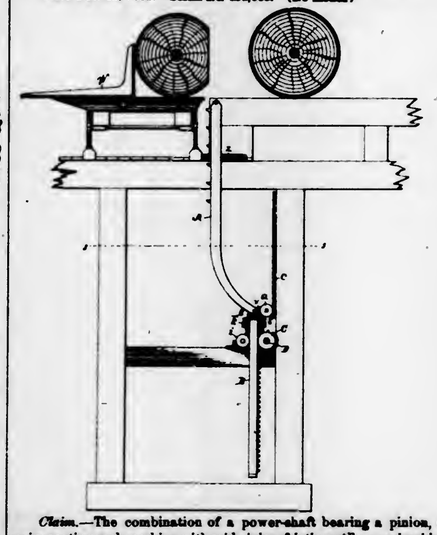
5. The combination of a series of pipes or chambers, each having openings on the side opposite the pipe next succeeding it in the series and directly connected with a hot-air supply, with means for propelling a continuous length of flexible material through and between said pipes, whereby said material is subjected to the action of the air both within and as it issues from the sides of said pipes.

485,695. APPARATUS FOR WASHING FABRICS. JOSEPH HAWORTH, Church, England. Filed Feb 4, 1891. Serial No. 380,949. (No model.) Patented in England Nov. 26, 1890. No. 19,267.



Claim.—In a washing and cleansing machine, the combination of a series of troughs mounted or fixed upon a center shaft or roll adapted to revolve, said troughs being open at one side for the admission of water or other liquid and perforated upon that side which is farthest away from the center shaft, through which perforations the liquid is sprayed upon the fabric being treated, substantially as herein set forth.

485,696. LOG-TURNER. WILLIAM H. HILL, Kalamazoo, Mich. Filed Feb. 15, 1892. Serial No. 421,863. (No model.)



Claim.—The combination of a power-shaft bearing a pinion, a reciprocating rack meshing with said pinion, friction-rollers, and guideways for steadying and keeping the rack in place, said rack being provided with a cap at the upper end, a cushion-support, a cushion between said cap and support, and a tooth-bar attached to the end of said rack, substantially as set forth.

485,697. ART OF GRINDING CUTLERY OR OTHER TEMPERED STEEL ARTICLES. ALLEN JOHNSON, Ottumwa, Iowa. Filed June 13, 1888. Serial No. 276,947. (No model.)

Claim.—The improvement in the art of grinding articles of tempered steel, which consists in holding the article against the surface of a wheel composed of emery and a binding agent capable of softening and disintegrating at a less heat than will draw the temper of hardened steel, and at the same time applying to the grinding-surface a supply of water sufficient to conduct away the heat generated by

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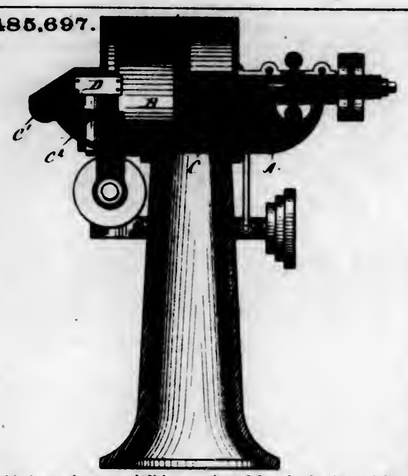
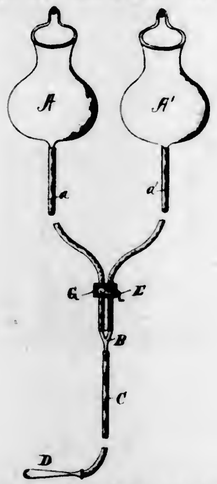


the friction and to retard disintegration of the wheel, substantially as described.

485,698. DUPLEX SYRINGE. FRANK S. KETCHUM, New York, N. Y. Filed July 9, 1892. Serial No. 439,523. (No model.)

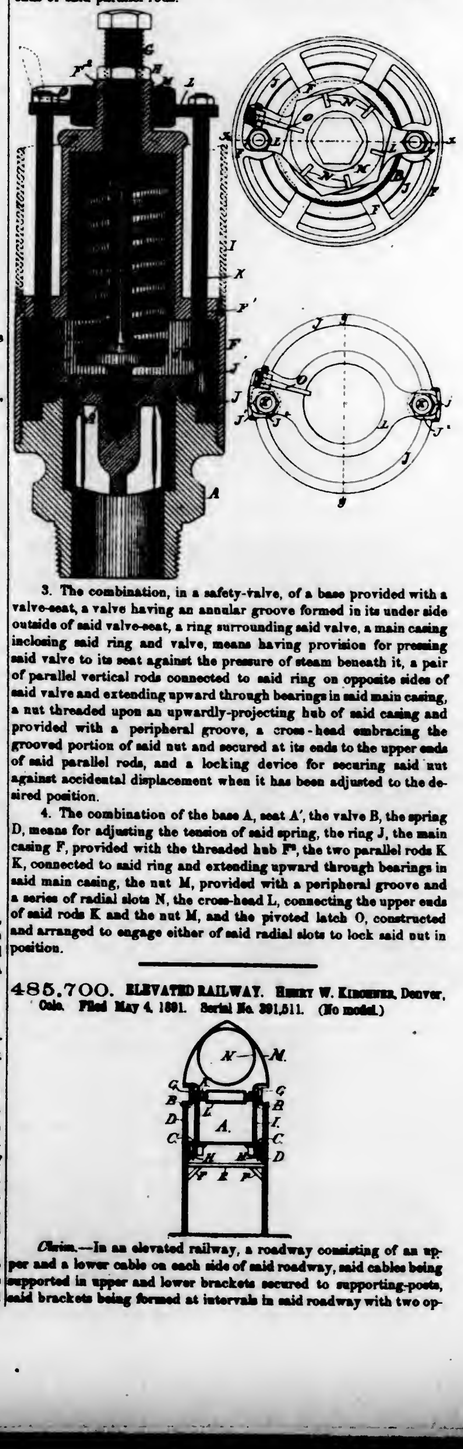


Claim.—In a syringe, the combination of the liquid-receptacles, the flexible and elastic tubes connected therewith, the frame through which said tubes pass, the key journaled in said frame and provided with radial flanges, and the Y-shaped connections provided with a flexible tube having an injection-tube, substantially as described.

485,699. SAFETY-VALVE. ABBE P. KINNEY, Boston, Mass., assignor to the American Steam Gauge Company, same place. Filed Aug. 4, 1892. Serial No. 442,198. (No model.)

Claim.—1. The combination, in a safety-valve, of a base provided with a valve-seat, a valve provided with an annular groove in its under side and outside of the valve-seat, means for pressing said valve to its seat against the pressure of steam beneath it, a ring surrounding said valve, a main casing inclosing said ring and valve, a pair of parallel vertical rods connected to said ring on opposite sides of said valve and extending upward therefrom through bearings in said main casing, a yoke or cross-head connecting the upper ends of said parallel rods, and a screw-threaded adjusting device connecting said cross-head to said main casing.

2. The combination, in a safety-valve, of a base provided with a valve-seat, a valve provided with an annular groove in its under side outside of said valve-seat, means having provision for pressing said valve to its seat against the pressure of steam beneath it, a ring surrounding said valve, a main casing inclosing said ring and valve, a pair of parallel vertical rods connected to said ring and extending upward therefrom through bearings in said main casing, a nut threaded upon an upwardly-projecting hub of said casing and provided with a peripheral groove, and a yoke or cross-head embracing the grooved portion of said nut and secured at its ends to the upper ends of said parallel rods.



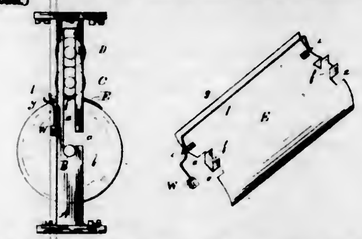
3. The combination, in a safety-valve, of a base provided with a valve-seat, a valve having an annular groove formed in its under side outside of said valve-seat, a ring surrounding said valve, a main casing inclosing said ring and valve, means having provision for pressing said valve to its seat against the pressure of steam beneath it, a pair of parallel vertical rods connected to said ring on opposite sides of said valve and extending upward through bearings in said main casing, a nut threaded upon an upwardly-projecting hub of said casing and provided with a peripheral groove, a cross-head embracing the grooved portion of said nut and secured at its ends to the upper ends of said parallel rods, and a locking device for securing said nut against accidental displacement when it has been adjusted to the desired position.

4. The combination of the base A, seat A′, the valve B, the spring D, means for adjusting the tension of said spring, the ring J, the main casing F, provided with the threaded hub F^3, the two parallel rods K K, connected to said ring and extending upward through bearings in said main casing, the nut M, provided with a peripheral groove and a series of radial slots N, the cross-head L, connecting the upper ends of said rods K and the nut M, and the pivoted latch O, constructed and arranged to engage either of said radial slots to lock said nut in position.

485,700. ELEVATED RAILWAY. HENRY W. KINGSNER, Denver, Colo. Filed May 4, 1891. Serial No. 391,511. (No model.)

Claim.—In an elevated railway, a roadway consisting of an upper and a lower cable on each side of said roadway, said cables being supported in upper and lower brackets secured to supporting-posts, said brackets being formed at intervals in said roadway with two oppositely-extending holes, through which the cable is threaded, forming a loop which engages with hooks secured to either end of a stretching device, whereby the cables in said roadway are kept at the proper tension, said stretching device consisting of two parallel bars secured together with their ends respectively overlapping the other bar and loosely secured thereto, forming a sliding double-stirrup loop, in which is secured a compression-spring, the tendency of which is to separate said overlapping ends longitudinally, combined and operating substantially as described, and for the purposes specified.

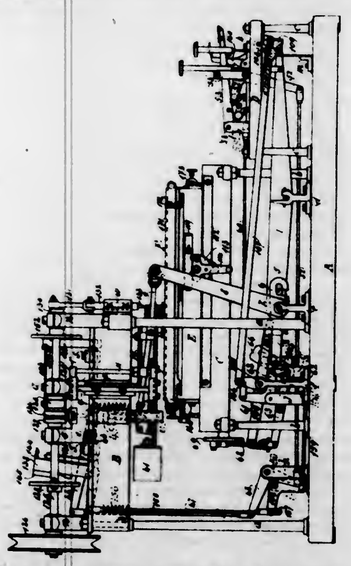
485,701. ROLL-PAPER PRINTER AND CUTTER. FRANCIS KINSEL, East St. Louis, Ill. Filed Jan. 20, 1892. Serial No. 418,236. (No model.)



Claim.—1. In a roll-paper printer and cutter, a printing-die and a vertically-movable curved plate having a cutting-edge interposed between the roll of paper and its outer layer to serve as a bed-plate for the printing-die, substantially as described.

2. A paper cutter and printer consisting in a frame A, having vertical slots *a a* and opening *a′*, a paper-roller B, printing-roller C, and inking-roller D, working in said slots, a curved plate E, adapted by recesses *e e* and guides *f f* to move vertically in the frame A, a cutting-edge *g* on said plate, and the paper-lifter I, secured to the plate by pins *i i* and held in normal position by a weight *w*, substantially as described.

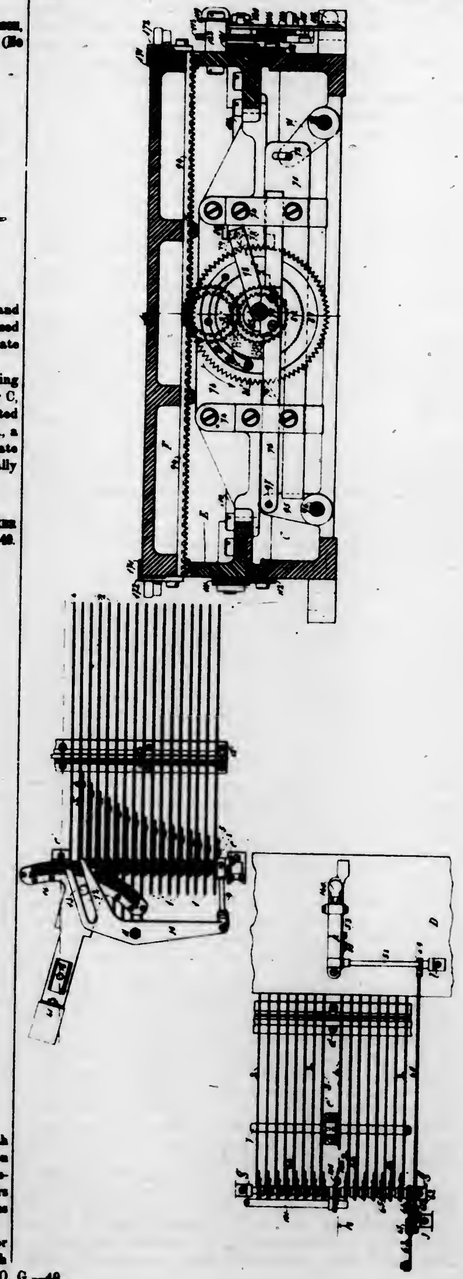
485,702. MATRIX-MAKING MACHINE. ALBERT J. KLEINER and JOHN G. GOMEZ, St. Louis, Mo. Filed Jan. 5, 1892. Serial No. 417,849. (No model.)



Claim.—1. In a matrix-making machine, the combination, with a fixed axis or hub, of a sliding plate moving radially with relation to the hub, segmental die-plates secured to the sliding plate, angle-levers fulcrumed on the hub, and means for actuating the angle-levers and the sliding plate therefrom, substantially as and for the purposes specified.

2. In a matrix-machine, the combination, with a fixed axis or hub, of a main plate secured thereto, a sliding plate provided with shifting blocks, levers fulcrumed on the hub or axis, connecting-rods which connect the levers on the hub with the shifting blocks, a suitable die-carrier, and means for actuating the levers on the hub, substantially as and for the purposes specified.

3. In a matrix-machine, the combination, with a suitable die-holder, of a hub or axis, a main plate secured to the said hub, a sliding plate provided with shifting blocks and to which the die-holder is secured, and means to move the sliding-plate in a radial line to and from the hub or axis, substantially as and for the purposes specified.



4. In a matrix-machine, the combination, with a fixed axis, of a main plate secured thereto and provided with a counterpoise, a radially-sliding plate, a die-carrier secured to the radially-sliding plate, and means for causing the movement of the radially-sliding plate to and from the fixed axis or hub, substantially as and for the purposes specified.

5. In a matrix-machine, the herein-described die-holder, consisting in two parallel plates rigidly secured together at a proper distance apart, said plates being correspondingly formed with several rows of guide-holes for the reception of the dies, arranged in circular arcs, the centers of which when the dies are in operative position are in the axis of a pivot-shaft, one of said plates being rigidly secured to a radially-sliding plate, the said sliding plate being supported and guided by parts rigidly secured to a main plate which is secured by means of a hub to the pivot-shaft, about the axis of which the device as a whole can be rotated in a plane parallel to that of the said plates, substantially as described, and for the purposes specified.

6. In a matrix-machine, the herein-described die-holder, consisting in two parallel plates rigidly secured together a proper distance apart, said plates being correspondingly formed with several rows of guide-holes for the reception of the dies, arranged in circular arcs, the centers of which when the dies are in an operative position are in the axis of a pivot-shaft, one of said plates being removably secured to a radially-sliding plate, the said sliding plate being supported and guided by parts rigidly secured to a main plate which is secured by means of a hub to the pivot-shaft, about the axis of which the device as a whole can be rotated in a plane parallel to that of the said plates, substantially as described, and for the purposes specified.

7. In a matrix-making machine, the combination, with a pivoted die-holder arranged and adapted to slide radially to and from its axis, of a projection on the die-holder and two levers pivoted on opposite sides of the die-holder and having forks which engage the projection on said die-holder, substantially as and for the purposes specified.

8. In a matrix-machine, the combination, with a vibratory die-holder provided with dies arranged in the arc of a circle and having a friction-roller arranged on a radial line from the axis of vibration of said holder, of two pivoted forked levers the forks of which engage the friction-roller on the die-holder, two independent fulcrum-shafts, separate connections between the respective pivoted forked levers and the independent fulcrum-shafts, and two series of keys, the keys of each series having graduated connections with its fulcrum-shaft, substantially as and for the purposes specified.

9. In a matrix-machine, the herein-described die-holder, in which the receptacles for the dies are arranged in a circular arc concentric with a pivot-shaft about which the said die-holder is adapted to be rotated, in combination with means for giving the said die-holder different degrees of rotation for the similar degrees of movement given to the different key-levers, said means consisting in a series of lever-arms of relatively-different lengths, rigidly secured to a common fulcrum-shaft, mechanical connections between said fulcrum-shaft and said die holder, and pins on the key-levers which engage with the said lever-arms, combined and operating substantially in the manner and for the purposes specified.

10. In a matrix-machine, the combination, with a vibratory die-holder having a stud for the engagement of forked levers, of two pivoted forked levers, each lever having one prong shorter than the other, and means for independently actuating said pivoted forked levers, substantially as and for the purposes specified.

11. In a matrix-machine, the combination, with a fixed axis or hub, of a radially-sliding die-holder mounted on said hub, means for causing the movement of said die-holder to and from the hub, a stud on said die-holder, said stud arranged on a radial line from the axis of vibration of the die-holder, two pivoted levers having forks which engage the stud on the die-holder, and means for independently actuating each of said forked levers, substantially as and for the purposes specified.

12. In a matrix-making machine, the herein-described die-holder, in which the receptacles for the dies are arranged on circular arcs in two series equally disposed on either side of a central line, said die-holder being adapted to be rotated about a pivot-shaft in opposite directions and also adapted to move to and from its axis of rotation, in combination with a stud rigidly secured to said die-holder at a distance from its axis of rotation, two bifurcated levers adapted to engage with said stud and rotate the said die-holder in relatively-opposite directions, respectively, key-levers, and intermediate connections between the said levers and the said bifurcated levers, substantially as described, and for the purposes specified.

13. In a matrix-machine, a key-lever provided with a laterally-projecting pin, a fulcrumed lever-arm formed with a hook-shaped end adapted to engage with the pin on said key-lever, thereby defining the relative angle between the two levers and thereby limiting the operative extent of movement of the key-levers, combined and operating substantially in the manner described, and for the purposes specified.

14. In a matrix-machine, a series of key-levers supported on a common fulcrum-pin, said levers being provided with laterally-projecting pins at graduated relatively-different distances from the common fulcrum-bearing of the said levers, combined and operating with a series of lever-arms rigidly secured to a common fulcrum-shaft, said lever-arms being of relatively-different graduated lengths and being formed with slots adapted to engage with the said laterally-projecting pin, said slots being open on one side, adapting any one of the series of lever-arms to be operated by the key-lever coacting therewith independently of the other key-levers, substantially as described, and for the purposes specified.

15. In a matrix-machine, the herein-described die-holder, adapted to be given a rotary movement about a pivotal axis, a stud rigidly secured to the said die-holder at a distance radially from its axis of rotation, a bifurcated lever-arm adapted to engage with said stud, intermediate connections between said lever-arm and an oscillating fulcrum-shaft, a lever-arm rigidly secured to said fulcrum-shaft, said lever-arm being formed with a closed ended slot, key-levers, and laterally-projecting pins on said key-levers, combined and operating substantially in the manner described, and for the purposes specified.

16. In a matrix-machine, the herein-described mechanism for forcing the die into the matrix-board, consisting in two shafts revolubly supported in line, a coupling between said shafts, whereby the said shafts may be operatively connected or disengaged, a drive-pulley secured to one shaft, a punch operated by the other shaft, a disk on the drive-pulley shaft, a fulcrumed vibrating lever actuated by the disk, a shaft actuated by the vibrating lever, and a second lever-arm on said shaft, which actuates the coupling or clutch for connecting the said shafts by the depression of the key-levers and for automatically disconnecting the same, combined and operating substantially as and for the purposes specified.

17. In a matrix-machine, two shafts supported in line in fixed journal-bearings, adapted to be mechanically connected and disconnected, one of said shafts having secured to it at or near one of its ends a driving-pulley and to its other end a coupling-cheek, the other shaft having secured to one of its ends a shifting coupling-cheek and to its other end a crank connected by a link to a guide-head to which is removably secured a stamping-punch, combined and operating substantially as described, and for the purposes specified.

18. In a matrix-machine, the herein-described mechanism for forcing the die into the matrix-board, consisting in two shafts revolubly supported in line, a coupling between said shafts, whereby the said shafts may be operatively connected or disengaged, a driving-pulley secured to one shaft, a punch operated by the other shaft, and means, substantially as described, for connecting the said shafts by the depression of the key-levers and for automatically disconnecting the same, combined and operating substantially as described, and for the purposes specified.

19. In a matrix-machine, two shafts supported in line in journal-bearings, a coupling between said shafts adapted to operatively connect and disconnect the same, and a disk secured to each of said shafts, each of said disks having a pin projecting from its face, adapted when the disks to which they are secured are rotated to engage, respectively, with two lever-arms secured to a common fulcrum-shaft, one of said lever-arms being connected to the shifting member of said coupling, combined and operating substantially as described, and for the purposes specified.

20. In a matrix-machine, a power-driven shaft, a shaft by which the die-punch is operated, a shifting coupling between said shafts, a crank-pin secured on the said power-driven shaft, a lever-arm secured to a fulcrum-shaft, and connections between the said fulcrum-shaft and the shifting member of the said coupling, whereby the rotation of said fulcrum-shaft is adapted to operatively connect and disconnect the said power-driven shaft and the said punch-operating shaft, said lever-arm being formed with a curved cheek eccentric to the path of revolution of the said pin and the said lever-arm being fulcrumed on a pin secured diametrically to said fulcrum-shaft, adapting the said lever-arm to be tilted to a position in which the said curved cheek is in a position to be engaged by the said revolving crank-pin, the said lever-arm being formed with an inclined cheek adapted to engage with the end of said revolving crank-pin, whereby the said lever-arm is tilted to an oblique position relative to said fulcrum-shaft, placing the said curved cheek of the said lever in a position beyond the path of said revolving crank-pin, combined and operating substantially in the manner and for the purposes specified.

21. In a matrix-machine, a power-driven shaft, a shaft by which the die-punch is operated, a shifting coupling between said shafts, a disk secured on the said power-driven shaft, a projecting pin on said disk, a lever-arm secured to a fulcrum-shaft, connections between the said fulcrum-shaft and the shifting member of the said coupling, whereby the rotation of said fulcrum-shaft is adapted to operatively connect and disconnect the said power-driven shaft and the said punch-operating shaft, said lever-arm being formed with a curved cheek eccentric to the path of revolution of the said pin and the said lever being fulcrumed on a pin secured diametrically to said fulcrum-shaft, adapting the said lever-arm to be tilted to a position in which the said curved cheek is in a position to be engaged by the said revolving pin, the said lever-arm being formed with an inclined cheek adapted to engage with the end of said revolving pin, whereby the said lever-arm is tilted to an oblique position relative to the said fulcrum-shaft, placing the said curved cheek of the said lever in a position beyond the path of the said revolving pin, and means, substantially as described, for retaining the said lever-arm in the said tilted oblique position, combined and operating substantially in the manner and for the purposes specified.

22. A power-driven shaft, a second independently-supported shaft, a shifting coupling between the said shafts, a crank-pin secured to said power-driven shaft, a lever-arm fulcrumed to a fulcrum-shaft, and intermediate connections between the said fulcrum-shaft and the said coupling, said lever-arm being formed with a curved cheek eccentric to the path of revolution of the said crank-pin and a cheek inclined to the plane of revolution of the said crank-pin, combined and operating substantially in the manner and for the purposes specified.

23. In a matrix-machine, a power-driven shaft, a second independently-supported shaft, a shifting coupling between the said shafts, a crank-pin secured to the said power-driven shaft, a lever-arm fulcrumed to a fulcrum-shaft, intermediate connections between the said fulcrum-shaft and the said coupling, a crank-pin secured on said second independently-supported shaft, and a second lever-arm rigidly secured on said fulcrum-shaft, said fulcrumed lever-arm being formed with a curved cheek eccentric to the path of revolution of the crank-pin secured on the said power-driven shaft and a cheek inclined to the plane of revolution of said crank-pin and said second lever-arm being formed with a stop-shoulder adapted to engage with the crank-pin secured on the said second independently-supported shaft, combined and operating substantially in the manner and for the purposes specified.

24. In a matrix-machine, a power-driven shaft, an independently-supported shaft to one end of which is secured a crank-head and connected reciprocating punch-head, a shifting coupling between the said shafts, a crank-pin secured on the said power-driven shaft, a lever-arm fulcrumed on a fulcrum-shaft, intermediate connections between said fulcrum-shaft and said coupling, a crank-pin secured on said punch-operating shaft, and a second lever-arm rigidly secured on said fulcrum-shaft, said fulcrumed lever-arm being formed with a curved cheek eccentric to the path of revolution of the crank-pin on the said power-driven shaft and a cheek inclined to the plane of revolution of the said crank-pin and said second lever-arm being formed with a stop-shoulder adapted to engage with the crank-pin secured on said punch-operating shaft, combined and operating substantially in the manner described, and for the purposes specified.

25. In a matrix-machine, a power-driven shaft, an independently-supported punch-operating shaft, a shifting coupling between the said shafts, a crank-pin secured on the said power-driven shaft, a double fulcrumed lever-arm adapted to engage with and be operated by the said crank-pin, intermediate connections between the said lever-arm and the said coupling, key-levers, and intermediate connections, substantially as described, between the said key-levers and the said lever-arm, whereby the manipulation of the said key-levers will bring the said lever-arm into a position to engage with the said crank-pin, thereby effecting the connection and disconnection of the said shafts, combined and operating substantially in the manner and for the purposes specified.

26. In a matrix-machine, in combination with the stationary carriage-frame and matrix-carriage, an intermediate carriage adapted to be given a movement transverse to the line-length, and means for effecting and governing such movement, consisting in a gear-pinion and operating ratchet-wheel, pawl and pawl-lever secured on the said intermediate carriage, and a rack secured to the supporting-framework, combined and operating substantially as and for the purposes specified.

27. In a matrix-machine, in combination with the matrix-carriage, an intermediate carriage adapted to be given a movement transverse to the line-length and means for effecting and variably governing such movement, consisting in a gear-pinion and operating-pawl and pawl-lever secured on the said intermediate carriage, said pawl-lever being provided with stops adapted to engage with a sliding plate formed with differential notches, and a rack secured to the supporting-framework, combined and operating substantially as and for the purposes specified.

28. In a matrix-machine, the herein-described means for rewinding the matrix-carriage-propelling mechanism, consisting in a double rack secured to the matrix-carriage, intermediate gear-wheel between one member of said rack and the gear-wheel secured to the spring-hub, intermediate gear between the other member of said rack and a ratchet-wheel, and coacting spring-governed pawl secured on the escapement-wheel, combined and operating substantially in the manner and for the purposes specified.

29. In a matrix-machine, the herein-described line-length-signaling device, consisting in an adjustable button 168, formed with a projecting interference-pin, rod 167, lever-arm 165, lever-arms 163 and 164, spring tapper-rod 162, with attached tapper, and bell 161, combined and operating substantially in the manner and for the purposes specified.

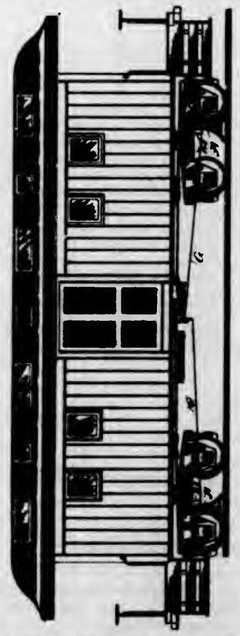
30. In a matrix-machine, the herein-described line-length-signaling device, consisting in an adjustable button 168, formed with a projecting interference-pin, rod 167, lever-arm 165, lever-arms 163 and 164, spring tapper-rod 162, with attached tapper, and bell 161, in combination with the adjustable button 168', formed with a projecting stop-pin, combined and operating substantially in the manner and for the purposes specified.

31. In a matrix-machine, the herein-described device for indicating in the operation of the machine the unoccupied line-space on the matrix-board, consisting in a graduated dial-plate, indicating dial-hand, and operating gear-wheels supported by the intermediate carriage, and a rack secured to the matrix-carriage, said gear-wheels being supported in such manner as to adapt them to engage with and be disengaged from the said rack, combined and operating substantially in the manner and for the purposes specified.

32. In a matrix-machine, the herein-described means for locking the keys against depression, consisting in a cross-bar dependently supported at either end by pivoted arms, intermediate connections between said pivoted arms and the different key-levers, whereby the said cross-bar is brought by the depression of any key-lever under the ends of the other key-levers, substantially as described.

33. In a matrix-machine, the herein-described means for locking the keys against depression, consisting in a cross-bar dependently supported at either end by pivoted arms and intermediate connections between said pivoted arms and the different key-levers, in combination with a catch, a slot in the end of the connecting-bar directly connected with the said pivoted arms, and a recoil-spring whereby the said cross-bar may be brought under the ends of all the keys, substantially as described, and for the purposes specified.

485,708. SANDING DEVICE FOR RAILWAY-CARS. William R. Letox, Allerton, Iowa. Filed Feb 4, 1892. Serial No. 420,264. (No model.)



Claim.—1. In combination with a brake system upon a car or locomotive, a sand-box so arranged as to automatically release the sand and conduct the same to the rail upon the setting of the brakes with a certain force, but not to so release it when the brakes are set with any less force, substantially as and for the purposes set forth.

2. In combination with an air-brake system of a car or similar construction and the automatically-operated sand-box described, the

supplementary cylinder D, containing the spring-piston *d*, adapted to operate the sand-valves by means of intermediate connecting mechanism, substantially as set forth.

3. In an automatic sanding device, the combination of the sand-box A and its valve a^2 and conducting-pipe *a'* with the rock-shaft H, having the arms h' h^3 h^3, said arm h' being operated by the brake mechanism and the arms h^3 h^3 being connected to and adapted to operate the valves a^2 a^2, substantially as set forth.

4. In combination with the brake system of a car or similar construction, the herein-described sand-box and its operating mechanism, so connected to the brake mechanism by a spring connection as to be operated by the application of the brakes with a certain force, but not to be so operated by the application of the brakes with any less force, substantially as set forth.

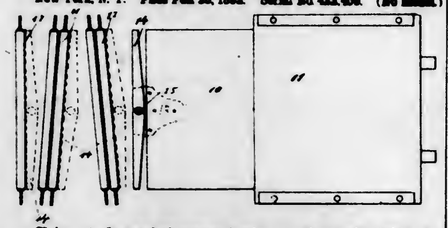
5. In an automatic sanding device, the combination of the sand-box A, pipe *a*, valve a^2, and spring K with the rock-shaft H, arms h' h^3 h^3, rods h^4 h^4, and the brake mechanism of the car, substantially as set forth.

6. In an automatic sanding device, the combination of the sand-box A, pipe *a*, valve a^2, spring K, rock-shaft H, arms h' h^3 h^3, and rod h^4 with the rods G, lever E, piston-rod *d'*, and its operating mechanism, substantially as set forth.

7. In an automatic sanding device for railway-cars, the combination of the sand-box A and valve a^2 with the pipe *a*, branch pipes *a' a'*, and deflector B, substantially as set forth.

8. In an automatic sanding device for railway-cars, the combination of the sand-box A and valve a^2 with the pipe *a*, branch pipes *a' a'*, deflector B, and bar C, substantially as set forth.

485,704. ATTACHMENT FOR PRINTING-PRESSES. EMIL MEIER, New York, N. Y. Filed Feb. 23, 1892. Serial No. 422,450. (No model.)

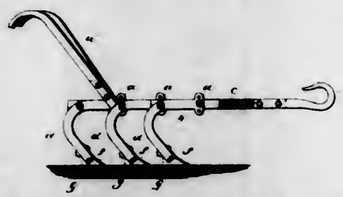


Claim.—1. In a printing-press having a reciprocating inking-table and distribution-rollers to contact with the table, the combination, with the table, of a bar pivoted at one edge of the table, so as to contact with the rollers, substantially as shown and described.

2. The combination, with the distribution-rollers and the reciprocating table, of a bar pivoted at the edge of the table next the rollers, the said bar having its back edge inclined from the middle toward the ends, substantially as described.

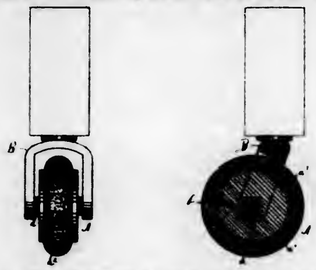
3. The combination, with the distribution-rollers and the reciprocating inking-table, of a support secured to the under side of the table and projecting from its free edge and a bar pivoted to swing horizontally on the support, substantially as described.

485,705. CULTIVATOR. WAVERLY C. MOORE, Greer's Depot, S. C. Filed Dec. 7, 1891. Serial No. 414,344. (No model.)



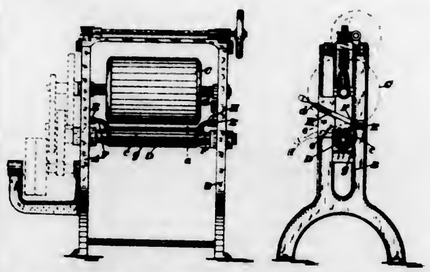
Claim.—In an interchangeable cultivator, the combination of a central curved beam pierced with holes at intervals and upturned at its rear end with the curved or angular side bars bolted at their forward ends to the central bar and held at their ends by screw-threaded rods and spacing-nuts, and the curved double standards provided with adjusting-heads, whereby the pitch of said standards may be changed and the side bars adjusted longitudinally upon the center bar, substantially as shown and described.

485,706. CASTER. HARRISON H. MCELHENEY, Nebraska City, Nebr., assignor to the McElhaney Manufacturing Company, same place. Filed July 28, 1891. Renewed Aug. 9, 1892. Serial No. 442,544. (No model.)



Claim.—The combination of a solid wheel *a'*, the perforated insulating-packing *a*, passing through said wheel and extending beyond each side of the same, axle *b*, passing through the arms of the shank B, and shank B, having the shaft C, substantially as shown and described.

485,707. IRONING-MACHINE. ROBERT S. NELSON and ADAM KRESTEN, Chicago, Ill. Filed Jan. 18, 1892. Serial No. 418,382. (No model.)



Claim.—A blade *c*, capable of motion to and from one of the rollers of an ironing-machine, said blade having arms F, which are pivoted to the frame of said machine, said arms serving to suspend said blade, and a lever H, secured to one of said arms and operating with said blade, in combination with one of the rollers of said machine, for the purpose substantially as described.

485,708. ELEVATED-RAILWAY SYSTEM. EDWIN HORTON, Maywood, Ill. Filed Feb. 20, 1892. Serial No. 422,136. (No model.)

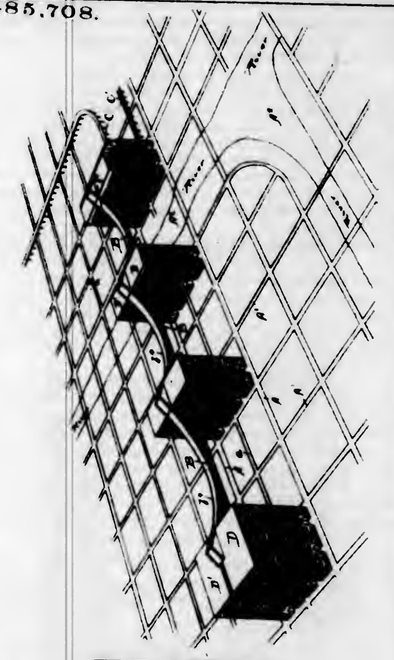
Claim.—1. The combination, with an elevated-railway road-bed B, having a railway-track, of two rows of buildings D and D', extending along the line of said road-bed, one row of buildings on each side thereof, the opposite buildings of the rows being connected together in pairs, said buildings being furnished with rooms and adapted for offices, commercial or other uses, and serving as supports from or by which said elevated road-bed is suspended or supported, whereby said road-bed may be erected at such height as to span navigable streams without interfering with the navigation thereof, substantially as specified.

2. The combination, with an elevated-railway road-bed B, of a series of buildings D D', extending along the line of said road-bed, each pair of said buildings being connected together by arches D^3, said road-bed being supported or suspended from said buildings, substantially as specified.

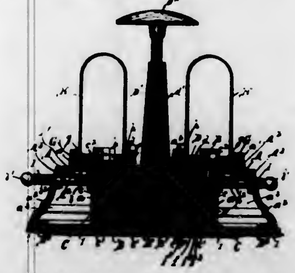
3. The combination, with an elevated-railway road-bed B, of a series of buildings D D', extending along the line of said road-bed, each pair of said buildings being connected together by arches D^3, said road-bed being supported or suspended from said buildings, the terminal building of said series being provided with a loop b^3 and waiting-room or floor D^3, substantially as specified.

4. The combination, with an elevated-railway road-bed B, of a series of buildings D D', extending along the line of said road-bed, each pair of said buildings being connected together by arches D^3, said road-bed being supported or suspended from said buildings, the terminal building of said series being provided with a loop b^3 and waiting-room or floor D^3, and an elevator or elevators connecting said waiting-room with the lower floor or floors of said building, said loop b^3 encircling said elevators, substantially as specified.

485,708.



485,709. DICE-CASTER. JAMES J. PARKER, Fulton, N. Y. Filed Mar. 29, 1892. Serial No. 426,864. (No model.)



Claim.—1. In a dice-caster, the combination of a frame having an air passage or duct, a support for one of the dice, mounted in the path of the air passed through the passage or duct, and a compression device for forcing the air through said duct and moving the support, substantially as and for the purpose described.

2. In a dice-caster, the combination of a frame having an air passage or duct, a support for one of the dice, mounted in the path of the air passed through the passage or duct, a compression device for forcing the air through said duct and moving the support, and a stop movable into said duct for shutting off the passage of the air, substantially as described.

3. In a dice-caster, the combination of a frame having an air passage or duct, a support for one of the dice, mounted in the path of the air passed through the passage or duct, a transparent shell above the support, and a compression device for forcing the air through said duct and moving the support, substantially as specified.

4. In a dice-caster, the combination of a frame having an air passage or duct, a movable support for one of the dice, mounted in the path of the air passed through the passage or duct, a compression device for forcing the air through the passage or duct and moving the support, a shell removably mounted above said support for permitting access thereto, and a fastener for retaining said shell in its normal position, substantially as set forth.

5. In a dice-caster, the combination of a frame having an air passage or duct, a movable support for one of the dice, mounted in the path of the air passed through said passage or duct, and a movable plunger for forcing the air through said passage or duct and moving said support, substantially as specified.

6. In a dice-caster, the combination of a frame having an air passage or duct, a movable support for one of the dice, mounted in the path of the air passed through said passage or duct, a movable plunger for forcing the air through said passage or duct and moving said support, and a stop movable into and out of said passage or duct, substantially as set forth.

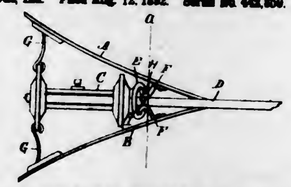
7. In a dice-caster, the combination of a frame having an air passage or duct, a movable support for one of the dice, mounted in the path of the air passed through said passage or duct, a movable plunger for forcing the air through said passage or duct and moving said support, a stop movable into and out of said passage or duct, and a spring for retaining the stop in its adjusted position, substantially as specified.

8. In a dice-caster, the combination of a frame having a series of passages or ducts, a series of movable dice-supports mounted above the exits of the respective passages or ducts, a series of transparent shells mounted above the dice-supports, and a plunger for forcing the air through said passages or ducts to move the dice-supports, substantially as set forth.

9. In a dice-caster, the combination of a frame having a series of passages or ducts, a series of movable dice-supports mounted above the exits of the respective passages or ducts, a series of transparent shells mounted above the dice-supports, a plunger for forcing the air through said passages or ducts to move the dice-supports, and independent stops movable into the respective passages or ducts for preventing the passage of the air, substantially as set forth.

10. In a dice-caster, the combination of a frame having a central chamber, passages or ducts leading from one extremity of said chamber, movable dice-supports mounted above the exits of the respective passages or ducts, a plunger movably mounted in said central chamber, and a flexible lining for said central chamber, having one end secured to the plunger and the other to the wall of the chamber, substantially as and for the purpose described.

485,710. CORN-PLANTER ATTACHMENT. JOSEPH B. PEDRICK, Columbus, Ind. Filed Aug. 12, 1892. Serial No. 442,859. (No model.)



Claim.—In a corn-planter attachment of the class described, the combination, with the plates A and B, having brackets F, adapted to interlock with arms permanently secured to the furrow-runner of a corn-planter, of the legs H and I, formed upon said brackets, respectively, and adapted to co-operate, substantially as and for the purpose set forth.

485,711. BROOM-CORN HARVESTER. GEORGE W. PETERSON, Leonardville, Kans. Filed July 23, 1891. Serial No. 400,989. (No model.)

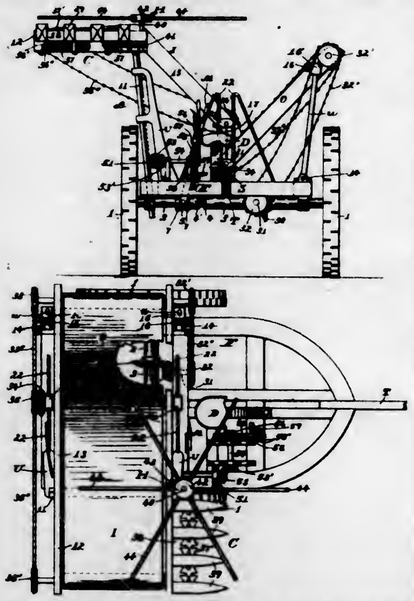
Claim.—1. In a corn-harvester, the combination, with the main frame having uprights, bars vertically adjustable in said uprights, an endless carrier whose frame is connected with said bars, a delivery-carrier to which said first carrier delivers, means for operating these carriers, and means for adjusting said bars vertically, of a cutting apparatus mounted on the outer end of said first-named endless carrier, connections between this cutting apparatus and a shaft of the carrier, a reel above the cutting apparatus, and connections between the reel-shaft and the cutting apparatus, as and for the purpose set forth.

2. In a corn-harvester, the combination, with the axle, the main frame mounted on the axle, a sleeve turning thereon and having teeth at one end and a gear at its other end, a ring splined on the axle and having teeth adapted to engage those on the sleeve, and a main lever for moving this ring longitudinally, of a pair of vertically-adjustable uprights, and a pair of supplemental uprights located at opposite sides of the frame, an inwardly-traveling and an outwardly-traveling carrier mounted, respectively, on the adjustable uprights and supplemental uprights, connections between said gear and the shaft of one carrier, connections between the adjacent shafts of the two carriers, a cutting apparatus supported at one side of and by the frame of the inwardly-traveling carrier, and connections between the roll thereof and the cutting apparatus, substantially as specified.

3. In a harvester, the combination, with the main frame having vertical guides rising therefrom, the cutting apparatus, and spring-cushions between said guides, of an endless carrier having lugs on its

frame moving in said guides and supported by the cushions, and means for raising and lowering said elevator, as and for the purpose set forth.

4. In a harvester, the combination, with a main frame having vertical guides rising therefrom, stationary uprights at one side and pivoted supplemental uprights at the other side of the guides, and the cutting apparatus, of bars moving through said stationary uprights, an inwardly-traveling carrier mounted in a frame on these bars and having lugs at the inner ends of its frame moving in the guides, an outwardly-traveling carrier whose frame is pivotally connected to said supplemental uprights and having lugs at its inner end moving in the guides beneath those of the other carrier, pivoted connecting-rods connecting the inner ends of the carrier-frame, means for driving the carriers, and means for adjusting said bars vertically, as and for the purpose set forth.



5. In a harvester, the combination, with an endless carrier moving in a frame and operating in conjunction with the cutting apparatus, its frame having a depending rod, of a tube rising from the main frame and embracing said rod loosely and an expansible spring surrounding the tube and pressing the carrier-frame upwardly, substantially as described.

6. In a corn-harvester, the combination, with the main frame, uprights thereon, an outwardly-traveling carrier whose frame is supported by one pair of uprights, an inwardly-traveling carrier whose frame is supported by the other pair, this frame having a horizontal outer portion and an inclined inner portion leading over the inner end of the outwardly-traveling carrier, and means for driving said carriers, of a cutting apparatus mounted at one side of and supported by said horizontal portion of the carrier-frame, connections between such apparatus and one of the shafts of the carrier, and a reel located at one end of the cutting apparatus, and driving connections between it and the cutting apparatus, as and for the purpose set forth.

7. In a harvester, the combination, with the main frame having the main uprights at one side and the pivoted supplemental uprights at the other side thereof, the adjusting-bars passing through said main uprights, a carrier whose frame is supported by said bars, and another carrier whose frame is pivotally supported by the supplemental uprights, of pivoted connecting-rods connecting the inner ends of said carrier-frames, a wheel driven by the axle, a belt connecting this wheel with the outer shafts of one carrier, pulleys on the shafts at the adjacent ends of the carriers, and a belt connecting said pulleys, substantially as described.

8. In a harvester, the combination, with the main frame having the main uprights at one side and the pivoted supplemental uprights at the other side thereof, the adjusting-bars passing through said main uprights, a carrier whose frame is supported by said bars, another carrier whose frame is pivotally supported by the supplemental uprights, and pivoted connecting-rods connecting the inner ends of said carriers, of a wheel driven by the axle, belts connecting this wheel with the outer shaft of one carrier, said shaft with the inner shaft of this carrier, said inner shaft with the inner shaft of the other carrier, and the latter inner shaft with the outer shaft of its carrier, a cutting apparatus, and connection between said apparatus and the last mentioned shaft, as and for the purpose set forth.

9. In a corn-harvester, the combination, with the frame, the main uprights at one side thereof, the adjusting-bars passing through said uprights, the supplemental uprights pivoted to the other side of the main frame, the blocks on the supplemental uprights, and set-screws through said blocks, of an inwardly-traveling carrier whose frame is supported by said bars, an outwardly-traveling carrier whose frame is loosely connected to the inner end of the other carrier-frame, swivel connections between said blocks and the outer end of the outwardly-traveling carrier-frame, and means for driving the carriers, substantially as described.

10. In a harvester, the combination, with the main frame, an upright thereon, a rack-bar moving therethrough, a carrier whose frame is supported by the rack-bar, vertical guides on the main frame, and lugs on the carrier-frame moving in said guides, of a shaft journaled in bearings in the upright and having a gear engaging said rack-bar, another shaft geared to the first and having a large gear, and an operating-lever for turning the latter gear, as and for the purpose set forth.

11. In a harvester, the combination, with the rotary cutting apparatus, the reel driven thereby, and connections between said apparatus and the driving-wheels, of an inwardly-traveling carrier in rear of the cutting apparatus, an outwardly-traveling carrier to which the other delivers, guides on the main frame, lugs on both carrier-frames moving in said guides, links connecting said carrier-frames, means for adjusting the inwardly-traveling carrier vertically, and means for adjusting the inner end of the outwardly-traveling carrier vertically and its outer end laterally, substantially as described.

485,712. BOX FOR TYPE-WRITER RIBBONS. Lebbeus H. Rogers, New York, N. Y., assignor to the Rogers Manifold and Carbon Paper Company, same place. Filed May 2, 1892. Serial No. 431,401. (No model.)

Claim.—1. The combination, with the box and removable reel formed with apertures in the ends thereof, of removable supports for the reel, formed with bearings adapted to fit in the apertures in the ends of the reel, said supports and reel being held in position by the sides of the box, and means for revolving the reel to wind the ribbon thereon, substantially as described.

2. The combination, with the box and a reel formed with apertures in its ends, of supports for the reel, formed with central openings therein, inwardly-extending flanges around the openings, projecting into the apertures in the ends of the reel and forming bearings for the same, and means for revolving the reel, substantially as described.

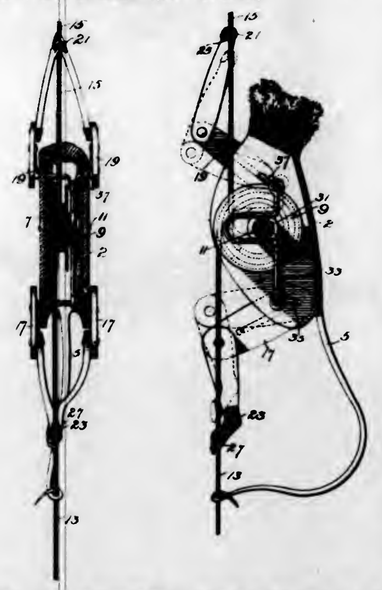
3. The combination, with the box having an opening in one side thereof and a reel formed with apertures in its ends, of supports for the reel, formed with central openings therein, inwardly-extending flanges around the openings, projecting into the apertures in the ends of the reel, forming bearings for the same, and a crank-handle, one end of which is adapted to be passed through the openings in the side of the box and support and into a suitable socket in the end of the reel for revolving the same, substantially as described.

4. The combination, with the box and reel-supports, of a reel comprising an inner metallic tube, reel-heads having central openings therein, through which the ends of the inner tube project, an outer tube abutting against the inner faces of the latter, outwardly-extending flanges formed by the projecting ends of the inner tube, whereby the reel-heads are clamped securely in place, and removable sheet-metal supports having annular flanges adapted to fit in the inner tube, substantially as described.

5. The combination, with the box, of a reel consisting of a central core, an inner tube formed on the core and projecting beyond the ends of the same, reel-heads having central openings therein, through which the ends of the tube project, inwardly-extending flanges around the opening in the reel-heads, bearing against the inner tube, an outer tube of a length greater than the length of the core, but less than the length of the inner tube, engaging against the outer faces of the inwardly-extending flanges on the reel-heads and abutting against the inner faces of the latter, outwardly-extending right-angled flanges formed by the projecting end of the inner tube, whereby the reel-heads are clamped securely in place, and supports for the reel, having central openings therein, and inwardly-extending flanges around the openings, projecting into the inner tube of the reel and forming bearings for the same, substantially as described.

6. The combination, with the box having a display-opening in one side thereof, of a reel and its supports, which are removable from the box, one of said supports when in place closing said display-opening and having a portion exposed through the same, so that an inscription thereon describing the character of the ribbon will be exhibited without opening the box or exposing any part of the ribbon itself, substantially as described.

485,713. TOY. William P. Shattuck, Minneapolis, Minn. Filed Dec. 1, 1891. Serial No. 413,686. (No model.)



Claim.—1. A toy consisting of a body formed to represent a living creature, a differential pulley arranged therein, cords wound upon said pulley and extending from the front and rear thereof, parts upon said body movable in relation thereto and guided by said cords, and connections between said parts and the pulley-shaft for imparting motion to said parts.

2. In a toy, the combination, with a suitable figure, of movable limbs connected therewith, a differential pulley, cords connected with said pulley and arranged to guide said limbs, and means connecting said pulley and said movable limbs for operating said limbs.

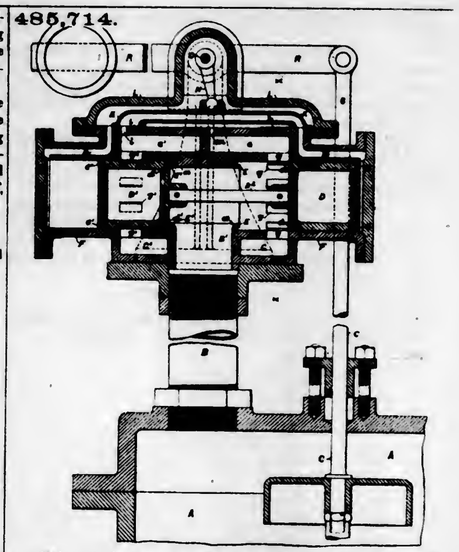
3. In a toy, the combination, with a suitable figure formed with jointed and movable limbs, of a differential pulley connected therewith, cords upon said pulley, means for guiding said limbs, and means connected with the axis of said pulley and with said limbs for operating the same as said figure is moved along said cords.

4. In a toy, the combination, with a suitable figure provided with upper and lower movable limbs, of a differential pulley connected with said figure, cords connected with said pulley and extending from the opposite ends of said figure, and means connecting the axle of said pulley with said limbs for moving said limbs back and forth along said cords as said figure is moved in either direction.

5. The combination, with a body, of movable limbs connected therewith, a differential pulley arranged therein, a cam provided in connection with said pulley, two cords wound on the same, crank-rods arranged in connection with the limbs, and a connecting-rod extending between the same and engaging said cam, whereby as the pulley is exerted on one of said cords said body is caused to advance and said limbs to operate, substantially as described.

485,714. APPARATUS FOR RAISING AND FORCING WATER OR OTHER LIQUIDS. Isaac Shone and Bowen Ault, London, England. Filed May 11, 1887. Serial No. 237,801. (No model.) Patented in England Dec. 15, 1886, No. 16,458.

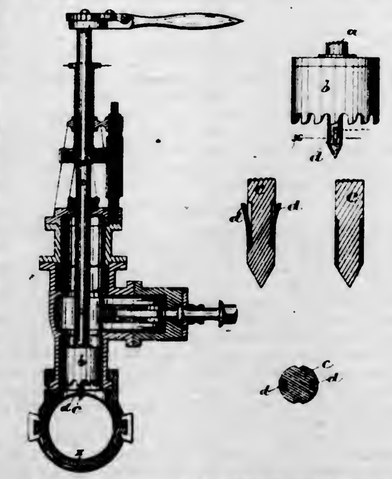
485,714.



Claim.—1. In an apparatus for raising liquids automatically by compressed air, the combination of a working chamber, two pistons that admit air to and from said working chamber, seats for said pistons, and a coupling-rod connecting said pistons together, loosely attached to each of them, so that they may work independently and without restraint in any direction to adapt themselves to their respective seats.

2. In an apparatus for raising liquids automatically by compressed air, the combination of a working chamber, a valve-casing, a float, a rocking lever, a rod connecting said lever projecting into the valve-casing, a valve within said casing worked by said lever, a connecting-arm rigidly attached to said lever and loosely attached to said valve, two pistons for admitting air to and from the working chamber, seats for said pistons, and a coupling-rod connecting said pistons together, loosely attached to each of them, so that they may work independently and without restraint in any direction to adapt themselves to their respective seats.

485,715. APPARATUS FOR TAPPING WATER-MAINS. Anthony P. Smith, Newark, N. J. Filed Dec. 13, 1890. Serial No. 374,634. (No model.)



Claim.—1. In an apparatus for connecting branches to water and other mains, the combination of a shaft *a*, a milling-tool, a drill, and

a spring-catching device connected with said drill, for the purpose set forth.

2. In a tapping apparatus, the combination, with the drill-shaft thereof, of a drill provided with a spring-catching device adapted to pass through and engage with the inner surface of a severed section of a pipe and effect its removal therefrom by the withdrawal of said drill, as set forth.

3. The combination, with the drill-shaft of a tapping apparatus, of a drill having a recess in its side and a spring-catch secured in said recess and having its upper end or portion projecting normally beyond the surface of the drill, for the purpose set forth.

4. A drill provided with a spring-catching device adapted to pass through and to engage with the inner surface of a section of a pipe or other article, whereby the removal of said section when severed from the main body is effected by the withdrawal of said drill, as set forth.

485,716. TAPPING APPARATUS. ANTHONY P. SMITH, Newark, N. J. Filed Jan. 8, 1892. Serial No. 417,860. (No model.)

Claim.—1. The combination, with the cutter *f* and drill *g*, of a shaft for operating said cutter and drill, the said shaft being provided with a duct to allow the outflow of liquid, substantially as set forth.

2. The combination, with a cutter having a chamber to receive the severed disk, of a duct leading from said chamber to the open air, whereby the pressure on said disk will be reduced on the side toward said chamber, substantially as set forth.

3. The combination, with the longitudinal shaft of a tapping apparatus having a drill and annular cutter secured at the end thereof, of a duct formed in said shaft and extending from the interior of said annular cutter to the outer air, substantially as set forth.

4. In combination, the main or supply pipe *c*, branch *c'*, longitudinally-perforated shaft *f'*, having the annular cutter *f* thereon, and the extension drilling-tool *f*, the perforation in said shaft leading into said annular cutter, as indicated, means for operating the shaft, and a gate *d'* for closing the branch, substantially as set forth.

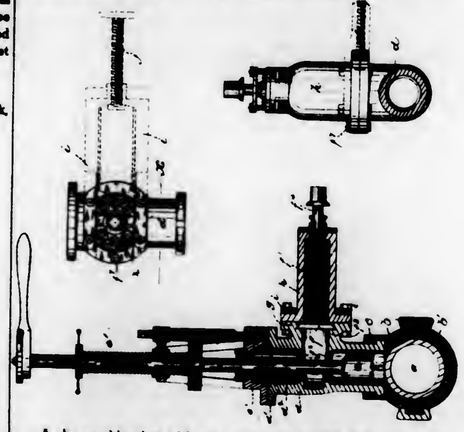
485,717. TAPPING APPARATUS. ANTHONY P. SMITH, Newark, N. J. Filed Jan. 8, 1892. Serial No. 417,860. (No model.)

Claim.—1. The combination, with the main pipe *c* and branch pipe *d*, having a longitudinal water-way d^3, a seat *d'* for the cutting-tool, an interior seat for a gate, a lateral passage and seat for the gate, and a valve-seat adjacent to said passage, the said valves closing the lateral passages to admit of the removal of the gate, of a gate and valve for closing the longitudinal and lateral passages, substantially as set forth.

2. In combination with the branch having a longitudinal passage d^3 and side passage *f*, a hood *h*, gate *f'* for closing said longitudinal passage, and a valve for closing said side passage and admitting of the removal of said closing means, substantially as set forth.

3. In combination with the branch having the longitudinal and side passages, a hood separable from said branch and having a gate, the capacity of the hood being equal to or greater than the dimensions of the gate, a screw having bearings in said hood and operating said gate to close the longitudinal passage, and a valve for closing the side passage when said gate is drawn into said hood, substantially as shown and described, for the purposes stated.

4. In combination with the main and branch pipes, the latter having the longitudinal and side passages and valve-seat, of a hood removably secured upon said branch and having bearings for a gate and a capacity to contain the gate as a whole, said gate arranged to enter through the side passage and close the longitudinal passage, means for operating said gate, a valve arranged in said valve-seat and adapted to close the side passage upon the withdrawal of the gate, and a tapping-tool, all said parts being arranged and adapted to operate substantially as and for the purpose set forth.

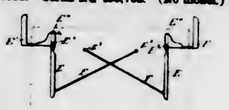


5. In combination with the main and branch pipe, the latter having one of its longitudinal ends secured to the main and the other being provided with a tapping-tool, said branch pipe being also provided with a side opening and seat for a removable gate, and a valve-seat adjacent to said side opening, a hood removably secured over said side opening and provided with a gate adapted to close the longitudinal passage through the branch, means for operating said gate, a valve for closing the side opening, and mechanical means for closing said valve across the side opening, substantially as set forth.

6. In combination, the branch having a side opening, a valve-seat and bearings for a gate, said gate and a tapping apparatus secured on said branch, and a sliding plate serving as a valve to close the side opening and adapted to be interposed between the longitudinal passage of the branch and the inner end of the withdrawn gate, substantially as and for the purposes set forth.

7. In combination with the branch having a side opening and bearings for a gate and bearings for a yoke or frame providing bearings for means for operating a valve, and also having a slideway for said valve, of a tapping apparatus, a gate, and a slide-valve adapted to be interposed between the longitudinal passage of the branch and the inner end of the withdrawn gate, a yoke or frame providing bearings for means for operating the said slide-valve, and said means for operating the slide-valve, all substantially as set forth.

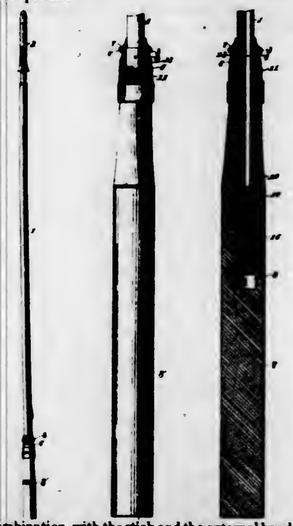
485,718. KITCHEN-CABINET. BOOKER F. SMITH, Stockton, Cal. Filed May 30, 1892. Serial No. 433,762. (No model.)



Claim.—In a kitchen-cabinet, substantially as described, the combination, with the casing and the sliding bread-board D, of the clamps E, secured to the casing, the bracket-arms E, pivotally connected to the clamps E and having the short supplemental arms E^4 and the rods F, connected to the bracket-arms E and the board D, substantially as and for the purpose set forth.

485,719. UMBRELLA-STICK. JAMES H. SPRAGUE, Norwalk, Ohio. Filed Apr. 5, 1892. Serial No. 427,893. (No model.)

Claim.—1. The combination, with the stick and the external band mounted on the stick above the lower end thereof and provided with lugs at its lower edge, of the handle having a bore in its upper end, a metal tube seated in the handle and adapted to receive the stick and provided at its upper end above the handle with the externally-threaded boss having notches to receive the lugs, and the ferrule loosely mounted on the stick, having its lower end internally threaded to engage the threads of the boss and its upper end reduced to fit the stick above the band and form a shoulder for bearing thereon, substantially as specified.



2. The combination, with the stick and the external band mounted on the stick above its lower end and provided at diametrically-opposite sides and at its lower edge with V-shaped lugs, of the handle having a bore in its upper end, a metal tube seated in the handle and adapted to receive the stick, the wooden dowel-pin located in the lower end of the tube and glued within the bore of the stick, the externally-threaded boss located at the upper end of the tube above the handle and provided with diametrically-opposite V-shaped notches adapted to receive the V-shaped lugs of the band, and the externally-milled ferrule mounted on the stick and having its lower end internally threaded to fit the boss of the tube and its upper end reduced to fit the stick and to form a binding-shoulder above the clasp, substantially as specified.

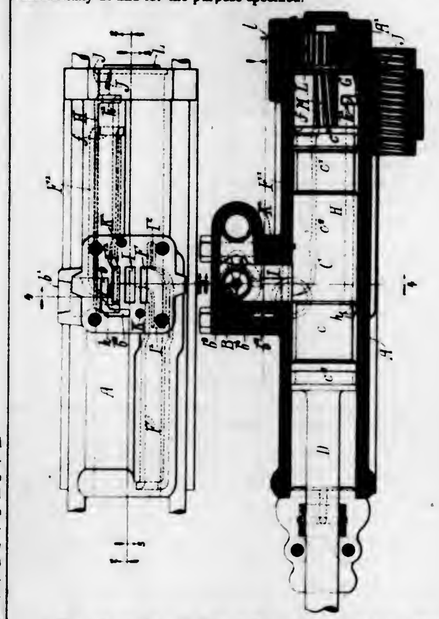
3. The combination, with the stick having the tubular extension internally threaded at its outer extremity, of the tip having the bore, the tube provided with the wooden dowel-pin secured thereto, mounted in the bore, said pin being glued within the same and the tube adapted to receive the tube of the stick, and the plug riveted in the outer end of the tube of the tip and at its outer extremity externally reduced and threaded to fit within and engage the threads of the tube of the stick, substantially as specified.

485,720. ROCK-DRILL. ABRAHAM J. SYPHER, Chicago, Ill. Filed Feb 9, 1892. Serial No. 420,875. (No model.)

Claim.—1. The combination, with the cylinder provided with a live-steam port, steam supply and exhaust passages, and with a cushioning steam-chamber at one end, and a piston provided with annular recesses near its ends, and a main valve actuated by the passage of steam through said recesses and controlling said steam supply and exhaust passages, of a cushioning steam-passage separate from the supply and exhaust passages leading from the central part of the cylinder to the cushioning-chamber, the inlet-opening of said cushioning-passage being arranged in position to take steam from one of the said annular recesses when the latter is in communication with the live-steam port of the cylinder and the outlet-opening of said steam-passage being located at a distance from the end of the cylinder equal to the length of the cushioning-chamber, substantially as described.

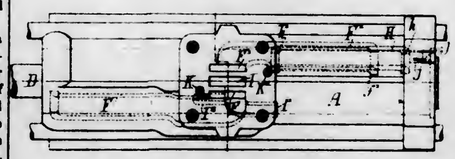
2. The combination, with a cylinder provided with central live-steam port, steam supply and exhaust passages leading to its ends, and a cushioning steam-chamber at one end, of a piston provided with annular recesses near its ends, a main valve actuated by the passage of steam through said recesses and controlling said steam supply and exhaust passages, a cushioning steam-passage separate from the supply and exhaust passages and leading from the central part of the cylinder to the cushioning-chamber, the inlet-opening of said cushioning steam-passage being arranged in position to take steam from one of the said annular recesses when the latter is in communication with the live-steam port of the cylinder and the outlet-opening of said steam-passage being located at a distance from the end of the cylinder equal to the length of the cushioning-chamber, substantially as described.

3. The combination, with the steam-cylinder of a rock-drill, provided with a cushioning-space at one end with steam-supply passages, of a small unobstructed steam-passage leading from one of said steam-supply passages to the end of the cushioning-space of the cylinder, substantially as and for the purpose specified.



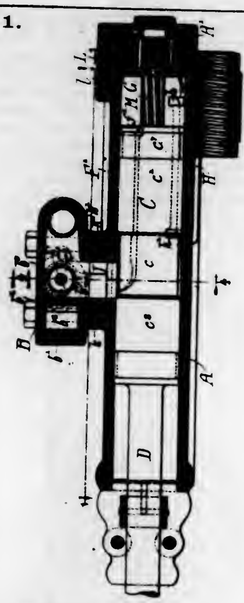
4. The combination, with the steam-cylinder of a rock-drill, provided with steam-supply passages, a cushioning-space at one end, and a separate cushioning steam-passage opening into said cushioning-space, of a small unobstructed passage leading from the cushioning steam-passage to the extreme end of the cylinder, whereby steam for starting the piston is obtained through said cushioning steam-passage, substantially as described.

485,721. ROCK-DRILL. ABRAHAM J. SYPHER, Chicago, Ill. Filed Feb. 9, 1892. Serial No. 420,876. (No model.)

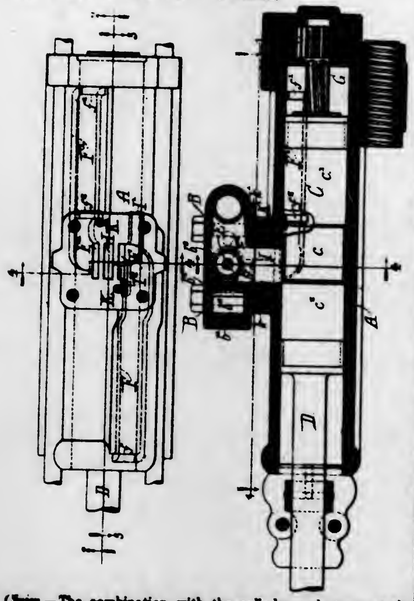


Claim.—The combination, with the cylinder provided with a live-steam port, steam supply and exhaust passages, and with a cushioning steam-chamber at one end and a piston provided with a single central annular recess and a main valve actuated by the passage of steam through said recess and controlling said steam supply and exhaust passages, of a cushioning steam-passage separate from the supply and exhaust passages, leading from the central part of the cylinder to the cushioning-chamber, the inlet-opening of said cushioning steam-passage being arranged in position to take steam from the said annular recess when the latter is in communication with the live-steam port of the cylinder, and the outlet-opening of said steam-passage being located at a distance from the end of the cylinder equal to the length of the cushioning-chamber, substantially as described.

485,721.

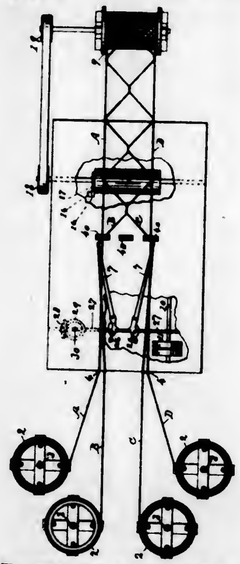


485,722. ROCK-DRILL. ABRAHAM J. SYPHER, Chicago, Ill. Filed Feb. 9, 1892. Serial No. 420,877. (No model.)



Claim.—The combination, with the cylinder and steam-supply pipe therefor, said cylinder being provided with steam supply and exhaust passages, with a live-steam port independent of said steam supply and exhaust passages and in constant communication with the steam-supply pipe and with a cushioning-chamber at one end, of a piston within the cylinder provided with an annular recess and a main valve actuated by the passage of steam through said recess and controlling said steam supply and exhaust passages, one of said steam supply and exhaust passages being provided with an inlet-opening located at the central part of the cylinder and in position to take steam from the annular recess of the piston when said recess is in communication with the live-steam port of the cylinder, and with an outlet opening or port located at a distance from the end of the cylinder equal to the length of the cushioning-chamber, whereby steam is supplied to the cushioning-chamber through said supply and exhaust passage independently of the action of the valve, substantially as described.

485,728. MACHINE FOR MAKING WIRE FENCING-BANDS. JOSEPH A. TATRO, Beaver Falls, Pa. Filed June 23, 1892. Serial No. 437,763. (No model.)



Claim.—1. The combination, in a machine for making band fencing, of the cam 12, mounted on a rotary shaft, the slide moving in vertical guides above the cam and having a pawl at its top, and the pair of rollers mounted one over the other above the slide and the lower provided with a fixed ratchet-wheel in gear with the pawl, all substantially as to construction and arrangement in the manner described, for the purpose of drawing the fence-band between said pair of rollers at regular intermissions of time and by uniform lengths of banding.

2. The combination, in a machine for making band fencing, of the pair of vibrating arms having each an open-tipped thimble at the front end and provided with the hubs at their points of support and with the vertical rollers in pairs at the rear ends, and the cam-shaped wheel mounted upon a rotary shaft and having the rims on its periphery in contact with the rollers of the vibrating arms, said arms and wheel being supported in the framework of the machine, and the whole constructed and arranged substantially as set forth, for the purpose of alternately swinging said arms inwardly and outwardly at regular intervals of time and for uniform distances, as herein fully described.

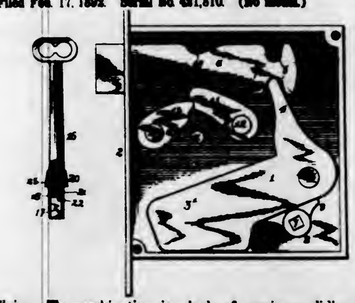
3. The combination, in a machine for making band fencing, of the twisting-wheels mounted on rotary shafts having each a straight notch from the edge to the arbor of the wheel, the gear-wheels in pairs beneath said twisting-wheels and meshing therewith, the studs at regular intervals around the faces of the lower gear-wheels, the forks below said lower gear-wheels in intermittent contact with the said studs and mounted on rotary shafts, the shafts of the said twisting-wheels and gear-wheels being supported in proper positions within the framework of the machine, the whole substantially as set forth herein, for the purpose of revolving the said twisting-wheels in the spinning of the wire, as herein fully described.

4. The combination, in a machine for making band fencing, of the cams 44, mounted on the rotary shafts carried in the framework of the machine, the slides pivoted to said cams, the center slide moving in guides in the aforesaid framework, the bent levers pivoted at one end to the said framework and also pivotally connected to the outer two of the slides aforesaid, and the twisting-wheels mounted one at the top of the center slide and the two others at the free ends of the bent levers, the whole constructed and arranged substantially as described, for the purpose of projecting said twisting-wheels above the top of the frame whenever required in the operation of the machine, as fully set forth herein.

5. The combination, in a machine for making band fencing, of the cams 44, mounted on rotary shafts supported in the frame of the machine, the reciprocating slides pivoted to said cams, the center slide moving in guides in the framework of the machine, the bent levers hung by one end in the frame of the machine and pivoted to the outer of the aforesaid slides, the set of large toothed wheels upon the center slide and the two bent levers having the circle of studs upon each wheel, the forks mounted on rotary shafts supported in the frame of the machine, the said forks in intermittent contact with the aforesaid studs, the toothed wheels upon said center slide, and bent levers in gear with the studded wheels, and the twisting-wheels upon the center slide and bent levers in gear with the last-mentioned toothed wheels, all substantially in the manner herein set forth, for the purpose of revolving said twisting-wheels and projecting them at intervals above the top of the frame-work of the machine, as herein fully described.

6. The combination, in a machine for making band fencing, of the twisting-wheel mounted upon a reciprocating movable support and having a straight notch formed from the rim to the arbor of said wheel, with the housing mounted on the same support and formed in two counterparts arranged on either side of the twisting-wheel, each counterpart having the gage projected from and above said counterpart, all in the manner described, for the purpose of fixing the length of a lock or twist in the fencing-band and affording bearings for the material during the formation of a twist, as fully set forth herein.

485,724. GRAVITY-LATCH. JOHN W. TOOPS, Kiousville, Ohio. Filed Feb. 17, 1892. Serial No. 421,810. (No model.)



Claim.—The combination, in a lock, of a casing, a sliding bolt or catch, a bolt or latch operating gravity-tumbler, a knob-spindle having means for operating said tumbler, a pivoted gravity-locking tumbler adapted to engage the bolt or catch, and a pivoted locking-tumbler adapted to engage and support the last-named tumbler in both its locked and unlocked positions, substantially as set forth.

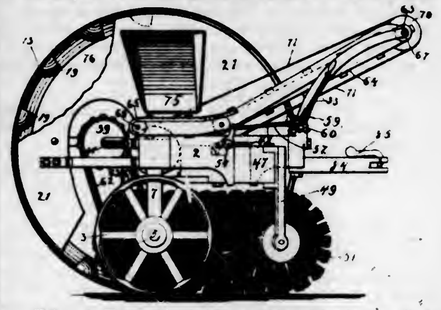
485,725. KEY. JOHN W. TOOPS, Kiousville, Ohio. Filed May 10, 1892. Serial No. 432,418. (No model.)

Claim.—In a key for locks, a shank having an arm or bit pivoted in the outer end thereof, so as to swing in line with or at right angles to the shank and provided with a slidable ring upon said shank, said ring and said arm or bit being connected by a pivoted link, whereby the sliding movement of the ring upon the shank actuates the arm or bit.

485,726. DEVICE FOR REMOVING CORNS. REINHARD VIOL, Frankfort-on-the-Main, Germany. Filed June 9, 1892. Serial No. 436,148. (No model.) Patented in Germany Feb. 3, 1891, No. 61,005, and Dec. 23, 1891, No. 1,770.

Claim.—A device for removing corns and other indurations of the skin, consisting in the combination of an incurved metal plate A and an upper covering-plate B, with an emollient medicament filled into a recess C, formed between the plates A and B, for the purpose as described.

485,727. STREET-SWEEPING MACHINE. EUGENE WALLACE, Minneapolis, Minn. Filed Aug. 14, 1891. Serial No. 402,636. (No model.)



Claim.—1. The combination, in a machine of the class described, with the frame and the angularly-placed dirt-collector, of the driving-wheel provided with an inwardly-projecting flange, a series of buckets upon the inner surface of said flange, a spout projecting within said flange at the upper part of said wheel, and an upwardly-projecting driven carrier adapted to receive material from said spout, substantially as described.

2. In a machine of the class described, the combination, with the machine-frame, of the brush-frame 47, mounted thereon, means for raising and lowering said brush, the driving-wheel, a connection between said driving-wheel and said brush, whereby said brush is driven from said driving-wheel, and means for disconnecting said brush from said driving-wheel as said brush is raised, substantially as described.

3. In a machine of the class described, the combination, with the machine-frame, of the brush mounted thereon, the driving-wheel provided with the inwardly-projecting flange, and the disk 21, arranged outside of said flange and provided with an opening in its lower portion, through which material is passed from said brush to the inner surface of said driving-wheel.

4. In a machine of the class described, the combination, with the frame of the machine, of the driving-wheel provided with the notched ring 31, the gear 27, having a spring-controlled lug adapted to engage the notches in said ring, the movable brush-frame, the brush mounted thereon and the shipper-arm arranged upon said brush-frame and adapted to engage the lug on the gear 27 and disconnect the same from the driving-wheel when the brush-frame is raised, and means connecting said gear 27 with said brush.

5. The combination, with the frame of the machine, of the brush mounted thereon, the wheel provided with the inwardly-projecting flange 15, the buckets 19 upon the inner surface of the said rim, the rib 17, and the inclined spout 75, having its upper end extending into said driving-wheel beneath said rib 17, substantially as described.

6. The combination, in a street-sweeper, of the machine-frame with a brush-frame vertically adjustable with respect to the same and secured thereto, a cylinder brush arranged therein to sweep the pavement, a sprocket-wheel upon the brush-shaft, a gear, a suitable clutch device for connecting the same with the drive-wheel, a pinion meshing with the said gear, a sprocket in connection therewith, and a sprocket-belt passing over the same and the sprocket of the brush, said drive-wheel provided with a flange 15, having on its inner surface a series of equidistant buckets, a spout projecting within said flange to receive the dirt from said buckets, and a driven carrier-elevator adapted to receive the dirt from said spout, substantially as described.

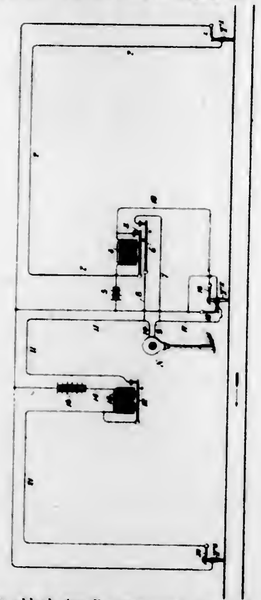
7. The combination, in a machine of the class described, of the machine-frame with the brush-frame secured thereon, the cylindrical brush therein, the drive-wheel having the flange 15, buckets arranged in the inner side of said flange, a gear-wheel, a clutch device in connection therewith to engage the drive-wheel, a gear-pinion meshing with said gear-wheel, means for disposing of the dirt elevated by the buckets, and means for raising or lowering the brush, substantially as described.

8. The combination, with the drive-wheel provided with the flange 15, having the inclined buckets 19, of the annular rib 17, arranged on the inner part of the drive-wheel and projecting inwardly from the surface thereof, a dirt-collecting device to gather the dirt into the lower part of the drive-wheel, a disk 21, covering the inner face of the drive-wheel and having an opening in its upper portion, a downspout projecting from the said opening and inside said annular rib, and an opening in the lower portion of said disk 21, through which the dirt is swept into the flanged driving-wheel, all substantially as and for the purpose specified.

9. The combination, with the frame of the machine, of the large flanged wheel provided with a series of buckets, a dirt-collector ar-

ranged diagonally across said machine and adapted to carry the dirt into said flanged wheel, means for disposing of the dirt lifted by said buckets, a stationary disk 21, closing the inner side of the driving-wheel, the shoe 77, arranged in a vertical plane therewith and provided with the slot 83, the arm 79, extending from the disk 21, and a pin in said arm to enter said slot 83, as and for the purpose specified.

485,728. ELECTRIC RAILWAY-SIGNAL. ABSHIRAH J. WILSON, Port Chester, N. Y., assignor to the Hall Signal Company, of Maine. Filed Feb. 29, 1892. Serial No. 423,139. (No model.)



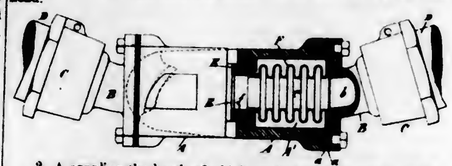
Claim.—1. In a block-signaling apparatus, a normally-closed signaling-circuit including in the main part thereof a normally-closed circuit-breaker constructed to be opened by the action of the train on the section of track that is guarded by the signal and also including a normally-closed branch or shunt of low resistance around the signaling-magnet, and in said branch or shunt a normally-closed circuit-breaker constructed to be opened by the action of the train on the section of track preceding the guarded section, substantially as and for the purposes set forth.

2. In a block-signaling apparatus, the combination of a normally-closed main signaling-circuit constructed to be broken by the action of the train upon a track-instrument placed at the beginning of the guarded section and to be closed again by the action of the train upon a track-instrument placed at the end of the guarded section and including a normally-closed branch or shunt of low resistance around the signal with a local circuit constructed to break said branch or shunt by the action of the train upon a track-instrument placed at a point suitably preceding the guarded section and to close again said branch or shunt by the action of the train upon a track-instrument placed upon or near the guarded section, substantially as and for the purposes set forth.

3. In a block-signaling apparatus, the combination of a normally-closed main signaling-circuit constructed to be broken by the action of the train upon a track-instrument placed at the beginning of the guarded section and to be closed again by the action of the train upon a track-instrument placed at the end of the guarded section and including a normally-closed branch or shunt of low resistance around the signal with a normally-closed local circuit constructed to be broken (and thereby to break said branch or shunt) by the action of the train upon a track-instrument placed at a point suitably preceding the guarded section and to be closed (and thereby to close again said branch or shunt) by the action of the train upon a track-instrument placed upon or near the guarded section, substantially as and for the purposes set forth.

485,729. HOSE-COUPLING. FREDERICK W. WHITNEY, Great Neck, N. Y. Filed Feb. 29, 1892. Serial No. 423,302. (No model.)

Claim.—1. A coupling the heads of which have compensating seats seated against them and a flexible or yielding connection between said seat and the outlet from the head, whereby the inclosed fluid is confined within said connection and cannot escape between the seat and head.

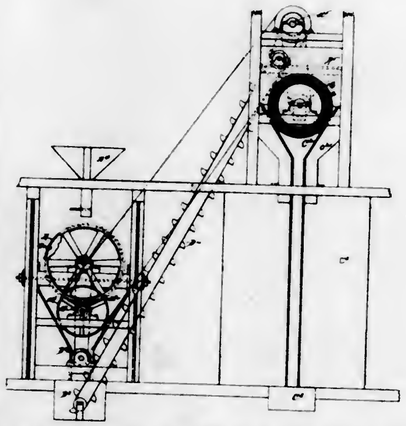


2. A coupling the heads of which are formed each with a socket, a compensating seat seated in said socket, and a flexible or yielding connection between said seat and the outlet from the head, whereby the inclosed fluid is confined within said connection and cannot escape between said seat and head.

3. A coupling the heads of which are locked together by a tilting motion, each being formed with a spherical socket having a compensating seat consisting of a spherical segment seated in the socket, and a flexible tubular connection between said seat and the outlet from the head, adapted to be bowed by the tilting or compensating movement of the seat.

4. In a coupling, the combination, with the head A thereof, of a compensating seat E and a diaphragmatic flexible tube F, connected at one end to said seat and communicating at the other with the outlet from the head.

485,730. PROCESS OF TREATING OXIDIZED OR CORRODED LEAD. RICHARD W. P. ADEE, Brooklyn, assignor to the J. R. Alsing Company, New York, N. Y. Filed Mar. 20, 1891. Serial No. 386,727. (No specimens.)



Claim.—The process of obtaining the powdered product of oxidised or corroded lead, consisting in abrading a mass of such lead by rolling contact with loose bodies other than the lead itself until the powder is wholly detached from the blue lead, and in subsequently transferring all of the blue lead and powder to a bolter and bolting the powder from the mass of blue lead, substantially as specified.

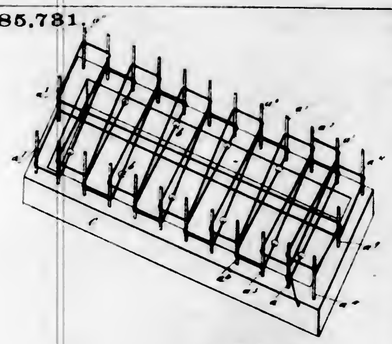
485,731. DRESS-TRIMMING. ELSIE ALLEN, New York, N. Y. Filed Apr. 14, 1892. Serial No. 429,061. (No model.)

Claim.—1. A trimming consisting of a plurality of rows of loops and a plurality of body or core strands knotted together at their points of crossing or intersection by a separate thread or yarn, substantially as described.

2. A trimming consisting of a plurality of rows of loops and a plurality of body or core strands alternated therewith, with the loops of one row arranged between the loops of the other row and the whole secured together at their points of crossing or intersection by a separate thread or yarn, substantially as described.

3. A trimming consisting of a plurality of rows of loops and a plurality of body or core strands, the loops of one course being alternated with the loops of the next course and the whole secured together at their points of crossing or intersection by a separate thread or yarn, substantially as described.

485,731.



485,732. PLOW. CHARLES L. RAGSDEY, Blue Branch, Tex. Filed Feb. 4, 1892. Serial No. 420,335. (No model.)

Claim.—1. The herein-described sweep attachment for plows, the same consisting of a band adapted to be secured to the plow-stock and having a rear curved slotted portion, clips mounted upon the band, and blades terminating at their front ends in tenons passed through the clips and slots of the band and provided with nuts, substantially as specified.

2. The herein-described sweep attachment for plows, the same consisting of a band having a rear semicircular portion, a pair of blades having their opposite faces convexed and their longitudinal edges reduced to form cutting-edges, said blades being adapted to be reversed, and means for attaching them to the band in an adjustable manner, substantially as specified.

3. The herein-described plow attachment, the same consisting of a band having a rear curved strap portion, a pair of blades radiating from the band and axially connected thereto and adapted to rotate, and means for securing the blades at any point of rotation, substantially as specified.

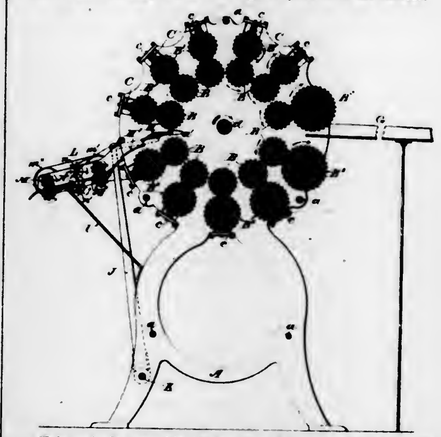
4. The combination, with the plow-standard, the shoval, and the heel-bolt, of the transverse strap 6, having the heel-bolt opening 7 and the semicircular rear strap 9, the same constituting a band for encircling the standard, the rear strap being provided at opposite sides of its center with the slots 11, the pair of perforated inverted-U-shaped clips 12, mounted on the strap 9, the opposite double-edge wings or blades 13, terminating at their inner ends in the reduced tenons 15, and the nuts 16, mounted thereon, substantially as specified.

485,788. CHECK-PUNCH. EDWARD W. RAMSEY, Stockwell, Ind. Filed July 23, 1891. Serial No. 401,092. (No model.)

Claim.—The machine for perforating or punching paper, as described, consisting, essentially, of the base A, having the central aperture, the threaded rod or post I, arranged in said central aperture, the rotatable plate F, also having a central aperture and arranged on said post, and furthermore having holes *e* around its margin and shouldered on the upper central portion, so as to form an interspace A to receive material to be operated upon, the disk H on the post I for confining the plate F in position, the nuts J and K, also on the post, for securing the disk H, the arms E, secured to the upper shouldered side of the plate F by screws *g*, and also having holes at their outer ends, the sockets B, arranged over said holes of the arm, and the punches arranged in the sockets and having their stem surrounded by springs, all adapted to operate substantially as and for the purposes specified.

485,784. MACHINE FOR TREATING FLAX OR OTHER FIBER-YIELDING PLANTS. BOGUMIL BOBEK, St. Paul Park, assignor of one-half to Charles H. Bell, St. Paul, Minn. Filed Dec. 27, 1890. Serial No. 375,982. (No model.)

Brief.—The machine consists of a series of pairs of crushing-rollers arranged around a central axis, the fiber-bearing stalks being crushed between the rollers of each pair and passing through the series as many times as desired. A movable discharge-plate is attached to the machine, which is adapted to be placed either into or out of operative connection therewith, as desired. Connected to the discharge-plate is a cleaning or scutching device including holding and cleaning rollers, the latter being driven at a higher speed than the former.



Claim.—1. In a machine for treating flax and other fiber-yielding plants, the combination, with a suitable frame, of a endless series of pairs of corrugated or fluted rollers, the several pairs being placed in sufficiently-close proximity to direct the material from one pair between the next in a continuous course through the machine, the peripheries of each pair of rollers working with each other, driving mechanism by which said rollers are rotated, and feeding and discharging devices by which the material to be operated upon is directed into and discharged from the machine while it is in operation, substantially as and for the purposes set forth.

2. In a machine for treating flax and other fiber-yielding plants, the combination of an endless series of rollers arranged in pairs, between which the material is arranged to pass a number of times in succession, and a deflector movable into the path of the material, so as to discharge the same from the machine, substantially as and for the purposes set forth.

3. In a machine for treating flax and other fiber-yielding plants, the combination of circular series of rollers arranged radially in pairs, a feeding-table, and a deflector movable into the path of the material, so as to discharge the same when desired, substantially as and for the purposes set forth.

4. In a machine for treating flax and other fiber-yielding plants, a number of pairs of rollers arranged in a circular series, the rollers of the outer circle on the under side of the machine being of greater diameter, so as to bring them closer together and prevent the material from escaping between them, substantially as and for the purposes set forth.

5. In a machine for treating flax and other fiber-yielding plants, the combination of an endless series of pairs of breaking-rollers, a shifting discharge-plate, and a detachable auxiliary cleaning device comprising one or more pairs of holding-rollers, and a pair of cleaning-rollers having a more rapid rate of peripheral rotation, substantially as and for the purposes set forth.

6. In a machine for treating flax and other fiber-yielding plants, the combination, with a suitable frame, of corrugated or fluted rollers arranged in an endless series of pairs in sufficiently-close proximity

with each other to direct the material from one pair between the next in a continuous course through the machine, driving mechanism for rotating said rollers, and a suitable discharging device by which the material is ejected from the machine while it is in operation, substantially as and for the purposes set forth.

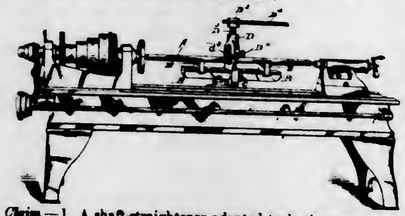
7. In a machine for treating flax and other fiber-yielding plants, the combination of an endless series of pairs of rollers between which the material to be treated may be made to pass a number of times in succession, and a discharging device consisting of a laterally-movable plate and vibratory arms connected with the ends of said plate and arranged to move the same into and out of the path of the material passing between said rollers, substantially as and for the purposes set forth.

8. In a machine for treating flax and other fiber-yielding plants, the combination, with a suitable frame, of corrugated or fluted breaking and cleaning rollers arranged in substantially-concentric circles and radially in pairs in sufficiently-close proximity to direct the material from one pair between the next in a continuous course through the machine, the rollers of the inner circle engaging with and driving the rollers of the outer circle, which are supported in outwardly-yielding bearings, a driving-gear engaging with pinions on the inner circle of roller-shafts, and feeding and discharging devices arranged to feed the material into and discharge it from the machine while it is in operation, substantially as and for the purposes set forth.

9. In a machine for treating flax and other fiber-yielding plants, the combination of an endless series of breaking-rollers, a laterally-movable discharging-plate with mechanism for projecting the same into the path of the material passing between said rollers, and a transverse guard-plate overhanging the outer roller of the pair next below said movable discharge-plate, substantially as and for the purposes set forth.

10. In a machine for treating flax and other fiber-yielding plants, the combination of a number of pairs of corrugated or fluted rollers arranged in an endless circle or series, with the peripheries of each pair working together, the outer roller of each pair being mounted in yielding bearings, so as to permit it to recede from the adjacent inner roller, the inner circle or series of rollers being all of the same diameter and provided with pinions of uniform size, a central gear meshing with said several pinions, whereby the inner rollers are all driven at a uniform rate of speed, the several pairs of rollers being placed in sufficiently-close proximity with each other to direct the material from one pair between another in a continuous course through the machine, and a discharging device under the control of the operator by which the material is ejected while the machine is in operation, substantially as and for the purposes set forth.

485,735. SHAFT-STRAIGHTENER. HENRY F. BUSKIRK, Indianapolis, Ind., assignor of one-half to George D. Mitten, same place. Filed Feb. 2, 1892. Serial No. 420,064. (No model.)

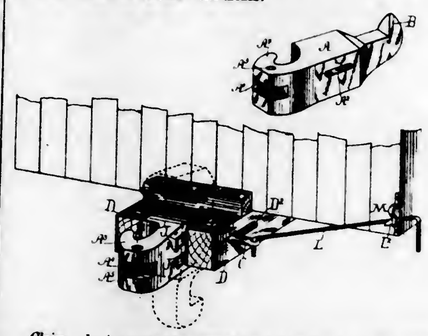


Claim.—1. A shaft-straightener adapted to be hung upon and supported by the shaft to be straightened, consisting of a bar B, a yoke C, mounted centrally thereon, a clamp-housing D, pivoted to said yoke and adapted to be swung back on one pivot, a screw-clamp carried by said clamp-housing, and bearing-blocks mounted on said bar on each side of said clamp-housing.

2. In a shaft-straightener adapted to be carried by the shaft to be straightened, the combination of the bar B, the yoke C, centrally and adjustably mounted thereon, the clamp-housing D, the screw-clamp held thereby, and the bearing-blocks E, adjustably mounted on said bar on both sides of the clamp-housing, said several parts being arranged and operating substantially as set forth.

3. In a shaft-straightener, the combination of the bar B, having grooves *b* in its sides, the yoke C, mounted on said bar and secured by means of the clamping-bolt F, whereby it is adapted to be adjusted longitudinally thereon, the clamp-housing D, secured to the upper ends of the arms of the yoke C by pivot-bolts D' and D^2, one of which may be removed to permit said housing to hinge upon the other, the screw-clamp D^3, mounted in said housing, with the clamp-block d^3 on its lower end, and the bearing-blocks E, located one on each side of the yoke C on the bar B and formed with projections which engage with the grooves *b* in said bar, whereby they are adapted to be adjusted longitudinally thereon, substantially as set forth.

485,736. CAR-COUPLING. FRANKLIN DE FORD, Stuart, assignor of one-third to L. H. De Ford, Valley Junction, Iowa. Filed Mar. 11, 1892. Serial No. 424,488. (No model.)



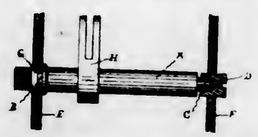
Claim.—1. A car-coupler comprising a draw-head having means at its forward end for coupling a car thereto, pivoted in its approximate center to a car as required to uncouple by swinging vertically, and adapted to serve as a buffer both when in a horizontal and vertical position, to operate substantially as set forth.

2. A car-coupler comprising a draw-head having a vertical jaw at the forward end, pivoted in its approximate center to a car as required to uncouple by swinging vertically, and adapted to serve as a buffer both when in a horizontal and vertical position, to operate substantially as set forth.

3. A car-coupler comprising a draw-head having a vertical jaw at its forward end, pivoted slightly in the rear of its gravity center to a car as required to uncouple by swinging vertically and to normally remain in a horizontal position, and adapted to serve as a buffer both when in a horizontal and vertical position, and means for operating the draw-head from the side of a car, to operate substantially as set forth.

4. A car-coupling comprising a draw-head having a vertical jaw and a link-and-pin cavity at its forward end, an elongated transverse slot in the rear of its gravity center and a hook formed on its rear end, two parallel beams secured to the under side of a car, elongated transverse slots formed in the approximate forward ends thereof, a bolt having a flattened surface in its approximate central portion through the said slots in the beams and the slots in the draw-head, a bolt extended through the slots in the beams in the rear of the aforesaid bolt, yielding pressure devices interposed between the said bolts, yielding pressure devices impinging the side of the draw-head opposite to the jaw thereof, and means for operating the draw-head from the side of a car, substantially as shown and described, to operate in the manner set forth.

485,737. HARP. GEORGE B. DURKEE and DANIEL LAFFERMAN, Chicago, Ill. Filed Mar. 7, 1892. Serial No. 424,079. (No model.)



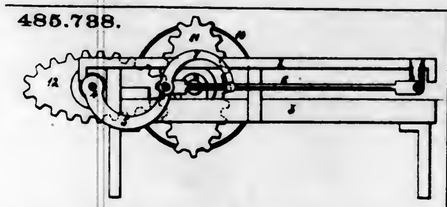
Claim.—In the sharping-action of a harp, the male and female taper or cone bearing near the head of the mandrel, with adjustable cone-bearing nut at tail end of said mandrel, substantially as and for the purpose herein described.

485,738. KNITTING-MACHINE. RALPH EMERSON, Rockford, Ill. Filed Sept. 1, 1891. Serial No. 404,477. (No model.)

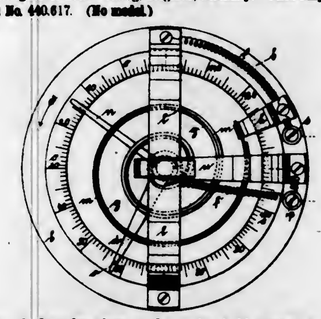
Brief.—The invention is fully disclosed in the claim. The movements specified are secured by the gearing employed.

Claim.—In a knitting-machine, the combination of a needle-bed, a cam-slide, and means for imparting a slow movement to the slide when about changing its direction of motion, and an increased movement which is approximately uniform during the knitting process.

485,738.



485,739. THERMOSTAT AND ALARM. GUSTAV FISCHER, Chemnitz, assignor to Arno Viewag, Siegmar, Germany. Filed July 20, 1892. Serial No. 440,617. (No model.)



Claim.—1. In a fire-alarm, a flat spring held against its normal tendency in a strained position by a hard coating or sheet of gelatine thereon, as set forth.

2. The combination, with a source of electric energy and an alarm, of a spring connected to and in circuit therewith, coated with hard gelatine to hold the spring in position to maintain the circuit open, as set forth.

3. In combination, the spring coated with gelatine, means for holding its outer end, the post to which its inner end is secured, the fixing-finger with stop-pin, and the moving finger secured to the post or shaft and arranged to be stopped by the stop-pin when the spring is released by the softening of the gelatine, as set forth.

4. The fire-alarm comprising in its structure the battery, bells, and arch *l*, in combination with the push-button *t* and spring *u*, as set forth.

485,740. CHECK-VALVE. JOHN P. GALLON, Albert, Kans. Filed June 30, 1892. Serial No. 438,571. (No model.)

Claim.—1. In a check-valve, the combination, with the shell having a cross-head fitting in one end thereof, of a valve-seat B, valve C, held in place by a coiled spring bearing at its end, respectively, against the valve and the cross-head, a valve-seat M, formed in the cross-head, and a spring valve N, fitting therein, substantially as specified.

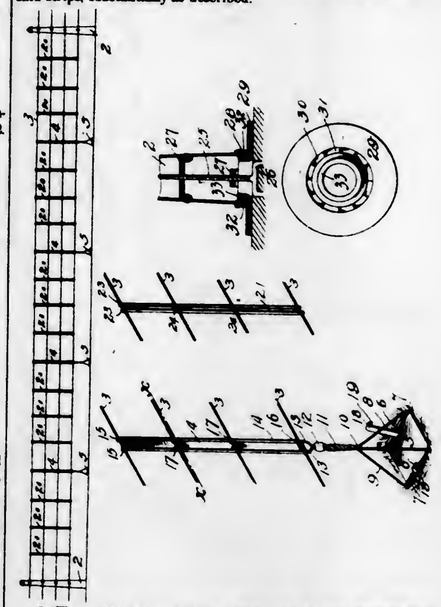
2. In a check-valve, the combination of the shell having a cross-head E, the valve C, fitting in a valve-seat B and held in place by spring-pressure, the valve N, fitting in a valve-seat M in the cross-head, and the supporting-bracket secured to the cross-head and provided with a socket to receive and guide the stem of valve N, substantially as specified.

3. In a check-valve, the combination, with the shell having a cross-head E, the valve C, fitting in a valve-seat B and held in place by spring-pressure, of the valve N, fitting in a valve-seat M in the cross-head, the supporting-bracket having a cross-arm, the socket-screw fitting in a tapped aperture in the extremity of the cross-arm to receive the stem of the valve N, and a coiled spring bearing at opposite ends against the valve and cross-arm, substantially as specified.

485,741. METALLIC FENCING. HIRAM A. HARRINGTON, Anoka, Minn. Filed May 10, 1892. Serial No. 432,422. (No model.)

Claim.—1. The combination, with the main posts, of the wires strung thereon, the supplementary supports having the flat sheet-metal bases 5, means for securing said bases on the ground, and means for attaching the wires to the upper parts of said supports, substantially as described.

2. The combination, with the main posts and the wires strung thereon, of metallic slats consisting of the strips 21, the vertical wires 23 embraced thereby, the ends of said wires being secured upon the fence-wires, and means for attaching the intermediate fence-wires to said strips, substantially as described.



3. The combination, with the fence-wires, of the supplementary supports consisting of the metallic strip 4, the two metallic loops 8 and 9, the upper ends of one of said loops being embraced in the curled edges of said strip, the curled lower end 16 of the strip, said loops twisted about one another, the plate 5, secured between the lower ends of said loops and having the notches, and the metallic pegs 18, extending therethrough and having the hooked ends, substantially as described.

4. The combination, with the wires 3, of the strip 4, the short loops 17 for fastening the wires thereon, the main loops 8 and 9, twisted together at 11 and having the straight lower sides, said loops soldered at 12, the metallic base-plate 5, having the curled edges 7, the hooked pegs to secure the base and the lower end of said loops, the upper ends 13 of one of said loops embraced by the curled edges of the strip 4, and means for securing the top and bottom wires thereon, substantially as described.

5. The combination, with the base of the metallic post, of a vertical fastening therefor, the base-plate 29, having the ratchet-feet 31, and the gravity pawl or pawls 32, provided on the post to engage the same, substantially as described.

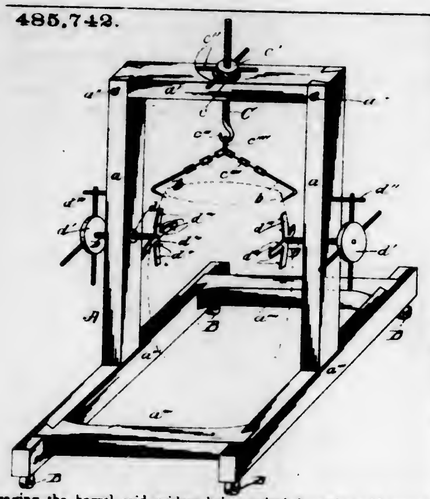
485,742. BARREL-STAND. MORRIS HERRMAN, Chambers County, Ala., and SAMUEL T. WHITAKER and WARD C. LANIER, West Point, Ga. Filed Apr 30, 1892. Serial No. 431,346. (No model.)

Claim.—1. In a device of the class specified, a base and a vertical framework thereon, a hoisting device adapted to elevate a barrel, and clamping devices consisting of screws seated in the side pieces of said framework and adapted to engage with the barrel near its middle portion, substantially as and for the purpose specified.

2. In a device of the class specified, a base and a vertical frame secured thereto, having a suitable hoisting device thereon and clamps for pivoting the said barrel when elevated, consisting of screws having suitable hand-holds thereon and on their inner ends carrying spiders spiked on their contacting faces to engage said barrel, said spiders being swiveled on said screws, substantially as and for the purpose specified.

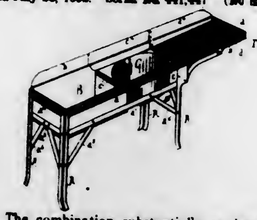
3. In a device of the class specified, a base and a vertical frame secured thereto, having a suitable hoisting device thereon and clamps for pivoting said barrel when elevated, consisting of screws having suitable hand-holds thereon and on their inner ends carrying spiders spiked and concaved on their inner or working faces for the purpose of en-

485,742.



gaging the barrel, said spiders being swiveled on the said screws, substantially as and for the purpose specified.

485,743. BOTTLE AND GLASS TRAY FOR COUNTERS. WILLIAM C. HUSS, Cincinnati, Ohio, assignor to the Huss Brothers Company, same place. Filed July 23, 1892. Serial No. 441,447. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the supporting-frame having the side rails a and end rails a^2, the trays B C, and the plate D to fit within said frame and having their edges formed to rest upon the said rails to support them in place.

2. The combination of the metal supporting-frame, the trays B C, and plate D, formed to fit therein and having their upper front and ends turned to hook over the top rails of said frame and their rear edges turned outwardly and upwardly, the outward bend to rest upon the upper back rail and the upward bend to form a back, substantially as hereinbefore set forth.

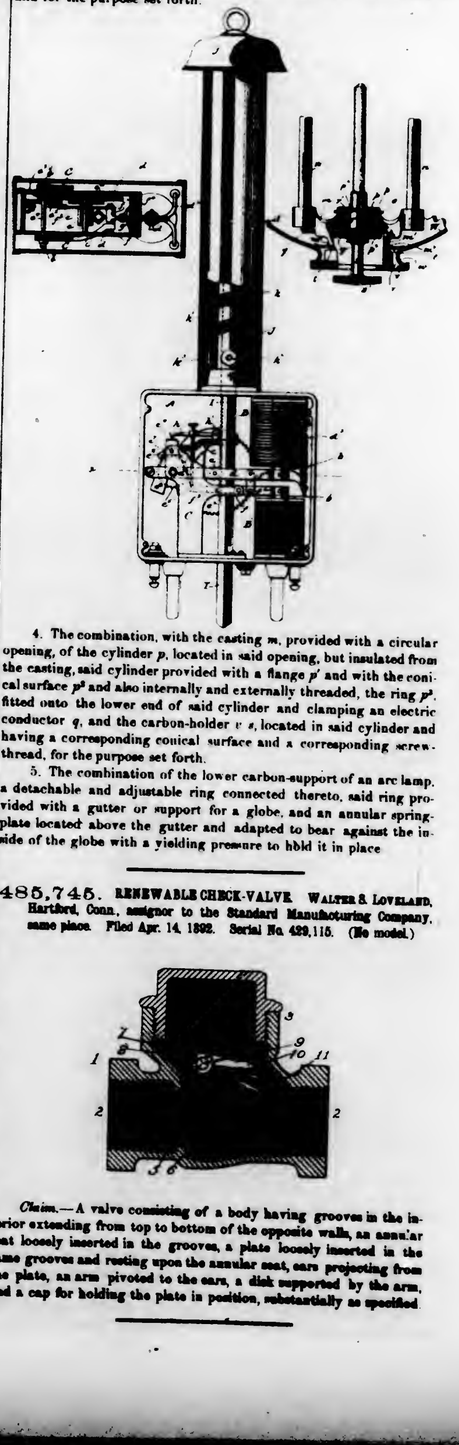
3. The frame having upper side and end rails a a^2, the trays B C, and the plate D, adapted to fit within said frame and having their upper edges outturned to support them in position, the said trays and plate being formed of sheet steel or iron and enameled to prevent tarnishing, substantially as hereinbefore set forth.

485,744. ELECTRIC-ARC LAMP. GEORG KIERKEGAARD, Brooklyn, N. Y. Filed May 13, 1892. Serial No. 432,831. (No model.)

Claim.—1. In an arc lamp, a train of wheels for feeding the carbon-rod and a bodily movable frame in which the same is mounted, in combination with an escapement and escapement-wheel mounted in a separate stationary frame, the movable frame being pivoted concentrically with the escapement-wheel, whereby the center of gravity of the escapement-wheel will remain constant or stationary, while that of the train is shifting, substantially as described.

2. In an arc lamp, the combination of a pivoted frame carrying a clockwork geared to the carbon-rod, an electro-magnet in the main circuit adapted to swing said frame on its pivot, a detent for said clockwork, an electro-magnet in a shunt-circuit to the arc, a lever moved by the shunt-circuit magnet and operating the detent, and a link or other device connecting the frame and the lever at points to one side of the pivots of said frame and lever, whereby a movement of the frame and levers by either of the magnets will cause a longer movement of the detent than of the clock-movement, substantially as described.

3. In an arc lamp, the combination of the main magnet B, the pivoted frame d, carrying a train of wheels provided with a detent, the carbon-rod geared to the train of wheels, said frame connected to or operated by the core of magnet B, the lever f^3 f^4, carrying at one end push-rod f^5, operating said detent, and at the other end connected to or operated by shunt-magnet B', said lever f^3 f^4 and said frame d being connected together by link f^6, substantially as and for the purpose set forth.



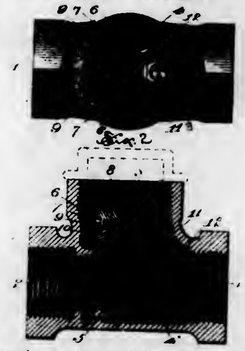
4. The combination, with the casting m, provided with a circular opening, of the cylinder p, located in said opening, but insulated from the casting, said cylinder provided with a flange p' and with the conical surface p^2 and also internally and externally threaded, the ring p^3, fitted onto the lower end of said cylinder and clamping an electric conductor q, and the carbon-holder r s, located in said cylinder and having a corresponding conical surface and a corresponding screw-thread, for the purpose set forth.

5. The combination of the lower carbon-support of an arc lamp, a detachable and adjustable ring connected thereto, said ring provided with a gutter or support for a globe, and an annular spring-plate located above the gutter and adapted to bear against the inside of the globe with a yielding pressure to hold it in place.

485,745. RENEWABLE CHECK-VALVE. WALTER S. LOVELAND, Hartford, Conn., assignor to the Standard Manufacturing Company, same place. Filed Apr. 14, 1892. Serial No. 429,115. (No model.)

Claim.—A valve consisting of a body having grooves in the interior extending from top to bottom of the opposite walls, an annular seat loosely inserted in the grooves, a plate loosely inserted in the same grooves and resting upon the annular seat, ears projecting from the plate, an arm pivoted to the ears, a disk supported by the arm, and a cap for holding the plate in position, substantially as specified.

485,746. CHECK-VALVE. WALTER S. LOVELAND, Hartford, Conn., assignor to the Standard Manufacturing Company, same place. Filed Apr. 14, 1892. Serial No. 429,116. (No model.)



Claim.—1. A valve consisting of a body having a chamber with a seat in the chamber, mortises cut in the opposite side walls, a bridge extending across the chamber with its ends supported in the mortises, an arm pivoted to the bridge, and a disk secured to the arm, substantially as specified.

2. A valve consisting of a body having a chamber with a seat in the chamber, semicircular mortises cut in the walls, a bridge with rounded ends and projecting lugs extending across the chamber with its rounded ends fitting the semicircular mortises, an arm pivoted to the lugs, and a disk secured to the arm, substantially as specified.

485,747. WEATHER-STRIP. GEORGE W. MORRIS, Mineak, Ill., assignor of one-half to A. B. Kipp, same place. Filed Mar. 26, 1892. Serial No. 426,699. (No model.)

Claim.—The combination, with a door having a groove in its ower edge and provided with a socket, of stationary plates secured to the side edges of the door and provided with bearing-openings, a spindle journaled in the bearing-openings, an elastic roll mounted on the spindle and provided with a central bore considerably larger than the spindle to enable it to have a limited vertical movement, said roll being located in the groove of the door, a spring arranged above the roll and located in the socket, and a curved plate secured to the lower end of the spring and engaging the upper face of the roll to force the latter downward, substantially as described.

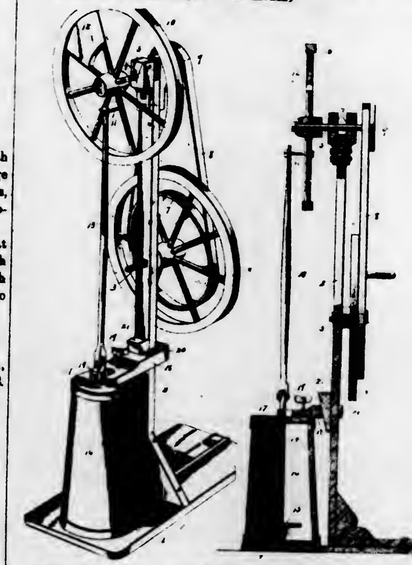
485,748. ILLUMINATED BADGE. PETER J. MCLAIN, Denver, Colo. Filed Jan. 6, 1892. Serial No. 417,220. (No model.)

Claim.—1. A badge consisting of a small box or receptacle composed of an oil-chamber below and an illuminating-chamber above, the back of the box being provided with a layer of asbestus or other suitable non-conductor of heat and the front of the box being open and provided with a transparent or semi-transparent plate, in combination with a label attached to said plate and upon which is formed any suitable design or inscription, substantially as and for the purpose set forth.

2. A badge consisting of a small box or receptacle having an oil-chamber below and an illuminating-chamber above, the back of the box being provided with a layer of asbestus or other suitable non-conductor of heat and a transparent or semi-transparent plate in front, which is otherwise open above the oil-chamber, substantially as and for the purpose set forth.

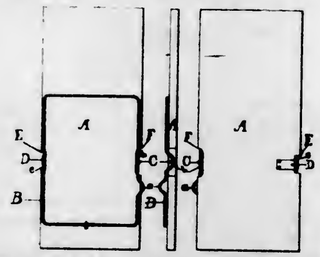
3. A badge consisting of a box or suitable receptacle provided with an illuminating-chamber, a transparent or semi-transparent plate in front, preferably concavo-convex in shape with its convex face outward, and a plate preferably arc-shaped, secured to the top of the box and supported thereon by legs or short standards, substantially as described.

485,749. CHURN. JAMES A. PAPOT, Baker's Mill, Fla. Filed July 7, 1892. Serial No. 439,284. (No model.)



Claim.—In a churn, the combination of a base, a standard rising therefrom, a churn-body supported on the base and having a cover provided with an opening to receive a dasher-rod, an arm extending horizontally from the standard and provided at its inner end with an opening to receive the same and having at its outer end a vertically-disposed clamping-screw engaging the cover, and a wedge arranged in the opening of the horizontal arm and securing the latter in its adjustment, substantially as described.

485,750. BILL-HOLDER. ALLAN G. PARK, Madison, Wis. Filed Apr. 12, 1892. Serial No. 428,889. (No model.)



Claim.—1. A bill-holder composed of a back board gained in its lateral edges, a spring-wire clamp having ears in the gains, a bracket hinging one ear in a bearing, and a catch engaging the other ear, all said parts combined substantially as set forth.

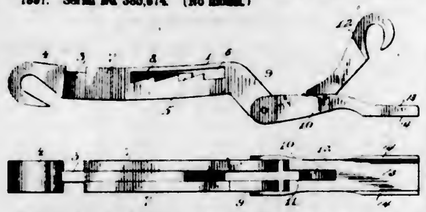
2. In a bill-holder, in combination with the back board and the clamp, a bracket upon one side of the board having a bearing receiving and hinging the clamp and a catch upon the opposite side engaging the clamp.

3. In a bill-holder, in combination, a back board, a bracket

bearing a journal and a catch, both attached to the board, and a clamp journaled in the bearing and engaged by the catch.

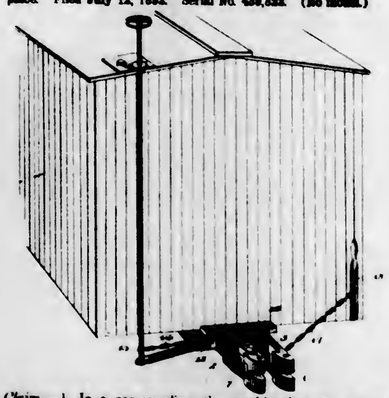
4. In a bill-holder, in combination, a bearing and catch on either side of the back board, a spring-clamp journaled and hinged in the bearing and engaged by the latch, and a thumb-piece formed in the clamp contiguous to the catch.

485,751. HAME-FASTENER. GEORGE M. ROAT, Pillar Point, N. Y., assignor of one-half to Fred. W. Reeves, same place. Filed Mar. 19, 1891. Serial No. 385,674. (No model.)



Claim.—A hame-fastening comprising the casing provided with a closed top portion and having a longitudinal opening 2 extending therethrough and transverse openings 6 in the opposite sides thereof, with teeth 8 at the bottom walls of the said openings 6, said casing also having a rear downwardly-extending bifurcated end 9, the hook 4, having a shank 3 adjustably arranged in the opening 2 and provided at the inner end of the shank with oppositely-disposed and laterally-extending lugs 5 to project through the openings 6 and engage the teeth 8, the operating-lever 10, provided with the bifurcation 11 and pivotally connected to the bifurcated end of the casing and having a free end which is dished, and flanges to fit against the bottom of the forward part of the casing, and a hook 12, pivoted to the operating-lever at a point intermediate of the ends of the latter and arranged in the bifurcation 11 and adapted to fold in the said bifurcated end 9 of the casing, substantially as described.

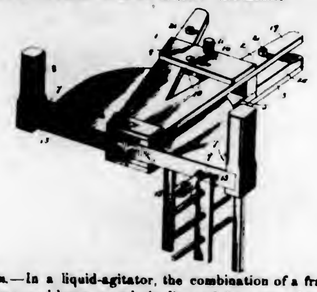
485,752. CAR-COUPLING. MATTHEW T. SCOTT, Blue Springs, Mo., assignor of two-thirds to James L. Brassfield and William G. Gore, same place. Filed July 12, 1892. Serial No. 439,832. (No model.)



Claim.—1. In a car-coupling, the combination of a draw-head having a stationary jaw provided in its outer side with a recess, a lever pivoted intermediate its ends and arranged in the recess and adapted to lie flush with the stationary jaw and to be thrown outward for uncoupling, a hinged jaw provided at its rear end with a heel and connected in advance of its hinge-point with the rear end of the lever, and a rod extending through the draw-head and connected with the heel of the hinged jaw, whereby both the lever and the hinged jaw may be operated by the rod, substantially as described.

2. In a car-coupling, the combination of a draw-head having a stationary jaw and provided in the outer side thereof with a recess, a hinged jaw mounted on the draw-head and arranged parallel with the stationary jaw and provided at its rear end with a heel, a rod connected with the heel of the lever and passing through the draw-head, a spring disposed on the rod and engaging the heel of the hinged jaw, a lever fulcrumed intermediate its ends in the recess, a rod connecting the rear end of the lever with the hinged jaw in advance of the point of hinging, and a spring bearing against the rear end of the lever to force the same outward, substantially as described.

485,753. LIQUID-AGITATOR. JAMES D. STEPHENS, Jasper, Ala. Filed Feb. 11, 1892. Serial No. 421,183. (No model.)



Claim.—In a liquid-agitator, the combination of a frame comprising upper and lower angularly-disposed bars spaced and having their inner ends forming clamps to receive and engage the edge of a table or the like, and the upper and lower cross-bars connecting the angularly-disposed bars intermediate of the ends of the latter and provided with bearing-recesses, vertical clamping-screws connecting the inner ends of the angularly-disposed bars, a driving-segment mounted between the angularly-disposed bars at the outer ends thereof and provided with handles, vertical guide-pulleys mounted between the cross-bars, a shaft journaled in the bearing-recesses, and a band wound around the shaft and retaining the same in the recesses and passing around the guide-pulleys and arranged on the periphery of the driving-segment and having its ends secured to the same, substantially as described.

485,754. ELECTRIC BELT. EMORY N. TEFFT, Iola, Kans., assignor of one-half to Robert Cook and Charles H. Fryer, same place. Filed July 30, 1892. Serial No. 441,723. (No model.)

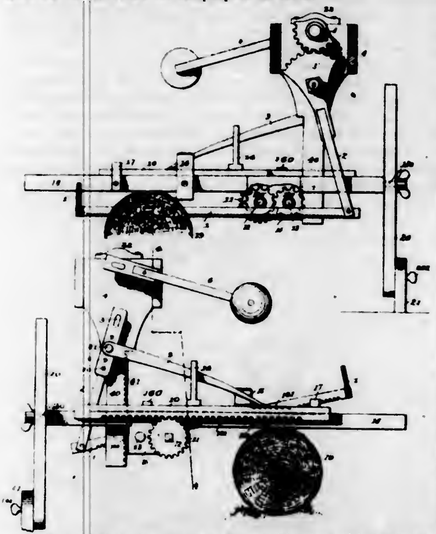
Claim.—In an electric belt, the combination, with the end electrodes, of the separate cells, each comprising a central battery-plate projected at one end, absorbent packing surrounding both sides of said battery-plate, and an outer double-layer battery-plate looped entirely around the central plate and the surrounding packing and having perforations in its looped end, non-corrosive retaining-bands encircling the outer plate of each cell and passing between the end perforations thereof, and connecting-loops passing through the perforations in the looped ends of the outer plates on each side of said bands and connected to the projected ends of the central plates, substantially as set forth.

485,755. WOOD-SAWING MACHINE. ASHFORD W. VIOLETT, Jr., Bardwell, Ky., assignor of two-thirds to Robert H. Webb and Frank W. Turk, same place. Filed July 23, 1891. Serial No. 400,507. (No model.)

Claim.—1. In a sawing-machine, the combination, with the horizontal frame, a rack-bar moving horizontally and longitudinally thereon and having ratchet-teeth on its upper side and gear-teeth on its lower side, a casing on the frame, a shaft therein having two gears, one engaging the teeth on the rack-bar, a second shaft in the casing having an idle-gear engaging the second gear on said first shaft, and a standard movable vertically through the frame and having teeth engaging said idle-gear, of a casing at the upper end of the standard, an oscillating shaft therein, a crank on one end of said shaft, a pawl pivoted to said crank and engaging said ratchet-teeth, a swing-lever on the other end of said shaft, and a saw connected to said lever, substantially as described.

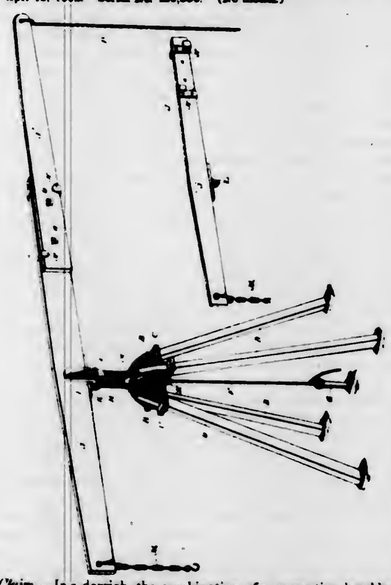
2. In a sawing-machine, the combination, with a standard, a shaft journaled therein and carrying a large gear-segment, a swing-lever depending from said shaft, and a reciprocating saw-blade pivoted to said lever, of another shaft journaled removably in said casing and carrying a small gear-segment engaging with said larger one, and a pendulum depending from this shaft, as and for the purpose set forth.

3. In a wood-sawing machine, the combination, with the frame, the rack-bar sliding thereon, the standard movable vertically through said frame, and connections, substantially as described, between the rack-bar and the standard, of a casing on the standard, two shafts journaled therein and carrying intermeshing gear-segments, a swing-lever depending from the lower shaft, a reciprocating saw-blade pivoted at one end thereto, a crank on this shaft, a pawl adjustably connected to this crank and engaging the rack-bar, and a pendulum on the other shaft, as and for the purpose set forth.



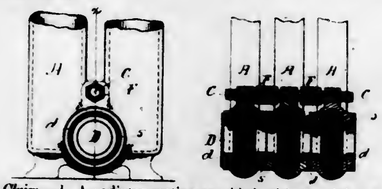
4. In a wood-sawing machine, the combination, with the frame, the toothed rack-bar sliding thereon, the standard movable vertically through the frame, and connections, substantially as described, between said rack-bar and standard, of an oscillating shaft journaled in said standard, a swing-lever connected to one end thereof and carrying the saw-blade, a crank on the other end thereof having a number of threaded openings, a set-screw removably engaging one of said openings, a pawl pivoted on the shank of said set-screw and engaging the teeth of the rack-bar, and a guide on the frame embracing the body of the pawl, as and for the purpose hereinbefore set forth.

485,756. DERRICK. WILLIAM W. WHITE, Forest City, Ill. Filed Apr. 15, 1892. Serial No. 429,356. (No model.)



Claim.—In a derrick, the combination of a supporting-head having a series of integral radially-extending bifurcated lugs, integral relief-stops at the ends of the lugs, and an integral socket, folding legs pivotally mounted at their upper ends within said bifurcated lugs and adapted to contact with the stops, a forked lever-rest provided with an integral shank loosely working in said socket, and a V-shaped bearing-recess in the base and inclosed between the imperforate parallel walls thereof, a sectional lever moving between the walls of said rest, and a fulcrum-plate secured to the under side of the lever and provided with a pointed V-shaped fulcrum-lug having its apex larger than the apex of said V-shaped bearing-recess in the base of the rest and in which said lug works, substantially as set forth.

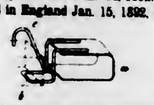
485,757. CONSTRUCTION OF CAST-IRON RADIATORS. GEORGE L. ALLEN, Worcester, Mass. Filed Apr. 25, 1892. Serial No. 430,470. (No model.)



Claim.—1. A radiator-section provided with the right and left threaded stud having its central portion rigidly fixed or embedded in the casting of the section and extending through the web in the manner set forth, with its right and left threaded ends projecting at either side thereof, in combination with the adjacent radiator-section and the tubular right and left threaded coupling joining said stud to the stud of the adjacent section, as shown and described.

2. The improvement in the construction of cast-iron radiators, which consists in the combination, with the cast sections having packing-joint surfaces about their openings, adapted for matching or abutting laterally against corresponding surfaces on the adjacent sections, of the oppositely-projecting right and left threaded studs having their central part embedded in the web or casting adjacent to the abutting joints and the internally-threaded couplings engaging the threaded ends of two adjacent studs, all substantially as and for the purpose shown and described.

485,758. CLIP FOR USE IN PHOTOGRAPHIC COPYING. ALOIS DELBO, Munich, Germany. Filed Mar. 14, 1892. Serial No. 424,775. (No model.) Patented in England Jan. 15, 1892, No. 865.



Claim.—1. In a clip for photographic copying, the combination, with a flat jaw having an extended bearing-surface, of a second jaw consisting of a wire bent at right angles to the first jaw, substantially as set forth.

2. A clip for photographic copying, consisting of a jaw formed of a piece of wire bent in the shape of a flat horizontal loop, as *b*, in combination with a second jaw formed of a piece of wire having a forward vertical end adapted to bear on the plate at one point only, the two jaws being connected by an intermediate spring, substantially as set forth.

3. A clip for photographic copying, consisting of a wire one end of which is bent into the shape of a horizontal flat loop, as *b*, and the other end in the form of a vertical pin, as *c*, the wire being bent in the form of a spiral at an intermediate point, substantially as set forth

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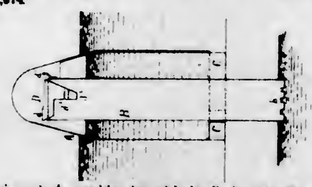
485,759. INTERMITTENT SIPHON. ROGERS FIELD, London, England. Filed Jan. 5, 1891. Serial No. 376,808. (No model.) Patented in England Aug. 1, 1883, No. 11,105, and in France June 1, 1889, No. 196,674.

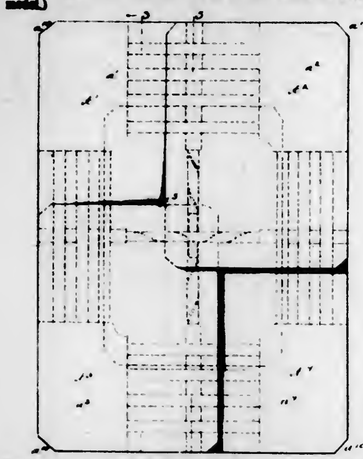


Claim.—1. In combination with the discharging-limb of a siphon, the conical ajutage D, one portion of which is prolonged downward as a spout, constructed and operating substantially as described.

2. An intermittent siphon consisting of an outer or receiving limb or bell A and an inner or discharging limb or pipe B, with its

sjutage D and its notches *b*, arranged and operating substantially as described.

485,760. BOOKBINDER'S EXTENSIBLE GLUE-BLOCK. JAMES F. GLENN, Chatham, N. Y. Filed Apr. 22, 1891. Serial No. 390,086. (No model.)



Claim.—1. A bookbinder's glue-block composed of sections the working faces of which normally overlap one another and adjustably secured together, substantially as described.

2. A bookbinder's glue-block composed of sections the working faces of which normally overlap one another and adjustably secured together and provided with a plate for supporting the center of the block when the sections are extended, as set forth.

3. A bookbinder's glue-block composed of extensible sections, a plate for supporting the center of the block when the sections are extended, and mechanism, substantially as described, for holding the sections in any desired position.

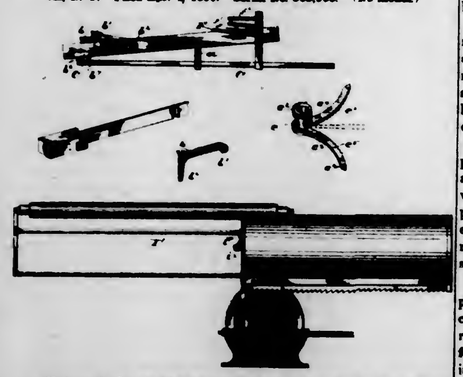
4. A bookbinder's glue-block composed of extensible sections and having overlapping sides on all of the sections.

5. A bookbinder's glue-block composed of extensible sections and having passages, rods in said passages connecting the sections, and a locking device for said sections.

6. An extensible glue-block for bookbinders, composed of sections connected together and havin grooves in the inner faces of each section, and tubes secured to the section-connecting devices and resting in said grooves when the sections are brought together, substantially as described.

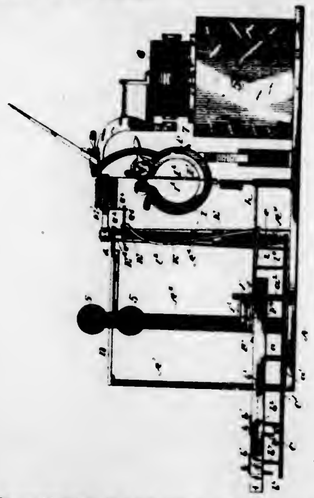
7. A bookbinder's extensible glue-block having passages, rods *b'* fitting within the passages and rigidly secured to the tubes *b²* by screws inserted through the openings *b⁴* in said tubes, substanially as shown.

485,761. TYPE-WRITING MACHINE. FRANK A. HEBB, Port Jervis, N. Y. Filed Apr. 4, 1889. Serial No. 306,060. (No model.)



Claim.—1. In combination, in a type-writer, the keys arranged in two series, a type-wheel arranged to reciprocate on its own axis, a shifting-rod geared to the wheel connections and provided with an armature on each side, a set of magnets on each side of said rod, provided with electrical connections under control of the sets of keys, and the stop mechanism controlled by the keys to arrest and return the wheel, all substantially as described.

2. In combination, in a type-writer, the keys arranged in two series, a type-wheel arranged to reciprocate on its axis, a shifting-rod geared to the wheel connections and provided with an armature on each side, a set of magnets on each side of said rod and an independent circuit for each shifting magnet, circuit-closers controlled by the keys, and a stop mechanism also controlled by the keys and adapted to arrest the wheel at the proper point determined by the particular key, substantially as described.



3. In combination, in a type-writer, the keys arranged in two series, a type-wheel arranged to reciprocate on its axis, a shifting-rod geared to the wheel connections and provided with an armature on each side, a set of magnets on each side of said rod, an independent circuit for each shifting magnet, circuit-closers controlled by the keys, a stop mechanism also controlled by the keys and adapted to arrest the wheel at the proper point determined by the particular key, and a hammer and hammer-magnet and circuit-closers for said hammer-magnet, controlled by the keys of both series, substantially as described.

4. In combination, in a type-writer, a type-wheel arranged to reciprocate in either direction on its axis, a rod carrying armatures and arranged to turn the wheel, if not obstructed, to the same point, a shifting magnet between each series of keys and said rod, an independent circuit for each shifting magnet, a hammer and hammer-magnet and circuits therefor, a pivoted cranked rod resting on the keys of each series, and three arms carrying two pairs of contacts, one pair of which is in the circuit of the shifting magnets and the other pair in the circuit of the hammer-magnet, and stop mechanism controlled by the key-levers, substantially as described.

5. The combination, substantially as described, of the keys arranged in two series, the type-wheel, means controlled by each series of keys for moving the type-wheel in either direction, two stop-arms moving with the type-wheel and each provided with notches corresponding in number to the number of keys in a series, and two stop-levers, each provided with a rod arranged diagonally across the rear ends of the keys of a series.

6. The combination, substantially as described, of the keys, the pivoted driving-arm carrying armatures, provided at its rear end with a rack, the type-wheel collar mounted loosely on its shaft and provided with a pinion, the type-wheel mounted loosely on its shaft, a pin for locking the type-wheel to its collar, electro-magnets, one on each side of the driving-arm, and the connections for said electro-magnets, controlled by the keys, for moving the driving-arm, and the shifting frame for raising the shaft of the type-wheel.

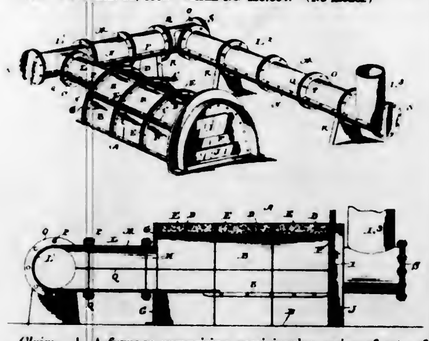
7. The combination, substantially as described, of the keys, the pivoted driving-rod provided at its rear end with a toothed segment carrying armatures, and electro-magnets, one on each side of said rod, and connections for said electro-magnets, controlled by the keys, for moving the driving-rod, the type-wheel collar mounted to rotate in a fixed bearing and provided with a pinion and two stop-arms, the type-wheel shaft vertically adjustable through the hub of the type-wheel collar and provided on its upper end with a shoulder, the type-wheel loosely mounted on the shaft above said shoulder, a long pin secured to the type-wheel and passing through an opening in the collar, the driving-frame, the stop-lever, and a spring to move the stop-lever in one direction.

8. The combination, with a type-writing machine having a carriage-escapement mechanism, of a paper-carriage consisting of two sections sliding one within the other and provided one with devices to engage the escapement mechanism and the other with paper holding and feeding devices, substantially as described.

9. The combination, with a type-writing machine having a carriage-escapement mechanism, of a paper-carriage consisting of two sections sliding one within the other, devices connecting the outer section to the escapement mechanism, paper holding and feeding devices carried by the inner section, and a latch to lock the sections together whether folded or extended, substantially as described.

10. The combination, with a type-writing machine having a carriage-escapement mechanism, of a hollow paper-carriage consisting of telescopic sections, devices connecting the outer section with the escapement mechanism, paper holding and feeding devices carried by the inner section, a latch to lock the sections together in either position of adjustment, and a partition secured within the rear ends of the inner and outer sections, substantially as described.

485,762. FURNACE. JOHN H. JOHNSON and JAMES MORAN, Orange, Tex. Filed Mar. 22, 1892. Serial No. 425,897. (No model.)



Claim.—1. A furnace comprising semicircular series of sets of metal plates, said plates being each provided with flanges encircling all the sides thereof and meeting the adjacent flanges of the adjacent plates of each series and set, meeting to form an approximately-semicircular casing and semicircular end flanges, the front and rear end plates secured to said semicircular end flanges, and bolts passing through the meeting flanges, substantially as set forth.

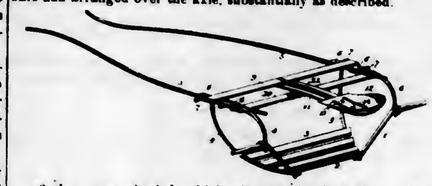
2. In a furnace, the casing consisting of semicircular series of sets of rectangular curved plates forming the sides and top of the same said plates being each provided with flanges surrounding all four sides thereof and meeting the adjacent flanges of the adjacent plates of each series and set to form an approximately-semicircular casing and semicircular end flanges, front and rear end plates secured to said semicircular end flanges, asbestus packing interposed between the various meeting flanges to form a cushion-joint, the flue extending from one of said end plates, and bolts passing through the several meeting flanges, substantially as set forth.

3. In a furnace, the combination, with the casing having a flanged collar projecting from the rear end thereof, of the sectional flue comprising a series of independent reversely-arranged pairs of semicircular plates having straight horizontal flanges along the sides thereof and semicircular flanges at their ends, the flanges of the plates and flue-sections abutting and bolted together, substantially as set forth.

4. The combination, with the furnace, of the sectional flue connected with said furnace and consisting in a series of reversely-arranged pairs of upper and lower independent semicircular plates having straight horizontal flanges along the sides thereof and semicircular flanges at their ends, the flanges of the plates and flue-sections abutting the ends of section of the flue terminating in circular flanges, cap-plates removably secured to said circular flanges, asbestos packing interposed between the various meeting flanges to form a cushion-joint, the supports receiving the lower semicircular sections of the flue, and bolts abutting the flanges together, substantially as set forth.

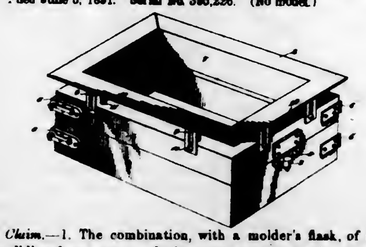
485,763. ROAD-CART. ELIAS A. KEARNEY, FRED S. KEARNEY, and HARRY G. KEARNEY, Ligonier, Ind. Filed Feb. 16, 1892. Serial No. 421,707. (No model.)

Claim.—1. In a two-wheeled vehicle, the combination of an axle having a drop-bend, shafts having their rear ends connected to the axle on opposite sides of the bend, a foot-board having its rear end secured to the axle at the bottom of the bend and having its front suspended from the shafts, cross-bars connecting the shafts near their rear ends, and an adjustable seat extending rearward from the cross-bars and arranged over the axle, substantially as described.



2. In a two-wheeled vehicle, the combination of an axle, the curved bracket-bars extending forward from the axle and provided with sleeves, longitudinally-adjustable shafts arranged in the sleeves, and set-screws mounted on the sleeves and securing the shafts in their adjustment, substantially as described

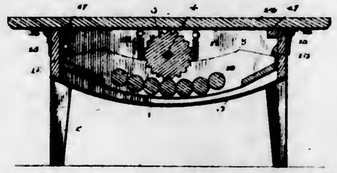
485,764. MOLDER'S FLASK. GEORGE J. KEENAN, Buffalo, N. Y. Filed June 5, 1891. Serial No. 395,226. (No model.)



Claim.—1. The combination, with a molder's flask, of a vertically-sliding frame composed of separate parts or sections connected independently and movably with the sides of the flask, substantially as set forth.

2. The combination, with a molder's flask, of a vertically-sliding flanged frame composed of separate parts or sections, the slotted lugs depending from the flange of the sections of said frame, and the screws extending through said slotted lugs into the sides of the flask, substantially as set forth.

485,765. WASHING-MACHINE. RICHARD T. KIRK, Appleton City, Mo. Filed June 25, 1892. Serial No. 438,000. (No model.)

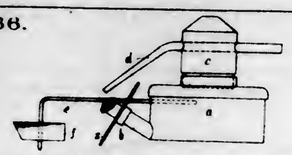


Claim.—In a washing-machine, the combination of a body provided at one end with a transverse cleat and having blocks arranged at its other end, a shaft journaled in the sides of the body, a corrugated roll mounted on the shaft, a rubbing-frame located beneath the corrugated rolls and composed of side bars provided in their upper edges on their outer faces with longitudinal recesses and having their ends engaging the cleats and blocks, end bars disposed at an incline and connecting the side bars, and a series of smooth rollers arranged adjacent to one another and journaled between the side bars, and spiral springs having their lower ends arranged in the recesses of the side bars and having their upper ends attached to the body, substantially as described.

485,766. BLOWPIPE SOLDERING DEVICE. FRITZ VON KREMPELHUBER and JOSEPH VON SCHRADZKI, Munich, Germany. Filed Apr. 20, 1892. Serial No. 429,920. (No model.) Patented in England Apr. 23, 1891, No. 7,030; in Belgium May 15, 1891, No. 94,629; in Switzerland Aug. 7, 1891, No. 3,830; in France Aug. 14, 1891, No. 212,943; in Austria-Hungary Sept. 16, 1891, No. 19,806 and No. 37,678, and in Germany Oct. 12, 1891, No. 59,209.

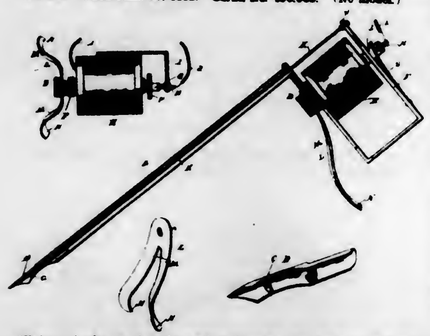
Claim.—In a blowpipe-lamp, a burner and blowpipe, in combination with a heating-wire provided near its end with a shield for

485,766.



concentrating the blowpipe-flame, said blowpipe being arranged to direct the blast through the flame onto the shield, substantially as set forth.

485,767. ELECTRIC PERFORATING-PEN. AARON D. LEWIS, Canton, Me. Filed June 30, 1892. Serial No. 438,605. (No model.)

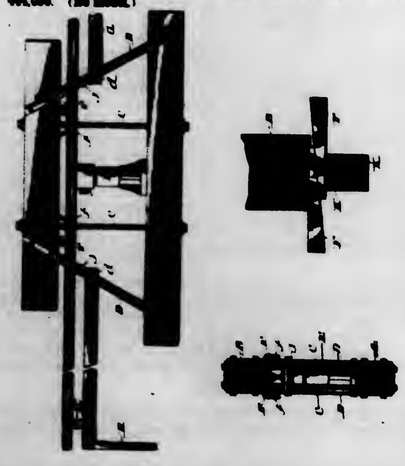


Claim.—1. In an electric perforating-pen, the hollow penholder, the writing-pen inserted in one end of said penholder and provided with a perforated guide-lug upon its under side, an electro-magnet mounted upon the other end of said penholder, a vibrating armature controlled by said magnet and provided with a connecting-slot at one end, and an elongated perforating-needle passing through said hollow penholder, loosely connected at one end to the slotted end of the armature and adapted to have the pointed end thereof work through said perforated guide-lug upon the under side of the pen and in a direct line with the point thereof, substantially as set forth.

2. The combination, with a writing-instrument, of an offstanding electrically-controlled perforating attachment secured to the upper end of the instrument and a forked hand-rest removably secured to the under side of said attachment and comprising opposite depending divergent rest-arms terminating at their lower ends in curved feet adapted to rest upon the back of the hand, substantially as set forth.

3. The combination, with a writing-instrument, of an offstanding electrically-controlled perforating attachment secured to the upper end of the instrument and a forked hand-rest removably secured to the under side of said attachment, substantially as set forth.

485,768. RAILWAY-RAIL-STRAIGHTENING MACHINE. EDGAR Y. MARSHALL, Garden City, Kans. Filed Aug. 25, 1892. Serial No. 444,060. (No model.)

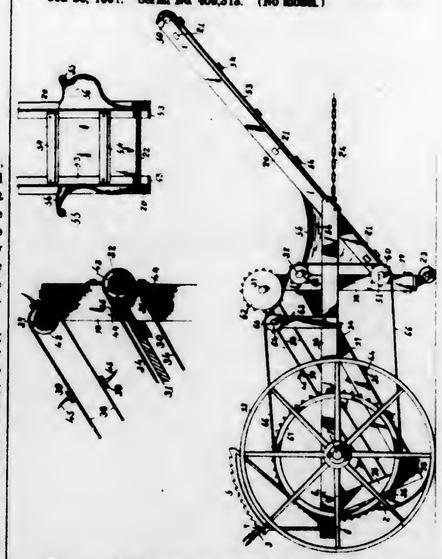


Claim.—1. In a rail-straightening machine, the combination with the bed-timber A and top timber B, rigidly connected together by tie-rods, of a hydraulic jack seated upon said bed-timber and adapted to bear against a rail placed under the top timber and wedges adapted to be arranged between the top timber and the rail substantially as described.

2. In a rail-straightening machine, the combination, with the bed-timber A and top timber B, rigidly connected together by tie-rods, of the hydraulic jack seated upon the bed-timber, the wedges F F, the tables G G, pivotally secured at their inner ends to the machine and provided at their outer ends with hinged legs H H, and feed-rolls mounted in bearings on said platform, substantially as described, and for the purpose specified.

3. In a rail-straightening machine, the combination, with the bed-timber A and top timber B, rigidly connected together by vertical tie-rods C C and diagonal brace-bars D D, of the tables G G, pivotally secured to said brace-bars and provided with hinged legs H H, feed-rolls I I, mounted in bearings on said tables, feed-rolls J J, mounted in bearings in the brace-bars, a hydraulic jack seated upon the bed-timbers, and wedges adapted to be wedged between the rail and top timber, substantially as described.

485,769. HAY-LOADER. JOHN L. MCCREARY, Lamar, Mo. Filed Oct. 20, 1891. Serial No. 409,313. (No model.)



Claim.—1. In a hay-loader, the combination, with the frame, the main axle journaled therein, the supporting-wheels journaled on the ends thereof, the curved teeth carried by the axle, and means for adjusting the angle of the teeth to the frame, of forwardly-inclined endless aprons leading from a point just in front of the rake and having their adjacent faces moving in the same direction, a small sprocket on one of the rollers of the lower apron, a larger sprocket on the roller of the upper apron, a sprocket-ring on one of the driving-wheels, and a chain belt passing over this ring, under the larger sprocket and over the smaller sprocket, as and for the purpose set forth.

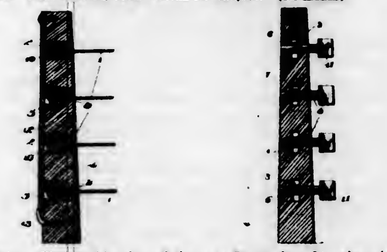
2. In a hay-loader, the combination, with the gathering devices and an apron leading upwardly and forwardly therefrom, of a frame supporting the whole, a framework leading upwardly and forwardly from a point below the upper end of said apron, an upwardly-moving delivery-apron in said framework, braces connecting the frame and framework, and plates carried by said braces above the lower end of the delivery-apron, one plate being raised and the other depressed, so as to turn the grain a right angle, substantially as described.

3. In a hay-loader, the combination, with the gathering devices, a broad apron leading upwardly therefrom, teeth carried thereby, and a frame supporting the whole, of a narrow framework carried by said frame and leading upwardly from a point thereon below the upper end of said apron, a narrow delivery-apron moving in said framework, and plates below the upper end of the broad apron, one plate being raised and the other being depressed, so as to turn the grain from its position across the broad apron to a position longitudinal of the narrow apron, substantially as hereinbefore described.

4. In a hay-loader, the combination, with gathering, elevating, and delivering mechanisms, of intermediate fixed deflecting-plates arranged at the head of the elevating mechanism, one of said plates being elevated and the other depressed, substantially as specified.

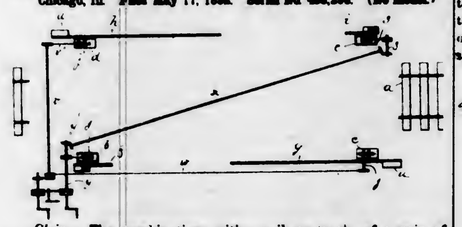
5. In a hay-loader, the combination, with gathering mechanism, of an endless carrier located in front of same and comprising two endless aprons arranged one above the other with their adjacent or facing sides provided with teeth traveling in the same direction at different rates of speed and diverging toward their front ends and the deflecting-plates, one raised and the other depressed, located in front of the carriers to receive the hay therefrom and change its disposition from transverse to longitudinal and the elevator at the end of the deflecting-plates, substantially as specified.

485,770. TENSION DEVICE. DANIEL W. MCGLASSON, Creston, Ohio. Filed June 14, 1892. Serial No. 436,707. (No model.)



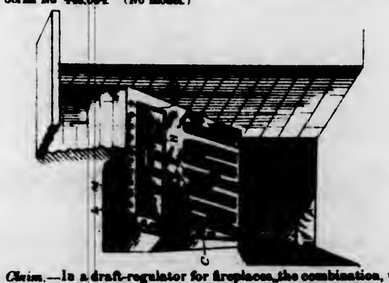
Claim.—The combination of the post 7, a series of turning-pins mounted in the post, a post 4, provided with a series of horizontal sockets of cylindrical form and having corresponding perforations communicating with the sockets, the spiral springs arranged within the sockets, the fence-wires connected at one end to the turning-pins and twisted at the other end around the outer coils of the spiral springs, a board arranged on the outer face of the post 4, covering the spring-sockets, pivoted at its upper end to the post and adapted to swing laterally to uncover the sockets, and a keeper arranged at the lower end of the pivoted board and mounted on the post, substantially as described.

485,771. RAILWAY SAFETY-GATE. EDWARD L. PATTERSON, Chicago, Ill. Filed May 17, 1892. Serial No. 433,206. (No model.)



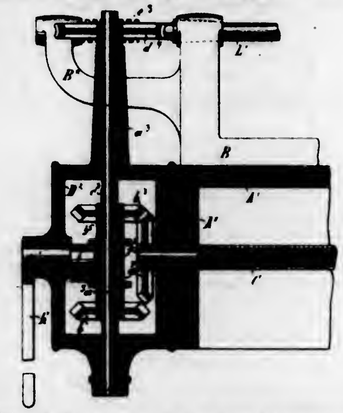
Claim.—The combination, with a railway-track, of a pair of safety-gates arranged upon each side of the track and means for operatively connecting one gate of each pair with the gate diagonally opposite thereto, substantially as shown and described.

485,772. DRAFT-REGULATOR FOR FIREPLACES. BENJAMIN W. PERL, Chicago, Ill. Filed Aug. 11, 1891. Renewed Oct. 6, 1892. Serial No. 448,084. (No model.)



Claim.—In a draft-regulator for fireplaces, the combination, with the casing having the forwardly and upwardly inclined front wall or plate and a series of grooves *g*, formed in the upper side of the bottom of the casing and inclined forwardly and downwardly, of the sliding damper G, having a series of holes *g'* in its lower edge designed to register with the grooves *g*, substantially as and for the purpose set forth.

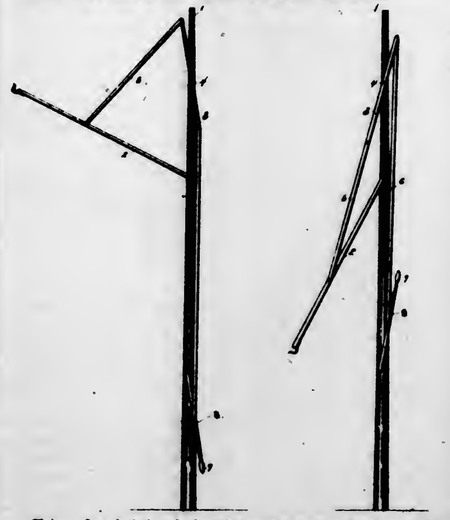
485,773. LATHE. WILHELM VON PITTLER, Leipsic, Germany. Filed Apr. 16, 1890. Serial No. 348,227. (No model.)



Claim.—1. In a metal-working machine, the combination, with a bed-rail and a screw-spindle in the same, of a casing mounted to turn on the end of the bed-rail and on an extension of the spindle, a shaft in said casing, a sliding sleeve on said shaft, bevel cog-wheels on the end of the sliding sleeve, a bevel cog-wheel on the end of the spindle, adapted to engage either of the bevel cog-wheels on the sleeve, and a driving-wheel on the upper end of the shaft in the casing, substantially as set forth.

2. In a metal-working machine, the combination, with a bed-rail, of a screw-spindle in the same, a casing mounted to turn on the end of said bed-rail and on an extension of the spindle, a shaft in said casing, a sliding sleeve on said shaft, bevel cog-wheels on the ends of said sleeve, a bevel cog-wheel fixed on one end of the spindle and adapted to engage either one of the bevel cog-wheels on the sleeve, an eccentric or cam arranged between collars on the sleeve, a lever on the stem of said eccentric or cam, and a driving-wheel on the upper end of the shaft in said casing, substantially as set forth.

485,774. HOISTING DEVICE. ALBERT L. PLOTNER, New Bedford, Mass. Filed June 16, 1892. Serial No. 436,890. (No model.)



Claim.—In a hoisting device, the combination, with the upright

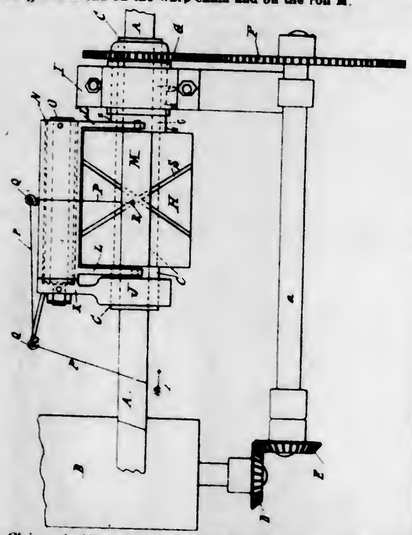
or support, of a crane pivoted thereon, a lever pivoted at its central portion to the upper portion of the support and having an arm pivoted thereto and to the crane, the main connecting-arm pivoted to the lever on the upper portion of the post, and a hand-lever pivoted to the said connecting-arm and post, substantially as and for the purposes specified.

485,775. NUT-WRENCH. EMMANUEL P. SUGLIADO, Boston, Mass. Filed May 27, 1892. Serial No. 434,603. (No model.)

Claim.—In a nut-wrench, the combination, with the shank A, having a T-handle branch B at one end, its opposite end being enlarged and provided with a transverse slot C and a vertical bore D, formed at right angles with the slot and the bore and slot intersecting each other, the angular jaw E on the end of the shank, and a lateral inward-extending branch F, of the jaw-body G, having a screw H, engaging the bore D and movable therein, and the forwardly-extending angular jaw I at the upper end of the body, in connection with the angular jaw E and the adjusting-nut M, mounted upon the screw H and engaging the slot C of the shank, all combined and arranged to operate as and for the purposes specified.

485,776. MECHANISM FOR UNWINDING WARP-THREADS. CHARLES R. SCRIMSHOUR and HENRY GILDARD, Lewiston, Me. Filed Jan. 12, 1892. Serial No. 417,532. (No model.)

Brief.—The warp-chain A, with the thread P wrapped about it, is passed over the drum B and through the cylinder C. The motion of the drum B is communicated to the cylinder C, which latter carries the roll M on the arm J. The roll M has the thread attached to it and is rotated by frictional contact with the stationary hub H, thus winding the thread off the warp-chain and on the roll M.



Claim.—1. Mechanism for unwinding thread from a chain, consisting of a drum rotated by the feeding of the said chain, in combination with a rotating cylinder, gearing from the said drum to the said cylinder, a roll or spool carried by the said cylinder, and means in contact with the said roll for causing its rotation as it revolves with the said cylinder in order that the thread may be wound on the said roll, substantially as set forth.

2. The combination of the fixed obliquely-grooved hub H with the cylinder C, rotating within the said hub, the roll or spool M, carried by the said cylinder, the thread-guide R, moving in the groove of the said hub under the action of the said roll, and the gearing for driving the said cylinder, substantially as and for the purpose set forth.

3. In combination with the drum B, which is in contact with the warp-chain A and rotated thereby, the cylinder C, gearing from the

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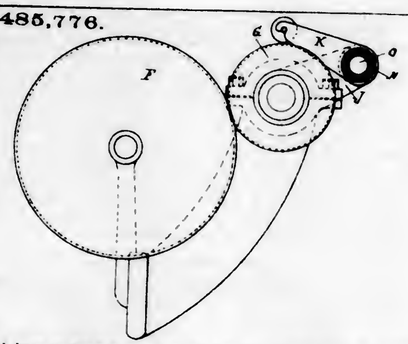
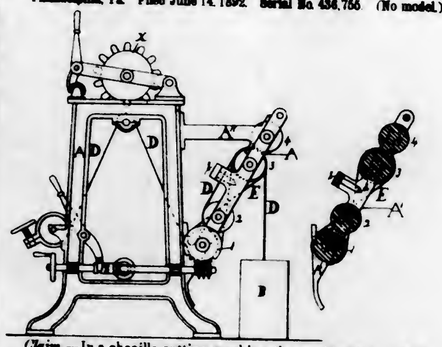


said drum to the said cylinder, whereby the latter is rotated, a fixed grooved hub or drum surrounding the said cylinder, a guide moving in the oblique groove of the said drum and having the winding thread passed therethrough, and a roll attached to the said cylinder, which revolves with the rotation of the latter to unwind the thread from the chain, the said roll also rotating to wind the thread on itself, substantially as set forth.

485,777. CHENILLE-CUTTING MACHINE. WILLIAM T. SMITH, Philadelphia, Pa. Filed June 14, 1892. Serial No. 436,755. (No model.)



Claim.—In a chenille-cutting machine, the combination, with device for cutting the chenille web, of the pair of drawing-rollers 1 and 2, the pair of delivering-rollers 3 and 4, and the set of dividing-pins placed between said pairs of rollers, whereby the cut chenille strips are delivered in groups, substantially as set forth.

485,778. COIN-CASE. JAMES S. WALKER, Denver, Colo. Filed June 15, 1892. Serial No. 436,846. (No model.)

Claim.—As an improved article of manufacture, a coin case or wrapper consisting of a blank having circular flaps arranged in pairs on opposite sides thereof and adapted to engage each other to form the heads or ends of the body of the said case or wrapper and a strip secured to and extending over the said body longitudinally and over the opposite heads or ends thereof and adapted to be secured to the body at the ends thereof to hold the parts in connection, substantially as described.

485,779. GRAIN-WEIGHER. ALBERT WIBOE, Argonia, Kans. Filed Nov. 12, 1891. Renewed Oct. 6, 1892. Serial No. 448,082. (No model.)

Claim.—In a grain-measuring machine, substantially as described, the combination, with the main casing having vertical guide-slots in its side walls and the depending lugs rigidly connected to the inside of the side walls above said guide-slots, of the vertically-movable and revoluble measuring-box comprising the vertical side walls and the

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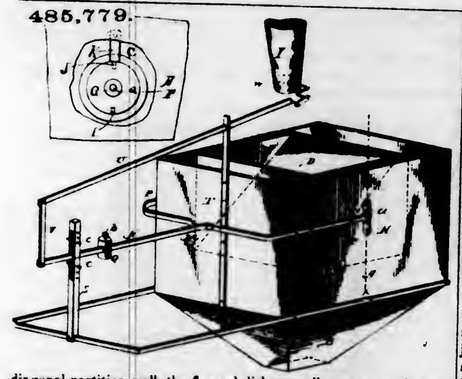
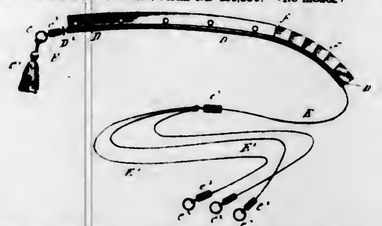


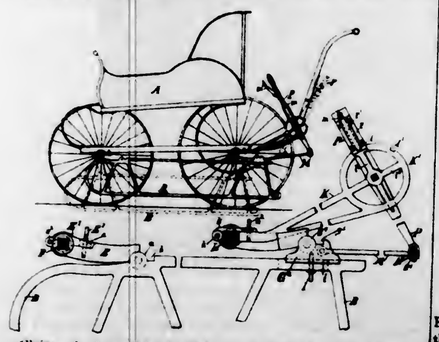
diagonal partition-wall, the flanged disks or collars connected to opposite side walls of said box and having lateral sockets adapted to move in the guide-slots of the casing, the radially-disposed sockets formed at diametrically-opposite points in the disks or collars and adapted to engage the depending lugs of the casing, the weight-beam having the branches straddling the casing and pivotally connected to the sides thereof and to the lateral sockets of the measuring-box, and a pea or counterbalance-weight mounted on said beam, substantially as specified.

485,780. DRESS-ELEVATOR. JOHN G. WIETJEN, Mount Vernon, N. Y. Filed Feb. 6, 1892. Serial No. 420,559. (No model.)



Claim.—A dress-elevator composed of a cord-guide formed of an interior closely-coiled wire, an exterior covering extending over said coiled wire and being united at the overlapping parts, the lower overlapping portion of said covering being slitted or notched, so as to yield to the strain on the same, a headed sleeve attached to the upper end of the wire tube, a dress-lifting cord passing through the interior coiled wire, a ring at the upper end of the lifting-cord, auxiliary dress-lifting cords attached to the lower end of the main lifting-cord, and rings at the lower ends of the auxiliary cords and adapted to be attached to the skirt, substantially as set forth.

485,781. SLEIGH ATTACHMENT FOR BABY-CARRIAGES. WILLIAM H. BENDURE and SCOTT TILBERY, Fort Wayne, Ind., assignors of one-third to John H. Hartman, same place. Filed July 15, 1892. Serial No. 440,112. (No model.)

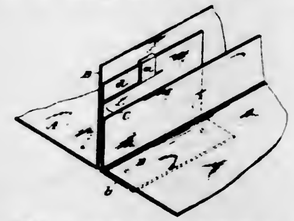


Claim.—1. A combined sleigh attachment for baby-carriages, consisting of a sleigh-body having ears provided with lugs or pivots adapted for mounting, forward supporting-standards, longitudinal slots for the longitudinal adjustment of the rear standard-bases, and slotted cross-pieces adapted for lateral adjustment, forward standards pivoted on said lugs, adjustable standard-bases having lugs on their inner surface adapted for engagement with the rear standards and supporting-hounds, rear supporting-standards pivoted on said lugs, said rear and forward standards being adapted for clamping the axles of said carriage by a hinged connection, and a lever mechanism adapted for raising and lowering said sleigh and carriage and consisting of a lever-bar K, secured to the rear axle by a hinged connection and having at the end thereof a notched quadrant or circle, to which is pivoted a hand-lever P, having a catch-spring *m* and properly fulcrumed on the plate N, to which is rigidly secured the supporting-hounds M and M', pivoted at their other extremity to the said standard-bases, all substantially as set forth and described.

2. In a combined sleigh attachment for baby-carriages, the combination of a sleigh B, having lugs *a* and *a'*, standard-bases G^2 and G^3, adjustable in slots b^2 b^3 and having lugs *g g'* and g^2 g^3, and slotted adjustable cross-pieces D D', with the pivoted standards E E' and G G', and the operating-lever mechanism consisting of the lever-bar K, having a notched quadrant or circle K', a pair of supporting-hounds M M', having a pivoted connection at said bases G^2 G^3 and secured at the other extremity to plate N, and the hand-lever P, having a pivotal connection at said plate and also at the center of said circle K' and provided with a spring-catch *m*, adapted for engagement with said quadrant or circle, all substantially as set forth and described.

3. The combination, in a sleigh attachment for baby-carriages, of the hounds M M', the slotted plate N, the lever-bar K, having a hinge *k*, a thumb-screw k^3, and a quadrant or circle K', with the hand-lever P, fulcrumed on plate N and pivoted to the center of circle K' and provided with a spring-catch *m*, adapted for engagement with said quadrant or circle, all substantially as set forth and described.

485,782. SHEET-METAL ROOFING. WILSON C. BERGER, Canton, Ohio, assignor to the Berger Manufacturing Company, same place. Filed Mar. 28, 1892. Serial No. 426,767. (No model.)



Claim.—The combination, with two sheets having upward-projecting flanges, one projecting a greater distance than the other and provided with a loop having side openings, of an anchor consisting of a horizontal base portion located beneath one of the sheets and an upward-extending portion located between the aforesaid flanges and having its upper edge intermediate the edges of the said flanges and provided with a horizontally-extending tongue to take into the loop, the said upwardly-projecting portion of the anchor and the highest flange of one sheet bent over the short flange of the other sheet.

485,783. SHEET-METAL ELBOW. WILSON C. BERGER, Canton, Ohio, assignor to the Berger Manufacturing Company, same place. Filed Apr. 30, 1892. Serial No. 429,827. (Model.)

Claim.—1. The combination, in a sheet-metal elbow, of groove B to extend a distance parallel to the front upper portion of the pipe, thence about the central to the rear lower portion, a groove C to extend a distance down parallel to the rear upper portion of the pipe and

thence about the central to the lower front portion, said grooves to cross at a point central to the bend, substantially as and for the purpose set forth.

2. The combination, in a corrugated sheet-metal elbow, of the grooves B and C to parallel the end portions of the pipe to cross or intersect at the center of the bent portion, the grooves D and E to converge and unite at a point near the crossing of the grooves B and C, substantially as and for the purpose set forth.

3. The combination, in a sheet-metal elbow, of the grooves B and C, as described, the grooves D and E, and the depressions F and G, substantially as shown, and for the purpose set forth.

485,784. PROCESS OF CASTING ARMOR. GEORGE H. CRAGG and HENRY L. GANTT, Philadelphia, Pa. Filed Dec. 22, 1891. Serial No. 416,007. (No specimens.)

Claim.—1. The process of producing a steel casting having a hard surface gradually decreasing in hardness from the surface, consisting in providing a dry mold with a lining or facing of a readily-fusible alloy, pouring steel into said mold and causing said alloy to be fused and entirely incorporated by alloying with the outer portion of the molten steel, and cooling and removing the casting from the mold, as set forth.

2. The process of producing steel castings having a hardened surface or surfaces gradually decreasing in hardness toward the interior, consisting in pouring molten steel into a mold of dry sand, one or more of the inner walls of which is provided with a lining or facing composed wholly or in part of a readily-fusible alloy and causing said alloy to be fused and entirely incorporated by alloying with the outer portion of the molten steel, and cooling and removing the casting from the mold, as set forth.

3. The process of producing a steel casting having a hard surface gradually decreasing in hardness from the surface, consisting in providing a dry mold with a lining or facing composed in part of an alloy containing ferro-chrome, pouring steel into said mold and causing the said alloy to be fused and entirely incorporated by alloying with an outer portion of the molten steel, and cooling and removing the casting from the mold, as set forth.

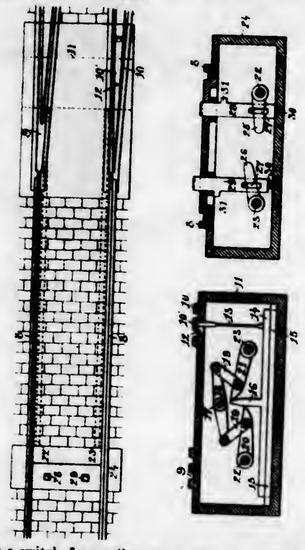
485,785. PROCESS OF CASTING ARMOR. GEORGE H. CRAGG and HENRY L. GANTT, Philadelphia, Pa. Original application filed Dec. 22, 1891. Serial No. 416,007. Divided and this application filed Apr. 19, 1892. Serial No. 429,769. (No specimens.)

Claim.—1. The process of producing steel castings having a hardened surface gradually decreasing in hardness toward the interior, consisting in providing a dry mold with a lining or facing composed wholly or in part of manganese alloy, pouring the steel into said mold and causing said alloy to be fused and entirely incorporated by alloying with the outer portion of the molten steel, and removing the casting from the mold when sufficiently cooled, substantially as described.

2. The process of producing steel castings having a hardened surface or surfaces gradually decreasing in hardness from the surface, consisting in pouring molten steel into a dry-sand mold, said mold having one or more of the inner walls provided with a lining or facing composed wholly or in part of ferro-manganese, and causing said alloy to be fused and entirely incorporated by alloying with the outer portion of the molten steel, and removing the casting from the mold when sufficiently cooled, substantially as described.

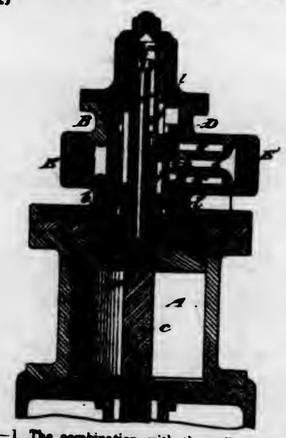
485,786. SWITCH. IRVING CODE, Fall River, Mass. Filed Apr. 13, 1892. Serial No. 428,893. (No model.)

Claim.—1. In an automatic railway-switch, the combination, with a track and a switch connected therewith, having a pivoted switch-tongue, of a casing 11, located below said switch and provided with a cover, a central longitudinal shaft secured in said casing, a cross-arm journaled on said shaft, thrust-arms pivotally connected with the ends of said cross-arms, rotatable shafts journaled in said casing, extending beyond the same and carrying the thrust-blocks, a reciprocating bar movable in guides, a vertical rod secured to said bar and to the switch-tongue, a vertical member on said bar against which the thrust-arms may bear, and means for partially rotating said last-mentioned shaft, as described.



2. In a switch for a railway having a main line, a branch line, and a switch connecting the two, the combination, with the casing 11, the reciprocating bar 14, movable in the guide 15 and having the member 16, a rod 13, secured to the bar 14, extending through a slot in the cover of the case and secured to the switch-tongue, the shafts 22 and 23, journaled in the ends of said casing, the thrust-arms 20 and 21, secured to said shafts and adapted to bear against the member 16, a cross-arm 18, journaled on the shaft 17, and links connecting the ends of the cross-arm with the thrust-arms, of a casing 24, into which the shafts 22 and 23 extend, the levers 25 and 26, secured to said shafts, the plungers 28 and 29, vertically movable in said casing and extending through slots in the cover, and the bent shoulders 27, secured to said plungers and adapted to engage said levers 25 and 26, as described.

485,787. VALVE FOR DIRECT-ACTING ENGINES. WILLIAM CRAIG, Brooklyn, N. Y. Filed Feb. 18, 1892. Serial No. 421,921. (No model.)



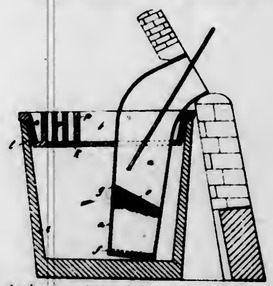
Claim.—1. The combination, with the cylinder and the valve-chest at one end thereof, of a main valve and an auxiliary valve therein, the latter communicating at one end with the interior of the cylinder, the end of the auxiliary valve in communication with the cylinder being enlarged and adapted to seat against the end of the cylinder outside of the body of the auxiliary valve, substantially as set forth.

2. The combination, with the valve-chest and cylinder and a supporting partition or gland provided with a recess on the side toward the cylinder, of a valve having one of its ends extended through the partition or gland within the cylinder and provided with an enlargement adapted to seat within the said recess in the gland or partition, substantially as set forth.

3. The combination, with the main valve and its chest, of the auxiliary valve working through the main valve and having exhaust-coves *j j'* for exhausting through the main valve and having passages *k k'* from said coves with lateral communication to the valve-chest at the ends of the main valve, substantially as and for the purpose herein set forth.

4. The combination, with the engine cylinder and piston, the valve-chest at one end of the cylinder, and the main valve within said chest, of the auxiliary valve working within the said main valve and having a central bore, the part of which farthest from the cylinder is counterbored, and an operating-rod for the latter valve affixed to the engine-piston, working through the latter valve, and having a head or collar at its outer end, substantially as herein described.

485,788. FILTERING-TUBE. MORITZ RUDOLPH, Berlin, Germany. Filed Jan. 7, 1892. Serial No. 417,317. (No model.) Patented in Germany May 17, 1891, No. 61,375; in England Dec. 14, 1891, No. 21,836; in France Dec. 16, 1891, No. 216,068, and in Belgium Dec. 17, 1891, No. 97,614.



Claim.—1. An improved device for refining molten glass, consisting of a filtering-tube *a*, divided into two or more compartments, the lower of which is filled with clay or porcelain balls, so that the glass after having passed the openings *f* at or near the bottom of said lower compartment must pass through the clay or porcelain balls before it can enter the upper compartment through the orifice *g* in the partition *e*, substantially as shown and described.

2. An improved device for refining molten glass, consisting of a filtering-tube divided into two or more compartments, the lower of which is filled with clay or porcelain balls, so that the glass after having passed the openings *f* at or near the bottom of said lower compartment must pass through the clay or porcelain balls before it can enter the upper compartment through the orifice *g* in the partition *e*, together with a melting-vessel *b*, supported by the melting-pot, said vessel having a partition *p* and an opening *k* at or near the bottom of said partition for allowing the material to penetrate into the refining-space *c*, whence it passes in serpentine way and flows through an opening *l* in the side or wall of said melting-vessel into the melting-pot, substantially as shown and described.

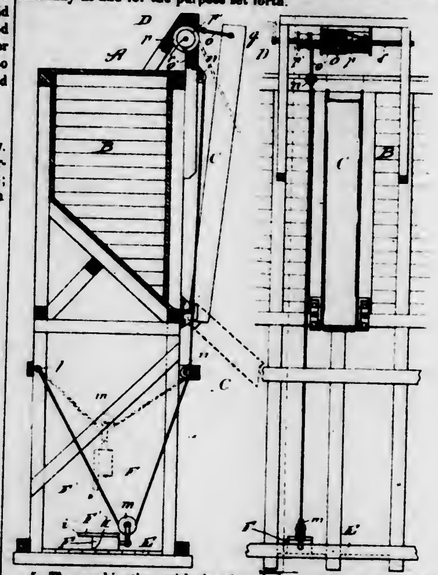
485,789. COUNTERBALANCE FOR THE DISCHARGE APPARATUS FOR COAL OR ORE BINS. RICHARD W. ROBBINS, Auburn, assignor to the Potthoff-Mullikan & Company, Chicago, Ill. Filed Sept. 3, 1892. Serial No. 444,878. (No model.)

Claim.—1. The combination, with the pivotal chute and hoisting mechanism therefor, of a coal or ore bin, a support E below the bin, a weight F, normally resting on the support and having at one end the fulcrums *h* and *i*, and a cable *o'*, fastened at opposite ends, respectively, behind the chute, as at *l*, and to the hoisting mechanism and connected with the weight at the end thereof opposite its said fulcrums, substantially as and for the purpose set forth.

2. The combination, with the pivotal chute and hoisting mechanism therefor, of a coal or ore bin, a support E below the bin, a weight F, normally resting on the support and having at one end an extension F', affording fulcrums *i* and *k*, and a cable *o'*, fastened at opposite ends, respectively, behind a chute, as at *l*, and to the hoisting mechanism and connected with the weight at the end thereof opposite its said extension, substantially as and for the purpose set forth.

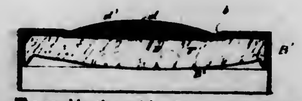
3. The combination, with the pivotal chute and hoisting mechanism therefor, of a coal or ore bin, an inclined support E below the bin, a weight F, normally resting on the support and having at one end an extension F', affording fulcrums *i* and *k*, and a cable *o'*, fastened at opposite ends, respectively, behind the chute, as at *l*, and to the hoisting mechanism and passing between its ends under the pulley *m*, the whole being constructed and arranged to operate substantially as and for the purpose set forth.

4. The combination, with the pivotal chute and hoisting mechanism therefor, of a coal or ore bin, an inclined support E below the bin, a weight F, normally resting on the support and having at one end an extension F', affording fulcrums *i* and *k*, rollers *k'* at the said fulcrums, and a cable *o'*, fastened at opposite ends, respectively, behind the chute, as at *l*, and to the hoisting mechanism and connected with the weight at the end thereof opposite its said extension, substantially as and for the purpose set forth.



5. The combination, with the pivotal chute and hoisting mechanism therefor, of a coal or ore bin, an inclined support E below the bin, a weight F, normally resting on the support and carrying at one end a pulley *m* and beveled at its opposite end, the bevel forming an extension F', affording fulcrums *i* and *k*, rollers *k'* at the said fulcrums, and a cable *o'*, fastened at opposite ends, respectively, behind the chute, as at *l*, and to the hoisting mechanism and passing between its ends under the pulley *m*, the whole being constructed and arranged to operate substantially as and for the purpose set forth.

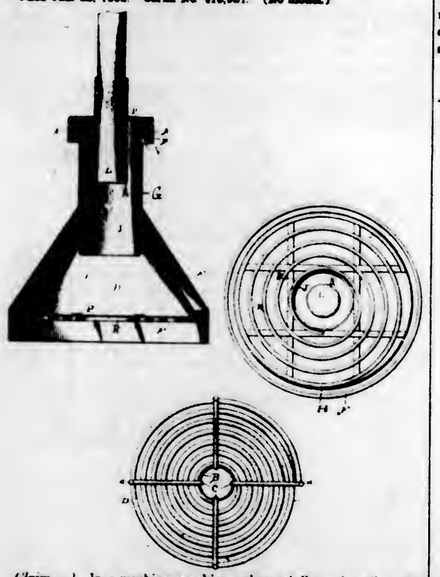
485,790. COVER FOR BOXES. FREDERICK V. RUTLEDGE, West Brighton, N. Y. Filed June 13, 1892. Serial No. 437,140. (No model.)



Claim.—The combination, with a box-cover having an opening, of a pad pinned in said opening, which pad is composed of a base-plate, a layer of fibrous material on said base-plate, and a covering of mica or like material drawn over said fibrous material and pasted

to the edges of the base-plate, said cushion projecting up through the opening in the top plate, and a piece pasted to the under side of the cover and to the under side of the base-plate of the pad for the purpose of holding said pad in place in the said opening, substantially as set forth.

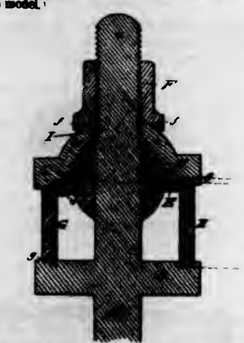
485,791. WASHING-MACHINE. JAMES W. FELL, Cambridge, Ill. Filed Jan. 22, 1892. Serial No. 418,921. (No model.)



Claims.—1. In a washing-machine, substantially as described, the combination, with the casing comprising the body and the vertically-disposed sleeve, of the reciprocating plunger comprising the body and the sleeve arranged in the sleeve of the casing, the laterally-disposed apertures formed in the sleeve of the plunger adjacent to the upper end thereof, and the cap comprising the flat top connected to the plunger-sleeve above the apertures therein and the depending flange surrounding said apertures, substantially as and for the purpose set forth.

2. In a washing-machine, the combination, with the center tube and the coiled wire, the horizontal bars secured to said tube and spanning and inclosing said wires and terminating at their outer ends with depending feet, substantially as and for the purposes specified.

485,792. ROTARY STOCK-CUTTER. ISAAC FRALEIGH and FREDERICK L. HEBERER, Poughkeepsie, N. Y. Filed Apr. 12, 1892. Serial No. 428,833. (No model.)

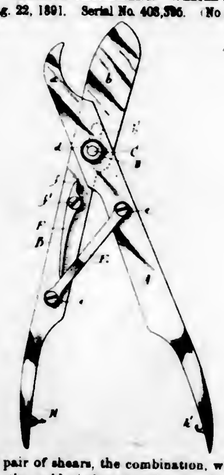


Claim.—1. In a rotary stock-cutter, the combination, with a spindle and fixed clamping-disk, of a ball carried by said spindle and free to slide thereupon, a movable clamping-disk carried by said spindle and free to rock thereon and embracing said ball, and means for clamping the cutters between said disks, substantially as set forth.

2. In a rotary stock-cutter, the combination, with a spindle and fixed clamping-disk, of a ball carried by said spindle and free to slide thereupon, a movable clamping-disk carried by said spindle and free to rock thereupon and provided with a concave portion which embraces said ball, and a nut for clamping the parts against the cutters, substantially as set forth.

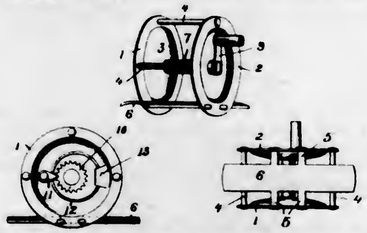
3. In a rotary stock-cutter, an adjustable cutter-head consisting of a clamping-disk B, attached rigidly to the spindle A, in combination with a movable clamping-disk C, concaved at *c*, and a ball D, surrounding the spindle A and held in place within the corresponding concavity of the disk C by the recessed rim E and the set-screws *e e*, substantially as and for the purpose specified.

485,793. PRUNING IMPLEMENT. WALTER P. HATCH, Chicago, Ill. Filed Aug. 22, 1891. Serial No. 403,386. (No model.)



Claim.—In a pair of shears, the combination, with the sections, of a bolt for connecting said sections together, a rubber or equivalent washer, and a nut D, bearing upon said washer, said nut having a concaved inner face and having corners *d'*, whereby when the washer is compressed it will be expanded laterally, causing its outer portions to embed the corners of the nut, and thereby guard it against rotation, substantially as described.

485,794. FISHING-REEL. AUGUSTUS D. HENDRICK, Birmingham, Conn., assignor to Isaac J. Booth, same place. Filed Mar. 2, 1892. Serial No. 423,594. (Model.)



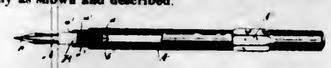
Claim.—1. In a fishing-reel, a pair of side plates concavo-convex in cross-section, whereby are formed interior cheeks and exterior recesses, in combination with a winding-spool journaled between said cheeks and a suitable crank and click, substantially as specified.

2. The combination, with the side plates having the opposed and inwardly-projecting cheeks, of the spool journaled in the plates, a click-wheel mounted upon one end of the spool outside the plate, but within the concavity, and a pawl co-operating with said click-wheel, substantially as described.

3. A reel comprising the side plates 1 and 2, in combination with a reel-plate 6, having projections 5 formed integral therewith and riveted through the side plates, substantially as described.

485,795. FOUNTAIN-PEN. JOHN HOLLAND, Cincinnati, Ohio. Filed Feb. 20, 1892. Serial No. 422,115. (No model.)

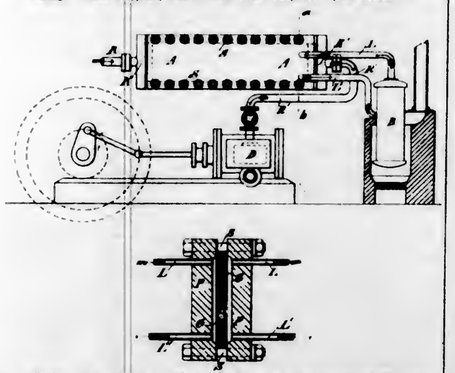
Claim.—1. In a fountain-pen, the combination of the holder having an internal shoulder near its forward end, the point-section having its inner end cone-shaped and longitudinally slotted to meet the ink-duct in said section, whereby the flow of ink is cut off when the point-section is screwed inward and opened by the reverse movement, substantially as shown and described.



2. The combination, substantially as hereinbefore set forth, of the holder A, having shoulder *a*, screw-threaded portion *a'*, and enlarged bore a^3, and the point-section B, having its rear end cone-shaped, slotted, and exteriorly screw-threaded and its forward end reduced exteriorly and perforated interiorly to meet the slot in the rear end.

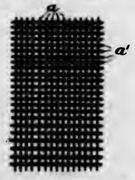
3. A point-section for fountain-penholders, consisting, substantially as hereinbefore set forth, of the cylindrical part B, exteriorly screw-threaded, diametrically slotted from the rear to the ink-duct, forming a collapsible valve adapted to close when forced within the holder and opened when retracted, whereby the supply of ink to the point-section may be regulated or entirely cut off.

485,796. APPARATUS FOR SUPERHEATING VAPORS AND GASES. MORITZ HOUGHAUS, Grevenberg, near Aix-la-Chapelle, Germany. Filed Aug. 25, 1892. Serial No. 444,133. (No model.)



Claim.—A superheater formed of a pair of metal plates G G, having ribs with intervening narrow channels on their inner faces, clamped together by chambered plates P P, inclosing separate steam-tight chambers between the plates G and the clamping-plates P, wherein high-pressure steam is conducted, so as to impart its heat to the plates G, which in turn give it up to the gases or vapors to be superheated, which traverse the passages formed between the plates G, as described.

485,797. SCREEN FOR METALLIC FUMES. MALVERN W. ILES, Denver, Colo. Filed Aug. 10, 1892. Serial No. 442,864. (No model.)



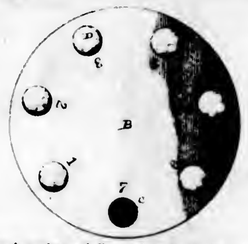
Claim.—1. A screen for separating metallic fumes from furnace-smoke, consisting of a fabric having warp and weft threads, the one composed of wool and the other of vegetable fiber.

2. A screen for separating metallic fumes from furnace-smoke, a bag formed of a fabric having warp and weft threads, one composed of wool and the other of vegetable fiber.

485,798. PUZZLE. JOHN J. JENKINS, Chicago, Ill. Filed May 27, 1892. Serial No. 434,027. (No model.)

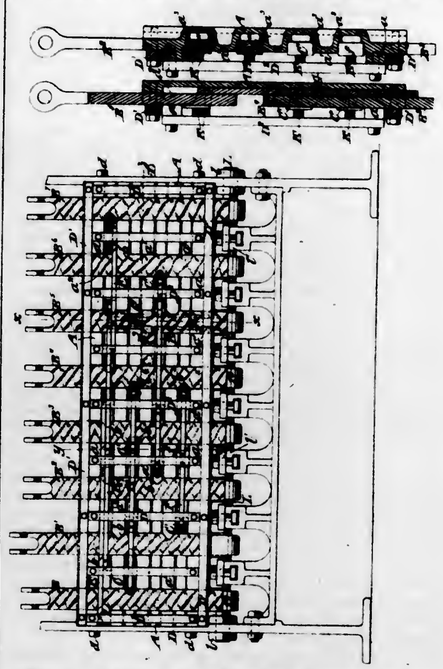
Claim.—1. The combination, with a box and six balls, of the box top having arranged in a circle a series of seven apertures numbered, consecutively, from 1 to 7 and adapted to seat the six balls, substantially as and for the purposes specified.

2. In a puzzle, substantially as described, the combination, with an uneven number of pockets arranged in a circle and numbered consecutively, of an even number of counters, substantially as and for the purpose set forth.



3. In a puzzle, substantially as described, the combination, with a series of seven pockets arranged in a circle and numbered consecutively, of a series of six counters, substantially as and for the purpose set forth.

485,799. INTERLOCKING APPARATUS FOR RAILWAY SWITCHES AND SIGNALS. HENRY JOHNSON and ARTHUR H. JOHNSON, Rahway, N. J. Filed Mar. 29, 1890. Serial No. 345,836. (No model.)

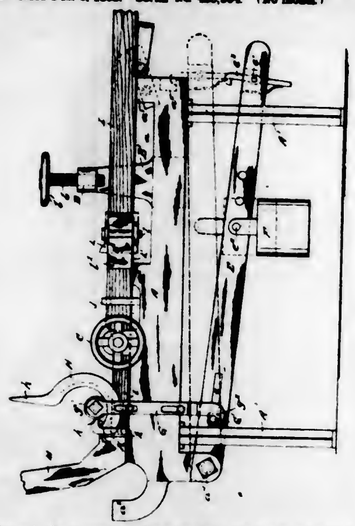


Claim.—1. In switch and signal interlocking apparatus, the combination, with longitudinally-movable tappets, of guides for said tappets, dogs arranged between said tappets and adapted to be shifted thereby to cause the locking of other of the tappets, a bar connecting certain of said dogs together substantially in a row, and a guide for said bar between the dogs and the tappets, substantially as specified.

2. In switch and signal interlocking apparatus, the combination, with two or more longitudinally-movable tappets, of a connection between said tappets, whereby movement imparted to one will be transmitted to another or others, guides for said tappets, and dogs adapted to be shifted by the tappets, substantially as specified.

3. In switch and signal interlocking apparatus, the combination, with a longitudinally-movable tappet, of a second tappet, a connection between said tappets, whereby movement imparted to one will be transmitted to the other, guides for said tappets, a third tappet arranged in line with one of the tappets first named, but moved independently thereof, and dogs adapted to be shifted by the tappets, substantially as specified.

485,800. WOOD-BENDING MACHINE. JOSEPH KLAER, Hamburg, Pa. Filed Feb. 8, 1892. Serial No. 420,654. (No model.)



Claim.—1. In a wood-bending machine, the frame provided with a bending-recess between blocks a' a^2, an intermediate yoke and screw-press B, a side offset a^3, corresponding with said yoke, and an intermediate screw-press C, operating at an angle to the press B, all substantially as set forth.

2. In a wood-bending machine, the combination, with the frame and the weighted lever E, pivoted thereto, of the link G, carried by said lever and spanning the frame, and the former H, upon which said link bears, all substantially as and for the purpose set forth.

3. In a wood-bending machine, the combination, with the frame and the weighted lever pivoted thereto, of the adjustable link G, adjustably pivoted to said lever, substantially as described, and spanning the frame, and the former H, upon which said link bears, substantially as and for the purpose set forth.

4. In a wood-bending machine, the combination, with the frame and the weighted lever E, pivoted thereto, of the link G, carried by said lever and spanning the frame, and the former H, upon which said link bears, said lever being provided with a catch e^2, adapted to lock it fast to the frame, substantially as set forth.

5. In a wood-bending machine, the combination, with the frame, of the weighted lever E, pivoted thereto and provided with a longitudinal slot e, the trunnion-piece adjustably secured in said slot, the link G, spanning the frame and having hooked ends engaging the trunnion-piece, and the former H, upon which said link bears, substantially as set forth.

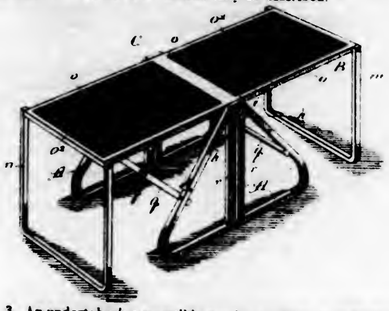
6. In a wood-bending machine, the combination, with the frame and the weighted lever pivoted thereto, of the link G, spanning the frame and provided with a roller g' on the cross-bar and hooked ends to engage the lever, and the former H, upon which said roller bears, substantially as set forth.

7. In a wood-bending machine, the curved former H, in combination with the strap L', having an end piece K, trunnions k for attaching an operating-lever, and hooked end k' to engage the end of the former, substantially as set forth.

485,801. UNDERTAKER'S CONVERTIBLE STAND. VACLAV KLEMBA, Chicago, Ill., assignor of two-thirds to Matthew Brunsen and Jaroslav Lenoch, same place. Filed Apr. 26, 1892. Serial No. 430,741. (No model.)

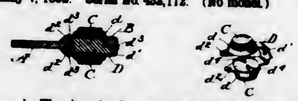
Claim.—1. An undertaker's convertible stand comprising, in combination, a runner-base formed of triangular pieces having an interposed folding connection whereby the base may be compacted to or about to the combined width of the triangular pieces, a table on the apex of the base, provided with folding end sections, and means separably pivoting the table on the base, whereby they may be readily separated for compacting and transportation, substantially as described.

2. An undertaker's convertible stand comprising, in combination, a runner-base A, formed of triangular pieces having an interposed folding connection whereby the base may be compacted to or about to the combined width of the triangular pieces, brace-bars r on the said triangular pieces carrying eyes s, a table B, provided with folding end sections n m, and a shaft k on the table and loosely confined between ears l, depending from opposite edges thereof near its center, said shaft extending at its opposite ends between the eyes s and being separably fastened thereto, substantially as described.



3. An undertaker's convertible stand comprising, in combination, a triangular runner-base A, provided with tongues g, a table B, provided with folding end sections n m and pivotally and separably supported on the apex of the said base to adapt an end section to be adjusted as a brace against an end of the base and held by the said tongues, and a pillow f, removably adjusted on the table, substantially as described.

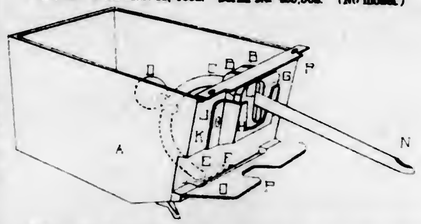
485,802. SLATE-MUFFLER. RICHARD KOEHLER, Brooklyn, N. Y. Filed May 7, 1892. Serial No. 432,112. (No model.)



Claim.—1. The herein-described muffler for slates, comprising pads and a holder therefor having rings upwardly and inwardly inclined to receive the pads and united by a connecting-band, substantially as shown and described.

2. In a slate-muffler, the combination of pads and a holder therefor, consisting of upwardly and inwardly tapering rings and united by a band, said rings having ears bent inwardly to hold the pads therein, substantially as shown and described.

485,808. BOTTLE-FILLING DEVICE. HENRY MEINHARD, Chicago, Ill. Filed Mar. 18, 1892. Serial No. 425,502. (No model.)

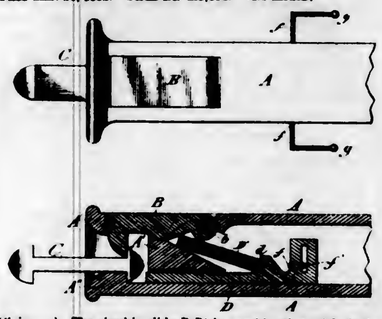


Claim.—1. In a fluid-bottling apparatus in which a tube projecting from a tank is employed to supply the fluid to the bottle, the combination, with the tank, of a slotted opening at one end, through which the tube projects, a bracket about such opening and secured to the end of the tank and having a receptacle open at one side to hold a cushion, and a slotted cushion adapted to be received within such receptacle and to permit the tube to pass therethrough.

2. In an apparatus for bottling fluids, the combination of a tank with a tube projecting therefrom and adapted to supply the fluid to the bottle and a bracket on the side of such tank having an opening of greater diameter than the diameter of the head of the bottle to be used, with a cushion adapted to rest in such bracket and perforated to permit of the passage of the tube, the perforation in such cushion being oblong and the tube being pivoted so as to swing through such perforation.

3. In an apparatus for bottling fluids, the combination of a tank with a tube projecting therefrom and adapted to supply the fluid to the bottle, a bracket on the side of such tank having an opening of greater diameter than the diameter of the head of the bottle to be used, with a cushion adapted to rest in such bracket and slotted to permit of the passage of the tube and also to permit said tube to have a certain amount of motion through the slot, the recess formed by said bracket being upwardly enlarged, and a ledge or projection above such bracket to hold the cushion in position.

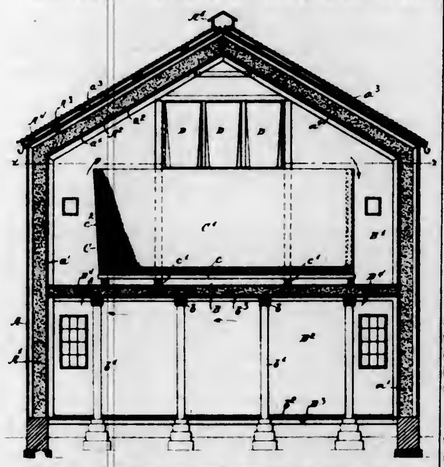
485,804. CAR-COUPLING. CHARLES S. PARK, Deerfield, Mass. Filed Mar. 21, 1892. Serial No. 426,252. (No model.)



Claim.—1. The double slide D D', in combination with the incline A', whereby the upper part of the double slide D D' is made to impinge upon the lower side of the swinging hook B, substantially as and for the purposes herein specified.

2. The double slide D D', in combination with a link and swinging catch, substantially as herein described.

485,805. ICE-FORMING AND PRESERVING ROOM. JAMES M. ROSS, Hyack, N. Y. Filed Oct. 13, 1891. Serial No. 408,570. (No model.)



Claim.—1. A refrigerating and preserving building comprising double side walls A A', packed with insulating material, a roof having the inner portion A^1 and outer portion A^2, each supported on an independent series of rafters, insulating material a between said outer and inner portions, a layer a^2 of tarred material between the material a' and the inner roof portion, a similar layer a^2 above the outer roof portion, a series of parallel contiguous air-ducts above the outer roof portion A^2 and covered by the roofing proper, said ducts running from each eave to the ridge and communicating with the atmosphere at both ends, a flooring B^2, having a non-conducting surface, and an intermediate horizontal transverse partition B, dividing the interior into an upper and a lower compartment, substantially as specified.

2. In an ice-forming and preserving building, the combination, with the upper chamber B', surrounded on all sides by double packed walls and roofing, said roofing having a series of air-ducts therein, of an ice-forming tank located in said chamber and having a less surface area than said chamber, the walls of said tank being flaring and one removable, a series of ducts or hoods D, communicating with the outer air through a wall of the building and extending over said tank, and an adjacent preserving-chamber having openings communicating with the chamber B' and means for sealing said openings and the hoods or ducts D when desired, substantially as specified.

485,806. ATTACHMENT FOR CANES, UMBRELLAS, &c. CLARENCE A. RENYARD, New York, N. Y. Filed May 11, 1892. Serial No. 432,602. (No model.)

Claim.—1. As an improved article of manufacture, a cap or protector for umbrella-handles, canes, &c., having a ring hinged thereto, adapted when in its normal position to give the appearance of an ornamental integral part of the cap without forming an obstruction in use, and provided with a suitable socket to receive the end of the cane, substantially as described.

2. An attachment for umbrella-handles, canes, &c., comprising a cap or protector having a socket to receive the end of a cane and a ring hinged at one side of the cap and adapted to overlie and embrace the upper end thereof, substantially as described.

3. An attachment for umbrella-handles, canes, &c., comprising a cap having a hollow extension or socket and provided at the upper end thereof with an exterior annular shoulder or seat, a ring hinged or pivoted to the cap so as to embrace the top thereof and rest on said seat, and means for holding said ring to its seat, substantially as described.

4. An attachment for umbrella-handles, canes, &c., comprising a cap having a hollow extension or socket provided near the upper end thereof with an exterior annular shoulder or seat, a ring hinged or pivoted to the cap so as to embrace the top thereof and rest on said seat, and a protruberance or catch adapted to hold said ring to its seat, substantially as described.

485,807. TROUSERS-PROTECTOR. ISRAEL M. AARONSON, New York, N. Y. Filed Feb. 18, 1892. Serial No. 421,913. (No model.)

Claim.—1. A trousers-protector comprising a plate provided with an outwardly-projecting lip or flange curved transversely upward, thereby forming a recess in its top, lugs projecting upwardly from the edge of the flange, and a fastening device for securing the protector in position, the same being hid by said lugs, substantially as and for the purpose set forth.

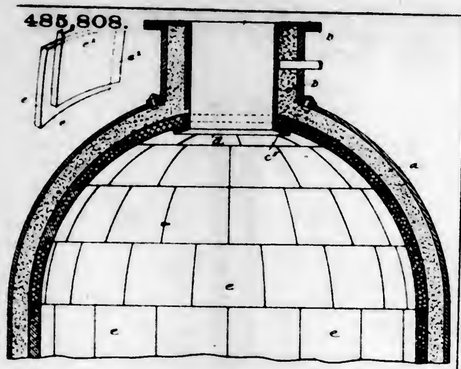
2. A trousers-protector comprising a curved portion or plate provided with openings, an outwardly-projecting lip or flange, projections or lugs extending upwardly from the edge of the lip or flange, and spring-operated teeth or prods adapted to protrude through the openings behind said projections or lugs, substantially as set forth.

485,808. PAPER-PULP DIGESTER. CHARLES CURTIS, Newton, Mass., and NATHANIEL M. JOHNS, Bangor, Me. Filed Apr. 2, 1892. Serial No. 427,471. (No model.)

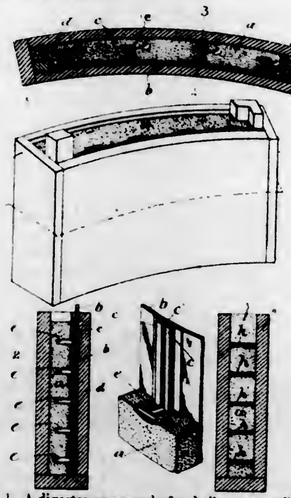
Claim.—1. In a digester, the combination of an outer shell, an outwardly-extended collar thereon having a flange, an inwardly-extended cylinder in said collar concentric with and of a smaller diameter than said collar, a cement lining between the shell and cylinder, said cylinder being provided with corrugations to engage the said cement lining, an inner lining composed of molded blocks, and a flange screwed upon the inner end of said cylinder and bearing on the inner surface of the inner lining, substantially as described.

2. In a digester, an outer shell a, an outwardly-extended collar b, having flanges b', an inwardly-extended externally-corrugated cylinder c, having flange c', provided with openings for the insertion of the cement lining between said cylinder and collar, an inner lining composed of molded blocks, a flange secured to the inner end of the cylinder and bearing on the said inner lining, and an outer cement lining interposed between the shell and cylinder and engaged with the corrugations of the cylinder.

485,808.



485,809. PAPER-PULP DIGESTER. CHARLES CURTIS, Newton, Mass., and NATHANIEL M. JONES, Bangor, Me. Filed May 4, 1892. Serial No. 431,832. (No model.)



Claim.—1. A digester composed of a shell, a cement lining, and a series of independent metallic acid-resisting lining-plates, each connected to the cement at a number of points between its edges, as set forth.

2. The combination, with a digester-shell and a cement lining therefor, of a series of metallic acid-resisting lining-plates, each having a plurality of fastening devices secured to it and to the cement lining at points within the edges of the plates, as set forth.

3. A digester lining-block composed of cement, having a metallic acid-resisting lining-plate attached to its inner surface by a plurality of fastening devices projecting from the back of said plate at points between the edges thereof.

4. The combination of a metallic acid-resisting lining-plate, a series of fastening devices projecting from the back of the plate, and a cement support formed upon said fastening devices, as set forth.

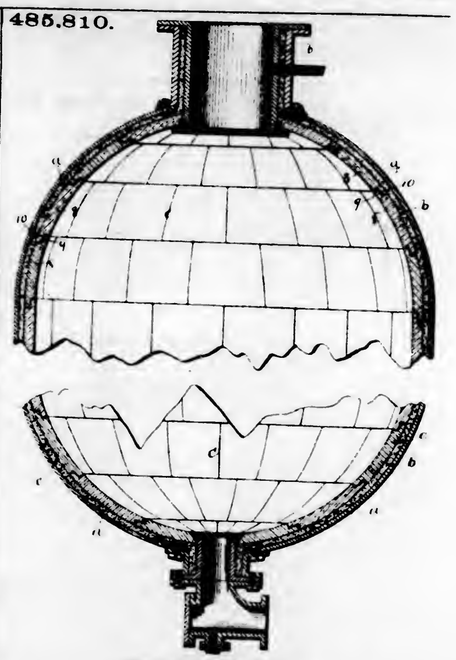
5. The combination of a metallic acid-resisting lining-plate having sockets on its back, a series of fastening devices, each engaged at one end with one of said sockets and provided with a headed outer end, and a cement support formed upon the headed ends of said fastenings, as set forth.

485,810. PAPER-PULP DIGESTER. CHARLES CURTIS, Newton, Mass., and NATHANIEL M. JONES, Bangor, Me. Filed Sept. 26, 1892. Serial No. 446,901. (No model.)

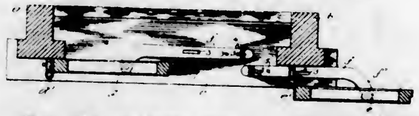
Claim.—1. The improved pulp-digester herein described, comprising in its construction a metal shell and a lining composed of compressed carbonized cement, as set forth.

2. The improved pulp-digester herein described, comprising in its construction a metal shell and a lining composed of compressed cement, as set forth.

485,810.

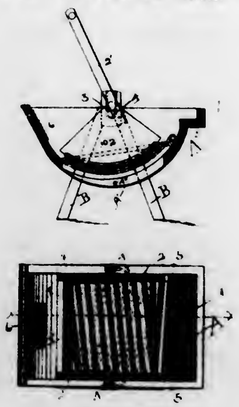


485,811. SHUTTER-WORKER. JOHN N. FARNHAM, Waltham, Mass. Filed July 15, 1892. Serial No. 440,068. (No model.)



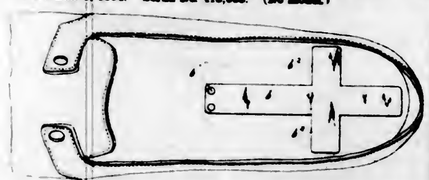
Claim.—The blind-fastener herein described, comprising the flat spring-acting bar *f*, bent at *f'* and loosely connected to the middle of the lower end of the blind and having the series of perforations 3 and the projections 4 5 6 7 rising from the window-sill at the points designated, with which said flat spring-acting bar *f* co-operates, the projections 5 6, entering the perforations and holding the blind wide open, the projection 4, entering one or another perforation and holding the blind in an intermediate position, and the projections 4 7, bearing against the sides of the bar and holding the blind closed.

485,812. WASHING-MACHINE. BYRON L. FISCH, Saginaw, Mich. Filed Sept. 12, 1891. Serial No. 405,463. (Model.)



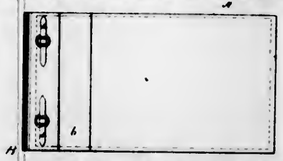
Claim.—In a washing-machine, the combination, with a tub having a circular bottom and upright sides, of the suspended hinged transverse diagonally-slatted concave bottom 1, consisting of the side pieces 8 8, the diagonal slats 1', mitered into the side 8 8, so that the edge of the slat will be presented, and the braces 10 10, connecting the ends of the sides 8, the hinges or pivots 5 5, the reciprocating rubber 2, having a convex diagonally-slatted rubbing-surface, the diagonal of the slats being opposite to the diagonal of the bottom 1, the slats set so as to present an edge, the pivots 4 4, secured to the rubber 2 at a point below the center of the circle described by the convex surface of the rubber, the sockets 3 3 on the sides of the tub for receiving the pivots 4 4, and the handle 2', substantially as described, and as and for the purpose set forth.

485,813. BOOT OR SHOE. GEORGE B. HOUGH, Stoughton, Mass. Filed Dec. 1, 1891. Serial No. 413,685. (No model.)



Claim.—The improved boot or shoe having a heel-seat formed with an excessive concavity and a single metallic spring-plate of cruciform shape attached at one end to the shank portion of the shoe-sole and extended across said concavity, the free ends of the spring bearing on the raised margin of the heel-seat, whereby said spring-plate may yield under the pressure of the wearer's heel until the plate fits said concavity, substantially as described.

485,814. COVER FOR MANUSCRIPTS. GEORGE H. KNOT, Cambridge, Mass. Filed Oct. 28, 1891. Serial No. 410,094. (No model.)



Claim.—1. A reversible cover for manuscript books, both leaves of which have a rigid or non-flexible portion A, a perforated stiff strip B, extended flexible portions *b* between the portions A and B, these strips being connected by a flexible back, the flexible portion *b* having a length allowing either cover to be turned entirely over upon and to lie flat against or under the opposite cover, and the perforations in the said strips coinciding with each other and adapted to receive fastenings for holding in such cover interposed leaves of paper correspondingly perforated.

2. The described temporary cover for manuscripts, adapted to hold sheets unattached to each other, consisting of the two non-flexible portions A A, connected together by an extended flexible portion having the two narrow stiff cross-strips B, placed apart from each other near the back of the cover and leaving between such strips and the rigid parts A a long flexible portion, permitting each leaf of the cover to be turned over to the opposite of its inclosed book and to lie underneath the same, and whereby the book may with equal facility be written in at front or back, the same set of sheets thus serving as two independent books.

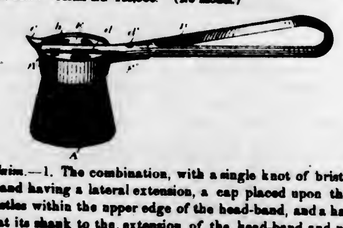
3. The described cover having the two rigid leaves, the two long flexible portions, one for each leaf, the narrow stiff perforated cross-strips, one for each leaf, and the short flexible portion between said strips and constituting the back, in combination with a set of independent sheets having perforations corresponding with those in such strips and with fasteners adapted to be passed through all these perforations and serving to hold the cover and sheets together, the combination permitting the writing at will in either end of the book or upon either side of any leaf, while both leaves of the cover lie underneath, and also permitting the ready withdrawal of each and every sheet.

485,815. INSECT-TRAP. EDMUND KOECHER, New York, N. Y., assignor to Louis Heike, same place. Filed Apr. 8, 1892. Serial No. 428,304. (No model.)

Claim.—1. A fly-trap composed of a supporting-frame having openings in its front and rear walls, a receptacle for a viscous adhesive substance at the lower part of said frame, guide-rollers supported in bearings of said frame, an endless apron mounted on said guide-rollers, a scraping device arranged at the back of the receptacle, and a second detachable scraper arranged at the opposite side of the apron and adapted for removing the flies, substantially as set forth.

2. A fly-trap consisting of a supporting-frame having openings in its front and rear walls, a receptacle for a suitable adhesive substance at the lower part of the frame, a scraper or doctor at the upper edge of one wall of the receptacle, guide-rollers supported in bearings of the frame, an endless apron mounted on said guide-rollers and entering into the adhesive substance in the receptacle, and a scraper for removing the flies, arranged at the opposite side of the apron and adapted to be inserted into a pocket of a wall of the receptacle, substantially as set forth.

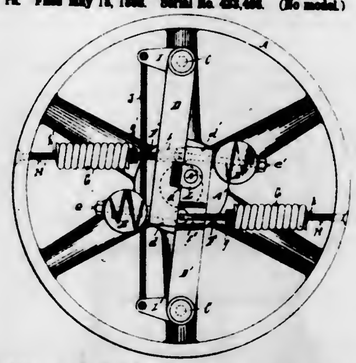
485,816. BRUSH. WALTER MERLIN, Albany, N. Y. Filed July 19, 1892. Serial No. 440,560. (No model.)



Claim.—1. The combination, with a single knot of bristles, of a head-band having a lateral extension, a cap placed upon the top of the bristles within the upper edge of the head-band, and a handle secured at its shank to the extension of the head-band and provided with a forward extension overlapping said cap, substantially as shown and described.

2. In a brush, the combination of a compressible head-band provided with overlapping arms and an eyelet securing said arms together, substantially as shown and described.

485,817. STEAM-ENGINE GOVERNOR. EDWARD L. MILLS, Erie, Pa. Filed May 18, 1892. Serial No. 433,466. (No model.)



Claim.—1. The combination, in a steam-engine governor, of pendulum-levers, one of which supports a wrist-pin or eccentric for driving an eccentric-rod, and a rod connecting said bars so as to synchronize the movements thereof, with centrifugally-operating weights and centripetally-acting springs secured to the free ends of said levers, substantially as and for the purpose set forth.

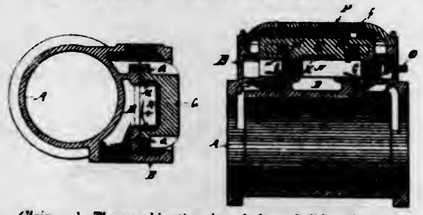
2. The combination, in a steam-engine governor, of two pendulum-

levers, one of which supports a wrist-pin or eccentric for driving an eccentric-rod, with laterally-projecting arms on said pendulum-levers and a rod extending from the arm on one lever to the arm on the other lever, substantially as and for the purpose set forth.

3. The combination, in a steam-engine governor, of two pendulum-levers, one of which supports a wrist-pin or eccentric for driving an eccentric-rod, and laterally-projecting arms on said levers connected together by means of a rod pivoted thereto, with centrifugally-operating weights and centripetally-acting springs connected directly to the free ends of said levers, substantially as and for the purpose set forth.

4. The combination, in a steam-engine governor, of two pendulum-levers, one of which supports a wrist-pin or eccentric for driving an eccentric-rod, connected together so that the movements of said levers are synchronous, and centrifugally-operating weights secured to the free ends of said levers, with centripetally-operating springs, each of which is connected to the free end of one of said levers, so as to act in opposition to the centrifugally-operating weight thereon, by means of a rod passing through a slotted opening in the lever opposite to the one to which it is secured, and stops on said rods limiting the outward movements of said levers, substantially as and for the purpose set forth.

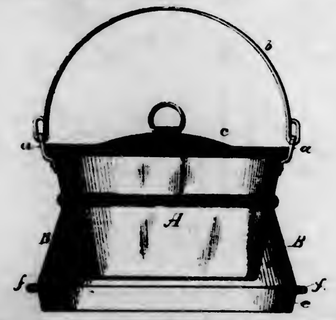
485,818. BALANCED SLIDE-VALVE. EDWARD L. MILLS, Erie, Pa. Filed July 21, 1892. Serial No. 440,833. (No model.)



Claim.—1. The combination, in a balanced slide-valve mechanism, of a steam-chest provided with main and auxiliary steam-ports in the bottom thereof and also a central exhaust-port therein, with a relief-plate having ports corresponding to the main ports in bottom of the steam-chest and passages in the relief-plate from the ports therein to the auxiliary ports in bottom of the steam-chest, and a slide-valve operating to simultaneously open and close the main ports in the bottom of steam-chest and also the ports in the relief-plate, substantially as and for the purpose set forth.

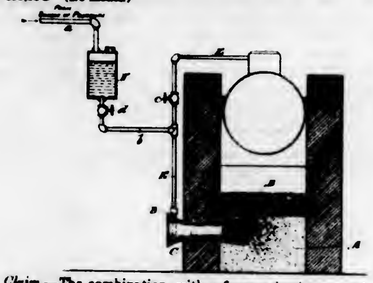
2. The combination, in a balanced slide-valve mechanism, of main ports, auxiliary ports at the ends thereof, and a central exhaust-port in the bottom of the steam-chest, and a relief-plate covering said main and auxiliary ports, having ports therein corresponding to the main ports in the steam-chest and passages therefrom to the auxiliary ports in the steam-chest, with a slide-valve having a central exhaust-opening therein and operating in a longitudinal groove between the relief-plate and the bottom of the steam-chest to simultaneously open and close the ports in the relief-plate and the main ports in the bottom of the steam-chest, and springs on the top of the relief-plate, substantially as and for the purpose set forth.

485,819. STEAM-COOKER. ISAAC B. MOWERY, Xenia, Ohio. Filed May 7, 1891. Serial No. 391,923. (No model.)



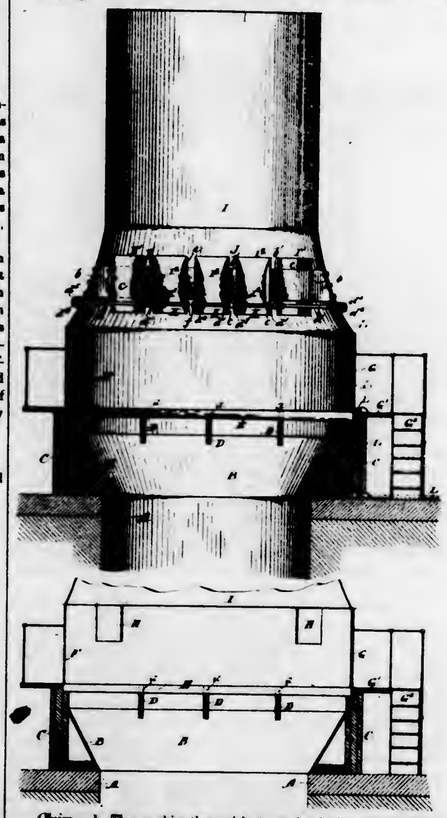
Claim.—As an article of manufacture, a culinary article comprising a tapering vessel provided with a circumferential rib and a jacket formed of two oppositely-tapering rings, one of which is provided with an outwardly-projecting flange and the other with an overlapping flange which incloses the outwardly-projecting flange to form a joint between the parts, substantially as set forth.

485,820. MEANS FOR BURNING SOLID CARBONACEOUS FUELS. WILLIAM MCCLAVE, Scranton, Pa. Filed Aug. 21, 1891. Serial No. 403,264. (No model.)



Claim.—The combination, with a furnace having a combustion-chamber, a grate, and an ash-pit adapted to be closed to the external atmosphere, of a tuyere extending through a wall of the ash-pit, so as to discharge below the grate, and in communication with sources of air, steam, and hydrocarbon, substantially as described.

485,821. COMPOUND STEAM-JET BLOWER. WILLIAM MCCLAVE, Scranton, Pa. Filed Oct. 23, 1891. Serial No. 410,073. (No model.)

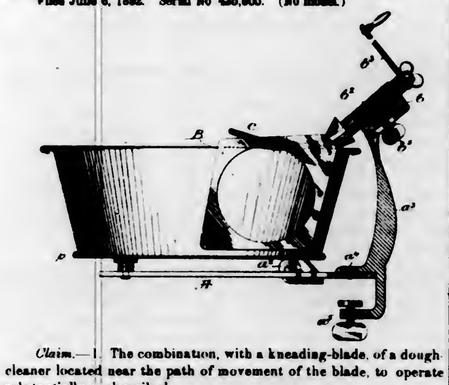


Claim.—1. The combination, with the main air-duct, of the inner air-duct placed within the main duct and of steam-jetting devices for the steam-blower, each inner duct having a plurality of steam-jet outlet-passages which are of a cylindrical bore sufficiently far back from their outlet ends to give proper direction and effectiveness to the steam-jets, and one such steam-jet device having a plurality of jet outlet-passages being arranged in each inner duct, substantially as and for the purpose described.

2. The combination, with the main air-duct, of the inner air-ducts within the main air-duct, steam-jet devices for the steam-blower, each having a plurality of jet outlet-passages of cylindrical bore sufficiently far back from the outlet end to give proper direction and effectiveness to the steam-jets, means for sustaining the inner duct, steam branch pipes for connecting the steam-blowers in series, and also all the steam-jet blowers of the different series, with the supply-pipe of the boiler or other source of supply, substantially as described.

3. The combination, with the main air-duct, of the inner air-ducts comprising two circles of blower-casings and one central blower-casing, all within the main duct, steam-jetting devices having a plurality of jet outlet-passages and means for sustaining the inner ducts, steam branch pipes for connecting all the steam-jet blowers with the supply-pipe of the boiler or other source of supply, substantially as described.

485,822. DOUGH-KNEADER. EDWIN PRESCOTT, Arlington, Mass. Filed June 6, 1892. Serial No. 435,805. (No model.)



Claim.—1. The combination, with a kneading-blade, of a dough-cleaner located near the path of movement of the blade, to operate substantially as described.

2. The combination, with a kneading-blade and a kneading-pan having a rim *p*, of a spider having bearings to support the pan at or near the said rim and to embrace the said rim, substantially as described.

3. The combination, with a kneading-pan and a fixed roller-bearing to support it, of lips to limit or define the path of rotation of the pan, substantially as described.

4. The kneading-blade having two angular working edges, a dough-cleaner located near the path of movement of the blade, and a bearing to support the kneading-blade shaft in an inclined position with relation to the center of rotation of the kneading-pan, combined with a crank to rotate said blade in the kneading-pan, substantially as described

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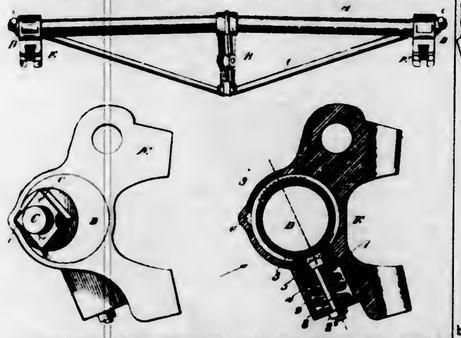
485,823. BRAKE-BEAM. HENRY B. ROSENBURG, Kalamazoo, Mich. Filed Nov. 20, 1891. Serial No. 412,588. (No model.)



Claim.—1. The combination, with a brake-beam, of a movable brake-head and an automatically-yielding locking-block or bolt for preventing the tipping or gravitation of the head on the beam, substantially as and for the purposes specified.

2. The combination, with a brake-beam having journaled ends, of a brake-head having a spring-supported grip or locking-block, substantially as and for the purposes specified.

3. The combination, with a brake-beam having a journal provided with projections, of a brake-head provided with a spring-supported grip or locking-block, substantially as and for the purposes specified.

4. The combination, with a brake-beam having a corrugated journal, of a brake-head provided with a spring-supported corrugated faced grip or locking-block, substantially as and for the purposes specified.

5. The combination, with a brake-beam having journaled ends, of a brake-head having a housing for the reception of a locking-block, a yielding locking-block arranged in said housing, and means for preventing the lateral displacement of the brake-head, substantially as and for the purposes specified.

6. The combination, with a brake-beam having a journal provided with limit lugs or stops, of a brake-head having a housing for a locking-block and a spring-supported locking-block arranged in said housing, substantially as and for the purposes specified.

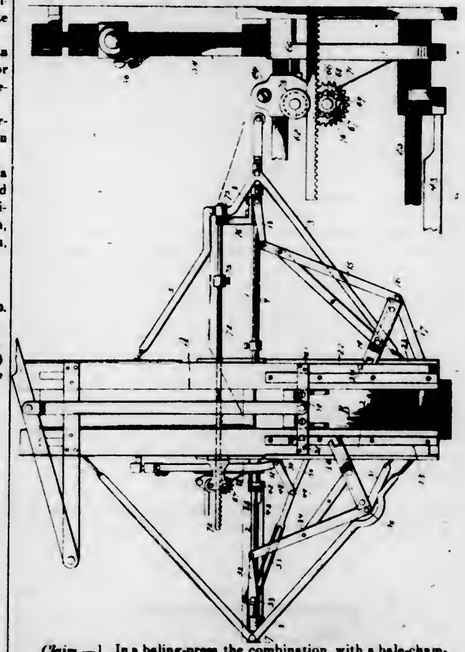
7. The combination, with a brake-beam, of a brake-head having a housing for a grip-bolt or locking-block, a locking-block arranged in said housing, and a spring for supporting and projecting said locking-block, substantially as and for the purposes specified.

8. The combination, with a brake-beam, of a brake-head having a housing for a grip-bolt or locking-block, a locking-block arranged in said housing, a spring for supporting and projecting said locking-block, and a bolt which passes through the head, substantially as and for the purposes specified.

9. The combination, with a brake-beam having a groove for the reception of a locking-block, of a brake-head provided with an automatically-yielding locking-block, substantially as and for the purposes specified.

10. The combination, with a brake-head provided with a housing for the reception of a grip-bolt or locking-block, of a yielding grip-bolt or locking-block arranged in the housing of the head, substantially as and for the purposes specified.

485,824. BALING-MACHINE. EDWARD A. WALKER, Canajoharie, N. Y. Filed Aug. 22, 1891. Serial No. 403,466. (No model.)



Claim.—1. In a baling-press, the combination, with a bale-chamber and reciprocating plunger, of reciprocating needles constructed and arranged to cross the bale-chamber and carry wires around the bale formed therein and reciprocating hooks adapted to advance and receive the wires from the needles and assist the latter in holding the wires across the bale-chamber, substantially as set forth.

2. The combination, with a bale-chamber and reciprocating plunger, of reciprocating needles constructed and arranged to cross the bale-chamber and carry wires around the bale formed therein, primary hooks arranged to receive the wires from the needles, wire-twisters, and secondary hooks adapted to grasp and carry the wires to be twisted to the twisters, substantially as set forth.

3. The combination, with a bale-chamber and plunger constructed to reciprocate therein, of reciprocating needles, primary and secondary hooks, and twisters to which the wires are carried by means of the secondary hooks, and means connected with the plunger for setting the needles, the hooks, and the twisters in motion, substantially as set forth.

4. The combination, with a bale-chamber and reciprocating plunger, of needle-frame, needles therein, a primary-hook frame, hooks, wire-twisters, and secondary hooks adapted to carry the wires to the twisters, substantially as set forth.

5. The combination, with bale-chamber and plunger, of needle-frame, hollow needles secured thereto, through which the wires pass, primary hooks, wire-twisters, secondary hooks, and means for swinging these secondary hooks to one side to grasp the wires preparatory to carrying them to the twisters, substantially as set forth.

6. The combination, with baling chamber and plunger, of needles, wire-twisters, hooks for grasping and carrying the wires to the twisters, slotted plates through which the wires are conducted by these hooks, and switch and spring mechanism for controlling the movement of these hooks, substantially as set forth.

7. The combination, with a bale-chamber, plunger, and a needle-frame extending out at one side of the bale-chamber, of a needle-carrier, needles therein, reciprocating primary and secondary hooks, bell-crank levers connected with the latter, and tappets secured to the bell-crank levers in position to be operated by the plunger to reciprocate the needles, substantially as set forth.

8. The combination, with a bale-chamber, a plunger, a needle-frame extending in one direction from the bale-chamber, and a hook-frame in the opposite direction, needles and pivoted hooks arranged to reciprocate in these frames, levers connected with the needles, and hooks and tappets secured to the levers in position to be operated upon by the plunger, whereby to set the connected parts in motion, substantially as set forth.

9. The combination, with a bale-chamber and plunger, of reciprocating needles, a primary-hook carrier, spring-actuated hooks pivoted thereto, said hooks and needles traveling approximately in alignment with each other, twisters, secondary hooks for carrying the wires to the twisters, and cutting mechanism, substantially as set forth.

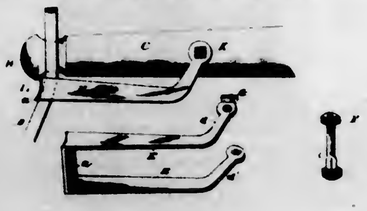
10. The combination, with bale-chamber and plunger, of reciprocating needles, reciprocating primary and secondary hooks, and means connecting both sets of hooks, whereby they are reciprocated simultaneously, substantially as set forth.

11. The combination, with a bale-chamber and plunger, of reciprocating needle-carrier having needles connected therewith, primary hooks, secondary-hook frame, secondary hooks, and slotted levers pivotally connected at one end with the secondary-hook frame and having sliding connection with the needle-carrier, substantially as set forth.

12. The combination, with a bale-chamber and plunger, of a reciprocating carrier, reciprocating needles, primary and secondary hooks, a rack-bar having loose sliding connection with the carrier, wire-twisters, and a shaft for imparting motion to the twisters, said shaft having a pinion thereon with which the teeth of the rack engage to impart motion to the twisters, substantially as set forth.

13. The combination, with a bale-chamber, reciprocating needle-carrier having needles therein, and reciprocating primary and secondary hooks, of a stationary plate having notches therein, a reciprocating blade, also provided with notches, a rock-shaft having an arm thereon pivotally connected with the blade, and a cam-lever attached also to the shaft, and a reciprocating rod secured to the carrier and having a cam thereon adapted to bear on the cam-lever when moved sufficiently, whereby to rock the shaft, substantially as set forth.

485,825. TRACE-HOLDER. JESSE F. WYKOFF, Corsica, Pa. Filed Mar. 14, 1892. Serial No. 424,927. (No model.)



Claim.—The combination, with a singletree provided with a trace hook or button, of a flat metal strip bent into U shape with laterally-projecting arms, each of said arms being formed with an enlargement at the free end thereof, one of said enlargements having a square hole therein and the other enlargement formed with a round hole and also provided with a bendable lip, a bolt having a head and a square portion adjacent to said head that is passed through the enlargement with the square hole therein, the remaining portion of said bolt being passed through the singletree and the opposite enlargement having the round hole therein and projecting above said latter enlargement, and a nut fitted to the said projecting portion of the bolt and held against accidental rotatable movement by the aforesaid bendable lip that is brought to bear thereagainst, whereby the bolt is caused to move with the U-shaped strip, substantially as described

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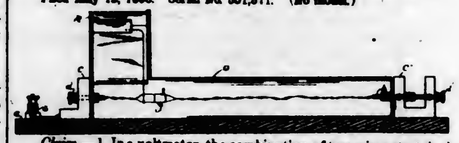
485,826. VOLTMETER. ROGER B. CARMICHAEL, Richmond, Ky. Filed May 13, 1890. Serial No. 351,371. (No model.)

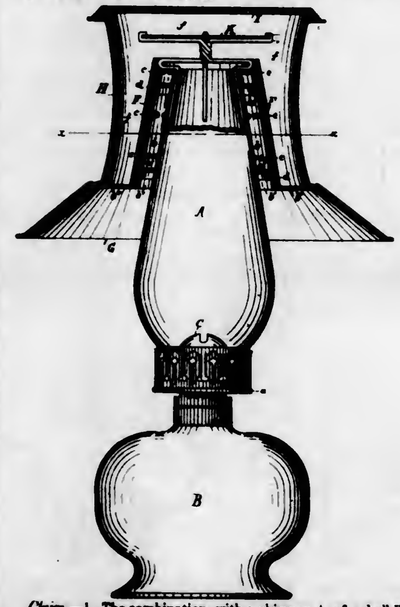


Claim.—1. In a voltmeter, the combination of two wires stretched substantially parallel with each other and retained in their separated positions by any appropriate means, said wires having a twist imparted to them, a suitable pointer connected transversely with said wires, and a scale, all as and for the purpose set forth.

2. In a voltmeter, two high-resistance wires stretched side by side and connected at intervals by cross-pieces, said wires having a twist imparted to them, in combination with a suitable pointer connected transversely with said wires, and a scale, all as and for the purpose set forth.

3. In combination, the two standards *c c'*, the screw *d*, extending through the standard *c*, the rod *h*, extending from the standard *c'*, the screw *i*, extending through a standard and secured to the rod *h*, the wires *f* and *g*, connected by cross-pieces and connecting the screw *d* and rod *h*, and a pointer transversely connected with said wires, all as and for the purpose set forth.

485,827. LIGHTING AND HEATING APPARATUS. DANIEL W. CLASS, Stapleton, N. Y. Filed Aug. 14, 1889. Renewed Apr. 30, 1892. Serial No. 431,365. (No model.)



Claim.—1. The combination, with a chimney A, of a shell F, constructed to be suspended from the chimney and concentric therewith and to provide a space *b* between itself and said chimney, the deflecting-shade G, carried by said shell, a cylinder H, arranged around said shell with a chamber *f* between, and a plate placed above the shell and chimney, all substantially as and for the purpose herein set forth.

2. The combination, with a chimney A, of a shell F, arranged around said chimney with a space *b* between, a shade G, attached to said shell, a cylinder H, placed around said shell with a chamber *f* between, and a foraminated plate I, placed above the shell and chimney, substantially as and for the purpose herein set forth.

3. The combination, with a chimney A, of a shell F, provided with perforations *a'* and arranged around said chimney with a space *b* between, a shade G, attached to said shell, a cylinder H, placed around said shell with a chamber *f* between, and a plate I, placed above the shell and chimney, substantially as and for the purpose herein set forth.

4. The combination, with a chimney A, of a shell F, provided with perforations *a'* and arranged around said chimney with a space *b* between, a shade G, attached to said shell, a cylinder H, placed around said shell with a chamber *f* between, and a foraminated plate I, placed above the shell and chimney, substantially as and for the purpose herein set forth.

5. The combination, with a chimney A, of a shell F, arranged around said chimney with a space *b* between, a shade G, attached to said shell, a cylinder H, placed around said shell with a chamber *f* between, a plate I, placed above the shell and chimney, and a deflecting-plate K, interposed between the top of the shell F and the plate I, substantially as and for the purpose herein set forth.

6. The combination, with a chimney A, of a shell F, provided with perforations *a'* and arranged around said chimney with a space *b* between, a shade G, attached to said shell, a cylinder H, placed around said shell with a chamber *f* between, a foraminated plate I, placed above the shell and chimney, and a deflecting-plate K, interposed between the top of the shell F and the plate I, substantially as and for the purpose herein set forth.

485,828. VALVE AND FAUCET. ARTHUR H. DADOEY, San Diego, Cal. Filed Jan. 19, 1892. Serial No. 418,577. (No model.)

Claim.—1. In a valve-stopper, the combination, with the valve-cylinder having holes *a* and openings *a'*, and a nut which is provided with a threaded opening, and a valve having a threaded stem which is adapted to screw into the said threaded opening, of a nozzle removably fitted to the said valve-stopper and having a key which is adapted to be engaged with the said valve to open and close the same, and the solder in the said holes *a'* for holding the cylinder to the nut, substantially as described, and for the purposes specified.

2. The combination, with the valve-cylinder having openings *a'* and holes *a*, and a valve-seat, and a valve having a mutual screw-thread connection with the said cylinder, of a nozzle removably fitted to the said valve-cylinder and having a key which is adapted to be engaged with the said valve to seat and unseat the same, and the solder in said holes *a'* for holding the cylinder to the nut, substantially as shown and described.

3. The combination, with a soft-metal cylinder having a tube and flange at one end, of a nozzle held around said tube, and a hard-metal plate surrounding said nozzle and held within said flange, substantially as shown, and for the purpose specified.

4. A valve stopper comprising a valve-cylinder having openings *a* in its sides between its ends and flanges at one end, the nozzle-support D, the valve-seat E, having the nipple or tubular extension J, the hard-metal plate in the said flange, the nut B, having a central threaded opening, the valve having a threaded stem which enters the opening in the nut B and having the opening in its front wall, the nozzle removably fitted on the support D and surrounded by said hard-metal plate, and the key G, substantially as described, and for the purpose set forth.

485,829. CAR-COUPLING. LAZARUS C. MARTIN, Greencastle, Pa. Filed Mar. 2, 1892. Serial No. 423,616. (No model.)

Claim.—In a car-coupling, the combination, with an ordinary link, of a draw-head having a longitudinal opening and provided with a shoulder at the bottom of the same and having a coupling-pin perforation arranged in rear of and close to the shoulder, whereby the point of engagement with a link will always be at the same point, a rock-shaft journaled in the draw-head and provided with a central depending link-engaging arm formed by a bend of the rock-shaft and arranged within the opening of the draw-head and adapted to bear against the shoulder thereof, a spring holding the arm in engagement with the shoulder, handles arranged at the ends of the rock-shaft and located at the sides of a car, and a rod designed to extend to the top of a car and connected with the rock-shaft, substantially as described.

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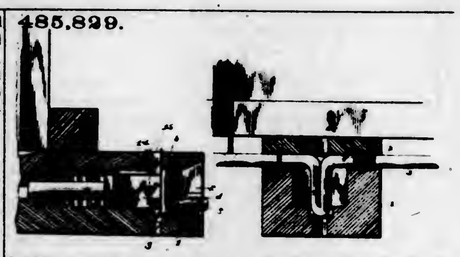
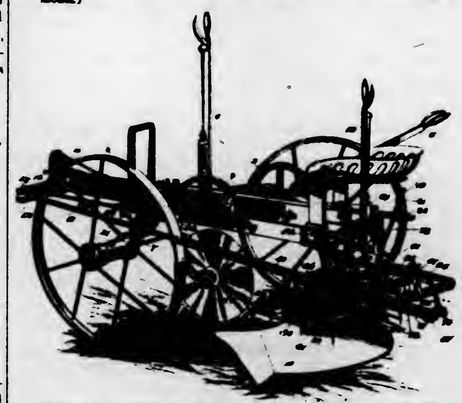


485,830. HARROW ATTACHMENT FOR SULKY-PLOWS. SIMON P. YODER, Ligonier, Ind. Filed Apr. 13, 1892. Serial No. 429,066. (No model.)



Claim.—1. The harrow-section consisting of the series of tubular harrow-bars having depending teeth and at their ends provided with curved slots, the opposite longitudinal end bars having tenons taking into the slots, and stops mounted on the tenons and passing through the slots, substantially as specified.

2. The combination, with the series of cylindrical harrow-bars, front and rear pairs of eyes in which said bars are mounted and adapted to rock, yoke-bars connecting the eyes, a tube connected to the under sides of the yoke-bars, a draft-rod passed through the tube and extending beyond the rear end of the same, a yoke-plate mounted on the rod, and a coiled spring interposed between the end of the tube and yoke-plate and adapted to spread the two, of longitudinal side bars forming journals for the harrow-bars, standards rigidly mounted on each of said bars, connecting-rods pivoted to the standards, and connections between the rear ends of the connecting-bars and stop at the rear end of the rod, substantially as specified.

3. The combination, with the cylindrical harrow-bars, the bearing-standards 50, rising therefrom at opposite sides of the centers of the bars, yoke-bars connecting the bearing-standards, a tube located between the standards and resting on the harrow-bars, eyebolts encircling the tube and passed through perforations in the yoke-bars, the concaved washers encircling the eyebolts mounted on the tube and having upper roughened faces, and clamping-nuts on the upper ends of the eyebolts above the yoke-bars, of the end bars 30, having tenons 31, forming bearings for the ends of the harrow-bars, the opposite series of rigid standards rising from the harrow-bars, the connecting-bars 67, pivoted to said standards and extending in rear of the same, the draft-rod mounted in the tubular rod and extending in rear of the same, where it terminates in a head, a perforated yoke-plate mounted on the rod in front of the head, a coiled spring upon the rod between the tube and head, teeth depending from the harrow-bars, and connecting-links between the connecting-rods and yoke-plate, substantially as specified.

4. The combination, with the sulky-plow frame comprising the central beam and the perforated plate 13, projecting from the rear end thereof, of the harrow-section, yielding draft connections between the same and the front end of the frame, a yoke-bolt mounted pivotally and removably in the perforations of the plate 13, and a rod adjustably bolted at its upper end to the yoke-bolt and at its lower end loosely connected with the harrow-section, substantially as specified.

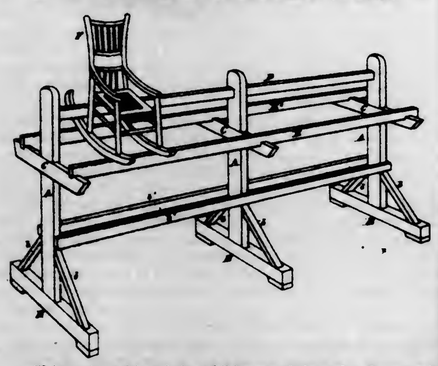
5. The combination, with a sulky-plow frame having a bearing-bracket, an inverted-L-shaped arm hinged therein and terminating at its outer end in a toothed locking standard or sector, and a bell-crank lever fulcrumed in the base of the standard and having a bolt for engaging the teeth thereof, of a harrow-section, loose connections between the lower end of the bell-crank lever and section, and draft-connections between the front end of the sulky-plow frame, substantially as specified.

6. The combination, with the sulky-plow frame having a bearing-bracket, an inverted-L-shaped arm hinged therein and terminating at its outer end in a toothed locking standard or sector, and a bell-crank lever fulcrumed in the base of the standard and having a bolt for engaging the teeth thereof, of a harrow-section, loose connections between the lower end of the bell-crank lever and section, an adjusting-rod connecting the section and rear end of the sulky-frame, and draft connections between the front end of the frame and section, substantially as specified.

7. The combination, with the central beam of a sulky-plow, an equalizing-arm pivoted at its inner end thereto, and equalizing devices connected to the arm and beam, of a harrow-section comprising a series of rocking bars, a tube to which the bars are loosely connected, a rod passed through the tube, connected at its front end to the equalizing-arm and terminating at its rear end in a head, a yoke mounted on the rear end of the rod, a coiled spring mounted on the rod between the yoke and tube, a series of standards rising from the harrow-bars, rods pivotally connecting the same, and links between the rear ends of the rods and yoke, said links having their rear ends threaded and passed through perforations in the yoke and provided with adjusting-nuts, substantially as specified.

8. The combination, with the central beam and side frame of the sulky-plow, the equalizing-arm loosely pivoted to the front end of the beam, the eyebolt projecting from the side of the frame, the rod 20, loosely connected to the arm, passing rearwardly through the eyebolt, terminating at its rear end in a head, and provided in front of the eyebolt with a stop, a washer on the rod in the rear of the eyebolt, and a spring coiled upon the rod between the washer and head, of the harrow-section and connecting devices between the free end of the arm and the section, substantially as specified.

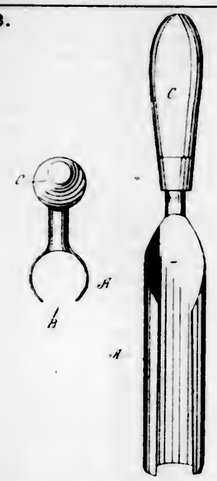
485,831. ROCKING-CHAIR EXHIBITOR. HERMAN ALBIN, Louisville, Ky. Filed Mar. 7, 1892. Serial No. 424,104. (No model.)



Claim.—A rocking-chair exhibitor consisting of a framework having standards A, bases B, side braces *b*, bracing-rails *b'*, cross-bars C, holding-rail D, and supporting-rails E and E', arranged and constructed substantially as described, and for the purposes specified.

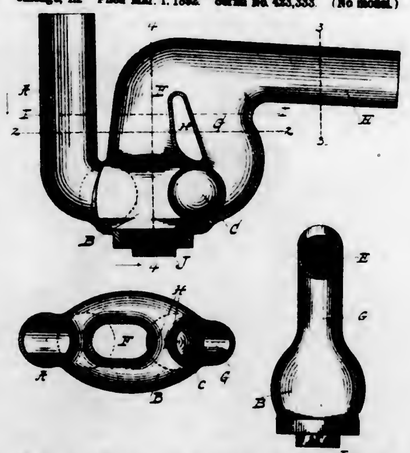
485,832. TRANSPLANTER. HERMAN BALDERSON, Highlands, Cal. Filed Jan. 2, 1892. Serial No. 416,902. (No model.)

Claim.—The improved transplanter consisting of a rigid cylindrical longitudinally-slotted tubular blade having an interior diameter substantially the same throughout its length and having its lower end provided with a circular cutting-edge at the interior concave face of the blade and provided with a suitable crank-handle secured to said



blade and projecting outward clear of the extended top of the cylinder, substantially as described.

485,833. TWO-WAY SANITARY TRAP. TIMOTHY J. BARROW, Chicago, Ill. Filed Mar. 1, 1892. Serial No. 423,333. (No model.)



Claim.—1. A trap provided with two outlet-passages leading from the trap into the waste-pipe and a valve which will close one of said passages and prevent the water from being drawn out through said passage, thereby retaining sufficient water to maintain a water seal in the trap, substantially as specified.

2. The trap B, having in it two valve-seats, the down waste-pipe A, leading into the trap, the passages F and G, leading from the trap to the discharge waste-pipe E, and valve C for the purpose of always retaining water in the passage G when there is a siphoning effect through the pipe E, the water in the passage flowing back into the trap when the siphoning effect is discontinued, substantially as specified.

3. The trap A, provided with two discharge-passages F and G, the pipes E and A, a valve-seat at the lower end of the pipe A, a valve-seat at the lower end of the passage G, and the ball-valve C, the trap being so constructed that the ball-valve will pass from one valve-seat to the other and prevent the water and gas being forced up through the pipe A or being drawn through the passage G, substantially as specified.

485,834. FIRE-ESCAPE. ANDREW BOWERS, Buckfield, Me. Filed Jan. 2, 1891. Renewed Apr. 14, 1892. Serial No. 429,123. (No model.)

Claim.—The fire-escape comprising the bar adapted to be supported in a window-casing, a loop formed therein, a rope passed through said loop and having its ends secured to eyes formed in the

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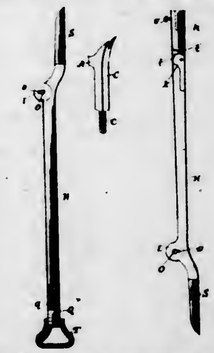
opposite ends of the stirrup, said stirrup also having secured thereto a rope serving as a foot-rest, and a body-strap secured to said stirrup, substantially as specified.

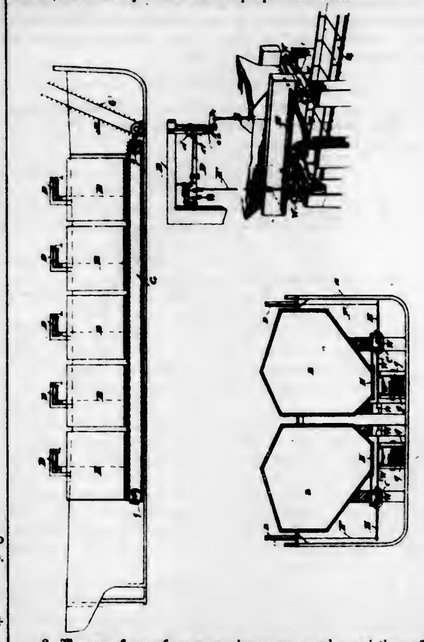
485,885. FENCE-BUILDING TOOL. JACOB W. BRENNAMAN, Abilene, Kans. Filed Apr. 3, 1891. Serial No. 387,590. (No model.)



Claim.—The herein-described combination fence-building tool, the same consisting of a pair of handles having at their lower extremities shovels, said handles being removably pivoted above the shovels, one of said handles being provided at its upper end with a socket adapted to receive the shank of a claw-bar having opposite fulcrumed lugs, a tamping-head, or other device, and below said socket provided with a toothed shoulder and a toothed binding-pawl eccentrically pivoted to the handle below the shoulder, substantially as specified.

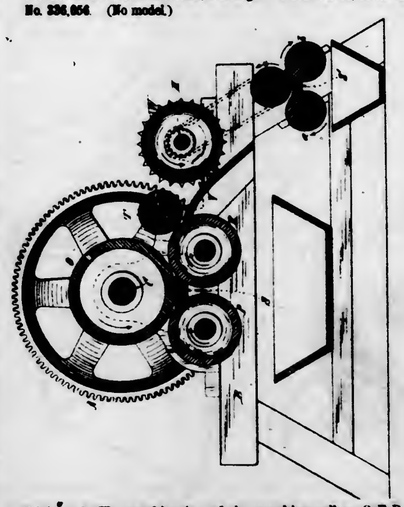
485,886. CONVEYER-BARGE STORAGE-VESSEL. FRANK H. BAKER, Cleveland, Ohio, assignor to the American Water Transportation Company, Chicago, Ill. Filed Sept. 12, 1891. Serial No. 405,855. (No model.)

Claim.—1. The new form of conveyer barge or vessel, consisting of the combination of a hull of any desired form of sailing or steam vessel, a series of receptacles located within the hull longitudinally of the vessel, arranged independently of one another and of the hull and provided with discharge-openings in their bases, scale-bearings supporting the receptacles and mounted upon supports rigidly secured to the hull, scale levers and beams connected with said scale-bearings, the said beams located above the deck of the vessel, and conveyers mounted longitudinally of the vessel and series of receptacles and passing underneath the said receptacles, and discharge-openings therein, substantially as and for the purpose set forth.



2. The new form of conveyer barge or vessel, consisting of the combination of a hull of any desired form of sailing or steam vessel, a series of receptacles located within the hull longitudinally thereof, provided with discharge-openings in their bases and mounted independently of one another and of the hull upon scale-bearings attached to the said hull, scale levers and beams for co-operating with the said bearings, and a longitudinal conveyer passing underneath the series of receptacles and openings, the said conveyer being mounted upon bearings resting upon the bottom of the vessel, substantially as described.

485,887. APPARATUS FOR PRESSING AND DISINTEGRATING FIBROUS MATERIAL. JOHN H. BROWN, New York, N. Y., assignor to the American Fiber Association, of Georgia. Filed Jan. 11, 1890. Serial No. 336,656. (No model.)

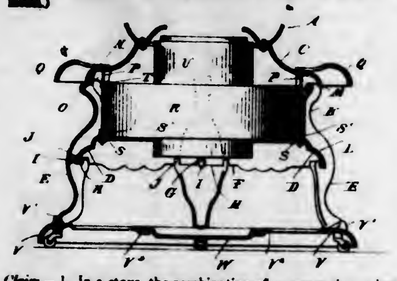


Claim.—1. The combination of the crushing-rollers O P R, the positively-driven feed-roller T, situated in rear of these rollers, and

the rollers *a b c* in the rear of or beyond the rollers T, substantially as described.

2. The combination of the crushing-rollers O P R, the positively-driven feed-roller T, situated in rear of these rollers, the toothed table V, situated below the roller T, and disintegrating-roller W above the table, substantially as described.

485,838. OIL-STOVE. Gaines W. Cors, Detroit, assignor to Hugh L. Smith, Jackson, Mich. Filed July 12, 1892. Serial No. 439,761. (No model.)



Claim.—1. In a stove, the combination of an upper ring, a lower ring, legs having extensions adapted to engage both rings, and clamping-bolts passing through both rings and clamping the rings and legs together, substantially as described.

2. In a stove, the combination of an upper ring, a lower ring, the legs having lugs J, engaging inside the lower ring, the bearing L, engaging upon the top of the lower ring, the lug N, engaging beneath the upper ring, and clamping-bolts passing through the upper and lower rings, substantially as described.

3. In a stove, the combination, with the upper ring, the lower ring, the legs having lugs J, engaging beneath the lower ring, and a finger G, engaging in a notch or recess in the lower ring, of the extensions K of said legs, having the bearing L upon the upper face of the lower ring, the legs or fingers N, engaging beneath the upper ring, and the clamping-bolts, substantially as described.

4. In a stove, the combination, with the upper and lower rings having notched bearings on their inner edges, of the tank R, adapted to engage the top and bottom of said notches, the legs having extensions and engaging both of the rings, and the clamping-bolts, substantially as described.

485,839. VELOCIPEDE. Robert F. Darling, Syracuse, N. Y., assignor to R. G. Stearns & Co., same place. Filed Mar. 17, 1892. Serial No. 425,267. (No model.)

Claim.—1. The combination, with the steering-post, of a continuous fork and a connecting-yoke composed of two like parts fitted against the front and rear sides of the fork and steering-post and consisting each of a curved channel portion which embraces one side of the fork and a semicircular collar portion projecting upwardly from the crown of the channel portion and embracing one side of the steering-post, substantially as set forth.

2. The combination, with the steering-post, of a fork formed of a single continuous length or piece, a yoke composed of two parts, each consisting of a channeled portion which embraces the fork and a collar portion which embraces the steering-post, and a sleeve surrounding both collar portions of the yoke, substantially as set forth.

3. The combination, with the front and rear wheels and the hollow steering-post, of a fork formed of a single continuous length or piece, a coupling connecting the fork with the steering-post, a brake-rod arranged in the steering-post and passing with its lower end through the fork and yoke, and a brake-spoon attached to the lower end of the brake-rod, substantially as set forth.

4. The combination, with the hollow steering-post and the handle-bar provided with a hollow shank arranged in said steering-post, of a hollow brake-rod arranged in the steering-post, an adjusting-rod arranged in the handle-bar shank and brake-rod and having its lower portion flattened and provided with a series of notches, a cap secured to the upper end of the brake-rod and provided in its top with an elongated opening through which the flat adjusting-rod passes and which forms inwardly-projecting lips or flanges with which the notches of the adjusting-rod engage, and a brake-lever pivoted to the handle-bar and connected with the adjusting-rod, substantially as set forth.

5. The combination, with the hollow steering-post and the handle-bar provided with a hollow shank arranged in said steering-post, of a hollow brake-rod also arranged in the steering-post, an adjusting-rod arranged in the hollow shank and the brake-rod and having its lower portion flattened and provided with a series of notches on opposite sides, a cap secured to the upper end of the brake-rod and provided with an elongated opening whose edges engage with a pair of said notches, a brake-lever pivoted to the handle-bar and connected with the adjusting-rod, and a spiral spring surrounding the brake-rod and bearing with its opposite ends against said cap and the steering-post, substantially as set forth.

6. The combination, with the front and rear wheels and the steering-post, of a main frame formed of one continuous piece or length of tubing and comprising an upper and a lower reach, a brace connecting the rear portions of the reaches in front of the rear wheel, a steering-head arranged in rear of the steering-post and connecting the front portions of the reaches, and a coupling connecting the ends of the continuous piece of tubing, substantially as set forth.

7. The combination, with the front and rear wheels of the steering-head, of a forwardly-projecting eye or bearing secured to the steering-head and provided with a screw-threaded socket, a steering-post arranged in the eye, a cone attached to the steering-post, a row of balls resting upon the cone, a case resting upon the balls and provided on its upper side with a screw-threaded collar engaging with the threaded socket of the eye, and a packing-washer arranged in said socket and surrounding the steering-post, substantially as set forth.

8. The combination, with the front and rear wheels and the steering-head provided with a forwardly-projecting eye or bearing having a cone, of a steering-post arranged in said cone, a row of balls resting upon said cone, and a case resting upon the balls and secured to the steering-post, substantially as set forth.

9. The combination, with the front and rear wheels and the steering-head provided with a forwardly-projecting eye or bearing, of a steering-post arranged in said eye, a cone surrounding the steering-post and arranged on the eye, a row of balls resting upon said cone, and a case resting upon the balls and provided with a split clamping-collar bearing against the steering-post, substantially as set forth.

10. The combination, with the front and rear wheels and the steering-head provided with a forwardly-projecting eye or bearing, of a steering-post arranged in said eye, a cone surrounding the steering-post and arranged on the eye, a row of balls resting upon said cone, an adjustable case surrounding the steering-post, resting upon the balls and provided with a split collar bearing against the steering-post, and a ring surrounding the split collar and provided with a clamping-screw bearing against the split collar, substantially as set forth.

11. The combination, with the front and rear wheels and the steering-head provided with a forwardly-projecting eye or bearing, of a steering-post arranged in said eye and provided with an externally-screw-threaded portion, a cone surrounding the steering-post and arranged on the upper side of said eye, a row of balls resting upon the cone, a case surrounding the steering-post, resting upon the balls and having a split collar provided with an internal screw-thread, which engages with the screw-thread of the steering-post, a ring surrounding the free ends of the split collar, and a clamping-screw arranged in the ring and pressing against the split collar, substantially as set forth.

12. The combination, with the front and rear wheels and the

steering-head provided with an upper and a lower eye or bearing, of a steering-post arranged in said eye, a cone secured to the steering-post below the lower eye and supporting a row of balls, a lower case arranged on the under side of the lower eye and resting upon said balls, a cone arranged on the upper side of the upper eye and supporting a row of balls, and a case adjustably secured to the steering-post and resting upon the upper row of balls, substantially as set forth.

13. A sprocket-wheel composed of a hub and two body-plates of sheet-metal secured with their central portions to the hub and having their toothed peripheral portions separated, substantially as set forth.

14. In a sprocket-wheel, the combination, with a hub provided with a peripheral flange, of a body composed of two separate sheet-metal parts riveted to opposite sides of the flange and each consisting of a toothed rim and arms or web portions connecting the rim with the hub, substantially as set forth.

15. In a velocipede, the combination, with the main frame provided with a hanger, of an eccentric-disk arranged in said hanger and provided with a peripheral groove, a bolt secured to the hanger and arranged in said groove, a sleeve or bearing arranged on the eccentric-disk, and a crank-shaft supported in said sleeve, substantially as set forth.

16. In a velocipede, the combination, with the main frame, of a hanger provided with a lip which embraces the main frame, a sleeve provided with an eccentric-disk arranged in said hanger, and a crank-shaft supported in said sleeve or bearing, substantially as set forth.

17. In a velocipede, the combination, with the main frame, of a divided or slitted hanger provided on its upper side with a lip which embraces the main frame and at its ends with lugs, an eccentric-disk arranged in said hanger and provided with a peripheral groove, a clamping-bolt arranged in the lugs of the hanger and extending into the groove of the eccentric-disk, a sleeve or bearing arranged on the eccentric-disk, and a crank-shaft supported in said bearing, substantially as set forth.

18. In a velocipede, the combination, with the main frame and the rear fork, of a hanger provided with a lip which embraces the main frame and with lugs or lips which embrace the front portion of the rear fork, a sleeve or bearing provided with an eccentric-disk arranged in the hanger, and a crank-shaft supported in the sleeve, substantially as set forth.

19. In a velocipede, the combination, with the main frame and the rear wheel, of a fork attached at its lower end to the axle of the rear wheel and a coupling composed of two parts which embrace the rear portion of the main frame and the upper portion of the fork, substantially as set forth.

20. In a velocipede, the combination, with the main frame, the saddle-pillar, and the rear wheel, of a fork attached at its lower ends to the axle of the rear wheel and a coupling uniting the main frame with the fork and supporting the pillar and composed of two parts, each consisting of a curved channeled portion which embraces the main frame, a semi-cylindrical portion forming part of the socket for the saddle-pillar, and lips or ears which are bent around the adjacent upper portion of the fork, substantially as set forth.

21. In a velocipede, the combination, with the main frame, the saddle-pillar, and the rear wheel, of a fork attached at its lower ends to the axle of the rear wheel, a coupling uniting the main frame with the fork and supporting the pillar and composed of two parts, each consisting of a curved channeled portion which embraces the main frame, a semicylindrical portion forming part of the socket for the saddle-pillar, and two lips or ears which embrace the upper portion of the fork and a ring or band surrounding both semicylindrical portions of the coupling, substantially as set forth.

22. In a velocipede, the combination, with the main frame having a cross-bar provided with an opening, of a mud-guard arranged on one side of the cross-bar, a stud secured at one end to the mud-guard and passing through the opening of the cross-bar and provided with a transverse opening, and a key arranged in the opening of the stud, substantially as set forth.

23. In a velocipede, the combination, with a fork having a cross-bar provided with an opening, of a mud-guard having a stud arranged in the opening of the cross-bar and provided with a transverse opening, a key arranged in the opening of the stud and bearing against one side of the cross-bar, and a spring interposed between the mud-guard and the opposite side of the cross-bar, substantially as set forth.

24. In a velocipede, the combination, with a fork having a cross-bar provided with an opening, of a mud-guard having a stud arranged in the opening of the cross-bar and provided with a transverse opening, a key arranged in the opening of the stud and bearing against one side of the cross-bar, and a slitted disk-spring interposed between the mud-guard and the opposite side of the cross-bar, substantially as set forth.

25. In a velocipede, the combination, with the fork having a cross-bar provided with an opening, of a mud-guard having a stud provided with a transverse opening at one end and arranged in the opening of the cross-bar, a key arranged in the opening of the stud and bearing against one side of the cross-bar and provided with a shoulder and an eye at opposite ends, and a spring interposed between the mud-guard and the opposite side of the cross-bar, substantially as set forth.

485,840. METHOD OF BRICKING FINE IRON ORES. Thomas A. Edison, Llewellyn Park, N. J. Filed Aug. 24, 1891. Serial No. 403,532. (No specimens.)

Claim.—1. The method of treating fine iron ore, which consists in washing the ore to eliminate phosphorus and mixing with the washed ore a binding material consisting of lime slaked in hot water to form lumps or bricks, substantially as described.

2. The method of lumping fine ore, which consists in mixing lime with the ore, allowing the same to set, and subsequently dampening and drying the same, substantially as described.

3. The method of treating fine ore, which consists in mixing therewith finely-divided lime slaked in hot water, allowing the mixture to set, and subsequently dampening and drying the same, substantially as described.

4. The method of treating fine ore, which consists in mixing therewith clay and finely-divided lime slaked in hot water, allowing the mixture to set, and subsequently dampening and drying the same, substantially as described.

485,841. METHOD OF MAGNETICALLY SEPARATING ORES. Thomas A. Edison, Llewellyn Park, N. J. Filed July 20, 1892. Serial No. 440,696. (No specimens.)

Claim.—1. The process of separating magnetic oxide of iron from magnetic pyrites where both occur in the same ore, consisting in subjecting the crushed material to magnetic action of such strength that, due to the difference in specific magnetic capacity of the oxide of iron and the pyrites, the oxide-of-iron particles will be acted upon, while the magnetic-pyrites particles will not be acted upon, substantially as set forth.

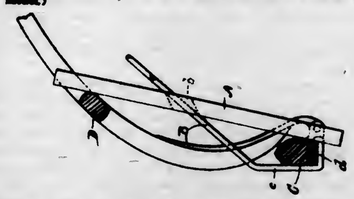
2. The process of treating ores containing magnetic oxide of iron and magnetic pyrites, consisting in first crushing the ore, then passing it through a magnetic separator of sufficient strength to separate the entire magnetic material from the non-magnetic gangue, and then passing the concentrated ore through a magnetic separator of such strength that, due to the difference in specific magnetic capacity of the oxide of iron and the pyrites, the oxide-of-iron particles will be separated from the pyrites particles, substantially as set forth.

485,842. METHOD OF MAGNETIC-ORE SEPARATION. Thomas A. Edison, Llewellyn Park, N. J. Filed July 20, 1892. Serial No. 440,697. (No specimens.)

Claim.—1. The process of separating nickeliferous from non-nickeliferous pyrrhotite where both occur in the same ore, consisting in subjecting the crushed material to a magnetic action of such strength that, due to the difference in magnetic capacity of the nickeliferous and non-nickeliferous pyrrhotite, the non-nickeliferous pyrrhotite will be acted upon magnetically, while the nickeliferous pyrrhotite will not be thus acted upon, substantially as set forth.

2. The process of treating ores containing nickeliferous and non-nickeliferous pyrrhotite, consisting in first crushing the ore to free the particles of pyrites from the gangue and other metals, passing the material through a magnetic separator of a sufficient strength to withdraw all the magnetic pyrites, and then passing the magnetic pyrites through another magnetic separator having a sufficient strength to act upon the non-nickeliferous pyrrhotite, but not upon the nickeliferous pyrrhotite, substantially as set forth.

485,848. THILL OR POLE PROP FOR VEHICLES. Henry T. Gross, Milwaukee, Wis. Filed June 24, 1892. Serial No. 437,866. (No model.)



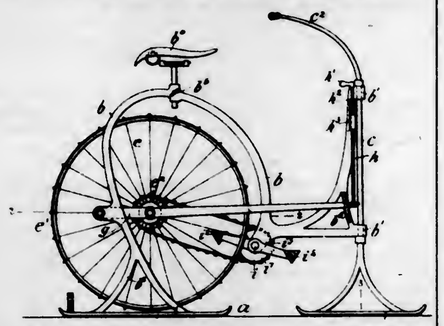
Claim.—1. A pole or thill prop comprising a bar having a slot therein intermediate of its ends and a bent rod that is free in the bar-slot and has a hook-shaped inner end, substantially as set forth.

2. A pole or thill prop comprising a bar having a slot therein intermediate of its ends, as well as another slot or recess adjacent to

one of said ends, and a bent rod that is free in the primary bar-slot and has a hook-shaped inner end, the hook end of the rod being engaged with the secondary slot when the device is not in use to thereby provide for the suspension of said device on a suitable support, substantially as set forth.

3. A pole or thill prop comprising a bar having a slot therein intermediate of its ends and a rod that loosely engages the bar-slot and has a right-angled hook-shaped portion at an obtuse angle to the remainder, substantially as set forth.

485,844. ICE-VELOCIPEDE. WILLIAM GUETHLER and FRANK GELBAHN, Philadelphia, Pa.; said Guethler assignor to Wilhelm Nellson, same place. Filed Feb. 23, 1892. Serial No. 422,547. (No model.)



Claim.—1. An ice-velocipede comprising a bifurcated backbone provided with a steering-head and having the center portion thereof curved upward to accommodate the driving-wheel, runners connected with the steering-head and with the respective bifurcations of the backbone, a saddle at the summit of the curved portion of the backbone, a driving-wheel having its axis disposed intermediate of said bifurcations and steering-head, a swinging frame for supporting the axis of the driving-wheel, a pedal-shaft journaled to the backbone and located beneath and in front of the axis of the driving-wheel, and a sprocket-chain and its accessories for operating said driving-wheel, substantially as and for the purposes set forth.

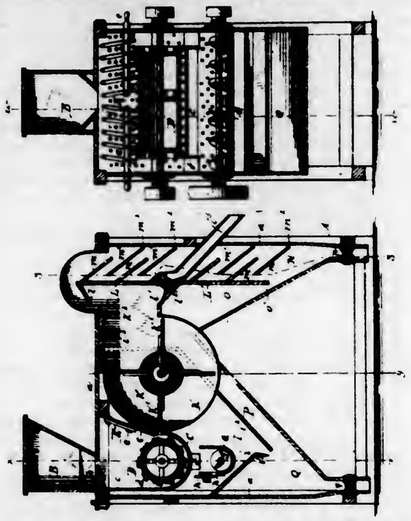
2. In an ice-velocipede, a swinging frame having a driving-wheel journaled thereto, a pedal-shaft journaled to a backbone in front of and below the axis of the driving-wheel, a sprocket-chain, sprocket-wheels connected with the driving-wheel and pedal-shafts, a link connected with the swinging frame for elevating the driving-wheel, and a bayonet-joint connected with said backbone and link and adapted to lock said link, and thereby support said driving-wheel in an elevated position, substantially as and for the purposes set forth.

3. An ice-velocipede provided with a bifurcated backbone having a steering-head and having the center portion thereof curved upward to accommodate the driving-wheel, concave runners having lateral flanges projecting from the shanks thereof and said runners connected with the steering-head and with the bifurcations of the backbone, an adjustable saddle supported at the summit of the backbone, a swinging frame carrying the driving-wheel, a pedal-shaft located in front of and below the axis of the driving-wheel, a sprocket-chain, sprocket-wheels connected with the driving-wheel and pedal-shafts, a link for actuating said swinging frame, and a bayonet-joint connected with said backbone and link and adapted to lock said link, and thereby support said driving-wheel in an elevated position, substantially as and for the purposes set forth.

4. An ice-velocipede provided with a swinging frame carrying the driving-wheel, a link connected with said frame for elevating the wheel, a pin on said link, and a slotted sleeve embracing said link and attached to the backbone and said pin and sleeve forming a bayonet-joint for locking the frame in an elevated position, substantially as and for the purposes set forth.

5. An ice-velocipede comprising a bifurcated backbone provided with a steering-head and having the center portion thereof curved upward to accommodate the driving-wheel, runners connected with the steering-head and with the respective bifurcations of the backbone, a saddle at the summit of the curved portion of the backbone, a swinging frame journaled to said bifurcations and extending into proximity with the steering-head, a link accessible to the rider for elevating said swinging frame, a driving-wheel journaled to the swinging frame and having its axis disposed intermediate of the bifurcations and steering-head, a pedal-shaft journaled to the backbone and located beneath and in front of the axis of the driving-wheel, and a sprocket-chain and its accessories for operating said driving-wheel, substantially as and for the purposes set forth.

485,845. GRAIN CLEANER. ADOLF HEDE, Silver Creek, N. Y. Filed Jan. 26, 1892. Serial No. 419,166. (No model.)



Claim.—1. The combination, with a scouring mechanism provided with a perforated scouring-case, of a fan having its eye connected with the space inclosing the perforated scouring-case and drawing the dust-laden air from the interior of the case through the perforations thereof, a dust-separator through which the fan causes the dust-laden air to flow, and a return-passage by which the purified air is conducted from the dust-separator to the perforated scouring-case, substantially as set forth.

2. The combination, with a scouring mechanism provided with a perforated scouring-case, of a receiving-hopper for the scoured grain, arranged underneath the same, a fan having its eye connected with the space inclosing the perforated scouring-case and with the receiving-hopper and drawing the dust-laden air from the scouring-case and an ascending air-current through the receiving-hopper, a dust-separator through which the fan causes the dust-laden air to flow, and a return-passage by which the purified air is returned to the receiving-hopper and the perforated scouring-case, substantially as set forth.

3. The combination, with a trough-shaped scouring-case, of a scouring-cylinder arranged within the lower portion thereof and separated from its top by a chamber in which the dust floats and which is provided with perforations for the escape of the air and dust, a fan having its eye connected with the dust-outlet of the chamber above the scouring-cylinder, a dust-separator through which the fan causes the dust-laden air to flow, and a return-passage by which the purified air is conducted from the dust-separator to the perforated scouring-case, substantially as set forth.

4. The combination, with a scouring mechanism, of a receiving-hopper arranged underneath the same and receiving the scoured grain, a fan whereby an air-current is drawn upwardly through the receiving-hopper, a separating-passage receiving the blast of the fan at its upper end, and a return-passage whereby the lower end of the separating-passage is connected with the receiving-hopper, substantially as set forth.

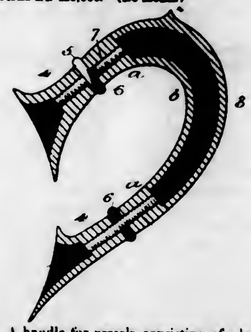
5. The combination, with a scouring-cylinder, of a scouring-case provided with discharge-openings at both ends, a conveyer-trough arranged underneath the scouring-case and receiving the grain therefrom, a duplex screw conveyer arranged in said conveyer-trough, which latter is provided with an elevated discharge-opening, a hopper which receives the grain from said discharge-opening, and a fan by which an air-current is drawn upwardly through said hopper, substantially as set forth.

6. The combination, with a scouring-cylinder, of a scouring-case provided with discharge-openings at both ends, a conveyer-trough arranged underneath the scouring-case and receiving the grain therefrom, a duplex screw conveyer arranged in said conveyer-trough, which latter is provided with an elevated discharge-opening, a hopper which receives the grain from said discharge-opening, a fan by which an air-current is drawn upwardly through said hopper, a separator which receives the air-current from said fan and in which the solid matter is separated from the air-current, and a return-spout which

connects the tail end of said separator with the receiving-hopper, substantially as set forth.

7. The combination, with a scouring mechanism, of a hopper which receives the grain therefrom, a fan by which an air-current is drawn upwardly through said hopper, a pocket arranged in the blast-spout of said fan for the separation of the heaviest material contained in the air-current, a descending zigzag passage which receives the air-current after it has deposited the heaviest material and in which the light material is separated from the air-current, and a return-passage connecting the tail end of said zigzag passage with the receiving-hopper, substantially as set forth.

485,846. HANDLE. CHARLES H. MANCHESTER, Hartford, Conn., assignor to the Hartford Silver Plate Company, same place. Filed Apr. 13, 1892. Serial No. 429,006. (No model.)



Claim.—1. A handle for vessels, consisting of a hand-section, attachment-sections, and insulators between the adjacent ends of the sections, said insulators having stems with a roughened surface projecting into sockets having complementary roughenings in the ends of the adjacent sections, substantially as specified.

2. A handle for vessels, consisting of a hand-section, attachment-sections, and insulators between the adjacent ends of the sections, said insulators consisting of roughened stems supporting disks, the roughened stems projecting into complementary roughened sockets in the adjacent ends of the sections, substantially as specified.

3. A handle for vessels, formed in separate sections of cast metal and pieces of heat-non-conducting material consisting of a disk and indented stem, the metal of the sections being cast about the stems, so that the sections are held together by the insulators only, which completely separate metal from metal, substantially as specified.

485,847. COMBINED COCK AND COUPLING FOR BARRELS, &c. THOMAS R. MURRAY, Albany, N. Y., assignor of one-half to Edward J. R. Murray, same place. Filed June 26, 1891. Serial No. 397,480. (No model.)

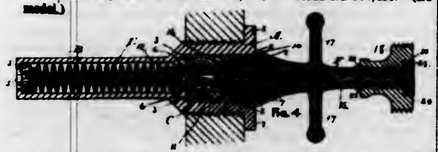
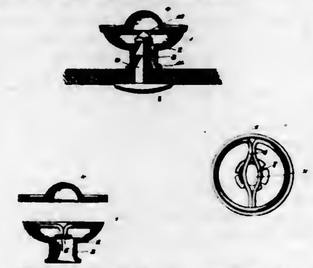


Fig. 4.

Claim.—1. A metallic bushing A, provided with an internal screw thread 2 and with an open-ended cylindrical extension B on its inner end, in combination with a removable annular valve-seat C, fitted to screw into said bushing and provided with an interior enlargement or chamber 8, an inwardly-opening valve D, fitted to close the opening through said valve-seat and provided with a solid stem 10, having radial channels 11 formed in its outer end, and a spring E, whose outer end is fitted to bear against the inner end of the valve D and whose inner end is connected to a removable perforated abutment 13, which forms a strainer at the inner end of said extension, said abutment, spring, valve, and valve-seat being removable through the outer end of said bushing, while the latter is secured in a barrel, whereby an unobstructed opening through said bushing can be obtained, as and for the purpose herein specified.

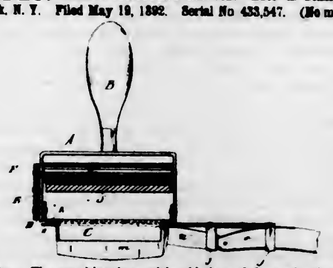
2. The combination of a metallic bushing A, provided with an internal screw-thread 2 and with an open-ended tubular extension B on its inner end, a removable annular valve-seat C, fitted to screw into said bushing and provided with an interior enlargement or chamber 8, an inwardly-opening valve D, fitted to close the opening through said valve-seat and provided with a solid stem 10, having radial channels 11 formed in its outer end, said channels forming an open communication through the valve-seat C with the tubular extension B when the valve D is pressed away from said valve-seat, a spring E, fitted to bear against the inner end of the valve D and having its opposite end connected to a removable perforated abutment 13, which forms a strainer at the inner end of the extension B, and a removable tubular section F, fitted to screw into the outer end of said bushing, so as to bear against the outer end of the valve D and effect the opening movement of the latter, said tubular section, valve-seat, valve, spring, and abutment being removable through the outer end of the bushing A, while the latter is secured in a barrel, whereby an unobstructed opening through said bushing can be obtained, as and for the purpose herein specified.

485,848. BUTTON. GEORGE H. PERRINE, Waterbury, Conn. Filed Nov. 25, 1891. Serial No. 413,096. (No model.)



Claim.—The herein-described button, consisting of the front and convexed back plates, the latter having an opening at its center, the hollow stud located in the opening, the spring-catch having the curved base 5, fitting in the angle formed by the back-plate and face-plate of the button, the terminals of said catch being downwardly curved to conform with the interior of the back-plate and extending transversely across the same, whereby the fastener becomes sprung or snugly wedged between the back and front plates, said terminals being provided opposite the opening in the back-plate with offsets 7, and the fastening-stud, rectangular in cross-section and having diametrically-opposite notches in its angles for engaging with the spring-offsets, substantially as specified.

485,849. RAZOR-STROPPING DEVICE. EGON L. SCHMITT, New York, N. Y. Filed May 19, 1892. Serial No. 433,547. (No model.)



Claim.—The combination, with a U-shaped frame having a handle, of a blade-holder mounted in said frame, a friction-roller in said frame, gearing for swinging the blade-holder from the friction-holder, a brace composed of a steel strip, a spring secured to one face of said strip, and two clamps secured to the opposite face of said strip, substantially as set forth.

485,850. FRUIT-JAR HOLDER. JOHN G. VAN ALTHENA, Milwaukee, Wis. Filed June 27, 1892. Serial No. 438,070. (No model.)

Claim.—1. A holder for fruit-jars, consisting of a strap or band, a plate provided with a curved portion, to which one end of the strap or band is secured, and a handle pivoted to the plate, which handle has a flange or face opposite to and curved reversely from the curved

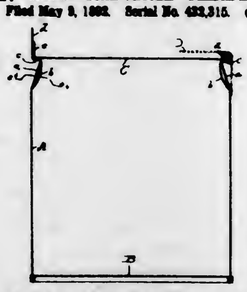
part of the plate, to which flange the other extremity of the strap or band is secured, substantially as set forth.

2. A holder for fruit-jars and the like, consisting of a strap or band, a plate provided with a curved flange at right angles thereto, said flange having one end of the strap or band secured thereto, and a handle pivoted to the plate and also formed or provided with a flange curved reversely to the arc of the other flange and having the opposite extremity of the strap or band secured thereto, substantially as set forth.

3. A holder for fruit-jars and the like, consisting of a strap or band, a plate provided with a curved flange at right angles thereto, said flange provided with end extensions, a rubber cushion upon the inner face of the flange, the edges thereof bearing against the end extensions of the flange, and a handle formed or provided with a flange curved reversely to the arc of the other flange and having the opposite end of the strap or band secured thereto, substantially as set forth.

4. A holder for fruit-jars and the like, consisting of a strap or band, a plate formed or provided with a curved flange at right angles thereto, having one end of the strap or band attached thereto, said flange provided upon its upper edge with an outward extension, and a handle pivoted to the plate, provided with a flange curved reversely to the flange of the plate, a space being left between the same, said flange having the other end of the strap or band secured thereto, the upward play of the ends of said strap or band being prevented by the rearward extension from the same curved flange of the plate, substantially as set forth.

485,851. SHEET-METAL VESSEL. FRANCIS A. WALSH, Milwaukee, Wis. Filed May 9, 1892. Serial No. 432,315. (No model.)



Claim.—1. In a sheet-metal vessel, a body or breast portion having a series of corrugations or variations from a plane surface formed around its wall adjacent to one end thereof, the said wall being formed with a practically-horizontally flange directly at the termination of said corrugations or variations, substantially as set forth.

2. In a sheet-metal vessel, a body or breast portion having a series of corrugations or variations from a plane surface formed around its wall adjacent to one end thereof and inclined inwardly toward said end, the outward projections of said variations being everywhere within the extreme external line of projection of the said wall, substantially as set forth.

3. A sheet-metal vessel comprising a body or breast portion having a series of corrugations or variations from a plane surface formed around its wall adjacent to one end thereof and inclined inwardly toward said end, the said wall thence extending outwardly and terminating in a flange formed into a bead or seam, substantially as set forth.

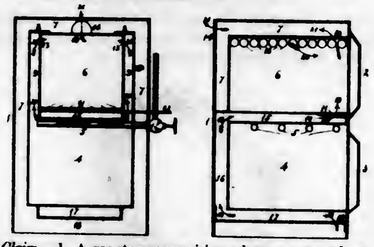
4. A sheet-metal vessel comprising a body or breast portion having a series of corrugations or variations from a plane surface formed around its wall adjacent to one end thereof and inclined inwardly toward said end, the said wall thence extending outwardly, forming a seat, and terminating in a flange, and a sealing-cover resting on said seat and provided with a like flange interlocked into a seam with the flange of the vessel-wall, substantially as set forth.

5. A sheet-metal vessel comprising a body or breast portion having a series of corrugations or variations from a plane surface formed around its wall adjacent to an end thereof and inclined inwardly toward said end, the said wall thence extending outwardly, forming a seat, and terminating in a flange, and a sealing-cover resting on said seat and secured to the same by a bead or seam formed from the said flange, substantially as set forth.

6. A sheet-metal vessel comprising a body or breast portion having a series of corrugations or variations from a plane surface formed around its wall adjacent to an end thereof and inclined inwardly toward said end, the said wall thence extending outwardly, forming a seat or support, and terminating in a flange formed into a bead or seam, and a clip-cover fitting over said vessel and secured thereto by an inward bead engaging the under surface of said seat or support, substantially as set forth.

7. A sheet-metal vessel comprising a body or breast portion having a series of corrugations or variations from a plane surface formed around its wall adjacent to one end thereof, said wall having a smooth continuous surface next said corrugations or variations, in combination with a slip-cover extending over said corrugations or variations and having frictional contact with said smooth continuous surface, substantially as set forth.

485,852. GAS-STOVE. ERSKINE C. WARREN, Rockford, Ill., assignor of one-half to George D. Roper, same place. Filed Oct. 9, 1891. Serial No. 408,260. (No model.)



Claim.—1. A gas-stove comprising a lower oven and an upper oven, a burner within the lower oven, an air-space between the ovens, said air-space closed to the products of combustion, an air-supply for said air-space, the ingress of the air-supply being at a point lower than the burners, openings in the bottom of the upper oven, communicating with the air-space, an exit for the air from the upper oven, the air-supply and the openings in the bottom of the upper oven being so relatively located as to produce a circulation of air through the air-space, and a damper for regulating the size of the openings in the bottom of the upper oven.

2. A gas-stove comprising a burner, an oven over the burner, an air-space between the oven and the burner, the air-space closed to the products of combustion, openings from the air-space into the oven, and an ascending flue and a base-flue connecting the air-space with the outer air.

3. A gas-stove comprising a burner, an oven over the burner, an air-space between the oven and the burner, the air-space closed to the products of combustion, openings from the air-space into the oven, a base-flue and an ascending flue connecting the air-space with the open air, and an escape in the upper portion of the oven for the heated air.

4. A gas-stove comprising a burner, an oven over the burner, an air-space between the oven and the burner, the air-space closed to the products of combustion, openings from the air-space into the oven, a damper for closing the openings, a base-flue and an ascending flue connecting the air-space with the outer air, ascending flues at the rear and the sides of the oven, an escape-flue over the top of the oven, and a communication between this latter flue and the upper part of the oven.

5. A gas-stove comprising a lower oven and an upper oven, a burner within the lower oven, an air-space between the ovens, said air-space closed to the products of combustion, an air-supply for said air-space, the ingress of the air-supply being at a point lower than the burners, openings in the bottom of the upper oven, communicating with the air-space, and an exit for the air from the upper oven, the air-supply and the openings in the bottom of the upper oven being so relatively located as to produce a circulation of air through the air-space.

6. A gas-stove comprising an upper oven and a lower oven, a burner in the lower oven, an air-space between the ovens, a vertical inlet-flue for the air-space at the rear of the lower oven, openings in the bottom of the upper oven near its front, communicating with the air-space, and an opening in the top thereof for the escape of air.

485,853. HYDROSTATIC AIR-COMPRESSOR. WILLIAM T. WOOD, Nashville, Tenn., assignor to J. C. McCrory and W. P. House, same place. Filed Feb. 6, 1892. Serial No. 420,547. (No model.)

Claim.—1. In a hydrostatic air-compressor, the combination of a liquid-holding cylinder, means for supporting the same at an inclination, a series of radial partitions within the cylinder, having cut-away lower edges, a perforated plate at the upper end of the cylinder, and a stationary cap-plate having perforations therein arranged on and in close contact with said first-named plate, substantially as described.

2. In a hydrostatic air-compressor, the combination, with a support, of an obliquely arranged liquid-containing cylinder having a concaved upper face, a shaft on which said cylinder is mounted, a series of radial partitions within the cylinder, having cut-away lower edges to form a communicating passage, a perforated plate in the top of the cylinder, and a stationary perforated cap-plate, substantially as described.

3. In a hydrostatic air-compressor, the combination, with a standard, of an obliquely-arranged liquid-holding cylinder mounted on the standard, means whereby the cylinder is rotated, a series of chambers formed within the cylinder, having a communicating passage at their lower ends, and a valve on the upper end of the cylinder permitting the ingress and egress of air, substantially as described.

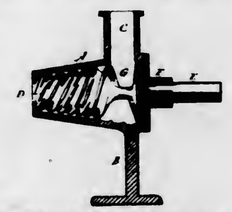
4. In a hydrostatic air-compressor, the combination, with a standard, of an obliquely-arranged rotary cylinder, a series of chambers formed within the same, communicating with each other at their lower ends, a conical-shaped top for the cylinder, and a valve in the top, substantially as described.

5. A hydrostatic air-compressor consisting of a cylinder arranged obliquely, means for rotating the cylinder, a series of radial partitions within the cylinder, forming chambers and having suitable passages formed therein, a perforated plate on the upper face of the cylinder, a stationary cap-plate having perforations therein and formed with a cross-bar between the perforations, and a conduit-pipe leading from said cap, substantially as described.

6. In a hydrostatic air-compressor, the combination, with a support, of an obliquely-arranged cylinder on the support, means for rotating the cylinder, a series of communicating compartments formed within the cylinder, inlet and outlet ports in the cylinder, and a valve for controlling said ports, substantially as described.

7. In a hydrostatic air-compressor, the combination, with a standard, of a liquid-containing cylinder mounted thereon, having a curved outwardly-extending lower end and a concaved upper end, a series of partitions within the cylinder, dividing the same into a series of compartments, the partitions extending to a point slightly above the bottom of the cylinder, and a valve for controlling the ingress and egress of air to and from the respective compartments, substantially as described.

485,854. MEAT-CUTTER. OLIVER D. WOODRUFF, Southington, Conn., assignor to the Enterprise Manufacturing Company of Pennsylvania, Philadelphia, Pa. Filed June 10, 1892. Serial No. 436,261. (No model.)



Claim.—1. In a meat-cutter consisting of a case adapted to receive the material to be cut at one end and permit the discharge of the meat at the other end, and in which case a revolving forcer is arranged, so that by its revolution the meat will be driven from the entrance toward the exit end of the case, the forcer constructed with spiral ribs on its surface, inclining toward the discharge end of the case, the said ribs made in short sections and so as to leave a space between the ends of adjacent sections, the advancing end of the ribs tapered and so as to form a sharp edge substantially dying out upon the surface of the forcer, substantially as described.

2. In a meat-cutter consisting of a case adapted to receive the material to be cut at one end and permit the discharge of the meat at the other end, and in which case a revolving forcer is arranged, so that by its revolution the meat will be driven from the entrance toward the exit end of the case, the forcer constructed with spiral ribs inclining from the entrance end toward the discharge, combined with intermediate ribs on the surface of the forcer between the before-mentioned spiral ribs, the said intermediate ribs inclining from one rib rearward toward the next rib and the said intermediate ribs terminating and at their advancing ends tapered to form a sharp edge substantially dying out upon the surface of the forcer, substantially as described.

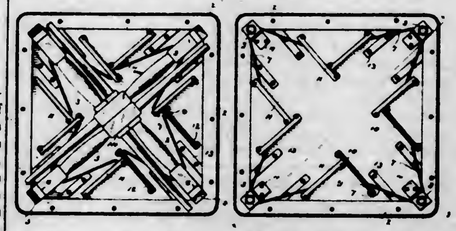
3. In a meat-cutter consisting of a case adapted to receive the material to be cut at one end and permit the discharge of the meat at the other end, and in which case a revolving forcer is arranged, so that by its revolution the meat will be driven from the entrance toward the exit end of the case, the forcer constructed with spiral ribs on its surface inclining toward the discharge end of the case, the said ribs made in short sections and so as to leave a space between the ends of adjacent sections, the advancing end of the rib-section tapered and so as to form a sharp edge substantially dying out upon the surface of the forcer, combined with intermediate ribs on the surface of the forcer between the before-mentioned spiral ribs, the said intermediate ribs inclining from one rib rearward toward the next rib and the said intermediate ribs at their advancing ends tapered to form a sharp edge substantially dying out upon the surface of the forcer, substantially as described.

4. In a meat-cutter consisting of a case adapted to receive the material to be cut at one end and permit the discharge of the meat at the other end, and in which case a revolving forcer is arranged so that by its revolution the meat will be driven from the entrance toward the exit end of the case, the case constructed with spiral ribs upon its inside, inclining toward the discharge end of the case, the said ribs made in short sections and so as to leave a space between the ends of adjacent sections, the ends of the sections opposed to the revolution of the forcer tapered and so as to form a sharp edge substantially dying out upon the surface of the case, substantially as described.

5. In a meat-cutter consisting of a case adapted to receive the material to be cut at one end and permit the discharge of the meat at the other end, and in which case a revolving forcer is arranged, so that by its revolution the meat will be driven from the entrance toward the exit end of the case, the case constructed with spiral ribs upon its inside, inclining toward the discharge end of the case, the said ribs made in short sections and so as to leave a space between the ends of the adjacent sections, the ends of the sections opposed to the revolution of the forcer tapered and so as to form a sharp edge substantially dying out upon the surface of the case, substantially as described.

6. In a meat-cutter consisting of a case adapted to receive the material to be cut at one end and permit the discharge of the meat at the other end, and in which case a revolving forcer is arranged, so that by its revolution the meat will be driven from the entrance toward the exit end of the case, the case constructed with spiral ribs upon its inside inclining toward the discharge end of the case, the said ribs made in short sections and so as to leave a space between the ends of the adjacent sections, the ends of the sections opposed to the revolution of the forcer tapered and so as to form a sharp edge substantially dying out upon the surface of the case, substantially as described.

485,855. FOLDING TABLE. EDWARD F. RAMSEY, Seymour, Conn. Filed May 2, 1892. Serial No. 431,394. (No model.)



Claim.—1. The combination, in a folding table, of a top, cleats surrounding the outer edge thereof, said cleats being recessed on their inner sides, and independent legs hinged to said top and adapted to fit into said recesses when in upright position, said legs and recesses being diagonally placed and slightly offset to allow the legs to be folded side by side in pairs when not in use, together with means for locking the same when in operative position, substantially as described.

2. The combination, in a folding table, of a top, cleats surrounding the outer edge thereof, said cleats being recessed on their inner sides, and independent legs hinged to said top and having shoulders formed near their upper ends, said shouldered ends being adapted to engage said recessed cleats when the legs are in upright position, said legs and recesses being diagonally placed and slightly offset, so that the diagonally-opposite legs will fold side by side in pairs, one diagonal pair of said legs being recessed on their outer sides about midway of their length and the other pair having similar recesses on their inner sides, so that the two pairs of crossing legs will lie closely against the under side of the table-top when in folded position, substantially as described.

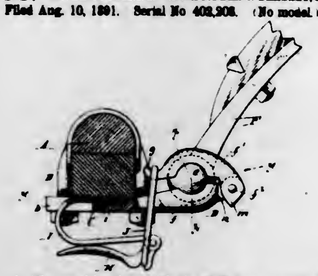
3. A folding table consisting of a top having independent legs hinged thereto and arranged to fold inward in pairs from the diagonally-opposite corners thereof, said top being provided on its under under side with diagonally-arranged plates 11, provided with grooves 10 and transverse holes 12, and the said legs being provided with the outwardly-springing braces 7, extending on both sides of each of said legs and having lugs 9 at their outer ends to engage said holes.

4. A folding table consisting of a top, legs hinged diagonally opposite each other on the under side thereof, diagonally-arranged plates 11 on the under side of the top, having grooves 10 and holes 12, and spring-braces on opposite sides of the legs, which are provided with lugs adapted to slide in the grooves and to engage the holes, as and for the purpose set forth.

5. A folding table consisting of a top, independent legs hinged diagonally opposite each other on the under side thereof, diagonally-arranged plates 11 on the under side of the top, having grooves 10 and holes 12, and spring-braces in the legs, held in place by plates 8, the outer ends of said braces having lugs 9, which slide in the grooves when the legs are folded and engage the holes when set up to lock the legs in position.

6. A folding table consisting of independent legs hinged diagonally opposite each other on the under side thereof, diagonally-arranged plates having grooves and transverse holes on the under side of the top, spring-braces upon the legs, having lugs adapted to engage said grooves and said holes, and guards 13, which prevent the spring-braces from being disengaged from the grooves of the plates.

485,856. THILL-COUPLING. CHRISTOPHER C. BRADLEY, Syracuse, N. Y. Filed Aug. 10, 1891. Serial No. 402,208. (No model.)



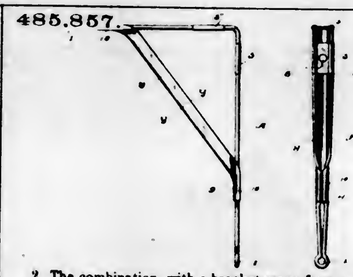
Claim.—1. The combination, with the thill-iron provided with a wrist or knuckle having its face rising from its ends toward its middle, of a clip provided with a rigid eye-section and a movable eye-section hinged to the front end of the rigid section, both sections embracing said wrist and provided with corresponding bearing-surfaces, a tension-spring secured with one end to said clip, a clamping-lever pivoted to the opposite end of said spring, and a loop connecting the movable eye-section with said clamping-lever, substantially as set forth.

2. The combination, with the thill-iron provided with a wrist or knuckle having a convex spherical surface, of a clip provided with a forwardly-projecting rigid eye-section, a movable eye-section hinged with its front end to the front end of the rigid eye-section, both eye-sections embracing said wrist and provided with corresponding concave spherical bearing-surfaces, a tension-spring secured with one end to said clip, a clamping-lever pivoted to the opposite end of said spring, and a loop detachably connecting the rear end of said movable eye-section with the clamping-lever, substantially as set forth.

3. The combination, with the wrist having a recess in its bearing-surface, of an absorbent plug arranged in said recess and a draft-eye embracing said wrist, substantially as set forth.

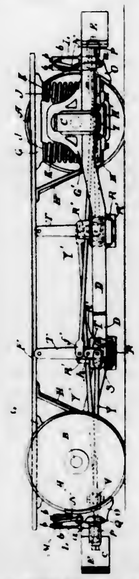
485,857. SHELF-BRACKET. HENRY L. BRADLEY, New Haven, Conn. Filed May 26, 1892. Serial No. 434,381. (No model.)

Claim.—1. A bracket the body of which is formed from a single piece of wire which is curved to form eyes at the outer ends of the arms and is also curved inward to form reduced portions and shoulders for the engagement of the brace.



2. The combination, with a bracket made from a single piece of wire, which is curved to form eyes at the ends of the arms and is curved inward to form reduced portions and shoulders, of clips adapted to engage certain of the reduced portions and a brace having heads provided with side flanges adapted to be curved about certain other of the reduced portions, the ends of the heads resting against the shoulders, so that the brace and bracket are locked against movement independently of each other and the width is not increased where the clips and braces are attached.

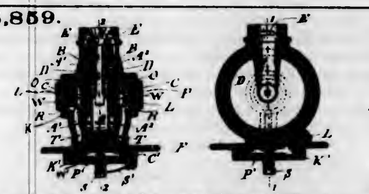
485,858. BRAKE MECHANISM FOR CAR-TRUCKS. GEORGE M. BRILL, Philadelphia, Pa. Filed Apr. 23, 1891. Serial No. 390,125. (No model.)



Claim.—1. In a brake mechanism, the combination of a transverse brake-beam P, having brake-shoes, transverse equalizing-levers V, secured to the brake-beams, upright brake-levers T, fulcrumed to the truck, and longitudinal brake-rods X X′ Y Y′, secured to the said equalizing-levers at their extremities and to the upright brake-levers above and below their fulcral points, the said upright brake-rods being secured to the longitudinal brake-rods between their connection with the equalizing-levers, substantially as described.

2. In a brake, the mechanism for securing the simultaneous action of all the brake-shoes at one time, in which the transverse brake-beams and longitudinal brake-rods are normally disposed in rectangular form, comprising brake beams and shoes secured to the truck, transverse equalizing-levers secured to the brake-beams, and longitudinal brake-rods secured to the equalizing-levers at each side of the point of the union of said levers to the brake-beams and to upright brake-levers fulcrumed between the equalizing-levers, the said brake-rods being secured to the brake-levers above and below their fulcral points, substantially as described.

485,859. TELEPHONY. WILLIAM BRUNNING, East Orange, N. J. Filed Aug. 1, 1891. Serial No. 401,373. (No model.)



Claim.—1. An apparatus for transmitting sound-vibrations, consisting of a closed hollow vessel containing a fluid and provided with dashers, which are held movably in contact with said fluid, one of which said dashers is provided with a spring and each of all other said dashers is provided with a diaphragm.

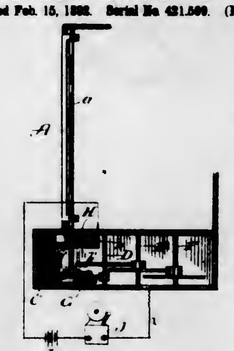
2. In a reversible apparatus for transmitting sound-vibrations, a confined fluid, in combination with three or more dashers held movably in contact therewith and two or more parallel diaphragms.

3. In an apparatus for transmitting sound-vibrations, a confined fluid, in combination with three or more dashers held movably in contact therewith and two or more diaphragms.

4. In an apparatus for transmitting sound-vibrations, which consists of a closed hollow vessel containing fluid and provided with dashers, which are held movably in contact with said fluid and in equipoise by outward tension, a plug which bears on said fluid to regulate such tension.

5. In an apparatus for transmitting sound-vibrations, a confined fluid, in combination with three or more dashers held movably in contact therewith, two or more diaphragms, a spring, and a socket or its equivalent for securing the operative part or attachment of a sound-conveying instrument thereto.

485,860. HOUSE-DOOR LETTER-BOX. JOHN W. COX, Jr., Chicago, Ill. Filed Feb. 15, 1892. Serial No. 421,569. (No model.)

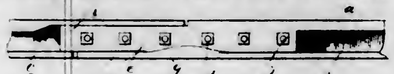


Claim.—In combination with a mail-box, a door connected with an electric circuit normally open, but closed by the opening of the door to insert mail, and a governor by which the circuit is kept closed to sound an alarm a predetermined length of time, substantially as described.

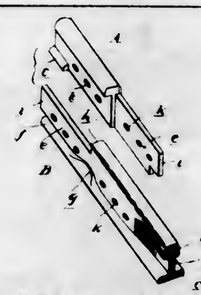
485,861. CIGAR-TIP PERFORATOR. REUBEN COHEN, Montreal, Canada. Filed May 10, 1892. Serial No. 432,516. (No model.)

Claim.—As an improved article of manufacture, a cigar having in its tip end the removable former or perforator C, provided with an exterior broad head B and an interior broadened point, the whole substantially as and for the purposes set forth.

485,862. RAIL-JOINT. JOHN DELANEY and ALBERT D. REAUME, Trenton, Mich. Filed Mar. 11, 1892. Serial No. 424,529. (No model.)

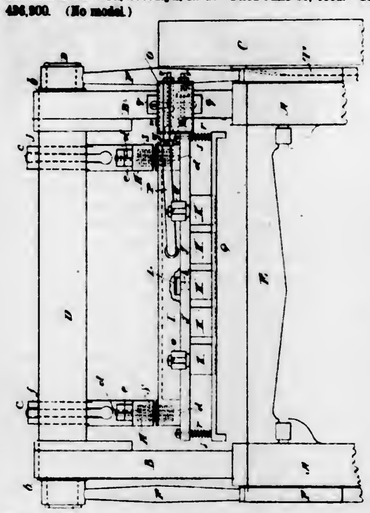


Claim.—1. A rail-joint formed integral with the rails and consisting of the side extension *e*, flange *f* on the extension, and enlargement *g*, substantially as described.



2. A rail-joint formed integral with the rail and consisting of a side extension *e*, a flange *f*, an enlargement *g* on the flange, and the tenon *i* on the end of the extension, substantially as described.

485,863. VALVE MECHANISM FOR CRACKER-MACHINES. CHARLES B. FOWLER, Brooklyn, N. Y. Filed June 16, 1892. Serial No. 436,900. (No model.)



Claim.—1. A cracker-machine provided with an air-box armed with suitable cutters and cutter-valves, a duplex valve connecting said air-box with a reservoir of compressed air and with the surrounding atmosphere, and mechanism for operating in succession the relief portion and the inlet portion of said duplex valve, substantially as shown and described.

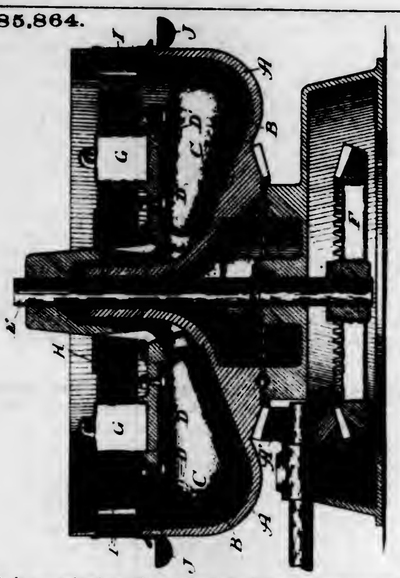
2. A cracker-machine provided with an air-box armed with suitable cutters and cutter-valves, a duplex valve connecting said air-box with a reservoir of compressed air and with the surrounding atmosphere, and a cam brought into contact with the relief and inlet portions of said valve successively, whereby the relief portion is closed and kept closed, while the inlet portion is opened by said cam, and thereupon both portions are released by said cam and allowed to return to their normal positions, substantially as shown and described.

3. In a cracker-machine, a valve mechanism which consists of a normally-closed inlet portion and a normally-open relief portion, and devices which successively close the relief portion, open the inlet portion, close the inlet portion, and open the relief portion, substantially as shown and described.

485,864. ORE-PULVERIZER. EPHRAIM D. GATES, Ridgeland, assignor to the Gates Iron Works, Chicago, Ill. Filed May 31, 1892. Serial No. 434,964. (No model.)

Claim.—1. In ore-pulverizers, the combination of a rotatable pulverizing-pan, means for rotating the pan, conical pulverizing-rolls arranged in the pan with their upper sides in a horizontal plane, a rotatable disk resting on the rolls, and means for rotating the disk in a direction opposite to the direction of rotation of the pan, substantially as described.

485,864.



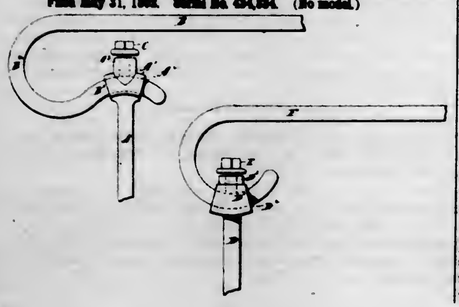
2. In ore-pulverizers, the combination of a rotatable pulverizing-pan provided with a pulverizing-die, conical pulverizing-rolls arranged in the pan with their upper sides in a horizontal plane and on the surface of the pulverizing-die, a rotatable disk provided with a hardened wearing-surface resting on the rolls, and means for rotating the disk in a direction opposite to the direction of rotation of the pan to effect the rotation of the pulverizing-rolls, substantially as described.

3. In ore-pulverizers, the combination of a rotatable pulverizing-pan, means for rotating the pan, conical pulverizing-rolls arranged in the pan with their upper sides in a horizontal plane, a rotatable disk resting on the rolls, means for rotating the disk in a direction opposite to the direction of rotation of the pan, and means for regulating the pressure exerted by the disk on the rolls, substantially as described.

4. In ore-pulverizers, the combination of a rotatable pulverizing-pan, means for rotating the pan, conical pulverizing-rolls arranged in the pan with their upper sides in a horizontal plane, a rotatable disk resting on the rolls, means for rotating the disk in a direction opposite to the direction of rotation of the pan, means for introducing material and water into the pulverizing-pan and for screening and catching the pulverized material as it passes from the pan, substantially as described.

5. In ore-pulverizers, the combination of a rotatable pulverizing-pan provided with a gear on its bottom, conical pulverizing-rolls arranged in the pan with their upper sides in a horizontal plane, a rotatable disk resting on the rolls, a vertical rotatable shaft rotating the disk and provided with a gear below the gear on the pan and containing an equal number of teeth, and a horizontal rotatable shaft provided with a pinion arranged between and engaging the gear on the pan and the gear on the vertical shaft and imparting an equal speed of rotation to both, substantially as described.

485,865. POST FOR CYCLE-SADDLES. CHARLES H. HARLEY, Chicopee, Mass., assignor to the Overman Wheel Company, same place. Filed May 31, 1892. Serial No. 434,894. (No model.)



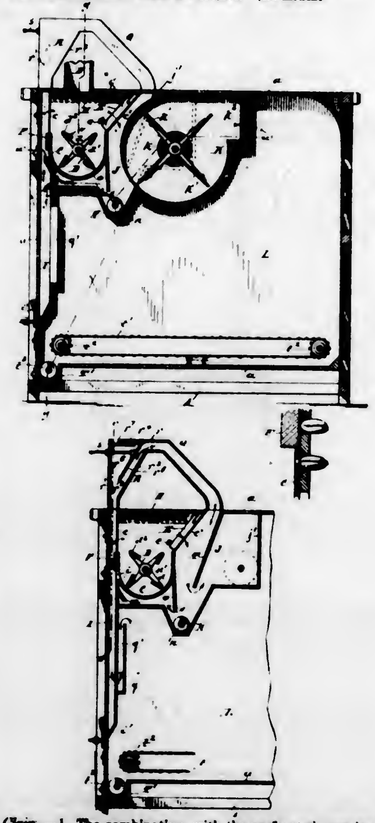
Claim.—1. A saddle-post having a vertical and a horizontal member, the latter having one end bent down and under and curved and the former being constructed at its upper end to receive the said curved end of the horizontal member and permit the said end to be moved forward and back, and means for clamping the said members together, substantially as set forth, and whereby by moving the said horizontal member as described its inclination is changed.

2. A saddle-post composed of a vertical member constructed at its upper end with an eye, a horizontal member having its inner end bent downward and curved and passed through the said eye, and means for clamping the said members together, substantially as described.

3. A saddle-post having a vertical member constructed at its upper end with a segmental eye having its center higher than its ends, a horizontal member having its inner end upwardly curved and bowed between its said curved end and its main portion, and means for clamping the said members together, substantially as described.

4. A saddle-post having a vertical member constructed at its upper end with an eye, a horizontal member having its inner end curved to pass through the said eye in which it is adjusted back and forth, and a set-screw mounted in the said vertical member of the post in position to enter the eye and engage with the curved end of the horizontal member, substantially as described.

485,866. GRAIN-CLEANER. AUGUST HEINE, Silver Creek, N. Y. Filed June 10, 1892. Serial No. 436,250. (No model.)



Claim.—1. The combination, with the perforated scouring-case, of an imperforate abrading-plate arranged against the outer side of a portion of the scouring-case and closing the perforations therein and a scouring-reel arranged within the scouring-case, substantially as set forth.

2. The combination, with a perforated scouring-case, of an imperforate plate secured to the scouring-case and provided on its inner side with a coating of emery, which closes the outer ends of the perforations, and a scouring-reel arranged in the scouring-case, substantially as set forth.

3. The combination, with a scouring-case, of a scouring-reel rotating in the scouring-case and a brush secured in the scouring-case and against which the grain is thrown by the reel, substantially as set forth.

4. The combination, with a trough-shaped scouring-case, of a scouring reel arranged therein and a stationary brush arranged in the scouring-case above the scouring-reel, substantially as set forth.

5. The combination, with a trough-shaped scouring-case, of a scouring-reel arranged therein, a perforated top plate forming the upper inclosure of the scouring-case at the head end thereof, and a brush forming the upper inclosure of the scouring-case at the tail end thereof, substantially as set forth.

6. The combination, with the inclosing case of the machine, the perforated scouring-case, and the scouring-reel arranged therein, of a draft-chamber inclosing the scouring-case and provided with a conveyer-trough, a fan having its eye connected with the draft-chamber, and a deflecting-board whereby the heavy particles are directed into the conveyer-trough, substantially as set forth.

7. The combination, with the inclosing case of the machine, the scouring-case, and the scouring-reel arranged therein, of a draft-chamber having its bottom extending underneath the scouring-case and separated at its front end from the wall of the inclosing case by an air-passage and an inclined cant-board arranged over said passage and separated at its upper end from the front wall of the inclosing case and at its lower end from the bottom of the draft-chamber, substantially as set forth.

8. The combination, with the scouring mechanism, of a draft-chamber inclosing the scouring mechanism and provided with a conveyer-trough, a fan whereby an air-current is drawn through the draft-chamber, a dust-depositing chamber connected with the discharge-spout of the fan, and a discharge-leg connected with the conveyer-trough and provided with an air-inlet communicating with said dust-depositing chamber, substantially as set forth.

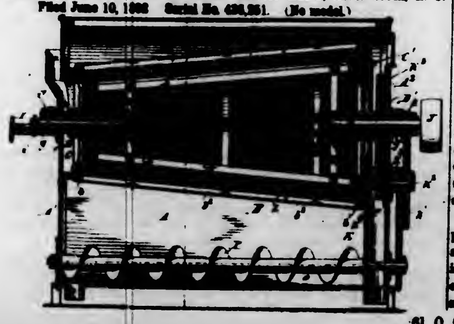
9. The combination, with the inclosing case of the machine and the scouring mechanism, of a draft-chamber inclosing the scouring mechanism, a fan having its eye connected with the draft-chamber, a dust-depositing chamber connected with the discharge-spout of the fan, an upright leg which receives the grain from the scouring mechanism and communicates near its lower end with the depositing-chamber to receive the air therefrom, and an air-trunk connecting the upper end of the leg with the draft-chamber, substantially as set forth.

10. The combination, with the upright separating-leg and the fan which causes an air-current to flow through the same, of a closed separating-chamber arranged above the upper end of the separating-leg and a lateral passage which leads from the upper end of the separating-leg to the fan, whereby the heavy particles are projected upwardly into the separating-chamber, while the air-current in which the lighter particles remain suspended passes off through the lateral passage, substantially as set forth.

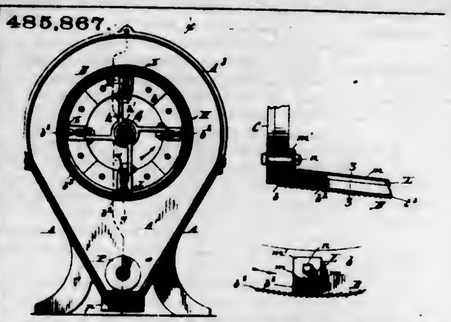
11. The combination, with an upright separating-leg and the fan which causes an air-current to flow through the same, of an inclosure having its lower end connected with the upper end of said leg and its upper end connected with the fan and a valve arranged in said inclosure and having on one side a depression which forms part of a closed separating-chamber, while the other side of the valve forms the adjustable wall of the passage which leads to the fan, substantially as set forth.

12. The combination, with the scouring mechanism and the draft-chamber inclosing the same, of a leg arranged on the front side of the scouring mechanism and receiving the grain therefrom and a return-bend air-trunk connecting the upper end of the leg with the draft-chamber and provided with a separating-chamber above the leg and a valve arranged therein, substantially as set forth.

485,867. BRAN-DUSTER. AUGUST HEINE, Silver Creek, N. Y. Filed June 10, 1892. Serial No. 436,251. (No model.)



485,867.

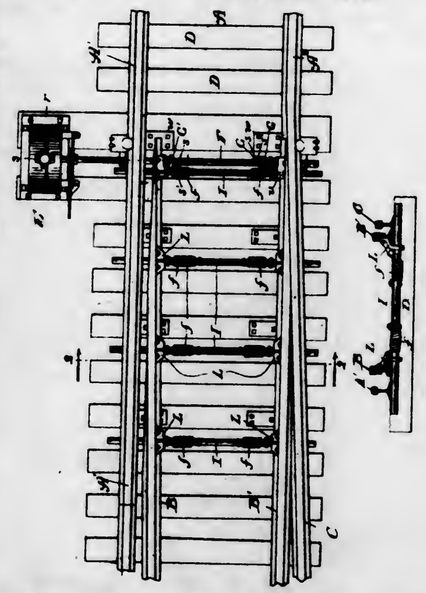


Claim.—1. The combination, with a circular bolting-screen, of a scouring-plate arranged within the screen and nearer the axis thereof than the bolting-surface and a rotating brush running in contact with the scouring-surface, but clearing the bolting-surface, substantially as set forth.

2. The combination, with the bolting-screen, of a brush rotating in the screen and scouring-plates arranged at intervals on the inner side of the screen and provided with longitudinal corrugations having inclined and abrupt sides, substantially as set forth.

3. The combination, with the heads of the bolting-screen, of longitudinal bars connecting said heads, a screen-cloth arranged on the outer sides of said bars, scouring-plates secured to the inner sides of said bars, and a rotating brush arranged within the screen and operating to rub the bran against the scouring-plates and dust the flour through the screen-cloth, substantially as set forth.

485,868. RAILWAY-SWITCH APPARATUS. JOHN J. HILL, Chicago, Ill. Filed Dec. 1, 1891. Serial No. 413,700. (No model.)



Claim.—1. In a railway-switch, the combination, with a switch-stand appliance, of a switch-rail operatively connected with the said appliance and resiliently yielding laterally with relation to the adjacent main rail independently of the said appliance and a register connected with and operated by the independent outward throw of the switch-rail, substantially as and for the purpose set forth.

2. In a railway-switch, the combination, with a switch-stand appliance, of a split switch operatively connected with the said appliance and having its rail B laterally yielding toward the adjacent main rail independently of the said appliance, a register connected with and operated by the independent outward throw of the said switch-rail, a tie-rod connecting the rails of the split switch and loosely supported

in its bearings, and a spring connecting the tie-rod with a switch-rail, substantially as and for the purpose set forth.

3. In combination with a main rail and a movable switch-rail in a railroad-track, a rotary switch-bar supported below the plane of the rails and provided with a worm having at its end a locking-point varying in pitch from that of the worm and a clip on the inner side of and extending below the switch-rail and provided with a beveled surface to be engaged by the worm, substantially as described.

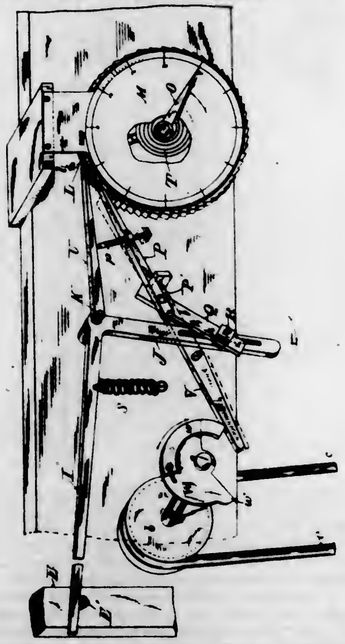
4. In a railway-switch, the combination, with a switch-stand appliance, of a rotary switch-bar provided with a longitudinally-sliding worm to engage and actuate the switch, a rail of the switch being laterally yielding toward the adjacent main rail independently of the said appliance, substantially as and for the purpose set forth.

5. In a railway-switch, the combination, with a switch-stand appliance, of a rotary switch-bar provided with a longitudinally-sliding worm and supported below the plane of the rails, whereby the threads of the worm engage and actuate the switch, a rail of the switch being laterally yielding toward the adjacent main rail independently of the said appliance, substantially as and for the purpose set forth.

6. In a railway-switch, the combination, with a switch-stand appliance, of a register on the said appliance, a rotary switch-bar provided with a longitudinally-sliding worm and supported below the plane of the rails, whereby the threads of the worm engage and actuate the switch, a rail of the switch being laterally yielding toward the adjacent main rail independently of the said appliance, and a movable abutment between the worm and register mechanism, substantially as and for the purpose set forth.

7. In combination with the rails A', A², and C, the split-switch rails B and B', connected by one or more tie-bars I, supported loosely in clips L on the rails, springs *f*, connecting the tie-bars with the clips, a rotary switch-bar F, carrying the worms G and G', secured to slide outwardly on the bar, clips H on the switch-rails, engaging the worms, a switch-stand operatively connected with the switch-bar to rotate it for working the switch and having an opening *l*, a pivotal signal-arm supported on the stand behind the opening and provided with means for fastening it in its registering position, a bell-crank *i*, linked to the said arm, and an abutment K, confined on the switch-rod between the bell-crank and adjacent worm, the whole being constructed and arranged to operate substantially as and for the purpose set forth.

485,869. REGISTER AND STOP-MOTION MECHANISM THEREFOR FOR WEAVING-MACHINES. CHARLES HOLDING, Urbana, Ohio. Filed Feb. 24, 1892. Serial No. 422,641. (No model.)



Claim.—1. In a weaving-register, the combination, with a moving part, of a register having figures, operative connections between said register and said moving part, and an adjustable cam rotated corresponding to the movement of the fabric and adapted to engage with said operative connections to stop said register after a certain length of fabric has been woven to show the number of threads woven in such distance.

2. The combination, with a moving part of a weaving-machine moving according to the travel of the carpet being woven, of a lever operatively engaged by said part, a toothed register-wheel, a spring to return said wheel to zero, an adjustable pawl carried by said lever and normally acting to rotate said register-wheel, a detent for said wheel, and a rotatable cam acting intermittently on said lever to throw out the pawl and detent simultaneously and allow the return of the register-wheel to zero.

3. In a weaving-indicator, the combination, with a moving part of the machine and a figure-indicator having a normal tendency to return to zero, of a detent to resist said normal tendency, operative connections between said indicator and said moving part of the machine, and an adjustable cam operated in unison with the travel of the carpet or other fabric and adapted to stop said indicator after a certain distance or length of the carpet or other fabric has been woven and to disengage said detent and indicator to allow the return of the latter to zero.

4. The combination, with a moving part of the weaving-machine moving according to the travel of the carpet being woven, of a lever operatively connected to said part, an adjustable pawl carried by said lever, a toothed register-wheel operated by said pawl, and a rotatable cam operatively connected to said pawl and consisting of a notched disk-segment W, having a projection *w'* at one side of the notch and an adjustable portion *w* at the other side of the notch and adapted to vary the shape of the disk portion and size of the notch, enlarging one while diminishing the other, and vice versa, substantially as and for the purpose described.

5. In a weaving-register, the combination, with a driving-drum for the warp-threads, of a rotatable cam connected therewith to operate at a corresponding speed and consisting of a cam-head having a bearing-surface, a segment portion adapted to increase the length of said bearing-surface and adjustably connected to said head, a projection from said bearing-surface at one end, a registering mechanism and operative means therefor, and mechanism adjacent to said cam adapted to be acted on by said bearing-surface and cam projection, substantially as described.

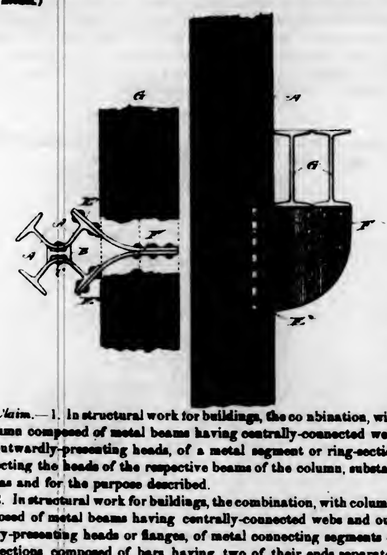
485,870. METAL FRAMEWORK FOR BUILDINGS. JOSEPH M. LARIMER, Chicago, Ill. Filed Nov. 10, 1891. Serial No. 411,500. (No model.)

Claim.—1. In framework for buildings, the combination, with metal columns connected end to end, of metal girders supported by said columns and the latter being joined in planes parallel to the girder-joints and suitable metal connecting plates or brackets for connecting the columns, said brackets having feet bearing on the tops of the girders, substantially as described.

2. In framework for buildings, the combination, with metal columns, of transverse girders connected to said columns below their upper ends, plates interposed between the ends of the columns, and brackets overlapping the joints between the columns and secured therewith, substantially as described.

3. In framework for buildings, the combination, with metal columns joined end to end and composed of a plurality of beams having outwardly-presenting heads, of transverse girders supported upon said columns and connecting-brackets overlapping the joints between the columns, said brackets being of such width as to adapt them to connect transversely two of the parallel heads of such columns, substantially as described.

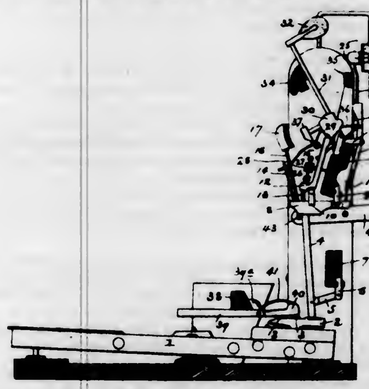
485,871. STRUCTURAL WORK FOR BUILDINGS. JOSEPH M. LARIMER, Chicago, Ill. Filed July 19, 1892. Serial No. 440,470. (No model.)



Claim.—1. In structural work for buildings, the combination, with a column composed of metal beams having centrally-connected webs and outwardly-presenting heads, of a metal segment or ring-section connecting the heads of the respective beams of the column, substantially as and for the purpose described.

2. In structural work for buildings, the combination, with columns composed of metal beams having centrally-connected webs and outwardly-presenting heads or flanges, of metal connecting segments or ring-sections composed of bars having two of their ends separated and adapted for connection to the heads of the column-beams and their outer ends connected together and extended laterally to form a supporting-bracket, substantially as described.

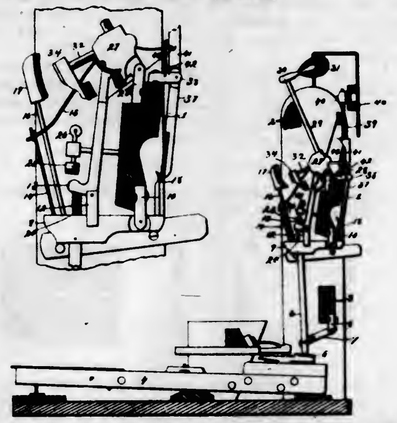
485,872. SOFT-STOP ATTACHMENT FOR PIANOS. OTTO LESTINA, Chicago, Ill. Filed Feb. 20, 1892. Serial No. 422,348. (No model.)



Claim.—1. In a pianoforte, the combination, with the key-levers, of the transverse pivoted rail located above said key-levers, the blocks secured to said rail, the spring-actuated levers pivoted to said blocks, the operating-arm, and the rockers on the key-levers, substantially as described.

2. In a pianoforte, the combination, with a piano-action, of the pivoted lever provided with a rod located underneath the whips, the lifters, the rockers, the key-levers, and the pivoted block provided with springs adapted to bear upon the rockers, substantially as and for the purpose described.

485,873. PIANO-ACTION. OTTO LESTINA, Chicago, Ill. Filed Feb. 20, 1892. Serial No. 422,349. (No model.)



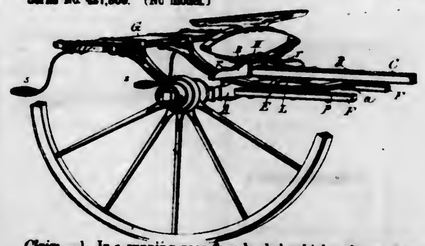
Claim.—In a pianoforte-action, the combination, with the fly or jack and the hammer-butt, of the spring-rod connected with the butt and the thread connected with said rod and the upper end of the fly or jack, substantially as and for the purpose set forth.

485,874. SHAFT ATTACHMENT. DANIEL W. LOOKE, Bucyrus, Ohio. Filed May 31, 1892. Serial No. 434,979. (No model.)

Claim.—1. A shaft attachment consisting of a sleeve having a hinged bottom or plate by which it is detachably fitted to the vehicle-shaft, bolts securing the free end of the bottom or plate to the body portion of the sleeve and clamping the sleeve to the pole or shaft, a pivotally-secured bar fitted to said sleeve and provided with a singletree, and an elastic connection from said bar to the vehicle pole or shaft, substantially as herein described.

2. A shaft attachment consisting of a sleeve to embrace the vehicle pole or shaft and having a forwardly-projecting tongue, a bottom or plate hinged at one end to said sleeve and having a forwardly-projecting tongue at its opposite end, the bolts passing through said tongues for clamping the sleeve to the pole or shaft, a horizontal bar having a sleeve or barrel at one end for receiving one of said bolts, whereby the bar turns about said bolts as an axis, a singletree at the forward end of the bar, a clip on said bar, and an elastic connection therefrom to vehicle pole or shaft, substantially as herein described.

485,875. RUNNING-GEAR. JAMES R. MCCARDELL, CHARLES H. WEST, and MARTIN J. MCDONALD, Trenton, N. J. Filed Mar. 30, 1892. Serial No. 427,309. (No model.)



Claim.—1. In a running-gear for wheeled vehicles, the combination of the foot-board and the hounds, the latter having their front ends elevated above the axle and their rear ends extended behind the axle and rigidly connected, substantially as described.

2. In a running-gear for wheeled vehicles, the combination of

the foot-board, the fifth-wheel, and the hounds, the latter having their front ends elevated above the axles and their rear ends extended behind the axle and rigidly connected to the fifth-wheel, substantially as described.

3. In the running-gear of a wheeled vehicle, the combination of the shafts, the axle, the hounds, and the fifth-wheel, the front ends of the hounds being elevated above the axle and the fifth-wheel being located so that its center is in rear of the axle, substantially as described.

4. The combination, in a running-gear for wheeled vehicles, of the shafts, the axle, the hounds, the foot-board, the fifth-wheel, the king-bolt, and the perch, the front ends of the hounds being raised above the axle and the rear ends being extended behind the axle and connected rigidly, substantially as described.

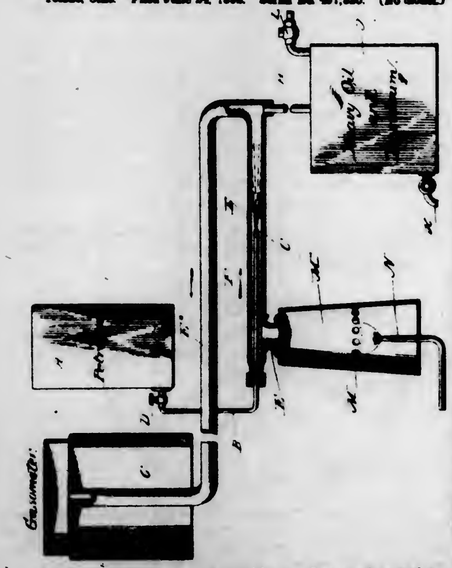
485,876. TELEPHONE. JAMES W. McDONOUGH, New York, N. Y. Filed July 21, 1891. Serial No. 130,304. (No model.)

Claim.—1. In a telephone, a vibratory plate or body having electric conductors or portions of electric conductors arranged substantially parallel to one another over substantially the whole surface of said plate or body and substantially parallel with the latter, said conductors being vibratory to impart a vibratory action to the plate or body, substantially as described.

2. In a telephone, a vibratory plate or body having electric conductors or portions of electric conductors arranged substantially parallel to one another over substantially the whole surface of said plate or body and substantially parallel with the latter and arranged to form a diaphragm in themselves and having the capacity to vibrate as a diaphragm and communicate their motion to substantially every part of the plate or body, substantially as described.

3. In a telephone, a combination, with the vibratory plate, of a conducting-wire wound over fixed supports and having a series of turns passing across the face of the vibratory plate in such way as to cover substantially the surface of said plate and to act as and communicate the motion of the diaphragm thereto, substantially as described.

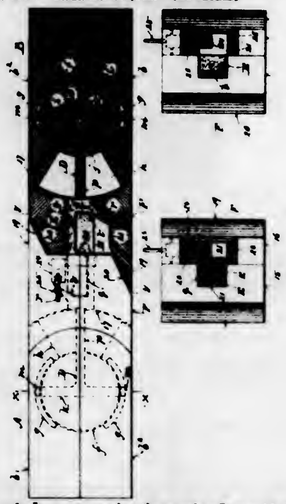
485,877. APPARATUS FOR MAKING GAS. ALONZO HOTCHKIN, Toledo, Ohio. Filed June 24, 1892. Serial No. 437,235. (No model.)



Claim.—1. An apparatus for making gas from crude petroleum, consisting of a tank or vessel for containing the petroleum, a feed-pipe leading therefrom, a pipe into which the feed-pipe enters, having a branch leading to a gas receiver or holder, a tank for heavy oil or residuum, communicating with the lower branch of the pipe, a casing below the lower branch of the pipe, which receives the small feed-pipe, having a reduced exit or mouth communicating with the lower branch at a point near the discharge end of the feed-pipe, and a burner in the closed casing.

2. An apparatus for making gas from crude petroleum, consisting of a tank for containing crude petroleum, a small feed-pipe leading therefrom for dropping or spraying the oil, a larger pipe receiving the feed-pipe and having a branch leading to a gas holder or receiver, a tank communicating with the lower branch for receiving the heavy oil or residuum, a casing having a reduced exit and provided with a series of openings to admit atmospheric air, a collar or flange forming communication between the mouth of the casing and the branch pipe near the feed-pipe and forming a stop to receive the air and products of combustion under pressure, and a burner in the closed casing, all adapted to serve for the purpose described.

485,878. CAR-COUPLING. JOHN O'HAIRE, Cambridge, Mass. Filed May 23, 1892. Serial No. 434,049. (No model.)



Claim.—1. In a car-coupler, the member B, provided with chamber *f* and ways *g*, in combination with the block C, the bar D, pivoted therein and working in said ways, and the head E on said bar, substantially as described.

2. The coupler member B, attached to the car draw-bar, in combination with the bar D, pivoted therein and provided with the head E, and the movable block F, inclosing said head and chambered to receive a companion head for engaging therewith.

3. The bar D, pivotally connected with the draw-bar, in combination with the head E thereon, the movable block F, supported thereby and chambered to receive a companion coupler-head, and mechanism for locking said heads in engagement.

4. In a car-coupler, the member B and pivoted bar D, provided with the head E, in combination with the movable block F, chambered at 21, and the locking-lever 24, pivoted to swing vertically in said chamber.

5. In a car-coupler, the member B, chambered at *f* and having ways *g*, in combination with the block C in said chamber, the T-bar D, pivoted in said block and projecting into said ways, and the coupler-head E on said bar, substantially as described.

6. The member B and pivoted bar D, having the head E, in combination with the movable block F, chambered at 21, and the locking-lever 24, pivoted to swing vertically in said chamber.

7. The bar D, pivotally connected with the draw-bar, in combination with the head E therein and the movable block F, chambered at 21 and having the wing 19 and bevel 20, substantially as described.

8. The bar D, pivotally connected with the draw-bar, in combination with the head E therein, the movable block F, chambered at 21 and having the wing 19 and bevel 20, and the locking-lever 24, pivoted in said chamber, substantially as described.

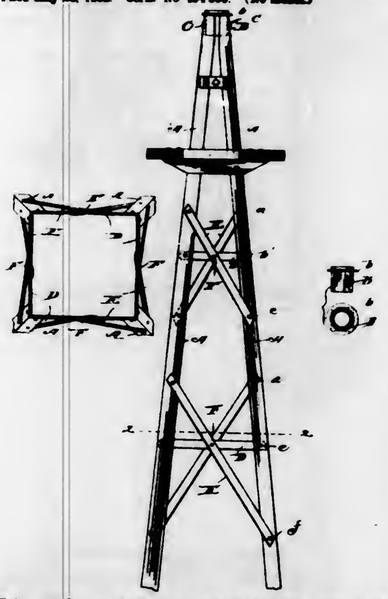
9. The member B and pivoted bar D, in combination with the head E on said bar, provided with the wing *r* and bevel *t*, substantially as described

10. The member B and bar D, pivoted therein, in combination with the head E, secured to said bar and provided with the wing *r* and bevel *t* 20, the block F on said bar, provided with the chamber 21, wing 19, and bevel 20, and the locking-lever 24, pivoted to swing in said chamber.

11. In a car-coupler, a T-rod pivoted to swing vertically and laterally on the draw-bar, in combination with a coupling-head on said rod and mechanism for centering said head to throw it into engagement.

12. In a car-coupler, the members A B and pivoted T-rods therein, provided with coupling-heads E, in combination with the movable blocks F on said heads, chambered at 21, mechanism for directing said heads into the chamber of opposite blocks, and the locking-levers 24 for securing said heads therein, all being arranged to operate substantially as described.

485,879. METAL TOWER. PALMER C. PERKINS, Mishawaka, Ind. Filed May 26, 1892. Serial No. 434,209. (No model.)



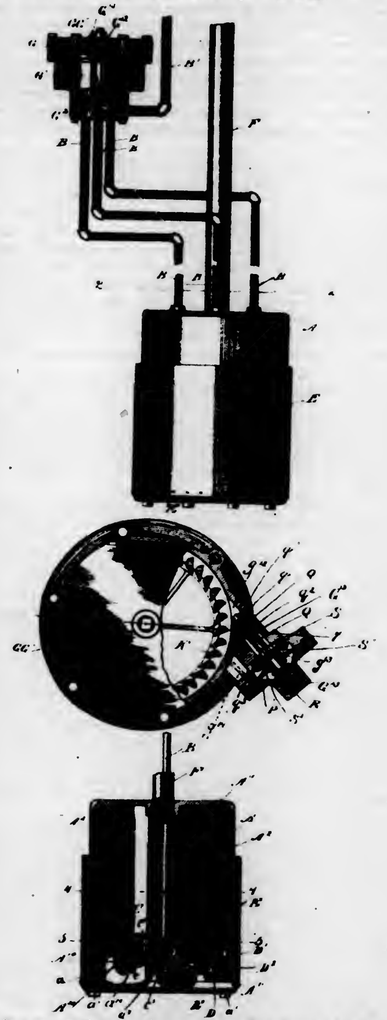
Claim.—1. In a windmill-tower, the combination, with uprights composed of angle-bars converging toward their upper ends, of a combined bearing, turn-table, and spacing-block composed of a casting having an angular exterior to which the uprights are secured, a peripheral flange overlying the ends of the uprights to form the turn-table, and a vertical aperture to provide a bearing for the operating-rod of the mill, substantially as described.

2. In a tower of the class described, the combination, with a frame composed of metal posts or uprights, of bracing applied thereto and comprising horizontal tie-bars and diagonal struts, the tie-bars being secured at their respective ends to the uprights and the struts crossing each other and the tie-bars being secured to the uprights intermediate the connections of the diagonal struts thereto, substantially as described.

3. In a tower of the class described, the combination, with a frame having uprights composed of angle-bars, of a system of bracing therefor comprising horizontal tie-bars and diagonal struts, the struts being secured at their respective ends to the uprights and the tie-bars being secured to the uprights intermediate the points of securement of the struts and the tie-bars and struts being secured together at their points of crossing, substantially as described.

485,880. PNEUMATIC PUMP. THOMAS O. PERRY, Chicago, Ill. Filed Sept. 5, 1891. Serial No. 404,864. (No model.)

Claim.—1. In a pneumatic water-elevator, a plurality of water-chambers, combined with a compressed-air chamber and a rotary valve which controls communication of the compressed-air chamber with the water-chambers, respectively, the valve-seat having a port leading to each water-chamber, and the valve having a single port leading from its seating-face into the air-chamber, said valve-port being extended at the face of the valve in the path of the rotary movement of the valve farther than the angular distance between consecutive ports of the seat, whereby each water-chamber is brought into communication with the compressed-air chamber before the preceding one is out of such communication, substantially as set forth.



2. In a pneumatic water-elevator, a plurality of water-chambers having a common discharge-pipe, combined with a compressed-air chamber and a rotary valve which controls communication of the air-chamber with the water-chambers, respectively, the valve-seat having the port or way leading to each water-chamber, and the valve having a single port leading from its seating-face into the air-chamber, said valve-port being extended at the face of the valve in the path of the rotary movement of the valve farther than the angular distance between consecutive ports of the seat, substantially as and for the purpose set forth.

3. In a pneumatic water-elevator, a plurality of water-chambers, combined with a compressed air-chamber, a rotary valve which controls communication between the air-chamber and the water-chambers, respectively, the water-chambers having each a water-induction port, the valve-seat having a port leading to each water-chamber and an additional port encircling the axis of rotation of the valve and leading to the outer air for a vent-port, the valve having a single port leading from its face into the air-chamber, the mouth of said port at

the face being extended in the path of the rotary movement of the valve farther than the angular distance between consecutive ports in the seat which lead to the water-chambers and registering with such ports as the valve revolves, said valve having a duct, one port of which in its path of rotation with the valve traverses the ports in the seat which lead to the water-chambers, while the other port registers continuously with the vent-port of the seat, the ports of the valve which communicate, respectively, with the vent-port of the seat and with the compressed air-chamber being separated by an angular distance as great as the angular extent of each of said ports of the seat leading to the water-chambers, respectively, whereby communication of the compressed-air chamber with each water-chamber continues until like communication is established with the next water-chamber and ceases before communication is established with the vent-port, substantially as set forth.

4. In a pneumatic water-elevator, a plurality of water-chambers, a compressed-air chamber, a valve-seat within said compressed-air chamber, having a central port leading to the outer air and a plurality of ports similarly disposed at equal angular distances about said central port and communicating with the water-chambers, respectively, and a rotary valve having two ports on its face oppositely disposed with respect to the center, one port communicating inwardly into the air-chamber and the other port communicating with the central port of the seat, the angular extent of said valve-ports being greater than the angular distance between the ports of the seat which lead to the water-chambers and the angular distance between the valve-ports being not less than the angular extent of said seat-ports, substantially as set forth.

5. In a pneumatic water-elevator, in combination with the water-chambers, a compressed-air chamber, and a rotary valve which controls communication between the compressed-air chamber and the water-chambers, respectively, a wheel adapted to be actuated by an air jet or blast, and connections from said wheel to said rotary valve, whereby the rotation of the wheel rotates the valve, substantially as set forth.

6. In a pneumatic water-elevator, in combination with the water-chambers, a compressed-air chamber, and a rotary valve which controls communication between the compressed-air chamber and the water-chambers, respectively, a wheel adapted to be actuated by an air jet or blast, and speed-reducing connections from said wheel to said rotary valve, whereby the wheel may have high speed and rotate the valve slowly, substantially as set forth.

7. In a pneumatic water-elevator, in combination with the water-chambers, a compressed-air chamber, and a rotary valve which controls communication between the compressed-air chamber and the water-chambers, respectively, a wheel in said compressed-air chamber adapted to be actuated by an air jet or blast, and connections from said wheel to said rotary valve, whereby the rotation of the wheel rotates the valve, and a nozzle through which the compressed air is introduced into said compressed-air chamber, disposed in position to direct such compressed air in a jet against the wheel, whereby the compressed air which operates in the water-chambers to expel the water operates, also, in the air-chamber to rotate the valve, substantially as set forth.

8. In a pneumatic water-elevator, in combination with the water-chambers, the compressed-air chamber, and a rotary valve which controls communication between the compressed-air chamber and the water-chambers, respectively, a wheel in said compressed-air chamber adapted to be actuated by an air jet or blast, and connections from said wheel to said rotary valve, whereby the wheel rotates the valve, a conduit leading to the compressed-air chamber, and two ports by which it communicates with the latter, one being adapted to direct the air in a jet upon the wheel, a valve normally closing the other port and adapted to be actuated by air-pressure within the conduit, whereby it constitutes a relief-port to diminish the velocity of the air through the jet-port, substantially as set forth.

9. In combination with the water-chambers and the compressed-air chamber, the latter having the duct G^{19} and the ducts G^{20} and G^{21}, all said ducts terminating at the same lower face of said air-chamber, the coupling G^3, having ducts which register one end with all said ducts of the air-chamber, and air-pipes from the water-chambers and the compressed-air-supply pipe E', screwed into the outer ends of said ducts, respectively, in the coupling, substantially as set forth.

485,881. WINDMILL AIR-COMPRESSOR. THOMAS O. PERRY, Chicago, Ill. Filed Sept. 5, 1891. Serial No. 404,886. (No model.)

Claim.—1. A windmill, the tura-table in which its shaft is journaled, and a tower-top which constitutes the vertical pivotal support of the tura-table, such tower-top being open around its vertical axis, combined with air-compressing mechanism on the tura-table and a discharge-pipe from such mechanism coaxial with the tower-top and adapted to extend within the axial opening of the latter, substantially as set forth.

485,881.

2. A windmill, its tura-table, and a tubular tower-top on which the tura-table is pivoted, combined with air-compressing mechanism on the tura-table, the discharge-pipe from such mechanism being swiveled to the tubular tower-top, substantially as set forth.

3. A windmill, the tura-table in which its shaft is journaled, and a plurality of air-compressing mechanisms on the tura-table operated by the windmill-shaft, the air-chambers of said mechanisms communicating with a common discharge-pipe, the tower-top to which the tura-table is pivoted being coaxial with said discharge-pipe and having an axial opening large enough to admit the latter, substantially as set forth.

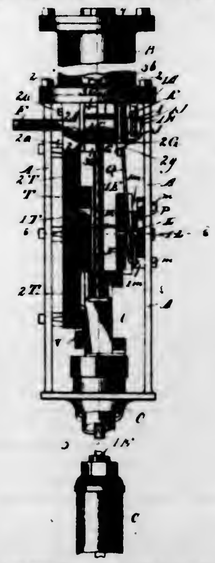
4. In combination with the tura-table, the air-compressing mechanism mounted thereon and the discharge-passage therefrom, comprising the pipes E and D, one fixed with respect to the tura-table and the other fixed with respect to the support of the tura-table, said parts being coaxial and swiveled together, their common axis coinciding with the vertical axis of the tura-table, substantially as set forth.

5. In combination with the windmill and the tower-top, the tura-table having a vertical trunk C^{36} and the vertical arms C^{38} and C^{40} and the cylinders C' C', rigid with each other and with the said trunk and arms, the horizontal bearings for the mill-shaft at the lower ends of said arms and on said trunk, and the vertical bearings of the tura-table on said trunk, whereby the cylinders stiffen the tura-table and tend to preserve the shaft-bearings in line, substantially as set forth.

6. In combination with the mill and the tower-top, the tura-table having horizontal bearings for the mill-shaft and vertical bearings for the tower-top and comprising the cylinders C' C', arranged horizontally side by side and rigid with each other and with the remainder of the tura-table, and the arms which afford bearings for the mill-shaft projecting downwardly from the base-plane of the cylinders, substantially as set forth.

7. The mill, the tower-top, and the tura-table which has horizontal bearings for the mill-shaft and vertical bearings for the tower-top, such tura-table comprising the air-compressing cylinders, combined with the cap-plate C^3, having the valve-chambers for all said cylinders and made integrally and bolted to all the cylinders, whereby it stiffens the tura-table, substantially as set forth.

485,882. PNEUMATIC PUMPING-ENGINE. THOMAS O. PERRY, Chicago, Ill. Filed Nov. 9, 1891. Serial No. 411,354. (No model.)



Claim.—1. In a pneumatic engine, a ratchet-valve which controls its air-supply, a spring and connections therefrom to the pawl of the ratchet-valve, whereby the recoil of the spring gives the pawl its ratchet-operating movement, a trip-bar connected with said spring, and a dog connected to the piston-rod and which engages the trip-bar as the piston moves and actuates it in direction to put the spring under tension and runs off said trip-bar at the limit of its stroke, whereby the ratchet-valve is operated instantaneously by the recoil of the spring, substantially as set forth.

2. In a pneumatic engine, in combination with a rotary ratchet-valve which controls the air-ports, a spring and connections therefrom to the valve-ratchet, whereby the recoil of the spring actuates the valve, a trip-bar connected to the spring, and two trip-dogs on the piston-rod which engage and actuate the trip-bar to put the spring under tension and release it to permit its recoil, the one during the stroke of the piston in one direction and the other during its stroke in the other direction, substantially as set forth.

3. In a pneumatic engine, in combination with a rotary ratchet-valve which controls the air-ports, a spring and connections therefrom to the valve-ratchet, whereby the recoil of the spring actuates the valve, a trip-bar connected to the spring, and two dogs pivoted to the piston-rod, which engage and actuate the trip-bar to put the spring under tension and release it to permit its recoil, one during the stroke of the piston in one direction and the other during its stroke in the other direction, and a spring which yieldingly holds the dogs in position to engage the trip-bar during the piston-strokes during which the trip-dogs respectively operate and permits them to yield past the trip-bar in the strokes in which they are respectively idle, substantially as set forth.

4. In a pneumatic engine, a ratchet-valve which controls its air-supply, a spring and connections therefrom to the pawl of the ratchet-valve, whereby the recoil of the spring gives the pawl its valve-operating movement, two dogs pivotally connected to the piston-rod and carried thereby in its reciprocating movement, a pivoted trip-bar connected to the spring, having the axis of its pivot at right angles to the piston-axis, and a stop which holds it normally extended both ways from the plane of said axes and with its opposite ends in the paths, respectively, of the heads of the dogs, and a spring which permits the dogs, respectively, to yield outwardly to pass the end of the trip-bar when moving in the direction in which the latter is restrained by its stop, substantially as set forth.

5. In combination with the ratchet-valve, the rock-shaft 1^L, and the connections therefrom to the pawl of the ratchet-valve, the dogs pivotally connected to the piston-rod, the spring L, connected to the rock-shaft, and a trip-bar N, extending both ways from said rock-shaft, and a spring V, reacting between the two dogs, tending to hold their heads respectively in position to engage the ends *A* the trip-bar in the longitudinal movement of the piston, substantially as set forth.

6. In a pneumatic engine, in combination with the piston, dogs pivoted thereto and reciprocating therewith, the trip-bar fulcrumed on the frame and stopped against rotation in one direction with its ends in the path of the heads of the dogs, respectively, whereby the operative dog engaging it at one side rocks it and the idle dog encountering it at the other side is deflected by it, and a switch or guard 2^T, corresponding to each dog and past the end of which the idle dog is deflected by the trip-bar and outside of which said dog becomes engaged before it runs off the trip-bar, whereby the idle dog is held outside the path along which it must return to engage the trip-bar until the entire length of said switch or guard has been traversed, substantially as set forth.

7. In combination, substantially as and for the purpose set forth, with a ratchet-valve which controls the air-supply of a pneumatic engine, the pawl which operates it, the spring L, and connections therefrom to the pawl of the ratchet-valve, whereby the recoil of the spring gives the pawl its ratchet-operating movement, the trip-bar N, connected with the spring, the dog secured to the piston-rod in position to engage and rock the trip-bar and run off from it at the limit of its stroke, and the fixed guard or cam T, having the recess which forms the shoulder 1^t, the dog having an angle which passes said shoulder before it runs off the trip-bar and provided with a spring V, tending to hold it out of such engagement after it runs off the trip-bar and becomes free from the tension of the spring L.

8. In a pneumatic engine, a rotary ratchet-valve which controls the air-port, in combination with the piston, the dogs pivoted thereto, the trip-bar fulcrumed on the frame and stopped against rotation in one direction at a position at which its ends are in the path of the heads of the dogs, whereby one dog rocks it and the other is deflected by it as the piston reciprocates, a spring which tends to actuate the trip-bar toward its stop, connections from the trip-bar to the pawl of the ratchet-valve, whereby the rocking of the bar away from its stop retracts the pawl and the contrary movement actuates the valve, and a fixed guard or cam 1^T for each dog, having a recess which forms a shoulder 1^t, the dog having an angle which passes said shoulder while it is actuating the trip-bar and is adapted to engage it on its return, said shoulder and angle being so located relatively that the angle passes the shoulder when the angular distance of the pawl from the point at which it will run off a ratchet-tooth is less than the angular movement of the valve necessary to close communicating ports, substantially as set forth.

9. In a pneumatic engine, in combination with the piston, dogs pivoted thereto and reciprocating therewith, the trip-bar fulcrumed on the frame and stopped against rotation in one direction with its ends in the path of the heads of the dogs, respectively, whereby the operative dog engaging at one side rocks it and the other dog encountering it at the other side is deflected, a switch 2^T, corresponding to each dog and past the end of which the idle dog is deflected by the trip and outside of which said dog becomes engaged before it runs off the trip, and a fixed guard or cam 1^T, corresponding to each dog and inside of which the dog travels, having a recess, which forms the shoulder 1^t, the dog having an angle which passes said shoulder while it is actuating the trip-bar after the idle dog is engaged outside of the switch 2^T, substantially as set forth.

10. In combination with a rotary valve, the ratchet on its stem, the detent-pawl 1^L, and the pawl K, which actuates said ratchet, having the stop-shoulder 2^K and the spring 3^K resting upon the back of the

ratchet and having its end in such position that the shoulder 2^x collides with it simultaneously with the dropping of the detent-pawl 1^1 from a tooth of the ratchet, substantially as set forth.

11. In a pneumatic engine, in combination with a rotary ratchet-valve which controls the air-ports, a spring and connections therefrom to the valve-ratchet, whereby the recoil of the spring actuates the valve, a trip-bar connected to the spring, and two dogs pivoted to the piston-rod which engage and actuate the trip-bar to put the spring under tension and release it to permit its recoil, one during the stroke of the piston in one direction and the other during its stroke in the other direction, the dogs being normally in position to engage the trip-bar during the stroke of the piston during which they respectively operate and adapted to yield past the trip-bar in the stroke in which they are respectively idle, substantially as set forth.

485,883. TILTING-TOWER FOR WINDMILLS. THOMAS O. PERRY, Chicago, Ill. Filed Apr. 5, 1892. Serial No. 427,817. (No model.)

Claim.—1. In a windmill-tower, a mast comprising four corner-bars converged from the middle toward both ends and suitably braced apart between the ends and fulcrumed at an axis diagonal to the square defined by the corner-bars, substantially as set forth.

2. In a windmill, a mast comprising four angle-iron corner-bars set with their angles at the corners of a square and their flanges coinciding with the sides of such square, said bars being converged from the middle of their length toward both ends and joined at their ends and braced apart between the ends and fulcrumed on an axis diagonal to the square defined by the corner-bars, substantially as set forth.

3. A windmill-tower consisting of corner-posts of channel-bar set in pairs, the individuals of each pair having their channels facing each other, substantially as set forth.

4. A windmill-tower consisting of triangular sides set on parallel base-lines and inclined toward each other, said triangular sides being tied together above a certain horizontal plane by braces connecting a side post of each triangle on one side of the pyramidal space defined by said triangular sides and being tied together at the opposite side of said pyramidal space below said horizontal plane, whereby the tower is open at one side above and at the other side below said plane, substantially as set forth.

5. A windmill-tower consisting of triangular sides set on parallel base-lines and inclined toward each other, said triangular sides being tied together above a certain horizontal plane by braces connecting a corner side post of each triangle on one side of the pyramidal space defined by said triangular sides and being tied together at the opposite side of said pyramidal space below said horizontal plane, whereby the tower is open at one side above and at the other side below said plane, combined with a mast fulcrumed at the apices of said triangular sides and tilting in a vertical plane between them, whereby such mast swings within the tower through the side open above said horizontal plane and is accessible at its lower end through the side open below said plane, substantially as set forth.

6. A windmill-tower having corner-posts and the tilting mast fulcrumed at the upper ends of such posts, horizontal ties connecting diagonally-opposite corner-posts near the lower end, said ties being deflected from straight lines to their intersection aside from the center of the rectangle defined by the corner-posts sufficiently to permit the lower end of the tilting mast to lodge in the angle between said ties when the axis of the mast is vertical and bolted together at such intersection, and suitable means for locking the said lower end of the mast at such lodgment, substantially as set forth.

7. A windmill-tower consisting of triangular sides set on parallel base-lines and inclined toward each other and tied together above a certain horizontal plane at one side of the pyramidal space defined by the triangles, the side bars of said triangles, which constitute the corner-posts of the tower, being tied together by horizontal bars connecting diagonally-opposite corner-posts at said horizontal plane, said diagonal ties being deflected from straight lines to carry their point of intersection away from the center of the rectangle defined by the corner-posts toward the side at which said triangles are tied together above said plane, and a tilting mast fulcrumed at the apices of said triangular sides and adapted to swing through the open side of the tower, substantially as set forth.

8. In combination with the diagonal ties L L and the tilting mast, whose lower end is adapted to lodge in the angle between them, the latch M, pivotally connected to one of said ties and bent at a distance from said pivot to permit the free end to lie alongside the other tie and provided with a hooked terminal adapted to engage the other tie, substantially as set forth.

9. In combination with the ties L of angle-iron oppositely placed, so that the horizontal flange of one lies upon the horizontal flange of the other at their intersection, the latch M, pivotally connected to the horizontal flange of one of said ties and having its free end hooked to engage the horizontal flange of the other, substantially as set forth.

10. A windmill-tower comprising two pairs of corner-posts, the individuals of each pair being rigidly joined together and forming side frames of the tower, set on parallel base-lines and provided each with a fulcrum for a tilting mast, such mast of double pyramidal shape, fulcrumed on the two side frames and adapted to swing in a vertical plane between the side frames, the side frames being tied together by a cross-tie B, connecting adjacent posts, and oblique braces N N from the other two posts to the cross-tie B, said braces intersecting within the tower and bolted together at their intersection, substantially as set forth.

11. A windmill-tower consisting of triangular sides set on parallel base-lines and inclined toward each other, each of such sides being made of side posts of channel-bar whose webs are transverse to the planes of the triangles, and ties and braces bolted to the webs of the channel-bars, substantially as set forth.

12. A windmill-tower composed of triangular sides consisting each of channel-bars set with their channels facing each other and secured together at their upper ends by means of the fitting J, said fitting having the fulcrum-bearing for the tilting tower, in combination with the corner-irons having an aperture at the angle to admit a shaft and the fitting having a corresponding aperture I^3, and the seat formed by the lugs i^2 for the pin I^2 at right angles to the axis of the shaft-aperture, and the shaft H, inserted diagonally through the mast and protruding at the corners through said apertures and pinned fast to the mast by the pins I^2, seated between the lugs i^2, substantially as set forth.

13. In combination with the tower, the mast fulcrumed thereon and having the axially-hollow terminal G and a counterbalance-weight P, having an axial aperture to receive the terminal G and permit the pump-rod to protrude through it, substantially as set forth.

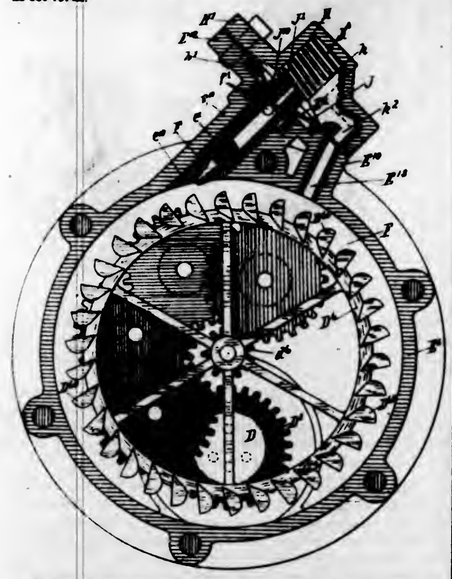
14. A windmill-tower consisting of opposite triangular sides, each made of side posts of channel-bar rigidly connected by cross-ties, the webs of the channel-bar being transverse to the planes of the triangles, substantially as set forth.

15. A windmill-tower comprising four corner-posts arranged in two pairs, a post of each pair having the web of the channel-bar in the plane of the web of the adjacent post of the other pair, substantially as set forth.

16. In a windmill-tower, in combination, substantially as set forth, the four corner-posts, and ties which rigidly unite said posts on three sides of the tower, the fourth side being left open to permit the mast to swing through it, the post which bounds each open side being made of channel-bar set with the web in the plane of such side.

485,884. VALVE-OPERATING MECHANISM FOR PNEUMATIC PUMPS. THOMAS O. PERRY, Chicago, Ill. Filed May 27, 1892. Serial No. 434,547. (No model.)

Claim.—1. In combination with the compressed-air chamber and the rotary valve which controls the escape of compressed air therefrom, a motor-wheel within the chamber and mechanism connected therewith adapted to rotate the valve, said motor-wheel being adapted to be actuated by an air-jet, a nozzle through which compressed air is admitted into the chamber, so located as to direct a jet of air upon the motor-wheel to actuate the same, a supplemental passage from the nozzle-cavity into the compressed-air chamber additional to the nozzle-orifice, a valve which seats against the air-pressure experienced within the nozzle-cavity, closing said supplemental passage when seated, and a spring tending to hold it on its seat against the pressure, whereby when the pressure in the nozzle becomes sufficient to overcome the tension of the spring said supplemental passage is opened and relieves the pressure and permits the compressed air to enter the chamber through the supplemental passage, substantially as set forth.



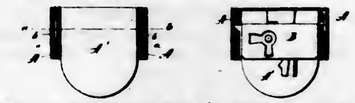
2. In combination with the compressed-air chamber and the rotary valve which controls the escape of air therefrom, the motor-wheel and mechanism connected therewith, which rotates the valve, the nozzle through which the compressed air is directed in a jet against the motor-wheel, the supplemental air-passage leading into the compressed-air chamber in a direction non-tangential to the motor-wheel, a valve which controls the supplemental passage, and a spring tending to seat the valve against the pressure in the nozzle-cavity, whereby the excess of pressure therein causes the supplemental passage to be opened and the air therein to be admitted into the chamber in a direction which does not actuate the wheel, substantially as set forth.

3. In combination with the compressed-air chamber, a rotary valve which controls the egress of air therefrom, a motor-wheel and mechanism connected therewith, which rotates the valve, a nozzle by which the compressed air is admitted to the chamber in a jet directed against the motor-wheel, a second chamber with which the nozzle-cavity communicates, a yielding partition in said second chamber, having an aperture through which the partitioned portions of the chamber may communicate, a seat or stop for the partition on the side thereof toward the communication of said chamber with the nozzle, said seat or stop being adapted to close the aperture when the partition is seated against it, and a spring reacting against the partition to force it to such seat or stop, said second chamber being provided with a passage leading into the compressed-air chamber from the side of the partition opposite the stop, whereby pressure in the nozzle-cavity operating against the partition tends to force the latter against the tension of the spring away from said stop and open a supplemental passage into the compressed-air chamber, substantially as set forth.

4. In combination with the compressed-air chamber, a rotary valve which controls the egress of air therefrom, a motor-wheel and mechanism connected therewith, which rotates the valve-nozzle, by which compressed air is admitted to the chamber by a jet directed against the motor-wheel and tending to operate it, a second chamber with which the nozzle communicates at a point remote from its jet-orifice, a yielding diaphragm pertaining to said chamber, a valve on such diaphragm, having the aperture through which the partitioned portions of the chamber may communicate, a seat for the valve on the side toward the nozzle, adapted to close said aperture when the valve is seated, and a spring reacting against the valve on the other side of the diaphragm to force it to such seat, said second chamber having a passage leading from the side of the diaphragm opposite the nozzle communication into the compressed-air chamber, substantially as set forth.

5. In combination with the compressed-air chamber, a rotary valve which controls the egress of air therefrom, a motor-wheel and mechanism connected therewith, which rotates the valve, a nozzle by which the compressed air is admitted to the chamber in a jet directed against the motor-wheel, a chamber into which the head of the nozzle protrudes and with which it communicates at its head, a diaphragm partitioning said chamber and carrying a valve, such valve having an aperture which leads through it, the head of the nozzle being in position to constitute a stop and seat for said valve at one side of the diaphragm, and a spring reacting against the valve on the other side to force it to such seat, the said second chamber having a passage leading from the side of the diaphragm opposite the nozzle into the compressed-air chamber, substantially as set forth.

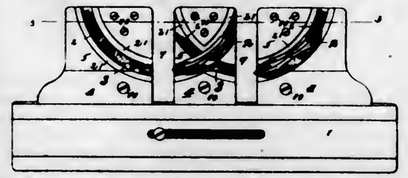
485,885. LOCK-CASE. JAMES ROGER, Terryville, Conn., assignor to the Eagle Lock Company, same place. Filed Aug. 22, 1892. Serial No. 443,625. (No model.)



Claim.—1. In a drawer-lock, the combination, with a body having flaring holding-wings constructed with perforations, of a cap having its ends constructed with retaining lips or fingers to enter the perforations in the said wing, substantially as set forth, and whereby the cap is held in place without perforating the front portion of the body and riveting the cap thereto.

2. In a drawer-lock, the combination, with a body having flaring holding-wings constructed with perforations, of a cap having its upper and lower sides turned inward to rest on the inner face of the said body, which forms the front plate of the lock, and having its ends constructed with retaining lips or fingers to enter the perforations in the said wings, substantially as set forth, and whereby the cap is held in place without perforating the front portion of the body and riveting the cap thereto.

485,886. BATTEN FOR LOOMS. OTTO W. SCHAUB, Philadelphia, Pa. Filed Aug. 23, 1892. Serial No. 443,891. (No model.)



Claim.—1. The combination, with the shuttles, of the batten-blocks formed with the curved or arc-shaped grooved paths or circles for the shuttles and having the faces thereof adjacent to said paths slightly rabbeted or depressed below the general level of the surface, substantially as described.

2. The combination, with the shuttles, of the batten-blocks formed with the curved or arc-shaped paths or circles for the shuttles and having the faces thereof adjacent to said paths slightly rabbeted or depressed below the general level of the surface, with the bottoms of the rabbets at all points equidistant from the inner portions of the grooves, substantially as described.

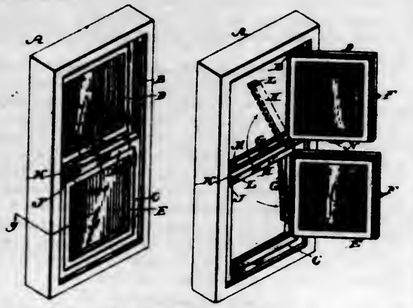
485,887. REVERSIBLE WINDOW-SASH. GOTTLIEB SCHMIDT, Philadelphia, Pa. Filed Oct. 31, 1891. Serial No. 410,436. (No model.)

Claim.—1. A reversible window-sash consisting of two inner and two outer frames, each of the outer frames having vertically-movable side stiles and hinged meeting-rails and each of the inner frames being hinged to a side stile of an outer frame, substantially as described.

2. A reversible window-sash having a hinged meeting-rail and a side stile on which the meeting-rail closes, said rail and stile having tenon-and-mortise joints, substantially as described.

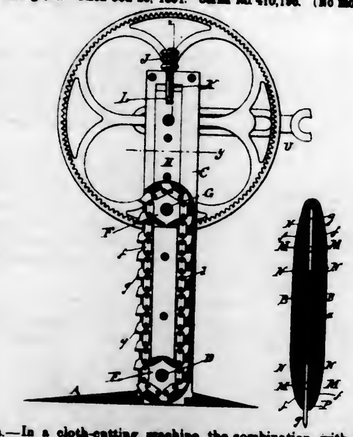
3. A reversible window-sash having an inner and outer frame, the inner frame being hinged to the outer frame and the outer frame

having a hinged meeting-rail, said parts being combined substantially as described.



4. A window-sash having hinged meeting-rails, a pivoted latch secured to a meeting-rail, and a controlling-spring for said latch, said parts being combined substantially as described.

485,888. CLOTH-CUTTING MACHINE. JACOB M. SCHOLLENBERGER, Chicago, Ill. Filed Oct. 29, 1891. Serial No. 410,196. (No model.)



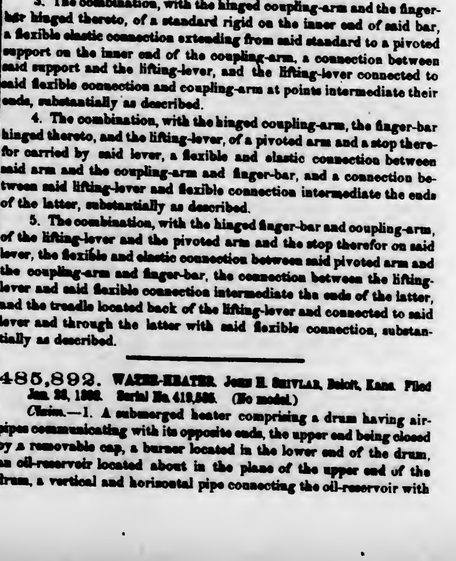
Claim.—In a cloth-cutting machine, the combination, with the foot-plate thereof, of a standard mounted thereon, said standard at its top portion provided with ways, a vertically-adjusting block mounted on the ways, two sprocket-wheels, one mounted in the lower portion of said standard and the other mounted in the lower end of said block, the drive-shaft having bearings in said block, adjustable with it and rigid to the upper sprocket-wheel, an endless-chain cutter mounted on the sprocket-wheels, said standard internally provided with grooves fitting the flat sides of the links of the chain and with grooves of less depth fitting the flat sides of the cutting-knives at both sides of said links, and the cutting-knives projecting through a groove in the front edge of the standard, substantially as and for the purpose specified.

485,889. WITHDRAWN.

485,890. SHAFT-BEARING. CASPER F. SEABER, Appleton, Wis., assignor to the Appleton Manufacturing Company, same place. Filed Feb. 6, 1892. Serial No. 420,982. (No model.)

Claim.—The combination, with the A-frame members socketed at their upper ends, of a ball-bearing and a two-part box to receive the bearing, said box having its lower member fitted to the socket and provided with an integral flange or web depending between the upper ends of the A-frame members, and a clamping-bolt passing through apertures in the ends of said members and in said web, whereby to clamp the parts together, substantially as described.

485,891. MOWING-MACHINE. JOHN F. SHERRELINE, Akron, Ohio. Filed Mar. 21, 1892. Serial No. 425,746. (No model.)



Claim.—1. The hinged coupling-arm, the finger-bar hinged thereto, and the lifting-lever, in combination, with a flexible and elastic connection between said finger-bar and lever, a pivoted support for said connection on the inner end of the coupling-arm, and a cord or chain connecting the lifting-lever with said flexible connection at a point intermediate the said support and the finger-bar, substantially as described.

2. The combination of the hinged coupling-arm, the finger-bar hinged thereto and having a rigid standard on its inner end, a lifting-lever, and a flexible elastic connection between said standard and lever, a pivoted support on the inner end of the coupling-arm, through which said connection extends to said lever, the lever being further connected with said flexible connection at a point intermediate the pivoted support and the finger-bar, substantially as described.

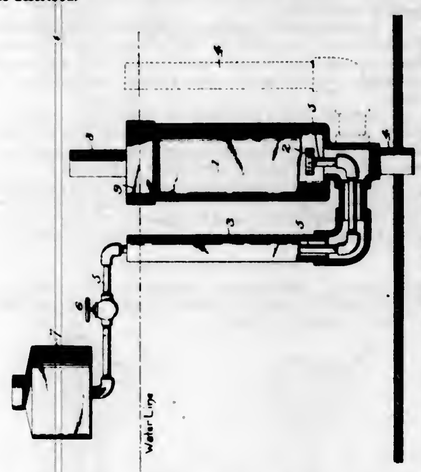
3. The combination, with the hinged coupling-arm and the finger-bar hinged thereto, of a standard rigid on the inner end of said bar, a flexible elastic connection extending from said standard to a pivoted support on the inner end of the coupling-arm, a connection between said support and the lifting-lever, and the lifting-lever connected to said flexible connection and coupling-arm at points intermediate their ends, substantially as described.

4. The combination, with the hinged coupling-arm, the finger-bar hinged thereto, and the lifting-lever, of a pivoted arm and a stop therefor carried by said lever, a flexible and elastic connection between said arm and the coupling-arm and finger-bar, and a connection between said lifting-lever and flexible connection intermediate the ends of the latter, substantially as described.

5. The combination, with the hinged finger-bar and coupling-arm, of the lifting-lever and the pivoted arm and the stop therefor on said lever, the flexible and elastic connection between said pivoted arm and the coupling-arm and finger-bar, the connection between the lifting-lever and said flexible connection intermediate the ends of the latter, and the treadle located back of the lifting-lever and connected to said lever and through the latter with said flexible connection, substantially as described.

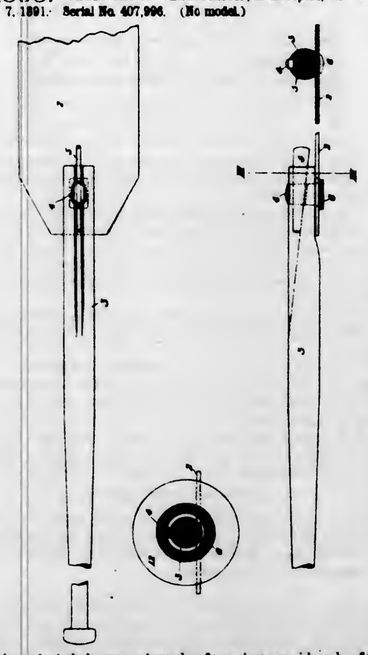
485,892. WATER-HEATER. JOHN H. SHIVLAR, Beloit, Kans. Filed Jan. 28, 1892. Serial No. 419,585. (No model.)

Claim.—1. A submerged heater comprising a drum having air-pipes communicating with its opposite ends, the upper end being closed by a removable cap, a burner located in the lower end of the drum, an oil-reservoir located about in the plane of the upper end of the drum, a vertical and horizontal pipe connecting the oil-reservoir with the burner, and a valve in the horizontal portion of the said pipe to control the flow of oil therethrough, substantially as and for the purpose described.



2. The combination, with a watering-trough, of the hereinbefore shown and described submerged heater, composed of a drum having pipe 4 at its lower end to project through the bottom of the trough to supply air to the burner and support the heater in the trough and having a removable cap at its upper end provided with pipe 8, a burner located in the lower end of the drum, an oil-reservoir arranged above the trough, a vertical and a horizontal pipe connecting the said reservoir with the burner and having valve 6 in the horizontal pipe, and a pipe 3, surrounding the said vertical pipe and connected with the pipe 4, substantially as shown, for the purpose described.

485,893. SKELP-TANG. JAMES SIMPSON, McKeesport, Pa. Filed Oct. 7, 1891. Serial No. 407,996. (No model.)



Claim.—1. A skelp-tang adapted to fit against one side only of the skelp-plate and having a pin oblong in cross-section with its greater dimension extending longitudinally of the tang and adapted to fit in a correspondingly-shaped slot in the skelp, substantially as and for the purposes described.

2. A skelp-tang having a separable and removable pin oblong in cross-section with its greater dimension extending longitudinally of the tang and adapted to fit in a hole in the skelp and to hold the same, substantially as and for the purposes described.

3. The combination, with a skelp-tang, of a pin oblong in cross-section adapted to fit in a hole in the skelp and a key set in a groove in the tang and adapted to pass through a slot in the pin, substantially as and for the purposes described.

4. The combination, with a skelp-tang, of a pin oblong in cross-section adapted to fit in a hole in the skelp and a tapered key set in a groove in the tang and adapted to pass through a slot in the pin, substantially as and for the purposes described.

5. In a pipe-welding apparatus, the combination, with the bell, of a skelp-tang adapted to fit against the side of the skelp and of such thickness relatively to the bell as to project laterally from the skelp a distance at least equal to the internal radius of the bell, whereby in drawing the skelp rise of the same above the center of the bell and consequently reverse bending thereof are prevented, substantially as and for the purposes described.

485,894. RAILWAY-GATE. WESLEY SMITH, Toledo, Ohio. Filed Oct. 27, 1890. Serial No. 369,537. (No model.)

Claim.—1. The combination, with a swinging gate, of an oscillating standard to which said gate is pivoted and a connecting-brace pivoted at one end to a support and at the other to the gate, its pivotal points being respectively at opposite sides of the ends of the oscillating standard.

2. The combination, with a rock-shaft, of a standard rigidly attached thereto, a gate pivoted to said standard, a brace pivoted at one end to the gate and at the other to a convenient support, its pivotal points being respectively on opposite sides of the standard, an arm secured to the rock-shaft, a reciprocating rod loosely connected to the arm, a frame in which said rod moves, and springs between the ends of the rod and frame.

3. In a railway-gate, a gate-mast, a rock-shaft, a standard connecting the mast and the shaft, and a brace connecting the mast and base, in combination with a rod connecting through interposed mechanism with the shaft, springs carried by the rod and exerting pressure in opposite directions, and means for increasing or diminishing the tension of the springs.

4. In a railway-gate, a casing, a rod movable therein, and springs carried by the rod and bearing against the casing, in combination with a rock-shaft, an arm carried thereby and connecting with the rod, a gate-mast, and a standard connecting the rock-shaft and the gate, in combination with a brace connecting the gate and base.

5. In a railway-gate, a casing, a rod movable therein having a vertical slot, and springs mounted on said rod and bearing against the

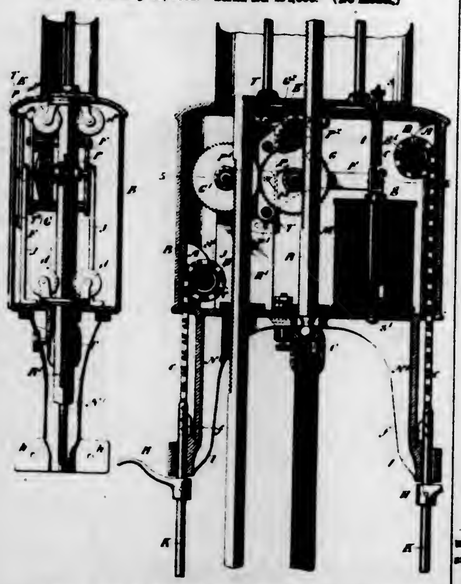
outer surface of the casing in combination with a rock-shaft, an arm carried thereby having a pin engaging the said slot, a gate-mast, and a standard carried by the shaft and connected with the gate, and a brace connecting the gate and base.

6. In a railway-gate, the combination, with a gate, of a rock-shaft, a spring-carrying sliding rod connected therewith, a standard carried by the shaft, the upper end of which is pivotally connected with the gate-mast, a brace connecting the gate and base, and mechanism for actuating the shaft to raise or to lower the said gate.

7. In a railway-gate, the combination, with a gate-mast, of a rock-shaft, a spring-carrying sliding rod connecting with the shaft, a standard carried by the shaft, the upper end of which is pivoted to and supports the front portion of the mast, a brace pivoted to the base of the gate and connecting with and supporting the rear portion of the mast, and mechanism for actuating the said shaft to raise or to lower the mast.

8. The combination, with a rock-shaft, of a standard connected therewith and carrying a gate, and a reciprocating counterbalanced rod connected, also, with the rock-shaft and adapted to regulate the movement of the same.

485,895. ELECTRIC-ARC LAMP. JAMES R. STERRE, New York, N. Y. Filed May 28, 1892. Serial No. 434,602. (No model.)



Claim.—1. In an arc lamp, a pair of carbon-supporting racks, a pair of pinions adapted to mesh with said racks, one of said pinions being carried by a shaft journaled in the frame of the lamp and the other by a second shaft journaled in a pivoted supporting-frame, in combination with intermediate gearing, escapement mechanism, and an adjustable tilting regulating-plate located in the path of the escapement-pallet, substantially as described.

2. In an arc lamp, a pair of carbon-supporting racks and a pinion for each rack, one of which is carried by a shaft journaled in the frame of the lamp and the other by a second shaft journaled in a pivoted frame, said shafting being operatively connected together by intermediate gearing, in combination with an escapement-pallet carried by the pivoted frame and controlled by gear-wheels operatively connected with the aforesaid gearing with a beveled tilting plate lying in the path of a pin borne by the escapement-pallet and means for adjusting said pivoted plate, whereby the length of the arc may be regulated at will, substantially as described.

3. A pair of rectangular-shaped carbon-supporting racks held in position by guide-rolls secured to the body of the lamp, in combination with a pinion for each rack, one of said pinions being carried by a shaft journaled to the frame of the lamp and the other by a shaft journaled in a pivoted frame, gear-wheels uniting the two shafts, an escapement-pallet carried by the pivoted frame and operatively connected to the aforesaid gearing through intermediate gear-wheels, a stop-pin on one end of the escapement-pallet, and a beveled tilting plate located in the path of said pin with an adjustment-screw for regulating the position of the plate, substantially as described.

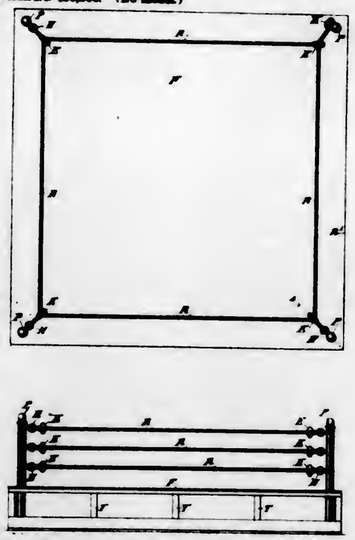
4. A globe-support consisting of a bent rod secured to the base of the globe and a pair of chains or cords attached to the ends of the rod and to spring-actuated drums in the body of the lamp, substantially as described.

5. A globe-support consisting of a single bent rod attached at its middle to the globe and at its ends to chains or cords passing around spring-actuated drums located in the body of the lamp, in combination with locking and releasing devices, substantially as described.

6. In an arc lamp, a protecting ring or collar for the globe, secured to the body of the lamp, and a globe-holder having vertical sliding sustaining devices operatively connected with spring-actuated drums in the body of the lamp, substantially as described.

7. In an arc lamp, a detachable globe-holder having a sustaining device inside the globe operatively connected with spring-actuated drums in the body of the lamp and a spark-cup detachably secured to the globe-holder beneath the globe, substantially as described.

485,896. BOXER'S RING. GEORGE E. STORAY, Jr., New York, N. Y., assignor to Eugene Van Schaick, same place. Filed Apr. 15, 1892. Serial No. 429,266. (No model.)



Claim.—1. A boxer's ring consisting of a platform and one or more ropes sustained by guys or stays attached to corner-posts, substantially as described.

2. A platform, corner-posts secured thereto, and one or more ring-ropes attached to said corner-posts by short stays or guys, substantially as described.

3. A platform and one or more ring-ropes supported above said platform by corner stays or guys attached to fixed points, substantially as described.

4. A boxer's ring consisting of a series of ropes sustained at various points by guys or stays attached to fixed supports, substantially as described.

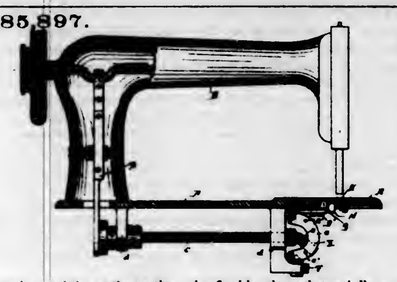
5. A boxer's ring consisting of a series of ropes threaded through eyes in the ends of short stays or guys attached to corner-posts, in combination with means for securing the ropes under tension, substantially as described.

6. A boxer's ring consisting of one or more ropes secured to corner-posts by elastic or yielding guys or stays and held under tension by means secured to one of the posts, substantially as described.

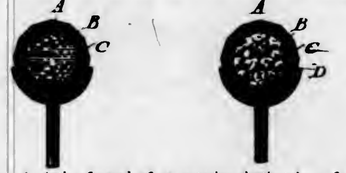
485,897. SHUTTLE-ACTUATING MECHANISM FOR SEWING-MACHINES. ROSWELL H. ST. JOHN, Cleveland, Ohio, assignor to the Standard Sewing Machine Company, same place. Filed Dec. 19, 1890. Serial No. 376,173. (No model.)

Claim.—In a sewing-machine, a shuttle-operating shaft having its front end bent at an angle to its body, in combination with a semi-circular yoke having a bearing-space between its sides for the bent end of the said shaft and its concave or open edge inside in respect to the shaft, and its ends supported pivotally equal distances above and below the axis of the said shaft, and a shuttle-carrying arm rigid with said yoke at right angles to the axis of said yoke, substantially as described.

485,897.



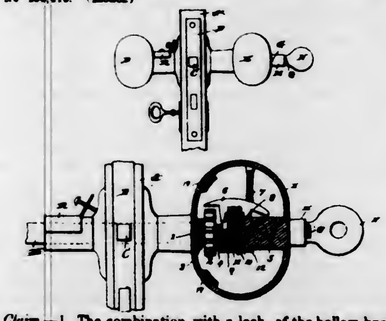
485,898. TIRE FOR BICYCLE-WHEELS. THOMAS H. SWEETING, Philadelphia, Pa. Filed June 15, 1892. Serial No. 436,796. (No model.)



Claim.—1. A tire formed of an exterior elastic tube, a flexible inner strengthening-tube, a liquid within said tubes, and an absorbent material in said liquid, said parts being combined substantially as described.

2. A tire formed of an exterior elastic tube having an anguiar contact outer face, a flexible inner tube, a liquid filling within said tube, and an absorbent material in said liquid, said parts being combined substantially as described.

485,899. LOCK. AUGUST O. TANNENBERG, New Orleans, La., assignor to William H. Bolinger, same place. Filed Sept. 21, 1891. Serial No. 406,419. (Model.)

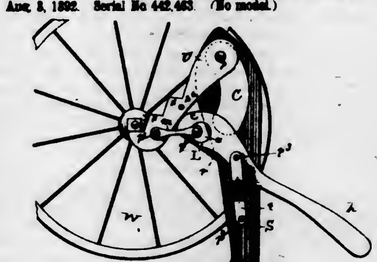


Claim.—1. The combination, with a lock, of the hollow knob E, having the block or bearing 5 therein, and also having the stud 3, the spindle having the ratchet-wheel 2 on the end within the hollow knob, and also having the spiral spring surrounding the spindle between the inner wall of the knob and the ratchet, the pivoted spring-backed tumbler also arranged in the knob, and the spring-actuated pivoted lever 6, the whole adapted to operate with a key, substantially as specified.

2. The combination, with a door-lock, of the spindle passing through the same, the knob D on the square end of said spindle, a knob on the opposite end of said spindle, which latter knob is provided with means whereby it may be locked, so as to turn with the spindle, and also allowed to turn independently thereof, and the plate R, secured to the shank of the knob D and carrying a stop-screw, whereby the loose knob may be fixed to the spindle so as to turn therewith, substantially as specified.

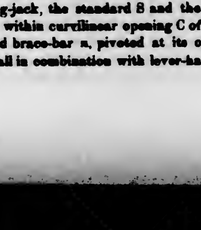
485,900. COMBINED SIDE AND CENTER BRACE ATTACHMENT FOR STEP-LADDERS. AUGUST O. TANNENBERG, New Orleans, La., assignor to William H. Bolinger, same place. Filed Apr. 14, 1892. Serial No. 428,998. (No model.)

Claim.—1. In a step-ladder, the combination, with the front part A, the rear part B, having lateral studs, and the links b, connecting the rear part to the front part, of the braces D, pivotally connected to the front part A and having notches or slots in their lower edges at intermediate points in their length to engage the lateral lugs of the part B, substantially as and for the purpose set forth.



2. In a step-ladder, the combination, with the front part A and the rear part B, connected to the front part, of the lateral braces C, having their upper ends flexibly connected to the sides of the front A and also having the lateral headed lugs *d* and the arms G, pivotally connected to the front part A and having the holes *a* at intermediate points in its length provided with the offsets *c*, substantially as and for the purpose set forth.

485,901. SPARK-ARRESTER. JOHN THORNTON, Melbourne, Victoria. Filed Oct. 13, 1891. Serial No. 408,582. (No model.)



Claim.—1. A spark-arrester consisting of a cylindrical or a conical shaped cage formed of rings linked together, forming a netting, which is left slack and so located as to surround the space between the opening leading to the funnel and top of exhaust-pipe.

2. In combination with the funnel of a locomotive, a vibratory netting formed of rings linked loosely together and forming a partition between the funnel and the smoke-box.

485,902. LIFTING-JACK. GEORGE C. WIMPER, Rome, Ga. Filed Aug. 3, 1892. Serial No. 442,463. (No model.)

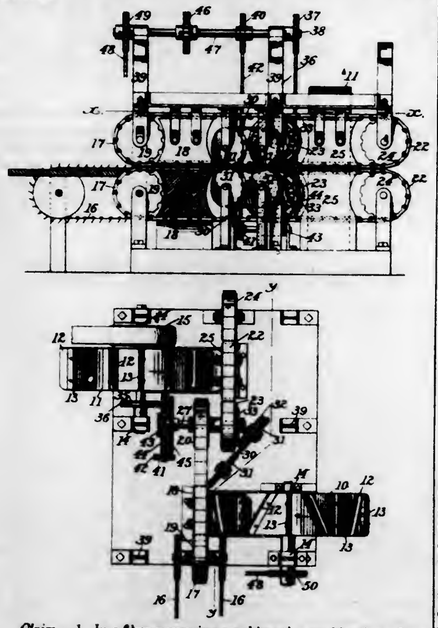
Claim.—1. A wagon-jack having an upright standard extending from a base-support, the upper end of which standard has curvilinear opening C, revolvable roller R, and stepped lever U, the upper end of which is pivoted to said roller, which is adjusted within opening C and adapted to move reciprocatingly in said opening, the opposite end of said lever being pivotally connected by brace *m* to operating-lever pivoted within upper end of bracket *t* to standard S, all in combination with lever L, substantially as described.

2. In a lifting-jack, the standard S and the revolvable roller R, adjusted to move within curvilinear opening C of said standard, stepped lever U, and brace-bar *n*, pivoted at its opposite ends to said roller and brace, all in combination with lever-handle L, substantially as described.

3. A lifting-jack having a standard S, provided at its upper end with curvilinear opening C, roller R, eccentrically pivoted at the upper end of lever U, all in combination with cam-head *c* of lever L, eccentrically linked to lower end of lever U, as and for the purpose intended, substantially as described.

485,908. FIBER-PREPARING MACHINE. JOHN L. ACOSTA, Vera Cruz, Mex. Filed June 22, 1892. Serial No. 437,632. (No model.)

Brief.—An improvement on the patent granted to the same inventor May 3, 1892, No. 474,052. The improvement consists in placing between the two sets of carrying-chains a pair of obliquely-disposed chains which serve to guide the fiber from one set of chains to the other.



Claim.—1. In a fiber-preparing machine, the combination of two sets of fiber-carrying chains arranged one after the other but offset in different planes, fiber-cleaning devices disposed on opposite sides of said chains, and obliquely-disposed chains between the two sets of carrying-chains to guide the fibers from the first set of chains to the second set, substantially as shown and described.

2. In a fiber-preparing machine, the combination of two fiber-cleaning wheels having their axes parallel but offset in different planes and having their peripheries overlapping, two sets of fiber-carrying chains offset in different planes and obliquely-disposed chains between the two sets of carrying-chains to guide the fibers from the first set of chains to the second set, substantially as shown and described.

485,904. METHOD OF MANUFACTURING OR BURNING COKE. JAMES C. ANDERSON, Highland Park, Ill. Filed Apr. 16, 1888. Serial No. 307,443. (No model.)

Claim.—1. The process of coking coal, which consists in passing a train of cars loaded with coal to be coked into a tunnel-like furnace having means for heating such furnace, substantially as shown and described, subjecting the coal upon the front cars to the action of such heating until it becomes properly ignited, then cutting off or dispensing with such means of heating the furnace and firing the coal and employing and using the products of combustion furnished by the gases of the coal undergoing the process of coking, and in the meantime moving the train so loaded with coal forward through the furnace toward the point of combustion and passing the cars out of the furnace at the end opposite that in which they entered as the coking is completed on each successively, thus constituting a continuous method of coking, substantially as set forth and described.

2. The method herein described of coking, which consists in loading the coal upon a series of cars, igniting the coal upon the initial end of the train in any well-known manner, then passing the loaded cars consecutively through a tunnel-way, utilizing the heat from the successively-burning loads to heat the tunnel-way and ignite and coke the charges of coal on the succeeding cars, and finally passing the cars out of the tunnel-way at the opposite end to that in which they enter, thus constituting a continuous and progressive method and avoiding frequent handlings.

485,905. FOLDING UMBRELLA. AIMÉ BEAUCHAMP, Fitchburg, Mass., assignor of one half to Jules J. Girard, same place. Filed July 19, 1892. Serial No. 440,460. (No model.)

Claim.—1. In an umbrella, a series of ribs made in two parts and fitted to be telescopically movable endwise one within the other, in combination with two runners and two sets of stretchers, one set connecting one of the runners to the tubular sections of said ribs and the other set connecting the other runner by independent movable attachments to the other rib-sections.

2. In an umbrella, the combination of a series of ribs made in two parts telescopically connected and movable one upon or within the other, two independent runners, a series of stretchers connecting one of said runners to fixed ears on the tubular rib-sections, a series of sleeves fitted loosely to and movable endwise on the other rib-sections above and entirely disconnected from the tubular-rib-sections, and a second series of stretchers connecting the other of said runners to ears on said sleeves.

3. In an umbrella, the combination of the stick A, the runners D and E, the latter provided with the slot *j*, the spring-catches *i* and *k*, a series of ribs made in two sections telescopically connected and movable one upon or within the other, a series of stretchers connecting the runner D to fixed ears on one series of the rib-sections, a series of movable sleeves mounted one on each of the other rib-sections, and a second series of stretchers connecting the runner E to said sleeves.

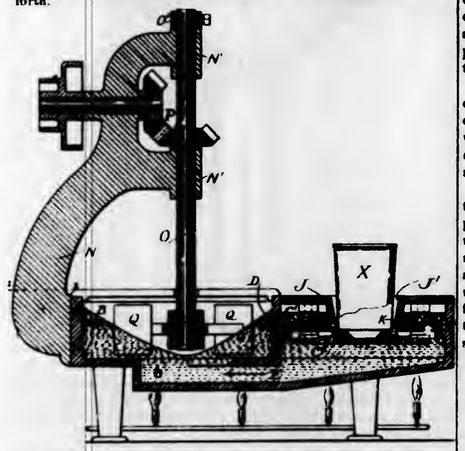
485,906. PROCESS OF AND MACHINE FOR SOLDERING. CHARLES M. BROWN, Chicago, Ill. Filed Dec. 19, 1891. Serial No. 415,638. (No model.)

Claim.—1. The process of soldering consisting in forming a bath of molten solder, imparting to it a swift motion, and causing its surface to slope to such an extent that an article having a flat unsunken bottom may be immersed therein far enough to submerge either a bottom seam or a side seam without bringing any considerable portion of its bottom in contact with the solder, and immersing in the sloping surface of the moving molten solder the article to be soldered until its joint is submerged, but without bringing any considerable portion of its bottom in contact with the solder, substantially as described.

2. The process of soldering consisting in forming a bath of molten solder, imparting to it a swift motion, and causing its surface to assume a concave form and to slope to such an extent that an article having a flat unsunken bottom may be immersed therein far enough to submerge either a bottom seam or a side seam without bringing any considerable portion of its bottom in contact with the solder, and immersing in the sloping concave surface of the moving molten solder the article until the entire joint to be soldered is simultaneously submerged, but without bringing any considerable portion of the bottom in contact with the solder, substantially as described.

3. In soldering machinery, means for causing the molten solder to circulate in a continuous current, in combination with means for supporting the article to be soldered and presenting the seam to be soldered only in contact with the said current, whereby a portion of the latter seals the joint, substantially as set forth.

4. In soldering machinery, in combination, means for causing the molten solder to circulate in a continuous current, means for causing the said current to fall from a higher to a lower level at one part of its circuit, and means for supporting the article to be soldered and presenting the seam to be soldered to the soldering-current as it descends from the higher to the lower lever, whereby the requisite portion of the solder is absorbed and seals the joints, substantially as set forth.



5. The process of soldering consisting in melting the solder, causing a greater quantity than is required for sealing the joint to flow from a higher to a lower level in a continuous stream the shape of which is horizontal cross-section corresponds to the outline of the joint to be sealed and immersing the joint to be sealed in the solder as it falls in a stream from the higher to the lower level, so that all parts of said joint are simultaneously brought in contact with the solder, substantially as herein described.

6. A soldering-machine having, in combination, two chambers, an opening through which solder flows from one chamber into the other, the bottom of the chamber into which the solder flows being located below the level of the opening, so that the solder flowing therefrom falls in a stream, and means for taking the solder from the lower chamber and returning it to the upper one, substantially as set forth.

7. In a soldering-machine having, in combination, the chamber C', the opening Z, extending vertically through said chamber and adapted to admit the article to be soldered, and the solder-discharge opening K near the bottom of said opening, substantially as set forth.

8. In a soldering-machine, the combination, with the compartment C, of the horizontal partition I, dividing it into upper and lower chambers C' and C³, and having the opening *i* and the flange J', extending upward from the partition I, and leaving the solder-discharge opening K, substantially as set forth.

9. The combination, with the chamber C', having the vertical opening Z and the solder-discharge opening K, communicating with said opening, of a stop situated opposite and below the opening Z for limiting the insertion of the article, substantially as set forth.

10. The combination, with the compartment C, of the horizontal partition I, dividing it into chambers C' and C³, and having opening *i*, through which said chambers communicate, and the plate J, having opening *j* for admitting the article, and flange J', projecting downward toward the partition I, leaving the opening K, through which solder flows from the chamber C', substantially as set forth.

11. The combination, with a chamber having the vertical opening Z for receiving the article to be soldered and the solder-discharge opening K, communicating with said opening Z, of a stop for limiting the insertion of the article, situated opposite and below the opening Z, and consisting of open frame M and means for supporting it, substantially as set forth.

12. The combination, with the compartment C, of the horizontal partition I, having opening *i*, the plate J, supported by said partition and having opening *j* and flange J', extending downward and leaving opening K, and the rest M, having arms *m*, secured to the partition I, substantially as set forth.

13. The combination, with the chamber C', having a solder-discharge opening K, and the chamber C³, having its bottom located below said opening, so that the solder flowing therefrom falls in a stream, of the compartment B, passages connecting it with both of said chambers, and means in said compartment for forcing the solder into the upper chamber C', whence it flows through the opening K back to the lower chamber C³, substantially as set forth.

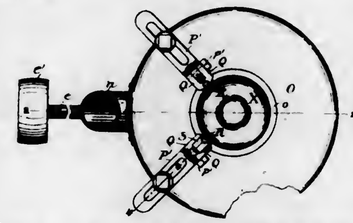
14. The combination, with the upper chamber C', having a solder-discharge opening, and the lower chamber C³, of the compartment B, passages connecting it with both of said chambers, and a rotary stirrer in said compartment, substantially as set forth.

15. The combination, with the chamber C', having a discharge-opening, and the lower chamber C³, of the compartment B, having a centrally-located opening in the floor thereof, a passage connecting said opening with the compartment C³, a passage connecting the compartment B and a chamber C', and means for producing a rotary motion of the solder in said compartment, substantially as set forth.

16. The combination, with the chamber C', having a discharge-opening, and the lower chamber C³, of the compartment B, a passage extending tangentially from the compartment B and communicating with chamber C', a passage connecting said compartment and the lower chamber C³, and a rotary stirrer in said compartment, substantially as set forth.

17. The combination of the receptacle A, having transverse partition D and longitudinal partition G, forming compartments B C and passage F', and the openings *b* and *c* in the floors of said compartments, respectively, the passage E, connecting said openings, the horizontal partition I, dividing compartment C into upper chamber C' and lower chamber C³, and having opening *i*, the flange J', extending upward and leaving opening K, and means for causing the solder to flow from compartment B into passage F, thence into chamber C', thence through opening K into chamber C³, and thence through passage E back to compartment B, substantially as set forth.

485,907. PROCESS OF AND MACHINE FOR SOLDERING. CHARLES M. BROWN, Chicago, Ill. Filed Dec. 19, 1891. Serial No. 415,634. (No model.)



Claim.—1. The process of soldering consisting in placing a quantity of molten solder in a receptacle having high sides, imparting to the solder a swift rotary motion, causing its surface to assume a concave form and to slope to such an extent that an article having a flat unsunken bottom may be immersed therein far enough to submerge either a bottom seam or a side seam without bringing any considerable portion of its bottom in contact with the solder, and immersing the article in the sloping concave surface of the swiftly-moving molten solder until the joint to be sealed is submerged, but without bringing any considerable portion of its bottom in contact with the solder, substantially as described.

2. The process of soldering which consists in placing a quantity of molten solder in a cup having high sides, imparting to the cup a swift rotary motion, causing the surface of the solder to assume a concave form and to slope to such an extent that an article having a flat unsunken bottom may be immersed therein far enough to submerge either a bottom seam or a side seam without bringing any considerable portion of the bottom in contact with the solder, and immersing the article in the sloping concave surface of the swiftly-moving molten solder until the joint to be sealed is submerged, but without bringing any considerable portion of the bottom in contact with the solder and without bringing said bottom in contact with the solder-cup, substantially as set forth.

3. The combination of a solder-cup, means for rotating the cup, and a drum surrounding the cup for catching particles of solder that are thrown off by centrifugal force, substantially as set forth.

4. The combination of a solder-cup, means for rotating it, a drum surrounding said cup, and a cover resting on said drum and having an opening opposite the cup, substantially as set forth.

5. The combination, with a revolvable solder-cup and means fo.

revolving it, of a guide situated so as to hold the article concentric with the cup while being soldered, substantially as set forth.

6. The combination, with a solder-cup and means for rotating it, of the vertical guide-rods R and means for adjusting them toward or from the center of motion of said cup, substantially as set forth.

7. The combination, with a solder-cup and means for rotating it, of the slides F', adjustable toward or from the center of motion of said cup, the clamp-plates Q, and the vertical rods R for centering the article, substantially as set forth.

8. The combination, with a solder-cup and means for rotating it, of means for centering the article and a guide S for indicating the distance to which it should be immersed, substantially as set forth.

9. The combination, with a solder-cup and means for heating it, of a vertical spindle to which said cup is secured and adjustable gearing for rotating said spindle at different speeds, substantially as set forth.

10. The combination, with the solder-cup and the vertical spindle C, of the disk D, the shaft *e*, the brush-wheel E, adjustable longitudinally on said shaft, and means for driving said shaft, substantially as set forth.

11. The combination, with the solder-cup and the spindle C, of the disk D, the shaft *e*, the brush-wheel E, splined thereto and having annular groove e^3, the endless screw J, the nut I' thereon, and the arm i, projecting from said nut and engaging the groove e^3, substantially as set forth.

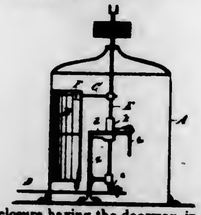
12. The combination, with the solder-cup and the spindle C, of the disk D, the brush-wheel E, adapted to engage said disk, and means for moving said wheel out of contact with said disk, substantially as set forth.

13. The combination, with the solder-cup and the spindle C, of the shaft *e*, to which said wheel is secured, the movable boxes F F', in which said shaft is journaled, a spring for holding the box F' normally elevated, and means for transmitting motion from shaft *e* to spindle C, substantially as set forth.

14. The combination, with the solder-cup and spindle C, of the shaft *e*, the box F', the lever H, by which said box is carried, the dog I, the spring G for holding the box normally elevated, and means for transmitting motion from the shaft *e* to the spindle C when the former is in its elevated position, substantially as set forth.

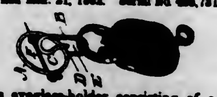
15. The combination, with the vertical spindle C and means for rotating it, of the spider B, having the annular flange *b*, and the collar C', secured to the spindle and having the annular groove in which said flange fits, substantially as set forth.

485,908. **SWITCH-STAND.** GUSTAVE COOK, New Orleans, La., assignor of one-half to William H. Bolinger, same place. Filed Oct. 22, 1891. Serial No. 409,566. (No model.)



Claim.—The inclosure having the doorway, in combination with the guard H, arranged on the inner side at the base of the cage, the slidable door having the hooks G on its inner side and at its base and taking into the guard H, the switch-stand within the cage, the target-rod arranged in the stand, the switch-rod connected with the lower end of the target-rod, as described, and the arms securing the door to the target-rod in such a manner that the turning of said rod to set the switch to the siding will close the door of the cage and the turning of the rod to reset the switch will open the door, substantially as specified.

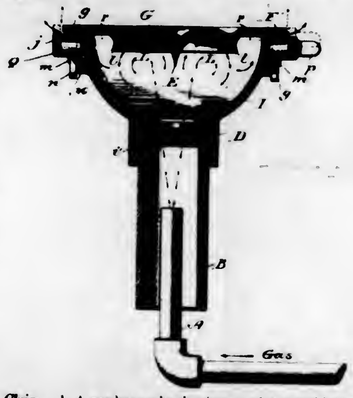
485,909. **SPECTACLE-HOLDER.** WILLIAM A. COPELAND, New York, N. Y. Filed Mar. 21, 1892. Serial No. 425,731. (No model.)



Claim.—1. An eyeglass-holder consisting of a ring having a fastening-pin on its rear side and a hook on the front side, said hook being secured at one end to the ring and turned back upon itself and having a crook or bend at its free end and projecting over or across the ring-opening and extending inward beyond the plane of the front side of the ring, substantially as described.

2. An eyeglass-holder consisting of a ring having a fastening-pin on its rear side and a hook on its front side, said hook being secured at one end to the ring by a joint G and projecting over or across the ring and extending inward beyond the plane of the front side of the same, substantially as described.

485,910. **GAS-BURNER.** CYRUS S. DEAN, Port Erie, Canada, assignor, by direct and mesne assignments, of two-thirds to Charles O. Rand, Buffalo, N. Y. Filed Apr. 30, 1892. Serial No. 431,264. (No model.)



Claim.—1. A gas-burner having its cap-plate provided on its inner face with an inverted cone and with an annular rib concentric with the said cone, the sides of the said cone and rib curving symmetrically to form the annular chamber L, and having the annular space *r* exterior to the said annular rib and within the gas-exit, substantially as described, for the purpose specified.

2. A gas-burner having an imperforate cap-plate provided on its inner face with a centrally-disposed inverted cone and with a concentric annular rib which curves symmetrically to form the annular chamber L, substantially as and for the purpose described.

3. The combination, with a gas-burner having a lateral discharge for the gas, of a ring encircling the said burner and means for moving the said ring vertically to deflect the flame more or less from the horizontal, substantially as described.

4. The combination, with a gas-burner having a lateral discharge for the gas, of an annular ring surrounding the burner and mutually-coacting pins and cams to effect a vertical adjustment of the said ring to deflect the flame more or less from the horizontal, substantially as and for the purpose described.

5. The combination, with a gas-burner having a lateral discharge for the gas and having a bowl portion and projections M and pins *m*, of a flame-deflecting ring encircling the burner and guided in its vertical movements by the said projections M and having cam portions to engage with and ride upon the said pins and having stops at the ends of the said cam portions to engage with the said pins and limit the movements of the ring in each direction, substantially as set forth.

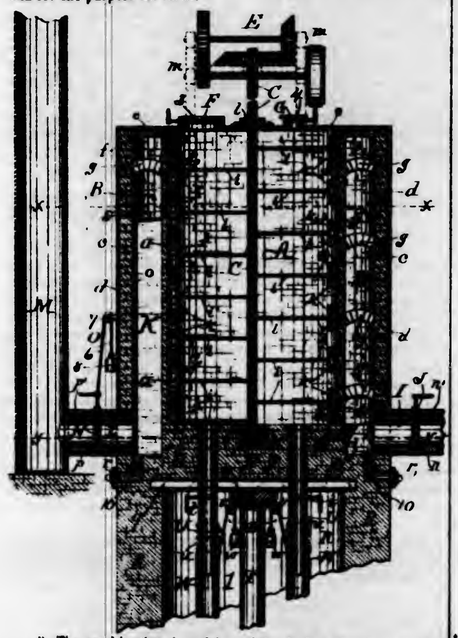
6. The combination, with a gas-burner having an inverted cone depending from its cap-plate, of a tube B of uniform diameter, having its upper end contracted and provided with an opening of less diameter than the bore of the said tube and communicating with the gas-burner directly opposite the apex of the said inverted cone and a gas-pipe of less diameter than the bore of the said tube and inserted within the same to a proper distance, substantially as and for the purpose specified.

485,911. **DRIER.** ELLSWORTH DE LANY, Syracuse, and JAMES DOOLEY, Jr., Camillus, N. Y. Filed Sept. 23 1891. Serial No. 407,090 (No model.)

Claim.—1. The combination, in a drier, of the drying-chamber A, the heating and combustion chamber B, encircling said drying-chamber, a receiving-chamber H at the lower end of said heating and combustion chamber at one side thereof, an ingress-flue leading to the side of said receiving-chamber, an escape-chamber K in the opposite side of said heating and combustion chamber, a stack having communication with said escape-chamber through an egress-flue L, and cold-air flues entering the lower extremities of said receiving and escape chambers, all substantially as shown and described.

2. The combination, in a drier, of the drying-chamber A, the heating-chamber B, encircling the same, said heating-chamber having at one side thereof vertical transverse partitions forming a vertical

escape-chamber inclosed within said heating-chamber, said escape-chamber having an open top, an egress-flue entering the side of said escape-chamber at the lower end thereof, and a stack connected to said escape-chamber by said egress-flue, all substantially as described and for the purpose set forth.



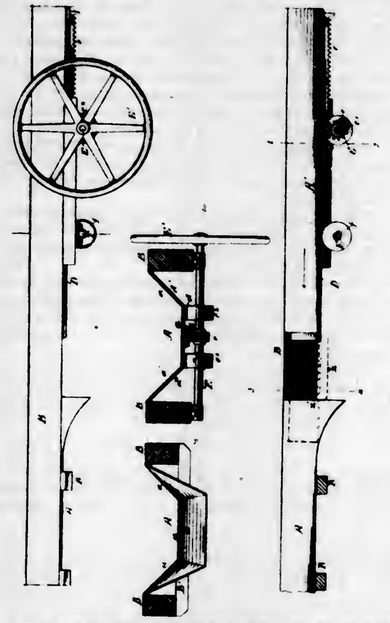
3. The combination, in a drier, of the drying-chamber provided with means for the ingress and egress of the material to be dried and also with means for the escape of the gas and moisture with a heating-chamber closed at its top and encircling said drying-chamber, said heating-chamber extending to a lower plane than said drying-chamber, a vertical escape-chamber inclosed within one side of said heating-chamber, a vertical stack having communication with the lower end of said escape-chamber, and horizontal flues connecting together opposite sides of said heating-chamber at the lower end thereof, substantially as shown and described.

485,912. **TRELLIS.** CHARLES G. DERBY, Lacon, Ill. Filed Sept. 3, 1891. Serial No. 405,077. (No model.)

Claim.—The combination, with a horizontal trellis-wire and a plant, of a fastener constructed of a single piece of wire and consisting of a yielding resilient U-shaped loop receiving the plant and arranged beneath the wire and having its terminals bent at an angle and arranged above the trellis-wire, one of the terminals being extended longitudinally of the trellis-wire and forming a stem provided at its outer end with a hook engaging the trellis-wire, substantially as described.

485,913. **GATE FOR CONVEYER TROUGHS.** JAMES M. DODGE, Philadelphia, Pa., assignor to the Link-Belt Engineering Company, same place. Filed Aug. 31, 1892. Serial No. 444,642. (No model.)

Claim —1 The combination, in a gate for a conveyer-trough provided with an opening, the trough at one side of the opening being shaped in the form of a bell-mouth, with a longitudinal movable gate adapted to pass into the bell-mouth and means for operating the gate, substantially as described.



2 The combination, in a conveyer-trough having an opening therein, with a longitudinally-movable gate mounted under the trough, means for supporting the gate thereunder, a rack on the gate, a shaft, a pinion on said shaft engaging with the rack, and a hand-lever by which the gate is opened or closed, substantially as described

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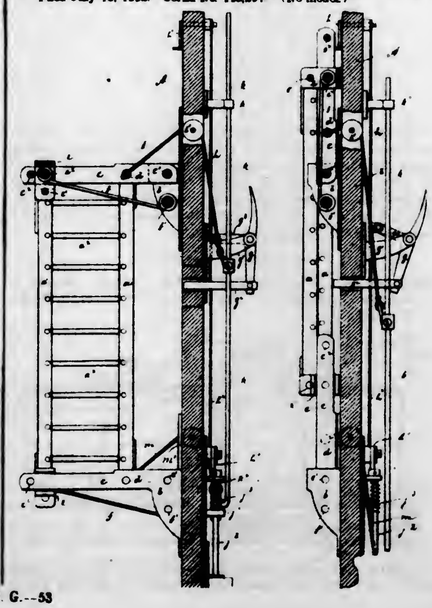
485,914. **FIRE-ESCAPE.** JAMES F. DOWDEN, New York, N. Y. Filed July 18, 1892. Serial No. 440,297. (No model.)



Claim.—1. The combination of a pair of arms *c*, pivoted to the house front, with a slide engaging the same and with a folding ladder pivoted to the slide, substantially as specified.

2. The combination of a pair of arms pivoted to the house front with a slide engaging the same, an eccentric-arm *f*, connected to the slide, and a folding ladder having one side bar pivoted to the slide and the other side bar pivoted to the arm, substantially as specified.

3. The combination of a pair of pivoted arms composed of a pair of parallel bars with a slide engaging said bars, an eccentric-rod for operating the slide, a laterally-projecting pivot *d*, secured to the arms, a laterally-projecting pivot *d'*, secured to the slide, and with a folding ladder connected to the pivots *d d'*, substantially as specified.

4. The combination of a pair of swinging arms with a folding ladder pivoted thereto and with a lever *g* and a push-rod g^3, passing through the wall and adapted to bear against the folding ladder, substantially as specified.

5. The combination of a pair of swinging arms with a slide, an eccentric-rod, and a folding ladder pivoted to the slide and with a push-rod g^3 and operating-lever *g* for mechanically opening the ladder, substantially as specified.

6. The combination of a pair of swinging arms with a ladder pivoted thereto and with a drum i^2, ratchet-wheel i, pawl k^3, engaging the ratchet-wheel, a cord *j*, engaging the drum, and with a slide *j'*, rod *k*, and operating-chains *l m*, secured thereto, substantially as specified.

7. The combination of a pair of swinging arms with a ladder pivoted thereto and with drums i^2, ratchet-wheel i, lever *g*, rod g^3, rod k^3, having pawl k^3, and with cord *j*, slide *j'*, rod *k*, and operating-chains *l m*, substantially as specified

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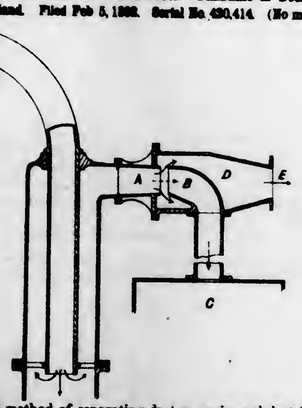
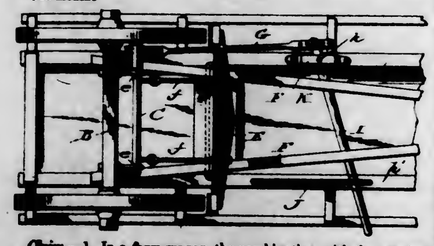
485,915. METHOD OF SEPARATING GRAIN AND DUST OR STIVE FROM AIR LADEN THEREWITH. FREDERIC R. DUCKHAM, London, England. Filed Feb 5, 1892. Serial No. 420,414. (No model.)



Claim.—The method of separating dust or grain and dust from an air-current, which consists in providing an atmosphere of greater density than the said air-current and in then causing the dust or grain and dust-laden current to be projected in the form of a jet across an open space into or against said atmosphere of greater density, whereby the dust or grain and dust are caused to separate from the said air-current, substantially as set forth.

485,916. BRAKE MECHANISM FOR WAGONS. WILLIAM H. BACKMAN, Hopedale, Ohio. Filed Apr. 13, 1892. Serial No. 429,021. (No model.)



Claim.—1. In a farm-wagon, the combination, with the running-gear having a brake mechanism, of a hay-rack or ladder and a lever in the plane of and beneath the said hay rack and pivoted thereto and having one end of said lever projected beyond the side of the said hay-rack about midway between the ends thereof and having the other end of the said lever connected with the said brake mechanism, substantially as described.

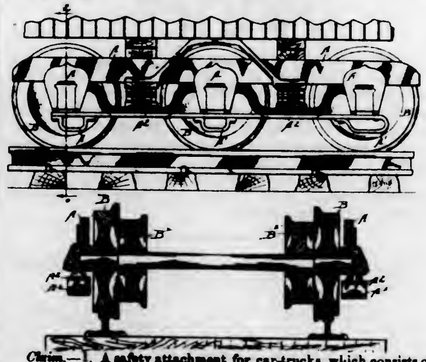
2. The combination, with a running-gear adapted to receive a farm-wagon body and provided with a brake mechanism, of a hay rack or ladder adapted to be fitted on said running-gear, a lever transversely disposed beneath and pivoted to the hay-rack and having one end projected beyond the side thereof at about midway of the ends of the said hay-rack, means for securing the free end of the said lever in the required position, and a rod to adjustably connect the other end of the said lever with the brake mechanism, substantially as shown and described.

485,917. PROCESS OF TREATING CLAY AND PRODUCTS THEREOF. ALEXANDER D. ELBERS, Hoboken, N. J. Filed Oct. 20, 1891. Serial No. 409,316. (No specimens.)

Claim.—1. The herein-described process of treating clay for the lining of metallurgical furnaces, &c., which consists in intermixing suitable clay with a flux which, if admixed in suitable proportions, combines with the fluxible accidental constituents of the clay to a thin fluid percolating slag when the mix is heated to about white heat; in preparing the mixes of clay and flux by forming and drying for the heating operation; in subjecting the prepared charges on the hearth of a suitable heating-furnace first to a fritting heat and then to a melting-heat; in furthering the outflow and removal of the slag from the melting and molten charges by suitable manipulation; in drawing and chilling the finished charges, and in preparing them for use by crushing, assorting, and grinding.

2. As a new article of manufacture, pyroconcentrates of fluxed clay, consisting of particles of dehydrated aluminum silicate holding remnants of a liquated flux in mechanical combination, substantially as described.

485,918. SAFETY ATTACHMENT FOR CARS AND TRUCKS. AUGUSTUS ELLIS, Bedford, Ind. Filed Feb 5, 1892. Serial No. 420,065. (No model.)



Claim.—1. A safety attachment for car-trucks, which consists of a wheel or roller secured thereto and arranged upon one side of the truck-wheels, and a shoe or runner secured thereto and arranged upon the other side of the truck-wheels, whereby upon derailment said truck is drawn by the friction between said shoe and the ties toward the rails, substantially as set forth.

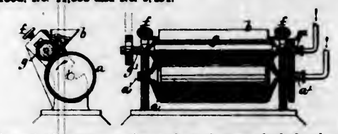
2. In a car-truck, the combination of the frame, the main wheels, the shoes secured to said frame under the outer ends of the axles, and secondary wheels mounted upon said axles in close proximity to the inner face of said main wheels, substantially as set forth.

3. In a car-truck, the combination of the frame, the wheels, and devices arranged in close proximity to and on each side of said wheels in position to support said truck upon the track when said wheels are off said track, substantially as set forth.

4. A safety attachment for car-trucks, consisting of shoes attached to the frame of the truck on the outside, and secondary wheels or flanges upon the inside of the main wheels, the bearing-faces of said shoes and said secondary wheels being a distance from the edge of the main-wheel flanges less than the height of said rail, substantially as set forth.

5. In a car-truck, the combination of the frame A, having a bar A^5 attached thereto under the outer ends of the axles, carrying shoes A', and the secondary wheels B', mounted upon said axles against the inner surface of the main wheels, all substantially as set forth, and for the purposes as set forth.

485,919. MANUFACTURE OF MANDRELS FOR ELECTROLYTIC DEPOSIT OF TUBES. FRANCIS H. RICHER, Leeds, assignor to Elmore's American and Canadian Patent Copper Depositing Company, Limited, London, England. Filed Aug. 12, 1891. Serial No. 402,446. (No model.) Patented in England May 23, 1890, No. 7,933; in France Mar. 26, 1891, No. 212,385; in Sweden May 14, 1891, No. 3,568; in Switzerland May 15, 1891, No. 3,539; in Norway May 18, 1891, No. 2,263; in Luxemburg June 1, 1891, No. 1,456; in Italy June 10, 1891, LVIII, 290; in Cape of Good Hope June 18, 1891, No. 695; in Victoria July 3, 1891, No. 8,948; in Tasmania July 6, 1891, No. 961/10; in New South Wales July 7, 1891, No. 3,104; in South Australia July 7, 1891, No. 1,974; in Queensland July 8, 1891, No. 1,367; in New Zealand July 16, 1891, No. 5,095; in Spain July 18, 1891, No. 12,111; in Brazil July 20, 1891, No. 1,358; in Western Australia Feb. 2, 1892, No. 312; in Canada Feb. 23, 1892, No. 38,332; in India Apr. 19 1892, No. 179/91, and in Austria-Hungary May 11, 1892, No. 41,093 and No. 9,431.

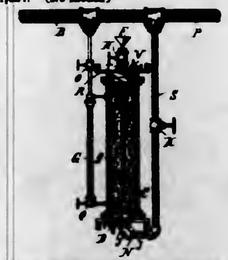


Claim.—1. The process of manufacturing mandrels for electrolytic deposit of tubes thereon, which consists in coating said mandrels with easily-fusible material and simultaneously polishing such easily-fusible material.

2. The process of manufacturing mandrels for electrolytic deposit of tubes thereon, which consists in coating said mandrels by revolving the same in contact with easily-fusible material while said material is in contact with a heated polishing-surface.

3. The process of manufacturing mandrels for electrolytic deposit of tubes thereon, which consists in coating cool metal tubes with easily-fusible polished material by passing such material in contact with said tubes and a heated polishing-surface.

485,920. BOILER OIL-INJECTOR. OSCAR A. RENOLD, New York, N. Y., assignor to Frank H. Cornell, same place. Filed July 23, 1892. Serial No. 441,027. (No model.)

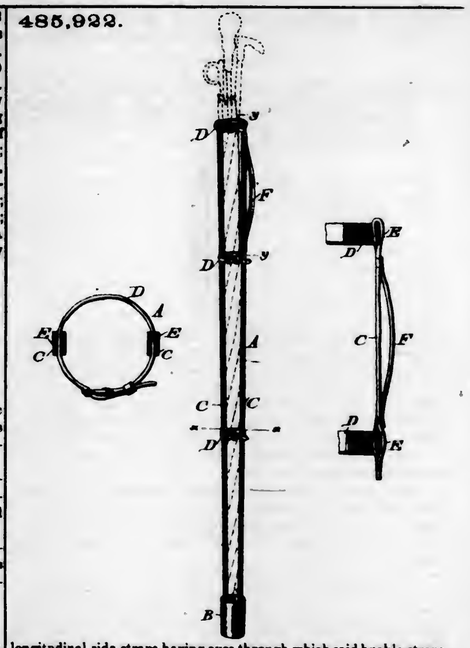


Claim.—In a boiler oil-injector, the combination of the feed-water pipe P, the by-pass S, depending from the pipe P, the chamber or reservoir C, connected at its lower end to the by-pass S, the oil-pipe G, depending from the feed-water pipe P and also connected to the chamber C at its lower end, the standing tube *g*, forming a continuation of the oil-tube G and extending upwardly within the chamber C nearly to the top thereof, and a cock K in the by-pass S for controlling the supply of water to the chamber C, whereby the supply of oil to the feed-water is automatically regulated by the flow of water into the chamber C, which is caused by the pressure in the feed-water pipe, substantially as set forth.

485,921. PAPER CARPET. MORRIS G. FAULKNER, Homer, N. Y. Filed Feb. 27, 1892. Serial No. 423,093. (No specimens.)

Claim.—The composition for treating vehicle-floor coverings, consisting of water, glue, alum, starch, asphaltum, lead, and whiting mixed together in substantially the proportions specified and colored with any suitable coloring-matter, substantially as described.

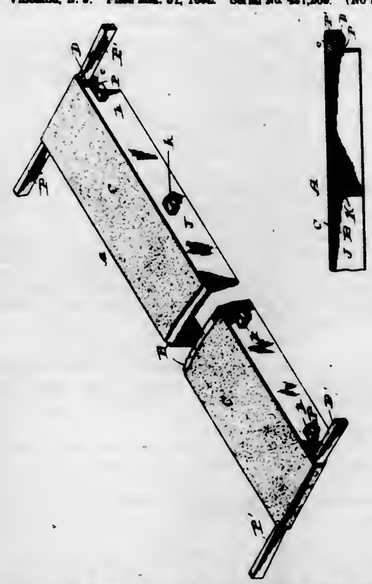
485,922. BUCKLE-STRAP. IDA M. FLEMMER, Philadelphia, Pa. Filed June 20, 1892. Serial No. 436,990. (No model.)



Claim.—1. A holder consisting of a bottom socket-piece, circumferential buckle-straps, longitudinal side straps connecting said socket-piece and buckle-straps, and a handle, said parts being combined substantially as described.

2. A holder for the purpose set forth, consisting of a skeleton frame formed of a bottom socket, circumferential buckle-straps, and longitudinal side straps having eyes through which said buckle-straps pass, and a loop-handle attached to one of said side straps, said parts being combined substantially as described.

485,928. TRUING DEVICE FOR BENCH-PLANES. JOHN P. GAGE, Vineland, N. J. Filed Mar. 31, 1892. Serial No. 427,209. (No model.)



Claim.—The herein-described device for truing up the working faces of bench-planes and other articles, said device comprising a heavy oblong rectangular metal casting having a true upper horizontal surface and formed at its ends with the under transverse lugs and a strip or piece of material provided with an abrasive surface stretched tightly over the true surface of said casting, the ends of

said strip or piece being extended over the ends of the casting and clamped in said under transverse lugs, substantially as specified.

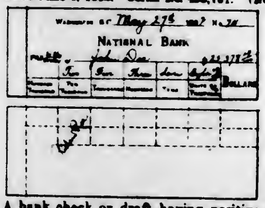
485,924. PORTABLE SHAMPOOING APPARATUS. HENRY J. GARRETT, London, England. Filed June 20, 1891. Serial No. 396,980. (No model.) Patented in England Mar. 16, 1890, No. 4,099, and in France June 30, 1890, No. 208,706.

Claim.—1. A shampooing apparatus comprising suitable supporting means, a discharge-pipe connected to or carried by said supporting means and provided with a fixed rose, the suction-pipe having the inlet-nozzle at one end, the compressible forcing-bulb connected to the other end of the suction-pipe, and the governor vessel or reservoir connected to the discharge-pipe and to the bulb and arranged in substantial axial alignment with said pipe and bulb to receive liquid from the bulb and transmit it under uniform pressure to the discharge-pipe, as and for the purpose described.

2. A portable shampooing apparatus consisting of a vertically-telescopical support, the discharge-pipe fixed to said support and having the rose, the suction-pipe, the compressible bulb, and the governor-vessel receiving from said bulb and discharging to the discharge-pipe, substantially as described.

3. A portable shampooing apparatus consisting of the combination of a support, a discharge-pipe mounted thereon to turn in a horizontal plane and provided with a rose or spreader, the suction-pipe, the compressible bulb connected to one end of said suction-pipe, and the governor-vessel intermediate of the bulb and the discharge-pipe, substantially as described.

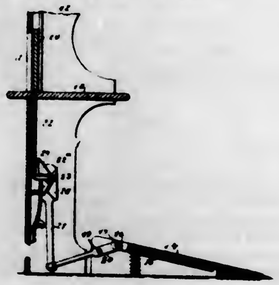
485,925. BANK CHECK, DRAFT, &c. AUBREY D. GARMAN, Lansing, Mich. Filed June 6, 1892. Serial No. 436,761. (No specimens.)



Claim.—1. A bank check or draft having positive indications for the signature of the drawer back of the highest number of the amount written upon its face, substantially as described.

2. A bank check or draft having upon its face spaces corresponding to the several orders of units and having indications upon the back for the signature of the drawer back of each of said spaces, whereby the signature of the drawer may be placed back of the space corresponding to the highest number of the amount written on the face, substantially as described.

485,926. DEVICE FOR AUTOMATICALLY CLOSING AND OPENING SLIDING DOORS. JAMES A. GATFIELD, Durham, Canada. Filed Mar. 30, 1892. Serial No. 427,105. (No model.)



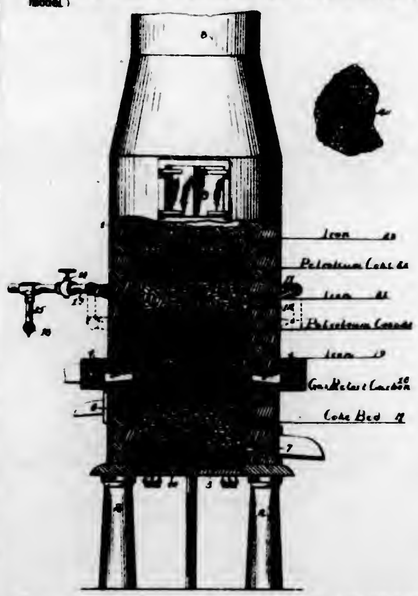
Claim.—1. The combination, with a shutter, of a pivoted platform having a lever connection with the shutter to open it and an automatically-operating latch mechanism to lock the shutter against opening when the platform is relieved of pressure and to release the shutter when pressure is applied to the platform to open the shutter, substantially as set forth.

2. The combination, with a shutter and a pivoted spring-controlled platform, of an extension of the shutter, a latch adapted for engagement with the extension, and a lever connection between the free end of the platform and the extension of the shutter, as and for the purpose set forth.

3. The combination, with a shutter, a platform pivoted at one end and spring-pressed at the other, and an extension from the shutter, extending downward in direction of the platform, of a spring-latch adapted for engagement with the extension and a trip mechanism adapted to act upon the latch when the platform is depressed, substantially as and for the purpose set forth.

4. The combination, with a shutter, a yoke extension therefrom, and a platform pivoted at one end and spring-controlled at its opposite end, of a latch adapted for engagement with the yoke of the shutter, a pitman connected with the shutter-yoke, a lever connection between the pitman and the platform, and a trip mechanism carried by the pitman and adapted for engagement with the latch, as and for the purpose set forth.

485,927. PROCESS OF MELTING IRON. HENRY J. GRAF, St. Louis, Mo., assignor to the Graf Iron Melting and Manufacturing Company, East St. Louis, Ill. Filed June 23, 1892. Serial No. 437,589. (No model.)



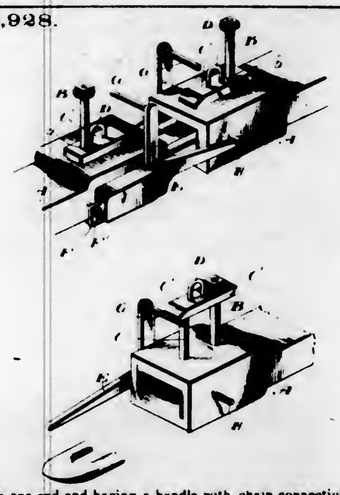
Claim.—The herein-described process of melting iron, consisting in first charging the iron with petroleum-coke in alternate layers and combining therewith a stratum of gas-retort carbon arranged between one of the layers of coke and iron, then subjecting the mass when ignited to an air-blast, and then reducing the blast and introducing steam through the mass while at a high temperature, substantially as and for the purpose set forth.

485,928. CAR-COUPLING. HENRY R. GRANT, Pleasant Mound, Tenn. Filed July 20, 1892. Serial No. 440,634. (No model.)

Claim.—1. In an automatic car-coupler of the character described, the combination, with the draw-head, of the pivotal levers secured to one side of each draw-head, having their rear ends weighted and provided with a guard-rod to limit the throw of said levers, so that the same will return to a horizontal position when pressure is removed from their free ends.

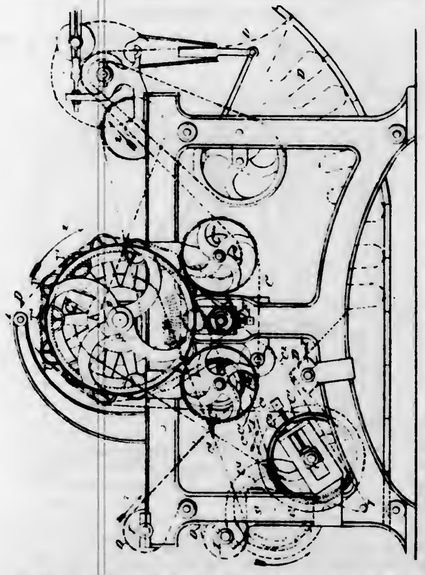
2. In a car-coupler, the combination of the pivotal levers attached to the sides of the draw-heads, said levers having vertical projecting rods carrying arms, the gravity-pin provided with an integral bar

485,928.



beveled on one end and having a handle with chain connections for raising the same, and the pin H for automatically tilting the levers to effect the coupling, all substantially as shown and described.

485,929. GIG-MILL. NICOLAS H. GROSSELIN, Fils, Sedan, France. Filed July 27, 1883. Serial No. 281,167. (No model.) Patented in France Nov. 25, 1887, No. 187,308; in Belgium Mar. 7, 1888, No. 80,913; in England Apr. 11, 1888, No. 5,304; in Italy Dec. 14, 1888, No. 24,582; in Spain Jan. 24, 1889, No. 9,144; in Switzerland Feb. 19, 1889, No. 501; in Russia Feb. 20 and March 4, 1889, No. 11,867; in Austria-Hungary Feb. 25, 1889, No. 9,132 and No. 23,070, and in Germany July 27, 1889, No. 55,784.



Claim.—1. In a gig-mill, the combination of a drum with one series of working or card rollers mounted on said drum and having independent rotary movement in one direction and another series of working or card rollers having independent movement in the opposite direction and means for operating the two series of rollers, substantially as described.

2. In a gig-mill, the combination, with a drum, of a series of rotary teaseling-rollers mounted on the same and working with the nap, and a second series of teaseling-rollers also mounted on the drum and working against the nap, and means for operating the two series of rollers, all substantially as described.

3. In a gig-mill, the combination of a drum and two series of alternating teaseling-rollers mounted on the drum, one series working with the nap and the other series working against the nap, and means for operating said rollers, all substantially as described.

4. The combination of a drum, two sets of napping-rolls carried thereby, and means for turning one set at a different speed from the other, substantially as described.

5. The combination of a drum, two sets of napping-rolls carried thereby, with their teeth set in different directions, and means for turning those against the nap at a greater speed than those set with the nap, substantially as described.

6. The combination of a drum, two series of napping-rollers carried thereby, with teeth to act with and against the nap, and two sets of roller-actuating devices constructed to drive the rollers that act against the nap at the greatest speed, substantially as described.

7. In a gig-mill, a drum and two series of working rollers adapted to turn in opposite directions and mounted thereon and provided with pulleys of equal diameters with said working rollers, in combination with two pulleys, one for each series of working rollers, and two driving-belts for the pulleys, all substantially as described.

8. In a gig-mill, the combination of a drum and two series of teaseling-rollers mounted thereon and adapted to work with and against the nap, respectively, means for operating said rollers, and an external and an internal stripper, all substantially as described.

9. In a gig-mill, the combination of a drum and two series of teaseling-rollers mounted thereon and adapted to work with and against the nap, respectively, one series being mounted at a greater distance from the center of the drum than the other, means for operating said rollers, and an external and an internal stripper, all substantially as and for the purpose set forth.

10. In a gig-mill, the combination of a drum carrying a series of teaseling-rollers with an internal stripper suspended from the shaft of the drum, all substantially as described.

11. In a gig-mill, the combination, with a drum carrying series of teaseling-rollers, of an internal stripper consisting of a rotary card-plate suspended from the shaft of the drum, all substantially as described.

12. In a gig-mill, the combination, with a drum carrying a series of teaseling-rollers, of an internal stripper consisting of a rotary card-plate suspended from the drum-shaft, a toothed wheel keyed to the drum-shaft, and a pinion attached to the stripper, all substantially as described.

485,930. REGISTERING-LOCK FOR CASH-REGISTERS. GEORGE W. GROVE, Dayton, Ohio, assignor to the National Cash Register Company, same place. Filed Aug. 12, 1892. Serial No. 442,893. (No model.)

Claim.—1. In a cash register and indicator having a casing inclosing the sales-registering mechanism and provided with a lid required to be opened to permit an inspection of such mechanism, the combination, with such casing and lid, of a lock controllable by a key from the exterior of the casing for holding the lid closed and a registering mechanism permanently secured in inaccessible position upon the lid or casing and actuated by the movements of the lock-bolt to make a registration of the lockings and unlockings of the lid, substantially as and for the purpose described.

2. In a cash register and indicator having a casing inclosing the sales-registering mechanism and provided with a lid required to be opened to permit an inspection of such mechanism, the combination, with such casing and lid, of a lock controllable by a key from the exterior of the casing for holding the lid closed and an inaccessible registering mechanism actuated by the operations of the lock and permanently secured in a position to be hidden when the lid is closed and to expose its registrations when the lid is opened, substantially as and for the purpose described.

3. In a cash register and indicator having a casing inclosing the sales-registering mechanism and provided with a lid required to be opened to permit an inspection of such mechanism, the combination, with such casing and lid, of a lock controllable by a key from the exterior of the casing for holding the lid closed, a train of registering-wheels arranged adjacent to the lock and permanently secured upon the lid or casing in position to expose their numbers to view, but otherwise inaccessible, and a pawl actuated by the movements of the lock-bolt and co-operating with a ratchet upon the primary registering-wheel to turn said wheel at each operation of the lock, substantially as and for the purpose described.

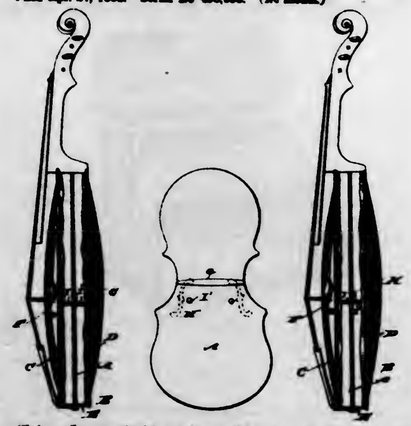
4. In a cash register and indicator having a casing A, inclosing the sales-registering mechanism and provided with the hinged lid F, the combination, with the lid and casing, of the plate N, provided with the sight-openings P and permanently secured to the inner face of the lid, the train of registering-wheels O, and the lock carried by said plate and confined in an inaccessible position between said plate and the lid, the barrel S of the lock, projecting through the lid into position to receive a key from the exterior thereof, and the pawl U, carried by the sliding bolt Q of the lock and co-operating with the ratchet T upon the primary registering-wheel, substantially as and for the purpose described.

485,931. PLOW-CLEVIS. ARTHUR R. GUILD, Walpole, N. H. Filed Feb. 19, 1892. Serial No. 422,130. (No model.)

Claim.—1. The combination, with a plow-beam, of a clevis pivotally connected thereto at its rear end and a spring carried by the plow-beam and connected to the clevis in advance of its pivotal point to normally hold its free end elevated above the line of draft, substantially as specified.

2. The combination, with a plow-beam, of a clevis pivoted to move vertically, a spring secured to the beam and arranged to normally elevate the clevis, and links or a stirrup connecting the spring to the clevis in front of its pivotal point on the beam, whereby a downward draft is communicated to the plow-beam, substantially as specified.

485,932. MUSICAL INSTRUMENT. ALEXANDER GYLFE, South Bend, Wash., assignor to himself and Louis H. Eklund, same place. Filed Apr. 27, 1892. Serial No. 430,859. (No model.)

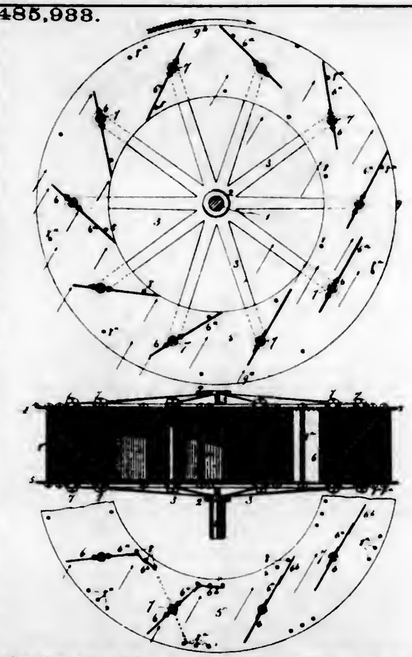


Claim.—In a musical instrument of the class described, the combination therewith of the sounding-board A, provided with the transverse strengthening-rib *a* and the sounding-holes H and arranged between the belly and back of the instrument and attached at its edges to the sides thereof, and the sounding-posts I I' between the said board and the belly and back of the instrument, substantially as shown and described.

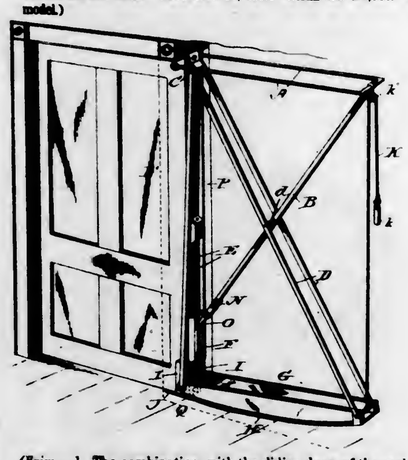
485,933. WIND AND CURRENT WHEEL. DAVID C. HERMAN, St. Louis, Mo. Filed Jan. 8, 1892. Serial No. 417,697. (No model.)

Claim.—A wind or water wheel having parallel plates 4 5, with pivoted wings 6 between them, having flexible extensions or flaps 6*, and binding-rods, as 8 8*, connecting the plates and limiting the movement of the wings on their pivots and giving bearing to the flexible extensions in their working position, substantially as set forth.

485,933.



485,934. DOOR OPERATOR AND SUPPORTER. JOHN A. HESS, Benton Harbor, Mich. Filed Nov. 10, 1891. Serial No. 411,509. (No model.)



Claim.—1. The combination, with the sliding door, of the rocker G, the rods E, and the lever D, connected at their lower ends with the opposite ends of the said rocker and having pivotal connection at their upper ends with the upper end of the door, and the lever B, crossing the lever D and pivotally connected therewith at the point of crossing and having an adjustable connection at its lower end with the said door, pivotally supported at its upper end, substantially as and for the purpose set forth.

2. The combination, with a sliding door, of the rocker G, the rods E, and the lever D, connected at their lower ends with the opposite ends of the said rocker and having pivotal connection at their upper ends with the upper end of the door, the lever B, crossing the lever D and pivotally connected therewith at the point of crossing and having a pivotal connection at its upper end with a suitable support, a mutually-interlocking slide and guide secured to the lower end of the lever B and the lower portion of the said door, and means for adjusting the said rocker within the pocket, substantially as and for the purpose set forth.

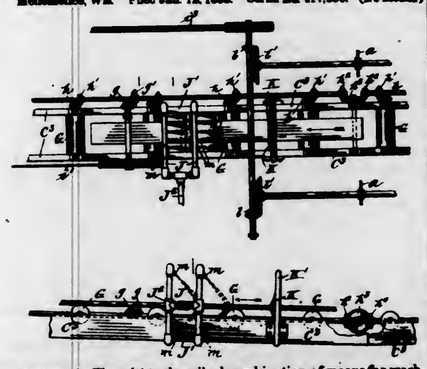
3. In a sliding door, the combination, with a rocker G and connections between the rocker and door, of a flexible strip connected at its inner end with the inner end of the said rocker and constructed to form a track and wear-plate for the said rocker, and provisions for moving the said strip within the pocket, substantially as and for the purpose set forth.

4. In a sliding door, the combination, with the rocker and suitable connections between the said rocker and door, of a guide, as I, located at the entrance end of the pocket and constructed to prevent injurious contact of the said rocker with the sides of the door, substantially as set forth.

5. The combination, with a sliding door, of a rocker G, the bar E, and lever D, the lever B, pivotally connected between its ends with the lever D, the guide and slide forming a connection between the lower end of the lever B and the said door, the bars A, connected at their front ends with the posts at the entrance end of the pocket and having pivotal connection at their rear end with the upper end of the lever B, and the weight *k*, connected with the rear ends of the said bars A, substantially as and for the purpose hereinbefore set forth.

6. The combination of a sliding door, the rocker G, the bars E, and the lever D, connected at their lower ends with the opposite ends of the said rocker and having pivotal connection at their upper ends with the upper portion of the door, the lever D, pivotally connected between its ends with the lever B, the mutually-interlocking slide and guide connecting the lower end of lever B with the lower portion of the door, the bars A, connected at their rear ends with the upper ends of the lever D and having pivotal connection at their front end with the post at the entrance of the door-pocket, a weight on the rear ends of the bars A, the flexible strip H, connected at its inner end with the rear end of the rocker, the threaded extension 8 at the front end of the said strip H, the stop J, the set-screw, and the guide I, arranged and operating substantially in the manner hereinbefore specified.

485,935. LUMBER PULLER AND WASHER. JAMES D. HILLS, Menominee, Wis. Filed Jan. 12, 1892. Serial No. 417,833. (No model.)



Claim.—1. The within-described combination of means for washing lumber in its transit from a river or stream to the point of discharge, the same comprising the mechanically-supported water-discharging device arranged in suitable relation to the conveyer of the lumber being washed and between the river or stream and the point where the washed lumber is discharged, the mechanical devices for supplying and discharging water under pressure through said discharging device upon lumber continuously moving past it, and the mechanical devices for continuously conveying the lumber lengthwise past the washing device, substantially as described.

2. A means for scouring and washing lumber in its transit from a raft on a river or stream to the point of discharge, comprising an automatic brush-head having brushes and an automatic water-discharging device supported by the lumber-conveyer, means connected with said device for forcibly discharging water through it upon the surface of the separate pieces of lumber in transit from a raft on a river or stream to their point of discharge, and means for receiving the pieces of lumber from the "handlers" at the raft and carrying them past the automatic brushes or scourers and the washer, substantially as described.

3. A means for receiving, supporting, pulling from their supports, and elevating separate pieces of lumber between rafts on rivers or streams and their points of discharge and washing them in their transit, the same comprising means for receiving the pieces of lumber from the handlers at the raft and supporting them between their ends, means for pulling them from their supports and elevating and conveying them to the point of discharge, an automatic water-discharging device, and means connected with said device for forcibly discharging water through it upon the surface of the pieces of lumber in their transit from the raft to their point of discharge, substantially as described.

4. In combination, means for receiving the pieces of lumber from the handlers at the raft and supporting them between their ends, means for pulling them from their supports and elevating the pieces of lumber on opposite sides of a conveyer and depositing them one behind the other lengthwise of the conveyer, and means for conveying them successively and continuously to their points of discharge, and an automatic water-discharging device, and means connected with said device, supported upon the lumber-conveyer, for forcibly discharging water through it upon the surface of the pieces of lumber in their transit from the raft to their point of discharge, substantially as described.

5. In combination, an automatic water-discharging device constructed to surround and applied so as to have the pieces of lumber passed through it and connected with means for forcibly discharging water through it upon the surface of separate pieces of lumber in their transit from a raft on a river or stream to their points of discharge and means for receiving the pieces of lumber from the handlers at the raft and carrying them past the automatic washer, substantially as described.

6. In combination, means for scouring and washing lumber in its transit from a raft on a river or stream to the points of discharge, comprising an automatic brush-head and an automatic water-discharging device, both constructed and applied to surround the lumber in its passage through them, means connected with the water-discharging device for forcibly discharging water through it upon the surface of the separate pieces of lumber in its transit from a raft on a river or stream to their points of discharge, and means for receiving the pieces of lumber from the handlers at the rafts and carrying them through the automatic scourer and washer, substantially as described.

7. In an apparatus for elevating and conveying lumber, the combination of a brush-head, a washer-head provided with nozzles and connected with means for forcing water, and means for conveying lumber by the brush and washer heads, whereby the sides of the lumber are cleaned simultaneously.

8. In a lumber conveying and washing device, a continuously-feeding bed, a brush-head with brushes, an automatic washer having oppositely-inclined jet-passages, whereby the lumber is conveyed between the brushes and jet-passages, and water-forcing means connected with the washer-head.

9. In an apparatus for conveying and washing lumber, a continuous conveyer, a brush-head and washer-head, each surrounding said conveyer, and means for forcing water under pressure, connected with the washer-head, whereby all sides of the lumber are cleaned as it is being conveyed.

10. In a lumber conveying and washing apparatus, a roller conveying-bed for moving the lumber, a brush-head having brushes adapted to bear on all sides of the pieces of lumber, a washer-head provided with jet-passages directed toward all sides of the lumber, and water-forcing means connected with said washer-head.

11. In a lumber conveying and washing apparatus, a washer-head provided with nozzles, means for forcing water under pressure, connected with said washer-head, and means for elevating the lumber from rafts and feeding it continuously, whereby all sides of the lumber are cleaned as it is being conveyed.

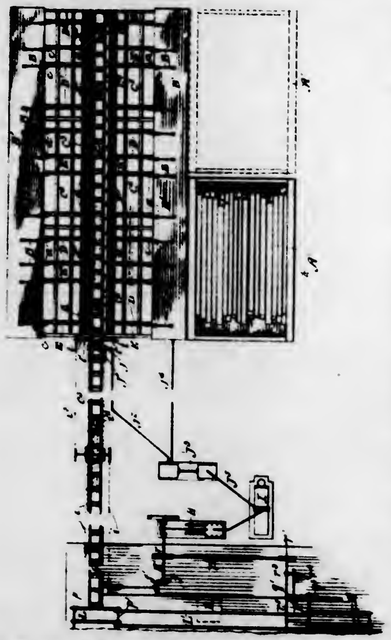
485,936. LUMBER PULLING, WASHING, AND ASSORTING MACHINE. JAMES D. HILLS, Menominee, Wis. Filed Jan. 20, 1892. Serial No. 418,682. (No model.)

Claim.—1. An organized mechanism for automatically carrying lumber from rafts on rivers or streams to the place of deposit, comprising a main or first continuously-operating conveyer-bed, inclined conducting-boards on the sides of the bed, which, with the bed, form a guiding-trough, timber-supporting floating horses arranged in the water of the river or stream on one or both sides of the conveyer-bed and adapted for separate pieces of timber to ride or rest on them lengthwise of the said conveyer-bed, endless pulling and elevating chains arranged between the conveyer-bed and the bed of the river or stream and adapted to take the pieces of timber continuously one after the other from the horses and pull and elevate them up to the trough and deposit them on the inclined boards thereof, so as to have them descend and rest lengthwise upon the conveyer-bed to be conveyed thereon, transverse transfer-chains having the sections which receive the pieces of timber successively from the conveyer-bed

formed of links beveled from bottom to top, said links forming steeple-chains, substantially as and for the purpose described.

2. The arrangement of one or more automatic brushes on the framework of the conveyer-bed and between the pulling and elevating chains which elevate the pieces of timber from floating horses and deposit them upon the conveyer-bed and the steeple-chain section of the transfer-chains, substantially as described.

3. An automatic lumber-washer connected with a water-power forcing means and arranged upon the framework of the organized mechanism between the pulling and elevating chains which elevate the pieces from the floating horses and deposit them upon the conveyer-bed and the steeple-chain section of the transfer-chains, substantially as described.



4. An organized mechanism for automatically carrying lumber from rafts on rivers or streams to the place of deposit, comprising a main or first continuously-operating conveyer-bed, inclined conducting-boards on the sides of the bed and forming with the bed a guiding-trough, timber-supporting floating horses arranged in the water of a stream or river on one or both sides of the conveyer-bed and adapted for separate pieces of timber to ride or rest on them lengthwise of said bed, endless pulling and elevating chains arranged between the conveyer-bed and the bed of the river and adapted to take the pieces of timber continuously one after another from the floating horses and pull and elevate them to the trough and deposit them on the inclined boards thereof, so as to have them descend and rest lengthwise upon the conveyer-bed to be conveyed thereon, transfer-chains having the sections which receive the pieces of timber successively from the conveyer-bed formed of links beveled from bottom to top, so as to form steeple-chains, and a grader's stand located between the receiving and discharging section of the transfer-chains, substantially as described.

5. An organized mechanism for automatically carrying lumber from rafts on rivers or streams to the place of deposit, comprising a main or first continuously-operating conveyer-bed, inclined conducting-boards on the sides of the bed forming with the bed a guiding-trough, timber-supporting floating horses arranged in the water of a stream or river on one or both sides of the conveyer-bed and adapted for separate pieces of timber to ride or rest on them lengthwise of said bed, endless pulling and elevating chains arranged between the conveyer-bed and the bed of the river and adapted to take the pieces of timber continuously one after another from the floating horses and pull and elevate them up to the trough and deposit them on the inclined boards thereof, so as to have them descend and rest lengthwise upon the conveyer-bed to be conveyed thereon, transfer-chains having the sections which receive the pieces of timber successively from the conveyer-bed, formed of links beveled from bottom to top, so as to form steeple-chains, and a grader's stand located between the receiving and discharging sections of the transfer-chains, and gearing for giving a slow movement to the transfer-chains and a faster movement to the conveyer-bed, substantially as described.

6. An organized mechanism for automatically carrying lumber from rafts on rivers or streams to the place of deposit, comprising a main or first continuously-operating conveyer-bed, inclined conducting-boards on the sides of the bed forming with the bed a guiding-trough, timber-supporting floating horses arranged in the water of a stream or river on one or both sides of the conveyer-bed and adapted for separate pieces of timber to ride or rest upon them lengthwise of said bed, endless pulling and elevating chains arranged between the conveyer-bed and the bed of the river and adapted to take the pieces of timber continuously one after another from the floating horses and pull and elevate them to the trough and deposit them on the inclined boards thereof, so as to have them descend and rest lengthwise on the conveyer-bed to be conveyed thereon, transfer-chains having the sections which receive the pieces of timber successively from the conveyer-bed formed of links beveled from bottom to top, so as to form steeple-chains, a grader's stand located between the receiving and discharging sections of the transfer-chains, gearing for giving a slow movement to the transfer-chains and a faster movement to the conveyer-bed, an automatic washer connected with a water-power forcing means and arranged upon the framework of the organized mechanism, and an automatic scouring-brush arranged upon the framework of the bed behind the washer, substantially as described

8. An organized mechanism for automatically carrying lumber from rafts on rivers or streams to the place of deposit, comprising a main or first continuously-operating conveyer-bed, inclined conducting-boards on the sides of the bed forming with the bed a guiding-trough, timber-supporting floating horses arranged in the water of a stream or river on one or both sides of the conveyer-bed and adapted for separate pieces of timber to ride or rest upon them lengthwise of said bed, endless pulling and elevating chains arranged between the conveyer-bed and the bed of the river and adapted to take the pieces of timber continuously one after another from the floating horses and pull and elevate them to the trough and deposit them on the inclined boards thereof, so as to have them descend and rest lengthwise upon the conveyer-bed to be conveyed thereon, transfer-chains having the sections which receive the pieces of timber successively from the conveyer-bed formed of links beveled from bottom to top, so as to form steeple-chains, a grader's stand located between the receiving and discharging sections of the transfer-chains, gearing for giving a slow movement to the transfer-chains and a faster movement to the conveyer-bed, an automatic washer connected with a water-power forcing means and arranged upon the framework of the organized mechanism, and automatic scouring-brush arranged upon the framework of the bed behind the washer, and the second continuously-operating conveyer-bed adapted to receive and convey the lumber lengthwise, substantially as described.

9. An organized mechanism for automatically carrying lumber from rafts on rivers or streams to the place of deposit, comprising a main or first continuously-operating conveyer-bed, inclined conducting-boards on the sides of the bed forming with the bed a guiding-trough, timber-supporting floating horses arranged in the water of a stream or river on one or both sides of the conveyer-bed and adapted for separate pieces of lumber to ride or rest on them lengthwise of said bed, endless pulling and elevating chains arranged between the conveyer-bed and the bed of the river and adapted to take the pieces of timber continuously one after another from the floating horses and pull and elevate them to the trough and deposit them on the inclined boards thereof, so as to have them descend and rest lengthwise upon the conveyer-bed to be conveyed thereon, transfer-chains having the

sections which receive the pieces of timber successively from the conveyer-bed formed of links beveled from bottom to top, so as to form steeple-chains, a grader's stand located between the receiving and discharging section of the transfer-chains, steeple-chains L^3, and an assorter comprising carrying-chains of different lengths with discharge space and director at their respective forward ends, two of said chains being of lengths to afford a support for the longest pieces at both ends till they arrive at their points of discharge, and thereupon one of said chains ceasing to support the lumber and the other chains of lengths adapted for supporting the pieces of lumber at both ends until they arrive at their respective points of discharge, and thereupon ceasing to support them at one of their ends, substantially as described.

10. An organized mechanism for automatically carrying lumber from rafts on rivers or streams to the place of deposit, comprising a main or first continuously-operating conveyer-bed, inclined conducting-boards on the sides of the bed forming with the bed a guiding-trough, timber-supporting floating horses arranged in the water of a stream or river on one or both sides of the conveyer-bed and adapted for separate pieces of timber to ride or rest upon them lengthwise of said bed, endless pulling and elevating chains arranged between the conveyer-bed and the bed of the river and adapted to take the pieces of lumber continuously one after another from the floating horses and pull and elevate them to the trough and deposit them on the inclined boards thereof, so as to have them descend and rest lengthwise upon the conveyer-bed to be conveyed thereon, transfer-chains having the sections which receive the pieces of timber successively from the conveyer-bed formed of links beveled from bottom to top, so as to form steeple-chains, a grader's stand located between the receiving and discharging sections of the transfer-chains, gearing for giving a slow movement to the transfer-chains and a faster movement to the conveyer-bed, an automatic washer connected with a water-power forcing means and arranged upon the framework of the organized mechanism, an automatic scouring-brush arranged upon the framework of the bed behind the washer, the second continuously-operating conveyer-bed adapted to receive and convey the lumber lengthwise, steeple-chains, and the specified assorter-chains, substantially as described.

11. The lumber-assorter comprising carrying-chains of different lengths with discharge-space at their respective forward ends, one of said chains being of a length to afford a support for the longest pieces of lumber at one end and with two other shorter chains of the series to insure support of such pieces at both ends till they arrive at their point of discharge and the other shorter chains also being of lengths adapted, in conjunction with the chain L^4, to insure the support of pieces of lumber of varying lengths at both ends until they arrive at their respective points of discharge, and thereupon said respective short chains ceasing to support the pieces of lumber at one of their ends, substantially as described.

12. The combination, with steeple transfer-chains L^3, of the described lumber-assorter, comprising carrying-chains of different lengths with discharge-space at their respective forward ends, one of said chains being of a length to afford a support for the longest pieces at one end, and with two other shorter chains of the series to insure the support of such pieces at both ends till they arrive at their point of discharge, and other shorter chains also being of lengths adapted, in conjunction with the chain L^4, to insure the support of the pieces of lumber of varying lengths at both ends until they arrive at their respective points of discharge, and thereupon said respective shorter chains ceasing to support the pieces of lumber at one of their ends, substantially as described.

13. The combination, with the directors T and the roller-bed, of the described assorter-chains, one of said chains being of a length to afford a support for the longest pieces at one end and with two other shorter chains of the series to insure the support of such pieces at both ends till they arrive at their point of discharge, and the other shorter chains also being of lengths adapted, in conjunction with the chain L^4, to insure the support of the pieces of lumber at both ends until they arrive at their respective points of discharge, and thereupon said respective shorter chains ceasing to support them at one of their ends, substantially as described.

14. An automatic lumber-assorter comprising a supporting-frame having a series of successive and constantly-open lumber-discharging spaces and traveling lumber-carrying chains constructed and arranged to receive, support, and carry pieces of lumber of different lengths until they arrive at spaces adapted for their discharge and then cease to support the respective pieces and allow them to discharge through spaces suited to their respective lengths, substantially as described.

15. An automatic lumber assorter comprising chains of varying lengths, one of said chains extending the entire length of the assorter and adapted to receive and support one end of all lengths of lumber during the conveyance and the other ends being supported and conveyed by the other chains of varying lengths until delivered to the proper discharging-spaces, substantially as described.

16. An automatic lumber-assorter comprising a supporting-frame having discharging-spaces adapted for the passage through them of pieces of lumber of different lengths and traveling, carrying, and supporting chains of varying lengths, one of said chains extending the entire length of the assorter and receiving, supporting, and carrying one end of all the lengths or pieces during their conveyance by the assorter-chains, and the other ends of the pieces of lumber being supported and conveyed by other chains of varying lengths until delivered to the proper discharging-spaces, substantially as described.

17. The combination of a conveyer, pulling and elevating chains arranged on the side of the conveyer between its ends and between it and the river-bed, lumber-supporting floating horses arranged to receive the pieces of lumber lengthwise of the conveyer, and steeple transfer-chains arranged transversely to the conveyer, substantially as described.

18. The combination of the first conveyer and steeple transfer-chains presenting beveled surfaces to the ends of the pieces of lumber as they pass upon them and arranged transversely to said conveyer, substantially as described.

19. The combination of the first conveyer, the first steeple transfer-chains presenting beveled surfaces to the ends of the pieces of lumber as they pass upon them and arranged transversely to the said conveyer, the grader's stand, the steeple-chains L^3, and the assorter-chains, substantially as described.

20. The combination of the first conveyer, steeple transfer-chains arranged transversely to the conveyer, the second conveyer, and the assorter-chains formed of different lengths, substantially as described

21. The combination of the assorter comprising chains, as L^4 to L^{13}, of different lengths, inclined directors T, suitable beds for the graded and sorted lumber, steeple transfer-chains L^3, and a suitable conveyer arranged transversely to the said steeple-chains, substantially as described.

22. The combination of the automatic washer, water-forcing means, the conveyer, the steeple transfer-chains arranged transversely to the conveyer, and the grader's stand, substantially as described.

23. The combination of the pulling and elevating chains, the conveyer, the automatic washer, water-forcing means, the steeple transfer-chains arranged transversely to the conveyer, and the grader's stand, substantially as described.

24. The combination of the pulling and elevating chains, lumber-supporting floating horses, the conveyer, the automatic washer, water-power forcing means, the steeple transfer-chains arranged transversely to the conveyer, and the grader's stand, substantially as described.

25. The combination of the conveyer, automatic scouring-brush, automatic washer, water-forcing means, steeple transfer-chains arranged transversely to the conveyer, and the grader's stand, substantially as described.

26. The combination of a suitable conveyer, the automatic washer, water-forcing means, steeple transfer-chains arranged transversely to said conveyer, and the assorter-chains, substantially as described

27. The combination of the automatic washer, water-forcing means, the first and second conveyers, the steeple transfer-chains L, arranged between and transversely to the said conveyer, steeple transfer-chains L^3, and the assorter-chains of different lengths, substantially as described.

28. The combination of the automatic washer, water-forcing means, suitable conveyer, the steeple transfer-chains L and L^3, those L being arranged transversely to the said conveyer and those L^3 parallel therewith, the assorter-chains, and the inclined lumber-directors, substantially as described.

29. The combination of the automatic washer, water-forcing means, the automatic scouring-brush, suitable conveyer, the steeple transfer-chains arranged transversely to said conveyer, the grader's stand, the assorter-chains of different lengths, the inclined directors, and suitable beds for receiving the graded and assorted lumber, substantially as described.

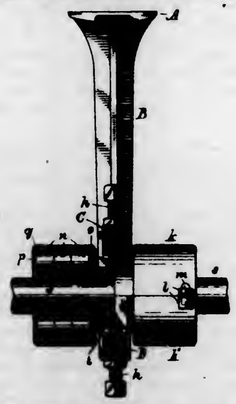
30. The combination of the grader's stand, conveyer-bed, and steeple transfer-chains which present beveled surfaces to the pieces of lumber as they pass upon them and are arranged transversely to the conveyer-bed and move at a slower speed than the conveyer, substantially as described.

31. The combination of the engine, pump, pulling and elevating chains, lumber-supporting floating horses, automatic washer-head, first conveyer, inclined boards on sides of said conveyer, steeple transfer-chains presenting beveled surfaces to the ends of the pieces of lumber as they pass upon them and arranged transversely to the conveyer, the grader's stand, the second conveyer, the assorter-chains of different lengths, inclined directors, roller-beds for receiving the graded and assorted lumber, and gearing for communicating motion to the first and second conveyers and to the transfer and assorting chains, substantially as described.

485,937. SCRAP-BOOK. JOHN V. HOUSTON, Lakeville, Oreg. Filed June 28, 1892. Serial No. 437,741. (No model.)

Claim.—The combination, with the inclosing casing having an opening at one edge, of the rollers 7, journaled at the corners of the casing adjacent to said opening, the plate 5, located just back of said opening, the winding and unwinding rollers 8 9, journaled within the casing and provided with gear-wheels 11, the intermediate gear-wheel 13, journaled in the frame 12, pivoted to one side of the casing, and adapted to be thrown into engagement with either of the wheels 11, the push-button 17, whereby the frame 12 may be manipulated to change the position of the gear-wheel 13, and the spring-catch 14, adapted to engage the free end of the frame 12 to hold the gear-wheel 13 in engagement with either of the wheels 11, substantially as and for the purposes specified.

485,938. ROLLER-BOX FOR SHAFT-HANGERS. JOHN W. HYATT, Newark, N. J. Filed May 17, 1892. Serial No. 433,382. (No model.)



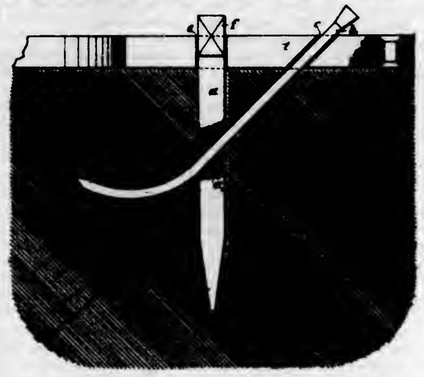
Claim.—1. The combination, with a hanger having the guides *e* and the cross-bars C D, of the roller journal-box divided horizontally and having the contracted waist *i* fitted to the guides *e* and provided at opposite ends with the enlarged cylindrical chambers *j* and anti-friction-rolls, and the cross-bars having means for adjusting the box vertically between the guides, substantially as herein set forth.

2. The combination, with a hanger having the guides *e* and the cross-bars C D, of the roller journal-box divided horizontally and having the contracted waist *i* fitted to the guides *e* and having at opposite ends the enlarged cylindrical chambers provided with grooves *q* in their outer ends, and the removable covers *p*, fitted in the grooves *q* and split at one side, and thereby adapted to spring over the shaft, as set forth.

485,939. DEVICE FOR LOCKING SPIKES. CARL S. VON ILANUS, Neu Villa, near Atterzee, Austria-Hungary. Filed Mar. 28, 1892. Serial No. 426,775. (No model.) Patented in England Mar. 7, 1892, No. 4,472; in Belgium Mar 31, 1892, No. 96,825; in Switzerland May 17, 1892, No. 4,823, and in Austria-Hungary June 2, 1892, No. 4,150 and No. 31,207.

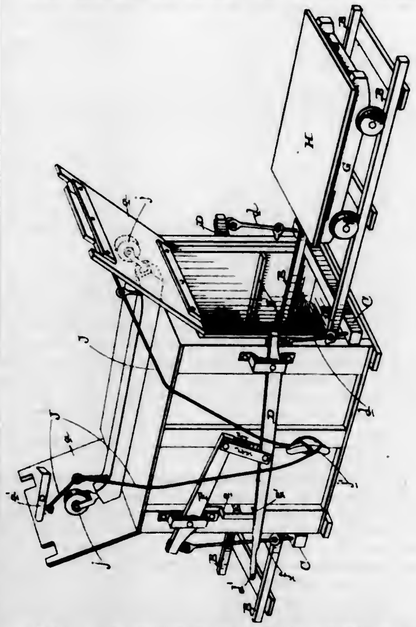
Claim.—1. A device for guiding the safety-nails of railroad-spikes, having the opening to receive the spike and the inclined guiding-opening to receive and direct the safety-nail, substantially as described.

2. A device for guiding the safety-nails of railroad and like spikes, consisting of the separable parts *l*, having the recess *c* between them for the spike, and the second recess *c*, inclining thereto and adapted to receive and direct the safety-nail, substantially as described.



3. In combination in a guiding device for the safety-nails of railroad-spikes, the two parts *l*, hinged together at one end, and each having recesses which form when the parts are brough together the recess *c* for the spike and the recess for the rail, substantially as described.

485,940. APPARATUS FOR BLEACHING FRUIT. ELIAS IRELAND, Winters, Cal. Filed Aug. 4, 1892. Serial No. 442,164. (No model.)



Claim.—1. An apparatus for bleaching fruit, consisting of a casing or chamber for confining the fruit and bleaching-fumes, said chamber having supports within it, vertically-movable tracks extending into said casing or chamber, whereby a load-car may be introduced therein, and a removable load-platform carried by the car and adapted to be transferred from the car to the supports and back again from the supports to the car by the movement of the tracks, substantially as herein described.

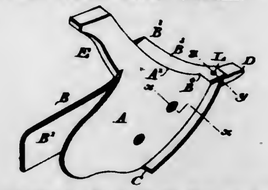
2. An apparatus for bleaching fruit, consisting of a chamber or casing for confining the fruit and the bleaching-fumes, supporting-cleats upon the interior of the chamber or casing, a load-platform adapted to be supported by said cleats, tracks entering said chamber or casing, a car adapted to travel on said tracks, and means for vertically raising said tracks within the chamber or casing, whereby the load-platform is successively transferred from the car to the supporting-cleats and back again, substantially as herein described.

3. An apparatus for bleaching fruit, consisting of a chamber or casing for confining the fruit and the bleaching-fumes, supporting-cleats upon the interior of the chamber or casing, a load-platform adapted to be supported by said cleats, tracks entering said chamber or casing and upon which a car is adapted to travel, and means for vertically raising said tracks within the chamber or casing to transfer the load-platform from the car to the cleats and back again, consisting of lifting-bars at each end of the chamber or casing passing under the tracks and levers connected therewith, whereby they are operated, substantially as herein described.

4. An apparatus for bleaching fruit, consisting of a chamber or casing for confining the fruit and the bleaching-fumes, supporting-cleats upon the interior of the chamber or casing, a load-platform adapted to be supported by said cleats, tracks entering said chamber or casing and upon which a car is adapted to travel, and the means for vertically raising said tracks within the chamber or casing to transfer the load-platform from the car to the cleats and back again, consisting of the lifting-bars at each end of the chamber or casing passing under the tracks, the pivoted main levers D, connected at one end by links with one lifting-bar, the supplemental levers F, connected by links with the other lifting-bar, and the links *f'*, connecting the two levers, whereby they operate in unison, substantially as herein described.

5. An apparatus for bleaching fruit, consisting of a chamber or casing for confining the fruit and bleaching-fumes, said casing having upon its inner surface the supporting-cleats and at each end the swinging doors, the vertically-adjustable track entering said chamber or casing, the lifting-bars under said tracks, the main levers D, pivoted to the sides of the casing and connected with one of the lifting-bars by links, the supplemental levers F, pivoted to the casing and connected by links with the other lifting-bar, the links connecting the two levers, the traveling car, and the removable load-platform adapted to rest upon said car and to be transferred to the supporting-cleats in the chamber or casing by the vertical movement of the tracks, substantially as herein described.

485,941. PLOW. SAMUEL R. JACKSON, Huntingdon Valley, Pa. Filed Feb. 8, 1892. Serial No. 420,653. (No model.)



Claim.—1. A plow having a reversible share provided near each of its ends with a series of openings, a mold-board with teats adapted to enter openings in each of said series, a clamping-plate with a shoulder engaging a shoulder on the mold-board, and means for connecting said plate and mold-board, said parts being combined substantially as described.

2. A plow having a standard, a sectional landside having each of its sections connected therewith, and a mold-board, one of said sections projecting beyond the front of the mold-board and provided with a shoulder against which the mold-board abuts, said parts being combined substantially as described.

3. A plow having a landside with a tongue on its under side and a plow-point having a longitudinally-slotted end to embrace said tongue, the walls of said tongue and slot forming double dovetail joints, forming a reversible point, substantially as described.

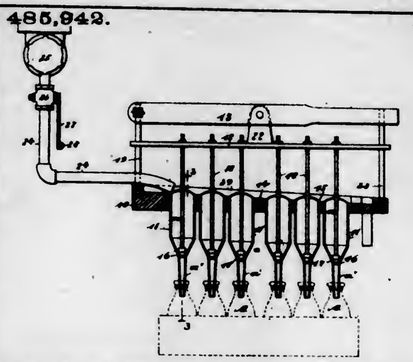
4. A plow having a landside with a tongue on its under side having an opening therein, and a plow-point with slotted end having in the walls thereof an opening corresponding to the opening in the tongue, and a key fitting in said openings, said parts being combined substantially as described

485,942. BOTTLE-FILLING APPARATUS. JOHN JACKSON, Lonsdale, R. I. Filed Feb. 26, 1892. Serial No. 422,901. (No model.)

Claim.—1. The filling apparatus comprising the trough having a series of dependent tubes provided with valves, rods extending up from the valves, a vertically-sliding frame 12, to which the upper threaded ends of the rods are secured, vertical guides 23 for said frame, a pivoted lever crossing the frame and pivotally connected between its ends with the said frame, and a supply mechanism leading to the trough, substantially as described.

2. A bottle-filling apparatus consisting in the trough 10, having a series of partitions 20, a series of tubes depending from every compartment formed thereby, a vertically-sliding frame carrying a series of depending valve-rods having valves on their lower ends within the tubes, a lever for operating said frame, a supply-tank 25, having a series of pipes 24 leading therefrom into the several trough-compartments and having valves 26, links 27, connected with said valves, and a lever connecting the series of links, substantially as described.

485,942.



485,943. SITZ-BATH. ALGERNON R. JAMESON, New York, N. Y. Filed Apr. 9, 1892. Serial No. 428,508. (No model.)

Claim.—1. The herein-described sitz-bath, comprising a pan having inlet and outlet pipes and a removable seat adapted to fit in said pan and having the inner depending wall adapted to rest upon the bottom of the pan and divide the same into two compartments, substantially as described.

2. The herein-described sitz-bath, comprising a pan, a removable inclined seat adapted to fit within said pan and divide the same into two compartments, and outlet and inlet pipes communicating with the outer compartment, substantially as described.

3. The herein-described sitz-bath, comprising a pan, a removable seat adapted to fit snugly in said pan and having the inner depending wall arranged to rest upon the bottom of the pan and divide the same into two compartments, the outlet-pipe, and the inlet-pipe having the branches to discharge the water on opposite sides of the pan in the outer compartment thereof, substantially as described.

4. In a sitz-bath, the combination, with a pan and a removable seat adapted to fit in the pan and divide the same into two concentric compartments, of an inlet-pipe having curved branches arranged in the outer compartment and an outlet-pipe communicating with the outer compartment and provided within said compartment with an upwardly-extending branch, substantially as described.

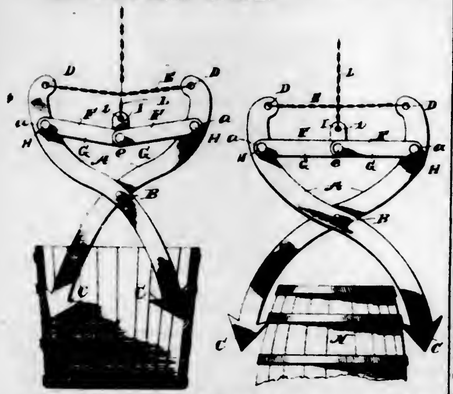
5. In a sitz-bath, the combination, with a pan and a seat adapted to fit therein, the inner wall of said seat dividing the pan into two compartments, of the inlet-pipe passing through the side of the pan and having the curved branches on the inner end thereof concentric with the side of said pan and adapted to discharge the water on opposite sides of the pan, the outlet-pipe arranged beneath said inlet-pipe and opening into the pan close to the bottom of the pan and provided with the upward extension arranged within the pan between the side thereof and the end of said pipe to receive the overflow of water in the pan, substantially as described.

6. The combination, with a pan having the inlet and outlet pipes, of a seat having an annular depending flange adapted to fit snugly within the side of the pan, the inclined portion of said seat conforming to the shape of the bather and the inner wall extending downward from the inner edge of said inclined portion to rest upon the bottom of the pan, substantially as described.

7. In a sitz-bath, the combination, with a pan, of a removable seat E, adapted to fit snugly within the pan and divide the same into two compartments, and a removable cover F, arranged to fit on the seat and partially cover the same and the pan, substantially as described.

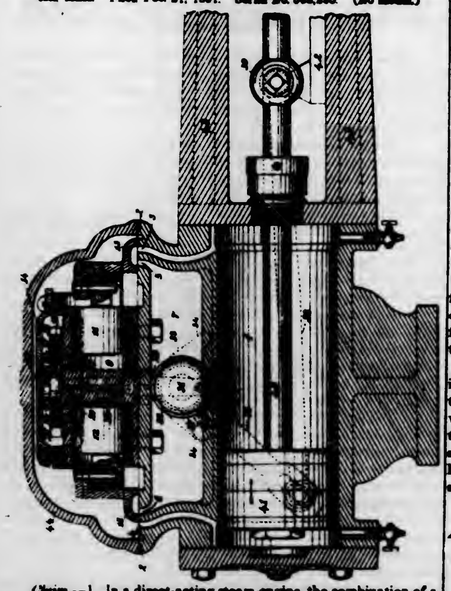
8. The combination, with a pan having inlet and outlet pipes, of a seat adapted to fit snugly in said pan and having an annular flange around the upper edge thereof and a removable cover having a flange arranged to fit under said annular flange on the seat to hold said cover in place over a portion of the pan, substantially as described.

485,944. GRAPPLE. REUBEN JONES, Kaufman, Tex. Filed July 30, 1892. Serial No. 441,626. (No model.)



Claim.—In a grapple, the S-shaped arms, the arrow-heads formed in the same piece with the arms and adapted to grasp either the interior or exterior of a vessel, and the chain E, secured to the upper ends of said arms, in combination with the toggle-levers F and G, the short arm I, pivoted to and between the levers F and G, and the chain L, secured to the said short arm, substantially as shown and described.

485,945. STEAM-ACTUATED VALVE. DANIEL E. KEMPSTER, Boston, Mass. Filed Feb. 21, 1891. Serial No. 382,295. (No model.)



Claim.—1. In a direct-acting steam-engine, the combination of a main cylinder, a piston and rod therefor, a steam-chest on said cylinder having the upwardly-extending portion 8, minor cylinders, and pistons therein, a main-valve seat having suitable induction and eduction ports, a main valve controlling said ports, suitable connecting devices between said main valve and minor pistons, an auxiliary-valve seat on said upwardly-extending portion, having suitable ports for said minor cylinders, an auxiliary valve on said seat, the aperture or slot 30, a lever therein for operating said valve, a shaft to which said lever is connected, passing through the side of the steam-chest, a side lever and its co-operating arm on said shaft, a connecting-rod pivoted to said side lever, and a cam-head fast on the main piston-rod and the other end of said connecting-rod pivoted thereto, all constructed and arranged to operate substantially as described.

2. In a direct-acting steam-engine, the combination, with a steam-chest having the upwardly-extending portion 8, provided with an auxiliary-valve seat, of a flat auxiliary valve thereon, its operating bar or lever passing through an aperture or slot in said seat into an exhaust chamber, a shaft connected with said bar or lever, and mechanism actuated by the main piston of the engine, substantially as described.

3. In a direct-acting steam-engine, the combination, with an auxiliary-valve seat on a raised portion of the steam-chest and having suitable ports for the minor cylinders, of a flat pivoted auxiliary valve therefor, its pivotal center or stud at one side of the steam-chest, a vertical lever adapted to connect with and operate said auxiliary valve, a horizontal shaft to which said lever is connected, and mechanism outside the steam-chest, connected with said shaft and the main piston of the engine, substantially as described.

4. In a direct-acting steam-engine, the combination, with a steam-actuated reciprocating main slide-valve and an auxiliary slide-valve pivoted at one side and oscillating parallel therewith, but on a different plane, and actuated by the main piston of the engine, of co-operating projections on said valves or equivalent mechanism, adapted to operate substantially as and for the purpose herein set forth.

5. In a direct-acting steam-engine, the combination, with a steam-chest having steam and exhaust chambers and a main valve actuated by minor pistons working in stationary minor cylinders on the face of the main-valve seat or cylinder and controlling the motive-fluid supply and exhaust of said main cylinder through suitable ports, of a flat-faced auxiliary valve controlling the motive-fluid supply and exhaust of said minor cylinders through suitable ports in an auxiliary-valve seat on the top of said minor cylinders, an aperture of slot extending from the face of said auxiliary-valve seat through into the exhaust-chamber, and an operating bar or lever connected with said auxiliary valve and passing through the said slot into engagement with mechanism connected with and actuated by the main piston-rod of the engine, substantially as shown and described.

6. In a direct-acting steam-engine, the combination, with the steam-chest thereof, having stationary minor cylinders provided with suitable pistons adapted to operate the main valve, an auxiliary-valve seat located on said minor cylinders and having suitable ports, and a flat-faced auxiliary valve on said seat, of an oscillating lever or device connected with said valve and mechanism actuated by the movement of the main piston, for the purpose set forth.

7. In a direct-acting steam-engine, the combination of a steam-chest, a stationary upright portion or casting therein, minor cylinders and pistons within said casting, an auxiliary-valve seat in said casting, an auxiliary valve on said seat, auxiliary-valve-operating mechanism actuated by the movement of the main piston, a main-valve seat, and a main valve constructed and arranged so as to be engaged by the auxiliary valve and moved mechanically thereby the first part of its stroke on the first movement of said auxiliary valve and then moved the balance of its stroke by direct steam-pressure admitted to the valve-actuating minor cylinder by said auxiliary valve, substantially as described.

8. In a direct-acting steam-engine, a main valve having side arms for encircling the stationary minor cylinders and having upright ears on the back, substantially as described, in combination with a flat-faced reciprocating auxiliary valve having its ends narrower than the body thereof, substantially as and for the purpose herein set forth.

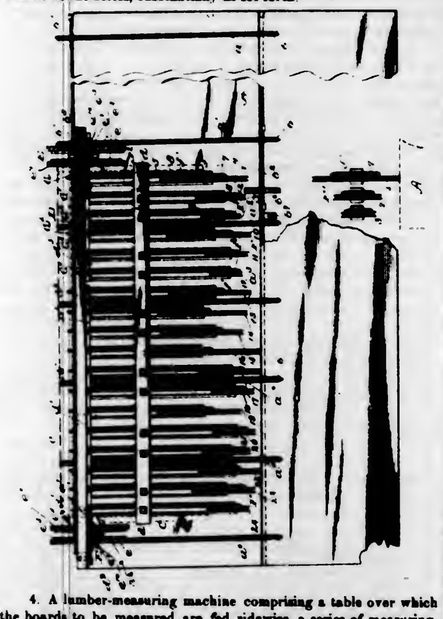
9. In a direct-acting steam-engine, the combination, with an auxiliary valve, a valve-actuating shaft, and connected mechanism between said valve and shaft, of the arms 33, fast on said shaft and provided with stops 34 34, and a side lever loose on said shaft and having the laterally-adjustable stop 37, adapted to co-operate with said arm-stops, and mechanism connected with said side lever, adapted to oscillate the latter by the movement of the main piston of the engine, substantially as and for the purpose herein set forth.

485,946. MACHINE FOR MEASURING AND REGISTERING THE MEASUREMENT OF LUMBER. CLAUS KROGH, Carlton, Minn. Filed Jan. 23, 1892. Serial No. 418,099. (No model.)

Claim.—1. A lumber-measuring machine comprising a table over which the boards to be measured are fed sidewise, a series of measuring-wheels located in proximity to the top of said table at different altitudes and designed to revolve upon contact therewith of a board, and a register or registers having connection with said measuring-wheels, substantially as set forth.

2. A lumber-measuring machine comprising a table over which the boards to be measured are fed sidewise, a series of measuring-wheels of varying diameters or circumferences, located in proximity to the top of said table, a register or registers, a shaft or shafts for operating the same, and differential connections between said shaft or shafts and series of measuring-wheels, whereby one of said wheels can operate said shaft independent of the other wheels of the series, substantially as set forth.

3. A lumber-measuring machine comprising a table over which the boards to be measured are fed sidewise, a series of measuring-wheels of varying diameters or circumferences, located in proximity to the top of said table, means for automatically stopping or holding said wheels, a register, a shaft for operating the same, and differential connections between said shaft and series of measuring-wheels, whereby one of said wheels can operate said shaft independent of the other wheels of the series, substantially as set forth.



4. A lumber-measuring machine comprising a table over which the boards to be measured are fed sidewise, a series of measuring-wheels of varying diameters or circumferences, located in proximity to the top of said table at stated or relative distances apart, said series being divided into gangs of three wheels of different altitudes with relation to said table and to each other, a register for registering the square feet in a board passed over said table beneath or in contact with said wheels, and connections between said wheels and registers, whereby one wheel of each gang of the series can operate said register independent of the other wheels of said gang or of the entire series, substantially as set forth.

5. The herein-described improved lumber-measuring machine, comprising the table, the measuring-wheels located in proximity to the top thereof and arranged in gangs, each wheel of which is at a different height from said table, the sprocket-wheels on the axles of said measuring-wheels, the register, the operating-shaft therefor, the sprocket-wheels on said shaft, and the chains encompassing said latter sprocket-wheels, and also those aforementioned, substantially as set forth.

6. The herein-described improved lumber-measuring machine, comprising the table, a measuring-wheel or series thereof located in proximity to the top of said table and having a sprocket-wheel, the register, the operating-shaft therefor, the sprocket-wheel on said shaft, composed of inner and outer sections, said inner section being secured to said shaft and free to move in advance of said outer section, and the sprocket-chain encompassing said sprocket-wheels, substantially as set forth.

7. The herein-described improved lumber-measuring machine, comprising the table, a series of measuring-wheels located in proximity to the top thereof and at different altitudes, said wheels being of varying diameters and circumferences, sprocket-wheels designed to move with said measuring-wheels, the register, the operating-shaft therefor having sprocket-wheels thereon composed of inner and outer sections designed to engage with each other, said inner sections being secured to said shaft and free to move independent of the outer sections, and the sprocket-chains encompassing said sprocket-wheels, substantially as set forth.

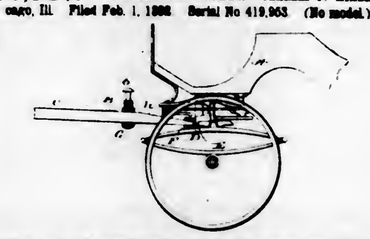
8. In a lumber-measuring machine having a series of wheels of varying diameters or circumferences, a register, an operating-shaft therefor, sprocket-wheels on said shaft operated by each of said former wheels and composed each of an inner section secured to said shaft and having grooves or recesses in its periphery, and an outer section having weighted pawls for engagement with said grooves or recesses, substantially as set forth.

9. In a lumber-measuring machine, a series of measuring-wheels of varying diameters or circumferences having teeth in their peripheries and weighted pawls engaging with said teeth and having their lower weighted ends on a line with the contact-points of said wheels, substantially as set forth.

10. The herein-described improved lumber-measuring machine, comprising a frame, parallel arms extending therefrom, measuring-wheels located between said parallel arms and having teeth in their peripheries, and weighted pawls fulcrumed between said arms and engaging said teeth, substantially as set forth.

11. The herein-described improved lumber-measuring machine, comprising a frame having two upper joists or beams, parallel arms extending from said frame and composed of members adjustably connected together, measuring-wheels located between said parallel arms, and vertical rods depending from one of said joists or beams and having lower lateral arms supporting said parallel arms, substantially as set forth.

485,947. VEHICLE-POLE SOCKET. CHARLES F. KIMBALL, Chicago, Ill. Filed Feb. 1, 1892. Serial No. 419,963. (No model.)

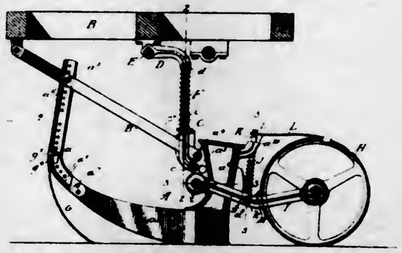


Claim.—1. The combination, with the running-gear, of a socket secured thereto and an elastic cup-shaped lining in said socket, a portion of which lining is between the socket and the running-gear, substantially as set forth.

2. The combination, with the carriage-gear, of the socket having a bearing-surface on its rear side and the elastic lining entered into said socket and having a flange on its rear face, engaging said bearing in the socket, and means for attaching said socket to the carriage-gear, said flange on the lining being clamped between the socket and the carriage-gear, substantially as set forth.

3. The combination, with a socket secured to the carriage-gear and a socket secured to the draw-bar, each of said sockets having an elastic hollow lining, of a pole entered into and fitting said hollows in the respective linings and an elastic cushion arranged behind the rear end of said pole, substantially as set forth.

485,948. SEEDING-MACHINE. GEORGE W. KIRKPATRICK, Macedon, N. Y., and JAMES B. RALSTON, Vernon, Tex.; said Ralston assignor to Helen M. Kirkpatrick, Macedon, N. Y. Filed Aug. 26, 1891. Serial No. 403,803. (No model.)



Claim.—1. In a seeding-machine, the combination of a runner-hoe and a backwardly-curved spring-arm attached to the front part thereof and extending under the runners, substantially as shown and described, to hold down stalks and other obstructive matters that the runner may ride thereover.

2. In a seeding-machine, the combination of the runner-hoe, the vertical pressure-arm pivoted thereto and having its upper end slotted, the crank-arm connected to the pressure-arm by a bolt passing through the slot therein, the spring encircling the pressure-arm, and an adjustable seat for the spring, by the adjustment of which the spring-pressure may be varied.

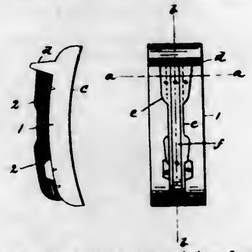
3. The combination of the runner-hoe having a guide a^{10}, the follower-wheel, the wheel-carrying arms jointed to the hoe to swing vertically, the bar K, jointed to said arms and extending through the guide a^{10}, the spring encircling the rod between the guide and the wheel-

carrying arms to press the latter down, and the wheel-scraper attached to the upper end of the bar K.

4. In a seeding-machine, the pressure-arm C, having the forked lower end, in combination with the runner-hoe having the vertically-extended flange fitted between and against the rear ends of the pressure-arm, whereby the hoe is maintained in an upright position and prevented from tipping sidewise.

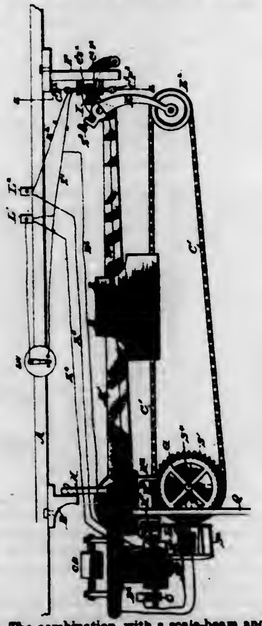
5. In combination with the hoe, the wheel-carrying arms jointed thereto to swing vertically, the pressure-spring seated between the arms and a projection on the hoe, the guide-bar extending from the arms through the spring and the projection on the hoe, and the scraper attached to the upper end of said bar.

485,949. PATTERN FOR CASTING BRAKE-SHOES. WILLIAM H. KRAMER, Allegheny, Pa. Filed Mar. 31, 1892. Serial No. 427,155. (No model.)



Claim.—A pattern for brake-shoes, consisting of a rubber, clutch-pieces separable from the rubber and having outer faces inclining outwardly from the rubber, and a key-piece arranged to be inserted between said clutch-pieces, as set forth.

485,950. AUTOMATIC ELECTRIC SCALE. PAUL J. KUHRACHER, Ashland, Ky. Filed Mar. 24, 1892. Serial No. 426,309. (No model.)



Claim.—1. The combination, with a scale-beam and its poise, of an endless belt attached to the poise, a sprocket-wheel for rotating the belt, and an electric motor, with revolving armature and automatic circuit-closing devices, for rotating the sprocket-wheel in either direction, substantially as shown and described.

2. In an automatic electric weighing-scale, the combination, with the poise-actuating devices and the electric motor, of a clutch interposed between the two and an electro-magnet placed in the circuit of the motor and acting upon the clutch to open the same when the current is broken in the motor, substantially as shown and described.

3. In an automatic electric weighing-scale, the combination, with the poise, of an endless belt for moving it, a worm-wheel and worm for rotating the belt-wheel, the electric motor, a clutch arranged between the motor and the worm, and an electro-magnet placed in the circuit of the motor and arranged to open the clutch and at the same time allow the worm to arrest the momentum of the poise-actuating mechanism, substantially as shown and described.

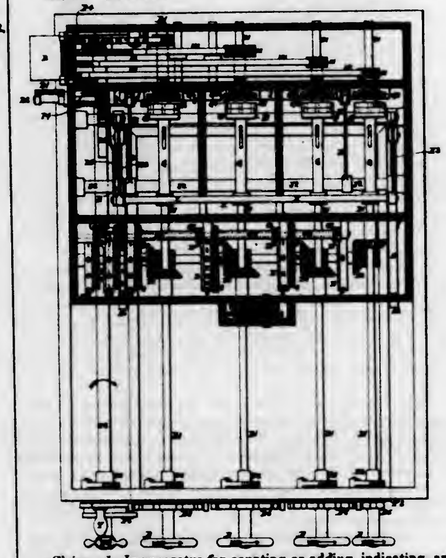
4. The combination, with the poise and scale-beam and an endless belt for operating the poise, of an adjustable lever-hanger fulcrumed upon the scale-beam and provided at its upper end with a set-screw and at its lower end a pulley for regulating the tension of and removing slack from the endless belt, substantially as shown and described.

5. The combination, with an automatic electric weighing-scale, of a printing device connected to and operated by the weighing devices and an adjustable connection for gearing these two parts together or disconnecting and moving one of these parts back in relation to the other to compensate for the known weight of the car and only print the net weight of load, substantially as shown and described.

6. The combination, with the endless belt moving the poise and its actuating sprocket-wheel, of the shaft S^4, rigidly attached thereto and having rigid disk *i* with holes, the loose gear-wheel w^3, having bracket-arm, with pointer and screw *k* for connecting and disconnecting the rigid disk, and the printing-gears connected to the loose wheel w^3, substantially as and for the purpose described.

7. The combination, with the printing-wheels and a hollow magnet, of a movable core having attached to it a press-plate reaching up to the printing-wheels and a spring for withdrawing the core and press-plate substantially as and for the purpose described.

485,951. CASH REGISTER, INDICATOR, AND CHECK-PRINTER. ROBERT LAMONT, Kilmarnock, Scotland. Filed May 3, 1892. Serial No. 431,622. (No model.)



Claim.—1. In apparatus for counting or adding, indicating, and recording cash or other quantities, the combination of the following parts, namely: hand-wheels B on spindles B', bevel-wheels B^2, which turn bosses B^4, loose on a spindle passing through spur-wheels C, smaller spur-wheels C', fixed on bosses B^4, planet-wheels C^3 on pins C^3, fixed in the spur-wheels C and gearing with the spur-wheels C' and with counter-wheels E, pinions C^4 on tubular spindles C^5, gearing with the spur-wheels C, projecting parts E' on the counter-wheels E, engaging with pinions C^6 on the spindles C^5, also tubes G on the spindles B', clutch-disks G' thereon, and clutch-disks G^2 on tubes G^3, having pinions G^4 gearing with vertical rack-bars G^5, which gear with pinions H, fixed to front indicating-disks H', reverse indicating-disks H^3, actuated through horizontal rack-bars L' L^2, pinions L^3 L^4 L^5 L^6, and a pitch-chain from the drivers of the front disks H,' also horizontal bars J and K, actuated, as described, to put the indicating-disks to zero, also pinions M on the tubes G^3, acting on sectors M', provided with type, an inking-ribbon N, moved as described, also paper feeding, impressing, and reversing devices, as described, and also a drawer A for receiving the cash, and in connection therewith devices for locking the spindles B' and devices for acting on other parts, as described, the several parts being arranged and operating substantially as and for the purposes herein set forth.

2. In the carrying mechanism, the combination of the following parts, namely: hand-wheels B on spindles B', bevel-wheels B^2, turning bosses B^4, loose on a spindle passing through spur-wheels C, smaller spur-wheels C', fixed on the bosses B^4, planet-wheels C^3 on pins C^3, fixed in the spur-wheels C and gearing with the spur-wheels C' and with counter-wheels E, pinions C^4 on tubular spindles C^5, gearing with the spur-wheels C, and projecting parts E' on the counter-wheels E, engaging with pinions C^6 on the spindles C^5, the several parts being arranged and operating substantially as herein set forth.

3. In an indicating mechanism, the combination of the following parts, namely: tubes G on spindles B', clutch-disks G' thereon and clutch-disks G^2 on tubes G^3, having pinions G^4, gearing with vertical rack-bars G^5, which gear with pinions H, fixed to front indicating-disks H', reverse indicating-disks H^3, actuated through the horizontal rack-bars L' L^2, pinions L^3 L^4 L^5 L^6, and a pitch-chain from the drivers of the front disks H', also horizontal bars J and K, actuated, as described, to put the indicating-disks to zero, the several parts being arranged and operating substantially as and for the purpose herein set forth.

4. In cash registering, indicating, and recording machines, the combination of spindles B', tubes G^3, and clutch mechanism adapted to connect the said tubes to the spindles with pinions M on the said tubes G^3, sectors M', actuated by the pinions M and provided with type, all substantially as and for the purposes set forth.

5. In cash-recording machines, the combination of sectors M', provided with type and means for actuating same with a strip of paper, an inking-ribbon, and rotatable disk P', provided with a roller P, an impression-bar N^7, and lever N^8, actuated by the roller P to actuate in turn the impression-bar, all substantially as and for the purposes set forth.

6. In a cash-recording machine, the combination of sectors M', provided with type and means for actuating same with a strip of paper, an inking-ribbon, and rotatable disk P', provided with a roller P, an impression-bar N^7, and lever N^8, actuated by the roller P to actuate in turn the impression-bar, a table R, spindle R^3, having affixed thereto a plate R', and means for turning the spindle, all substantially as and for the purposes set forth.

7. In a cash-recording machine, the combination of sectors M', provided with type, means for actuating the same, a strip of paper, and an inking-ribbon with a crank-shaft P^2, slides Q and Q^3, bars P^4, connecting the slide Q with the crank-shaft, gripping-plate Q^4, having a lever Q^4 and pivoted to the slide Q^3, and the lever Q^5, passing through an opening in the slide Q^3 and connecting the slide Q with the lever Q^4, all substantially as and for the purposes set forth.

8. In a cash-recording machine, the combination of sectors M', provided with type, means for actuating the same, a strip of paper, and an inking-ribbon with a crank-shaft P^2, slides Q and Q^3, bars P^4, connecting the slide Q with the crank-shaft, gripping-plate Q^3, having a lever Q^4 and pivoted to the slide Q^3, a lever Q^5, passing through an opening in the slide Q^3 and connecting the slide Q with the lever Q^5, the said slide Q being provided with a cutting-knife adapted to act with a stationary knife fixed to the framing, all substantially as and for the purposes set forth.

9. In a cash-recording machine, the combination of sectors M', provided with type and means for actuating same, a strip of paper, and an inking-ribbon with a crank-shaft P^2, a slide Q, arms P^4, connecting the slide Q with the crank-shaft P^2, a rod N^3 on the said slide, lever N^4, provided with a gripping-plate N^5 and having pivoted thereto a gripping-plate N^6, the said gripping-plates N^5 N^6 adapted to be actuated by the rod N^3 to grip the inking-ribbon and carry it forward, all substantially as set forth.

10. In a cash-recording machine, the combination of the sectors M', provided with type, means of actuating the same, a strip of paper, and an inking-ribbon with a crank-shaft, an impression-bar N^7, gripping-plate Q^5, gripping-plates N^5 N^6, and suitable connections whereby the said bar N^7 and the gripping-plates Q^5 N^5 N^6 are actuated by the rotation of the said crank-shaft, substantially as set forth.

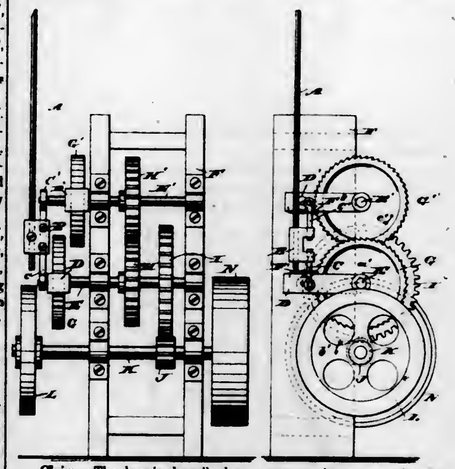
11. In a cash-recording machine, the combination of the cash-drawer with a shaft P^5 to actuate the printing devices when rotated and a disk P^6, fixed to the said shaft, the said disk P^6 having a cut-away portion and adapted to prevent the drawer from being opened except when the cut-away portion is turned toward the drawer, and a spindle B', having notched disks B^6 fixed thereto, a bar T^2, having studs adapted to engage in the notches of the disks B^6, and a lever T, adapted to move the bar T^2 and provided with a pin T^3, adapted to lock the said shaft P^5, all substantially as and for the purposes set forth.

12. In a cash indicating, registering, and recording machine, the combination of spindles B', gear-wheels G^4, adapted to be turned forward by the said spindles, racks G^5 to operate the indicating mechanism and gearing with the wheels G^4, with a drawer having a friction-roller A^2, a bar J, and lever connections J' J^2 J^3 J^4, adapted to be actuated by the said roller A^2 to raise the bar J to turn the racks G to their normal positions, all substantially as set forth.

13. In a cash registering and indicating machine, the combination of hand-wheel having secured thereto spindles B', pinions B^6 to actuate the registering mechanism, tubes G, capable of longitudinal movement on the spindles, but adapted to rotate therewith, and tubes G^3, loose on the spindles B' and having pinions G^4 to actuate the indicating devices, with mechanism adapted to connect the tubes G with the tubes G^3 and means for disengaging these tubes from each other while the indicating devices are being returned to zero, substantially as and for the purposes set forth.

14. In cash indicating, registering, and recording machines, the combination of hand-wheel spindles B', provided with pinions B^6 to actuate the registering mechanism, tubes G, capable of longitudinal movement on the spindles B', but adapted to rotate therewith, and tubes G^3, loose on the spindles B' and provided with pinions G^4 and M to actuate the indicating and recording devices, respectively, with mechanism adapted to connect the tubes G with the tubes G^3 and means for disengaging these tubes while the indicating and recording devices are being returned to zero, substantially as and for the purposes set forth.

485,952. POWER-TRANSMITTER. WILLIAM LARSON and OLE GUDENSEN, Lake Mills, Iowa. Filed June 26, 1892. Serial No. 437,964. (No model.)



Claim.—The herein-described power-transmitter, comprising a frame, three parallel shafts E E' K, mounted therein and geared together, ratchet-wheels mounted on the shafts E E', parallel arms D D', also on the shafts E E', and provided with pawls engaging said ratchets, arms C C', projecting from arms D D' toward each other, and a head B, to which the adjacent ends of arms C C' are clamped, substantially as set forth.

485,953. SIPHONIC WATER-DISTRIBUTING APPARATUS. JOHN K. LEEDY, Tom's Brook, Va. Filed Jan. 26, 1892. Serial No. 419,331. (No model.)

Claim.—1. In a siphonic water system, the combination of a water-main having its respective ends sealed by immersion in a source of supply and discharge, the supply-source being above the level of the source of discharge-water, the intermediate portions of the main having angular bends whose apexes are above the level of the source-water, air-traps located at these apexes and constructed substantially as described, pipes *c*, connected to the main at intervals along its length, said pipes being carried below the level of the water-source and then to the surface of the ground, and pumps connected to the upper ends of these pipes, substantially as described.

2. A siphonic water system consisting of a water-source, a water-discharge below the source, a main connecting the source and discharge and having intermediate elevations and depressions, service-pipes connected to the main at intervals along its length, said pipes being carried below the level of the water-source and then to the sur-

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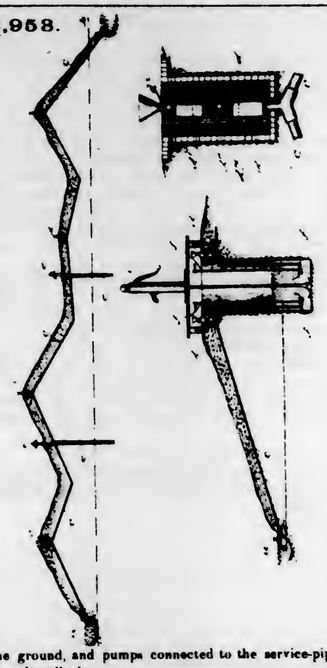


face of the ground, and pumps connected to the service-pipes, substantially as described.

485,954. **FIRE-ESCAPE.** LUCRETIA LESTER, Cuba, N. Y. Filed June 18, 1892. Serial No. 437,111. (No model.)

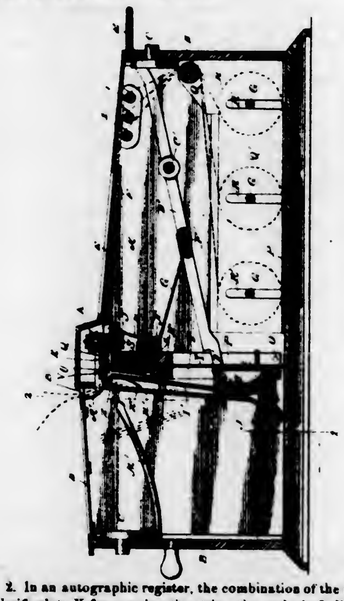
Claim.—1. In a frictional fire-escape, the combination of the jaws A and B, having a series of corrugations with central recesses, said sections being pivoted to each other, substantially as shown, and for the purpose set forth.

2. In a frictional fire-escape, the combination of the sections A and B, provided with corrugations having central recesses, and a pivot for securing the parts to each other, one of the sections having a straight portion above and to one side of the pivot, substantially as shown, and for the purpose set forth.

3. In a frictional fire-escape, the combination of the sections A and B, having corrugated inner faces, one of the sections having a projecting lug, with an aperture serving as a guide for the rope, and a hook *e*, outwardly-extended portion having a pivot to one side or out of line with the aperture *d*, a section B, having a straight portion above the pivot, shoulders *f f*, and a hook at the end farthest from the pivot, substantially as shown.

485,955. **AUTOGRAPHIC REGISTER.** PERRY B LOREE, Dayton, Ohio, assignor to the National Cash Register Company, same place. Filed July 11, 1892. Serial No. 439,579. (No model.)

Claim.—1. In an autographic register, the combination of the pair of feed-rollers for advancing the paper strips to the cutting-point, the reciprocating knife-plate Y for severing the strips, and the pivoted frame for actuating the knife-plate, composed of the levers D', projecting outside the casing and having their ends connected by the cross-bar E', substantially as described.



2. In an autographic register, the combination of the reciprocating knife-plate Y for severing the strips, the rock-shaft J', the filing-frame I', carried thereby, the plate K', secured to said frame, the filing pin M', the rods N', secured to the rock-shaft J' and projecting through slots in the knife-plate Y, and means for reciprocating the knife-plate, substantially as described.

3. In an autographic register, the combination of the feed-rollers for advancing the paper strips to the cutting-point, the reciprocating knife-plate Y for severing the strips, the deflecting-plates A' and Z for directing the check-strips upward and the record-strip downward, the filing-pin M', the guide-wires H', the rock-shaft J', the filing-frame I', carried by the rock-shaft and provided with the plate K', co-operating with the filing-pin M', the arms N', and the lever-frame for reciprocating the knife-plate, provided with the operating cross-bar E' outside of the casing, substantially as described.

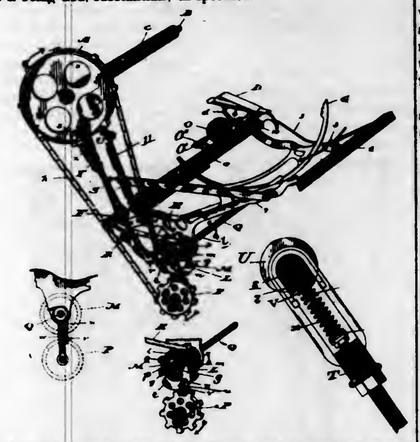
4. In an autographic register, the combination of the reciprocating knife-plate Y for severing the strips, the gong S' and striker T', carried by said plate, a contact-piece, as W, co-operating with the striker T' to sound the gong when the knife-plate is lifted, and means for lifting the knife-plate, substantially as described.

5. In an autographic register, the combination of the feed-rollers for advancing the paper strips, the hinged frame composed of the side-plates P and cross-bars Q, R, and S, and the hinged frame composed of the side plates T and the cross-bars U, V, and W, the vertically-reciprocating knife-plate Y, confined and guided between said frames, and the lever-frame for lifting said knife-plate to sever the paper strips between the cross-bars Q R and U V, substantially as described.

6. In an autographic register, the combination of the feed-rollers for advancing the paper strips, the reciprocating knife-plate Y for severing them, the deflecting-plates A' and Z for directing the check-strips upward and the record-strip downward, the filing-pin M', the rock-shaft J', the filing-frame I', carried thereby and provided with the plate K', co-operating with the pin M', the rods N', secured to the rock-shaft J' and projecting through slots O' in the knife-plate, the levers D', hung on the shaft C' and projecting through slots in the knife-plate at one end and through slots in the end wall of the casing at their opposite ends, the cross-bar E', connecting their outer ends, and a resetting-spring G' for the levers and cross-bars, substantially as described.

485,956. **HARVESTER-BINDER.** JOHN LOUD, Woodstock Camden. Filed Jan. 8, 1891. Serial No. 377,142. (No model.)

Claim.—1. In a harvester-binder, the combination, with the needle rock-shaft actuated as specified, of the needle, a knotter-operating disk, an eccentric semicircle on the knotter-operating disk, a compressor adapted to be operated by said eccentric semicircle, and a compressor-trip adapted to have a longitudinal and upward motion as the knot is being tied, substantially as specified.

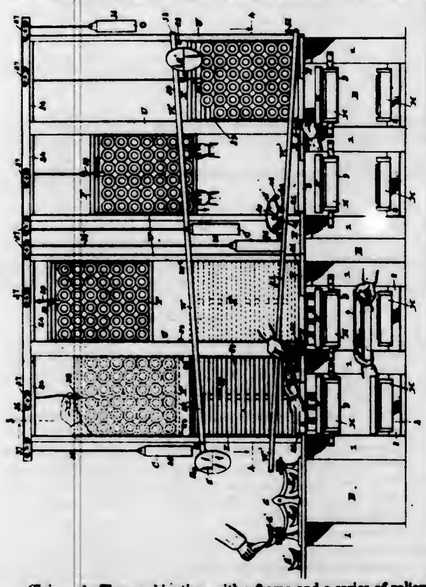


2. In a harvester-binder, the combination of the needle G, mounted on a hub 10, having a lug X, a pivoted compressor D, pivotally attached to and carried by the hub of the needle G, the shoe *d*, having an inclined bottom and toe *b*, engaging lug X, the needle rock-shaft F, actuated as specified, and the grooved wheel O, substantially as described.

3. The combination of the sprocket-wheels A and M, hanging bracket *w*, lug *v*, sprocket-wheel P, coil-spring *u*, mounted on a hub around the packer-shaft Q and having one end bearing against part of the frame and the other against said bracket, and the chain *k*, around wheels A and P and under wheel M, substantially as specified.

4. The combination of the pitman-rod S, pitman-box T, adjustable spring *x*, inclosed in said box, movable box *z*, bearing against the crank-pin *s*, the notched cam U, and lug W, substantially as described and shown.

485,957. **CANNING APPARATUS.** WILLIAM H. MACOMBER, Baltimore, Md. Filed Aug. 23, 1891. Serial No. 403,484. (No model.)



Claim.—1. The combination, with a frame and a series of rollers journaled therein and having reduced ends, of a tray having across its bottom bars spaced so as to travel on and engage said reduced ends, the inner corners of the bars being rounded, substantially as described.

2. In a canning apparatus, a packing-table, an upright guideway rising from said table and open at front and back, half-tracks across the sides of said guideway at about their vertical centers, a number of can-frames half the depth of the guideway and of a length to pass under said half-tracks, and a counterbalancing-weight, as and for the purpose set forth.

3. The removable scoop or scale pan of a scale, provided with a series of vertically-disposed wheels along the sides of the bottom and a horizontally-disposed wheel at each end, as set forth.

4. A canning apparatus comprising a scale, a pair of rails leading downwardly therefrom, and a single track leading from a point adjacent their lower ends downwardly to a point adjacent the scale, a removable scoop for the scale, a pair of wheels at each side thereof for supporting the scoop in upright position on the double track, and a single grooved wheel journaled beneath each end of the scoop for hanging the same on the single track, as and for the purpose set forth.

5. In a canning apparatus, the combination, with a base and a packing-table supported thereby, of an upright guideway rising from the base in rear of the table and open at front and back, can-frames half the depth of the guideway and less than half its height, a detachable counterbalance for supporting at the front of said guideway a tray full of cans, and a support at an intermediate point of the height of the guideway for supporting the next tray in order, as and for the purpose set forth.

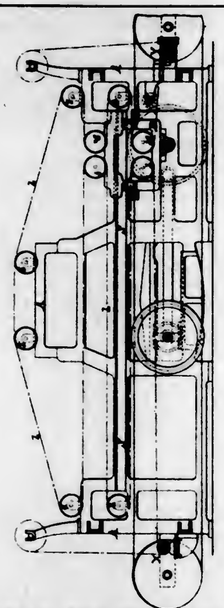
6. A canning apparatus comprising a base, a series of packing-tables supported thereby, and independent means at each table for delivering the empty cans thereto and removing the filled cans therefrom, the filled cans being removed from below the table and the empty cans supplied from above the table, a scale at a remote point, removable scoops for said scale, having trucks on their under sides, and a delivery-way for said scoops, leading from the scale along the series of tables, whereby the scoops serve also as the carrying means to transport the weighed contents to the pockets, as and for the purpose set forth.

7. A canning apparatus comprising a base, a series of packing-tables supported thereby, and independent means at each table for delivering the empty cans thereto and removing the filled cans therefrom, a scale at one end of the series of tables, removable scoops for said scales, having trucks on their under sides, a delivery-way for said scoops, leading from the scale along the series of tables, and a return-way adjacent to the delivery-way and the tables to carry the scoops back to the scale.

485,958. **MACHINE FOR CUTTING FUSTIANS OR OTHER WEFT-PILE FABRICS.** JOHN J. MANN, Manchester, and JAMES H. SMITH, Hooles, England. Filed June 23, 1892. Serial No. 437,681. (No model.) Patented in France Sept. 12, 1890, No. 206,080; in Switzerland Sept. 15, 1890, No. 2,755; in Belgium Sept. 19, 1890, No. 93,040; in Italy Sept. 20, 1890, No. 23,397; in Austria-Hungary Jan. 11, 1891, No. 39,095, and in Canada May 5, 1892, No. 33,861.

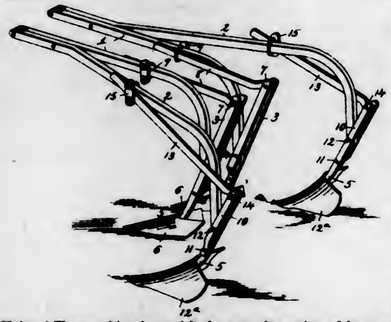
Brief.—Several of the rollers over which the cloth passes are slightly tapered from the ends toward the center.

485,958.



Claim.—A machine for cutting fustian and other weft-pile fabrics, having a fixed frame and a reciprocating carriage, with rollers upon the frame and carriage, over which the cloth is passed, each of such rollers tapering slightly from its ends toward its center, as and for the purpose set forth.

485,959. LISTING-PLOW-CULTIVATOR ATTACHMENT. HIRAM L. MARKHAM, Greenleaf, Kans. Filed June 17, 1892. Serial No. 437,062. (No model.)

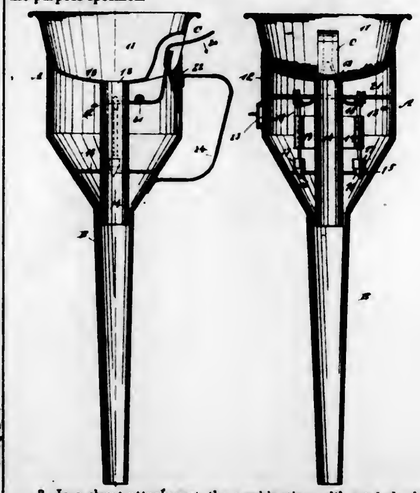


Claim.—The combination, with the opposite pairs of long and short downwardly-bent beams interchangeably pivoted to the arch, of the bifurcated standards pivoted intermediate their ends to the lower ends of the beams, the inner standards being provided with the series of adjusting-holes, links or bars pivoted to the upper ends of the standards, clamps connecting the front ends of said links or bars to the beams, the side shovel secured to the standard of the short beam, and the listing-shovel secured to the standard of the long beam, substantially as specified.

485,960. WATER-CLOSET ATTACHMENT. ISAAC A. MARTIN and CHARLES T. HARRIS, Ouray, Colo. Filed July 26, 1892. Serial No. 441,113. (No model.)

Claim.—1. A closet attachment, the same consisting of a hollow body, a spout emanating from the body, the body being divided into two compartments, the upper compartment being in direct communication with the spout, and valved openings contained in the lower compartment and leading into the spout, as and for the purpose specified.

2. In a device for the purpose described, the combination, with a hollow body and a spout located at one end of the body, of a partition dividing the body into two compartments, the upper compartment adapted to contain a liquid and the lower compartment a disinfectant, the bottom of the lower compartment being provided with openings, a tube connecting the upper compartment with the spout, the tube being of less diameter than the spout, valves closing the openings in the bottom of the lower compartment, and a lever controlling the movements of the valves, substantially as shown and described, whereby a liquid placed in the upper compartment while passing through the device and through the spout may have a disinfectant commingled therewith by the manipulation of the valves, as and for the purpose specified.



3. In a closet attachment, the combination, with a tubular body divided into two compartments, a fluid-receiving compartment and a compartment to hold a disinfectant, and a spout connected with one end of the body, of a tubular connection between the liquid-receiving compartment and the spout, valves normally closing openings in the disinfectant-compartment, said openings leading to the spout, and a means, substantially as shown and described, for manipulating the said valves from the exterior of the said device, as and for the purpose specified.

485,961. LONG-JOINT COUPLING. FRANCIS I. MAULE, Philadelphia, Pa. Filed July 13, 1888. Serial No. 279,869. (No model.)

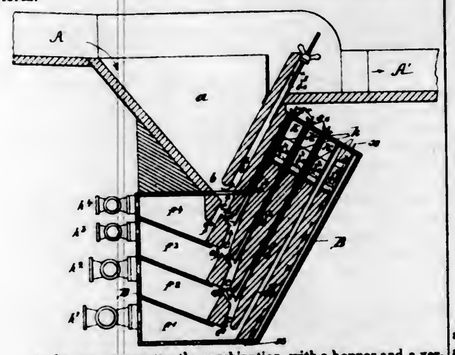
Claim.—The combination of the coupling-tube having a projecting nut at one end and at the other end a threaded sleeve and lock-nut, said sleeve having a permanent soft-metal packing ring or washer let into the same and the lock-nut having a projecting rib for bearing upon said packing ring or washer, said rib being beveled on its inner periphery, substantially as specified.

485,962. ORE-SEPARATOR. CARL A. R. MEINECKE, Clausthal, Germany. Filed Oct. 27, 1890. Serial No. 369,492. (No model.) Patented in Germany Apr. 26, 1887, No. 41,569, and in Austria-Hungary July 1, 1887, No. 26,952 and No. 61,312.

Claim.—1. An ore separator and grader comprising the hopper, a casing thereunder provided with a vertically-extending channel *c*, communicating with the outlet in the bottom of said hopper, a series of valved water-supply chambers at one side of the said channel communicating therewith, and a series of separate and independent channels leading upward and outward from the channel *c* to separate outlets, substantially as set forth.

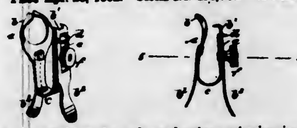
2. The combination, in an ore separator and grader, with the hopper having an opening in its bottom, of the casing under the hopper, provided with a vertically-extending channel *c*, a water-inlet at the bottom of the casing to cause an upward flow through channel *c* against the downward flow through the hopper-opening, a waste-channel leading upward and outward from the upper end of channel *c*, and a series of separate and independent grading-channels leading upward and outward from the bottom and between the ends of the channel *c* to separate outlets, substantially as set forth.

3. An ore separator and grader comprising the hopper having an outlet in its bottom, a casing thereunder having a vertically-extending channel *c*, into which the hopper discharges, a series of valved water-chambers communicating one above the other with said channel, a series of upward and outward inclined grading-channels at the opposite side of channel *c*, and a slide in the lower end of each grading-channel to close or partially close the channel *c*, substantially as set forth.



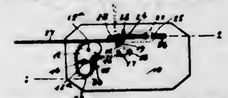
4. In an ore-separator, the combination, with a hopper and a vertically-arranged channel into which said hopper discharges, one or more inlets opening into the said channel at one side, of a series of branch outlets arranged on the opposite side of the channel and located one above the other and an overflow arranged above the uppermost branch outlet, substantially as set forth.

485,963. RUBBER-DAM CLAMP. CHRISTIAN A. MENSCH, Allentown, Pa. Filed Apr. 28, 1892. Serial No. 431,042. (No model.)



Claim.—1. In a rubber-dam clamp having gripping-jaws united by a closing spring-piece or portion in their rear, the jaws provided with separate and attached fingers arranged to extend back of or beyond the closing-spring portion of the clamp, and the one of which with its attached jaw is made adjustable in direction of its length up or down, essentially as specified.

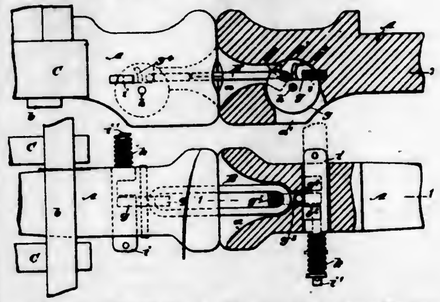
2. In a dental spring dam-clamp of the character herein described, the combination, with the fixed jaw *b*, having a rearwardly-extending finger b^3, and with the attached closing-spring *c*, of the longitudinally-adjustable opposite jaw *b'*, and its attached finger b^3, in slotted and sliding connection with said closing-spring, and a binding-screw *f*, adapted to hold said sliding jaw when adjusted, substantially as herein set forth.

485,964. BAR-WIRE-FORMING DEVICE. DAVID MENDELSON, New York, N. Y. Filed June 20, 1892. Serial No. 437,402. (No model.)

Claim.—1. A device of the character described, comprising a plate or bed, an arm held to slide on the bed, the arm having its upper end bent to engage a wire to be shaped, a forming-cam secured to the bed adjacent to the wire-holding arm, and forming-pins projecting from the bed near and to one side of the forming-cam and also adjacent to the bent arm, substantially as described.

2. A device of the character described, comprising a base-plate having a longitudinal slot therein, a bent arm held to slide in the slot, the arm having its upper end bent into a plane substantially parallel with the plate and adapted to engage a wire to be formed, a longitudinally-adjustable forming-cam held to the plate near the bent arm, forming-pins secured to the plate and extending upward near one edge of the cam, and a second group of pins secured to the plate and held near one side of the sliding arm, substantially as described.

3. A device of the character described, comprising a slotted base-plate, a slide held to the under side of the base-plate and having an upwardly-extending bent arm and an upwardly-extending stud held to move in the slots of the base-plate, a cam secured to the base-plate near one end, forming-pins secured to the base-plate near one edge of the cam, and a second set of pins secured to the base-plate at one side of the bent arm, substantially as described.

485,965. CAR-COUPLING. MELVIN T. MILES, Le Mars, Iowa. Filed Mar. 16, 1892. Serial No. 425,198. (No model.)



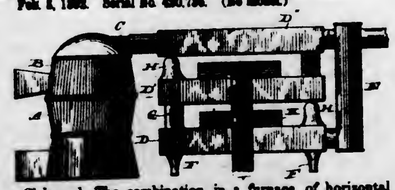
Claim.—1. The combination, with a draw-head apertured in front and adapted to receive a coupling-dog at the rear of the aperture, of a pivoted coupling-dog having a toe formed on it to engage an inserted coupling-link and a transverse sliding notched bar which will hold the dog from rocking, substantially as described.

2. The combination, with a draw-head apertured in front and vertically slotted to receive a coupling-dog, of a disk-like coupling-dog having a toe and pivoted in the slot of the draw-head and a locking-bar having a notch that will clear it from contact with the coupling-dog when it is slid transversely in a cross-slot in the draw-head, substantially as described.

3. The combination, with a draw-head that is forwardly apertured and supported to slide on a car-frame and a buffer-spring therefor, of a disk-like pivoted coupling-dog having a toe formed by cutting away part of the disk, a pin thereon rearward of the toe, a notched cross-bar adapted to lock or release the dog by its sliding movement, and means to move the bar longitudinally, substantially as described.

4. The combination, with a draw-head apertured forwardly and having the top and bottom walls of the aperture divergently sloped and slotted from below to receive a circular coupling-dog, of a disk-like coupling-dog pivoted at its center in the slot of the draw-head, a toe on the disk, formed by cutting it away and adapted to engage a coupling-link, a pin on a flat face of the disk-like dog rearward of its toe, a notched cross-bar transversely located in a slot in the draw-head rearward of the pin on the dog, a spiral spring on one end of the cross-bar which draws the notch of the bar away from the dog, and a link and lever connected to the other end of the cross-bar, substantially as described.

485,966. FURNACE. GEORGE T. MOH, Philadelphia, Pa. Filed Feb. 8, 1892. Serial No. 420,736. (No model.)

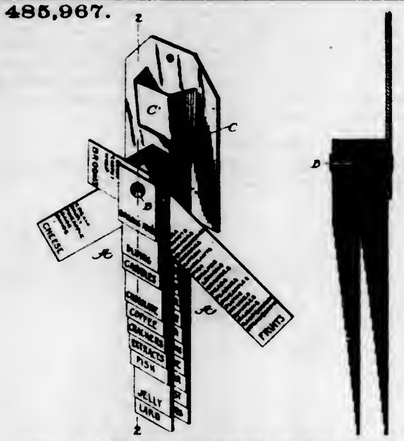


Claim.—1. The combination, in a furnace, of horizontal radiators arranged in tiers and cold-air ducts set between the radiators, arranged to deliver the air beneath the bottoms of the upper radiators, substantially as described.

2. The combination, with the radiators of a hot-air furnace, of cold-air ducts resting on said radiators and having flat bottoms to absorb heat from said radiators, substantially as and for the purpose specified.

485,967. REGISTERING AND INDICATING DEVICE. JOHN J. MONNIN and MAJOR R. JEWELL, Rochester, N. Y.; said Monnin assignor to said Jewell. Filed May 6, 1891. Serial No. 391,807. (No model.)

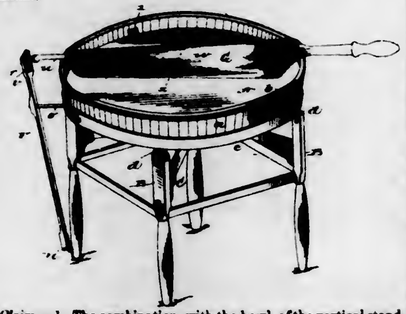
485,967.



Claim.—1. In an indicator, a supporting board or back, a series of overlying sheets or tablets of different and successively-increasing lengths from front to rear, and a pivot connecting the series at one end to the back-support, each sheet having on its face the names of articles or commodities and each sheet adapted to be turned out and exposed independently of and without disturbing or moving the other sheets of the series.

2. In combination with a back or support, a series of superimposed sheets or tablets of different and successively-increasing lengths from front to rear, connected to the back by a frictional pivot passing through the series at one end, each sheet having on its exposed end a generic or key word and on its covered surface the names of the species and each sheet being adapted to be turned out and exposed independently of and without disturbing the other sheets of the series.

485,968. BUTTER WORKER AND WEIGHER. THOMAS MUIR, Margaretville, N. Y. Filed Apr. 14, 1891. Serial No. 388,833. (No model.)



Claim.—1. The combination, with the bowl, of the vertical standard hinged at its lower end and a working lever or cutter having a universal connection with said standard at or near the upper end of the latter, whereby the downward pressure of the worker will operate by its leverage to exert an upward pulling strain upon the swinging standard, substantially as set forth.

2. The combination, with the bowl and vertical standard hinged at its lower end, arranged in operation to swing freely at its upper end toward and from the bowl, and recessed at its upper end, of a working lever or cutter having a ball-bearing in said recess and devices for retaining the ball in position, substantially as set forth.

3. The combination, with the bowl and vertical standard hinged at its lower end and recessed at its upper end, of slotted plate *r*, secured across the upper part of the recess, a working lever or cutter having a ball on the end bearing in said recess, and a latch pivoted on said standard to retain the ball in the recess, substantially as set forth.

4. The combination of the supporting-frame having the central block D, provided with the movable sleeve, and radial fingers to sustain said bowl, the sleeve being provided with bars depending through said block, and a scale-beam arranged for operation by the vertical movement of the bowl, substantially as set forth.

5. The combination, with the supporting frame and bowl, of the vertical standard hinged at its bottom, a working lever having a universal connection with said standard, together with a bar *e*, pivoted to the standard, playing through a slot in the frame, and devices for limiting the movement of the said bar *e*, substantially as set forth.

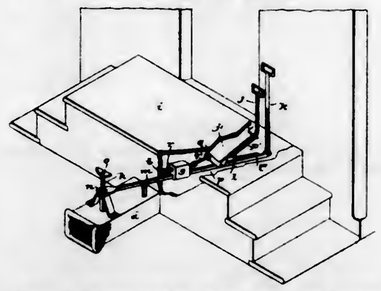
6. In a butter-worker, substantially as described, the combination of the bowl, devices for working the butter in said bowl and for supporting the bowl during such operation, a vertically-movable weighing-support for the said bowl, and a scale arranged for operation by the movement of said support, substantially as set forth.

7. The combination, with the supporting-frame having the standard *f*, of the bowl pivoted upon said standard and a sleeve embracing said standard and provided with curved arms, together with anti-friction-spheres interposed between standard and sleeve, substantially as set forth.

8. In a butter-worker, the combination of the frame, the bowl supported normally on said frame, devices connected with the frame, whereby to work the butter in the bowl, and a weighing-support arranged within and movable independently of the supporting-frame and adapted to support the bowl and its contents during the operation of weighing, substantially as set forth.

9. In a butter-worker, the combination of the supporting-frame having a central shaft or standard *f*, a sleeve embracing said standard and movable vertically thereon and provided with arms arranged to bear under and support the bowl and contents during weighing, a scale, and connections between such scale and the said sleeve, substantially as set forth.

485,969. CAR-COUPLING. VAN B. MCDONALD, Coytee, Tenn. Filed Nov. 26, 1891. Serial No. 413,133. (No model.)



Claim.—1. In a car-coupling, an elevating device for a coupling-pin, consisting of lever *k*, arm *l*, forked at one end and fulcrumed at *m*, in combination with foot-lever *j j*, pivoted to lever *k* at point *p*, spring *p'*, link *q*, connecting-rod *q'*, and bolt *r*, all substantially as described.

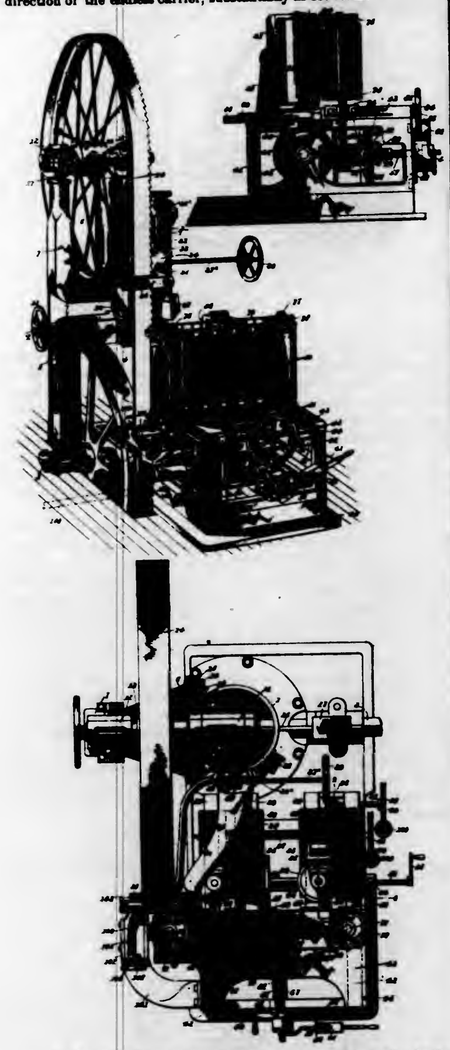
2. In a car-coupling, the levers *k* and *j j'*, in combination with the coupling-pin, spring-actuated slide, and the intermediate connections, all substantially as shown and described.

485,970. BAND-SAW MILL. FRANK MCDONOUGH, Eau Claire, Wis. Filed July 3, 1891. Serial No. 398,407. (No model.)

Claim.—1. In a band-saw mill, the tubular standard or upright having a laterally and downwardly extending arm or bracket and provided above said bracket with dovetailed ways or guides, in combination with a vertically-movable slide mounted upon said dovetailed ways and having a laterally and upwardly extending bracket and provided at its upper end with a laterally-extending arm having a socket extending downwardly within the tubular upright, the posts mounted in said socket and in the upwardly-extending arm of the slide, and the upper saw-shaft journaled in bearings at the upper ends of said posts, substantially as set forth.

2. In a band-saw mill, the combination of the tubular upright having dovetailed ways or guides, the slide mounted upon the latter and having arms or brackets provided with sockets, one of which extends downwardly in the tubular upright, the posts mounted in said sockets and having bearings at their upper ends for the upper saw-shaft, the springs or cushions mounted in the sockets below the said posts, and the steel plates or washers arranged adjacent to the upper and lower sides of said springs or cushions, substantially as set forth.

3. The combination, with the vertically-arranged endless carrier adapted to be adjusted to a fixed position, of the separate independently movable and yielding slides having upwardly-extending brackets, means for normally pressing said slides automatically toward the carrier, separate automatically and independently adjustable roller-yokes pivotally connected at their centers to the upper ends of said brackets and thus free to move to automatically adjust themselves to uneven surfaces, separately-movable pressure-rollers journaled in each of said yokes, and means for automatically forcing said slides in the direction of the endless carrier, substantially as set forth.



4. The combination, with a band sawing-machine, of a feeding device comprising an adjustable bed mounted slidingly upon a suitable frame or casing in front of the saw, an endless carrier mounted upon vertical shafts having bearings in said bed, a horizontal shaft journaled in a bracket extending downwardly from the sliding bed and having at its outer end a worm meshing with a worm-gear upon the lower end of one of the vertical shafts and at its inner end a beveled pinion, a horizontal shaft mounted to slide longitudinally in the frame or casing and having a sliding pinion keyed thereon and connected with the sliding bed and a cam-disk at one end, a friction-disk at the inner end of the horizontal shaft, journaled in the casing, a weight-controlled cam-disk adjacent to said cam-disk on the longitudinally-sliding shaft and bearing thereon to regulate the pressure of said friction-disk against the object with which it contacts, and means for transmitting motion at variable rates of speed to the said friction-disk, substantially as and for the purpose set forth.

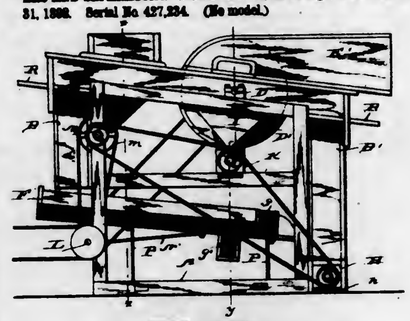
5. In a band-saw mill, the combination, with the vertically-arranged endless carrier, of the independently-movable slides, roller-yokes pivotally mounted upon said slides and free to move thereon, pressure-rollers journaled in said yokes, the yoke nearest the saw being provided with laterally-extending arms or brackets, a supplemental smaller pressure-roller journaled between said arms or brackets, and means for moving said slides, substantially as set forth.

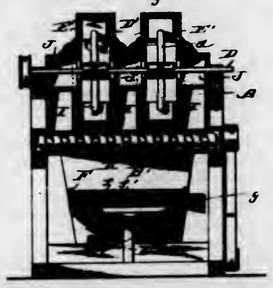
6. In a feeding device for band-saws, the combination of the frame having parallel pairs of dovetailed guides or ways, the vertically-arranged endless carrier, the separate independently-movable pressure-roller slides having separate movable pressure-rollers, rack-bars upon the under sides of the independently-movable slides, and pinions engaging said rack-bars and mounted upon separate parallel shafts having grooved wheels at their outer ends and weighted ropes connected with said wheels and adapted to rotate the shafts to force the slides carrying the pressure-rollers automatically in the direction of the endless carrier and entirely independently of each other, so that the pressure-rollers will readily adjust themselves to uneven surfaces and the slides correspondingly yield, substantially as and for the purpose set forth.

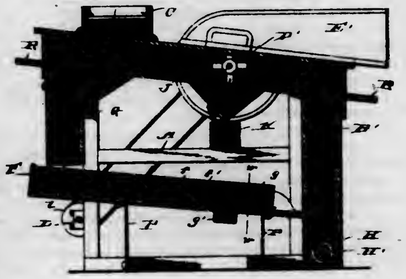
7. In a band-saw mill, the combination of the tubular upright having dovetailed ways or guides, the slide mounted upon the latter and having arms or brackets provided with sockets, one of which extends downwardly in the tubular upright, and the posts mounted in said sockets and having bearings at their upper ends for the upper saw-shaft, substantially as described.

8. In a band-saw mill, the combination of the tubular upright having dovetailed ways or guides, the slide mounted upon the latter and having arms or brackets provided with sockets, one of which extends downwardly in the tubular upright, the posts mounted in said sockets and having bearings at their upper ends for the upper saw-shaft, and the springs or cushions mounted in the sockets below the said posts, substantially as described.

485,971. GRAIN CLEANING ATTACHMENT FOR CLOVER HULLERS AND SEPARATORS. RALPH MCLAIN, La Grange, Ind. Filed Mar. 31, 1892. Serial No. 427,234. (No model.)





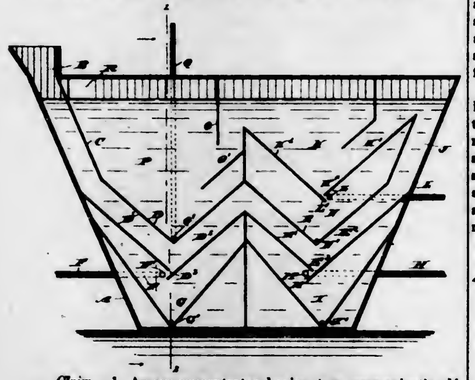


Claim.—1. In a grain-cleaner, the wide vertical flues at each end thereof, the hopper C, arranged to discharge into one of said flues some distance below the upper end thereof, the fan journaled transversely of the frame midway between said flues, the parallel horizontal flues in the upper portion of the frame, said horizontal flues running in each direction from the blast-chamber and communicating at their respective ends with the vertical flues, and the inclined shoe receiving the discharge from one of said vertical flues and itself discharging into the other, substantially as specified.

2. In a grain-cleaner, the wide vertical flues B B', one at each end of the frame, the hopper C, discharging into the flue B, the fan-shaft D, journaled transversely of the frame midway between said vertical flues and carrying a series of fans *d*, the blast-chambers D', in which said fans work, the large flues E in the upper portion of the frame and communicating with said blast-chambers, the parallel horizontal flues E, running each way from said blast-chambers and leading to the flues B B', the dirt-hoppers I, attached to the bottom of each flue E against the fan-chambers, the check-boards J, and conveyer K, and the grading-screens arranged to carry the grain from the flue B to the flue B', substantially as specified.

3. In a grain-cleaner, the combination, with the frame, the wide flues B B', one at each end of said frame, the hopper C, discharging into the flue B through an opening in the wall thereof some distance below its upper end, the corrugated feed-roll in the lower portion of said hopper, and the oscillating vibrating shoe receiving the grain from the flue B and discharging it into the flue B' near the lower end of the latter, of the blast-chambers located in the central upper portion of the frame, the fans working therein, the horizontal parallel flues E, leading in each direction from said blast and communicating, respectively, with the upper portions of the flues B B', the regulating slides R R in the flues B B', the hoppers I, attached one to the bottom of each of said flues E, the check-boards J, and the conveyer K underneath the discharges of said hoppers, substantially as specified.

485,972. ORE-CONCENTRATOR. THOMAS T. MCNARY, Hailey, Idaho. Filed May 31, 1892. Serial No. 434,974. (No model.)

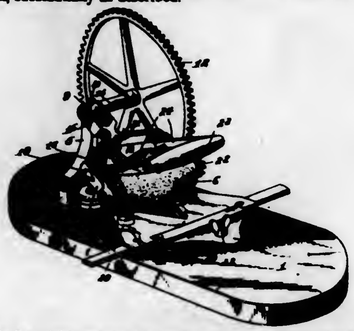


Claim.—1. An ore-concentrator having two communicating V-shaped channels D E, having openings D^2 E^2, leading into settling-chambers G I, respectively, a channel J, leading upwardly from the arm E^2 of channel E, two settling-chambers over the channels D E, respectively, and the water-pipes F H in chambers G I opposite the respective openings D^2 E^2, substantially as set forth.

2. An ore-concentrator comprising upper and lower V-shaped settling-chambers P N G I, the V-shaped channels D E between the two pairs of chambers and having openings D^2 E^2, water-pipes F H in the lower settling-chambers opposite said openings, an inlet-passage C, leading into channel D, an outlet B in the chamber P, a channel J, leading from the arm E^2 of channel E into the channel K' of a V-shaped hopper K over the chamber N, said hopper having an opening K^2, leading into chamber N, the pipe L in the chamber N opposite opening K^2, and the passage O', connecting the chamber K with the chamber P, substantially as set forth.

485,973. SICKLE-GRINDER. ABRAHAM J. HUFF, Goshen, Ind., assignor to William B. Lehman, same place. Filed Apr. 30, 1892. Serial No. 431,171. (No model.)

Claim.—1. In a sickle-grinder, the combination of a base, a standard having its lower end hingedly connected with and rotatively mounted on the base and provided at its upper end with a socket, a spindle arranged in the socket, a master-wheel mounted on the spindle, a grinding-frame hinged to the upper end of the standard by the spindle, and a grinding-shaft journaled in the grinding-frame and carrying a grinding-roll and having a pinion meshing with the master-wheel, substantially as described.

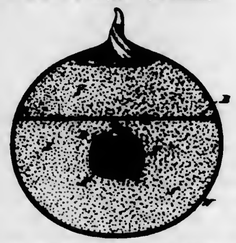


2. In a sickle-grinder, the combination of a base, a standard having its lower end hingedly connected with and rotatively mounted on the base and provided at its upper end with a socket, a spindle arranged in the socket, a master-wheel mounted on the spindle, a grinding-frame hinged to the upper end of the standard by the spindle, and a grinding-shaft journaled in the grinding-frame and carrying a grinding-roll and having a pinion meshing with the master-wheel and having a spiral spring having one end attached at the lower end of the standard and having its other end secured to the grinding-frame, substantially as described.

3. In a sickle-grinder, the combination of a base, a circular plate rotatively mounted on the base and provided with lugs, a standard hinged to the lugs and provided at its upper end with a socket, a spindle secured in the socket, a master-wheel mounted on the spindle, a grinding-frame hinged to the standard by the spindle, a grinding-shaft journaled in the grinding-frame and carrying a grinding-roll and having a pinion meshing with the master-wheel, and a spiral spring secured to one of said lugs and connected to the grinding-frame, substantially as described.

4. In a sickle-grinder, the combination of a base, a standard having its lower end hingedly connected with and rotatively mounted on the base and provided at its upper end with a socket, a spindle arranged in the socket, a master-wheel mounted on the spindle, a U-shaped grinding-frame having its stem bifurcated and hinged to the standard by the spindle, the adjustable bearing-plate secured to the sides of the grinding-frame, and a shaft journaled in the bearing-plates and carrying a driving-roll and having a pinion meshing with the master-wheel, substantially as described.

485,974. TORPEDO. CHARLES NELSON, Brooklyn, N. Y. Filed July 21, 1892. Serial No. 440,600. (No model.)

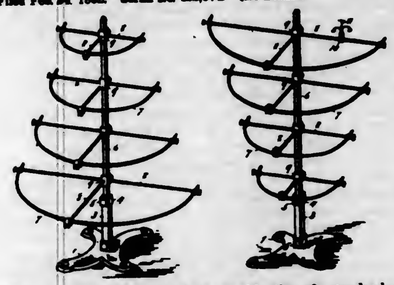


Claim.—1. The combination, with a fulminate or explosive, a gravel or heavy filling, and a wrapper, of a filling of light specific gravity and an external shell or casing for the light filling, substantially as described.

2. The combination, with a fulminate or explosive, a gravel or heavy filling, and a wrapper, of a filling of light specific gravity, and an external shell or casing for the light filling, and a cover or shield placed within the light filling in proximity to the fulminate, substantially as described.

3. The combination, with a fulminate or explosive, a gravel or heavy filling, a disk or strip D of consistent material, and a wrapper, of a filling of light specific gravity and an external shell or casing, substantially as described.

485,975. DISPLAY-STAND. SAMUEL NEWMAN, Cincinnati, Ohio. Filed Feb. 24, 1892. Serial No. 422,574. (No model.)

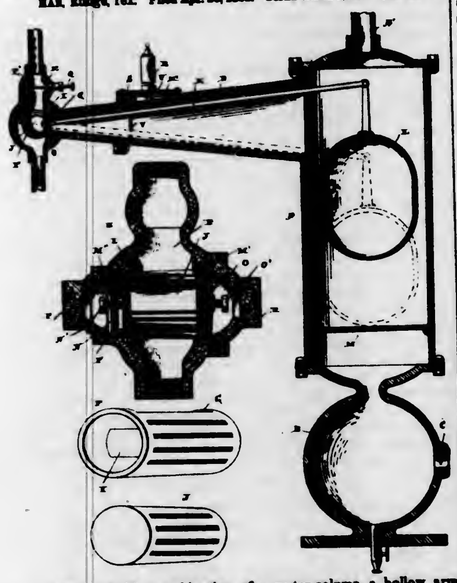


Claim.—1. In a display-stand, the combination of a standard and frames, each composed of a semicircular or curved rod and straight rods connected to the latter rod and to collars adjustable upon said standard, substantially as set forth.

2. In a display-stand, the combination of a standard adjustable upon a base and frames, each composed of a curved or semicircular rod and straight rods connected to the latter rod and to collars adjustable upon said standard, substantially as specified.

3. In a display-stand, the combination of a standard, a frame supported upon said standard, and a sample support or bracket composed of a central stem and arms or wings adjustable by a clamp with relation to said stem, said bracket also being adjustable upon said frame, substantially as set forth.

485,976. BOILER FEEDER AND INDICATOR. PRESTON A. NEWMAN, Runge, Tex. Filed Apr. 26, 1892. Serial No. 430,708. (No model.)



Claim.—1. The combination of a water-column, a hollow arm projecting therefrom, a valve-chamber at the outer end of the arm, a valve therein, a float in the column, and a connection between the valve and float, the said valve-chamber being formed with a passage around said valve, substantially as shown and described.

2. The combination, with a water-column, a hollow arm projecting therefrom, a valve-chamber at the outer end of the arm, and a rotary valve in said chamber, the chamber being provided with an independent steam-passage around the valve, of a wall which separates the said passage from the main valve-passage, a casing which rests against the said wall and in which the valve rotates, a float in the water-column, and a connection between the said float and rotary valve, substantially as shown and described.

3. The combination, with a water-column, a hollow arm projecting therefrom, and a valve-chamber on the outer end of said arm, which is provided with a transverse opening, which extends through the same, of a slotted valve-casing adapted to fit the said opening, a slotted valve in said casing, cross-bars at the ends of the casing, set-screws extending through said bars, which engage the valve, a float in the column, and a connection between the float and valve, substantially as shown and described.

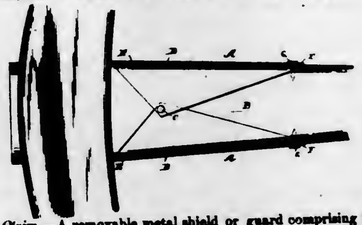
4. The combination, with a water-column, a hollow arm projecting therefrom, and a valve-chamber at the outer end of the arm, which is provided with a transverse opening extending through it, of a slotted casing adapted to fit the said opening, a rotary slotted valve in the casing, a bar made integral with one of the casing ends, a set-screw in said bar, which engages the valve, a bar at the opposite end of the casing, which is secured to the valve-chamber, a set-screw therein, which engages the opposite end of the valve, plugs for the openings in the said valve-chamber, a float in the column, and a connection between the said rotary valve and float, substantially as shown and described.

5. The combination, with a water-column, a hollow arm projecting therefrom, a valve-chamber at the outer end of the arm, and a valve therein, of a float in the column, a rod connecting the valve and float, a whistle on the said hollow arm, a spring-arm carrying a clapper which closes the said whistle, and a loop depending from the spring-arm, through which passes the rod which connects the valve and float, substantially as shown and described.

6. The combination, with a water-column, a hollow arm projecting therefrom, a valve-chamber at the outer end of the arm, and a valve in said chamber, of a float in the column and a rod which connects the said valve and float, a plate in the upper surface of the said hollow arm, a whistle supported thereon, a spring-arm secured at its end to the under side of the plate, a clapper on said arm, and a loop depending from the free end of the spring-arm, through which the said rod extends, substantially as shown and described.

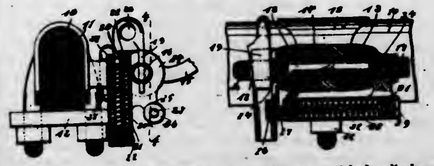
7. The combination, with a water-column having a steam-inlet at its upper end and a water-inlet at its lower end, an arm projecting from the said column, a valve-chamber at the outer end of the arm, and a valve in said chamber, of a float in the column, a perforated shelf for the float to rest on, and a connection between the float and valve, substantially as shown and described.

485,977. PICK-HANDLE PROTECTOR. GEORGE M. NEWTON, Sharon, Ala. Filed Dec. 9, 1891. Serial No. 414,486. (No model.)



Claim.—A removable metal shield or guard comprising the opposite members U-shaped in cross-section and having their opposite sides overlapping each other and pivoted together at their corners between their ends and adapted to be driven over the swelled end of the handle to form a drive fit thereon, and screws for securing the guard to the handle, substantially as set forth.

485,978. THILL-COUPLING. WILLIAM H. PARDEE, Antigo, Wis. Filed Mar. 15, 1892. Serial No. 425,000. (No model.)



Claim.—1. In a thill-coupling, the combination, with the clip-lugs and thill-knuckle, of the coupling-bolt adapted to extend through the lugs and knuckle, the head-plate secured to the bolt and adapted to fit against one of the lugs, the face-plate adapted to fit against the opposite lug and having means, as shown, for attachment to the coupling-bolt, and a yielding connection between the head-plate and face-plate, substantially as described.

2. In a thill-coupling, the combination, with the clip-lugs and thill-knuckle, of the coupling-bolt adapted to extend through the lugs

and knuckle, a head-plate secured to the bolt and having arms to clasp one of the lugs, a face-plate adapted to receive the bolt and to fit against the opposite lug, and a spring connection between the head-plate and face-plate, substantially as described.

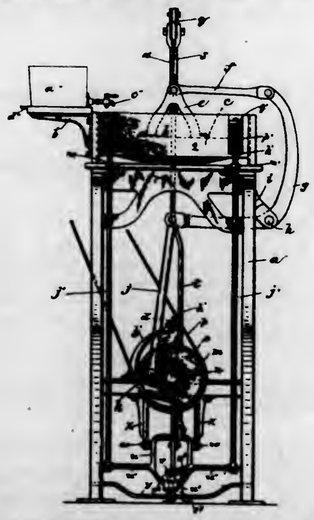
3. The combination, with the clip-lugs and thill-knuckle, of the coupling-bolt adapted to extend through the lugs and knuckle, a head-plate secured to the bolt and adapted to fit against one of the lugs, a tube secured to the head-plate and extending beneath the coupling-bolt and parallel therewith, a face-plate adapted to fit the opposite lug and having means for attachment to the coupling-bolt, and a spring-actuated bolt held in the guide-tube and connected with the face-plate, substantially as described.

4. In a thill-coupling, the combination, with the clip-lugs, the thill-knuckle, and the coupling-bolt, of a head-plate secured to the bolt and having arms to clasp one of the clip-lugs, a guide-tube fixed to the under side of the head-plate and extending parallel with the coupling-bolt, a face-plate adapted to fit the opposite clip-lug and having means for attachment to the coupling-bolt, and a spring-pressed bolt held in the guide-tube and having one end secured to the face-plate, substantially as described.

485,979. SPEAKING-TUBE. WILLIAM PERPENTE, New Haven, Conn. Filed Aug. 17, 1891. Serial No. 402,897. (No model.)

Claim.—In a speaking-tube, the combination of a tube and a receiver C, consisting of a whistle *e*, having a cut or opening *g* therein, and a hearing-piece or bell provided with a deflecting orifice *i*, the said opening *g* being coincident with the inner end of said orifice, substantially as set forth.

485,980. STARCHING-MACHINE. JOHN C. POLAND, Boston, Mass. Filed Mar 26, 1890. Serial No. 345,368. (No model.)



Claim.—1. In a starching-machine, the combination of a bed or support for the article to be starched, a starch-box adapted to rock on said bed, means, as a spring and connections between the same and the starch-box, whereby the latter is normally raised above the bed, a lever connected with the starch-box by suitable intermediate devices and adapted to be moved into position to prevent the action of the box-raising spring, and thereby permit the starch-box to rest on the bed, and a latch or detent whereby the lever may be held in said position, as set forth.

2. In a starching-machine, the combination of a bed or support for the article to be starched, a starch-box adapted to rock on said bed, means, as a spring and connections between the same and the starch-box, whereby the latter is normally raised above the bed, a lever connected with the starch-box by suitable intermediate devices and adapted to be moved into position to prevent the action of the box-raising spring, and thereby permit the starch-box to rest on the bed, a latch or detent whereby the lever may be held in said position, a driving-shaft journaled in bearings on the frame of the machine and provided with a fast pulley and with a loose pulley, connections between said shaft and the starch-box, whereby the latter is rocked by the rotation of the shaft, a belt-shipper engaged with the driving-belt, and connections between said shipper and the treadle-engaging latch, whereby the displacement of said latch is caused to shift the belt and stop the rocking motion of the starch-box, as set forth.

3. In a starching-machine, the combination of a support for the article to be starched, a starch-box over said support, having a perforated bottom, means for rocking said starch-box, a pivoted lever connected with the starch-box, a spring *s*, arranged to move said lever to raise the starch-box from the support, a treadle connected with said lever and adapted to move the latter in the direction required to depress the starch-box, and a detent whereby the treadle may be held against the force of the box-raising spring, as set forth.

4. In a starching-machine, the combination of a casing *b*, a rocking starch-box therein having a perforated bottom, a sliding side piece forming a part of said casing, a pivoted lever connected with the starch-box, a spring adapted to raise the starch-box through said lever, a treadle pivoted to the frame of the machine, a lock or detent for the treadle, and connections between the starch-box lever and the treadle and between the treadle and the sliding front piece, whereby the front piece is raised simultaneously with the starch-box by the action of the spring when the treadle is released, as set forth.

5. In a starching-machine, the combination of a support for the article to be starched, a starch-box having a perforated bottom adapted to rock on said support, a bell-crank lever *g*, pivoted to a fixed support and having one of its arms connected by rod *f* with the rocking starch-box, and a driving-shaft having an eccentric wrist-pin *k*, connected by rod or pitman *j* with the other arm of said lever, as set forth.

6. The combination of a support for the article to be starched, a rocking starch-box having a perforated bottom, a lever pivoted to a fixed support and connected by a flexible connection with said starch-box, a spring arranged to move said lever in the direction required to cause the latter to raise the starch-box, a treadle pivoted to the frame of the machine, a rod *t*, connecting said treadle with the starch-box-raising lever, a latch or detent adapted to hold the treadle against the stress of the starch-box-raising spring, a driving-shaft journaled in bearings in the frame of the machine and provided with a fast pulley and a loose pulley, connections between said shaft and the starch-box, whereby the latter is oscillated by the rotation of the shaft, a belt-shipper engaged with the belt that transmits motion to the driving-shaft, and connections between said belt-shipper and the latch or detent, whereby the belt-shipper is held in position to engage the driving-belt with the fast pulley when the treadle is locked by its detent and is moved to engage the belt with the loose pulley by the displacement of said latch from its treadle-holding position, as set forth.

7. The combination of the casing *b*, having the sliding front piece 2, the table *r'*, extending outwardly from said casing, the starch-box, its raising-lever, and the lever-operating spring, the pivoted treadle connected with said lever, the rods *j' j'*, connected with said treadle and passing through lugs *k'* on the front piece 2 of the casing, the shoulders or enlargements *m'* on the rods *j'* below the lugs *k'*, the shoulders or enlargements *q'* on said rods above said lugs, and springs interposed between the lugs and the shoulders *q'*, whereby a yielding downward pressure is imparted to the sliding piece 2 when the treadle is depressed, and a latch or detent to hold said lever in a depressed position, as set forth.

485,981. ART OF AND MACHINE FOR CUTTING FLANGED BEAMS. JOHN A. POTTER, Munhall, assignor of one-half to Robert W. Grace, Pittsburg, Pa. Filed May 16, 1890. Serial No. 352,031. (No model.)

Claim.—1. An improvement in the art of dividing I-beams, channels, angles, and analogous merchant shapes in which the members are substantially at right angles to each other, which consists in punching out by machine-actuated cutting-faces transverse pieces from the flanges, thus forming a slot of sufficient width to receive the web-cutting tool, and then punching and shearing out, also by machine-actuated cutting-faces, a piece from the web in line with the cuts in the flanges, substantially as and for the purposes described.

2. In apparatus for cutting flanged beams, the combination of a knife-block having separated cutting-edges and adapted to support the flanges of a beam, a knife-head, and a knife which moves obliquely relatively to said bed-knife and is adapted to engage the flanges and to punch the same, substantially as and for the purposes described.

3. In apparatus for cutting flanged beams, the combination of a knife-block having separated cutting-edges and adapted to support

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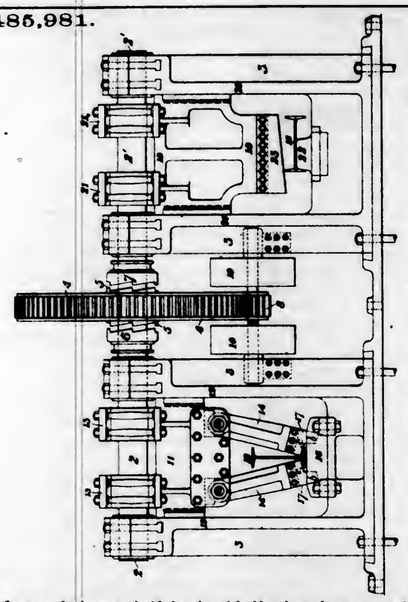
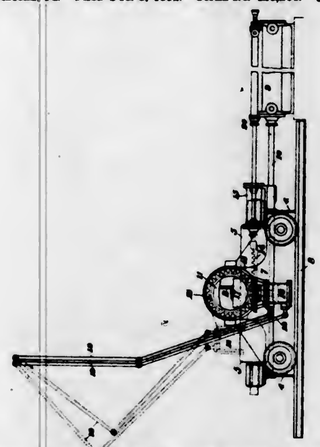


the flanges of a beam, a knife-head and knife adapted to engage the flange and to punch the same, and a guide set obliquely relatively to the bed-knife and adapted to engage the knife-head, substantially as and for the purposes described.

485,982. ROLLING-MILL. JOHN A. POTTER and PER T. BERG, Homestead, Pa. Filed Feb. 3, 1892. Serial No. 420,206. (No model.)



Claim.—1. In a rolling-mill, the combination, with the rolls, of metal-feeding apparatus comprising a rotatory clamp set in front of the rolls and adapted to receive the metal therefrom, mechanism for actuating the clamp to seize the metal, and mechanism for rotating the clamp and moving it laterally, substantially as and for the purposes described.

2. In a rolling-mill, the combination, with the rolls, of metal-feeding apparatus comprising a rotatory box set in front of the rolls, a clamping-tongue adapted to be projected to clamp the metal, and a cylinder attached to the box and adapted to actuate the tongue, substantially as and for the purposes described.

3. In a rolling-mill, the combination of the rolls, metal-feeding apparatus comprising a rotatory box, a clamping-tongue, and a tongue-actuating motor adapted to move the tongue in both directions to clamp the metal and to free the same, substantially as and for the purposes described.

4. In a rolling-mill, the combination, with the rolls, of metal-feeding apparatus comprising a rotatory box, a clamping-tongue, mechanism for actuating the latter to clamp the metal in the box, a laterally-movable carriage carrying the box, and a motor mounted on the carriage mechanically connected with the box and adapted to rotate the same, substantially as and for the purposes described.

485,988. CONSTRUCTION AND LAYING OF SUBAQUEOUS TUNNELS. ROBERT POWELL, Cleveland, Ohio. Filed Mar. 7, 1892. Serial No. 424,045. (No model.)

Claim.—1. The herein-described method of laying subaqueous tunnels, conduits, or tubes, which consists in forming a series of buoyant air-tight sections with removable water-tight bulk-heads, launching said sections on the lake or other body of water in which they are to be laid and floating them out to their proper positions, securing all of said sections together on the surface of the water into a continuous line of tube or tunnel, removing some or all of the intermediate bulk-heads to form a continuous floating conduit, simultaneously admitting water at various points into said conduit, and allowing the whole line of tube to sink at once to the bed of the lake or other water, as explained.

2. The process of submerging buoyant tubes or tunnels in determined position, which consists in attaching buoys to the upper side and admitting water through valves at a number of points simultaneously throughout the length of the tube or tunnel, thus causing it to sink in horizontal position and with the desired side uppermost, as explained.

3. In a buoyant tube or tunnel, the combination of the inlet-valves 10 at bottom, operating-rods 11, extending to the top, bulk-heads 15, closing the ends of the tunnel-sections, and manholes 13 and covers 14, giving ingress thereto through the upper side, as described.

4. In a buoyant tunnel constructed in sections adapted to be coupled together end to end, the combination of the removable sectional bulk-heads 15 near the ends of each tunnel-section, the inlet-valves 10 at bottom, operating-rods 11, extending therefrom to the top, and manholes 13 and covers 14, giving access to the tunnel from the exterior, as described.

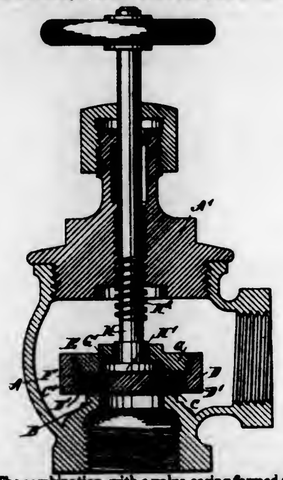
5. The bulk-heads constructed of radial staves in two dished or concavo-convex disks converging toward their peripheries and with central grooved or flanged cores and longitudinal straining-bolts for drawing the centers of the said disks together and thus expanding them radially, as explained.

6. The combination of the radial staves united together in the form of a pair of concavo-convex disks, the longitudinal straining-bolt, and the peripheral packing, the whole constructed substantially as herein described and constituting a bulk-head applicable at any desired point within a tube or tunnel and adapted for ready removal from the inside without injury to the parts of said bulk-head.

7. The combination of the grating, clearing-arms, and turbine

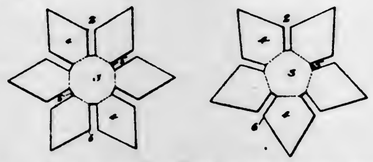
wheel rotating said arms to exclude fish, weeds, and other solid matter from the intake of a water tube or tunnel, as explained.

485,984. DISK-HOLDER FOR VALVES. JOHN W. RANDALL, New York, N. Y. Filed July 1, 1892. Serial No. 438,684. (No model.)



Claim.—The combination, with a valve-casing formed at its lower end with an inwardly-extending annular flange, of a ring seated on said casing-flange, a metal disk on top of said ring and provided with a projection fitting into the said ring, and a cap screwing in the casing on top of the said disk, substantially as set forth.

485,985. PACKING GLASSWARE FOR SHIPMENT. CHARLES ROWTON, Rochester, Pa. Filed Feb 25, 1892. Serial No 422,830. (No model.)



Claim.—1. A wrapper for tumblers or similar articles, comprising a base portion having strips projecting therefrom, the lower portions of the sides of the wrapper being thicker than their upper portions when in place about the article, whereby the strain is removed from the edge of the tumbler, substantially as and for the purposes described.

2. A wrapper for glassware, consisting of a base portion having a series of strips projecting therefrom, the lower portions of said strips being arranged to overlap each other when in place about the article, substantially as and for the purposes described.

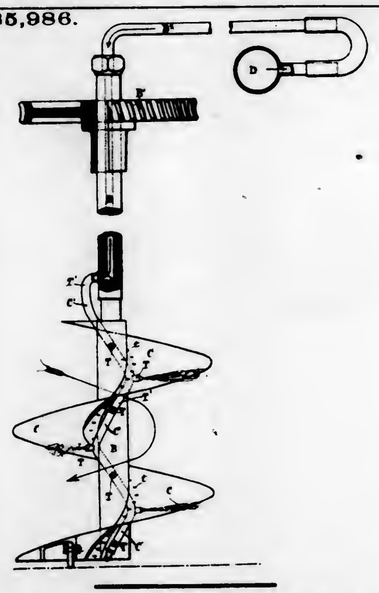
3. A wrapper for glassware, consisting of a base portion having a series of tapering strips radiating therefrom, said strips being arranged to overlap each other near their bases when the wrapper is about the article, substantially as and for the purposes described.

4. A wrapper for glassware, consisting of a base portion having a series of tapering strips projecting therefrom, the lower portions of said strips being indented or partially cut away, substantially as and for the purposes described.

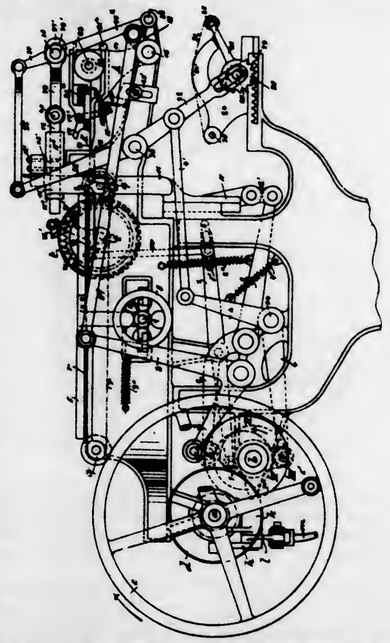
485,986. MALTING APPARATUS. JULES SALADIN, Nancy, France. Filed June 21, 1892. Serial No. 437,544. (No model.)

Claim.—The combination, with a stirrer or turning device consisting of an arbor or shaft provided with a passage therein and a helix or spiral plate rigidly mounted on said arbor, of a spiral enlargement which follows the line of attachment of said helix and is provided at suitable intervals with escape-openings for the fluid supplied to the passage in the said arbor or shaft, means of communication being provided between the said passage and the spiral enlargement, substantially as described.

485,986.



485,987. CIGAR-BUNCHING MACHINE. JOHANN B. SCHMITT, Bingen, Germany. Filed July 3, 1891. Serial No. 398,418. (No model.) Patented in Germany Sept. 23, 1890, No. 58,773; in France Nov. 25, 1890, No 208,791; in Austria-Hungary Feb 19, 1891, No. 10,081 and No. 26,838; in England Aug. 19, 1891, No. 13,231, and in Switzerland Nov. 2, 1891, No. 3,054.



Claim.—1. The combination, with the feeding-apron, of the two longitudinal bars supported above the apron and on each side of it, the slides connected to the said bars and carried by the machine-frame, and a spindle provided with right and left handed screw-threads for varying the distance between the said bars, substantially as set forth.

2. The combination, with the vertically-sliding frame provided with horizontally-slotted bosses at its upper parts, of the cutter 9, secured to the said frame, the slides guided in the said bosses and provided with supports projecting through the said slots, a cross-bar secured to the said supports, a cutter 10, secured to the said cross-bar, and a rod operating to reciprocate the said slides, substantially as set forth.

3. The combination, with the swinging yoke A for carrying the gripping devices, of a shaft supporting the yoke, an arm secured on the shaft, a revoluble eccentric, a pivoted bell-crank lever provided with a roller, a spring operating to press the said roller on the eccentric, and a rod pivotally connecting the said arm and bell-crank lever, whereby the yoke is swung intermittently, substantially as set forth.

4. The combination, with the swinging yoke A, of the upper gripper-jaw 17, pivoted to the yoke and provided with a lever-arm, and a spring adapted to hold the said jaw in its normal position, a lower gripper-jaw also carried by the yoke, and a tappet secured to the frame of the machine and projecting into the path of the end of the said lever-arm, whereby the upper jaw is moved away from the lower jaw to receive the material, substantially as set forth.

5. The combination, with the swinging yoke A, of the upper gripper-jaw pivoted to the yoke, the lower gripper-jaw, a spring pressing the upper jaw toward the lower jaw, the discharging-plate between the said jaws, and means for sliding the said plate and the lower jaw simultaneously in opposite directions, substantially as set forth.

6. The combination, with the swinging yoke and the upper gripper-jaw, of the two plates 20 and 21, sliding longitudinally in the said yoke and provided with toothed racks, and toothed pinions arranged between the said racks and gearing with both, whereby the said plates are constrained to move in opposite directions, substantially as set forth.

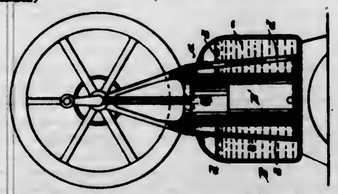
7. The combination, with the swinging yoke and the upper gripper-jaw, of the two plates 20 and 21, sliding longitudinally in the said yoke, one of the said plates being provided with a projecting stop and each plate being provided with toothed racks, toothed pinions connecting the said racks, a stationary stop for the said stop to strike, whereby the said plates are moved in opposite directions, and a spring for restoring the plates to their normal positions when the stops are separated, substantially as set forth.

8. The combination, with the reciprocatory rolling-table provided with a curved upper surface, of the shaft 27, journaled in the lower part of the said table, the arms secured on the said shaft, the bunching-roller carried by the said arms, the bunching-apron secured to the ends of the table and looped over the said roller, the toothed wheels secured on the said shafts, and the stationary toothed racks gearing into the said wheels, whereby the said arms are vibrated as the table is reciprocated and in the same direction, substantially as set forth.

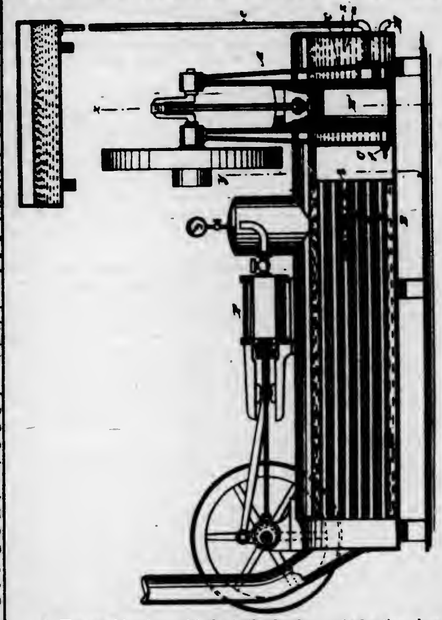
9. The combination, with the curved rolling-table, the stationary toothed racks, the toothed wheels gearing into the said racks, the arms and the bunching-roller, a shaft journaled in the lower part of the said table and having the said arms and wheels secured on it, and the bunching-apron secured to the ends of the table, of pivoted levers provided with longitudinally-slotted ends engaging with the projecting ends of the said shaft, a revolable cam, and intermediate operating rods and levers connecting the said pivoted levers with the said cam, whereby the said table is reciprocated intermittently, substantially as set forth.

10. The combination, with the rolling-table provided with an apron and a bunching-roller, of the pivoted levers 32 for reciprocating the said table, the cutter 10, and the horizontal slides connected to the said cutter, the guide-rod pivotally connected to the said slides and provided with the slotted end 37', the arms 37° 37, pivoted at one end to the frame and secured upon a shaft passing through the slotted end of the said guide-rod, and the rod 35, pivotally connecting the upper ends of the said levers 32 and the arm 37, whereby the said cutter is moved at the ends of the travel of the table in opposite directions to the table, substantially as set forth.

485,988. GAS-ENGINE EXHAUST-FURNACE. HIPPOLYTE J. SARRAZIN, Henderson, Minn. Filed Mar. 17, 1892. Serial No. 425,207. (No model.)

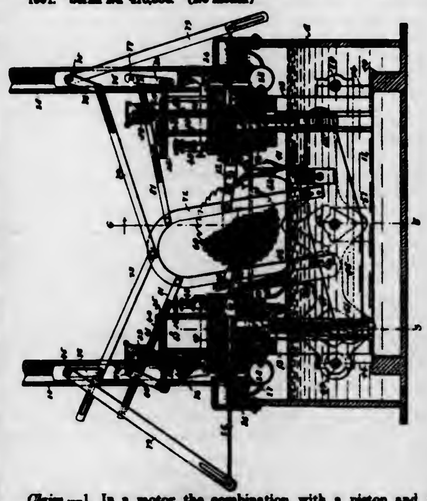


Claim.—1. The combination, with a steam-boiler, of a gas-engine in the water-space thereof and exhausting into the heating-compartment or combustion-chamber of the boiler, substantially as set forth.



2. The combination, with the boiler having a combustion-chamber and a water-chamber at one end communicating with the water-space of said boiler, of a gas-engine the cylinder of which is within said water-chamber and an exhaust-valve connecting said cylinder with the combustion-chamber, substantially as set forth.

485,989. POWDER-MOTOR. GEORGE V. SHEFFIELD, New York, N. Y., assignor to the American Rapid Motor Company. Filed Oct. 30, 1891. Serial No. 410,830. (No model.)



Claim.—1. In a motor, the combination, with a piston and a chambered carrier-block sliding over the same, of a firing-pin contained in the carrier-block, a feed-hopper adapted to contain an explosive compound, and a time connection between the carrier-block and the hopper, substantially as described.

2. In a motor, the combination, with a driving-shaft, a cylinder, a piston held to slide in the cylinder, and an actuating mechanism connecting the piston and the driving-shaft, of a carrier-block sliding over

the piston in an inclosed chamber within the cylinder, the said block being provided with a central chamber and a series of passages, a furnace, a firing-pin passing through the furnace and into the carrier-block, and a reciprocating hopper located above the carrier-block for containing an explosive compound, the said hopper having a time connection with the chambers of the carrier-block, as and for the purpose specified.

3. In a motor, the combination, with a driving-shaft, a cylinder, a piston held to slide in the cylinder, lever-arms connected with the piston, dogs carried by the lever-arms, and toothed wheels secured upon the driving-shaft with which the dogs engage, of a carrier-block held to slide above the piston and having chambers therein, a heating device, a firing-pin passing through the heating device into the carrier-block, a hopper having time connection with the chambers of the carrier-block, and link connections between the hopper-supports, the carrier-block, the firing-pin, and the lever-arms, as and for the purpose specified.

4. In a motor, the combination, with a driving-shaft, a cylinder, a piston held to slide in the cylinder, an actuating mechanism connecting the piston and the drive-shaft, and a carrier-block provided with a series of chambers and held to slide above the piston, of a cover-plate located above the slideway of the carrier-block and provided with a series of channels, a hopper held to slide above the cover-plate and adapted to allow discharge of an explosive powder into the chambers of the carrier-block, a firing device having movement in the carrier-block, and a propelling mechanism connecting the actuating mechanism with the support of the hopper, the carrier-block, and the firing device, as and for the purpose specified.

5. In a motor, the combination, with a driving-shaft, a cylinder, a piston held to slide in the cylinder, an actuating mechanism connecting the piston and the driving-shaft, and a carrier-block held to slide in the cylinder above the piston, the said carrier-block being provided with chambers and the cylinder with channels communicating with said chambers, of a valved hopper having a sliding movement over and in engagement with the cylinder and adapted for containing and discharging an explosive compound, a trip mechanism adapted to engage with the valves of the hopper, a firing device entering the chambers of the carrier-block, a heating device surrounding the firing device, and means, substantially as shown and described, for moving the carrier-block, the hopper, and the firing device, as and for the purpose specified.

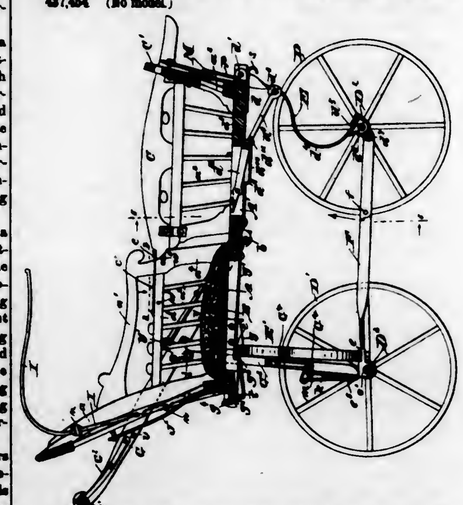
6. In a motor, the combination, with a driving-shaft, cylinders located at opposite sides of the driving-shaft, pistons having movement in said cylinders, a walking-beam pivotally connected at its ends with the pistons, levers also connected with the pistons, and a driving mechanism connecting the driving-shaft, the walking-beam, and levers, of carrier-blocks held to slide in the cylinders over the pistons and beneath channels in the cylinders, the said carrier-block being provided with chambers, a hopper having sliding movement over the cylinders and upon them, heating devices, firing-pins passing through the heating devices into the carrier-blocks, and link connections between the walking-beam, the supports for the hoppers, the carrier-blocks, and the firing-pins, as and for the purpose specified.

7. In a motor, the combination, with a driving-shaft, cylinders arranged at each side of the driving-shaft, pistons held to slide in the cylinders, a walking-beam connecting the pistons, levers connected at one end with the pistons, ratchet-wheels attached to the driving-shaft, and dogs carried by the walking-beam and levers and engaging with said ratchet-wheels, of carrier-blocks provided with chambers and held to slide in the cylinders above the pistons and beneath channels in said cylinders, said channels being adapted for registry at times with the chambers of the carrier-blocks, slides located above the cylinders, hoppers carried by said slides, the lower ends of which hoppers register at intervals with the channels in the cylinders, valves controlling the supply of an explosive compound carried by the hopper, trip devices adapted for engagement with the valve, a firing-pin having movement in the carrier-blocks, and a driving connection between the walking-beam, the firing-pin, the carrier-blocks, and the slides for the hoppers, substantially as shown and described.

485,990. POCKET-LAMP AND CIGAR-LIGHTER. HENRY A. SHERMAN, Peachton, Ohio. Filed Apr. 13, 1892. Serial No. 429,096. (No model.)

Claim.—The combination, in a pocket-lamp, of a casing open at one side and having an opening in its upper edge, a segmental extinguisher pivoted on the interior of the casing and adapted to close the opening therein, an oil-reservoir substantially the same shape as the casing and removably secured therein by means of lugs *f f'* on the exterior of the reservoir and the interior of the casing, a wick-tube secured in an opening in the upper edge of oil-reservoir, a removable spring igniting-arm *g*, secured on the outer face of the reservoir, a removable cover *d'*, fitted over the open side of the casing, a short shaft journaled in the center of the cover and carrying a disk for carrying the cap-disk *b* on its interior, and means for rotating this disk, substantially as described.

485,991. CONVERTIBLE CARRIAGE, CHAIR, OR ROCKER. NATHAN SILVERSON, New York, N. Y. Filed June 21, 1892. Serial No. 437,454. (No model.)



Claim.—1. In a convertible carriage and chair, the combination, with two separably-hinged body-sections, one furnished with a back, of springs, axles, and flexing reach-bars, substantially as described.

2. In a convertible carriage and chair, the combination, with two separably-hinged body-sections, one having a seat-back and side arms, of two forward-bent springs, a single transversely-extending bent rear spring, two axles, four wheels, two flexing reach-bars, and means to detachably secure the top of the rear spring to the rear body-section, substantially as described.

3. In a convertible carriage and chair, the combination, with two hinged body-sections, one having a back and two arms, and pusher-bars loosely connected with the hinges of the body-sections and joined by a handle-bar, of two front springs, a rear spring, two axles, one longer than the other, and two upwardly-flexing reach-bars, substantially as described.

4. In a convertible carriage and chair, the combination, with two hinged body-sections, one having a seat-back and two side arms and the other provided with hinged pieces on top of fixed sides, and latching devices between said hinged pieces and the arms of the seat-section, of two forward-bent plate-springs, one rear bent plate-spring fast by its ends on the rear axle, a rear axle, a front axle, wheels loose on each axle, and a latching device between the rear spring and the seat-section of the body, substantially as described.

5. In a convertible carriage and chair, the combination, with two body-sections hinged together below, one section provided with a back and two side arms, inwardly-folding hinged pieces on top edges of the other section, and a latching device between each folding piece and an arm of the seat-section, of two forward plate-springs bent rearwardly, one rear plate-spring wave-bent laterally, a latching device between this spring and the seat-section, two axles, four wheels, and two upwardly-flexing reach-bars, substantially as described.

6. In a convertible carriage and chair, the combination, with two body-sections hinged together below, the rear section having a back and two side arms, inwardly-folding hinged pieces on top of the fixed sides of the front body-section, and a latching device between each folding piece and an arm of the seat-section, of two forward plate-springs curved rearwardly and jointed to the front body-section, one rear plate-spring wave-bent laterally, a latching device between this spring and the seat-section, a rear axle, a front axle shorter than the rear axle, two loose wheels on each axle, and a loop-brace pivoted on the front springs between and adapted to have locked engagement with the front body-section, substantially as described.

7. In a convertible carriage and chair, the combination, with two body-sections hinged together below, springs, axles, wheels, and two upwardly-flexing reach-bars, of two pusher-bars that have pintles on lower ends which form removable pivots for the hinges of the body-sections, substantially as described.

8. In a convertible carriage and chair, the combination, with two body-sections hinged together below and latching devices at meeting ends above, springs, axles, wheels, and two upwardly-flexing rule-jointed reach-bars, of two pusher-bars, pintle-bolts thereon that form pivots for the hinges of the body-sections, two prop-bars hinged to the pusher-bars, a transverse handle-bar between the pusher-bars above, and a latching device adapted to hold the lower ends of the prop-bars connected to the rear axle, substantially as described.

9. In a convertible carriage and chair, the combination, with two body-sections hinged together in sequence by meeting bottom portions, a back and two side arms on the rear or seat section, two inwardly-folding hinged pieces on top edges of fixed sides on the front body-section, and a bow-spring forwardly and loosely connected to the sides of these folding pieces and adapted to retain them elevated or folded, and latching devices for the rear ends of the folding pieces adapted to lock them elevated and connected to arms of the seat-section, of two plate-springs jointed above to the front end of the front body-section, a loop-brace therefor loose on a transverse brace-rod that is fast to these springs, a latch-dog on the front body-section, an offset guide-plate below thereon, a rear plate-spring wave-bent laterally and fast at the ends on a rear axle, a latching device on the seat-section, which engages the top of the rear spring, two axles, one longer than the other, four wheels, and two upwardly-flexing reach-bars, substantially as described.

10. In a convertible carriage and chair, the combination, with two body-sections hinged together in sequence, latching devices above adapted to lock these body-sections together, pusher-bars jointed at their front ends on the hinges of the body-sections, and prop-bars therefor, of two front plate-springs quarter-twisted above and pivoted by top ends on the front of the leading body-section and secured below on the front axle, a rear plate-spring laterally wave-bent fast below on a rear axle and flat on top, and a latching device on the body adapted to interlock with said spring, a long rear axle, a front axle, wheels loosely secured thereon at the ends, and two reach-bars, each formed of two pieces that are rule-jointed together and adapted to flex upwardly, substantially as described.

11. In a convertible carriage and chair, two parallel pusher-bars adapted to removably lock fast to hinge-joints of a two-part body, a hinged prop-bar for each pusher-bar, a latching device on the prop-bars that holds them fast to a rear axle, a transverse handle-bar between the pusher-bars, and brace-rods that engage the handle-bar and pusher-bars, substantially as described.

12. In a convertible carriage and chair, latching devices on one section of the two-part hinged body that detachably engage hook-plates on the other section of said body, substantially as described.

13. In a convertible carriage and chair, a body composed of two sections hinged together in sequence and provided with latching devices that hold them from flexing, substantially as described.

14. In a convertible carriage and chair, a two-part body hinged together in sequence and adapted to fold and form a chair-seat and lower frame or base therefor, substantially as described.

15. In a convertible carriage and chair, a two-part body hinged together in sequence, the rear section provided with a back and two arms, and the front section furnished with two hinged pieces longitudinally curved on free edges that become rockers when the body-sections are folded, substantially as described.

16. In a convertible carriage and chair, the combination of the carriage, the body of which is formed of two separably-connected sections, the rear section forming a seat or chair-body section, and the folding and removable running-gear, of a table-leaf adapted to engage the arms of a seat-section detachably, substantially as described.

17. In a convertible carriage and chair, a two-part body hinged together in sequence, so as to fold with bottom walls together, axles and wheels therefor, and devices adapted to hold one body-section on the other body-section, producing a chair-seat and adapting the axles and wheels to sustain said seat for progressive movement, substantially as described.

18. In a convertible carriage and chair, a two-part body hinged together in sequence, so as to fold and produce a chair-seat and its base, hinged rocker-pieces on one body-section that are part of its sides, a latching device therefor, and a hinged front piece on this base or body-section that when folded downwardly blocks the chair from rocking, substantially as described.

19. In a convertible carriage and chair, the combination, with the separable body-sections, the rear one of which is the chair-seat, the front and rear axles, and the springs connecting the axles and body-sections, of two reach-bars for the connection of front and rear axles, each rule-jointed and by upward flexure adapted to reduce space between said axles, the forward axle having sleeves d^3, to which the forward ends of the reach-bars are pivoted, and the rear axle having bracket-blocks d', to which the rear ends of the reach-bars are bolted, substantially as described.

20. In a convertible carriage and chair, the combination, with the seat-section of a two-part vehicle-body, of two pusher-bars that form legs for a high chair, a connecting handle-bar that serves to space the lower ends of said legs, two prop-bars hinged on edges of the pusher-bars forming two other legs, two brace-rods extending from the pusher-bars to interlock with the sides of the seat-section at its rear, and two stretcher-bars extending between the pusher-bars and prop-bars below, substantially as described.

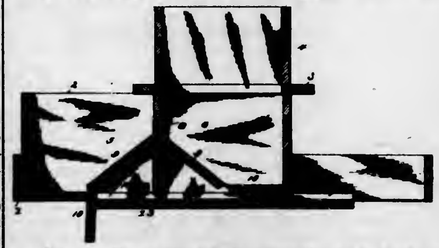
21. In a convertible carriage and chair, the combination, with a seat-section having a back and two side arms that are grooved on inner side faces and have opposite pins projected from said faces aligned with the grooves, of a table-leaf that will slide between the side arms and engage tongues and grooves on its edges with the grooves and pins on said arms, and spring latching devices, which are adapted to detachably lock the table-leaf on the seat-section, substantially as described.

22. In a convertible carriage and chair, the combination, with a front body-section that is adapted to fold below a rear body-section and a latch-hook adapted to hold these body-sections together at their free edges rearwardly of the rear body-section, of two hinged side pieces on the front section that when it is folded become rockers, a bow-spring loosely engaging with these rockers at its ends, and a hook-bent guide-rod that is secured by one end on the front body-section and loosely engages the bow-spring between its ends, substantially as described.

23. In a convertible carriage and chair, the combination, with a front body-section longitudinally slotted in its bottom wall, a guide-plate below said slot, and a locking-dog pivoted therein, of two plate-springs fixed below on a front axle and pivoted above to the front body-section, a transverse brace-rod secured by its ends to the plate-springs near the body-section, and a loop-brace loosely secured by its ends on the brace-rod adapted to slide on the guide-plate and be locked between the dog and a stud depending from the body-section, substantially as described.

24. In a convertible carriage and chair, the combination, with a two-part body hinged at their meeting edges, two axles, four wheels, two springs at the front, and a plate rear spring laterally wave-bent and fast at its ends on the rear axle, of two latch-hook plates on the rear body-section that engage the front edges of the flat bow of the rear spring, and a spring latch-bar adapted to interlock with the rear edge of said flat bow between the hook-plates, substantially as described.

485,992. MEASURING-VESSEL. JOHN SHORT, Fairland, Mich. Filed July 7, 1892. Serial No. 439,200. (No model.)



Claim.—1. The combination of a rectangular frame having at each end a discharge-opening and comprising vertical side walls 7, a top wall 3, supported by the upper ends of said side walls, and a bottom wall 13, provided with door-closing abutments, a rectilinearly-reciprocating grain-box 2, set within the rectangular frame between the parallel side walls thereof and provided at its opposite ends with pivoted swinging doors 10, which are alternately raised and closed by the door-closing abutments as the grain-box is reciprocated in a right line between the parallel side walls of the rectangular frame, substantially as described.

2. The combination of a rectangular frame 1, having a discharge-opening at each end and provided with vertical parallel side walls 7, a horizontal plate 3, supported by the upper ends of the side walls, a hopper 4 above the horizontal plate, a door-closing abutment located at the under side of the rectangular frame, and a rectilinearly-reciprocating grain-box 2, set within the rectangular frame between the parallel side walls thereof and provided with reversely-inclined bottom

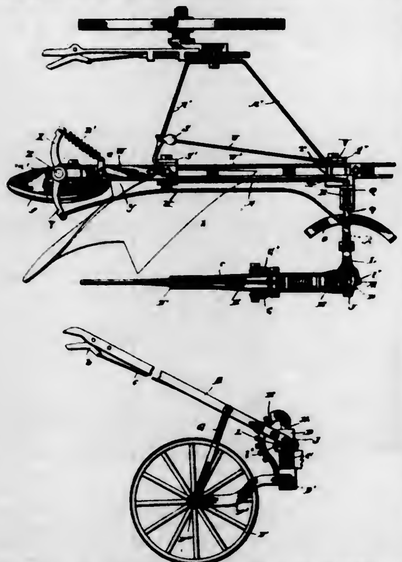
walls, to the lower edges of which are pivoted opening and closing doors 10, which are alternately raised and closed by the door-closing abutments as the grain-box is reciprocated rectilinearly between the side walls of the rectangular frame, substantially as described.

3. The combination of a rectangular frame 1, having at each end a discharge-opening and provided at its bottom with a horizontal wall 13, having side cleats or bars 14, a rectilinearly-reciprocating grain-box 2, supported by the side cleats or bars and comprising a partition 8 and reversely-inclined bottom walls 9, to the lower edges of which are pivoted opening and closing doors 10, which are alternately raised and closed by the ends of the cleats or bars as the box is reciprocated rectilinearly on said cleats or bars, a hopper 4, located above the grain-box, and a leveling-plate 3, interposed between the hopper and the grain-box, substantially as described.

485,993. CULINARY VESSEL. JEROME SNYDER and FRED. LOCKWOOD, Mianus, Conn. Filed Nov. 23, 1891. Serial No. 412,879. (No model.)

Claim.—The combination of the steaming-pan, the cover larger than the pan, and handles jointed to the top of the pan and extending through the cover and adapted to fold down on the cover and secure it to the top of the pan, substantially as described.

485,994. WHEEL-PLOW. PHILIP W. STAMBOPS, Jr., Peoria, Ill. Filed Dec. 15, 1890. Serial No. 374,530. (Model.)



Claim.—1. In a wheel-plow, the combination, substantially as set forth, with a wheeled frame and a plow carried thereby, of a wheel-landside at the rear of the plow, a vertical pivot connecting said wheel-landside with the plow-beam and permitting the wheel-landside to swivel upon a vertical axis, a stop to limit said swiveling motion in one direction, and a spring to hold said wheel-landside in the normal line of draft as determined by said stop, substantially as set forth.

2. In a wheel-plow, the improved furrow-wheel mounting consisting of a vertical spindle, a furrow-wheel holder linked thereto, a furrow-wheel journaled in said holder, a hand-lever pivoted to said spindle, and a link pivoted to said holder and lever, substantially as specified.

3. The combination of a plow-beam, the frame connected thereto, the standard swiveled on the end of said frame, carrying a wheel and adjusting devices therefor, and a locking device for said standard active only when the furrow-wheel is in the normal line of draft with the short vertical shaft connected to the rear end of the plow-beam, the wheel journaled thereon, and a spring controlling the position of said shaft, substantially as specified.

4. The combination of the plow-beam, the frame connected thereto, the standard swiveled on the end of said frame, carrying a wheel and a single lever for adjusting said wheel both vertically and laterally, and a locking device for said standard, adapted to lock the same only when the furrow-wheel is in the normal line of draft, substantially as set forth.

5. The combination of the plow-beam and plow with the vertical shaft journaled on the rear end thereof, the inclined wheel-landside attached to the lower end of said shaft and a spring for controlling said shaft so as to normally keep the wheel-landside in working position, substantially as specified.

6. The combination of the plow-beam, the plow, the frame, and supporting-wheels connected thereto, substantially as described, with the casting attached to the rear end of the beam, the vertical shaft journaled therein, the inclined wheel-landside journaled on the lower end of said shaft, the laterally-projecting arm connected to the upper end of the shaft, and the spring connecting said arm to the beam all substantially as specified.

7. The combination of the plow-beam, the frame connected thereto, the standard swiveled on the end of said frame, carrying a wheel and adjusting devices therefor, and an arm projecting from the standard toward the beam, and the latching devices for engaging and locking said arm, with the short vertical shaft connected to the rear end of the plow-beam, the wheel journaled thereon, and the spring controlling the position of said shaft, substantially as set forth.

8. The combination of the plow-beam, the frame connected thereto, the standard swiveled on the end of said frame, carrying a wheel and adjusting devices therefor, and an arm projecting from said standard toward the beam, and latch devices for engaging and locking said arm, with a short vertical shaft connected to the rear end of the plow-beam, the inclined wheel-landside journaled thereon, the oppositely-projecting crank-arms connected to the upper end of said shaft, the spring connecting one arm to the beam and the rod connecting the other arm to the arm attached to the standard, substantially as set forth.

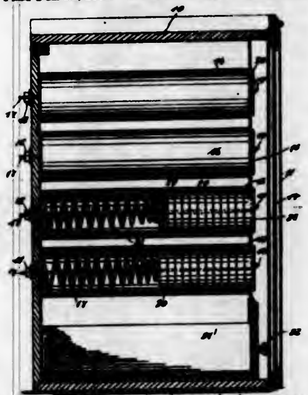
9. The combination of the plow, the frame having a portion projecting from the furrow side of the beam, the standard swiveled on the end of said projecting portion, the yoke and wheel connected to the standard, the lever and segment for adjusting said wheel vertically, and an arm attached to the standard and overlying the projecting portion of the frame, the plate supported on said frame and upholding the end of said arm, the spring-controlled latch adapted to engage and lock said arm, and the bell-crank lever, rod, and foot-treadle for operating said latch, substantially as specified,

10. The combination of the plow, the vertical shaft connected to the rear end of the beam thereof, the inclined wheel-landside on said shaft, and the crank-arm on the upper end thereof, with the frame connected to the beam and having an outstanding arm at the furrow side, a wheel adjustably mounted and swiveled on the extremity of said arm, the arm connected to the support of said wheel and movable therewith, the rod connecting said arm with the crank-arm on the wheel-landside shaft, the guide-plate, and the spring-controlled locking device for said arm, all substantially as specified.

11. The combination of the plow-beam, the shaft attached to the rear end thereof, carrying a wheel on its lower end and a crank on its upper end, and a frame connected to said beam, having a wheel on its landside and a standard swiveled in proper bearings on its furrow side, with the segment attached to said standard, the wheel, and yoke and lever for adjusting the same, connected to said standard, the inwardly-projecting arm connected to the standard, the spring-controlled latch adapted to engage and lock said arm when the wheel turns parallel with the beam, and the rod connecting said arm with the crank on the shaft attached to said beam, all substantially as specified.

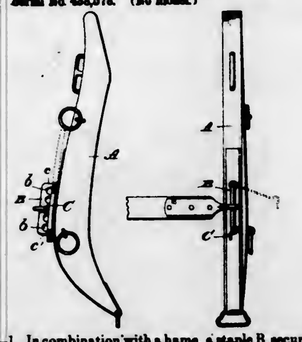
12. The combination of the plow-beam, the wheel attached to the rear end thereof, the frame connected to said beam, having projecting portions at the land and furrow sides, a wheel connected to the frame at the landside, and a standard swiveled to the frame at the furrow side, a notched arm connected to said standard, a guide-plate for said arm, connected to the frame, a spring-controlled latch adapted to lock said arm, a treadle and rod for releasing said latch, a yoke pivotally connected to said standard, and a wheel connected to the yoke, a segment connected to the standard, a lever pivoted to the standard and engaging said segment by suitable devices, and links connecting said lever with the yoke, whereby the wheel can be vertically adjusted in relation to the standard, all substantially as set forth.

485,995. BRAID-CASE. CHARLES F. SOMERVILLE, Michigamme, Mich. Filed Feb. 29, 1892. Serial No. 423,204. (No model.)



Claim.—A braid-holding case having a swinging transparent door, a plurality of parallel braid-holding cylinders arranged within the door and opening toward the latter, braid-supporting spindles extending centrally through the cylinders, spiral springs arranged within the cylinders, and a supporting-wall for the front ends of the cylinders, substantially as described.

485,996. HAME. JOHN SWEENEY, Manchester, Ohio. Filed June 30, 1892. Serial No. 438,578. (No model.)



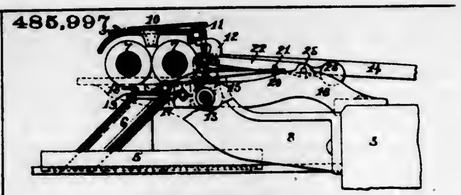
Claim.—1. In combination with a hame, a staple B, secured thereto, the inner side of the connecting portion of said staple having notches or recesses with which the tag-eye is adapted to engage and a flat spring-bar having one end bent around one member of the staple and the other end formed into a hook to engage the other member of the staple, substantially as shown, and for the purpose set forth.

2. In combination with a hame, a staple having recesses, the projecting portions between said recesses extending toward the body portion of the hame a sufficient distance to provide a space between the hame and projecting portions in which the eye of the tag can move, and a flat spring-bar pivotally attached to one of the side members of the staple and provided with a hook which is adapted to engage with the other side member, the portion of the flat bar between the eye and hook being bent so as to be located between the body portion of the hame and the forwardly-projecting portions of the staple, substantially as shown, and for the purpose set forth.

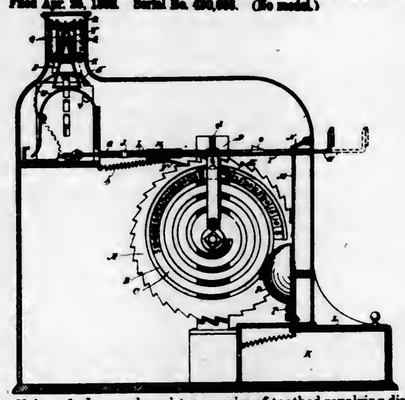
485,997. STOP-MOTION FOR DRAWING-FRAMES. CYRUS A. TAFT, Whitinsville, Mass., assignor to the Whitin Machine Works, same place. Filed Mar. 8, 1892. Serial No. 424,302. (No model.)

Brief.—The invention consists in a stop-motion to take effect on the filling of the can.

Claim.—The combination, with the rock-shaft of a drawing-frame stop-motion and the coiler, of a pivoted lever having at one end a rider the inclined sides of which extend within the circumference of the coiler, the lower edge of the rider bearing on the coiler, the other and longer end of said lever supporting a pivoted stop-arm, and an auxiliary finger secured to the rock-shaft, the whole adapted to arrest the motion of the rock-shaft when the rider is lifted, as described.



485,998. CASH-REGISTER. EDWARD T. TAYLOR, Oakland, Cal. Filed Apr. 25, 1892. Serial No. 430,866. (No model.)



Claim.—1. In a cash-register, a series of toothed revolving disks having each a series of figures and corresponding guides forming scrolls from the exterior to the center of the disks, indicators the points of which stand above the figures, and mechanism whereby they are gradually moved from the exterior toward the center of the disk as the latter is revolved, pawls engaging the teeth upon the periphery of the disks, the pawl-carriers and guides upon which the pawl-carriers slide, a rod for each disk, having an indicating-figure upon its outer end and movable parallel with the guides and pawl-carriers, and a lug upon the rod, by which the pawl-carrier is engaged and the pawl caused to engage a tooth of the disk, so as to advance the latter whenever the rod is drawn forward, substantially as herein described.

2. In a cash-register, a series of toothed rotary disks, each having a series of figures arranged in the form of a scroll upon its surface from the periphery to the center, sliding rods having indicating-figures upon the outer ends, pawls and sliding pawl-carriers which are engaged by the rods to rotate the disks one tooth whenever a rod is drawn forward, a cash-drawer, a rod by which it is locked when the drawer is closed, a hinged movable plate extending above the line of numbered rods, and a lug or incline upon each of said rods, whereby the plate is lifted and the cash-drawer opened whenever either of the rods is drawn forward, substantially as herein described.

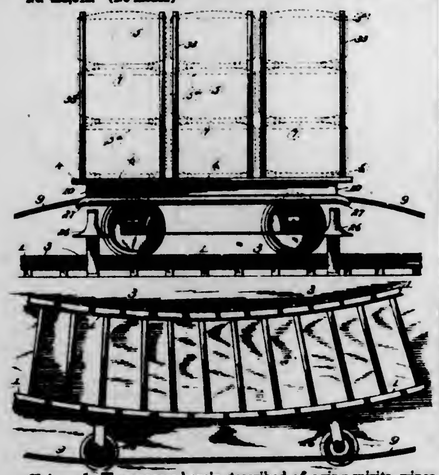
3. In a cash-register, a series of toothed rotary disks having their surfaces formed into scrolls upon which indicating-figures are marked from the periphery to the center, pawls adapted to engage the teeth of the disks, whereby either disk may be moved forward a single tooth when its pawl is actuated, sliding rods corresponding with the pawls, each having an indicating-figure upon its outer end, a cash-drawer and a bell, a rod by which the cash-drawer is locked and which engages the hammer of the bell, a pivoted oscillating plate to which the upper end of the rod is connected, a lug fixed upon each sliding numbered rod, which engages said plate to raise the locking-rod and open the cash-drawer and ring the bell at the same time, and indicating-figures mounted in the upper part of the case containing this mechanism, said figures being moved outwardly and exposed in openings in the case by connections from the sliding rod, substantially as herein described.

4. In a cash-register, the toothed registering-disks, pawls engaging the teeth, and sliding rods whereby the pawls are actuated to advance the disks, indicating-plates having figures corresponding with each of the sliding rods and the amounts marked upon the disks, said plates sliding outwardly from each other upon guide-rods, openings opposite the figures through which the latter are exposed when the plates are forced outwardly, and levers connected with the sliding operating-rods and with the movable indicating-plates, whereby the latter are separated from each other and exposed in their respective openings by the movement of the rods, substantially as herein described.

5. In a cash-register, an indicating device consisting of figure-plates movable upon guide-rods transversely within a chamber having openings at opposite sides and in line with said plates, springs by which the plates are normally drawn toward each other and away from the openings, a mechanism by which the plates are simultaneously forced outward upon the guide-rods to expose the figures in the openings, a sliding rod connected with each of said mechanisms and having a figure upon its outer end corresponding with that of the indicator, and a toothed registering-disk with figures upon its surface corresponding with those upon the indicator, and the actuating-rod and mechanism whereby said disk is rotated in unison with the movements of the indicator, substantially as herein described.

6. In a cash-register, an indicating device consisting of character-plates movable upon guide-rods transversely within a chamber having openings at opposite sides and in line with the faces of the plates, springs by which the plates are normally drawn toward each other and away from the openings, a mechanism by which the plates are simultaneously forced outward upon the guide-rods to expose the figures in the openings, a locking-plate by which the figures are retained in view, said plate being actuated to release the character-plates and allow them to return to their normal position when any other set of figures is exposed, substantially as herein described.

485,999. PROCESS OF AND APPARATUS FOR AGING LIQUORS. THEODORE R. TIBBY, Washington, D. C. Filed May 19, 1892. Serial No. 433,612. (No model.)



Claim.—1. The process herein described of aging spirits, wines, or other liquors, which consists in subjecting the liquor in bulk to rapid mechanical vibration, producing a continuous tremulous action throughout the body of the liquor, as explained.

2. An apparatus for aging or ripening spirits, wines, or other liquors, consisting of a railway-track, one or more cars or trucks mounted thereon for carrying the liquor to be treated, the surfaces of the track and of the truck-wheels being relatively uneven, and means for communicating relative movement between the trucks and track for the purpose of producing tremulous mechanical agitation through the body of liquor, as explained.

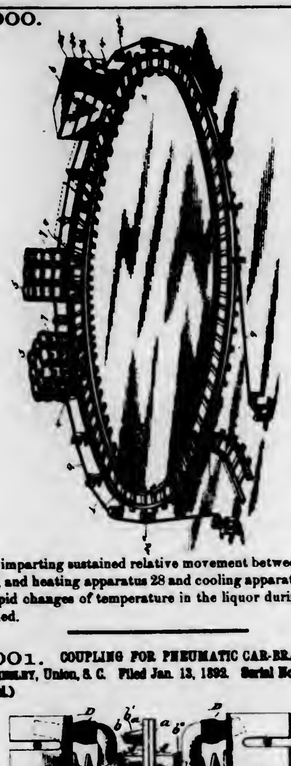
3. An apparatus for aging spirits, wines, and other liquors, consisting of a circular or endless track, one or more trucks or cars mounted thereon, the surfaces of the track and of the truck-wheels being relatively uneven, means for storing the liquor in bulk on said cars or trucks, and means for producing relative movement between said trucks and track, all substantially as herein described, whereby a sustained tremulous action is produced through the body of the liquor, as explained.

486,000. APPARATUS FOR AGING WINES, SPIRITS, OR OTHER LIQUORS. THEODORE R. TIBBY, Washington, D. C. Filed Aug. 26, 1892. Serial No. 444,168. (No model.)

Claim.—1. An apparatus for aging wines, spirits, and other liquors, consisting of a smooth endless railway-track, trucks running thereon and carrying the liquor to be treated, and driving mechanism for producing relative movement between the trucks and said railway-track, as herein shown and described.

2. The combination of a railway-track, trucks adapted to run thereon and carry the liquor under treatment, suitable driving mechanism for imparting sustained relative movement between said trucks and track, and heating apparatus 28 and cooling apparatus 33 for producing rapid changes of temperature in the liquor during treatment, as explained.

486,000.



486,001. COUPLING FOR PNEUMATIC CAR-BRAKES. RUFUS W. TIBBLEY, Union, S. C. Filed Jan. 13, 1892. Serial No. 417,906. (No model.)

Claim.—In a pipe-coupling for pneumatic car-brakes, the combination, with a coupling-head having valves and a bracket attached to the car-frame and a vertical slot, of the spring attached to and supporting said head and means for securing it to the slotted bracket, and also adjusting it higher or lower, as specified.

486,002. WATER-ELEVATOR. RUFUS W. TIBBLEY, Union, S. C. Filed Feb. 11, 1892. Serial No. 421,209. (No model.)

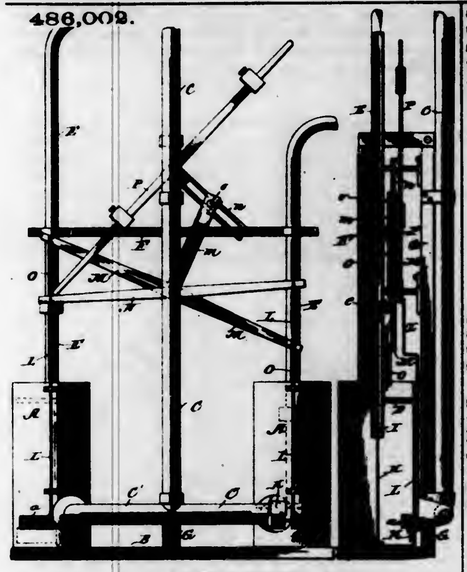
Claim.—1. In a water-elevator, the combination of two cylinders having inlets and outlets near the bottom, pistons working in the cylinders, tubes affixed to said pistons and provided with check-valves, stationary pistons held in the lower open ends of said tubes and provided with check-valves, gates for closing the inlets and outlets, and lever mechanism for connecting the pistons and gates and operating the latter, substantially as shown and described.

2. In a water-elevator, the combination of the cylinders having inlets and outlets near the bottom, pistons working in the cylinders, tubes affixed to said pistons and provided with check-valves, stationary pistons held in the lower open ends of said tubes and provided with check-valves, gates for closing the inlets and outlets, levers connecting the said pistons and gates, respectively, a two-armed wiper or lever for depressing the piston-lever, and means for connecting the piston and gate levers, substantially as shown and described.

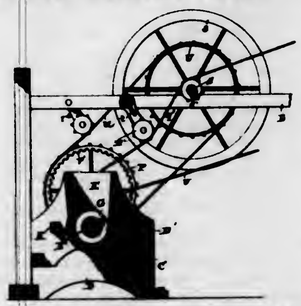
3. In a water-elevator, the combination, with cylinders, movable pistons, and connecting-lever, the valved tubes, valved stationary pistons, and sliding gates for controlling water inlets and outlets, of the pivoted oscillating lever connected with and actuating the said gates, and a wiper or second oscillating lever adapted to actuate the gate-lever intermittingly, substantially as shown and described.

4. In a water-elevator, the combination, with the cylinders, of pistons reciprocating therein, fixed apertured pistons having valves that seat downward, and tubes attached to the pistons and working on the fixed pistons and having valves that seat downward, as shown and described.

486,002.



486,003. GRINDING-MILL. ARNE S. TRAGETTON, Kennett, Iowa. Filed Apr. 30, 1892. Serial No. 430,905. (No model.)



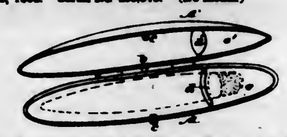
Claim.—1. In a grinding-mill, the combination, with the frame, the hopper, and stationary grinding-disk, of the grinding-shaft, a revolving grinding-disk mounted to slide upon said shaft, a sliding sleeve mounted on the said shaft alongside of said revolving disk, an off-standing arm secured to said frame, a threaded rod located opposite said arm, a longitudinally-slotted lever pivoted at one end to said off-standing arm and working over the shaft and said threaded rod, a stop-nut engaging said threaded rod, and a spring interposed between said stop-nut and the lever to force said sliding sleeve against said revolving disk, substantially as set forth.

2. In a device of the class described, the combination, with the main grinding-shaft, of a balance-wheel loosely mounted upon one end of said shaft and provided with an interiorly-toothed ratchet-ring, an adjacent pawl-plate fixedly secured to said shaft, and a spring-actuated pawl pivoted to said plate and working within said ratchet-ring and engaging the teeth thereof, substantially as set forth.

3. In a device of the class described, the combination, with the frame, of the main shaft carrying a small pinion at one end thereof, a counter-shaft journaled in said frame above said main shaft, a combined chain and gear wheel mounted upon one end of said counter-shaft and provided with an inner cogged periphery meshing with said pinion, a small wheel or pulley mounted upon said counter-shaft, and independent chain belts passing over said combined chain and gear wheel and said smaller wheel or pulley, substantially as set forth.

4. In a device of the class described, the combination, with the frame, of the main shaft carrying a pinion at one end, a counter-shaft journaled in said frame above said main shaft, a combined chain and gear wheel mounted upon one end of said counter-shaft and meshing with said pinion, a smaller chain wheel or pulley mounted upon said counter-shaft, a supplemental drive-shaft located adjacent to said frame and carrying a small chain wheel or pulley and a larger chain-wheel, the main driving chain belt passing over the small wheel or pulley of said supplemental shaft and counter-shaft, and an auxiliary chain belt passing over the larger chain-wheel of said supplemental shaft and said combined chain and gear wheel, substantially as set forth.

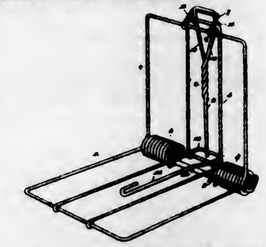
486,004. CIGAR-CASE. JOHN O. ULLIS, Ludington, Mich. Filed Mar. 26, 1892. Serial No. 426,375. (No model.)



Claim.—1. As a new article of manufacture, a cigar-case composed of two longitudinal opening and closing sections adapted to hold a partly-burned cigar singly within it and provided internally with transverse knives or cutters arranged intermediately of the length of the case, substantially as specified.

2. In a cigar-case of the character described, the two longitudinal concave opening and closing sections A A', hinged together along their one edge, as at *b*, and provided internally intermediately of the length of the case, the one with a shallow transverse knife or cutter *d*, having a concave cutting-edge, and the other with a deeper transverse knife or cutter *d'* of convex form on its cutting-edge, said knives being arranged approximately opposite each other, essentially as and for the purpose herein set forth.

486,005. ANIMAL-TRAP. GEORGE H. WELLS, Jr., Lake Charles, La., assignor of one-half to Solomon Hirsh, same place. Filed June 30, 1892. Serial No. 438,008. (No model.)



Claim.—1. In a trap, the combination of a frame or base, a striking-wire mounted thereon and having coils, a transverse brace receiving the coils, a supporting-frame, a lever fulcrumed on the supporting-frame and constructed of wire and provided at its upper end with a triangular loop having eyes to receive the supporting-frame, and a bait-trigger provided with eyes to receive the transverse brace and having a loop arranged to engage the lower end of the lever, substantially as described.

2. In a trap, the combination of a base, a transverse brace, an L-shaped supporting-frame having a horizontal portion extending longitudinally of the base and having a vertical portion rising from the rear of the base, a striking-wire having coils disposed on the transverse brace, a loop hinged to the striking-wire, a lever fulcrumed on the supporting-frame and constructed of a single piece of wire and consisting of a triangular portion having eyes at its sides to receive the supporting-frame and a depending stem twisted below the loop, and a bait-trigger constructed of wire and consisting of a loop having eyes to receive the transverse brace, and a stem forming a continuation of one side of the loop and being bent inward and provided at its front end with a bait-hook, substantially as described.

486,006. VESSEL. ADOLF WERNER, Brooklyn, N. Y. Filed Mar. 17, 1892. Serial No. 425,310. (No model.)

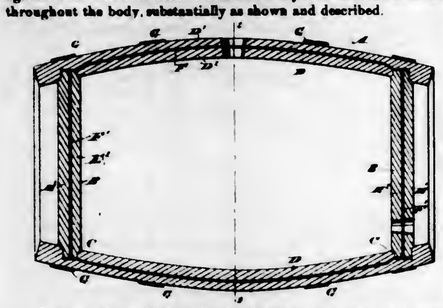
Claim.—1. A vessel comprising a body formed of staves and heads, each made in sections, and strips of flexible material arranged within the sections of the staves and the heads, substantially as shown and described.

2. A vessel comprising a body composed of staves, each made in sections, heads also made in sections, and strips of flexible material placed between the stave-sections and the head-sections and forming a closed receptacle within the body and heads of the vessel, substantially as shown and described.

3. A vessel provided with a body composed of staves, each made

in sections, and a strip of flexible material placed between the two parts of the staves, substantially as shown and described.

4. A vessel provided with a body composed of staves, each made in parts, a strip of flexible material placed between the two parts of the stave, the side edges of the layers of adjacent staves abutting against each other to form a continuous layer of flexible material throughout the body, substantially as shown and described.

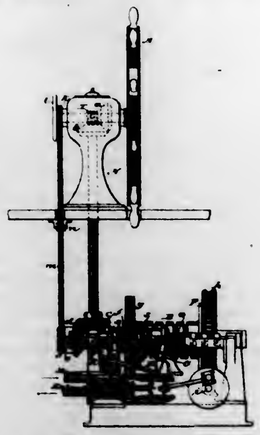


5. A vessel provided with a head made in sections, each composed of two parts, and a strip of flexible material placed between the parts of each section, the side edges of one strip abutting against the edges of the strip of the adjacent section, so as to form a continuous layer or lining within the sections forming the head, substantially as shown and described.

6. A vessel provided with a stave made in two parts and a strip of flexible material placed between the two parts of the stave, substantially as shown and described.

7. A vessel provided with a head-section made of two parts and a strip of flexible material placed between the two parts, substantially as shown and described.

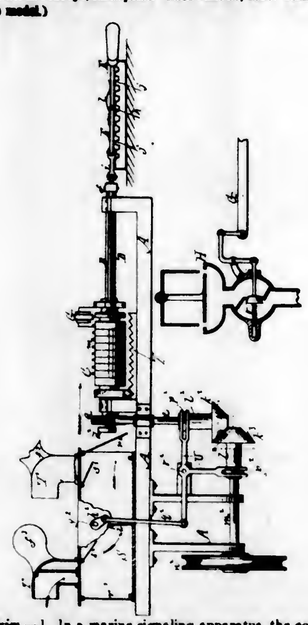
486,007. STEERING APPARATUS FOR SHIPS. WILLIAM C. WILLIAMSON, Philadelphia, Pa., assignor to himself, George W. Williamson, and John D. Williamson, same place. Filed May 4, 1892. Serial No. 431,855. (No model.)



Claim.—1. In a combined steam and hand steering apparatus for ships, in combination with a driving-shaft provided with a gear-wheel and a steering-drum, a hand-power shaft provided with a gear-pinion mounted loosely thereon, and a clutch for coupling and uncoupling said shaft and pinion, and mechanism for connecting and disconnecting the steering-drum and the steering-engine and for simultaneously coupling or uncoupling the clutch on the hand-power shaft, so that said steering-drum may be driven either by the steering-engine or by the hand-power shaft, substantially as set forth.

2. In a combined steam and hand steering apparatus for ships, in combination with a hand-power shaft provided with a gear-pinion mounted loosely thereon, and a clutch for coupling and uncoupling said shaft and pinion, a lever for coupling and uncoupling said clutch, fulcrumed on a yielding or spring support, substantially as set forth.

486,008. AUTOMATIC MARINE SPEED AND DIRECTION INDICATOR. HENRY B. WILLIAMS, Rochester, N. Y., assignor of one-half to Lemuel A. Jeffreys, same place. Filed June 20, 1891. Serial No. 396,948. (No model.)



Claim.—1. In a marine signaling apparatus, the combination of a revolving shaft, a cylinder mounted thereon revoluble with the shaft and adjustable longitudinally to different positions, a series of cams arranged in sets on said cylinder, a lever on which said cams act, said lever being connected with a whistle, a lever connected with the cylinder by suitable means to produce the end adjustment of the same, and a segment over which said lever works, the segment being provided with teeth with which engages a tooth on the lever, as and for the purpose specified.

2. The combination of a revolving shaft, a cylinder mounted thereon revoluble with the shaft and adjustable longitudinally to different positions, a series of cams arranged in sets on said cylinder, a lever on which the cams act, said lever being connected with a whistle, a carriage connected with the cylinder so as to move longitudinally with it, types connected with the carriage and lying in line with the cams, a movable ribbon upon which the types strike when brought into position, and means for automatically depressing the types by the movements of the lever, as herein shown and described.

3. The combination, with the cylinder C, of the carriage K, connected therewith, the arms *v v*, attached to the carriage and provided with the types *w w*, the lever G, and the rock-arm M, pivoted at one end to the lever and intermediately to the frame and bearing upon the types, as shown and described, and for the purpose specified.

4. The combination, with the shaft *c*, which operates the cam-cylinder, of the chamber S, the cowls T T, connected therewith to turn axially the shaft g^3, provided with the valve i^3, resting crosswise in the chamber, the cone-gears L^2 L^3, attached, respectively, to the shafts *c* and m^3 and engaging together, the double-armed crank-lever U, connecting with the hubs of the cone-gears, whereby they are moved forward and back, and the rod q^3, connecting the lever U with a crank h^3 on the shaft g^3, as shown and described, and for the purpose specified.

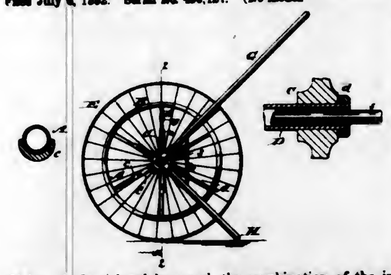
486,009. COMBINED BUTTON AND FASTENER. REUBEN D. WIRE, Independence, Mo. Filed Mar 3, 1892. Serial No. 423,631. (No model.)

Claim.—1. A combined button and button-fastener comprising an apertured button, a tubular spacing-shank, a perforated disk, and a staple-like clip the members of which are to be passed through the apertures of the button, the tubular shank, the fabric, and the perforated disk and their ends clinched against the under surface of the said disk, substantially as described.

2. A combined button and button-fastener comprising an apertured button, a tubular spacing-shank having flaring ends, an apertured disk, staple-like clips the members of which are to be passed through the apertures of the button, the tubular shank, the fabric, and the perforated disk and their ends clinched against the said disk, and a cup-shaped cap secured to the disk, substantially as described.

486,009.

486,010. HOSE-REEL. REUBEN D. WIRE, Independence, Mo. Filed July 6, 1892. Serial No. 439,127. (No model.)

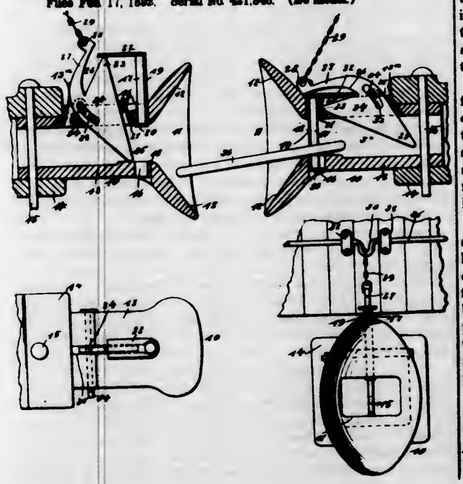


Claim.—1. In a hand hose-reel, the combination of the independent and separable spiders C C, constructed with arc-shaped sockets *c c* on the outer ends of their arms, the bent arms or spokes A A of the reel, the rims B B on the outer ends of said spokes, and means, substantially as described, applied to the axial portions of the spiders for tightening up the spiders, bent arms or sockets A A, and rims B B together, as set forth.

2. In a hand hose-reel, the combination of the independent and separable spiders C C, constructed with arc-shaped sockets *c c* on the outer ends of their arms, the bent arms or spokes A A of the reel, the rims B B on the outer ends of said spokes, an axial connection between the spiders, means, substantially as described, applied to the axial portions of the spiders for tightening up the spiders, bent arms or spokes, and rims B B together, and the handle G, with attached foot-rest H, said spiders, bent arms or spokes, said rims connecting them, and the handle with its attached foot-rest all being separable from each other to facilitate shipping and storage, as specified.

3. In a hand hose-reel, the combination, with the separable spiders C C, of the bent arms or spokes A A, the rims B B, the axial sleeve or tube D, the nuts *d d*, the solid axle or rod *s*, the extra wheels E E, and the handle G, with its attached foot-rest H, substantially as shown and described.

486,011. CAR-COUPLING. HORATIO G. WOOD, Newport, R. I. Filed Feb. 17, 1892. Serial No. 421,846. (No model.)



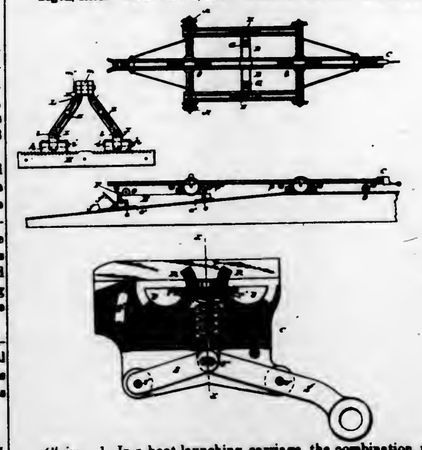
Claim.—1. A car-coupling comprising a draw-head having a flaring mouth and a vertical pin-hole in the rear of the mouth, a coupling-pin held to slide in the pin-hole and having an arm at the top, and a swinging pin-lifting lever pivoted in a slot in the draw-head, the lower end of the lifter extending downward into the path of the link and the upper end of the lever being adapted to engage the arm of the pin, substantially as described.

2. A car-coupling comprising a hollow draw-head having a flaring mouth, a vertical pin-hole in the rear of the mouth, and a slotted top, a pin held to slide in the pin-hole, and a weighted lifting-lever pivoted in the slot and loosely connected with the head of said pin and having its lower end extended into the path of the coupling-link, the upper end of the lifting-lever being adapted to connect with a lifting-chain, substantially as described.

3. The combination, with a draw-head having a vertical pin-hole with a groove in one wall, of a coupling-pin having a bottom limiting-flange and having a rib to slide in the groove, substantially as described.

4. The combination, with the slotted draw-head and the vertically-movable pin held to slide therein and having a rearwardly-extending arm, of a swinging weighted lifting-lever pivoted in the rear of the pin, the lever having its lower end adapted to extend into the path of a coupling-link and having its upper end recessed to receive the arm of the pin, and a crank mechanism for operating the lifting-lever, substantially as described.

486,012. BOAT-LAUNCHING CARRIAGE. HENRY J. WOODS, Muskegon, Mich. Filed Feb. 11, 1892. Serial No. 421,114. (No model.)



Claim.—1. In a boat-launching carriage, the combination, with the main frame provided with suitable wheels or rollers running on an inclined track, of the supplemental wheels secured to said frame and the supplemental inclined track on which said supplemental wheels run, located adjacent to the main track and parallel thereto, substantially as described.

2. In a boat-launching carriage, the combination, with the main frame provided with suitable axles carrying flanged wheels running on an inclined track, of the supplemental flanged wheels journaled to the rear axle and the supplemental inclined track on which the said supplemental wheels run, located adjacent to the main track and parallel thereto, and the supports, constructed substantially as described, for the after end of the carriage, whereby said carriage is held in a level position, as and for the purpose set forth.

3. In a boat-launching carriage, the combination of the adjustable devices for supporting the keel of the boat, secured to the central longitudinal irons of the main frame and consisting of journal-boxes carrying rollers, the hangers bolted to the angle-irons of the main frame, said hangers being provided with ratchet-teeth and the journal-box being also provided with ratchet-teeth, the whole being adjusted properly and clamped firmly in position by means of a suitable clamp, together with the adjustable devices secured near the center of the main frame for supporting the boat in an upright or perpendicular position, substantially as described.

4. In a boat-launching carriage, the combination, with the main frame, of the adjustable rollers for supporting the boat's keel, secured to the central longitudinal members of the main frame, and the adjustable devices for supporting the sides or hull of the boat, consisting of suitable frames pivoted to the main frame near its middle point.

said frames having journaled thereon suitable boxes carrying rollers, which rollers are movable in said boxes to adapt them to conform to the shape or contour of the hull, the ratchet-braces for connecting said frames to the ratchet-boxes, the ratchet-boxes, and the ratchet-

sounding-board, with weights attached to the sounding-board, whereby its vibration is increased, substantially as described.

3. The combination, in an upright piano, of the frame, the strings, and the sounding-board having a series of weights attached thereto,

and links pivotally connecting the rear end thereof with said crank-shaft, substantially as set forth.

upon the stationary cylinder and having a valved lower end, and means for reciprocating the piston and the outer cylinder simultaneously in opposite directions.

said frames having journaled thereon suitable boxes carrying rollers, which rollers are movable in said boxes to adapt them to conform to the shape or contour of the hull, the ratchet-braces for connecting said frames to the ratchet-boxes, the ratchet-boxes, and the ratchet-plates secured to the side irons of the main frame, all arranged and operating substantially as shown and described.

5. The combination, with the main frame, of the adjustable central rollers for supporting the keel of the boat, the adjustable rollers for supporting the hull secured near the central portion of the main frame, and the locking devices for holding the boat in position upon the carriage, consisting of a suitable casting movably secured near the front ends of the central longitudinal irons of the main frame and provided with a radial slot in which one of the securing-bolts works, the catches for engaging with suitable perforations on the keel of the boat, the links pivoted between the casting, the vertical spindle connected at its lower end to said links, and the spring for operating said catches, all arranged substantially as described.

6. The combination, with the main frame and devices constructed substantially as shown and described for suitably supporting the boat in position upon the carriage, of a locking device consisting of a suitable casting C, secured in place by pins or bolts to the front ends of the central longitudinal irons of the main frame and provided with a radial recess or slot in which one of the bolts works, the links S and S', pivoted within the casing, the vertical spindle T, pivoted to said links at its lower end, the spring enveloping the same, the plate r', catches R, working in said casting and operated through suitable connections by the aforesaid links, formed with the tooth-like projections r for engaging the boat's keel, and the adjustable irons or plates U U, working in the slots u' u', substantially as described.

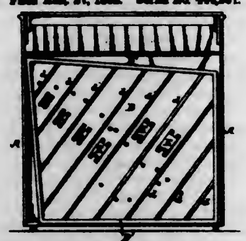
7. In a boat-launching carriage, the combination, with the central adjustable rollers for supporting the keel of the boat and secured to the central longitudinal members of the main frame, of the hull-supporting devices secured to the main frame near the center thereof and consisting of the parts B B, carrying rollers G G, journaled in boxes g g, and the adjustable devices for raising and lowering the same, secured to the outside irons of the main frame and consisting of the ratchet-plate H, the ratchet-boxes A A, engaging the same, the ratchet-braces K and K', journaled in the ratchet-boxes A A, said ratchet-braces being pivoted at L to the frame B, all arranged and combined substantially in the manner herein shown and described.

8. In a boat-launching carriage, the combination, with the hull-supporting devices and the locking devices constructed substantially as described, of the roller-carrying brackets for the rollers which support the keel of the boat, said brackets being secured to the central longitudinal members of the main frame and consisting of the journal-boxes N, the roller O, the hangers N', bolted to the angle-irons of the main frame, and the bolt N'' for clamping the roller-box firmly in position, substantially as shown and described.

9. The combination, with the boat-launching carriage, of the supports E E, secured movably to the flooring of the inclined track, the clamp F for holding said supports together, said supports being provided with the hinges e e, secured to their bottom, the rods e', secured to the flooring, the pawl f, pivoted to the back of one of the supports, and the ratchet f', secured to the flooring, all combined and operating substantially in the manner and for the purpose set forth.

10. The combination, with the carriage having the locking and supporting devices constructed substantially as described, of the supplemental flanged wheels A A, secured to the rear axle of the carriage, and the supplemental inclined track D, connected to the flooring of the main track and constructed substantially as shown and described for supporting the boat in a level position, substantially as specified.

486,018. SOUNDING-BOARD FOR PIANOS. PHILIP WURBS, Jr., Philadelphia, Pa., assignor to Christopher J. Happe and Florence J. Happe, same place. Filed Aug. 27, 1892. Serial No. 444,261. (No model.)



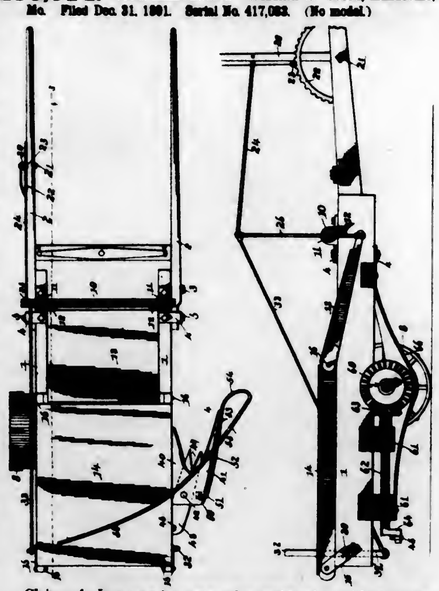
Claim.—1. As a new article of manufacture, a sounding-board for upright pianos, having a weighted center for the purpose of increasing its vibration, substantially as specified.

2. The combination, in an upright piano, of the strings and a sounding-board, with weights attached to the sounding-board, whereby its vibration is increased, substantially as described.

3. The combination, in an upright piano, of the frame, the strings, and the sounding-board having a series of weights attached thereto, said weights diminishing in size from the bass to the treble from a point back of the bass-strings to a point back of the treble-strings, substantially as described.

4. The combination of the sounding-board with a weight or weights having a hollow center and small bearing-surface, with means for attaching the weights to the sounding-board without detracting materially from the tone, substantially as described.

486,014. CORN-HARVESTER. WILLIAM A. YOUNG, Mandeville, Mo. Filed Dec. 31, 1891. Serial No. 417,083. (No model.)



Claim.—1. In a corn-harvester, the combination, with the main framework mounted on wheels and the cutting apparatus carried by the framework and located at one side thereof, of a table mounted on the framework and comprising front and rear sections hinged at their adjacent ends, loose connections between the rear end of the rearmost section and the framework, and a pivotal rocking support journaled in the framework above the front section and pivotally connected to the front end thereof below the horizontal plane of the rear section, substantially as specified.

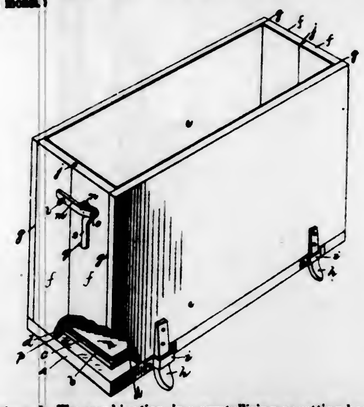
2. In a corn-harvester, the combination, with the framework, a cutter located at one side of the same, and front and rear rock-shafts journaled in the framework and provided with rock-arms, of a dumping table or platform formed in sections loosely pivoted together at their adjacent ends, the rear end of the rearmost section being loosely connected to the rock-arms of the rear shaft and the front ends of the foremost section being pivotally connected to the rock-arms of the front rock-shaft, a stop-rod mounted on each of these shafts and extending above and below the same, a connecting-rod connecting the two ends of these levers, a hand-lever pivoted upon the machine, a connecting-bar between the same and the connecting-rod, and means for locking the hand-lever, substantially as specified.

3. In a corn-harvester, the combination, with the main framework having the gathering devices, a rock-shaft journaled across the framework, and a bar rising therefrom, of hangers depending from the shaft, a table in two sections connected on a transverse pivot, the front end of the front section being pivoted to said hangers, and links at the rear end of the rear section, pivoted to the framework, the hangers being longer than the links, substantially as and for the purpose set forth.

4. In a corn-harvester, the combination, with the main framework having the gathering devices, a shaft journaled across the rear end of the framework and having a crank, retaining-arms secured to this shaft, a rock-shaft journaled across the framework, an arm rising therefrom, and connections between this arm and the crank, of a table in two sections connected by a transverse pivot, rigid hangers depending from the rock-shaft and connected with the front end of the table, and links pivotally connecting the rear end thereof with said crank-shaft, substantially as set forth.

5. In a corn-harvester, the combination, with a dumping-table comprising front and rear sections hinged by a knuckle-joint together, the end of the front section being pivotally held by an operating-lever and the rear section having its outer end pivotally connected to a fixed support, of a system of levers for operating said table, substantially as specified.

486,015. CRYSTALLIZING AND SETTING BOX. PRESCOTT W. ARVINE, Port Richmond, N. Y. Filed Nov. 25, 1891. Serial No. 413,068. (No model.)



Claim.—1. The combination, in a crystallizing or setting box, of a bottom plate, end plates parted vertically and the parts respectively attached to the side plates to be opened and closed together with them, the compressible joint-packing at the bottom of said side and end plates and in the meeting edges of the end plates, and the clamp-fastenings to connect and secure the ends and sides, said packings being compressed in the said joints when the parts are connected, substantially as described.

2. The combination, in a crystallizing or setting box, of the rabbeted and packed bottom plate, the sides having the parted ends attached to them, the tightening-joints connecting the sides and bottom, and the self-locking hook and lever-clamps fastening the ends and through them also securing the sides, said ends having the packing in the meeting joints, substantially as described.

3. The combination, in a crystallizing or setting box, of the rabbeted and packed bottom plate, the sides having the parted ends attached to them, the tightening-joints connecting the sides and bottom, consisting of the horn-cleats on the sides and the socket-clips on the bottom plate, and the hook and lever clamps fastening the ends and through them securing the sides, said ends having the packing in the meeting joints, substantially as described.

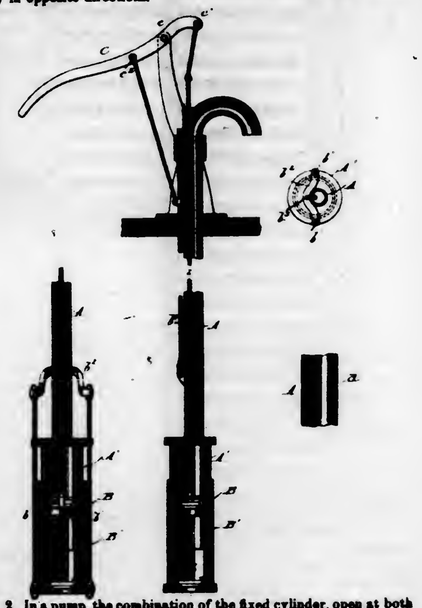
4. The combination, in a crystallizing or setting box, of the rabbeted and packed bottom plate, the sides having the parted ends attached to them, the tightening-joints connecting the sides and bottom, and the clamps fastening the ends and through them securing the sides, said clamps consisting of the catch-hook, stud, and elbow-lever, said lever having its fulcrum-pivot intermediate the stud and the pivot connecting the lever and hook and substantially in line therewith, as herein set forth.

5. The combination, in a crystallizing or setting box, of the sides and parted ends respectively fastened together and jointed to the bottom, and the catch-hook, stud, and elbow-lever fastening-clamps, said clamps adapted to thrust the sides apart when the clamps are released for opening the box, substantially as described.

6. The combination, in a crystallizing or setting box, of the sides and parted ends respectively fastened together and jointed to the bottom, the catch-hook, stud, and elbow-lever fastening-clamps, and the stop-stud for the elbow-lever, said lever having its fulcrum-pivot intermediate to the pivot connecting the lever and hook, and the stud on which the hook catches, substantially as described.

486,016. PUMP. DANIEL B. ANDERS, Milton, Pa. Filed Mar. 28, 1892. Serial No. 426,886. (No model.)

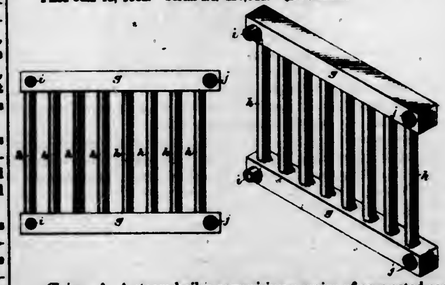
Claim.—1. In a pump, the combination of a fixed cylinder A', open at its lower end and having a discharge or delivery pipe connected with its upper end, a reciprocating valved piston working within the stationary cylinder, an outer cylinder telescopically fitted upon the stationary cylinder and having a valved lower end, and means for reciprocating the piston and the outer cylinder simultaneously in opposite directions.



2. In a pump, the combination of the fixed cylinder, open at both ends, and the pump-stock or delivery-pipe rising therefrom, the reciprocating valved piston in said cylinder, the piston-rod connected with the piston and extending up through the pump-stock, and an external valved cylinder fitting and adapted to reciprocate on the fixed cylinder, and means for reciprocating the said movable cylinder and the piston simultaneously in opposite directions.

3. In a pump, the combination of the fixed cylinder, open at both ends, the pump-stock or delivery-pipe rising therefrom eccentrically, the valved reciprocating piston in said cylinder, the piston-rod extending up through the pump-stock, the external cylinder fitted upon the stationary cylinder and adapted to reciprocate thereon, the rods b' b', attached to the external cylinder, the yoke connecting the upper ends of the said rods, the operating-rod b³, connected with the yoke, and the lever-handle connected with the piston-rod and with the rod b³ to move the piston and the reciprocating cylinder simultaneously in opposite directions.

486,017. STEAM-BOILER. FRANK H. BAILEY, Wilkes-Barré, Pa. Filed Jan. 13, 1892. Serial No. 417,911. (No model.)



Claim.—1. A steam-boiler comprising a series of connected sections, each section being composed of transverse upper and lower headers, vertical tubes connecting said headers and forming a complete circulating section, male joints situated one at each end on the opposite sides of each header, and a female joint on each end of each header on the opposite side of the header from that on which the male joint is situated, substantially as specified.

2. A steam-boiler or water-heater comprising a series of connected sections, each section being composed of opposite headers, joints thereon, and tubes connecting the headers, the tubes being so

486,017.

486,019.

486,020. MANUAL MOTOR. PHILIPPE BALSEMENGEIX, St. Pée (Vosges,) France. Filed Mar. 24, 1892. Serial No. 426,261. (No model.) Patented in France Apr. 30, 1891, No. 213,173; in Belgium July 27, 1891, No. 95,739; in Sweden July 29, 1891, No. 3,413; in Norway Aug. 3, 1891, No. 3,473; in Italy Aug. 6, 1891, XXV, 30,176, and Nov. 6, 1891, XXV, 30,559; in Spain Aug. 31, 1891, No. 13,366; in Turkey Sept. 26, 1891, No. 240; in Switzerland Oct. 3, 1891, No. 3,907; in Russia Oct. 9, 1891;

tions carried by the ring, engaging the ways on the collar, substantially as and for the purpose shown.

2. In a lamp, in combination with a collar surrounding the wick-tube at some distance therefrom and having inclined ways, the two rings connected together, chimney-clamps on the upper ring, shade-supporting devices on the lower ring, and means carried by the lower ring to engage the ways on the collar, substantially as and for the

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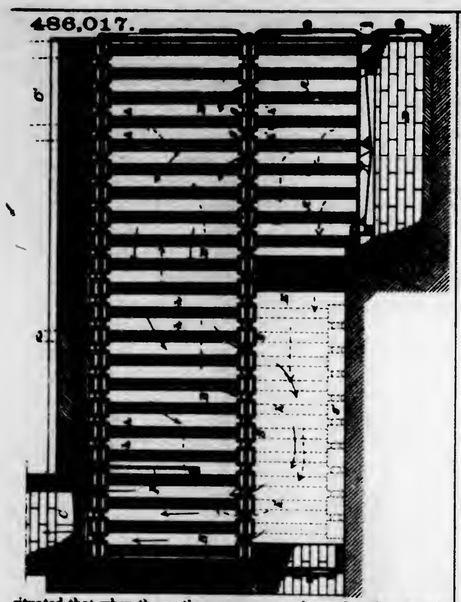
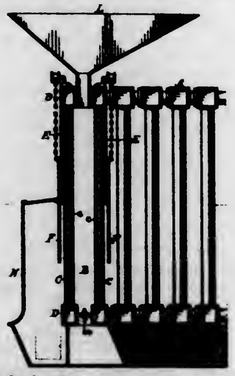


situated that when the sections are connected together they may be in line with each other or staggered, substantially as specified.

486,018. FIRE-BOX. FRANK H. BAILEY, Wilkes-Barre, Pa. Filed Feb. 13, 1892. Serial No. 421,265. (No model.)



Claim.—1. A fire-box for boilers, comprising a series of vertical grate-bars partially inclosed and adjustable gates or doors for exposing a greater or less amount of fuel in the fire-box.

2. The combination, in a fire-box, of a series of vertical grate-bars, a casing partially inclosed in the same, and vertically-adjustable doors for exposing a greater or less amount of fuel, substantially as specified.

3. The combination, in the fire-box, of a series of vertical grate-bars, a casing partially inclosed in the same, vertically-adjustable doors for exposing a greater or less amount of fuel, and a pressure-chamber connected to the steam-space of the boiler and having a diaphragm operatively connected to said doors, substantially as specified.

4. The combination, in the fire-box, of the vertical grate-bars, a non-conducting covering for said grate-bars, adjustable doors for regulating the amount of fuel exposed, and a grate bar or bars at the bottom of the fire-box, substantially as specified.

486,019. STEAM-TRANSMITTER. DAVID B. BAKER and MOSES LANDAU, Tacoma, Wash. Filed May 6, 1892. Serial No. 432,076. (No model.)

Claim.—1. In a steam-transmitter, the combination, with a suitable steam-generator and a traveling carriage, of a stationary steam-supply pipe arranged alongside of the traveling carriage and communicating with said steam-generator, a steam-consuming device mounted on the carriage, and a sliding steam-supply pipe for said device, extending longitudinally of the carriage and working in said steam-supply pipe for taking steam therefrom and conveying it to the steam-consuming device, the end of said stationary steam-supply pipe closely surrounding the sliding steam-supply pipe to form a steam-tight joint, substantially as set forth.

2. In a steam-transmitter, the combination, with a suitable steam-generator and a traveling carriage to which steam is to be supplied, of a stationary steam-pipe communicating with said steam-generator and provided with a stuffing-box at its end, a sliding steam-pipe having a perforated contracted end and passing through the said stuffing-box and working in said stationary steam-supply pipe, a bracket mounted on the traveling carriage to which said sliding pipe is secured, and suitable connecting-pipes extending from said sliding steam-pipe, substantially as and for the purpose set forth.

3. In a steam-generator, the combination, with a suitable steam-supply and a traveling carriage to which steam is to be supplied, of a stationary steam-supply pipe communicating with said steam-supply, a stationary steam-exhaust pipe, oppositely-extending sliding steam supply and exhaust pipes carried by the carriage and having sliding steam-tight connection with the stationary supply and exhaust pipes, respectively, a steam-consuming device on the carriage, and suitable connections between the said device and the said sliding supply and exhaust pipes, substantially as and for the purpose set forth.

4. In a steam-transmitter, the combination, with a suitable steam-supply and a traveling carriage, of a stationary steam-supply pipe communicating with the steam-supply, a steam-consuming device on the carriage, a sliding steam-pipe supported from the carriage and having a limited sliding steam-tight connection with the stationary steam-supply pipe and formed with a perforated contracted end, and suitable communication between said sliding steam-pipe and the steam-consuming device on the carriage, substantially as and for the purpose set forth.

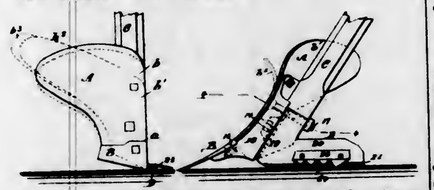
5. In a steam-transmitter, the combination, with a suitable steam-supply, a movable carriage, and a steam-consuming device on the carriage, of the stationary steam-supply pipe communicating with the steam-supply, the stationary steam-exhaust pipe, the oppositely-extending sliding steam supply and exhaust pipe having sliding connections with the stationary steam supply and exhaust pipes, respectively, the bracket supported from the carriage and having the sliding steam supply and exhaust pipes secured thereto, the solid coupling-rod connected to the ends of said pipes, and the branch supply and exhaust pipe communicating, respectively, between the steam-consuming device on the carriage and said sliding steam supply and exhaust pipes, substantially as and for the purpose set forth.

486,020. MANUAL MOTOR. PHILIPPE BALDENWECK, St. Pôl (Vosges,) France. Filed Mar. 24, 1892. Serial No. 426,261. (No model.) Patented in France Apr. 30, 1891, No. 213,178; in Belgium July 27, 1891, No. 96,730; in Sweden July 28, 1891, No. 2,413; in Norway Aug. 3, 1891, No. 2,473; in Italy Aug. 8, 1891, XXV, 30,175, and Nov. 6, 1891, XXV, 30,559; in Spain Aug. 31, 1891, No. 12,366; in Turkey Sept. 26, 1891, No. 240; in Switzerland Oct. 2, 1891, No. 2,907; in Russia Oct. 9, 1891; in Austria-Hungary Oct. 11, 1891, No. 48,974 and No. 688; in England Oct. 12, 1891, No. 17,262, and in Germany Oct. 14, 1891, No. 66,479.

Claim.—1. In a manual-motor apparatus, the combination, with the supporting-frame, a driving-shaft journaled therein, and a ratchet-wheel carried thereby, of rod A, an actuating-lever pivoted thereto, a pair of arms pivoted to one end of said lever, pawls thereon adapted to engage with the teeth of said ratchet-wheel, and a saddle pivotally mounted on the main frame and having a link connection with the actuating-lever, substantially as set forth and described.

2. In a manual-motor apparatus, the combination, with the driving-shaft and pawl-and-ratchet devices located in the base of the apparatus, of arms D D, having the foot-rest P, and rod A, and an actuating-lever *a*, pivoted on said rod and connected with the pawl devices, together with a pivotally-mounted saddle having a link connection with the said lever above its fulcrum, substantially as set forth.

486,021. PLOW. MARCUS L. BATTLE, Cairo, Ga. Filed Dec. 11, 1891. Serial No. 414,733. (No model.)



Claim.—1. In a plow, the combination, with the stock, a shoe removably secured to the stock, and a plowshare comprising a point-section and a blade or wing section, the latter section being more or less curved at the top, and a removable connection between both sections of the share and the shoe, of a landside held in adjustable and frictional engagement with the shoe and stock, the said landside being provided with removable teeth graduated as to length, substantially as shown and described.

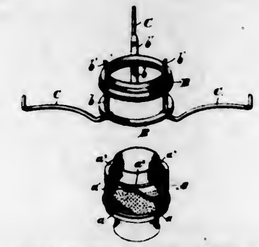
2. In a plow, the combination, with the stock having its lower end recessed, a heel secured to the stock, and a share secured to the heel, of the landside D, provided with the forward-inclined member 19, having the recess 22 in its upper edge, and the side member 20, having the flange 21, and the toothed cutter 23, secured to the member 20 of the landside, substantially as herein shown and described.

3. In a plow, a landside provided with a blade removably attached thereto and extending outward at a right angle therefrom, which blade is in the form of a series of teeth graduated as to length, the forward tooth being the shortest and the rear tooth the longest and the cutting-edge of all the teeth being the forward edge, as and for the purpose specified.

486,022. LAMP. WILLIS BEMENT, Long Island City, N. Y. Filed May 27, 1892. Serial No. 434,502. (No model.)

Claim.—1. In a lamp, in combination with the perforated collar of the burner, having inclined ways, horizontal ways at the upper end of the latter and openings from the upper sides of the horizontal ways, a ring, the chimney-holder supported therefrom, and projections carried by the ring, engaging the ways on the collar, substantially as and for the purpose shown.

2. In a lamp, in combination with a collar surrounding the wick-tube at some distance therefrom and having inclined ways, the two rings connected together, chimney-clamps on the upper ring, shade-supporting devices on the lower ring, and means carried by the lower ring to engage the ways on the collar, substantially as and for the purpose shown.



3. In a lamp, in combination with a collar surrounding the wick-tube at some distance therefrom and having inclined ways, the two rings connected together, chimney-holding devices on the upper ring, and the shade-holding wires or rods attached to the lower ring, having portions engaging the inclined ways on the collar, substantially as and for the purpose set forth.

4. In a lamp, in combination with a collar surrounding the wick-tube at some distance therefrom and having inclined ways, the two rings connected together, the chimney-holding devices on the upper ring, and the shade-holding wires or rods attached to the lower ring and extending beyond the inner side thereof into the ways, substantially as and for the purpose set forth.

5. In a lamp, in combination with a collar surrounding the wick-tube at some distance therefrom and having inclined grooves and horizontal grooves at the upper ends of the inclined ones, the two rings outside of the collar, the posts connecting such rings, having their upper ends above the upper ring formed to make chimney-holding clamps, and the shade-holding wires or rods attached to the lower ring and projecting beyond the inner side of the latter to form projections to engage the grooves in the collar, substantially as and for the purpose described.

486,023. AXLE-NUT. JOSEPH BERGER, Middle Village, N. Y. Filed June 24, 1892. Serial No. 437,381. (No model.)

Claim.—1. The combination, with the axle having opposite lugs on its outer end and an aperture 16 intermediate of said lugs, of the cap B, having internal nuts 13 14 to interlock with the axle-lugs, an opening 17 through the cap near its inner end intermediate of its lugs and registering with the axle-aperture 16, and the spring 18 on the outer side of the cap and having a pin 19 entering said registering apertures, substantially as described.

2. The combination, with an axle provided at ends with diametrically-opposite lugs, the outer face of one lug being beveled, of a nut adapted to be slipped over the end of the axle and provided with oppositely-placed interior lugs, a spring located upon the nut, and a pin carried by the spring and adapted to extend downward within the nut through an aperture formed therein between the lugs of the nut and retracted by the outer beveled face of the axle-lug, substantially as shown and described, whereby the nut may be carried over the lug portion of the axle and turned, bringing the lugs of the nut in locking engagement with those of the axle and the pin in locking engagement with the axle back of its lugs, as and for the purpose specified.

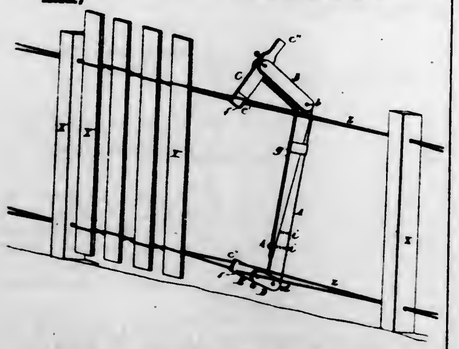
3. The combination, with an axle having lugs formed at its outer end and an upper and a lower lug, the upper lug having an inclined face, and the axle at one side being provided with a recess located at the rear of the lugs, of a nut provided with interior oppositely-located lugs constructed at the sides of the nut, the nut being provided in its upper face with an aperture between the lugs, a spring secured to the upper surface of the nut, and a pin projected downward from the spring through the aperture of the nut, the lower portion of the pin being beveled for contact with the beveled axle-lug, as and for the purpose set forth.

486,024. GLOVE OR MITTEN. FERDINAND BERTHEAU and ADAM G. HOSTMANN, Chicago, Ill. Filed July 14, 1892. Serial No. 440,014. (No model.)

Claim.—1. A glove or mit provided on its grasping portions with metallic staples, which are passed through the leather and through a lining, the ends being bent upon said lining, so as to be embedded therein, and a reinforcing-strip secured adjacent to the juncture of the thumb with the main portion of the glove or mit by staples, for the purpose set forth.

2. A glove or mit for the purpose set forth, having its palm and thumb or grasping portions provided with metallic staples, the ends thereof being passed through the leather forming the glove or mit and through a lining *a*, having a piled surface, said staples being upset, so as to enter said piled surface, and arranged in rows, which alternate with each other, so as not to materially impair the flexibility of the mit or glove, the pieces of leather forming the glove or mit being connected by staples *b*, and a reinforcing-strip B, united to the body and thumb by rows of staples *c*, substantially as shown, and for the purpose set forth.

486,025. SLAT-FENCE-WIRE TWISTER. SILAS J. BLANKENBAKER, Louisville, Ky. Filed June 11, 1892. Serial No. 436,902. (No model.)

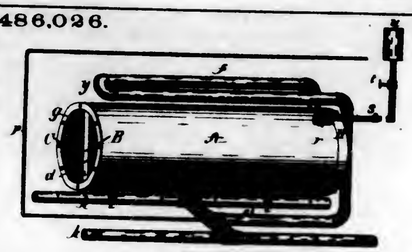


Claim.—A fence-wire twister comprising a middle section formed in two parts, adjustably secured together by a band and bolt, as described, an upper section formed with notches on each side to engage the wires and provided with a handle, pieces B, pivotally connecting this section with one end of the middle section, a lower section having notches for the wire, and pieces D, connecting the same with the other end of the middle section, all as and for the purpose set forth.

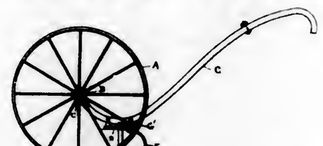
486,026. HYDROCARBON-OIL VAPORIZER AND BURNER. GEORGE BOURNONS, New Haven, Conn. Filed Mar. 28, 1892. Serial No. 426,951. (No model.)

Claim.—In a hydrocarbon-oil vaporizer and burner, the combination of the tubular retort or shell provided with the horizontal longitudinal dividing-partition, the removable heads adapted to be secured to the ends of the shell, the superheating-pipe above the retort, a burner-pipe or pipes beneath the retort connected with the superheating-pipe, and a steam-pipe connected with the vapor-pipe and having a nozzle or mouthpiece entering therein between the burner-pipe and retort and adapted to project a steam-jet toward the burner-pipes, substantially in the manner and for the purpose specified.

486,026.

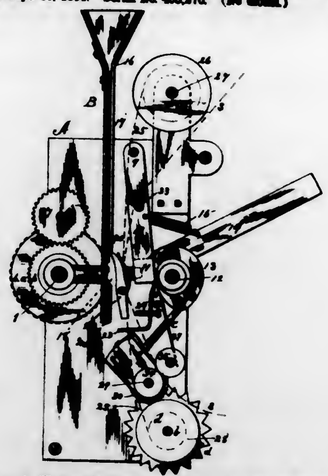


486,027. STRADDLE-ROW CULTIVATOR. ROBERT C. BUCKLEY, Peoria, Ill. Filed Mar. 23, 1892. Serial No. 426,168. (No model.)



Claim.—In a cultivator, a pair of convex carrying-wheels having their hubs set in toward each other, an axle C, having a bracket or hanger D secured thereto, and a pair of handles secured to the said hanger D, said handles having their forward portions curved downward to near the ground and supporting the hangers H, to which are bolted the cultivating-teeth I and J, substantially as herein set forth and described.

486,028. WORKMAN'S TIME-RECORDER. WILLARD L. BUNDY, Binghamton, N. Y., assignor to the Bundy Manufacturing Company. Filed Sept. 10, 1891. Serial No. 405,370. (No model.)



Claim.—1. The combination, with a type-bearing check provided with a lug on one face, of a check-chute adapted to receive said lug in one of its walls and conduct the check to the printing position with proper presentation of the type.

2. The combination, with the check-chute open on one side and the check inserted therein, of the pivotal pawl engaging with said check and stopping it in the chute, and the impression-cam provided with an arm adapted to engage with the pawl and release the check when said cam is rotated.

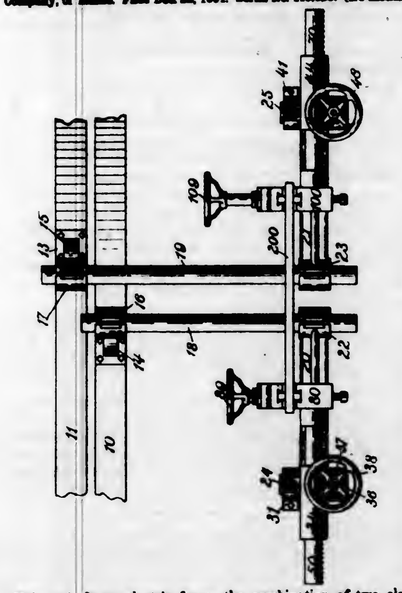
3. The combination, with the check-chute grooved longitudinally and open on one side and the check inserted therein, having a flange upon its back entering said groove, of the pivoted pawl engaging with said flange through said opening in the chute and stopping the check in its transit through said chute.

4. The combination, with the check-chute and the check inserted therein, of the pawl stopping it in the chute and the arm catching and temporarily detaining the check when released from the pawl.

5. The combination, with the check and check-chute and the pawl catching the check in the chute, of the hour and minute wheels, the swinging plates, and the impression-cam.

6. The combination, with the check and check-chute and the pawl catching the check in the chute, of the time-wheels, the swinging plates, the impression-cam, and the arms upon the cam catching the check released from the pawl by the engagement of the arm with the pawl.

486,029. ELECTRIC FORGE. GEORGE D. BOURNS, Boston, and EDWIN R. ARGELL, Somerville, Mass., assignors to the Electrical Forging Company, of Maine. Filed Dec. 23, 1891. Serial No. 415,535. (No model.)



Claim.—1. In an electric forge, the combination of two electrodes connected with opposite electric poles, one of said electrodes being supported by two horizontal arms, and a bracket provided with eyes, in which said arms are adjustable.

2. In an electric forge, the combination of two horizontal conductive arms connected with opposite electric poles, two brackets hinged to said arms provided with two sets of eyes, arms adjustable in one set of said eyes, electrodes attached to the inner ends of said arms, and guide-arms supported in the other set of eyes and connected with said electrodes.

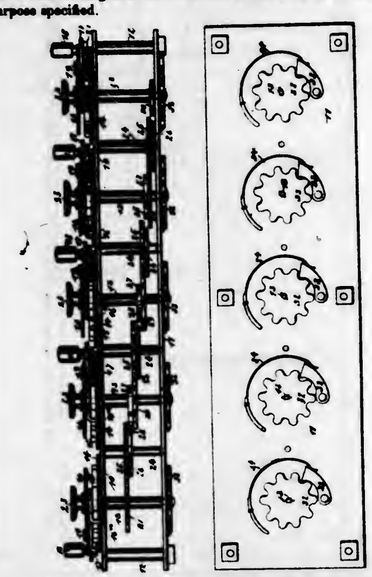
3. In an electric forge, the combination of two horizontal conductive arms connected with opposite electric poles, two brackets hinged to said arms provided with two sets of eyes, arms adjustable in one set of said eyes, electrodes attached to the inner ends of said arms, and guide-arms supported in the other set of eyes and connected with said electrodes.

4. An electrode for an electric forge, consisting of a recessed block provided with a fixed jaw on the horizontal face of said recess and with a guideway on the vertical face thereof, a spindle adjustable in a screw-threaded socket of said electrode, a movable jaw on said spindle and sliding at its inner end in said guideway, a boss on said spindle, grooved collars between said bars and movable jaw, ball-bearings between said collars, and means for turning said spindle.

5. In an electrode for an electric forge, the combination of a bracket provided with a sleeve or eye, an arm adjustable in said eye and provided with a rack, a pinion engaging said rack, and means for actuating said pinion.

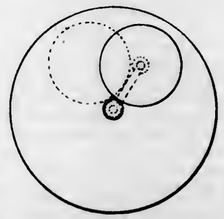
486,030. CASH REGISTER AND INDEX. JOHN R. GLANDIN and PAUL BENOIT, Roanoke, Ill.; said John R. Glandin assignor to Joseph R. Glandin, same place. Filed Oct. 5, 1891. Serial No. 408,129. (No model.)

Claim.—1. In a cash-register, the combination, with a series of consecutive-registering dials, each bearing a mark designating the character of their reading and provided with a series of numerals, each dial having a reading-line in front of it, gearing, substantially as described, connected with the dials, and gearing arranged intermediate of the dial-gearing and engaging therewith, of ratchet-wheels secured to the dials, plates containing numbers corresponding to those on the dials and held stationary over the latter, shifting-arms pivoted between the plates and the dials, having movement independent of the dials, dogs carried by the levers and engaging with the ratchet-wheels, and a stop limiting the movement of the levers in one direction to the reading-line above referred to, substantially as and for the purpose specified.



2. In a cash-register, the combination, with a series of consecutive-numbering dials, each bearing a mark designating the character of their reading and provided with a series of numerals, spindles secured to the dials, spindles arranged intermediate of the dial-spindles, and gears and cam-disks carried by the dial-spindles, the gears of the two spindles interlocking and the cam-disks acting at intervals only upon the intermediate spindles, of ratchet-wheels secured to the dials, plates containing numbers corresponding to those on the dials and held stationary above the latter, shifting-arms pivoted on the dial-spindles between the plates and dials and having movement independent of the dials, dogs carried by the levers and engaging with the ratchet-wheels, and a stop limiting the movement of the levers in one direction, substantially as and for the purpose specified.

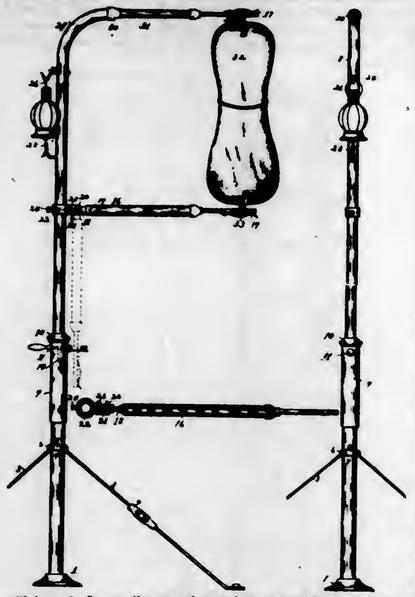
486,031. AUXILIARY MOTOR FOR CARS. WILLIAM CROSS, Sr., Winnipeg, Canada. Filed Jan. 6, 1892. Serial No. 417,437. (No model.)



Claim.—1. A mechanical power for wheel vehicles, consisting of the herein-described auxiliary wheels, and the divided axle upon which the auxiliary wheels are adjustably superposed, in combination with mechanism, as described, adapted to reinforce the power employed to propel the vehicle, substantially as herein set forth.

2. In a mechanical power, the herein-described auxiliary wheels superposed upon a divided axle, in combination with the threaded sliding block F, the rotatable shaft *d*, the sprocket-wheels *h* and *g'*, the chain belts H, the threaded spindle *g''*, and connecting-bars I, all adapted to shift the bearing-point of the axle upon the auxiliary wheels and simultaneously to hold the sections of the divided axle in alignment, substantially as herein set forth.

486,082. MAIL-CRANE. WILLARD H. BLAIR, Columbus, Nebr., assignor of one-half to the Sheffield Velocipede Car Company, Three Rivers, Mich. Filed Aug. 12, 1892. Serial No. 442,906. (No model.)



Claim.—1. In a mail-crane, the combination, with a hollow standard, of a frame-piece telescoped therein and a cap-sheath secured to the frame-piece and adapted to envelop the upper part of the standard, substantially as described.

2. In a mail-crane, the combination of a hollow standard, a frame-piece telescoped therein, a cross-bolt, and slots in the upper end of the standard, adapted to engage the cross-bolt, substantially as described.

3. In a mail-crane, the combination of a standard, a frame-piece, a cross-bolt, longitudinal slots in the upper end of the standard and shallow depressions at right angles to the said slots therein, substantially as described.

486,083. LOCKET. WILLIAM J. FAHLENER, Chicago, Ill. Filed Dec. 30, 1891. Serial No. 416,670. (No model.)

Claim.—1. As an article, a locket adapted to open and close and provided with means for holding a picture on the side adjacent to the plane of separation of its parts and also provided with a sight-opening extending through one of its parts from side to side thereof parallel with the plane of separation of the parts and containing a magnifying-lens, substantially as described.

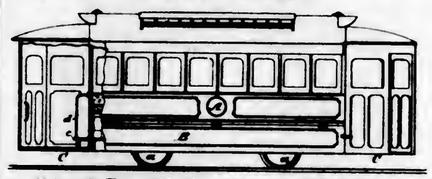
2. As an article, a locket adapted to open and close and provided with a holder for a picture or the like adjacent to the plane of separation of its parts with a sight-opening extending through one of said parts from side to side thereof and containing a magnifying-lens and also with a spring-retracted cord or chain located within the other of said parts for the attachment of the locket to the person, substantially as described.

3. A locket comprising a shell adapted to open and close and provided with means for holding a picture or the like adjacent to the plane of separation of its parts, a cord for attaching the locket to the person, a winding-drum for the cord, located within the shell, and a spring for actuating the said drum, substantially as described.

4. A locket comprising a shell adapted to open and close and provided with means for holding a picture or the like adjacent to the plane of separation of its parts and provided, also, with a sight-tube extending through one of the parts of the shell from side to side thereof parallel with the plane of separation of the parts and containing a magnifying-lens, substantially as described.

5. A locket comprising a shell adapted to open and close and provided with means for holding a picture or the like adjacent to the plane of separation of its parts, a cord for attaching the locket to the person, a cord-winding drum for the cord, located in one of the parts of the shell, a spring for actuating said drum, and a sight-tube extending through the other of said parts, connected at its opposite ends with the shell and containing a magnifying-lens, substantially as described.

486,084. STREET-CAR. JOHN H. PORTER, Monmouth, Ill. Filed Oct. 24, 1891. Serial No. 409,670. (No model.)

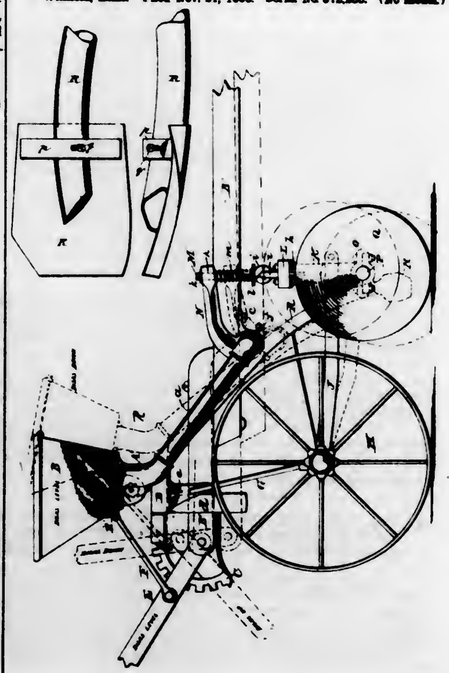


Claim.—1. The combination, with a car provided at its end with two doors hinged at their inner edges, one door being hinged to swing inward and the other outward, of a vestibule having its floor below the floor of the car and provided with two doors arranged one on each side of the center of the vestibule and spaced from the end of the car, substantially as described.

2. The combination, with the car A, of a vestibule provided with the semicircular floor C, dropped below the level of the car-floor, a step *e*, arranged above the floor C, and sliding doors D, arranged at about forty-five degrees from the end of the car, substantially as specified.

3. An improved car having its floor extending beyond the end and provided with two doors hinged to a central post, one door swinging inward and the other outward, and a semicircular vestibule having its floor below the level of the car-floor and provided with two sliding doors, one on each side of the center of the vestibule and spaced from the end of the car, substantially as herein shown and described.

486,085. GRAIN-DRILL. JAMES C. FULLER and WILLIAM A. LEE, Winfield, Kans. Filed Nov. 21, 1890. Serial No. 372,235. (No model.)



Claim.—1. In a grain-drill, the combination of a series of depending posts, an axle or shaft mounted in the lower ends thereof, a series of furrow-disks on the axle or shaft, and push-bars engaging the disk-supports, substantially as set forth.

2. In a grain-drill, the combination, with a series of push-bars, of a cross-bar, a series of posts carried by said cross-bar and connected to the push-bars, and furrow-disks carried in pairs or in sets of three or more by said arms, substantially as set forth.

3. In a grain-drill, the combination, with a frame and push-bars, of a cross-bar, means for suspending said cross-bar from the frame, a series of posts carried by the cross-bar, and furrow-disks carried by said posts at an angle to the line of draft of the machine, substantially as set forth.

4. In a grain-drill, the combination, with a movable frame and press-wheels, of arms or brackets carried by the movable frame, cross-bars suspended from said arms or brackets, posts secured to said cross-bars, and furrow-disks carried by said posts, substantially as set forth.

5. In a grain-drill, the combination, with a tongue, a frame loosely connected therewith, and press-wheels, of arms or brackets projecting from said movable frame, a cross-bar suspended from said arms or brackets, posts carried by said cross-bars, and furrow-disks carried by the posts, substantially as set forth.

6. In a grain-drill, the combination, with a tongue, a frame connected loosely therewith, and press-wheels, of arms or brackets adjustably connected to said movable frame and projecting therefrom, a cross-bar suspended from said arms or brackets, posts carried by the cross-bar, and furrow-disks carried by said posts, substantially as set forth.

7. In a grain-drill, the combination, with a tongue, a frame loosely connected thereto, and press-wheels, of arms or brackets projecting from said movable frame, a cross-bar yieldingly connected with the arms or brackets, posts projecting from said cross-bar, and furrow-disks carried by said posts, substantially as set forth.

8. In a grain-drill, the combination, with a tongue, a frame connected loosely thereto, a seed-box carried by said movable frame, and press-wheels, of arms or brackets projecting from said frame, a series of furrow-disks supported by said arms or brackets, and means for moving said movable frame to raise and lower the furrow-disks, substantially as set forth.

9. In a grain-drill, the combination, with a tongue, a frame connected loosely thereto and adapted to be oscillated, and press-wheels, of arms projecting from said oscillating frame, furrow-disks carried by said arms, and means for oscillating the frame and raising the tongue simultaneously to raise the furrow-disks, substantially as set forth.

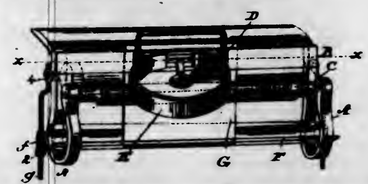
10. In a grain-drill, the combination, with a tongue, an oscillatory frame, a seed-box carried by the oscillatory frame, and press-wheels, of arms projecting from the oscillatory frame, a cross-bar carried by said arms, and posts secured to said cross-bar and carrying furrow-disks, substantially as set forth.

11. In a grain-drill, the combination, with a tongue, an oscillatory frame, a seed-box carried thereby, and press-wheels, of arms projecting from said oscillatory frame, furrow-disks supported by said arms, a rack-bar, a lever pivoted to the rear end of the tongue, and a rod connecting said lever with the seed-box or the oscillating frame, substantially as set forth.

12. In a grain-drill, the combination, with a cross-bar, of brackets secured thereto, yokes pivotally connected to said brackets, the arms of each yoke being loosely connected to an axle and carrying-wheels on said axles, push-bars projecting from said axles, and furrow-disks at the forward ends of said push-bars, substantially as set forth.

13. A grain-drill comprising a frame, seed-box, and wheels, the frame and box approximately balanced on the axle of the wheels, substantially as set forth.

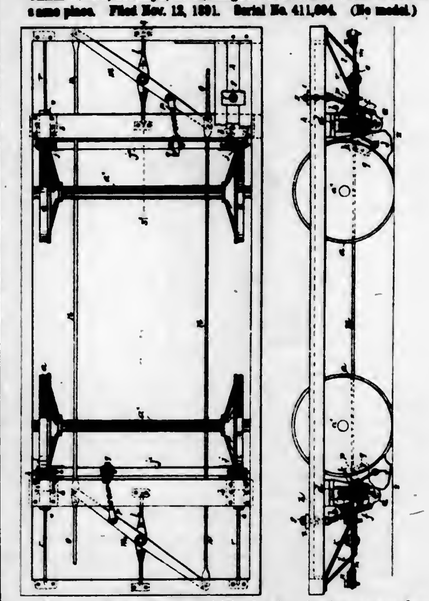
486,086. TYPE-WRITING-MACHINE CARD-HOLDER. CHARLES R. GODFREY, Milford, assignor to the Library Bureau, Boston, Mass. Filed Mar. 5, 1892. Serial No. 423,868. (No model.)



Claim.—1. The combination, with a type-writer and its feed-rolls, of a card-holder best to positively engage the bottom edge of and sustain without bending a card between the feed-rolls and thereby positively hold the same in place to be printed upon, substantially as described.

2. The feed-rolls of the type-writer and the card-holder to positively engage the bottom edge of and present to the type-printing line a stiff cabinet card, combined with adjusting devices to adjust the card-holder with relation to the type-writing line toward or from it, substantially as described.

486,087. COMBINED WHEEL AND RAIL BRAKE FOR CARS. JAMES GRADY, Brooklyn, N. Y., assignor of one-half to John W. Fowler, same place. Filed Nov. 12, 1891. Serial No. 411,694. (No model.)



Claim.—1. In combination with brake-shoes having concave faces to engage with the wheels and projections at bottom to engage with the rails, brake-pedestals projecting downward behind said shoes, vertical spiral springs inclosed within said pedestals, followers above said springs, and hangers connecting said followers with the brake-shoes, substantially as hereinbefore specified.

2. In combination with spring-supported brake-shoes having concave faces to coact with the pair of wheels on one axle and projections at bottom to coact with the rails and constructed with inclines at back, a horizontal rock-shaft parallel with the axle and in a lower plane, means for turning said rock-shaft, and cams carried by said rock-shaft and coacting with said inclines, substantially as hereinbefore specified.

3. In combination with brake-shoes having concave faces to coact with the wheels of a car and projections at bottom to coact with the rails and constructed with inclines at back and means for pressing such shoes first against the wheels and then against both wheels and rails, comprising cams which coact with said inclines, vertically-arranged spiral springs, followers above said springs, hangers connecting said brake-shoes and followers, and separate and distinct retracting-springs connected with said cams, respectively, substantially as hereinbefore specified.

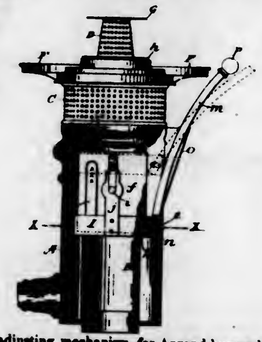
486,088. LAMP. LEWIS F. OSBOURN, Meriden, Conn., assignor to the Charles Parker Company, same place. Filed Sept. 1, 1891. Serial No. 404,304. (No model.)

Claim.—1. In an Argand-burner lamp, the combination, with a tubular wick-carrier adapted to surround the wick and engage therewith to move it up and down, of a ring or annular band *l*, arranged loosely round about, but flexibly or pivotally coupled to said wick-carrier, and a lifter-rod hinged or pivotally coupled at its lower end to one side of said ring *l* and having its upper end protruded through an opening in the upper part of the oil-chamber of the lamp, the whole constructed, arranged, and operating in the manner and for the purposes hereinbefore set forth.

2. In an Argand-burner lamp, the combination, with a tubular wick-carrier, of a ring or band surrounding the said carrier, vertically-projecting arms attached at one set of their ends to said ring

and perforated at or near the other set of their ends, pins or projections on the carrier, which are detachably coupled to the perforated ends of said arms, and suitable means accessible exteriorly of the lamp for lowering and raising said ring or band, all substantially as and for the purposes set forth.

3. In a wick-adjusting mechanism for Argand-burner lamps, the combination, with a curved lifter-rod the upper end of which protrudes from the oil-chamber of the lamp, of a wick-carrier the portion of which that is connected to the lower end of said rod is provided with an oblong aperture *a*, and a pin *c* in the lower end of said rod, working in said oblong aperture, all substantially as and for the purposes set forth

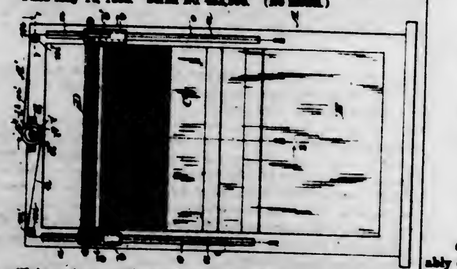


4. A wick-adjusting mechanism for Argand-burner lamps, composed of a wick-carrier, a lifter-rod arranged within and projected upwardly through an aperture of the oil-chamber and provided with a knob or handle to prevent its casual descent bodily into said chamber, and a ring or band surrounding the carrier, pivotally connected therewith and connected at one side to the lower end of said lifter-rod, said parts being detachably connected with the others, as and for the purposes set forth.

486,039. GASOLINE-TORCH. CHRISTOPH HEIDEL, St. Louis, Mo., assignor to Louis Kriesbaum and Richard Martin, same place. Filed Aug. 20, 1891. Serial No. 402,946. (No model.)

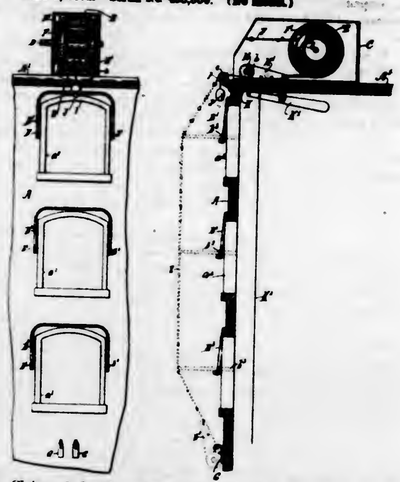
Claim.—The combination of the horizontally-arranged reservoir 1, having a handle 8 extending in line therewith, a shield 7, of non-conducting material, located between the handles and the reservoir, a shank 6 and diametric pin 9, by which the handle is secured to the reservoir, and a supply-pipe connected with the reservoir provided with a valve and burner, substantially as described.

486,040. SHADE AND CURTAIN FIXTURE. JAMES H. HERMAN, Murphy, Tex., assignor of one-half to T. P. Chaddick, same place. Filed May 14, 1892. Serial No. 432,992. (No model.)



Claim.—A supporting and retracting device for window-shades and curtain-poles, comprising two vertically-sliding bracket-boxes on strips fixed to the stiles of the window-casement and a spring-actuated retracting device comprising a bracket-plate between the cap-piece of the casement, a stud projecting from the bracket-plate, a cylindrical shell rotatable on the stud, a rotatable cap-plate on the stud and connected to the shell, a volute spring on the stud between the cap-plate and a back plate of the shell, having one end fast to the shell and the other end secured to the stud, a locking-disk fast on the stud outside of the cap-plate, pawls on the cap-plate adapted to lock with the disk, two strands wrapped on the shell and secured by an end of each thereon and thence extended laterally in opposite directions over pulleys on the window-stiles and downwardly from the pulleys to a connection with the bracket-boxes, and pulleys that support the strands on the casement, substantially as described.

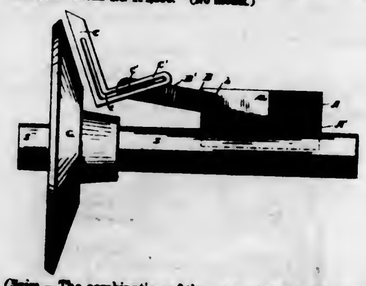
486,041. FIRE-ESCAPE. LUE S. HOGEBOOM, Bangor, Me. Filed June 3, 1892. Serial No. 435,260. (No model.)



Claim.—1. In a fire-escape, the combination of a windlass, a flexible ladder attached to and capable of being wound upon the windlass, a windlass carried by the free end of the ladder, a cord or its equivalent attached to and wound upon the windlass which is carried by the ladder, and means for lowering this cord automatically, and a detent for normally locking the windlass to which the cord is attached, substantially as specified.

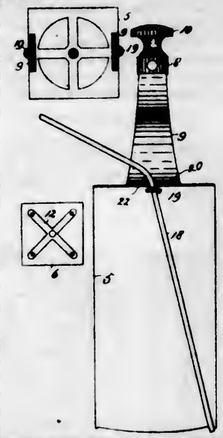
2. In a fire-escape, the combination of a windlass, a flexible ladder attached to and capable of being wound upon the windlass, a number of hinged bows or frames arranged upon the wall of a building for holding the ladder away from such wall, a windlass carried by the ladder, a cord or its equivalent attached to said windlass, and a detent for normally locking the windlass to which the cord is attached, substantially as specified.

486,042. PITCH-GAGE FOR BEVEL-GEARS. WILLIAM HOLLAND, South Bend, Ind., assignor of one-half to Joseph Rushmin. Filed Dec. 12, 1891. Serial No. 414,869. (No model.)



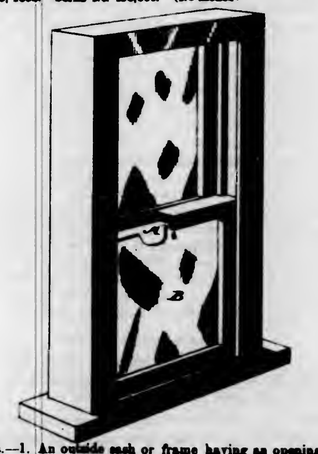
Claim.—The combination of the grooved block, the rule adjustably connected to one end thereof, and the slotted angular gage adjustably connected to the free end of said piece, substantially as and for the purpose specified.

486,043. BUTTER-MOLD. SYLVANUS H. JONES, Denver, Colo., assignor of one half to Benjamin F. Neal, same place. Filed Oct. 24, 1891. Serial No. 409,998. (No model.)



Claim.—In a butter-mold, the combination of the mold-chamber having two of its opposite sides each composed of two plates of sheet metal secured closely together at the top, the bottom of the inner plate being moved into the chamber, causing it to decrease slightly from the top downward, the lower extremity of the inner plate being outwardly flanged to engage the outer plate, to which it is secured, the outer plate projecting slightly below the inner plate and forming a stop for the cutter, a piston or follower having a stem extending through the top of the chamber, a transverse cutter located at the bottom, and an actuating-lever therefor consisting of two branches connected above the chamber and extending downward on two opposite sides thereof, whereby they are secured to the extremities of the cutter, these branches being suitably fulcrumed to the outside of the mold, substantially as described.

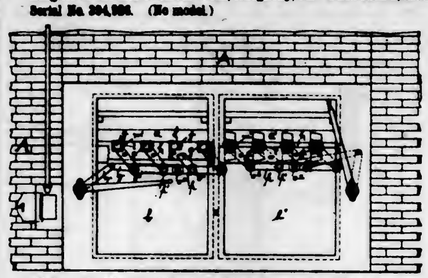
486,044. MEANS FOR CLEARING APARTMENTS OF FLIES, &c. DAVID A. JONES, Boston, Canada, assignor to Jessie Arabella Jones, same place, and Alexander Hellcon Macdonald, Toronto, Canada. Filed Apr. 25, 1892. Serial No. 430,609. (No model.)



Claim.—1. An outside sash or frame having an opening at the top of the glass or screen, in combination with means to protect said opening on the inside of said sash or frame and having the outside thereof open to the light, substantially as described.

2. An outside sash or frame having an opening at the top of the glass or screen, in combination with a molding having a dependent member to protect the opening and a second member projecting horizontally therefrom, leaving a free passage horizontally for the rays of light to pass over the top of said glass or screen, substantially as described.

486,045. SHAKING-GRATE. LLEWELLYN R. JORDAN, Bellevue, assignor of one-half to Calvin Wells, Allegheny, Pa. Filed June 3, 1891. Serial No. 394,998. (No model.)



Claim.—1. The combination with the grate-front *h*, of the grate-bars *d*, having the journals *f* journaled in semicircular bearings *h'* in said grate-front *h* and in bearing-blocks *i*, said bearing-blocks fitting in seats *j* and having the grooves i^3, adapted to engage the lugs *k*, formed in said seats *j*, and lugs *n* on said bearing-blocks *i*, adapted to enter the recesses *n'* in said grate-front, substantially as and for the purposes set forth.

2. The combination, with the grate-front *h*, of the grate-bars *d*, having the journals *f* journaled in semicircular bearings *h'* in said grate-front *h* and in bearing-blocks *i*, said bearing-blocks fitting in seats *j* and having the grooves i^3, adapted to engage the lugs *k*, formed in said seats *j*, lugs *n* on said bearing *i*, adapted to enter the recesses *n'* in said grate-front, and the pins *l*, entering the openings *l'* in said grate-front, and bearing-blocks, substantially as and for the purposes set forth.

486,046. SPRING CHAIR-BOTTOM. SEBASTIAN KOHN, Louisville, Ky. Filed Apr. 13, 1892. Serial No. 428,956. (No model.)

Claim.—In a chair-bottom, the combination, with a central coupling composed of two members, one of which has an annular series of posts projecting from its under side, two oppositely-arranged posts of said series being longer than the other posts and provided with screw-threads and the other member of the coupling being provided with two oppositely-arranged apertures to receive said longer posts, and nuts on the longer posts to secure the members of the coupling together, of an outer frame and a series of springs, each bent to form a loop embracing one of the posts of the series, the free ends of said springs being secured to said outer frame, substantially as set forth.

486,047. RAILWAY SIGNAL APPARATUS AND SYSTEM. JACOB W. LATTIG, Easton, Pa. Filed Aug. 18, 1892. Serial No. 443,573. (No model.)

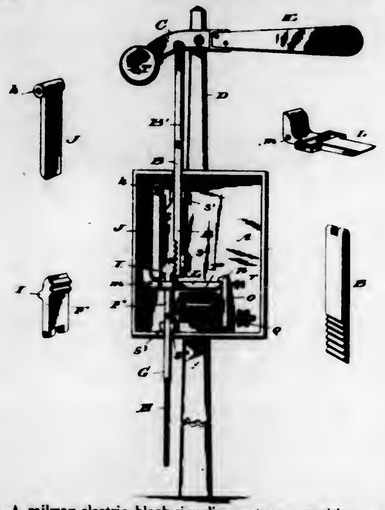
Claim.—1. The combination of a railway-signal, signal-operating mechanism composed in part of two rods or slide-bars capable of engaging and being disengaged from one another, a clamp through which said bars pass and one move, means for locking the clamp in its closed position, and an electro-magnet for controlling said locking means, substantially as and for the purposes hereinbefore set forth.

2. The combination, substantially as set forth, of a signal, a divided signal-operating rod, a clamp for holding together the two parts of the rod which pass through and move in said clamp, and an electro-magnetically-operated detent for controlling the movable member of said clamp, substantially as and for the purposes hereinbefore set forth.

3. In combination with the two toothed slide-bars forming part of the signal-operating mechanism, the clamp-lever, the pivoted latch-lever locking and releasing the clamp-lever, the detent for locking and releasing the latch-lever, and the electro-magnet and its armature-lever for controlling the detent, substantially as and for the purposes hereinbefore set forth.

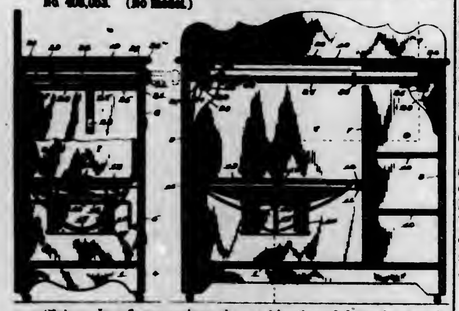
4. The combination, substantially as hereinbefore set forth, of a signal-operating mechanism having at some point in it between the signal and the operating-lever a mechanical break, means for closing said break, an electro-magnet controlling said break-closing means, a lock-circuit including said magnet, and a second or lock-operating circuit including an electro-magnet which controls contacts included

in the lock-circuit, substantially as and for the purpose hereinbefore set forth.



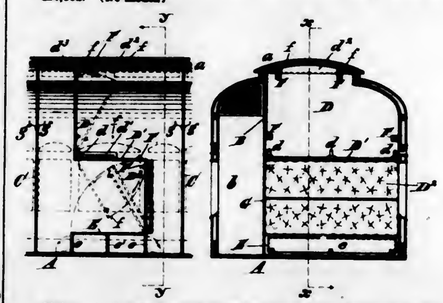
5. A railway electric block-signaling system comprising at one station a signal, signal-operating mechanism having in it a mechanical break, means for closing said break, an electro-magnet for controlling said break-closing means under such an arrangement that the break shall be open so long as and whenever the magnet is inactive, and a normally-open lock-circuit including said magnet, in combination with an insulated track-section extending from that station to the next, a normally-open lock-operating circuit formed in part by the track-rails of said section, and including at the last station the key by which it is closed and opened, and at the first-named station (or station where the signal to be operated is located) an electro-magnet controlling normally-open contacts in the local lock-circuit, the arrangement being such that the local lock-circuit at the one station can be closed only through the closure of the lock-operating circuit at the other station, substantially as and for the purposes hereinbefore set forth.

486,048. *FLOUR-SAFE.* ESRA J. LEAMON, Huntingburg, Ind., assignor to John A. Leamon, same place. Filed Aug. 18, 1891. Serial No. 403,063. (No model.)



Claim.—In a flour-receiver, the combination of the casing or cabinet having end walls provided with inwardly-projecting oppositely-situated brackets 23, formed with square slots 24 in the upper portion thereof, a drawer-slide mounted in the slots in each of said brackets and moving outward and inward through openings 21 in the front portion of the casing or cabinet and having stops laterally projecting from each side thereof, adapted to contact with the rear portion of said bracket, and also provided with grooves 29 in the upper side of the same, said brackets being located in such position intermediate of the front and back of the casing or cabinet as to properly limit the outer withdrawal of the said slides, the front of the casing above the opening 21 being provided with a transverse slot which extends from and is limited at its opposite ends by the said openings 21, the latter being located below the plane of said transverse slot, and a dough-board movably mounted in said transverse slot and of greater length than the latter to extend the same at its opposite ends across the openings 21 and partially over the slides and formed with depending pins at the outer ends thereof, extending downward from the lower side to fit in the grooves of the aforesaid slides to properly draw the latter outward simultaneously therewith, and also having depending pins 30, located at the rear thereof, which extend both above and below the upper and lower surfaces of the dough-board to contact with the front wall of the casing or cabinet above and below the transverse slot therein, substantially as described.

486,049. *STATE ROOM FOR CARS OR SHIPS.* CHARLES L. LOCKWOOD, Covington, Ky., assignor to himself, John W. Shrague, and Gustavus A. Shrague, Cincinnati, Ohio. Filed Apr. 4, 1892. Serial No. 427,602. (No model.)



Claim.—1. A private section or state-room for railway-cars, ships, boats, and other structures, having a stepped or double-right-angled partition therein, whereby it is divided into two separate and independent apartments, the upper angle of said partition forming an upper reclining receptacle or double berth opening into one apartment and the lower angle forming a lower receptacle or double berth directly beneath said upper berth and opening into the other apartment, and each apartment having its own independent doorway, substantially as herein set forth.

2. A state-room composed of two side and two end walls having a central zigzag partition extending from one end wall to the other and composed of an upper vertical division D, a central horizontal division D', and a lower vertical division D^2, whereby it is divided into two independent private apartments, one having an upper berth and the other a lower berth, and each entered by independent doorways in said walls, substantially as herein set forth.

3. A section or state-room for railway-cars, ships, boats, and other structures, having a stepped or double-right-angled partition therein, whereby it is divided into two separate apartments, the upper angle forming an upper receptacle or berth which opens into one apartment only and the lower angle forming a lower receptacle or berth which opens into the other apartment only, the lower end of said partition resting on a base E, the latter forming the bottom of said lower berth, and each apartment having its own independent doorway, substantially as herein set forth.

4. A section or state-room for railway-cars, ships, boats, and other structures, having a stepped or double-right-angled partition therein, whereby it is divided into two separate and independent apartments, said partition being composed of three separate movable leaves or divisions D D' D^2, the division D being always a vertical one and hinged or otherwise freely jointed to the division D', the division D' being adapted to be disposed either horizontal or vertical, and the division D^2 being also adapted to be disposed either vertical or horizontal, all the parts being arranged, constructed, and adapted to be operated substantially as and for the purpose specified.

486,050. *MACHINE FOR CUTTING THE PILE OF FUSTIANS OR OTHER PILE FABRICS.* JOHN J. MANN, Salford, England. Filed Apr. 12, 1892. Serial No. 428,812. (No model.)

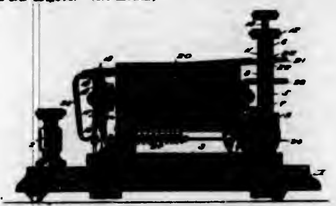
Claim.—1. A knife for cutting fustians or other pile fabrics, having an automatic releasing mechanism and a yielding handle or frame carrying both knife and releasing mechanism and adapted to give way in the direction of the action of the cloth when the knife goes through the back of the fabric.

2. A knife for cutting fustians or other pile fabrics, having an automatic releasing mechanism and a handle or carrying-frame in two parts, one part carrying the knife and releasing mechanism, with a yielding connection between the said two parts, substantially as and for the purpose set forth.

3. A knife for cutting fustians or other pile fabrics, having an

automatic releasing mechanism and a handle or carrying-frame in two parts, one carrying the knife and releasing mechanism, while the other is adapted to be secured to a support, and a yielding connection between the two parts of the said handle or frame, substantially as and for the purpose set forth.

486,051. *TELEGRAPH-SOUNDER.* JAMES MARET, Mount Vernon, Ky., and WILLIAM L. DE GRAFF, Homer, Mich. Filed Aug. 4, 1891. Serial No. 401,676. (No model.)



Claim.—1. In a telegraph-sounder, the combination of a base-plate, an electro-magnet mounted thereon, having the poles connected by a bar of non-magnetic material, but separated at their ends, and an armature-rod having an enlarged armature arranged above the ends of the poles and contact-points.

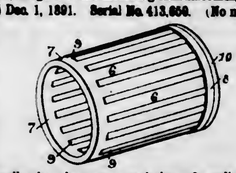
2. In a telegraph-sounder, the combination of a base, a base-plate thereon, posts rising from the plate, an electro-magnet mounted on the posts, having the poles connected near their rear ends connected by a bar of non-magnetic material and having the front ends extending outward therefrom, a standard mounted on the base-plate, an upper and lower contact-screw in the standard, an armature-rod having a knife-edge bearing and an enlarged armature located above the ends of the magnet, and an adjusting-screw for the armature.

3. In a telegraph-sounder, the combination of a base having binding-posts, a base-plate thereon, an electro-magnet having poles connected at their inner portions by a bar of non-magnetic material, the outer ends of which are separated and extended outward, adjustable contact-points, an enlarged striking-armature above the inner ends of the poles having the rod, the support having the knife-edge bearing for the rod, and the adjusting-spring.

4. In a telegraph-sounder, the combination of an electro-magnet, poles connected by a bar of non-magnetic material, connected and having their ends separated, an armature-rod having an armature arranged above the ends of the poles, adjustable contact-points, and an adjusting-spring for the armature.

5. In a telegraph-sounder, the combination of a base, an electro-magnet thereon, the poles connected to the cores of the magnet and having the extended separated ends, the bar of non-magnetic material connecting the inner portions of the poles, the armature arranged above the extended ends of the poles, the adjusting-spring for the armature, and the contact-points.

486,052. *ANTIFRICTION-BEARING.* FRANK MOSSBERG, Attleborough, Mass., assignor to the Mossberg Manufacturing Company, same place. Filed Dec. 1, 1891. Serial No. 413,659. (No model.)

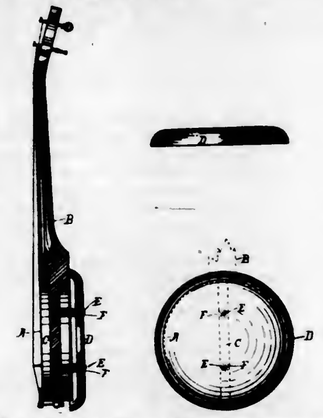


Claim.—A roller-bearing case consisting of a cylinder the parallel bars 6 6 of which are oppositely concaved and are connected at one end by the solid portion 7, integral with said bars, and at the other end by the perforated flange 8, of a diameter greater than the diameter through the barred portion, forming an integral part thereof, the antifriction-rolls 9 9, journaled between the concaved surfaces of the bars, and the ring 10, adapted to secure said rolls in place, as described.

486,053. *BANJO ATTACHMENT.* WILLIAM L. ROGERS, San Francisco, Cal. Filed May 19, 1891. Serial No. 393,272. (No model.)

Claim.—1. A banjo attachment consisting of a concave-convex piece adapted to isolate the entire banjo-frame from the body of the player and lead the sound-waves forward, substantially as set forth.

2. A banjo attachment consisting of a concavo-convex disk underlying the banjo-frame and concentrical therewith, the rim of said disk rising above the outer lower edge of said frame and standing out therefrom, substantially as set forth.

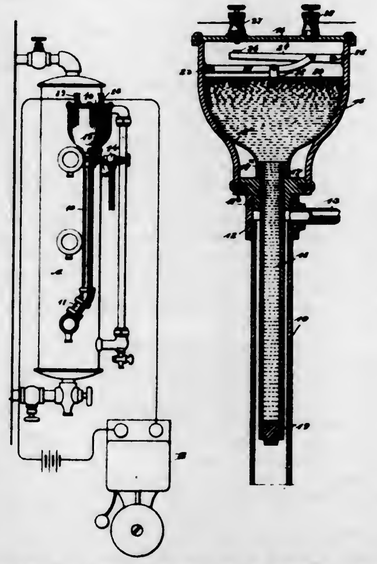


3. The combination of a banjo-frame and a concavo-convex disk lying beneath and wholly covering the under side thereof, substantially as set forth.

4. The combination of a banjo-frame, a bar laid thereacross, a concavo-convex disk, and means to secure said disk to said bar, substantially as set forth.

5. The combination of a banjo-frame, a bar laid thereacross, blocks seated upon the under side of said bar, a concavo-convex disk bearing upon said blocks, and screws binding said bar, blocks, and disk, substantially as set forth.

486,054. *WATER-INDICATOR FOR BOILERS.* WILLIAM H. ROGERS, Bay Side, N. Y. Filed May 21, 1892. Serial No. 433,845. (No model.)



Claim.—1. A device of the character described, consisting of a shell, a receptacle provided with a diaphragm supported by the shell and having an extension projected beyond the shell, the receptacle and its extension being adapted to contain an expansible liquid or a gas, a lever fulcrumed upon the diaphragm, and a second lever ful-

crumed upon the support of the vessel and actuated by the lever carried by the diaphragm, as and for the purpose specified.

2. A water-level indicator for boilers or a device adapted for use as a thermometer, the same consisting of a shell, a vessel contained within the shell and provided with an extension projecting beyond the shell, the vessel and its extension being adapted to contain a contractible and expansible substance, a diaphragm constituting a portion of the receptacle, a lever fulcrumed upon the diaphragm, a contact-lever actuated by the diaphragm-lever and pivoted to the casing near one end, and an alarm mechanism in battery connection with the shell, the circuit being opened and closed by the contact-lever, as and for the purpose specified.

3. In a high and low water indicator for boilers, the combination, with a shell and a tube connected with said shell and adapted for attachment to the water-column of a boiler, of a vessel supported by the shell and provided with an extension projected downward within the tube attached to the water-column, the vessel and its extension containing an expansible and contractible material, a diaphragm constituting a portion of the vessel, a lever fulcrumed upon the diaphragm, a second lever pivoted to an adjacent support, independent of the diaphragm and actuated by the diaphragm-lever, an alarm mechanism, and a connection, substantially as shown and described, between the levers and the alarm mechanism, whereby upon the expansion and contraction of the diaphragm, as predetermined, an alarm will be sounded, as and for the purpose set forth.

486,055. VELOCIPEDE. CYRUS W. SALADEE, Cleveland, Ohio, assignor to William H. Woodruff, Hartford, Conn. Filed Oct. 10, 1891. Serial No. 408,297. (No model.)

Claim.—1. In a cycle-vehicle, the upright and side braces carrying the bearings for the pedal-shafts and the axle of the driving-wheel, in combination with the pedal-shafts journaled in said side braces and carrying the pedals at their outer ends, the wheel within said upright and carried by the rear axle, the inverted power-wheels rigid with the pedal-shafts and arranged between the upright and the side braces, and the pinions rigid with the rear axle and meshing with the inverted power-wheels, one or both of the power-wheels and pinions having pivoted roller-cog bearings, substantially as and for the purpose described.

2. In a cycle-vehicle, the frame comprising the upright and its lower side braces, the horizontal backbone to which said upright is secured, and the diagonal braces connected to the upright and the steering-head, combined with the rear axle journaled in said upright, and the propelling devices arranged outside of the upright and having its pedal-shafts journaled therein, and its side braces, substantially as and for the purpose described.

3. In a cycle-vehicle and in combination with the propelling mechanism thereof, the axle of the rear wheel supported in suitable bearings between the driving mechanism and the ends of the hub of said rear wheel, and the brackets secured to the outside of the machine-frame and provided with journal-bearings adapted to receive the stub axles or shafts of the pedal-cranks.

4. In a bicycle, the combination of the steering post or head, the upright fork or standard, and the braces arranged diagonally to the fork or standard and steering-head and united to the steering-head and to the upright standard at or near its opposite ends, as set forth.

5. The combination of a vertical fork or standard adapted to carry the rear driving-wheel of a bicycle, a steering-head, the backbone united to the steering-head and the upright standard, and the braces between the backbone, the steering-head, and the upright standard, substantially as described.

6. In a safety-cycle vehicle, the combination of an upright fork or standard, a steering-head, a backbone adapted to sustain a saddle-post and united at its ends to the steering-post and the upright fork, and the diagonal braces, substantially as described.

7. The combination, with an upright fork and a steering-head, of a horizontal backbone detachably connected to the steering-head and fork, and suitable braces, as set forth.

8. The combination, in a bicycle, of the vertical fork or standard carrying the axle-bearing, the brackets rigid with the fork or standard and having bearings for the power-wheel of a propelling mechanism, and the lower braces secured to the lower ends of the fork or standard below the bearing and to the fender and steering-head, substantially as described.

9. The combination, with a standard or fork and the steering-head, of the backbone connected at its front end to said steering-head and rigidly secured at its rear end to the standard or fork and adapted to carry a saddle-post, the frame of the vehicle being braced by the inclined rods, the upper ends of which are attached to the backbone and having their lower ends connected to the steering-post, as set forth.

10. The combination, in a bicycle, of the vertical fork or standard, the rear fender over the driving-wheel having its front end supported by the vertical fork and its rear end sustained by rods extending from the fender to the lower end of said vertical fork.

11. In a bicycle, the combination, with a vertical fork made of flat or bar metal, as described, of the hollow spool-bearing having its reduced portion fitted in an aperture in the standard or fork, with its flange bearing against the inside of the fork and its threaded end receiving a fastening-nut, said spool-bearing having a transverse passage for the reception and support of the rear axle of the driving-wheel.

12. In a bicycle, a spring-fork adapted to carry the steering-wheel and comprising the curved spring-rods which carry the axle-bearings at their lower ends, the crom-head having the upper ends of the spring-rods rigidly secured thereto and the stem united to the steering-spindle, as set forth.

13. In a bicycle, the spring-fork comprising the curved elastic rods threaded at their upper ends, the front axle-bearing to which the lower ends of said rods are secured, and the crom-head adapted for connection to the steering-spindle and having the sockets to receive the threaded upper ends of the rods and nuts to fasten the parts together.

14. In a bicycle, a vertical fork or standard adapted to sustain the rear driving-wheel, comprising the vertical bars and transverse bearing-plates rigidly fastened to the lower ends of said bars, combined with a backbone to which the upper ends of said bars are fastened.

15. In a bicycle, the combination, with the vertical rods forming a vertical standard or fork, of the transverse bearing-plates rigid with the lower ends of said rods and each having a bearing for the support of the wheel-axle, and the braces to the fender and steering-head fastened to said bearing-plate.

16. In a bicycle, the combination, with the vertical rods forming a standard or fork, of the bearing-plates rigid with the rods and adapted to receive the axle of the driving-wheel, said plates provided with the rigid depending arms, and the braces secured to said depending arms.

17. In a bicycle, the vertical fork or standard having the brackets and the separate bearings for the rear axle and the pedal axles or shafts, combined with the braces held between the fork and brackets and adapted for connection to a fender and the steering-head.

18. In a bicycle, the T-shaped backbone and the vertical rods or tubes attached to the vertical web of said backbone, the lateral projections on the backbone lying over the attached ends of said rods or tubes, said back being adapted to engage the steering-post and a saddle-post.

19. In a cycle-vehicle, the combination, with the steering post or head, of a backbone adapted to support the saddle-post, said backbone having its front end suitably connected to the steering post or head and its rear end detachably secured to or between the upper ends of side braces which extend obliquely from said backbone to the frame engaging the rear axle of the machine.

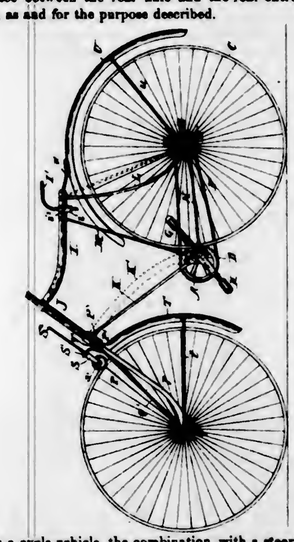
486,056. CYCLE-VEHICLE. CYRUS W. SALADEE, Cleveland, Ohio, assignor to William H. Woodruff, Hartford, Conn. Filed Mar. 14, 1892. Serial No. 424,894. (No model.)

Claim.—1. In a cycle-vehicle, the propelling mechanism embracing a pedal or crank shaft, a master driving-gear provided with a circular toothed periphery and an eccentric hub, in which the crank-shaft is rigidly secured, a driven gear or wheel, and suitable connections between the master and driven wheels, as and for the purpose set forth.

2. In a cycle-vehicle, the propelling mechanism comprising the pedal or crank shaft, the master-sprocket provided with a circular toothed periphery, and the rigid hub arranged eccentrically within said circular periphery, a driven sprocket-wheel, a suitable chain between said wheels, and the pedal-cranks secured to the shaft in the lines of the shorter and longer radii from the eccentric hub of the master sprocket-wheel, as and for the purpose described.

3. In a cycle-vehicle, a propelling mechanism comprising a pedal or crank shaft, the master sprocket-wheel having a circular toothed periphery eccentric to the shaft, two pedal-cranks arranged on the shaft at diametrically-opposite points thereto and respectively in the lines of the longer and shorter radii from the eccentric hub to the periphery of the master-sprocket, a driven wheel, and a connecting-chain, as and for the purpose described.

4. In a cycle-vehicle, the combination, with a steering-head and the rear axle, of a single longitudinal backbone united to the steering-head, a single transverse bearing for the pedal-shaft, a series of diverging bars forming a part of the frame and all united rigidly to the bearing at their meeting ends and having their outer ends secured to the steering-head, the backbone, and the rear axle, respectively, and the flexion-brace between the rear axle and the rear extremity of the backbone, as and for the purpose described.



5. In a cycle-vehicle, the combination, with a steering-head and a rear axle, of a backbone and the transverse bearing for the pedal-shaft and having its ends constructed to receive the meeting ends of the diverging braces which connect the bearing to the steering-head, the backbone, and the rear axle, said braces being rigidly confined in place by clamping-nuts, as and for the purpose described.

6. In a cycle-vehicle, the combination, with a steering-head and a rear axle, of the transverse bearing for the pedal-shaft and having its ends adapted to receive the braces, the longitudinal backbone, the diverging braces provided with eyes which receive the ends of the bearing and the nuts screwed on the ends of the bearing and adapted to confine the braces between annular flanges on the bearing and said nuts, as and for the purpose described.

7. In a cycle-vehicle, the combination, with a longitudinal backbone, a bearing, a rear axle, and braces connecting said parts, of the flexion-brace L, connecting the rear axle and the rear extremity of the backbone, said brace being deflected or curved inwardly toward the bearing and lying inside of a straight line between the rear axle and the backbone, as and for the purpose described.

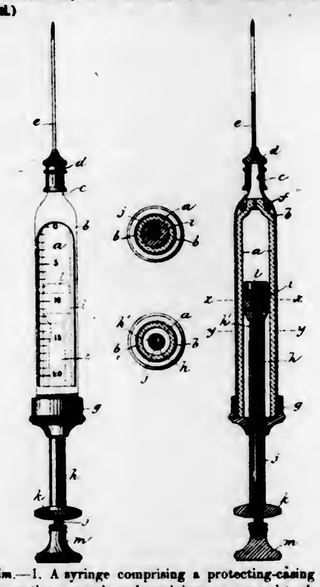
8. In a cycle-vehicle, the brake mechanism having the roller-shoe made of a single piece of metal and provided with the continuous inclined walls adapted to bear laterally against the sides of a tire and suitable means for guiding and operating the support for said roller-shoe, as and for the purpose described.

9. In a cycle-vehicle, the brake mechanism comprising the slotted guide-arm rigid with the steering-fork, the roller-bracket fitted therein and having the operating-stem connected thereto, and the roller-shoe *f*, journaled in the bracket, said shoe being formed in a single piece and provided with the deep V-shaped groove, forming continuous inclined side walls adapted to bear laterally against the sides of a tire, as and for the purpose described.

10. In a cycle-vehicle, the combination, with a rear axle and a longitudinal backbone, of the rear fender having its forward end extended below and beyond the rear end of said backbone and provided with the connecting-arm, which is rigidly fastened to said backbone, and the braces intermediate of the fender and the rear axle, as and for the purpose described.

11. The combination, with a rear axle and a hub or bearing for the pedal-shaft, of a sleeve loosely or pivotally connected to said axle and depending therefrom, a bar or rod fitted in the depending sleeve and connected to the hub or bearing, and the nuts fitted on the rod or bar and bearing against the ends of the sleeve, as and for the purpose described.

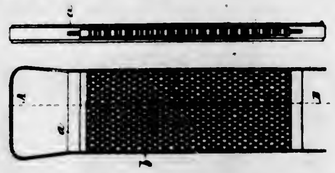
486,057. HYPODERMIC SYRINGE. STANLEY B. SLATER, London, England, assignor to Silas Mainville Burroughs and Henry Solomon Wellcome, same place. Filed June 8, 1892. Serial No. 436,260. (No model.)



Claim.—1. A syringe comprising a protecting-casing having a cut-away portion, a nozzle and retaining-cap secured to the casing, a glass body fitting the casing, having a reduced end, and a washer interposed between the reduced end of the body and casing, substantially as described.

2. A syringe comprising a protecting-casing having cut-away portions, a nozzle and retaining-cap connected to the casing, a glass body fitting the casing, a tubular piston-rod having a contracted portion and carrying a compressible piston, a screw-rod sliding in said piston and having a flattened face corresponding to the contracted portion of the piston-rod, a cap, and an adjusting nut and handle, substantially as described.

486,058. GRATER FOR CULINARY PURPOSES. JOHANN WICH, Rothenfels, assignor to Mayer & Grammelspacher, Baden, Germany. Filed Apr. 4, 1892. Serial No. 427,734. (No model.) Patented in England Mar. 10, 1890, No. 3,783; in Germany Apr. 1, 1890, No. 51,336; in Austria-Hungary June 20, 1890, No. 11,543 and No. 36,900, and in Belgium Oct. 24, 1890, No. 92,453.



Claim.—1. A grater provided with upright strips forming an open network of loops separated only by the thin walls formed by the sides of the strips, substantially as set forth.

2. A grater provided with upright serrated strips forming an open network of loops separated only by the thin walls formed by the sides of the strips, substantially as set forth.

3. A grater provided with upright strips forming a honeycombed network, the strips being provided with fine serrations on one edge and coarse serrations at the other edge, substantially as set forth.

486,059. TYPE-WRITER FOR STENCIL-MAKING. JOHAN L. YOUNG, Tarrytown, assignor to Charles H. Bliss, trustee, Brooklyn, N. Y. Filed July 18, 1888. Serial No. 208,474. (No model.)

Claim.—1. A bushing provided with a hard antifriction composition, the bearing or support in which the bushing is mounted, provided with a chamber outside of the bushing, channels through the bushing from the face thereof to said chamber, and a powdered antifriction material in said chamber adapted to reinforce the said com-

walls and an interior space between said walls, and a passage-way beneath the walls of said double cone, adapted to permit the exit of the heated products of combustion that rise through the perforated plate and to permit such heated products to pass into the heating-drum external to said cased chamber, substantially as and for the

all arranged and combined for service substantially as and for the purpose described.

486,065. PRESS FOR DRAWING THROUGH AND FORMING

486,059. TYPE-WRITER FOR STENCIL-MAKING. JOHAN L. YOUNG, Tarrytown, assignor to Charles H. Bilger, trustee, Brooklyn, N. Y. Filed July 18, 1890. Serial No. 359,474. (No model.)

Claim.—1. In a type-writer, the platen having a surface D, composed of fine and closely-proximate penetrating-points, in combination with a hard type-letter adapted to be forced down upon the sheet and upon the points, substantially as set forth.

2. In a type-writing machine, the combination, with the type-letters, of a platen having a hard roughened surface, substantially as and for the purpose described.

3. In a type-writing machine, the combination, with the type-letters, of a platen having a roughened surface, substantially as and for the purpose described.

486,060. FIFTH-WHEEL. WILLIAM H. BAGBY, Bound Brook, N. J., assignor of one-half to William W. Smalley, same place. Filed Apr. 20, 1892. Serial No. 429,942. (No model.)

Claim.—1. A fifth-wheel comprising two contacting plates, the upper plate being provided with recesses for the reception of a hard lubricant, substantially as described.

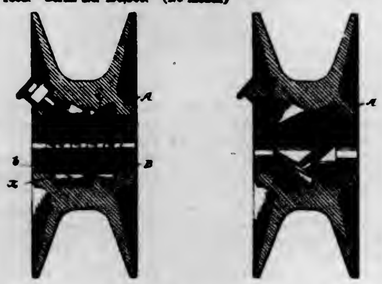
2. A fifth-wheel comprising two plates, the upper plate of which is of relatively-softer material than the lower plate and is provided with pockets for the reception of a solid lubricant, substantially as described.

3. A fifth-wheel comprising two plates, one of which is of wrought-iron and is adapted to be attached to the axle and the other of which is of softer cast metal and adapted to be attached to the head-block of the wagon and provided with recesses on its under side for the reception of a solid lubricant, substantially as described.

4. In a fifth-wheel composed of two plates, the upper cast plate provided with pockets having undercut edges for the reception and retention of a solid lubricant, substantially as described.

5. In a fifth-wheel composed of two plates, the upper cast plate provided with elongated pockets for the reception of a hard lubricant, arranged at angles to radial lines, substantially as described.

486,061. BEARING. WILLIAM H. BAGBY, Bound Brook, N. J., assignor of one-half to William W. Smalley, same place. Filed Apr. 29, 1892. Serial No. 430,569. (No model.)



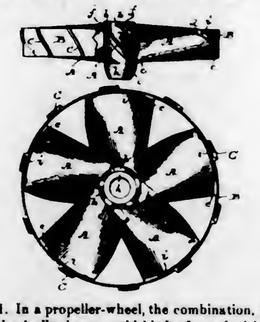
Claim.—1. A bushing provided with a hard antifriction composition, the bearing or support in which the bushing is mounted, provided with a chamber outside of the bushing, channels through the bushing from the face thereof to said chamber, and a powdered antifriction material in said chamber adapted to reinforce the said composition, substantially as set forth.

2. The combination, in a rotating bearing, of a bushing having pockets containing a hard antifriction composition or material, the rotating bearing in which the bushing is mounted, having a chamber outside of and surrounding the said bushing, channels through the bushing, and a reinforcing powdered material in said chamber adapted to build up the material of the pockets, substantially as set forth.

3. The combination, in a wheel or pulley, of a hollow cylindrical bushing, a chamber around the same, channels through said bushing, a powdered antifriction material in the said chamber, and vanes or deflectors, substantially as and for the purpose described.

4. The combination, with a wheel or pulley, of a bushing inserted therein, the wheel being provided with a continuous chamber surrounding the bushing, the channels through the bushing, the powdered antifriction material in the chamber, and the vanes or deflectors situated in the chamber and extending only part way between the bushing and the wall of the chamber, substantially as set forth.

486,062. PROPELLER-WHEEL. EDWIN D. BABCOCK, Milwaukee, Wis. Filed June 21, 1888. Serial No. 277,787. (No model.)



Claim.—1. In a propeller-wheel, the combination, with the hub, of blades fitted spirally thereto, said blades formed with driving-faces that are the result of the intersection of two curved surfaces that have different degrees of curvature, the inner portion of the blade standing at a less angle to the axis of the hub than the outer portion and having a channel formed from one inner corner to the opposite outer corner of said blade, said channel increasing in depth from the inner edge of the blade outward, substantially as described.

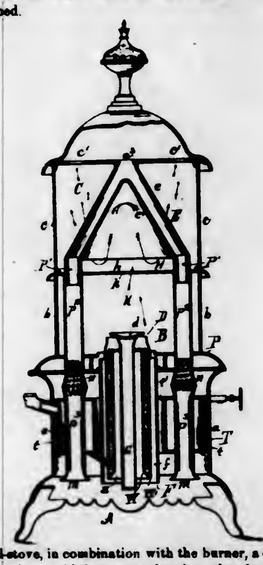
2. The combination, with the hub, of the blades having inner flanges that are obliquely secured to the hub, said blades straddling the hub and the edges thereof each forming a tangent to the hub, together with flanges projecting from the outer ends of said blades, and a strengthening-rim secured directly to the said blade-flanges, substantially as described.

486,063. OIL-STOVE. MAURICE G. BENEDICT, Detroit, assignor to the Coldwater Oil Stove Company, Coldwater, Mich. Filed Jan. 2, 1892. Serial No. 416,767. (No model.)

Claim.—1. In an oil-stove, the combination of a burner, a combustion-chamber surrounding said burner, a heating-drum above the combustion-chamber, a centrally-perforated partition separating said combustion-chamber from said heating-chamber, a double cone located within the heating-drum and having air-inlets at its bottom leading into the space between the walls of said cone and an air-outlet opening at its apex, and flues connecting the inlet-openings with the space beneath the stove, substantially as and for the purpose specified.

2. In an oil-stove, the combination of a burner, and oil-tank, an air-space being formed above the oil-tank, a flue passing through said oil-tank, terminating at its lower end in a bell-mouth and provided at its upper end with perforated side walls, and a flue extending above the combustion-chamber from the upper end of said first-mentioned flue and communicating with the outer air and adapted to form a communication through the said perforated side walls between the open air-space above the oil-tank and the air external to said stove, substantially as and for the purpose specified.

3. In an oil-stove, the combination of a burner, a combustion-chamber surrounding said burner, a heating-drum above said combustion-chamber, a centrally-perforated plate dividing the combustion-chamber from the heating-drum, a conical chamber above the combustion-chamber, situated within the heating-drum, having double walls and an interior space between said walls, and a passage-way beneath the walls of said double cone, adapted to permit the exit of the heated products of combustion that rise through the perforated plate and to permit such heated products to pass into the heating-drum external to said coned chamber, substantially as and for the purpose described.

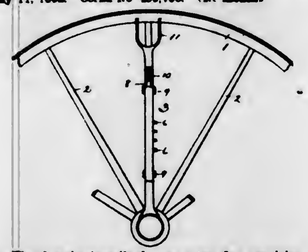


4. In an oil-stove, in combination with the burner, a combustion-chamber surrounding said burner, a heating-chamber, a conical chamber, within the heating-chamber, a perforated plate separating the heating-chamber from the combustion-chamber, an oil-tank, and cold-air flues extending through said oil-tank from the bottom of the stove and terminating in said conical chamber, substantially as and for the purpose specified.

5. In an oil-stove, in combination with a burner, a combustion-chamber, a heating-chamber, a centrally-perforated plate separating said combustion-chamber from said heating-chamber, and an interior heating-chamber with double conical walls, supported on and spaced from the said plate and having an interior conical cavity beneath it and above the central perforation of said plate, substantially as and for the purpose described.

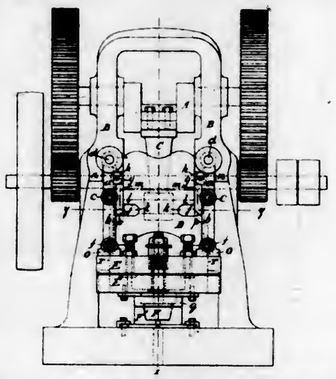
6. In an oil-stove, in combination with a burner, a combustion-chamber surrounding said burner, a centrally-perforated plate terminating said combustion-chamber at its upper extremity, a conical chamber having double walls, and a space between said walls, supported above and spaced from said centrally-perforated plate, the said conical chamber being provided with inlet-flues at its base and an outlet-opening at its apex, substantially as and for the purpose described

486,064. VEHICLE-JACK. NELSON E. BRADFORD, Allegheny, Pa. Filed July 11, 1892. Serial No. 439,700. (No model.)



Claim.—The herein-described apparatus for repairing vehicle-wheels, consisting of the two bars 4 5, coupled together and the one capable of sliding within the other, a rack-bar formed on the inner face of one of the said bars, and a pawl pivoted to the top of the other, a forked end 11 to engage with the felly of the wheel, and a curved base 12, formed on the other bar to engage with the hub of the said wheel, and a suitable means formed on the edges of the said bars, whereby a lever may be used to elevate or lower the movable bar 4, all arranged and combined for service substantially as and for the purpose described.

486,065. PRESS FOR DRAWING THROUGH AND FORMING UP SHEET METAL. WINFIELD BURTON, Bloxton, England, assignor of one-half to Frederick Ernest Sankey, same place. Filed Feb. 15, 1892. Serial No. 421,894. (No model.) Patented in England Mar. 7, 1891, No. 4,109.



Claim.—1. In a press for forming up sheet metal, the combination, with a frame and a reciprocating punch-carrying head mounted in guides therein and provided with a lifter *j*, an operating-shoulder *l*, and a surface *m* above the lifter and substantially parallel with its line of motion, of a blank-holder, its slide mounted in guides in the frame, and a pair of knee-levers *a b*, pivoted at one end to the frame and at the other end to the slide which carries the blank-holder, said knee-levers having a projection arranged in the path of the upwardly-moving lifter on the head, whereby when the latter ascends the said lifter will take under said protection and raise the blank-holder through the medium of said knee-lever, substantially as set forth.

2. In a press for forming up sheet metal, the combination, with a frame and a reciprocating punch-carrying head mounted in guides therein and provided at each side with a lifter *j*, an operating-shoulder *l*, and a surface *m* above the lifter and substantially parallel with the line of its motion, of the blank-holder and its slide, the latter mounted in guides in the frame, and a pair of knee-levers, each consisting of arms *a* and *b*, arranged one pair at each side of the path in which the punch-carrying head moves and pivoted at their upper ends to the frame and at their lower ends to the slide which carries the blank-holder, said knee-levers being each provided with a projection at a point in the length of the upper arm *a* and in the path of the ascending lifter on the head, substantially as and for the purposes set forth.

3. As a means for operating the reciprocating blank-holder of a press for forming up sheet metal through the medium of the reciprocating punch-carrying head, the combination, with a projecting shoulder and lifter on the said head, of a knee-lever composed of two arms *a* and *b*, pivotally connected together and the arm *a* pivotally attached to a fixed part of the press and the arm *b* to the slide carrying the blank-holder, said arm *a* being provided with a roller which projects into the path of the said shoulder and lifter on the punch-carrying head, as and for the purposes set forth.

4. In a press for forming up sheet metal, the combination, with a frame and punch-carrying head mounted in guides therein and provided with an operating-shoulder *l* and a surface *m* above the latter and substantially parallel with its line of motion, of a blank-holder, its slide mounted in guides in the frame, a pair of knee-levers *a b*, pivoted at one end of the frame and at the other end to the slide which carries the blank-holder, whereby the descent of the punch-carrying head permits the descent of, depresses, and holds down the blank-holder, and means for raising the blank-holder when the pressure is removed, substantially as set forth.

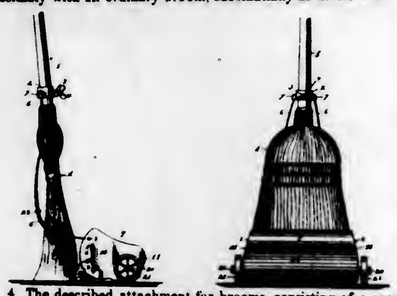
486,066. ATTACHMENT FOR BROOMS. GEORGE H. ABRAHS, Brooklyn, N. Y. Filed Sept. 22, 1891. Serial No. 406,468. (No model.)

Claim.—1. In combination with a broom, a sleeve mounted upon the handle, springs attached to the said sleeve, and a dust pan or receptacle mounted pivotally on said springs, substantially as set forth.

2. The combination, with a broom, of a sleeve adapted to be shifted up and down upon the handle, means, such as a set-screw, for retaining said sleeve at any desired adjustment, springs attached to the

said sleeve, and a dust pan or receptacle mounted pivotally upon said springs, substantially as set forth.

3. An attachment for brooms, consisting of a receptacle having a yielding lip adapted to rest upon the floor and provided with supporting wheels or rollers, in combination with means including a sleeve and spring-supports for the receptacle for connecting such receptacle detachably with an ordinary broom, substantially as described.



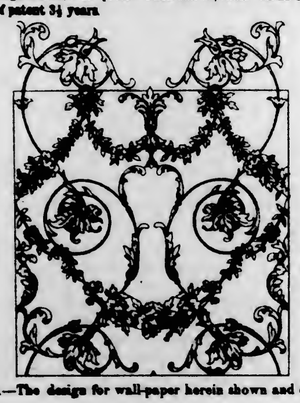
4. The described attachment for brooms, consisting of a receptacle pivotally mounted on spring-supports and having a flexible lip adapted to rest lightly upon the floor and provided at the inner edge of said lip with a transverse rib or ridge to retain the sweepings in the body of the receptacle, substantially as set forth.

DESIGNS.

21,958. WALL-PAPER. CHARLES BOOER, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 10, 1892. Serial No. 448,441. Term of patent 3½ years.

Claim.—The design for wall-paper herein shown and described.

21,959. WALL-PAPER. CHARLES BOOER, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 10, 1892. Serial No. 448,442. Term of patent 3½ years.



Claim.—The design for wall-paper herein shown and described.

21,960. WALL-PAPER. CHARLES BOOER, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 10, 1892. Serial No. 448,443. Term of patent 3½ years.

Claim.—The design for wall-paper herein shown and described.

21,961. WALL-PAPER. CHARLES BOOER, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 10, 1892. Serial No. 448,444. Term of patent 3½ years.

Claim.—The design for wall-paper herein shown and described.

21,962. WALL-PAPER. CHARLES BOOER, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 10, 1892. Serial No. 448,445. Term of patent 3½ years.

Claim.—The design for wall-paper herein shown and described.

21,963. WALL-PAPER. CHARLES BOOER, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 10, 1892. Serial No. 448,446. Term of patent 3½ years.

21,963.

Claim.—The design for wall-paper herein shown and described.

21,964. WALL-PAPER. CHARLES BOOER, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 10, 1892. Serial No. 448,448. Term of patent 3½ years.

Claim.—The design for wall-paper herein shown and described.

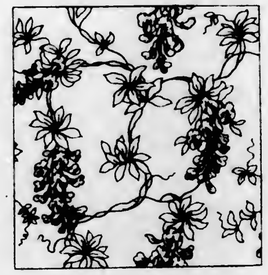
21,965. WALL-PAPER. CHARLES BOOER, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 10, 1892. Serial No. 448,449. Term of patent 3½ years.

Claim.—The design for wall-paper herein shown and described.

21,966. WALL-PAPER. CHARLES BOOER, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 10, 1892. Serial No. 448,450. Term of patent 3½ years.

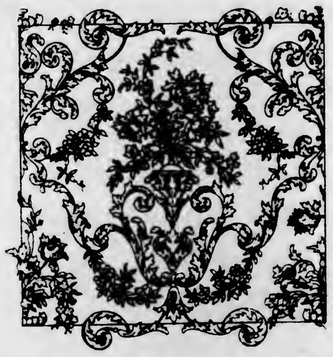
Claim.—The design for wall-paper herein shown and described.

21,967. WALL-PAPER. CHARLES BOOER, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 10, 1892. Serial No. 448,451. Term of patent 3½ years.



Claim.—The design for wall-paper herein shown and described.

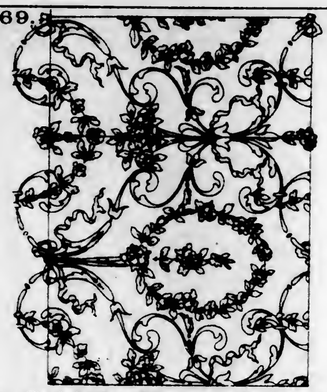
21,968. WALL-PAPER. CHARLES BOOER, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 10, 1892. Serial No. 448,452. Term of patent 3½ years.



Claim.—The design for wall-paper herein shown and described.

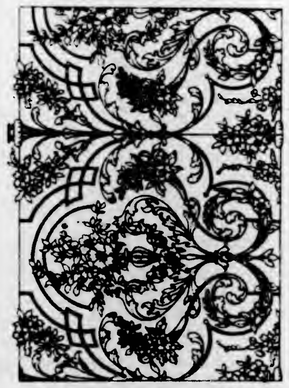
21,969. WALL-PAPER. CHARLES BOOER, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 10, 1892. Serial No. 448,453. Term of patent 3½ years.

21,969.



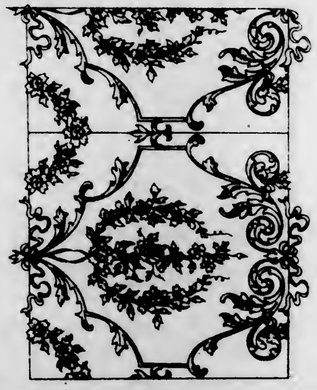
Claim.—The design for wall-paper herein shown and described.

21,970. WALL-PAPER. CHARLES BOOER, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 10, 1892. Serial No. 448,454. Term of patent 3½ years.



Claim.—The design for wall-paper herein shown and described.

21,971. WALL-PAPER. CHARLES BOOER, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 10, 1892. Serial No. 448,455. Term of patent 3½ years.



Claim.—The design for wall-paper herein shown and described.

21,972. WALL-PAPER. CHARLES BOOER, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 10, 1892. Serial No. 448,456. Term of patent 3½ years.

Claim.—The design for wall-paper herein shown and described.

21,973. PERFUMERY-HOLDER. JOHN E. WARREN, Jr., Newark, N. J., assignor to Herman Tappan, New York, N. Y. Filed Sept. 24, 1892. Serial No. 446,839. Term of patent 3½ years.

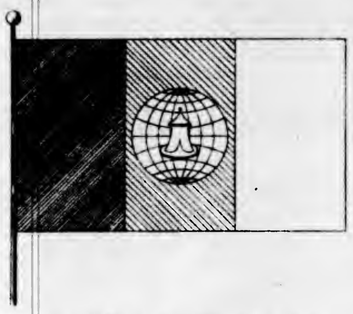
Claim.—The design for a perfumery-holder, as herein shown and described.

21,974. PURSE OR POCKET-BOOK. MAX SCHEUER, New York, N. Y. Filed Oct. 10, 1892. Serial No. 448,459. Term of patent 7 years.

Claim.—The design for a pocket-book or purse, as herein described and shown.

21,975. BADGE. NATHAN S. BOYNTON, Port Huron, Mich. Filed Sept. 2, 1892. Serial No. 444,902. Term of patent 3½ years.

21,975.

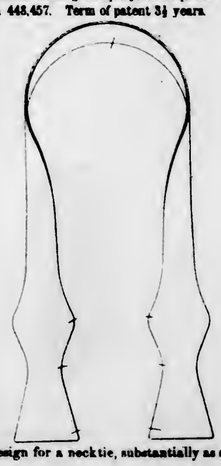


Claim.—The design for a badge, substantially as shown and described.

21,976. CANE-HANDLE. GEORGE W. SCOTT, Washington, D. C. Filed Oct. 15, 1892. Serial No. 449,014. Term of patent 3½ years.

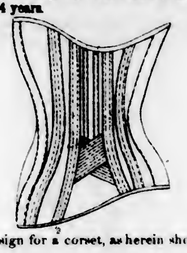
Claim.—The design for a cane-handle, substantially as shown and described.

21,977. NECKTIE. WILLIAM M. GRIFFITH, Baltimore, Md., assignor to the Griffith Manufacturing Company, same place. Filed Oct. 10, 1892. Serial No. 448,457. Term of patent 3½ years.



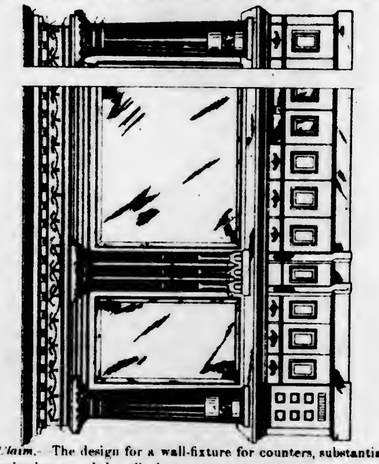
Claim.—The design for a necktie, substantially as shown and described.

21,978. CORSET. DANIEL KOPS, New York, N. Y., assignor to Lewis Schiele & Co., same place. Filed June 20, 1892. Serial No. 437,367. Term of patent 14 years.



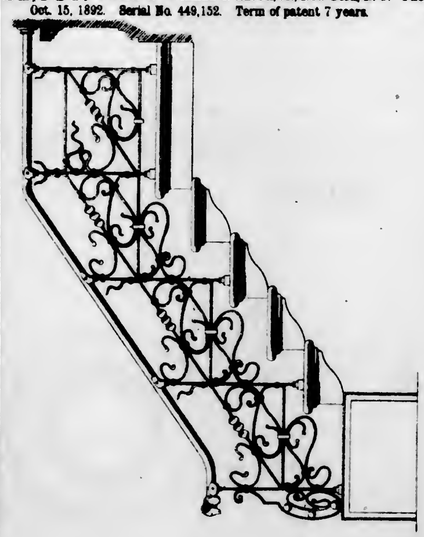
Claim.—The design for a corset, as herein shown and described.

21,979. WALL-FIXTURE FOR COUNTERS. WILLIAM C. HUSS, Cincinnati, Ohio, assignor to the Huss Brothers Company, same place. Filed Oct. 15, 1892. Serial No. 449,013. Term of patent 3½ years.



Claim.—The design for a wall-fixture for counters, substantially as herein shown and described.

21,980. RAILING. WILLIAM C. HANNA, Jr., New York, N. Y. Filed Oct. 15, 1892. Serial No. 449,152. Term of patent 7 years.



Claim.—The design for a railing herein shown and described.

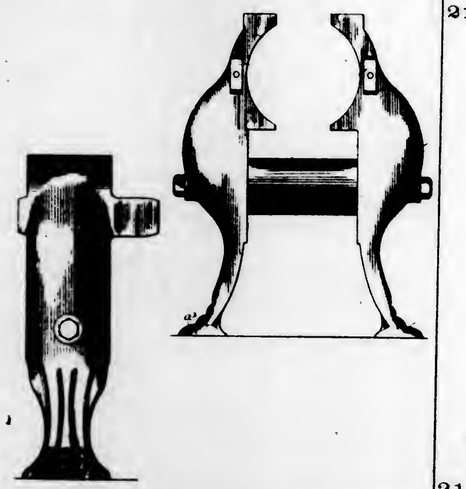
21,981. ELECTRIC-MOTOR FRAME. BARRON D. SOUTHARD, Chicago, Ill. Filed June 20, 1892. Serial No. 437,363. Term of patent 7

Claim.—The herein-described design for a glass chimney, consisting of a horizontal contrasting band or stripe upon the surface at and extending below the upper edge of the chimney in connection with a beaded or crimped edge ornament covered by said band or stripe, substantially as set forth.

TRADE-MARKS

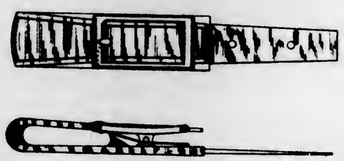
Claim.—The design for a railing herein shown and described.

21,981. ELECTRIC-MOTOR FRAME. BARRON D. SOUTHARD, Chicago, Ill. Filed June 20, 1892. Serial No. 437,383. Term of patent 7 years.



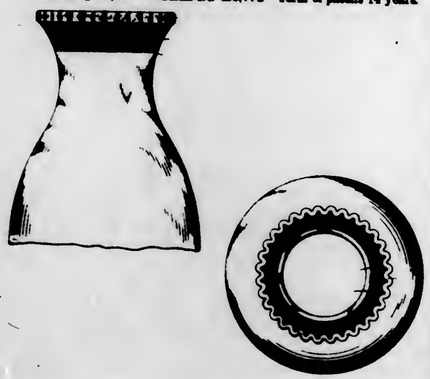
Claim.—The design for an electric-motor frame, substantially as herein shown and described.

21,982. SNAP-HOOK. JULIUS G. DEKEMMER, Milwaukee, Wis. Filed July 14, 1892. Serial No. 440,073. Term of patent 7 years.



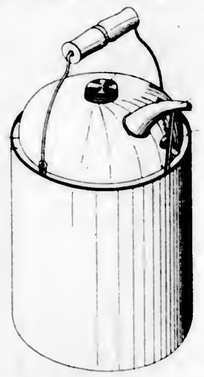
Claim.—The design for a snap-hook, substantially as herein shown and described.

21,983. LAMP-CHIMNEY. JASON B. LEFFINGWELL, Alexandria, Ind. Filed May 20, 1892. Serial No. 433,774. Term of patent 14 years.



Claim.—The herein-described design for a glass chimney, consisting of a horizontal contrasting band or stripe upon the surface at and extending below the upper edge of the chimney in connection with a beaded or crimped edge ornament covered by said band or stripe, substantially as set forth.

21,984. OIL-CAN. WILLIAM C. HINE, Youngstown, Ohio. Filed Sept. 19, 1892. Serial No. 446,336. Term of patent 7 years.



Claim.—The design for an oil-can, as herein described and shown.

21,985. OIL OR GAS STOVE. EARL A. THISSELL and WILLIAM H. WILDER, Northampton, Mass. Filed Oct. 6, 1892. Serial No. 448,058. Term of patent 14 years.

Claim.—The design for a stove, as herein described and shown.

21,986. RADIATOR. HAROLD J. BELL, Philadelphia, Pa., assignor to Thomas Devlin, Louis J. McGrath, William K. Brown, and Catharine A. McGrath, executors of William V. McGrath, deceased, same place. Filed June 15, 1892. Serial No. 436,867. Term of patent 14 years.

Claim.—1. The design shown for radiator-pipes, consisting of the parts A B C, substantially as set forth.

2. The design shown for loops or pairs of radiator-pipes, consisting of the ornamental figures A B C D E F, arranged substantially as set forth.

TRADE-MARKS

REGISTERED NOVEMBER 8, 1892.

21,931. STATUETTES. LOUIS H. AYER, Chicago, Ill. Filed Aug. 8, 1892.

I WILL

Essential feature.—The words "I WILL." Used since the 1st day of July, 1892.

21,932. PHOTOGRAPHIC-CARD MOUNTS. A. M. COLLINS MANUFACTURING COMPANY, Philadelphia, Pa. Filed Sept. 13, 1892.

MANTELLO

PORTRAIT CARDS

Essential feature.—The words "MANTELLO PORTRAIT CARDS." Used since July 8, 1892.

21,933. PRINTERS' AND LITHOGRAPHERS' INK. THE AULT & WIBORG COMPANY, Cincinnati, Ohio. Filed Sept. 20, 1892.

REFLEX

Essential feature.—The word "REFLEX." Used since June 1, 1892.

21,934. CORSETS. EMIL SCHWENDUBE, New York, N. Y. Filed Sept. 26, 1892.

René

Essential feature.—The word "RENÉ." Used since September 1, 1892.

21,935. BOYS' AND CHILDREN'S SUITS. A. LEVY & CO., New York, N. Y. Filed Aug. 5, 1892.

ROUGH AND READY NEVER RIPS

Essential feature.—The words "ROUGH AND READY NEVER RIPS." Used since June 25, 1884.

21,936. OVERGAITERS AND LEGGINS. ARNOLD SIEBLER, New York, N. Y. Filed May 27, 1892.

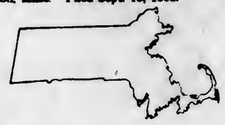
Essential feature.—The device of an annular band inclosing the figure of an eagle and radiating lines upon which are the letters "A. S." Used since January 1, 1890.

21,937. COTTON GOODS, SUCH AS SILESIAS, SATEENS, CAMBRICS, AND TWILLS. BURTON BROS. & CO., New York, N. Y. Filed Sept. 30, 1892.

ROMAN

Essential feature.—The word "ROMAN." Used since January 15, 1892.

21,938. CORDS, LINES, TWINES, AND ROPES. SAMSON CORDAGE WORKS, Boston, Mass. Filed Sept. 15, 1892.



Essential feature.—An outline map of the State of Massachusetts. Used since February, 1886.

21,939. RAW AND MANUFACTURED WHALEBONE. THE NEW ENGLAND WHALEBONE MANUFACTURING COMPANY, New York, N. Y. Filed Sept. 24, 1892.

PREMIER

Essential feature.—The word "PREMIER." Used since September 1, 1892.

21,940. WHEAT-FLOUR. MINNESOTA MILLING COMPANY, Duluth, Minn. Filed Oct. 14, 1892.

MINKOTA

Essential feature.—The word "MINKOTA." Used since September 15, 1892.

21,941. TEA. PAXTON & GALLAGHER, Omaha, Nebr. Filed May 31, 1892.

21,941.

Essential feature.—A rectangular border consisting of tea leaves, flowers, and buds and the central representation of a tea-branch. Used since September 1, 1891.

21,942. TEA AND COFFEE. FRANK J. MILLER, Buffalo, N. Y. Filed Sept. 30, 1892.

EMPIRE STATE EXPRESS

Essential feature.—The words "EMPIRE STATE EXPRESS." Used since April 1, 1892.

21,943. CANNED FRUITS AND VEGETABLES. ADAMS, BALDWIN COMPANY, Cheswold, Del., and Baltimore, Md. Filed Sept. 14, 1892.

Essential feature.—The representation of a group of three horses' heads within a circular border. Used since September 21, 1891.

21,944. CIDER VINEGAR. DUFFY, HAMILTONIAN & GARDNER CIDER COMPANY, Newark, N. Y. Filed Aug. 29, 1892.

DIAMOND SEAL Duffys

Essential feature.—The words "DIAMOND SEAL," the word "DUFFYS," and a diamond-shaped red label. Used since April 1, 1892.

21,945. SOAP. WM. GOSSAGE & SONS, Widnes and Liverpool, England. Filed May 27, 1892.

Essential feature.—The representation of a man, intended to represent a magician, wearing a flowing robe and peering through a telescope. Used since 1888.

21,946. SOAP. WM. GOSSAGE & SONS, Widnes and Liverpool, England. Filed May 27, 1892.

Essential feature.—Three circles arranged in a horizontal line, the end circles containing each a representation of a wreath and the central one containing the name "GOSSAGE & FILS." Used since 1891.

21,947. SILVER-POLISH. PUHL C. PLANTENER, Fort Wayne, Ind. Filed Sept. 12, 1892.

STAR-LIGHT

Essential feature.—The word "STAR-LIGHT." Used since January 5, 1892.

21,948. WASHING-BLUE. ISIDORE LEWISOHN, New York, N. Y. Filed Sept. 14, 1892.

Essential feature.—The representation of stars graduated in size and of contrasting color and produced one upon the other, each star being well defined and the points of the undermost star appearing between the points of the star above it. Used since January 1, 1885.

21,949. VARNISH. MAYER & LOWENSTEIN, New York, N. Y. Filed Oct. 11, 1892.

EMERITE.

Essential feature.—The word "EMERITE." Used since September 30, 1891.

21,950. CARBONATED DRINKS. JOHN T. DRISCOLL & CO., Boston, Mass. Filed Sept. 9, 1892.

GRAPE NECTAR

Essential feature.—The words "GRAPE NECTAR." Used since August 1, 1892.

21,951. LAGER-BEER. STEIN & ARNSBERGER, Louisville, Ky. Filed Sept. 19, 1891.

21,951.

Essential feature.—The monogram "S A" and the representation of a cornucopia and a pair of hands clasped in friendship. Used since July 1, 1891.

21,952. SMOKING AND CHEWING TOBACCO. THE WHELHAN & DWIRE TOBACCO COMPANY, Quincy, Ill. Filed Aug. 30, 1892.

Essential feature.—The words "THE OLD TIMER" and the representation of a cob pipe. Used since July 16, 1892.

21,953. PLUG-TOBACCO. A. BECKLEARD & SONS, Louisville, Ky. Filed Oct. 15, 1892.

MILES NATURAL LEAF.

Essential feature.—The words "MILES NATURAL LEAF." Used since September 10, 1891.

21,954. LIQUID FOR FLAVORING TOBACCO AND CIGAR-BOXES. GEORGE H. LOUDENS, St. Paul, Minn. Filed Sept. 23, 1892.

HAVANINE

Essential feature.—The word "HAVANINE." Used since January 15, 1892.

21,955. CHEWING-GUM. ORVO G. DAVISON, Peoria, Ill. Filed Oct. 11, 1892.

MINNE-HA-HA

Essential feature.—The word "MINNE-HA-HA." Used since September 1, 1892.

21,956. CAMPHOR. GRIESER & HAAS, New York, N. Y. Filed Oct. 1, 1892.

Essential feature.—The representation of a trefoil figure. Used since June 21, 1892.

21,957. PILLS. HARRIS G. WILKINSON, Chicago, Ill. Filed Oct. 14, 1892.

INDAPO

Essential feature.—The word "INDAPO." Used since January 1, 1892.

21,958. LINIMENT. SOLOMON BRANSON, Rockwood, Tenn. Filed Sept. 21, 1892.

SOLOMON'S WONDER.

Essential feature.—The words "SOLOMON'S WONDER." Used since September, 1891.

21,959. SARSAPARILLA TONIC. A. G. & G. F. WEBER, Albany, N. Y. Filed Aug. 31, 1892.

DR JOHNSON'S

Essential feature.—The words "DR. JOHNSON'S" and the letters "W S B W" in the form of a monogram. Used since July 1, 1892.

21,960. POWDER FOR ALLAYING FEVERS, FOR THE TREATMENT OF FEBRILE AFFECTIONS, AND THE CURE OF HEADACHE ARISING FROM FEVER. HENRY JAMES PARKER, Clayton, Ill. Filed Apr. 23, 1892.

ANTITHERMAL

Essential feature.—The word "ANTITHERMAL." Used since September, 1891.

21,961. REMEDY FOR GONORRHŒA AND GLEET. BEVIS H. DAVIS, Hinsdale, N. Y. Filed Sept. 7, 1892.

GENETICA

Essential feature.—The word "GENETICA." Used since September 8, 1889.

21,962. MEDICINAL REMEDIES IN THE FORM OF TABLETS, PLASTERS, PILLS, OINTMENTS, SUPPOSITORIES, AND POWDERS. CAPITAL DRUG COMPANY, Augusta, Me. Filed Sept. 3, 1892.

BOVINE

Essential feature.—The word "BOVINE." Used since January 1, 1892.

21,963. DEODORIZING-POWDER. CHARLES W. CHADWICK, Baltimore, Md. Filed Sept. 9, 1892.

ANTIFETOR

Essential feature.—The word "ANTIFETOR." Used since July 2, 1892.

21,964. TOILET CREAM FOR THE SKIN. JAMES F. HITE, Owensborough, Ky. Filed Sept. 19, 1892.

HITE'S MAGIC CREAM

Essential feature.—The representation of an open hand and the words "HITE'S MAGIC CREAM." Used since January, 1887.

21,965. PIANO AND ORGAN HARDWARE. BLAKE & JOHNSON, Waterbury, Conn. Filed Sept. 15, 1892.

B & J
1852

Essential feature.—The letters and character "B & J" and the figures "1852." Used since September 6, 1892.

21,966. STEAM AND HOT-WATER RADIATORS. PHILADELPHIA HARDWARE AND MALLEABLE IRON WORKS, Philadelphia, Pa. Filed Oct. 15, 1892.

KEYSTONE.

Essential feature.—The word "KEYSTONE." Used since October 1, 1892.

21,967. PNEUMATIC TIRES FOR BICYCLES. BOSTON WOVEN HOSE AND RUBBER COMPANY, Boston, Mass. Filed Oct. 8, 1892.

EVERTITE

Essential feature.—The word "EVERTITE." Used since September, 1, 1892.

21,968. BRACES AND HOSE-HOLDERS. ALFRED BERENS, London, England. Filed Sept. 6, 1892.

21,968.

Essential feature.—The device of a willow-pattern plate with the words "BERENS'S BEE BRACES" and "HOVER'S HOSE HOLDER" thereon. Used since January 1, 1882.

21,969. SPRING CURRY-COMBS. SPRING CURRY COMB COMPANY, South Bend, Ind. Filed Aug. 27, 1892.

Essential feature.—A picture of the interior of a stable with an ass at a manger and in a threatening attitude, apparently speaking to a man behind him, who has dropped a curry-comb from his upraised hands. Used since August 1, 1892.

21,970. MANUFACTURED FERTILIZERS. THE WESTERN UNION CHEMICAL COMPANY, Cleveland, Ohio. Filed Aug. 30, 1892.

HALF AND HALF

½ AND ½

Essential feature.—The term, designation, or expression "HALF AND HALF." Used since January 1, 1889.

THE NORRIS PETERS CO.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

CHASE *v.* RYDER.

Decided October 14, 1892.

1. PRACTICE—ASSIGNEE MAY PROSECUTE INTERFERENCE OF A DEAD INVENTOR.

The assignee of an entire interest may prosecute an interference on behalf of the application of his principal, who died while the interference proceedings were pending.

2. PRIORITY IS THE ONE QUESTION IN AN INTERFERENCE.

The object of an interference is to determine priority of invention, and if that question is properly raised as to a pending application it ought to be tried to a final issue, leaving questions of abandonment or public use or proper parties to be decided at the proper time.

APPEAL on motion.

FURNACE-GRATE.

Application of John K. Chase filed February 12, 1891, No. 381,128. Application of Watson Ryder filed February 11, 1891, No. 381,042.

Mr. Charles Wahlers and *Mr. J. A. Wiedersheim* for Chase.

Mr. A. M. Pierce and *Mr. H. N. Low* for Ryder.

SIMONDS, *Commissioner:*

This is an appeal from a decision of the Primary Examiner denying Ryder's motion for dissolution of the interference, that motion being based upon the ground that Chase having died pending the interference the application for patent made by him during his life-time has no further standing in the Office, wherefore, as a consequence, the interference must be dissolved.

Chase's application stands on the records of the Office wholly assigned to a third person by Chase during his life-time, and the assignee desires to prosecute the interference in behalf of Chase's application.

The moving party cites certain cases, to wit:

Eagleton Manufacturing Company v. *Manufacturing Company et al.*, (27 O. G., 1237; 111 U. S., 490.) In this case the applicant for patent died while his application was pending, but the attorneys whom he had appointed thereafter materially amended that application, and the Supreme Court held the patent void for that reason, saying:

> In view of the entire change in the specification, as to the invention described, the patent, to be valid, should have been granted on an application made and sworn to by the administratrix.

Rice v. *Burt and Ten Eyck*, (C. D., 1879, 291.) The decision in this case sets forth the facts passed upon thus:

> Pending the interference Ten Eyck died, and his wife, the executrix of his last will and testament, having joined with Burt in a new application for Letters Patent for the invention embraced in the original application of Burt and Ten Eyck, motion is now made for leave to withdraw the original application.

Thereupon the Commissioner said:

> In my judgment a new application is not necessary in a case like this. I think, also, that it is better practice to make the executrix a party to the original application.

De La Vergne Refrigerating Machine Company v. *Featherstone et al.*, (58 O. G., 1842; 49 Fed. Rep., 916.) In this case the inventor, James Boyle, died while his application was pending, and after his death the patent "was granted unto James Boyle, his heirs, or assigns." The Court said:

> The statutes of the United States recognize only three classes of persons to whom a patent for an invention can issue. These are, first, the inventor himself; second, the assignee of the inventor, when the assignment is made before the issue of the patent, and, third, the executor or administrator of the inventor, if the inventor dies before the patent is granted.

And again:

> The grant to a living patentee is complete and operative: First, to the patentee or grantee named, if living and, second, in the event of his death during the term of the patent, to his personal representatives, executors, or administrators for the use of his heirs.

And still again:

> It is not necessary, for the purposes of this case, to decide whether a new application should have been filed by the administrator or whether the administrator could have stepped into the proceedings on suggesting the death of the applicant, and been allowed to continue the proceedings in the name of the administrator. This, perhaps, would be a matter of practice for the Patent Office to decide.

Ex parte Stevens, (59 O. G., 299.) The syllabus of this decision correctly expresses the point decided, that syllabus being:

> The assignee of an inventor who died before making his application has no standing as an applicant before the Patent Office, and this is true where the application sought to be made by the assignee is a division of one properly filed by the inventor.

The pith of Ryder's contention is that, although Chase before his death assigned away the entire interest in the patent to be obtained to a third person, yet that application, after the applicant's death, has no further standing in the Patent Office. The cases cited by Ryder do not support his contention; but it is not necessary to decide that precise question here. As has been before remarked, an interference proceeding is somewhat like a feigned suit out of chancery to determine a particular question, and the particular question sought to be determined by it is that of priority of invention. If that question be properly raised as to a pending application, it ought to be tried and decided when reached in due and proper course, allowing other questions, such as that of abandonment or public use, or such as that now raised, to be decided at the proper time. It is readily to be seen that if this motion is allowed to prevail Ryder might go out of this Office with a patent to which he is not entitled, because he was not the prior inventor as against Chase. That is a consequence to be avoided

if it reasonably can be, and it is thought that it can by allowing this interference to proceed. If Ryder should chance to prevail in the interference, it would result that it would never be necessary to decide the question he now brings up. It has been said in the course of the judicial decisions of this Office that interferences exist between applications and not between applicants, and as a rule that seems to be a proper theory.

For these reasons the decision of the Primary Examiner is affirmed.

EX PARTE ANDERSON.

Decided October 15, 1892.

PRACTICE—FINAL FEE—SECTION 4885, REVISED STATUTES.

That provision of section 4885 which requires the payment of a final fee within six months after its allowance is mandatory and leaves the Commissioner no discretion to accept it after the expiration of such time.

ON petition.

SYSTEMIC ALPHABET OF SOUNDS.

Application of Thomas Anderson filed September 30, 1890, No. 366,646.

Mr. Charles E. Barber for the applicant.

SIMONDS, *Commissioner:*

This is a petition asking that a final fee on an application for patent be accepted after the expiration of the six months allowed by law. The petitioner has made a good case for the allowance of his petition if it were within the discretion of the Commissioner. The section of statute governing the matter is this:

Sec. 4885. Every patent shall bear date as of a day not later than six months from the time at which it was passed and allowed and notice thereof was sent to the applicant or his agent; and if the final fee is not paid within that period the patent shall be withheld.

The word used is "shall," and it is mandatory on the Commissioner.

The petition is denied.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court of Appeals—Second Circuit.

ELECTRICAL ACCUMULATOR COMPANY *et al. v.* BRUSH ELECTRIC COMPANY.

Decided October 4, 1892.

1. PRIORITY OF INVENTION—WHEN RES ADJUDICATA.

The question of priority of invention as between rival inventors having been once thoroughly tried and decided, and the defeated party's assignee having in consequence disclaimed the invention as the condition of obtaining a decree on a narrower and different invention a renewal of a discussion of the question of priority by that assignee in a suit against it for infringement of the rival inventor's patent is useless.

2. PATENTS ISSUED ON SAME DAY—SENIORITY UNDETERMINABLE—OWNER IS OWNER OF BOTH MAY ELECT.

Where two patents exist for the same invention, the applications for which were filed on the same day by the same inventor, the patents were issued on the same day, and are owned by the same person, and the testimony shows that it can never be ascertained which patent actually first received the final signature which rendered it a complete and legal deed. *Held* that there are no known presumptions which can be resorted to upon which to base a finding as to which of the two is the earlier patent, and *Held* that the owner of both patents has the right to elect the one upon which it will rest its title to a monopoly, even though that one be the one having the higher or later serial number.

3. SAME—EFFECT UPON NON-ELECTED PATENT.

Held, also, that in such case in connection with the finding of validity of the one patent the court should adjudge the other patent to be inoperative and should prohibit its assignment or sale.

4. SAME—DISCLAIMER.

Held that in such case, where the patentee was the actual and first inventor of the whole of the described and patentable thing which is specified in the patent, the sections of the statutes in regard to disclaimer were not intended to apply and do not apply.

5. EARLIER AND LATER PATENTS TO SAME PARTY—LATTER FOR BROAD INVENTION—CONSTRUCTION OF.

Where pending a long interference as to a broad invention the applicant takes out a patent for a narrow or specific part of that broad invention, which patent states on its face that it is a division of the broad application and which patent describes but does not claim the broad invention, *Held* that the earlier narrow patent should receive a limited construction in accordance with its apparent scope, and that the later broad patent is valid. Courts do not construe Letters Patent for the purpose of their destruction, nor in the critical and hostile spirit which a plea in abatement formerly encountered.

6. SAME—IF EARLIER PATENT TAKEN OUT IN FOREIGN COUNTRY—EFFECT UPON DOMESTIC PATENT.

Where a previously-granted foreign patent to the same inventor is not the same in its essential particulars with any one of the inventions which are claimed in the domestic patent, the latter is not limited in its term by the former.

7. BRUSH—SECONDARY BATTERIES—No. 266,090 CONSTRUED AND HELD NOT INFRINGED.

Letters Patent No. 266,090, issued October 17, 1882, to Charles F. Brush, for improvements in secondary batteries, construed in the light of the original application and of a set of contemporaneous applications filed by the same inventor and of other patents issued to him for related subject-matter, and *Held* not infringed, although the literal language of the claims, taken in connection with an amendment filed during the pendency of the application, (which amendment slipped by the scrutiny of the Patent Office,) is broad enough for a construction under which infringement must have been found.

Mr. Frederic H. Betts and *Mr. Edmund Wetmore* for the appellants.

Mr. W. C. Witter, *Mr. W. H. Kenyon*, *Mr. R. N. Kenyon*, and *Mr. Charles E. Mitchell* for the appellee.

SHIPMAN, *J.:*

This is an appeal from a decree of the Circuit Court for the Southern District of New York, which enjoined the defendants against the infringement of the seventh and fourteenth claims of Letters Patent No. 266,090, dated October 17, 1882, and of the first, second, third, sixth, seventh, and twelfth claims of Letters Patent No. 337,299, dated March 2, 1886, each of said patents having been granted to Charles F. Brush for improvements in secondary batteries for the current storing of electrical energy. The applications were filed as follows: that of No. 266,090 on June 9, 1881, and that of No. 337,299 on June 13, 1881.

The subject-matter of this litigation has been three times examined by Judge Coxe in the cases of the present defendant against the Julien Electric Company, (38 Fed. Rep., 126;) of the present complainant against the Julien Electric Company, (41 Fed. Rep., 679,) and in this suit, (47 Fed. Rep., 48.)

This repeated scrutiny has caused some of the questions which were presented in the pleadings to disappear from the case, while the vigor of other defenses which have been successively supported and resisted has become impaired. The questions which still remain for investigation are important and, mainly by reason of the numerous patents which Mr. Brush has

taken, are entangled; but the three opinions which have been written have freed the subject from much of its perplexity.

Patent No. 337,299 is the most important and will be first considered.

It solely relates to secondary batteries. A secondary battery was well defined by Judge Coxe to be—

a battery which has no original power of developing a current of electricity, and is active only when rendered so by sending a current, elsewhere generated, through it.

Sir William Thomson, in his deposition in the first Julien case, had stated the distinction between a primary and a secondary battery as follows:

A secondary battery is a battery which is active only when rendered so by sending a current through it from an independent source of electric energy. A primary battery is one which is active in virtue of the materials of which it is made.

Electricity is chemically generated by virtue of these materials. The electrodes are unlike and inherently differ from each other electromotively. The positive plate is dissolved in the battery fluid in which it is placed, and which is ordinarily dilute sulphuric acid. "The other electrode collects the electric energy from the liquid," and by this chemical union a current of electricity is developed. The two electrodes of a purely secondary battery are of the same kind, are not separated electromotively, and are insoluble in the battery fluid; but—

by subjecting these elements to the action of an electric current the two elements are differentiated and rendered electro-positive and electro-negative with respect to each other, depending entirely on which is connected with the positive pole of the charging-generator and which with the negative pole thereof.

The electrodes absorb either the hydrogen or oxygen which is set free from the liquid by the charging-current, which in popular though not in scientific language is called "absorbing electricity." Hence the significance of the name "storage-battery," which suggests the idea of continuance or duration of use.

The capacity of a primary battery to give a current is limited; it is soon exhausted,

while in the secondary battery the amount of current which may be obtained depends entirely upon the resistance of the conducting-wires discharging it,

and the battery may be charged and discharged for an indefinite number of times.

The commercial importance of a secondary battery is easily recognized from this statement of its points of unlikeness to a primary battery.

Prior to the invention of the Brush and the Faure batteries the only secondary battery in use was that of Planté, which was invented about the year 1860. The following statement of the chemical effect of the successive charges of the electric current upon the two plain plates of rolled or pressed lead of which this battery was composed is condensed from the more elaborate statement in the appellee's printed argument. The plates having been immersed in an electrolyte of dilute sulphuric acid and having been respectively connected to the two poles of any suitable source of electricity, by means of which a current was passed through the plates, oxygen was developed on one plate and hydrogen on the other. The hydrogen passed off in bubbles, leaving its lead plate practically unaffected; but the oxygen combined chemically with the lead of the other plate until it had formed a film or skin of peroxide of lead of a finely-divided granular character, like rust. The skin of peroxide, operating to protect the underlying lead, soon stopped the action of the oxygen on the lead. A small current on discharge was produced, but too small to be of value. Planté ascertained that there must be correspondingly-thick films on each plate. He therefore reversed the direction of his current, developed oxygen on the hydrogen plate and hydrogen on the oxygen plate, which took away the oxygen from the oxide film and left the surface granular or spongy metallic lead. These reversed charges were repeated for days and sometimes for weeks. The result was to disintegrate through the action of electricity the surface of the plain lead plates and to form spongy layers of lead thereon.

This granular layer is what is called the "active material" of the battery—that is, material which becomes practically and actively capable of receiving and discharging electricity by the passage of an electric current. The core of the original plate mechanically supported the active material and conducted the current through it. This operation of the breaking up of the surface of solid lead plates, so as to create porous coatings—in other words, of the "formation" of the active material of a battery by electrical disintegration—was the distinguishing feature of the Planté secondary battery. It occupied a long and therefore expensive amount of time, and was encumbered by other mechanical difficulties, one of which was the thinness of the layers and another the tendency of the layer to peel off from the plate. These minor defects were partially avoided by increasing the number and diminishing the surface of the plain plates.

The improvement described in No. 337,299 was confessedly an improvement upon the Planté battery and upon no other, and, in the language of the specification, consisted—

broadly, in a secondary-battery plate or element having active absorptive material primarily and mechanically applied thereto or combined therewith, as contradistinguished from a plate of element having the active material produced by the disintegrating action of electricity, as in the well-known Planté process.

The mechanical application of a layer of lead oxide to each one of two lead plates before the plates are placed in the battery fluid, these coatings being at once active material and ready for the charging-current when immersed in the battery fluid, was, in general terms, the distinguishing feature of the Brush invention.

The drawings of the patent show a plain plate and also corrugated, ribbed, slotted, honeycombed, and studded plates of various forms. The first conception of Brush was a plain plate of lead coated with lead oxide, which was retained in position by a sheet of paper or felt, which was secured to the plate by strips of wood. The more perfected method of construction consisted in changing the plate into a ribbed or corrugated or slotted plate and in filling the ribs and corrugations with the lead oxide, which was retained in position by being rammed or pressed into the open receptacles. The patentee deemed peroxide to be the best oxide of lead to be used; but as it is expensive directed that red lead might be used and suggested that protoxide of lead or litharge might also be used.

The specification says:

When a pair of plates such as I have described are associated together to form a secondary battery and immersed in dilute sulphuric acid and charged by the passage of an electric current in the usual manner, one of the plates has its coating peroxidised

if a lower oxide of lead was employed for the coating, and forms the oxygen element of the battery, while the other plate has its coating of oxide reduced to the metallic state and then absorbs hydrogen, thus constituting the hydrogen element of the battery.

The claims which are to be considered upon the

cement prior to immersion in the battery fluid; that he was not the inventor of an electrode otherwise coated, and that upon filing a disclaimer, thus limiting the first claim of the patent, the Accumulator

tery which corresponds with the general phraseology of the claims, provided their language should be so construed as to include the class of batteries which

divisions in a progressive order and system. Cases I and J were intended to describe and claim the important and generic departure from Planté. In process

if a lower oxide of lead was employed for the coating, and forms the oxygen element of the battery, while the other plate has its coating of oxide reduced to the metallic state and then absorbs hydrogen, thus constituting the hydrogen element of the battery.

The claims which are to be considered upon the present appeal are as follows:

1. A secondary-battery element or electrode consisting of a plate or suitable support primarily coated or combined with mechanically-applied active material or material adapted to become active, substantially as set forth.
2. In a secondary battery, an electrode consisting of a plate or support provided with a coating or surface layer of an absorptive substance, such as metallic oxide, applied thereto, substantially as set forth.
3. A plate or suitable support primarily coated or combined with mechanically-applied oxide of lead or equivalent lead compound, substantially as set forth.
6. A plate or suitable support provided with grooves, perforations, or receptacles and primarily coated, combined, or filled with mechanically-applied active material or material adapted to become active, substantially as set forth.
7. A plate or suitable support provided with grooves, perforations, or receptacles and primarily coated, combined, or filled with mechanically applied oxide of lead or equivalent lead compound, substantially as set forth.
12. The method of making plates or electrodes for secondary batteries, consisting in primarily combining active material with suitable plates or supports mechanically, in contradistinction to forming the active material by an electrical disintegration of the plate or support, substantially as set forth.

These claims describe and necessarily refer to a secondary battery as heretofore defined. A plate or support, which is insoluble in the liquid, mechanically supports the active material and electrically conducts the current of electricity through it, the specified active or absorptive material being oxide of lead, which is, primarily, mechanically applied to the plates and in such state of minute division as to be at once capable of being charged without previous process of "formation" by electrical disintegration.

The first question, that of novelty, brings directly into view the much-discussed subject of priority of invention as between Mr. Brush and Camille A. Faure, who, in France, of which country he was a citizen, invented, in 1878, the same improvement upon the Planté battery, by the use of lead oxide, which he applied to the plates in the form of a paste or cement. His French patent was dated October 20, 1880, and inasmuch as he was a citizen of France he is not permitted to claim his invention before that date as against a citizen of the United States, who, being also an original inventor, subsequently received a patent for his own invention in this country.

Faure's application for a patent in this country was filed April 20, 1881, and the patent thereon, No. 252,002, was issued on January 3, 1882.

Brush's application and the Faure patent were put into interference in March, 1882, in the Patent Office. The subject-matter involved in the interference was the fundamental principle of each invention—that of "a plate of a secondary battery, provided with a surface layer of an absorptive substance—such as metallic oxide—applied thereto." After a long delay in the Office priority was adjudged to Brush and his patent was issued in 1886.

The defendant in this suit, as owner of the Faure patent, then brought suit for its infringement against the Julien Electric Company.

In that suit the question of priority as between Brush and Faure was thoroughly tried. The circuit court decided that Faure was the inventor of a secondary-battery electrode coated with a mechanically-applied layer of lead or like insoluble substance placed upon the supporting-plate in the form of a paste, paint, or cement prior to immersion in the battery fluid; that he was not the inventor of an electrode otherwise coated, and that upon filing a disclaimer, thus limiting the first claim of the patent, the Accumulator Company was entitled to a decree. The complainant in that case, being the defendant here, filed such a disclaimer. Faure had filed a bill in equity in the United States circuit court in one of the districts of Ohio for the repeal of the Brush patent upon the ground that he (Faure) was the prior inventor of the broad invention described in the first claim of No. 252,002.

After the disclaimer this bill was dismissed upon Faure's motion.

Inasmuch as the defendant, being the owner of the Faure patent, has, as the result of a direct issue on the subject of priority, disclaimed the right of Faure in this country to the invention, except as limited, a renewal of a discussion of the question of priority is useless.

We come next to other devices which are alleged to anticipate, especially the first three claims of the patent, in the event of a liberal and broad construction of those claims. This question was most extensively discussed in the record of the first Julien case with respect to the Faure patent, and has been less elaborately considered by the experts in this case, and turns upon the proper construction of the term "secondary battery."

It is admitted that the definition of a secondary battery which has already been given is a correct one; but it is said that at the date of the Brush and Faure inventions the term "secondary battery" was often used by writers and scientists in a larger and looser sense, and included a battery in which electrodes of different materials are employed and capable of yielding a current without being previously charged from an external source; that such a battery, although also a primary battery, is a secondary battery when it is used as such, and it it so used when it has become exhausted and "is regenerated or brought back to its former condition by the direct action upon itself of an independent source of electric energy." Hence it is claimed that if Brush used the term in this larger sense, and if the language of his claims is liberally construed, then in some of the pre-existing descriptions of batteries there are described structures which possessed the elements of a plate primarily combined with mechanically-applied active material of some sort.

It is perhaps sufficient to say that such a construction of the Brush patent requires one to assume that Brush did not mean what the history of the invention and of the patent and its manifest intent make it apparent that he did mean. He is describing an improvement upon a Planté secondary battery and upon his method of producing active material by the disintegrating action of electricity upon two lead electrodes insoluble in the battery fluid. Brush's secondary battery is Planté's secondary battery improved, and his language is to be read in the light of that fact and the fact that he was speaking only of a current-storing device. It therefore serves no useful purpose to strive to show that the Brush patent was anticipated, because some pre-existing scientist had described a bat-

tery which corresponds with the general phraseology of the claims, provided their language should be so construed as to include the class of batteries which has been mentioned—a construction which is forbidden by the history of the invention and by a disinterested examination of the patent.

Passing by, therefore, batteries of the primary type, the structures of another character which are in this case deemed by the defendant to bear adversely upon the Brush claims to novelty are those described in the patents to George G. Percival, dated April 3, 1866, and to Georges L. Leclanché, dated April 23, 1867.

Percival's invention, he says in his patent, consisted—

in substituting layers of pulverized gas-carbon or some other conducting powder, (coarse lead powder,) separated by a layer or plate of some porous substance, for the metallic plates of which the electrodes of the pole are ordinarily formed.

The layers constitute the electrodes, are wet by a proper solution, and for convenience in establishing connection with these layers there is on each end of the box a screw-cup fastened to a slip of copper.

This invention, as described, resided solely in the substitution of separate layers of coarse powder for the two metallic plates of a Planté battery. The copper slips which when exposed to dilute sulphuric acid would be dissolved are not plates or supports, but are mere connecting devices. The layers are not coatings of plates, and probably are to be "formed" by the Planté process of electrical disintegration.

Leclanché's "polarization apparatus or electrical accumulator" is composed of two flasks, in which are placed two plates of graphite or two plates of unoxidizable metal. These two plates are buried in powdered graphite—a good conductor of electricity—and moistened with a liquid which is an equally good conductor, such as potash water. There is no similarity between Leclanché's plates and his powdered graphite, which is practically unoxidizable, though it may be minutely oxidized, and the lead plates and the absorptive oxide of lead of Brush or Faure. The Leclanché device was, furthermore, intended to be constantly associated with the primary battery when in use.

These structures do not affect Brush's patent, No. 337,299. Not only the invention as described in the first, second, and third claims belongs to him, but he was the first who rammed or pressed the dry powder, the form in which his absorptive substance was used, into grooves or receptacles in the plates, as described in the sixth and seventh claims.

There being no question as to infringement, the next point relates to the validity of the various claims, which are solely the subject of this appeal, in view of other patents to Mr. Brush of a prior or of the same date.

On July 9, 1881, Mr. Brush filed in the Patent Office eight divisional applications for patents, marked from A to H, inclusive, and on June 13, 1881, he filed two more applications, respectively marked Case I and Case J.

He drew the ten original specifications himself. The first eight were designed to subdivide his improvements upon the Planté battery into as many separate patents as practicable and to state the sub-divisions in a progressive order and system. Cases I and J were intended to describe and claim the important and generic departure from Planté. In process of time some of these applications were subdivided. Cases I and J came into interference with Faure's patent, and patents thereon were not issued until March 2, 1886. Meanwhile the other applications had become patents, and in some of the cases the specifications had been amended and rewritten with a view to cover as large a field as was attainable. The result of this subdivision of the main invention, the alteration of specifications, and the grant of divisional patents at different dates was to make an entangled mass of patents, which are to some extent intertwined with each other—a confusion which has caused perplexity to experts, counsel, and judges, and which has endangered the strength and the validity of the patents themselves.

As Cases I and J were originally presented to the Patent Office, distinction between them seemed to rest upon the difference between porous or spongy lead and oxide of lead as active materials. When the patents Nos. 337,298 and 337,299 were issued, the difference between them is that between "an absorptive substance or an absorptive substance adapted to be transformed into active material" on the one hand, and "active material or material adapted to become active" on the other. There is a theoretical and scientific difference between the articles which may be "absorptive" and "active."

Spongy lead has no oxygen, but will absorb oxygen, and thus become active. The oxides of lead have absorbed oxygen, and are therefore active; but—

it is admitted that the moment a battery constructed with plates having either coating is charged or discharged all distinction vanishes.

As the terms are used in the electrical art they are synonymous, and it is especially certain that as these two patents are phrased there is no substantial difference in the character of the inventions which are described and claimed. The attempt to draw a line of demarcation between them is ineffectual. The bill of complaint in this case originally included No. 337,298 but upon motion of the complainants was dismissed as to that patent. This was done after Judge Coxe's analysis and criticism of the two patents in the second Julien case.

The defendants insist that as No. 337,298 is the earlier patent and is for the same invention as No. 337,299 the latter patent is void. This conclusion would be true if the premise were true. The applications were filed on the same day, the patents were issued on the same day, and are owned by the same person. The testimony shows that it can never be ascertained which patent actually first received the final signature which rendered it a complete and legal deed. The mere fact that one had an earlier number signifies merely that the Patent Office followed Brush's alphabetical order, so that a judicial ascertainment of the fact of priority is impossible, and there are no known presumptions which can be resorted to upon which to base a finding. The owner of both patents has elected to regard No. 337,299 as the one upon which it will rest its title to a monopoly, and we are of opinion that it had such power of choice. What would be the condition of

separate owners of two separate and contemporaneous patents for the same invention is a question which has not yet arisen; but it is obviously improper that No. 337,298 should be left in a condition where it can be assigned or be made the subject of sale. It has been suggested that a disclaimer should be filed; but the sections of the statutes in regard to disclaimers were not intended for and do not seem applicable to a case of this sort, in which the patentee was the actual and first inventor of the whole of the described and patentable thing which is specified in the patent. It therefore seems proper that a final decree should be framed in accordance with the circumstances of the case, and should, in connection with the finding of the validity of the specified claims of No. 337,299, adjudge No. 337,298 to be inoperative and prohibit its assignment or sale.

The next defense is that the Brush patents Nos. 260,653 and 276,155 cover and include everything properly claimed and described in the first seven claims of No. 337,299.

No. 260,653 was a division of the application designated as "Case I," was applied for June 15, 1882, and was patented July 4, 1882. The remainder of that application was patented as No. 337,298. The single claim is as follows:

In a secondary battery, an element consisting of a structure of etagère-like form, containing, in the spaces between its shelves, lead in a finely-divided state, substantially as set forth.

This claim was inserted in Case I in September, 1881, at the suggestion of the Patent Office, was put in interference with an application of August de Meritens, which was decided in Brush's favor on December 5, 1881. On June 15, 1882, he filed an application which contained only the claim which was the subject of this interference. No. 260,653 states on its face that it is a division of Case I, in which other features of the invention were claimed, so that the public was not misled into the idea that unpatented portions of the invention had been abandoned. The specification, although the broad invention is described, and the claim show that the patent is for the etagère-like form or series of shelves, in which the finely-divided lead of Case I was held. If Letters Patent were to be treated by courts in the critical and hostile spirit which a plea in abatement formerly encountered, the contention of the defendant would have technical importance; but courts do not construe Letters Patent for the purpose of their destruction. The history of No. 260,653 entirely contradicts the theory of its breadth. The broad invention was the subject of Case I. Pending its consideration in the Patent Office, a subordinate claim became the subject of interference upon which a patent was issued, which proclaimed its divisional character. Subsequently the patents were issued upon the broad claims which had lingered in interference in the Patent Office, and it is now contended that the main invention had been, in fact, included in the claim for a series of shelves which held finely-divided lead.

Such a construction is not demanded by decided cases or by known principles of law, and a limited construction, in accordance with its apparent scope, will therefore be placed upon No. 260,653.

No. 276,155 was originally Case B, and is, apparently, for a corrugated plate, which has an active coating electrically produced thereon or which is provided with an active or absorbing coating. The same suggestions, which have already been made, apply to this patent, which was intended to include only a limited part of the improvements of Brush. Whether it anticipates the fourth and fifth claims of No. 337,299, which are not in issue in this litigation, is not important in this case.

The effect of Brush's Italian patent upon No. 337,299 remains to be considered.

Brush applied for an Italian patent on July 28, 1882. It was sealed August 8, 1882, was issued for the term of three years from September 30, 1882, and was not prolonged. It had expired when No. 337,299 was issued. It was in force when No. 266,090 was issued. Under section 4887 an existing foreign patent is not a bar to a subsequent United States patent for the same invention to the same inventor unless the invention has been in public use in this country for two years prior to the application. Existing foreign patents for a claimed invention limit the duration of subsequent United States patents for the same essential invention to the same inventor. The defendant claims that an expired foreign patent for a specified and described invention is so substantial a limitat on that it is, in fact, a bar to a subsequent United States patent for the same invention to the same inventor, and that an expired foreign patent for a subordinate feature of a described but unclaimed invention is a bar to a subsequent United States patent to the same inventor for the generic invention, because by not taking out his foreign patent for the generic invention and by permitting the short-term patent to expire he had abandoned the generic invention to the world.

The interesting questions of law which are involved in these two propositions will become practically important if the facts of the case require their decision. In our opinion the Italian patent is not the same in its essential particulars with any one of the inventions which are claimed in No. 337,299, and the "home patent would not be infringed by a structure made in accordance with the provisions of the foreign patent." The question in regard to No. 337,299 turns upon the character of the invention disclosed or claimed in Divisions C and D of the Italian patent, particularly in Division D.

The alleged destructive effect of this division was the question upon which the experts most strenuously contended, the question being whether Division D is the Brush battery of 1880, in which active material in the form of powder is primarily pressed into receptacles, whereby the process of electrical disintegration is superseded, or is for a different invention made in 1882 of a secondary plate, prepared by compressing partially-oxidized powdered lead into a core of roughened or perforated sheet-lead so as to create a solid plate, coherent and malleable, having minute seams of oxide of lead, upon which plate the active material is to be produced by electrical disintegration, the alleged improvement being to facilitate the Planté process. Another form of the described invention was to have the solidified mass of particles constitute the entire body of the battery-plate.

The witnesses differed both upon the intent and meaning of the language of this division, and also upon the result which would be attained by the process as described, the defendant insisting that whatever pressure was brought to bear upon the partially-oxidized particles of lead the result would not be a compact plate, but a "porous mass of mingled particles of lead and lead oxide," which would be substantially the same thing as the dry powder pressed into the receptacles of the plate of No. 337,299.

The language of the Italian patent, its history, and that of the United States patents Nos. 275,986, 266,762, 266,089, and 262,533, which were applied for May 27, 1882, being Cases K, M, N, and O, and which are for the general characteristics of Division D, as distinguished from Cases I or J, cause us to believe that there is a clearly-marked separation between Cases I or J and Division D, and satisfy us of the weakness of this part of the defense. The electrodes of the respective patents are different things and one does not interfere with the other.

The discussion of this question and of the reasons which lead to our conclusion could be greatly prolonged; but we prefer to summarize the important considerations, and as the principal reasons which led Judge Coxe to adopt the same view have also controlled us we restate them in substantially his language:

First. The language of the Italian patent is entirely different from that of the patents in suit. The drawings are different.

Second. The inventor's statement of his intent and purpose in taking the foreign patent, and his reasons for not attempting to patent the invention of No. 337,299 abroad is corroborated by his notes made at the time he was perfecting the inventions patented abroad. When these notes are placed side by side with corresponding portions of the Italian patent, it will be seen that they are substantially similar.

Third. The fact that a sharp distinction is drawn in No. 337,299 between the inventor's and Planté's method.

There is nothing of this in the Italian patent. On the other hand, the inventor clearly intimates that the plates of Division D are to be formed by the Planté process.

Fourth. The Italian patent is capable of a narrow construction, which differentiates it from the patents in suit.

Fifth. The fact that the element of the Italian patent is produced by heavy pressure, hydraulic or otherwise, whereby the particles of lead and lead oxide are compacted into a firmly-coherent mass having minute veins of oxide of lead everywhere ramifying through it, unlike the plate of the United States patents in suit.

Sixth. The "mass" described in the Italian patent is malleable and capable of being made into strips or wires and manipulated so as to form any style of element.

Neither the active material of No. 337,299 nor the completed plate of that patent is capable of such treatment.

Seventh. No. 337,299 is designed to cover Mr Brush's inventions made in the summer of 1879 and in the summer and autumn of 1880.

The Italian patent is designed to cover the inventions of 1882.

Division C was for the same invention which is described in United States Patent No. 261,512, originally Case F. It describes a method of providing a coating of porous metal upon the plate of a secondary battery, which metal is reduced from the oxide "through the agency of a hot atmosphere of any suitable reducing-gas and at a temperature insufficient to fuse the reduced metal." Plain or corrugated or perforated plates may be used. Knowledge in regard to this invention must be derived from the patent alone, for apparently it has never been subjected to a crucial test by practice. It is a particular process for coating lead plates, and the coating possesses properties differing from but intermediate between those of spongy lead and electrically-deposited coherent lead. The patent also says that these properties are similar to those of the electrically-deposited metal described in Division B, which are also described in United States Patent No. 274,082, originally known as Case D. The peculiarities of this coating can be easily understood, for it is deposited by electrical action in the manner customary in any process of electroplating and before the process of "forming" the plate. The coating, though porous in an electrical sense, is firmly attached to the plate and is firm in its structure. The active layer is formed by the Planté process. The coating of Division C is between this solid coating and spongy lead, and batteries made according to this process demand a "forming" process analogous to that required by the Planté battery, for the coating must require disintegration. We do not perceive that either the principal or a subordinate feature of No. 337,299 is contained in Division C, and it is quite manifest that any one who should make batteries in accordance with it would never be asked to defend himself against infringement of No. 337,299.

The question respecting No. 266,090 remains to be considered.

The first form of Brush's broad invention of the primary mechanical application of active material to the lead core or plate was a plain plate covered with lead oxide, which was retained in position by blotting-paper, which was secured to the plate by strings or strips of wood. This was obviously a clumsy and inefficient method of combining or coating the plate with active material, and the ribbed or corrugated plate was substituted, in which the oxide was easily retained in position. This more perfect form of the invention is described in the sixth and seventh claims of No. 337,299. The battery of these claims is the one distinctly known as the "storage-battery" of Brush, and is the one with which the battery of the defendants, which is filled with the paste or cement of Faure, corresponds.

But it is also obvious that the ribbed or grooved plate possessed advantages in a secondary battery in which the Planté process of electrical disintegration or some kindred process of "forming" was used. A larger surface of metal was exposed, the expansion or contraction of the active coating was confined to many small areas, and the peeling, which was unavoidable upon a large plain surface, was diminished if not prevented. Accordingly Mr. Brush applied in Case C, which subsequently became No. 266,090, for a patent upon a secondary-battery plate, ribbed, honeycombed, studded, "or equivalently prepared."

The descriptive part of this specification manifestly referred only to the method of producing active material by formation from the substance of the plate and ribs, whether by the Planté process of electrical disintegration or by the improved forming process of Division A. The scratched, perforated, thin platina foil-plates of Kirchoff were no anticipation of the plate as described in the specification. The distinction between Cases I or J and C were in the mind of the draftsman, who meant that Cases I and J should refer to the generic invention and that Case C should be limited to a narrow improvement upon Planté. But the desire for enlargement of territory grew, and by an amendment of June 20, 1882, wherein the specification was rewritten, the draftsman said:

This form of element is also well adapted to receive and retain any active coating which may be applied thereto.

This sentence the Patent Office promptly required should be omitted upon the ground that it was "new matter," and it was thereafter canceled.

The following sentence had, however, been permitted to remain:

U. S. Circuit Court—Southern District of New York.

NEW YORK BELTING AND PACKING COMPANY *v.* GUTTA-PERCHA AND RUBBER MANUFACTURING COMPANY.

Decided February 24, 1892.

SUIT QUIA TIMET—PRELIMINARY INJUNCTION.

Although the complainant has not shown the manufacture

THE
OFFICIAL GAZETTE

This sentence the Patent Office promptly required should be omitted upon the ground that it was "new matter," and it was thereafter canceled.

The following sentence had, however, been permitted to remain:

Figures 8 and 9 are * * * plates arranged ready for charging, after having been "formed" or in any manner provided with active coating.

The corresponding part of the sentence in the original application was—

after having been previously formed according to the process described in Case A or otherwise.

The new specification also made cast lead, instead of rolled or pressed lead, a patentable improvement; but Judge Coxe directed a disclaimer of the purely cast-lead claims upon the ground that they contained nothing patentable, and they were disclaimed accordingly.

Upon the strength of the clause—

in any manner provided with active coating—

which slipped by the scrutiny of the Patent Office, it is now insisted that the general language of the various claims covers a plate in a secondary battery provided with any kind of active coating, either electrically formed or mechanically applied. The literal language of the claims is broad enough for such a construction, but it would be obtained by an undue enlargement of the meaning of an amendment, the effect of which was not appreciated by the Examiner. Mr. Brush has obtained all to which he was entitled by construing his patents for improved form of plates in the order and system in which they were originally presented to the Patent Office. What the construction ought to be, had different inventors taken these progressive steps, it is not necessary to inquire; but when one inventor makes a generic invention, and also subordinate specific inventions, and presents the whole series in a set of contemporaneous applications, the patentee must not be enabled by an ingenious use of general terms to enlarge the boundaries of each invention, to extend each into the borders of another, and obtain a series of overlapping patents.

This construction is narrower than that permitted by Judge Coxe, who found an infringement by the defendants of two claims only. As construed by this court, there is no infringement of No. 266,090.

The decree of the circuit court will be modified in accordance with the directions herein contained, with costs of this court to the appellant. In other respects the decree will be affirmed.

U. S. Circuit Court—Southern District of New York.

NEW YORK BELTING AND PACKING COMPANY *v.* GUTTA-PERCHA AND RUBBER MANUFACTURING COMPANY.

Decided February 24, 1892.

SUIT QUIA TIMET—PRELIMINARY INJUNCTION.

Although the complainant has not shown the manufacture by the defendants of the infringing articles, preliminary injunction will be granted based upon proof that they have kept such articles in stock and offered them for sale. Although the defendants may have no present intention of continuing such sales, in view of the fact that there is a final decision sustaining the patent, the court will exercise its discretion to secure the continuance of that intention by the granting of a preliminary injunction.

MOTION for preliminary injunction.

STATEMENT OF THE CASE.

This was a motion for a preliminary injunction in a suit for infringement of Design Patent No. 11,208 for rubber mats, granted to plaintiff, as assignee of George Woffenden, May 27, 1879. The patent has been sustained by the decision of Judge Coxe in the New York Belting and Packing Company *v.* the New Jersey Car Spring and Rubber Company, (57 O. G., 1888; 48 Fed. Rep., 556.)

Mr. Benjamin F. Lee and *Mr. William H. Lee* for the complainant.

Mr. Livingston Gifford for the defendant.

LACOMBE, *J.:*

While I do not think the complainant has shown the manufacture by the defendants of infringing mats of the kind described in the decision of Judge Coxe, it is impossible not to escape the conviction that they have kept such mats in stock and offered them for sale. The catalogue which they circulated down to some time subsequent to June 1, 1891, offering mats of sizes not made by the complainant seems conclusive on this point. It may be that the defendants have no present intention of continuing such sales; but in view of the fact that there is a final decision sustaining the patent it does not seem an unfair exercise of the court's discretion to secure the continuance of that intention by the granting of a preliminary injunction at least until further order. The defendants cannot complain, in view of the fact that they have infringed or threatened infringement, although when they did so they expected that complainant's patent would turn out to be void. If defendants do not intend to sell such infringing mats, their business is in no way interfered with by an order prohibiting them from doing so. Nor does the suggestion that some improper use may be made of the order, by advertising it so as to interfere with or embarrass the defendants in the sale of other mats not now before the court, warrant a refusal of the relief asked for. It is to be assumed that complainants have applied in good faith and intend to avail of the preliminary injunction only to accomplish the purpose for which it is granted—viz., the securing of the rights they have shown on this motion. Should the contrary appear hereafter it will work such a change in the equities between the parties that the court will experience no difficulty in reconsidering this decision.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 61.—No. 7. TUESDAY, NOVEMBER 15, 1892. PRICE—$5 per year.

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The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Withdrawal of Cases from Issue.

Hereafter all amendments proposed to allowed applications which involve a withdrawal from issue, and all petitions and requests relating thereto, shall be filed with the docket clerk, Mr. J. M. Emory, and transmitted by him to the Primary Examiner for report. If the Examiner shall report favorably to the admission of such amendment, the matter will be laid before the Commissioner for immediate determination. If the Examiner shall report unfavorably, the case will be docketed and will be heard and decided by the Commissioner in regular course, unless good reasons shall appear for immediate action.

Women Inventors.

The Patent Office has published and has for sale a volume containing a list of women inventors to whom patents have been granted by the United States from 1790 to July 1, 1888. 44 pages. Paper covers, 50 cents.

World's Columbian Exposition.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 8, 1892.

To the Inventors and Manufacturers of the United States:

It is the intention of the Patent Office to make at the World's Columbian Exposition at Chicago in 1893 an exhibit which will show that great advance in the several arts which is due, in large measure, to the encouragement and support afforded by our patent system. This exhibit is to consist of models of patented inventions, which will be carefully selected, to show as far as is possible the inception of each art, the stages through which the art has advanced, and the final development reached at the present time. This display of typical inventions, embodied in concrete form and properly arranged, will, it is believed, constitute a grand historical exhibit of the progress of the useful arts and one which will be of great interest not only to inventors and manufacturers, but to the public generally.

The Office collection of models has been seriously impaired by fire, and is further incomplete by reason of the fact that models have not generally been required or received during the last ten years. The Office is not, therefore, in possession of the models of many valuable inventions which might properly be included in such an exhibit, and without which indeed, the exhibit would be incomplete. The limited appropriation for this exhibit will not permit the Office to make such models. An urgent appeal is therefore made to all inventors and manufacturers to come to the assistance of the Office in this matter, either by loans of models already built or by the construction of such models not in the possession of the Office as should properly be placed in such a collection. Of course, where models are loaned to the Office all proper credit will be given both in labels and catalogues to the parties by whom the loans are made, and such disposition will be made of the models after the close of the exhibit as the owners shall direct. Many inventors and manufacturers have already indicated a willingness to co-operate with the Office in this matter, and it is confidently expected that such a response will be made to this general appeal as will assure the unparalleled success of this attempt to graphically and concretely show the development of American invention.

W. E. SIMONDS,
Commissioner.

Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subclassified in the Scientific Library for convenient and ready reference.

Notice.

All solicitors, agents, or attorneys who, in circulars or advertisements or otherwise, refer to the Commissioner of Patents, or to any other official of the Patent Office, for evidence of their professional standing, do so without authority.

APPLICATIONS UNDER EXAMINATION.

PATENTS

Notice.

All solicitors, agents, or attorneys who, in circulars or advertisements or otherwise, refer to the Commissioner of Patents, or to any other official of the Patent Office, for evidence of their professional standing, do so without authority.

Names of Applicants.

When the full first name of the applicant does not appear either in his signature or in the preamble to the specification, the Examiner will, in his first official letter, require an amendment supplying the omission, and he will not pass the application to issue until the omission has been supplied, unless an affidavit shall have been filed setting forth that the full first name of the applicant is the one originally given by him.

Issue of November 15, 1892.

Patents	353—No. 486,067 to No. 486,419,	inclusive.
Designs	11—No. 21,987 to No. 21,997,	inclusive.
Trade-Marks	36—No. 21,971 to No. 22,006,	inclusive.
Labels	None.	
Reissues	3—No. 11,282 to No. 11,284,	inclusive.
Total issue	403	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States	Patents and Designs.	Trade-Marks and Labels.
Alabama	4	....	Nevada	1	....
Arizona Territory	....	....	New Hampshire	1	....
Arkansas	....	....	New Jersey	13	3
California	7	1	New Mexico Territ'y	1	....
Colorado	1	....	New York	64	11
Connecticut	4	....	North Carolina	5	....
Delaware	....	....	North Dakota	....	....
District of Columbia	1	1	Ohio	28	2
Florida	2	1	Oregon	....	....
Georgia	....	1	Pennsylvania	44	5
Idaho	....	....	Rhode Island	4	1
Illinois	29	....	South Carolina	....	....
Indian Territory	....	....	South Dakota	4	....
Indiana	5	1	Tennessee	3	....
Iowa	6	....	Texas	7	....
Kansas	3	....	Utah Territory	4	....
Kentucky	4	....	Vermont	....	....
Louisiana	2	....	Virginia	5	....
Maine	2	....	Washington	3	....
Maryland	5	....	West Virginia	1	....
Massachusetts	20	8	Wisconsin	5	1
Michigan	16	1	Wyoming	....	....
Minnesota	6	....	U. S. Army	....	....
Mississippi	....	....	U. S. Navy	....	....
Missouri	11	2	Total to citizens of the United States	326	34
Montana	....	....			
Nebraska	4	....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	....	....	Mexico	....	....
Austria-Hungary	....	....	Netherlands	....	....
Belgium	....	....	Newfoundland	....	....
Bermuda	....	....	New South Wales	....	....
Brazil	....	....	New Zealand	....	....
Canada	1	....	Norway	....	....
Chile, Republic of	....	....	Portugal	....	....
Cuba	....	....	Russia	....	....
Denmark	1	....	Scotland	1	....
Ecuador	....	....	South Australia	....	....
England	17	1	Spain	1	....
France	5	1	Sweden	1	....
Germany	8	....	Switzerland	1	....
Guatemala	1	....	Victoria	....	....
Ireland	1	....			
Italy	....	....	Total to citizens of foreign countries	36	2
Japan	....	....			

APPLICATIONS UNDER EXAMINATION.

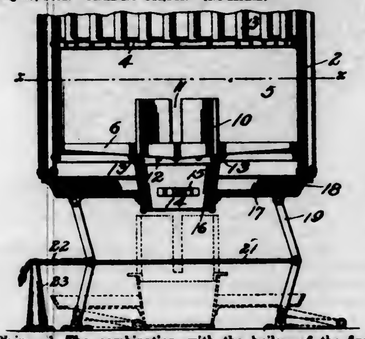
Condition at Close of Business November 8, 1892.

Division No.	Subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended	No. of applications awaiting action.
	Between one and two months in arrears.			
16	Telegraphy, Telephony, Electric Lighting and Signaling.	Sept. 8	Oct. 31	170
21	Gas, Painting, Leather, Tanning, Alcohol, Oils, Fats, and Glue, etc.	Oct. 4	Oct. 27	115
8	Furniture, Toilet, Umbrellas and Canes, etc.	Sept. 12	Oct. 27	251
25	Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, etc.	Sept. 9	Oct. 26	169
14	Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, etc.	Sept. 15	Oct. 22	133
12	Mechanical Engineering, Stores-Service, etc.	Sept. 13	Oct. 22	217
11	Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting.	Sept. 12	Oct. 20	224
10	Carriages and Wagons and Railway-Cars.	Sept. 12	Oct. 15	405
21	Textiles, etc.	Sept. 12	Oct. 8	167
30	Lamps, Gas-Fittings, Type-Writers, Matrix-Making Machines.	Sept. 9	Oct. 8	176
19	Stoves and Furnaces	Sept. 9	Oct. 5	349
18	Steam-Engineering, etc.	Sept. 8	Oct. 3	158
24	Sewing-Machines and Apparel	Sept. 13	Oct. 1	113
3	Metallurgy, Metal Founding, Forging, Rolling, Coating, Annealing and Tempering, etc.	Sept. 10	Oct. 1	207
17	Paper-Manufactures and Printing.	Sept. 9	Oct 1	204
20	Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc.	Sept. 8	Sept. 24	292
6	Chemistry, Medicines, Fertilisers, Preserving, Photography, Sugar and Salt, etc.	Sept. 8	Sept. 17	279
5	Fine Arts, Stationery, Book-Binding, Music, etc.	Sept. 13	Sept. 12	253
27	Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	Sept. 12	Sept. 12	272
1	Tillage and Fences	Sept. 8	Sept. 9	265
15	Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc.	Sept. 10	Sept. 8	293
	Between two and three months in arrears.			
2	Farm Stock, Products, etc	Aug. 9	Oct. 25	222
23	Advertising, Baggage, Packing and Storing Vessels, etc.	Aug. 18	Oct. 17	270
26	Instruments of Precision, Acoustics, Optics, etc.	Sept. 3	Oct. 12	232
22	Fire-Arms, Navigation, Signals, etc.	Aug. 30	Oct. 10	205
9	Hydraulics, Fire-Extinguishers, etc.	Aug. 29	Oct. 10	402
4	Civil Engineering, etc.	Sept. 3	Sept. 15	369
	Between three and four months in arrears.			
7	Harvesters, Games and Toys	Aug. 2	Oct. 13	527
28	Pneumatics, Refrigeration, Air and Gas Engines, etc.	July 21	Aug. 17	482
	Between four and five months in arrears.			
13	Metal-Working, Arms and Projectiles, etc.	July 1	Oct. 24	276
29	Wood-Working Machines, Carpentry, Coopering and Roofing, etc.	June 14	Oct. 18	396
	Between six and seven months in arrears.			
26	Electricity, Generation, Distribution, etc.	Apr. 30	Sept. 17	532
	Total number of applications awaiting action			8,625
	Under one month in arrears.			
Designs		Nov. 2	Nov. 3	47
Trade-Marks		Nov. 2	Nov. 3	45

PATENTS

GRANTED NOVEMBER 15, 1892.

486,067. AUXILIARY FIRE-POT. JOHN W. ALLAN, Minneapolis, Minn., assignor of one-half to Adolph G. Schiener, same place. Filed July 26, 1892. Serial No. 441,362. (No model.)



Claim.—1. The combination, with the boiler, of the fire-box thereof and a smaller fire-pot arranged to be inserted therein or withdrawn therefrom, substantially as described, and for the purpose set forth.

2. The combination of a boiler and the fire-box thereof with a smaller fire-pot arranged to be inserted therein and means for cutting off draft except through said small fire-pots, substantially as described.

3. The combination of a boiler and the fire-box thereof with the main grate of the fire-box, said grate provided with an opening or openings, and a small fire-pot having walls arranged to be raised through said opening or openings into a position within said fire-box, substantially as and for the purpose specified.

4. The combination, with the fire-box, of the main grate thereof, provided with a central opening or openings, a small fire-pot arranged to be raised through said opening or openings into said fire-box, the center of the main grate forming the grate for the small fire-pot, and means for cutting off all draft into said fire-box except through the small fire-pot, substantially as described, and for the purpose set forth.

5. The combination, with the fire-box and the main grate thereof, provided with a central opening or openings, of a removable small fire-pot arranged to be raised through said opening or openings into said fire-box, means for cutting off all draft through said fire-box except through said small fire-pot, and means for raising and for withdrawing said small fire-pot, substantially as described, and for the purpose set forth.

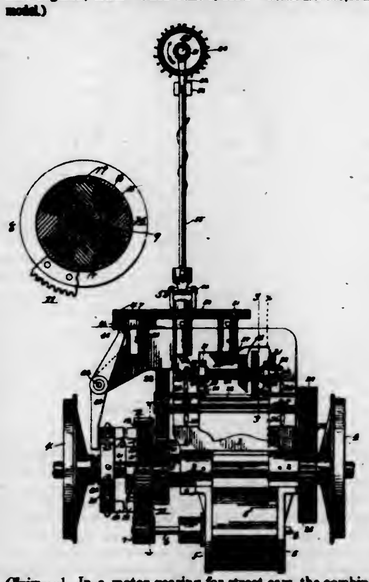
6. The combination, with the fire-box, of the main grate thereof, provided with a central opening or openings, the auxiliary fire-pot arranged to be raised through said opening or openings, a small ash-pan arranged beneath said fire-pot, and a pan adapted to close the entrance of air into the fire-box except through the auxiliary fire-pot, substantially as described.

7. The combination, with the fire-box, of the main grate thereof, provided with the opening 7, a small fire-pot arranged to be raised through said opening, the central part of the main grate forming the grate for the small fire-pot, an ash-box arranged beneath the small fire-pot, draft-openings therein, and a closing-pan 17, and means for raising and lowering the whole into the fire-box and beneath the boiler, substantially as described.

8. The combination, with the fire-box, of the main grate thereof, provided with an annular opening 7, the fire-pot 10, whose walls are arranged to pass through said opening, the small ash-box 14, arranged beneath and attached to said fire-pot, the flanged ring 18, arranged on the boiler, the closing-pan 17, and means for lifting and fixing said fire-pot, small ash-box, and pan, substantially as described.

9. The combination, with the fire-box, of the grate thereof, the small fire-pot arranged to be inserted through the center of said grate and provided with the flange 13, arranged to close the opening in the grate through which it is inserted, the ash-box 14, secured to the small fire-pot and provided with draft-openings, a ring 18, arranged on the boiler, the pan 17 to engage the same and supporting said part 14 and the fire-pot, and means for instantly withdrawing the small fire-pot and the pan or for lifting the same into position, substantially as described.

486,068. ELECTRIC LOCOMOTIVE. WILLIAM B. ALLINGTON, East Saginaw, Mich. Filed June 9, 1891. Serial No. 395,694. (No model.)



Claim.—1. In a motor-gearing for street-cars, the combination, with the wheel 39, having a grooved hub, of a lever 43, pivoted to the motor-truck, one end of said lever being forked and fitting into the groove 42 in said hub, the other end fitting into the groove of a grooved cam 46, and means for causing said cam to be revolved by the revolution of the regulating-handle, thereby throwing said wheel 39 in and out of gear with the speed-gear wheel, substantially as described.

2. In a motor-gearing for street-cars, the combination, with the supplemental shaft and gear-wheels mounted thereon, of a shaft 33, carrying grooved cams 31 and rotated by the revolution of the regulating-handle, the journal-boxes 35, supporting the supplemental shaft and movably secured to the frame of the motor-truck, said journal-boxes being provided with projecting pins carrying friction-rollers bearing against said cams 31 for moving the supplemental shaft back-

ward, and other projecting pins working in the grooves of said cam 31 for drawing the supplemental shaft forward, thereby throwing the supplemental shaft into and out of gear, substantially as described.

3. In a motor-gearing for street-cars, the combination, with a motor, a speed-gear wheel mounted loosely on the driving-axle, and a pinion keyed to the armature-shaft and intermeshing with said speed-gear wheel, of a clutch mounted on the driving-axle and adapted to

2. The combination, in a riveting-machine, of a table provided with a series of longitudinal grooves and transverse guides, which latter carry shiftable slides furnished with clamp-levers, a pair of vertically-acting anvil-bars being applied to said table and operated by treadle connections, for the purpose described.

3. The combination, in a riveting-machine, of a table provided with longitudinal grooves and fixed transverse guides which latter

486,074.

circle concentric with the spiral, the spiral and the circumscribing circle being subdivided, substantially as described.

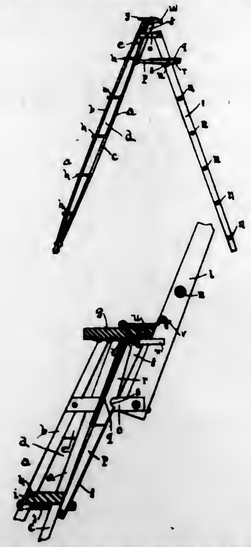
4. A calculating device consisting of a subdivided plane spiral having thereon natural numbers in positions relative to their logarithms, a subdivided circle concentric therewith, and a pair of radial arms, substantially as described.

ward, and other projecting pins working in the grooves of said cam 31 for drawing the supplemental shaft forward, thereby throwing the supplemental shaft into and out of gear, substantially as described.

3. In a motor-gearing for street-cars, the combination, with a motor, a speed-gear wheel mounted loosely on the driving-axle, and a pinion keyed to the armature-shaft and intermeshing with said speed-gear wheel, of a clutch mounted on the driving-axle and adapted to gear said speed-gear wheel directly to the said driving-axle, a supplemental shaft carrying a gear-wheel adapted to engage with a secondary gear-wheel driven from the speed-gear wheel, a pinion likewise keyed to said shaft and adapted to engage with a gear-wheel keyed to the driving-axle, and journal-boxes for said supplemental shaft, adapted to be slid backward and forward, thereby throwing said supplemental shaft and gearing into and out of gear with the speed-gear wheel and driving-axle, and means for throwing either said clutch or said supplemental shaft into and out of gear with the speed-gear wheel, substantially as described.

4. In a motor for street-car propulsion, the combination, with a compound-wound motor and speed and power gears for gearing said motor to the driving-axle, and a regulating-handle for throwing either the speed or power gear into gear at will, of a switch likewise operated by the motion of the regulating-handle and adapted to vary the speed and power of the motor by throwing in or out of circuit the series coil or coils of the motor, substantially as described.

486,069. EXTENSION STEP-LADDER. ELIAS C. ANDER, Bay City, Mich. Filed Feb. 16, 1892. Serial No. 421,660. (No model.)



Claim.—In a step-lader, the combination of the sides *a*, carrying the steps *h*, the upper step *g*, secured to the upper ends of the side pieces, the brackets *e*, secured to the side pieces and projecting rearwardly, the side bars *l*, pivoted to the rear ends of said brackets and carrying the rungs *n*, the arms *p*, pivoted by one end to the side pieces *a* and with the shelf *g* secured to their outer ends, and the piece *r*, secured to the shelf and provided with a notch *s* for engaging with one of the rungs *n*, for the purpose set forth, substantially as described.

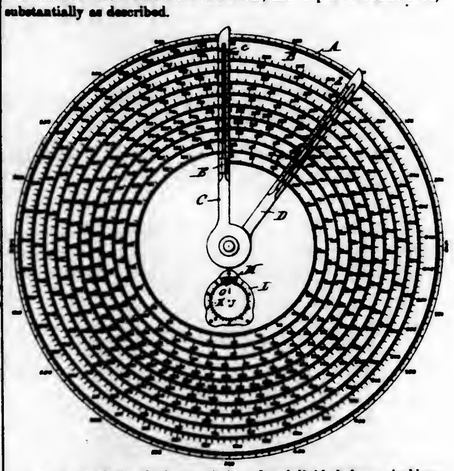
486,070. CALCULATING-INSTRUMENT. GEORGE M. ANDREWS, Boston, Mass. Filed Feb 20, 1892. Serial No. 422,254. (No model.)

Claim.—1. A calculating device consisting of a subdivided spiral having a regular radial increment and a pair of radial arms bearing graduations upon their edges, substantially as described.

2. A device for performing calculations, consisting of a subdivided plane spiral having a number of turns surrounded by a subdivided circle concentric therewith and a pair of radial arms, the number of turns of the spiral multiplied by the number of subdivisions of the circle being equal to the units of the logarithmic table, substantially as described.

3. A device for performing calculations, consisting of a plane spiral of ten turns, a pair of radial dividing-arms, and a circumscribing circle concentric with the spiral, the spiral and the circumscribing circle being subdivided, substantially as described.

4. A calculating device consisting of a subdivided plane spiral having thereon natural numbers in positions relative to their logarithms, a subdivided circle concentric therewith, and a pair of radial arms, substantially as described.



5. A calculating device consisting of a subdivided plane spiral having thereon natural numbers in distances from zero of the spiral proportional to their logarithms and a pair of radial arms bearing graduations upon their edges, substantially as described.

6. A calculating device consisting of a subdivided plane spiral having thereon natural numbers at distances from zero of the spiral proportional to their logarithms, a subdivided circle concentric therewith, and a pair of radial arms, substantially as described.

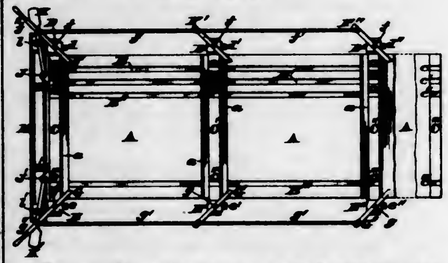
7. A calculating device consisting of a subdivided plane spiral having thereon natural numbers at distances from zero of the spiral proportional to their logarithms, a subdivided circle concentric therewith, and a pair of radial arms bearing graduations upon their edges, substantially as described.

8. A calculating device consisting of a subdivided plane spiral having thereon natural numbers at distances from zero of the spiral proportional to their logarithms, a subdivided circle concentric therewith, and a pair of graduated radial arms movable separately or in unison and carrying indicators, substantially as described.

9. A calculating device consisting of a subdivided spiral of ten turns, a circumscribing circle subdivided into a thousand parts, and a pair of radial arms movable separately or in unison, the spiral having thereon natural numbers at distances from zero proportional to their logarithms, substantially as described.

10. A calculating device consisting of a spiral bearing natural numbers logarithmically located, as herein set out, a subdivided circle surrounding it, and a pair of graduated radial arms carrying indicators, substantially as described.

486,071. RIVETING-MACHINE. JACOB RAHE, Cincinnati, Ohio, assignor to the Victor Safe and Lock Company, same place. Filed June 10, 1892. Serial No. 436,232. (No model.)



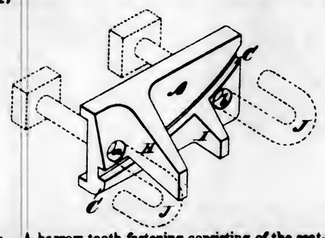
Claim.—1. The combination, in a riveting-machine, of a table provided with a series of grooves, a vertically-acting anvil-bar, and a set of guides, which latter carry shiftable slides furnished with clamp-levers, for the purpose described.

2. The combination, in a riveting-machine, of a table provided with a series of longitudinal grooves and transverse guides, which latter carry shiftable slides furnished with clamp-levers, a pair of vertically-acting anvil-bars being applied to said table and operated by treadle connections, for the purpose described.

3. The combination, in a riveting-machine, of a table provided with longitudinal grooves and fixed transverse guides, which latter carry shiftable slides furnished with clamp-levers, a pair of vertically-reciprocating and laterally-adjustable anvil-bars being applied to said table, for the purpose described.

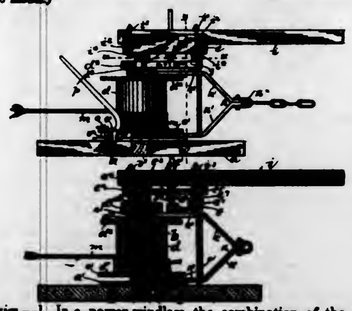
4. The combination, in a riveting-machine, of the table A, provided with longitudinal grooves B B' B'' B''', transverse guides C C' C'' C''', grooved at *c d c' c''*, shiftable slides D D' D'' E E' E'', applied to said guides, coupled clamp-levers F F' F'' G G' G'', pivoted to said slides, laterally-shiftable slides H H', fitted to the guide C, tubular housings I I', carried by these slides H H', anvil-bars J J', traversing said housings, springs *j' j'* for depressing said anvil-bars, and treadles K K' for elevating them, all as herein described.

486,072. FASTENING FOR HARROW-TEETH. ARTHUR O. BENNET, Lansing, Mich. Filed Dec. 1, 1890. Serial No. 373,173. (No model.)



Claim.—A harrow-tooth fastening consisting of the seat-iron A, having the curved channel C and the lugs H I on the opposite sides thereof, and the holes *a b*, also on opposite sides of said curved channel, and the clamping-hcoks J J', all combined and operating substantially as described, and for the purpose specified.

486,073. POWER-WINDLASS. HARWELL L. BENNETT and RUSSELL B ADAMS, Westerville, Ohio. Filed Apr. 2, 1892. Serial No. 427,453. (No model.)



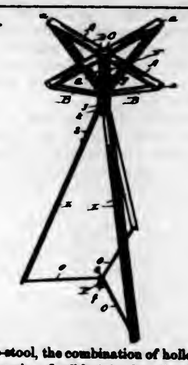
Claim.—1. In a power-windlass, the combination of the base-frame, shaft *b*, connected spool *d*, and ratchet d^5, loose on said shaft, beam-supporting plate *e* and beam therein, and pawl *f''*, pivotally connected with said beam-support and adapted to engage with said ratchet-wheel, substantially as specified.

2. In a power-windlass, the combination of the base-frame, a connected spool and ratchet loose thereon, a beam-supporting plate above the same, a beam therein, a pawl *f''*, formed of two jointed sections, one of said sections being pivotally supported from said beam-support and its remaining section adapted to engage with the ratchet-teeth, and the fulcrumed lever *f'* and its pivoted pressure-arm f^5, the latter adapted, as described, to be brought into contact with the hinge-point of said pawl-sections, substantially as specified.

486,074. COMBINED CANE AND STOOL. FREDERIC BENOIT, Chicago, Ill. Filed Oct. 2, 1890. Serial No. 366,818. (No model.)

Claim.—1. In a camp-stool, the combination of hollow folding legs, a foot-piece, and bracing-wires flexibly joined to the foot-piece and adapted to telescope into said legs, substantially as set forth.

486,074.



2. In a camp-stool, the combination of hollow folding legs, a foot-piece, and bracing-wires flexibly joined to the foot-piece and adapted to telescope into said legs, said wires being locked to the legs, so that they cannot be detached therefrom, substantially as set forth.

3. In a camp-stool, the combination, with the hollow folding legs, of the bracing-wires sliding in the legs and made in the form of loops and fastened to the legs by retaining-wires *o*, substantially as set forth.

4. In a camp-stool, the combination of hollow folding legs, bracing-wires adapted to telescope into and be concealed by said legs and also adapted to swing upon the legs when drawn out of the same, and a socket-piece to which the bracing-wires are hinged and which serves as a means of union for said wires, substantially as set forth.

5. The combination, with the folding legs and bracing-wires, of the socket or foot-piece to which the bracing-wires are pivoted and which is also adapted to receive the lower ends of the legs when folded, substantially as set forth.

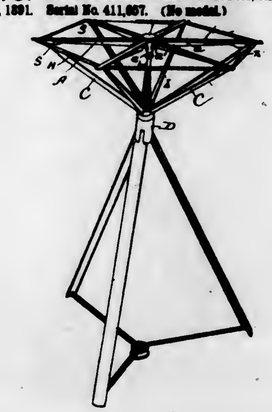
6. In a folding stool, a movable center piece resting upon the body and supported both vertically and laterally thereby while being used as a seat, hinged seat-arms radiating from said center piece, and braces for said arms hinged to the arms and to the body, in combination with the body, the latter being extended upwardly to support the seat, substantially as specified.

7. In a folding stool, a movable center piece, hinged seat-arms radiating from said center piece, and braces for said seat-arms, in combination with the body of the stool, adapted to support and sustain said center piece when the seat is unfolded and also to support said braces, and a releasable lock for securing the center piece to the body, substantially as set forth.

8. In a folding stool, a series of upwardly-folding seat-arms and braces, the former being united to a movable center piece, in combination with a central body or support upon which the center piece of the seat may rest and to which it may be locked against upward movement while the seat is being used, substantially as set forth.

9. In a folding stool, the combination of a series of hollow legs and a series of bracing-wires for limiting their spread, the latter being capable of telescoping into the legs and being also hinged to them, so that they may be brought into line therewith, substantially as set forth.

486,075. FOLDING STOOL. FREDERIC BENOIT, Chicago, Ill. Filed Nov. 12, 1891. Serial No. 411,657. (No model.)



Claim.—1. In a folding stool, the combination, with a central hub or support, of radiating seat-arms pivotally mounted thereon and having inclined or cam surfaces on their inner sides between their pivots and free ends, and a plunger or slide mounted on said support and adapted to engage said surfaces to assist in unfolding the stool, substantially as described.

Claim.—1. The herein-described improved hose-supporter, comprising the strap having the apertured plate at its upper end, means for suspending the same, and the clasp loosely connected to the lower end of said strap, composed of two parts or members, one of which

sulating medium which insulates the entire coil from all parts of the core and the other coils, one side of each coil lying beneath the opposite side of the next coil in sequence, substantially as described.

4. An armature having a slotted core of the cylindrical type pro-

486,080. HAND-STAMP. JOSEPH BOYT, Columbus, Ohio. Filed Sept. 22, 1890. Serial No. 365,793. (No model.)

Claim.—1. In a folding stool, the combination, with a central hub or support, of radiating seat-arms pivotally mounted thereon and having inclined or cam surfaces on their inner sides between their pivots and free ends, and a plunger or slide mounted on said support and adapted to engage said surfaces to assist in unfolding the stool, substantially as set forth.

2. In a folding stool, the combination, with the hinged seat-arms having inclined or cam surfaces between their hinges and free ends, of a plunger or slide adapted to engage said surfaces and provided at its upper end with an exterior handle or button by which it may be operated to assist in spreading the stool, substantially as set forth.

3. In a folding stool, the combination, with the seat-arms having inclined or cam surfaces, of a plunger or slide adapted to engage said surfaces to assist in spreading the stool, a spring operating on the plunger to hold it from engagement with said surfaces, and bars H, hinged to the outer ends of the arms and to each other between the arms, substantially as set forth.

4. The combination of the seat-arms, the hub to which the arms are joined, the movable button, and the hollow stem of the button with the body D and its locking-catch adapted to enter said stem, substantially as set forth.

5. The combination, in a folding stool, of a seat having a central hub B and a downwardly-movable hollow stem *c*, supported in said hub, with the body D and its locking-catch adapted to enter a slot in said stem and means for depressing the stem into engaging position with the body, substantially as set forth.

6. In a stool, the combination, with the seat-arms adapted to fold, of flat bars H, of spring metal, hinged to said arm, connected by pivots A, and adapted to fold outward and downward and to permit such folding by bending, substantially as set forth.

7. The combination, with the folding seat-arms, of flat elastic bars adapted to fold and hinged to said arms and to each other by pivots perpendicular to the supporting or seat surfaces of said arms and bars, substantially as set forth.

8. The combination, with the seat-arms and the connections at the outer ends thereof, of springs acting upon and assisting in folding said connections, substantially as set forth.

9. The combination, with the seat-arms and the connections H, of springs S, secured to the arms and bearing upon said connections, substantially as set forth.

10. The combination, in a folding stool, of a seat having folding arms, connecting-bars hinged thereto, and springs S, acting between said arms and bars to break the joints of the latter, substantially as set forth.

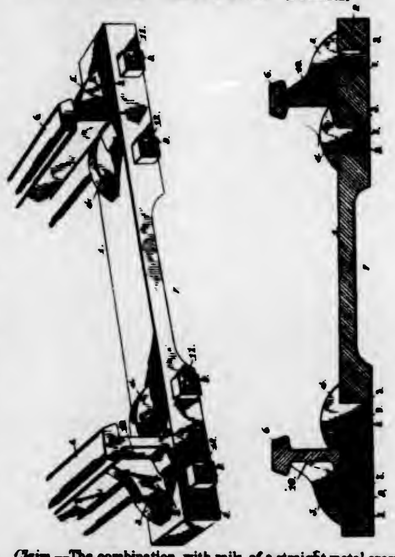
11. The combination, in a folding stool, of a seat embodying seat-arms, connections for the outer ends of said arms, and springs S, bearing upon said connections, with means for locking said seat to the body of the stool, said springs assisting in throwing off the seat when the lock is released, substantially as set forth.

486,076. HOSE-SUPPORTER. ELLEN A. BLACK, Beckwith, Cal. Filed July 8, 1892. Serial No. 439,422. (No model.)

Claim.—1. The herein-described improved hose-supporter, comprising the strap having the apertured plate at its upper end, means for suspending the same, and the clasp loosely connected to the lower end of said strap, composed of two parts or members, one of which has an outer double-hooked end of approximately-goose-neck shape, and the other is of U shape and designed to bind against said former part or member, substantially as set forth.

2. The herein-described improved hose-supporter, comprising the strap having the apertured plates loosely secured to its upper end, the hook having a coiled end and inserted through said apertured plate, the bail loosely connected to the lower end of said strap, the clasp pivotally connected to said bail and composed of two parts or members, one of which has an outer double-hooked end of approximately-goose-neck shape, and the other is of U shape and designed to bind against said former part or member, substantially as set forth.

486,077. METALLIC CROSS-TIE. JEROME M. BORDNER, Palmyra, Pa. Filed Jan. 9, 1892. Serial No. 417,543. (No model.)



Claim.—The combination, with rails, of a straight metal cross-tie having a straight flat upper face and having its lower face concavely recessed intermediate of its ends to form a central arch and solid ends, the inner clips 4, having reduced shanks fitting in vertical mortises of the cross-tie and forming inner and outer shoulders resting upon the upper face of the cross-tie at opposite sides of the shank, the inner shoulder being extended and curved and conforming to the configuration of and engaging the bottom flange of a rail, the outer clips 5, having reduced shanks arranged in vertical mortises of the cross-tie and forming inner and outer shoulders resting upon the upper face of the cross-tie at opposite sides of the shank, the inner shoulder being curved and engaging the bottom flange of a rail and being extended vertically on the web thereof and fitting under the head of the rail, and fastening devices securing the shank to the cross-tie and passing through the latter, substantially as described.

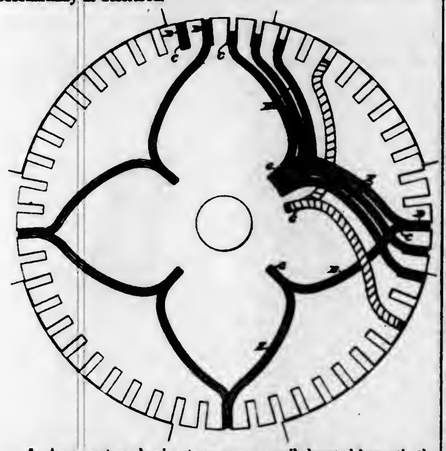
486,078. ARMATURE FOR DYNAMO-ELECTRIC MACHINES AND ELECTRIC MOTORS. CHARLES S. BRADLEY, New York, N. Y. Filed Nov. 17, 1890. Serial No. 371,736. (No model.)

Claim.—1. A drum-armature having a core provided with slots or grooves in its face, in combination with coils fitting therein, the individual strands or windings of each coil preserving substantial parallelism throughout and all held in place by the slots and their own mutual binding action, substantially as described.

2. A drum-armature having a slotted core and a series of coils fitted in the slots, the individual strands or windings of the coils having substantial parallelism throughout, one side of each coil lying beneath the opposite side of the next coil in sequence, so that all are bound together, substantially as described.

3. A drum-armature having a slotted core and a series of coils the individual strands or windings of which preserve substantial parallelism throughout, each coil being wrapped or surrounded with an insulating medium which insulates the entire coil from all parts of the core and the other coils, one side of each coil lying beneath the opposite side of the next coil in sequence, substantially as described.

4. An armature having a slotted core of the cylindrical type provided with two or more coils the individual strands or windings of which preserve substantial parallelism in each coil throughout the length thereof, said coils being located in the aforesaid slots and held in place by the walls thereof and their own mutual binding action, substantially as described.



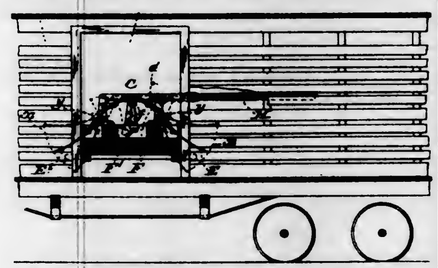
5. An armature having two or more coils located beneath the face of the core, one side of each coil overlapping one side of the next coil in sequence, whereby they are all held in place, substantially as described.

6. In an armature, two or more coils located beneath the face of the core and overlapping each other in sequence, whereby they are made detachable, substantially as described.

7. An armature having two or more coils buried in the face of the core, each coil overlapping another and all held together by the core and their own mutual binding action, substantially as described.

8. A slotted armature having two or more detachable coils sprung in place in the slots and overlapping each other, whereby they are securely held, substantially as described.

486,079. CAR-LOADER. HENRY C. W. BOOSTERSCHEIBEN, Staunton, Ill. Filed July 11, 1892. Serial No. 439,576. (No model.)



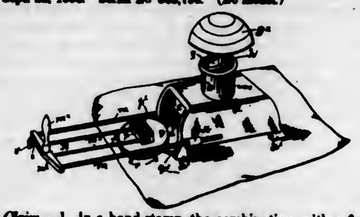
Claim.—1. A loading apparatus having a vibrating shovel for receiving and delivering the material to be loaded, said apparatus being mounted on a slide, substantially as described.

2. A car-loader mounted on an adjustable slide, said loader having a shovel vibrating in a vertical plane to lift and throw the material being loaded, substantially as described.

3. A car-loader having two vibrating shovels, said shovels being mounted on a slide and arranged back to back and vibrating in a vertical plane and in opposite directions, respectively, substantially as described.

4. The combination, in a car-loader, of a vibrating shovel and a movable incline, said incline lapping upon said shovel, and said shovel and incline both being movable in a vertical plane, substantially as described.

486,080. HAND-STAMP. JOSEPH BOFF, Columbus, Ohio. Filed Sept. 22, 1892. Serial No. 446,794. (No model.)

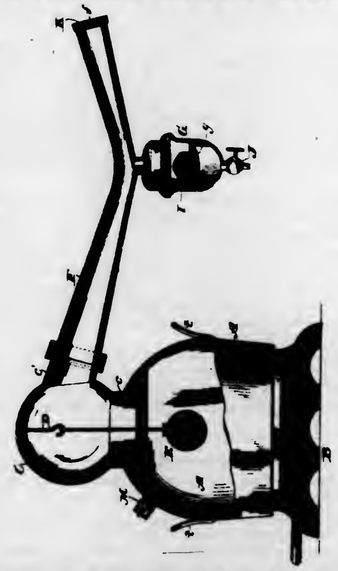


Claim.—1. In a hand-stamp, the combination, with a frame one end of which is provided with guides, of a vertically-movable chase mounted in the frame, an inking-plate at one end of the frame, two longitudinally-movable parallel rods mounted in the guides of the frame, and an ink-roller secured to the rods and movable from the plate to the chase, substantially as set forth.

2. In a hand-stamp, the combination, with a frame provided with guides and a vertically-movable chase, of a rotatable inking-plate secured at one end of the frame provided with projections, a longitudinally-movable frame mounted in the guides of the main frame, an inking-roller mounted in the movable frame, said roller being adapted to be reciprocated from the plate to the chase, and a detent pivotally secured to the outer end of the movable frame, adapted to engage with the projections of the inking-plate and rotate it, substantially as set forth.

3. In a hand-stamp, the combination, with a stamp-frame provided with guides and a vertically-movable chase, of a substantially-V-shaped supporting frame or rod projecting outwardly from the end of the stamp-frame, an inking-plate provided with a central downwardly-projecting stem pivotally secured in the angle of the supporting-frame, a longitudinally-movable frame mounted in the guides of the stamping-frame, and an inking-roller mounted in the movable frame, said roller being adapted to be reciprocated from the plate to the chase, and said movable frame being provided with means for engaging with and operating the inking-plate, substantially as set forth.

486,081. COMPLEXION-STRAINER. MABEL CASSIDY, New York, N. Y. Filed Mar. 12, 1892. Serial No. 424,703. (No model.)



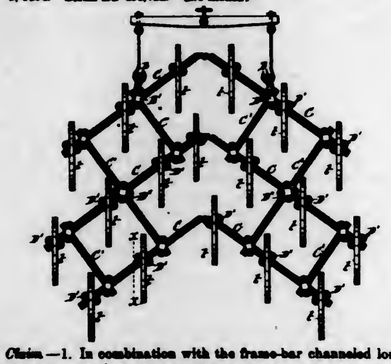
Claim.—1. The combination, with the boiler having a steam-dome, of the suspended receptacle within the boiler, the tube leading from said dome and an apertured cork to the end of said tube, and a vessel connected to the under side of said tube and provided with a cock.

2. The combination, with the boiler having a steam-dome, of the suspended receptacle within the boiler, the tube leading from said

dome and an apertured cork to the end of said tube, and a vessel connected to the under side of said tube and provided with a cock, and a reticulated shelf in said vessel, substantially as shown and described.

3. The combination, with the boiler having a steam-dome, of the suspended receptacle within the boiler, the tube leading from said dome and an apertured cork to the end of said tube, and a vessel connected to the under side of said tube and provided with a cock, and a reticulated shelf in said vessel, the said tube inclining from both ends toward its center, at which point said vessel is detachably connected.

486,082. HARROW. ORLANDO J. OHLER, Utica, N. Y. Filed Aug. 6, 1891. Serial No. 401,722. (No model.)



Claim.—1. In combination with the frame-bar channeled longitudinally in its under side, the plate *d'*, seated in the channel of said bar and confined in alignment thereby and provided with recessed seats in its opposite edges, the tooth lying in said seats, the shoe *e*, lying across the under side of the tooth and forming with the tongue *d'*, extending lengthwise of the tooth to brace the same, and the clip lying in the shoe and embracing the bar, substantially as described and shown.

2. In a harrow-frame, the combination, with the draft-bar, of the cross-bar boxed thereon and movable lengthwise thereof, a plate upon the cross-bar at the point of crossing and provided with bolt-holes at the four corners of the crossing of the bars, and two clips crossing each other on the under side of the draft-bar and having their attaching-shanks outside of the bars in the four corners of the crossing thereof and passing through the bolt-holes of the aforesaid plate, and nuts on the ends of said clip-shanks, as set forth.

3. The combination of the harrow-frame composed of draft-bars and cross-bars boxed on said draft-bars and movable lengthwise thereof, of a draft-iron having its attaching-shank extending across the said bars at their point of crossing, and a clip embracing said bars and secured to the draft-iron shank, substantially as described and shown.

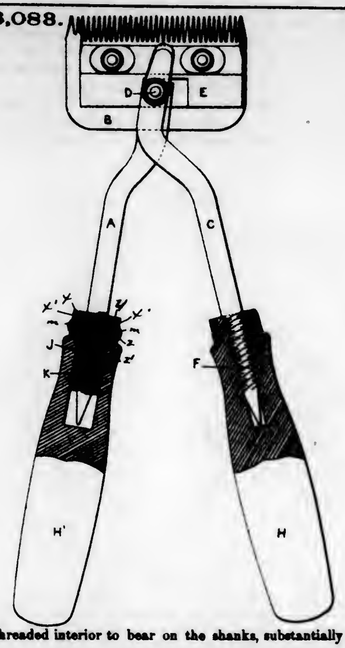
4. The combination of the draft-bar formed concavo-convex in cross-section and disposed with its concave side downward, the plate *d'*, formed likewise concavo-convex and seated with its convex side in the concave side of the draft-bar and projecting beneath the edges thereof, the spring-tooth seated on the bottom edges of the plate *d'*, a clip securing the tooth and plate to the draft-bar, and the supporting-arm *e*, formed integral with the plate *d'*, and having its free end extending under the front end of the draft-bar and bearing thereon, as and for the purpose set forth.

5. In combination with the concavo-convex draft-bar, the supporting-arm *e*, secured at its rear end to the under side of the draft-bar and formed likewise concavo-convex in cross-section, and with the longitudinal strengthening-rib *e'* in its concave side, as set forth and shown.

486,083. HANDLE FOR HAIR-CLIPPERS. WILLIAM CLARK, London, England. Filed Jan. 14, 1892. Serial No. 418,060. (No model.) Patented in England Apr. 9, 1891, No. 6,022.

Claim.—In combination, the handle having a reduced bored upper end, the socket fitting in said bore and having an interior screw-thread, an integral concentric flange or rim forming an annular space to receive the reduced end of the handle, both the said socket and rim having a lateral perforation which are in alignment with each other, the perforation in the socket opening into the screw-threaded interior thereof, and the means for holding the socket to the reduced end of the handle and for directly engaging and locking the shank in place, consisting of the single screw passing through the perforation of the flange, the perforation of the socket, and the intermediate reduced part of the handle, the inner end of the said screw projecting into the screw-threaded interior to bear on the shanks, substantially as described.

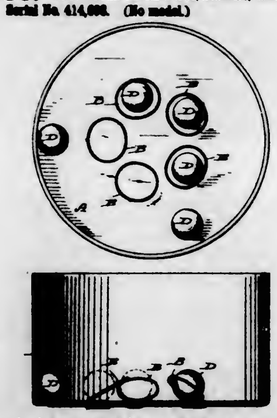
486,088.



486,084. PROCESS OF SETTING ROUGH DIAMONDS, &c., IN HOLDERS OR IMPLEMENTS OF METAL. MAX CLADNITZER, Breslau, Germany. Filed Apr. 6, 1892. Serial No. 428,260. (No model.)

Claim.—The hereinbefore-described process of setting diamonds, consisting in first forming a recess or cavity in the implement of less size than the diamond, heating the holder to expand the recess or cavity, forcing the diamond into the recess by pressure, and applying pressure to the walls of the implement to compress the walls of the cavity about the diamond, substantially as described.

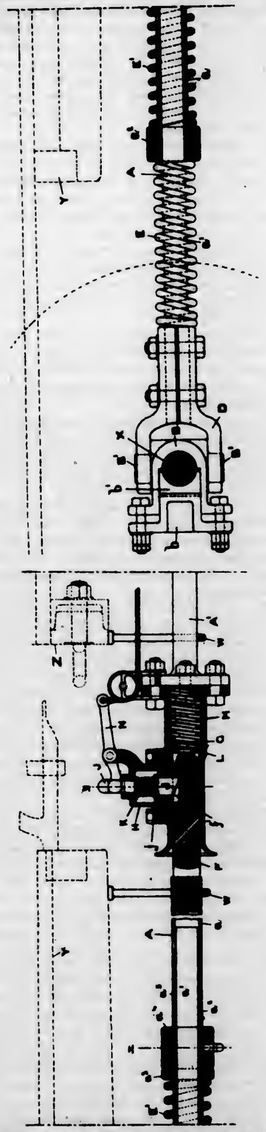
486,085. TOY. JOHN M. CLIFFORD, Madison, Wis. Filed Dec. 11, 1891. Serial No. 414,698. (No model.)



Claim.—1. A toy comprising a suitable base, a series of rings arbitrarily disposed thereon to stand at an angle to the same, and a series of rolling objects, these objects being arrested and lodged in the rings by a manipulation of said base, substantially as set forth.

2. A toy comprising a suitable receptacle, a series of rings arranged in a circle upon the bottom of the receptacle to stand at an angle thereto and converge toward a common center, and a series of rolling objects corresponding in number to that of the rings, these objects being arrested and lodged in said rings by a manipulation of said receptacle, substantially as set forth.

486,086. CAR-COUPLING. WILLIAM H. OSLER, London, England, assignor of one-half to the Hon. Kerr & Company, Limited, same place. Filed Apr. 7, 1892. Serial No. 428,188. (No model.) Patented in England Feb. 10, 1892, No. 2,692.



Claim.—1. A car-coupling consisting of two rods or bars, one of which is made elastic in its length, each connected to one of the axles of each car by a universal joint, the one rod or bar carrying an engaging-tongue on its free end and the other rod or bar carrying a socket on its free end, adapted to receive the engaging-tongue on the end of the other rod or bar, and a spring-finger mounted on the socket and adapted to engage with the engaging-tongue, as and for the purpose set forth.

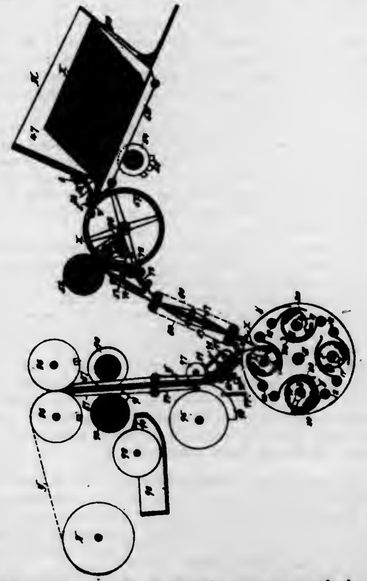
2. In a car-coupling, the combination of the rod or bar universally connected to the axle of a tram-car and made telescopic in its length, the said parts being controlled by springs, so that the said rod or bar is elastic in its length, the engaging-tongue carried on the free end of the said rod or bar, the rod or bar universally connected to the axle of the motor or dummy car, the socket on the free end of the said rod or bar, adapted to receive the engaging-tongue on the other rod or bar, the spring-finger carried by the socket and adapted to engage with a notch in the engaging-tongue, and the lever adapted to operate the spring-finger, to release the connecting-tongue, as and for the purpose set forth.

3. In a car-coupling, the combination of the rod or bar elastic in its length, universally connected to the axle of the tram-car and carrying at its free end an engaging-tongue, the rod or bar universally connected to the axle of the motor or dummy car and carrying a socket at its free end, adapted to receive the engaging-tongue on the other rod or bar, the spring-finger adapted to lock the two rods or bars together, and the radius-bars adapted to support the ends of the rods or bars when they are uncoupled, as set forth.

486,087. LOOM-SHUTTLE. THOMAS CROSS, Taunton, Mass. Filed Apr. 27, 1892. Serial No. 430,815. (No model.)

Claim.—A loom-shuttle having a squared recess in one end, a side eye leading from said recess, and a threading-slot communicating with said recess from the body of the shuttle, a rectangular plate seated in said recess and provided with a back-turned guide and retaining tongue arranged alongside of said eye at one side of the slot, and a slotted tension-screw working in said slot, substantially as set forth.

486,088. NEWSPAPER-WRAPPING MACHINE. LOUDEN C. ONEWALL, Brooklyn, assignor to Robert Hoe, Stephen D. Tucker, Theodore H. Mead, and Charles W. Carpenter, New York, N. Y. Filed Aug. 6, 1891. Serial No. 401,942. (No model.)



Claim.—1. In a machine for wrapping newspapers and other publications, the combination of a core and means for winding the paper and wrapper upon the core and securing the wrapper about the core, substantially as described.

2. In a machine for wrapping newspapers and other publications, the combination of a core, means for winding the paper and wrapper

upon the core and securing the wrapper about the core, and means for removing the wrapped paper from the core, substantially as described.

3. In a machine for wrapping newspapers and other publications, the combination of a core, means for winding the paper and wrapper upon the core and securing the wrapper about the core, a drying-chamber in which the paper is held in form until the paste is set, and means for transferring the wrapped paper from the core to the drying-chamber, substantially as described.

4. In a machine for wrapping newspapers and other publications, the combination of a core, means for winding the paper and wrapper upon the core and securing the wrapper about the core, a drying-chamber in which the paper is held in form until the paste is set, means for transferring the wrapped paper from the core to the drying-chamber, and a flattening mechanism to which the papers are delivered from the drying-chamber, substantially as described.

5. In a machine for wrapping newspapers and other publications, the combination of a core, means for winding the paper and wrapper upon the core and securing the wrapper about the core, and means for removing the wrapped paper from the core by moving one of them longitudinally, substantially as described.

6. In a machine for wrapping newspapers and other publications, the combination of a core, means for winding the paper and wrapper upon the core and securing the wrapper about the core, and an ejector moving longitudinally of the core to remove the wrapped paper from the core, substantially as described.

7. In a machine for wrapping newspapers and other publications, the combination of a core, a wiper outside the core pressing against the paper, and means for rotating one of the members to wind the paper and wrapper upon the core, substantially as described.

8. In a machine for wrapping newspapers and other publications, the combination of a rotating core by which the paper and wrapper are held at one end and a wiper outside the core pressing against the paper during the rotation of the core, substantially as described.

9. In a machine for wrapping newspapers and other publications, the combination of a rotating core by which the paper and wrapper are held at one end and a sprig-wiper outside the core pressing against the paper during the rotation of the core, substantially as described.

10. In a machine for wrapping newspapers and other publications, the combination of a rotating core by which the paper and wrapper are held at one end, a wiper outside the core pressing against the paper during the rotation of the core, and means for removing the wrapped paper from the core by moving one of them longitudinally, substantially as described.

11. In a machine for wrapping newspapers and other publications, the combination of a rotating core by which the paper and wrapper are held at one end, a wiper outside the core pressing against the paper during the rotation of the core, and an ejector moving longitudinally of the core to remove the wrapper paper from the core, substantially as described.

12. In a machine for wrapping newspapers and other publications, the combination of a core provided with grippers, a wiper outside the core pressing against the paper, means for rotating one of the members to wind the paper and wrapper upon the core, means for operating the grippers to seize the paper to be wrapped and release the wrapped paper for its delivery, and means for removing the wrapped paper from the core.

13. In a machine for wrapping newspapers and other publications, the combination of a rotating core provided with grippers, a wiper outside the core pressing against the paper during the rotation of the core, means for operating the grippers to seize the paper to be wrapped and release the wrapped paper for its delivery, and means for removing the wrapped paper from the core, substantially as described.

14. In a machine for wrapping newspapers and other publications, the combination of a rotating core provided with grippers, a wiper outside the core pressing against the paper during the rotation of the core, an ejector moving longitudinally of the core to deliver the wrapped paper, and means for operating the grippers to seize the paper as the ejector is withdrawn and release the paper for its removal by the ejector, substantially as described.

15. In a machine for wrapping newspapers and other publications, the combination of a collapsible core, means for winding the paper and wrapper upon the core and securing the wrapper about the core, means for removing the wrapped paper from the core, and means for expanding and contracting the core as the paper is received and delivered, substantially as described.

16. In a machine for wrapping newspapers and other publications, the combination of a collapsible core, a wiper outside the core pressing against the paper, means for rotating one of the members to wind the paper and wrapper upon the core, means for removing the wrapped paper from the core, and means for expanding and contracting the core as the paper is received and delivered, substantially as described.

17. In a machine for wrapping newspapers and other publications, the combination of a collapsible core, a wiper outside the core pressing against the paper, means for rotating one of the members to wind the paper and wrapper upon the core, an ejector moving longitudinally of the core to deliver the wrapped paper, and means whereby the core is expanded and contracted as the paper is received and delivered, substantially as described.

18. In a machine for wrapping newspapers and other publications, the combination of a rotating collapsible core, a wiper outside of the core pressing against the paper during the rotation of the core, an ejector moving longitudinally of the core to deliver the wrapped paper, and means whereby the core is expanded and contracted as the paper is received and delivered, substantially as described.

19. In a machine for wrapping newspapers and other publications, the combination of a rotating collapsible core provided with grippers for seizing the paper, a wiper outside the core pressing against the paper during the rotation of the core, an ejector moving longitudinally of the core to deliver the wrapped paper, and means whereby the grippers are operated to seize the paper and the core is expanded as the ejector is withdrawn and the grippers released and core contracted to release the wrapped paper for its removal by the ejector, substantially as described.

20. In a machine for wrapping newspapers and other publications, the combination of a series of cores, a rotating carrier by which the cores are carried, means for winding the papers and wrappers upon the cores and securing the wrappers about the cores, and means for moving the wrapped papers longitudinally for delivering them from the cores, substantially as described.

21. In a machine for wrapping newspapers and other publications, the combination of a series of rotating cores, a corresponding series of wipers outside the cores, a rotating carrier carrying the cores and wipers, and means for removing the wrapped papers from the cores, substantially as described.

22. In a machine for wrapping newspapers and other publications, the combination of a series of rotating cores, a wiper outside each core, a series of ejectors moving longitudinally of the cores, and a rotating carrier by which the cores, wipers, and ejectors are carried, substantially as described.

23. The combination, with paper and wrapper feeding mechanisms and pasting devices for the wrapper, of a core to which the papers and wrappers are delivered by the feeding mechanisms and means for winding the paper and wrapper upon the core and securing the pasted wrapper, substantially as described.

24. The combination, with paper and wrapper feeding mechanisms and pasting devices for the wrapper, of a core to which the papers and wrappers are delivered by the feeding mechanisms, means for winding the paper and wrapper upon the core and securing the pasted wrapper, and means for removing the wrapped paper from the core, substantially as described.

25. The combination, with paper and wrapper feeding mechanisms and pasting devices for the wrapper, of a core to which the papers and wrappers are delivered by the feeding mechanisms, means for winding the paper and wrapper upon the core and securing the pasted wrapper about the core, and means for removing the wrapped paper from the core by moving one of them longitudinally.

26. The combination, with paper and wrapper feeding mechanisms and pasting devices for the wrapper, of a core to which the papers and wrappers are delivered by the feeding mechanisms, a wiper outside the core pressing against the paper, and means for rotating one of the members to wind the papers and wrappers upon the core, substantially as described.

27. The combination, with paper and wrapper feeding mechanisms and pasting devices for the wrapper, of a core provided with grippers to which the papers and wrappers are delivered, a wiper outside the core pressing against the paper, means for rotating one of these members to wind the papers and wrappers upon the core, means for operating the grippers to seize the paper to be wrapped and release the wrapped paper for its delivery, and means for removing the wrapped paper from the core, substantially as described.

28. The combination, with paper and wrapper feeding mechanisms and pasting devices for the wrapper, of a collapsible core to which the papers and wrappers are delivered by the feeding mechanisms, means for winding the papers and wrappers upon the core and securing the pasted wrappers, means for removing the wrapped papers from the core, and means for expanding and contracting the core as the papers are received and delivered, substantially as described.

29. The combination, with paper and wrapper feeding mechanisms, of a series of cores to which in turn the papers and wrappers are delivered by the feeding mechanisms, a rotating carrier by which the cores are carried, means for winding the papers and wrappers upon the cores and securing the wrapper about the cores, and means for moving the wrapped papers longitudinally to remove the papers from the cores, substantially as described.

30. The combination, with paper and wrapper feeding mechanisms, of a series of cores to which in turn the papers and wrappers are delivered by the feeding mechanisms, a rotating carrier by which the cores are carried, means for winding the papers and wrappers upon the cores and securing the wrappers about the cores, a series of ejectors moving longitudinally of the cores, and a rotating carrier by which the cores and ejectors are carried, substantially as described.

31. The combination, with paper and wrapper feeding mechanisms, of a series of cores to which in turn the papers and wrappers are delivered by the feeding mechanisms, a rotating carrier by which the cores are carried, means for winding the papers and wrappers upon the cores and securing the wrappers about the cores, a series of ejectors moving longitudinally of the cores, a series of drying-chambers to which the wrapped papers are delivered by the ejectors, and a rotating carrier by which the cores and ejectors are carried, substantially as described.

32. The combination, with paper and wrapper feeding mechanisms, of a series of cores to which in turn the papers and wrappers are delivered by the feeding mechanisms, a rotating carrier by which the cores are carried, means for winding the papers and wrappers upon the cores and securing the wrappers about the cores, a series of ejectors moving longitudinally of the cores, a series of drying-chambers to which the wrapped papers are delivered by the ejectors, a rotating carrier by which the cores and ejectors are carried, and a flattening mechanism to which the wrapped papers are delivered from the drying-chamber, substantially as described.

33. The combination, with paper and wrapper feeding mechanisms, of a series of rotating cores to which in turn the papers and wrappers are delivered by the feeding mechanisms, a corresponding series of wipers outside the cores, and a rotating carrier by which the cores and wipers are carried, substantially as described.

34. The combination, with paper and wrapper feeding mechanisms, of a series of rotating cores to which in turn the papers and wrappers are delivered by the feeding mechanisms, a wiper outside each core, a series of ejectors moving longitudinally of the cores, and a rotating carrier by which the cores, wipers, and ejectors are carried, substantially as described.

35. The combination, with paper and wrapper feeding mechanisms, of a series of rotating cores to which in turn the papers and wrappers are delivered by the feeding mechanisms, a wiper outside each core, a series of ejectors moving longitudinally of the cores, a series of drying-chambers to which the wrapped papers are delivered by the ejectors, and a carrier by which the cores, wipers, ejectors, and drying-chambers are carried, substantially as described.

36. The combination, with a wrapping mechanism, of a paper-feeding mechanism, a paper-holder, a gripper-cylinder forming a part of said mechanism and receiving papers from the holder, and detachable driving connections for said gripper-cylinder whereby the position of the gripper-cylinder relatively to the wrapping mechanism may be adjusted, substantially as described.

37. The combination of a core, a wiper outside the core, means for rotating one of said members, a paper-feeding mechanism, and a wrapper-feeding mechanism delivering a wrapper between the rear end of the paper and the core, substantially as described.

38. The combination of a core, a wiper outside the core, means for rotating one of said members, a paper-feeding mechanism, a wrapper-feeding mechanism, and means for adjusting said wrapper-feeding mechanism to deliver a wrapper to the core simultaneously with the paper or to deliver a wrapper between the rear end of the paper and the core, substantially as described.

39. The combination of a series of cores, a wiper outside each core, means for rotating one of said members, a rotating carrier by which the cores and wipers are carried, a paper-feeding mechanism delivering papers to the cores successively, and a wrapper-feeding mechanism having a switch constructed to guide the wrapper to the core simultaneously with the papers or between the rear end of the paper and the core.

40. The combination of a rotating and traveling wrapping-core, a paper-feeding mechanism, and a wrapper-feeding mechanism having an adjustable switch for guiding the wrapper to the core at different points of its travel, substantially as described.

41. The combination of a wrapping mechanism, a paper-feeding mechanism, a wrapper-feeding mechanism, and means for adjusting said wrapper-feeding mechanism to deliver a wrapper with the leading end of the paper or beneath the overlapping rear end of the paper, substantially as described.

42. The combination of a wrapping mechanism, a feeding mechanism for advancing a perforated wrapper-web, a pasting mechanism for applying paste to the wrapper, and a breaking and feeding segment, substantially as described.

43. The combination of a web-feeding mechanism for advancing a perforated web, a pasting mechanism for applying paste to the wrapper, and a breaking and feeding segment engaging the unpasted portion of the web, substantially as described.

44. The combination of a paper-wrapping mechanism, a drying-chamber in which the wrapped papers are held in form until the paste has set, and means for transferring the wrapped papers from the wrapping mechanism to the drying-chamber, substantially as described.

45. The combination of a paper-wrapping mechanism, a drying-chamber in which the wrapped papers are held in form until the paste has set, means for transferring the wrapped papers from the wrapping mechanism to the drying-chamber, and a flattening mechanism to which the papers are delivered from the drying-chamber, substantially as described.

46. The combination, with a paper-wrapping core, of a wiper outside said core, means for rotating one of said members, an ejector coacting with said core to remove the wrapped paper, and a cam and connections for moving one of them longitudinally, substantially as described.

47. The combination, with a paper-wrapping core, of a wiper outside said core, an ejector, means for rotating said core, and a cam and connections for operating said ejector, substantially as described.

48. The combination, with a hollow paper-wrapping core having a collapsible section, of a wiper outside said core, an ejector, a plunger inside the core carrying the ejector and engaging and actuating the collapsible section to expand and contract the core, means for rotating the core, and a cam and connections for moving the plunger longitudinally of the core, substantially as described.

49. The combination, with a hollow paper-wrapping core having a movable gripper for seizing the paper, of a wiper outside said core, an ejector, a plunger inside the core, carrying the ejector and actuating said gripper, means for rotating the core, and a cam and connections for moving the plunger longitudinally of the core, substantially as described.

50. The combination of a series of rotating paper-wrapping cores, wipers outside said cores, ejectors, a rotating carrier by which the cores and ejectors are carried, and a cam and connections for actuating said ejectors, substantially as described.

51. The combination of a series of rotating paper-wrapping cores, wipers outside said cores, ejectors, plungers carrying said ejectors and moving longitudinally of said cores, a rotating carrier by which the cores and plungers are carried, and a cam and connections for actuating said plungers, substantially as described.

52. The combination of a series of rotating hollow paper-wrapping cores, wipers outside said cores, ejectors, plungers inside said cores carrying said ejectors, a rotating carrier by which the cores and plungers are carried, and a cam and connections for actuating said plungers, substantially as described.

53. The combination of a series of rotating hollow paper-wrapping cores, wipers outside said cores, ejectors, drying-chambers to which the wrapped papers are delivered by the ejectors, plungers inside said cores carrying said ejectors, a rotating carrier by which the cores, plungers, and drying-chambers are carried, and a cam and connections for actuating said plungers, substantially as described.

54. The combination, with a paper-wrapping core consisting of a hollow cylinder having an opening on one side to receive the end of the paper, of means for winding the paper and wrapper upon the core, substantially as described.

55. The combination, with a paper-wrapping core consisting of a hollow cylinder having an opening on one side to receive the end of the paper and a movable gripper, of means for actuating said gripper to seize and release the paper and means for winding the paper and wrapper about the core, substantially as described.

56. A paper-wrapping core consisting of a hollow cylinder having a collapsible section coacting with the core-body to form a gripper, substantially as as described.

57. The combination, with a paper-wrapping core having a collapsible section coacting with the core-body to form a gripper, of means for actuating said collapsible section to seize and release the papers and means for removing the papers from the core, substantially as described.

58. The combination, with a paper-wrapping core having a collapsible section, of an ejector and a plunger moving inside the core with the ejector and engaging and actuating said collapsible section, substantially as described.

59. The combination, with a paper-wrapping core having a spring collapsible section, of an ejector and a plunger moving inside the core with the ejector and engaging and actuating said collapsible section, substantially as described.

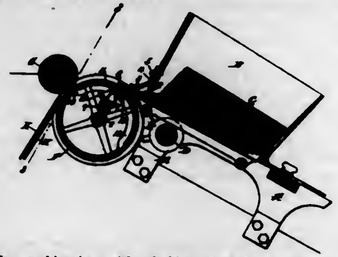
486,089. METHOD OF AND MEANS FOR FEEDING SHEETS FROM A PILE. LUTHER C. CROWELL, Brooklyn, assignor to Robert Hoe, Stephen D. Tucker, Theodore H. Hoad, and Charles W. Carpenter, New York, N. Y. Filed Nov. 3, 1891. Serial No. 410,698. (No model.)

Claim.—1. The method of feeding sheets from a pile, which consists in placing the pile of sheets in a vertically-inclined position, feed-

ing the bottom sheet up the incline by engagement with the under side of the sheet, and alternately lifting the pile of sheets on the line of engagement and allowing them to fall, substantially as described.

2. The method of feeding sheets from a pile, which consists in placing the pile of sheets in a vertically-inclined position, feeding the bottom sheet up the incline by engagement with the under side of the sheet, and lifting the pile of sheets on the line of engagement during the feeding movement and allowing them to fall after the feeding of a sheet is completed, substantially as described.

3. The combination, with a holder adapted to receive a pile of sheets and having its bottom inclined vertically, of one or more rotating feeding-fingers advancing the bottom sheet up the incline by engagement with the under surface of the sheet and projecting within the holder during the feeding operation sufficiently to lift the pile of sheets on the line of engagement, said finger or fingers being arranged to release the sheets and allow them to fall during a portion of their rotation, substantially as described.



4. The combination, with a holder adapted to receive a pile of sheets and having its bottom inclined vertically, of a series of rotating feeding-fingers advancing the bottom sheet up the incline by engagement with the under surface of the sheet and projecting within the holder during the feeding operation sufficiently to lift the pile of sheets on the line of engagement, said fingers being set at such a distance apart that the sheets are alternately lifted and allowed to fall during the feeding operation, substantially as described.

5. The combination, with a holder adapted to receive a pile of sheets and having its bottom inclined vertically, of feeding devices constructed to receive a sheet advanced from the pile and feeding mechanism advancing the bottom sheet up the incline to the feeding devices by engagement with the under surface of the sheet and arranged to release the pile of sheets as a sheet is advanced by the feeding devices, substantially as described.

6. The combination, with a holder adapted to receive a pile of sheets, of a series of rotating feeding-fingers projecting within the holder during the feeding operation sufficiently to lift the pile of papers on the line of engagement, said fingers being set at such a distance apart that the sheets are alternately lifted and allowed to fall during the feeding operation, substantially as described.

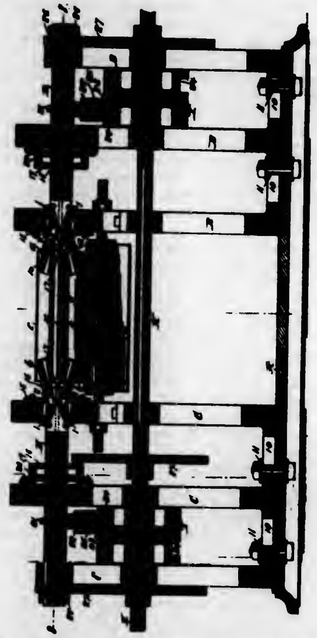
7. The combination, with feeding mechanism for advancing a bottom sheet from a pile, of spring-fingers beneath which the sheets pass and steps projecting downward beside said fingers and normally covered thereby but exposed by the raising of the spring-fingers on the simultaneous passage of two or more sheets below the latter and adapted to engage the second sheet to prevent the passage of a plurality of sheets, substantially as described.

8. The combination, with feeding mechanism for advancing a bottom sheet from a pile, of spring-fingers beneath which the sheets pass and pins 3, projecting downward beside the fingers and normally covered thereby but exposed by the raising of the spring-fingers on the simultaneous passage of two or more sheets past the pins and adapted to engage the top of the second sheet to prevent the passage of a plurality of sheets, substantially as described.

9. The combination, with one or more rotating feeding-fingers adapted to advance the bottom sheet from a pile by engagement of the under surface of the sheet and to release the pile of sheets during a portion of their rotation, of feeding devices to which the sheet is advanced by the feeding-fingers and by which it is advanced when the feeding-fingers have released the pile of sheets, substantially as described.

10. The combination, with a holder adapted to receive a pile of sheets and having its bottom inclined vertically and provided with openings, of a series of rotating feeding-fingers advancing the bottom sheet up the incline by engagement of the under surface of the sheet and arranged to release the sheets during a portion of their rotation, said fingers projecting within the holder during the feeding operation sufficiently to lift the pile of sheets on the line of engagement, feeding devices to which the bottom sheet is advanced by the feeding-fingers, spring-fingers between the feeding-fingers and feeding mechanism, and steps projecting downward beside the spring-fingers and normally covered thereby but exposed by the raising of the spring-fingers on the simultaneous passage of two or more sheets below the latter and adapted to engage the second sheet to prevent the passage of a plurality of sheets, substantially as described.

486,090. NEWSPAPER-WRAPPING MACHINE. LUTHER G. CROWELL, Brooklyn, assignor to Robert Hoe, Stephen D. Tucker, Theodore H. Mead, and Charles W. Carpenter, New York, N. Y. Filed Apr. 26, 1892. Serial No. 430,668. (No model.)



Claim.—1. In a machine for wrapping newspapers and other publications, the combination of a core, means for winding the paper and wrapper upon the core and securing the wrapper, and means for removing the wrapped paper from the core by withdrawing the core from the paper, substantially as described.

2. In a machine for wrapping newspapers and other publications, the combination of a core formed of two parts arranged opposite each other, means for winding the paper and wrapper upon the core and securing the wrapper, and means for withdrawing the two parts of the core in opposite directions to release the paper, substantially as described.

3. In a machine for wrapping newspapers and other publications, the combination of a collapsible core, means for winding a paper and wrapper upon the core and securing the wrapper, means for removing the wrapped paper from the core by withdrawing the core from the paper, and means for expanding and contracting the core to loosen the paper for the withdrawal of the core, substantially as described.

4. In a machine for wrapping newspapers and other publications, the combination of a collapsible core provided with grippers for seizing a paper, means for winding the paper and wrapper upon the core and securing the wrapper, means for withdrawing the core to release the wrapped paper, and means whereby the grippers are closed to seize the paper and the core expanded and the grippers opened and core contracted to release and loosen the wrapped paper for the withdrawal of the core, substantially as described.

5. In a machine for wrapping newspapers and other publications, the combination of grippers, means for winding a paper and wrapper into tubular form, while held by the grippers, and means for withdrawing the grippers from the paper, substantially as described.

6. In a machine for wrapping newspapers and other publications, the combination of grippers, means for winding a paper and wrapper into tubular form while held by the grippers, means for withdrawing the grippers from the paper, and means for opening and closing the grippers to seize and release the paper, substantially as described.

7. In a machine for wrapping newspapers and other publications, the combination of grippers by which the paper and wrapper are held, means for rotating the grippers, a wiper outside the grippers pressing against the paper, and means for withdrawing the grippers from the paper, substantially as described.

8. In a machine for wrapping newspapers and other publications, the combination of grippers by which the paper and wrapper are held, means for rotating the grippers, a wiper outside the grippers pressing against the paper, and means for withdrawing the grippers from the paper, substantially as described.

9. In a machine for wrapping newspapers and other publications, the combination of two sets of grippers by which the paper and wrapper are held at the opposite side edges, means for winding the paper and wrapper into tubular form while held by the grippers, and means for withdrawing the grippers in opposite directions to release the paper, substantially as described.

10. In a machine for wrapping newspapers and other publications, the combination of two sets of grippers arranged opposite each other, means for winding a paper and wrapper into tubular form while held by the grippers, and means for withdrawing the grippers in opposite directions to release the paper, substantially as described.

11. In a machine for wrapping newspapers and other publications, the combination of two sets of grippers arranged opposite each other, a wiper outside the grippers, pressing against the paper, means for rotating one of the members, and means for withdrawing the grippers in opposite directions to release the papers, substantially as described.

12. In a machine for wrapping newspapers and other publications, the combination of two sets of rotating grippers arranged opposite each other, a wiper outside the grippers, pressing against the paper, and means for withdrawing the grippers in opposite directions to release the paper, substantially as described.

13. In a machine for wrapping newspapers and other publications, the combination of two sets of rotating grippers arranged opposite each other, a wiper outside said grippers, pressing against the paper, means for rotating one of the members, means for withdrawing the grippers in opposite directions to release the paper, and means for opening and closing the grippers to seize and release the paper, substantially as described.

14. In a machine for wrapping newspapers and other publications, the combination of two sets of grippers arranged opposite each other, means for winding a paper and wrapper into tubular form while held by the grippers, means for withdrawing the grippers in opposite directions to release the paper, and means for opening and closing the grippers to seize and release the paper, substantially as described.

15. In a machine for wrapping newspapers and other publications, the combination of two sets of rotating grippers arranged opposite each other, a wiper outside the grippers, pressing against the paper, means for withdrawing the grippers in opposite directions to release the paper, and means for opening and closing the grippers to seize and release the paper, substantially as described.

16. The combination, with a paper-wrapping core and means for winding a paper and wrapper upon the core, of means for withdrawing the core from the paper and a stripper coacting with the core to deliver the paper, substantially as described.

17. The combination, with a paper-wrapping core and means for winding a paper and wrapper upon the core, of means for withdrawing the core from the paper and a flattening mechanism receiving the paper as it is released from the core, substantially as described.

18. The combination, with a paper-wrapping core formed in two parts arranged opposite each other and means for winding a paper and wrapper upon the core, of means for withdrawing the two parts of the core in opposite directions to release the paper and a flattening mechanism receiving the paper as it is released from the core, substantially as described.

19. In a machine for wrapping newspapers and other publications, the combination of grippers by which the paper and wrapper are held, means for rotating the grippers, a wiper outside the grippers, pressing against the paper and curved substantially concentric with the path of movement of the grippers, and means for withdrawing the grippers from the paper, substantially as described.

20. In a machine for wrapping newspapers and other publications, the combination of two sets of rotating grippers arranged opposite each other, a wiper outside the grippers, pressing against the paper and curved substantially concentric with the path of movement of the grippers, and means for withdrawing the grippers in opposite directions to release the paper, substantially as described.

21. In a machine for wrapping newspapers and other publications, the combination of two sets of rotating grippers arranged opposite each other, a wiper outside said grippers, pressing against the paper and curved substantially concentric with the path of movement of the grippers, means for withdrawing the grippers in opposite directions to release the paper, and means for opening and closing the grippers to seize and release the paper, substantially as described.

22. The combination, with grippers, of a wiper outside said grippers, means for rotating one of the members, a cam and connections for moving said grippers transversely to the plane of rotation, and means for opening and closing said grippers, substantially as described.

23. The combination, with grippers, of a wiper outside said grippers, means for rotating said grippers, a cam and connections for moving said grippers transversely to the plane of rotation, and means for opening and closing said grippers, substantially as described.

24. The combination, with two sets of grippers arranged opposite each other, of a wiper outside said grippers, means for rotating one of said members, cams and connections for moving said grippers transversely to the plane of rotation, and means for opening and closing said grippers, substantially as described.

25. The combination, with two sets of grippers arranged opposite each other, of a wiper outside said grippers, means for rotating said grippers, cam and connections for moving said grippers transversely to the plane of rotation, and means for opening and closing said grippers, substantially as described.

26. The combination, with grippers, of wiper c, outside said grippers, shaft H and connections for rotating one of the members, and cam I, carried by and rotating with said shaft H, and connections for moving the gripper transversely to the plane of rotation, substantially as described.

27. The combination, with two sets of grippers arranged opposite each other, of wiper c, outside said grippers, shaft H and connections for rotating one of the members, and cams I, carried by and rotating with said shaft H, and connections for moving said grippers transversely to the plane of rotation, substantially as described.

28. The combination, with grippers, of wiper c, outside said grippers, shaft H and connections for rotating the grippers, and cam I, carried by and rotating with said shaft H, and connections for moving the grippers transversely to the plane of rotation, substantially as described.

29. The combination, with longitudinally-moving shaft D and a gripper pivoted thereon, of frame B, having an opening through which said gripper moves, and bowls carried by said gripper and engaging said frame to operate the gripper, substantially as described.

30. The combination, with longitudinally-moving shaft D and a gripper pivoted thereon transversely to the shaft, of frame B, having an opening through which said gripper moves, and bowls 1 2 on said gripper on opposite sides of its pivot and engaging said frame to operate the gripper, substantially as described.

31. The combination, with longitudinally-moving shaft D, of hollow cylinder d, carried by said shaft and having an opening on one side, gripper e on said shaft, coacting with the edge of said opening and forming a collapsible section of the cylinder, and means for actuating said gripper as the shaft is moved, substantially as described.

32. The combination, with longitudinally-moving shaft D, of hollow cylinder d, carried by said shaft and having an opening on one side, gripper e, pivoted on and transversely to said shaft, said gripper coacting with the edge of said opening and forming a collapsible section of the cylinder, frame B, having an opening through which said gripper moves with the shaft, and bowls 1 2, carried by said gripper on opposite sides of its pivot and engaging said frame to operate the gripper, substantially as described.

33. A paper-wrapping core consisting of a hollow cylinder having an opening on one side to receive the end of the paper and a movable gripper for seizing the paper, pivoted transversely to the axis of the cylinder, substantially as described.

34. A paper-wrapping core consisting of a hollow cylinder having an opening on one side to seize the end of the paper and a movable gripper for seizing the paper, pivoted transversely to the axis of the cylinder and forming a collapsible section of the cylinder, substantially as described.

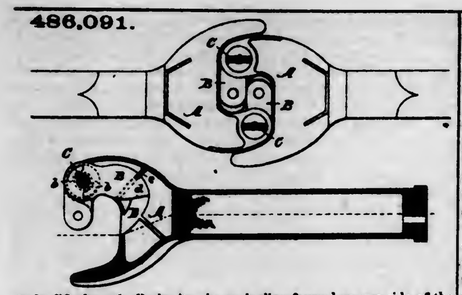
35. The combination, with two sets of grippers arranged opposite each other, of means for closing and opening the grippers to seize and release the paper, means for winding a paper and wrapper upon the grippers, and means for withdrawing the grippers in opposite directions to stretch the paper as the wrapping is commenced and while the grippers are closed, substantially as described.

486,091. CAR COUPLING. MARK M. DEMING, New York, N. Y. Filed Jan. 27, 1892. Serial No. 419,486. (No model.)

Claim.—1. A car-coupling which consists of a swinging locking-jaw pivoted in a bifurcated draw-head provided with inclines whereby said swinging jaw is raised and turned into the locked position, a projecting shoulder behind which the locking-jaw falls to become locked, and an inclined lug set in the path of the locking-jaw when lifted above the shoulder in such position that said lug crowds said locking-jaw in front of said shoulder, so that in falling said locking-jaw drops into its unlocked position relatively to the draw-heads, substantially as shown and described.

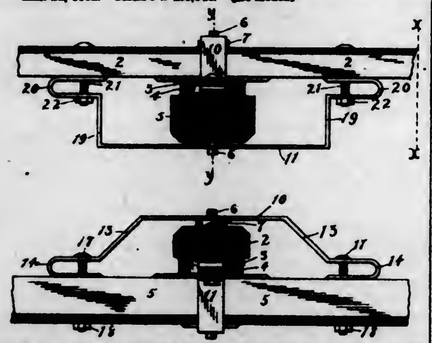
2. In a car-coupling, the combination, with the head and locking-jaw, of recessed inclines within the jaw, said jaw being adapted

486,091.



to be lifted vertically by its pin, an incline formed on one side of the head near the top thereof for crowding the jaw into the uncoupled position, and a locking device cast integral with the head, all substantially as and for the purpose described.

486,092. WHIFFLETREE. JOHN EGGAR, Rochester, Minn. Filed Mar. 28, 1892. Serial No. 426,941. (No model.)



Claim.—1. The combination, with two movable parts, of a center pin passing through both, a strap engaging one end of said pin and having loop ends arranged to rest upon the other part, said loop ends being perforated, and bolts passing through the same and through said other part and having adjustable locking-nuts, substantially as described.

2. The combination, with two movable parts, of a center pin passing through both and provided with the collar to engage one of the parts, a strap extending about one of said parts and having a middle portion in engagement with said pin, said strap provided with perforated loop ends to rest upon the other part, and bolts passing through the same and secured by suitable nuts.

3. The combination, with the pole and evener, of a center pin passing through both, a strap having loop ends bolted upon the top of said pole and having its middle portion arched over said evener and in engagement with the upper end of said pin, a second strap having loop ends bolted to the under side of said evener, and the middle portion of said second strap passing beneath the pole and engaging the lower end of said pin, substantially as described.

4. The combination, with the two movable parts, of a center pin passing through both, a strap having loop ends and a middle part to engage one end of said pin, each of said loop ends having in its outer part a slot and in its inner part a smaller opening, and a bolt passing through the slot and smaller opening of each loop end and having an adjustable locking-nut, substantially as described.

486,093. TOBACCO-PIPE. FRANKIS EELES, Chicago, Ill. Filed May 20, 1892. Serial No. 433,705. (No model.)

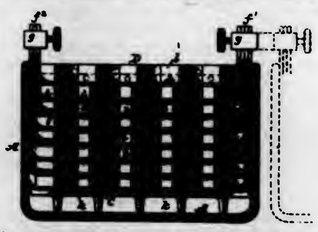
Claim.—1. A tobacco-smoking pipe having its main or body portion provided with two vertically-arranged nicotine-chambers with a small vertically-arranged tube or pipe connecting the same and having its upper end extended above the bottom of the upper one of said chambers and with a smoke-passage communicating with the extreme upper portion of the lower one of said chambers and having a downwardly-curved inner end, substantially as described.

2. A tobacco-smoking pipe having its main or body portion formed of three separate, removable, and replaceable parts or sections and provided with two vertically-arranged and centrally-communicating nicotine-chambers with a small vertically-arranged tube or pipe connecting the same and with a single smoke-passage communicating with the extreme upper portion of the lower one of said chambers, substantially as described.

3. A tobacco-smoking pipe having its main or body portion formed of three separate, removable, and replaceable parts or sections and provided with two vertically-arranged and centrally-communicating nicotine-chambers with a small vertically-arranged tube or pipe connecting the same and with a single smoke-passage communicating with the extreme upper portion of the lower one of said chambers and having a downwardly-curved inner end, substantially as described.

4. A tobacco-smoking pipe having its main or body portion formed of three separate, removable, and replaceable parts or sections and provided with two vertically-arranged and centrally-communicating nicotine-chambers, the middle section of the said pipe being formed integrally with the stem thereof and provided with a single smoke-passage having a downwardly-curved inner end communicating with the extreme upper portion of the lower one of said chambers, substantially as described.

486,094. SECONDARY BATTERY. RUDOLF BECKERTEYER, Yonkers, N. Y. Filed Apr. 4, 1890. Serial No. 346,511. (No model.)



Claim.—1. In a secondary or storage battery, the combination, substantially as hereinbefore described, of a suitable cell or receptacle and battery-plates arranged in a pile, insulated from each other, each plate having openings through it from side to side and each of said openings registering with corresponding openings in the other plates and affording spaces for occupation by the battery fluid.

2. In a secondary or storage battery, the combination, substantially as hereinbefore described, of a suitable cell or receptacle and counterpart battery-plates piled in said cell, insulated from each other by thin sheets of interposed insulating material, and each plate consisting of a grid or frame of metallic lead, provided with a series of openings through it from side to side and having active material applied to the sides of all of said openings and also at the edges of the plate, whereby an extensive area of active material is afforded with but little metallic lead, and the latter well protected by said insulating material, although submerged in battery fluid.

3. In a secondary or storage battery, the combination, substantially as hereinbefore described, of a suitable cell or receptacle and horizontally-arranged counterpart battery-plates in a pile and provided with openings which register with each other from top to bottom of the pile, and each plate at one edge thereof provided with a flexible integral lead extension to serve as an upwardly-turned terminal, said plates being insulated by thin sheets of insulating material from each other in said pile and alternating in position for grouping the terminals of alternating plates at appropriate sides of the battery.

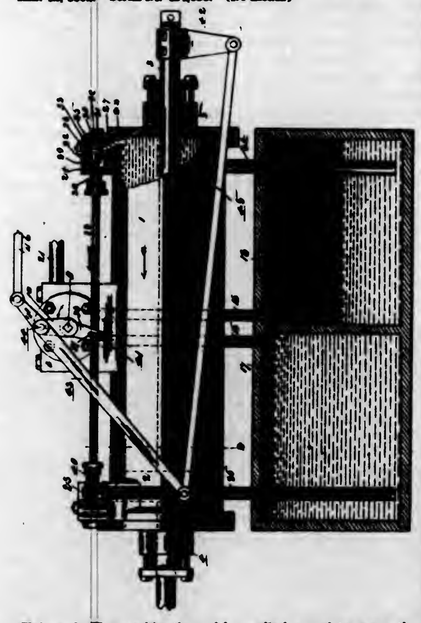
4. In a secondary or storage battery, the combination, substantially as hereinbefore described, of a suitable cell or receptacle, a horizontal base-plate within the cell, elevated above its bottom and provided with a series of openings, a pile of battery-plates insulated from each other, each provided with a series of openings the sides of which are coated with active material, the openings in each plate registering with corresponding openings in other battery-plates and also with those in the base-plate, each set of registering openings serving as a space for battery fluid, communicating with the fluid-space beneath the base-plate and affording a passage for detached active material to the bottom of the cell.

5. In a secondary or storage battery, the combination, with the cell and a series of piled battery-plates having registering openings lined with active material, of a cap-plate having corresponding openings, substantially as described, for controlling the battery fluid against undue splashing movements.

6. A storage-battery plate composed of a leaden grid or frame provided with a series of openings and recessed at its edges to correspond with the outlines of said openings and having active material applied to the sides of all of said openings and also to the sides of the recesses at the edges of the plate, the two sides of said plate being free from said active material, substantially as described.

7. A storage-battery plate composed of a grid or frame of metallic lead having a series of square openings therein, short webs at the corners of said openings, and active material applied to the sides of said openings between said short webs, substantially as and for the purposes described.

486,095. FLUID-MOTOR. CHARLES F. BLAKE, Chicago, Ill. Filed Mar. 12, 1892. Serial No. 424,653. (No model.)



Claim.—1. The combination, with a cylinder, a piston operating therein, and pipes for conducting a fluid into or out of said cylinder at each end, of check-valves at opposite ends of the cylinder for normally preventing the flow of the fluid therefrom, means for forcing the fluid into either end of the cylinder to operate the piston, and devices for operating said valves, whereby the fluid may be permitted to escape from either end of the cylinder, substantially as described.

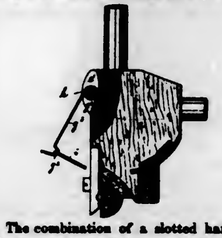
2. The combination, with a cylinder, a piston operating therein, and pipes for conducting a fluid into or out of said cylinder at each end, of check-valves at opposite ends of the cylinder for normally preventing the flow of the fluid therefrom, means for forcing the fluid into either end of the cylinder to operate the piston, devices for operating said valves, whereby the fluid may be permitted to escape from either end of the cylinder, and mechanism operated by the motion of the piston for effecting the closing of said valves, substantially as described.

3. The combination of a cylinder having check-valves at its opposite ends, a piston adapted to move in the cylinder, water-reservoirs, pipes for conducting water from the reservoirs into opposite ends of the cylinder, steam-pipes for introducing steam into the reservoirs, a steam-valve for controlling the admission of steam to the reservoirs, and devices actuated by the piston-rod for operating the steam and check valves, substantially as described.

4. The combination, with a cylinder, a piston-rod, and a piston adapted to move in said cylinder, of water-reservoirs, pipes for conducting water therefrom into the cylinder at opposite ends, steam-pipes for introducing steam into said reservoirs, a valve-chamber 7, ports 13 and 14, communicating with said steam-pipes, a rotary valve 8 in said chamber, adapted to open and close said ports 13 and 14, stem 9, carrying said valve 8 and projecting to the outside of said valve-chamber, a lever 10, carried by said rod, lever 43, connected to said lever 10, arm 42, connected to said piston, and connecting-rod 45, connecting said arm 42 with the lever 43, whereby the motion of the piston will act through the lever 43 to normally return the valve 8 to each position as to close the ports 13 and 14 and thereby cut off steam from the steam-supply pipes, substantially as and for the purpose specified.

5. The combination, with a cylinder 1, a piston-rod, and piston adapted to move therein, of water-reservoirs 17 and 18, valve-casing 22, mounted upon said cylinder at one end, chambers 24 and 25 in said casing, check-valve 29, adapted to permit the flow of water from the chamber 25 to the chamber 24, ports 27 and 28 for affording communication between the chamber 25 and the interior of the cylinder, pipe 34, adapted to conduct water from the reservoir 18 to the chamber 24, valve-casing 23 upon the opposite end of the cylinder 1, check-valve and chambers in said valve-casing 23, similar to the check-valve and chambers in the casing 22, pipe 35, steam-supply pipes 15 and 16, valve-chamber 7, ports 13 and 14 in said valve-chamber, affording communication between the pipes 15 and 16 and said chamber, exhaust-port 19, rotary valve 8, mounted in said chamber 7 and adapted to be operated to open and close the ports 13 and 14, steam-supply pipe 21, stem 9, projecting to the outside of said chamber 7, lever 36, carried by said stem 9, rod 38, extending into the valve-casings 22 and 23 and adapted to engage the check-valves contained in said casings, said rod 38 being connected to said lever 36, whereby the rotation of the stem 9 will operate said rod 38, substantially as described.

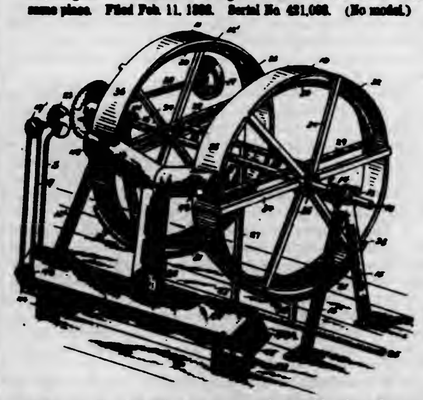
486,096. PIANO-ACTION. FREDERICK EBERHARDT, St. Johnsville, N. Y. Filed June 2, 1892. Serial No. 435,246. (No model.)



Claim.—1. The combination of a slotted hammer-butt with a string-pivot and a butt-spring coiled around said pivot, substantially as specified.

2. The combination of a slotted hammer-butt having cheeks *c* with a string-pivot passing through the cheeks and with a butt-spring coiled around the pivot and having rearward extension *g*, substantially as specified.

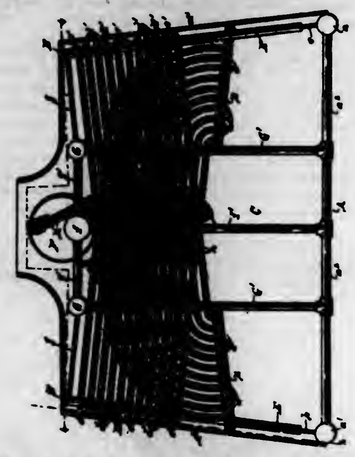
486,097. LAMPBLACK MACHINE. HENRY J. C. BEYER, Erie, Pa., assignor of two-thirds to George L. Ester and William W. Ester, same place. Filed Feb. 11, 1892. Serial No. 421,092. (No model.)



Claim.—1. In a lampblack apparatus, the combination of a revolvable wheel having a broad rim and spokes running from the axle to the edge of the rim, burners arranged to deposit lampblack on the inside and outside of said rim, and a conducting-tube for the deposited lampblack, slotted at one end and arranged to fit over said rim and provided with two scrapers, one for the outside and one for the inside of the rim, and means for revolving the wheel, substantially as set forth.

2. In a lumpblock apparatus, the combination of two revolvable wheels having broad rims and spokes running from the axis to the outer edges of the rims, burners arranged to deposit lumpblock on the inside and outside of said rims, and a conducting-tube for the deposited lumpblock, having two branches, each branch being slotted at one end and arranged to fit over said rim and provided with two scrapers, one for the outside and one for the inside of the rim, and means for revolving the wheel, substantially as set forth.

486,098. STEAM-GENERATOR. THOMAS PEARSE, Yonkers, N. Y. Filed Dec. 14, 1891. Serial No. 414,962. (No model.)



Claim.—1. In combination, a combustion-chamber, a water-containing base, a head connected to said base and arranged above the base and over the combustion-chamber, a series of upwardly-inclining heating-tubes arranged in planes one within the other, opening from said head, and a steam-drum connected to the heating-tubes, substantially as and for the purpose described.

2. In combination, a combustion-chamber, a water-containing base, a head extending laterally from the side wall of the generator, arranged above the base and over the combustion-chamber, a series of heating-tubes secured to said head and arranged with their free extremities disposed in planes one above the other and their free ends inclining upwardly, and a steam-drum connected to the upwardly-inclining ends of the heating-tubes, substantially as described.

3. In combination, a combustion-chamber, a water-containing base, a laterally-extending head, heating-tubes opening from said head, and an upwardly-extending head connected to the free ends of said heating-tubes and to the water-containing base, substantially as and for the purpose set forth.

4. In combination, a combustion-chamber, a water-containing base, a laterally-extending head arranged above the combustion-chamber and connected to the water-containing base, heating-tubes arranged in planes, one within the other, having one extremity opening from said head and the other inclining upwardly, an inclining head connected to the upper ends of said tubes, and a connection between the inclining head and the water-containing base of less diameter than the head, substantially as and for the purpose specified.

5. In combination, a combustion-chamber, a water-containing base, a laterally-extending head arranged above the water-containing base and over the combustion-chamber, a depending connection between the laterally-extending head and the water-containing base, formed of less diameter than the head, heating-tubes arranged in planes, one within the other, having one extremity opening from the laterally-extending head and the other inclining upwardly, and an upwardly-extending head connected to the upper ends of said tubes, substantially as and for the purpose set forth.

6. In combination, a water-containing base, a pair of laterally-extending heads at opposite sides of the generator, connected to the water-containing base, heating-tubes opening from said heads and extending from opposite sides of the generator, whereby said heating-tubes lap one with the other, a steam-drum connected to said tubes, and a separation-drum interposed between the steam-drum and the heating-tubes, substantially as and for the purpose specified.

7. In combination, a water-containing base, a pair of laterally-extending heads at opposite sides of the generator, connected to the water-containing base, heating-tubes opening from said heads and extending from opposite sides of the generator, whereby said heating-tubes lap one with the other, and a steam-drum connected to said tubes, substantially as and for the purpose set forth.

8. In combination, a water-containing base, a pair of laterally-extending heads at opposite sides of the generator, connected to the water-containing base, heating-tubes opening from said heads and extending from opposite sides of the generator, whereby said heating-tubes lap one with the other, upwardly-extending heads connected to the extending ends of the heating-tubes, a steam-drum extending from front to rear of the generator between the upwardly-extending heads, and connections between said upright heads and the steam-drum, substantially as and for the purpose set forth.

9. In combination, a water-containing base, a head extending laterally from the side wall of the generator and connected to the water-containing base, a series of heating-tubes secured to said head and arranged with their free extremities disposed in planes one above the other, a steam-drum above the heating-tubes, connected thereto, and superheating-coils connected to said steam-drum and passed between said heating-tubes, substantially as and for the purpose specified.

10. In combination, a pair of laterally-extending heads at opposite sides of the generator, heating-tubes opening from said heads and extending from the opposite side of the generator, whereby said heating-tubes lap one with the other, a steam-drum above the heating-tubes, connected thereto, and a superheater passed between the lapped heating-tubes, substantially as and for the purpose set forth.

11. In combination, a combustion-chamber, a water-containing base, a head extending laterally from the side wall of the generator above the water-containing base and over the combustion-chamber, a series of heating-tubes secured to said head and arranged with their free extremities disposed in planes one above the other, a steam-drum connected to the upper extremities of the heating-tubes, and a separation-drum arranged substantially parallel with the steam-drum and interposed between the steam-drum and the heating-tubes, substantially as and for the purpose specified.

12. In combination, a water-containing base, a head extending laterally from the side wall of the generator and connected to the water-containing-base, a series of heating-tubes secured to said head and arranged with their free extremities disposed in planes one above the other, a steam-drum above the heating-tubes, connected thereto, a separation-drum between the steam-drum and said heating-tubes, and a return connection between the water-containing base and the separation-drum, substantially as and for the purpose specified.

13. In combination, a water-containing base, a head extending laterally from the side wall of the generator and connected to the water-containing base, a series of heating-tubes secured to said head and arranged with their free extremities disposed in planes one above the other, a steam-drum above the heating-tubes, connected thereto, a separation-drum between the steam-drum and said heating-tubes, and superheating-coils connected to said steam-drum and passed between said heating-tubes, substantially as and for the purpose set forth.

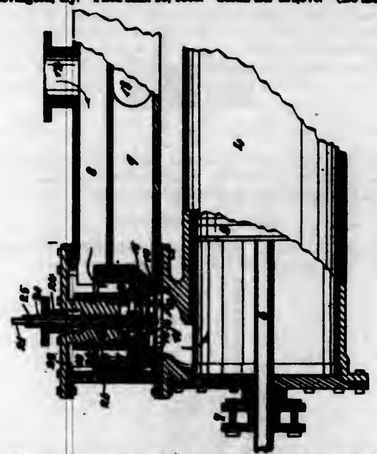
14. In combination, a water-containing base, upwardly-inclining heating-tubes connected to said base, upright heads connected to the upper extremity of the tubes, separation-drums disposed below the plane of the upper extremity of said heads, and downwardly-inclining connections between the separation-drums and the upper extremity of the heads, substantially as and for the purpose set forth.

15. In combination, a pair of laterally-extending heads at opposite sides of the generator, heating-tubes opening from said heads and extending from the opposite side of the generator, whereby said heating-tubes lap one with the other, and a steam-drum above the heating-tubes, connected thereto, substantially as and for the purpose set forth.

16. The herein-described heater, the same being composed of a combustion-box, a water-containing base, a series of independent heads connected to said base and arranged above the combustion-box, heating-tubes projecting from the heads, independent uprightly-extending heads connected to the ends of said heating-tubes and to the water-containing base, a steam-drum above the heating-tubes, connected thereto, a separation-drum between the steam-drum and said heating-tubes, and a connection between the separation-drum and the water-containing base, substantially as and for the purpose specified.

17. In combination, a water-containing base, a pair of laterally-extending heads at opposite sides of the generator, connected to said base, heating-tubes opening from said heads and extending from the opposite side of the generator, whereby said heating-tubes lap one with the other, a steam-drum above the heating-tubes, connected thereto, a separation-drum between the steam-drum and said heating-tubes, and a return connection between the water-containing base and the separation-drum, substantially as and for the purpose set forth.

486,099. VALVE FOR STEAM-ENGINES. HARLIN P. FISHER, Covington, Ky. Filed Mar. 10, 1892. Serial No. 424,570. (No model.)



Claim.—1. In a steam-engine, the combination of a steam-chest, a supply and exhaust pipe communicating with it, a valve inside of this steam-chest controlling the passage of live steam through the steam-chest to the steam-cylinder, and another valve controlling the exhaust from the cylinder, one of these valves being seated on the other, all substantially as shown and described.

2. In a steam-engine, the combination of a combined supply and exhaust side pipe, a steam-chest at each end of it communicating with and common to the two branches of the side-pipes, all these parts constructed in one casting, and valves located within the steam-chests and controlling the passage of steam between them and the side pipes, all substantially as shown and described.

3. In a steam-engine, the combination of supply and exhaust side pipes and a valve controlling each side pipe, the valve of the former being seated on the valve of the latter side pipe, which construction and disposition admits of the pressure of the live steam being utilized for the purpose of keeping the valves seated, all substantially as shown and described.

4. The double puppet-valve consisting of the two puppet-valves seated on each other—that is, one providing the valve-seat for the other—the two so constructed, disposed, and connected as to be capable of joint and independent movements and by which movements the supply and exhaust to and from the steam-cylinder are regulated, all substantially as shown and described.

5. In a steam-engine, the combination of supply and exhaust side pipes, a steam-chest with which they communicate, and a valve for each side pipe, controlling its communication with the steam-chest, one of these valves being provided with a valve-seat to receive the other valve, one of the valves being guided by a part of the interior surface of the steam-chest, the other by a boss depending from the under side of the cover of the steam-chest, all substantially as shown and described.

6. The double puppet-valve consisting of two puppet-valves seated on each other, each provided with its own valve-stem, by which they are made capable of joint and independent movements for the purpose of regulating the steam supply and exhaust, all substantially as shown and described.

7. The double puppet-valve consisting of two puppet-valves seated on each other, each provided with its own valve-stem, one of which passes through the other, the valves and connections being so constructed as to be capable of joint and independent movements for the purpose of regulating the steam supply and exhaust, all substantially as shown and described.

8. A double valve for steam-engines, consisting of a steam-chest provided with an interior valve-seat, a valve fitting this seat and having also a valve-seat, and another valve fitting the seat on the valve first mentioned, all substantially as shown and described.

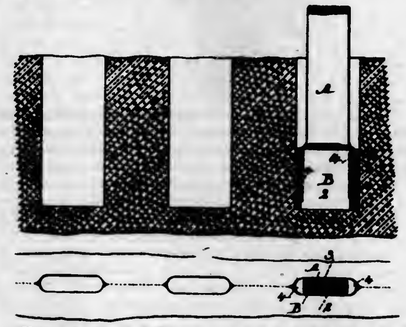
9. A double valve for steam-engines, consisting of a steam-chest provided with an interior valve-seat, a valve fitting this seat and having also a valve-seat, and the central boss closing the upper end of the inner valve, all substantially as shown and described.

486,100. MANUFACTURE OF COKE. JAMES J. FRIEDERSDORF and CHARLES S. FISHER, Johnstown, Pa. Filed Dec. 17, 1891. Serial No. 415,251. (No specimens.)

Claim.—1. The process of manufacturing hard coke, which consists in pulverizing soft coal, mixing therewith a suitable hardening substance, charging the same into ovens, and heating them, substantially as described.

2. As a new article of manufacture, coke hardened by combining with it caustic lime or other suitable solid hardening substance in the process of its manufacture in such a manner that the proportion of its cell-space to its cell-walls is diminished, giving to it greater density and firmness, substantially as described.

486,101. ROCK DRILLING AND SPLITTING. GEORGE M. GRIMM, Brooklyn, N. Y. Filed July 7, 1892. Serial No. 439,239. (No model.)

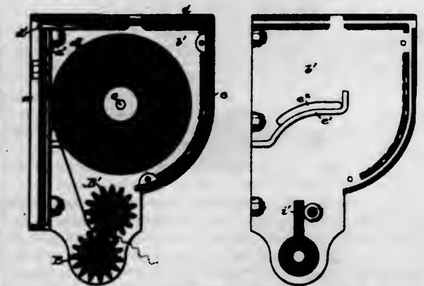


Claim.—1. A rock-drill having a shank and a head that is comparatively thin, with flat sides and rounded ends, whereby the hole as drilled is much longer in one direction than the other and has flat or nearly-flat sides and round ends, substantially as set forth.

2. The method herein specified of drilling and splitting rock, consisting in drilling into the rock a range of holes, each hole being much wider in the line of cleavage than in the opposite direction and with flat sides and rounded ends to such hole, and introducing into such holes powder and exploding the same, so that the powder may act between the nearly-flat opposite surfaces to pry the stone apart in the line of cleavage and in a plane passing through the longest diameter of the holes, whereby false cracks and injury to the surface of the stone are avoided, substantially as set forth.

3. A rock-drill having a shank and a head that is comparatively thin, with flat sides and rounded ends, and a face that is flat and beveled on two or more of its edges, whereby the hole as drilled is much longer in one direction than the other and has flat or nearly-flat sides and round ends, substantially as set forth.

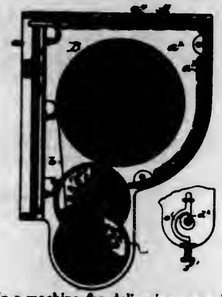
486,102. MECHANISM FOR DELIVERING AND CUTTING ROLL-PAPER. DARIUS L. GOFF, Pawtucket, R. I. Filed May 5, 1892. Serial No. 431,807. (No model.)



Claim.—1. In a paper-delivering machine, the combination, substantially as hereinbefore described, of a pair of delivering and measuring rolls geared together, a cutter for severing the paper, stopping and releasing mechanism controlling said rolls, and a hand-wheel coupled to one of said rolls for releasing the stopping mechanism and also for imparting a semi-rotation to the rolls.

2. The combination of a pair of corrugated delivering-rolls operatively coupled together, a hand-wheel coupled to one of said rolls for forwardly rotating them both in harmony, a longitudinal cutter carried radially on one of said rolls, and a ratchet and pawl for guarding against backward rotation, substantially as described.

486,108. MECHANISM FOR DELIVERING AND CUTTING ROLL-PAPER. DARIUS L. GOFF, Pawtucket, R. I. Filed May 6, 1892. Serial No. 431,982. (No model.)



Claim.—1. In a machine for delivering paper in predetermined lengths from a rotatively-mounted roll-package, the combination, substantially as hereinbefore described, of a pair of overbalanced delivering and measuring rolls geared together, a cutter carried on one of said rolls, stopping mechanism for restricting the rotation of said rolls, and a thumb-piece which when manipulated releases the rolls and permits them to partially rotate and to automatically project the free end of the paper for grasping, so that on pulling said free end a length thereof may be drawn from the package corresponding with the measuring capacity of the rolls, the cutter presented in position for service, and the rolls so set by the stopping mechanism that when next released they will be partially rotated automatically because of their being overbalanced.

2. In a paper-delivering machine, the combination, substantially as hereinbefore described, of a pair of delivery-rolls geared together, stopping mechanism restricting the rotation of the rolls, and means, as weights or springs, for overbalancing said rolls and causing them to partially rotate automatically upon being released from the stopping mechanism.

486,104. HINGE. IRA F. HARRIS Nashua, N. H. Filed June 16, 1892. Serial No. 436,939. (No model.)

Claim.—1. The doubled sheet-metal hinge-leaves formed by bending the pintle-eye parts on one portion in one direction and then bending the pintle-eyes of the other portion in an opposite direction around the first-mentioned eye parts, substantially as described.

2. The within-described doubled sheet-metal butt-hinge, having its eye portions at one terminus of the sheet inclosed or surrounded by eye parts on the other portion of the sheet and the two eye parts fastened by means of lugs of the sheet entered into perforations, substantially as described.

486,105. PENDANT FOR WATCHES. WESLEY T. HARRISON, Williamstown, Ky., assignor of one-half to J. C. Chipman, Sterling, Colo. Filed Oct. 1, 1891. Serial No. 407,367. (No model.)

Claim.—The watchcase herein shown and described, adapted to contain any stem-winding pendant set movement, in combination with the crown A, the stem B, formed of three parts F F' F², formed as shown, reciprocating longitudinally between the crown A and the mechanism of the watch, the connecting-rods G H, and the frames O B I, within which such reciprocation is effected, as illustrated and described.

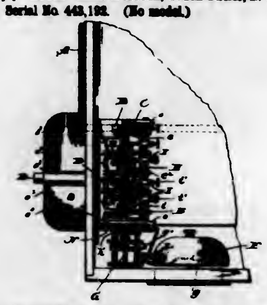
486,106. VEHICLE-WHEEL. KONRAD HAMMESFAHR, Ingolstadt, Germany. Filed July 30, 1891. Serial No. 401,022. (No model.)

Claim.—1. The combination of tube B with a pair of conical disks provided with radial corrugations to form a series of adjacent spoke-receiving mortises which widen from the center toward the periphery and with spokes within the mortises and in contact with each other at the center, substantially as specified.

2. The combination of U-shaped tire C with nuts D, received by the tire, and with caps E received by such nuts, substantially as specified.

3. The combination of U-shaped notched tire C with the inner protecting-plates *c* and with the nuts D, having lugs *d'*, and with caps E, received by such nuts, substantially as specified.

486,107. LOCK. ABEL C. HOUSE, South Butler, N. Y. Filed Aug. 16, 1892. Serial No. 443,193. (No model.)



Claim.—1. In combination, a lock having several keys any of which are adapted to be set to act as releasing-keys, an alarm mechanism adapted to sound a single tone when a proper key is actuated, and an alarm mechanism adapted to sound several tones when an improper key is actuated, substantially as described.

2. In combination with a cash-drawer and its locking mechanism, a gong, a spring-actuated motor having an escape-wheel and pallet, the pallet-arbor, the hammer of said arbor, the detent-arm also on said arbor, the rock-shaft connected with said arm, and the keys adapted to release said arm by rocking the shaft to permit the motor to actuate said hammer.

3. In combination, the locking-bolt, the pivoted swinging frame, the arm thereon engaging the bolt, the series of pivoted keys, the adjustable screw carried by each key, the rib or flange on the frame, serving as a gage for the adjustment of the screw, and the key or rod attached to the frame to swing the same, substantially as described.

4. In combination with the pivoted keys, the rock-shaft H, an arm on said shaft for each key adapted to be engaged thereby, and the alarm mechanism actuated by said rock-shaft, substantially as described.

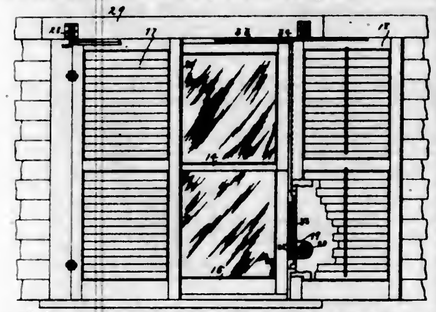
5. In combination with the pivoted keys having each a lateral extension, a rock-shaft, the arm for each key on said shaft, adapted to be engaged by said extension, the crank-arm on the shaft, the alarm mechanism, and the rod between the latter and said crank-arm, adapted to set said alarm mechanism in operation, substantially as shown and described, and for the purpose specified.

6. In combination, the sliding locking-bolt, the pivoted swinging frame connected with the bolt, the key for swinging the frame, the spring for maintaining said latter parts in their normal position, pivoted keys carrying screws or pins to co-operate with said frame, the bell-hammer adapted to be actuated by said frame, the rock-shaft, the arms thereon, one for each key, the spring-actuated motor having an escape-wheel, the second hammer carried by the pallet-arbor, the detent-arm also on said arbor, the rod connecting said arm with the rock-shaft, and the forks on the keys embracing said shafts, substantially as described.

7. In combination, the several keys, the swinging frame, the bell-hammer carried by the pivoted plate *l*, the pivoted dog *l'*, carried by said plate, and the lug on the frame to engage said dog, substantially as described.

486,108. SHUTTER-OPENER. ARIJAH H. HULL, Odebolt, Iowa. Filed Apr. 26, 1892. Serial No. 430,676. (No model.)

Claim.—1. In a shutter-opener, the combination, with a shutter and a rope connected thereto, of a supporting-case mounted on the window-jamb, a shaft rotatably mounted in said clip, a sleeve loosely mounted on said shaft, a pawl-and-ratchet mechanism adapted to prevent a reverse movement of said sleeve, a slot in the end of said sleeve, a pin mounted transversely in said shaft and engaged within said slot in said sleeve, a drum loosely mounted on said sleeve and shaft, a rope fixed to said drum and extending therefrom over pulleys to and through a perforation in said shutter, a lever pivoted on said shutter, one end of which lever is pivoted on a vertical pivot secured on the casing, the remaining end of said lever being connected to the projecting end of the rope, and a torsional spring acting upon said lever to cause the same to turn upon the vertical pivot.



2. In a shutter-worker, the combination, with a shutter, of a pivot vertically secured to the window-casing, a lever pivoted at one end to said pivot, a pivotal connection between said lever and the shutter, a torsional spring mounted upon said vertical pivot and acting upon said lever to open the shutter, and a rope attached to the end of said lever.

3. In a shutter-worker, the combination, with a supporting-clip and a shaft rotatably mounted therein, of a sleeve rotatably mounted on said shaft, a ratchet-wheel formed on said sleeve, a pawl pivoted on said clip and engaging said ratchet-wheel, a spring interposed between said sleeve and the shaft, a slot formed in the end of said sleeve, a pin mounted transversely in said shaft and engaged in said slot, a drum rotatably mounted on said sleeve and provided with a pin projecting inward therefrom, and a rope forming a connection between said drum and a shutter, as and for the purposes set forth.

4. In a shutter-worker, a torsional spring secured to the window-casing and having an arm extending laterally and engaging with a lever pivoted to the shutter, as set forth.

5. In a shutter-worker, the combination, with a hinged shutter-blind, of a torsional spring mounted on a vertical pivot secured to the window-casing and having an arm to extend laterally to connect with a lever mounted on the same pivot and fulcrumed to the shutter to operate as set forth, for the purposes stated.

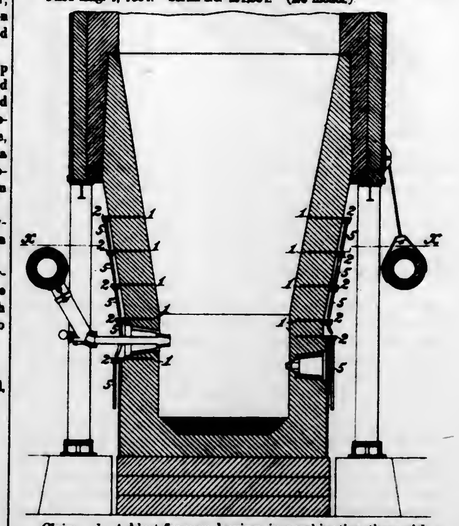
486,109. LOOM-SHUTTLE. ALFRED IRMENWOOD, New Bedford, Mass. Filed Jan. 11, 1892. Serial No. 417,717. (No model.)

Claim.—1. In a loom-shuttle, the combination, with the shuttle-body, the cop-spindle having an angular head pivoted in the shuttle-body, a spring bearing on said head, a bolt securing the spring to the body, and a nut on the lower end of the bolt, of a locking-arm working in a longitudinal opening in the shuttle-body and adapted to have one end forced adjacent to or against a flat face of said nut by said head when the spindle is lowered, as set forth.

2. In a loom-shuttle, the combination, with the shuttle-body, the cop-spindle having an angular head pivoted in the shuttle-body, a spring bearing on said head, a bolt passing through the spring and body and having a web under its head engaging a notch in the hole through the spring, and a thick nut on the lower end of the bolt, the nut standing in an opening in the lower face of the shuttle-body, which opening is continued into the cop-cavity, of an extension secured to the head of the spindle and standing within the continuation of the opening when the spindle is lowered with the free end of the extension against the nut, as set forth.

3. In a loom-shuttle, the combination, with the shuttle-body, the cop-spindle having its head pivoted in the shuttle-body, a spring engaging said head, a bolt connected with the spring, and a nut on the lower end of the bolt standing within an opening in the shuttle-body, which opening is continued into the cop-cavity, of an extension secured to the head of the spindle and standing within the continuation of the opening when the spindle is lowered, the end of the extension engaging the nut, and a set-screw threaded through the extension and having a square head at its upper end fitting within the continuation and a notch in its lower end, as hereinbefore set forth.

486,110. BLAST-FURNACE. JULIAN KENNEDY, Pittsburg, Pa. Filed Aug. 1, 1891. Serial No. 401,361. (No model.)



Claim.—1. A blast-furnace having, in combination therewith, a series of solid plates of high conductivity embedded in the walls of the furnace and means for cooling the outer edges of the plates, substantially as set forth.

2. A blast-furnace having, in combination therewith, a series of solid plates of high conductivity embedded in the walls of the furnace, the outer edges of the plates being provided with gutters or tubes for the circulation of a cooling fluid, substantially as set forth.

3. A solid metal plate for cooling the bosh of blast-furnaces, having a length less than the circumference of the wall of the furnace to which it is to be applied and provided along its outer edge with a tube or gutter for the reception of a cooling medium, substantially as set forth.

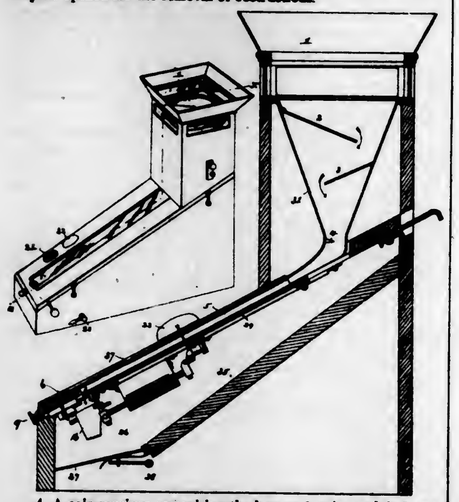
486,111. COIN RECEIVER AND REGISTER. VIRGIL A. KRUPP, Kenton, N. Y. Filed Oct. 24, 1891. Serial No. 409,668. (No model.)

Claim.—1. A coin receiver and register comprising a vertical hopper for receiving coins, said hopper being provided with oppositely-inclined shelves for tossing the coins, and an inclined conduit leading to the registering mechanism and communicating with the bottom of the hopper, an auxiliary shelf or spur being mounted in the path of the coins opposite the junction of the bottom of the conduit and the hopper.

2. A coin-receiver comprising a hopper and coin-conduit communicating therewith, means within the hopper for feeding the coins one

at a time to the conduit, the bottom of the hopper being provided with a movable section, and means for permitting a coin or obstructive matter to fall within access of the operator when said section is open.

8. A coin-receiver comprising a receptacle for the coins, a coin-conduit connecting therewith, said conduit being provided with a sliding bottom extending throughout its length, whereby the entire conduit may be opened for the removal of obstructions.



4. A coin-receiver comprising the hopper 1, coin-conduit 5, provided with a glass panel on top, and a slide 29 on the bottom, extending the entire length of the conduit, as and for the purpose described.

5. A coin receiver and register comprising a receiving-hopper, a coin-conduit, a coin-stop 6 at the bottom of the conduit, recessed as described, ejecting-slide 10, slide 14, connected with the register, and an opening between the slide, into which the movable coin may drop when the ejector is withdrawn.

6. In a coin receiver and register, the combination of a coin-conduit, a sliding stop 6 at the bottom thereof, a receiving-chamber below the stop to receive coins of the wrong denomination, the stop being provided with a recess of shorter diameter than a coin of the required denomination for the purpose described, ejecting-slide 10, guideway 13, and register-arm 19, actuated by a coin forced into the guideway, an opening being provided through which the coin may drop after the register is actuated.

7. In a coin-receiver, the combination of a hopper and a coin-conduit connected therewith, the hopper having inclined shelves for feeding the coins one at a time to the conduit and being provided with a movable section at the bottom, and the conduit having a removable bottom 29, provided with a recess under the hopper normally closed by a projection on the movable section of the hopper, whereby the bottom of the hopper may be thrown wide open for the removal of obstructive matter.

486,112. DENTAL SPACER. NATHANIEL KUHN, Fairbury, Nebr. Filed Apr. 11, 1892. Serial No. 429,264. (No model.)

Claim.—In a device of the character set forth, the combination of frame-bars having lower bent ends, as set forth, and screw-openings in the upper ends thereof, an adjusting-bar engaging said screw-openings, jaws arranged in pairs and inserted through the lower ends of said frame-bars, one jaw of each pair being hinged to the other and adapted to be moved away therefrom, and screws extending into said lower ends of the frame-bars and having spreading ends adapted to engage said jaws, substantially as described.

486,113. ADVERTISING-CABINET. DAVID B. LINCOLN, Aurora, Ill., assignor to John A. Manly, Grand Rapids, Mich., and Charles T. Dailey, Kansas City, Mo. Filed Dec. 26, 1891. Serial No. 416,290. (No model.)

Claim.—1. An advertising-cabinet for hotel-counters, comprising, in combination, a hollow metal body having braces upon its interior, sunken or depressed receptacles formed integral with the body, grooved metal strips upon its surface and front, providing ways, and a series of independent metal advertising-cards adapted to be clamped within the ways, substantially as described.

2. A cabinet for hotel-counters, comprising, in combination, a hollow metal body having suitable braces on its interior and sunken or depressed receptacles therein, and having grooved metal strips upon its surface, providing slideways open at one end, a series of independent metal advertising-cards adapted to be placed in the slideway, and a strip removably secured in the open end of the slideway to confine the cards therein, substantially as described.

486,114. DUMP-WAGON. CHARLES LEER, Sioux City, Iowa. Filed Feb. 19, 1892. Serial No. 422,136. (No model.)

Claim.—1. The combination, with a reach connecting the front and rear parts of suitable running-gear, of a body pivoted to rock laterally upon the reach and provided with movable side walls and devices preventing said side walls from following the rest of the body downward when either side is depressed.

2. The combination, with a laterally-tilting wagon-box, of a bent bar secured to the box transversely to the axis of tilting and means for locking said bar at a point some distance from said axis.

3. In a dumping-wagon, a reach having its upper side V-shaped in cross-section and a wagon-box supported by said reach and hinged to the V-shaped edge to rock laterally for dumping to either right or left.

4. The combination, with the reach and the wagon-box pivoted thereon and provided with the bent and perforated bar, of the bolt arranged in fixed ways to slide through the perforation and secure the box against tilting.

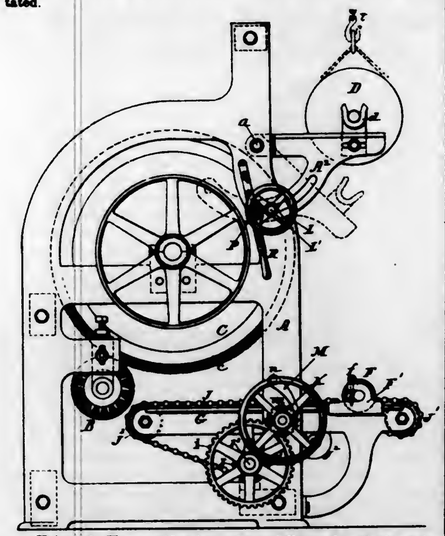
5. The combination, with the reach, the box hinged thereon to tilt laterally, and the perforated bar fixed to the box, of the bolt, the spring pushing the bolt in one direction, the cranked rod at the front end of the box, and a rod connecting the lower crank-arm to the bolt to retract it.

6. The combination, with the reach and the laterally-rocking body mounted thereon, of the inclined sides pivoted to swing independently of the rest of the body.

7. The combination, with the reach and the laterally-rocking body pivotally mounted thereon, of the side walls swinging independently upon pivots near the axis of motion of the body and means for preventing the descent of either side wall when the body is tilted to that side.

486,115. CLOTH-NAPPING MACHINE. ERWIN T. MARBLE and ERWIN R. MARBLE, Worcester, Mass. Filed June 7, 1892. Serial No. 435,811. (No model.)

Brief.—The invention comprises means whereby the contact-roll may be adjusted in relation to the napping-cylinder; also, means whereby the introduction and removal of the fabric may be facilitated.



Claim.—1. The combination, substantially as described, of the napping-cylinder, the stationary guide-rails disposed below said cylinder, projecting at the front of the machine and extending beneath the cylinder or its axis, the draft roll or drum arranged above and forward of said napping-cylinder, with the common tangential plane of said drum and cylinder being at or nearly perpendicular to the plane of said guide-rails, the contact-roll detachably mounted in its bearings, the said bearings movable on said guide-rails, a shaft extending from one to the other of said guides, parallel with the roll-axis, operating connections from said shaft for simultaneously moving said bearings along the guide-rails, and means for retaining adjustment thereof at any desired position, for the purposes set forth.

2. The combination, with the draft-drum, of the napping-cylinder C, contact-roll F, its sliding bearings F', the bearing-guides G, disposed in a plane extending beneath the cylinder, the chains J, connected with said bearings, and the operating-shaft I', having the sprocket-wheel I fixed thereon that engages the chains, substantially as and for the purpose set forth.

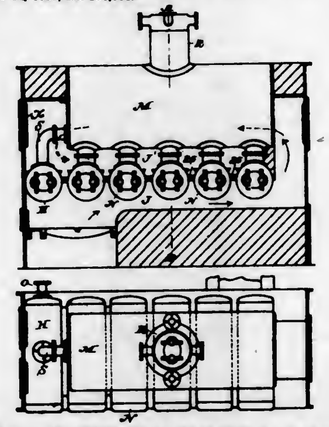
3. The combination of the contact-roll F, its journal-bearing boxes F', the guiding-ways G, the chains J, connected to said boxes, guide-sheaves J' therefor, the shaft I', provided with sprocket-wheels I, that engage said chains, the gear i, fixed on said shaft, the hand-wheel K, and its pinion K', meshing with said gear, the ratchet *m*, and pawl M, for the purposes set forth.

4. The combination, with the draft-drum, its pivoted supporting-bracket, the bracket-clamping screw, and hand-nut, of a stay-pin arranged in the frame and adapted for entering a recess in said bracket and locking the same when at its normal elevated position, for the purpose set forth.

5. The bracket stay-pin and the springing handle-lever engaging the grooved head thereof, in combination with the frame having a hole for said pin, the draft-drum, and the drum-supporting bracket pivoted to the frame and fitted with a recess that swings into line with said pin-hole and engages with said stay-pin when the bracket is in normal position, for the purpose set forth.

6. In combination with the contact-roll and its traverse-guides, the sliding bearing-boxes F', fitted to their guides by underlocking lips and having the overhanging jaw for receiving the contact-roll journal, and the detachable pins for retaining and releasing said journals and contact-roll, substantially as set forth.

486,116. BOILER. HENRI MARTIN, Sotteville, near Rouen, France. Filed Nov. 5, 1890. Serial No. 330,339. (No model.) Patented in France Mar. 14, 1889, No. 196,068.



Claim.—1. In combination, the steam-boiler M, a series of water-heating chambers N, extending transversely below the boiler and arranged adjacent to each other in the same plane to form a passage J below them, and a second passage J' between them and the bottom of the boiler, the said passages being separated from each other by the transverse heating-chambers, the furnace connected to the passage J, and the removable connections I between the transverse heating-chambers and the boiler, said connections extending across the chamber J', and the means to permit access to the chamber J', substantially as described.

2. In combination, the steam-boiler M, a series of water-heating chambers N, extending transversely of the boiler and forming a division-wall to divide the furnace horizontally into the two passages J J, the connections I from the heating-chambers to the boiler M, and the division-wall between the connections I, said walls dividing the heating-chamber vertically into passages, substantially as described.

3. In combination, the two steam-boilers M M', a series of water-chambers N, extending transversely below the two boilers, the connections from the heating-chambers to the boilers, and the double furnace below the heating-chambers, said chambers extending over and being common to both furnaces, substantially as described.

4. In combination, the boilers M M', the two furnaces, the transverse heating-chambers common to both of the boilers and the furnaces, said chambers dividing the furnace-space into passages J J', the two series of connections I, and the two walls J' between the connections I, dividing the inner passage J' from the outer return-flues, substantially as described.

5. In combination, the boiler having the passage or passages through it, the series of transverse heating-chambers below the boiler and forming a division of the furnace into two passages J J', the said passage through the boiler communicating with the passage J for receiving the heated products of combustion and discharging them into the passage J', and the removable connections extending across the passage J' from the heating-chambers to the boiler, substantially as described.

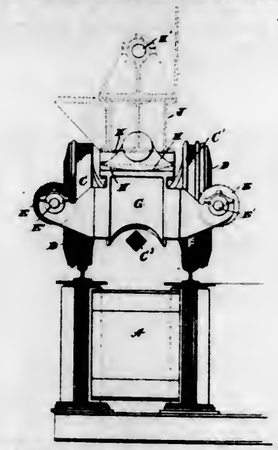
6. The combination, with the heating-chamber and the boiler, of the connection I between them, consisting of the outer part, the inner part secured at one end to the outer part and being of reduced diameter at its other end, and the interposed packing or cement between the reduced inner part and the outer part, substantially as described.

486,117. OVERHEAD TRAVELING CRANE. JOHN R. MORGAN, Alliance, Ohio, assignor of three-fourths to Thomas R. Morgan, Sr., Thomas R. Morgan, Jr., and William H. Morgan, same place. Filed July 27, 1891. Serial No. 400,794. (No model.)

Claim.—1. In an overhead traveling crane, the combination, with tracks and trucks thereon, the latter having curved seats, of a bridge provided at its ends with curved bearings resting loosely on the

curved seats on the trucks and free to slide on said curved seats and a movable trolley on the bridge.

2. The combination, with trackways, each consisting of parallel rails, and trucks, mounted on said trackways, of a bridge the ends of which rest loosely on said trucks and free to slide thereon to allow the bridge to give or yield under a load, substantially as set forth.



3. The combination, with trackways, each consisting of parallel rails, and trucks mounted on said trackways, of a bridge loosely mounted at its ends on the trucks and adapted to have a sliding movement on said trucks, as described, and a movable trolley carried by the bridge, substantially as set forth.

4. The combination, with trackways and trucks thereon, each truck having curved seats, of a bridge provided at its ends with bearing-blocks shaped to conform to the curvature of the seats and resting loosely thereon and a movable trolley on the bridge.

5. In an overhead crane, the combination, with a traveling trolley, the latter having curved seats, of a chain-block beam provided at its ends with curved bearings resting loosely on the curved seats of the trolley and free to slide on said curved seats.

6. The combination, with a movable bridge and a movable trolley thereon, the said trolley being provided on its opposite sides with curved seats, of a chain-block beam having curved bearing-blocks conforming in shape to the curved seats and loosely resting thereon.

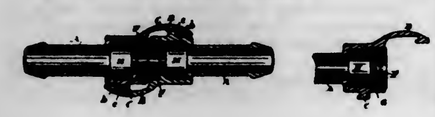
7. The combination, with trackways, each consisting of parallel rails, and trucks mounted on said trackways, of a bridge the ends of which rest loosely on the trucks, double trackways on the bridge, a trolley on said double trackways, and a chain-block beam loosely resting on the trolley, substantially as set forth.

8. The combination, with trackways, each consisting of parallel rails, and trucks mounted on said tracks and provided with curved seats, of a bridge provided at its ends with curved bearing-blocks, which latter rest on the curved seats of the truck, a movable trolley on the bridge, and a chain-block beam loosely supported on the trolley.

9. The combination, with two trackways, each consisting of parallel rails, and an angular driving-shaft located in a plane passing between the rails of one of said trackways, of trucks on said trackways, a bridge on said trucks, a sleeve carried by one of said trucks and provided with a bore corresponding in shape with the cross-section of the angular shaft, and a gear-wheel carried by said shaft for transmitting the motion thereof to the movable parts on the bridge.

10. The combination, with two trackways, each consisting of parallel rails, and an angular driving-shaft located in a plane passing between the rails of one of the trackways, of trucks on the trackways, a bridge loosely mounted at its ends on said trucks, and means for transmitting the motion of the angular driving-shaft to the movable parts on the bridge.

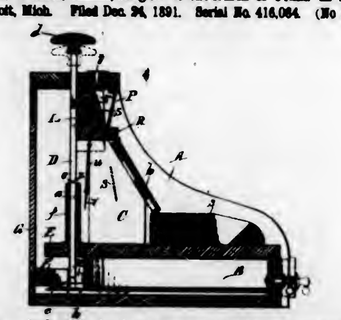
486,118. HOSE-COUPLING. JAMES F. MCELROY, Albany, N. Y., assignor to the Consolidated Car-Heating Company, same place. Filed Dec. 9, 1891. Serial No. 414,888. (No model.)



Claim.—1. A two-part hose-coupling composed of two like halves or portions, each half consisting of a body portion having a suitable passage therethrough, a locking-wing, a projecting flange near the end of said locking-wing, and a cam-lug with which the projecting flange on the locking-wing engages to make the coupling, said locking-wing coming into contact with the locking-wing on the adjoining coupler-head when the coupling is made, substantially as described, and for the purpose set forth.

2. A two-part hose-coupling composed of two like halves or portions, each half consisting of a body portion having a suitable passage therethrough, a coupler-head provided with a female screw, a gasket screwed into said coupler-head and extending into the internal chamber of the coupler, a threaded ring in contact with said gasket in the internal chamber, a locking-wing, a cam-lug with which the locking-wing engages, and projections for the purpose of retarding the rotation of the coupler-head, substantially as described, and for the purpose set forth.

486,119. CASH REGISTER AND INDICATOR. PETER H. MCEWAN, Windsor, Canada, assignor of one-fourth to Frank M. Allman, Detroit, Mich. Filed Dec. 24, 1891. Serial No. 416,064. (No model.)



Claim.—1. In a device for the purpose set forth, the combination of the case, the drawer therein, the rearwardly-extending spring attached to said drawer and having a catch at its free end, the expelling-spring bearing against the rear end of said drawer, and the vertically-reciprocal plunger for depressing the spring-catch to unlock said drawer, the lower end of said plunger engaging said spring between its catch and the point of attachment to the drawer and extending into the path of the catch of said spring is engaged thereby to arrest the throw of said drawer when unlocked by the action of said plunger.

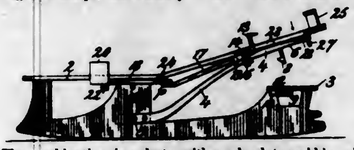
2. In a cash register and indicator, the combination of the case having a ticket-receiving slot therein, the reciprocal plunger in said case, said plunger having a block attached thereto, provided in its front face with a recess that registers with the slot in the case, the cross-rail against which the block rests and which forms the bottom of the recess therein when the plunger is raised, said case having a transparent front opposite said recess, the spring for restoring said plunger after being depressed, and means for locking said plunger so that it cannot be actuated, substantially as specified.

3. In a cash register and indicator, the combination of the case, the vertically-reciprocal plunger in said case, the sale-ticket, the case having a slot to receive said ticket adjacent to said plunger, said plunger carrying a block provided with a recess that receives the ticket from said slot, the cross-rail in the case that retains the ticket in said slot when the plunger is raised, but from which it is discharged as the plunger is depressed, the drawer to receive said ticket, and mechanism for unlocking and expelling said drawer as the plunger is actuated.

4. In a cash register and indicator, the combination of the case having a ticket-receiving slot therein, the reciprocal plunger in said case, said plunger having a block attached thereto, provided in its front face with an inclined recess, and the cross-rail in the case, against which said block rests when the plunger is raised and which forms the bottom of said recess, whereby as the plunger is depressed said recess is opened to discharge the ticket.

486,120. SKATE. ROBERT B. HORTON and HAMILTON HALL, Sandy Hill, N. Y. Filed Apr. 22, 1892. Serial No. 430,262. (No model.)

Claim.—1. In a skate, the combination, with a fixed sole-plate having depending pins, of a heel-lever pivoted to said sole-plate and having heel-clamps and a bolt for loosely connecting it with a plate-spring, a front heel-clamp adjustably secured to the plate-spring and linked to a pair of sole-clamp levers, the sole-clamp levers provided with slots to engage with the pins depending from the sole-plate, a plate-spring provided with catches, a heel-plate having slots, and a locking-bar adapted to engage with the catches of the plate-spring for locking the clamps, substantially as shown and described.

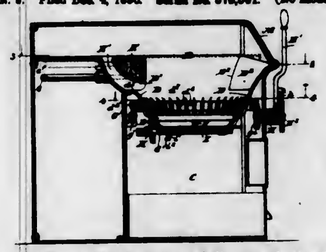


2. The combination, in a skate, with a sole-plate and hinged heel-lever provided with clamps, of an independent spring-plate located beneath the heel-lever and secured to the runner and adjustably connected to the sole and front heel-clamps and provided with catches, a heel-plate fixed to the runner and provided with slots for the passage of the catches on said spring-plate, and a spring-actuated locking-bar working in guides on the under side of said heel-plate and adapted to engage with the catches on the spring-plate, and thereby hold the clamps in their locked positions, substantially as set forth.

3. The combination, in a skate, with a sole-plate having depending pins, of a slotted heel-lever hinged to said sole-plate and provided with heel-clamps and a bolt on its under side for loosely connecting it with a spring-plate, a front heel-clamp adjustably connected to said spring-plate, the sole-clamp levers connected by a link with said heel-clamps and adapted to engage with the depending pins of the sole-plate, the spring-plate slotted at its free end and provided with catches, a heel-plate slotted for the passage of the catches on the spring-plate and provided with suitable guides for a sliding locking-bar, and the sliding locking-bar adapted to engage with the catches of the spring-plate and lock the same to the heel-plate, for the purposes shown and described.

4. In a skate, the combination, with a spring-plate secured to the runner and provided with a slot for the passage of an adjusting-bolt, of a front heel-clamp and adjusting bolt and nut for adjustably connecting said heel-clamp with said spring-plate, and a link connecting said heel-clamp with the sole-clamp levers, and the sole-clamp levers, whereby said sole and heel-clamps can be simultaneously adjusted, substantially as shown and described.

486,121. HEATER, FURNACE, &c. MICHAEL O'GORMAN, Jersey City, N. J. Filed Dec. 4, 1890. Serial No. 373,561. (No model.)



Claim.—1. The combination, substantially as set forth, of the rotatable grate-holder or frame, the grate pivoted therein, the dumping arm or crank on the grate, and grate-dumping devices acting on the crank to automatically dump the grate during its rotation.

2. The combination, substantially as set forth, of the rotatable grate, the dumping arm or crank thereon, and the hinged arm K, adapted to be brought into the path of the dumping-arm and having the ledge *l* and vertical face *l'*.

3. The combination, substantially as set forth, of a rotatable grate-holder mounted to revolve continuously in one direction, means operatively connected with the grate-holder and adapted to effect the rotary movement of the grate, a grate supported in the grate-holder, and devices constructed and arranged to impart to the grate-holder a vertical vibration while it is rotating.

4. The combination, substantially as set forth, of a rotatable grate-holder provided with an annular series of teeth, a dumping-grate carried by the grate-holder, vertical and horizontal rollers forming the bearings and guides for the grate-holder, a pinion engaging the teeth of the grate-holder, and means for operating the pinion.

5. The combination, substantially as set forth, of the rotatable grate-holder having teeth thereon, a pinion engaging the teeth to rotate the holder, a toothed wheel also engaging the teeth and having alternate shallow and deep spaces between its teeth to impart a vertical vibration to the holder, and means for rotating the pinion.

6. The combination, substantially as set forth, of the open-bottom fire-pot, a grate-holder surrounding the fire-pot and located above its lower end out of the way of ashes and hot coals, a grate suspended from the grate-holder and arranged beneath the open bottom of the fire-pot, and means operatively connected with the grate-holder for rotating it through one or more revolutions.

7. The combination of the open-bottom fire-pot, an annular grate-holder arranged above the lower end of the fire-pot out of the way of ashes and hot coals, a grate suspended in the holder and arranged beneath the open bottom of the fire-pot, and means for rotating the grate-holder through one or more revolutions.

8. The combination, substantially as set forth, of the stove-casing, the open-bottom fire-pot, the rotatable grate-holder arranged at the bottom thereof, the grate carried by the grate-holder and arranged beneath the open bottom of the fire-pot, means for rotating the grate-holder, and means for automatically dumping the grate during its revolution.

9. The combination, substantially as set forth, of the stove-casing, the open-bottom fire-pot, the rotatable grate-holder arranged above the lower end of the fire-pot, the grate suspended in the grate-holder and arranged beneath the open bottom of the fire-pot, mechanism for rotating the grate-holder, and devices constructed and arranged to automatically dump the grate during its rotation.

10. The combination, substantially as set forth, of the casing, the fire-pot, a grate arranged therein with an air-space between the casing and pot, the ash-pit arranged beneath the fire-pot and grate and in open communication with the air-space between the pot and casing, air passages or inlets between the space above the fire-pot and the top of the air-space between the pot and casing, and devices constructed and arranged to regulate said air-passages, whereby hot air from the ash-pit and space between the casing and fire-pot may be admitted in regulated quantity to the top of the fire.

11. The combination, substantially as set forth, of the front plate or casting N, the casing having the bearings or sockets *n* and projections *n'*, the door M, having trunnions *m* and notches or recesses *m'* in its edges for the purpose described, a fire-pot, the removable section thereof that holds the door in place, and a grate.

486,122. DOWNDRAFT-FURNACE. ORLAND D. ORVIS and ORIL D. ORVIS, Chicago, Ill. Filed Apr. 19, 1892. Serial No. 429,736. (No model.)

Claim.—1. In a downdraft-furnace, the combination of the fire-chamber and combustion-chamber separated from but directly over the fire-chamber and a draft-passage through which the downdraft products of combustion are conducted into said combustion-chamber at a point forward of its rear end during their onward passage toward the rear end of the furnace, substantially as described.

2. In a downdraft-furnace, the combination of a combustion chamber or chambers separated from but directly over the fire-chamber and a direct-draft passage at the side or sides of said fire-chamber, through which the downdraft products of combustion are conducted into said combustion-chamber in their onward passage toward the rear end of the furnace, substantially as described.

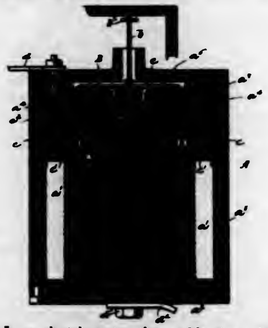
3. In a downdraft-furnace, the combination of two or more fire-chambers, a combustion-chamber separated from but directly over said fire-chambers, and a draft-passage between said fire-chambers, conducting the downdraft products of combustion from the said fire-chambers directly to the overhead combustion-chamber, substantially as described.

4. In a downdraft-furnace, the combination, with the fire-chamber, of a combustion-chamber directly over said fire-chamber, an arch or diaphragm separating said chambers, and a direct-draft passage or passages between said arch and the wall or walls of the furnace, through which the downdraft products of combustion from the grate-bars are conducted directly to said combustion-chamber, whereby said combustion-chamber throughout its length is subjected to direct-

draft heat in the passage of the products of combustion from the fire-chambers to the rear portion of the furnace, substantially as described.

5. In a downdraft-furnace, the combination of the fire-chamber, an arch-like structure inclosing the same, a combustion-chamber directly over said grate-bars, and an updraft-passage directly conducting the downdraft products of combustion from the grate-bars to the forward end of the combustion-chamber immediately over the fire-chamber, substantially as described.

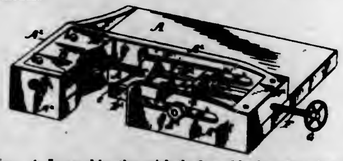
486,123. ELECTRIC METER. JOHN PERRY, London, England. Filed June 8, 1892. Serial No. 435,863. (No model.) Patented in England Jan. 17, 1890, No. 573; in France Nov. 17, 1890, No. 208,583, and in Belgium Nov. 18, 1890, No. 92,706.



Claim.—1. In an electric meter, the combination, with an armature consisting of a conductor shaped with coaxial surfaces of revolution, respectively receiving and giving out electric current, of a field magnet or magnets having polar surfaces arranged coaxially with the armature, said polar surfaces being interrupted or discontinuous, for the purpose set forth.

2. An electric meter consisting of a rotary circular body, in combination with means for sending a current from its edge to its center, or vice versa, and means for producing Foucault currents in the body, for the purpose set forth.

486,124. COMBINED PIPE-HOLDER AND PIPE-VISE. ADOLPHUS S. RAGER, Frederick, Md. Filed June 14, 1892. Serial No. 436,659. (No model.)



Claim.—1. In combination with the base-block and stationary jaw of a pipe-holder, the frame inclosing said jaw, a hand-screw retained parallel with the base-block, a head-block loosely mounted upon one end of said screw and forming the rear end of a carriage, the sides of said carriage pivoted to the head-block, a blade removably secured to said sides, and a plate secured to the base-block between the sides of the carriage, whereby the latter is guided, substantially as described.

2. In combination with the base-block and stationary jaw of a pipe-holder, the frame inclosing said jaw and having slots in its sides, a hand-screw retained parallel with the base-block, a head-block loosely mounted upon one end of said screw and having its ends received in guide-slots of the frame, the sides of a blade-carrying carriage pivoted to the head-block, and a blade rearwardly secured to said sides, substantially as described.

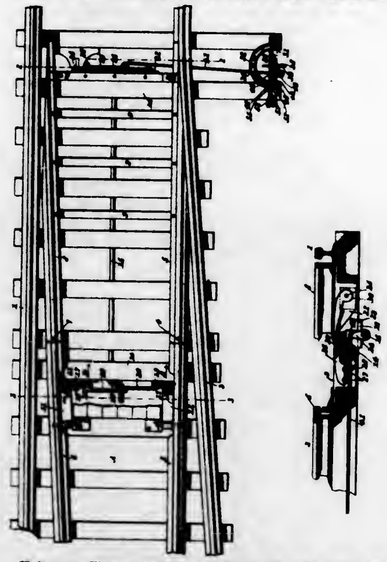
486,125. WHEEL. WILLIAM T. ROBINSON, Birmingham, Ala. Filed Aug. 24, 1892. Serial No. 443,976. (No model.)

Claim.—In a wheel, the combination of the hub-section 2, provided with an annular flange 6 and having an integral axle-box, the latter having its outer portion threaded and provided between the threaded portion and the annular flange with an annular shoulder and with a series of integral beveled projections forming mortises, the spokes having tapered inner ends laterally wedge-shaped and provided with tenons arranged in said mortises, the interiorly-threaded removable hub-section 4, screwing on the threaded portion of the axle-box and provided at its inner end with an annular flange 7, the

486,125.

inner and outer circular securing-plates slightly conical or flaring, arranged on the axle-box at the side faces of the ends of the spokes and extending outward beyond the annular flanges and provided with perforations, the outer plate being arranged on said annular shoulder, and the rivets arranged in the perforations of said plates and interposed between the spokes, substantially as and for the purpose described.

486,126. RAILWAY-SWITCH. GEORGE SAALMILLER, South Chicago, Ill. Filed Jan. 12, 1892. Serial No. 417,869. (No model.)



Claim.—1. The combination, with the side and main rails and their switches, of a connecting-bar for the switches, a plate secured to the under side of the bar and provided with an inverted-V-shaped recess, a rock-shaft extending under the plate, a shifting-arm secured to the rock-shaft and having its upper end taking into and adapted to operate against the opposite sides of the recess, treads pivoted at the sides of the rails, and connections between the treads and rock-shaft, substantially as specified.

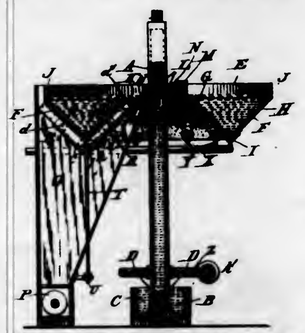
2. The combination, with the main and side rail, the switch-rails and the bar connecting the same, of the plate secured to the under side of said bar and having an inverted-V-shaped recess, a rock-shaft terminating under the cam-recess, means for oscillating the rock-shaft, and a shifting-arm extending from the rock-shaft and taking into the recess, substantially as specified.

3. The combination, with the side, the main rails, and the switch-rails, of the bar connecting the switch-rails, the recessed plate, the latch pivoted to the face of an adjacent tie opposite the plate and provided with inner and outer notches, a pin extending from the plate and adapted to be engaged by the notches, a rock-shaft extending under the plate, a shifting-arm extending from the rock-shaft and into the recess of the plate and under the latch, and means for operating the rock-shaft, substantially as specified.

4. The combination, with the main rails, the switch-rails, the side rails, and the bar connecting the same, said rails being arranged as described, of the plate having the inverted-V-shaped recess, said plate being bolted to the bar, the rock-shaft extending under the plate, the shifting-arm mounted on the rock-shaft and extending into the recess

of the plate, said plate being provided with a pin, a locking-latch pivoted opposite the plate and adjacent thereto and provided with inner and outer notches, either of which is adapted to engage the pin in accordance with the position of the switch-rails, a crank located at the opposite end of the rock-shaft, opposite bell-crank levers located at opposite sides of the crank of the rock-shaft, links connecting the inner ends of the bell-crank levers with the crank of the rock-shaft, treads pivoted at the sides of the inner side rail and the inner main rail, and links connecting the treads with the outer ends of the bell-crank levers, substantially as specified.

486,127. APPARATUS FOR MAKING LAMPBLACK. SWAIN SALMONS, Ridgway, Pa. Filed Aug. 3, 1892. Serial No. 441,945. (No model.)



Claim.—1. In an apparatus for making lampblack, the combination, with the hollow shaft, of the rotatable pan formed with a V-shaped bottom and having communication with the interior of said shaft for the passage of water to the shaft and the burner located beneath the pan at a point to direct the flame or products of combustion against the two oppositely-inclined faces of the bottom, substantially as and for the purposes described.

2. In an apparatus for making lampblack, the combination, with the hollow shaft, of the rotatable pan having communication with the interior of said shaft, formed with a V-shaped bottom and an inwardly-extending horizontal portion from the inner inclined wall of the bottom, and a burner located beneath the pan at a point to direct the flame or products of combustion against the two oppositely-inclined faces of the bottom, substantially as and for the purposes described.

3. In an apparatus for making lampblack, the combination, with the hollow shaft, of the rotatable pan having communication with the interior of said shaft for the passage of water from the pan to the shaft and formed with a V-shaped bottom, tubes extending upwardly from the space bounded by the inner inclined wall of the bottom, and a burner located beneath the pan at a point to direct the flame or products of combustion against the two oppositely-inclined faces of the bottom, substantially as and for the purposes described.

4. In an apparatus for making lampblack, the combination, with the rotatable pan and a burner located beneath the bottom of the pan, of a scraper located adjacent to the bottom to bear against the same, a rod connected with said scraper, and an adjustably-weighted lever to which said rod is connected for supporting said scraper, substantially as and for the purposes described.

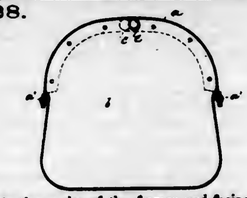
5. In an apparatus for making lampblack, the combination, with the rotatable pan formed with a V-shaped bottom and a burner located beneath said bottom, of a V-shaped scraper supported beneath the pan so that its two members will bear against the oppositely-inclined faces of the bottom of the pan to remove lampblack therefrom, substantially as and for the purposes described.

6. In an apparatus for making lampblack, the combination, with the rotatable pan formed with a V-shaped bottom and having a portion extending horizontally inwardly from the inner wall of said bottom and a burner located beneath said bottom, of a V-shaped scraper supported to bear against the oppositely-inclined walls of the bottom of the pan and a yielding scraper connected with said V-shaped scraper and bearing against the horizontally-extending portion to the bottom of the pan, substantially as and for the purposes described.

486,128. FRAME FOR POCKET-BOOKS. SIMON SCHERMER, New York, N. Y. Filed May 27, 1892. Serial No. 434,545. (No model.)

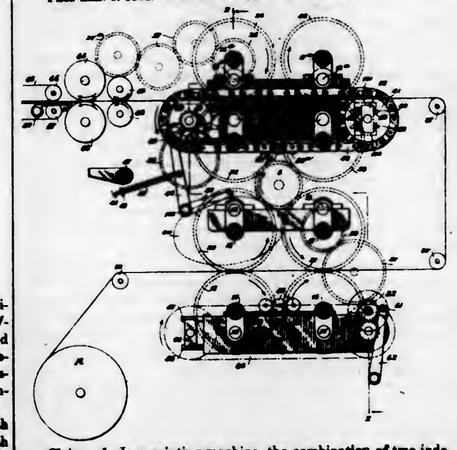
Claim.—The combination of a pair of pivotally-connected jaws that are L-shaped in cross-section with a pair of laterally-yielding pins

486,128.



secured within the angles of the frames and facing each other with their headed interlocking ends, substantially as specified.

486,129. PRINTING-MACHINE. WALTER SCOTT, Plainfield, N. J. Filed Mar. 9, 1891. Serial No. 384,236. (No model.)



Claim.—1. In a printing-machine, the combination of two independent pairs of flat platens and flat type-beds, the components of each of said pairs having a motion of circumduction and being geared together, and a driver-gear common to both of said pairs, substantially as described.

2. In a printing-machine, the combination of two independent pairs of flat platens and flat type-beds, the components of each pair having a motion of circumduction and being geared together, a driver common to both of said pairs, feed-rollers for drawing the paper from a roll between the type-bed and platen of each pair, and rollers for guiding the paper, substantially as described.

3. In a printing-machine, the combination of two pairs of flat platens and flat type-beds, the components of each pair having a motion of circumduction and being geared together, a driver common to both of said pairs, feed-rollers for drawing the paper from a roll between the platen and type-bed of each pair, rollers for guiding the paper, cutting-cylinders for severing the perfected copies, and gearing connecting the feed and cutting devices with the gearing of one of said pairs, substantially as described.

4. In a printing-machine, the combination of a flat type-bed carrying the form and having a motion of circumduction, inking-rollers, chains carrying said rollers, and mechanism for causing said rollers to traverse the forms, substantially as described.

5. In a printing-machine, the combination of a flat type-bed carrying the form and having a motion of circumduction, inking-rollers, endless chains carrying said rollers, sprocket-wheels, and mechanism for rotating said wheels, whereby the inking-rollers are caused to traverse the forms, substantially as described.

6. In a printing-machine, the combination of a flat type-bed carrying the form and having a motion of circumduction, inking-rollers, endless sprocket-chains carrying the rollers, sprocket-wheels, and gear-wheels for rotating said sprocket-wheels, whereby the ink-rollers are caused to ink the forms, substantially as described.

7. In a printing-machine, the combination of a flat type-bed carrying the form and having a motion of circumduction, inking-rollers, endless sprocket-chains carrying said rollers, sprocket-wheels at each end of the bed, a sprocket-pinion connected with the sprocket-wheels at one end of the bed, and a gear on the stationary frame for driving the sprocket-pinion, substantially as described.

8. In a printing-machine, the combination of a flat type-bed carrying the form and having a motion of circumduction, inking-rollers,

chains carrying said rollers, sprocket-wheels at each end of the bed, a sprocket-pinion connected with the sprocket-wheels at one end of the bed, a stationary internal gear, and a gear on the bed intermediate the internal gear and the sprocket-pinion, substantially as described.

9. In a printing-machine, the combination of a flat type-bed carrying the form and having a motion of circumduction, inking-rollers, means for causing them to move around the bed, and an inking-table on the bed, over which the rollers pass, substantially as described.

10. In a printing-machine, the combination of a flat type-bed carrying the form and having a motion of circumduction, inking-rollers, means for causing them to move around the bed, an inking-table on the bed, over which the rollers pass, an ink-fountain, and a movable ductor-roller for supplying the table with ink from the fountain, substantially as described.

11. In a printing-machine, the combination of a flat type-bed carrying the form and having a motion of circumduction, inking-rollers moving around the said bed, an inking-table on the bed, a stationary ink-fountain, and a ductor-roller on pivoted arms for supplying ink to the table from the fountain, substantially as described

12. In a printing-machine, the combination of a flat type-bed carrying the form and having a motion of circumduction, inking-rollers moving around said bed, an inking-table on the bed, a stationary ink-fountain, a ductor-roller on pivoted arms for supplying ink to the table from the fountain, and a cam for moving the roller to the fountain, substantially as described.

13. In a printing-machine, the combination of a flat type-bed carrying the form and having a motion of circumduction, inking-rollers moving around the said bed, an inking-table on the bed, an ink-fountain, a ductor-roller on pivoted arms, a cam for moving the ductor into contact with the fountain, and a spring for moving the ductor against the inking-table, substantially as described.

14. In a printing-machine, the combination of a flat type-bed carrying the form and having a motion of circumduction, inking-rollers, endless sprocket-chains carrying said rollers, sprocket-wheels at each end of the bed, and means for adjusting the bearings for the wheels at one end of the bed, substantially as and for the purpose described.

15. In a printing-machine, the combination of a flat bed carrying the form, inking-rollers, a distributing-roller, sprocket-chains carrying said rollers, sprocket-wheels at each end of the bed, a rack having semicircular ends on the bed, and gearing connecting the distributing-roller and said rack, substantially as and for the purposes described.

16. In a printing-machine, the combination of a flat platen and a flat bed, each having a motion of circumduction and being geared together, a driver-gear, feed-rolls drawing the paper between the platen and bed, cutting-cylinders geared together, lobal gearing driving one of said cylinders, and gearing from one part of the printing device driving said lobal gears, as and for the purposes described.

17. In a printing-machine, the combination of two pairs of flat platens and flat beds, the components of each pair having a motion of circumduction and being geared together, a driver common to said pairs, feed-rolls drawing the paper between the platen and bed of each pair, cutting-cylinders geared together, lobal gearing driving one of said cylinders, and gearing from one part of the printing device driving said lobal gears, as and for the purposes described.

18. In a printing-machine, the combination of printing devices taking impressions intermittently upon a web, feed-rolls drawing the web from a roll, and variable-speed mechanism, substantially as described, driving the feed-rolls at or near the speed of the printing devices while the impressions are being taken and at a varying speed at other times, substantially as and for the purposes described.

19. In a printing-machine, the combination of printing devices taking impressions intermittently upon a web, feed-rolls drawing the web from a roll, cutting-cylinders, and variable-speed mechanism, substantially as described, driving the rolls and cylinders at or near the speed of the printing devices while the impressions are being taken and at a varying speed at other times, as and for the purposes described.

20. In a printing-machine, the combination of two pairs of printing devices taking impressions intermittently and alternately upon a web, feed-rolls drawing the web from a roll, and variable-speed mechanism, substantially as described, driving the rolls at or near the speed of each of said pairs while such pair is taking an impression and at a varying speed at other times, substantially as and for the purposes described.

21. In a printing-machine, the combination of two pairs of printing devices taking impressions alternately and intermittently upon a web, feed-rolls drawing the web from a roll, cutting-cylinders, and mechanism, substantially as described, driving the rolls and cylinders at or near the speed of each of said pairs while each pair is taking an impression and at a varying speed at other times, substantially as and for the purposes described.

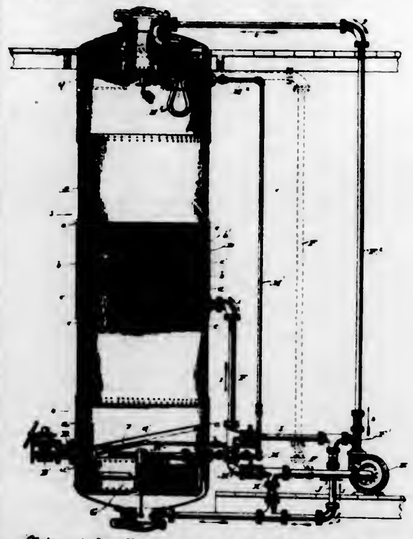
22. In a printing-machine, the combination of a flat platen, a flat type-bed, each having a motion of circumduction and being geared together, feed-rolls drawing the web between the platen and bed, and lobal gears and gearing connecting said rolls and the gearing of the printing devices, substantially as described.

23. In a printing-machine, the combination of a flat platen, a flat type-bed, each having a motion of circumduction and being geared together, feed-rolls drawing the web between the platen and bed, cutting-cylinders, and lobal gears and gearing connecting said rolls and cylinders and the gearing of the printing devices, substantially as described.

24. In a printing-machine, the combination of two pairs of flat platens and flat type-beds, the components of each pair having a motion of circumduction and being geared together, feed-rolls drawing the web between the platen and bed of both pairs, and lobal gears and gearing connecting said rolls and the gearing of the printing devices, substantially as and for the purposes described.

25. In a printing-machine, the combination of two pairs of flat platens and flat type-beds, the components of each pair having a motion of circumduction and being geared together, feed-rolls drawing the web between the platen and bed of each pair, cutting-cylinders, and lobal gears and gearing connecting said rolls and cylinders and the gearing of the printing devices, substantially as and for the purposes described.

486,180. DIGESTING APPARATUS. ALEXANDER SELKIRK, Albany, assignor, by mesne assignments, to Robert Whitehill and Daniel S. Waring, Newburg, N. Y. Filed Mar. 5, 1889. Serial No. 301,877. (No model.)



Claim.—1. In a digesting apparatus, the combination, with the digesting-vessel, of a concentric perforated plate of extended area, forming with the wall of the digesting-vessel an annular liquor-chamber, a draft-pipe leading from said liquor-chamber, and means for forcing the liquor withdrawn from said chamber back into the digester, substantially as described, for the purposes set forth.

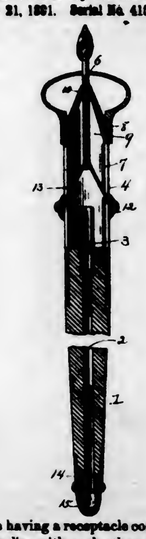
2. In a digesting apparatus, the combination, with the digesting-vessel, of a concentric perforated plate forming with the wall of the digesting-vessel an annular liquor-chamber, open supports arranged at intervals between the wall of the vessel and the perforated plate and sustaining the latter in place, a draft-pipe leading from said liquor-chamber, and means for forcing the liquor withdrawn from said chamber back into the digesting-vessel, substantially as described, for the purpose set forth.

3. In a digesting-vessel, the combination, with the wall of the digesting-vessel, of a concentric perforated plate d, forming with said wall of said vessel an annular chamber D, the rings d', provided with notches or openings d^3, a draft-pipe, a pump, and pipes discharging into the respective opposite ends of the digesting-vessel, substantially as and for the purposes set forth.

4. In a digesting apparatus, the combination, with the concentric internal perforated plate d, forming with the wall of the digesting-vessel the annular liquor-chamber D, of the wire-gauze covering d', a draft-pipe leading from said liquor-chamber, and means for forcing the liquor withdrawn from said chamber back into the digesting-vessel, substantially as described, for the purpose set forth.

5. In a digesting apparatus, the combination, with the digesting-vessel having the blow-off opening provided with a stop-cock controlled by an operator, of the perforated plate d', set inclined and having at its lowest dip the perforated step d^4, neighboring the blow-off opening, and the live-steam pipe U, having a valve under control of the operator and its discharge end directed to the said step d^4, substantially as and for the purposes set forth.

486,181. CANE. WILLIAM S. SHARPSHER, Evanston, assignor of one-half to the North Western Toy and Manufacturing Company, Chicago, Ill. Filed Dec 21, 1891. Serial No. 415,737. (No model.)



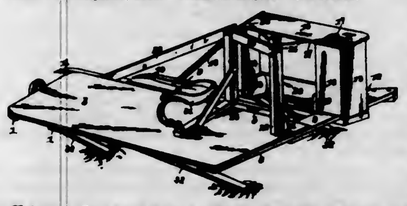
Claim.—1. A cane having a receptacle constructed to receive and hold several matches in line with each other, a hollow handle, a friction igniting device therein, and a pusher to force the match through the friction device, and means, substantially as described, attached to said cane for spreading the pusher, as set forth.

2. A lighting implement comprising a reservoir to receive the matches, a friction device at the end thereof, a pair of nippers to grasp the match to be lighted, and a spreader attached to the cane at the upper end of the reservoir to open the nippers, substantially as described.

3. The combination, with the perforated cane 1, of spreading-tube 3, slotted tube 4, sliding nippers 13, friction device 10, and hollow handle 5, inclosing the friction device, substantially as described.

4. The cane and lighting device herein described, comprising the perforated cane 1, having cap 15, hollow perforated handle 5, friction-wires 10, inclosed in said handle, slotted tube 4, connecting the handle to the cane, the ring 12, sliding on the tube 4, the nippers 13, attached to said ring and sliding in the slots in the tube, and the spreading-tube 3, all substantially as shown and described.

486,182. CORN-HARVESTER. JOSEPH J. SUDLEY, El Dorado, Kans. Filed Apr. 23, 1892. Serial No. 430,370. (No model.)



Claim.—1. In a corn-harvester, the combination, with the main frame supporting a platform, of a bar extending laterally from the main frame at the rear end thereof, an arm extending forwardly from the bar and carrying a knife, a box mounted upon the arm adjacent to the knife, guides for conducting the corn to the knife, standards mounted on the arm and platform, a pulley mounted on the standard of the platform, a pulley mounted on the rear standard of the arm, a rope connected to the front standard of the arm, passed over the pulley on the platform, and thence transversely over and depending from the pulley of the rear standard, and a weight secured to the end of the rope, substantially as specified.

2. In a corn-harvester, the combination, with the main frame having the platform, the standard rising from the rear inner corner thereof and provided with a pulley, a beam extending laterally from the main frame, an arm mounted on the beam, a rear standard and a front standard rising from the arm, a cross-piece connecting the standards and having a perforation, and a pulley mounted over the perforation, of a rope secured to the cross-bar, passed rearwardly over the pulley of the standard and platform, and thence transversely over the pulley supported above the rear standard, depending through the opening in the cross-bar between the sides thereof, a weight located on the rope, a knife located upon the arm below the rope, and a box mounted on the arm adjacent to the knife, substantially as specified.

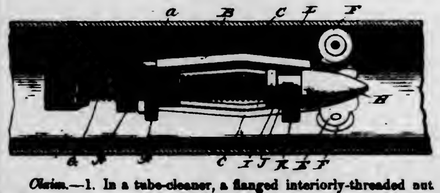
3. In a corn-harvester, the combination, with the main frame having the platform, the beam extending laterally therefrom, the guide-arm mounted on the beam and extending forwardly to a point near the end of the platform, and fingers mounted on the platform and guide-arm, of a knife bolted to the guide-arm and extending diagonally toward the platform and a guide-bar adjustably connected at its front end to the inner edge of the main frame and converging rearwardly toward the knife, substantially as specified.

4. In a corn-harvester, the combination, with the main frame having the platform, the rear cross-bar, and the arm extending forwardly from the latter, of a knife extending from the arm toward the platform and terminating short of the cross-bar, so as to form an intervening space, and an angularly-adjustable guide-bar secured to the main frame and converging rearwardly toward the knife, substantially as specified.

5. In a corn-harvester, the combination, with the main frame comprising the longitudinal beam 2, the inner edge of which near its rear end is provided with an offset, a cross-bar located at the rear end of the main frame, and an arm extending forwardly therefrom, of a knife bolted to the arm and extending diagonally across the space between the arm and the platform and a guide-bar pivoted to the offset and provided with a perforated plate and bolt for adjusting it with relation to the knife, substantially as specified.

6. In a corn-harvester, the combination, with the main frame, the platform thereon, the rear transverse bar, the arm mounted thereon and extending forwardly opposite the platform, the standards 13 and 14, rising from the arm, the cross-piece connecting the same, the inclined bar 18, leading from the front end of the arm to the upper end of the front standard 14, the front and rear bars 23 and 22, respectively, the latter provided with a pulley 26, the inclined bar 24, leading from the front end of the platform to the upper end of the standard 23, the cross-bar 25 between the standards 23 and 22, the rope connected at its front end to the cross-piece 15, connecting the standards 13 and 14, and the pulley mounted on the cross-piece, said rope being passed over the pulley 26 and over a pulley 16, mounted on the cross-piece, of a knife located between the bars 13 and 14 and a box adjacent to the knife, substantially as specified.

486,188. BOILER-TUBE CLEANER. WILLIAM R. SMITH and JAMES R. SMITH, Birmingham, Ala., assignors of one-half to A. Eubank, same place. Filed June 27, 1892. Serial No. 438,191. (No model.)



Claim.—1. In a tube-cleaner, a flanged interiorly-threaded nut having a series of holes or apertures in the flange thereof, a series of curved or bowed levers loosely bolted at one end in said holes or apertures and provided at their outer ends with registering beveled meeting faces and movable cutting-disks, and a headed screw-mandrel working through said nut between the levers and connected with the latter, substantially as set forth.

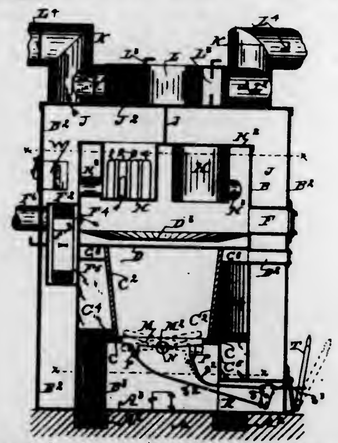
2. In a tube-cleaner, the combination, with a threaded nut or head, of a series of bowed cutter-levers connected to said nut and provided at their outer ends with inner beveled meeting faces and outer bifurcated lugs, cutting-disks mounted in said lugs, a screw-mandrel working through said head or nut and terminating at one end in a conical head working between the meeting ends of said levers, and

an adjusting-ring carried by said mandrel and embracing said bowed levers, substantially as set forth.

3. In a tube-cleaner, a flanged nut, a series of bowed levers loosely connected at one end to said nut, cutting-disks mounted in the other ends of said levers, a screw-mandrel passing through said nut and provided with a conical spreading head and an annular groove at the base of said head, a collar loosely working in said groove, and an adjusting-ring spaced from said collar and encircling said bowed levers, substantially as set forth.

4. In a tube-cleaner, a flanged nut, a series of bowed levers loosely connected at one end of said nut and carrying cutting-disks at the other ends, a screw-mandrel passing through said nut and provided with a conical head and an annular groove, a collar loosely working in said groove, an adjusting-ring encircling said bowed levers and connected with said collar by regular-spaced bolts between which work said levers, and sleeves loosely mounted upon said bolts, substantially as set forth.

486,184. HOT-AIR FURNACE. JAMES R. SPENCER and JOSEPH L. SPENCER, Des Moines, Iowa. Filed July 27, 1891. Serial No. 400,836. (No model.)



Claims.—1. In a furnace, a hot-air chamber extending vertically between two concentric walls and extending horizontally between a plate on the top of the inner wall, and fixed elbow-shaped partitions extending vertically between the inner and outer wall and horizontally between the plates at the tops of the two walls, said partitions serving to divide the said chamber into a number of compartments, and a hot air flue connected direct with the top of each compartment, a chamber between said flues having openings communicating therewith, and a damper for each opening for the purpose of conveying an equal quantity of heat through each flue to an equal number of separate rooms in a building or directing the heat to any one of the rooms in the manner set forth, for the purposes stated.

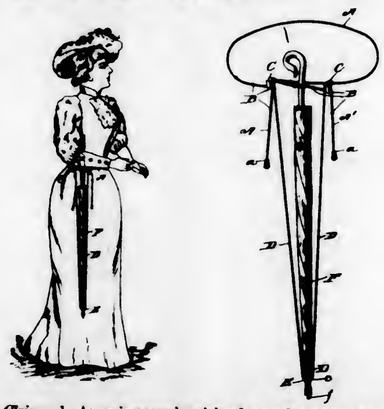
2. An annular chamber on the top of a hot-air furnace, a plurality of flues connected with the said chamber, dampers whereby communication between the flues and chamber may be cut off, dampers located in the said annular chamber at points between the flues, so that heated air may be directed to any one or all of the said flues, and dampers in each of the said flues to aid in concentrating and directing the heated air, substantially as set forth.

3. A radiator consisting of an open-topped chamber having a series of tubes that are closed at their tops and open at their bottoms fixed in the closed bottom of the chamber to project vertically and open-ended tubes extending outwardly from said open-topped chamber, in combination with the combustion-chamber and hot-air chamber that extends around and over the combustion-chamber in the manner set forth, for the purposes stated.

4. In a hot-air furnace, the combination of the chamber F^3, an opening leading from above the fire-pot into the top of the said chamber, an annular chamber surrounding the fire-pot, an opening leading from the bottom of the chamber F^3 to the said annular chamber and an opening leading from the annular chamber to the chamber F, an escape-flue connected with the chamber F, and a damper within the said chamber whereby the products of combustion may be directed through the said annular chamber or directly to the flue, substantially as set forth.

5. An improved hot-air furnace adapted to concentrate and direct heat to a single room or compartment in a building or divide and direct a uniform quantity to each one of a number of rooms or compartments, comprising three concentric walls B, B^2, and B^3, a base having a number of air-passages A^1, a fire-pot supported at the top of the inner wall B^2, plates D and C^3 at the top portion of the fire-pot to produce an annular air-chamber, a deflector D^2 above the fire-pot, a chamber F^3, having a damper F^6, having communication with the combustion-chamber at a point above the fire-pot and also at a point below the plate C^3, radiators H, suspended in the top of the combination-chamber, partitions J between the walls B and B^2, flues K at the top of the furnace, and an annular chamber L and dampers L^3, L^5, and L^4, arranged and combined to operate in the manner set forth.

486,185. UMBRELLA SUSPENDER AND CARRIER. LAURA R. STOCKDALE and GEORGE R. LAWRENCE, Englewood, Ill. Filed July 5, 1892. Serial No. 439,019. (No model.)



Claim.—1. As an improved article of manufacture, an umbrella suspender or carrier consisting of a waistband having attached thereto the securing-hooks B and suspender or cord D, having at its lower end a receptacle for the ferrule of the umbrella, substantially as described.

2. In an umbrella suspender or carrier, the combination of a waistband with the securing-hooks attached thereto, said hooks having a bifurcation C^3 to receive and retain the free ends of the band or cord A, and the suspender D, having at its lower portion a receptacle or socket for the ferrule of the umbrella, substantially as described.

3. In an umbrella suspender or carrier, the combination of the waistband or cord A, provided with the knots or enlargements B, with the securing-hooks C, having the teeth c' and fork C^3, and the suspender D, having a receptacle or socket to receive and retain the ferrule of the umbrella, all constructed, arranged, and operating substantially as and for the purpose set forth.

4. In an umbrella suspender or carrier, the combination of the waistband or cord A, having its free ends provided with knots or enlargements B, with the securing-hooks C, having the cylinders C', provided with teeth c' and the bifurcation C^3 to receive and retain the free ends of the band or cord A, and the suspender D, having secured to its lower portion the socket-piece E, having the opening e', provided with the flaring mouth e, substantially as and for the purpose set forth.

486,186. PUMP. WILLIAM H. SUTHERLAND, Miller, S. D. Filed Jan. 16, 1892. Serial No. 418,344. (No model.)

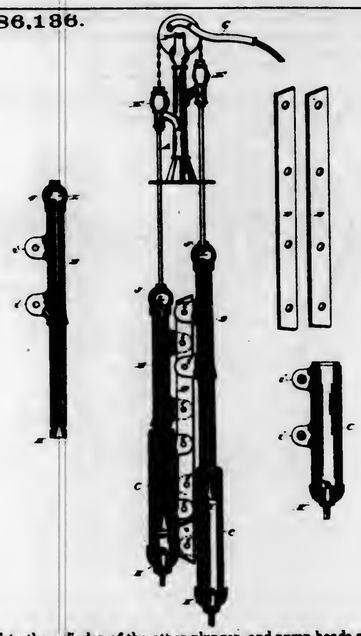
Claim.—1. A pump having a pair of cylinders located side by side and provided with alternating reciprocating plungers, the plunger of one cylinder being directly connected to the cylinder of the other plunger, substantially as and for the purpose specified.

2. A pump having a pair of cylinders provided with alternating reciprocating hollow plungers, the plunger of one cylinder being directly connected to the cylinder of the other plunger, substantially as described.

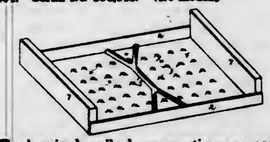
3. A pump provided with a pair of reciprocating plungers having lugs on their adjacent faces and a pair of cylinders also provided with lugs, in combination with a pair of plates, the lugs on one plunger being secured to the same plate as the lugs on the opposite cylinder, whereby the plunger of one pair reciprocates with the cylinder of the opposite pair, substantially as described.

4. A pump having a pair of cylinders provided with reciprocating hollow plungers, the plunger of one cylinder being directly connected to the cylinder of the other plunger, and pump-heads secured to said plungers, substantially as described.

486,186.

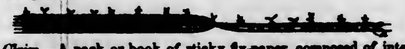


486,187. TRAY FOR DRYING FRUIT. HORACE H. TAYLOR, Fresno, Cal., assignor of one-half to William M. Story, same place. Filed Apr. 20, 1891. Serial No. 390,013. (No model.)



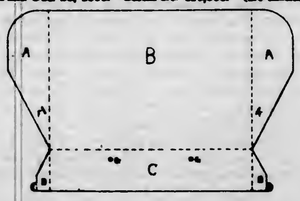
Claim.—The herein-described evaporating-pan, consisting of a bottom, opposite integrally-formed side walls depending from the longitudinal edges of the bottom, said bottom and side walls being formed of paper or wood pulp, the bottom having a series of perforations punched from its upper side through the same, the stock surrounding the openings, forming inclosing flanges, strengthening-ribs integrally formed upon the under side of the bottom, and end pieces between the sides and secured to the bottom and sides, substantially as specified.

486,188. BOOK OF STICKY FLY-PAPER. OTTO THUM and WILLIAM THUM, Grand Rapids, Mich. Filed May 14, 1891. Serial No. 392,657. (No specimens.)



Claim.—A pack or book of sticky fly-paper, composed of interior sheets smeared on both sides and having unsmeared margins and having the outside sheets or covers also unsmeared, substantially as described.

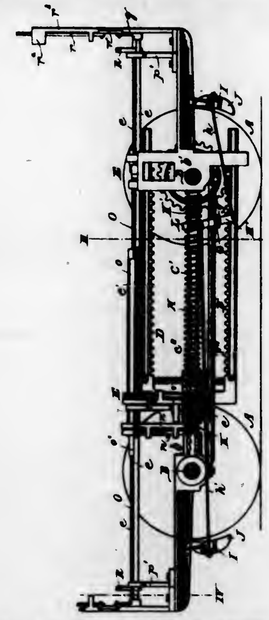
486,189. NEWSPAPER-HOLDER. WILLIS H. TURNER, Jackson, Mich. Filed Dec. 26, 1891. Serial No. 416,333. (No model.)



Claim.—1. The combination, in a paper-holding device made in one piece of tin or other metal of any desired weight or thickness, of the cover B, the sides A A, the back C, the sides D D, the tongues E E, and the slots F F, substantially as set forth.

2. A paper-holding device formed from one piece of tin or other metal and a continuous piece of wire adjusted to hold paper by the power of the spring, the spring being placed in position by the same operation that attaches the completed paper-holder to a building or other object.

486,140. CAR BRAKE AND STARTER. PETER D. VAN VRADENBURG, Binghamton, N. Y. Filed Feb. 20, 1892. Serial No. 422,287. (No model.)



Claim.—1. A brake mechanism having opposing springs of unequal power, substantially as described.

2. A brake mechanism having opposing springs of unequal power, in combination with an automatic locking device, substantially as set forth.

3. A brake mechanism having opposing springs of unequal power, in combination with a ratchet-bar, a detent pawl or dog adapted to engage said ratchet-bar, and mechanism, as described, for throwing said detent into and out of engagement.

4. A brake mechanism having opposing springs of unequal power, in combination with a ratchet-bar, a detent pawl or dog adapted to engage said ratchet-bar, and a rock-shaft provided with a bead, whereby said detent pawl or dog is thrown into or out of engagement with the ratchet-bar, substantially as set forth.

5. In a vehicle-brake mechanism, the combination, with the axle, of a supporting-frame secured thereto, opposing springs, a cross-bar adapted to be controlled by said springs, and levers mounted upon said supporting-frame and attached at one end to the cross-bar, whereby the brakes are operated, as set forth.

6. In vehicle-brake mechanism, the combination, with the axles, of a supporting-frame secured thereto, opposing springs, a cross-bar adapted to be controlled by said springs, levers mounted upon said supporting-frame and attached at one end to the cross-bar, whereby the brakes are operated, a ratchet-bar, and a detent pawl or dog adapted to lock said bar and set the brakes, as described.

7. In a vehicle-brake mechanism, the combination, with the axles, of a supporting-frame secured thereto, opposing springs, a cross-bar adapted to be controlled by said springs, levers mounted upon said supporting-frame and attached at one end to the cross-bar, whereby the brakes are operated, a ratchet-bar, a detent pawl or dog adapted to engage said ratchet-bar, and a rock-bar provided with a bead, whereby said detent pawl or dog is thrown into and out of engagement with said ratchet-bar, substantially as and for the purpose set forth.

8. The herein-described starting and stopping mechanism, consisting of the combination of a pair of rack-bars, a pinion secured to the vehicle-axle and adapted to engage the bars, and brake-levers attached to compressible springs arranged to simultaneously store up power and apply the brakes, in the manner and for the purpose specified.

9. In combination with the herein-described starting-springs and their mechanism, a brake-lever actuated by said springs, whereby the starting energy is stored simultaneously with the braking operation, substantially as described

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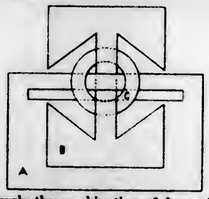
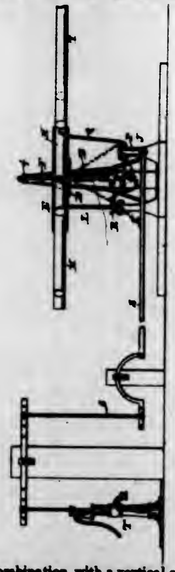
486,141. TOY OR PUZZLE. RICHARD DE VISSELE, New York, N. Y., assignor to Adrian Bonnet, same place. Filed Nov. 3, 1891. Serial No. 410,782. (No model.)



Claim.—In a puzzle, the combination of three pieces of celluloid or similar thin tough flexible material of the shape and relative proportions described, and illustrated in the drawings above referred to, and for the purpose set forth.

486,142. HORSE-POWER. JACOB G. WALTON, Davilla, Tex. Filed Feb. 16, 1892. Serial No. 421,713. (No model.)

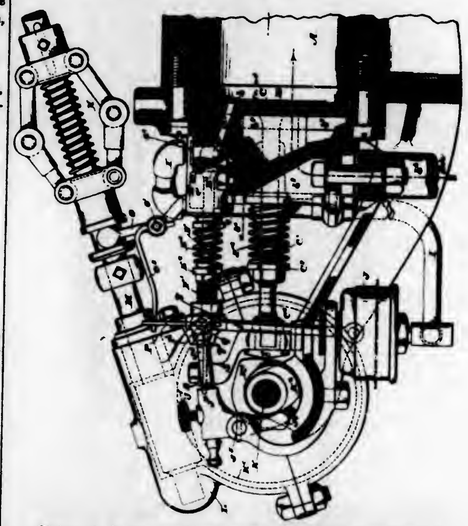


Claim.—1. The combination, with a vertical supporting-axle, of a wheel mounted upon said axle and having radiating spokes, a bearing located adjacent to said axle, a rock-shaft mounted in said bearing and terminating in a crank at one end, a reciprocating pitman connected with said crank and the device to be operated, and a rock-arm mounted upon said rock-shaft and arranged in the path of said spokes, substantially as set forth.

2. In a horse-power, the combination of a spider-wheel, an adjacent supporting-casing, a crank-shaft journaled in said casing, a lever-foot and upwardly-extending lever-arm mounted on said crank-shaft, a lever-arm pivotally mounted in said casing and provided with a lower inwardly-extending foot working over the opposing lever-foot, substantially as set forth.

3. In a horse-power, the combination of a spider-wheel and adjacent supporting-casing, a crank-shaft journaled in said casing, a lever-foot and an upwardly-extending long lever-arm mounted on said crank-shaft, a shorter lever-arm pivotally mounted in said casing adjacent to said crank-shaft and provided with a lower curved lever-foot working over the opposing lever-foot, and a stop located in rear of said shorter lever-arm, substantially as set forth.

486,143. GAS-ENGINE. HENRY WARDEN, Philadelphia, Pa. Filed July 31, 1889. Serial No. 319,426. (No model.)



Claim.—1. In a gas-engine, the combination, with a conduit leading from the source of gas-supply to the admission-valve chamber, of an admission-valve controlling the opening from said chamber to the cylinder, a valve, as E, controlling the opening of said conduit into the said valve-chamber, a valve, as G, arranged to close the conduit in advance of valve E, and a pump, as J, or its equivalent, connected with the conduit between said valves and operative mechanism, as specified, and whereby the suction-stroke of the pump is made while the valve F is closed and valve G open.

2. In a gas-engine, the combination, with a conduit leading from the source of gas-supply to the admission-valve chamber, of an admission-valve controlling the opening from said chamber to the cylinder, a valve, as E, controlling the opening of said conduit into the said valve-chamber, a valve, as G, arranged to close the conduit in advance of valve E, mechanism for actuating said valves, as described, and whereby the valve G is closed in advance of the opening of valve E, a pump, as J, or its equivalent, connecting with the conduit between said valves, and pump-actuating mechanism arranged to actuate the pump, as described, and so as to effect its suction-stroke while valve E is closed.

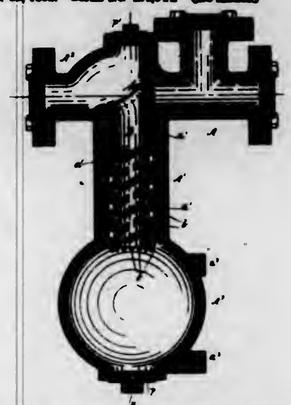
3. In a gas-engine, the combination, with a conduit leading from the source of gas-supply to the admission-valve chamber, of an admission-valve controlling the opening from said chamber to the cylinder, a normally-closed valve, as E, leading to the admission-valve chamber, a normally-open valve, as G, situated in advance of valve E, valve-actuating mechanism arranged, as described, to close valve G in advance of the opening of valve E and to close valve E in advance of the opening of valve G, a pump, as J, or its equivalent, connecting with the conduit between valves E and G, pump-actuating mechanism arranged to make the suction-stroke while valve E is closed, a governor, and connections from said governor to the valve-actuating mechanism adapted to throw the said mechanism out of operation as the speed of the engine exceeds a determined rate.

4. In a gas-engine, the combination, with the gas-service conduit, of the cylinder-valve casing T, having ports t^2, t^4, t^5, and t^6 and connections, as described, the piston-valve U, having packing-rings U, G and U E, adapted to alternately and reciprocally close and open ports t^2 and t^6, and a third ring arranged to work between the ports t^4 and t^5, and a gas-pump connecting with said valve-casing, as specified.

5. In a gas-engine, the combination of the valves G' and E' or their equivalents situated in the conduit through which gas is supplied to the engine, a gas-pump, as J, connecting with said conduit between said valves and adapted, as described, to deliver measured charges of gas to the engine, a reciprocating plate, as 8, arranged, as specified, to actuate the valves, a governor, and a block, as P', connected with the governor and arranged, as specified, in the path of plate 8, and

so that the said plate is thrown out of operative connection with the valves when the block moves beyond a determined position.

486,144. STEAM-SEPARATOR. WILLIAM O. WEBBER, Erie, Pa. Filed Feb. 15, 1892. Serial No. 421,944. (No model.)



Claim.—1. In a steam-separator, the combination, with a vertically-arranged wet-steam passage or chamber, of a helically-disposed groove on the inner walls of said chamber, for the purposes mentioned.

2. In a steam-separator, the combination, with the dry-steam passage or chamber, of a series of parallel-sided openings through its walls into the wet-steam chamber, which are inclined to the axis of said passages and arranged in alternating vertical order.

3. In a steam-separator, the combination, with the induct-nozzle, the educt-nozzle, the drip-chamber, and the concentric chambers A' and B, connecting, respectively, with the induct and educt nozzles and both opening into the drip-chamber, of a helical groove on the wall of the chamber A' and perforations through the lower portion of the walls of the chamber B.

4. In a steam-separator, the combination, with the induct-nozzle, the educt-nozzle, and the drip-chamber, and the concentric chambers A' and B, connecting, respectively, with the induct and educt nozzles and both opening into the drip-chamber, and a helical groove on the wall of the chamber A' and parallel-sided perforations *b*, arranged helically through the lower portions of the wall of the chamber B.

5. In a steam-separator, the combination, with the induct and educt nozzles, the drip-chamber, and the concentric chambers A' and B, connecting, respectively, with the induct and educt nozzles and opening into the drip-chamber, of openings at the top and bottom of said separator in axial line with said concentric chambers and plugs for closing said openings.

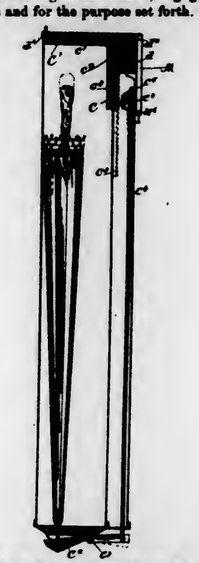
486,145. COIN-CONTROLLED UMBRELLA-STAND. HENRY WESTPHAL, Chicago, Ill. Filed July 6, 1891. Serial No. 398,499. (No model.)

Claim.—1. An umbrella-stand composed of one or more compartments having a downsliding door engaging by means of an operating-rod and trap at the bottom of the compartment, with a lock mechanism and coin-controlling device, whereby the insertion or removal of articles is unimpeded by the downsliding door and the release and removal of the key are controlled by the deposit of a coin and the umbrella, substantially as set forth.

2. In an umbrella-stand, the combination of a box or receptacle having at its top a guideway for the door, with the door adapted to operate in said guideway and having at its rear lower part a projection to engage a locking mechanism and a ratchet to engage with a pawl operated by a rod secured at its lower end to a trap secured to and covering the lower end of the box, substantially as set forth.

3. In an umbrella-stand, the combination of the piece A', bent to form the sides a' a^3 a^4 and having at its top the guideway C, and the piece A^2, forming the side a^4, the whole composing a box or receptacle *a* for the umbrella, with the door C, having the strips c' secured to a flexible piece and having the projection *d* and ratchet c^3, the pawl *e*, having its bearing in the rear portion of the box, the operating-rod c^4, pivotally secured at its lower end to the trap C^2, having the openings c^5 and fulcrumed to the casting C^3, and the casting C^3, having the portion c^6 and adapted to fit over the bottom of box *a*, substantially as and for the purpose set forth.

4. In an umbrella-stand, the combination of the box *a* or receptacle for the umbrella, composed of the pieces A^2 A', having the sides a' a^3 a^4 and the guideway C', the door C, having the strips c' secured to a flexible piece and having the projection *d* and ratchet c^3, the pawl c^4, having its bearings in the rear portion of the box *a*, the operating-rod c^4, pivotally secured at its lower end to the trap C^2, and having the openings c^5 and fulcrumed to the casting C^3, secured to the bottom of the box *a*, and the locking mechanism D', engaging with the door C', all constructed as and for the purpose set forth.



5. In an umbrella-stand, the combination of the box *a* or receptacle for the umbrella, composed of the pieces A', having the sides a' a^3 a^4 and the guideway. C' and the piece A^2, with the door C', having the strips c' secured to a flexible piece and having the projection *d* and ratchet c^3, the pawl c^4, the operating-rod c^4, pivotally secured at its lower end to the trap C^2, secured to the bottom of the box *a*, the lock D', having the compound cams D^2 to engage the projection *d* on the door, the tumblers, and the key, all constructed, arranged, and operating substantially as and for the purpose set forth.

6. In an umbrella-stand, the combination of the piece A', bent to form the sides a' a^3 a^4 and having at its top the guideway C and the piece A^2, forming the side a^4, the whole composing a box or receptacle *a* for the umbrella, with the door C, having the strips c' secured to a flexible piece and having the projection *d* and ratchet c^3, the pawl c^4, having its bearing in the rear portion of the box, the operating-rod c^4, pivotally secured at its lower end to the trap C^2, having the openings c^5 and fulcrumed to the casting C^3, the casting C^3, having the portion c^6 and adapted to fit over the bottom of the box *a*, the locking mechanism D', having the plates d^3 d^3, the tumblers d^5 d^5, having the springs e' and recesses c^4 c^7, the wheel or compound cam D^2, having the arm c^8 and forked arm F, having the prongs f' f^3, the key guide or tube G, having the spring g' and lug g^3, the stay H, having the recesses A, and a key D^4, having projections *f*, all constructed, arranged, and operating substantially as shown and described, and for the purpose set forth.

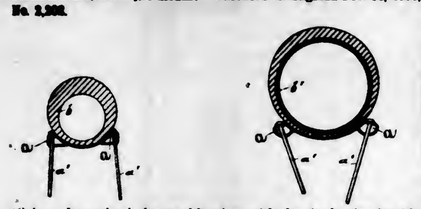
7. In an umbrella-stand, the combination of a box or receptacle for the umbrella, having a guideway for a door, with the door having a catch to engage with a locking mechanism, the locking mechanism adapted to engage with the door, a coin-controlling attachment having the casing M, having the slot *n*, the groove *m*, the box n^2, the lever P, having the forked arm *p*, the lever N, having the arms m' m^2 and the lower enlarged part m^4, having the depression m^5, the rod R, having the arms r r^2, and the rod c^2, having the projection m^6, all constructed, arranged, and operating substantially as and for the purpose set forth.

8. In an umbrella-stand, the combination of the locking mechanism D', having the plates d^3 d^3, the tumblers d^5 d^5, having the springs e e' and recesses c^4 c^7, the wheel or compound cam D^2, having the arm c^8 and forked arm F, having the prongs f' f^3, the key-guide G, having the spring g' and lug g^3, the stay H, having the recesses A, and a key D^4, having projections *f*, with a receptacle for the umbrella, having a door to engage the lock, substantially as and for the purpose set forth.

9. The locking mechanism D', having the plates d^3 d^3, the tumblers d^5 d^5, having the springs e e' and recesses c^4 c^7, the wheel or com-

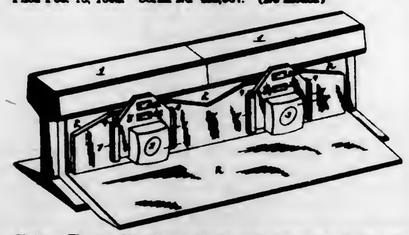
pound cam D^6, having the arm e^2 and forked arm F, having the prongs f f^1, the key-guide G, having the spring g and lug g^2, the stay H, having the recesses A, and a key D^5, having projections f, substantially as and for the purpose set forth.

486,146. WHEEL FOR VELOCIPEDES. FREDERICK WESTWOOD and WILLIAM H. BUTLER, Birmingham, England. Filed Feb 9, 1892. Serial No. 420,830. (No model.) Patented in England Feb. 11, 1890, No. 2,262.



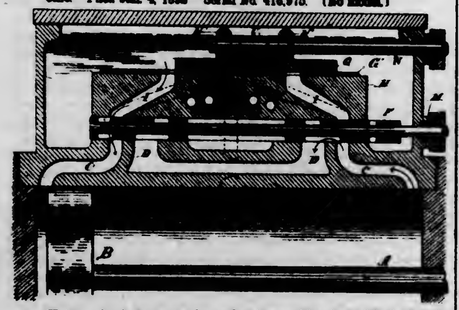
Claim.—In a wheel, the combination, with the rim having its side edge bent over inwardly toward the wheel center, thereby forming hollow chambers a, of the tire secured to the rim between the said chambers and the spokes passing through holes in the edges of the rim below the said chambers and through holes in the rim above the said chambers and provided with heads bearing on the rim close to the tire, substantially as set forth.

486,147. NUT-LOCK. WARREN S. WOODSTOCK, Wytheville, Va. Filed Feb. 18, 1892. Serial No. 422,007. (No model.)



Claim.—The combination, with the rail-sections or their equivalents, the transverse bolts, and their nuts, of the locking-bar perforated to receive the bolts and located between the nuts and the rail-sections, said locking-bar being provided at opposite sides of the bolts with punched-out flanges, and the locking-plates mounted removably between each pair of flanges and having their lower edges provided with nut-receiving recesses, substantially as specified.

486,148. STEAM-ENGINE VALVE. JAMES H. WERAT, Dayton, Ohio. Filed Jan. 4, 1892. Serial No. 416,975. (No model.)



Claim.—1. A steam-engine valve, in combination with the herein-described relief-plate having lateral steam-passages formed therein for the circulation of the steam, as set forth.

2. A steam-engine valve, in combination with inlet and exhaust ports, a main valve having a seat upon said ports, a relief-plate partially embracing said main valve, ports formed in the relief-plate and registering with the inlet-ports in the main valve, a cut-off valve having a seat upon the relief-plate and commanding the aforesaid ports therein, one or more recesses formed in the relief-plate for the reception of a corresponding number of spring-actuated cap-bolts, serving to hold the relief-plate in adjustment, and a series of steam-circulation passages located in the relief-plate, in the manner and for the purpose substantially as described.

3. In a steam-engine valve, the combination, with a normally-stationary relief-plate, of main and cut-off valves working therewith, one or more bolts passing through and arranged to hold the relief-plate in place, and a spring operating in conjunction with the relief-plate to hold the latter yieldingly on its seat and allow it a limited movement away from the valve, as set forth.

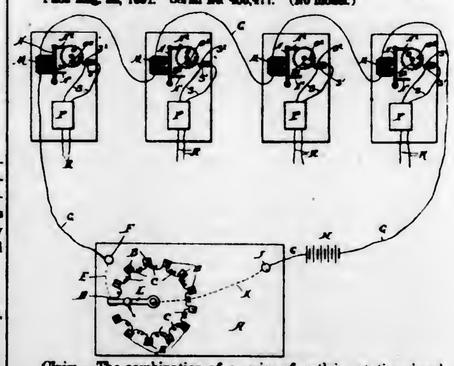
4. In a steam-engine valve, the combination of a main valve working over the ports of the steam-cylinder, a stationary relief-plate fitting over the main valve, one or more cap-bolts passing through the relief-plate and main valve and having their ends secured in the steam-cylinder adjacent to the main valve-seat, springs operating with the cap-bolts in such a manner as to allow the relief-plate a limited upward movement only, and a cut-off valve located on top of the relief-plate and operating in unison with the main valve, substantially as described.

5. In a steam-engine valve, the combination of a stationary relief-plate, a main and cut-off valve working therewith, one or more cap-bolts passing through the relief-plate and main valve and having their ends secured in the steam-cylinder, and springs operating in conjunction with the relief-plate and cap-bolts, substantially as described.

6. The combination, with the valve of a steam-engine, of a relief-plate, substantially as described, said relief-plate being held normally immovable by means of bolts passing into the steam-cylinder.

7. In a steam-engine valve, the combination of a main valve, a relief-plate located thereon, a cut-off valve on the relief-plate, cap-bolts passing through the same and the main valve and adapted to hold the said relief-plate in place, and openings, such as F', in the main valve, through which the cap-bolts pass, substantially as described.

486,149. TEST-CIRCUIT FOR BURGLAR-ALARM SYSTEMS. REMUND R. WILDER, Kansas City, Mo., assignor to the Wilder Duplex Electric Burglar Alarm and Messenger Company, of West Virginia. Filed Aug. 22, 1891. Serial No. 403,477. (No model.)

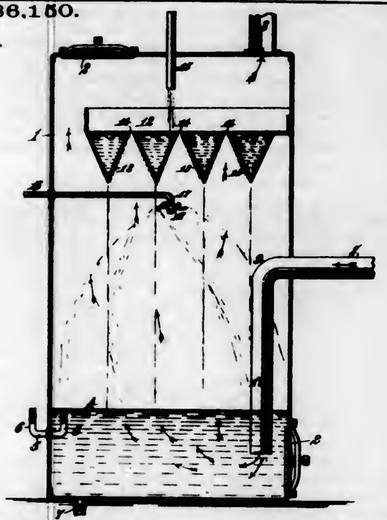


Claim.—The combination of a series of outlying-station signaling devices with a central-station apparatus connected therewith, a tester at the central station containing a movable arm and a series of contact-plates adapted to be successively engaged by such arm, a circuit containing all of such plates and such arm, a series of magnets, one at each outlying station and included in such circuit, armatures, one for each magnet, a retracting-spring and dog connected with each armature, a ratchet-wheel adapted to be engaged by such dog and to be rotated one tooth at each action by such spring, a pin on such plate, a local starting-circuit for such station-signaling mechanism, and a circuit-closer therefor in the path of such pin, said ratchet-wheels arranged so that each will move one tooth at each action and one of the local starting-circuits will be closed at each action.

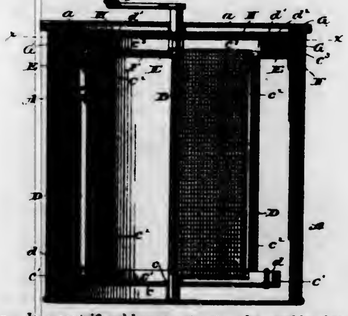
486,150. APPARATUS FOR COOLING AND WASHING GAS. CHARLES H. WILDER, Boston, Mass., assignor of one-half to Luke A. Wilder, Chicago, Ill. Filed Jan. 7, 1892. Serial No. 417,999. (No model.)

Claim.—An apparatus for cooling and washing gas, consisting of a tank having a hydraulic seal at its bottom, an overflow-trap, for preserving the seal at a uniform level, a gas-inlet pipe entering the tank above the water seal and provided with an elbow which extends downward and dips into the seal, a water-containing vessel located in the upper portion of the tank and having its bottom composed of a series of troughs separated at their adjacent top edges and each formed by two inclined plates connected at their lower ends and inclining toward each other to produce a thin longitudinal water-delivery edge at the bottom of the trough, whereby the water flowing over the top edges of and down the pairs of inclined plates is discharged in thin sheets, and a water-supply pipe for delivering water into the water-containing vessel, substantially as described.

486,150.



486,151. CENTRIFUGAL HONEY-EXTRACTOR. FLORANCE WILLIAMS, Seneca, Wis., assignor of one-half to L. B. Haskins, same place. Filed Aug. 20, 1892. Serial No. 444,397. (No model.)



Claim.—In a centrifugal honey-extractor, the combination, with the comb-holder frame, comprising two or more bars at its lower end, a ring uniting the same, upright bars, and a ring uniting them at their upper ends, of comb-holders pivoted to said frame at points midway between the upright bars, a gear-segment carried by the pivot of each holder at its upper end, a ring having a rack for each segment, and a shaft carrying said ring and journaled in said frame at its lower end, substantially as shown and described, and for the purpose specified.

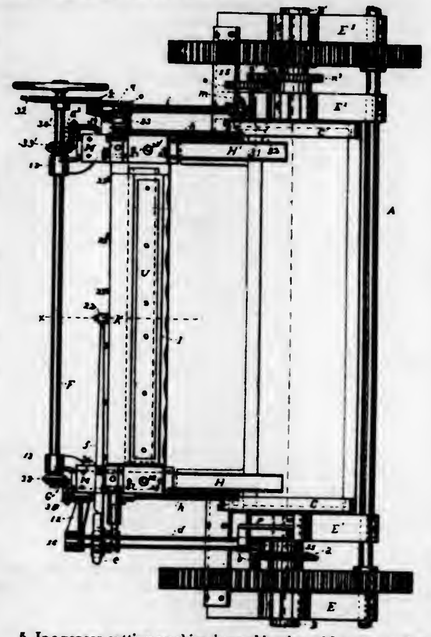
486,152. MACHINE FOR CUTTING VENEERS. JOHN B. WILSON, Brooklyn, N. Y. Filed Apr. 15, 1890. Serial No. 348,130. (No model.)

Claim.—1. In a veneer-cutting machine, a corrugated lengthwise-reciprocating knife, substantially as and for the purpose described.

2. In a veneer-cutting machine, the combination of a non-reciprocating guiding-lip with a lengthwise-reciprocating knife, substantially as and for the purpose described.

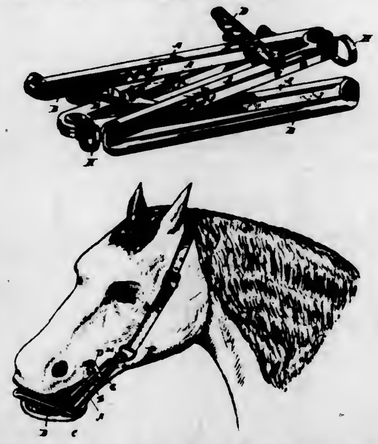
3. In a veneer-cutting machine, the combination of a non-reciprocating guiding-lip 30 with a corrugated reciprocating knife I, substantially as and for the purpose described.

4. In a veneer-cutting machine, the combination of reciprocating knife-carriage K, non-reciprocating knife-cap P, having guide-lip 30, connecting-rod f, eccentric e, eccentric-shaft d, gearing connecting latter with main shaft, and feed-screws, shafts, and gearing, substantially as and for the purpose described.



5. In a veneer-cutting machine, in combination with reciprocating knife-carriage and eccentric, a reciprocating arm or rod f, connecting said eccentric and carriage and attached to latter about its middle, substantially as and for the purpose described.

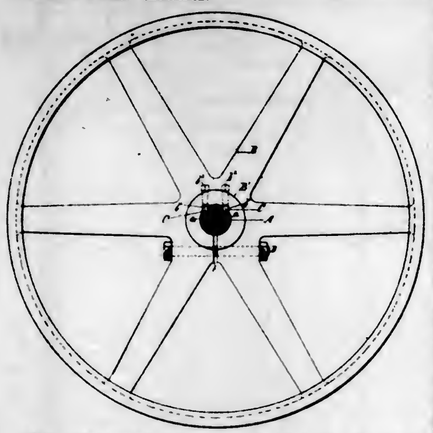
486,158. VETERINARY INSTRUMENT. ADAM J. ZIEGLER, Lincoln, Ill., assignor of one-half to Samuel H. Martin, same place. Filed July 13, 1892. Serial No. 440,347. (No model.)



Claim.—1. In a mouth-speculum for horses, the hinged side bars, the bit-rods connecting the free ends of the side bars, and loop-shaped latches pivotally connected to one of each pair of side bars and embracing the other of each pair, the latter being provided with pins to engage notches in said latches, substantially as specified.

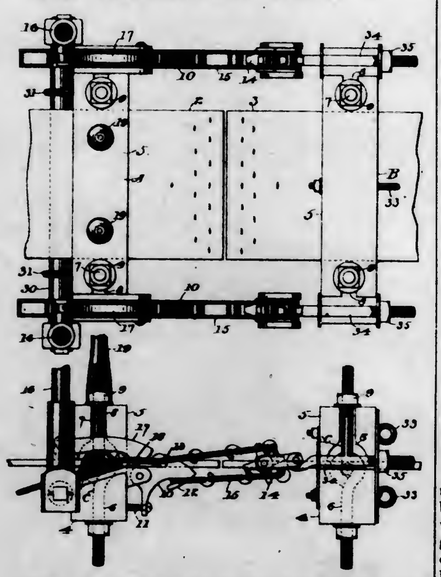
2. In a mouth-speculum for horses, the hinged side bars, the bit-rods connecting the free ends of the side bars, the loop-shaped latches connecting said side bars and provided with notches, pins to engage said notches, and springs connected to the latches to normally hold them in contact with said pins, substantially as specified.

486,154. PULLEY-FASTENING. FRANK H. BALL, Elizabeth, N. J., assignor to the Ball & Wood Company, same place. Filed June 18, 1892. Serial No. 437,313. (No model.)



Claim.—The combination, with the shaft A, having the half-keyways *a a* formed and located therein as described, and the pulley B, having half-keyways *b' b'* and the kerf *b* formed and located therein as described, of clamping-bolt D in the pulley and the keys C C in the keyways, as shown, and for the purposes stated.

486,155. BELT-TIGHTENER. HENRY BRAND, Duluth, assignor of one fourth to Archibald Johnson and Rufus Davenport, St. Paul, Minn. Filed Apr. 18, 1892. Serial No. 429,612. (No model.)



Claim.—1. In a device of the class described, the combination of the pair of clamps, the connecting-chain, the lever pivoted to one of said clamps, provided with an attachment for engaging the links of said chain so as to pull upon the same as the lever is thrust in one direction, while free to slip along the chain with the reverse movement of the lever, and the automatic retaining devices adapted to engage the chain and retain its tension when released by the lever, substantially as described.

2. The combination of the pair of clamps, the chain extending from one to the other, the lever pivoted to one, the dog carried by the lever, adapted to automatically and successively engage the links of the chain, and an automatic catch adapted to successively engage the links of the chain and retain the tension thereof, substantially as described.

3. In a belt-stretcher, a chain-tension device comprising, in combination, a relatively-fixed support, a lever pivoted thereon, a gravity-dog connected to said lever and lying upon the top of said chain and adapted to successively engage the links of the same, and a spring-actuated catch underneath said chain, adapted to successively engage its links as carried forward by the operation of the lever and to hold it from return movement when released from said lever, substantially as described.

4. In a device of the class described, the combination, with the clamps, of the chain attached to one and running over and past the other, the pivoted lever upon said second clamp, the gravity-dog pivoted to said lever and lying upon the top of said chain and adapted to automatically engage the links thereof and apply tension thereto by the operation of the lever, and the retaining-catch underneath said chain, automatically engaging its links and holding it from return movement when released by said dog, substantially as described.

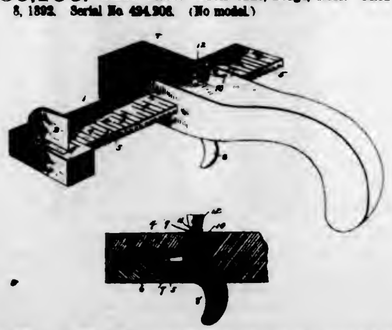
5. The combination, with the pair of clamps, of the chains connected to one, running over sprockets upon the other and returning over the first, the levers pivoted to said first clamp, the gravity-dogs carried thereby adapted to run freely in one direction along said chains and to engage the same and apply tension thereto with the reverse movement of the levers, and the catches underneath the return part of the chains engaging their links and retaining the tension applied by said levers, substantially as described.

6. The combination of the pair of clamps, the chains connecting the same, the lever-operated dogs mounted upon one of the clamps, adapted to automatically engage and apply tension to the chains, and means for automatically retaining said tension, substantially as described.

7. In a device of the class described, a belt-securing clamp comprising, in combination, the upper and lower cross-bars, the bolts hinged to one bar and fitting into the end grooves in the other bar, and the securing-nuts threaded upon said bolts, substantially as described.

8. The combination of the pair of clamps, the chains connecting the same, the lever-operated devices mounted upon one of the clamps, adapted to engage and apply tension to said chains, the automatic retaining devices also mounted upon said clamp and adapted to retain said tension, and the standard or arm upon said clamp, by means of which it may be held from rocking under the action of said lever, substantially as described.

486,156. DRAW-GAGE. ALONZO CERO, Dodge, Nebr. Filed Mar. 8, 1892. Serial No. 424,208. (No model.)

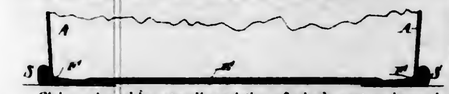


Claim.—1. In a draw-gage, the combination of a gage-piece terminating in a handle and provided with a transverse opening, a knife-bar arranged in the transverse opening and provided in its lower face with transverse grooves having inclined upper walls, and a depending grip having a forwardly-extending arm pivoted at its front end and disposed longitudinally of the grip-piece and transversely of the knife-bar and provided on its upper face with a flange having an inclined upper edge adapted to engage the said grooves, substantially as described.

2. In a draw-gage, the combination of a gage-piece provided with a transverse opening, a graduated knife-bar having transverse grooves on its lower face, a depending grip provided with a forwardly-extending arm pivoted at its outer end on the gage-piece, and the parallel catches mounted on the upper face of the arm and arranged to engage the groove, substantially as described.

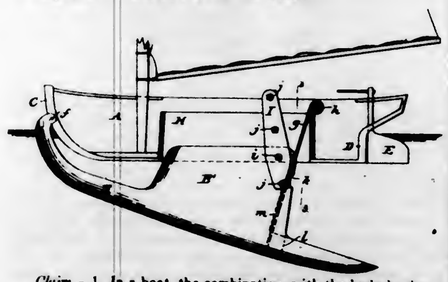
3. In a draw-gage, the combination of a gage-piece having a transverse opening, a graduated knife-bar provided in its lower face with transverse grooves, catches to engage the grooves, a depending grip provided with a forwardly-extending arm pivoted on the gage-piece and carrying on its upper face the catches, a pin provided with a head and connected with the grip, and a spring arranged on the pin to hold the catches in engagement with the grooves, substantially as described.

486,157. CULINARY UTENSIL. JOSEPH CLOUD, Philadelphia, Pa. Filed Mar. 14, 1892. Serial No. 424,720. (No model.)



Claim.—A cooking utensil consisting of a body part, an inner tin bottom positively connected with the body part, and a second outer and comparatively-heavy bottom composed of sheet-iron, with an external copper face, the outer bottom extending over the under surface of the inner tin bottom and having its rim connected with the body portion of the utensil, but having its upper face unconnected with the adjacent under surface of the upper tin bottom, so that the adjacent faces may be free to separate slightly when the utensil is subjected to heat.

486,158. KEEL FOR BOATS. JOHN COOK, New York, N. Y. Filed July 1, 1891. Serial No. 398,201. (No model.)



Claim.—1. In a boat, the combination, with the body having a well, of a keel and center-board formed together, the keel part being hinged to the body at the stem and the center-board part traversing the well and adapted to be moved conjointly with the keel, substantially as and for the purpose set forth.

2. In a boat, the combination, with the body and well, of a combined keel and center-board pivoted to the stem and a supplemental brace pivoted to the center-board, adapted to stiffen the combined keel and center-board when down and to be folded over when the latter is up, substantially as described.

3. A boat provided with a combined keel and center-board, the keel being pivoted at its front end to the stem of the boat and having a supplemental brace pivoted to the center-board with a stud coacting with a slot in the center-board, substantially as described.

4. The combination, with the combined keel and center-board having the groove or recess *m* in the end of the center-board, of the hoisting chain or cable *g*, working in said groove, substantially as and for the purpose described.

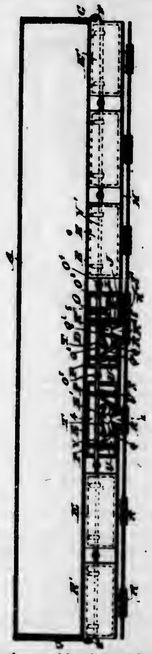
486,159. BAG LOCK. FRANK DEPUY and LEWIS S. DEPUY, Portland, Pa. Filed Feb 26, 1892. Serial No. 423,009. (No model.)

Claim.—1. The combination, with the casing having a hasp or bolt opening and a dog or lever mounted in said casing and extending across said opening into the path of the hasp or bolt to lock the same, of a shaft journaled in the case and provided with a cam to engage said dog or lever and retract it, a worm-wheel on the shaft, and a transverse key-operated worm-shaft engaging said worm-wheel, substantially as set forth.

2. In a mail-pouch lock, the combination, with a mail-pouch provided with a flap carrying a series of bolts, of a central locking mechanism adapted to be operated by a key and adapted to receive one of the bolts of the said flap and a series of locks pivotally connected with each other and also connected with the said central locking mechanism and operated therefrom, said series of locks being adapted to be engaged by the said bolts on the flap, substantially as shown and described.

3. In a mail-pouch, the combination, with a flap attached to the pouch and carrying bolts having shanks and ball-heads, of a lock comprising a casing having openings for the entrance of the said bolt, bell-crank levers held in the said casing and adapted to engage the heads of the said bolts, a shaft carrying cams engaging the said bell-crank levers, substantially as shown and described.

4. In a mail-pouch, the combination, with a flap attached to the pouch and carrying bolts having shanks and ball-heads, of a lock comprising a casing having openings for the entrance of the said bolt, bell-crank levers held in the said casing and adapted to engage the heads of the said bolts, a shaft carrying cams engaging the said bell-crank levers, springs pressing against the said bell-crank levers to hold the latter in contact with the said cams, and a key-operated worm-gear for actuating said shafts, substantially as shown and described.



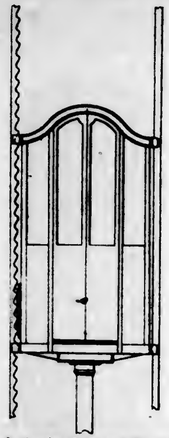
5. In a mail-pouch, the combination, with a flap attached to the pouch and carrying bolts having shanks and ball-heads, of a lock comprising a casing having openings for the entrance of the said bolt, bell-crank levers held in the said casing and adapted to engage the heads of the said bolts, a shaft carrying cams engaging the said bell-crank levers, and a spring held in the said casing and pressing on the head of the said bolt, substantially as shown and described.

6. In a mail-pouch lock, the combination, with a central locking mechanism provided with shafts mounted to turn, of a series of locks, each provided with a shaft pivotally connected at its ends with the shafts of the adjacent locks, the shafts of the innermost locks being pivotally connected with the two shafts of the central locking mechanism, substantially as shown and described.

486,160. CLAMP FOR SECURING STEREOTYPE-PLATES. WILLIAM FILMER, San Francisco, Cal. Filed Jan. 11, 1892. Serial No. 417,697. (No model.)

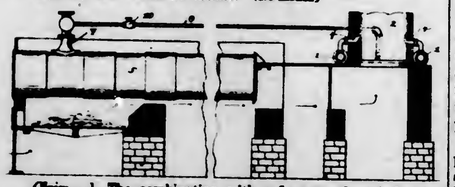
Claim.—The improved clamp for securing stereotype-plates to their supporting beds or blocks, consisting of independent detachable stocks made in two parts and bearing against the sides of the bed or block, said stocks having hooks overlapping the edge of the stereotype-plate and having screws passing through and securing its parts together, the inner ends of said screws forming retaining-points engaging the sides of the bed or block, whereby the stocks are held in position, substantially as herein described.

486,161. ELEVATOR. ALFREDO R. HALDIM, Barcelona, Spain, assignor to the Society Ridoux et Cie., Paris, France. Filed Sept. 4, 1891. Serial No. 404,703. (No model.) Patented in Spain Feb. 14, 1891, No. 11,663.



Claim.—In a safety device for elevators, the combination of a fixed rack provided with recesses, a recessed casting secured to the side of the car, and a loose sphere located in the recess of said casting and adapted when the elevator descends at a normal degree of speed to alternately pass from the recess in the casting to those in the rack, and vice versa, but to become wedged between the walls of the casting and rack when the descent of the car becomes excessive, substantially as set forth.

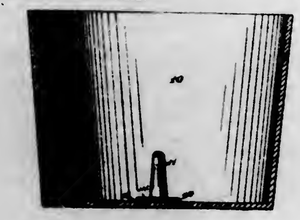
486,162. STEAM-BLOWER. JOHN JONES, Wilkes-Barre, Pa. Filed Sept. 22, 1891. Serial No. 406,506. (No model.)



Claim.—1. The combination, with a furnace, of a tubular ring arranged around the smoke-stack and located on the outside of the same, the series of detachable nozzles extending inward from the ring and passing through the sides of the smoke-stack and discharging into the latter, and a pipe connecting the boiler and the ring and supplying the latter with steam, substantially as described.

2. The combination, with a furnace, of a tubular ring arranged around the outside and at the base of the smoke-stack thereof and provided at its inner periphery with threaded openings, said ring being composed of two semicircular tubular sections removably coupled at their ends, the series of inwardly-extending detachable nozzles having their outer ends threaded and engaging the threaded openings of the ring and passing through the sides of the smoke-stack and extending upward, said nozzles being composed of two separable sections and being readily removable from the smoke-stack, and a pipe connecting the ring with the boiler of the furnace, substantially as described.

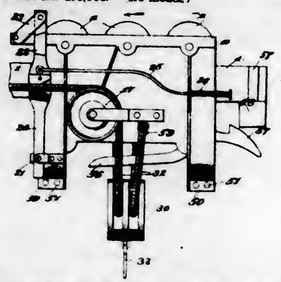
486,163. DEVICE FOR ARTIFICIALLY FEEDING YOUNG ANIMALS. WILLIAM A. EMPSON, Des Moines, Iowa. Filed Oct. 1, 1891. Serial No. 407,479. (No model.)



Claim.—1. An apparatus for artificially feeding the young of mammalian animals, which consists in a containing-vessel having an open end, and an imperforate artificial teat located and secured within said containing-vessel, which teat within said vessel is adapted to be partially or wholly surrounded by food.

2. In an apparatus for artificially feeding the young of mammalian animals, the combination, with an open-ended containing-vessel, of an imperforate artificial teat located within said containing-vessel, which teat is made of yielding compressible elastic material and presents a uniformly unbroken exterior surface.

486,164. HAY-CARRIER. JOHN LAW, Madelia, Minn. Filed Oct. 10, 1891. Serial No. 408,306. (No model.)



Claim.—1. In a hay-carrier, the combination, with an approximately-horizontal beam having a block on its under side, of the carrier proper comprising a plate bent into U shape under the beam, its bend being cut away between its ends, wheels journaled in the sides and traveling on the beam, a transverse plate within the body, having downturned ears, a catch pivoted between its ears and having a hooked outer end, its inner end or tail standing in the cut-away portion of the body, sheaves on the body, blocks at each end of the load, and an operating-rope passing over said sheaves and through said blocks, between which latter it is adapted to strike the tail of the catch.

2. In a hay-carrier, the combination, with the track, the body traveling thereon and having in one side a pair of openings in horizontal alignment, and a sheave journaled at the other side, of two double blocks adapted to be connected to the ends of the load, a single block, a rod passing through its body and pivotally connecting it with said openings, and a rope leading over the sheave, through the two pulley-blocks, over the pivoted block, back through the two pulley-blocks, and connected with the carrier-body.

3. In a hay-carrier, the combination, with the track, the carrier proper moving thereon, a sheave journaled in one side of the carrier, and a rope-clamp consisting of a single lower member pivoted at its lower end to the body of the carrier, a double upper member pivotally connected by a link at its upper end to said body, the lower end having lips astride the upper end of the lower member, and pivot-pins passing through these lips and into the lower member, of pulley-blocks connected to the load and a rope leading from a source of power through said clamp, over the sheave, through said blocks, and connected to the body.

4. In a device of the character described, the combination, with the body, a sheave connected thereto, and a rope passing over said sheave, of a rope-clamp adjacent the sheave, consisting of two members pivotally connected at their inner ends and having their outer ends pivotally connected with the body, a rod extending from said members near their meeting ends and passing through a rib on the body, and a spring drawing said rod in a direction to normally close the clamp on the rope.

5. In a device of the character described, the combination of a carrier-body having a T-shaped opening, a rope having a free end thereof extended upward from blocks below the carrier, and a wire-clamp consisting of a loop with outwardly-bent ends arranged at an angle to said loop, the said loop of the clamp receiving the end of said rope and the outwardly-bent ends thereof inserted through the horizontal portion of the T-shaped opening and moved downward into the narrower vertical portion thereof to secure the end of the rope to the carrier, substantially as set forth.

6. In a device of the character described, the combination, with a track having a block, of a carrier-body moving on said track, a sheave on said body, a rope-clamp adjacent the sheave, a spring holding said clamp normally closed, a rod projecting from the clamp and adapted to open it when the rod contacts with said block, and a catch removably holding the body in position to keep these parts in contact.

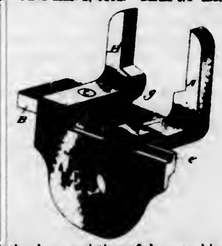
7. In a device of the character described, the combination, with a track having blocks near its outer end on its lower face and on one side, of a carrier-body moving on said track, a sheave on said body,

a rope-clamp adjacent the sheave, a rod projecting from said clamp beyond the body and adapted to contact with the block on the side of the track to hold the clamp open, a spring normally closing the clamp, a catch pivoted in the body and adapted to engage the block on the lower face of said track, and a rope connected with the body, passing under the tail of said catch where the rope connects with the load, and passing thence over the sheave and through the clamp.

486,165. COMPOSITION OF MATTER FOR PRODUCING PORTLAND CEMENT. HENRY J. LIVINGSTON, New Orleans, La. Filed Apr. 11, 1891. Serial No. 388,941. (No specimens.)

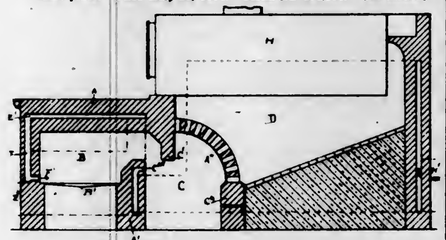
Claim.—The herein-described composition of matter for the production of Portland cement, consisting of shell containing ninety per cent. and upward of carbonate of lime, alluvial clay, and ground-chalk flints, in substantially the proportions specified.

486,166. LATHE-DOG. WILLIAM MOORE and JOHN W. PARKER, Owosso, Mich. Filed Mar. 2, 1892. Serial No. 423,455. (No model.)



Claim.—A lathe-dog consisting of the attaching-plate A', having on one edge a projection *c* and an integral jaw B', one part of said jaw being at right angles to said plate and provided with a serrated side and the other part extending parallel to the plane of the plate, in combination with a movable jaw A, having a grooved part *f* and a serrated and slotted arm B, whereby said movable jaw is made adjustable and adapted to co-operate with the fixed jaw and to be secured thereto, substantially as described.

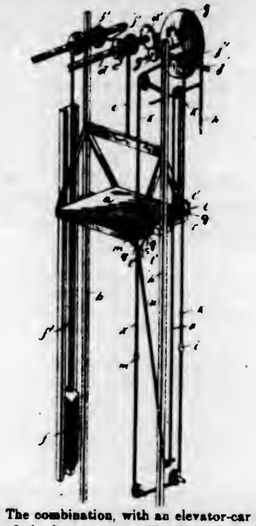
486,167. SMOKE-CONSUMING STEAM-BOILER FURNACE. FRANK REYNOLDS, Omaha, Nebr., assignor of one-half to Alonzo R. Hunt, same place. Filed Aug. 29, 1891. Serial No. 404,151. (No model.)



Claim.—1. In a boiler-furnace, the arrangement of a fuel-chamber provided with independent vertical flues upon the sides and communicating at the rear with a horizontal top flue and in front with a vertical flue leading into said fuel-chamber, the rear wall of said chamber terminating a suitable distance below the top, a communicating intermediate chamber of smaller capacity than said fuel-chamber and provided at a point near said rear wall with a transverse downwardly-extending deflecting-wall and an arch having a number of openings leading into a furnace, and open-air flues surrounding said furnace and leading into said intermediate chamber, said furnace decreasing in capacity at the rear, so that the heat is focused or crowded before entering the boiler-flues, all substantially as and for the purpose set forth.

2. In a boiler-furnace, the combination of the fuel-chamber B, provided with the flues E, E, E', and F, leading into said chamber, the wall A', the chamber C, provided with the deflecting-wall C' and arch A'', walls C' and C'', and the furnace D, provided with an open-air pocket leading into the wall A' and escaping into the chamber C, all arranged so that the heat in leaving the fuel-chamber is focused into the smaller chamber C and from this into the furnace D of greater capacity, the outlet of this furnace being contracted, so that the heat is again focused in leaving, all substantially as and for the purpose set forth.

486,168. ELEVATOR-BRAKE. JOSEPH ROSS, Memphis, Tenn. Filed May 21, 1892. Serial No. 433,843. (No model.)



Claim.—1. The combination, with an elevator-car and its hoisting mechanism, of a brake to act on said hoisting mechanism, a brake-controlling table extending throughout the elevator-shaft and provided with tapered or conical stops at intervals thereon, adjacent stops on the same side of said cable, tapering in the same direction, and spring-catches on the car, constructed and arranged to open and pass said stops when the small ends thereof are engaged, and thereby not move the cable, but to move the cable when engaging the other ends of the stops, and means to open the jaws or catches.

2. In combination, the elevator-car and hoisting mechanism, a brake to stop the car, a controlling-cable for said brake, extending throughout the elevator-shaft and respectively provided with oppositely-tapered stops at intervals thereon, a pair of spring-jaws or catches for each controlling-cable to engage the stops and move the cable for the purpose set forth, and means for opening each pair of jaws.

3. In combination, an elevator-car, a hoisting mechanism therefor comprising a hoisting-drum provided with a counter-weight mechanism, a main pulley for operating the hoisting-drum, and a hand-cable passing over said pulley and through the elevator-shaft, a screw-threaded shaft, a brake-shoe on said shaft to move thereby into and out of engagement with said pulley, an operating-cable for said screw-shaft, extending from said shaft throughout the elevator-shaft and provided with stops arranged at intervals thereon, and the spring-jaws on the car arranged to engage said stops to apply the brake, and connections for opening said jaws, substantially as described.

4. In a hand-elevator, the combination of the elevator-car, the hoisting mechanism comprising the main pulley, a screw-threaded shaft, a brake-shoe mounted thereon and moved thereby into or out of engagement with said pulley, an endless controlling-cable extending throughout the elevator-shaft from said screw-threaded shaft to rotate the same and provided with oppositely-tapered stops at intervals on its opposite sides, respectively, and catches arranged substantially as described on the car that engage said stops and move the cable to apply the brakes.

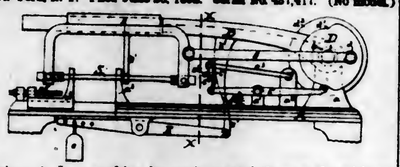
5. The elevator-car provided with a pair of notched jaws or catches, springs yieldingly holding the same together, ways in which said jaws slide, means for opening the jaws, a connection secured to said means for controlling the jaws and extending throughout the elevator-shaft, the hoisting mechanism, a brake-controlling cable extending through the shaft and having stops engaged by said jaws, and a brake controlled by said cable.

6. The combination of an elevator-car and operating mechanism therefor, an endless cable extending throughout the elevator-shaft and controlling the operating mechanism, said cable being provided with oppositely-arranged stops on its opposite sides, respectively, catches on the car through which opposite sides of said cable respectively pass, said catches and stops being so arranged that one catch will engage the stops and operate the cable when the car is going up and the other catch when the car is going down, substantially as described.

7. In combination, an elevator-car and its operating mechanism, an endless cable controlling said mechanism and extending through-

cut the elevator-shaft, the opposite sides of said cable being respectively provided with oppositely-tapered stops, two pairs of swinging spring-controlled jaws on the car, each side of the cable respectively passing between the jaws of one pair, levers arranged to open said jaws, and a connection extending through the shaft and connected to said levers to open the jaws, substantially as described.

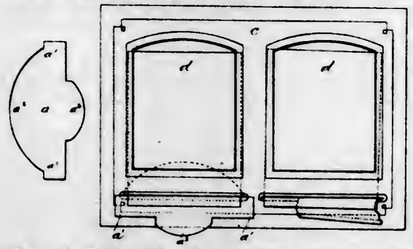
486,169. MACHINE FOR SAWING METAL. CHARLES STOFFORD, New York, N. Y. Filed June 20, 1892. Serial No. 437,417. (No model.)



Claim.—1. In a machine for sawing metal, the cam d', and lever C, in combination with the shoe c, connected by the rods c^3 c^4 to the pedestal a^3, and swing-arm B, having the curved surface b', when constructed and operated substantially as and for the purposes herein shown and set forth.

2. In a machine for sawing metal, the swing-arm B, carrying the sliding saw-carriage e and saw-guide d and having the projection b', in combination with the projection d' and lever E, having an adjustable weight e, and also with the friction-shoe c, lever C, spring c^4, and cam d', when constructed and operated substantially as and for the purposes herein shown and set forth.

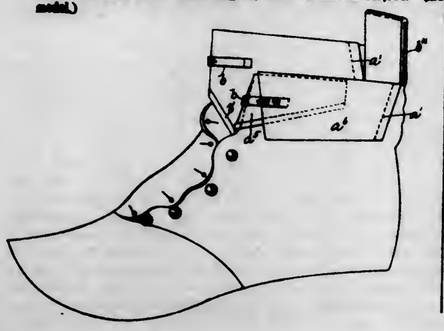
486,170. IMPLEMENT FOR WITHDRAWING PHOTOGRAPH-CARDS FROM ALBUM LEAVES. WILLIAM B. VARIANT, Philadelphia, Pa. Filed July 26, 1892. Serial No. 441,373. (No model.)



Claim.—1. The herein-described implement, comprising a body portion having a lip adapted for insertion through the slot of a photograph or card holding pocket and beneath the photograph or card and having laterally-extending guide-wings and a handle, the construction being such that the lip may be inserted beneath the card or photograph and fitted by the wings into position for guiding the photograph or card through the slot, for the purposes set forth.

2. The herein-described implement, comprising a body portion having a lip adapted for insertion through the slot of a photograph or card holding pocket and beneath the photograph or card and having a handle, the construction being such that the lip may be inserted beneath the card or photograph into position for guiding the same through the slot, for the purposes set forth.

486,171. PROTECTOR FOR SHOE-UPPERS. SIMEON W. WALES, North Abington, Mass. Filed Aug. 20, 1892. Serial No. 443,561. (No model.)



Claim.—1. The herein-described hood or protector for linings of boots or shoes, it consisting of a body portion a, composed of paper or like fibrous material and shaped, substantially as described, to extend down into the boot or shoe toward the heel thereof, and a reinforcing-strip a', secured to the upper hood near its longitudinal center and extended from near the top of the body a to its central bottom portion, substantially as described.

2. The herein-described hood or protector for linings of boots or shoes, it consisting of a substantially-V-shaped body portion a, composed of paper or like fibrous material, a reinforcing-strip a', secured to the body near its longitudinal center, and a lasting-tag a^2, secured to the end of the strip a' and extended beyond the apex of the V-shaped body a, substantially as described.

3. The herein-described hood or protector for linings of boots or shoes, it consisting of a substantially-V-shaped body portion a, composed of paper or like fibrous material, and a reinforcing-strip a', secured to the body a near its longitudinal center, the said body and strip being divided or split for a portion of their length, substantially as described.

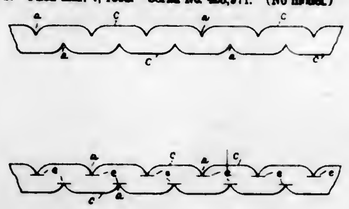
4. The herein-described hood or protector for linings of boots or shoes, it consisting of a substantially-V-shaped body portion a, split or divided longitudinally for a portion of its length and provided at its upper part with folding flaps a^3 a^4, and a reinforcing-strip of textile material secured to the said body near its longitudinal center, substantially as described.

5. The herein-described hood or protector for linings of boots or shoes, it consisting of a substantially-V-shaped body portion a, composed of paper or like fibrous material, and a reinforcing-strip a', secured to the body a near its longitudinal center, the said body and strip being divided or split for a portion of their length to form the portions 2 3, and reinforcing edges b' for said portions, substantially as described.

486,172. METHOD OF DISINFECTING SEWAGE. HUGO WOLLHEIM, London, England. Filed Sept. 16, 1889. Serial No. 324,136. (No specimens.) Patented in England Oct. 24, 1888, No. 15,321; in France Apr. 13, 1889, No. 197,440; in Belgium May 3, 1889, No. 86,091, and in Canada June 6, 1889, No. 31,506.

Claim.—The herein-described method of clarifying, purifying, and sterilizing sewage and other waste waters, consisting in treating the same with a prepared mixture of milk of lime and trimethylamine, in the proportions substantially as specified.

486,173. METALLIC FENCING. THOMAS V. ALLIS, New York, N. Y. Filed Mar. 7, 1892. Serial No. 423,971. (No model.)



Claim.—1. The improved metallic fencing-strip having V-shaped cut notches along each edge intermediately with alternate salient intervening portions, said salient portions of one edge located opposite the notches in the other edge and the length of said salient portions being greater than the width of the notches at their base, substantially as described.

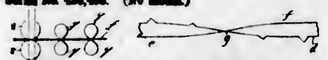
2. The improved metallic fencing-strip having V-shaped cut notches with rounded corners and alternate salient portions along each edge intermediately, the said salient intervening portions having rounded terminations and located opposite the notches in the other edge, the length of said salient portions being greater than the width of the notches at their base, substantially as described.

3. The improved metallic fencing-strip having V-shaped cut notches along each edge intermediately with alternate salient intervening portions, said salient portions of one edge located opposite the notches in the other edge and the length of said salient portions being greater than the width of the notches at their base, and said strip being corrugated sidewise, substantially as described.

4. The improved metallic fencing-strip having V-shaped notches at intervals along the edges intermediately and terminating at the inner inner walls of longitudinal slits at the bottom of the notches, substantially as described.

5. The improved metallic fencing-strip having V-shaped cut notches at intervals along the edges intermediately and terminating at the inner intact walls of the longitudinal slits at the bottom of the notches and being corrugated sidewise, substantially as described.

486,174. METHOD OF AND APPARATUS FOR TWISTING METALLIC STRIPS. THOMAS V. ALLIS, New York, N. Y. Filed Mar. 26, 1892. Serial No. 426,602. (No model.)



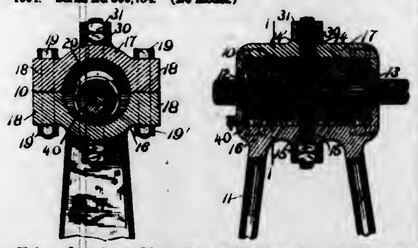
Claim.—1. The method of twisting metallic strips, which consists, first, in twisting a short section of a strip; second, inserting the twisted portion through two or more pairs of dies with a portion of said twisted section between each of the pairs of dies, and, third, forcing the strip along through the dies, and thereby causing it to twist between the said pairs of dies, substantially as described.

2. In a metallic-strip-twisting machine, the combination of two or more pairs of dies located apart in line a distance proportionate to the pitch of the twist to be produced, substantially as described, and means for forcing the strips through said dies, said strips having an initial twisted portion and inserted in said dies with a twisted portion between each pair of dies, as set forth.

3. In a metallic-strip-twisting machine, the combination of two or more pairs of dies located apart in line a distance proportionate to the pitch of the twist to be produced, substantially as described, means for forcing the strips through said dies, said strips having an initial twisted portion and inserted in said dies with a twisted portion between each pair of dies, and a reel receiving the strips from said dies and having rotation in the axis of the strips in unison with the pitch of the twist, substantially as herein set forth.

4. In a metallic-strip-twisting machine, the combination of two or more pairs of roll-dies located apart in line a distance proportionate to the pitch of the twist to be produced, substantially as described, and means for forcing the strips through said dies, said strips having an initial twisted portion and inserted in said dies with a twisted portion between each pair of dies, and a reel receiving the strips from said dies and having rotation in the axis of the strips in unison with the pitch of the twist, substantially as herein set forth.

486,175. JOURNAL-BOX. EDWIN R. ARGELL, Somerville, Mass., assignor to the Electrical Forging Company, of Maine. Filed July 16, 1891. Serial No. 399,754. (No model.)



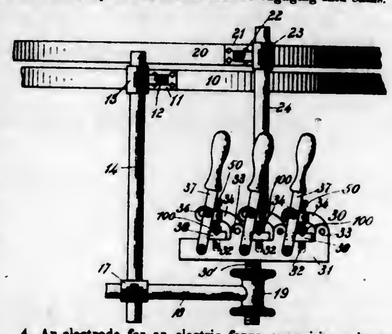
Claim.—In a journal-box, the combination of a casing for containing oil, a sleeve disposed therein and provided with slots and with trunnions extending through the sides of said casing, fastening devices on said trunnions, and rings disposed in said slots and dipping into the oil-chamber of said casing.

486,176. ELECTRIC FORGE. GEORGE D. BURTON, Boston, and EDWIN R. ARGELL, Somerville, Mass., assignors to the Electrical Forging Company, of Maine. Filed Jan. 12, 1892. Serial No. 417,950. (No model.)

Claim.—1. An electrode for an electric forge, consisting of a base, a fixed jaw supported thereon, an arm pivoted to said base and provided with a hook at its outer end having a depressing cam-face and a lifting cam-face, a movable jaw supported by said arm, and a lever pivoted to said base and provided with a stud engaging said cam-faces when the lever is oscillated.

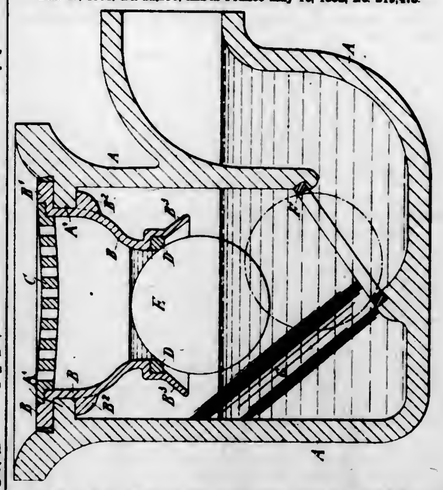
2. In an electric forge, the combination of an adjustable electrode provided with sockets for receiving the ends of bars to be heated, an electrode disposed in a plane with the first electrode and consisting of a base provided with detachable conductive fixed clamping-jaws, arms pivoted to said base and provided with depressing and lifting cam-faces, movable jaws supported in said arms, hand-levers pivoted on said base and provided with studs engaging the hooked arms for clamping or releasing the jaws, and conductors connecting said electrodes with the source of a heating-current.

3. In an electric forge, the combination of a converter provided with exterior rings constituting the positive and negative poles, an electrode provided with a socket for receiving the end of a bar to be heated, a conductor connecting said electrode with one of said rings, a second electrode and a conductor connecting said second electrode with the other ring, said second electrode being provided with a fixed conductive jaw, a hinged arm provided with a hook at its outer end, having a depressing and a lifting cam, an adjustable spindle in said arm carrying the movable conductive jaw, and a hand-lever pivoted to said base and provided with a stud for engaging said cams.



4. An electrode for an electric forge, comprising a base, a detachable conductive jaw supported in said base, a movable arm, a spindle supported therein and provided with a groove at its lower end and with a nut which serves, in conjunction with the grooved end of said spindle, as a conductive clamping-jaw, and means for actuating said arm, substantially as set forth.

486,177. GULLY-TRAP. GEORGE COUKEN, Cardiff, England. Filed Feb. 23, 1892. Serial No. 422,508. (No model.) Patented in England Dec. 19, 1891, No. 23,356, and in France May 19, 1892, No. 219,475.

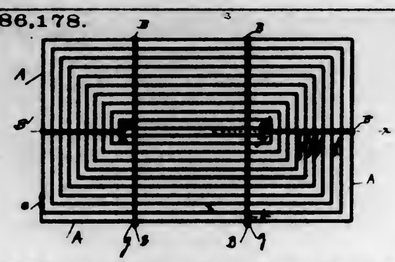


Claim.—In a gully-trap, the combination of a copper ball E, rubber ring D, held in a frame B, with bell-mouth B^2, supported by the casing A and held therein by means of the flanges A' and B' and the projections B^3, the rubber ring F, fixed in an inclined position at the bottom of the trap, and guides G, all substantially as described, and for the purposes specified.

486,178. DOOR-MAT. HENRY J. GILMORE, Cleveland, Ohio. Filed Dec. 11, 1891. Serial No. 414,755. (No model.)

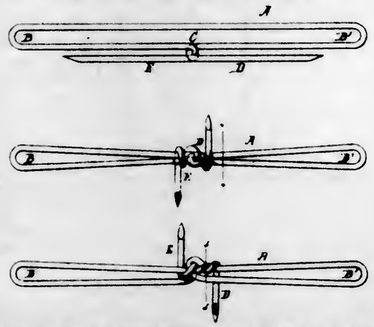
Claim.—In a door-mat, a single piece of metal A, having the inner bend d and the continued bends and laps, as shown, each lap being straight from end to end of the lap, the outer lap being secured, as illustrated, at e, holes through the side laps and end laps, binding-

486,178.



rods B B' through said holes, and ferrules *f* around the rods B B' between the several laps of metal A, as shown and described.

486,179. BARBED-WIRE FENCE. JOHN W. GRIEWOLD, Troy, N. Y. Filed June 15, 1891. Serial No. 396,263. (No model.)

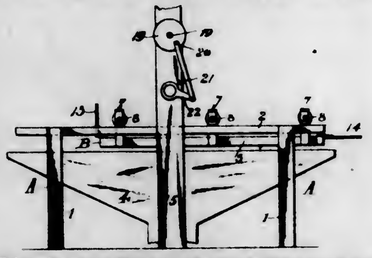


Claim.—1. A wire-fencing link composed of a length of wire doubled twice to form eyes, as B B', and having its ends D E interlocked and the said ends then twisted or wrapped around the body portion of said link.

2. A wire-fencing link composed of a length of wire doubled to form eyes B B' and having its ends D E interlocked, one of said ends being twisted or wrapped about its own standing part.

3. A wire-fencing link composed of a length of wire doubled to form eyes B B' and having its ends D E interlocked, one of said ends being twisted or wrapped about its own standing part and the other of said ends being twisted or wrapped around the straight middle portion of said link.

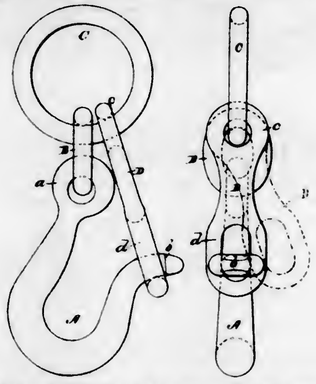
486,180. VEGETABLE-WASHER. EDGAR J. HOLLISTER, Tecumseh, Mich. Filed Nov. 23, 1891. Serial No. 413,397. (No model.)



Claim.—In a vegetable-washer, the combination of a supporting-frame, a movable table on the said frame, formed with slots, standards projected from the supporting-frame, bearings in the standards, a pipe formed with perforations in said bearings and arranged over the movable table, a laterally-extended arm on the perforated pipe, means, as described, to rock the perforated pipe, and a supply-pipe leading into the spray-pipe.

486,181. SAFETY-HOOK. LINCOLN KIRB, New York, N. Y. Filed July 27, 1892. Serial No. 441,497. (No model.)

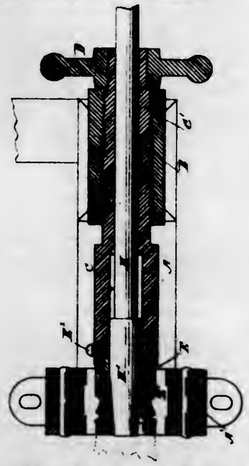
Claim.—1. The combination, in a safety-hook, of a hook proper having a suspension-eye in the same plane as its body, a small ring permanently interlocked with said eye, a main suspension-ring permanently interlocked with said small ring, and a safety-link which is permanently interlocked with said main ring and is adapted to interlock with the point of said hook proper, which is provided with an enlarged point or to hang loosely, said eye and small ring serving in either case ordinarily to sustain the entire load strain, substantially as hereinbefore specified.



2. The combination, in a safety-hook, of a hook proper having a suspension-eye in the same plane as its body and a point of broad-arrow shape with lateral projections, a small ring permanently interlocked with said eye, a main suspension-ring permanently interlocked with said small ring, and a safety-link permanently interlocked with said main ring and having a longitudinal loop to interlock with said point of the hook proper, substantially as hereinbefore specified.

3. The improved safety-hook composed of a hook A, having a suspension-eye *a* in the same plane as its body and a locking-point *b* of broad-arrow shape with lateral projections, the small ring B, permanently interlocked with said eye *a*, the ring C, permanently interlocked with said small ring, and the safety-link D, permanently interlocked with said ring C by means of an eye *c* and having a distinct longitudinal loop *d* to interlock with said point *b*, substantially as hereinbefore specified.

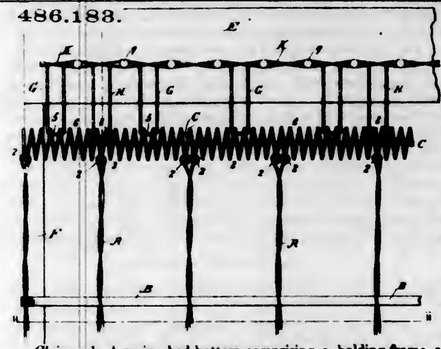
486,182. GLASS-MOLD. SAMUEL OAKMAN, Melrose, Mass. Filed Aug. 12, 1892. Serial No. 442,902. (No model.)



Claim.—In a glass-mold having a reinforcing-chamber M, the combination of a sliding spindle H H' for keeping the neck of the bottle open with a rotating die-thimble E, adapted to be rotated and withdrawn, substantially as and for the purpose set forth.

486,188. SPRING BED-BOTTOM. ADDISON F. PURNELL, Wake Forest, N. C. Filed Nov. 2, 1891. Serial No. 410,700. (No model.)

486,183.



Claim.—1. A spring bed-bottom comprising a holding-frame, a flexible web suspended between opposite rails of said frame, and an interposed spring of coiled wire arranged parallel with the said rails and attached to said frame by portions of its coils lying between the axis of said spring and the suspending-rail, said spring being connected on the opposite side of said axis with said flexible web and constituting an elastic and yielding connection through which the tension of said web is transmitted to said frame transversely of the said spring, substantially as described.

2. The combination, with the holding-frame, flexible suspended web, and interposed spring of coiled wire with its axis parallel with the plane of said web, of limiting-stops normally out of engagement, but arranged to engage said spring when bent by a sufficient pressure on said web, substantially as described.

3. The combination of a holding-frame, a flexible suspended web, an interposed spring with its axis parallel with the plane of said web, having its coils attached on one side at intervals to said holding-frame and connected on the other side with said flexible web, and limiting-stops normally out of engagement, but arranged when a sufficient pressure is applied to said web to engage the side of said coils attached to the said holding-frame, substantially as described.

4. A spring bed-bottom comprising a holding frame, a flexible suspended web, and an interposed spring of coiled wire having its axis parallel with the plane of the bed-bottom and attached to the said holding-frame and web, respectively, by portions of the coils on opposite sides of said axis, said coils projecting above the surface of the said web and constituting an elevation of approximately the shape and dimensions of a bolster and adapted to serve for a bolster, substantially as described.

5. A spring bed-bottom comprising a flexible suspended web, a coiled-wire spring having its axis parallel with the plane of said web, connected with said web, and projecting beyond the same, and a holding-frame to which said spring is attached, having its surface on a level with the top of said spring, substantially as described.

6. A spring bed-bottom comprising a holding-frame, a flexible suspended web, and an interposed spring of coiled wire with its axis in the plane of said web, said frame comprising end rails and side rails, said web being suspended from said end rails and said spring being interposed between said web and an end rail, with its coils attached on one side at a number of points at intervals to said end rail and connected on the other side with said web at points intermediate the points of attachment to said end rail, substantially as described.

7. A spring bed-bottom comprising a holding-frame, a coiled-wire spring attached at intervals at a number of points to a rail of said frame parallel with said rail, and a flexible web comprising wire strands connected with the coils of said spring intermediate the points of attachment to said holding-frame, substantially as described

8. A bed-bottom comprising a holding-frame and a flexible web suspended therein, said frame comprising end rails and side rails and said web comprising a number of parallel strands of twisted wires and flexible cross-strips inserted between said wires and there provided with depressions to bring the upper surfaces of said cross-strips in the plane of the upper surfaces of said strands, the wires of said strands being twisted tightly together a number of times intermediate the insertions of said cross-strips, substantially as described.

9. In combination with the holding-frame, the flexible web, and the interposed spring of coiled wire connected with said web, with its axis parallel with the plane thereof, the attaching means of looped wire, the loops of said attaching means engaging the coils of said spring, and the ends secured to said frame, substantially as described.

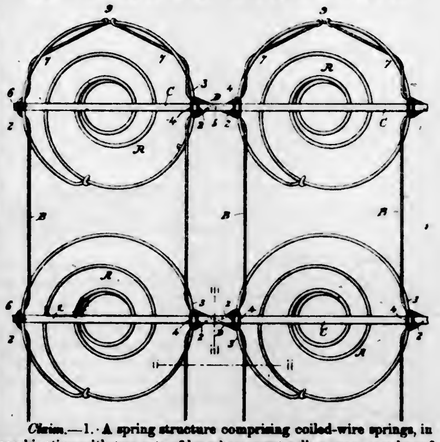
10. In combination with the holding-frame, the flexible web, and the interposed coiled-wire spring connected with said web, with its axis parallel with the plane thereof, the attaching means of looped wire with bent ends, the loops engaging the coils of said spring, and the bent ends driven into said frame, substantially as described.

11. In combination with the holding-frame, the flexible web, and the interposed coiled-wire spring connected with said web, with its axis parallel with the plane thereof, the attaching means of looped wire with bent ends, the loops engaging the coils of said spring, and the bent ends driven into said holding-frame, and the strip or twisted-wire strand fastened over said looped wires, substantially as described.

12. In combination with the holding-frame, the flexible web, and the interposed coiled-wire spring attached to said frame and connected with said web, with its axis parallel with the plane of said web, the limiting-stops of looped wire secured to said frame, with their loops passing around coils of said spring, but out of contact therewith until sufficient pressure is applied to said web, substantially as described.

13. A spring bed-bottom comprising a holding-frame, a flexible web composed of twisted-wire strands and cross-strips inserted between the twisted wires, an interposed coiled-wire spring connected on one side with the ends of said strands, and attaching means of looped wire engaging the spring-coils on the opposite sides and secured to said holding-frame, substantially as described.

486,184. SPRING BED-BOTTOM. ADDISON F. PURNELL, Wake Forest, N. C. Filed Nov. 2, 1891. Serial No. 410,701. (No model.)



Claim.—1. A spring structure comprising coiled-wire springs, in combination with two sets of long braces extending over a number of said springs and short braces intermediate adjacent springs, the long braces of one set extending parallel with said short braces over springs connected by said short braces, so that said last-mentioned springs are joined together in the direction of said short braces both by short braces between springs and by long braces extending between and over the same springs, substantially as described.

2. The combination, with a cross-brace with hooked ends and a row of coiled-wire springs having provisions for engaging said hooked ends, of short braces acting as struts between the springs, whereby the resiliency of the springs tends to hold the said hooked ends in engagement, substantially as described.

3. The combination, with the coiled-wire springs, of short braces intermediate adjacent springs and diametrical long braces extending parallel with said short braces, so that said springs are joined together in the direction of said short braces both by short braces between springs and by long braces extending between and diametrically across the same springs, substantially as described.

4. The combination, with coiled-wire springs and short braces between adjacent springs, of diametrical long braces extending over a number of springs parallel with said short braces and adapted to hold the said short braces in position, substantially as described.

5. The combination, with coiled-wire springs, of tangential braces with lateral loops bent around the spring-wires, short braces with eyes or loops engaging the said lateral loops, and diametrical braces threaded through the lateral loops and adapted to hold the said short braces in engagement with said lateral loops, substantially as described.

6. The combination, with coiled-wire springs, of tangential braces with lateral loops bent around the spring-wires, short braces of the general form of the figure 8, with the eyes or loops engaging the said lateral loops, and diametrical braces threaded through the lateral loops and adapted to hold the said short braces in engagement with said lateral loops, substantially as described.

486,185. COVER FOR KETTLES, &c. JOSHUA S. SIBBEN, Philadelphia, Pa. Filed Jan. 12, 1892. Serial No. 417,879. (No model.)

spring *f*, encircling said pin and exerting its tension to force the hook outwardly, substantially as and for the purpose set forth.

3. The herein-described hat and coat hook, consisting of a casing A, provided with an opening *e*, and with an aperture L, a rigid arm C, projecting from said casing, a hook D, pivoted to said casing and

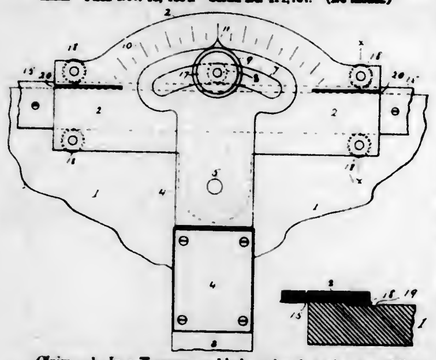
papers and the like, a laterally-swinging box applied thereto and serving both as a gage and as a receptacle for fasteners.

486,192.

486,185. COVER FOR KETTLES, &c. JOSHUA S. BURDEN, Philadelphia, Pa. Filed Jan 12, 1892. Serial No. 417,870. (No model.)

Claim.—A lid-retainer for kettles or like vessels, formed of the bent wire E, said bent wire comprising the spring-hook end *d* and the recessed portion *e* with their connecting extensions, substantially as and for the purpose set forth.

486,186. T-SQUARE. WINFIELD G. THORNTON, Minneapolis, Minn. Filed Nov. 13, 1891. Serial No. 411,787. (No model.)

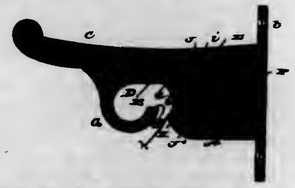


Claim.—1. In a T-square, a blade, a head, a plate providing a curved slot and pivotally connecting the blade and head, and a clamping device in such slot, permitting adjustment of the blade and serving to lock the plate to the head, substantially as set forth.

2. The combination, with a board having a projecting strip along its edge, of a T-square composed of a blade, a head, a plate pivotally connecting them and providing a curved slot, and a clamping device in such slot, permitting adjustment of the blade and serving to lock it to the head and to lock the instrument to the marginal strip of the board, substantially as set forth.

3. The combination, with a board having a strip along its edge and a groove coinciding with the inner edge of the strip, of a T-square having a slotted head adapted to engage the edges of the strip and to be moved along the same, substantially as set forth.

486,187. COAT-HOOK. CHARLES R. VAIL, Salt Lake City, Utah. Filed July 1, 1892. Serial No. 438,699. (No model.)



Claim.—1. As an improvement in hat and coat hooks, the combination, with a casing provided with an opening *e* and with an aperture L, of a hook D, comprising an arm E, working in said opening and provided within the casing with a transverse recess I and with two coincident apertures *i*, located at opposite sides of said recess, an L-shaped bolt J, working in said apertures and passing through said recess, said bolt being provided with a shoulder *j*, and a coil-spring K, encircling said bolt between the shoulder *j* and the opposing wall of the recess I, substantially as and for the purpose set forth.

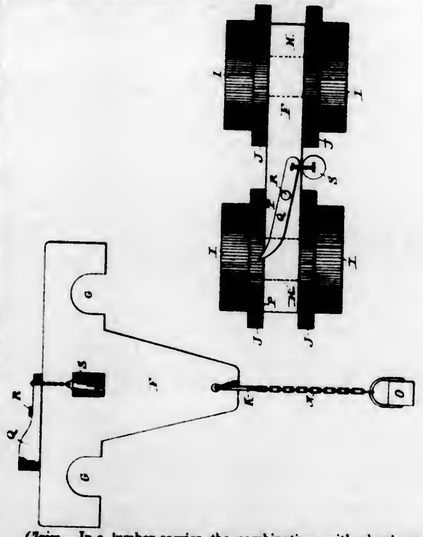
2. As an improvement in hat and coat hooks, the combination, with a casing provided with an opening *e*, of a hook D, comprising a ring G, open at its inner side, as at *g*, and an arm E, working in said opening and provided with an enlargement H, within the casing forming a step-shoulder A, a spring-held locking-bolt J, working in said enlargement, a pin F, projecting rearward from the arm E, and a coil-spring *f*, encircling said pin and exerting its tension to force the hook outwardly, substantially as and for the purpose set forth.

3. The herein-described hat and coat hook, consisting of a casing A, provided with an opening *e*, and with an aperture L, a rigid arm C, projecting from said casing, a hook D, comprising a ring G, open at its inner side, as at *g*, and an arm E, working in said casing, said arm being provided with an enlargement H, having a transverse recess I, and apertures *i*, an L-shaped bolt J, working in said apertures and adapted to register with the aperture L, said bolt being provided with a shoulder *j*, a coil-spring K, encircling the bolt between the shoulder *j* and the opposing wall of the recess I, a pin F, projecting from the rear end of the arm E, and a coil-spring *f*, encircling said pin and exerting its tension to force the hook outwardly, all arranged and adapted to operate, substantially as and for the purpose set forth.

486,188. BLEACHING COMPOUND. HAMILTON Y. CASTNER, London, England. Filed Aug. 3, 1892. Serial No. 442,059. (No specimens.)

Claim.—The new bleaching compound composed of sodium peroxide and one or more neutral salts of the alkaline-earth metals, substantially as described.

486,189. LUMBER-CARRIER. PHILLIP A. CHAUVIN, Bivins, Tex. Filed Dec. 22, 1891. Serial No. 415,909. (No model.)



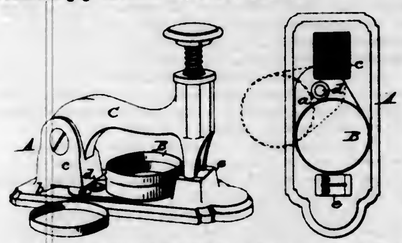
Claim.—In a lumber-carrier, the combination, with closely-arranged tracks with a space between the same, of a truck consisting of an elongated rectangular body having slots extending upward thereinto from the bottom edge and adjacent to the ends thereof and a depending extension located centrally of said slots and adapted to project between and below said rails and having a ring in the lower end thereof with a chain connected thereto, a pair of axles with flanged truck-wheels on opposite ends thereof and adapted to be removably engaged by said slots of the body, one truck-wheel having its flange at the inner side formed with notches, and a horizontally-movable pawl pivoted to the top edge of the body and having a weight secured to one end thereof to normally throw the tip thereof into engagement with the notches of the flange of the said truck-wheel so formed, substantially as described.

486,190. APPARATUS FOR APPLYING PAPER-FASTENINGS. JESSE B. DIVEN, Washington, D. C., assignor of one-half to J. B. Gregg Custis, same place. Filed Aug. 4, 1892. Serial No. 442,141. (No model.)

Claim.—1. In combination with an implement for applying fasteners to papers and the like, a box or receptacle mounted and movable upon said implement toward and from the anvil, whereby it is adapted to serve both to contain the fastening devices and as a gage to determine the point at which the fastener shall be applied.

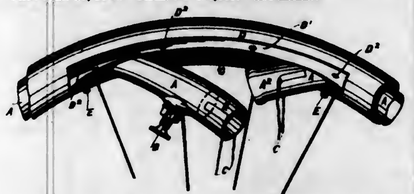
2. An implement for applying fasteners to papers and the like, provided with a movable receptacle to contain fasteners and a friction-clamp for holding the receptacle at different adjustments.

3. In combination with an implement for applying fasteners to papers and the like, a laterally-swinging box applied thereto and serving both as a gage and as a receptacle for fasteners.



4. In combination with implement A, having anvil *c* and block *c*, provided with slit *b*, box or receptacle B, provided with extension *a*, and rivet *d*, passing through the extension *a* and serving to secure the same to the base of the implement A.

486,191. WHEEL-TIRE. ROBERT EDLIN, Leicester, England. Filed June 23, 1892. Serial No. 437,805. (No model.)



Claim.—1. The combination, with the tube forming the air-receptacle of a pneumatic tire, having a lateral filling-orifice and closed ends, of a tubular extension on one of said ends forming a sheath for the opposite end and fastenings for securing said tubular extension or sheath and its inclosed end together, substantially as described.

2. In a pneumatic tire, the combination, with the outer covering or wearing portion having an opening therein closed by a flap, of an inner air-tube having closed ends, one of said ends having a tubular extension forming a sheath for the opposite end, and flexible connections on said sheath and end inclosed thereby for holding the sheath and end in proper relative position, substantially as described.

3. A pneumatic tire for vehicle-wheels, consisting of an air-tube having closed ends, one end having a tubular extension into which the opposite end is received and tied thereto, an outer covering formed with one or more flaps provided with a series of marginal perforations adapted to fit over a similar number of studs on the wheel-rim, a metal plate, also perforated to fit over the said studs and be secured thereon by nuts or equivalent means, substantially in the manner described, and illustrated in the accompanying drawings.

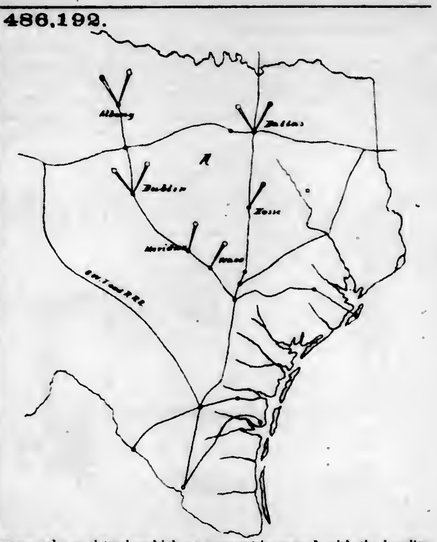
486,192. METHOD OF AND APPARATUS FOR RECORDING THE LOCATION AND CHARACTER OF BUSINESS. CHARL. A. KRATZER, Dallas, Tex. Filed Mar 16, 1892. Serial No. 425,124. (No model.)

Claim.—1. The method of recording the location of any object or business, which consists in removably attaching an indicator to a map at the proper locality and opening an account in a suitable book or register in the name of such locality, which account specifies all the facts necessary to be known in order to properly attend to the business recorded, substantially as set forth.

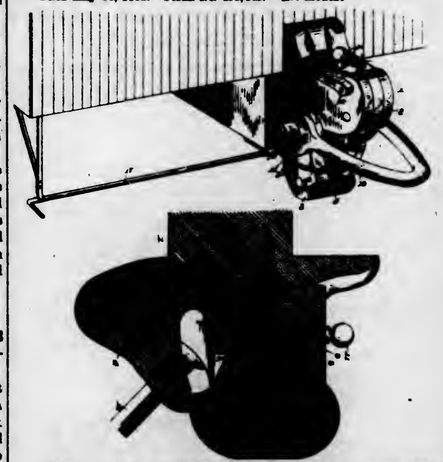
2. The method of recording the location of any object or business, and also the identity or character thereof, which consists in removably attaching an indicator of the kind calculated to show such facts to a map at the proper locality and opening an account in a suitable book or register in the name of such locality, which account specifies all the facts necessary to be known in order to properly attend to the business recorded, substantially as set forth.

3. In an apparatus for recording the location of any object or business, the combination, with a suitable map mounted on a board, of indicating-pins adapted to be stuck into the map to mark a locality and a register in which an account is opened with the locality marked and showing all the facts necessary to be known in regard to the matter so located, substantially as set forth.

4. In an apparatus for recording the location of any object or business, and also the identity or character thereof, the combination, with a suitable map mounted on a board, of indicating-pins distinguishable from each other and each kind being made to represent certain predetermined facts in regard to the object located on the map and a register in which an account is opened with the locality marked and showing all the facts necessary to be known in regard to the matter so located, substantially as described.



486,198. CAR-COUPLING. JEPTHA L. MATSON, Dunbarton, Wis. Filed May 18, 1892. Serial No. 433,445. (No model.)



Claim.—1. In a car-coupling, the combination of a draw-head provided with a depending stationary hook, a pivoted catch arranged below the hook and adapted to receive a link and to close the mouth of the hook to confine a link, and a latch arranged to lock the catch, substantially as described.

2. In a car-coupling, the combination of a draw-head having its front end bifurcated and provided with depending extensions, a hook mounted in the bifurcation and depending therefrom, a catch pivotally mounted in the depending extension and arranged beneath the hook and having an extension and adapted to swing forward to present an inclined face to guide a link into the hook, and a latch arranged to engage the extension of the catch, substantially as described.

3. In a car-coupling, the combination of a draw-head provided with a vertical opening and having lateral trunnions, a U-shaped link journaled on the trunnions, a depending hook arranged at the front of the draw-head, a pivoted catch mounted below the hook and adapted to convey a link into the mouth of the same, and a latch comprising a plate hinged to the draw-head and a depending curved arm arranged

in the vertical opening of the draw-head and adapted to engage the catch, substantially as described.

4. In a car-coupling, the combination of a draw-head provided with a vertical opening and having lateral trunnions, a U-shaped link journaled on the trunnions, a hook depending from the front of the

4. The combination, with the guides K' and with the revoluble carrier, of shafts carrying said guides and means for adjusting said shafts longitudinally in their bearings, substantially as set forth.

5. The combination, with the rotatable die-carrier, guides K', and

low the spring on opposite sides of the clamp and adapted to contact with the spring when the seat is depressed, as and for the purpose described.

2. In a saddle for cycle-vehicles, the combination, with a seat,

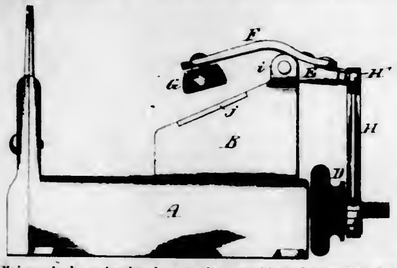
G, whereby the leverage of the latter beam may be varied as desired.

3. In a machine of the class described, the combination, with the main frame A, of the pivoted furrow-opener beam I, a yoke or frame P, pivotally secured to the main frame and connected with the fur-

in the vertical opening of the draw-head and adapted to engage the catch, substantially as described.

4. In a car-coupling, the combination of a draw-head provided with a vertical opening and having lateral trunnions, a U-shaped link journaled on the trunnions, a hook depending from the front of the draw-head, a pivoted catch mounted below the hook, a latch having an arm arranged in the vertical opening and adapted to engage the catch, and a rock-shaft having a curved arm arranged to lift the link, substantially as and for the purpose described.

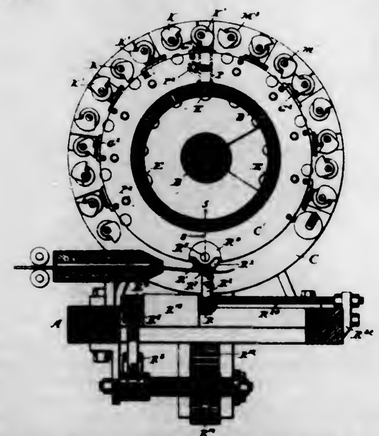
486,194. MACHINE FOR HAMMERING LEATHER. PETER W. MINOR, Springville, N. Y. Filed July 24, 1891. Serial No. 400,613. (No model.)



Claim.—1. In a leather-hammering machine, the combination, with an anvil, of an arm fulcrumed in proximity to the anvil, said arm having a hammer thereon, and a pitman permanently connected with the arm for imparting a positive vibratory motion thereto, substantially as set forth.

2. In a leather-hammering machine, the combination, with an anvil having an inclining upper face, of a spring-arm fulcrumed in proximity to the anvil and having a hammer on one end, a drive-crank, and a pitman extending from the drive-crank to the spring-arm, whereby positive motion is imparted to the hammer, substantially as set forth.

486,195. MACHINE FOR FORGING HORSESHOE-NAILS. BRASTUS B. PIERCE, New Brighton, Pa., assignor to the Standard Horse Nail Company, same place. Filed Nov. 13, 1891. Serial No. 411,809. (No model.)



Claim.—1. The combination, in a nail-making machine, of series of roller-dies, carrying and driving mechanism whereby said dies are revolved positively and are brought successively in pairs into operation upon all the opposite faces and sides of a rod and movable bearings for the roller-dies, and means for adjusting said bearings to vary the distance between the dies of each pair, substantially as set forth.

2. The combination of the die-carrier, dies, shafts, and cylindrical bearings with eccentric sockets and external teeth, and a shaft with reverse worms engaging said teeth, substantially as described.

3. The combination of the dies, shafts, cylindrical bearings and a worm-shaft provided with separate sections having the worm-teeth and means for clamping said sections to the shaft, substantially as set forth.

4. The combination, with the guides K' and with the revoluble carrier, of shafts carrying said guides and means for adjusting said shafts longitudinally in their bearings, substantially as set forth.

5. The combination, with the rotatable die-carrier, guides K', and shafts of said guides, of supplementary pieces M^2, bushing M', adjustable in the carrier, and clamping-collars M^3, substantially as set forth.

6. The combination, with the rotatable die-carrier having a recess, of a block R^2, fitting said recess, and a cutter-shaft having its bearings in the carrier and at one end in said block and supporting a cutter, substantially as set forth.

7. The combination, with the die-carrier, of a rotating cutter carried by said carrier and a coacting cutter supported by a stationary part of the machine and means for moving the latter into and out of operative position at intervals, substantially as set forth.

8. The combination of the rotating die-carrier, a revolving cutter supported thereon, having a radial end face, and a reciprocating cutter having a face adapted to shear with the end face of the revolving cutter when said reciprocating cutter is stationary, substantially as set forth.

9. The combination of the cutter R, rock-shaft, driving-shaft B, and eccentric, gear-segments R^3 R^9 R^{10}, rack R^{13}, and connecting link and strap R^{14}, substantially as set forth.

10. The combination, with the rotating die-carrier and rotating cutter R', of an oscillating cutter R, movable into and out of cutting position in a plane at right angles to the carrier, substantially as set forth.

11. The combination of the rotatory die-carrier and cutter R', rock-shaft and cutter R, and means for adjusting the bearings of said shaft in the direction of the length of the nail, substantially as set forth.

12. The combination of a rotatable die-carrier, rotating cutter thereon, and presser arranged to make contact with the nail-bar to deflect the same to a place below that in which the bar is fed, substantially as and for the purpose set forth.

13. The combination of the cutter-holder R^8 and presser R^7, carried thereby and arranged to deflect the bar below the plane on which it is fed, substantially as and for the purpose set forth.

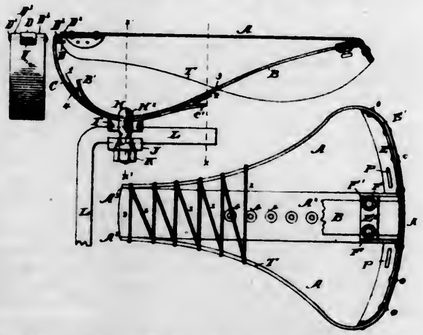
14. The combination, with the cutter-shaft and counter-shaft, of disks or pulleys thereon and brake-strap J and means for adjusting the same, substantially as set forth.

486,196. LUBRICANT. CHARLES H. RIDSDALE, Guisborough, and ALFRED JONES, Middlesborough, England. Filed Nov. 17, 1891. Serial No. 412,137. (No specimens.)

Claim.—1. A lubricant consisting of the combination of hard alkaline-earth soap, ordinary soap, fatty matters containing a large amount of stearine, and a solid lubricating material, the whole forming a somewhat-greasy body capable of just being scraped by the nail and not fusing under the boiling point of water.

2. A lubricant consisting of the combination of an alkaline earth and fatty matters consisting largely of stearine, ordinary soap, and sulphur, substantially as described.

486,197. SADDLE FOR CYCLE-VEHICLES. CYRUS W. SALADEE, Cleveland, Ohio, assignor to the Whitten-Godding Cycle Company, Providence, R. I. Original application filed Oct. 19, 1892, Serial No. 449,306. Divided and this application filed June 18, 1892. Serial No. 437,200. (No model.) Patented in Canada June 23, 1892, No. 39,190.



Claim.—1. In a saddle for cycle-vehicles, the combination, with a seat and a post-clamp, of the spring having its terminal ends connected to the pommel and cantle of the seat, respectively, and the duplex bearing having its parts or members situated above and below the spring on opposite sides of the clamp and adapted to contact with the spring when the seat is depressed, as and for the purpose described.

2. In a saddle for cycle-vehicles, the combination, with a seat, of the spring having its forward end curved directly from a clamp up to and connected with the pommel and its hind end rearwardly extended to support the cantle of said seat, a post-clamp connected to said spring and arranged about midway between its vertical center and the pommel thereof, and the bearing having its front part arranged above the spring in front of the clamp and its rear part below the spring in rear of the clamp, said bearing being normally out of contact with the movable parts of said spring, as and for the purpose described.

3. In a saddle for cycle-vehicles, the combination, with a seat and a post-clamp of the spring consisting of the front and rear members, the front member having its forward end curved directly from said clamp up to and connected with the pommel and the rear member extended rearwardly and upwardly to support the hind end of the seat, the inner ends of said members being confined to said clamp and extended beyond the clamp in opposite directions and arranged above and below the spring members normally out of contact with the same, for the purpose described, substantially as set forth.

486,198. SURGICAL APPARATUS. SAMUEL M. SAPP, Geneseo, Kans., assignor of one-half to John G. Mollstarfer and Jeremiah M. Mollstarfer, same place. Filed Apr. 14, 1891. Serial No. 388,878. (No model.)

Claim.—The combination, with the tank provided with the sleeves at its four corners, of the upper angular leg-sections, the set-screws mounted in the sleeves, the lower bored hollow sections receiving the upper sections, the ferrules at the upper ends of the lower sections, the set-screws therein, the ferrules at the lower ends of the lower sections, provided with eyes, the set-screws terminating in the eyes, and the headed rods connecting the eyes of each pair of legs, substantially as specified.

486,199. JOURNAL-BEARING. SAMUEL J. SHIMER, Milton, assignor to the Shimer Bearing Company, South Bethlehem, Pa. Filed Dec. 21, 1891. Serial No. 415,762. (No model.)

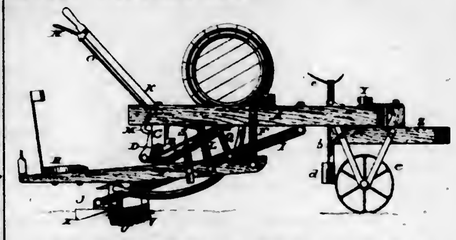
Claim.—In a journal-box, the combination of the main box A, formed with projecting end flanges 1 2, arranged below the bearing-surface of the box and extending the width thereof, the end pieces B, adapted to set on the end flanges of the box and formed with inwardly-directed edge flanges 3, having their upper surfaces coincident with the surfaces of the end pieces and extending the width of the box and adapted to rest on the surface of the box, and a filling covering the box-surface and the end pieces, substantially as described.

486,200. TRANSPLANTER. HIRAM O. STARRS and ANDREW G. FULLER, Madison, Wis., assignors to the Fuller & Johnson Manufacturing Company, same place. Filed Mar. 21, 1892. Serial No. 426,787. (No model.)

Claim.—1. In a machine of the class described, the combination, with the main frame, of the beam I, pivoted to the main frame, the furrow-opener carried by the beam, and a beam or beams G, pivoted to the frame and supported upon the furrow-opener beam, all substantially as shown and described.

2. In a machine of the class described, the combination, with the main frame, of the furrow-opener beam I, the beam or lever G, pivoted to the main frame and supported upon the furrow-opener beam I, and an adjustable connection between the said beam I and the beam G, whereby the leverage of the latter beam may be varied as desired.

3. In a machine of the class described, the combination, with the main frame A, of the pivoted furrow-opener beam I, a yoke or frame P, pivotally secured to the main frame and connected with the furrow-opener beam by a link Q, and the beams G, also pivoted to the main frame and provided with a yoke T to engage the yoke P, all substantially as shown and described.



4. In combination with the main frame, furrow-opener beam I, and the pivoted beams G, the yoke P, pivoted to the main frame and connected to the furrow-opener beam by a link Q and having its side bars notched or serrated, as shown, and the yoke T, secured to the beams G and adapted to engage the notches or recesses in the side bars of the frame P.

5. In a machine of the class described, the combination, with the main frame and the beam I, of the lever K, pivoted to the main frame and connected with the beam by means of a link L, and a pawl M, adapted to engage one of the cross-bars of the main frame when the lever is depressed, all substantially as shown and described.

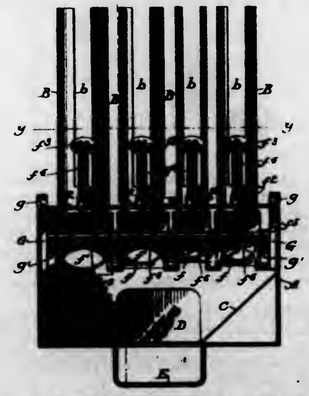
6. In a machine of the class described, the combination, with a main frame, of a block or frame Z, pivoted thereto at its forward end, and a lever *b*, pivoted to the main frame and adapted to engage slots formed in the main frame and in the frame Z, all substantially as shown and described.

7. In combination with a main frame having a block B at its forward end, said block having a slot or recess *a* in its rear face, a supplemental frame or block Z, provided with a wheel *e* and connected with the block B of the main frame by means of a bolt Y, and a lever *b*, pivoted to the block B and adapted to enter the slot *a* and a corresponding slot in the frame or block Z.

8. In a machine of the class described, the combination, with a main frame, of the pivoted truck and the combined scraper and locking device *b c d*, secured to the main frame, all substantially as shown and described.

9. In a machine of the class described, a combined furrow opener and coverer comprising the horizontal plates V V, united at their forward edges to form the depending vertical cutting-blade U, said plates V V being separated from each other at their inner opposing edges and having their outer rearward edges bent downward and inward to form wings X, as and for the purpose set forth.

486,201. CHANGE MAKING AND DELIVERING DEVICE. DANIEL L. TOWER, Brooklyn, N. Y. Filed Jan. 8, 1892. Serial No. 417,605. (No model.)



Claim.—1. In a change making and delivering apparatus, the combination of a delivery-chute having an inclined bottom, vertical ways, a gate sliding vertically on said ways and adapted to close the mouth of said chute when in its lowest position, and a ball extended below said gate in the line of its movement and parallel with the plane in which the coins fall from the chute, whereby the hand is always in position to receive coins while opening the gate, substantially as

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486,202. ROLL-CARRIAGE. THOMAS WATTERSON, Cornish, Me. Filed June 6, 1891. Serial No. 395,504. (Model.)

an inclosed gas-burner supported at the side of said upright flue and at a point above its bottom, and a draft-pipe extending from said burner into said upright air-chamber and thence upward to a point below the perforated top of said chamber, and through which the hot

bent down and secured to vertical spindles pivoted to sleeves upon the gangs, and draft-rods for the gangs, substantially as described.

2. In a harrow, the combination of the gangs of disks and the pole, of flat metal bars secured to the pole on its upper and under

ways, a gate sliding vertically on said ways and adapted to close the mouth of said chute when in its lowest position, and a bell extended below said gate in the line of its movement and parallel with the plane in which the coins fall from the chute, whereby the hand is always in position to receive coins while opening the gate, substantially as shown and described.

2. In a change making and delivering apparatus, the combination of a cylindrical coin-tube having its upper portion vertical and its lower portion inclined from the vertical and a delivery-slide closing the lower end of said tube, substantially as shown and described.

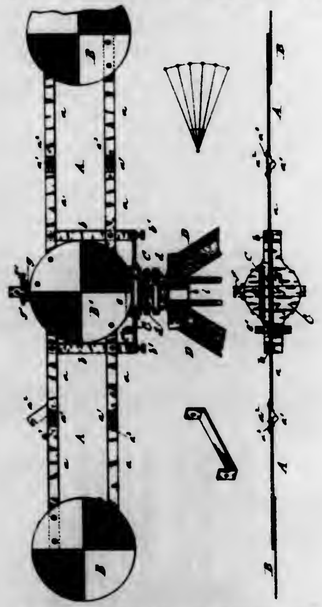
3. In a change making and delivering apparatus, the combination of a coin-tube, a delivery-slide closing the lower end thereof, movable supports for said slide, and means to retain said support and slide against the end of said tube, substantially as shown and described.

4. In a change making and delivering apparatus, the combination of a coin-tube, a delivery-slide closing the lower end of said tube, pivoted arms upon which said slide may move, and a spring to retain said slide against the end of said tube, substantially as shown and described.

5. In a change making and delivering apparatus, the combination of a coin-tube, a delivery-slide closing the lower end thereof, a pivoted support for said tube, and a spring to swing said support and slide against the end of said tube, substantially as shown and described.

6. In a change making and delivering apparatus, the combination of a coin-tube, a delivery-slide closing the lower end of said tube, a main casing, a cover for said tube, a bar or plate connected to said cover and adapted to engage said slide, and a locking device to secure said cover and plate to said casing, substantially as shown and described.

486,202. SURVEYOR'S TARGET. CLAUDIO URRUTIA, Guatemala, Guatemala. Filed Mar 1, 1892. Serial No 423,324. (No model.)

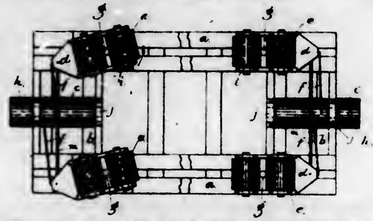


Claim.—1. A telemeter formed of a horizontal frame having fixed targets or disks at the outer ends and an alidade pivoted to the center of and at right angles to the frame, substantially as set forth.

2. A telemeter composed of a horizontal frame having fixed targets or disks at the center and outer ends, an alidade pivoted to the center of and at right angles to the frame, and a tripod or other support, to the head of which the frame is attached, substantially as set forth.

3. The combination, with a horizontal frame composed of parallel rods and fixed targets or disks at the center and ends of said rods, of upright rods connecting the horizontal rods near the center disk and screws for connecting the upright rods with the head of the tripod, substantially as set forth.

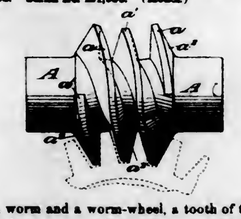
486,203. ROLL-CARRIAGE. THOMAS WATERHOUSE, Cornish, Me. Filed June 8, 1891. Serial No. 395,304. (Model.)



Claim.—1. In a roll-carriage for moving heavy objects, the combination, with a supporting-frame, of truck-frames pivotally attached to said frame at each corner, each truck-frame having journaled therein two trucks, one in front of the other, a windlass journaled in each end of the supporting-frame, and a cable attached to the tongues of the two truck-frames on each end and to said windlass, substantially as and for the purposes set forth.

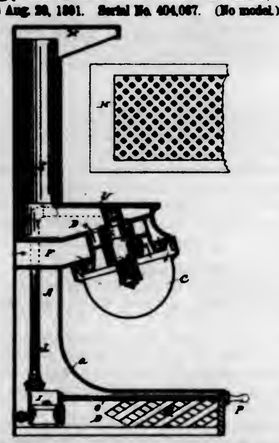
2. In a roll-carriage for moving heavy objects, the combination, with a supporting-frame, of four truck-frames pivotally attached to the supporting-frame, one at each corner, each truck-frame having two trucks, one in front of the other, a pivoted link connecting the tongues of each pair of truck-frames, and a windlass journaled in the supporting-frame, adapted to operate the truck-frames and steer the roll-carriage.

486,204. WORM-GEAR. JAMES F. WELCH, Brooklyn, N. Y., assignor to the Glen Cove Machine Company, Limited, same place. Filed Feb. 18, 1892. Serial No. 421,933. (Model.)



Claim.—A worm and a worm-wheel, a tooth of the worm being set in a curved plane corresponding to the curve of the circumference of the worm-wheel and having its driving or contact side varied along its length to assume different pitches relative to the axis of the worm and the teeth on the worm-wheel having their contact sides formed in a compound curved plane having a general obliqua direction across the face of the wheel to correspond to the face of the worm-tooth, substantially as set forth.

486,205. GAS HEATING-STOVE. MOSES G. WILDER, Philadelphia, Pa. Filed Aug. 20, 1891. Serial No. 404,067. (No model.)



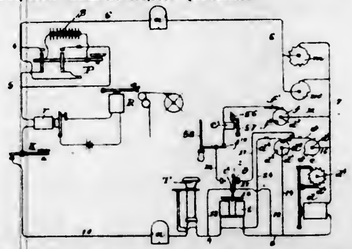
Claim.—1. The combination, in a gas-heater, of an upright air-chamber or circulating-flue, a perforated top or cover for said flue, an inclosed gas-burner supported at the side of said upright flue and at a point above its bottom, and a draft-pipe extending from said burner into said upright air-chamber and thence upward to a point below the perforated top of said chamber, and through which the hot waste gases from the burners pass and act upon the air in said chamber or flue to produce an upward circulation.

2. The combination of an upright air-chamber extended laterally at its base to form a hearth, a perforated top or cover for said air-chamber, an inclosed gas burner or burners placed at the side of the said upright air-chamber and over said hearth, a draft pipe or pipes extending laterally from said burners into said air-chamber and thence upward to a point below said perforated top, an air-duct for supplying air to said burners, and suitable openings near the bottom of said air-chamber to permit entrance of air to be acted upon by the heated hearth and the heat from the waste gases passing through said draft-pipe to cause a circulation under said hearth and upward through said upright air-chamber.

3. The combination, with the upright air chamber or flue, of the inclosed gas-burners supported at the side thereof and at a point above the bottom of said flue, a draft-pipe extending from said burners into said flue and thence upward to a point below the top of said flue, and a duct for supplying air to said burners, all substantially as and for the purposes set forth.

4. The combination, with the upright air chamber or flue, of the inclosed burners supported at the side thereof and at a point above the bottom of said flue and a draft-pipe extending from said burners into said flue and thence upward to a point below the top of said flue, substantially as and for the purposes set forth.

486,206. POLICE SIGNAL SYSTEM. JOHN C. WILSON, Boston, Mass., assignor to the Municipal Signal Company, Portland, Me. Filed Oct. 14, 1887. Serial No. 252,326. (No model.)



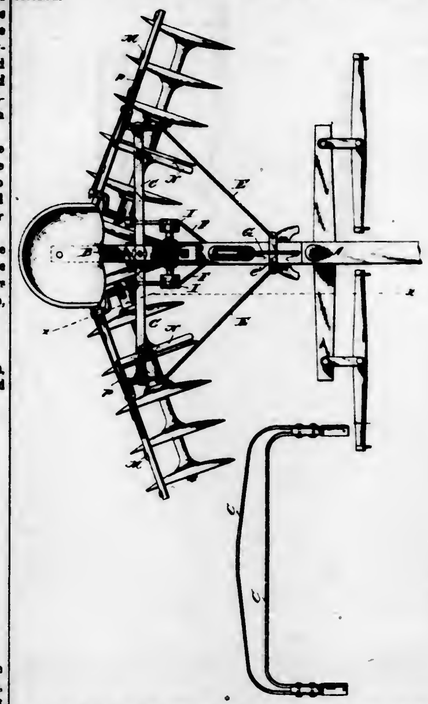
Claim.—1. In a police signal system, the combination of a main electric circuit, a main station and a series of sub-stations thereon, each sub-station containing a light-signal, a controlling electro-magnet therefor in a normally-open shunt-circuit, a circuit-closer for the shunt-circuit, a polarized actuating-magnet therefor in a main circuit, a low-resistance shunt, including a circuit-controller, around said magnet, an electro-magnetically-movable step-by-step individual-call mechanism in the main circuit to operate the circuit-controllers at the sub-stations successively and open the corresponding low-resistance shunt, whereby its polarized magnet is thrown into the main circuit, and a circuit-changing device at the main station to close the normally-open shunt and energize the light-controlling magnet therein at any predetermined sub-station, substantially as described.

2. In a municipal telegraph system comprising a main office and several sub-stations or boxes connected by a single wire, the combination, substantially as described, of circuit-changing devices contained in the boxes for transmitting signals, a receiving-instrument at the main office for receiving the said signals from the boxes, with light-signals and electro-magnets controlling their operation, and electro-magnetically-movable step-by-step individual-call switches controlling the circuits of said light-signal-operating magnets, and a circuit-changing device at the main station for effecting the movement of the said switches, whereby two independent systems of communication are effected over one wire between the main and the several sub-stations—namely, a system of signaling from the several sub-stations to the main station for aid, &c., and a system of light-signaling from the main station to the several sub-stations independently to call the attention of a passing officer—as described.

486,207. HARROW. ARTHUR F. BROWN, Dayton, Ohio, assignor to the Hoddard Manufacturing Company, same place. Filed Jan. 25, 1892. Serial No. 419,157. (No model.)

Claim.—1. In a harrow, the combination, with the gangs of disks and the pole, of flat metal bars secured to the pole on its upper and lower sides, extending therefrom at right angles and having their ends bent down and secured to vertical spindles pivoted to sleeves upon the gangs, and draft-rods for the gangs, substantially as described.

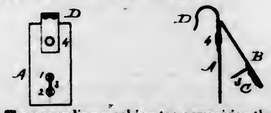
2. In a harrow, the combination of the gangs of disks and the pole, of flat metal bars secured to the pole on its upper and under sides, extending therefrom at right angles and having secured between their bent lower ends vertical spindles pivoted to sleeves upon the gangs, a lock-lever upon the pole for shifting and locking the gangs, and draw-bars connecting said lever and gangs, substantially as described.



3. In a harrow, the combination, with the gangs having socketed sleeves thereon, of the pole having secured to its upper and lower sides the laterally-extending and downwardly-bent flat metal bars C, to the lower ends of which are secured the spindle-pieces D, engaging the sockets of the sleeves on the gangs, brace-rods E for the bars C, draw-bars F, and lock-lever G, substantially as described.

4. In a harrow, the combination, with the swinging gangs, of the upwardly and forwardly extending draw-bars F, the rollers I, journaled upon the sides of the pole and bearing upon the draw-bars, and the lock-lever G, substantially as described.

486,208. MARKING TAG. SIMON DANTZER, Dayton, Ohio. Filed Apr. 2, 1890. Serial No. 346,356. (No model.)

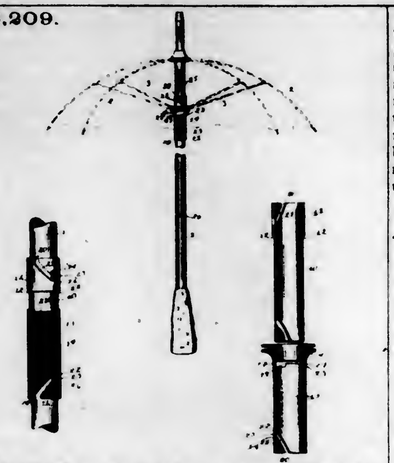


Claim.—The suspending marking-tag comprising the folded parts A and B, the clasp 3, secured within the latter near the end, and the metallic hook D, secured to the former part near the end opposite of said clasp and said hook curved in the direction of said clasp, substantially as described.

486,209. UMBRELLA-RUNNER. CHARLES J. FELL, Wilkes-Barre, Pa., assignor of one half to August J. Schuler, same place. Filed Nov. 27, 1891. Serial No. 413,262. (No model.)

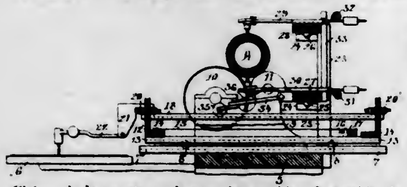
Claim.—An umbrella-stick having pins thereon on the upper and lower portions thereof in alignment with each other, combined with a runner comprising an upper member having a central bore of a size to slide on the stick and its upper end increased in thickness to

486,209.



form a shoulder 12, against which the ring is drawn by the stretchers, a lower member 13, having an internal bore of a size to fit closely over the reduced body of the upper member and milled or roughened on its exterior, the said lower member being secured upon the lower portion of the upper member in such manner as to form a space between the upper end of the lower member and the shoulder 12 of the upper member and both of said members at opposite ends of the same being formed with oblique slots extending in reverse diagonal directions to each other, said slots terminating in locking-recesses 23, which are in vertical alignment with each other and provided with a limiting shoulder or corner 23×, beyond which the longest inclined wall of each of said slots extends, thereby causing the pin engaging said slots at either end to be removably locked behind said shoulders or corners, and a stretcher-ring 4, journaled on the runner-tube between the upper end of the lower member and the shoulder of the upper member and having tongues 27 projecting downwardly to engage recesses 28, situated at opposite sides of the upper end of said lower member, substantially as described.

486,210. PANTOGRAPH ENGRAVING-MACHINE. JOHN HOPE, Providence, R. I. Filed Aug. 9, 1892. Serial No. 442,574. (No model.)



Claim.—1. In a pantograph engraving-machine, the combination, with a stylus-carriage and wheel-heads operated thereby adapted to support the object to be engraved, of a carriage having upper and lower engravers and means by which the lateral movement of the stylus-carriage will be conveyed to said engraver-carriage, as described.

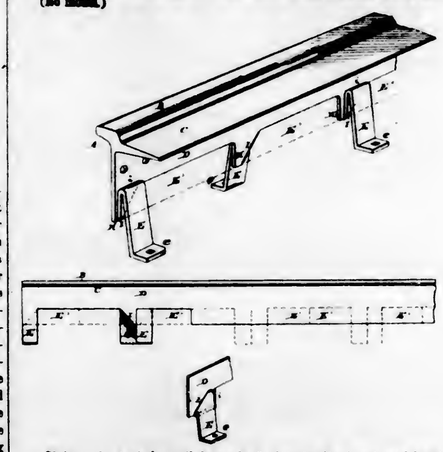
2. In a pantograph engraving-machine, the combination, with wheel-heads suitably journaled on which the object to be engraved is supported and by which it may be moved under an engraving point or points, of a stylus-carriage and means connecting the same with the wheel-heads, whereby they are operated by the movement of the carriage, as described.

3. In a pantograph engraving-machine, the combination, with a compound carriage formed of a lower transversely-movable carriage and an upper stylus-carriage longitudinally movable, of wheel-heads suitably journaled, adapted to support the object to be engraved and to move the same, and flexible connections between the wheel-heads and the lower carriage, as described.

4. In a pantograph engraving-machine, the combination, with the transversely-movable carriage 12, having the cross-bars 13 13 supported on the balls 8 8 and the rails 14 and 14' and a stylus-carriage longitudinally movable thereon, of the wheel-heads 10 10, the wheels 11 11, and the bands 15 and 16, secured to the wheel-heads and to the carriage 12, as described.

5. In a pantograph engraving-machine, the combination, with the carriage 12, transversely-movable on the balls 8 8, supported in grooves in the rails 7 7, a stylus-carriage longitudinally movable on said carriage 12, the wheel-heads 10 and wheels 11, suitably journaled, and the bands 15 and 16, secured to the wheel-heads and to the carriage 12, of the vertical standards, the bearing-plates 24, supported thereby and having grooves in their upper surfaces, an upper carriage formed by the rails 27 and 28, suitably braced and supported on the balls 25 and 26, and means intermediate the rail 27 and the stylus-carriage, whereby the operation of the stylus-carriage is conveyed to the upper carriage, as described.

486,211. GIRDER-RAIL AND PROCESS OF MANUFACTURING THE SAME. RUDOLPH M. HUNTER, Philadelphia, assignor to the Johnson Company, Johnstown, Pa. Filed Feb. 23, 1892. Serial No. 422,364. (No model.)



Claim.—1. A girder-rail formed of a longitudinal web and head portion and a series of foot portions formed integral with the web and connected thereto by bends.

2. A girder-rail formed of a longitudinal web and head portion and a series of foot portions formed integral with the web and connected thereto by bends and in which some of said foot portions project to one side of the web and some to the other side of the web.

3. In a girder-rail, the combination of the head, web, and foot portions formed integral and in which the web is provided with a series of downwardly-projecting portions connecting integrally with the foot portions by means of bent portions of the metal.

4. In a girder-rail, the combination of the head, web, and foot portions formed of one integral piece of metal and in which the foot portions extend below the web and are connected at the extreme lower portion thereof by bent portions interposed between the said web and foot and in which the depth of the finished rail is greater than the extreme depth of the web prior to the formation of the foot portions thereon.

5. In a girder-rail, the combination of the web D, formed with the head B and tram C at the top and integrally connected with the foot portions E by means of the bent portions I and i.

6. The herein-described method of forming a girder-rail of great depth between the foot and the head, which consists of first rolling a girder-rail with head and tram and web, but without foot portions, then cutting or notching the lower edge of the web to form longitudinal strips, and subsequently bending the said strips at an angle to the length of the rail and downward or away from the head portion thereof to form feet

486,212. CIRCUIT-CONTROLLER. HARRY W. LELAND, Jersey City, N. J. Filed Jan. 11, 1892. Serial No. 417,614. (No model.)

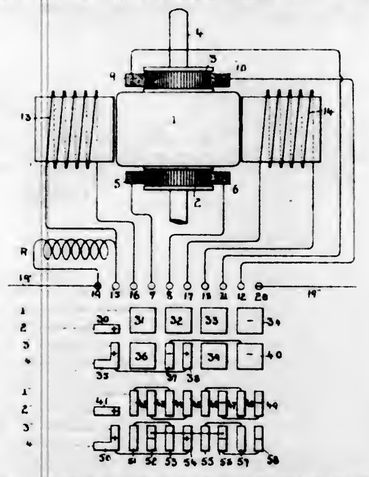
Claim.—1. A circuit-controller comprising a sheet or disk provided with one or more rubber or similar elastic ridges or protuberances formed on its surface and circuit-controlling contacts embedded in the sheet and its ridges, respectively.

2. A circuit-controller comprising a sheet or disk of elastic material provided with one or more protuberances on its surface and having circuit-controlling contacts mounted on the under surface of the protuberance or protuberances.

3. A circuit-controller comprising a sheet of elastic material having one or more circuit-controlling contacts mounted upon its under surface and one or more co-operating contacts mounted on the under side of the sheet, the co-operating contacts being held in their normal condition by the elasticity of the supporting-sheet.

4. A circuit-controller comprising a sheet of elastic material provided with one or more ridges or protuberances, to the under side of which are fixed circuit-controlling contacts, co-operating contacts mounted on the under side of the sheet in operative relation to those first mentioned, and a protecting-sheet applied to the under surface to maintain the contacts in operative condition.

486,218. GOVERNING ELECTRIC MOTORS. ROBERT LUNDELL, New York, N. Y., assignor of one-half to Edward H. Johnson, same place. Filed Dec. 19, 1891. Serial No. 415,573. (No model.)



Claim.—1. An electric motor having its armature and field-magnet each wound with independent sections of coils, in combination with circuit-changing devices for varying the series and multiple-arc relation of the armature-coils, and circuit-changing devices for varying the series and multiple-arc relation of the field-magnet coils, substantially as set forth.

2. An electric motor having two or more circuits, each of which circuits includes in series a section of coils on the armature and a section of coils on the field-magnet, in combination with circuit-changing devices for varying the series and multiple-arc relation of said circuits, substantially as set forth.

3. An electric motor having two or more independent sections of coils on its armature, each connected to a separate commutator, a section of coils on the field-magnet connected in series with each of said armature-sections, and circuit-changing devices for varying the series and multiple-arc relation of the armature and field-sections, substantially as set forth.

4. The combination, with an electric motor having its armature and its field-magnet each wound with independent sections of coils, of circuit-changing devices connected therewith for simultaneously changing the series and multiple-arc arrangement of the armature-sections and the series and multiple-arc arrangement of the field-magnet coil-sections, substantially as set forth.

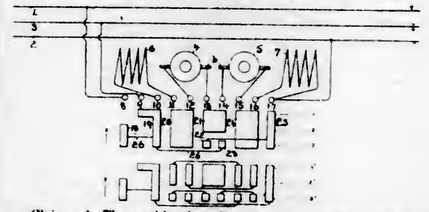
5. The method of regulating the speed of an electric motor, which consists in varying both the series and multiple-arc relation of its armature-coils and the series and multiple-arc relation of its field-magnet coils, substantially as set forth.

6. An electric motor having its armature and field-magnet each wound with independent sections of coils, in combination with a resistance in the motor-circuit, circuit-changing devices for varying the series and multiple-arc relation of the armature-coils, circuit-changing devices for varying the series and multiple-arc relation of the field-magnet coils, and circuit-changing devices for cutting said resistance in and out of circuit, substantially as set forth.

7. The combination of a field-magnet having several independent coils, an armature having an equal number of coils, a commutator for each armature-coil, and a switch mechanism having contact-plates co-operating with switch-brushes to close the circuit through all the coils in series when in one position and to close the circuit through the coils in multiple arc when in another position, substantially as set forth.

8. The combination of a field-magnet having several independent coils, an armature having an equal number of coils, a commutator for each armature-coil, an artificial resistance connected or adapted to be connected to the line-terminals and to a field-terminal, and a switch mechanism having contact-plates co-operating with switch-brushes to close the circuit through all the coils in the series when in one position and to close the circuit through the coils in multiple arc when in another position, said switch having, also, contacts co-operating with the terminals to which said resistance is connected and arranged to throw the resistance in circuit when the switch is in certain positions and out of circuit when the switch is in other positions, substantially as set forth.

486,214. GOVERNING ELECTRIC MOTORS. ROBERT LUNDELL, New York, N. Y., assignor of one-half to Edward H. Johnson, same place. Filed Jan. 2, 1892. Serial No. 416,782. (No model.)



Claim.—1. The combination of three or more conductors between different pairs of which different electro-motive forces are maintained, a motor having two or more armature-coils, circuit-changing devices for connecting said motor at will between different pairs of said conductors, and circuit-changing devices for altering the relation of the armature-coils, substantially as described.

2. The combination of three or more conductors between different pairs of which different electro-motive forces are maintained, a motor having two or more armature-coils and an equal number of field-magnet coils, circuit-changing devices for connecting said motor at will between different pairs of said conductors, and circuit-changing devices for altering the relation of the field-magnet and armature coils, substantially as described.

3. The combination, with the positive, negative, and neutral supply-wires, of a motor having one or more field-magnet coils and two or more armature-coils, means for closing the field-magnet circuit at will between two of said wires, and means for connecting the coils in series or in multiple arc, substantially as described.

4. The combination, with the positive, negative, and neutral supply-wires, of a motor having one or more field-magnet coils and two or more armature-coils, and means for closing the field-magnet circuit at will between the central and outer wires or between the two outer wires, and means for changing the connections of the motor-coils to series or to multiple, substantially as described.

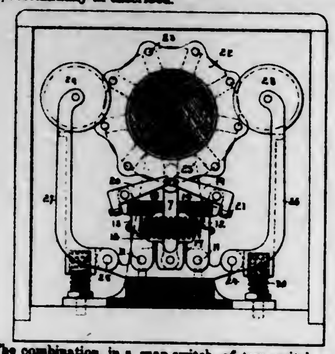
5. The combination, with the positive, negative, and neutral supply-wires, of a motor having several field-magnet and armature coils, a switch having contacts which in one position of the switch close circuit between the neutral and an outer wire in series through all the motor-coils, contacts which in a second position of the switch close circuit between the two outer wires through all the coils in series, and contacts which in another position of the switch close circuit between the positive and negative conductors and then throw the motor-coils in multiple arc, substantially as described.

6. The combination, with the positive, negative, and neutral supply-wires, of a motor having several field-magnet and armature coils, a switch having contacts which in one position of the switch close circuit between the neutral and an outer wire in series through all the motor-coils, contacts which in a second position of the switch close circuit between the two outer wires through all the coils in series, and contacts which in another position of the switch close circuit between the positive and negative conductors and then throw the motor-coils in multiple arc, and a similar set of switch-contacts for reversing and governing the motor, substantially as described.

486,215. DOUBLE SNAP-SWITCH. ROBERT LUNDELL, New York, N. Y., assignor of one-half to Edward H. Johnson, same place. Filed Feb. 10, 1892. Serial No. 421,061. (No model.)

Claim.—1. The combination, in a switch, of a switch member having contacts, a handle for moving it, a spring for throwing said member when the latter has been moved a predetermined distance, a second switch member, and an operating-spring therefor released at or

about the same instant that the first-mentioned spring throws its switch member, substantially as described.



2. The combination, in a snap-switch, of two switch members, one of which is provided with a suitable handle for moving it and with contacts and the other of which has contact devices adapted to make contact therewith, a spring put under tension by movement of the first-mentioned switch member and acting on said member to throw it suddenly when the latter has been moved a predetermined distance, a second spring, also put under tension by movement of said first switch member, and means operated by said second spring for throwing the second switch member, whereby the circuit is made and broken by a double spring action, substantially as described.

3. The combination, in a switch, of a member in the form of a drum, on the surface of which are contact-plates in two series independent of each other, movable either to the right or to the left at will, co-operating switch-contacts, one or more springs opposing the movement of the movable member, whereby it or they will be put under tension by movement of the switch in either direction, and releasing devices for the springs, substantially as described.

4. The combination, in a switch, of a body carrying two sets of contact-plates on opposite sides of a median line, respectively, forming one switch member and movable at will either to the right or left, a co-operating switch member having contact devices normally standing on said median line that is between said sets of plates, a spring so connected as to be put under tension by movement of the switch in either direction, an escapement or releasing device for said spring, and means operated by such spring for instantaneously changing the switch connections, substantially as described.

5. The combination, in a switch, of a body carrying switch contact-plates, pivoted plates or springs adapted to make contact therewith, means for moving the body, a pivoted arm or device having a trip engaging the body, whereby the arm or device is moved by said body, a spring connected to said pivoted arm or device and put under tension by such movement, said trip being made so as to disengage the connection between the body and said arm or device at a predetermined point, whereby said spring can act, and a strip or bar carried by the pivoted arm and adapted to strike said pivoted contacts, whereby the connection of the switch is instantaneously changed, substantially as described.

6. The combination, in a switch, of a body, several rows of contact-plates thereon, pivoted springs or plates adapted to co-operate therewith, means for moving the body and for putting a spring under tension thereby, and means for releasing said spring, and a striker moved by the spring against the pivoted contact plates or springs, substantially as described.

7. The combination of a drum or body carrying several contact-plates in the form of curved plates having flanges or webs extending in planes at right angles to the axis of the drum or body and in line with each other, some of said contact-plates being idle, but of the same shape as the other plates, and co-operating pivoted springs adapted to grasp and make contact with the plates, whereby the resistance to motion of the switch-body is the same in all positions, substantially as described.

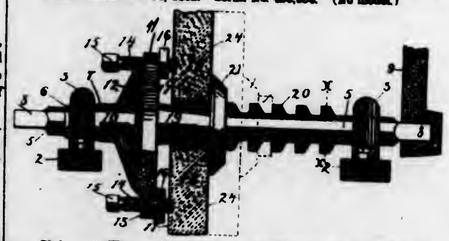
486,216. FOLDING PICTURE. ALBERT CORBETT, New York, N. Y. Filed June 11, 1892. Serial No. 436,331. (No model.)

Claim.—1. A folding picture composed of a foundation folded at its median line and an interior layer that is attached in part to both halves of the foundation and provided with a folding unattached side portion or gusset that is adapted to fold to the inside of the foundation when the same is folded up or extended beyond the foundation when the same is opened, substantially as set forth.

2. A folding picture composed of a foundation that is adapted to

be folded along its median line and an interior sheet that is attached in part to both halves of the foundation-plate and provided with non-attached folding side portions or gussets at opposite sides, said gussets folding to the inside of the foundation when the latter is folded up and extending beyond the sides of the same when it is in open position, substantially as set forth.

486,217. GRINDSTONE-HANGER. OLE H. PETERSON, Grove City, Minn. Filed Mar. 28, 1892. Serial No. 426,694. (No model.)



Claim.—1. The combination, with the shaft, of the bearings therefor and means for attaching the power device to said shaft, said shaft having several integral arms containing adjustable set-screws adapted to engage one side of the grindstone to prevent the same from turning and by which the stone is trued, and a collar provided on the shaft to engage the other side of the stone, substantially as described.

2. The combination, with the shaft having integral arms 11 and lugs 20, of the bearings for the shaft, said arms provided with small holes 13, set-screws arranged therein, locking-nuts 16 on said screws, whereby the same are forced into engagement with one side of the grindstone, and a collar provided with the annular opening and slots 27, whereby the same may be passed over the lugs 20 to engage the other side of the stone, substantially as described.

3. The combination, with the shaft having the enlarged portion 7 and the integral arms 11 projecting therefrom, with lugs 20 provided on said shaft, a concave collar having the opening 25 and slots 27 to avoid said lugs, the washer 22, said arms provided with small openings 13, set-screws arranged therein, and locking-nuts 16, whereby said set-screws are forced into engagement with the grindstone to prevent its turning, substantially as described.

486,218. BRAKE-BEAM. HENRY R. ROSENBURG, Kalamazoo, Mich. Filed Apr. 2, 1892. Serial No. 427,891. (No model.)

Claim.—1. The combination, in a trussed metal brake-beam, of a tension member and a solid compression member having its outer skin continuous, said member provided with inclined tension-rod recesses at its opposite ends, substantially as and for the purposes specified.

2. In a trussed brake-beam, the combination, with the compression member and head, of an interposed filling-block having an orifice for the passage of the tension member of the structure, substantially as and for the purposes specified.

3. In a trussed brake-beam, the combination, with a compression member having a semicylindrical end and provided with an inclined recess for the reception of the tension member, of a semicylindrical filling-block perforated for the passage of the tension member and a brake-head, substantially as and for the purposes specified.

4. In a brake-beam, the combination, with a compression member having a semicylindrical end provided with square shoulders, of a semicylindrical filling-block having longitudinal flanges which engage the square shoulders of the semicylindrical end of the compression member and a suitable brake-head, substantially as and for the purposes specified.

5. In a trussed cambered brake-beam, the combination, with a cambered compression member, a tension member, a brake-head, and a nut for maintaining the camber, of an interposed locking device for preventing any alteration in the camber of the beam, substantially as and for the purposes specified.

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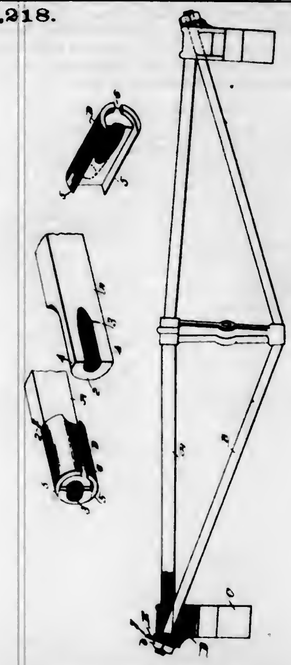
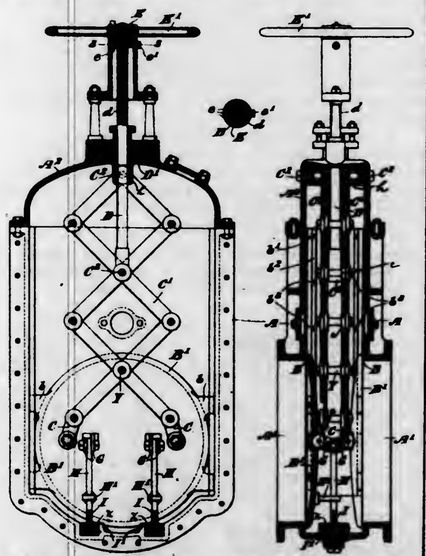


486,219. VALVE-OPERATING MECHANISM. CHARLES L. ROWLAND, Brooklyn, N. Y. Filed July 7, 1892. Serial No. 439,213. (No model.)



Claim.—1. The combination, substantially as set forth, with the valve and its casing, of the lazy-tongs connected at one end with the valve and at the other end with the casing, one of said connections being formed by connecting the end levers at different points with the part to which they are attached and the other by pivoting the end levers to the other part, both levers being pivoted in the same axis, and a valve-operating rod or device connected with the lazy-tongs between said two connections.

2. The combination, substantially as set forth, with the two valves and the casing, of two lazy-tongs pinned together at their joints and each connected at one end with the valve and at the other with the casing, one of said connections of each lazy-tongs being formed by connecting the end levers at different points with the part to which they are attached and the other by pivoting the end levers to the other part, both levers being pivoted in the same axis, and a valve-operating device connected to both lazy-tongs at a point between said two connections.

3. The combination, substantially as set forth, of the valve, the lazy-tongs having its end levers at one end separately connected with the valve and its end levers at the opposite end connected to a pivot common to both levers, and a valve-operating rod or device connected with the lazy-tongs between said pivot and valve.

4. The combination, substantially as set forth, of the two valves, the two lazy-tongs pinned together at their joints and each connected at one end to one of the valves and at their opposite ends to a fixed pivot, and a valve-operating device connected to both lazy-tongs at a point between the fixed pivot and the valves.

5. The combination, substantially as set forth, of the two valves, two lazy-tongs, each having its end levers at one end separately connected with one of the valves and its end levers at the opposite end connected to a fixed pivot common to both levers, a valve-operating device connected with both sets of lazy-tongs at a point between the valves and said pivots, and the toggle-valve-closing devices located between the two valves.

6. The combination, substantially as set forth, of the two valves, means for opening and closing them, toggle-levers pivoted to the adjacent faces of the valves, a rod connected with said levers, and a stop against which it works.

7. The combination, substantially as set forth, of the two valves, means for opening and closing them, toggle-levers pivoted to the adjacent faces of the valves, a rod connected with said levers, and an adjustable stop against which it works.

8. The combination, substantially as set forth, of the valve, the lazy-tongs connected at one end with the valve and at the other end with a fixed pivot, the screw-threaded valve-operating rod connected with the lazy-tongs between the valve and the fixed pivot, the threaded nut engaging the rod, means for operating the nut to move the rod endwise, and locking devices for holding the rod in the desired position.

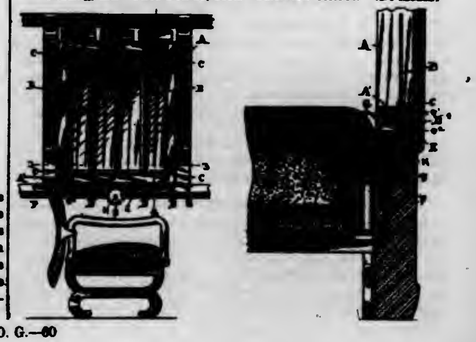
9. The combination, substantially as set forth, of the valves, means for opening and closing them, the toggle-levers pivoted on the adjacent faces of the valves, the rod pivotally connected with the ends of the toggle-levers, and the adjustable screw-threaded stop-rod against which the toggle-rod abuts to firmly close the valves.

10. The combination, substantially as set forth, of the casing, the hood, the valve, the lazy-tongs connected with the valve at one end and at the other end pivoted on a pin C^3, inserted through the hood, and the adjusting-rod passing through the hood and connected with the lazy-tongs.

11. The combination, substantially as set forth, of the casing, the valves, the hood on the casing, the two sets of lazy-tongs, each connected at one end with one of the valves and at the other pivoted on a pin inserted through the hood, and the valve-adjusting rod.

12. The casing and hood having an interior rib or cross-piece apertured or bored transversely in line with the axis of the hood and apertured or bored lengthwise transverse to said axis, in combination with the lazy-tongs, their pivot-pins C^3, inserted into the last-named apertures, and the adjusting-rod D, passing through the first-named aperture, substantially as set forth.

486,220. RAILWAY-CAR WINDOW. ARTHUR H. SHURE, Shure's Landing, Md. Filed Dec. 28, 1891. Serial No. 415,967. (No model.)



Claim.—1. In a railway-car, a window comprising a series of vertically-arranged overlapping panes of glass mounted at their opposite ends in holders which are journaled in the window-casing, the lower holders having trunnions extending through the sill of said casing and carrying pinions on their projecting ends, a chamber in the car-framework containing said pinions, a rack-bar in said chamber, having teeth in one edge which mesh with said pinions and also a longitudinal series of openings, and a toothed wheel engaging said openings and accessible from the interior of the car for turning it and thereby sliding the rack-bar, in the manner and for the purpose described.

2. In a railway-car, a window comprising a series of vertically-arranged overlapping panes of glass mounted at their opposite ends in holders which are journaled in the window-casing, the lower holders having trunnions extending through the sill of said casing and carrying pinions on their projecting ends, a rack-bar having teeth in one edge which mesh with said pinions and a longitudinal series of openings, a toothed wheel engaging in said openings and accessible from the interior of the car, and a locking device applied to said wheel for fixing it at different positions.

3. In a railway-car, a window comprising a series of vertically-arranged overlapping panes of glass mounted at their opposite ends in holders which are journaled in the window-casing, the lower holders having trunnions extending through the sill of said casing and carrying pinions on their projecting ends, a rack meshing with said pinions, a toothed wheel or disk engaging said rack and accessible from the inside of the car, and a bifurcated fastening whose forks extend on opposite sides of the wheel and are provided with a set-screw for locking the latter.

486,221. WIRE-STRETCHER. JOHN DUFFORD, Yellow Creek, Ill. Filed Mar. 31, 1892. Serial No. 427,173. (No model.)

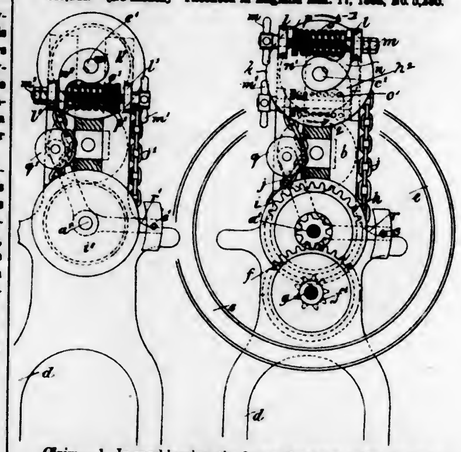
Claim.—1. The combination, with the notched bar A and lever L, of the dogs D D′, lying on opposite edges of the bar and pivoted to the lever, and the connecting-bar C, joining the ends of the dogs, the front ends of the dogs being formed to embrace the bar and their rear ends being provided with inwardly-extending lugs adapted to enter the notches in the bar, substantially as shown and described.

2. The combination of the lever A, provided with notches N N in its opposite edges, the lever L, the dogs D D′, formed with hooks *d d* and lugs *d′ d′*, and the connecting-bar C, pivoted to the rear end of the dogs, substantially as shown and described.

3. The combination, with the bar, the lever, and dogs attached to the lever and adapted to give it a step-by-step advance thereon, of the bar E E², moving with the lever, the lever L², pivoted to the bar E E², and the cam F, pivoted to the lever L² and sliding upon the bar E², the lever being provided with a shoulder overhanging the edge of the cam and adapted to form therewith a wire-holding clamp, substantially as shown and described.

4. The combination, with the bar A and lever L, of the bar E E², formed with the notch *e*, the lever L², pivoted to the bar E E², and the cam F, pivoted to the lever L² and provided with the fingers *f f* and with the rod *f′*, joining the ends of the fingers and sliding in a notch *e*, substantially as shown and described.

486,222. WRINGING AND MANGLING MACHINE. WILLIAM DOBB and JOHN P. TAPLEY, Manchester, England, assignors of one-third to John Harry Parr, same place. Filed Aug. 15, 1892. Serial No. 443,148. (No model.) Patented in England Mar. 17, 1892, No. 5,295.

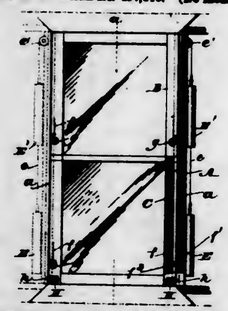


Claim.—1. In combination, the frame, the upper roller, the lower roller, the said upper roller being arranged in bearings to have vertical yielding movement, the driving means for said roller, consisting of the chain extending from the lower to the upper roller and capable of yielding vertically as the upper roller moves up and down, means for applying a tension to the said chain, the upper chain-wheel loose on the shaft of the upper roller, and a yielding connection between said chain-wheel and shaft, substantially as described.

2. In combination, the framework, the roller *b*, the vertically-movable roller *c*, the chain-wheel loose on the shaft thereof, the chain for driving the said chain-wheel, the yielding connection between the chain-wheel and the roller-shaft, including the arm *n*, the spring, and the adjusting-screw, and the weighted lever carrying a roller to press on the chain, substantially as described.

3. In combination, the framework, the roller *b*, the vertically-movable roller *c*, the means for rotating it, and the yielding connection between the driving means and the roller-shaft, including the arm *n*, the spring pressing thereon, the wheel carrying the spring, and adjusting means therefor, substantially as described.

486,223. WINDOW. WILLIAM B. BUCKHEAD, West Point, assignor of nine-sixteenths to Samuel A. Murray, Jr., Philadelphia, Pa. Filed June 17, 1892. Serial No. 437,019. (No model.)

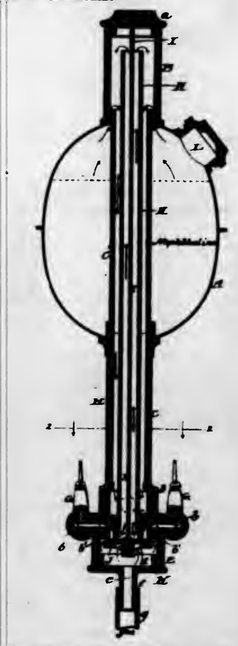


Claim.—1. The combination of the sash, the spring-controlled studs secured to its vertical edges, the window-casing in which the jambs are provided with longitudinal guide-grooves, the slide-bars mounted in said grooves and provided with longitudinal tongues that are adapted to grooves or ways in the vertical edges of the sash, said tongues being provided on their edges with recesses with which the studs are adapted to engage, together with the weight devices connected with said bars, substantially as described.

2. The combination of the sash, the spring-plates secured thereto, the studs and their angular operating portions, the window-casing in which the stiles are provided with longitudinal guide-grooves, the slide-bars mounted in said grooves and in longitudinal grooves in the vertical edges of the sash, said bars being provided with recesses with which the said studs are adapted to engage, together with the weight devices connected with said bars, substantially as described.

3. The combination of the sash, the spring-controlled studs on its vertical edges, the window-casing in which the stiles are provided with longitudinal guide-grooves and with the series of perforations *i*, the slide-bars mounted in said grooves and in longitudinal grooves in the vertical edges of the sash, said bars being provided with recesses with which the said studs are adapted to engage, the lock devices fitted in the lower corners of the sash and adapted to engage the said perforations, together with the weight devices connected with the slide-bars, substantially as described.

486,224. CARBURETOR. NICHOLAS FISCH, Elizabeth, N. J., assignor to Pierre Le B. Coombs, St. Joseph, Mo. Filed Mar. 8, 1890. Serial No. 343,172. (No model.)



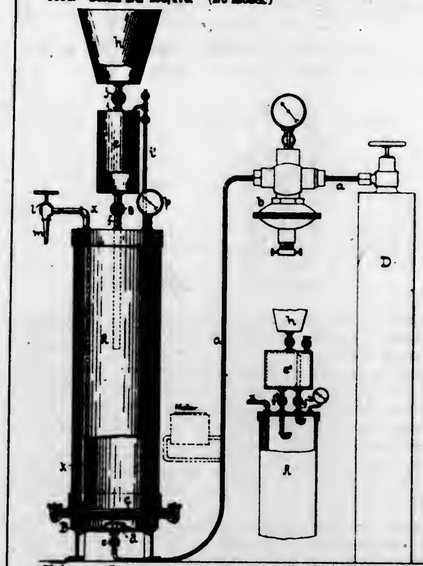
Claim.—1. In a carburetor for enriching gas, the combination of the hydrocarbon-reservoir, the mixing-chamber above said reservoir and open to the same, a tubular stem of said reservoir, having a prolongation which extends up through said reservoir, the outlet-chamber connected with the lower part of said stem, the illuminating-burner connected with said outlet-chamber, the inlet-chamber arranged below said outlet-chamber and reservoir and provided with a gas-inlet from below, the tube H, extending from the inlet-chamber up to the mixing-chamber, the heating-burner connected directly with the inlet-chamber, and a valve arranged in the inlet-chamber to control the passage of gas to the heating-burner and its stem, connected at its upper end to some part of the mixing-chamber, substantially as set forth.

2. In a carbureting-lamp, the combination of the reservoir A and the mixing-chamber arranged above the same, the inlet-chamber E, arranged below said reservoir, the tube connecting the inlet and mixing chambers, the outlet-chamber D, arranged below said reservoir, the tube connecting said outlet and mixing chambers, the heating and illuminating burners connected, respectively, with said chambers E and D, and means for automatically controlling the supply of gas to the heating-burners, whereby the gas is led twice through the pipes, passing through the reservoir on its way to the illuminating-burners, substantially as set forth.

3. In a carburetor for enriching gas, constructed to receive gas at its bottom or lower part and having its illuminating and heating burners arranged below the hydrocarbon-reservoir, the combination of the hydrocarbon-reservoir and the mixing-chamber above and mounted on same, the inlet-chamber E, provided with a valve-seat *b′* and a passage therefrom leading to the heating-burner, the tube H, leading from the inlet-chamber to the mixing-chamber, the valve J in the inlet-chamber, controlling the flow of gas to the heating-burner and provided with an aperture *d* to allow the free passage of gas to the mixing-chamber, the valve-stem arranged as set forth, the outlet-chamber, and the tube connecting same with the mixing-chamber and the heating and illuminating burners, all arranged substantially as set forth.

4. In a carburetor for enriching gas, the combination of the hydrocarbon-reservoir, an inlet-chamber and pipe for admitting gas to the reservoir, a heating-burner therefor, and a thermo-regulator valve provided with a slight notch or groove and secured to the carburetor for controlling the flow of gas to the burner, and whereby when such valve is tightly seated such groove shall still afford an open passage for gas and whereby the flame may not be extinguished.

486,225. APPARATUS FOR IMPREGNATING LIQUIDS WITH CARBONIC ACID. CHARLES H. PEIRCE, New York, N. Y., assignor to the Brewing Improvement Company, Maywood, N. J. Filed Oct. 13, 1891. Serial No. 408,670. (No model.)



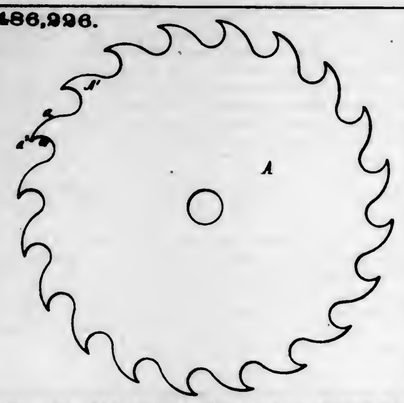
Claim.—1. In an apparatus for impregnating liquids with carbonic acid, a closed vessel for containing the liquid to be impregnated, a receptacle or receptacles for carbonic acid, located at and extending substantially over the bottom of said vessel, porous material such as specified and as distinguished from open or perforated material separating the carbonic-acid receptacle or receptacles from the superposed liquid, and an external source of supply of carbonic acid under pressure connected with the said receptacle or receptacles, substantially as shown and described.

2. In an apparatus for impregnating liquids with carbonic acid, a closed vessel divided by a diaphragm into an upper compartment to contain the liquid to be impregnated and a lower compartment for carbonic acid, said diaphragm consisting of porous material such as specified and as distinguished from open or perforated material, and an external source of supply of carbonic acid under pressure connected with the lower compartment, substantially as shown and described.

486,226. SAW. DEXTER HAZARD, Marquette, Mich., assignor of one-half to Frederick O. Clark, same place. Filed Jan. 12, 1891. Serial No. 377,418. (No model.)

Claim.—As an improved article of manufacture, a saw-blade having its teeth formed integrally therewith, each tooth having its face and throat formed of a true arc describing a semicircle starting from the point of the tooth and terminating without an angle in an arc

486,226.



having a radius about equal to the distance between the points of the teeth and forming the back of the tooth, substantially as described, and to obtain the advantages stated.

486,227. TRUNK-LOCK. WILLIAM J. HEBERT, Portland, Me. Filed Jan. 16, 1892. Serial No. 418,280. (No model.)

Claim.—1. In a trunk-fastening, the herein-described cross-arms F, pivotally connected to the back plate and having suitable spring mechanism in the arbors about the pivot-point for automatically drawing the extremities of the cross-arms together when the same are forced apart, and the prem-bolt K, having an inner beveled face to engage the lower beveled extremities of said cross-arms, and notches at the sides of said beveled face to receive said lower extremities, substantially as above set forth.

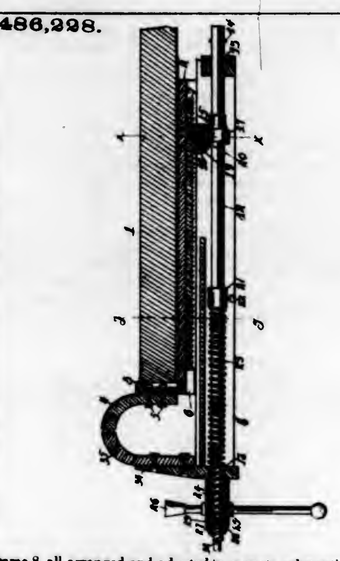
2. In a trunk-fastening, the pivotally-operating cross-arms F, the actuating-spring *f*, the prem-bolt K, the V-shaped stop C, and lock-bolt I, with its attendant locking mechanism, substantially as set forth.

3. In a trunk-fastening, the combination, with the spring-actuated arms F, of the herein-described prem-bolt K, provided with a guide projection *c* and having the curved face L for spreading apart the cross-arms F, and notches *n* for holding the cross-arms apart, substantially as set out.

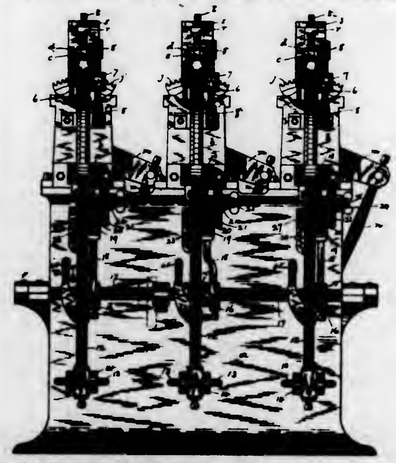
486,228. VISE. WILLIAM REBERT, St. Louis, Mo., assignor of one-half to Frederick Brunier, same place. Filed Mar. 21, 1892. Serial No. 426,769. (No model.)

Claim.—A vise of the class described, consisting of a stationary frame 2, formed at its forward end with an extension 3, carrying a jaw 4, and with depending portions 11, provided with grooves 10, said frame 2 having a longitudinal groove 6 in its under face, within which is located a rack-bar 7, a movable frame 8, provided with outturned flanges 9, engaging the grooves 10, an operating-screw 12, loosely journaled in the ends of the frame 8 and provided at its rear end with a rotating-pin 14, a cam 15, secured upon the screw, a toothed block 16, disposed between the rack-bar 7 and the cam 15 and provided with a groove 20 for the reception of the cam, an adjustable collar 21, disposed on the operating-screw, a coil-spring 23, encircling the screw and interposed between said collar and the inner face of the frame 8, a screw-threaded sleeve 24, mounted on the outer end of the operating-shaft and carrying an operating-bar 26, a nut 27, screwed on the projecting end of the operating-screw and provided with a socket, a coil-spring 29, disposed therein and encircling said screw 12, a screw 30, passed through the nut 27 and screwed into the sleeve 24, and a jaw 35, secured to an extension 34 of the frame 8, all arranged and adapted to operate substantially as and for the purpose set forth.

486,228.



486,229. HEEL-BURNISHING MACHINE. GEORGE A. KNOX, Lynn, Mass. Filed Aug. 6, 1890. Serial No. 361,177. (No model.)



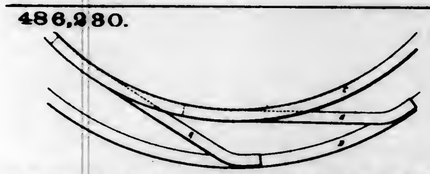
Claim.—1. In a heel-burnishing machine, the combination, with an oscillating burnishing-tool, of a jack, a friction-seat thereon adapted to support the rocking tool when the machine is not in operation, and a support of non-conducting material between said seat and the body of the jack, as set forth.

2. In a heel-burnishing machine, the combination of a plurality of burnishing instrumentalities or burnishers, each including an oscillating burnishing-tool and a jack, said jack and tool being relatively movable, as described, a series of driving-shafts, one for each burnishing-tool, connections between said driving-shafts and tools, whereby the tools are independently oscillated, normally-loose intermeshing gears on said shaft, clutches adapted to connect the gears with and disconnect them from the shafts, and a supporting-frame common to all the parts recited, as set forth.

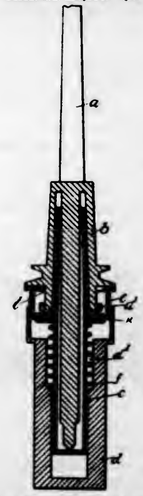
486,230. ELASTIC VEHICLE-TIRE. RICHARD P. MARTINEZ, Brooklyn, N. Y. Filed Mar. 14, 1892. Serial No. 425,464. (No model.)

Claim.—In an elastic vehicle-tire, the combination of multitudinous tangential straight-bar springs rigidly secured at an acute angle to an inner and an outer tire, said tires and springs so longitudinally corrugated that they will be materially strengthened in proportion to their weight, substantially as and for the purposes shown and described.

486,230.



486,231. SPINDLE. WALTER G. MORGAN, Willimantic, Conn. Filed Sept. 30, 1891. Serial No. 407,202. (No model.)



Claim.—1. In combination with the oil-cup *d*, a tubular bolster *c*, provided with the projecting collar *k*, located within the cup, the spring *f*, located within the cup and underlying the collar on the bolster, the locking-ring removably secured to the top of the oil-cup and having an eccentric opening, and the spindle *a*, having a locking-collar *a'*, a portion of which underlies the locking-rim, all substantially as described.

2. In combination with an oil-cup, a locking-collar having a vertical adjustment detachably secured to said cup and having an eccentric opening therethrough, the spindle having a projecting locking-ring underlying in part an edge of the opening in the collar, a tubular bolster supported on a spring within the oil-cup and provided with a collar projecting into the path of movement of the lower edge of the locking-collar, and the supporting-spring underlying said flange, all substantially as described.

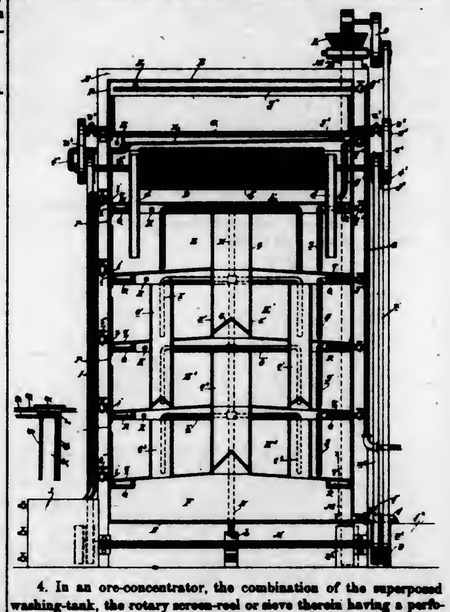
3. In combination with an oil-cup, a locking-collar detachably secured to said cup and having an eccentric opening therethrough, the spindle having a projecting locking-ring underlying in part an edge of the opening and with a downturned flange surrounding said ring, the tubular bolster supported within the oil-cup and having a collar, the edges of which are adapted to engage the locking-collar, and the spring having one end resting upon a projecting part of the cup and with its upper end engaging the under surface of the collar on the bolster, all substantially as described.

486,232. ORE-CONCENTRATOR. PEDRO DE HAPOLAS, San Francisco, Cal. Filed Jan. 11, 1892. Serial No. 417,702. (No model.)

Claim.—1. In an ore-concentrator, the combination of the superposed washing-tank to which the material is supplied, the underlying vertical series of pans having cock-controlled discharge-pipes, the alternating side and central overflow-pipes connecting said tank and pan series, and the vertical water-pipe provided with a cock-controlled branch entering said tank and cock-controlled branches entering the pans and terminating near their bottoms, substantially as herein described.

2. In an ore-concentrator, the combination of the superposed washing-tank to which the material is supplied, the underlying vertical series of pans having cock-controlled discharge-pipes, the overflow-pipes connecting said tank and pan series, the vertical water-pipe having cock-controlled branches entering said tank and pans, the air-blower, the air-pipe, and the branches of said air-pipe entering the pans and terminating near their bottoms, substantially as herein described.

3. In an ore-concentrator, the combination of the shaking-screen, the receiving-pan K, the rotating screen-reel with hollow perforated axle, the pipes connecting the pan with the hollow axle, and the washing-tank in which said reel rotates, substantially as herein described.



4. In an ore-concentrator, the combination of the superposed washing-tank, the rotary screen-reel or sieve therein having a perforated hollow axle and material-supply pipe connected with said axle, the underlying vertical series of pans, overflow-pipes connecting said tank and pans, cock-controlled water-supply branches entering said tank and pans, air-supply pipes entering the pans, and a blower to furnish the air, substantially as herein described.

5. In an ore-concentrator, the combination of the washing-tank, the rotary screen-reel or sieve therein having a perforated hollow axle, the supply-pan above, the pipe connecting said pan with the hollow axle, the underlying vertical series of pans, overflow-pipes connecting said tank and pans, cock-controlled water-supply branches entering said tank and pans, air-supply pipes entering the pans, and a blower to furnish the air, substantially as herein described.

6. In an ore-concentrator, the combination of the washing-tank, the rotary screen-reel or sieve therein having a perforated hollow axle, the supply-pan communicating with said axle and having a water-sprinkler, the shaking-screen above the pan, the perforated water-pipe above the screen, the underlying vertical series of pans, overflow-pipes connecting said tank and pans, cock-controlled water-supply branches entering said tank and pans, air-supply pipes entering the pans, and a blower to furnish the air, substantially as herein described.

7. In an ore-concentrator, the combination of the shaking-screen, the pan below, the water-tank with its revolving reel communicating with the pan, the vertical series of pans, the receiving-chamber F, overflow-pipes connecting the tank, pans, and chamber, the cock-controlled discharge of said chamber, the cock-controlled water branches entering the tank and pans, the air-supply pipes entering the pans, and the blower to furnish the air, substantially as herein described.

8. In an ore-concentrator, the combination of the shaking-screen, the water-sprinkler above, the pan below, the water-tank with its revolving reel communicating with the pan, the vertical series of pans, the receiving-chamber F, overflow-pipes connecting the tank, pans, and chamber, the cock-controlled discharge of said chamber, the cock-controlled water branches entering the tank and pans, the air-supply pipes entering the pans, the blower to furnish the air, and the cock-controlled discharge-pipes from the tank and pans, substantially as herein described.

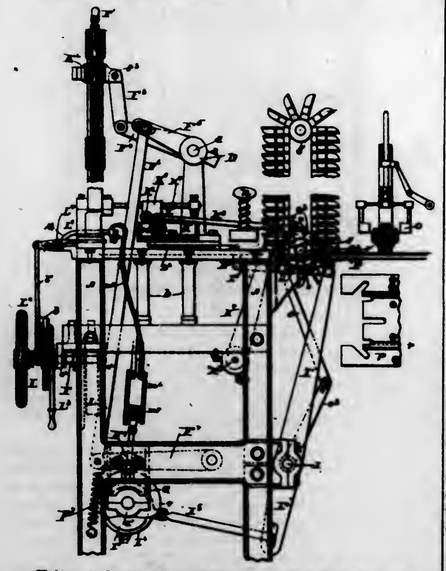
9. In an ore-concentrator, the series of pans, in combination with

the alternating central and side overflow-pipes by which said pans communicate, said pipes having a dividing-board and side apertures in their lower ends, substantially as herein described.

10. In an ore-concentrator, the combination of the washing-tank, the series of pans, overflow-pipes connecting said tank and pans, separate cock-controlled water branches entering said tank and pans, air-pipes entering the pans, cock-controlled discharges from tank and pans, and the underlying removable drawers under said tank and pans and with which they communicate through perforations in their bottoms, substantially as herein described.

11. A concentrating apparatus consisting of a frame, a confining box or casing, a shaking-screen in the upper portion of the box, a pulverizer above the screen for supplying it, an elevator for supplying the pulverizer, a supply-pan below the screen, a washing-tank under the pan, having a rotary screen-reel communicating with the pan, a series of pans under the tank, a receiving-chamber under the pans, provided with a cock-controlled discharge, overflow-pipes connecting the tank, pans, and chamber, cock-controlled water branches entering the tank and pans, air-pipes entering the pans, and cock-controlled discharge-pipes for said tank and pans, substantially as described.

486,233. ENVELOPE-MACHINE. FRANKS T. EDMONDS, Philadelphia, Pa., assignor to Clarence Wolf, same place. Filed Aug. 4, 1891. Serial No. 401,668. (No model.)



Claim.—1. In a machine such as herein described, the combination, with the gummers, elevator, and main operating-shaft, of the drying and reversing chain and the conveyer-hook reciprocating between the gummers and chain, whereby the envelopes are gummed and conveyed directly to said chain, substantially as described.

2. In an envelope-machine, the combination, with the main shaft, rock-shaft moved thereby, elevator, and shaft for moving said elevator, of the fingers on the rock-shaft, adapted to rest on the pile of blanks on the elevator, the ratchet-wheel on the elevator-moving shaft, the bell-crank lever having the pawl co-operating with said ratchet-wheel, and a link connecting said bell-crank lever and rock-shaft, substantially as described.

3. In an envelope-machine, the combination, with the main shaft, elevator, shaft for moving said elevator, and rock-shaft moved by the main shaft, of the fingers on said rock-shaft, adapted to rest on the pile of envelopes, a suction-tube carried by said shaft, the elevator-shaft-operating mechanism, and the link connection between said elevator-shaft-operating mechanism and rock-shaft, substantially as described.

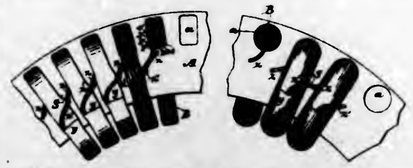
4. In an elevator-shaft-operating mechanism for envelope-machines, the combination, with the elevator, the shaft for moving the same, having the head and ratchet wheels thereon, the bell-crank lever pivoted on said shaft, the pawl on said bell-crank lever co-operating with the ratchet-wheel, and the stationary pawl for preventing retrograde movement of said wheel, of the throw-out pivoted on said shaft, having a projection behind each of said pawls, and the operating-handle, substantially as described.

5. In a machine such as described, the combination, with the gummers, main shaft, and the drying and reversing chain, of the conveyers for transferring the blanks from the gummers to the chain, the rock-shaft moved by the main shaft and having the crank-arms for moving the conveyers, and the ratchet-wheel, pawl, and crank-arm on the rock-shaft for moving the chain during the forward movement of the conveyers, substantially as described.

6. In a machine such as described, the combination, with the gummers, main shaft, and the drying and reversing chain, of the conveyers for transferring the blanks from the gummers to the chain, the rock-shaft moved by the main shaft and having the crank-arms for moving the conveyers, the ratchet-wheel on the chain-drum, the bell-crank carrying the pawl co-operating with the ratchet-wheel, and the crank-arm on the rock-shaft connected with the bell-crank lever, the teeth on the ratchet-wheel and the pawl being in proper relation to operate during the forward movement of the conveyers.

7. In a machine such as described, the combination, with the gummers, main operating-shaft, the conveyers, the rock-shaft moved by the main shaft, and the arms on the said rock-shaft connected with the conveyers, of the drying and reversing chain, the drum around which said chain passes, having the ratchet-wheel thereon, the bell-crank lever pivoted on the drum-shaft, the pawl on said bell-crank lever engaging the ratchet-wheel, the arm on the rock-shaft, and the link connected to the bell-crank lever and loosely connected to the arm, substantially as described.

486,234. ARMATURE FOR DYNAMO-ELECTRIC MACHINES. ALBERT L. PARSELLE, Boston, Mass. Filed Nov. 7, 1891. Serial No. 411,197. (No model.)



Claim.—1. The combination, substantially as set forth, of an armature having seats or apertures therein for the armature-coils and coils lying in said seats, each coil being composed of a number of independent insulated lengths of wire whose ends are electrically connected to form the desired circuit or circuits through the coil.

2. The combination, substantially as set forth, of an armature-ring having apertures or seats therein for the armature-coils and coils lying in said seats, the coils being each composed of a cable of insulated wires whose ends are electrically connected to form a continuous circuit or circuits through the coil.

3. A coil of an insulated electrical conductor, constructed, substantially as herein described, of a number of superposed insulated conductors, each having free ends that are electrically connected to form a circuit or circuits through the coils, each conductor forming one convolution of the coil.

4. The combination, substantially as set forth, of an armature having apertures or seats therein for the coils, the layers of independent insulated wires, and the coupling-tubes within which the ends of the wires are electrically connected to form a continuous circuit or circuits through the coil.

5. The combination of a core with a coil composed of a number of independent superposed insulated conductors whose free ends are electrically connected to form a circuit or circuits through the coil, each conductor forming one convolution of the coil, substantially as set forth.

6. The combination of a core having an aperture therein, with a coil lying in said aperture and composed of a number of independent superposed insulated conductors whose free ends are electrically connected to form a circuit or circuits through the coil, each conductor forming one convolution of the coil, substantially as set forth.

7. The combination of a core and a coil consisting of a previously-formed group or cable of superposed insulated electrical conductors whose free ends are electrically connected to form a circuit or circuits through the coil, each conductor forming one convolution of the coil, substantially as set forth.

8. An electric coil consisting of a number of insulated wires whose free ends are introduced into coupling-tubes within which they are electrically connected to form the desired circuit or circuits, substantially as set forth.

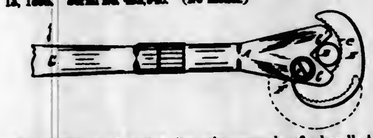
9. The combination of a number of insulated wires adapted to form an electric coil and having free ends with coupling-tubes containing a suitable flux, whereby the ends of the wires may be electrically welded together within the tubes or metallically united by solder to form the desired circuit or circuits, substantially as set forth.

10. The combination of a core, a coil composed of a number of independently-insulated conductors whose ends are electrically connected to form a circuit or circuits through the coil, each conductor forming one convolution of the coil, and insulation exterior to the group of conductors and interposed between it and the core.

11. The combination of an apertured core, a coil composed of a number of independently-insulated conductors whose ends are electrically connected to form a circuit or circuits through the coil, each conductor forming one convolution of the coil, and insulation surrounding the group of conductors and interposed between it and the core.

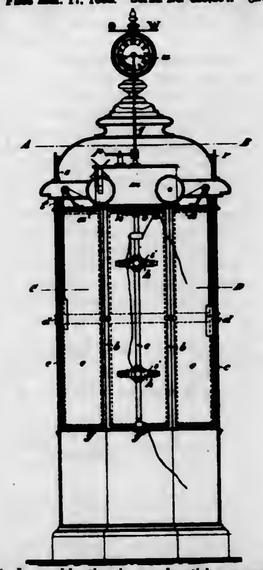
12. A coil consisting of a group of electrical conductors, each insulated from the others and having their ends electrically connected to form a circuit or circuits through the coil, each conductor forming one convolution of the coil, and an exterior sheath of insulating material surrounding the group of conductors.

486,235. PIPE-WRENCH. ALFRED H. FARRALL, Erie, Pa., assignor to the Hollands Manufacturing Company, same place. Filed May 13, 1892. Serial No. 432,940. (No model.)



Claim.—The combination, in a pipe-wrench, of a handle having alligator or V-shaped jaws C C' rigidly secured to the end thereof and having a slot D in one of said jaws, with a cam-shaped hook E pivoted in the slot D and having rearwardly-projecting teeth *e* on the inner surface thereof, substantially as and for the purpose set forth.

486,236. MAGIC-LANTERN KIOSK. FRANZ S. FREILING, Munich, Germany. Filed Mar. 17, 1892. Serial No. 425,227. (No model.)



Claim.—1. In combination, in an advertising apparatus, the stereopticon, means for revolving the same, and a stand entirely inclosing the said stereopticon, said stand having a series of panels upon which the views are to be projected, the said panels extending around the said stereopticon in a plane outside the path of the stereopticon, substantially as described.

2. In combination, in an advertising apparatus, the stand having a series of panels around it, partitions extending from the meeting ends of the panels toward the center of the stand to divide the same into a series of radial compartments, a stereopticon apparatus within the stand, and the means for operating the same, substantially as described.

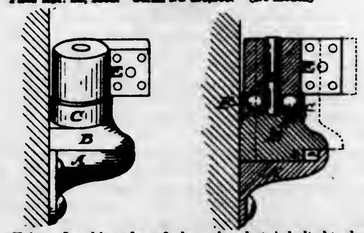
3. In combination, the stand, the series of radial partitions therein, the panels around the stand at the outer ends of the partitions, said partitions and panels forming a series of compartments, and a stereopticon apparatus arranged centrally of the stand and having a lens for each compartment, substantially as described.

4. In combination, the stand, the stereopticon therein, the series of radial partitions, and the panels around the stand and between the outer ends of the partitions, said partitions being removable, substantially as described.

5. In combination, the stand, the series of panels, the series of radial partitions, each of said partitions being arranged to slide outward and having a hinge and a leg at its inner end, whereby it may be folded against the side of the stand when drawn out, and the stereopticon within the stand, substantially as described.

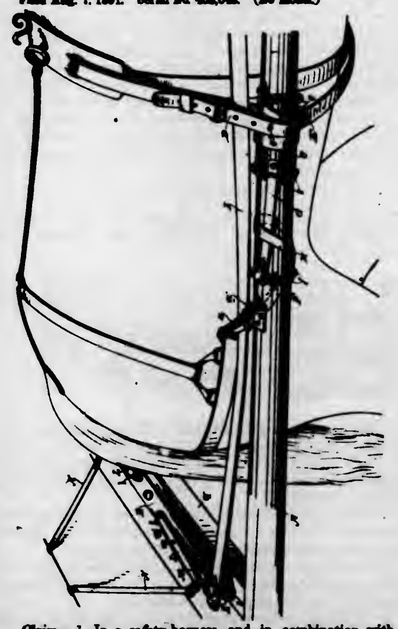
6. In combination, the stand, the series of panels, the central shaft, the stereopticon carried by the shaft, the means for driving the shaft, a notched wheel on the shaft, and a pawl with means for operating the same intermittingly to engage and release the notched wheel, substantially as described.

486,237. SAFE-HINGE. WILLIAM A. SHERMAN, Richmond, Va. Filed Apr. 22, 1892. Serial No. 430,205. (No model.)



Claim.—In a hinge for safe-doors, bracket A, bolted to door-jamb and provided with dovetail groove, and the pintle-block B, having a dovetail tenon supported in the groove of the bracket, in combination as described, and for the purpose set forth.

486,238. SAFETY-HARNESS. JAMES T. SMITH, Oroville, Cal. Filed Aug. 7, 1891. Serial No. 402,042. (No model.)



Claim.—1. In a safety-harness, and in combination with the shaft-bearer and belly-band, a sliding split sleeve fitted to move freely on the shaft and to which the shaft-bearer and belly-band are attached, said sleeve carrying antifriction-rollers in its end, a ring to

which the breeching-strap is attached, fitted to move freely on the shaft back of the sliding sleeve and to have its rearward movement limited by a stop on the shaft, and a strap connecting the ring and sleeve, so that the two move together, substantially as herein described.

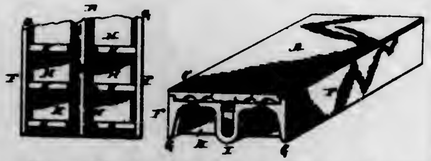
2. In a safety-harness, and in combination with the shaft-bearer and belly-band, a sliding-sleeve fitted to move freely upon the shaft and to which the shaft-bearer and belly-band are attached, the extension-strap connected with the rear of said sleeve, a ring fitted to move freely upon said shaft, connected with said extension-strap and adapted to be limited in its backward movement by a stop on the shaft, said sleeve and ring being each provided with antifriction-rollers which bear on the shaft, and the breeching-strap passing through the ring and embracing the shaft and extension-strap, substantially as herein described.

486,239. MACHINE FOR SHAPING AUGER-HEADS. ALBERT U. SMITH, Seymour, Conn. Filed Mar. 22, 1892. Serial No. 426,267. (No model.)

Claim.—1. In a machine for shaping the heads of augers, the combination of a turn-table arranged for a limited extent of rotation, a rotative mandrel arranged upon the said turn-table, the axis of the mandrel being at right angles to the axis of the turn-table, the mandrel constructed in two parts with a recess between the two parts, the face of one part of the mandrel provided with a center adapted to receive the point and head of the auger, the other part of the mandrel made tubular and provided with jaws adapted to grasp the shank of the auger, and whereby rotation may be imparted to the mandrel and auger, a stationary cam around one part of the mandrel, corresponding to the twist of the auger, and a stud against which said cam may bear, whereby under the rotation of the mandrel a longitudinal movement is imparted to the mandrel to operate upon the auger, substantially as described.

2. In a machine for shaping the heads of augers, the combination of a turn-table, a mandrel arranged upon the said turn-table and adapted to revolve upon an axis at right angles to the axis of the turn-table, the mandrel formed in two parts, but so as to leave a space between the two parts, the face of one part of the mandrel in the said space provided with a center adapted to receive the point end of the auger, but eccentric to the axis of the mandrel, the other part of the mandrel tubular, means, substantially such as described, to grasp and hold the auger in the said tubular part of the mandrel, with mechanism, substantially such as described, to impart a rotative movement to said turn-table, and a cam corresponding to the twist of the auger and adapted to impart a corresponding longitudinal movement to said mandrel, with a revolving cutter adapted to operate upon the auger, substantially as described.

486,240. STEREOTYPE-PLATE AND HOLDER. ALEXANDER THOMSEN, Lake Charles, La. Filed Mar. 30, 1892. Serial No. 427,095. (No model.)



Claim.—1. The integral stereotype-plate holder consisting of side bars and a connecting-floor having a loop or depression to give elasticity thereto, combined with a stereotype-plate resting generally on said floor and having interlocking engagement with said block, substantially as described.

2. The integral stereotype-plate holder having side bars and a web or floor connecting the same, said web having a loop or depression to give elasticity thereto, substantially as described.

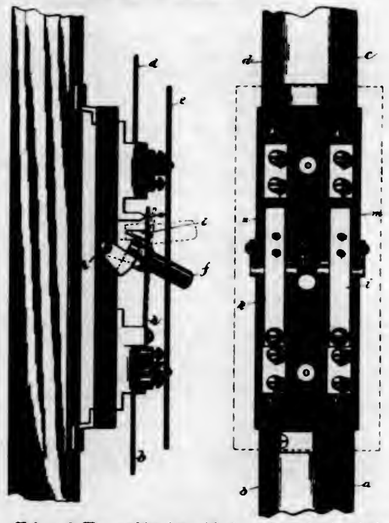
3. The integral stereotype-plate holder consisting of side bars and a connecting-web having a loop therein, the bars and web being connected by lateral ribs, substantially as described.

4. The integral stereotype-plate holder having side bars, a floor connecting said bars a little below the top thereof, so as to leave a side rib above said floor, and a loop or trough in the floor to give elasticity thereto, substantially as described.

5. The stereotype-plate holder having side bars, a connecting floor or web, and a loop or trough in said web, combined with a stereotype-plate resting on said floor and having a rib entering said loop or trough, substantially as described.

6. The integral stereotype-plate holder having side walls and a plurality of longitudinal troughs permitting the expansion of the side walls, substantially as described.

486,241. ELECTRIC SWITCH. HENRY P. WARNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Feb. 16, 1891. Serial No. 381,698. (No model.)



Claim.—1. The combination, with the rocker *g*, having the handle projecting through the shield *s*, of the springs *i k*, having their under surfaces opposite the rocker curved inwardly at the lower portion thereof and provided with a seat or catch, the contacts for said springs, and the circuits, whereby on raising said rocker the springs are first electrically connected together through the medium of the rocker and afterward lifted from their contacts while the rocker is latched in position and its upward movement limited, substantially as and for the purpose specified.

2. In an electrical switch, the combination, with a rocker or cam, of two springs having their under surfaces opposite the rocker curved inwardly at the lower portion thereof and provided with a seat or catch, said springs being adapted to be raised or lifted from contacts at their free ends by the action of said rocker or cam, while at the same time the springs are thereby placed in electrical connection through the medium of the rocker, substantially as and for the purpose specified.

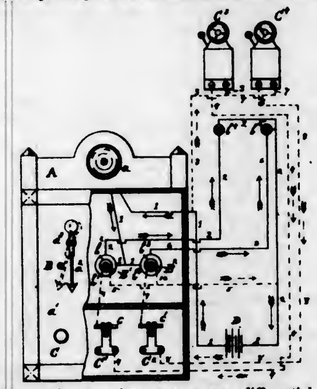
486,242. CLASP. GEORGE H. ADAMS, Providence, R. I. Filed Feb. 24, 1892. Serial No. 422,950. (No model.)

Claim.—The combination, with the shoe 8, having the inward radially-bent arms 11 11, provided with the bearings 12 12, and a spring 13, secured within the shoe by the ends of said arms, of an annular clamping-plate 14, the base 17, formed integral with said plate, a post 16, bent up from the base 17, and the pintles 18 18, extending from the sides of said post and adapted to be engaged by the bearings 11 11, as described.

486,243. ELECTRICAL ANNUNCIATOR. FRANKLIN S. CARTER, Burlington, N. J., and GEORGE P. STUBBY, Philadelphia, Pa. Filed Aug. 13, 1891. Serial No. 402,889. (No model.)

Claim.—1. In an electric annunciator, a series of pointers, in combination with a series of differential magnets arranged to attract the said pointers, respectively, the necessary electrical generating and conducting devices constituting two circuits, with independent currents acting on the said magnets reversely, and a series of bells corresponding to the said magnets and located in one of the said circuits, the said electrical devices and magnets being arranged so that the current of the return-call will ring the bell belonging to the magnet from which the call has come and simultaneously reset the pointer operated by the said magnet, also reversing the polarity of the other magnets, substantially as set forth.

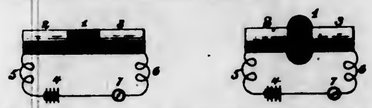
2. In an electric annunciator, a pointer which also acts as an armature, in combination with a differential magnet acting thereon and having two helices which develop different strengths of current when energized, two push-buttons arranged at different points for call and return-call, a generator of electricity, conductors making circuits, respectively, through each of the said helices, and the appropriate push-button and bells included in the said circuits, respectively, the said devices being so arranged that the current sent through the larger helix on pressing one push-button is of opposite polarity to that sent through the smaller helix on pressing the other, substantially as set forth.



3. In an electric annunciator, two or more differential magnets, each provided with two helices of different inductive capacities and so connected as to offer different polarity when energized, in combination with a generator of electricity and the necessary circuit-closers and conductors, one wire from each of the stronger helices leading to its respective push-button and the other wire from said helix in each instance being run through its own small helix as well as from it through all the other small helices attached to the cores of all the other indicating-magnets, and thence through the general call-bell to the generator of electricity, substantially as set forth.

4. In an annunciator, the combination of magnet B, provided with a positive helix *b*, battery D, general-alarm bell *a*, connecting-wires 1 and 2, and push-button b^2, with negative helix b^3, electric bell C^2, switch C', and connecting-wires 1, 3, 4, 5, and 2, substantially as set forth.

486,244. MICROPHONE. CHARLES CLARDON, Paris, France. Filed Mar. 21, 1892. Serial No. 425,730. (No model.)



Claim.—1. The method of transmitting vocal and other sounds telegraphically by causing said sounds to vary the cross-section and length and corresponding electrical resistance of an electrical conductor included in a charged electric circuit, and thereby producing electrical undulations similar in form to the sound-waves which accompany the utterance of said vocal and other sounds, substantially as described.

2. A telephonic transmitter comprising two electrodes at a distance from each other and a plastic viscid conducting body maintained in invariable contact with the two electrodes, the whole included in a charged electric circuit, substantially as described.

3. A telephonic transmitter comprising two separated electrodes forming the terminals of a charged electric circuit, a plastic viscid conducting body maintained in invariable contact with the two electrodes, and an elastic non-conducting sleeve enveloping the plastic body, substantially as described.

4. A telephonic transmitter comprising one fixed electrode and one electrode movable toward and from the other under the influence of sound-waves, a plastic viscid conducting body maintained in invariable contact with the two electrodes, a diaphragm for receiving the impact of sound-waves and giving motion to the movable electrode, and a charged electric circuit including in series the two electrodes and the plastic viscid conductor, substantially as described.

5. In a telephonic transmitter, the combination of a diaphragm and an electrode receiving motion from said diaphragm, with another electrode separated from the first, a plastic viscid conductor maintained in invariable contact with the two electrodes, an elastic non-conducting sleeve enveloping the plastic conductor and a portion of the electrodes, and a charged electric circuit terminating at the electrodes, substantially as described.

6. In a telephonic transmitter, the combination of an electrode having a convex surface and a second electrode having a concave surface embracing but out of contact with the convex surface of the first electrode, and a plastic viscid conductor bridging the two electrodes and in invariable contact with the same, substantially as described.

7. In a telephonic transmitter, the combination of an electrode having a convex spherical surface and another electrode having a spherical cavity larger in diameter, but concentrically arranged with reference to the first electrode, and a plastic viscid conductor bridging the two electrodes and in invariable contact with their spherical surfaces, substantially as described.

8. A microphonic element consisting of a plastic viscid conductor, substantially as described.

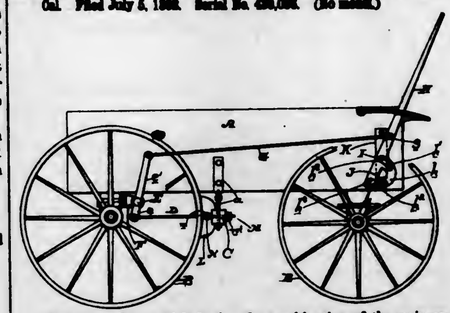
9. A microphonic element consisting of a viscid plastic conductor composed of an intimate mixture of a fluid and of finely-divided solids, either or both of which are conductors of electricity, substantially as described.

10. A microphonic element consisting of a viscid plastic conductor of electricity, composed of an intimate mixture of a non-conducting fluid or fluids with finely-divided conducting solids, substantially as described.

11. A microphonic element consisting of a viscid and plastic conductor of electricity, composed of an intimate mixture of a viscid non-conducting fluid with finely-divided metal or metals or metalloids, substantially as described.

12. A viscid and plastic microphonic element consisting of an intimate mixture of glycerine and finely-divided metal or metals or metalloids, substantially as described.

486,245. WAGON-BRAKE. FREDERICK W. DOREN, Petaluma, Cal. Filed July 5, 1892. Serial No. 439,093. (No model.)



Claim.—1. In a vehicle-brake, the combination of the main operating-lever having independent elongated bearing-slots in its lower end, a fixed pivot-pin passing freely through one of said slots, a second fixed pivot-pin passing freely through the other slot, whereby the lever changes its fulcrum in its backward and forward movement, and the connecting-rod G of the brake mechanism attached to the brake-lever at a point above the pivot-pin I, substantially as herein described.

2. In a vehicle-brake, the combination of the main operating-lever H, having its foot provided with the curved elongated upper slot *h'* and the curved elongated lower slot h^2, the fixed pivot-pin I, passing freely through the upper slot, the fixed pivot-pin J, passing freely through the lower slot, and the connecting-rod G of the brake mechanism attached to the lever at a point above the pivot-pin I, substantially as herein described.

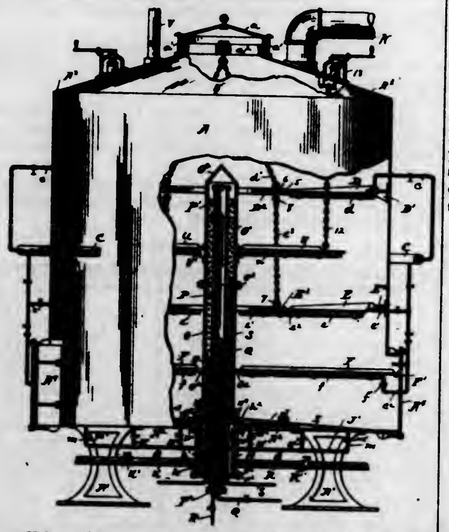
3. In a vehicle-brake, the combination of the main operating-lever H, having its foot provided with the curved elongated upper slot *h'* and the curved elongated lower slot h^2, the fixed pivot-pin I, passing freely through the upper slot, the fixed pivot-pin J, passing freely through the lower slot, suitable stops or catches to arrest the lever on either pin, whereby it changes its fulcrum in its backward and forward movement, and the connecting-rod G of the brake mechanism attached to the lever at a point above pivot-pin I, substantially as herein described.

4. In a vehicle-brake, the combination of the main operating-lever H, having its foot provided with the curved elongated upper slot h' with the upwardly-extending recess or stop at its back end and the curved elongated lower slot h'' with the downwardly-extending recess or stop at its back end, the fixed pivot-pin I, passing freely through the upper slot, the fixed pivot-pin J, passing freely through the lower slot, and the connecting-rod G of the brake mechanism attached to the lever at a point above the pivot-pin I, substantially as herein described.

5. In a vehicle-brake, the means for attaching and tightening the brake-block to the brake-beam, consisting of the separated eyebolts passing through the brake-beam and provided with tightening-nuts, the eyes of said bolts lying on each side of the brake-block, and the transverse bolt passing through said eyes and intervening brake-block and provided with a tightening-nut, substantially as herein described.

6. In a vehicle-brake, the brake-beam and the brake-block grooved or notched upon said beam, in combination with the eyebolts passing through said beam and having tightening-nuts, the eyes of said bolts lying on each side of the brake-block, and a transverse bolt passing through said eyes and the intervening brake-block and provided with the tightening-nut, substantially as herein described.

486,246. PERCOLATOR. JOHN W. EVANS, Cleveland, Ohio. Filed Jan. 18, 1892. Serial No. 418,498. (No model.)



Claim.—1. In a percolator for extracting oil, a draining and steaming apparatus suitably supported at the bottom of the percolator and comprising a hollow perforated drum or cylinder divided by a diaphragm into two compartments, each compartment of said drum or cylinder having one or more steam-pipes discharging into the same, substantially as and for the purpose set forth.

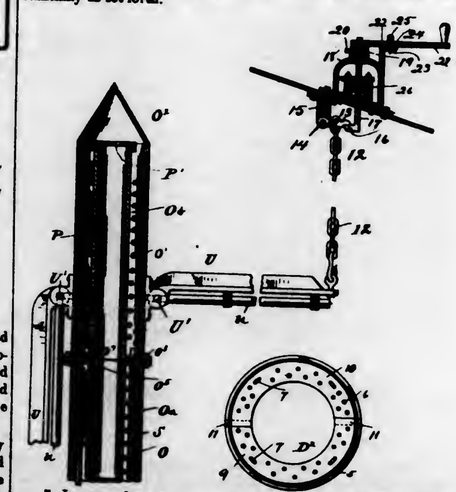
2. In a percolator for extracting oil, a cylinder located centrally or approximately centrally below the container of the percolator and extending more or less into said container and being closed at the bottom and open at the top, said cylinder having connected therewith a system of steam and drain pipes in open relation with the container of the percolator and having connected therewith below such system of steam and drain pipes one or more larger steam and drain pipes and having a series of perforations or openings discharging into the container just above the bottom of the latter, substantially as shown and described.

3. In a percolator for extracting oil, an upright draining and steaming apparatus suitably supported at the bottom of the percolator and comprising a hollow perforated drum or cylinder, with the perforations discharging laterally into the body or container of the percolator, and a heater comprising an imperforate drum or cylinder located within said draining and steaming apparatus, said heater and draining and steaming apparatus having, respectively, one or more steam-pipes in open relation therewith and the heater being provided with a drain-pipe, substantially as set forth.

4. In a percolator for extracting oil, a draining and steaming apparatus located centrally or approximately centrally within the tank or container of the percolator and being suitably supported at the bottom of the percolator and comprising a perforated drum or cylinder and one or more steam-pipes discharging into said drum or cylinder, and a heater located within and extending approximately the entire length of said draining and steaming apparatus, said heater comprising an imperforate drum or cylinder closed at the ends and a steam-pipe for supplying steam to the same, the heater being provided with a drain-pipe, substantially as set forth.

5. In a percolator for extracting oil, a draining and steaming apparatus located centrally or approximately centrally within the tank or container of the percolator and being suitably supported at the bottom of the percolator and comprising two compartments that are located the one above the other and separated by a diaphragm, the surrounding walls of the compartments being perforated with the perforations discharging laterally into the tank or container of the percolator, one or more steam-pipes in open relation with the respective compartments of the draining and steaming apparatus, and a heater located within and extending approximately the entire length of said draining and steaming apparatus, said heater comprising an imperforate drum or cylinder closed at the ends and a steam-pipe and a drain-pipe in open relation therewith, substantially as set forth.

6. In a percolator for extracting oil, a hollow cylinder secured to the central portion of the bottom of the tank or container of the percolator and extending more or less into and being in open relation with the container and being closed at the bottom, a heating-coil located at the bottom of the tank or container, and a system of steam and drain pipes adapted to establish open communication between the interior of the cylinder aforesaid and the interior of the tank or container, one or more larger steam and drain pipes in open relation with said cylinder below the aforesaid system of pipes, a draining and steaming apparatus located above and in open communication with said cylinder and comprising a perforated drum or cylinder and one or more steam-pipes discharging into said drum or cylinder, a heater located within and extending approximately the entire length of the perforated drum or cylinder of said draining and steaming apparatus, said heater comprising an imperforate drum or cylinder closed at the ends, a steam-pipe discharging into the same, and a drain-pipe, substantially as set forth.



7. In a percolator for extracting oil, so-called "breakers" hinged to or connected with the sides of the percolator and a depressible center piece for supporting the inner end of the breaker, the breakers having perforated pipes attached underneath the center piece, comprising an annular ring with vertical perforations and made in two sections, the ends of each section overlapping the adjacent end of the other section, substantially as set forth.

8. In a percolator for extracting oil, a steaming apparatus located centrally or approximately centrally in the tank or container of the percolator and comprising a perforated drum or cylinder, with the perforations discharging laterally into the container, and so-called "breakers" having perforated pipes attached underneath and being hinged or connected with the outside of said drum or cylinder in such a manner that in the horizontal or working position of the breakers the attached perforated pipes are in open relation with the interior of said drum or cylinder, substantially as set forth.

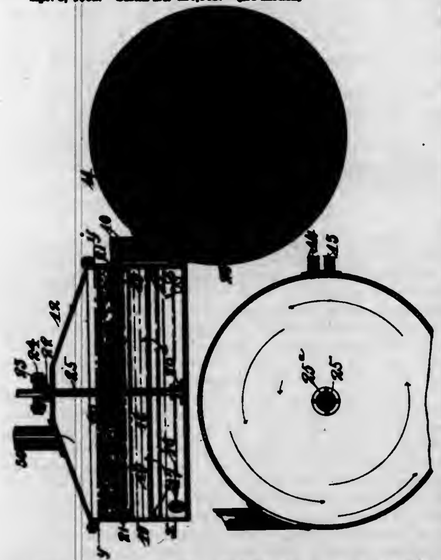
9. In a percolator for extracting oil, so-called "breakers" hinged inside the tank or container, in combination with a chain or suitable device connected with the breakers and detachably connected with suitable mechanism that is adapted to be operated from outside the container to release said chain or device and permit the breakers to turn on their hinges out of a working position, substantially as set forth.

10. In a percolator for extracting oil, a steaming apparatus located centrally or approximately centrally in the body or container of the percolator and comprising a perforated drum or cylinder, with the perforations discharging laterally into the container, so-called "breakers" having perforated pipes attached underneath and being hinged to or connected with the outside of said drum or cylinder in such a manner that in the horizontal or working position of the breakers the attached perforated pipes are in open relation with the interior of said drum or cylinder, and a chain or suitable device connected with said breakers and detachably connected with suitable mechanism adapted to be operated from outside the container of the percolator to release the chain and permit the breaker to turn down outside the drum or cylinder aforesaid, substantially as set forth.

11. In a percolator for extracting oil, so-called "breakers," in combination with suitable mechanism for holding said breakers in a horizontal or working position, said mechanism comprising a chain or suitable device attached to the breaker and detachably connected or adapted to be detachably connected with a dog pivoted to a rigid support inside the top of the percolator, a frame or bracket secured to the outside of the top of the container, and a rod extending through the top member of said frame into the container and terminating at its lower or inner end in a toe or projecting member adapted to support the dog and connected breaker in a horizontal or working position, the rod at its outer end terminating in a crank or handle, substantially as set forth.

12. In a percolator comprising so-called "breakers," the combination, with suitable mechanism for holding said breakers in a horizontal or working position, said mechanism comprising a chain or suitable device attached to the breakers and detachably connected or adapted to be detachably connected with a dog pivoted to a rigid support inside the top of the percolator, a frame or bracket secured to the outside of the top of the container, and a rod extending through the top member of said frame into the container and terminating at its lower or inner end in a toe or projecting member adapted to support the dog and connected breaker in a horizontal or working position, the rod at its outer end terminating in a crank or handle, of suitable means for locking said mechanism in the working position of the breakers, substantially as set forth.

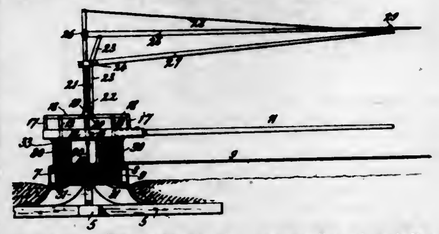
486,247. SMOKE-PURIFIER. CONRAD FISK, St. Louis, Mo. Filed Apr. 6, 1892. Serial No. 427,903. (No model.)



Claim.—1. In an apparatus for purifying smoke, the combination, with a circular tank and stationary and rotating screens disposed therein, of an inlet-pipe communicating with the lower end of the tank obliquely to a diametrical plane and an outlet-pipe communicating with the top of the tank, substantially as and for the purpose set forth.

2. A smoke-purifier consisting of a pipe S in communication with the flue of the furnace, a pump, or other suitable source of draft in connection with said pipe, a pipe, such as 10, in communication with the said pump and with a suitable tank containing a body of water, a stationary sieve, such as 18, fixed within the said tank, a movable sieve 20, also located within said tank and adapted to be rotated in one direction, a flanged band 19, located below said movable sieve for supporting the same, a shaft 25, passing through the said sieves, but fixed to the movable one, means for imparting motion to said shaft, a pipe 30 in communication with the said tank for carrying off the purified products of combustion, a valve located in the flue of the furnace, and a valve, such as 31, located in the pipe S and adapted to reduce the vacuum in the said flue when properly manipulated, substantially as described.

486,248. STUMP-PULLER. ADAM C. PERSON, Rapid City, S. D. Filed Feb. 25, 1892. Serial No. 422,731. (No model.)



Claim.—1. The combination, in a stump-puller, of a winding-drum and means for revolving the same, the drum being provided with a circumferential flange midway its length and a guideway extending obliquely from the body of the drum up one side of said flange to its center and down the other side to the body of the drum, substantially as described, whereby a rope or cable may be guided from the drum at one side over the flange and down to the drum at the other side and rest upon the guideway.

2. A flanged winding-drum having an oblique guideway extending from the body of the drum up one side of the flange to the center of its edge and down the other side to the body of the drum across the flange, substantially as described.

3. The combination, in a stump-puller, of a winding-drum, a team-pole socket mounted thereon, clutch-pins connecting the said socket and drum, pin-levers pivotally mounted on the socket, a mast rising from the drum-shaft, a spool fitted to slide on the mast and having a flange connection with the said pin-levers, a knuckle-jointed brace upon the mast and connected with the spool, and means, substantially as described, for operating the brace.

4. The combination, in a stump-puller, of a winding-drum, a pole-socket, a clutch to connect them, a mast mounted on the drum-shaft, a spool to slide on the mast and connected with the said clutch, a knuckle-jointed brace connected with the mast and spool, a pulley upon the mast, and a cord passing around the pulley and connected with a lever of the said knuckle-jointed brace, substantially as described, whereby a pull upon one end of the cord will close the clutch and a pull upon the other end will open it.

5. The combination, in a stump-puller, of a drum, a pole-socket, a clutch thereon, a mast upon the drum-shaft, a shifting cord connected with the clutch, and a boom supported upon the mast and extending over the team path and having a loop or eye for supporting the said cord, substantially as described.

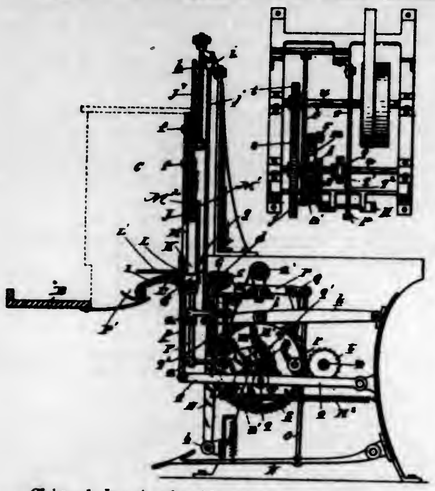
6. The combination, in a stump-puller, of a winding-drum mounted on a vertical shaft, means for rotating the drum, and a mast supporting a clutch-opening device and mounted to rotate freely upon the said shaft, substantially as described.

7. The combination, in a stump-puller, of a winding-drum mounted on a vertical shaft and a line-carrying boom mounted to revolve freely upon the same shaft above the drum, substantially as described.

8. The combination, in a stump-puller, of a winding-drum mounted on a shaft, a team-pole socket mounted upon the same shaft, a bearing-box for the socket to revolve upon the shaft and fitted to the socket with free crosswise movement, and clutch-pins to connect the socket and drum, substantially as described.

9. The combination, in a stump-puller, of a winding-drum mounted on a shaft, a team-pole socket mounted on the same shaft and having a clutch connection with the drum, a box fitted to revolve upon the shaft and having free crosswise play in the said socket, and a key passing through the socket and box and engaging a circumferential groove in the shaft, substantially as described, whereby the socket is retained upon the shaft.

486,249. CIGAR-SUPPORTING MACHINE. ALEXANDER GORDON, Detroit, Mich. Filed June 16, 1890. Serial No. 355,694. (No model.)



Claim.—1. In a cigar-bunching machine, an apron and a bunching-table yieldingly supported in vertical guides and provided with a pocket for the filler, in combination with a vertically-reciprocating plunger adapted to compress the filler in said pocket, substantially as described.

2. In a cigar-bunching machine, the combination, with the apron, of a bunching-table yieldingly supported and provided with a pocket for the filler, a plunger mounted above said pocket, and means for actuating said plunger to depress the bunching-table by compressing the filler in its pocket, substantially as described.

3. The combination of a bunching-table having a pocket for the filler, a filler-receptacle mounted above said pocket and having an open bottom, and an aperture for receiving the binder projected from the binder-table, a table for supporting the binder in front of said receptacle, an apron, and a vertically-reciprocating plunger registering with the filler-receptacle and with the pocket in the bunching-table, substantially as described.

4. The combination of the vertically-yielding bunching-table supported in vertical guides and provided with a pocket for the filler, the filler-receptacle secured above said pocket, the bunching-cloth adapted to close the bottom of said receptacle, the apron, and the reciprocating plunger adapted to be projected through the filler-receptacle into the pocket of the bunching-table, substantially as described.

5. The combination of the vertically-yielding bunching-table provided with a pocket for the filler, the reciprocating plunger for compressing the filler in said pocket, the apron, and mechanical means for locking the bunching-table into position after its depression by the plunger, substantially as described.

6. The combination of a bunching-table yieldingly supported in vertical guides and provided with a pocket for the filler, a filler-receptacle secured above said pocket, means for holding the binder in proper relation to said receptacle, a reciprocating plunger adapted to depress the bunching-table by compressing the filler in the pocket of the same, means for temporarily locking the bunching-table in its depressed position, an oscillating frame carrying the bunching-rollers, and a bunching-cloth, all arranged to operate while the bunching-table is in its depressed position, substantially as described.

7. In a cigar-bunching machine, the combination, with the bunching-table provided with a pocket for the filler, of the filler-receptacle secured above said pocket and provided with the aperture L and shield *g*, the bunching-cloth forming the bottom of said receptacle above the bunching-table in front of the filler-receptacle, and the reciprocating plunger secured in a vertical guide-frame, having the aperture M therein above the filler-receptacle, substantially as described.

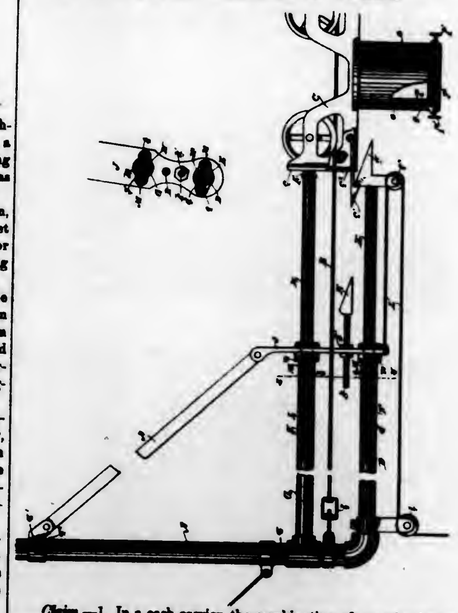
8. The combination, with the bunching-table yieldingly supported in vertical guides, of the lever *o*, carrying the bunching-table, the revolving cam *q'*, arranged to hold the bunching-table in its depressed position, the apron, and the oscillating frame carrying the bunching-rollers, substantially as described.

9. The combination, with the apron and bunching-table supported in vertical guides, of the lever *o* and spring q^3, yieldingly carrying said table, the shaft *n*, provided with the cam *q'*, adapted to hold the lever *o* in a depressed position during a portion of the revolution of the shaft *n*, the oscillating frame carrying the bunching-rollers and provided with the arm H', and the wrist-pin *r*, carried by the cam and adapted to engage with said arm, substantially as described.

10. The combination of the bunching-table yieldingly supported in vertical guides and provided with a pocket for the filler, the filler-receptacle mounted above the pocket in said bunching-table, the vertically-reciprocating plunger, the lever *k* and its intermediate connection for actuating said plunger, the roller *l* on said lever, and the revolving cam *m*, provided with the cam-groove *n'*, adapted to engage said roller *l* to actuate the plunger during a portion of the revolution of the cam *m*, substantially as described.

11. The combination of the apron, the bunching-table supported in vertical guides, the lever *o* and spring q^3, carrying said bunching-table free to yield under pressure, the reciprocating plunger, the lever *k* and its actuating connection with said plunger, the roller *l* on said lever, the oscillating frame carrying the bunching-rollers, the arm H' on said frame, the revolving shaft *n*, the cams *q'* and *m* on said shaft, and the wrist *r* on the cam *m*, substantially as described.

486,250. CASH-CARRIER. ABE B. GUGGENDORFER, Monterey, Cal. Filed May 25, 1892. Serial No. 434,230. (No model.)



Claim.—1. In a cash-carrier, the combination of a car having a latch, a hanger having the tubular arm D, a spring within said arm, a slidable rod having its inner end mounted within said arm and bearing against said spring, a catch carried by the forward end of the slidable rod and adapted to engage with said latch, means for retracting said rod with its engaged car, a spring-controlled projector-rod with which the car comes in contact, whereby said rod is forced back, and a releasing device to trip the car-latch and permit the projector-rod to throw the car forward, substantially as herein described.

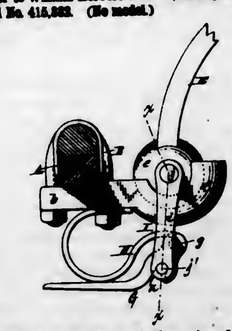
2. In a cash-carrier, the combination of a hanger, the parallel horizontally-arranged tubular arms D and G, extending from its lower end, a spring located within each of said tubular arms, the parallel slidable rods E and H in line with the outer ends of the arms and having their inner ends entering said arms and bearing against said springs, a beveled catch on the outer end of one of said rods, a car having a pivotally-secured latch adapted to engage said catch, a stop-plate on the car adapted to contact with the outer end of the other or projector rod H, means for retracting the rod E and car and thereby retracting the rod H, and a releasing device in the path of the latch on the car for releasing the same from contact with its catch and permitting the upper rod H to project the car forward, substantially as herein described.

3. In a cash-carrier, the combination of the hanger, the tubular rods projecting horizontally from its lower end and having slotted sides, the rectractor-rod E and projector-rod H in line with the outer

ends of the arms D and G and having their inner ends mounted within said arms, springs in the arms bearing against the ends of the rods, pins on the inner ends of the rods working in the slotted sides of the arms to guide and steady the rods, a car having a stop-plate for engaging the projector-rod and a spring-latch for engaging a catch on the retractor-rod, means for retracting the latter rod and car and thereby retracting the projector-rod, and a beveled releasing-cam in the path of the latch for releasing the same and permitting the projector-rod to throw the car forward, substantially as herein described.

4. In a cash-carrier, the combination, with the hanger and its tubular arms, the rods telescopically mounted in said arms, springs within the arms against which the rods bear, a car having a latch engaging a catch on one of said rods, and means for retracting the rods and car, of a sleeve adjustably mounted on the hanger, a connecting and supporting plate J between the tubular arms, a link pivotally connected with said plate and sleeve, and a threaded shank adjustably mounted in said plate between the arm and having an inclined cam upon its outer end in the path of the latch on the car for releasing the latch from its catch, substantially as herein described.

486,251. THILL-COUPLING. WILLIAM H. HANNAH, Syracuse, N. Y., assignor to William Herbert Hannah, same place. Filed Dec. 22, 1891. Serial No. 415,982. (No model.)

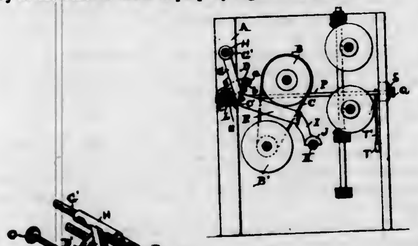


Claim.—1. The combination, with the axle, of a draft-eye provided with a socket in its upper side, a thill-iron provided with a knuckle seated in said socket, a spring secured to the axle and projecting forwardly, a clamping-lever pivoted to the front end of said spring, and a link attached to the clamping-lever outside of its fulcrum and connecting the lever with the knuckle, substantially as set forth.

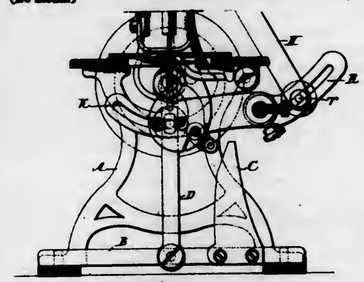
2. The combination, with the axle, of a draft-eye provided with a socket in its upper side, a thill-iron provided with a knuckle seated in said socket, a spring secured to the axle and projecting forwardly, a clamping-lever pivoted to the front end of said spring, and a link which is permanently attached to the knuckle and detachably connected to the clamping-lever outside of the fulcrum of the latter, substantially as set forth.

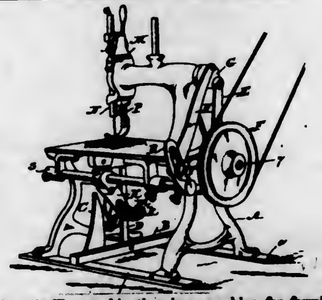
486,252. SLIVER-TENSION REGULATOR FOR ROVING-MACHINES. HENRY H. HEPLER, Baltimore, Md., assignor of one-half to George Draper & Sons, Hopedale, Mass. Filed Mar. 29, 1892. Serial No. 426,926. (No model.)

Brief.—As the belt is shifted from one end of the cone-pulleys the screw L, actuated from the knob Q, shifts the belt slightly one way or the other in order to properly regulate the sliver.



486,253. MACHINE FOR FORMING AND CUTTING FRINGE LOOPS ON EDGES OF FABRICS. FRANK HOFFMANN, Philadelphia, Pa., assignor of two-thirds to Oswald Lever and William S. Grundy, same place. Filed Dec. 30, 1890. Renewed June 28, 1892. Serial No. 438,253. (No model.)





Claim.—1. The combination, in a machine for forming fringe loops, with a reciprocating needle, of the upright guiding slide-bar D, pivotally fixed at its lower end to adapt it to be vibrated in an arc of a circle, a vertically-reciprocating loop-forming hook L, mounted on said bar D in such manner that while carried thereby it shall be free to slide vertically thereon, and separate and independent mechanisms operating, respectively, to vertically reciprocate said loop-form-

ing hook, as aforesaid, and to vibrate said guide-bar D in an arc of a circle in one direction simultaneous with the upward throw of the looper and in the opposite direction simultaneous with the downward movement thereof, substantially as described.

2. The combination, with the reciprocating needle, of an upright pivoted guide D, slotted at its upper end, a vertically-reciprocating hooked looping device mounted thereon, the slotted arm K, carrying said looper and its actuating-shaft S, the main shaft and its cam-wheel 7, mounted on the end thereof, and connections between the cam-wheel 7 and guide D, operating to vibrate said guide D in an arc of a circle at the terminus of the upward throw of the looper, substantially as described.

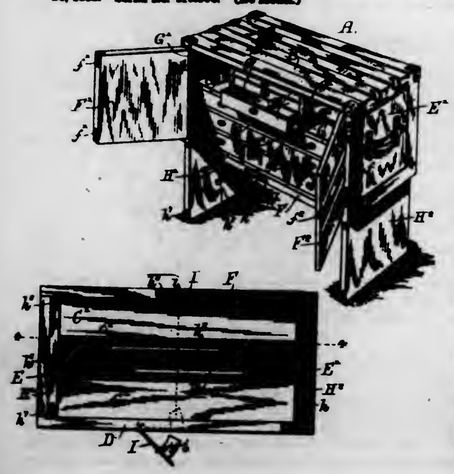
3. The combination, with the needle, of the pivoted guide D, the looper L, means to vertically reciprocate the same on the pivoted guide, means to vibrate said guide on the terminus of the upward throw of the looper, a cam-post C, and a shearing-blade V, mounted on said looper and having its heel 3 extending beyond the face thereof and abutting against the cam-post C, and a spring 2, supporting said shear-blade in normal position on the face of the looper, substantially as described.

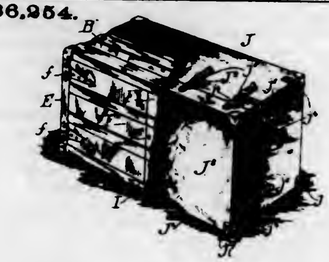
4. The combination, in a machine for forming and cutting fringe loops, with a reciprocating needle, of the pivotally-fixed upright guide-bar D, the looper-hook L, carried thereby and adapted to slide vertically thereon, mechanism to vertically reciprocate said looper-hook as aforesaid, mechanism to vibrate the bar D in an arc of a circle in one direction simultaneous with the upward movement of the looper and in the opposite direction simultaneous with its downward movement, a shear-blade V, mounted on said looper and having a heel 3 extending beyond the face thereof, and mechanism independent of the looper and its carrying guide-bar adapted to actuate said blade on the terminus of the downward throw of the looper and after the full formation of the loop, substantially as described.

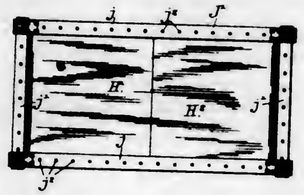
5. The combination, with the reciprocating needle and a stationary finger 4, secured to the under side of the throat-plate and contiguous to the needle-slot, of a spring 5, also mounted on said throat-plate, and mechanism consisting of the eccentric 6, operating on said spring to cause it to catch the thread and press it against the finger 4 after the needle has passed through the slot and to release it after the needle has completed its movement, and a hooked looper, with mechanism to adapt it to catch the thread and draw it down after the needle passes through the slot on its descending movement, substantially as described.

6. The combination, with the reciprocating needle, of an upright pivoted guide-bar, with mechanism to vibrate the same in an arc of a circle in unison with the movements of the loop-forming device, a looper-hook mounted on said vibrating guide-bar in such manner as to be free to slide vertically thereon, with mechanism to so actuate the looper, consisting of the slotted arm K, its actuating-shaft S, a slotted arm R, mounted thereon, and a connecting-arm H, actuated from the main shaft to vibrate said slotted arm, with a set-screw between said slotted arm K and connecting-arm H, whereby the vibratory movement of the arms K and R may be adjusted and the length of the loop regulated, substantially as described.

486,254. TRUNK. MARIA L. H. KIMM, Chicago, Ill. Filed Jan. 26, 1892. Serial No. 419,262. (No model.)







Claim.—1. The combination, with a trunk having its bottom wall secured above the lower edges of its end and side walls, so as to form a shallow recess in the under surface of its bottom, of folding legs hinged within said recess adjacent to the end walls, said legs being of the same width as said recess and adapted to fill the space between the end and side walls, and to thereby form a continuous bottom surface for the trunk when the legs are folded, substantially as described.

2. The combination, with a trunk having its bottom wall secured above the lower edges of its side and end walls, forming a shallow recess, folding legs hinged within said recess adjacent to the end walls, said legs being of the same width as the recess and adapted to fill the same when folded, and brace-rods hinged to the inner surfaces of the legs for holding them extended, said trunk being provided with cleats secured longitudinally to the bottom adjacent to the side walls and affording support for the legs when folded, of a central recess to receive said brace-rods, substantially as described.

3. The combination, with a trunk, of a removable flexible cover having attached to its lower edge a rigid open frame adapted to fit against the margins of the bottom of the trunk, substantially as described.

4. The combination, with a trunk, of a removable cover composed of flexible material and having attached to its lower edges a rigid open-bottom frame having upwardly-extending projections to engage the side and end walls of the trunk, substantially as described.

5. The combination, with a trunk, of a removable flexible cover having attached to its lower edges a rigid open-bottom frame provided with caster-wheels, substantially as described.

6. The combination, with a trunk having legs adapted to fold inwardly against its bottom, of a cover of flexible material having attached to its bottom an open rigid frame, through which the legs may pass when unfolded, substantially as described.

486,255. CORN-HARVESTER. ALVIN V. KIMM, West Liberty, Ohio. Filed Mar. 31, 1892. Serial No. 427,166. (No model.)

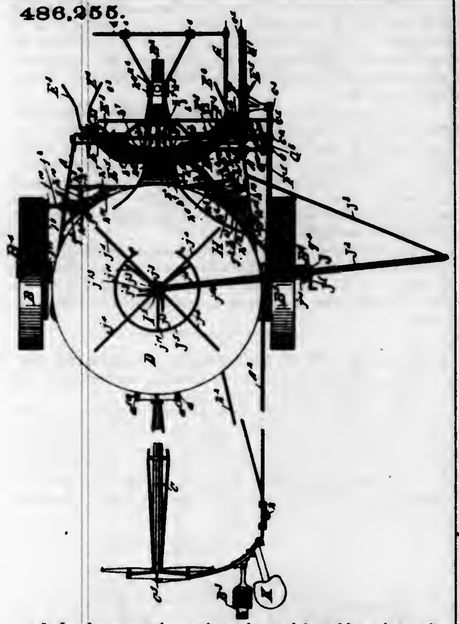
Claim.—1. In a harvester, a revolving table, a reciprocating packer pivotally connected at one end to a revolving crank-shaft, and a movable pivot to change the travel of said packer, said movable pivot being operated by the rotation of said table, substantially as specified.

2. In a harvester, a revolving table and a reciprocating packer, a revolving crank-shaft connected to the end of said packer, a movable pivot for said packer, and operating mechanism between said table and movable pivot to successively move said pivot at each revolution of said table, substantially as specified.

3. In a harvester, a revolving table and a reciprocating packer, a revolving crank-shaft pivotally connected to said packer, and a movable pivot intermittently operated by the revolution of said table to automatically change the travel of said packer, substantially as specified.

4. In a harvester, the reciprocating packers each supported on a movable pivot-support and connected to a revolving crank-shaft, a revolving table adjacent to said packers, and means, substantially as described, for intermittently and simultaneously moving the pivotal supports of said packers by the revolution of said table, substantially as specified.

486,255.



5. In a harvester, the continuously-revolving table, reciprocating packers operating adjacent to said table, movable pivot-supports for said packers, laterally-moving supporting-shafts to which said pivot-supports are pivotally connected, a pawl-and-ratchet mechanism attached to said shafts, and means, substantially as specified, for operating said pawl-and-ratchet mechanism from the revolving table to produce an intermittent lateral movement of said shaft at each revolution of said table, substantially as specified.

6. In a harvester, a continuously-revolving table, reciprocating packers operating adjacent to said table, movable pivot-supports for said packers, vertical shafts having crank-arms pivotally connected to said movable supports, said shafts being connected together so as to move simultaneously, a ratchet-wheel on one of said shafts, and a pawl to engage said ratchet, a projecting arm attached to said pawl and adapted to be engaged by a projection on the revolving table at each revolution thereof, and thus change the position of said movable pivot-supports, substantially as specified.

7. In a harvester, a continuously-revolving table, reciprocating packers adjacent to said table, pivotally connected to continuously-revolving crank-shafts, a supporting-shaft to which is pivotally connected supporting-pivots for said packers, said shaft being supported in laterally-moving bearings in the frame of said harvester, an operating-shaft in proximity to said supporting-shaft, said operating-shaft being provided with projecting arms pivotally connected to said supporting-shaft, a ratchet-wheel on said operating-shaft, a pivoted lever having a pawl to engage said ratchet-wheel, said pivoted lever being extended under said moving table and adapted to be moved by a projection on said table so as to produce a limited movement of said operating-shaft at each revolution of said table, substantially as specified.

8. In a harvester, reciprocating packers pivotally connected at one end to a revolving crank-shaft, a supporting-shaft having moving pivotal supports for said packers, said shaft being supported in laterally-moving bearings in the harvester-frame, operating-shafts connected by a link connection to said supporting-shafts, and means, substantially as described, for intermittently moving said operating-shafts to change the throw of said packers, substantially as specified.

9. In a harvester, a reciprocating packer formed of one or more metal strands, one of which is slidingly journaled in a movable pivot-support, a revolving crank-shaft, to which said packer is pivoted, supporting-shafts, to which the movable pivot-supports are pivotally connected, laterally-moving bearings for said supporting-shaft, and means, substantially as described, for producing a lateral movement of said supporting-shaft, and thus vary the throw of said packer, substantially as specified.

10. In a harvester, a revolving table and a central detachable post, said post being formed of two telescoping parts, to one of which parts are pivotally connected projecting radial arms, brace connections from said arms to the other part of said posts, and means, substantially as described, for detachably securing the respective telescoping parts together, substantially as specified.

11. In a harvester, a central shock-forming post formed of angle-iron and constructed in two telescoping parts, as described, an encircling band or frame at the upper extremity of one part, adapted to pivotally support projecting radial arms and to form a sliding connection with the remaining part of said post, brace connections from said radial arms to the movable part of said post, and a detachable connection between the respective parts of said post whereby a telescopping movement of said post causes the depression of said arms, substantially as specified.

12. In a harvester-cutter, a revolving shaft having supporting-heads thereon, pivoted knives in said supporting-heads, projecting fingers connected with said knives, and lugs or projections on said heads to engage with said fingers, and springs between one or more of said lugs and said fingers, substantially as specified.

13. In a cutter for harvester-knives, a revolving shaft having supporting-heads thereon, a pivoted knife or knives in said supporting-heads, and a finger connected to each of said knives, stationary projections or lugs to limit the movement of said fingers, and a spring between said fingers and lugs to permit a limited yielding movement of said knife or knives in the said head, substantially as specified.

14. In a harvester, a pivoted supporting and guiding wheel having a laterally-projecting arm connected centrally to the journal or pivotal support of said guiding-wheel, pivoted levers connected to the opposite ends of said laterally-projecting arm, a centrally-pivoted arm pivotally connected to each of said pivoted levers, and means for producing a movement of one of said pivoted levers, substantially as specified.

15. In a harvester, a main frame, a movable supporting-shaft journaled in bearings, said bearings being slidingly supported in slots in said main frame, a pivot on said supporting-shaft, and a movable packer slidingly connected to said pivot, a crank-shaft for operating said packer, and means for moving said supporting-shaft and its bearings in the slotted openings in said frame to produce a diminishing movement of said packer, substantially as specified.

16. In a harvester, movable packers, each pivotally connected at one end to a revolving crank-shaft, a supporting-shaft having a moving pivotal support for each of said packers, said shaft being supported in laterally-moving bearings in the harvester-frame, operating-shafts having projecting arms, each connected by a link connection to one of said supporting-shafts, a pawl-and-ratchet movement for intermittently moving one of said operating-shafts, and a connecting-rod from said operating-shaft to the other operating-shaft, substantially as specified.

17. In a harvester, a shock-forming table or platform having a central detachable supporting-post, an oscillating beam connected at one end to said detachable post and secured to the frame at the other by a normally-stationary connecting-rope arranged at an angle to the plane of the central supporting-post, an extensible supporting-post for said beam, and a track or way on said beam-supporting post, adapted to release and guide said beam when its supporting-post is elevated, substantially as specified.

18. In a harvester, the oscillating shock-discharging beam pivoted centrally to a supporting-post and connected to the frame at one end by a normally-stationary rope arranged at an angle to the plane of the supporting-post, a connection from the opposite end of said beam to the shock supporting and discharging device, and a guiding and supporting track on said supporting-post, adapted to normally retain and guide said beam, substantially as specified.

19. In a harvester, the main frame having a tongue pivotally connected to the rear thereof, a projecting L-shaped auxiliary frame extending backwardly from the main frame at one side of said tongue and connected thereto at the rear, said auxiliary frame being hinged to the main frame, substantially as specified.

20. In a harvester, the main frame, a backwardly-extending tongue pivotally connected thereto, a projecting L-shaped auxiliary frame extending backwardly from the main frame and connected to the rear end of said tongue, said auxiliary frame being pivoted to the main frame and supported at the rear by a caster-wheel, substantially as specified.

486,256. COMBINED UMBRELLA-LOCK AND SATCHEL-FASTENER. TIMOTHY J. LEHEEY, Indianapolis, and JAMES O'CONNELL, Bedford, Ind. Filed Aug. 6, 1892. Serial No. 442,253. (No model.)

Claim.—1. The herein-described combined umbrella-lock and satchel-fastener, consisting of the ring-lock A, adapted to fit and be locked around the handle of an umbrella, and the chain B, secured to said ring-lock and adapted to be passed around the handle of a satchel or similar article and around the arm of a car-seat or other object to which the umbrella and satchel are to be secured, substantially as and for the purpose described.

2. The herein-described combined umbrella-lock and satchel-fas-

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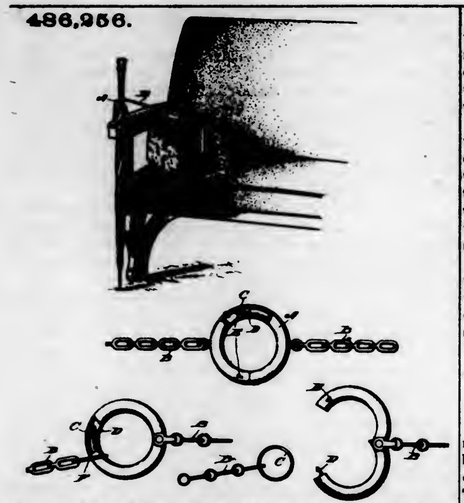
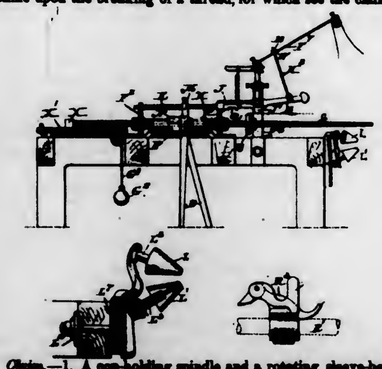


tener, consisting of the ring-lock A, composed of two separable halves adapted to fit and be locked together around an umbrella-handle, and the chain B, permanently secured at its opposite ends to the respective halves of the ring A and adapted to be passed around the handle of a satchel or similar article and around the arm of a car-seat or other object to which the umbrella and satchel are to be secured, substantially as and for the purpose described.

486,257. COP-WINDING MACHINE. OSWALD LEVER and WILLIAM S. GREENDY, Philadelphia, Pa. Filed Mar. 2, 1891. Serial No. 383,698. (No model.)

Brief.—The invention consists of specific details in the cop-forming device, in the tension device, and in the devices for stopping the machine upon the breaking of a thread, for which see the claims.



Claim.—1. A cop-holding spindle and a rotating sleeve-bearing therefor whereby said spindle may also have an endwise motion, in combination with cop-shaping mechanism consisting of three conical friction-rollers mounted upon shafts set at an angle to each other, the lower one of said rollers being loose upon its shaft and capable of longitudinal reciprocation thereon and a vertically-adjustable supporting-plate for said roller-shafts, consisting of the supporting-plate L^3, provided with slotted arms L^4 L^4, substantially as and for the purpose described.

2. A cop-holding spindle, a sleeve-bearing therefor, a belt-shipping mechanism, and connected spring-controlled sliding rod H, mounted over the same, having an enlargement J thereon recessed on its under surface, and a bearing F therefor and having an enlarged opening, in combination with mechanism adapted to free the said rod on the breaking of a thread, consisting of an angle-arm F^5, its supporting-post F^6, connected arms F^7 and F^8, pivotally mounted on said angle-arm, a tension-spring K, between said angle-arm and the arm F^8 on one side of the pivotal bearing, and mechanism on the other side of said pivotal bearing connecting the arm F^8 with rod H, controlling the belt-shipping device, substantially as described.

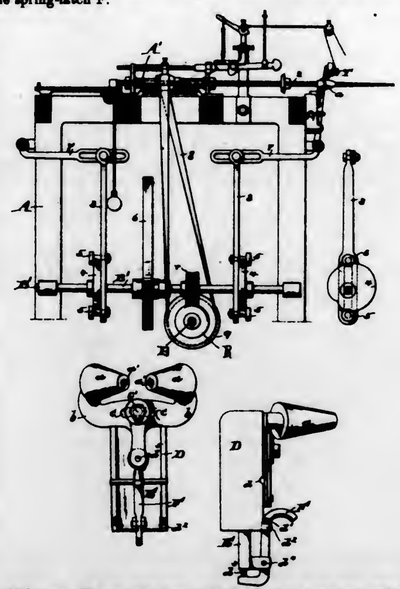
3. The combination, with yarn-winding mechanism, of tension devices consisting of the bracket R, having journal-bearing arms R^3, recessed at R^4 to form thread-guides, and a latch R^2, journaled at one end therein and adapted to rest by gravity upon the yarn passing under the same and through said recess in the bracket-arms, substantially as described.

4. The combination, with yarn-winding mechanism, of tension devices consisting of the bracket R, having journal-bearing arms R^3, recessed at R^4 to form thread-guides, a latch R^2, journaled at one end therein and adapted to rest by gravity upon the yarn passing under the same and through said recess in the bracket-arms, and a counterbalancing device R^4 R^5 on and extending over the pivoted latch, whereby the weight of the latter upon the yarn may be adjusted, substantially as described.

5. A cop-shaping mechanism and its vertical supporting-plate L^2, provided with projecting pin 6, in combination with a vertically-slotted plate L^3 and having recesses L^5, adapted to engage with the laterally-projecting pins L^6 of the supporting-plate, substantially as described.

486,258. DRIVING MECHANISM FOR COP AND BOBBIN WINDERS. OSWALD LEVER and WILLIAM S. GREENDY, Philadelphia, Pa. Filed Nov. 27, 1891. Serial No. 413,197. (No model.)

Brief.—The belt is shifted on the conical pulleys by means of the rod N and cam 6, while the thread-guide is operated from the cam 4 by means of the link 3 and arm 7, thus bringing the thread to the apex of the cop at the moment the machine is running at its highest speed. The cop-forming device consists of rollers *a*, mounted adjustably on a frame E, said frame being capable of vertical movement by reason of the spring-latch F.



Claim.—1. The combination, with the reversely-conical pulleys L and G, of the endless belt or band M, arranged loosely around the driven pulley, the belt-shifter *g*, the fixed rod *n*, upon which said belt-shifter is guided in its reciprocation, the rod N, pivoted at *m* to the same, the driven shaft B, connecting actuating-gearing between said shaft B and rod N, operating to reciprocate the said rod N slowly, the shaft B', driven thereby, and the yarn-guide and its actuating mechanism consisting of the vibrating slotted arm 7, pivoted in the frame of the machine and actuating said guide, the rod 8, the cam 4, mounted on said shaft B' and operating to reciprocate the said rod, substantially as described.

2. The combination, with the reversely-conical pulleys L and G and the endless belt or band M, arranged loosely around the driven pulley, of the belt-shifter *g*, the rod N, pivoted to the same, and mechanism to reciprocate the said rod N slowly, consisting of a counterbalancing device to move the said rod N in one direction, and cam-pins *e e* on said rod N, the slot 8 between the same, the cam 6, its shaft and driving-gearing, and the shaft B and worm-gearing, said parts operating to move the rod N in the opposite direction, substantially as described.

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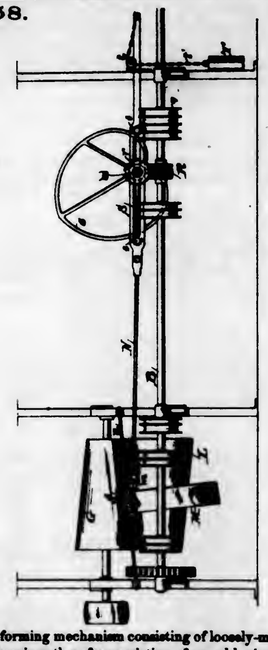
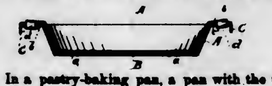


3. Bobbin-forming mechanism consisting of loosely-mounted conical rollers *a a*, bearings therefor consisting of arms *b b*, pivoted at their lower ends at a^3 and provided with roller-shafts *a' a'*, set at an angle thereto, and vertically-sliding supporting-frame E, lateral slots *c c* in said arms *b b*, and a set-screw *c'*, passing through said slots into the face of the supporting-frame E, substantially as described.

4. The combination, with a fixed frame D, of a frame E, adapted to slide vertically therein, provided with a finger F, hinged to the base of said frame E at d^5 and having a spring d^6 between it and said frame, and with projecting pin *d'*, said fixed frame D being provided with a projection d^7, acting as a stop for the downward descent of the finger F, and having a recess *d*, into which the projecting pin *d'* will pass on the upward rise of the finger and acting as a locking device therefor, substantially as described.

486,259. BAKING-PAN. SIDNEY C. LOSS and FRANCIS C. LOSS, Dayton, Ohio. Filed July 19, 1892. Serial No. 440,562. (No model.)



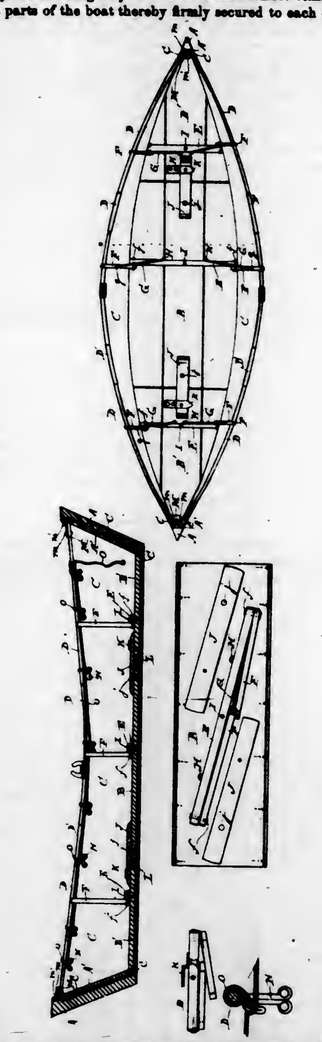
Claim.—1. In a pastry-baking pan, a pan with the usual sides and rim minus a bottom, in combination with a false bottom with wings or extensions thereon adapted to be bent over to form handles and to admit of the said bottom being placed in the pan, sliding clamps to fit and move on the said handles, the inner end of said clamps adapted to fit under the rim of said pan when pushed inwardly to hold the false bottom in contact with the pan, substantially as herein described.

2. In a pie-plate or baking-pan, the herein-described pan, in combination with the false or detachable bottom and handles being an entirety, means of attaching and detaching the said bottom with and from the pan, substantially as herein described.

3. In a pie or pastry baking pan, the plate or pan A, the false bottom therefor having wings or extensions *b*, forming the handles thereof, and supports *d* for the sliding clamp C, as herein described, and for the purposes set forth.

486,260. FOLDING BOAT. MANFRED U. LOGAN, Miamisburg, assignor of two-thirds to Gertrude Driggs and Otis Kaszinsky, Dayton, Ohio. Filed May 31, 1892. Serial No. 434,837. (No model.)

Claim.—1. In a folding boat, the bottom thereof, composed of nine pieces divided into three sections, each section of three pieces hinged together longitudinally, the central piece of each section having a floor riveted thereto, (and adapted to turn on the rivet as its axis,) each floor having a rib at each end pivoted thereto and each rib provided with a brace whereby the ribs and the floors may be maintained at the proper angle to each other, the said ribs having a semicircular opening adapted to receive the gunwales, in combination with a flexible waterproof covering secured at each end to the aprons and stem and stern posts of the boat, the said covering having hooks attached to the upper sides thereof, adapted to receive a cord whereby the covering may be drawn to the utmost tension and the various parts of the boat thereby firmly secured to each other.



2. In a folding boat, the longitudinal bottom section B, with the pivoted button J, in combination with bottom sections B', having each a clip or locking device K, adapted to engage with the pivoted bar J when turned upon its axis in a longitudinal direction, thereby maintaining said section B and said sections B' in the same longitudinal horizontal plane, as herein shown and described.

3. In a folding boat, the bottom section B, consisting of a middle plank and two side planks hinged together longitudinally, the middle plank of each section having a floor E pivoted thereto, whereby the middle and two side planks of each section are maintained in the same plane when the floor E is turned in a transverse direction, said floor E being provided with ribs F, pivoted to the ends thereof, and braces G, whereby the proper angle between the floor and the ribs is maintained, as herein shown and described.

4. In a folding boat, the longitudinal sections B and B', constituting the bottom of the boat, the middle plank of sections B' having pins L, adapted to enter sockets L' in the ends of the middle plank of

section B, also buttons J, pivoted to the ends of the middle plank of section B, said buttons adapted to engage with clips K, attached to the ends of the middle planks of sections B', whereby the three sections are maintained in the same horizontal plane, in combination with the floors E, pivoted to the middle plank of sections B and B' and adapted to be turned in a transverse direction and thereby maintain each section in the same transverse horizontal plane, as herein described.

5. In a folding boat, the combination, with the gunwales and canvas covering, of the flooring consisting of three sections, the middle section being of a greater length than the two end sections, each of said sections consisting of a plurality of planks hinged together longitudinally by means of suitable flexible material that will admit of the planks of each section being folded upon each other, a cross-brace pivoted to the middle plank of each section, ribs pivoted to the ends of said cross-brace and adapted to be folded upon said cross-brace or raised in an inclined position to support the gunwales, and braces consisting of hook-and-eye joint at one end and a staple connection at the other, forming an additional support between said cross-brace and ribs, substantially as described.

6. In a folding boat, the combination, with the pivotal cross-brace and ribs and gunwales, of a flooring consisting of a plurality of planks hinged together longitudinally, a sliding fastening-bar pivoted to the ends of the middle plank of the middle section, and clips attached to the inner ends of the middle plank of the end sections of said flooring, by means of which the sections are joined in one rigid and compact flooring, substantially as herein described.

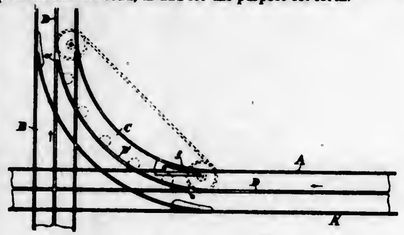
7. In a folding boat, the combination, with the flooring consisting of three divisions with means of attaching said divisions together so as to form one compact flat surface, of a cross-brace pivoted to the center plank of each of the divisions and ribs pivoted to the ends of said cross-brace, the upper end of said ribs provided with semicircular recess adapted to support the gunwales, a canvas covering provided with hooks placed at intervals along the edge thereof, by which the canvas is drawn and rigidly laced around said gunwales by means of a cord or rope, as herein described.

486,261. BOTTLE-STOPPER. JAMES T. MARSHEY, Philadelphia, Pa., assignor, by mesne assignments, to Edward W. Brassinghamen, New York, N. Y. Filed Feb. 27, 1892. Serial No. 423,013. (No model.)

Claim.—A bottle-stopper consisting of a sleeve with an inwardly-projecting lip and outwardly-projecting ears, the latter at the upper end of said sleeve, an elbow-lever journaled in said ears and having on the outer end of its upper limb a cap with a cork secured thereto and on its lower limb a roller, and a spring secured to said sleeve and bearing against said roller, substantially as described.

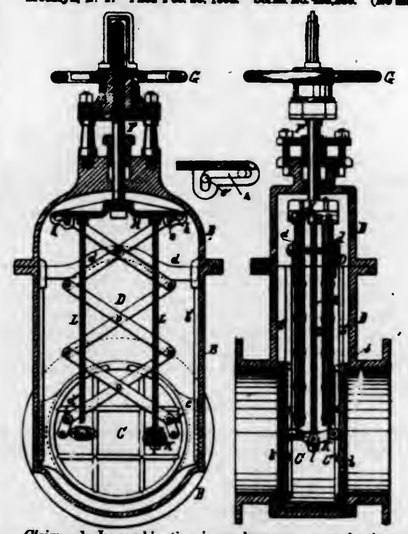
486,262. CABLE RAILWAY. ROBERT MCGLINTOCK, JOHN F. LARMARINE, and JOHN W. LOVELL, Baltimore, Md. Filed Oct. 6, 1892. Serial No. 447,892. (No model.)

Claim.—1. The combination of two intersecting cable railways, each having a grip-slot, a curved track, and a curved slot leading from one railway to the other and having a point at each union of the curved slot with the other slots, a separate cable for each railway, one of the cables forming a loop one end of which is coincident with the slot-point of the intersecting road and the other end with the slot-point of its own road, as and for the purpose set forth.



2. The combination of two cable railways crossing each other, yokes to support the conduit and rails of each road, two pulleys, each mounted in a separate box and each box attached to a supporting-yoke on each road, and the cable of one of the roads formed into a loop which passes over both of said pulleys.

486,263. VALVE-OPERATING MECHANISM. JOHN W. OSBORN, Brooklyn, N. Y. Filed Feb. 29, 1892. Serial No. 423,260. (No model.)



Claim.—1. In combination, in a valve or gate mechanism, a casing, a valve-seat therein, a valve or gate arranged to travel in guides in said casing, lazy-tongs for opening and closing the said valve, fulcrumed in the said casing and secured to the said valve, a movable head for operating the said lazy-tongs, toggles for forcing the said valve against the said valve-seat, an operating-rod for the said toggles secured to the said head, and means, as a wheel and screw, for actuating the said head, substantially as and for the purposes set forth.

2. In combination with the stationary parts of a valve or gate operating mechanism, a valve or gate, lazy-tongs for opening and closing the said valve or gate, toggles for forcing the said valve against its seat, an operating-rod pivoted to the elbow of the said toggles, and means, as a wheel and screw, for simultaneously actuating the said lazy-tongs and the said toggles, substantially as and for the purposes set forth.

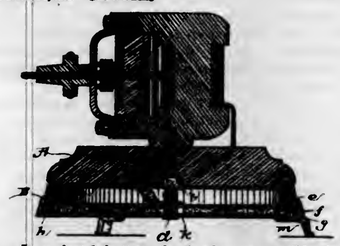
3. In combination with the stationary parts of a valve or gate operating mechanism, a valve or gate, lazy-tongs for removing and replacing the valve or gate, toggles for tightly closing the said valve, and means of operating the said toggles and the said lazy-tongs, substantially as and for the purposes set forth.

4. In combination with the stationary parts of a valve or gate operating mechanism, a valve, a pair of lazy-tongs for opening and closing the said valve, a valve-stem connected with the said lazy-tongs, and means, as a wheel and screw, for actuating the said lazy-tongs, substantially as and for the purposes set forth.

5. In a valve-gate, the following elements in combination, a pair of gate-valves, one or more lazy-tongs, and an actuating rod or stem for operating the lazy-tongs and through them the valves or gates.

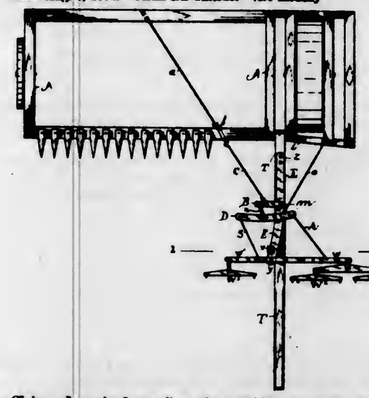
6. In a valve-gate adapted to close orifices for the admission or emission of fluids or gases, a system of lazy-tongs, levers, and an actuating hand-wheel and rod combined therewith, whereby the valves may be operated by the extension and contraction of said levers, as and for the purposes described.

486,264. ELECTRIC BATTERY. JOHN J. O'LAIGE, Boston, assignor of one-half to John S. Maxwell, Medford, Mass. Filed Oct. 3, 1891. Serial No. 407,663. (No model.)



Claim.—In an electric battery, the circular copper cell having central post *d*, the insulating-sleeve K about said post, the circular centrally-apertured pad in said cell, and the circular centrally-apertured zinc disk E, resting upon said pad, said post rising through said apertures, in combination with the circular removable cover A, having a central terminal and a terminal adapted to contact with said zinc disk, whereby not only is the circuit closed upon the placing in any position of the cover upon the cell, but the contact can be insured by a partial rotation of said cover, substantially as set forth.

486,265. DRAFT-EQUALIZER. PHILIP J. RABE, Frankfort, Ill. Filed Aug. 8, 1892. Serial No. 442,585. (No model.)



Claim.—In a draft-equalizer, the combination of the tongue T, arms E B *w w'*, doubletrees D and *x*, whiffletrees w^2 w^3 w^3, rods *a b c r s*, and hooked plate *v*, all arranged to operate substantially as and for the purpose set forth.

486,266. SULKY-PLOW. LEWIS ROUSE, GEORGE ROUSE, and WILLIAM H. HARLEY, Baldwinsville, N. Y. Filed Feb. 23, 1892. Serial No. 423,400. (No model.)

Claim.—1. In a sulky-plow, the combination, with the tubular cross-beam and the tie-rod passing through it, of the draft-beam and braces secured thereto, the bars secured to said cross-beam, one extending forwardly and the other rearwardly, and wheels journaled thereto, substantially as described, for the purpose set forth.

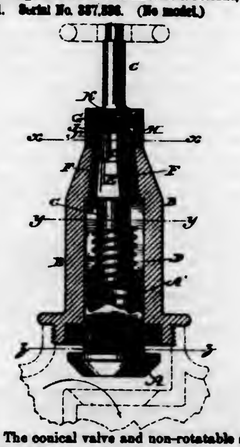
2. In a sulky-plow, the combination, with the tubular cross-beam, the tie-rod passing through it, the draft-beam and braces secured thereto, the racks upon the ends of said cross-beams, and the pawl-levers pivoted adjacent to said racks and adapted to engage therewith, the bars secured to the cross-beam, one extending forwardly and the other rearwardly, and the wheel journaled thereto, as set forth.

486,267. SOAP COMPOUND. JONATHAN SHARP, Philadelphia, Pa. Filed Jan. 26, 1892. Serial No. 419,502. (No specimens.)

Claim.—1. The herein-described soap compound, consisting of soap bark, water, crude turpentine, soda, sal-ammoniac, borax, camphor, oil, and caustic soda, substantially in the proportions specified and prepared in the manner set forth.

2. A preparation for treating wool for carding and spinning, consisting of the herein-described soap compound made of soap bark, water, crude turpentine, soda, sal-ammoniac, borax, camphor, oil, and caustic soda prepared in the manner set forth and afterward mixed with oil, all substantially as and for the purpose described.

486,268. PACKINGLESS VALVE. ARCHIBALD SUTHERLAND, Philadelphia, Pa., assignor of one-half to Antonio G. Pessano, same place. Filed Apr. 6, 1891. Serial No. 387,896. (No model.)



Claim.—1. The conical valve and non-rotatable shank carrying the same, said shank having a threaded opening therein, the stem C, having threads on its lower end, the same entering and engaging said shank, threads K at top, and a cone intermediate of said threads, in combination with the box having its inner face conforming to said shank and cone E and an adjusting-nut which is supported on the top of the box and engages with the upper threads of the stem, substantially as described.

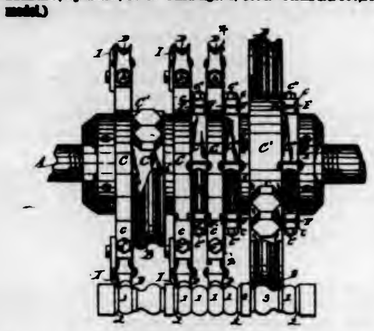
2. A conical valve, a non-rotatable shank carrying the same, and a threaded valve-stem engaging said shank and provided with a cone, in combination with the box having its interior conforming to said shank and cone, a nut secured to the upper end of the stem, and the washer which is interposed between said nut and box and rotates on the latter, the inner surface of said washer and the contiguous part of the stem having flat portions which are in contact, substantially as described.

3. A conical valve and a threaded stem fitted thereto, a cone on said stem, and a box receiving the shank of said valve and conforming to said shank and cone, in combination with a washer which is rotatively supported on the top of the box and connected with the valve-stem by means of an adjusting-nut which is attached to said stem and engages with said washer, substantially as described.

4. In a packingless valve, a casing with an angular chamber in the lower portion thereof, with an upper conical opening F, a valve with a non-rotatable angular shank or extension A', having a screw-threaded opening in the upper portion thereof and a lower conical head, a stem C, having threads on its lower end to engage the threaded opening of the head and upper screw-threads K, a cylindrical sleeve directly below the threads K and having a cut-away portion J', a cone B, directly below and continued from the said cylindrical sleeve, said cone being located within the conical opening F of the casing and preventing upward movement of the stem C by being in contact with the gradually-converging walls of said opening, a washer H on the upper part of the casing and having a flat portion J to en-

gage the cut-away portion F' of the sleeve C, and a nut G, engaging the upper screw-threads K and bearing directly on top of the washer H, said washer being located on the upper end of casing A, substantially as described.

486,269. ROTARY CUTTER FOR WOODWORK. CHARLES H. ZIMMERMANN, Syracuse, N. Y. Filed Apr. 1, 1891. Serial No. 387,207. (No model.)

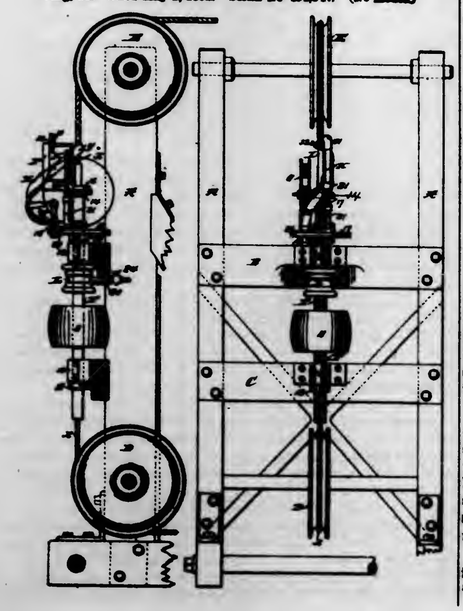


Claim.—1. The combination of the ogee-cutter formed in one piece and provided with the dovetailed groove *d* and a screw-threaded socket at the side of said groove, the knife *d'*, set into said groove, and the set-screw *f'*, inserted in the socket and confining the knife in the groove, as set forth.

2. The combination of the cutter-head formed with the arms C' C' and with the V-shaped grooves *a a* in opposite sides of the rear portion of the arms, the knives F F, formed with V-shaped edges and seated thereby in the aforesaid grooves, the cap *c*, provided with similar grooves *d' d'*, the bolt *d''*, fastening said cap to the knives and cutter-head, and the cutters D D, projecting from the front of the arms, substantially as described and shown.

3. The combination, with the cutter-head C, formed with the arm C', of the main cutter D, formed with the shank D' and secured thereat to the front of said arm, and the supplemental cutter I, attached to the side of the arm C' and having its cutting-edge inclined outward from the line of cutting of the aforesaid main cutter, substantially as described and shown.

486,270. WIRE-COVERING MACHINE. JOHN A. BARRETT, Brooklyn, N. Y., assignor to the Standard Underground Cable Company, Pittsburg, Pa. Filed May 2, 1892. Serial No. 431,547. (No model.)



Claim.—1. The combination, with a hollow rotating shaft, through which the conductor or other article to be wrapped is drawn, of a tape-reel carried by and rotating with said shaft, devices carried by said shaft for applying fluid to the tape, and connections whereby said devices may be fed from a stationary fluid-supply during the rotation of the shaft, substantially as described.

2. The combination, with a hollow rotating shaft, through which the conductor or other article to be wrapped is drawn, of a tape-reel carried by said shaft, a chamber in said shaft and connections for supplying fluid to said chamber, and a feed-pipe carried by the shaft, delivering the fluid from the chamber to the tape, substantially as described:

3. The combination, with a hollow rotating shaft, through which the conductor or other article to be wrapped is drawn, of a tape-reel carried by said shaft, a sponge-box carried by said shaft and provided with sponges engaging the tape, a chamber in said shaft and connections for supplying fluid thereto, and a feed-pipe connecting said chamber with said sponge-box, substantially as described.

4. The combination, with a hollow rotating shaft, through which the conductor or other article to be wrapped is drawn, of a tape-reel carried by said shaft, a plate over which the tape is led to the conductor, a sponge-box carried by said shaft and provided with sponges pressing against the tape on said plate, a chamber in said shaft and connections for supplying fluid thereto, and a feed-pipe connecting said chamber with said sponge-box, substantially as described.

5. The combination, with a hollow rotating shaft, of a tape-reel carried by said shaft, a chamber in said shaft and connections for supplying fluid to said chamber, a sponge-box provided with sponges engaging the tape, a swinging feed-pipe carrying said sponge-box and connecting with said chamber, and means whereby the movement of the sponge-box away from the tape closes the feed-pipe and cuts off the supply of fluid, substantially as described.

6. The combination, with hollow rotating shaft F, having chamber 26 outside the central chamber in the shaft, of pipe 23, stuffing-box L, loose on said shaft and connecting pipe 23 with said chamber 26, and feed-pipe 21, carried by said shaft and connecting with said chamber, substantially as described.

7. The combination, with the hollow rotating shaft F, having chamber 26 outside the central chamber in said shaft, pipe 23, and stuffing-box L, loose on said shaft and connecting pipe 23 with said chamber 26, of stud 28, having port 27 connecting with said chamber 26, and feed-pipe 21, mounted to swing on said stud and connecting with said port 27 in one position, substantially as described.

8. The combination, with rotating shaft F, of sponge-box K, carried by said shaft and having a series of compartments, and a feed-pipe and connections for supplying fluid to said sponge-box, said feeding-pipe connecting with the inner row of compartments only, substantially as described.

9. The combination, with hollow rotating shaft F, tape-reel G, carried by said shaft, and plate I, over which the tape is led, of a sponge-box K, provided with sponges pressing against said plate and having a swinging support on said shaft F, connections for supplying fluid to said sponge-box, and spring-arm 31, holding said sponge-box against said plate I with a yielding pressure, substantially as described.

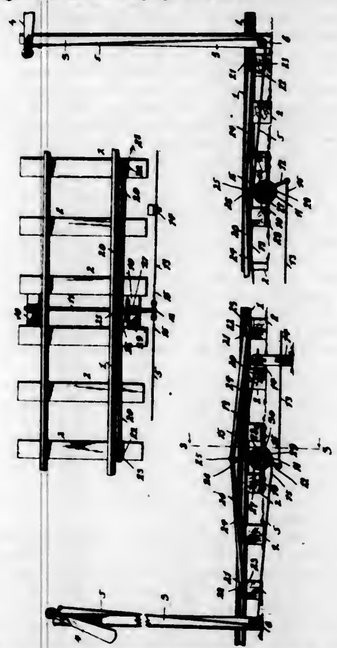
10. The combination, with hollow rotating shaft F, tape-reel G, carried by said shaft, and plate I, over which the tape is led, of sponge-box K, provided with sponges pressing against said plate and having a swinging support on said shaft F, connections for supplying fluid to said sponge-box, spring-arm 31, connected to said sponge-box, and screw 32, carried by the spring-arm and pressing against the outer side of plate I, whereby the sponge is pressed against the plate with a yielding adjustable pressure, substantially as described.

486,271. RAILWAY-SIGNAL. GILBERT A. BARTHOLOMEW, Maumee, Ohio. Filed May 7, 1892. Serial No. 432,150. (No model.)

Claim.—1. In a railway-signal, the combination, with a toggle-lever supported alongside a rail, springs for holding said lever normally raised, and a link depending from the lever and having a stud at its lower end, of a disk having a slot which said stud engages, a shaft to which the disk is eccentrically secured, a double lever secured to said shaft, wires leading from the arms of said lever to signals, and springs in the wires, as and for the purpose set forth.

2. In a railway-signal, the combination, with a toggle-lever whose ends are slotted, pins passing through the slots, whereby the lever is supported alongside a rail, springs for holding said lever normally raised, and a link pivoted to and depending from the center of the lever and having a stud at its lower end, of a disk having a slot which said stud engages, a shaft to which the disk is eccentrically secured, a lever secured to said shaft, and wires leading from said lever to signals, as and for the purpose set forth.

3. In a railway-signal, the combination, with a toggle-lever supported alongside a rail, springs for holding said lever normally raised, and a link pivoted to and depending from the lever and having a stud at its lower end, of a disk having a concentric slot which said stud engages, the ends of the slot being deflected toward the center of the disk, a shaft to which the disk is eccentrically secured, a double lever secured to said shaft, and wires leading from the arms of said lever to signals, as and for the purpose set forth.



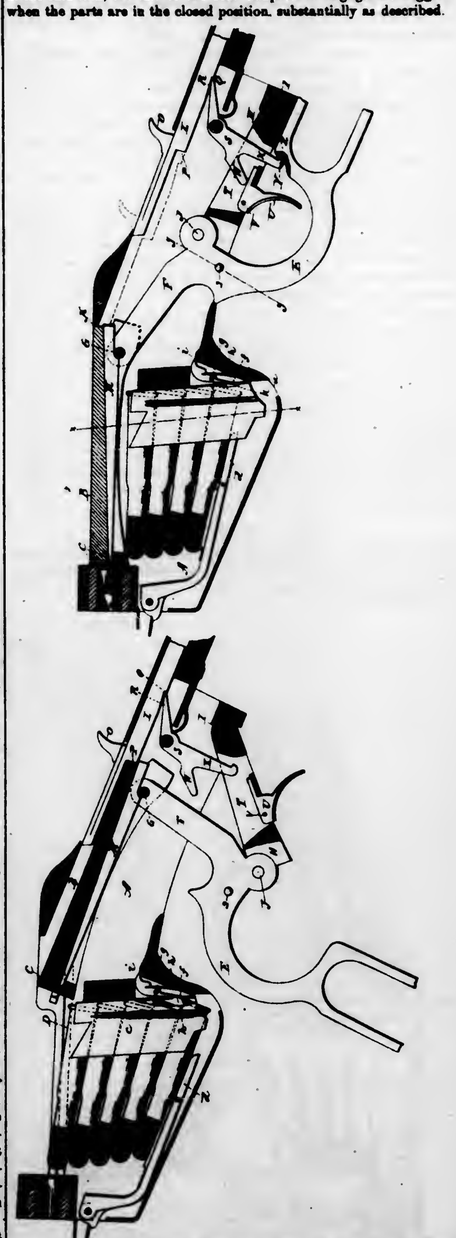
4. In a railway-signal, the combination, with a toggle-lever supported alongside a rail and a link depending from the lever and having a stud at its lower end, of a disk having a concentric slot which said stud engages, the ends of the slot being deflected toward the center of the disk, a shaft to which the disk is eccentrically secured, a signal, and connections, substantially as described, between the shaft and the signal, as and for the purpose set forth.

5. In a railway-signal, the combination, with a toggle-lever supported alongside a rail and a link depending from the lever and having a stud at it lower end, of a disk having a concentric slot which said stud engages, said disk being eccentrically pivoted, a signal, and connections, substantially as described, between the disk and signal, as and for the purpose set forth.

486,272. BREECH-LOADING FIREARM. JOHN M. BROWNING and MATTHEW S. BROWNING, Ogden, Utah; assignors to the Winchester Repeating Arms Company, New Haven, Conn. Filed June 6, 1892. Serial No. 435,704. (No model.)

Claim.—1. In a firearm in which the barrel opens into the receiver at the rear, the combination therewith of a longitudinally-reciprocating breech-piece arranged in the receiver, the breech-piece provided with trunnions near its forward end and upon opposite sides, the receiver constructed with longitudinal grooves in which said trunnions may run, the breech-piece at the rear end free to swing up and down, a lever extending through the bottom of the receiver and rearward, an arm of the lever extending forward and hung to the breech-piece near its rear end, a link hung in the receiver at the rear of the breech-piece and so as to swing in a plane parallel with the plane of the lever, the link extending forward and hung to the receiver between the pivot which connects the lever to the breech-piece and the pivot by which the link is hung to the receiver, and the receiver constructed with a shoulder at the rear of the breech-piece and against which the breech-piece will abut when in the closed position, substantially as described, and whereby in the first part of the opening movement of the said lever the rear end of the breech-piece will be drawn down and away from its abutment on the receiver.

2. In a firearm in which the barrel opens into the receiver at the rear, the combination therewith of a longitudinally-reciprocating breech-piece, a lever extending through the bottom of the receiver, an arm at its forward end hung to the rear end of the breech-piece, a link hung upon a pivot in the receiver and extending forward, hung to the said lever between the pivot which connects the lever with the breech-piece and the pivot by which the link is hung to the receiver, a hammer arranged in the receiver in rear of the breech-piece and adapted to slide longitudinally, the breech-piece being adapted in its rear movement to force the hammer to its cocked position, a sear hung to the receiver below the hammer, its nose adapted to engage the cock-notch of the hammer, and a trigger hung in a mortise in the said link, the tail of the sear adapted to engage the trigger when the parts are in the closed position, substantially as described.

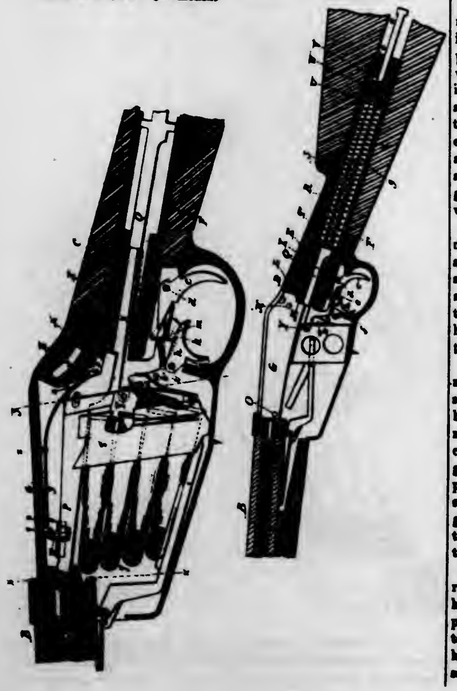


3. In a firearm in which the barrel opens into the receiver at the rear, the combination therewith of a longitudinally-reciprocating breech-piece, a swinging lever adapted to impart reciprocating move-

ment to said breech-piece, a reciprocating hammer in rear of the breech-piece, a sear hung in the receiver below the hammer, its nose adapted to engage the full-cock notch of the hammer, a trigger hung below the sear, the tail of the sear adapted to engage the trigger, so that a pull of the trigger will release the hammer, the hammer constructed with a notch in rear of the full-cock notch, but deeper than the full-cock notch, and the sear constructed with a downwardly-projecting dog adapted to make hooked engagement with the lever, the depth of the full-cock notch being such as to prevent such engagement of the dog and lever, while the deeper notch will permit the nose of the sear to rise to such an extent as to cause the engagement of the dog with the lever, substantially as described.

4. In a firearm in which the barrel opens into the receiver at the rear, a longitudinal breech-piece arranged in the receiver in rear of the barrel, the breech-piece constructed with trunnions upon opposite sides at its forward end, the receiver constructed with longitudinal grooves in which the said trunnions are adapted to run, while the breech-piece at the rear is adapted for up-and-down movement, the receiver constructed with a shoulder at the rear against which the rear end of the breech-piece may abut when in the closed position, a lever through the bottom of the receiver, having an arm extending forward and hung to the breech-piece near its rear end, a link hung at the rear upon a pivot in the receiver, the link extending forward, hung to the said lever between the connection of the lever with the breech-piece and the pivot on which the link is hung, the said link constructed with a vertical mortise, a trigger hung upon a pivot in said mortise, a longitudinally-reciprocating hammer above said link, a sear hung upon a pivot between said link and hammer, its nose adapted to engage the full-cock notch in the hammer and the tail of the sear adapted to engage the trigger, so that a pull upon the trigger will turn the sear from the full-cock notch, the sear constructed with a downwardly-projecting dog through the mortise in the link, the lever and dog constructed with corresponding notches to adapt them to engage with each other, and the hammer constructed with a notch in rear of and deeper than the full-cock notch, the depth of the full-cock notch being such as to prevent the dog from turning into engagement with the lever, but the increased depth of the notch at the rear being such as to permit such engagement between the notch and lever, substantially as described.

486,278. BREECH-LOADING FIREARM. JOHN M. BROWNING and MATTHEW S. BROWNING, Ogden, Utah, assignors to the Winchester Repeating Arms Company, New Haven, Conn. Filed June 27, 1892. Serial No. 438,105. (No model.)



Claim.—1. In a firearm in which the receiver carrying the barrel is movable longitudinally toward and from the rear or stock portion of the arm to open and close the breach, the combination therewith of a spring between the two parts, the said spring being adapted to form a cushion at the termination of the opening movement of the two parts, substantially as described.

2. In a firearm in which the receiver is constructed with a tubular spindle extending from its rear end and the stock constructed with a guide within it to receive said spindle and within which the said spindle may slide in the opening and closing movement, the combination therewith of a hammer arranged within said spindle, the tail of the hammer extending through the rear end of the guide in which the spindle moves, the tail of the hammer constructed with a head upon its rear end adapted at a predetermined time to strike the rear end of the said guide and form a stop for the hammer, a collar loose on the tail of the hammer within the spindle, the hammer constructed with a shoulder forward of said collar, a mainspring around the spindle of the hammer and between the said collar and shoulder on the hammer, the tail of the hammer also constructed with a second shoulder between the said collar and spring-bearing shoulder, a second spring arranged around the tail of the hammer and in rear of said collar, the forward end of the spring resting against the said collar and the rear of the spring against a shoulder or bearing stationary in the spindle, the said second spring being of greater strength than that of the mainspring, and a sear hung in the receiver and adapted to engage the said hammer at the cocked position, substantially as described.

3. In a firearm, the combination of a longitudinally-reciprocating breech-piece, a slide arranged to move longitudinally in the breech-piece and extending forward terminates in a hook adapted to engage with the cartridge-head, a spring-finger hung within the breech-piece, a projection from the said slide, extending through a slot in the breech-piece and adapted to engage with said finger, the engaging surfaces of the said finger and projection inclined so as to produce a cam action, and a stop on the slide to limit its longitudinal movement, substantially as described.

4. In a firearm, the combination of a longitudinally-reciprocating breech-piece, a longitudinal firing-pin arranged within said breech-piece, and a spring-finger hung within the breech-piece and adapted to swing in a plane with the path of movement of the firing-pin, the firing-pin constructed with a stud projecting into the path of movement of said finger and which stud is adapted to engage said finger before the firing-pin reaches its extreme forward movement, substantially as and for the purpose described.

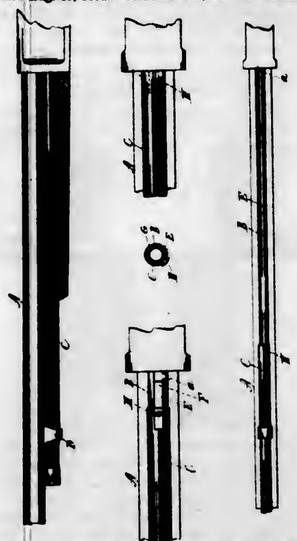
5. In a firearm in which the receiver, with the barrel it carries, is movable toward and from the stock to produce the opening and closing movement of the breech, the combination therewith of a breech-piece arranged longitudinally in the receiver, an arm projecting forward from the stock and constructed with an upward and forwardly inclined slot, the breech-piece constructed to embrace the said arm and provided with a pin extending through said slot in the said arm, the breech-piece longitudinally guided in the receiver at its forward end, a spring in the breech-piece, adapted to work beneath the said arm, the arm, and the said spring, the one constructed with a notch and the other with a corresponding shoulder, whereby a latching engagement will be made between the breech-piece and the said arm when the parts are in the closed position, substantially as described.

6. In a firearm, the combination of a longitudinally-movable hammer, a sear hung forward of said hammer and extending rearward, adapted to engage said hammer in the cocked position, the sear constructed with a shoulder *m* in rear of the pivot on which it is hung, and a dog A, hung in the trigger-guard and so as to swing vertically, the nose of the dog adapted to engage said sear only when the sear has engaged the hammer in the cocked position, substantially as and for the purpose described.

7. In a firearm in which the receiver and the barrel it carries are movable longitudinally forward and backward toward and from the stock portion of the arm to open and close the breech-piece, the combination therewith of a longitudinally-movable hammer arranged to move backward and forward with the receiver, a sear hung in the receiver forward of the hammer and extending rearward, adapted to engage the hammer in the cocked position, a dog A, hung in the stock portion of the arm and so as to swing in a vertical plane, the sear constructed with a shoulder *m*, and the nose of the dog adapted to engage said shoulder of the sear when the parts are in the closed position and the hammer held by the sear in the cocked position, substantially as and for the purpose described.

8. In a firearm, the combination of a receiver, a longitudinally-reciprocating breech-piece, a chamber in the receiver beneath the hammer and open at the top when the breech-piece is in the open position, the said chamber also having an opening through the bottom, and the said chamber adapted to receive a removable cartridge holder or magazine when the breech-piece is in the open position, the said opening in the bottom of the receiver adapted for the escape of the said holder, a sear hung in the receiver and extending rearward from the said chamber, adapted to engage the hammer at full-cock with a V-shaped spring attached by one arm to the receiver and extending downward, the other arm of the spring bearing upon the sear with a tendency to force it into its engaging position, and the downwardly-projecting portion of the spring provided with a nose adapted to engage the said holder or magazine and so as to prevent the forward movement of said holder or magazine, substantially as described.

486,274. MAGAZINE-GUN. JOHN M. BROWNING, Ogden, Utah, assignor to the Winchester Repeating Arms Company, New Haven, Conn. Filed Aug. 15, 1892. Serial No. 443,061. (No model.)

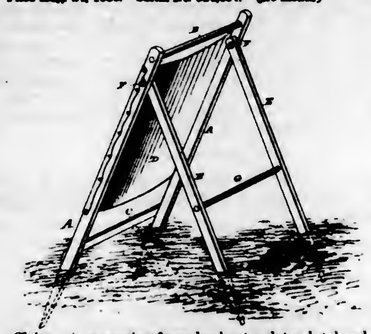


Claim.—1. In a magazine-firearm, the combination of a magazine-tube beneath the barrel, secured at its rear end in a stationary position, combined with a second tube inclosing said magazine-tube and adapted to move longitudinally thereon, the magazine-tube constructed with a longitudinal slot and an opening near its forward end, through which cartridges may be introduced to the said magazine-tube, a follower and a spring within said magazine-tube, the said outer tube adapted to engage said follower through the said longitudinal slot, and whereby the forward longitudinal movement of the said outer tube will impart corresponding longitudinal movement to the said follower, and the said outer tube adapted to engage with the inner tube in its rear position through a rotative movement of said outer tube, substantially as and for the purpose described.

2. In a magazine-firearm, the combination of a magazine-tube beneath the barrel, secured at its rear end in a stationary position, combined with a second tube inclosing said magazine-tube and adapted to move longitudinally thereon, the magazine-tube constructed with a longitudinal slot and an opening near its forward end, through which cartridges may be introduced into the said magazine-tube, a follower and a spring within said magazine-tube, the said outer tube adapted to engage said follower through the said longitudinal slot, and whereby the forward longitudinal movement of the said outer tube will impart corresponding longitudinal movement to the said follower, and the said outer tube adapted to engage with the inner tube in its forward or open position by a rotative movement of said outer tube, substantially as and for the purpose described.

3. In a magazine-firearm, the combination of a magazine-tube beneath the barrel, secured at its rear end in a stationary position, combined with a second tube inclosing said magazine-tube and adapted to move longitudinally thereon, the magazine-tube constructed with a longitudinal slot and an opening near its forward end, through which cartridges may be introduced into the said magazine-tube, a follower and a spring within said magazine-tube, the said outer tube adapted to engage said follower through the said longitudinal slot, and whereby the forward longitudinal movement of the said outer tube will impart corresponding longitudinal movement to the said follower, and the said outer tube adapted to engage with the inner tube in both its rear or closed and in its forward or open position by a rotative movement of said outer tube, substantially as and for the purpose described.

486,275. BACK-REST. JAMES H. BUTLER, Asbury Park, N. J. Filed Aug. 24, 1892. Serial No. 443,857. (No model.)



Claim.—A supporting-frame having two lateral stakes sharpened at their lower ends and provided with a back and shoulder supporting fabric stretched across its front, with a brace-frame of two sharpened stakes hinged at their top ends to the upper part of the main frame, united substantially as shown, and adapted to fold together in the manner described, and for the purposes set forth.

486,276. CARPET-BEATER. CHARLES S. CRAFTER, ALVAN S. HOUTMAN, and FRANK A. GREEN, Birmingham, Conn. Filed June 13, 1892. Serial No. 436,603. (No model.)

Claim.—1. In a carpet-beater, the combination of a case, a driving-shaft C, arranged in said case and carrying wheels upon which the case may run, one or both of the said wheels made fast to said shaft, a rock-shaft E, hung in the case forward of and parallel with the driving-shaft, an arm G, extending rearwardly from said rock-shaft, the rock-shaft provided with forwardly-projecting beaters F, the driving-shaft provided with radially-projecting arms adapted to engage said arm G of the rock-shaft, and a lever L, hung above the rock-shaft upon an axis parallel therewith, one arm of the lever extending rearward over the driving-shaft and adapted to engage with a corresponding arm on the driving-shaft when an arm of the driving-shaft engages the arm of the rock-shaft, the said lever projecting forward and provided with a spring adapted to bear upon the beaters, substantially as and for the purpose described.

2. In a carpet-beater, the combination of a case, the shaft C, arranged therein carrying wheels one or both of which are made fast to said shaft, a rock-shaft E, hung in the case forward of the driving-shaft and carrying beaters F, an arm G, hinged to the rock-shaft and extending rearward toward the driving-shaft, the hinge permitting the said arm to swing upward, but held against a downward swing, the driving-shaft provided with one or more radially-projecting arms adapted to engage said hinged arm of the beater-shaft, a stationary fulcrum O in the case above the said hinged arm G, a lever L, hung in the case above the beater-shaft, one arm extending rearward and adapted to engage with corresponding radially-projecting arms on the driving-shaft, the lever extending forward and provided with a spring adapted to bear upon the beaters, and a spring-dog P, hung upon the rear arm of the said lever and with which the said hinged arm of the rock-shaft is adapted to engage, substantially as and for the purpose described.

486,277. RESERVE. JOHN W. CHESSMORE, Hovinville, Iowa. Filed Nov. 9, 1891. Serial No. 411,343. (No model.)

Claim.—In a beehive, the combination, with a storage-compartment consisting of a rectangular casing having inwardly-extending side flanges and end flanges extending inwardly from the casing, of a series of trays of a length less than the length of the interior of the casing and greater than the distance between the end flanges, rests on the trays, a series of right-angle openings in the upper edges of the trays, hooked bails for fitting in said openings, and a stop having a lateral projection on its lower end of a width equal to the width of the space between the trays and casing and of a length equal to the width of a tray, substantially as described.

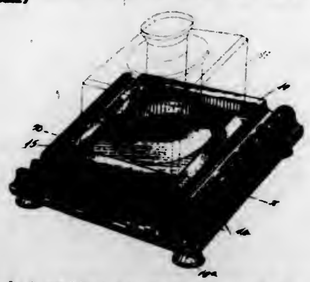
486,278. COMBINED INKSTAND-SUPPORT AND PEN-RACK. EMRY DAVIS, New York, N. Y. Filed May 4, 1892. Serial No. 431,830. (No model.)

Claim.—1. A combined inkstand-support and pen-rack consisting of a fabric body having a countersunk recess therein and longitudinally-aligning penholder-rests in front of said recess, substantially as shown and described.

2. A combined inkstand-support and pen-rack consisting of a fabric body having an eccentrically-located countersunk opening therein, a strip or disk of fabric closing the under side of said opening, and vertical penholder-rests in front of said opening at each side of the transverse center of the fabric body, substantially as shown and described.

3. A combined inkstand-support and pen-rack consisting of a fabric body having scalloped edges, a countersunk opening eccentrically located in said body, a strip or disk of fabric closing the under side of said opening, and Y-shaped penholder-rests in front of said opening at each side of the transverse center of the fabric body, substantially as shown and described.

486,279. COMBINED INKSTAND-SUPPORT AND PEN-RACK. EMRY DAVIS, New York, N. Y. Filed May 4, 1892. Serial No. 431,831. (No model.)



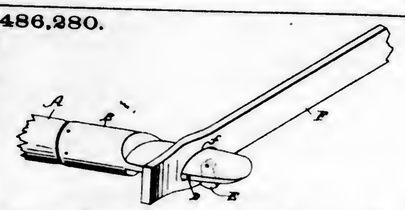
Claim.—1. A combined pen and pencil rack and inkstand-support consisting of a body or base having one or more recesses in its upper face and a chamber in the base of said recesses, substantially as shown and described.

2. A combined pen and pencil rack and inkstand-support consisting of a base or body having one or more recesses in its upper face and a chamber in the base of said recesses and of less diameter than the recesses, substantially as shown.

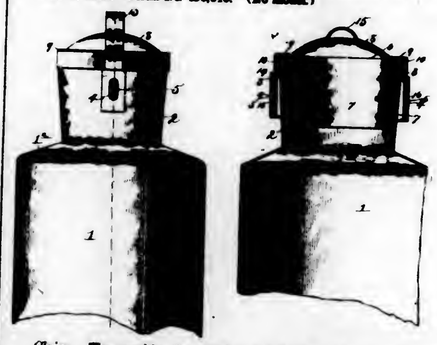
3. A combined pen and pencil rack and inkstand-support consisting of a body or base having one or more rectangular recesses therein in its upper face and a circular chamber in the base of said recesses of less diameter than the recesses, substantially as shown and described.

486,280. WHIFFLETREE-HOOK. CHARLES C. DEBERRY, Nashville, Tenn. Filed Jan. 26, 1892. Serial No. 419,572. (No model.)

Claim.—The whiffletree specified and shown, having its end sections or tips smooth and even and provided in its under face near each end of tree or tip with a deep longitudinal recess having a hook seated longitudinally and completely therein, said hook pivoted by its head near the outer wall and the roof of the recess and normally falling into and maintaining a vertically-pendent position, with a bearing against the outer wall of the recess, all in the manner and for the purposes hereinbefore fully described.

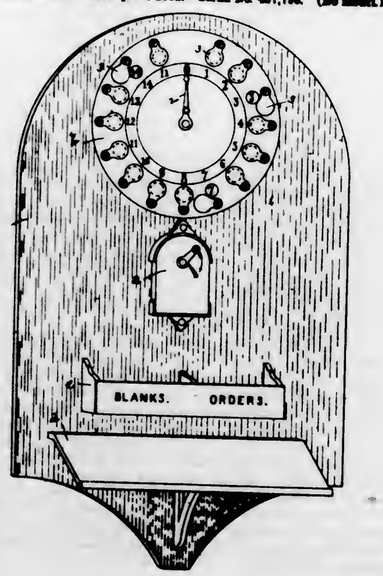


486,281. MILK-CAN. GEORGE W. EVANS, Baltimore, Md. Filed July 2, 1892. Serial No. 438,815. (No model.)



Claim.—The combination, with a can having a downwardly-depending spring-arm secured thereto near the upper end and having an outwardly-extending flange and the housing having an open upper end and an opening in its wall for the passage of a key, of the cover having a downwardly-extending spring-arm having an opening registering with the opening in said arm and its lower end provided with inwardly and outwardly extending lugs, substantially as described.

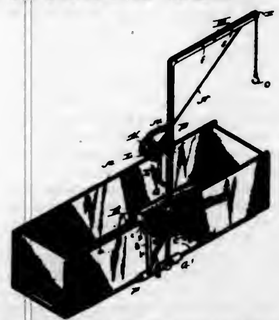
486,282. MESSENGER-CALL SYSTEM FOR BUILDINGS. FRANK H. FULLER, Springfield, and CHARLES B. PERKINS, Holyoke, Mass.; said Fuller assignor, by mesne assignments, to Elroy F. Cross, West Springfield, Mass. Filed Apr. 5, 1892. Serial No. 427,798. (No model.)



Claim.—1. In a messenger-call system for buildings, the combination, with a call-box centrally located with respect to the rooms of a building or those upon a single floor thereof and electrically connected with a central station, of an indicator located adjacent to said call-box and adapted to be set to designate either of said rooms, substantially as and for the purpose described.

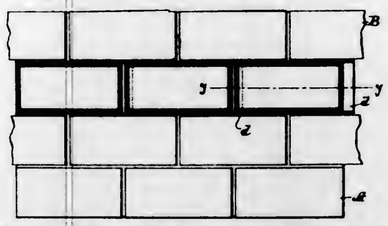
2. In a messenger-call system for buildings, the combination, with a single call-box centrally located with respect to a series of rooms or apartments of a building and electrically connected with a central station, of an indicator located adjacent to said call-box, said indicator comprising a dial having thereon a series of numbers corresponding to those of said rooms and a pointer adapted to be moved to designate either of the numbers of said series, and having a second series of numbers corresponding to those of the first series, and means, as the pivoted covers shown and described, whereby either of the numbers composing said second series can be exposed to view, substantially as and for the purpose set forth.

486,283. CRANE. JACOB H. GROSS, White Pigeon, Ill. Filed June 30, 1892. Serial No. 438,330. (No model.)



Claim.—The combination, with the cooling tank or receptacle for milk-cans, the longitudinal rod secured thereto, the sleeve sliding on said rod, and the block arranged to slide freely on the edge of said tank and connected by braces to said sleeve, of the crane-arm having loose bearings in said sleeve and block, the shaft or spool, its ratchet and pawl carried by said arm, the adjustable pulley also carried thereby, and the rope or cable having a hook attached thereto, substantially as specified.

486,284. BUILDING-CELL. LOUIS H. GIRAUD, Boston, Mass. Filed Feb 4, 1892. Serial No. 420,291. (No model.)



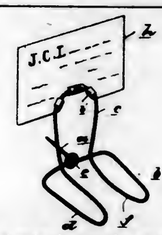
Claim.—1. As an improved article of manufacture, a closed hollow box or air-tight cell, combined with an attached jacket or sheet having a binder-lip *d* extended from one to the other side of one end of the box, substantially as described.

2. A closed box or air-tight cell, combined with a sheet or jacket attached to the bottom thereof and having its opposite sides projected above the top of the box to form binder-lips *d'*, substantially as described.

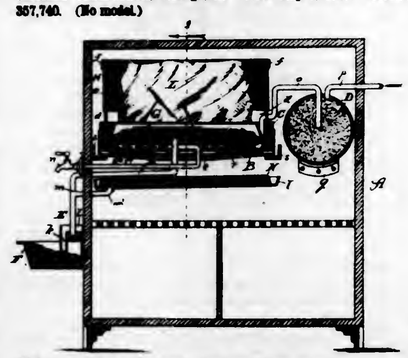
3. A box or air-tight cell having a coating or covering, substantially as described, to make it water-repellent, combined with a water-repellent sheet or jacket applied to the bottom thereof and adapted to extend at each side above the top of and beyond, also, the end of the box or air-cell and leave lips to co-operate with the abutting end of other boxes or air-cells having like sheets or jackets and form a binder across the joints, substantially as described.

486,285. HOLDER FOR TOOLS. JAMES B. GIBSON, Alpena, Mich. Filed Feb. 29, 1892. Serial No. 423,162. (No model.)

Claim.—In a tool-holder, the combination, with the holdre consisting of two parallel spring-loops and securing portion and a vertically-disposed U-shaped yoke uniting the inner arms of the loops, of a plate having loops formed at its lower edge, through which the yoke passes, substantially as described.



486,286. COMBINED REFRIGERATOR AND WATER-COOLER. MICHAEL GREENBAUM, Chicago, Ill. Filed July 5, 1890. Serial No. 357,740. (No model.)



Claim.—1. In combination with the refrigerator-chest A, the pan C, supported within the chest, reservoir D, supported within the chest and provided with a pipe *p* to connect it with a water-supply, coil *o'* in the pan C, continued at one end into a pipe *o*, passing into the interior of the reservoir D near the center thereof and continued at the other end into a pipe o^3, leading to the faucet *n*, an ice-support above the pan C, and an overflow-pipe extending from a point above the coil *o'* through the pan C and out of the refrigerator, substantially as described.

2. In combination with the refrigerator-chest A, pan C, supported therein, coil *o'* within the pan C, communicating at one end with the water-supply and at the other with the faucet *n*, ice-support above the pan C, overflow-pipe leading from a point above the coil *o'* through the pan C and out of the refrigerator, and flaring pan B, having the opening *t* and within which the pan C is supported, the drip-receiving pan I, supported below the pan B and provided with a discharge-pipe *m'*, leading out of the refrigerator, and condensing-pan K, inverted upon the pan I, substantially as described.

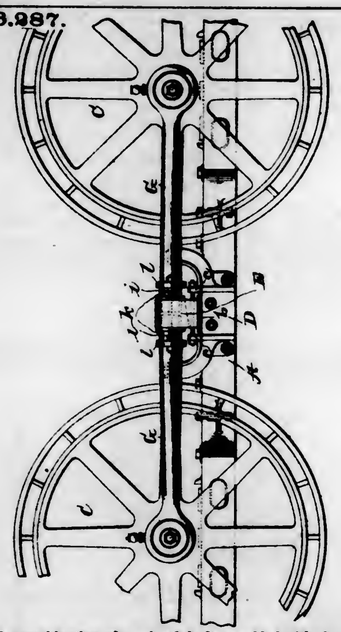
3. In combination with the refrigerator-chest A, pan C, supported therein, coil *o'* within the pan C, communicating at one end with the water-supply and at the other with the faucet *n*, overflow-pipe leading from a point above the coil *o'* through the pan C and out of the refrigerator, flaring pan B, having the opening *t* and within which the pan C is supported, ice-support G, and the inclosure for the ice, comprising plates H, supported above the edge of the pan C and having spaces *d* below them, substantially as described.

486,287. POWER-TRANSMITTING MECHANISM. BENJAMIN W. GUMP, Philadelphia, Pa., assignor to the Pennsylvania Iron Works Company, same place. Filed Aug. 11, 1892. Serial No. 442,773. (No model.)

Claim.—1. The combination of a pair of shafts provided with sheaves or drums, a strut made in two parts and having smooth cylindrical adjacent stub ends, a coupling-sleeve provided with a smooth cylindrical bore to receive said stub ends, means for connecting and adjusting said strut longitudinally, and means for adjusting the strut vertically.

2. The combination of a pair of shafts provided with sheaves or drums, a strut made in two parts and having smooth cylindrical adjacent stub ends, a coupling-sleeve provided with a smooth cylindrical bore to receive said stub ends, bolts for connecting two parts of the strut and adjusting them longitudinally, a bracket supporting the sleeve, and means for adjusting the strut vertically.

486,287.



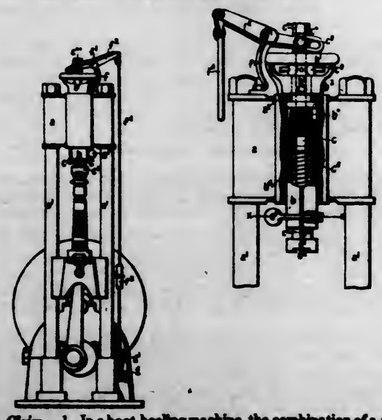
3. The combination of a pair of shafts provided with sheaves or drums, a strut connecting the ends of the shafts, a coupling-sleeve provided with longitudinal slots, and adjusting-bolts in said slots and engaging the strut.

4. The combination of a pair of shafts provided with sheaves or drums, a strut connecting the ends of the shafts, a coupling-sleeve, a bracket supporting said sleeve, a wedge for adjusting the strut vertically, and suitable means for adjusting the strut longitudinally.

5. The combination of a pair of shafts provided with sheaves or drums, a strut connecting the ends of the shaft, a coupling-sleeve provided with an inclined seat on its under side, a bracket, a wedge between the seat on the sleeve and the bracket, bolts for adjusting the wedge, and suitable means for adjusting the strut longitudinally.

6. The combination of a pair of shafts provided with sheaves or drums, a strut connecting the ends of the shaft, a sleeve connecting the contiguous ends of the strut and provided with arc-shaped longitudinal slots, and bolts passing through said slots and engaging flanges or collars on the strut, also provided with arc-shaped slots.

486,288. HEEL-NAILING MACHINE. HARRY B. INGRAHAM, Worcester, Mass., assignor to Charles Carroll Colby, London, England. Filed Apr. 25, 1892. Serial No. 430,562. (No model.)



Claim.—1. In a boot-heeling machine, the combination of a cross-head, a hollow bar *b*, adjustable in the said cross-head, and a spindle *c*, carrying the heel to be attached, said spindle being mounted axially within the bar *b* and capable of sliding up and down therein, substantially as described.

2. In a boot-heeling machine, the combination of a cross-head, a hollow bar *b*, adjustable in the said cross-head, a spindle *c*, carrying the heel to be attached, said spindle being mounted axially within the bar *b* and capable of sliding up and down therein, a spring-actuated pin for retaining the said spindle in its highest position with respect to the bar *b*, and a lever for disengaging the said pin when required, substantially as described.

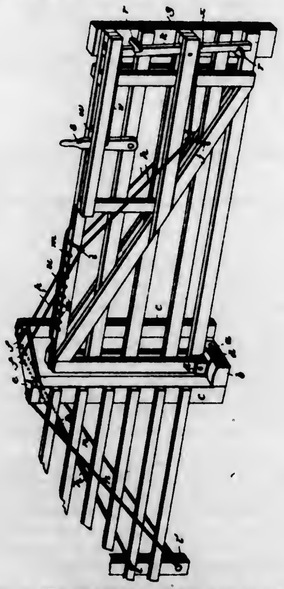
3. In a boot-heeling machine, the combination of a cross-head, a hollow bar *b*, adjustable in the said cross-head, a spindle *c*, carrying the heel to be attached, said spindle being mounted axially within the bar *b* and capable of sliding up and down therein, a spring for forcing the spindle *c* downward, and means for raising the said spindle manually, substantially as described.

4. In a boot-heeling machine, the combination of a cross-head, a hollow bar *b*, adjustable in the said cross-head, a spindle *c*, carrying the heel to be attached, said spindle being mounted axially within the bar *b* and capable of sliding up and down therein, a spring for forcing the spindle *c* downward, and a nut c^2 for adjusting the travel of the spindle *c*, substantially as described.

5. In a boot-heeling machine, the combination of a cross-head, a hollow bar *b*, adjustable in the said cross-head, a spindle *c*, carrying the heel to be attached, said spindle being mounted axially within the bar *b* and capable of sliding up and down therein, a collar c^3, mounted to slide on the spindle, but limited in its upward movement by a nut c^{3*}, a lever f^3, engaging with the said collar, and a foot-lever *g*, connected with the lever f^3 by an adjustable link f^4, substantially as described.

6. In a boot-heeling machine, the combination of a cross-head, a hollow bar *b*, adjustable in the said cross-head, a spindle *c*, carrying the heel to be attached, said spindle being mounted axially within the bar *b* and capable of sliding up and down therein, a spring c^4, a collar c^3, mounted to slide on the spindle and engage with a nut c^{3*}, screwed on the spindle, a lever f^3, engaging with the collar c^3, an adjustable link f^4, connecting the said lever f^3 with a foot-lever *g*, a spring *g'* for raising the said foot-lever, a spring-actuated pin *d*, carried by the bar *b* and adapted to engage with the spindle *c*, and a lever *d'* for withdrawing the said pin *d*, substantially as described.

486,289. FARM-GATE. WILSON B. MILLER, Round Rock, TEX. Filed Aug. 6, 1892. Serial No. 442,234. (No model.)



Claim.—1. The combination, with a gate pivoted on its lower inner end, of a suspending-wire passing freely through the latch-bar, through the free ends of yokes on each side of the gate, over a cap-post above the pivoted end of the gate, and anchored some distance from and independent of said post-cap, substantially as described, and for the purpose stated.

2. The combination, with a gate pivoted to swing on its lower inner end and posts having a cap crossing the gate above its pivoted end, of a suspending-wire for the gate, having a free bearing upon the post-cap, anchored in the line of the fence some distance from and independent of said post-cap, and supporting the gate in the way, substantially as described.

3. The combination, with a gate pivoted to swing on its lower inner end, posts having a cap crossing the gate above its pivoted end, and a latch-post having a catch near each end, the two catches standing in reverse relation to each other, of a gate latch-bar pivoted in the middle of its length and a suspending-wire for the gate, having a free bearing upon the post-cap, anchored in the line of the fence some distance from and independent of said post-cap and passed through the latch-bar, substantially as described.

4. The combination, with a gate pivoted to swing on its lower inner end, posts having a cap crossing the gate above its pivoted end, and a latch-post having a catch near each end, the two catches standing in reverse relation to each other, of a gate latch-bar pivoted in the middle of its length, a suspending-wire for the gate, anchored in the line of the fence some distance away from the pivoted end of the gate, having a free bearing upon said post-cap and passed through the latch-bar, and yokes, one hanging down and one standing up, in the upper and lower bars of the gate to engage the wire at both sides of the gate, substantially as described.

5. The combination, with a gate pivoted to swing on its lower inner end, a latch-post having a catch near each end, the two catches standing in reverse relation to each other, and a gate latch-bar pivoted in the middle of its length, of a suspending-wire for the gate, anchored in the line of the fence some distance away from the pivoted end of the gate, supported upon posts over said pivoted end, passed through the latch-bar, yokes, one hanging down and one standing up in the upper and lower gate-bars, engaging the wires at both sides of the gate, a lever pivoted in the upper bars of the gate, having a wire connection with the upper end of the latch-bar, and a stop for limiting the pressure of the latch-bar upon the post-catches, substantially as described.

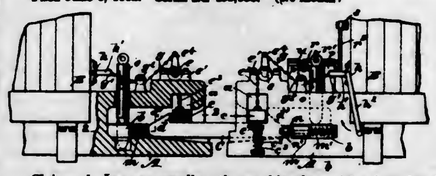
6. The combination of the gate and the suspending-wire supported on the post-cap and anchored independent of said cap with supplemental wires connected to said cap and anchored, as described.

486,290. PIPE-ROD COUPLING. PHILIP MUELLER, Decatur, Ill. Filed May 30, 1892. Serial No. 433,672. (No model.)

Claim.—1. A pipe-rod coupling comprising a coupling-sleeve internally threaded at both ends and having centrally an annular internal enlargement and recesses on both sides of said enlargement, two lengths of pipe having their cylindrical peripheries screw-threaded adjacent to their ends and said ends expanded within the recesses of the coupling-sleeve, and a smooth-surfaced plug diametrically larger than the internal diameter of the pipe and having rounded or conoidal ends, substantially as set forth.

2. A pipe-rod coupling comprising a coupling-sleeve internally threaded at both ends and having a central annular partition with annular recesses on both sides of said partition, pipes externally screw-threaded and having their ends abutting against said partition, and a smooth-surfaced plug diametrically larger than the internal diameter of the pipes and having rounded conoidal ends, substantially as described.

486,291. CAR-COUPLING. DAVID A. MCCOLLUM, Bucyrus, Mo. Filed June 6, 1892. Serial No. 436,295. (No model.)



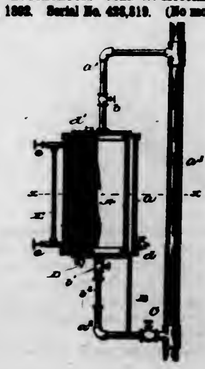
Claim.—1. In a car-coupling, the combination, with a draw-head forwardly recessed and transversely slotted at two points, of a spring actuated latch-bar in the forward recess, a spring-pressed presser-bar in the rear transverse slot, means for lifting the latch-bar, and a device for locking the presser-bar, substantially as described.

2. In a car-coupling, the combination, with a recessed draw-head flared in front and having a transverse vertically-elongated slot in its forward end and a horizontally-elongated transverse slot rearward of the front slot, of a latch-bar in the forward slot, springs adapted to draw said bar downwardly, means for elevating the latch-bar from either side of a car and from its roof, and a spring-pressed presser-bar in the horizontal rear slot of the draw-head, substantially as described.

3. In a car-coupling, the combination, with a draw-head forwardly recessed, flared at the front end, and transversely slotted at two points near the front end, the forward slot being vertically elongated and the rear slot horizontally elongated, a latch-bar in the forward slot, a presser-bar in the rear slot, springs adapted to depress the latch-bar, and springs adapted to forwardly actuate the presser-bar, of a vertical locking-pin adapted for elevated adjustment by a spring, means for lowering the pin from the sides of a car, and a device for elevating the latch-bar from the sides or roof of a car, substantially as described.

4. In a car-coupling, the combination, with a draw-head forwardly recessed, flared at the front end, and transversely slotted at two points in sequence, a vertically-movable latch-bar in one slot and projected through the same, guide-rods on the ends of said bar, spiral springs on said rods, a presser-bar projecting through the other slot, guide-rods on said bar, springs on said rods that press the bar forwardly, a trip-shaft rotatable on the draw-head, a vertical locking-pin for the presser-bar, adapted to reciprocate in the draw-head and loosely connected with the trip-shaft, a torsion-spring on said shaft that normally elevates the locking-pin, a device adapted to depress the pin when manipulated at either side of the car, and mechanism connected with the latch-bar wherewith this bar may be elevated by manipulation from the sides or roof of a car, of a draw-bar provided with a latching-shoulder at each end, substantially as described.

486,292. LUBRICATOR. JOHN W. MCCONKLE, Lexington, Wash. Filed Apr. 12, 1892. Serial No. 428,819. (No model.)



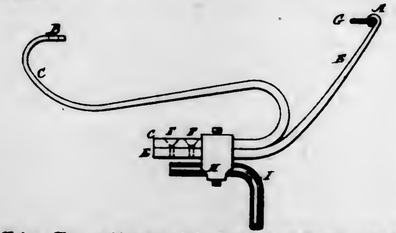
Claim.—The herein-described improved lubricator, comprising the oil-chamber having steam branch pipes opening into its upper and lower ends and provided with an upper supply-opening and lower outlet-cock, a steam jacket or chamber inclosing said oil-chamber and having a lower discharge-cock, the pipe opening into said steam-jacket leading from said lower branch pipe, the valves in said branch pipe, and the sight-tube connected at its ends with said oil-chamber, substantially as set forth.

486,293. SCREW-NOZZLE FOR CANS. LAWRENCE A. HORTON, Chicago, Ill. Filed Sept. 17, 1891. Serial No. 405,965. (No model.)

Claim.—1. The combination, with a sheet-metal can A, having a head A', furnished with a cap-groove *a*, of a sheet-metal nozzle B, provided with screw-threads stamped or pressed thereon and having its lower edge or rim *b'* rolled or turned up outwardly to form an annular channel *b*, said turned-up rim or edge fitting in the cap-groove *a* and being soldered to the head A', and an imperforate sheet-metal screw-cap C, fitting over the nozzle and having its lower edge or rim projecting into said annular channel *b*, said annular channel being filled with a sealing material or wax, whereby said can may be hermetically sealed, substantially as specified.

2. The combination, with a sheet-metal screw-nozzle B, provided with corrugated screw-threads and having an upturned rim *b'* at its base, forming an annular channel or receptacle for the sealing material, of an imperforate sheet-metal screw-cap fitting over said nozzle and having a rolled edge or rim *c*, projecting into said annular receptacle or channel for the purpose of hermetically sealing the nozzle, substantially as specified.

486,294. SADDLE-SPRING FOR VELOCIPEDES. GEORGE A. PERKINS, Cambridge, Mass. Filed Jan. 13, 1892. Serial No. 417,992. (No model.)



Claim.—The combination of the S-shaped spring C C with the curved spring E E, secured at F F, substantially as shown in the drawings, and described herein.

486,295. FISH SCALER AND DRESSER. REUBEN F. PFLUEGER, Akron, Ohio. Filed Jan. 30, 1892. Serial No. 419,736. (No model.)

Claim.—1. A fish scaler and dresser comprising a metallic plate having its side edges concaved or bowed inwardly toward each other, one of said edges having a series of saw-teeth for removing the scales and the other edge beveled to form a stripper or scale-wiper, a knife or cutter integral with one end portion of said plate, and a concaved toothed portion at the other end, and a handle attached centrally to said plate, substantially as specified.

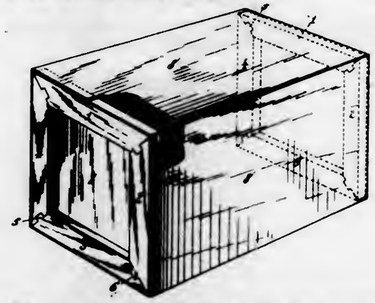
2. The herein-described fish scaler and dresser, comprising an oblong quadrangular plate having its longer edges curved inwardly and its shorter edges one curved inwardly and the other straight, one of said longer curved edges having teeth formed thereon and the opposite edge beveled to form a scale-wiper, the shorter curved edge also having teeth and the straight edge a cutter, substantially as specified.

486,296. TOBACCO-PIPE. ISAIAH FORSTNER, New York, N. Y. Filed Mar. 9, 1892. Serial No. 424,207. (No model.)

Claim.—1. In a tobacco-smoking pipe of the class described, a corncob bowl having an opening in one side and a plug formed of a suitable hard material and attached in the said bowl to form a bottom for the same, the said plug being formed with a threaded aperture opening into the bowl and registering with the opening in the side of the bowl, in combination with a stem made of corncob and fitting into the side opening of the said bowl and a core held in the said stem and projecting at the inner end of the same, the projecting end being threaded to engage the threaded aperture in the plug, substantially as shown and described.

2. A tobacco-smoking pipe comprising a corncob bowl formed in one side with an opening, a plug formed of a suitable hard material and attached in the said bowl to form a bottom for the same, a stem made of corncob and fitting into the side opening of the said bowl to abut with its inner end against the said plug, a core held in the said stem and projecting at the inner end of the same, the projecting end being threaded to engage a correspondingly-threaded aperture in the said plug, the opening in the core registering with an aperture in the said plug, and a mouthpiece screwing in the said core at the outer end thereof, said mouthpiece abutting against the stem, substantially as described.

486,297. CRATE. ARCHIE H. RAMSEY, Rutland, Fla. Filed Mar. 10, 1892. Serial No. 424,416. (No model.)



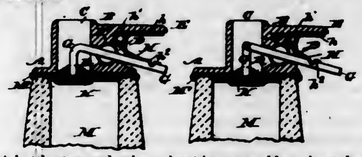
Claim.—1. A head for a shipping box or crate, consisting of counterpart strips, each formed with a tongue at one end and a groove at the opposite end, which extend at obtuse angles to the inner longitudinal edge of the strip, the tongues and grooves being engaged with each other, and a sheet of wood or veneer secured to one side of the connected strips, substantially as described.

2. A shipping box or crate comprising the side walls S and a box-head composed of counterpart strips, each formed with a tongue at one end and a groove at the opposite end, which extend at obtuse angles to the inner longitudinal edge of the strip, the tongues and grooves being engaged with each other and the side walls of the box being secured to the edges of the heads, substantially as described.

486,298. VALVED CAP OR STOPPER FOR BOTTLES. WILLIAM H. RISLEY, Cambridge, Mass. Filed Mar. 26, 1892. Serial No. 426,640. (No model.)

Claim.—1. A bottle-stopper having a filling and outlet bore, a lateral opening extending from the bore outward through the stopper, a lever extending through said opening into the bore and pivoted between its ends to rock vertically in the opening, and a valve carried by the inner end of the said lever and closing the bore, substantially as described.

2. A bottle-stopper having a filling and outlet bore, a lateral intersecting opening through one side and a pivot-aperture intersecting said lateral opening, a transversely-apertured pivot turning in said aperture, and a lever extending through said opening and pivot into the bore and there provided with a valve closing said bore, substantially as described.

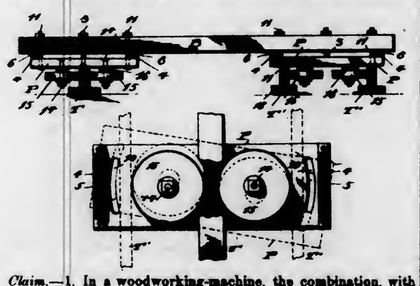


3. A bottle-stopper having a bore intersected by a lateral opening and an integral thumb-piece, a valve-carrying lever extending through the said lateral opening into the bore and pivoted in said opening, and a spring pressing the outer end of the lever away from its thumb-piece, substantially as described.

4. A bottle-stopper having a bore intersected by a lateral lever-opening, a transversely-apertured tubular pivot crossing the said opening, an integral thumb-piece above the lever-opening, a lever extending through the opening and tubular pivot into the bore and provided with a valve, and a spring interposed between the thumb-piece and lever pressing them apart, substantially as described.

5. The combination, with the bottle-stopper comprising a body-section B, having a base-flange A, provided with integral lugs N^3, and the valve having an operating-lever, of the wire N, adapted to embrace a bottle-neck and having upward-projecting twisted arms between its ends, provided at their upper ends with loops N', engaging the lugs N^3, substantially as set forth.

486,299. CARRIAGE-GUIDE. JOHN K. ROWAN, North Washington, Pa. Filed May 3, 1892. Serial No. 431,706. (No model.)



Claim.—1. In a woodworking-machine, the combination, with the track and the carriage-base, of a plate centrally pivoted beneath the base and supported by said track, two wheels journaled on pins in the plate and traveling against opposite side faces of the track, and means for permitting the turning of the plate around its pivot and for fastening it in adjusted position, as and for the purpose set forth.

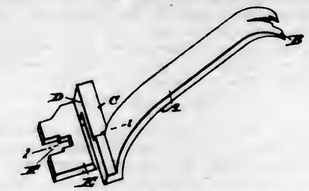
2. In a woodworking-machine, the combination, with the track and the carriage-base, of a plate centrally pivoted beneath the base and supported by said track, two wheels journaled on pins in the plate and traveling against opposite side faces of the track, the plate having a slot near one end struck on a curve around said pivot, and a bolt through said slot and base, as and for the purpose set forth.

3. The combination, with a track, a base, and a plate mounted on a central pivot-bolt beneath the base and supported by said track, the plate having near its ends slots struck on a circle around said pivot-bolt, of roughened clamps on the upper face of said plate, wheels journaled on pins in the plate and traveling against opposite side faces of the track, and bolts through said slots and the base, as and for the purpose set forth.

4. The combination, with a track, a base, and a plate mounted on a central pivot-bolt beneath the base and having rollers traveling upon said track, the plate having near its ends slots struck on a circle around said pivot-bolts, of roughened clamps on the upper face of said plate, wheels journaled on pins in the plate and traveling against opposite side faces of the track, and bolts through said slots and the base, as and for the purpose set forth.

5. The combination, with a track consisting of a single rail, a base, and a plate mounted on a central pivot-bolt beneath the base and supported by said rail, the plate having near its end slots struck on a circle around said pivot-bolt, of roughened clamps on the upper face of said plate, wheels journaled on pins in the plate and traveling against opposite side faces of the rail, and bolts through said slots and the base, as and for the purpose set forth.

486,300. WRENCH. GEORGE W. SHIELD, Fort Recovery, Ohio. Filed June 1, 1892. Serial No. 435,172. (No model.)

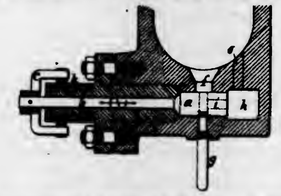


Claim.—1. A wrench comprising a handle provided at one end with a laterally-projecting arm having at one end a depending lug and a notched jaw projecting from the lug in a lower plane than the arm and parallel with and spaced from the said arm to form a slot therebetween, substantially as set forth.

2. A wrench comprising a handle, an arm extending transversely from one end thereof and provided at its outer end with a lug, a jaw projecting from said lug depending therefrom and standing at an angle to the said handle and forming a slot with the said arm, the said jaw being formed with different-sized notches for engagement with the different-sized nuts, substantially as shown and described.

3. A wrench comprising a handle, an arm extending transversely from one end thereof and provided at its outer end with a lug, a jaw projecting from the said depending lug and standing at an angle to the said handle and forming a slot with said arm, and a claw formed on the other end of the said handle for pulling nails, substantially as shown and described.

486,301. VALVE APPARATUS FOR GAS OR PETROLEUM MOTOR ENGINES. HERMANN SCHMIDT, Cologne, Germany, assignor to the Gas-Motoren-Fabrik-Deutz, same place. Filed Dec. 11, 1891. Serial No. 414,794. (No model.) Patented in Germany Mar. 20, 1891, No. 59,793; in England Oct. 16, 1891, No. 17,794, and in Italy Jan. 23, 1892, LXI, 51.



Claim.—In a gas or petroleum motor engine, a cylindrical rotary valve *e*, with passage *m*, establishing a communication between the explosion-chamber and the igniting device *g* and having freedom to move longitudinally, in combination with a chamber *h* and a port or passage connecting the latter with the cylinder, whereby the inner end of the valve is subjected to the varying pressures in the cylinder, substantially as and for the purposes set forth.

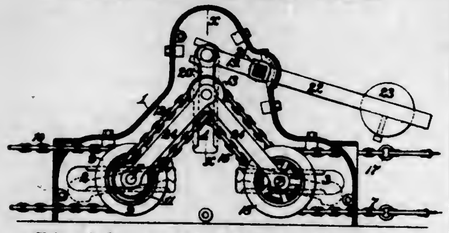
486,302. PLUG-TOBACCO SHAPER. CHARLES D. SOUSE, Martinsville, Va., assignor of one-half to Nat. B. Morris and James H. Spencer, both of same place. Filed July 9, 1890. Serial No. 358,173. (No model.)

Claim.—1. The combination, in a plug-tobacco-shaping apparatus, of sinker-frames each having on both surfaces a series of sinkers, those on one surface being thicker than those on the opposite surface and each series of sinkers separated from each other to provide longitudinal and transverse spaces, with the cell mold-frames composed of longitudinal and transverse strips and interposed alternately between the sinker-frames, so that the sinkers on one surface of a sinker-frame project into the cells of one mold-frame while the sinkers on the opposite surface project into the cells of another mold-frame, substantially as described.

2. The combination, in a plug-tobacco-shaping apparatus, of sinker-frames each having upwardly-projecting side bars and provided on both surfaces with a series of sinkers, those on one surface being

thicker than those on the opposite surface and each series of sinkers separated from each other to provide intervening longitudinal and transverse spaces, with the coil mold-frames composed of longitudinal and transverse strips and interposed alternately between the sinker-frames, said coil mold-frames having their outer longitudinal strips located between and bearing against the upwardly-projecting side bars on the sinker-frames, substantially as described.

486,803. COMPENSATOR FOR SIGNALS. SIMON H. STUPAKOFF, Pittsburg, assignor to the Union Switch and Signal Company, Swissvale, Pa. Filed Aug. 1, 1892. Serial No. 441,882. (No model.)

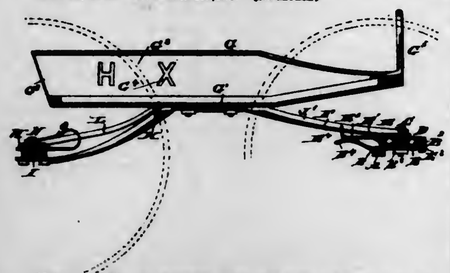


Claim.—1. In a compensator for signals, the combination of a movable adjusting and transmitting shaft, two shafts movable laterally by the adjusting-shaft and connected, respectively, with an operating-lever and with a signal, and means for transmitting rotary movement from the lever-operated shaft to the transmitting-shaft and from the latter to the signal-operating shaft, substantially as set forth.

2. In a compensator, the combination of two laterally movable and rotatable shafts, sprocket-wheels keyed to said shafts, chains passing around said wheels and connected, respectively, to an operating-lever and to a signal, an adjusting and transmitting shaft, chains passing around sprocket-wheels on the adjusting and transmitting shaft and on the laterally-movable shafts, and means for shifting the adjusting-shaft, substantially as set forth.

3. In a compensator for signals, the combination of two laterally-movable and rotatable shafts having sprocket-wheels keyed thereto, chains passing around said wheels and connected, respectively, to an operating-lever and to a signal, an adjusting and transmitting shaft, links connecting the latter with the lever-operated and signal-operating shafts, chains passing around sprocket-wheels on the transmitting-shaft and on the lever-operated and signal-operating shafts, and means for shifting the adjusting-shaft, substantially as set forth.

486,804. WAGON-GEAR. EVERET TAKKEN, Holland, Mich. Filed Feb. 18, 1892. Serial No. 421,901. (No model.)



Claim.—1. The combination, with the front and rear axles, of a fifth-wheel secured to the front axle and extending in front of the same, a king-bolt held on the fifth-wheel, and a spring having one end secured to the center of the rear axle and its other end to the king-bolt, the central portion of the spring being bent upward to permit it to be secured to the under side of a body, substantially as described.

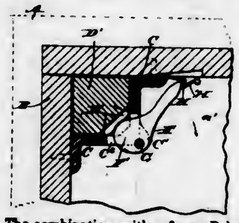
2. The combination, with the front and rear axles and a fifth-wheel carried by the front axle, of a spring having one end secured to the center of the rear axle and its other end to the fifth-wheel and spring-bars having their rear ends secured to the outer ends of the rear axle and their forward converging ends united and connected with the fifth-wheel, the central portions of the said spring and bars being bent upward to permit them to be secured to the under side of the body, substantially as herein shown and described.

3. The combination, with the front and rear axles, of a fifth-wheel carried by the front axle and provided with a rearwardly-projecting extension having an upwardly-extending eye and a spring having one end secured to the rear axle and its forward end passed through the eye of the fifth-wheel and connected with the said wheel, substantially as herein shown and described.

4. The combination, with the front and rear axles, of a fifth-wheel formed with ball-bearings and mounted on the front axle, a king-bolt held on the fifth-wheel, a spring having one end secured to the rear axle and its other end to the king-bolt, and spring-bars having their forward ends united and engaging the king-bolt and their rear ends secured to the rear axle, substantially as herein shown and described.

5. The combination, with the body and the rear axle, of a U-shaped bar mounted in bearings on the axle and having its ends secured to the under side of the body and a curved spring secured to the axle and having its free end bearing on the middle portion of the U-shaped bar, substantially as and for the purpose set forth.

486,805. TABLE-LEG FASTENER. JAMES W. THOMPSON and ROBERT COLLINS, Lenoir City, Tenn. Filed Jan. 9, 1892. Serial No. 417,495. (No model.)

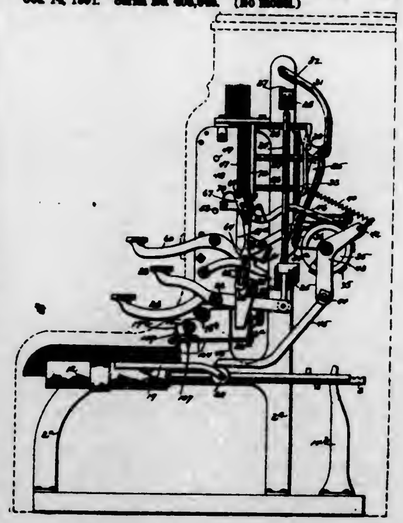


Claim.—1. The combination, with a frame B, having its corners closed, of the angle-plate C, secured in the inner angle of the frame-corner and forming in connection therewith a leg-socket, a slot C' across the plate C at its angle, and a horizontal swinging lever F, pivoted to the plate C and having a cam F' entering the slot to engage the upper end of a leg inserted into said socket, substantially as set forth.

2. The combination, with a table-top and a frame secured thereto, of an L-shaped casing secured to the said frame at one corner, a leg adapted to engage with its upper end the said casing, a cam-lever pivoted on the said casing, and a piece of soft material held in the said table-leg to be engaged by the cam end of the cam-lever, substantially as shown and described.

3. The combination, with a table-top and a frame secured thereto, of an L-shaped casing secured to the said frame at one corner, a leg adapted to engage with its upper end the said casing, a cam-lever pivoted on the said casing, a piece of soft material held in the said table-leg to be engaged by the cam end of the cam-lever, and a spring for locking the said cam-lever in place, substantially as shown and described.

486,806. CASH-REGISTER. OLE TYRDAL, Stoughton, Wis., assignor to the United States Cash Register Company, same place. Filed Oct. 14, 1891. Serial No. 408,848. (No model.)



Claim.—1. In a cash-register, the combination, with a series of indicating-keys, of the vertical bars pivoted thereto and provided with lugs at varying heights, the pivoted bails with which said bars are adapted to engage, and the downwardly-depending hooked arms secured to said bails, substantially as described.

2. In a cash-register, the combination, with a series of indicating-keys, of the vertical bars connected therewith, having lugs at varying heights, the pivoted bails with which said bars are adapted to engage, the downwardly-depending hooked arms secured to said bails, the segments, and means, substantially as described, for actuating the same.

3. In a cash-register, the combination, with the series of indicating-keys, of the vertical bars pivotally connected therewith, the lugs thereon at varying heights, the pivoted bails with which said bars are adapted to engage, provided with downwardly-extending hooked arms, the transverse shaft, the segments journaled thereon, provided with horizontal bars with which said hooked arms engage and with radial pins, the springs connected with said pins, and the bail pivoted on said rock-shaft, having a transverse bar adapted to engage with said pins, substantially as described.

4. In a cash-register, the combination, with the series of indicating-keys, of the vertical bars pivotally connected therewith, the lugs thereon at varying heights, the pivoted bails with which said bars are adapted to engage, provided with downwardly-projecting hooked arms, the transverse shaft, the segments journaled thereon, provided with horizontal bars with which said hooked arms engage and with radial pins, the springs connected with said pins, the bail pivoted on said rock-shaft, having a transverse bar adapted to engage with said pins, and the downwardly and forwardly extending arm connected with said bail and adapted to be actuated by opening and closing a sliding till-cover, substantially as described.

5. In a cash-register, the combination, with the series of indicating-keys, of the vertical bars pivoted thereto, having lugs at varying heights, the pivoted bails with which said bars engage, provided with downwardly-projecting hooked arms, the transverse shaft, the segments journaled thereon, provided with horizontal bars with which said hooked arms engage and with radial pins, the springs connected with said pins, the bail pivoted on said shaft, provided with a transverse bar with which said pins engage, the downwardly and forwardly extending arm secured to said bail, and the sliding till cover or lid having a slotted arm and roller, substantially as described.

6. In a cash-register, the combination, with the registering mechanism consisting of a frame, a series of wheels at the top and bottom thereof, chains passing over said wheels and divided at regular intervals by lateral fingers or pointers, and a series of registering-plates having numbers thereon running from "0" to "9," of the spring-actuated pitmen, the arms to which said pitmen are pivoted, the spring-actuated segments, the bail having a transverse bar with which said pins engage, and means, substantially as described, for actuating said segments.

7. In a cash-register, the combination, with the registering mechanism consisting of a frame, the loose wheels journaled therein, the chains having fingers or pointers at regular intervals, and the registering-plates, of the registering-key pivoted to said frame, the arm connected therewith, the crank with which said arm is connected, and the transverse plate journaled to the frame and connected with said crank, substantially as described.

8. In a cash-register, the combination, with the registering mechanism comprising the frame, the loose wheels, the chains passing over said wheels, having lateral fingers or pointers at regular intervals, and the registering-plates having numerals thereon running from "0" to "9," of the registering-key pivoted to said frame, having a pin or stud near its rear end, the slotted arm in which said stud works, the crank connected with said arm, and the transverse plate journaled in said frame and connected with the crank, substantially as described.

9. In a cash-register, the combination, with the registering mechanism comprising the frame, the loose wheels, the series of chains running over said wheels and provided with lateral fingers or pointers, of the oscillating block having steps located in the lower part of said frame and the registering-key connected with said block, substantially as described.

10. In a cash-register, the combination, with the registering mechanism comprising the frame, the loose wheels, the series of registering-chains passing over said wheels, provided with lateral fingers or pointers, and the registering-plates, of the oscillating block having steps located in the lower part of the frame, the rearwardly-extending spring-actuated arms journaled on a bar connected with the frame and provided with upwardly-extending arms having studs or pins, the downwardly-depending levers pivoted to partitions in the frame and having slots in their lower ends with which said pins or studs engage, and the registering-key having an arm connected with a crank on the journal of said oscillating block, substantially as described.

11. In a cash-register, the combination, with a registering mechanism, substantially as described, of the pivoted registering-key having a stud near its rear end, a slotted arm connected therewith, a spring-actuated crank connected with said arm, and a downwardly-depending hooked arm adapted to engage with the bail which is elevated by depressing the indicating-keys, substantially as set forth.

12. In a cash-register, the combination, with the supporting-frame, a registering mechanism substantially such as described, the registering-key, and the bail journaled in said frame, of the display-plates having slots intermediate their ends, the frame in which said plates are located, the two-armed pivoted lever actuated by said bail and supporting the lower ends of the display-plates, the pivoted lever having a forwardly-extending arm at its upper end and a rearwardly-extending arm at its lower end, the segment connected with the said arms, journaled on the transverse rock-shaft which carries the registering segments, and the bars connecting said segment with a registering-segment, substantially as described.

13. In a cash-register, the combination, with the supporting-frame, a registering mechanism substantially such as described, the registering-key, and the bail journaled in said frame, of the display-plates having slots intermediate their ends, the frame in which said plates are located, the two-armed pivoted lever actuated by said bail and supporting the lower ends of said display-plates, the pivoted lever having a forwardly-extending arm at its upper end and a rearwardly-extending arm provided with a slot at its lower end, and the segment having an adjustable arm provided with a stud or pin working in said slot, substantially as described.

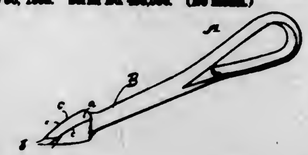
14. In a cash-register, the combination, with the supporting-frame and the spring-actuated pivoted hooked arm having an aperture at its lower end, of the headed rod passing through said aperture, a plate pivoted to a transverse rod journaled in the supporting-frame and having an aperture through which said rod also passes, the adjustable nut on the front end of said rod, and the sliding till cover or lid having an upwardly-projecting arm or plate adapted to engage with said pivoted plate, substantially as described.

15. In a cash-register, the combination, with two or more registering devices substantially such as described, of corresponding series of segments having arms and pitmen adapted to actuate said registering mechanism and horizontal bars connecting the corresponding segments of the series together, substantially as described.

16. In a cash-register, the combination of the supporting-frame, the indicating-keys having hooks near their rear ends, the transverse bail having a plate adapted to engage with said hooks, the spring-actuated hooked arm engaging with said bail, the vertical bars having lugs varying in height, connected with said keys, the bails having transverse plates with which the upper ends of said rods engage, the downwardly-depending hooked arms secured to said bails, the shaft journaled in said frame, the segments journaled on said shaft, having horizontal arms adapted to engage with said arms, the radial pins on said segments, the springs for actuating the same, the bail pivoted to said shaft, having a downwardly and forwardly extending arm, the sliding till-cover having a slotted arm with which said arm engages, the arms connected with the segments, the spring-actuated pitmen pivoted to said arms, the registering-key, and a registering mechanism actuated by said pitmen, substantially as described.

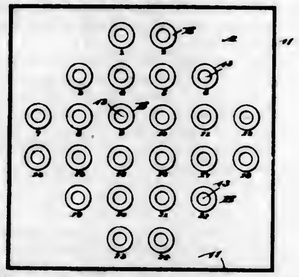
17. In a cash-register, the combination of the supporting-frame, the indicating-keys having hooks near their rear ends, the transverse bail having a plate with which said hooks engage, the spring-actuated hooked arm engaging with said bail, the vertical bars provided with lugs which vary in height, connected with said keys, the bails having transverse plates with which the upper ends of said rods engage, the downwardly-depending hooked arms secured to said bails, the transverse shaft journaled in said frame, the segments journaled on said shaft, having horizontal bars adapted to engage with said arms, the radial pins on said segments, the springs for actuating the same, the bail pivoted to said shaft, having a downwardly and forwardly depending arm, the sliding till-cover having a slotted arm and an upwardly-extending central arm at its rear end, the arms connected with the segments, the spring-actuated pitmen pivoted to said arms, the registering mechanism substantially such as described, the registering-key having a downwardly-depending hooked pivoted arm, and the transverse bail with which said arm is adapted to engage, substantially as described.

486,807. CAN-OPENER. FRANK A. VOEZ, Anderson, Ind. Filed June 30, 1892. Serial No. 438,066. (No model.)



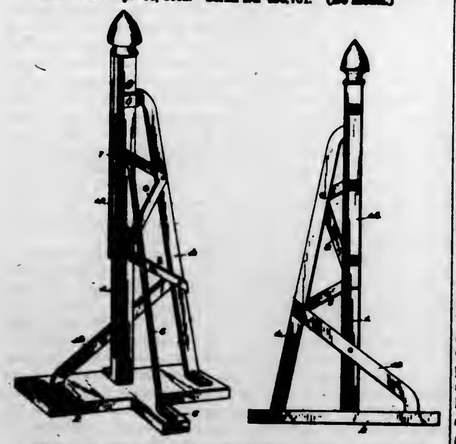
Claim.—The herein-described can-opener, having the two parallel prongs or cutters C C, ground each to a cutting-edge at each edge, said prongs or cutters being separated from each other by a U-shaped interval or recess, the inner faces of said prongs and the bottom wall of said recess being rounded or convex, so as to permit the rotation of the tool in cutting and the outer faces of said prongs presenting a smooth surface rounded and tapering to the shank, the cutting-edges of the prongs being continued along the edges of the bottom wall of said recess and forming a continuous cutter, substantially as specified.

486,808. PUZZLE. ROBERT WATT, Akron, Ohio. Filed June 2, 1892. Serial No. 435,263. (No model.)



Claim.—The board A, formed with vertically and horizontally aligned rows of apertures, each row containing an even number and the whole being arranged in cruciform order with a pair of apertures at each of the four extremities of the cross, and a series of men or pieces corresponding in number with the whole number of apertures and provided with pins on one side and apertures or sockets on the other, substantially as set forth.

486,809. FENCE-POST. CAMDEN L. WILCOX, West Williamsfield, Ohio. Filed Apr. 11, 1892. Serial No. 428,701. (No model.)

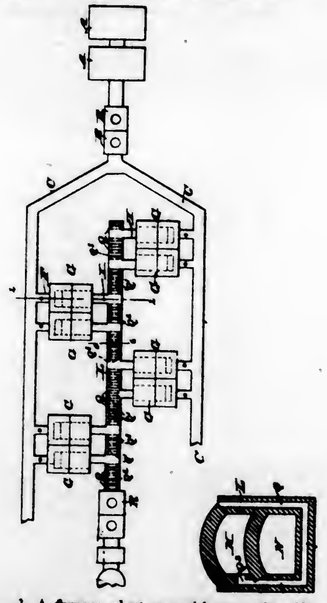


Claim.—1. The combination of a horizontal base, a vertical fence-post rising from the base near the middle thereof, an inclined brace-bar extending from the base at one end thereof to the post near the top of the latter and secured to the base and to the post, and a truss-brace extending back and forth from the post to the brace-bar and consisting of integral zigzagly-disposed bars or portions, substantially as described.

2. The combination of a base, a vertical post rising from the base, an inclined brace-bar 4, having its lower end secured to the base and its upper end attached to the top of the post, a truss-brace connecting the post and the brace-bar 4 at intermediate points and consisting of angularly-disposed portions, and a short inclined brace 10, crossing the posts and secured thereto and having its lower end secured to the base and its upper end attached to the brace 4 at the lower terminus of the truss-brace, substantially as described.

3. The combination of a base, a vertical post rising from the base, an inclined brace-bar 4, having its lower end secured to the base and its upper end attached to the top of the post, a truss-brace connecting the post and the brace-bar 4 at intermediate points and consisting of angularly-disposed portions, a short inclined brace 10, crossing the posts and secured thereto and having its lower end secured to the base and its upper end attached to the brace 4 at the lower terminus of the truss-brace, and the rod 5, arranged at the sides of the post to resist lateral strain and having its lower end secured to the foundation and its upper end attached to the post, substantially as described.

486,810. FURNACE PLANT. JAMES H. WILSON, Pittsburg, Pa. Filed Jan. 14, 1892. Serial No. 418,092. (No model.)



Claim.—1. A furnace plant comprising a series of hearth-furnaces connected with a general gas-supply, an air-duct for each of the said hearth-furnaces and leading to the combustion-chamber of the hearth to supply the air necessary for the combustion of the gas, and a waste-gas duct for each hearth-furnace and extending under part of the corresponding air-duct and formed with a channel through which passes the said air-duct and which channel opens into the respective hearth at the discharge side thereof, substantially as shown and described.

2. A furnace plant comprising a series of hearth-furnaces connected with a general gas-supply, an air-duct for each of the said hearth-furnaces and leading to the combustion-chamber of the hearth to supply the air necessary for the combustion of the gas, a waste-gas duct for each hearth-furnace and extending under part of the corresponding air-duct and formed with a channel through which passes the air-duct and which channel opens into the respective hearth at the discharge side thereof, and a main conduit for the several hearth-furnaces and formed with an air-flue connected with the outer air and with each of the said air-ducts and also formed with a waste-gas flue extending under the said air-flue and into which lead the several waste-gas ducts, substantially as shown and described.

3. In a furnace plant, the combination, with a series of hearth-furnaces connected with a general gas-supply, of a main conduit formed with an arch to divide the conduit into two flues, of which one is the waste-gas flue and the other the air-supply flue, the said waste-gas flue extending under the air-supply flue and connected with a chimney and with waste-gas channels from the said hearth-furnaces, the said air-supply flue being connected with the several hearth-furnaces to supply the air necessary for the combustion of the gas, substantially as shown and described.

4. In a furnace plant, the combination, with a series of hearth-furnaces connected with a general gas-supply, of a main conduit formed with an arch to divide the conduit into two flues, of which one is the waste-gas flue and the other the air-supply flue, the said waste-gas flue extending under the air-supply flue and connected with a chimney and with waste-gas channels from the said hearth-furnaces, the said air-supply flue being connected with the several hearth-furnaces to supply the air necessary for the combustion of the gas, and air-inlet channels arranged in the sides and bottom of the said conduit and leading to the air-supply flue, substantially as shown and described.

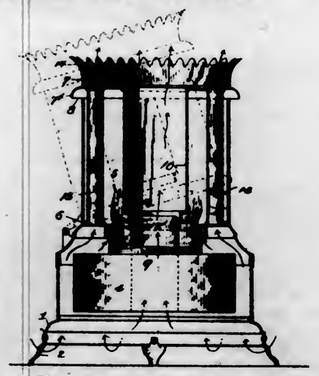
5. In a furnace plant, the combination, with a series of furnaces connected with a general gas-supply, of a main conduit having an air-supply flue and a waste-gas flue, both connected with the series of furnaces, air-inlet channels arranged in the sides and bottom of the conduit and leading to the air-supply flue, and a chimney or stack connected with the waste-gas flue to furnish draft for the entire series of furnaces, substantially as shown and described.

6. A furnace plant comprising a series of hearth-furnaces connected with a gas-supply, an air-duct for each of the said hearth-furnaces and leading to the combustion-chamber of the hearth to supply the air necessary for the combustion of the gas, a waste-gas duct for each hearth-furnace and extending under part of the corresponding air-duct and formed with a channel through which passes the air-duct, each channel opening into the hearth at the discharge side thereof, and a main conduit for the several hearth-furnaces and provided with an air-flue connected with the outer air and with each of the said air-ducts, a waste-gas flue extending under the said air-flue and into which lead the several waste-gas ducts, and a valve arranged in each of the said waste-gas ducts to control the heat within each of the hearths, substantially as shown and described.

7. A furnace plant comprising a series of hearth-furnaces connected with a gas-supply, an air-duct for each of the said hearth-furnaces and leading to the combustion-chamber of the hearth to supply the air necessary for the combustion of the gas, a waste-gas duct for each hearth-furnace and extending under part of the corresponding air-duct and formed with a channel through which passes the air-duct, each channel opening into the hearth at the discharge side thereof, and a main conduit for the several hearth-furnaces and provided with an air-flue connected with the outer air and with each of the said air-ducts, a waste-gas flue extending under the said air-flue and into which lead the several waste-gas ducts, and a valve or gate arranged in each of the said air-ducts for controlling the supply of air to each hearth, substantially as shown and described.

8. In a furnace plant, the combination, with a series of furnaces, of a main conduit having an air-supply flue and a waste-gas flue, both connected with a series of furnaces, air-inlet channels arranged in the sides and bottom of the said conduit and leading to the air-supply flue, a chimney or stack connected with the waste-gas flue to furnish draft for the entire series of furnaces, and an enriching apparatus arranged in the said main conduit between the chimney and the furnace next to it, substantially as shown and described.

486,811. OIL-STOVE. WILLIAM H. WILDER, Northampton, Mass. Filed July 21, 1892. Serial No. 440,816. (No model.)

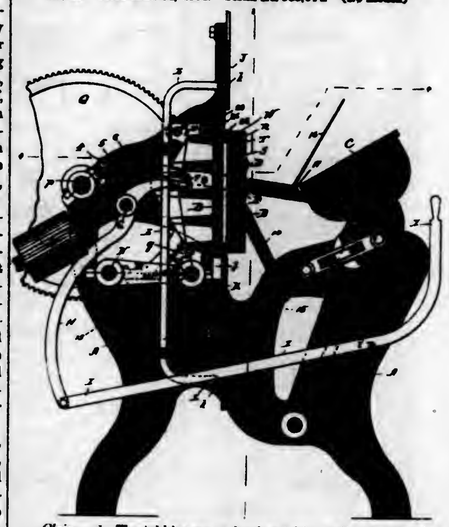


Claim.—1. The combination, in an oil-stove, of the base, the burner, the combustion-chamber above the burner, the central pure-air tube extending through the burner and upward through the combustion-chamber and closed therefrom, and the series of tubes located entirely within the combustion-chamber and around the burner, forming an annular combustion-space between itself and the central tube, substantially as described.

2. In combination, the base, the burner, the combustion-chamber, the central tube extending through the burner and the combustion-chamber and closed therefrom, the series of tubes around the burner and entirely within the combustion-space, all of said tubes opening through the top of the stove, the said combustion-chamber having a lateral discharge opening or openings, substantially as described.

3. In combination, in an oil-stove, the base, the burner, the combustion-chamber having a lateral opening at its top and an inclined flange for directing the discharge of the gases downward, the upwardly-extending flange, the central tube extending through the burner and combustion chamber, and the series of tubes about the burner and entirely within the combustion-chamber, said tubes opening through the top of the stove at the base of the upwardly-projecting flange, substantially as described.

486,812. JOB-PRINTING PRESS. FREDERICK G. WILLARD, Austin, Ill. Filed Mar. 14, 1891. Serial No. 385,014. (No model.)



Claim.—1. The jobbing-press having inking-rollers moving in a straight path parallel with the face of the form and inclined laterally and devices for guiding the rollers in such path, substantially as set forth.

2. The jobbing-press whose inking-rollers are combined with devices whereby they are given a path inclined laterally over the face of the form to bring fresh portions of their surface in contact with the type, substantially as set forth.

3. The jobbing-press having inclined ways V for the inking-roller carriage, in combination with such carriage, substantially as set forth.

4. The combination, in a printing-press, of the type-bed resting against an inclined support, such as 3, an overbalancing-weight connected to the bed, and releasable devices for normally preventing action by said weights, substantially as set forth.

5. The combination, with the type-bed, of the wedges 3, guides 2, a spring 4, and devices connecting said spring with the bed, substantially as set forth.

6. The combination of the type-bed, inclined back supports for the bed, and the spring and connecting devices for holding the bed against said supports, with the overbalancing-weight and releasable devices for preventing the weight from acting, substantially as set forth.

7. In a printing-press, the grippers and their shaft 17, in combination with its actuating-arms and a pin 18, making the shaft rigid in the arms, said pin being adapted to be withdrawn when it is desired to release the shaft, substantially as set forth.

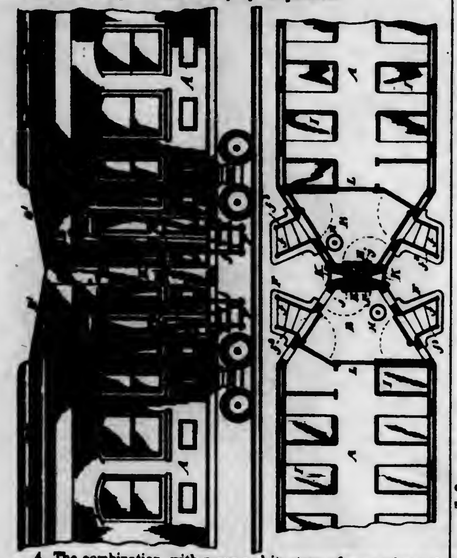
486,813. PASSENGER-CAR. WILLIAM A. WINSLOW, Watertown, N. Y. Filed Apr. 6, 1892. Serial No. 427,971. (No model.)

Claim.—1. A passenger-car provided at each end with an inclosed extension or vestibule having its outer end of less width than the body of the car, combined with a strip of flexible material attached to each of said extensions and projecting outwardly to engage the similar extension of an adjacent car, the strip on one car being diagonally opposite that on the abutting car, said strips extending from the roof to the floor of the extensions, substantially as described.

2. A passenger-car having an inclosed vestibule or extension at each end, said extension having inclined sides and a rounded outer end of less width than the body of the car and provided with a door in each side of the extension, a door at the rounded end, and a door leading to the main body of the car.

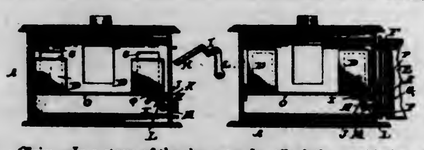
3. The combination, with two cars, each provided with an inclosed extension or vestibule having inclined sides and an outer rounded

end of less width than the body of the car, said rounded ends abutting when the cars are coupled together, of a removable mat of flexible material adapted to be attached to the floor of each car and to extend across the point between the cars and a strip of flexible material secured to each extension and projecting outwardly to engage the opposite extension, the strip on one car being diagonally opposite to that on the abutting car, said strips extending from the roof to the floor, substantially as and for the purpose specified.



4. The combination, with a car and its steps, of supporting-rods extending vertically from the lower step to a short distance above the floor of the car and then bent inwardly and secured at their upper ends to the side of the car near the roof and stay-rods extending from the supporting-rods to the side of the car, substantially as specified.

486,314. DAMPER-REGULATOR FOR STOVES. JOHN H. WOOD, Charleston, Ill. Filed Feb. 23, 1892. Serial No. 422,430. (No model.)



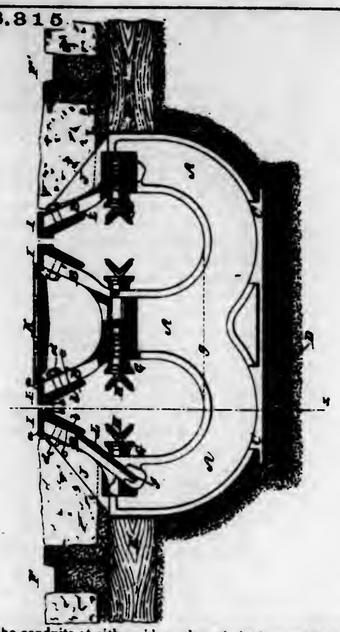
Claim.—In a stove of the character described, the combination of an oven having flue-passages around the same, a water-back or reservoir, flue-passages leading from the stove to the reservoir, a main flue, an oven-door carrying an operating-piece, a damper controlling the flue-passages to the water-back, and mechanism arranged between the oven-door and the damper for closing the latter upon opening the door, substantially as described.

486,315. ELECTRIC-RAILWAY CONDUIT. AUGUSTUS W. WHITNEY, Chicago, Ill., assignor to the Siemens & Halske Electric Company of America, of Illinois. Filed May 13, 1892. Serial No. 432,794. (No model.)

Claim.—1. In an underground conduit for electric railways, the combination, with a yoke provided with upper vertical converging slot-rail supports and a mortise adjacent to the base of the outer support, of angular slot-rails having horizontal portions resting on the top of said supports and dependent diverging portions fixing said supports and bolted thereto, an independent water-shed seated in said mortise and locked by the adjacent angular plate, and a suitable supply conductor or conductors in said conduit, substantially as described.

2. In a double underground conduit for electric railways, the combination, with the double yoke-casting provided with the double series of converging rail-supports, so that the inner supports relatively diverge, of angular slot-rails seated on and bolted to the supports, the spaces between the inner diverging supports forming openings for access to the conduits at either side, and manholes bearing on the inner slot-rails for closing said openings, substantially as described.

486,315.



486,316. CLIP FOR HOLDING PAPERS OR FOR OTHER PURPOSES. SAMUEL H. WRIGHT, Dublin, Ireland. Filed June 1, 1892. Serial No. 435,135. (No model.)

Claim.—A clip for holding papers or for other purposes, consisting of a longitudinally-slotted tube having an orifice in juxtaposition to one end and a core-pin having an angularly-bent end passing through the orifice and provided with a head, substantially as and for the purposes described.

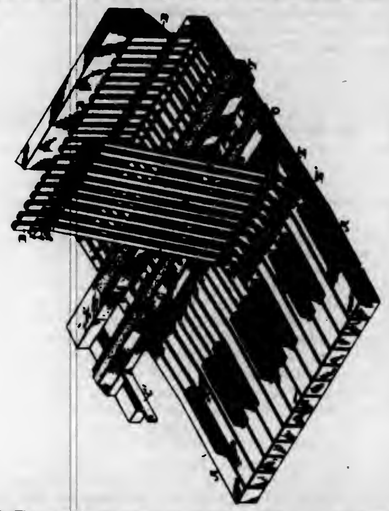
486,317. PIANO-KEY COUPLER. PHILIP WURST, Jr., Philadelphia, Pa., assignor to Christopher J. Happe and Florence J. Happe, same place. Filed June 4, 1892. Serial No. 435,801. (No model.)

Claim.—1. The combination, in a piano-key coupler, of the piano-action having upright bars and keys acting upon said bars independently of the coupler with coupling-levers mounted above the keys, the outer end of each lever being connected to a key and the inner end of each lever being situated directly under one of the upright bars or a projection thereon, but independent of the keys, so that the coupling-levers will be only acted upon by the keys to which they are attached and not by the key under the coupled bar, substantially as described.

2. The combination, in a piano-key coupler, of the piano-action having vertical bars acting upon the hammers, keys acting upon the bars independent of the coupler, coupling-levers mounted directly above the keys, the outer ends of the levers being coupled to their respective keys by links and the inner ends of the levers being situated in such relation to the vertical rods that when raised they will act upon the same, the inner ends of the keys being independent of the coupler-levers, and a shifter-bar situated under all the levers with mechanism for shifting this bar, so as to raise or lower the coupling-lever, substantially as specified.

3. The combination, in a piano-key coupler, of the keys, the piano-action having vertical rods, the supporting-bar extending across the piano, coupling-levers supported by said bar, pins keeping the said bars in proper position, links connecting the levers to the keys, and brackets on the vertical rods, situated directly above the levers, with screws for regulating the throw of the vertical rods when acted upon by the levers, substantially as specified.

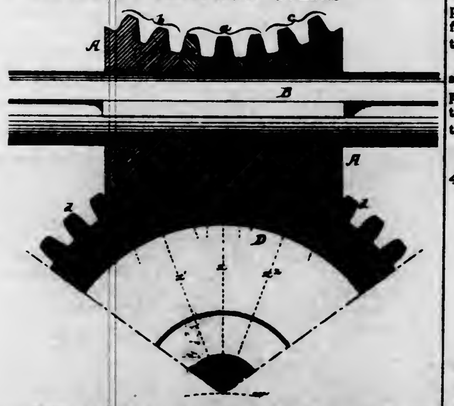
4. The combination, in a piano-key coupler, of the keys, the coupling-levers, piano-key action, and links connecting the keys of the coupling-levers, said links resting in slots in the ends of the levers and having pins resting in transverse split bearings, so as to give free but positive movement to the parts, substantially as specified.



5. The combination, in a piano-key coupler, of the keys, the transverse supporting-bar, coupling-levers, links attached to the coupling-levers, brackets secured to the keys to which the links are pivoted, piano-key action having vertical bars, brackets on said bars, and screws carried by said brackets, having buttons situated directly above the ends of the coupling-levers, with mechanism for throwing the coupling-levers into and out of action, substantially as specified.

6. The combination, in a piano-key coupler, of the keys and action, a transverse supporting-bar, coupling-lever, and L-shaped pivot-pins for said lever, said pins having screw-threaded tangs, substantially as set forth.

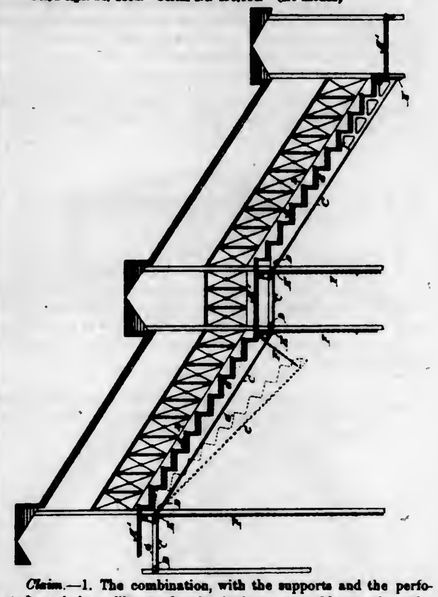
486,318. WORM-GEAR. CHARLES R. ALBRO, Philadelphia, Pa. Filed Oct. 19, 1891. Serial No. 409,156. (No model.)



Claim.—1. A worm having the pitch-line of its convolutions conforming to the pitch-line of the teeth of the wheel with which it is to engage, the center lines of all of the convolutions at their points of engagement with the teeth being parallel with each other, substantially as specified.

2. A worm comprising a series of sections, each of which has the pitch-line of its convolutions conforming to the pitch-line of the teeth of the wheel with which it is to engage, the center line of each convolution of each section at the point where said convolution engages with a tooth of the worm-wheel being parallel with a radial line drawn from the axis of the worm-wheel through the center of said section, substantially as specified.

486,319. STAIRCASE. PATRICK H. BARRY, New York, N. Y. Filed Apr. 21, 1892. Serial No. 430,101. (No model.)



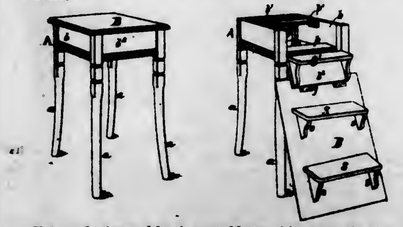
Claim.—1. The combination, with the supports and the perforated or skeleton-like treads, of swinging or movable troughs under said treads, pivots for said troughs, and catches or locks for engaging the free ends of the troughs, substantially as described.

2. The combination, with the supports and the perforated or skeleton-like treads, of swinging or movable troughs under said treads, pivots for said troughs, catches or locks for engaging the free ends of the troughs, and cords or chains for raising said troughs, substantially as described.

3. The combination, with the supports and the perforated or skeleton-like treads, of swinging or movable troughs under said treads provided with flanges made to rest outside of said supports, pivots for said troughs, and catches or locks for engaging the free ends of the troughs, substantially as described.

4. The combination, with the supports and the perforated or skeleton-like treads, of swinging or movable troughs under said treads provided with serrated or step-shaped flanges made to correspond to the steps, pivots for said troughs, and catches or locks for engaging the free ends of the troughs, substantially as described.

486,320. COMBINED STAND AND STEP-LADDER. CHARLES F. RATT, Brooklyn, N. Y. Filed Oct. 26, 1891. Serial No. 409,532. (No model.)



Claim.—1. A stand having a table-top hinged to the frame and having affixed to the under side of the said top one or more steps, whereby when said top is turned back and downward to rest against the stand it may serve as a step-ladder.

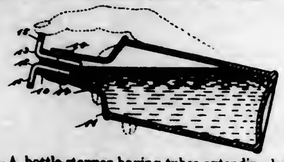
2. A stand having a table-top hinged to the frame with a link connection and one or more steps affixed to the under side of the said

top, whereby when the said top is turned back and downward to rest against the stand it may serve as a step-ladder.

3. A stand having a frame with one or more cross-braces for steps and a table-top jointed to the frame and one or more steps affixed to the under side of said table-top, whereby when said top is turned back and downward to rest against the stand it may serve as a step-ladder, as and for the purpose set forth.

4. A stand having a frame and a table-top having one or more steps affixed to its under side with an end cross-piece jointed to the frame and to the table-top and forming a link connection for the latter, as and for the purpose described.

486,821. BOTTLE-STOPPER. THOMAS G. BOOTH, New York, N. Y. Filed Mar. 23, 1892. Serial No. 426,264. (No model.)

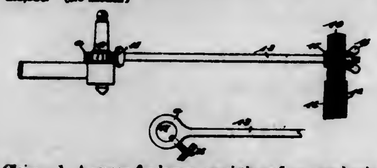


Claim.—A bottle-stopper having tubes extending longitudinally through it and held to turn freely therein, the tubes having their upper ends bent outward, so that they may be turned to overlap each other, and caps to close the outer ends of the tubes, substantially as described.

486,822. ARTIST'S SKETCHING-SCREEN. THEOPHILUS A. BROUWER, Jr., East Hampton, N. Y. Filed Dec. 9, 1891. Serial No. 414,454. (No model.)

Claim.—A screen or shade comprising a sectional support, a post having a flattened lower end rest against one side of the upper end of the support, a bolt extending through the said overlapped ends, a collar or shoulder 19 on the post between its ends, ribs 15, each formed of a middle and opposite end sections separably connected, as at 16, the middle sections being mounted at their point of crossing on the said post, a nut on the outer end of the post and clamping the ribs against said collar or shoulder, and a cover having eyelets or sockets receiving the opposite ends of each rib, substantially as described.

486,823. SCREEN FOR LAMPS OR GAS-LIGHTS. THEOPHILUS A. BROUWER, Jr., East Hampton, N. Y. Filed Mar. 23, 1892. Serial No. 426,263. (No model.)



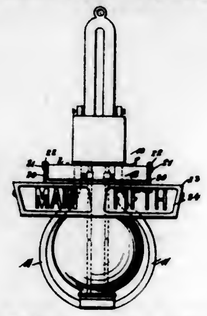
Claim.—1. A screen for lamps, consisting of an arm having an attaching device at one end, a series of folding panels having registering apertures through which the opposite end of the arm projects, and an adjusting device to secure the panels in any desired position, substantially as set forth.

2. In a device of the character described, the combination, with an arm, of a series of panels capable of folding one over the other and pivoted upon the arm, and a locking device carried by the arm and adapted for engagement with the panels, and a socket formed at one end of the arm, the said socket being provided with a locking mechanism, as and for the purpose specified.

3. In a device of the character described, the combination, with an arm, of a screen comprising a series of panels of fan-like arrangement and loosely pivoted upon the arm at one end, and a locking device carried by the arm adapted to exert pressure upon the panels to hold them in a predetermined position, a socket formed at one end of the arm and adapted to embrace a gas-burner, a portion of a lamp or a fixture, and a set-screw extending within the socket and adapted for engagement with the article that the socket surrounds, as and for the purpose set forth.

4. As an improved article of manufacture, a fan-like screen comprising panels adapted to fold one upon the other and an arm carrying a socket and locking mechanism, the said arm constituting a pivot-pin for the panels of the screen, as and for the purpose set forth.

486,824. SIGN FOR ELECTRIC LAMPS. EDWIN W. CLAY, Louisville, Ky. Filed June 21, 1892. Serial No. 437,466. (No model.)



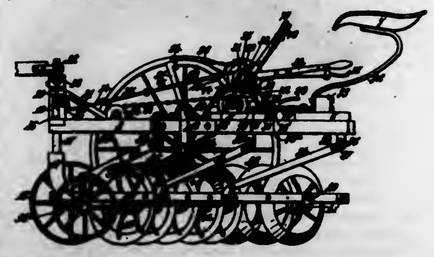
Claim.—1. A sign for electric lamps, comprising a ring adapted to embrace the upper portion of a lamp-frame, transverse braces arranged within and on opposite sides of the ring, clamps to secure the braces to the lamp-frame, and a sign-frame supported by rods attached to the ring, the frame having paneled sides in which the letters of the sign may be arranged, substantially as described.

2. A sign for electric lamps, comprising a ring arranged to embrace the upper portion of the lamp-frame, an open-paneled frame suspended from the ring, clamping mechanism for attaching the ring to the lamp-frame, and means for adjusting the ring vertically on the clamping mechanism, substantially as described.

3. The combination, with the lamp-frame, of upwardly-extending bolts or supports clamped to the frame and arranged on opposite sides thereof, a ring adapted to embrace the lamp-frame and the supports, bolts clamped to the ring and having split heads to slide on the supports, fastening-screws to clamp the bolt-heads to the supports, and a sign-frame suspended from the ring, all substantially as described.

4. The combination, with the lamp-frame, of clamping-pieces, fastened to the sides of the frame, outwardly-extending eyebolts secured to the clamping-pieces, upwardly-extending bolts or supports secured in the eyebolts, outwardly-extending bolts having split heads which are held to slide on the supports, fastening-screws for securing the split heads to the supports, a ring clamped to the outwardly-extending sliding bolts, and a sign-frame suspended from the ring, substantially as described.

486,825. ROTARY PLOW. GEORGE P. CLEVELAND, Coleman, Tex. Filed June 20, 1892. Serial No. 437,287. (No model.)



Claim.—1. In a rotary plow, the combination, with a plow-frame, of a working frame, a series of rotary plows journaled therein and consisting of cupped annuli having planes of rotation at acute angles with the line of draft, their axes being successively displaced toward the center at an acute angle with the line of draft, and push-bars pivotally connecting the working frame with the plow-frame at two or more points upon each frame, substantially as described.

2. In a rotary plow, the combination, with a plow-frame and with a working frame, of a series of rotary plows consisting of cupped annuli having their planes of rotation inclined at acute angles to the line of draft and capped at an angle to the plane of rotation substantially equal to the angle said plane makes with the line of draft, the spindles of said annuli being arranged, successively, one behind and to one side of the preceding spindle, one or more ground-wheels supporting one end of the working frame, and a plurality of push-bars pivotally connected to the plow-frame and inclined forward and downward in substantial parallelism and connected at separate points to the working frame, substantially as described.

3. In a rotary plow, the combination, with a plow-frame, of an axle having ends bent at right angles to form journal-supporting arms, wheels mounted on the journals, means for rocking the axle, and thereby raising and lowering the plow-frame, a working frame arranged beneath the latter, a series of rotary plows journaled upon spindles, and a plurality of push-bars pivotally connected to the plow-frame and extended forward and downward in substantial parallelism and pivotally connected to the plow-frame at separate points, substantially as described.

4. In a rotary plow, the combination, with a plow-frame, of an axle having ends bent at right angles and provided with journals at their ends to receive the wheels, means for rocking said axle to raise and lower its horizontal main portion, a vertical wheel-supported standard passing through the front of the plow-frame, an independent lift to raise and lower the forward end of the plow-frame upon said standard, a working frame having rotary plows, a plurality of push-bars pivotally connected to the plow-frame and inclined forward and downward, their lower ends connected to the working frame at separate points, and a lift for raising and lowering the working frame to which said lift is connected between the points of attachment of the push-bars, substantially as described.

5. In a rotary plow, the combination, with a working frame composed of two diverging wings, each having parallel side bars connected by a series of equidistant cross-braces provided with spindles, of two diverging series of rotary plows mounted on said spindles and consisting of annuli capped upon their faces at an angle substantially equal to one-half the angle divergence of the two series of plows, substantially as described.

6. In a rotary plow, the combination, with a plow-frame and a working frame composed of two diverging wings, each so arranged that its longitudinal line shall make an acute angle with the line of draft, of two series of rotary plows mounted in said wings upon spindles arranged one behind another in the longitudinal line of the wing, said spindles making acute angles with said longitudinal line substantially equal to the acute angles that the longitudinal lines of the wings make with the line of draft, substantially as described.

7. In a rotary plow, the combination, with a plow-frame and a working frame composed of two diverging wings united and arranged in such manner that their longitudinal lines make acute angles with the central line of draft on opposite sides of said draft-line, of a series of rotary plows mounted in each of said wings, the plows in each wing having their axes of rotation at acute angles with the longitudinal line of said wing, and a plurality of push-bars connecting the plow-frame and working frame at two or more points on each frame, substantially as described.

8. In a rotary plow, the combination, with a plow-frame and a working frame composed of two diverging wings, each consisting of parallel side bars connected by a series of cross-braces, said diverging wings being each so arranged that its longitudinal line shall make an acute angle with the line of draft, of spindles supported by the cross-braces of the wings one behind another in the longitudinal line of each wing and making angles with said longitudinal line substantially equal to the angles that the longitudinal lines of the wings make with the line of draft, rotary plows mounted on said spindles, and push-bars connecting the plow-frame and working frame, substantially as described.

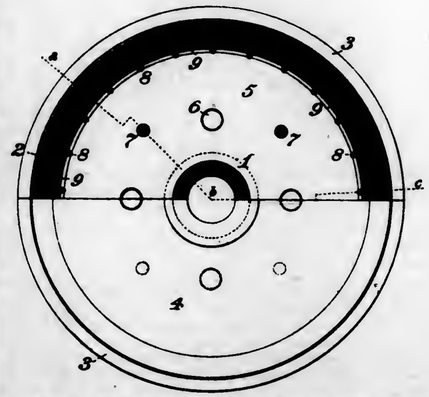
9. In a rotary plow, the combination, with a working frame composed of two wings, of two divergent series of rotary plows journaled in said wings, one series upon each side of the line of draft, a plow-frame supported above the working frame upon an axle, means for lowering and raising the working frame, and a plurality of push-bars pivoted at their rear ends to supports upon the plow-frame, upon which they leave a limited vertical adjustment, the forward ends of said push-bars being pivoted to separate points on the working frame and inclining forward and downward in substantial parallelism from their points of attachment at the rear to the points of connection to the working frame, substantially as described.

10. In a rotary plow, the combination, with a working frame in which the annular plows are journaled, of a plow-frame arranged above, push-bars pivotally connected to both frames, and means for raising and lowering the plow-frame to vary the angle of inclination of said push-bars, substantially as described.

11. In a rotary plow, the combination, with a working frame containing cupped annular plows, of a plow-frame above the same, push-bars pivotally connected at their ends to said plow-frame and working frame, means for raising and lowering the plow-frame to vary the angle of inclination of the push-bars, and push brace-bars connected to the working frame and adapted to be varied in length to lean the cupped annular plows and vary the angle of inclination of their cupped faces, substantially as described.

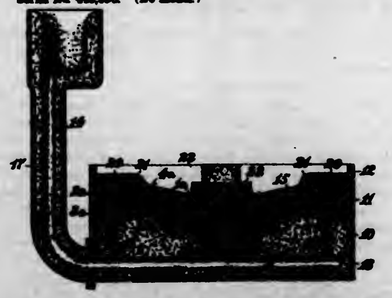
12. In a rotary plow, the combination, with a working frame, of cupped annular plows journaled therein at an acute angle with the line of draft and arranged one behind and somewhat removed laterally with respect to the preceding plow and colters arranged to cut the soil in advance of the leading plow or plows in lines parallel with the line of draft and intersecting the plane of revolution of the leading plow at a point in rear of the axis of said plow, substantially as described.

486,826. CAR-WHEEL. GEORGE W. CUMMINS, Evanston, Ill., assignor to the American Steel Wheel Company, Jersey City, N. J. Filed July 6, 1892. Serial No. 439,102. (No model.)



Claim.—A double-plate car-wheel composed of a hub, two side plates or webs, and a flanged tread-section or rim having on its inner surface a series of transverse ribs extending from one side plate to the other, and a series of circumferential ribs interposed between and connecting said transverse ribs, substantially as set forth.

486,827. MOLD FOR CASTING CAR-WHEELS. GEORGE W. CUMMINS, Evanston, Ill., and JOHN W. RAMPS, Boston, Mass., assignors to the American Steel Wheel Company, Jersey City, N. J. Filed July 20, 1892. Serial No. 440,600. (No model.)



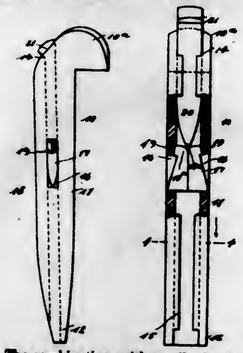
Claim.—1. The combination, in a mold for casting car-wheels, of a cope, a drag, an interposed main or tread-surface chill, a vertical

pouring-head inclosing a main runner or pouring-channel, a horizontal runner communicating therewith and located below the mold-cavity, vertical flange-runners connecting said horizontal runner with the flange-space of the mold-cavity, and an edge-chill forming the wall of the mold-cavity on the side of the rim-space thereof opposite the flange, substantially as set forth.

2. The combination, in a mold for casting car-wheels, of a cope, a drag, an interposed main or tread-surface chill, a vertical pouring-head inclosing a main runner or pouring-channel, a horizontal runner communicating therewith and located below the mold-cavity, vertical flange-runners connecting said horizontal runner with the flange-space of the mold-cavity, an edge-chill forming the wall of the mold-cavity on the side of the rim-space thereof opposite the flange, and a ring-chill forming the wall of the mold-cavity at and adjacent to the inner and upper portion of the rim-space thereof, substantially as set forth.

3. The combination, in a mold for casting car-wheels, of a cope, a drag, an interposed main or tread-surface chill, a vertical pouring-head inclosing a main runner or pouring-channel, a horizontal runner communicating therewith and located below the mold-cavity, vertical hub-runners connecting said horizontal runner with the lower portion of the hub-space of the mold-cavity, and a hub-chill forming the upper end wall of the hub-space, substantially as set forth.

486,328. RAILWAY-SPIKE. SAMUEL BERGH, Reno, Nev. Filed June 28, 1892. Serial No. 438,201. (No model.)



Claim.—1. The combination, with a spike having a longitudinal bore therein and mortises in the side walls of the bore, of locking-plates adapted to rest in the mortises, said plates having their lower ends formed into edges and their upper ends bent outwardly, and a spreading-wedge adapted to enter the bore of the spike and to extend between the upper portions of the locking-plates, substantially as described.

2. The combination, with a spike having a longitudinal bore therein and side mortises opening through the side walls of the bore, of locking-plates held in said mortises, the locking-plates having their lower ends formed into edges, their upper ends bent outwardly and formed into edges, and their upper corners rounded, and a spreading-wedge adapted to enter the bore and extend between the upper portions of the locking-plates, substantially as described.

486,329. PLASTER COMPOUND. HENRY B. HOLLIS, Jackson, Mo. Filed Jan. 22, 1892. Serial No. 418,900. (No specimens.)

Claim.—The herein-described composition of matter, consisting of kaolin, silicate of soda, glue, and sand, combined in about the proportions set forth.

486,330. PROCESS OF TREATING SPEISS. PAUL PLISSY, El Paso, Tex. Filed Jan. 8, 1892. Serial No. 417,802. (No specimens.)

Claim.—1. The herein-described process of treating speiss, consisting in roasting the crushed speiss, then mixing the roasted speiss with sulphur and heating the mixture, then passing a current of air over the same, and finally condensing the fumes thereof, as specified.

2. The herein-described process for treating speiss, consisting of first crushing the speiss to grain size, then roasting it in a calcining-furnace, then mixing the roasted speiss with sulphur, then subjecting the mixture to a gentle heat and passing a current of air over the same to carry off arsenious acid and sulphide of arsenic, and then condensing the latter in flue dust-chambers, substantially as shown and described.

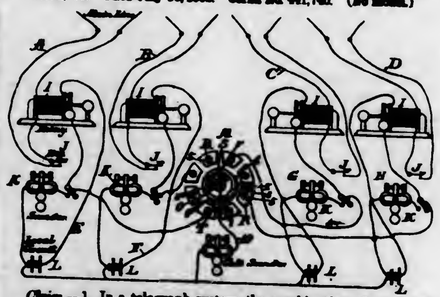
486,331. GUN-SWAB. GEORGE H. GARRISON, Sumas City, Wash. Filed Mar. 2, 1892. Serial No. 423,449. (No model.)

Claim.—1. In a gun-swab, the combination of a screw-threaded stem having a head at one end and provided with a channel in its screw-threaded portion, a sliding sleeve on the stem, a set-screw passed through the sleeve into the channel of the stem, a cylindrical core on the stem between the head thereof and the sliding sleeve and having a cleaning-surface, and a clamping-nut on the screw-threaded end of the said stem, substantially as described.

2. A gun swab or cleaner consisting of a body comprising a rubber core or cushion and a reticulated cylindrical cover snugly fitting the core or cushion and extending around the ends thereof, a stem projected through the core or cushion, provided with a head in firm engagement with the upper portion of the body and having a threaded lower end extending beyond the lower portion of the body, a sleeve mounted upon the lower end of the stem and engaging with the lower end of the body, and a lock or adjusting nut screwed upon the lower portion of the stem, the said lock or adjusting nut acting to maintain the sleeve and likewise the head of the stem in positive yet removable engagement with the body, as and for the purpose specified.

3. A gun swab or cleaner consisting of a body comprising a rubber core or cushion of cylindrical form and a reticulated covering closely adhering and conforming to the exterior of the core or cushion, a stem projected downward through the core or cushion, provided with a disk-like head concaved upon its under surface and engaging firmly with the upper end of the body, the lower end of the stem being carried beyond the lower portion of the body and threaded, a sleeve provided with an upper flange and loosely mounted upon the projecting portion of the stem, the flange being concave in its upper face and in firm engagement with the lower portion of the body, a set-screw passed through the sleeve into a slot in the stem, whereby the sleeve is prevented from turning, and an adjusting or lock nut of disk-like form screwed upon the lower end of the stem to an engagement with the sleeve, the peripheral surface of the head of the stem and likewise the peripheral surface of the lock or adjusting nut being serrated or otherwise roughened, as and for the purpose specified.

486,332. TELEGRAPH SYSTEM. ADOLPHUS GIFFORD, Richmond, Va. Filed July 30, 1892. Serial No. 441,760. (No model.)



Claim.—1. In a telegraph system, the combination of a series of main-line circuits having the terminal contacts thereof arranged in annular series, a call-sounder in the local circuits of said main-line circuits, and the continuously-rotating contact normally in circuit with the call-sounders and arranged within said annular series of terminal contacts of the main-line circuits and having means whereby it makes contact for a limited time successively with each terminal contact during each complete revolution of said rotating contact, substantially as and for the purpose described.

2. In a telegraph system, the combination of a series of main-line circuits having the terminal contacts thereof arranged in annular series and each contact being independent of the other, a call-sounder in the local circuits of said main-line circuits, a rotating contact connected normally in circuit with the call-sounder and arranged within

said annular series of the main-line terminal contacts, a brush carried by said rotating contact and adapted to successively ride upon said terminal contacts during each complete revolution of the rotating contact, and mechanism for positively driving the rotating contact in one direction continuously, substantially as and for the purpose described.

3. In a telegraph system, the combination, with a series of main-line circuits and their corresponding open local circuits, of a switch and signal mechanism common to the whole series of circuits, comprising the annular series of independent terminal contacts to which said main-line conductors are connected, a call-sounder connected in circuit with the local circuits, the continuously-rotating contact connected in circuit with the call-sounder and adapted to make contact successively with each of the terminal contacts, and a pointer movable with said continuously-rotating contact and pointing to characters on a dial, whereby the call-sounder gives the signal and closes a local circuit when an electric current passes over one main-line circuit and the pointer indicates said main-line circuit on the dial, substantially as and for the purpose described.

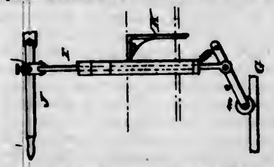
4. In a telegraph system, the combination, with a series of main-line circuits and their corresponding local circuits, of a switch and signal mechanism common to all of said circuits and comprising the recessed insulated support or base, the annular series of terminal contacts to which the main-line conductors are connected and which are fixed to said base, the continuously-rotating contact arranged in the recess of said base and carrying a yielding arm adapted to successively bear on said fixed terminal contacts during each complete revolution of said rotary contact, a call-sounder in circuit with the local circuits, and a brush connected with said call-sounder and bearing normally against the rotary contact or its shaft, as and for the purpose described.

5. In a telegraph system, the combination, with a series of main-line circuits and their corresponding local circuits, of a switch and signal mechanism common to said circuits and comprising the insulated base, the annular series of terminal contacts fixed on said base and having main-line conductors connected thereto, a continuously-rotating carrier-shaft having the rotary contact which is arranged within said annular series of terminal contacts for the main-line circuits, a pointer rigid with the carrier-shaft and adapted to traverse a dial, a call-sounder connected with the local circuits, and the brush normally bearing on the carrier-shaft and connected with said call-sounder, substantially as and for the purpose described.

6. In a telegraph system, the combination, with a series of main-line circuits and their corresponding local circuits, of a switch and signal mechanism common to said circuits and comprising the insulated base or support, the segmental terminal contacts fixed in said base in annular series and having the main-line conductors connected thereto, the central carrier-shaft having a pointer which traverses a dial, the rotary contact rigid with the carrier-shaft within said annular series of terminal contacts, the spring-arm secured to the rotating contacts and having means for limiting the play of its free end against said fixed terminal contacts, a call-sounder connected with the local circuits, and a brush in circuit with the call-sounder and normally bearing on the carrier-shaft, substantially as described.

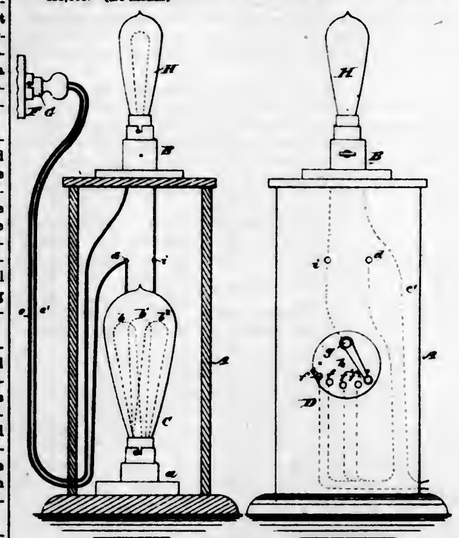
7. In a telegraph system, the combination, with a series of main-line circuits and their corresponding local circuits, of a switch and signal mechanism common to all of the main-line circuits and comprising the insulated base or support having the independent clamp-plate fixed to one side thereof, the terminal contacts for the main-line conductors, connected independently with said clamp-plates and arranged in annular series on said base or support, the carrier-shaft having a pointer which traverses a dial, the rotary contact fixed to said carrier-shaft and provided with a yielding arm that bears against said terminal contacts successively, a call-sounder included in the local circuits, and a brush bearing on the carrier-shaft and connected to the sounder, substantially as described.

486,333. TROLLEY FOR ELECTRIC RAILWAYS. AUGUSTUS H. R. GUILEY, South Boston, Pa., assignor to himself and Wilson B. Selliday, same place. Filed Dec. 31, 1891. Serial No. 416,658. (No model.)



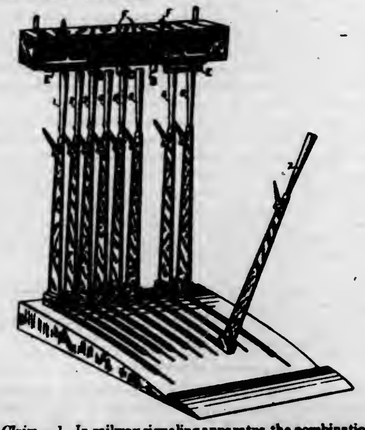
Claim.—In an electric railway, a continuous slotted conduit placed at or below the street level, provided with one or more electrical conducting-rails and furnished with sectional hinged covers arranged to open outwardly, one or more trolley-rods provided with sectional insulation, arranged to project from the electric car through the slot of the conduit and provided with trolley-wheels adapted to roll on the electrical conducting-rails, and a hand-lever pivotally connected with the trolley-rod for raising and lowering the trolley-wheels and increasing or diminishing the pressure of the same upon the conductors, substantially as specified.

486,334. REGULABLE ELECTRIC LAMP. GEORGE W. HALL and JOSEPH J. DE MARR, Georgetown, Colo. Filed Dec. 1, 1891. Serial No. 413,605. (No model.)



Claim.—The combination, with the lamp-socket I, the long contact-spring J, and the short contact-spring K, of the lamp L, provided with carbon filaments i i' of different resistance, the carbon filaments being connected to the contact-button k at one end and connected with separate contact-buttons l m at the opposite end, substantially as specified.

486,335. RAILWAY SIGNALING APPARATUS. ARNOLD HALL, Altcar and Hill House Station, England. Filed Apr. 16, 1892. Serial No. 430,209. (No model.)



Claim.—1. In railway signaling apparatus, the combination, with two or more levers, of a signal board or sign adapted when released to prevent the actuation of one of the levers and means, substantially such as shown and described, actuated by the other lever for releasing the signal-board.

2. In railway signaling apparatus, the combination, with two or

movo levers, of a signal board or sign adapted when released to prevent the actuation of one of the levers, means, substantially such as shown and described, actuated by the other lever for releasing the signal-board, and resetting devices for the said board or sign.

3. In railway signaling apparatus, the up and down levers and cross-over lever, in combination with two signal-boards adapted when released to lock the two first-mentioned levers, and means, substantially such as shown and described, actuated by the cross-over lever for releasing the signal-boards.

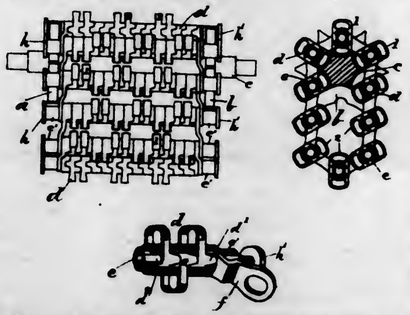
4. In a railway signaling apparatus, the combination, with the two groups of levers 1 2 3 and 7 8 9, of signal boards or signs adapted when released by the levers 3 and 7 to lock the levers 1 2 and 8 9, a second set of signal boards or signs adapted when released to also lock the levers 1 2 and 8 9, a lever 5, and means, substantially such as shown and described, actuated by the lever 5 to release this second set of signs or locking-boards.

5. In a railway signaling apparatus, the combination, with the home and distance levers, of a siding-lever, a cross-over lever, and two distinct locking devices for the home and distance levers, one set being brought into action by the movement of the siding-lever and the other by the movement of the cross-over lever.

6. In combination with a lever, as 1, a lever 3, a tappet B, bearing upon lever 3 and provided with a nose *b*, and a signal board or lock E for lever 1, provided with an arm D.

7. In combination with levers 1 and 3 and box or frame A, pivoted sign or board E, provided with arm D, a tappet B in the path of lever 3 and provided with nose *b*, and a rod F, connected to arm D.

486,886. LOOM PATTERN-CHAIN. JAMES HILL, Keighley, England. Filed Jan. 26, 1892. Serial No. 419,090. (No model.) Patented in England July 28, 1891. No. 12,781.



Claim.—1. The combination of the cams *d*, having projections and recesses *d'* and *d*², with the links *f* and *g*, formed with like projections and recesses, as described, to gear with said cams *d*, and the tubes *e*, supporting said cams and links, substantially as specified.

2. The combination of the cams *d*, having their hubs formed with projections and recesses to gear with each other, the links *f* and *g*, formed with like projections and recesses to gear with said cams *d*, the tubes *e*, supporting said cams and links, and the binding-screws *h* and *h'*, substantially as specified.

3. A series of cams *d*, having projecting perforated hubs, the hub of one cam having projections engaging in radial recesses in the hub of the next adjacent cam, pins passing through said cams, and means for securing the cams and pins together, substantially as described.

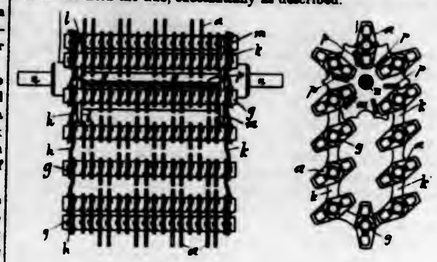
4. In a pattern-chain, a series of pins and links, in combination with a series of cams *d*, having projecting perforated hubs, the hubs being provided with radial recesses and projections on their opposite ends, said recesses being arranged on opposite sides of the hubs to allow of the cams being arranged operatively or inoperatively, as required, substantially as described.

5. The combination, with a series of cams and a corresponding series of pins, of a series of links each having one end rigidly connected to one set of cams and the other loosely connected to the succeeding set, substantially as described.

486,887. LOOM PATTERN-CHAIN AND BARREL THEREFOR. EDWARD HILL, Keighley, England. Filed Mar. 21, 1892. Serial No. 425,993. (No model.)

Claim.—1. A cam consisting of two parts of sheet metal, one piece being a hub and the other the cam-piece proper, the latter being provided with notches, said hub having projections extending in opposite directions from the ends thereof, the projections on one end extending through and fastened in notches in the cam-piece and the projections on the opposite end adapted to enter notches in the next adjacent cam, substantially as described.

2. A pattern-surface cam consisting of two parts, one part being a hub and the other a plate having an aperture the walls of which surround and hold the hub, substantially as described.

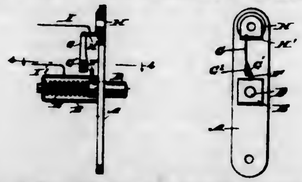


3. A chain-link composed of a plate and a hub, said hub being inserted in an aperture in one end of the link and provided with projections for securing said hub and link together, substantially as described.

4. In a pattern-chain, in combination with cams having recessed hubs, a link comprising a plate, and a hub made of separate pieces, the hub being inserted in the plate and provided with projections on one end engaging with said plate and on its other end with projections engaging in the recesses in the hubs of the cams, substantially as described.

5. The combination of a pattern-barrel having sprocket-wheels at the ends and ribs extending from wheel to wheel, of a pattern-chain having operative and inoperative cams locked together and its inoperative cams arranged to come in contact with said ribs and thus support the operative cams, substantially as described.

486,888. ELECTRIC ALARM. HENRY A. HULL, New Brunswick, N. J. Filed Apr. 20, 1892. Serial No. 429,871. (No model.)



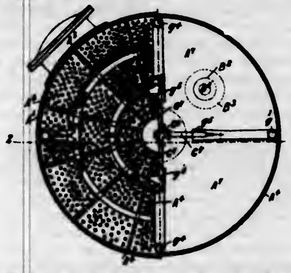
Claim.—1. In an electric alarm, the combination, with a contact-spring having two faces, one of which is insulated, of a rod which is provided with a pin and adapted to slide, whereby when the rod reciprocates the said pin passes in contact with one side and then the other side of said spring, as shown and described, for the purpose specified.

2. An electric alarm provided with a rod mounted to slide and to turn and carrying a contact-pin and a contact-spring provided on its free end with two faces, of which one is insulated, and both faces adapted to be alternately engaged by the said contact-pin, as set forth.

3. In an electric alarm, the combination, with a spring-pressed rod or button mounted to turn and slide and a contact-pin arranged on the said rod or button, of a contact-spring formed at its free end with two faces, of which one is insulated, the faces extending in the path of the said pin in such a manner that when the rod is pressed the pin passes over the insulated face and when the pressure is released the pin passes over the other face, substantially as shown and described.

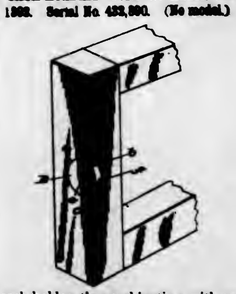
4. In an electric alarm, the combination, with a plate supporting a frame and connected with a battery, of a spring-pressed rod or button fitted to slide in the said plate and frame, a pin held on the said rod or button, a contact-spring insulated on the said plate and connected with the alarm and the other pole of the battery, the said contact-spring being formed with two faces, of which one is insulated, and both adapted to be alternately engaged by the pin on the pressing and releasing of the said button, substantially as shown and described.

486,889. PROCESS OF TREATING FIBROUS MATERIAL FOR MAKING PULP. JAMES JOHNSTON, Peter-Culter, and GEORGE JOHNSTON, Denny, Scotland. Filed May 13, 1891. Serial No. 392,602. (No specimens.) Patented in England Apr. 30, 1890, No. 6,644, and in Belgium Feb. 28, 1891, No. 93,889.



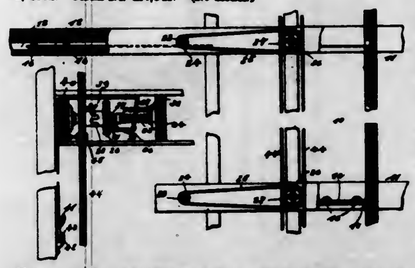
Claim.—The herein-described process of treating fibrous material for making paper-pulp, consisting in first subjecting the material to the usual treatment by strong alkalies and steam and then forcing air and cold water or other liquid through the material, substantially as set forth.

486,340. SASH-HOLDER. JOHN W. KALES, Franklinville, N. Y. Filed May 13, 1892. Serial No. 433,090. (No model.)



Claim.—In a sash-holder, the combination, with an elastic roll or wheel and its axial securing-screw, of the casing or housing therefor adapted to permit said roll or wheel to project therethrough and having the edges of its open side beveled or tapered to enter a cut or indentation in the bottom of the cavity to receive said casing or housing, substantially as set forth.

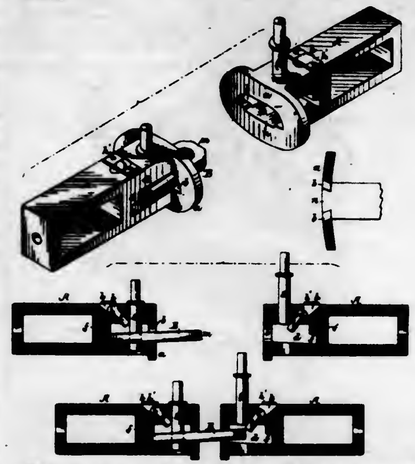
486,841. HATCH-DOOR. CORD KIBBLE, Bluffton, Ind. Filed Apr. 5, 1892. Serial No. 427,840. (No model.)



Claim.—1. The combination, with the slidable doors, each having parallel racks on its upper side and a cable-slot and each door provided along the slot edges with hinged leaves having both ends curved or beveled to facilitate the entrance of the cable, of a series of shafts 23, one shaft crossing the upper side of each of the several doors and having pinions meshing into said racks, sprocket-wheels 24 on the ends of the shafts, a shaft 27 at each floor, parallel with shafts 23 and having a slidable sprocket-wheel 26, operating mechanism therefor at each floor, sprocket-wheels 29 also on the several shafts 27 and connected with the sprocket-wheels 26 by clutches, and a sprocket-chain 44, connecting the several sprocket-wheels 29 and held thereto by guides 45, substantially as set forth.

2. A hatch-door having a cable-slot and provided along the edges of the slot with hinged upward-swinging leaves, said leaves being curved or inclined upward at their inner edges and contacting above their hinges or pivots, whereby they are free to swing upward, but are limited in their downward movement, substantially as set forth.

486,842. CAR-COUPLING. BENJAMIN KING and CHARLES L. TODD, Philadelphia, Pa. Filed June 24, 1892. Serial No. 437,260. (No model.)



Claim.—1. A car-coupling head having a link-support, openings for the guidance of the coupling-pin, and a supporting-pin guided in an inclined opening in the rear of the coupling-pin, said supporting-pin having an enlarged head and said inclined opening being tapered or shouldered, so as to restrict the downward movement of the supporting-pin by engagement with said head, substantially as specified.

2. A car-coupling head having a link-support, guides for the coupling-pin, and a supporting-pin guided in an inclined opening in the rear of the coupling-pin, said supporting-pin having an enlarged and rounded head, so that the supporting-pin is free both to rise and fall in its guide-opening and is also free to swing upward at the lower end when struck by the link which is being withdrawn from the head, substantially as specified.

3. A car-coupling head having a link-support inclined upwardly from the inner to the outer end, guides for the coupling-pin, and a supporting-pin traveling in an upwardly-inclined course at the rear of the coupling-pin, substantially as specified.

4. The combination of the coupling-head having a link-support, guides for the coupling-pin, and an upwardly-inclined guide for a supporting-pin, with a link having squared or flattened portions at the ends for striking and moving upward and rearward the lower end of the supporting-pin, said squared or flattened ends having sharp corners at top and bottom, substantially as specified.

5. A car-coupling head having a link-support with laterally-flaring recess at the front end, guides for the coupling-pin, and a supporting-pin traveling in an upwardly-inclined course at the rear of said coupling-pin and serving to retain the latter in the elevated position until struck and moved out of the way by an entering link, substantially as specified.

486,848. GRAIN-DRILL. GEORGE W. KIRKPATRICK, Macedon, N. Y. Filed July 13, 1892. Serial No. 439,703. (No model.)

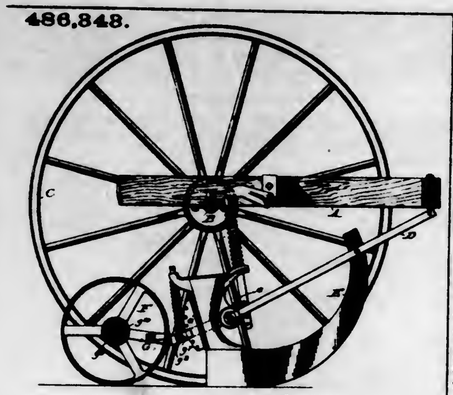
Claim.—1. In combination with a runner-hoe and a follower-wheel, a wheel-carrying arm lying wholly on one side of the hoe and wheel and jointed to the former, substantially as described.

2. In combination with a runner-hoe, an arm jointed thereto to swing vertically and a wheel applied wholly to one side of the arm and carried thereby.

3. In a grain-drill, the combination of a runner-hoe, a follower-wheel, and a single or undivided arm having at opposite ends laterally-projecting journals adapted to enter the wheel and the hoe, respectively.

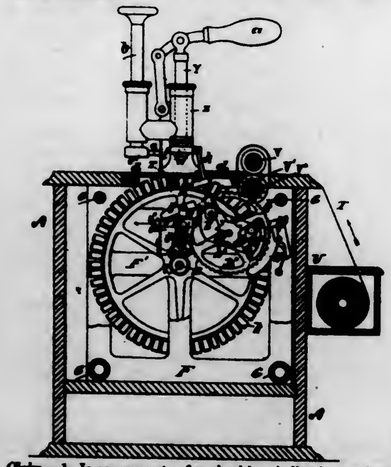
4. In combination with a runner-hoe and a follower-wheel, a vertically-swinging wheel-carrying arm lying on one side of the hoe and wheel and engaging a vertical guide on the rear side of the hoe, whereby lateral play of the arm is prevented.

486,848.



5. In combination with a runner-hoe, a follower-wheel, a wheel-carrying arm lying wholly on one side of the wheel, and an adjustable plate g^9, carried on the arm and engaging and sliding on the vertical rib or guide on the hoe.

486,844. CHECK ISSUING AND RECORDING APPARATUS. THOMAS L. KENNEY and HOWARD BUCKLEY, London, England. Filed Feb. 6, 1891. Serial No. 380,533. (No model.) Patented in England Feb. 19, 1890, No. 2,676.



Claim.—1. In an apparatus for checking, indicating, and registering, the combination of feed-rollers to feed forward a strip of paper with a stamping-pad, a spur-wheel h^3, gearing with a pinion on one of the feed-rollers, a spur-wheel h^5, attached to the spur-wheel h^3, a tumbler provided with a cam-surface and with a pawl to engage the spur-wheel h^5, a link connecting the tumbler with the said stamping-pad, and a spring-stop to engage the spur-wheel h^5 and acted upon by the cam-surface on the tumbler, all substantially as and for the purposes set forth.

2. In an indicating, checking, and registering apparatus, the combination of indicating mechanism, a stamping-pad, and ram therefor with means for preventing the stamping-pad from being depressed, the said means consisting of a tumbler provided with a projecting tooth, a link connecting the stamping-pad with the tumbler, a spring-stop i^7 to engage the teeth on the tumbler, a rocking lever to disengage the spring-stop from the tooth, means for operating the rocking lever from the indicating mechanism, a spring-stop i^9 to engage the stop i^7, and a catch on the link to act upon the stop i^9, all substantially as and for the purposes set forth.

3. In an indicating, checking, and registering machine, the combination of checking mechanism, a type-wheel, and spindle E therefor with means for controlling the movement thereof, consisting of a ratchet attached to the spindle E, a pawl engaging the ratchet-wheel and provided with a tail-piece, a rocking double lever, one end of which is adapted to move over the said tail-piece to disengage the pawl from the ratchet-wheel, and means for rocking the said lever by the movement of the checking mechanism, all substantially as set forth.

4. In an indicating and checking machine, a pointer and two dials, one behind the other, the front dial being stationary and having marked thereon divisions and numerals in a progressive series and provided with openings, the back dial being movable and having marked thereon a series of figures adapted to show through the openings in the front dial, and means for moving the back dial at each revolution of the pointer, in combination with a type-wheel provided with a series of numerals representing progressive amounts arranged spirally around the circumference of the wheel and means for transmitting rotary and longitudinal motion to the type-wheel from the pointer, whereby the amount on the type-wheel corresponding to the amount indicated by the pointer and dials will be in position for printing the check.

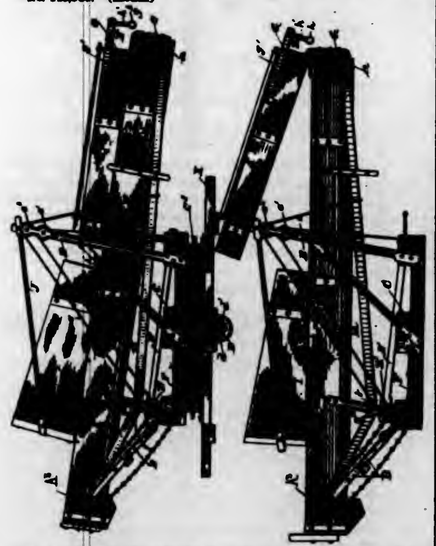
486,845. DAMPER-REGULATOR. CHARLES C. KOEPER, New York, N. Y. Filed May 3, 1892. Serial No. 431,690. (No model.)

Claim.—1. A damper-regulator consisting of a valve-casing adapted for communication with the steam-space of the boiler, the said casing being provided with a sliding valve-plug and a port controlled by the plug, a weighted lever bearing upon the valve-plug, a cylinder communicating with the port in the valve-casing, a piston held to slide in the cylinder, a rod projected upward from the piston, provided with spring-cushions and adapted for attachment to the handle or manipulating-arm of the damper, a guide or bearing for the rod between the two springs, and weights carried by the rod, as and for the purpose set forth.

2. A damper-regulator for boilers, consisting of a valve-casing adapted for connection with the steam-space of the boiler and provided with an outlet-port and a valve-plug regulating the opening of the said port, a weighted lever having bearing upon the valve-plug, which controls the inlet and the escape of steam, normally maintaining it in its seat and closing the port in the valve, a cylinder in direct communication with the valve-casing port, a piston having movement in the cylinder, a spring-cushioned rod attached to the piston and adapted for adjustable connection with the damper arm or handle, weights carried by the rod, a lever 40, pivoted between its ends below the valve-casing, a spring connecting one end of said lever with the said weighted lever, and a connection between the opposite end of lever 40 and the weights, substantially as and for the purpose set forth.

3. A damper-regulator for steam-boilers, consisting of a valve-casing adapted for connection with the steam-space of a boiler and provided with a port, a valve-plug controlling the port, a drip-opening, a lever fulcrumed at one end over the casing, provided with a pin extending down and bearing upon the valve-plug, a strap through which the lever passes, and provided with an adjusting-screw and a weight adjustable upon the lever, a cylinder in communication with the main port of the valve-casing, a piston having sliding movement in the cylinder, a rod projected upward from the piston and adapted for attachment to the arm or handle of a damper, springs carried by the rod, one being compressed when the other is expanded, weights connected with the rod, and a counterbalance-lever having a spring connection at one end with the weighed lever and a connection at its opposite end with the weights over the piston, as and for the purpose set forth.

486,846. STRAW-STACKING MACHINE. ADOLPH LANGHEIER, South Bend, Ind. Filed July 1, 1891. Renewed Oct. 11, 1892. Serial No. 448,803. (Model.)



Claim.—1. The combination of a carrier and means for moving the same both vertically and longitudinally, with a receiver slidably supported on the lower end and guided by the sides of the carrier, and the rods pivotally connected to the receiver and to a fixed upright separate from and beside the carrier, whereby the receiver is permitted to move only in a substantially-vertical plane, substantially as described.

2. The combination, in a folding carrier, of a section having hinge-plates g, having elongated slots in their upper edges, substantially as described, attached to the ends of its sides, with a folding section having hinge-plates g', having studs on their upper inner corners, substantially as described, attached to the ends of its sides, the studs of plates g' engaging the slots of plates g, forming a slidable hinge-joint between the sections, substantially as specified.

3. The combination of the carriage, the carrier mounted thereon, and means, substantially as described, for adjusting and supporting the same, with the hooks attached to the carriage adapted to engage and hold down the carrier but permit its oscillation, substantially as and for the purpose described.

4. The combination of the carrier-section, the front and rear bars supporting the same, said front bars having a loose connection, and means for elevating the carrier, with devices for holding down the rear end of the section but permitting it to oscillate, substantially as and for the purpose specified.

5. In a folding carrier, the combination of a lower section and an upper section hinged thereto with the arms attached to the hinged end of the upper section and the rod connected to the extremities of said arms and adapted to engage the fixed section, substantially as and for the purpose specified.

6. In a straw-stacker, the combination of a vertically and longitudinally adjustable carrier and means, substantially as described, for adjusting the same, with the hooks F and pins f', substantially as and for the purpose set forth.

7. The combination of the adjustable section A, the folding section A', the hinge-joints uniting the sections, the receiver I, slidably mounted on section A, and the rods J, pivotally connected to said receiver and to fixed support beside but independent of the section, substantially as described, and mechanism for adjusting said sections, all constructed and arranged to operate substantially as described.

486,847. PRESSING-FRAME. GARRIS LELAND, Fremont, Nebr. Filed Apr. 9, 1892. Serial No. 428,462. (No model.)

Claim.—1. The herein-described improved pressing-frame, having the supporting-posts, the curved arm having one end projecting into one of said posts and the slotted plate on the other end thereof, and the spring-pressed catch for engaging said slotted plate, substantially as set forth.

2. The herein-described improved pressing-frame, having the supporting-posts, one of which has a groove or opening therein, the spring-pressed catch in the other one of said posts, and the arm having concaved and convexed surfaces and provided at one end with a projecting portion extending through said opening or groove of said post and having a plate at its other end provided with slots into which said spring-pressed catch projects, as set forth.

3. The herein-described improved pressing-frame, comprising the board formed substantially as described and having arms projecting therefrom, the posts to which said arms are secured, provided one with a spring-pressed catch and the other with an opening or groove, and the curved invertible arm having a stud extended through said opening or groove and at its other end provided with a slotted plate designed to be engaged by said catch, as set forth.

486,848. BATHER'S APPLIANCE. WILLIAM H. MATTSON, Philadelphia, Pa. Filed June 23, 1892. Serial No. 437,634. (No model.)

Claim.—1. A shield for the eyes, consisting of a projecting portion a, inclined toward each side, and having an outer flange d for directing water to the sides of the head, substantially as described.

2. The combination, in a shield, of the projecting portion a, the inner flange b, adapted to rest against the head, and the outer flange d, projecting above the base of the shield and forming a trough for the water, substantially as described.

3. The combination of the shield having an outer flange for directing the water from the face of the wearer and an inner flange adapted to rest against the head, with a cap to which the inner flange of the shield is secured, substantially as described.

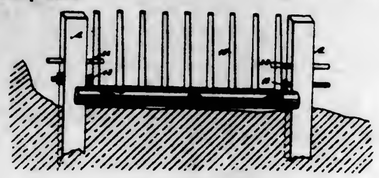
486,849. FLOOD-FENCE. HENRY D. MERRELL, Middlebury, Ind. Filed Jan. 15, 1892. Serial No. 418,172. (No model.)

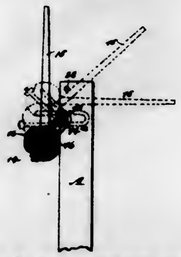
Claim.—1. In a flood-fence, the combination, with posts provided with pins on their inner faces, of a panel provided with elongated eyes engaging the pins on the posts, substantially as described.

2. In a flood-fence, the combination, with posts provided with pins on their inner faces, of a panel comprising a beam of greater length than the distance the posts are apart, and pickets projecting from the beam, said beam being provided with elongated eyes engag-

ing the pins on the posts, substantially as herein shown and described.

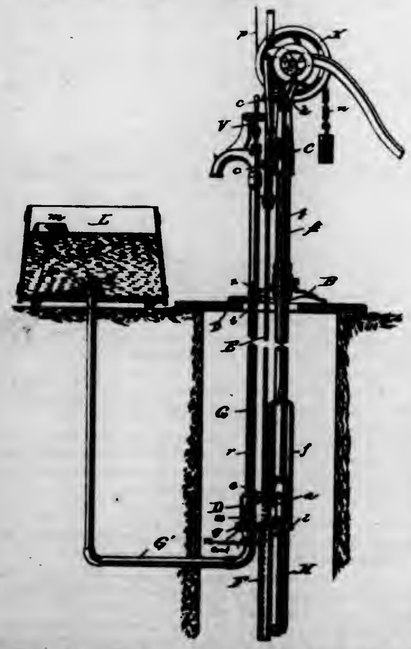
3. In a flood-fence, the combination, with posts adapted to be fixed in the bed of a stream or in low land and pivot-pins projected from the posts parallel with the proposed line of fence or gate, of a panel comprising a weighty beam and pickets projected from the beam, bolts secured to the beam and having elongated eyes engaging the pivot-pins of the posts, and stops carried by the posts, whereby the upward movement of the panel may be limited, as and for the purpose specified.





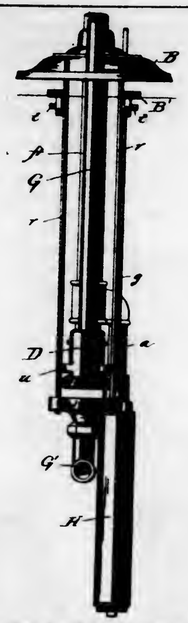
4. A post adapted for use in connection with flood-fences, the said post being constructed of metal T-shaped in cross-section, the cross-bar or head member at the lower end of the post being curved inward to form a segment, and wedges adapted for use in connection with the post, as and for the purpose set forth.

486,850. PUMP. PHILIP A. MYERS, Ashland, Ohio. Filed Dec. 3, 1890. Serial No. 373,402. (No model.)



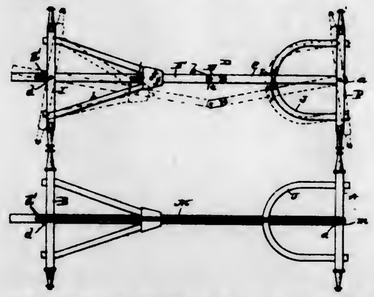
Claim.—In combination, a pump-stock A, closed at its upper end and open at its lower end, forming an air-chamber, a chambered cast-

486,850.



ing D, connected to said stock and communicating with its open lower end, discharge-pipes also connected to said casting, one leading to the spout and the other to a tank, a valve in said casting controlling the direction of the water, a branch pipe *a*, extending from the stock A and having a lower open end and a cylinder sliding on said pipe, with operating connections between said cylinder and the windmill, substantially as described.

486,851. WAGON RUNNING-GEAR. IRA B. OWENS and DANIEL C. BALL, Glen Elder, Kans. Filed Apr. 23, 1892. Serial No. 430,409. (No model.)

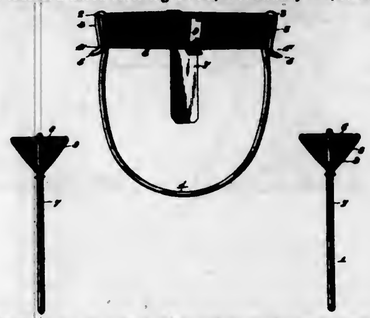


Claim.—In a wagon running-gear, the combination, with the front and rear axles and their bounds, the rear bounds having a cap-plate secured to their inner ends, of the pivoted sectional coupling-pole, the rear section thereof having slots *c* and *d'*, the former connected to the cap-plate by a bolt *f* and the latter connected to the rear axle by a bolt *d*, and the draft-rod M, connecting the front and rear axles, substantially as specified.

486,852. POCKET-PROTECTOR. JOSEPH W. PARMLEY, Ipswich, S. D. Filed Jan. 12, 1892. Serial No. 417,944. (No model.)

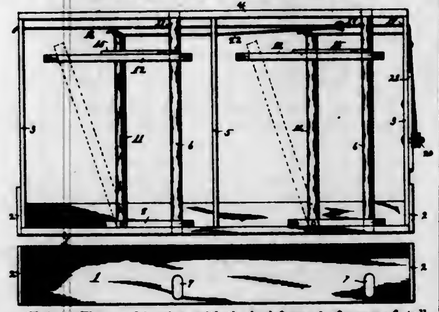
Claim.—1. The herein-described pocket safety attachment, the same consisting of the bowed spring-frame bent to U-shape form, having its ends outwardly bent to form hooks which contact with the frame below its bends and terminate in outwardly-bent pointed extremities, and the rubber band sprung over the frame and connecting the hooks and clamped between the hooked portions and the frame, substantially as specified.

2. The herein-described pocket safety attachment, the same consisting of the U-shaped spring-frame, the rubber band connecting the terminals of the same, and a spreading device inserted between the opposite sides of the band and serving to open the upper edges thereof, so as to form a flared receiving-mouth, substantially as specified.



3. The herein-described safety pocket attachment, the same consisting of the U-shaped wire frame, the rubber band sprung over the terminals thereof, and a Y-shaped spreader formed of sheet metal, inserted between the opposite sides of the band and having tongues, said tongues engaging the opposite sides of the band and clamping the same against the terminals, substantially as specified.

486,853. CATTLE-STANCHION. CHARLES S. ROMER, Chaffee, N. Y. Filed July 6, 1892. Serial No. 439,164. (No model.)

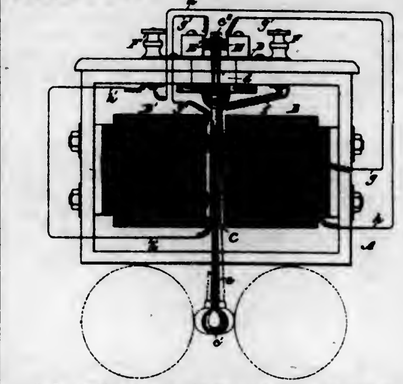


Claim.—The combination, with the bed-frame 1 of a row of stalls and the trough thereof and the upper cross-bar 4, of the uprights 6, the upper and lower stanchion-pieces 8 and 12, secured thereon, the swinging uprights pivoted loosely at their lower ends in oblong apertures 7 in the bed-frame and passing through oblong apertures 10 and 14 in the upper and lower stanchion-pieces, the ropes 16 and 22, secured to the swinging uprights and lever 21 for operating the same simultaneously, and the latches 15, whereby the said swinging uprights are held in vertical position to confine the animals, substantially as specified.

486,854. ELECTRO-MAGNETIC BELL. JAMES J. ROSS, Detroit, Mich., assignor of one-half to George B. Holden, same place. Filed Dec. 30, 1891. Serial No. 416,474. (No model.)

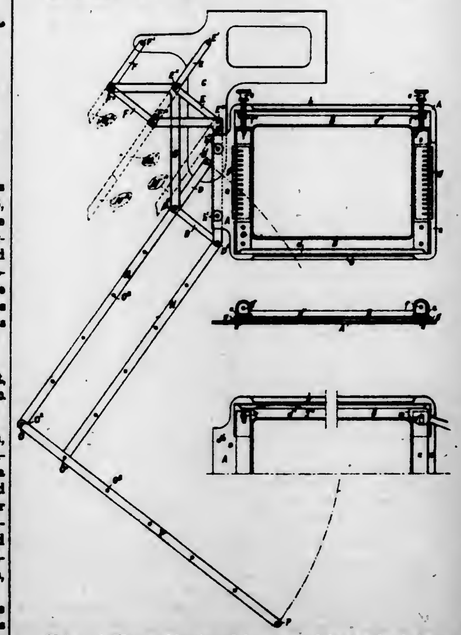
Claim.—1. In an electric bell-ringing apparatus, the combination, with two or more electro-magnets, of the armature-lever pivoted intermediate the ends thereof between said magnets and carrying a hammer at one end, the bell or bells arranged in proximity to said hammer, the contact-springs resting against opposite sides of the other arm or end of said armature-lever, and circuit connections, substantially as described, normally closed through said armature-lever and both of said magnets and contact-springs, whereby a continuous bell-ringing action is produced by the reciprocal action of the magnets, substantially as set forth.

2. A continuous bell-ringing apparatus, comprising two or more electro-magnets, an armature-lever pivoted intermediate the ends thereof between said magnets, a hammer on the long arm of said lever, a suitable bell or bells arranged in proximity to said hammer, contact-springs resting against opposite sides of the short arms of said lever and tending to normally center the same between the magnets, and electric circuit connections normally closed through said armature-lever and both of said magnets and contact-springs, whereby a rapid vibratory movement of the lever may be produced by the reciprocal action of the magnets and springs, thus causing the hammer to strike opposite sides of the bell or bells alternately in quick succession, substantially as described.



3. In combination with the electro-magnets, the rocking armature-lever pivotally supported intermediate the ends thereon between said magnets, a suitable hammer secured to the longer arm of said lever, the guide-plate having the elongated slot in which the short arm or extension of said lever works, the spring-plates secured in frictional contact with opposite sides of said extension, and suitable circuit connections through said magnets, armature-lever, and springs, whereby said springs will be automatically polished, so as to insure perfect electrical contact between the same and said armature-lever, substantially as set forth.

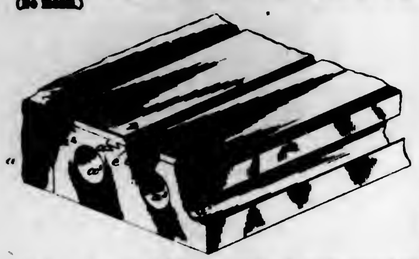
486,855. FABRIC-GUIDING DEVICE FOR EMBROIDERING-MACHINES. MARTIN H. RUSSELL, Paris, France. Filed Nov. 20, 1890. Serial No. 372,093. (No model.)



Claim.—1. The combination of the support C, having fixed pivots D' E F', arranged as shown, the angle-piece G, having pivots D^2 E^2 F^2, corresponding to the pivots of the support, the angle-piece H, having pivots D^3 E^3 F^3, corresponding to the pivots of the support, rods D, connecting the pivots D' D^2 D^3, rods E, connecting the pivots E' E^2 E^3, rods F, connecting the pivots F' F^2 F^3, and the levers M N, having arm P, substantially as described.

2. The combination of the fixed support C, having pivots D' E' F', arranged as shown, the angle-piece G, having pivots D² E² F², the angle-piece H, having pivots D³ E³ F³, rods D E F, levers M N, and arm P, substantially as described.

486,356. ARTIFICIAL BLOCK FOR PAVEMENTS. DAVID P. SARGENT, Williamsport, Pa. Filed Jan. 5, 1892. Serial No. 417,361. (No model.)



Claim.—1. A paving-block composed of an upper wearing-surface of artificial stone, which is interlocked with a lower body portion composed of hard-burned clay, having intermixed therein stone which is ground to a small size, and provided, also, with tongue and groove upon its sides adapted to interlock with adjacent similar blocks, substantially as specified.

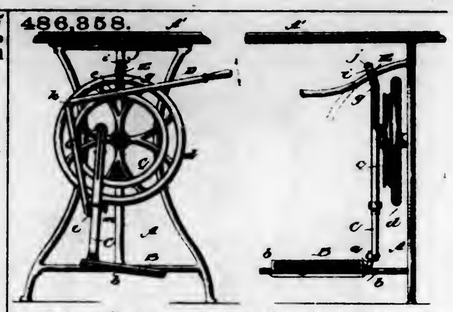
2. A pavement herein described, consisting of the foundation-blocks A, each having tongue and groove at its sides or edges and the dovetailed recesses in its top, and thereby interlocking with the wearing-face or top B, in the manner and for the purposes set forth.

486,357. FRUIT CONDUCTOR OR CONVEYER. JAMES MCC. SETTLE, South Jacksonville, Fla. Filed Mar. 11, 1892. Serial No. 424,601. (No model.)

Claim.—1. A fruit conductor or conveyer consisting of a flexible piece of material of elongated form, having a serpentine tube or passage therein, formed by parallel rows of stitches alternately curving from side to side thereof, substantially as described.

2. A fruit conductor or conveyer made of flexible material and of elongated form and having parallel rows of stitches running therethrough in serpentine form to provide a tortuous tube or passage, substantially as described.

486,358. HAND ATTACHMENT FOR SEWING-MACHINES. JOHN GRAFFORD, Goldsborough, N. C. Filed May 20, 1891. Renewed Sept. 30, 1892. Serial No. 447,495. (No model.)



Claim.—A hand-power attachment for sewing-machines, consisting of an operating-lever, a hinge thereon between its ends, a two-part pivoted clamp connected to one part of the said hinge by a swivel connection, a short lever hinged to the rear end of the operating-lever, and a hinge at the lower end of the short lever and provided with an adjustable clamp, substantially as shown and described.

486,359. BOTTLE-STOPPER. HARRY B. STEWART, St. Louis, Mo., assignor of two-thirds to Theodore Schwer and Joseph E. Blake, same place. Filed Jan. 13, 1892. Serial No. 417,847. (No model.)

Claim.—The combination of a band adapted to encircle a bottle, a bail, a lever constructed of wire and fulcrumed on the band and having the ends of the bail pivotally connected to it, a stopper having a threaded opening, and a threaded stem adjustable in the threaded opening of the stopper and provided with a transverse opening receiving the bail, whereby the stopper is hinged to the bail, substantially as described.

486,360. COMBINED COAL-SCUTTLE AND ASH-SIFTER. FRITZ TANNRATH, Chicago, Ill. Filed Jan. 12, 1892. Serial No. 417,853. (No model.)

Claim.—1. A combined coal-hod and ash-sifter consisting of a coal-hod having one end 2 composed of open-work material to form a sieve, a cover 3, of open-work material, over such end of the hod, and a removable plate for closing said end of the hod.

2. A combined coal-hod and ash-sifter consisting of a coal-hod having one end composed of open-work material to form a sieve, a cover of open-work material over such end of the hod, and a removable plate for closing such end of the hod, provided with an outwardly-projecting handle 7.

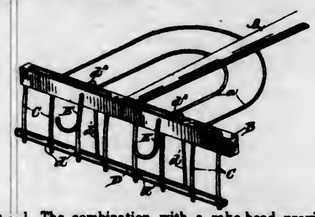
3. A combined coal-hod and ash-sifter consisting of a coal-hod having one end composed of open-work material to form a sieve, a cover of open-work material over such end of the hod, guideways upon the sides of the hod at said end, and a removable plate adapted to slide in said guideways for closing said end of the hod.

4. A combined coal-hod and ash-sifter consisting of a coal-hod having one end composed of open-work material to form a sieve, a cover of such open-work material over such end of the hod, guideways upon the sides of the hod at said end, and a removable plate for closing said end of the hod, provided with flanges adapted to slide in said guideways, and handles 7 and 9 on opposite sides of the end of said plate.

5. A coal-hod or similar receptacle having one end composed of open-work material to form a sieve and a cover 3, of open-work material, over such end of the same.

6. A combined coal-hod and ash-sifter having one end 2 composed of open-work material to form a sieve and a removable plate 4, located over said end 2 of the hod, so that by removing such plate 4 the coal-hod can be used as an ash-sifter.

486,361. RAKE. JOSEPH T. THOMPSON, Oneida, N. Y. Filed Feb. 24, 1891. Serial No. 382,873. (No model.)



Claim.—1. The combination, with a rake-head provided with braces *a* and pivoted latches *b*, adapted to be turned down over the said braces near the rake-head, of a cleaning-strip D, provided with perforations which are adapted to receive the tines of the rake, the said cleaning-strip being provided with bars *d*, which are passed vertically between the latches and the rake-head and have their upper ends *d*² forwardly bent and adapted to rest upon the top of the rake-head B, all substantially as and for the purpose set forth.

2. A rake provided with the guards E, constructed of wire and secured to and projecting rearwardly from the back of the rake-head and arranged in rear of and above the rake-teeth and extending downward and curving outward and upward, thereby adapted to support the rake-teeth at a suitable distance above the ground, substantially as described.

3. The combination, with a rake, of a cleaning-strip having perforations to receive the rake-teeth, said perforations being countersunk at the upper face of the strip to provide cutting-edges, substantially as described

4. The combination, with a rake, of a cleaning-strip having perforations to receive the rake-teeth, upwardly-extending arms bent over the rake-head, and guides secured to the rake-head and receiving through them the said arms, substantially as and for the purpose set forth.

5. The combination of a rake comprising a rake-head, a handle, braces extending from the handle to the rake-head and rake-teeth, a cleaning-bar having perforations to receive the rake-teeth and provided with upwardly-extending arms having their upper ends loosely resting upon the rake-head, and the latches pivotally mounted on the front of the rake-head and engaging the adjacent braces and forming guides for the arms, substantially as described.

6. In a rake, the combination of a rake-head, a handle, rake-teeth, and a continuous brace arranged on both sides of the handle and extending through the same and also through the rake-head and extending downward from the back of the latter and forming guards curved outward and upward, substantially as described.

7. A rake provided with the brace extending through the handle and arranged on opposite sides of the same and passing through the rake-head and terminating in hook-shaped guides arranged in rear of and above the rake-teeth, said guides forming abrupt downward bends and securing the rake-head in position, substantially as described.

486,362. ICE-CREAM MOLD. WELLINGTON C. THRAPWELL, Adrian, Mich. Filed May 31, 1892. Serial No. 435,096. (No model.)

Claim.—1. In an ice-cream mold, the combination, with a casing provided at opposite ends with apertured heads, of a mold open at both ends and supported in said apertured heads, a plunger fitting within said mold and provided with a rod having ratchet-teeth, a pivoted lever adapted to successively engage said ratchet-teeth, and a knife for cutting off the cream as it is ejected from the mold, substantially as described.

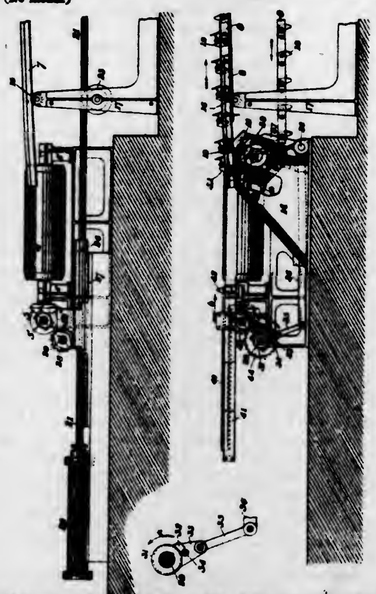
2. In an ice-cream mold, the combination, with the casing A, provided at opposite ends with apertured heads E F, of the mold H, open at both ends and supported in said apertured heads, a plunger K, fitting within said mold and provided with a rod J, having ratchet-teeth *j*, a bracket I, secured to the head F and carrying a spring-actuated pawl L, engaging said ratchet-teeth to prevent backward movement of the plunger, a pivoted lever M, carrying a spring-actuated pawl *m*, adapted to successively engage the ratchet-teeth, and a knife N for cutting off the cream as it is ejected from the mold, substantially as described.

486,363. CHINOLINCHINOPHENOL-SULPHATE AND METHOD OF OBTAINING SAME. JOSEF ROESLER, Biebrich, Germany. Filed Sept. 14, 1891. Serial No. 405,572. (No model.)

Claim.—1. The herein-described method of producing a soluble salt—chinolinchinophenol-sulphate—from orthoxychinolin and chinolin, which consists in heating a mixture of one of said substances and a sulphate of the other, substantially as described.

2. As a new article of manufacture, the sulphur-yellow powder of chinolinchinophenol-sulphate possessing a slight odor of chinolin very readily soluble in water, forming a thick mass at 96° centigrade, which is fusible at 114° centigrade, and having the formula hereinbefore set forth.

486,364. COOLING-BED FOR METAL BEAMS AND RAILS. HENRY AIKEN, Pittsburg, Pa. Filed Apr. 6, 1891. Serial No. 387,788. (No model.)



Claim.—1. An apparatus for cooling metal rails, &c., comprising a bed constructed to cool the rails and a carrier arranged to move them along the bed, said carrier having series of projections, by which the rails are separated from each other while cooling, substantially as and for the purposes described.

2. An apparatus for cooling metal rails, &c., comprising a bed constructed to cool the rails, a carrier arranged to move them along the bed, said carrier having projections by which the rails are separated from each other while cooling, and driving mechanism constructed to actuate the carrying mechanism in successive steps of limited extent, substantially as and for the purposes described.

3. An apparatus for cooling rails, &c., comprising a bed provided with means for cooling the rails, endless conveying-chains arranged to move the metal along the bed, said chains having projecting separated spurs, and wheels upon which the chains are carried, substantially as and for the purposes described.

4. The combination, with a cooling-bed, of an endless conveying-chain provided with means for moving the metal, sprocket-wheels around which the chain passes, driving-gear acting on one sprocket-wheel, and a lock for the other sprocket-wheel, substantially as and for the purposes described.

5. The combination, with a cooling-bed, of an endless conveying-

chain provided with means for moving the metal, sprocket-wheels around which the chain passes, driving-gear consisting of a pawl and ratchet acting on the sprocket-wheel at the delivery end and arranged to move the chain to a limited extent, and a lock for the other sprocket-wheel, substantially as and for the purposes described.

6. The combination, with a cooling-bed, of an endless conveying-chain provided with means for moving the metal, sprocket-wheels around which the chain passes, driving-gear acting on the sprocket-wheel at the delivery end and arranged to move the chain to a limited extent, a lock, and a motor connected both with the driving-gear and the lock, substantially as and for the purposes described.

7. The combination, with a cooling-bed, of an endless conveying-chain provided with means for moving the metal, sprocket-wheels around which the chain passes, a pawl and ratchet acting on the sprocket-wheel at the delivery end of the bed, a lock-wheel and detent at the other sprocket-wheel, and a motor situate at the receiving end of the bed and having a rod actuating said pawl and mechanically connected with the detent, said rod being arranged to actuate the pawl in its motion in one direction and to actuate the detent in its motion in the other direction, substantially as and for the purposes described.

8. The combination, with the bed, of the sprocket-wheel and a chain passing thereover, a stop-wheel upon the sprocket-wheel shaft, a detent arranged to engage the stop-wheel, a rotary shaft having a projection thereon, and a lever operated by said projection and connected to the detent, substantially as and for the purposes described.

9. The combination of the feed-table, the cooling-bed extending therefrom and having an endless conveying-chain provided with means for moving the metal, the transfer device for moving the rail from the feed-table to the cooling-bed, actuating mechanism for the chain, and a motor mechanically connected with the transfer device and with the chain-actuating mechanism and constructed to drive them alternately, substantially as and for the purposes described.

10. The combination of the feed-table, the cooling-bed extending therefrom and having an endless conveying-chain provided with means for moving the metal, the transfer device for moving the rail from the feed-table to the cooling-bed, actuating mechanism for the chain, a motor mechanically connected with the transfer device and with the chain-actuating mechanism and constructed to drive them alternately, and a lock for the chain, said lock being mechanically connected with the motor and adapted to be moved thereby into locking position at the end of the motion of the chain, substantially as and for the purposes described.

11. The combination of the feed-table and conveying-chain provided with means for moving the metal, a rack-bar having a projection adapted to move across the table, driving-gear for the chain, and a hydraulic cylinder mechanically connected with said driving-gear and connected by gearing with said rack and constructed to operate said parts alternately on its forward and backward strokes, substantially as and for the purposes described.

12. The combination of the saws adapted to divide a rail into sections, a feed-table 4, leading from the saws, several series of beds constructed to cool the sections, extending transversely to the feed-table, conveying mechanism for the cooling-beds, having projections arranged to separate the rails, and straightening-presses at the ends of the cooling-beds, substantially as and for the purposes described.

13. The combination, with a feed-table, of a movable stop consisting of a pivotally-supported spring-backed bar and mechanism for raising said stop above the level of the table, substantially as and for the purposes described.

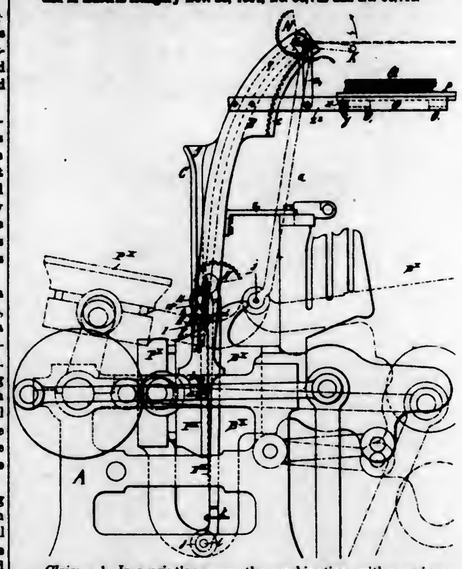
14. The combination of the cooling-bed, a frame adjacent thereto, upon which the rails are delivered therefrom, conveying mechanism having rollers 63, extending along the end of the bed, and transfer mechanism for shifting the rails from the frame to the conveying mechanism, or vice versa, substantially as and for the purposes described.

15. The combination of the cooling-bed, a frame adjacent thereto, upon which the rails are delivered therefrom, conveying mechanism extending along the end of the bed, and a rocking yoke between the conveying mechanism and the frame and having arms adapted to shift the rails from the frame to the conveying mechanism, or vice versa, substantially as and for the purposes described.

16. The combination, with the conveying mechanism and frame adjacent thereto, of the rocking yoke between the same, said yoke having pivoted arms, means for preventing movement of the arms in one direction, and means for rocking the yoke, substantially as and for the purposes described.

17. The combination, with the conveying mechanism, of the rocking yoke 66, having pivoted arms, means for preventing movement of the arms in one direction, mechanism for rocking the yoke, and a frame 74, containing the yoke, substantially as and for the purposes described.

486,865. PRINTING-PRESS. KARL ALMÉR, Stockholm, Sweden, assignor to F. H. Weller's Liberty Machine Works, Berlin, Germany. Filed Oct. 14, 1891. Serial No. 408,701. (No model.) Patented in Germany Aug. 1, 1891, No. 68,647; in Belgium Aug. 1, 1891, No. 95,871, and in Austria-Hungary Nov. 28, 1891, No. 36,748 and No. 61,710.



Claim.—1. In a printing-press, the combination, with a reciprocally-movable platen and bed, a flier provided with a gripper-bearing reciprocating vertically between said platen and bed, a toothed segment connected with the flier, a crank-shaft having its bearing on the flier, grippers secured to the crank-shaft, and a tension device operating on said shaft to hold the grippers in contact with their bearing, of a fixed toothed sector adapted to mesh with the like segment on the flier and a fixed abutment in the path of the crank of the gripper-shaft, operating to successively impart a partial revolution to the flier and gripper-shaft, respectively, after said flier has moved clear of the bed and platen, for the purpose set forth.

2. In a printing-press, the combination, with a reciprocally-movable platen and bed, a flier reciprocating vertically between said platen and bed and having a bearing for the grippers, a toothed segment connected with said flier, a crank-shaft mounted on the flier, grippers secured to the crank-shaft, and a tension device operating on the shaft to hold the grippers in contact with their bearing on the flier, of a fixed toothed sector adapted to gear with the segment on the flier, a fixed abutment in the path of the crank-shaft, operating to successively impart to said flier and shaft, respectively, a partial revolution, a locking device for locking the crank-shaft against returning to its normal position under the action of the tension device, and a releasing device for releasing said crank-shaft from the locking device, said elements being timed in their operation to the movements of the platen and bed, as and for the purpose set forth.

3. In a printing-press, the combination, with the bed and platen hinged together, as described, of a combined flier and gripper comprising a rectangular frame D E F F', having motion on and with the hinge-pin of said bed and platen between the latter and having bearing on and motion with the platen when the latter is in a given position, a rock-shaft connected with the frame at its upper end, gripper-fingers secured to said shaft, actuating devices operating to hold the fingers in contact with the upper cross-bar of the frame, to move said fingers out of contact therewith as said frame comes in contact with the platen, and again return said fingers to seize the sheet to be printed, said frame moving upwardly with the hinge-pin after the impression is made, and mechanism for tilting said frame and moving the gripper-fingers to release the printed sheet, as set forth.

4. In a printing-press, the combination, with the bed and platen hinged together, as described, of a flier consisting, essentially, of a rectangular frame, the connecting-rods G and H, connecting the flier with the hinge-pin of the bed and platen, said rod G having a cam-head G', the spring-actuated rock-shaft L, provided with gripper-fingers and mounted at the upper end of the flier, said rock-shaft having a crank adapted to be engaged by said cam-head to move said shaft against the stress of its spring, and means for tilting the flier in one direction when about to reach the limit of its upward movement and in a reverse direction at the beginning of its downward movement, for the purpose set forth.

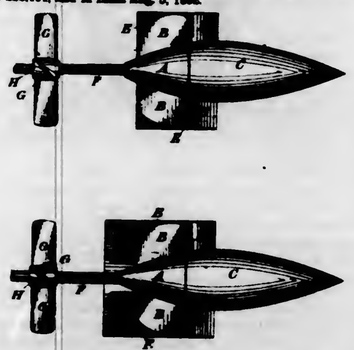
5. In a printing-press, the combination, with the bed and platen hinged together as described, of a flier consisting, essentially, of a rectangular frame, the connecting-rods G and H, connecting the flier with the hinge-pin of the bed and platen, said rod G having a cam-head G', a spring-actuated pawl pivotally connected to the upper cross-bar of the flier, the rock-shaft L, provided with gripper-fingers, mounted on the flier near said upper cross-bar and carrying a crank g r, adapted to be engaged by the cam-head G' and by the pawl when said flier moves in opposite directions, a releasing device for releasing the crank from engagement with the pawl, and means for tilting the flier in one direction as it is about to reach the limit of its upward motion and in a reverse direction at the beginning of its downward motion, for the purpose set forth.

6. In a printing-press, the combination, with the bed and platen hinged together as described, of a flier consisting of the frame D E F F', the connecting-rods G and H, connecting the flier with the hinge-pin of the bed and platen, said rod G having a cam-head G', a spring-actuated pawl pivotally connected to the upper cross-bar of the flier and provided with an arm w, the rock-shaft L, mounted on the flier near said upper cross-bar, said shaft carrying gripper-fingers M and a crank g r, adapted to be engaged by the cam-head G' and by the pawl when said flier moves in opposite directions, a fixed abutment in the path of the arm w of the pawl, and gearing adapted to tilt the flier in one direction as it is about to reach the limit of its upward movement and in a reverse direction at the beginning of its downward movement, for the purpose set forth.

7. An attachment for printing-presses, having a reciprocally-movable platen and bed consisting of a flier F×, composed of the supporting-bar D, provided with journals A, the toothed segment N and guide-arm K on said journals, the side bars E and the cross-bars F F', a gripper for clamping the work to the flier, releasing devices for releasing the work from the gripper, the connecting-rods G and H, said rod G having the cam-shaped head G' for operating the releasing devices, the standard B, provided with guide-groove f and toothed sector c, and the standard C, provided with guide-grooves f and g, said parts being arranged for operation substantially as and for the purpose set forth.

8. An attachment for printing-presses, having a reciprocally-movable platen and bed consisting of the flier F×, composed of the supporting-bar D, provided with journals A, the toothed segment N and guide-arm K on said journals, the side bars E and the cross-bars F F', the spring-actuated pawl W, provided with the short arm w' and the long arm w, connected with the bar D, the spring-actuated gripper-shaft L, having crank g r and tappet s, the connecting-rods G and H, said rod G having the cam-shaped head G', the standard B, provided with guide-groove f and toothed sector c, and the standard C, provided with guide-grooves f and g, said parts being arranged for operation substantially as and for the purpose set forth.

486,866. PROPELLER. SYDNEY W. BARNABY, London, England, assignor to John Isaac Thornycroft, same place. Filed Mar. 28, 1892. Serial No. 426,116. (No model.) Patented in France Mar. 16, 1892, No. 220,191, and in India Aug. 5, 1892.



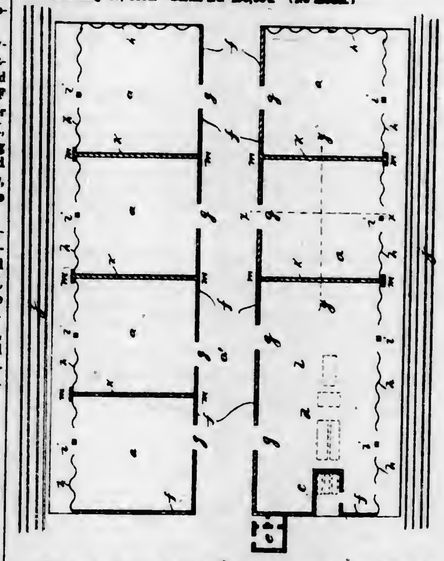
Claim.—1. In propelling and steering apparatus for navigable vessels, the combination, with a screw-propeller and a fixed tube within which said propeller can rotate, of supplementary screw-blades mounted to rotate with said screw-propeller and arranged outside of and forward of said tube, substantially as herein described, and for the purpose specified.

2. In propelling and steering apparatus for navigable vessels, the combination of a screw-propeller, a fixed tube within which said screw-propeller can rotate, supplementary screw-blades mounted to rotate with said screw-propeller and arranged outside of and in front of said tube, and inwardly-projecting straight guide plates or blades fixed to the forward end of said tube, substantially as herein described, for the purpose specified.

3. In propelling and steering apparatus for navigable vessels, the combination, with a propeller comprising a screw-propeller, a rearward body of the kind herein described arranged in line with and behind said screw-propeller and provided with guide plates or blades, and a fixed tube surrounding said screw-propeller and rearward body, of supplementary screw-blades mounted to rotate with said screw-propeller and arranged outside of and at the forward end of said tube, substantially as herein described, for the purpose specified.

4. In propelling and steering apparatus for navigable vessels, the combination, with a propeller comprising a screw-propeller, a rearward body and a tube provided at its rear end with guide plates or blades and within which said screw-propeller can rotate, of supplementary screw-blades carried by a separate boss fixed on the shaft carrying said screw-propeller and arranged outside of and in front of said tube, and guide plates or blades fixed to the forward end of said tube, substantially as herein described, for the purpose specified.

486,867. WAREHOUSE. WILL W. BIBBS, Montgomery, Ala. Filed May 19, 1892. Serial No. 433,604. (No model.)



Claim.—1. A warehouse having one or more sides formed by heavy fireproof walls and the remaining sides inclosed by metal plates, such as corrugated metal sheets, which can be forced off in case of fire.

2. A warehouse divided into separate fireproof compartments by vertical fire-walls, the outer masonry wall inclosing one or more sides of the warehouse and the metallic plates inclosing the remaining sides, substantially as described.

3. A fireproof warehouse divided into separate compartments by fire-walls extended laterally at the ends along the sides of the compartments to prevent fire lapping around the vertical edges of the fire-wall into an adjoining compartment.

4. A warehouse divided into separate compartments by imperforate fire-walls extending above the roofs of the compartments and below the floors thereof and T-shaped at the ends, for the purposes set forth.

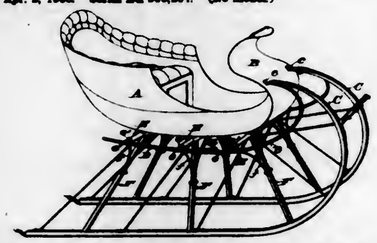
5. In a warehouse, the pedestals, the roof-supporting posts resting thereon, girders resting thereon and abutting against the post to prevent lateral movement thereof, and the floor also surrounding the post, substantially as set forth.

6. The cotton-warehouse divided into separate fireproof compartments by vertical imperforate fire-walls extending above the roof and projecting laterally at the outer edges, the outer heavy fire-wall inclosing one or more sides of the warehouse, the remaining sides of

the house being inclosed by removable metal sheets overlapped by said edges of the fire-walls, substantially as described.

7. The warehouse divided into separate fireproof compartments by vertical fire-walls extending above the roof, said fire-walls having corbals, each compartment having a separate roof supported independently on the fire-wall corbals, a heavy fire-wall inclosing one or more sides of the building, and removable metal sheets inclosing the remaining sides of the building, substantially as described.

486,368. SLEIGH. JOHN A. CHAPMAN, Milwaukee, Wis. Filed Apr. 2, 1888. Serial No. 269,237. (No model.)



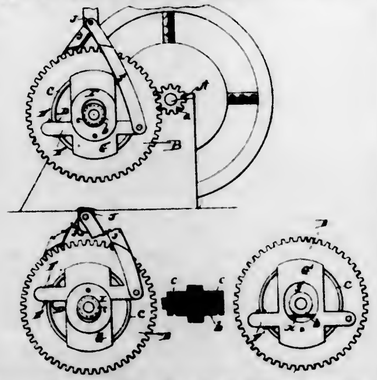
Claim.—1. The combination, in a sleigh, with the beams projecting beyond the sides of the body, of fenders uniformly round from end to end and metallic loops placed around said fenders and severally secured to the ends of said beams, substantially as and for the purposes set forth.

2. The combination, in a sleigh, with the runners and fenders, of metallic tips, each formed with seats for the reception of the front ends of a runner and fender, which are secured thereto and firmly held together thereby, substantially as and for the purposes set forth.

3. The combination, in a sleigh, with the dash, runners, and fenders, of metallic fastening-tips, each formed with seats for the front ends of a runner and fender, the seat for the runner opening forwardly and the seat for the fender opening rearwardly and provided with a foot for attachment to the dash, substantially as and for the purposes set forth.

4. The combination, in a sleigh, with a rounded fender, of a metallic scraper provided with concaved feet adapted to said fender and serving as a guard therefor, said scraper having an intermediate break and an adjacent foot, whereby it is made slightly flexible to conform to said fender, substantially as and for the purposes set forth.

486,369. MECHANISM FOR CONVERTING RECIPROCATING INTO ROTARY MOTION. DENNIS S. CORRELL, Welton, Iowa. Filed May 3, 1892. Serial No. 431,633. (No model.)



Claim.—1. In a mechanism for converting reciprocatory into rotary motion, the combination, with a wheel or disk having a circular flange and a central hub, of a clutch-lever loosely mounted on the hub of said wheel or disk, a spring connected to the lever and impinging against the said central hub, and friction-shoes mounted in bearings in the clutch-lever and engaging the inner and outer sides of the circular flange of the wheel or disk, substantially as and for the purpose described.

2. In a mechanism for converting reciprocatory into rotary motion, the combination, with a wheel or disk having a circular flange and a central hub, a clutch-lever loosely mounted on the hub of said wheel or disk and having the inwardly-directed lateral arms adjacent to one end straddling the circular flange and provided in their inner sides with bearing-seats, the concave friction-shoe engaging the outer side of the circular flange and having a rib seated in the bearing-seat of the outer lateral arm, and the convex friction-shoe engaging the inner side of the circular flange and having a rib seated in the bearing-seat of the inner lateral arm, of the spring connected to the lever and impinging against the central hub of the wheel or disk, substantially as specified.

3. In a mechanism for converting reciprocatory into rotary motion, the combination, with a wheel or disk having circular flanges upon its sides and a central hub, of the clutch-lever F, loosely mounted upon the hub on one side of the wheel or disk, the clutch-lever F', loosely mounted upon the hub on the other side of the wheel or disk and extending in an opposite direction to the lever F, springs connected to the levers F F' and impinging against the central hub, friction-shoes mounted in bearings in the clutch-levers and engaging the inner and outer sides of the circular flanges of the wheel or disk, and a suitable means for reciprocating the said clutch-levers, substantially as specified.

4. In a mechanism for converting reciprocatory into rotary motion, the combination, with a wheel or disk having circular flanges upon its sides and a central hub, the clutch-lever F, loosely mounted upon the hub on one side of the wheel or disk, the clutch-lever F', loosely mounted upon the hub of the wheel or disk and extending in an opposite direction to the lever F, springs connected to the levers F F' and impinging against the central hub, friction-shoes mounted in bearings in the clutch-levers and engaging the inner and outer sides of the circular flanges of the wheel or disk of the pitman, and links pivotally connected at one end to the pitman and at their opposite ends to the levers F F', respectively, substantially as and for the purpose specified.

486,370. BLANKET-ROLL SUPPORT FOR SOLDIERS. CHARLES DODGE, Jr., Fort Bayard, N. Mex. Filed June 20, 1892. Serial No. 437,423. (No model.)

Claim.—1. The herein-described blanket-roll support, consisting of a yoke formed to surround the body, substantially as shown, and having straps for attaching the blanket-roll, substantially as herein shown and described.

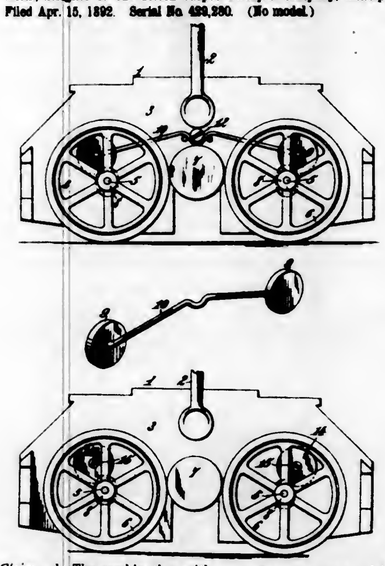
2. The herein-described blanket-roll support, which consists of the yoke bent or formed to surround the body and adapted to rest upon one shoulder and the opposite hip, the roll-attaching straps located at intervals along the yoke, and the bracing-strap H, also attached to the frame and adjusted to pass over one shoulder and beneath the opposite arm, substantially in the manner shown and described.

3. The herein-described blanket-roll support, consisting of the flexible yoke bent or formed to surround the body and to be supported upon one shoulder and one hip, substantially as described, and having straps for attaching the roll, and the spacing connection at the lower ends of the yoke, substantially as herein described.

4. The combination of the yoke bent or formed to surround the body diagonally from one shoulder to the opposite hip, the straps on the frame for embracing and holding the blanket-roll, and the steadying-strap D, connected with the frame near the lower end and adapted for engagement with the belt or other object on the body of the wearer, as and for the purpose explained.

5. The blanket-roll support consisting of the combination of the yoke bent or formed to surround the body and adapted for suspension from the shoulder or shoulders and having straps for embracing and holding the blanket-roll, the straps for suspending and embracing the yoke on the body, and the straps I, attached to the frame and adapted to suspend the haversack or canteen, substantially in the manner explained.

486,371. CARPET-SWEEPER. WALTER J. DREW, Grand Rapids, Mich., assignor to the Bissell Carpet Sweeper Company, same place. Filed Apr. 15, 1892. Serial No. 429,280. (No model.)



Claim.—1. The combination, with a carpet-sweeper case, a drive-wheel, and a brush-shaft, of an antifriction-roller bearing, substantially as described.

2. The combination, with the carpet-sweeper case, a drive-wheel, and a brush-shaft, of an antifriction-roller, said drive-wheel held away from frictional contact with the case by means of the antifriction-roller, the brush-shaft, and its bearings upon the floor, substantially as described.

3. The combination, with a carpet-sweeper case, a drive-wheel and a brush-shaft, of an antifriction-roller bearing acting to force or press the drive-wheel toward the brush-shaft when pressure is applied to the sweeper-case, substantially as described.

4. The combination, with a carpet-sweeper case and a drive-wheel, of a roller-bearing acting on the drive-wheel outside the wheel-base and a brush-shaft acted on by the drive-wheel inside the wheel-base, so that by pressure on the sweeper-case the roller-bearing forces or presses the drive-wheel toward the brush-shaft, substantially as described.

5. The combination, with a carpet-sweeper case and a drive-wheel, of an elastic support carrying a roller-bearing, substantially as described.

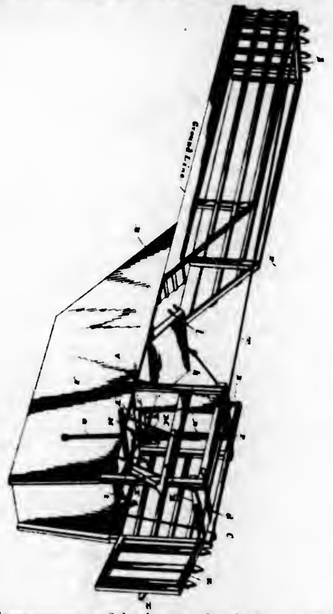
6. The combination, with a carpet-sweeper case and a drive-wheel, of an elastic support carrying a roller-bearing which acts on the drive-wheel outside the wheel-base and a brush-shaft acted on by the drive-wheel inside the wheel-base, substantially as described.

486,372. ANIMAL-DIPPER. ELMER A. FIREBAUGH, Spencer, Ohio. Filed June 17, 1892. Serial No. 437,072. (No model.)

Claim.—1. In an apparatus of the character described, a tank, a cage over the tank, trap-doors at the bottom of the cage, a lock for the said doors, a gate at one end of the cage, and a lock-tripping mechanism operated by the gate for unlocking the said trap-doors when the gate is closed, substantially as specified.

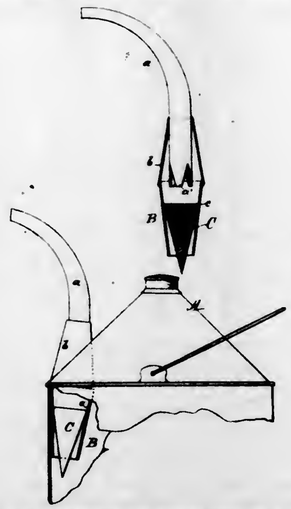
2. In an apparatus of the character described, a tank, a cage over the tank, trap-doors at the bottom of the cage, a retaining-board projecting into the tank inside of the cage, a gate for the cage, and a connection between the said gate and retaining-board, whereby when the gate is opened the board is raised, substantially as described.

3. In an apparatus of the character described, comprising a tank, a cage over the tank, trap-doors forming the bottom of the cage, a latch for locking the doors in a horizontal position, a gate for the cage, and a lever connected with the said latch and in the path traveled by the gate to be engaged thereby for disengaging the latch from the trap-doors when the gate is closed, substantially as described.



4. In an apparatus of the character described, comprising a tank, a cage over the tank at one end, trap-doors forming the bottom of the tank, and boards hinged at the inner end of the cage for holding the animal down, substantially as described.

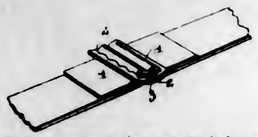
486,373. VALVE-NOZZLE FOR OIL-CANS. JOHN F. FISK, Jr., Cincinnati, Ohio. Filed July 30, 1892. Serial No. 441,659. (No model.)



Claim.—The combination, with a nozzle constructed substantially as shown, of the hollow conical sections connected to each other and containing a plug C and the discharge-nozzle extending within the upper conical section, the end thereof extending beyond the juncture of said conical sections with each other, said discharge-nozzle having

projecting ends, against which the plug is adapted to abut when the can is filled, substantially as shown.

486,374. BELT-FASTENER. BROOM GREENWOOD and RANDOLPH M. WEST, Jamestown, N. Y. Filed Nov. 28, 1891. Serial No. 412,808. (No model.)

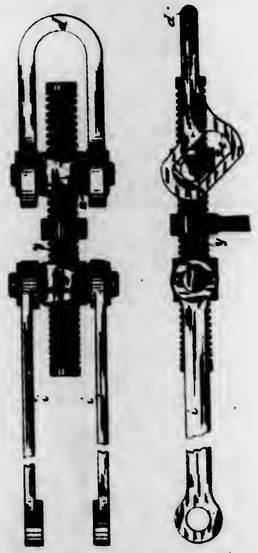


Claim.—1. The herein-described improved belt-fastener, the same consisting of an oblong open frame and a U-shaped locking-wire surmounting the frame and longer than the opening therein, said wire having its terminals inwardly bent and adapted to be passed through the folded ends of a belt, substantially as specified.

2. The herein-described improved belt-fastener, consisting of the curved oblong frame having its inner edges toothed and the U-shaped wire locking-bail longer than the opening in the frame and adapted to be passed through the folded ends of the belt, substantially as specified.

3. The herein-described improved belt-fastener, consisting of the transversely-curved oblong frame toothed at the inner edges of its side bars and the U-shaped locking-bail formed of spring-wire longer than the opening in the frame and having its terminals inwardly bent at their free ends and greater in length than the opening in the frame and adapted to be passed through the folded ends of the belt, substantially as specified.

486,375. CAR-COUPLING. EMIL GRUEN, Cologne, Germany. Filed Apr. 22, 1892. Serial No. 430,231. (No model.)

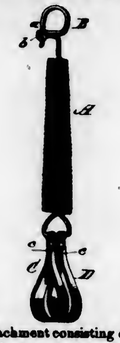


Claim.—1. In a car-coupler, the combination of a coupling pin or screw, a coupling-loop formed with inclined slots engaging suitable projections carried by the pin and screw, and a hook adapted to engage the loop, as set forth.

2. In a car-coupler, the combination of the coupling-hook, the coupling link or screw, the nut carried by the pin or screw and formed with trunnions, and the coupling-loop formed with inclined slots in its ends, which engage the trunnions, substantially as set forth.

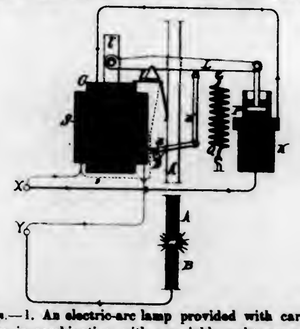
3. In a car-coupler, the combination of the hook, the coupling-screw, the screw-nut carried by the screw and formed with trunnions, bearing-blocks mounted on the trunnions, a coupling-loop formed with inclined slots which engage said bearing-blocks, and a suitable coupling-hook adapted to engage the loop, substantially as set forth.

486,376. BRIDLE ATTACHMENT. WILLIAM L. GUTHRIE, Leddonia, Mo. Filed July 18, 1892. Serial No. 440,232. (No model.)



Claim.—A bridle attachment consisting of a coiled spring having connected at its lower end one or more spring-hooks and at its upper end having the wire of the spring extended and bent to form a spring pin or tongue and the wire bent laterally upon itself to form a keeper for said pin or tongue, substantially as and for the purpose set forth.

486,377. ELECTRIC-ARC LAMP. DANIEL HIGHAM, Boston, Mass., assignor, by mesne assignments, to the Higham Electric Company, Portland, Me. Filed July 9, 1892. Serial No. 439,510. (No model.)



Claim.—1. An electric-arc lamp provided with carbon-feeding mechanism, in combination with a variable resistance connected in series with the carbons and a yielding connection between the feeding mechanism and the variable resistance, whereby the latter is acted upon by the feeding mechanism to compensate for variations of the resistance at the arc, substantially as described.

2. An electric-arc lamp provided with carbon-feeding mechanism, in combination with a variable resistance connected in series with the carbons and means whereby said variable resistance is acted upon by the current supplied to the lamp through the medium of a yielding connection, substantially as and for the purpose set forth.

3. An electric-arc lamp provided with differental coils and carbon-feeding mechanism controlled thereby, in combination with a variable resistance and a yielding connection between the feeding mechanism and the said resistance, substantially as and for the purpose set forth.

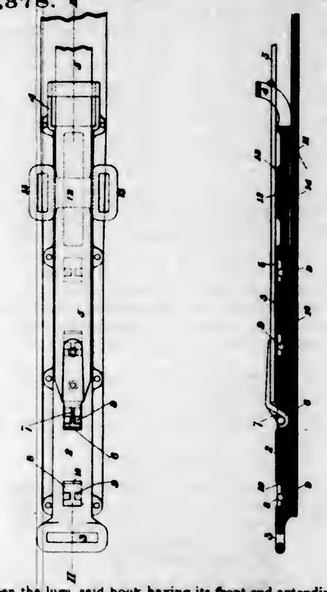
4. An electric-arc lamp provided with a carbon-feeding mechanism, in combination with a variable resistance connected in series with the carbons, a yielding connection between said feeding mechanism and variable resistance, and means whereby the current supplied to the lamp increases the variable resistance when the current rises in intensity and decreases the variable resistance when the current falls in intensity.

5. An electric-arc lamp having shunt and series coils and carbon-feeding mechanism controlled thereby, in combination with a variable resistance in series with the lamp and means whereby the said variable resistance is acted upon through the medium of a yielding resistance by the shunt-coil to reduce its resistance and by the series coil to decrease its resistance, substantially as set forth.

486,378. HAME-TUG. BYRON L. HOWE, Cleveland, Ohio. Filed June 13, 1892. Serial No. 436,464. (No model.)

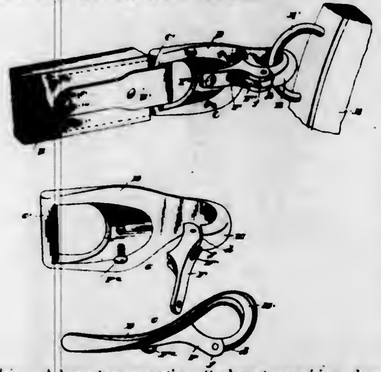
Claim.—A hame-tug having one or more holes therein, provided with inwardly-extending lugs, and a hook having a central web which

486,378.



fits between the lugs, said hook having its front end extending at an angle to the shank to bear at its rear or convex side against a shoulder at the rear end of the hole, substantially as and for the purposes described.

486,379. HAME-TUG. WILLIAM H. KIRK, Newark, N. J. Filed Feb. 26, 1892. Serial No. 422,871. (No model.)



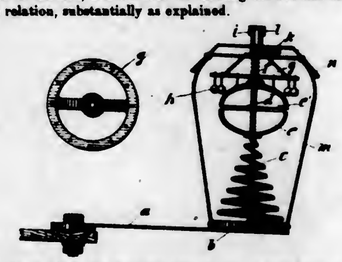
Claim.—A hame-tug-connecting attachment comprising a broad concavo-convex plate having a bar with the metal thereof adjacent thereto increased in thickness and a hook on the opposite end of said plate bent backward from the plane of attachment of said plate and having a recessed end, a tongue having a bifurcated end embracing and pivotally connected to said recessed end of the hook and provided with an under concave side at the free end thereof to bear on the outer convex surface of said plate and formed with a screw-hole aligning with a similar hole in said plate to receive an attaching-screw and adapted to receive a metallic clip on the bar of said plate, substantially as described.

486,380. ALARM APPARATUS. EMIL LAGERMANN, Berlin, Germany. Filed Mar 20, 1892. Serial No. 426,074. (No model.)

Claim.—1. An alarm apparatus consisting of a bell, a movable frame carrying the clappers adapted to strike the bell when brought near, and a lock adapted to retain the clapper-frame in striking position, the whole being mounted upon a vibratory support, substantially as described.

2. An alarm consisting of the bell, a clapper mounted in a shiftable frame adapted for movement in and out of active position, and the lock for holding the frame in active position, all substantially as set forth.

3. In an alarm, the combination of the elastic support, the clappers mounted on the elastic support and thereby adapted to receive vibratory motion through the support and mounted adjustably with relation to the bell, and the lock for holding the bell and clappers in active relation, substantially as explained.



4. In an alarm for movable objects, the combination of the bell, the stem projecting above the bell, the clapper-frame carrying clappers, shiftably mounted on the stem near the bell and adapted to be moved to bring the clappers into and out of active relation to the bell, and the lock for holding the frame in position of active relation, all substantially as set forth.

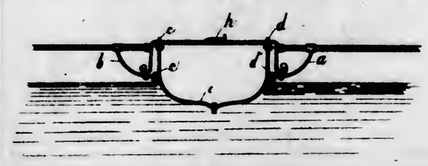
5. In an alarm for movable objects, the combination of the bell, the stem upon which the bell is mounted projecting above the bell, the clapper-frame vertically movable on said stem and carrying clappers which are adapted to strike the bell when the frame is depressed, the spring for keeping the frame normally elevated, and the lock for holding the frame in depressed position, all substantially as set forth.

6. In an alarm for movable objects, the combination of the spiral spring terminating in the stem, the bell mounted on the stem, the clapper-frame mounted movable on the stem beyond the bell and having clappers adjusted to strike the bell when the frame is moved toward the bell, but to rest out of reach of the bell when the frame is forced away, and the lock for holding the frame with the clappers in striking distance, all substantially as and for the purpose set forth.

7. In an alarm for movable objects, the combination of the plate-spring, the spiral spring mounted on one end of the plate-spring and terminating in the stem, the bell and clapper-frame mounted on said stem to be relatively movable thereon, clappers on the clapper-frame, adjusted to strike the bell when the bell and frame are brought together, but rendered inactive when the bell and frame are separated, and the catch for holding the frame and bell in active relation, all substantially as and for the purpose set forth.

8. In an automatic alarm, the combination of the bell and clapper-frame mounted to be relatively movable on a stem, clappers on the frame, adjusted to strike or not to strike as the bell and frame are brought together or are separated, the push-button having a recess, and a surrounding protecting-frame having a lock with a spring-bolt adapted to enter said recess, all substantially as and for the purpose set forth.

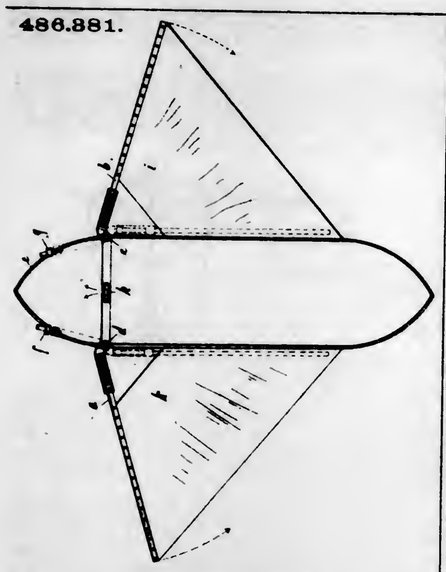
486,381. BOAT. EMIL LAGERMANN, Berlin, Germany. Filed May 3, 1892. Serial No. 431,688. (No model.)



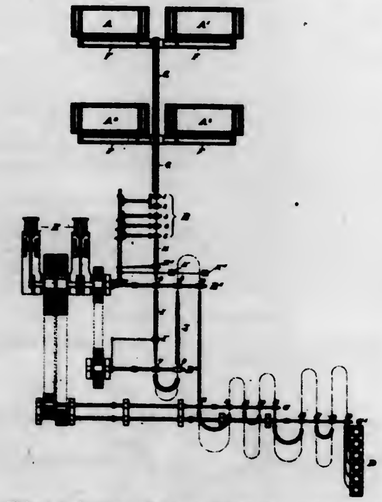
Claim.—1. The attachment for preventing boats from capsizing, consisting of the brackets hinged to the boat and sail-cloths attached to the boat and to the brackets, whereby when the brackets are swung out the sail-cloth is expanded to form wings and when the brackets are swung in the cloth is folded to the sides of the boat, substantially as described.

2. The combination, with a boat, of the pair of brackets hinged to swing in a horizontal plane at the sides of the boat and the horizontal wings secured to the brackets normally above the water and the inner arms of the wings for controlling them adapted to interlock across the boat when the wings are spread and having means for locking them alongside the boat when the wings are folded, substantially as and for the purpose set forth.

486,881.



486,882. WIRE-ROD MILL. GEORGE LAUENSTEIN, Johnstown, Pa., assignor of one-half to Fred. W. Stammler, same place. Filed Mar. 16, 1892. Serial No. 425,180. (No model.)



Claim.—1. In a rod-mill, the combination of a preliminary roughing-train, a guide leading therefrom to the first pass of a second roughing-train, a guide leading from said first pass to the first pass of a third roughing-train, and a guide leading from another pass of the third train back to another pass of the second train, substantially as and for the purposes described.

2. In a rod-mill, the combination of a preliminary roughing-train, a guide having positively-actuated feed-rollers leading therefrom to the first pass of a second roughing-train, a guide leading from said first pass to the first pass of a third roughing-train, and a guide leading from another pass of the third train back to another pass of the second train, substantially as and for the purposes described.

3. In a rod-mill, the combination of a preliminary roughing-train, a guide leading therefrom to the first pass of a second roughing-train, a guide having positively-actuated feed-rollers leading from said first pass to the first pass of a third roughing-train, and a guide leading from another pass of the third train back to another pass of the second train, substantially as and for the purposes described.

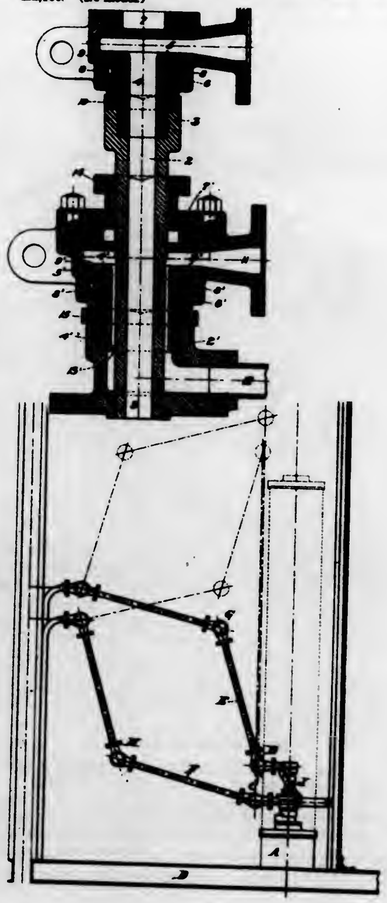
4. In a rod-mill, the combination of a preliminary roughing-train, a guide leading therefrom to the first pass of a second roughing-train, a guide leading from said first pass to the first pass of a third roughing-train, a guide leading from another pass of the third train back to another pass of the second train, and shears located adjacent to the second train, substantially as and for the purposes described.

5. In a rod-mill, the combination of a preliminary roughing-train, a guide leading therefrom to the first pass of a second roughing-train, a guide leading from said first pass to the first pass of a third roughing-train arranged to run at a slower speed than the second train, and a guide leading from another pass of the third train back to the second train, substantially as and for the purposes described.

6. In a wire-rod mill, the combination of a continuous roughing-train, a second open train provided with three sets of rolls and having its first pass in line with the last pass of the first train, a third train provided with two sets of rolls and having its first pass in line with the first pass of the second train, feed-rollers between the passes above recited, and a guide leading from the second pass of the third train to the second pass of the second train, substantially as and for the purposes described.

7. In a wire-rod mill, the combination, with a roughing-train, of feed-rollers arranged to transfer the metal therefrom to a train arranged to rotate at a slower speed and a guide leading from the reducing-train back to the roughing-train, substantially as and for the purposes described.

486,888. PIPE CONNECTION FOR HYDRAULIC MECHANISMS. CAMILLE MERSADIER, Braddock, Pa. Filed Feb. 19, 1892. Serial No. 422,106. (No model.)

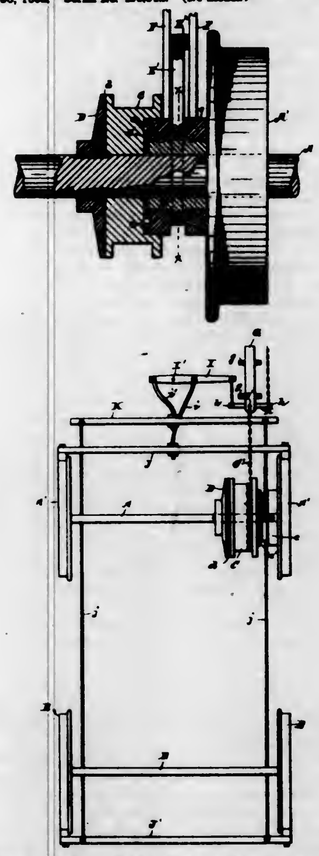


Claim.—1. In a swivel-joint, the combination of an interfitted swivel-box and swivel-neck, one having a flange and the other a shoulder against which the flange fits, a packing-ring set in a recess between the swivel-box and swivel-neck, a removable end cap, a pipe connection to which the swivel-neck is screwed, and an interposed locking-nut, substantially as and for the purposes described.

2. In a water-supply for crane-journals, the combination of a central pipe and, surrounding the same, a swivel-box and swivel-neck having flanges or shoulders adapted to be forced against each other by water-pressure, a packing-ring between said swivel-box and swivel-neck, a removable cap, and a stuffing-box, substantially as and for the purposes described.

3. The combination of two adjacent jointed pipes, swivels to which they are connected, and a counterbalancing connection between opposite sides of said swivels, substantially as and for the purposes described.

486,884. BRAKE MECHANISM FOR CARS. JASPER MURRAY, Cleveland, Ohio, assignor of one-half to Samuel Harris, same place. Filed June 30, 1892. Serial No. 438,512. (No model.)



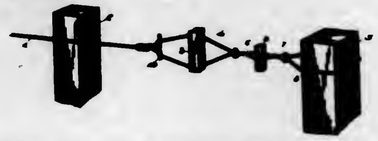
Claim.—1. In brake mechanism for street-cars, in combination, a car-axle and a friction disk, drum, and sleeve mounted on the axle in the order named, the sleeve being screw-threaded right and left handed and bearing nuts expansible by rotating the sleeve, such expansion of the nuts being adapted to close the clutch, substantially as and for the purpose set forth.

2. In brake mechanism, in combination, a car-axle, friction disk and drum, and a sleeve mounted on the axle, the sleeve bearing right and left handed nuts, the drum and opposing nut having a ball-bearing between them, substantially as described.

3. In brake mechanism, in combination, a car-axle, co-operating friction disk and drum and sleeve mounted on the axle, the sleeve bearing distensible nuts for operating the clutch, and means for oscillating the sleeve for distending or contracting the nuts, the drum having a chain for operating the lever system of the brakes.

4. In brake mechanism, in combination, a car-axle and friction-drum mounted thereon, and means, substantially as indicated, for operating the drum, and a chain connecting the drum with a sliding bar, such bar bearing an equalizing-lever, the two ends of the lever being operatively connected with the lever system of different cars, whereby the brakes of the different cars are simultaneously operated.

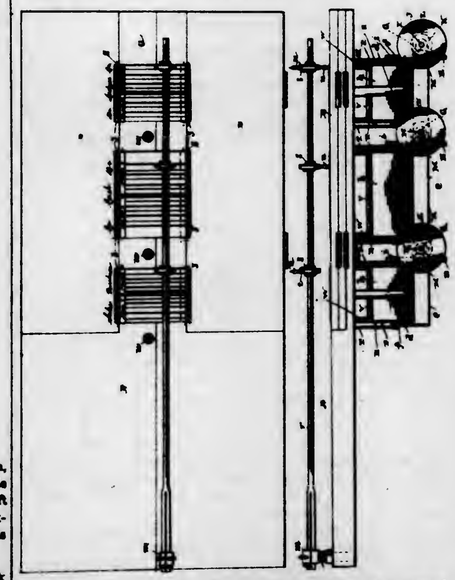
486,885. TENSION DEVICE FOR WIRE FENCES. ROBERT C. MCCLARRAN, Wooster, Ohio. Filed June 4, 1892. Serial No. 435,518. (No model.)



Claim.—1. In a wire fence, the combination of a post, a fence-wire, and a tension device comprising a loop connected to the post and the fence-wire, rings arranged on the loop and connecting the sides of the same, a spreader-bar separating the sides of the loop between the inner end of the same and the adjacent ring, and a twisting-bar arranged between the sides of the loop at a point between the rings and adapted to twist the loop to maintain the wire at the desired tension, substantially as described.

2. In a wire fence, the combination of a post, a fence-wire, a clip-bar provided intermediate its ends with an eye receiving the fence-wire, a tension device comprising a loop connected to the post and having the clip-bar linked into it, rings arranged on the loop and connecting the sides of the same, a spreader-bar separating the sides of the loop between the clip-bar and the adjacent rings, and a twisting-bar arranged between the sides of the loop at a point between the rings and adapted to twist the loop to maintain the wire at the desired tension, substantially as described.

486,886. BOOKKEEPING APPARATUS. THOMAS P. PATTESON, St. Joseph, Mo. Filed Apr. 21, 1892. Serial No. 430,131. (No model.)



Claim.—1. An apparatus for bookkeeping, comprising several sheets of suitable material arranged in a fixed relation to each other and a pen-support extending across them and carrying a pen or pens for each sheet, as and for the purpose described.

2. An apparatus for bookkeeping, comprising several sheets of suitable material arranged adjacent to each other, a pen-support ex-

tending over and across them, and adjustable pen-sockets upon the said support carrying pens, as and for the purpose specified.

3. An apparatus for bookkeeping, comprising several sheets of suitable material arranged adjacent to each other, a pen-support extending over them carrying a pen or pens for each sheet, and a universal guideway for one end of the said pen-support.

4. An apparatus for keeping books, comprising several sheets of suitable material arranged adjacent to each other, a pen-support extending over them, carrying a pen or pens for each sheet, and an ink-stand for each pen, the said stands being the same distance apart as the pens, as and for the purpose set forth.

5. An apparatus for bookkeeping, comprising several sheets of suitable material arranged adjacent to each other, a guideway having an angular opening, a pen-support extending over the said sheets, having an angular end for the guideway, and a round portion, for the purpose specified, and carrying a pen or pens for each sheet.

6. An apparatus for keeping books, comprising a set of books, each of which is composed of two rollers and a sheet of suitable material wrapped thereon, a means for revolving the said rollers, and a pen-support extending over the said sheets, carrying a pen or pens for each sheet.

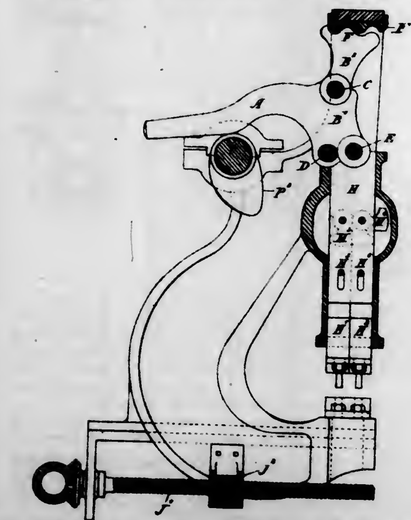
7. An apparatus for bookkeeping, comprising a set of books, each composed of two rollers, each having a cog-wheel, and a sheet of paper rolled thereon, an endwise shaft carrying two cog-wheels at a less or greater distance apart than the said rollers, for the purpose set forth, and a pen-support extending over the books, provided with a pen for each sheet.

8. An apparatus for bookkeeping, comprising a desk, a frame under it, rollers journaled in the said frame in pairs, the top of the desk having slots, sheets of paper passing through the said slots over the desk and having their ends secured to the said rollers, a means for revolving the said rollers, and a pen-support extending over the said sheets and having a pen for each sheet.

9. An apparatus for bookkeeping, comprising a desk, a frame under it, rollers removably journaled in the said frame in pairs, sheets of paper passing over the desk and having their ends secured to the rollers, a means for revolving them, and a pen-support extending over the said sheets, provided with a pen for each sheet, all combined as and for the purpose specified.

10. In a duplicating apparatus, the combination of the rollers, the sheets of paper passing from one to the other, a means for revolving them, friction-rollers which engage the paper, for the purpose specified, and a pen-support carrying a pen or pens, substantially as set forth.

486,387. PUNCHING, SHEARING, &c., MACHINE. THOMAS SMITH, South Stockton, England. Filed June 23, 1892. Serial No. 437,617. (No model.) Patented in England Sept. 4, 1890, No. 13,886; in France Aug. 14, 1891, No. 215,533, and in Germany Aug 28, 1891, No. 12,975.



Claim.—1. In a machine for punching, shearing, riveting, &c., in which intense pressure is to be exerted on the operating tool or appliance, the combination, with a frame provided with toggle-teeth, of a toggle-lever mounted between fixed bearings on said frame and having a projection on one arm connected to the tool to be operated and the other arm corrugated and adapted to advance on toggle-teeth fixed in said frame, with means for exerting pressure on the pivot of said toggle-lever, substantially as and for the purpose described.

2. In a machine for punching, shearing, riveting, &c., in which intense pressure is to be exerted upon the operating tool or appliance, the combination, with a frame provided with toggle-teeth and an operating-tool, of a toggle-lever mounted between fixed bearings on said frame, the said toggle-lever consisting, essentially, of two arms, one arm being pivoted in said frame and having a projection thereon to which the operating-tool is attached and the other arm being corrugated and adapted to advance on toggle-teeth fixed in said frame, with means for exerting pressure upon the pivot of said toggle-lever, substantially as and for the purposes described.

3. In a machine for punching, shearing, riveting, &c., in which intense pressure is to be exerted upon the operating tool or appliance, the combination, with a frame provided with toggle-teeth and an operating-tool, of a toggle-lever mounted between fixed bearings on said frame, the said toggle-lever consisting, essentially, of two arms pivoted together, the one arm being pivoted in said frame and having a small freedom of transverse movement relative to said pivot and having a projection thereon to which the operating-tool is attached and the other arm being corrugated and adapted to advance on toggle-teeth fixed in said frame, with means for exerting pressure upon the pivot of said toggle-lever, substantially as and for the purposes described.

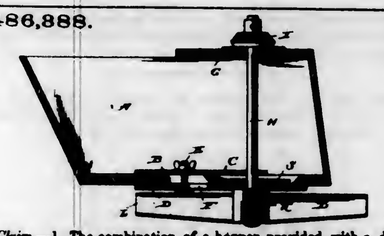
4. In a machine for punching, shearing, riveting, &c., in which intense pressure is to be exerted upon the operating tool or appliance, the combination, with a frame provided with toggle-teeth and an operating-tool, of a toggle-lever mounted between fixed bearings on said frame, the said toggle-lever consisting, essentially, of two arms, the one arm being pivoted in said frame and having a projection thereon to which the operating-tool is attached and the other arm being corrugated and adapted to advance on toggle-teeth fixed in said frame, and a lever connected to one of said arms, with means for moving said lever and so exerting pressure upon the pivot of said toggle-lever, substantially as and for the purposes described.

5. In a machine for punching, shearing, riveting, &c., in which intense pressure is to be exerted upon the operating tool or appliance, the combination, with a frame provided with toggle-teeth and an operating-tool, of a toggle-lever mounted between fixed bearings on said frame, the said toggle-lever consisting, essentially, of two arms pivoted together, the one arm being pivoted in said frame and having a small freedom of transverse movement relative to said pivot and having a projection thereon to which the operating-tool is attached and the other arm having a plurality of rows of corrugations arranged side by side, the corrugations in one row lapping the corrugations in the adjacent row, and rows of toggle-teeth fixed in said frame, registering with said corrugations and adapted to engage said corrugations as the toggle-lever arm advances, substantially as and for the purposes described.

6. In a machine for punching, shearing, riveting, &c., in which intense pressure is to be exerted upon the operating tool or appliance, the combination, with the frame provided with toggle-teeth and an operating-tool, of a toggle-lever mounted between fixed bearings on said frame, the said toggle-lever consisting, essentially, of two arms pivoted together, the one arm being pivoted in said frame and having a small freedom of transverse movement relative to said pivot and having a projection thereon to which the operating-tool is attached and the other arm having a plurality of rows of corrugations arranged side by side, the corrugations in one row lapping the corrugations in the adjacent row, rows of toggle-teeth fixed in said frame, registering with said corrugations and adapted to engage said corrugations as the toggle-lever arm advances, and a lever connected to one of said arms, with means for moving said lever and so exerting pressure upon the pivot of said toggle-lever, substantially as and for the purposes described.

486,388. SEED-SOWER. ROBERT J. STRAUS, Shiremanstown, Pa. Filed July 13, 1892. Serial No. 439,813. (No model.)

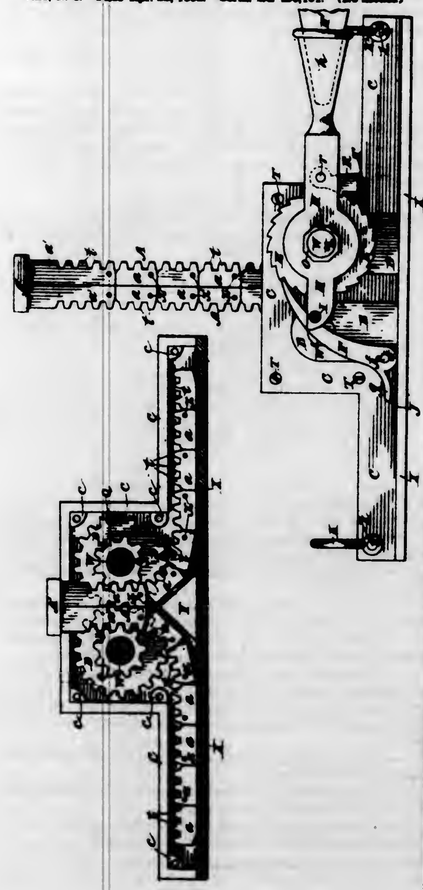
486,388.



Claim.—1. The combination of a hopper provided with a discharge-opening, a slide arranged within the hopper and adapted to vary the size of the discharge-opening therein, a distributing-wheel arranged below the discharge-opening in the hopper, means for revolving said wheel, and another slide arranged between the hopper and the distributing-wheel, substantially as and for the purpose described.

2. In a machine of the character described, the combination of a hopper provided with a discharge-opening, a slide arranged within the hopper and adapted to vary the size of the discharge-opening, a through-bolt attached to said slide and extending through aligned slots formed in one wall of the hopper, and a slide arranged on the outside thereof, a shaft journaled in opposite walls of the hopper at one side of the discharge-opening and provided with a distributing-wheel, and means for revolving said shaft and wheel, substantially as described.

486,389. RAILROAD-TRACK JACK. JOHN M. WRIGHT, Fayetteville, N. C. Filed Apr. 22, 1892. Serial No. 430,161. (No model.)



Claim.—1. In a track-jack, a lifting-bar composed of two linked flexible parts connected to a head and each of which parts is adapted to support the other in a vertical position, in combination with a case and mechanism for raising both of the parts together, substantially as described.

2. A box or case having a central opening at the top and provided with two shafts and pinions suitably spaced apart, in combination with a two-part linked and toothed lifting-bar, the parts of which are connected to a head and are arranged between and engage with said pinions, substantially as described.

3. The combination, with the two-part linked lifting-bar having teeth at the edge and arranged in a case and operating mechanism, of the guide having inclined faces for separating the two parts of the linked bar, substantially as described.

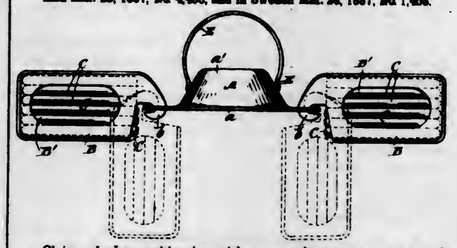
4. In a track-raising jack, a two-part linked lifting-bar, each part being composed of links having teeth at one edge and adapted to be flexed one toward the other at the toothed edge only, said parts being connected by links lying back to back to a rigid head, in combination with a box or case and suitable operating mechanism.

5. In a track-jack, a lifting-bar composed of two flexible parts, each part being formed of toothed links connected to a head and applied back to back, the links having joints which permit them to be flexed one toward the other outward, but prevent them from being flexed backward, whereby each half or part of the bar supports the other when raised into a vertical position, in combination with a case and a pinion engaging with the toothed links, substantially as described.

6. In a jack, a lifting-bar composed of two sets of pivotally-connected links having teeth at one edge and adapted to be flexed one toward the other at the toothed edge, said sets of links being connected at one end, in combination with a case and mechanism for raising the bar, substantially as described.

7. A box or case provided with two transverse shafts carrying two gear-wheels meshing with each other and two pinions suitably spaced apart, in combination with a two-part linked and toothed lifting-bar and operating mechanism, substantially as described.

486,390. CENTRIFUGAL CREAM-TESTER. PETER V. P. BEDA, Askov-Vejen Station, Denmark, assignor, by mesne assignments, to Ovidius K. Westfield, Perth Amboy, and Reinhold J. Proitzer and Adolph J. Proitzer, Jersey City, N. J. Filed Nov. 27, 1891. Serial No. 413,341. (No model.) Patented in France Mar 17, 1887, No. 182,947; in Belgium Mar. 31, 1887, No. 76,783; in Norway Mar. 31, 1887, No. 531; in England Mar. 26, 1887, No. 4,490, and in Sweden Mar. 26, 1887, No. 1,458.



Claim.—1. In combination with a central rotary part, a set of frames or cases for holding cream-testing tubes, the said frames being removably hinged to the said central part, and a bail also attached to the latter for lifting it, as described.

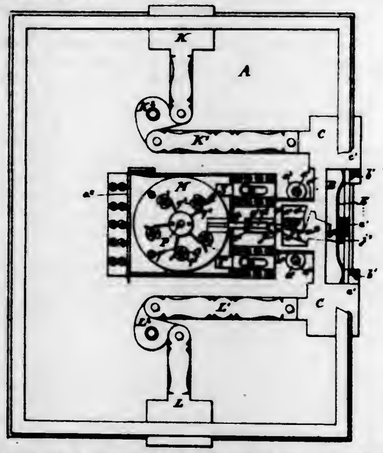
2. A tube-supporting case or frame provided with a hook or hooked end and an opening at this end and having openings in its sides for allowing the inspection of cream-testing tubes within the said frame or case, the said hooked end serving for attachment to a central part capable of rotation, substantially as set forth.

486,391. PERMUTATION-LOCK. MAXIMILIANO BADOUI, Geneva, Switzerland, assignor to Alaga Rovillini de Murait, same place. Filed July 11, 1892. Serial No. 439,691. (No model.)

Claim.—1. In locks for safes, the combination of a spring-bolt B, formed substantially as shown, with a fastening-bolt C, formed substantially as shown, a spring E, with bearing e', a rocking lever J, pivoted to said bolt C, a bit D', acted upon by means of a knob or handle D and acting upon the aforesaid bolts B and C and lever J, and with a series of pins or other sliding pieces g, located in a box G and pressed by the retracting motion of the bolt C against a corresponding series of disks H, which are provided each with one hole h for the passage of the corresponding pin or other sliding piece g, and with series of cutouts h', said disks H being each connected to a corresponding wheel O by means of a bolt or slider h^2, which may be

locked into any one of the cutouts k' of the disk H, each wheel O being acted upon by means of a pinion g^3, able to be rotated from the outside of the safe, and each wheel O being provided with a full tooth g^6 or other suitable step, substantially as and for the purpose specified.

2. The combination, with the bolt having a face c^3, of the sliders g, the box G, supporting the same, the springs to press the sliders toward the bolt, the disks, each with cutouts and a hole for receiving the end of the slider as the bolt is retracted, the wheels O, and the spring-bolts h^3 for connecting the wheels and disks, and pinions and knobs for rotating the respective wheels and setting the disks, substantially as specified.

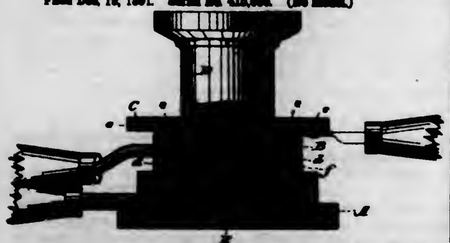


3. The combination, with the bolt having a face c^3, of the sliders g, the box G, supporting the same, the springs to press the sliders toward the bolt, the disks, each with cutouts and a hole for receiving the end of the slider as the bolt is retracted, the wheels O, and the spring-bolts h^3 for connecting the wheels and disks, and pinions and knobs for rotating the respective wheels and setting the disks, the axis P and plates M N, and the hinge c^7, by which access is given in setting the disks, substantially as specified.

4. The fastening-bolt C, in combination with the bolt B and spring for projecting the same and the rocking lever J and bit D for acting upon both bolts to withdraw or project the same, the rocking lever J holding the bolt C out of action when only the spring-bolt B is made use of, substantially as specified.

5. The combination, with the bolt and sliders g, of the disks H, each having cutouts and a hole for its slider, and the wheels O, having stops O' and spring-bolts for connecting the wheels and disks, turn-buttons, axes, and pinions gearing into the wheels, and cams and springs for indicating the places at which the pinions are to be stopped, substantially as specified.

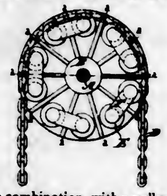
486,892. MOLD FOR GLASSWARE. PETER BLANKENHORN, Jr., Wellsburg, W. Va., assignor of one-half to Lucas Walter, same place. Filed Dec. 19, 1891. Serial No. 415,609. (No model.)



Claim.—1. In a glass-mold, the combination of the mold-base the mold-ring seated therein, and the screw-ring having a projecting flange resting upon the mold-ring, a smooth cylindrical bearing therein, and external screw-threads below the same, substantially as described.

2. In a glass-mold, the combination of the mold-base, the mold-ring seated therein, the screw-ring having a central hole therethrough, an annular flange resting upon the mold-ring, a smooth cylindrical bearing therein and external screw-threads below the same, and a plunger arranged to reciprocate through the hole in the screw-ring, substantially as described.

486,898. APPLICATION OF MAGNETIC ATTRACTION. ARMAND DE BOVET, Paris, France. Filed Aug 31, 1891. Serial No 404,296. (No model.) Patented in France Mar. 3, 1891, No. 211,852.



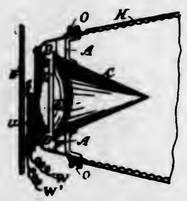
Claim.—1. The combination, with a pulley composed of two symmetrical parts, the peripheral portions thereof being separated and containing the groove, of a chain lying therein and one or more electro-coils by which the peripheral portions of the pulley are excited and become the pole-pieces, substantially as described.

2. The combination, with a pulley formed of similar parts having the peripheral portions separated and insulated, of electro-coils mounted on cores supported by said parts, two of the terminals of said coils being connected, contacts to which the other terminals are connected, and a battery connected with said contacts, substantially as described.

3. A pulley or traction wheel composed of similar sector-shaped parts, the peripheral grooved portions separated slightly, in combination with an insulating-annulus interposed between said electro-coils arranged upon cores projecting from said sector-shaped pieces, a battery, and means intermediate of said battery and coils whereby the current shall only traverse the said coils during a certain arc of revolution of the pulley, substantially as described.

4. The combination, with a pulley, of electro-coils on cores forming parts of separate but adjacent portions, contacts to which the terminals of the coils are connected, and contact-plates having connections with the poles of the battery and arranged to engage said contacts during a part of the revolution of the pulley, substantially as described.

486,894. APPARATUS FOR RECORDING SPEECH OR OTHER SOUNDS. WILLIAM ROSSING, East Orange, N. J. Filed July 23, 1891. Serial No. 400,451. (No model.)



Claim.—1. In a phonograph, a horn or sound-conveyer, one end of which projects inwardly and forms a concave annular reflector, in combination with a spherical reflector, a diaphragm which presents its inner side to the concave surface of the spherical reflector and is supported by its frame on the convex surface of the annular reflector, and a recording-style which is supported on the outer side of said diaphragm.

2. In a phonograph, a style consisting of a loop of an electrical circuit, the two limbs of which are insulated from each other and from the diaphragm, and the end of which loop is provided with a suitable point for making the record in a phonograph record-blank.

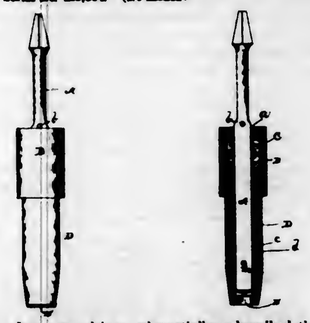
3. In phonographs, a style S, consisting of a loop of an electrical circuit-wire, the point of which is formed by an acute angle in the bend of the loop, the two sides of the loop insulated from each other by the insulating material K and the whole being insulated from the diaphragm.

4. In phonographs, the style S, springs G G', and insulating material K K', in combination.

5. In phonographs, the style S, springs G G', insulating material K K', and rubber block B', in combination.

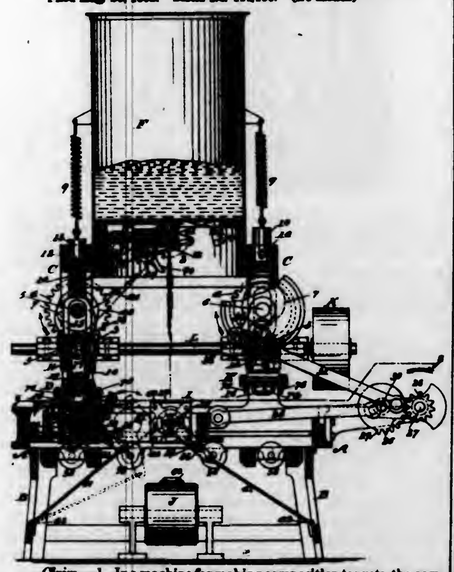
6. In phonographs, the style S, springs G G', insulating material K K', rubber block B', and rubber band U, in combination.

486,895. SCREW-DRIVER. WILLIAM M. CARR, Tyrone, Ky., assignor of one-half to Edmund S. Slaughter, same place. Filed Apr. 30, 1892. Serial No. 430,894. (No model.)



Claim.—In a screw-driver, substantially as described, the combination, with the shank, the sleeve D, surrounding the same, and a spring backing the said sleeve, of the sleeve E, formed of rubber or equivalent material, mounted upon the sleeve D, substantially as and for the purpose set forth.

486,896. MACHINE FOR MAKING COMPOSITION TARGETS. JOHN W. DUNBAR, New London, Conn., assignor to Hallock A. Pearces. Filed Aug. 26, 1892. Serial No. 444,169. (No model.)



Claim.—1. In a machine for making composition targets, the combination of a ram, a device for feeding the composition, a carriage, a rotary mold-block trunnioned therein, and mechanism for moving said carriage and locking the same into positions wherein the said mold-block coincides with the said ram and the said feed device alternately, substantially as described.

2. In a machine for making composition targets, the combination of a ram, a composition-feeding device, a rotary mold-block bearing a series of molds, a reciprocating carriage for carrying the mold-block into alternate coincidence with the ram and feeding device, and mechanism for intermittently revolving the mold-block in one direction when moving from the ram toward the feed.

3. In a machine for making composition targets, the combination of two rams, a central feed, two mold-blocks adapted to coincide with one ram and the feed simultaneously, and a carriage for moving said mold-blocks into alternate coincidence with the rams.

4. In a machine for making composition targets, the combination of two rams, a central feed, two rotary mold-blocks containing series of molds revolving in vertical planes, a mechanism for intermittently rotating said blocks into positions for feeding, compressing, cooling, and dropping the work, and a conveyer beneath the blocks for receiving the work.

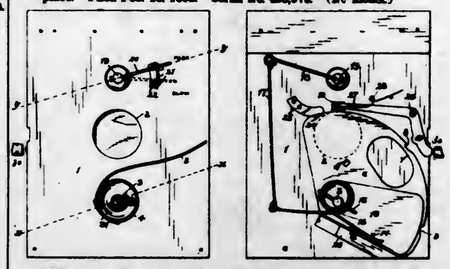
5. The combination of the rams D E and tank F, the feeding device 2, the mold-blocks H I, the carriage G, and the reversible rock-arm 26 for moving the carriage, and means for reversing said arm, substantially as described.

6. The combination of the rams D E, the mold-blocks H I, and means for feeding the material and operating said blocks, substantially as described, and the driving-shaft L, worms 3 3, gears 4 4, and cams 7 7, arranged as specified.

7. The combination of the rams D E, the tank and supply device 2, the carriage G and means for reciprocating it, the rotary mold-blocks H I, trunnioned in said carriage, the rock-arms 38, connected at their free ends to the frame of the machine, and pawls mounted on the rock-arms engaging with said mold-blocks to revolve them in one direction at each stroke of the carriage, substantially as described.

8. In a machine for making composition targets, the combination of a ram, a mold-block and means for moving the mold-block into and out of coincidence with the ram, and an automatic composition-feeding device having coincidence with the mold-block when it is out of coincidence with the ram, the same consisting in a plunger, a valve for alternately establishing communication of the plunger with the tank and the outlet, and mechanism for moving the valve and the plunger automatically corresponding to the movements of the said mold-block.

486,897. CAMERA-SHUTTER. GEORGE EASTMAN, Rochester, N. Y., assignor, by mesne assignments, to the Eastman Kodak Company, same place. Filed Feb. 10, 1892. Serial No. 420,972. (No model.)



Claim.—1. The combination, with the shutter-support and an oscillatory arbor journaled in said support, of an exposing-shutter journaled loosely on the arbor, an auxiliary shutter secured rigidly to the arbor, a catch for engaging the exposing-shutter, a spring for moving the arbor in one direction, and a stop on the exposing-shutter, with which the auxiliary shutter co-operates to cover the exposing-aperture when moved in one direction, substantially as described.

2. The combination, with the shutter-support and an oscillatory arbor journaled therein, of an exposing-shutter journaled loosely on the arbor, an auxiliary shutter secured rigidly to the arbor, stops on the main shutter, with which the auxiliary shutter co-operates, a catch engaging the exposing-shutter, an adjustable arm on the shutter-support, and a spring connected at one end to said arm and at the other to the arbor, substantially as described.

3. The combination, with the shutter-support and an arbor journaled therein, of an exposing-shutter journaled on the arbor, an auxiliary shutter rigidly secured to the arbor, co-operating with stops on the main shutter, a catch engaging the exposing-shutter, a second arbor journaled in the support having two arms, a notched plate with which one of said arms engages, and a spring connected to the other of said arms and to the arbor, substantially as described.

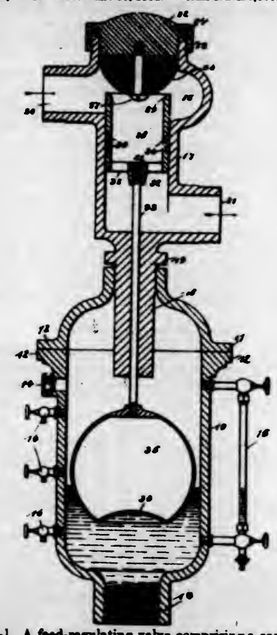
4. The combination, with the support, the arbor journaled therein having the grooved pulley, the cord connected thereto, and the cord-guard 31, arranged in proximity to said pulley, of the shutter connected to the arbor and operated thereby, substantially as described.

5. The combination, with the shutter-support and an arbor journaled therein, of an exposing-shutter journaled loosely on the arbor, an auxiliary shutter secured rigidly to the arbor co-operating with stops on the main shutter, a catch engaging the exposing-shutter, an adjustable arm on the support, a spring connected to said arm at one end, passing around the arbor and engaging the auxiliary shutter, and the pin on the end of the arbor for preventing the displacement of the coils of the spring, substantially as described.

6. The combination, with the shutter-support and an arbor extending through the support and having the pulley at one end for moving it in one direction, of an exposing-shutter journaled loosely on the arbor near the other end, an auxiliary shutter secured rigidly to the arbor, a catch for engaging the exposing-shutter, a spring for moving the arbor in one direction, and a stop on the exposing-shutter,

with which the auxiliary shutter co-operates to cover the exposing-aperture when moved in one direction, substantially as described.

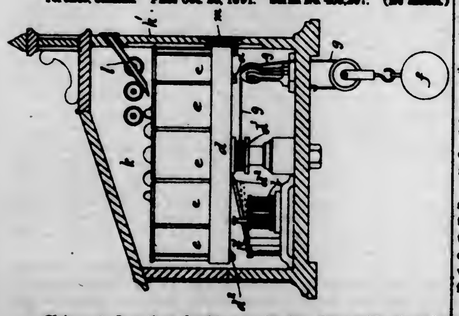
486,398. FEED-REGULATING VALVE. WILLIAM K. FARRAND, Brooklyn, N. Y. Filed June 15, 1892. Serial No. 436,808. (No model.)



Claim.—1. A feed-regulating valve comprising a casing 17, having an inlet 20 at its upper end and an outlet 21 at its lower end, a cap 22, arranged to close the top of the casing, a spheroidal valve-seat 26, secured to the under side of the cap and extending downward opposite the inlet, a sliding hollow valve 28, held to move between the inlet and outlet and to close upon the seat at a point opposite the inlet, a chamber 25, extending around within the casing at a point adjacent to the inlet, a water-column arranged beneath the valve and connected with the receptacle controlled by the valve, a float suspended in the water-column, and an operative connection between the float and valve, substantially as described.

2. The combination, with the float-actuating regulating-valve and the water-column held beneath the valve, of a float held within the water-column and connected with the stem, the float having an air-chamber in its bottom, substantially as described.

486,399. WORKMAN'S TIME-REGISTER. CHARLES J. GARRETT and ALFRED MOSES, Keighley, England, assignors to Thomas Horn, Toronto, Canada. Filed Oct. 20, 1891. Serial No. 409,207. (No model.)

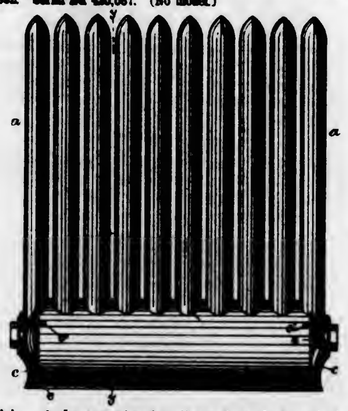


Claim.—1. In a time-checking mechanism, the combination of a rotary disk, check-receptacles mounted thereon, electro-magnets, armatures acted on by said magnets and engaging with the disk, and means for intermittently moving said disk at prearranged times, substantially as described.

2. In a time-checking mechanism, the combination of a rotary disk, check-receptacles mounted thereon, a motor-weight acting on said disk, electro-magnets, armatures acted on by said magnets, and a clock electrically connected with said magnets, constructed to make and break the circuits at prearranged intervals, substantially as described.

3. In time-checking mechanism, the combination of a rotary disk carrying suitably-formed receptacles, means for rotating the same, electro-magnets with hinged armatures operating in connection with projections formed on said rotary disk for governing or controlling its said rotary motions, and a timepiece or clock for completing the circuit of said electro-magnets at prearranged times, substantially as specified.

486,400. RADIATOR. CHARLES F. GESSERT, New York, N. Y., assignor to the C. F. Gessert Company, of New Jersey. Filed Mar. 16, 1892. Serial No. 425,087. (No model.)



Claim.—1. In a sectional radiator formed of vertical sections with air-spaces between the same, the combination, with the intermediate sections and with sections having supporting-legs attached thereto, of the plates *f*, extended transversely across the sections and engaged with the supporting-legs and extended from the intermediate sections to the floor to inclose the space beneath the radiator, as set forth.

2. In a sectional radiator formed of vertical sections with air-spaces between the same, the combination, with the intermediate sections and with sections having supporting-legs attached thereto, of the ribs *e* upon the edges of the legs and the plates *f*, having their upper edges fitted to the intermediate sections and their lower edges extended to the bottom of the legs and having their ends engaged with the ribs *e*, as set forth.

3. In a sectional radiator formed of vertical sections with air-spaces between the same, the combination, with the intermediate sections and with sections having supporting-legs attached thereto, of the ribs *e* upon the edges of the legs and the plates *f*, having their upper edges fitted to the intermediate sections and their lower edges extended to the bottom of the legs and having their ends fitted to the ribs *e* and secured detachably thereto, as by the button *o*, substantially as set forth.

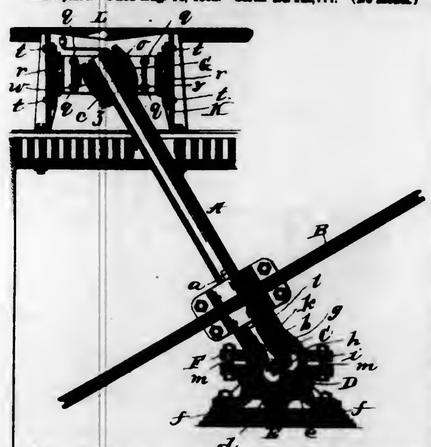
4. In a sectional radiator formed of vertical sections with air-spaces between the same, the combination, with the intermediate sections and with sections having supporting-legs attached thereto, of the plates *f*, fitted interchangeably at their ends to the legs upon the opposite sides of the radiator and provided with means, as lugs or buttons, for securing them detachably to the legs, and the plates being extended from the intermediate sections to the bottom of the legs, so as to inclose the space beneath the radiator, as set forth.

5. In a sectional radiator formed of vertical sections with air-spaces between the same, the combination, with the intermediate sections and with sections having supporting-legs attached thereto, of the plates *f*, fitted interchangeably at their ends to the legs upon the opposite sides of the radiator, and one of the plates being provided with an air-inlet and a damper applied thereto, substantially as set forth.

6. In a sectional radiator formed of vertical sections with air-spaces between the same, the combination, with the intermediate sections and with sections having supporting-legs attached thereto, of the plates *d*, cast between the legs to the bottom of the same, and the plates *f*, fitted interchangeably at their ends to the legs upon the opposite sides of the radiator and one of the plates being provided with an air-inlet and a damper applied thereto, substantially as herein set forth.

7. In a sectional radiator formed of vertical sections with air-spaces between the same, the combination, with the intermediate sections and with sections having curved supporting-legs attached thereto, of the plates *f*, curved in cross-section and extended transversely across the sections and engaged with the supporting-legs and extended from the intermediate sections of the floor to inclose the space beneath the radiator, as set forth.

486,401. ADJUSTABLE SHAFT-BEARING. BENJAMIN W. GEIST, Philadelphia, Pa., assignor to the Pennsylvania Iron Works Company, same place. Filed Aug. 11, 1892. Serial No. 442,777. (No model.)



Claim.—1. The combination of a sheave, a revoluble shaft having journals at both ends, an adjustable bearing at one end, a trunnioned bearing, and a trunnioned yoke supporting said latter bearing at the opposite end of the shaft and admitting of oscillations of the bearing and the yoke.

2. The combination of a sheave, a revoluble shaft having journals at both ends, a universal bearing at one end, a trunnioned bearing, and a trunnioned yoke at the opposite end of said shaft and supporting said latter bearing.

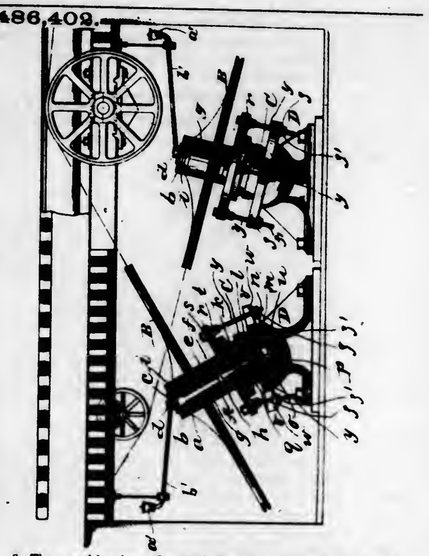
3. The combination of a sheave, a revoluble shaft having journals at both ends, a trunnioned bearing, a trunnioned and longitudinally-movable yoke supporting said bearing at one end, and an adjustable bearing at the opposite end of said shaft.

4. The combination of a sheave, a revoluble shaft having journals at both ends, a trunnioned bearing and a trunnioned yoke supporting said bearing at one end, a fixed frame supporting said yoke, and an adjustable bearing at the opposite end of the shaft.

5. The combination of a sheave, a revoluble shaft having journals at both ends, a trunnioned bearing and a trunnioned yoke supporting said bearing at one end, a fixed frame supporting said yoke, adjustable cheek-pieces between the yoke and the frame, and an adjustable bearing at the opposite end of the shaft.

6. The combination of a shaft provided with journals at both ends, a sheave secured to the shaft, a spherical bearing, a base for said bearing and a clamping-plate engaging the bearing, bolts for securing said plate and bearing to the base at one end, and a movable bearing at the opposite end of the shaft.

486,402. ADJUSTABLE SHEAVE-SUPPORT. BENJAMIN W. GEIST, Philadelphia, Pa., assignor to the Pennsylvania Iron Works Company, same place. Filed Aug. 11, 1892. Serial No. 442,778. (No model.)

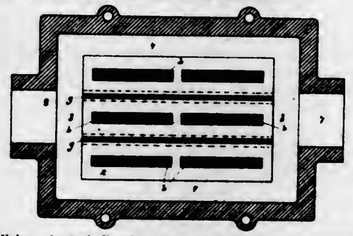


Claim.—1. The combination of a base having a concave bearing-seat in its upper end, a sheave-support having a semispherical bearing adapted to and adjustable in said seat and provided with a concentric seat to receive a clamping-plate, an annular clamping-plate engaging said concentric seat, and a sheave revoluble on said support.

2. The combination of a shaft having a cylindrical and conical section, a sheave revolubly mounted on said cylindrical section, a semispherical bearing having a conical bore in which the conical section of the shaft is rigidly secured, a base having a semispherical seat, and means for adjustably securing the bearing in the seat.

3. The combination of a shaft having a journal at one end, a sheave revolubly supported on said journal, a bearing separate from the shaft and to which the lower end of the shaft is rigidly secured, a concentric seat at the upper end of said bearing, a clamping-plate on said seat, a base having a seat for said bearing and provided with a surrounding flange, and bolts for connecting the clamping-plate to said flange.

486,403. VALVE. EDWARD W. HARDEN and MICHAEL R. CONWAY, Cincinnati, Ohio, assignors to Frederic C. Weir, same place. Filed Jan. 27, 1892. Serial No. 419,461. (No model.)



Claim.—1. A shell valve A, provided with one or more passages *d* and one or more ports leading through the valve and one or more ports *b* above the valve and one or more steam-passages *g* in the top face of the valve-seat for admitting steam to the ports *b*, substantially as specified.

2. An auxiliary shell valve having two or more ports *b*, passages *g'*, supplied from the opening B, one or more ports *d* in the top face of the valve-supplying ports *b*, and two or more cut-offs *c*, substantially as specified.

3. The shell valve A, provided with the central opening B, ports *a* through the valve, ports *b* in the upper seat of the valve, similar ports *i* in the lower section of the valve, and steam-ports *e h* in the lower seat of the valve, substantially as specified.

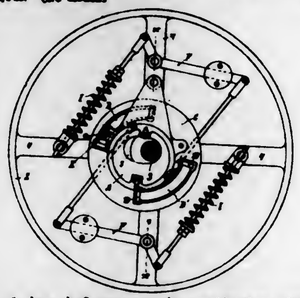
4. A shell valve A, receiving steam into the interior opening B, a series of steam-passages *a* through the valve, a series of steam-ports *b* in the valve-seat, the series of steam-passages *g b*, and the cut-offs *c* for closing the ports *b g*, substantially as specified.

5. In combination with the shell valve A, having the series of steam-ports *a d* in the top section of the valve and a similar series of ports through the lower section of the valve, and the duplex valve-seats provided with similar ports and passages, substantially as specified.

6. In combination with the shell valve A, having two or more exterior and two or more interior ports and four or more cut-offs *c* for reducing or closing simultaneously the ports *b* and *g*, whereby the steam is admitted alternately over the exterior and interior faces of the valve, substantially as specified.

7. In combination with the shell valve A, having a central opening B, having one or more exterior ports *a*, and two or more cut-offs *c* for reducing and closing simultaneously the main and auxiliary ports, substantially as specified.

486,404. GOVERNOR. EDWARD W. HARDEN, Cincinnati, Ohio, assignor to Frederic C. Weir, same place. Filed Mar. 7, 1892. Serial No. 424,042. (No model.)



Claim.—1. In a shaft-governor, the combination, with a wheel and an eccentric-support having an elongated opening receiving the shaft, of a plate C, having an eccentric-guide D, a slide E, hinged to the eccentric-support and working in the eccentric-guide D, an eccentric-ring B, secured to said eccentric-support, and a weighted arm connected to said eccentric-ring B and to the wheel, substantially as described.

2. In a shaft-governor, the combination, with a wheel and an eccentric-support having an elongated opening receiving the shaft, of a plate C, having an eccentric-guide D, a slide E, hinged to the eccentric-support and working in the eccentric-guide D, an eccentric-ring B, adjustably secured to said eccentric-support, and a weighted arm connected to said eccentric-ring B and to the wheel, substantially as described.

3. In a shaft-governor, the combination, with a wheel and an eccentric-support having an elongated opening receiving the shaft, of a plate having an eccentric-guide D, a slide hinged to the eccentric-support and working in the guide D, and a weighted arm for operating said parts, substantially as described.

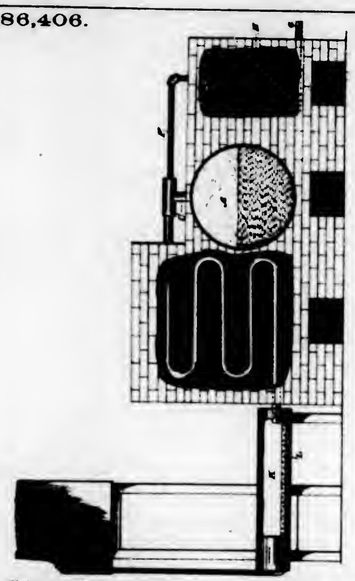
4. In a shaft-governor, the combination, with a wheel, of a laterally-moving eccentric-support mounted thereon and having an elongated opening receiving the shaft, an eccentric-ring radially adjustable on such support, and a weighted arm connected to said eccentric-ring and to the wheel, substantially as described.

486,405. DOUBLE PIANO-STOOL. JOHN J. HEMING, Seattle, Wash. Filed Apr. 22, 1892. Serial No. 430,204. (No model.)

Claim.—1. A piano-stool comprising a support, a vertically-adjustable base mounted on said support, and two seats movable toward and from each other mounted on the vertically-adjustable base and having independent vertical adjustment thereon, substantially as set forth.

2. A piano-stool comprising a support, a vertically-adjustable base thereon, two seats movable toward and from each other on the base and also having an independent vertical adjustment thereon, a catch for securing the two seats together, and springs forcing the seats apart on the vertically-adjustable base when the catch is released, substantially as set forth.

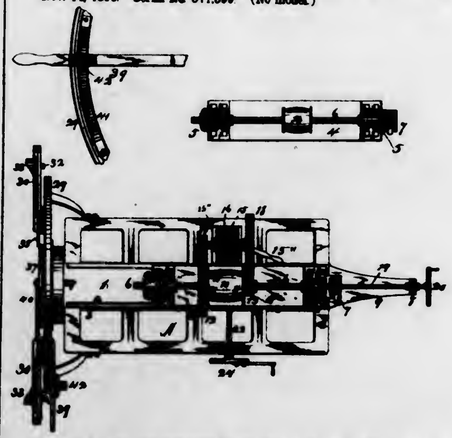
486,406. PROCESS OF REMOVING SULPHUROUS COMPOUNDS FROM OILS. JOHN D. RUETER, Cleveland, Ohio, assignor to himself, J. Burton Parsons, and Edward P. Williams, same place, and Sullivan B. Lamereaux, Whiting, Ind. Filed Aug. 17, 1891. Serial No. 402,818. (No specimens.)



Claim.—1. The process of removing sulphurous compounds from oil, consisting of, first, vaporizing the oil; second, superheating the oil-vapors conjointly with steam, free from the presence of oil or other liquid, to the temperature at which the sulphurous compounds are decomposed from the remaining portion of the oil-vapors, so as to chemically unite with the hydrogen of the steam; third, separating the resultant vapors, all substantially as set forth.

2. The process of removing sulphurous compounds from oil, consisting of the following steps in the following order: first, vaporizing the oil in a primary retort; second, conducting such oil-vapors and also superheated steam to a secondary retort; third, superheating such oil-vapors conjointly with such superheated steam in said secondary retort, free from the presence of oil or other liquid, to a temperature of about 900° fourth, passing out the resultant vapors into a condenser and absorbing the sulphureted hydrogen into water, all substantially as set forth.

486,407. HUB-BORING MACHINE. WILLIAM R. KANE, Syracuse, assignor of one-half to William F. Morris, Baldwinsville, N. Y. Filed Nov. 14, 1890. Serial No. 371,399. (No model.)

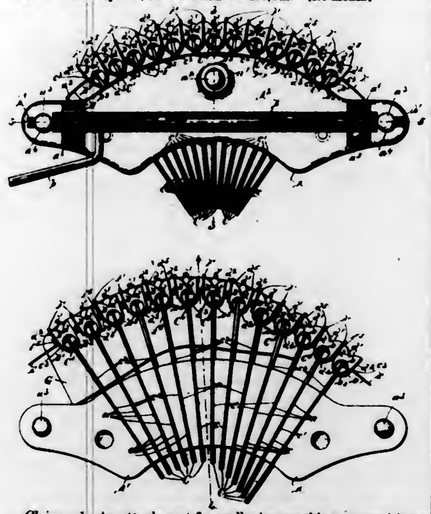


Claim.—1. The combination, with the bed, the sliding table mounted in a longitudinal way thereon, the bearings erected upon the table, the boring-shaft mounted therein, the drive-pulley and the gear and pinion mounted upon the shaft, and means to connect the gear to the pulley, of an arm secured to the table, provided with a way thereon transverse to the table, a slide mounted in said way, a bearing on said slide, a shaft in said bearing, a gear and pinion upon said shaft, and a lever connected to said slide.

2. The combination, with the bed, the sliding table mounted in a longitudinal way thereon, the bearings erected upon the table, and the boring-shaft mounted in them, of a stationary ring mounted upon said bed, spokes radiating therefrom, a rim upon said spokes, slotted arms radiating from said rim and adjustable felly-holders mounted upon said arms, radial guides in said stationary ring, sliding jaws in said guides, a loose ring placed upon the stationary one and covering said guides, connecting-rods between the jaws and the loose ring, and a lever connected to the loose ring.

3. The combination, with the bed, the sliding table mounted in a longitudinal way thereon, the bearings erected upon the table, and the boring-shaft mounted in them, of a stationary ring mounted upon said bed, spokes radiating therefrom, a rim upon said spokes, slotted arms radiating from said rim and adjustable felly-holders mounted upon said arms, radial guides in said stationary ring, sliding jaws in said guides, a loose ring placed upon the stationary one and covering said guides, connecting-rods between the jaws and the loose ring, and a lever connected to the loose ring, and a vertical lever 44, hinged to the floor, a ring pivoted between studs upon said lever and fitting over the outer end of the hub, and a ratchet pivoted upon said lever and engaging with said rim.

486,408. SCALLOPING-MACHINE. HENRY LOEWER, Rochester, N. Y. Filed Apr. 15, 1892. Serial No. 429,242. (No model.)



Claim.—1. An attachment for scalloping-machines, comprising a frame, a series of movable bars or arms, removable heads provided upon two or more adjacent bars and having in corresponding faces inwardly-extending grooves formed with curved sides extending toward opposite sides of the heads, and a flexible connection between two or more of the heads, substantially as and for the purpose specified.

2. An attachment for scalloping-machines, comprising a frame, a series of movable bars or arms, removable heads hinged upon the extremities of two or more adjacent bars or arms and having in corresponding faces inwardly-extending grooves formed with curved sides extending toward opposite sides of the heads, and a flexible connection between two or more of said heads, substantially as and for the purpose set forth.

3. An attachment for scalloping-machines, comprising a frame, a series of movable bars or arms, removable heads hinged upon the extremities of two or more adjacent bars or arms and having in corresponding faces inwardly-extending grooves formed with curved sides extending toward opposite sides of the heads, and a spring-wire passed through two or more of said heads, substantially as and for the purpose specified.

4. An attachment for scalloping-machines, comprising a frame having radial guideways, a series of bars or arms lengthwisely movable in said guideways, heads hinged upon two or more of said bars or arms and formed with inwardly-extending grooves having curved sides extending to opposite sides of the heads, and a clamp for holding said arms or bars in their adjusted position, substantially as and for the purpose set forth.

5. An attachment for scalloping-machines, comprising a frame having guideways, arms or bars adjustably movable in said guideways and formed along one of their corresponding edges with serrations, a plate adapted to bear upon said serrated edges, and a clamp for securing said plate in position, substantially as and for the purpose specified.

6. An attachment for scalloping-machines, comprising a frame having guideways, arms or bars adjustably mounted in said guideways and formed along one of their corresponding edges with serrations, and heads movably mounted upon two or more of said bars or arms, having corresponding faces provided with inwardly-extending grooves formed with curved sides extending toward opposite sides of the heads, substantially as and for the purpose set forth.

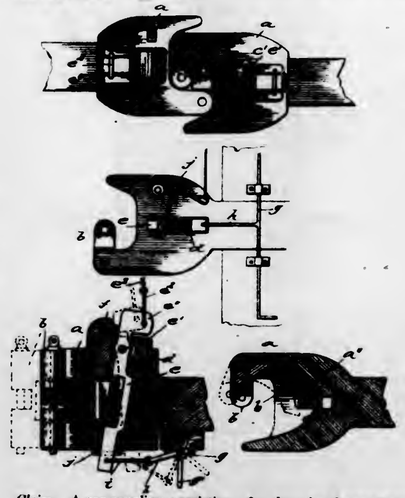
7. An attachment for scalloping-machines, comprising a frame, a series of radially-movable bars or arms, heads hinged upon said bars or arms and formed with inwardly-extending grooves having curved sides extending to opposite side of the heads, and a pattern-holder movably mounted on one of said heads and having its lower end provided with a shoulder projecting normally beneath the plane of the lower faces of said heads, substantially as and for the purpose specified.

8. An attachment for scalloping-machines, comprising a frame, a series of movable bars or arms, heads provided upon said bars or arms, and a pattern-holder having its lower end provided with an engaging shoulder adapted to project beyond the plane of the outer faces of said heads, substantially as and for the purpose set forth.

9. An attachment for scalloping-machines, comprising a frame, a series of movable bars or arms, heads provided upon said bars or arms, and pattern-holders adjustably mounted on said heads and having their lower ends formed with an engaging shoulder projecting normally beneath the plane of the lower faces of said heads and beyond the plane of the outer faces of said heads, substantially as and for the purpose specified.

10. An attachment for scalloping-machines, comprising a frame, a series of movable bars or arms, heads provided upon said bars or arms, a connection between two of said heads, and a pattern-holder having its upper end engaged with said connection and its central portion adjustably connected to one of said heads, substantially as and for the purpose set forth.

486,409. CAR-COUPLING. HENRY E. MOORAW, Newton, Ala., assignor of one-half to E. B. Hinote, Caryville, Fla. Filed July 15, 1892. Serial No. 440,167. (No model.)



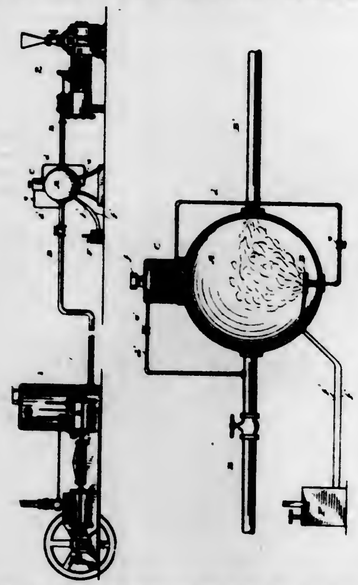
Claim.—A car-coupling consisting of a draw-head constructed as described and provided with a stepped enlargement on its upper side, a pivoted coupling-jaw constructed as described and carried by the draw-head, a locking-pin pivoted in a vertical slot in the draw-head and formed with a rearwardly-extending head at its upper end, a spring bearing against the forward edge of the locking-pin above its pivot and seated in a recess formed in the stepped enlargement, a portion of the locking-pin below its pivot extending in the path of the

rear end of the coupling-jaw, and an uncoupling device connected to the locking-pin, substantially as described.

486,410. THILL-COUPLING. THOMAS H. PRESSER, Sioux Falls, S. D., assignor of one-half to Melvin Grigsby and Frank Forde, same place. Filed Jan. 30, 1892. Serial No. 419,807. (No model.)

Claim.—In a thill-coupling, the combination, with the axle and the clip having a pivot-bolt, of the thill-iron having a jaw with a semi-circular recess, an inclined extension provided with a slot, a jaw pivoted to said thill-iron, having an outwardly-projecting flange, an upwardly-extending projection, a screw-threaded aperture, and a headed bolt having a washer and a nut, substantially as described.

486,411. METHOD OF INCREASING THE EFFICIENCY OF MOTOR FLUIDS. WILLIAM L. SAUNDERS, North Plainfield, N. J., assignor of one-half to the Ingersoll Sergeant Drill Company, New York, N. Y. Filed June 13, 1890. Serial No. 314,107. (No specimens.)



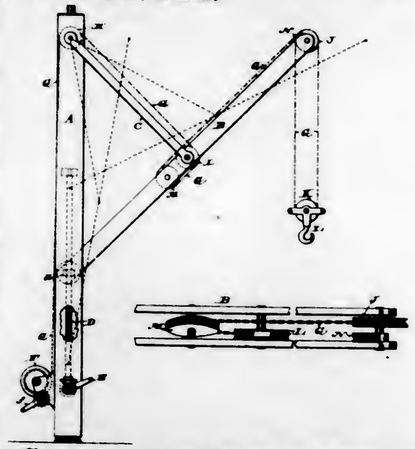
Claim.—1. The method of increasing the efficiency of compressed air for use as a motive power at a distance from the compressor, the same consisting in delivering compressed air to a line-pipe, conveying said air through the line-pipe to a point near the point of consumption, whereby the heat of compression is dissipated, then applying heat to said cooled air by direct contact therewith within the pipe, and then supplying the heated air to a translating device or devices.

2. The method of increasing the efficiency of compressed air for use as a motive power at a distance from the compressor, the same consisting in delivering compressed air to a line-pipe, conveying said air through the line-pipe to a point near the point of consumption, whereby the heat of compression is dissipated, then bringing said cooled air in contact with a flame within the line-pipe, and then supplying the heated air to a translating device or devices.

3. The method of increasing the efficiency of compressed air for motive purposes, the same consisting in delivering the compressed air to a line-pipe, conveying said air through the line-pipe to a point near the point of consumption, then bringing the said air in contact with a flame contained within the line-pipe at a point adjacent to the point of consumption, and then supplying the heated air to the translating device.

4. The method of increasing the efficiency of compressed air for motive purposes, the same consisting in delivering the compressed air to a line-pipe at a point distant from the source of supply, conveying said air through the line-pipe from the compressor to a point near the point of consumption, then bringing the said air in contact with a flame contained within a chamber forming part of the line-pipe, and then supplying the heated air from said chamber to the translating device.

486,412. CRANE. HARRY SAWYER, Muskegon, Mich., assignor to the Shaw Electric Crane Company, same place. Filed July 20, 1892. Serial No. 440,698. (No model.)



Claim.—1. In a crane comprising a mast and jib, having a vertically-adjustable hinge or pivotal connection at one end and an intermediate link connection therewith, the combination of sheaves located at the joints of the link with the mast and jib, a sheave at or near the upper end of the jib, and a chain or cable passing over the sheave at the upper end of the link, around a sheave at the lower end of the link, and over the sheave at or near the upper end of the jib, substantially as and for the purposes set forth.

2. In a crane comprising a mast and jib, having a vertically-adjustable hinge or pivot connection at one end and an intermediate link connection therewith, the combination of sheaves located at the joints of the link with the mast and jib, a sheave at or near the upper end of the jib, a lifting-block provided with a sheave, a hoisting device, and a chain or cable connected with said hoisting device and passing over the sheave at the joint between said link and mast, around a sheave at the joint between said link and jib, over the sheave at or near the upper end of the jib, around the sheave in the lifting-block, and back to the jib, substantially as and for the purposes set forth.

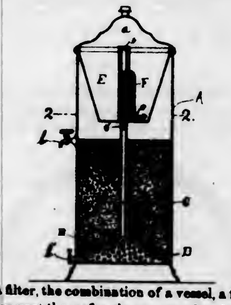
3. In a crane comprising a mast and jib, having a vertically-adjustable pivot or hinge connection at one end and an intermediate link connection therewith, the combination of sheaves located at the joints of the link with the mast and jib, a sheave at or near the upper end of the jib, a sheave in the jib between its lower end and said link, and a chain or cable passing over the sheave at the joint of the link and mast, thence over the sheave at the joint of the link and jib, thence under the sheave toward the lower end of the jib, and thence over the sheave at or near the upper end of the jib, substantially as and for the purposes set forth.

4. In a crane comprising a mast and jib, having a vertically-adjustable hinge or pivot connection at one end and an intermediate link connection therewith, the combination of sheaves located at the joints of the link with the mast and jib, a sheave at or near the upper end of the jib, a drum or segment of a drum rigidly secured to the jib concentric with and of the same radius as the sheave at or near its upper end, a lifting-block provided with a sheave, and a chain or cable passing over the sheave at the joint of the mast and link, thence around the sheave at the joint of the link and jib, thence over the sheave at or near the upper end of the jib, thence around the sheave in the lifting-block, and back to said drum or segment, to which it is secured, substantially as and for the purposes set forth.

5. In a crane comprising a mast and jib, having a vertically-adjustable hinge or pivot connection at one end and an intermediate link connection therewith, the combination of sheaves located at the joints of the link with the mast and jib, a sheave at or near the upper end

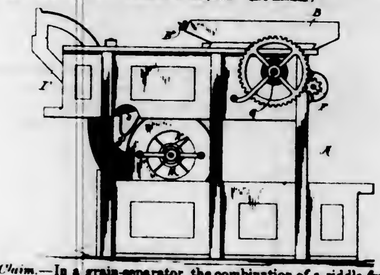
of the jib, a sheave in the jib between its lower end and the joint of the link with the jib, a drum or segment of a drum rigidly secured to the jib concentric with and of the same radius as the sheave at or near its upper end, a lifting-block provided with a sheave, a hoisting device attached to the mast, and a chain or cable connected with said hoisting device and passing in the same direction over the sheaves at the joints of the link with the mast and jib, thence under and over the sheave toward the lower end of the jib, thence over the sheave at the upper end of the jib, thence around the sheave in the lifting-block, and thence back to said drum or segment of a drum, to which it is secured, substantially as and for the purposes set forth.

486,413. WATER-FILTER. HENRY A. SIEGRIST and GEORGE M. BITTMAN, St. Louis, Mo. Filed Aug. 4, 1890. Serial No. 360,915. (No model.)



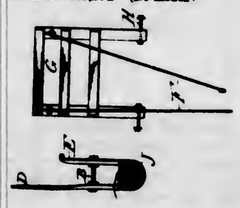
Claim.—In a filter, the combination of a vessel, a filtering medium placed in the lower part thereof, a clear-water chamber located above said filtering medium and communicating therewith, a removable supply-pan depending within said clear-water chamber and constructed to retain water at a common level therewith, a tube secured to and extending within the supply-pan, a pipe leading from beneath the filtering medium and extending into said tube, and a siphon secured to said tube and having its short leg terminating within said supply-pan, its bend below the top of the supply-pan, and its long leg projecting into said pipe, whereby the supply-pan may be removed, cleansed, and replaced without disturbing the remaining parts of the filter.

486,414. GRAIN-SEPARATOR. JOHN E. SMITH, Shiloh, Ohio. Filed Feb. 28, 1891. Serial No. 383,244. (No model.)



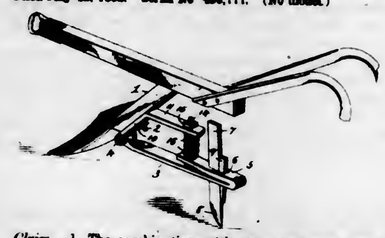
Claim.—In a grain-separator, the combination of a riddle-frame, a riddle, a continuous bottom having a vibratory motion, an air-blast flue having an opening in one side in which the bottom terminates, said bottom provided with a transverse slit, a slide or screen for closing this slit, and a spout secured to the bottom and located immediately below the slit, substantially as set forth.

486,415. SAWBUCK. FRANCIS M. TRIBBETT, Abingdon, Ill. Filed Dec. 19, 1890. Serial No. 375,274. (No model.)



Claim.—The counterbalance-hooks D D, having arms E E, weights J J, hooks L L and pivoted at B B, and treadle G, and rods F F, all arranged to operate and hold wood firmly while sawing it, substantially as set forth and described.

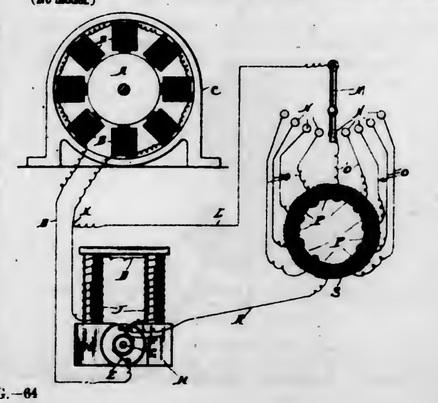
486,416. HEEL ATTACHMENT FOR PLOWS. AMASA O. WOODBURY, Lampasas, assignor of one-half to John O. Darby, Florence, Tex. Filed July 12, 1892. Serial No. 439,777. (No model.)



Claim.—1. The combination, with the sweep-stock, sweep, and heel-bolt, of the heel attachment comprising the upper and lower members hinged at their front ends, the upper member having an inclined front portion slotted to receive the bolt and the rear member carrying a knife, and a yielding spring adjustment between the rear ends of the members, substantially as specified.

2. The combination, with the sweep-stock, sweep, and bolt, of the heel attachment consisting of the lower horizontal member reduced at its front end and having its rear end bent upon itself and forming a diverging branch having an opening, a knife-receiving opening mounted in the rear end of the lower member, a vertical knife therein having its lower end beveled to form a cutting-edge, a wedge-shaped key for securing the knife in position, the upper member having the front inclined slotted portion, bifurcated at its lower end and pivotally connected to the front end of the lower member and at its rear end provided with a bolt-opening, a bolt passed upwardly through the perforation in the branch of the lower member and through the bolt-opening in the upper member, a nut on the upper end of the bolt, and a spring coiled upon the bolt between the two members, substantially as specified.

486,417. REGULATOR FOR DYNAMO-ELECTRIC MACHINES. ALEXANDER DOW, Elgin, Ill. Filed Mar. 30, 1891. Serial No. 386,773. (No model.)



Claim.—1. The combination of a generator whose field-magnets are traversed by a pulsating current with a regulator in a shunt around the said field-magnets, such field-magnets and regulator being independent of the main working circuit, the inductance and resistance of the said regulator and field-magnets being so proportioned that the current produced by the said generator will divide itself between the said regulator and field-magnets in a ratio varying in accordance with the varying range of pulsation of the said current, so as to make the generator self-regulating.

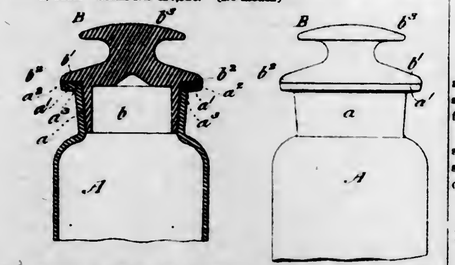
2. The combination of a dynamo-electric machine with field-magnets whose coils are traversed by a pulsating current with a regulator adapted to vary the said current in the field responsive directly to the varying range of pulsation of such current, and said field-magnets and regulator being independent of the main working circuit.

3. The combination of a generator with field-magnets whose coils are traversed by a pulsating current with an exciter for such field-magnets and a regulator adapted to vary the current in the field of the exciter responsive directly to the varying range of pulsation of such current, and said field-magnets and regulator being independent of the main working circuit.

4. The combination of a generator for exciting the field-magnets of an alternator, the field-magnets of said generator being traversed by a portion of its own current, and a regulating device in a shunt or derived circuit about such field-magnets of the exciter, said regulating device responsive directly to the varying range of pulsation of said current, and said field-magnets and regulator being independent of the main working circuit.

5. The combination of a generator for exciting the field-magnets of an alternator, the field-magnets of said generator being traversed by a portion of its own current, and a regulating device in a shunt or derived circuit about such field-magnets of the exciter, said regulating device containing resistance-coils and magnetic material associated therewith, and said field-magnets and regulator being independent of the main working circuit.

486,418. BOTTLE. HERMAN W. FAY, St. Louis, Mo. Filed Apr. 2, 1892. Serial No. 427,532. (No model.)



Claim.—In a bottle, the combination of a bottle-neck and a bottle-stopper, said neck and said stopper each having a flange, the peripheral portions of said flanges when the stopper is in position closely meeting each other, but within such peripheral portions being separated from each other, the neck-flange within said peripheral portion being dished and the dish extending to meet the neck-opening, substantially as described.

486,419. WATCH-CHAIN HOLDER AND BADGE. JAMES R. PEARSON, Pittsburg, and VALENTINE SPERLE, Allegheny, assignors of one-third to Diedrich Hintemeyer, Pittsburg, Pa. Filed July 28, 1892. Serial No. 441,208. (No model.)

Claim.—1. A combined watch-chain holder and badge consisting of a casing constructed as described, means for attaching the same to the clothing, a bar having a loop projecting from said casing, hooks formed on the ends of said bars, catches within the casing to engage with the said hooks, and means for releasing said hooks to permit the bar to move partly out of the casing, as and for the purpose described.

2. A watch-chain holder consisting of the plate 13, the inner ribs 14 17, attached to or integral therewith, the pins 11 and ring 21 to attach the same to the clothing, the flanged casing 12, having openings through its edges or sides, the loop 3, formed of spring-wire and provided with hooked extremities 15 16, the catch 10 to engage with one of said hooks, the lever 18, pivoted to the plate 13 and having a portion 20 projecting beyond said casing, and the notch 22, formed near the top of said lever 18 to engage with the hook 16, all arranged and combined for service substantially as and for the purpose set forth.

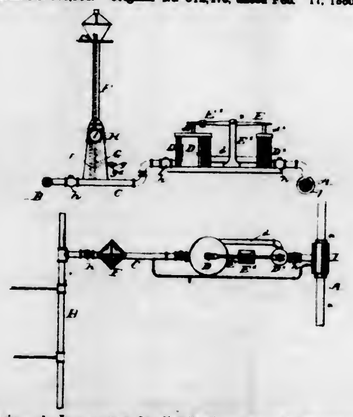
REISSUES.

11,282. PULP-DIGESTER. GEORGE F. RUSSELL, Lawrence, assignor to the American Sulphite Pulp Company, Boston, Mass. Filed June 24, 1892. Serial No. 437,226. Original No. 445,235, dated Jan. 27, 1891.

Claim.—1. The improved pulp-digester herein described, having an outer shell A and a continuous lining or coat B of cement, as described, applied to the interior of the said shell, for the purpose set forth.

2. The improved pulp-digester herein described, having an outer shell A, a continuous lining or coat B of cement, substantially as described, applied to the interior of the said shell, and an interior lining of tiles C, all substantially as set forth.

11,283. SYSTEM FOR DISTRIBUTING GAS UNDER PRESSURE. WILLIAM A. HOEVELER and THOMAS J. MCTIGHE, Pittsburg, Pa. said McTighe assignor to said Hoeveler. Filed Sept. 28, 1885. Serial No. 178,318. Original No. 312,470, dated Feb. 17, 1885.



Claim.—1. In a system for distributing gas under pressure, the combination, with two separate conduits, one adapted to convey gas under higher pressure than the other, of a pressure-regulating device connected to both and a visual signal consisting of a burner and a pressure-indicating gage attached to the low-pressure conduit and adapted to indicate an abnormal pressure and the amount of the same, substantially as described.

2. In a system for distributing gas under pressure, the combination, with a high-pressure conduit A and a low-pressure conduit B, connected together by a pipe C, furnished with a pressure-regulator, of a casing I, surrounding the high-pressure conduit at its point of connection with the regulator-pipe C, and a pipe i, connecting the casing I with the low-pressure conduit, substantially as described.

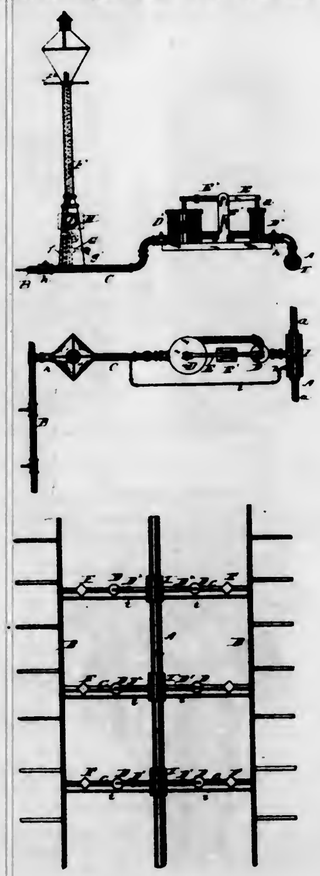
3. In a system of distributing gas under pressure, the combination, with two conduits, one adapted to convey gas under higher pressure than the other, and a regulating-valve adapted to regulate the relative degree of pressure in the two, of a gage connected to the low-pressure conduit and provided with a valve adapted to be opened by a pressure greater than that required to operate said regulating-valve, substantially as and for the purpose described.

4. The combination, with an underground gas-main, of a box or casing surrounding each joint connection and a parallel gas-conduit communicating with each box or casing, substantially as described.

5. The combination, with an underground gas-main, of a casing or box inclosing each joint connection and a pipe leading therefrom to carry off gas leaking from the joint, substantially as described.

6. In a system of gas distribution, the combination, with a joint of the high-pressure main pipe or conduit, of a casing or box surrounding said joint, a leakage-pipe connected to said casing and adapted to carry off the leakage gas from said box, and a low-pressure pipe communicating with said leakage-pipe, substantially as described.

11,284. SYSTEM FOR DISTRIBUTING GAS UNDER PRESSURE. WILLIAM A. HOEVELER and THOMAS J. MCTIGHE, Pittsburg, Pa. said McTighe assignor to said Hoeveler. Filed Nov. 7, 1885. Serial No. 182,152. Original No. 312,470, dated Feb. 17, 1885.



Claim.—1. In a system for distributing gas under pressure, the combination, with two separate conduits, one adapted to convey gas under a higher pressure than the other, of a pressure-regulating device connected to both, and a visual signal consisting of a burner and a pressure-indicating gage attached to the low-pressure conduit and adapted to indicate an abnormal pressure and the amount of the same, substantially as described.

2. In a system for distributing gas under pressure, the combination, with a high-pressure conduit A and a low-pressure conduit B, connected together by a pipe C, furnished with a pressure-regulator, of a casing I, surrounding the high-pressure conduit at its point of connection with the regulator-pipe C, and a pipe i, connecting the casing I with the low-pressure conduit, substantially as described.

3. In a system of distributing gas under pressure, the combination, with two conduits, one adapted to convey gas under higher pressure than the other and a regulating-valve adapted to regulate the relative degrees of pressure in the two, of a gage connected to the low-pressure conduit and provided with a valve adapted to be opened by a pressure greater than that required to operate said regulating-valve, substantially as and for the purpose described.

4. In a system for the distribution of gas, the combination of two separate and substantially-parallel conduits or pipes located apart from one another, constituting a high and low pressure main and communicating by connecting-pipes, said low-pressure conduit or pipe receiving its supply solely from said high-pressure conduit or pipe and through said connecting-pipes, substantially as described.

5. In a system for the distribution of gas, comprising high and low pressure mains connected together, the combination, with the low-pressure main, of a lamp-post, a gage, and an automatic blow-off valve located in a pipe leading from the low-pressure main or conduit, said valve and gage being secured to or within said lamp-post, substantially as described and shown.

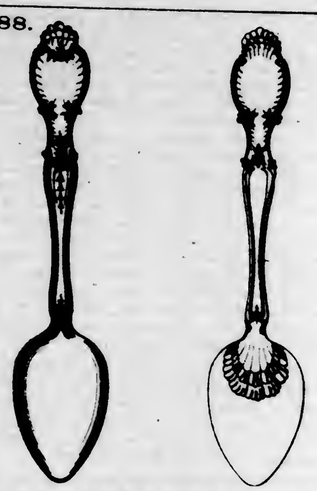
DESIGNS.

21,987. SPOON. HARRY M. MOSES, Richmond, Va., assignor to the H. M. Moses Company, same place. Filed May 14, 1892. Serial No. 433,061. Term of patent 7 years.

Claim.—The design for a spoon, as herein shown and described.

21,988. SPOON, &c. PAULDING FARNHAM, New York, N. Y., assignor to Tiffany & Co., same place. Filed Sept. 27, 1892. Serial No. 447,094. Term of patent 14 years.

21,988.



Claim.—1. In the design for spoons, &c., the front A, substantially as shown.

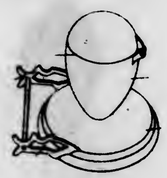
2. In the design for spoons, &c., the back B, substantially as shown.

3. The design for spoons, &c., consisting of the front A and the back B, substantially as shown.

21,989. DISH. EMILE GÉRARD, Limoges, France, assignor to Haviland & Abbot, New York, N. Y. Filed Oct. 4, 1892. Serial No. 447,598. Term of patent 7 years.

Claim.—The design for a dish, substantially as shown and described.

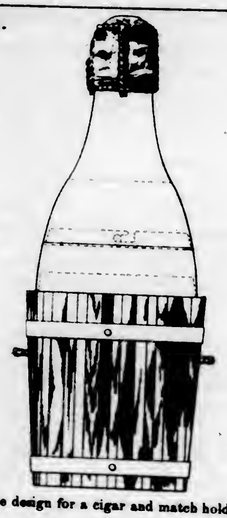
21,990. INKSTAND. HARRY W. SHEPHERD, Little Cloy, Pa. Filed Aug. 22, 1892. Serial No. 443,903. Term of patent 7 years.



Claim.—The design for inkstands, substantially as herein shown and described.

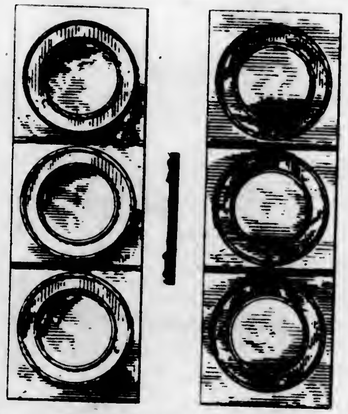
21,991. CIGAR AND MATCH HOLDER. HARRY R. H. HINRICHS, Newark, N. J. Filed Sept. 22, 1892. Serial No. 446,602. Term of patent 7 years.

21,991.



Claim.—The design for a cigar and match holder, herein shown and described.

21,992. TOBACCO PLUG. WARWICK W. WOOD, Winston, N. C. Filed Oct. 6, 1892. Serial No. 448,057. Term of patent 14 years.



Claim.—The design for a plug of tobacco, substantially as shown and described.

21,993. RUFFLING. ADOLPH COHEN, New York, N. Y. Filed Sept. 3, 1892. Serial No. 445,014. Term of patent 3½ years.

Claim.—The design for ruffling, substantially as herein shown and described.

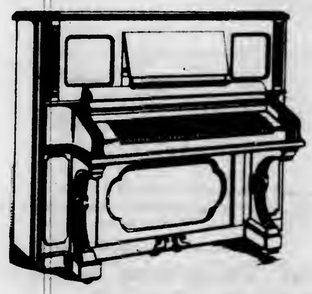
21,994. CARPET. WILLIAM F. BROWN, Newark, N. J., assignor to the Bigelow Carpet Company, New York, N. Y. Filed Oct. 11, 1892. Serial No. 448,583. Term of patent 3½ years.

Claim.—1. In a design for carpets, the body A, substantially as shown.

2. In a design for carpets, the border B, substantially as shown.

3. The design for carpets, consisting of the body A and the border B, substantially as described.

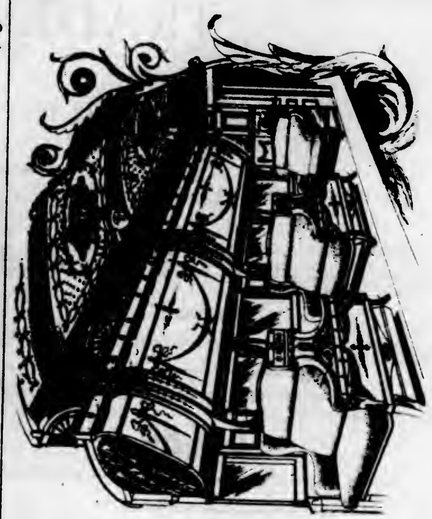
21,995. CASING FOR UPRIGHT PIANOFORTES. WILLIAM F. DECKER, New York, N. Y. Filed Sept. 23, 1892. Serial No. 447,179. Term of patent 14 years.



Claim.—The design for an upright-pianoforte casing, substantially as shown.

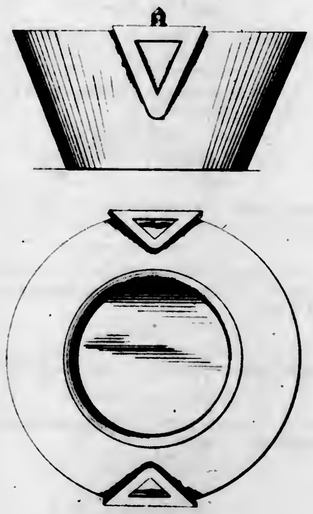
21,996. ORNAMENTATION OF CAR INTERIORS. ADOLPH RAPP, Chicago, Ill., assignor to the Pullman's Palace Car Company, same place. Filed Mar. 17, 1892. Serial No. 425,393. Term of patent 14 years.

21,996.



Claim.—The design for the ornamentation of a car interior, substantially as herein shown and described.

21,997. WASHING-MACHINE TUB. SAMUEL SADLER, St. Louis, Mo. Filed June 21, 1892. Serial No. 437,532. Term of patent 14 years.



Claim.—The design for a washing-machine tub, as herein shown and described.

TRADE-MARKS

REGISTERED NOVEMBER 15, 1892.

21,971. COLLAR-BUTTONS. FREDERICK D. WILLIAMS, Providence, R. I. Filed Sept. 22, 1892.

SIMPLICITÉ

Essential feature.—The word "SIMPLICITÉ." Used since November, 1886.

21,972. FINGER-RINGS. FRANK H. OSBORNE, New York, N. Y. Filed Sept. 15, 1892.

COLON

Essential feature.—The word "COLON." Used since September 1, 1892.

21,973. FINGER-RINGS. FRANK H. OSBORNE, New York, N. Y. Filed Sept. 15, 1892.

YSABEL

Essential feature.—The word "YSABEL." Used since September 1, 1892.

21,974. CALF-SKINS, GOAT-SKINS, SOLE-LEATHER, AND SHEEP-SKINS. THE SHAW LEATHER COMPANY, Boston, Mass. Filed Oct. 10, 1892.

GAROO

Essential feature.—The word "GAROO." Used since August 1, 1892.

21,975. BOOTS, SHOES, AND SLIPPERS. EDWIN C. BURT & CO., New York, N. Y. Filed Sept. 19, 1892.

Essential feature.—The representation of a series of overlapping metals arranged in a curve. Used since July 8, 1892.

21,976. THREAD OF COTTON, SILK, FLAX, AND OTHER FIBROUS MATERIAL. THE KERR THREAD COMPANY, East Newark, N. J. Filed May 24, 1892.

DIAMOND

Essential feature.—The word "DIAMOND." Used since December 12, 1891.

21,977. PLAYING-CARDS. THE UNITED STATES PRINTING COMPANY, Cincinnati, Ohio. Filed Oct. 12, 1892.

Essential feature.—The representation of a star having lines radiating therefrom. Used since May 2, 1892.

21,978. GAMES, GAME-BOARDS, PUZZLES, DOLLS, RATTLES, BALLS, BATS, AND THE LIKE, EXCLUDING TOY WHEELS. HARNE & CO., Newark, N. J. Filed June 22, 1892.

Essential feature.—The representation of a star and the letter "H" at the center thereof. Used since January 1, 1886.

21,979. FLOUR. ADOLPH C. KLIEBTWORTH, New York, N. Y. Filed Oct. 13, 1892.

TIYOTTE

Essential feature.—The word "TIYOTTE." Used since September 10, 1892.

21,980. LARD AND ITS SUBSTITUTES. THE W. J. WILCOX LARD AND REFINING COMPANY, Guttenberg, N. J., and New York, N. Y. Filed Sept. 29, 1892.

Essential feature.—The words "EL CLAVEL" and the picture or cut of a flower commonly denominated a "pink," and a bud attached to the pink-stem. Used since July 1, 1892.

21,981. FRUIT CONFECTIONS. THE WALTER M. LOWNEY COMPANY, Boston, Mass. Filed Sept. 26, 1892.

Grover

Essential feature.—The word "GROVER." Used since 1857.

21,982. ORANGES. THE CRESCENT ORANGE GROVE COMPANY, Citra, Fla., and Steubenville, Ohio. Filed Oct. 10, 1892.

Essential feature.—The representation of a star and crescent. Used since July, 1883.

21,983. CARBONATED DRINKS. JOHN T. DRISCOLL & CO., Boston, Mass. Filed Sept. 9, 1892.

Essential feature.—Four letters "B" within the figure of a square. Used since August 1, 1892.

21,984. WINES AND LIQUORS. NETTER BROS., Philadelphia, Pa. Filed Oct. 10, 1892.

Essential feature.—The representation of a lunar phasis, upon which is displayed a human profile, and also a figure of a woman standing upon the lower end of the curve of the lunar phasis, one hand being uplifted, pointing to a star, the opposite hand resting on a shield, upon which is inscribed the letters "N B," arranged as a monogram. Used since July, 1892.

21,985. LAGER-BEER. EMANUEL BIENWASSER, Philadelphia, Pa. Filed Oct. 22, 1892.

Essential feature.—The word "LOHENGRIN." Used since October 1, 1888.

21,986. WHISKY. WILLIAM WALSHAM, New York, N. Y. Filed Sept. 28, 1892.

ARISTON

Essential feature.—The word "ARISTON." Used since August 15, 1892.

21,987. DRESSING FOR THE HAIR. JOSEPH JACKSON, Paris, France. Filed Sept. 8, 1892.

THE ROYAL WINDSOR

HAIR RESTORER

Essential feature.—The words "THE ROYAL WINDSOR HAIR RESTORER." Used since 1879.

21,988. DISINFECTANTS. THE ODORLESS DISINFECTANT CO., Washington, D. C., New York, N. Y., and Jersey City, N. J. Filed Oct. 10, 1892.

Essential feature.—The letters "O D Co," monogrammatically arranged, over which is intertwined a flowing ribbon, upon which is displayed the words "THE ODORLESS DISINFECTANT CO." Used since June, 1892.

21,989. POLISHING-POWDER, NOT INCLUDING STOVE-POLISH. DANIEL W. CURTIS, Syracuse, N. Y. Filed Sept. 3, 1892.

MIRROR

Essential feature.—A lozenge-shaped figure inclosing the word "MIRROR." Used since February 1, 1892.

21,990. COMPOSITIONS APPLIED WITH A BRUSH IN MAKING ORNAMENTAL CARDS. THADDEUS DAVIDS COMPANY, New York, N. Y. Filed Oct. 24, 1892.

LETTERINE

Essential feature.—The word "LETTERINE." Used since October 18, 1892.

21,991. THRASHING, STACKING, AND WEIGHING MACHINE AND A STEAM-ENGINE. PORT HURON ENGINE AND THRESHER COMPANY, Port Huron, Mich. Filed Aug. 26, 1892.

RUSHER

Essential feature.—The word "RUSHER." Used since January 13, 1891.

21,992. REMEDIES FOR DISEASES OF THE THROAT, LUNGS, AND KIDNEYS. MARTIN VAN EVERY, Buffalo, N. Y. Filed Aug. 3, 1892.

VAN'S BEST

Essential feature.—The words "VAN'S BEST." Used since August, 1890.

21,993. INTERNAL AND EXTERNAL REMEDIES FOR COUGHS, COLDS, CRAMPS, BRUISES, AND SPRAINS. WALTER S. ROCKEY, New York, N. Y. Filed Aug. 5, 1892.

Essential feature.—A square figure having inwardly-curved sides bearing the letter "R" at each corner and superimposed upon the figure of a circle. Used since July 21, 1892.

21,994. A LINE OF MEDICINES. HENRY DWIGHT VAN RENSSELAER, Waukesha, Wis. Filed Sept. 6, 1892.

VITAQUA

Essential feature.—The word "VITAQUA." Used since November 1, 1891.

21,995. PREPARED MEDICINE FOR RHEUMATISM, GOUT, AND LUMBAGO. HENRY O. PRICE, Cleveland, Ohio. Filed Aug. 6, 1892.

RHEUMADYNE

Essential feature.—The word "RHEUMADYNE." Used since June 25, 1892.

21,996. PROPRIETARY MEDICINES. KATHARMON CHEMICAL COMPANY, St. Louis, Mo. Filed Sept. 9, 1892.

Katharmon

Essential feature.—The word "KATHARMON." Used since August 15, 1888.

21,997. MEDICINE FOR DOGS AND OTHER ANIMALS. ELIZA LEITÉ SCOTT, London, England. Filed Oct. 18, 1892.

PACITA

Essential feature.—The word "PACITA." Used since March 20, 1891.

21,998. SINGLE-KEYED TYPE-WRITERS. THE LIBERTY MANUFACTURING COMPANY, New York, N. Y. Filed Oct. 7, 1892.

EDLAND

Essential feature.—The word "EDLAND." Used since December, 1891.

21,999. TIN OR TERNE PLATES. CHARLES A. CONKLIN MANUFACTURING CO., Atlanta, Ga. Filed Sept. 24, 1892.

LENOX

Essential feature.—The word "LENOX." Used since 1886.

22,000. BUILDERS' HARDWARE, INCLUDING LOCKS AND LATCHES. READING HARDWARE COMPANY, Reading, Pa. Filed Sept. 19, 1892.

RHCo

Essential feature.—The letters "R H Co" Used since about 1874.

22,001. OPERATING MACHINERY FOR PASSENGER AND FREIGHT ELEVATORS. CAHILL & HALL ELEVATOR COMPANY, San Francisco, Cal. Filed Sept. 7, 1892.

HYDRO-STEAM

Essential feature.—The word "HYDRO-STEAM." Used since March 10, 1891.

22,002. STOVE-MATS. THE J. L. BROWN CO., Pittsburg, Pa. Filed Oct. 1, 1892.

AUGITE

THE WOMAN'S FRIEND.

Essential feature.—The words "AUGITE" and "THE WOMAN'S FRIEND." Used since October 15, 1891.

22,003. HEATING-FURNACES. HOWARD FURNACE COMPANY, Syracuse, N. Y. Filed Oct. 6, 1892.

HOWARD

Essential feature.—The word "HOWARD." Used since September 15, 1887.

22,004. HEATERS, RANGES, AND STOVES. MAJESTIC MANUFACTURING COMPANY, St. Louis, Mo. Filed Sept. 26, 1892.

Essential feature.—The representation of a ship having a picture of a cooking-range on the mainsail thereof and accompanied by the word "MAJESTIC." Used since March 1, 1991.

22,005. NON-HEAT-CONDUCTING COVERINGS FOR STEAM AND OTHER PIPES AND BOILERS. THE MAGNESIA SECTIONAL COVERING CO., Ambler, Pa. Filed Oct. 20, 1892.

MAGNABESTOS.

Essential feature.—The word "MAGNABESTOS." Used since April 1, 1892.

22,006. WASHING MACHINES. BLUFFTON MANUFACTURING CO., Bluffton, Ind. Filed June 23, 1892.

ROUND AMERICAN WASHING MACHINE

Essential feature.—The words "ROUND AMERICAN WASHING MACHINE" and the representation of an eagle. Used since September 1, 1883.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE PERKINS.

Decided October 29, 1892

1. PRACTICE UNDER RULE 106—CERTIFIED COPY OF INTERFERING SUBJECT-MATTER.

When an applicant seeks to take advantage of the provisions of Rule 106, he should not be required to file a certified copy of the interfering subject-matter.

2 SAME—SUBSTITUTION OF DIVISIONAL APPLICATION—QUESTIONS FOR THE EXAMINER.

The only questions for the Examiner are whether or not the new application is a legitimate division of the earlier application and whether or not the original application is in proper condition for the substitution of the divisional application.

ON petition.

TYPE-WRITER.

Application of Willis J. Perkins filed July 28, 1892, No. 441,530.

Mr. W. A. Bartlett for the applicant.

FROTHINGHAM, *Acting Commissioner:*

This is a petition requesting that the above-entitled case be substituted for another application of this applicant, Serial No. 208,966, in interference No. 15,714, entitled *Sholes* v. *Perkins*, as hereinafter set forth.

The record shows that on August 8, 1892, the applicant filed the following request:

It is respectfully requested that this application, which is a division of original application No. 208,966, filed July 24, 1886, be substituted for said application in the interference with C. L. Sholes. (Rule 106.)

In reply to this request the Examiner wrote as follows:

Before this case can be substituted for application Serial No. 208,966, in the interference of *Perkins* v. *Sholes*, under Rule 105, a certified copy of the record in said other case relating to the interfering matter must be filed in this case.

Thereupon the applicant filed an argument and requested a reconsideration of this action. The Examiner, however, on September 2, 1892, repeated the action last above quoted.

It is to be observed that the applicant is seeking to file an alleged divisional application for the subject-matter involved in an interference, pursuant to the provisions of Rule 106 and not according to Rule 105. Rule 106 is as follows:

106 When a part only of an application is involved in an interference, the applicant may withdraw from his application the subject-matter adjudged not to interfere, and file a new application therefor, or he may file a divisional application for the subject-matter involved, if the invention can be legitimately divided: *Provided*, That no claim shall be made in either application broad enough to include matter claimed in the other.

It is evident from an inspection of the rule that the applicant is not called upon to file any certified copies. The Examiner, however, states that under the decisions in the following cases—*Thomson and Wightman* v. *Tesla* v. *Borel* and *Paccand*, (48 MS. Dec., 4;) *Prinz* v. *Fuller*, (46 MS. Dec., 99,) and *Reichenbach* v. *Goodwin*, (50 MS. Dec , 471)—the principle involved in this petition has been specifically ruled upon. Upon examination of these decisions I do not find anything which holds that the applicant should be obliged to file certified copies, as required by the Examiner, when he seeks to take advantage of the provisions of Rule 106. The only question presented before the Examiner in the present case is whether or not this application is a legitimate division of the earlier application and whether or not the original application is in proper condition to have the present application take its place in the interference. It does not appear that the subject-matter of the interference has been canceled from the original application. If it has not been canceled, it is difficult to see how the present application, assuming that it is a legitimate division, can be properly substituted for the original application.

The decisions cited by the Examiner relate wholly to the question how far one party to an interference is entitled to inspect or obtain information of the subject-matter involved in the interference in his opponent's application. That question may arise hereafter in this case; but it is not raised in the present petition.

To the foregoing extent the petition is granted, and the case is remanded to the Examiner for action in conformity herewith.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Northern District of Illinois.

MAHON *et al. v.* MCGUIRE MANUFACTURING COMPANY *et al.*

Decided May 2, 1892.

PATENTS FOR INVENTIONS—BENDING-BLOCK—PATENTABLE INVENTION.

Letters Patent No. 337,006, issued March 2, 1886, to David C. Mahon and others, for a "bending-block," consisting of a block or former adapted to the bending or shaping of the loop in guide-rods for grain-car doors, are void for want of patentable invention.

BILL by David C. Mahon and others against the McGuire Manufacturing Company and William A. McGuire.

Mr. F. W. Parker for the complainants.

Messrs. West & Bond for the defendants.

BLODGETT, *J.:*

This is a bill for an injunction and accounting by reason of the alleged infringement of Patent No.

This testimony is corroborated by that of several practical mechanics in the record, and it may be also

skill. In *Butler* v. *Steckel* (137 U. S., 21; 11 Sup. Ct. Rep., 25) it was held that it does not require invention

not ground for denying an injunction to the true owner of the Trade-Mark, where every step of the suit for an injunction and

BLODGETT, *J.:*

This is a bill for an injunction and accounting by reason of the alleged infringement of Patent No. 337,006, granted to complainants March 2, 1885, for a "bending-block." The patent shows a block or former adapted to the bending or shaping of a portion of the guide-rods called for by the patent granted William McGuire and Frank Jaeger June 3, 1884, and December 1, 1885, for a "grain-car door." The guide-rod called for by the McGuire and Jaeger patents is made of round rod-iron about three-quarters of an inch to an inch in diameter, and has a peculiarly-shaped loop at the upper end, and the work of forming this loop on an ordinary blacksmith's anvil added quite considerably to the cost of the door. The device covered by this patent is a forming-block over which a part of the iron rod is bent to complete the loop. The peculiarity of this forming-block is a J-shaped groove, which receives the iron rod as it has been shaped on the anvil, and the end of the rod is then bent round a nose or projection of the former to give it the required shape, and the end is then bent sidewise and flattened by blows from the hammer to adapt it to be fastened to the car with facility. The patent contains four claims, all of which defendants are charged with infringing:

1. A bending block or former adapted to receive or hold (at the curvature of the iron) an iron, *e'' e'''*, having a curvature, *e'*, the said block also having a part formed approximately like the curvature *e* of the said iron, in combination with a pin or lug arranged for contact with the said iron in the angle at the junction of the part *e'''* with the flattened portion *e'*, substantially as and for the purpose specified.
2. A bending block or former having thereon one or more projecting parts, *g g*, formed substantially as shown and described, and one or more projecting parts *h h*, arranged, substantially as shown, with relation to the part or parts *g g*, in combination with one or more pins or lugs, F F, for the purposes set forth.
3. A bending block or former having thereon one or more beveled or tapering projecting parts, *g g*, and one or more beveled or tapering projecting parts, *h h*, in combination with one or more pins or lugs, F F, the said parts *h* and *g* being tapering or smallest at their outer ends or faces, all arranged, substantially as shown and described, with relation to each other, for the purposes set forth.
4. A bending block or former having thereon one or more diagonal or inclined blocks, E E, and also having upon one or both ends projecting parts, *g g* and *h h*, both arranged substantially as shown and described, in combination with one or more pins, F F, for the purposes set forth.

The defenses are: (1) want of patentable novelty; (2) non-infringement.

In addition to the common knowledge, which might be enough, the proof shows that long before this patent it was old to give shapes to rods or bars of wood or metal by bending them about a pattern or former, Mr. Barnes, who was called as an expert witness for the defendants, saying:

By "bending-blocks" I understand is meant what is technically called a "former," a former being a block, frame, or mass of wood or metal which has a contour, groove, or surface which either has the same or approximately the same general shape, outline, or alignment as the work to be produced. Such formers, and formers in general, have been commonly used since the earliest history of metallurgy. Some of the most-complicated formers were used several hundred years since in forming ornamental ironwork—a class of work which is at this day performed more commonly in drop-presses and dies. Probably the largest use for formers is in bending pipes of copper or iron after filling them with resin or sand for the connections required in ships and on locomotives; also in the formation of hand-railings and ornamental pipework. Such formers have a contour or shape, either in grooves or sections of grooves, formed by stops either loose or fixed on the formers, the alignment of which corresponds in a general sort of way to the alignment of the work to be produced in carriage-work. In order to obtain duplication and symmetry it is absolutely necessary to use such formers—sometimes several of them—to produce one piece. It is not uncommon, however, to produce most-complicated forms from common rolled iron by means of a former, having first prepared the metal, if necessary, to more readily assume some particular complex shape. Such formers are not necessarily arranged to bend metals only in one plane, as conical spirals and other forms lying in several planes are often produced in this way. This is often done in preparing pipes for distilleries and in the manufacture of conical springs.

This testimony is corroborated by that of several practical mechanics in the record, and it may be also said to be a matter of common knowledge that formers have been used from time immemorial to bend various farm implements, like scythe-snaths, plow-handles, etc. It will be borne in mind that these patentees did not invent the guide-rod nor the loop upon it, the only device of their patent being a former about the end or horn of which the loop of the rod is bent. It seems to me nothing can be more obvious than that only mechanical skill is called into action in making a core or former around which an iron rod is to be bent to bring it to some desired shape. The shoemaker bends his leather around the last to adapt it to the shape of the wearer's foot. The farmer bends a tough flexible piece of wood around a former shaped like the neck of his ox to make an ox-bow for his yoke. The thills and other parts of vehicles are shaped by bending over formers. In 1 Appleton's Mechanical Dictionary (66th ed., p. 701, tit. "bending") is a description of the mode of forming the links for shipcables by bending them round an oval former. The simple problem is to make a form which shall give the required shape to the rod of iron or wood to be bent around it It may in some cases require a superior order of mechanical skill to make a former which shall hold one portion of the iron rod in place while the other portion is bent round the forming-core, as in the case of these guide-rods. One part of this loop, it appears, must be formed by the smith with the hammer upon a plain anvil. This being done, the patentees cut a groove in an iron block of such shape as to receive the rod with the part already made with the hammer, and the portion placed in this groove is held very firmly, while the end to be operated upon is bent round the nose or end of the block which projects beyond this groove. Clearly only the skill to cut this groove and shape the nose or end of the block to give the required shape to the loop was called for to make this former.

These patentees are intelligent men, well skilled in their art and trade as blacksmiths. They knew from experience that it was old to bend iron over a former like a mandrel or the horn of an anvil to give it the desired shape, and the problem presented them was to make a former which would give a final shape to the loop of this guide-rod, and thereby cheapen its construction. They knew all they had to do to accomplish this was to make a forming-block which would hold the partly-formed loop in the shape it had received from the hammer, while the rest of the loop was completed by bending the rest of the rod round the former, and their efforts in that direction resulted in the bending-block of the patent. Other persons working at the same problem made devices which the testimony shows would do the work - that is, give the required shape to the end of the rod: but they were not as good working blocks as those made by these patentees.

It is urged in behalf of complainants that the fact that these other persons failed or did not succeed as well as these patentees in producing a former for the purpose shows that the device involved invention. But it seems to me the failure resulted from want of

skill. In *Butler* v. *Steckel* (137 U. S., 21; 11 Sup. Ct. Rep., 25) it was held that it does not require invention to produce a former or die when the former is old, the court saying:

It is true, I doubt not, that it required considerable mechanical skill to make a die which would cut a bretzel from dough so as to imitate a hand-made bretzel, because the hand-made bretzel is somewhat clumsily shaped, as the parts are bent, twisted, and laid upon each other, and it was undoubtedly a matter requiring some study, effort, and experiment to make the shape of the die correspond to the external formation of the bretzel. This, however, seems to me not to involve invention, but mere mechanical skill. A cutter might be compelled to experiment some—that is, cut several dies—but that is not invention.

And the same principle is announced in *Peters* v. *Manufacturing Co.*, (130 U. S., 626; 9 Sup. Ct. Rep., 643;) in *Pennsylvania Railroad Co.* v. *Locomotive Engine Safety Truck Co.*, (110 U. S., 494; 4 Sup. Ct. Rep., 220,) and in *Florsheim* v. *Schilling* (137 U. S., 64; 11 Sup. Ct. Rep., 20) it is held not to involve invention to so change old devices as to adapt them to similar or analogous operations, and in *Burt* v. *Evory* (133 U. S., 349; 10 Sup. Ct. Rep., 394) it is said:

Neither is it invention to combine old devices into a new article without producing any new mode of operation.

With the view I take as to the question of patentability of this device I do not deem it necessary to consider the question of infringement, although I may say that as the pins or lugs F F are elements of all the claims of complainants' patent, and as defendants do not use these pins, I doubt if the charge of infringement is sustained, as it is necessary to the working of the complainants' machine that the pins shall be removable, and hence the raised portion of defendants' block around which the part to be flattened is bent does not perform the same office in the defendants' machine that is performed by the pins F F in the complainants' machine, and certainly if a patent can be sustained at all for such a device as this it must be for the specific construction. I do not, however, intend to dispose of the case on the question of non-infringement; but as that question is distinctly made in the pleadings and proof it is but just, at least, that I shall intimate my views upon it.

The bill must be dismissed for want of equity.

U. S. Circuit Court—Northern District of Illinois.

HUTCHINSON *et al. v.* BLUMBERG.

Decided June 8, 1892.

1 TRADE-MARKS—WHAT WILL BE PROTECTED—STAR.

The word "Star" and the symbol of a star, adopted and used during many years by manufacturers of shirts, waists, underwear, and furnishing goods to mark and designate their goods, in combination with the words "Star Shirts" and other words describing the articles, so that the goods become well known by such mark and by the designation of "Star Goods," constitute a valid Trade-Mark.

2. SAME—INFRINGEMENT.

Such Trade-Mark is infringed by marking similar goods with a star and crescent, making the star so prominent that such goods may also be designated as "Star Goods," and purchasers may be readily deceived into the belief that the goods were made by the proprietors of the Trade-Mark, even though the star so used is not of the color usually employed for the Trade-Mark, and of a five-pointed star, while that in the Trade-Mark is uniformly six-pointed.

3. SAME—INJUNCTION.

The facts that the infringer of a Trade-Mark, on being notified of his infringement, told his customers to erase the Trade-Marks from their goods and had since gone out of business, are not ground for denying an injunction to the true owner of the Trade-Mark, where every step of the suit for an injunction and accounting has been contested by the infringer, and he has put the complainants to the expense of proving every fact necessary to establish their right and his infringement.

BILL by Gardner S. Hutchinson, Henry B. Pierce, Ira Cole, and Thomas S. Morison against Jacob J. Blumberg for infringement of Trade-Mark, praying an injunction and an accounting. Decree for complainants.

Mr. B. F. Watson and *Mr. Cornelius V. Smith* for the complainants.

Mr. Elbert C. Ferguson for the defendant.

BLODGETT, *J.:*

The complainants in this case, who were copartners doing business under the style and firm-name of "Hutchinson, Pierce & Co.," having their principal place of business in the city of New York, charge that the firm of T. A. Morison & Hoyt, in or about the year 1859, was engaged in the manufacture of shirts, waists, underwear, and furnishing goods, and, to designate the goods of their manufacture, adopted and employed as their device and Trade-Mark the word "Star," and with the form and symbol of a star to represent the word "Star," and also the words. "Star Shirts," and the device or figure of a star, in combination with the words "Star Shirts," and other words describing the goods as "* shirt" and "* waist;" that complainants, through a series of mesne assignments, have become and now are the successors of said firm of T. A. Morison & Hoyt, and have also become the owners of said Trade-Mark, and of the exclusive right to use the same; that the goods manufactured by complainants and their predecessors have been extensively sold, and have become well known by said Trade-Mark and the designation of "Star Goods," and that said goods so designated by said Trade-Mark have a wide and high reputation for excellence and are much sought after in the trade; that defendant is engaged in the manufacture and sale of shirts, waists, underwear, and furnishings, substantially like those manufactured and sold by complainants and greatly resembling the same, and has marked and identified said goods by a star, symbol, or device like that used by complainants, and that the use of such symbol on the goods of defendant has the effect of causing purchasers and users of such goods to believe that they are purchasing and using goods manufactured by complainants; that defendant marks and designates his goods with the word "Star" and symbol of a star and crescent, and so marks the packages and boxes containing said goods, making the star so prominent and conspicuous as to attract attention and deceive purchasers in the belief that the goods so made by defendant are the "Star Goods" of complainants, thereby deceiving the public and greatly wronging and injuring the complainants. The answer denies the complainants' right to the use of the star as a Trade-Mark, and also denies infringement.

The proof shows conclusively that the firm of T. A. Morison & Hoyt adopted the star both in word and symbol as their Trade-Mark as early as 1859, and that the business of said firm has passed by transfer through a number of succeeding firms until about 1883

it came to the complainants as the successors of the firm in a direct line from said T. A. Morison & Hoyt, and that the star Trade-Mark has been used by the

ants' trade-mark, his conduct in that respect might be considered by the court in fixing the terms of the

IN equity for injunction and accounting for infringement of Trade-Marks.

liable to be sued therefor jointly in one suit. In *Estes* v. *Worthington et al.* (30 Fed. Rep., 465) it was

it came to the complainants as the successors of the firm in a direct line from said T. A. Morison & Hoyt, and that the star Trade-Mark has been used by the said firm of T. A. Morison & Hoyt and its successors, and is now used by complainants upon the same kind and class of goods as that to which it was applied by the original firm which first devised and adopted it. It may also be taken as abundantly proven, if not conceded upon hearing, that the defendant, for a year or more before the commencement of this suit, had made and sold shirts, waists, and underwear upon which he had placed a star and crescent, but such prominence had been given to the star, both in word and symbol, in the marking of the defendant's goods and packages, as to readily deceive inexperienced persons, purchasers, and users into the belief that they were obtaining the genuine and well-known "Star Goods" of the complainants.

It is contended on the part of the defendant that, as he has combined the figure of a crescent with a star in marking his goods, there is no infringement. But I have no doubt, from the proof in the case, that the defendant does by the use of the star in his mark, although combined with a crescent, infringe upon the complainants' rights, because, as is charged in the bill and as the proof shows, he makes the star so prominent a feature in the mark as to enable him, or those dealing in his goods, to impose them upon the inexperienced and unwary as "Star Goods"—the use of the word and symbol "Star" giving a color of right to designate the defendant's goods as "Star Goods," by which complainants' goods have come to be widely and favorably known.

It is also contended on the part of the defendant that complainants are only entitled to the use of a red star, because the proof shows that complainants' goods were mainly marked with a red star, or the star was impressed in red color upon complainants' goods; but the complainants have not confined themselves, as the proof shows, exclusively to the use of a red star, but have designated their goods so that they became known to the trade as "Star Goods" without reference to the color. Hence I think there is no force in this position on the part of the defendant. The defendant also contends that he has not infringed because he has used a five-pointed star, while the complainants' star has been usually and uniformly a six-pointed star. There is no force in this objection, because no purchaser would be expected to stop and count the points upon a star in order to determine whether they were the goods of the complainants or not. It is enough that the goods are marked with a star, and are known or called by the designation of "Star Goods."

It is also further urged in behalf of the defendant that on being notified by the complainants that he was infringing their Trade-Mark he gave notice to persons to whom he had sold star-and-crescent goods to erase the star from the marks upon the goods, and that he has since gone out of business, and therefore no decree for any injunction should be awarded against him. If the proof had shown that the defendant at once, on being notified of his infringement, had in good faith abandoned the use of complainants' trade-mark, his conduct in that respect might be considered by the court in fixing the terms of the decree; but the record shows that the defendant has contested every step of the case. He has put the complainants to the expense of proving every fact necessary to establish their right to the use of the Trade-Mark in question, and also the fact of his (defendant's) infringement, and even only a very few days before the case was brought on for final hearing put in additional proof upon the point of complainants' right to the use of the word and symbol "Star." As I have already said, the defendant's Trade-Mark shows the star as the prominent feature, although there is a crescent alongside the star. He prints the word "Trade-Mark" in the same relation to the star as it is printed and shown in the complainants' mark, and locates his mark in the same place upon the garment. These facts show, I think, most manifestly a clear intention upon the part of the defendant to avail himself of the celebrity of the complainants' goods for the purpose of making a market for his own. It is very evident, I think, that any person disposed to take advantage of a customer, having the defendant's goods in his store, could, on inquiry being made for "Star Goods," which is the common designation of complainants' goods, or "Star Shirt," or "Star Waist," or "Star Underwear," hand to the customer defendant's goods, and say: "These are the 'Star Goods'—are known as such," and impose on a customer by reason of this Trade-Mark, the presence of the crescent cutting no special figure in the purchaser's mind. Very many cases have been decided by the courts where analogous questions have arisen, such as that the use of the words "Perry Davis' Vegetable Pain Killer" is an infringement upon the Trade-Mark of "Perry Davis' Pain Killer," (*Davis* v. *Kendall*, 2 R. I., 566;) "Charter Oak" and a sprig of oak leaves, and "Charter Oak," omitting the sprig of oak leaves, (*Filley* v. *Fassett*, 44 Mo., 173;) "The Hero" and "The Heroine," (*Rowley* v. *Houghton*, 2 Brewst., 303;) "Rising Sun Stove Polish" and "Rising Moon Stove Polish," (*Morse* v. *Worrell*, 9 Amer. Law Rev., 368;) "Apollinaris Water" and "London Apollinaris Water," in different kinds of bottles and different kinds of labels, (*Apollinaris Co.* v. *Norrish*, 33 Law T., [N. S.,] 242.)

In *Amoskeag Manufg. Co.* v. *Spear* (2 Sandf., 608) in was said:

An injunction ought to be granted whenever the design of a person who imitates a Trade-Mark, be his design apparent or proved, is to impose his own goods upon the public as those of the owner of the mark, and the imitation is such that the success of the design is a probable or even possible consequence.

A decree may be prepared finding that the complainants have a valid Trade-Mark as alleged in their bill, and that defendant has infringed the same, and for an accounting.

U. S. Circuit Court—Southern District of Georgia, Eastern Division.

ARMSTRONG & CO. *v.* SAVANNAH SOAP WORKS.

Decided April 13, 1892.

TRADE-MARK INFRINGEMENT—BILL AGAINST CORPORATION—JOINDER OF DIRECTORS AS PARTIES DEFENDANT.

In a bill against a corporation for infringing a Trade-Mark plaintiff included the directors of the defendant corporation as parties defendant. Upon demurrer, *Held* not a misjoinder, and demurrer overruled.

IN equity for injunction and accounting for infringement of Trade-Marks.

Mr. William G. Henderson for the plaintiffs.
Mr. J. R. Saussy for the defendants.

SPEER, *J.*:

The plaintiff has brought his bill against the defendants named and is met by a demurrer, first, upon the ground that the bill as originally filed did not state an amount of damages exceeding two thousand dollars, exclusive of interest and costs. This has been cured by an amendment, and it will not be necessary to consider the able argument of the plaintiff's attorney, in which he insists that the court has jurisdiction of a suit for the infringement of a registered Trade-Mark irrespective of the amount involved. A further ground of demurrer is that the directors of the defendant corporation are joined as parties defendant, which, it is insisted, is a misjoinder. In support of this proposition the defendants rely upon Story on Equity Pleadings, section 235; 1st Daniel's Chancery Pleadings and Practice, page 145, note 2; Law Reports, Chancery Division, page 552, reporting the case of *Wilson* v. *Church*. In the case last mentioned it was held that under the English judicature act, the defendants being officers of the corporation, were improperly joined. It is to be observed, however, in the language of Jessel, master of the rolls—

the legislature in adopting this act inaugurated a totally new system of pleading and established a new court of justice, for that is what the high court is, and one system for all kinds of actions, whether common law actions or equity actions. There is no other practice extant applicable to equity actions. The old practice has ceased to exist. There is only one kind of action and one kind of procedure.

It was there held that as the officer of the corporation was joined merely for the purpose of discovery, and as the discovery could be had by interrogatories in a court of law, the joinder was improper. It is perhaps unnecessary to point out that this system has no standing in the courts of the United States, where the domain of law and equity procedure is entirely distinct. In his admirable work on Equity Pleading, quoted above, Judge Story declares that the officers of a corporation, although they may be witnesses, may be joined in a suit against a corporation, because discovery may be sought from them, and in the case of *Glascock* v. *The Copper Miners' Company*, (11 Sims, 305,) cited in Daniel's Chancery Practice, section 145, the plaintiff was sued at law by a body corporate, and filed his bill for discovery only, making the governor, deputy chairman, one of the directors, and secretary of the company codefendants with the company. It was objected upon demurrer to the bill that an officer of the corporation could not be made a codefendant to the bill which sought for discovery only, or at any rate that the individual members could not be joined as defendants with the corporation at large; but the demurrer was overruled. These are the authorities for the decision. On the other hand, the current of authority in this country seems clearly to justify the plaintiff's action in joining the directors. In the case of *Conrad Poppenhausen* v. *Falke et al.* (4 Blatchf., 498) it was held that where persons were acting in concert in infringing a patent, although they act merely as employés of a corporation, they are liable to be sued therefor jointly in one suit. In *Estes* v. *Worthington et al.* (30 Fed. Rep., 465) it was held, Judge Wallace delivering the opinion, that in torts of misfeasance, like the violation of a trade-mark, agents and servants are personally liable to the injured party, citing *Bell* v. *Josselyn*, (3 Gray, 309,) *Richardson* v. *Kimball*, (28 Maine, 453,) *Mitchell* v. *Harmony*, (13 Howard, 115,) *Phelps* v. *Wait*, (30 N. Y., 78.) It is true that there is a class of agents—such as mere workmen in the employ of a manufacturer—against whom there can be no recovery, although they may have participated in the acts of infringement, (*ibid.*,) but ordinarily the infringer cannot escape the responsibility by showing that he was acting for another. (*Maltby* v. *Bobo*, 14 Blatchf., 53; *Steiger* v. *Heidelberger*, 4 Fed. Rep., 455.)

In view of the authorities cited the demurrer must be overruled.

CIRCUIT COURT OF APPEALS.

Acts Relating to Organisation of Courts of Appeals.

[The full text of the accompanying act is reprinted here in response to requests, and for the convenience of, subscribers to the OFFICIAL GAZETTE.]

[PUBLIC—No. 118.]

An act to establish circuit courts of appeals and to define and regulate in certain cases the jurisdiction of the courts of the United States, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there shall be appointed by the President of the United States, by and with the advice and consent of the Senate, in each circuit an additional circuit judge, who shall have the same qualifications, and shall have the same power and jurisdiction therein that the circuit judges of the United States, within their respective circuits, now have under existing laws, and who shall be entitled to the same compensation as the circuit judges of the United States in their respective circuits now have.

SEC. 2. That there is hereby created in each circuit a circuit court of appeals, which shall consist of three judges, of whom two shall constitute a quorum, and which shall be a court of record with appellate jurisdiction, as is hereafter limited and established. Such court shall prescribe the form and style of its seal and the form of writs and other process and procedure as may be conformable to the exercise of its jurisdiction as shall be conferred by law. It shall have the appointment of the marshal of the court with the same duties and powers under the regulations of the court as are now provided for the marshal of the Supreme Court of the United States, so far as the same may be applicable. The court shall also appoint a clerk, who shall perform and exercise the same duties and powers in regard to all matters within its jurisdiction as are now exercised and performed by the clerk of the Supreme Court of the United States, so far as the same may be applicable. The salary of the marshal of the court shall be twenty-five hundred dollars a year, and the salary of the clerk of the court shall be three thousand dollars a year, to be paid in equal proportions quarterly. The costs and fees in the Supreme Court now provided for by law shall be costs and fees in the circuit courts of appeals; and the same shall be expended, accounted for, and paid for, and paid over to the Treasury Department of the United States in the same manner as is provided in respect of the costs and fees in the Supreme Court.

The court shall have power to establish all rules and regulations for the conduct of the business of the court within its jurisdiction as conferred by law.

SEC. 3. That the Chief-Justice and the associate justices of the Supreme Court assigned to each circuit, and the circuit judges within each circuit, and the several district judges within each circuit, shall be competent to sit as judges of the circuit court of appeals within their respective circuits in the manner hereinafter provided. In case the Chief-Justice or an associate justice of the Supreme Court should attend at any session of the circuit court of appeals he shall preside, and the circuit judges in attendance upon the court in the absence of the Chief-Justice or associate justice of the Supreme Court shall preside in the order of the seniority of their respective commissions.

In case the full court at any time shall not be made up by the attendance of the Chief-Justice or an associate justice of the Supreme Court and circuit judges, one or more district judges within the circuit shall be competent to sit in the court according to such order or provision among the district judges as either by general or particular assignment shall be designated by the court: *Provided*, That no justice or judge before whom a cause or question may have been tried or heard in a district court or existing circuit court, shall sit on the trial or hearing of such cause or

question in the circuit court of appeals. A term shall be held annually by the circuit court of appeals in the several judicial circuits at the following places:

In the first circuit, in the city of Boston.
In the second circuit, in the city of New York.
In the third circuit, in the city of Philadelphia.
In the fourth circuit, in the city of Richmond.
In the fifth circuit, in the city of New Orleans.
In the sixth circuit, in the city of Cincinnati.
In the seventh circuit, in the city of Chicago.
In the eighth circuit, in the city of Saint Louis.
In the ninth circuit, in the city of San Francisco.

And in such other places in each of the above circuits as said court may from time to time designate. The first terms of said courts shall be held on the second Monday in January, eighteen hundred and ninety-one, and thereafter at such times as may be fixed by said courts.

SEC. 4. That no appeal, whether by writ of error or otherwise, shall hereafter be taken or allowed from any district court to the existing circuit courts, and no appellate jurisdiction shall hereafter be exercised or allowed by said existing circuit courts, but all appeals by writ of error or otherwise, from said district courts shall only be subject to review in the Supreme Court of the United States or in the circuit court of appeals hereby established, as is hereinafter provided, and the review, by appeal, by writ of error, or otherwise, from the existing circuit courts shall be had only in the Supreme Court of the United States or in the circuit courts of appeals hereby established according to the provisions of this act regulating the same.

SEC. 5. That appeals or writs of error may be taken from the district courts or from the existing circuit courts direct to the Supreme Court in the following cases:

In any case in which the jurisdiction of the court is in issue; in such cases the question of jurisdiction alone shall be certified to the Supreme Court from the court below for decision.

From the final sentences and decrees in prize causes.

In cases of conviction of a capital or otherwise infamous crime.

In any case that involves the construction or application of the Constitution of the United States.

In any case in which the constitutionality of any law of the United States, or the validity or construction of any treaty made under its authority, is drawn in question.

In any case in which the constitution or law of a State is claimed to be in contravention of the Constitution of the United States.

Nothing in this act shall affect the jurisdiction of the Supreme Court in cases appealed from the highest court of a State, nor the construction of the statute providing for review of such cases.

SEC. 6. That the circuit courts of appeals established by this act shall exercise appellate jurisdiction to review by appeal or by writ of error final decision in the district court and the existing circuit courts in all cases other than those provided for in the preceding section of this act, unless otherwise provided by law, and the judgments or decrees of the circuit courts of appeals shall be final in all cases in which the jurisdiction is dependent entirely upon the opposite parties to the suit or controversy, being aliens and citizens of the United States or citizens of different States; also in all cases arising under the patent laws, under the revenue laws, and under the criminal laws and in admiralty cases, excepting that in every such subject within its appellate jurisdiction the circuit court of appeals at any time may certify to the Supreme Court of the United States any questions or propositions of law concerning which it desires the instruction of that court for its proper decision. And thereupon the Supreme Court may either give its instruction on the questions and propositions certified to it, which shall be binding upon the circuit courts of appeals in such case, or it may require that the whole record and cause may be sent up to it for its consideration, and thereupon shall decide the whole matter in controversy in the same manner as if it had been brought there for review by writ of error or appeal.

And excepting also that in any such case as is hereinbefore made final in the circuit court of appeals it shall be competent for the Supreme Court to require, by certiorari or otherwise, any such case to be certified to the Supreme Court for its review and determination with the same power and authority in the case as if it had been carried by appeal or writ of error to the Supreme Court.

In all cases not hereinbefore, in this section, made final there shall be of right an appeal or writ of error or review of the case by the Supreme Court of the United States where the matter in controversy shall exceed one thousand dollars besides costs. But no such appeal shall be taken or writ of error sued out unless within one year after the entry of the order, judgment, or decree sought to be reviewed.

SEC. 7. That where, upon a hearing in equity in a district court, or in an existing circuit court, an injunction shall be granted or continued by an interlocutory order or decree, in a cause in which an appeal from a final decree may be taken under the provisions of this act to the circuit court of appeals, an appeal may be taken from such interlocutory order or decree granting or continuing such injunction to the circuit court of appeals: *Provided*, That the appeal must be taken within thirty days from the entry of such order or decree, and it shall take precedence in the appellate court; and the proceedings in other respects in the court below shall not be stayed unless otherwise ordered by that court during the pendency of such appeal.

SEC. 8. That any justice or judge, who, in pursuance of the provisions of this act, shall attend the circuit court of appeals held at any place other than where he resides shall, upon his written certificate, be paid by the marshal of the district in which the court shall be held his reasonable expenses for travel and attendance, not to exceed ten dollars per day, and such payments shall be allowed the marshal in the settlement of his accounts with the United States.

SEC. 9. That the marshals of the several districts in which said circuit court of appeals may be held shall, under the direction of the Attorney-General of the United States, and with his approval, provide such rooms in the public buildings of the United States as may be necessary, and pay all incidental expenses of said court, including criers, bailiffs, and messengers: *Provided, however*, That in case proper rooms can not be provided in such buildings, then the said marshals, with the approval of the Attorney-General of the United States, may, from time to time, lease such rooms as may be necessary for such courts. That the marshals, criers, clerks, bailiffs, and messengers shall be allowed the same compensation for their respective services as are allowed for similar services in the existing circuit courts.

SEC. 10. That whenever on appeal or writ of error or otherwise a case coming directly from the district court or existing circuit court shall be reviewed and determined in the Supreme Court the cause shall be remanded to the proper district or circuit court for further proceedings to be taken in pursuance of such determination. And whenever on appeal or writ of error or otherwise a case coming from a circuit court of appeals shall be reviewed and determined in the Supreme Court the cause shall be remanded by the Supreme Court to the proper district or circuit court for further proceedings in pursuance of such determination. Whenever on appeal or writ of error or otherwise a case coming from a district or circuit court shall be reviewed and determined in the circuit court of appeals in a case in which the decision in the circuit court of appeals is final, such cause shall be remanded to the said district or circuit court for further proceedings to be there taken in pursuance of such determination.

SEC. 11. That no appeal or writ of error by which any order, judgment, or decree may be reviewed in the circuit court of appeals under the provisions of this act shall be taken or sued out except within six months after the entry of the order, judgment, or decree sought to be reviewed: *Provided, however*, That in all cases in which a lesser time is now by law limited for appeals or writs of error such limits of time shall apply to appeals or writs of error in such cases taken to or sued out from the circuit courts of appeals. And all provisions of law now in force regulating the methods and system of review, through appeals or writs of error, shall regulate the methods and system of appeals and writs of error provided for in this act in respect of the circuit courts of appeals, including all provisions for bonds or other securities to be required and taken on such appeals and writs of error, and any judge of the circuit courts of appeals, in respect of cases brought or to be brought to that court, shall have the same powers and duties as to the allowance of appeals or writs of error, and the conditions of such allowance, as now by law belong to the justices or judges in respect of the existing courts of the United States respectively.

SEC. 12. That the circuit court of appeals shall have the powers specified in section seven hundred and sixteen of the Revised Statutes of the United States.

SEC. 13. Appeals and writs of error may be taken and prosecuted from the decisions of the United States court in the Indian Territory to the Supreme Court of the United States, or to the circuit court of appeals in the eighth circuit, in the same manner and under the same regulations as from the circuit or district courts of the United States, under this act.

SEC. 14. That section six hundred and ninety-one of the Revised Statutes of the United States and section three of an act entitled "An act to facilitate the disposition of cases in the Supreme Court, and for other purposes," approved February sixteenth, eighteen hundred and seventy-five, be, and the same are hereby, repealed. And all acts and parts of acts relating to appeals or writs of error inconsistent with the provisions for review by appeals or writs of error in the preceding sections five and six of this act are hereby repealed.

SEC. 15. That the circuit court of appeals in cases in which the judgments of the circuit courts of appeals are made final by this act shall have the same appellate jurisdiction, by writ of error or appeal, to review the judgments, orders, and decrees of the supreme courts of the several Territories as by this act they may have to review the judgments, orders, and decrees of the district court and circuit courts; and for that purpose the several Territories shall, by orders of the Supreme Court, to be made from time to time, be assigned to particular circuits.

Approved, March 3, 1891.

[PUBLIC RESOLUTION—No. 16.]

Joint Resolution to provide for the organization of the circuit courts of appeals.

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That the first meetings of the several circuit courts of appeals mentioned in the act of Congress passed at this present session, entitled "An act to establish circuit courts of appeals and to define and regulate in certain cases the jurisdiction of the courts of the United States, and for other purposes," shall be held on the third Tuesday in June, A. D. eighteen hundred and ninety-one; and if, from any casualty, the first meeting of any of said courts shall fail to be so held on that day, the first meeting of any such court so failing to be held, shall be held on such day subsequent thereto as the Chief Justice, or any justice of the Supreme Court of the United States assigned to such circuit, shall direct: *And be it further resolved*, That nothing in said act shall be held or construed in any wise to impair the jurisdiction of the Supreme Court or any circuit court of the United States in any case now pending before it, or in respect of any case wherein the writ of error or the appeal shall have been sued out or taken to any of said courts before the first day of July, anno Domini, eighteen hundred and ninety-one.

Approved March 3, 1891.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 61.—No. 8. TUESDAY, NOVEMBER 22, 1892. PRICE—$5 per year.

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Changes in Classification.

(ORDER No. 765.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., November 14, 1892.

The following sub-classes are hereby established in Division VII, Class 208, Velocipedes:

1. Unicycles.
2. Epicycles.
3. Dicycles.
4. Bicycles, ordinary, rigid-frame.
5. Bicycles, ordinary, header-preventers.
6. Bicycles, safety, rigid-frame.
7. Bicycles, safety, spring-frame.
8. Bicycles, tandem.
9. Crank-clutches.
10. Pedals and cranks.
11. Bearings.
12. Steering-heads and handle-bars.
13. Brakes.
14. Locks.
15. Saddles.
16. Bicycles, propulsion, crank-and-gear.
17. Bicycles, propulsion, crank-and-chain.
18. Bicycles, propulsion, lever-and-crank.
19. Bicycles, propulsion, lever, crank-and-gear, or chain.
20. Bicycles, propulsion, lever-and-ratchet.
21. Bicycles, propulsion, lever, ratchet-and-gear, or chain.
22. Bicycles, propulsion, rack-and-pinion.
23. Bicycles, propulsion, miscellaneous.
24. Children's seats.
25. Luggage-carriers.
26. Steps and foot-rests.
27. Coupling-bars.
28. Bicycles, supports.
29. Dress and mud guards.
30. Polycycles, propulsion, crank-and-pitman.
31. Polycycles, propulsion, crank-and-gear.
32. Polycycles, propulsion, crank-and-chain.
33. Polycycles, propulsion, lever and-crank.
34. Polycycles, propulsion, lever, crank-and-gear, or chain.
35. Polycycles, propulsion, lever-and ratchet.
36. Polycycles, propulsion, lever, ratchet-and-gear, or chain.
37. Polycycles, propulsion, rack-and-pinion.
38. Polycycles, propulsion, miscellaneous.
39. Polycycles, propulsion, auxiliary-spring.
40. Polycycles, propulsion, axle-couplings.
41. Propulsion, rowing-machines.
42. Polycycles, figure.
43. Polycycle, spring-frame.
44. Polycycles, steering devices.

The following changes are directed in Class 175, Electric, Special Applications, Division XVI: The sub-class Valve controllers is abolished; the sub-classes of Heating—169, Heaters, and 171, Pressing and ironing—are transferred to Division XIX; the sub-class 90, Separators, is transferred to Division XXV, and the sub-class of Heating, 160, Soldering, is transferred to Division XIV.

W. E. SIMONDS,
Commissioner.

Protection of Foreign Exhibitors.

DEPARTMENT OF STATE,
Washington, D. C., July 20, 1892.

To the Diplomatic and Consular Officers of the United States:

GENTLEMEN: I subjoin a transcript of the act of Congress approved April 6, 1892, Public No. 39, entitled "An act to protect foreign exhibitors from prosecution for exhibiting wares protected by American patents and trade-marks," which reads as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That no citizen of any other country shall be held liable for the infringement of any patent granted by the United States, or of any trade-mark or label registered in the United States, where the act complained of is or shall be performed in connection with the exhibition of any article or thing at the World's Columbian Exposition at Chicago.

You will transmit copies of this circular to the government of the country to which you are accredited, and ask that it be given the widest possible circulation for the information of those directly concerned.

I am, gentlemen, your obedient servant,

JOHN W. FOSTER,
Secretary of State.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., August 4, 1892.

Official copy to the Commissioner of Patents for his information and guidance.

E. M. DAWSON,
Chief Clerk.

Withdrawal of Cases from Issue.

Hereafter all amendments proposed to allowed applications which involve a withdrawal from issue, and all petitions and requests relating thereto, shall be filed with the docket clerk, Mr. J. M. Emory, and transmitted by him to the Primary Examiner for report. If the Examiner shall report favorably to the admission of such amendment, the matter will be laid before the Commissioner for immediate determination. If the Examiner shall report unfavorably, the case will be docketed and will be heard and decided by the Commissioner in regular course, unless good reasons shall appear for immediate action.

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Issue of November 22, 1892.

Patents	439	No. 486,420 to No. 486,841, inclusive.
Designs	20	No. 21,998 to No. 22,017, inclusive.
Trade-Marks	58	No. 22,007 to No. 22,058, inclusive.
Labels	None.	
Reissues	3	No. 11,235 to No. 11,237, inclusive.
Total issue	497	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	3	....	Nevada	....	....
Arizona Territory	....	....	New Hampshire	1	1
Arkansas	2	....	New Jersey	24	2
California	9	1	New Mexico Ter	1	....
Colorado	3	....	New York	55	21
Connecticut	12	1	North Carolina	3	....
Delaware	....	....	North Dakota	....	....
District of Columbia	2	....	Ohio	34	4
Florida	2	....	Oregon	2	....
Georgia	3	....	Pennsylvania	39	2
Idaho	....	....	Rhode Island	1	....
Illinois	51	4	South Carolina	....	1
Indian Territory	1	....	South Dakota	2	....
Indiana	14	3	Tennessee	3	....
Iowa	6	....	Texas	5	1
Kansas	5	....	Utah Territory	3	....
Kentucky	2	....	Vermont	2	....
Louisiana	1	....	Virginia	1	1
Maine	5	....	Washington	2	....
Maryland	8	2	West Virginia	2	....
Massachusetts	20	4	Wisconsin	19	1
Michigan	18	....	Wyoming	....	....
Minnesota	3	....	U. S. Army	....	....
Mississippi	1	....	U. S. Navy	....	....
Missouri	15	....			
Montana	....	....	Total to citizens of the United States	411	48
Nebraska	1	....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	....	....	Netherlands	....	....
Austria-Hungary	2	....	Newfoundland	....	....
Belgium	....	....	New South Wales	....	....
Brazil	....	2	New Zealand	....	....
British Guiana	....	....	Norway	....	....
Canada	1	....	Porto Rico	....	....
Chile, Republic of	....	....	Portugal	....	....
China	....	....	Russia	....	....
Denmark	....	....	Scotland	....	....
France	14	1	South Australia	....	....
Germany	7	1	Spain	....	....
Great Britain	6	....	Sweden	1	....
Hawaiian Islands	....	....	Switzerland	....	....
Hungary	....	....	Victoria	....	....
India	....	....	West Indies	....	....
Ireland	....	....			
Italy	....	....	Total to citizens of foreign countries	31	6
Japan	....	...			

APPLICATIONS UNDER EXAMINATION.

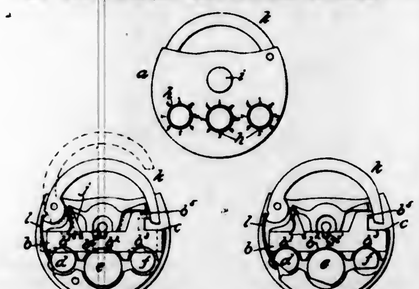
Condition at Close of Business November 15, 1892.

Division No.	Subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended	No. of applications awaiting action.
	Under one month in arrears.			
31	Gas, Painting, Leather, Tanning, Alcohol, Oils, Fats, and Glue, etc.	Oct. 15	Nov. 10	92
	Between one and two months in arrears.			
14	Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, etc.	Sept. 21	Nov. 8	121
8	Furniture, Toilet, Umbrellas and Canes, etc.	Sept. 21	Nov. 3	252
25	Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, etc.	Sept. 16	Nov. 1	185
16	Telegraphy, Telephony, Electric Lighting and Signaling.	Sept. 16	Oct. 31	157
21	Textiles, etc.	Sept. 19	Oct. 22	169
11	Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting.	Sept. 17	Oct. 20	211
19	Stoves and Furnaces	Sept. 23	Oct. 15	344
30	Lamps, Gas-Fittings, Type-Writers, Matrix-Making Machines.	Sept. 16	Oct. 15	179
10	Carriages and Wagons and Railway-Cars.	Sept. 16	Oct. 15	388
24	Sewing-Machines and Apparel	Sept. 17	Oct. 13	132
17	Paper-Manufactures and Printing.	Sept. 16	Oct. 8	199
3	Metallurgy, Metal Founding, Forging, Rolling, Coating, Annealing and Tempering, etc.	Sept. 16	Oct. 3	181
20	Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc.	Sept. 16	Oct. 1	288
1	Tillage and Fences	Sept. 22	Sept. 26	273
5	Fine Arts, Stationery, Book-Binding, Music, etc.	Sept. 17	Sept. 23	238
27	Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	Sept. 16	Sept. 23	289
6	Chemistry, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc.	Sept. 16	Sept. 17	272
15	Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc.	Sept. 15	Sept. 15	265
4	Civil Engineering, etc.	Sept. 15	Sept. 15	345
	Between two and three months in arrears.			
2	Farm Stock, Products, etc	Sept. 1	Nov. 5	227
12	Mechanical Engineering, Stores-Service, etc.	Sept. 14	Oct. 26	231
22	Advertising, Baggage, Packing and Storing Vessels, etc.	Aug. 19	Oct. 17	279
7	Harvesters, Games and Toys	Aug. 17	Oct. 17	516
23	Instruments of Precision, Acoustics, Optics, etc.	Sept. 5	Oct. 15	240
33	Fire-Arms, Navigation, Signals, etc.	Sept. 3	Oct. 10	210
9	Hydraulics, Fire-Extinguishers, etc.	Sept. 2	Oct. 10	392
18	Steam-Engineering, etc	Sept. 10	Oct. 5	157
	Between three and four months in arrears.			
26	Pneumatics, Refrigeration, Air and Gas Engines, etc.	July 26	Aug. 29	438
	Between four and five months in arrears.			
13	Metal-Working, Arms and Projectiles, etc.	July 2	Oct. 19	261
29	Wood-Working Machines, Carpentry, Coopering and Roofing, etc.	June 23	Oct. 18	396
	Between six and seven months in arrears.			
28	Electricity, Generation, Distribution, etc.	May 14	Oct. 3	510
	Total number of applications awaiting action			8,430
	Under one month in arrears.			
	Designs	Nov. 3	Nov. 3	66
	Trade-Marks	Nov. 11	Nov. 13	20

PATENTS

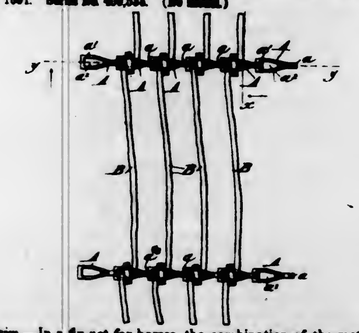
GRANTED NOVEMBER 22, 1892.

486,420. LOCK. GEORGE F. ABBOTT, New Haven, Conn., assignor, by mesne assignments, to A. W. Curtis, Meriden, Albert M. Sigourney and Frank W. Sigourney, Bristol, Conn., and George S. Mason, Brooklyn, N. Y. Filed Feb. 20, 1892. Serial No. 422,149. (No model.)



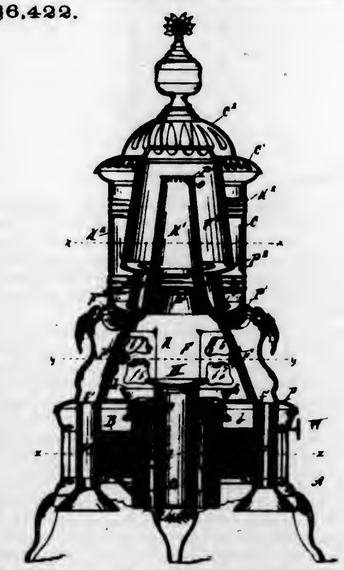
Claim.—In combination, in a lock, a movable bolt having a number of recesses in the edge thereof, a series of rotary tumblers arranged adjacent to the recesses in the bolt with one edge of each tumbler adapted to project into the respective recesses in the bolt and having a segment of the tumblers cut away to an extent corresponding to the recesses, a handle secured to each tumbler and located on the outer surface of the lock and bearing an index-mark, a series of index-marks on the surface of the lock adjacent to the edge of the handle, and means for throwing the bolt, all substantially as described.

486,421. FLY-NET. MATTHEW W. BACH, Ottawa, Ill. Filed Oct. 22, 1891. Serial No. 409,533. (No model.)



Claim.—In a fly-net for horses, the combination of the metallic chains composed of links A, said links consisting each of a strip of metal bent to provide a loop *a* and the two flat ends *a'* *a'*, which lie in contact with each other and are slotted at a^2, and the leather strips B B, passing through the slots a^2 of the links A and twisted about the flattened portions *a'*, all arranged substantially as described.

486,422. OIL-STOVE. MADISON S. BENEDICT, Detroit, assignor to the Coldwater Oil Stove Company, Coldwater, Mich. Filed Apr. 6, 1892. Serial No. 427,973. (No model.)



Claim.—1. In an oil-burning heating-stove, the combination of the base, an oil-burner located therein, a combustion-chamber surrounding said burner, a heating-drum located above said combustion-chamber, divided by annular walls into three compartments, one of said compartments being directly above said combustion-chamber and provided with a mouth opening downward into said combustion-chamber, the second of said compartments being annular in form and surrounding the first and provided with an exit-opening at the top and with inlet-flues at the bottom, and the third or outermost of said chambers being also annular in form, provided at its upper side with outlet-openings and at its lower side being connected by passage-ways that lead between the flues from the said combustion-chamber, substantially as and for the purpose described.

2. In an oil heating-stove, the combination of a base, a burner located therein, a combustion-chamber, an annular flue at the summit of and surrounding said combustion-chamber, inlet-flues leading from beneath said combustion-chamber upward along the sides thereof and entering said annular flue, and outlet-flues leading from the upper side of said annular flue through an interposed drum and discharging into a heating-chamber communicating with the open air at the top of said heater, substantially as and for the purpose described.

3. In combination with the base of an oil-stove, a combustion-chamber having formed integral therewith an annular heating-chamber located horizontally around the top of the combustion-chamber, a number of upright flues leading into said annular chamber from below said combustion-chamber, and an equal number of outlet-flues leading from above said annular chamber and communicating with the outer air through an interposed heating-chamber, in which all said last-mentioned flues unite, substantially as and for the purposes described.

4. In an oil heating-stove, the combination of a combustion-cham-

ber, a base and a burner supported therein, a heating-chamber located above said combustion-chamber, provided with an internal space adapted to receive the products of combustion and to pass part of them therethrough into the open air and to deflect another part of them around the under side and to the outer walls of said chamber

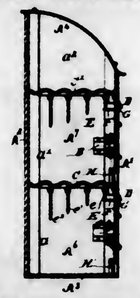
wheel I, the cam-lever I', the spiral spring L, and the pitman I", as and for the purposes substantially as set forth and described.

vided with one or more longitudinal stiffening-corrugations, substantially as specified.

486,428. CATCH-BASIN WATER-CLOSET. HENRY C. BOSSENMAN, Cincinnati, Ohio. Filed June 24, 1892. Serial No. 437,863. (No model.)

bar, a base and a burner supported therein, a heating-chamber located above said combustion-chamber, provided with an internal space adapted to receive the products of combustion and to pass part of them therethrough into the open air and to deflect another part of them around the under side and to the outer walls of said chamber, and a casing adapted to confine the deflected products of combustion and direct them against the outer wall of said heating-chamber, substantially as and for the purpose specified.

486,423. HOUSE LETTER-BOX. CAROLINE BENNETT and ARTHUR R. PARKINSON, Kansas City, Mo.; said Parkinson assignor to said Bennett. Filed Feb. 15, 1892. Serial No. 421,856. (No model.)

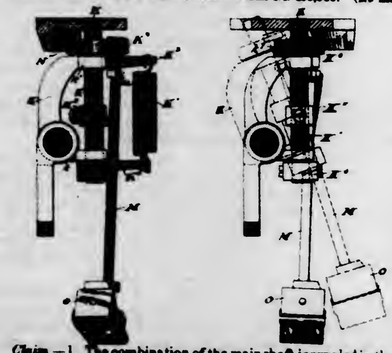


Claim.—1. In a house letter-box having vertical sides and a fixed top and a longitudinal opening through one of said sides near said top for the reception of the letters, the combination of vibrating pins within said box, attached at their upper ends to the under side of the top of said box and having their lower ends extending downwardly in juxtaposition to and past the lower edge of said opening, substantially as and for the purpose described.

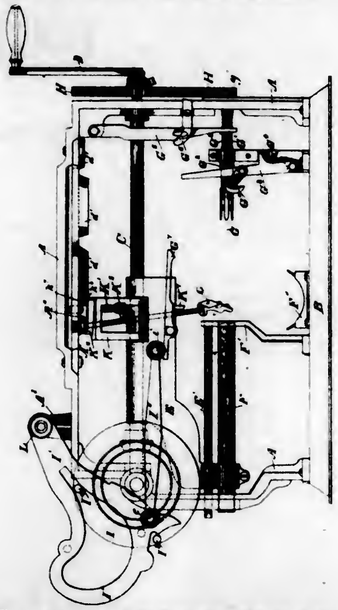
2. In a house letter-box having vertical sides and a fixed top and a longitudinal opening through one of said sides near said top for the reception of the letters, the combination of vibrating pins attached at their upper ends to the under side of the top of said box and arranged in multiple series and having the lower ends of one of said series of pins extending downwardly in juxtaposition to and past the lower edge of said opening and the lower ends of another series in rear thereof and extending downwardly and in length beyond the lower ends of the first series, substantially as and for the purpose described.

3. In a house letter-box having a suitable opening in one of its walls for the reception of the letters, the combination of posts extending from the inner walls of said box beneath said opening, and vibrating pins suspended from said inner walls, graduated in length and having one series of said pins interlocking with said post, substantially as and for the purpose described.

486,424. APPLE PARER AND CORER. CHARLES A. BENTON, Aurelius, Mich. Filed June 4, 1892. Serial No. 435,560. (No model.)



Claim.—1. The combination of the main shaft journaled in the upright frame, the movable carriage, the swinging frame, the cam-bolt, and the lugs K^6, K^8, and K^9 on said cam-bolt, the slotted bracket with offset slot, the pins N", and the flanges *d d* upon the side of said slotted bracket, the knife O, and pendent knife-arm M and the notched arm K^2, the spiral spring K", the swinging dog or lever G^2, the movable arm G^3, the trimming-knife G", the spiral spring G^4, the disk drive-wheel I, the cam-lever I', the spiral spring L, and the pitman I", as and for the purposes substantially as set forth and described.



2. The combination of the main shaft journaled in the upright frame and driven by a crank, the beveled cogged wheel *b*, the cogged drive-wheel H, and the cogged wheel H', and the cogged wheel *g'*, the disk drive-wheel I, the cam-lever I', and the spiral spring L, the movable carriage E, the pitman I", the swinging frame K, the cam-bolt K', with the lugs K^6, K^8, and K^9, the knife and pendent knife-arm, the notched arm K^2, the spiral spring K", the slotted bracket provided with pins N" and flanges *d' d'* and offset slot, the trimming-knife G", the spiral spring G^4, the movable arm G^3, the swinging dog or lever G^2, the lug G^5, and the latch G^7, the parallel guide E', the coring-tube F, the guide F', the chute F", the fork G, the plunger G^3, the spindle G', and the post or standard G^4, as and for the purposes substantially as set forth and described.

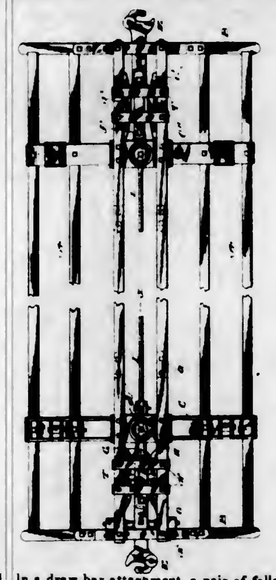
486,425. FASTENER FOR THE MEETING-RAILS OF SASHES. MARTIN BOURKE, Youngstown, Ohio. Filed Apr. 9, 1892. Serial No. 428,463. (No model.)

Claim.—The combination, with the thimble having exterior threads and interior cam-shoulder and at its outer end a depression *c* and diametrically-opposite groove *d*, of the bracket, the standard thereon, the bearing-sleeve at the upper end of the standard, and the bolt supported in said sleeve and having thumb-piece with a lug to act in conjunction with the interior cam-shoulder of the thimble, substantially as specified.

486,426. KNIFE. CHAPIN C. BROOKS, Cape Elizabeth, Me. Filed Mar. 7, 1892. Serial No. 423,960. (No model.)

Claim.—A blade having a series of corrugations extending through and through the blade and to about its transverse center and one of its edges beveled to form serrations or teeth and having its back provided with one or more longitudinal stiffening-corrugations, substantially as specified.

486,427. DRAW-BAR ATTACHMENT FOR CARS. PERRY BROWN, Sharonville, Ohio. Filed Mar. 12, 1892. Serial No. 424,697. (No model.)



Claim.—1. In a draw-bar attachment, a pair of follower-blocks having a receptacle for the spring longer than the length of said spring when closed and opening transversely of the same, substantially as described.

2. In a draw-bar attachment, a pair of follower-blocks, one being a receptacle for the spring and the other having a plunger for acting on the spring projecting from it and extending into and working within the receptacle inclosing the spring, substantially as described.

3. In a draw-bar attachment, a draw-bar, a connecting-rod between it and a second draw-bar at the opposite end of the car, a pair of follower-blocks, a spring between them, and a yoke pivotally connected to the first-mentioned draw-bar, passing above and below said follower-blocks and connected with the draw-bar on the opposite end of the car, substantially as described.

4. In a draw-bar attachment, a draw-bar, a connecting-rod between it and a second draw-bar at the other end of the car, a pair of follower-blocks, a spring between them, and a yoke arranged above and below said blocks, connected to a second yoke secured to said connecting-rod, substantially as described.

5. In a draw-bar attachment, a pair of draw-bars, and a rod connecting said draw-bars having an oblong eye through which the king-bolt and a bolt connecting it with one of the draw-bars pass, substantially as described.

6. In a draw-bar attachment, a bolster having an opening in its center to admit the passage of the draw-bar connections and provided with antifriction-rollers, substantially as described.

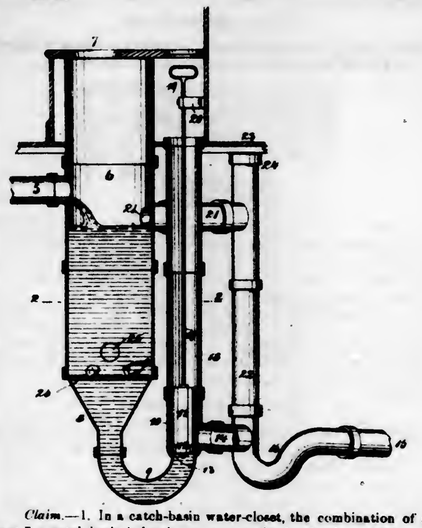
7. In a draw-bar attachment, a pair of guide-plates having notches on their edges to receive cross-bars running from one to the other and under the draft-timbers, substantially as described.

8. In a draw-bar attachment, a bolster having a central aperture for the passage of the connections between the draw-bars and a bolster-plate closing the aperture on the lower side and having tenons fitting into mortises in the bolster, substantially as described.

9. In a draw-bar attachment, a pair of follower-blocks and a spring-plug bearing on the draft-bar to keep it in its normal position and a draft-iron having a receptacle for the plug and recesses for the follower-blocks, substantially as described.

10. In a draw-bar attachment, a follower-block and a draw-bar having their contiguous faces butting together, the draw-bar having a pivotal connection near the front end of said follower-block, and a spring pressing said draw-bar and follower-plate together, whereby the draw-bar is returned to its central position by the power of the spring, substantially as described.

486,428. CATCH-BASIN WATER-CLOSET. HENRY C. BUSSENIUS, Cincinnati, Ohio. Filed June 24, 1892. Serial No. 437,883. (No model.)



Claim.—1. In a catch-basin water-closet, the combination of a seat 7, a catch-basin below it, a water-supply pipe 5, a hopper 8 below the catch-basin, a combined trap and outlet-pipe 9, a valve 11, which controls the outlet, and an overflow 21 22, all as substantially shown and described.

2. In a catch-basin water-closet, the combination of a seat 7, a catch-basin below it, a water-supply pipe 5, a hopper 8 below the catch-basin, a combined trap and outlet-pipe 9, a valve 11, which controls the outlet, a valve-rod 17, whereby the valve is operated, a bearing 20, which keeps the valve-rod in proper position, a pipe 18, leading up to the surface, through which the valve may be removed and access gained to parts below, and an overflow 21 22, all as substantially shown and described.

3. In a catch-basin water-closet, the combination of a seat 7, a catch-basin below it, a water-supply pipe 5, a hopper 8 below the catch-basin, a combined trap and outlet-pipe 9, a valve 11, which controls the outlet, an outlet 14 15, which leads to the sewer, a trap 16, and an overflow 21 22, connecting the catch-basin with the sewer-outlet, the upright portion 22, leading to the surface and provided with the hand-hole opening 24, through which access to trap 16 may be had, all as substantially shown and described.

4. In a catch-basin water-closet, the combination of a seat 7, a catch-basin below it, a water-supply pipe 5, a hopper 8 below the catch-basin, a grate above the hopper, a combined trap and outlet-pipe 9, terminating in its rising branch into a valve-chamber 10, a narrow-ridged valve-seat 13 within this valve-chamber, and a rubber or leather seated valve 11, all as substantially shown and described.

5. In a catch-basin water-closet, the combination of a seat 7, a catch-basin below it, a water-supply pipe 5, a hopper below the catch-basin, a combined trap, outlet-pipe, and valve-chamber 9 10, a valve 11, provided with a valve-rod 17, a pipe 18, leading to the surface and permitting access to the valve-chamber and parts below, a sewer-outlet 14 15, a trap 16, provided in the same, and an overflow 21 22, connecting the catch-basin with the sewer-outlet, its upright portion 22 leading to the surface and having hand-hole opening 24, by which access to trap 16 is had, all as substantially shown and described.

6. In a catch-basin water-closet when arranged in series, the combination of the seats 7, catch-basins below them, pipes 25, connecting all the catch-basins, hoppers below the catch-basin, outlet-pipes 9, connecting to the hoppers, valves 11, controlling the passage from outlet-pipes 9, sewer-outlets 14 15, provided with traps 16, a water-supply pipe 5, connecting to one of the series of catch-basins, and an overflow connecting the series with one of the sewer-outlets, all as substantially shown and described.

7. In a catch-basin water-closet, the combination of a seat 7, a catch-basin below it, a water-supply pipe 5, a hopper 8 below the catch-basin, a combined trap and outlet-pipe 9, a valve 11, located externally from the catch-basin and connected with it by pipe 9, and an overflow, all as substantially shown and described.

8. In a catch-basin water-closet, the combination of a seat 7, a catch-basin below it, a water-supply pipe 5, a hopper 8 below the catch-basin, a combined trap and outlet-pipe 9, a valve 11, located exter-

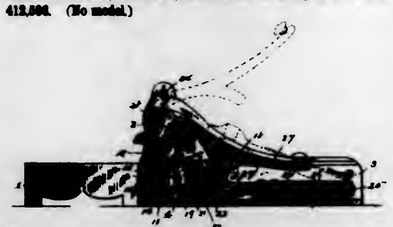
nally from the catch-basin and connected with it by pipe 9, an external passage 18, reaching up to the surface, and an overflow, all as substantially shown and described.

486,429. CIGARETTE-HOLDER. SALLIE P. BRYANT, Baltimore, Md. Filed Feb. 20, 1892. Serial No. 422,310. (No model.)

Claim.—1. A cigarette-holder comprising the portion A, formed of compressed pith and provided with a suitable wrapping and longitudinally bored, and a mouthpiece or stem held in said bore and having spurs or nicks thereon and partially covered by an extension of the wrapping, substantially as specified.

2. A cigarette-holder having the holder proper formed of an absorbent material, a stem or mouthpiece having spurs or nicks in one end thereof held in said absorbent material, and a wrapping around the absorbent material and partially surrounding the stem or mouthpiece, substantially as specified.

486,430. DEVICE FOR AFFIXING STAMPS AND LABELS. HENRY CAMPBELL, Baltimore, Md. Filed Nov. 21, 1891. Serial No. 412,866. (No model.)



Claim.—1. In a stamp-affixing machine, the combination of two pairs of knives at right angles to each other and adapted to sever the stamp from the corner of a sheet, one pair of said knives having a shear cut and the other pair being serrated, substantially as set forth.

2. The combination, with a lever, of a stamp-affixing presser and knives at right angles to each other carried by and oscillating with said lever and corresponding knives for the opposite side of the stamp-sheet, substantially as set forth.

3. In a stamp-affixing machine, the combination, with a presser, of a severing-knife having a serrated edge and a corresponding knife for the other side of the stamp-sheet, said knives having corresponding and re-entering serrations and one of them being movable toward the other transversely to the plane in which the serrations lie as the knives meet, substantially as set forth.

4. The combination, with cutting and affixing devices, of feeding and moistening rolls in line with said devices and feed-rolls beyond and parallel with the moistening-rolls for the main portion of the stamp-sheet, substantially as set forth.

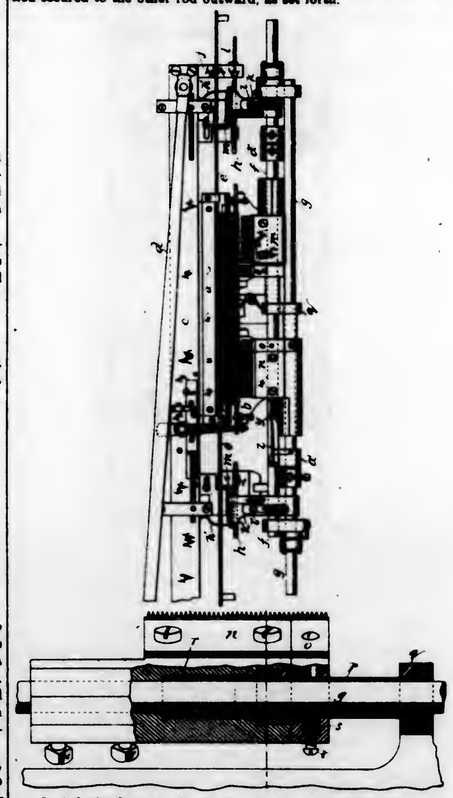
5. The combination of the knives 17 and 18, the corresponding knives 21 22, the lever 24, the hand-lever 27, the feed-rolls, the ratchet 32, and the pawl 31, connected with and operated by said hand-lever, substantially as set forth.

6. In a machine for affixing stamps and labels, the combination of a stationary knife or cutter, a knife at right angles thereto, a spring supporting the latter knife, and an oscillating lever carrying cutters at right angles to each other and adapted to co-operate with the first-mentioned cutters to sever a stamp from a sheet, substantially as set forth.

7. The combination, with cutters at right angles to each other, of an oscillating lever having at its side a cutter and having at its end a spring-supported cutting-plate, substantially as set forth.

486,431. TRANSFERRING MECHANISM FOR PRODUCING TAPE-NARROWINGS ON KNITTING-MACHINES. RUSSELL H. CARTER, Lowell, assignor to Sam. Hodgson, Meredith, N. H. Filed Feb 3, 1892. Serial No. 420,602. (No model.)

Claim.—1. A device for operating the sectional transferring-point slides in knitting-machines to effect tape-narrowings, comprising in its construction the movable slide-carrying bars provided with ratchet-teeth, to each of which one of the slide-sections is secured, sleeves to which the other sections are frictionally secured, the said rods passing through the said sleeves, means connecting the two sections to cause the transferring-points to be raised and lowered in unison, and pawls connected with one rod and engaging the ratchet-teeth of the other rod, whereby when one rod is shogged to move the transferring-points carried thereby inward its pawl will operate to move the section secured to the other rod outward, as set forth.



2. A device for operating the transferring-point slides in knitting-machines to effect tape-narrowings, consisting of movable rods provided with ratchet-teeth, to which one section of each set of slides is secured, independent supports to which the other sections are frictionally secured, connections between the two sections to cause them to be raised and lowered in unison, and a pawl pivotally connected with each rod and engaging the teeth of the opposite rod, as set forth.

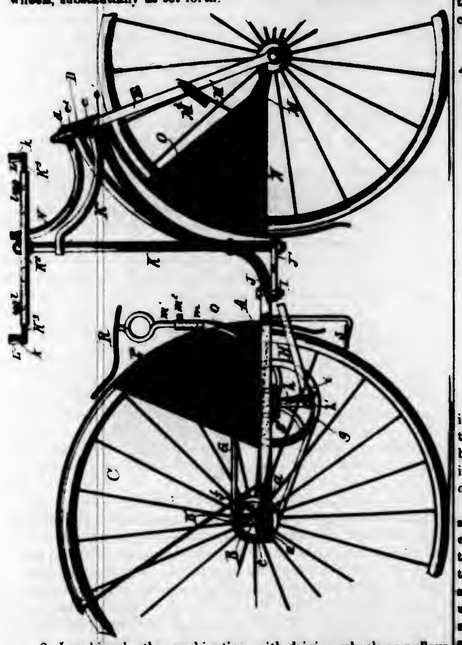
3. A device for operating the transferring-point slides in knitting-machines to effect tape-narrowings, consisting of movable rods provided with ratchet-teeth, to which one section of each of said slides is secured, independent supports to which the other sections are frictionally secured, one section of each set being provided with a hole, a pin connected with the other section and extending laterally therefrom into the said hole to connect the two sections to cause them to be raised and lowered in unison, and a pawl pivotally connected with each rod and engaging the teeth of the opposite rod, as set forth.

4. Means for adapting the sectional transferring-point slides of a knitting-machine to be operated to produce the tape-narrowings, consisting of the longitudinally-movable rod, the chambered section *n*, secured to said rod, a sleeve through which the said rod extends and which is adapted to extend into the chamber of the section *n*, and the section *o*, frictionally supported on said sleeve, as set forth.

5. The sectional transferring-point slides *n o* and independent supports for the same and a pin *u*, connected with and extending laterally from one section into a hole formed in the other section.

486,432. BICYCLE. ALEXANDER H. CLARK, Fond du Lac, Wis. Filed Jan. 16, 1892. Serial No. 418,297. (No model.)

Claim.—1. In a bicycle, the combination, with two driving-wheels and crank-arms secured to the axles thereof, of pitmen connected to said crank-arms, a pivoted lever connected at its ends to said pitmen, and means for vibrating said lever to transmit a rotary motion to said wheels, substantially as set forth.



2. In a bicycle, the combination, with driving wheels or pulleys and crank-arms on the axles thereof, of pitmen connected with said crank-arms and adapted to reciprocate with the rotation of said crank-arms, and also a lateral movement independent of said crank-arms, a pivoted lever connected to said pitmen, and means for vibrating said pivoted lever to impart a rotary motion to the drive wheels or pulleys, substantially as set forth.

3. In a bicycle, the combination, with driving wheels or pulleys and crank-arms carried by the axles of said drive wheels or pulleys, of pitmen connected with said crank-arms, a pivoted lever connected at its ends to the forward ends of said pitmen, a segment-rack carried by said pivoted lever, an oscillatory rod or upright, a segment-rack carried by said oscillatory upright or rod and adapted to mesh with the segment-rack carried by the pivoted lever, and means for oscillating said rod or upright, substantially as set forth.

4. In a bicycle, the combination, with the driving pulleys or wheels, of an oscillatory rod or upright, mechanism for transmitting motion from said oscillatory rod or upright to the drive wheels or pulleys, and adjustable handles at the upper end of said oscillatory rod or upright, substantially as set forth.

5. In a bicycle, the combination, with the driving-wheels and crank-arms thereon, of pitmen connected to said crank-arms, a pivoted lever connected at its ends to said pitmen, a vertical shaft connected to said lever and adapted to have a rocking movement, and extensible handles connected to said shaft at the upper end thereof, substantially as set forth.

6. In a velocipede, the combination, with a frame, wheels, and propelling mechanism adapted to be actuated by hand, of foot-rests carried by the front fork of the frame for turning said fork and the wheel carried thereby, the said foot-rests projecting rearwardly from the front fork and located in a plane behind the plane of said fork, substantially as and for the purpose set forth.

7. In a bicycle, the combination, with driving-pulleys, of an oscillatory upright, mechanism for communicating motion from said oscillatory upright to the drive wheels or pulleys, means for oscillating said oscillatory upright, and braces for supporting said oscillatory upright, substantially as set forth.

8. In a bicycle, the combination, with the spines or back bones, of boxes adjustably mounted on the rear ends of said spines or back bones, journal-boxes located within said boxes and adapted to receive the axle of the rear wheel, and springs located within said boxes and adapted to bear on the journal-boxes.

9. In a bicycle, the combination, with drive wheels or pulleys and crank-arms carried by the axle of said drive wheels or pulleys, of pitmen, bolts passing through said pitmen, straps connected at their ends to said bolts and passing about the crank-pins on said crank-arms, so that said pitmen can have a lateral movement, and mechanism for reciprocating said pitmen, substantially as set forth.

486,433. STREET-CAR CURTAIN. ARTHUR D. COCHRAN, Indianapolis, Ind. Filed June 6, 1892. Serial No. 435,614. (No model.)

Claim.—1. The combination, with a street-car curtain having rings in its sides, of vertical guide-rods secured at their lower ends within the grooved faces of the car-framework and circular vertical guide-brackets surrounding the upper end of such rods, such brackets flaring at the top and bottom and having a narrow vertical slot in their opposing faces, substantially as shown and described.

2. A street-car curtain consisting of a curtain suspended from a suitable spring-roller and provided with a stiffening-rod at its lower end, rings having flat shanks so secured to the sides of such curtain that such rings will be retained in a horizontal position when the curtain is vertical, a vertical rod on each side of such curtain, such rod supported only at its base and standing loosely in a groove in the upright at the side of such curtain, a circular vertical guide-bracket attached to the upright and surrounding the upper end of such rod, such bracket flaring at the top and bottom and having a narrow vertical slot through which the curtain can move, whereby the rings of such curtain will be forced in their descent through such brackets over the upper ends of such guide-rods and such curtain can be readily lifted, if desired, without operating the roller, substantially as shown and described.

486,434. CHECK-FILE. ARTHUR L. COLTON, Cleveland, Ohio. Filed May 11, 1892. Serial No. 432,548. (No model.)

Claim.—1. In a check-file, the construction herein described, consisting of the rigid drawer-shaped holder and a series of movable partitions in said holder, disconnected therefrom and provided with tabs centrally at their top edge and projecting above said edge and lettered or numbered consecutively, in combination with intermediate customers' division-sheets having tabs at their top at either side of the line of tabs on the said division-sheets, substantially as described.

2. A bank-check file consisting of a drawer-shaped holder, a series of separate removable partitions lettered or numbered consecutively and disconnected from said holder, and a series of independent customers' division-sheets between said partitions, each of said sheets having a tab projecting above said edge and provided with one or more characters and a blank space for a customer's name, substantially as described.

3. The receptacle or holder having a fixed rod lengthwise at one side, the back supporting piece or plate for the contents of the file, and an arm having pivoted and sliding connection upon said rod and bearing against said back plate, substantially as described.

4. The receptacle and a rod longitudinally along inside thereof, a supporting-arm having a sliding bearing on said rod, and a back

plate or piece to support the contents of the file held by said arm, substantially as described.

5. The file-holder and the rod lengthwise at one side thereof, in combination with the back plate, an arm having a sliding bearing on said rod, pivotally engaged with the back plate at about its center

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block having bearings mounted thereon, opposite independent winding-drums journaled in said bearings, separate ratchet-wheels secured to the inner adjacent ends of said drum, a single swinging operating-

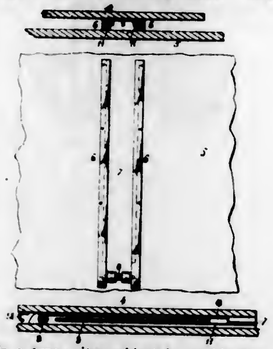
and above the knotter-frame, with a space between the two, and a spring extension of the deflector to close said space and adapted to yield under unusual pressure.

plate or piece to support the contents of the file held by said arm, substantially as described.

5. The file-holder and the rod lengthwise at one side thereof, in combination with the back plate, an arm having a sliding bearing on said rod, pivotally engaged with the back plate at about its center, and said arm provided with a downwardly-extending portion to brace the back plate in inclined position, substantially as described.

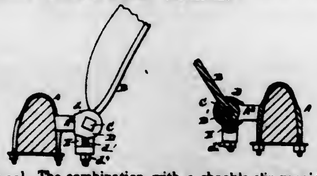
6. The file-holder having ledges along its sides and the partitions and division-sheets constructed at their ends to rest on said ledges when inclined, in combination with the back plate forming a support for the contents of the file and an arm to hold said back plate, having a leg to rest on the bottom of the holder and arranged to slide back and forth in the holder on a friction-bearing at the side of said holder, substantially as described.

486,485. TYPE-WRITER CABINET. SAMUEL L. CONDÉ, Rockford, Ill. Filed Jan. 21, 1892. Serial No. 418,861. (No model.)



Claim.—In a type-writer cabinet, in combination with lateral grooved ways having stops near their forward ends, a grooved roller supported between the forward ends of said ways, a horizontal movable type-writer platform having on its under side a bracket with lateral flanges to slide in the grooved ways, and a longitudinal tongue to engage the roller.

486,486. THILL-COUPLING. WILLIAM DAHL, Detroit, Mich. Filed Apr. 6, 1892. Serial No. 428,061. (No model.)



Claim.—1. The combination, with a shackle-clip provided with perforated ears, of a shaft-iron, a bolt journaling the shaft-iron between said ears, cheek-pieces D D′, each provided with a perforated head and a screw-threaded stem engaged upon said bolt, and a yoke adjustably engaged at its extremities upon said stems, whereby the yoke may be forced into engagement with the shaft-iron, substantially as described.

2. The cheek-pieces D D′, each provided with a perforated head and a screw-threaded stem, having, in combination therewith, a yoke adjustably engaged at its extremities upon said stems, substantially as and for the purpose described.

3. As an article of manufacture, the cheek-pieces D D′, each provided with a perforated head and a screw-threaded stem, a yoke engaged at its extremities upon said stem, and nuts engaged upon said stem to hold and adjust said yoke, said heads each constructed with a flange d^2, open at one side, as at d^3, substantially as and for the purpose described.

486,487. VALVE-GEAR. FRANCIS H. A. DEVLIN, Mauch Chunk, Pa. Filed July 13, 1892. Serial No. 439,899. (No model.)

Claim.—1. The combination, with a slotted valve-controlling link, of the sliding adjustable block moving in the slot of said link and provided with a projecting threaded stud, a bearing-nut mounted upon said stud, the eccentric-rod having an open rectangular head embracing said bearing-nut, and springs interposed between the inner ends of said head and side of said nut, substantially as set forth.

2. In a hay-booming apparatus, the combination of the base-

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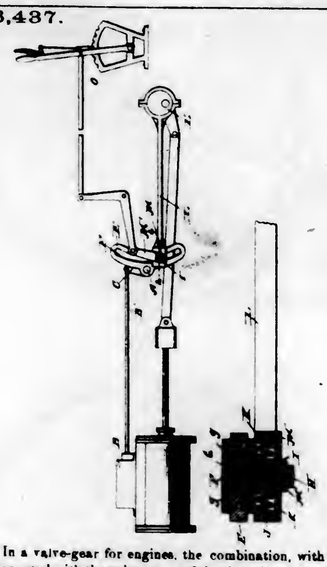
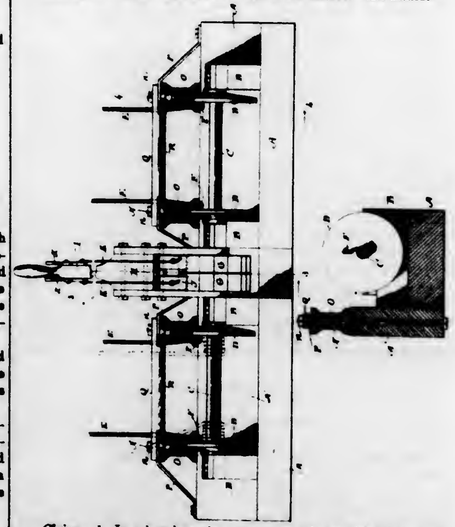


2. In a valve-gear for engines, the combination, with the rock-shaft connected with the valve-stem, of the slotted link fixedly secured to one end of said shaft, a sliding adjusting-block moving in the slot in said link and provided with a projecting threaded stud, a bearing-nut mounted upon said stud, the eccentric-rod having an open rectangular head embracing said nut, springs interposed between the inner ends of said head and the sides of said nut, a cap-plate clamped over the open side of said head and the springs and nut therein, and lifting devices connected to said stud, substantially as set forth.

486,488. HAY-BOOM. WILLIAM R. DILLION and ALBERT C. CARR, Dillon, Ky. Filed Aug. 23, 1892. Serial No. 443,583. (No model.)



Claim.—1. In a hay-booming apparatus, the combination, with the booming-ropes, of the opposite independent winding-drums, ratchet-wheels secured to the adjacent ends of said winding-drums, a single swinging operating-lever working over both of said ratchet-wheels, separate and independent gravity-pawls pivotally mounted to the same point of attachment within the lever and independently engaging the ratchet-wheels, and a rope-guide arranged in rear of each drum, substantially as set forth.

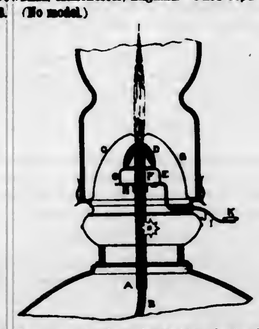
2. In a hay-booming apparatus, the combination of the base-

block having bearings mounted thereon, opposite independent winding-drums journaled in said bearings, separate ratchet-wheels secured to the inner adjacent ends of said drum, a single swinging operating-lever having a yoke pivotally connected to said shafts and spanning both of said ratchet-wheels, independent gravity-pawls pivotally mounted to the same point of attachment within said yoke and independently engaging the ratchet-wheels, separate means for lifting either of said pawls out of engagement with each ratchet-wheel, stop-pawls pivotally mounted upon the base-block and engaging said ratchet-wheels, guides arranged adjacent to each winding-drum, and the booming-ropes passing through said guides to said drum, substantially as set forth.

3. In a hay-booming apparatus, the combination, with a base-block having a rear base-flange, of the opposite independent winding-drums mounted upon the base-block and having end flanges or disks, means for simultaneously or independently rotating said drums, vertically-arranged guide-pulleys journaled upon said base-flange adjacent to the drum flanges or disks, horizontal guide-bars connecting the upper end of said pulleys, and the booming-ropes adapted to pass under said guide-bars between the guide-pulleys and connected to the end flanges or disks, substantially as set forth.

4. In a hay-booming apparatus, the combination, with a base-block having a rear flange, of the opposite independent winding-drums having end flanges or disks provided with hooks adapted to connect the ends of the booming-ropes to the drums, means for simultaneously or independently rotating said drums, guide-pulleys journaled upon the base-flange adjacent to the drum flanges or disks, diagonal bracing and washer strips secured to the base-flange adjacent to each pulley and clamped thereover, and horizontal guide-bars connecting the pulleys in pairs and provided with under rounded faces, substantially as set forth.

486,489. AUTOMATIC SAFETY-EXTINGUISHER FOR LAMPS. JAMES R. DOWDALL, Manchester, England. Filed Sept. 8, 1891. Serial No. 405,073. (No model.)



Claim.—1. In an automatic extinguishing device for lamps, consisting of the combination, with a loose extinguisher D, which surrounds the wick-tube, of a loose removable rocking unstable platform E, placed upon a flat plate or collar and upon which the extinguisher rests, substantially as described.

2. In an automatic extinguishing device for lamps, the combination, with the extinguisher D, of a loose rocking unstable platform E, provided with a slot F, through which the wick-tube passes, and depending wings or rockers G, which rest loosely and rock to and fro upon a fixed platform beneath them, substantially as described.

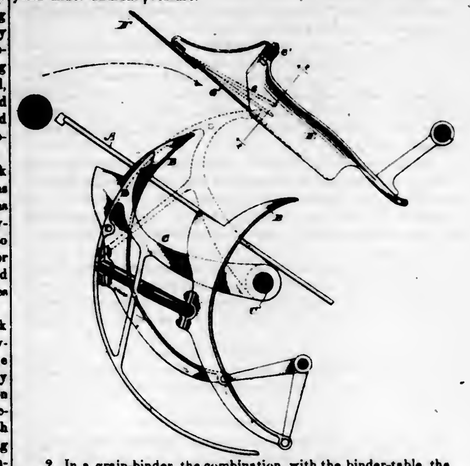
3. In an extinguishing device for lamps, the combination, with the extinguisher D and fixed platform H, of the loose rocking unstable platform E and pivoted lever I, substantially as described.

4. In an automatic extinguishing device for lamps, the combination of the wick-tube A, the extinguisher D, the loose unstable rocking platform E, provided with downward-projecting curved rockers G, and the fixed platform H, upon which the rockers loosely rest, substantially as described.

5. In an extinguishing device for lamps, the combination, with the wick-tube A and the dome C, of the extinguisher D, the loose removable rocking unstable platform E, provided with projecting rockers G, the fixed platform H, upon which the rocking platform moves to and fro, and the pivoted lever I, substantially as described.

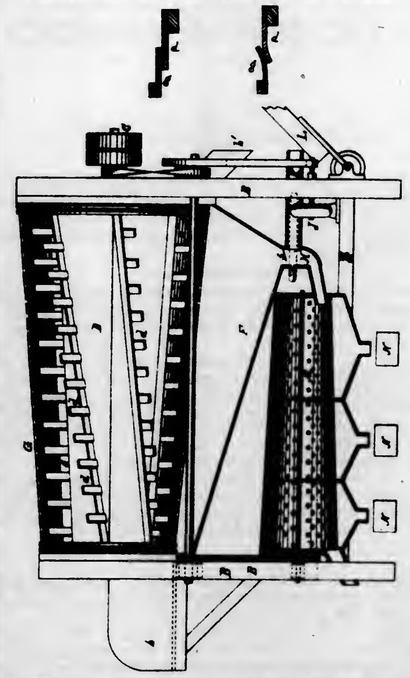
486,440. SELF-BINDER. OSBURN & BLETTNER, Chicago, Ill., assignor to the William Deering & Company, same place. Filed Dec. 3, 1891. Serial No. 413,893. (No model.)

Claim.—1. In a grain-binder, the combination, with the binder-table, the packing devices, and the needle, of the knotter-frame E, supported above the table, a fixed grain-deflector substantially in line with and above the knotter-frame, with a space between the two, and a spring extension of the deflector to close said space and adapted to yield under unusual pressure.



2. In a grain-binder, the combination, with the binder-table, the packing devices, and the needle, of the knotter-frame above the table, said frame having the beveled or inclined portion *e*, the grain-deflector in line with the lower part of the knotter-frame, and an elastic extension of said deflector supported within the knotter-frame.

486,441. PEA HULLER OR SHELLER. JOHN H. EMPSON, Longmont, Colo. Filed Mar. 9, 1892. Serial No. 424,269. (No model.)



Claim.—1 In combination, in an apparatus for shelling peas, an outer shell or drum provided with flexible elastic blades or paddles, preferably of rubber, an inner frame or drum provided with similar blades or paddles arranged to strike against the first said blades or paddles, and means for rotating one or both the said drums, substantially as and for the purpose set forth.

2. In combination, in an apparatus for shelling peas, a conical shell or drum provided with blades or paddles, and a frame or drum within the said shell provided with co-operating blades or paddles, arranged to strike face to face against the first said paddles, substantially as and for the purposes set forth.

3. The composition of matter herein described, consisting of non-coagulable egg-albumen, magnesium sulphate, magnesium oxide, and a suitable coloring-pigment, in substantially the proportions specified.

ride and subsequently adding to the liquid mixture thus formed magnesium oxide, whereby a non-hygroscopic cement or paint is produced, substantially as described.

2. The herein-described composition of matter for the production

form and adapted with the rotation of the holding-receptacle to register with the outlet-opening of the sockets formed in the lower rim or flange of said receptacle, the downwardly-extending lugs provided with sockets secured to the bottom thereof, the gravity lock-bars se-

2. In combination, in an apparatus for shelling peas, a conical shell or drum provided with blades or paddles, and a frame or drum within the said shell provided with co-operating blades or paddles, arranged to strike face to face against the first said paddles, substantially as and for the purposes set forth.

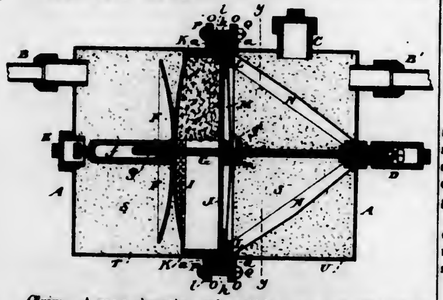
3. In combination, in an apparatus for shelling peas, an outer shell or drum provided with blades or paddles and a relatively-moving inner drum or frame provided with blades or paddles arranged to strike face to face against the first said blades or paddles, the line of action at one end of the said drums being further removed from the axis of motion than at the other end, substantially as and for the purposes set forth.

4. In combination with the relatively-moving parts of a pea-sheller or like apparatus, one or more pairs of co-operating blades or paddles carried by the said parts and arranged to strike face to face against each other, one at least of the blades or paddles of each of the said pairs being of elastic material, substantially as and for the purposes set forth.

5. The improvement in the art of shelling peas by machinery, which consists in subjecting the pods and vines successively to the striking pressure of impinging bodies and to a rolling and shearing action between such bodies, substantially as and for the purposes set forth.

6. The improvement in the art of shelling peas by machinery, which consists in subjecting the pods and vines to blows and pressure between two impinging bodies, substantially as and for the purposes set forth.

486,442. CARBURETOR. JOHN A. ENOS, Boston, Mass., assignor of one-half to Daniel J. Byrnes, Washington, D. C. Filed Feb. 13, 1892. Serial No. 421,463. (No model.)



Claim.—A gas carbureting and purifying apparatus consisting of a metallic case with the internally-threaded tube D, the screw-bolt G, the convex disk, the nut *f*, the flexible convex diaphragm I, the perforated disk J, the tube K, and the packings S R S, substantially as shown and described.

486,443. MANUFACTURE OF ARTIFICIAL STONE. LOUIS ENRIGHT, Chicago, Ill., assignor to the United States Durolithic Company, West Union, Iowa. Filed Dec. 15, 1891. Serial No. 415,135. (No specimens.)

Claim.—1. The process of producing cement, which consists of mixing saponified oil with magnesium sulphate, whereby an insoluble metallic magnesium soap is produced, and adding same to magnesium oxide, magnesium chloride, and aluminium-sulphate potassium while in a plastic condition, and while the same is still plastic adding thereto inert material, whereby a cement is produced impervious to moisture and capable of resisting the action of carbonic-acid gas.

2. The herein-described composition of matter for the production of artificial stone, consisting of saponified oil, aluminium palmitate, magnesium oxide, magnesium sulphate, and magnesium chloride, and an inert substance, in substantially the proportions specified.

486,444. MANUFACTURE OF CEMENT. LOUIS ENRIGHT, Chicago, Ill., assignor to the United States Durolithic Company, West Union, Iowa. Filed Jan. 4, 1892. Serial No. 416,967. (No specimens.)

Claim.—1. The process of making cement, which consists in mixing together non-coagulable albumen and a solution of magnesium sulphate and subsequently adding to the liquid mixture thus formed magnesium oxide, whereby a cement or paint is produced which is practically impervious to moisture, substantially as described.

2. The herein-described composition of matter for the production of cement or paint, consisting of the non-coagulable egg-albumen, magnesium sulphate, and magnesium oxide, in substantially the proportions specified.

3. The composition of matter herein described, consisting of non-coagulable egg-albumen, magnesium sulphate, magnesium oxide, and a suitable coloring-pigment, in substantially the proportions specified.

486,445. MANUFACTURE OF ARTIFICIAL STONE. LOUIS ENRIGHT, Chicago, Ill., assignor to the United States Durolithic Company, West Union, Iowa. Filed Dec. 15, 1891. Serial No. 415,131. (No specimens.)

Claim.—1. The process of making cement, which consists of mixing non-coagulable albumen with oxychloride of magnesium in a plastic state and while the same is still plastic adding thereto inert material, whereby the cement is rendered non-hygroscopic.

2. The herein-described composition of matter for the production of artificial stone, consisting of non-coagulable albumen, magnesium oxide, magnesium chloride, and an inert substance, substantially in the proportions specified.

486,446. MANUFACTURE OF ARTIFICIAL STONE. LOUIS ENRIGHT, Chicago, Ill., assignor to the United States Durolithic Company, West Union, Iowa. Filed Dec. 15, 1891. Serial No. 415,132. (No specimens.)

Claim.—1. The process of making cement, which consists of mixing non-coagulable albumen with oxysulphate of magnesium in a plastic state and while the mixture is still plastic adding thereto inert material, whereby the cement is rendered impervious to moisture, substantially as described.

2. The herein-described composition of matter for the production of artificial stone, consisting of non-coagulable albumen, magnesium oxide, magnesium sulphate, and an inert substance, in substantially the proportions specified.

486,447. MANUFACTURE OF ARTIFICIAL STONE. LOUIS ENRIGHT, Chicago, Ill., assignor to the United States Durolithic Company, West Union, Iowa. Filed Dec. 15, 1891. Serial No. 415,136. (No specimens.)

Claim.—1. The process of producing cement, which consists of mixing saponified oil with magnesium oxide, magnesium sulphate, and aluminium sulphate while in the plastic state and while the same is still plastic adding thereto inert material, whereby the cement is rendered capable of resisting the attacks of moisture and carbonic-acid gas.

2. The herein-described composition of matter for the production of artificial stone, consisting of saponified oil, magnesium oxide, magnesium sulphate, aluminium sulphate, potassium, and an inert substance, in substantially the proportions specified.

486,448. MANUFACTURE OF ARTIFICIAL STONE. LOUIS ENRIGHT, Chicago, Ill., assignor to the United States Durolithic Company, West Union, Iowa. Filed Dec. 15, 1891. Serial No. 415,133. (No specimens.)

Claim.—1. The process of making cement, which consists of mixing saponified oil with a concentrated solution of magnesium sulphate, whereby a metallic-magnesium soap is produced, adding said metallic-magnesium soap to a mixture of magnesium oxide and magnesium chloride in a plastic condition, and while the same is still plastic adding thereto inert material, whereby the cement is rendered impervious to moisture, substantially as described.

2. The herein-described composition of matter for the production of artificial stone, consisting of metallic-magnesium soap, magnesium oxide, magnesium chloride, and an inert substance, in substantially the proportions specified.

486,449. MANUFACTURE OF ARTIFICIAL STONE. LOUIS ENRIGHT, Chicago, Ill., assignor to the United States Durolithic Company, West Union, Iowa. Filed Dec. 15, 1891. Serial No. 415,134. (No specimens.)

Claim.—1. The process of making cement, consisting of mixing saponified oil with oxysulphate of magnesium in a plastic state and while the same is still plastic adding thereto inert material, whereby the cement is rendered impervious to moisture.

2. The herein-described composition of matter for the production of artificial stone, consisting of saponified oil, magnesium oxide, magnesium sulphate, and an inert substance, in substantially the proportions specified.

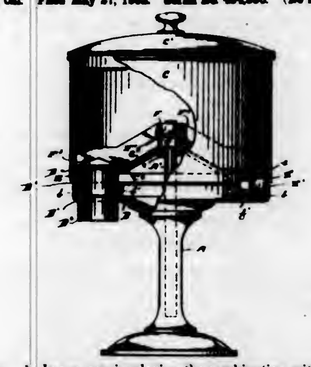
486,450. MANUFACTURE OF CEMENT. LOUIS ENRIGHT, Chicago, Ill., assignor to the United States Durolithic Company, West Union, Iowa. Filed Jan. 4, 1892. Serial No. 416,966. (No specimens.)

Claim.—1. The process of making cement, which consists in mixing together non-coagulable albumen and a solution of magnesium chloride and subsequently adding to the liquid mixture thus formed magnesium oxide, whereby a non-hygroscopic cement or paint is produced, substantially as described.

2. The herein-described composition of matter for the production of a paint or cement, consisting of magnesium chloride and non-coagulable egg-albumen and magnesium oxide, in proportions substantially as specified.

3. The herein-described composition of matter for the production of cement or paint, consisting of magnesium chloride and non-coagulable albumen, magnesium oxide, and a coloring-pigment, substantially in the proportions specified.

486,451. MEASURING-CANISTER. FERDINAND ESPIL, San Francisco, Cal. Filed May 27, 1892. Serial No. 434,690. (No model.)



Claim.—1. In a measuring device, the combination, with the platform provided with a discharge-outlet, of the revoluble holding-receptacle mounted thereon, said receptacle having an opening provided in the bottom thereof, the measuring-thimbles secured to the bottom thereof, said thimbles adapted to register with the discharge-opening of the platform during the rotation of the receptacle, and suitable mechanism for locking the holding-receptacle at a predetermined point.

2. The combination, in a measuring device, of the platform, the seat formed in the rim or edge thereof, the discharge-opening cut within the platform, of the revoluble holding-receptacle mounted thereon, said receptacle provided with outlet-openings which register with the discharge-opening during the rotation of holding-receptacle, and the lock-bars, said bars adapted to automatically fall into locked engagement with the platform-seat when either of the outlet-openings of the holding-receptacle move into registering position with the discharge-opening of the platform.

3. In a measuring device, the combination, with the revoluble holding-receptacle, said receptacle having openings formed in its bottom, of the scraper secured within holding-receptacle, said scraper adapted to cover the receptacle-openings during rotation thereof, and the measuring-thimbles secured to bottom of holding-receptacle.

4. In a measuring device, the combination, with the platform thereof, the vertical shaft projecting therefrom, the revoluble holding-receptacle secured thereon, openings formed in the bottom thereof, and the thimbles secured to and projecting therefrom, of the scraper located within holding-receptacle, said scraper adapted to cover the openings formed in the receptacle-bottom during the rotation thereof, and a suitable mechanism for locking the revoluble receptacle at a predetermined point.

5. In a measuring device, the combination, with the revoluble holding-receptacle, said receptacle provided with discharge-openings, of the scraper secured therein and adapted to cover each of said openings during one complete revolution of the holding-receptacle and suitable mechanism for locking said receptacle during its rotation.

6. In a measuring device, the combination, with the revoluble holding-receptacle provided with discharge-openings, of the scraper secured therein, said scraper being provided with a projecting piece which is adapted to cover the discharge-openings during the rotation of the holding-receptacle.

7. In a measuring device, the combination, with the platform thereof, of the inner and outer vertical flange projecting therefrom, the outer flange having a seat formed therein, the vertical shaft projecting therefrom, the outlet-opening located within the pathway formed by the inner and outer vertical flange, the revoluble holding-receptacle mounted upon vertical shaft, the opening provided in the bottom of the receptacle, the thimbles secured to and projecting therefrom, said thimbles traveling within the pathway of the platform and adapted with the rotation of the holding-receptacle to register with the outlet-opening of the sockets formed in the lower rim or flange of said receptacle, the downwardly-extending lugs provided with sockets secured to the bottom thereof, the gravity lock-bars secured within the sockets formed in the rim and lugs of the receptacle, said bars adapted to fall into locked engagement with the seat of the platform, and the scraper located within the holding-receptacle.

8. The combination, in a measuring device, of the platform having a seat cut in its outer vertical flange, the revoluble holding-receptacle, said receptacle provided with a depending rim or flange and having downwardly-extending lugs secured to the bottom thereof, the sockets formed in said lugs and rim, and the gravity lock-bars secured therein, said bars during the rotation of receptacle adapted to fall into locked engagement with the platform-seat.

9. In a measuring device, the combination, with the platform thereof, of the outlet-opening formed therein, the revoluble holding-receptacle located thereon, said receptacle having openings formed in the bottom thereof, which register with the outlet-opening during the rotation of said receptacle, and devices for controlling the flow of material through the opening of the receptacle and the platform in order that only a predetermined quantity shall pass therethrough at a given time.

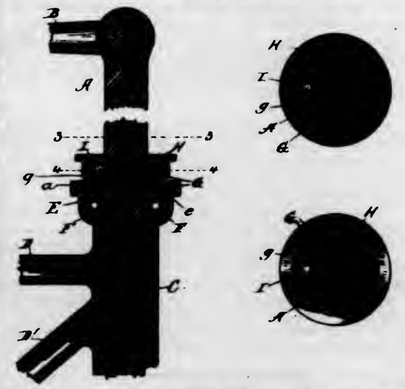
10. In a measuring device, the combination, with the platform, of the discharge-opening formed therein, the revoluble holding-receptacle mounted thereon, said receptacle having openings in its bottom, the measuring-thimbles secured to bottom thereof, and suitable mechanism for automatically locking the holding-receptacle when the same has been rotated such a distance as to cause either of the thimbles to register with the discharge-opening of the platform.

11. In a measuring device, the combination, with a platform having a seat formed in an outer vertical flange thereof, said flange being partly cut away in order to provide a stop-shoulder, of the holding-receptacle mounted thereon and the lock-bars located between holding-receptacle and the platform-flange, said bars adapted to contact with the platform stop-shoulder in order to provide against a reverse rotation of the holding-receptacle.

12. In a measuring device, the combination, with the revoluble holding-receptacle, of the scraper located therein, said scraper provided with lateral wings.

13. In a measuring device, the combination, with a revoluble holding-receptacle, of the scraper provided with lateral wings, one of said wings having a forwardly-projecting piece secured thereto.

486,452. CONE-BEARING AND BALL-LOCK FOR BICYCLES. OTTO BOESLER, Chicago, Ill., assignor to Alfred Funtheretano, same place. Filed Dec. 13, 1890. Serial No. 374,610. (No model.)



Claim.—1. In an adjustable ball-bearing, the cone adjustable against the bearing-balls and provided with an eccentric opening, in combination with a shaft on which the cone is mounted by means of screw-threads, the thread on the said shaft terminating at a point inside the line of contact of the locking-ball of the shaft, and a locking-ball inserted in said eccentric opening, substantially as and for the purposes specified.

2. In adjustable ball-bearings, the cup for the reception of the balls, in combination with the shaft A, the bearing-balls F, arranged in the cup, the adjustable cone E, provided with flange G and eccentric opening *g*, the locking-ball I, and the cap H, substantially as and for the purposes specified.

486,458. AUTOMATIC CAR-BRAKE. ENOCH FARNSWORTH, Utahville, Pa. Filed Feb. 16, 1892. Serial No. 421,734. (No model.)

to fit the head and mounted loosely on the same, so as to have an engaging and disengaging movement thereon as the parasol is opened and closed, substantially as and for the purposes specified.

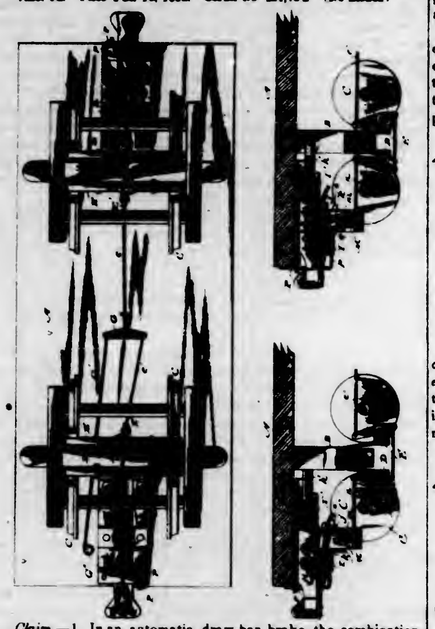
2. The tubular stem C, provided with irregularly-shaped head c, in combination with the top notch E, having a sliding engaging and dis-

486,457. INCANDESCENT ELECTRIC LAMP. GUSTAV A. FEIN, Springfield, Mass. Filed Mar. 14, 1892. Serial No. 424,926. (No model.)

actuating-disk R, provided with a tooth r^3, and the printing-wheel N^1 substantially as and for the purpose described.

10. In a time-stamp, the combination of a rotatory peripherally-typed printing-wheel, a rotating actuating-wheel R, rock-shaft O, trip-

486,458. AUTOMATIC CAR-BRAKE. BIGGS FARNSWORTH, Utahville, Pa. Filed Feb. 16, 1892. Serial No. 421,734. (No model.)



Claim.—1. In an automatic draw-bar brake, the combination, with an endwise-movable draw-bar, of a trip pivoted to said draw-bar and movable longitudinally therewith, a brake-lever arranged to be normally moved by said trip or detent, and a manually-operated lever having a part extending in the path of said trip or detent and forming a bearing therefor, whereby said detent can be freed from engagement with the brake-lever by said manual lever, as and for the purpose described.

2. In an automatic draw-bar brake, the combination, with a brake-lever and a spring-cushioned draw-bar, of a trip or detent pivoted to and movable with the draw-bar and having the abrupt shoulder and the incline or cam, an operating-lever arranged in the path of the shoulder on said trip and connected with the brake-lever, and a hand-lever having an arm adapted to be adjusted in the path of the cam on said trip, substantially as and for the purpose described.

3. In an automatic draw-bar brake, the combination, with a brake-lever and an endwise-movable draw-bar, of a spring associated with said draw-bar, a trip or detent connected to and movable with said draw-bar and having the abrupt shoulder at its rear end, and an operating-lever provided with a projection against which the abrupt shoulder bears, substantially as and for the purpose described.

4. In an automatic draw-bar brake, the combination, with a brake-lever and an endwise-movable draw-bar, of a spring associated with said draw-bar, and having the incline or cam, an operating-lever arranged to be operated by the trip or detent and connected to the brake-lever, and a rock-shaft having a hand-lever and an arm adapted to be adjusted in the path of the cam or incline on said trip to permit the latter to be elevated by the arm and thereby disconnected from the operating-lever, substantially as and for the purpose set forth.

486,454. PARASOL FOR BABY-CARRIAGES. ALFRED FRATHINGHAM, Chicago, Ill. Filed Sept. 3, 1890. Serial No. 364,345. (No model.)

Claim.—1. The parasol-stem C, irregularly-shaped head *c*, and notch D, all in one piece, in combination with the top notch E, adapted to fit the head and mounted loosely on the same, so as to have an engaging and disengaging movement thereon as the parasol is opened and closed, substantially as and for the purposes specified.

2. The tubular stem C, provided with irregularly-shaped head *c*, in combination with the top notch E, having a sliding engaging and disengaging movement on said head, the standard A and rod B, pivoted thereto at one end and at the other threaded into the lower end of the tubular stem, and the runner H, substantially as and for the purposes specified.

486,455. DRAWER-FASTENER. ROBERT FRIGE, Saginaw, Mich. Filed Apr. 19, 1892. Serial No. 429,742. (No model.)

Claim.—In a drawer adapted to be locked from the rear end, the combination of a drawer-catch A, having formed thereon flanges *c c*^{1} *c*^{1}, connected by a web *a*^{3}, and a slotted drawer-back formed to fit the web of the drawer-catch, and a drawer-bottom, whereby the whole is secured together in the manner and for the purpose set forth, and means for locating the drawer, substantially as described.

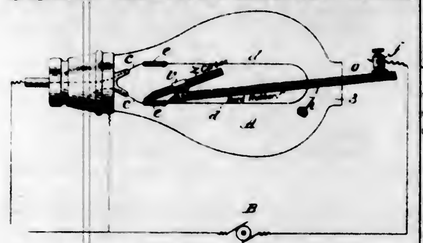
486,456. ONE-WHEEL VEHICLE. FREMONT FRASER and JACOB L. WESTERVELT, Chicago, Ill. Filed Aug. 16, 1892. Serial No. 443,340. (No model.)

Claim.—1. In a one-wheel vehicle drawn by a horse, the construction of an endless shaft A, bended in front to form the top part *a*, with extending curved portion *b b*, the same provided with lugs *w* and terminating into side portions *c c*, the same in combination with a brace-bar L, connected with side brace *l*, said shaft bearing at the rear part *d* of the same brackets *i i*, spindle *h* in connection with the vehicle-wheel, and springs *e e*, substantially as shown, and for the purpose specified.

2. In a one-wheel vehicle having an endless shaft bended in front to form a raising top portion *a*, the same detachably connected with a metallic bracket B, combined with the saddle-tree C, the same connected with the saddle-girth D of the horse, said bracket B having a flanged face *m*, with a furrow *n*, and its top portion provided with a groove *o*, lugs *s s* and *q q*, the same in connection with movable arms *p p* and detachable pin *r*, substantially as shown, and for the purpose described.

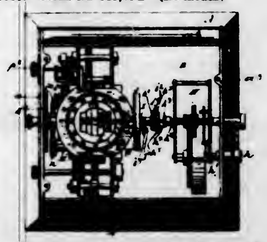
3. In a one-wheel vehicle having an endless shaft A, in combination with a metallic bracket B on the saddle-tree C, the same in connection with a metallic strip F underneath the furrowed base of the bracket, said strip terminating with hook-shaped ends *u u*, substantially as shown, and for the purpose set forth.

486,457. INCANDESCENT ELECTRIC LAMP. GUSTAV A. PERL, Springfield, Mass. Filed Mar. 14, 1892. Serial No. 424,898. (No model.)



Claim.—In an incandescent electric lamp, leading-in or circuit wires, an incandescent filament, a joint for uniting said filament and said circuit-wires, consisting of a single tube, one end of which receives an end of the filament and is thereto secured, and the opposite end thereof receives an end of the leading-in wires and is fused thereto, substantially as set forth.

486,458. TIME-STAMP. JACOB GAHER, Brooklyn, N. Y. Filed June 27, 1889. Serial No. 315,794. (No model.)



Claim.—1. In a time-stamp, a type-bearing ring-shaped printing-dial rotating in one plane and in combination with such dial and projecting within the same, and a peripherally-typed wheel rotating in another plane substantially at right angles to the first, substantially as and for the purpose described.

2. The annular rotatable dial K^2 and the stationary central circular box *m*, formed with an aperture for the exposure of the peripheries of the printing-wheels underneath, in combination with said peripheral-printing wheels, substantially as and for the purpose described.

3. The combination of the peripherally-typed wheel N^2, rotating printing-dial wheel K^2, teeth upon said dial-wheel, stationary central box-bearing *m*, having aperture for the exposure of said peripherally-typed wheel, pinion *k*^{2}, meshing with teeth of K^2, pinion *k*, and crown-wheel J, attached to driving-shaft I, substantially in the manner and for the purpose specified.

4. The combination of a geared rotating printing-dial wheel K^2, a stationary central box-bearing *m*, having aperture for the exposure of peripherally-typed wheels underneath, pinion *k*^{2}, meshing with gears of K^2, shaft K, pinion *k*, sleeved crown-wheel J, projections *i*^{2} *j*', spring *i*^{3}, and shaft I, substantially in the manner and for the purpose specified.

5. In a time-stamp substantially such as described, a rotatory printing-wheel, the periphery of which is provided with printing-types and with intervening notches, in combination with a rotating toothed actuating-wheel mounted upon a yielding support, substantially as and for the purpose described.

6. In a time-stamp substantially such as described, a rotatory printing-wheel having its periphery provided with printing-types and intervening notches, in combination with a correspondingly-toothed rotating actuating-wheel having a yielding bearing and maintained in operative contact with said printing-wheel by spring-pressure, substantially in the manner and for the purpose described.

7. In a time-stamp substantially such as described, a rotatory printing-wheel having its periphery provided with printing-types and intervening small and shallow notches, in combination with a rotating actuating-wheel having yielding bearing and provided with teeth corresponding to said notches and maintained in operative contact with said printing-wheel by spring-pressure, substantially as and for the purpose described.

8. The combination of the driving-shaft I, disk O, projection *o*', tripping-lever Q, spring *w*', rock-shaft Q', plate *q*', and sliding pawl *q* with the actuating-wheel R and printing-wheel R', substantially as and for the purpose described.

9. The combination of the driving-shaft I, disk O, projection *o*', tripping-lever Q, spring *w*', rock-shaft Q', and sliding pawl *q* with the actuating-disk R, provided with a tooth *r*^{3}, and the printing-wheel N^2 substantially as and for the purpose described.

10. In a time-stamp, the combination of a rotatory peripherally-typed printing-wheel, a rotating actuating-wheel R, rock-shaft Q', tripping-lever Q, arm *q*', spring *w*', sliding pawl *q*, spring *q*^{3}, and rigid projection *q*^{4}, substantially as and for the purpose described.

11. In a time-stamp, the combination of a rotatory peripherally-typed printing-wheel, a rotating actuating-wheel R, rock-shaft Q', spring *w*, tripping-lever Q, arm *q*', and sliding pawl *q*, and spring *q*^{3}, substantially as and for the purpose described.

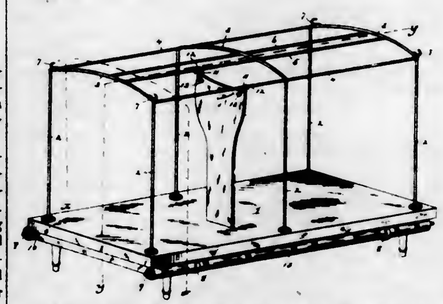
12. In a time-stamp, the combination of a rotatory peripherally-typed printing-wheel, rock-shaft Q', arm *q*', slotted and sliding click *q*, having beveled edge, spring *q*^{3}, and motor-wheel R, the latter having teeth operating upon said bevel to slide backward said click and engage therewith alternately according to the movement of the rock-shaft, substantially as and for the purpose described.

13. The combination of rotating motor-wheel R, having tooth *r*^{5} and rotating upon movable bearing carried by oscillating bracket *r*, with spring *r*^{3}, stud *r*^{7}, and rotatory peripherally-typed printing-wheel N^2, provided with notches *n*^{4}, substantially as and for the purpose described.

14. In a time-stamp, the combination of rotatory notched printing-wheel N^2, with rotating motor-wheel R, carrying actuating-tooth *r*^{5}, movable supporter *r*^{4}, and spring *r*^{6}, substantially as and for the purpose described.

15. In a time-stamp, the combination of a rotatory printing-wheel, provided with notches, with a rotatory actuating-wheel provided with teeth engaging in said notches, one of said wheels being mounted upon a movable stud or bearing and held in operative position relative to the other wheel by means of spring-pressure, substantially as and for the purpose described.

486,459. SUPPORTING-RACK FOR TROUSERS. WILLIAM GERHARD, Milwaukee, Wis. Filed May 9, 1892. Serial No. 432,279. (No model.)



Claim.—1. In a rack of the character set forth, the combination of a base or support, uprights rising from said base or support and having upper arched or curved connecting-bars, longitudinal outer bars attached to said arched or curved connecting-bars and arranged parallel, a pair of intermediate closely-arranged parallel bars between said outer bars, supporting-hooks adapted to engage said bars, and inclosing curtains for the device, arranged in connection with the sides and ends and top, substantially as described.

2. In a rack of the nature set forth, the combination of a base or support, a frame rising therefrom having outer bars having hooks at the opposite ends thereof and a pair of closely-arranged central bars, hooks adapted to engage said bars, and a covering for the said frame, a portion of which is adapted to be held in position by said hooks, substantially as described.

3. In a rack of the character set forth, the combination of a base or support having hooks projecting therefrom, side curtains connected thereto and adapted to be rolled and supported by said hooks, a frame rising therefrom having hooks thereon for connection of the curtains therewith, said frame having parallel bars in the upper portion thereof for support of trousers or pantaloons thereon, and a curtain adapted to be drawn over the top and ends of the said frame, substantially as described.

4. In a rack of the character described, the table or portable support, a wire frame rising therefrom and having supporting-bars, hooks depending therefrom for the support of the pantaloons or other articles, the inclosing curtains, and hooks at the top of the frame and at the bottom of the table for the support of the curtains when rolled up, as set forth.

486,460. CAR-COUPLING. JESSE GLOSSE, Spokane, Wash. Filed May 5, 1892. Serial No. 431,914. (No model.)

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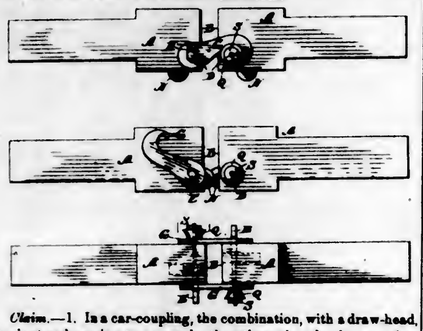
brake-bar, of a revoluble friction-wheel carried by said lever and a movable braking-cam also carried by said lever and operatively connected to the said friction-wheel, substantially as set forth.

upper end of the section, the inverted-U-shaped hanger 53, having eyes 54 at its lower end, the shaft 55, passing through the eyes and upper ends of the standards and carrying the bevel-gear 60 near its

486,460. CAR-COUPLING. JOHN GLOSSE, Spokane, Wash. Filed May 5, 1892. Serial No. 431,914. (No model.)



Claim.—1. In a car-coupling, the combination, with a draw-head, of a pivot-rod passing transversely therethrough, a hook secured to said pivot-rod on one side of said draw-head, a stud secured to the opposite side of said draw-head and adapted to engage with a similar hook on the opposite draw-head, and a tongue secured to said pivot-rod and projecting beyond the face of said draw-head when the hook is thrown back out of engagement, substantially as described.

2. In a car-coupling, the combination, with a draw-head, of a pivot-rod passing transversely therethrough, a tongue and a hook, both secured to said pivot-rod, said tongue projecting beyond the face of the draw-head when the hook is thrown out of engagement, and a knob secured upon said pivot-rod and arranged to engage a similar and similarly-placed hook upon the opposite draw-head, substantially as described.

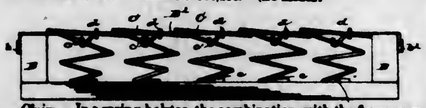
3. In a car-coupling, the combination, with a draw-head having a groove or recess undercut therein, of a pivot-rod passing transversely through said draw-head, a knob secured on said pivot-rod on one side of said draw-head, a hook secured to said pivot-rod on the opposite side of said draw-head, and a tongue in said groove or recess secured to said pivot-rod, said tongue projecting beyond the face of the draw-head when the hook is thrown back out of engagement, substantially as described.

486,461. BUTTON. CHARLES S. GOODING, Brookline, Mass. Filed Mar. 3, 1892. Serial No. 423,571. (No model.)

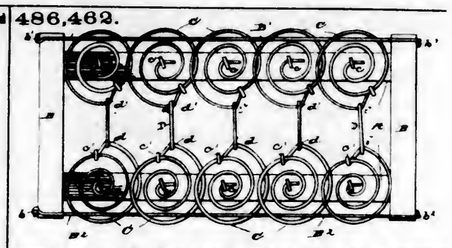
Claim.—1. The improved shoe button or stud consisting of a suitable head and a shank of doubled wire engaged at its ends with the head, said shank including a substantially-flat spiral foot having the central bead of the wire at its free end, and a neck portion connecting the foot with the button-head, as set forth.

2. The improved shoe button or stud consisting of a suitable head and a shank of doubled wire engaged at its ends with the head, said shank including a substantially-flat spiral foot having the central bead of the wire at its free end, and a neck portion connecting the foot with the button-head, said neck portion having barbed ends embedded in the button-head, as set forth.

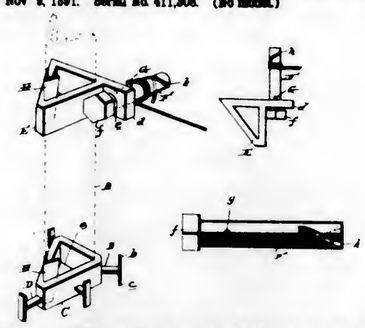
486,462. SPRING-BOLSTER. ELLA GOOLEY, New Holland, Ohio. Filed Jan. 9, 1891. Serial No. 377,293. (No model.)



Claim.—In a spring-bolster, the combination, with the frame composed of the slats, of the coiled springs secured to said slats, the top coil of which overlaps the next adjacent spring and is bent at right angles to form the angle c^3, the links secured in said angles and connecting the springs on the inside, and the wires B^1 and B^2, connected to the frame and passing under one side of the top coil of a spring and above the other side of the same throughout the series, all combined and operating substantially as described.



486,463. METALLIC FENCE. SETH GREEN, Jackson, Miss. Filed Nov. 9, 1891. Serial No. 411,308. (No model.)



Claim.—1. The combination, with a fence-post, of a cuff adapted to be secured thereto and having a branch projecting therefrom and provided with a bearing and a bolt having a slot at one end, adapted to receive a fence-wire and having an angular head at its opposite end adapted to prevent the bolt from turning when forced against a bearing, substantially as specified.

2. The combination, with a fence-post, of a cuff adapted to be secured thereto and having an extended bearing for a bolt and a bolt having a spiral slot at one end to receive a fence-wire and having an angular head at its opposite end, whereby said bolt when driven to place in the bearing of the cuff will be prevented by the engagement at its angular head with said cuff from turning therein, substantially as specified.

3. The angular post, in combination with the cuff placed over said post, the wedge for adjustably securing said cuff thereto, the bolt having a spiral slot at one end and an angular head at its opposite end and also having a hole between the slot and head, and a pin or key adapted to enter said hole for securing the bolt to the cuff, substantially as specified.

4. In a fence of the character described, the bolt having a spiral slot opening longitudinally from one end thereof to receive the fence-wire and an angular head at its opposite end, substantially as and for the purposes specified.

5. The angular post, in combination with the cuff placed over said post and having an extended bearing for the bolt, the bolt having a spiral slot at one end to receive a fence-wire and having an angular head at its opposite end, whereby said bolt when driven to place in the bearing of the cuff will be prevented by the engagement of its angular head with said cuff from turning therein, the angular and vertically-movable anchor or foot-brace adapted to be secured to said post and having on its outer sides the anchor branches provided with entering points or arms, which arms are designed to be embedded in the earth and resist both vertical and lateral strain, the whole adapted to serve in a fence, substantially as specified.

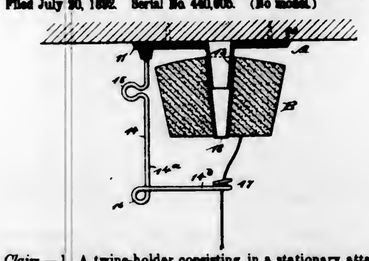
486,464. BICYCLE-BRAKE. PAUL HAAG, Chicago, Ill., assignor to Alfred Pantherstone, same place. Filed Nov. 10, 1890. Serial No. 370,941. (No model.)

Claim.—1. In a brake mechanism for bicycles and similar vehicles, the combination of a movable cam operating by contact with a wheel of the vehicle and a revoluble friction-wheel operatively connected to the cam and serving to move the latter into operative position, substantially as set forth.

2. In a brake mechanism for bicycles and similar vehicles, the combination, with a pivoted brake-lever operatively connected to a brake-bar, of a revoluble friction-wheel carried by said lever and a movable braking-cam also carried by said lever and operatively connected to the said friction-wheel, substantially as set forth.

3. In a brake mechanism for bicycles and similar vehicles, the combination, with a pivoted brake-lever operatively connected to a brake-bar, of a revoluble friction-wheel carried by said lever, a movable braking-cam also carried by said lever and operatively connected to said friction-wheel, and a retracting-spring acting upon the brake-lever to release the brake, substantially as set forth.

486,465. TWINE-HOLDER. WALTER T. HARRIS, Macon, Ga. Filed July 20, 1892. Serial No. 440,605. (No model.)



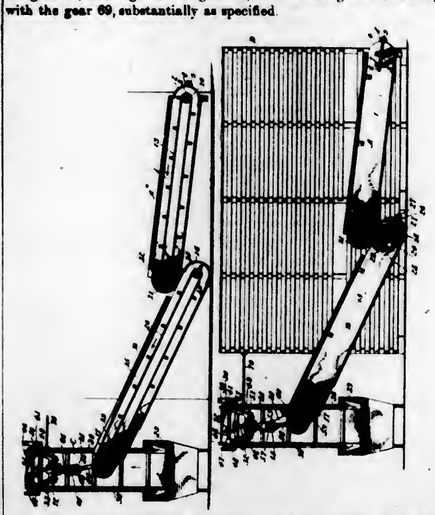
Claim.—1. A twine-holder consisting in a stationary attaching-plate A, having a flat upper face to permit it to be secured to a ceiling or other support, the stationary tapering friction-plug 13, depending from the lower side of the plate and upon which a ball of twine may be forced and held by friction against rotation and displacement, and the stationary angled arm 14, depending from the attaching-plate and having its transverse arm provided below the lower end of the plug with a guide-eye, through which the cord passes from the exterior of the ball, substantially as set forth.

2. A twine-holder comprising a base-plate 10, provided with a conical friction-plug 13 to enter the core of a ball of twine and hold the same by friction against displacement and rotation, and the stationary angled arm 14, having a suspension-eye 15, and guide-eyes 16 17, the eye 17 being at the extremity of the transverse member 14^b and opposite the free end of the plug or spindle, substantially as set forth.

486,466. CORN-CONVEYER. JOHN HEALEA and GEORGE G. HEALEA, Farmer City, Ill. Filed Mar. 22, 1892. Serial No. 426,163. (No model.)

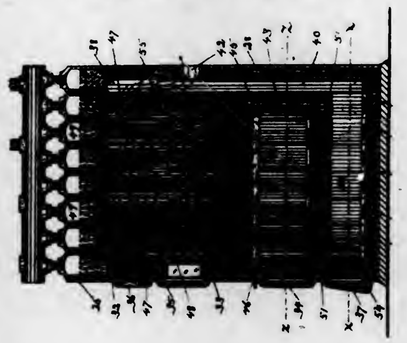
Claim.—1. In a corn-conveyer, the combination, with an inclined terminal section having an apron, oppositely-inclined brace-bars connected to said section and terminating at their upper ends over the lower end of the section, and the transverse shaft connected by sprocket-chain to one of the shafts of the apron of an adjacent section, of the swiveled connection between the upper ends of the brace-bars and the upper end of the adjacent section, said connection comprising a hanger provided with a disk having a grooved ring and a central tubular stud, and an inverted hanger provided with a disk swiveled in the grooved ring and connected to a transverse shaft upon the adjacent section, and a vertical shaft mounted in the tubular stud and geared at opposite ends to the said transverse shafts carried, respectively, by the terminal and adjacent sections, substantially as described.

2. A corn-conveyer comprising the inclined section C, the inclined braces 30, pivoted thereto, the drive-shaft 39 at the upper end of the conveyer C, the pulley 41 and the sprocket 40 thereon, the belt 71, passing over the pulley, the shaft 46, journaled in the upper ends of the inclined braces, the sprocket 47, the chain 48, connecting the sprockets 40 and 47 of the section B, the standards 56, rising from the upper end of the same, the belt-operating shaft 17, journaled in the upper end of the section, the inverted-U-shaped hanger 53, having eyes 54 at its lower end, the shaft 55, passing through the eyes and upper ends of the standards and carrying the bevel-gear 69 near its center and at one end the sprocket-wheel 57, the sprocket-wheel 59, mounted on the shaft 17, the chain 58, connecting the sprockets 57 and 59, the disk 61 at the upper end of the hanger 53, provided with the central opening 65, the ring 63, having the L-shaped recess 62 for receiving the disk 61, the U-shaped hanger 49, provided at its lower end with a disk 51, the same having the tubular stud 52, passing through the opening 65 of the hanger 53, the bolts 64, passing through the ring and disk 51, eyes 50, formed at the upper end of the hanger 49 for the reception of the shaft 46, the gear 72 on the shaft 46, the vertical shaft 66, mounted in the tubular stud 52 and provided with the gear 67, meshing with the gear 72, and with the gear 68, meshing with the gear 69, substantially as specified.



3. In a corn-conveyer, the inclined terminal section C, having side bars 28, combined with the oppositely-inclined braces 30, pivoted at 31 to said side bars, the connecting-bars 32 between the upper ends of the braces and the upper end of the section, the hopper 29 at the lower end of the section, the inclined brace-bars 34, connected at their upper ends to brace-bars 30 below the pivot 31 and lying at their lower ends between the bars 28, the shaft 35, journaled in bearings in the lower ends of bars 34, the shaft 39, journaled in the upper ends of bars 28, a sprocket-chain connection between shafts 35 and 39, the apron carried by said shafts, the adjacent section disposed at one end above said hopper and suspended by a swiveled connection from the upper ends of the bars 30, the shaft 55, carried by the adjacent section and connected to the shafts for operating the apron thereof, and the transverse shaft 46 at the upper ends of brace-bars, geared to shaft 55 and connected by sprocket-chain to the shaft 39, substantially as described.

486,467. STEAM-GENERATOR. WESTON C. HIGGINS, Norwich, Conn. Filed July 5, 1892. Serial No. 439,050. (No model.)



Claim.—1. A sectional heater provided with a series of vertical draft-flues communicating with each other at top and bottom, one of which is provided with an exit and the bridge-wall is above said exit, and a damper between the top of the wall and the exit, substantially as set forth.

2. A sectional heater provided with a series of vertical

Claim.—1. A wheelbarrow having pivoted adjustable side-boards adapted to be secured in any desired positions relative to the bottom board, substantially as and for the purpose set forth.

2. A wheelbarrow having pivoted adjustable side-boards adapted to be secured in any desired positions relative to the bottom board

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cross-section, the plate A, having a T-shaped opening adapted to receive said stem, the stop E, having a V-shaped opening with sharp edges *a a*, and notches *i i*, in combination with an eccentric-cam F, having an arm F', adapted to enter a segmental-shaped opening in said plate, whereby the stop E and by means of which the stem of stop E

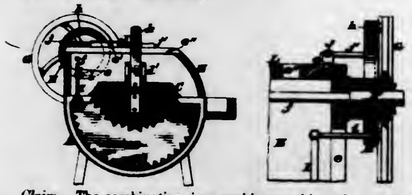
Claim.—1. A sectional heater provided with a series of vertical draft-flues communicating with each other at top and bottom, one of which is provided with an exit and the bridge-wall is above said exit, and a damper between the top of the wall and the exit, substantially as set forth.

2. A sectional heater provided with a series of vertical and horizontal draft-flues communicating with each other at the top and at the front of the heater, the horizontal flues being on the same plane and one of the vertical flues being provided with an exit, and a damper between said exit and the fire-pot, substantially as set forth.

3. In a sectional generator, in combination, front, rear, and intermediate sections, and a section adjacent to the rear section having a cross-wall, as set forth, vertical draft-flues between said cross-wall and rear section, a system of draft-flues leading to and connecting with each other at the front of the generator, and a damper at the entrance to one of said vertical flues, all being substantially as herein described.

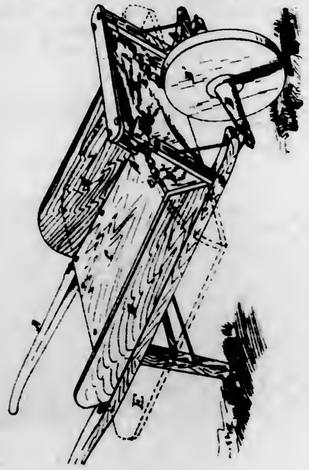
4. In a generator, in combination, front and rear sections and a multiple of intermediate sections, the rearmost of which is provided with a cross-wall forming a flue-chamber between said wall and rear section, which chamber is divided by vertical partitions into three flues, the middle one of which has a smoke-outlet, as set forth, each of the intermediate sections being formed with horizontal flues corresponding in number and position with the said vertical flues and the front section being formed with a transverse chamber into which the several horizontal flues lead, all being substantially as described, and for the purpose specified.

486,468. WASHING-MACHINE. JOHANN HOFMANN, Cincinnati, Ohio, assignor to Mollenkamp & Binne, same place. Filed Feb. 1, 1892. Serial No. 419,902. (No model.)



Claim.—The combination, in a washing-machine, of a tub A, the concave rubber B, journaled therein at *b b'*, the lid E, hinged to said tub and having guides *d d'*, the convex rubber C, having pivots *c c'* applied to slides D D', traversing said guides, a lever K, provided with a slot *k* and projecting from this rubber C, a rod J, having one bend *j'* inserted in the slot *k* and another bend *j* engaged with the groove A of an eccentric H, a shaft F, upon which said eccentric is mounted, and a link I, having a pin *i*, that engages with said groove A, the lower end of said link being coupled to the concave rubber B, all as herein described, and for the purpose stated.

486,469. WHEELBARROW. PETER HOOGERHEIL, Beverly, Mass. Filed Aug. 24, 1892. Serial No. 443,969. (No model.)



Claim.—1. A wheelbarrow having pivoted adjustable side-boards adapted to be secured in any desired positions relative to the bottom board, substantially as and for the purpose set forth.

2. A wheelbarrow having pivoted adjustable side-boards adapted to be secured in any desired positions relative to the bottom board and having a locking device for holding each of said boards in its adjusted position, substantially as and for the purpose set forth.

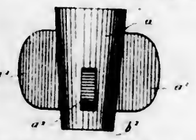
3. In combination with a wheelbarrow, the pivoted adjustable side-boards having end pieces at right angles, or nearly so, thereto and a locking device for securing said side-boards in their adjusted positions, substantially as set forth.

4. In combination with a wheelbarrow, the pivoted adjustable side-boards having segmental wings or end pieces at right angles, or nearly so, thereto and means for locking said side-boards in their adjusted positions, substantially as and for the purpose set forth.

5. In combination with a wheelbarrow, the pivoted adjustable and detachable side-boards adapted to be secured in any desired positions to or detached from the bottom board and having a locking device for securing them in their adjusted positions relative to the bottom board, substantially as and for the purpose set forth.

6. In a wheelbarrow, the pivoted adjustable side pieces having wings or end pieces, as described, combined with guides for the latter and means for locking said side-boards in their adjusted positions relative to the bottom board, substantially as and for the purpose set forth.

486,470. SLATE-PENCIL SHARPENER. GEORGE S. H. HUMPHREYS, Philadelphia, Pa. Filed May 28, 1892. Serial No. 434,750. (No model.)



Claim.—1. A slate-pencil sharpener comprising a partially-cylindrical casting having a ribbed and channeled internal body and a covering-plate applied thereto, substantially as and for the purposes set forth.

2. A slate-pencil sharpener comprising a casting having a tapering ribbed and channeled internal body and a pivoted and tapering recessed plate adapted to contact or seat with the rear surface of said casting, substantially as and for the purposes set forth.

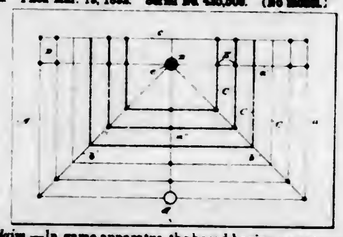
3. A slate-pencil sharpener comprising a casting having wings and a ribbed and channeled tapering internal body, and a plate pivoted to one of said wings and adapted to be brought into engagement with and held in position on the one side of said wings, substantially as and for the purposes set forth.

4. A slate-pencil sharpener comprising a casting having wings, a bill, stop, and a ribbed inner body, and a plate pivoted to one of said wings and adapted to be brought into engagement with said stop, substantially as and for the purposes set forth.

5. A slate-pencil sharpener comprising a casting having a tapering or conical ribbed inner body, wings, and a stop, and a sliding plate connected with one of said wings and adapted to contact with the stop of the other wing, substantially as and for the purposes set forth.

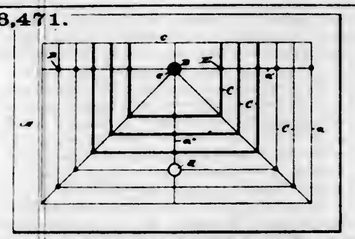
6. A slate-pencil sharpener comprising a casting having a tapering or conical ribbed and channeled internal body and a contracted offset at the upper or outer end thereof, wings, a stop, and a bill formed integral with said casting, and a plate pivoted to one of said wings and adapted to engage with the stop of the other of said wings, substantially as and for the purposes set forth.

486,471. GAME APPARATUS. ADRIAN C. HOUSENGER, Portland, Pa. Filed Mar. 19, 1892. Serial No. 425,509. (No model.)



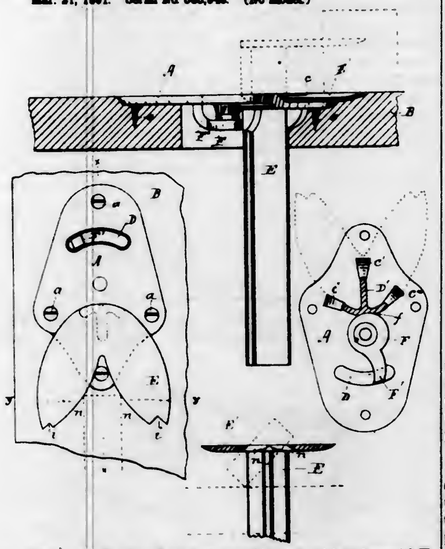
Claim.—In game apparatus, the board having an outer rectangle *a*, the concentric rectangles C, the intersecting lines *a' a''*, and the diagonal lines *b b'*, extending from the intersection of the lines *a' a''* to the

486,471.



opposite corners of the outer rectangle, and the two sets of moving pieces distributed at the intersections of said lines and embracing the two arbitrarily-movable pieces *d e*, substantially as described.

486,472. BENCH-STOP. SUMNER W. JENES, Dayton, Ohio. Filed Mar. 21, 1891. Serial No. 385,946. (No model.)



Claim.—1. In a bench-stop, the combination, with a plate with T-shaped and segmental apertures therein, of a T-shaped stem with the stop E' at the upper end thereof, said stop having a V-shaped notch extending near the center thereof, the edges of said notch being beveled outwardly, substantially as herein described.

2. In a bench-stop, the combination, with a plate having a T-shaped aperture in a depressed portion thereof and a segmental aperture in a raised portion thereof and downwardly-projecting lugs from the three points of the T-shaped aperture, of a T-shaped stem adapted to enter said apertures, a forked or V-shaped stop at the upper end of said stem, provided with upwardly-inclined edges, and means for adjusting and holding said stop, substantially as herein described.

3. In a bench-stop, the combination, with a plate with T-shaped and segmental apertures therein and lugs extending downwardly from the three corners of the T-shaped aperture, of an eccentric-cam provided with an arm adapted to work in the segmental slot and a T-shaped stem supporting the stop E', substantially as herein set forth.

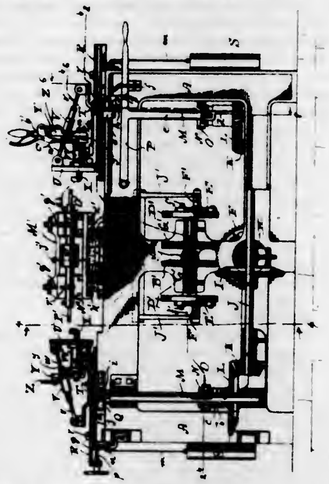
4. In a bench-stop, the combination, with the plate A and openings D and D' and cam F with projecting arm F', of a T-shaped stem with a longitudinal groove thereon and the stop E', having the V-shaped notch with upwardly-inclining edges, substantially as herein described.

5. The combination, with the stop E', having the edges *n n* and notches *i i* and supported upon a T-shaped stem, of the plate A, having a T-shaped opening therein, adapted to receive the T-shaped stem and a cam attached to said plate, whereby the stem may be held vertically at any desired adjustment, substantially as described.

6. In combination with a bench, a plate having a segmental-shaped opening adapted to receive the arm of an eccentric-cam, and a T-shaped opening adapted to receive the stem of a stop having a V-shaped opening, the upper edges of said opening being sharp and adapted to enter the wood while being planed, substantially as herein described.

7. In a bench-stop, the stop E', mounted on a stem of T-shaped cross-section, the plate A, having a T-shaped opening adapted to receive said stem, the stop E', having a V-shaped opening with sharp edges *n n*, and notches *i i*, in combination with an eccentric-cam F, having an arm F', adapted to enter a segmental-shaped opening in said plate, whereby the stop E' and by means of which the stem of stop E' is locked by said cam, substantially as herein described.

486,478. MORTISING-MACHINE. DAVID JENKINS, Sheboygan, Wis., assignor to the Jenkins Machine Company, same place. Filed Nov. 23, 1891. Serial No. 412,781. (No model.)



Claim.—1. The combination of a frame provided with a stationary transverse base, supports arranged on the base, tools extended from the supports, a positively-adjustable carrier loose on the base in opposition to the tools, a projection on the carrier, a rotative cam opposed to the projection, and a retractive mechanism for said carrier independent of the cam, substantially as set forth.

2. The combination of a frame provided with a stationary transverse base, supports reciprocative on the base, tools extended from the supports, a positively-adjustable carrier loose on the base in opposition to the tools, a projection on the carrier, a rotative cam opposed to the projection, and a retractive mechanism for said carrier independent of the cam, substantially as set forth.

3. The combination of a frame provided with a stationary transverse base, a series of supports arranged on the base, tools extended from the supports, a positively-adjustable carrier loose on the base in opposition to the tools, a pivotally-adjustable clamp mechanism forming part of the carrier, a projection on said carrier, a rotative cam opposed to the projection, and a retractive mechanism for the aforesaid carrier independent of the cam, substantially as set forth.

4. The combination of a frame provided with a stationary transverse base, a series of supports arranged on the base, tools extended from the support, a positively-adjustable carrier loose on the frame in opposition to the tools, a clamping mechanism forming part of the carrier and adjustable to various angles, a projection on said carrier, a rotative cam opposed to the projection, and a retractive mechanism for the aforesaid carrier independent of the cam, substantially as set forth.

5. The combination of a frame provided with a stationary transverse base, a series of supports arranged on the base, tools extended from the supports, a positively-adjustable carrier loose on the frame in opposition to the tools, a clamping mechanism that forms part of the carrier and has a pivotal and angular adjustment, a projection on said carrier, a rotative cam opposed to the projection, and a retractive mechanism for the aforesaid carrier independent of the cam, substantially as set forth.

6. The combination of a frame provided with a stationary transverse base midway of its length, supports arranged on the base, tools extended from the supports toward both ends of the frame, carriers loose on said frame in opposition to the tools, a slide forming part of each carrier, suitable means for adjusting the latter on its slide, a projection depending from the slide, a rotative cam opposed to said projection, and suitable means for returning the relative carrier to its normal position after being actuated by the cam, substantially as set forth.

7. The combination of a frame provided with a stationary base having tool-supporting devices mounted thereon, carriers loose on the frame at right angles to said base, a depending projection forming part of each carrier, a shaft carrying a cam opposed to said projection, a clutch-hub gear-wheel loose on the shaft, a lever-controlled clutch-collar splined on said shaft in opposition to the hub of the gear-

engaging a single one of the base-grooves, supports independently adjustable on the standards, tools extended from the supports toward both ends of the frame, and a carrier reciprocative on said frame in opposition to the tools, substantially as set forth.

17. The combination of a frame provided with a stationary base having side grooves in the direction of its length, a series of base-su-

roll-top adapted to swing entirely within the casing, the combined cover and writing-leaf adapted to open and close independently of the roll-top and arranged to close the open side of the casing when in a vertical position and to form an extension of the bottom of the same when in a horizontal position, a hinge connecting the combined cover and writing-leaf to the bottom of the casing and provided with an

Claim.—1. In an insulating-chair for railway-rails, the combination, with the iron chair B, supporting the rail, of the interposed plate or plates of insulating material D and a plate F, of iron or other metal, clamped to said insulation.

2. In an insulating-chair for railway-rails, the combination, substantially as described, with the metal chair B, of the plate or plates

7. The combination of a frame provided with a stationary base having tool-supporting devices mounted thereon, carriers loose on the frame at right angles to said base, a depending projection forming part of each carrier, a shaft carrying a cam opposed to said projection, a clutch-hub gear-wheel loose on the shaft, a lever-controlled clutch-collar splined on said shaft in opposition to the hub of the gear-wheel, a driving-pinion for this wheel, and suitable means for returning the relative carrier to its normal position after being actuated by the cam, substantially as set forth.

8. The combination of a frame provided with a stationary base having tool-supporting devices mounted thereon, carriers loose on the frame at right angles to said base, a depending projection forming part of each carrier, a shaft carrying a cam opposed to said projection, a clutch-hub gear-wheel loose on the shaft, a clutch-collar splined on said shaft in opposition to the hub of the gear-wheel, a foot-lever connected to the clutch-collar, a hand-lever having a depending arm impinged against the foot-lever, a driving-pinion for said gear-wheel, and suitable means for returning the relative carrier to its normal position after being actuated by the cam, substantially as set forth.

9. The combination of a frame provided with a stationary base having tool-supporting devices mounted thereon, carriers loose on the frame at right angles to said base, a depending projection forming part of each carrier, a shaft carrying a cam opposed to said projection, a clutch-hub gear-wheel loose on the shaft, a clutch-collar splined on said shaft in opposition to the hub of the gear-wheel, a foot-lever connected to the clutch-collar, a hand-lever having a depending arm impinged against the foot-lever, a pivotal hanger for the hand-lever, a driving-pinion for said gear-wheel, and suitable means for returning the relative carrier to its normal position after being actuated by the cam, substantially as set forth.

10. The combination of a frame provided with a stationary base having tool-supporting devices mounted thereon, carriers loose on the frame at right angles to said base, a depending projection forming part of each carrier, a shaft carrying a cam opposed to said projection, a clutch-hub gear-wheel loose on the shaft, a clutch-collar splined on said shaft in opposition to the hub of the gear-wheel, a foot-lever connected to the clutch-collar, a hand-lever having a depending arm impinged against the foot-lever, a pivotal hanger for the hand-lever, a striker on the relative carrier for automatically detaching said hanger and hand-lever, a driving-pinion for said gear-wheel, and suitable means for returning said carrier to its normal position after being actuated by the cam, substantially as set forth.

11. The combination of the reciprocative tables having plates mounted thereon, a bar connected to each plate, sleeves fast on the bar and having cam-surfaces at their free ends, spring-controlled dogs arranged to work in the sleeves, levers loose on the dog-shanks and provided with lugs opposed to the cam-surfaces of said sleeves, a link connecting the levers, a latch carried by one of these levers, and a segment-rack for engagement with the latch, substantially as set forth.

12. The combination of the reciprocative tables having plates mounted thereon, a bar connected to each plate, sleeves fast on the bar and having cam-surfaces at their free ends, spring-controlled dogs arranged to work in the sleeves, levers loose on the dog-shanks and provided with lugs in opposition to the cam-surfaces of said sleeves, a set-nut adjustable on each dog-shank in opposition to the lever thereon, a link connecting the levers, a latch carried by one of these levers, and a segment-rack for engagement with the latch, substantially as set forth.

13. The combination of a frame provided with a stationary transverse base midway of its length, supports arranged on the base, tools extended from the supports toward both ends of the frame, tables reciprocative on said frame in opposition to the tools, a slide positively adjustable in each table and provided with a depending projection, a rotative cam opposed to the projection, suitable means for returning the table to its normal position after action of the cam on said projection, and an independently-adjustable clamping mechanism on each of said tables, substantially as set forth.

14. The combination of the reciprocative tables, plates mounted on the tables, a bar hinged to each plate, clamping-dogs carried with the bar in opposition thereto, screw-threaded rods pivotally connected to said plate and bar, and a turnbuckle uniting the rods, substantially as set forth.

15. The combination of the reciprocative tables having segmentally-slotted plates pivoted thereon, set-bolts on the table engaging the plate-slots, a bar hinged to each plate, clamping-dogs carried with the bar in opposition thereto, screw-threaded rods pivotally connected to said plate and bar, and a turnbuckle uniting the rods, substantially as set forth.

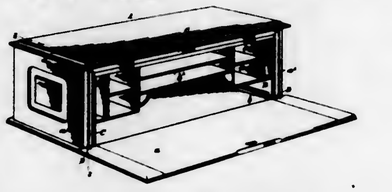
16. The combination of a frame having a stationary transverse base midway of its length provided with horizontal side grooves, a series of bars reciprocating in the base lengthwise of the same, a series of standards, each of which is connected to one of the bars and has feet engaging a single one of the base-grooves, supports independently adjustable on the standards, tools extended from the supports toward both ends of the frame, and a carrier reciprocative on said frame in opposition to the tools, substantially as set forth.

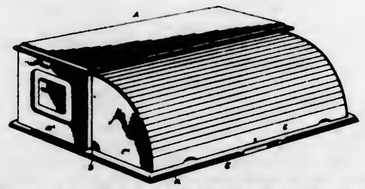
17. The combination of a frame provided with a stationary base having side grooves in the direction of its length, a series of bars reciprocative in the base lengthwise of the same and adjustable as to throw, a series of standards, each of which is connected to one of the bars and has feet engaging a single one of the base-grooves, tool-supports mounted on the standards, and a carrier reciprocative on said frame at right angles to the said base, substantially as set forth.

18. The combination of a frame provided with a stationary transverse base midway of its length, a series of bars loosely arranged in the base lengthwise of the same, a corresponding series of bell-cranks pivoted to the frame and joined to the bars, a series of rotative disks having eccentric arms adjustable thereon, a pitman connecting each eccentric arm with one of the bell-cranks, tool-supporting devices secured to said bars, and carriers reciprocative on said frame at right angles to said base, substantially as set forth.

19. The combination of the herein-described frame, the transverse drive-shaft provided with a spur-pinion, and idler driven by said pinion, a counter-shaft carrying a spur-wheel in mesh with the idler, a bevel-pinion on the latter shaft, a longitudinal shaft carrying a bevel gear-wheel in mesh with the bevel-pinion, vertical shafts geared to the longitudinal one, a clutch mechanism controlling the rotation of each vertical shaft, cams carried by these latter shafts, sliding tables having projections in the paths of the cams, suitable means for returning the tables to their normal position after being actuated by said cams, a clamping mechanism carried by each table, a stationary base arranged on the frame midway of the tables, a series of bars loosely arranged in said base lengthwise of the same, tool-supporting devices connected to each bar, a series of bell-cranks pivoted to said frame and corresponding in number to that of the bars to which they are joined, disk-carrying shafts having gear connection with said drive-shaft, and a pitman connecting each of the disks with one of the bell-cranks, substantially as set forth.

486,474. ROLL-TOP DESK. JOHN R. JONES, Minneapolis, Minn., assignor to the Rues Jones Desk Company. Filed June 6, 1891. Serial No. 395,306. (No model.)



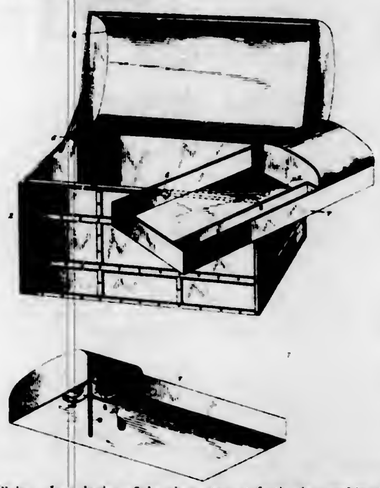


Claim.—1. In a roll-top desk, the outer casing having one open side and composed of a top, a bottom, ends, and one side, an inner pigeon-hole portion separated from the sides of said outer casing, a roll-top hinged at the bottom of the casing and adapted to swing entirely within the same into the space between the outer casing and the pigeon-hole portion, and a combined cover and writing-leaf hinged at the bottom of the casing and adapted to open and close independently of the roll-top and adapted to form an extension of the bottom when arranged in a horizontal position and also to close the open side of the casing when disposed in a vertical position, substantially as described.

2. In a roll-top desk, the outer casing having one open side and composed of a top, a bottom, ends, and one side, a roll-top hinged at the bottom thereof and adapted to swing entirely within the same, and the combined cover and writing-leaf hinged at the bottom of the casing and adapted to open and close independently of the roll-top and adapted to form an extension of the bottom when arranged in a horizontal position and also to close the open side of the casing when disposed in a vertical position, substantially as described.

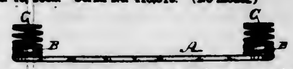
3. In a roll-top desk, the combination of an outer casing having an open side and composed of a top, a bottom, ends, and one side, a roll-top adapted to swing entirely within the casing, the combined cover and writing-leaf adapted to open and close independently of the roll-top and arranged to close the open side of the casing when in a vertical position and to form an extension of the bottom of the same when in a horizontal position, a hinge connecting the combined cover and writing-leaf to the bottom of the casing and provided with an opening, and a sector-shaped leaf secured to the roll-top and arranged in said opening and hinged to the said hinge by the pintle of the latter, substantially as described.

486,475. TRUNK-TRAY. ARTHUR C. JORDAN, Emporia, Va. Filed May 28, 1892. Serial No. 434,094. (No model.)



Claim.—In a device of the character set forth, the combination of a trunk having a corner-post with an opening extending down thereinto and rollers in the upper front edge thereof only, and a tray having a metal casting secured to one corner thereof and upward over one side of the same and provided with a depending post or rod pivotally and removably mounted in the aforesaid corner-post, said tray having a stop depending from the bottom thereof at a distance from the said casting, adapted to contact with one end of the trunk, said tray thereby having a swinging movement horizontally over the top of the body of the trunk and contacting with the aforesaid rollers, substantially as described.

486,476. SASH-HOLDER. CHARLES D. KELSEY, Des Moines, Iowa. Filed Jan. 18, 1892. Serial No. 418,516. (No model.)



Claim.—An improved article of manufacture consisting of an elongated friction-plate for windows, having a plane surface extending from end to end on one side, integral screw-threaded projections on the other side, extending at right angles therefrom and adapted to engage the coils of springs, and coil-springs fitted and fixed to the said projections, for the purposes stated.

486,477. INSULATING-CHAIR FOR RAILS. FRANK R. KIRKHAM, Plainfield, N. J. Filed Feb. 23, 1892. Serial No. 422,348. (No model.)

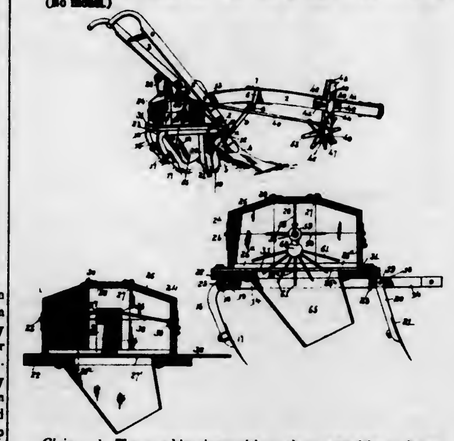
Claim.—1. In an insulating-chair for railway-rails, the combination, with the iron chair B, supporting the rail, of the interposed plate or plates of insulating material D and a plate F, of iron or other metal, clamped to said insulation.

2. In an insulating-chair for railway-rails, the combination, substantially as described, with the metal chair B, of the plate or plates D of insulating material, the iron plate F, upon which the foot of the rail rests directly, and the bolts G, clamping the insulation between the base of the chair and the plate F.

3. In an insulating-chair for railway-rails, the combination, substantially as described, of a chair B, supporting the abutting ends of two rails, one or more layers or sheets of insulating material extending under said abutting ends, the separate plates of iron or other material interposed between the foot of each rail and the base of the chair or separated from one another at the joint between the rails, and the block of insulating material K, interposed between the abutting ends of the rails and the two plates F.

4. The combination, with a railway-rail and its support, of an interposed sheet or plate of insulating material and a plate F, of iron or other metal, clamped down upon the insulation, so as not to move with the rail.

486,478. COMBINED CORN AND COTTON PLANTER. THADDEUS W. KNIGHT, Taylor, Tex. Filed May 26, 1892. Serial No. 434,236. (No model.)



Claim.—1. The combination, with a plow comprising a beam, standard, and planting mechanism, of feed devices located in the planting mechanism, a pair of opposite X-shaped plates having their horizontal branches slotted and their vertical branches inwardly bent at their opposite edges, said plates being located at opposite sides of the beam, vertical standards located between the flanges of the plates and clamped by the same, bolts passed through the slots into the beams, a cranked axle located in bearings in the lower ends of the standards, a wheel thereon, and a pitman connected to the crank of the axle and to the feed mechanism of the planting mechanism, substantially as specified.

2. The combination, with a plow comprising a beam, handles, and a bifurcated pivoted standard depending from the rear end of the beam, of opposite metal clamp-sections, bolts passing through the upper and lower ends of the same above and below the beam, and a rudder-bar having its upper end pivoted to the lower bolt, passed rearwardly through the standard and terminating beyond the same in a depending blade, said bar having perforations adjacent to its intersection with the standard and a bolt passed transversely through the standard and one of the perforations of the bar, substantially as specified.

3. The combination, with the main beam and its standard and plow, of the opposite metal straps pivoted to the standard and terminating at their rear ends in depending standards carrying shovels, cross-bars connecting the beams, a central standard depending from the front cross-bar and carrying a shovel, a hopper surmounting the beams, feed mechanism mounted in the hopper, means for operating said mechanism, and the rudder-bar 9, loosely connected at its upper end to the main beam of the plow, adjustably connected to the standard of the plow and terminating at its rear end in rear of the plow in a blade, substantially as specified.

4. The combination, with the opposite beams terminating in shovels, the cross-bars, the front standard and its shovel, the plow-beam, the main standard, and the plow, of a platform surmounting

the beams, the hopper surmounting the platform, the hopper-bottom being supported above said platform and it and the platform being provided with a longitudinal slot having end offsets and central half-circular openings, opposite reversely-disposed L-shaped plates removably fitted therein the ends of which have half-circular notches, said plates being located between the hopper-bottom and platform and

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486,481. STEAM ROAD-ROLLER. HARRY W. LASTER, Chicago, Ill. Filed Aug. 20, 1892. Serial No. 443,563. (No model.)

sides of the notch, and the turnbutton M', carried by the strip M, all substantially as and for the purpose set forth.

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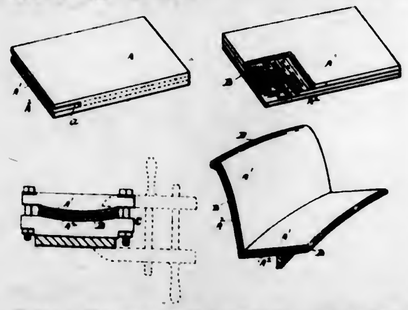
lating the supply of fluid to one side of the piston, a relief-valve in the piston opening from the pressure side thereof, a spring operating to close said valve and move the piston in a direction to open communication with the supply-port, and means for adjusting said spring, sub-

the beams, the hopper surmounting the platform, the hopper-bottom being supported above said platform and it and the platform being provided with a longitudinal slot having end offsets and central half-circular openings, opposite reversely-disposed L-shaped plates removably fitted therein the ends of which have half-circular notches, said plates being located between the hopper-bottom and platform, a seed-slide mounted over the plates and having openings, a standard depending from the main beam, a wheel journaled in the standard, a pitman-rod connected to the crank of the axle of the wheel and extending opposite the hopper, and the connecting-rod between the pitman-rod and seed-slide, substantially as specified.

5. The combination, with the hopper and reciprocating seed-slide, of means for operating the slide and the block spanning the slide and having an opening, bristles located in the opening, a circular projection from the upper side of the block and having undercut edges, a ring encircling the projection, and wires connected to opposite sides of the ring and to the front and rear walls of the hopper, substantially as specified.

486,479. PROCESS OF MAKING BUILT-UP WORK FOR PEW-BACKS, &c. MORRIS LANCASTER, Northville, Mich., assignor of one-half to the Globe Furniture Company, same place. Filed Dec. 28, 1891. Serial No. 416,282. (No model.)



Claim.—1. The process herein described of constructing built-up work for seating, consisting of preparing a board A of desired length, breadth, and thickness, smoothing the surfaces of said board in its normal flat condition, then resawing said board to form counterpart exterior boards A' A^2, then applying a thin layer or veneer between the undressed surfaces of said counterpart exterior boards, and compressing said exterior boards and the intermediate layer by desired forms or molds to form seating of uniform thickness, substantially as described.

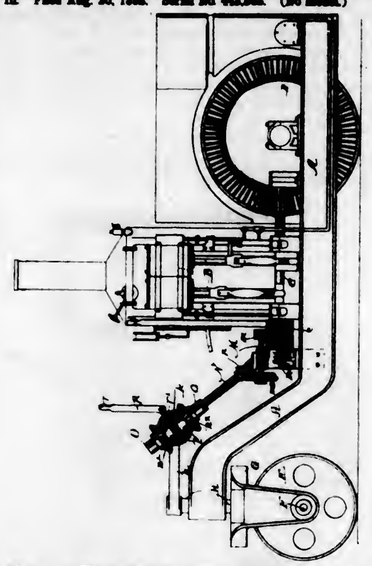
2. The process herein described of constructing built-up work for seating, consisting of preparing a board of desired length, breadth, and thickness, smoothing said board in its normal flat condition, then resawing said board to form counterpart exterior boards A' A^2, then cementing between the undressed inner surfaces of the boards A' A^2 a thin rotary-cut veneer having its grain extended across that of the exterior boards, compressing said exterior boards and said veneer together by desired forms or molds while the cement is green to form seating of uniform thickness, and then trimming the edges of said seating substantially as described.

486,480. RADIATOR. WILLIAM R. LANDON, Philipsburg, assignor to James R. Hughes, Pittsburg, and Lewis H. Ireland, Allegheny, Pa. Filed Sept. 19, 1891. Serial No. 406,181. (No model.)

Claim.—1. The combination, with two radiator-sections having perforated connecting-pipes to establish communication, of a baffle-tube with one end closed, provided with a duct to establish communication between the first and second section at the bottom, substantially as described.

2. The combination, with two radiator-sections, of a baffle-tube having one end closed and provided with a duct D^a and the rib D^g, said duct establishing communication between the first and second sections, substantially as described.

486,481. STEAM ROAD-ROLLER. HARRY W. LASTER, Chicago, Ill. Filed Aug. 20, 1892. Serial No. 443,562. (No model.)



Claim.—1. The combination, with a steam-roller having the driving-shaft C and the steering-screw K, of a shaft N, geared to the driving-shaft and bearing two loose gears n' n^2, a gear k, connected with the screw K and engaging with both of the gears n' n^2, and a friction device adapted to engage either of the gears n' n^2 with the shaft N, substantially as described.

2. The combination, with a steam-roller having the shaft C and steering-screw K, of the shaft N, connected with the shaft C and driven thereby, two loose gears n' n^2 upon the shaft N, and having internal-coned surfaces upon their adjacent faces, a double male friction-cone P, feathered to the shaft N between said gears and provided with means for engaging it alternately with their internal-coned surfaces, and a gear k, engaging with both of the gears n' n^2 and connected with the screw K, substantially as described.

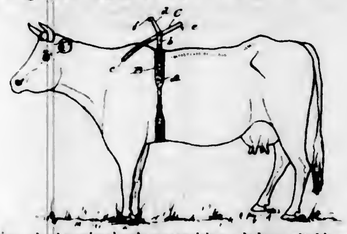
3. The combination, with a steam-roller having the driving-shaft C and the screw K, of the gear c, the pinion m, the shaft M, the gear m^2, the gear n, the shaft N, the gears n' n^2, the cone P, and the gear k, substantially as described.

486,482. IRONING-TABLE. GEORGE W. LAWBAUGH, Geneseo, Ill. Filed June 9, 1892. Serial No. 436,170. (Model.)

Claim.—1. In an ironing-table, substantially as described, the combination, with a board, a bar arranged upon the under side of the board and carrying a pin, and the main legs pivotally connected at one end to the board, of the auxiliary legs pivotally connected at an intermediate point in their length to the main legs, the transverse strip M, connected to the upper ends of the auxiliary legs and having the notch m, designed to receive the bar of the board and a recess designed to seat the pin, and a turnbutton pivotally connected to the strip M and adapted to engage the pin and retain the same in the recess, substantially as and for the purpose set forth.

2. In an ironing-table, substantially as described, the combination, with the board, the longitudinal bar arranged upon the under side of the board and having transverse apertures at intervals in its length, the pin arranged in one of the apertures of the bar, and the main legs pivotally connected to the board, of the auxiliary legs pivotally connected at an intermediate point in their length to the main legs, the transverse strip M, connected to the upper ends of the auxiliary legs and having the notch m, and the recesses n on opposite sides of the notch, and the turnbutton M', carried by the strip M, all substantially as and for the purpose set forth.

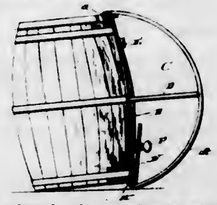
486,483. ANIMAL-POKE. CHARLES J. LE COUNT, Henry, S. D. Filed Aug. 1, 1892. Serial No. 441,890. (No model.)



Claim.—1. An animal-poke comprising a belt, a suitable support arranged on the belt, a spur-lever pivoted to the support, and an arm extended upward from the lever, substantially as set forth.

2. An animal-poke comprising a belt, a bracket fast on the belt and provided with a central vertical extension, a lever that is pivoted to the bracket extension and has a yoke-shaped forward end, an arm extended upward from the lever adjacent to the pivot-point of the same, and a spur depending from the rear end of said lever, substantially as set forth.

486,484. KEG OR BARREL TILTER. WALTER I. LEGGETT, Galesburg, Ill., assignor of one-half to Chauncy P. King, same place. Filed Sept. 9, 1892. Serial No. 445,423. (No model.)



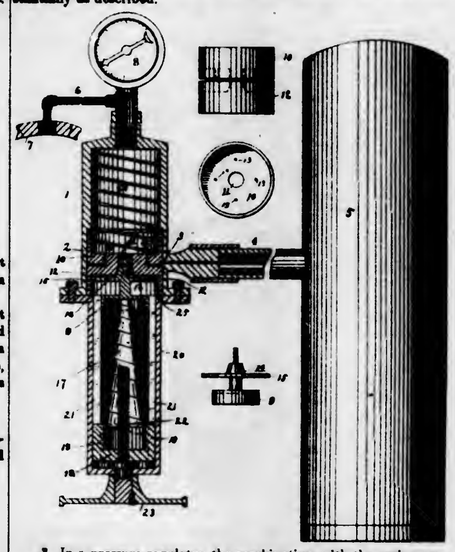
Claim.—1. In a barrel or keg stand, substantially as described, the combination, with the side sections respectively formed from a single strip of material and comprising the rocker A, the longitudinal bed-strip B, and the hook a, which latter is formed by extending one end of the strip beyond the point of connection of the ends and curving the same upwardly and inwardly, so as to adapt it to engage the chine at one end of a barrel, of the angular brace-bail having its ends connected to the bed-strips B and its angles connected to the rockers A of the sections, the transverse bed-strips arranged intermediate of the brace-bail and the ends of the sections and having their ends connected to the strips B, and a hook connected to one of the brace-strips and adapted to serve, in conjunction with the hooks a, to hold the barrel upon the stand, substantially as and for the purpose set forth.

2. In a barrel or keg stand, substantially as described, the combination, with the side sections respectively formed from a single strip of material and comprising a rocker A, the longitudinal bed-strip B, and the hook a, which latter is formed by extending one end of the strip beyond the point of connection of the ends and curving the same upwardly and inwardly, so as to adapt it to engage the chine at one end of a barrel, and the transverse bed-strips connecting the sections, of the hook adapted to serve in conjunction with the hooks a, a bar carrying said hook and having a longitudinal slot, and a set-screw taking through the longitudinal slot of the bar and into one of the transverse bed-strips, all substantially as and for the purpose set forth.

486,485. PRESSURE-REGULATOR. JOSEPH LEER and JOSEPH BODAM, Rochester, N. Y. Filed Aug. 12, 1892. Serial No. 442,913. (No model.)

Claim.—1. In a pressure-regulator, the combination, with the casing embodying the chamber and having a fluid-inlet port, of the movable piston operating in said chamber and co-operating with the port and governing the supply of fluid to one side of the piston, a relief-valve in the piston, and a spring for operating it and the piston in a direction to open communication between the top of the piston and the inlet-port, substantially as described.

2. In a pressure-regulator, the combination, with the casing embodying the chamber and having a fluid-inlet port, of the movable piston operating in said chamber, co-operating with said port and regulating the supply of fluid to one side of the piston, a relief-valve in the piston opening from the pressure side thereof, a spring operating to close said valve and move the piston in a direction to open communication with the supply-port, and means for adjusting said spring, substantially as described.



3. In a pressure-regulator, the combination, with the casing embodying the chamber and having a fluid-inlet port, of the movable piston operating therein, co-operating with the port and having the recessed under side, the relief-valve operating in the piston, having the perforated guiding-flange, and the adjustable spring operating on the valve to close it and move the piston to open the inlet-port, substantially as described.

4. The combination, with the cylinder having the inlet-port, the piston operating in the cylinder and co-operating with the port, and the spring for operating the piston in one direction, of the relief-valve in the piston and the spring for closing it and moving the piston in the opposite direction, substantially as described.

5. The combination, with the cylinder having the inlet-port, the piston operating in the cylinder having the groove, and one or more passages leading to one side of the piston, of the relief-valve opening toward the other side of the piston, the spring closing said valve and moving the piston, and means for regulating the pressure of the spring, substantially as described.

6. The combination, with the cylinder having the inlet-port, the piston operating in the cylinder having the groove, and one or more passages leading to one side of the piston and the central aperture, of the relief-valve operating in said aperture and guided on the piston and the adjustable spring in the casing, operating to close the valve and move the piston, substantially as described.

7. The combination, with the cylinder having the inlet-port, the piston operating in the cylinder, of the relief-valve in the piston, the movable nut guided in the casing, and the screw for operating it, substantially as described.

8. The combination, with the casing, the cylinder having the inlet-port, the piston operating in the cylinder, of the relief-valve in the piston, having the extension guided in the casing, the adjustable nut guided in the casing, and the spring interposed between the nut and valve, substantially as described.

9. The combination, with the cylinder having an inlet-port, a piston operating in the cylinder and co-operating with the port, and the relief-valve in the piston, of the casing-section 20, removably connected to the cylinder, the adjustable nut therein, and the spring interposed between the nut and valve, substantially as described.

486,486. FEEDER-LIFTER. SAMUEL B. LEWIS, Raton, N. Mex. Filed Jan. 11, 1892. Serial No. 417,773. (No model.)

Claim.—A device of the class described, having pivotally-connected members provided with concaved jaws and handles, one of the handles terminating in a ring and the other terminating in a spiral coil or twist c', and the actuating-spring having a spirally-coiled portion which fits and engages the spiral coil or twist, and an arm which engages the opposite handle, substantially as specified.

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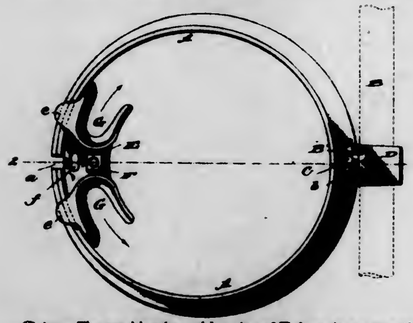
486,487. HAND FENCE-MACHINE. JEROME W. MARTIN, Kansas City, Mo., and MONTROSE CAHILL, Hays City, Kans. Filed July 5, 1892. Serial No. 439,076. (No model.)



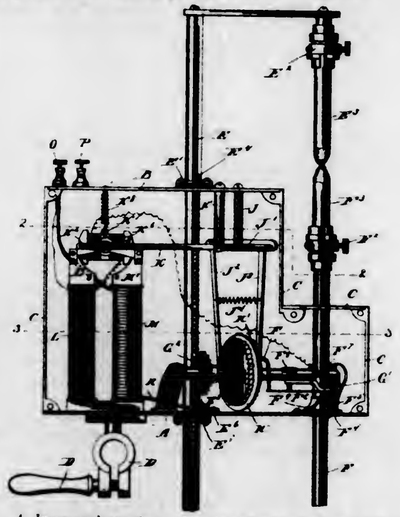
Claim.—The combination, with a ring of T shape in cross-section, having an opening *a* and a clamp to hold a rod, of a traveler of two like parts oppositely disposed and each formed with a flange to engage the side of the ring and overlap the edges thereof and a hole for the passage of a wire and two half-jaws for barbed wire, the two parts being detachably connected together and constructed to travel around the inner periphery of the ring, substantially as and for the purpose specified.

486,488. ELECTRIC-ARC LAMP. WILLIAM O. MERRIMAN, Chicago, Ill. Filed Apr. 13, 1892. Serial No. 429,061. (No model.)

Claim.—1. In an arc lamp, the combination of carbon-rods with racks associated therewith, a shaft with two pinions thereon to engage such carbon-rod racks, two oppositely-faced ratchet-wheels, two dogs on the ends of a pivoted cross-bar, and means for rocking such cross-bar, said dogs opposed to said ratchet-wheels, so that when the cross-bar rocks the racks are engaged and move in either direction.

2. In an arc lamp, the combination of two carbon-rods with racks thereon, a shaft, pinions on said shaft, adapted to engage each one of said racks, said carbon-rods on opposite sides of said shaft, and means for rotating said shaft in either direction responsive to variations in the resistance of the arc, said means containing two oppositely-faced ratchet-wheels on the shaft and dogs associated therewith, and a rock-bar, on the ends of which such dogs are pivoted, and a shunt-magnet adapted to rock such bar.

3. In an arc lamp, the combination of two carbon-rods with racks thereon, a single shaft, pinions on such shaft, adapted each to engage one of said racks, and means for rotating said shaft in either direction responsive to variations in the resistance of the arc, said means containing two oppositely-faced ratchet-wheels on the shaft and dogs associated therewith, and a rock-bar, on the ends of which such dogs are pivoted, and a shunt-magnet adapted to rock such bar.

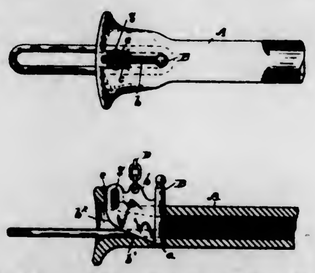


4. In an arc lamp, the combination of two carbon-rods with racks thereon, a single shaft, pinions on such shaft, adapted each to engage one of said racks, and means for alternately rotating said shaft in either direction responsive to variations in the resistance of the arc, such means comprising an electrically-actuated rock-bar, and two oppositely-faced ratchet-wheels on the shaft, and dogs to engage the same, said dogs attached to such rock-bar.

5. In an arc lamp, the combination of two carbon-rods with a shaft between them, driving connections between the shaft and the rods, driving mechanism to alternately rotate the shaft in opposite directions, and means for operating said mechanism, containing a main and a shunt magnet, and an electro-magnet responsive in its position to the balance between the main and shunt magnet.

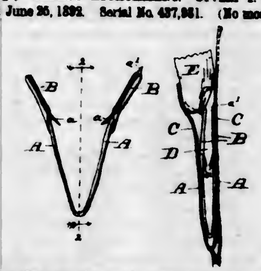
6. In an arc lamp, the combination of two carbon-rods with a shaft and driving connections from the shaft to the rods with mechanism for alternately rotating the shaft in opposite directions, and a motor for such mechanism, consisting of a main and shunt magnet with an armature-magnet whose poles are continuously exposed to the poles of the main shunt-magnet and a connection from such armature-magnet to the driving mechanism.

486,489. CAR-COUPLING. ROBERT S. MORROW and DAYTON W. GLENN, Cleveland, Ohio. Filed May 28, 1892. Serial No. 434,744. (No model.)



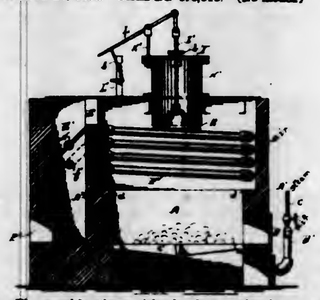
Claim.—In a car-coupler, the head A, having a hole *a* for the draw-bolt and a slot in front of the said hole in the upper part of the head for the flange of the bolt and an inclined slot *a'* in the lower part of the head in front of the hole *a* for the lower portion of the said flange, in combination with the bolt B, having flange or web *b*, with substantially-straight inclined front edge *b'* and curved portion b^3, slot *d*, and pin *g* for limiting the upward movement of the bolt, the said bolt having a bearing in the lower part of the head to sustain part of the load and the lower part of flange *b'* sank in slot *a'* substantially as described.

486,490. SAFETY ATTACHMENT. SYLVEST T. MOSBY, Chicago, Ill. Filed June 26, 1892. Serial No. 437,961. (No model.)



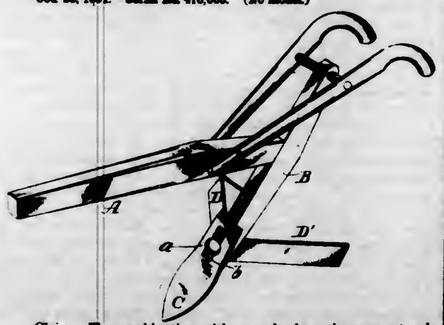
Claim.—A safety attachment for pockets, consisting of a spring-metal frame having the ends thereof V-shaped, such ends being connected by a bar, with prongs on such bar extending downward and inward, whereby when the device is placed in a pocket the spring of the V-shaped ends will tend to hold the springs apart, with pointed prongs on one of the bars connecting the ends, extending upward and outward and adapted to engage with the fabric of which the pocket is constructed, and a flexible cover extending over the bar connecting the ends of the frame and over the downwardly-extending prongs thereon on the outer side thereof and partially over such prongs on the other side thereof, substantially as described.

486,491. GAS-PRODUCER. ALEXANDER K. MURRAY, Bradford, Pa. Filed Oct. 27, 1891. Serial No. 410,018. (No model.)



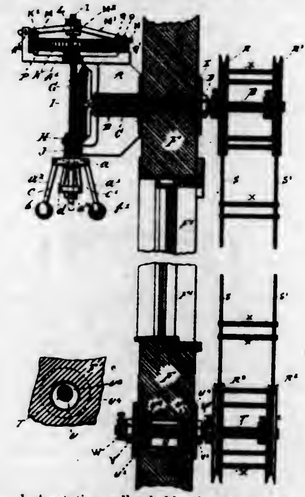
Claim.—The combination, with the furnace having a grate and provided with an internal annular shoulder in its walls above the grate, of a gas-reservoir in rear of the furnace and communicating therewith and an air-supply pipe resting on said annular shoulder, extending around the walls of the furnace-chamber and entering the gas-reservoir.

486,492. PLOW. MILFORD J. MCBURNETT, Wedowee, Ala. Filed Oct. 28, 1891. Serial No. 410,066. (No model.)



Claim.—The combination, with a standard or other support and a shovel having an elongated slot formed therein, of a bolt passed through the standard and slot and a pair of wings of different lengths having offset inner ends and holes in said ends adapted to receive the bolt which passes through the slot, whereby all of said parts are held together by the same bolt, substantially as set forth.

486,493. FIRE-ESCAPE. WILLIAM J. MCCOLLOM, Paterson, N. J. Filed Mar. 17, 1892. Serial No. 425,290. (No model.)



Claim.—1. A rotating endless ladder the sides of which are formed of wire rope or other flexible material and the hollow rungs of tube located at suitable distances apart, secured by wedges which are formed with pointed ends and flat heads, the body or shank being oval in section and located eccentrically with respect to the head, the wedge forcing the part of the side rope inserted in suitable holes formed in the end of tubular rung into a bend or curve, securing the same in a thorough manner, substantially as specified.

2. The combination, with the wall of the building perforated as described, of the sprocket-wheels R^2 R^3 with shaft T, tube U, eccentrics U^3 U^3, collars U', U^4, U^5, and W, and lock-nuts V and V', constructed substantially as shown, and for the purpose specified.

3. In a fire-escape, wheels carrying an endless ladder, in combination with a friction-wheel, friction-strap, a ratchet cut into the friction-wheel, and a pawl to engage therewith to arrest the backward motion of the shaft carrying said endless ladder, as specified.

4. In a fire-escape, an endless ladder, in combination with shafts, sprocket-wheels, the wall of building, one shaft placed at the upper story and the other at the lower story of the building, shafts having suitable bearings, and eccentric-supports in the wall for one bearing to allow of the ladder being adjusted tightly or loosely and then securely fastened by the nuts, as specified.

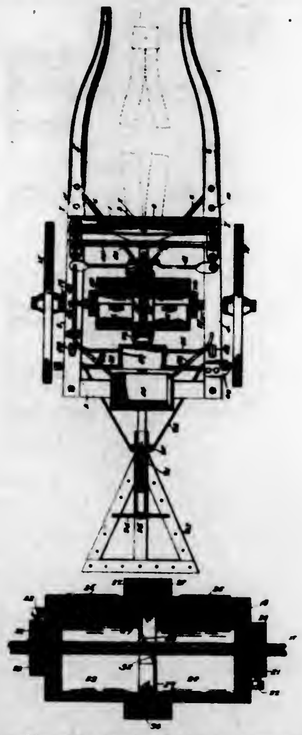
5. The combination, with an endless wire-rope ladder having tubular rungs and the device Y for securing rungs to said rope, of the shafts B and T, the sprocket-wheels R R' R^2 R^3, secured on said shafts, the bearings C and U, the eccentric adjustment U^3 and U^3, and the controlling mechanism, as shown and described.

486,494. COMBINED SEEDER AND HARROW. HAYDEN S. HELSON and FRANCIS M. HESETT, Bairns, Ark., assignors of one-half to Bettie Hardin, Malissa Jones, and Levi B. Daniels, Jr., same place. Filed May 12, 1892. Serial No. 432,812. (No model.)

Claim.—1. In a machine of the class described, the combination, with the rotatable axle, the opposite disks, and the cylindrical hopper-sections having openings and doors for covering the same, of rings encircling the inner ends of the cylindrical sections, space-blocks interposed between the rings, semicircular partitions interposed between the opposite sides of the space-blocks and the rings and having their meeting edges reversely bent at points opposite the discharge-openings, and bolts passed through the rings, partitions, and blocks, substantially as specified.

2. In a machine of the class described, the combination, with the rotatable axle, the opposite disks, and the cylindrical hopper-sections having openings and doors for covering the same, of rings encircling the inner ends of the cylindrical sections, space-blocks interposed between the rings, semicircular partitions interposed between the oppo-

site sides of the space-blocks and the rings and having their meeting edges reversely bent at points opposite the discharge-openings, bearings located in rear of each opening, curved levers pivoted in the bearings and connected with plates covering the openings, springs pressing against the rear ends of the levers, and a cam located in the path of the heads of the levers and adapted to actuate the same, so as to elevate the plates from over the openings, substantially as specified.



3. In a machine of the class described, the combination, with the framework, the axle, the hopper mounted thereon and having discharge-openings and adapted to rotate with the axle, curved levers fulcrumed in rear of the openings and provided with plates covering the openings, springs interposed between the rear ends of the levers, and the hopper for normally closing the plates over the openings, of a cross-bar pivoted to one side of the framework and loosely lying in the opposite side, a standard rising from the said opposite side, and a lever loosely connected to the free end of the cross-bar and notched to engage the standard, substantially as specified.

4. In a machine of the class described, the combination, with the framework, the hopper, and discharge mechanism, of the transverse shaft 45, mounted in bearings 46 in the under side of the framework, the curved standard 47, pivoted upon the shaft, the V-shaped bail 49, passing through an opening in the rear side of the standard and at its upper ends loosely engaging the shaft, and the lever 79, rising upwardly and rearwardly from the standard, substantially as specified.

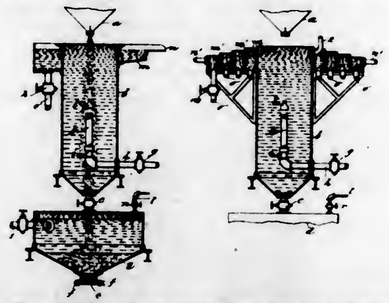
5. In a machine of the class described, the combination, with the rectangular frame having bearing-eyes upon its under side near its rear end, the rock-shaft 63, located in the eyes, bent at one end to form the crank 64 and at its opposite end to form the eye 66 and lever 67, terminating in the handle, means for locking the lever, a rod 69ª, having one end passed through the eye 66 and its opposite end upwardly bent to form an eye 70, engaging the crank-arm 64, and nuts on the end of the arm 64 and rod 69ª, of a following attachment comprising a pair of draft-arms engaging the axle and rods connected with the rod 69ª, substantially as specified.

6. In a machine of the class described, the combination, with the rectangular frame having bearing-eyes upon its under side near its rear end, the rock-shaft 63, located in the eyes, bent at one end to form the crank 64 and at its opposite end to form the eye 66 and lever 67, terminating in the handle, means for locking the lever, a rod 69ª, having one end passed through the eye 66 and its opposite end upwardly bent to form an eye 70 for engaging the crank-arm 64, and nuts on the end of the arm 64, and rod 69ª, of a following attachment comprising a pair of draft-arms engaging the axle and rods, connected with the rod 69ª, and a spring-strap 91, connected to the rod 69ª, having its rear end removably connected with and bearing upon the follower, substantially as specified.

7. In a machine of the class described, the combination, with the framework and the bearing-eyes in the rear end of the same, of the rock-shaft mounted in the bearing-eyes and terminating beyond the same in rock-arms, a cross-bar connecting the bearing-arms, a lever for operating the rock-shaft of a follower, means for connecting the same with the rock-arms of the rock-shaft, and arms extending forward from the follower and terminating in hooks engaging the axle, substantially as specified.

8. In a machine of the class described, the combination, with the framework, the bearing-eyes on the under side thereof, the rock-shaft mounted in the eyes and terminating beyond the same in rock-arms having eyes, a rod located in the eyes, a lever for rocking the shaft, and a keeper located on the rear bar of the frame, of a harrow, a bar on top thereof, a spring-strap having its front end mounted in the keeper and its rear end terminating in a hook engaging the bar of the harrow and bearing thereon, and rods extending forwardly from the harrow and engaging the rock-shaft, substantially as specified.

486,495. METHOD OF AND APPARATUS FOR SEPARATING GRAPHITE OR LIKE SUBSTANCES FROM CRUSHED ROCK. AXEL W. HIBELIUS, Hackettstown, N. J. Filed Oct. 16, 1891. Serial No. 408,864. (No model.)



Claim.—1. The process of separating graphite and like substances from the crushed rocks, which consists in causing a falling body of dry and crushed rock to meet a vertically and upwardly moving body or stream of water at the surface of and within a surrounding body of comparatively-still water, on which surface the flakes of graphite or other substance not absorbing water are separated and are floated off on the overflowing water, while the water-absorbing particles are precipitated in the water, substantially as described.

2. The combination of the vessel *b*, having an open top, the overflow receiving and discharging pan *m* thereat, the water-inlet and upwardly-discharging pipe *h*, and the discharge-passage and stop-valve at the bottom of said vessel, said vessel *b* and pipe *h* adapted to contain a body of comparatively-still water surrounding the upwardly-discharged current from said pipe *h*, substantially as described.

3. The combination of the vessel *b*, having an open top, the overflow receiving and discharging pan thereat, said pan having a sloping bottom adapted to collect the matters precipitating in said pan, a discharge-pipe and stop-valve at the lower side thereof, and the water-inlet and upwardly-discharging passage and stop-valve at the bottom of said vessel, said vessel and upwardly-discharging inlet adapted to contain a body of comparatively-still water surrounding the upwardly-discharged current from said inlet, substantially as described.

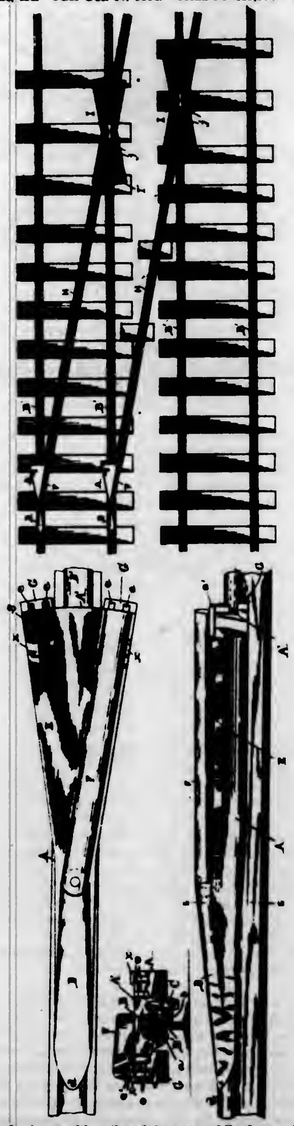
4. The combination of the vessel *b*, having the open top, the overflow receiving and discharging pan thereat, the water-inlet and upwardly-discharging pipe *h*, having one or more detachable sections for regulating the flow of the water, and the discharge-passage and stop-valve at the bottom of said vessel, substantially as described.

5. The combination of the vessel *b*, having the open top, the overflow receiving and discharging pan thereat, the water-inlet and upwardly-discharging pipe *h*, the discharge-passage and stop-valve at the bottom of said vessel, and the receiving and discharging vessel *d* below, connected with said discharge-passage and having pipes and valves for discharging and refilling with water without interruption of the separating process in vessel *b*, said refilling-pipe being independent of the inlet for supply of vessel *b*, substantially as described.

486,496. PROCESS OF TINNING IRON AND STEEL PLATES. ERWIN NORRIS, Maywood, assignor to himself, and OLIVER W. HORTON, Chicago, Ill. Filed July 23, 1892. Serial No. 441,041. (No specimens.)

Claim.—The process of making tin-plate, which consists of the following steps: first, white-pickling the sheets; second, coating the same with melted stearic acid, and, third, immersing the same in melted tin and finishing, substantially as specified.

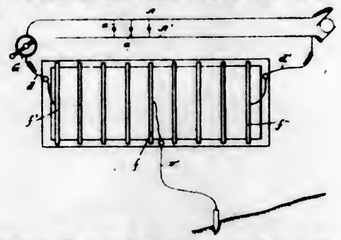
486,497. PORTABLE RAILWAY-SWITCH. JOHN R. NORWOOD, Sykesville, Md. Filed Dec. 17, 1891. Serial No. 415,332. (No model.)



Claim.—1. A portable railroad-frog to straddle the track-rail and provided with suitable means for clamping it thereto, said frog comprising a pivoted switch-bar and a platform, the switch-bar and platform both being provided with corresponding lugs to receive the end of a switch-rail between them, thereby locking said bar in the manner described.

2. A temporary railroad-switch comprising a number of frogs straddling the track-rails and suitably clamped thereto, each of said frogs provided on top with a stationary inclined tongue, and a pivoted switch-bar, forming a continuation thereof, switch-rails H, interlocking with the frogs and switch-bars, and cross-over saddles clamped to the track-rails and grooved in the line of the switch-rails.

486,498. LIGHTNING-ARRESTER. HARRY G. OSBURN, Chicago, Ill. Filed Dec. 26, 1891. Serial No. 416,126. (No model.)



Claim.—1. The combination, with a charged circuit, of a generator-receiver, which provides a normally-closed path connected to said circuit and having a ground connection and adapted to produce a current of sufficient electro-motive force to counteract the current in the charged circuit, substantially as described.

2. The combination, with a charged conductor, of an electrical generator-receiver, which provides a normally-closed path to the ground for an excessive discharge of electric fluid resulting from lightning and which produces a current of sufficient force to counteract the current in said charged conductor, substantially as described.

3. The combination of a conductor and a closed circuit leading therefrom containing a generator-receiver, whereby an excessive discharge will generate a current of sufficient electro-motive force to counteract the current in the charged conductor.

4. The combination, with a charged conductor and a dynamo having the ground connection, of a generator-receiver having closed connections with said charged conductor and a continuous ground connection, said generator provided with plates forming cells for an electrolyte, substantially as described.

5. The combination, with a charged conductor and a dynamo, of a generator-receiver having a series of plates or partitions forming a series of cells for an electrolyte, a ground connection at one pole of said generator and a connection between the other pole of the generator and the charged conductor, and a switch for cutting the generator out of circuit with the charged conductor, substantially as described.

6. The combination, with the connected charged conductors and a dynamo, of a generator-receiver, which provides a normally-closed path and having its poles connected, respectively, with said conductors, and a ground connection from the generator, substantially as described.

486,499. LIGHTING DEVICE. BRADFORD H. PRESLETON, Chicago, Ill. Filed Aug. 17, 1892. Serial No. 443,202. (No model.)

Claim.—In a lighting device comprising an outer casing or box E to be secured to a lamp or lantern and provided with a movable scratcher-point, a circular casing G, immovably secured within said casing E, as described, a strip arranged in a roll in said casing G, the said strip being provided with igniting-points and passed through a slot G' in the rim of said casing G and over the rim of said casing G, and a shaft mounted to turn in the said casing or box E and adapted to wind up the said igniting-strip, the several parts serving for the purpose, operating in combination, in the manner substantially as herein-before shown and described.

486,500. PIANOFORTE-ACTION. JAMES H. PERLEE, Sharon, Wis. Filed Apr. 6, 1892. Serial No. 427,988. (No model.)

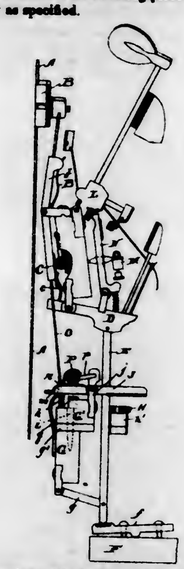
Claim.—1. The combination, in a piano-action, of the levers *J* with supports for said levers, consisting of bar G and a separate bar G', to

which the levers are secured and which is itself supported upon said

positions thereof, together with the spindles and saddles the edges

which the levers are secured and which is itself supported upon said bar G, substantially as specified.

2. The combination, with the series of levers J and their supporting-blocks *j*, of bars G and G' and a filling-piece inserted between said bars, substantially as specified.



3. The combination, with the levers J, of the locking-rod P and the spring acting upon said rod, substantially as specified.

486,501. CHECK-VALVE. FRANK A. PHILLIPPI, Philadelphia, Pa. Filed Dec. 31, 1891. Serial No. 416,670. (No model.)

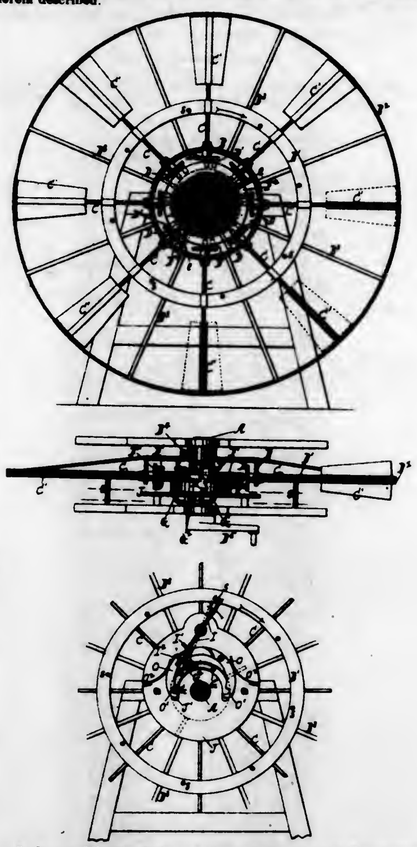
Claim.—1. In a check-valve, the loose piece A, having the openings E and the stationary valve-seat F, projecting from the loose piece A, combined with the male piece B, the yielding valve D, clamped between the adjacent ends of the pieces A and B, the central tube H, supported to engage the valve, and a spring to force the tube H and seat D toward the valve-seat F, substantially as described.

2. In a check-valve, a stationary valve-seat F, combined with a yielding valve D, a central tube H, supported to engage the valve D, and a spring arranged to force the valve D into engagement with the seat F, substantially as and for the purpose specified.

3. In a check-valve, the loose piece A, having the openings E, the male piece B, having the interior guide K, and suitable devices to couple the two pieces together, combined with the stationary valve-seat F, projecting from the loose piece A into the piece B, the flexible valve D, clamped between the adjacent ends of the pieces A and B, the central tube H, supported in the guide K and engaging the valve D, and a spring interposed between the guide K and the valve D to force the latter into engagement with the valve-seat F, substantially as described.

486,503. FEATHERING PADDLE-WHEEL. JOHN POLHEMUS, New York, N. Y. Filed Apr. 2, 1892. Serial No. 427,302. (No model.)

Claim.—1. In a paddle-wheel, the combination of a series of radial axially-rotating spindles supporting the paddles, a cam on each of the said spindles, having two radial eccentric guide-pins, a stationary concentric disk on the paddle-wheel shaft, with a circumferential groove receiving alternately each of said cam guide-pins for controlling the positions of the cams, and two radial trip-pins at opposite sides of the stationary disk, connected thereto, with different degrees of angle for engaging with the spindle-cams to alternately reverse the positions thereof, together with the spindles and paddles, the edges of said circumferential disk-groove being cut away at points in fixed relation to each of said trip-pins to form passages for the cam guide-pins to and from the groove, substantially as and for the purpose herein described.



2. In a paddle-wheel, the combination of radial axially-rotating spindles supporting the paddles, a reversing mechanism for said spindles, comprising the stationary concentric disk mounted loosely on the paddle-wheel shaft, two gage-pins connected to the stationary disk for determining the positions thereof on the shaft, two locking-pawls, each alternately engaging one of said disk gage-pins, an adjusting-pin connected to the stationary disk, a concentric series of tappets at one side of the wheel, mounted thereon, an adjusting-lever for engaging at one end with said disk-adjusting pin and at the other end with the concentric wheel-tappets, and a spur on said adjusting-lever for engaging with the disk-locking pawls to retract the latter, whereby the stationary disk is automatically set to different positions, according to the direction of motion of the wheel, substantially as and for the purpose herein described.

3. In a paddle-wheel, the combination of radial axially-rotating spindles supporting the paddles, a cam on each of the said spindles, having two radial eccentric guide-pins, a stationary concentric disk mounted loosely on the paddle-wheel shaft and constructed with a circumferential groove receiving alternately each of said cam guide-pins, two radial trip-pins at opposite sides of the stationary disk, connected thereto, with different degrees of an angle, the edges of said circumferential disk-groove having passages for the cam guide-pins to and from it at points in fixed relation to said trip-pins, two gage-pins connected to the stationary disk in fixed relation to the trip-pins, two locking-pawls, each alternately engaging one of said disk gage-pins, an adjusting-pin connected to the stationary disk, a concentric series of tappets at one side of the wheel, mounted thereon, an adjusting-lever for engaging at one end with said disk-adjusting pins and at the other end with the concentric wheel-tappets, and a spur on said adjusting-lever for engaging with the disk-locking pawls to retract the latter, all substantially as and for the purpose herein described.

486,508. BOX-LID SUPPORT. SILAS H. RAYMOND, Grand Rapids, Mich., assignor to T. Stewart White and Thomas Priest, same place. Filed June 16, 1892. Serial No. 436,953. (No model.)

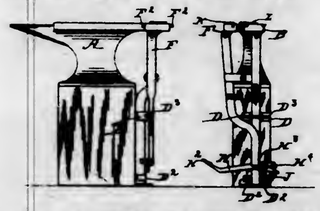
Claim.—1. A box-lid support consisting of a lever pivoted to the lid near the hinged side thereof and adapted to turn in the plane of the lid and project beyond the same and engage the side of the box below the hinge, substantially as described.

2. In combination with a box having a lid hinged to the same at one side, a lever pivoted to the same lid near the hinged side and swinging in the same plane and projecting beyond the said lid and engaging the side of the box, substantially as described.

3. In combination with a box having a lid hinged at one side, a lever consisting of a single piece of wire bent at right angles and passing through said lid near the hinged side thereof, substantially as described.

4. A box-lid support consisting of a continuous wire passing through said lid near the hinged side thereof and bent at right angles at opposite sides of said lid and having its outer end adapted to project beyond the said lid and engage the side of the box and to turn and rest upon the outer surface of said lid, substantially as described.

486,504. ANVIL ATTACHMENT. GEORGE W. REED, Des Moines, Iowa. Filed Feb. 1, 1892. Serial No. 419,975. (No model.)

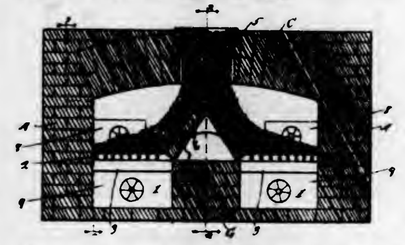


Claim.—1. An attachment for anvils, adapted to aid in forming calks on horseshoes, comprising a part resting on the floor-surface, detachably secured to the anvil-block and providing a continuity of surface with the top of the angular end of the anvil, a movable portion adapted to be operated by foot-pressure, pivoted to the side of the aforesaid portion, the meeting edges of the said parts adapted for grasping articles between them, a metal block having its top surface inclined at two different angles and adapted to be detachably and reversibly connected with one of the said parts, and a block having a flat end surface adapted to be detachably connected with the other part to provide a continuity of surface with its end which is in proximity to the aforesaid jaw, substantially as set forth.

2. An attachment for anvils, adapted to aid in forming calks and clips on horseshoes, comprising a stationary jaw having a base adapted to rest on the floor, an upright portion detachably connected with the supporting-block of the anvil and having a smooth top surface adapted to provide a continuity of surface with the top of the anvil, a movable jaw pivotally connected with the upright portion of the said fixed jaw, means for operating the said movable jaw by foot-pressure, an angular metal block having its top surface inclined or beveled upwardly from the sides, detachably fixed in the said movable jaw, a metal block having a smooth end surface adapted to provide a continuity of surface with the inner edge of the fixed jaw, detachably connected with the said fixed jaw, and an extension adapted to aid in forming clips on a horseshoe, having its upper edge sharpened and rounded, fixed to one corner of the said fixed jaw, to operate substantially in the manner set forth, for the purpose stated.

3. An attachment for anvils, comprising the fixed jaw B, provided with the openings B^2 and B^3 B^4, the clip-forming attachment C, fixed to one corner thereof, the lugs D D and D^2 D^3, fixed to the anvil-block, the key D^4, the movable jaw F, the set-screws F^2 F^3 in the sides thereof, the lever H, having the treadle H^3 and cam H^4, pivoted to a projection H, extending from the side of the upright portion of the part B, the coil-spring J, the block K, and the block L, all constructed and combined substantially in the manner set forth, for the purposes stated.

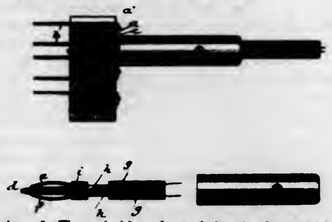
486,505. BOILER-FURNACE. CARL SCHROLL, Chicago, Ill. Filed Oct. 29, 1891. Serial No. 410,260. (No model.)



Claim.—1. A furnace having a plurality of grates, a distributing-ridge located between said grates and having two solid continuous inclined-plane faces that rise from the adjacent sides of said grates and meet about midway between said sides of the grate, and a fuel-hopper located above said distributing-ridge.

2. A furnace having an opening therein for the admission of fuel and a metallic lining for said opening, having its end adjacent the fire-grate notched, for the purpose set forth.

486,506. ELECTRIC SWITCHBOARD. CHARLES R. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Feb. 7, 1890. Serial No. 339,896. (No model.)



Claim.—1. The switchboard consisting in the combination of strips of insulating material provided with corresponding notches, metallic pieces being mounted in said notches and said strips being placed together to form rows of rectangular plug-holes, each having two metallic connections on opposite sides thereof, substantially as and for the purpose specified.

2. A loop-plug consisting of the central insulating-piece, two springs mounted on opposite sides thereof, being bow-shaped and insulated from one another, said springs being each connected with a different strand of a flexible cord, and a stop for limiting the distance to which said plug may be inserted in the plug-hole, the said central insulating-piece extending between the outer ends of said springs, substantially as and for the purpose specified.

3. A switchboard consisting in the combination of strips placed one above the other, each strip containing notches corresponding to notches in the strip contiguous thereto, the corresponding notches being provided with metallic pieces and each pair of notches forming a rectangular socket, substantially as and for the purpose specified.

4. A telephone-exchange switchboard provided with rectangular plug-holes, the contiguous sides thereof being unequal and two opposite sides thereof being provided with metal contact-faces, in combination with loop-connecting plugs having elastic spring-contact pieces or points, said elastic spring-contact pieces or points being bow-shaped and corresponding in shape to said plug-holes and adapted to be inserted therein only in one position to close the contact-pieces of the plugs to the metallic faces of the plug-holes, the pair of contact-pieces of each plug being maintained separated and insulated from one another, substantially as and for the purpose specified.

486,507. TEST SYSTEM FOR MULTIPLE SWITCHBOARDS. CHARLES R. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Feb. 11, 1892. Serial No. 421,174. (No model.)

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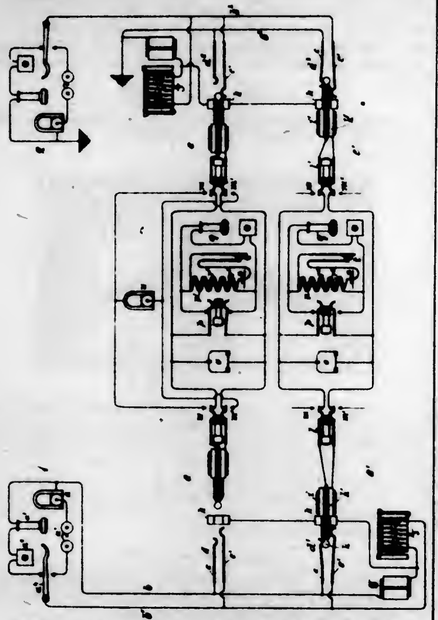
with a projecting pin, and a spring connected with the handle engaging with the pin and provided at the top with enlargements, which project laterally beyond the sides of the slot and rest inside the tube, the casing between the grate and division-plate directly under the other set of perforations in the latter, substantially as set forth.

2. In a furnace of the class described, an incinerating-grate sup-

486,507. TEST SYSTEM FOR MULTIPLE SWITCHBOARDS. CHARLES H. SWANSON, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Feb. 11, 1892. Serial No. 421,174. (No model.)



Claim.—1. In a testing system for multiple switchboards, the combination, with a device adapted to give a suitable response upon cessation of current through it, of a source of electricity in a parallel circuit therewith and contact-pieces constituting terminals of said parallel branch circuits, adapted to be applied to the contact-pieces of a spring-jack, whereby it may be determined whether the said contact-pieces of the spring-jack are short-circuited or not, substantially as described.

2. The combination, with a group of spring-jacks, each having two contact-pieces adapted to be crossed together by a connecting-plug placed therein, like contact-pieces of all the spring-jacks being connected together, of a testing-plug having two contact-pieces adapted to be applied to the two contact-pieces of a spring-jack, and a source of electric current and a responsive device adapted to give a response upon the cessation of current therethrough in parallel circuits between the two contact-pieces of the plug, substantially as described.

3. The combination, with spring-jacks, each having two contact-pieces adapted to be crossed together when connection is made thereto, like contacts of the different spring-jacks being connected together, of a testing-plug having contacts adapted to be applied to the contact-pieces of a spring-jack and a source of telephonic undulatory current, and a telephone-receiver in parallel circuits whose terminals are connected to the two contact-pieces of the testing-plug, respectively, substantially as described.

4. In combination with a telephone-line circuit extending from a sub-station to a central station and connected with spring-jacks at the central station, each having two line-springs and a test-ring, a connecting-plug adapted to be inserted into any spring-jack having two contact-pieces, one adapted to make contact with one of the line-springs and the other adapted to cross together the other line-spring and the test-ring of the jack, a testing-plug having two contact-pieces adapted to be applied to the test-ring and to that line-spring which is adapted to be crossed with the test-ring, respectively, and a source of telephonic undulatory current, and a telephone-receiver in parallel branches, whose terminals are connected to the two contact-pieces of the testing-plug, respectively, substantially as described.

486,508. SHEEP-RACK. JAMES H. SWANSON, Canton, Pa. Filed June 3, 1892. Serial No. 435,402. (No model.)

Claim.—1. A combined sheep rack and manger consisting of a base having hinged thereto the girders A A', upon which are mounted

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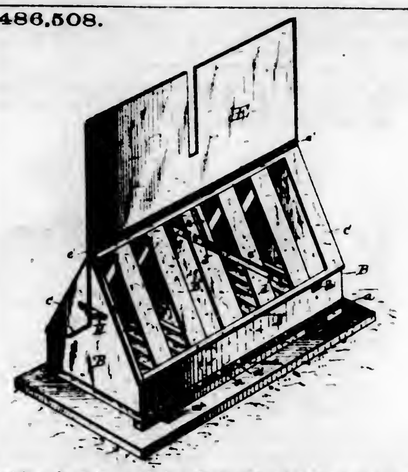
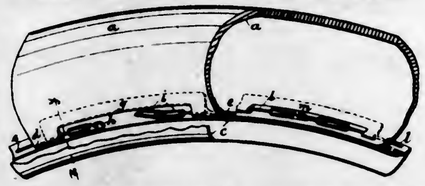


the triangular strips *a*, end pieces B, sides B', and hinged slatted frames C, substantially as and for the purpose set forth.

2. In a combined sheep rack and manger, the combination with the base having hinged thereto the girders A A', upon which are mounted the triangular strips *a*, the end pieces B, sides B', and the hinged slatted frames C, of the cover E, hinged to the upper ends of the end pieces B, the downwardly-depending spring-lever handles G, secured to cover E, and the knee H, secured to end piece B, with which said lever is adapted to engage, substantially as described.

486,509. INFLATABLE TIRE. EDWARD H. SIMPSON, Brooklands, England. Filed May 21, 1892. Serial No. 433,702. (No model.)



Claim.—1. The combination, with a longitudinally-divided envelope of an inflated tire for velocipedes and similar light road-carriages, of a bridge-piece *g*, inserted into the edge of said envelope, a wire inserted into a loop formed on said edge and passing through the pierced lugs of said bridge-piece, and a coupling device for said wire between the lugs of the bridge-piece.

2. The combination of a bridge-piece *g*, inserted into one edge of a tubular tire for wheels of velocipedes and similar road-carriages, divided longitudinally on one side of the vertical center line of the felly, a wire *e*, inserted into a loop formed on said edge and the pierced lugs g^2 g^3 of said bridge-piece, and a coupling device for the ends of the wire between said lugs, the other edge *b* of the tubular tire being slightly elastic and cemented to the felly of the wheel.

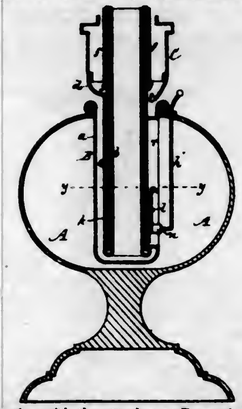
3. The combination of a bridge-piece *g*, inserted into one edge *d* of a tubular tire for wheels of velocipedes and similar road-carriages, divided longitudinally on one side of the vertical center line of the felly, a wire inserted into a loop formed on said edge and the pierced lugs g^2 g^3 of said bridge-piece, and a coupling device for the ends of the wire between said lugs, the other edge *b* of the tubular tire being slightly elastic and attached to the felly by a band passed around the same.

4. The combination of a tubular tire divided longitudinally, bridge-pieces *g m*, attached to the sides of said tire, wires *e l*, passing through loops formed on the said sides and through the pierced lugs of said bridge-pieces, and coupling devices for the ends of the wires between the lugs of the bridge-pieces.

486,510. LAMP. HENRY R. SHAFFER, Rochester, N. Y. Filed Dec. 28, 1891. Serial No. 415,945. (No model.)

Claim.—1. The combination, with the attachment B, provided with the vertical slot *r*, of the handle *h'*, seated in the lamp-body outside the attachment, the wick-band *k*, encircling the wick, provided

with a projecting pin, and a spring connected with the handle engaging with the pin and provided at the top with enlargements, which project laterally beyond the sides of the slot and rest inside the tabs, as shown and described, and for the purpose specified.



2. In combination with the attachment B, provided with a vertical slot *r*, a wick-band *k*, encircling the wick, a handle *h'*, seated in the body of the lamp and connecting with the wick-band, and a cup *d* on the attachment above the lamp provided with a passage *t* within the attachment, through which the wick-raising devices extend when raised, as herein shown and described.

486,511. VISE-STAND FOR SUSTAINING BICYCLES. BENJAMIN M. STRAHLE, Peoria, Ill., assignor of one-half to William H. Miller, same place. Filed Mar. 9, 1892. Serial No. 424,269. (No model.)

Claim.—1. A vise-stand for bicycles, comprising a body A, a rod B, adjustably sustained by said body A, and a head-block revolubly mounted upon the upper end of said rod B, said head-block having jaws adapted to clamp the bicycle-frame and arranged and located in such position on the revolvable head-block as to hold the bicycle-frame entirely at one side of the sustaining-rod, substantially as described.

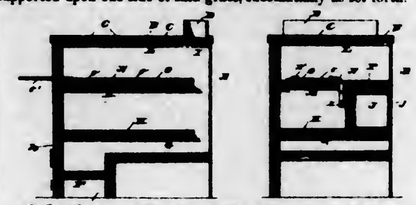
2. A vise-stand for bicycles or the like, comprising a body portion A, a sustaining-rod B, supported by said body portion, a head-block C, having a socket to receive the upper end of said sustaining-rod, whereby said head-block can be revolved, a fixed jaw C', formed in piece with said head-block, a movable jaw D, sustained by said head-block, and a screw-spindle E, passing through said fixed and movable jaws, substantially as described.

3. A vise-stand for bicycles or the like, comprising a body A, a sustaining-rod B, supported by said body, a head-block C, provided with a socket to receive the upper end of said sustaining-rod, whereby said head-block can be revolved, said head-block having cast in piece therewith a fixed jaw C' and a lateral extension C^2, and a movable jaw D, mounted upon the lateral extension of said head-block, and means for operating said jaws, substantially as described.

486,512. INCINERATING-FURNACE. OSCAR SEIVERS, Clear Lake, Iowa. Filed Mar. 19, 1892. Serial No. 425,510. (No model.)

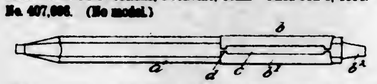
Claim.—1. In a furnace of the class described, the closed casing having a series of top receiving-openings, the fire-grate arranged in the front lower end of the casing, an incinerating-grate supported directly over the fire-grate and extending in rear thereof to form a bottom flue, a horizontal division-plate arranged parallel with the incinerating-grate and forming between itself and the top of the casing a foul-air chamber, said division-plate being provided with opposite sets of perforations, one set of which opens onto the grate, and an inclosed evaporating-pan arranged to slide within and at one side of the casing between the grate and division-plate directly under the other set of perforations in the latter, substantially as set forth.

2. In a furnace of the class described, an incinerating-grate supported within the furnace-casing over the fire-box, a longitudinal guide-strip above said grate to form a slide above and at one side of the same, and a sliding evaporating-pan working in said slide and supported upon one side of said grate, substantially as set forth.



3. In a furnace of the class described, the casing, an incinerating-grate, an evaporating-pan supported by said incinerating-grate, a division-plate located above said evaporating-pan and grate and provided with a series of perforations opening over the grate at one side of the pan and also directly into said pan, and guide-strips on each side of the perforations over the grate, and a perforated cut-off slide working in said guide-strip, substantially as set forth.

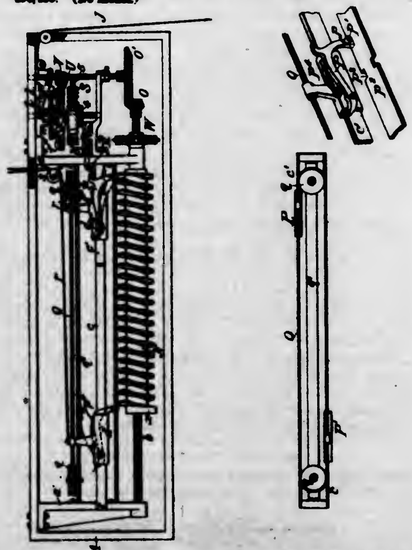
486,513. MARKING ATTACHMENT FOR CARPENTERS' PENCILS. ALBERT F. STERRY, Rockville, Conn. Filed Oct. 5, 1891. Serial No. 407,696. (No model.)



Claim.—1. In combination with a carpenter's pencil flat or oblong in cross-section, an adjustable sleeve conforming in shape to the shape of the pencil and provided with frictional clamping-arms, and a projecting flat blade having an angular marking-point, all substantially as described.

2. In combination with a carpenter's pencil flat or oblong in cross-section, an adjustable sleeve conforming in shape to the shape of the pencil and provided with frictional clamping-irons, a projecting flat blade having an angular marking-point, and the corrugations formed in the body of the sleeve, all substantially as described.

486,514. STREET OR STATION INDICATOR. WILLIAM A. TWINEM, San Francisco, Cal., assignor to the American Indicator Company, same place. Filed Dec. 16, 1889. Renewed Apr. 25, 1892. Serial No. 430,463. (No model.)



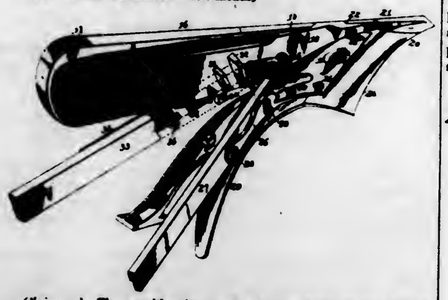
Claim.—1. A continuously-operated street or station indicator comprising an indicating device, mechanism driven continuously by

the motion of the car-axle for operating the same, a series of teeth included in said mechanism for causing said indicating device to operate at predetermined points throughout a trip, and means, substantially as described, for automatically returning said series of teeth to their original position at the end of each trip, substantially as and for the purposes set forth.

2. A continuously-operated street or station indicator comprising an indicating device, mechanism driven continuously by the motion of the car-axle for operating the same, a series of teeth spaced to cause said indicating device to operate at predetermined points throughout a trip, and a spring for returning said series of teeth to their original position at the end of a trip, substantially as set forth.

3. A continuously-operated street or station indicator comprising an indicating device, mechanism driven continuously by the motion of the car-axle for operating the same, a wheel having a series of teeth spaced to cause said indicating device to operate at predetermined points throughout a trip, a spring connected to said wheel and tending to reverse its movement, a ratchet and pawl for operating said wheel against the pressure of the spring, and a lever for disengaging said pawl and permitting said spring to return the wheel to its original position, substantially as set forth.

486,515. PLOW. CRAPEN WASHER, Vernon, Ind. Filed Apr. 28, 1892. Serial No. 431,008. (No model.)

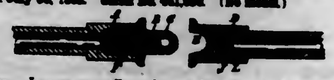


Claim.—1. The combination, with the standard having the integrally-formed foot at its lower end, the same consisting of the landside and mold-board portions, the former being provided with a short and a long inwardly-disposed lug and the latter provided near its rear end with a diverging flange having bolt-openings, of a pair of handles, similar interchangeable bolts passed through the openings of the flange and one of the handles, the remaining handle resting against the end of the short lug and the rear inner corner of the landside and abutting against the upper side of the long lug, and a bolt passed through said handle in rear of the lug and through the landside of the plow, substantially as specified.

2. The herein-described improved plow-foot, the same consisting of the vertical landside provided upon its exterior in rear of its point with a recess having a curved front end, a concentric bolt-opening, and at its rear end provided with a slot concentric with the bolt-opening, and further consisting of the opposite concaved landside, from the upper end of which extends a handle-receiving flange, the point of the foot being provided upon its exterior and landside with a share-receiving recess, and a transverse brace extending from the inner side of the landside to the corresponding side of the mold-board side, said brace, mold-board side, and landside being all cast integral, substantially as specified.

3. The combination, with the cast-metal standard terminating at its lower end in a foot comprising a landside and mold-board side, the former being recessed at its front end to receive a point or share and in rear of the same having a shallow recess to receive a supplemental landside, and the mold-board having its upper end extended and flanged to receive a handle, of a handle secured to the landside, a similar handle secured to the flanged mold-board extension, a supplemental landside adjustably mounted in the recess of the landside of the foot, and a share bolted in the recess of the landside at the front end thereof and overlapping and extending above the lower end of the mold-board side, substantially as specified.

486,516. CAR-COUPLING. JAMES S. WAGGONER, Columbus, Ind. Filed July 30, 1892. Serial No. 441,802. (No model.)

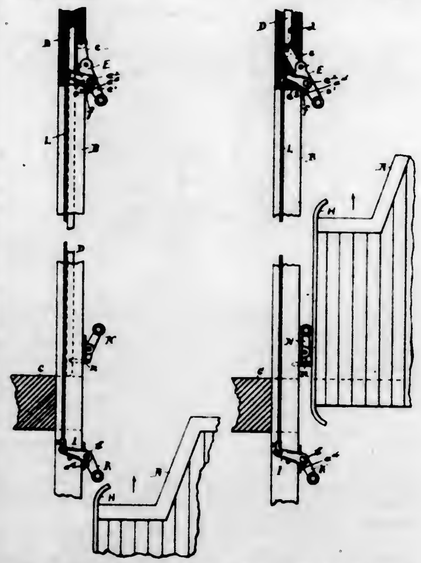


Claim.—In a car-coupling, the combination of the draw-bars A and D, provided, respectively, with a shelf B and corresponding recess E, a hook mounted so as to swing in a vertical plane in the throat of each draw-bar, and a link adapted to engage said hooks, all arranged to co-operate substantially as set forth.

486,517. FOLDING TABLE. WILLIAM H. WASHER, Grand Rapids, Mich. Filed May 29, 1891. Serial No. 394,563. (No model.)

Claim.—The folding table herein described, consisting of the divided top having divided pairs of strips B B, secured to the under side of the top, said strips being divided in a line with the division-line of the top, blocks B' B', secured to the under side of one portion of the top to pivot one pair of legs G' G', the opposite pair of legs G G being pivoted to strips B B, said pairs of legs being crossed and pivoted to a bar I, having braces H, the stops K K', grooved block F, and the pivoted bar D, adapted to engage said block and stops when required, substantially as specified.

486,518. SAFETY ATTACHMENT FOR ELEVATORS. WILLIAM J. WHITE, Cleveland, Ohio. Filed Oct. 21, 1891. Serial No. 409,362. (No model.)



Claim.—1. In elevators, the gate, means secured to the shaft or way for holding the gate in its open position and to be engaged by a part or shoe on the elevator-carriage, another device upon the shaft or way connected with said means for operating the same, and said part or shoe on the elevator-carriage adapted to engage said means and device, respectively, to release the gate upon the ascent or descent of the carriage, substantially as shown and described.

2. In elevators, the gate, a lever pivoted to the shaft or way and adapted to hold the gate in its open position, another lever also secured to the shaft or way, means connecting said levers, so that the operation of the last-mentioned will release the first-mentioned lever, and a part or shoe on the elevator-carriage adapted to engage the levers, respectively, to release the gate upon the ascent or descent of the carriage, substantially as shown and described.

3. In elevators, the gate, means secured to the shaft or way for holding the gate in its open position and adapted to be engaged by a part or shoe on the elevator, another device on the shaft or way connected with said means for operating the same, a latch for locking the gate in its closed position, and said part or shoe on the carriage adapted to release the latch and also to engage said means and device, respectively, to release the gate upon the ascent or descent of the carriage, substantially as shown and described.

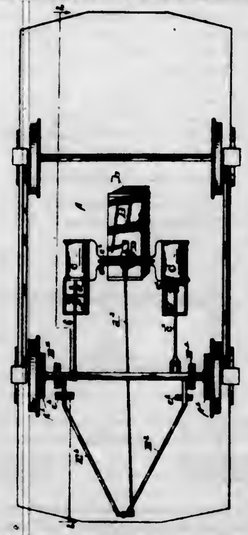
486,519. INHALER. WILLIAM C. WILSON, Kansas City, Mo., assignor of two-thirds to John R. Porter and William H. Rhiera, same place. Filed Dec. 16, 1891. Serial No. 415,261. (No model.)

Claim.—1. The combination of an outer cylinder closed at one of its ends, an inner cylinder extending the length of the outer cylinder, perforations through said inner cylinder, and an absorbent material surrounding a portion of said inner cylinder, substantially as described, and for the purpose set forth.

2. The combination of an outer cylinder closed at one of its ends, an inner perforated cylindrical shell within said outer cylinder, absorbent material wound around a portion of said inner cylinder, and a ring 5, secured to the inner cylindrical shell for preventing the endwise movement of said absorbent material, substantially as and for the purpose set forth.

3. In an inhaler, the combination of the outer cylinder 1, an inner cylinder, perforations in said inner cylinder, a top secured to the upper end of said inner cylinder for the purpose of closing the outer cylinder, said top consisting of the swaged stopper 7 and flange 8, a screw-top 9, and a screw-cap for closing said top, substantially as and for the purpose set forth.

486,520. CAR STARTER AND BRAKE. PAUL WUHLFING, Indianapolis, Ind. Filed Feb. 23, 1892. Serial No. 422,551. (No model.)



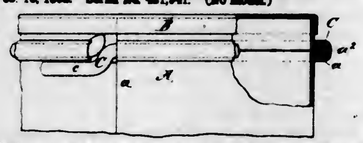
Claim.—1. In a car attachment for storing the power required to stop the same and utilizing it to start again, the combination of the chamber B, cylinders C, provided with the pistons C', the shifting-valve C^3, the ports 1 and 2, the pipes c^2 and c^4, leading, respectively, from said ports 1 and 2 to the valve D, said valve D divided by the horizontal partition d, having the pipes c^2 and c^4 connected with its lower side and a pipe d^3 connected with the chamber B, the crank-shaft E, mounted in adjustable bearings and provided with gear-wheels, the cranks of which shaft are connected by connecting-rods c' to the piston-rods of the piston C', said adjustable bearings hung upon the ends of the pivoted rods or levers E^3, the turning and vertically-adjustable post F', having the forward ends of said bars or levers E^3, secured to its lower end and formed with a crank near its lower end, from which a connecting-rod d^3 leads to the projecting end of the partition d of the valve D, and the operating-lever F for operating said post F', all substantially as set forth.

2. The combination, with a car A, of the storage-chamber B, the cylinders C, containing the pistons C', the valve D, the pipes c^2 and c^4, leading from the respective ports of said cylinders to said valve D, the shifting partitions d, the pipes d^3, running from said valve to the storage-chamber, the crank-shaft E, mounted in adjustable bearings hung upon the ends of the pivoted levers E^3 in suitable housings, said crank-shaft being provided with gear-wheels adapted to mesh with gear-wheels on the main axle, its crank being connected by connecting-rods to the piston-rods of the pistons C', an operating-lever, the post F', attached at its upper end to said lever and having the ends of the levers E^3 attached to its lower end, and a rod d^3, connected at one end to a crank formed near its lower end and to the sliding partition d' of the valve D at its other end, said several parts being arranged and operated substantially as shown and described.

3. In an apparatus for storing the power of the momentum of cars and utilizing the same to start the car, the combination of the operating shafts and levers, the pumping-cylinders, the connecting valves and pipes, and a storage-chamber having a follower therein which normally divides the main portion of said chamber from the end connected to the pumping mechanism, but which is adapted to be forced back when required, all substantially as set forth.

4. The combination, with a car, of an apparatus for storing the power of its momentum, whereby the car may be stopped, and again utilizing said power for starting the car, which consists in an air-storage chamber, an air-pump connected therewith, suitable valves for controlling the inflow and outflow of air, said air-pump being connected with an axle of the truck by which it is driven, and a shifting-valve interposed between said storage-chamber and said pump, whereby its operation may be reversed and the power thus utilized in both directions, substantially as set forth.

486,521. KEY-OPENING CAN. JOHN ZIMMERMAN, Chicago, Ill., assignor to the National Key-Opening Can Company, same place. Filed Feb. 18, 1892. Serial No. 421,941. (No model.)



Claim.—1. A can or other vessel constructed of a metal-coated sheet having a fold which embraces a ripping-wire, the metal of the fold being reduced in thickness externally to the wire and the reduced or partially-separated portion having the metal coating continuous with that of the other parts of the sheet.

2. The described blank-body for a coated sheet-metal can, consisting of a sheet folded about a wire which terminates inside one edge and projects beyond the opposite edge of said sheet, the metal being slitted in the line of the fold from the first-mentioned end thereof to the adjacent edge of the sheet.

3. A can-body having a ripping-wire embraced within an outwardly-projecting fold which extends around the can and at that edge of the sheet which forms the under lap of the side seam and terminates outside said seam.

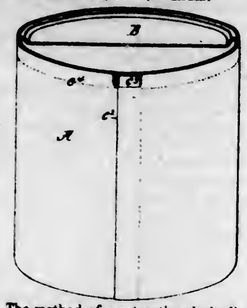
4. The can described, having a ripping-wire embraced in an outwardly-projecting fold which terminates externally to the lapped side seam, the metal of the fold having a line of less thickness than that outside said fold, such reduced portion being covered with a coating or coatings continuous with that of other portions of the sheet.

5. The method of constructing cans of tin-plate or similar coated sheet metal, which embraces the steps of reducing the thickness of the metal by pressure along a line of proposed separation, whereby the coating or coatings are unbroken, and forming a fold about a ripping-wire along the line of such reduced thickness.

6. The method of constructing the bodies of sheet-metal cans having a coating or coatings of tin or other metal, which embraces the steps of reducing the thickness of the sheet by pressure along the line of proposed separation, the forming of a groove having the thinned portion of metal in its wall, the placing of a ripping-wire in said groove, the compression of the walls of the groove about the

wire, and thereafter forming up the body of the vessel from the sheet so prepared.

486,522. KEY-OPENING CAN. JOHN ZIMMERMAN, Chicago, Ill., assignor to the National Key-Opening Can Company, same place. Filed May 3, 1892. Serial No. 431,727. (No model.)



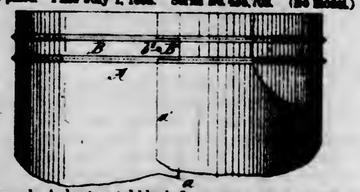
Claim.—1. The method of constructing the bodies of hermetically-sealed sheet-metal key-opening cans of the class having a free lip or tongue, which forms a prolongation of a detachable circumferential strip of the body-sheet, which method consists in slitting one side edge of the sheet to form the tongue, forming a weakened line parallel with the end of the sheet and continuous with the slit or with each slit, if more than one, placing the opposite side edge of the sheet in the slit beneath the tongue and over the remainder of the slitted edge, and finally passing a soldering-tool along the superposed edge and over the edge of the tongue, whereby the oppositely-overlapping surfaces are soldered in a straight line from end to end of the body, leaving the end of the tongue free.

2. A hermetically-sealed sheet-metal can having the body described, said body consisting of a sheet of single thickness throughout, which has as a part thereof a circumferential detachable strip, the extremity of which is a free tongue that is laterally disconnected from the body by a slit or slits in one margin of the sheet, the opposite margins of the sheet being beneath the tongue and elsewhere throughout superposed upon the slitted edge of the sheet to form a lapped side seam, and a straight continuous line of solder extending along the said superposed edge and beneath the base of the tongue.

3. A hermetically-sealed sheet-metal can comprising a body having a lapped and soldered side seam and a head soldered to the body, the body being constituted of a sheet of single thickness throughout, having a marginal detachable strip to which the head is soldered, and which has a free extremity separated laterally from the body-sheet by a slit substantially parallel with the head and overlapping the opposite edge of the sheet which the remainder of the slitted margin underlaps to form the side seam.

4. A blank for sheet-metal can bodies, having one or more weakened lines to afford a detachable strip at or parallel with the edge of the blank, the said strip having one of its extremities laterally disconnected from the blank by a slit or slits formed in continuation of the weakened line or lines to constitute a tongue, said tongue being offset, substantially as described, and for the purpose set forth.

486,523. KEY-OPENING SHEET-METAL CAN. JOHN ZIMMERMAN, Chicago, Ill., assignor to the National Key-Opening Can Company, same place. Filed July 1, 1892. Serial No. 438,762. (No model.)



Claim.—1. A sheet-metal blank for a can or other closed vessel, having a detachable strip terminating at one edge of the blank in a free tongue and provided with one or more apertures in said strip at or near the base of the tongue, substantially as and for the purpose set forth.

2. A sheet-metal can formed of a sheet which is lapped and soldered at its opposite margins, said sheet having a circumferential detachable strip terminating at one of the soldered margins in a free tongue, which is perforated at or near its base and has its perforation or perforations filled with solder.

486,524. DYNAMO-ELECTRIC MACHINE. GEORGE BAKER, Brooklyn, N. Y. Filed Dec. 16, 1891. Serial No. 415,462. (No model.)

Claim.—1. In a dynamo-electric machine, the combination, with a ring-armature, of a field-magnet on each side thereof, each magnet consisting of a vertical core wound with two coils, a space being left between them for the armature-shaft bearings, pole-pieces projecting from each end of the cores and surrounding the side and periphery of the armature, pole-pieces of like sign being opposite each other, and the coils of the respective magnets being in separate circuits, substantially as described.

2. The combination, with an armature, of a disk or spider supporting the same, plugs of metal being inserted in the disk or spider with their ends exposed on both faces of the disk or spider, one end serving as a contact-surface for the brushes and the other end having attached to it the ends of coils on the armature, substantially as described.

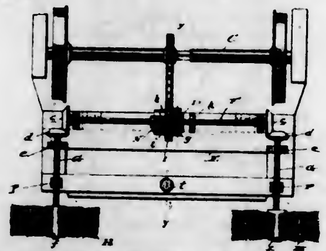
486,525. BURNER ATTACHMENT. THOMAS W. BARTHOLOMEW, Danville, Pa. Filed Dec. 26, 1891. Serial No. 416,235. (No model.)

Claim.—1. The herein-described lamp-burner attachment, consisting of a pair of divergent spring-arms connected by a coil, in combination with a pliable hanger adapted to pass through the lamp-burner tube and to bend over the top of the same, as specified.

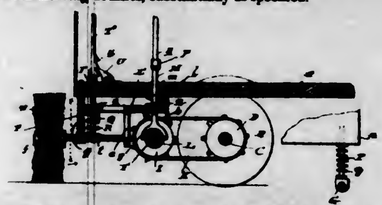
2. In the lamp-burner attachment, a pair of divergent spring-fingers, in combination with a pliable hanger adapted to pass through the burner, as set forth.

3. A lamp-burner attachment formed of a single coiled wire having divergent fingers, in combination with a hanger having a loop at its lower end linked to said coil and a pliable upper end adapted to bend over the top of the tube, as described.

486,526. TRACK-CLEANING MACHINE. ALPHEUS B. BEALL and PHILIP V. BAIL, Sioux City, Iowa. Filed May 19, 1892. Serial No. 433,637. (No model.)

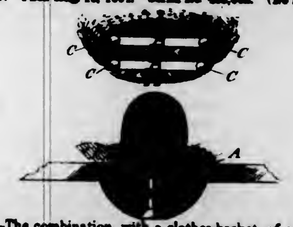


Claim.—1. The combination, with a car-body and the forward axle thereof, of a sprocket-wheel fixed to said axle, a frame hinged to the under side of the body in advance of the axle, a transverse shaft journaled in said frame and carrying beveled gears at opposite ends, a slidable sprocket-wheel arranged on this shaft and adapted to form a part of the clutch, a clutch-section fixed to said shaft, a lever for shifting the clutch in and out of engagement, and suitable means for raising and lowering the free end of the hinged frame carrying the track-clearing brushes, substantially as specified.



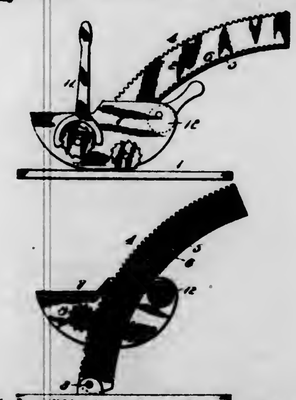
2. The combination, with a car and the forward axle thereof, of a transverse shaft journaled in advance of said axle and connected therewith by a chain belt so as to receive motion therefrom, said shaft also having beveled gears on opposite ends, a frame hinged beneath the forward portion of the car-body, rotatable brushes journaled in said frame and carrying gears to engage the gears on said transverse shaft, the spring interposed between the frame and car-body, the spring-surrounded rod connected to said frame, the ratchet-lever pivoted to the upper end of the rod, and the ratchet on the car-body for engaging said lever, all adapted to operate substantially as specified.

486,527. CLOTHES-BASKET PROTECTOR. LEHA BEARD, Flushing, N. Y. Filed Aug. 18, 1891. Serial No. 402,982. (No model.)



Claim.—The combination, with a clothes-basket, of a protector consisting of two bars B B, the projecting buttons C near the ends of each bar, and the thimbles D, covering the points of the screws passing through the buttons and bottom of the basket, substantially as described.

486,528. LIFTING-JACK. GEORGE H. BRYANT, Newton, and VICTOR BRADENBARB, Boston, Mass. Filed Apr. 21, 1892. Serial No. 430,100. (No model.)



Claim.—1. In a lifting-jack, the combination, with a pivoted standard, of a carriage adapted to travel thereon and rotating means for propelling the carriage along the standard, said means mounted on the carriage, substantially as and for the purpose specified.

2. In a lifting-jack, the combination, with a pivoted rack-standard, of a carriage adapted to travel thereon and a power-pinion journaled on the carriage and arranged to engage the rack of the pivoted standard, substantially as and for the purpose specified.

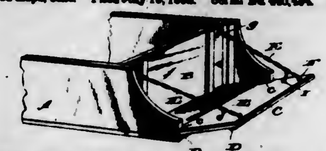
3. In a lifting-jack, the combination, with a pivoted rack-standard, of a carriage adapted to travel thereon, said carriage provided with a power-pinion and a binding-roller which engages the pivoted standard, substantially as and for the purpose specified.

4. In a lifting-jack, the combination, with a pivoted rack-standard, of a carriage adapted to travel thereon, a power-pinion for moving the carriage along the standard, and a drop-roller for causing the fall of the carriage, substantially as and for the purposes specified.

5. In a lifting-jack, the combination, with a pivoted standard having racks 4 and 6 and plain surface 5, of a carriage adapted to travel thereon and provided with pinions 8 and 10 and binding-roller 9, substantially as and for the purposes specified.

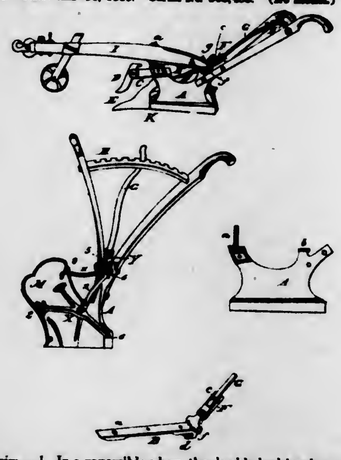
6. In a lifting-jack, the combination, with a pivoted, curved, or arc-shaped standard, of a carriage adapted to travel thereon and means for propelling the carriage along the curved standard, substantially as and for the purposes specified.

486,529. SCOOP-BOARD FOR WAGONS. FRASER M. GIBSON, Good Hope, Ohio. Filed July 18, 1892. Serial No. 440,484. (No model.)



Claim.—As an improved article of manufacture, a scoop-board for a wagon, provided with a beveled lower edge, cross-bars upon its outer face, and notches at the lower corners, chains connected to the board near its outer corners, and hooks connected with the said chains between their ends, substantially as and for the purposes specified.

486,530. REVERSIBLE PLOW. MYRON R. HUBBELL, Wolcott, Vt. Filed Mar. 30, 1892. Serial No. 427,463. (No model.)



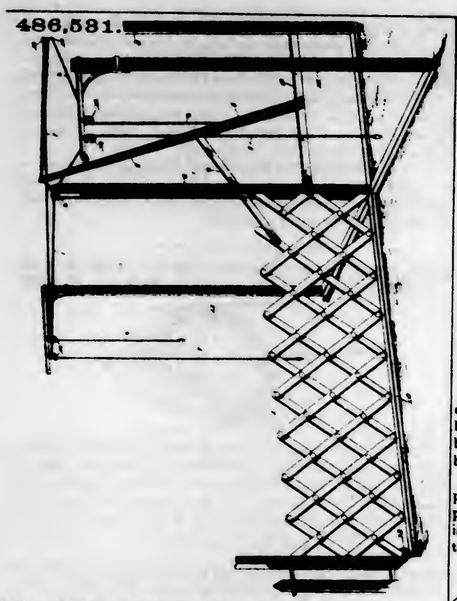
Claim.—1. In a reversible plow, the double locking-bar *z z*, swiveled to the standard A, in combination with the mold-board lugs 2 2, the spring Y, attached at one end to the standard A, the other end of the spring pivoted to the locking-bar *z z* in such a manner as to draw the outward end of the same upward into position, ready to engage with the lugs 2 2 of the mold-board M, substantially as described.

2. The combination, in a reversible plow, of the reversible mold-board, the double locking-bar *z*, swiveled at its upper end to the standard A and adapted to engage either with the mold-board or its brace, and the spring Y, attached as specified, substantially as set forth.

486,531. LAZY-TONG GATE. ANDREW J. JAMES and JOHN FERGUSON, Santa Cruz, Cal. Filed Aug. 10, 1892. Serial No. 442,606. (No model.)

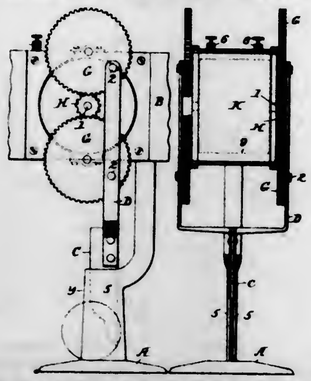
Claim.—The combination of a frame comprising the uprights 2 and 3, a horizontal bar connecting the uprights, a lazy-tong gate pivoted to the upright 2, a lever fulcrumed at its lower end on the horizontal bar, a bar 6, connecting the gate with the lever, supporting-posts arranged on opposite sides of the gate and having horizontal arms, pulleys arranged at the upper ends of the uprights 2 and 3, and the operating-ropes 7 and 8, having their inner ends secured to the upper ends of the lever and extending therefrom to the pulleys and passing around the same and extending to and depending from the

486,581.



horizontal arm, said operating-ropes being adapted to oscillate the lever, substantially as described.

486,582. CLOTH-CUTTING MACHINE. LARAB E. JONES, Chicago, Ill. Filed Jan. 2, 1892. Serial No. 416,859. (No model.)



Claim.—1. A machine for cutting fabrics, provided with a knife consisting of a flat blade secured in a holder at one end only, a movable frame, and means for imparting movements to said blade for carrying each portion of the cutting-edge in a circular path, substantially as set forth.

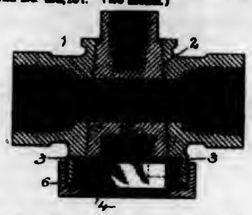
2. The combination, in a fabric-cutting machine, of a movable frame, a knife-carrier having bearings for two or more wrist-pins upon revolving disks, and a knife-blade projecting beyond the end of the carrier and having its cutting-edge inclined toward the lower end, substantially as described.

3. The combination, in a machine for cutting fabrics, of a movable frame, a knife, a knife bar or carrier to which one end only of the knife is secured, and two or more revolving disks, each provided with a wrist-pin extending into a bearing in the knife bar or carrier, substantially as and for the purpose described.

4. The combination, with the frame and the knife of a fabric-cutting machine, of a carrier in the form of a yoke, in which one end only of the knife is held, and shafts carrying disks which are upon opposite sides of the frame, each with a wrist-pin extending into a bearing of the yoke, substantially as described.

5. The combination, with the knife held in a carrier by one end only, of a fabric-cutting machine, means for imparting to the same a movement to carry each portion of the cutting-edge in a circular path, and a guard arranged with its edge *y* in position to prevent the contact of the cutting-edge of the knife with the fabric during the upward movement of the knife, substantially as and for the purpose set forth.

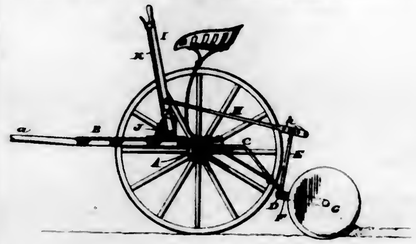
486,583. COCK. WALTER S. LOVELAND, Hartford, Conn., assignor to the Standard Manufacturing Company, same place. Filed May 7, 1892. Serial No. 432,157. (No model.)

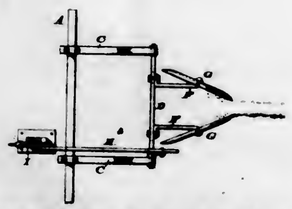


Claim.—1. A cock consisting of a body with a tapering-plug chamber, a plug held in said chamber, a bridge extending across the body with its ends in sockets in the walls, having a projecting hub bearing against the larger end of the plug, and a cap screwed on the body against the bridge, substantially as specified.

2. A cock consisting of a body with a tapering-plug chamber, a plug held in said chamber, a bridge projecting across the end of the plug, a cap on the body bearing against the bridge, and lugs projecting from the end of the plug and adapted to come into contact with the bridge, substantially as specified.

486,584. POTATO-COVERER. JOSEPH LUNDY, Rancocas, N. J. Filed May 26, 1891. Serial No. 394,091. (No model.)





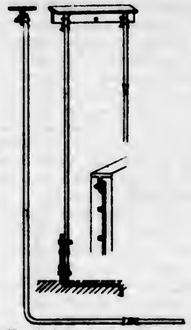
Claim.—1. In combination, the traveling support, the disk-arms, disks mounted on said arms, the rock-arm connected rigidly with the disk-arms, and means for positively throwing the rock-arm in either direction, substantially as set forth.

2. In combination, the traveling support, the rock-shaft, disk-arms mounted on said rock-shaft, disks mounted on said arms, a rock-arm connected to said shaft, and means for positively throwing said rock-arm in either direction, substantially as set forth.

3. In combination, the traveling support, the rock-shaft, the disk-provided arms mounted on said rock-shaft, a rock-arm connected to said shaft, the lever, and a rigid link the respective extremities of which are positively coupled to the rock-arm and the lever, respectively, substantially as set forth.

4. In combination, the traveling support, the rock-shaft, the disk-provided arms mounted on said rock-shaft, a rock-arm connected to said shaft, a lever, means for locking the lever in given positions of adjustment, and a rigid link the respective extremities of which are coupled positively to the rock-arm and lever, respectively, substantially as set forth.

486,585. CONSTRUCTION OF TANKS, RESERVOIRS, SILOS, &c. PIERRE A. J. MOUREN, Plaine St. Denis, France. Filed Oct. 31, 1891. Serial No. 410,516. (No model.) Patented in France Sept. 16, 1890, No. 208,260.



Claim.—1. In metallic skeleton frames for reservoirs, tanks, and analogous containing-vessels, the combination, with a metallic skeleton base embedded in cement or similar material, of metallic supporting-rods having their lower ends bent at right angles to the vertical portion and secured in said cement, metallic uprights secured to said supporting-rods, and metallic caps secured to said uprights, all said parts being secured together by wires, substantially as described, and for the purposes set forth.

2. In metallic skeleton frames for reservoirs, tanks, and analogous containing-vessels, the combination, with a metallic skeleton base embedded in cement, of supporting-rods having lower angular ends secured in said cement, metallic top and uprights supporting said top, and ferrules and wires adapted to secure said parts together, substantially as described, and for the purposes set forth.

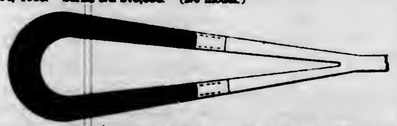
3. In metallic skeleton frames for reservoirs, tanks, and analogous containing-vessels, a binding device adapted to secure the end portions of the parts of said frame together, consisting of clamping-plates, rings or bands securing said plates together, and wires adapted to hold said parts in position, substantially as described, and for the purposes set forth.

486,586. COMBINED BUCKLE AND SNAP-HOOK. TRUMAN H. PAGE, La Crosse, Wis. Filed June 15, 1892. Serial No. 436,638. (No model.)

Claim.—1. The herein-described device, consisting of a snap-hook comprising two spring-arms and an integral loop, with eyes at the rear portion thereof, a tongue having a free loop, with which said eyes engage, a buckle-frame having eyes engaging said loop outside of the eyes of the snap-hook, and a loop having eyes engaging said loop of the tongue between the eyes of the snap-hook, substantially as described.

2. The herein-described snap-hook, made of a single piece of wire and comprising the spring-arms 2, having their front ends bent under and upward, as at 3 and 4, and at the other end formed into eyes 5 and doubled into a loop 6 to engage the bent ends 4, combined with an attaching-buckle secured to said snap-hook, as set forth.

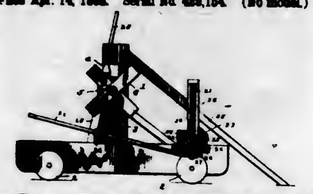
486,587. CRUPPER. HENRY H. PALMER, Rockford, Ill.; Samuel D. Palmer administrator of said Henry H. Palmer, deceased. Filed May 14, 1888. Serial No. 273,838. (No model.)



Claim.—1. The herein-described crupper, consisting of the outer casing made of leather, a metallic core of spring material inclosed within and conforming to the shape of said casing, the ends of the metallic core extending forward along that portion of the crupper which rests on the back of the horse, for the purpose set forth.

2. The herein-described crupper, consisting of the outer casing made of leather, a metallic core of spring material inclosed within the casing, its ends extending forwardly along that portion of the crupper which rests on the horse's back, and a packing inserted between the casing and the metallic core, substantially as set forth.

486,588. WIRE-REEL CARRIER. JACOB PELTENBAR, De Witt, Mo. Filed Apr. 14, 1892. Serial No. 429,154. (No model.)



Claim.—The combination of a frame having vertical standards rising from its sides and provided with a horizontal cross-bar 24, connecting the sides and arranged near the lower ends of the standards, the transverse ways arranged at the front of the frame and provided in their bottom with a longitudinal slot, a sliding wire-guide mounted for transverse movement in the ways and having a vertical wire-receiving opening, a longitudinally-disposed oscillating lever fulcrumed between its ends on the cross-bar 24 and having its front ends arranged beneath the ways and pivotally connected with said guide by a pin passing through the slot in the bottom of the ways, said lever extending to the rear of the frame, and a fixedly-supported spool-shaft journaled in the standards, substantially as described.

486,589. STOVE-KETTLE COVER. MARY I. REESE and ABRAM L. REESE, Chase, Kans. Filed June 20, 1891. Serial No. 397,002. (No model.)

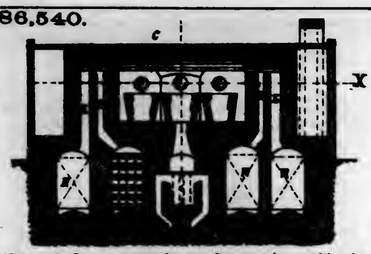
Claim.—1. The cover for kettles and other utensils, the same being provided with a spring-actuated clamp for engaging the mouth of the kettle, and at opposite sides thereof with depending projections for engaging the mouth of the kettle, one of said projections being adjustable, substantially as specified.

2. The kettle-cover having a keeper, an L-shaped clamp mounted for sliding in the keeper and terminating at its inner end in an eye, a hook mounted on the cover, a spring-coil the terminals of which engage the hook and the eye of the clamp, and projections depending from the cover at opposite sides of the clamp and adapted to engage the kettle, substantially as specified.

3. The kettle-cover having a radial slot and at opposite sides of the same provided with ways, a right-angularly-bent extension mounted for movement in the ways, an adjusting-screw mounted in the slot and passing through the extension, and kettle-embracing devices located upon the cover depending therefrom and located at opposite sides of the extension, one of said devices being spring-actuated, substantially as specified.

486,540. GAS-FURNACE. FRIEDRICH SIEMENS, Dresden, Germany. Filed Mar. 26, 1892. Serial No. 426,675. (No model.) Patented in England Dec. 6, 1889, No. 6,077; in France Dec. 21, 1889, No. 198,316; in Belgium Dec. 23, 1889, No. 92,686; in Germany Jan. 23, 1894, No. 81,113, and in Austria-Hungary June 26, 1894, No. 10,256 and No. 28,486.

486,540.



Claim.—1. In a regenerative gas-furnace, the combination, with a heating-chamber provided with a high crown, of gas and air flues in the walls of said chamber and ports for conveying the gas and air into the furnace and the products of combustion therefrom, said ports formed substantially as herein set forth and described and located in the upper portion of the walls of said chamber near to the crown, whereby the resultant flame delivered into the furnace-chamber may be freely developed therein and not impinge upon the inner surface thereof or on the materials on the bed or bench.

2. In a regenerative gas-furnace, the combination, with a heating-chamber provided with a high crown, of gas and air flues, mixing-chambers, to each of which a pair of gas and air flues are connected, and a port-opening for each of said mixing-chambers, said ports formed substantially as herein set forth and described and located in the upper portion of the walls of said chamber near to the crown, whereby the gas and air are mixed prior to their entrance into the chamber, the resultant flame freely developed therein and not impinging upon the inner surface thereof or on the materials on the bed or bench.

3. In a regenerative gas-furnace, the combination, with a heating-chamber provided with a high crown, of gas and air flues, said air-flues located nearer to the side walls and crown of said chamber than the gas-flues, and ports for separately conveying the gas and air into the furnace, said ports formed substantially as herein set forth and described and located one above the other in the upper portion of said chamber near to the crown, whereby by reason of the greater specific gravity of the air discharged above the gas the resultant flame will be permitted to freely develop within the chamber and not impinge upon the inner surface thereof or on the materials on the bed or bench.

4. In a regenerative gas-furnace, the combination, with a heating-chamber provided with a high crown, of two pairs of gas and air flues in the end wall of said chamber and ports for conveying the gas and air into the furnace and the products of combustion therefrom, said ports formed substantially as herein set forth and described and located in the upper portion of the end wall of said chamber near to the crown, whereby the resultant flame shall alternately horizontally enter the chamber from a pair of gas and air flues, be freely developed therein, sweep around the heating-chamber without touching the walls, roof, or materials therein, and leave the chamber by the other pair of flues, as described.

5. In a metallurgical furnace, the combination, with a heating-chamber provided with a high crown, of ports for conveying gaseous fuel into the furnace and the products of combustion therefrom, said ports formed substantially as herein set forth and described and located in the upper portions of the walls of said chamber near to the crown, whereby the resultant flame will be delivered into the furnace-chamber and freely developed therein without being brought in contact with the inner surface of the furnace-chamber or material on the bed or bench thereof.

486,541. GUARD-RAIL. FREDERICK W. BARRETT, Springfield, Ohio. Filed Jan. 30, 1892. Serial No. 419,737. (No model.)

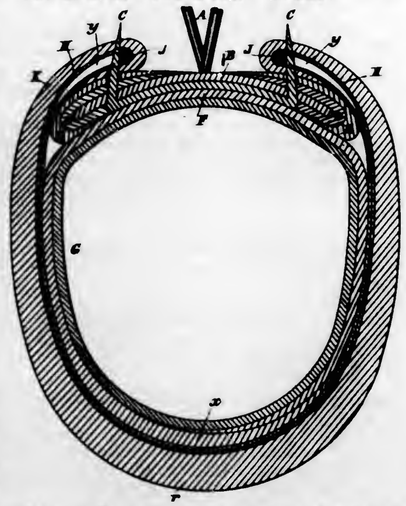
Claim.—1. The combination, with a guard-rail and tubular supporting-posts therefor, of a tubular arm pivotally supported near one end of said rail and adapted to swing in one direction but stopped in its movement in a reverse direction, and a spring-rod mounted within said post, one end being bent outward within said arm and the other end bent outward to engage it with the base of said post, substantially as described, and for the purpose set forth.

2. The combination, with a guard-rail, supporting-post, and couplings between said posts and rail, of a bracket rotatably mounted over one of said couplings and having a turned-down stop portion *g*, adapted to engage with the rail, and an arm F, mounted in said bracket opposite said stop portion, substantially as shown and described.

3. The combination, with an adjustable guard-rail, supporting-posts therefor, and couplings between said rail and posts, of rotatable brackets mounted near each end of said rail, each consisting of a reduced neck portion rotatably mounted in the coupling and having a curved-down portion bent sidewise out of the plane of the arm and post, substantially as shown and described, and a spring to effect the normal engagement of said curved-down portion of each bracket with the adjacent portion of the guard-rail.

4. The combination, with an extensible guard-rail formed in two parts, the one adjustable within the other, and tubular supporting standards or posts for each member or part, of a bracket-piece G at each end of the guard having a reduced portion rotatably mounted in the supporting-post, and a curved-down sidewise-bent stop portion *g*, adapted to engage with the rail, a tubular arm mounted in each bracket-piece opposite said stop portion, and a spring-rod extending through each tubular post and bracket-piece and bent laterally to engage with said arm and the base of said post, respectively, whereby the automatic return of the arm and the contact of the stop are effected.

486,542. ELASTIC TIRE. PRESTON DAVIES, London, England. Filed Mar. 25, 1892. Serial No. 426,396. (No model.)



Claim.—1. The combination, in a wheel-tire, of an inflated tube G with a protective wrapping F, secured to the rim B, and an outer removable combined covering or jacket built up of spiral windings of tape, webbing, ribbon, or other suitable material H on its inner side and india-rubber K on its outer side, held in position on the under side of the rim of the wheel by wires J and hooks C, all substantially as set forth.

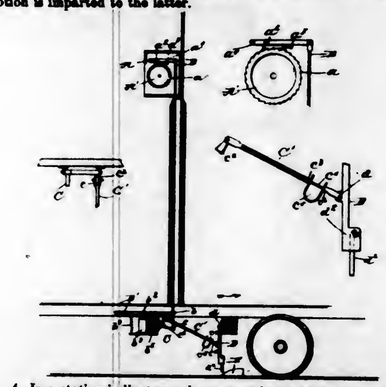
2. The combination, with a wheel-rim B, provided with coverings of leather D, india-rubber E, and jacket H, of hooks C, each formed in one piece, passing through the rim, but not otherwise secured thereto, and also passing through the coverings of leather and india-rubber and serving to secure the jacket to the rim, substantially as set forth.

486,543. AUTOMATIC STATION-INDICATOR. WILLIAM S. DILLON, Portland, Oreg., assignor to the North Pacific Indicator Company, same place. Filed Sept. 14, 1891. Serial No. 405,605. (No model.)

Claim.—1. In a station-indicator, a box or casing containing a suitable card-displaying device, a rod for operating the same on its downward movement, automatically-actuated mechanism for elevating the rod, a yielding check for controlling its downward movement, a hanger carrying a drag-catch adapted to engage a bumper on the road-bed, and a yielding push-bar connecting with the hanger and by interposed mechanism with the said rod, whereby motion is imparted to the latter.

2. In a station-indicator, a box or casing containing a suitable card-displaying device, a rod for operating the same, a hanger carrying a drag-catch designed to engage a bumper on the road-bed, and a yielding push-bar connecting with the hanger and by interposed mechanism with the said rod, whereby motion is imparted to the latter.

3. In a station-indicator, a box or casing containing a suitable card-displaying device, a rod for operating the same on its downward movement, a hanger carrying a drag-catch designed to engage a bumper on the road-bed, and a telescopic push-bar connecting with the hanger and by interposed mechanism with the said rod, whereby motion is imparted to the latter.

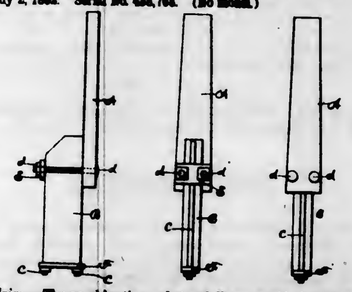


4. In a station-indicator, a box or casing containing a suitable card-displaying device, a rod for operating the same, a hanger carrying a drag-catch designed to engage a bumper on the road-bed, a yielding push-bar connecting with the hanger and by interposed mechanism with the said rod to elevate the same, and a yielding check for controlling the downward movement of the rod.

5. In a station-indicator, a box or casing containing a suitable card-displaying device, a pivoted hanger located beneath the car and carrying a drag-catch, a bell-crank lever, a rod, one end of which operates the said device and the other end engages the said lever, and a yielding push-bar connecting the hanger and the bell-crank lever.

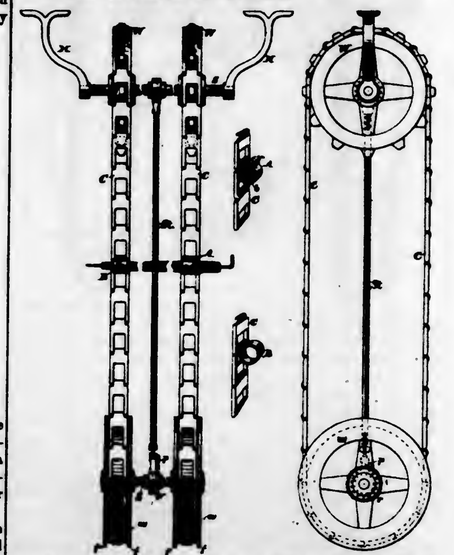
6. In a station-indicator, a box or casing containing a suitable card-displaying device, a rod for operating said device by its downward movement, mechanism for elevating the rod automatically, and a yielding check for controlling the downward movement of the rod, said check comprising a lever pivoted to the rod, a cylinder, a piston-rod connecting with the lever, and a spring, also connecting with the lever and exerting power in the direction opposite that exerted by the elevating mechanism.

486,544. FENCE-POST. VALENTINE FIELDING, Tipton, Ind. Filed July 2, 1892. Serial No. 438,768. (No model.)



Claim.—The combination, substantially as specified, with the base or part B, molded from the composition described, having a groove in front, top, and back thereof, into which is fitted the bent iron rod C, provided with threaded ends projecting below the base of part B, of the iron or metal plate F, provided with a hole in each end, said holes being parallel, through which pass the threaded ends of the bent iron rod C, provided with nuts or taps, by means of which the iron rod C and metal plate F are firmly secured in their respective places, the part A, provided with two parallel holes near the bottom thereof, through which pass on each side of part B the iron bolts or iron rods *d d*, provided with threaded ends projecting beyond the back part of part B, the cross-piece E, provided with a hole in each end, through which pass the threaded ends of the bolts *d d*, provided with taps or nuts, by means of which the cross-piece E is held in place and parts A and B firmly and immovably united, all arranged and operated as and for the purpose set forth.

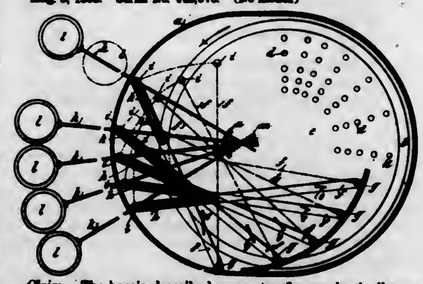
486,545. REVOLVING EXHIBITOR FOR THE DISPLAY OF GOODS. DAVY GRIMM and ROBERT M. HERRON, Dalton, Ga. Filed June 27, 1892. Serial No. 438,288. (No model.)



Claim.—1. The combination, in a revolving exhibitor for the display of goods, of two parallel shafts, one mounted with two sprocket-wheels and the other having two flanged wheels, the upper shaft fastened to a ceiling, side wall, or frame and the lower shaft hanging loose, supported and operated by two parallel endless link-chains, in the apertures of which the sprockets work, in conjunction with an adjustable stretcher, and the springs A and rings B, the ratchet *r*, and pawl *p*, substantially as set forth, and for the purposes specified.

2. In a revolving exhibitor, the combination of two flanged or grooved rollers, one fastened to a ceiling, side wall, or frame and the other hanging loose, supported and operated by two parallel belts, in conjunction with an adjustable stretcher, a ratchet and pawl, and devices for attaching goods to said belts, all substantially as set forth, and for the purposes specified.

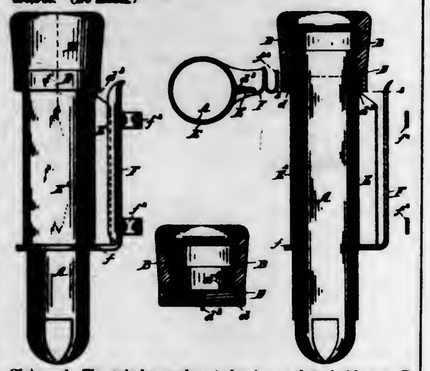
486,546. FINGER-EXERCISING DEVICE. THÉOLINE C. GUILLARD and VICTOR R. CATHERINET, Saint-Mandé, near Paris, France. Filed Aug. 3, 1892. Serial No. 442,070. (No model.)



Claim.—The herein-described apparatus for mechanically exercising and rendering supple the finger-joints, consisting in the combination of the sliding rods *k*, carrying finger-rings *l*, with levers *f*, provided with tappets *e* and with a pin-disk rotated by a motor *b* and provided with pins *d*, acting on said tappets and arranged in any desired order so as to impart to and fro movements to the levers and

finger-ring rods alternately or simultaneously, substantially as and for the purpose specified.

486,547. COMBINED WHIP-SOCKET AND REIN-HOLDER. WILLIAM H. HARNY, Elmwood Place, Ohio. Filed July 6, 1892. Serial No. 439,246. (No model.)



Claim.—1. The tubular socket A, having a detachable cap B, fitted over the top of said socket, and a support, as F, rigidly connected thereto, in combination with a clamp E, revolubly connected to said socket, and a coiled spring located within the lower portion of said cap and around the outer top portion of the socket, the end portions of said spring being connected to said cap and clamp, respectively, and suitable means for attaching the support to a vehicle, substantially as set forth.

2. The tubular socket A, cap B, and ring D, fitted over the top of said socket, with a coiled spring within said ring, support F, rigidly connected to said socket, in combination with clamp E, having a tubular portion E^3, engaging a portion of the socket, the free ends of said spring being connected to said cap and clamp, substantially as specified.

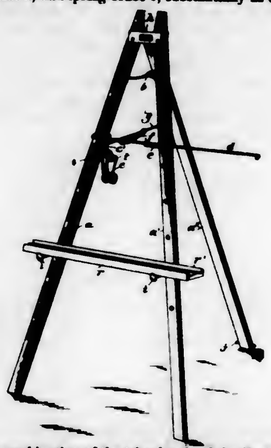
3. The tubular portion A, having a vertical support F, connected thereto, cap B and ring D, fitted over the top of said tubular portion, said ring having an inwardly-projecting flange d around a portion of its lower face, and a coiled spring within said ring, in combination with a clamp revolubly connected to said tubular portion, the ends of said spring being connected to said cap and clamp, respectively, and suitable means for connecting said support to the vehicle.

486,548. SODA-WATER APPARATUS. JONATHAN RAMSEY and RUSWELL CARLETON, Boston, Mass. Filed Sept. 18, 1891. Serial No. 405,966. (No model.)

Claim.—In a soda-water apparatus, the combination of an ice-box constructed with double walls at its sides and bottom and having a non-conducting filling between said walls, said ice-box being provided with a lid at its top, a casing surrounding said ice-box, an air-chamber between said ice-box and said casing, a cover for said air-chamber provided with air-openings, and a fan disposed within said air-chamber for causing a circulation of air through said chamber, substantially as set forth.

486,549. BASIN. ADOLPH G. TRUMMER, St. Paul, Minn., assignor of one-half to Joseph W. Skinner, La Crosse, Wis. Filed Feb. 20, 1892. Serial No. 422,910. (No model.)

Claim.—1. An easel consisting of the legs a a' a^2, head-piece h, and brace b, the legs a a' being provided with holes and fitted with pins i i, in combination with a board r, provided with a groove r', one side of which is inclined and the other vertical, substantially as described.



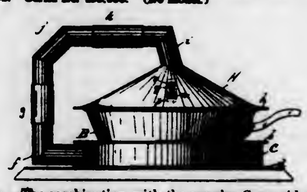
2. In an easel, a tripod consisting of the parts a a' a^2, connecting head-piece h, and spring-brace b, substantially as described.

3. The combination of the tripod and rod d, adjustably connected thereto, with the clasp c and rod g, the rod g being adjustably connected to the rod d and to the clasp, substantially as described.

4. The combination of the rod d with the adjustable attaching device e, consisting of a wire bent so as to form two eyes and a spring by which it is secured to said rod, substantially as described.

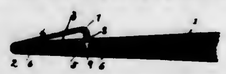
5. The combination of the rod d with the clamping device e, provided with the arm e', the device being adjustably connected to the rod, adapting it to adjustment upon the easel, substantially as described.

486,550. ODOR-REMOVING DEVICE FOR COOKING-STOVES. CHARLES T. TOLMAN and POWHATTAN RUFFIN, Boston, Mass. Filed June 6, 1892. Serial No. 436,036. (No model.)



Claim.—The combination, with the annulus C, provided with the horizontal flanges b c, of the tube f, opening horizontally through a wall thereof, the cover H, provided with the draft-opening and damper, the tube i, opening through the apex of said cover, and the elbow-tube j, detachably connecting the tubes f i, all being arranged to operate substantially as described.

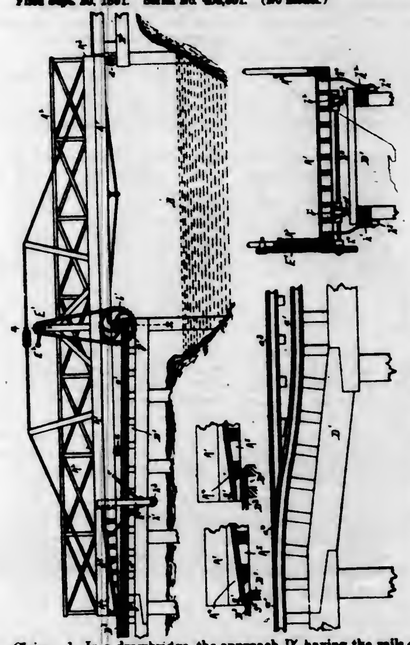
486,551. WHIFFLETREE-HOOK. WILLIAM C. WENTWORTH, Dexter, Me. Filed Sept. 9, 1891. Serial No. 405,312. (No model.)



Claim.—A whiffletree provided at one end with a groove extending inward from the central portion thereof on the upper and lower sides of the same and the upper part of said groove having an opening at the termination thereof that extends through the whiffletree, in combination with a spring attachment for retaining a trace on a whiffletree, consisting of an upper spring having an inner angularly-bent end formed into a rounded lug adapted to be pressed through the opening at the termination of the upper groove of the whiffletree and bent at its outer end and continued in a lower arm of greater length than the spring portion that covers the lower part of the opening through the whiffletree and also extends beyond the said opening to provide an under wearing-surface, said lower arm being rigidly secured against movement to the under side of the whiffletree and embedded in the lower groove to form a flush joint and also forming

a limitation for the downward depression of the spring by having the lug of the latter contact therewith, substantially as described.

486,552. DRAWBRIDGE. CHARLES A. SCHERMERHORN, St. Paul, Minn. Filed Sept. 26, 1891. Serial No. 406,801. (No model.)

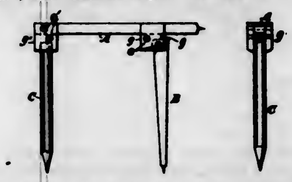


Claim.—1. In a drawbridge, the approach D', having the rails a' a^2 set at an incline, the bridge mounted upon said rails by traction-wheels, and means for actuating said traction-wheels to open and close said bridge, substantially as and for the purpose set forth.

2. In a drawbridge, the approach D', having the rails a' a^2 set at an incline, the bridge mounted upon said rails by traction-wheels, and with its shore end formed with an incline d, substantially corresponding with the surface of the approach, and with the lowermost edge of said incline overlapping the outermost edge of said approach, and means whereby said traction-wheels may be actuated, substantially as and for the purpose set forth.

3. In a drawbridge, the approach D', having the rails a' a^2, the bridge mounted upon said rails by traction-wheels and supported wholly thereby, and means for actuating said traction-wheels and safety-guards h' h^2 h^3 h^4, substantially as and for the purpose set forth.

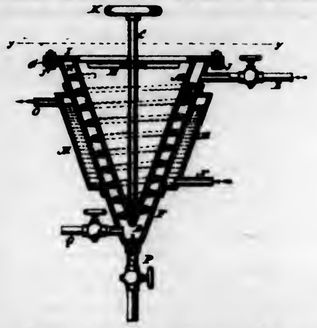
486,553. BRAN-COMPASS. JAMES R. BEVIS, Washington, Ohio. Filed Mar. 7, 1891. Serial No. 384,067. (No model.)



Claim.—1. In a compass, the combination, with a stem, of two pairs of clamping-jaws, a pencil grasped by one pair of said jaws, which are pivotally connected with said stem, said pencil being removably secured by said jaws, and a pointed leg pivotally connected with the other pair of jaws, which grasp said stem and are adjustable thereon, substantially as set forth and described.

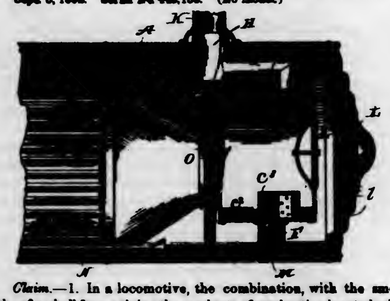
2. In a compass, a stem A, in combination with a pair of clamping-jaws g, secured by screws c, a pointed leg B, pivotally connected with jaws g, a pair of clamping-jaws g', secured and pivotally connected with said stem by screws c', and a pencil removably secured in jaws g', substantially as and for the purposes described.

486,554. CONDENSER. HENRY S. BLACKMER, Mount Vernon, N. Y. Filed Aug. 13, 1891. Serial No. 402,830. (No model.)



Claim.—In a condenser, the combination of the inverted conical outer vessel F, having an inlet-pipe Q and a discharge-pipe P at its lower end portion and an inlet-pipe L at its upper end portion, the inverted conical inner vessel A, having its exterior provided with the spiral flange B, which gradually diminishes from the large to the small end of the inner vessel and has its outer edge in juxtaposition to the inner surface of the outer vessel, means for rotating the inner vessel, with its diminishing-spiral flange, to force the condensed material toward the discharge-pipe of the outer vessel, the movable cover I, and the water-jacket M, surrounding the outer vessel and provided with a lower inlet-pipe N and an upper outlet-pipe O, substantially as described.

486,555. LOCOMOTIVE. PATRICK BROWN, Buffalo, N. Y. Filed Sept. 5, 1892. Serial No. 445,183. (No model.)



Claim.—1. In a locomotive, the combination, with the smoke-arch, of a shell for receiving the products of combustion located within said arch, an annular smoke-passage adjacent to said shell and communicating with the smoke-stack, a connection between said shell and said annular passage, and a perforated screen interposed between said shell and said annular passage, substantially as described.

2. In a locomotive, the combination, with the smoke-arch, of a shell for receiving the products of combustion located within the same, an annular smoke-passage adjacent to said shell and communicating with the smoke-stack, a direct connection between the shell and smoke-stack provided with a screen, and a connection between said shell and said annular passage having a screen interposed therein, substantially as described.

3. In a locomotive, the combination, with the smoke-arch, of a shell for receiving the products of combustion located within the same, an annular smoke-passage adjacent to said shell and communicating with the smoke-stack, smoke-retarding deflectors located in said passage, and a connection between said shell and said annular passage, substantially as described.

4. In a locomotive, the combination, with the smoke-arch, of a shell for receiving the products of combustion located within said arch, the annular smoke-passage provided interiorly with smoke-deflectors and communicating with the smoke-stack, a direct connection between said shell and the smoke-stack, a screen for said connection, a connection between the said shell and said annular passage, and a screen for said connection, substantially as described.

5. In a locomotive, the combination, with the smoke-arch, of a shell for receiving the products of combustion, located within the same and forming an air-space between the two, an annular smoke-passage adjacent to said shell having its exterior walls in contact with the air in said air-space, a connection between said shell and said annular pas-

sage and a connection between said passage and the smoke-stack, air-inlets for admitting air to said air-space, and pipes for conducting the air from said air-space to the fire-box, substantially as described.

486,556. PNEUMATIC-TIRED WHEEL. GEORGE A. BURWELL, Toledo, Ohio. Filed May 2, 1892. Serial No. 431,537. (No model.)

Claim.—1. The combination of the wheel-rim connected with the wheel-spokes and the clamping-rim external thereto, the periphery of which is longitudinally extensible, with the air-tube having a portion of its surface supported directly against said clamping-rim and the substantially non-extensible covering-strip inclosing the outer portion of the said air-tube and having its edges interposed between the edges of the wheel-rim and the clamping-rim, as described, said clamping-rim being contracted solely by the pressure of the air-tube against it, and thereby caused to grip the edges of the covering-strip between the edges of the clamping-rim and wheel-rim, substantially as described.

2. The combination of the wheel-rim connected with the wheel-spokes and provided with an outwardly-turned lip or bead around its edges and the longitudinally-extensible clamping-rim having lips or beads around its edges, turned toward those of the wheel-rim, with the air-tube seated in said outer rim and the covering-strip surrounding the outer part of the air-tube and having its edges provided with enlargements introduced between the beaded edges of the wheel-rim and the clamping-rim, which is contracted solely by the pressure of the air in the air-tube, substantially as described.

3. The combination of the wheel-rim connected with the spokes and the clamping-rim surrounding said wheel-rim and disconnected therefrom and having its ends overlapped and capable of movement with relation to one another with the air-tube seated in said clamping-rim and the covering-strip, said air-tube being provided with an inflating-passage and the said clamping-rim being provided with a bushing inclosing said inflating-passage and extending through an opening in the wheel-rim, substantially as described.

4. The combination of the wheel-rim connected with the wheel-spokes and the clamping-rim surrounding said wheel-rim but disconnected therefrom and having its ends overlapped and capable of movement with relation to one another with a fastening-bolt connected with one end of said rim and working in a slot in the other end thereof, said wheel-rim being provided with an opening and a movable cover therefor adjacent to said fastening-bolt, substantially as described.

5. The combination of the wheel-rim connected with the wheel-spokes and the clamping-rim surrounding the said wheel-rim but disconnected therefrom and having its ends overlapped and capable of movement with relation to one another with the air-tube seated in said clamping-rim and the covering-strip, said air-tube being provided with an inflating-passage and the said clamping-rim being provided with a bushing inclosing said inflating-passage and extending through an opening in the wheel-rim, and a fastening-bolt connected with one end of said rim and working in a slot in the other end thereof, said wheel-rim being provided with an opening and a movable cover therefor adjacent to the said fastening-bolt, substantially as described.

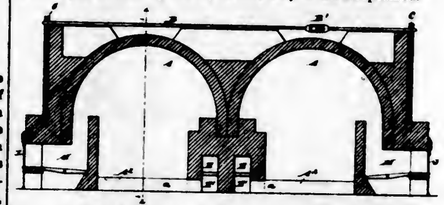
6. The combination of the wheel-rim connected with the wheel-spokes and the clamping-rim surrounding the said wheel-rim and disconnected therefrom and having its ends overlapped and capable of movement with relation to one another with the air-tube and covering-strip co-operating with said clamping-rim, as described, one end of said clamping-rim being provided with a projecting tongue of less width than the rim and the other end with a loop or strap to receive said tongue, substantially as and for the purpose described.

486,557. BRICK-KILN. CHARLES B. COKE, Brooklyn, N. Y., assignor to Edward B. Esterbrook, same place. Filed Mar. 16, 1892. Serial No. 425,079. (No model.)

Claim.—1. In a kiln for burning bricks and the like, having provisions for downdraft, the floor A', the base A^3 thereunder, having parallel channels *c* of graduated depths, the flue E of corresponding-graduated size extending across the rear and communicating both with the series of channels *c* and with two stacks F F, one at each end of the flue, all arranged to serve substantially as herein specified.

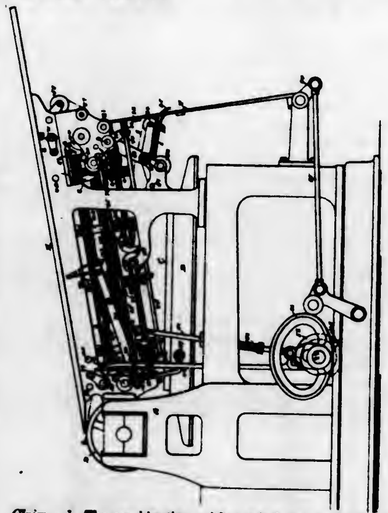
2. In a kiln for burning bricks and the like, having provisions for downdraft, the floor A', the base A^3 thereunder, having parallel channels *c* of graduated depths, the flue E of corresponding-graduated size extending across the rear and communicating both with the series of channels *c* and with two stacks F F, one at each end of the flue, two kilns and four dampers being combined, so that the same stacks may serve for both, all substantially as herein specified.

3. In a kiln for burning bricks and the like, having provisions for downdraft, the curved side walls A^2, the semicylindrical arch A, narrower than the space between the side walls, and the loosely-mounted layer of bricks D, overlapping the sides of said arch and capable of yielding to allow for difference of expansion by heat, in combination with each other and with the base A^3, channeled deeper in the center than near each side, delivering into a flue E, correspondingly varied in size, and with the stacks F and dampers H, as shown, all arranged for joint operation, substantially as herein specified.



4. In a kiln for burning bricks and the like, having provisions for downdraft, the floor A', the base A^3 thereunder, having parallel channels *c* of graduated depths, the flue E of corresponding-graduated size extending across the rear and communicating both with the series of channels *c* and with two stacks F F, one at each end of the flue, and the loosely-fitted doors J, admitting air in thin streams, and provisions for maintaining a close joint between the arch and the side walls, all arranged for joint operation, substantially as herein specified.

486,558. COMBINED PRINTING-PRESS AND FOLDING MECHANISM. LOTHER C. CROWELL, Brooklyn, assignor, by direct and mesne assignments, to Robert Hoe, Stephen D. Tucker, Theodore H. Mead, and Charles W. Carpenter, New York, N. Y. Filed July 6, 1892. Serial No. 307,908. (No model.)



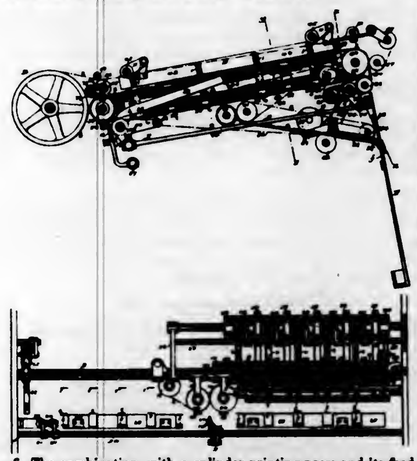
Claim.—1. The combination, with a printing-press having a reciprocating type-bed coacting with an impression-cylinder, of mechanism for conveying the sheets from the cylinder and a folding mechanism located adjacent to the cylinder and above the path of the bed and arranged to fold the sheets from said conveying mechanism, substantially as described.

2. The combination, with a printing-press having a reciprocating type-bed coacting with an impression-cylinder, of a folding mechanism located adjacent to the cylinder and above the path of the bed and constructed to be rendered inoperative and means for delivering the sheets unfolded, substantially as described.

3. The combination, with a printing-press having a reciprocating type-bed coacting with an impression-cylinder, of a fly located at the end of the press and a folding mechanism located adjacent to the cylinder and above the path of the bed and arranged to deliver the folded sheets to the fly, substantially as described.

4. The combination, with a printing-press having a reciprocating type-bed coacting with an impression-cylinder, of a fly, tapes for conveying sheets from the cylinder to the fly in an unfolded condition, and a folding mechanism constructed to be rendered inoperative and arranged to fold the sheets from said tapes, substantially as described.

5. The combination, with a printing-press having a reciprocating type-bed coacting with an impression-cylinder, of a fly, tapes for conveying sheets from the cylinder to the fly in an unfolded condition, and a folding mechanism constructed to be rendered inoperative and arranged to fold the sheets from said tapes and deliver them to the fly in a folded condition, substantially as described.



6. The combination, with a cylinder printing-press and its feed-board, of a folding mechanism located adjacent to the cylinder and beneath the feed-board, substantially as described.

7. The combination, with a cylinder printing-press, its feed-board, and tapes for conveying the sheets from the cylinder outward beneath the feed-board, of a folding mechanism located adjacent to the cylinder and beneath the feed-board and arranged to fold the sheets from said tapes, substantially as described.

8. The combination, with a cylinder printing-press, its feed-board, fly, and tapes for conveying the sheets from the cylinder outward beneath the feed-board, of a folding mechanism located between the cylinder and fly and beneath the feed-board and arranged to fold the sheets from said tapes and deliver them to the fly, substantially as described.

9. The combination, with a cylinder printing-press, its feed-board, fly, and tapes for conveying the sheets from the cylinder to the fly in an unfolded condition, of a folding mechanism located between the cylinder and fly and beneath the feed-board and arranged to fold the sheets from said tapes and deliver them to the fly in a folded condition, substantially as described.

10. The combination, with a printing-press having a reciprocating type-bed coacting with an impression-cylinder, of a fly located at the end of the press, tapes for conveying the sheets from the cylinder to the fly in an unfolded condition, and folding-rolls 40 and blade 42, arranged to fold the sheets from said tapes and constructed to be rendered inoperative, substantially as described.

11. The combination, with a printing-press having a reciprocating type-bed coacting with an impression-cylinder, of a fly located at the end of the press, delivery-pulleys 54, roll 44, and tapes for conveying the sheets from the cylinder in an unfolded condition, folding-rolls 40, located between the pulleys 54 and roll 44, and folding-blade 42, arranged to fold the sheets from said tapes into the bite of said rolls and constructed to be rendered inoperative, substantially as described.

12. The combination, with the impression-cylinder and bed, the delivery-pulleys 54, and tapes for conveying the sheets from the delivery-pulleys to the folding-rolls, of a folding-blade 42 and the folding-rolls 40, located adjacent to the cylinder and above the path of the bed and driven directly from the shaft of said pulleys, substantially as described.

13. The combination, with the impression-cylinder and bed, the delivery-pulleys 54, and tapes for conveying the sheets from the delivery-pulleys to the folding-rolls, of the folding-rolls 40, located adjacent to the cylinder and above the path of the bed, and the folding-blade 42, operated directly from the main press-shaft 99, substantially as described.

14. The combination, with the impression-cylinder and tapes for conveying the sheets away from the cylinder, of the folding-rolls 40 and blade 42, arranged to fold the sheets from said tapes, the tapes 4, roll 30, and vibrating pulleys 20, all substantially as described.

15. The combination, with a cylinder printing-press, its fly, and tapes for conveying the sheets from the cylinder to the fly in an unfolded condition, of the folding-rolls 40 and blade 42, arranged to fold the sheets from said tapes, the tapes 4, roll 30, and the vibrating pulleys 20, substantially as described.

16. The combination, with a cylinder printing-press, its fly, and tapes for conveying the sheets from the cylinder, of the rolls 40 and blade 42, arranged to fold the sheets and deliver them to the fly once folded, and the rolls 41 and blade 43, arranged to act upon the sheets as they are delivered from the rolls 40 and deliver them to the fly twice folded, substantially as described.

17. The combination, with a cylinder printing-press, its fly, and tapes for conveying the sheets from the cylinder to the fly in an unfolded condition, of the rolls 40 and blade 42, arranged to fold the sheets and deliver them to the fly once folded, and the rolls 41 and blade 43, arranged to act upon the sheets as they are delivered from the rolls 40 and deliver them to the fly twice folded, substantially as described.

18. The combination, with the impression-cylinder and bed and the delivery-pulleys 54, of the folding-rolls 40 41, located adjacent to the cylinder and above the path of the bed and driven directly from the shaft of said pulleys, substantially as described.

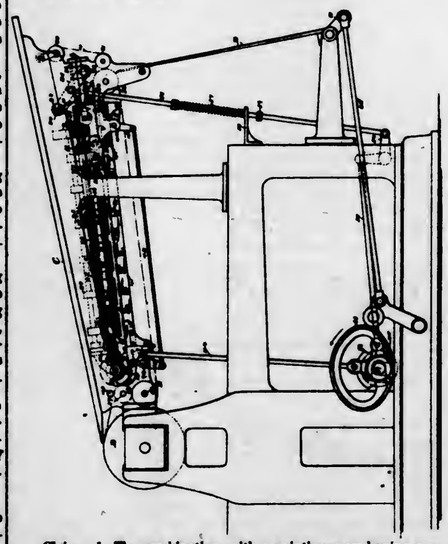
19. The combination, with the impression-cylinder and bed and the folding-rolls 40 41, located adjacent to the cylinder and above the path of the bed, of the folding-blades 42 43, operated from the main press-shaft 99, substantially as described.

20. The combination, with the slitter 76, of the folding-rolls 40 and the folding-blade 42, provided with the spring-fingers 1, which are curved to conform to the rolls and are arranged to press the sheets against the rolls as the blade is vibrated downward, substantially as described.

21. The combination, with the folding-rolls 41 and blade 43, of the fly provided with the opening *f* and means for delivering the sheets folded between said rolls through said opening, substantially as described.

22. The combination, with the folding-rolls 40 and blade 42, of the tapes 4, roll 30, and vibrating pulleys 20, substantially as described.

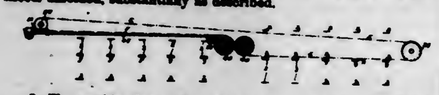
486,559. COMBINED PRINTING-PRESS AND FOLDING MECHANISM. LOTHER C. CROWELL, Brooklyn, assignor, by direct and mesne assignments, to Robert Hoe, Stephen D. Tucker, Theodore H. Mead, and Charles W. Carpenter, New York, N. Y. Filed July 14, 1892. Serial No. 307,976. (No model.)



Claim.—1. The combination, with a printing-press having a reciprocating type-bed coacting with an impression-cylinder, of mech-

anism for conveying the sheets from the cylinder and a folding mechanism located adjacent to the cylinder and above the path of the bed and arranged to fold the sheets upward from said conveying mechanism, substantially as described.

2. The combination, with a printing-press having a reciprocating type-bed coacting with an impression-cylinder, of a folding mechanism located adjacent to the cylinder and above the path of the bed and arranged to fold the sheets upward, said folding mechanism being constructed to be rendered inoperative, and means for delivering the sheets unfolded, substantially as described.



3. The combination, with a printing-press having a reciprocating type-bed coacting with an impression-cylinder, of a fly located at the end of the press and a folding mechanism located adjacent to the cylinder and above the path of the bed and arranged to fold the sheets upward and deliver them to the fly, substantially as described.

4. The combination, with a printing-press having a reciprocating type-bed coacting with an impression-cylinder, of a fly, tapes for conveying sheets from the cylinder to the fly in an unfolded condition, and a folding mechanism constructed to be rendered inoperative and arranged to fold the sheets upward from said tapes, substantially as described.

5. The combination, with a printing-press having a reciprocating type-bed coacting with an impression-cylinder, of a fly, tapes for conveying sheets from the cylinder to the fly in an unfolded condition, and a folding mechanism constructed to be rendered inoperative and arranged to fold the sheets upward from said tapes and deliver them to the fly in a folded condition, substantially as described.

6. The combination, with a cylinder printing-press and its feed-board, of a folding mechanism located adjacent to the cylinder and beneath the feed-board and arranged to fold the sheets upward, substantially as described.

7. The combination, with a cylinder printing-press, its feed-board, and tapes for conveying the sheets from the impression-cylinder outward beneath the feed-board, of a folding mechanism located adjacent to the cylinder and beneath the feed-board and arranged to fold the sheets upward from said tapes, substantially as described.

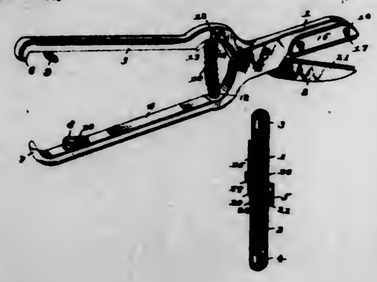
8. The combination, with a cylinder printing-press, its feed-board, and tapes for conveying the sheets from the impression-cylinder outward beneath the feed-board, of a pair of folding-rolls located adjacent to the cylinder and above the path of the sheets and a folding-blade located beneath the path of the sheets and arranged to fold the sheets upward into the bite of the rolls, substantially as described.

9. The combination, with the impression-cylinder, the fly, and the tapes arranged to convey the sheets from the cylinder to the fly in an unfolded condition, of the folding-rolls 40, located above the path of the sheets, and the folding-blade, capable of being rendered inoperative, located below the path of the sheets and arranged to fold the sheets upward into the bite of the rolls, substantially as described.

10. The combination, with the impression-cylinder and the tapes 2 3 for conveying the sheets from the cylinder, of the folding-rolls 40, arranged above the path of the sheets, the folding-blade 41, arranged below the path of the sheets, the tapes 5, and the vibrating pulleys 23 and tapes 4, substantially as described.

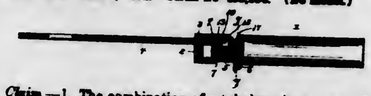
11. The combination, with the impression-cylinder, the fly, and the tapes 2 3 for conveying the sheets from the cylinder to the fly in an unfolded condition, of the folding-rolls 40, arranged above the path of the sheets, the folding-blade 41, arranged below the path of the sheets, the tapes 5, and the vibrating pulleys 23 and tapes 4, substantially as described.

486,560. FRUIT CLIPPING AND HOLDING SHEARS. JAMES S. BOWER, Longwood, Fla. Filed May 19, 1892. Serial No. 433,570. (No model.)



Claim.—The combination, with a pair of oppositely-pivoted jaws of equal thickness and adapted to grip an object, of a removable cutting-blade attached to one of the said jaws and adapted to be attached to the reverse side of the same jaw when the cutting-edge on the opposite jaw becomes blunted, substantially as described.

486,561. PIANO TUNING-PIN. HENRY B. ROSS, Corpus Christi, Tex. Filed June 7, 1892. Serial No. 435,896. (No model.)



Claim.—1. The combination of a tubular pin, a grooved string-block mounted therein and having a pair of openings extending therethrough from said grooved portion thereof, and a set-screw connected to said string-block and adapted to adjust the same, substantially as described.

2. The combination of a tubular pin having a slot on one side thereof and a mouth with a lip on the opposite side, a string-block having openings extending therethrough and vertical grooves therein, and a set-screw swiveled to said block and adapted to adjust the same, substantially as described.

3. The combination of a tubular pin, a string-block mounted therein and having openings therethrough for the reception of the string and a vertical opening in the upper portion thereof with a slot opening outward therefrom, and a set-screw having a reduced end, with a head adapted to engage said opening and slot for the purpose of adjustment, substantially as described.

486,562. CAR-DOOR. THOMAS BURAME, Little Rock, Ark. Filed Feb. 20, 1892. Serial No. 422,173. (No model.)

Claim.—1. The combination, with the car having the door-opening supports for the door and the opposite vertical strips, one of which declines at its front face from an intermediate point, of the door adapted to fit between the strips and consisting of upper and lower sections hinged together in line with the point at which the face of the strip declines, the stud extending from the face of the lower section and provided with stops at its outer end, a latch loosely pivoted in the stud, and a lever rigidly secured to the upper section and terminating at its lower end in an eye fitting over the stud, engaged by the latch and adapted for movement between the face of the door and the stops at the outer end of the stud, substantially as specified.

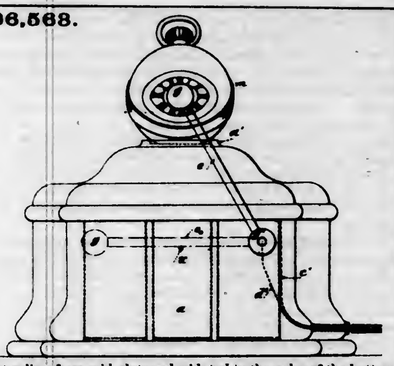
2. The combination, with the car-wall having the opening, the door-supports adjacent thereto, and the vertical strips located near the opposite edges of the opening, the rear one of which has its front face declined from an intermediate point, of the upper and lower door-sections hinged at their inner edges, the strips secured to the lower edge of the upper section and overlapping the intermediate space between the sections, the stud extending from the lower section, stop-pins located at the outer end of the same, a vertically-movable gravity-latch located in the stud, and a lever rigidly secured to the upper section and provided near its lower end with an eye adapted to take over the stud and in the lower end of the eye with a shoulder for engaging the latch, substantially as specified.

3. The combination, with the car having the opening, the opposite strips, the sectional door adapted to fit between the strips, and the lever secured to the upper section and depending in front of the lower section and provided at its lower end with an eye, of a recessed stud extending from the lower section of the door and having a transverse pin within its recess and a latch, vertically slotted, mounted in the recess and loosely receiving the pin and arranged in the path of the eye of the lever and provided below the stud with a perforation for receiving the seal, substantially as specified.

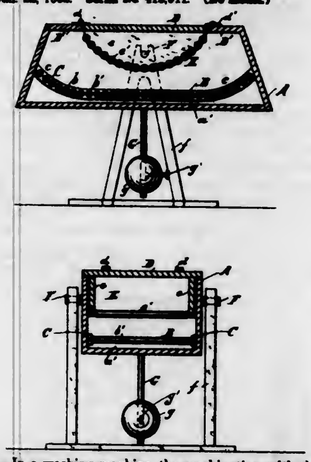
486,568. ILLUMINATED TIMEPIECE. BENJAMIN HAAS, Jr., and GERVAYE TISSOT, Paris, France. Filed Nov. 9, 1891. Serial No. 411,332. (No model.) Patented in France Sept. 17, 1891, No. 217,013.

Claim.—A timepiece provided with a supporting-casing and an electric battery inclosed in the said casing, in combination with an electric lamp operated by the said battery, a pivoted tubular supporting-arm *c* for said lamp, having a shell *f* formed at its lower end and provided with a pivot-stud *d*, a fixed contact-plate *h*, electric conductors making connection through the said lamp respectively to the said shell and pivot-stud and to the said plate, and additional conductors extending from said plate and said stud to the poles of the battery, substantially as set forth.

486,563.



486,564. WASHING-MACHINE. JOHN P. HALE, Malvern, Kans. Filed Jan. 23, 1892. Serial No. 418,811. (No model.)



Claim.—In a washing-machine, the combination, with the stand, of the box centrally pivoted to the stand and provided with a hinged lid and smooth end portions at its top, the convex upper wash-board, consisting of rollers journaled in end pieces secured to the lid, and the lower wash-board, consisting of rollers and slats supported in the box a short distance above the box-bottom, substantially as set forth.

486,565. NUT-LOCK. HARVEY H. LAUTH and SAMUEL L. NEELY, Vera, Ill. Filed Apr. 28, 1892. Serial No. 430,986. (No model.)

Claim.—1. The combination, with the bolt and inner nut-section the face of which is provided with opposite grooves and dovetail sliding jaws adapted to engage the bolt, mounted in the grooves and provided on their outer sides with lugs, of an outer nut-section the inner face of which is provided with opposite eccentric grooves engaging with the lugs of the jaws and means for locking the two nuts against separating, substantially as specified.

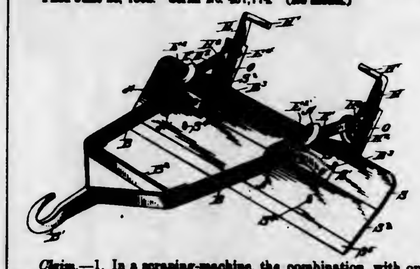
2. The combination, with a bolt, an inner nut-section the face of which is provided with a groove, and a jaw adapted to engage the bolt, having a lug mounted for sliding in the groove, of the outer nut-section provided with an eccentric groove for engaging the lug of the jaw and means for preventing a separation of the two nut-sections, substantially as specified.

3. The combination, with an inner nut provided with opposite grooves, serrated jaws adapted to engage the bolt, mounted in the grooves radiating from the bolt-hole of the nut, said jaws being provided with lugs, and cavities formed in the face of the nut, of an outer nut-section the inner face of which is provided with a pair of opposite eccentrically-disposed grooves engaging the lugs of the jaws, a pair of spring-pressed pins mounted in perforations formed in said outer nut-section and engaging with the cavities of the inner nut, and means for preventing a separation of the nut-sections, substantially as specified.

4. The combination, with a bolt and an inner nut having radial grooves and opposite undercut curved grooves, each of which curved grooves terminates at one end in a plain notch, of jaws having their inner ends serrated and adapted to engage the bolt and mounted in the radial grooves, lugs formed on the outside of the jaws, an outer nut-section the inner face of which is provided with opposite eccentric grooves engaging the lugs of the jaws, shouldered fingers extending from the sides of the outer nut-section and engaging the undercut grooves of the inner nut-section, and means for preventing oscillation of the nuts upon each other, substantially as specified.

5. The combination, with a bolt, an inner nut-section having a bolt-receiving opening, opposite radial grooves upon its inner face, provided with opposite curved undercut grooves terminating in notches and cavities formed at the sides of the grooves, a pair of which cavities are shallowed and the remaining pair deep, and sliding jaws mounted in the radial grooves, adapted to engage the bolt and provided with lugs, of the outer nut-section having a bolt-receiving opening, a pair of eccentrically-disposed grooves engaging the lugs of the jaws of the inner nut-section, a pair of shouldered pins, perforations for receiving the pins and provided with shoulders, coiled springs encircling the pins, and a pair of inwardly-disposed fingers having shoulders engaging the undercut grooves of the inner nut-section, substantially as specified.

486,566. ROAD-SCRAPER. WILLIAM P. MENTLEY, Defiance, Ohio. Filed June 22, 1892. Serial No. 437,774. (No model.)



Claim.—1. In a scraping-machine, the combination, with opposite beams and the standards pivotally connected intermediate their ends to the rear ends of the beams, of a scraping-blade secured to the standards, inverted-U-shaped links pivoted to each of the beams, connecting-bars between the upper ends of the standards and links, said connecting-bars being provided with a series of adjusting-holes, and bolts connecting the links and bars and standards and bars, substantially as specified.

2. In a scraping-machine, the combination, with a pair of opposite beams provided near their rear ends with a series of perforations, of standards loosely receiving the rear ends of the beams, bolts for adjustably connecting the standards with the beams, and adjustable connecting devices between the upper ends of the standards and the beams, substantially as specified.

3. In a scraping-machine, the combination, with the opposite beams terminating at their front ends in a draft-hook, of the opposite standards adjustably mounted on the beams and extending above and below the same, the scraper-blade secured to the front faces of the standards, the inverted-U-shaped links pivotally connected to the beams in front of the blade, and the connecting-bars adjustably connected to the links and pivotally connected to the upper ends of the standards, substantially as specified.

4. The combination, with the opposite beams, a pair of standards pivotally connected to the rear ends thereof, and the blade connected to the front faces of the standards, of opposite handle-levers of bell-crank shape pivoted to the upper ends of the standards and provided in their front branches with slots and studs extending through the bars and through the slots and connecting-bars between the upper ends of the standards and beams, said bars having studs engaging the slots of the levers and pivotally connected at their ends to the beams and standards, substantially as specified.

5. In a scraping-machine, the combination, with the opposite beams, the bifurcated standards, and bolts pivotally connecting the standards between their ends with the rear ends of the beams, the upper and lower scraper-blade sections, heel-bolts passing through the same and through the standards, the upper section being slotted

head on said bars having lateral projections, and a drill removably carried by said cross-head, substantially as described.

7. In a rock-drill, the combination of a cylinder, a piston movably mounted in said cylinder, an annular rack-plate secured to the front

and which terminates short of the middle of said compression member, substantially as and for the purposes specified.

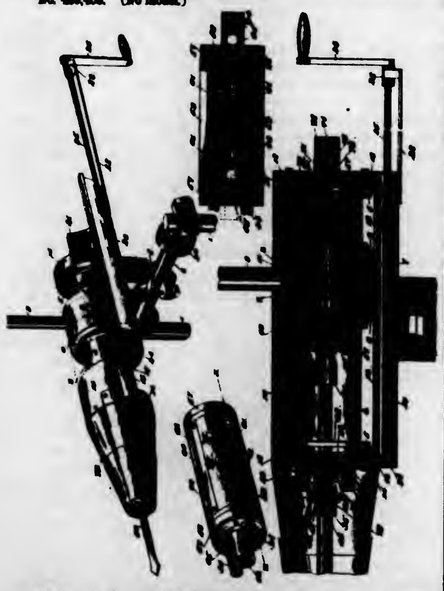
2. In a trussed brake-beam, the combination, with a tension mem-

be actuated by the car-wheel without being affected by irregularities in the road-bed or sagging of the track, substantially as described.

8. In combination with the relay provided with the usual electro-

5. In a scraping-machine, the combination, with the opposite beams, the bifurcated standards, and bolts pivotally connecting the standards between their ends with the rear ends of the beams, the upper and lower scraper-blade sections, heel-bolts passing through the same and through the standards, the upper section being slotted for the passage of the beams, of the inverted-U-shaped links embracing and pivoted at their lower ends to intermediate points of the beams, the perforated connecting-bars, bolts pivotally connecting the rear ends thereof between the upper ends of the standards and the front ends thereof adjustably to the links, studs extending through the bars, and bell-crank levers fulcrumed above their angles upon the bolts with connecting-bars and standards, said levers having their upper ends inwardly bent to form handles and their front branches slotted concentric with their pivot-point and loosely receiving the headed studs of the connecting-bars, substantially as specified.

486,567. ROCK-DRILL. NEWTON MONDAY, Lathrop, Mo., assignor of one-half to James M. O'Carr, same place. Filed Apr. 16, 1892. Serial No. 429,403. (No model.)



Claim.—1. In a rock-drill, a rotatable cylinder, a piston mounted in said cylinder, a valve in said piston, a rock-drill secured to said piston, and means for automatically holding the said drill in its adjusted position, the said parts being operated by pneumatic pressure, substantially as described.

2. In a rock-drill adapted to be operated by pneumatic pressure, the combination of a rotatable cylinder having flanges thereon and ingress and exhaust ports therein, rings on said flanges having inner beveled faces, a sleeve embracing said rings and having an opening therein, an air-tube fitted to said sleeve over the opening thereof, a piston in said cylinder having a drill connected to the same, a valve in said piston, and means for sustaining the rotative adjustment of the drill, substantially as described.

3. In a rock-drill, the combination of a cylinder, a carrier in which said cylinder is adjustably fitted, having a clamp connected thereto, a cross shaft or bar to which said clamp is adjustably fitted, and standards or mountings to which the ends of said cross-bar are adjustably connected, substantially as described.

4. In a rock-drill, the combination of a cylinder and a dust-casing therefor which has a conical front portion which is removably fitted to the body of said casing, substantially as described.

5. In a rock-drill, the combination of a cylinder, a piston in said cylinder, bars or rods connected to said piston and extending through the head of said cylinder, a cross-head on said bars or rods, and a drill-stock connected to said cross-head, substantially as described.

6. In a rock-drill, the combination of a cylinder having an annular rock-plate secured to the front head thereof, a piston mounted in said cylinder and having parallel bars secured thereto, a swinging or movable plate engaging said bars and carrying pawls at the opposite ends thereof, guides projecting upward from said plate, a cross-head on said bars having lateral projections, and a drill removably carried by said cross-head, substantially as described.

7. In a rock-drill, the combination of a cylinder, a piston movably mounted in said cylinder, an annular rock-plate secured to the front end of the cylinder, bars secured to the piston and extending through the head of the cylinder, a swinging or movable plate attached to a stud centrally located in the said head of the cylinder and having pawls at the opposite ends thereof and recesses to partially take over the said bars, a spring connected to said swinging or movable plate, guides projecting upward from said plate in reverse planes, a cross-head secured to said bars and having lateral projections to engage said guides, and a drill connected to said cross-head, substantially as described.

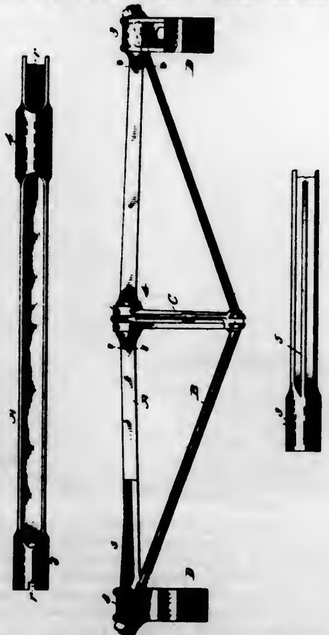
8. In a rock-drill, the combination of a cylinder, a piston movably mounted in said cylinder and containing a valve, a cross-head connected to said piston, having a tubular opening therein and intersected by a transverse opening, a drill-stock having a recess with a shoulder and fitted into said tubular opening, and a key extending through the transverse opening of said cross-head and engaging in the recess of the drill-stock, substantially as described.

9. In a rock-drill, the combination of a cylinder, a piston therein having grooves with ports at the ends thereof and slides adjustably fitted over a portion of said ports and other grooves with ports inside of the ends of the same, and a valve in said piston, the drill being connected directly to said piston, substantially as described.

10. In a rock-drill, the combination of a cylinder, a piston therein having suitable ports, a tubular valve longitudinally movable in said piston and provided with a dividing partition or web and a recess or groove in the upper portion thereof, a pin projecting through said piston and engaging said recess to limit the movement of the valve, said valve being provided with ports, as set forth, and a drill connected to said piston, substantially as described.

11. In a rock-drill, the combination of a cylinder, a piston movably mounted in said cylinder and having a drill connected thereto, said piston being formed with grooves and ports, as set forth, a longitudinally-movable divided tubular valve having ports therein at right angles to each other, and valve-stops or cushion-plates arranged at opposite ends of said cylinder, substantially as and for the purpose set forth.

486,568. BRAKE-BEAM. HENRY B. ROBERTSON, Kalamazoo, Mich. Filed Apr. 2, 1892. Serial No. 427,522. (No model.)



Claim.—1. In a trussed beam, the combination, with a tension member and strut, of a malleable-iron compression member having a longitudinal tapering rib or ribs extending inwardly from the ends thereof and arranged in the line of strain of the tension member and which terminates short of the middle of said compression member, substantially as and for the purposes specified.

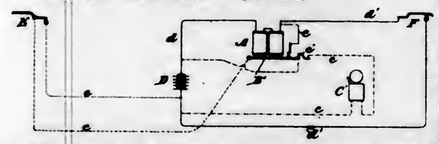
2. In a trussed brake-beam, the combination, with a tension member and strut, of a malleable-iron compression member having hollow or tubular swells at its ends and longitudinal tapering ribs extending inwardly therefrom, substantially as and for the purposes specified.

3. In a trussed brake-beam, the combination, with a tension member and strut, of a compression member having a central and end swells, said end swells being hollow or tubular, and longitudinal reinforce-ribs on its rear face, which extend inwardly from the end swells of said compression member, substantially as and for the purposes specified.

4. A compression member for trussed brake-beams, said member having a central and end sections of hollow or tubular form, adapted to receive a strut and brake-heads, and intermediate sections of I or H shape in cross-section, substantially as and for the purposes specified.

5. A compression member for trussed brake-beams, said member having a central and end sections of hollow or tubular form and intermediate portions of substantially I or H cross-section, the rear face of the said intermediate sections having ribs or reinforces which extend inwardly from the hollow end sections, substantially as and for the purposes specified.

486,569. ELECTRIC SIGNALING DEVICE. JAMES J. ROSS, Detroit, Mich., assignor of one-half to George B. Holden, same place. Filed Dec. 28, 1891. Serial No. 416,473. (No model.)



Claim.—1. An electrical alarm or signaling apparatus comprising the normally-open alarm-circuit having an electric bell or alarm placed therein, the relay, with normally-open main and local circuits independent of but controlling said alarm-circuit, the open contact-points of the alarm-circuit being arranged in relation to the armature-lever of the relay, so as to be closed thereby when the local circuit is closed and locked until released by the breaking of the local circuit, a main-circuit closer, a local-circuit breaker, and a common generator for the several circuits, all arranged and adapted to operate substantially as described.

2. In combination with the relay provided with the usual main and local circuits, the train-actuated circuit-closer placed in the main circuit, the train-actuated circuit-breaker placed in the local circuit, the independent normally-open alarm-circuit adapted to be closed and locked when said local circuit is closed, the bell or signal placed in said alarm-circuit, and a common generator for the several circuits, substantially as described.

3. In combination with the relay provided with the usual main and local circuits, the local-circuit breaker, the main-circuit closer, the second normally-open local alarm-circuit, the contact-springs, and the armature-lever adapted to close the alarm-circuit through said springs when said lever is actuated by the closing of the main circuit, substantially as described.

4. In an electrical alarm or signaling apparatus, the circuit-closer or switch comprising the rocking bell-crank lever, the oscillating lever engaging said bell-crank, the contact-springs carried by said oscillating lever, the parallel bars between which said oscillating lever works, the contact-clips secured to the inner faces of said bars, and the spring adapted to hold said oscillating lever and bell-crank in normal position, substantially as described.

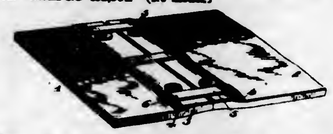
5. The circuit-closer comprising the rocking bell-crank levers, the oscillating levers, the contact-springs fixed to one of said oscillating levers, the sliding rod and wedge connected to the other oscillating lever, the contact-plates, the stop-plate or guard, and the springs for holding said levers in their normal positions with the circuit broken, substantially as described.

6. The combination, in an electrical bell-ringing apparatus, of the circuit-closing mechanism comprising a pair of bell-crank levers, oscillating levers connected therewith, contact devices carried by one of said oscillating levers, and means controlled by the other oscillating lever, whereby a moving train will close the circuit when the train is passing in one direction only, substantially as described.

7. In combination with the circuit-closing mechanism or switch and the track, the box or casing inclosing said switch, and the angle-irons clamped to the track-rail and provided with lateral extensions having said box adjustably supported thereon, whereby the circuit-closing mechanism may be supported in operative position, so as to be actuated by the car-wheel without being affected by irregularities in the road-bed or sagging of the track, substantially as described.

8. In combination with the relay provided with the usual electro-magnet, armature-lever, and main and local circuits, the second local circuit comprising the circuit-wires, the binding-posts, the standards, the insulating-blocks, the spring contact-plates secured to said blocks, the electric bell placed in said second circuit, and means, substantially as described, for automatically opening and closing the several circuits, as set forth.

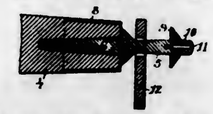
486,570. BELT-FASTENER. FREDERICK R. SHAW, Canisteo, N. Y., assignor of one-half to Joseph R. Shaw, same place. Filed May 10, 1892. Serial No. 432,801. (No model.)



Claim.—1. In a belt-fastening, the combination of two independent flat plates secured on the two adjacent ends of the belt by means of rivets passing therethrough and through the belt and arranged in a median line through the length of each of the plates, said plates being the length of the width of the belt and the rear edge of each bent under and slightly upward, and a coupling passing over and under the said plates and through the belt and bearing on the rear bent-under edges of the said plates, the said plates being applied to the upper side of the belt and the entire fastening forming a hinge for the two ends of the belt, substantially as described.

2. In a belt-fastening, the combination of two strips or bars secured on the two opposite ends of the belt by means of rivets and having the outer edges thereof doubled under, and metallic clips passing over and bearing upon the said doubled-under edges of the two plates and having the ends thereof extended through the belt and clinched or bent against the under side of the latter, substantially as described.

486,571. TRACE-FASTENER. THOMAS J. SMITH, Providence, R. I. Filed Apr. 21, 1892. Serial No. 430,063. (No model.)



Claim.—1. In a trace-fastening, the combination, with a whiffletree and a stud extending from the end thereof and provided with a transverse slot, of an elastic bar having a contracted central portion and tapering ends secured in said slot, as described.

2. The combination, with the whiffletree 4 and the stud 5, secured thereto and having a transverse slot, of the elastic bar 9, having the contracted neck 10 secured in said transverse slot, as described.

486,572. PRINTING-PLATE AND PROCESS OF MAKING THE SAME. WILLIAM H. SEMBLE, Newark, N. J. Filed Apr. 9, 1892. Serial No. 428,517. (No model.)

Claim.—1. The improved printing-plate herein described, composed of clay, shellac, and wood pulp and having on one of its faces the design of the imprint desired, substantially as set forth.

2. The process of preparing printing-plates, which consists in taking an impression from a suitable original printing-plate in a composition consisting of clay, shellac, and wood pulp subjected to a drying and hardening process, and taking from said hard impression a reproduction of the original in a composition of clay, shellac, and wood pulp not hardened to the degree of the hardened negative impression, substantially as set forth.

3. The process herein described of preparing printing-plates, which consists in taking a negative plate or matrix in a composition consisting of clay, shellac, and wood pulp, subjecting said composition plate to a drying or hardening operation, and then taking from the hardened negative a positive or reproduction of the original printing-plate, substantially as set forth.

486,578. MUSIC-LEAF TURNER. ALBERT F. VOSS, Frankfort, Ind. Filed May 23, 1891. Serial No. 393,707. (No model.)

Claim.—1. In a music-leaf turner, the combination of the supporting-frame having the central vertical rod provided at its upper end with the horizontally-extending graduated arm, a series of vertical rods journaled in the graduations of said arm, said rods having hori-

zontal swinging arms carrying a clamp at their free ends, and means for actuating said rods and arms, substantially as specified.

2. In a music-leaf turner, the combination of the frame having a central vertical support provided at its upper end with a horizontally-extending graduated arm and at its lower end with the horizontally-

latter by heat, and finally subjecting the impregnated compound to the heating action of an electric current.

4. The process of reduction of a pulverized metallic oxide, which consists in introducing it into boiling coal-tar, drying it by heat to

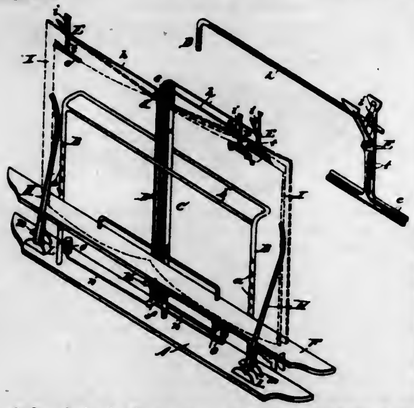
Claim.—1. In a cash register, indicator, and check-printer, the combination, with a casing having a sight-aperture and a numeral-bearing wheel rotatively mounted in said casing, of rotatively-mounted

and intermediate gearing between said wheel and pull, whereby rotation of the pull rotates the said wheel.

13. The combination, with the pull 6 and its spindle provided

zontal swinging arms carrying a clamp at their free ends, and means for actuating said rods and arms, substantially as specified.

2. In a music-leaf turner, the combination of the frame having a central vertical support provided at its upper end with a horizontally-extending graduated arm and at its lower end with the horizontally-extending plate in a vertical line with said arm, the series of leaf-actuating angle-rods journaled in the graduations of said arm and in said plate and carrying a clamp at their upper horizontal ends, substantially as specified.



3. In a device for the purpose set forth, the combination of the supporting-frame, the rest slidingly mounted on said frame, the depending plates pivoted to the ends of said rest, the pressure-arms pivoted to said plates, and the spring interposed between said arms and plates, substantially as specified.

486,574. SHOUP-GOVERNOR. MOSES G. WILSON, Philadelphia, Pa. Filed Nov. 26, 1891. Serial No. 413,073. (No model.)

Claim.—1. The combination of two or more volumetric regulators, a shell or case supporting said regulators, gas-passages in said shell, and a valve or cock carried by said case and constructed to open or close said gas-passages progressively.

2. The combination of two or more volumetric regulators, a shell or case supporting said regulators, a cock or valve carried by said case, gas-passages in said shell or case connecting said cock and regulators, and gas-passages in said cock adapted to control the supply of gas to or from said regulators progressively.

3. The combination, with a group of volumetric regulators, the case which supports them, and the valve or cock by means of which the supply of gas to or from said regulators is controlled, of a crank or arm for turning said valve or cock and a stationary index to show by the position of said crank the number of regulators through which gas is passing.

486,575. PROCESS OF REDUCING REFRACTORY COMPOUNDS. THOMAS L. WILLSON, Louisville, Ky. Filed Apr. 20, 1892. Serial No. 429,553. (Specimens.)

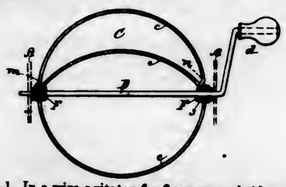
Claim.—1. The process of reduction of a pulverized metallic compound, which consists in first impregnating it with a reducing agent by saturating it therewith while the latter is in liquid condition and then subjecting the impregnated compound to the heating action of an electric current.

2. The process of reduction of a pulverized metallic compound, which consists in first impregnating it with a reducing agent by boiling it therein and then subjecting the impregnated compound to the heating action of an electric current.

3. The process of reduction of a pulverized metallic oxide, which consists in first impregnating it with a reducing agent in the nature of a hydrocarbon which is liquid when heated by introducing the oxide into a heated bath of the reducing agent until sufficient of the latter has been absorbed by the metallic compound, then drying the latter by heat, and finally subjecting the impregnated compound to the heating action of an electric current.

4. The process of reduction of a pulverized metallic oxide, which consists in introducing it into boiling coal-tar, drying it by heat to expel the volatile constituents of the tar, and then subjecting the tar-impregnated oxide to electric smelting.

486,576. WIRE AGITATOR FOR FLOUR-SIFTERS. JOHAB H. BEMBLOW, Worcester, Mass. Filed Feb. 6, 1892. Serial No. 420,866. (No model.)



Claim.—1. In a wire agitator for flour or meal sifters, a series of curved wire bows, each having both of its ends respectively bent to form a loop or eye for surrounding the axial shaft and said loops placed adjacent to each other and united side to side at the junction of the bows to form the bearings for sustaining the wire bows in their relative positions and supporting the agitator in connection with its shaft, substantially as and for the purpose set forth.

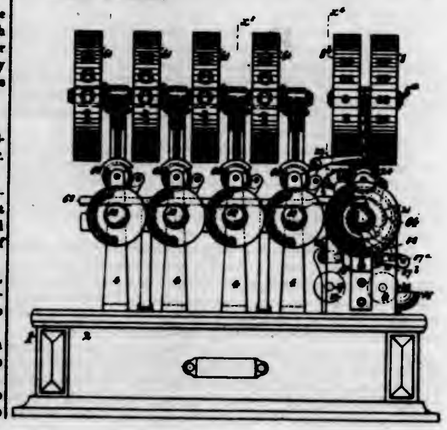
2. The combination, in an agitator for flour-sifters, of the series of outwardly-curved wire bows, each provided with a circular bend or loop at its ends, and the tubular eyes arranged through the looped ends of the respective bows and upset or flanged for attaching the several bows together and forming a bearing for the axial shaft, as set forth.

3. The combination of the wire bows having their ends bent to form a loop or eye thereon, the tubular flanged bearing-eyes inserted through the several looped ends and upset for fastening the bows together, the impressed screw-thread formed within one of said bearing-eyes, and the axis-shaft having the threaded tapered end for worming into said eye, substantially as and for the purpose set forth.

4. An agitator for flour-sifters of the class specified, composed of the wire bows *c*, having their ends bent into loops 3, the said loops placed together flatwise adjacent to each other and united to form bearings for the axial shaft, which is passed through the said loops, the said parts tin-coated and the outer bows offset, as at *m* and *n*, to bring the main curves of the several bows into coinciding relation with each other, substantially as set forth.

5. In a sifter having a cylindrical body, a hemispherical sieve located therein, and a rotary beater or agitator, the cranked shaft D, having the shoulder 9, the conoidal screw-threaded portion 8, and non-threaded outer extension 10, in combination with the agitator-bows *c* and the tubular connecting-eyes, one of which has a tapered opening threaded for fitting said shaft, substantially as shown and described.

486,577. CASH REGISTER, INDICATOR, AND CHECK-PRINTER. GEORGE BOMMERSHAM, Brooklyn, N. Y. Filed Dec. 22, 1891. Serial No. 415,842. (No model.)



Claim.—1. In a cash register, indicator, and check-printer, the combination, with a casing having a sight-aperture and a numeral-bearing wheel rotatively mounted in said casing, of rotatively-mounted pull and its spindle, said spindle having a stud 16, which engages a socket in a wheel 13, rotatively mounted on the spindle, intermediate mechanism between said wheel 13 and the numeral-bearing wheel, whereby the latter wheel partakes of the rotation of the pull until disengagement is effected by the drawing out of the spindle, mechanism for feeding the check-strip into the printing device, a stud on the spindle which actuates said feeding mechanism when the pull is drawn out, the check-printing mechanism, and means, substantially as described, whereby the drawing out of the pull operates said printing mechanism, substantially as set forth.

2. In a cash-register, the combination, with the frame and casing, the pull 6, and its spindle mounted rotatively therein and provided with a boss 17 and stud 16, of the adder 24, hinged to the casing and upheld normally out of gear by the boss 17, the gear-wheel 13, mounted rotatively on the pull-spindle, and the gear-wheel 26 on the shaft of the adding mechanism and arranged to gear with the wheel 13 when the said mechanism is allowed to descend, as set forth.

3. In a cash-register, the combination, with the casing, the frame, the rotatively-mounted numeral-bearing wheel 8, the rotatively-mounted pull 6 and its spindle, the connected gear-wheels 12 and 13, rotatively mounted on said spindle, and intermediate gearing between the said wheels and the wheel 8, of the type-wheel 29, mounted to turn loosely about the sleeve 30 on the pull-spindle, the said sleeve, the gear-wheel 29^a on the type-wheel, the shaft 32, and the wheels 31 and 33 on said shaft, gearing, respectively, with the wheels 29^a and 12, whereby the wheels 29 and 8 are set simultaneously.

4. In a cash-register, the combination, with the pull 6 and its spindle provided with a stud 7, of the guiding-block 4^b, the notched wheel 48, adapted to be engaged by the stud 7, the feed-rollers 51, and the intermediate gearing between the wheel 48 and said rollers, whereby the withdrawal of the pull effects the rotation of the feed-rollers to a predetermined extent.

5. In a cash-register, the combination, with the pull 6 and its spindle provided with a stud 7, of the guiding-block 4^b, the notched wheel 48, adapted to be engaged by the stud 7 when the pull is withdrawn, the notched wheel 52, secured to the wheel 48, the spring-hammer adapted to be drawn back by the wheel 52, and the gong 55, substantially as set forth.

6. In a cash-register, the combination, with the pull 6 and its spindle provided with a notch 6^b, of the cutting-blade 57, the spring which actuates said blade when freed, and the arched arm 58, arranged between the blade and the spindle of the pull, whereby the said blade is held normally in an elevated position, as set forth.

7. In a cash-register, the combination, with the pull 6 and its spindle provided with a wiper 43, of the sleeve 13^a on said spindle, provided with a projecting toe 13^b, engaged by said wiper when the pull is drawn out, the toothed wheel 12 on said sleeve, the shaft 32, the wheels 31 and 33 thereon, the type-wheel 29, and the gear-wheel 29^a thereon, substantially as set forth.

8. In a cash-register, the combination, with the pull 6 and its spindle provided with a wiper 43, of the sleeve 13^a on said spindle, provided with a toe 13^b, engaged by said wiper when the pull is drawn out, the bevel-wheel 11^a, fixed on said sleeve, the numeral-bearing wheel 8, and intermediate mechanism between said wheels 11^a and 8, substantially as set forth.

9. In a cash-register, the combination, with the pull 6 and its spindle provided with a wiper 43, of the sleeve 13^a on said spindle, provided with a toe 13^b, engaged by the said wiper when the pull is drawn out, the wheel 13, fixed on said sleeve, and the adder 24 in gear with said wheel 13, substantially as set forth.

10. In a cash-register, the combination, with a pull 6 and its spindle provided with a beveled wiper 43, of a type-wheel, means for setting said type-wheel through the rotation of the pull, an inking-ribbon arranged under the type-wheel, means for feeding a strip of paper under said ribbon through the drawing out of the pull, an impression-block 40, carried by a vibrating frame 39, the said frame, a rock-shaft 45, arms 44 and 46 on said shaft, the former being acted upon by said wiper and the later acting to raise the frame 39, and a spring to retract the parts.

11. The combination, with a numeral-bearing wheel, of a rotatively-mounted pull, intermediate gearing connecting said pull and wheel, and means for limiting the rotation of said pull in setting the wheel, said means comprising a carrier on the pull-spindle, a series of spring push-pins mounted in said carrier, and a fixed stop-piece arranged in the path of the pins when pressed in by the operator, the said pins corresponding with the respective numerals on the wheel, substantially as and for the purposes set forth.

12. The combination, with a numeral-bearing wheel having in it two oppositely-arranged sets of numerals, of an inclosing casing having front and rear sight-apertures whereat like numerals of the two series on the wheel appear simultaneously, a rotatively-mounted pull, and intermediate gearing between said wheel and pull, whereby rotation of the pull rotates the said wheel.

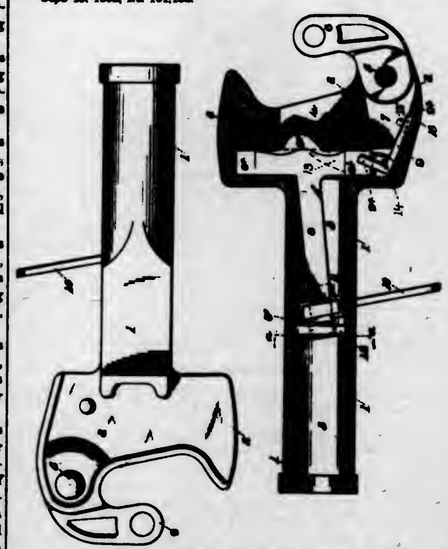
13. The combination, with the pull 6 and its spindle provided with a beveled collar 6^a, of the carrier 21, splined on said spindle, the spring-retracted push-pins mounted in said carrier and having hooked extremities, the depressible retaining-disk mounted on a bracket on the frame and normally concentric with the spindle, the said bracket and frame, and the spring which supports said disk, all operating substantially as set forth.

14. In a cash-register, the combination, with a pull 59 and its spindle, the gear-wheel 60, splined on said spindle, the numeral-bearing wheel 61, and intermediate gearing between said wheels 60 and 61, of the adder 68, provided with a toothed wheel 67, the wheel 66, fixed on the spindle of the pull 59 and furnished with teeth to engage the wheel 67, locking-notches 66^a, and an unlocking-notch 66^b, the dog which locks said wheel against rotation, the master-pull 6 and its spindle provided with a pinion 72, the rack-bar 73, means, substantially as described, carried by said rack-bar for actuating said locking-dog, and a spring 71, which retracts the pull when freed.

15. In a cash-register, the combination, with a master-pull 6 and its spindle provided with a pinion 72, of the rack-bar 73, engaging said pinion and provided with a pin or stud 73^a, a pull 59 and its spindle, and a boss 76 on said spindle provided with a slot 76^a, with which the stud 73^a engages when the master-pull is rotated, thus locking the pull 59 against rotation, as set forth.

16. In a cash-register, the combination, with a pull 6 and its spindle, of a flanged sleeve 30, mounted loosely on said spindle, a type-wheel 64, mounted loosely on said sleeve and provided with teeth 64^a, a pull 59 and its spindle, a pinion 63, fixed on said spindle, a rack-bar 65, the teeth on which gear with the teeth on the type-wheel 64 and pinion 63, the studs 30^a and 30^b in the flanged sleeve 30 for returning the type-wheel 64 to its normal position, and the stud 7 in the spindle of the pull 6, arranged to engage the stud 30^a and rotate sleeve 30, as set forth.

486,578. CAR-COUPLING. FRED ENOS, Bridgeport, Conn. Filed Aug. 17, 1892. Serial No. 443,205. (No model.) Patented in Belgium Sept. 18, 1892, No. 101,152.



Claim.—1. The combination, with a draw-bar having an opening upon its under side adapted to receive an operating-lever, of a T-shaped locking-arm within the arm and to which the operating-lever is connected and a bridge 12 to hold said locking-arm in place, substantially as shown and described.

2. In a car-coupling, the combination, with the draw-bar head having a recess to receive the finger-arm of a swinging knuckle, of an angle-lever whereby said knuckle is opened and a T-shaped gravity-locking arm adapted to lock the knuckle in a closed position, substantially as described.

3. In a car-coupler of the class described, a swinging knuckle, an angle-lever pivoted within the coupler, a T-shaped locking-bar having an inclined recess upon its under side, and an extension 8^a, the whole

adapted to be operated by a hand-lever from beneath the draw-bar, as and for the purpose set forth.

4. In a car-coupler, the combination, with the draw-bar and its attached head, of a swinging knuckle pivoted to the head and provided with a rearwardly-extending finger-bar, a T-shaped locking-bar having its head extending transversely within the draw-head and

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slots extending through its curved walls and elongated in the direction of the length of the cylinder, substantially as set forth.

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rigid extensions thereof, and means for preventing further movement of the jaws endwise on each other when they have been brought opposite to each other, substantially as and for the purpose described.

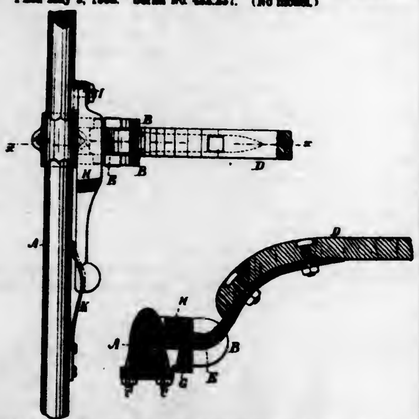
6. The combination, in a trolley-wire hanger, of two grooved

adapted to be operated by a hand-lever from beneath the draw-bar, as and for the purpose set forth.

4. In a car-coupler, the combination, with the draw-bar and its attached head, of a swinging knuckle pivoted to the head and provided with a rearwardly-extending finger-bar, a T-shaped locking-bar having its head extending transversely within the draw-head and adapted to block the finger-bar, and a lever for the operation of the locking-bar to disengage the same, substantially as set forth.

5. In a car-coupler, the combination, with the draw-bar and the draw-head both recessed as described, of the knuckle provided with a finger-bar and pivotally attached to the head, a T-shaped locking-bar having its shank lying within the draw-bar and its head disposed transversely within the recess in the draw-head, a lever engaging and adapted to tilt the said locking-bar, whereby its head is removed out of locking engagement with the finger-bar, and a lever interposed between the locking-bar and knuckle, whereby the latter is swung open by the lifting movement of the former, substantially as specified.

486,579. THILL-COUPLING. HENRY A. GROUX, West Orange, N. J. Filed May 9, 1892. Serial No. 432,237. (No model.)



Claim.—1. The combination, with the pole-iron having a T-shaped joint-pin at the end, of the hooks for receiving such pole-iron and joint-pin, an elastic block behind the joint-pin, and a plate and pivotal connection therefor on the axle, substantially as set forth.

2. The combination, with the shaft or pole-iron having a T-shaped joint-pin, of the hooks for receiving the same, a spring having end projections for closing the hooks and a central portion pressing against the joint-pin, and a swinging lever pivoted on the axle and acting upon the spring, substantially as set forth.

3. The combination, with the hooks, of a pole-iron having a T-end or a joint-pin to be received into the hooks, a rubber block having a T-shaped head and passing down between the hooks, a pivoted lever having a wedge surface acting upon the rubber block, and a spring for holding the lever in position, substantially as set forth.

486,580. ATTRITION-MILL. WILLIAM H. HOFFMAN, Brewster, N. Y. Filed Dec. 18, 1891. Serial No. 415,453. (No model.)

Claim.—1. The combination, with the casing and the screen-blocks located therein, of a sectional shaft, one section having a longitudinal movement relative to the other section, a bushing fixed to the longitudinally-movable section in position to move toward and away from the screen-blocks within the casing, and means for holding said movable shaft-section in its adjustments, substantially as set forth.

2. The combination, with the sectional shaft, one section having a longitudinal movement relative to the other section, of a bushing fixed to the longitudinally-movable section, a movable support for said movable section, a thrust-block engaged with said section and with the movable support, and means for actuating the shaft, substantially as set forth.

3. The combination, with the masonwork casing and the screen-blocks supported therein, of the bushing removably housed within said casing, substantially as set forth.

4. The combination, with the masonwork casing, the screen-blocks supported therein, and the bushing having a movement toward and away from the screen-blocks, of the doors forming a closure at the end of the casing for housing the bushing within the casing, substantially as set forth.

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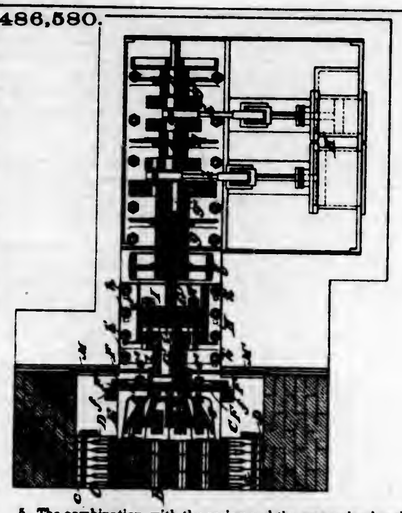
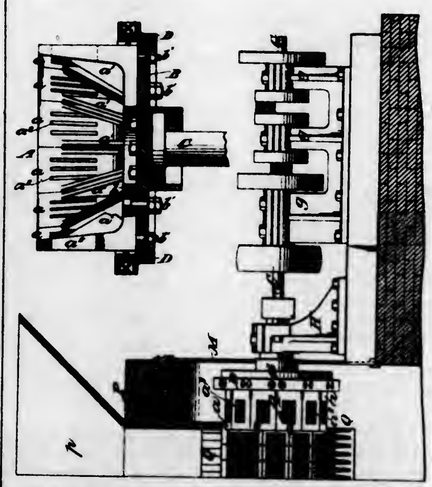


5. The combination, with the casing and the supporting-brackets fixed to the opposite walls thereof, of the screen-blocks and the series of sectional independent binders resting upon the supporting-brackets and holding the screen-blocks in position, substantially as set forth.

486,581. BUSHING FOR ATTRITION-MILLS. WILLIAM H. HOFFMAN, Brewster, N. Y. Filed Dec. 18, 1891. Serial No. 415,454. (No model.)



Claim.—1. A bushing for an attrition-mill, comprising an open-end cylinder provided on its inner face with one or more abutments extending along the curved inner wall of the cylinder toward the closed end of the cylinder for securing a grip upon the material being operated upon, substantially as set forth.

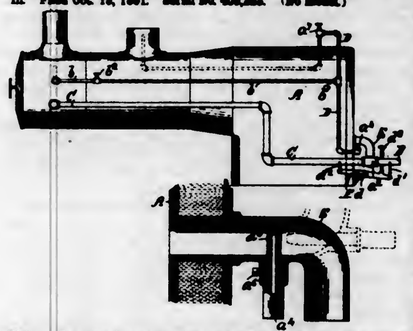
2. A bushing for an attrition-mill, comprising an open-end cylinder having interior webs or brackets connecting the inner curved wall of the cylinder with the closed end of the cylinder and formed integral therewith, substantially as set forth.

3. A bushing for an attrition-mill, comprising an open-end cylinder formed in sections, each section consisting of a portion of the curved body and head of the cylinder, and means for holding the sections in assembled adjustment, substantially as set forth.

4. The combination, with the head or chuck, of the bushing formed in sections and the retaining-band surrounding the sections, substantially as set forth.

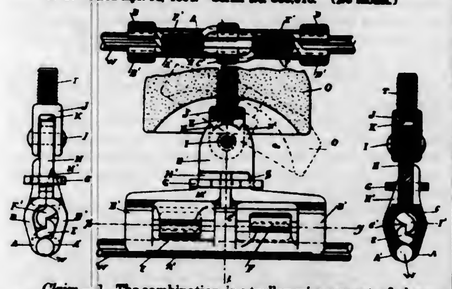
5. The bushing comprising an open-end cylinder having elongated slots extending through its curved walls and elongated in the direction of the length of the cylinder, substantially as set forth.

486,582. SMOKE-CONSUMING DEVICE. EMIL KRAUSE, Chicago Ill. Filed Oct. 10, 1891. Serial No. 408,262. (No model.)



Claim.—In a smoke-consuming attachment, the combination of the cold-air pipe, the hot-air pipe opening inside of the smoke-box, the curved pipes E, with which the cold and hot air pipes have a common connection, the steam-supply pipe, the injector tubes or nozzles inserted in the pipes E, the rocking lever, and the companion valves attached to the respective ends thereof and inserted, respectively, in the cold and hot air pipes and alternately closing the passage therethrough in accordance with the direction in which said lever is moved, substantially as and for the purpose set forth.

486,583. TROLLEY-WIRE HANGER. DAVID B. LAIN, Yonkers, N. Y. Filed Apr. 11, 1891. Serial No. 388,610. (No model.)



Claim.—1. The combination, in a trolley-wire support, of a hanger for attachment to the wire, an insulator for preventing electrical communication between the hanger and a supporting device, a pivotal connection between the hanger and the insulator, and means for limiting the motion on this pivot to such an extent that the insulator can neither come in contact with the hanger nor in the path of a trolley when moving on the wire supported by the hanger, substantially as and for the purpose described.

2. The combination, in a trolley-wire hanger, of grooved jaws that partly embrace the wire and means for clamping these jaws to the wire by moving them endwise together and on the wire, substantially as and for the purpose specified.

3. The combination, in a trolley-wire support, of a hanger consisting of grooved jaws that partly embrace the wire, means for clamping these jaws to the wire by moving them endwise together and on the wire, an insulator for preventing electrical communication between the hanger and a supporting device, a pivotal connection between the hanger and the insulator, and means for so limiting the movement about the pivot that the insulator can neither come in contact with the hanger nor within the path of the trolley while moving on the wire held in the hanger, substantially as and for the purpose specified.

4. The combination, in a trolley-wire hanger, of two grooved jaws which partly embrace the wire and lugs with inclined faces rigidly attached to each jaw or rigid extensions thereto, said lugs being so disposed that each lug of one jaw interlocks with a lug of the other jaw, which by sliding on each other clamp the jaws together when they are moved endwise nearer to opposition on the wire, substantially as and for the purpose described.

5. The combination, in a trolley-wire hanger, of two grooved jaws, lugs with inclined faces rigidly attached to each jaw and to rigid extensions thereof, and means for preventing further movement of the jaws endwise on each other when they have been brought opposite to each other, substantially as and for the purpose described.

6. The combination, in a trolley-wire hanger, of two grooved jaws, lugs with inclined faces rigidly attached to each jaw and to rigid extensions thereof, means for preventing further movement of the jaws endwise on each other when they have been brought opposite to each other, and means for preventing the jaws from moving apart on each other, substantially as and for the purpose specified.

7. The combination, in a trolley-wire hanger, of two grooved jaws, each constituting the lower member of a frame, two other parts, each parallel to a jaw and each constituting the upper member or backbone of a frame, cross-pieces or pillars rigidly connecting each backbone to a jaw, and two lugs attached to each frame, each lug having an inclined face next to the frame to which it is attached, these lugs so arranged that when the two frames are put face to face, but not exactly opposite to each other, with a wire between the grooved jaws, each lug on one frame may interlock with a lug on the other frame inclined face to inclined face, substantially as and for the purpose specified.

8. The combination, in a trolley-wire hanger, of two grooved jaws, each constituting the lower member of a frame, two other parts, each parallel with a jaw and each constituting the upper member of a frame, cross-pieces or pillars connecting each upper member with a lower member, two lugs attached to each frame, one to the lower member and one to the upper member, each of said lugs having an inclined plane face next to the plane face of the frame to which it is attached and so placed that when the two frames are brought face to face, but not quite opposite to each other, with a wire between the grooved jaws, each lug of one frame may interlock with a lug of the other frame, and as the frames are moved to nearer opposition the interlocked lugs may slide upon each other, an ear extending upward from the middle of each upper member, the ear of one frame being larger than the ear of the other frame and having in one side a recess, in which the smaller ear may lie, and also provided with a projecting part which comes in contact with the smaller ear when the two frames stand opposite to each other on the wire, a ring which may encompass both ears when they lie together, a hole through the larger ear, two projecting lugs on the top of the larger ear, a fork having a hole through its prongs, a threaded body and a rib in its crotch, a rivet or bolt passing through the fork and larger ear, connecting them together in such a manner that the fork can revolve about the rivet or bolt in either direction until stopped by the coming in contact of the rib in the crotch of the fork and a lug on the top of the ear, and an insulating-body provided with a nut for the reception of the threaded part of the fork and suitably prepared for attachment to a span-wire, all substantially as and for the purpose specified.

486,584. LUMBER-SORTER. CHARLES B. LITTLE, West Duluth, Minn. Filed Apr. 11, 1892. Serial No. 428,713. (No model.)

Claim.—1. In a lumber-sorter, the combination of a way having a number of transverse openings which are normally closed by movable sections of said way, an overhead conveyer arranged above and parallel with said way to move the stuff to be sorted over said way, and trips arranged to be operated by the stuff for opening said movable sections, substantially as and for the purposes set forth.

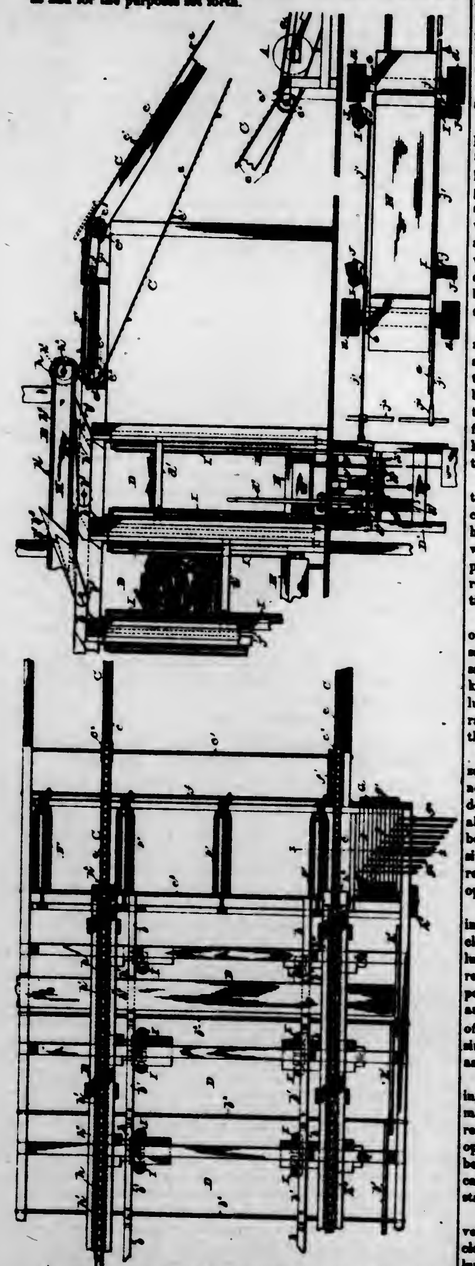
2. In a lumber-sorter, the combination of a suitable way having a number of openings therein and movable sections normally closing said openings, an overhead conveyer arranged above and parallel with said way to move the stuff to be sorted over said way, and mechanism under the control of the operator by which the movable sections are opened and the lumber is dropped through said way at the proper points, substantially as and for the purposes set forth.

3. In a lumber-sorter, the combination of a suitable way having openings normally closed by movable sections, trip arms or levers connected with said movable sections and arranged in different vertical planes, a conveyer arranged to move the lumber to be sorted over said way, and a stop under the control of the operator arranged to direct the lumber to the sorter in the proper position to engage the trip arm or lever of the opening through which such lumber is to be dropped, substantially as and for the purposes set forth.

4. In a lumber-sorter, the combination of a way having openings at intervals therein and movable sections normally closing said openings, trip arms or levers connected with said movable sections and arranged in different vertical planes, a conveyer arranged to move the lumber to be sorted over said way, and a graduated stop under the control of the operator, arranged to guide any piece of lumber to the sorter in the proper position as to its length to engage with and operate the trip arm or lever of the opening through which such piece of lumber is to to be dropped, substantially as and for the purposes set forth.

5. In a lumber-sorter, the combination of a way having openings therein at intervals and movable sections normally closing said open

ings, trip arms or levers connected with said movable sections and arranged in different vertical planes, a conveyer arranged to move the lumber to be sorted over said way, shifting-rollers arranged at the receiving end of the sorter parallel with said way, and a graduated stop at one side of said sorter in line with said rollers, substantially as and for the purposes set forth.



6. In a lumber-sorter, the combination of a suitable way having transverse openings therein and movable sections normally closing said openings, trips connected with and arranged to open said movable sections by the engagement of the lumber therewith, and an overhead conveyer arranged to move the lumber to be sorted over said way, substantially as and for the purposes set forth.

7. In a lumber-sorter, the combination of an approximately-horizontal way having transverse openings therein at intervals and movable sections normally closing said openings, an overhead conveyer arranged to move the lumber laterally over said way, trips connected with said movable sections and arranged in different vertical planes, mechanism at the receiving end of the sorter to move the lumber lengthwise, and a stop under the control of the operator, arranged to arrest the lumber in its lengthwise movement in position to engage with the trip of the opening through which it is to be dropped, substantially as and for the purposes set forth.

8. In a lumber-sorter, the combination of a conveyer comprising parallel chain belts provided at suitable intervals with dogs, horizontal shifting-rollers arranged parallel and with their upper sides approximately in the same plane with the upper sides of said belts, ways parallel with said rollers, having transverse openings at intervals therein and movable sections normally closing said openings, an overhead conveyer comprising chain belts provided with dogs and arranged parallel with said ways, trips connected with the movable sections of said ways and arranged in different vertical planes, and a graduated stop comprising a series of vertically-movable bars corresponding in number and position with said trips, substantially as and for the purposes set forth.

9. In a lumber-sorter, the combination of an approximately-horizontal way having a series of transverse openings therein and movable sections normally closing said openings, a series of pockets or receptacles below said openings for the reception of various kinds of lumber, an overhead conveyer arranged above and parallel with said way to move the lumber to be sorted laterally over said way, and means for opening the movable sections therein and dropping the several kinds of lumber into the proper receptacles, substantially as and for the purposes set forth.

10. In a lumber-sorter, the combination of a suitable way having transverse openings at intervals therein and movable sections normally closing said openings, and receptacles underneath said openings for holding the different kinds of lumber, said receptacles being provided with vertically-movable yielding supports and a space below said supports for the introduction of a wagon or truck, said supports being removable to deposit their load upon such wagon or truck, substantially as and for the purposes set forth.

11. In a lumber-sorter, the combination of a suitable way having openings at intervals therein and movable sections normally closing said openings, a conveyer arranged to move the lumber laterally over said way, receptacles underneath said openings for holding different kinds of lumber, vertically-movable yielding supports upon which the lumber falls in said receptacles, and laterally-movable uprights arranged on opposite sides of said receptacles, substantially as and for the purposes set forth.

12. In a lumber-sorter, the combination of an approximately-horizontal way having openings at intervals therein and movable sections normally closing said openings, a series of receptacles arranged underneath said openings and each provided at the bottom with a removable truck, vertically-movable yielding supports upon which the lumber falls in said receptacles, retractile upright rollers arranged on opposite sides of said receptacles, and connections with the rollers of each receptacle, whereby they are simultaneously thrown into or out of operative position, substantially as and for the purposes set forth.

13. In a lumber-sorter, the combination of horizontal ways having transverse openings at intervals and movable sections normally closing said openings, an overhead conveyer arranged to move the lumber laterally over said ways, and receptacles underneath and corresponding with said openings, each receptacle being provided on opposite sides with upright bars capable of turning in suitable bearings and carrying upright rollers, said bars being connected on each side of the receptacle with a rock-shaft and lever, whereby said rollers are simultaneously moved into or out of operative position, substantially as and for the purposes set forth.

14. In a lumber-sorter, the combination of horizontal ways having transverse openings therein at intervals and movable sections normally closing said openings, a number of receptacles below and corresponding with said openings, vertically-movable frames at or near the opposite ends of said receptacles, the upper cross-pieces of said frames being movable, and a counterweighted drum connected by chains or cables passing over sheaves with the lower parts of said frames, substantially as and for the purposes set forth.

15. In a lumber-sorter, the combination of ways having transverse openings at intervals therein and movable sections normally closing said openings, an overhead conveyer arranged to move the lumber laterally over said ways, trips connected with said movable sections and arranged in different vertical planes, shifting-rollers parallel with said ways at the receiving end of the sorter, a graduated stop consisting of a series of vertically-movable bars corresponding in number and position with said trips and carried at the ends upon

pivoted parallel links, and levers severally connected with and arranged to raise said bars above the tops of said shifting-rollers, substantially as and for the purposes set forth.

16. In a lumber-sorter, the combination of a feeding-conveyer, shifting-rollers arranged parallel therewith, a graduated stop located in line with said shifting-rollers, ways having openings at intervals therein and movable sections normally closing said openings, an overhead conveyer arranged to take the lumber from said shifting-rollers and move it laterally over said ways, and a series of receptacles below said openings, each provided with a truck and with vertically-movable yielding supports upon which the lumber is dropped in said receptacle and lowered upon said truck, substantially as and for the purposes set forth.

17. In a lumber-sorter, the combination of an approximately-horizontal way having openings at intervals therein and movable sections normally closing said openings, trips connected with said sections and arranged in different vertical planes, and a stop consisting of a series of independently and vertically movable bars arranged at or near one side of said way and parallel therewith, substantially as and for the purposes set forth.

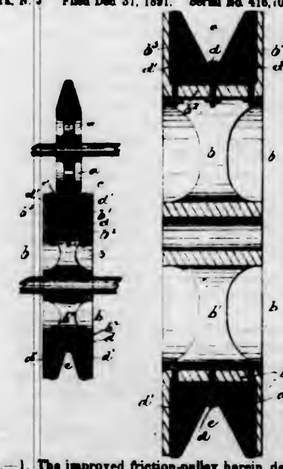
18. In a lumber-sorter, the combination of approximately-horizontal ways having transverse openings at intervals therein and movable sections normally closing said openings, rock-shafts to which said movable sections are attached, and trip-arms also attached to said rock-shafts and having their free ends beveled or inclined on the under side, substantially as and for the purposes set forth.

19. In a lumber-sorter, the combination of ways having transverse openings at intervals therein and movable sections normally closing said openings, rock-shafts to which said movable sections are attached, and trip-arms also attached to said rock-shafts and arranged in different vertical planes, the free ends of said movable sections and trip-arms being beveled or inclined on the under side, substantially as and for the purposes set forth.

20. In a lumber-sorter, the combination of approximately-horizontal ways having openings therein at intervals and movable sections normally closing said openings, means under the control of the operator for opening said movable sections, an overhead conveyer comprising chain belts provided with dogs and supported upon sprocket-wheels or drums with their under sides above and parallel with said ways, and guides in which said chain belts run between said sprocket-wheels or drums, substantially as and for the purposes set forth.

21. In a lumber-sorter, the combination of a conveyer comprising a number of parallel chain belts provided at intervals with dogs, a number of shifting-rollers placed parallel with the upper sides of said chain belts with their peripheries projecting a little above said belts and having their receiving ends beveled, so as to receive and raise the lumber thereon, and a stop against which the lumber is moved endwise by said rollers, substantially as and for the purposes set forth.

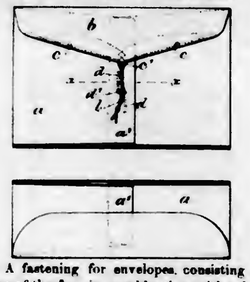
486,585. PULLEY FOR TRANSMITTING POWER. JOSEPH MEIER, Newark, N. J. Filed Dec. 31, 1891. Serial No. 416,706. (No model.)



Claim.—1. The improved friction-pulley herein described, combining therein a metallic body having a seat b^3, and integral flanges b^4 at the opposite edges thereof, between which are bolted layers of leather or like frictional material, having a groove formed therein with oppositely-inclined walls, and bolts d' d', extending through said layers and said seat and holding said layers to said seat, substantially as set forth

2. The improved friction-pulley comprising a body having a seat b^3 and integral flanges formed at the opposite edges of said seat at right angles thereto, layers c c, extending clear across said seat, and graduated layers forming a V-shaped groove imposed thereon, short bolts d, arranged to hold the layers c at the center, and long bolts extending through the graduated layers, all combined substantially as set forth.

486,586. ENVELOPE-FASTENER. ALFRED J. NEWBURY, New York, N. Y. Filed Feb. 12, 1892. Serial No. 421,333. (No model.)

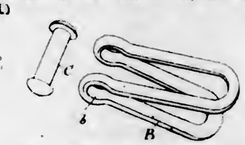


Claim.—1. A fastening for envelopes, consisting of a wire secured in the edge of the flap, in combination with a loop connected to the body of the envelope and a flexible wire secured to one part of the fastening and adapted to be passed through the other and bent over, substantially as set forth

2. A fastening for envelopes, consisting of a wire secured in the edge of the flap and having a central loop, in combination with a metal loop connected to the body of the envelope and a flexible wire secured to one loop and adapted to be passed through the other loop and bent over, substantially as set forth.

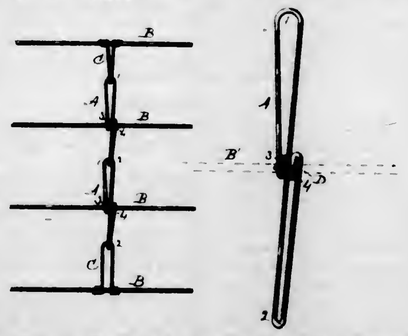
3. A fastening for envelopes, consisting of a wire secured in the edge of the flap and having a central loop, in combination with a metal loop secured to the body of the envelope within the lapped edges a' with the loop projecting, and a flexible wire secured to one loop and adapted to be passed through the other loop and be connected thereto, substantially as set forth.

486,587. DEVICE FOR COUPLING CHAIN-LINKS. CYRUS F. FOSLER, West Baldwin, Me. Filed Nov. 30, 1891. Serial No. 413,466. (No model.)



Claim.—A chain-coupling composed of a link partially doubled on its center to form an incomplete eye, combined with a double-headed bolt adapted to slip laterally into said eye, substantially as described.

486,588. WIRE FENCE. ISAIAH OARS, Union, Ohio, assignor of one-half to Roxy Folkerth, same place. Filed June 22, 1892. Serial No. 437,649. (No model.)

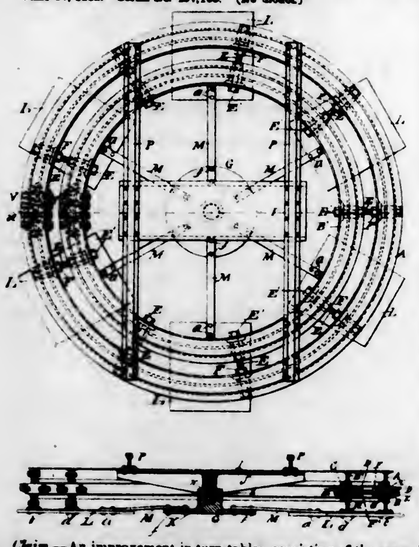


Claim.—1. The stay A for wire fences, formed of a single piece of wire bent into two loops equidistant from its center, the ends over-

lapped at the center at the sides of the body, and parallel hooks in reverse order formed of the two ends adapted to embrace the runner, substantially as shown and described.

2. The stay A for wire fences, formed of a single piece of wire bent into two loops equidistant from its center, the ends overlapped at the center at the sides of the body, and parallel hooks in reverse order formed of the two ends adapted to embrace the runner, in combination with the binding-wire D, substantially as described.

486,589. TURN-TABLE. GEORGE W. PATTON, Chicago, Ill., assignor to himself, Jason H. Shepard, and John Deisen, same place. Filed June 17, 1892. Serial No. 437,108. (No model.)



Claim.—An improvement in turn-tables, consisting of the central base-plate with the table I J N pivoted thereon and exterior plates L, connected with the central base-plate by bars M, in combination with a circular rail bolted to said exterior plates, rollers placed on the circular rail, a circular rail placed on said rollers, and the rollers held in position to rotate between the two rails by flanges on their inner ends, an L-shaped band surrounding the outer ends of the rollers, and by pivot-bolts, as and for the purpose specified.

486,590. PROCESS OF PRODUCING INLAID WORK ON STONES. RUDOLF RAUSCH, Vienna, Austria-Hungary. Filed Feb. 1, 1892. Serial No. 419,963. (No specimens.)

Claim.—The above-described method of producing mother-of-pearl, snail, or mussel shells, or metal inlaid work on stones, consisting first in drawing and cutting with a sharp tool the desired ornament or figure on the stone, then in applying acid on the so-produced engraving until the required depth is obtained, afterward in finishing and dressing the so-produced excavations by a hand-tool, then again in combining the mother-of-pearl, snail, or mussel shells, or metal into the pattern corresponding in shape with the excavations on the stone, and finally in cementing said patterns in whole or in sections into said excavations, substantially as described, and for the purposes set forth.

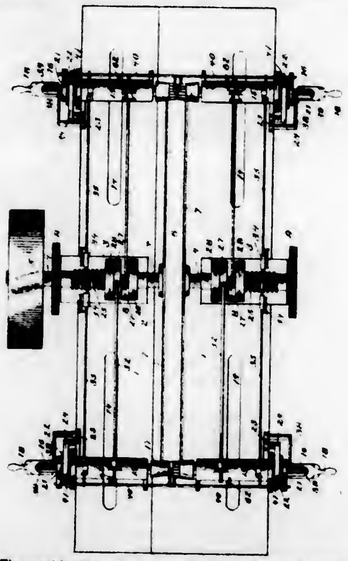
486,591. MACHINE FOR GRINDING DRINKING-GLASSES. HENRY C. SCHRADER, Wheeling, W. Va. Filed Jan. 12, 1892. Serial No. 417,798. (No model.)

Claim.—1. In a machine of the character described, the combination, with the swinging frames, the grindstone, and the main shaft, of the worm-shafts geared with the main shaft, ratchet-wheels fast on said worm-shafts and eccentrics loose thereon, spring-pawls for locking said ratchets and eccentrics, movable stops for throwing said pawls out of action, and slides operated by said worms to move said stops, substantially as shown and described.

2. In a glass-grinding machine, the combination, with the grindstone, of a vibrating glass-holder pivoted on a given horizontal plane and a second holder pivoted on a different plane, substantially as described.

3. In a glass-grinding machine, the combination, with the grindstone, of two vibrating glass-holders arranged on the same side thereof and pivoted on different horizontal planes and connections between the shaft of the grindstone and said frames to vibrate the latter, substantially as shown and described.

4. In a glass-grinding machine, the combination, with the grindstone, of two vibrating glass-holders at each side thereof, the holders at each side being pivoted in different horizontal planes to hold the articles being ground at different elevations, substantially as shown and described



5. The combination of a grindstone and a plurality of glass-holders arranged in pairs on opposite sides of the grindstone, the holders of both members of each pair being operated to recede from and return to the stone by a train of connections operatively connected with a single worm, substantially as described.

6. In a glass-grinding machine, the combination, with the shaft of the grindstone and the vibrating holder, of a worm-shaft in gear with the shaft of the grindstone, an eccentric on said worm-shaft, and a connection between said eccentric and the holder to vibrate the latter, substantially as shown and described.

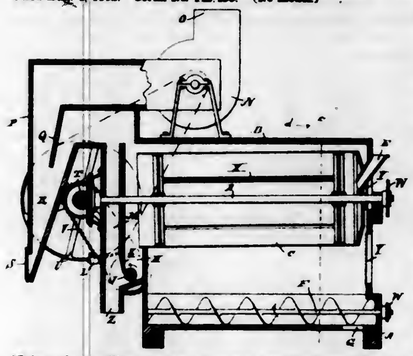
7. In a glass-grinding machine, the combination, with the grindstone, of a vibrating glass-holder, a continuously-rotating worm-shaft, an eccentric on said shaft, provided with a pawl for making it fast thereon, a movable dog for tripping said pawl, a connection between the eccentric and the holder for vibrating the latter, a slide operated by the worm on said shaft to move the dog out of the path of the pawl to permit the latter to be thrown into operative position, and a connection between the vibrating holder and the slide to disengage the latter from the worm, substantially as shown and described.

8. In a glass-grinding machine, the combination, with the grindstone, of a swinging frame movable toward and from the stone, a rotatable and longitudinally-movable shaft in said frame, provided with a holder for the article to be ground, a ratchet on said shaft, and a pawl pivoted to a stationary part of the machine to engage and hold the ratchet, and thereby cause a partial rotation of the shaft and holder at each movement of the frame, substantially as shown and described.

9. The combination of a grinding-stone, a frame pivoted to swing in a plane parallel with the axis of the stone, a rotatable and longitudinally-movable shaft extending across the path of the stone, provided with a holder for the object to be ground, means for rotating and reciprocating said shaft, and an adjustable stop for gaging the longitudinal movement of the shaft across the path of the stone, whereby facets in different planes may be made on the object, substantially as described.

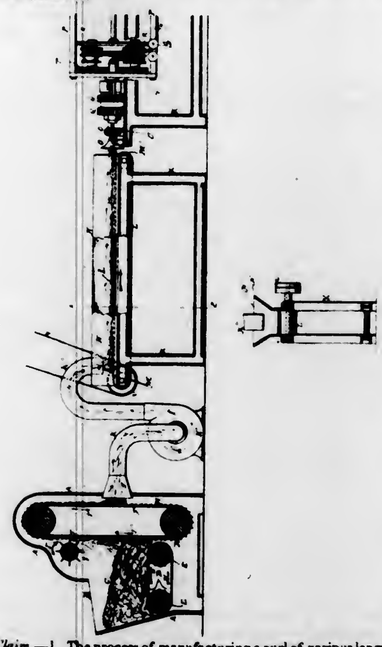
10. The combination, with the grindstone, of a frame movable toward and from the stone in a plane parallel to that of the stone, a rotatable and spring-pressed longitudinally-movable shaft in said frame, provided with a holder for the article to be ground, an adjustable stop for limiting the longitudinal movement of the shaft toward the stone, and a stepped block for holding said stop in different positions, substantially as shown and described.

486,592. ROLLING SCREEN. THOMAS A. SHIP, Dayton, assignor of one-half to Peter B. Holly and Christian A. Saltsman, Hamilton, Ohio. Filed Aug. 8, 1892. Serial No. 442,455. (No model.)



Claim.—In a rolling screen, the combination, substantially as set forth, of a perforated rotary screen, a grain-inlet at one end thereof, a discharge-passage at the other end thereof, a distributing-roll and gate in said discharge-passage, a casing forming a chamber around the screen, a conveyer in the base of the casing, air-inlets to the casing at the receiving end of the screen, a suction-fan, a suction-conduit connecting said fan with the chamber around the screen and with the interior of the screen and with said discharge-passage beyond said roll and gate, and a screenings-trap in said conduit.

486,593. METHOD OF MANUFACTURING CURLED HAIR. PETER WOLL, Jr., Philadelphia, Pa. Filed Oct. 28, 1891. Serial No. 410,115. (No specimens.)



Claim.—1. The process of manufacturing a curl of various lengths of fiber, which consists in forming the long and short fibers into a lap, twisting the same into a gasket, and curling or spiralizing the gasket, substantially as described.

2. The process of manufacturing a curl of various lengths of fiber, which consists in forming the long and short fibers into a lap, twisting the same into a gasket, curling or spiralizing the gasket, and "fixing" or "setting" the curl, substantially as described.

486,594. METHOD OF TREATING MINERALS, MATTES, SPEISS, OR OTHER SUBSTANCES CONTAINING NICKEL. JEAN DE COPPET, Paris, France. Original application filed May 20, 1892, Serial No. 433,730. Divided and this application filed Aug. 30, 1892. Serial No. 444,573. (No specimens.) Patented in France Feb. 26, 1892, No. 219,699.

Claim.—1. In the art of treating minerals, mattes, speiss, and other substances containing nickel, copper, iron, and cobalt, the process of separating nickel, cobalt, and iron from copper, which consists in obtaining a mixture of metallic copper, nickel, cobalt, and iron by a preliminary reduction of the oxides of these metals and then separating these metals from the copper by means of a hot acid solution of copper, substantially as and for the purposes set forth.

2. The art of treating substances containing iron, copper, nickel, and cobalt for the removal or separation of the iron, nickel, and cobalt, which consists in roasting or oxidizing the substance to convert the copper, iron, nickel, and cobalt into salts and oxides, removing the salts, and preparing an acid reagent by the lixiviation of the roasted substance, reducing the oxides to the metallic state to form a mixture of metallic nickel, iron, copper, and cobalt, and treating the mixture with the reagent in a hot state to separate the cobalt, nickel, and iron, substantially as and for the purposes set forth.

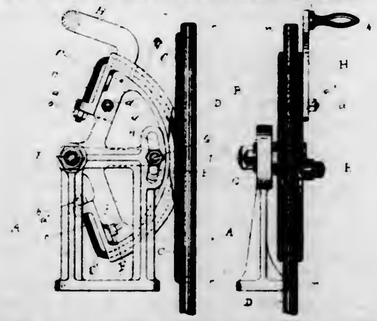
3. The art of treating substances containing iron, copper, nickel, and cobalt for the removal or separation of the iron, nickel, and cobalt, which consists in roasting or oxidizing the substance to convert the copper, iron, nickel, and cobalt into salts and oxides, removing the salts by washing the roasted substance, reducing the oxides to a metallic state to form a mixture of metallic nickel, iron, copper, and cobalt, and treating the mixture with a hot acid solution of copper to separate the cobalt, nickel, and iron, substantially as and for the purposes set forth.

486,595. METHOD OF TREATING MINERALS, MATTES, SPEISS, OR OTHER SUBSTANCES CONTAINING NICKEL. JEAN DE COPPET, Paris, France. Original application filed May 20, 1892, Serial No. 433,730. Divided and this application filed Aug. 30, 1892. Serial No. 444,574. (No specimens.) Patented in France Feb. 26, 1892, No. 219,699.

Claim.—1. The art of analytically treating substances containing, in addition to sulphur and impurities, metals, of which the most important are nickel, cobalt, copper, and iron, which consists in refining the substance by eliminating the iron from the other mineral, roasting or oxidizing the refined substance to convert the copper, nickel, and cobalt into salts and oxides, removing the salts and preparing an acid reagent by lixiviation of the refined and roasted substance, reducing the oxides to the metallic state to form a mixture of nickel, copper, and cobalt, treating the mixture with the reagent in a cold state to separate the cobalt, and treating the copper and nickel with the reagent in a hot state to separate the nickel, substantially as and for the purposes set forth.

2. The art of analytically treating substances containing nickel, cobalt, copper, and iron, which consists in refining the substance by eliminating the iron from the other minerals, roasting or oxidizing the refined substance to convert the copper, nickel, and cobalt into salts and oxides, removing the salts from the refined and roasted substance by lixiviation or washing, reducing the oxides to the metallic state to form a mixture of nickel, copper, and cobalt, treating the mixture with a cold acid solution of copper to separate the cobalt, and treating the copper and nickel with a hot acid solution of copper to separate the nickel, substantially as and for the purposes set forth.

486,596. MEASURING-PUMP. WILLIAM CRIGHTON, Fort Wayne, Ind., assignor of two-thirds to Scott Swann and Edgar D. Rogers, same place. Filed July 11, 1892. Serial No. 439,659. (No model.)



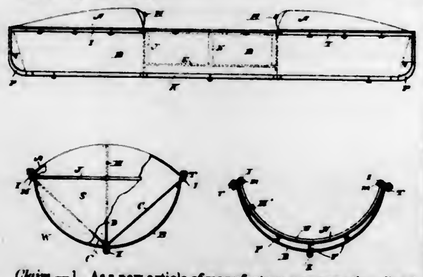
Claim.—1. An automatic measuring device for liquids, consisting of a vertical standard A, having a pivot I, a slot n, and an adjustable

stop G, a cam or segment B, pivoted to said standard, having its perimeter properly grooved for the reception of operating-cables, and provided with an operating-handle H, perforated lugs *e* and *e'* for securing said cables, a slot *f*, with an adjustable stop F, adapted for engagement with the stop G in standard A, and a movable stop E, also adapted for engagement with the stop G, said cam or segment being adapted to raise and lower the lifting-rod D by means of operating-cables connected therewith, all substantially as set forth and described.

2. In a measuring device for liquids, the combination of the vertical standard A, having a pivot I, a slot *n*, and an adjustable stop G, with the cam or segment B, hinged on the pivot I and having a grooved perimeter, an operating-handle H, perforated lugs *e* and *e'*, slot *f*, having a stop F, adjustable therein, and a movable stop E, adapted for engagement with stop G, and the flexible cables C and C', secured in said lugs and grooved perimeter and adapted to operate the lifting-rod D of a suitable pump, all substantially as herein-before set forth and described.

3. The combination, in a measuring device, of the slotted standard A and the cam B, pivoted thereto and provided with an operating-handle, a movable stop E, a slot *f*, having a stop F, adjustable therein, and perforated lugs *e* and *e'*, with the lifting-rod D, and the cables C and C', connecting said lugs with said lifting-rod and having a bearing on the grooved perimeter of said cam, all substantially as set forth and described.

486,597. COLLAPSIBLE PNEUMATIC BOAT. WILLIAM H. GAMBLE and DAVID R. ALLEN, Miamisburg, Ohio. Filed Mar. 8, 1892. Serial No. 424,163. (No model.)



Claim.—1. As a new article of manufacture, a pneumatic collapsible boat made of textile or other suitable flexible material rendered air-tight and having air-tight decked-over end portions provided with air-valves and separated from an open or well portion by air-tight partitions, and an air-tight open or well portion having double sides and bottom with an air-space between the double sides and bottom and provided with an air-valve, the whole being adapted to take a boat shape and remain extended by means of inflation, substantially as described.

2. In a pneumatic collapsible boat composed entirely of air-tight flexible material, the decked inflatable end sections, in combination with an intermediate inflatable open or well section having double sides and bottom walls connected by flexible stays which hold said walls in proper relation to each other when said section is inflated, substantially as described.

3. In a pneumatic collapsible boat composed of air-tight flexible material, air-tight end sections having the sides and bottom B, deck A, transverse partitions S, and provided with flexible stays C, C, and D, in combination with an interposed open or well section, substantially as described.

4. In a pneumatic collapsible boat, an air-tight end section formed by the deck A, the sides and bottom B, and the transverse partition S, all composed of flexible air-tight material, said section being divided into two or more separate chambers by and in combination with the partitions C, D, and C, which also answer the purpose of stays, and the air-valve H, substantially as described.

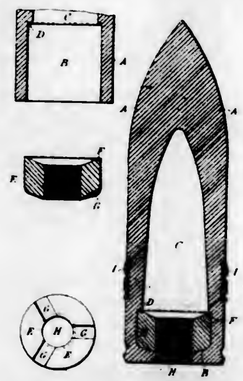
5. In a pneumatic collapsible boat composed of air-tight flexible material, an inflated open or well section having double side and bottom walls and interposed between closed or decked and inflatable end sections.

6. In a pneumatic collapsible boat composed of air-tight flexible material, an open or well section located between two decked and air-tight sections and having double side walls and bottom connected at suitable intervals by longitudinally-arranged flexible stays.

7. A pneumatic collapsible boat composed of air-tight flexible material, the inflatable decked end sections and intermediate open or well section having the double side walls and flexible stays connecting said walls, in combination with the stem-posts P P, connected to said end sections, and the jointed and detachable keel connected to said stem-posts and secured underneath the several collapsible boat-sections, substantially as described.

8. A pneumatic collapsible boat made of flexible material rendered air-tight and having decked-over end portions provided with air-valves and separated from an open or well section by air-tight partitions, and an open or well portion having double sides and bottom with an air-tight space between and provided with an air-valve, in combination with the hinged detachable gunwales I, the detachable keel K, fastened underneath the boat, the stem-posts P, fastened at the ends of the boat, and one or more ribs or braces N, provided at their ends with yokes *m* to engage the gunwales and adapted to be held in place by the pressure against them of the sides and bottom of the inner wall E of the well-section.

486,598. PROJECTILE. HUBERT H. GREENFELL, London, and JAMES G. ACCLES, Birmingham, England. Filed Dec. 19, 1891. Serial No. 415,680. (No model.)



Claim.—1. A hollow projectile provided with a plug near its rear end, having grooves on its outer face, the body of said projectile being provided with a flange upset over said plug and into the grooves thereof.

2. A hollow projectile provided with an enlarged chamber at its rear end, having shoulders at the inner portion of said enlarged chamber, a plug within said chamber, abutting against said shoulders, the body of said projectile being provided with a flange upset over said plug and clamping it against the shoulders.

3. A hollow projectile provided with a plug near its rear end, having grooves on its outer face, the body of said projectile being provided with a flange upset over said plug and into the grooves thereof, said plug and flange having a screw-threaded opening extending therethrough.

4. A hollow projectile provided with an enlarged chamber at its rear end, having shoulders at the inner portion of said enlarged chamber, a plug within said chamber, abutting against said shoulders and provided with grooves on its outer face, the body of said projectile being provided with a flange upset over said plug and into the grooves thereof, clamping the plug against said shoulders.

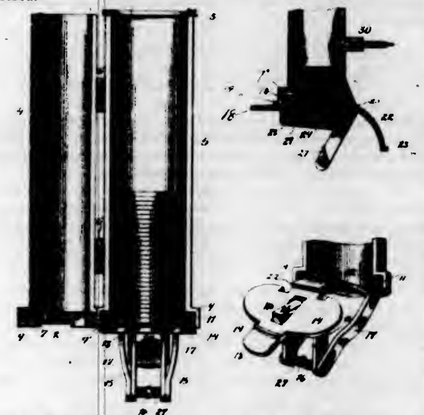
486,599. SOAP-HOLDER. CHARLES S. HIGGINS, Brooklyn, N. Y. Filed July 14, 1892. Serial No. 440,070. (No model.)

Claim.—1. The combination, with a soap-holder formed in two portions and provided with a locking-latch for holding said portions together, of means for automatically opening said holder when the same is brought into operation next after the delivery of the last cake of soap, substantially as described.

2. The combination, with a soap-holder formed in two portions and provided with a locking-latch in the lower part of one of the portions for holding said portions together, of a releasing-pawl placed in the movable bottom of the soap-holder for automatically opening the same when brought into operation next after the delivery of the last cake of soap, substantially as described.

3. The combination, with a soap-holder formed in two portions and provided with a locking-latch placed in a recess in the lower part of one of the portions for holding said portions together, of a releasing-pawl placed in the movable bottom of the soap-holder for automatically opening the same when brought into operation next after the delivery of the last cake of soap, substantially as described.

4. The combination, with a soap-holder formed in two portions and provided with a locking-latch in the lower part of one of the portions for holding said portions together, of a releasing-pawl pivoted in a casing on the under side of the movable bottom and having free vertical play through a slot formed in the movable bottom for automatically opening the holder when the same is brought into operation next after the delivery of the last cake of soap, substantially as described.



5. The combination, with a soap-holder formed in two portions and provided with a locking-latch for holding said portions together, of a releasing-pawl whose front end is lighter than its rear end and is provided with a stop or lug for limiting its upward movement, pivoted in a casing on the under side of the movable bottom and having free vertical play through a slot formed in said bottom for automatically opening the holder when the same is brought into operation next after the delivery of the last cake of soap, substantially as described.

6. The combination, with a soap-holder formed in two portions and provided with a locking-latch placed in a recess in the lower part of one of the portions for holding said portions altogether, said locking-latch being formed with two wings, one of which is held pressed from the inner surface of the recess by a spring and the other of which is provided with a locking-head engaging when the holder is closed with a lug on the inner surface of a recess formed in the other portion of the soap-holder, of a releasing-pawl pivoted in a casing on the under side of the movable bottom and having free vertical play through a slot formed in said bottom for automatically opening said holder when the same is brought into operation next after the delivery of the last cake of soap, substantially as described.

7. The combination, with a soap-holder formed in two portions and provided with a locking-latch for holding said portions together, of a forwardly and downwardly movable bottom for the same, said bottom being provided with downwardly-projecting rods mounted on a transverse shaft journaled in brackets projecting from the lower end of one of the portions of the soap-holder, and means for automatically drawing said bottom into a position under the holder after the delivery of a cake of soap, substantially as described.

8. The combination, with a soap-holder formed in two portions and provided with a locking-latch for holding said portions together, of a movable bottom for said holder, said bottom being provided with rods projecting downwardly from it and mounted on a transverse shaft journaled in brackets projecting from the lower end of one of the portions of the soap-holder and being provided with a forwardly-extending ledge for grasping and actuating said bottom and with a rearward-projecting and downwardly-curved portion provided with a rib thereon for holding the cakes of soap in proper position when the bottom is being moved forward to deliver a cake of soap, and means for automatically drawing said bottom into position under the holder after the delivery of a cake of soap, substantially as described.

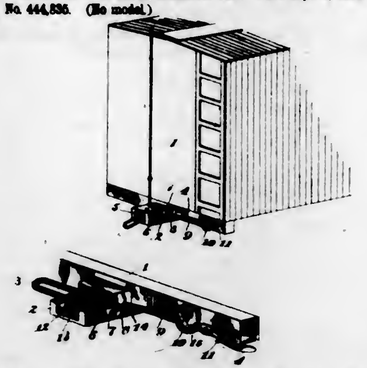
9. The combination, with a soap-holder formed in two portions and provided with a locking-latch for holding said portions together, of a forwardly and downwardly movable bottom for said holder, said bottom being provided with rods projecting from the same and mounted on a transverse shaft journaled in brackets projecting from the lower end of one of the portions of the soap-holder, means for automatically drawing said bottom into position under the holder after the delivery of a cake of soap, and a releasing-pawl pivotally secured in a casing on the under side of said bottom and having free vertical play through a slot formed in said bottom for engaging the locking-latch and opening the holder when the same is brought into operation next after the delivery of the last cake of soap, substantially as described.

486,600. VALVE-SEAT. JOHN H. McGOWAN, Cincinnati, Ohio. Filed Dec. 21, 1891. Serial No. 415,706. (No model.)

Claim.—1. A valve-seat for disk lift-valves provided with a central boss for a guide-stem and one or more concentric supporting-rings within the port-openings, having their supporting-faces in or approximately in the plane of the boss and marginal seat and being themselves sustained by supports wholly below said plane, substantially as set forth.

2. In combination with a flat disk valve composed of or faced with rubber or other yielding material, a seat provided with one or more concentric supporting-rings arranged within the annular seat-opening with their supporting-faces in or approximately in the plane of the boss and marginal seat and being themselves sustained by supports wholly below said plane, substantially as set forth.

486,601. CAR-COUPLING. SAMUEL C. NOBLE, Overpeck, assignor of one-half to N. B. Tubbs, Hamilton, Ohio. Filed Sept. 1, 1892. Serial No. 444,836. (No model.)



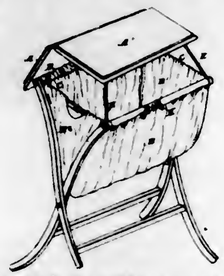
Claim.—1. In a car-coupler, the combination, with a draw-bar, the outer end of which is provided with a recess and two transverse openings, one of which is through the draw-bar to the rear of the recess and the other is through the walls of the recess, of a substantially-U-shaped pin, one arm of which is longer than the other one and passes through the opening to the rear of the recess, and means for moving the pin in said openings, substantially as set forth.

2. In a car-coupler, the combination, with a draw-bar, the outer end of which is provided with a recess and two transverse openings, one of which passes through the walls of the recess and the other one passes through the bar to the rear of the recess, of a substantially-U-shaped pin in said draw-bar, a lever pivoted to the side of the car, and a link connecting one end of the lever and the end of the longer arm of the pin, substantially as set forth.

3. In a car-coupler, the combination, with a draw-bar, the outer end of which is provided with a recess and two transverse openings, of a substantially-U-shaped pin in said openings, a lever pivoted to the side of the car, a link connecting one arm of the link with the arm of the lever and provided with a short crook near the connection with the lever, whereby the lever may be swung upon its pivot without the link engaging with said pivot, and a stop on the other side of the pivot for limiting the movement of the lever in the opposite direction, substantially as set forth.

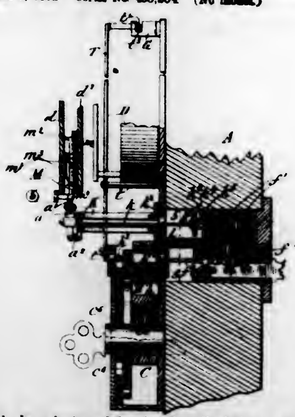
4. In a car-coupler, the combination, with a draw-bar, the outer end of which is provided with a recess, the bottom wall of the recess being slightly inclined at its outer end and the upper portion of the bar being cut away, said draw-bar being provided with two transverse openings, one of which passes through the walls of the recess and the other passes through the solid portion of the bar to the rear of the recess, of a substantially-U-shaped pin in said openings, one arm of which is longer than the other and fits snugly in the opening at the rear of the recess and the shorter arm fits loosely in the openings in the wall of the recess, and means for moving the pin back and forth through said openings, substantially as set forth.

486,602. SEWING OR EMBROIDERY TABLE. ALICE R. P. MORTON, New York, N. Y. Filed May 17, 1892. Serial No. 433,371. (No model.)



Claim.—As an article of manufacture, a sewing or embroidery table comprising the legs, the frame supported thereby, the bag depending from said frame, the two-part hinged top, the pivoted rung D, connected to one part, the bail-shaped support E, the stop G to receive the support, and the angle-brace F, said rung, support, stop, and brace co-operating to retain the two-part top when it is elevated and adjusted above the bag.

486,603. TIME-LOCK. EDWIN S. PHELPS, Leavenworth, Kans. Filed June 2, 1892. Serial No. 435,254. (No model.)



Claim.—1. In a device of the class described, the combination of a key-hub guarded by tumblers with a clock mechanism for raising one or more of the said tumblers to allow the use of different keys during different periods of time and the bolt operated by the said hub, substantially as described.

2. In a locking device, the combination of a key-hub guarded by tumblers, the bolt operated by the said hub, the moving dial, the extension-arms carried by the said dial, and the intermediate mechanism connecting the said arms with the said tumblers, substantially as described.

3. In a locking device, the combination of the key-hub guarded by tumblers, the bolt operated by the said tumblers, the clock mechanism for raising or lowering one or more of the said tumblers, and the recording mechanism to register the turning of the said hub, substantially as described.

4. In a locking device, the combination of the casing, the key-hub journaled therein, the bolt operated by the said hub, the tumblers seated in the said casing, the arm engaging with one or more of the said tumblers, and the mechanism for moving the said arm to raise or lower the said tumbler or tumblers, substantially as described.

5. In a locking device, the combination of the casing, the key-hub journaled therein, the bolt operated by the said hub, the tumblers seated in the said casing to lock the hub relatively thereto, the rotatable disk mounted on the casing, the arm carried by the disk and engaging with one or more of the said tumblers, the shaft connected with the said disk, the arm attached to the front end of the said shaft, the moving dial-plate, the extension-arms secured thereon and adapted to bear against when extended the arm connected with the shaft, substantially as described.

6. In a locking device, the combination of the casing, the key-hub journaled therein, the bolt operated by the said hub, the tumblers seated in the said casing to lock the hub relatively thereto, the disk rotatably mounted on the casing, the arm carried by the disk and engaging with one or more of the said tumblers, the shaft connected with the said disk, mechanism for partly rotating the said shaft, the segment mounted on the shaft, having cam-faces, and the spring adapted to press upon the cam, substantially as described.

7. In a locking device, the combination of the lock proper consisting, essentially, of a bolt and a dog for moving the same, the said dog having a rack formed on its upper edge, and the rotatable lantern-gear meshing with the said rack, substantially as described.

8. In a locking device, the combination of the lock proper consisting, essentially, of a bolt and a dog for moving the latter, the said dog having a rack formed on its upper edge, the lantern-gear meshing with the said rack, the key-hub, and the shaft connecting the said hub with the lantern-gear, substantially as described.

9. In a locking device, the combination of the lock proper consisting, essentially, of a bolt and a dog for moving the latter, the said dog having a rack formed on its upper edge, the rotatable lantern-gear meshing with the said rack, the key-hub provided with arms to operate the said dog to disengage it from the lantern-gear, substantially as described.

10. In a locking device, the combination of the lock proper consisting, essentially, of a bolt and a dog for moving the same, the said dog having a rack formed on its upper edge, the lantern-gear meshing with the said rack, the key-hub, the shaft carrying the said lantern-gear, the inner ends of the said shaft and key-hub having diametrical slots, and the plate with its ends seated in the said slots, substantially as described.

11. In a locking device, the combination of the lantern-gear adapted to be rotated by the key-hub, the pin eccentrically mounted on the outer end thereof, the lever engaging with said pin at its lower end and having a punch attached to its upper end, the tape-roll, the guide, and the guide-rolls, substantially as described.

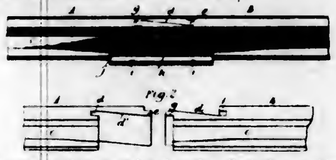
486,604. SUSPENSION DEVICE FOR INCANDESCENT LAMPS. STEPHEN PORTER, Boston, Mass. Filed Nov. 23, 1891. Serial No. 412,719. (No model.)

Claim.—1. A suspension device comprising a spool adapted to be engaged with a cord and provided with a spring exerting a constant pull on the cord in the direction required to wind the same upon the spool, and a support for the spool provided with bars or bearings for the cord located at opposite sides of the periphery of the spool and in close proximity thereto, said bearings being rigidly connected with each other, arranged to bear upon and form abrupt beads or bights in the cord and prevent the taking-up action of the constantly-pulling spring when the support is in its normal position and to let out said bights and permit the taking-up action of the spring when the support is moved from its normal position, the action of the spring being opposed only by the friction of the cord on said bearings, so that when the bearings are displaced the spring is free to act, as set forth.

2. In a suspension device, the combination of the spool having cord-receiving slots open at one end of the spool, a stud on which said spool is adapted to rotate, heads on said stud at opposite ends of the spool, one of said heads being removable to expose the slotted end of the spool, and the cord-deflecting bars on the heads, as set forth.

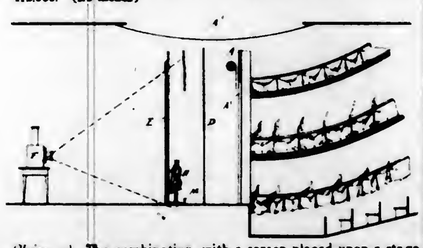
3. In a suspension device, the combination of the spool, the stud supporting the spool, the heads on the stud, the laterally-adjustable bars or friction devices secured to said heads, and means for holding said bars in the different positions to which they may be adjusted, as set forth.

486,605. RAIL-JOINT. JOHN B. SARVIS, Newburg, N. Y. Filed July 22, 1892. Serial No. 440,916. (No model.)



Claim.—In a rail-joint of the class described, the combination, with the rail A, having the vertical recess, the vertical wall arranged diagonally to the length of the rail, and the vertical projection, of the rail B, having the recess, vertical wall, and projection, the chair having the flanges, as described, and the wedge-pieces, as and for the purpose set forth.

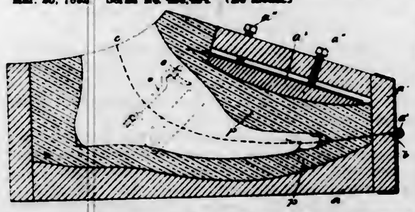
486,606. APPARATUS FOR PRODUCING SCENIC EFFECTS. FRANCIS SEYMOUR, Paterson, N. J. Filed Jan. 23, 1892. Serial No. 418,969. (No model.)



Claim.—1. The combination, with a screen placed upon a stage within the stage-opening, of a stereopticon placed behind the screen to throw an image upon the screen, a masking-piece in front of the screen, and a stage property representing a body capable of movement placed between the screen and the masking-piece, substantially as set forth.

2. The combination, with a screen placed upon a stage within the stage-opening, of a stereopticon placed behind the screen to throw an image upon the screen, a masking-piece in front of the screen, a movable support between the screen and the masking-piece, and a stage property on said movable support, substantially as set forth.

486,607. METHOD OF AND MEANS FOR MAKING PATTERNS FOR INDIVIDUAL LASTS. GEORGE W. WILLEY, Brockton, Mass. Filed Mar. 25, 1892. Serial No. 426,424. (No model.)



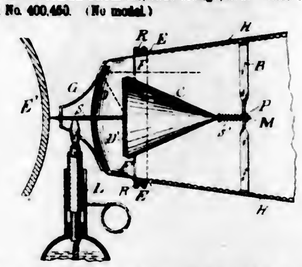
Claim.—1. The improved method hereinbefore described of making individual lasts for boots and shoes, the same consisting in first making a divided matrix conforming to the shape of the foot and composed of separable sections, enlarging the matrix at the toe and at the margin of the sole to form an angle defining the contour of the sole, and filling the matrix with a composition substantially such as gutta-percha and sawdust, the same when hardened constituting a cast or form which is a fac-simile of the foot with the additions caused by the enlargement of the matrix, as set forth.

2. The improved method hereinbefore described of making individual lasts for boots and shoes, the same consisting in first making a divided matrix conforming to the shape of the foot and composed of separable sections, enlarging the matrix at the toe and at the margin of the sole to form an angle defining the contour of the sole, filling the matrix with a composition substantially such as gutta-percha and sawdust, the same when hardened constituting a cast or form which is a fac-simile of the foot with the additions caused by the enlargement of the matrix, and finally softening the toe portion of the cast and re-forming the same by inserting it in a supplemental mold or matrix, as set forth.

3. The improved foot-matrix flask, consisting of a bottom section and a top section separable from the bottom section said flask having sides and being thereby formed to contain a mass of material surrounding the foot and provided with an unyielding curved bottom or pattern former adapted to impart the desired curvature to the bottom of the human foot and to the material interposed between said curved bottom and the bottom of the foot, whereby said flask is adapted to retain the pattern so formed in proper position for casting, substantially as and for the purpose set forth.

4. In a foot-matrix flask, the combination of the bottom section, the top section hinged to the bottom section, the presser or follower in the top section, and means for operating said presser, as set forth.

486,608. APPARATUS FOR RECORDING SPEECH OR OTHER SOUNDS. WILLIAM BROWNING, East Orange, N. J. Filed July 23, 1891. Serial No. 400,460. (No model.)



Claim.—1. In a phonograph, a style supported at two or more points, in combination with an applied flame or other source of heat.

2. In a phonograph, a style supported at two or more points, in combination with a flame or other source of heat applied between the support that is adjacent to the record-surface and the diaphragm-support.

3. A phonographic diaphragm provided on the side presented to the mouth of the horn with a shield having a cone, convex or dome shape, which prevents contact of sound-waves with that side.

4. In combination, a phonographic diaphragm and a cone-shaped shield covering and protecting the diaphragm on the side presented to the mouth of the horn from the contact of the sound-waves, and the outside of which has a sound-wave-deflecting surface, arranged to deflect the same through an annular space around the diaphragm and into a chamber in front of the same.

5. A phonographic diaphragm provided on the side presented to the mouth of the horn with a cone-shaped shield against the contact of sound-waves, which on its outer side deflects sound-waves into and through an annular space around the diaphragm upon a dome-shaped reflector.

6. A phonographic diaphragm provided on the side presented to the mouth of the horn with a cone-shaped shield against the contact of sound-waves, which on its outer side deflects sound-waves into and through an annular space around the diaphragm upon a dome-shaped reflector and thence upon the diaphragm.

7. In combination with a diaphragm of a phonograph, the concave or dome-shaped deflector placed between the diaphragm and the recording-surface so as to deflect sound-waves upon the front or adjacent face of the diaphragm.

8. A horn or cone shaped sound-conveyer closed at the small end by a concave or dome-shaped cap, in combination with a diaphragm provided with a style which passes through the cap toward the recording body or material, upon which diaphragm sound-waves are reflected from the concave surface.

9. A horn or cone shaped sound-conveyer terminated at the small end by a dome or concave cap, an inner cone-shaped shield covering and protecting one side of a phonographic diaphragm from the action of sound-waves, and the diaphragm provided with the style projecting through the cap toward the recording body or material, all in combination.

10. The diaphragm of a phonograph provided on the side presented to the mouth of the horn or sound-conveyer with a shield, which prevents the contact of sound-waves therewith, substantially as shown and described.

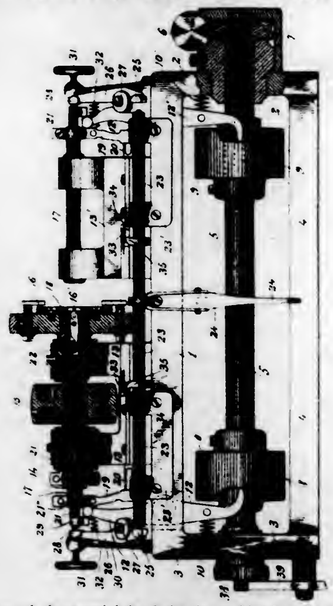
11. A diaphragm of a phonograph provided on the side presented to the mouth of the horn or sound-conveyer with a closed air-chamber, the front side of which consists of the diaphragm, substantially as shown and described.

12. A horn or cone shaped sound-conveyer provided at its small end with a concave or dome-shaped deflecting-cap, a phonographic diaphragm provided with an air-chamber on the side adjacent to the mouth of the horn or sound-conveyer, and with a style projecting

through the deflecting-cap of the horn toward or into the recording body or material, all in combination

13. A phonographic diaphragm provided with a frame and style, in combination with a horn or sound-conveyer, means for movably supporting said diaphragm and style in said horn, and a spring bearing on the frame of the diaphragm to press the style toward the tablet.

486,609. UPRIGHTING-LATHE. DUANE H. CHURCH, Waltham, Mass. Filed Mar. 1, 1892. Serial No. 423,412. (No model.)



Claim.—1. In an uprighting-lathe, the combination of two cutter-holding spindles located in line with and facing each other and provided with laterally-adjustable cutters at their adjacent ends, means for moving said spindles simultaneously endwise in opposite directions, and a live-spindle inclosing one of said cutter-holding spindles and provided with a work-holder adapted to hold and rotate a piece of work between said cutters, as set forth.

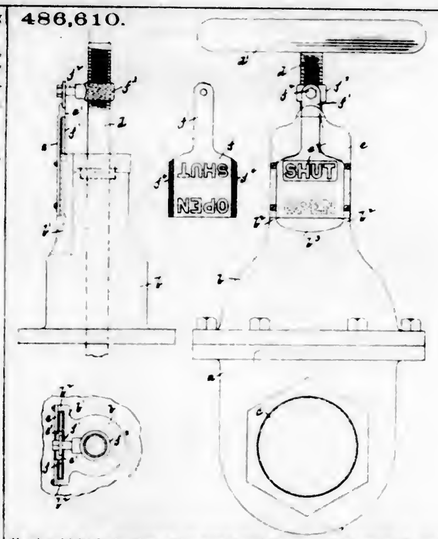
2. In an uprighting-lathe, the combination of a cutter-holding spindle provided at one end with a laterally-adjustable cutter, means for moving said spindle endwise to present its cutter to a piece of work, and a rotating hollow spindle inclosing the cutter-holding spindle and provided with a work-holder arranged to hold and rotate the work in position to receive the action of the cutter, as set forth.

3. In an uprighting-lathe, the combination, with a rotary hollow spindle, of a cutter-holding spindle located within said spindle and provided with a laterally-movable cutter-holder, means for moving said cutter-holding spindle lengthwise of the rotary spindle, an adjusting device engaged with the cutter-holder and adapted to move the same laterally to vary its position relatively to the axial line of the rotary spindle, a caliper device, and connections between it and the adjusting device whereby the cutter may be adjusted, as set forth.

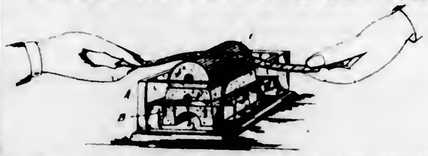
486,610. VALVE-INDICATOR. JASON GILLM, Indian Orchard, Mass. Filed Apr. 8, 1892. Serial No. 428,283. (No model.)

Claim.—1. The combination, with a stationary-spindle valve having at the upper end of its body a recess or pocket, said pocket having in the outer side thereof a transverse slot, of a sign-plate adapted to have free vertical movement within said pocket, said plate having upon both the front and rear sides thereof letters or symbols to indicate the position of the valve-plug when exposed to view through the slot in said pocket, the letters or symbols upon one side of said plate being arranged in an inverted position relatively to those upon the opposite side thereof, an internally-threaded sleeve engaging a threaded portion of the valve-spindle, and means for detachably connecting said sign-plate to said sleeve, arranged and operating substantially as described, whereby said sign-plate is adapted to be reversed to enable the valve to be used in either a vertical or a horizontal position.

2. The combination, with valve-body *a b* and the stationary spindle *d*, said body having at its upper end the square shoulder *b'*, provided at its outer side with the side flanges b^2 and intermediate recess b^3, of plate *c*, adapted to be secured to said flanges, said plate having therein the slot c^2 and having at its upper end the inwardly-projecting lugs *c'*, sign-plate *f*, adapted to have free movement within the recess in said shoulder and having the stem *f'* adapted to be guided between said lugs *c'*, sleeve f^2, engaging a threaded portion of said spindle *d*, and a bolt or similar device connecting the stem *f'* of said sign-plate to said sleeve, arranged and operating substantially as described.



486,611. POSTAGE-STAMP MOISTENER. FREDERICK GORETZ, New York, N. Y. Filed Sept. 15, 1892. Serial No. 446,025. (No model.)



Claim.—1. A moistener for postage and other stamps, consisting of a receptacle for the water and an absorbent block located in said receptacle and provided with a covering-layer extending over the top of the same and with elastic cushions in the side walls, substantially as set forth.

2. A moistener for postage-stamps, composed of a receptacle for water and an absorbent block provided with a covering-layer at the top and with a bottom groove and longitudinal perforations in the block, substantially as set forth.

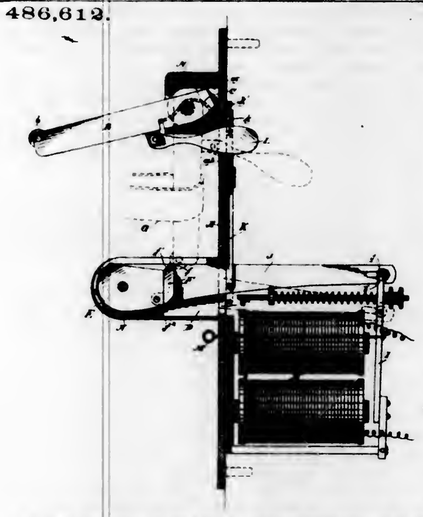
3. An absorbent block for stamp-moisteners, provided with a bottom groove and with a longitudinal perforation in the middle portion of the body and a longitudinal perforation at the top part of the block, substantially as set forth.

486,612. ELECTRIC RELEASING DEVICE. WILLIAM R. HEWITT, San Francisco, Cal. Filed Aug. 23, 1892. Serial No. 443,892. (No model.)

Claim.—1. In an automatic releasing device, the combination of a swinging spring-controlled releasing-arm, a depressible trip-catch with which the end of said arm engages, a trip-lever connected with said catch for releasing it from its engagement with the arm, an electro-magnet, a swinging armature of said magnet, and tripping-contacts between said armature and the trip-lever, substantially as herein described.

2. In an automatic releasing device, the combination of a swinging spring-controlled releasing-arm, a pivoted depressible block below, a spring controlled trip-catch carried by said block and adapted to engage the releasing-arm, a trip-lever connected with the block, an electro-magnet, a swinging armature thereof, and tripping-contacts between said armature and trip-lever, substantially as herein described.

486,612.



3. In an automatic releasing device, the combination of a swinging spring-controlled releasing-arm, a trip-catch engaging said arm, a trip-lever for operating the catch, means for operating the trip-lever, and the means for automatically returning the trip-lever to its normal position by the swinging of the releasing-arm, consisting of the slide-bar K, attached to said trip-lever and having an elongated slot, and the cam-lever pivoted to the releasing-arm and operating in the slot of the slide-bar, substantially as herein described.

4. In an automatic releasing device, the combination of a swinging spring-controlled releasing-arm, a trip-catch engaging said arm, a trip-lever for operating the catch, means for operating the trip-lever, and the means for automatically returning the trip-lever to its normal position by the swinging of the releasing-arm, consisting of the slide-bar K, attached to said trip-lever and having an elongated slot, the cam-lever pivoted to the releasing-arm and operating in the slot of the slide-bar, and the set-screw in the top of the slide-bar for regulating the contact of the cam-lever therewith, substantially as herein described.

5. An automatic releasing device consisting of a swinging spring-controlled releasing-arm, a pivoted depressible block below, with the spring-controlled trip-catch with which the releasing-arm engages, a lever secured to said block, an electro-magnet, a swinging armature thereof, trip-pins between said armature and lever, the slide-bar connected with the lever and having the slot, and the cam-lever pivoted to the releasing-arm and operating in the slot of the slide-bar to raise said slide-bar and return the trip-lever to normal position, substantially as herein described.

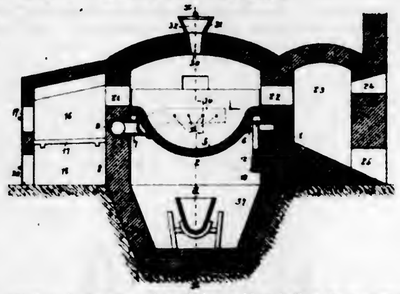
6. In an automatic releasing device, the combination of a swinging spring-controlled releasing-arm having in its end a roller and a depressible trip-catch having a curved upper end behind which the roller of the releasing-arm engages, substantially as herein described.

7. In an automatic releasing device, the combination of a swinging spring-controlled releasing-arm having a roller in its end, a depressible yielding spring-controlled trip-catch having a beveled or inclined forward edge at its top, by which the roller passes, and a curved back edge against which the roller bears and is held, substantially as herein described.

8. An automatic releasing device consisting of the swinging spring-controlled releasing-arm having the roller in its lower end, the depressible spring-controlled trip-catch with its beveled front and rounded back for engaging the roller of the releasing-arm, the trip-lever for operating said catch, the electro-magnet with its armature, and the contact-pins between the armature and lever, substantially as herein described.

9. An automatic releasing device consisting of the swinging spring-controlled releasing-arm having the roller in its lower end, the depressible spring-controlled trip-catch with its beveled front and rounded back for engaging the roller of the releasing-arm, the trip-lever for operating said catch, the electro-magnet with its armature, the contact-pins between the armature and lever, the slotted slide-bar connected with the lever, and the cam-lever operating in said bar and pivoted to the releasing-arm, substantially as herein described.

486,613. PROCESS OF REFINING GOLD AND SILVER MATTE. WERNER LABOUTE, Deadwood, S. D. Filed Dec. 8, 1890. Renewed Oct. 28, 1892. Serial No. 450,304. (No model.)



Claim.—1. A process for refining gold and silver matte, consisting in first smelting pyritic gold and silver ores in a suitable furnace, then transferring the gold and silver matte into a converter, heating this converter during the entire process, tilting the converter to bring the molten matte over the tuyere-openings, passing a blast of air through said matte to produce various stages of oxidation, adding lead or lead-containing substances, and finally adding a flux to slag off the baser metals which are not at first oxidized and volatilized by said blast, substantially as set forth.

2. In an apparatus for refining gold and silver matte produced by smelting in a suitable furnace, a furnace having a side opening, a swinging spoon-shaped converter having an elongated spout mounted on trunnions within the same, said spout being located and arranged within said side opening, a series of tuyere-openings in the wall of the converter, a hollow rib secured to the outside of said converter and communicating with said tuyeres and with a suitable blast apparatus, and means for operating said converter, substantially as set forth.

3. In an apparatus for refining gold and silver matte produced by smelting in a suitable furnace, a furnace having a side opening, a spoon-shaped converter provided with an elongated spout located and arranged within said side opening and with tuyere-openings, said converter being suspended within said furnace on a hollow and a solid trunnion, a hollow rib secured to the outside of said converter and communicating with said tuyere-openings and said hollow trunnion, which latter connects with a suitable blast apparatus, and means for operating said converter, substantially as set forth.

4. In an apparatus for refining gold and silver matte produced by smelting in a suitable furnace, a furnace provided with a side opening, a converter-chamber, a fire-chamber and dust-chamber located on opposite sides of said converter-chamber and communicating therewith, a slag and bullion pit directly beneath the converter-chamber, a spoon-shaped converter provided with a series of tuyere-openings, and an elongated spout located and arranged within said side opening in the furnace, said converter being suspended within said furnace on a hollow and a solid trunnion, a hollow rib secured to the outside of said converter and communicating with said tuyere-openings and said hollow trunnion, which latter connects with a suitable blast apparatus, and means for operating said converter, substantially as set forth.

486,614. BEET-CULTIVATOR. AUGUST LUNDGREN, Moline, Ill., assignor to the Moline Plow Company, same place. Filed Feb. 6, 1892. Serial No. 420,565. (No model.)

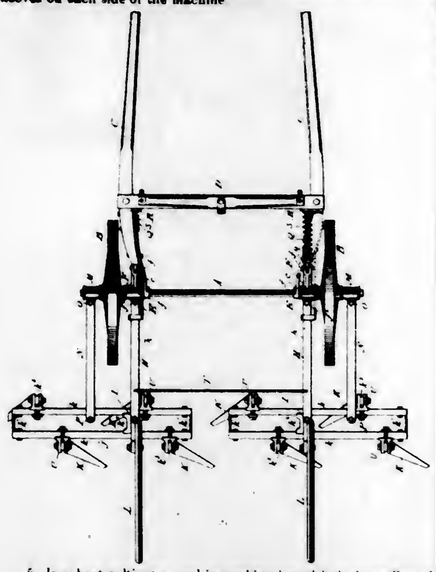
Claim.—1. In a beet-cultivator, the combination of the wheeled draft-frame, the two heads or gangs, each provided with two pairs of horizontal blades, substantially as described, and each connected with the draft-frame by parallel arms H N, one blade of each pair being set in advance of the other, substantially as shown and described.

2. In a beet-cultivator, the axle, its wheels, and draft devices, in combination with two sleeves mounted on each end of the axle and on opposite sides of the wheel, draft-bars extending rearward from the respective sleeves, two cross-heads, substantially as shown, connected one to each pair of draft-bars, handles for controlling the respective heads, and cultivator-blades, substantially as described, applied to the head in pairs.

3. In a cultivator, the combination, with the axle and its wheels, of two transverse heads in rear of the axle and parallel therewith, each carrying shovels disposed in pairs, parallel pivoted coupling-bars between each head and the axle, and a pivoted connection between the two heads, whereby they are movable laterally in unison and are maintained in position parallel to the axle, substantially as shown and described.

4. In a beet-cultivator, its wheels and the draft-frame, in com-

bination with the two heads at the rear provided with cultivator-blades, the draft bars or beams extending forward in pairs from the respective heads, two sleeves mounted on each end of the axle on opposite sides of the wheel and jointed to the adjacent draft-bars, and a lifting-spring interposed between the draft-frame and one of the sleeves on each side of the machine.



5. In a beet-cultivator, and in combination with the laterally and vertically movable head or frame J, castings U, bolted to and movable lengthwise of the head, a standard connected to the casting by a pivot-bolt and an adjusting-bolt, as described, and a horizontal obliquely-arranged blade attached to the lower end of the standard, whereby the blade may be adjusted both as to its lateral position and as to its fore-and-aft inclination.

6. In combination with the axle and its wheels, the draft-frame journaled upon the axle and provided with the rigid arms E, the shovel-carrying heads, the sleeves upon the axle, and the draft bars or beams H and N, connecting the sleeves and the head, the beams H being adapted to be rested upon the arms G, as and for the purpose described.

7. In a beet-cultivating machine, the combination of a draft-frame, two elongated heads or frames lying transversely in rear of the draft-frame and each provided with a series of cultivator-blades T, and the draft-bars A, A', and N, connecting the heads and the draft-frame and mounted on pivots at their two ends, whereby the heads or gangs are permitted to move laterally and vertically, and also permitted to rock or tip sidewise that the blades may follow the surface of the ground.

486,615. BALE-TIE MACHINE. WINFIELD S. LIVINGOOD, Kansas City, Mo., assignor, by mesne assignments, to the Midland Manufacturing Company, same place. Filed Jan. 12, 1892. Serial No. 417,817. (No model.)

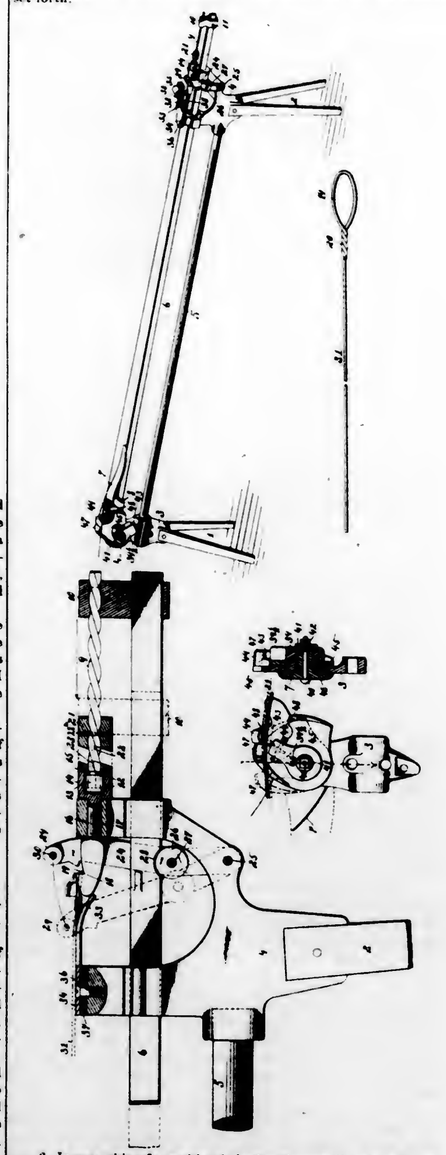
Claim.—1. In a machine for making bale-ties, the combination of a twisting device, a cutting device having a projection 47, and a suitable operating connection between the same, said cutting device having a clamp in connection therewith for holding the severed wire, said clamp consisting of a fixed projection 49 and a movable projection 48, connected with said projection 47, substantially as and for the purpose set forth.

2. In a machine for making bale-ties, the combination of the head 3, lever 7, arm 39½, attached to the lever, adjustable knife secured to said arm, movable projections 47 and 48, operated by the lever, and a suitable projection 49, against which the wire is clamped by the combined action of projections 47 and 48, substantially as described, and for the purpose set forth.

3. In a machine for making bale-ties, the combination of the head 3, the lever 7, having a spindle 39 journaled in the head, arm 39½, secured to the spindle, knife 43, adjustably secured to the arm 39½, plate 45, journaled on the head 3, projections 47 and 48 on the plate 45, and projection 49 on the head 3, substantially as set forth.

4. In a machine for making bale-ties, the combination of the heads 3 and 4, suitable operating connection between the same, cutting device on the head 3, twisting device on the head 4, plate 34 and rubber 37 on the head 4, and a hood 35 on said plate for receiving the end of the wire, substantially as described.

5. In a machine for making bale-ties, the combination, with the twisting device and the cutting device, of a clamp for holding the wire after it is severed, a lever for operating said clamp and cutting device, and the operating-rod 6, having connection with said lever and twisting device, substantially as described, and for the purpose set forth.

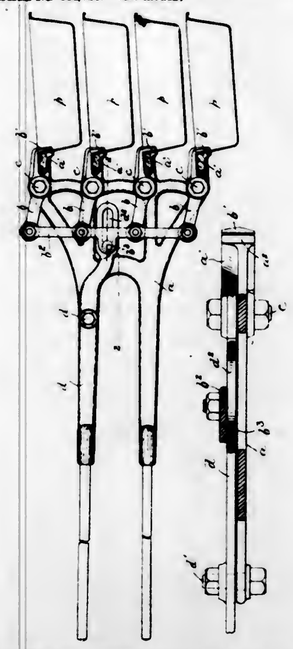


6. In a machine for making bale-ties, the combination of a cutting device, a twisting device, means for connecting the same, a hook over which a loop is formed, a clamp for retaining said loop in its position, a hub in connection with said hook, having an opening, a screw-threaded rod having one end secured in the opening in said hub, and means for rotating said screw-threaded rod, substantially as and for the purpose set forth.

7. In a machine for making bale-ties, the combination of a cutting-head, a twisting-head, means for connecting said heads, a hook over which a loop is formed, a hub on said hook, a movable screw-rod in connection therewith, a movable internally-threaded sleeve on said screw-rod, and a movable clamp secured to the connecting means between said heads for operating said screw-rod, substantially as set forth.

8. In a machine for making bale-ties, the combination of a cutting-head, a twisting-head, reciprocating bar 6 for connecting said heads, a hook 18, a hub 14, secured to said hook, a screw-rod 9, having a flange 12 secured in an opening in said hub 14, a movable sleeve 21, having a shoulder which engages with a corresponding shoulder on the hub 14, and an adjustable internally-threaded clamp 10, secured to the reciprocating bar 6 for operating said screw-rod and rotating said hook, substantially as and for the purpose set forth.

486,616. PLIER. JOSEPH MONTO, Needham, assignor to the Steel Edge Stamping and Retinning Company, Boston, Mass. Filed Sept. 1, 1892. Serial No. 444,721. (No model.)



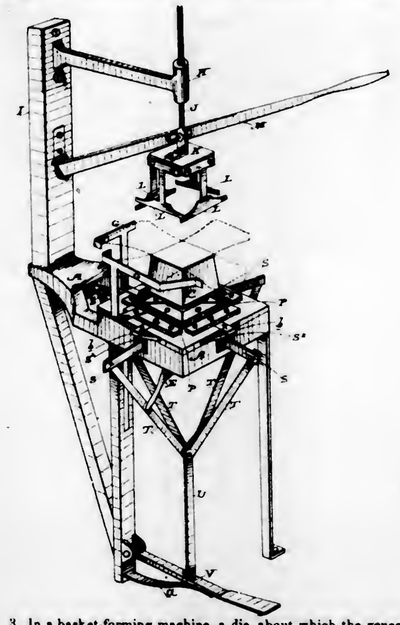
Claim.—1. Pliers comprising a lever having a series of rigid jaws, a series of short levers pivoted to said lever, said short levers having jaws arranged to co-operate with the said rigid jaws, an operating lever or handle pivoted to the jaw-carrying lever, and connections between said operating-lever and the series of shorter levers, as set forth.

2. The improved pliers comprising a lever having a series of rigid jaws, a series of shorter levers pivoted to said lever and having jaws arranged to co-operate with the said rigid jaws, a rod connecting the rear ends of said shorter levers in a series, and an operating handle or lever pivoted to the jaw-carrying lever and connected with said rod, as set forth.

486,617. MACHINE FOR FORMING BERRY-BASKETS. ROSWELL E. MOREY, Oakland, Cal. Filed Apr. 25, 1892. Serial No. 430,642. (No model.)

Claim.—1. In a basket-forming machine, the combination of a block or die to secure the veneers and provided with a downwardly-extending guiding-shank, a vertically-moving former consisting of a base-plate and of the plates L, projecting downwardly therefrom, a guide projecting upwardly from the base-plate, a lever engaging the upper guide to depress said former and fold the veneers over the die, a spring under the lower end of the lower guiding-shank for returning the die to its normal position, and a pivoted lever movable in and out of line with said shank, substantially as herein described.

2. In a basket-forming machine, a die upon the top of which veneers are laid transversely to each other and guides by which their position with relation to the die and each other is adjusted, a vertically-moving former consisting of downwardly-projecting plates and a lever by which the former is moved, so that the plates act to fold the veneers down around the sides of the die with their lower edges projecting below the bottom of the die, a vertical central guide by which the die is supported, extending downwardly through the table, a supporting-lever E, upon which this guide rests while the veneers are being folded over the die and which is removable to allow the die itself to be depressed after the veneers are folded, a channel formed of exterior fixed plates Q and interior movable plates O and adapted to receive the trough-shaped metal band into which the edges of the basket are forced by depressing the die, and levers and mechanism whereby the movable plates are forced outwardly, so as to compress the band upon the edges of the basket, substantially as herein described.



3. In a basket-forming machine, a die about which the veneers are folded to form a basket, a vertically-moving former and means for reciprocating it above the die, whereby the veneers are folded around the latter with their lower edges projecting below the lower surface of the die, a vertical guide D and a horizontally-moving lever E, by which the die is supported, fixed plates Q and movable plates O upon the table beneath the die, forming a channel to receive the band which is fixed upon the upper edge of the basket, indenting or corrugating projections upon the movable plates, levers connected with said plates and with a foot-treadle, whereby movable plates are simultaneously forced outward to compress the band upon the edges of the basket and indent or corrugate it, so as to fix it permanently in place thereon, substantially as herein described.

4. In a basket-forming machine, a die and a reciprocating former by which the veneers are folded about the die with their lower edges projecting below its lower surface, a mechanism for depressing the die after the veneers are bent to place, a channel to receive the top band of the basket, consisting of fixed and movable plates exterior to and interior to the band, a lever whereby the movable plates are forced to clamp the band upon the edges of the basket when moved in one direction, and projections upon the lever, which act to return the clamping-plates to their normal position when the lever is returned, substantially as herein described.

486,618. FRUIT-TRANSPORTING PACKAGE. JOSEPH T. MOTT, New York, N. Y. Filed Feb. 20, 1892. Serial No. 422,232. (No model.)

Claim.—1. The combination, with a carrier having outwardly-inclined sides and ends, of a series of boxes arranged in similar tiers therein, the partitions interposed between the tiers having side rails for holding down the lower boxes and guard-rails for keeping the superimposed boxes in position thereon, and the cover having side and end bars attached to its under surface, so as to leave air-passages between their tops and bottom of cover, said bars being adapted to

hold down the upper tiers of boxes and keep the same in position, the carrier having openings in its ends and sides opposite the meeting edges of the boxes, substantially as described.

2. The combination, with a carrier-case having outwardly-inclined sides and ends, of a series of boxes arranged in similar tiers

ing mouth adapted to project through the wall, said mouth having on its outer end a vertical door to close the same.

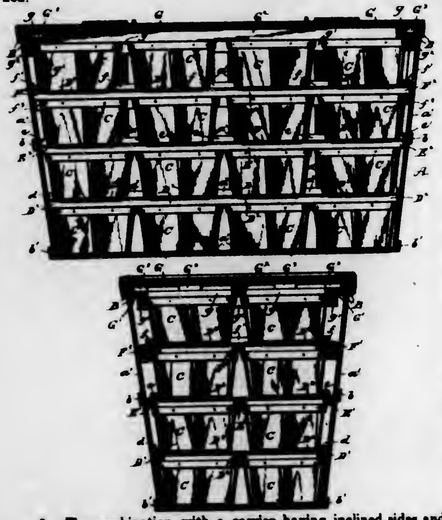
2. The body or receptacle having the laterally-inclined lower end, in combination with the gravitating top lid provided with pack-

posite side of the frame and having vertical slots made in them, and connecting-rods extending from the cranks, having screw-threaded ends passing through the slots in the hangers, and lock-nuts by which the connecting-rods are raised or lowered in the slots and secured so

drums journaled transversely at the ends of a suspended oscillating frame, a disk fixed upon the shaft of one of the drums, a cam having clutch-arms extending to the front and rear edges of the disk, with which they engage alternately, an arm projecting from the cam, and a

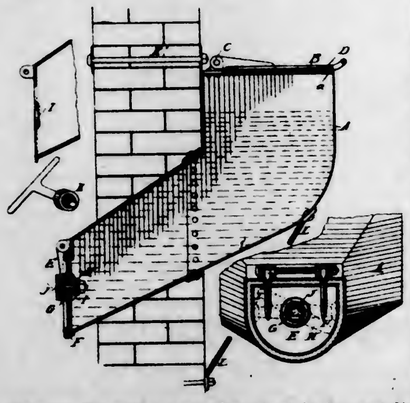
hold down the upper tiers of boxes and keep the same in position, the carrier having openings in its ends and sides opposite the meeting edges of the boxes, substantially as described.

2. The combination, with a carrier-case having outwardly-inclined sides and ends, of a series of boxes arranged in similar tiers therein, partitions interposed between the tiers having side and center rails for holding down the lower boxes and guard-rails for keeping the superimposed boxes in position, the upper partitions also having depending side strips for holding the boxes thereunder in position, and the cover having center and side rails and end rails for holding down the upper row of boxes, ventilating-passages being formed between the said rails and cover and in the sides and ends of case opposite the meeting edges of the boxes, substantially as and for the purpose specified.



3. The combination, with a carrier having inclined sides and ends and a series of boxes arranged in tiers therein, also having inclined sides and ends, and the partitions interposed between the tiers of boxes, with the top having central longitudinal bar G^3, of side bar G', and end bars *g* attached thereto but separated therefrom so as to leave an air-space therebetween, and the depending strips attached to said bars, substantially as set forth.

486,619. GARBAGE-RECEPTACLE. WILLIAM T. RUSSELL and HENRY P. HAYDEN, Washington, D. C. Filed Nov. 5, 1891. Serial No. 410,947. (No model.)



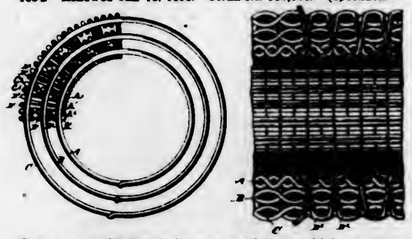
Claim.—1. The garbage-receptacle constructed to be mounted in a wall or fence, said receptacle consisting of a vertical chamber adapted to extend on the inner side of the wall and provided at its upper end with a lid and at its lower end with the laterally-extending mouth adapted to project through the wall, said mouth having on its outer end a vertical door to close the same.

2. The body or receptacle having the laterally-inclined lower end, in combination with the gravitating top lid provided with packing, the vertical outlet-door, and means for locking the latter.

3. The garbage-receptacle constructed to be mounted in a wall or fence, said receptacle adapted at its inner end to receive the garbage and provided with a laterally-extending mouth adapted to pass through the wall to the outside, in combination with a hinged door to close the mouth, locking devices at the inner side of the door to hold the same closed, and connections extending from said locking devices to the outside of the door and adapted to receive an operating-key.

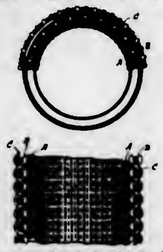
4. The garbage-receptacle having the converging walls and the laterally-extended inclined delivery end rounded on the bottom, and provided with the door and locking devices therefor.

486,620. TUBULAR WOVEN FABRIC. BENJAMIN L. STOWE, Brooklyn, assignor to J. Van D. Reed, New York, N. Y. Filed Dec. 15, 1884. Renewed Jan. 18, 1890. Serial No. 337,373. (Specimens.)



Claim.—A multiply tubular woven fabric in which one or more of the inner plies have a greater number of picks or crossing of warps than the others, substantially as and for the purposes hereinbefore set forth.

486,621. TUBULAR WOVEN FABRIC. BENJAMIN L. STOWE, Brooklyn, assignor to J. Van D. Reed, New York, N. Y. Filed Dec. 15, 1884. Renewed Jan. 18, 1890. Serial No. 337,385. (No model.)



Claim.—1. A compound tubular-fabric hose, consisting of a closely woven or knitted and practically-water-tight tube of linen surrounded by one or more loose-textured cotton-fabric tubes to give strength and body to the hose and at the same time to permit the passage of air and dampness, substantially as and for the purposes hereinbefore set forth.

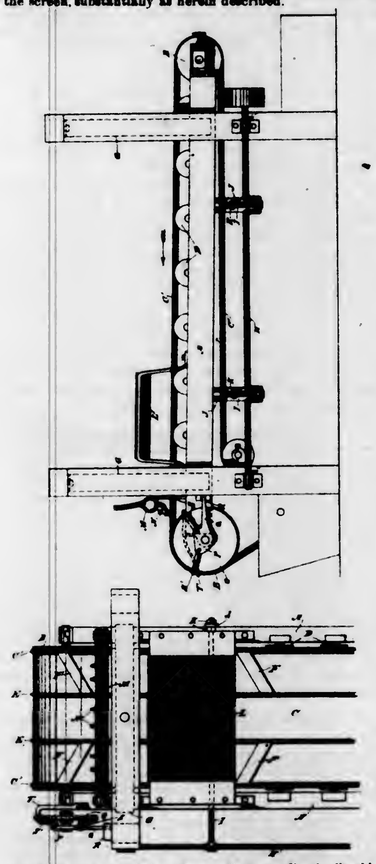
2. Multiply-woven hose consisting of a closely-woven inner ply of linen and an outer ply or plies more loosely woven of cotton, combined with binding-warps which unite the plies into one fabric, substantially as set forth.

486,622. CONCENTRATOR. JAMES TULLOCH, Angels, Cal. Filed Mar. 9, 1892. Serial No. 424,332. (No model.)

Claim.—1. In a concentrator, an endless traveling belt, a suspended frame having drums at opposite ends over which the belt passes, a crank-shaft at one side of the frame, connecting-rods extending from the crank-shaft to hangers which are secured to the opposite side of the frame, said hangers being perforated to admit the ends of the connecting-rods, and nuts fitting the screw-threaded ends of the connecting-rods, whereby they may be lengthened or shortened so as to level the belt transversely, substantially as herein described.

2. In a concentrator, an endless belt, drums mounted at opposite ends of a suspended frame over which the belt passes, a crank-shaft journaled at one side of the framework, hangers secured to the opposite side of the frame and having vertical slots made in them, and connecting-rods extending from the cranks, having screw-threaded ends passing through the slots in the hangers, and lock-nuts by which the connecting-rods are raised or lowered in the slots and secured so as to increase or decrease the side oscillation of the suspended frame and belt, substantially as herein described.

3. In a concentrator, an endless inclined upwardly-traveling belt passing around drums at opposite ends of a suspended frame and a mechanism by which said frame is caused to oscillate from side to side, in combination with a screen-surface mounted upon the belt-frame with the bottom having the same inclination as the belt and formed with meshes or perforations which are finest at the upper end and gradually increasing in size from that point to the lower or discharge end of the screen, substantially as herein described.



4. A concentrator consisting of an endless traveling inclined belt passing around drums journaled transversely at opposite ends of a suspended frame, a mechanism by which the frame and belt are given an oscillation from side to side, a screen-surface mounted upon the belt-frame so as to stand above the surface of the belt and having the same general inclination with the belt, and perforations which are finer at the upper and receiving end of the screen and larger at the lower and discharge end, a water-pipe extending transversely above the belt and just above the upper end of the screen, a series of small discharge-pipes extending from said water-pipe down to a point close to the surface of the belt, and cocks or faucets whereby the discharge from these pipes is controlled, substantially as herein described.

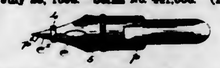
5. A concentrator consisting of an endless traveling belt passing around rollers journaled transversely upon a suspended frame which is oscillated from side to side about its points of suspension, in combination with a disk O, clutch-arms S S', and an actuating mechanism whereby the belt is caused to alternately advance and recede in the direction of its length and during the transverse oscillations, substantially as herein described.

6. In a concentrator, an endless traveling belt passing around drums journaled transversely at the ends of a suspended oscillating frame, a disk fixed upon the shaft of one of the drums, a cam having clutch-arms extending to the front and rear edges of the disk, with which they engage alternately, an arm projecting from the cam, and a horizontal guide-slot in which it travels, whereby the cam is oscillated upon the shaft by the side oscillations of the belt-carrying frame and the clutches are caused to engage alternately with the front and rear edge of the disk, whereby the belt is given an oscillating motion longitudinally, substantially as herein described.

7. In a concentrator, an endless traveling inclined belt passing around drums at opposite ends of a suspended transversely-operating frame, a disk fixed to the shaft of one of the drums, a cam journaled loosely upon the shaft, having clutch-arms extending in opposite directions to engage the front and rear edges of the disk, a guide-frame T, projecting from the belt-frame, a transverse horizontal guide in which the end of the cam-arm slides during the transverse oscillations of the belt-frame, whereby the cam is caused to oscillate upon the shaft and cause the front and rear clutches to engage the rim of the disk alternately, in combination with an arm or stop T, projecting from the side of the belt-carrying frame and engaging one of the clutch-arms to prevent its making a full stroke, whereby the longitudinal oscillations of the belt are greater in one direction than the other and the belt is thus caused to gradually advance during its side oscillations, substantially as herein described.

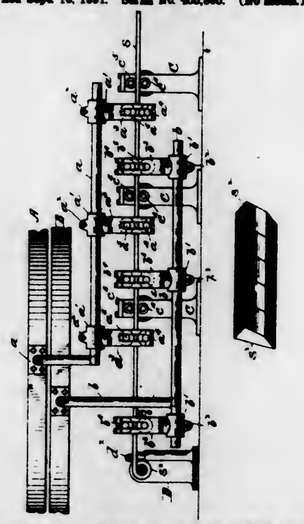
8. In a concentrator, drums journaled transversely at opposite ends of an oscillating frame, an endless traveling inclined belt passing around said rollers, having tubular flanges at the edges and intervening longitudinal ribs raised above the surface, and diagonal raised bars converging from the sides of the belt toward the central ribs and toward the lower end of the belt, substantially as herein described.

486,623. INK-HOLDER FOR PENS. CHARLES W. VOSE, Chatham, Mass. Filed July 23, 1892. Serial No. 441,008. (No model.)



Claim.—The herein-described ink-holding attachment for pens, consisting of a piece of elastic, flexible, and non-metallic material slotted at opposite ends to form loops to engage the pen at opposite ends of its eye and adapted to be held in place by its elasticity when stretched upon the pen, substantially as described.

486,624. ELECTRICAL METHOD OF AND APPARATUS FOR FORMING TUBES. GEORGE D. BURTON, Boston, and EDWIN R. ARGELL, Somerville, Mass., assignors to the Electrical Forging Company, of Maine. Filed Sept. 16, 1891. Serial No. 405,895. (No model.)



Claim.—1. The process of forming a metal tube, which consists in heating a bar electrically to a higher degree at its core or internal part than upon its exterior, coiling said bar in its heated state upon a mandrel with its successive turns abutting against each other, and permitting the coils to expand under the action of the internal heat,

whereby their abutting edges are fused together, substantially as set forth.

2. The process of forming a metal tube, which consists in forming a bar with its opposite edges beveled or inclined to its faces, heating said bar by an electric current to a higher degree at its core than

486,626.

ears at its sides, a lever pivoted between said ears, a cam pivoted to said lever and bearing against said platform, the outer ends of said arm and lever serving as clamping-jaws, an adjustable arm in said

whereby their abutting edges are fused together, substantially as set forth.

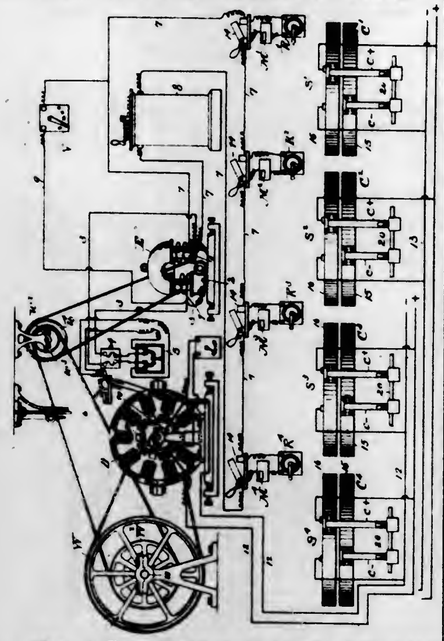
2. The process of forming a metal tube, which consists in forming a bar with its opposite edges beveled or inclined to its faces, heating said bar by an electric current to a higher degree at its core than upon its exterior, coiling the so-heated bar upon a mandrel, with its beveled edges overlapping each other, and permitting the coils to expand under the action of the internal heat, whereby the abutting overlapping edges of the coils are fused together, substantially as set forth.

3. The combination of two rods of conductive material connected to opposite electric terminals and disposed parallel to each other, clamps adjustable on said rods, and electrodes projecting in opposite directions from said clamps from each conducting-rod toward the other, each of said electrodes being provided with a pair of contact-rolls adapted to receive a bar between them, and feed-rolls for feeding a bar between said electrodes.

4. The combination of two sets of converter-rings, each set being independent of the other, a set of electrodes connected with opposite terminals of one set of rings, a set of electrodes connected with opposite terminals of the other set of rings, and feed mechanism for passing a bar through both sets of electrodes successively.

5. The combination of the rods *a* and *b*, respectively connected to the positive and negative terminals of the converter, and the clamps *a'* and *b'*, respectively arranged to slide along their rods, provided with the clamping-screws a^2 b^2, arranged to clamp them to their rods and carry their respective electrodes, which complete the circuit through the metal bar to be heated, substantially as described.

486,625. ELECTRIC METAL-HEATING APPARATUS. GEORGE D. BURTON, Boston, Mass., assignor to the Electrical Forging Company, of Maine. Filed Oct. 31, 1891. Serial No. 409,389. (No model.)



Claim.—1. The combination, in an apparatus for heating metals by electricity, of a main dynamo located at the central station and arranged to supply its alternating electric current to a sub-station, an exciter-dynamo, also located at the central station and arranged to excite the field-magnets of said main dynamo, an electrical converter located at said sub-station and arranged to receive the alternating current of said main dynamo and convert it into a current of lower potential, a pair of metal holders located in the secondary circuit of said converter and arranged to complete the secondary circuit through the bar placed in them to be heated, an adjustable resistance coil or apparatus located at said sub-station where said converter is placed within reach of the operator thereof, and an electric circuit connecting said resistance-coil to the exciter and arranged to regulate the electric current passing from the exciter to said main dynamo, substantially as described.

2. The combination, in an apparatus for heating metals by electricity, of a main dynamo located at the central station and arranged to supply its alternating current to a series of sub-stations, an exciter-dynamo, also located at the central station and arranged to excite the field-magnets of said main dynamo, electrical converters located at each of said sub-stations and respectively arranged to receive the alternating current of said main dynamo and convert it into a current of lower potential, a pair of metal-holders located in the secondary circuit of each of said converters, and a series of resistance-coils located one at each of said sub-stations adjacent to the converter thereof and all connected by an electrical circuit with said exciter and arranged to jointly or separately regulate the current passing therefrom to the field of the main dynamo, substantially as described.

3. The combination of the main driving-shaft *w*, the dynamo D, connected thereto by intermediate driving mechanism, the exciter-dynamo E, arranged to excite the field-coils of the dynamo D and connected to said shaft *w* by intermediate driving mechanism constructed to vary the relative speed of the armature of dynamo E to said shaft *w* at the will of the operator, and a converter C^4, having its primary circuit connected to said dynamo D and provided with metal-holders in its secondary circuit for receiving the bar of metal to be heated, substantially as described.

4. The combination, in an apparatus for heating metals by electricity, the main dynamo located at the central station and arranged to supply its alternating electric current to a sub-station, an exciter-dynamo, also located at the central station and arranged to excite the field-magnets of the said main dynamo, an electrical converter located at said sub-station and arranged to receive the alternating current of said main dynamo and convert it into a current of lower potential, a pair of metal-holders located in the secondary circuit of said converter and arranged to complete the secondary circuit through the bar placed in them to be heated, an adjustable resistance coil or apparatus located at said sub-station, and an electrical shunt-circuit connecting said resistance-coil to the armature of the exciter and arranged to regulate the electric current passing from the exciter to said main dynamo, substantially as described.

5. The combination of the main dynamo producing alternating currents, the exciter-dynamo E, connected to the field-coils of the main dynamo and arranged to excite them, and a resistance coil or apparatus placed in a shunt-circuit connected with the armature of the exciter-dynamo and arranged to force a greater amount of electric current into the field-coils of the main dynamo by increasing the resistance in the shunt-circuit of the exciter-dynamo, substantially as described.

6. The combination of the main dynamo D, constructed to produce alternating electric currents, the exciter-dynamo E, connected to the field-coils of the said main dynamo, the shunt-circuit 7, connected to the armature of the exciter-dynamo and passing around the field-magnets thereof, the adjustable rheostat 8, located in said circuit 7, and the shunt or bridge circuit 9, connected at each end with the circuit 7 around the field-coils of the exciter E and containing the ammeter or volt-meter V, substantially as described.

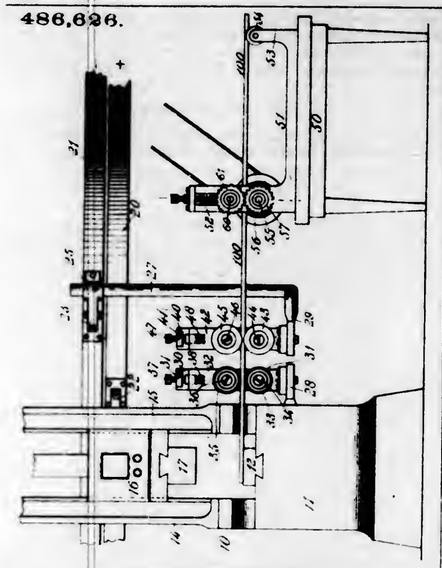
7. The combination of the main dynamo D, constructed to produce alternating electrical currents, the exciter-dynamo E, electrically connected with the field-magnets thereof, the converter C^4, connected to the main dynamo by the circuit 12 and arranged to convert the electric current into one of lower potential, the metal-holders *c*— *c*+, connected in the secondary circuit of the converter, the electrical circuit 7, leading from the exciter E to a point adjacent to the converter C^4 and provided at that point with the switch 14, the meter M^4, and the adjustable resistance-coil R^4, all located in said circuit, substantially as described.

486,626. ELECTRIC FORGING APPARATUS. GEORGE D. BURTON, Boston, and EDWIN H. ARNELL, Somerville, Mass., assignors to the Electrical Forging Company, of Maine. Filed Jan. 13, 1892. Serial No. 417,952. (No model.)

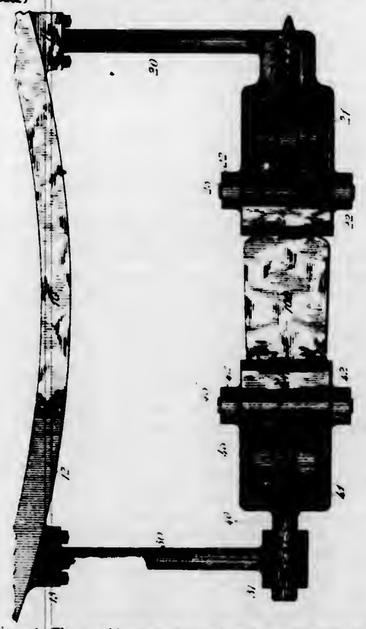
Claim.—1. In an electric forging apparatus, the combination of an electric converter provided with two converter-rings constituting positive and negative poles, conductive brackets attached thereto, standards connected with said brackets, two pairs of rollers journaled in said standards, and a mechanical bar-feeder for feeding a bar between said rollers.

2. In an electric forging apparatus, the combination of two converter-rings constituting opposite electric poles, two standards, conductors connecting said standards with said rings, respectively, two pairs of contact-rollers disposed, respectively, on said standards, a pair of feed-rollers disposed adjacent to said contact-rollers, and a driving-pulley on the shaft of one of said feed-rollers.

486,626.



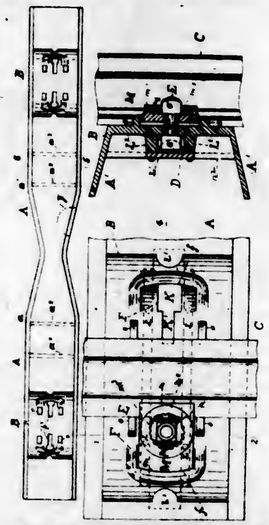
486,627. ELECTRIC FORGE. GEORGE D. BURTON, Boston, and EDWIN H. ARNELL, Somerville, Mass., assignors to the Electrical Forging Company, of Maine. Filed Jan. 13, 1892. Serial No. 417,953. (No model.)



Claim.—1. The combination of an electric converter provided with exterior rings constituting opposite electric poles, conductive brackets attached to said rings, arms connected with said brackets, and clamps carried by said arms and having laterally-extending jaws, substantially as set forth.

2. In an electric forge, the combination of a current-converter provided with exterior conductive rings constituting opposite electric poles, conductive brackets attached to said rings, one of said brackets being provided with a sleeve and the other being provided with a horizontally-extending arm provided with a broadened platform having ears at its sides, a lever pivoted between said ears, a cam pivoted to said lever and bearing against said platform, the outer ends of said arm and lever serving as clamping-jaws, an adjustable arm in said sleeve, and a cam-operated clamp carried by said arm and provided with laterally-extending clamping-jaws.

486,628. RAILROAD-TIE AND FASTENING. JOSEPH L. CHAPMAN, Haddonfield, N. J. Filed Dec. 23, 1891. Serial No. 415,968. (No model.)



Claim.—1. The cast tie A, with the raised surfaces B B near each of its ends, respectively, said raised surfaces being provided with guide-lugs *o o o o* and clamp-recesses F F, with opening K, terminating in slot K' and in chamber D and tapering from points *a a'* toward the center, where it is the narrowest, substantially as shown.

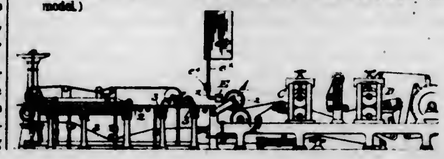
2. The cast tie A, with its surface A^3 raised at B B, where it is provided with guide-lugs *o o o o*, clamp-recesses F F, concaved on their inner edges *f f*, and the opening K K to allow the passage of bolt-head *e* of bolt E, said opening terminating in slot K' to receive the body of bolt E, and the depending lugs L^2 L^3, having cast upon their lower edge the riveting projections L L, in combination with the plate L', substantially as shown.

3. In a cast tie, the raised surface B B, provided with clamp-recesses F F, having their inner edges *f* concaved, opening K to allow bolt-head *e* to pass, terminating in slot K' for the body of bolt E, clamp M, having its convexed edge *m* bearing against the concaved surface of edge *f* of recess F, and bolt E with its nut *e'*, in combination with the rail C, substantially as described.

4. In a cast tie, the raised surface B B, provided with guide-lugs *o o o o*, clamp-recesses F F, having their inner edge *f* concaved, opening K to allow bolt-head *e* to pass, terminating in slot K' for the body of the bolt E, with a clamp M in recess F, having its convexed edge *m* bearing against the concaved surface of the edge *f* of recess F, and a bolt E with its nut *e'*, in combination with the rail C, substantially as shown and described.

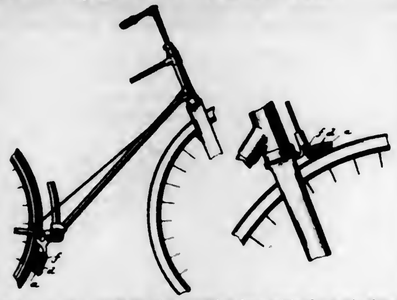
5. The clamp M, provided with a bolt-hole, having a ring *m'* cast upon its upper surface, with the inner surface m^2 of said ring corrugated or rough, its upper diameter being smaller than its lower diameter, forming a conical shape, and a circular pocket around said bolt-hole, in combination with the nut *e'* of bolt E and a locking-piece P, substantially as shown.

486,629. MEANS FOR COLORING PAPER. WILLIAM H. CONNELL, Brownsville, N. Y. Filed Oct. 20, 1892. Serial No. 449,634. (No model.)



Claim.—In a paper-making machine, the combination, with the making-wire and the couch-roll, of suitable mechanism for applying to the couch-roll a coloring liquid, substantially as described.

486,630. BICYCLE-BRAKE. WILLIAM H. CROOK, Washington, D. C. Filed July 18, 1892. Serial No. 440,269. (No model.)



Claim.—1. In a vehicle, the combination, with the brake lever or spoon, of a brake-brush applied thereto.

2. In a vehicle, the combination, with the brake lever or spoon, of a brake-brush and means for detachably or removably securing it to the lever or spoon.

3. In a vehicle, the combination, with the brake lever or spoon, of a brake-brush provided with a pocket and securing means.

4. In a vehicle, a brake-brush provided with a flexible back.

5. In a vehicle, the combination, with the frame and wheels, of the lever *b*, pivoted to the frame, the brake-brush applied thereto, and the strap *d* for securing the brush to the lever.

6. As a new article of manufacture, a brake-shoe for application to the brake-spoon of an ordinary bicycle-brake, provided with a pocket to receive said spoon, whereby it is rendered capable of application to the existing brake without previous special adaptation of the brake-spoon to receive it.

486,631. PULLEY. ELI CROMLEY, Jr., Manchester, England, assignor to Charles A. Goslett, Chicago, Ill. Filed Aug. 13, 1892. Serial No. 443,008. (No model.) Patented in England Aug. 21, 1890, No. 13,121.

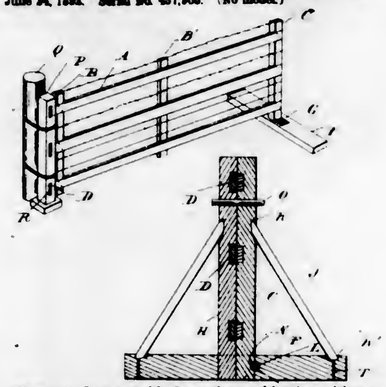
Claim.—1. In a belt drum or pulley, the combination of a rim thereon provided with openings through it and recesses in its outer surface at the said openings, pieces of friction material fitting into the said recesses to extend beyond the outer surface of the rim and provided with reduced extensions passing through the said openings, and securing means for the strips engaging the said reduced extensions at the under side of the rim, substantially as described.

2. In a belt drum or pulley, the combination of a rim thereon provided with openings through it and recesses in its outer surface at the said openings, pieces of friction material fitting into the said recesses to extend beyond the outer surface of the rim and provided with transversely-perforated reduced extensions passing through the said openings, and cotters bearing against the under side of the rim and engaging the said reduced extensions at the perforations, substantially as and for the purpose set forth.

3. In a belt drum or pulley, the combination, with the rim, of elongated recesses formed therein at intervals around its periphery and extending in a direction crosswise of its circumference, openings through the rim at intervals in each of the said recesses, strips of friction material in the said recesses, projecting beyond the outer surface of the rim and provided with reduced extensions passing through the said openings, and securing means for the strips engaging the said reduced extensions at the under surface of the rim, substantially as described.

4. In a belt drum or pulley, the combination, with the rim, of dovetailed recesses formed therein at intervals around its periphery, openings through the rim at the said recesses, pieces of friction material of dovetail form in cross-section set into and fitting the said recesses projecting beyond the outer surface of the rim and provided with perforated reduced extensions which pass through the said openings, and cotters extending through the perforations in the said reduced extensions and bearing against the under surface of the rim to secure the said pieces in place, substantially as described.

486,632. FENCE. FRANK A. DE LAND, Memphis, Mich. Filed June 24, 1892. Serial No. 437,908. (No model.)



Claim.—1. In a portable fence, the combination, with a series of longitudinal strips, connecting cross-strips, and tongues extending beyond one of the cross-strips, of a post composed of one of the cross-strips and a complementary number having grooves on its inner face, in which the tongues of the adjacent panels are adapted to engage, a base for the post, and means for uniting the two sections of the post in close contact, substantially as described.

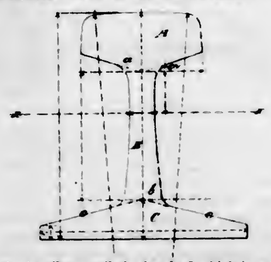
2. In a portable fence, the combination of panels, each panel comprising longitudinal strips and posts, an end post C, having extensions E, the tongues D at the other end, the base having aperture G, with which the extension engages, the securing-post H, having gains I to receive the tongues, said post forming a complementary half of the fence-post, and means for uniting the two sections of the post in close contact, substantially as described.

3. The combination, in a portable fence, of panels having a post at one end and lateral tongues at the other end, bed-pieces apertured to receive the post, and a complementary post-section having beveled gains to receive the tongues, and means for securing the post to the bed-piece, substantially as described.

4. The combination, in a portable fence, of the panel having a post at one end and lateral tongues at the other end, the bed-piece F, having notches at its ends centrally apertured, the complementary post-sections C and H, adapted to enter said aperture and having notches on their sides, the braces J, extending from the notches in the post to the notches in the two pieces, and means for securing the post detachably to the bed-piece, substantially as described.

5. In a portable fence, the combination, with the panel having a post at one end and lateral tongues at the other end, of the bed-piece F, centrally apertured and having notches near its ends, the complementary post-sections C and H, having notches near the top, the braces J, adapted to enter the notches in the post and bed-pieces, and the securing-pins L and O, substantially as described.

486,633. RAILWAY-RAIL. PLIMMON H. DUDLEY, New York, N. Y. Filed Apr. 19, 1892. Serial No. 429,741. (No model.)



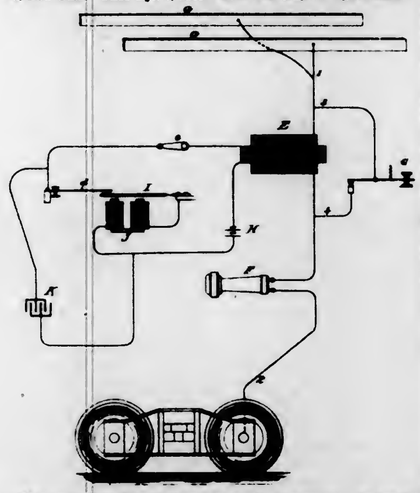
Claim.—1. A railway-rail the head of which is united with the web by fillets having a broad or open curve, the web being gradually

thickened as it approaches the base, the gradual thickening of the web beginning at a point above the center of the web and the base increasing rapidly in thickness from its thick edges toward the web, substantially as set forth.

2. A railway-rail having the width of its head equal to about one-half the height of the rail, the depth of the head from the top to the intersection of the planes bounding the under sides of the head about one-half the width of the head, the head being joined to the web by fillets having a broad or open curve, and the neutral axis of the rail lying below the middle point of the height of the rail, substantially as set forth.

3. A railway-rail having the width of its head equal to one-half or more of the height of the rail, the depth of the head about one-half its width, and the curves of the opposite sides of its web taken in a vertical plane transverse to the rail, drawn from centers above the middle point of the web, whereby the web is thickened more at its lower portion than at its upper portion, exclusive of the fillets, substantially as set forth.

486,634. SYSTEM OF RAILWAY SIGNALING. THOMAS A. EDISON, Menlo Park, N. J., and ELIHU T. GILLIAND, Boston, Mass., assignors, by mesne assignments, to the Consolidated Railway Telegraph Company, of New York. Filed Apr. 7, 1885. Serial No. 161,457. (No model.)



Claim.—1. In railway inductive signaling apparatus, the combination, with a grounded line-wire, a moving car, and an external condensing-surface upon said car, of a transmitting inductive coil and circuit-controller and a receiving-telephone carried by the car and located in a ground connection from said condensing-surface through the rails upon which the car travels, substantially as set forth.

2. In railway inductive signaling apparatus, the combination, with a grounded line-wire, a moving car, and an external condensing-surface upon said car, of a transmitting induction-coil and musical vibrator and a receiving-telephone carried by the car and located in a ground connection from said condensing-surface through the rails upon which the car travels, substantially as set forth.

3. In railway inductive signaling apparatus, the transmitter having, in combination, an induction-coil with secondary in induction-circuit, a circuit-controller, and local battery in the primary of the coil, and a key short-circuiting the secondary, substantially as set forth.

4. In railway inductive signaling apparatus, the transmitter having, in combination, an induction-coil with secondary in induction-circuit, a musical vibrator, and local battery in the primary of the coil, and a key short-circuiting the secondary, substantially as set forth.

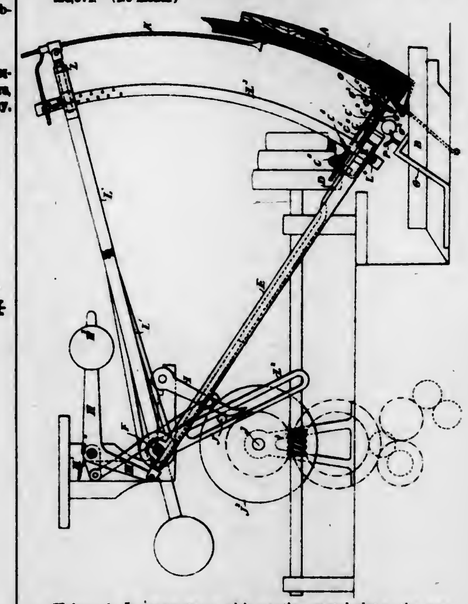
5. In railway inductive signaling apparatus, the transmitter having, in combination, an induction-coil, a vibrator, and local battery in primary of coil, and a condenser shunting points of vibrator, and a device for varying the circuit to make signals, substantially as set forth.

6. In railway inductive signaling apparatus, the combination, with a grounded line-wire, of a moving car having an external condensing-surface and signal transmitting and receiving instruments located in a ground connection from such condensing-surface through the rails upon which the car travels, and a station having, also, signal transmitting and receiving instruments located in a grounded circuit, connected by a condensing-surface with said line, substantially as set forth.

7. In railway inductive signaling apparatus, the combination, with a grounded line-wire, of a moving car having an external condensing-surface and a signal-transmitting circuit-controller and a receiving-telephone located in a ground connection from such condensing-surface through the rails upon which the car travels, and a station having, also, a signal-transmitting circuit-controller, and a receiving-telephone located in a grounded circuit, connected by a condensing-surface with said line, substantially as set forth.

8. In railway inductive signaling apparatus, the combination of inductive strips upon two or more cars coupled together with signal transmitting and receiving apparatus located upon one car and connected with the inductive strips thereof, substantially as set forth.

486,635. APPARATUS FOR MANUFACTURING TIN-PLATE. DANIEL EDWARDS, Morriston, England. Filed Apr. 12, 1892. Serial No. 428,871. (No model.)



Claim.—1. In apparatus used in coating metal plates, the combination of a pot for melted coating metal, a support for a pile of plates to be coated, a sucker or suckers, mechanism for pressing them against and causing them to lay hold of the outermost plate near one of its edges and for then tilting the suckers to bend this edge of the plate outward and for afterward drawing back the suckers away from the pile, and mechanism for then releasing the suckers from the plate to allow the plate to drop down into the bath of coating metal, substantially as described.

2. The mechanism for taking plates one by one from a pile of plates, consisting of a pneumatic sucker and mechanism by which such sucker is first brought against the front plate of the pile near one of its edges, then tilted to bend that edge outward away from the pile, and afterward moved back from the pile, and a claw which takes hold of a portion of the edge of the sucker and bends it back so as to release the sucker from the plate, substantially as described.

3. The combination of the pot for metal, the support for a pile of plates, the sucker, the rod to which it is jointed, the arm that supports the rod, the axis by which the rear end of the arm is supported, the fixed stop which normally upholds the front end of the arm, the pushers carried by arms which are fast upon the axis, mechanism for giving a rocking motion to the axis and for thrusting the rod toward or away from the axis, and mechanism for drawing back a portion of the outer circumference of the sucker after the sucker has been drawn backward away from the pile of plates, substantially as described.

486,636. CLAMPING DEVICE FOR VEHICLE-SEATS. THOMAS FARLEIGH, Syracuse, N. Y., assignor to Christopher C. Bradley, same place. Filed Mar. 16, 1892. Serial No. 425,180. (No model.)

Claim.—1. The combination, with the vehicle-body provided with side runners, of a movable seat, a transverse clamping-bar attached

to the seat and adapted to bear with its ends against said runners, and a cam whereby said clamping-bar is tightened against the runners, substantially as set forth.

2. The combination, with the vehicle-body having longitudinal runners, of a movable seat, a transverse clamping-bar adapted to bear with its ends against said runners, a clamping-cam bearing against the middle portion of said clamping-bar, and supports attached to the seat and arranged between the cam and the ends of the clamping-bar, substantially as set forth.

3. The combination, with the vehicle-body having runners which overhang the inner sides of the body, of a movable seat, a transverse clamping-bar arranged with its ends underneath said runners, a transverse supporting-bar secured with its ends to the seat and connected with the clamping-bar, and a cam arranged between the supporting and clamping bars and bearing against the same, substantially as set forth.

4. The combination, with the vehicle-body having longitudinal runners which overhang the inner sides of the body, of a movable seat, a transverse clamping-bar arranged with its ends underneath the runners, a transverse supporting-bar secured with its ends to the seat, an elongated cam journaled in the rear board of the movable seat and arranged between the middle portions of the clamping and supporting bars, and bolts connecting the clamping-bar with the supporting-bar between the cam and the ends of said bars, substantially as set forth.

486,637. SEEDING-MACHINE. JOHN M. FENDER, Liberty, and JOHN L. RITER, Brownsville, Ind. Filed July 9, 1892. Serial No. 439,499. (No model.)

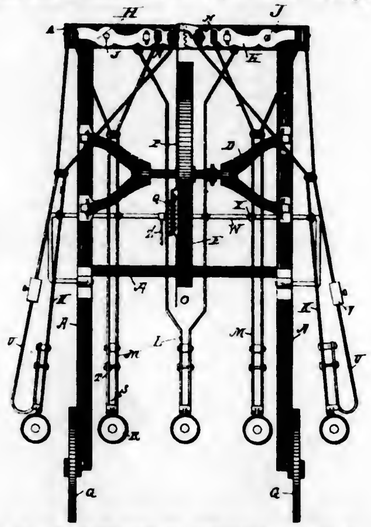
Claim.—1. In a seeding-machine, the combination, substantially as set forth, of a frame, a driving-wheel mounted in hangers fixed under the forward end of said frame at the center of its width, a pair of wheels under the rear of the frame at its extremity of width, a rank of drill-hoes disposed across under the frame between said forward and rear wheels, and drag-bars connecting said drill-hoes with said frame forward of the plane of the axis of said driving-wheel.

2. In a seeding-machine, the combination, substantially as set forth, of a frame, a wheel under the forward portion of said frame at its center of width, a pair of wheels under the rear portion of said frame at its extremes of width, an odd number of drill-hoes arranged in a rank disposed below said frame between said forward and rear wheels, a drag-bar attached to the center one of said hoes and extending forward of and straddling said front wheel and connected with the front part of said frame, and drag-bars engaging the other hoes and extending forward of and outside said front wheel and connected with the front portion of the frame.

3. In a seeding-machine, the combination, substantially as set forth, of a drag-bar, a drill-hoe pivoted thereto, a spring having its forward end attached to said drag-bar and having its rear end connected with said drill-hoe forward of the pivot uniting the drill-hoe to the drag-bar, and a sliding fulcrum-bolt secured in said drag-bar under said spring.

4. In a seeding-machine, the combination, substantially as set forth, of a drag-bar, a drill-hoe pivoted thereto, a spring attached at its forward end to said drag-bar and attached at its rear end to said drill-hoe forward of and above the pivot uniting the drill-hoe to the drag-bar, and a fulcrum supported by the drag-bar below the intermediate portion of the spring.

5. In a seeding-machine, the combination, substantially as set forth, of a frame, a central wheel under the front of the frame, two side wheels under the rear of the frame, a rank of drill-hoes across under the frame between the front and rear wheels, drag-bars connecting the hoes with the forward portion of the frame, and sliding weights upon the outside drag-bars only of the rank of drag-bars.



6. In a seeding-machine, the combination, substantially as set forth, of a rank of drill-hoes, drag-bars connecting said hoes with the front portion of the frame of the machine, a rocker disposed across over all the drag-bars, independent spring connections between said rocker and the several drag-bars, and a spring connection from said rocker to a rigid abutment supported by the frame of the machine.

7. In a seeding-machine, the combination, substantially as set forth, of a frame, outside drill-hoes, inside drill-hoes, a pair of connected levers pivoted to the forward portion of the frame, drag-bars engaging said outer drill-hoes and connected with said levers, and drag-bars engaging said inner drill-hoes and bifurcated at their forward ends, one member of the bifurcation being attached to the appropriate one of said levers, and the other member of the bifurcation being attached to the forward portion of the frame.

486,638. MACHINE FOR SURFACE-COATING PAPER. CHARLES M. GAGE, Pepperell, Mass. Filed Mar. 17, 1892. Serial No. 425,264. (No model.)

Claim.—1. In a machine for surface-coating paper, a tank to contain surface-coating material and a device to immerse the paper in the material in the tank, combined with a pair of rolls having a felt covering, between which the web of paper, surface-coated upon both sides, passes on its way to the action of brushes, substantially as described.

2. In a machine for surface-coating paper, a tank to contain surface-coating material and a device to immerse the paper in the material in the tank, combined with a pair of rolls having a felt covering, between which the web of paper, surface-coated upon both sides, passes, and with a succeeding series of supporting-rolls and brushes adjacent to and also intermediate said supporting-rolls to act upon opposite sides of the web, substantially as described.

3. In a machine for surface-coating paper, a vat to contain the surface-coating material, a device to immerse the web in the surface-coating material in the vat, a pair of rolls, as C' D, covered with felt, succeeding rolls B' B^3 B^4, and a series of brushes, as d^3, e^3, g', and f^3, the double brush g' f^3 acting upon both sides of the material, substantially as described.

4. In a machine for surface-coating paper, a vat to contain the material, a device to immerse the web in the surface-coating material in the vat, a pair of rolls, as C' D, covered with felt, succeeding rolls B' B^3 B^4, a series of brushes to act upon opposite sides of the web, and a drying mechanism to operate substantially as described.

5. In a machine for surface-coating, a web of material, the rolls or supports B' B^3, the shaft F, provided with eccentrics and with a

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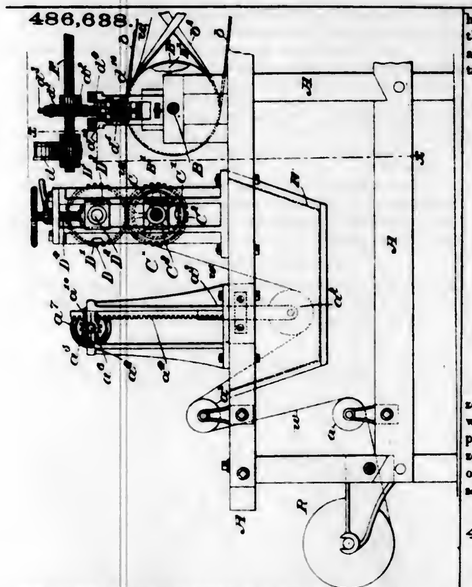


cam-knocker, the series of brushes d^3 e^3 f^3 g', the link d^3, the lever e^3, the spring-controlled slide-rod f', having a head-plate 2, and connections between the link d^3, the lever e^3, and the rod f' respectively with the said brushes d^3 e^3 f^3, to operate substantially as described.

486,639. COIN-HOLDER. WILLARD H. GILMAN, Boston, assignor to the W. S. Reed Toy Company, Leominster, Mass. Filed Apr. 24, 1891. Serial No. 390,250. (Model.)

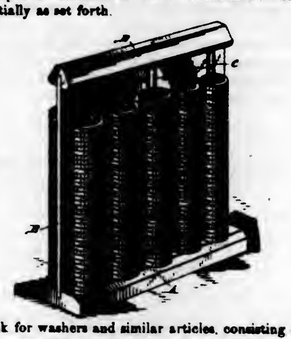
Claim.—1. A coin-holder consisting of a tube provided with a coin-receiving slot and having one end permanently closed and having a notch formed in its edge at the other end, a cap fitted to the notched end of the tube and carrying a flat spring centrally secured to the cap and directly engaging said notch, and means for retaining the cap upon the tube while the spring is engaged in the notch, substantially as set forth.

2. A coin-holder consisting of a tube provided with a coin-receiving slot, having one end permanently closed and provided with a spring to press the coins down from the slot, the other end being provided with a notch in its edge, and a cap provided with a flat locking-spring centrally secured to said cap and adapted to engage the said notch and prevent rotation of the cap, the said cap being adapted to be secured or fastened to and removed from the tube by external agency, the said spring being exposed to contact with the coins, whereby the spring may be operated to unlock the cap by the pressure of the coins in the box, as set forth.

486,640. RACK FOR AXLE-WASHERS. TIMOTHY GUBBINS, Buffalo, N. Y. Filed Apr. 8, 1892. Serial No. 428,260. (No model.)

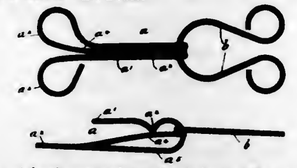
Claim.—1. A rack for washers and similar articles, consisting of a horizontal base, an upright board or frame secured at its lower end to said base, upright washer holders or supports secured at their lower ends to the horizontal base, and a horizontal stop-bar arranged on the upright board and overhanging the free upper ends of the washer-holders, whereby the washers are retained upon the holders, substantially as set forth.

2. A rack for washers and similar articles, consisting of a horizontal base, an upright board or frame mounted on said base, elastic upright washer holders or supports secured at their lower ends to said base and capable of being sprung outward at their upper ends, and a horizontal stop-bar arranged on said upright board and overhanging the upper ends of the elastic washer-holders, whereby the washers are confined upon the holders when the latter are in their normal position, substantially as set forth.



3. A rack for washers and similar articles, consisting of a horizontal base, an upright board or frame mounted thereon, upright washer-holders secured at their lower ends to the base and each composed of a wire loop arranged parallel with said board, and a horizontal stop-bar secured to the upper end of the upright board and overhanging the free upper ends of the wire-holders, substantially as set forth.

486,641. HOOK. JOHN W. GRANTLAND, Philadelphia, Pa., assignor of one-half to W. Harry Matzson, same place. Filed July 2, 1892. Serial No. 438,748. (No model.)



Claim.—A hook comprising a doubled-wire bill provided intermediate of its point and curved neck with an inwardly-projecting bend having the two wires thereof brought together to form a concave seat and separated from each other at the curved-neck portion and a shank provided with thread-eyes and an integral straight tongue extending obliquely upward and forward from the thread-eyes and having its free extremity working in the opening between the wires of the curved-neck portion of the bill and having its intermediate portion normally engaging said seat, substantially as and for the purposes set forth.

486,642. APPARATUS FOR HEATING AND COOLING MILK. JOHAN L. JÖNSSON, Stockholm, Sweden, assignor to the Aktiebolaget Separator, same place. Filed Sept. 29, 1890. Serial No. 366,549. (No model.)

Claim.—1. A combined liquid heater and cooler consisting of a surface heater which receives and heats the liquid, a receiver which is arranged below said heater and which is provided with means whereby the heated liquid is detained temporarily, and a surface cooler which is arranged below said receiver and which receives the heated liquid therefrom and cools the same, substantially as set forth.

2. In a combined liquid heater and cooler, the combination of a surface heater which receives and heats the liquid, a receiver which intercepts the heated liquid and which is provided with an overflow whereby the escape of the liquid is retarded, and a surface cooler which receives the heated liquid from the receiver and cools the same, substantially as set forth.

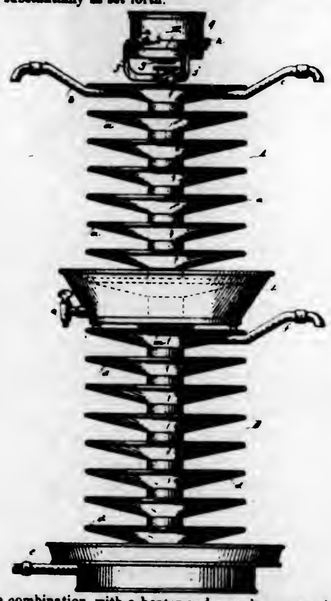
3. In a combined liquid heater and cooler, the combination of a variable feeder, a surface heater which receives the liquid from the feeder and heats the same, a receiver which is arranged below said heater and which is provided with means whereby the heated liquid is detained temporarily, and a surface cooler which is arranged below said receiver and which receives the heated liquid therefrom and cools the same, substantially as set forth.

4. The combination, with an apparatus for changing the temperature of a liquid, provided in its top with an upwardly-projecting head, of a frame provided with a central sleeve fitting over said pin and a feed-cup capable of vertical adjustment in said frame and provided with a discharge-orifice over said sleeve, substantially as set forth.

5. The combination, with an apparatus for changing the temperature of a liquid, having at its top a receiving-surface for the liquid,

of a feed-cup provided with a discharge-orifice over said receiving-surface and with laterally-projecting arms and a supporting-frame surrounding the feed-cup and provided with inclined series of notches for engagement with said arms at different elevations, substantially as set forth.

6. The combination, with the heater, of a receiver arranged underneath the heater and provided with a central overflow and a cooler arranged underneath the receiver and receiving the liquid from said overflow, substantially as set forth.



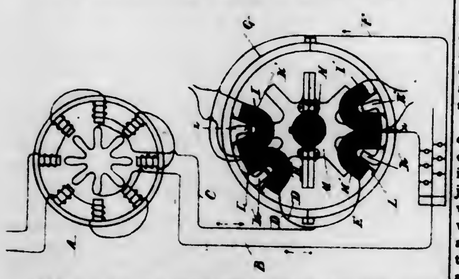
7. The combination, with a heater and a cooler arranged below the same and connected therewith by a stem, of an annular receiver having its inner ring provided with internal centering projections around said stem, substantially as set forth.

8. The combination, with a heater and a cooler, of an intermediate annular receiver provided with an internal curtain which compels the heated liquid to pass to the bottom of the receiver before it can rise to the overflow, substantially as set forth.

9. The combination, with the annular receiver provided with a central overflow, of an internal curtain having feet by which its lower edge is supported above the bottom of the receiver, substantially as set forth.

10. The combination, with the heater having a depending flange secured to the periphery of the lower section thereof, of a receiver arranged below and around the lower section of the heater and a cooler which receives the heated liquid from the receiver, substantially as set forth.

486,643. CURRENT-DIRECTOR. JAMES F. MCELROY, Albany, N. Y., assignor to the Consolidated Car Heating Company, Wheeling, W. Va. Filed Jan. 2, 1892. Serial No. 416,903. (No model.)

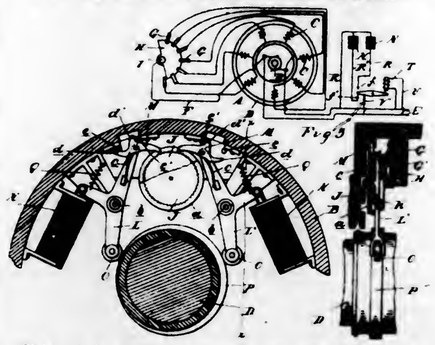


Claim.—1. In a current-director, the combination, with a generator, of a divided circuit, a revolving armature, a fixed portion with which the armature coincides, and fixed coils in the branches of the circuit, arranged to embrace the extremities of the armature during the coinciding interval, substantially as described.

2. In a current-director, the combination, with the circuit of an alternating-current dynamo, of two magnetic circuits consisting of fixed and revolving portions alternately coinciding synchronously with the current-waves and two coils in branches of said circuit, said coils being placed on the fixed portions of the magnetic circuit with their convolution doubled or bent to embrace the extreme portions of the revolving armature at the moment of coincidence, substantially as described.

3. In a current-director, the combination, with a generator, of a revolving armature having a series of radiating arms, a divided circuit, looped coils in the branches, through which the extremities of the arms pass, and fixed cores for the coils, substantially as described.

486,644. CURRENT-REGULATOR. JAMES F. MCELROY, Albany, N. Y., assignor to the Consolidated Car Heating Company, Wheeling, W. Va. Filed Mar. 21, 1892. Serial No. 426,754. (No model.)



Claim.—1. In a current-regulator having fixed contacts and a movable contact, the combination of a ratchet-wheel carrying said movable contact, two pawls adapted to actuate the same in opposite directions, respectively, by the movement of the armature, a spring for each pawl, arranged to normally hold each pawl out of gear with the ratchet-wheel, an electro-magnet for each pawl, arranged to throw such pawl into gear upon becoming active, an electric circuit including said magnets in two normally-open branches thereof, means for moving the pawls, and means for closing said circuit through one or the other of said branches upon an increase or decrease from the normal strength in the circuit of the generator, substantially as described.

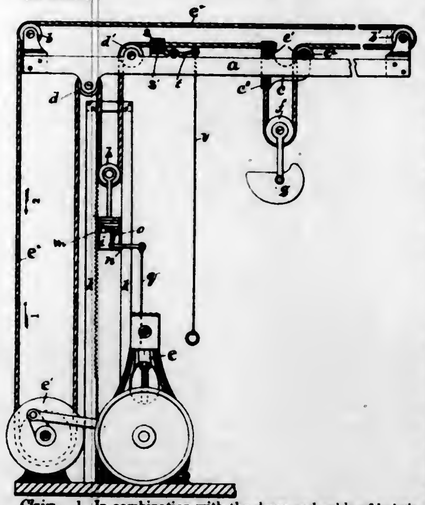
2. In a current-regulator having fixed and movable contacts, a ratchet-wheel carrying said movable contact, two oscillating levers carrying pawls adapted to engage with and turn said wheel in opposite directions, respectively, a cam on the shaft of the armature of the generator to actuate said levers, fixed stops arranged to throw the pawls out of gear in the extreme positions of their levers, springs to normally hold each lever in its extreme position out of engagement with the cam, electro-magnets having movable cores attached to said levers to throw the same into position upon becoming energized, a circuit divided into two normally-open branches into which said magnets are included, and means for closing said circuit through one or the other of said branches, respectively, upon an increase or decrease from the normal current strength in the circuit of the generator, substantially as described.

3. In a current-regulator, the combination of the segmental circular series of fixed contact-springs, the contact-plate pivotally secured in the center of said series of field-contacts and provided with an outer segmental portion adapted to variably contact with said fixed contact-springs, an inner circular portion on said contact-plate, and a single contact-spring contacting therewith, substantially as described.

4. In a current-regulator, the combination, with an electric-generator provided with field-coils in multiple shunt connection with the circuit of the dynamo, of fixed contacts, one for each field-coil, grouped in segmental circular series around a common center, a ratchet-wheel journaled in said center, an insulating-disk secured to said ratchet-wheel, a metallic contact-plate let into said insulating-disk flush therewith and provided with an outer segmental portion adapted to variably contact with the fixed contact-springs and the inner circular portion, a single contact-spring contacting with said circular portion, and means for actuating the ratchet-wheel step by step in one direction or the other by variations in the normal current strength of the dynamo, substantially as described.

5. The combination, with a generator provided with field-coils in multiple shunt connection with the circuit of the dynamo, of a current-regulating device actuated by the revolving shaft of the armature for varying the number of active field-coils and comprising the segmental circular series of fixed contacts G, and a segmental circular contact-plate H in said shunt-circuit, the double ratchet-wheel J, carrying said movable contact-plate, the oscillating levers L L', carrying pawls M, adapted to engage with and turn said ratchet-wheel in opposite directions, respectively, the eccentric P on the shaft of the armature actuating said levers, the fixed stops E E', the springs Q for throwing the levers out of gear, the electro-magnets N, having movable cores secured to the levers, the circuit R, having branches R' in which said electro-magnets are located, and means for closing the circuit through one or the other of said branches by fluctuations in the current strength of the circuit of the dynamo, substantially as described.

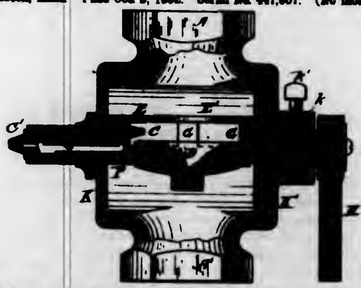
486,645. HOISTING AND CONVEYING APPARATUS. HERBERT R. PALMER, Cleveland, Ohio. Filed Sept. 10, 1892. Serial No. 445,586. (No model.)



Claim.—1. In combination with the drum and cable of hoisting apparatus of the class referred to, a load-supporting carriage controlled by said cable, a take-up consisting of a weight suspended by said cable between the carriage and the drum, and mechanism for gripping the cable between the weight and carriage, for the purpose specified.

2. In combination with the drum and cable of hoisting apparatus of the class referred to, a load-supporting carriage controlled by said cable, a take-up consisting of a weight suspended by said cable between the carriage and drum, means for locking said weight in desired positions, and mechanism for gripping the cable between the weight and carriage, all for the purpose specified.

486,646. TRACK-SANDING DEVICE. CHARLES W. SHERBURNE, Boston, Mass. Filed Oct. 3, 1892. Serial No. 447,907. (No model.)



Claim.—1. In a locomotive track-sanding apparatus, the combination of a hollow body having two necks, one A for attachment to the sand-pipe leading from the sand-box and the other A' for attachment to the sand-pipe leading in front of the driving-wheels, and an interior stage E, perforated for sand-channel and provided with legs G, which support a rim F and having attached thereto cup D, with an air-nozzle C located between the upper edge of said cup and the lower surface of said stage, substantially as and for the purposes described.

2. In a track-sanding apparatus having an interior stage E, a sand-channel through said stage, a cup covering the aperture through the stage of said sand-channel, and an air-blast between the bottom of said stage and the upper edge of said cup, and the cup D, adjustable to and from said stage, substantially as and for the purposes described.

3. In an air-brake apparatus having a stage, a sand-channel through the stage, a cup opposite said sand-channel and extending laterally beyond the edges of said sand-channel, and the air-nozzle C between the upper edge of said cup and the lower surface of said stage, substantially as described.

4. In a track-sanding apparatus having an internal stage, a sand-channel through said stage, a cup below said stage and extending laterally beyond the borders of the channel through said stage, and the air-blast pipe C^2, provided with a reducing-plug C', substantially as and for the purposes described.

5. In a track-sanding apparatus provided with a stage E, a sand-channel through said stage, a series of depending legs G, and a rim F, supported by said legs, the combination of the adjustable cup D and nozzle C above the upper edge thereof, substantially as and for the purpose described.

6. In a track-sanding apparatus provided with a cup D, which is interposed across the sand-channel and is larger in area than the sand-channel above it, the combination of the cup D, having an induction sand-channel about its center and an induction sand-channel around its edge, with an air-blast nozzle C, substantially as and for the purpose described.

486,647. PROCESS OF OBTAINING AMMONIA OR OTHER SALTS FROM MOLASSES. LOTHAR STERNBERG, Jersey City, N. J., assignor to the American Sugar Refining Company, same place. Filed Jan. 5, 1892. Serial No. 417,111. (No specimens.)

Claim.—1. The method of treating the waste lyes resulting from the extraction of sugar or the production of alcohol from molasses preparatory to extracting ammonia therefrom, which consists in concentrating such lyes after they have, if necessary, been freed from any excess of lime, strontia, and baryta, to a density of, say, 45° Baumé, then forming a mixture of the concentrated lye with any suitable carrier, such as granulated coke, then drying such mixture and crushing the resultant dried mixture suitably for introduction into a calcining-retort.

2. The method of extracting ammonia from the waste lyes resulting from the extraction of sugar or the production of alcohol from molasses, which consists in concentrating such waste lyes after they have, if necessary, been freed from any excess of lime, strontia, and baryta to a density of, say, 45° Baumé, then forming a mixture of the concentrated lye with any suitable carrier, such as granulated coke, then drying such mixture and crushing the resultant dried mixture and calcining it in a retort in an atmosphere of superheated steam, and in conducting the ammonia-gas from such retort to the ordinary condensing-tower, wherein the ammonia-gas is brought into contact with sulphuric acid and by combination therewith formed into ammonia sulphate.

3. The method of extracting the valuable constituents from the waste lyes produced in the extraction of sugar or the manufacture of alcohol from molasses, which consists in forming a mixture of such concentrated waste lye with a suitable carrier, such as granulated coke, drying said mixture, then crushing it and calcining it in a retort charged with superheated steam, conducting the vapors and gases from said retort to a condensing-tower loosely filled with bricks kept wet with an ammonia-sulphate solution containing free sulphuric acid, conducting from said tower the excess of steam and the water-gas occluded therein to a condensing-coil for the condensation of the steam and the utilization of the heat thereof, conducting the water-gas from said coil to a gasometer, draining the liquids discharged from the condensing-tower into a settling-tank, separately drawing off the resultant ammonia solution from said settling-tank, and, finally, dissolving in water any desired part of the calcined mass from the retort and obtaining the potassium and other salts from the resultant solution by the usual methods.

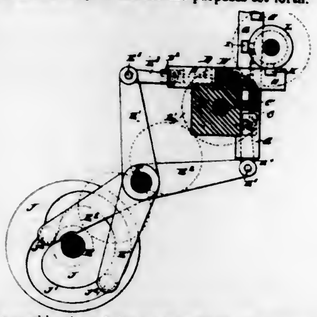
486,648. WARP-KNITTING MACHINE. BENJAMIN I. STOWE, New York, N. Y., assignor to J. Van D. Reed, same place. Filed Feb. 3, 1892. Serial No. 51,815. (No model.)

Brief.—The loops formed by both sets of needles are made upon the same side of the fabric, and longitudinal strands are laid into the fabric and retained by the looped stitchers.

Claim.—1. The combination, substantially as hereinbefore set forth, of the vertical and horizontal needles C and D and the longi-

tudinal warp-guide bar G' with the yarn-guide bar I, arranged to deliver a separate yarn to each of the vertical needles, the yarn-guide bar K, arranged to deliver a separate yarn to each of the horizontal needles, and mechanism for reciprocating said yarn-guide bars I and K.

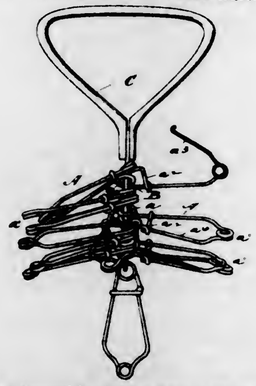
2. The combination, with a needle-bar having lateral grooves for the reception of the needles and a longitudinal groove cut in one of its faces, of the dovetail piece or holder adapted to the longitudinal groove in the needle-bar, the set-screws in said dovetail piece, and the series of needles, substantially as and for the purposes set forth.



3. The combination of the needle-guide bar, its lateral grooves, the needles, and the needle-bar B, provided with tongue, substantially as and for the purposes set forth.

4. The combination of the driving-shaft E, the cam J, the levers $E' E^3$, and the adjustable connecting-links $E^2 E^4$ with the needle-bars $C^2 D^2$, the vertical cross-bars G, provided with the guideways *g*, and the horizontal cross-bars H, provided with guideways *h*, substantially as hereinbefore set forth.

486,649. FISH OR GAME CARRIER. FRANK T. VERRAVEN, Spencer, Iowa. Filed Sept. 7, 1891. Serial No. 404,947. (No model.)



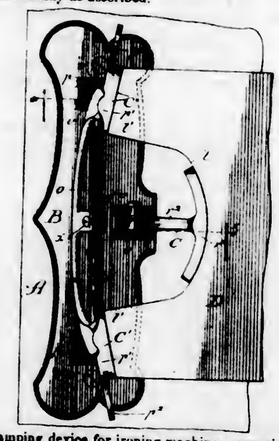
Claim.—As a new article of manufacture, a fish or game carrier comprising a series of holders, each constructed from spring metal and having a latch adapted to be passed through the gills of a fish or over the neck of a bird and then to be engaged with the body of the holder, a rod or bar passing through the several holders, whereby to loosely connect and suspend them, and a handle jointed to said suspending-rod, substantially as described.

486,650. IRONING-MACHINE CLAMP. FREDERICK A. WALKER, Evanston, assignor to the R. H. Sinclair Company, Chicago, Ill. Filed May 20, 1892. Serial No. 433,700. (No model.)

Claim.—1. In a clamping device for ironing-machines, the combination, with a suitable base, of a neckband-clamp C, comprising a finger portion *r*, pivotally supported on the base and having a cam projection *t* at its rear end and terminating at its opposite end in a head *r'* to enter and to co-operate with the neckband-recess in an ironing-board, a thumb-piece r^3, extending backward from the finger portion, and a spring *m* for engaging the said cam projection, substantially as described.

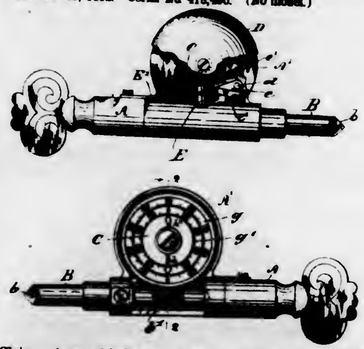
2. In a clamping device for ironing-machines, the combination, with a base B, of a neckband-clamp and shoulder-clamps at opposite sides of the neckband-clamp and having a common pivotal support on the base, said clamps terminating in heads to co-operate with an ironing-board and having handle portions at which to manipulate them from the head end of the ironing-board, substantially as described.

3. In a clamping device for ironing-machines, the combination, with a base B, of a neckband-clamp C, comprising a finger portion *r*, pivotally supported on the base and terminating at its free end in a head *r'* and provided with a thumb-piece r^3, shoulder-clamps C', flanking the clamp C and each comprising a finger portion *p*, pivotally supported on the base and terminating at its free end in a head *p'*, provided with a thumb-piece p^3, and springs *m* and *m'* to engage the clamps, substantially as described.



4. A clamping device for ironing-machines, comprising, in combination, a base B, a neckband-clamp C, comprising a finger portion *r*, pivotally supported on the base and terminating at its free end in a head *r'* and provided with a thumb-piece r^3, shoulder-clamps C', flanking the clamp C and each comprising a finger portion *p*, pivotally supported on the base and terminating at its free end in a thumb-piece p^3, a rod *s*, extending between and forming the pivot for the two shoulder-clamps, a yoke *o*, connecting the two shoulder-clamps and fastened to the rod, and springs *m* and *m'* for the clamps, the whole being constructed and arranged to operate substantially as described.

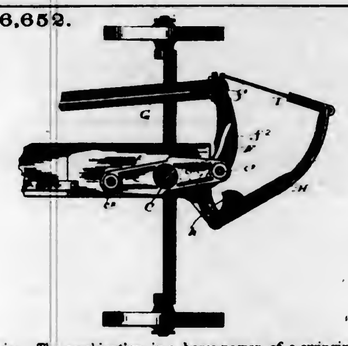
486,651. SPEED-INDICATOR. LOUIS T. WEISS, Brooklyn, N. Y. Filed Jan. 18, 1892. Serial No. 418,480. (No model.)



Claim.—A speed-indicator comprising a handle, a spindle rotatively mounted therein and having on it a worm, a worm-wheel mounted rotatively on the handle and in gear with the worm, a pivoted cam-piece mounted on the worm-wheel between limiting-studs, a spring-hammer mounted on the handle and adapted to be actuated by said cam-piece in whichever direction the worm-wheel is rotated, and a gong mounted on the handle in position to be struck by the hammer.

486,652. HORSE-POWER. ANDREW WISNEY, Chicago, Ill. Filed Mar. 16, 1892. Serial No. 425,103. (No model.)

486,652.



Claim.—The combination, in a horse-power, of a swinging arm *c*, connected with a sweep, a yoke-shaped oscillating arm F, pivoted to the power at a different point from that of the arm *c*, and a pitman pivoted to the opposite end of the arm F, said arm F having cam-shaped surfaces and the arm *c* having means for engaging with these cams and being arranged to swing between the two arms of the yoke, substantially as described.

486,653. HUB-BAND. CHARLES L. WIEDERER, Buffalo, N. Y., assignor to Pratt & Letchworth, same place. Filed July 13, 1892. Serial No. 439,574. (No model.)

Claim.—1. A sheet-metal hub-band provided at its outer end with a separate reinforcing-ring driven into the band, with its peripheral face bearing against the inner surface of the band, whereby the outer end of the band is stiffened, substantially as set forth.

2. A sheet-metal hub-band provided at its outer end with an inwardly-extending flange and a reinforcing-ring arranged within the band and bearing with its outer face against the inner side of said flange and with its peripheral face against the inner surface of the hub-band, substantially as set forth.

3. A sheet-metal hub-band having at its outer end an inwardly-turned flange or lip and a split reinforcing-ring sprung into the band and bearing against said flange, substantially as set forth.

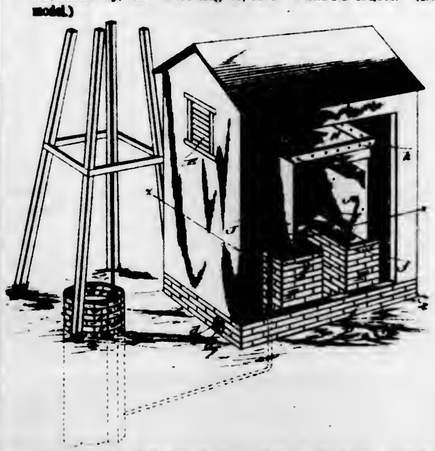
486,654. HAT OR BONNET STAND. SARAH E. L. WILSON, Baltimore, Md. Filed Mar. 16, 1892. Serial No. 425,100. (No model.)

Claim.—1. A hat or bonnet stand comprising the spring-prongs, each having its free end in the form of a loop, provided with a loose roller *b*, and the other ends of the prongs secured to a wooden handle E.

2. In a hat or bonnet stand, the combination of a handle E, provided at one end with side grooves *f*, a ferrule-cap D, provided in its top with holes *c* and secured to the handle, and the spring-prongs, each having its free end in the form of a loop and the other end having its two extremities in close contact and entered into the said holes in the cap top and occupying the side grooves in the handle, as set forth.

3. In a hat or bonnet stand, the combination of a wooden handle having a ferrule-cap on one end and a central bore with a flared mouth at the opposite end of the handle, spring-prongs fastened between the ferrule-cap and handle, and a support having a prong to enter the bore of the handle.

486,655. REFRIGERATING APPARATUS. LUTHER C. WILLIAMSON, Union City, Ind. Filed Aug. 29, 1891. Serial No. 404,076. (No model.)



Claim.—1. The combination of a metallic chamber arranged within a suitable inclosure and having the collecting curb or trough arranged in juxtaposition to the walls thereof and extending inwardly to afford a cooling-trough along the side or sides of the cooling-chamber, the elevated tank or reservoir having the perforations arranged close to the walls of said chamber, and the supply-pipe leading to an exterior source of water-supply and having its discharge end terminating within the tank or reservoir, substantially as described.

2. The combination of a metallic chamber arranged within a suitable inclosure and having a series of shelves, the collecting curb or trough arranged in juxtaposition to the walls of the chamber and extending inward to afford a cooling-trough along the sides of the cooling-chamber, the elevated tank or reservoir having the flaring edges provided with perforations arranged close to the walls of said chamber, the supply-pipe leading to an exterior source of water-supply and having its discharge end terminating in the tank or reservoir, and the eduction or waste pipe, substantially as described.

486,656. CARBON-BRUSH HOLDER FOR DYNAMO-ELECTRIC MACHINES AND MOTORS. JAMES J. WOOD, Fort Wayne, Ind. Filed May 3, 1892. Serial No. 431,679. (No model.)

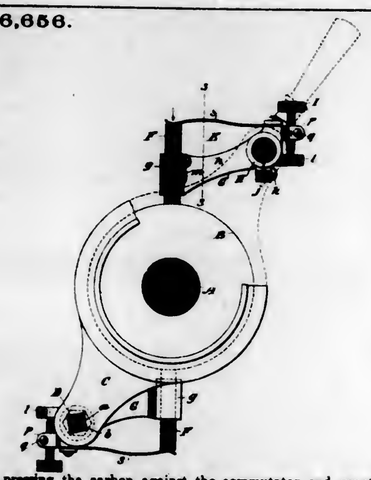
Claim.—1. The combination, with a stationary brush-carrying stud D, of carbon-carrier G, fixed on said stud and having carbon-socket *g* and arm *l*, a spring *s*, oscillatory block H, mounted freely on the stud D, and adjusting-screw I, engaging said block and reacting against said arm *l*, whereby the turning of said screw oscillates the block H and adjusts the tension of spring *s*.

2. The combination, with stud D, of carbon-carrying frame G, having carbon-socket *g* and two hubs *i i*, with spring *s* for pressing the carbon toward the commutator, oscillatory block H, mounted on the stud between said hubs, and adjusting-screw I, engaging said block for oscillating it to vary the tension of said spring.

3. The combination, with fixed stud D, of carbon-carrying frame G, having carbon-socket *g*, two hubs *i i*, fixed on said stud and connecting arm *l*, oscillating block H, mounted on the stud between said hubs, spring *s*, fixed on said block and pressing on the carbon, and adjusting-screw I, engaging said block and reacting against said arm *l* for oscillating the block to vary the tension of said spring

4. The combination, with a brush-holder yoke and stud carried thereby, of a carbon-brush holder mounted on said stud, having a

486,656.



spring pressing the carbon against the commutator and reacting against the stud, so that it tends to twist the latter, and the stud where it passes through the brush-holder yoke being constructed with an angular shank *a*, fitted in an angular hole in the yoke, with an intervening angular insulating-bushing *b* and a clamping-screw for tightening it in place.

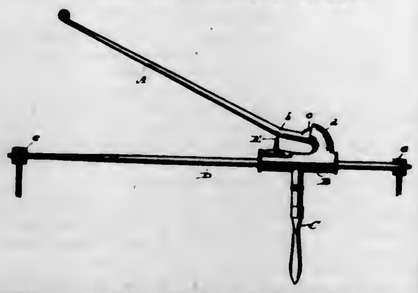
486,657. PROJECTILE. FRANK M. ASHLEY, Hawthorne, assignor of one-half to Warren Wood, Paterson, and Wm. A. Rosenbaum, Jersey City, N. J. Filed Feb. 29, 1892. Serial No. 423,108. (No model.)

Claim.—1. A hollow projectile provided with an axial tube open at both ends and provided at its rear end with a device for rotating the shell as it travels through the air.

2. A hollow projectile having a tube extending axially through it, said tube being open at both ends, in combination with fixed propeller-blades located at the rear end of said tube, for the purpose set forth.

3. The combination, with a shell A, a perforated head *a*, and a perforated disk *a'*, of a central tube B, having its bearings in the head and disk and provided with a set of fixed wings or blades to be acted upon by air, for the purpose set forth.

486,658. MAIL-CATCHER. ALFRED T. BACON, Stevens' Point, Wis. Filed Aug. 19, 1892. Serial No. 443,476. (No model.)

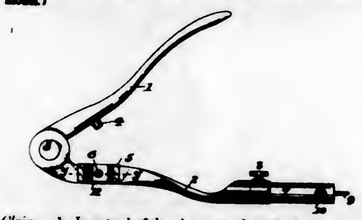


Claim.—1. An ordinary mail-catcher having the sleeve portion thereof provided with a recess, a pivoted bell-crank, and a spring arranged in the recess to impinge against the bell-crank, substantially as set forth.

2. An ordinary mail-catcher having the sleeve portion thereof provided with a recess, a bell-crank pivoted within the recess, a spring arranged in said recess to impinge against the bell-crank, and stops arranged to limit the throw of said bell-crank in either direction, substantially as set forth.

3. An ordinary mail-catcher having the sleeve portion thereof provided with a countersunk recess, a bell-crank pivoted within the recess, and a spring arranged in said recess to impinge against the bell-crank, substantially as set forth.

486,659. DECAPPING AND RECAPPING TOOL. JOHN H. BARLOW, New Haven, Conn. Filed Mar. 2, 1892. Serial No. 423,488. (No model.)



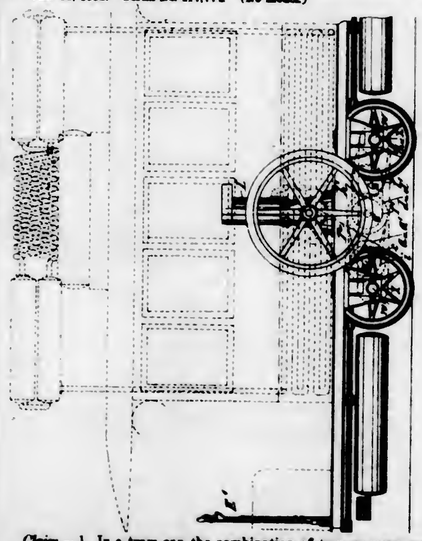
Claim.—1. In a tool of the character described, a pair of handles pivoted together, one of said handles bearing a seating and the other handle having a lateral bend or recess, in combination with a semicircular shell seat-block fitted to said bend and a screw whereby said block is held and detached, substantially as specified.

2. A decapping and recapping tool, the same consisting of the pivoted handles, as described, whereof one is provided with a curved block-holding recess adapted to hold the seating-block and with a socket for holding the decapping-block, and means for fastening the latter, and the removable seating-block adapted to and secured in the recess, the whole arranged substantially as described.

3. In a decapping-tool, a pair of pivoted handles, one provided with a lateral recess having a flange or shelf 12, in combination with a removable seating-block adapted to fit said recess and means for securing said seating-block in position, substantially as described.

4. In a decapping and recapping tool, a pair of pivoted levers, as described, one of which is provided at its end with a socket for holding the decapping-plug, in combination with such plug and means for securing it in the socket, substantially as described.

486,660. MOTOR-CAR. OSKAR BLEICHER, Dresden, Germany. Filed Jan. 11, 1892. Serial No. 417,774. (No model.)



Claim.—1. In a tram-car, the combination of two or more motors, a continuous shaft, and intermediate gears and ratchet mechanism for each motor, connecting the respective motors to said shaft independently of each other to permit the running of one of the motors without affecting the remainder, substantially as described.

2. In a tram-car, the combination of two or more motors, a shaft, wheels mounted loosely upon said shaft and driven, respectively, by said motors, a notched disk for each wheel, secured to the shaft, and pawls carried by said wheels and engaging with the disks for propelling the disks in one direction only, substantially as described.

3. In a tram-car, the combination of the shaft *n*, mechanism intermediate of said shaft and the car-axle for transmitting two different speeds to the axle in either direction and for disconnecting said axle from the shaft *n*, substantially as and for the purpose specified.

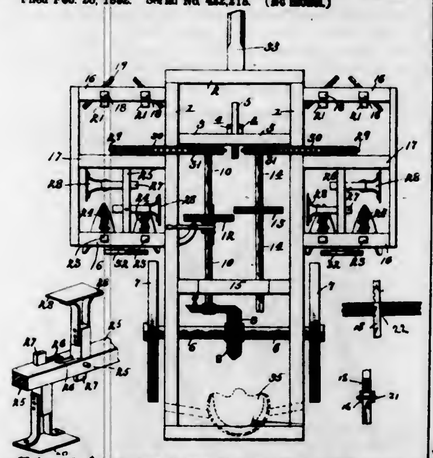
4. In a tram-car, the combination of the main shaft *n*, a shaft *e* intermediate of the shaft *n* and the car-axle, a transmission between the two shafts for imparting different speeds to the same, and a transmission between the shaft *e* and the car-axle for imparting a rotary motion in either direction, substantially as described.

5. In a tram-car, the combination of the main shaft *n*, shafts *e* and *s*, intermediate of the shaft *n* and the car-axle, two sets of transmission-wheels between the shaft *n* and shaft *e* for imparting different speeds to the same, a clutch operated by a lever for changing the speeds, two sets of transmission-wheels between shaft *e* and shaft *s* for imparting to the latter shaft a rotary motion in either direction, a clutch operated by a lever for changing the direction of rotation, and a connection between the car-axle and shaft *s*, substantially as described.

6. In a tram-car, the combination of a motor, a coupling-shaft K K', a transmission intermediate of the motor and said shaft, a connection between said shaft and the car-axle, a brake mechanism, means for coupling and uncoupling the shaft K, actuated from the brake mechanism, and a connection between the brake mechanism and the motor, whereby on applying the brakes the axle is disconnected and the action of the motor modified, substantially as described.

7. In a tram-car, the combination of a motor, a coupling-shaft K K', provided with a screw-spindle *s*, a connection between said shaft and the car-axle, a brake mechanism actuated by a suitable hand-wheel, a connection between the brake-rod and the screw-spindle of the shaft for imparting a longitudinal motion to the same to couple and uncouple the shaft, the chain-drum f^3, connected with the brake-blocks, and a connection between the brake mechanism and the governor of the motor, substantially as described.

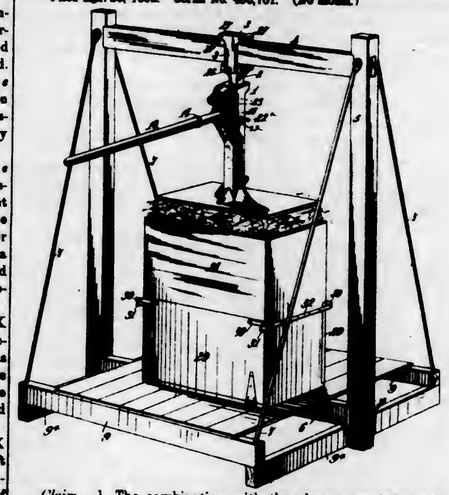
486,661. COTTON-CHOPPER. EDWARD H. BENNETT, Winton, N. C. Filed Feb. 20, 1892. Serial No. 422,218. (No model.)



Claim.—1. In a cotton-chopper, the combination of the supporting-frame, the axle, the double bevel gear-wheel, the interchangeable shafts, one of which has a bevel gear-wheel adapted to engage with said double bevel gear-wheel, the cog-wheels on said shafts, one of which is shiftable lengthwise thereon, the sprocket-wheels on said shafts, the lateral frames, the shafts journaled on said frames, having horizontally and radially adjustable arms carrying choppers or knives, the lateral sprocket-wheels, and the chains, substantially as described.

2. In a cotton-chopper, the combination of the supporting-frame, the axle, the double bevel gear-wheel, the interchangeable shafts, one of which has a bevel-gear which is adapted to engage with said double bevel-gear, the cog-wheels on said shafts, one of which is shiftable lengthwise thereon, the sprocket-wheels on said shafts, the lateral frames, the shafts journaled in said frames, having horizontally and radially adjustable arms provided with choppers, the lateral sprocket-wheels, and the sprocket-chains, the notched bars carrying the clearers and shovels, and the wedges passing through slots in said frames and engaging with the said notches, substantially as described.

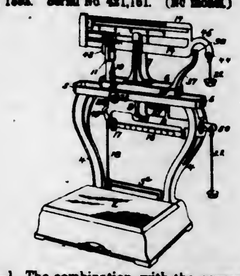
486,662. PRESS. DANIEL W. BRADLEY, Winchester, Ky., assignor of one-half to Morgan T. McElderney and Smith P. Kerr, same place. Filed Apr. 26, 1892. Serial No. 430,701. (No model.)



Claim.—1. The combination, with the plunger consisting of a rack-bar, of a shell having side plates provided with openings and communicating pockets to receive the rocking supports of the segment-gear and the journal-supports of the spur-gear, said openings and pockets being provided with linings formed in sections, substantially as described.

2. In a press, the combination, with a horizontal bar forming part of the portable press-frame, of a plunger supported by a yoke consisting of two perpendicular plates pivotally connected to the head of a rack-bar inserted between said plates, the latter having a central uniting-plate, lugs being provided in front and rear thereof to support the journals of antifriction-rolls resting on the horizontal bar, substantially as described.

486,663. COMPUTING-SCALE. JOHN W. CULBER, New Brighton, Pa., assignor to the Computing Scale Company, Dayton, Ohio. Filed Feb. 11, 1892. Serial No. 421,161. (No model.)



Claim.—1. The combination, with the computing-beam and the weight-beam, of a rod connecting said beams, having a flexible joint between such connections, whereby said rod will adapt itself to the variations in the vibrations of the said beams in the efficient working of the scale, substantially as described.

2. The combination, with the computing and weighing beams of a weighing and price scale, placed the one above the other, of a rod adapted to connect the weight-carrying levers with the said beams, composed of a lower and an upper part which are flexibly connected at a point between the weighing and computing beams, the said lower part having a pivot connection with the said weighing-beam, substantially in the manner and for the purpose set forth.

3. The combination, with the computing and weighing beams of a weighing and price scale, of a rod composed of an upper and a lower part, adapted to connect the weight-carrying levers with the said beams, the upper part having pivotal connection with a link through which the computing-beam slides and having its lower end flexibly jointed with the said lower part, which latter has a knife-edge bearing 19 on the weighing-beam and a limited pivotal movement relative to the said upper part, substantially as described.

4. In a weighing and price scale, the combination of the computing-beam, a slotted link within which the said beam slides, having pivot-bearings and a weight-beam, with a rod connecting the link-pivots and the weight-beam and having a flexible joint between such connections, and mechanism for engaging said link-pivots for lifting them out of bearing contact with said rod, substantially as described, for the purpose stated.

5. In a weighing and price scale, the combination, with the traversing computing-beam, a link for the computing-beam to slide through, and a rod connecting the weighing mechanism with the said link and having pivotal connection with the said link, of a tube having a limited vertical movement and having vertical members which project up on each side of the computing-beam and which are adapted to receive the projecting ends of the rod and link-pivots, and actuating mechanism for lifting said tube, substantially as and for the purpose described.

6. In a weighing and price scale, the combination, with the carriage supporting the computing-beam, having a rack and a locking mechanism to secure the carriage in the proper position, of two tubular shafts in axial alignment, a gear-wheel on one of said shafts to mesh with the rack-bar and move the carriage and a cam on the other of said shafts to actuate the said locking mechanism, and a hand-operated shaft concentric with and adapted to have a rotary and a longitudinal movement relative to the said tubular shafts and constructed to engage with each to move or lock the carriage, substantially as set forth.

7. In a weighing and price scale, the combination, with the carriage supporting the computing-beam and a locking mechanism to secure the carriage at the located position, of two axially-aligning tubular shafts constructed, respectively, to move the carriage and actuate the said locking mechanism, and a shaft adapted to have longitudinal and rotary movement within the said tubular shafts and having a pin which is adapted to be brought in engagement with each of the said tubular shafts on moving the said inner shaft longitudinally to lock the said shaft to either of the said tubular shafts, substantially as and for the purpose described.

8. In a weighing and price scale, the combination, with the carriage supporting the computing-beam, a locking-clamp to secure the carriage in the required position, and a lever for actuating the said locking-clamp, of two tubular shafts in axial alignment, one constructed to move the carriage, the other to actuate the lever in each direction, and a shaft located within and adapted to have a longitudinal and rotary movement relative to the said tubular shafts and having a pin to engage with either of the tubular shafts to lock it to the central shaft to move the carriage or actuate the lever, substantially as described, for the purpose specified.

9. In a platform-scale, the combination, with the weighing and computing beams, a carriage supporting the computing-beam, and a rod connecting the computing-beam with the weighing mechanism and having pivotal connection with a link through which the computing-beam slides, of the tube 23, having arms 11^a, adapted to engage with the pivots of the said link, a lever 29, having engagement with the said tube 23, a locking-clamp for securing the carriage at the desired position, having connection with the said lever 29, two axially-aligning tubular shafts, the one constructed to move the carriage, the other to actuate the lever 29, and a shaft adapted to have a longitudinal and a rotary movement within the said tubular shafts and having a pin to engage with and lock the said shaft with either of the tubular shafts, substantially as described, for the purpose specified.

10. In a computing-scale, the combination, with a computing-beam and a weight-beam, of a vertical rod having a free pivotal connection with a link on said computing-beam, a bearing connection on the weight-beam, a flexible joint in itself between such connections, and a pivotal connection with the platform or scale levers, whereby in the operation of the scale the difference between the fixed arc described by the weight-beam and the variable arc described by the computing-beam is compensated for without friction.

11. The combination, in a computing-scale, of the computing and weighing beams, with a flexibly-jointed rod and link for connecting these parts, substantially as described, a carriage for the computing-beam, a vertically-adjustable tube forked and slotted at its upper end, and means, substantially such as described, for operating and locking the carriage and the forked tube in the way described, whereby the carriage is operated without wear upon the pivots or bearings and is locked while weighing, so that the mechanism is held steady and accuracy obtained.

12. The combination, with weighing mechanism, of a computing-beam adapted to have a sliding movement, bearing-pivots with which it has both fixed and movable relation, a pointer-link on said beam, having the pivot-bearings with which the beam has movable relation, and a jointed rod connecting the said beam with the weighing mechanism, for operation in the way substantially as described.

13. The combination, with weighing mechanism, a movable computing-beam, a slide-link on said beam, having pivot-bearings, a carriage bearing said computing-beam, and a weight-beam, of a rod connecting said link-pivots and weight-beam, having a flexible joint between such connections, a tube having slotted arms for engaging said link-pivots, a lever engaging said tube and having a rigid arm and a pivoted clamp, means for operating said arm and clamp simultaneously, the one to hold the carriage and the other to hold the weight-beam, and suitable means for independently operating the carriage and the lever.

14. The combination, with the weighing mechanism, a computing-beam, a carriage bearing said beam, and a weight-beam, of a rod connecting said beams, having a flexible joint between such connections, substantially as described.

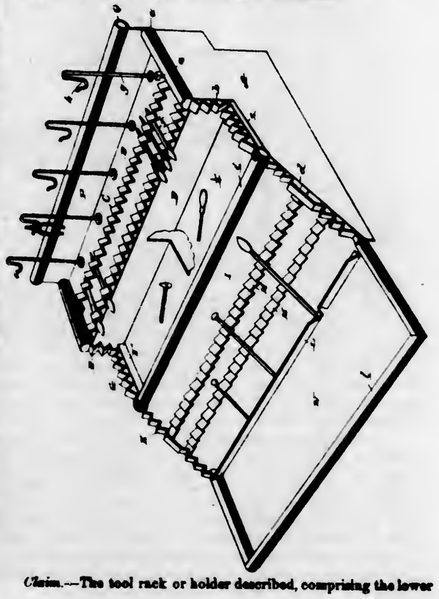
15. The combination, with weighing mechanism, a computing-beam, a carriage bearing said beam, and a weight-beam, of a rod connecting said beams, having a flexible joint between said connections, a slide-link on said computing-beam, having bearing-pivots engaging the upper end of said jointed rod, and a lifting device adapted to engage said link-pivots, substantially as described.

16. The combination, with weighing mechanism, a computing-beam, a carriage bearing said beam, a slide-link on said beam, having pivot-bearings, and a weight-beam, of a rod connecting said link-pivots and weight-beam, having a flexible joint between such connections, a lifting device adapted to engage said link-pivots, a clamp connecting said lifting device, and a cam device engaging said lifting device for operating it and the clamp, substantially as described.

17. The combination, in a weighing and price scale, of the computing-beam and the weight-beam, a slide-link, on said computing-beam, a rod loosely connecting said link and weight-beam, having a flexible joint between such connections, a tube having arms adapted to engage said link, a yoke-lever engaging said tube and having an arm adapted to engage said weight-beam, a clamp connecting said yoke-lever, a hollow column forming a stop for said tube, a carriage bearing said computing-beam, and suitable means for operating said carriage, the yoke-lever, its arm, its clamp, and the tube, substantially as described.

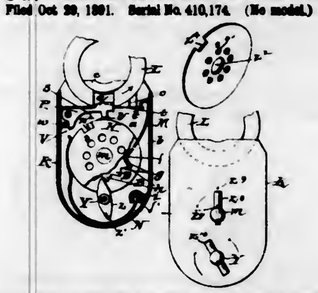
18. In a weighing and price scale, a computing-beam constructed with three separate divisions arranged in groups of determined size, substantially as described, in combination with a slide-link 43 and a poise 46, the lower division forming an upper and a lower series with which the said link 43 coacts, representing the price-division A and B, the upper division representing the value series A and the intermediate division representing both the value and weight series B, the poise 46 coacting with said upper and intermediate series, whereby the value and price of the article being weighed is determined, as described.

486,664. TOOL-HOLDER. SOLOMON J. DAVIDSON, Vinita, Ind. Ter. Filed Dec. 19, 1891. Serial No. 415,652. (No model.)



Claim.—The tool rack or holder described, comprising the lower horizontal tray, the inclined tray or wall having the racks extending longitudinally thereof and also bordering its transverse edges, the horizontal tray or shelf arranged upon or above the inclined tray, the horizontal tray of greater altitude having longitudinally-disposed racks and guards at opposite ends, the racks on the lower horizontal shelf and extending to the upper horizontal shelf, and the hooks secured in the upper horizontal shelf, substantially as specified.

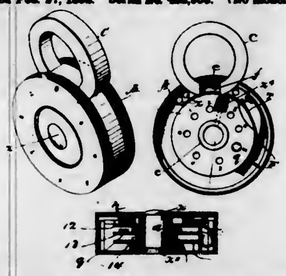
486,665. PERMUTATION-PADLOCK. JOSIAH J. DEAL, Canton, Ohio. Filed Oct. 29, 1891. Serial No. 410,174. (No model.)



Claim.—1. The combination, with a lock-case having a face portion *a*, side *b*, having at its outer edge a groove *n*, a stud *i*, having a circular recess *j* therein to support the spring N, a head-block *c*, circular raceway *d*, groove *o*, extending from the body of the lock to the raceway, a hub *l* to support the tumblers, and pin *m*, of the shackle L, locking-bolt P, tumblers A B E G H, rack-wheel D, springs M and N, and turn-pins *m* and *y*, the latter having a cross-bar *z*, the ends of which are adapted to engage and rotate said rack to register the notches z^4 under the lug U to release the shackle, substantially as set forth.

2. The combination, with a lock-case having a face portion *a* and sides *b*, grooved at their outer edge to receive a sliding lid or back, of a block end portion *c*, having therein a circular raceway *d* and a groove *o*, a locking-bolt P, a lid or back provided with an outwardly-projected lug *p*, adapted to slide in the groove *o*, and a shackle to turn in said raceway to engage the end of the lug *p* to lock and hold the lid in the case, substantially as set forth.

486,666. COMBINATION-PADLOCK. JOSIAH J. DEAL, Canton, Ohio. Filed Feb. 27, 1892. Serial No. 423,066. (No model.)

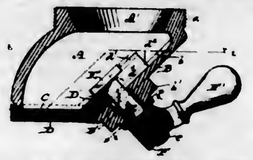


Claim.—1. In a permutation-padlock, the combination, with the inclosing case having a circular shackle-groove and a shackle adapted to rotate in said groove, a portion of said shackle being cut away to form an opening therein, of a plurality of disks or tumblers the peripheries of which are cut away, forming circular depressions adapted to register with the shackle-groove, the rotatable cap, and the brake-spring, substantially as described.

2. The combination, in a padlock as herein described, of the case A, having a circular groove *c*, a central spindle *c*, a plurality of tumblers having peripheral depressions to correspond with the groove *c* of a rotatable cap B, adapted for engagement with the disks or tumblers 12 and 13 to rotate said tumblers, and the tumbler 14 to lock or unlock the shackle in the groove *c*, substantially as described.

3. The combination, in a padlock, of the case A, having a circular groove, a central-apertured spindle, locking-tumblers to rotate about said spindle, springs T and F, cap B, pin S, screw x^4, by which the pin is secured in position, and the shackle, substantially as described, and for the purpose set forth.

486,667. SPRINKLER. CHARLES DOELGER and OSCAR KIRSTEN, Milwaukee, Wis. Filed Apr. 21, 1892. Serial No. 430,067. (No model.)



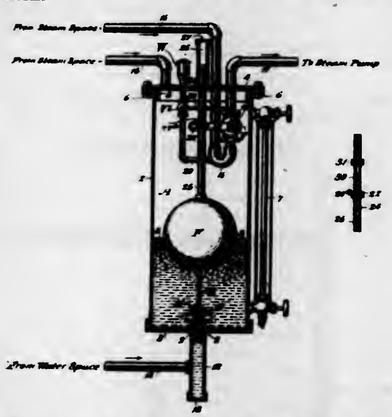
Claim.—1. A sprinkler-head comprising a chambered casing having an oblique rear wall and open at its bottom and a plate arranged horizontally below the opening in said casing and provided with an oblique portion adapted for adjustable engagement with the oblique wall of said casing, substantially as set forth.

2. A sprinkler-head comprising a chambered casing having an oblique rear wall and an opening in its bottom, a plate arranged below said opening and provided with an oblique portion adapted to adjustably engage with the oblique rear wall of the casing, an aperture through said oblique wall, a bolt extending therethrough and arranged to engage with the oblique portion of said plate, and means for adjusting said bolt within said aperture to effect a vertical adjustment of the horizontal part of said plate, substantially as set forth.

3. A sprinkler-head comprising a chambered casing having an oblique rear wall, a substantially-semicircular front wall and an opening in its bottom, a plate arranged horizontally below said opening and provided with an angular portion adapted to adjustably engage with the oblique rear wall of said casing, a slot in said angular portion of the plate, an aperture in said oblique wall, a bolt extending through said slot and said aperture, shoulders upon said angular portion of the plate arranged to engage with the head of the bolt, means for loosening said bolt to release said plate, and means for adjusting the bolt within said aperture to raise or lower said plate, substantially as set forth.

4. A sprinkler-head comprising a chambered casing having an oblique rear wall and opened at its bottom, a plate arranged to extend horizontally below said opening and provided with an angular portion adapted to engage with said oblique wall, an angular aperture in said oblique wall, a bolt passed therethrough and engaged with the angular portion of said plate within the casing, a nut for securing said bolt in position, and an angular bushing having an eccentric aperture for the bolt and fitted at its outside to the contour of the aperture in said wall, substantially as and for the purpose described.

486,668. AUTOMATIC FEED-REGULATOR. CLAYTON C. FRESCOTT, New York, N. Y. Filed Mar. 31, 1892. Serial No. 427,164. (No model.)



Claim.—1. In a feed-regulator, the combination of a casing for containing water and steam, a float and a valve within the casing, pipes leading to and from said valve, and connections between the float and valve, whereby the latter is operated by the rising and falling of the former, substantially as described.

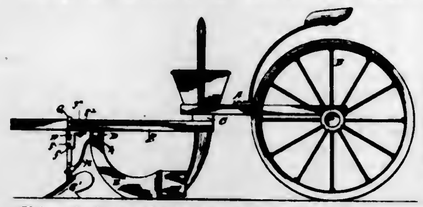
2. In a feed-regulator, the combination of a shell or casing, a float therein, steam-pipes passing through a head of said casing, a valve connected with and supported by said pipes, and connections between said valve and float for operating the first, substantially as described.

3. In a feed-regulator and alarm, the combination of a casing for containing water and steam, a float and two valves within the casing, a steam-pipe leading to one of said valves and having a branch to the other valve, a pipe leading away from said first-named valve, an alarm connected with said second valve, and connections between the float and valves, whereby the last are controlled, substantially as described.

4. The combination of two valves, means for moving them, one in both directions, the other in one direction, a cam on the spindle of the first of said valves, and connections therefrom to the second of said valves, whereby the latter is moved in the other direction, substantially as described.

5. In a feed-regulator, the combination of a casing for containing water and steam, a float and valves therein, connections between said float and said valves, whereby one valve is moved in both directions and the second in one direction, a cam on the first valve, a connection from said cam to said second valve for moving the same in the other direction, and pipe connections to and from said valves, substantially as described.

486,669. SEED-PLANTER. HENRY FIEBER and JACOB R. KROSBERG, Concordia, Mo. Filed Sept. 29, 1892. Serial No. 447,343. (No model.)

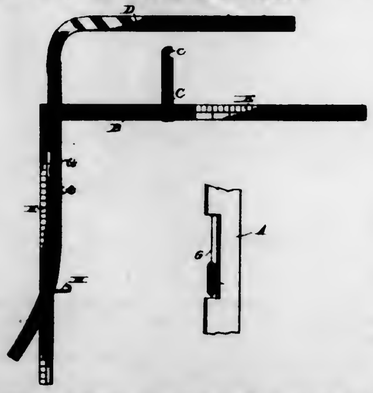


Claim.—1. A corn-planter comprising a seed-receptacle, seed-spout, runner, furrow-opener secured at its forward upturned end to the brace cross-bar, a bracket also bolted to the frame in advance of the runner, a furrow-opening plow-standard secured between the side flanges of the bracket, and a brace connecting the lower end of said standard with the forward end of the runner and the forward cross-brace, substantially as described.

2. A corn-planter comprising the planter-frame, the seed-box, the seed-spout, furrow-opening runner, and a double-mold-board furrow-opening plow having a standard secured between the side plates *f* of a bracket F, and the diagonal brace H, secured to the lower end of the standard and the forward end of the opening-runner, substantially as described.

3. A corn-planter comprising the frame, the seed-box, seed-spout, furrow-opening runner, a double-mold-board furrow-opening plow, having upper bolt-holes *g*, a bracket F, having side flanges *f* and bolt-holes *f'*, and a brace H, secured at its upper end to the frame and adjustably secured at its lower end to one of a series of holes in the standard, substantially as described.

486,670. TAILOR'S MEASURE. CASPAR GUSKEL, Jefferson, Iowa. Filed Dec. 10, 1891. Serial No. 414,568. (No model.)

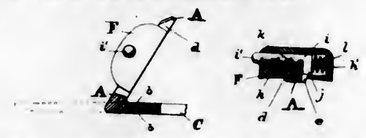


Claim.—1. A tailor's scale comprising the upright blade A and horizontal blade B, fixed thereto, the slide C, strap D, and two flexible scales E and F.

2. In a tailor's measure, an upright blade provided with a plumb-line and with a horizontal blade, in combination with means for attaching the upper end of the same to the shoulder, and with a clasp for connecting the lower end of the same to the clothing, and also provided with two flexible graduated scales, substantially as described and shown.

3. A tailor's measure comprising two right-angular arms or blades rigidly connected together, in combination with two flexible scales attached thereto at or near their angle, a plumb-level to indicate the vertical and horizontal position of the respective arms, a strap connected to one of the arms or blades adapted to pass over the shoulder, an adjustable fastening device on the other arm to connect with said straps, and means for fastening the measure to the clothing of the person, substantially as shown and described.

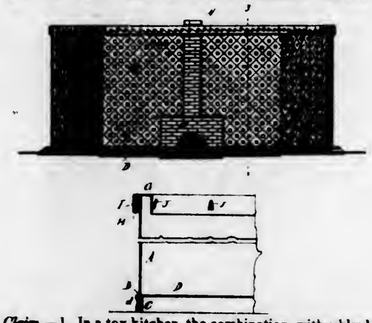
486,671. TOE-WEIGHT. MICHEAL HEAGERTY, Baltimore, Md. Filed July 25, 1892. Serial No. 441,226. (No model.)



Claim.—1. The combination of a horseshoe, an upright shank secured to said shoe and having two opposite sides beveled and provided with a notch, a weight having a dovetailed groove to receive the said shank and provided with a bored recess having an opening *k* communicating therefrom to the said groove, and a spring-bolt occupying the said recess and having a lateral lug *j*, which projects through the said opening, as shown and described.

2. In a toe-weight, the combination of a shank having two opposite sides beveled and provided with a notch, a weight having a dovetailed groove to receive the said shank and provided with a bored recess having an opening *k* communicating therefrom to the said groove, a plug closing one end of said recess, a bolt occupying the recess and having a lateral lug which projects through the said opening, and a spring between said plug and bolt, as shown and described.

486,672. TOY KITCHEN AND STOVE. JULIUS JAEGER, Rutherford, N. J. Filed Dec. 15, 1891. Serial No. 415,116. (No model.)



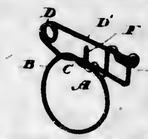
Claim.—1. In a toy kitchen, the combination, with a blank forming the rear and side walls, which blank has a downwardly-projecting tongue at the lower edge of the portion forming the rear wall and a laterally-projecting tongue on the lower edge of each portion forming a side wall, of a base-plate having a grooved flange at the rear for receiving the bottom downwardly-projecting tongue of the blank and laterally-projecting grooved flanges at the ends for receiving the laterally-projecting bottom flanges of those parts of the main blank forming the side walls of the kitchen, substantially as set forth.

2. In a toy kitchen, the combination, with a body-blank having a downwardly-projecting tongue projecting at the bottom edge of its rear portion, of a floor-plate having a rear grooved flange for receiving the tongue on the rear portion of the body-blank, and a toy stove having a rear plate provided with a downwardly-projecting tongue adapted to pass into the same grooved flange at the back of the bottom plate that receives the downwardly-projecting tongue on the rear portion of the main body-blank, substantially as set forth.

3. In a toy kitchen or stove, the combination, with a body-blank, of a plate and spoon shelf at the upper edge of the body-blank and projecting from the face of the same, which shelf has a series of slots in its horizontal portion, a toy stove, and a chimney resting on the front of the blank and extending from the top of the stove up through one of the slots in the plate or spoon shelf, whereby said chimney is held securely at its upper end by said shelf, substantially as set forth.

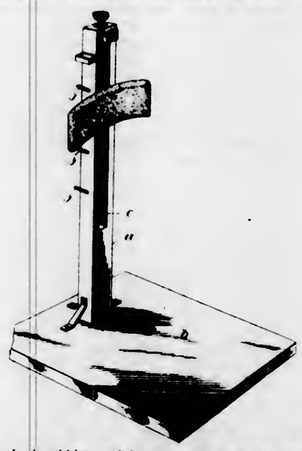
4. In a toy kitchen or stove, the combination, with a body-blank, of a plate and spoon shelf formed thereon and having a slot through which a chimney can pass, a chimney passed through said slot in the shelf and provided at its lower end with a tongue, and a stove having an opening in its top plate, through which opening said tongue on the lower end of the chimney is passed and which tongue is bent over on the under side of said stove top plate, substantially as set forth.

486,673. LADY'S HANDKERCHIEF-HOLDER. HENRY C. KENNEDY, Philadelphia, Pa. Filed July 13, 1892. Serial No. 439,904. (No model.)



Claim.—As an improved article of manufacture, a handkerchief-holder composed of a single piece of wire and comprising a retaining or safety pin and a loop integral with and depending from the bar of the safety-pin and twisted around the same with one end of the wire extending upwardly from said loop portion to form a pin between the bars of the safety-pin, substantially as shown and described.

486,674. BATH-ROOM DRYING COMPANION. DANIEL W. LENT, Milwaukee, Wis. Filed Jan. 13, 1892. Serial No. 418,492. (No model.)



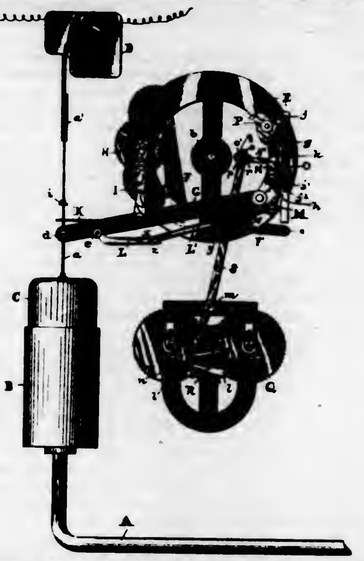
Claim.—1. A rubbing and drying device for bath-rooms, consisting of a horizontally-curved pad having an unyielding back and waterproof-cushioned concave surface, means for holding a rubbing and drying towel over said waterproof surface, and a suitable support and adjustable clamp for said rubbing device, as described.

2. A drying and rubbing device for bath-rooms, consisting of a standard and a cross-head having a horizontal concave form, faced with a waterproof cushion, and provided with means for removably securing a rubbing and drying towel over said waterproof-covered pad, and an adjustable clamp for securing said cross-head at different heights on said standard, substantially as described.

3. A drying and rubbing device for bath-rooms, consisting of a standard having a fixed foot-rest or platform *b* and a vertical slot *c*, in combination with a cross-head horizontally curved and faced with a concave waterproof-covered pad or cushion, means for securing a drying and rubbing towel over said waterproof-covered pad, and an adjustable-tongued clamping device for said cross-head, substantially as described.

4. A rubbing and drying device for bath-rooms, consisting of a cross-head having an unyielding back, a cushioned or padded concave surface, a waterproof facing or covering for such cushion, and hooks and pins on its back upon and over which to smoothly stretch and secure a towel as a drying and rubbing covering for the waterproof cushion, and a suitable support for the said cross-head, substantially as described.

486,675. PNEUMATIC FIRE-ALARM. ANTHONY A. LEHMANN, Baltimore, Md. Filed Feb. 1, 1892. Serial No. 419,905. (No model.)



Claim.—1. In pneumatic fire-alarm-transmitting mechanism, the combination of an air-cup inverted in a suitable liquid, an air-conduit communicating with said air-cup, a call-box governed by said air-cup, a movement for lifting said cup out of the liquid to recharge it with air, and means for automatically tripping said movement by the lowering of the air-cup.

2. In pneumatic fire-alarm-transmitting mechanism, the combination of an air-cup inverted in a suitable liquid, an air-conduit communicating with said air-cup, a call-box governed by said air-cup, a movement for lifting said cup out of the liquid to recharge it with air, a hammer to trip the said movement, a trigger checking said hammer, and means whereby the lowering of the air-cup operates said trigger to release the movement.

3. In pneumatic fire-alarm-transmitting mechanism, the combination of an air-cup inverted in a suitable liquid, an air-conduit communicating with said air-cup, a call-box governed by said air-cup, a movement for lifting said cup out of the liquid to recharge it with air, a hammer to trip the said movement, a trigger checking said hammer, a pivoted plate adapted to be depressed as the cup lowers, and suitable connection between said plate and the trigger, whereby the depression of the former causes the release of the latter.

4. In pneumatic fire-alarm-transmitting mechanism, the combination of an air-cup inverted in a suitable liquid and having a suitable stem, an air-conduit communicating with said air-cup, a call-box governed by said air-cup, a movement for operating a lever which raises the air-cup out of the liquid to recharge it with air, a hammer to trip the said movement, a trigger checking said hammer, a plate pivoted to the lever of the lifting movement and adapted to be engaged by a shoulder on the stem of the air-cup, whereby it is depressed, and suitable connections between said plate and the releasing-trigger, whereby the depression of the former causes the release of the said trigger.

5. In pneumatic fire-alarm-transmitting mechanism, the combination of an air-cup inverted in a suitable liquid and having a suitable stem, an air-conduit communicating with said air-cup, a call-box governed by said air-cup, a movement for operating a lever which raises the air-cup out of the liquid to recharge it with air, said lever comprising a frame with a slotted cross-bar through which the stem of the air-cup passes, a hammer to trip the said movement, a trigger checking the said hammer, a plate on a shaft journaled in the frame of the lifting-lever, said plate slotted to receive the stem of the air-cup, which stem has a shoulder above the plate, and suitable connections between the said plate and the trigger, whereby the latter is released by the depression of the plate.

6. In pneumatic fire-alarm-transmitting mechanism, the combination of an air-cup inverted in a suitable liquid, an air-conduit communicating with said air-cup, a call-box governed by said air-cup, a movement for lifting said cup out of the liquid to recharge it with air, a spring-actuated slide serving as a hammer to trip the said move-

ment, a pivoted latch to engage and hold said slide, a plate adapted to be depressed as the air-cup lowers, levers connecting said plate, and the pivoted latch to cause the release of the latter, and means actuated by the lifting movement for returning the slide after it has tripped the movement.

7. In pneumatic fire-alarm-transmitting mechanism, the combination of an air-cup inverted in a suitable liquid, an air-conduit communicating with said air-cup, a call-box governed by said air-cup, a movement lifting said cup out of the liquid to recharge it with air, for a spring-actuated slide serving as a hammer to trip the said movement, a pivoted latch to engage and hold said slide, a plate adapted to be depressed as the air-cup lowers, levers connecting said plate and the pivoted latch to cause the release of the latter, and an arm on a shaft in gear with the lifting movement, said arm to engage a post projecting from the slide, and thereby return the slide after it has tripped the movement.

8. In pneumatic fire-alarm-transmitting mechanism, the combination of an air-cup inverted in a suitable liquid, an air-conduit communicating with said air-cup, a call-box governed by said air-cup, a movement for lifting said cup out of the liquid to recharge it with air, means for tripping said movement by the lowering of the air-cup, and time mechanism for holding the movement directly after it has acted to permit an alarm of fire to be transmitted.

9. In pneumatic fire-alarm-transmitting mechanism, the combination of an air-cup inverted in a suitable liquid, an air-conduit communicating with said air-cup, a call-box governed by said air-cup, a movement for lifting said cup of the liquid to recharge it with air, a spring-actuated slide serving as a hammer to trip the said movement, a pivoted latch to engage and hold said slide and be released by the lowering of the air-cup, means for returning said slide after it has tripped the movement, a second latch to take the slide when it is thus returned and hold it, and time mechanism for throwing out said second latch and allowing the other latch to take the slide.

10. In pneumatic fire-alarm-transmitting mechanism, the combination of an air-cup inverted in a suitable liquid, an air-conduit communicating with said air-cup, a call-box governed by said air-cup, a movement for lifting said cup out of the liquid to recharge it with air, a spring-actuated slide serving as a hammer to trip the said movement, a pivoted latch to engage and hold said slide and be released by the lowering of the air-cup, means for returning said slide after it has tripped the movement, a second latch to take the slide when it is thus returned and hold it, a clock-movement having a toothed time-disk, and a lever engaging said disk at one end and the said second latch at the opposite end, whereby as the disk revolves said lever is actuated to release said latch from the slide.

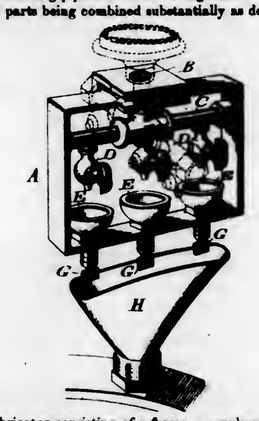
11. In pneumatic fire-alarm-transmitting mechanism, the combination of an air-cup inverted in a suitable liquid, an air-conduit communicating with said air-cup, a call-box governed by said air-cup, a movement for lifting said cup out of the liquid to recharge it with air, a spring-actuated slide serving as a hammer to trip the said movement, a pivoted latch to engage and hold said slide and be released by the lowering of the air-cup, means for returning said slide after it has tripped the movement, a second latch to take the slide when it is thus returned and hold it, a clock-movement having a toothed time-disk, and a spring-actuated lever having a pin at one end engaging the periphery of the time-disk and a pin at the opposite end extending over an arm of the said second latch and adapted to strike a projection on said arm and release the latch when the pin at the opposite end of the lever drops behind a tooth of the time-disk, substantially as described.

12. In pneumatic fire-alarm-transmitting mechanism, the combination of an air-cup inverted in a suitable liquid, an air-conduit communicating with said air-cup, a movement for lifting said cup out of the liquid to recharge it with air, a spring-actuated slide serving as a hammer to trip the said movement, a pivoted latch to engage and hold said slide and be released by the lowering of the air-cup, means for returning said slide after it has tripped the movement, a second latch to take the slide when it is thus returned and hold it, a clock-movement having a toothed time-disk, and a spring-actuated lever having a pin at one end engaging the periphery of the time-disk and a pin at the opposite end extending over an arm of the said second latch and adapted to strike a projection in the form of a spring-held catch pivoted to the said arm and thereby release the latch when the pin at the opposite end of the lever drops behind a tooth of the time-disk, the said pivoted projection moving out of the path of the lever on the return movement of the latter.

486,676. LUBRICATOR. FERDAS S. LIVINGSTON, Philadelphia, Pa. Filed May 24, 1892. Serial No. 434,198. (No model.)

Claim.—1. A lubricator having a frame with an oil-supply pipe connected therewith, distributing-pipes mounted on the lower end of said supply-pipe and rotatable horizontally therein and having cocks thereon and oil-cups on said frame below said distributing-pipes, said parts being combined substantially as described.

2. A lubricator consisting of a frame, an oil-supply pipe connected therewith, distributing-pipes connected with a joint, rotatably mounted on the lower end of said supply-pipe, cocks on said distributing-pipes, and oil-cups on said frame below said cocks, a portion of said cocks when said distributing-pipes are rotated being removed from over said oil-cups, said parts being combined substantially as described.



3. A lubricator consisting of a frame, a supply-pipe, a distributing-pipe connected with said supply-pipe and rotatably mounted within the frame, cocks in said discharging-pipe, cups on the frame below said cocks, wipers in said cups having their lower ends extending below the same, and a wiper-cup adapted to be engaged by the wipers, said parts being combined substantially as described.

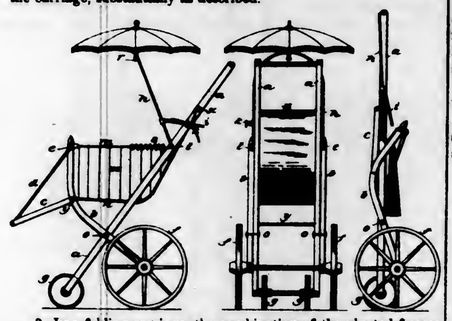
486,677. RUNNING-GEAR FOR VEHICLES. TARGE G. MANDT, Stoughton, Wis. Filed Mar. 5, 1892. Serial No. 423,907. (No model.)

Claim.—In a running-gear for vehicles, the combination, with the front and rear axles, of the side springs having their rear ends clipped to the rear axle and their front ends connected with a transverse equalizer, the front spring connected with the front axle and having its ends provided with bearings in which the equalizer rests and the reverse springs secured to the side springs, substantially as described.

486,678. CHILD'S CARRIAGE. CARL HUMMELSHEIM, Baltimore, Md. Filed June 11, 1892. Serial No. 436,301. (No model.)

Claim.—1. In a folding carriage, the combination of the pivoted frames and the flexible side springs connecting their upper ends with a flexible seat connecting said frames and suspended between them from said flexible connections, substantially as described.

2. In a folding carriage, the combination of the pivoted frames and flexible side springs connecting their upper ends with a flexible seat connecting said frames and a netting of flexible material connecting the spring connections and the seat between the frames at each side of the carriage, substantially as described.



3. In a folding carriage, the combination of the pivoted frames and flexible side springs connecting their upper ends with a flexible seat connecting said frames, a netting of flexible material connecting the spring connections and seat between said frames at each side of the carriage, and a foot-rest pivoted to the front frame and supported therefrom, substantially as described.

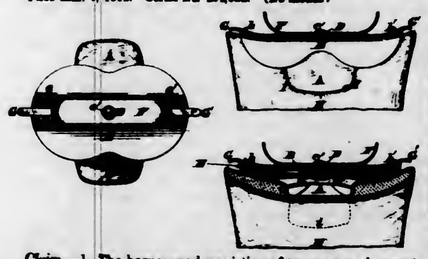
4. A folding carriage substantially as described and composed of the pivotally-connected frames, the wheels *f g*, the flexible seat, the flexible spring-frame connections above said seat, the side netting suspending said seat from the spring connections, the pivoted foot-rest, and the adjustable connections for the latter, substantially as described.

5. In a child's carriage, the combination, with a back frame, of an umbrella-support formed of an arched-shaped frame A, pivoted at its ends to the sides of said back frame, the rod i, pivotally connecting one side of said arched frame and back frame and having a screw-clamp, and an umbrella adjustably clamped on the arched end of said frame A, whereby the said arched frame may be adjusted forward or backward and the umbrella adjusted and inclined to either side upon the arched end of its support, substantially as described.

6. In a child's carriage, the combination, with the back frame, of a pivoted umbrella-support having its upper end arched, an umbrella adjustable on said arch to incline it to one side or to the other, and the adjustable connection with the frame for said umbrella-support, substantially as described.

7. The combination, in a folding carriage, of the frames which cross and are pivoted to each other and provided with wheels and a seat adapted to fold with said frames with straps or cords having spring-sections for connecting the said pivoted frames above the seat at each side of the carriage, substantially as described.

486,679. HARNESS-PAD. EDWARD L. MCCLAIN, Greenfield, Ohio. Filed Mar. 7, 1892. Serial No. 424,062. (No model.)



Claim.—1. The harness-pad consisting of two parts only, to wit: a cap and a small supplementary pad pivoted to its under side, which pad is capable of being arranged either transversely or longitudinally of said cap, as and for the purpose described.

2. The harness-pad consisting of two parts only, to wit: a cap and a small detachable supplementary pad pivoted to its under side, which pad is capable of being arranged either transversely or longitudinally of said cap or of being readily removed therefrom, as and for the purpose described.

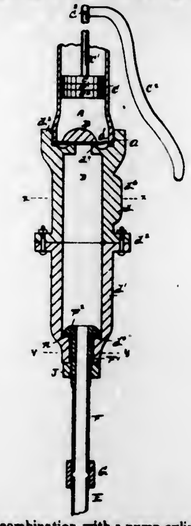
3. The harness-pad cap having one or more slots near each end, a pair of flexible tongues applied to its upper side, a turn-bar capable of being swung around upon said cap, and a small supplementary pad pivoted to the under side of the latter, as and for the purpose described.

4. The harness-pad cap having a small supplementary pad pivoted to its under side and a turn-bar pivoted to its upper side, said pad being secured by a rivet traversing an eyelet wherewith said bar is swiveled to said cap, substantially as and for the purpose described.

5. A sweat-collar having at top a recess or socket provided with a bottom, in combination with a removable cap, to whose under side is pivoted a small supplementary pad adapted to fit within said recess and to be retained by suitable fasteners, substantially as herein described.

6. The combination of the small supplementary pad A, having a flexible strip B secured to its upper side, a rivet C, having its head c under said strip, and the eyelet D, uniting the cap E and turn-bar F, said rivet being passed through said eyelet and upset on the same, as at *c'*, all as herein described.

486,680. CYLINDER AND CYLINDER-CAP. ROBERT A. OWEN, Coral, Mich. Filed Mar 3, 1892. Serial No. 423,573. (No model.)



Claim.—1. The combination, with a pump-cylinder provided with a plunger and check-valve, of a cylinder-cap having a detachable engagement with the end of the pump-cylinder adjacent to the check-valve, a coupling loosely passed through the opposite end of the cylinder-cap, and a lock-nut to tighten the engagement of the coupling with the cylinder-cap, the diameter of said coupling reduced beyond the engagement of the nut therewith to allow the loosened nut and disconnected cylinder-cap to slip down over the reduced portion of the coupling and afford access to the check-valve and plunger of the pump-cylinder, substantially as described.

2. The combination, with a pump-cylinder provided with a plunger and check-valve, of a cylinder-cap detachably engaged with the end of the cylinder, said cap constructed with a valve-seat at the end adjacent to said cylinder and with an inwardly-projected shoulder c^2 at the opposite end, a coupling F, passed through one end of said cap and extending outward therefrom, said coupling provided with a head seated upon said shoulder, and a lock-nut having a screw-threaded engagement with said coupling adjacent to the corresponding end of the cap, the diameter of said coupling exterior to said cap reduced below the screw-threaded engagement of the nut therewith to allow the loosened nut and cylinder-cap to slip down over the reduced portion of the coupling and thereby afford access to the check-valve and plunger, substantially as described.

3. The combination, with a pump-cylinder provided with a plunger and check-valve, of a cylinder-cap having a direct screw-threaded engagement with the cylinder, said cap constructed with a valve-seat for the check-valve and with an interior shoulder at its opposite end, a coupling F, passed loosely through the shouldered end of the cap, provided with a head seated upon said shoulder, a gasket located between said shoulder and the head of the coupling, and a lock-nut having a threaded engagement with the coupling to tighten its head upon the gasket, the diameter of said coupling reduced below the threaded engagement of the lock-nut therewith to allow the loosened nut and cyl-

inder-cap to slip down over the reduced portion of the coupling, the loosening of the cylinder-cap affording direct access to the check-valve and plunger, substantially as described.

4. The combination, with a pump-cylinder provided with a check-valve and plunger, of a cylinder-cap made in two parts united and

tion is secured, and a branch communicating with said movable portion and provided with an earpiece, substantially as described.

end of said shaft, and a motor having gear connection with the upper end of said shaft, arranged and adapted to give motion thereto and to the propeller-wheel, substantially as described.

spiral form, and a guide-opening adjacent thereto, said parts being combined, substantially as described.

2. A padlock having spring-pressed tumblers pivoted at opposite

inder-cap to slip down over the reduced portion of the coupling, the loosening of the cylinder-cap affording direct access to the check-valve and plunger, substantially as described.

4. The combination, with a pump-cylinder provided with a check-valve and plunger, of a cylinder-cap made in two parts united, one part constructed with a contracted valve-seat for the check-valve and having a screw-threaded engagement with the adjacent end of the pump-cylinder, the other part of said cylinder-cap constructed with an inwardly-projecting shoulder, a coupling F, passed through the shouldered end of said cap and projecting outward therefrom, said coupling provided with a flanged head seated upon said shoulder, and a lock-nut having a threaded engagement with said coupling adjacent to the corresponding end of the cap to seat the head firmly upon said shoulder, the diameter of said coupling reduced below the threaded portion thereof to allow the loosened nut and cylinder-cap to slip down over the reduced portion of the coupling, thereby affording access to said check-valve and plunger, substantially as described.

486,681. SPEAKING-TUBE. CHARLES L. PEIRCE, Milwaukee, Wis., assignor to David S. Wegg, Chicago, Ill. Filed Feb. 5, 1892. Serial No. 420,434. (No model.)

Claim.—1. The combination, with the main tube, of a tubular post communicating therewith, a tube provided with a mouthpiece and extensibly engaged with said post, a valve in said tube, suitable means for automatically opening said valve when the tube is extended, and suitable means for automatically closing said valve when the tube is retracted, substantially as set forth.

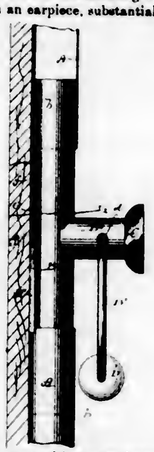
2. The combination, with a main tube, of a tubular post communicating therewith, a weighted flexible tube provided with a mouthpiece and having a sliding engagement with said post, and a valve in said tube, provided with a spring for automatically opening it when the tube is raised, and one or more angular extensions upon the outside of said tube, adapted to automatically close said valve when said tube is lowered, substantially as described.

3. The combination, with a main tube, of a tubular post communicating therewith, a flexible tube provided with a mouthpiece and having a sliding engagement with said post, a cut-off valve in said flexible tube, means for automatically operating said valve when the flexible tube is extended, means for automatically closing said valve when said tube is retracted, a tubular post of larger diameter than the first-mentioned post and located outside of the same, and a plurality of electric push-buttons connected with wires extending through the space between said posts to suitable signaling-instruments, substantially as described.

486,682. SPEAKING-TUBE. CHARLES L. PEIRCE, Milwaukee, Wis., assignor to David S. Wegg, Chicago, Ill. Filed Feb. 5, 1892. Serial No. 420,435. (No model.)

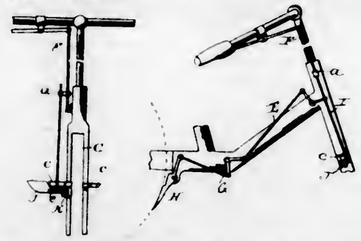
Claim.—1. A speaking-tube comprising a stationary portion and a portion provided with a mouthpiece and movably engaged with said stationary portion, said movable portion being also slidingly engaged with a suitable guide upon the wall or other support to which the stationary portion is secured, substantially as described.

2. A speaking-tube comprising a stationary portion, a movable portion provided with a mouthpiece and adjustably engaged with said stationary portion and having a sliding engagement with a guide located upon the wall or other support to which said stationary portion is secured, and a branch communicating with said movable portion and provided with an earpiece, substantially as described.



3. A speaking-tube comprising a stationary portion, a portion movably engaged with said stationary portion and having sliding engagement with a suitable guide upon the wall or other support to which said stationary portion is secured, a sleeve communicating with the bore of said movable portion, a branch provided with an earpiece and revolubly engaged with said sleeve, and a valve in said movable portion operatively engaged with said branch, substantially as described.

486,683. ATTACHMENT FOR THE BRAKES OF BICYCLES. WILLIAM S. PORTER, Washington, Pa. Filed June 9, 1892. Serial No. 436,096. (No model.)



Claim.—In a brake attachment for bicycles, the combination, with the ordinary brake mechanism, of a clamp attached to the ordinary vertical brake-rod, a supplemental or pendent rod screw-threaded at its upper end and adjustable in said clamp, a clamp fitting around one of the members or tines of the steering-fork and adjustable thereon, and a foot-lever pivoted to said clamp and provided with a slot or oblong opening in which the lower end of the pendent rod is adjustably secured, substantially as described.

486,684. BOAT-PROPELLING APPARATUS. WILBER S. SALISBURY, Chicago, Ill. Filed Feb. 12, 1892. Serial No. 421,334. (No model.)

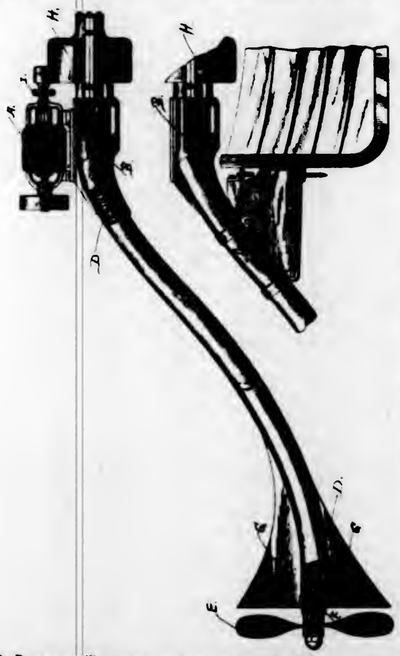
Claim.—1. Boat-propelling apparatus comprising a tube and motor-support connected therewith a flexible shaft within said tube carrying at its lower end a propeller-wheel, and a motor mounted on said support connected with said flexible shaft and giving motion therethrough to the propeller-wheel, substantially as described.

2. Boat-propelling apparatus comprising a tube arranged and adapted to be pivotally connected with the stern of a boat, a flexible shaft within said tube carrying at its lower end a propeller-wheel, and a motor connected with said flexible shaft adapted to give motion thereto and to the propeller-wheel, substantially as described.

3. Boat-propelling apparatus comprising a suitably-incased flexible shaft adapted to be pivotally connected with the stern of a boat and provided at its lower end with a propeller-wheel, and a motor having connection with the upper end of said shaft operative to give motion thereto and to the propeller-wheel, substantially as described.

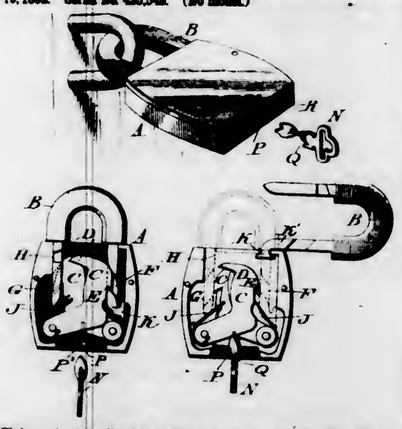
4. Boat-propelling apparatus comprising a rotary flexible shaft contained within a casing arranged and adapted to be pivotally connected with the stern of a boat, a propeller-wheel fixed to the lower end of said shaft, and a motor having gear connection with the upper end of said shaft, arranged and adapted to give motion thereto and to the propeller-wheel, substantially as described.

5. Boat-propelling apparatus comprising a tube arranged and adapted for pivotal connection with the stern of a boat and provided at its lower end with steering-fins, a flexible shaft within said tube provided at its lower end with a propeller-wheel, and an electric motor having operative connections with the upper end of said shaft adapted to give motion to the propeller-wheel, substantially as described.



6. Boat-propelling apparatus comprising a flexible rotary shaft, a casing surrounding said shaft, a propeller-wheel fixed to the lower end of said shaft, and means connected with the upper end of said shaft adapted to give motion to the propeller-wheel, substantially as described.

486,685. PADLOCK. FREDERICK W. SCHULZE, Philadelphia, Pa., assignor of one-half to George F. Rothacker, Jr., same place. Filed Mar. 19, 1892. Serial No. 426,548. (No model.)



Claim.—1. A padlock having tumblers in opposite sides of a casing with noses on their upper ends, a bow with openings to receive said noses, a rotary escutcheon in said casing, having a keyhole of spiral form, and a guide-opening adjacent thereto, said parts being combined, substantially as described.

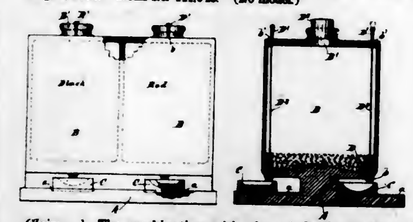
2. A padlock having spring-pressed tumblers pivoted at opposite sides of the casing, each of said tumblers having noses on opposite sides of their upper ends, and a bow with the openings F in one limb and the openings G and H in the other limb, the opening H being above the opening G, said parts being combined substantially as described.

3. A padlock having a guide-opening in its casing, a rotary escutcheon with a keyhole of spiral form, and a key with a spiral shank, having a prong projecting longitudinally therefrom, substantially as described.

4. A padlock having spring-pressed tumblers pivoted at their lower end on opposite sides of the casing and having noses on their upper ends, a bow with openings to receive said noses, and a rotary escutcheon in the end of said casing, the springs of the tumblers bearing against the bow, said parts being combined substantially as described.

5. A lock having its casing provided with the opening L in its top plate, a bow with a limb having openings therein, and a tumbler adapted to engage in said openings, the said limb of the bow having the segmental arm K at its lower end, both limb and arm fitting closely in said opening L, and the foot K at the outer side of the end of said arm, said foot being parallel with said limb and extending above and below said arm and adapted to ride in the movements of the limb on the inner wall of the casing, said parts being combined substantially as described.

486,686. INKSTAND. AUGUST W. SIOS, Minneapolis, Minn. Filed Aug. 2, 1892. Serial No. 441,940. (No model.)

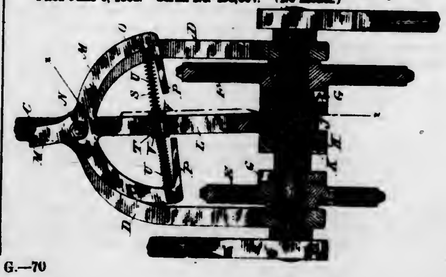


Claim.—1. The combination, with a base A, having a cup-seat or recess *a*, of an ink-well B, formed integral with said base and having a discharge-orifice *b* in the part of its bottom overhanging the cup-seat, an independent removable dip-cup C, having a limited sliding movement on said seat *a*, as described, a stopper for closing the discharge-orifice *b*, and means for operating said stopper from the exterior of the well, substantially as and for the purposes set forth.

2. The combination, with the ink-well having the discharge-orifice in its bottom and the air-vent in its top, of the inside stopper for said discharge-orifice, the operating-rod connected to said inside stopper and projecting above the top of the well and having a stop or knob at its upper end, and the outside stopper for the said air-vent mounted on the part of the said rod projecting above the top of the well, with freedom for sliding movement thereon, substantially as described.

3. The inkstand substantially as shown and described, the same consisting of the supporting-base A and one or more ink-wells B, constructed integral therewith, the removable dip-cup C, working in the seat *a* of said support, the inside stopper D, normally closing the discharge-orifice *b* in the bottom of the well, the outside stopper D′, normally closing the air-vent *b*′ in the top of the well, and the operating-rod D^2, connected to the stopper D and working through the stopper D′ and provided with the stop-lug or knob *d* on its outer end, substantially as and for the purposes set forth.

486,687. BICYCLE. ALBERT S. SWARTHOUT, Poughkeepsie, N. Y. Filed June 9, 1892. Serial No. 436,097. (No model.)



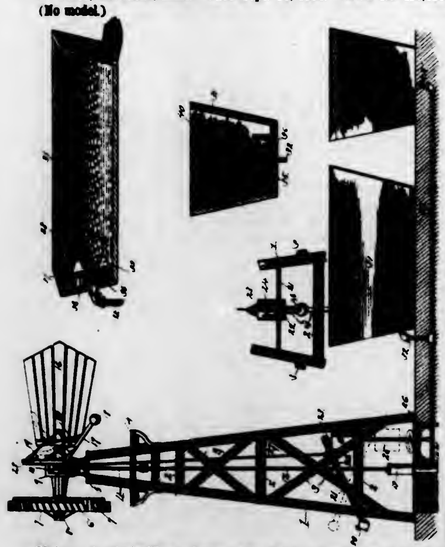
Claim.—1. In a bicycle, the combination, with the drive-wheel and the pedal-shaft, each of which is provided with sprocket-wheels, one set of which is composed of wheels of different diameters, and one set of which is loosely mounted on the pedal-shaft, of a clutch having a lateral movement on and a rotary movement with the pedal-shaft, means for exerting initially a yielding pressure, and means for exerting, finally, a positive pressure to advance said clutch in engagement with one of the loose wheels, and chains for connecting each set of wheels.

2. In a bicycle, the combination, with the pedal-shaft carrying loosely-mounted clutch-face sprocket-wheels, of a clutch adapted to slide on said pedal-shaft and to turn therewith a pivoted lever, a shifter pivoted to said lever and connected to the clutch, a yielding connection between the shifter and the lever, and means carried by the lever to retain the clutch in positive engagement with its coacting clutch-face.

3. In a bicycle, the combination, with the pedal-shaft, of two sprocket-wheels loosely mounted thereon and provided with clutch-faces, a pivoted lever having a forked lower end provided with inward-projecting fingers, and a spring-actuated shifter pivoted to said lever and engaged with said clutch and located in the path of movement of the fingers.

4. In a bicycle, the combination, with the pedal-shaft, of two sprocket-wheels loosely mounted thereon and provided with clutch-faces, a clutch having a sliding engagement with said shaft, a pivoted lever, a shifter pivoted thereto, a spring between the lever and the shifter, the energy of which is exerted to hold the clutch in engagement with the clutch-faces, and means for holding the lever in fixed adjustment.

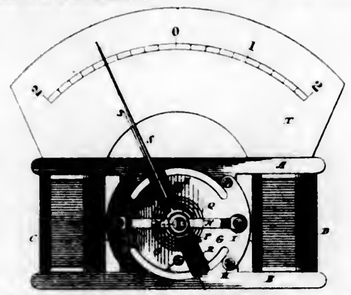
486,688. AUTOMATIC REGULATOR FOR WINDMILLS. CHARLES R. TOMER, Hiawatha, Kans. Filed Sept. 28, 1891. Serial No. 407,029. (No model.)



Claim.—A windmill-regulator comprising a trough or a similar receptacle connected to the supply-pipe from the pump and provided with an internal casing surrounding the trough-inlet and having an inlet-valve opening, a spring-arm carrying a valve and exerting its pressure to seat the valve in said opening, a pivotally-acting float attached to the casing, an arm carried by the float and separate from the valve, the said arm being arranged to come into contact with the valve and unseat or open the same when the float falls and to separate from said valve when the valve rises, so as to permit the spring-arm of the valve to seat or close the same, independently of the float, substantially as set forth.

486,689. ELECTRICAL MEASURING-INSTRUMENT. EDWARD WESTON, Newark, N. J. Filed June 4, 1891. Serial No. 395,130. (No model.)

Claim.—1. In an electrical measuring-instrument, and in combination with an electro-magnetic system having a field of force which is substantially constant or not, varying with the strength of the current acting upon it, a loop-conductor movable in said field under the influence of a current, a spring opposing the movement of said conductor, and an index actuated by said conductor, the said parts being constructed and arranged so that a current due to a certain definite or working potential difference will cause said index to move to a definite position on the scale and there remain as long as said potential difference is maintained.



2. In an electrical measuring-instrument, and in combination with an electro-magnetic system having a field of force which is substantially constant or not, varying with the strength of the current acting upon it, a loop-conductor movable in said field under the influence of a current.

3. In an electrical measuring-instrument, and in combination with an electro-magnetic system having a field of force which is substantially constant or not, varying with the strength of the current acting upon it, a loop-conductor in circuit with said electro-magnetic system and movable in said field under the influence of the current which traverses both said conductor and said system.

4. In an electrical measuring-instrument, and in combination with an electro-magnetic system having a field of force which is substantially constant or not, varying with the strength of the current acting upon it, a loop-conductor movable in said field under the influence of a current and mechanism for opposing a definite initial resistance to the motion of said conductor.

5. In an electrical measuring-instrument, the combination of an electro-magnetic system and a movable electrical conductor, the said parts being disposed in mutual inductive proximity and constructed and arranged in circuit, so that a varying current traversing said system and said conductor may cause a constant or substantially-unvarying field by reason of magnetic saturation in said system and a varying field about said conductor.

6. In an electrical measuring-instrument, an electro-magnetic system and a movable electrical conductor, the said parts being disposed in mutual inductive proximity and being constructed and arranged so that a varying current traversing said system and said conductor may cause a constant or substantially-unvarying field by reason of magnetic saturation in said system and a varying field about said conductor, in combination with means for opposing the movement of said conductor due to the reaction of said fields.

7. In an electrical measuring-instrument, an electro-magnetic system producing a field of force and a loop-conductor movable therein by a current traversing said conductor, the said parts being constructed and arranged so that a current causing a movement of said conductor in said field will also magnetize said electro-magnetic system to or practically to saturation.

8. In an electrical measuring-instrument, an electro-magnetic system producing a field of force, a loop-conductor movable therein, and a means of producing a definite mechanical resistance to the motion of said conductor, the aforesaid parts being constructed and arranged in circuit, so that a current traversing said conductor and said electro-magnetic system and causing said conductor to move against said mechanical resistance also magnetizes to saturation or practically to saturation said electro-magnetic system.

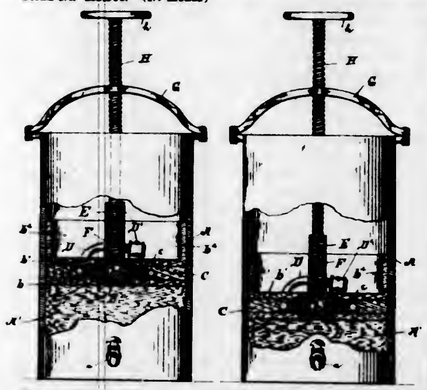
9. The combination, in an electrical measuring-instrument, of two magnets relatively arranged to produce an annular field of force, a conductor in loop form disposed and rotary in said field, and a spring opposing the movement of said conductor.

10. The combination, in an electrical measuring-instrument, of two magnets relatively arranged to produce an annular field of force, a conductor in loop form disposed and rotary in said field, a spring opposing the movement of said conductor, and means for adjusting said spring so that it may offer a definite resistance to the initial movement of said conductor.

11. The combination of the electro-magnets A B C D, cover-plates G, electro-magnet J K, supported between the poles of said magnets A B C D, and the pivoted coil R, disposed in the annular field between said electro-magnets, the said coil and electro-magnets being in circuit.

12. The combination of the electro-magnets A B C D, cover-plates G, electro-magnet J K, supported by said plates G and between the poles of said magnets A B C D, the pivoted coil R, disposed in the annular space between said electro-magnets, and the spring Q, secured to said coil-pivot and to an abutment, the said coil and electro-magnets being in circuit.

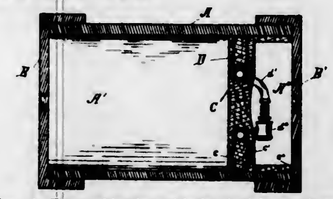
486,690. APPARATUS FOR STORING, HANDLING, AND TRANSPORTING LIQUIDS. AUGUST CIKEL, Boyd, Wis. Filed Feb. 23, 1892. Serial No. 422,506. (No model.)



Claim.—1. In combination with the cylinder provided with the air-tight compartment having the faucet therein, the movable head or piston working in said cylinder and provided with the centrally-disposed tube projecting upwardly therefrom, the adjusting rod or screw having its lower end or foot arranged to work in said tube, and the spring interposed between the piston-head and the foot of the screw, said tube being adapted to house and retain the spring in proper position therein and also to serve as a guide for the screw, substantially as described.

2. An apparatus for storing, handling, transporting, and dispensing liquids, comprising the cylindrical vessel having open top and closed bottom with faucet therein, the movable head or piston working in said vessel, provided with a circumferential guiding and supporting flange, and centrally-disposed tube projecting upwardly therefrom, the spring housed in said tube, and the adjusting rod or screw supported above the piston with its lower end or foot resting upon said spring within said tube, substantially as described.

486,691. APPARATUS FOR STORING, HANDLING, AND TRANSPORTING LIQUIDS. AUGUST CIKEL, Boyd, Wis. Filed Feb. 23, 1892. Serial No. 422,507. (No model.)



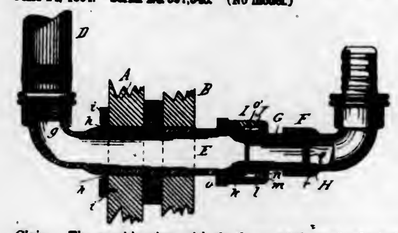
Claim.—1. The combination, with the air-tight vessel and means for admitting and withdrawing liquid therefrom, of a movable partition or rodless piston consisting of the disks connected by a central hub, one of said disks being provided with an annular peripheral flange adapted to prevent tilting or canting of the partition, and an expansible packing arranged between the disks, substantially as described.

2. In combination with the cylindrical vessel having the removable heads provided with faucet and air-cock, as described, the movable partition or rodless piston having the annular recess therein, and the expansible ring seated in said recess, comprising a solid outer ring and a tubular inner ring, together with an air-cock connecting said tubular ring with the air-chamber behind the piston, substantially as described.

3. In combination with the cylindrical vessel, the movable head or piston provided with the circumferential recess or groove and the expansible packing seated in said groove, said packing consisting of a solid outer elastic disk or ring having a tubular inner elastic ring integral therewith, and an air-inlet tube with check-valve therein, communicating with said tubular ring, substantially as described.

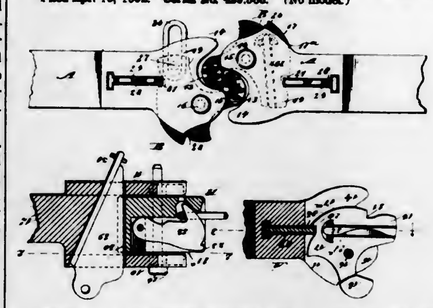
4. In combination with the cask or vessel having the air-tight compartment and means for introducing and withdrawing liquid therefrom, the movable head or piston comprising a central portion or hub having disks formed integrally therewith and separated so as to provide an annular recess encircling said hub, the expansible packing-ring comprising an outer solid ring and an inner tubular ring, seated in said recess between said disks, and the guiding and supporting flange rigid with one of said disks, substantially as described.

486,692. HOSE-REEL. ALBERT D. COFFIN, Oakland, Cal. Filed June 24, 1891. Serial No. 397,345. (No model.)



Claim.—The combination, with the frame of the reel, of a hollow axle composed of sections E and F, connected together by a rotary joint, flange *h* on the section E, and a stationary ring *i*, secured to the frame and forming a bearing for said flange *h*, substantially as described.

486,693. CAR-COUPLING. THOMAS COURSER, Lake City, Fla. Filed Apr. 16, 1892. Serial No. 429,383. (No model.)



Claim.—1. A car-coupler provided with a knuckle, the said knuckle having a coupling-hook connected therewith and provided, also, with an auxiliary pivoted coupling-hook, the auxiliary coupling-hook being concealed when the main hook is in use, as and for the purpose specified.

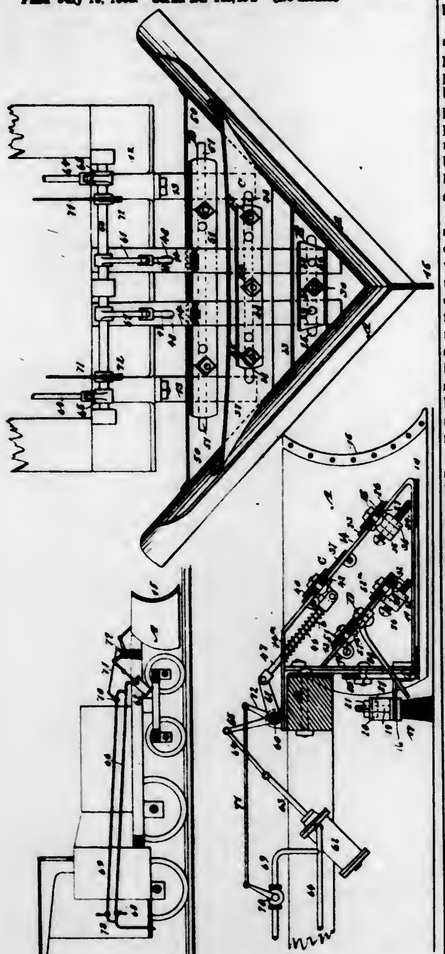
2. In a car-coupler, the combination, with the draw-head, of a knuckle pivoted in the draw-head, the said knuckle having a cylindrical back provided with channels and provided at its front with a hook adapted for coupling with an opposing hook and at one end with an auxiliary coupling device, and a locking-pin adapted to enter the channels in the knuckle, as and for the purpose set forth.

3. The combination, with a draw-head of the knuckle type, of a knuckle pivoted in the draw-head, the said knuckle having a cylindrical rear channeled surface and provided with a coupling-hook projecting from its body portion in a forward or outward direction, one end of the body being chambered and provided with a coupling device for use in connection with a draw-head of the pin-and-link-coupling type, and a sliding pin located in the draw-head and adapted to enter channels in the knuckle, whereby the knuckle may be held firmly in the head either with its end carrying the auxiliary device outward or the hook of the knuckle in an outer position, substantially as and for the purpose set forth.

4. In a car-coupler, the combination, with a draw-head provided with a horn at one side and a second horn near the center and an inclined pin opening at the rear of its forward edge, of a knuckle pivoted within the draw-head opposite the inner horn, the said knuckle being provided with an outwardly-extending hook emanating from the body of the knuckle, the rear surface of the body of the knuckle being cylindrical in shape and channeled and one end of the body of the knuckle being provided with an auxiliary coupling device, and a pin held to slide in the inclined pin-opening and adapted, also, to en-

ter on occasion the channels in the knuckles, as and for the purpose specified.

486,694. SNOW-PLOW. PATRICK H. CRADDOCK, Leadville, Colo. Filed July 19, 1892. Serial No. 440,494. (No model.)



Claim.—1. In a snow or like plow, the combination, with a supporting-frame having inclined guide-bars connected therewith, of a plow consisting of a clearing-board or fender and connecting or brace plates uniting the sides of the fender, the said connecting or brace plates consisting of body-plates, and slides having movement laterally in the body-plates, one of the slides being provided with sockets for the reception of the guide-bars, substantially as shown and described, whereby the plow may have horizontal movement or lateral movement upon its support, as and for the purpose set forth.

2. In a plow adapted for attachment to an engine, the combination, with a supporting-frame having inclined guides located thereon, of a plow consisting of a clearing-board or fender approximately V-shaped, connecting or brace plates uniting the sides of the clearing-board or fender, said plates consisting of a slotted body-plate, slides having lateral movement upon the body-plates and provided with sockets loosely receiving the guide-bars, and draw-bars connected with one of the brace-plates, whereby the plow is capable of both vertical and lateral movement, substantially as shown and described.

3. In a plow adapted for connection with an engine, the combination, with a supporting-frame having inclined guide-bars located thereon, of a plow consisting of an essentially-V-shaped clearing-board or fender having a concaved outer face, connecting or brace plates uniting the sides of the fender, each of said brace-plates comprising a slotted body-plate, slides having lateral movement upon the body-plates, sockets formed upon the slides and loosely receiving the guide-bars, spring-pressed draw-bars connected with one of the brace-plates, and a stop mechanism carried by the brace-plates, as and for the purpose set forth.

4. In a plow of the character described, the combination, with a supporting-frame adapted for attachment to an engine, the said supporting-frame being provided with inclined guide-bars, of a plow comprising an essentially-V-shaped clearing-board or fender, adjustable brushes located at the rear of the clearing-board, connecting or brace plates uniting the members of the clearing-board or fender, each brace-plate comprising a slotted body-plate and slides having longitudinal movement in the body-plates and carrying sockets to receive the guide-bars of the frame, spring-pressed draw-bars connected with one of the brace-plates, and a lifting mechanism, substantially as shown and described, connected with the draw-bars, as and for the purpose specified.

5. In a plow of the character described, the combination, with a supporting-frame adapted for attachment to the pilot-board of an engine, the said frame consisting of a base, brackets projected upward from the base, and inclined guide-bars extending upward and rearward from the margins of the base, of a plow consisting of a clearing-board or fender of essentially V shape, having a concaved outer face and provided with track-scrapers at its lower edge, brushes carried by the fender at its rear, connecting or brace plates uniting the sides of the fender, each comprising a slotted body-plate, slides having longitudinal and lateral movement upon the body-plates, and slides carrying sockets receiving the guide-bars of the frame, draw-bars connecting with one of the brace-plates, and a pneumatic lifting apparatus connected with the draw-bars, as and for the purpose specified.

6. In a plow of the character described, the combination, with a supporting-frame consisting of a horizontal triangular base-plate, brackets projected upward therefrom and adapted for engagement with the pilot-board of an engine, and inclined brace-bars extending from the front margin of the base-plate to the pilot-board, of a plow consisting of a fender having a concaved forward face, connecting or brace plates uniting the inner side faces of the fender, said brace-plates comprising a slotted body-plate, slides having longitudinal and lateral movement in the body-plate, the slides carrying sockets loosely receiving the guide-bars, an adjusting-stop mechanism carried by the lower brace-plates, draw-bars connected with one of the upper brace-plates, a finger projected from the rear lower brace-plate, entering the V-shaped opening in the supporting-frame, and a pneumatically-operated lifting mechanism connected with the draw-bars, as and for the purpose specified.

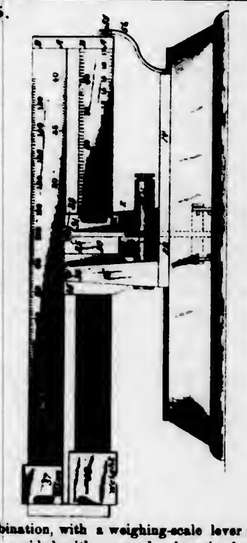
7. The combination, with a plow adapted for attachment to the pilot of an engine, the plow being capable of vertical movement, of a rock-shaft, draw-bars connected with the plow and with the rock-shaft, air-receiving cylinders the piston-rods of which are connected with the rock-shaft, an air-storage reservoir, a main pipe leading from the storage-reservoir into the cylinders, said main pipe being provided with a supply and exhaust valve, and a storage-pipe connected with the main pipe between the storage-receptacle and its valve and also adjacent to the connection of the main pipe with the cylinders, the storage-pipe being provided with a valve, the said valve having connection with the rock-shaft and being operated therefrom, as and for the purpose specified.

486,695. COMPUTING-SCALE. JOHN W. CULMER, New Brighton, Pa., assignor to the Computing Scale Company, Dayton, Ohio. Filed Feb. 11, 1892. Serial No. 421,162. (No model.)

Claim.—1. In an even-balance scale, an approximately-T-shaped base, a computing-beam supported parallel with and adapted to slide on the T-head of the said base, a scoop-holder at the opposite end of the said base, and a base-lever or shackle-bar adapted to connect the computing-beam with the scoop-holder, the parts being combined and arranged in co-operative relation, substantially in the manner hereinbefore set forth.

2. An even-balance scale comprising an approximately-T-shaped base having ways on the T-head and having a hollow standard on the end opposite the said T-head, a weighing-scale part for the scoop, mounted on said standard and having a depending rod projected through it, a carriage mounted and adapted to slide upon the T-head-ways of the base, a computing-beam supported by said carriage, graduated and equipped with poises, a jointed coupling-rod depending from and having connection with the computing-beam, and a base-lever or shackle-bar fulcrumed between its ends in the said base and having its ends loosely and pivotally connected, respectively, with the said jointed coupling-rod and the said depending rod of the weighing-scale part, the parts being arranged, combined, and operating substantially in the manner specified.

486,695.



3. The combination, with a weighing-scale lever having a depending rod 17, provided with a cross-head on its lower end, and a computing-beam, of a base-lever or shackle-bar fulcrumed between its ends, having a cross-head at one end and mutually-coacting pivots between the ends of the juxtaposed cross-heads of the rod 17 and the shackle-bar, and a coupling-rod having a loose pivotal connection with the other end of the shackle-bar and adapted to connect the latter with the computing-beam, substantially as and for the purpose described.

4. The combination, with scale-lever 9, a computing-beam, and a base-lever or shackle-bar having connection at one end with the scale-lever, of a coupling-rod made in section and adapted to connect the other end of the shackle-bar with the computing-beam, substantially in the manner set forth.

5. The combination, with a computing-beam adapted to slide in the direction of its length, a scale-lever, and a shackle-bar connecting at one end with the scale-lever, of a link mounted on and having positive engagement with the computing beam and a coupling-rod having loose pivotal connection with the said link and with the shackle-bar, substantially as and for the purpose described.

6. The combination, with the scale-lever and a computing-beam, of a shackle-bar having jointed connection at one end with the computing-beam and having a cross-head 26^a at the opposite end and the rod 17, depending from the scale-lever and having a cross-head, and a hook 20, depending therefrom and extending beneath the cross-head 26^a, the said cross-head having mutually-coacting pivots between them, substantially as described.

7. The combination, with the scale-lever, a computing-beam, a shackle-bar having connection with the scale-lever at one end and having a cross-head and pivots 27 at the opposite end, of a coupling-rod having connection at its upper end with the computing-beam and having a cross-head and pivots 58 at its lower end and the swinging links 28, connecting the pivots 27 and 58, substantially in the manner and for the purpose hereinbefore set forth.

8. The combination, with the scale-lever, of a computing-beam arranged at right angles to the scale-lever and adapted to slide in the direction of its length and a shackle-bar adapted to connect the scale-lever with the computing-beam, substantially as set forth.

9. The combination, with the scale-lever, a computing-beam, and a shackle-bar having connection at one end with the scale-lever, of a coupler connecting the other end of the shackle-bar with the computing-beam, consisting of a rod 29, having loose pivotal connection with the shackle-bar and having a socket or depression in its upper end, and a fork having independent loose pivotal connection with the computing-beam and having a tongue or pin projected from its lower end to enter the socket or recess in the rod 29, substantially as and for the purpose set forth.

10. The combination, with the rectangular-shaped scale-lever having lugs 11 on its front end, of a poise pendently-supported between the lugs 11 and a scoop-holder pivotally supported near the opposite end of the scale-lever, the fulcrum of the said scale-lever being centrally between the pivot-supports of the said scoop-holder and poise, substantially as set forth.

11. The combination, with a scale-lever of an even-balanced scale, of an inverted-T-shaped poise pendently supported by its vertical member and having its horizontal portion hollow to receive compensating weights, substantially as and for the purpose set forth.

12. The combination, with the hollow T-base having cap 40 at one end and tubular standard 2 at the opposite end, the yoke 3, having lateral and vertical arms 6 and 7, mounted on said standard, a rectangular scale-lever 9, pivotally supported between the yoke-arms 7 and the poise 12, and the scoop-holder 16, pivotally supported on the scale-lever at points equidistant from its axial line of support, of a computing-beam, a carriage adapted to slide on the cap 40 and having vertical members between which the computing-beam is pivotally supported, a link 30, and a shackle-bar supported within the hollow base and having positive connection at its ends with respectively the said link 30 and the scoop-holder 16, a limited movement being provided between the said shackle-bar and the said connections, substantially as and for the purpose specified.

13. In a weighing-scale, a scoop-support and a weighing-lever mounted at one end of a base and a computing-beam standing at right angles on the other end of said base and adapted to have a sliding movement thereon, in combination with a base-lever fulcrumed at two opposite points on vertical screw-bearings 24 and 25, arranged in vertical line with the bearings 8 of said weighing-lever, a rod having a free joint at or near the middle of its length, that part above the joint being forked and having a limited vertical play on bearings 33 of a link 30, on which said beam is adapted to slide, the lower part of said rod terminating in a cross-head having two opposite longitudinal bearings 58, standing at right angles to said beam-link bearings, the links 28, vertically connecting the said rod with two opposite horizontal bearings 27 27 on the long end of the base-lever, and an inflexible rod having a rigid connection with said scoop-support, free bearing connections with said weighing-lever, a free seat connection with the lower side of the short end of said base-lever, and two opposite vertical screw-bearings 22 22 on the upper side of the short end of said base-lever in vertical line with the bearings 10 10 of said base-rod and weighing-lever, for operation as described.

14. The combination of the base, the weighing-lever, a scoop-support, and a base-lever with a computing-beam standing at right angles on one end of the base, a bearing-support for said beam, adapted to slide on said base, a slide-link for said beam, having a fixed relation to said base, a jointed rod having a free connection with said slide-link and a free connection with one end of said base-lever, and an inflexible rod having a rigid connection with the scoop-support and a free bearing connection with said weighing-lever and a free bearing connection with the other end of the base-lever, substantially as described.

15. In a weighing-scale, a scoop-support and a weighing-lever mounted at one end of a base and a computing-beam standing at right angles on the other end of said base and adapted to have a sliding movement thereon, in combination with a base-lever formed at one end with a rectangular cross-head fitted at its four corners with bearing-screws 23 and 24, the inner ones whereof are fulcrumed on screw-bearings 25 in a base-bracket, the long end of said base-lever terminating in a cross-head fitted with bearings 27, in combination with an inflexible rod having a rigid connection with said scoop-support, free bearing connections with said weighing-lever, a free bearing connection on the under side at the outer end of said cross-head and free upper bearings on the outer cross-head screws 23, and a rod having a free bearing connection with said computing-beam and a free bearing connection with the long end of said base-lever and having a freely-flexing joint between the base-lever and the beam, for operation substantially as described.

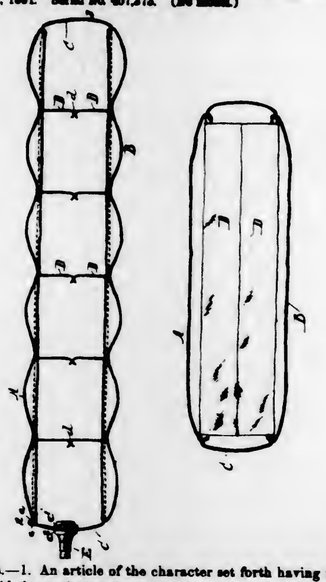
16. In a weighing-scale, a scoop-support and a weighing-lever mounted at one end of a base and a computing-beam standing at right angles on the other end of said base and adapted to have a sliding movement thereon, in combination with a base-lever fulcrumed near one end in a base-bracket, the other end terminating in a cross-head fitted with end bearings 27 27, a rod having a free joint at or near the middle of its length, the part above the joint being forked and having a free bearing connection with the computing-beam, the lower part of said rod terminating in a cross-head having bearings 58, the links 28, vertically connecting the said rod and lever bearings, and an inflexible rod having a rigid connection with said scoop-support, free bearing connection with said weighing-lever, and a free bearing connection with the upper and the lower sides of the short end of said base-lever, for operation substantially as described.

17. The combination, in a weighing-scale, of a base, a scale-lever having a poise at one end, a scoop-support mounted on said scale-lever, and a base-lever fulcrumed near one end in said base and in vertical line with the fulcrum-bearings of said scale-lever, and a rigid support suitably connected to the scoop, to the scale-lever, and to the short end of the base-lever, with a computing-beam mounted to slide on said base at right angles to said base-lever, a link loosely connecting said beam, and a flexibly-jointed rod having a free bear-

ing connection with said link and with the long end of said base-lever, substantially as described.

486,696. AIR BED OR PILLOW.

SETH CURLIN, Union City, Tenn., assignor of one-half to John Emberson Beck, same place. Filed Oct. 1, 1891. Serial No. 407,873. (No model.)



Claim.—1. An article of the character set forth having its main body provided upon its interior with one or more stay-strips dividing the article into compartments, said stay-strips being formed of long sections attached to opposite parts of the body, the free edges of said strip-sections being adapted to be connected together, substantially as described.

2. An article of the character set forth having its main body formed of waterproof textile material and provided upon its interior with stay-strips D, formed of sections, the ends of said strips being free or disconnected to permit the circulation of air and liquid about the same and the adjoining edges of the sections of the stay-strips being fastened directly together, substantially as described.

486,697. WRENCH.

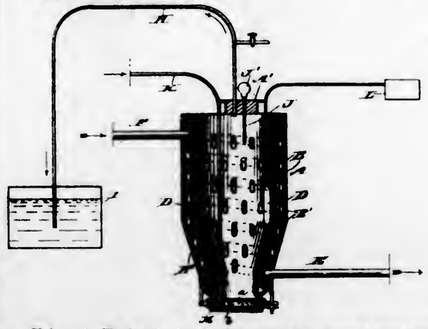
ANDREW J. CURTIS, East Williamson, N. Y., assignor of one-half to Harvey H. Pound and William Pound. Filed May 31, 1892. Serial No. 435,036. (No model.)

Claim.—1. A wrench having a rigid jaw, a shank provided with the inclined bearing-surface on the front face thereof, a saddle arranged to slide on the shank and carrying the movable jaw, a locking-piece pivoted in the saddle and having an eccentric head, and a spring arranged to force the head of said locking-piece into engagement with the inclined face of the shank, the locking-piece being provided with the thumb-piece for releasing the head from the shank and the offset to limit its play toward the shank, substantially as described.

2. In a wrench, substantially as described, the combination of the shank having a rigid jaw at one end and the inclined bearing-surface which inclines outwardly as it recedes from said rigid jaw, a saddle fitted on said shank and having the movable jaw, the eccentric pivoted in the saddle and provided with the smooth-faced head which binds directly against said inclined bearing-surface of the shank, and the pressure-spring confined between the vertical body of the saddle and the shank and pressing against said pivoted eccentric to normally force its smooth-faced head into firm contact with the inclined bearing of said shank, as and for the purpose described.

486,698. PROCESS OF AND APPARATUS FOR TREATING ORES OF GOLD.

LOUIS C. DAUMAS, Paris, France. Filed Dec. 26, 1891. Serial No. 416,249. (No model.)



Claim.—1. The herein-described process of extracting gold from its ore, which consists in mixing the pulverized ore with protochloride of sulphur, saturating the liquid with dry chlorine, subjecting the mass to heat, filtering it, and finally cooling and then moistening the filtrate, substantially as shown and described.

2. The herein-described process of extracting gold from its ore, which consists in mixing the crushed ore with protochloride of sulphur, saturating the liquid with dry chlorine, subjecting the mass to heat, recovering the chlorine, and filtering the resultant liquid, substantially as described.

3. The herein-described apparatus for the extraction of gold from its ore, comprising a hopper-like receptacle having end closures, a steam-coil surrounding the receptacle, and branch pipes connected with the coil and extending transversely through the receptacle, substantially as described.

4. The herein-described apparatus for the extraction of gold from its ore, comprising a hopper-like receptacle having end closures, a steam-coil surrounding the receptacle, cross-pipes extending through the receptacle and connected with the coil, and a filtering material held in the lower portion of the receptacle, substantially as described.

5. The combination, with the dissolving-receptacle traversed and surrounded by steam-pipes, as described, and having a filtering substance in its lower end, of a filtering-funnel arranged beneath the receptacle and connected with a receiving-vessel, substantially as described.

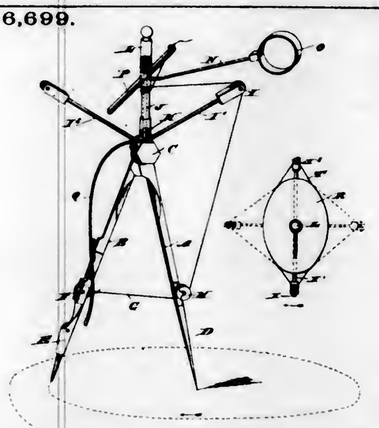
486,699. INSTRUMENT FOR DRAWING GEOMETRICAL CURVES.

CHARLES L. DAVIS, New York, N. Y. Filed Apr. 19, 1892. Serial No. 429,709. (No model.)

Claim.—1. In a drawing-instrument, the combination, with a compass, of a cord connected with one of the legs of the compass and a drum or sleeve mounted to rotate loosely on the spindle or pin held on the head of the compass, the said drum being adapted to wind up the said cord, substantially as shown and described.

2. In a drawing-instrument, the combination, with a compass, of a cord connected with one of the legs of the compass, a drum or sleeve mounted to rotate loosely on the spindle or pin held on the head of the compass, the said drum being adapted to wind up the said cord, and a device for holding the said drum stationary while the compass is turned, substantially as shown and described.

486,699.



3. A draftsman's compass provided with a drum or sleeve mounted loosely on a spindle projecting from the head of the compass, a rod extending from the said drum and provided with a finger-ring for holding the said drum stationary while the compass is turned, and a cord connected with the said drum and with one of the legs of the compass, substantially as shown and described.

4. A draftsman's compass provided with a drum or sleeve mounted loosely on a spindle projecting from the head of the compass, a rod extending from the said drum and provided with a finger-ring for holding the said drum stationary while the compass is turned, a cord connected with the said drum and with one of the legs of the compass, and a bar projecting from the said drum, substantially as shown and described.

5. A draftsman's compass provided with a drum or sleeve mounted loosely on a spindle projecting from the head of the compass, a rod extending from the said drum and provided with a finger-ring for holding the said drum stationary while the compass is turned, a cord connected with the said drum and with one of the legs of a compass, a bar projecting from the said drum, and a spring pressing on the said leg, to which the cord is fastened, substantially as shown and described.

6. In a drawing-instrument, the combination, with a compass provided on its head with a spindle or pin carrying a knob or handle, of a sleeve held loosely on the said spindle and provided with a finger-ring for holding the drum stationary while the compass is turned, and a cord or thread connected at one end with the said drum and passing over pulleys held on one of the legs to engage and connect with the other leg of the compass, substantially as shown and described.

7. In a drawing-instrument, the combination, with a compass provided on its head with a spindle or pin carrying a knob or handle, of a sleeve held loosely on the said spindle and provided with a finger-ring for holding the drum stationary while the compass is turned, a cord or thread connected at one end with the said drum and passing over pulleys held on one of the legs to engage and connect with the other leg of the compass, and a bar held on the said drum and adapted to engage the cord or thread, substantially as shown and described.

8. In a drawing-instrument, the combination, with a compass provided on its head with a spindle or pin carrying a knob or handle, of a sleeve held loosely on the said spindle and provided with a finger-ring for holding the drum stationary while the compass is turned, a cord or thread connected at one end with the said drum and passing over pulleys held on one of the legs to engage and connect with the other leg of the compass, a bar held on the said drum and adapted to engage the cord or thread, and a spring pressing one of the said legs outward, substantially as shown and described.

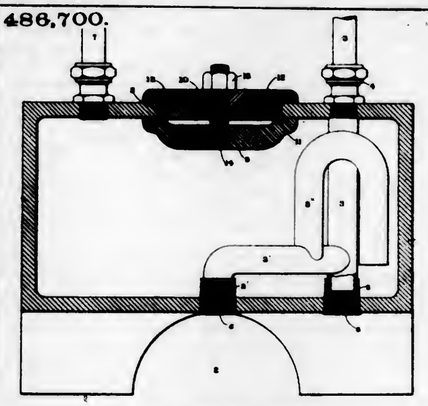
486,700. BOILER.

ROBERT DAVIES, Birkenhead, England. Filed Mar. 30, 1892. Serial No. 427,062. (No model.)

Claim.—1. The improvement in boilers which consists in leading the water-supply pipe through the boiler to the flue or fireplace and plugging the end or ends thereof with one or more fusible plugs and providing within the boiler a branch from the said supply-pipe, through which the boiler receives its supply, substantially as described and illustrated.

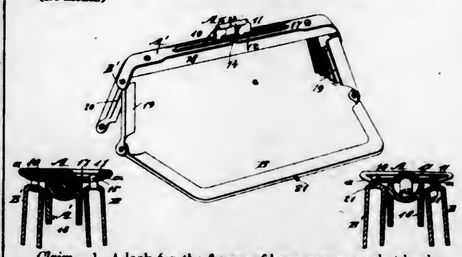
2. In domestic hot-water-supply apparatus, the combination of the water-supply pipe 3 3', fusible plugs 6 6', and supply branch 3", substantially as and for the purpose described and illustrated.

486,700.



486,701. LOCK FOR THE FRAMES OF BAGS, PURSES, AND POCKET-BOOKS.

FREDERICK R. DEEK, Brooklyn, N. Y., assignor to Prahar & Brother, same place. Filed Feb. 3, 1892. Serial No. 420,147. (No model.)

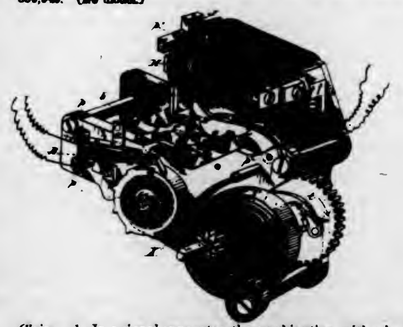


Claim.—1. A lock for the frames of bags, purses, pocket-books, and the like articles, comprising two leaves placed back to back and provided with interlocking knuckles, a pivot-pin passed through the knuckles of both leaves, and a spring coiled upon the pivot-pin, the ends of which spring exert tension upon both leaves, as and for the purpose specified.

2. A lock for the frames of bags, purses, pocket-books, and like articles, comprising two leaves placed back to back and provided with interlocking knuckles, the outer edges of the leaves being flanged downward, a pivot-pin passed through the knuckles of both leaves, and a spring coiled upon the pivot-pin, the ends of which spring exert tension upon the flanges of the leaves, as and for the purpose specified.

486,702. SUCCESSIVE NON-INTERFERENCE SIGNAL BOX.

WILLIAM R. DRENOW, Boston, Mass. Filed July 26, 1890. Serial No. 359,949. (No model.)



Claim.—1. In a signal apparatus, the combination, with a break-wheel and train, of a mechanical disabling device and three detents therefor, one controlled by a non-interference magnet, one by the train, and the third by the action of the apparatus in sending a signal.

2. In a signal apparatus, the combination, with a mechanical disabling device therefor, of a spring tending to throw said device into

a position to disable the apparatus, a detent holding said device against the action of said spring and controlled by a non-interference magnet, whereby the apparatus will be disabled if an interfering-signal is being sent, a second detent for said device controlled by the train, whereby if the train is started the device will be released, provided no interfering-signal is being sent, and a third detent for said device controlled by the apparatus when in operation, whereby it will not be disabled by its own interruption of the circuit.

3. In a signal apparatus, the combination of a break-wheel, a circuit-key operated by said wheel, but adapted to be spring-pressed out of operative position to disable the apparatus, and three detents for said key, one controlled by a non-interference magnet, one controlled by the train, and the third placed to engage the key when it is operated by the break-wheel.

4. In a signal apparatus, the combination, with the train, of a break-wheel adapted to come into action at a certain period after the train is started, a mechanical disabling device for interrupting the mechanical continuity of the mechanism, and a detent therefor controlled by a non-interference magnet, whereby if the train is started while an interfering-signal is being sent the detent will be removed and the apparatus disabled before the break-wheel comes into action.

5. In a signal apparatus, the combination, with a signal-wheel, its train, a mechanical disabling device, and three detents for said device, as described, of a resetter for said device and a releaser for the train, both operated by the train in running, whereby if the box is started while an interfering-signal is being sent it will be temporarily disabled, but will be automatically restored and a signal sent upon the termination of the interfering-signal.

6. In a signal-apparatus, the combination, with a train and break-wheel, of a manual starting device for the train, a non-interference magnet, mechanical disabling device therefor acting to interrupt the mechanical continuity of the mechanism, and detents for said device, controlled by the train and said magnet, respectively, whereby neither alone can disable the apparatus.

7. In a signal apparatus, the combination, with a circuit-key, of a break-wheel therefor, a spring for throwing said key out of its operative position, three detents for said key, controlled, respectively, by the non-interference magnet, the train, and the break-wheel, an automatic resetter for said key, and an automatic releaser for said train.

8. In a signal apparatus, the combination, with a train and break-wheel, of a manual starting device for the train, a non-interference magnet, means for mechanically disabling the apparatus, so that the mechanical continuity of the mechanism is interrupted, in order that the break-wheel shall not act to interrupt the circuit, and detents therefor controlled by the said magnet and train, respectively.

9. In a signal apparatus, the combination, with a train and break-wheel, of a manual starting device therefor, a non-interference magnet, means for mechanically disabling the apparatus, so that the mechanical continuity of the mechanism is interrupted, in order that the break-wheel shall not act to interrupt the circuit, and detents therefor controlled by the said magnet and train, respectively, with a device for preventing the disabling of the apparatus by its own magnet in sending a signal.

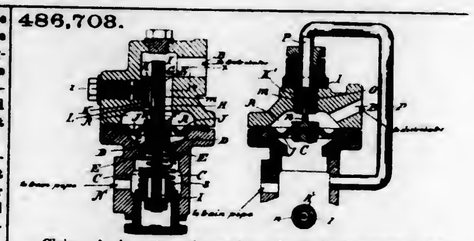
10. In a signal apparatus, a break-wheel and train therefor, a non-interference magnet, and contacts in the main line, adapted to be actuated by said wheel and so placed relatively to the wheel as to be mechanically engaged by the wheel or not, according to the position of detents controlled by the train and magnet, respectively.

11. In a signal apparatus, a break-wheel and train therefor, a non-interference magnet, and contacts in the main line, adapted to be actuated by the said wheel and so placed relatively to the wheel as to be mechanically engaged by the wheel or not, according to the position of the detents controlled by the train and magnet, respectively, means being also provided for preventing the disabling of the apparatus by its own magnet in sending a signal.

12. In a signal apparatus, a break-wheel and train therefor, a non-interference magnet, contacts in the main line, adapted to be actuated by the said wheel, and two detents determining the mechanical engagement of said contacts by the wheel, one detent being controlled definitely by the train and the other controlled by the said magnet

13. In a signal apparatus, a break-wheel and train therefor, a non-interference magnet, contacts in the main line, adapted to be actuated by the said wheel, and two detents determining the mechanical engagement of said contacts by the wheel, one detent being controlled definitely by the train and the other controlled by the said magnet, means being also provided for preventing the disabling of the apparatus by its own magnet in sending a signal.

486,708. AUTOMATIC REGULATOR FOR AIR-BRAKES. MARTIN L. B. DUVAL, Paris, France, assignor to the Compagnie de Fives-Lille, same place. Filed Feb 18, 1892. Serial No. 422,093. (No model.)



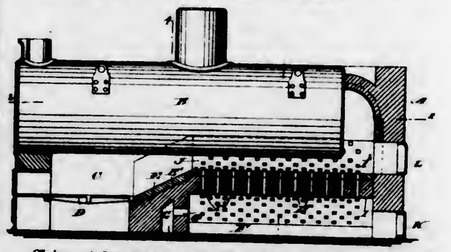
Claim.—1. An automatic regulator for air-brake systems, comprising two communicating chambers, one being connected to the main conduit and the other to the distributer, a pressure-actuated device, such as a diaphragm, between the two chambers, and a rod carried thereby and having a groove of varying area in cross-section forming part of the passage to the distributer, so that a change of pressure in the main conduit causes a proportionate contraction of such passage, substantially as described.

2. The combination of the two communicating chambers, one connected with the distributer and the other with the main conduit, a flexible diaphragm between the two chambers, and a regulating device or rod carried by said diaphragm and having a groove or depression diminishing in sectional area from the middle toward the ends, a stationary piece opposite said groove or depression and cut away to form part of an orifice through which air passes to and from the distributer, substantially as and for the purpose set forth.

3. The combination of the two communicating chambers connected, respectively, with the distributer and with the main conduit, the regulating device or rod actuated by the difference of pressure between the two chambers and having a groove or depression, whose sectional area diminishes toward the ends, a stationary piece forming with said groove or depression an orifice through which air passes to and from the distributer, and a spring tending to restore the rod to its normal position when equilibrium is established between the two chambers, substantially as described.

4. The combination, with the pressure-actuated regulator controlling the size of an orifice through which the air passes from the main conduit to the distributer, of a spring opposing the motion of said regulator when it moves responsive to a fall of pressure in the main conduit, and an auxiliary spring which co-operates with the first to resist the motion of said regulator in case of an abnormal reduction of pressure in the main conduit, substantially as described.

486,704. FURNACE. JAMES S. ECKER, Portland, Oreg., assignor of five-eighths to John S. Laidlaw and James Laidlaw, same place. Filed June 18, 1892. Serial No. 437,169. (No model.)



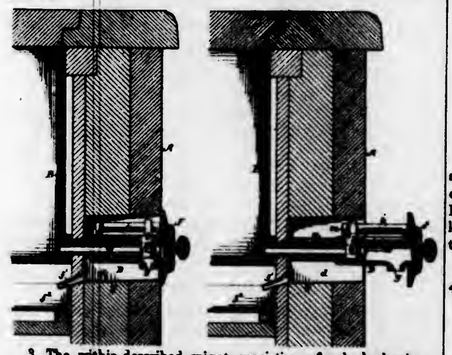
Claim.—A furnace comprising the brick work A, the fire-chamber C in the front end thereof, the ash-pit therebelow, the curved bridge-wall E, having its top E' inclined upwardly and rearwardly from the grate and having a transverse channel G communicating with the outer air through passages H, leading through the side walls to the furnace-front, a chamber F between the bridge-wall and rear end of the brick work A and formed of brick work with an arched top I and an inverted arched radiating-surface I^2, registering at one end with the rear edge of the curved inclined top E', openings G', connecting the chamber F and passage G, and series of vertical openings I^3, leading through the top I, substantially as set forth.

486,705. SPIGOT FOR REFRIGERATORS, &c. NICHOLAS RUSCONI, Philadelphia, Pa., assignor of two-thirds to Edward G. Whitesides and George G. Whitesides, same place. Filed Apr. 11, 1892. Serial No. 428,694. (No model.)

Claim.—1. The within-described spigot, consisting of a body having a valve, a slide free to move longitudinally on said body and

adapted to form a continuation of the same, and a handle sliding on the valve, substantially as specified.

2. The within-described spigot, consisting of a body having a valve, a slide free to move longitudinally on said body and adapted to form a continuation of the same, a knob or escutcheon at the outer end of said slide, and a sliding handle for the valve, substantially as specified.



3. The within-described spigot, consisting of a body having a valve, a slide free to move longitudinally on said body and adapted to form a continuation of the same, said slide having a lug at its inner end, and a sliding handle for the valve, adapted to be projected by contact with said lug as the slide is drawn outward, substantially as specified.

4. The combination, in a refrigerator or like structure, of the recessed casing, the ice-tank having a valved spigot-body projecting into said recess, a slide free to move longitudinally on said spigot-body and adapted to form a continuation of the same, and a handle sliding on the valve, substantially as specified.

5. The combination, in a refrigerator or like structure, of the casing having a lined recess with drainage-spout, the ice-tank having a valved spigot-body projecting into said recess, a slide free to move longitudinally on said spigot-body and adapted to form a continuation of the same, and a handle sliding on said valve, substantially as specified.

6. The combination, in a refrigerator or like structure, of the recessed casing, the ice-tank having a valved spigot-body projecting into said recess, a slide free to move longitudinally on said spigot-body so as to form a continuation of the same and having a knob or escutcheon for closing the recess when the slide is pushed inward, and a handle sliding on the valve, substantially as specified.

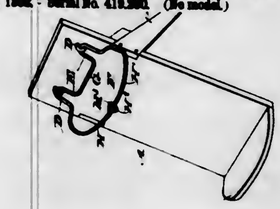
486,706. ARTIFICIAL PORTLAND CEMENT. CARL VON FORELL, Brunswick, Germany. Filed Sept. 30, 1890. Serial No. 366,866. (No specimens.)

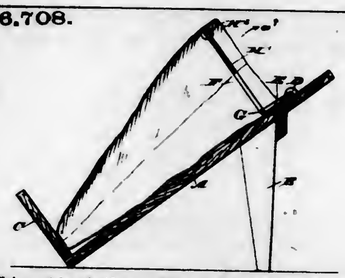
Claim.—An artificial Portland cement consisting of a mixture of finely-pulverized Roman cement with a predetermined quantity of pure hydrate of calcium in the form of a fine dry powder, so that the lime and the hydraulic factors are substantially in the proportion of seventeen to ten.

486,707. ARTIFICIAL ROMAN CEMENT. CARL VON FORELL, Brunswick, Germany. Filed Feb 16, 1891. Serial No. 381,657. (No specimens.)

Claim.—A cement consisting of a mixture of pulverised Roman cement containing an excess of lime with a predetermined quantity of silicate of alumina in the form of powder, so that the lime and the hydraulic factors in the mixture may be substantially in the proportion of seventeen to ten.

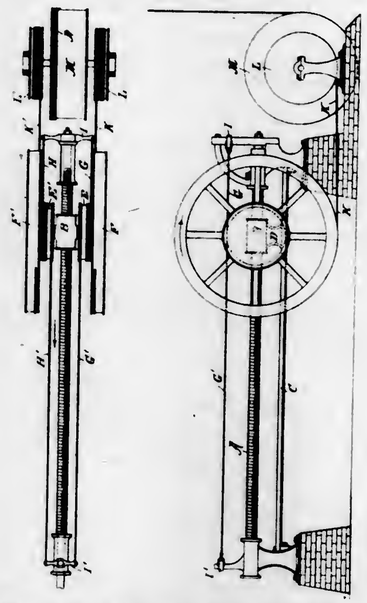
486,708. BAG-HOLDER. MICHEL FORTIN, Stillwater, Minn. Filed Jan. 26, 1892. Serial No. 419,260. (No model.)





Claim.—A bag-holder consisting in the inclined board A, having staples D D, legs B, and a transverse rest C, and the holder F, formed of a single piece of wire bent between its ends to form connected loops E E, engaging said staples, and curved arms at right angles to the loops and having a sliding connection H^3 H^3 at their ends, substantially as set forth.

486,709. ELEVATOR. CHARLES W. POWLES, Baltimore, Md. Filed Mar. 3, 1892. Serial No. 423,491. (No model.)



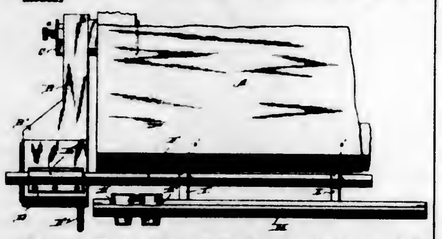
Claim.—1. In a hoisting apparatus, the combination of a driving-screw, a nut reciprocated thereby, a sheave carried by said nut, trace-cables wound around said sheave in opposite directions, a larger sheave on the same shaft with the former, and a cable which is wound upon and unwound from the larger sheave as it is rotated by the trace-cables, substantially as described.

2. The combination of the screw and nut, a sheave of large diameter on a shaft carried by said nut and having a power-transmitting cable attached thereto, a sheave of small diameter on the said shaft, and trace-cables reversely wound upon the sheave of small diameter, substantially as described.

3. The combination of the screw and nut, a sheave carried by the latter, a cable operated by said sheave and transmitting motion to a sheave on the drum-shaft, a hoisting-drum of larger diameter than its driving-sheave, and trace-cables reversely wound on the shaft of the sheave carried by said nut, substantially as described.

4. The combination of the screw and nut, a pair of small sheaves and a pair of larger sheaves, all carried by said nuts, a pair of trace-cables on each of the smaller sheaves, one of each pair being attached to the end of a balanced beam, and power-transmitting cables operated by the larger sheaves, substantially as described.

486,710. ADJUSTABLE PALETTE FOR ARTISTS. MARY B. FOWLER, Selma, Ala. Filed July 5, 1892. Serial No. 438,897. (No model.)



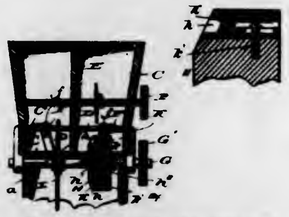
Claim.—1. The herein-described palette attachment, comprising a block having a clamp, a plate hinged to said block and provided with means for its adjustable angular support with relation thereto, the rod carried by said plate, and the palette adjustably carried by said rod, substantially as specified.

2. The herein-described palette, comprising a block having a clamp attachment, a plate connected to said block and having an adjustable support thereon, a guide on said plate, a rod held and sliding in said guide, and a hinged palette-board having a sliding connection with said rod, substantially as specified.

486,711. TRACK FOR HAY-CARRIERS. CHARLES A. GUTENKUNST, Milwaukee, Wis. Filed Mar. 21, 1892. Serial No. 425,765. (No model.)

Claim.—In a track for hay-carriers, the combination, with separate angle-bars arranged with the edges of their horizontal flanges in proximity to each other, said horizontal flanges forming the trackway, of spacing-bars that clamp the vertical flanges and a plate and bolts for clamping the horizontal flanges onto the spacing-block.

486,712. COMBINED CULTIVATOR AND PLANTER. ROBERT HARDIN, Gadsden, Ala. Filed June 16, 1892. Serial No. 436,927. (No model.)



Claim.—1. The combination, with a cultivator-frame, of a hopper provided above its bottom C with a false slotted bottom C', an adjustable plate F, secured on said false bottom and adapted to vary the size of the slot therein, a shaft journaled below the hopper, a feed-disk mounted on said shaft and extending through the bottom of the hopper into the space or chamber formed between said bottom and the false bottom C', and means for rotating the shaft, substantially as described.

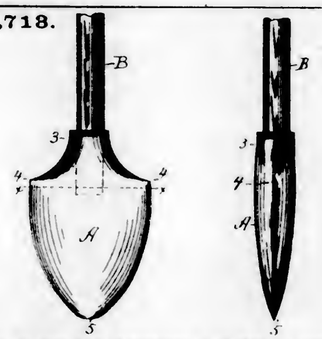
2. In a planter, the combination of a hopper mounted on a suitable frame, a shaft journaled below the hopper and provided with an intermediate threaded portion h', a feed-disk having an interiorly-threaded hub fitted on and engaging with the threaded portion of the shaft, a nut h^2, fitted on the shaft and bearing closely against the feed-disk, and means for rotating the shaft, substantially as described.

3. In a planter, a feed-disk provided with a series of cups, a pin K, arranged in one or more of said cups and provided with a socket which opens through one end thereof, and a set-screw extending through a slot formed in one wall of said socket into the solid body of the feed-disk, substantially as and for the purpose described.

486,718. TOOL FOR SETTING PLANTS. ALONZO A. HAWES, Wallingford, Conn. Filed July 30, 1892. Serial No. 441,732. (No model.)

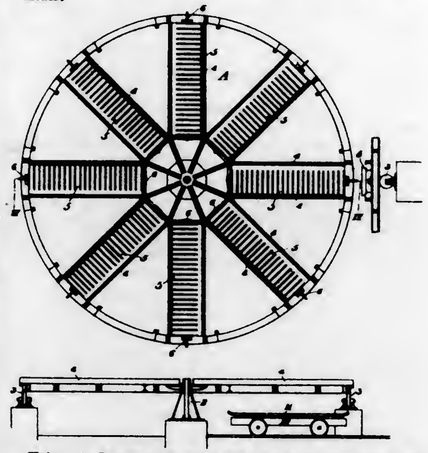
Claim.—The herein-described implement, consisting of the handle

486,718.



and blade, the latter being in substantially the form of a rounded dart in side view and elliptical in cross-section with a thickened middle portion, substantially as described, and for the purpose specified.

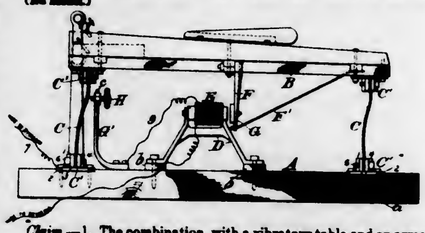
486,714. APPARATUS FOR CASTING PIG-IRON. HENRY D. HIBBARD, Pittsburg, Pa. Filed Feb. 24, 1891. Serial No. 382,446. (No model.)



Claim.—1. In apparatus for casting pig metal, a turn-table carrying radially-arranged series of molds mounted on pivots in the table and adapted to be overturned, substantially as and for the purposes described.

2. In apparatus for casting pig metal, a turn-table carrying radially-arranged series of molds mounted on pivots in the table and adapted to be overturned, and a car-track extending beneath said turn-table, substantially as and for the purposes described.

486,715. ELECTRIC DEVICE FOR VIBRATING TABLES. WILLIAM L. IRLAY, Camden, N. J. Filed Apr. 9, 1892. Serial No. 428,473. (No model.)

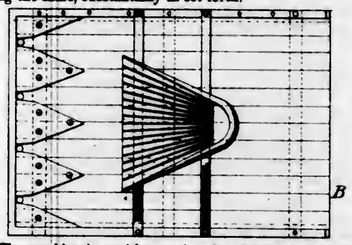


Claim.—1. The combination, with a vibratory table and an armature carried thereby, of an electro-magnet adapted to attract said armature to cause the table to vibrate and devices for automatically making and breaking an electric circuit, including said electro-magnet.

2. The combination, with a vibratory table of an ore-vanning

apparatus, of electrical devices constructed and arranged to impart a differential vibration to said table, substantially as set forth.

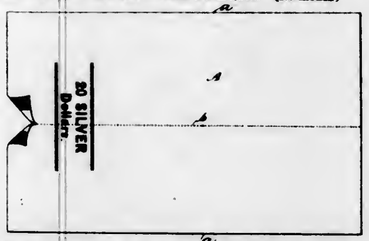
3. The combination, with a vibratory table, of a rheotome for actuating the same, substantially as set forth.



4. The combination, with a table, of springs for supporting the same, an electro-magnet, an arm secured to the table and carrying an armature for said electro-magnet, a contact, and an electrical circuit through said electro-magnet, one of the supporting-springs, and the contact, substantially as set forth.

5. The combination, with a base and a table, of springs for supporting said table on the base, clamps for securing said springs to the table and base, said base being provided with sockets under the clamps at one end thereof, whereby to permit the springs at one end of the table to be adjusted vertically to regulate the inclination of the table, substantially as set forth.

486,716. COIN-WRAPPER. FERDINAND A. JAEKEL, Memphis, Tenn. Filed Mar. 12, 1892. Serial No. 424,673. (No model.)



Claim.—A coin-wrapper consisting in the oblong sheet A, having a central longitudinal line of small perforations *b*, dividing it into two equal sections to cause the division of the wrapped coin into equal parts when the package is broken in two, the inner side of the sheet at the end carrying the value-marks being gummed, substantially as set forth.

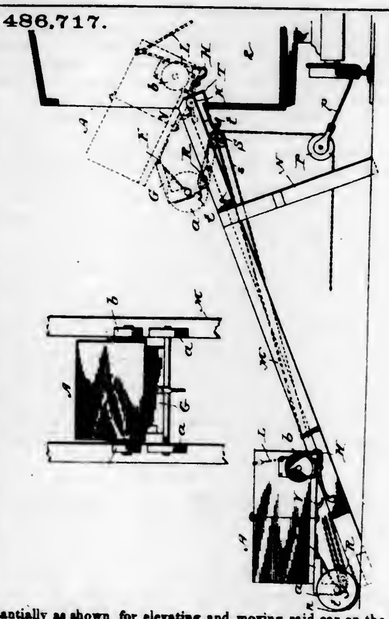
486,717. GRAIN-CARRIER. JAMES K. KARR, La Crosse, Wis. Filed Aug. 12, 1892. Serial No. 442,870. (No model.)

Claim.—1. In a means for carrying and emptying grain, the combination, with an incline track, of a car mounted on wheels which are located at relatively-different elevations whereby the car will maintain a horizontal position, a frame hinged at one end to said car and carrying the rear wheels, and a cable for moving said car on the incline track, adapted to be attached to said hinged frame whereby the power is applied to said car through said hinged frame, substantially as set forth.

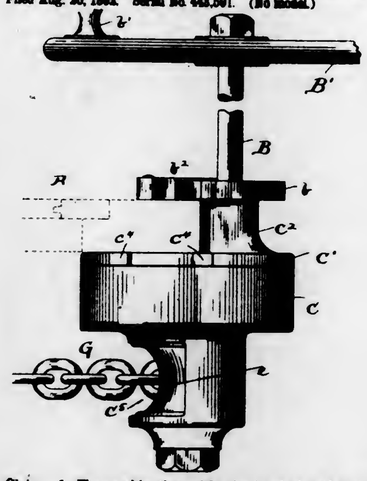
2. The combination, with an incline track having wheels *a* at its upper end, of a car mounted on wheels which are located at relatively-different elevations, a stop located between the ends of said car and adapted to engage with the upper portion of the platform and form a fulcrum for the car to tilt upon, a frame G, hinged at one end to the car and carrying the rear wheels, and a cable attached to said frame G and adapted to transmit the power to the car for moving the same on the track and tilting the car, substantially as set forth.

3. The herein shown and described means for conveying and emptying grain into a suitable receptacle, consisting of an inclined track braced between its ends and having upwardly-curved guards *m* at its lower end and a cross-bar and wheels K at its upper end, a car adapted to travel on said track and mounted on wheels which are located at relatively-different elevations, a hinged door L to close one end of the car, a weighted catch H to secure the lower end of said door L, a stop V, depending from the car and adapted to form a fulcrum about which said car tilts, a brace-frame G, hinged at one end to the car and carrying the rear wheels, and block and tackle, substantially as shown, for elevating and moving said car on the track M, substantially as set forth.

486,717.



486,718. CAR-BRAKE. HARRY H. KELLEY, Willoughby, Ohio. Filed Aug. 20, 1892. Serial No. 443,501. (No model.)



Claim.—1. The combination, with a brake-shaft and a pinion on the lower end of said shaft, of a stationary pin, brake-chain spool loose on said pin, brake-chain attached to said spool, and internal gear operative with said spool and in mesh with the aforesaid pinion, substantially as set forth,

2. The combination, with the brake-shaft, of a stationary pin, an eccentric brake-chain spool loose upon said pin, brake-chain attached to said spool, and means operatively connecting said spool and brake-shaft in such a manner as to cause the same to move in the same direction, substantially as set forth.

3. The combination, with the brake-shaft and pinion on the lower end of said shaft, of an internal gear in mesh with said pinion, and a spool upon which the brake-chain is adapted to wind integral with and eccentric to said internal gear, substantially as set forth.

4. The combination, with the brake-shaft and a pinion on the lower end of said shaft, of an internal gear in mesh with said pinion,

a spool operative with and eccentric to said internal gear, brake-chain attached to the larger side or belly of said eccentric spool, the arrangement of parts being such that in the application of the brakes after the slack in the chain is removed or taken up the radius at the point where the chain winds upon the spool will gradually decrease, substantially as and for the purpose set forth.

5. The combination, with a casing, brake-shaft having bearing in said casing, and a pinion on the lower end of said shaft, of a center-pin supported by said casing, a brake-chain spool loosely mounted on said pin, brake-chain attached to said spool, an internal gear integral with the upper end of said spool and in mesh with the aforesaid pinion, said pinion, internal gear, and brake-chain spool being all inclosed within the casing that has a lateral opening for accommodating the location and operation of the brake-chain, substantially as set forth.

6. The combination, with a casing composed of two castings, as at C C', rigidly secured to each other, the one casting constituting the cap of the casing, said cap having lateral flanges perforated for the passage of the bolts for securing the casing to the platform of the car and having an upwardly-projecting stud or member C^3, of the brake-shaft having bearing in said upwardly-projecting stud, a pinion on the lower end of said shaft, a center-pin supported by said casing, a brake-chain spool loose on said pin, brake-chain attached to said spool, and internal gear integral with the upper end of the spool and in mesh with the aforesaid pinion, said pinion, gear, and spool being all inclosed within the casing and the latter having a lateral opening for accommodating the location and operation of the brake-chain, substantially as set forth.

486,719. RAILWAY SYSTEM. JOHN P. F. KUHLMANN, Seattle, Wash. Filed Nov. 16, 1891. Serial No. 412,112. (No model.)

Claim.—1. In a railway system, the combination, with an inclined track, of a closed conduit located below the surface of the ground and extending along the track, a cable in the conduit, and a counterbalancing-weight located in the conduit and permanently attached to the cable, substantially as described.

2. In a railway system, the combination of a conduit, a cable in said conduit, a weight attached to and moving with the cable, and cushioning devices located at each end of the conduit, substantially as specified.

3. In a railway system, a cable traveling in a conduit, a weight attached to and moving with said cable, and a brake for actuating the speed of the weight, in combination with a gripper for connecting the car to the cable, as and for the purpose set forth.

4. In a railway system, a cable, a weight attached to and movable with said cable, a brake for checking the speed of the weights, consisting of one or more laterally-movable brake-shoes, toggle-links actuating the same, and a draw-bar attached to the weight for applying the power to the toggle-links, in combination with a gripper for connecting the cable to the car, as set forth.

5. In a railway system, a cable, a weight attached to and movable with said cable, a track upon which the weights mounted on trucks are adapted to travel, and a cushioning device located at each end of the conduit, in combination with a gripper for connecting the car to the cable, as and for the purpose set forth.

6. In a railway system, a cable located within a conduit, weights attached to and movable with said cable, one or more cushioning devices located in the conduit and operating in conjunction with the weights, said devices consisting of a fixed air-cylinder, a piston working therein, a pawl located on the forward or free end of the same and adapted to engage and hold the weight, means for disengaging the same, and a check-valve located on the air-cylinder for regulating the ingress or egress of air, in combination with a gripper for connecting the car and cable, as and for the purpose set forth.

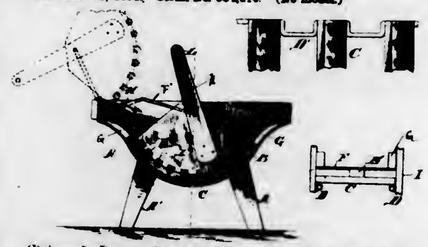
486,720. FINGER-RING. ISADOR LEHMAN, Cleveland, Ohio. Filed Apr. 28, 1892. Serial No. 430,987. (No model.)

Claim.—1. A finger-ring having one or more inwardly-projecting tongues or springs integral therewith, substantially as and for the purpose set forth.

2. A finger-ring having one or more inwardly-projecting tongues or springs integral therewith and with the free end thereof bent or presented outwardly, substantially as and for the purpose set forth.

3. A finger-ring having two inwardly-projecting tongues or springs integral therewith and an imperforate portion between the free ends of said tongues or springs, substantially as set forth.

486,721. WASHING-MACHINE. NATHAN H. LOSS, Muncie, Ind. Filed Mar. 11, 1891. Serial No. 384,616. (No model.)



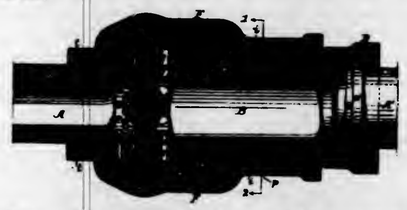
Claim.—1. In a washing-machine, the combination of a box, a flexible removable bed fitted in said box and provided at its ends with a spring-bar, cleats secured to the inner walls of the box and bearing against the spring-bars on the removable bed, and a reciprocating rubber supported in said box above the removable bed, substantially as shown and described.

2. In a washing-machine, the combination, with a suds-box, of supporting-arms pivotally connected to the sides thereof and a reciprocating rubber pivoted to the inner ends of the supporting-arms, said arms being pivotally connected to the outer sides of the suds-box and having the intermediate angular portions which extend across the

edges of the suds-box, the distance from such angular portions to the pivotal points of the rubber being less than the distance from such pivotal points to the end of the rubber, whereby when the rubber is elevated it contacts with the end of the suds-box and is held in an elevated position just within the vertical sides of such box and the supporting-arms bear upon the edges of the suds-box, substantially as shown and described.

3. In a washing-machine, a resilient or spring-yielding bed, substantially as described, comprising a series of parallel slats having the transverse grooves in the ends thereof, the two connecting-rods fastened at their ends to the end slats of the bed and passing continuously through the grooves in the ends of the intermediate slats, said connecting-rods being bent at points between adjacent slats and bearing against the contiguous faces of said slats, as and for the purpose described.

486,722. STOP-VALVE FOR HIGH PRESSURES. HENRY W. LOSS, Philadelphia, Pa. Filed Sept. 30, 1890. Serial No. 366,640. (No model.)

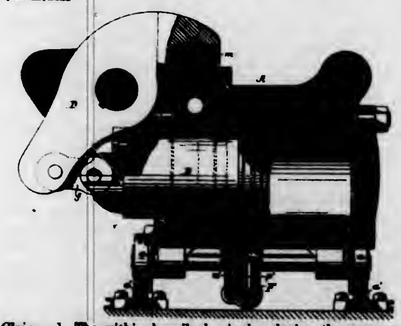


Claim.—1. The combination of the tube forming a section of a fluid-conveying pipe or conduit and having a partition, inlet-ports on one side of said partition, and outlet-ports on the opposite side of the same with a valve movable on said tube and consisting of a single sleeve having a chamber for bridging the ports thereof, and three packings each consisting of a ring adapted to an internal annular groove in the valve, said packings being so located in respect to the ports that when the valve is open there will be packing-rings between the ends of the valve and the ports and when the valve is closed there will be a packing-ring between the ports as well as rings between said ports and the ends of the valve, the inlet-ports in this case being closed by a blank portion of the valve-body which fits snugly upon the outer face of the ported tube, substantially as specified.

2. The combination of the tube forming a section of a pipe or conduit and having an external thread, an internal partition, and ports on opposite sides of said partition with a valve surrounding said tube and having an internal chamber for bridging the ports and an internal thread for adaptation to the external thread on the tube, whereby a combined turning and sliding movement of the valve is caused in opening or closing the same, substantially as specified.

3. The combination of the tube forming part of a pipe or conduit and having an internal partition cored at the center and ports on opposite sides of said partition with the sliding valve having a chamber bridging said ports, substantially as specified.

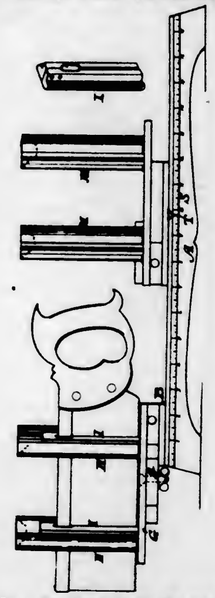
486,723. GRIPPING DEVICE FOR FORGING-MACHINES. HENRY W. LOSS, Philadelphia, Pa. Filed July 13, 1891. Serial No. 399,313. (No model.)



Claim.—1. The within-described gripping device, the same consisting of a body structure carrying a fixed gripping-jaw, a lever hung to said body, a cylinder and plunger, a gripping-jaw fitted to curved guides on one arm of said lever, and a connection between the other arm of the lever and the plunger, substantially as specified.

2. The within-described gripping device, consisting of a body structure carrying a fixed lower jaw, a cylinder having a plunger, a lever having two arms, one of which projects inwardly over the fixed jaw, a connection between the plunger and the other arm of the lever, and a gripping-jaw carried by the inwardly-projecting arm of the lever, substantially as specified.

486,724. MITERING-MACHINE. CHARLES F. MARQUARD, Cleveland, Ohio. Filed May 13, 1892. Serial No. 433,226. (No model.)

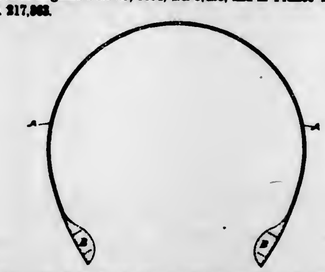


Claim.—1. In a mitering-machine, the bed-frame A, plate B, firmly fixed onto said frame, a clamp fixed to plate B, consisting of frame C, screw D, traversing jaw F, and the fixed jaw *c*, plate G, mounted on plate B by bolt *g*, grooved posts H H, standing on plate G, and movable saw-guides I I, supported in said posts, all constructed and combined to operate substantially as and for the purpose set forth.

2. In a mitering-machine, the combination, with bed-frame A, of the adjustable carriage K, having the fixed clamp C D, and swiveled plate L, provided with the grooved posts M, substantially as and for the purpose set forth.

3. In a mitering-machine, the combination, with bed-plate A and adjustable carriage K, provided with clamp C D, and swiveled plate L, having grooved posts M, of the scale S and pointer T, substantially as and for the purpose set forth.

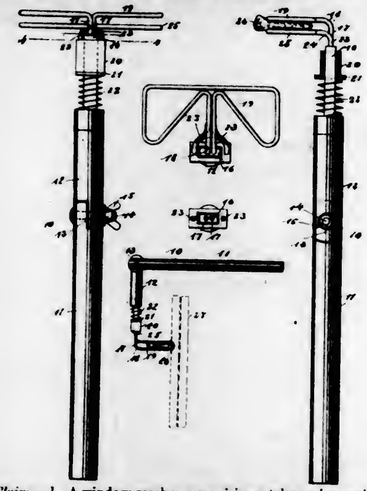
486,725. BAR APPLIANCE OR INSTRUMENT FOR USE OF TEACHERS OF MUSIC, &c. GEORGE MILLER, Newcastle-upon-Tyne, England. Filed Dec. 17, 1891. Serial No. 415,270. (No model.) Patented in England Feb. 25, 1891, No. 3,495, and in France Dec. 5, 1891, No. 217,963.



Claim.—An instrument for enabling vocal and instrumental sounds to be heard by the wearer simultaneously with their production and identically as they are heard in the auditorium, consisting of pads made of some good sound-conducting material or combina-

tion of materials to cover the apertures of the ears and exclude external noises, said pads being connected by some resonant sound-conducting material or combination of materials which will gather and convey the sounds produced by the performer to the ears of the wearer.

486,726. WINDOW-WASHER. DAVID MENDELSON, New York, N. Y. Filed May 31, 1892. Serial No. 434,963. (No model.)

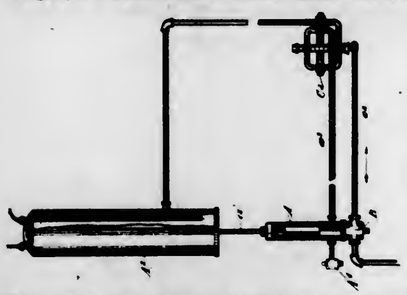


Claim.—1. A window-washer comprising a telescoping main handle made in hinged sections, fastening devices to fix the position of the sections, a fixed jaw carried at the upper end of the handle, a spring-pressed jaw held to press against the fixed jaw, and a supplemental longitudinally-adjustable handle secured to the main handle and extending at right angles thereto, substantially as described.

2. A window-washer comprising a telescoping main handle having fastening devices to fix the position of the sliding or telescoping sections, a fixed jaw carried at the upper end of the main handle, a spring-pressed jaw arranged parallel with the fixed jaw, a telescoping supplemental handle having at one end an eye to receive the main handle, and means for fastening the supplemental handle to the main handle, substantially as described.

3. A window-washer comprising a telescoping main handle, fastening devices to fix the relative positions of the handle-sections, a fixed jaw carried at the upper end of the handle, a spring-pressed jaw held to press against the fixed jaw, a telescoping supplemental handle adapted to extend at an angle to the main handle, a fastening device to secure the supplemental handle to the main handle, a cross rod or support adapted to be secured to a window-frame, a fastening device to secure the supplemental handle to the cross-rod, and a cable or cord operatively connected with the movable jaw and adapted to move the same against the tension of its spring, substantially as described.

486,727. THERMOSTATIC REGULATOR. EDWIN C. MERRILL, Allegheny, Pa. Filed Mar 9, 1892. Serial No. 424,316. (No model.)



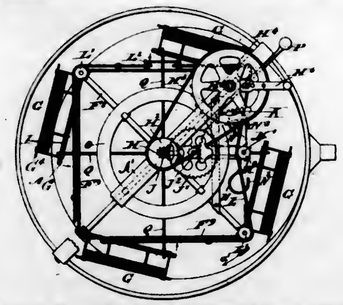
Claim.—1. The combination, with the regulating-valve, of a chamber through which the heating medium circulates, an expanding tube inclosed by said chamber closed at its inner end and connected at the other end with the wall of the chamber by a tight joint and around which the heating medium circulates, and a lever in said tube operated by the contraction and expansion thereof to open and close the regulating-valve, substantially as described.

2. The combination, with the valve, of a chamber adapted to contain water, an expansible tube inclosed thereby, closed at its inner end and at the other end connected with said chamber by a water-tight joint, and a connection from the free end of said tube and inclosed thereby for actuating said valve by the expansion and contraction of said tube, substantially as described.

3. The combination, with the regulating-valve, of a thermostatic controlling device therefor, comprising an expansible tube in a casing provided with inlet and outlet for water, said tube being closed at its inner end and at its other end connected with said chamber by a water-tight joint, a bar or support within said tube, and a valve-actuating lever in the tube pivoted to said support and adapted to transmit the motion of said tube to said valve, substantially as described.

4. The combination of the regulating-valve, the expansible tube in a casing or chamber adapted for the circulation of water around said tube, a support inclosed by said tube, a valve-actuating lever fulcrumed in said support, and means for adjusting the support and lever with respect to said tube, substantially as described.

486,728. CENTRIFUGAL HONEY-EXTRACTOR. CHARLES W. METCALF, Santa Paula, Cal. Filed Apr. 7, 1892. Serial No. 428,111. (No model.)



Claim.—1. In a centrifugal honey-extractor, the combination, with a segmental gear-wheel for imparting movement to the frame, of springs formed at their free ends with lugs adapted to engage the said segmental wheel, substantially as shown and described.

2. In a centrifugal honey-extractor, the combination, with a basket-support made approximately-U shape, of a basket or comb holder, having its front and rear made of wire-netting and its sides provided with grooves near their lower ends, the said grooves engaging a bar of the said support and forming the fulcrum for the holder and facilitating the removal of the comb-holder from the support, substantially as shown and described.

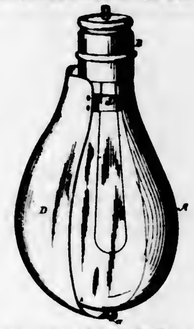
3. In a centrifugal honey-extractor, the combination, with a vertically-arranged shaft and a U-shaped support held thereon, of a basket or holder having its front and rear formed of wire-netting and arranged tapering from the bottom upward and outward, sides formed at their base with grooves adapted to engage the bottom bar of the said support, and projecting bars adapted to engage alternately the vertical bar of the said support to limit the swinging motion of the holders or baskets, substantially as shown and described.

4. In a centrifugal honey-extractor, the combination, with a frame mounted to turn and holders or baskets supported on shafts of the said frame and mounted to swing, of a main driving-shaft mounted to rotate, a series of gear-wheels connected with the said shaft, and a segmental gear-wheel in mesh with a pinion of the said series of gear-wheels and connected by a sprocket-chain with sprocket-wheels on the shafts of the said frame, substantially as shown and described.

5. In a centrifugal honey-extractor, the combination, with a frame and baskets or holders supported thereon, of a sprocket-chain engaging sprocket-wheels held on shafts of the said frame, a segmental gear-wheel connected with the said sprocket-chain, and springs held on the frame and formed with lugs adapted to be engaged by the said segmental gear-wheel to limit the motion of the latter in one direction to ease the stopping of the frame by the reaction of the said springs, substantially as shown and described.

6. In a centrifugal honey-extractor, the combination, with a frame mounted to turn and holders or baskets supported on the said frame and mounted to swing, of a main driving-shaft mounted to rotate, a series of gear-wheels connected with the said shaft, a segmental gear-wheel in mesh with a pinion of the said series of gear-wheels and connected by a sprocket-chain with the said frame, and a brake mechanism, substantially as described, and connected with the said frame, as set forth.

486,729. ELECTRIC-LAMP SHADE. CHARLES J. MILLER, Philadelphia, Pa., assignor to the Novelty Electric Company, same place. Filed Apr. 21, 1892. Serial No. 430,071. (No model.)

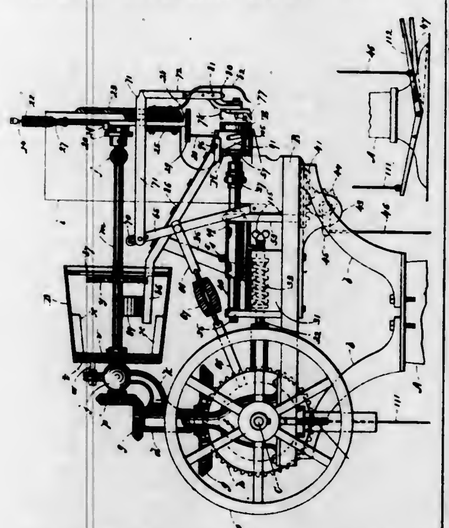


Claim.—1. The combination of the bulb of an incandescent electric lamp having a projection at its extremity with a shade engaging with said projection and engaging with the neck of the lamp, substantially as specified.

2. The combination of the bulb of an incandescent electric lamp having a projection at its extremity with a shade having an orifice therein, through which is passed the projection on the bulb, said shade having fingers engaging with the neck of the lamp, substantially as specified.

3. A shade for electric lamps, conforming in shape to the bulb of the lamp, perforated at the base to receive the projection on the bulb, and having at its opposite end spring-fingers *d d* and rear extensions *d' d'*, substantially as described.

486,730. LASTING-MACHINE. FRANK MOLLOY, Haverhill, Mass., assignor to himself and Orlando Brown, trustees, same place. Filed July 20, 1891. Serial No. 400,013. (No model.)



Claim.—1. In a lasting-machine, a fluted crimping-wheel mounted on a longitudinally-reciprocating shaft and mechanism, substantially as specified, for clamping the upper against said wheel.

2. In a lasting-machine, the fluted crimping-wheel and clamping-finger, in combination with mechanism for conjointly actuating said finger and wheel, substantially as described.

3. In a lasting-machine, the combination of a shaft journaled on the frame, a crimping-wheel thereon, mechanism for reciprocating said shaft longitudinally, a sleeve on the shaft provided with a cam-groove, adjusting mechanism for said sleeve, and a projection on said shaft working in said groove, substantially as and for the purpose set forth.

4. In a lasting-machine, a fluted crimping-wheel and mechanism for reciprocating the same, in combination with a pivoted clamping-finger and mechanism for forcing said finger into engagement with said wheel, substantially as set forth.

5. In a lasting-machine, the fluted crimping-wheel E and shaft, in combination with the drive-shaft and the spring-tensioned connecting-shaft whereby said crimping-shaft may be reciprocated longitudinally, as described.

6. The combination of the drive-shaft and spring-tensioned connecting-rod with the sliding crimping-shaft, the crimping-wheel, the pincher and actuating mechanism, the cam-sleeve and shaft projection, and treadle-actuated mechanism for adjusting said cam-sleeve, substantially as set forth.

7. The reciprocating crimper-shaft, in combination with the fluted crimping-wheel E, provided with grooves 56, the clamping-levers 57, and locking mechanism, substantially as described.

8. In a lasting-machine, a spring-tensioned shaft and mechanism for reciprocating the same longitudinally, in combination with a cam-sleeve on said shaft, a shaft projection working in a cam-groove on said sleeve, a crimping-wheel on said shaft, a pincher actuated conjointly therewith, a treadle-actuated sector-gear, and a sliding rack meshing therewith and secured to said sleeve, substantially as described.

9. In a lasting-machine, the drive-shaft, in combination with the pivoted finger 77 and feeler-spring 78, and a cam-actuated series of levers pivoted to the machine-frame and connecting said shaft and finger, substantially as set forth.

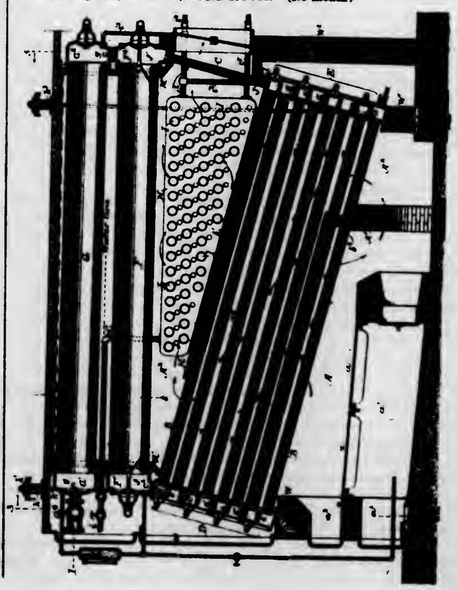
10. The drive-shaft, sliding block, and spring-tensioned connecting-rod, in combination with the shaft 40, mounted on said block and provided with the projection 51, the non-rotatable cam-sleeve 49 on said shaft, adjusting mechanism therefor, and a detachable crimping-wheel mounted on said shaft, substantially as described.

11. In a lasting-machine, the spring-pushed hammer-plunger, in combination with a rotary shaft, a cam-wheel mounted thereon, segmental cams on said wheel for elevating said plunger, and friction-wheels interposed between said cams, substantially as described.

12. In a lasting-machine, the hammer-wheel *z*, provided with segmental cams, as 20, and friction-rolls 21, in combination with the shaft *m* and the spring-pushed plunger-bar provided with a projection for engaging said cams, arranged substantially as set forth.

13. The fluted crimping-wheel E, in combination with the shaft 40, provided with the screw 59, the recessed nut 60, and the clamping-levers 57, pivoted on said shaft and locked by said nut, substantially as described.

486,731. STEAM-BOILER. EDWARD J. MOORE, Philadelphia, Pa. Filed Sept. 26, 1891. Serial No. 406,909. (No model.)



Claim.—1. The combination of the front and rear headers, inclined connecting-tubes, drum connected to said headers with side headers, and transverse tubes situated between the inclined tubes and drum, substantially as described.

2. The combination of the front and rear headers, inclined connecting-tubes, drum connected to said headers with side headers, transverse tubes situated between the inclined tubes and drums, said side headers being connected to the water-inlet pipe, and the rear header, substantially as described.

3. The combination, in a steam-boiler, of the drum, the front and rear headers made up of sections nippled together and attached to said drum, tubes connecting said headers, the front headers being secured together independent of the nipples, with front suspension-rods attached to the front header, and the reciprocated rods attached to the lower portion of the rear headers, whereby the weight of the headers is sustained by the rods and not by the nipples, substantially as described.

4. The combination, in a steam boiler, of the sectional headers, nipples forming communications between the sections, with a clamp-plate on each section, and securing devices for said plates, whereby the sections are held together independently of the nipples, substantially as set forth.

5. The combination of the front and rear plates of a header with a tapered stay-tube having its end projecting beyond the line of the front plate, with a cap for said stay-tube, substantially as described.

6. The combination, in a steam-boiler, of the furnace, the grate-bars on or about on the line of the bridge-wall, inclined tubes, front and rear headers, an arch back of the bridge-wall, and a deflecting-plate extending from the arch forward to the front header, so that the products of combustion will be deflected through the archway to the second combustion-chamber, substantially as described.

7. The combination, in a steam-boiler, of the inclined circulating-tubes, the front and rear headers, the water-drum and the steam-drum, the deflecting-plates *b b'*, separating the combustion-chamber into three parts, with transverse tubes situated between the upper deflecting-plate *b'* and the water-drum, substantially as described.

8. The combination, in a boiler of the type substantially as described, of the side headers, transverse tubes connecting the side headers, water-inlet pipes entering said headers, with a pipe i^3, communicating with the main tubes of the boiler, and an extension of said pipe, whereby scum at the water-line can be removed, and a pipe i^4, through which mud from the bottom of the side header can be removed, substantially as described.

9. The combination of the inclined tubes, front and rear headers, deflecting-plates, the upper deflecting-plates being on a line with the top of the rear header, a filling-plate between the top of the rear header and the wall of the furnace, cleaning-openings in said plate through which a cleaning-tool can be inserted to clean the upper deflecting-plate, with covers for said opening, substantially as described.

10. The combination, in a steam-boiler, of the inclined circulating-tubes, the front and rear headers, the water-drum connected to the front and rear headers, and the steam-drum mounted above the water-drum and connected with one end only thereof, with a pipe i^2 near the passage of the two drums, a pipe i^3, communicating with said pipe i^2, through which water of condensation may be carried away from the steam-drum, substantially as described.

11. The combination, in a boiler, of the inclined water-tubes, front and rear headers therefor, and front and rear manifolds communicating with the said headers, water-drums, and circulating-tubes extending from the front manifold to the rear manifold, substantially as described.

12. The combination, in a steam-boiler, of the inclined water-tubes, front and rear headers therefor, a series of water-drums, front and rear manifolds therefor, nipples forming communications between the front water-manifold and the front header, tubes forming communications between the rear water-manifolds and the rear header, a series of steam-drums above the water-drums, front and rear manifolds therefor, and nipples forming communications between the rear steam-manifold and the water-manifold, the forward steam-manifold being connected to the steam-supply pipe, substantially as described.

13. The combination of the inclined tubes, front and rear headers, water-manifolds, drums and tubes connecting the front and rear water-manifolds, steam-drum and tubes above the water-drum and tubes, and front and rear steam-manifolds with which the drums and tubes communicate, the rear steam-manifold and water-manifold being connected together, substantially as described.

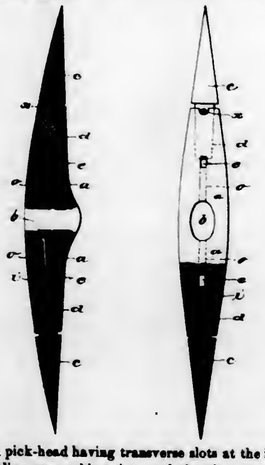
14. The combination, in a steam-boiler, of the head or manifold, a flange thereon, the edge of said flange being chamfered, and a cap adapted to said flange and having an annular groove ground to the flange, so as to form a steam-tight joint, with a bolt for securing the cap to the header, substantially as described.

15. The combination of a drum, its head, an opening opposite the drum, a flange on said head projecting outward and having its edge chamfered, a cap having an annular groove corresponding with the chamfer on the flange to form a steam-tight joint, and a bolt passing through said cap and provided with a nut, with a V-shaped brace secured to the drum and connected to the bolt, substantially as described.

16. The combination of the flanged header, a cap adapted to said flange, forming a steam-tight joint, a bolt passing through said cap, a box-nut adapted to said bolt, said nut having its face ground and adapted to a ground seat on the cap, a V-shaped brace attached to the sides of the drum, and a pin securing the brace to the bolt, substantially as described.

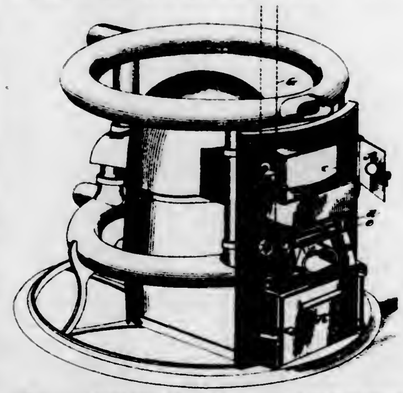
17. The combination, in a steam-boiler, of the drum, the struck-up sheet-metal head having a deep flange which incases the drum, said flange being expanded at the point where it is coupled to another head or header, said expanded portion being wholly within the flange and having an opening for the reception of the coupling-nipple, substantially as described.

486,782. PICK. KENNETH J. MORRISON and MICHAEL MCLELLAN, Stellarton, Canada; said McLellan assignor to said Morrison. Filed Apr. 27, 1891. Serial No. 390,713. (No model.) Patented in Canada Jan. 8, 1891, No. 35,731.



Claim.—A pick-head having transverse slots at the inner ends of sockets for holding removable points and the air-passages *o o*, leading from said slots into the eye *b*, as shown and described, for the purpose specified.

486,788. FURNACE-DAMPER. DAVID MCCOWATT, Chicago, Ill. Filed Dec. 14, 1891. Serial No. 414,952. (No model.)

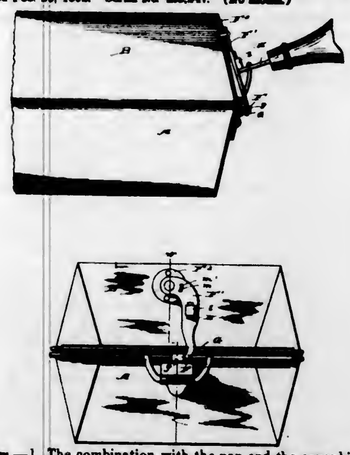


Claim.—1. In combination with a furnace, an air-duct delivering into the furnace at or about the fuel-line and an air-duct also delivering into the furnace below the fire-pot, a common damper-chamber open to the atmosphere and with which both of said ducts communicate, and a rocking damper adapted to be turned so as to partially or wholly open or close either of said ducts at will, and whereby the opening or closing of one duct correspondingly closes or opens the other, substantially as described.

2. In combination with a furnace, a divided check-draft duct delivering into the furnace at or above the fire-level, a draft-supply duct communicating with the furnace below the fire-chamber, an intermediate damper-chamber with which both of said ducts communicate, and a rocking damper located in said chamber and consisting of a curved plate adapted to be turned so as to close either or both of said ducts at will, substantially as described.

3. In combination with a furnace, a check-draft duct delivering into the furnace at or above the fire-level, a draft-supply duct communicating with the furnace below the fire-chamber, an intermediate damper-chamber with which both of said ducts communicate, a rocking damper located in said chamber and consisting of a curved plate adapted to be turned so as to close either or both of said ducts at will, and an operating-cable for rocking said damper, substantially as described.

486,784. BAKING-PAN. EVERETT B. CESCON, Vineland, N. J. Filed Feb. 29, 1892. Serial No. 423,247. (No model.)



Claim.—1. The combination, with the pan and the cover hinged thereto, of a swinging arm carried by said cover and a handle or lifter designed to detachably engage said arm, substantially as specified.

2. The combination, with the lower pan and the cover comprising a similar receptacle hinged or pivotally connected thereto and carrying a swinging arm designed to engage the lower pan and form a lock, of a handle or lifter arranged to detachably engage said swinging arm, substantially as specified.

3. The combination, with the pan A, having the horizontally-slotted projecting plate secured thereto, of a cover having a curved lug or projection thereon adapted to loosely engage the slot of said plate and normally held from disengagement by a notch formed in the wall of said slot, substantially as specified.

4. The combination, with the cover having the swinging arm thereon adapted to engage a lug or projection on the pan and form a lock, of the detachable handle or lifter having its shank adapted to engage said arm, substantially as specified.

486,785. BARREL OR KEG COUNTER. JOHN OSTERTAG Jr., Chicago, Ill. Filed May 4, 1891. Serial No. 391,565. (No model.)

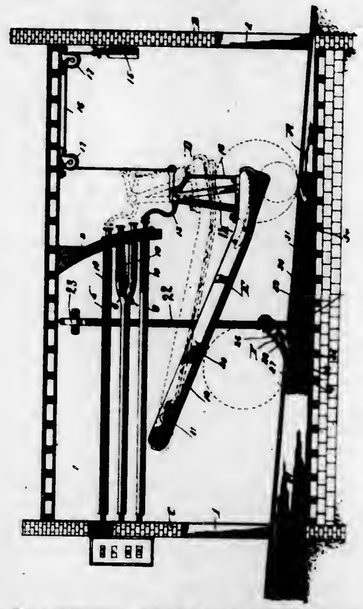
Claim.—1. A barrel-counter comprising a trackway along which the barrels are adapted to roll, a movable frame located over and between the ends of said trackway and in the path of the barrel and adapted to be moved by the passage of the barrel, a pivot-arm upon said movable frame, located also in the path of the barrel, and a register adapted to be operated by the movement of said pivot-arm.

2. A barrel-counter comprising a movable frame located over the trackway for the barrels, a hammer carried by said movable frame, a pivoted arm mounted upon said movable frame and connected with said hammer, and a register adapted to be operated by said hammer.

3. A barrel-counter comprising a movable frame located over the trackway for the barrels, a hammer mounted upon said frame, adapted to be operated by a passing barrel, and a series of rods for operating a register, located in position to be engaged by said hammer.

4. A barrel comprising a movable frame located over the trackway for the barrels, a hammer upon said frame, connected with a pivoted arm mounted upon said frame and located in the path of the barrels, and a series of rods for operating a register, located in position to be engaged by said hammer.

5. A barrel-counter comprising a movable frame located over the trackway for the barrels and provided with devices for operating a register, rails secured to the lower face of said frame, and springs interposed between said frame and rails.



6. The combination, substantially as herein set forth, of a pivoted stop located in the trackway of a barrel-counter and comprising two arms 26 and 27, the arm 26 being normally located in the path of the barrels, a latch for holding said arm 26 depressed, and devices for unlatching and elevating said arm.

7. The combination, substantially as herein set forth, of a pivoted stop located in the trackway of a barrel-counter and comprising two arms 26 and 27, the arm 26 being normally located in the path of the barrels, a latch for holding said arm depressed, a contact-arm located in the path of the barrels for unlatching said arm 26, and another contact-arm connected with said stop and located in the path of the barrels and adapted to elevate said arm 26.

8. The combination, substantially as hereinbefore set forth, of a pivoted stop located in the trackway of a barrel-counter and comprising two arms 26 and 27, the arm 26 being normally located in the path of the barrels, a latch for holding said arm 26 depressed, a contact-arm located in the path of the barrels, a latch for unlatching said arm 26, and devices for elevating said arm 26.

9. The combination, substantially as hereinbefore set forth, of a pivoted stop located in the trackway of a barrel-counter and comprising two arms 26 and 27, the arm 26 being normally located in the path of the barrels, a latch for holding said arm 26 depressed, devices for unlatching said arm 26, and a contact-arm located in the path of the barrels and adapted to elevate said arm 26.

10. The combination, substantially as herein set forth, of a pivoted stop located in the trackway of a barrel-counter and comprising two angularly-arranged arms 26 and 27 and a spring arranged to hold said arm 26 normally in the path of the barrels.

486,786. SAW-HANDLE ATTACHMENT. MITCHEL PYPER, New York, N. Y. Filed Dec. 17, 1891. Serial No. 415,267. (No model.)

Claim.—1. A saw provided with a stationary abutment at an angle to its back and secured directly to the side of the blade adjacent to but wholly independent of its handle, whereby loosening of the handle will not affect the abutment, substantially as set forth.

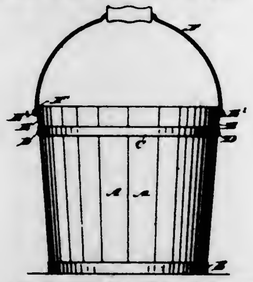
2. A saw provided on its side adjacent to its handle with an abutment at right angles to its back edge and another abutment at an angle of forty-five degrees thereto, said abutments being secured fixedly to the blade wholly independent of the handle, substantially as set forth.

3. A saw provided with the abutments 12 13, secured directly to

486,736.

the side of the blade adjacent to and wholly independent of the handle, and the arm 14, pivoted between its ends to the blade at the juncture of the two abutments, with its longer end projecting beyond the back of the saw, substantially as set forth.

486,737. WOODEN VESSEL. EDWIN M. REEDS, Santa Paula, Cal. Filed Mar. 31, 1892. Serial No. 427,194. (No model.)



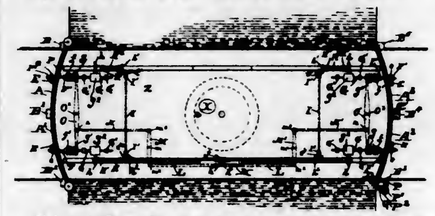
Claim.—1. A wooden vessel provided with transverse openings through its sides, widening toward their outer ends in the direction of the depth of the vessel, a hoop or band encircling the vessel adjacent to said openings, and movable rivets or pins headed at their inner ends within the vessel and engaging at their outer ends, said hoop or band preventing it from dropping off of the vessel and permitting it to be drawn thereon as the vessel shrinks, substantially as set forth.

2. A wooden vessel having opposite transverse openings through it, the outer ends of the openings widening in the direction of the depth of the vessel, movable headed pins or rivets extending through the said openings and engaging at their outer ends one of the vessel hoops or bands, and bail connections for said pins, substantially as set forth.

3. A wooden vessel having opposite transverse openings widening at their outer ends in the direction of the depth of the vessel, braces within the vessel and apertured in register with said openings, a band or hoop encircling the vessel and having apertures registering with the wide ends of the openings, and the movable pins or rivets extending through the braces and hoop and headed at their ends, substantially as set forth.

4. A wooden vessel having opposite transverse openings widened vertically toward their outer ends, braces within the vessel having apertures registering with said openings, a band or hoop encircling the vessel and having apertures registering with the wide ends of the openings, movable rivets or pins extending through said braces and hoops and headed at their ends, the vertically-movable bail-arms having eyes at their lower ends receiving the said rivets or pins behind the hoop or band, substantially as set forth.

486,738. SAFETY-GATE FOR BRIDGES. HENRY J. ROSLY, Chicago, Ill. Filed Aug. 29, 1892. Serial No. 444,335. (No model.)



Claim.—1. In a safety-gate, the combination of a two-part vertically-movable gate located at each approach of a drawbridge or railroad-crossing, a vertical rack on each part of the gate, a slotted opening through each part of the gate, a rotatable shaft extending through the slotted opening, a gear-wheel at one end of the shaft, intermeshing with the rack on the gates and a clutch-wheel at the other end thereof, longitudinally-movable rotatable shafts having clutch-wheels thereon adjacent to the first-named clutch-wheels, a lever above the floor of the bridge, and connecting mechanism whereby such clutch-wheels can alternately be thrown into and out of engagement by longitudinal movement of the longitudinally-movable rotatable shafts, a rotatable vertical shaft extending above the level of the highway, and rotatable shafts having intermeshing gear-wheels thereon connecting the vertical shaft with the longitudinally-movable rotatable shafts, whereby rotation of the vertical shaft will produce rotation of such longitudinally-movable shafts, substantially as described.

2. In a safety-gate, the combination of a two-part vertically-movable gate located at each approach of a drawbridge or railroad-crossing, a vertical rack on each part of the gate, a slotted opening through each part of the gate, a rotatable shaft extending through the slotted opening, a gear-wheel at one end of the shaft, intermeshing with the rack on the gates and a clutch-wheel at the other end thereof, longitudinally-movable rotatable shafts having clutch-wheels thereon adjacent to the first-named clutch-wheels, a lever above the level of the roadway and connecting mechanism whereby such clutch-wheels can alternately be thrown into and out of engagement by longitudinal movement of the longitudinally-movable rotatable shafts, a rotatable vertical shaft extending above the level of the highway, and rotatable shafts having intermeshing gear-wheels thereon connecting the vertical shaft with the longitudinally-movable rotatable shafts, posts having rotatable pulleys in the upper part thereof, flexible connections extending over the pulleys and attached at one end to the gates and at the other end to the counterweights, a toothed wheel secured to the pulley-shaft and rotated thereby, a spring-lever resting against the toothed wheel, a bell-hammer on the spring-lever, and a bell, substantially as described.

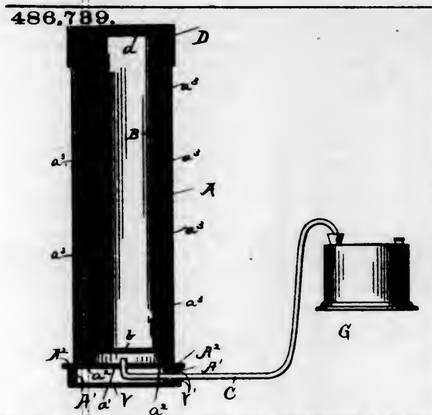
3. In a safety-gate, a vertically-movable gate, a post having rotatable pulleys in the upper end thereof, a connection extending over the pulleys, one end whereof being attached to the gate and the other end to counterweights, in combination with a toothed wheel rigidly secured to the shaft on which one of the pulleys is rigidly secured, a spring-lever resting against the toothed wheel, a bell-hammer on one end of such spring-lever, and a bell placed so that the hammer on the spring-lever will strike it when such spring-lever is actuated by the movement of the gate, substantially as described.

486,739. CLOTH-SHRINKING MACHINE. CHARLES W. SCHAEFER, Cleveland, Ohio. Filed Oct. 8, 1891. Renewed Oct. 8, 1892. Serial No. 448,196. (No model.)

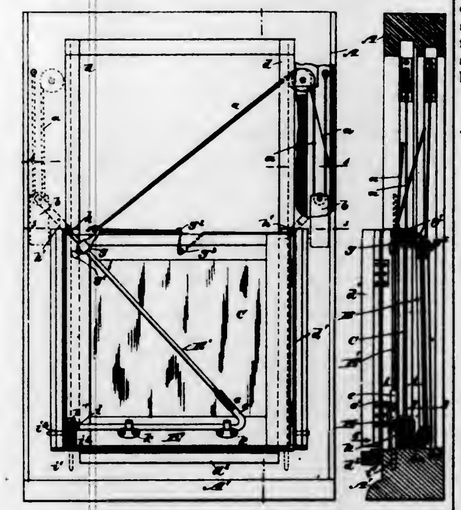
Claim.—1. In a cloth-steaming apparatus, an upright hollow perforated cylinder having suspended within it an imperforate cylinder, with a narrow annular space between the cylinders closed at the upper end, both of said cylinders being closed at the bottom, the outer cylinder having connected therewith a steam-pipe adapted to discharge steam into the space between the bottom of the respective cylinders, substantially as set forth.

2. The combination, with a cloth-steaming apparatus comprising an upright hollow perforated cylinder having suspended within it an imperforate cylinder, with a narrow annular space between the cylinders closed at the upper end, both of said cylinders being closed at the bottom, the outer cylinder having connected therewith a steam-pipe adapted to discharge steam into the space between the bottoms of the respective cylinders, of a cap or cover mounted on the upper end of the apparatus and adapted to slide or move endwise on the perforated cylinder and obstruct one or more perforations in the upper end of said cylinder, substantially as and for the purpose set forth.

486,739.



486,740. SWINGING JACK FOR WINDOW-SASHES. VALENTINE SCHERMER, New York, N. Y. Filed June 23, 1892. Serial No. 437,575. (No model.)



Claim.—1. In a swinging jack for window-sashes, a horizontal jack-bar pivoted by one end on the window-casement and loosely joined at the other end to a stay-rod end, which rod is loosely secured by its other end to the window-casement above the pivoted end of the jack-bar, substantially as described.

2. A sash supporting and swinging jack comprising two loosely-connected pieces, one piece pivoted by an end on a bracket-block that is detachably secured to the window-casement and the other piece joined flexibly with an eye-plate that is embedded in the stile of the casement, substantially as described.

3. A sash supporting and swinging jack comprising a bar bent at one end to produce an angularly-projecting limb, an end piece jointed on said limb and adapted to have adjustable connection with a stay-rod, a stay-rod furnished with a hook on one end, an eye-plate loosely engaging said hook of the stay-rod, a bracket-block loosely secured to the window-casement, a fulcrum-pin passing through the end portion of the jack-bar and through the bracket-block into the sub-sill of the casement, and means to connect the jack-bar with the sashes of the window, substantially as described.

4. In a swinging jack for window-sashes, a jack-bar pivoted by one end on the casement of the window and loosely connected at the other bent end to a stay-rod, a stay-rod having a hook at its top end and adapted for adjustment at the other end that engages the jack-bar, an eye-plate engaging the hook of the stay-rod, and an adjustable hook-block on the stay-rod, substantially as described.

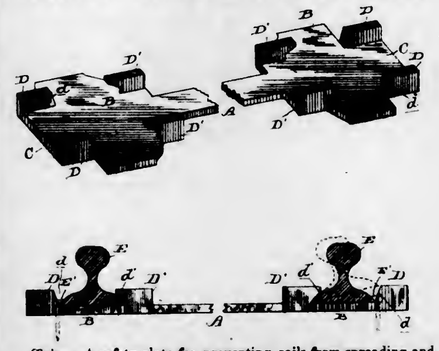
5. In a swinging jack for window-sashes, a jack-bar bent at one end to produce a limb at an acute angle thereon, a socketed and internally-threaded piece hinge jointed to the jack-bar limb, a perforated boss at the other end of the jack-bar, a bracket-block vertically perforated, a finger-piece thereon laterally projected, a fulcrum-bolt passing through the boss of the jack-bar and through the bracket-block, a stay-rod threaded at one end and furnished with a hook at the other end, an adjustable hook-block thereon, and an eye-plate on the hook of the stay-rod, substantially as described.

6. The combination, with a window-casement and two sashes counterbalanced therein and permitted to swing inwardly when both sashes are in lowered condition, of a sash supporting and swinging jack comprising a horizontal bar and a diagonal stay-rod loosely joined at one end of each, the other end of the horizontal bar loosely secured to swing on the sill of the casement, and the remaining end of the stay-rod loosely secured to the casement-stile above the pivoted end of the horizontal bar, substantially as described.

7. In a device to support and swing window-sashes in their casement, a two-part adjustable jack-frame pivoted on the sill of the window-casement and hinged to the side of the casement above said pivot-point, hooks on the lower sash adapted to hold the lower edges of both sashes together, and other hooks on the inner side of the lower sash adapted to engage the horizontal bar of the composite jack, substantially as described.

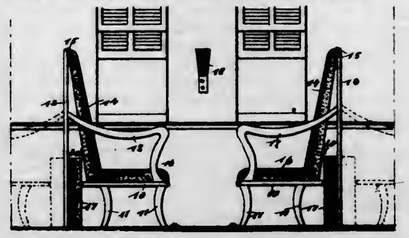
8. In a sash supporting and swinging device for window-sashes, the combination, with a swinging jack pivoted on a window-casement, of devices for the detachable connection of the window-sashes with said jack, each comprising a hanger-hook bent at a right angle, having a lip on the end of its horizontal member and a hook on the top of the upright member that is also notched on the edges oppositely and slotted between said notches, and a clip-plate having two hooked flanges that loosely embrace the upright member of the hanger-hook, and a headed stud thereon which engages the slotted aperture of the hanger-hook, substantially as described.

486,741. SAFETY-PLATE FOR RAILROADS. THOMAS B. SMITH, Bridgeport, Ohio. Filed Mar. 9, 1892. Serial No. 424,312. (No model.)



Claim.—A safety-plate for preventing rails from spreading and tipping, consisting of a plate A, having broad end pieces B B, each having lugs D', pressing on the top of the inside of the foot of the rail, and other lugs D', having their inside edges inclined away from the rail, whereby the rail may be readily inserted endwise and yet fit tightly between the lugs when seated, substantially as described.

486,742. CONVERTIBLE CAR-SEAT. WILLIAM H. STRACY, Ogden, Utah. Filed Feb. 24, 1892. Serial No. 423,610. (No model.)



Claim.—1. The combination, with the seat-frames and the partitions, of the seat-backs hinged at their upper edges to the partitions and provided with sockets 20, the removable rods 19 to rest at their upper ends in said sockets, and the sockets 22 for the lower ends of the rods, substantially as set forth.

2. The combination, with the seat-frames and the partitions, of the seat-backs hinged at their upper edges to the partitions and provided with swinging arms 21, having sockets 20, lower sockets 22, and removable rods 19 to engage said sockets with their opposite ends.

3. The combination, with the seat-frames and the cross-piece 23 for connecting them, of the partitions having seat-backs hinged at their upper edges thereto, and provided with sockets 20, removable supporting-rods 19, sockets 22 for the lower ends of the rods, a supporting-spring 18 for the backs when swung up, the partitions terminating at the upper edges of said backs, the outwardly-movable seat 16, and the separate and independent seat-sections 17, resting behind the seat-frames and adapted to rest on the seat-frames when the seats 16 are moved outward, substantially as set forth.

486,743. GUARD FOR HORNED STOCK. LOUIS L. TACKITT, Kaufman, Tex. Filed May 10, 1892. Serial No. 432,502. (No model.)

Claim.—1. A guard for horned stock, consisting of a rod 6, having a hook 7 and a suitable support 4 5, and means by which the support is fastened to the horns, substantially as described.

2. A guard for the horns of an animal, consisting of an annular ring 1, having a collar 2 and a fastening device, and the upwardly-extending arms 4 and 5, secured to the ring, having their upper ends joined together for providing a solid rod 6, formed with a hook 7, substantially as described.

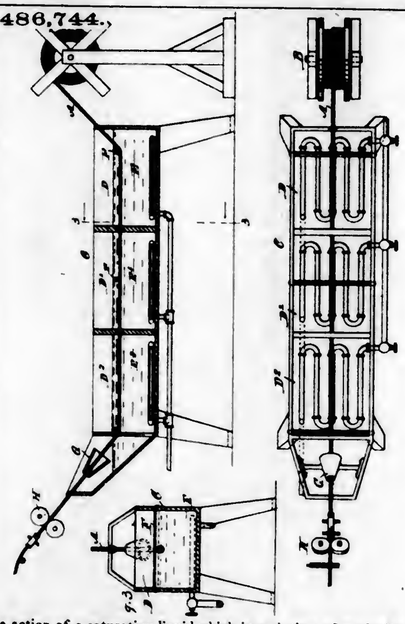
3. A guard for the horns of an animal, consisting of an annular ring 1, having a collar 2 and a fastening device, the upwardly-extending arms 4 and 5, secured to the ring, having their upper ends joined together for providing a solid rod 6, formed with a hook 7, and the strengthening-band 8 for engaging the upper ends of the arms, substantially as described.

486,744. PROCESS OF SATURATING ARTICLES OR SUBSTANCES. JOHN A. TYLER, Glenshaw, Pa. Filed Dec. 18, 1891. Serial No. 415,521. (No specimens.)

Claim.—1. The herein-described process of saturating articles or substances, consisting of first subjecting the article or substance to the action of heat to expand air and other fluids contained in the pores of the article or substance and then subjecting the article to an immersion in the coating or saturating liquid heated to a less temperature, so as to cool the air or fluid to form a vacuum in the pores filled by the surrounding coating or saturating liquid, substantially as shown and described.

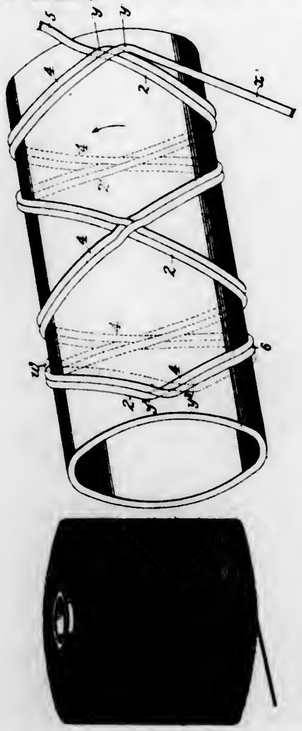
2. In the process of saturating articles or substances, the steps consisting in immersing the article in a coating or saturating liquid heated to a high temperature and continuing the immersion in another portion of the liquid heated to a markedly-lower temperature, substantially as set forth.

3. In the process of saturating articles or substances, the steps consisting in subjecting the article or substance a series of times to



the action of a saturating liquid which is each time of markedly-decreased temperature.

486,745. COP. SIMON W. WARDWELL, Jr., Boston, assignor to Joseph R. Lesson, Newton, Mass. Filed Dec. 19, 1891. Serial No. 415,648. (No model.)

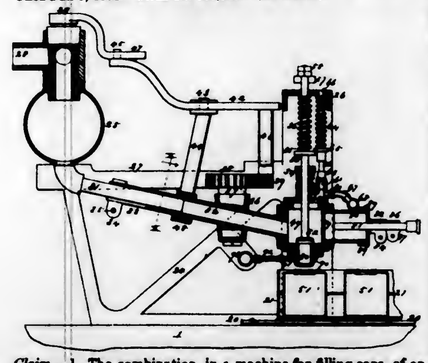


Claim.—1. A cylindrical cop or ball of thread consisting of successive layers in each of which the coiled portions of thread extending from end to end of the cop have the same number of windings and in which each coil of thread is parallel throughout its extent to one of the preceding coils and the ends of the coils at each side are substantially in the same plane, substantially as described.

2. A cylindrical cop in which the coiled thread in each layer extends to the extreme ends of the cop and is there reversed and in which the point where each thread in each coil is reversed is beyond the point at the end of the cop where the thread is reversed in the preceding coil and in which the ends are in substantially the same plane, substantially as described.

3. The cop in which the thread is in successive layers and in which each coil of thread of each layer extends to the end of the cop and the winding is then reversed and in which the thread of each coil is parallel to that of a preceding coil, substantially as described.

486,746. CAN-FILLING MACHINE. EMIL WILDE, Highland, Ill. Filed Feb. 5, 1891. Serial No. 380,343. (No model.)



Claim.—1. The combination, in a machine for filling cans, of an endless carrier adapted to support a number of cans to be filled and a number of measures provided with nozzles and discharge-valves, whereby a row of cans is simultaneously filled, with means for giving alternating movement to the endless carrier and valves, the same comprising a pawl-and-ratchet mechanism for revolving the carrier, a lifting device for simultaneously operating said valves, power mechanism and connecting-rods operated by the latter and in turn operating the pawl-and-ratchet mechanism and the lifting device, substantially as described.

2. The combination, in a machine for filling cans, of an endless carrier for the cans and a number of measures provided with nozzles and discharge-valves, with means for giving alternating movement to the endless carrier and valves, the same comprising geared crank-shafts, a pawl-and-ratchet mechanism for revolving the carrier, a lifting device for simultaneously operating said valves, and connecting-rods operated by the cranks of said shafts and in turn operating the pawl-and-ratchet mechanism and the lifting device, substantially as described.

3. The combination, in a machine for filling cans, of an endless carrier adapted to support a number of cans to be filled and a number of measures provided with nozzles and discharge-valves, with means for giving alternating movement to the endless carrier and valves, the same comprising a lifting-bar connecting the stems of the valves, cams acting upon said lifting-bar, connected rock-shafts carrying the cams, pawl-and-ratchet mechanism for revolving the carrier, a power mechanism, and connecting devices between the power mechanism and pawl-and-ratchet mechanism and between the power mechanism and one of the rock-shafts, substantially as described.

4. The combination, in a can-filling machine, of a vessel 25, with induction-cock 29, the measuring-vessels 49, having reciprocating discharge-valves 52, ducts leading from vessel 25 to the measures, a rotary cock in each of the ducts, said rotary cocks being connected, a lever mechanism operated by the connections on the rotary cocks for opening the induction-cock when the latter are closed, or vice versa, and means, substantially as described, for alternately opening and closing the rotary cocks and valves, substantially as set forth.

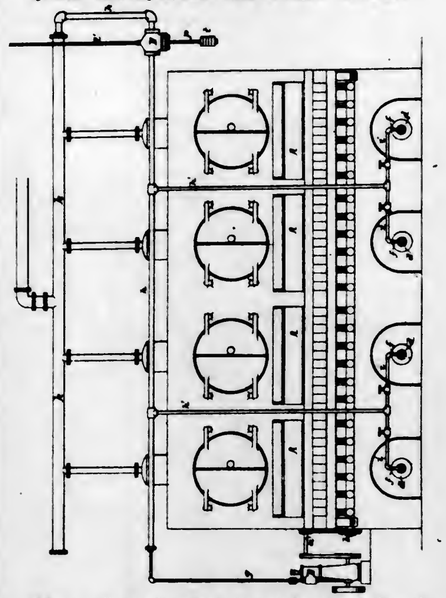
5. The combination, in a can-filling machine, of the endless carrier 20, having intermittent movement, the vessel 25, with supply-cock 29, measures 49, ducts leading from the vessel 25 to the measures, cocks 36 in the ducts, discharge-nozzles 50, with drip-chambers 90, valves 52, suction device in connection with the drip-chamber and devices, substantially as described, to accomplish the synchronal movement of the endless carrier, cocks, valves, and suction device, as set forth.

6. The combination, in a can-filling machine, of the row of measures 49, valves 52, with stems connected to a single bar, cams 69, rock-shafts 70, with cams 71, connecting-rods 72 73, lever 74, with means of oscillating the same, and having arm 105, slotted standard 106, rack-bar 39, ducts leading from a supply and cocks 36 in said ducts, with spin-wheels 38, engaging the rack-bar, all constructed and adapted to operate, substantially as set forth.

7. The combination, in a can-filling machine, of the vessel 25, measures 49, with ducts leading from vessel 25 to the said measures, cocks 36, spin-wheels 38, rack-bar 39, with slotted standard 106, valves 52, bar 57, connected with the valve-stems 53, cams 69, cam-shafts 70, and lever 74, with arms connected with the standard 106, and arms 71 on the cam-shafts, all constructed and adapted to operate, substantially as set forth.

8. The combination, in a can-filling machine, of the vessel 35, supply-cock 29, operating arm and lever 47 42, rack-bar 39, with pin 40, measures 49, duct leading from said vessel to said measures, cocks 36 in the ducts, with spin-wheels 38, valves 52 and 63, bar 57, cams 69 on shafts, carrying-arms 71, rods 72 and 73, lever 74, with arms connected with the rod 73, and with a slotted standard on the rack-bar, all constructed and adapted to operate, substantially as set forth.

486,747. STEAM-BOILER FURNACE. ALFRED WILKINSON, Bridgeport, Pa., assignor to the Wilkinson Manufacturing Company, of Pennsylvania. Filed July 26, 1892. Serial No. 441,127. (No model.)



Claim.—1. The combination, in furnaces for steam-boilers, of a mechanical stoker, a motor for operating the same, a pipe for conveying steam from the boiler to said motor, and an automatic regulating-valve in said pipe opening against the pressure in the boiler, substantially as specified.

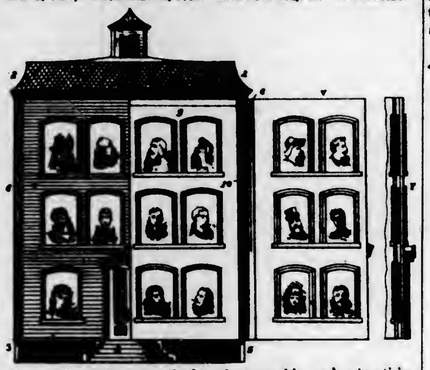
2. The combination, in steam-boiler furnaces, of draft apparatus operated by an injector, a pipe for conveying steam from the boiler to said injector, and an automatic regulating-valve in said pipe opening against the pressure in the boiler, substantially as specified.

3. The combination, in a steam-boiler furnace, of a mechanical stoker, a motor for driving the same, draft apparatus operated by an injector, a pipe for conveying steam to said motor and injector, and an automatic regulating-valve in said pipe opening against the pressure in the boiler, substantially as specified.

4. The combination of the valve-casing, its fixed cylinder and moving valve, one or both ported, as described, said valve being acted on by the boiler-pressure to close the ports, and by pressure in the delivery-pipe to open the ports, substantially as specified.

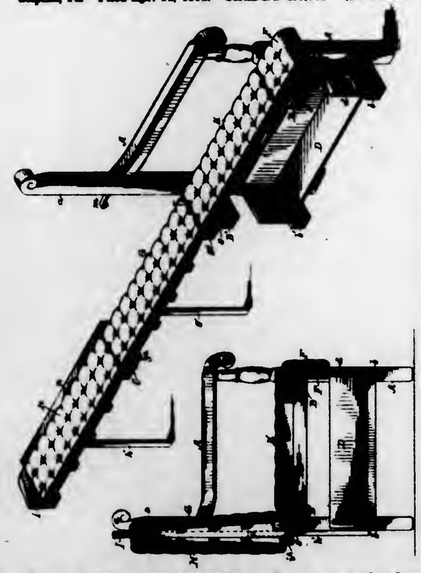
5. The combination of the valve-casing, its fixed cylinder, and the movable valve, one or both ported, as described, said valve having a projecting weighted stem and being actuated by boiler-pressure to close the ports and by pressure in the delivery-pipe added to the weight upon the stem to open the ports, substantially as specified.

486,748. PHOTOGRAPH-DISPLAY RACK. JULIUS H. ARRAM, Akron, Ohio. Filed Mar. 11, 1892. Serial No. 424,521. (No model.)



Claim.—In a display-rack for photographic and advertising cards, the combination, with hinged leaves consisting of two oppositely-disposed panels having intermediate horizontal spaces and openings in each panel from said spaces, of a sliding frame having grooves to receive the edges of said cards and openings to register with the openings in said panels and arranged to slide in the space between said panels, substantially as shown and described.

486,749. CONVERTIBLE FURNITURE. HENRY O. ATWOOD, Philadelphia, Pa. Filed Apr. 11, 1892. Serial No. 428,675. (No model.)



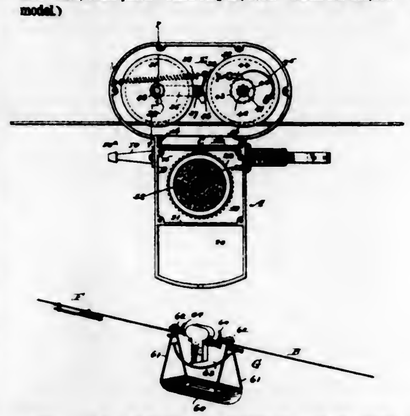
Claim.—1. The combination of the stationary supporting-frame comprising the end sections and longitudinal connecting-bars and vertical posts *a*, forming part of such sections, a sliding seat portion supported by such frame, guides on said frame for said seat portion, a section G, hinged to one of the longitudinal supporting-bars and adapted to enter between the opposite vertical posts *a*, and a section H, hinged to said section G with supporting-legs for said sections, substantially as specified.

2. The combination of the stationary supporting-frame, folding back portions, a sliding seat portion, guides therefor on the frame, a flap F, and hinges connecting the flap to said seat portion and to the stationary frame, substantially as specified.

3. The combination of the stationary supporting-frame, the hinged back portions, the movable seat portion, and a flap F, hinged to the front bar of the supporting-frame and to said seat portion, substantially as specified.

4. The combination of the stationary supporting-frame, guides thereon, a sliding drawer adapted to such guides, a hinged flap F, having its lower edge covering the top of said drawer, a sliding seat portion connected to said flap F, and folding back portions, substantially as specified.

486,750. CASH AND PARCEL CARRIER. SAMUEL J. BRETHOFF, New York, N. Y., assignor of two-thirds to Simon Ottenberg and Herman Kahn, same place. Filed July 26, 1892. Serial No. 441,160. (No model.)



Claim.—1. In a cash-car, the combination, with the casing, of a driving-wheel and a brake pivoted between its ends in the casing and a vertically-movable support to rest on the cable beyond the driving-wheel and to which is pivoted the outer end of the brake, whereby when the car is placed upon a track or cable its driving mechanism will be automatically set in operation and the inner end of the brake removed from connection therewith, and whereby, also, the moment the car is removed from the track or cable the brake is automatically applied.

2. In a cash-car or cash-carrier, the combination, with the driving-wheel and the supporting-wheel, the latter having vertical movement in the car-casing and both wheels being adapted to be engaged by the cable, of a pivoted brake pivotally connected at one end with the spindle upon which the supporting-wheel is mounted, the said brake being adapted at its opposite end for engagement with the periphery of the supporting-wheel, a spring controlling the brake normally pressing it against the periphery of the supporting-wheel, the brake being automatically moved away from the supporting-wheel when the cable engages with the supporting-wheel of the car, substantially as and for the purpose set forth.

3. In a cash-car or cash-carrier, the combination, with the casing thereof provided with a horizontal transverse opening and a vertical opening or openings intersecting the horizontal one, said openings being adapted to receive the cable, of a spring-controlled lock having movement over and from the vertical opening to close or to uncover the same and comprising the slide 14 in the bottom of the horizontal opening and provided at its inner corners with upwardly-extending flanges 16, crossing the vertical openings, and the spring 17, pressing the slide outwardly, substantially as shown and described.

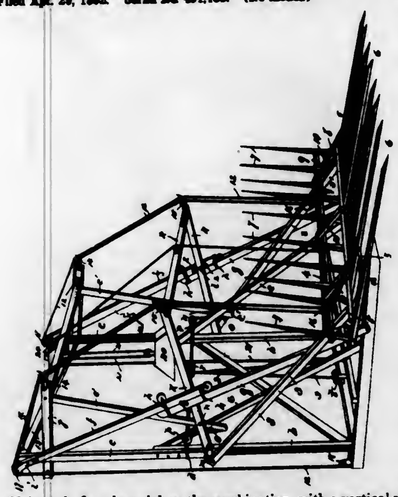
4. In a cash-car, the combination, with the casing having a cash-compartment in its lower end open at one side, the power mechanism having a winding-spindle projecting through the side of the casing over the open side of the cash-compartment and provided exterior to the casing with a ratchet-wheel, of a swinging arm mounted loosely on the outer end of said spindle parallel with that side of the casing and adapted to swing freely in one direction without operating the spindle, a pawl on the said arm engaging the said ratchet to rotate the spindle when the arm is turned in the opposite direction, a locking-dog on the casing engaging the ratchet, a door carried by the said arm to slide across the open side of the cash-compartment, said carrier having a circular series of apertures arranged around the ratchet, and the pin to engage said apertures, substantially as set forth.

5. In a cash-car, the combination, with the casing, the driving-wheel, the power mechanism, and the door having an arm for winding the power mechanism, of a supporting-wheel having its spindle mounted in a slot in the casing to permit the wheel to move vertically, said spindle projecting through the slot for operation by the finger of the operator, and a brake pivoted between its ends in the casing with one end adjacent to the driving-wheel to engage the same and pivotally connected at its opposite end with the spindle of the supporting-wheel, both wheels being adapted to run on a cable, substantially as set forth.

6. In a cash car or carrier, the combination, with the car, of a basket arranged below it and provided with hangers extending upward at each side of the car and having arms or buffers on their upper ends and adapted to be engaged by the car, as and for the purpose specified.

7. In a cash and parcel carrier, the latch F, comprising two hangers provided with means for mounting them on a cable and having apertures in their lower ends, a rod extending loosely through said apertures and headed at its ends, a spring 56 on the rear end of the rod, a spring 55 on the rod between the two hangers, and the forwardly-projecting spring-latches 59, secured to the lower end of the forward hanger, substantially as set forth.

486,751. HAY-RICKER. CHARLES A. BLISS, Attica, Ind., assignor to Frederick E. Minor, Colfax, Ind., and Oscar C. Minor, Gardner, Ill. Filed Apr. 29, 1892. Serial No. 431,136. (No model.)



Claim.—1. In a hay-ricker, the combination, with a vertical supporting-frame, of the swinging carrier fulcrumed to said frame and vertically adjustable therewith at its fulcrum-point, the hay-fork carried by said carrier, and operating means, substantially as set forth.

2. A hay-ricker provided with the swinging fork-carrier provided with a vertically-adjustable fulcrum, and cables for swinging the carrier, provided with guide-pulleys carried by movable supports, substantially as set forth and described.

3. A hay-ricker provided with the vertical adjustable supporting-frame, guide-pulleys carried thereby, the swinging carrier fulcrumed to and vertically adjustable with said frame at its fulcrum, the hay-fork carried by said carrier, and cables for swinging said carrier, passing over said pulleys, combined substantially as described and set forth.

4. A hay-ricker having the swinging carrier provided with a vertically-adjustable support and fulcrum, substantially as described.

5. A hay-ricker having the swinging hay-fork carrier, controlling-cables for operating the carrier, and a vertically-adjustable support carrying said carrier and provided with guide-pulleys for said cable, substantially as described.

6. In a hay-ricker, the combination of the extensible vertical frame, a support therefor, the swinging frame fulcrumed to and vertically adjustable with said vertical frame, the hay-carrier carried by said swinging frame, cables for operating said swinging frame, passing over pulleys carried by said vertical frame, and a counterweight device for equalizing the movements of and starting the swinging frame in its downward movement.

7. In combination, the runners, the vertically-extensible supporting-frame extending up therefrom, extensible braces therefor from the runners, outwardly-extending frames pivoted to said extensible frame and carrying guide-pulleys, the vertically-swinging frame fulcrumed to and vertically adjustable with said extensible frame, a hay-carrier carried by said swinging frame, and controlling-cables for the swinging frame, passing over said guide-pulleys, substantially as described.

8. In combination, a support, the rigid vertical frame, the vertical vertically-adjustable frame supported by and confined to the rigid frame, a windlass and cables for adjusting the adjustable frame, guide-pulleys carried by the adjustable frame, the swinging frame at its inner end fulcrumed to the adjustable frame, the pivoted fork carried by the outer end of the swinging frame, and controlling-cables for the swinging frame, passing up over the adjustable frame and the pulleys thereof, substantially as described.

9. In combination, the runners, the vertical rigid frame secured thereto, the vertically-adjustable frame confined to and adjustable on the rigid frame, the inclined extensible braces pivoted to the runners and said adjustable frame, having their sections loosely confined together, so as to slide longitudinally on each other, means, substantially as described, for adjusting the adjustable frame, the vertically-swinging frame pivoted to the adjustable frame and carrying the hay-carrier, and operating means, substantially as described, for the swinging frame.

10. In a hay-ricker, a base or support, a rigid vertical frame, a vertically-adjustable frame confined thereto and provided with extensible braces, cable-guiding frames pivoted to and extending outwardly from said adjustable frame, the lower pulley-guiding frame being loosely supported by said extensible braces, the braces supporting the upper guide-frame, hoisting-cables secured to the lower ends of said last-mentioned braces, the windlass mounted in said rigid frame to receive said cables and raise and lower the adjustable frame, and the swinging fork-frame carried by said adjustable frame and provided with one or more operating-cables, combined as set forth.

11. In a hay-ricker, the vertically-adjustable supporting-frame provided with the vertically-swinging fork-carrying frame fulcrumed thereto and having the outwardly-extending cable-guiding frames for the operating-cables of said swinging frame, said swinging and guide frames being movable with the adjustable frame.

12. A support, the vertically-adjustable vertical frame, and the outwardly-extending cable-guide frame pivoted to said adjustable frame and provided with supports loosely holding them, in combination with the vertically-swinging frame pivoted to said adjustable frame and carrying the hay-fork and the operating-cables therefor, substantially as described.

13. The vertically-swinging frame, in combination with the V-shaped fork pivotally jointed to the free end of said frame beyond the apex of the fork, so that the center of gravity of the fork when loaded is beneath or inwardly from said pivotal points, substantially as described.

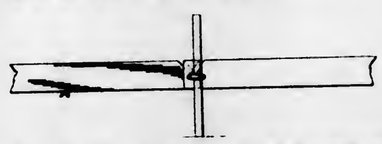
14. The vertically-swinging-frame, in combination with the V-shaped fork composed of the two series of fingers joined at their inner ends, said fork being pivoted to the free end of the frame at a distance beyond the inner ends of the fingers, so that the meeting points of the fingers are located over the frame, as set forth.

15. The swinging frame having the outer ends of its beams provided with the outwardly-extending upwardly-curved arms, in combination with the fork composed of the two series of fingers joined together at their inner ends, said fork being pivotally joined to said arms at a distance from the inner ends of the fingers, so that the fork will rest against said frame, substantially as described.

16. The swinging frame having the outwardly-extending arms, in combination with the fork composed of the series of main fingers secured together, the series of upwardly-extending fingers secured together and to the inner ends of the main fingers, the fork being pivoted to said arms at points a distance outwardly from the inner ends of their main fingers, and the stop-arms carrying rollers, substantially as described.

17. The swinging frame, in combination with the V-shaped fork pivoted thereto and composed of the two series of fingers pivoted together at their inner ends and adjustably secured so that their angles can be varied, as set forth.

486,752. FENCE. ALBERT L. BONHAFFON, Philadelphia, Pa. Filed July 22, 1892. Serial No. 440,856. (No model.)



Claim.—1. In a fence, the combination, with the post and the laterally-overlapping bars provided at their ends with slots which open on the upper edges of the bars, of the loop device locking the ends of the bars together and to the post, substantially as described.

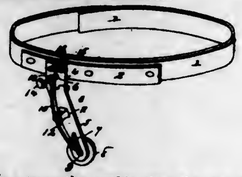
2. In a fence, the combination of the post, the laterally-overlapping bars having oppositely-disposed slots in the overlapping ends thereof, the mouths of the slots opening on the upper edges of the bars, and the loop device locking said ends together and to the post, substantially as described.

3. In a fence, the combination of the post, the bars having oppositely-inclined slots in the overlapping ends thereof, and the loop

device locking said ends together and to the post, substantially as described.

4. In a fence, the combination of the post, the bars having oppositely-inclined and offset-slots in the overlapping ends thereof, and the loop device adapted to lock said ends together and to the post, substantially as described.

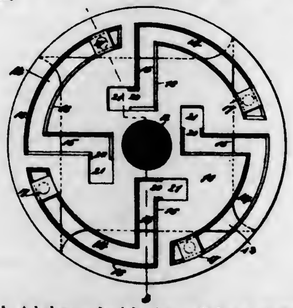
486,753. TRUSS. ELI R. BOSSWORTH, Morrisville, Vt. Filed July 12, 1892. Serial No. 439,957. (No model.)



Claim.—1. In a truss, the combination of a plate hinged or pivotally connected to a belt and carrying a pad at its lower end and a lever centrally pivoted in a bearing on the hinged plate with its lower end extending over said pad and having an adjusting-screw working through its upper end against a fixed bearing on the belt, substantially as set forth.

2. In a truss, the combination, with a belt, of an adjustable plate pivotally secured thereto, a downwardly-extending plate hinged to said adjustable plate at its upper end and carrying a pad at its lower end, and a lever centrally pivoted in a bearing on the lower hinged plate with its lower end extending over the center of the pad and having an adjusting-screw working through its upper end against a fixed bearing on the belt, substantially as set forth.

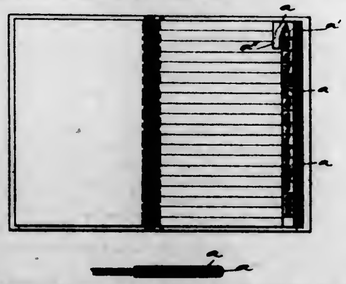
486,754. BALANCE-WHEEL. HIRAM BOOCK and JULIUS H. LOVENDALE, Salt Lake City, Utah. Filed Aug. 5, 1892. Serial No. 442,310. (No model.)



Claim.—1. A balance-wheel having radial and circumferential slots therein, screws secured in the slots, and nuts for the ends of the screws, substantially as described.

2. A balance-wheel having connected circumferential and radial slots therein, holes extending through the wall of the wheel and connected with the slots, and screws and nuts adapted to enter the holes and to be fastened in the several slots, substantially as described.

486,755. INDEX. FRANK BOWMAN, Brooklyn, N. Y. Filed May 26, 1892. Serial No. 434,627. (No model.)

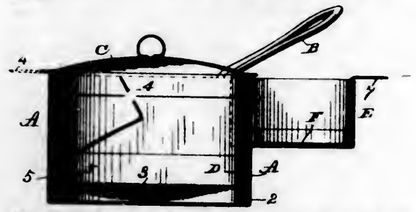


Claim.—1. As a new article of manufacture, an index tag or sheet consisting of a piece of transparent flexible material having the indexial matter printed in reverse on its under side, substantially as described.

2. In combination with a book, an indexial tag consisting of a piece of transparent material pasted or otherwise secured to the book and having the indexial character placed on its under side, whereby it will be protected from defacement and the printing of the indexial character directly on the leaf is avoided, substantially as described.

3. In combination with a book, the index-tags consisting each of a piece of transparent material folded upon itself and secured over the edge of the leaf, the indexial character being placed on the inner side of one of the folds of the tag, substantially as described.

486,756. APPARATUS FOR CLEANING JEWELRY OR LIKE OBJECTS. CHARLES T. BRADSHAW, Philadelphia, assignor to Ezra F. Bowman, Lancaster, Pa. Filed July 12, 1892. Serial No. 439,793. (No model.)



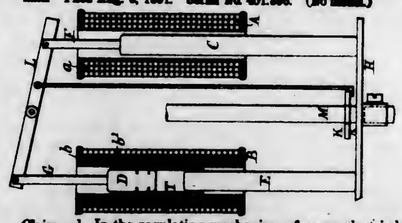
Claim.—1. In apparatus for pickling and cleaning jewelry and other metallic objects, a vessel to receive the pickling solution, a movable receptacle for said objects, substantially as described, contained in said vessel and having a perforated bottom supported above the bottom of said vessel and a handle hinged thereto, combined with an object-washing vat attached to the side of said vessel, and an object-receptacle for said vat, having a perforated bottom, an upturned rim surrounding said bottom, and a handle projecting above the side of the vat, substantially as set forth.

2. In apparatus for pickling and cleaning jewelry and other metallic objects, a vessel A to receive the pickling solution, combined with an object-receptacle D to receive and hold said objects in said solution, having a rim 2, a perforated bottom 3, attached to said rim, and thereby supported above the bottom of said vessel, and a handle 4, hinged to said rim and having thereon the stop 5, substantially as set forth.

3. In apparatus for pickling and cleaning jewelry and other metallic objects, a vessel A to receive the pickling solution, a receptacle D to receive and hold said objects in said solution, having a rim 2, a perforated bottom 3, attached to said rim, and thereby supported above the bottom of said vessel, and a handle 4, hinged to said rim, combined with an object-washing vat E, attached by a hook 6 to the side of said vessel, and an object-receptacle F for said vat, having a perforated bottom, an upturned rim surrounding said bottom, and a handle 7, projecting above the side of said vat, substantially as set forth.

4. The receptacle D, consisting of the rim 2, having one edge bent upon itself to form a groove, the perforated bottom 3, having its border clamped in said groove, whereby it is attached to said rim, and the handle 4, hinged to said rim and having the stop 5 thereon, combined with the vessel A and its cover C, substantially as set forth.

486,757. ELECTRIC-ARC LAMP. JAMES BROOKER, London, England. Filed Aug. 6, 1891. Serial No. 401,896. (No model.)



Claim.—1. In the regulating mechanism of an arc electric lamp, the combination of two solenoids, the one having a coil of coarse wire in the lamp-circuit and an integral core linked to one arm of a lever, the other having a coil of fine wire in a shunt to the lamp-circuit and a divided core, part of which is linked to the opposite arm of the said lever, which lever is linked to the carbon-feeding device, substantially as and for the purpose set forth.

2. In the regulating mechanism of an arc electric lamp, the combination of two solenoids, the one having its coil of coarse wire in the lamp-circuit and an integral core linked to one arm of a lever, the other having a coil of fine wire in a shunt to the lamp-circuit, along with a few convolutions of coarse wire in the lamp-circuit, and having a divided core part of which is linked to the opposite arm of the said lever, which lever is linked to the carbon-feeding device, substantially as and for the purpose set forth.

3. In the regulating mechanism for an arc electric lamp, the combination of two solenoids, the one having its coil in the lamp-circuit and a divided core part of which is linked to the carbon-feeding device and part to one arm of a lever, the other having its coil in a shunt to the lamp-circuit and an integral core linked to the opposite arm of the said lever, substantially as described.

486,758. WRENCH. WILLIAM R. BROOKS, Trenton, N. J., assignor to the American Saw Company, same place. Filed Feb. 6, 1892. Serial No. 420,537. (No model.)

Claim.—1. The combination of a hollow handle-piece which carries the fixed jaw, a movable jaw provided with a shank having a screw-threaded extension, an adjusting-nut upon the latter provided with an encircling groove, the internal projections on the wall of the handle-piece which enter the said groove in the adjusting-nut and operate as a support to keep the nut in its position and sustain the jaws in a state of parallelism when widely separated, and a sliding screw-driver having a yoke part which incloses a portion of the screw-threaded shank.

2. The combination of a hollow handle-piece, the movable jaw provided with a shank having a screw-threaded extension which carries the adjusting-nut and a sliding screw-driver having a yoke part which incloses a portion of the screw-threaded shank, substantially as described.

3. In a combined wrench and screw-driver, the combination, with the hollow handle-piece having one end slotted at *k* and provided with the lateral openings a' and a^2, connected by the slot a^2, of the movable jaw provided with a shank having a screw-threaded extension which carries the adjusting-nut, a sliding screw-driver having a yoke part which incloses a portion of the screw-threaded shank, and a clamping-screw H, engaging the screw-driver and located within the openings a' and a^2, substantially as described.

4. The combination of the movable jaw-shank C, having a screw-threaded extension C', the adjusting-nut E thereon, the inclosing hollow handle-piece, and the sliding screw-driver F, having a yoked part G, which surrounds the screw-threaded shank C', substantially as described.

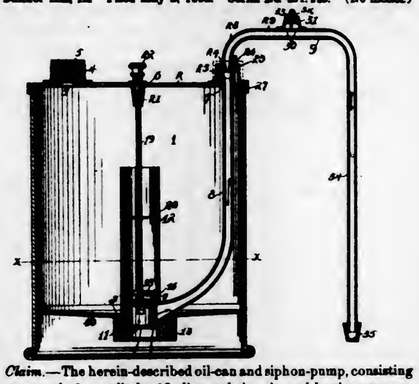
5. The combination of the hollow handle-piece carrying fixed jaw, a movable jaw whose shank slides within the handle-piece and is provided with the screw-threaded part C', an adjusting-nut E on said screw-threaded part, supporting projections for the adjusting-nut, the screw-driver F, having yoke G, which partly surrounds the screw-threaded shank C', and the clamping-screw H, operating within the lateral openings a' and a^2 in the hollow handle-piece, substantially as described.

486,759. COMBINED WRENCH AND SCREW-DRIVER. WILLIAM R. BROOKS, Trenton, N. J., assignor to the American Saw Company, same place. Filed Apr. 6, 1892. Serial No. 428,096. (No model.)

Claim.—1. In a combined wrench and screw-driver, the combination of the hollow wrench-stock or handle-piece A, having formed therewith the fixed jaw B, the movable jaw D, having slide C and provided with the internally-located screw-threaded shank C', an adjusting-nut E, located on the said screw-threaded shank within the transverse opening in the handle-piece, said nut being provided with an encircling groove, which is engaged by lugs or projections on the inside of the handle-piece A, the screw-driver F, having the screw-threaded shank F', and the adjusting-nut G, located on said screw-threaded shank, with a transverse opening in the handle-piece, substantially as described.

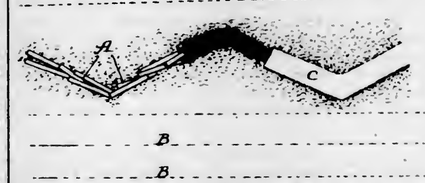
2. In a combined wrench and screw-driver, the combination of the main wrench-stock or handle-piece A, having formed therewith the fixed jaw B, the movable jaw D, having a slide C located within the handle-piece, on the inner end of which slide is a screw-threaded shank C', an adjusting-nut E on said screw-threaded shank and located within a transverse slot in the main casing, said screw-threaded shank being provided with a T-shaped head C^2, which enters a T-shaped slot in the end of the slide C in order that they may be detachably connected with each other, a screw-driver F, movable through a slot in the end of the casing opposite to the fixed jaw, said screw-driver being provided at its inner end with a T-shaped slot, a screw-threaded shank F', having a T-shaped head F^2, which enters said slot in order that the shank and screw-driver may be detachably connected together, and an adjusting-nut on the said screw-threaded shank, located within a transverse opening in the main casing.

486,760. OIL-CAN AND SIPHON-PUMP. THEODORE BUHANE, Bunker Hill, Ill. Filed May 2, 1892. Serial No. 431,443. (No model.)



Claim.—The herein-described oil-can and siphon-pump, consisting of a receptacle 1, a cylinder 12, disposed therein and having an open bottom and top, a piston 18, working in the cylinder and provided with a piston-rod 19, a fixed siphon-tube 8, communicating with the cylinder at its lower end, a valve 15, working in the cylinder across the opening of the tube 8, a siphon 9, detachably connected with the tube 8, and an inwardly-yielding valve provided at the exterior of the siphon, all arranged and adapted to operate substantially as and for the purpose set forth.

486,761. METHOD OF BURNING CLAY TO MAKE BALLAST. HENRY G. BUTLER and WILLIAM BUTLER, Kenosha, Wis., assignors to the Davy Clay Ballast Company, same place. Filed May 9, 1892. Serial No. 433,205. (No model.)



Claim.—1. In burning clay to make ballast, &c., by laying and maintaining a fire in the open air with fuel and clay, the method of promoting the burning, which consists in forming the fire in zigzag shape, substantially as described.

2. In burning clay to make ballast, &c., by laying and maintaining a fire in the open air with fuel and clay, the method of promoting the burning and increasing the products, which consists in loosening the soil and mixing fuel with it preparatory to building on it the fire, substantially as described.

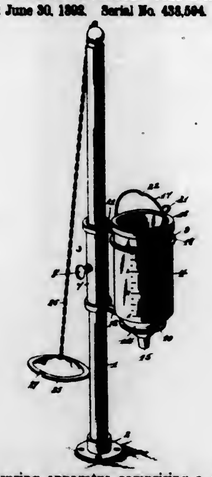
3. In burning clay to make ballast, &c., by laying and maintaining a fire in the open air with fuel and clay, the method of promoting the burning and increasing the product, which consists in loosening the soil of the foundation and mixing fuel with it and piling thereon kindling-wood preparatory to applying thereon the clay to be burned and coal for burning it and preparatory to increasing the width of the fire with additional clay and coal, substantially as described.

4. In burning clay to make ballast, &c., by laying and maintaining a fire in the open air with fuel and clay, the method of promoting the burning and increasing the product, which consists in loosening the soil of the foundation and mixing fuel with it, laying thereon a zig-

zag bed of kindling and piling on the kindling and burning clay and coal and increasing the width of the pile by loosening the soil along the same and mixing fuel with it and laying thereon kindling in the zigzag line of the initial pile and piling on the newly-prepared foundation the clay to be burned and coal for burning it, substantially as described.

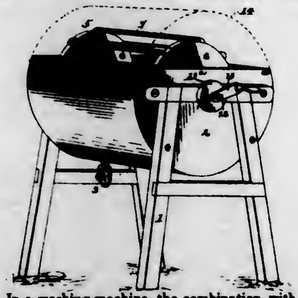
5. In burning clay to make ballast, &c., by laying and maintaining a fire in the open air with fuel and clay, the method of promoting the burning and increasing the product, which consists in loosening the soil of the foundation and mixing fuel with it, laying thereon a zigzag bed of kindling and piling on the kindling and burning clay and coal, increasing the width of the pile by loosening the soil along the same and mixing fuel with it and laying thereon kindling in the zigzag line of the initial pile and piling on the newly-laid foundation the clay to be burned and coal for burning it, thereby also gradually increasing the height of the fire to a desired altitude, thence forward piling additions of clay and coal only to the crown of the fire and coaling the furrows thus formed on the crown and covering them with clay from the pile, substantially as described.

486,762. MEASURING-VESSEL. JOHN S. CAMDEN, Parkersburg, W. Va. Filed June 30, 1892. Serial No. 438,594. (No model.)



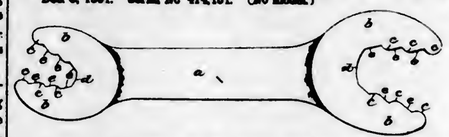
Claim.—Measuring apparatus comprising a standard, a vertically-adjustable holder mounted on the standard, a receptacle provided at its bottom with a depending tubular portion and having at its top a horizontal annular flange, a band surrounding the receptacle and arranged beneath the flange, a bail having its ends pivoted to the band and provided intermediate of its ends with a bend, a stopper for closing the tubular portion, and a stopper-rod having its lower end connected to the stopper and provided at its upper end with a hook to engage the bend of the bail to hold the stopper above the bottom of the vessel, substantially as described.

486,763. WASHING-MACHINE. JAMES McL. CAMPBELL, Montague, Mich. Filed July 21, 1892. Serial No. 440,793. (No model.)



Claim.—In a washing-machine, the combination, with the revoluble cage adapted to contain clothes to be cleaned, of the expanders provided with projecting fingers and pivoted to the inner sides of the heads of the cage, substantially as and for the purposes specified.

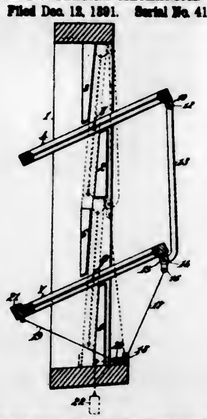
486,764. WRENCH. DANIEL H. CARPENTER, Orlando, Fla. Filed Dec. 5, 1891. Serial No. 414,131. (No model.)



Claim.—1. A wrench having its jaw terminating in similar curvilinear grips projecting from such jaws and having adjacent straight rests, substantially as described.

2. A graduated wrench having its jaws constructed with series of similar rounded grips projecting from the planes of the jaws and intervening straight rests, substantially as described.

486,765. SASH-OPERATING MECHANISM. HARVEY J. CASEY, Durham, N. C. Filed Dec. 12, 1891. Serial No. 414,876. (No model.)

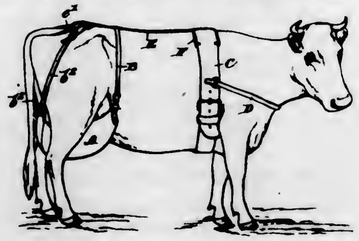


Claim.—1. The combination, with a window-frame and a pair of sashes pivoted therein at or near their center, of a rigid link having one end portion pivotally connected with the top rail of the upper sash and its opposite end portion pivotally connected with the top rail of the lower sash, and means for swinging one of the sashes open or closed, and thereby cause it through the rigid link to swing the other sash open or closed, substantially as described.

2. The combination, with a window-frame and an upper and a lower window-sash pivoted in the frame, of a link pivoted at one end to the top rail of the upper sash and at its opposite end to the top rail of the lower sash, a pulley or guide on the window-frame, a cable engaging the pulley or guide and arranged to swing one of the sashes open or closed and thereby cause it through the link to swing the other sash open or closed, and cable and pulley mechanism for swinging the lower sash, substantially as described.

3. The combination, with a window-frame and an upper and a lower window-sash pivoted therein, of a link having one end pivoted to the top rail of the upper sash and its opposite end pivoted to the top rail of the lower sash and provided with a projecting arm, a pulley or guide on the window-frame, a cable engaging the pulley or guide and connected with the projecting arm of the link for opening the lower sash, and a cable connected with the bottom rail of the lower sash for closing the latter, substantially as described.

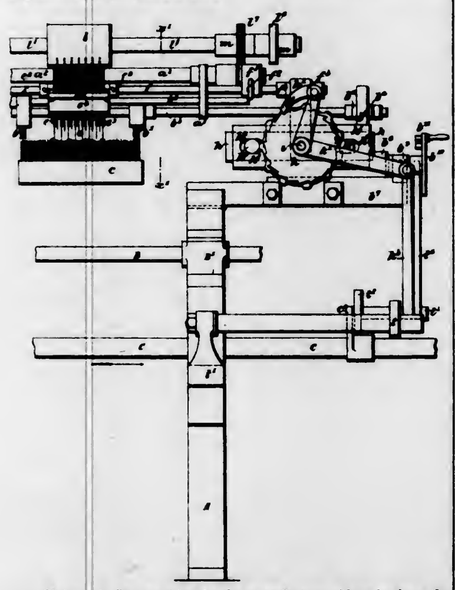
486,766. COW-BAG PROTECTOR. HENRY H. CHASE, Duluth, Minn. Filed Feb. 23, 1892. Serial No. 422,545. (No model.)



Claim.—The within-described combined cow-bag protector and holding-harness, comprising the protector A for receiving the bag of a cow, a central back-strap E, having a rearwardly-extended attaching portion to which a connecting-ring is fastened, extensible supporting-straps B, attached to the central back-strap some distance forward of its rear end and to the front ends of the cow-bag protector, separated extensible rear supporting-straps b^3, attached to the ring on the extended portion of back-strap E and to the rear end of the cow-bag protector, the crupper d', also attached to the ring of the back-strap E, an extensible surcingle C, adapted to pass around a cow's body immediately in rear of the front legs and attached to the back-strap, and an extensible strap D, adapted to pass around a cow's breast and attached to the opposite sides of the surcingle, the whole serving for holding the protector in proper position around the cow's bag in whatever position the cow may be standing, and the construction admitting of the device being adapted by adjustment to different-sized cows, substantially as described.

486,767. MACHINE FOR MAKING LACE HOSIERY. HENRY CLARKE and THOMAS MAWBY, Leicester, England. Filed Mar. 21, 1888. Serial No. 304,201. (No model.) Patented in England Apr. 27, 1888, No. 6,377.

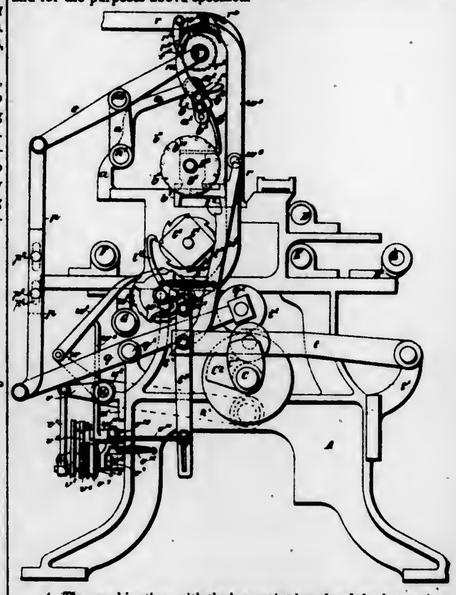
Brief.—The lace-points are selected by the Jacquard cylinder, the shaft of which is provided with two ratchet-wheels adapted to be engaged by oppositely-acting pawls on the frame, the pawls being controlled by the upper end of a lever actuated by a pattern-wheel. The bar carrying the lace-points is connected to a slide, the movements of which are produced by a pattern-wheel located between two pegs on the slide. The narrowing-points are racked in automatically by rack-rods controlled by cams, the shaft carrying the cams being actuated by a pawl and ratchet and the engagement of the pawl being controlled by a pattern-chain.



Claim.—1. In a machine for the manufacture of lace hosiery, the combination, with an upright needle-frame, of a set of lace-points arranged above the needles and supported on a bar, bearings for said bar, said bar being connected with a slide, and an intermittently-actuated pattern-wheel, the periphery of which bears against two pins on the said slide and imparts endwise motion to the said set of lace-points alternately in either direction to adjust the same relatively to the work, substantially as hereinbefore described.

2. In a machine for the manufacture of lace hosiery, the combination, with an upright needle-frame, of a set of lace-points arranged above the needles, a bar on which said points are supported, bearings for said bar, a slide connected with said bar, an intermittently-actuated pattern-wheel, the periphery of which bears against two pins on the said slide and imparts endwise motion to the said set of lace-points alternately in either direction according to the pattern to be produced, a pattern-chain, mechanism consisting of a Jacquard cylinder, and a bar s^3 supported by hangers, substantially as described, for putting the lace-points in and out of action as required, and mechanism for intermittently rotating the Jacquard cylinder, comprising ratchet-wheels r^3 r^4, pawls r' r^5, lever w^3, cam-wheel w^4, ratchet-wheel w^5, pawl w', shaft w, arm w, connecting pawl w' with the shaft w, means for oscillating the shaft w, and a lever w^6, adapted to lift pawl w' out of gear with the ratchet-wheel when it encounters the studs on the pattern-chain, substantially as described.

3. In a machine for the manufacture of lace hosiery, the combination, with an upright needle-frame, of a set of lace-points arranged above the needles and supported on a bar, bearings for said bar, said bar being connected with a slide, an intermittently-actuated pattern-wheel, the periphery of which bears against two pins on the said slide and imparts endwise motion to the said set of lace-points in either direction according to the pattern to be produced, mechanism consisting of a Jacquard pattern cylinder, and a bar s^3 supported by hangers, substantially as above described, for putting the lace-points in and out of action as required, and means substantially as above described for intermittently rotating the said pattern-cylinder, substantially as and for the purposes above specified.



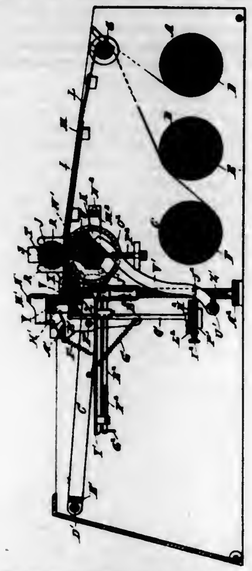
4. The combination, with the lace-point bar f and the lace-points e, carried thereby, of a fork f^3, fixed on the said bar, a sliding block h, having an arm h', engaging with the said fork f^3 and having pins or projections h^4 h^5, a pattern-wheel k, arranged to rotate between the said pins or projections, and means substantially such as above described for intermittently rotating the said pattern-wheel, whereby the said sliding block and the bar f are moved endwise alternately in each direction, substantially as and for the purposes above specified.

5. In a machine for the manufacture of lace hosiery, the combination, with the lace-points, of the automatically and intermittently rotated Jacquard cylinder, mechanism substantially as above described for moving said Jacquard cylinder toward and away from the lace-points, and pawls r' r^3 and ratchet-wheels r^3 r^4, by which said cylinder is partially rotated in one or other direction when it is moved toward and away from the lace-points, substantially as and for the purposes specified.

6. In a machine for the manufacture of lace hosiery, the combination, with the lace-points, the pattern-cylinder, and means for moving the said cylinder to and from the said points, of a repeating device consisting, essentially, of two ratchet mechanisms r' r^3 r^4 r^4 for the forward and backward movement of the said cylinder, cam-and-ratchet mechanism w' w^3 w^4, the lever w^6, actuated thereby for displacing the parts r' r^3, an arm w, secured on a shaft u for actuating the pawl w', a lever w^6 for disengaging the said pawl, and a pattern-chain for controlling the action of this lever, substantially as and for the purposes above specified.

7. In a machine for the manufacture of lace hosiery, the combination of the slides d', carrying the lace-points e and held in the bed c^3, the bar s^3 for lifting the said slides out of action, and springs s^4 for holding the said slides in their raised position, substantially as and for the purposes set forth.

486,768. AUTOGRAPHIC REGISTER. Hugo Cook, Dayton, Ohio. Filed Mar. 11, 1892. Serial No. 424,581. (No model.)



Claim.—1. In an autographic register, the combination of feeding mechanism for the paper strip, cutting mechanism for cutting it into slips, filing mechanism for filing the slips, and a single revoluble shaft making a complete revolution at each operation of the machine and actuating all three of said mechanisms to feed, cut, and file the slips.

2. In an autographic register, the combination of a pair of feed-rollers for the paper strip, a knife for cutting it into slips, a filing-pin, an arm or plate for forcing the slips upon said pin, and a single revoluble shaft actuating the feeding-rollers, knife, and filing-arm to feed, cut, and file the slips.

3. In an autographic register, the combination of a filing-pin, a knife for cutting the paper strip into slips, and a filing arm or plate for forcing the slips upon the pin, both carried by the same movable frame, and means for actuating said frame to cut the slips and file them.

4. In an autographic register, the combination of a filing-pin, a knife for cutting the strips into slips, and means for forcing the slips upon the pin, both carried by the same movable frame, a revoluble cam for actuating the frame to cut and file the slips, and a spring for resetting the frame.

5. In an autographic register, the combination of a pair of feed-rollers for the paper strip, a filing-pin, a knife for cutting the strip into slips, and means for forcing the slips upon the pin, both carried by the same movable frame, and a revoluble driving-shaft and cam for actuating the feed-rollers to advance the strip and the movable frame to cut it into slips and file them.

6. In an autographic register, the combination of the writing-tablet over which the check-strip and record-strip are led, a pair of feed-rollers for said strips, a filing-pin, a knife for cutting the strips into slips, and means for forcing the record-slips upon the pin, and a single revoluble shaft making a complete revolution at each operation of the machine for actuating the knife, and filing means, and feed-rollers.

7. In an autographic register, the combination of a filing-pin, a swinging frame carrying both a knife for cutting the paper strip into slips and means for forcing the slips upon the pin, and a revoluble shaft provided with a cam co-operating with the swinging frame.

8. In an autographic register, the combination of a fixed knife-bar, a movable knife-bar co-operating therewith, an arresting-plate for holding the paper strip while it is being severed by the knives, and a spring-plunger carried with the movable knife-bar and co-operating with said plate.

9. In an autographic register, the combination of a swinging frame, a second frame pivoted thereto and carrying the knife for cutting the paper strip into slips, and a revoluble cam and a spring co-operating with said first-mentioned frame.

10. In an autographic register, the combination of a knife for cutting the paper strip into slips, a filing-pin, a movable plate or arm for forcing the slips upon the pin, a movable guide for directing the end of the strip over the point of the pin, and means for automatically withdrawing said guide from the path of the filing plate or arm.

11. In an autographic register, the combination of a pair of feed-rollers for advancing the paper strip, a knife for cutting it into slips, a filing-pin, an arm or plate moving with the knife to force the slip upon the pin, a movable guide for directing the end of the strip over the point of the pin, and means for automatically withdrawing the guide from the path of the filing plate or arm to permit the latter to force the severed slip upon the pin.

12. In an autographic register, the combination of a pair of feed-rollers for advancing the paper strip, a filing-pin, a knife for cutting the strip into slips and means for forcing the slips upon the pin, both carried by the movable frame, a revoluble shaft provided with a cam for actuating the movable frame to sever and file the slips, a movable guide for directing the end of the strip over the point of the pin, a swinging arm carrying said guide, and a cam upon the revoluble shaft co-operating with said arm to withdraw the guide from the path of the knife and filing device.

13. In an autographic register, the combination of a vertically-movable plate for supporting the record-slips, a spring pressing the plate upward, a ratchet and pawl co-operating with the plate to permit downward but prevent upward movement of it, and means for piling the slips upon the supporting-plate.

14. In an autographic register, the combination of a vertically-movable plate for supporting the record-slips, a spring pressing the plate upward, a vertical ratchet, a spring-catch upon the plate co-operating with the ratchet, and a movable filing arm or plate for piling the slips upon the supporting-plate.

15. In an autographic register, the combination, with the filing-pin and means for forcing the slips upon said pin, of a vertically-movable plate for supporting the slips filed upon the pin, a spring pressing said plate upward, a vertical ratchet, and a spring-catch upon the plate co-operating with the ratchet, for the purpose described.

16. In an autographic register, the combination of a pair of feed-rollers for advancing the paper strip, an operating-handle fast to one of said rollers and revoluble therewith, a movable frame carrying a knife for cutting the strip into slips, and a cam upon the shaft of the feed-roller co-operating with said movable frame to cause the knife to sever the paper strip.

17. In an autographic register, the combination of a pair of feed-rollers for advancing the paper strip, an operating-handle fast to one of said rollers, a filing-pin, a knife for cutting the strip into slips, and means for forcing the slips upon the pin, both carried by the same movable frame, and a cam upon the shaft of the feed-roller for actuating the movable frame.

18. In an autographic register, the herein-described method of separating the check-strip from the record-strip after they have been led together over the writing-tablet, consisting in imparting to one a tendency to curl in one direction and to the other a tendency to curl in the opposite direction, whereby the two strips will automatically separate when liberated at a point beyond the writing-tablet.

19. In an autographic register, the herein-described method of separating the check-strip from the record-strip, consisting in winding the two strips in reverse directions upon their respective supply-rolls, leading them together over the writing-tablet, and liberating them at a point beyond said tablet, whereby when liberated the two strips will automatically separate, in the manner described.

20. In an autographic register, the herein-described method of feeding the check-strip and the record-strip and separating the one from the other, consisting in imparting to one a tendency to curl in one direction and to the other a tendency to curl in the opposite direction, leading them together over the writing-table and between the pair of feed-rollers, and cutting them into slips at a point beyond said rollers, whereby the free ends of the strips will automatically separate when liberated at the cutting-point.

21. In an autographic register, the herein-described method of feeding the check-strip and record-strip and automatically separating one from the other, consisting in winding said strips in reverse directions upon their respective supply-rolls, leading them together from said rolls over the writing-tablet and between the pair of feed-rollers, and cutting them into slips at a point beyond said rollers, whereby the free ends of said strips will automatically separate when liberated at the cutting-point, substantially as described.

22. The combination of the feed-rollers J K, the swinging frame having the arms C' co-operating with the pins J' L', carried by the roller K, the resetting-spring I' for the frame, the frame A', carried by the arms C' and carrying the knife Y and filing-plates R', the spring G', connected to the arms F' of the frame A', the fixed knife-bar Z, and the filing-pins Q', substantially as described.

23. In an autographic register, the combination of the filing-pins Q', the movable frame A', carrying knife Y and filing-plate R', means for supporting and actuating said frame, the guide-pins S',

arms T', rock-shaft U', arm V', and revoluble cam W', substantially as described.

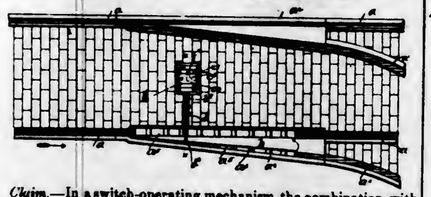
24. In an autographic register, the combination of the fixed knife-bar Z, movable frame A', carrying the knife-bar Y, means for supporting and actuating said frame, the spring-plate V, and the spring-plungers N', carried by the frame A' and co-operating with the plate V, substantially as described.

25. In an autographic register, the combination of the vertical posts Z' and Z^3, the former provided with serrations on one side, the plate Y', mounted to slide upon said posts and adapted to support the record-slips placed upon it by the filing mechanism, the spring D^3, pressing said plate upward, and the spring-catch carried by the plate and co-operating with the serrations in the post Z', substantially as described.

26. In an autographic register, the combination of the vertical posts Z' and Z^3, the former provided with serrations on one side, the plate Y', mounted to slide upon said posts, the filing-pins Q', extending upward through open slots in the plate Y', the vertically-moving frame A', provided with the plates R', co-operating with the pins Q', the spring D^3, pressing the plate Y' upward, and the spring-catch carried by the plate and co-operating with the serrations in the post Z', substantially as described.

27. In an autographic register, the combination, with the cross-piece P' of the framework, of the clip H^3, carrying the filing-pins Q' and provided with the ears J^3, and thumb-screw I^3, co-operating with the cross-piece P', substantially as described.

486,769. TRAMWAY-SWITCH. Robert C. Davis and David A. Ripley, Columbus, Ohio, assignors of one-third to Ben C. Graham, same place. Filed Jan. 2, 1892. Serial No. 416,868. (No model.)



Claim.—In a switch-operating mechanism, the combination, with the main and branch track rails, switch-plates, and a pivoted tongue on one of said switch-plates, of a switch-box b' partially embedded in the earth at a point opposite said switch-tongue, said switch-box consisting of an upper and lower plate b^2 b^3, a channel b^4 in the upper side of said plate b^2, and a depression b^5 and channel b^4 leading from the under side of said plate, said plates being firmly clamped together, a bolt c, pivoted through the channel portion of said upper plate, a trigger c^3, carried on the upper end of said bolt having diverging arms c^4 c^4, a cover-plate c^5 above said arms, an arm d^2, carried on the lower end of the bolt within the depression b^5, and an operating-rod d^3 extending therefrom through the channel b^4, said operating-rod being connected with the switch-tongue b, substantially as and for the purpose specified.

486,770. PROCESS OF MAKING SALICYLATE OF PHENYL. Paul Behrend, Ludwigshafen, Germany. Filed Jan. 18, 1892. Serial No. 418,460. (Specimens.) Patented in England Aug. 22, 1891, No. 14,224, and in Belgium Aug. 29, 1891, No. 96,204.

Claim.—The herein-described process of producing salicylate of phenyl, which consists in heating salicylic acid at or about 230° centigrade with air, substantially excluding and vaporizing the water.

486,771. LAWN-SPRINKLER. Charles G. Ritte, St. Louis, Mo. Filed July 21, 1892. Serial No. 440,735. (No model.)

Claim.—1. In a sprinkling device, a tube having lateral outlets, in combination with a surrounding cover or cap supported on the tube above and around the outlets and a disk located on the tube below the outlets, said cover and disk being relatively adjustable with respect to each other, so as to graduate the size of the outflow of water.

2. In a sprinkling device, the combination of a main tube provided with lateral outlets, an external horizontal disk on said tube, and a cap or cover carried by the tube below the outlets and providing an annular chamber around the said lateral openings and in conjunction with the disk.

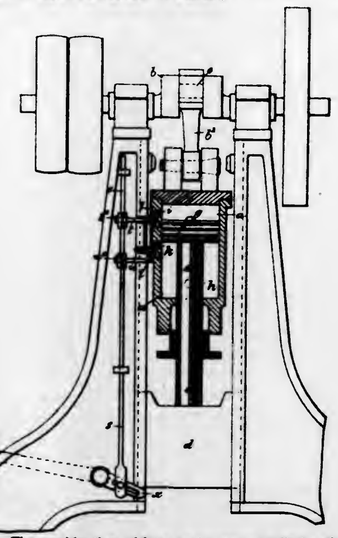
3. In a sprinkler for lawns and other places, the combination of a main tube having side outlets, an external horizontal disk integral with said tube, and a cap which screws upon the upper end of the tube and has a lower annular open-ended chamber surrounding the openings in the tube, said cap being adjustable, so as to make the distance greater or less between its lower end and the aforesaid disk, substantially as described.

4. The combination, in a sprinkling device, of the main frame having runners, the main tube supported in said frame, an external disk on said tube, and a cap located on the upper end of the tube above the said disk, which cap provides an annular surrounding chamber opposite the lateral outlets in the tube and above the disk, substantially as described.

5. In a sprinkler for lawns and other purposes, the combination of the main tube having lateral outlets and an integral horizontal disk or flange formed with a concave upper face, in combination with a cap screwed upon the upper end of the said tube and having an expanded lower portion which provides an annular surrounding chamber whose lower end is contiguous to the aforesaid disk or flange, substantially as described.

6. The combination of the main tube A, having lateral openings a a, integral cup-shaped flange C on the tube below the openings a, and the cover B, which is vertically adjustable on the tube, being located above the flange C and being formed with the enlarged portion F, which provides the annular chamber D, said cover having a top perforation b, substantially as described.

486,772. POWER-HAMMER. Joseph Evans, Birmingham, England, assignor of one-half to Arthur Winkler Wills, same place. Filed Mar. 26, 1892. Serial No. 426,584. (No model.)

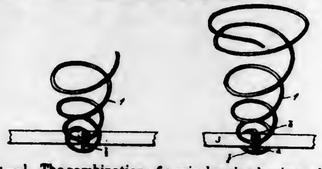


Claim.—1. The combination, with the reciprocating cylinder of a power-hammer, of the ported valves having parallel spindles supported by parts of the cylinder, and one of which is provided with a tappet-arm, suitable connections between the valve-spindles, and a regulating-bar carrying tappets located in the path of said tappet-arm, so that the striking of the latter against one or the other tappet simultaneously operates the ported valves, substantially as described.

2. The combination, with the reciprocating cylinder of a power-hammer, of the ported valves having parallel spindles supported by parts of the cylinder, and one of which is provided with a tappet-arm, intermeshing gears secured, respectively, to the valve-spindles, and a regulating-bar carrying tappets located in the path of the said tappet-arm, so that the striking of the latter against one or the other tappet simultaneously turns the ported valves, substantially as described.

3. The combination, with the reciprocating cylinder having a valve-plate provided with ports, of the inlet and escape valves, having parallel spindles and provided with ports, gearing between the valve spindles, and devices for turning one of the valve-spindles and thereby simultaneously turning the valves, substantially as described.

486,778. COMBINED SPIRAL SPRING AND SUPPORT. WILLIAM S. FOSTER, Utica, N. Y., assignor to Foster Bros., same place. Filed Apr. 21, 1892. Serial No. 430,997. (No model.)



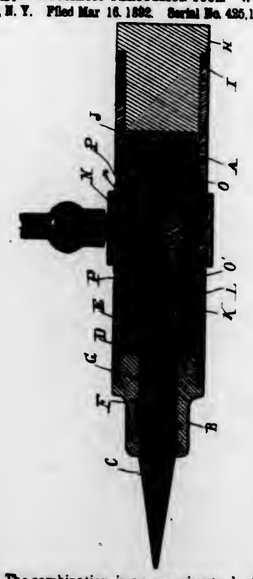
Claim.—1. The combination of a spiral spring having a diametrically-extending end and a strip having a depression adapted to receive the end, substantially as set forth.

2. The combination of a spiral spring having an end extending diametrically across the end convolution of the spring and a securing-strip having a depression adapted to receive the end of the spring and be clamped between the projecting end and the end convolution, substantially as set forth.

3. The combination of a spiral spring having a plain end convolution and the end of the wire forming the spring projecting into the vertical center of the spring and a securing or supporting strip having a depression or offset adapted to receive the end of the wire, the strip being clamped between the end of the wire and the end convolution, substantially as set forth.

4. The combination of a spiral spring having a plain end convolution and a supporting end projecting diametrically across the end convolution and a supporting-strip having a transverse offset adapted to receive the supporting end, the strip being clamped between the supporting end on the side of the spring and the end convolution on the opposite side of the strip from the spring, substantially as set forth.

486,774. PNEUMATIC PERCUSSION-TOOL. WILLIAM E. GIBBS, New York, N. Y. Filed Mar 16, 1892. Serial No. 425,137. (No model.)



Claim.—1. The combination, in a percussion-tool, of two concentric pistons of different lengths adapted to give successive blows, as set forth.

2. The combination, in a percussion-tool, of a centrally-located cylindrical piston with an auxiliary piston of somewhat shorter length, the two pistons arranged to deliver successive blows, substantially as shown and described.

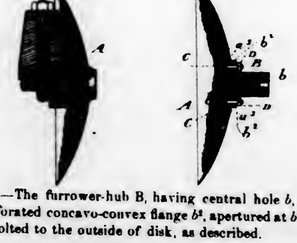
3. In a percussion-tool, the combination of the concentric pistons arranged to give successive blows and one piston adapted to operate as a valve for the other.

4. The combination of the concentric pistons, the casing containing same, the percussion-tool C, and the stroke-adjusting plug H, all arranged substantially as and for the purposes set forth.

486,775. RAILWAY-JOINT. ROBERT R. GREENWELL, Waco, Tex. Filed Feb. 6, 1892. Serial No. 420,462. (No model.)

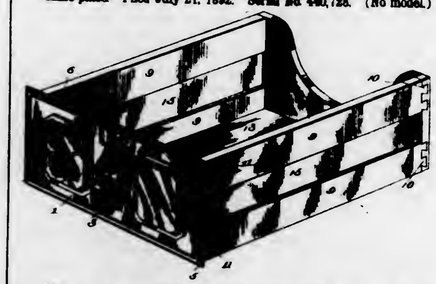
Claim.—In a railway-joint, the combination, with the webs, fish-plates, and slotted bolts passing therethrough, of the main key longer than the series of bolts and terminating beyond the same in a head, said key being gradually tapered from a point in rear of its head and beyond the series of bolts toward its opposite end and at the beginning of its taper provided with a series of serrations or teeth, and the secondary key located in the slots of the bolts longer than the series of bolts tapered reversely to the main key and at its reduced end provided with a head or stop beyond the bolts, the inner face of which is serrated or toothed to engage those of the main key, that portion of the secondary key in rear of its head being reduced to such an extent as to produce a resilient or spring portion, substantially as specified.

486,776. DISK FURROWER. SPENCER HAINES and WILLIAM B. MATHIS, Rancocas, N. J. Filed Feb. 26, 1891. Renewed Oct. 18, 1892. Serial No. 449,295. (No model.)



Claim.—The furrower-hub B, having central hole *b*, sand-band *b'*, and perforated concavo-convex flange b^2, apertured at b^3, whereby it can be bolted to the outside of disk, as described.

486,777. POST-OFFICE LOCK-DRAWER. JOHN W. HARRIOTT, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed July 21, 1892. Serial No. 440,728. (No model.)



Claim.—1. A drawer constructed of the front, the back, the side pieces spaced apart and secured at their respective ends to the front and back, and the sheet-metal bottom and sides secured in the side pieces, substantially in the manner and for the purpose explained.

2. The herein-described drawer, consisting of the front, the back, the side pieces spaced apart and secured at their respective ends to the front and back and provided with longitudinal slots, and the bottom and the sides made of sheet metal and secured in the slots in said side pieces, substantially in the manner and for the purpose set forth.

3. The herein-described drawer, constructed of a wooden frame slotted longitudinally to receive the bottom and sides, the sheet-metal bottom and sides fitting in said slots, and a metallic front attached at one end to the frame and keeping the bottom and sides in place, all substantially as herein set forth.

4. The herein-described composite drawer, constructed of a wooden back, side frames which consist of two wooden strips dovetailed at their rear ends to the back, and formed with longitudinal slots in their adjacent edges and also at the bottom, the sheet-metal sides and bottom slipped into the said slots, and the front attached to the front ends of the said frames and keeping the sides and bottom in place, all substantially as herein set forth.

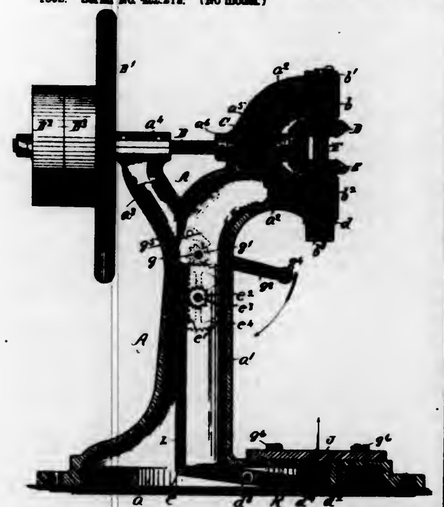
5. The herein-described composite drawer, consisting of the stout wooden back 8, having slot 12 at bottom, the side frames dovetailed at the rear ends to the back 8 and consisting of the upper strips grooved at 14 on their lower edges and the bottom strips grooved at 14 on their upper edges and also at 12 along their inner sides, the sheet-metal bottom formed to fit in the slots 10 of the back and lower side pieces, the sheet-metal sides formed to fit in the adjacent slots in the side frames, and the front fitted to the front end of the said frames, having rearwardly-extending lugs 6 and secured to the said frames by rivets 11, all substantially as herein set forth.

486,778. UMBRELLA-RUNNER RETAINER. HENRY J. HERBERT, Detroit, Mich. Filed Mar. 7, 1892. Serial No. 424,042. (No model.)

Claim.—1. A spring-fastener consisting of a piece of sheet metal having a pin at one end, an upper and lower spring-arm, the upper arm carrying a nose at its end nearest the fastening-pin, and a loose connection with the stick at the joint of the two arms to permit the motion of both spring-arms, substantially as shown and described.

2. An umbrella-fastener consisting of a pin E, arms J and I, the arm I carrying nose A, a lug B at the junction of said arms J and I, and a pin C, having a groove to receive lug B, substantially as shown and described.

486,779. ICE-CREAM FREEZER. WILLIAM H. HOPKINS, Chicago, Ill., assignor to William Thompson & Co., same place. Filed Feb. 20, 1892. Serial No. 422,218. (No model.)



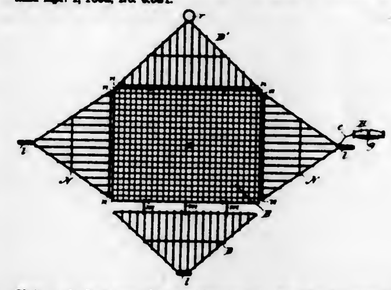
Claim.—1. In a freezing apparatus of the character described, the combination, with the freezer proper and mechanism for rotating the movable parts thereof, of a vertically-movable platform carrying said freezer, a rocking lever pivoted at one end to the under side of said platform, a rack-bar pivoted at its lower end to the opposite end of the rocking lever, and means, substantially as described, for imparting a vertical endwise movement to said rack-bar, whereby said platform may be elevated or depressed, substantially as described.

2. In a freezing apparatus of the character described, the combination, with the freezer proper, and mechanism for rotating the movable parts thereof, of a vertically-movable platform, a rocking lever pivoted at one end thereto, the rack-bar pivoted at its lower end to the rear end of the rocking lever, the pinion engaging with the toothed end of said bar, the gear-pinion mounted thereon and engaging with said gear-wheel, and means for rotating said crank-shaft, substantially as described.

3. In a freezing apparatus of the character described, the combination, with the freezer proper and mechanism for rotating the movable parts thereof, of a supporting-frame comprising a chambered base and hollow standard, a vertically-movable platform adapted to receive the freezer and mounted on said base and having a projecting part extending down into the chamber, a rocking lever located in said chamber and pivoted at its front end to said projecting part, a rack-bar pivoted at its lower end to the rear end of said lever and extending upwardly on the inside of said standard, and means, substantially as described, for imparting an endwise movement to said rack-bar for elevating or depressing the platform, substantially as described.

4. In a freezing apparatus of the character described, the combination, with the sleeve a^3, having a bearing-socket in its lower end, the spindle F, loosely inclosed by said sleeve and having a recess in its lower end, and means for imparting rotary motion to said sleeve and spindle in opposite directions, of a vertically-movable platform J and the cream-receptacle G, and agitator H, carried thereby, said receptacle and agitator being adapted to simultaneously engage with the sleeve b^3 and shaft F, respectively, upon the upward movement of the platform J, substantially as described.

486,780. TRAY. GEORGIANA HORNE-PAYNE, London, England. Filed June 4, 1892. Serial No. 435,536. (No model.) Patented in England Apr. 1, 1892, No. 6,331.



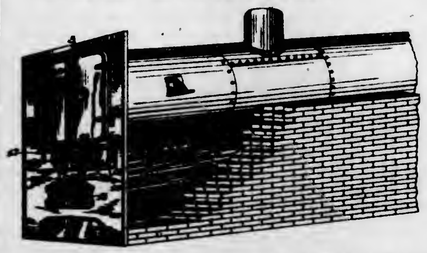
Claim.—1. In a tray, the combination of a four-sided rectangular base formed of interwoven wires, four triangular side pieces of wire, one for each side of said base-piece, said side pieces being independently hinged to said base-piece, loops or circles, one at the apex of each of said side pieces, registering with each other when the side pieces are closed, and a handle composed of a bar fitting one of said loops or circles, whereby said tray is carried, substantially as described.

2. In a tray, the combination of the base-piece B, having sides S, end pieces N N, and side piece D', hinged as at *n*, door D, hinged as at *m*, and the locking and carrying device composed of the parts *l r* H, all arranged substantially as shown and described.

3. A tray composed of interwoven wire having the form of a pyramid and consisting of a rectangular base or bottom and triangular sides or doors hinged to each side of the rectangular base, said sides terminating in a loop or ring, and a bolt or handle for locking said rings or loops together, substantially as described.

4. A tray composed of interwoven galvanized-iron wire having the form of a pyramid, consisting of a rectangular base or bottom with a narrow upturned rim, triangular sides or doors, one for each side of said base, hinged thereto, fastening devices, one at the free angle of each door or side, interlocking with each other, and a bolt or handle, all arranged substantially as described.

486,781. SMOKE-CONSUMER. JULIUS L. HORNE, St. Louis, Mo. Filed June 9, 1892. Serial No. 436,143. (No model.)



Claim.—1. A portion of a furnace having a fire-door, an air-heating tube located in said furnace and constructed to discharge heated air therein, and a device constructed to lock said door in a closed position when the passage leading to said tube is closed or partly closed, substantially as specified.

2. A furnace having a fire-door, an opening adjacent to said fire-door, an air-heating tube having one end connected with said opening and its opposite end free, the body of said tube being provided

with perforations, and a device constructed to prevent the opening of said fire-door prior to admission of air to the said tube, substantially as specified.

3. The combination, with a furnace comprising a fire-box and doors opening therein, said furnace being provided in its front with an air inlet or inlets located above said doors of a horizontally-

ated arm pivotally connected to the body or plate, the short arm *j*, also pivotally connected to the body or plate and having the index-mark, and a plumb-bob suspended from the body or plate, substantially as specified.

9. In a perspective-gage or mathematical instrument, the com-

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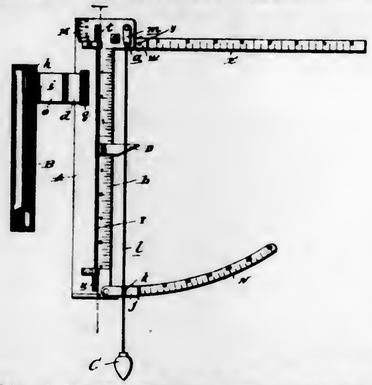
wheel, a sleeve or drum 12 for the brake-chain, having its upper end connected to said ratchet-wheel 16 to revolve therewith, a clutch-jaw 18, mounted to slide vertically upon and revolve with said brake-

with perforations, and a device constructed to prevent the opening of said fire-door prior to admission of air to the said tube, substantially as specified.

3. The combination, with a furnace comprising a fire-box and doors opening therein, said furnace being provided in its front with an air inlet or inlets located above said doors, of a horizontally-adjustable slide for closing said inlet or inlets, and an arm depending from said slide and adapted when the latter is in closed position to project over and lock the doors in closed position, substantially as and for the purpose set forth.

486,782. PERSPECTIVE-GAGE. DAVID C. HUSTER, Chicago, Ill. Filed Aug. 9, 1892. Serial No. 442,860. (No model.)



Claim.—1. In a perspective-gage or mathematical instrument, the combination, with a body or plate and a plumb-bob connected to said plate by a suspending-cord, of a tubular hand-grasp connected to the plate and having a notch or slot in its upper end and a suitable means for closing the upper end of said tubular hand-grasp, substantially as specified.

2. In a perspective-gage or mathematical instrument, the combination, with the body or plate having the lateral branch *d*, of a hand-grasp having the lateral branch *e* flexibly connected to the branch *d* of the plate, the lug on the branch *d*, and the pivoted hook on the branch *e*, adapted to engage the said lug, substantially as and for the purpose set forth.

3. In a perspective-gage or mathematical instrument, the combination, with a body or plate having the branch *d* and a plumb-bob connected to said plate by a suspending-cord, of a tubular hand-grasp having a notch or slot in its upper end and also having the branch *e* flexibly connected to the branch *d* of the plate, a suitable means for closing the upper end of the hand-grasp, a lug on the branch *d*, and a pivoted hook on the branch *e*, adapted to engage said lug, substantially as and for the purpose set forth.

4. In a perspective-gage, the combination of a graduated body or plate, an index-piece adapted to be adjusted on the body or plate, and a graduated arm E, pivotally connected to said body or plate and adapted to be swung into alignment with the same, so as to serve, in conjunction with the index-piece, for indicating the proportional size of the front and top of an object in perspective, substantially as specified.

5. In a perspective-gage, the combination of a graduated body or plate, an index-piece adapted to be adjusted on said body or plate, the arm *j*, connected to the plate and having an index-mark, a plumb-bob and a cord connecting said plumb-bob to the plate, substantially as specified.

6. In a perspective-gage or mathematical instrument, the combination of a graduated body or plate, an index-piece adapted to be adjusted on said body or plate, a curvilinear graduated arm connected to the body or plate, and a plumb-bob connected by a cord to the body or plate, substantially as specified.

7. In a perspective-gage or mathematical instrument, the combination, with a graduated body or plate, an index-piece adjustable on said body or plate, and a straight graduated arm connected to the body or plate, of a curvilinear graduated arm connected to the body or plate and a plumb-bob connected by a suspending-cord to the body or plate, substantially as specified.

8. A perspective-gage or mathematical instrument embodying the following instrumentalities, viz: a graduated body or plate, an index-piece adjustable on the body or plate, a straight graduated arm pivotally connected to the body or plate, a curvilinear graduated arm pivotally connected to the body or plate, the short arm *j*, also pivotally connected to the body or plate and having the index-mark, and a plumb-bob suspended from the body or plate, substantially as specified.

9. In a perspective-gage or mathematical instrument, the combination, with the graduated body or plate, of the index-piece, the shaft *p*, the manipulating-wheel *q*, mounted on said shaft, the pulley *r*, also mounted on the shaft *p*, the pulleys *t u*, and the cord *s*, taking around the pulley *r* and over the pulleys *t u* and having its ends connected to the index-piece, substantially as and for the purpose set forth.

486,788. MOISTENING-PAD. HOWARD L. KEELER, Mount Holly, N. J. Filed Aug. 10, 1892. Serial No. 442,660. (No model.)

Claim.—1. A device of the class described, having the reservoir A and cap B, comprising the cover J, the upright supporting-arm M, the projection C, the feed-wick D, and the absorbent collar E, substantially as described.

2. A device of the class described, having the reservoir A and cap B, comprising the cover J, the upright supporting-arm M, the projection C, the groove F in said projection, the feed-wick, and the continuous absorbent collar E, substantially as described.

3. A device of the class described, having a reservoir A and cap B, comprising the cover J, the depression G in said cover, the upright supporting-arm M, the projection C, the feed-wick, and the continuous absorbent collar E, substantially as described.

4. A device of the class described, comprising the reservoir A, the cover J, the depression G in said cover, the supporting-arm M, the projection C, the groove F in said projection, the continuous collar E, and the feed-wick passing under the collar in said groove in contact with said collar, substantially as described.

5. In a device of the class described, the combination, with the reservoir A, feed-wick D, cover J, supporting-arm M, and projection C, of a continuous absorbent collar or band E, adapted to be slipped over said projection, substantially as described, and for the purpose specified.

6. A device of the class described, wherein a reservoir A is surmounted by a cap B, comprising the cover J, supporting-arm M, projection C, continuous moistening band or collar E, and feed-wick D, passing vertically up through a perforation in the arm M and thence horizontally through a groove F in the projection C, substantially as described.

7. A device of the class described, having a reservoir A and cap B, the cap B comprising the cover J, having the depression G therein, the supporting-arm M, the wick D, the continuous band or collar E, covering the projection C, the said projection having an upwardly-extending edge with the groove F therein, and a downwardly-extending edge O, disposed over the depression G in the cover J, substantially as described.

486,784. MACHINE FOR FORGING VEHICLE-CLIPS. ALBERT L. KERR, York, assignor of one-half to The Keystone Wagon Company, of Reading, Pa. Filed Feb. 18, 1892. Serial No. 422,084. (No model.)

Claim.—1. In a machine such as described, the combination, with the anvil, of the vertically-reciprocating hammer with power mechanism for reciprocating the same, the connected movable bearings for said hammer, and the operating-handle connected with the bearings and projecting at the hammer end of the machine for moving said bearings, whereby the operator may watch the effect of the blows and simultaneously move the operative end of the hammer laterally, substantially as described.

2. In a machine such as described, the combination, with the anvil, of a vertically-reciprocating hammer pivoted on a substantially-horizontal center to swing laterally, whereby the point at which the blow is delivered may be changed, substantially as described.

3. In a machine such as described, the combination, with the anvil and vertically-reciprocating hammer, of the bearings in which the hammer is mounted pivoted to swing laterally, substantially as described.

4. In a machine such as described, the combination, with the anvil, vertically-reciprocating hammer, power mechanism, and an elastic connection between the hammer and power mechanism, of the pivoted guides in which the hammer is mounted, substantially as described.

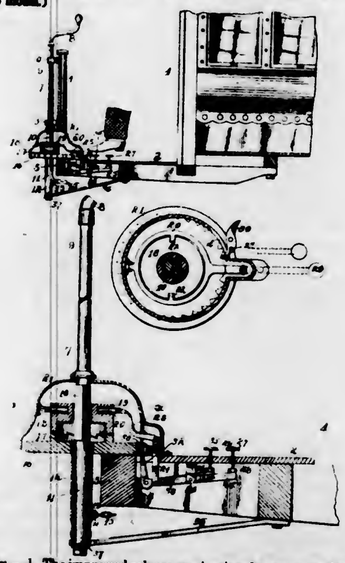
5. In a machine such as described, the combination, with the anvil, vertically-reciprocating hammer, power mechanism, and suspension-strap connecting the hammer and power mechanism, of the guides in which the hammer is mounted pivoted to swing laterally, substantially as described.

6. In a machine such as described, the combination, with the anvil, vertically-reciprocating hammer having the curved slot at the upper end, power mechanism, and a suspension-strap carried thereby and passing through the slot in the hammer, of the guides in which the hammer is mounted pivoted to swing laterally, substantially as described.

7. In a machine such as described, the combination, with the anvil and vertically-reciprocatory hammer, of the pivoted guides in which the hammer is mounted, the downwardly-extending arm connected thereto, and the operating shaft and handle for moving said arm and guides, substantially as described.

8. In a machine such as described, the combination, with the anvil and vertically-reciprocating hammer, of the pivoted guides in which the hammer is mounted, the downwardly-extending arm connected thereto, the operating-shaft having the eccentric engaging said arm, and the handle for the shaft, substantially as described.

486,785. CAR-BRAKE. PATRICK J. LAWRENCE and MILES F. GARRETSON, Wellston, Mo. Filed June 13, 1892. Serial No. 436,551. (No model.)



Claim.—1. The improved release mechanism for street-car brakes, comprising the combination of a revoluble brake-handle, a ratchet-wheel 16, mounted to revolve without movement of said handle, a jaw 17, having ratchet-teeth and mounted to revolve with said ratchet-wheel, a sleeve or drum 12 for the brake-chain, having its upper end connected to said ratchet-wheel 16 to revolve therewith, a clutch-jaw 18, mounted to slide vertically upon and revolve with said brake-handle and provided with ratchet-teeth which normally engage the teeth of said jaw, a dog or pawl normally in engagement with the teeth of said ratchet-wheel 16, and a foot-treadle for simultaneously disengaging this pawl from the teeth of said ratchet-wheel and disengaging the teeth of the clutch-jaw from the teeth of the jaw 17, substantially as and for the purpose set forth.

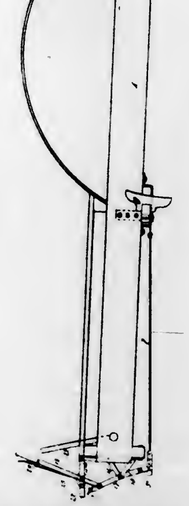
2. An instantaneous release mechanism for car-brakes, having a brake-handle suitably secured in bearings to the dash-board 4 of the car 1 and having mounted thereon a sleeve 12, ratchet 16, and a clutch-jaw 17, and said sleeve 12, ratchet 16, and clutch-jaw 17 being formed integrally with or mechanically secured with each other, substantially as set forth.

3. An instantaneous release mechanism for car-brakes, having a clutch-jaw 18, adapted to engage in the teeth of the clutch-jaw 17, said clutch-jaw 18 provided with an annular groove 19, into which fit the lugs 22 of a yoke 20, said yoke being pivotally secured on one side to the casing 21 and on the other side by means of a series of levers to a foot-treadle 27, and said clutch-jaw 18 being adapted to be released from its engagement with said clutch-jaw 17 by the downward movement of the foot-treadle 27, projecting above the platform 2 of said car, substantially as set forth.

4. An instantaneous release mechanism for car-brakes, having a ratchet 16 revolubly mounted with a sleeve 12 and a clutch-jaw 17 upon the brake-rod, a pawl 30, provided with a slot 31, a bell-crank lever 32, engaging in said slot 31 and connected by a series of levers pivoted to a bracket 26 and held in contact under the floor of said platform by a spring 38 with the treadle 35, and said pawl adapted to be released from its engagement in the teeth of said ratchet 16 by the downward movement of the treadle 35, substantially as set forth.

5. An instantaneous release mechanism for car-brakes, having a revoluble sleeve 12, a ratchet 16, a clutch-jaw 17, formed therewith, a yoke 20, and pawl 30, all forming parts of the release mechanism and incased and protected by a casing 21, substantially as set forth.

486,786. BRAKE FOR HAY-WAGONS. JOHN LUCKENBILL, Ballwin, Mo. Filed Aug. 22, 1892. Serial No. 443,786. (No model.)



Claim.—1. In a brake for hay and other racks, the combination, with the brake-beam and shoes, of a brake-operating mechanism consisting of a bracket, bars 17 and 22, an operating-lever pivoted to each of said bars, a pivoted rack-bar 25 on the bar 22, and a brake-rod connecting the lower end of the bar 17 with the brake-beams, substantially as and for the purpose set forth.

2. In a brake for hay or other racks, the combination, with a

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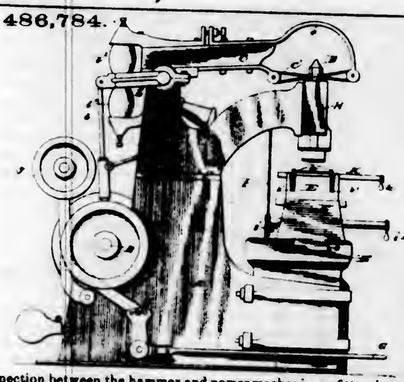
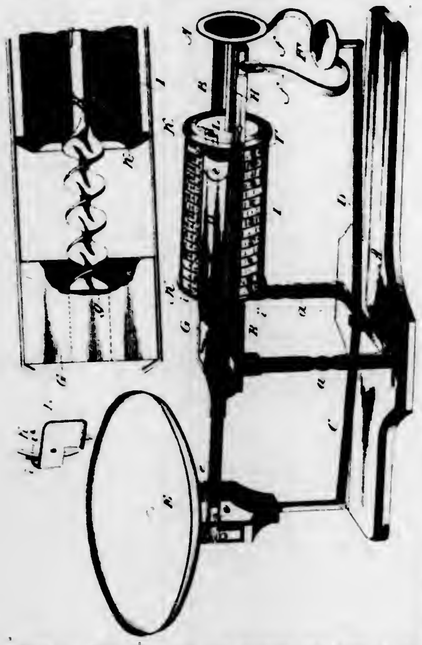


brake-beam and shoes, of a bracket secured to the rack by means of an adjustable fastening, such as described, bars 17 and 22, an operating-lever pivoted to the said bars, a pivoted rack-bar 25 on the bar 22, a trip for raising the rack-bar, and a pin on the lever 17 passing through openings in the brake-rod and secured therein by means of a pivoted catch 31, substantially as and for the purpose set forth.

3. In a brake for hay or other racks, the combination, with the brake-beam, shoes, and brake-rod, of the bracket 8, bars 17 and 22, pivoted rack-bar 25 on the bar 22, operating-lever pivoted to the bar 22 and to the bar 17, pivotally connected to the bracket 8, and a pin on the bar 17 for engagement with openings in the brake-rod and adapted to be secured therein by the pivoted catch 31, substantially as and for the purpose set forth.

486,787. **WEIGHING AND PRICE SCALE.** GUSTAVE LUNDBERG, Logan, Utah. Filed Apr. 30, 1892. Serial No 431,278. (No model.)



Claim.—1. The combination, with the supporting-frame, of a pivoted beam carrying a revoluble and longitudinally-movable graduated cylinder, and a non-rotatable scale-plate carried by the beam and engaging with the cylinder so as to be moved therewith upon the scale-beam, substantially as shown, and for the purpose set forth.

2. The combination, with a pivoted beam, of a rotary cylinder adapted to be moved longitudinally upon the beam, said cylinder carrying a non-rotatable indicating-plate, said plate and cylinder being suitably divided and marked to indicate the weight of an article placed on the opposite end of the scale-beam from the cylinder, substantially as shown, and for the purpose set forth.

3. The combination, with a pivoted scale-beam, of a rotary and longitudinally-movable cylinder carrying a peripheral scale indicating weight, and a series of peripheral scales indicating the prices of predetermined quantities, and an indicating-plate spaced to correspond with the divisions and subdivisions on the cylinder, said plate being adapted to move longitudinally with the cylinder and held against rotary movement by engagement with the scale-beam, substantially as shown, and for the purpose set forth.

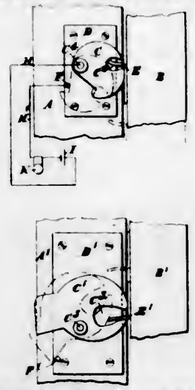
4. In combination with a pivoted scale-beam, a rotary shaft H, having fixedly secured thereto a cylinder, a block carried by the scale-beam and provided with an aperture with which the spiral portion of the shaft H engages, and a pan carried by the scale-beam of sufficient weight to counterbalance the cylinder when it reaches the limit of its movement toward the scale-pan, substantially as shown.

5. The combination, with a supporting-frame, of a scale-beam pivoted thereto and provided at one end with a scale-pan and on the opposite side of the pivot with a movable cylinder, said cylinder being fixedly attached to the rotary shaft having a hand-wheel, said shaft having a spiral portion for engagement with a block carried by the scale-beam adjacent to its fulcrum, for the purpose set forth.

6. The combination, in a weighing and price scale, of a scale-beam having an open frame on one side of its fulcrum, the side bars of said open frame carrying a block G, apertured for the reception of a longitudinally-movable and rotary shaft H, having a spiral end portion, a graduated cylinder rigidly attached to the shaft between the side bars of the scale-beam, said cylinder carrying stationary heads which are connected by plates having bent ends which engage therewith, one of said plates also engaging with one of the side bars of the scale-beam to prevent the rotation of the same, and a scale-plate O, carried by the plates L and L', so as to move longitudinally with the cylinder and be held against rotation, substantially as shown, and for the purpose set forth.

7. In combination with a scale-beam B, fulcrumed upon a supporting-frame and provided at one end with a platform which is hung therefrom, a pan mounted on the opposite end of the beam, bars C and D, connected to the pan and platform and pivoted to the supporting-frame, and a movable weight and price-determining cylinder carried by the scale-beam, so as to be capable of both a rotary and longitudinal movement, substantially as shown, and for the purpose set forth.

486,788. **SASH-HOLDER.** HUBERT S. MOORE, London, England. Filed Mar. 29, 1892. Serial No 426,892. (No model.) Patented in England Feb. 2, 1892, No. 1,963, and in Belgium Mar. 19, 1892, No. 96,585.



Claim.—1. Means or appliances for preventing or mitigating the rattling of windows and the like, as well as draft, comprising a pivoted eccentric device attached to a part of the window-frame and formed with a recess, and a projection attachable to the moving part of the window and arranged to enter said recess and act against opposite sides thereof, whereby when said projection is moved in one direction with said moving part of the window it will act against and move said eccentric device in one direction and jam said window, and when it is moved in the other direction it will act against and move said eccentric device in the opposite direction and release said window, substantially as herein described.

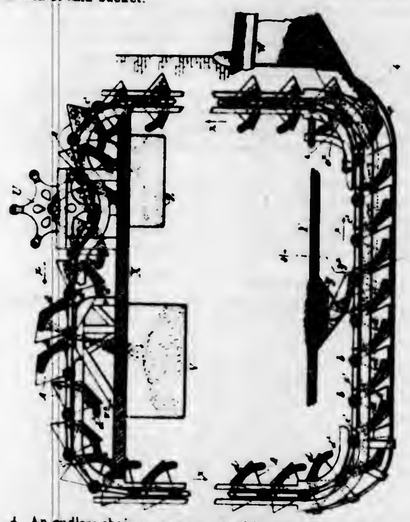
2. Means or appliances for preventing or mitigating the rattling of windows and the like, as well as draft, comprising a pivoted device C, formed with a recess C^3, and having a part of its periphery eccentric to its axis, a plate D, adapted to be fixed to the window-frame and carrying a pivot-pin C^4, and a pin F for said pivoted device, a spring connected to said pivoted device and tending to partly turn it into its inoperative position, and a projection E, fixed to the movable part of the window and arranged to enter the recess in said pivoted device and to move the same into its operative position when said movable part of the window moves in one direction, substantially as herein described.

486,789. **CONVEYER.** GEORGE W. MCCARLIE, Montclair, N. J. Filed Mar. 5, 1892. Serial No 423,962. (No model.)

Claim.—1. An endless-chain conveyor comprising an endless chain mounted on a track and buckets carried in said chain, the said buckets being pivotally mounted in the chain at one end and provided at the other end with stops which engage some part of the chain and limit the swing of the bucket, whereby the latter is at times suspended at two points in its length in a stable manner.

2. An endless-chain conveyor comprising an endless chain provided with track-wheels and buckets carried in said chain, said buckets being pivoted at their front ends to the axles of the track-wheels and provided at their other ends with limiting-stops which engage some part of the conveyer-chain and limit the extent of swing of the bucket about its pivot, as set forth.

3. An endless-chain conveyer comprising an endless chain provided with track-wheels and a series of wedge-shaped buckets carried by said chain, each of said buckets being pivoted at its front end to one of the axles and provided at its rear end with limiting-stops adapted to engage some part of the conveyer-chain and support the rear end of said bucket.



4. An endless-chain conveyer comprising an endless chain provided with track-wheels and a series of double buckets, the compartments of which are arranged bottom to bottom, as set forth, each of said buckets being pivoted in the chain at its forward end and provided at its rear end with limiting-stops which are adapted to engage some portion of the chain and limit the swing of the bucket about its pivot.

5. The combination, with the endless track having a lower portion where the load is received, an upper portion where the load is discharged, and ascending and decending portions, of an endless chain having track-wheels mounted on said track, and a series of buckets mounted in said chain, pivoted at their forward ends and provided at their other ends with limiting-stops adapted to engage some portion of the chain and support that end of the bucket while it is receiving its load, and a chute arranged over the conveyer at the loading-point, substantially as set forth.

6. The combination, with the endless track, the endless chain having track-wheels mounted on said track, and the buckets pivoted at their front ends in said chain and provided with limiting-stops at their other ends, of the curved trough or chute e' arranged under the conveyer and about that point in the track where the conveyer turns to ascend, the said trough arranged in the path of the buckets, whereby the latter meet and scoop up the material which flows down said trough.

7. An endless-chain conveyer having buckets each with two compartments whereby it is adapted for conveying simultaneously different kinds of materials, in combination with independent chutes or hoppers for filling the compartments in the buckets, and means for discharging the loads independently from said compartments.

8. In an endless-chain conveyer, the combination, with the endless chain composed of links c and axles or cross-rods b^x, of the bucket mounted in said chain and pivoted at its front end to said axles, said bucket being provided at its respective sides with the curved and slotted links d, and said links c being provided with studs which engage the slots in the respective links d, whereby the ends of said slots serve as stops to limit the extent of movement of the bucket about its pivot.

9. In a conveyer, the combination, with an endless track having in it a curve connected with the track at its respective extremities by easings of reverse curvature, as set forth, an endless chain mounted on wheels on said track, and buckets carried by said chain, of a driver consisting of a pair of spiders C, and a shaft on which said spiders are mounted, the arms of the spiders engaging some part of the conveyer, the curvature of the track being substantially concentric with the shaft of the driver, as set forth.

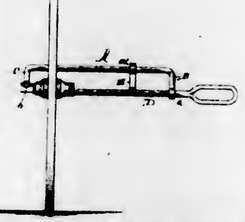
10. In a conveyer, the combination, with an endless track having in it a depressed curve with easings of reverse curvature which connect its respective extremities to the straight track in front of and back of the driver and an endless-chain conveyer mounted on wheels on said track and provided with pivotally-mounted buckets, of the driver arranged over said depression in the track, said driver comprising a rotating shaft B, set concentrically, or nearly so, with said depressed curve, and two spiders C on said shaft in the planes of the respective track-wheels of the conveyer and adapted to drive the conveyer by contact of its arms with the track-wheels, as set forth.

11. In a conveyer, the combination, with a track having in it a curve and an endless-chain conveyer on said track, provided with two series of track-wheels and pivotally-mounted buckets, of a driver arranged at the driving-point, said driver comprising two rotatively-mounted spiders C, arranged substantially concentric to the curve in the track and in the planes of the respective series of track-wheels, the arms of said spiders bearing on the track-wheels at points less distant from the centers of the spiders than the centers of the track-wheels are therefrom, whereby the driving-pressure serves to press the track-wheels radially outward against the tracks, as set forth.

12. In a conveyer, the combination, with an endless track having a curve with easings of reverse curvature connecting its respective extremities with the track before and behind the driver and a driver comprising spiders C on a rotatively-mounted shaft placed substantially concentric with said curve, said spiders having rollers in its arms, of the endless-chain conveyer mounted on wheels on said track, the axes of the conveyer-wheels being at a greater radial distance from the driver-axis than the axes of said rollers, substantially as and for the purposes set forth.

13. In a conveyer, the combination, with a track having in it a curve connected to the main track by an easing of reverse curvature and an endless-chain conveyer having track-wheels mounted on said track and buckets mounted in the chain, of a driver situated at said curve in the track and substantially concentric therewith, said driver comprising a rotatively-mounted shaft, and spiders on said shaft, the arms of said spiders being arranged to drive the conveyer by contact with some part thereof as the spiders rotate, substantially as set forth.

486,790. **DEVICE FOR SUPPORTING VEHICLES.** WILLIAM S. OVERFELT, JOHN R. EVANS, and CHARLES J. CAPP, Duncan's Bridge, Mo. Filed Mar 10, 1892. Serial No. 424,460. (No model.)



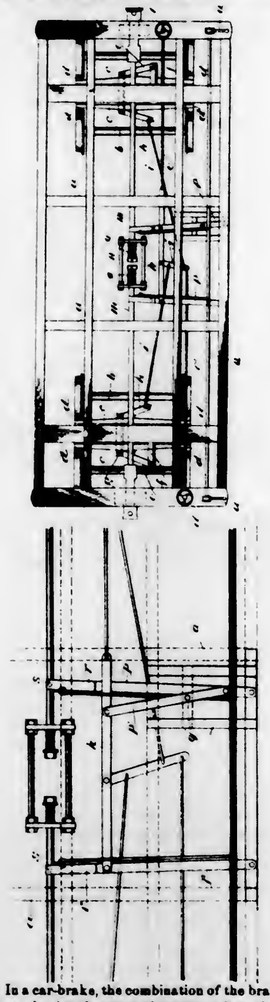
Claim.—The improved implement described, comprising the main bar, the branch formed at one end of said bar and having a guide-eye, the branch formed at the opposite end of the main bar and having its end bifurcated, there being a longitudinally-disposed aperture of rectangular form in cross-section formed in the said branch and adapted to receive the shank of a wrench, the slide-bar taking through the guide-eye in one of the branches of the main bar, and the hanger branch fixedly connected to the slide-bar and having an eye to receive the main bar, substantially as specified.

486,791. **WIRE COAT AND HAT HOOK.** ARTHUR W. PARMELEE, Worcester, Mass., assignor to the Wire Goods Company, same place. Filed Aug. 17, 1892. Serial No 443,331. (No model.)

Claim.—A coat and hat hook made from a single piece of wire threaded at one end and bent to form the upper hook b', doubled in the form of an elongated loop, each part of which is in the same horizontal plane, and having the two parts of the loop b and c intertwisted at d, the part c being continued parallel to and in the same horizontal plane with the part b to a point near the base of the screw end a and

then bent downward substantially at right angles to itself and doubled in the form of an elongated loop, the free end of which terminates under the screw end *a* at the point *g'*, the elongated loop being bent to form the lower hook *f'*, substantially as described.

486,792. CAR-BRAKE. JOHN H. PFLIEGER, Johnstown, Pa. Filed Apr. 26, 1892. Serial No. 430,536. (No model.)



Claim.—1. In a car-brake, the combination of the braking mechanism, coupling mechanism between the cars, and mechanism, substantially as described, detachably connecting the coupling mechanism with the braking mechanism, so that the brakes are applied when the coupling-heads are forced in and are relieved when the coupling-heads are drawn out, and means, substantially as described, whereby the coupling and braking mechanisms are disconnected, substantially as described.

2. In a car-brake, the combination of the movable draw-bars yieldingly held in their normal positions, the swinging levers connected to be swung by said bars, the braking mechanism, a reciprocating bar connected with said levers and with the brake mechanism to operate the same from said draw-bars, substantially as described.

3. In combination, the movable draw-bars, the braking mechanism, intermediate lever connections between said draw-bars, and braking mechanism to apply or release the brakes by the movement of said bars, and means substantially as described whereby the draw-bars and braking connections can be disconnected, substantially as described.

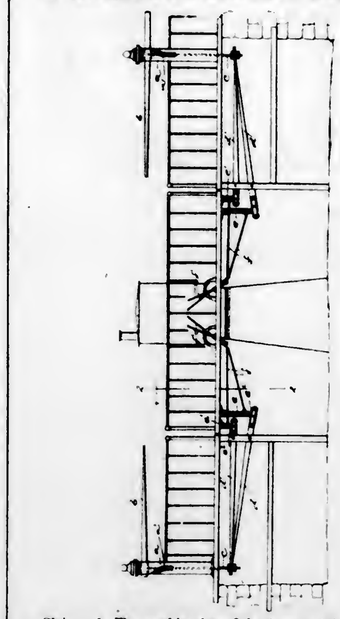
4. In combination, the extended bars of the coupling-heads, springs to hold the same in their normal positions, levers connected to said bars to be swung thereby, means whereby the levers can be thrown in and out of operative relation with said bars, braking mechanism, and connections between said levers and said braking mechanism, substantially as described.

5. In combination, the coupling-heads having extended draw-bars, the frame at the inner ends of said bars into which said bars loosely extend, the springs therein, the levers connected to said bars to be swung thereby, the reciprocating bar connected therewith, the braking mechanism comprising brake-rods, and a lever pivoted to the said bar.

6. In combination, the movable draw-bars, the swinging levers, a catch carried by each lever to lock the same to its bar, a reciprocating bar connected with and operated by said levers, and the braking mechanism connected with and operated by said reciprocating bar.

7. In combination, the draw-bars, the braking mechanism, intermediate connections whereby the brakes are operated from the draw-bars, catches to normally connect said connections to the draw-bars, and a rock-shaft connected to said catches to operate the same to release the catches, substantially as described.

486,793. DRAWBRIDGE-GATE. FRANK A. PHILBRICK, Chicago, Ill. Filed Apr. 5, 1892. Serial No. 427,994. (No model.)



Claim.—1. The combination of the draw and the adjacent framework, the posts supporting horizontally-swinging and vertically-moving gate-bars, levers pivoted in the framework and having their outer ends connected to the gate-bars and their inner ends extending under the draw, and cams on the draw, adapted to depress the inner ends of the levers, substantially as described.

2. The combination of the posts provided with longitudinal spiral slots, the gate-bars having their inner ends working in said slots, and means for vertically moving the gate-bars in the slot, substantially as described.

3. The combination of the draw and adjacent framework, the posts carrying vertically-movable gate-bars working in spiral slots in the posts, pivoted levers connected to the inner ends of the gate-bars by vertical rods and having their inner ends terminating under the draw, and cams on the draw, adapted to depress the inner ends of the levers, substantially as described.

4. The combination of a draw and the adjacent framework, the post carrying horizontally-swinging and vertically-movable gate-bars, levers pivoted in the framework and connected at their outer ends to the gate-bars and having their inner ends extending in under the draw, one lever of each pair extending in farther than the other and pivoted below it, and the inclined cams on the draw, one of the cams being smaller than the other and located nearer the end of the draw, substantially as described.

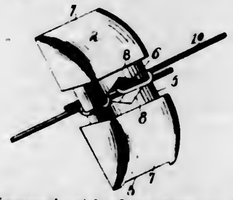
5. The combination of the draw and the adjacent framework, the posts and gate-bars, and the long levers for operating the bars, the inner ends of these levers being provided with rollers, the hinged inclined cams on the draw, and means for swinging them inwardly, substantially as described.

486,794. ELEVATOR. CHARLES H. REID, Kansas City, Mo. Original application filed Sept. 27, 1888, Serial No. 286,696. Divided and this application filed Apr. 21, 1890. Renewed June 2, 1892. Serial No. 435,248. (No model.)

Claim.—1. In elevators for letters and other articles, the carrier B, in combination with the drop-box P, door R, insulated arm T, battery 3, and wires 1 2, and signal-bell, substantially as described.

2. In elevators for letters and other articles, the carrier B, the drop-box P, door R, and arm T, in combination with the disk 48 and slide 49 and the parts connecting the same with the lever V W, substantially as shown and described.

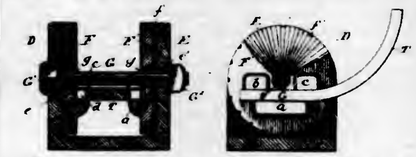
486,795. BALE-TIE. JOSEPH B. ROLLINS, Memphis, Tenn., assignor of one-third to Otto Seyppels, Seyppels Landing, Ark. Filed Feb. 11, 1892. Serial No. 421,100. (No model.)



Claim.—As an improved article of manufacture, a bale-tie consisting of a solid block formed upon its under surface at each corner with an edged extension 4, said block having its median portion reduced and provided with an opening forming two approximately cylindrical parallel members 9, around which the ends of the bale-wire are adapted to be secured, substantially as and for the purpose set forth.

486,796. SPRING-TOOTH HARROW. WILLIAM B. SMITH, Watkins, N. Y. Filed Jan. 27, 1892. Serial No. 419,451. (No model.)

Claim.—1. In a spring-tooth harrow, the combination, with the clip, of the plates for holding the tooth, one of the plates being provided with a projection fitting an opening in the clip and having a recess for the head of the bolt, and a bolt passing through said plates and clip, and a nut outside the clip for securing said bolt and clip, substantially as described.



2. In a spring-tooth harrow, the combination, with the clip provided with ratchet-teeth on the inner side of one of its faces, of the adjustable plates mounted in the clip, one of the plates having a projection fitting an opening in the clip and the other plate having ratchet-teeth on its outer side fitting the ratchet-teeth in the clip, and a bolt passing through the plates and secured to one side of the clip, substantially as described.

486,797. STOVE-GRATE. WILLIAM D. SOUTHARD, Peekskill, N. Y. Filed Jan. 26, 1892. Serial No. 419,369. (No model.)

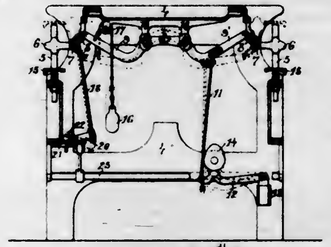
Claim.—1. The combination of the dumping-grate *a*, having a back trunnion with a limiting-stop on the outer end and a flange *a'* on the inner end, and the center grate *b*, supported by lugs from the grate *a* and having a trunnion extending out through the stove-base affording support for the front of the grate *a*, the center grate having a stop *t* to prevent its separation from the main grate, substantially as set forth.

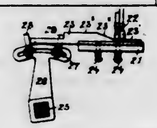
2. The combination, substantially as described, of the stove-base provided with a hanger *n* and hook *g*, a grate-section with a flange *f* to engage with a hook *g*, a rectangular center grate supported by lugs from the main grate and having a stop *t*, and a trunnion extending through the base, the front of the grate-section *a* resting on said trunnion, the back trunnion of the said section being provided with a limiting-stop, all substantially as shown.

3. The combination, substantially as shown herein, of a stove-base, substantially as described, a grate comprising a main section *a*, having a side flange *f*, a back trunnion provided with a stop *c* and flange *n* and supporting a center grate by means of flanges *l* and lugs *k*, a center grate having a stop *t* and a trunnion *h*, supporting the front of the main grate-section, which has lugs *y y*, extending downward on each side of the trunnion, all operating together, as and for the purposes described.

486,798. SEPARATOR FOR SPINNING-MACHINES. CYRUS A. TAFT, Whittinsville, Mass., assignor to the Whittin Machine Works, same place. Filed June 15, 1892. Serial No. 436,783. (No model.)

Brief.—The invention consists in the combination, with mechanism for reciprocating the ring-rail and the mechanism for oscillating the separators, of mechanism to automatically vary the motion of the separators.





Claim.—1. In a spinning-machine, the combination, with the spindles, the ring-rail, and the mechanism for reciprocating the ring-rail, so as to build the cops, of the rock-shaft 7, the separator-plates 6, secured to the shaft, the arm 8, also secured to the shaft 7, mechanism adapted to automatically vary the motion of the separators, and means for oscillating the separators, as described.

2. In a machine for spinning filling, the combination, with the spindles, the separators, and the mechanism for operating the separators, of the ring-rails and the mechanism for reciprocating the ring-rails, the rock-shaft 25, the arm 26, the pins 28 and 29, the wedge 23, the pivoted arm 20, and the rod 18, the whole adapted to limit the oscillation of the separators, as decribed

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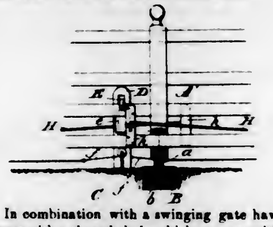
486,799. SWINGING GATE. ANDREW W. TAYLOR, Wayne, Nebr. Filed May 14, 1892. Serial No. 433,052. (No model.)



Claim.—1. In combination with a swinging gate having a central supporting-post with a threaded pin which engages with a socket, rods connecting the gate to crank-arms, so that when said crank-arms are depressed the gate will be opened and will close automatically and elevate the crank-arms, substantially as shown, and for the purpose set forth.

2. In a swinging gate having a central supporting-post with a screw-threaded portion on its lower end, which engages with a threaded socket, posts for limiting the swinging movement of said gate, rods attached to the gate on opposite sides and at a distance from the supporting-post, as shown, said rods engaging with crank-arms which are adapted to be depressed by the passage of a vehicle to swing the gate and at the same time elevate the same, so that it will automatically assume a closed position, substantially as set forth.

3. In combination with an automatically-closing swinging gate, a pivoted latch carried by a stop-post adjacent to the supporting-post of the gate, said latch being adapted to engage with the gate and retain the same in an elevated position, said latch being connected to crank-arms having stops for limiting the movement of said crank-arms and retaining them in an inclined position, substantially as shown.

4. In combination with a swinging gate having a central supporting-post, bars H, connecting the gate with crank-arms, and a post carrying a latch, said latch being connected to crank-arms which are adapted to move in an opposite direction from the crank-arms which operate the gate, substantially as shown, and for the purpose set forth.

5. In combination with a centrally-supported gate having means for elevating the same when swung open, said means also serving automatically to close the gate, rods H H, connected to the gate and to crank-arms I, and a post D, carrying a weighted latch, said latch being connected to crank-arms G, located on opposite sides of the gate and in line with the crank-arms I, substantially as shown, and for the purpose set forth.

6. In combination with a swinging gate centrally supported, said supporting means serving automatically to raise the gate when opened and close the same when released, angle-irons *h h*, attached to the gate on opposite sides of its supporting-post, bars H H, attached thereto and to crank-arms, a post D, carrying a latch E, having on one side a weight and on the other a rod with which flexible connections *f* engage, rollers over which the flexible connections pass, and rods F F, attached to flexible connections and to crank-arms G G, said crank-arms being located on opposite sides of the gate in line with the crank-arms I I, the crank-arms G G and I I being inclined so as to be depressed by contact with a vehicle-wheel, substantially as shown, and for the purpose set forth.

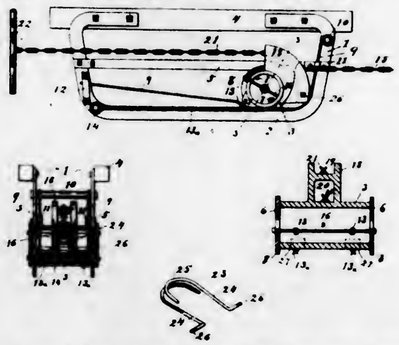
486,800. PAIL. WILLIAM B. THOMSON, Detroit, Mich., assignor to the Detroit Paper Package Company, same place. Filed Mar. 26, 1892. Serial No. 426,569. (No model.)

Claim.—1. In a package, the combination, with a pail and a cover therefor having a downturned flange, of a bottomless jacket in which the pail fits closely at its lower end, the walls of which having a greater divergence than the walls of the pail, whereby an air-space is formed of increasing width toward the upper end of the jacket and into which space the said flange on the cover extends, substantially as shown and described.

2. In a package, the combination, with a pail and a cover therefor, of a jacket inclosing said pail and which has a greater divergence from its bottom upward than the pail, whereby an air-space is formed between the two, the upper and lower ends of the said space being sealed, substantially as shown and described.

3. The combination of an impervious jacket, an impervious pail which fits within the former, filling it entirely at its lower end, the wall of the jacket being of greater divergence to its upper end than the wall of the pail, whereby an air-space is formed between the two of gradually-increasing width toward its upper end, a cover for the pail, a flange thereon which depends in the space thus formed, and a sealing material between the outer side of the flange and the inner wall of the jacket, whereby the space between the jacket and pail is sealed, substantially as shown and described.

486,801. CAR-BRAKE. JOHN TRENDLEY, St. Louis, Mo., assignor of three-fourths to John W. Schorr, Otto Stifel, and Charles Noll, same place. Filed July 30, 1892. Serial No. 441,706. (No model.)



Claim.—1. In a car-brake, the upper and lower tracks 2 and 5, provided with means for suspending them beneath a car-body, in combination with a drum 3, adapted to roll on said tracks 2 and carrying a segment 18, having a greater throw than said drum and provided with a peripheral groove 19 and a passage 20, located intermediate of said groove and the body of the drum, a chain 21, attached to and adapted to be wound on said segment in said groove, a brake-chain 15, attached to and constructed to be wound on said drum and located in said passage 20, and two stay-chains attached at one end to a stationary object and at the opposite end to said drum and constructed to be wound thereon in a direction opposite to the direction in which said brake-chain is to be wound, substantially as and for the purpose set forth.

2. In a car-brake of the class described, a drum 3, having a segment 18, stay-chains 13, attached to said drum, and enlargements 27, formed on said drum and arranged to be engaged by said chains, substantially as and for the purpose set forth.

3. In a car-brake, a winding-drum 3, having another and larger drum in the form of a segment 18, mounted thereon and provided with a groove 19 and a passage 20, substantially as set forth.

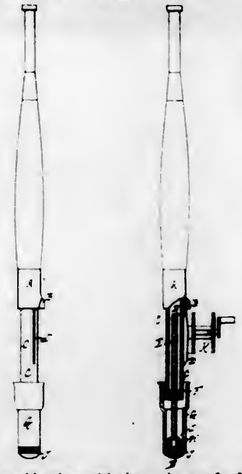
4. In a car-brake having a winding-drum, a split stirrup 23, consisting of two hooks 24, having hooks 25 at one end reversely arranged and overlapping each other and mounted upon said drum in a groove therein, substantially as set forth.

5. In a car-brake, two parallel horizontal supporting-tracks 2, provided with means for attaching them to a car-frame, in combination with a rolling winding-drum, as 3, stay-chains 13, adapted to be wound upon said drum, brake-chain 15, also adapted to be wound on said

drum, means for rolling said drum upon said supporting-tracks, and a yielding track, as 9, in the path of said drum and constructed to hold same at normal position and aid in returning said drum to such position after it has been removed therefrom, substantially as set forth.

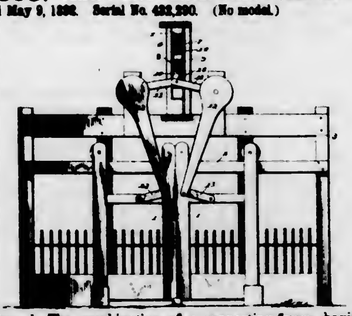
6. In a car-brake having a rolling winding-drum constructed to roll upon supporting-tracks, two spring-bars 9, constituting a yielding track in the path of said drum, said bars having one end fixed and the opposite end free, a strap 12, arranged to guide the free end of said bars, and a stop, as 13, formed in or located upon said bars adjacent the normal position of said drum, substantially as and for the purpose set forth.

486,802. FISHING-ROD. HERSCHEL WHITAKER, Detroit, Mich. Filed Mar. 19, 1892. Serial No. 425,618. (No model.)



Claim.—The combination, with the reel-seat of a fishing-rod, a stationary clip at one end of the reel-seat, and a movable ferrule or clip at the other end thereof, of a screw-threaded plug F, arranged at one end of the reel-seat, and a rotating screw-shaft E, engaging the screw-threaded plug and connected with the movable ferrule or clip, so that by rotating the screw-shaft the movable ferrule or clip is adjusted toward or from the stationary clip, substantially as described.

486,803. SLIDING GATE. ASBURY WILKINSON, Lake Charles, La. Filed May 9, 1892. Serial No. 432,290. (No model.)



Claim.—1. The combination of a supporting-frame having a track-bar and provided with a transversely-disposed supplemental frame, sliding gates suspended from the track-bar, gate-levers fulcrumed on the supporting-frame and connected with the sliding gates and having inwardly-extending arms, a vertically-sliding weighted block mounted on the supplemental frame and having its lower end connected with the arms of the gate-levers, and operating-levers fulcrumed on the supplemental frame and connected with the upper end of the sliding block, substantially as described.

2. The combination of a supporting-frame having a track-bar, a transversely-disposed supplemental frame mounted on the main frame and provided with vertically-arranged diagonally-disposed guides, the vertically-movable weighted block arranged in the guides and having openings at its upper and lower ends arranged at angles to each other, the operating-levers fulcrumed on the supplemental frame, the upper links pivoted in the upper opening of the block and to the operating-levers, sliding gates suspended from the track-bar, gate-levers fulcrumed on the supporting-frame and having their lower ends connected with the sliding gates and provided at their upper ends with inwardly-extending arms, and the links arranged in the lower openings of the block and connecting the same with the arms, substantially as described

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486,804. HOLDER FOR TOBACCO-LATHS. JOSEPH M. WOOD, Albion, Wis. Filed Apr. 5, 1892. Serial No. 427,882. (No model.)

Claim.—1. A holder for tobacco-laths, having a securing-plate for attachment to a joist, wall, or other support, and a hanger pivotally connected to said securing-plate and comprising two relatively-adjustable sections arranged to slide upon each other and slotted to receive a securing-bolt, the lower section being provided at its lower end with a hook to engage the tobacco-slat, substantially as specified.

2. A holder for tobacco-laths, having an inverted L-shaped securing-plate for attachment to a joist, wall, &c., and having a perforation in its vertical portion, a hanger-strap comprising two relatively-adjustable sections, the lower of which is provided at its lower end with a lath-holding hook and the upper of which is provided with a perforation to register with that in the securing-plate, and an adjusting-bolt engaging said registering-perforations and provided with a tightening-nut, whereby the hanger-strap may be locked at any desired inclination or angular adjustment, substantially as specified.

3. In a holder for tobacco-laths, the combination, with a stationary securing-plate, of a jointed hanger-strap pivotally connected to said securing-plate and comprising relatively-adjustable upper and lower sections, the upper section being slotted and provided at its lower extremity with keepers and the lower section being slotted, fitting in said keepers and provided with a lath-supporting hook, and the clamping-bolt engaging said slots, substantially as specified.

4. In a tobacco-lath holder, the combination, with a securing-plate, of a hanger-strap pivotally connected to a vertical portion of said plate by means of a clamping-bolt and having its lower end twisted at right angles and bent upon itself to form a lath-supporting hook, whereby said trap may be clamped at any desired inclination, its width being parallel with the direction of the strain, substantially as specified.

486,805. WASHING-MACHINE. CHARLES T. WOODS, Randolph, Kans. Filed Apr. 5, 1892. Serial No. 427,874. (No model.)

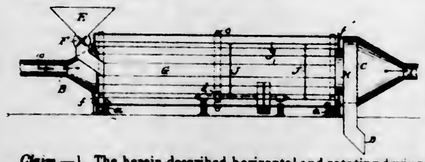
Claim.—1. In a washing-machine, the combination of a body, a washboard arranged within the body, a pitman, and a reciprocating rubber arranged on the rubbing-face of the washboard and comprising two narrow jaws hinged together at their backs and provided with corrugated engaging edges and having narrow longitudinal clothes-openings, one of the sections being secured to the pitman, and means for securing the sections together, substantially as described.

2. In a washing-machine, the combination of a body, a washboard

486,805.

arranged within the body, track-bars located at the sides of the wash-board, a rubber provided at its ends with rollers arranged on the track-bars, the bracket-bars secured to the sides of the tub and provided with recesses and having openings, springs arranged in the openings, and bars arranged in said recesses and engaging the rollers and being held against the latter by the springs, substantially as described.

486,806. DRIER. HERBERT C. BATCHELLER, New York, N. Y., assignor of seventeen-twentieths to Spencer D. Schuyler, same place, and William M. Cramp, Philadelphia, Pa. Filed May 11, 1892. Serial No. 433,550. (No model.)



Claim.—1. The herein-described horizontal and rotating drying-cylinder, having longitudinally-arranged buckets and an exit-opening at one end concentric with the circumference of the cylinder and of less diameter than the cylinder, whereby a continuous end ledge is provided to prevent the premature discharge of the partially-dried material, and a hot-air supply leading to the opposite end of the cylinder, whereby the hot current passing through the cylinder carries the dried material out through said restricted exit-opening.

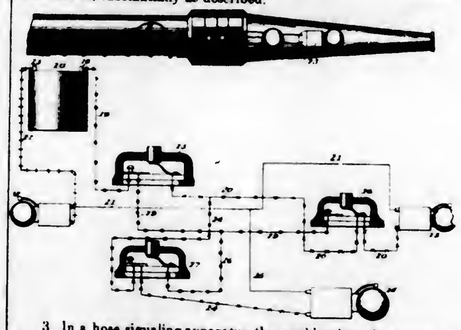
2. The combination, with a horizontally arranged and rotating cylinder, of a hot-air conduit in communication with one end of the cylinder, a material-feeder at the same end of the cylinder, and one or more impeding or delay screens within the cylinder, substantially as described.

3. The combination, with a horizontally arranged and rotating cylinder, of a hot-air conduit in communication with one end of the cylinder, a material-feeder at the same end of the cylinder, an exit extension upon the opposite end of the cylinder, having at said end a discharge-outlet for the grains and for the air, and a stopping-screen at the exit for separating the discharged grain from the air-current, substantially as described.

486,807. ELECTRICAL HOSE SIGNALING APPARATUS. WILLIAM POWLER, Colorado Springs, Colo. Filed Feb. 8, 1892. Serial No. 420,936. (No model.)

Claim.—1. In a hose signaling apparatus, the combination of a source of electricity, a circuit composed of three wires which are attached to the hose, a bell or other signaling device located at each extremity of the line of hose and within the circuit, a third bell or signaling device intermediately located and connected by means of branch wires with the wires of the main circuit, and a push-button for each bell or annunciator, the elements of the apparatus being so arranged and connected that by pressing any button all the bells are simultaneously sounded, substantially as described.

2. In a hose signaling apparatus, the combination of a source of electricity, a circuit the wires of which are attached to the hose, a bell or annunciator located at each extremity of the line, electrically-arranged couplings whereby the circuit is made or broken by uniting or disconnecting the hose-sections, and a third annunciator or signaling device intermediately located and connected by branch wires with the wires of the main circuit, said connection being made by the use of a key attached to one of the metallic sections of the hose-couplings, and suitable push-buttons, the whole being so arranged and connected that by pressing any one of the buttons all the bells are sounded, substantially as described.



3. In a hose signaling apparatus, the combination of a source of electricity, a circuit composed of three wires which are attached to the hose-sections, a bell or other signaling device located at each end of the line and within the circuit, one wire of each length of hose extending to the metallic section of the coupling and the other wires to special attachments located within the coupling-sections, whereby the circuit is established by coupling the hose, and push-buttons, the apparatus being so arranged that the pressing of any button rings both bells, substantially as described.

4. In a hose signaling apparatus, the combination of a source of electricity, signaling mechanism located at each extremity of the line of hose, a circuit in which said mechanism lies, the wires of the circuit being carried by the hose, electrically-arranged couplings consisting of the metallic sections of the coupling extremities of the hose to which the sections of one of the wires lead, and special parts located within the hose-coupling sections to which the sections of the other wires lead, and a third signaling device intermediately located and connected with the main circuit by branch wires leading to a key carrying suitable contacts, one of the metallic parts of the hose-coupling being fashioned to receive this key, one of the key-contacts engaging said coupling, while the other contacts are electrically connected with the special attachments within the section, and a suitable push-button for each bell, annunciator, or signaling device, substantially as described.

486,808. UPRIGHT-PIANO ACTION. GEORGE M. GUILD, Boston, Mass., assignor to L. A. Guild, same place. Filed Mar. 7, 1892. Serial No. 424,073. (No model.)

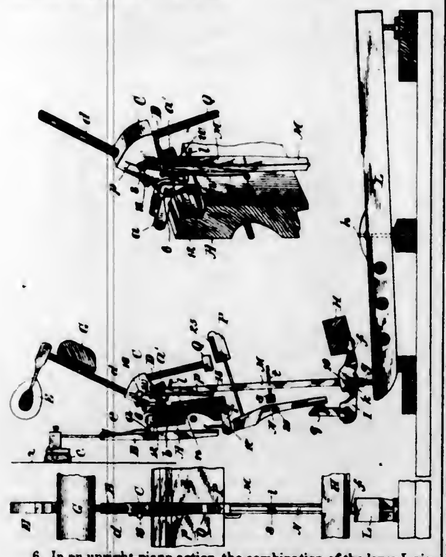
Claim.—1. In an upright-piano action, the combination, with the hammer and hammer-heel, the latter provided with a rest or projection 16, the jack, and the jack-butt co-operating with the latter, of the spring *p*, secured at one end to the jack and having its opposite or free end in contact with the rest or projection 16, said spring sliding on said rest and exerting an outward pressure against the same, substantially as and for the purpose set forth.

2. In an upright-piano action, the combination of the lever I, pivoted to the rail H, the lifter-rod and jack pivoted at its lower end to said lever I and provided with the regulating-button *s*, the throw-off arm *q*, projecting from the lever I, and the intermediate lever N, arranged between the throw-off arm and the button *s*, substantially as set forth.

3. In an upright-piano action, the combination of the lever I, pivoted to the flange of the rail H and actuated by the key L, the lifter-rod and jack M, pivoted to said lever I and provided with the regulating-button *s* and slot *n*, the throw-off arm *q*, secured to the lever I, the intermediate lever N, arranged between the throw-off arm and the button *s*, the jack-butt, hammer-heel, and hammer, the guide-pin *l*, projecting through the slot *n*, and the spring *p*, the latter connected at one end with the lifter-rod and jack M and at the opposite end with the jack-butt or hammer-heel, all operating substantially as described.

4. In an upright-piano action, the combination of the lever I, the lifter-rod and jack M, pivoted thereto, the lever N, operated by the lever I, the hammer-heel having the jack-butt formed thereon, the back-catch P, secured to the lever N, and the bumper Q, projecting from the hammer-heel and adapted to be caught and held by the back-catch as the lever N is actuated, substantially as described.

5. In an upright-piano action, the combination of the lever I, the lifter-rod and jack M, pivoted thereto, the lever N, operated by the lever I, the hammer-heel having the jack-butt formed thereon, a spring connected at one end with said lifter-rod and jack and at the opposite end with hammer-heel or jack-butt, the back-catch P, secured to the lever N, and the bumper Q, projecting from the hammer-heel and adapted to be caught and held by the back-catch as the lever N is actuated, substantially as set forth.



6. In an upright-piano action, the combination of the lever I, pivoted to the flange of the rail H, the lever N, operated by the lever I, the lifter-rod and jack M, pivoted to the lever I and provided with the button *s*, the hammer-heel having the jack-butt formed thereon, the spring *p*, the back-catch P, secured to the lever N, and the bumper Q, projecting from the hammer-heel, all operating substantially as described.

7. In an upright-piano action, the lifter-rod and jack pivoted to the lever I and provided with the regulating-button *s*, in combination with the hammer-heel having the jack-butt formed thereon, the intermediate lever N, the throw-off arm *q*, projecting from the lever I and adapted to move the lever N into contact with the button *s*, and the spring *p*, adapted to seat the lifter-rod and jack beneath the jack-butt and retract the hammer after the blow, substantially as set forth.

8. In an upright-piano action, the combination of the lever I, the lifter-rod and jack pivoted thereto and provided with the regulating-button *s* and slot *n*, the hammer-heel having the jack-butt formed thereon, the intermediate lever N, the throw-off arm *q*, projecting from the lever I and adapted to move the lever N into contact with the button *s*, the spring *p*, connected at one end with the lifter-rod and jack and at the opposite end with the jack-butt or hammer-heel, and the guide-pin *l*, projecting through the slot *n*, formed in the free end of the lifter-rod and jack, substantially as set forth.

9. In an upright-piano action, the lever I, pivoted to the flange of the rail H, the lifter-rod and jack pivoted at its lower end to said lever I, and the hammer-heel having the jack-butt formed thereon, the latter provided with the seat *w* and stop 12, in combination with the key L, provided with the adjusting-screw *g*, the latter adapted to contact with the under side of the lever I to lift the same, substantially as described.

10. In an upright-piano action, the combination, with the lever I, provided with the throw-off arm *q* and pivoted to the rail H, the lifter-rod and jack M, pivoted at its lower end to said lever I and provided with the regulating-button *s*, and the hammer-heel C, having the jack-butt D formed thereon, of the lever N, the back-catch P, secured to and projecting from the front side of the lever N, and the elongated bumper Q, projecting down from the hammer-heel and adapted to be caught and held without slip by the back-catch as the lever N is actuated, substantially as set forth.

11. In an upright-piano action, the combination of the damper and damper-lever, the latter pivoted to the flange *a* of the rail A, the hammer and hammer-heel, the latter having the jack-butt formed thereon, the lever I, pivoted to the rail H and having the lower end of the lifter-rod and jack pivoted thereto, and an intermediate lever N, operated by the lever I and adapted to actuate the damper-lever on the depression of the key, substantially as set forth.

12. In an upright-piano action, the combination of the damper and damper-lever, the latter pivoted to the flange *a* of the rail A, the intermediate actuating-lever N, the lever I, pivoted to the rail H and provided with the throw-off arm *q*, the latter adapted to move the lever N to actuate the damper-lever on the depression of the key, the lifter-rod and jack pivoted to the lever I, and the jack-butt D, substantially as described.

13. In an upright piano-action, the combination of the rail A, flange *a*, hammer E, hammer-heel C, having the jack-butt D formed thereon, the lifter-rod and jack M, provided at its free end with the slot *n* and having the adjustable button *s*, the spring *p*, having one end connected with the hammer-heel or jack-butt, and the other end with the lifter-rod and jack, the guide-pin *l*, projecting from the hammer-heel and engaging the slot *n*, the lever I, pivoted to the flange of the rail H and having the lifter-rod and jack pivoted thereto, said lever I being provided with the throw-off arm *q*, the key L, provided with the adjusting-screw *g*, the lever N, the back-catch P, secured to the lever N, and the bumper Q, projecting from the hammer-heel, all constructed and arranged to operate substantially as set forth.

14. An action for upright-pianos, substantially as described, the same consisting of the rail A, flange *a*, hammer E, hammer-heel C, having the jack-butt D formed thereon, the lifter-rod and jack M, provided at its free end with the slot *n* and having the adjustable button *s*, the spring *p*, having one end connected with the hammer-heel or jack-butt and the other end with the lifter-rod and jack, the guide-pin *l*, projecting from the hammer-heel and engaging the slot *n*, the lever I, pivoted to the flange of the rail H and having the lifter-rod and jack pivoted thereto, said lever I being provided with the throw-off arm *q*, the key L, provided with the adjusting-screw *g*, the lever N, the back-catch P, secured to the lever N, the bumper Q, projecting from the hammer-heel, the damper *c*, damper-lever B, pivoted to the flange *a* and adapted to be actuated by the lever N, and the damper-spring *e*, all constructed and arranged to operate substantially as described.

15. In an upright-piano action, the combination of the lever I, pivoted to the flange *f* of the rail H, the lifter-rod and jack M, pivoted at its lower end to said lever I and provided with the adjustable button *s*, the hammer-heel having the jack-butt D formed thereon, the throw-off arm *q*, projecting from the lever I, the lever N, and the key L with its adjusting-screw *g*, the latter forming a rest for the lever I, all operating substantially as set forth.

486,809. CONVEYER. GEORGE W. MCCARLIN, Hoboken, N. J. Filed May 31, 1892. Serial No. 434,973. (No model.)

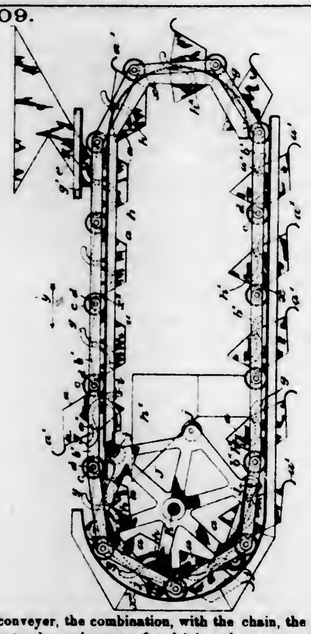
Claim.—1. An endless-chain conveyer comprising a chain and buckets pivotally hung in said chain, said buckets being provided with stops to engage the chain and limit the movement of the buckets about their pivots, substantially as set forth.

2. An endless conveyer having buckets pivotally hung in the chain, said buckets being provided with limiting-stops to engage the chain and limit the movements of the buckets about their pivots and each bucket provided with a cover-plate, which extends over and covers the space between it and the next adjacent bucket, said limiting-stops serving to prevent collision of the buckets when turned, substantially as set forth.

3. In a conveyer, the combination, with the track, track-wheels, axles, and chain-links, of the buckets pivotally hung in the chain, each bucket having a limiting-stop to limit the movement of the buckets about its pivots and a cover-plate extension at one end, which extends over and into the next adjacent bucket, and a fixed bar at the loading-point on the track, said bar being arranged and adapted to prevent the passing bucket from swinging out from under the cover-plate on the next adjacent bucket while receiving its load, substantially as set forth.

4. In an endless conveyer provided with a track and track-wheels and with buckets pivotally mounted in the chain, the combination, with a fixed bar, as g^x, situated at the loading-point, of the conveyer-buckets, each having a plate fixed to its side inside the plane of the chain-links and projecting upward above the top of the bucket back of the pivot, whereby its upper end moves under said bar g^x when the bucket passes the loading-point, and means carried by the moving conveyer, which prevents the rear ends of the buckets from being depressed too much when loading, substantially as set forth

486,809.



5. In a conveyer, the combination, with the chain, the wheels, the axles, the tracks, and means for driving the conveyer, of the buckets pivotally mounted in the chain and each provided with a covering-plate, which covers the space between it and the adjacent bucket and takes over the axle between the buckets, whereby it prevents undue depression of that end of the becket at the loading-point, the horizontal bar g^x, arranged in fixed position at the loading-point, and the plates g on the respective buckets arranged to move under said bar g^x when the buckets pass the loading-point, and thus prevent undue depression of the front ends of the same, as set forth.

6. In a conveyer, the combination, with the track, the track-wheels, their axles, and the endless chain, of the buckets pivotally mounted in the chain, said buckets being provided with projecting covering-plates a' and with projecting limiting-stops to engage the links above and below, respectively, as set forth.

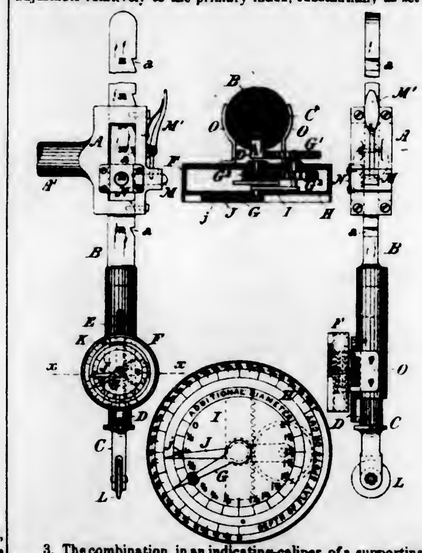
7. In an endless conveyer, the combination, with the straight tracks x and x^4 and the curved track x^5 at the point where the conveyer changes its direction, of the endless chain, the track-wheels and their axles, the buckets mounted pivotally in the chain, and the driver arranged concentric with said track x^5 and inside of the loop of the conveyer, said driver comprising a shaft K, wheels J, fixed on said shaft and having arms provided with antifriction-rollers at their extremities, said rollers being spaced to correspond with the spacing of the conveyer-wheels and arranged to bear upon the latter at points nearer to the center of the driver, measured radially, than the centers of the wheels are situated, substantially as set forth.

8. The combination, with the tracks of a conveyer, the axles, and the wheels, of the links of the endless chain arranged in pairs, the links of the pairs being independent and having bearings on opposite sides of the wheels, the buckets pivotally mounted in the inner links of the pairs, and limiting-stops on the buckets arranged to engage the inner links only of the pairs, whereby the space between the links is left unobstructed, substantially as and for the purposes set forth.

486,810. AUTOMATIC INDICATING-CALIPERS. JOHN W. PORTER, Waukesha, Wis., assignor of one-half to James McNaughton, same place. Filed Aug. 15, 1892. Serial No. 443,094. (No model.)

Claims.—1. The combination, in an indicating-caliper, of a radius-bar which is adjustable in position relatively to a fixed support to indicate approximately the diameter of a piece of work, an indicator-bar adapted to bear on the periphery of the work and to traverse freely longitudinally on the radius-bar, a fixed dial, a primary index actuated by the indicator-bar to indicate the complement of the diameter on said dial, and a movable dial and telltale-index, each adjustable relatively to the primary index, for automatically indicating variations from the initially-ascertained diameter of the work, substantially as set forth.

2. The combination, in an indicating-caliper, of a supporting head or frame, a radius-bar fitting adjustably therein, an indicator-bar sliding freely in the radius-bar, an indicating-dial fixed to the radius-bar, a primary index traversing around said dial and actuated by movements of the indicator-bar, and a movable dial and telltale-index, each adjustable relatively to the primary index, substantially as set forth.



3. The combination, in an indicating-caliper, of a supporting head or frame, a radius-bar fitting adjustably therein, an indicator-bar sliding freely in the radius-bar, an indicating-dial fixed upon the radius-bar, a primary index traversing around said dial and actuated by movements of the indicator-bar, a movable dial mounted upon and concentric with the fixed dial and carrying a pin or abutment against which the primary index bears in its traverse in one direction, and a telltale-index mounted concentric with the fixed and movable dials and carrying a shoulder or projection against which the primary index bears in its traverse in the opposite direction, substantially as set forth.

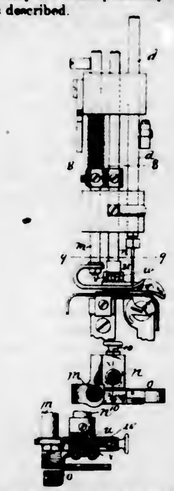
4. The combination, in a registering-caliper, of a supporting head or frame, a radius-bar having a series of lateral notches or recesses spaced at regular intervals and provided with numeral indications, said bar being fitted to traverse longitudinally in the head, an adjusting-latch adapted to engage either of the notches of the radius-bar and hold the latter in position in the head, an index-plate fixed to the head in the line of traverse of the numeral indications of the radius-bar, an indicator-bar sliding freely in the radius-bar, an indicating-dial fixed upon the radius-bar, a primary index traversing around said dial and actuated by movements of the indicator-bar, a movable dial mounted upon and concentric with the fixed dial, and a telltale-index mounted concentric with the fixed dial and movable thereon independently of the movable dial, substantially as set forth.

5. The combination, in an indicating-caliper, of a supporting head or frame, a radius-bar fitting adjustably therein, an indicator-bar sliding freely in the radius-bar and carrying a lateral rack exterior thereto, an indicating-dial fixed to the radius-bar, a primary index mounted on said dial, intermediate gearing transmitting motion from the rack of the indicator-bar to the primary index, and a movable dial and telltale-index, each adjustable relatively to the primary index, substantially as set forth.

6. The combination, in an indicating-caliper, of a radius-bar having a hollow or tubular end portion, an indicator-bar fitted to slide freely therein, an indicating-gage connected with the capacity of longitudinal adjustment to the tubular portion of the radius-bar, and a primary index mounted on said gage and actuated by the movements of the indicator-bar, substantially as set forth.

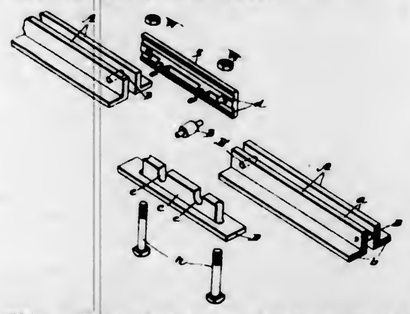
486,811. GUIDE FOR SEWING-MACHINES. THOMAS C. ROBINSON, Boston, Mass., assignor of three-fourths to Richard Stephenson and E. B. Welch, same place. Filed Sept. 15, 1890. Serial No. 364,990. (No model.)

Claim.—1. The combination, with a sewing mechanism embracing a presser-foot and its bar, of the vertically-movable guide-bar n, mounted in an independent guideway in the head of the machine above the work-table and provided with the foot u, independent of the presser-foot, and the guide o, adjustable in the foot u in a straight horizontal plane toward and from the presser-foot, whereby the said guide-bar and foot u may move independently of the presser bar and foot, substantially as described.



2. The combination, with a sewing mechanism embracing a presser-foot and its bar, of the vertically-movable guide-bar n, mounted in an independent guideway in the head of the machine above the work-table and provided with the foot u, independent of the presser-foot, means for connecting the bar n and the presser-foot bar together, and the guide o, adjustable in the foot u in a straight horizontal plane toward and from the presser-foot, whereby the said foot u and the presser-foot may move independently or together, substantially as described.

486,812. TRACK FOR HAY-CARRIERS. BRIGH TAYLOR, Worcester, assignor to the Hay Manufacturing Company, Canton, Ohio. Filed May 31, 1892. Serial No. 434,873. (No model.)



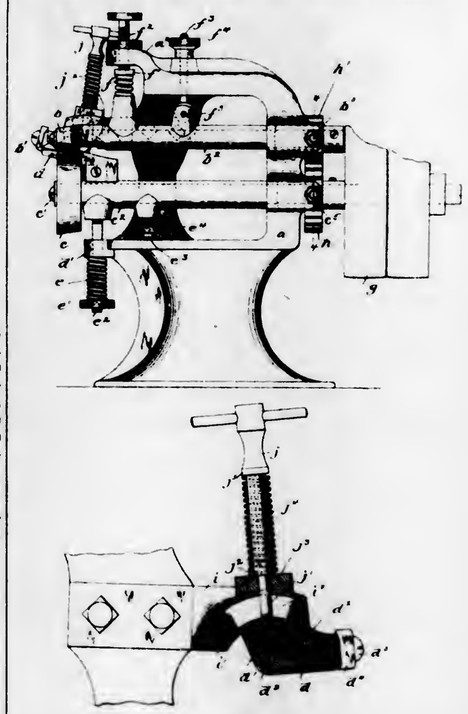
Claim.—1. The combination, in a track for hay-carriers, of the angle-bars placed side by side, a coupler consisting of a base-plate, a cap-plate, bolts for clamping the two together, and double-shouldered rivets located between said angle-bars with their reduced ends projecting therethrough, whereby said angle-bars are retained against vertical and lateral displacement, substantially as set forth.

2. The combination, in a track for hay-carriers, of the angle-bars placed side by side, a coupler consisting of a base-plate having an upwardly-extending bar provided with recesses in its edge, double-shouldered rivets seated in said recesses and extending with their ends through said angle-bars, a cap-plate having shoulders which project into said recesses, and means for clamping the cap-plate and base-plate to said angle-bars.

3. In combination, angle-bars placed side by side, a coupler for uniting the ends of said bars, consisting of a base-plate provided with an upwardly-extending bar having recesses in its edge and located between said angle-bars, a cap-plate, means located in said recesses for spacing the bars, a cap-plate having depending lugs located in said recesses above said spacing means and provided with longitudinal grooves into which the vertical webs of said bars project, and bolts for clamping the plates to the track.

4. The combination, with a track consisting of angle-bars, of a hanger consisting of a base-plate having an upwardly-projecting web located between the vertical webs of said track, a top plate having longitudinal grooves into which project the vertical webs of said angle-bars and against the under side of which the base-plate web abuts, a hook having a screw-threaded engagement with the top plate, and a nut for clamping said plates together, substantially as set forth.

486,813. LEATHER-SKIVING MACHINE. ALBION K. WARBURN, Bridgewater, assignor to the Swain & Fuller Manufacturing Company, Boston, Mass. Filed Apr. 1, 1892. Serial No. 427,233. (No model.)

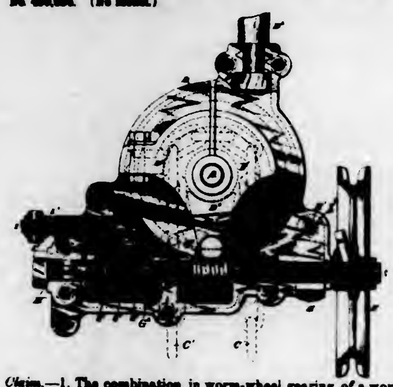


Claim.—1. In a leather-skiving machine, the combination, with the feed-roll, of the skiving-knife, the knife-holder having a segmental surface, the fixed slotted segmental seat having a concave and a convex side, the former being in contact with the segmental surface of the knife-holder, the screw-threaded locking-rod engaged with the knife-holder and passing through the slot in the segmental seat, and the block interposed between the shoulder on said rod and the convex surface of the segmental seat, all arranged and operating substantially as set forth.

2. In a leather-skiving machine, the combination, with the feed-roll, of the skiving-knife, the knife-holder having a segmental surface, the fixed slotted segmental seat having a concave and a convex side, the former being in contact with the segmental surface of the knife-holder, the screw-threaded locking-rod engaged with the knife-holder and passing through the slot in the segmental seat, the block interposed between the shoulder on the said rod and the convex surface of the segmental seat, and the spring interposed between the upper surface of the said block and the shoulder on the rod, as set forth.

3. In a leather-skiving machine, the combination, with the supporting-frame and the skiving-knife, of the feed-rolls, the shafts supporting said rolls, the elongated tubular bearings supporting said shafts and connected with the supporting-frame by means of pivots, the intermeshing gears affixed to said shafts and arranged, as described, relatively to the said pivots, whereby the displacement of the gears caused by the swinging movements of the bearings and shafts is reduced to the minimum, and means for adjusting and holding said bearings, shafts, and feed-rolls, all arranged and operating substantially as set forth.

486,814. WORM-WHEEL MECHANISM. THOMAS A. WESTON, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed July 9, 1891. Renewed Oct. 26, 1892. Serial No. 449,892. (No model.)



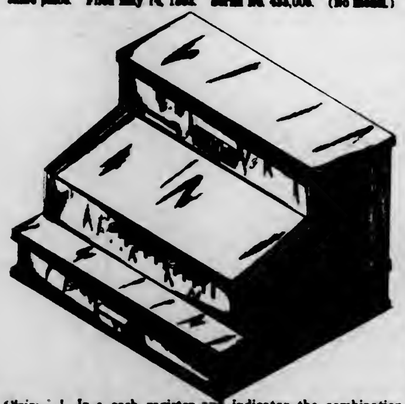
Claim.—1. The combination, in worm-wheel gearing, of a worm-shaft, friction-disks, a ratchet-wheel loose thereon, and a pawl adapted to engage therewith, the said ratchet-wheel acting on both of its sides against the friction-disks slidingly engaged with the worm-shaft, substantially as set forth.

2. The combination, in worm-wheel gearing, of a worm-shaft and an automatic frictional checking device comprising a friction-disk loose upon the worm-shaft, friction-disks slidingly engaged with said worm-shaft, and means for engaging the loose friction-disk to prevent its revolving, substantially as set forth.

3. The combination, in worm-wheel gearing, of a worm-shaft and its supporting-frame with a friction-disk adapted to be engaged with the supporting-frame and friction-disks slidingly engaged to the worm-shaft, substantially as set forth.

4. The combination, in worm-wheel gearing, of a worm-shaft provided with the squared part G^4, rounded corners G^7, and shoulder G^{10}, rotatable disks G^4, G^5, and G^9, and non-rotatable disks G^6, the disk G^5 being provided with a ratchet and a pawl, substantially as and for the purpose specified.

486,815. CASH REGISTER AND INDICATOR. WILLIAM F. WURSBURG, WILLIAM H. WURSBURG, and APOLLONIUS A. TLOOKTHEIL, Grand Rapids, Mich., assignors to W. F. Wursburg and W. H. Wursburg, same place. Filed May 14, 1892. Serial No. 433,006. (No model.)



Claim.—1. In a cash register and indicator, the combination, with a series of rocking keys, a series of slides, one for each key and operated thereby, a swinging bar or shaft operated by said slides, and adding and indicating mechanisms operated by the movement of said slides, of an additional slide operated by the operation of any one of said series of slides and mechanism operated thereby for throwing the indicating and adding mechanisms into gear, substantially as specified.

2. In a cash register and indicator, the combination, with the keys, of the slides operated thereby, the swinging shaft or bar operated by any one of said slides, the indicating and adding mechanisms operated from said shaft, the needle-slide and needle operated by all of said series of slides, and the device operated by said needle for throwing the adding and indicating mechanisms into proper gear, substantially as specified.

3. In a cash register and indicator, the combination, with the shaft E and its operating mechanism, of the elongated sleeve capable of an endwise movement along said shaft but rotating therewith, the indicating-wheels journaled around said sleeve and shaft, a series of projections carried by said sleeve and designed to have engagement internally with any one of said indicator-wheels but with but one of said wheels at a time, the holding-pawls for said wheels, the pawl-releasing devices operated by said projections on the sleeve, the adding devices actuated by a gear-wheel on said sleeve, and means for imparting a step-by-step endwise movement to said sleeve through the operation of the keys, substantially as specified.

4. In a cash register and indicator, the combination, with the shaft E, rotated by the operation of the keys and the sleeve on said shaft and having an endwise movement thereon, of the indicating-wheels arranged to have connection one at a time with said sleeve, the stop-bar, the holding-pawls, the rock-shaft carrying said pawls, and devices operated by the initial movement of said sleeve to release said pawls, as specified.

5. In a cash register and indicator, the combination, with the shaft E and its operating mechanism, and the sleeve rotating with and sliding on said shaft, said sleeve having a lug or projection, of the indicator-wheels loosely journaled in brackets around said sleeve, and a series of radial internal slots in each of said wheels, designed to be engaged by said projection, the holding and releasing devices for said indicators, the lever in engagement with said sleeve, the needle-slide actuated by each key, and the needle carried by said needle-slide and operating said lever, substantially as specified.

6. In a cash register and indicator, the combination, with the shaft E, its operating mechanism, the sliding sleeve H on said shaft and rotating therewith, and the lug or projection on said sleeve, of the indicator-wheels loosely journaled in brackets around said shaft, said wheels having the internal radial slots designed to be engaged by said lug or projection, the stop-bar, the holding-pawls, the shaft on which said pawls are loosely carried, the lifting-lugs for said pawls, and the hanger-arm carried by said shaft and operated by said lug or projection to lift said pawls, substantially as specified.

7. In a cash register and indicator, the combination of the shaft E, sleeve H, sliding thereon and rotating therewith, projection K′ on said sleeve, indicators H′ H^3 H^5 H^6, having internal slots for engagement with said projection, the stop-bar, the rock-shaft, its pawls for holding the indicators, and the releasing devices operated by said projection, substantially as specified.

8. In a cash register and indicator, the combination of the shaft E, the sleeve H thereon, the operating devices for said sleeve, the lug or projection K′ on one end portion of said sleeve, the gear-wheel L on the other end portion, the rotary indicators having internal slots designed to be engaged by the lug or projection K′, the stop, holding and releasing devices thereof, and the adding mechanism operated by a connection with the gear-wheel L, substantially as specified.

9. In a cash register and indicator, the combination of the rotary indicators having the numbers "1" to "9" and "0," inclusive, marked on their peripheries, the stop-pins on said peripheries, their ratchet-gear, the stop-bar therefor, the rock-shaft, the pawls loosely carried thereby and designed to engage said ratchet-gear, the lugs on said shaft, upon which said pawls rest, the rocking device for said shaft, the operating-shaft E, and means whereby any one of said indicators may be made fast with said shaft E upon the operation of the proper key, substantially as specified.

10. In a cash register and indicator, the combination, with the adding and indicating mechanisms, of the sliding sleeve designed to have engagement with said adding and indicating mechanisms, the shaft carrying said sleeve and its operating mechanism, the lever in engagement with said sleeve, the needle, the slide carrying said needle and operated by the depression of any key to move said sleeve in one direction, and a cash-drawer operating the lever device to move said sleeve in the reverse direction, substantially as specified.

11. In a cash register and indicator, the combination, with the loose rotating indicators, the stop, releasing, and holding devices, and the adding-wheels and their gear, of the shaft E and its operating devices, the sleeve H, having an endwise-sliding movement on said shaft and rotating therewith, means on said sleeve for engagement with the indicators and with the gear of the adding-wheels upon its endwise movement in one direction, the lever in engagement with said sleeve, the needle operating said lever, the needle-slide carrying said needle and actuated by the depression of any key to move said sleeve in one direction, and a cash-drawer operating against said lever for returning said sleeve, substantially as specified.

12. In a cash register and indicator, the combination, with the adding and indicating mechanisms, the sliding sleeve operating said mechanisms, the shaft carrying said sleeve, and the key-operated slides operating said shaft through intermediate gear, of the needle-slide operated by any one of the keys, the needle carried by said slide, and the lever in engagement with said sleeve and operated by said needle, substantially as specified.

13. In a cash register and indicator, the combination, with the shaft E, of the sleeve H, rotating therewith and having an endwise-sliding movement thereon, the projection K′ on said sleeve, the series of rotary indicators normally loose on said sleeve and turning in brackets, their returning-springs, the internal radial slots in said indicators, designed to be engaged by said projection, the ratchet-gear on each indicator, the loose pawls for said gear, the rock-shaft carrying lifters for said pawls, and the hanger carried by said shaft and operated by said projection, substantially as specified.

14. In a cash register and indicator, the combination, with the rocking keys and the slides operated by said keys, of the needle-slide operated by any one of said slides, the needle carried thereby, the lever O, the perforated segment-arm carried by said lever, the arm on said lever, projecting into the lower portion of the case, and the cash-drawer operating said arm, substantially as specified.

15. In a cash register and indicator, the combination, with a series of angular keys loosely pivoted at their angles, of a series of reciprocating slides operated each by its key, a swinging rod or shaft operated by said slides and a different vertical distance by each, and a weighted swinging-bail frame engaged and operated by each slide, and serving, also, to return said slides after operation, substantially as specified.

16. In a cash register and indicator, the combination, with a series of angular rocking keys, of a horizontal reciprocating slide for each key, operated by the impingement of the key, the swinging rod or shaft G, operated by said slides, each slide operating it a different vertical distance, the swinging-bail frame operated by all of said slides, the needle-slide and needle operated by said bail-frame, and the lever for throwing the adding and indicating mechanisms into gear, said lever being operated by said needle, substantially as specified.

17. In a cash register and indicator, the combination of a series of angular rocking keys, their horizontal reciprocating slides, the gear operated by said slides, the rock-shaft D′, its swinging-bail frame carried by said shaft and operated by said slides, the needle-slide and needle operated by said bail-frame, and the cash-drawer having a lock-bolt released by a connection with said bail-frame, substantially as specified.

18. In a cash register and indicator, the combination, with the series of keys, of the series of reciprocating slides operated one by each key, the rock-shaft D′, the bail-frame carried by said shaft and operated by said slides, the needle-slide, the needle operated by said bail-frame, and the weighted arm carried by said rock-shaft for returning the bail-frame, needle-slide, and key-slides to their normal position, substantially as specified.

19. In a cash register and indicator, the combination, with the series of pivoted rocking keys, of a reciprocating slide operated by each key, a swinging-bail frame operated by each slide, a needle-slide and needle operated by said bail-frame, a cash-drawer having its lock released by the action of said bail-frame, and means for returning said slides and bail-frames to their original position when a key is released, substantially as specified.

20. In a cash register and indicator, the combination, with a series of angular rocking keys carrying finger-pieces on their horizontal arms, of a series of reciprocating slides having each a notch at its outer end engaged by the depending arm of its respective key, the additional slide, the guides on which said slides work, the shoulder c^6 on each key, the bail-frame operated by engagement with said shoulder, the graduated inclines, and the adding and indicating mechanisms operated by said slides, substantially as specified.

21. In a cash register and indicator, the combination, with a series of angular rocking keys, of a series of edgewise-disposed reciprocating slides operated each by one of said keys, said slides having each a notch receiving the lower end of its respective key, a shoulder for engagement with a bail-frame, and an incline by means of which the adding and indicating gear is operated, said inclines being of different pitch on the different slides, substantially as specified.

22. The combination, with a series of rocking keys, of a series of edgewise-disposed reciprocating slides, one for each key and operated thereby, the guide rods or bars working in slots in said slides, the collars or sleeves on said rods or bars, the shoulder c^6 on said slides, the graduated inclines c^3, the horizontal portions c^4 and c^5, terminating said inclines, and the adding and indicating mechanisms operated by said slides, substantially as specified.

23. In a cash register and indicator, the combination, with the keys and their slides, of the needle-slide operated by the operation of any one of said keys and slides, the needle carried thereby, the lever O, having a perforated segment-arm designed to be engaged by said needle, the sliding sleeve for throwing the adding and indicating mechanisms into gear, operated by said lever, and the arm on said lever, operated by the closing of the cash-drawer for reversely operating said sleeve, substantially as specified.

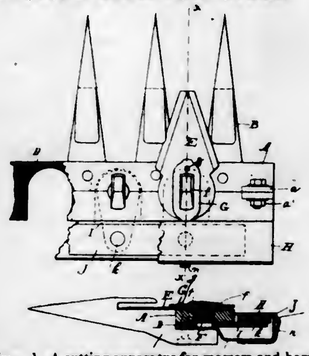
24. In a cash register and indicator, the combination, with the keys, their slides, the needle-bar, needle, lever devices, and swinging rod or shaft G, all operated by said slides, of the rock-shaft D′, its weighted arm, the segment-carrying arm F′, and toothed segment F, carried by said shaft, the shaft E, having gear operated by said segment, the arm F^8, connected to said segment-carrying arm and to the rod or shaft G, and the adding and indicating mechanisms operated from the shaft E, substantially as specified.

25. In a cash register and indicator, the combination, with the adding and indicating mechanisms, of the shaft E, the sleeve H, sliding on and moving with said shaft, said sleeve having means for connection with the gear of the adding and indicating mechanisms, the swinging rod or shaft G, operated by the key-slides, the arm F^8, toothed segment F, the pinion E^9 on said shaft and engaged by said segment, the ratchet-wheel E′, fast to the shaft E, and the disk E^3, loosely sleeved on said shaft and having a pawl connection with said ratchet-wheel, substantially as specified.

26. In a cash register and indicator, the combination of keys A, slides C, swinging frame or shaft G, needle-slide D and its needle, the lever O, operated by said needle, the shaft D′, its weighted arm, and bail-frame D^3, the segment-carrying arm F′ and toothed segment F, the arm F^8, connecting said swinging rod or shaft and the segment-carrying arm, and the adding and indicating mechanisms operated from said segment and lever O, substantially as specified.

27. A cash register and indicator comprising the keys A, key-slides C, swinging rod or shaft G, bail-frame D^3, shaft D′, arm F′, toothed segment F, arm F^8, shaft E, its gear operated by said segment, the sleeve H, the indicators H′ H^3 H^5 H^6 and their gear and operating devices, the adding mechanism and its gear operated from said sleeve, the needle-slide C and its needle, and the lever O, having a connection with said sleeve and operated by said needle, all in combination with an inclosing case having a cash-drawer the lock of which is released by the bail-frame D^3, said cash-drawer having means whereby it sounds an alarm when opened and operates the lever O in one direction when closed, substantially as specified.

486,816. CUTTER-BAR FOR MOWERS. MELVILLE C. AYER, Biddeford, assignor of one-half to William H. Stevens, Portland, Me. Filed May 26, 1892. Serial No. 434,382. (No model.)



Claim.—1. A cutting apparatus for mowers and harvesters, consisting of a finger-bar, studs each journaled vertically in said finger-bar, a knife secured to the top of said stud, an arm or lever secured to the lower end of said stud below said finger-bar, and means for imparting an oscillating motion to said arm or lever, in combination, substantially as described.

2. In a cutting apparatus for mowers and reapers, the combination, with a finger-bar, of studs each journaled vertically in said finger-bar, said stud having a head projecting above the upper surface of said finger-bar, said head having a recess formed in its forward end next the surface of said cutter-bar, a knife resting on said finger-bar and having an opening for said head to pass through that portion of the knife immediately in front of said opening, fitting said recess when in position, a spring-plate secured to said knife in front of said head and having an opening through which said head passes, the rear end of said opening being in contact with the rear end of said head when the knife is in position, substantially as described.

3. In a cutting apparatus for mowers and reapers, the combination, with a finger-bar, of studs each journaled vertically in said finger-bar, said stud having a head extending above the upper surface of said finger-bar, said head having a recess formed in its forward end next the surface of said cutter-bar, a knife fitting over said head and within said recess, and a spring-plate for retaining said knife within said recess, substantially as described.

4. In a cutting apparatus for mowers and reapers, the combination, with a finger-bar, of studs journaled vertically in said finger-bar, knives secured to the upper ends of said studs, an arm or lever secured to the lower end of each of said studs below said finger-bar, a casing secured to the under side of said finger-bar and extending rearward and turned up beyond the end of said arm or lever, and a

2. In an automatic bolt-operating device, the combination of a power and boltwork with a lever and a bar O, connected therewith and with the boltwork, and a stop by means of which the lever and bar are operatively connected as one lever, whereby a partial action of the power casts the boltwork and a further action of the power retracts the boltwork, substantially as described.

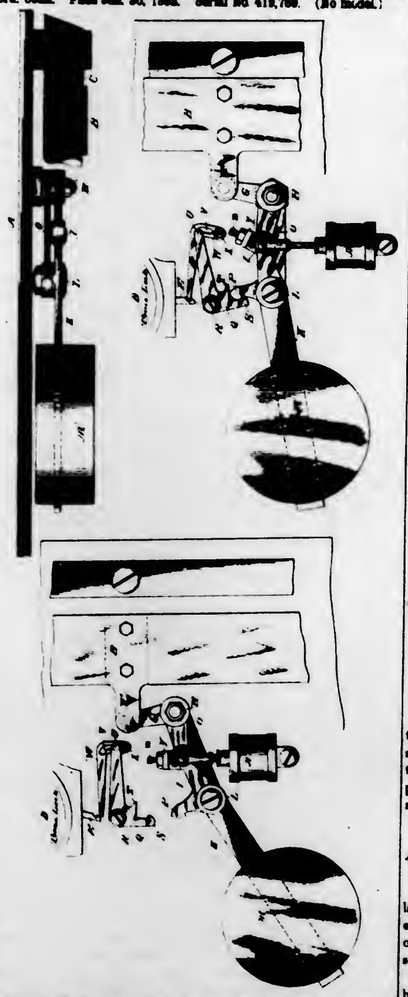
side boards 5, having tongues 8 to enter said grooves and grooves 7, tongues 10, arranged on said end boards to enter the grooves of the side boards, pivoted buttons arranged on said ends, latches or sockets therefor on the side pieces, lugs arranged on the top and bottom boards,

slides, and an auxiliary guide opposite to the main guide, in combination, as shown.

4. In a cutting apparatus for mowers and reapers, the combination, with a finger-bar, of studs journaled vertically in said finger-bar, knives secured to the upper ends of said studs, an arm or lever secured to the lower end of each of said studs below said finger-bar, a casing secured to the under side of said finger-bar and extending rearward and turned up beyond the end of said arm or lever, and a cover for said casing, fitting in a groove in the rear of said bar and having a flange fitting down over the upturned edges of said casing, and means for retaining said cover in position, substantially as described.

5. A cutter-bar for mowers and harvesters, consisting of a finger-bar, studs each journaled vertically in said finger-bar, a knife secured to the top of said stud, an arm or lever secured to the lower end of said stud below said finger-bar, and means for imparting an oscillating motion to said arm or lever, in combination with a cover for the reciprocating mechanism, making a tight connection with said finger-bar in rear of said knives, substantially as described.

486,817. SAFE-BOLTWORK. FREDERICK H. BULLARD, Chicopee, Mass., assignor to The Yale & Towne Manufacturing Company, Stamford, Conn. Filed Jan. 30, 1892. Serial No. 419,780. (No model.)



Claim.—1. In an automatic bolt-operating device, the combination of a power and boltwork with a lever K operated by the power, mechanism for operatively connecting the lever with the boltwork, and a stop adapted to limit the movement of the lever for casting the boltwork, substantially as described.

2. In an automatic bolt-operating device, the combination of a power and boltwork with a lever and a bar O, connected therewith and with the boltwork, and a stop by means of which the lever and bar are operatively connected as one lever, whereby a partial action of the power casts the boltwork and a further action of the power retracts the boltwork, substantially as described.

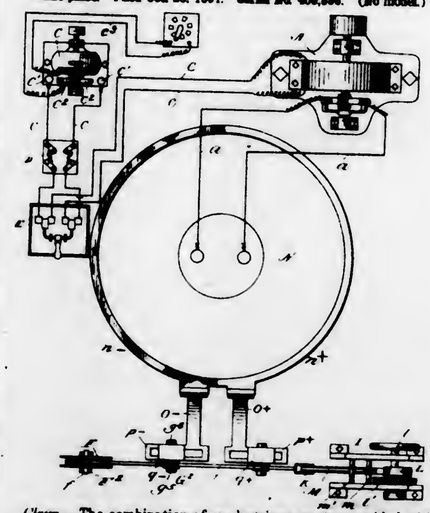
3. In an automatic bolt-operating device, the combination of a power and boltwork with a bell-crank lever adapted to be moved by the power in the direction for casting the boltwork, and a second lever with which the bell-crank lever engages, and a time-lock adapted to release the power, whereby the bell-crank lever will move in the direction for retracting the boltwork, substantially as described.

4. In an automatic bolt-operating device, the combination, with boltwork, of a weighted lever, a bell-crank lever, and a stop over the pivoted connection of the two levers, whereby the fulcrum of the weighted lever is shifted when that lever has been partially operated, substantially as described.

5. In a bolt-operating apparatus, the combination of a bell-crank lever pivotally connected by one arm with the boltwork and pivotally connected by the other arm with a weighted lever, and a bar connecting the lever-fulcrum pivot at L with the bell-crank lever-pivot at H, and a stop, as at Z, whereby the fulcrum-pivot of the lever is shifted from L to H, substantially as described.

6. In an automatic bolt-operating apparatus, the combination, with the boltwork and a time-lock, of a bell-crank lever G, a weighted lever K, a bar O, having a hook P, a lever Q, provided with a hook S and a projection T, a slotted lever W, and a projection Y from the bar O, provided with screw Z, all arranged and operating substantially as described.

486,818. ELECTRICAL METAL-WORKING APPARATUS. GEORGE D. BURTON, Boston, Mass., assignor to the Electrical Forging Company, same place. Filed Oct. 26, 1891. Serial No. 409,896. (No model.)



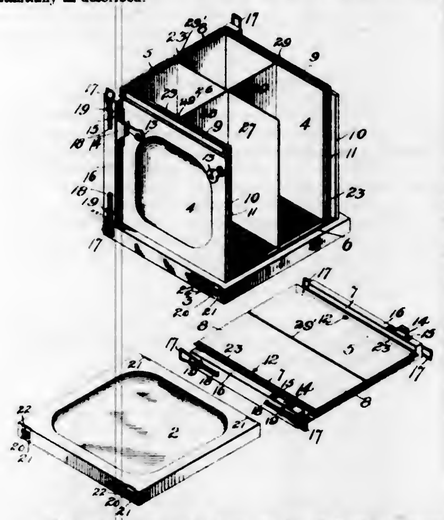
Claim.—The combination of an electric converter provided with two exterior rings of opposite polarity, conductive arms attached to said rings, electrodes mounted on said arms and provided with contact-rolls, a feed-reel disposed adjacent to one of said electrodes, a pair of forging-hammers disposed adjacent to the other electrode, and means for actuating said hammers.

486,819. KNOCKDOWN BOX. GEORGE S. CARTER, Minneapolis, Minn. Filed Dec. 26, 1891. Serial No. 416,157. (No model.)

Claim.—1. The combination, in a knockdown box, of rectangularly-grooved top and bottom boards, rabbeted and grooved side and end boards to fit the same and one another, and spring-hasps arranged on the same to engage lugs provided on the adjoining part or parts, substantially as described.

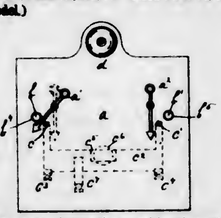
2. The combination, in a packing-box, of the top and bottom boards each having a rectangular groove, rabbeted side and end pieces to fit into said grooves, locks for fastening the side and end pieces together, and spring-loops arranged on the side pieces to engage lugs provided on the top and bottom boards, substantially as described.

3. The combination, in a packing-box, with the grooved top and bottom boards, of end boards 4, having tongues to enter said grooves, side boards 5, having tongues 8 to enter said grooves and grooves 7, tongues 10, arranged on said end boards to enter the grooves of the side boards, pivoted buttons arranged on said ends, latches or sockets therefor on the side pieces, lugs arranged on the top and bottom boards, and spring-loops provided on the side pieces to engage the same, substantially as described.



4. The combination, with the top and bottom 2 and 3, grooved as described, of the end pieces 4 4 and the side pieces 5 5, grooved and rabbeted to fit one another and said top and bottom pieces, and partitions 26, 27, 28, and 29, arranged in the box, said partitions having lugs to engage one another and being collapsible, substantially as described.

486,820. ELECTRICAL ANNUNCIATOR. FRANKLIN S. CARTER, Burlington, N. J., assignor to Franklin S. Carter, Charles M. Wilkins, and R. Ward Wilkins, Philadelphia, Pa. Filed June 14, 1892. Serial No. 436,662. (No model.)



Claim.—1. In an annunciator, the combination of a bar or plate carrying pins or projections which are in the path of the pointers, and an electro-magnet to actuate the bar to move the pins collectively out of the path of said pointers, substantially as set forth.

2. In an annunciator, the combination of a bar or other mechanism carrying pins or projections, said pins or projections being in the path of the pointers to intercept and hold them to indicate a call, and an electro-magnet to actuate said bar to withdraw said pins or projections collectively from the path of the pointers to allow them to be attracted and return to their normal position, said electro-magnet being in circuit with the indicating-magnets, substantially as shown.

3. In an annunciator, the combination of a dial, pointers pivotally attached to said dial, and intercepting-pins arranged to be collectively moved by an electro-magnet, substantially as set forth

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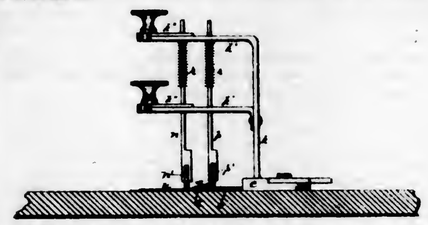
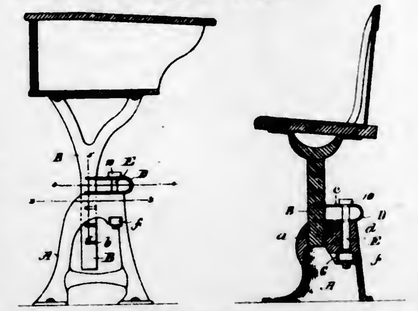
486,821. GUIDING DEVICE FOR SEWING-MACHINES. LOUIS S. CHAFFEE, Cortland, N. Y.; Mary H. Chaffee, administratrix of said Louis S. Chaffee, deceased, assignor of one-half to Homer B. Rhoubottom, same place. Filed Dec. 8, 1891. Serial No. 414,268. (No model.)

Claim.—1. A sewing-machine attachment comprising a main guide, an adjustable standard mounted thereon, guide-arms secured thereto provided with openings, as shown, adjustable slides mounted on said arms, vertical presser-roller bars mounted in said arms and slides, and an auxiliary guide opposite to the main guide, in combination, as shown.



2. The combination, with the presser-foot, the needle, and the main and auxiliary guides, of intermediate work-holding rollers, one in front of the needle and the other laterally separated therefrom and parallel thereto, both being mounted in vertically-movable bars, guided and adjustable laterally in arms supported above the table, and springs around and connected to said bars and bearing against said arms and holding said rollers in vertically-yielding contact with the work.

486,822. ADJUSTABLE SUPPORTING-STANDARD FOR SCHOOL DESKS AND SEATS. FREDERIC A. CHANDLER, Somerville, Mass. Filed Apr. 7, 1892. Serial No. 428,209. (No model.)



Claim.—1. A supporting-standard for school desks and seats, composed of a lower portion or base A and an upright or upper portion B, provided with grooves or recesses and adapted to slide vertically within said base, combined with a double or U-shaped spring D, adapted to slide horizontally on said base and engage the grooves or recesses in the vertically-sliding upright, and a clamping-bolt E, passing through said spring and adapted to hold the same when slid forward to lock the upright at the desired height, substantially as set forth.

2. In a supporting-standard for school desks and seats, the combination of the lower portion or base A, the upright or upper portion B, provided on opposite sides with a series of horizontal grooves or recesses *b* and adapted to slide vertically in said base, the double or U-shaped spring D, provided with slots *c c* and having the outer ends of its two branches or members bifurcated to embrace the upright B and enter the grooves *b* on its opposite sides, the lower member of said spring resting on the base A and sliding horizontally thereon, and the vertical bolt E and nut *f*, said bolt passing through the slots *c c* of the spring, whereby the latter is clamped when adjusted to hold the upright at the desired height, all constructed to operate substantially as and for the purpose described.

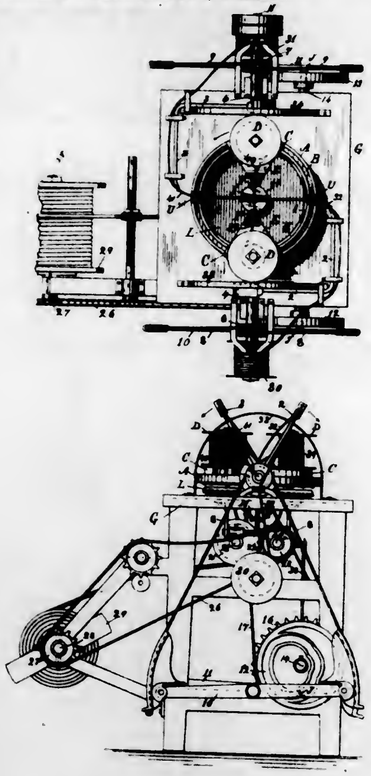
3. In a supporting-standard for school desks and seats, the combination of the base A, the upright B, provided on opposite sides with a series of horizontal grooves or recesses *b* and adapted to slide vertically in said base, the double or U-shaped slotted spring D, having the outer ends of its two members or branches bifurcated to embrace the upright B and enter the grooves *b*, the bifurcations at the outer end of the lower member of said spring lying partly within the grooves *b* and partly outside the same, whereby they are adapted to take a firm bearing upon the top of the base A on either side of the upright B, and the clamping-bolt E, passing through the spring D to hold the same when adjusted, substantially as set forth.

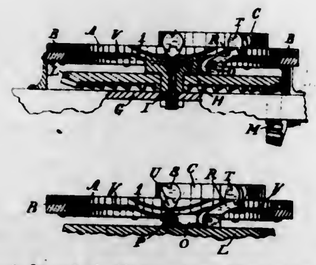
4. The combination of the base A and vertically-sliding upright B, provided with grooves or recesses *b*, the slotted double or U-shaped spring D, sliding horizontally on the top of the base A and adapted to engage the grooves or recesses *b*, the vertical bolt E, passing through the slots of the spring D and provided with a nut *f*, and the pocket G on the under side of the base A, open on one side to receive said

nut *f* and adapted to hold the same in position to receive the end of the bolt when thrust down through the aperture *d* of the base A, substantially as set forth.

486,823. WIRE-BRAIDING MACHINE. JOHN R. CLEAVELAND, Indianapolis, Ind., assignor to Mary R. Cleaveland, same place. Filed Aug. 9, 1892. Serial No. 442,561. (No model.)

Brief.—A pair of wire-carriers are rotated horizontally by means of the devices shown by Figs. 4, 5, and 6. An oscillating arm is mounted on either side of the machine and alternately intercepts the course of the wire-carriers. The oscillating arms lay their wire in diametrically-opposite grooves. The wire-carriers pass over them at those points by means of the mechanism set up in claim 2. The arms are oscillated by the mechanism set up in claim 3.





Claim.—1. In a wire-braiding machine, the combination of the following instrumentalities, namely: a table, a pair of wire-carriers mounted on said table and arranged to rotate thereon in a horizontal plane, a pair of wire-carriers also mounted on said table and arranged to oscillate thereon in vertical planes which intersect the plane of rotation of the horizontal wire-carriers, means for imparting a continuous rotary motion to said rotating wire-carriers, and means for imparting an intermittent oscillating movement to said oscillating wire-carriers, all substantially as and for the purpose set forth.

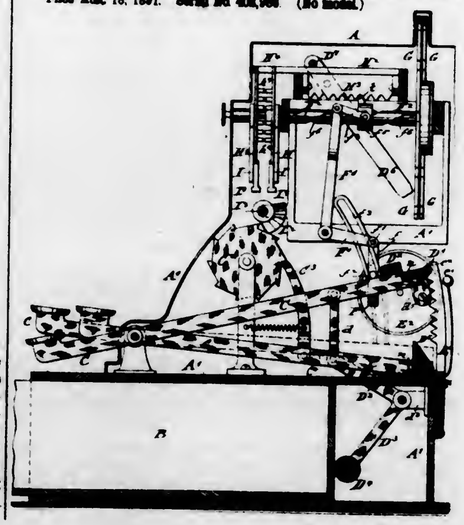
2. In a wire-braiding machine, the combination of the table, the circular way mounted thereon and having in its upper surface a pair of diametrically-opposed radial grooves, the centrally-perforated hub secured to said table concentric with said way, the pair of wire-carriers arranged to traverse said way, the wheel mounted upon said hub and arranged to rotate beneath said way, the dogs pivoted to said wheel and arranged to engage said wire-carriers, and the guide arranged to disengage said dogs from said carriers while the carriers are passing the radial grooves in the way, substantially as and for the purpose set forth.

3. In a wire-braiding machine, the combination of the table, the pair of wire-carriers arranged to rotate in a horizontal plane thereon, the pair of rock-shafts mounted on said table at opposite sides of the plane of rotation of said wire-carriers, the plane of rotation of said rock-shafts being at right angles to the plane of rotation of the wire-carriers, the pair of wire-carrying arms secured to the rock-shafts, the pair of rocking levers pivoted to the table so as to swing in a vertical plane thereon, the cords connecting the ends of said levers and said shafts, and means, substantially as shown and described, for imparting an intermittent oscillating movement to said rocking levers whereby said wire-carrying arms are simultaneously oscillated in opposite directions, substantially as set forth.

486,824. BRAIDED FENCE-WIRE. JOHN R. CLEAVELAND, Indianapolis, Ind., assignor to Mary R. Cleaveland, same place. Filed Aug. 30, 1892. Serial No. 443,553. (No model.)

Claim.—The above-described braided fencing-wire, consisting of two strands of wire bent into serpentine form and laid side by side in parallel planes without being twisted together, but crossing each other to form a series of loops, said pair of strands being bound together by two other wire strands, which are interwoven with said loops and twisted together, passing, respectively, alternately over and under the first wires at their points of intersection, thus forming a second series of loops in a plane substantially at right angles to the plane of the loops formed by the first-mentioned wires, the whole being so closely interwoven that all of the four wires composing the strand are in contact at their several points of intersection, all substantially as set forth.

486,825. CASH REGISTER AND INDICATOR. ELISEO DEL VALLE, Brooklyn, N. Y., assignor of three tenths to George Martens, same place. Filed Aug. 18, 1891. Serial No. 402,986. (No model.)



Claim.—1. The combination of a series of fulcrumed key-levers, a coupling-frame pivoted to the fulcrum of the key-levers, fulcrumed elbow-levers provided with stops at their upper arms and a push-roller at their lower arms, pivot-links connecting the coupling-frame with said elbow-levers, and a cash-drawer provided with fixed abutments at the side walls that are engaged by the stops when the key-levers are in normal position, but cleared by the same when one or more of the key levers are raised, substantially as set forth.

2. The combination of a series of fulcrumed key-levers having notched rear ends, a coupling-frame operated by said key-levers, said coupling-frame being provided with an oscillating rear bar, an upright toothed and spring-actuated arm pressing on said rear bar, and a transverse locking-bar on said arm, said rear arm locking the raised key lever or levers and the locking-bar the remaining key-levers, substantially as set forth.

3. The combination of a series of fulcrumed key-levers, a coupling-frame pivoted to the fulcrum of the key-levers, said coupling-frame being provided with a pivoted rear bar and with a transverse bar connecting the side bars of the coupling-frame, an inclined abutment by which the rear bar is oscillated in backward direction, a spring-actuated pivoted and toothed arm that presses on the rear bar of the coupling-frame, and a transverse locking-bar on said arm, substantially as set forth.

4. The combination of a series of fulcrumed key-levers having notched rear ends, a coupling-frame pivoted to the fulcrum of the key-levers, a fixed transverse bar connecting the side bars of the coupling-frame and extending over the key-levers, a pivoted bar at the rear part of the coupling-frame, and a spring-actuated and toothed arm pivoted to the supporting-frame and provided with a stop at the upper end, said toothed arm pressing the pivoted rear bar of the coupling-frame into the notched rear ends of the raised key lever or levers, so as to lock the same in raised position, substantially as set forth.

5. The combination of a series of fulcrumed key-levers having notched rear ends, a coupling-frame pivoted to the fulcrum of said key-levers and composed of side bars, a transverse connecting-bar and a pivoted rear bar, an upright pivoted and toothed arm having a stop at the upper end, a transverse locking-bar on said arm, a spring for pressing the toothed arm on the pivoted rear bar of the coupling-frame, and an inclined abutment for oscillating said rear bar, so as to withdraw it and the locking-bar from the notched rear ends of the key-levers, substantially as set forth.

6. The combination, with a series of fulcrumed key-levers, of a coupling-frame composed of side bars pivoted to the fulcrum of the key-levers, a fixed transverse connecting-bar and a pivoted rear bar, a fixed abutment on the supporting-frame, an upright toothed arm pivoted to said supporting-frame, a transverse locking-bar applied to said toothed bar, a spring applied to the toothed arm, so as to hold it in contact with the rear bar of the coupling-frame until the rear arm is moved by the abutment in backward direction, and an alarm device operated by the toothed arm at each operation of a key-lever, substantially as set forth.

7. The combination, with a series of fulcrumed key-levers, of a step-shaped block suspended transversely above said key-levers, a spirally-grooved spindle above said block, a sliding nut on said spindle, said nut engaging the groove of said spindle, an intermediate fulcrumed elbow-lever connecting the pivot-shaft of the block with the sliding nut, indicating and registering dials placed loosely on said spindle, means for moving the dials axially with the spindle in one direction, and means for locking them in position when the spindle is returned into its normal position, substantially as set forth.

8. The combination, with a series of key-levers applied to a common fulcrum, of a coupling-frame pivoted to the fulcrum of the key-levers and provided with arc-shaped and slotted guide-arms, a step-shaped block arranged transversely above said keys and provided with pins extending into said guide-arms, a spirally-grooved spindle supported in bearings above the step-shaped block, intermediate mechanism between the step-shaped block and the spindle, by which an axial motion is imparted to said spindle in proportion to the oscillating motion imparted to the step-shaped block by the key-levers, and indicating and registering dials applied to said spindle, substantially as set forth.

9. The combination, with a series of fulcrumed key-levers, of a step-shaped block supported transversely above said key-levers, a spirally-grooved spindle supported above said step-shaped block, a sliding nut engaging the spiral groove of said spindle, an intermediate fulcrumed elbow-lever connected at the lower end to arms of the step-shaped block and at the upper end to said nut, and a check-frame by which the nut and spindle are retained at the point to which they are set by the raised key-lever, substantially as set forth.

10. The combination of a series of key-levers, a spirally-grooved spindle, intermediate mechanism between the key-levers and spindle, by which axial motion is imparted to the latter, a temporary indicating-dial applied loosely to said spindle, means for moving said dial in one direction with the spindle, a spring for returning the dial in opposite direction, a check-pawl engaging recesses in the circumference of the dial, and means for withdrawing said check-pawl, so as to permit the turning of the dial with the spindle and the re-engagement of said dial by the check-pawl on the return of the operating key-lever, substantially as set forth.

11. The combination, with a series of fulcrumed key-levers, of a coupling-frame pivoted to the fulcrum of the key-levers, a fixed tooth applied to said coupling-frame, an indicating-dial having recesses in its circumference, intermediate mechanism for turning said dial by the action of one of the key-levers, a horizontally-movable and spring-actuated bar having stops adapted to engage the recesses of said dial, an upright arm pivoted to the horizontal bar and to the supporting-frame, a tapering projection on said arm, and a push-pawl on the coupling-frame for withdrawing the stops from the dial whenever a key-lever and the coupling-frame are raised and locking said dial when the key-lever and coupling-frame are returned to their former position, substantially as set forth.

12. The combination, with a series of fulcrumed key-levers, of an axially-rotary spindle, mechanism between the key-levers and the spindle for axially turning the latter, registering-dials applied loosely to said spindle and provided with projecting pins at their adjoining faces, a pawl pivoted to a lug on said spindle and adapted to engage simultaneously the projecting teeth of both dials, so as to turn the same in one direction with the spindle, and a check-pawl adapted to engage the toothed circumference of said dials, so as to prevent them from returning with the spindle, substantially as set forth.

13. The combination of a series of fulcrumed key-levers, a rotary spindle mechanism between the key-levers and the spindle for axially rotating the latter, a totalizing-dial placed loosely on said spindle, a pawl-and-ratchet device for turning the dial with the spindle in one direction, a check device for locking the dial and preventing its turning with the spindle in opposite direction, elbow-levers on said spindle, push-pawls on said elbow-levers adapted to engage the toothed circumference of the dial, a stop on one dial for operating the elbow-lever of the adjacent dial after each full rotation of the first dial, and means operated by the key-levers for operating the push-pawl and move the last dial for the distance of one tooth when the first dial has completed its rotation, substantially as set forth.

14. The combination of a series of fulcrumed key-levers, axially-rotating spindles, a totalizing-dial placed loosely on said spindle, a pawl pivoted to a lug on said spindle for engaging projecting pins on said dial, a check-pawl adapted to engage the toothed circumference of the dial and retain the same when the spindle is moved in opposite direction, a projecting stop on one dial, an elbow-shaped lever applied loosely to the spindle of the next adjacent dial, a push-pawl applied to the lower arm of said elbow-lever and adapted to engage the toothed circumference of the second dial, a shaft having spirally-bent wings or flanges adapted to operate said push-pawl, and means operated by the key-levers for turning said shaft, so as to move the dial for a distance of one tooth when the first dial has completed its rotation, substantially as set forth.

15. The combination of a series of key-levers, a coupling-frame pivoted to the fulcrum of said key-levers, elbow-levers connected to said coupling-frame and provided with toothed segments at their front ends, rotary spindles supported above the key-levers, intermediate mechanism between the key-levers and the spindles for imparting axial motion to the latter, totalizing-dials applied loosely to said spindles, means for moving the dials in one direction with the spindles, check-pawls adapted to prevent the dials from being moved in opposite direction with the spindles, projections on said dials, intermediate elbow-levers on said spindles, push-pawls applied to the lower ends of the elbow-levers, a shaft extending longitudinally below the push-pawl, spirally-bent wings on said shaft adapted to engage the push-pawls, and pinions on the ends of the shaft, said pinions meshing with the segments operated by the coupling-frame, so as to turn the shaft and actuate the push-pawls, substantially as set forth.

16. The combination, with a series of fulcrumed key-levers, of a coupling-frame pivoted to the fulcrum of the key-levers, a fulcrumed elbow-lever connected to the coupling-frame and provided with a toothed segment at its front end, a transverse shaft having wing-shaped flanges, pinions on said shaft meshing with said segments, axially-turning spindles, mechanism between said spindles and the key-levers for imparting axial motion to the same, registering-dials placed loosely on said spindles, means for moving the dials and their spindles in one direction, check-pawls for preventing the return motion of the dials when the spindles are moved in opposite direction, and transferring mechanism by which each full rotation of one dial is registered on the next adjacent dial by the action of the flanges on the transferring-shaft, substantially as set forth.

17. The combination of a series of fulcrumed key-levers, axially-rotated spindles, mechanism between the key-levers and spindles for transmitting axially rotary motion to the latter, two totalizing-dials applied loosely to said spindles, means for moving said totalizing-dials in one direction with the spindles, check devices for preventing the

return motion of said dials when the spindles are moved in opposite direction, and means whereby one of said dials on each spindle can be returned to zero independently of the permanent totalizing-dial, so as to form a temporary totalizing-register for any desired period of time, substantially as set forth.

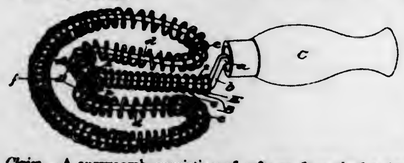
486,826. CAR-COUPLING. CHARLES DESJARDIN, Portland, Me. Filed Apr. 9, 1892. Serial No. 428,436. (No model.)

Claim.—1. In a car-coupling, the combination of an open-ended draw-bar, a cross-bar journaled in the lower portion of said draw-bar, and a coupling-pin extending up through an opening in the top of said draw-bar and being provided with a pivot-bearing on the top of said draw-bar, the said cross-bar being adapted to engage the lower end of said coupling-pin, substantially as described.

2. In a car-coupling, the combination of an open-ended draw-bar, a cross-bar journaled in the lower portion of said draw-bar, and a coupling-pin extending up through an opening in the top of said draw-bar and having a dog or point projecting forward and resting on the top of said draw-bar and having a pivot-bearing immediately above said opening on top of said draw-bar, said cross-bar being adapted to engage the lower end of said pin, substantially as described.

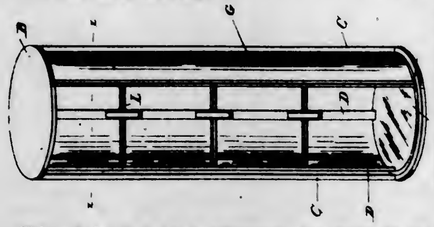
3. In a car-coupling, the combination of an open-ended draw-bar, a cross-bar journaled in the lower portion of said draw-bar, a coupling-pin pivoted at the top of said draw-bar, a link adapted to enter said draw-bar, and a bifurcated tongue for supporting the inner end of said link, said tongue being secured within the upper portion of said draw-bar in rear of said coupling-pin, its forward end being near the top of the mouth of said draw-bar, substantially as described.

486,827. CURRYCOMB. ANTHONY FAGER, Canton, Ohio, assignor to F. R. Kohler & Co., same place. Filed June 3, 1892. Serial No. 435,451. (No model.)



Claim.—A currycomb consisting of a frame formed of a single piece of wire having a central straight portion B, rearward-extending portions *d*, from which extend a horseshoe portion, a handle secured to the straight portion, and a wire coiled about said frame.

486,828. HAT-CASE. ALBERT GROULEFF, Grayling, Mich., assignor of one-half to M. P. Salting, same place. Filed May 23, 1892. Serial No. 434,063. (No model.)

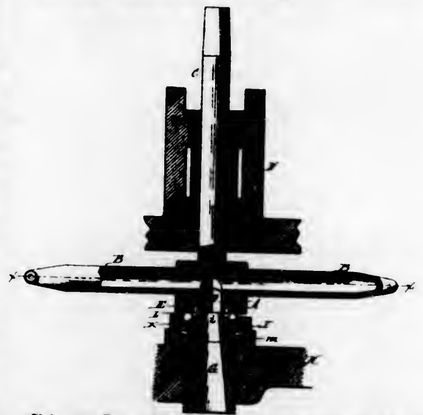


Claim.—1. In a hat-case, the combination, with the top and bottom, of a connecting-frame composed of two series of separated strips radially arranged, an outer semicylindrical casing on the outer series of strips, a ring located in a groove between the strips in the top and bottom, and a semicylindrical door secured to and connecting the rings, substantially as described.

2. In a hat-case, the combination, with the top and bottom, of a vertical frame connecting the two consisting of separated radially-arranged strips, a semicylindrical casing on the outer strip, and semicylindrical door slidingly engaging between the strips, a flexible felt strip on the inner face of the outer strip bearing against the outer face of the door and adapted to make a dustproof joint between the two, and a flexible strip on the door, substantially as described.

3. In a hat-case, the combination, with the top and bottom, of a connecting-frame composed of two series of separated strips radially arranged, a semicylindrical door between the strips, an outer semicylindrical casing on the outer series of strips, and cross-frames secured to the inner strips, substantially as described.

486,829. STEAM-TURBINE. FREDERICK HART, Poughkeepsie, N. Y., assignor to the Aktiebolaget Separator, Stockholm, Sweden. Filed May 2, 1892. Serial No. 431,415. (No model.)



Claim.—1. The combination, with the turbine having a flat bearing-surface on its lower side, of a nozzle arranged below said bearing-surface, an annular groove formed in the upper surface of said nozzle around the opening thereof, and antifriction-balls arranged in said groove and supporting the flat bearing-surface of the turbine, substantially as set forth.

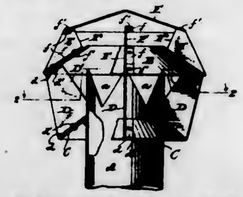
2. The combination, with the turbine having a flat bearing-surface on its lower side, of antifriction-balls supporting said surface and a nozzle arranged below said bearing-surface and having an annular ball-groove formed in its upper surface around its orifice and having between said orifice and said groove a flat face arranged substantially in the plane of contact of the flat bearing-surface of the turbine with the balls, substantially as set forth.

3. The combination, with the turbine having a flat bearing-surface on its lower side, of a nozzle arranged below said bearing-surface and having in its upper surface an annular groove surrounding its orifice and on its under side a spherical knuckle, a supply-pipe provided with a seat in which said knuckle rests, and antifriction-balls arranged in said groove and supporting the flat bearing-surface of the turbine, substantially as set forth.

4. The combination, with the supply-pipe and the turbine, of a removable nozzle provided on its under side with a spherical knuckle resting in a spherical seat in the supply-pipe and provided in its upper side with an annular groove, antifriction-balls arranged in said groove, and a flat wear-plate secured to the under side of the turbine and bearing on said balls, substantially as set forth.

5. The combination, with the turbine, of a nozzle provided with a ball-groove, which has its inner and outer faces arranged at different angles, and balls arranged in said groove and supporting the turbine, substantially as set forth.

486,830. CHIMNEY-COWL. WILLIAM J. KAYSER, Milwaukee, Wis., assignor to Louis Hoffmann and William Baur, same place. Filed Mar. 5, 1892. Serial No. 423,838. (No model.)



Claim.—1. A chimney-cowl comprising a vertically-disposed pipe provided with a series of notches in its upper end, a frustum-shaped hood open at its upper end, located concentrically above the upper

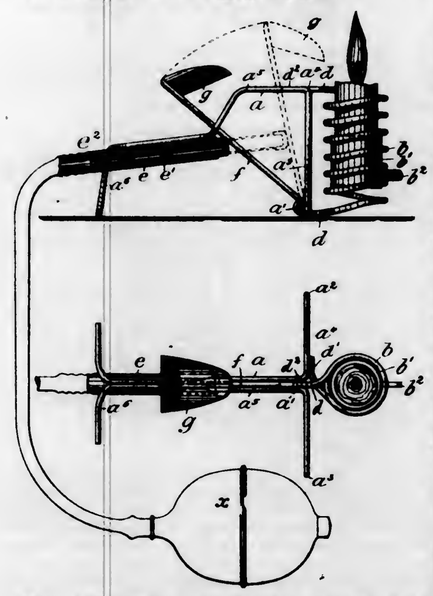
end of said pipe, and a conical cap or cover located concentrically above the said hood, substantially as described.

2. A chimney-cowl comprising a vertically-disposed pipe provided at its upper end with a series of V-shaped notches, a frustum-shaped hood located concentrically above the upper end of said pipe, said hood being open at its top, a second frustum-shaped member fitted around the pipe below the said hood, radially-disposed supports extending from the surface of the said lower member and adapted to support the said hood in position, and a conical cap or cover located concentrically above the opening in said hood, substantially as described.

3. A chimney-cowl comprising a vertically-disposed pipe having a series of V-shaped notches in its upper end, a frustum-shaped member fitted around said pipe below the lower ends of said notches, a frustum-shaped hood open at its top and arranged concentrically above the upper notched end of said pipe, and radially-disposed supporting-strips extending from the upper surface of the first-mentioned frustum-shaped member and adapted to support the said hood in position above said pipe, said supporting-strips being constructed with their inner edges inclined outwardly toward the top, substantially as described.

4. A chimney-cowl comprising a vertically-disposed pipe provided with a series of V-shaped notches in its upper end, a frustum-shaped member fitted around said pipe below the said notches, a frustum-shaped hood located concentrically above the notched end of said pipe, a conical cap or cover arranged concentrically above the said hood, and radially-disposed supports for said hood and said cap, provided with outwardly-inclined inner edges, substantially as described.

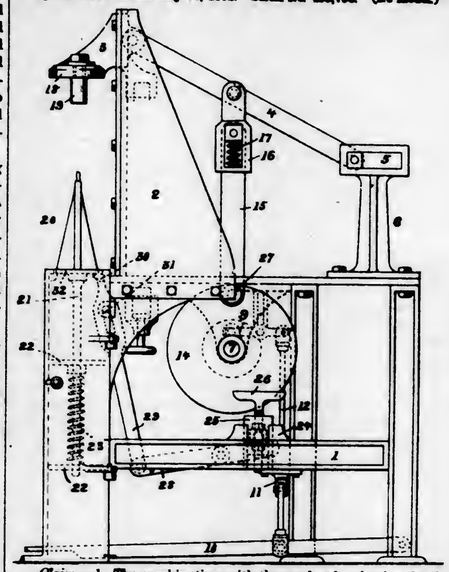
486,831. FLASH-LIGHT APPARATUS. JOSEPH B. LAWSON, Philadelphia, Pa., assignor of one-half to Alexander Hemsley, same place. Filed Mar. 23, 1892. Serial No. 426,063. (No model.)



Claim.—1. The combination, in a flash-light apparatus, of light-producing means, a pneumatic cylinder and its complemental piston, a rocker-arm in range of said piston and provided with a scoop, and a stop for limiting the travel of said rocker-arm, substantially as and for the purposes set forth.

2. A flash-light apparatus comprising a main frame, consisting of a single piece of wire offset at the center to form a trunnion and having its ends bent upward to form a front support and rearward to form a bifurcated backbone and downward and outward to form rear feet, a candle holder or stick attached to said front support, a pneumatic engine and its complemental cylinder connected with the backbone, a rocker-arm journaled to said trunnion and working in the bifurcation of said support, and a scoop attached to said rocker-arm, substantially as and for the purposes set forth.

486,832. SPRING-SETTING MACHINE. JOHN H. MILLER, Bridgeport, Conn. Filed May 20, 1892. Serial No. 433,708. (No model.)



Claim.—1. The combination, with the crusher-head, whereby the spring is crushed and held, of a vertically-movable bender operating from beneath the bed and adapted to engage and lift the lowermost coil of the spring, substantially as shown and described.

2. In a machine of the character described, the combination, with the vertically-movable crusher-head whereby the spring is crushed flat and so held, of a bending-tool having its operating-face in substantially the same plane as the outermost coil of the spring, and means for projecting said bending-tool upward to perform its function prior to the release of the spring by the crusher-head.

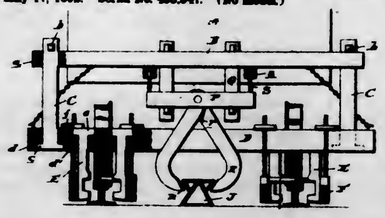
3. The combination, in a machine as described, of a vertically-movable crusher-head, a pitman having an expansion-joint therein and adapted to operate said head, and a crank connected to and adapted to operate the pitman, substantially as set forth.

4. In a machine of the character described, the combination, with a support for the spring to be worked, of a vertically-movable and guided crusher-head, a lever whereby said head is operated in both directions, a pitman connected to the lever and provided with a spring-section, whereby it may elongate under strain, and a crank-disk connected to and adapted to actuate the pitman, substantially as specified.

5. In a machine as described, the combination, with the crusher-head having vertical movement for the depression of the spring, of the pitman having a yielding section to permit of its elongation under strain, the crank-disk connected with and adapted to actuate the pitman, and the vertically-movable bender and connections between it and the crank-disk, whereby said bender is actuated by the crank-disk after the downward movement of the crusher-head.

6. In a machine of the character described, the combination, with the vertically-movable crusher-head, of a support beneath said crusher-head for the spring to rest upon, the vertically-disposed plunger depressible through the bed, and a vertically-movable bending device operating from below the bed and adapted to engage and lift the lowermost coil of the spring, substantially as shown and described.

486,833. SAFETY-TRUCK FOR CARS. GEORGE W. MOORE, Burnet, Tex., assignor of one-fourth to Baly J. Moore, same place. Filed May 17, 1892. Serial No. 433,947. (No model.)



Claim.—1. In a device for preventing the derailment of railway-trains, substantially as described, the combination, with a car and a transverse beam hung from the car, of the hanger-arms loosely mounted in the beam and adapted to move upwardly when subjected to pressure from below, and the longitudinally-disposed shoes connected to

journal grooved and confined in said band-socket by means of pins, substantially as described.

extending along opposite sides of the main track, one of said grooves being arranged to direct one of the said devices outwardly, while the other groove is adapted to direct the other device inwardly, as set forth.

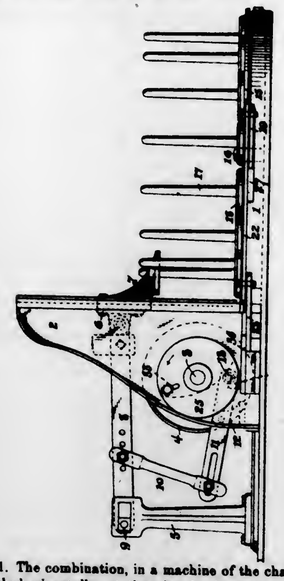
in the electric circuit, and means controlled by the electro-magnet, whereby a movement in one direction is imparted to said lever when the circuit is closed and in the opposite direction when the circuit is broken, as set forth.

Claim.—1. In a device for preventing the derailment of railway-trains, substantially as described, the combination, with a car and a transverse beam hung from the car, of the hanger-arms loosely mounted in the beam and adapted to move upwardly when subjected to pressure from below, and the longitudinally-disposed shoes connected to the hanger-arms and having their lower edges curved or beveled, substantially as and for the purpose set forth.

2. In a device for preventing the derailment of railway-trains, substantially as described, the combination, with a car and the hanger-arms C, depending therefrom and having the heads *c* at their lower ends, of the transverse beam loosely mounted upon the arms C and adapted to move upwardly when subjected to pressure from below, the hanger-arms E, loosely mounted in and depending from the beam and having the heads *e* at their upper ends, the said hanger-arms E resting upon opposite sides of each rail and carrying shoes at their lower ends, substantially as and for the purpose specified.

3. In a device for preventing the derailment of railway-trains, substantially as described, the combination, with a car having the hanger-arms Q, of the beam P, loosely mounted on said arms so as to be vertically movable thereon, a suitable means for raising and lowering said beam, the tongs R, having their lower ends curved or beveled and adapted to engage a safety-rail between the track-rails, and the shoulder *r*, provided on one of the said tongs R, substantially as and for the purpose set forth.

486,884. MACHINE FOR CRUSHING SPRINGS. JOHN H. MILLER, Bridgeport, Conn. Filed Nov. 27, 1891. Serial No. 413,239. (No model.)

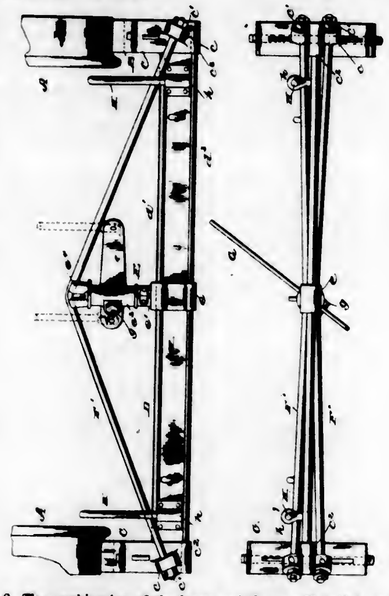


Claim.—1. The combination, in a machine of the character described, with the horizontally-rotative plate having spring-supporting pins, of the standards, the bifurcated crusher-head mounted and adapted to slide within said standards, a lever connected to and adapted to operate said crusher-head, means for raising the lever, and a weight mounted upon said lever and adjustable along the latter, whereby the downward stroke of the crusher may be varied in force, substantially as described.

2. In a machine of the character described, the combination, with the standards and the bifurcated crusher-head mounted and adapted to slide therein, of the lever 8, pivoted to said crusher-head and provided with a sliding bearing at its rear end, the weight adjustable along said lever 8, a cam for raising said lever, and adjustable lever connections, substantially as described, between the lever 8 and the cam, whereby the vertical movement of the crusher may be regulated.

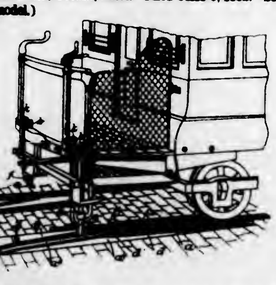
486,885. BRAKE-BEAM. CHARLES D. WILEY, St. Louis, Mo., assignor of one-sixteenth to George W. Bennett, same place. Filed Jan. 25, 1892. Serial No. 419,244. (No model.)

Claim.—1. A brake-beam fulcrum consisting of a band having a socket, a cap having a socket and a king-post, said post having its ends journaled in said sockets, respectively, and having its outer journal grooved and confined in said band-socket by means of pins, substantially as described.



2. The combination of the beam and the arm H, said beam being provided with the bracket perforated as described, and said arm having its outer end fitted to said perforation and riveted against the outer end of said lug, substantially as described.

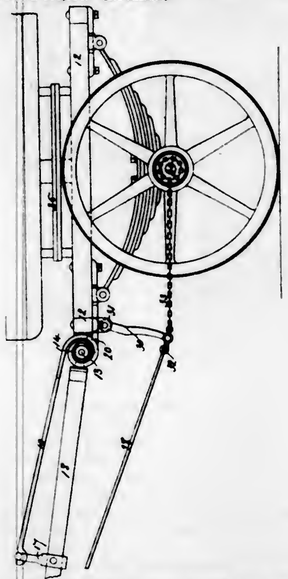
486,886. STREET-RAILWAY SWITCH AND OPERATING DEVICE. HORACE BLANCHARD, Boston, Mass. Filed June 6, 1892. Serial No. 435,663. (No model.)



Claim.—1. The combination of a car provided with two independent switch-operating devices adapted to be depressed by the driver, each consisting of a vertically and axially movable rod having its lower end bent rearwardly, and a track, including a pivoted switch-point, adapted to either make the main track continuous or to connect it with a branch track, and two fixed guides forming grooves between said guides and the opposite sides of the free end of the switch-point and of the end of the main track, one of said guides being adapted to direct the course of one of the switch-operating devices on the car when said device is depressed by the operator, while the other guide is adapted to direct the course of the other switch-operating device, the arrangement being such that one switch-operating device when depressed by the operator and directed by its groove will move the switch-point to connect the main track with the branch, while the other operating device when similarly depressed and guided will move the switch-point into position to make the main track continuous, as set forth.

2. The combination, with a car having two downwardly-projecting vertically and axially movable switch-operating rods having rearwardly-bent lower ends and adapted to be operated independently, of a base-plate carrying a pivoted switch-point forming a part of the track on which the car is adapted to run, said base-plate having grooves arranged at opposite sides of the free end of said switch and extending along opposite sides of the main track, one of said grooves being arranged to direct one of the said devices outwardly, while the other groove is adapted to direct the other device inwardly, as set forth.

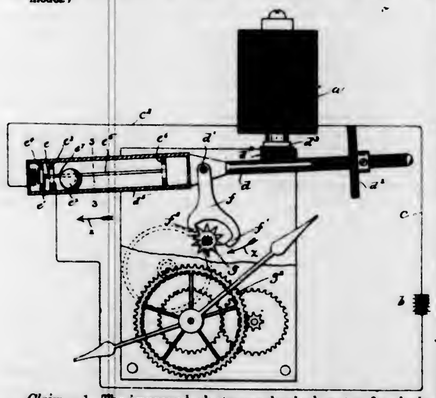
486,837. MEANS FOR CONNECTING DRAFT-ANIMALS TO VEHICLES. THOMAS H. BRIGG, Bradford, England. Filed July 18, 1891. Serial No. 399,954. (No model.)



Claim.—1. A two-axled vehicle provided with shafts, springs arranged to lift up the latter, and lowly-placed trace-fastening attachments, substantially as described.

2. A two-axled vehicle provided with shafts, springs arranged to lift up the latter, and a depending attachment carrying lowly-placed trace-fastening means, substantially as described.

486,838. ELECTRIC CLOCK. MARTIN V. B. BYRIDGE, Everett, assignor of two-thirds to Henry E. Waite, Newton, and Joseph H. Eastman, Boston, Mass. Filed Jan. 18, 1892. Serial No. 418,440. (No model.)



Claim.—1. The improved electro-mechanical motor for clocks, comprising an electric circuit, including an electro-magnet, a pivoted lever adapted to be oscillated and provided with a device, such as an escapement-arm, adapted to impart a step-by-step movement to a clock mechanism, a loose weight adapted to be moved independently on said lever by gravitation when the lever is inclined, electrodes supported by the lever and arranged to be alternately separated and connected by movements of the weight, said electrodes being included in the electric circuit, and means controlled by the electro-magnet, whereby a movement in one direction is imparted to said lever when the circuit is closed and in the opposite direction when the circuit is broken, as set forth.

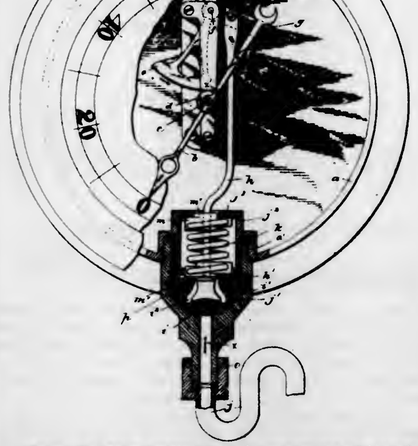
2. The combination of an electric circuit, including an electro-magnet, a pivoted lever provided with a guide and with an escapement-arm adapted to be oscillated by said lever, a train, including an escape-wheel, to which a step-by-step movement is imparted by said arm, a loose weight adapted to be moved independently in said guide by gravitation when the lever is inclined, electrodes supported by the lever and arranged to be alternately separated and connected by movements of the loose weight, said electrodes being included in the electric circuit, and means controlled by the electro-magnet whereby a movement in one direction is imparted to said lever when the circuit is closed and in the opposite direction when the circuit is broken, as set forth.

3. The combination of an electric circuit, including an electro-magnet, a pivoted lever provided with a weight and with an escapement-arm adapted to be oscillated by said lever, a train, including an escape-wheel, adapted to be moved step by step by said arm, a loose weight adapted to be moved independently on said lever by gravitation when the lever is inclined, electrodes supported by the lever and arranged to be alternately separated and connected by movements of the weight, said electrodes being included in the electric circuit, a weighted arm pivoted to a fixed support and provided with an armature arranged to be attracted by the electro-magnet when the circuit is closed and thereby elevate the weighted arm, the latter being arranged to exert a downward pressure on the lever against the influence of the weight on said lever when the circuit is broken, the weighted arm giving the lever a movement in one direction when the circuit is broken while the weight on the lever gives the latter an opposite movement when the circuit is closed, as set forth.

4. As an improvement in electric clocks, a lever adapted to be oscillated and provided with a guide and with two electrodes, one fixed and the other movable relatively to the lever, and a loose weight adapted to be moved independently in said guide by gravitation, the arrangement being such that movements of the weight alternately separate and connect said electrodes, as set forth.

5. As an improvement in electric clocks, an oscillatory lever composed in part of an exhausted tube and provided with electrodes and with a gravitating weight, all located in said tube, the arrangement being such that movements of the weight alternately separate and connect said electrodes, as set forth.

486,839. STEAM-PRESSURE GAGE. MURDOCK MCNEIL, Boston, Mass. Filed Jan. 30, 1892. Serial No. 419,539. (No model.)



Claim.—In a steam-pressure gage, the combination of the casing, the holder *j'*, externally screw-threaded and engaged with an internally-threaded socket formed on the casing, the diaphragm secured at its margin in said casing and having a thickened central portion surrounded by a thinner and more flexible portion, said diaphragm

presenting convex bottom and top surfaces, a pointer-operating rod having a head formed with a concave surface to bear upon the convex upper surface of the diaphragm, a spring arranged to force said head downwardly upon the diaphragm, and the adjustable cap supporting said spring, as set forth.

11,286. WOOD-TRIMMING MACHINE. CHARLES NEBACHER, Cleveland, Ohio. Filed May 17, 1892. Serial No. 433,393. Original No. 461,162, dated Oct. 13, 1891.

head and pivotally connected to said clamps, and an arm forming part of the said levers at one extremity and at the other sliding in a bearing pivoted to the upper cross-head guide, substantially as described.

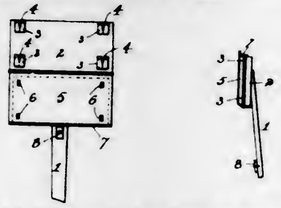
10. In a wood-trimming machine, a main bed or table, supports

in combination with a catch-plate secured to the side rail of the upper sash and provided with a series of holes or sockets, substantially as shown and described.

3. The combination of the upper sash of a window, a plate hav-

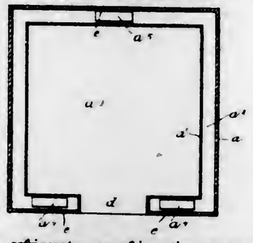
presenting convex bottom and top surfaces, a pointer-operating rod having a head formed with a concave surface to bear upon the convex upper surface of the diaphragm, a spring arranged to force said head downwardly upon the diaphragm, and the adjustable cap supporting said spring, as set forth.

486,840. CARD-ATTACHER. JAMES RYAN, Atlanta, Ga. Filed Apr. 11, 1892. Serial No. 428,714. (No model.)



Claim.—A leaf having on its face means for holding tacks upright thereon and a second leaf adapted to hold a card and recessed on its face in such positions as will allow said tacks to penetrate below its surface and hinged to said first-mentioned leaf, for the purpose specified.

486,841. REFRIGERATOR. WILBURT C. TRUSSELL, Boston, Mass., assignor to the Trussell Automatic Freezer Company, of Maine. Filed Dec. 1, 1891. Serial No. 413,694. (No model.)

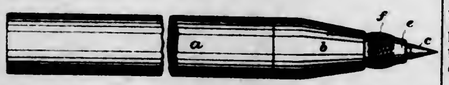


Claim.—1. A refrigerator or refrigerating structure having a storage-chamber, a closed air-space surrounding said chamber and having no connection therewith, and one or more portable refrigerating-cans located in said air-space, said cans being entirely independent or free from external connections, substantially as described.

2. A refrigerator or refrigerating structure having a storage-chamber, a closed air-space surrounding said chamber and having no connection therewith, and groups of portable refrigerating-cans located in said air-space at opposite sides of the storage-chamber, said cans having no connection with each other nor with the exterior of the structure, substantially as described.

REISSUES.

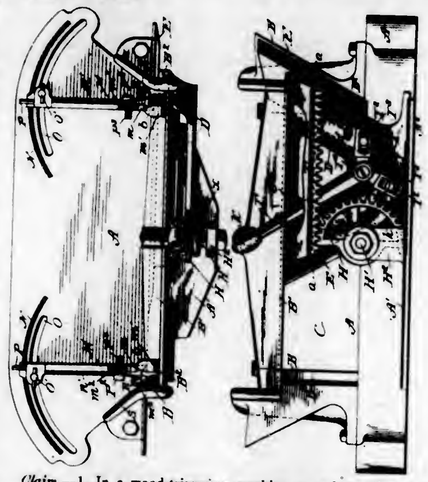
11,285. LEAD OR CRAYON HOLDER. EBERHARD FABER, New Brighton, N. Y. Filed June 30, 1892. Serial No. 437,370. Original No. 444,143, dated Jan. 6, 1891.



Claim.—1. The combination, with the sheath or tubular handle having the tube *b'*, of the tubular lead or crayon holder having a limited end movement within the tube *b'* and having clamping-jaws with reverse inclined exterior surfaces and projecting beyond the end of the tube *b'*, so as to be grasped and moved by the fingers in clamping or releasing the lead or crayon, substantially as set forth.

2. The combination, with the sheath and the tube *b'* and tapering cap *b*, of the tubular lead or crayon holder *d*, having a turned-over end *d'*, forming a stop to prevent the holder being drawn out, and clamping-jaws with reverse inclined exterior surfaces and roughened, so as to be grasped in moving the holder endwise to clamp or release the lead or crayon, substantially as set forth.

11,286. WOOD-TRIMMING MACHINE. CHARLES NERACHER, Cleveland, Ohio. Filed May 17, 1892. Serial No. 433,393. Original No. 461,162, dated Oct. 13, 1891.



Claim.—1. In a wood-trimming machine, a reciprocating carriage, a knife sliding in ways thereon, means on the carriage and in connection with the frame for giving movement to said knife, and means for moving the carriage, substantially as described.

2. In a wood-trimming machine, a reciprocating carriage, a knife at each end thereof, sliding in ways thereon, means on the carriage and in connection with the frame for giving cutting movement to said knives alternately, and means for moving the carriage, substantially as described.

3. In a wood-trimming machine, a reciprocating carriage, a knife at each end, sliding in ways, and means on the carriage, operated by the movement thereof, in connection with the frame and each of the knives for moving the same, substantially as described.

4. In combination, in a trimming-machine, a post, a gage having a plain front face, a beveled edge, and a recess on the rear face, forming a bearing approximately at right angles to the line of the beveled face, substantially as described.

5. In combination with a trimming-machine, a swinging gage, and a supplemental gage supported thereby, adjustable lengthwise thereof and having movement to and from the face of the main gage to bring it into or throw it out of action, substantially as described.

6. In a wood-trimming machine, means for cutting the wood with a drawing cut, consisting in the reciprocating cross-head, knives mounted in outwardly-inclined slots in the cross-head, angular levers connecting said knives and pivoted upon the cross-head, with means for alternately raising and lowering the knives in the slots when the cross-head reciprocates, consisting in an arm forming part of the angular levers at one extremity and adjustably pivoted to the cross-head guides at the other extremity, substantially as described.

7. In a wood-trimming machine, a main frame or table, supports at either end of the table for a cross-head guide and similar guide at the foot of the table, a cross-head adapted to reciprocate in these guides by means of a rack on the cross-head and gear upon bearings in the bed-plate and provided with slots obliquely diverging, knives guided by these slots and connected by movable pivots with angular levers, a pivot connecting said levers with the cross-head, and an arm forming part of said levers at one extremity and movably pivoted to one of the cross-head guides at the other, substantially as set forth.

8. In a wood-trimmer, means for propelling knives with both vertical and horizontal movements to obtain a resultant angle of forty-five degrees, consisting in a reciprocating cross-head provided with obliquely-diverging slots, knives mounted in bearings in said slots, angular levers pivoted to said cross-head and adjustably pivoted to the knives at their outer extremities, and an arm forming part of the angular levers at one extremity and adjustably pivoted to one of the cross-head guides at the other, in combination with a horizontal table provided with vertical supports for the upper cross-head guide, also with a central opening in the support underneath the guide and with vertical shearing-edges to the supports on either side of the opening, substantially as described.

9. In a wood-trimming machine, a cross-head supported in upper and lower guides, knives clamped movably in slots obliquely diverging from the base of the cross-head, angular levers pivoted to the cross-head and pivotally connected to said clamps, and an arm forming part of the said levers at one extremity and at the other sliding in a bearing pivoted to the upper cross-head guide, substantially as described.

10. In a wood-trimming machine, a main bed or table, supports at either end of the table for a cross-head guide, a similar lower guide upon the bed-plate, a vertical shearing-edge upon each of the supports, a cross-head moving in said guides, obliquely-diverging slots in the cross-head, knives sliding in said slots and retained therein by clamps, a rack upon the cross-head and pinion mounted upon the bed-plate, angular levers connecting the knives and pivoted to the cross-head, and an arm forming part of the levers at one extremity and movably pivoted to the cross-head guide at the other extremity, in combination with triangular gages adjacent to the shearing-edges aforesaid, a curved bearing-surface on each of the supports for the gages, and plane bearing-surfaces upon the gages, substantially as described.

11. In a wood-trimming machine, a cross-head reciprocating in upper and lower guides, a table adjacent to the cross-head, knives having an oblique reciprocation derived from the movements of the cross-head, vertical edges upon the cross-head-guide supports inclosing an opening, and gages adjacent to the said opening and provided with vertical shearing-edges, substantially as described.

12. In a gage for a trimming-machine, a vertical body portion resting upon the bed-plate of the machine, which is provided with an extended slot, a clamping-screw in the outward foot of the gage and slot, a vertical beveled inner edge of the gage, and means for preserving the alignment of the edge of the gage, and shearing-edge for the knives, consisting in the plane surface *m* on the inner edge of the gage and curved surface *m'*, projecting from the upper cross-head guide, in combination with the auxiliary gage provided with enlarged head, substantially as described.

13. In a gage for a trimming-machine, a vertical plate M, resting upon the bed-plate A and provided with the vertical beveled inner edge M', a plane bearing-surface *m*, adapted to engage the curved surface *m'* upon vertical supports upon the machine-frame, the angular depressions Q', adapted to register with the bosses Q upon the supports B when the gage is turned back, and a clamping-screw O', moving in the slot O in the bed-plate A, all substantially as described.

14. In a trimming-machine, a vertical gage provided with a beveled edge, an extended foot provided with a clamping-screw, adapted to move in a slot in the machine bed-plate, and an auxiliary gage sliding in a recess in the main gage, an enlarged head to the sliding gage, and a recess for the head in the main gage, substantially as described.

15. In a wood-trimmer, a triangular swinging gage provided with a vertical shearing-edge and located adjacent to the vertical edge of a cross-head-guide support and also provided with a rectangular boss upon its upper extremity, a curved projection integral with the edge of the cross-head guide at its upper extremity, adapted to engage said rectangular boss upon the gage in the base of the main gage, a head upon the auxiliary gage, and depressions in the main gage, adapted to receive said head, and a clamping-screw passing through the extended base of the main gage and the clamp for the auxiliary gage, substantially as described.

16. In a wood-trimmer, a gage to regulate the angle of the cut, consisting in the triangular portion M, provided with depressions Q', engaged by rectangular bosses Q, in combination with the rectangular boss *m*, and curved boss *m'*, and circular slot, and clamping-bolt, substantially as described.

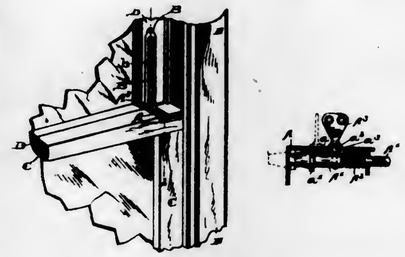
17. Means for securing alignment between the vertical edge of a cross-head-guide support and a shearing-edge M' on a gage, consisting in the face of a rectangular boss *m*, a curved surface *m'*, a spring R, and projections Q upon the support, engaging corresponding openings Q' in the gage, substantially as described.

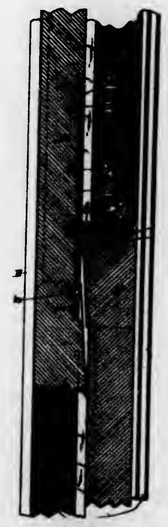
11,287. FASTENER FOR THE MEETING-RAILS OF SASHES. LEWIS C. WALKER, Indianapolis, Ind. Filed June 30, 1892. Serial No. 438,463. Original No. 472,068, dated Apr. 5, 1892.

Claim.—1. The combination, with the upper and the lower sashes of a window, of a lock having a spring-mounted bolt, a key adapted to operate the same, a slot in the upper part of the casing of the lock, through which the key passes, having an enlargement at its rear end, said key also having an enlarged neck which is adapted to be turned when put into said enlarged portion of the slot and the bolt thus held back out of operative position, when desired, said lock being mounted on the lower sash, and a series of sockets for the bolt in the side rail of the upper sash, substantially as set forth.

2. A sash-fastener comprising a lock having a tapering bolt seated therein, a removable key, and an opening in the upper part of the lock to allow the insertion of the key, such opening having an enlargement at one end for the engagement of the enlarged neck portion of the key, whereby the bolt is retained within its casing, said lock being secured to the top of the meeting-rail of the lower sash, in combination with a catch-plate secured to the side rail of the upper sash and provided with a series of holes or sockets, substantially as shown and described.

3. The combination of the upper sash of a window, a plate having a longitudinal groove and a series of holes or sockets secured thereon, the lower sash having a lock composed of a casing, a spring-mounted bolt the spring whereof normally holds the bolt forward into engagement with one of said holes or sockets, and a key passing through the casing and entering a hole in said bolt, whereby the bolt may be withdrawn and the sashes left free to operate, substantially as set forth.





4. A sash-fastener comprising a casing having a bolt seated therein, a spring coiled around such bolt, forcing the same outward by its tension, a removable key having a flange, and an opening in the upper part of the casing to allow the insertion and operation of such key, such opening having an enlargement whereby when the key is turned and engages in such opening the bolt is retained within its casing, substantially as shown and described.

DESIGNS.

21,998. TEXTILE FABRIC. ANNIE G. THYNE, New York, N. Y., assignor to the Cheney Brothers, South Manchester, Conn. Filed Sept. 13, 1892. Serial No. 445,708. Term of patent 3½ years.

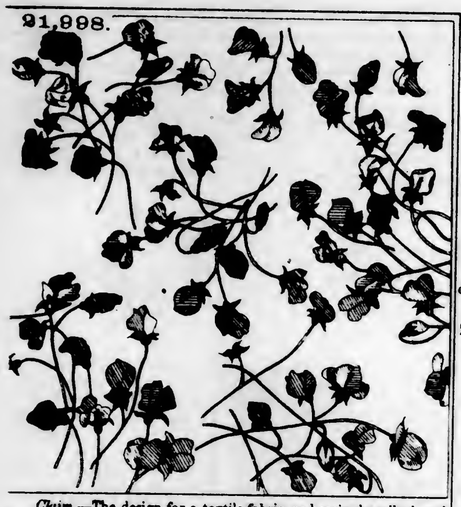
21,998.

22,001.

22,005. RELIEF BUST OF COLUMBUS. BRUNO H. HAMANN, Philadelphia, Pa. Filed Oct. 22, 1892. Serial No. 449,901. Term of patent 3½ years.

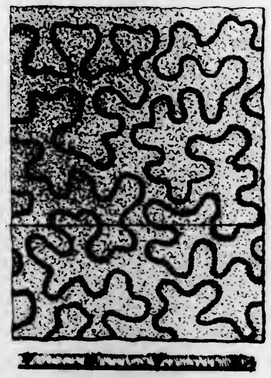
22,008. HANDLE FOR SWORDS OR THE LIKE. GEORGE R. WEISS, Fairhaven, Mass. Filed Oct. 27, 1892. Serial No. 450,186. Term of patent 14 years.

21,998.



Claim.—The design for a textile fabric, as herein described, and as shown in the accompanying drawing.

21,999. NAPPED FABRIC. AUGUST C. OHLS, New York, N. Y., assignor to Henry H. Bell's Sons, same place. Filed Sept. 8, 1892. Serial No. 445,388. Term of patent 7 years.



Claim.—The design for a napped fabric, as herein described and shown.

22,000. THIMBLE. FREDERICK G. CRABB, New Haven, Conn. Filed Oct. 31, 1892. Serial No. 450,561. Term of patent 7 years.

Claim.—The design for a thimble, as herein shown and described.

22,001. GLASS VESSEL. JULIUS PROSSER, Greensburg, Pa., assignor to The Huntington Glass Company, Huntington, W. Va. Filed Oct. 28, 1892. Serial No. 450,235. Term of patent 3½ years.

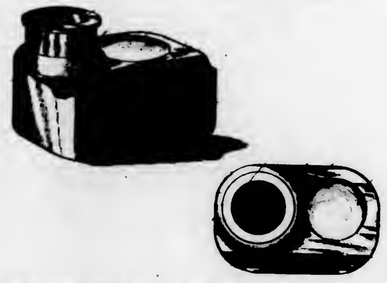
22,001.

Claim.—The design for vessels, substantially as herein shown and described.

22,002. PAPER-WEIGHT. GUSTAF L. REENSTIERNA, Boston, Mass. Filed May 31, 1892. Serial No. 435,067. Term of patent 3½ years.

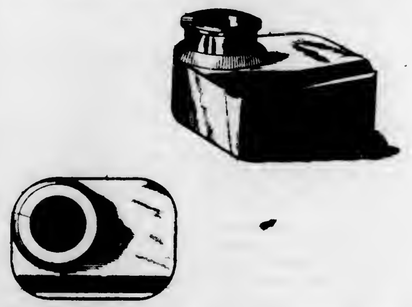
Claim.—The design for a paper-weight, substantially as shown and described.

22,003. INKSTAND. WILLIAM ROGERS, Chicago, Ill. Filed Nov. 17, 1890. Serial No. 371,762. Term of patent 14 years.



Claim.—The design for an inkstand, substantially as shown and described.

22,004. INKSTAND. WILLIAM ROGERS, Chicago, Ill. Filed Oct. 20, 1892. Serial No. 449,527. Term of patent 14 years.



Claim.—The design for an inkstand, substantially as shown and described.

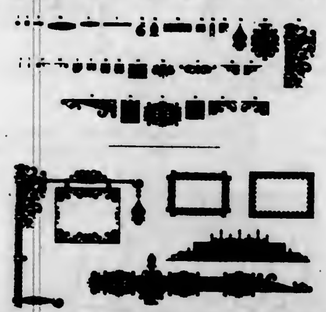
22,005. RELIEF BUST OF COLUMBUS. BENJAMIN H. HERMAN, Philadelphia, Pa. Filed Oct. 26, 1892. Serial No. 449,993. Term of patent 3½ years.

Claim.—The design for a relief bust of Columbus, as shown and described.

22,006. SIGN. HERMANN TRAUB, Hamburg, Germany. Filed Sept. 13, 1892. Serial No. 445,807. Term of patent 7 years.

Claim.—The design for a sign, substantially as herein shown and described.

22,007. FONT OF TYPE ORNAMENTS. HERMAN ILLESBURG, Philadelphia, Pa., assignor to The MacKellar, Smiths & Jordan Company, same place. Filed Oct. 26, 1892. Serial No. 450,201. Term of patent 7 years.

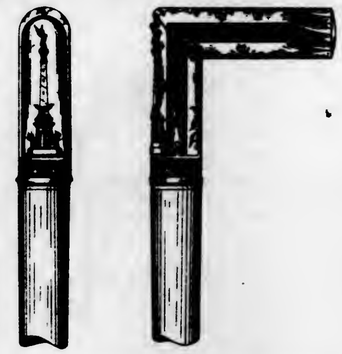


Claim.—The design for a font of combination type ornaments, substantially as described, and as shown in the accompanying typographical impression.

22,008. HANDLE FOR SWORDS OR THE LIKE. GEORGE B. WIXON, Fairhaven, Mass. Filed Oct. 27, 1892. Serial No. 450,195. Term of patent 14 years.

Claim.—The design for a handle for swords and the like, herein shown and described, the same comprising the straight portion A and the carved portions B, C, and D, each presenting a ribbed surface, the said portions B, C, and D being connected by the rings *d* and the portion D terminating in the coil *e*, as set forth.

22,009. CANE. THOMAS W. GARDNER, Indianapolis, Ind. Filed Oct. 7, 1892. Serial No. 448,151. Term of patent 3½ years.



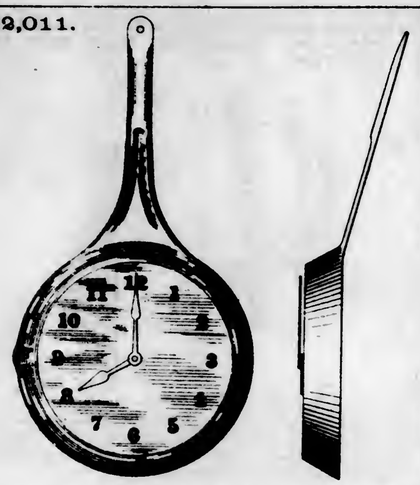
Claim.—The design for a cane, substantially as shown.

22,010. BOOK-REST AND HOLDER FOR UMBRELLAS, &c. CHARLES PERLEE, Elgin, Ill. Filed Oct. 31, 1892. Serial No. 450,562. Term of patent 14 years.

Claim.—The design for a book-rest and cane and umbrella holder, herein shown and described.

22,011. CLOCK-CASE. ARTHUR MERRITT and EUGENE F. ADDAMS, New York, N. Y. Filed Oct. 27, 1892. Serial No. 450,193. Term of patent 7 years.

22,011.



Claim.—The design for a clock-case, herein shown and set forth.

22,012. CHAIR. AUGUST THONET, Vienna, Austria-Hungary, assignor to Thonet Brothers, same place. Filed June 23, 1892. Serial No 437,660. Term of patent 7 years.

Claim.—The design for a chair, substantially as herein shown and described.

22,013. TABLE. FRANCIS KOENIG, Philadelphia, Pa., assignor to Reinhold G. Ledig, same place. Filed Oct. 19, 1892. Serial No. 449,399. Term of patent 3½ years.

Claim.—The design for a table, substantially as shown and described.

22,014. TABLE. FRANCIS KOENIG, Philadelphia, Pa., assignor to Reinhold G. Ledig, same place. Filed Oct. 19, 1892. Serial No. 449,398. Term of patent 3½ years.

Claim.—The design for a table, substantially as shown and described.

22,015. TABLE. FRANCIS KOENIG, Philadelphia, Pa., assignor to Reinhold G. Ledig, same place. Filed Oct. 19, 1892. Serial No. 449,400. Term of patent 3½ years.

Claim.—The design for a table, substantially as shown and described.

22,016. OIL OR GAS STOVE. AUGUSTINE C. WEST, Cambridge, Mass. Filed Sept. 26, 1892. Serial No. 446,956. Term of patent 7 years.

Claim.—The design for a gas or oil stove, substantially as herein shown and described.

22,017. ELECTRIC-HEATER CASING. MARK W. DEWEY, Syracuse, N. Y. Filed Oct. 19, 1892. Serial No. 449,404. Term of patent 14 years.

Claim.—The design for an electric-heater casing, substantially as shown and described.

TRADE-MARKS

REGISTERED NOVEMBER 22, 1892.

22,007. PHOTOGRAPH AND AUTOGRAPH ALBUMS AND SCRAP-BOOKS. KOCH SONS & COMPANY, New York, N. Y., and Berlin, Germany. Filed Oct. 10, 1892.

Essential feature.—The words "COLUMBIAN SOUVENIR." Used since September 19, 1892.

22,008. BOOKS, PAMPHLETS, AND PERIODICALS. ARTHUR C. HORTHROP, Waterbury, Conn. Filed Oct. 14, 1892.

Essential feature.—The words "THE NATIONAL GUARDSMAN." Used since October 1, 1891.

22,009. PHOTOGRAPHIC PAPER. ALFRED I. COHN, New York, N. Y. Filed Oct. 18, 1892.

Melanotype

Essential feature.—The word "MELANOTYPE." Used since September 1, 1892.

22,010. PLAYING-CARDS. ANDREW DOUGHERTY, New York, N. Y. Filed Oct. 26, 1892.

Essential feature.—A series of red and a series of green bars crossing each other to form a plaid, each bar composed of parallel lines of different thicknesses, with intermediate single lines between the bars. Used since April 7, 1855.

22,011. PLAYING-CARDS. THE NEW YORK CONSOLIDATED CARD COMPANY, New York, N. Y. Filed Oct. 26, 1892.

Essential feature.—A series of squares having each a series of arms or points and a series of Greek crosses whose arms project into contiguous squares. Used since 1885.

22,012. SPECTACLES AND EYEGLASSES. AMERICAN OPTICAL COMPANY, Southbridge, Mass. Filed Oct. 15, 1892.

Essential feature.—The representation of a circle with a line through the center thereof. Used since January 1, 1882.

22,013. HATS AND BONNETS FOR LADIES, MISSES, AND YOUNG BOYS, AND TRIMMINGS THEREFOR. HERBERT J. TAYLOR New York, N. Y., and Chicago, Ill. Filed Sept. 16, 1892.

Essential feature.—The words "MAISON NOUVELLE" and the representation of a house with a tower, from which floats a flag, on which is the word "MILLINERY." Used since January, 1890.

22,014. KNIT FABRICS. MURPHY, HIBBEN & Co., Indianapolis, Ind. Filed Oct. 3, 1892.

Essential feature.—The representation of a Maltese cross, with a United States flag occupying the center of the same. Used since September 1, 1892.

22,015. CERTAIN NAMED DRY GOODS. J. D. WEIR & Co., New York, N. Y. Filed Sept. 21, 1892.

JAYDEWEIR

Essential feature.—The word "JAYDEWEIR." Used since March 1, 1891.

22,016. PLAIDS FOR DRESSES. P. J. WILLIS & Bro., Galveston, Tex. Filed Oct. 4, 1892.

Essential feature.—The representation of the face and head of an Indian chief. Used since October 15, 1884.

22,017. SHOES FOR CHILDREN'S WEAR. KOLLOCK, LOGAN & Co., Lynn, Mass. Filed Oct. 27, 1892.

LITTLE SOLDIER

Essential feature.—The words "LITTLE SOLDIER." Used since October 20, 1889.

22,018. COSMETICS, BOTH LIQUID AND POWDER, AND A LIQUID DENTIFRICE. EDWARD G. HAKE, New Cumberland, Pa. Filed Sept. 26, 1892.

Luxe

Essential feature.—The word "LUXE." Used since April 13, 1891.

22,019. FACE AND SKIN POWDER. VAN DYK MANUFACTURING COMPANY, Rutherford, N. J. Filed Sept. 15, 1892.

DE MELOS

Essential feature.—The words "DE MELOS" and a shield with a Greek cross upon the same. Used since August, 1892.

22,020. PREPARATIONS FOR THE COMPLEXION, INCLUDING SOAPS, LOTIONS, POWDER, AND CREAM. LIDA WILBERT, Chicago, Ill. Filed July 29, 1892.

Essential feature.—The words "LEMON JUICE" upon an ornamental shield superimposed upon sprays of flowers. Used since January 13, 1892.

22,021. WHITE SOAP FOR THE TOILET AND LAUNDRY. THE OHIO SOAP COMPANY, Cincinnati, Ohio. Filed Sept. 12, 1892.

DELIGA

Essential feature.—The word "DELIGA." Used since May 1, 1892.

22,022. TOILET SOAP. THE OAKLEY SOAP AND PERFUMERY COMPANY, New York, N. Y. Filed Oct. 13, 1892.

Essential feature.—A medallion or rectangular figure having an irregular wavy outline and the words "ROSE-WATER AND GLYCERINE" printed thereon. Used since July 1, 1892.

22,023. WATERPROOF LIQUID BLACKING FOR SHOES. PRICE & WALTERS, Buffalo, N. Y. Filed Sept. 21, 1892.

Essential feature.—The word "NIGRO" and the monogram "B P Co." Used since January 1, 1891.

22,024. LIQUID ENAMEL FOR USE ON GLASS. E. P. GLEASON MANUFACTURING COMPANY, New York and Brooklyn, N. Y., and Chicago, Ill. Filed May 31, 1892.

COLORINE

Essential feature.—The word "COLORINE." Used since November 1, 1891.

22,025. LIQUID ENAMEL FOR USE ON GLASS. E. P. GLEASON MANUFACTURING COMPANY, New York and Brooklyn, N. Y., and Chicago, Ill. Filed May 31, 1892.

FROSTINE

Essential feature.—The word "FROSTINE." Used since November 1, 1891.

22,026. POWDERED PAINTS. W. H. KEMP Co., New York, N. Y. Filed Sept. 30, 1892.

Essential feature.—A representation of the Sphinx. Used since September 6, 1892.

22,027. BAKING-POWDER. ANDREW W. RUHL, Baltimore, Md. Filed Oct. 31, 1892.

SUPERLATIVE

Essential feature.—The word "SUPERLATIVE." Used since September, 1892.

22,028. BAKING-POWDER. ANDREW W. RUHL, Baltimore, Md. Filed Oct. 31, 1892.

ATLAS.

Essential feature.—The word "ATLAS." Used since June, 1892.

22,029. ZWIEBACK, (A TWICE-BAKED BREAD.) JACOB SCAFFENBORST, New York, N. Y. Filed Oct. 11, 1892.

Essential feature.—The representation of a child sitting in an arm-chair, feeding a doll with a spoon. Used since September 1, 1888.

22,030. LARD. FERRAS SOBRINHO & Co., Rio Janeiro, Brazil, and New York, N. Y. Filed Oct. 20, 1892.

Essential feature.—The word "SALUTARIS." Used since November 27, 1891.

22,031. LARD. FERRAS SOBRINHO & Co., Rio Janeiro, Brazil, and New York, N. Y. Filed Oct. 20, 1892.

Essential feature.—The word "SANITAS." Used since October 22, 1891.

22,032. TONIC PREPARATIONS, PILLS, AND POWDERS. DR. JULIUS DIESSLY & Co., Alexandria, Va. Filed Oct. 25, 1892.

Essential feature.—The representation of a bowl having a standard and entwined by a serpent, with a branch of herbs and a staff diagonally crossing each other behind said bowl. Used since November 30, 1889.

22,033. MEDICINAL TONIC. LOTT MARSFIELD, Boston, Mass. Filed Sept. 23, 1892.

Essential feature.—The representation of a bull standing in a field of grain. Used since September 9, 1892.

22,034. MEDICINAL PREPARATION FOR THE CURE OF PILES, DYSENTERY, AND KINDRED COMPLAINTS. WILLIAM A. WIDGERY, Medford, Mass. Filed Sept. 19, 1892.

Essential feature.—A geometrical diamond figure imprinted in black. Used since July 1, 1892.

22,035. PREPARATIONS OF SULPHUR IN LIQUID FORM. PETERS & COMPANY, (Limited,) Chicago, Ill. Filed Sept. 26, 1892.

DR. VON PETERS' LIQUID SULPHUR

Essential feature.—The words "DR. VON PETERS' LIQUID SULPHUR" and a representation of the head of a laughing or smiling devil in silhouette or otherwise, having horns and a long-pointed chin, or chin with a long-pointed beard, under which shall be some device representing fire or flames. Used since April 29, 1892.

22,036. PROPRIETARY PREPARATIONS EMBODYING A COAL-TAR DERIVATIVE. ALKAHEALS CHEMICAL COMPANY, New York, N. Y., and Nashville, Tenn. Filed Sept. 12, 1892.

THERAPINE

Essential feature.—The word "THERAPINE." Used since May 1, 1891.

22,037. REMEDY FOR RHEUMATISM, CYSTITIS, AND OTHER DISEASES RESULTING FROM EXCESS OF ACID IN THE SECRETIONS. KRAMER & MATTSON, Ambler, Pa. Filed Oct. 20, 1892.

ALKALITHIA.

Essential feature.—The title "ALKALITHIA." Used since January 2, 1891.

22,038. REMEDY FOR DISEASES OF THE LIVER, KIDNEYS, AND STOMACH. ARON KLEIN, Hamilton, Ohio. Filed Sept. 12, 1892.

Essential feature.—A conventional representation of the sun with a white center. Used since September 1, 1891.

22,039. COMPOUNDS FOR DESTROYING INSECTS AND OTHER PESTS, FOR DISINFECTING PURPOSES, FOR CURING DISEASES, AND HEALING WOUNDS. JOHN ROWBOTHAM, Merchantville, N. J. Filed Oct. 24, 1892.

FLYLENE.

Essential feature.—The word "FLYLENE." Used since July 15, 1888.

22,040. CAPSULES FILLED WITH MEDICINE. JOHN R. PLANTES, New York, N. Y. Filed Oct. 19, 1892.

PERLOIDS.

Essential feature.—The word "PERLOIDS." Used since September 8, 1892.

22,041. WORM-POWDERS. MCBRIDE & HALL, Brooklyn, N. Y. Filed Sept. 24, 1892.

Essential feature.—The representation of an oblong four-sided figure having two short concave ends, two long concave sides, and four curved tips. Used since January 1, 1872.

22,042. LIQUID COUGH-SYRUP. MARTHA R. VAN ARSDALE, Yuba City, Cal. Filed Sept. 23, 1892.

C I
C S

Essential feature.—The letters "C. I. C. S." Used since August 17, 1892.

22,043. OINTMENTS. WILLIAM FAIRWEATHER, Chicago, Ill. Filed Sept. 19, 1892.

FAIROLINE.

Essential feature.—The word "FAIROLINE." Used since June 15, 1892.

22,044. DISINFECTANT. JEAN MARIE RAYMOND, Paris, France. Filed Oct. 14, 1892.

Essential feature.—The representation of an oak-leaf, accompanied with an acorn and bearing the word "RAYMOND." Used since January, 1888.

22,045. CAPSULES FOR MEDICINE. JOHN R. PLANTEN, New York, N. Y. Filed Oct. 20, 1892.

Essential feature.—The figure of a shield and the representation of three trees or plants thereon. Used since 1846.

22,046. CAPSULES FOR MEDICINE. JOHN R. PLANTEN, New York, N. Y. Filed Oct. 20, 1892.

Essential feature.—The word "EUREKA." Used since 1878.

22,047. PILLS FOR HUMAN USE. JAMES COCKLE & CO., London, England. Filed Oct. 3, 1892.

Essential feature.—The name "JAMES COCKLE" in conjunction with the words "COMPOUND ANTIBILIOUS PILLS." Used since 1805.

22,048. PIANOS. FREDERICK G. SMITH, New York, N. Y.; Jersey City, N. J.; Washington, D. C.; Saratoga Springs, N. Y.; Chicago, Ill.; Brooklyn, N. Y.; Philadelphia, Pa., and Kansas City, Mo. Filed Oct. 1, 1892.

Berkeley

Essential feature.—The word "BERKELEY." Used since July, 1891.

22,049. LAMPS AND BURNERS. WILLIAM B. ROBIN, Cincinnati, Ohio. Filed Sept. 24, 1892.

ELECTROPHOTE

Essential feature.—The word "ELECTROPHOTE." Used since April 1, 1892.

22,050. HAIR AND WOOL CLIPPERS. AMERICAN SHEARER MANUFACTURING COMPANY, Nashua, N. H. Filed Sept. 9, 1892.

AMERICAN HORSE

Essential feature.—The words "AMERICAN HORSE." Used since 1868.

22,051. BAKING AND ROASTING PANS. JOHN W. OBLINGER, Troy, Ohio. Filed Nov. 1, 1892.

ROYAL

Essential feature.—The word "ROYAL." Used since July 1, 1890.

22,052. STOVES, RANGES, AND FURNACES. CO-OPERATIVE FOUNDRY COMPANY, Rochester, N. Y. Filed Sept. 8, 1892.

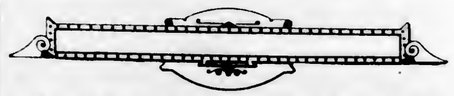
Essential feature.—A red cross. Used since June, 1882.

22,053. HAND WASHING-MACHINES. THE VANDERGRIFT MANUFACTURING COMPANY, Jamestown, N. Y. Filed Oct. 7, 1892.

PAN AMERICAN

Essential feature.—The words "PAN AMERICAN." Used since April 1, 1891.

22,054. HAND WASHING-MACHINES. THE VANDERGRIFT MANUFACTURING COMPANY, Jamestown, N. Y. Filed Oct. 7, 1892.



Essential feature.—An oblong bar resting upon a scroll with a portion of the scroll lying above and a portion below the oblong bar. Used since February 2, 1892.

22,055. HAY-CARRIERS. JOSEPH R. PORTER, Ottawa, Ill. Filed May 14, 1892.

SOLID

Essential feature.—The word "SOLID." Used since January 1, 1888.

22,056. WINDMILLS. BAKER MANUFACTURING COMPANY, Evansville, Wis. Filed Oct. 27, 1892.

MONITOR

Essential feature.—The word "MONITOR." Used since 1874.

22,057. POST-OFFICE LETTER-BOXES, DRAWERS, AND THE LIKE. THE KEYLESS LOCK COMPANY, Indianapolis, Ind. Filed Sept. 19, 1892.

Keyless

Essential feature.—The word "KEYLESS" in fanciful script letters, with the tail of the "y" extended to form a paraph. Used since September 1, 1889.

22,058. CHEWING-TOBACCO. P. H. HAHN & CO., Winston, N. C. Filed Oct. 14, 1892.

MAMIE

Essential feature.—The word "MAMIE." Used since June, 1892.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

SIBBALD *v.* CASSIDY AND SMITH.

Decided November 11, 1892.

PRACTICE—ABANDONMENT—STATUTORY BAR.

The lapse of two years from and after the allowance of a patent to an applicant without responsive action on his part does not *per se* work such a forfeiture of rights as will bar the applicant from making a subsequent application for the same improvements and taking a patent therefor. (Discussing and construed sections 4883, 4886, and 4897 of the Revised Statutes.)

ON petition.

KNITTING MACHINE STOP MECHANISM.

Application of Charles J. Sibbald filed January 21, 1891, No. 378,566. Application of James W. Cassidy and Edward M. Smith filed February 18, 1890; Patent No. 430,512, granted June 17, 1890.

Mr. M. D. Peck for Sibbald.

Mr. W. G. Henderson for Cassidy and Smith.

SIMONDS, *Commissioner:*

This is a petition brought by Cassidy and Smith asking that a patent be withheld from issuing upon the application of Charles J. Sibbald filed January 21, 1891. That application has been in interference with an application of Cassidy and Smith, and a final decision was made therein awarding priority of invention to Sibbald October 15, 1892, reported in 61 O. G., 563.

The contention of Cassidy and Smith is that section 4897 of the Revised Statutes presents a statutory bar to the issue of a patent upon Sibbald's application.

The question raised is *ex parte* in its nature. Wherefore Cassidy and Smith were not of right entitled to be heard, but they have been heard, and at length, by reason of the peculiar nature of the contention made.

Sibbald filed an application for patent for the improvement in question September 22, 1887, which passed to issue October 27, 1888, and the final fee not having been paid it became abandoned October 27, 1890. Sibbald filed a second application for patent upon the same invention, presenting a new oath, petition, specification, and drawing, January 21, 1891.

Cassidy and Smith contend that under section 4897 of the Revised Statutes, after an application has been once allowed any second application for the same invention must be made within two years from and after that allowance, and that after the expiration of such two years no right to make a new application of any nature upon that particular improvement exists.

The central section of the patent law is as follows:

Sec. 4886. Any person who has invented or discovered any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvement thereof, not known or used by others in this country, and not patented or described in any printed publication in this or any foreign country, before his invention or discovery thereof, and not in public use or on sale for more than two years prior to his application, unless the same is proved to have been abandoned, may upon payment of the fees required by law, and other due proceedings had, obtain a patent therefor.

The construction of section 4897 contended for by Cassidy and Smith is wholly out of harmony with section 4886.

The section of the statute which deals with analogous matters is the following:

Sec. 4894. All applications for patents shall be completed and prepared for examination within two years after the filing of the application, and in default thereof, or upon failure of the applicant to prosecute the same within two years after any action therein, of which notice shall have been given to the applicant, they shall be regarded as abandoned by the parties thereto, unless it be shown to the satisfaction of the Commissioner of Patents that such delay was unavoidable.

It is well recognized both by the courts and by the Office that failure to prosecute an application for a patent for two years does not necessarily work an abandonment of the invention.

The construction of section 4897 contended for by Cassidy and Smith is wholly out of harmony with section 4894, and on principle no reason can be seen for the distinction which Cassidy and Smith set up.

The construction of section 4897 contended for by Cassidy and Smith is out of harmony with the general declarations of the Supreme Court as to what constitutes abandonment of an invention, as expressed notably in *Smith* v. *Goodyear Dental Vulcanite Company et al.*, (93 U. S., 486.) Cummings filed a caveat on his invention of dental plates May 14, 1852. He applied for a patent April 12, 1855, which was rejected May 19, 1855, again August 14, 1855, and again February 8, 1856. In 1859 motion for rehearing was denied. March 1, 1864, a new application was filed and a patent issued thereon June 7, 1864. By reason of Cummings' poverty the Supreme Court excused these delays and sustained his patent.

In *Weir* v. *Morden* (21 Fed. Rep., 243) reissue patent No. 8,914, for improvement in railroad-frogs, dated September 30, 1879, was before the United States Circuit Court for the Northern District of Illinois, and the court gives the history of the patent thus:

The history of this patent, as gathered from the records in this case, seems to be this: In October, 1877, the complainant filed the application for his patent, and on December 2, 1877, the patent was allowed with certain claims; but, as he now insists, by the neglect of his solicitor the final fee to the Patent Office was not paid, and the proceedings to obtain the patent lapsed. Some time in February, 1879, he renewed his application, and asked that the original specifications and drawings might be considered as part of the renewed application, and the original patent, No. 215,543, was issued May 20, 1879. On June 20, 1879, application was made for a reissue, which resulted in the reissue No. 8,914, now before the court.

The defense of two years' public use being made, the question then arose as to whether the two years ran from the first or the second application for the original patent, and thereupon the court said this:

It may also, I think, be urged with much force, although it was not pressed in the argument, that the application for this patent

must be deemed to have been first made at the time, and not before the time, when the renewed application was made, after the patent allowed in 1877 had elapsed * * * The application made by Weir in February, 1879, must, as it seems to me, be considered as his first application, the former application going for naught and leaving him to stand upon that application as made at the time he renewed it upon his old specifications and drawings.

It is true that the contention now made by Cassidy and Smith was not raised in this case, but it could hardly have failed to arise in the mind of the court.

The statutory history of section 4897 distinctly negatives Cassidy and Smith's present contention. The following is section 3 of an act to amend an act entitled "An act to promote the progress of the useful arts," approved March 8, 1863:

Sec. 3. *And be it further enacted*, That every patent shall be dated as of a day not later than six months after the time at which it was passed and allowed, and notice thereof sent to the applicant or his agent; and if the final fee for such patent be not paid within the said six months the patent shall be withheld, and the invention therein described shall become public property as against the applicant therefor: *Provided*, That in all cases where patents have been allowed previous to the passage of this act the said six months shall be reckoned from the date of such passage.

The following is—

An act amendatory of an act to amend an act entitled "An act to promote the progress of the useful arts," approved March three, eighteen hundred and sixty-three.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That any person having an interest in an invention, whether as the inventor or assignee, for which a patent was ordered to issue upon the payment of the final fee, as provided in section three of an act approved March three, eighteen hundred and sixty-three, but who has failed to make payment of the final fee, as provided by said act, shall have the right to make the payment of such fee, and receive the patent withheld on account of the non-payment of said fee, provided such payment be made within six months from the date of the passage of this act: *Provided*, That nothing herein shall be so construed as to hold responsible in damages any persons who have manufactured or used any article or thing for which a patent, as aforesaid, was ordered to be issued.

Approved June 25, 1864.

The following is—

An act amendatory of an act to amend an act entitled "An act to promote the progress of the useful arts," approved March three, eighteen hundred and sixty-three.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That any person having an interest in an invention, whether as inventor or assignee, for which a patent was ordered to issue upon the payment of the final fee, as provided in section three of an act approved March three, eighteen hundred and sixty-three, but who has failed to make payment of the final fee, as provided in said act, shall have the right to make an application for a patent for his invention, the same as in the case of an original application, provided such application be made within two years after the date of the allowance of the original application: *Provided* That nothing herein shall be so construed as to hold responsible in damages any persons who have manufactured or used any article or thing for which a patent aforesaid was ordered to issue. This act shall apply to all cases now in the Patent Office, and also to such as shall hereafter be filed. And all acts or parts of acts inconsistent with this act are hereby repealed.

Approved March 3, 1865.

The act of July 8, 1870, repealed all these acts, but contained the following:

Sec. 52. *And be it further enacted*, That every patent shall date as of a day not later than six months from the time at which it was passed and allowed, and notice thereof was sent to the applicant or his agent; and if the final fee shall not be paid within that period the patent shall be withheld.

(See Revised Statutes, section 4885.)

Sec. 55. *And be it further enacted*, That any person who has an interest in an invention or discovery, whether as inventor, discoverer, or assignee, for which a patent was ordered to issue upon the payment of the final fee, but who has failed to make payment thereof within six months from the time at which it was passed and allowed, and notice thereof was sent to the applicant or his agent, shall have a right to make an application for a patent for such invention or discovery the same as in the case of an original application: *Provided*, That the second application be made within two years after the allowance of the original application. But no person shall be held responsible in damages for the manufacture or use of any article or thing for which a patent, as aforesaid, was ordered to issue, prior to the issue thereof: *And provided, further*, That when an application for a patent has been rejected or withdrawn, prior to the passage of this act, the applicant shall have six months from the date of such passage to renew his application, or to file a new one; and if he omit to do either his application shall be held to have been abandoned. Upon the hearing of such renewed applications abandonment shall be considered as a question of fact. (See Revised Statutes, section 4897.)

The act of July 8, 1870, was repealed by the adoption of the Revised Statutes June 22, 1874; but those Revised Statutes contain the following:

Sec. 4885. Every patent shall bear date as of a day not later than six months from the time at which it was passed and allowed and notice thereof was sent to the applicant or his agent; and if the final fee is not paid within that period the patent shall be withheld.

Sec. 4897. Any person who has an interest in an invention or discovery, whether as inventor, discoverer, or assignee, for which a patent was ordered to issue upon the payment of the final fee, but who fails to make payment thereof within six months from the time at which it was passed and allowed, and notice thereof was sent to the applicant or his agent, shall have a right to make an application for a patent for such invention or discovery the same as in the case of an original application. But such second application must be made within two years after the allowance of the original application. But no person shall be held responsible in damages for the manufacture or use of any article or thing for which a patent was ordered to issue under such renewed application prior to the issue of the patent. And upon the hearing of renewed applications preferred under this section abandonment shall be considered as a question of fact.

The act approved March 3, 1863, contained the very important provision that if the final fee be not paid within six months—

the invention therein described shall become public property as against the applicant therefor.

This provision was omitted from the act of July 8, 1870, and is omitted from the Revised Statutes now in force. Its omission is significant and bears strongly against the present contention of Cassidy and Smith.

The leading object and purpose of section 4897 seems to be to permit an assignee (as well as the inventor) to make a new application for the patent wherein he has an interest within two years from and after the date of the allowance thereof. This section is not like section 4886, one of broad and sweeping import, but more in the nature of a section having a specific and limited purpose. The domination of this idea in this section is shown by the use of the word "such" in the sentence—

but such second application must be made within two years after the allowance of the original application.

And it is also shown by the words "preferred under this section" in the sentence—

And upon the hearing of renewed applications preferred under this section abandonment shall be considered as a question of fact.

It is believed that no court case can be found which sustains the contention now made by Cassidy and Smith. As already shown, that construction is at variance with the general declarations of the courts as to abandonment, and with other sections of the statute which clearly are of a broad and sweeping import. It is in opposition to the clear significance of the changes made in the original statute from which section 4897 springs, and is clearly illiberal. It is believed to be a wrong construction, and the petition is denied.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—District of Massachusetts.

CITY OF CARLSBAD *et al. v.* TIBBETTS *et al.*

Decided August 16, 1892.

1. EQUITY PLEADING—ALLEGATIONS OF CITIZENSHIP—PRAYER FOR PROCESS.

A bill may be dismissed by the court on its own motion where the proper allegations as to citizenship of the parties are not contained in the introductory part and are not pointed out by counsel elsewhere in the bill or where the prayer for subpœna does not contain the names of the defendants, as required by the rules.

2. TRADE-MARKS—INFRINGEMENT—DECEPTIVE REPRESENTATIONS.

Independently of any right of complainants to the exclusive use as a Trade-Mark of the name applied by them to their product the sale by defendants of a deleterious substance represented by the latter to be in part or in whole the same substance in which complainants are dealing, and of which they are the sole producers, and which is admittedly of a beneficial character will be restrained.

BILL by the city of Carlsbad and others against S. Tibbetts and others for infringement of Trade-Marks. Heard on demurrer to amend bill.

STATEMENT OF THE CASE.

The introductory part of the bill as originally filed was as follows:

To the Honorable the Judges of the said Court:

The city of Carlsbad, a municipality of Bohemia, in the Empire of Austria, Julius Schottlander, and others, to wit, Bruno Schottlander, Salo Schottlander, Augusta Oliven, Elizabeth Oliven, Dorathea Cohn, Louis Pacully, Melvine Korn, Paula Heymann, descendants and heirs of Loebel Schottlander, deceased, trading as Loebel Schottlander, citizens of Bohemia, in the Empire of Austria, doing business in the city of Carlsbad, the said city of Carlsbad and Loebel Schottlander acting herein by their attorneys in fact and agents, the Eisner & Mendelson Company, of the city of Philadelphia and State of Pennsylvania, in the United States of America, and the said Eisner & Mendelson Company, a corporation duly organized under the laws of the State of Pennsylvania, doing business in the city of Philadelphia, and in the city of New York, exclusive licensees for the United States of America for the Carlsbad water and the Carlsbad Sprudel Salz, complainants, bring this their bill of complaint against the said S. Tibbetts and W. W. Lacey, trading as S. Tibbetts & Co., S. Tibbetts, George Burwell, and W. W. Lacey, residents of said district of Massachusetts, and doing business in the city of Boston, defendants, and thereupon your orators complain, and say.

The bill contained allegations showing the acquisition by the city of Carlsbad of exclusive proprietary rights to the mineral springs at said city and to the waters thereof and the crystalline salts produced by evaporation of the water of the Sprudel spring, and also to the use of the name "Carlsbad" as applied to the water and salts; the acquisition by the firm of Loebel Schottlander of the exclusive right and license of bottling and exporting the water and of exporting the Carlsbad Sprudel Salz, as manufactured and put up by the city of Carlsbad; the adoption for said salts of the distinctive name "Carlsbad Sprudel Salz" and its use upon the distinctive bottles, labels, and wrappers in which the salts were sold; that the salts had become well known under the distinctive name of "Carlsbad Salz" or "Carlsbad Sprudel Salz," and said Trade-Marks, labels, and designations had come to be regarded as denoting the origin thereof and as the product of said mineral springs, and that the Eisner & Mendelson Company had become the exclusive licensees and sole agents under the said Loebel Schottlander for the sale of the Carlsbad Sprudel Salz in the United States and were fully authorized to commence actions at law or other proceedings in the name of the firm of Loebel Schottlander and in the name of the city of Carlsbad. The bill continued:

Your orators further show that since the adoption by the city of Carlsbad and the said Loebel Schottlander of the trade-marks hereinbefore more particularly mentioned and described, the said city of Carlsbad, Loebel Schottlander, and said complainants' firm, proceeded, at the expenditure of much time, labor and money, to push the sale of the said Carlsbad Sprudel Salz, so made, put up, and labeled by him and your orators aforesaid, and have thereby made extensive sales thereof in the markets of Europe and elsewhere; wherefore he and they, as well as your orators, the Eisner & Mendelson Company, are seriously injured and deprived of the profits which they would otherwise realise by reason of any other spurious or artificial salts being put up and sold under the name of "Carlsbad," thereby indicating such spurious and artificial articles as being the genuine product of the Carlsbad springs, or as manufactured by or at the city of Carlsbad, which is not only a fraud upon the rights of your orators, but a deception upon the community. Your orators further show unto your honors that, notwithstanding the long and quiet use and enjoyment of the exclusive right to the name of "Carlsbad" as applied to any proprietary article or to the sale of the product of the said Carlsbad spring, and the long and quiet use and enjoyment of the said exclusive Trade-Marks of the words "Carlsbad Sprudel Salz," "Carlsbad Salz," "Carlsbad," or "Carlsbader Salz," or "Karlsbader," the said defendants S. Tibbetts and W. W. Lacey, trading as S. Tibbetts & Co., S. Tibbetts, George Burwell, and W. W. Lacey, well knowing the premises and willfully disregarding the rights of your orators, and contriving to injure your orators, and to deprive them of the great benefits and advantages which might and otherwise would accrue unto your orators from the exclusive sale of the products of the said springs, and the sole use of the Trade-Marks aforesaid used by your orators to distinguish the said goods as genuine, have recently, before the commencement of this suit, as your orators are informed and believe, without the license, consent, or knowledge of your orators, and against their will, and in violation of their rights aforesaid, and with the intention of defrauding your orators and deceiving the public, the community, and the trade, wrongfully and fraudulently sold and offered for sale, are now selling and offering for sale, and threaten to continue still to sell and offer for sale, in the city of Boston and elsewhere, a spurious and artificial article, designating the same as "Carlsbad Obesity Pills," indicating by the words "Prepared only by the Carlsbad Obesity Pill Company, Carlsbad" that the same are manufactured and prepared by the Carlsbad Obesity Pill Company of Carlsbad, and, furthermore, translating the words aforesaid into German, and thereby using the word "Karlsbader" in the same manner in which the said word is used by the city of Carlsbad in the translation of the word into German, in the sale of the proprietary article prepared by the said city. Your orators further aver that there is no such company, firm, or partnership at the city of Carlsbad as the Carlsbad Obesity Pill Company, but that the said company is composed of and comprises the defendants above named, who reside and do business in the city of Boston, at 176 Boylston street, under the name and firm of S. Tibbetts & Co. Your orators further aver, on information and belief, that S. Tibbetts is the agent of or is employed by George Burwell, druggist, at 176 Boylston street, Boston, and that one W. W. Lacey is interested with the said Tibbetts, and is to a great extent the moving spirit in the manufacture and preparation of the commodity indicated as "Carlsbad Obesity Pills."

Accompanying this bill as an exhibit is filed an actual sample of the article sold by defendants as above set forth, marked "Exhibit A," with the words written upon the outside cover of the box in ink, 'Bought by P. E. T., June 24, 1891."

Your orators further complain and aver that accompanying the sale of the said Carlsbad Obesity Pills, and published extensively by distribution and through the mails, is a pamphlet entitled on its front outer cover "How to Get Thin," as will more fully appear by reference to a copy thereof filed herewith, and which is prayed may be taken as part of this bill of complaint the same being marked "Exhibit B." On the back outer cover of the said pamphlet is a description of the city of Carlsbad, in Bohemia, and of the constituent elements of the springs of the said city. On page 16 of said pamphlet, commencing at the seventh line from the bottom of said page, the said defendants use the following language and representation: "They [meaning the Carlsbad Obesity Pills] are composed of the salts of the celebrated Carlsbad springs, rich in sulphate of sodium, so blended with vegetable extracts as to render them the most effective obesity pills offered to the public." The said pamphlet furthermore contains a pictorial representation of the "Sprudel Boiling Springs" at Carlsbad. Your orators further aver that the said pills are not composed of the salts of the Carlsbad springs, but that, on the contrary, they consist mainly of aloes, which is a drug very deleterious to health if used for any length of time. Your orators further aver that there is no such company as the "Carlsbad Obesity Pill Company" at Carlsbad having the right to use the name of "Carlsbad," as indicating that the said pills are manufactured in or at Carlsbad, containing any of the constituent elements of the genuine product of the Carlsbad spring; but, on the contrary, your orators aver, on information and belief that the said pills are manufactured in the United States of America, most probably in the city of Boston, by the said Tibbetts, Burwell, and Lacey, or either one or all of them combined, with the express intention of selling the same under the name of "Carlsbad," not only with the purpose of injuring and defrauding your orators of their just rights, but with the intention of deceiving the community into purchasing the said pills under the supposition that they are manufactured at or in the city of Carlsbad, of some or all of the constituent elements or component parts of the product of the Carlsbad springs, and that in furtherance of this scheme the same are consigned to S. Tibbetts & Co., as sole agents for the United States and Canada. Your orators further aver that the said defendants, in furtherance of the scheme aforesaid, have a printed card, in colors, whereon the said pills are called "Carlsbad Pills," with the name "Carlsbad Obesity Pills, Carlsbad," which your orators aver is calculated to deceive the public into the supposition that the said pills are manufactured under or at the city of Carlsbad, or by the city of Carlsbad. Your orators aver that the same are manufactured in the United States of America. Which said acts and doings on the part of said defendants have not only been and are calculated and manifestly designed to defraud your orators, and have greatly injured them in their trade and business in the United States of America, but are manifestly calculated and designed to deceive the public, the trade, and the community, and create confusion in the minds of purchasers, and mislead and deceive the public, especially those familiar with and preferring the genuine products of the Carlsbad spring. Your orators further say that they cannot, with certainty, state the exact magnitude of their loss and injury suffered by reason of the said wrongful acts of the defendants, but believe the same will exceed the sum of ten thousand dollars.

The bill further alleged the bringing of other suits in the circuit courts of the United States against other persons to prevent unlawful interference with said proprietary rights of complainants, in which injunctions against the defendants therein had been granted, and, after praying a discovery, an injunction, and an

accounting, the bill concluded with the following prayer for process:

May it please your honor to grant unto your orators a writ of subpœna of the United States of America, directed to the said defendants, commanding them, by the proper officers, to appear and answer this bill of complaint and to abide and perform such order and decree in the premises as to the court shall seem meet, and be required by the principles of equity and good conscience.

Defendants demurred to the bill.

Mr. Jerome Carty for the complainants.
Mr. Stephen H. Tyng for the defendants.

PUTNAM, *J.*:

The following are noted by the court on its own motion: The bill in this case contains no proper prayer for subpœna, as required by the rules of the Supreme Court. Moreover, there are no proper allegations as to citizenship in that portion of the bill where they are customarily and properly inserted. If they appear elsewhere, the court cannot be expected to search for them, and it is for counsel to point them out. If they do not appear, the bill is defective on this account, as well as for the other reason already stated. It is therefore ordered: Bill dismissed at the August rules, 1892, with costs, as of course, and without further order on the part of the court, unless before that time complainants properly amend and pay taxable costs to that time.

Thereafter complainants amended the bill by inserting in the introductory part thereof, after the description of certain of the complainants as citizens of Bohemia, in the Empire of Austria, the words "and subjects of the Emperor of Austria," and after the description of the Eisner & Mendelson Company as a corporation duly organized under the laws of the State of Pennsylvania the words "and a citizen of said State of Pennsylvania," and after the word "defendants" the words "and citizens of said State of Massachusetts," and also by changing the prayer for process therein so as to read as follows:

May it please your honor to grant unto your orators a writ of subpœna of the United States of America, directed to the said defendants S. Tibbetts and W. W. Lacey, trading as S. Tibbetts & Co., and S. Tibbetts George Burwell, and W. W. Lacey, commanding them, and each of them, to appear and answer this bill of complaint, and to abide and perform such order and decree in the premises as to the court shall seem meet, and be required by the principles of equity and good conscience.

As this case comes before me on general demurrer, if the bill is sustainable on any ground the demurrer must be overruled. The complainants cite nothing binding this court protecting them in the exclusive use of the word "Carlsbad." The case which most nearly approaches the contention of the complainants on this point is found originally as *Thompson* v. *Montgomery*, (41 Ch. Div., 35; decided by the court of appeal in 1888 and affirmed by the House of Lords in [1891] App. Cas., 217.) This case is noted in *Lawrence Manufg. Co.* v. *Tennessee Manufg. Co.*, (55 O. G., 1528; 139 U. S., 537, 11 Sup. Ct. Rep., 396,) where it seems to be regarded as an authority only to the extent that the party restrained was using the name of the town of Stone in such way as to amount to a false representation that his goods were the goods of the complainant. In *Brewing Association* v. *Pisa* (24 Fed. Rep., 149) and in *White Lead Co.* v. *Cary* (25 Fed. Rep., 125) the Court protected the name of the city which was the residence of the original manufacturer and which he had attached to his Trade-Marks; but in *New York & R. Cement Co.* v. *Coplay Cement Co.* (45 Fed. Rep., 212) Mr. Justice Bradley laid down very broadly the rule that the name of a town or city is one in which no person can obtain an exclusive right, and he made a striking illustration by citing the word "Havana" as attached to cigars, showing that if a dealer in New York sells "Havana" cigars which in truth are not not such it may be fraud, but it can be no violation of a Trade-Mark. In this case he affirms his own decision in *New York & R. Cement Co.* v. *Coplay Cement Co.*, (53 O. G., 1408; 44 Fed. Rep., 277,) concurred in by Circuit Judge McKennan, concerning the use of the name of the town or village of Rosendale.

I fear that the rule laid down by Justice Bradley may be held to be the law in the United States, although to one who knows the history of the manufacture of Rosendale cement it would seem just on a bill filed by any cement manufacturer in that locality, in behalf of himself and other manufacturers, to protect against an injury to the honest dealer coupled with a fraud on the public. The fact that many have a common interest in the same subject-matter ought not to deprive one of the many from being protected against an injury to the whole, and whatever difficulties there might be in a suit at law for damages in behalf of one manufacturer among many, as pointed out by Justice Bradley, there is no more inconvenience in proceeding in equity in such cases than on bills in behalf of parishioners to establish a general *modus*, or of commoners respecting rights of common, or of one tax-payer in behalf of all others in the town, all of which are well-recognized subjects of equity jurisdiction. It may be, as the complainants assert, that this case can be distinguished on the alleged ground that the right of the complainants to use the name of the city of Carlsbad in connection with products of its springs is exclusive. It is certain that in case of the "Stone Ale" referred to, and also in the case of the "Glenfield Starch," reported as *Wotherspoon* v. *Currie* (L. R., 5; H. L., 508) and noted in *Lawrence Manufg. Co.* v. *Tennessee Manufg. Co.*, (55 O. G., 1528; 139 U. S., 550; 11 Sup. Ct. Rep., 401,) the use of the name of the town was protected, under special circumstances.

On the other hand, it may well be questioned whether, if the respondents in this case should use the word "Carlsbad" in such manner as to be free from all representation or suggestion that they were offering for sale the products of complainants' springs, or in connection with only the words "Obesity Pills," any injury to the complainants could be shown or any right of theirs violated. As, however, this bill must be sustained on general demurrer, I do not now find it necessary to pass upon the broad right to the use of the word "Carlsbad" claimed by complainants. Moreover, that matter can be better determined on a presentation of all the facts at a final hearing.

This bill must be sustained on the allegation that the respondents make public use of the following representation:

They [meaning the Carlsbad Obesity Pills] are composed of the salts of the celebrated Carlsbad springs.

This the bill alleges to be false. The bill further alleges that respondents' pills are composed mainly of

aloes—a drug alleged to be very deleterious to health if used for any length of time. On this point the case is narrowed down very closely. It is that the respondents are falsely and injuriously selling a deleterious substance and are representing it to be in part or in whole the same substance, admittedly of a beneficial character, in which the complainants are dealing and of which they are the sole producers. That a direct attack like this on the trade of a manufacturer or other dealer will be restrained is an elementary proposition. It is not necessarily a branch of the law of Trade-Marks, but underlies and supports it. While the courts in this country have not generally accepted the rules of the English courts restraining libels directed against a man's trade or business on the ground that those rules rest on the judicature acts, yet they will enjoin and punish untrue representations expressly made by one person that he is selling the product of another, and even when such representations are not fraudulent they will protect against them, as they will against any unauthorized intrusion on other property rights. It is sufficient that the court is satisfied that there is an intent on the part of the respondents to palm off their goods as the goods of the complainants and that they persist in so doing after being requested to desist. *McLean* v. *Fleming*, (96 U. S., 245, 254.) But positive proof of fraudulent intent is not required where the proof of infringement is clear. (*Id.*, 253.) This principle, so far as it applies independently of the special branch of law relating to Trade-Marks, supports a class of cases where the use of a man's own surname is restrained, and also the results in *Thompson* v. *Montgomery*, *ubi supra*, and *Lee* v. *Haley*, (L. R., 5; Ch. App., 155.) It is fully recognized in *Nail Co.* v. *Bennett* (43 Fed. Rep., 800) and in *Lawrence Manufg. Co.* v. *Tennessee Manufg. Co.*, *ubi supra*, and is somewhat explained in Browne on Trade-Marks, sec. 43.

Demurrer overruled and respondents ordered to plead or answer on or before October rules next; costs to abide the final decree.

U. S. Circuit Court—Northern District of Illinois.

UNITED STATES CREDIT SYSTEM COMPANY *v.* AMERICAN INDEMNITY COMPANY.

Decided 1892.

PATENTS FOR INVENTION—INVENTION—DEBT INSURANCE.

Letters Patent No. 465,485, issued December 22, 1891, to Levi Maybaum, for means for securing against excessive losses by bad debts, being a plan of insurance against losses from bad debts based on estimates of the different percentages of loss in different lines of business and providing forms for ruling paper, with spaces for entering various details of the insurance transaction, are void for want of invention.

ACTION by the United States Credit Company for infringement of patent, originally brought against one Langsdorf, and upon intervention the American Indemnity Company was made defendant. Heard on demurrer to bill. Demurrer sustained.

STATEMENT OF THE CASE.

The amended bill of complaint alleges that the complainant is a New Jersey corporation; that prior to the date of the patented invention hereinafter referred to no particular system or means of insuring business men against loss from bad debts was known or used; that prior to the 5th day of January, 1891, one Levi Maybaum, of Newark, N. J., was the original and first inventor, contriver, and discoverer of a new, useful, and practical system or method of insuring business men against excessive losses from bad debts, and that he was the discoverer and inventor of a certain new and useful means for carrying said new and useful system or method into practice; that attached to the bill of complaint is a copy of the patent, in which said Levi Maybaum sets forth his claim for a patent, the substance of which is as follows:

By a careful observation of statistics and of other sources of information I have ascertained that the average losses due to bad debts vary in different lines of business, and I have compiled tables showing what the average percentage of losses in all of the principal lines or classes of business are and have been for a series of years. I have also ascertained that in those lines of business in which there is a large percentage of average loss there is also a larger percentage of average profit, and that therefore, on the average, persons transacting any given line or class of business can afford to make losses to the amount of the average percentage of their class without danger of too great a reduction of the profits of their business. My invention or art and method of guaranteeing credits is based upon the ascertainment of these facts, and for the purpose of practicing my invention I have prepared or compiled tables in which all kinds of business are classified and the average rate or percentage of loss in each ascertained, from which can be readily determined what amount of loss in any given class of business would be a loss in excess of the average usually sustained from bad debts in that class, and what therefore would be an amount of loss which a person in that business cannot afford to make without impairing the average profits normally due in that class; and I have invented a sheet, page, or form for entering the details of such transaction, forms of which are shown in Figs. 1 and 2, respectively. Heretofore it has of course been common for persons to obtain guarantees or security for individual doubtful debts due from certain customers, or to require in the case of any given customer before dealing with him that purchases by that customer should be guaranteed. Such a course cannot, however, be generally adopted, as it would involve the obtaining of separate guarantees for each individual debt or each individual debtor. It is also not feasible to guarantee persons in business against any loss whatever from bad debts, or to guarantee against all losses from any and all customers generally, as such a mode of practicing the business of guaranteeing would induce recklessness on the part of the person guaranteed in giving a credit.

The statement goes on to give the mode or manner of practicing the art, how to arrive at the proper percentage of loss, and explaining the sheets of ruled paper contained therein, which are marked "Sheet No. 1" and "Sheet No. 2." It states, in substance, that he provides separate spaces for entering the details of the transaction of insurance—for instance, a space for the name of the assurer, another one for the name of the assured, another for the per cent. or amount beyond which losses are guaranteed against, etc. The claims for which he desires to secure Letters Patent are as follows:

What I claim, and desire to secure by Letters Patent, is—

1. The means for securing merchants and others from excessive losses by bad debts, which consist of a sheet provided with separate spaces and suitable headings, substantially as described, for the name of the assurer, the name of the assured, the percentage or amount beyond which assurance is given, the class or classes of persons as to rating, capital, or otherwise, in respect to whom said losses are guaranteed against, and the percentage of said capital or the amount which said losses must not exceed.

2. The means for securing merchants and others from excessive losses by bad debts, which consist of a sheet bearing the name of the assurer and provided with separate spaces and suitable headings, substantially as described, for the name of the assured, the percentage or amount beyond which assurance is given, the class or classes of persons as to rating, capital, or otherwise, in respect to whom said losses are guaranteed against.

3. The means for securing merchants and others from excessive losses by bad debts, which consist of a sheet provided with separate spaces and suitable headings, substantially as described, for the name of the assured, the percentage or amount beyond which assurance is given, the class or classes of persons as to rating, capital, or otherwise, in respect to whom said losses are guaranteed against, in conjunction with a register for details of the transaction adapted to disclose the amount of loss sustained, substantially as described.

The bill further alleges that the defendant is infringing said patent and asks for an injunction and damages. The defendant demurred to the complainant's bill.

The drawings or sheets attached to the patent are as follows:

FIG. 1.

Guarantees.		Percentage on sales beyond which assurance is given.	Percentage on rating which individual indebtedness must not exceed.	Ratings covered.			Consideration.	Conditions.
Name of assurer.	Name of assured.			Capital rating.	Credit rating.			

MEANS FOR SECURING AGAINST EXCESSIVE LOSSES BY BAD DEBTS. No. 485,485. Patented Dec. 22, 1891.

FIG. 2.

Guarantees.	Name of assurer.	Name of Company.
	Name of assured.	
Percentage on sales beyond which assurance is given.		
Percentage on rating which individual indebtedness must not exceed.		
Ratings covered.	Capital rating.	
	Credit rating.	
Consideration.		
Conditions.		

Mr. Lysander Hill for the complainant.

Mr. John M. Thatcher and *Messrs. Davis, Kellogg & Severance* for the defendant.

BLODGETT, *J.*, (orally:)

I cannot see any ground on which to sustain this patent. It is void for want of invention. The guarantying of men's financial ability to pay is not an invention of the complainant. Nearly all forms of guarantying or insuring have been in existence for many years, notably fidelity, casualty, fire, lightning, and other forms of insurance, all of which are based upon averages obtained from practical experience. It required no inventive genius to form and plan the insurance on this basis. One is not entitled to a patent for a plan or method of business which only requires good judgment and foresight. In this case ordinary business judgment would suggest this system of guarantying. Again, the means for securing merchants and others against excessive losses is stated to consist of a sheet of paper containing ruled lines and certain tabulated information or statistics. It is evident that the means for securing the merchant is by virtue of a contract or agreement whereby the assured guarantees the merchant against loss. The arrangement of a sheet of paper with ruled lines for tabulating information is not new. That statistics and various kinds of information have always been tabulated in a similar manner is a matter of general knowledge. I do not intend to decide that a man may not have a patent for a mode of keeping accounts or for a form of tabulating amounts or statistics, but am clearly of opinion that this patent cannot be construed to cover a business principle such as a law of averages, which seems to have been the purpose of the specification in this patent.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 61.—No. 9. TUESDAY, NOVEMBER 29, 1892. PRICE—$5 per year.

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World's Columbian Exposition.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 8, 1892.

To the Inventors and Manufacturers of the United States:

It is the intention of the Patent Office to make at the World's Columbian Exposition at Chicago in 1893 an exhibit which will show that great advance in the several arts which is due, in large measure, to the encouragement and support afforded by our patent system. This exhibit is to consist of models of patented inventions, which will be carefully selected, to show as far as is possible the inception of each art, the stages through which the art has advanced, and the final development reached at the present time. This display of typical inventions, embodied in concrete form and properly arranged, will, it is believed, constitute a grand historical exhibit of the progress of the useful arts and one which will be of great interest not only to inventors and manufacturers, but to the public generally.

The Office collection of models has been seriously impaired by fire, and is further incomplete by reason of the fact that models have not generally been required or received during the last ten years. The Office is not, therefore, in possession of the models of many valuable inventions which might properly be included in such an exhibit, and without which, indeed, the exhibit would be incomplete. The limited appropriation for this exhibit will not permit the Office to make such models. An urgent appeal is therefore made to all inventors and manufacturers to come to the assistance of the Office in this matter, either by loans of models already built or by the construction of such models not in the possession of the Office as should properly be placed in such a collection. Of course, where models are loaned to the Office all proper credit will be given both in labels and catalogues to the parties by whom the loans are made, and such disposition will be made of the models after the close of the exhibit as the owners shall direct. Many inventors and manufacturers have already indicated a willingness to co-operate with the Office in this matter, and it is confidently expected that such a response will be made to this general appeal as will assure the unparalleled success of this attempt to graphically and concretely show the development of American invention.

W. E. SIMONDS,
Commissioner.

Protection of Foreign Exhibitors.

DEPARTMENT OF STATE,
Washington, D. C., July 30, 1892.

To the Diplomatic and Consular Officers of the United States:

GENTLEMEN: I subjoin a transcript of the act of Congress approved April 6, 1892, Public No. 29, entitled "An act to protect foreign exhibitors from prosecution for exhibiting wares protected by American patents and trade-marks," which reads as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That no citizen of any other country shall be held liable for the infringement of any patent granted by the United States, or of any trade-mark or label registered in the United States, where the act complained of is or shall be performed in connection with the exhibition of any article or thing at the World's Columbian Exposition at Chicago.

You will transmit copies of this circular to the government of the country to which you are accredited, and ask that it be given the widest possible circulation for the information of those directly concerned.

I am, gentlemen, your obedient servant,
JOHN W. FOSTER,
Secretary of State.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., August 4, 1892.

Official copy to the Commissioner of Patents for his information and guidance.

E. M. DAWSON,
Chief Clerk.

Indexes to Patents on Electricity.

Indexes to patents relating to electricity, covering the period of time from July 1, 1882, to June 30, 1890, have been issued, and are for sale. These indexes, arranged alphabetically, numerically, and by classes, comprise the following volumes, the prices of which are given below:

Vol. 1. Index to patents relating to electricity granted by the United States prior to June 30, 1881, with an appendix, July 1, 1881, to June 30, 1882. One volume, 250 pages. In paper covers, $3; bound, $5.

Vol. 2. Appendix No. 2, July 1, 1882, to June 30, 1883. One volume, 50 pages. In paper covers, $1.50.

Vol. 3. Appendix No. 3, July 1, 1883, to June 30, 1884. One volume, 60 pages. In paper covers, $1.50.

Vol. 4. Appendix No. 4, July 1, 1884, to June 30, 1885. One volume, 60 pages. In paper covers, $1.50.

Vol. 5. Appendix No. 5, July 1, 1885, to June 30, 1886. One volume, 54 pages. In paper covers, $1.50.

Vol. 6. Appendix No. 6, July 1, 1886, to June 30, 1887. One volume, 52 pages. In paper covers, $1.50.

Vol. 7. Appendix No. 7, July 1, 1887, to June 30, 1888. One volume, 68 pages. In paper covers, $1.50.

Vol. 8. Appendix No. 8, July 1, 1888, to June 30, 1889. One volume, 72 pages. In paper covers, $1.50.

Vol. 9. Appendix No. 9, July 1, 1889, to June 30, 1890. One volume, 84 pages. In paper covers, $1.50.

Vol. 10. Appendix No. 10, July 1, 1890, to June 30, 1891. One volume, 98 pages. In paper covers, $1.50.

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Issue of November 29, 1892.

Patents	396—No.	486,842 to No. 487,237, inclusive.
Designs	10—No.	22,018 to No. 22,027, inclusive.
Trade-Marks	41—No.	22,059 to No. 22,099, inclusive.
Labels	None.	
Reissues	4—No.	11,288 to No. 11,291, inclusive.
Total issue	451	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	2	.....	Nevada	.....	.....
Arizona Territory	1	.....	New Hampshire	4	1
Arkansas	.....	.....	New Jersey	12	1
California	13	.....	New Mexico Territ'y	.....	.....
Colorado	1	.....	New York	53	9
Connecticut	7	3	North Carolina	2	.....
Delaware	.....	.....	North Dakota	.....	.....
District of Columbia	.....	1	Ohio	26	5
Florida	1	.....	Oregon	.....	.....
Georgia	4	.....	Pennsylvania	38	3
Idaho	2	.....	Rhode Island	9	.....
Illinois	45	1	South Carolina	1	.....
Indian Territory	.....	.....	South Dakota	1	.....
Indiana	5	1	Tennessee	2	2
Iowa	11	.....	Texas	6	.....
Kansas	4	.....	Utah Territory	.....	.....
Kentucky	3	.....	Vermont	.....	.....
Louisiana	.....	.....	Virginia	2	.....
Maine	2	.....	Washington	3	.....
Maryland	3	1	West Virginia	1	.....
Massachusetts	44	5	Wisconsin	11	1
Michigan	19	.....	Wyoming	1	.....
Minnesota	5	1	U. S. Army	1	.....
Mississippi	2	1	U. S. Navy	.....	.....
Missouri	14	1	Total to citizens of the United States	370	37
Montana	1	.....			
Nebraska	8	.....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	.....	.....	Mexico	.....	.....
Austria-Hungary	4	.....	Netherlands	.....	.....
Belgium	1	.....	Newfoundland	.....	.....
Bermuda	.....	.....	New South Wales	.....	.....
Brazil	.....	.....	New Zealand	.....	.....
Canada	1	.....	Norway	.....	.....
Chile, Republic of	.....	.....	Portugal	.....	.....
Cuba	1	.....	Russia	.....	.....
Denmark	.....	.....	Scotland	1	.....
Ecuador	.....	.....	South Australia	1	.....
England	13	.....	Spain	.....	.....
France	2	.....	Sweden	2	.....
Germany	8	4	Switzerland	1	.....
Guatemala	.....	.....	Victoria	1	.....
Ireland	.....	.....	Total to citizens of foreign countries	36	4
Italy	.....	.....			
Japan	.....	.....			

APPLICATIONS UNDER EXAMINATION.

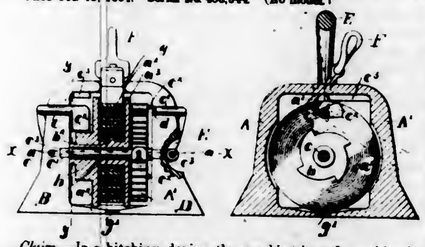
Condition at Close of Business November 22, 1892.

Division No.	Subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended.	No. of applications awaiting action.
	Under one month in arrears.			
31	Gas, Painting, Leather, Tanning, Alcohol, Oils, Fats, and Glue, etc.	Oct. 22	Nov. 22	73
	Between one and two months in arrears.			
2	Farm Stock, Products, etc	Sept. 23	Nov. 15	205
16	Telegraphy, Telephony, Electric Lighting and Signaling	Sept. 22	Nov 14	186
14	Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, etc.	Sept. 23	Nov. 11	117
8	Furniture, Toilet, Umbrellas and Canes, etc.	Sept. 29	Nov. 10	247
25	Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, etc.	Sept. 22	Nov. 7	166
21	Textiles, etc	Sept. 24	Nov. 3	156
12	Mechanical Engineering, Stores-Service, etc.	Sept. 27	Oct. 29	209
10	Carriages and Wagons and Railway-Cars	Sept. 26	Oct. 29	363
24	Sewing-Machines and Apparel	Sept. 27	Oct. 24	140
30	Lamps, Gas-Fittings, Type-Writers, Matrix-Making Machines	Sept. 23	Oct. 22	188
11	Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting	Sept. 24	Oct. 20	233
9	Hydraulics, Fire-Extinguishers, etc.	Sept. 23	Oct. 17	397
19	Stoves and Furnaces	Sept. 26	Oct. 15	351
17	Paper-Manufactures and Printing	Sept. 24	Oct. 6	218
20	Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc.	Sept. 22	Oct. 5	292
5	Fine Arts, Stationery, Book-Binding, Music, etc.	Sept. 24	Oct. 1	251
1	Tillage and Fences	Oct. 1	Sept. 29	265
27	Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	Sept. 24	Sept. 27	272
15	Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc.	Sept. 22	Sept. 26	243
4	Civil Engineering, etc	Sept. 22	Sept. 23	363
	Between two and three months in arrears.			
28	Instruments of Precision, Acoustics, Optics, etc.	Sept. 15	Oct. 26	251
22	Fire-Arms, Navigation, Signals, etc.	Sept. 19	Oct. 15	211
18	Steam-Engineering, etc	Sept. 10	Oct. 8	134
3	Metallurgy, Metal Founding, Forging, Rolling, Coating, Annealing and Tempering, etc.	Sept. 16	Oct. 3	217
6	Chemistry, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc.	Sept. 21	Sept. 29	258
	Between three and four months in arrears.			
13	Metal-Working, Arms and Projectiles, etc.	July 27	Nov. 3	226
32	Advertising, Baggage, Packing and Storing Vessels, etc.	Aug. 19	Nov. 1	277
7	Harvesters, Games and Toys	Aug. 20	Oct. 26	546
26	Pneumatics, Refrigeration, Air and Gas Engines, etc.	Aug. 16	Sept. 3	435
	Between four and five months in arrears.			
29	Wood-Working Machines, Carpentry, Coopering and Roofing, etc.	July 2	Oct. 18	379
	Between six and seven months in arrears.			
26	Electricity, Generation, Distribution, etc.	May 14	Oct. 3	543
	Total number of applications awaiting action			8,407
	Under one month in arrears.			
	Designs	Nov. 12	Nov. 14	42
	Trade-Marks	Nov. 14	Nov. 18	36

PATENTS

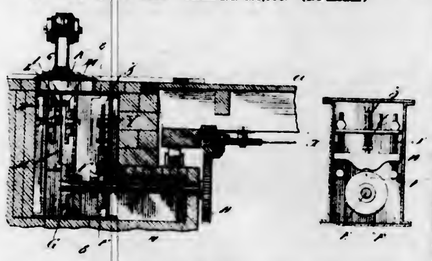
GRANTED NOVEMBER 29, 1892.

486,842. HITCHING DEVICE. ELMER E. ALBIN, Springfield, Ohio. Filed Oct. 15, 1891. Serial No. 408,844. (No model.)



Claim.—In a hitching device, the combination of a reel having integral flanges and a strap adapted to coil thereon, a ratchet-wheel on said reel, a bail pivoted in the casing on journals, one of which extends into said casing and is provided with a detent projection formed integral therewith and adapted to engage said ratchet by the weight of said bail when released, a projecting lug on the casing forming a stop to keep said detent from reversing, a rigidly-secured shaft for said reel, the ends of which are fitted into holding-recesses in said casing, a coil-spring attached at one end to said shaft and at the remaining end to one of a series of pins arranged at different points about the circumference of the reel, and a two-part casing to form an open or split bearing for the shaft and bail, substantially as specified.

486,848. DRAWBRIDGE-GATE. ANDERS G. ANDERSON, Chicago, Ill. Filed Apr. 13, 1892. Serial No. 428,906. (No model.)



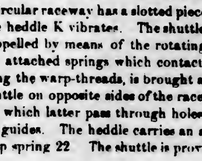
Claim.—1. The combination, with a turning bridge equipped at its ends with racks, as specified, of the gear D, shaft E, wheel G, pitman H, plate I, wheels M and N, constructed with sheaves upon sides, as specified, bars K and L, cables O, conduits S S and S', sheaves T and T', sheaves U and U', and gates B and B', all constructed and cooperating substantially as specified.

2. A turning bridge constructed with racks at each end, as specified, and a gear driving a horizontal shaft, said shaft operating cables and said cables connected with and operating gates upon the approaches of said bridge, said gear being so placed as to engage said racks, in combination with said horizontal shaft, the wheel F, friction-wheel V, bearer W, and spring Y, as shown and specified.

3. In combination with a bridge, a shaft 2, pinion 3, gear 4, gears 5 and 9, drums 10 and 11, cables 12 and 13, sheaves 14 15 and 18 and 19, sliding rack b, rail c, gear D, and a driving-shaft and mechanism thereto attached, susceptible of operating gates on the several approaches of the bridge, as specified.

4. A swinging bridge equipped with racks, as indicated by *b*, in combination with gates B, gear D, shaft E, wheel F, friction-wheel V, bearer W, and spring Y, said gates B upon the approaches being operated by power transmitted by shaft E, all substantially as shown and described.

486,844. CORNER FOR BOXES. JOHN AUSTIN, Burlington, Iowa. Filed Apr. 4, 1892. Serial No. 427,601. (No model.)



Claim.—The sides 1, having beveled ends, in combination with the external corner-piece having the angular recess, the internal corner-piece, and the bolt for drawing the parts together, said beveled ends abutting against each other and provided with grooves in their beveled faces for the passage of the bolt, and the inner corner-piece fitting the sides and filling the angle between them and extending vertically substantially the whole width of the sides, whereby said sides are adapted to be moved into the angle of the external corner-piece by friction of said inner corner-piece and are laterally supported against external pressure or blows, both corner-pieces bearing against the sides opposite each other for a distance greater than the thickness of the sides, substantially as set forth.

486,845. MACHINE FOR COVERING WIRES. JOHN A BARRETT, Brooklyn, N. Y., assignor to the Standard Underground Cable Company, Pittsburg, Pa. Filed May 10, 1892. Serial No. 432,404. (No model.)

Brief.—The circular raceway has a slotted piece extending across it, along which the heddle K vibrates. The shuttle travels along the raceway and is propelled by means of the rotating plate 12, having studs to which are attached springs which contact with the shuttle. The heddle, carrying the warp-threads, is brought alternately outside the path of the shuttle on opposite sides of the raceway. It vibrates between the wires, which latter pass through holes on opposite sides of the longitudinal guides. The heddle carries an adjustable take-up eye 8 and a take-up spring 22. The shuttle is provided with a warp-holding lip.

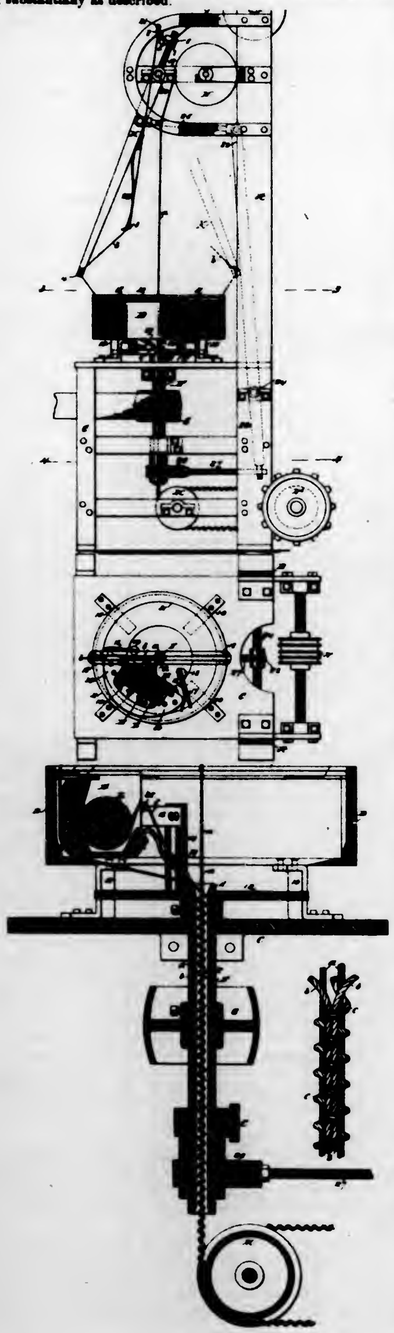
Claim.—1. The combination, with mechanism for advancing a plurality of wires or similar strands at suitable distances apart, of a heddle reciprocating between said wires and carrying the warp and a shuttle carrying the weft between the warp and wires and alternately on opposite sides of the latter, substantially as described.

2. The combination, with mechanism for advancing a plurality of wires and carrying the warp or similar strands at suitable distances apart, of a heddle reciprocating between said wires and a shuttle moving in a circular path about the wires and carrying the weft between the warp and wires and alternately on opposite sides of the latter, substantially as described.

3. The combination, with a shuttle and circular shuttle-race, of a heddle reciprocating across said race from the outer side of the path of the shuttle on one side of the center of said path to the outer side on the opposite side of the center of said path, substantially as described.

4. The combination, with a shuttle and circular shuttle-race, of a slotted guide extending across the race from the outer side of the path of the shuttle on one side of the center of said path to the outer side on the opposite side of the center of said path, and a heddle reciprocating longitudinally of said guides, substantially as described

5. The combination, with a shuttle and circular shuttle-race, of a slotted guide extending across said race from the outer side of the path of the shuttle on one side of the center of said path to the outer side of the opposite side of the center of said path and provided with openings midway of said guide on opposite sides of the slot, and a heddle reciprocating longitudinally of the guide between said openings, substantially as described.



6. The combination, with a hollow rotating shaft, a circular shuttle-race above said shaft, and a shuttle driven by the shaft, of a slotted guide extending across said race from the outer side of the path of the shuttle on one side of the center of said path to the outer side on the opposite side of the center of said path and provided with openings midway of said guide on opposite sides of the slot, and a heddle reciprocating longitudinally of the guide between said openings, substantially as described.

7. The combination, with a circular shuttle-race, of a heddle reciprocating across said race from the outer side of the path of said shuttle on one side of the center of said path to the outer side on the opposite side of the center of said path, rotating shaft F, plate 12, carried by said shaft, studs 13 14 on said plate, and shuttle E, lying between and engaged at opposite ends by said studs, substantially as described.

8. The combination, with rotating shaft F and shuttle-race D, of plate 12, carried by said shaft, studs 13 14 on said plate, springs 15 16 on said studs, and shuttle E, lying between and engaged at opposite ends by said springs, substantially as described.

9. The combination, with a circular shuttle-race, of a heddle reciprocating across said race from the outer side of the path of said shuttle on one side of the center of said path to the outer side on the opposite side of the center of said path, rotating shaft F, plate 12, carried by said shaft, studs 13 14 on said plate, springs 15 16 on said studs, and shuttle E, lying between and engaged at opposite ends by said springs, substantially as described.

10. The combination, with a circular shuttle-race having the lip 31, of slotted guide 18, extending across said race from the outer side of the path of the shuttle on one side of the center of said path to the outer side on the opposite side of the center of said path, said lip 31 being cut away at opposite ends of the guide, heddle K, reciprocating longitudinally of said guide, spring 22 on said heddle, having a warp-eye, and shuttle E, having the lip 30, substantially as described.

11. The combination, with reel I, of swinging heddle K, carrying take-up arm 19, spring 22 on said heddle, having a warp-eye, shuttle-race D, having lip 31, and shuttle E, having lip 30, substantially as described.

12. The combination, with a circular shuttle-race having the lip 31, of a heddle reciprocating across said race, a spring on said heddle, yielding in the line of movement of the heddle and having a warp-eye, and a shuttle having the lip 30, substantially as described.

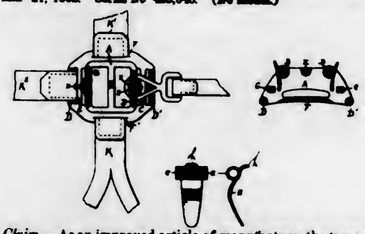
13. The combination, with the reel I, of swinging heddle K, carrying take-up arm 19, and spring 22 on said heddle, having a warp-eye, substantially as described.

14. The combination, with the circular raceway D, having inwardly-extending lip 31, of shuttle E, having warp-holding lip 30, lying on said lip 31, substantially as described.

15. The combination, with reel I, of swinging heddle K, carrying take-up arm 19, and a warp-eye adjustable on said arm, substantially as described.

16. Heddle K, having take-up arm 19 and spring 22, having an eye, substantially as described.

486,846. TRACE-CARRIER. GUSTAV A. BROWN, Manley, Nebr. Filed Mar 21, 1892. Serial No 425,840. (No model.)

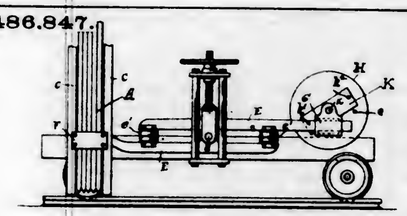


Claim.—As an improved article of manufacture, the trace-carrier hereinbefore described, comprising the rectangular stock A, having two solid sides, provided at the lower ends with the loop-bars F F', the cylindrical cross-bars B B, the loop-supporting braces C C, the lower loop-bars D D', adapted to support the trace-hangers, in combination with the tongues H H, provided with the ears *e* and the thumb-piece H, all arranged substantially as and for the purpose set forth.

486,847. STONE-CHANNELING MACHINE. WILLIAM H. REYAFF, North Amherst, Ohio. Filed Sept. 24, 1891. Serial No. 406,632. (No model.)

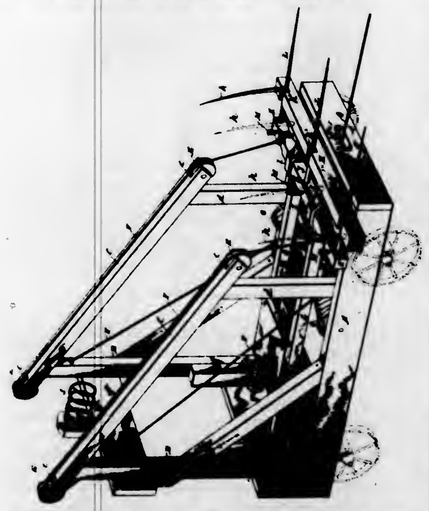
Claim.—In a stone-channeling machine, the lever for operating the drills pivoted between its ends and having the drills attached to

486,847.



one end, in combination with a box supporting the opposite end of said lever and connected with the power-shaft, said box made in a single piece and having an opening longitudinally through its center for the said lever, and recesses above and below the lever, closed at their ends and provided with separate bearing-pieces confined in said recesses and between which said lever is supported and adapted to slide, substantially as described.

486,848. HAY-ELEVATOR. PRESTO BURRELL, Bhoirfoot, Idaho. Filed June 20, 1892. Serial No. 437,397. (No model.)



Claim.—1. In an elevator, the combination, with the frame, of the fork-arms pivoted at one end of said frame and carrying a fixed fork-head at their other ends, a turning fork-bar mounted to rotate in rear of said fixed fork-head and carrying supporting-tines resting in said head, and means for raising and lowering said fork-arms, substantially as set forth.

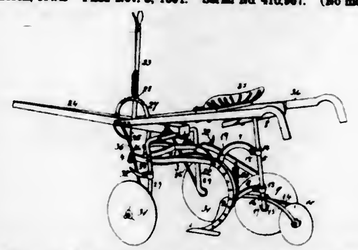
2. In a hay-elevator, the frame, the parallel fork-arms pivoted at one end of said frame and carrying a fixed fork-head at their other ends, a turning fork-bar mounted to oscillate upon said fork-arms in rear of the head and provided with a series of tine-openings, tines removably secured within said tine-openings and resting in said fixed head when elevating, and means for raising said fork-arms, substantially as set forth.

3. In an elevator, the frame, a buffer-spring located at one end of said frame, parallel fork-arms pivoted at one end below said buffer-spring, a notched fork-head secured to the other ends of said fork-arms, a fork-bar mounted to rotate upon said fork-arms in rear of the notched head and provided with a series of tine-openings, removable tines inserted in said openings, keys wedging said tines removably in said openings, a strike-plate secured to said fork-arms, adapted to strike said buffer-spring, and means for elevating the fork, substantially as set forth.

4. In an elevator, the frame, an operating-shaft journaled within said frame, opposite end uprights and intermediate uprights rising from said frame, inclined side bars secured to the upper ends of the uprights and carrying at each end grooved guide-wheels, swinging fork-arms pivoted to the end uprights and carrying a movable fork over said inclined side bars, and hoisting-ropes connected with said movable fork, passing over the end guide-wheels of said side bars and connected to said operating-shaft, substantially as set forth.

5. In an elevator, the frame, a swinging fork mounted within said frame, an operating-shaft journaled within the frame and provided with opposite reversely-disposed grooved cone-pulleys and a separate and independent intermediate cone-pulley, opposite hoisting-ropes connected with the fork and winding and unwinding on said opposite cone-pulleys, and a single draft-rope winding and unwinding on the intermediate cone-pulley in an opposite direction to the winding and unwinding of said opposite hoisting-ropes on the opposite reversely-disposed pulleys, substantially as set forth.

486,849. AGRICULTURAL IMPLEMENT. ALEXANDER CALDWELL, Essex, Iowa. Filed Nov. 5, 1891. Serial No. 410,967. (No model.)



Claim.—1. The combination, with the skeleton plow, of the beam thereof, supports 6 and 7, projecting from said beam, and a standard passing through said supports and carrying a rotatable disk, substantially as shown and described.

2. In an implement of the character herein specified, the combination, with the skeleton plow, of the disks 9 and 10, arranged the disk 10 behind the disk 9, substantially as shown and described.

3. In an implement of the character herein specified, the combination, with the standard 5, bearing a revoluble disk 9, of the adjustable frame carrying the disk 10, substantially as shown and described.

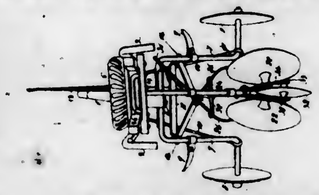
4. In a device of the character herein specified, the combination, with the tongue, truck-arch, supporting-wheels, and the main frame 21, adjustably supported therebeneath, of the skeleton plow, standard 5, and the disks 9 and 10, substantially as shown and described.

5. In an implement of the character herein specified, the combination, with the support 6 and 7, carried by and extending rearwardly from the plow-beam, of the standard 5, bearing a disk 9, said standard being made adjustable, whereby the angle of rotation of the disk 9 may be varied, substantially as show and described.

6. In an implement of the character herein specified, the combination, with the skeleton plow and the beam thereof, of the supports 6 and 7, the standard 5, and the cross-bar 8, said cross-bar being made adjustable forward and backward, substantially as and for the uses and purpose set forth and described.

7. The combination, with the standard 5, of the straight bar 15 and curved bar 14, interchangeably connected to standard 5, and the rotatable disk mounted between said bars, substantially as shown and described.

486,850. AGRICULTURAL IMPLEMENT. ALEXANDER CALDWELL, Essex, Iowa. Filed Nov. 5, 1891. Serial No. 410,968. (No model.)



Claim.—1. In a device of the character herein specified, the combination, with the standard 24, of the two disks mounted upon the

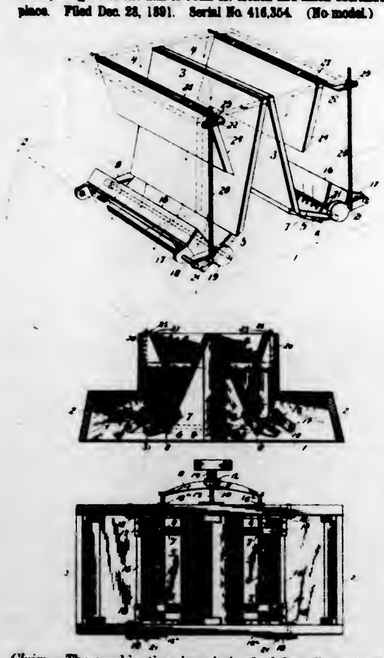
horizontal arms at the base thereof, substantially as shown and described.

2. In a device of the character herein specified, the combination, with the double skeleton plowshare, of the two revoluble disks, mounted upon the horizontal arms at the base of the standard 24, said disks being to the rear and sides of the share, substantially as shown and described.

3. In an implement of the character herein specified, the combination of the double skeleton plowshare, the disks 22, and the adjustable cutter 32 between said disks 22, substantially as shown and described.

4. The combination, with the supporting truck and frame 11, of the double skeleton plowshare, disks 22, standard 24, and cutter 32, adapted and arranged to be disconnected from the truck, substantially as shown and described.

486,851. FEED-REGULATOR. LAWRENCE S. CAMPBELL, Allegan, Mich., assignor of one-half to John M. Heath and Allen Ostrander, same place. Filed Dec. 28, 1891. Serial No. 416,354. (No model.)



Claim.—The combination, in a shake-feed for roller-mills, a feed-chute provided with a sloping interior wall, a shaker-board located at the bottom of said wall and having an endwise or transverse movement, a pivoted cut-off commanding the mouth of the chute, a weighted arm secured to actuate the cut-off, a valve swinging against the sloping wall and provided with a rearwardly-extending arm, an adjustable rod connecting said arm and the weighted arm, and a horizontal shaft and cam connected with the shaker-boards and located on the exterior of the casing surrounding the chute, all arranged in the manner and for the purpose substantially as described.

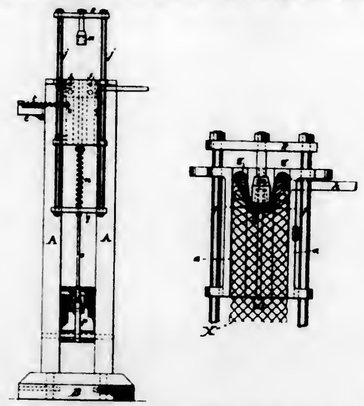
486,852. FLEXIBLE SHAFT. GEORGE H. COATES, Worcester, Mass. Filed Apr. 14, 1890. Serial No. 347,908. (No model.)

Claim.—1. In a flexible shaft, the combination of a chain having links provided with a straight central section c and formed of a single wire coincident with the axis of the shaft, a helical wire coil inclosing said chain, and circular washers inclosing concentrically said central sections of the links, said washers substantially filling the bore of said helical wire coil, but capable of a longitudinal movement therein, substantially as described.

2. In a flexible shaft comprising a helical wire coil C and a chain D inclosed therein and having links provided with a straight central section c coincident with the axis of said shaft, the combination of a series of washers F, inclosing the central sections of said links concentrically, said washers being cut open radially to receive said links, and inclosing sleeves *g*, surrounding said washers and having their ends *g'* turned inwardly, substantially as described.

3. In a flexible shaft consisting of an interior chain and an exterior coil, the sleeves C and A^4, connected with said coil and chain, respectively, whereby a sliding motion is secured to said coil, as and for the purpose specified.

486,853. MACHINE FOR COMPRESSING AND FORMING THE ENDS OF SECTIONAL WOVEN-WIRE SPRINGS. DEWEY A. COBB, Philadelphia, Pa. Filed Mar. 24, 1892. Serial No. 426,184. (No model.)



Claim.—In a machine for compressing and forming the ends of tubiform woven-wire springs, the combination of the standing frame A, having an inclosure or box *a* for the reception of the end of the spring, provided with an entrance-door *b*, the horizontal rods *g*, actuated by the lever *h*, the vertical rods *j j* in the cross-head *k*, and the socketed plunger-rod *m*, all arranged substantially in the manner herein shown and described, for the purpose set forth.

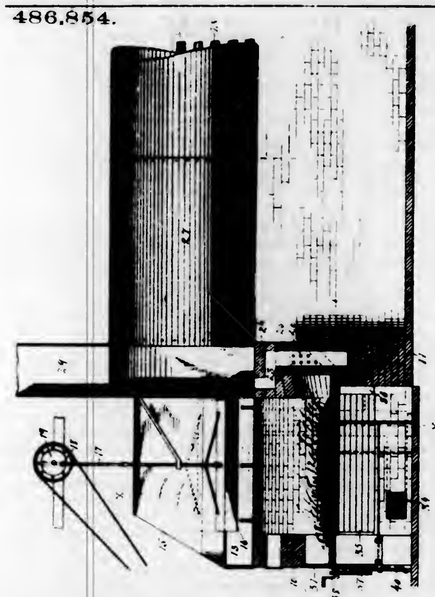
486,854. BOILER-FURNACE AND SMOKE-CONSUMER. JAMES CONNELLY, Des Moines, Iowa. Filed Mar. 14, 1892. Serial No. 424,903. (No model.)

Claim.—1. In a furnace, an arch over the grate, a pipe adapted to serve as a keystone in the top of said arch and provided with a longitudinal opening or passage-way for fuel, and air-passages at the sides of said opening, a fuel-magazine in the form of a hopper communicating with said fuel passage-way in said pipe or keystone, a gate fitted in the bottom of said magazine, and means for operating said gate at intervals, arranged and combined to operate in the manner set forth, for the purposes stated.

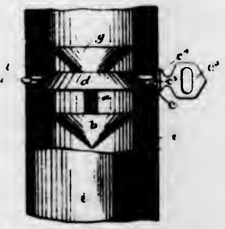
2. In a furnace, a pipe having air-passages at its sides and vertical openings in its center and adapted in shape to serve as a keystone, in combination with an arch over a grate, an arch over a bridge-wall in rear of the grate, and an air superheater and distributer extending vertically from the bridge-wall into the arch over the bridge-wall, and an air-passage extending therefrom through the arch to the rear end of the air-passage in the pipe that serves as a keystone in the arch over the grate, to operate in the manner set forth, for the purposes stated.

3. An improved furnace comprising parallel walls, a bridge-wall between said walls, a grate in front of the bridge-wall, an arch over the grate, an arch over the bridge-wall, an air superheater and distributer extended vertically from the center of the bridge-wall into the arch over the bridge-wall, air-passages extending horizontally through the arch over the grate and vertically through the arch over the bridge-wall to convey air into the said superheater and distributer, a fuel magazine or hopper above the arch over the grate, a passage for fuel in said arch, a gate having inclined sides suspended in the bottom of the hopper, and means for raising and lowering the gate, all arranged and combined in the manner set forth, for the purposes stated.

486,854.



486,855. DAMPER. CHARLES A. COUCH, Columbus, Ohio. Filed May 9, 1892. Serial No. 432,231. (No model.)



Claim.—1. In a damper, the combination of the stem *a*, a conical *c*, flaring surface-deflector *b* on said stem, a horizontal key-pin *c*, also supported on said stem, and a deflecting-ring *d*, suspended above said deflector *b*, said key being adapted to be journaled in a smoke-pipe, substantially as and for the purpose specified.

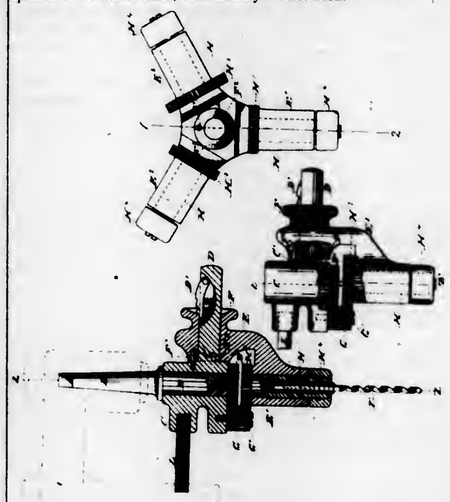
2. In a damper, the combination, with the stem *a*, of a flaring deflector-plate at each end thereof, a transverse key-pin *c*, carried on said stem between said plates, and a deflector-ring *d*, suspended between said deflector-plates, substantially as and for the purpose specified.

486,856. DRILLING APPARATUS. JAMES T. COWLEY, Lowell, Mass. Filed Jan. 11, 1892. Serial No. 417,640. (No model.)

Claim.—1. The combination, with a driven gear-wheel, of an arm, a revoluble and longitudinally-movable drill-head mounted thereon and having a plurality of extensions, a spindle contained in each of the said extensions and having upon its inner end a pinion, the pinions of the different spindles differing in size and number of teeth and being adapted to gear with the said gear-wheel, whereby the speed with which the said spindles are driven will vary with the distance that may exist between their axis and that of the gear-wheel, substantially as described.

2. In a drilling apparatus, the combination of a main spindle having a gear-wheel thereon, a sleeve mounted on the said spindle and having an arm projecting therefrom at right angles to the axis of the spindle, a drill-head journaled on the said arm and longitudinally movable thereon and having radial extensions, spindles contained in the said extensions and having pinions thereon adapted to engage the said gear-wheel, and means for imparting motion from the said main spindle to the spindles within the extensions, substantially as described.

3. In a drilling apparatus, the combination, with a main spindle having a pinion thereon, of a sleeve mounted on the said spindle and having an arm projecting therefrom at right angles thereto, a drill-head mounted on the said arm and longitudinally and revolubly movable thereon, means for locking the head against the said movements, radial extensions formed upon the said head, spindles having pinions contained in the said extensions, and a gear-wheel mounted on the said sleeve and engaging with the pinion upon the main spindle and the spindles in the extensions, substantially as described.



4. In a drilling apparatus, the combination, with a main spindle having a pinion thereon, of a sleeve mounted on the said spindle and having an arm projecting therefrom, a drill-head having a plurality of extensions journaled upon the said arm, spindles contained in the said extensions, having pinions upon their inner ends and a cog-wheel mounted on the sleeve and engaging with the said pinions upon the main spindle and the spindles contained in the said extensions, substantially as described.

5. In a drilling apparatus, the combination, with a main spindle having a pinion thereon, of a suitably-journaled drill-head having a plurality of extensions, a spindle contained in each of the said extensions and having upon its inner end pinions, the pinions of the different spindles differing in size and number of teeth, and a suitably-journaled gear-wheel gearing with the pinions upon the main spindles and the spindles in the said extensions, whereby the speed with which the last-named spindles are driven will vary with the distance that may exist between their axis and the axis of the main spindle, substantially as described.

6. In a drilling apparatus, the combination of a main spindle having a pinion thereon, a sleeve mounted on the said spindle and having an arm projecting at right angles thereto, a drill-head journaled and longitudinally movable upon said arm and provided with extensions, a spindle contained in each of the said extensions and having a pinion upon its inner end, the several pinions differing in size and number of teeth, and a gear-wheel journaled upon the said sleeve and gearing with the pinions upon the main spindle, and the spindles in the extensions, whereby the speed with which the last-named spindles are driven will vary with the distance that may exist between their axis and the axis of the main spindle, substantially as described.

7. In a drilling apparatus, the combination, with a main spindle having a pinion thereon, of an arm extending at right angles to the axis of the said spindle, a drill-head having a plurality of extensions journaled and longitudinally movable upon the said arm, means for locking the said head in position on the said arm, a spindle contained in each of the said extensions and having upon its inner end pinions, the pinions of the different spindles differing in size and number of teeth, and a suitably-journaled gear-wheel gearing with the pinions upon the main spindles and the spindles in the said extensions, whereby the speed with which the last-named spindles are driven will vary with the distance that may exist between their axis and axis of the main spindle, substantially as described.

8. In a drilling apparatus, the combination, with a main spindle, of an arm at right angles thereto, a drill-head having a plurality of extensions journaled on the said arm, a spindle contained in each of the said extensions and having upon its inner end pinions, the pinions

of the different spindles differing in size and number of teeth, and a suitably-journaled gear-wheel gearing with the pinions upon the main spindles and the spindles in the said extensions, whereby the speed with which the last-named spindles are driven will vary with the distance that may exist between their axis and axis of the main spindle, substantially as described.

9. In a drilling apparatus, the combination, with a main spindle having a pinion thereon, of a sleeve mounted on the said spindle and having an arm projecting at right angles thereto, a drill-head having a plurality of extensions journaled on the said arm, a spindle contained in each of the said extensions and having a pinion upon its inner end, the several pinions differing in size and number of teeth, and a gear-wheel journaled upon the said sleeve and gearing with the pinions upon the main spindle and the spindles in the extensions, whereby the speed with which the last-named spindles are driven will vary with the distance that may exist between their axis and the axis of the main spindle, substantially as described.

10. The combination, with the frame of a press, of a main drill-spindle supported thereon, a sleeve mounted on said spindle, an arm secured to said sleeve at a right angle thereto and at a right angle to the said spindle, a drill-head mounted on said arm carrying a number of spindles and provided with cavities, a pin secured to and extending from the said sleeve, said head by its cavities adapted to be connected to the said pin, and a catch for holding said head in connection with said pin, substantially as set forth.

11. The combination, with the frame of a press, of a main drill-spindle supported thereon, a sleeve mounted on said spindle, an arm secured to said sleeve, a drill-head mounted on said arm carrying a number of spindles and provided with cavities of different depths, a pin secured to and extending from the said sleeve, said head adapted to be connected to the said pin and to assume different positions on its journal by means of its cavities and the said pin, and means for holding said head in connection with said pin, substantially as set forth.

486,857. VEHICLE-POLE. THOMAS B. COLPETZ, Omaha, Nebr. Filed Dec. 7, 1891. Serial No. 414,311. (No model.)

Claim.—1. In a draft device, substantially as described, the combination of the circle or plate provided centrally and to one side of its center with points for the attachment of the pole and the pole detachably connected with said circle or plate, whereby it may be applied centrally thereto for a two-horse team or to one side of the center for a three-horse team, substantially as set forth.

2. An improved device, substantially as described, comprising the pole, the circle adapted at its center and to one side of its center to receive such pole, and fastening devices whereby said pole may be detachably secured to the plate at its center or to one side thereof, all substantially as and for the purposes set forth.

3. In a draft device, substantially as described, the combination, with a plate or frame, of the tongue provided with portions held to said plate or frame and adjustable laterally thereon, whereby the pole may be set centrally of the frame for a two-horse team or to one side of such center for a three-horse team, and fastening devices, all substantially as set forth.

4. In a draft device, substantially as described, the combination of the circle or plate provided with a transverse portion arranged approximately at right angles to the line of draft and the pole adjustable upon said transverse portion, whereby it may be set centrally or to one side of the center thereof, all substantially as set forth.

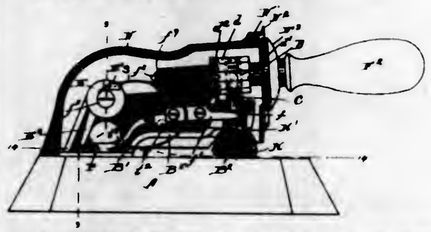
5. The improved draft device, substantially as herein described and shown, consisting of the circle or plate, the pole held to said plate and provided with a seat for the doubletree, and the three-horse evener, all substantially as set forth.

6. The draft device, substantially as herein described, consisting of the circle or plate provided at its center and to one side of its center with bolt-holes, the pole, the three-horse evener, and bolts passed through the holes in the circle or plate and securing the pole and evener thereto, all substantially as and for the purposes set forth.

7. In a draft device, the combination, with the circle or plate E, of the pole having irons H' and M, lapped at A and *m* upon the opposite edges of and securing the pole to the said plate, substantially as set forth.

8. The combination, in draft devices, substantially as described, consisting of the plate E, having bolt-holes G G', arranged one on the center and the other to one side thereof, the pole having its coupling formed with plates, having lapped portions A and *m*, the three-horse evener having its coupling formed with plates having lapped portions A' and C, and the bolts F F', all substantially as and for the purposes set forth.

486,858. PERFORATING-STAMP. BENJAMIN F. CUMMINS, Chicago, Ill., assignor to the B. F. Cummins Company, same place. Filed Mar. 26, 1892. Serial No. 426,711. (No model.)



Claim.—1. In a perforating-stamp, the combination, with a group of independently-movable punches and their corresponding female die, of a guide for said punches, a reciprocating plate for withdrawing said punches, a lever carrying a matrix for operating said punches, and an arm or lever for operating said punch-withdrawing plate, connected with said matrix-operating lever, said punches having each a shoulder or enlargement to engage said withdrawing-plate, substantially as specified.

2. In a perforating-stamp, the combination, with a group of independently-movable punches and their corresponding female die, of a guide for said punches, a reciprocating plate for withdrawing said punches, a lever carrying a matrix for operating said punches, and an arm or lever for operating said punch-withdrawing plate, connected with said matrix-operating lever, said punches having each a shoulder or enlargement to engage said withdrawing-plate, said punches fitting freely in the holes of said withdrawing-plate and said withdrawing-plate being loose on its operating-arm, substantially as specified.

3. The combination, with a die-plate, of a set of independently-movable punches, a guide for said punches, a reciprocating withdrawing-plate for said punches, a lever for operating the punches, and an arm f', connected to said operating-lever and furnished with a fork f, embracing the set of punches for operating said withdrawing-plate, substantially as specified.

4. The combination, with die-plate G, of a set of independently-movable punches C, each furnished with a shoulder or enlargement *c*, a guide for said punches, a withdrawing-plate C^4 for said punches, a revoluble matrix D, and an operating-lever F F', furnished with an arm f' for operating said withdrawing-plate, substantially as specified.

5. The combination, with the die-plate G, of a set of independently-movable punches C, each furnished with a shoulder or enlargement *c*, a guide for said punches, a withdrawing-plate C^4 for said punches, a revoluble matrix D, and an operating-lever F F', furnished with an arm f' for operating said withdrawing-plate, said operating-arm having a fork or U shaped lifter f, embracing said punches and on which said withdrawing-plate rests loosely, substantially as specified.

6. In a perforating-stamp, the combination, with the series of independently-movable punches, of a guide therefor, a female die for said punches, a matrix for operating the punches, a rotatable pivoted operating-lever carrying said matrix, and a holder B, furnished with a large integral stud B^3, to which said operating-lever is pivoted, said guide being also carried by said holder, whereby the matrix, the die, and the punches are maintained in proper registry with each other, substantially as specified.

7. The combination, with bed-plate A, furnished with die-plate G, of holder B, furnished with integral guide-case B^2 and integral pivot-stud B^1, a set of independently-movable punches C, furnished with shoulders or enlargements *c*, a guide for said punches, a matrix D, a lever-shaft F, to which said matrix is secured, and a lever F', pivoted on said stud B^1, upon which said lever-shaft F is journaled, and a punch-withdrawing plate C^4 and means for operating said plate, substantially as specified.

8. The combination, with bed-plate A, furnished with die-plate G, of holder B, furnished with integral guide-case B^2 and integral pivot-stud B^1, a set of independently-movable punches C, furnished with shoulders or enlargements *c*, a guide for said punches, a matrix D, a lever-shaft F, to which said matrix is secured, and a lever F', pivoted on said stud B^1 and upon which lever said lever-shaft F is journaled, a punch-withdrawing plate C^4, and an operating-arm f' therefor, connected with said lever F, said arm f' having a fork f embracing said group of punches, substantially as specified.

9. The combination, with bed-plate A, furnished with die-plate G, of holder B, furnished with integral guide-case B^2 and integral pivot-stud B^1, a set of independently-movable punches C, furnished with shoulders or enlargements *c*, a guide for said punches, a matrix D, a lever-shaft F, to which said matrix is secured, and a lever F', pivoted on said stud B^1 and upon which lever said lever-shaft F is journaled, a punch-withdrawing plate C^4, and an operating-arm f' therefor, connected with said lever F, said arm f' having a fork f embracing said group of punches, substantially as specified.

10. The combination, with bed-plate A, furnished with die-plate G, of holder B, furnished with integral guide-case B^2 and integral pivot-stud B^1, a set of independently-movable punches C, furnished with shoulders or enlargements *c*, a guide for said punches, a matrix D, a lever-shaft F, to which said matrix is secured, and a lever F', pivoted on said stud B^1 and upon which lever said lever-shaft F is journaled, said holder B or its guide-case B^2 having a lateral opening b^3, and said guide comprising a lower guide-plate C^3 and a soft-metal guide C', and a punch-withdrawing plate C^4 and means for operating the same, substantially as specified.

11. The combination, with bed-plate A, furnished with die-plate G, of holder B, furnished with integral guide-case B^2 and integral pivot-stud B^1, a set of independently-movable punches C, furnished with shoulders or enlargements *c*, a guide for said punches, a matrix D, a lever-shaft F, to which said matrix is secured, and a lever F', pivoted on said stud B^1 and upon which lever said lever-shaft F is journaled, said holder B or its guide-case B^2 having a lateral opening b^3, said guide comprising a lower guide-plate C^3 and a soft-metal guide C' and an upper guide-plate C^5, and a punch-withdrawing-plate C^4 and means for operating the same, substantially as specified.

12. In a perforating-stamp, the combination, with the bed-plate A, having a die-plate G secured thereto, of a paper-feed wheel and shaft mounted below said bed-plate, a holder B, carrying punches, a guide for the punches and mechanism for operating the punches and provided with a hollow base-plate or ring B', secured to said bed-plate around an opening therein, and a device for communicating motion to said paper-feed-wheel shaft, operating through said hollow base-plate or ring B' and the opening in the bed-plate, said device consisting of a fork or slide P, carrying a pawl P', the paper-feed-wheel shaft being furnished with a ratchet and means for operating said slide P, substantially as specified.

13. The combination, with bed-plate A, of die G, holder B, having hollow base-plate or ring B', secured to said bed-plate around an opening therein, paper-feed wheels H and shaft H', mounted below said bed-plate and furnished with a ratchet H^3, slide or fork P, furnished with pawl P', a set of independently-movable punches C, a guide therefor and matrix and lever for operating the same, and a lever T for communicating motion to said fork or slide, said lever T being connected to said operating-lever and having its fulcrum on said holder B, substantially as specified.

14. The combination, with bed-plate A, of die G, holder B, having hollow base-plate or ring B', secured to said bed-plate around an opening therein, paper-feed wheels H and shaft H', mounted below said bed-plate and furnished with a ratchet H^3, slide or fork P, furnished with pawl P', a set of independently-movable punches C, a guide therefor and matrix and lever for operating the same, and a lever T for communicating motion to said fork or slide, said holder B having a flange B^5 and said lever T being connected to said matrix-operating lever and furnished with a rolling or movable fulcrum resting on said flange B^5 of the holder, substantially as specified.

15. In a perforating-stamp, the combination, with the bed-plate, of a paper-feed-wheel shaft mounted below the bed-plate, a holder B, having a lateral flange B^5, an operating-lever F', pivoted to said holder, a slide or fork P, furnished with a pawl P', a ratchet on said feed-wheel shaft, and a lever T, having its short arm pivoted to said operating-lever F' and its long arm pivotally connected with its fork or slide P, said lever having a movable fulcrum t^3 resting on said ledge or flange B^5, substantially as specified.

16. In a perforating-stamp, the combination, with the bed-plate, of a paper-feed-wheel shaft mounted below the bed-plate, a holder B, having a lateral flange B^5, an operating-lever F', pivoted to said holder, a slide or fork P, furnished with a pawl P', a ratchet on said feed-wheel shaft, and a lever T, having its short arm pivoted to said operating-lever F' and its long arm pivotally connected with its fork or slide P, said lever having a movable fulcrum t^3 resting on said ledge or flange B^5, and a spring S for giving a quick movement to said pawl-carrying slide, substantially as specified.

17. In a perforating-stamp, the combination, with the bed-plate, of a paper-feed-wheel shaft mounted below the bed-plate, a holder B, having a lateral flange B^5, an operating-lever F', pivoted to said holder, a slide or fork P, furnished with a pawl P', a ratchet on said feed-wheel shaft, and a lever T, having its short arm pivoted to said operating-lever F' and its long arm pivotally connected with its fork or slide P, said lever having a movable fulcrum t^3 resting on said ledge or flange B^5, said movable fulcrum consisting of an antifriction roller or wheel, substantially as specified.

18. In a perforating-stamp, the combination, with bed-plate A, of holder B, secured thereto, a set of punches, their guide, and operating-lever mounted on said holder B, and a hollow case or shell N, inclosing said holder B, the punches, and their operating-lever and within which said operating-lever vibrates, said case or shell N having a collar or flange N' at its open end and said operating-lever being furnished with a disk F^6, closing the opening in the end of said shell, substantially as specified.

19. In a perforating-stamp, the combination, with bed-plate A, of die-plate G, holder B, secured to said bed-plate, a group of independently-movable punches C and their guide carried by said holder, a matrix D for operating said punches, a rotatable pivotal operating-lever F F', to the rotatable part or shaft F of which said matrix is secured, a case or shell N, inclosing said holder and the mechanism carried thereby and furnished with an open end or rim N', and an indicating-disk F^6, secured to said shaft F, said holder N having an index point or mark N^3, substantially as specified.

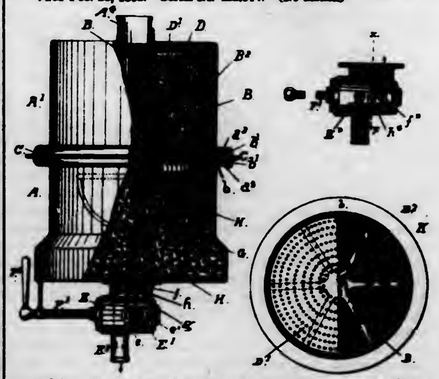
20. The combination, in a perforating-stamp, with a set of independently-movable punches, their matrix, guide, and the punch-withdrawing plate, of the holder B, having stud B^3, the part F' of the operating-lever pivoted on said stud B^3 and furnished with an arm f' for operating the punch-withdrawing plate, and a lever T, connected to said part F' of the lever for communicating motion to the paper-feed mechanism, the paper-feed mechanism, and the part F of said operating-lever, carrying said matrix, substantially as specified.

21. The combination, with a set of independently-movable punches, their matrix, guide, and punch-withdrawing plate, of the holder B, having stud B^3, an operating-lever consisting of two parts F and F', said part F being revoluble on said part F' and carrying said matrix and said part F' being pivoted on said stud B^3 and furnished with arm f' for operating the punch-withdrawing plate, paper-feed mechanism, and a lever T, connected to said part F' of the lever for communicating motion to the paper-feed mechanism, said part F' having studs F^4 F^5, to which said arm f' is secured by screws and to one of which said lever T is pivoted, substantially as specified.

22. The combination, with a set of independently-movable punches, their matrix, guide, and punch-withdrawing plate, of the holder B, having stud B^3, an operating-lever consisting of two parts F and F', said part F being revoluble on said part F' and carrying said matrix and said part F' being pivoted on said stud B^3 and furnished with arm f' for operating the punch-withdrawing plate, paper-feed mechanism, and a lever T, connected to said part F' of the lever for communicating motion to the paper-feed mechanism, said part F' having studs F^4 F^5, to which said arm f' is secured by screws and to one of which said lever T is pivoted, and said holder B having a ledge or flange B^5, upon which the fulcrum of said lever T rests, substantially as specified.

23. In a perforating-stamp, the holder B, furnished with integral guide-case B^2 for the punches and a soft-metal guide for the punches in said case, said holder being also provided with an integral stud B^4 to serve as the pivot for the operating-lever, in combination with a set of independently-movable punches, a matrix, and an operating-lever carrying said matrix and pivoted to said stud B^3, substantially as specified.

486,859. WATER-FILTER. JOSEPH DAVIS, San Francisco, Cal. Filed Feb. 23, 1892. Serial No. 422,517. (No model.)



Claim.—1. A water-filter comprising an outer case or body composed of two sections and held together by means of an annular ring O, having a filtering-compartment containing coarse filtering mate-

rial and connected with a supply or service pipe under pressure and having a compartment which forms a receiver for filtered water, an inner shell or holder having porous filtering heads or ends, and a body of fine filtering material confined between said filtering-heads setting in said receiving-compartment and forming the dividing wall or partition between said compartment and the said filtering-compartment, removable radial partitions in said holder, an outlet for drawing off the filtered water, an inlet in said filtering-compartment having direct connection with the unfiltered water-supply, a direct outlet for the unfiltered water from said compartment, and a faucet having ports and passages adapted to open and close said inlets and outlet for operation, substantially as set forth.

2. The combination of the case or body having a filtering-compartment containing coarse filtering material, and a compartment separated from it by a porous filtering-partition and having an outlet for drawing off filtered water, and the faucet having two water-inlet ports and passages communicating separately with a supply or service pipe through the plug of the faucet, and a discharge outlet and passage from the filtering-compartment through the faucet-plug, substantially as set forth.

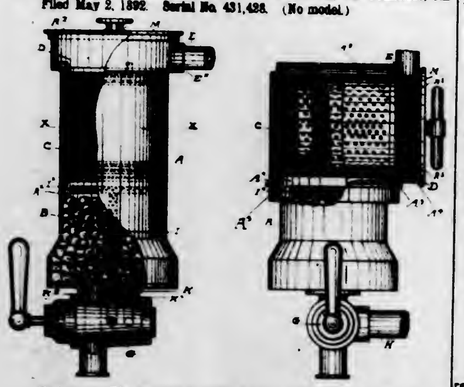
3. In a water-filter, the combination, with a case or body having a compartment containing a filtering substance or material, of the faucet having ports and passages $f f^{\times} g g^{\times} h h^{\times}$, and the scouring-pipe H, substantially as set forth.

4. The combination of the case or body formed of separable sections, the removable cylinder B, having the flange b, the packings a^{3} a^{3}, the flanged coupling by which the sections are united and the flange b is clamped and held to produce a water-tight joint, the porous filtering-diaphragms in the heads of the cylinder, consisting in the removable plates and interposed filtering-pads, and the filtering material, such as fine carbon, and the removable radial partition in said cylinder, substantially as set forth.

5. In a water-filter, the carbon-holder having removable radial partition forming separate pockets or receptacles for the filtering substance and porous filtering-heads or ends, substantially as set forth.

6. In a water-filter, the combination, with the carbon-holder B, containing a filtering substance, as described, of the removable radial partitions K, and the porous filtering-diaphragms D D' D D', and the fibrous filtering-disks between the perforated diaphragms D D', substantially as set forth.

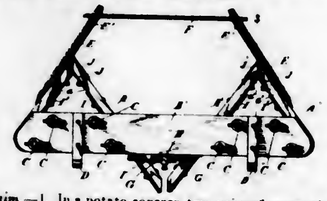
486,860. WATER-FILTER. JOSEPH DAVIS, San Francisco, Cal. Filed May 2, 1892. Serial No. 431,428. (No model.)



Claim.—1. The herein-described water-filter, consisting of the body A, having an opening for the insertion and removal of the filtering-cylinder, the said casing being divided into two compartments, the lower space or compartment $A^{\times}$ containing filtering material, such as pebbles or coarse gravel, the removable filtering-cylinder C, having perforated filtering-surfaces with double walls and interposed fibrous material between and the removable radial partition in said cylinder, the ledge or bead in said casing for supporting the removable filtering-cylinder, the chamber D to receive the filtered water and having an outlet E, a three-way stop-cock secured to the bottom of said casing and communicating therewith, and a perforated cleaner I in the lower compartment $A^{\times}$ and connected with the three-way stop-cock, all constructed and arranged substantially in the manner and for operation as set forth.

2. In a water-filter of the character described, the combination, with a casing A, reservoir D, a removable top M therefor, outlet E, three-way stop-cock secured to the bottom of said casing, and a rinser I, having an annular head or top $I^{\times}$ secured in the bottom of said casing and connecting with said cock, of a removable cylinder having double perforated walls, fibrous filtering material between said walls, the removable radial partitions in said cylinder, and the rim or bead upon which the said cylinder is supported, as set forth.

486,861. POTATO-COVERER. ISAAC F. DODGE, Gowen, Mich., assignor of one-half to Valdemar C. Thompson, same place. Filed June 24, 1892. Serial No. 437,919. (No model.)



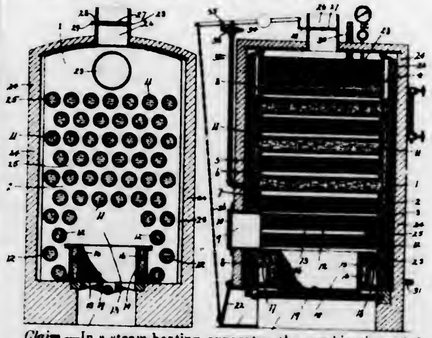
Claim.—1. In a potato-coverer, two pairs of converging scraper-bars having vertically-adjustable angle-plates and shoes, each pair also being adjustably secured to a transverse beam, and overlapping bars attached at their respective outer ends to the adjacent scraper-bar and adjustably secured at their inner ends to each other.

2. In a potato-coverer, the combination of a transverse beam, two pairs of converging scraper-bars adjustably attached thereto, bars attached at their outer ends to the respective scraper-bars and overlapping each other at their inner ends, and means for adjustably attaching said last-mentioned bars together.

3. In a potato-coverer, the combination of the converging scraper-bars, vertically-adjustable plates I and I', secured to the inner sides thereof, and a vertically-adjustable angle-plate secured to the scraper-bars at the place of junction thereof, said angle-plates having a shoe at their inner sides, substantially as described.

4. The combination, in a potato-coverer, of the converging bars secured together at their inner ends and formed at the point of junction with a recess, vertically-adjustable angle-plates secured to said bars adjacent to said recess and having a shoe at their lower ends, and vertically-adjustable scraper plates, also secured to said bars, all substantially as described, and for the purposes specified.

486,862. STEAM-HEATER. JOHN A. FLAJOLE, Bay City, Mich. Filed Feb. 9, 1892. Serial No. 420,845. (No model.)

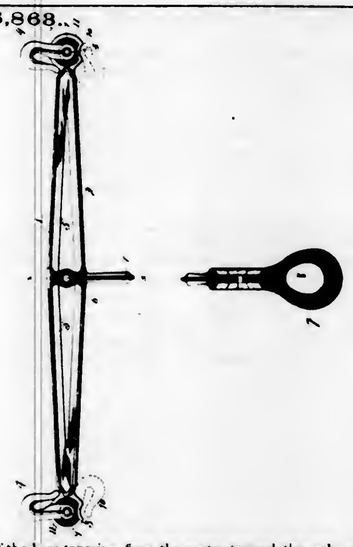


Claim.—In a steam-heating apparatus, the combination of the rear vertical section 1, containing chamber or chambers 4, and the front vertical section 5, containing chamber or chambers 8, and a fuel-opening 9, a combustion-chamber in front of the fuel-opening 9, the series of horizontal tubes 11 with their opposite ends connected to the adjacent sides of the said vertical sections above the combustion-chamber, the series of horizontal tubes 12, arranged on the lateral sides of the combustion-chamber and having their opposite ends connected with the said vertical sections, a fire-pot 14 below the combustion-chamber and provided with an annular water-space 16, the pipes 17 and 18 for connecting the water-space 16 with the front and rear vertical sections, a grate 19 below the fire-pot, and a large steam-tube 23 above the series of tubes 11 and with its ends connected to the upper portions of the said vertical end sections, substantially as set forth.

486,863. WHIFFLETREE. LOUIS S. PLATAU, Pittsburg, assignor to the Platau Manufacturing Company, Dallas, Tex. Filed Mar 14, 1892. Serial No. 424,842. (No model.)

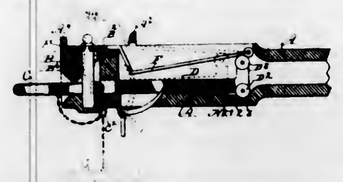
Claim.—As an improved article of manufacture, a whiffletree con-

486,863.



sisting of the bars tapering from the center toward the ends, where they are joined together, the strengthening-ribs on their inner sides, the central web, and outwardly-extending arm having an opening therein, the circular flanged heads with central apertures and cut away or notched on their rear sides, all being constructed integral with each other, and the trace-hooks pivoted to said heads, substantially as and for the purpose set forth.

486,864. CAR-COUPLING. WILLIAM A. FLOOK, Des Moines, Iowa, assignor of one-half to John C. Hamrick, Princeton, Ill. Filed June 9, 1892. Serial No. 436,079. (No model.)



Claim.—1. In a car-coupling, a link-balancing device consisting of a metal block having a vertical perforation to allow a pin to descend therethrough and said block placed loosely in a cavity of corresponding form in the draw-head, in combination with a draw-head having an open-topped cavity, a coupling-link, and a coupling-pin, to operate in the manner set forth.

2. The link-balancing device B^{3}, having a perforation adapted to admit a flat pin B^{4}, having a neck and head, and a pin-carrier F, having an elongated opening across the end and in right-angled position relative to the opening in the device B^{3}, in combination with a draw-head having a cavity adapted to admit the device B^{3} and means for raising and lowering the pin-carrier F and a pin carried thereby, as and for the purposes stated.

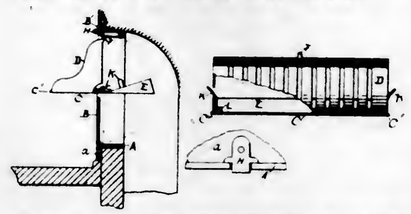
3. In a car-coupling, a link-moving and pin-supporting device consisting of a flat bar having roller-bearers at its rear end to carry one roller at its bottom and another roller in an elevated position, in combination with a draw-bar having a chamber extending rearward from the link-cavity and an inclined plane in the top surface of the rear part of the floor of said chamber and concave across said incline plane, adapted to receive and retain a roller, and a pin-carrier pivoted in said chamber and adapted to be lifted by the forward motion of the link-moving device, and means for sliding the link-moving device, arranged and combined to operate in the manner set forth for the purposes stated.

4. A rock-shaft having a curved arm at its central portion in bearings fixed to a draw-bar, in combination with a sliding link-moving device having an opening to admit said arm in a chamber in rear of the link-cavity, a pin-carrying device pivoted to the draw-bar, and means for operating the rock-shaft, for the purposes stated.

5. A draw-bar having shoulders A^{3} on its sides and a shoulder A^{3} on its top at some distance from the shoulders at the sides, in combination with the ends of bars fixed in parallel position on the bottom of a car and a bar of dead-wood fixed across the front of a car, substantially as and for the purposes shown and described.

6. An automatic car-coupling comprising a draw-bar having an open bell-shaped mouth and link-cavity, an open-topped cavity at its front end intersecting the link-cavity, and a link-balancing device fitted therein, an open-topped chamber extending rearward from the link-cavity, and a sliding link-moving device therein, a rock-shaft in bearings attached to the draw-bar and provided with a curved arm adapted to extend upward through an opening in the draw-bar to engage and move the sliding bar, a pin-carrier pivoted in the top and rear part of the chamber and adapted to be engaged and lifted by the forward motion of the sliding link-moving device, and a pin suspended from the front end of the pin-carrier and adapted to pass down through a perforation in the link-balancing device and also through a link in the link-cavity, all arranged and combined to operate in the manner set forth.

486,865. WARM-AIR REGISTER. CHARLES H. FOSTER, Omaha, Nebr. Filed Feb. 5, 1891. Serial No. 380,359. (No model.)

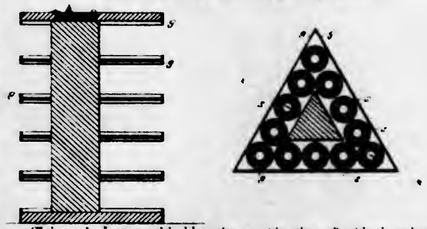


Claim.—1. In a warm-air register comprising a suitable supporting-frame, the combination of a solid valve-panel horizontally pivoted within said frame and provided with an open-fretted foot-rest, substantially as and for the purpose set forth.

2. In a warm-air register comprising a suitable supporting-frame, the combination of a solid valve-panel horizontally pivoted and radially adjustable within said frame and provided upon the rear with a dirt-receptacle and an open-fretted foot-rest, substantially as shown, and for the purpose set forth.

3. In a warm-air register, the combination of the following instrumentalities, to wit: the frame A, provided with the guard B, the valve-panel C, provided with the foot-rest D and dust-receptacle E, the catch H, and the springs K, all arranged substantially as shown and described.

486,866. SPOOL-HOLDER. THEODORE FRELINGHUYSEN, New York, N. Y. Filed May 5, 1892. Serial No. 431,896. (No model.)



Claim.—1. In a spool-holder, the combination of a block or box with two or more shelves, each provided with a flexible projection toward the contiguous shelf, as specified.

2. In a spool-holder, the combination of a block or box with two or more continuous shelves around the same, each provided with a flexible projection toward the contiguous shelf, as specified.

3. In a spool-holder, the combination of a block or box with two or more continuous shelves, each provided with a flexible projection toward the contiguous shelf, and a cover or case, substantially as specified.

486,867. FOLDING BED. JEREMIAH GANEY, Chicago, Ill. Filed Apr. 25, 1892. Serial No. 430,448. (No model.)

Claim.—The combination, with the back pieces A A, at right angles to each other and fastened together at their rear edges, of the base B, fastened to said back pieces and projecting in front of them, the front C, hinged to said base and adapted to cover the face of the back pieces A A, and the extensions E E, hinged to the edges of the front and adapted to be folded inward and received within the space between the back pieces and the front when the latter is raised.

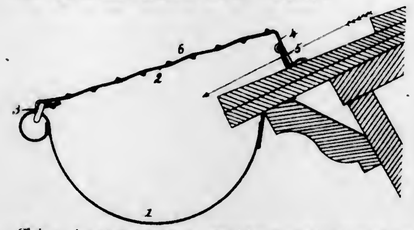
486,867.

Claim.—1. The combination, with the wheel-supporting frame, of a set of turn-buttons mounted on said frame, centering-jaws also mounted on said frame, and connecting mechanism whereby the turn-buttons and the centering-jaws are actuated simultaneously, substantially as set forth.

2. The combination, with a wheel-supporting frame and a boring-tool, of centering-jaws adapted to move toward and from the hub, turn-buttons adapted to engage over the wheel, and a rotative ring connected with said turn-buttons and having cams connected with the centering-jaws, whereby both the turn-buttons and the centering-jaws are actuated simultaneously, substantially as set forth.

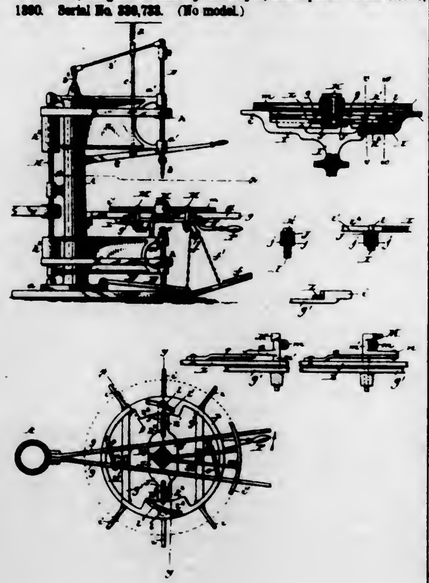
3. The combination, with a wheel-supporting frame, a boring-tool, and a centering device, of turn-buttons adapted to engage over the wheel-spokes and having shanks pivoted on said frame, arms formed on said shanks, and a rotative ring connected by rods with the arms of the turn-buttons, whereby the buttons are actuated, substantially as set forth.

486,868. GUTTER-PROTECTOR. JOHN GOSSETT, Decatur, Ill. Filed May 12, 1892. Serial No. 433,714. (No model.)



Claim.—A gutter-protector comprising a covering portion, as 6, connected with the front edge of the gutter and extended upward and backward above the roof, and a reticulate or perforate water-admitting portion, as 4, extending downward to and connecting with the roof, substantially as set forth.

486,869. HUB-BORING MACHINE. DANIEL H. GOWINS, Syracuse, N. Y., assignor to Harvey A. Moyer, same place. Filed Feb. 3, 1890. Serial No. 339,733. (No model.)



Claim.—1. The combination, with the wheel-supporting frame, of a set of turn-buttons mounted on said frame, centering-jaws also mounted on said frame, and connecting mechanism whereby the turn-buttons and the centering-jaws are actuated simultaneously, substantially as set forth.

2. The combination, with a wheel-supporting frame and a boring-tool, of centering-jaws adapted to move toward and from the hub, turn-buttons adapted to engage over the wheel, and a rotative ring connected with said turn-buttons and having cams connected with the centering-jaws, whereby both the turn-buttons and the centering-jaws are actuated simultaneously, substantially as set forth.

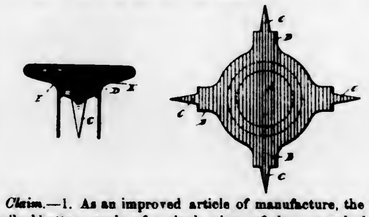
3. The combination, with a wheel-supporting frame, a boring-tool, and a centering device, of turn-buttons adapted to engage over the wheel-spokes and having shanks pivoted on said frame, arms formed on said shanks, and a rotative ring connected by rods with the arms of the turn-buttons, whereby the buttons are actuated, substantially as set forth.

486,870. COMPOSITION FOR WALL-COVERINGS. LA ROY F. GRIFFIN, North Granville, N. Y. Filed Nov. 23, 1889. Serial No. 331,255. (No specimens.)

Claim.—1. The process of making a covering for walls by adding glue to spent sulphite liquor, allowing it to stand until all resulting changes have been completed, and then adding sand, wood fiber, and sulphate of lime, substantially as described.

2. A composition for wall-covering, consisting of sand, wood fiber, sulphate of lime, and spent sulphite liquor to which glue has been added, substantially as described.

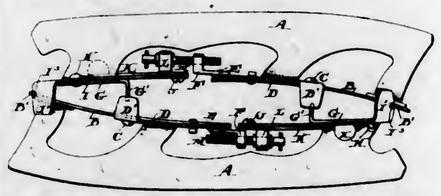
486,871. BUTTON. ALBERT HALL, Brooklyn, N. Y. Filed Oct. 17, 1890. Serial No. 368,459. (No model.)



Claim.—1. As an improved article of manufacture, the herein-described button, made of a single piece of sheet metal, the same comprising a face *a*, a back *b*, consisting of the underturned extension of the face and of broad wings B, extending therefrom, a shank D, consisting of the downturned ends of said wings, which wings abut at their corners, and prongs C, projecting from the ends of the wings, said wings having shoulders at both sides of the prongs, substantially as described.

2. A blank for making buttons, consisting of a sheet-metal disk A, of greater diameter than the head of the button to be formed, said disk having wings B and prongs C projecting from said wings, substantially as set forth.

486,872. SKATE. YARDELL HENDERSON, New Haven, Conn. Filed Mar. 19, 1892. Serial No. 425,515. (No model.)



Claim.—The combination, in a skate, of sole-plates and movable clamps adapted to clamp the foot in the usual way, said sole-plates being formed substantially as described, so as to interlock with the clamps on a companion skate, substantially as and for the purpose specified.

486,878. COLORS FOR PRINTING ON TEXTILE FABRICS. ADOLF HOH, Lindau, Germany, assignor of one-half to Albert Westermann, Bettingen, Switzerland, and Josef Servus, New York, N. Y. Filed May 28, 1891. Serial No. 394,240. (No specimens.)

Claim.—1. A color composition for printing on textile and other fabrics, which consists of a water-soluble dye-stuff, a fatty substance, and a thickening substance, such as linseed-oil varnish, substantially as set forth.

2. A color composition for printing on textile or other fabrics, which consists of a suitable water-soluble dye-stuff, a fatty substance, a mordant, and a thickening substance, such as linseed-oil varnish, substantially as set forth.

486,874. CUTTING-HEAD. WARREN R. HUTHER, Rochester, N. Y., assignor of one-half to Angus R. Huther, same place. Filed June 4, 1892. Serial No. 435,491. (No model.)

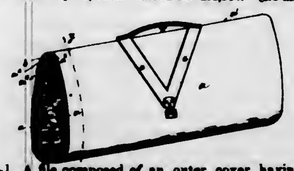
Claim.—1. In a cutting-head, the herein-described circular disk, provided with a major tooth having one side substantially vertical and the other inclining from its base toward its top for forming the top of less thickness than the base and having a series of minor teeth along its top edge, formed with their front and rear edges inclining downwardly from the substantially-vertical side of the major tooth toward the inclined side of said tooth, and formed, also, with a sharp top edge inclining in the same direction as their front and rear faces, substantially as and for the purpose described.

2. In a cutting-head, the herein-described circular disk, provided with a major tooth having one side substantially vertical and the other inclining from its base toward its top for forming the top of less thickness than the base and having a series of minor teeth along its top edge, formed with their front and rear edges inclining downwardly from the substantially-vertical side of the major tooth toward the inclined side of said tooth, and a second major tooth at the rear of the former one, having a top cutting-edge of substantially the same width as the base of the former major tooth, substantially as and for the purpose described.

3. In a cutting-head, the herein-described circular disk, provided with a pair of major teeth, one in advance of the other, having two of their opposite sides formed substantially parallel and their other two sides inclining from their bases toward their tops for forming the tops of said teeth of less width than their bases and having a series of minor teeth along their top edges, formed with their front and rear edges inclining downwardly from the substantially-vertical sides of the major teeth toward the inclined sides of said teeth, and a second major tooth at the rear of one of the former teeth, having a top cutting-edge of substantially the same width as the bases of the former major teeth, substantially as specified.

4. In a cutting-head, the combination of a spindle, a pair of circular disks on said spindle, each provided with a series of major teeth having two of their opposite sides formed substantially parallel and their other two sides inclining from their bases toward their tops for forming the tops of said teeth of less width than their bases and having a series of minor teeth along their top edges, formed with their front and rear edges inclining downwardly from the substantially-vertical sides of the major teeth toward the inclined sides of said teeth, said disks being provided, also, with major teeth arranged at intervals thereon between the former teeth and formed with top cutting-edges of substantially the same width as the bases of the former major teeth, and a cutting-plate mounted on said spindle and formed at one of its ends with a cutting-edge of substantially the same width as the distance between said circular disks, substantially as and for the purpose specified.

486,875. PAPER OR MUSIC FILE. WLADISLAUS JEDRZEJ, Brooklyn, N. Y. Filed Apr. 8, 1892. Serial No. 428,307. (No model.)

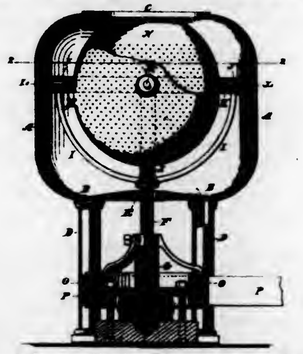


Claim.—1. A file composed of an outer cover having pockets and of an inner removable back having laterally-extending flaps that are adapted to be received by such pockets, substantially as specified.

2. A file composed of an outer flexible cover having two inner pockets a^3 and an outer pocket a^4 and of a removable back *b*, having flaps *b'*, adapted to be received by pockets a^3, substantially as specified.

3. A file composed of an outer flexible cover having two inner pockets a^3 and an outer pocket a^4, of an inner removable back *b*, having flaps *b'*, and of an A-shaped handle *c*, substantially as specified.

486,876. CENTRIFUGAL EXTRACTOR. WILLIAM R. JOHNSON, New York, N. Y. Filed Jan. 30, 1892. Serial No. 419,894. (No model.)



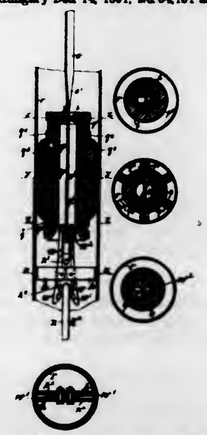
Claim.—1. In a centrifugal machine, a basket pivotally suspended in a ring from which said basket depends, the said ring being pivotally supported in a frame carried by a shaft, substantially as described.

2. The combination, in a centrifugal extractor, of a basket A, mounted upon suitable pivots within the ring K, said ring being pivotally mounted at right angles to the axis of the basket in support I with a vertical shaft F, substantially as described.

3. The combination, in a centrifugal extractor, of the basket A and its pivot-bearing M M, supported in the ring K, said ring being supported by its pivots L L, which bear in the support J, carried by the arms I I, with the shaft F and mechanism for rotating the same, substantially as and for the purpose shown and described.

4. The combination, in a centrifugal extractor, of a perforated basket A, having the pivoted bearing M M above the center and supported in the ring K, which is supported by the bearing L L at right angles to the axis of M M, said bearing L L supported by the ring J, rigidly held by arms I I, with the vertical shaft F and means for rotating the same, substantially as described.

486,877. BORING APPARATUS. OTTO LENTZ, Culm, Germany. Filed Sept. 23, 1891. Serial No. 406,597. (No model.) Patented in Germany July 15, 1891, No. 60,651; in Belgium July 15, 1891, No. 96,629, and in Austria-Hungary Dec. 14, 1891, No. 34,131 and No. 73,578.



Claim.—1. In a boring apparatus, means for imparting a partial rotation to the boring bar or tool, which consists of a flat bar having a spiral twist therein and the grapple for the boring bar or tool con-

nected with the flat bar, in combination with rolling bearings and a support therefor arranged in the bore-hole or casing-pipe, between which rolling bearings the twisted flat bar has motion.

2. In a boring apparatus, means for maintaining the grapple-releasing devices and the devices for imparting a partial rotation to the boring-bar in proper relation to the grapple and for regulating the drop of the boring tool or bar, which consist in a flat bar having a spiral twist therein and an abutment adjustable vertically on said bar above its twisted portion, a grapple the pivoted jaws of which are provided with arms or shanks, and a connection between the grapple and bar, in combination with rolling bearings between which the bar slides and diverging bearings connected with the rolling bearings and adapted to engage the shanks of the grapple-jaws, said rolling and diverging bearings being held in the bore-hole by frictional contact and adapted to be displaced therein by the abutment on the flat bar.

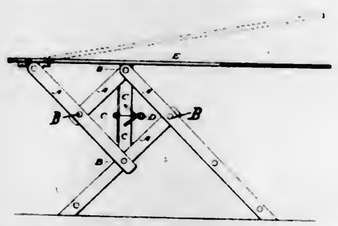
3. In a boring apparatus, the combination, with the grapple for the boring bar or tool, a guide-frame suspended from the grapple-support, said frame having at its lower end two pawls, and a flat bar having a spiral twist formed therein, connected with the grapple-support, of a boring-bar adapted to slide in the guide-frame, said boring-bar having a toothed disk near its lower end, with the teeth of which the pawls on the guide-frame are adapted to engage, and stationary rolling bearings, between which the flat bar slides, for the purpose set forth.

4. In a boring apparatus, the combination, with the grapple for the boring-bar, having extended arms or shanks *w*, provided with rollers w^3, and the bar *e*, having the spiral twist *e'*, said bar being connected with the grapple-support, of the cylindrical body *q'*, having the lower end of its bore made flaring outwardly, the rollers *i*, journaled within the bore of the body at its upper end and having bearing on the opposite faces of the flat bar *e*, and the spring-actuated blocks q^3, substantially as and for the purpose set forth.

5. In a boring apparatus, the combination, with a bushing provided at one end with rolling bearings and at the opposite end with diverging bearings and held in the bore-hole or casing-pipe by frictional contact, of the grapple for the boring bar or tool, a flat bar connected therewith and having a twisted portion formed therein working between the rolling bearings of the bushing, and abutments secured to the bar and grapple-support at opposite sides of said bushing and adapted to engage the same, for the purpose set forth.

6. In a boring apparatus, the combination, with the bushing *q'*, held in the bore-hole or casing-pipe by frictional contact, of the grapple for the boring bar or tool, the flat bar *e*, connected with the grapple-support, and the rings *g* and *h*, connected, respectively, with the flat bar *e* and the grapple-support on opposite sides of the support *q'*, substantially as and for the purpose set forth.

486,878. IRONING-TABLE. WILLIAM H. LITTLE, Picture Rocks, Pa. Filed Dec. 2, 1891. Serial No. 413,760. (No model.)

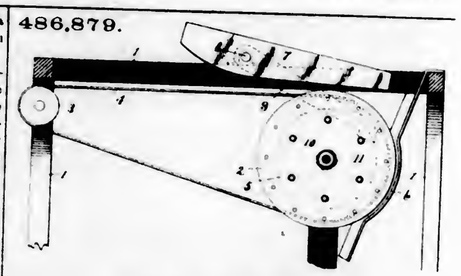


Claim.—The combination of the side bars A, pivoted together by transverse rungs B, said rungs connecting opposite side bars, and the braces, each composed of two pieces C, connected by hinge c and spring D, making it self-adjusting and double-acting, substantially as set forth.

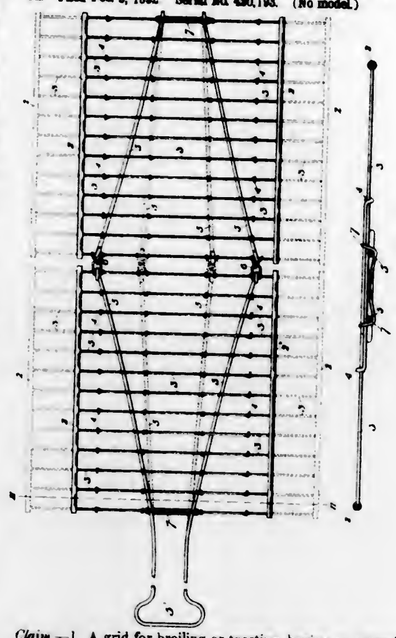
486,879. MAGNETIC SEPARATOR. THOMAS J. LOVETT, Chicago, Ill., assignor, by mesne assignments, to the International Ore Separating Company, of New Jersey. Filed Feb. 13, 1892. Serial No. 421,439. (No model.)

Claim.—In a magnetic separator, the combination of a wheel which has a plurality of magnets set in its periphery with alternate north and south poles pointing outward, a drum which surrounds said wheel, an idler-pulley, an endless belt which runs around said pulley and drum, mechanism for rotating said wheel and drum at different rates of speed, and an inclined feed-chute arranged tangentially to said wheel and drum, substantially as described.

486,879.



486,880. BROILER OR TOASTER. ROBERT MARTIN, Pittsburg, Pa. Filed Feb. 3, 1892. Serial No. 420,193. (No model.)



Claim.—1. A grid for broiling or toasting having an extensible portion, substantially as described.

2. A toaster or broiler composed of extensible halves, substantially as described.

3. A toaster or broiler composed of hinged halves, each half having an extensible or telescoping section, substantially as and for the purposes described.

4. A toaster or broiler having side rods and wires extending inwardly therefrom, each wire having a loop inclosing the opposite wire, substantially as and for the purposes described.

5. A broiler or toaster composed of hinged halves, each half having side rods and cross-wires, each cross-wire terminating in an inclosing loop, substantially as and for the purposes described.

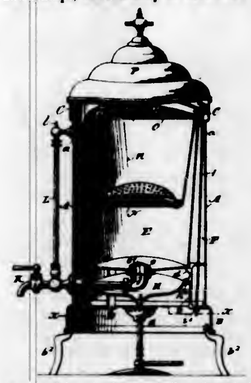
6. A broiler or toaster composed of hinged halves, each half having side rods and cross-wires, each cross-wire terminating in an inclosing loop, and handles attached to the hinges, substantially as and for the purposes described.

486,881. COFFEE OR TEA URN. THOMAS MILLER, Jersey City, N. J. Filed Feb. 16, 1892. Serial No. 421,750. (No model.)

Claim.—1. An urn made with a casing, a beverage-receptacle therein, clamps having an upper lug or shoulder engaging the beverage-receptacle and provided with a lower arm clasping the casing, and bolts engaging the clamps and casing, substantially as described.

2. An urn made with a body or shell, a detachable head-piece and detachable base-piece adapted thereto, a beverage-receptacle within the body, clamps having an upper lug or shoulder engaging the beverage-receptacle and provided with a lower arm clasping the base-piece, and bolts passed through the head-piece and engaging the clamps, substantially as described.

3. An urn made with a casing, a beverage-receptacle therein, clamps having an upper lug or shoulder engaging the beverage-receptacle and also having an upper shoulder abutting the casing, said clamps also having a lower arm clasping the casing, and bolts engaging the casing and clamps, substantially as described.



4. An urn made with a body or shell, a detachable head-piece and a detachable base-piece, a beverage-receptacle within the body, clamps having an upper lug or shoulder engaging the beverage-receptacle and also having an upper shoulder abutting the body or shell, said clamps also having a lower arm clasping the base-piece, and bolts engaging the head-piece and the clamps, substantially as described.

5. An urn made with a casing, a beverage-receptacle therein, a burner below the receptacle, and a heat-deflector interposed between the receptacle and burner and having a pendent stop limiting approach of the burner, substantially as described.

6. An urn made with a casing, a beverage-receptacle therein, a lateral outlet for the beverage from the receptacle, a burner below the receptacle, and a heat-deflector interposed between the receptacle and burner and having a lateral projection or extension guarding the beverage-outlet, substantially as described.

7. An urn made with a casing, a beverage-receptacle therein, clamps having an upper lug or shoulder engaging the beverage-receptacle and provided with a lower arm clasping the casing, a burner below the beverage-receptacle, and a removable heat-deflector interposed between the burner and receptacle and sustained by or from the clamps, substantially as described.

8. The clamp D, having shoulder *d* and lugs d^5 d^6, combined with the urn-casing and the beverage-receptacle adapted to the shoulders *d*, a removable heat-deflector having lugs adapted to the clamp-lugs d^5 d^6, and a fastening device for the deflector at the lug d^6, substantially as described.

9. The clamp D, provided with a shoulder *d* and lower and upper bolt-receiving arms d' d^3, having shoulders or bearings d^4 d^5, respectively, substantially as described.

10. The clamp D, provided with a shoulder *d*, lower and upper bolt-receiving arms d' d^3, having shoulders or bearings d^4 d^5, respectively, and lugs to which a removable heat-deflector is adapted, substantially as described.

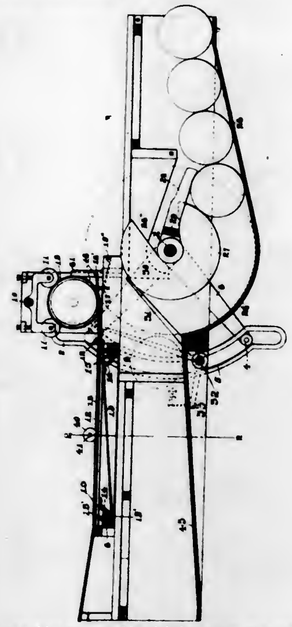
486,882. LABEL-ATTACHING MACHINE. HARRY W. MORGAN, Rochester, N. Y. Filed Feb. 5, 1892. Serial No. 420,490. (No model.)

Claim.—1. In a machine for attaching labels to cans, the combination of can-gripping devices, a pasting-table movable under said devices and adapted to press a label upon a can, devices for lifting the can to the grippers, and means for operating the latter, adapted to release the can before the return of the table, whereby the pasted can is discharged without danger of smearing the pasting-table, substantially as set forth.

2. In a machine for attaching labels to cans, the combination of can-gripping devices, a pasting-table movable under said devices and adapted to press a label upon a can, devices for lifting the can to the grippers, and means for operating the latter, adapted to release the can before the return of the table, whereby the pasted can is discharged without danger of smearing the pasting-table, and an inclined way for guiding the discharged can out of the machine, substantially as set forth.

3. In a machine for attaching labels to cans, the combination of the lifting-arms with the guideways 26 and 43 and levers 31, pivoted near their intersection, substantially as set forth, whereby the ingoing can raises said lever and permits it to fall when the can has passed it, so that it can subsequently guide said can into the discharge-guideway.

4. In a machine for attaching labels to cans, the segmental disks fixed on the driving-shaft provided with segmental recesses, in combination with inclined guideway 26, whereby a can is momentarily held and then moved in said way, and with lifting-arms loosely supported on said shaft within the recesses and adapted to momentarily bear upon a can to prevent its following its predecessor into the segmental recesses, substantially as set forth.



5. In a machine for attaching labels to cans, the combination of the driving-shaft and can-lifting arms with levers 31, fixed on shaft 32 and situated in the path of the can lifted by said arms, said shaft suitably supported in journal-bearings, levers 33, also fixed on said shaft, and pasting devices adapted to be operated by the driving-shaft through the medium of the arms and levers, substantially as set forth.

6. In a machine for attaching labels to cans, a pasting-table, a thin pasting-strip arranged with its width in a vertical plane to avoid bending of the same, a paste-receptacle supported at the side of said table, and mechanism for moving said strip from the receptacle to the table and back, consisting of the bell-crank lever on shaft 35', the crank-arm 36 on shaft 36', the connecting-rod 37, and means for operating the same, substantially as set forth.

7. In a machine for attaching labels to cans, the spring-supported removable pasting-table composed of slats, in combination with can-gripping mechanism adapted to hold a can against the table and a series of stops 14, one for each end of each slat, arranged across the table under the can to prevent the slats from jumping when released from pressure, substantially as set forth.

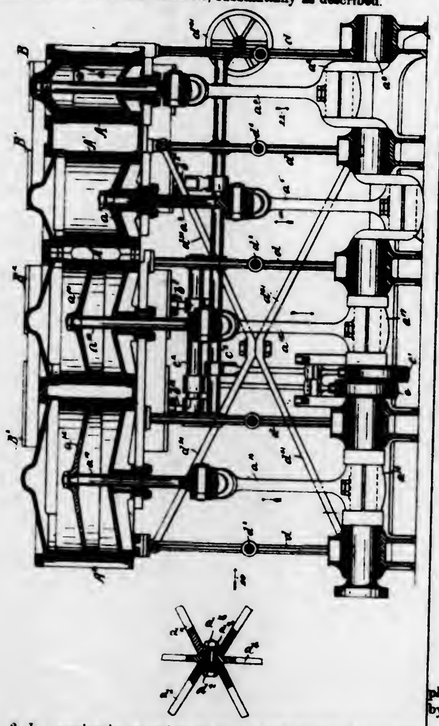
8. In a machine for attaching labels to cans, the combination of the pasting-table having a spring-supported slat provided with a label-stop, can-gripping mechanism, and means for moving the table under a can held in the grippers, whereby said stop is pushed down by the can, substantially as set forth.

9. In a machine for attaching labels to cans, the combination of the grippers, the pasting-table, mechanism for moving the table under a can held in said grippers, and a spring-supported wire or frame adapted to press the end of the label against the can, substantially as set forth.

486,883. STEAM-ENGINE. CHARLES D. MOSHER, Amesbury, Mass. Filed Oct. 19, 1891. Serial No. 409,137. (No model.)

Claim.—1. In a quadruple-expansion engine, the combination of two pairs of steam-cylinders, each pair consisting of two cylinders having valve chests or cylinders, a crank-shaft provided with two

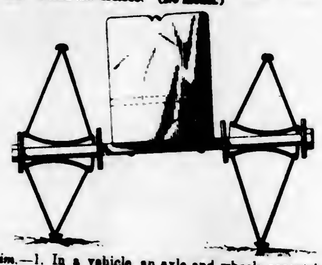
sets of cranks, one for each pair of cylinders, the cranks of one pair being set at an angle of substantially one hundred and eighty degrees and the cranks of the second pair being set at an angle of substantially one hundred and eighty degrees to each other, but at an angle of substantially ninety degrees to the first set of cranks, a bed-plate, and a supporting-frame for the cylinders, consisting of a plurality of columns and braces, two eccentrics on the crank-shaft, a rock-shaft supported by the columns and connected to the valve of one pair of cylinders and to one eccentric, and a second rock-shaft supported by the columns and connected to the valves of the other pair of cylinders and to the second eccentric, substantially as described.



2. In a quadruple-expansion engine, the combination of two pairs of steam-cylinders, each comprising two cylinders, the four cylinders being arranged in a line, two pairs of valve chests or cylinders accompanying said steam-cylinders, pistons in the steam-cylinders, a bed-plate, a crank-shaft supported thereby and provided with two sets of cranks relatively arranged, as shown, two sets of piston-valves in the valve chests or cylinders, a rock-shaft to which one set of valves is connected, a second rock-shaft to which the valves of the other set are connected, eccentrics located side by side on the crank-shaft and connected with said rock-shafts, said eccentrics being located between the center of the second intermediate cylinder and the center of the low-pressure cylinder, said location of the eccentrics permitting the employment of the maximum length of bearing-surface and the minimum length of shaft, and of the series of cylinders, as set forth.

3. In a quadruple-expansion engine, the combination of the following instrumentalities, viz: two pairs of steam-cylinders, each comprising two cylinders, two pairs of valve chests or cylinders cast integral with said cylinders and connected together, pistons in the steam-cylinders, a bed-plate, a crank-shaft supported thereby and provided with two sets of cranks, each consisting of two cranks set at substantially an angle of one hundred and eighty degrees to one another, the cranks of one set being at substantially an angle of ninety degrees to the cranks of the other set, two sets of piston-valves in the valve chests or cylinders, a rock-shaft to which one set of valves is connected, a second rock-shaft to which the valves of the other set are connected, an eccentric on the crank-shaft connected to one rock-shaft, a second eccentric to which the other rock-shaft is connected, and a supporting-frame for the said cylinders and rock-shafts, consisting of columns d d' and braces d^3 d^3, placed under a tensile strain and subjecting said columns to a compressive strain, substantially as described.

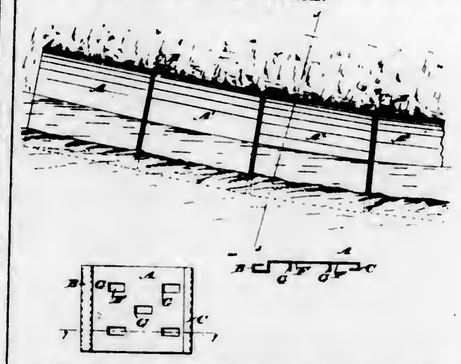
486,884. VEHICLE. LUTHER MYERS, Maumee, Ohio. Filed July 5, 1892. Serial No. 438,885. (No model.)



Claim.—1. In a vehicle, an axle and wheels eccentrically journaled thereon formed with hubs having a longitudinally-variable bearing-surface.

2. In a vehicle, wheels, in combination with an axle journaled therein eccentrically, the eccentricity of the wheels being in opposition to each other, whereby the axle is given a laterally-rocking motion.

486,885. METALLIC RIPRAP. DUNCAN T. MCINTYRE, Mattoon, Ill., assignor to himself, and D. Stuart McIntyre, Knoxville, Tenn. Filed Nov. 23, 1891. Serial No. 412,733. (No model.)



Claim.—1. The herein-described riprap, consisting of metallic plates having continuous vertical integral strengthening-posts formed by their interlocked vertical meeting edges, substantially as described.

2. The herein-described riprap, consisting of inclined metallic sheets resting against the face of the bank to be protected, the said sheets having their vertical meeting edges interlocked and formed into posts at the rear or inner surface of the structure, the posts being embedded in the bank and thereby avoiding the use of separate posts, substantially as described.

3. A riprap composed of a series of interlocked metallic plates having perforations, substantially as shown and described.

4. A riprap composed of interlocked metallic plates having rearwardly-extending lips punched through from the outer side of the plates and adapted to pass into the ground of the slope, substantially as shown and described.

5. A riprap composed of a series of interlocked metallic plates having perforations and rearwardly-extending lips adapted to engage the ground of the slope, substantially as shown and described.

486,886. AUTOMATIC BRAKE. JAMES A. MCKEE and PINK G. HATCHETT, Alexander, Tex. Filed May 26, 1892. Serial No. 434,456. (No model.)

Claim.—1. In an automatic vehicle-brake, substantially as described, the combination, with a running-gear, the movable brake-beam carrying the wheel-engaging shoes, the levers F, fulcrumed in bearings on the rear axle of the running-gear, and the links connecting the levers and the brake-beam, of the lever R, the chain connected to one end of said lever and extending rearwardly therefrom, a suitable means for connecting said chain and the levers F, a movable tree, friction-pulley P, carried by the tongue, and a branch chain taking over said pulley P and connected at one end to the movable tree and at its opposite end to the rearwardly-extending chain, substantially as and for the purpose set forth.

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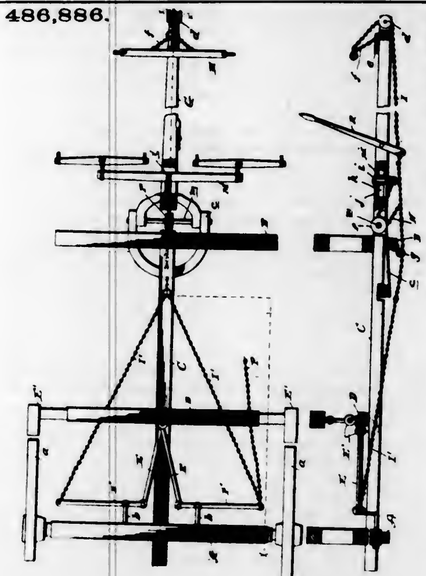
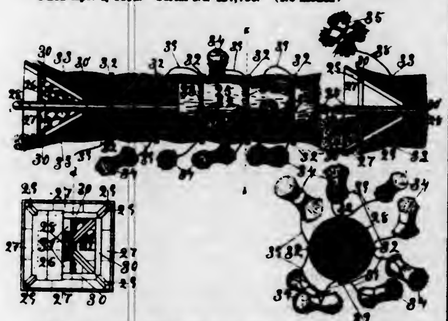


2. In an automatic vehicle-brake, substantially as described, the combination, with a running-gear, the movable brake-beam, the levers F, fulcrumed in bearings carried by the rear axle, the links connecting the levers and the brake-beam, and the tongue carrying the friction-pulley d at its forward end and also carrying the friction-pulley P adjacent to its rear end, of a movable neck-yoke, a chain connected at one end to the neck-yoke and taking over the friction-pulley d of the tongue and extending rearwardly, the lever R, carried by the tongue and having one of its ends connected to the chain, a suitable means for connecting the said chain and the levers F, a movable doubletree, and a chain connected at one end to the doubletree and taking over the pulley P and connected at its opposite end to the rearwardly-extending chain, all substantially as and for the purpose stated.

486,887. ANCHOR-RIPRAP. DAVID HEALE, Fort Calhoun, Nebr. Filed Apr. 4, 1892. Serial No. 427,700. (No model.)



Claim.—1. A fascine having a pocket opening directly out at its downstream end, substantially as shown and described.

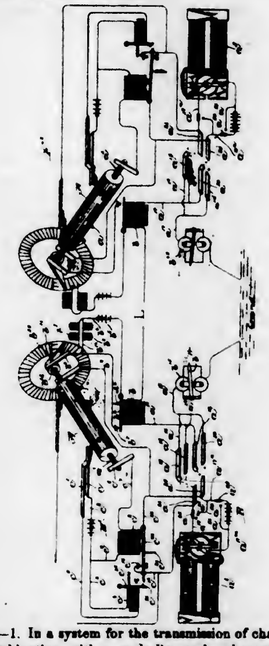
2. A fascine having a pocket opening directly out at its downstream end and planks inclosing a portion of the pocket, the inclosed portion filled with weighting material, substantially as shown and described.

3. A fascine consisting of the core-log 28 with the radial arms 32, one end provided with a pyramidal pocket consisting of the angle-timbers 29, the furring 30, the cross-bars 30, the radial arms 31, and the planking 27, the whole having an annular envelope of brush or finer material bound on with the encircling wires 33, substantially as shown and described.

4. A fascine for riprap, having attached to it by cables a number of smaller fascines or bundles of hay, straw, or bagasse, substantially as shown and described.

5. In a riprap, the transversely-bound double bundle 35, consisting of long hay, straw, or bagasse, having two encompassing binders 37 crossing each other at about right angles and having within a sack of sand or rock 36, substantially as shown and described.

486,888. ELECTRICAL TRANSMITTING APPARATUS. ALBERT D. NEAL, Boston, and HOWARD F. EATON, Cambridge, Mass.; said Eaton assignor to said Neal. Filed Apr. 17, 1891. Renewed May 19, 1892. Serial No. 433,569. (No model.)



Claim.—1. In a system for the transmission of characters or letters, the combination, with a main line and a character-controlling magnet located therein, of an electro-magnet having its armature in a normally-open circuit connected to the main-line circuit, a substantially-continuously-movable surface provided with one or more circuit-terminals in circuit with the said electro-magnet, a circuit terminal or terminals in circuit with the electro-magnet and co-operating with the circuit terminal or terminals on the movable surface, a locking-bar for the armature of the said electro-magnet, a second electro-magnet to operate the locking-bar, located in a normally-closed circuit, and character-keys adapted when operated to open the normally-closed local circuit and close the normally-open circuit, substantially as described.

2. In a system for the transmission of characters or letters, the combination, with a main line and a character-controlling magnet therein, of an electro-magnet having its armature in a normally-open circuit connected to the main-line circuit, a continuously-movable surface provided with one or more circuit-terminals constantly in circuit with the said electro-magnet, a circuit terminal or terminals in circuit with the electro-magnet and co-operating with the circuit terminal or terminals on the movable surface, and character-keys adapted when operated to bring the said circuit-terminals in contact, substantially as described.

3. In a system for the transmission of characters or letters, the combination of the following instrumentalities, viz: a main-line circuit, a character-controlling magnet located therein, a local circuit controlled by the armature of the said magnet, printing-magnets in said local circuit, independent circuit terminals or segments to which the said printing-magnets are connected, a selecting-arm or circuit-closer, means to move it into contact with the said circuit terminals or segments, an electro-magnet c^9 to effect a change in condition of the main-line circuit, a local circuit in which the electro-magnet is located, and means to effect the local circuit to operate the electro-magnet and change the condition of the main-line circuit to operate the character-controlling magnet, substantially as described.

4. In a system for the transmission of characters or letters, the combination of the following instrumentalities, viz: a main-line circuit, a character-controlling magnet located therein, a movable surface A, located at one point or station, a polarized electro-magnet to effect movement of the said surface, a second movable surface A, located at another point or station, means to move it substantially continuously, a pole-changer, character-keys co-operating with the said second movable surface, and means, substantially as described, rendered effective by the co-operation of the character-keys to effect a change in condition of the main-line circuit and operate the character-controlling magnet, substantially as described.

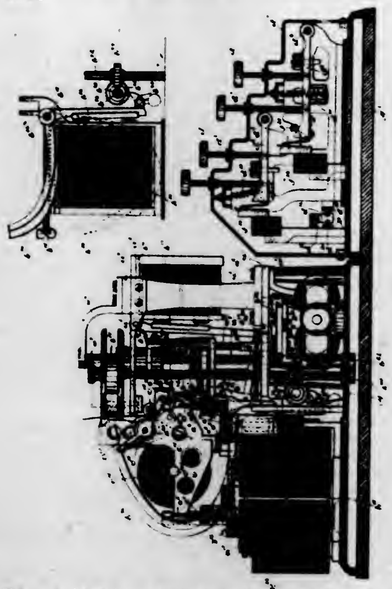
5. The combination of the following instrumentalities, viz: a main-line circuit, a character-controlling magnet located in the main line at one point or station, a movable surface provided with a plurality of circuit-terminals, mechanism at a transmitting point or station positively connected to the said movable surface to move the same continuously, and a plurality of character-keys located in the transmitting-station and co-operating with the continuously-movable surface to effect a change in condition of the main-line circuit to operate the character-controlling magnet at the receiving-station without stopping the movement of the continuously-moving surface, substantially as described.

6. In a system for the transmission of characters or letters, the combination of the following instrumentalities, viz: a main-line circuit, a character-controlling magnet located therein, a local circuit controlled by the armature of the said magnet, printing-magnets in said local circuit, independent circuit terminals or segments to which the said printing-magnets are connected, a selecting-arm or circuit-closer, means to move it into contact with the said circuit terminals or segments, a substantially-continuously-movable surface provided with one or more circuit-terminals, and co-operating circuit-terminals operated by character-keys, substantially as described.

7. The combination of the following instrumentalities, viz: a shaft a', a roll A, mounted thereon and provided with circuit-terminals or studs a, pole-changing disks mounted on the shaft, but insulated therefrom and from each other, pole-changing arms co-operating with said disks, a disk longitudinally movable upon said shaft and provided with pins or projections, and a magnet having its armature provided with forks to engage said pin or projections, the said longitudinally-movable disk being adapted to be moved on the shaft to engage and disengage its pins or projections from the forked armature, as and for the purpose specified.

486,889. TYPE-WRITING AND PRINTING INSTRUMENT.

ALBERT D. NEAL, Boston, and HOWARD F. EATON, Quincy, Mass.; said Eaton assignor to said Neal. Filed June 9, 1891. Serial No. 396,843. (No model.)



Claim.—1. In an electro-mechanical type-writing instrument, the combination of the following instrumentalities, viz: a shaft or pivot, a movable type-carrier mounted on said shaft to revolve therewith and to slide thereon, an electro-magnet to positively revolve the type-carrier in one plane or direction, a second electro-magnet to effect a sliding movement of the type-carrier on its shaft or pivot and thereby move the said type-carrier in a different plane or direction, and circuit-controllers to govern the operation of the said magnets, substantially as described.

2. In an electro-mechanical type-writing instrument, the combination of the following instrumentalities, viz: a movable type-carrier, an electro-magnet to effect its movement in one direction, a second electro-magnet to effect its movement in another direction, an electro-magnet to control the duration of the movement in one direction, and circuit-controllers to govern the operation of the said magnets, substantially as described

3. In an electro-mechanical type-writing instrument, the combination of the following instrumentalities, viz: a type-carrier having an axial and pivotal movement, an electro-magnet to positively effect its axial movement, a second electro-magnet to effect its pivotal movement, a hammer or striker, an electro-magnet to operate it to effect the printing of a letter or character, circuit-controllers rendered operative by the manipulation of character-keys to operate the electro-magnets governing the movement of the type-carrier, and independent circuit-controllers to govern the operation of the printing-magnet, substantially as described.

4. In an electro-mechanical type-writing instrument, the combination of the following instrumentalities, viz: a type-carrier provided with a plurality of letters or characters, an electro-magnet to move it in one plane or direction, a second electro-magnet to positively move it in a different plane or direction at an angle to the first plane or direction, a positioning-arm connected to the type-carrier to move therewith, a series of movable stops to co-operate with said positioning-arm, one or more electro-magnets to operate said stops, and circuit-controllers for said electro-magnets, substantially as described.

5. In an electro-mechanical type-writing instrument, the combination of the following instrumentalities, viz: a revoluble type-carrier provided with a plurality of characters, a positioning-arm secured to said carrier to revolve therewith, movable stops connected in pairs to co-operate with the said arm, electro-magnets to operate said stops, an electro-magnet to revolve said type-carrier, and circuit-controllers to govern the operation of the electro-magnets, substantially as described.

6. In an electro-mechanical type-writer, the combination of the following instrumentalities, viz: a type-carrier provided with a plurality of letters or characters, an electro-magnet to move it in one direction, an electro-magnet to move it in another direction, a positioning arm or device movable with the type-carrier, movable stops or pins connected in pairs, electro-magnets to operate said movable stops or pins, a hammer or striker, an electro-magnet to operate it, and circuit-controllers to govern the operation of the electro-magnets, substantially as described.

7. In an electro-mechanical type-writer, the combination of the following instrumentalities, viz: a type-carrier provided with a plurality of letters or characters, an electro-magnet to move it in one direction, a second electro-magnet to move it in another direction, gearing to produce a multiplied movement of the type-carrier, a striker or hammer, an electro-magnet to operate the said hammer or striker, and circuit-controllers to govern the operation of the electro-magnets, substantially as described.

8. In an electro-mechanical type-writer, the combination of the following instrumentalities, viz: a type-carrier provided with a plurality of letters or characters, an electro-magnet to move the type-carrier in one direction, a second electro-magnet to move the type-carrier in another direction, and an electro-magnet to govern the movement of the type-carrier in the second direction, a movable carriage, an electro-magnet to effect movement of the carriage in one direction, means to move it in the opposite direction, a paper-roll on said carriage, a feed-roll on the carriage, means to effect the movement of the feed-roll on the movement of the carriage in one direction, and circuit-controllers governing the operation of the electro-magnets, substantially as described.

9. In an electro-mechanical type-writer, the combination of the following instrumentalities, viz: a type-carrier having a movement in different directions, independent electro-magnets to positively effect the movement of the type-carrier in each of the said different directions, circuit-terminals to which the electro-magnets are connected, character-keys, and a plurality of circuit-controllers positively operated by each character-key and co-operating with the said circuit-terminals to govern the operation of the independent electro-magnets, substantially as described.

10. In an electro-mechanical type-writer, the combination of the following instrumentalities, viz: a type-carrier provided with a plurality of characters, a positioning arm or device movable with the said type-carrier, a stop for said positioning-arm, and a printing-magnet operated by the said arm and stop, substantially as described

11. In an electro-mechanical type-writer, the combination of the following instrumentalities, viz: a type-carrier provided with a plurality of characters arranged in substantially horizontal and vertical rows, an electro-magnet to move the type-carrier in one direction, a second electro-magnet to move it in another direction, a positioning device or arm movable with the type-carrier, movable stops or pins to engage said positioning device or arm, independent electro-magnets to operate said stops or pins, circuit-controllers for said electro-magnets, a hammer or striker, and an electro-magnet to operate it, governed in its operation by the said stops and arms, substantially as described.

12. In an electro-mechanical type-writer, the combination of the following instrumentalities, viz: a type-carrier provided with a plurality of characters and movable in two different planes, an electro-magnet to positively move the said type-carrier in one plane, a second electro-magnet to positively move the said type-carrier in a different plane, character-keys, and a plurality of independent circuit-controllers operated by each of the said character-keys to effect the operation of the independent electro-magnets, substantially as described.

13. In an electro-mechanical type-writer, the combination of the following instrumentalities, viz: a type-carrier shaft or pivot, a type-carrier longitudinally movable on said shaft, a positioning-arm secured to said shaft or pivot, an electro-magnet to move the type-carrier longitudinally on its pivot or shaft, a second electro-magnet to positively revolve said pivot and type-carrier, circuit-controllers for said electro-magnets, a hammer or striker, and an electro-magnet to operate it, substantially as described.

14. In an electro-mechanical type-writer, the combination of the following instrumentalities, viz: a type-carrier shaft or pivot, a type-carrier longitudinally movable on said shaft and provided with a plurality of characters arranged in substantially horizontal and vertical rows, a positioning arm or device secured to said pivot to move therewith, a series of electro-magnets to move the type-carrier different distances longitudinally on its pivot, an electro-magnet to positively revolve said pivot and its type-carrier, movable stops to co-operate with the positioning arm or device, a plurality of electro-magnets to operate said movable stops, circuit-controllers to govern the operation of the said electro-magnets, a hammer or striker, and an electro-magnet to operate it, substantially as described.

15. In an electro-mechanical type-writer, the combination of the following instrumentalities, viz: a type-carrier shaft or pivot, a type-carrier longitudinally movable on said shaft and provided with a plurality of characters arranged in substantially horizontal and vertical rows, a positioning arm or device secured to said pivot to move therewith, a series of electro-magnets to move the type-carrier longitudinally on its pivot, electro-magnets to revolve the type-carrier pivot in opposite directions, movable stops or pins connected in pairs, a plurality of electro-magnets to operate said stops or pins, circuit-controllers to govern the operation of the said electro-magnets, a hammer or striker, an electro-magnet to actuate said hammer or striker, and governed in its operation by the electro-magnets actuating the movable stops and by the positioning device or arm, substantially as described.

16. In an electro-mechanical type-writer, the combination of the following instrumentalities, viz: a movable type-carrier provided with a plurality of characters, an electro-magnet to move the said type-carrier, a positioning arm or device, a stop to engage said arm or device to limit the movement of the said carrier, a hammer or striker, and an electro-magnet to operate said hammer or striker, controlled in its operations by the said stop and positioning arm or device, substantially as described.

17. In an electro-mechanical type-writer, the combination of the following instrumentalities, viz: a type-carrier provided with a plurality of characters arranged in substantially horizontal and vertical rows, a plurality of electro-magnets to effect the movement of the said carrier in one direction, electro-magnets to effect movement of the said carrier in a different direction, a positioning device or arm movable with the said type-carrier, stops or pins to co-operate with said arm or device, electro-magnets to operate said stops or pins, a hammer or striker, an electro-magnet to operate it, controlled by the operation of the pin-magnets, substantially as described.

18. In an electro-mechanical type-writer, the combination of the following instrumentalities, viz: a type-carrier provided with a plurality of characters arranged in substantially horizontal and vertical rows, a plurality of electro-magnets to effect the movement of the said carrier in one direction, electro-magnets to effect movement of the said carrier in a different direction, a positioning device or arm movable with the said type-carrier, stops to co-operate with said arm or device, electro-magnets to operate said stops or pins, a transforming device to control the circuits of the electro-magnets effecting the movements of the type-carrier, substantially as described.

19. In an electro-mechanical type-writer, the combination of the following instrumentalities, viz: a type-carrier provided with a plurality of characters arranged in substantially horizontal and vertical rows, a plurality of electro-magnets to effect the movement of the said carrier in one direction, electro-magnets to effect movement of the said carrier in a different direction, a positioning device or arm movable with the said type-carrier, stops or pins to co-operate with said arm or device, electro-magnets to operate said stops or pins, a transforming device, as D, governing the circuits of the electro-magnets on one side of the same, and a second circuit controlling or transforming device governing the circuits on the other side of the said electro-magnets, substantially as described.

20. In an electro-mechanical type-writer, the combination of the following instrumentalities, viz: a type-carrier provided with a plurality of characters, an electro-magnet to move it in one direction, a second electro-magnet to move it in a different direction, a positioning device or arm, a series of stops or pins to co-operate with the said positioning arm or device, a striker or hammer, an electro-magnet to operate it, a local circuit in which the hammer-operating magnet is located, and independent branches for said local circuit, controlled by the positioning-arm, and the stop-operating magnets, substantially as described.

21. In an electro-mechanical type-writer, the combination of the following instrumentalities, viz: a type-carrier provided with a plurality of characters arranged in substantially horizontal and vertical rows, a plurality of electro-magnets to elevate the said type-carrier different distances, electro-magnets to positively effect the movement of the type-carrier in a different direction, a positioning device or arm movable with the said type-carrier, stops or pins to co-operate with said arm or device, electro-magnets to operate said stops or pins, a movable carriage, an electro-magnet to effect the movement of the carriage in a forward direction across the face of the type-carrier, a hammer or striker, an electro-magnet to operate it, mechanism to effect the movement of the carriage in a backward direction, and an electro-magnet to govern the operation of the said mechanism, substantially as described.

22. In an electro-mechanical type-writer, the combination of the following instrumentalities, viz: a type-carrier provided with a plurality of characters arranged in substantially horizontal and vertical rows, a plurality of electro-magnets to elevate the said type-carrier, electro-magnets to effect the movement of the type-carrier in a different direction, a positioning device or arm movable with the said type-carrier, stops or pins to co-operate with the said arm or device, electro-magnets to operate said stops or pins, a movable carriage, an electro-magnet to govern the movement of the carriage in a forward direction and itself controlled by the operation of the pin-magnets, a hammer or striker, an electro-magnet to operate it, governed by pin-magnets, and releasing-magnets governed by elevating-magnets, substantially as described.

23. In an electro-mechanical type-writer, the combination of the following instrumentalities, viz: a type-carrier provided with a plurality of characters arranged in substantially horizontal and vertical rows, a plurality of electro-magnets to effect the movement of the said carrier in one direction, electro-magnets to effect movement of said carrier in a different direction, a positioning device or arm movable with the said type-carrier, stops or pins to co-operate with said arm or device, electro-magnets to operate said stops or pins, a call-bell, and an electro-magnet to operate it, controlled by pin-magnets, substantially as described.

24. The combination, with an electro-mechanical type-writing or printing instrument, consisting of a movable type-carrier provided with a plurality of characters, electro-magnets to operate it, a hammer or striker, and an electro-magnet to operate said hammer or striker, of a circuit-controlling device consisting of a plurality of independent circuit-terminals connected to independent electro-magnets employed to operate the type-carrier, a movable arm or member provided with a plurality of contact arms or brushes co-operating with the independent circuit-terminals, a battery in circuit with the movable arm or member and with the type-carrier, operating electro-magnets of the instrument, and means to control the circuit of the said battery, substantially as described.

25. The combination, with an electro-mechanical type-writing or printing instrument, consisting of a movable type-carrier provided with a plurality of characters, electro-magnets to operate it, a hammer or striker, and an electro-magnet to operate the said hammer or striker, of a circuit-controlling device consisting of a plurality of independent circuit-terminals connected to independent electro-magnets employed to operate the type-carrier, a movable arm or member provided with a plurality of contact arms or brushes co-operating with the independent circuit-terminals, a battery in circuit with the movable arm or member and with the type-carrier, operating electro-magnets of the instrument, an electro-magnet controlling the circuit of the said battery, a pole-changer in circuit with the circuit-controlling electro-magnet, means to operate the said pole-changer, and means to operate the circuit-controlling magnet and effect the operation of the electro-magnets of the instrument, substantially as described.

26. In an electro-mechanical type-writing or printing instrument, the combination of the following instrumentalities, viz: a type-carrier provided with a plurality of letters or characters, electro-magnets to operate it, a shaft, a disk or support loosely mounted on said shaft and provided with circuit-terminals to which the said electro-magnets are connected, a pawl or arm on said shaft, a ratchet-wheel engaged by said pawl, an arm on said ratchet-wheel, and a stop in the path of movement of the said arm on the ratchet-wheel, substantially as described.

27. The combination, with the shaft w^2, provided with a pawl or arm, of a ratchet-wheel having its teeth in engagement with said pawl, an arm on said ratchet-wheel, and a stop in the path of movement of the arm on the ratchet-wheel, substantially as described.

28. In an electro-mechanical type-writing or printing instrument, the combination, with a circuit-terminal carrying-roll w^4, of circuit-terminals co-operating with the terminals on the said roll, the circuit-terminal disk or support w^{47}, loosely mounted on said roll and adapted to be moved on the roll to vary the position of its terminals with relation to the terminals on the roll, and a contact arm or brush fast to the roll to revolve therewith and co-operating with the circuit-terminals of the disk, substantially as and for the purpose specified.

29. In an electro-mechanical type-writing instrument, the combination of the following instrumentalities, viz: a type-carrier provided with a plurality of letters or characters, an electro-magnet to move it in one direction, a second electro-magnet to move it in another direction, and means to produce a multiplied movement of the type-carrier in the said second direction, a positioning-arm connected to the type-carrier to move therewith, a series of movable stops to co-operate with said positioning-arm, one or more electro-magnets to operate said stops, and circuit-controllers for said electro-magnets, substantially as described.

30. In an electro-mechanical type-writing instrument, the combination of the following instrumentalities, viz: a movable type-carrier provided with a plurality of characters, a positioning-arm secured to said carrier to revolve therewith, movable stops to co-operate with the said arm, electro-magnets to operate said stops, an electro-magnet to revolve said type-carrier, means operated by the electro-magnet to produce a multiplied movement of the type-carrier, and circuit-controllers to govern the operation of the electro-magnets, substantially as described.

31. In an electro-mechanical type-writer, the combination of the following instrumentalities, viz: a movable type-carrier provided with a plurality of characters, an electro-magnet to operate it, means operated by the electro-magnet to produce a multiplied movement of the type-carrier, a positioning device or arm for said type-carrier, means to engage the positioning device or arm and stop the movement of the type-carrier, an electro-magnet to operate said means, a striker or hammer, and an electro-magnet to actuate said hammer, substantially as described

32. In an electro-mechanical type-writer, the combination of the following instrumentalities, viz: a type-carrier provided with a plurality of letters or characters, an electro-magnet to positively move it in one direction, an electro-magnet to positively move it in another direction, a positioning arm or device movable with the type-carrier, movable stops or pins co-operating with the positioning arm or device, electro-magnets to operate said movable stops or pins, a hammer or striker, an electro-magnet to operate it, and circuit controllers to govern the operation of the electro-magnets, substantially as described.

33. In an electro-mechanical type-writer, the combination of the following instrumentalities, viz: a type-carrier provided with a plurality of letters or characters, an electro-magnet to move it in one direction, a second electro-magnet to move it in another direction at an angle to the first direction, means to produce a multiplied movement of the type-carrier in the second direction, a striker or hammer, an electro-magnet to operate the said hammer or striker, and circuit-controllers to govern the operation of the electro-magnets, substantially as described.

34. In an electro-mechanical type-writer, the combination of the following instrumentalities, viz: a type-carrier provided with a plurality of characters, an ink ribbon or surface extended across the face of the type-carrier, spools upon which the said ribbon is wound, substantially-vertical shafts upon which the said spools are fastened, a hammer or striker to operate on said ribbon, an electro-magnet to operate said hammer or striker, gearing operated by the armature of the hammer-magnet to operate the ribbon-feed, and circuit-controllers for said electro-magnets, substantially as described.

35. In an electro-mechanical type-writer, the combination of the following instrumentalities, viz: a type-carrier provided with a plurality of characters, a shaft or pivot upon which the said type-carrier is mounted to revolve therewith and to move longitudinally thereon, an electro-magnet to positively revolve the type-carrier, a second electro-magnet to effect movement of the type-carrier longitudinally on the shaft and independent of the movement of the shaft, a plurality of circuit-terminals connected to the said electro-magnets, and a plurality of circuit-controllers co-operating with the said terminals, substantially as described.

36. In an electro-mechanical type-writer, the combination of the following instrumentalities, viz: a type-carrier shaft or pivot, a type-carrier longitudinally movable on said shaft or pivot, an electro-magnet to move the type-carrier longitudinally on its shaft, a second electro-magnet to revolve said type-carrier, a positioning arm or device, also actuated by the second electro-magnet, circuit-controllers for said electro-magnets, a hammer or striker, and an electro-magnet to operate it, substantially as described.

37. In an electro-mechanical type-writing instrument, the combination of the following instrumentalities, viz: a type-carrier revoluble in opposite directions, a movable arm or device also revoluble in opposite directions, independent electro-magnets to effect the movement of the said arm in opposite directions, movable stops or pins arranged on opposite sides of the normal position of the movable arm or device to co-operate with the said arm or device, independent electro-magnets to operate the said stops or pins, and circuit-controllers to govern the operation of the electro-magnets, substantially as described.

38. In an electro-mechanical type-writing instrument, the combination of the following instrumentalities, viz: a type-carrier having an axial and pivotal movement, an electro-magnet to effect its axial movement, a second electro-magnet to positively effect its pivotal movement, a paper-carriage, and an electro-magnet to effect the movement of the said carriage across the face of the type-carrier, a hammer or striker, an electro-magnet to operate it to effect the printing of a letter or character, circuit-controllers rendered operative by the manipulation of character-keys to operate the electro-magnets governing the movement of the type-carrier, and independent circuit-controllers to govern the operation of the printing-magnet, substantially as described.

39. In an electro-mechanical type-writer, the combination of the following instrumentalities, viz: a movable type-carrier provided with a plurality of characters, an electro-magnet to move it, means operated by the said electro-magnet to produce a multiplied movement of the said type-carrier, a hammer or striker to operate on the type carrier, a movable paper-carrying carriage, an electro-magnet to effect the movement of the carriage across the face of the type-carrier, and circuit-controllers to govern the operation of the electro-magnets, substantially as described.

40. In an electro-mechanical type-writer, the combination of the following instrumentalities, viz: a movable type-carrier provided with a plurality of characters, a positioning arm or device movable with said type-carrier, movable stops or pins connected together to be moved simultaneously and co-operating with said positioning arm or device, electro-magnets to operate said stops or pins, an electro-magnet to move said type-carrier, and circuit-controllers to govern the operation of the electro-magnets, substantially as described.

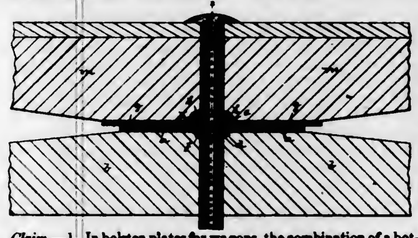
41. In an electro-mechanical type-writing instrument, the herein-described transmitter, consisting of character-keys and a plurality of independent circuit-controllers composed of stationary and movable circuit-terminals, a plurality of movable circuit-terminals being operated by each of the said character-keys, substantially as and for the purpose specified.

42. In an electro-mechanical type-writer, the combination of the following instrumentalities, viz: a movable type-carrier provided with a plurality of characters, an electro-magnet to move it, a positioning device or arm movable with the said type-carrier, a plurality of pins or stops to co-operate with the said device or arm, a plurality of electro-magnets to operate the said pins or stops, a local circuit controlled by two or more of the said electro-magnets and an electro-magnet in said local circuit, substantially as described.

43. In an electro-mechanical type-writing instrument, the combination of the following instrumentalities, viz: a movable type-carrier provided with a plurality of characters, a series of electro-magnets to effect the movement of the said type-carrier different distances in the same direction, a second electro-magnet to effect its movement in another direction at an angle to the first direction, an electro-magnet to control the duration of the movement in the second direction, and circuit-controllers to govern the operation of the said electro-magnets, substantially as described.

44. In an electro-mechanical type-writer, the combination, with a movable type-carrier provided with a plurality of characters, of an electro-magnet to move said type-carrier, a positioning arm or device movable with the type-carrier, a plurality of movable stops or pins, a plurality of electro-magnets to operate said stops or pins, circuit-terminals to which the said electro-magnets are connected, character-keys, and a plurality of circuit-controllers positively operated by each character-key, the circuit-controllers operated by a particular character depending upon the position of the character or letter on the type-carrier corresponding to the said particular key, substantially as described.

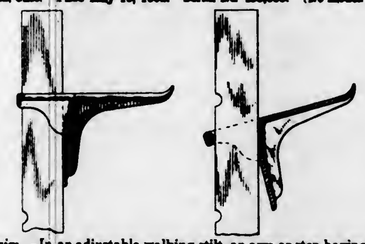
486,890. BOLSTER-PLATE. DAVID B. OLIVER, Allegheny, Pa. Filed Mar. 31, 1892. Serial No. 426,877. (No model.)



Claim.—1. In bolster-plates for wagons, the combination of a bottom plate having a reinforcing-ring depending below the same around the bolt-hole and an upwardly-projecting annular bearing around the bolt-hole and a top plate having an annular cup or seat fitting around and a lip extending over the top of said bearing on the bottom plate, substantially as and for the purposes set forth.

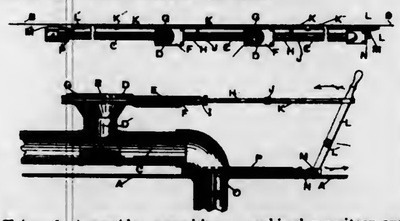
2. In bolster-plates for wagons, formed of two plates swiveling on each other, the bottom plate thereof having a reinforcing-ring depending below the same around the bolt-hole, substantially as and for the purposes set forth.

486,891. ADJUSTABLE WALKING-STILT. JOHN L. POPE, Cleveland, Ohio. Filed May 19, 1892. Serial No. 433,633. (No model.)



Claim.—In an adjustable walking-stilt, an arm or step having the upper portion of the surface next to the shaft at an obtuse angle with the step-pad and the lower portion at a right angle to said pad and a bar on the side of the opening through which the shaft passes opposite the pad, and notches in the shaft for the engagement of said bar, all substantially as described.

486,892. CUSPIDOR. COURTLOW B. PEIRCE, Prescott, Wis. Filed June 3, 1892. Serial No. 435,370. (No model.)



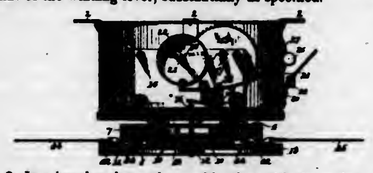
Claim.—1. A cuspidor comprising a combined repository and flushing-pipe C, hoppers G, attached to and in communication with said pipe, as shown and described, sliding valves for closing the mouths of said hoppers, said valves connected in series to open or close the mouths of said hoppers simultaneously, substantially as described.

2. A cuspidor comprising a combined repository and flushing-pipe C, hoppers G, attached to and in communication with said pipe, as shown and described, sliding valves E, capable of closing the mouths of said hoppers, and sliding valves O, guarding the terminal openings of said flushing-pipe and operating in combination with and in an opposite direction to said valves E, substantially as described.

486,893. BURGLAR-ALARM. JOHN H. PRUITT, Marion, Ala. Filed Sept. 7, 1891. Serial No. 405,005. (No model.)

Claim.—1. In a burglar-alarm, the casing, a bell-sounding-alarm mechanism arranged therein, a hammer actuated by the mechanism, and a bell arranged in the path of the hammer, the U-shaped lever pivoted below the bell-hammer, a spring for normally pressing or elevating one branch of said lever into the path of the hammer, and a removable weight supported by a branch of said lever, substantially as specified.

2. In a burglar-alarm, the combination, with the casing and the alarm mechanism comprising in its make-up a spring-drum and winding-shaft, the latter projecting through the casing, of a ratchet mounted on the shaft, a pawl for holding the same, a lever mounted at one side of the ratchet and having a pawl engaging said ratchet, a spring for elevating the lever, a wire depending from the lever and terminating in a hook, a vibratory bell-hammer lever, a U-shaped lever pivoted below the same, a spring for elevating the U-shaped lever into the path of the hammer-lever, a wire depending from the hammer-lever and terminating in a hook, and a weighted handle having an eye adapted to engage removably the hook of the locking-lever or that of the winding-lever, substantially as specified.

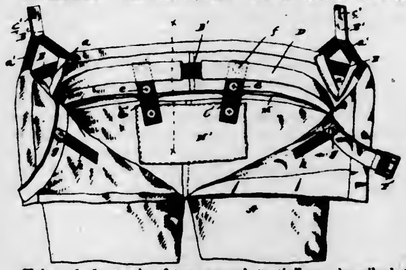


3. In a burglar-alarm, the combination, with the casing and the internal alarm mechanism, the latter comprising a winding-shaft projecting through the casing, of a ratchet-wheel mounted on the shaft, a spring-pawl engaging the ratchet-wheel, a lever loosely mounted on the shaft, a pawl pivoted upon the lever and engaging the ratchet-wheel, and a coiled spring connected to the lever and casing at one side of the pivot of the lever, substantially as specified.

4. In a burglar-alarm, the combination, with the casing, the opposite bells, the internal alarm mechanism having and actuating a cam-wheel provided with a stop, and a pivoted vibratory bell-hammer lever actuated by the wheel and adapted to be vibrated between the bells, of a head stationarily supported below the casing, a platform stationarily supported below the head, slides having notches mounted on the platform, springs connecting the same with a ring supported upon the platform, a gravity-disk loosely mounted on the platform and having a depending annular flange supported by the slides, a trip-rod fixed to the center of the disk, extending above and below the same and at its upper end projecting through the casing, and a spring-pressed bell-crank pivoted in the casing and having its upper end projecting into the stop of the cam-wheel and its lower end extending into the path of the stop, substantially as specified.

5. In a burglar-alarm, the combination, with the casing, the alarm mechanism, a platform supported below the casing, and slides mounted thereon and adapted when drawn out to liberate said alarm mechanism, of a window and its frame, a rack-bar having inclined teeth secured to the window, a lever pivoted to the frame and at its inner end engaging the teeth, and a wire connecting the outer end of the lever with the aforesaid slide, substantially as specified.

486,894. TROUSERS. SAMUEL RACHELMAN and MAX RACHELMAN, St. Paul, Minn. Filed June 14, 1892. Serial No. 436,734. (No model.)



Claim.—1. In a pair of trousers substantially as described, the combination, with a plait extending transversely across the rear portion of the same and elastic strips arranged on the inner side of the rear portion and connected to the garment above and below the plait, so as to allow vertical expansion of the rear or seat portion, of the hip-strap connected to the upper ends of the elastic strips and having an interposed elastic strip, so as to allow expansion around the body, the said strap being adapted to pass over the hips and be fastened in front of the wear, substantially as and for the purpose set forth.

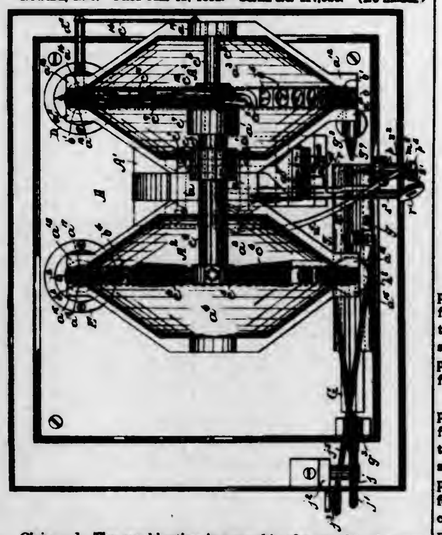
2. In a pair of trousers substantially as described, the combination, with a plait extending transversely across the rear portion of the same, the elastic strips arranged on the inner side of the rear portion and

connected to the garment above and below the plait, so as to allow vertical expansion of the rear or seat portion, and the hip-strap connected to the elastic strips and adapted to pass over the hips and be fastened in front of the user, of the elastic strips A, connected to the inner side of the forward portion of the trousers and to the hip-strap, substantially as specified.

3. In a pair of trousers, the combination, with a strip of material interposed in the rear portion of the same and the transversely-extending plait formed in said interposed strip, of the elastic strips arranged on the inner side of the rear portion of the trousers and connected to the same above and below the plait, so as to allow vertical expansion of the rear or seat portion, the hip-strap connected to the elastic strips in the rear portion of the trousers and adapted to pass over the hips and be buckled in front of the user, and the elastic strips A, connected to the inner side of the forward portion of the trousers and to the hip-strap, substantially as and for the purpose set forth.

4. In a pair of trousers, the combination, with a waistband, the slits or openings *a*, formed in said waistband, and elastic pieces connecting the walls of the slits or openings, of the suspending-straps B' and the pairs of elastic strips *a'*, connecting the suspending-straps to the waistband, one of each pair of said strips being connected to the waistband immediately adjacent to the rear walls of the slits or openings *a*, while the other is connected to said waistband slightly in advance of said slits or openings *a*, all substantially as and for the purpose set forth.

486,895. BUTTON-ATTACHING MACHINE. CHARLES RADOLIFFE, Newark, N. J. Filed Jan. 13, 1892. Serial No. 417,923. (No model.)

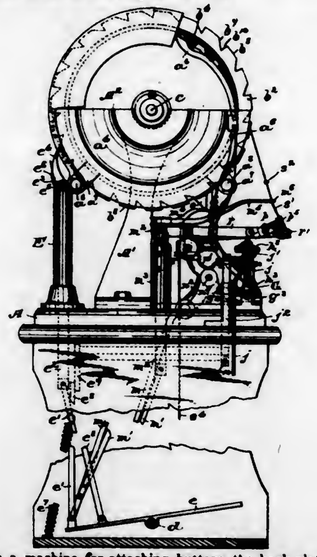


Claim.—1. The combination, in a machine for attaching buttons, of a base or table, a standard on said table, oppositely-arranged pockets or receivers on said standard, chutes or raceways leading from each pocket or receiver, a slide in connection with one chute, upon which the back-plate of a button is fed, devices for placing the back-plate properly on said slide, a pivoted shell-guide connected with the other chute, and a chuck for forcing the post on the back-plate through the material and placing the shell on said post, for the purposes set forth.

2. The combination, in a machine for attaching buttons, of a base or table, a standard on said table, oppositely-arranged pockets or receivers on said standard, chutes or raceways leading from each pocket or receiver, a slide in connection with one chute, upon which the back-plate of a button is fed, devices for placing the back-plate properly on said slide, a pivoted shell-guide connected with the other chute, and a chuck for forcing the post on the back-plate through the material and placing the shell on said post, for the purposes set forth.

3. The combination, in a machine for attaching buttons, of a back-plate-holding pocket or receiver A^2, a chute or raceway extending therefrom, means in said receiver or pocket adapted to rotate and feed the back-plates into said chute, mechanism for operating the same, a reciprocally-moving slide and means for operating said slide, upon which the back-plates are fed one at a time, a rotary spindle adapted to engage the end of the post on the back-plate, and thereby properly place the same while on the slide, and means for rotating said spindle, for the purposes set forth.

4. The combination, in a machine for attaching buttons, of a back-plate-holding pocket or receiver A^2, consisting of stationary half-sections secured together by means of lugs and forming a space between said half-sections, a back-plate-conveying ring adapted to rotate between said half-sections and forming part of said pocket, said ring being provided with small holding-pockets on its inner periphery and having an outer toothed periphery, and means for operating said ring, substantially as and for the purposes set forth.



5. In a machine for attaching buttons, the back-plate-holding pocket or receiver A^2, consisting of half-sections secured together and forming a space between them, a back-plate-conveying ring adapted to rotate between said half-sections and forming part of said pocket, said ring being provided on its inner periphery with small holding-pockets b^4, having a pocket portion b^{11} and an incline b^{12}, and means for securing each pocket to said ring, for the purposes set forth.

6. In a machine for attaching buttons, the back-plate-holding pocket or receiver A^2, consisting of half-sections secured together and forming a space between them, a back-plate-conveying ring adapted to rotate between said half-sections and forming part of said pocket, said ring being provided on its inner periphery with small holding-pockets b^4, having a pocket portion b^{11} and an incline b^{12}, and means for securing each pocket to said ring, in combination with a reciprocating back-plate-holding slide and means for conveying the back-plate from such pockets in said ring to said slide, substantially as and for the purposes set forth.

7. In a machine for attaching buttons, the combination of a reciprocating back-plate slide with a rotary spindle adapted to engage with the end of the post on the back-plate, and means for moving said slide forward and backward, and devices for rotating said spindle, substantially as and for the purposes set forth.

8. In a machine for attaching buttons, the combination of a back-plate-holding pocket or receiver, a chute or raceway extending therefrom, mechanism for feeding the back-plates from said pocket or receiver into said chute, a slide adapted to be moved forward and backward, the lower end of said chute terminating above said slide and thereby adapted to feed a back-plate thereupon, a hunter arranged above said slide, consisting of an outer sleeve, a ring provided with inclined surfaces and a stop, a slotted spindle in said sleeve, provided with a pulley and a pin thereon adapted to move upon said inclined surfaces of said ring, and means for rotating said pulley, whereby said spindle receives a rotary up-and-down movement, substantially as and for the purposes set forth.

9. In a machine for attaching buttons, the combination of a hunter A, having a rising and falling and rotating slotted spindle, with means, substantially as described, for rotating said spindle while rising and falling and engaging with a stop at its highest point, consisting, essentially, of a slide provided with a pin in one side, a forked and pivoted arm for operating said slide, and a belt or cord passing over pulleys, connecting said slide with said rotating spindle, substantially as and for the purposes set forth.

10. In a machine for attaching buttons, the combination, with a base or support, of a slide G upon said support, a pivoted crank-arm c^{10}, a hunter A, arranged upon said support, having a rising and falling and rotating slotted spindle, a cord connected with said slide and passing over a pulley and around said spindle while rising and falling, and a stop A^{14} to limit its upward movement, substantially as and for the purposes set forth.

11. In a machine for attaching buttons, the combination of a hunter A, having a rising and falling and rotating slotted spindle, with means, substantially as described, for rotating said spindle while rising and falling and engaging with a stop at its highest point, and a sliding device for carrying the back-plate from beneath said slotted spindle after it has been rotated thereby into its proper position, a pulley on said spindle, and a weighted cord passing over said pulley and a second set of pulleys and connected at one end with said sliding device, whereby when said slide moves it operates said spindle, substantially as and for the purposes set forth.

12. In a button-attaching machine, a hunter A, comprising therein a hollow sleeve, a ring A^9, having a flat surface A^{10}, two inclines A^{12} and A^{13}, a stop A^{11}, and a slotted spindle provided with a pulley and a pin A^{14}, adapted to move on said surfaces A^{12}, A^{13}, and A^{10} and engage with said stop, substantially as and for the purposes set forth.

13. In a machine for attaching buttons, the herein-described slide G, provided at one end with a recess or pocket g', in combination with a pivoted crank-arm c^{10} and stops g^5 and g^6 to limit the forward and backward movement of said slide, substantially as and for the purposes set forth.

14. In a machine for attaching buttons, the herein-described slide G, provided at one end with a pocket g' and a spring-actuated sliding arm g^4, projecting normally above the front edge of said recess g', substantially as and for the purposes set forth.

15. In a machine for attaching buttons, the herein-described slide G, provided at one end with a recess or pocket g' and a spring-actuated sliding arm g^4, projecting normally above the front edge of said recess g', and means on the bed-plate of the machine for automatically depressing said arm g^4 when the slide has moved forward, substantially as and for the purposes set forth.

16. In a machine for attaching buttons, the herein-described slide G, provided at one end with a recess or pocket g' and a spring-actuated sliding arm g^4, projecting normally above the front edge of said recess g', and means on the bed-plate of the machine for automatically depressing said arm g^4 when the slide has moved forward, and means for moving said slide forward and backward, consisting, essentially, of a pin g^8 in the side of said slide, a slotted and pivoted lever or arm c^{20}, engaging therewith, and a spring-actuated lever and treadle for operating the same, substantially as and for the purposes set forth.

17. In a button-attaching machine, in combination, a base or table, a standard A' thereon, a back-plate-receiving pocket A^2, consisting, essentially, of half-sections a^3 and a^4, secured together and having a ring b^2, adapted to rotate between the same, provided with back-plate-receiving pockets and mechanism for producing a step-by-step movement of said ring, a shaft extending into said pocket A^2, provided with brushes for forcing the back-plates into the pockets on said ring, a reciprocatory-moving slide, a rotating hunting-spindle, and means for conveying a back-plate from the ring in the pocket A^2 beneath said hunting-spindle and upon the slide, substantially as and for the purposes set forth.

18. In a machine for attaching buttons, the combination, with the pocket A^2, of the chute or raceway a^6, curved double, as at a^{20}, whereby the back-plate which has entered said chute, with its post projecting downwardly, passes out therefrom at the bottom of the chute with the post in an upright position, substantially as set forth.

19. In a machine for attaching buttons, the back-plate-holding pocket or receiver A^2, consisting of half-sections having grooved flanges a^{15} and a^{16}, lugs a^7 on said flanges, and bolts a^9 for securing them together, whereby a space is formed between said half-sections, and a back-plate-feeding ring provided with annular projections on the sides, fitting into said grooves in the flanges a^{15} and a^{16}, thereby forming a complete pocket or receiver, with a ring adapted to rotate centrally between its half-sections, substantially as and for the purposes set forth.

20. In a machine for attaching buttons, the herein-described back-plate-feeding ring b^3, provided with teeth b^4, inclined, as at b^5, and straight, as at b^{10}, provided on its inner periphery with dovetailed portions b^{14}, and pockets b^4, having the portions b^{11} secured in said dovetailed portions, substantially as and for the purposes set forth.

21. In a button-attaching machine, in combination, a base or table, a standard A', a back-plate-receiving pocket A^2, consisting, essentially, of half-sections a^3 and a^4, secured together, a ring b^2, adapted to rotate between the same, provided with back-plate-receiving pockets, and mechanism for producing a step-by-step movement of said ring, a shaft extending into said pocket A^2, provided with brushes for forcing the back-plates into the pockets on said ring, a reciprocatory-moving slide, a rotating hunting-spindle, a back-plate from the ring in the pocket A^2 beneath said hunting-spindle and upon the slide, substantially as and for the purposes set forth.

22. The combination, in a machine for attaching buttons, of a shell-holding pocket or receiver A^2, a chute or raceway extending therefrom, a shell-guide pivoted to said chute or raceway, means in said receiver adapted to rotate and feed the shells into said chute, means in said pivoted guide for holding a shell therein, and a chuck for receiving a shell from said pivoted guide, substantially as and for the purposes set forth.

23. The combination, in a machine for attaching buttons, of a shell-holding pocket or receiver A^2, a chute or raceway extending therefrom, a shell-guide pivoted to said chute or raceway, means in said receiver adapted to rotate and feed the shells into said chute, a device in said pivoted guide for holding a shell therein, and a chuck for receiving said shell and provided with a slotted punching-spindle, substantially as and for the purposes set forth.

24. The combination, in a machine for attaching buttons, of a shell-holding pocket or receiver A^2, a chute or raceway extending therefrom, a shell-guide pivoted to said chute or raceway, means in said receiver adapted to rotate and feed the shells into said chute, a device in said pivoted guide for holding a shell therein, and a chuck for receiving said shell and provided with a slotted punching-spindle, and means extending through said chuck and connected with said spindle and provided with a handle n^7 and a weight n^8 for turning said spindle within the chuck, substantially as and for the purposes set forth.

25. The combination, in a button-attaching machine, of a shell-holding pocket or receiver A^2, consisting of half-sections secured together by means of lugs and forming a space between said half-sections, a shell-conveying ring adapted to rotate between said half-sections and forming part of said pocket, said ring being provided with shell-holding recesses, and a mutilated wheel in said pocket provided in its rim with a shell-conveying groove, said wheel having an outer toothed periphery, and means for operating said ring, substantially as and for the purposes set forth.

26. In a machine for attaching buttons, the shell-holding pocket or receiver A^2, consisting of half-sections secured together and forming a space between them, a shell-conveying ring adapted to rotate between said half-sections and forming part of said pocket, said ring being provided in its inner periphery with recesses b^4, and a stationary shell-guide in said pocket A^2 beneath one upper quarter portion of said ring, substantially as and for the purposes set forth.

27. In a machine for attaching buttons, the shell-holding pocket or receiver A^2, consisting of half-sections secured together and forming a space between them, a shell-conveying ring adapted to rotate between said half-sections and forming part of said pocket, said ring being provided in its inner periphery with recesses b^4, and a stationary shell-guide in said pocket A^2 beneath one upper quarter portion of said ring, consisting of a mutilated wheel provided with a groove in its outer rim and arranged on a stationary sleeve to one of said half-sections, substantially as and for the purposes set forth.

28. In a machine for attaching buttons, the shell-holding pocket or receiver A^2, consisting of half-sections secured together and forming a space between them, a shell-conveying ring adapted to rotate between said half-sections and forming part of said pocket, said ring being provided in its inner periphery with recesses b^4, and a stationary shell-guide in said pocket A^2 beneath one upper quarter portion of said ring, consisting of a mutilated wheel provided with a groove in its outer rim and arranged on a stationary sleeve to one of said half-sections, devices for operating said ring, and a shaft in said sleeve provided with brushes, receiving an oscillatory movement from said devices for operating the ring, substantially as and for the purposes set forth.

29. In a machine for attaching buttons, the standard D, provided with a spring-actuated jaw for operating said ring in the pocket A^2, pivoted to a rod in said standard, and means for producing an up-and-down motion of said rod, in combination with the shaft *c*, a wheel c^6 on said shaft, and a link connecting said wheel with a pin working in a slot d^{12} in said standard D and secured to the rod therein, substantially as and for the purposes set forth.

30. The combination, in a button-attaching machine, of a shell-holding pocket or receiver A^2, consisting of half-sections secured together by means of lugs and forming a space between them, a shell-conveying ring adapted to rotate between said half-sections and form-

ing part of said pocket, provided with shell-retaining recesses, and a mutilated wheel in said pocket provided in its rim with a shell-conveying groove, said ring having an outer toothed periphery, and means for operating said ring, in combination with a pivoted guide and a chute for conveying a shell from said pocket into said shell-guide, substantially as and for the purposes set forth.

31. The combination, in a button-attaching machine, of a shell-holding pocket or receiver A^2, consisting of half-sections secured together by means of lugs and forming a space between them, a shell-conveying ring adapted to rotate between said half-sections and forming part of said pocket, provided with shell-retaining recesses, and a mutilated wheel in said pocket provided in its rim with a shell-conveying groove, said ring having an outer toothed periphery, and means for operating said ring, in combination with a pivoted shell-guide and a chute for conveying the shell from said pocket into said shell-guide and a pivotally-secured chuck into which the shell can be forced from said guide, substantially as and for the purposes set forth.

32. In a machine for attaching buttons, in combination, a shell-holding pocket or receiver A^2, consisting of stationary half-sections, a shell-conveying ring adapted to rotate between said half-sections and forming a part of said pocket, provided with shell-retaining recesses, and a mutilated gear-wheel in said pocket provided in its rim with a shell-conveying groove, said ring having an outer toothed periphery, and means for operating said ring, a pivoted guide, and a chute for conveying the shells from said pocket into said shell-guide, plates pivotally secured to the back of said guide, a cam-lever for operating said plates, and a pivoted chuck adapted to be brought against the front of said shell-guide and into which a shell can be forced from said guide when said cam-lever is operated, substantially as and for the purposes set forth.

33. In a machine for attaching buttons, the combination of a shell-holding pocket or receiver, a chute or raceway extending therefrom, mechanism for feeding the shells from said pocket into said chute, a shell-guide pivoted to the lower end of said chute, means for holding a shell in the lower end of said guide, a hunter provided with a hunting-spindle, and means connected with said guide for bringing it up against said hunting-spindle, whereby said shell is properly rotated in said guide, substantially as and for the purposes set forth.

34. In a machine for attaching buttons, the combination of a shell-holding pocket or receiver, a chute or raceway extending therefrom, mechanism for feeding the shells from said pocket into said chute, a shell-guide pivoted to the lower end of said guide, a hunter provided with a hunting-spindle, and means connected with said guide for bringing it up against said hunting-spindle, whereby said shell is properly rotated in said guide, and a pivoted chuck for receiving said hunted shell, as and for the purposes set forth.

35. In a machine for attaching buttons, the shell-guide pivotally secured to the shell-conveying chute, consisting of guides or ways for feeding the shell to its lower portion and provided with pivoted plates f^3 and f^3, operated by means of a cam-lever, said plates f^3 and f^3 having pins f^6 thereon, and slot f^5 in said cam-lever, into which said pins project, substantially as and for the purposes set forth.

36. In a machine for attaching buttons, in combination, a shell-holding pocket or receiver A^2, consisting of stationary half-sections, a shell-conveying ring adapted to rotate between said half-sections and forming a part of said pocket, provided with shell-retaining recesses, and a mutilated gear-wheel in said pocket provided in its rim with a shell-conveying groove, said ring having an outer toothed periphery, and means for operating said ring, a pivoted guide, and a chute for conveying the shells from said pocket into said shell-guide, plates pivotally secured to the back of said guide, a cam-lever for operating said plates, a pivoted chuck adapted to be brought against the front of said shell-guide and into which a shell can be forced from said guide when said cam-lever is operated, and a shell-stop near the upper end of said shell-guide, consisting of a rod f^5, provided with a stop-pin f^6, adapted to project directly beneath the end of said shell-conveying chute to which the shell-guide is pivoted, substantially as and for the purposes set forth.

37. In a machine for attaching buttons, the shell-guide pivotally secured to the shell-conveying chute, consisting of guides or ways for feeding the shell to its lower portion and provided with pivoted plates f^3 and f^3, operated by means of a cam-lever, and a rod f^5, provided with a stop-pin f^6 on the upper front portion of the guide, in combination with a rod l, extending out from the standard of the machine and projecting through a hole f' in the center of the shell-guide, substantially as and for the purposes set forth.

38. In a machine for attaching buttons, the herein-described shell-guide F, pivoted to the lower end of the shell-conveying chute, in combination with a plate o, having an inclined surface o' and a reciprocating rod m^3, and finger m^4 for causing said guide to swing to the hunter and away from the chuck, substantially as and for the purposes set forth.

39. In a machine for attaching buttons, the hunter p, provided with a rotating spindle having a flat end p^2 and a grooved pulley, a reciprocating rod m^3, and means connecting said rod with said spindle for causing the rotary movement of the said spindle, substantially as and for the purposes set forth.

40. In a machine for attaching buttons, the hunter p, provided with a rotating spindle having a flat end p^2 and a grooved pulley, in combination with a reciprocating rod m^3, provided with a finger m^4, a cord connected with said pulley and passing through an eye on said finger m^4, a stop-piece s^3 on said cord, and a rod s, to which the end of said cord is attached, substantially as and for the purposes set forth.

41. In a machine for attaching buttons, the hunter p, provided with a rotating spindle having a flat end p^2 and a grooved pulley, in combination with a reciprocating rod m^3, provided with a finger m^4, a cord connected with said pulley and passing through an eye on said finger m^4, a stop-piece s^3 on said cord, and a rod s, to which the end of said cord is attached, a pivoted shell-guide provided with a plate o, having an incline o', and a finger m^4 on said rod m^3, whereby said guide is brought up against the end p^6 of the hunting-spindle and said spindle rotates and properly places the shell in said guide, substantially as and for the purposes set forth.

42. In a machine for attaching buttons, a pivoted chuck arranged in bearings on the table or base of the machine and mechanism for operating the same, said chuck comprising therein spring-actuated jaws n^2, a slotted spindle, and a lever n^7 for turning said spindle, as and for the purposes set forth.

43. In a machine for attaching buttons, a pivoted chuck arranged in bearings on the table or base of the machine and mechanism for operating the same, said chuck comprising therein spring-actuated jaws n^2, a slotted spindle, and a lever n^7 for turning said spindle, in combination with a slide on said base of the machine, said slide having a back-plate-conveying guide and means at the end thereof for retaining said back-plate and its post in position to permit said slotted spindle to enter upon said post or stud, substantially as and for the purposes set forth.

44. In a machine for attaching buttons, a pivoted chuck arranged in bearings on the table or base of the machine and mechanism for operating the same, said chuck comprising therein spring-actuated jaws n^2, a slotted spindle, and a lever n^7 for turning said spindle, in combination with a slide on said base of the machine, said slide having a back-plate-conveying guide, a spring-actuated post g^4 at the end thereof, and a stop g^5, provided with a pointed end g^6 for depressing said post g^4, all arranged substantially as and for the purposes set forth.

45. In a machine for attaching buttons, the combination, with a ring, as b, provided with annular projections on its sides and rotating in grooved half-sections, of a back-plate or shell containing pocket or receiver with the mechanism for actuating the same, consisting of an upright and tubular standard secured to the table of the machine, a reciprocating rod therein, means at its lower end for actuating said rod, and a spring-actuated jaw at its upper end in normal engagement with a tooth on said ring, substantially as and for the purposes set forth.

46. In a machine for attaching buttons, the hunter p, consisting of a tubular sleeve p', a spindle p^2, provided with a pulley p^2 and a flat end p^6, two pins p^5 on said pulley, and a pin p^7, projecting from the side of said sleeve, substantially as and for the purposes set forth.

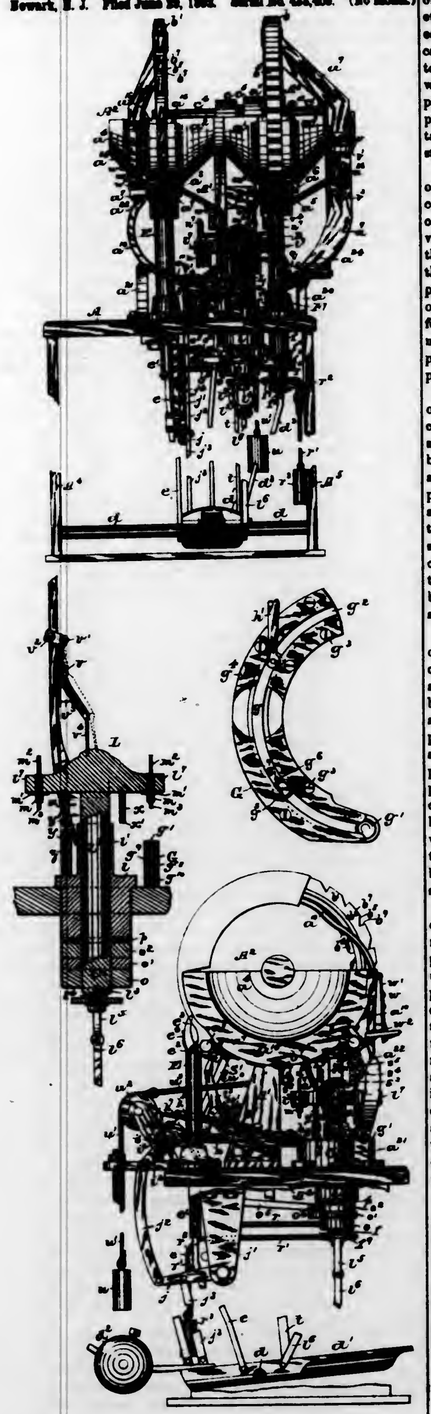
47. In a button-attaching machine, the combination, with the standard A', of two pockets A^3 and A^4, secured on opposite sides of said standard, each provided with a feeding device for feeding certain parts of a button to devices for securing them to a piece of material, a hub c, secured to the wall of one of said pockets, a sleeve in said hub, and a shaft in said sleeve provided with brushes extending into each of said pockets A^3 and A^4, and means at the one end of said shaft for producing an oscillatory movement of the shaft, substantially as and for the purposes set forth.

48. In a button-attaching machine, the combination, with the standard A', of a pocket A^2, containing back-plates, and a pocket A^3, containing shells, both secured on opposite sides of said standard, a rotary-moving ring in said pocket A^2 for feeding the back-plates into a chute, a slide beneath said chute and means for operating the same, and a hunting device for properly placing the back-plate and its post, a rotary-moving ring in said pocket A^2 for feeding a shell into a chute, a shell-guide pivoted to said chute, and devices for hunting or rotating said shell in its guide and for removing its shell to a chuck, and mechanism for securing the shell upon the post on the back-plate and twisting the upper portion thereof, substantially as and for the purposes set forth.

49. In a machine for attaching buttons, the combination, with a standard A' and a rod or arm r, attached thereto, of the hunter p, secured to said rod and provided with a spindle, and means for rotating the same, substantially as and for the purposes set forth.

50. In a machine for attaching buttons, the combination, with a rod r, having a pulley r', of the hunter p and its spindle provided with a pulley p^3 and a belt or cord passing over said pulleys for operating the same, substantially as and for the purposes set forth.

486,896. BUTTON-ATTACHING MACHINE. CHARLES RADCLIFFE, Newark, N. J. Filed June 20, 1892. Serial No. 437,409. (No model.)



Claim.—1. The combination, in a machine for attaching buttons, of a base or table, a standard on said table, oppositely-arranged pockets or receivers on said standard, chutes or raceways leading from each pocket or receiver, a rotatively-arranged punch and shell-chuck carrying device, the chucks of which are adapted to pick up a button-shell, a back-plate guide in connection with the one chute upon which the back-plate of a button is fed, devices for placing the back-plate properly and forcing the same to the forward end of said back-plate guide, and mechanism for causing an up-and-down and a rotative movement of said punch and shell-chuck carrying device, substantially as and for the purposes set forth.

2. The combination, in a machine for attaching buttons, of a base or table, a standard on said table, oppositely-arranged pockets or receivers on said standard, chutes or raceways leading from each pocket or receiver, a rotatively-arranged punch and shell-chuck carrying device, a shell-hunting device upon which the button-shells are fed from the one chute and properly placed in position therein and from which the trucks on said carrying device pick up a hunted shell, a back-plate guide in connection with one chute, upon which the back-plate of a button is fed, devices for placing the back-plate properly and forcing the same to the forward end of said back-plate guide, and means for causing an up-and-down and a rotative movement of said punch and shell-chuck carrying device, substantially as and for the purposes set forth.

3. The combination, in a machine for attaching buttons, of a base or table, a standard on said table, oppositely-arranged pockets or receivers on said standard, chutes or raceways leading from each pocket, a back-plate guide in connection with one chute, upon which the back-plate of a button is fed, a slide in said back-plate guide having a forked end adapted to engage with the post on the back-plate and properly arrange the post in said guide, a rotatively-arranged punch and shell-chuck carrying device provided with a punch for forcing the post on the back-plate through the material, means for removing said punch from the post on the back-plate and placing a shell in the chuck upon said device, a shell hunting or receiving post into which the shells are fed, and devices for properly rotating or hunting the button-shell within said post before being picked up by the chuck, substantially as and for the purposes set forth.

4. The combination, in a machine for attaching buttons, of a base or table, a standard on said table, oppositely-arranged pockets or receivers on said standard, chutes or raceways leading from each pocket, a back-plate guide in connection with one chute upon which the back-plate of a button is fed, a slide in said back-plate guide having a forked end adapted to engage with the post on the back-plate and properly arrange the post in said guide, a rotatively-arranged punch and shell-chuck carrying device provided with a punch for forcing the post on the back-plate through the material, means for removing said punch from the post on the back-plate and placing a shell in the chuck upon said device, devices for properly rotating or hunting the button-shell before being picked up by the chuck, and a tripping device adapted to engage with a lever on a spindle rotating in and extending through said chuck to bend the points on the post on said back-plate across a rectangular opening in the hub of the shell, substantially as and for the purposes set forth.

5. The combination, in a machine for attaching buttons, of a base or table, a standard on said table, oppositely-arranged pockets or receivers on said standard, chutes or raceways leading from each pocket or receiver, a back-plate guide in connection with one chute, upon which the back-plate of a button is fed, a slide in said back-plate guide having a forked end adapted to engage with the post on the back-plate and properly arrange the post in said guide, a rotatively-arranged punch and shell-carrying device provided with a punch for forcing the post on the back-plate through the material, means for removing said punch from the post on the back-plate and placing a shell in the chuck upon said device, and devices for properly rotating or hunting the button-shell before being picked up by the chuck, consisting, essentially, of a spindle rotating in a tubular post having a movable shell receiver into which the end of said spindle adapted to hunt the deposited shell projects, and means connected with the end of the spindle to cause its rotation and also the up-and-down movement thereof, substantially as and for the purposes set forth.

6. The combination, in a machine for attaching buttons, of a back-plate-holding pocket or receiver A^2, a chute or raceway extending therefrom, means in said receiver or pocket adapted to rotate and feed the back-plate into said chute, mechanism for operating the same, a back-plate guide having a guiding slot or opening therein into which a back-plate is fed one at a time, a reciprocally-moving forked slide in said guiding-slot having outwardly-projecting fingers for guiding the back-plate and hunting the same, and mechanism for forcing said forked slide forward in the back-plate guide and cause the sudden return of the same to its starting position, substantially as and for the purposes set forth.

7. The combination, in a machine for attaching buttons, of a back-

plate holding pocket or receiver A^6, a chute or raceway extending therefrom, means in said receiver or pocket adapted to rotate and feed the back-plates into said chute, mechanism for operating the same, a back-plate guide having a guiding slot or opening therein into which a back-plate is fed one at a time, a reciprocally-moving forked slide in said guiding-slot having outwardly-projecting fingers for guiding the back-plate and hunting the same, and mechanism for forcing said forked slide forward in the back-plate guide and cause the sudden return of the same to its starting position, consisting, essentially, of a cross-head sliding in suitable guides, a link connecting one end of said cross-head with the end of said sliding fork, a lever connected with the opposite end of the cross-head, and a cam mechanism for operating said lever and causing the movement of said cross-head and sliding fork connected therewith, substantially as and for the purposes set forth.

8. The combination, in a machine for attaching buttons, of a back-plate-holding pocket A^6, consisting of stationary half-sections secured together by means of lugs and forming a space between said half-sections, a back-plate-conveying ring adapted to rotate between said half-sections and forming part of said pocket, said ring being provided with back-plate-retaining pockets on its inner periphery and having an outer toothed periphery, means for operating said ring to produce a step-by-step movement thereof, a chute or raceway leading from said pocket, and a back-plate guide having a reciprocally-moving slide therein provided with a forked end, substantially as and for the purposes set forth.

9. The combination, in a machine for attaching buttons, of a back-plate-holding pocket A^6, consisting of stationary half-sections secured together by means of lugs and forming a space between said half-sections, a back-plate-conveying ring adapted to rotate between said half-sections and forming part of said pocket, said ring being provided with back-plate-retaining pockets on its inner periphery and having an outer toothed periphery, means for operating said ring to produce a step-by-step movement thereof, a chute or raceway leading from said pocket, and a back-plate guide having a reciprocally-moving slide therein provided with a forked end, consisting of fingers g^6 and g^6 forming a narrow space g^7 between them, into which the deposited back-plate is forced to be properly placed in the forward end of the back-plate guide, substantially as and for the purposes set forth.

10. The combination, in a machine for attaching buttons, of a back-plate-holding pocket A^6, consisting of stationary half-sections secured together by means of lugs and forming a space between said half-sections, a back-plate-conveying ring adapted to rotate between said half-sections and forming part of said pocket, said ring being provided with back-plate-retaining pockets on its inner periphery and having an outer toothed periphery, means for operating said ring to produce a step-by-step movement thereof, and a back plate guide having a reciprocally-moving slide therein provided with a forked end, and a back-plate-holding plate or support in the forward end of said back-plate guide, consisting of a spring-actuated post g^8, arranged in a socketed portion of said guide and provided in the top thereof with a concave portion into which the back-plate is forced by the action of said sliding fork, substantially as and for the purposes set forth.

11. The combination, in a button-attaching machine, of a back-plate-holding pocket or receiver, a chute or raceway extending therefrom, mechanism for feeding the back-plates from said pocket or receiver into said chute, a back-plate guide G and a sliding fork thereon adapted to be moved forward and backward, the lower end of said chute terminating above said guide, mechanism for causing a reciprocatory movement of said sliding fork, whereby the deposited back-plate is properly hunted and is forced to the forward end of the back-plate guide G, and a holding plate or support in said end having a concave surface in the top thereof, and a spring for forcing said plate upwardly to retain the back-plate when the sliding fork has returned to its starting-point, substantially as and for the purposes set forth.

12. In a button-attaching machine, the combination of a hunter F, having a rising and falling and a rotating slotted spindle, with means, substantially as described, for rotating said spindle and causing the same to rise and fall, consisting, essentially, of a pulley f^9, secured to the spindle, and a weighted cord for causing its rotation, a second pulley f^{10} and cord operating to cause the rotation of said spindle during the return stroke of the treadle of the machine, an eccentric or cam-shaped hub on a tubular post, a post f^{11} on said pulley f^{10}, provided with a finger in sliding engagement with said eccentric or cam-shaped hub, whereby during the rotary movement of said spindle the latter is also caused to move up and down, substantially as and for the purposes set forth.

13. In a button-attaching machine, the combination of a hunter F, having a rising and falling and a rotating slotted spindle, with means, substantially as described, for rotating said spindle and causing the same to rise and fall, consisting, essentially, of a pulley f^9, secured to the spindle, and a weighted cord for causing its rotation, a second pulley f^{10} and cord operating to cause the rotation of said spindle during the return stroke of the treadle of the machine, an eccentric or cam-shaped hub on a tubular post, a post f^{11} on said pulley f^{10}, provided with a finger in sliding engagement with said eccentric or cam-shaped hub, whereby during the rotary movement of said spindle the latter is also caused to move up and down, and a spring-actuated shell-holder arranged in sliding contact at or near the top of said tubular post in which the spindle rotates and slides, substantially as and for the purposes set forth.

14. In a machine for attaching buttons, the combination, with a base or support, a guide G, a sliding fork on said guide, and means for conveying a back-plate in front of said sliding fork, of a rod or lever K', connected at the back with said fork, a cross-head connected with said rod K', a rod k^3, pivotally arranged on an arm k^2, having a pin or stud k^4 thereon, and cams engaging with said pin to cause a forward movement of said cross-head and the sliding fork, and a spring connected with said cross-head to cause the return of the several mechanisms, substantially as and for the purposes set forth.

15. In a machine for attaching buttons, the combination, with a base or support, a guide G, a sliding fork on said guide, and means for conveying a back-plate in front of said sliding fork, a rod or lever K', connected at the back with said fork, a cross-head connected with said rod K', a rod k^3, pivotally arranged on an arm k^2, having a pin or stud k^4 thereon, and cams engaging with said pin to cause a forward movement of said cross-head and the sliding fork, a spring connected with said cross-head to cause the return of the several mechanisms, and means for operating said cams, consisting of a crank-arm i^3, having a lever operated by means of the treadle of the machine, and a spring-actuated dog or clutch pivotally connected with said crank-arm, adapted to engage with notches in a collar connected with said cams, substantially as and for the purposes set forth.

16. In a button-attaching mechanism, the combination of a back-plate guide provided with a sliding fork and means for operating the same, consisting, essentially, of a crank arm i^3, provided with a spring-actuated dog or pawl i^3, a sleeve or collar i^2, having notches into which the jaw of said dog or pawl is forced, a set of cams on a collar connected with said collar i^2, a pin k^4 on a pivoted lever k^2, and an intermediately-arranged system of levers for operating and causing a sliding movement of said fork, substantially as and for the purposes set forth.

17. In a button-attaching machine, a punch and shell-chuck carrying device consisting of oppositely-projecting arms l^7 and l^8, said arms l^7 being provided with punches for forcing the head on a back-plate post through the material, consisting of rods m, having slotted ends m^2, and projecting fingers or ends m^3 above said arms l^7, and said arms l^8 being provided with shell-holding chucks having spring-actuated sides n', and a spindle in each chuck, and means for causing an up-and-down movement and at the same time an intermittent circular movement of said punch and shell-chuck holding device, substantially as and for the purposes set forth.

18. In a button-attaching machine, a punch and shell-chuck carrying device consisting of oppositely-projecting arms l^7 l^8, said arms l^7 being provided with punches for forcing the head on a back-plate post through the material, consisting of rods m, having slotted ends m^2, and projecting ends m^3 above said arms l^7 and said arms l^8 being provided with shell-holding chucks having spring-actuated sides n' and a spindle in each chuck, and means for causing an up-and-down movement and at the same time an intermittent circular movement of said punch and chuck holding device, consisting, essentially, of rings o, o', and o^3, arranged on a post l^9 on said punch and shell-chuck holding device, an arm o^5, and means for operating the same, connected with said ring o', a spring-actuated pawl or dog on said arm o^5, adapted to engage with notches in said ring o^3 to cause the intermittent circular movement of said punch and shell-chuck supporting device, and a lever l^3, provided with a yoke l^5, loosely connected with the end of said post l^9, for causing the up-and-down movement of said device, all arranged substantially as and for the purposes set forth.

19. In a button-attaching machine, in combination, a base or table, a standard A' thereon, a back-plate-receiving pocket A^9 and a shell-receiving pocket A^6, chutes or raceways leading from each pocket, a rotatively-arranged punch and shell-chuck carrying device, the chucks of which are adapted to pick up a button-shell, a back-plate guide in connection with the one chute upon which the back-plate of a button is fed, devices for placing the back-plate properly and forcing the same to the forward end of said back-plate guide, mechanism for causing an up-and-down movement and a rotative movement of said punch and shell-chuck carrying device, pivoted stop-pieces q and q', used in connection with the lower slotted ends of said chutes, and pins on said punch and shell-chuck holding device, adapted to engage with and raise said stop-pieces to release a back-plate or shell, substantially as and for the purposes set forth.

20. In a button-attaching machine, the combination, with a back-plate or a shell-pocket, a chute or raceway having a slotted lower end, and a pivotally arranged stop-plate connected therewith, having a stop portion adapted to project down into said slotted end of the chute or raceway, substantially as and for the purposes set forth.

21. In a button-attaching machine, the combination, with a pocket A^9, a chute or raceway a^{10}, curved double, as at a^{20}, whereby the back-plate, which has entered said chute with its post projecting downwardly, passes out therefrom at the bottom of the chute with the post in an upright position, a slot in the lower portion of said chute, and a pivoted stop-piece provided with a finger adapted to project down into said slot, substantially as and for the purposes set forth.

22. In a button-attaching machine, the combination, with a pocket A^9, a chute or raceway a^{10}, curved double, as at a^{20}, whereby the back-plate, which has entered said chute with its post projecting downwardly, passes out therefrom at the bottom of the chute with the post in an upright position, a slot in the lower portion of said chute, a pivoted stop-piece provided with a finger adapted to project down into said slot, and a pivoted back-plate-retaining device w near the upper end of said chute, substantially as and for the purposes set forth.

23. In a button-attaching machine, in combination, a base or table, a standard A', a shell-holding pocket A^6, a chute or raceway extending therefrom, a shell-hunting device secured on said table directly in front of the lower end of said chute or raceway, means in said hunting device for rotating a shell therein, and a chuck for picking up the shell from said hunting device, substantially as and for the purposes set forth.

24. In a button-attaching machine, in combination, a base or table, a standard A', a shell-holding pocket A^6, a chute or raceway extending therefrom, a shell-hunting device secured on said table directly in front of the lower end of said chute or raceway, means in said hunting device for rotating a shell therein, and a chuck for picking up the shell from said hunting device, said chuck being provided with a slotted spindle and means for partially rotating the same, substantially as and for the purposes set forth.

25. In a button-attaching machine, in combination, a base or table, a chute or raceway extending therefrom, a shell-hunting device secured directly in front of the lower end of said chute and consisting of a tubular post f, arranged in the table or support of the machine, a rising and falling spindle having a rotative movement arranged in said post, a movable and spring-actuated shell-receiver on the upper portion of said post, pulley-wheels on said spindle for rotating the same, an eccentric hub on said post, and means on one of said pulley-wheels on the spindle engaging with said eccentric or cam-shaped hub to cause the rising and falling movement of the spindle, and a punch and shell-chuck supporting device having punches m and shell-retaining chucks n, said device rotating and moving up and down in a bearing plate or support and provided with a spindle l^9, and means on the end of said spindle for causing an intermittent circular motion of the device, and also a rising and falling movement, substantially as and for the purposes set forth.

26. In a button-attaching machine, the herein-described punch and shell-chuck carrying device, consisting of a bearing-plate l, a spindle l^9, having arms l^7 and l^8 at its upper end, punches m, provided with slotted ends m^2, arranged in said arms l^7, and shell-holding chucks n in said arms l^8, consisting of spring-actuated sides n', a rotating spindle n^2 in each chuck having a slotted end and rotating in bearing-plates n^4 in said chucks, a hub n^6 on the upper end of the spindle n^2, having a finger n^7, mechanism adapted to engage with said finger n^7 and thereby partly rotate said spindle n^2, and mechanism for causing an intermittent circular motion and also an up-and-down movement of said spindle l^9, substantially as and for the purposes set forth.

27. In a button-attaching machine, the herein-described punch and shell-chuck carrying device, consisting of a bearing-plate l, a spindle l^9, having arms l^7 and l^8 at its upper end, punches m, provided with slotted ends m^2, arranged in said arms l^7, and shell-holding chucks n in said arms l^8, consisting of spring-actuated sides n', a rotating spindle n^2 in each chuck having a slotted end and rotating in bearing-plates n^4 in said chucks, a hub n^6 on the upper end of the spindle n^2, having a finger n^7, mechanism adapted to engage with said finger n^7 and thereby partly rotate said spindle n^2, and mechanism for causing an intermittent circular motion and also an up-and-down movement of the spindle l^9, consisting, essentially, of collars o, o', and o^3, one of which is provided with a crank o^3, having a spring-actuated dog or pawl adapted to engage with notches in the collar o^3, a lever o^5, connected with said crank o^3, and a system of levers and cranks for operating said lever o^5 from the treadle of the machine, substantially as and for the purposes set forth.

28. In a button-attaching machine, the herein-described punch and shell-chuck supporting device, having shell-chucks n, each provided with a spindle n^2, slotted in the lower end, a hub n^6 on the top of each spindle provided with a spring-actuated finger n^7, and a tripping device S for rotating said spindle, consisting, essentially, of a slide working in bearings or guides s and s' and means for causing a forward movement of said slide in its guides, a spring-actuated finger s^3 on the forward end of said slide, adapted to slip over the end of the finger n^7 during the forward stroke, but firmly engaging with said finger during the return stroke and thereby rotating the spindle in the chuck, and a weighted rod w^2 for causing the return of the slide S to its starting position, substantially as and for the purposes set forth.

29. In a button-attaching machine, the combination, with a slide S, arranged in guides s and s' and having a spring-actuated tongue or finger s^3, and ears s^4, to which are secured a rod w^2, of an arm f^6, provided with a spring-actuated finger f^6, pivotally arranged on a support f^5, and a crank f' and lever or rod f for operating the same, substantially as and for the purposes set forth.

30. In a button-attaching machine, the combination, with a back-plate guide G, having a socketed post z, and a spring-actuated pin y therein provided with a chamfered end, and a punch and shell-chuck supporting device having an intermittent circular movement, said device being provided with downwardly-extending pins x, having chamfered ends x', adapted to pass over the chamfered ends y' on said rod or pin y to prevent a backward movement of said punch and chuck supporting device, substantially as and for the purposes set forth.

31. In a button-attaching machine, the combination of the herein-described punch and shell-chuck supporting device L, having arms l^7 and l^8, and outwardly-extending pins l^9, with chutes a^9 and a^{10}, provided with pivoted stop-pieces q and q', with which said pins l^9 engage to operate them and thereby release a back-plate or shell during the intermittent rotation of the punch and shell-chuck supporting device, substantially as and for the purposes set forth.

32. In a machine for attaching buttons, in combination, a shell-holding pocket or receiver A^6, consisting of stationary half-sections, a shell-conveying ring adapted to rotate between said half-sections and forming part of said pocket, provided with shell-retaining recesses, a mutilated wheel in said pocket provided in its rim with a shell-conveying groove, said ring having a toothed periphery, and means for operating said ring, a shell-hunting device, a chute for conveying the shells from said pocket to said shell-hunting device, said device being provided with a shell-hunting spindle and a sliding shell-receiver, a punch and shell-chuck supporting device having chucks thereon adapted to move down upon said shell-receiver on the hunting device and pick up a hunted shell, a back-plate guide having a back-plate holder in its forward end, above which the chuck is rotated and brought down upon the same to place its shell over the post on the back-plate, a slotted spindle in said chuck adapted to engage with the prongs or projections on said post, and a hub and finger n^7 on said spindle for turning the spindle and bending the prongs or projections on the back-plate post across the slot or opening in the button-shell, substantially as and for the purposes set forth.

33. In a button-attaching machine, in combination, a shell-holding pocket or receiver A^6, consisting of stationary half-sections, a shell-conveying ring adapted to rotate between said half-sections and forming part of said pocket, provided with shell-retaining recesses, a mutilated wheel in said pocket provided in its rim with a shell-conveying groove k, said ring having a toothed periphery, and means for operating said ring, a shell-hunting device, a chute for conveying the shells from said pocket to said shell-hunting device, said device being provided with a shell-hunting spindle and a sliding shell-receiver, a punch and shell-chuck supporting device having chucks thereon adapted to move down upon said shell-receiver on the hunting device and pick up a hunted shell, a back-plate guide having a back-plate holder in its forward end, above which the chuck is rotated and brought down upon the same to place its shell over the post on the back-plate, a slotted spindle in said chuck adapted to engage with the prongs or projections of said post, a hub and finger n^7 on said spindle for turning the spindle and bending the prongs or projections on the back-plate across the slot or opening in said button-shell, and a reciprocally-moving slide S, adapted to engage with the finger n^7 to rotate the spindle, substantially as and for the purposes set forth.

34. In a machine for attaching buttons, the combination of a shell-holding pocket or receiver, a chute or raceway extending therefrom, mechanism for feeding the shells from said pocket into said chute, a hunter provided with a hunting-spindle having a rotating and an up-and-down movement, a punch m, and a shell-chuck n, and means connected with said punch and chuck for bringing the chuck against the hunted shell and picking it up, substantially as and for the purposes set forth.

35. In a machine for attaching buttons, a chuck n, arranged on a supporting device having an intermittent circular movement and also an up-and-down movement, said chuck comprising therein spring-actuated jaws or sides n', a slotted spindle, and a lever or finger n^7 for turning said spindle, substantially as and for the purposes set forth.

36. In a machine for attaching buttons, in combination, a back-plate guide G and mechanism for feeding a back-plate to the forward end of said guide, and a shell-conveying chuck n, arranged on a supporting device having an intermittent circular movement and also an up-and-down movement, said chuck comprising therein spring-actuated jaws or sides n', a slotted spindle, and a lever or finger n^7 for turning said spindle, substantially as and for the purposes set forth.

37. In a machine for attaching buttons, in combination, a back-plate guide G and mechanism for feeding a back-plate to the forward end of said guide, and a shell-conveying chuck n, arranged on a sup-

porting device having an intermittent circular movement and also an up-and-down movement, said chuck comprising therein spring-actuated jaws or sides n', a slotted spindle, and a lever or finger n^7 for turning said spindle, and means at the end of said back-plate guide G for retaining the back-plate and its post in position to permit the slotted spindle to enter upon said post, substantially as and for the purposes set forth.

38. In a button-attaching machine, the herein-described punch and shell-chuck supporting device L, consisting of spindle l^5, having oppositely-extending arms l' and l^5, and slotted punches and shell-chucks on said arms, said chucks comprising therein spring-actuated jaws or sides n', a slotted spindle and a lever or finger n^7 for turning said spindle, a collar o', having an arm o^5, provided with a spring-actuated dog, and a collar o^3, having notches with which said dog engages to rotate said spindle l^5 and its connected parts intermittently, means for operating said arm o^5, and a rod l^5 and yoke l^5, connected with the end of the spindle l^5 to produce an up-and-down movement of the same, substantially as and for the purposes set forth.

39. In a button-attaching machine, the herein-described punch and shell-chuck supporting device L, consisting of a spindle l^5, having oppositely-extending arms l' and l^5, and slotted punches and shell-chucks on said arms, said chucks comprising therein spring-actuated jaws or sides n', a slotted spindle and a lever or finger n^7 for turning said spindle, a collar o', having an arm o^5 provided with a spring-actuated dog, and a collar o^3, having notches with which said dog engages to rotate said spindle l^5 and its connected parts intermittently, means for operating said arm o^5, consisting of a rod o^6, pivoted crank-arms j^3 and j, and a rod j^3, operated by the treadle of the machine, and a rod l^5 and yoke l^5, connected with the end of the spindle l^5 to produce an up-and-down movement of the same, substantially as and for the purposes set forth.

40. In a button-attaching machine, the combination, with the standard A', of two pockets A^3 and A^5, secured on opposite sides of said standard, each provided with feeding devices for feeding certain parts of a button to devices for securing them to a piece of cloth, a hub secured to the wall of one pocket, a sleeve in said hub, and a shaft in said sleeve provided with brushes extending down into said pockets, and means at the one end of said shaft for producing an oscillatory movement of said shaft, chutes or raceways leading from each pocket, a rotatively-arranged punch and shell-chuck carrying device, the chucks of which are adapted to pick up a button-shell, a back-plate guide G in connection with one chute upon which the back-plate of a button is fed, devices for placing the back-plate properly and forcing the same to the forward end of the said back-plate guide, consisting of a sliding fork and a spring-actuated holding-plate or back-plate support, and mechanism for causing the operation of said punch and chuck holding device, and means for causing the sliding movement of said sliding fork, substantially as and for the purposes set forth.

486,897. HYDRAULIC-MINING ENGINEERING METHOD AND APPARATUS. ABEL M. RAWSON, San Francisco, Cal. Filed May 26, 1892. Serial No. 434,816. (No model.)

Claim.—1. In an apparatus for hydraulic mining in gorges, the combination of a dam extending across the gorge below the mining operations with a pipe or conduit extending longitudinally of the gorge, its receiving end being above the dam and its discharging end below the same, and additional pipe-sections adapted to be secured at the upper end of said pipe to extend the same as required, substantially as described.

2. In an apparatus for hydraulic mining in gorges, the combination of a dam extending across the gorge below the mining operations with a pipe or conduit extending longitudinally of the gorge, its receiving end being above the dam and its discharging end below the same, and an elevated supply flume or conduit discharging above said dam, substantially as described.

3. In an apparatus for hydraulic mining in gorges, the combination of a dam extending across the gorge below the mining operations with a pipe or conduit extending longitudinally of the gorge, its receiving end being above the dam and its discharging end below the same, and an elevated sectional supply flume or conduit discharging above said dam, substantially as described.

4. In an apparatus for hydraulic mining in gorges, the combination of a dam extending across the gorge below the mining operations with a pipe or conduit extending longitudinally of the gorge, its receiving end being above the dam and its discharging end below the same, an elevated supply flume or conduit, and distributing branch flumes discharging above the dam, substantially as described.

5. In an apparatus for hydraulic mining in gorges, the combination of a dam extending across the gorge below the mining operations with catch-basins open at the bottom abutting against the face of the dam, said dam having perforations leading from the catch-basins, substantially as described.

6. In an apparatus for hydraulic mining in gorges, the combination of a dam extending across the gorge below the mining operations with catch-basins open at the bottom abutting against the face of the dam, said dam having perforations leading from the catch-basins, and a pipe extending longitudinally of the gorge, its receiving end being above the dam and its discharging end below the same, substantially as described.

7. In an apparatus for hydraulic mining in gorges, the combination of a dam extending across the gorge below the mining-operations with catch-basins open at the bottom abutting against the face of the dam, said dam having perforations leading from the catch-basins, a pipe extending longitudinally of the gorge, its receiving end being above the dam and its discharging end below the same, and an elevated supply flume or conduit and distributing branch flumes discharging above the dam, substantially as described.

8. In an apparatus for hydraulic mining in gorges, the combination of a dam extending across the gorge below the mining operations with a pipe or conduit extending longitudinally of the gorge, its receiving end being above the dam and its discharging end below the same, an elevated supply flume or conduit discharging above said dam, and a relief-pipe discharging below said dam, substantially as described.

9. In hydraulic mining in gorges, the process which consists in arresting mingled débris and water resulting from the mining operations, permanently retaining the earthy matter in the gorge, while allowing the water to flow down into the valley below, the above steps of the process being accomplished by artificial means, substantially as and for the purpose set forth.

10. In hydraulic mining in gorges, the artificial process which consists in arresting the mingled débris in the water resulting from mining operations, permanently retaining the earthy matter to form a barrier across the gorge, discharging the mingled débris and water upon the barrier, and carrying off the clear water which accumulates above said barrier, substantially as and for the purpose set forth.

486,898. CAR-AXLE. DAVID ROSENBERG, Sr., and DAVID ROSENBERG, Jr., New York, N. Y. Filed June 24, 1891. Renewed Mar. 5, 1892. Serial No. 423,942. (No model.)

Claim.—1. The combination, with a divided axle and a sectional coupling or bearing sleeve for uniting the said axle, of layers of wire surrounding the sleeve-sections and serving to hold the sections compressed about the axle, substantially as set forth.

2. The combination, with a divided axle and a sectional coupling or bearing sleeve for uniting the parts of the axle, of one or more layers of wire surrounding the sleeve under tension to hold its parts in assembled adjustment, and a protecting-jacket surrounding the wire, substantially as set forth.

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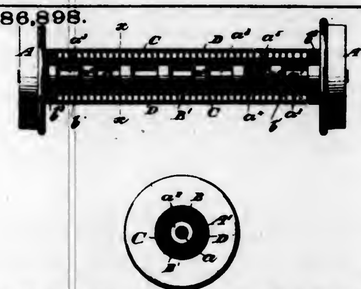
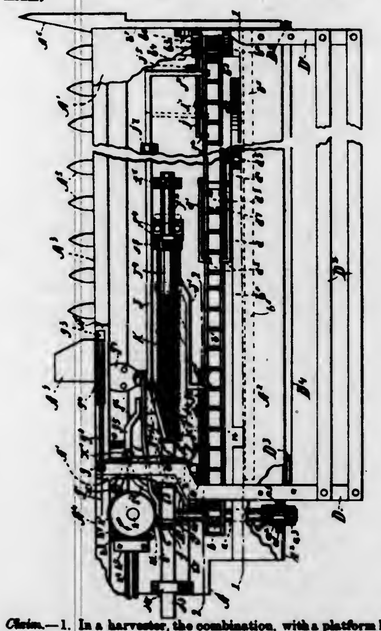


3. The combination, with a divided axle, the point of division being nearer one of the wheels than the other, of a sectional bearing-sleeve having a binding fit in its engagement with the shorter portion of the divided axle and a loose fit with the larger portion of said axle and means for drawing the sectional sleeve into binding contact with the shorter portion of the axle, substantially as set forth.

486,899. ADVERTISING NOVELTY OR DISPLAY-CARD. JAMES ROBINSON, Newark, N. J. Filed Feb. 3, 1892. Serial No. 420,157. (No model.)

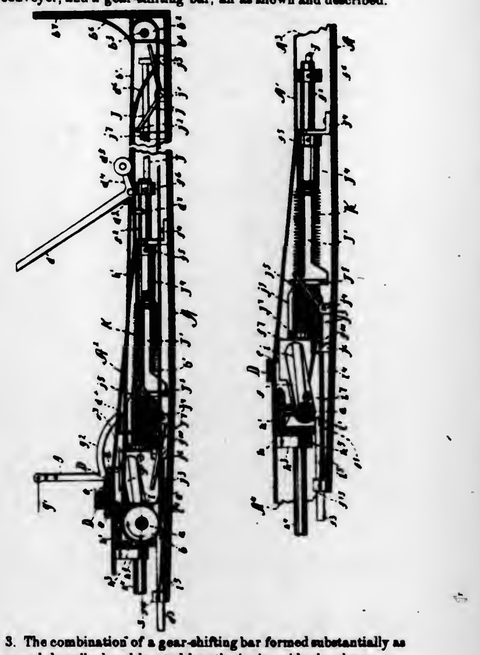
Claim.—An advertising novelty consisting of a board A, having fac-similes of hat-bodies arranged thereon, each provided with a metallic band c, provided with prongs c' and c^3, adapted to be forced through the material of the hat-body and through the said board A and bent over thereon, and a block d, secured to the back of each hat-body by means of a pin d' and arranged between the back of the hat-body and the face of the board A to preserve the contour of the hat-body, substantially as and for the purposes set forth.

486,900. CONVEYER-GEARING FOR HARVESTERS. GEORGE SCHUBERT, Walnut, Tex. Filed Feb. 4, 1892. Serial No. 420,302. (No model.)



Claim.—1. In a harvester, the combination, with a platform having a slot, of a chain operated in said slot, conveyer-arms pivoted on said chain, an extension d^5 on one of the arms d, an antifriction-roller on said extension d^5, adapted to engage with the inwardly-projecting edge of the plate A^5, projections d^3 and d^5, projecting inward in position to engage with the chain b', a notch n in the inwardly-projecting edge of the plate A^5, a spring secured to the plate A^5, partly closing with its free end the passage-way of the roller d^5, a guide d^5 near the grain end of the slot, guides b^5, as shown, and means to operate the conveyer-chain, as described.

2. In a harvester, the combination, with bars D and D', pivoted on the platform, projecting with their free ends rearward, of strips D^3, secured to the rear ends of said bars D and D' to receive the grain, as and for the purpose described, a projection c on the bar D, said bar extending forward, as shown, a trip-lever g, pivoted in the platform in position to rest with its heel on the forward projecting end of the bar D, a draw-rod attached to near the free end of the trip-lever, as shown, a toggle-joint pivoted with one end to the platform and with its other end to the bar D', a bell-crank pivoted to the platform and connected with one arm to the toggle-joint and with its other arm to the bar D, as shown, a conveyer-gearing for operating the conveyer, and a gear-shifting bar, all as shown and described.



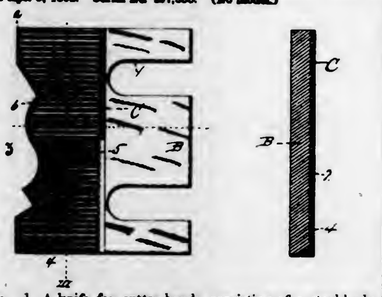
3. The combination of a gear-shifting bar formed substantially as shown and described and located lengthwise in guides in a harvester-platform to be shifted endwise alternately in opposite directions to operate a movable bearing i', a shaft a, journaled in the movable bearing i' and in a pivoted bearing, gearing to operate the shaft a, substantially as described, to operate a sprocket-wheel on said shaft a, a chain b' on said sprocket-wheel, conveyer-arms pivoted to said chain b', means to operate the conveyer-arms, substantially as described, and brackets on the gear-shifting bar, projecting with their free end in the passage-way of the lug d^5 on the chain b', substantially as and for the purpose described.

4. In a harvester, the combination, with a platform, of a bar i, pivoted in said platform, projecting with its free end stubbleward, a bearing i', formed on the free end of the bar i, an antifriction-roller i^7, pivoted on the bar i, adjacent the bearing i', in position to engage with the inclined slot f' in the gear-shifting bar, a shaft a, journaled in the bearing i' and in a pivoted bearing a^4, bevel-pinion h^2 on the shaft a, adapted to engage alternately with the bevel-pinions h' and h^3 to operate a sprocket-wheel b, a chain on said sprocket-wheel to operate a conveyer, the gear-shifting bar located in the platform, and means to operate said gear-shifting bar, substantially as shown, and for the purpose described.

5. In a harvester, the combination, with a harvester-platform, of a gear-shifting bar in said harvester-platform, an inclined slot in said gear-shifting bar, a vertically-moving bearing i' on the free end of a bar i, an antifriction-roller i^7, pivoted adjacent the bearing i' to engage with the inclined slot f', a shaft a, journaled in the bearing

f' and in a pivoted bearing a^5, a beveled pinion h^4 on the shaft a, adapted to engage alternately with bevel-pinions h' and h^3 to operate a sprocket-wheel b on the shaft a, a conveyer operated by a chain b', operated by the sprocket-wheel b, a lug d^7 on said conveyer-chain, a projection e on the bar D, said bar D, pivoted on the platform, a trip-lever g, pivoted in the platform, a draw-rod on said trip-lever to operate the bar D, a bracket J on the gear-shifting bar, adapted to engage with the stud j^2 and with its free end extending in the path of the lug d^7, a lever j, pivoted in the platform to engage with the bracket J and with its other end projecting in the path of the lug d^7, a dog i^3, pivoted with one end to a spring-pressed lever g^2, with its other end in a guide in position to engage with the gear-shifting bar, a projection J^6 on the bracket J to engage with the free end of the spring-pressed lever g^2, and a bracket J on the gear-shifting bar, having the rearward projection J^5 to operate the dog i^4 and engage with the stud j^3 and with its upper part in position to be engaged with the lug d^7, a lever j^5, pivoted in the platform in position to engage with one end with the rearward projection j^5 and with its other end in position to be engaged by the lug d^7, a spring i^2 to force the projection i^3 in contact with the gear-shifting bar, collars f^3 and f^4, and a spring K on the gear-shifting bar, as shown, and for the purpose described.

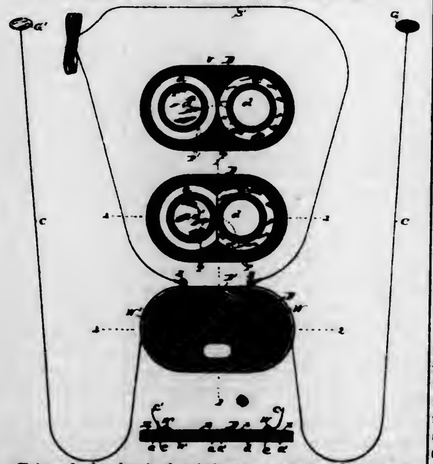
486,901. CUTTER-HEAD KNIFE. SAMUEL J. SHIMER, Milton, Pa. Filed Apr. 5, 1892. Serial No. 427,855. (No model.)



Claim.—1. A knife for cutter-heads, consisting of a steel body formed with longitudinally-arranged grooves in its face and a filling of soft metal in the grooves, substantially as and for the purpose specified.

2. A knife for cutter-heads, consisting of a steel body-piece having longitudinally-arranged grooves in its face terminating in a transversely-arranged groove at their rear ends and a soft-metal filling in the grooves, substantially as and for the purpose specified.

486,902. GALVANIC BODY-BATTERY. JOHN W. SHULTS, Wichita, Kans. Filed Mar. 22, 1892. Serial No. 426,062. (No model.)



Claim.—1. A galvanic electric battery consisting of a body portion of vulcanized rubber provided with a receptacle therein for holding an exciting material and with a perforation or perforations leading from the receptacle to the face of said body portion, of metallic elements of an electric battery set in or fixed to said body portion, and of electric conductors arranged connected with the poles of the battery and terminating with electrodes, substantially as and for the purpose set forth.

2. A galvanic electric battery consisting of a body portion of vulcanized rubber provided with a receptacle therein and with one or more perforations leading from the receptacle to the face of said body portion, of a deposit of muriate of ammonia or an equivalent exciting material or compound placed in said receptacle and adapted to sift through said perforations, of metallic elements of an electric battery set in or fixed to said body portion, and of electric conductors arranged connected with the poles of the battery and terminating with electrodes, substantially as and for the purpose set forth.

3. The herein-described galvanic electric battery, consisting of the body portion provided with a receptacle in the back thereof and with face perforations leading into said receptacle, of the cap or cover for inclosing said receptacle, of the metallic elements set in the face of said body portion, of the conductors arranged electrically connected with said metallic elements and terminating with button electrodes, and of the battery-supporting cord connected with said body portion, wherein a deposit of muriate of ammonia or an equivalent exciting material substance or compound is placed in said receptacle and adapted to sift through the perforations leading therefrom, and wherein both the siftings of said deposit and the metallic elements of the battery are adapted to be brought in contact with the body of the wearer and the exudations out of the cutis, substantially as and for the purpose set forth.

486,903. HAME-FASTENER. CHRISTOPHER A. SMITH, Philadelphia, Pa. Filed Apr. 20, 1892. Serial No. 430,010. (No model.)

Claim.—1. In a hame-fastener of the character described, the combination, with the lever, of a sliding locking-hook mounted on the end of the lever and a cam also mounted on the end of the lever and engaging the hook to actuate the same.

2. The combination, in a hame-fastener, of a lever provided with a groove in its end, a locking-hook having an internal notch and provided with studs engaging said groove, and a cam mounted on the end of the lever and engaging the notch in the hook.

486,904. SLEEVE-LINK. THOMAS W. F. SMITTEN, Brooklyn, N. Y. Filed June 11, 1892. Serial No. 436,333. (No model.)

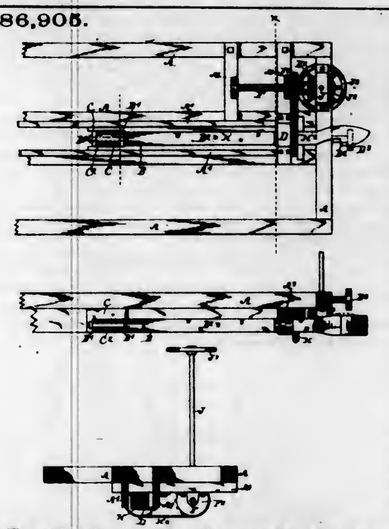
Claim.—1. The combination, in sleeve-links, of two buttons provided with eyes, an elastic metallic link open at one side to produce a hook, a sleeve adapted to slide upon the link to close the opening, and lateral projections upon the link adapted to engage with the sleeve to hold it in position, substantially as set forth.

2. The combination, in sleeve-links, of two buttons, each provided with an eye, an elastic metallic link open at one side to produce a hook and provided with a lateral projection upon the free end which is opposite the hook, said link being bent so that its two sides abut against each other, and a sleeve adapted to slide upon the link and provided with an opening adapted to receive the said projection upon the link, substantially as set forth.

486,905. CAR-COUPLING. JOHN H. SNYDER, Des Moines, Iowa. Filed May 16, 1892. Serial No. 433,075. (No model.)

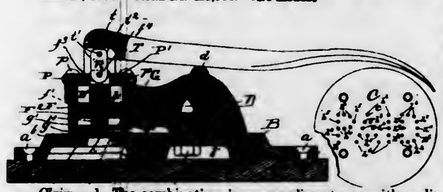
Claim.—1. A car-coupling comprising the following elements, in combination, to wit: a draw-bar having a vertical jaw formed on or fixed to the forward end and mounted beneath a car in such a manner as to be capable of a rotary and also a slight lateral movement, means for rotating the draw-bar to uncouple, and means for normally holding the draw-bar to the limit of its lateral movement toward a mating jaw and at the same time prevent the draw-head from assuming other than a vertical or horizontal position, comprising an angular formation on the draw-bar, and a leaf-spring secured to the car and having its free end normally impinging the said angular formation.

486,905.



2. The combination, in an automatic car-coupling, of a draw-bar, draw-head, and fixed vertical jaw formed complete in one piece and rotatably mounted beneath a car in such a manner as to be capable of a limited lateral movement, yielding pressure devices attached to the rear end of the draw-bar to serve as a buffer, an angular formation on the said draw-bar, a leaf-spring secured to the car and engaging the said angular formation for the purposes stated, a sprocket-wheel fixed to the said draw-bar, a rotatable shaft extended parallel with the draw-bar and secured to the car, a sprocket-wheel fixed thereto in alignment with the aforesaid sprocket-wheel, a sprocket-chain connecting them, a bevel gear-wheel secured to the said shaft, a shaft having a bevel gear-wheel therein in mesh with the aforesaid gear-wheel, and a hand-wheel fixed to the top of the said shaft, all constructed and combined to operate in the manner set forth.

486,906. PERFORATING CANCELING-STAMP. JOHN STEWALL, Chicago, Ill., assignor to the R. F. Cummins Company, same place. Filed Mar. 19, 1892. Serial No. 426,066. (No model.)



Claim.—1. The combination, in a canceling-stamp, with a die-plate, of a plunger having a group of punches loosely suspended therefrom and arranged to perforate a canceling character or characters, a guide for said plunger, and a fixed guide-plate for guiding said punches, said guide-plate for said punches being secured rigidly to said plunger-guide, substantially as specified.

2. The combination, in a canceling-stamp, with a bed-plate and die-plate secured thereto, of a guide for said plunger, a group of punches having heads and arranged to perforate characters, a punch-plate secured to said plunger and having holes in which said punches loosely fit and from which plate said punches are loosely suspended by their heads, the holes in said punch-plate being of larger diameter than the punches, and a guide-plate for said punches, having holes therefor registering with the die-holes in said die-plate, said punch-guide plate being secured to the plunger-guide, substantially as specified.

3. The combination, in a canceling-stamp, with a bed-plate and die-plate secured thereto, of a plunger, a guide for said plunger, a group of punches having heads and arranged to perforate characters, a punch-plate secured to said plunger and having holes in which said punches loosely fit and from which punch-plate said punches are loosely suspended by their heads, and a guide-plate for said punches, having holes therefor registering with the die-holes in said die-plate, and a lever and connecting-link for operating said plunger positively in both directions, substantially as specified.

4. The combination, in a canceling-stamp, with a bed-plate and die-plate secured thereto, of a plunger, a guide for said plunger, a group of punches having heads and arranged to perforate characters, a punch-plate secured to said plunger and having holes in which said punches loosely fit and from which punch-plate said punches are loosely suspended by their heads, a guide-plate for said punches, having holes therefor registering with the die-holes in said die-plate, a lever for operating said plunger, a cap secured to the guide for said plunger and furnished with ears to which said operating-lever is pivoted, and a connecting-link pivoted to said plunger and to the short arm of said lever and having a toggle or knee joint action therewith, substantially as specified.

5. The combination, with bed-plate B, having die-plate C secured thereto and furnished with holes c, of frame-block D, secured to said bed B and furnished with plunger-guide D' and punch-guide G, having holes g, plunger F, having stem F' and slot or recess f, punch-plate F^3, having holes f^3 to receive the punches, of larger diameter than the punches, punches H, having heads h, by which they are loosely suspended from said plate F^3, cap P, secured to said block D and having a hole or bearing P' for the stem of said plunger, and ears P^3, link R, and operating-lever T, substantially as specified.

6. The combination, in a hand perforating-stamp, with a die-plate, of a plunger having a group of punches loosely suspended therefrom and arranged to perforate characters and a fixed guide-plate registering with said die-plate for guiding said punches, said punches being in two or more different sets or series of graduated or different lengths, so that the several sets or series will come into operation successively, and said punches having square ends or cutting-faces, substantially as specified.

7. The combination, with a die-plate, of a plunger having a group of punches loosely suspended therefrom and a fixed guide-plate registering with said die-plate for guiding said punches, said punches being in two or more different sets or series of graduated lengths, so that the several sets or series will come into operation successively, and the punches of the same length being distributed around the center of the plunger, thus causing the plunger to operate squarely, notwithstanding the different lengths of the punches, substantially as specified.

8. The combination, in a perforating-stamp, of a group of punches having heads and arranged to perforate characters, a plunger carrying a punch-plate furnished with holes slightly larger in diameter than the punches and in which the punches fit loosely, said punches being loosely suspended from said plate by their heads, a guide for said punches, and a female die, substantially as specified.

9. The punch-carrying plunger F, having slot or recess f to receive the heads of the punches and provided with removable punch-plate F^3, secured to said plunger and furnished with a series of holes for the punches of larger diameter than the punches, and a group of punches loosely suspended by their heads from said punch-plate, said slot or recess in the plunger being but slightly deeper than the thickness of the punch-heads, so as to operate all the punches simultaneously and at the same time leave the punches loose and free to adjust themselves in position in respect to their guide-plate and the die-plate, in combination with a fixed die-plate and a fixed guide-plate for said punches, substantially as specified.

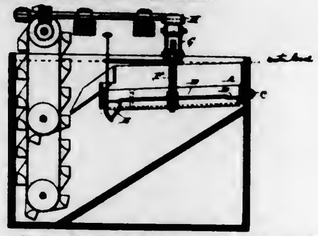
10. The combination, in a perforating-stamp, with a bed-plate and die-plate secured thereto, of a reciprocating plunger, a fixed guide for said plunger, a group of punches having heads and arranged to perforate characters, a punch-plate secured to said plunger and having holes in which said punches loosely fit and from which plate said punches are loosely suspended by their heads, a fixed guide for said punches arranged just above the die-plate, so that the same will operate also as a stripper-plate to strip the paper from the punches as they are withdrawn, an operating-lever, and connecting-link for operating said plunger positively in both directions to perforate the paper and withdraw the punches therefrom, substantially as specified.

11. The combination, with bed-plate B, having die-plate C, furnished with holes e, secured thereto, separate frame-block D, secured to said bed B and furnished with plunger-guide D', and a separate or removable punch-guide plate G, having holes g for the punches, of plunger F, having separate punch-plate F^3, furnished with holes for the punches H, furnished with heads h, separate or removable cap P, secured to said block D, operating-lever T, pivoted to said cap P, and connecting-link R, pivoted to said lever and to said plunger, substantially as specified.

12. The combination, in a hand-operated perforating-stamp, with a die-plate, of a plunger carrying a group of punches, the punches being in two or more sets of slightly-different lengths to cause the same to come into operation successively, an operating-lever T, and connecting-link R, pivoted to the short arm of said lever and to said plunger, the two pivots of said link and the fixed pivot of said lever being combined and arranged, substantially as shown and described, so that said three pivots approach more nearly a straight line, and

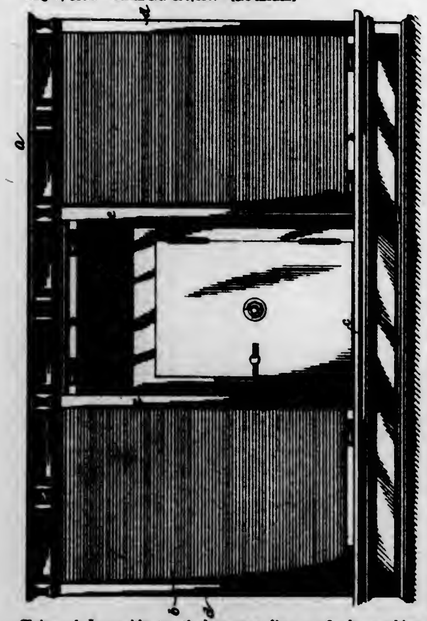
thus increase the power of the lever as the successive sets of punches come into operation, substantially as specified.

486,907. COAL-JIG. CHARLES O. STROH, Freeland, Pa. Filed Apr. 11, 1892. Serial No. 428,726. (No model.)



Claim.—The combination of the tank, the stationary box with annular wall within said tank, the inclined perforated bottom or piston operating inside of said wall and having an annular circumferential depression communicating with a slate-pocket, and means, substantially as described, for reciprocating said piston up and down.

486,908. BURGLAR-ALARM CABINET. ALFRED STROMBERG, Chicago, Ill., assignor of one-half to Marks Simons, same place. Filed July 9, 1892. Serial No. 439,429. (No model.)



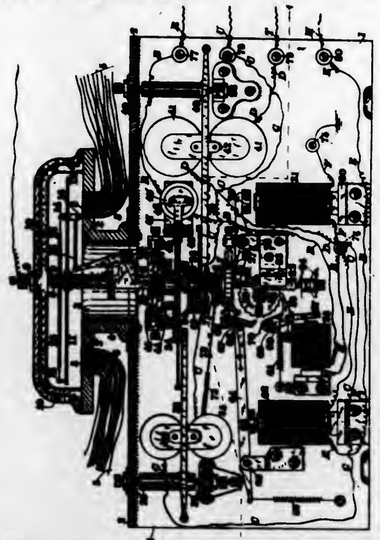
Claim.—1. In a cabinet entirely surrounding a safe, the combination, with the flexible curtain adapted to be raised to give access to the safe-door, of the swinging stanchions *d' d*, provided with channels *d' d'*, which act as guides to said flexible curtain, and a sill *e*, upon which said curtain is adapted to fall, and contact-points on said sill, adapted to make contact with plates connected to the circuits which are carried by said flexible curtain, substantially as and for the purpose specified.

2. In a cabinet surrounding a safe, the combination, with the flexible curtain adapted to be brought down over the face of the safe, of the swinging stanchion *d* and the stanchion *c*, each provided with channels which serve as guides for the said curtain, whereby the said curtain is directed to the sill *e*, contact-points carried upon said curtain and said stanchions and adapted to complete an electric circuit, whereby when said curtain or said stanchions are removed from their normal positions said circuit may be broken to give an alarm, substantially as and for the purpose specified.

3. The combination, with a cabinet carrying an electric circuit, of a flexible curtain carrying an electric circuit and adapted to close an opening in said cabinet, stanchions carrying slots in which said curtain is adapted to slide, and contact-points carried upon said curtain and said stanchions and adapted to complete an electric circuit, whereby when said curtain or said stanchions are removed from their normal positions said circuit may be broken to give an alarm, substantially as described.

4. The combination, with a cabinet carrying an electric circuit, of a flexible curtain carrying an electric circuit and adapted to close an opening in said cabinet, a swinging stanchion and a removable stanchion, said stanchions carrying slots in which said curtain is adapted to slide, and contact-points carried upon said cabinet, curtain, and stanchions, whereby when said curtain or said stanchions are displaced from their normal positions the circuit may be broken to give an alarm, substantially as described.

486,909. AUTOMATIC TELEPHONE OR OTHER ELECTRICAL EXCHANGE. ALMON B. STROWGER, Chicago, Ill., assignor to the Strowger Automatic Telephone Exchange, same place. Filed Feb. 18, 1892. Serial No. 422,162. (No model.)



Claim.—1. In an automatic electrical exchange, the combination, with a series of wires the ends of which are arranged in a horizontal plane, of a switch movably secured relatively thereto, said switch having its contact-head movable vertically, radially, and laterally, whereby it occupies a plane above the ends of the wires when moving and occupies the plane of the ends of the wires when at rest and may be moved from the end of one wire to any other wire without coming in contact with the intermediate wires, substantially as set forth.

2. In an automatic electrical exchange, the combination, with wires the ends of which are arranged in concentric rows in a horizontal plane, of a switch movably secured at the axis of said rows, the contact-point of which switch is movable radially and annularly relatively to the axis of the rows of wires and occupies a plane above the ends of the wires when moving and occupies the plane of the ends of the wires when at rest, substantially as set forth.

3. In an automatic electrical exchange, the combination, with a series of wires, of a switch adapted to be placed in electrical connection with any one of said wires and a pin connected therewith and an adjustable slide provided with an arm for engaging said pin and for limiting the return movement of said switch after said connection has been made and broken, substantially as set forth.

4. In an automatic electrical exchange, the combination, with a series of wires, the ends of which are arranged in concentric rows or circles, of a shaft journaled at the axis of the rows of wires, a switch secured thereto, the contact-point of which is movable radially and annularly relatively to said shaft, a rod movable longitudinally to the axis of the shaft, connected with the contact-point of said switch, and an adjustable stop at one end of the rod for limiting the return movement of the contact-point, substantially as set forth.

5. In an automatic electrical exchange, the combination, with a series of wires, of a switch adapted to be placed in electrical connection with any one of said wires, the contact-point of which switch occupies a different plane when moving from what it does when at rest, and a series of magnets, one of which operates mechanism for moving the contact-point from one plane to the other and the remaining magnets operate mechanism for moving the point in the different planes, all of said magnets having a common ground-wire, the first-mentioned magnet being electrically connected with each of the other magnets and with the ground-wire, whereby the contact-point is always moved from one plane to the other whenever the switch is operated, substantially as set forth.

6. In an automatic electrical exchange, the combination, with a series of wires, the ends of which are arranged in concentric rows or circles, of a switch movably secured at the center of said rows, the contact-point of which switch is movable radially and annularly relatively to the axis of said rows, ratchet-wheels for placing said switch in contact with any one of the ends of said wires, an electrically-operated lever for each wheel, one end of which lever is provided with a pawl, and means for positively disconnecting said pawl from its ratchet-wheel when at rest, substantially as set forth.

7. In an automatic electrical exchange, the combination, with a series of wires, the ends of which are arranged in concentric rows or circles, of a switch movably secured at the center of said rows, the contact-point of which switch is movable radially and annularly relatively to the axis of said rows, ratchet-wheels for placing said switch in contact with any one of the ends of said wires, an electrically-operated lever for each wheel, one end of which lever is provided with a pawl, and adjustable mechanism for releasing said pawl from its ratchet-wheel when at rest, substantially as set forth.

8. In an automatic electrical exchange, the combination, with a series of wires, the ends of which are arranged in concentric rows or circles, of a switch movably secured at the center of said rows, the contact-point of which switch is movable radially and annularly relatively to the axis of said rows, ratchet-wheels for placing said switch in contact with the ends of any one of said wires, an electrically-operated lever for each wheel, one end of which lever is provided with a pawl, and means for limiting the forward movement of said pawl and for forcing it toward the ratchet-wheel, whereby it acts as a stop for the ratchet-wheel at the end of the thrust or forward movement of the pawl, substantially as set forth.

9. In an automatic electrical exchange, the combination, with a series of wires, the ends of which are arranged in concentric rows or circles, of a switch movably secured at the center of said rows, the contact-point of which switch is movable radially and annularly relatively to the axis of said rows, ratchet-wheels for placing said switch in contact with the ends of any one of said wires, an electrically-operated lever for each wheel, one end of which lever is provided with a pawl, and adjustable mechanism for limiting the forward movement of said pawl, substantially as set forth.

10. In an automatic electrical exchange, the combination, with a table having a series of wires radially secured thereto, of a zero-plate insulatingly secured to said table, said plate being substantially as long as the distance between the outer and inner rows of wire-heads and having its upper surface flush with the top of the table, and a switch the contact-point of which rests upon and is movable toward and from said plate, substantially as set forth.

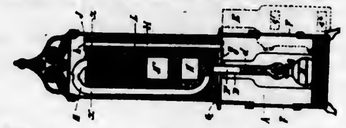
11. In an automatic electrical exchange, the combination, with a table having a series of wires secured thereto, of a switch the contact-point of which is adapted to be placed in electrical connection with any one of said wires, said table being concentrically adjustable relatively to the switch, substantially as set forth.

12. In an automatic electrical exchange, the combination of a series of wires the ends of which are arranged in concentric rows or circles, a shaft journaled at the center of said rows, a switch secured to said shaft, means for rotating the shaft in one direction, a fusee on the said shaft for rotating the shaft in the opposite direction, and a spring-actuated chain secured to and adapted to run on and off of said fusee substantially in a line with the angle of the pitch of the spiral of said fusee, substantially as set forth.

13. In an automatic electrical exchange, the combination of a series of wires arranged in a horizontal plane and a contact-head movable relatively thereto, a longitudinally-movable spindle or shaft for operating said head, a step for the reception of the lower end of the spindle, provided with projections upon the bottom, a bracket or lug provided with perforations for the reception of the step, an armature-lever, one end of which is bifurcated and engages with the ends of the projections upon the step below the bracket, and an electro-magnet for operating the lever, substantially as set forth.

14. In an automatic electrical exchange, the combination of a series of wire ends arranged concentrically in a horizontal plane, a vertically-movable shaft or spindle at the center of said ends, spring-arms secured to the upper end of the spindle, a contact-head movably secured to one of said arms, a spring secured to the head at one end and to the outer end of the other arm at the opposite end, and means for rotating said spindle upon its axis and moving the head upon said arm, substantially as set forth.

486,910. STOVE. JOSEPH A. SUTTMAN, Hirslanden, near Zurich, Switzerland. Filed June 28, 1892. Serial No. 437,798. (No model.) Patented in Switzerland Oct. 22, 1891, No. 4,376; in England Apr. 13, 1892, No. 7,080, and in Belgium Apr. 20, 1892, No. 99,818.



Claim.—1. A stove or heater provided with a combustion-chamber and a heating-chamber arranged above it, in combination with a lamp or its equivalent arranged in the former chamber and a circulation-pipe having its upper end arranged to receive gases from the heating-chamber in the upper part of the stove instead and its lower end arranged to discharge the same downward into the flame of the lamp to be consumed, substantially as set forth.

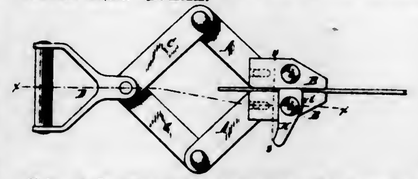
2. In a stove or heater, a combustion-chamber and a heating-chamber arranged above the same, in combination with an open-work casing L, arranged in the said heating-chamber, a lamp or its equivalent arranged in the said combustion-chamber, and a bent circulation-tube which is arranged to receive hot air or gases from the upper part of the heating-chamber and discharge the same down into the flame of the said lamp, substantially as set forth.

3. In combination with the combustion-chamber and the heating-chamber, the lamp arranged in the former and the open-work casing, circulation-pipe, and hot-air pipes H, arranged in the latter chamber, all substantially as set forth.

4. In combination with the combustion-chamber and the heating-chamber arranged above it, the lamp in the former chamber, the bent circulation-pipe arranged in the latter chamber and discharging downward into the flame of the lamp, and the tube D, which fits on the lamp-chimney and extends up within the heating-chamber into proximity to the said circulation-pipe, substantially as set forth.

5. The partition-plate G and upper plate J, forming the combustion-chamber and heating-chamber, in combination with the tube or tubes H, secured at the upper and lower ends to the said plates by cylindrical sockets A, the open-work casing L, inclosing a space in the middle of the said heating-chamber, and the lamp and circulation-tube, substantially as set forth.

486,911. LINEMAN'S WIRE-GRIP. CLARK A. SVENSON, Buffalo, N. Y., assignor to Arlington D. Isham, same place. Filed Feb 8, 1892. Serial No. 420,650. (No model.)



Claim.—1. In a wire-grip, the combination, with an upper lever, of a lower lever pivoted upon the upper lever out of plane thereof and provided on opposite sides of its pivot with bosses or raised portions, a solid gripping-jaw pivoted upon the upper lever and supported with its rear portion upon the rear boss of the lower lever, a similar jaw pivoted upon the front boss of the lower lever and resting with its rear portion upon the upper lever, pins or projections arranged on said levers and engaging in grooves or ways formed in the jaws behind their pivots, links pivoted at their front ends to the rear ends of the levers, and a draft-loop attached to the rear ends of said links, substantially as set forth.

2. The combination, with the crossed levers and the pivoted jaws, of means whereby the jaws are caused to move parallel with each other, a retaining-plate pivoted to one of the jaws and adapted to swing across the space between the jaws for confining the wire between the jaws, substantially as set forth.

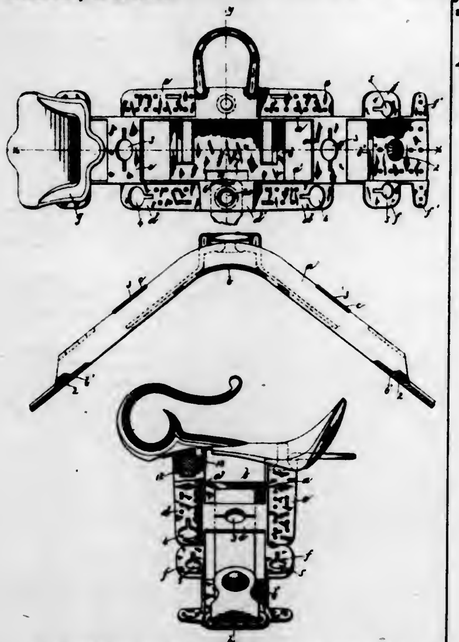
3. The combination, with the crossed levers and the pivoted jaws, of means whereby the jaws are caused to move parallel with each other, a retaining-plate pivoted to one of the jaws and adapted to swing across the space between the jaws for confining the wire between the jaws, and a stop whereby the movement of the retaining-plate is limited, substantially as set forth.

486,912. HARNESS-SADDLE. ORRIN TABER, Nashua, N. H. Filed Aug. 13, 1892. Serial No. 443,062. (No model.)

Claim.—1. A saddle-tree having the continuous sides *c d'*, bridges

connecting the lower edges of said sides, bridges *c c*, having terret-receiving holes, and flanges *d d*, also having terret-receiving holes, and the flanges *f f* near the ends of said tree having holes 5, substantially as described.

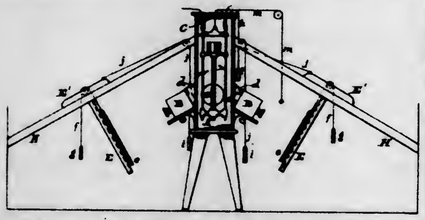
2. A saddle-tree having the continuous sides *a a'*, bridges *b b' b'*, connecting the lower edges of said sides, bridges *c c*, having terret-receiving holes connecting the upper edges of said sides *a a'*, the perforated flanges *d d* and *e e*, and the flanges *f f*, having holes 5 projecting outwardly from opposite sides of the tree near the ends thereof, substantially as described.



3. A saddle-tree having continuous sides *a a'*, bridges *b b'*, connecting the lower edges of said sides, said bridges *b' b'* having holes 2, and the bridges *e e*, having holes 3, and flanges *d*, having terret-receiving holes, substantially as described.

4. The saddle-tree having the bridge *b*, with an opening 7, and the projection *d'*, having a hole 20 and recess 6 above the opening 7, combined with the checkrein-hook having the curved rib 9 and the upwardly-extended projection 10, substantially as described.

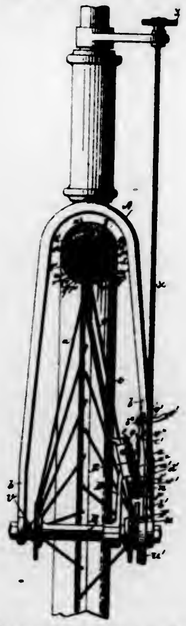
486,913. APPARATUS FOR PHOTOGRAPHIC PRINTING. HARRY B. TALLMAN, Cleveland, Ohio. Filed Dec. 1, 1890. Serial No. 373,267. (No model.)



Claim.—1. The combination, in a photo-printing apparatus, of an electric-arc lamp adjustably supported in a light-proof case having openings therein, a series of cameras supported about said case with their optical axes inclined to the axes of the electrodes of said lamp and focally adjustable with relation thereto, each of said cameras being connected by a light-proof connection to one of the openings of said case, and a series of paper-holders, one opposite each of said cameras, supported upon guiding-ways in the optical axis of the camera and adjustable focally therein and transversely thereto, substantially as described.

2. The combination, in a photo-printing apparatus, of an electric-arc lamp adjustable vertically, a light-proof case inclosing said lamp and having a series of openings in its sides, a series of cameras secured to said case with their optical axes inclined to the axial line of the electrodes of said lamp, each of said cameras being connected by a light-proof connection to one of the openings in said case and being adjustable in its optical axis, guiding-ways arranged opposite each of said cameras and carrying a frame traversing in the optical axis of the camera, and paper-holders supported upon such frames and adjustable transversely to the optical axis of the camera, all combined and operating substantially as described.

486,914. VELOCIPEDE. PARDON W. TILLINGHAST, Providence, R. I. Filed May 11, 1891. Serial No. 392,393. (No model.)



Claim.—1. The combination, with a hollow pneumatic tire and an air-pump connected with the tire and revolving with the wheel, of a cam attached to the supporting-frame for the wheel for operating the piston of the pump, substantially as described.

2. The combination, with a hollow pneumatic tire and an air-pump connected with the tire and revolving with the wheel, of an adjustable cam attached to the supporting-frame for the wheel and adapted to change the throw of the piston of the pump, substantially as described.

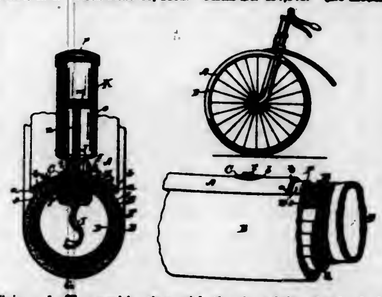
3. The combination, with a hollow pneumatic tire and an air-pump connected with the tire and revolving with the wheel, of the cam made in two sections, the one attached to the supporting-frame for the wheel and the other made movable at the will of the rider to change the throw of the piston, substantially as described.

4. The combination, with the hollow pneumatic tire, of an air-pump connected with the tire and revolving with the wheel, a cam for operating the piston in one direction, a spring for operating the piston in the opposite direction, a catch for holding the piston of the pump in a position of disengagement from the cam, and means for releasing the piston from the catch at the will of the rider, substantially as described.

5. The combination, with a hollow pneumatic tire, of an air-pump connected with the tire and revolving with the wheel and provided with a relief-valve and with a piston having an opening which is in communication with the chamber of the hollow tire and adapted to register with the passage to the relief-valve upon the farthest disengagement of the piston from its operating-cam, a cam for operating the piston in one direction, a spring for operating the piston in the opposite direction, a catch for holding the piston in its position of disengagement from the cam, and means for releasing the piston from the catch at the will of the rider, substantially as described.

6. An inflater for pneumatic tires, having an air-compressing cylinder carried by the wheel-hub, the compression in said cylinder being effected by the revolution of the wheel.

486,915. PNEUMATIC TIRE. PARDON W. TILLINGHAST, Providence, R. I. Filed June 20, 1892. Serial No. 437,375. (No model.)

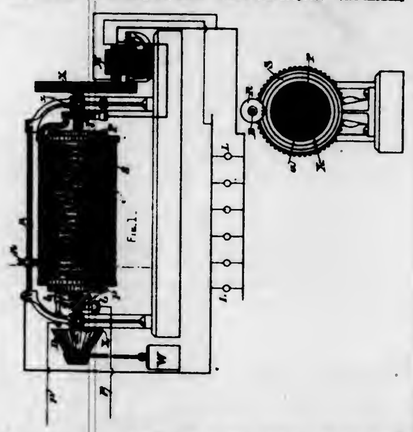


Claim.—1. The combination, with the rim of the wheel, of a hollow inflatable tire having its attaching portion practically of the same width as that of the rim and having the edges of the said attaching portion made thicker than the adjacent side walls of the tire, whereby the chafing of the tire at the edge of the rim will be prevented, substantially as described.

2. The combination, with the rim of the wheel, of a hollow inflatable tire having the outer surface of its side walls adjacent to the attaching portion extending outward at an angle with the attaching surface of the rim, whereby the chafing of the tire at the edge of the rim will be prevented, substantially as described.

3. The combination, with the rim of the wheel, provided with an opening for the valve-tube, and a pneumatic tire having an internally-screw-threaded attaching tube of greater exterior diameter than the said opening in the tire, and a valve-tube adapted to pass through the said opening in the rim and screw into the attaching tube, of a pump for inflating the tire, said pump having a flange at its attaching end of larger diameter than the opening in the rim, whereby when the pump is screwed to the valve-tube the said pump will be firmly clamped to the rim, substantially as described.

486,916. ELECTRICAL TRANSFORMER. ELIHU THOMSON, Swampscott, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed May 20, 1892. Serial No. 434,075. (No model.)



Claim.—1. A transformer for electric circuits, provided with means for varying the length of one of its windings in a continuous unbroken manner, substantially as set forth.

2. A transformer for electric circuits, having means for automatically varying the effective inductive length of one of its windings in a continuous unbroken manner simultaneously with the change in load, substantially as described.

3. A transformer for electric circuits, having one of its windings bare, and a traveling contact maintaining a continuous unbroken connection with said winding, substantially as described.

4. A transformer for electric circuits, having one of its windings bare, and a traveling contact adapted to roll in contact with said winding, substantially as described.

5. A transformer for electric circuits, arranged to rotate on a longitudinal axis and having one of its windings bare, and an axially-movable roller bearing upon said winding, substantially as set forth.

6. The combination, with a rotatable transformer having one of its windings bare, of a traveling contact resting continuously upon said winding and means for rotating the transformer, substantially as set forth.

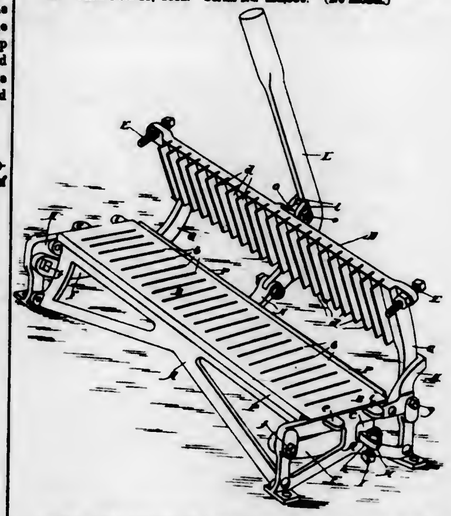
7. The combination, with a transformer mounted on a longitudinal shaft and having one of its windings bare, of a traveling contact bearing upon said winding and a motor controlled by the load upon the secondary circuit and arranged to rotate the shaft, substantially as described.

8. The combination, with a transformer mounted on a longitudinal shaft, of a traveling contact maintaining a continuous unbroken connection with one of the windings thereof, a motor responding to variations in the load upon the secondary circuit, arranged to rotate the shaft in one direction, and a counterbalance tending to rotate the shaft in the opposite direction, substantially as set forth.

9. The combination, with a transformer having its outer coil bare and mounted upon a longitudinal shaft, of a traveling contact maintaining a continuous unbroken contact with said coil, a motor for rotating the shaft in one direction, and a counterbalance arranged to exert an increasing torsional force upon the shaft in the opposite direction, substantially as set forth.

10. The combination, with the transformer mounted upon a longitudinal shaft X and having its outer coil S bare, of a roller R, arranged to slide axially upon the rod B and to maintain a continuous contact with the coil S, a motor geared to the shaft, and a conical drum D, secured to the shaft and having a cord and weight attached thereto, substantially as described.

486,917. BUTTERCUP-CUTTER. NELSON A. WALKER, Chicago, Ill. Filed Feb. 26, 1892. Serial No. 422,539. (No model.)



Claim.—In a candy-cutter, the frame A, having lips or ribs P P, lugs *e e* and *i i*, and check or stop K, in combination with the upper jaw D, with cutters or teeth *d*, projection O, arms G G, and adjustable screws E E, the lower jaw C, having cutters or teeth *c*, arm or projection M, the arms F F, lugs H, with adjustable screw I, the slotted bed B, the link N, and the handle L, having lug *l*, substantially as described.

486,918. GAME-COUNTER. WILLIAM C. WEIS and FRANK H. WEIS, Toledo, Ohio, assignors of two-thirds to William H. Birkenbauer and Henry W. Keelker, same place. Filed Dec. 4, 1891. Serial No. 414,027. (No model.)

Claim.—1. In a game-counter, a casing, ratchet-wheels journaled therein, each carrying a dial, and bell-crank levers journaled in the casing, one arm of each resting against an operating-lever, the other arms carrying a spring-pallet, whereby when the operating-arm is moved the ratchet-wheel will revolve.

2. In a game-counter, the combination, with a casing, of the

ratchet-wheels therein, a central lever pivoted within the casing, and bell-crank levers arranged within the casing, adapted to bear at one end upon said central lever and contact at their other ends with the ratchet-wheels.

3. In a game-counter, the combination, with a casing, of the ratchet-wheels carrying dials, the central lever pivoted within the casing, the bell-crank levers carrying the operating-pawls, the locking-pawls, and the spring for holding the bell-crank levers in contact with the central lever.

486,919. HOPPER FOR CIGAR-MACHINES. MARION A. WISNER, Columbus, Ohio, assignor of one-half to Jerome C. Briggs, same place. Filed July 23, 1891. Serial No. 400,482. (No model.)

Claim.—A partition for a cigar-machine hopper, having at its upper corners clamps which engage the upper edges of the hopper and an adjustable device at its lower end, substantially as set forth.

486,920. DRIVE-CHAIN. ADOLF WÖHNER, Buda-Pesth, Austria-Hungary, assignor to Siemens & Halske, Berlin, Germany. Filed June 20, 1892. Serial No. 437,246. (No model.)

Claim.—1. The combination, in a drive-chain, of links having cross-bars and link-connecting parts arranged at each side, said links being provided with distinct lubricating-chambers at each side adjacent to the engagement of the link-connecting parts, substantially as described.

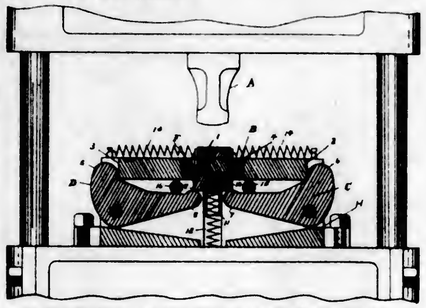
2. The combination, in a drive-chain, of links having cross-bars and link-connecting parts arranged at each side, said links being provided with distinct lubricating-chambers at each side adjacent to the engagement of the link-connecting parts and said cross-bars being provided with oil-admission openings and ducts or passages to convey the oil to the link-connecting parts of the chain, substantially as described.

3. The combination, in a drive-chain, of links comprising side plates provided with tapering perforations and tubular cross-bars seated and expanded in said perforations and provided with an oil-admission opening, together with bolts passing through the cross-bars and engaging link-connecting plates, the expanded portions of the cross-bars presenting oil-collecting chambers, substantially as described.

486,921. HEEL-PRESS. WILLIAM J. YOUNG, Lynn, Mass. Filed Feb. 16, 1892. Serial No. 421,562. (No model.)

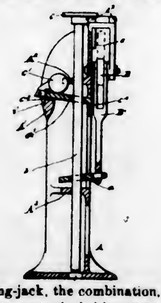
Claim.—1. A heel-press consisting of a yielding table, a reciprocating plunger, a horizontally-movable divided mold, and pivoted levers, the inner ends of which support said table and the outer ends actuate said mold.

2. In a heel-press, the combination of the following elements: a divided mold B, a reciprocating plunger A and yielding table F, working therein, and the bent levers C and D, operated by the downward pressure of the plunger upon the table F, acting to force inward the parts 2 and 3 of the divided mold B, all substantially as set forth, and for the purposes specified.



3. In a heel-press, the combination of the following elements: a divided mold B, a reciprocating plunger A and yielding table F, working therein, and the bent levers C and D, the upper ends 6 and 5 of which are cam-shaped, and the lower ends 7 and 8 of which extend beneath the table F, the levers C and D acting to force inward the parts 2 and 3 of the divided mold when the table F is forced downward, all substantially as set forth, and for the purposes specified.

486,922. LIFTING-JACK. ELMER E ALEXR, Springfield, Ohio. Filed Dec. 1, 1891. Serial No. 413,750. (No model.)



Claim.—1. In a lifting-jack, the combination, with an operating-handle adapted to operate a vertical-rising stem, of a pivoted stop adapted to normally engage and limit the movement of said handle and a hand projection on said stop for moving the said stop out of engagement with the said handle, substantially as specified.

2. In a lifting-jack, the combination, with an operating-handle and a vertical-rising stem, of a perforated piece on said stem adapted to be operated by said handle, a perforated piece adapted to act as a detent for said bar, a pivoted stop normally engaging and limiting the movement of said handle, and a hand projection on said stop for moving the said stop out of engagement with the said handle, substantially as specified.

3. In a lifting-jack, the combination, with a frame, a bar slidingly mounted therein, and a suitable operating-handle adapted to operate the said bar, of a perforated piece arranged in said frame and adapted in its normal position to act as a detent for said bar and a weighted arm pivoted to said perforated piece and adapted when turned to an unusual position to raise said detent and hold it out of engagement with said bar, substantially as specified.

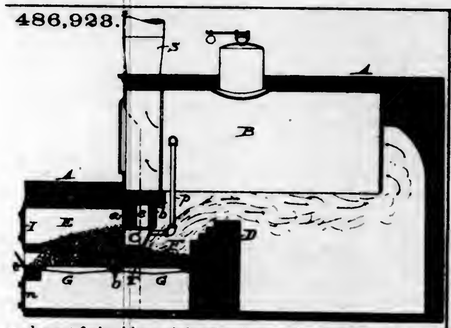
486,923. FURNACE FOR STEAM-BOILERS. FRANK BARCLAY, Beatrice, Nebr. Filed July 5, 1892. Serial No. 438,967. (No model.)

Claim.—1. The combination, in a furnace, of a front coking-chamber and a rear combustion-chamber with a transverse air-chamber supported by a water-box, the rear wall of said air-chamber being provided with a series of perforations for delivering heated air to the combustion-chamber, substantially as shown and described.

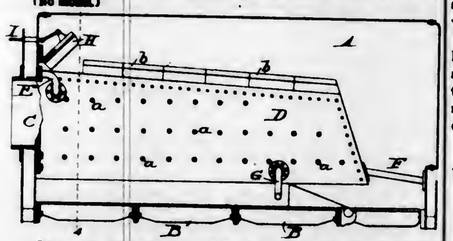
2. The combination, in a furnace, of a front coking-chamber, a rear combustion-chamber, and a transverse water-box with a transverse air-chamber over the same, said air-chamber having its front wall solid and its rear wall provided with a series of perforations, all arranged to operate substantially as and for the purpose set forth.

3. In a furnace, the combination of a front coking-chamber and a rear combustion-chamber, the two being separated by a pendent partition having an opening underneath it, through which the gases produced in the coking-chamber are compelled to pass through the incandescent fuel, with an air-heating duct or chamber located in said pendent partition and having its rear wall provided with a series of perforations through which the heated air is delivered in a large number of small jets, substantially as and for the purpose set forth.

486,923.



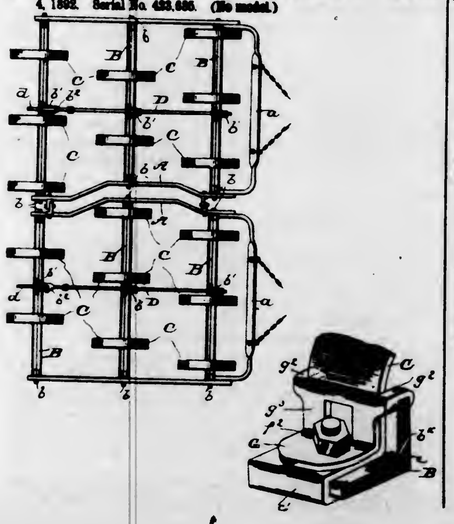
486,924. LOCOMOTIVE OR MARINE BOILER FURNACE. FRANK BARCLAY, Beatrice, Nebr. Filed Aug. 23, 1892. Serial No. 443,868. (No model.)



Claim.—1. As an improvement in locomotive or marine boiler furnaces, a magazine or retort composed in part of hollow walls and in part of fire-brick, said magazine or retort being set or arranged within the fire-box and above the grate, substantially as shown and described.

2. In a locomotive or marine boiler furnace, the combination, with the fire-box, of the magazine or retort composed in part of hollow walls connected by tubes with the boiler and in part of fire-brick or equivalent heat-retaining material and provided with a direct-draft opening and a door or damper for closing the same at will, substantially as and for the purpose set forth.

486,925. HARROW. PAUL BLAKER, Newtown, Pa. Filed Mar. 4, 1892. Serial No. 423,686. (No model.)



Claim.—1. In a harrow, the combination, with an angle tooth-bar, of a tooth having a portion adapted to fit the re-entrant angle of the bar and engage an edge and an outer side of said bar and securing means, substantially as described.

2. In a harrow, the combination, with an angle tooth-bar, of a tooth having a portion adapted to fit the re-entrant angle of the bar and having a portion engaging an edge and outer side of said bar and a securing-bolt having a polygonal head for engaging a recess in the portion of said tooth engaging the outer side of said bar, substantially as described.

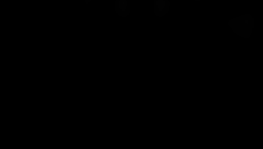
3. In a harrow, the combination, with an angle tooth-bar, of a tooth having a portion adapted to fit the re-entrant angle of the tooth-bar and having a portion engaging an edge and outer side of said bar and a securing-bolt having a polygonal head to engage a polygonal recess in the portion of said tooth engaging the outer side of said bar, said bolt having a polygonal body for engaging a polygonal recess in the bar, substantially as described.

4. In a harrow, the combination, with an angle tooth-bar, of a tooth having a portion adapted to fit the re-entrant angle of the bar and a clip adapted to engage the tooth on the side opposite the bar-engaging portion of the tooth, said clip having bar-engaging portions extending on each side of the tooth, substantially as described.

5. In a harrow, the combination, with an angle tooth-bar, of a tooth having a portion adapted to fit the re-entrant angle of the bar and a clip adapted to engage the tooth on the side opposite the bar-engaging portion of the tooth, said clip having two arms engaging the said bar and having portions engaging the sides of the tooth to prevent lateral movement of the same, substantially as described.

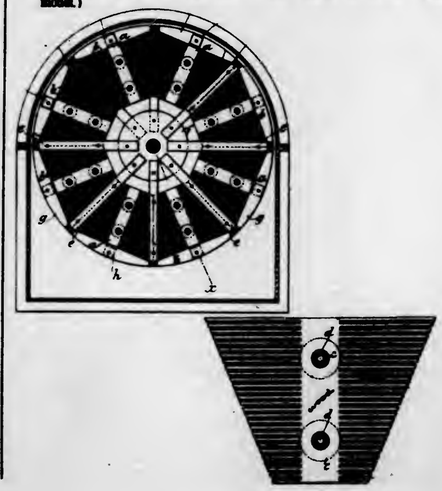
6. In a harrow, the combination, with an angle-bar, of a tooth having a portion adapted to fit the re-entrant angle of the bar, a clip adapted to engage the tooth and having arms entering recessed portions of the bar and engaging the sides of said tooth, and securing means for holding said bar, tooth, and clip together, substantially as described.

486,926. COIL FOR ELECTRICAL APPARATUS. HENRY C. BOOK, Somerville, Mass. Filed Dec 5, 1884. Serial No 149,559. (No model.)



Claim.—The improved coil above described, made up of a series of spiral coils, each spiral separated from the spirals under and over it by a cylinder of thin insulating-sheet material coated with a plastic insulating material and each convolution of each spiral separated from its neighbors by the plastic insulating-coating of the insulating-sheet material, all substantially as and for the purpose set forth.

486,927. WASHER OR SCRUBBER FOR GAS. JOSIAH C. CHANDLER, London, England. Filed Sept. 12, 1891. Serial No. 405,531. (No model.)



Claim.—1. A revolvable washer or scrubber for gas, consisting of a series of boards, each made of a single piece of wood having a series of fingers *b'*, extending in opposite directions from the center or body of the wood, as shown and described.

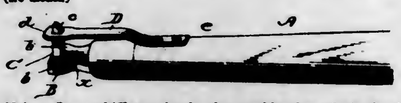
2. A revolvable washer or scrubber for gas, consisting of a series of bundles of boards arranged around a common center, as set forth, each board being made of a single piece of wood having a solid center and a series of fingers *b'*, extending from the opposite edges to such solid portion.

486,928. WIRE-REEL. WILLIAM DULIN, Avoca, Iowa, assignor of one-half to H. B. Dulin, same place. Filed Mar. 5, 1892. Serial No. 423,873. (No model.)

Claim.—1. The combination of an axle and transporting-wheels; two independent hollow stud-axles mounted on said axle, one near each wheel, a frame having its forwardly-extending arms secured loosely to the respective stud-axles, a ratchet-wheel secured rigidly on the inner end of each of the stud-axles and carrying means to engage the reel, levers loosely mounted on the stud-axles and carrying pawls engaging the ratchet-wheels, and operating-rods connected to these levers and extending rearwardly, substantially as described.

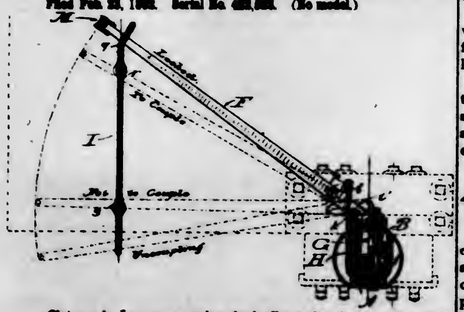
2. A machine for reeling wire, consisting of a frame, hollow stud-axles loosely mounted in said frame, ratchet-wheels secured to the inner ends of said axles, inwardly-projecting pins on the inner faces of said wheels, levers loosely mounted on the stud-axles between the ratchet-wheels and the side bars of the supporting-frame, pawls carried by said levers and engaging the ratchet-wheels, operating-rods secured to the levers and extending rearwardly, a bail pivoted to the frame, and a weight secured to said bail, in combination with a reel and transporting-wheels, substantially as described.

486,929. WHIFFLETREE-HOOK. CHARLES H. EVANS and FRED T. DUNLAP, Manchester, N. H. Filed Aug. 22, 1892. Serial No. 443,750. (No model.)



Claim.—In a whiffletree-hook, the combination of the hook-head B, having the neck *x* and the projections *b b*, the guard C, having one end pivoted between the projections of the hook-head and the other end *c* beveled, said head and guard being adapted to pass through the aperture in the trace, the spring-catch D, having the aperture *d'* for engaging with the free end of the guard, and means for attaching the spring-catch and hook-head to a whiffletree, substantially as described.

486,930. CAR-COUPLING. CHARLES J. CHISHOLM, Mobile, Ala. Filed Feb 20, 1892. Serial No. 422,868. (No model.)

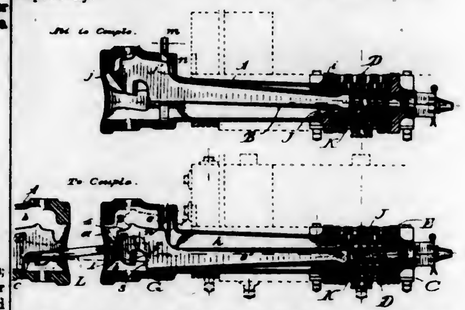


Claim.—1. In a car-coupler, the buffer A, forming one piece with the front follower or lugs *i*, which latter are used in combination with the draft or buffer springs D and are supported in the follower-guide C.

2. In a car-coupler, the buffer A, having the side lugs *f*, forming a continuation of the top lug or bracket *g*.

3. In a car-coupler, the buffing member A, having the vertical recess *b b*, intersecting the horizontal recess *c* and extending above and below the top and bottom surfaces *c*, respectively, forming the walls *b*, in combination with the locking-rib *j*.

4. In a car-coupler, the buffing member A, having the downwardly-extending rib *j* and shoulder *j'*, in combination with the cushioned tension member B with its corresponding shoulders 4, 5, and 7, respectively.



5. In a car-coupler, the shoulder *j'* of the buffing member, in combination with the shoulder 7 of the tension member.

6. In a car-coupler, the longitudinally-independent tension member B, in combination with the longitudinal cushion or coupling spring K.

7. In a car-coupler, the longitudinally independent and cushioned tension member B, in combination with the independent buffing member A.

8. In a car-coupler, the longitudinally-cushioned tension member B with its compression locking-surface 6, in combination with the surface or shoulder of a locking coupling or uncoupling device.

9. In a car-coupler, the longitudinally-independent longitudinally-cushioned tension member B, mounted as shown and described, in combination with the buffer A, mounted substantially as shown on accompanying drawings and described in this specification.

10. In a car-coupler, the combination of the independent buffer A and cushioned tension member B, in combination with the locking coupling or uncoupling device consisting of the yoke G, the lever F, the fulcrum H, the bracket I, and the stop M.

11. In a car-coupler locking, coupling, or uncoupling device, the lever F, having its fulcrum-seat *k*, heel *l*, and safety-pin *l'*, and prong *l*, in combination with the spring-fulcrum H, having its slot *o* and shoulder *p*.

12. In a car-coupler locking, coupling, or uncoupling device, the lever F with its shoulder *l*, in combination with the yoke G with its locking-shoulder *n*.

13. In a car-coupler locking, coupling, or uncoupling device, the bracket I with its rests *q r s* for the purpose explained, in combination with the lever F and fulcrum-spring H.

14. In a car-coupler locking, coupling, or uncoupling device, the stop M, in combination with the lever F and fulcrum-spring H.

15. In a car-coupler, the case J, in combination with the buffer-spring or draft-spring D, the back follower E, the tension member B, and the compression member A, all arranged substantially as shown on accompanying drawings and described in this specification.

16. In a car-coupler, the buffing member A, having the downwardly-extending locking-rib *j*, in combination with the locking-surface 4 and safety-stop surface 5 of the longitudinally-independent and longitudinally-cushioned tension member B.

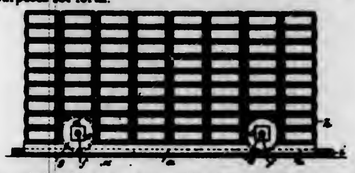
17. In a car-coupler, the longitudinally-independent and longitudinally-cushioned tension member B and the compression surface or shoulder 3, in combination with the longitudinal cushion or coupling spring K, all arranged as shown on accompanying drawings and operating as described in this specification.

486,931. DRIER-CAR FOR BRICKS. NATHAN HARPER, Newark, N. J. Filed July 21, 1892. Serial No. 440,778. (No model.)

Claim.—1. In a brick-drier car, a longitudinal supporting-frame constructed and placed on the outer side of the wheels of said car and adapted to receive and sustain brick-carrying pallets below the level of the top of and beyond said wheels, substantially as and for the purpose set forth.

2. In a brick-drier car, a longitudinal supporting-frame constructed and placed on the outer side of the wheels of said car and

adapted to receive and sustain brick-carrying pallets below the level of the axles and extending beyond said wheels, substantially as and for the purposes set forth.



3. In a brick-drier car, the combination, with the wheels, of a longitudinal supporting-frame constructed and placed on the outer side of said wheels and having its top arranged at a lower level than the top of said wheels, said frame being adapted to receive and sustain brick-carrying pallets below the level of the top of said wheels, substantially as and for the purposes set forth.

4. In a brick-drier car, the combination, with the wheels, of a longitudinal supporting-frame constructed and placed on the outer side of said wheels and having its top arranged at a lower level than the axles of said wheels, said frame being adapted to receive and sustain brick-carrying pallets below the level of the axles of said wheels, substantially as and for the purposes set forth.

5. In a brick-drier car, the combination, with the wheels, of a frame with its top arranged at a lower level than the top of said wheels, and projections extending upwardly from said frame to or above the top of said wheels, said projections and said frame being adapted to receive and sustain brick-carrying pallets on their different respective levels, substantially as described.

6. In a brick-drier car, the combination, with the wheels, of a frame with its top arranged at a lower level than the axles of said wheels, and projections extending upwardly from said frame to receive or sustain the said axles carrying said wheels, said projections and said frame being adapted to receive and sustain brick-carrying pallets on their different respective levels, substantially as described.

486,932. TIRE SETTER AND COOLER. ALFRED J. LARSEN, Waverly, Wash. Filed Mar. 16, 1892. Serial No. 425,126. (No model.)

Claim.—In a tire setter and cooler, the combination of a water box or receptacle having inclines on opposite sides thereof nearer to one end than to the other and formed with level or flap top portions and rear inclined ends, a perforated platform of less length than the said box or receptacle and mounted on the said inclines, said platform being provided with rollers and with a central bolt and clamp, and a rock-shaft connected to said platform for operating the same, substantially as described.

486,933. CANNON-PINION. JOHN B. JOHNS, Macon, Ga. Filed Apr. 12, 1892. Serial No. 428,806. (No model.)

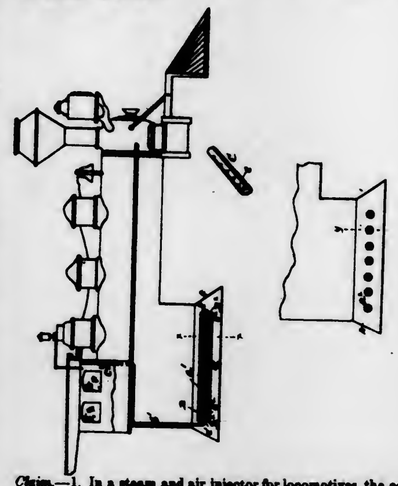
Claim.—1. A means for fastening a gear pinion or wheel to a shaft or arbor, consisting in the combination of a pinion in one piece having a countersunk axial opening and a divided elastic friction-tube which is expanded in said axial opening and holds itself in place on the arbor or shaft and the gear-pinion by tight frictional contact between the opposing faces, substantially as described.

2. A means for fastening a gear pinion or wheel to a shaft or arbor, consisting in the combination of a gear-pinion having its axial opening provided with flared or beveled walls and an elastic divided friction-tube provided at one end with an undercut head which conforms to and is expanded in said axial opening of the gear-pinion by the arbor or shaft on which said friction-tube is fitted and which is tightly hugs solely by frictional contact, substantially as described.

3. In a fastening for the cannon-pinions of watches and time-keepers, the combination, with the arbor, of the pinion having an axial polygonal opening provided with the flared or beveled walls and a friction-tube which is divided or split from one end nearly its entire length and having a polygonal protuberance or head at its split end, said protuberance or head being undercut or beveled and expanded in the axial opening of the pinion by the shaft or arbor on which the tube is fitted and which it tightly hugs by frictional contact, substantially as described.

4. The arbor having the externally-cut-out portion about midway of its length, in combination with a cannon-pinion having a split tube pressed and tempered so as to sink into the cut-out portion of the arbor, substantially as specified.

486,934. STEAM AND AIR INJECTOR FOR LOCOMOTIVES. FREDERICK LEADBEATER, Detroit, Mich. Filed Feb. 26, 1892. Serial No. 422,949. (No model.)



Claim.—1. In a steam and air injector for locomotives, the combination, with one of the walls of the ash-pit of the locomotive having one or more orifices therethrough, of a steam-pipe located adjacent to the orifices to deliver steam therethrough to the ash-pit and carry an air-supply through said orifices to the ash-pit, said steam-pipe set outward and spaced from the wall of the ash-pit and made adjustable to and from said wall, substantially as described.

2. In a steam and air injector for locomotives, the combination, with the wall of the ash-pit of the locomotive having an inlet-passage therein, of a box shaped to correspond to said orifice, brackets located at the ends of the box, a steam-pipe engaged with said brackets, communicating through the box into the ash-pit and with the steam-space of the boiler, and a controlling-valve located in said steam-pipe in proximity to the cab of the locomotive, said steam-pipe extending longitudinally of the box and spaced from its outer edge, the extremities of the pipe adjustable in said brackets nearer to and farther from the wall of the ash-pit, substantially as described.

486,935. BICYCLE-BRAKE. WILLIAM T. LEWIS, Peoria, Ill. Filed Apr. 14, 1892. Serial No. 429,114. (No model.)

Claim.—1. In a brake for bicycles, a yoke D, having an elongated slot H formed in either extremity thereof and parallel to the edges thereof, for the purposes herein set forth and described.

2. In a brake for bicycles, a semicircular or U-shaped yoke having an elongated slot cut in the inner side of each of the extremities thereof, for the purposes set forth and described, said yoke being mounted on the brake-rod of a velocipede and provided with a suitable braking device, substantially as and for the purposes herein set forth and described.

486,936. PIPE-COUPLING. JOSEPH LESTER, Chicago, Ill. Filed Dec. 21, 1891. Serial No. 416,764. (No model.)

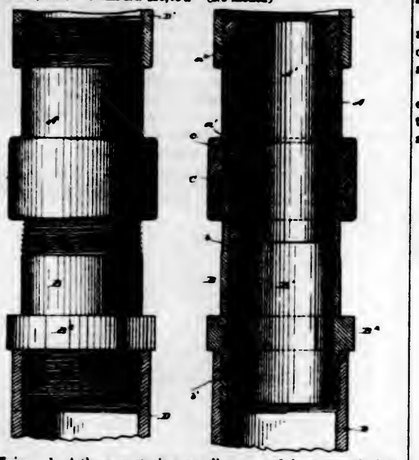
ards adapted to move the shovel to one side of the pan as it is elevated, substantially as shown and described.

2. The combination, with the revolving pan, the shovel swiveled at one end, the elevating-rod, the guiding-standard, and the weighted

gravitating locking-dog at the rear end of the bolt having bearing on said abutments, of an endwise-movable rod adapted to impart motion to the breech-bolt and to have motion independently of said bolt, an abutment on the rod adapted to engage the locking-dog and lift the

end of the cylinder to the barrel, said cylinder having an exhaust-port near its rear end, of a piston having its forward end hollowed out to form a peripheral scraping-edge d^{20} and provided in rear of said edge with a peripheral groove, for the purpose set forth.

486,986. PIPE-COUPLING. JOSEPH LAURER, Chicago, Ill. Filed Dec. 21, 1891. Serial No. 415,754. (No model.)



Claim.—1. A three-part pipe-coupling two of the parts of which are telescopically connected together and each being detachably connected to its respective pipe-section and adapted to be disconnected without detaching either of the pipe-sections and the third part surrounding and clamping together the telescopically-joined portions, substantially as set forth.

2. A pipe-coupling having two tubular nipples adapted to be respectively secured to the ends of two pipe-sections and having a loose sliding-joint connection with each other, in combination with an external collar with an internal tapering aperture, whereby it is adapted to force together the parts of the sliding joint, substantially as set forth.

3. A pipe-coupling having two tubes or nipples independent of the pipe-sections to be coupled and fitted together by a sliding or telescopic joint, the exterior part of said joint being tapered and provided with a tapering thread, in combination with a surrounding collar having an internal tapering thread corresponding to that aforesaid, substantially as set forth.

4. The herein-described pipe-coupling, having the tube or nipple formed of copper and adapted to be detachably connected to a section of pipe and adapted to be connected to and disconnected from an adjacent pipe-section by a sliding joint without removing the first aforesaid pipe-section, in combination with an exterior clamp or collar formed of steel, said collar having an interior tapering thread corresponding to an exterior thread on the copper nipple, substantially as set forth.

5. A pipe-coupling device consisting of a nipple A, having a reduced portion and detachably secured to one of two pipe-sections to be coupled, a nipple B, detachably secured to the other of said pipe-sections, sliding loosely on said reduced portion of nipple A and having an exterior tapering thread, and a collar having an interior tapering thread and adapted to be screwed on said nipple B, whereby said nipples A and B are clamped together, substantially as set forth.

6. In a pipe-coupling, the combination of the pipe D, the pipe D', the nipple A, detachably connected to the pipe D' and having at its end a permanently-smooth exterior surface, the nipple B, detachably connected to the pipe D and having a permanently-smooth interior surface fitting the exterior surface on nipple A and having an expanded exterior surface, and means, substantially as set forth, movable longitudinally on said expanded surface to crowd the nipple B against the nipple A, as described.

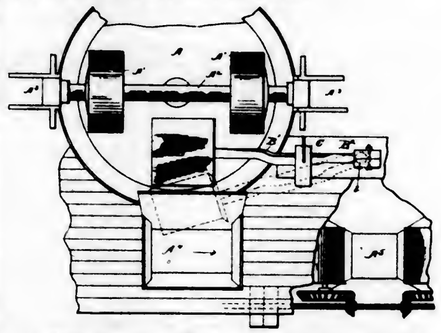
7. The combination, with a pipe or tube having an external tapering thread and an adjacent pipe telescopically connected therewith, whereby it is adapted to slip longitudinally in the aforesaid pipe both after and before a coupling, of a binding-collar having an interior tapering thread corresponding to the tapering thread on the first aforesaid pipe, said collar surrounding and clamping tightly together said telescopically-connected pipes, substantially as set forth.

486,987. PULVERIZER OR MIXER. ROBERT W. LYLE, New York, N. Y., assignor of one-half to Andrew M. Strathearn, Woodbridge, N. J. Filed June 3, 1892. Serial No. 435,207. (No model.)

Claim.—1. The combination, with the revolving pan, of a shovel swiveled at one end and adapted to be lowered into the pan, a rod connected to the shovel for elevating the same, and the guiding-standards adapted to move the shovel to one side of the pan as it is elevated, substantially as shown and described.

2. The combination, with the revolving pan, the shovel swiveled at one end, the elevating-rod, the guiding-standard, and the weighted cord for elevating the shovel when not in use, substantially as shown and described.

3. The combination, with a revolving pan, of a flat shovel swiveled to one side of the same and adapted to rest in said pan, the sectional elevating-rod, and the turnbuckle whereby the shovel may be adjusted, substantially as shown and described.



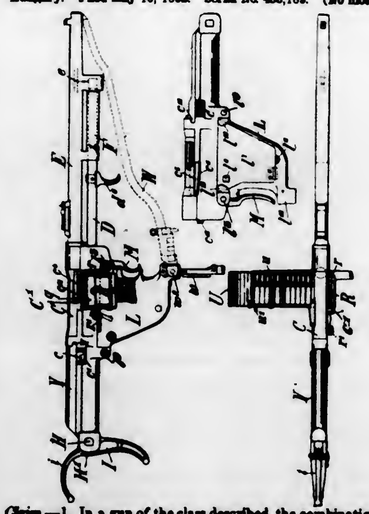
4. The combination, with a shovel having a handle swiveled at its outer end, the curved guide, and the operating-rod swiveled to the shovel for operating the same, substantially as shown and described.

5. The combination, with a shaft having tight and loose pulleys at one end and a crank-arm at the other, of the shovel swiveled at the end of its handle, the adjustable rod connecting the shovel and crank-arm, and the curved guide for swinging and turning the blade of the shovel, substantially as shown and described.

6. The combination, with the shaft-carrying pulley and crank-arm, of the weighted rope connected to said crank-arm, the adjustable rod also connected therewith, the shovel having a handle swiveled at its outer end, and the curved guiding-standards arranged between the end of the handle and shovel, substantially as and for the purpose described.

7. The combination, with a revolving pan, of a conveyer arranged at one side of the same and a shovel swiveled at one end adjacent to the conveyer and adapted to be intermittently lowered into and raised from said pan and swinging outward to discharge on the conveyer during its upward movement, substantially as shown and described.

486,988. QUICK-FIRE GUN. ADOLF ODKOLEK, Vienna, Austria-Hungary. Filed May 16, 1892. Serial No. 433,189. (No model.)



Claim.—1. In a gun of the class described, the combination, with the receiver provided with two abutments, the breech-bolt, and a gravitating locking-dog at the rear end of the bolt having bearing on said abutments, of an endwise-movable rod adapted to impart motion to the breech-bolt and to have motion independently of said bolt, an abutment on the rod adapted to engage the locking-dog and lift the same off its abutments when said rod moves rearwardly, and a forwardly-projecting arm on the rear end of the rod adapted to engage the locking-dog and hold the same to its abutments when said rod has reached or is about to reach the limit of its forward motion, substantially as and for the purpose set forth.

2. In a gun of the class described, the combination, with the receiver, the breech-bolt, and the locking-dog pivoted to the rear end of said bolt, of abutments removably seated in the receiver and extending into the path of the dog, for the purpose set forth.

3. In a gun of the class described, the combination, with the receiver provided with two abutments, the breech-bolt slotted longitudinally near its rear end, and a gravitating locking-dog at the rear end of the receiver, said dog being provided with an abutment b' at its free end, of an endwise-movable rod adapted to impart motion to the breech-bolt and have motion independently thereof, a radial arm extending into the breech-bolt through the slot thereof, an abutment on said rod adapted to engage the locking-dog and lift the same off its abutments during the rearward motion of said rod, and a forwardly-projecting arm at the rear end of the rod, adapted to contact with the abutment b' on the locking-dog during such rearward motion and during a portion of the forward motion of the rod, said arm engaging the upper face of said dog to hold it down to its abutments when the rod has reached or is about to reach the limit of its forward motion, substantially as and for the purpose set forth.

4. In a gun of the class described, the combination, with the receiver provided with two abutments c c, with guide-ribs c^{10} in rear thereof, and with guide-grooves c^9, extending rearwardly and forwardly of the abutments, the breech-bolt provided with guide-ribs $a^\times$, fitting said grooves, and with a longitudinal slot near its rear end, and a gravitating locking-dog at the said rear end of the bolt, having bearing on the abutments c c, of an endwise-movable rod, a radial arm extending into the receiver through its slot, an abutment on said rod adapted to engage the locking-dog and lift the same, so as to lie in the plane of the guide-ribs c^{10}, and a forwardly-projecting arm d on the rear end of the rod, provided with guide-ribs d', fitting the grooves c^9 and having bearing on the ribs c^{10}, said arm contacting with the locking-dog during the rearward and during a portion of the forward movement of the rod and adapted to engage the said dog as it drops off the said guide-ribs when the rod has reached or is about to reach the limit of its forward movement, substantially as and for the purpose set forth.

5. In a gun of the class described, the combination, with the receiver, the breech-bolt, and the firing-pin G, provided with a locking-shoulder, of an endwise-movable rod provided with a radial arm d^{14}, extending into the breech-bolt through a longitudinal slot therein, said arm being provided with a forked portion d^6 d^8, forming a recess d^{12} for the reception of the shoulder on the firing-pin, substantially as and for the purpose set forth.

6. In a gun of the class described, the combination, with the receiver provided with abutments c c, the breech-bolt, a gravitating locking-dog at the rear end thereof, and the firing-pin G, having a locking-shoulder at its rear end, of an endwise-movable rod provided with a radial arm d^{14}, extending into the receiver through a longitudinal slot therein, said radial arm being forked to form abutments d^6 d^8, and a recess d^{12} between them for the reception of the locking-shoulder on the firing-pin, and with an abutment d^8, adapted to engage the locking-dog and lift it off its abutments on the rearward motion of the rod, and a forwardly-projecting arm on the rear end of said rod adapted to engage the locking-dog and hold it to its abutments when said rod has reached or is about to reach the limit of its forward motion, substantially as and for the purpose set forth.

7. In a gun of the class described, the combination, with the receiver, of a heel-piece H', provided with a shoulder-rest i and arm I, said heel-piece being detachably secured to the rear end of the receiver, substantially as and for the purpose set forth.

8. In a gun of the class described, the combination, with the receiver having a rearwardly-projecting guide extension, of a heel-piece adapted to close the end of the receiver detachably secured thereto, and a covering-plate V, connected with the heel-piece for covering the extension of the receiver, substantially as and for the purpose set forth.

9. In a gun of the class described, the combination, with the receiver provided with a rearwardly-projecting guide extension slotted transversely at its rear end, of a heel-piece H', also slotted transversely, the key H, fitting said transverse slots, and the covering-plate V, secured to said heel-piece and provided at its forward end with lugs adapted to engage recesses in the receiver, substantially as and for the purpose set forth.

10. In a gun of the class described, the combination, with the barrel, the piston-cylinder, and a gas-duct leading from the forward end of the cylinder to the barrel, said cylinder having an exhaust-port near its rear end, of a piston having its forward end hollowed out to form a peripheral scraping-edge d^{20} and provided in rear of said edge with a peripheral groove, for the purpose set forth.

11. In a gun of the class described, the combination, with the barrel, the piston-cylinder, a gas-duct leading from the forward end of the cylinder to the barrel, and an exhaust-duct near its rear end, of a piston having the periphery of its outer face formed into a scraping-edge, an annular groove d^{11} in rear of said scraping-edge, and oblique channels d^{13}, opening into said groove, the body of said piston having longitudinal recesses, substantially as and for the purpose set forth.

12. In a gun of the class described, the combination, with the barrel, the piston-cylinder, a gas-duct leading from the forward end of the cylinder to the barrel, and an exhaust-duct near its rear end, of a piston having the periphery of its outer face formed into a scraping-edge, an annular groove d^{11} in rear of said scraping-edge, and oblique channel d^{13}, opening into said groove, the body of said piston being provided with a spiral thread d^{14}, substantially as and for the purpose set forth.

13. In a gun of the class described, the combination, with the barrel E, provided with the conical bearing $f^\times$, having a longitudinal groove therein and a screw-threaded portion in front thereof, and the piston-cylinder F, provided with a sleeve f^3, having a correspondingly-conical bore and longitudinal groove therein and fitting on the conical bearing of the barrel, of the key f^3 and nut e, respectively fitted in the grooves in the barrel and sleeve and on the screw-threaded portion of said barrel, substantially as and for the purpose set forth.

14. In a gun of the class described, the combination, with the receiver C, provided with a longitudinal transverse passage, a dividing-plate dividing said passage, and a cartridge-carrier consisting of a belt, to which the cartridges are secured, said belt passing under the plate and the cartridges over said plate, of an endwise-movable breech-bolt adapted to exert pressure on the cartridges as they are brought within its reach and a toothed belt-feeding device adapted to engage the belt and draw the same through the slot in the receiver, substantially as described.

15. In a gun of the class described, the combination of a cartridge-carrier to which the cartridges are secured at or near their opposite ends, with the receiver provided with a transverse passage for the belt and with fixed abutments for the fasteners of the cartridges, and the breech-bolt having motion across said transverse passage on the line of a cartridge, whereby the latter is detached from the belt by the power exerted thereon by the bolt and carried by said bolt into the breech of the gun.

16. In a gun of the class described, the combination of a cartridge-carrier consisting of a belt, to which the cartridges are fastened, the receiver having a transverse passage for the belt and abutments for the fasteners of the cartridges, with the breech-bolt having motion in the receiver across the transverse passage, and the abutments for the cartridge-fasteners on a line with a cartridge in said receiver, whereby said cartridge is detached from the belt by the power exerted thereon by the bolt when the latter moves forward, and a feeding device controlled by the bolt to move the cartridge-carrier, for the purpose set forth.

17. In a gun of the class described, the combination, with the receiver having a longitudinal slot in one side for the passage of a cartridge-carrier belt and the cartridges secured thereto and a like narrow slot in the opposite side for the passage of the belt only, of a guide and cutter-blade c^7, projecting into the receiver from above the narrow slot toward the wider slot, said blade having near its forward edge a slot or recess the forward edge of which, as well as the rear edge of the plate, being ground to knife-edges, substantially as and for the purposes set forth.

18. In a gun of the class described, the combination, with the receiver C, provided with a longitudinal transverse passage, a dividing-plate dividing said passage, and a cartridge-carrier consisting of a belt to which the cartridges are secured, said belt passing under the plate and the cartridges over said plate, of an endwise-movable breech-bolt adapted to exert pressure on the cartridges as they are brought within its reach and a belt-feeding device comprising a vertically-movable plate having downwardly-curved teeth adapted to engage the cartridge-belt and draw the same through the slot in the receiver, substantially as and for the purpose set forth.

19. In a gun of the class described, the combination, with the receiver C, provided with a longitudinal transverse passage, a dividing-plate dividing said passage, and a cartridge-carrier consisting of a belt to which the cartridges are secured, said belt passing under the plate and the cartridges over said plate, of an endwise movable breech-bolt adapted to exert pressure on the cartridges as they are brought within its reach, and a belt-feeding device comprising a vertically-movable plate whose upward motion is controlled by the movements of the breech-bolt, and an actuating device to move the plate downwardly, said plate being provided with downwardly-curved

teeth adapted to engage the cartridge-belt when the plate is moving downwardly, substantially as and for the purpose set forth.

20. In a gun of the class described, the combination, with the receiver C, provided with a longitudinal transverse passage, a dividing-plate dividing said passage, and a cartridge-carrier consisting of a belt to which the cartridges are secured, said belt passing under the plate and the cartridges over said plate, of an endwise-movable breech-bolt adapted to exert pressure on the cartridges as they are brought within its reach, and a belt-feeding device comprising a vertically-movable plate whose upward motion is controlled by the movements of the breech-bolt, an actuating device to move the plate downwardly, said plate being provided with downwardly-curved teeth adapted to engage the cartridge-belt when the plate is moving downwardly, and a correspondingly-toothed fixed plate opposite said movable plate operating to hold the belt against upward motion with said movable plate, substantially as and for the purpose set forth.

21. In a gun of the class described, the combination, with the vertically-movable bar P and its attached plate O and the elastic toothed strips S thereon, of a fixed plate R, provided with like toothed strips arranged opposite plate O, the teeth in both plates being curved downwardly, substantially as and for the purpose set forth.

22. In a gun of the class described, the combination, with the fixed plate R, the plate O, its spring-actuated bar P, and the spring-actuated pawl p^2 at the foot of said bar, of the spring-actuated lever l, provided with an arm l^3 at its lower end adapted to engage the pawl p^2 and the piston-rod D in perpetual engagement with said lever, substantially as and for the purpose set forth.

23. In a gun of the class described, the combination, with the housing L, provided with an opening, the gate R, hinged to and adapted to close said opening, said gate having downwardly-curved teeth on its inner face, the endwise-movable piston-rod D, and the spring-actuated lever l in perpetual engagement with the rod, said lever having at its lower end an arm l^3, of the spring-actuated bar P, provided at its lower end with a spring-actuated pawl p^2, adapted to be engaged by the arm l^3 of lever l, and the plate O, secured to the upper end of the bar P opposite the gate R, said plate O being likewise provided with downwardly-curving teeth, substantially as and for the purpose set forth.

24. In a gun of the class described, the combination, with the receiver provided with lugs c^4, the housing L, provided with perforated ear l^3, fitting between said lugs, the trigger M, having a forked portion into which the ear l^3 fits, and a bushing m', extending through said forked portion and the perforation of the ear l^3, of a retaining-pin passing through the lugs c^4 and the bushing m', substantially as and for the purpose set forth.

25. In a gun of the class described, the combination, with the piston-rod D, provided with a full-cock notch, and the housing L, of the trigger M, pivoted to the front face of said housing and provided with a sear m, adapted to engage the full-cock notch in the piston-rod, and the spring-actuated stud m^2, loosely seated in a recess in the housing and having bearing on the rear face of the trigger, substantially as and for the purpose set forth.

26. In a gun of the class described, the combination, with the piston-rod D, provided with a longitudinal slot d^{2x}, and the shoe d^3 at the forward end of said slot, of the spring-actuated lever l, extending into the slot d^{2x}, substantially as and for the purpose set forth.

27. In a gun of the class described, the combination, with the piston and its rod D, of the receiver, the heel-piece H', and the buffer J, projecting from said heel-piece into the path of the rod, substantially as and for the purpose set forth.

28. The combination, with a gun of the class described, of a gun-rest comprising two legs hinged together and connected with the gun so as to revolve about horizontal and vertical axes, for the purpose set forth.

29. In a gun of the class described, the combination, with the housing L, provided with a cylindrical and vertically-slotted bearing l^{12}, of two legs W W, hinged together, and a cylindrical head seated in said bearing, to which head the upper end of the legs is pivoted, substantially as and for the purpose set forth.

30. In a gun of the class described, the cartridge-belt carrier consisting of a cylindrical casing U, having a slotted axial spindle u, a more or less elastic crank u^2, secured on said spindle, and a cover u^3, hinged at u^6 to an opening in said casing, which is also provided with a loop u^4, in combination with the gun and housing L, the side wall of which is provided with a hook l^2, substantially as and for the purpose set forth.

31. In a gun of the class described, the combination, with the receiver having a rearwardly-projecting guide extension, the housing L, depending from the receiver, the heel-piece H', and the covering-plate V, connected with the heel-piece and receiver to cover the extension thereof, and the pins P P, connecting the housing with the receiver, and the key H, connecting the heel-piece to the extension of said receiver, for the purpose set forth.

32. The combination, with a gun provided with a support or stand therefor, of a shoulder-rest detachably secured to the rear end of the gun, for the purpose set forth.

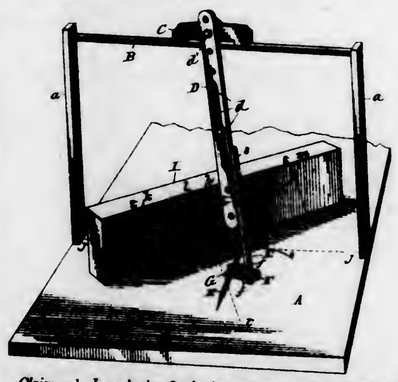
33. The combination, with a gun, of a support or stand and a shoulder-rest, both detachably secured to the gun, for the purpose set forth.

486,939. ANIMAL-CATCHER. AUGUST OTTO, Saginaw, Mich. Filed Apr. 18, 1892. Serial No. 429,554. (No model.)

Claim.—1. An animal-catcher consisting of the yoke-shaped body 1, having the grooves 5 and 9 in the sides of the yoke and a hole in one end thereof in continuation of groove 9, and the tongue 4, hinged to the other end of the yoke and adapted to close the mouth of the yoke when turned inward, and a rope secured to the tongue 4 and passing through the grooves and holes, substantially as described.

2. In an animal-catcher, the combination, with the yoke 1 and the grooves 5 and 9 in the sides of the yoke and a hole in one end thereof in continuation of groove 9, of the tongue 4, pivoted to one end of the yoke and adapted to close up the mouth thereof, the rope 10, secured at one end of the tongue 4 and passing through groove 5 over back 14 of the yoke through groove 9 and adapted to pull the tongue 4 within the yoke, substantially as described.

486,940. STAIR-CURVE. IRENAS J. PALMER, Olean, N. Y., assignor of one-half to THOMAS STOTT, same place. Filed July 16, 1892. Serial No. 440,207. (No model.)



Claim.—1. In a device for laying out stair-rail curves, the combination, with a platform and a horizontal guide-rod supported above the same, of a guide-block loosely supported upon said guide-rod and free to be reciprocated and turned thereon, a vertically-adjustable arm pivotally connected to said guide-block, means for clamping it rigidly thereto, and a stylus adjustably connected to said arm, substantially as described.

2. In a device for laying out stair-rail curves, the combination, with a platform and a horizontal guide-rod supported above the same, of a guide-block loosely supported upon said guide-rod and adapted to be reciprocated and turned thereon, an arm pivotally connected to said guide-block and provided with means for clamping it rigidly thereto, a rod secured to and longitudinally adjustable on said arm, and a stylus adjustably connected to said rod, substantially as described.

3. In a device for laying out stair-rail curves, the combination, with a platform A, standards a a, and the guide-rod B, rigidly secured to said standards, of the guide-block C, grooved upon its under side and loosely supported upon said guide-rod and free to be reciprocated and turned thereon, and a stylus adjustably connected to said guide-block, constructed and arranged substantially as described, whereby

the guide-block carrying the stylus and connections may be removed from the guide-rod and reversed, for the purpose specified.

4. In a device for laying out stair-rail curves, the combination, with the platform A, standards a a, and the cylindrical guide-rod B, rigidly secured to said standards, of the guide-block C, provided upon its under side with V-shape grooves and loosely supported upon said guide-rod, and a stylus adjustably connected to said guide-block, substantially as shown and described, and for the purpose specified.

5. In a device for laying out stair-rail curves, the combination, with the platform A, standards a a, and horizontal guide-rod B, of the grooved guide-block C, loosely supported upon said guide-rod, the arm D, pivotally connected to said guide-block, means for rigidly clamping it thereto, the rod E, secured to the arm D, the hollow tube F, vertically adjustable on the rod E and provided with a set-screw for securing it in its adjusted position, a rod mounted in the tube F and free to be turned therein and carrying a stylus, and a set-screw for binding the said rod in said tube, substantially as shown and described, and for the purpose specified.

6. In a device for laying out stair-rail curves, the combination, with the platform A, standards a a, and horizontal guide-rod B, of the guide-block C, supported and free to be reciprocated and turned on said guide-rod, the arm D, pivotally connected to said guide-block, means for rigidly clamping it thereto, the rod E, secured to the arm D, the tube F, vertically adjustable on the rod E and provided with a set-screw for securing it in its adjusted position, a rod G, fitting within the tube F and circumferentially grooved near its inner end, a set-screw carried by the tube F and engaging said circumferential groove, and a stylus adjustably secured in the outer end of the said tube and at right angle to its longitudinal axis, substantially as shown and described, and for the purpose specified.

7. In a device for laying out stair-rail curves, the combination of the table A, standards a a, horizontal guide-rod B, the guide-block C, supported and free to be reciprocated and turned on said guide-rod, the arm pivotally connected to said guide-block, means for clamping it rigidly thereto, the rod E, secured to the arm D, the vertically-adjustable tube F, secured on the said rod by a set-screw, the rod G, fitted in said tube and free to be rotated therein, and a stylus H, adjustably secured in the outer end of the rod G at right angles to its longitudinal axis, said stylus consisting of a hollow tube having fitted in its ends a tapered sharpened point, substantially as shown and described.

486,941. PROCESS OF REDUCING ORES. ADOLPHE J. ROSS, New York, assignor of one-half to James MacNaughton, Albany, N. Y. Filed Apr. 16, 1892. Serial No. 429,467. (No specimens.)

Claim.—1. The process of fluxing titaniferous iron ores, which consists in combining their titanic acid with bases as fluxes, so as to form in the slag predominant titanates of two or more of those bases and subjecting the combination to the usual heat and treatment of a blast-furnace, substantially as and for the purpose described.

2. The process of fluxing titaniferous iron ores, which consists in combining their titanic acid with bases and fixed alkalies as fluxes, so as to form in the slag predominant titanates of those bases and subjecting the combination to the usual heat and treatment of a blast-furnace, substantially as and for the purpose described.

3. The process of fluxing titaniferous iron ores, which consists in combining their titanic acid with earthy bases as fluxes, so as to form in the slag predominant titanates of two or more of those bases and without a sufficient amount of silica to flux said bases, and subjecting the combination to the usual heat and treatment of a blast-furnace, substantially as and for the purpose described.

4. The process of fluxing titaniferous iron ores, which consists in combining their titanic acid with earthy bases and fixed alkalies as fluxes, so as to form in the slag predominant titanates of those bases, and without a sufficient amount of silica to flux said bases, and subjecting the combination to the usual heat and treatment of a blast-furnace, substantially as and for the purpose described.

5. The process of fluxing titaniferous ores, consisting in combining them in and subjecting them to the usual treatment and fusion of a blast-furnace, in combination with fuel, the earthy bases, alumina, lime, and magnesia, and without a sufficient amount of silica to flux said bases, substantially as and for the purpose described.

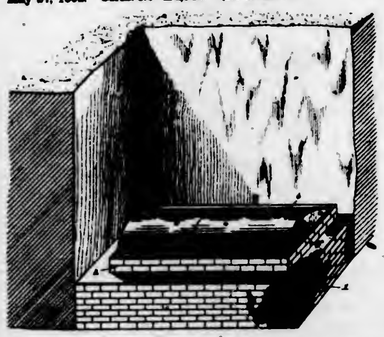
6. The process of fluxing titaniferous ores, consisting in combining them in and subjecting them to the usual treatment and fusion of a blast-furnace, in combination with fuel, the earthy bases, alumina and lime, and without a sufficient amount of silica to flux said bases, substantially as and for the purpose described.

486,942. POLE-TIP. WASHINGTON I. SHREVES, Prophetstown, Ill., assignor of one-half to Alfred B. Lounds, same place. Filed May 20, 1892. Serial No. 433,720. (No model.)

Claim.—The combination of a pole-tip having a depression in its

lower face, a forwardly-disposed latch having one end pivoted to the under side of the pole-tip in rear of the depression and provided at its front end with a rearwardly-extending arm adapted to fit within the depression when the latch is closed to be engaged by a neck-yoke center, and a spring for normally holding the latch closed, substantially as described.

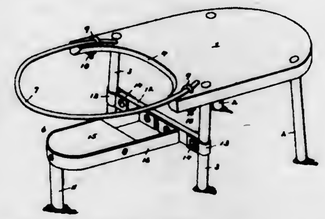
486,948. GRAVE-BOX COVER. ISAAC SCOTT, Christman, Ill. Filed May 27, 1892. Serial No. 434,549. (No model.)



Claim.—1. A grave-box cover consisting of two semicircular plates telescopically overlapping each other and having horizontally-positioned side flanges at right angles thereto and vertically-disposed closed outer ends and eyes or rings on the top adjacent to the outer closed ends of each of the plates for lifting the device entire, substantially as described.

2. The combination, with a grave-wall having an inner raised course of brick or stone, of a cover constructed of semicircular plates telescopically fitted to each other and having flanges adapted to rest on said raised course of brick, substantially as described.

486,944. MILK-STOOL. RILEY W. SHAW, Lapeer, Mich. Filed June 13, 1892. Serial No. 436,542. (No model.)

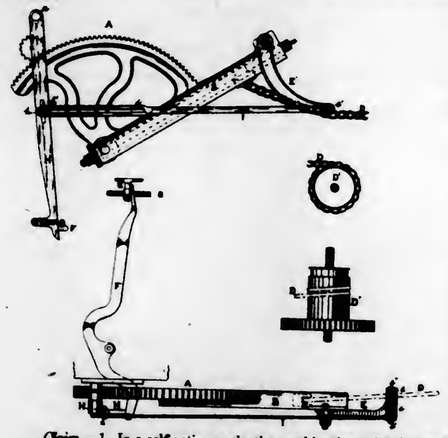


Claim.—1. In a milking-stool, the combination of a seat, front and rear legs supporting the seat, an expansible pail-receiving band extending from the seat, a horizontal bar adjustably mounted on the front legs, and a pail-support comprising a frame secured to the bar, and a leg secured to the outer end of the frame, substantially as described.

2. The combination of a seat, front and rear legs supporting the seat, an expansible pail-receiving band extending from the seat, a horizontal bar extending between the front legs, the approximately-U-shaped clips secured to the ends of the horizontal bar by bolts and receiving the front legs and adjustably clamping the horizontal bar to the front legs, and a pail-support comprising a block, a metal strap bent into an approximately-rectangular shape and having its ends secured to the bar and receiving the block between its sides, and a leg secured to the block and arranged at the front end thereof, substantially as described.

486,945. SELF-ACTING SPINNING-MULE. JOHN STARK, Droylsden, assignor to Asa Lees & Co., Limited, Oldham, England. Filed Feb. 16, 1892. Serial No. 421,741. (No model.)

Brief.—The invention consists in connecting a pivoted bracket or lever on the upper end of the quadrant-stock, which bears upon the quadrant-chain, with the shaper-screw by means of a series of specially-arranged levers with connecting rods or chain, whereby at each movement of the shaper-screw the pivoted bracket or lever on the quadrant-stock is drawn down to increase the tension of the winding-chain.



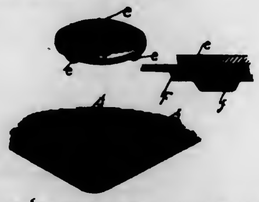
Claim.—1. In a self-acting mule, the combination, with the quadrant A, quadrant-stock B, winding-chain D, and shaper-screw C, of the horizontal pivoted lever F, moved forward thereby at each turn of the screw, the tightening-lever E on the quadrant-stock provided with an L-shaped end which comes in contact with the winding-chain D, and a non-rigid connection between the lever F and the lever E, whereby the movement of the one is transmitted to the other, substantially as described.

2. A nosing-motion for self-acting mules, comprised of a tightening lever or bracket E, pivoted to the quadrant-stock and provided with an L-shaped arm to bear upon and tighten the winding-chain, a horizontal pivoted lever F, which is actuated by and transmits motion from the shaper-screw, and a depending lever H and link I, which connect together the levers E and F and transmit the movement of the one to the other, in combination with the quadrant-stock B, winding-chain D, and shaper-screw C.

3. In a self-acting mule, the combination, with the quadrant A, quadrant-stock B, and shaper-screw C, winding-chain D, and winding-drum D', of the lever E, pivoted to the quadrant-stock and provided at the end with a pin *d*, the horizontal pivoted lever F, actuated by the shaper-screw, the nut G, the depending lever H, provided with a stud A, which engages with the link I, and the link I, provided with a slot *i*, which connects the levers H and E, substantially as described.

4. In a self-acting mule, the combination, with the quadrant-stock B, the winding-chain D, the pivoted bracket or lever E on the upper end of the quadrant-stock which bears upon the quadrant-chain, and the shaper-screw C, provided with a nut moving thereon, of the horizontal pivoted lever F, connected to the lever E by a non-rigid connection to move or gradually alter the position of the tightening-lever E, substantially as described.

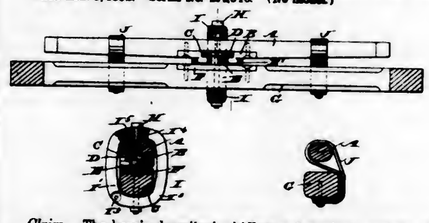
486,946. STOVE. DANIEL M. THOMAS, Columbia, Pa. Filed Jan. 8, 1891. Serial No. 377,212. (No model.)



Claim.—1. The combination, with a stove-cover provided with one or more knobs or depressions on its under side adjacent to the edge, of the supporting-rim provided with depressions or knobs, the walls or corners of one of said parts being rounded to facilitate the revolution of the cover when desired, substantially as described.

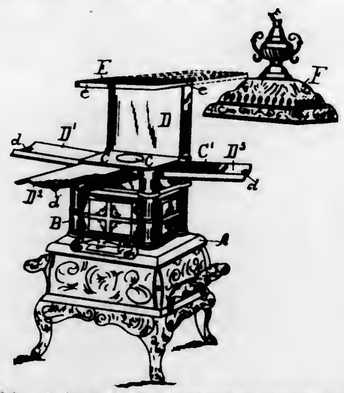
2. The combination, with a stove-cover provided on its under surface with knobs or projections, of its supporting-rim provided with corresponding depressions, either or both of which have the engaging walls inclined to facilitate the revolution of the cover when the knobs and depressions register with each other, substantially as described.

486,947. WHIFFLETREE. HENRY MCF. WRIGHT, Aspen, Colo. Filed Mar. 9, 1892. Serial No. 424,310. (No model.)



Claim.—The herein-described whiffletree-fastening, consisting in the plate B, having an undercut recess C in its lower side, the plate F, having a centrally-apertured pin E on its upper side entering said recess and having a head entering the undercut part thereof, the link I, formed in two sections I' I^3, pivoted together at one end, as shown at I^3, and overlapped at their opposite apertured ends, as shown at I^4 I^5, and the bolt H, extending through said apertured ends, pin E, and through an aperture in the hinged end of the link member I^3, substantially as set forth.

486,948. STOVE. LIBBETTE F. ZIMMERLING, Jackson, Mich. Filed Jan. 8, 1892. Serial No. 417,426. (No model.)



Claim.—1. In a stove, the combination of a burner, a plate above said burner, doors hinged to said plate and adapted to close and form the side walls of a compartment above said plate, and grates engaged with said plate and adapted to draw out on said doors when they are opened, substantially as described.

2. In a stove, the combination of a burner, a plate above said burner, doors hinged to said plate and adapted to close and form the side walls of a compartment above said plate, and grates on which to support cooking utensils on the sides of said plate, said grates forming flues over said doors, substantially as described.

3. In a stove, the combination of a burner, a compartment above said burner having one of its side walls stationary and the remaining side walls adapted to swing outward, grates forming flues above said walls, and a warming-shelf supported above said compartment and forming a part of said stove when used as a heater, substantially as described.

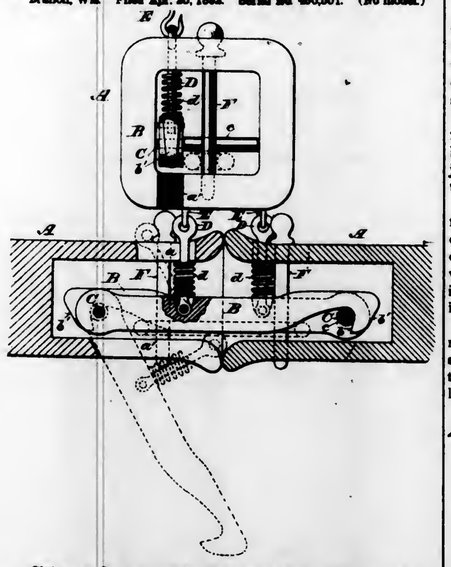
4. In a stove, the combination of a burner, a compartment above said burner having one of its side walls stationary and the remaining side walls adapted to swing outward, and a warming-shelf supported on said stationary wall and adapted to swing back and form a cold-shelf, substantially as described.

5. In a stove, the combination of an oven having a stationary wall, doors opening downward and outward, a warming-shelf above said oven, a crown closing said oven above said shelf, and grates for supporting articles to be heated over said doors when opened, substantially as described.

6. In a stove, the combination of a combustion-chamber and a compartment above said combustion-chamber having a fixed upright wall and the remaining walls adapted to be swung downward and outward, and a warming-shelf supported by said fixed upright wall and adapted to retain its position above the combustion-chamber when the movable walls are so swung outward and adapted to form the top of the compartment when the movable walls are closed, substantially as described.

7. In a stove, the combination of a combustion-chamber, a compartment above said combustion-chamber having one fixed upright wall and three walls adapted to swing outward and downward, and a shelf forming the top of said compartment and adapted to be swung backward from over the combustion-chamber, substantially as and for the purpose described.

486,949. CAR-COUPLING. WILLIAM H. BORCHERS, Pheasant Branch, Wis. Filed Apr. 25, 1892. Serial No. 430,551. (No model.)

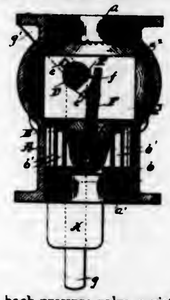


Claim.—1. In a car-coupler, the combination of a draw-head having an outwardly-opening recess in the end, a vertically-swinging hook hinged on a cross-rod passing horizontally through said recess, a rod pivoted to said hook within said recess and passing vertically through the draw-head, and a spring interposed between said hook and the upper part of the draw-head and holding said hook normally in its lower position, said draw-head having a vertical slot in the under side below said hook and provided with a vertical aperture for a coupling-pin, whereby said hook may be disconnected and dropped out of the way and the coupling employed with an ordinary link-and-pin connection, substantially as and for the purposes set forth.

2. In a car-coupler, the combination of a draw-head having an outwardly-opening recess in the end, a vertically-swinging hook hinged on a cross-rod passing horizontally through said recess and having its offset or engaging surface in a plane approximately parallel with its vertical movement, the opposite side of said recess being left open for the reception of the hook of a corresponding coupling, a rod pivoted to said hook and having a suitable connection for raising said hook, and a spring holding said hook normally in its lower position, said draw-head having a vertical slot in the under side below said hook, which may be lowered through the same out of the way for the purpose of using an ordinary link-and-pin connection, substantially as and for the purposes set forth.

3. In a car-coupler, the combination of a draw-head having an outwardly-opening recess, a vertically-swinging hook hinged in one side of said recess on a cross-rod passing horizontally through the same, and a detachable connection for holding said hook in operative position, said draw-head having a vertical perforation for a coupling-pin, and a vertical slot in the under side extending from the outer end inwardly below said hook, which may be dropped through the same, thereby adapting said coupling for use with an ordinary link-and-pin connection, substantially as and for the purposes set forth.

486,950. BACK-PRESSURE VALVE. WILLIAM W. DOOLITTLE, Chicago, Ill., assignor to the Crane Company, same place. Filed July 9, 1892. Serial No. 439,483. (No model.)



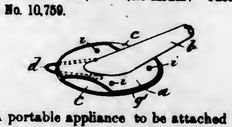
Claim.—1. In a back-pressure valve, a piston-valve, in combination with a shaft mounted in the case, a link-rod hinged to one end to the valve and at the other to the shaft eccentrically to the axis thereof, and a weighted lever mounted on a fixed shaft outside the case and arranged to close the valve when standing in a vertical position, substantially as described.

2. The valve-case A, in combination with the piston-valve B, freely-rocking shaft D, the crank-arm E of the inner end thereof, the link-rod F, hinged, respectively, to the valve and crank-arm and with joints arranged to form a toggle, and the weighted lever G, attached to said shaft, substantially as described.

3. The valve-case A, in combination with a piston-valve B, the freely-rocking shaft D, the forked crank-arm E, fixed on the inner end thereof, the link-rod F, connecting the valve and crank-arm and extending a little beyond the forked arms of the latter, and the weighted lever G, all relatively arranged to close the valve and retain it in this adjustment under ordinary pressure by the lever dropping into a vertical position, substantially as described.

4. The valve-case A, provided with a side opening a^3, in combination with the head C to close said opening and provided with a stud *c*, extending into the casing, the shaft D, mounted in said stud, the piston-valve E, linked eccentrically to the shaft, and the weighted lever G, fitted on the outer end of the shaft, substantially as described.

486,951. INHALER. HENRY ELLIS, Ramsgate, England. Filed Aug. 8, 1892. Serial No. 442,511. (No model.) Patented in England June 24, 1891, No. 10,759.



Claim.—1. A portable appliance to be attached to kettles and similar articles, consisting of a tube fixed to a disk or plate, which plate is furnished with loop for securing the appliance by passing under the edge of the lid-opening, substantially as described.

2. In a disk or plate with packing for attaching to the lid-opening of kettles and the like, the thin pieces of plate cut away, for the purpose specified.

486,952. HINGE. WILLIAM S. GILLESPIE, Bath Beach, N. Y. Filed Mar. 16, 1892. Serial No. 425,133. (No model.)

Claim.—In a concealed hinge, the combination of two ordinary flat pin-flaps, with a rectangular U-shaped intermediate member connecting said flaps, and a strip secured to the inner side thereof so formed as to maintain contact with the curved surfaces of the edges of the door and jamb during the entire movement of the hinge, substantially as shown and described.

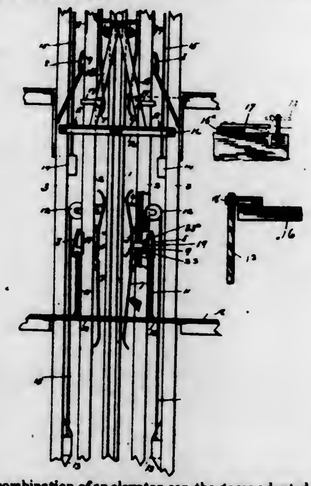
486,953. MEANS FOR OPERATING ELEVATOR-DOORS. ROBERT W. HARE, Allegheny, Pa. Filed Feb. 8, 1892. Serial No. 420,771. (No model.)

Claim.—1. The combination of the doors 10, adapted to close the openings at the various landings of an elevator, locking and releasing devices for said doors, consisting of sliding blocks connected to said doors, a catch for locking said blocks at certain points, levers for releasing said blocks to permit the doors to drop by gravity, and means for moving said blocks upwardly a limited distance by the movement

of the elevator-platform to close the said doors, substantially as and for the purpose described.

2. The combination of an elevator-car, the horizontal doors closing the opening at each landing, sliding blocks connected with said doors, levers, catches operated by said levers and designed to engage said blocks, means operated by the elevator-car for engaging said levers and automatically disengaging the catches from the blocks, pieces 17, projecting from the elevator and serving to engage and raise the sliding blocks in the upward motion of the elevator and when the catches are disengaged from the sliding blocks, means for disengaging said pieces from the sliding blocks when the catches are re-engaged with the latter, and means for raising said sliding blocks when the elevator is moving downward and has passed beyond the doors.

3. The combination of an elevator-car, the doors adapted to close the openings at the various landings, sliding blocks connected with said doors, catches adapted to engage said blocks and hold the doors in closed position, means for forcing said catches into and out of engagement with said blocks, counterweights connected with said blocks, and means for engaging said counterweights when the elevator is traveling downward and has passed beyond said doors, said means serving to force the counterweights downward a predetermined distance and thereby close the doors.



4. The combination of an elevator-car, the doors adapted to close the openings at the various landings, sliding blocks connected with said doors, catches adapted to engage said blocks and hold the doors in closed position, means operated by the movement of the elevator-car for forcing said catches into or out of engagement with said blocks, counterweights connected with said blocks, means moving with the elevator for engaging said counterweights in a downward movement of the elevator-car, said means serving to automatically force the counterweights downward a sufficient distance to close the doors, and means traveling with the elevator-car for automatically closing the doors on the upward movement of the car.

5. The combination of the doors adapted to close the openings at the various landings of an elevator hatchway or well, sliding blocks connected with said doors, means for holding said blocks normally in position to keep said doors closed, means for releasing said blocks to allow the doors to open, and means for automatically raising said doors when the elevator-car has passed beyond them.

6. The combination of the doors adapted to close the openings at the various landings of an elevator hatchway or well, sliding blocks connected with said doors and having recesses in their under sides, and two levers for each of said sliding blocks, one of said levers carrying a catch adapted to engage the recess in the adjacent sliding block and the other of said levers having its upper end engaging the under side of the lower extremity of the adjacent lever, substantially as described, and for the purposes specified.

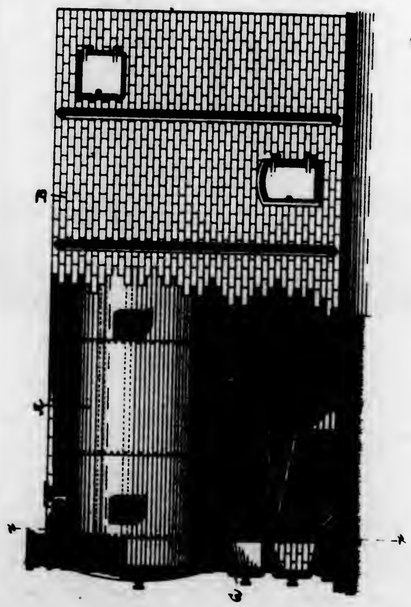
486,954. CLOTHES-PIN. GARRIS W. MCCOOL, St. Louis, Mo. Filed July 5, 1892. Serial No. 439,092. (No model.)

Claim.—1. A clothes pin or holder comprising a coil of wire having an extension, which has two sections which lie in different planes, each to co-operate with a clothes-line to hold clothes of different thicknesses, substantially as shown and described.

2. A clothes pin or holder comprising two coils of wire apart from each other but connected by a straight piece and having portions extending in opposite directions to co-operate with a clothes-line, substantially as shown and described.

3. A clothes pin or holder consisting of two coils of wire united by a straight piece and having each an extension comprising two straight sections which lie in different planes and adapted both to co-operate with a clothes-line, substantially as shown, and for the purposes specified.

486,955. BOILER-FURNACE. WILLIAM R. PARES, Palmer, Mass. Filed Mar. 7, 1892. Serial No. 423,970. (No model.)

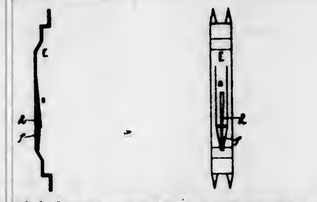


Claim.—1. An independent water-grate for boiler-furnaces, composed of a water-front, a water-back, a series of grate-tubes extending between said water-front and water-back, one or more circulating-tubes also extending between said parts beneath said grate-tubes, and a connection by which said water-grate can be placed in communication with the boiler, substantially as described.

2. The combination, with a return tubular boiler and its furnace, of an independent water-grate located within the combustion-chamber of said furnace, said water-grate consisting of a water-front, a water-back, and a series of grate and circulating tubes connecting said parts together, as described, and a pipe or pipes leading from said water-back and entering the boiler through the front tube-sheet thereof, substantially as set forth.

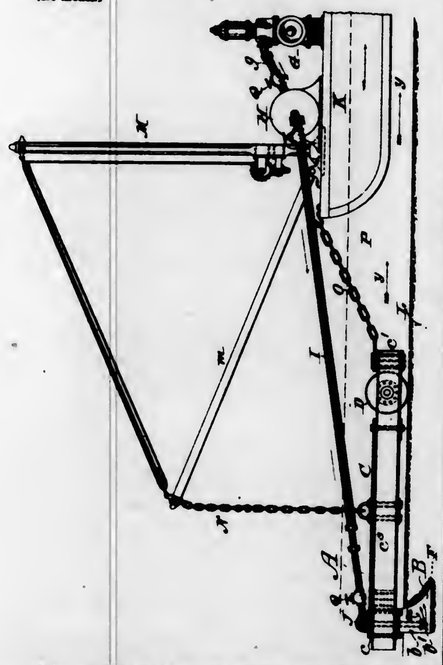
3. The combination, with a boiler-furnace and boiler, of an independent water-grate located within said furnace, said water-grate being composed of a water-front which is suitably supported at the front end of the furnace between the fuel-inlet and ash-outlet openings of the latter, a water-back which forms the rear wall of the combustion-chamber and extends to but is independent of the boiler, a series of substantially-horizontal grate-tubes connecting said water-front and water-back with each other, a series of circulating-tubes extending between the water-front and water-back below said grate-tubes and standing at an acute angle to the latter, and a pipe or pipes connecting said water-back with the boiler, substantially as set forth.

486,956. NECKTIE-FASTENER. HERBERT S. PELLMAN, Meriden, Conn., assignor of one-half to Henry L. Allen. Filed Aug. 12, 1892. Serial No. 443,068. (No model.)



Claim.—A necktie-fastener comprising in its construction a base-plate E, having the spring-tongue *e*, and having a portion of its surface opposite the end of the spring-tongue bent to form a depression *f*, and the pin 2, secured to the end of the spring-tongue and having its point normally resting in said depression, substantially as described.

486,957. DEEPENING RIVERS OR OTHER WATER-CHANNELS. JOHN SCHAFFER, Kirkwood, Mo. Filed Oct. 19, 1891. Serial No. 409,109. (No model.)



Claim.—1. The plow B, having the pipe *e* and one or more nozzles E, substantially as described.

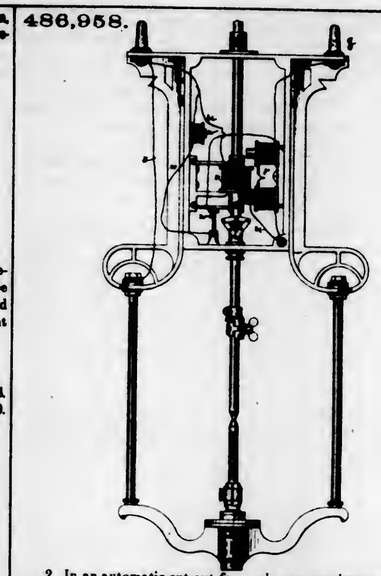
2. A plow B, having a water-passage extending within it and having its outlet in the mold-board of the plow, for the purpose described.

3. The combination of the frame C, tube J, pipes *e*, nozzles E, and plows B, substantially as described.

4. The combination of the pump G, the pipe *e*, the water-passage connecting said pump and pipe, the nozzle E, the plow B, and the plow-frame, substantially as described.

486,958. ELECTRIC-ARC LAMP. CHARLES R. SKINNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Jan. 2, 1883. Serial No. 80,783. (No model.)

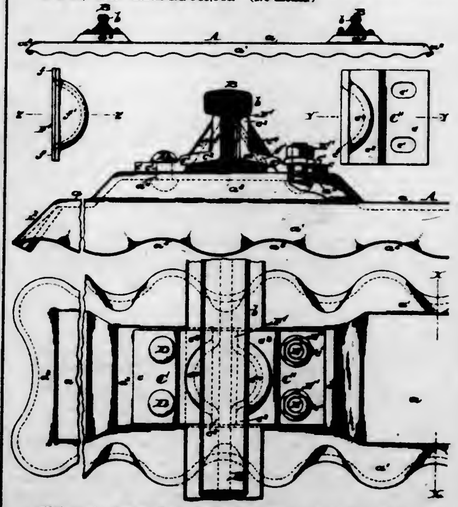
Claim.—1. In an electric-arc lamp, the combination, with an electro-magnet in the main circuit thereof, of an electro-magnet in the shunt-circuit of the arc of the lamp, a resistance shunting both the arc and the electro-magnet in the main circuit, and contact-points to open or close the said resistance shunt-circuit, the said contact-points being operated by either of the said electro-magnets.



2. In an automatic cut-out for arc lamps, a resistance-shunt with its contact-points, an electro-magnet in the main circuit, an electro-magnet in the shunt of the arc of the lamp, the clutch for engagement with the rod, and said clutch being provided with lost motion to permit the breaking of the contacts to open the resistance-shunt before the carbon-points are separated.

3. The combination, in an electric-arc lamp, of the lifting-magnet placed in the main circuit and a fine-wire magnet included in a shunt around the arc, a shunt around both of these magnets including resistance, the carbon-rod, the clutch therefor, and the pivoted lever of said clutch, said lever controlling contacts w^3, included in the said shunt containing the resistance, whereby on establishing the current through the lamp the contacts w^2 are opened before the rod is lifted by the closing of the clutch, substantially as and for the purpose specified.

486,959. RAIL-TIE. GEORGE H. SELLERS, Ridley Park, Pa. Filed Feb. 21, 1890. Serial No. 341,346. (No model.)



Claim.—1. A metallic railway-tie having supporting-surfaces for the rails elevated above the plane of the top of the tie and downwardly-extending corrugated sides.

2. In combination with a railway-tie, rail-clamps OC, the clamp

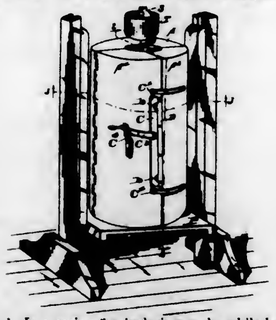
C being permanently and the clamp C' adjustably secured to the tie, and one or more liners, as F, adapted for insertion between the clamps and the web of the rail.

3. In combination with a railway-tie, rail-clamps C C', having corrugations, as c^3, formed in them, the clamp C being permanently and the clamp C' adjustably attached to the tie, and a corrugated liner or liners F, adapted to lie between the clamps and the web of the rail, all substantially as and for the purpose specified.

4. In combination with a metallic railway-tie having transverse corrugations formed in its body or sides and elevated rail-supports, and an adjustable rail-support with a corrugated base adapted to fit over the corrugations of the tie.

5. In combination with a metallic railway-tie A, having corrugated sides a' and elevated rail-supports a^3, rail-clamps C C', having a flange c, adapted to rest upon the base of the rail, a flange c^3, adapted to extend along the web to the rail-head, and a conical flare c^4, extending from the upper part of flange c^3 toward the outer edge of flange c^3, the clamp C being permanently and the clamp C' adjustably attached to the tie, and a liner or liners F, adapted to lie between the flange c^3 and the web of the rail, all substantially as and for the purpose specified.

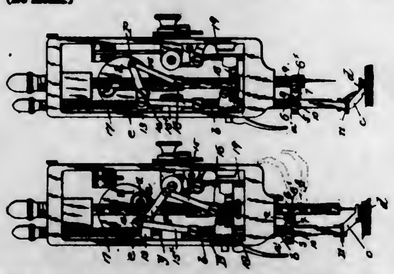
486,960. SACK-CASE FOR PACKING-MACHINES. EVERT M. THOMPSON, Indianapolis, Ind., assignor to the Herdyke & Marmon Company, same place. Filed Feb. 27, 1892. Serial No. 423,054. (No model.)



Claim.—1. In a casing for inclosing sacks while being filled by a packing-machine, the combination of a main and two swinging parts, a multipronged catch on one and a swinging latch having a handle on the other, said latch being arranged to engage behind the prongs of said catch, and thus draw and hold said two swinging parts together, substantially as set forth.

2. The combination, with the swinging parts of a casing to contain the sacks in a packing-machine while being filled, of a multipronged catch on one, a swinging latch on the other, said catch and latch being arranged to interlock, and a pivoted handle on the swinging latch with a catch for holding said handle while closed, substantially as set forth.

486,961. FEEDING MECHANISM FOR SEWING-MACHINES. ALPHA O. VERY, Boston, Mass. Filed June 30, 1892. Serial No. 438,490. (No model.)



Claim.—1. In combination, the needle-bar with means for reciprocating the same, the presser-foot and its bar, the feed-foot and its bar, a lever carried by one of said bars and in permanent connection with each of the other bars for operating the feed and presser foot bars reversely, and means for applying a tension to the feed-foot and presser-foot bars and the lower feed, substantially as described.

2. In combination, the needle-bar with means for reciprocating the same, the presser-foot and its bar, the feed-foot and its bar, the lever pivotally connected to and carried by one of the bars, the links connecting the ends of said lever with the other bars, and the means for applying a tension to the presser-foot and feed bars and the lower feed, substantially as described.

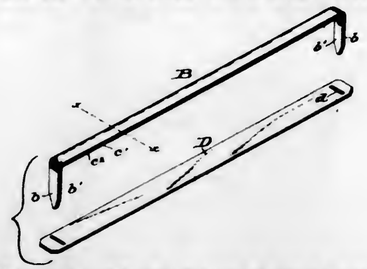
3. In combination, the needle-bar with means for reciprocating the same, the presser-foot with its carrying-bar, the block 13 on the presser-foot bar, the feed-foot and its carrying-bar, the lever pivoted on the block 13 and connected pivotally at its opposite ends with the needle-bar and feed-foot bar, respectively, and the spring for applying a tension to the bars and the lower feed, substantially as described.

4. In combination, the needle-bar, the presser-foot and its bar, the feed-foot bar having the feed-foot pivotally connected thereto, the spring for applying a tension to the said foot, the block 13 on the presser-foot bar, the spring above said block and around said bar, the lever pivoted on the said block 13, the links connecting the ends of said lever with the needle and presser-foot bars, respectively, and the lower feed, substantially as described.

5. In combination, the needle-bar, the feed-foot, the presser-foot, the bars for said feet, one of which is in the form of a sleeve and receives the other within it, the tension means, the connections between the foot-bars and the needle-bar for operating the presser and feed-foot bars reversely, and the lower feed, substantially as described.

6. In combination, in a sewing-machine, the needle-bar with means for reciprocating the same, the feed-foot bar with connections to the needle-bar for operating the same, the feed-foot pivotally connected to the feed-foot bar and having an angular offset, the spring for applying a tension to said foot engaging the said offset, and the means for limiting the oscillatory movement of the foot and the lower feed, substantially as described.

486,962. COURT-FILE-COVER FASTENER. ANDREW H. WALKUP, Omaha, Nebr. Filed May 28, 1892. Serial No. 434,836. (No model.)



Claim.—1. A court-file-cover fastener made of a sheet of metal, having in each end a notch a and slit a', forming points b and b', said sheet being doubled longitudinally at its center, bringing its edges c' and c^2 together and having its ends turned down at right angles with the body of the sheet, substantially as shown and described.

2. In a court-file-cover fastener, the fastener made of a sheet of metal having in each end a notch a and slit a', forming points b and b', said sheet being doubled longitudinally at its center, bringing its edges c and c' together and having its ends turned down at right angles with the body of the sheet, and washer D, having in each end slots d, adapted to receive the points b and b', substantially as shown and described, and for the purposes set forth.

3. A court-file-cover fastener consisting of the main sheet B and the points b and b', standing at right angles with said sheet, substantially as shown and described.

4. In a court-file-cover fastener, the combination of the fastener consisting of the main sheet B and the inner points b' and outer points b, standing at right angles with said sheet, and washer D, having in each end slots d, adapted to receive the points b and b', substantially as shown and described, and for the purposes set forth.

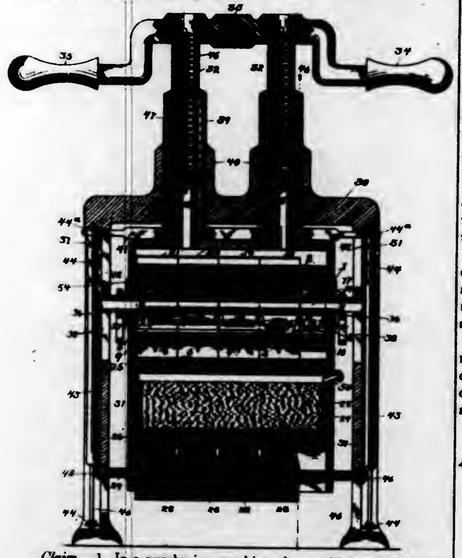
5. In a court-file-cover fastener, the fastener consisting of the main sheet B and the points b and b', standing at right angles with said sheet, and washer D, having in each end slots d, adapted to receive the points b and b', substantially as shown and described.

486,968. FIRE-TONGS. SIDNEY W. BARTHOLOMEW, Castalia, N. C. Filed May 20, 1892. Serial No. 433,749. (No model.)

Claim.—1. A fire-tongs consisting of the arm A, having the slotted-handle portion, and the arm A', pivotally secured in said slotted portion and having a slotted guide at right angles to the slot in the handle B, through which the arm A passes.

2. A fire-tongs consisting of the arm A, formed of wire having one end bent to form a handle portion and having said end turned back upon itself to form the slot C, in combination with the arm A', formed of wire having one end bent into curved form with the free end of the wire passed through and pivoted within the slot in the handle portion of the arm A and having said free end embracing the two arms A and A' and bent back upon itself to form the slot C', through which the arm A passes, substantially as herein described.

486,964. MACHINE FOR PRINTING STENCIL CHARACTERS CONSECUTIVELY. EDWIN G. BATES, New York, N. Y., assignor to the Bates Manufacturing Company, of New York. Filed June 3, 1889. Serial No. 312,959. (No model.)



Claim.—1. In a numbering-machine, the combination, with a series of endless tapes having numerals cut therein, of mechanism adapted to move said tapes along one after another, whereby the stencil-openings are brought into position to print numbers consecutively, and an inking apparatus located within said tapes, substantially as set forth.

2. In a numbering-machine, the combination of the reciprocating casing, endless stencil-cut tapes mounted thereon, feeding mechanism located within said tapes, operated by the reciprocation of the casing, and an inking apparatus also located within said tapes, substantially as set forth.

3. In a stenciling-machine, the combination, with a series of endless stencil-cut tapes, of feed-wheels located within said tapes, adapted to move said tapes to print consecutively, and an inking apparatus also located within said tapes opposite said feed-wheels and serving to maintain said tapes in proper position, substantially as set forth.

4. In a stenciling-machine, the combination of a stencil-cut endless tape, feeding mechanism for moving it, and a pivoted brush located within the tape for inking it, substantially as set forth.

5. In a numbering-machine, the combination, with a reciprocating casing and endless stencil-cut tapes mounted thereon, of mechanism located within said tapes, operated by the reciprocation of the casing to move said tapes to print consecutively, and means for applying ink to the stencil-tapes on the inner surface and in line with the stencil-openings which are in printing position, substantially as set forth.

6. In a numbering-machine, the combination of a series of endless stencil-cut tapes, a series of feed-wheels engaging with said tapes, each wheel adapted to make two revolutions to effect a complete revolution of the tape fed by it and having four shallow notches and one deep notch, a pawl having stepped teeth adapted to engage with said notches, and a regulator adapted to prevent a tooth of the pawl dropping into the deep notch of its wheel, except on every alternate revolution of the wheel next below in denomination substantially as set forth.

7. In a numbering-machine, the combination, with a stationary frame and movable casing, of notched feed-wheels, a toothed shaft upon which said feed-wheels are mounted, a straight slot in said stationary frame, in which an end of said shaft slides, and a piece 36, provided with slot 37, mounted on said shaft, engaging with a pin on the stationary frame, substantially as set forth.

8. In a numbering-machine, the combination, with a reciprocating casing and inking apparatus contained thereon, of a stationary frame, means for reciprocating said casing with relation to said frame, a gear on a spindle supported in said stationary frame, a gear on the shaft of the ink-brushes of the inking apparatus, said gears being adapted to be brought into engagement by the downward movement of said casing, and means for rotating said spindle, substantially as set forth.

9. In a numbering-machine, the combination, with a series of endless stencil-cut tapes, of a series of feed-wheels for said tapes, each adapted to make two revolutions for each revolution of the tape fed by it, means for moving said wheels to feed the tapes to print consecutively, comprising four shallow and one deep notch cut in the inner periphery of said feed-wheels, a rock-shaft, a pawl carried by said rock-shaft, having stepped teeth and one auxiliary tooth of greater length than any tooth but the units-tooth, and an annular wheel having alternate deep and shallow notches, with which said auxiliary tooth engages, substantially as set forth.

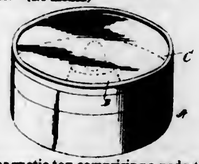
10. In a consecutive-numbering machine, the combination, with endless moving tapes, of an inking apparatus comprising an ink-reservoir, ink-ducts, valves controlling the supply of ink from the reservoir to the ducts, and ink-brushes for applying the ink, substantially as set forth.

11. In a consecutive-numbering machine, an inking apparatus comprising an ink-reservoir, ink-ducts, double-seated valves located within said ink-ducts, and ink-brushes for applying the ink, substantially as set forth.

12. In a consecutive-numbering machine, an inking apparatus comprising an ink-reservoir, ink-ducts, and double-seated valves adapted to operate by gravity to close the bottom valve and by pressure of the printing-surface on the valve-stem to close the upper valve, substantially as set forth.

13. In a numbering or stenciling machine, the combination of a reciprocating body or casing, endless stencil-cut tapes mounted thereon, feeding mechanism located within said tapes, operated by the reciprocation of the body or casing, and a single-inking apparatus within and common to all of said stencil-tapes, substantially as set forth.

486,965. TOY. HENRY CASPAR, Chicago, Ill. Filed June 17, 1892. Serial No. 437,015. (No model.)



Claim.—1. A magnetic toy comprising a pedestal, a magnet fixed therein and exposed through the top thereof, and an egg-shaped object or fragment thereof, carrying a piece of metal or other material of magnetic property in one end, whereby the pedestal may be manipulated to attract the object and hold it in an erect position, substantially as specified.

2. The improved magnetic toy described, comprising the case A, having the platform therein, as shown, the pedestal B, fixed in the bottom thereof, the magnet fixed in the pedestal and exposed through its top, the transparent cover closing the platform, and the egg-shaped object or fragment carrying a piece of metal or other material of magnetic property in one end, to be operated substantially as and for the purpose specified.

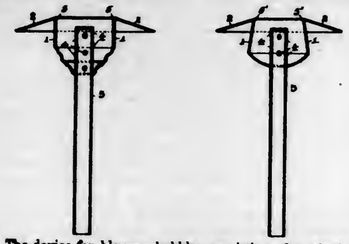
486,966. FIRE-KINDLER. SIGMUND HEINSEIMER, Savannah, Ga., assignor of one-half to John C. Reuter, same place. Filed July 6, 1892. Serial No. 439,168. (No specimens.)

Claim.—The process of treating whole wood for fire-kindlers, consisting in first boiling the same in a mixture of sulphuric acid, crude oil, and rosin, and subsequently dipping the same into semi-fluid rosin to form a coating, substantially as specified.

486,967. SOAP-BUBBLE PIPE. WILLIAM S. PICKETT, Rochester, N. Y. Filed Mar. 19, 1892. Serial No. 425,282. (No model.)

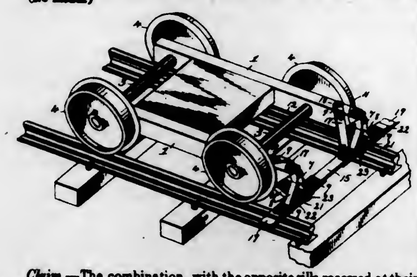
Claim.—1. The device for blowing bubbles, consisting of a tube having an enlarged bowl provided with an outwardly-convex annular

flange or collar having a film-retaining lip on its interior periphery, substantially as set forth.



2. The device for blowing bubbles, consisting of a tube having an enlarged bowl to hold a bubble and a perforated device for directing divided air-currents against the interior of the bowl, the perforations being within its circumference and directed toward the interior surface of its outer wall, substantially as set forth.

486,968. SAFETY ATTACHMENT FOR CAR-TRUCKS. LOUIS F. FISHER, Willow Springs, Mo. Filed June 15, 1892. Serial No. 436,859. (No model.)



Claim.—The combination, with the opposite sills recessed at their front ends, the inverted-L-shaped hangers having their upper horizontal portions inserted into the recesses and bolted to the sills, said hangers having their lower ends provided with diverging bifurcations terminating in perforated ends, of the transverse bar upon the under sides of the bifurcations, the metal plates upturned at their front edges, provided with depending flanges and applied to the under side of the transverse bar, the diagonal braces bolted to the sills and having their front ends terminating over the inner bifurcations of the hangers, and the series of bolts passed through the lower ends of the braces, the inner bifurcations, the transverse bar and plates, and bolts passed through the outer bifurcations, bar, and plates, and through bar and plates between the bifurcations, substantially as specified.

486,969. LUBRICATOR. JEAN B. FONDU, Vilvorde, Belgium. Filed Mar. 1, 1890. Serial No. 342,825. (No model.) Patented in Belgium Apr. 9, 1886, No. 72,631; in France Oct. 13, 1886, No. 179,011; in England Nov. 19, 1886, No. 15,063, and June 6, 1887, No. 8,108; in Austria-Hungary June 2, 1888, No. 23,280, and in Italy June 30, 1888, No. 23,562.

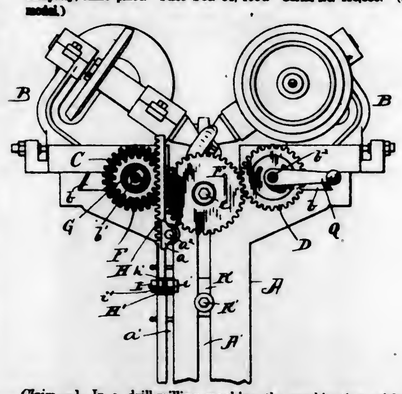
Claim.—1. The combination, with a lubricator having a curved top or upper portion, of the discharge duct or tube having lateral entrance-openings at or near the top of the curved portion and with no communication with the cup at the bottom, and a regulator for said openings working through the top of the lubricator, substantially as described.

2. In a lubricator for moving parts, the combination, with the receptacle, the removable top having the curved inner surface, and the screw working through said top, of the discharge duct or tube having lateral entrance-openings at or near the top of the curved portion and in position to be closed by the screw and with no communication with the cup at the bottom, substantially as described.

3. In a lubricator for moving parts, the combination, with the receptacle and discharge duct or tube having no communication with the cup at the bottom, of the top having the curved inner surface with the tube depending from its highest part, registering with the discharge duct or tube and having the lateral openings for the entry of lubricant at or near the top of the curved portion, substantially as described.

4. In a lubricator for moving parts, the combination, with the receptacle and discharge duct or tube, of the top having the curved inner surface with the tube depending from its highest part, registering with the discharge duct or tube and having the lateral openings for the entry of lubricant, and the screw working through said top and past the openings to close or vary the size of the same, substantially as described.

486,970. TWIST-DRILL-MILLING MACHINE. PETER HOSSCHEID, Akron, Ohio, assignor to the Whitman & Barnes Manufacturing Company, same place. Filed Dec. 31, 1891. Serial No. 416,636. (No model.)



Claim.—1. In a drill-milling machine, the combination, with a supporting-frame, cutter-spindle carriers, and a work or blank holding spindle, of screws connected with the cutter-spindle carriers and operatively connected with each other, a pinion loosely mounted on the shank of one of said screws, a rack adapted to operatively connect said spindle and work or blank holding spindle, and suitable mechanism for locking said pinion to the screw upon which it is mounted, substantially as set forth.

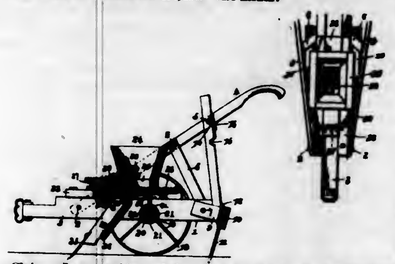
2. In a milling-machine, the combination, with a supporting-frame, cutter-spindle carriers, and a work or blank holding spindle, substantially as indicated, of screws connected with the cutter-spindle carriers, gears mounted on the shanks of said screws and operatively connected with each other, a pinion loosely mounted on the shank of one of said screws adjacent the gear aforesaid, a rack adapted to operatively connect said pinion and work or blank holding spindle, and suitable mechanism for locking said pinion to the adjacent gear, substantially as and for the purpose set forth.

3. In a milling-machine, the combination, with a supporting-frame, cutter-spindle carriers, and a work or blank holding spindle, substantially as indicated, of screws connected with the cutter-spindle carriers, gears mounted on the shanks of said screws and operatively connected with each other, a pinion loosely mounted on the shank of one of said screws adjacent the gear aforesaid, a rack adapted to operatively connect said pinion and work or blank holding spindle, and a nut mounted on the correspondingly-threaded portion of the shank of the respective screw forward of said pinion, and the opposing surfaces of said pinion and adjacent gear being such that upon tightening the nut aforesaid said pinion is brought into frictional contact with said gear and firmly held thereto, substantially as and for the purpose set forth.

4. In a milling-machine, the combination, with a supporting-frame and cutter-spindle carriers, of screws connected with the cutter-spindle carriers, gears mounted on the shanks of said screws and operatively connected with each other, one of said gears being loosely mounted on the respective screw and the latter adjacent said gear being provided with a rigid disk, and suitable mechanism adapted to lock said gear to the disk, substantially as and for the purpose set forth.

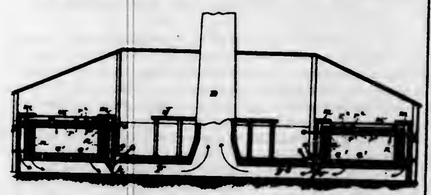
5. In a milling-machine, the combination, with a supporting-frame and cutter-spindle carriers, of screws connected with the cutter-spindle carriers, gears mounted on the shanks of said screws and operatively connected with each other, one of said gears being loosely mounted on the respective screw and the latter adjacent said gear being provided with a rigid disk, the disk being slotted, as at s, and the adjacent gear having bolts or securing devices, as at O, extending through said slots, the opposing surfaces of said gear and disk being such that upon the tightening of said bolts or securing devices said gear is brought into frictional contact with said disk and firmly held thereto, substantially as and for the purpose set forth.

486,971. PLANTER. WILLIAM M. HOLLADAY, Moulin, Miss. Filed June 21, 1892. Serial No. 437,467. (No model.)



Claim.—In a machine of the class described, the combination, with a framework, an axle, ground-wheels mounted thereon, and a hopper located upon the framework and provided with a bottom having an opening, of a seed-slide mounted in the hopper, provided at its front end with a notch and provided with an opening, means for communicating a forward motion to the slide, and a coiled-spring loop connected permanently at its ends to the sides of the opposite hopper and having its central or intermediate portion sprung over the front or notched end of the slide, substantially as specified.

486,972. CONTINUOUS BRICK-KILN. CARL F. KAUL, Madison, Nebr. Filed Mar. 23, 1892. Serial No. 426,097. (No model.)



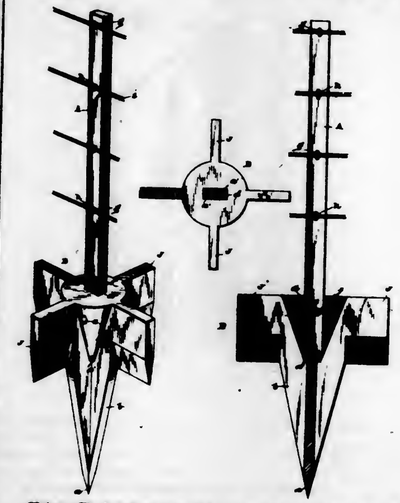
Claim.—1. In a brick-kiln, the combination, with the walls or casing of the brick-chamber, of a series of passages for draft, a portion of said passages being constructed for upward draft, a portion for downward, and a portion being for lateral or sidewise drafts; an underground flue with which the downward draft-passages are connected, and a smoke-stack to which the underground flue extends, substantially as set forth and described.

2. In a kiln, the combination, with a brick-chamber provided with apertures in its floor, of an underground flue with which said apertures connect, apertures in the covering of said chamber provided with removable covers, a flue placed on the top of said chamber to cover a row of said apertures, vertical flues in the side walls, connecting with said top flue at its extremities and with said underground flue, and apertures *n*, connecting said side flues with the interior of the said chamber, whereby upward, downward, and side or lateral drafts for heat are produced, substantially as set forth.

3. The combination of the brick-chamber of a brick-kiln which has a perforated covering and is provided with opposite vertical flues in the side walls, of a removable flue constructed to cover a row of perforations in said covering and also to connect two opposite vertical flues at their upper extremities, substantially as set forth and described.

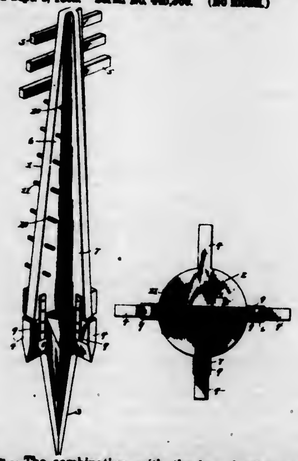
4. In a brick-kiln, the combination, with one or more fire-boxes at the front, of an inner wall *b*, provided with openings *h* and *i*, apertures *d'* in the floor of the brick-chamber, an underground flue leading to a smoke-stack, a perforated covering on said chamber, removable caps for the apertures in said covering, vertical flues *n*, and lateral passages *s* in the side walls, and a removable flue *w* to be placed on the top covering in position to cover a row of apertures and also to connect with vertical flues *m* at their upper extremities, substantially as and for the purposes described.

486,978. METALLIC POST OR BASE FOR FENCES. ORVILLE M. KNOX, Oneida, N. Y. Filed June 30, 1892. Serial No. 438,004. (No model.)



Claim.—The herein-described foot-piece for fence-posts, the same formed of one piece of metal and consisting of the inverted cone-shaped body portion having a post-receiving socket in its upper side, whose bottom is perforated to form drainage-openings, the four-winged spear-point at the lower end of the body portion, whose edges are tapered toward the lower extremity thereof and are square, and the radial wings J, extending from the body portion above the spear-point and in line with the wings thereof, said wings J having their outer edges squared and their lower edges beveled to form cutting-shoulders, substantially as specified.

486,974. TELEGRAPH-POLE. ORVILLE M. KNOX, Oneida, N. Y. Filed Sept. 5, 1892. Serial No. 445,202. (No model.)

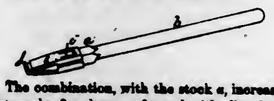


Claim.—The combination, with the base having a spear-point and provided with outwardly-extending wings, of a pole T-shaped in horizontal section and tapering from the lower end to the top and having its coincident flanges forming a flat surface and provided in one of the flanges with a vertical series of perforations, the cross-bars secured to the flat surface formed by the coincident flanges, the horizontal pins arranged in said perforations and projecting from opposite sides of the flange and forming a ladder, and means for securing the lower end of the pole to the base, substantially as described.

486,975. DOOR-SPRING. CHARLES KOCH, Whiting, Iowa, assignor of one-half to Washington A. Koch, same place. Filed May 12, 1892. Serial No. 432,782. (No model.)

Claim.—In a device of the character set forth, the combination of a framing, a plate secured to said framing and having ears and an apertured lug, a rod or bar having an end thereof pivotally mounted in said ears, a door having a loop thereon through which the end of the rod or bar freely passes, a spring secured to said apertured lug of the plate at one end and to the said rod or bar at its opposite end, and a hook attached to the door and adapted to engage the said rod or bar, substantially as described.

486,976. INK-ERASER. J. B. MATHEW, Hartford, Conn. Filed Oct. 5, 1891. Serial No. 407,703. (No model.)



Claim.—1. The combination, with the stock *a*, increasing in size from the edge upward, of a sleeve *c*, formed with slits *c'* and springs *c''*, and the strip *d*, substantially as described.

2. In combination, the strip *d*, the stock *a*, provided with mortises *a'*, the sleeve *c*, conforming generally to the shape of the stock and provided with the springs *c''*, and spurs *c'''*, all substantially as described, and for the purposes set forth.

3. The combination of stock *a*, pliable strip *d*, and folded slit sleeve *c*, all substantially as described, and for the purposes set forth.

4. The combination of stock *a*, pliable strip *d*, sleeve *c*, and springs *c''*, all substantially as described, and for the purposes set forth.

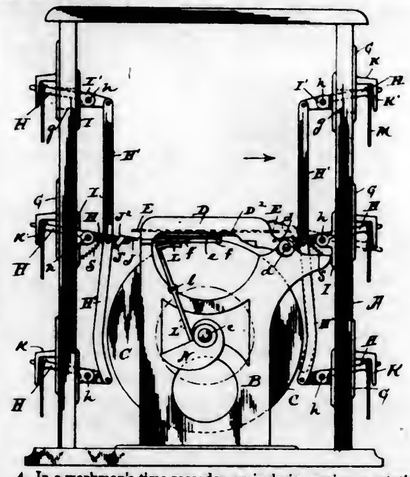
5. The combination of stock *a*, pliable strip *d*, sleeve *c*, and springs *c''*, terminating in spurs *c'''*, all substantially as described, and for the purposes set forth.

486,977. WORKMAN'S TIME-RECORDER. REUBEN D. MORGAN, Cleveland, Ohio. Filed Dec. 4, 1891. Serial No. 414,041. (No model.)

Claim.—1. In a workman's time-recorder, a rotating cylindrical type-bearing surface, a frame supported above and extending lengthwise of the axis of said type-bearing surface and having cross-pieces or rods, a sliding frame or carriage mounted on and adapted to slide endwise of said rods or cross-pieces, said sliding frame being adapted to carry the time-record-receiving paper or card and the carbon-paper or inked ribbon instrumental in making the record, and suitable mechanism for pressing said time-record-receiving paper or card and carbon-paper or inked ribbon against the type of the type-bearing surface aforesaid, substantially as set forth.

2. In a workman's time-recorder, supporting frames or standards and a rotating type-cylinder supported by said frames or standards, a frame extending lengthwise above the cylinder and hinged to said supporting frames or standards, said hinged frame having cross-pieces or rods, a sliding frame or carriage mounted on and adapted to slide endwise said rods or cross-pieces of the hinged frame, said sliding frame being adapted to carry the time-record-receiving paper or card and the carbon-paper or inked ribbon instrumental in making the record, and suitable lever and spring-actuated mechanism for pressing said time-record-receiving paper or card and carbon-paper or inked ribbon against the type on the type-cylinder, substantially as set forth.

3. In a workman's time-recorder, upright supporting frames or standards and a rotating type-cylinder supported by said frames or standards, a frame mounted on or connecting the supporting frames or standards above the cylinder and provided with cross-pieces or rods, a sliding frame or carriage mounted on and adapted to slide endwise said rods or cross-pieces, the side members of the sliding frame being bent or folded to form holders for carrying the time-record-receiving paper or card and the carbon-paper or inking-ribbon instrumental in making the record, and suitable lever and spring-actuated mechanism for pressing the time-record-receiving paper or card and carbon-paper and inking-ribbon against the type on the type-cylinder, substantially as set forth.



4. In a workman's time-recorder, an inclosing casing, a rotating type-cylinder supported within said casing, and the type of the cylinder being arranged in series substantially as shown and described, a frame, as at D, supported above the type-cylinder, a sliding frame or carriage supported by frame D and adapted to move crosswise of the same and carry the time-record-receiving paper or card and the carbon-paper or inking-ribbon instrumental in making the record, a spring, as at E, for each series of the type of the type-cylinder, said springs being connected with and arranged transversely of frame D, and having, respectively, a depending test, projection, or hammer adapted to press the time-record-receiving paper or card and inking-ribbon or carbon-paper against the type of the respective series of type of the type-cylinder, and levers pivotally connected with the inclosing casing and adapted to be manipulated from outside the casing, and a nose or projecting member, as at J, pivotally connected with the inner end of said levers and adapted to engage and lift the free end of one of the springs aforesaid, substantially as set forth.

5. In a workman's time-recorder, an inclosing casing and a rotating cylinder supported within the casing and bearing type arranged substantially as indicated, a hinged frame supported above the type-cylinder, and a sliding frame or carriage supported by said hinged frame and adapted to be moved crosswise of the cylinder and carry the time-record-receiving paper or card and the carbon-paper or inking-ribbon instrumental in making the record, the side members of the hinged frame having depressions or recesses with the recesses in one side member alternating with the recesses in the other side member, horizontal or approximately horizontal leaf-springs secured to one of the respective side members of the hinged frame between said depressions or recesses and extending transversely of the frame, the free ends of said springs being adapted to be depressed into a recess of and extending beyond the opposite side member of said hinged frame, the springs having, respectively, a depending projection or hammer, and mechanism, substantially as and for the purpose set forth.

6. In a workman's time-recorder, an inclosing casing, a rotating cylinder supported within said casing and bearing type arranged substantially as indicated, a hinged frame supported above the type-cylinder and a sliding frame or carriage supported by said hinged frame and adapted to move crosswise of the cylinder and carry the time-record-receiving paper or card and the carbon-paper or inking-ribbon instrumental in making the record, the side members of the hinged frame having depressions or recesses with the recesses in one side member alternating with the recesses in the other side member, horizontal or approximately horizontal leaf-springs secured to one of the respective side members of the hinged frame between said depressions or recesses and extending transversely of the frame, the free ends of said springs being adapted to be depressed into a recess of and extending beyond the opposite side member of said hinged frame, the springs having, respectively, a depending projection or hammer adapted to be engaged by an arm or member of the lever mechanism aforesaid, substantially as and for the purpose set forth.

7. In a workman's time-recorder, an inclosing casing, a rotating cylinder bearing series of type arranged substantially as indicated, a frame, as at D, supported above the type-cylinder and a sliding frame or carriage supported by frame D and adapted to move at right angles to the axis of the type-cylinder and carry the time-record-receiving paper or card and the carbon-paper or inking-ribbon instrumental in making the record, a spring, as at E, for each series of type on the type-cylinder, said springs being connected with and arranged transversely of frame D, and having, respectively, a depending test, projection, or hammer, as at *e*, mechanism, substantially as indicated, for lifting the free ends of said springs to actuate the hammers, and a spring connected with said hammer-actuating mechanism and acting in the direction to return said mechanism to its normal position, substantially as and for the purpose set forth.

8. In a workman's time-recorder, a rotating type-cylinder bearing series of type arranged on the periphery of the cylinder, a frame or carriage located above and lengthwise of said cylinder and adapted to slide crosswise of the cylinder, said sliding frame carrying the time-record-receiving paper or card and the carbon-paper or ribbon instrumental in making the record, suitable lever and spring-actuated mechanism for each series of type and adapted to press the time-record-receiving paper or card and carbon-paper or inking-ribbon against the type of the respective series of type of the type-cylinder, and arms, as at K, projecting outwardly from the sides of the inclosing casing and having, respectively, a depending member, as at K', provided with a slot adapted to be engaged by an arm or member of the lever mechanism aforesaid, substantially as and for the purpose set forth.

9. In a workman's time-recorder, supporting frames or standards, a rotating spindle mounted in said frames or standards and a type-cylinder mounted on the spindle, a frame or carriage supported above and extending lengthwise of the cylinder, said frame or carriage being adapted to hold the time-record-receiving paper or card and the carbon-paper or ribbon instrumental in making the record, the cross-pieces at either end of said frame being provided with teeth, a sector pivotally connecting with the supporting-frame at either end of the cylinder, and suitable means for operatively connecting said sector with the rotating spindle, substantially as and for the purpose set forth.

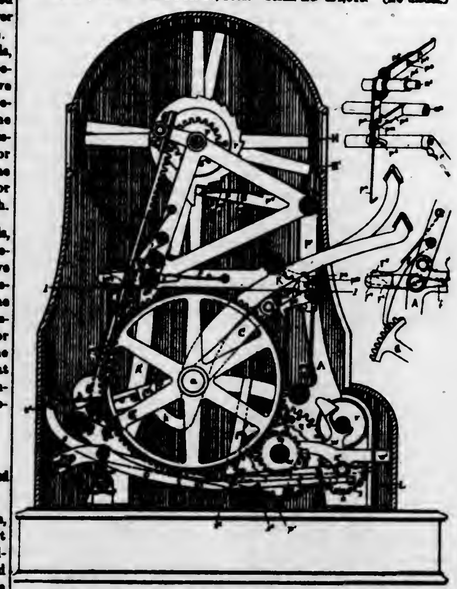
10. In a workman's time-recorder, supporting frames or standards, a rotating spindle mounted in said frames or standards and a type-cylinder mounted on the spindle, a frame or carriage supported above and extending lengthwise of the cylinder, said frame or carriage being adapted to hold the time-record-receiving paper or card and the carbon-paper or ribbon instrumental in making the record, the cross-pieces at either end of said frame being provided with teeth, a sector pivotally connected with the supporting-frame at either end of the cylinder, and a cam mounted on the rotating spindle aforesaid at either end of the cylinder, said sector having a depending arm or member adapted to be engaged and actuated by the respective cam, substantially as and for the purpose set forth.

486,978. HAY-RACK. LYMAN A. SWAN, Freeman, N. Y. Filed July 26, 1892. Serial No. 441,273. (No model.)

Claim.—1. In a hay-rack, the combination of the main stay-pieces, the front and rear rack-sections having bed-pieces arranged adjacent to the main stay-pieces and provided with cross-pieces, and clips adjustably securing the bed-pieces and the main stay-pieces together and adjustably secured to the cross-pieces, whereby the rack is made laterally adjustable, substantially as described.

2. In a hay-rack, the combination of the main stay-pieces, the front and rear rack-sections having bed-pieces and having cross-pieces provided with longitudinal slots, the angular clips having a lower horizontal portion arranged on the lower edges of the bed and main stay-pieces and having an upper horizontal portion arranged on the lower faces of the cross-pieces and provided with a longitudinal slot, and bolts passing through the slots and cross-pieces and the clips and securing the upper horizontal portions to the cross-pieces and the lower horizontal portions to the bed-pieces and adjustably connecting the latter to the cross-pieces, substantially as and for the purpose described.

486,979. CASH REGISTER AND INDICATOR. CHARLES CARR, Boston, Mass. Filed Feb. 15, 1892. Serial No. 421,618. (No model.)



Claim.—1. In a registering-machine, the combination of the main first-moving gear, the levers K, the bail B, having the positive stop-bar a^7 and having pivoted to it the driving-pawl D, whose driving movement with the bail is positively limited by and at said stop-bar, the said pawl, and the locking-rod a^{14}, located beyond and out of contact with the pawl in its driving movement, but in a position near its back, where it prevents the pawl at the end of and after its driving motion from swinging out of engagement with the teeth of the gear, substantially as and for the purpose set forth.

2. In a registering-machine in which a one-way driving mechanism is introduced between the main driving-wheel and the driven wheel of the adding mechanism, the combination of the automatic operative mechanism for the driving-wheel, said driving-wheel, the

adding mechanism, and the intermediate connecting mechanism, with a stop device for the adding mechanism, which is alternately thrown out of and into action by said operative mechanism to first allow the adding mechanism to operate and then to furnish a positive stop therefor when it has reached the desired position, substantially as set forth.

3. The combination of keys K, tappets *k*, bail B, pawl D, gear G, pinion *m*, ratchet *n*, pawl *l*, gear *g*, having pins *p'* therein, and said pins *p'*, with a stop device which by the action of bail B is forced into action with pins *p'*, serving to stop gear *g* and related parts, substantially as described.

4. The combination of keys K, tappets *k*, bail B, pawl D, gear G, pinion *m*, ratchet *n*, pawl *l*, gear *g*, the pins *p'*, and a stop device operated by said bail B to act with pins *p'* to stop gear *g* positively with a releasing mechanism operated by the keys to force said stop device away from pins *p'*, allowing a movement of gear *g*, substantially as set forth.

5. The combination of keys K, tappets *k*, bail B, pawl D, gear G, pinion *m*, ratchet *n*, pawl *l*, gear *g* with trigger *d'*, lever *o*, tooth o^3, and pins *p'*, substantially as and for the purpose set forth.

6. The combination of keys K, frame C, tilting frame *i*, fingers i^3, and cross-bar *f'* with stop-levers *e*, substantially as and for the purpose specified.

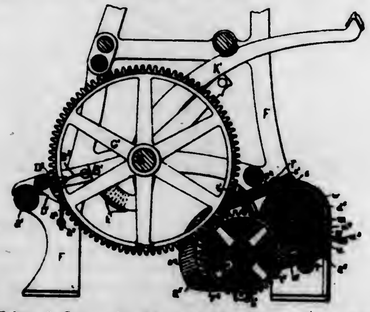
7. In a registering-machine having groups of keys, each group representing a different decimal place and each setting suitable automatic operative mechanism for a distinct wheel of a registering mechanism, the action of which wheel if it corresponds to a higher group is permissible only while the operative mechanism of the next lower group is at the normal position, the combination of the keys, operative mechanism, and adding-wheel of a higher group, a pawl acting with said wheel, a locking device for holding said pawl into said wheel to prevent its turning, the operative mechanism of the next lower group, and suitable connecting mechanism whereby the action of the higher wheel is allowed only when the said pawl is unlocked by the action of the operative mechanism of the lower group, substantially as set forth.

8. The combination of keys K, bail B, and gear G' of a higher group with pawl F, arm F^6, hook F', its extended hub F^2, arm *f* on hub F^2, link f'^2, and bail B of a lower group of keys, substantially as and for the purpose set forth.

9. In an indicating-machine in which the indicating-wheels are held in indicating position by independent pawls, said pawls having a common key-operated tripping device, the combination of said wheels, pawls, and tripping device with a catch device which through the medium of the tripping device serves to catch and hold said pawls out of working position during the first and larger portion of the forward stroke of the keys and then releases said pawls, allowing them to act during the remainder of the forward and the whole of the backward stroke, substantially as described.

10. The combination of wheels H and H', ratchets *r*, pawls P, arms P', pins P^5, hub P^6, arm P', trigger P^8, bail C, pin P^9, catch P^3, hook P^4, and the keys, substantially as and for the purpose set forth.

486,980. CASH-REGISTER. CHARLES CARR, Boston, Mass. Filed June 8, 1892. Serial No. 436,016. (No model.)



Claim.—1. In a registering-machine having an adding mechanism in which the process of carrying is effected by means of camdisks fixed to the numeral-wheels of lower value, each acting to lift a lever and hook-pawl, said hook-pawl engaging the teeth of a ratchet-wheel attached to the next higher numeral-wheel, thus turning said higher numeral-wheel through one units-space during the movement of the lower wheel through each tenth units-space, the combination of key-levers arranged in groups or banks, each group representing a different decimal place, a bail or yoke spanning each group and operated by the keys of said group, a driving-pawl pivoted on each of said bails and each engaging the teeth of a separate main driving-gear, said driving-gears, the above-described adding mechanism, and suitable intermediate one-way driving mechanism connecting each of said main driving-gears to its corresponding numeral-wheel in the adding mechanism, all operating together, substantially as and for the purpose set forth.

2. The combination of keys K, bail B, pawl D, gears G and *g*, gears *h* and *e*, the one-way driving mechanism connecting gears *g* and *h*, numeral-wheel *d*, to which said gear *e* is attached, disk *c*, also attached to the numeral-wheel *d* and having upon its periphery the cam *f*, said cam, lever *o*, having roller *p* running on disk *c*, said roller, a hook-pawl *s*, pivotally attached to said lever, and ratchet *r'*, attached to numeral-wheel *d'* and engaged by the said hook-pawl and said numeral-wheel *d'*, all arranged and operating together, substantially as set forth.

3. The combination of the numeral-wheels, the shaft a^4, upon which the numeral-wheels are loosely mounted, the disks *m*, keyed to the shaft and having each a tooth *m'*, the spring-pawls *n*, fixed upon the numeral-wheels by means of pins *n'*, said pins, the rocking frame *u*, having hooks u^4 formed thereon, and said hooks, substantially as and for the purpose set forth.

4. The combination of the adding mechanism herein described, the resetting device therefor and the rocking arms *t*, cross-bar *t'*, its attached spring-fingers s^3, the pins t^2 in the said rocking arms, the arms *x'*, having cam-slots u^3, which from the connection with and by the action of the resetting mechanism act through and by means of pins t^2, arms *t*, bar *t'*, and fingers s^3 to disengage the carrying-pawls of the adding mechanism, substantially as described.

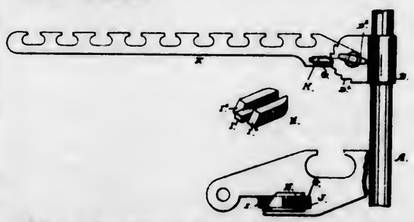
5. The combination of the numeral-wheels, the ratchets *r'*, shaft a^4, disks *m*, having teeth *m'*, spring-pawls *n*, pins *n'*, rocking frame *u*, hooks u^4, arms *x'*, cam-slots u^3, pins t^2, arms *t*, cross-bar *t'*, spring-fingers s^3, and pawls *s*, having arms *s'*, and said arms, all substantially as and for the purpose set forth.

6. In a registering-machine in which the first-moving gears are operated by the action of pawls carried by bails which have been raised and allowed to fall by the action of finger-keys, the movement of the said bails and pawls always stopping in the same position resting against a fixed stop-bar, the combination of keys, bails, pawls, gears, the stop-bar, and arms formed upon each of said pawls with fixed locks, which are so located that when the bails and pawls are in the resting position they act against the arms of the pawls and prevent the said pawls from swinging out of engagement with the teeth of said gears, thereby forming a positive stop and lock for said gears, substantially as described.

7. The combination of the fixed pawl-lock a^5, arm D^2, fixed to pawl D, bail B, carrying pawl D, said pawl D, lever K, spring D^3 or equivalent pawl-mover, and the fixed stop-bar *a'*, for the purpose of giving a specific and definite movement to the wheel G', substantially as described.

8. The fixed lock a^5, in combination with pawl-arm D^2, and pawl D, for the purpose of locking the said pawl D in its engagement with gear G while at rest, substantially as described.

486,981. ADJUSTABLE STAND FOR SHOW-WINDOWS. CHARLES H. GRUNHAGEN, San Francisco, Cal. Filed Feb. 29, 1892. Serial No. 423,863. (No model.)



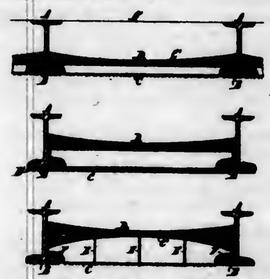
Claim.—1. In a show-stand for the display of goods and wares in windows, a spring-clamp engaging the standards or uprights, having projecting or extended spring-leaves with serrated or notched edges and a movable pivoted bracket or arm provided with a spring trigger or block in the head thereof, having inwardly-extending points adapted to engage with the teeth or notches of the spring-clamp, in the manner described.

2. In a stand for show-windows, a spring-clamp having extended leaves with notched edges, a slotted bracket or arm pivoted to the leaves, a spring trigger or block with upwardly-extending points and furrowed upon both sides, forming runways in the bracket or arm, and a spring for operating the block, in the manner described.

3. In a show-stand for windows, a spring-clamp composed of one

piece of sheet metal bent to form tubes or sockets around the spring-clamp and integral with it, in combination with the stand A, rods N, and thumb-screw M, as described.

486,982. FIREPROOF CEILING. GEORGE HAYES, New York, N. Y. Filed Jan. 14, 1892. Serial No. 418,004. (No model.) Patented in France Oct. 28, 1892, No. 226,755; in Belgium Oct. 26, 1892, No. 93,740 and in England Apr. 16, 1892, No. 6,617.



Claim.—1. A covering for the under surface of iron beams, of sheet metal, having apertures arranged at intervals throughout, the edge metal of which is turned outward and with a backward bead or curve projecting as tongues, hooks, or barbs to hold plaster and having its edges turned over to clamp the flanges of the beams, essentially as shown and described.

2. A trough-like covering-plate for the lower face of iron beams, with upturned edges for securing to beams and apertures at intervals throughout its face, and projecting hooks to grasp and hold plaster thereto, essentially as shown and described.

3. A hollow sheet-metal blocking for use between iron beams, molded or formed at two edges or ends with curves to rest upon flanges of beams, with its lower face flush with the lower face of beams to serve as ceiling-lath, the said lower face apertured at intervals, each aperture having at its verge raised and projecting tongues, hooks, or barbs, as herein set forth, the upper face of the blocking also apertured, and all constructed essentially as shown and described.

4. A ceiling construction consisting of a covering-plate for iron beams and a hollow boxing or blocking for insertion between the beams, with its lower face flush with the covering-plate of beams and all apertured, and with projecting tongues for reception of plaster, essentially as shown and described.

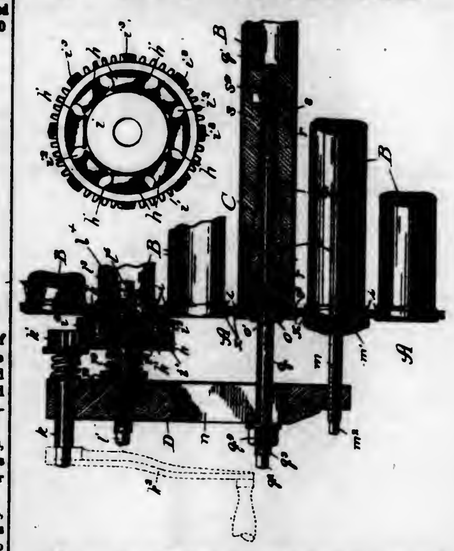
5. The combination of iron beams, apertured and tongued sheet-metal covering-plate with upturned flanges gripping the beams, and hollow apertured and tongued sheet-metal blocking between the beams, formed and arranged essentially as shown and described.

486,983. PROCESS OF UTILIZING HEAT IN THE MANUFACTURE OF SUGAR AND SALT. SAMUEL H. ALLEN, Philadelphia, Pa., assignor to the Sugar Apparatus Manufacturing Company, same place. Filed May 4, 1891. Serial No. 391,166. (No specimens.)

Claim.—1. The within-described improvements in the process of sugar-refining and in the manufacture of salt or brine from salt-water, consisting, first, in evaporating the salt-water to separate and save the salt or brine by an evaporation in which the water-vapors from the evaporating salt-water are condensed to comparatively-hot distilled water in heating or evaporating the salt-water, and, second, in collecting the hot distilled water resulting from the said evaporation and in washing bone-black, dissolving sugars, &c., in the process of sugar-refining with the same, the distilled water serving as a carrier of the heat used in the manufacture of the salt or brine into the sugar-refining processes and as the medium of its use in the latter, substantially as specified.

2. The within-described improvements in the process of sugar-refining and in the manufacture of salt or brine from salt-water, consisting, first, in evaporating the salt-water to separate and save the salt or brine by an evaporation in which the water-vapors from the evaporating salt-water are condensed to comparatively-hot distilled water in heating or evaporating the salt-water; second, in collecting the hot distilled water resulting from the said evaporation and in washing bone-black with the same after a filtration of sugar liquor through the black in the process of sugar-refining, and, third, in again collecting the said hot distilled water after it has been used in washing the bone-black and in heating with it the salt-water preparatory to the evaporation of the latter for the production of salt or brine, the distilled water serving as a carrier of heat used in the manufacture of salt or brine into the sugar-refining processes and again as a carrier of the same heat back into the salt or brine making process, substantially as and for the purpose specified.

486,984. TUBE-FLANGING MACHINE. JOHN D. MURPHY, Chicago, Ill. Filed Feb. 16, 1892. Serial No. 421,608. (No model.)



Claim.—1. In a device for upsetting the ends of tubes, the combination, with a support and means for securing the same in operative position, of a shaft on the support, a rotary head on the shaft, provided with revolable upsetting-wheels to engage and travel upon the tube end, a confined spring upon the shaft, bearing against the rotary head to press the upsetting-wheels against the tube end, tensioning means upon the shaft for the said spring, and means for turning the said head, substantially as described.

2. In a device for upsetting and beading the ends of tubes, the combination, with means for securing the device in operative position, of a series of rotary upsetting and beading wheels mounted in revolvable bearings to engage and travel upon the tube end, one or more wheels of the series being provided with a cutting-edge *h'* to shave off the edge of the tube during the beading operation, and means for pressing the upsetting and beading wheels against the tube end and for revolving the bearings, substantially as and for the purpose set forth.

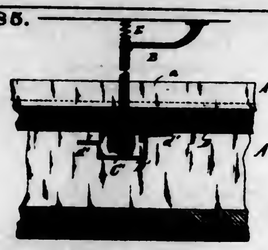
3. In a device for upsetting the ends of tubes, means for securing the device in operative position, comprising, in combination, an expansible sleeve adapted to enter a tube provided with an annular shoulder s^3 on its outer circumference and a conical opening, and a conical expansion-core to enter said opening and expand the sleeve against the inner circumference of the tube and cause the shoulder s^3 to form a circumferential bead *i* on the tube and engage the groove under the said bead, substantially as and for the purpose set forth.

4. In a device for upsetting the ends of tubes, the combination, with a support and means for securing it in a tube, of a frame adjustably mounted between its ends upon the support, a set-screw upon one end portion of the frame, having a base to engage a tube end, upsetting mechanism on the opposite end portion of the frame, and means upon the support for clamping the upsetting mechanism against a tube end, substantially as described.

486,985. TROLLEY FOR CONDUIT-RAILWAYS. BENJAMIN OLMSTEAD, Brooklyn, N. Y. Filed May 17, 1892. Serial No. 433,263. (No model.)

Claim.—The combination, with a casing the top plate of which is provided with a longitudinal slot, of metallic conductors attached to the under side of the top plate, insulating-plates between the top plate and the conductors, a hinged and spring-actuated arm adapted to be suspended from a car and passing through the slot of the top plate, a trolley at the lower end of the arm, the rollers of which are in contact with the conductors, and protecting-casings suspended from the pivots of the rollers and provided with lips or flanges at the ends, substantially as set forth.

486,985.

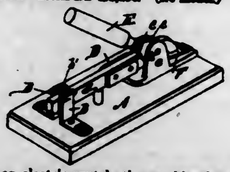


486,986. SUBMERGED PIPE. MAX G. SCHEIER, Milwaukee, Wis. Filed July 27, 1892. Serial No. 441,576. (No model.)

Claim.—1. In submerged pipe, the combination of two non-flexible pipe-sections, an intermediate flexible pipe-section engaging the ends of the former sections, but free to be bent to various angles, clamping-rings arranged on the engaged pipe-sections, and calking material interposed between the ends of said non-flexible and flexible pipe-sections, substantially as set forth.

2. In submerged pipe, two non-flexible pipe-sections, an intermediate flexible pipe-section engaging the ends of the former sections, but free to be bent to various angles, and suitable means for forming water-tight connection between said pipe-sections, in combination with a guiding and protective casing that incloses the joint formed by said pipe-sections, substantially as set forth.

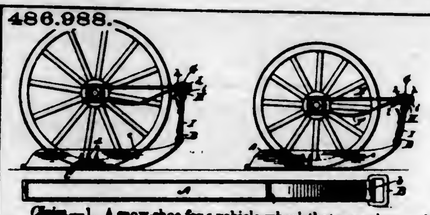
486,987. ELECTRIC SWITCH. WILLIAM J. SEMMLER, Detroit, Mich. Filed June 27, 1892. Serial No. 438,186. (No model.)



Claim.—1. In an electric switch, the combination of the brush-holder D, the bifurcated handle E, having a common pivot with said brush-holder, said handle adapted to depress said brush-holder at one extremity of its movement and to elevate the same at the other extremity of its movement by a striking contact therewith, and the spring F, adapted to force said lever in either direction, whereby the same is caused to strike said brush-holder and make and break the contact quickly, substantially as described.

2. In an electric switch, the combination of the terminals B, the brush-holder D, provided with brushes b', the handle E, said handle adapted to strike said brush-holder at one extremity of its movement and force the said brush into contact with said terminals and to strike said brush-holder at the opposite extremity and break said contact, and a spring adapted to throw said handle in both directions, substantially as and for the purposes described.

486,988. SNOW-SHOE FOR VEHICLE-WHEELS. JOSEPH STRUTZ and HERMAN MEYER, Sheboygan, Wis. Filed June 24, 1892. Serial No. 437,861. (No model.)



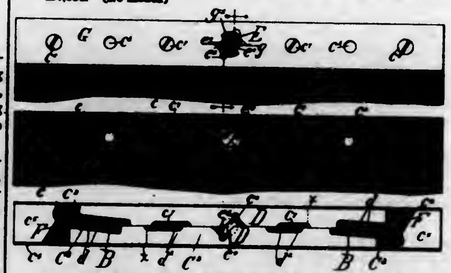
Claim.—1. A snow-shoe for a vehicle-wheel, that comprises a suitable sole and sides, the latter being provided with registering openings, a cross-piece connecting the sides forward of their longitudinal centers, and a key for detachable engagement with said openings, substantially as set forth.

2. A snow-shoe for a vehicle-wheel, that comprises a suitable sole and sides, the latter being provided with registering openings, and a key for detachable engagement with said openings, in combination with a bracket connected to an axle of the vehicle and suitable means for coupling the forward ends of the shoe and bracket, substantially as set forth.

3. A snow-shoe for vehicle-wheels, that comprises a suitable sole and sides, and suitable means for detachably connecting the shoe and wheel, in combination with a bracket connected to an axle of the vehicle and a coupling for the forward ends of the bracket and shoe, substantially as set forth.

4. A snow-shoe for a vehicle-wheel and suitable means for connecting the forward portion of the shoe with the axle of said wheel independent of the vehicle-body or draft appliance, substantially as set forth.

486,989. BINDER. CHRISTIAN H. STOBLATING, Chicago, Ill., assignor to William A. Vawter, same place. Filed June 25, 1892. Serial No. 437,986. (No model.)



Claim.—1. A temporary binder comprising the combination, with a cover and rods secured thereto, of a binding-piece provided with holes or perforations adapted to receive said rods, locking-bars longitudinally movable in said binding-piece, having surfaces adapted to engage said rods and lock or clamp said binding-piece thereto, and means for actuating said locking-bars, substantially as described.

2. A temporary binder comprising the combination, with a cover and rods secured thereto, of a binding-piece provided with holes or perforations adapted to receive said rods, movable locking-bars in said binding-piece, having surfaces adapted to engage said rods and lock or clamp said binding-piece thereto, and means for positively actuating said locking-bars, and a spring applied to each of said locking-bars, tending to cast and retain said bars normally in a locked position, substantially as described.

3. A temporary binder comprising the combination, with a cover and rods secured thereto, of a binding-piece provided with holes or perforations through which said rods pass and having, also, longitudinally-movable locking-bars the surfaces of which are adapted to engage said rods to clamp said binding-piece thereto, notches in the edges of said locking-bars, and a key provided with lateral projections to engage said notches to actuate said bars, substantially as described.

4. A temporary binder comprising the combination, with a cover and rods secured thereto, of a binding-piece provided with holes or perforations through which said rods pass and provided, also, with longitudinally-movable locking-bars the surfaces of which are adapted to engage said rods and to clamp said binding-piece thereto, notches in the edges of said locking-bars, a key provided with lateral projections adapted to engage said notches to actuate said bars, and a spring applied to each of said bars, tending to cast and to retain said bars normally in a locked position and against accidental unlocking, substantially as described.

5. In a temporary binder, the combination, with the lower cover and rods secured thereto, of a binding-piece comprising a body piece or part having a longitudinal groove, longitudinally-movable locking-bars located within said groove, each bar having a wedge-shaped portion at one end, holes or perforations through said binding-piece adapted to receive said rods, and means for actuating said bars, whereby the wedge-shaped portions of said locking-bars are moved longitudinally between said rods and the sides of said groove and in engagement therewith to lock the parts together, substantially as described.

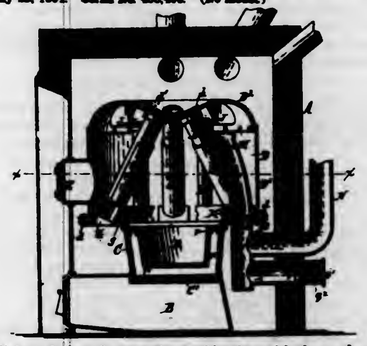
6. In a temporary binder, the combination, with the lower cover and binding-rods secured thereto, of a binding-piece comprising a body-piece having a longitudinal groove in its upper side, longitudinally-movable locking-bars located therein, a cap or cover for said binding-piece provided with sides or flanges adapted to embrace the edges of the binding-piece proper, holes or perforations in said binding-piece and cover adapted to receive the binding-rods, said locking-bars being provided with surfaces adapted to wedge between the sides of the groove and the binding-rods as the locking-bars are moved, and means for actuating said locking-bars, substantially as described.

7. The combination, with the binding-strip of a temporary binder, comprising a binding-piece proper and a cap or cover therefor, of a canvas covering for said binding-piece, whereby the top cover proper is flexibly attached to said binding-piece, and a detachable escutcheon-plate secured to the upper surface of said binding-piece outside of said canvas covering, substantially as described.

8. In a temporary binder, the combination, with the lower cover, rods secured therein, and a binding-piece comprising a grooved binding-piece proper and a cap or cover therefor, locking-bars fitted to and longitudinally movable in the groove formed in said binding-piece, and a key for operating said locking-bars, said key being provided with lateral projections, of an escutcheon-plate secured to the upper surface of said binding-piece and a hole in said plate, said hole comprising outer sections to allow the insertion of the key into operative position and inner sections which project inwardly beyond the ends of the lateral projections of the key and are adapted to prevent the removal of the key from the binding-piece when said lateral projections are inserted thereunder, substantially as described.

9. In a temporary binder, the combination, with the under cover, the binding-rods secured therein, a binding-piece, holes therein adapted to receive the binding-rods, and longitudinally-movable locking-bars mounted in said binding-piece, of annular grooves at the upper ends of said binding-rods, adapted to engage said locking-bars, and means for actuating said bars, substantially as described.

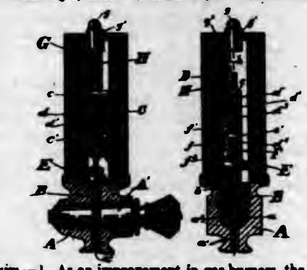
486,990. FURNACE. HORACE K. TALLMADGE, Buffalo, N. Y. Filed July 23, 1891. Serial No. 400,402. (No model.)



Claim.—1. In a furnace, the combination, with the combustion-chamber having a horizontal bottom ring or plate provided with inclined abutments and a dome or top provided with an inverted conical central portion and horizontal lugs or abutments arranged between said conical central portion and the wall of the dome, of upwardly-converging flues arranged in the combustion-chamber and secured at their upper ends to the conical central portion of said dome and at their lower ends to the inclined abutments of the bottom ring and vertical flues arranged in the combustion-chamber between the converging flues and secured at their upper ends to the horizontal lugs of the dome and at their lower ends to the horizontal surfaces of the bottom ring, substantially as set forth.

2. In a furnace, the combination, with the combustion-chamber having a dome-shaped top formed with an inverted conical central portion and depressions forming interior horizontal surfaces and a horizontal bottom ring having raised inclined abutments or surfaces, of inclined flues secured at their respective ends to the conical portion of the dome and the raised inclined surfaces of the bottom ring and alternating vertical flues secured at their respective ends to the horizontal surfaces of the dome and the bottom ring, substantially as set forth.

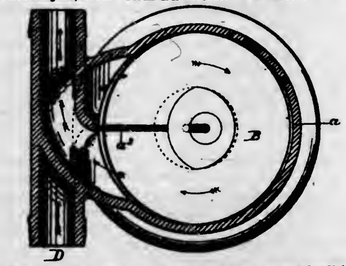
486,991. SAFETY GAS-BURNER. BAYARD R. TAYLOR, Chicago, Ill. Filed July 1, 1892. Serial No. 438,704. (No model.)



Claim.—1. As an improvement in gas-burners, the combination of a gas-cock, a spring-actuated auxiliary valve consisting of a flat disk and cylindrical stem, mechanism for raising and latching the same, consisting of a slotted key or plug, a T-shaped riser and lugs on the cylindrical stem, an independent compound latch for holding the valve open in either one of its two open positions, a bimetallic spring arranged to actuate the compound latch, and a cooling-chamber inclosing the entire mechanism, substantially as described.

2. As an improvement in gas-burners, the combination of a gas-cock, a key A', riser B, auxiliary valve E, spindle D, with the lugs d^6 d^6, the spring d and collar d', the compound latch F, bimetallic spring H, cooling-chamber G, bushing g', and burner-tip g, substantially as described.

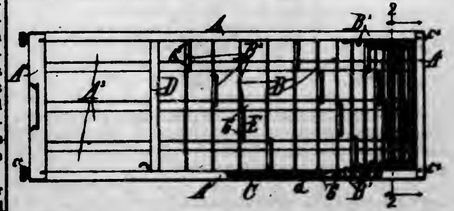
486,992. DISK WATER-METER. JAMES A. TILDEN, Hyde Park, Mass., assignor to the Hersey Manufacturing Company, Portland, Me. Filed July 20, 1891. Serial No. 400,189. (No model.)



Claim.—1. In a water-meter, the combination of the disk or measuring chamber, the diaphragm or division-plate a^2, a gyrating disk, a water-inlet curved toward the diaphragm or partition a^2, and a curved water-outlet upon the opposite side of the partition-plate, as and for the purposes described.

2. A water-meter case having a measuring or disk chamber, a water-inlet in two sections or parts, and a water-outlet crossing the two sections or parts of the water-inlet, as and for the purposes described.

486,993. CHECK-FILE. FELIX TRAMBLAY, Chicago, Ill. Filed Mar. 3, 1892. Serial No. 424,207. (No model.)



Claim.—1. A check-file comprising a case having a slotted bottom, guide-rods secured within the case, and a plurality of loose trans-

verse partitions mounted on said guide-rods, each partition being provided at its lower edge with depending lugs projecting into the slots of the case-bottom, substantially as described.

2. A check-file comprising a case, a plurality of loose transverse partitions therein provided at their sides with eyes, and two parallel guide-rods secured within the case adjacent to each side thereof and passing through the eyes of the partitions, substantially as described.

3. A check-file comprising a case, the sides of which are provided with parallel grooves in their inner faces, a plurality of transverse partitions provided at their ends with perforated lugs fitting loosely within said grooves, and guide-rods located within said grooves, secured at each end thereof and passing through the perforated lugs of the partitions, substantially as described.

4. A check-file comprising a case, a plurality of loose transverse partitions therein provided at their ends with eyes, and parallel guide-rods removably secured in the case adjacent to each side thereof and passing through the eyes of the partitions, substantially as described.

5. A check-file comprising a case having a slotted bottom, two parallel guide-rods secured in the case adjacent to each side thereof, and a plurality of loose transverse partitions having depending lugs at their lower margins adapted to enter the slots in the case-bottom and provided at their ends with suitable eyes through which the guide-rods pass, substantially as described.

6. A check-file comprising a case, a plurality of loose transverse partitions mounted on guides within the case, and flexible connections secured to the sides of the partitions to limit the movement of said partitions with relation to each other, substantially as described.

7. A check-file comprising a case, guides secured therein, a plurality of transverse partitions mounted on said guides, flexible connections passing through the partitions at the sides, and adjustable buttons or stops mounted on said connections between the partitions, substantially as described.

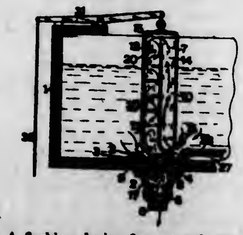
8. A check-file comprising a case, guides secured therein, a plurality of transverse partitions mounted on said guides, a follower also mounted on said guides and provided with a friction device bearing thereon, and flexible connections secured to the partitions and to the follower, substantially as described.

9. A check-file comprising a case, a plurality of loose transverse partitions having eyes at their sides and two parallel guide-rods secured adjacent to each side of the case and passing through the eyes of the partitions, and means, substantially as shown and described, for attaching a tag or designation-card to each of said loose partitions, substantially as specified.

10. A check-file comprising a case having a slotted bottom, guides secured within the case, and a plurality of loose transverse partitions mounted on said guides, each partition being provided at its lower end with depending lugs projecting into the slots of the case-bottom and at its upper end with a tag-holder comprising an elongated lug, as B^3, provided with two diverging slits b^4, substantially as specified.

11. A check-file comprising a case, a plurality of light transverse partitions having eyes at their sides, parallel guide-rods adjacent to each side of the case and passing through the eyes of the partitions, and a tag-holder integral with each of said transverse partitions and consisting of an elongated lug B^3, projecting above the top edge of the partition and provided with two diverging slits b^4, the latter being adapted to receive the opposite ends of a tag or card, substantially as specified.

486,994. FLUSHING DEVICE FOR WATER-CLOSETS. HENRY C. WHEEN, Chicago, Ill. Filed May 19, 1892. Serial No. 433,507. (No model.)

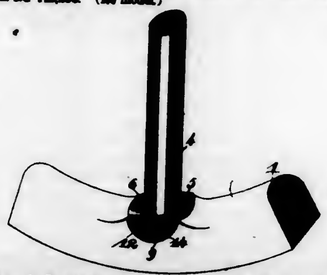


Claim.—1. A flushing device for water-closets, consisting of a three-chambered siphon, two chambers of which are for receiving water from the tank, said two chambers forming the short leg of said siphon and one chamber, into which water is delivered from said short leg, forming the long leg of said siphon, the chamber comprising said long leg provided with horizontally-disposed baffles arranged in the manner and for the purpose substantially as described.

2. A flushing device for water-closets, consisting of a three-chambered siphon, two chambers of which are for receiving water from the tank, said chambers forming the short leg of said siphon and one chamber, into which water is delivered from said short leg, forming the long leg of said siphon, the chamber serving for said long leg having horizontally-disposed baffles, as described, said long leg terminating at the lower end thereof in a cylindrically-shaped chamber whose bottom is provided with multidischarge-openings, which serve, in combination with said baffles, for the purpose substantially as described.

3. A flushing device for water-closets, comprising a three-chambered siphon, as described, said siphon within a casing, which also forms a valve for admitting water to the discharge-pipe to start said siphon, a supply-valve for filling the tank, said valve operated by the rise and fall of the water in the tank, a pipe forming a communication between the chamber of said supply-valve and the discharge-pipe under said siphon-casing, said pipe from said supply-valve casing having a valve to open and close communication with said supply-valve casing, said valve in said pipe operated by the means which operates the tank-supply valve at the time and for the purpose substantially as described.

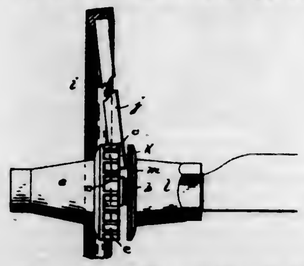
486,995. PROTECTING-PLATE FOR SPOKE-SOCKETS. BARNEY WEIERMAN and FRANK LUDEMANN, St. Louis, Mo. Filed Aug. 5, 1892. Serial No. 442,233. (No model.)



Claim.—1. In combination with a spoke and felly, a plate 5, having a flat surface 6, an opening 8, formed in the said plate for receiving the reduced extension of the spoke, lips formed on the opposite sides of the said plate and provided with beveled edges 14, and semicircular depressions 9, formed on the opposite sides of the felly forming shoulders 10, the depth of said shoulders corresponding to the thickness of the lower edge of said lips, substantially as described.

2. In combination with a spoke and felly, a plate 5, having an opening 8, lips 12, formed on the opposite sides of said plate, the lower edges of which are beveled, depressions 9, formed on the opposite sides of said felly, and shoulders 10, of a shape corresponding to the lower edges of said lips, substantially as described.

486,996. HUB FOR VEHICLE-WHEELS. CLARK WHITFORD, Water Valley, Miss., assignor to himself and WILLIAM L. HOLMES, same place. Filed July 21, 1892. Serial No. 440,764. (No model.)



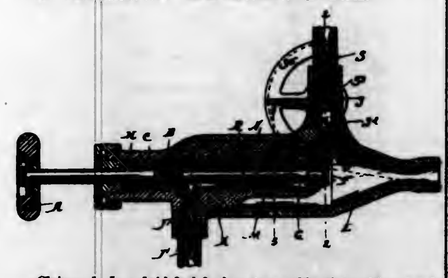
Claim.—The herein-described hub, provided with the annular flange and outwardly-extending reduced threaded portion, the radial lugs on said flange beveled toward their inner and outer edges, the spokes of greater width than and projecting beyond said lugs and fitted between and recessed on the sides to fit the lugs, and the nut screwed on said threaded portion and having the smooth annular flange arranged to engage the outer edges of the spokes, and thereby clamp them in position and determine the dish of the wheel and maintain the same tight, substantially as described.

486,997. BALING-PRESS. ANDREW WHEELY, Chicago, Ill. Filed Oct. 1, 1891. Serial No. 407,372. (No model.)

Claim.—1. In a baling-press, the combination, with the frame, of the plunger M, having the top O, carried in guides P and bearing a post or posts O', and a hopper L, having a movable end *l*, guided by means of pins *l'*, moving in slots P^3 in the side of the hopper and bent forward to pass through eyes P^2, attached to the same, substantially as described.

2. In a baling-press, the combination, with a frame, of a hopper having a movable end and a plunger having a top shorter when drawn back than the opening from the hopper into the compression-chamber and provided with means of engagement with the movable end, whereby the latter is moved inward at the forward stroke of the plunger to contract the opening in the bottom of the hopper and enable the top of the plunger to entirely close the same, substantially as described.

486,998. FLUID-FUEL FEEDER. ERRA P. WILLIAMS, Chicago, Ill. Filed June 5, 1891. Serial No. 395,265. (No model.)



Claim.—1. In a fluid-fuel feeder, the combination, with a nozzle having a hollow case or body, of an interior pressure-fluid discharging part cut away to provide a partially-annular space between it and the inner wall of the body of the nozzle, an air-supply opening into such annular space back of the fluid-pressure-discharge aperture, and an oil-supply way which leads through the wall of the case across the solid portion of the part through which the pressure-fluid passes and to the fluid-pressure aperture, substantially as shown and described.

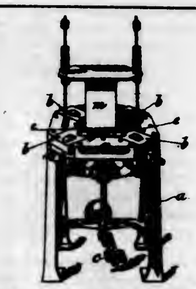
2. In a fluid-fuel feeder, the combination, with a body having a discharge-nozzle, of an interior pressure-fluid-discharging part having an aperture opening interiorly of the nozzle, flanges or ribs on the pressure-fluid-discharging part partially surrounding said aperture, whereby there is provided a channel, and a fluid-fuel-supply way delivering into said channel, substantially as described.

3. In a fluid-fuel feeder, the combination, with a discharging-nozzle, of a pressure-fluid-discharging part having a threaded connection with the nozzle, and said part having a channel therein to receive the oil, said channel leading across the aperture for the discharge of the pressure-fluid, substantially as described.

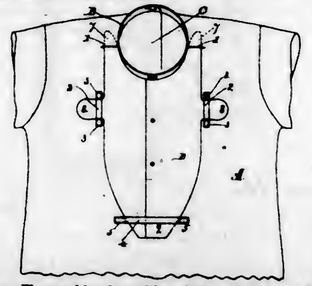
4. In a fluid-fuel feeder, the combination, with a discharge-nozzle, of an interior pressure-fluid-discharging part having a valve-controlled aperture for discharging the pressure-fluid within the nozzle, and an oil-supply way leading to the aperture, substantially as described.

486,999. APPARATUS FOR DOUBLE-SEAMING METAL CANISTERS, &c. WILLIAM WOOLLFORTH, London, England. Filed May 14, 1891. Serial No. 392,741. (No model.) Patented in England June 21, 1890, No. 8,971; in Germany May 20, 1891, No. 60,226; in Belgium May 11, 1892, No. 98,620; in Spain June 15, 1892, No. 13,260, and in Italy June 30, 1892, No. 267/32,522.

Claim.—The combination, with the stationary block A, having the groove *g* in its side edges, of advancing and receding square-cornered jaws, each having a projecting part *f* fitting in the groove *g* of the block A, and a groove *d*, which is formed in the edges of the jaws at the rear edges of the parts *f* and is semicircular in cross-section, whereby a double-rolled seam is produced, substantially as set forth.



487,000. SHIRT. LOUIS ADAM, Albany, N. Y. Filed Apr. 13, 1892. Serial No. 428,941. (No model.)



Claim.—The combination, with a shirt-body having a lateral slit at each side of the neckband, vertical straps 2 at opposite sides of the bosom-seat, and a transverse strap 4 near the lower end of said bosom-seat, of a detachable bosom D, having its upper end hollowed out, as at 6, to span the front part of the neckband B and to form points 7, adapted to enter the lateral slits 1, tabs or tongues 8, formed at the opposite edges of said bosom and fitted to engage with the vertical straps 2, and a narrowed lower end 9 of said bosom fitted to engage with the transverse strap 4 of the shirt-body, substantially as and for the purpose herein specified.

487,001. CONVEYER FOR ICE-CAKES. GEORGE B. BENNA, Pelham Manor, N. Y. Filed Mar. 30, 1892. Serial No. 427,026. (No model.)

Claim.—1. The combination, with upright guideways, of a conveyer-box A, a ball pivoted to said box and provided with a catch, a fixed stop attached to said ways, a yielding frame adapted to engage said catch, a releasing device on the box adapted to engage said yielding frame, and a hydraulic brake connected with the ball of the conveyer-box, the yielding frame releasing the catch on the ball by the weight of the load striking the releasing device, substantially as set forth.

2. The combination of upright guideways, a conveyer-box open at one end and provided with a spring-buffer and release-pin at the other end, a ball pivoted to the said box, a catch on said ball, a hydraulic brake attached to the ball, a fixed stop on the guideways, and a yielding and spring-cushioned frame adapted to engage the catch on the ball and having an inclined seat for the release-pin at its lower end, substantially as set forth.

3. The combination of fixed upright guideways having enlarged lower ends, a conveyer-box for the load, a ball pivoted to said box, and guide-links keyed to the pivots of the conveyer-box, said guide-links having antifriction-rollers at their ends for guiding the box in the ways, said links serving to tilt the conveyer-box when they arrive at the lower ends of the ways, substantially as set forth.

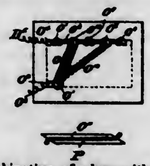
4. The combination of upright guideways, a conveyer-box for ice-cakes and other heavy loads guided in said ways, being open at one end and provided with a spring-buffer and a release-pin at the opposite end, and a yielding spring-cushioned frame adapted to engage said release-pin.

5. The combination of upright guideways having enlarged lower ends, a conveyer-box guided in said ways, a ball pivoted to said box, a hydraulic brake connected with said ball for controlling the descending and ascending motion of the box, and fixed U-shaped guide-links

487,001.

on the pivots of the box, said links having antifriction-rollers on their ends and antifriction-rollers on the ends of the pivots, substantially as set forth.

487,002. SAFETY DEVICE FOR ELECTRIC CIRCUITS. GEORGE CUTTER, Chicago, Ill. Filed Feb. 13, 1892. Serial No. 422,127. (No model.)



Claim.—1. The combination of a box with separated contact-pieces within the same with an aperture through a portion of such box, a movable part whereby the dimensions of such aperture may be varied, and a series of fuse-carrying blocks of varying outline to correspond to the variations in the aperture made by such movable part.

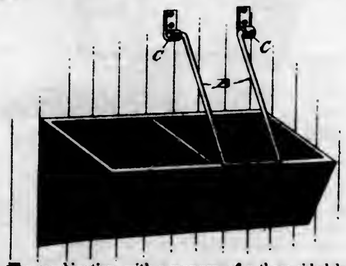
2. The combination of a box with separated contact-pieces within the same with an aperture through a portion of such box, a movable part whereby the dimensions of such aperture may be varied, and a series of fuse-carrying blocks of varying outline to correspond to the variations in the aperture made by such movable part, each of said blocks having a fuse of a capacity differing from those of the others, so that the effective shape of the aperture determines the capacity of the fuse to be inserted.

3. In a system of safety devices for electric circuits, a series of boxes having each interior separated contacts and each an aperture peculiar to itself or alike with a series of fuse-blocks each shaped to conform to one of such apertures and all blocks adapted to conform to the same aperture being provided with fuses of the same capacity.

4. The combination of a box having an aperture with interior separated contacts and a movable piece adapted to vary the effective area of such aperture with a series of fuse-carrying blocks, each adapted to conform to some variation of such aperture and when inserted to close the circuit between such contacts.

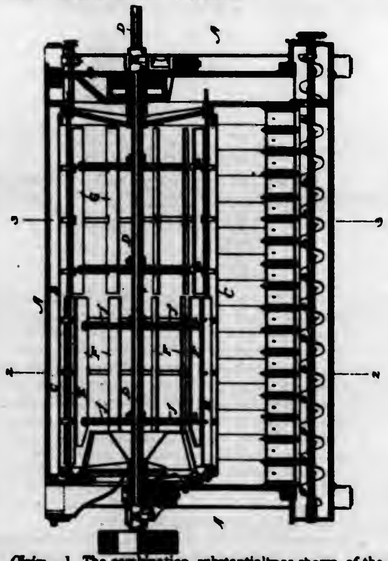
487,003. FEED-TROUGH. THOMAS DOOLAN, Chicago, Ill. Filed Aug. 18, 1890. Serial No. 362,107. (No model.)

Claim.—1. The combination, with a manger, of a three-sided hay-saver constructed from a single piece of spring material formed with its ends bent to constitute pintles, and the parallel side portions, said portions being disconnected, so that their pintle ends may be moved to and from each other, and the said portions also being a sufficient distance apart to permit the horse's head between them, but not to allow its lateral movement therein, the saver being removably hinged at a considerable distance above the top of the manger and arranged to lie at an angle thereto with its front portion supported by the front edge of the manger, substantially as shown and described.



2. The combination, with a manger, of a three-sided hay-saver constructed from a single piece of spring material and formed with its ends bent to constitute pintles by which the saver is hinged with the outward semicircular bends near each end, the parallel side portions, and the cross-bar at the lower end, the saver being hinged at a considerable distance above the manger and arranged to lie at an angle to the top of the manger with the cross-bar resting on the front edge of the manger, substantially as shown and described.

487,004. FLOUR-BOLT. WILLIAM D. GRAY, Milwaukee, Wis., assignor to the Edward P. Allis Company, of Wisconsin. Filed Nov. 23, 1891. Serial No. 413,230. (No model.)



Claim.—1. The combination, substantially as shown, of the reel, lifting-buckets in its head end only, rotary spreader-blades inside of said buckets, rotary spreaders in the tail end of the reel, and mechanism for revolving the spreaders and the reel at different speeds.

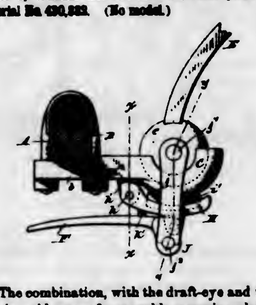
2. The combination, substantially as shown, of the reel, the lifting-buckets in its head end, rotary spreaders inside of said buckets, rotary spreaders located in the tail with a longitudinal inclination greater than that of the head-spreaders, and mechanism for rotating the reel and spreaders at different speeds.

3. In a flour-bolt, the combination of a rotary encircling bolting-cloth, internal lifting-buckets to spread the material on the upgoing side, central rapidly-revolving spreaders to receive the material from the lifters and deliver it against the cloth, bolting-cloth to which the material passes after the above treatment, and a second series of rotary spreaders encircled thereby and acting without intervening parts to deliver the material to the cloth.

4. A continuous cylindrical bolting-reel, in combination with two series of rapidly-rotating spreader-blades located within the reel,

those at the tail end being located nearer the bolting-surface than those at the head end.

487,005. THILL-COUPLING. WILLIAM H. HANNAH, Syracuse, N. Y., assignor to William Herbert Hannah, same place. Filed Apr. 27, 1892. Serial No. 430,983. (No model.)



Claim.—1. The combination, with the draft-eye and the knuckle or wrist seated in said eye, of a movable carrying-plate provided with an elastic block or filling bearing against said eye, a clamping-lever pivoted upon said plate, and a link connecting the clamping-lever with the part to which the pressure is applied, substantially as set forth.

2. The combination, with the draft-eye and the knuckle or wrist seated in said eye, of a carrying-plate pivoted to said eye and provided with an elastic block or filling bearing against said eye, a clamping-lever pivoted upon the plate, and a link connecting the clamping-lever with the part to which the pressure is applied, substantially as set forth.

3. The combination, with the draft-eye and the knuckle or wrist seated in said eye, of a carrying-plate pivoted to the eye and provided with a socket, an elastic block or filling seated in said socket and bearing against the eye, a clamping-lever pivoted upon the carrying-plate, and a link connecting the clamping-lever with the part to which the pressure is applied, substantially as set forth.

4. The combination, with the draft-eye and the knuckle or wrist seated in the eye, of a carrying-plate pivoted to the eye and having a toe on one side of its pivot which is adapted to bear against the eye and provided with an elastic block or filling which bears against the eye, a clamping-lever pivoted to said plate, and a link connecting the clamping-lever with the part to which the pressure is applied, substantially as set forth.

5. The combination, with the draft-eye and the knuckle or wrist, of a carrying-plate pivoted to the eye and having a projecting stop on its under side and an elastic block or filling on its upper side, a clamping-lever pivoted to said plate and striking said stop when the clamping-lever is tightened, and a link connecting the clamping-lever with the part to which the pressure is applied, substantially as set forth.

6. The combination, with the open draft-eye provided with a depending lug and the knuckle or wrist seated in said eye, of a carrying-plate pivoted to said lug and provided with a socket in front of its pivot, an elastic block or filling seated in said socket and bearing against said eye, a toe formed on the carrying-plate in rear of its pivot and adapted to bear against the eye, a clamping-lever pivoted to the front portion of said plate, a link connecting the clamping-lever with the knuckle, and a stop formed on the carrying-plate, whereby the tightening movement of the clamping-lever is limited, substantially as set forth.

487,006. FILE-BOX. WILFRED I. GREEN and THOMAS L. WAITE, Dayton, Ohio, assignors to The H. Chase's Sons' Company, same place. Filed Apr. 15, 1892. Serial No. 429,302. (No model.)

Claim.—1. In a file-box, the combination, with side bars or guides, of a sliding support or case mounted thereon and adapted to compress the papers within the box, spreading pieces mounted on said support, a spring to spread them into gripping contact with said bars, and a push-piece to break said gripping engagement, the expansion of the papers acting on the supporting-case and increasing the gripping contact.

2. In a file-box, the combination, with side bars and a casing or support slidingly mounted thereon, of spreading pieces adapted to grip said side bars and abutting on each other in their gripping position and a spring to effect said gripping contact, the expansion of the papers compressed by the clamp acting to increase said engagement, the gripping engagement being broken by reversely operating said spreading pieces and equalized on said bars by the abutment of said spreading pieces.

3. In a file-box, the combination, with side bars and a supporting cross-plate or case slidingly mounted thereon, of spreading pieces slidingly mounted on said support and adapted to grip said side bars at their outer ends and abutting on each other in their gripping position to equalize the grip on both bars, the expansion of the papers increasing said gripping engagement, and a push-piece to break said engagement.

4. In a file-box, the combination, with side bars and a supporting-case slidingly mounted thereon, of spreading pieces slidingly mounted on said supporting-case and adapted to grip said side bars at their outer ends and a pressure-board acting on their inner ends to spread the same under the expansive action of the papers in the said file, whereby the expansion of the papers will act directly on the gripping-pieces to spread them.

5. In a file-box, the combination, with side bars and a supporting-case slidingly mounted thereon, of spreading pieces adapted to elongate and grip the side bars, a pressure-board acted on by the expansion of the papers and operatively connected to said spreading pieces to communicate directly the expansion of the papers thereto, and a push-piece acting to compress the papers and break said gripping engagement of the spreading pieces.

6. In a file-box, the combination, with side bars and a supporting-piece slidingly mounted thereon, of a spreading device mounted between said side bars and adapted to grip the latter, a pressure-board for the filed papers connected to said gripping device to spread the same under the expansive action of the papers, and a push-piece to draw in said spreading device to break said engagement before returning the clamp.

7. In a file-box, the combination, with side bars and a cross-piece slidingly mounted thereon, of a pressure board or piece acted on by the expansion of the compressed papers in the file and a spreading device operatively connected to said pressure board or piece and spread into gripping contact with said bars by the said expansion of the papers, the loosely-mounted connection of said gripping device with the said support and pressure-board allowing of equalizing the grip on the said side bars, substantially as described.

8. In a file-box, the combination, with the side bars and a supporting-piece slidingly mounted thereon, of a spreading device carried by said supporting-piece and adapted to be spread to grip said bars and a push rod or button acting on said spreading device to break said gripping engagement.

9. In a file-box, the combination, with side bars and a cross supporting-piece slidingly mounted thereon, of a spreading device carried by said supporting-piece and adapted to be spread to gripping engagement with said bars and a push-piece slidingly mounted between finger-hooks mounted on said cross-piece and acting to break said grip of the spreading device by the action of the thumb thereon while the fingers are engaged with said finger-hooks.

10. In a file-box, the combination, with guides and a supporting-piece slidingly mounted thereon, of grippers carried by said supporting-piece and a spring-action applied to said grippers.

11. In a file-box, the combination, with side bars and independent grippers therefor, of a spring bearing near its ends against said grippers equally and movably mounted to effect a like gripping engagement at each side bar, whereby if one gripper is slightly different from the other the spring will compensate for the difference and give a like grip to both.

12. In a file-box, the combination, with side bars and a cross-piece mounted thereon, of a pressure-board carried by said cross-piece and having a universal-joint connection therewith to allow of adjusting itself to different thicknesses of portions of the file.

13. In a file-box, the combination, with side bars and a cross-piece mounted thereon, of a pressure-board supported at substantially its center by said cross-piece, the connection between said pressure-board and cross-piece allowing of the sides of the board moving back and forth in a horizontal plane and the top and bottom in a vertical plane.

14. In a file-box, the herein-described self-adjusting connection between a pressure-board and its support, the same consisting of a loosely-mounted fulcrum-piece connecting said pressure-board with its support, whereby the board may adjust itself at the sides, the top, and the bottom, substantially as shown and described, according to the irregular thickness of the papers in the file.

487,007. ATTACHMENT FOR SEWING-MACHINES. DAVID B. M. SHELLEY, Montgomery Station, Pa. Filed Apr. 20, 1892. Serial No. 429,918. (No model.)

487,007.

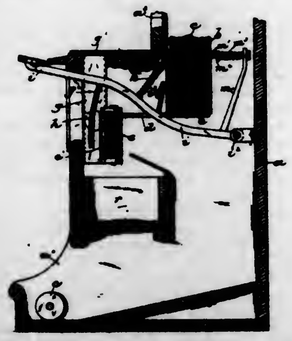
Claim.—1. In molding-machines, the bonnet pivotally connected to the frame and extending over the cutter-head, the presser-bar connected to the front edge of said bonnet, a vertical standard connected to the frame, a swinging bracket-arm on the standard, bearing on the presser-bar, and a spring acting on said bracket to hold down the presser, all combined substantially as described.

2. In a wood-molding machine, the combination, with the presser-bar pivotally connected to the frame, of a vertical standard and a spring-pressed bracket thereon, said bracket in position to swing against a bearing-piece connected to the presser, and so hold the presser to the work, substantially as described.

3. In combination with the table of a wood-molding machine, a socket thereon, a vertical bar supported in said socket and held therein by a set-screw, as described, a bracket on said bar, and the hood passing over the cutter-head, pivoted to the table at one side of said head and engaged by the bracket at the other side, substantially as described.

4. In combination with the bed and hood of a molding-machine, the vertical bar connected to said bed and having a swinging bracket extending into contact with said hood, the coiled spring surrounding said standard and having its ends inclosed in cups or washers on the bar, and a set-nut in position to regulate the tension of said spring, all substantially as described.

487,008. COIN-CONTROLLED VENDING-MACHINE. CHARLES W. SMITH, Woburn, Mass. Filed Mar. 25, 1892. Serial No. 426,433. (No model.)

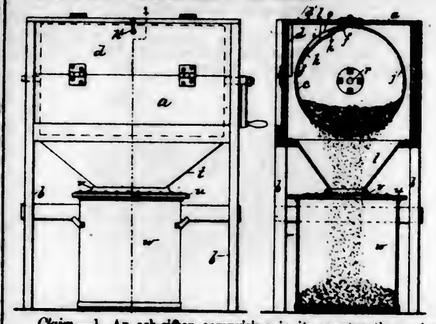


Claim.—1. In an automatic vending-machine, the combination of a receptacle for a charge of articles, a movable gate or stop normally in position to support said articles in the receptacle, a hub supporting said gate and provided with an inclined flange or shoulder, a coin-chute adapted to guide a coin to a bearing on said shoulder, and a lever adapted to depress said coin and thereby cause the latter to displace the gate or stop, as set forth.

2. In an automatic vending-machine, the combination of a receptacle for a charge of articles, a movable gate or stop normally in position to support said articles in the receptacle, a coin chute or guide, a device adapted to be operated by a moving coin in said chute to displace said gate, a laterally-movable lever adapted to be moved by the operator and provided with a projection, and means for giving a lateral movement to the lever while it is being depressed or moved by the operator, whereby said projection is caused to enter the chute and move a coin therein, as set forth.

3. In an automatic vending-machine, the combination of a receptacle, a movable stop or gate adapted to support a charge of articles therein, and a normally-inoperative gate-displacing mechanism adapted to be made operative by a coin inserted in the machine, said mechanism including a lever adapted to be depressed by the operator and provided with a device to engage the gate and hold it in its displaced position while the lever is depressed and with a stop or detent which is engaged by the depression of the lever with the second article in the receptacle, as set forth.

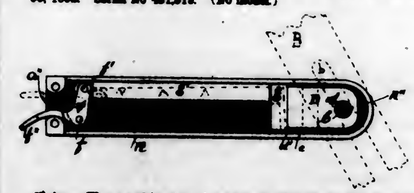
487,009. ASH-SIFTER. GARY F. ABBOTT, Boston, N. H. Filed Aug. 31, 1891. Serial No. 404,266. (No model.)



Claim.—1. An ash-sifter comprising in its construction a box mounted on legs and having a door, a movable reticulated ash-receptacle mounted in said box, and a can-cover having an opening and a permanent flexible connection with the bottom of the box, substantially as described.

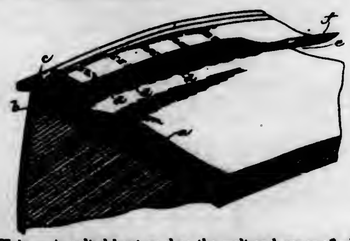
2. An ash-sifter comprising in its construction a stationary box containing a rotary reticulated ash-receptacle and having a tapering or funnel-shaped bottom, a rigid can-cover having a central opening, and flexible material permanently uniting the can-cover and the said bottom of the box, substantially as described.

487,010. BEVEL. WILLIAM G. AVERY, Chicago, Ill. Filed Apr. 30, 1892. Serial No. 431,319. (No model.)



Claim.—The combination, in a bevel, of a stock formed in two parts, which are secured together at one end and left free at the other end, one of said parts being chambered, a slotted blade between the free ends of the stock, a locking-plate below the blade, a screw passing through the free ends of the stock, the slotted blade, and the locking-plate, a wedge below the locking-plate, a bar attached to the wedge, and a pivoted bell-crank, one end of the bell-crank being pivoted to the bar attached to the wedge and the other arm of the bell-crank extending through the back end of the stock, substantially as shown and described.

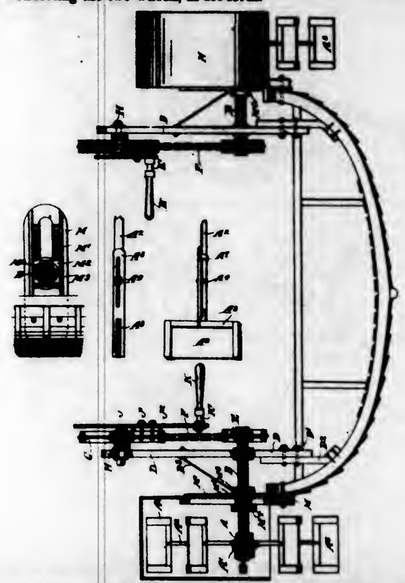
487,011. SHOE. ANDREW BUTLER, Jr., Boston, assignor to the Rapid Welt Machine Company, Boston, Mass. Filed Sept. 1, 1892. Serial No. 444,734. (No model.)



Claim.—A welted boot or shoe the welt and upper of which are united to the channeled inner sole by a chain-stitch, the interlocked or enchained loops of which are twisted and laid in the channel of the inner sole, as set forth.

487,012. PROPELLER FOR BOATS. FREDERICK GLAS, South Yarra, near Melbourne, Victoria. Filed May 20, 1892. Serial No. 433,974. (No model.)

Claim.—1. In a propeller for boats, the combination, with a vertically-adjustable bearing, of a propeller-shaft journaled therein, longitudinally-adjustable spokes secured on the shaft and carrying paddles, a sprocket-wheel on the shaft, a frame carrying a vertically-adjustable stud, a sprocket-wheel on the stud, and a sprocket-chain connecting the two wheels, as set forth.



2. In a propeller for boats, the combination, with the side or gunwale thereof, of a frame secured thereto having a plurality of serrations, a block having serrations adapted to be clamped into engagement with the serrations of the frame, a propeller-shaft journaled in the block and carrying a series of longitudinally-adjustable spokes provided with paddles, a sprocket-wheel on the shaft, a standard carrying a vertically-adjustable stud, a sprocket-wheel on the stud, a sprocket-chain connecting the two wheels, and a crank carried by the sprocket-wheel on the stud, said crank being axially adjustable, as set forth.

487,013. METHOD OF SECURING DESIGNS ON GLASS ARTICLES. ALBERT A. GRAMES, Pittsburg, Pa. Filed Mar. 21, 1892. Serial No. 425,834. (No specimens.)

Claim.—The herein-described method of securing designs to the surfaces of glass articles, consisting in transferring a design, print, or photograph with vitrifiable colors to the lower surfaces of glass articles, applying a suitable opaque enamel to the back of such design, print, or photograph, and then burning the glass article to produce a hard impenetrable coating on the lower faces thereof to preserve the print, photograph, or design permanently thereon, and provide an opaque background against which the said design, print, or photograph stands out clearly and distinctly, substantially as described.

487,014. BLANK-BOOK. HERMANN H. HOFFMANN and FRANCIS H. HOFFMANN, Chicago, Ill. Filed Aug. 16, 1892. Serial No. 443,262. (No model.)

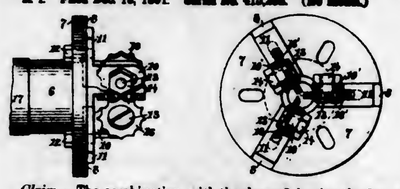
Claim.—1. A blank-book comprising sections or signatures, a series of stubs, each composed of a strip folded in the center and then each half folded, said sections or signatures being secured to the side folds, substantially as described.

2. A guard or hinge for blank-books, comprising a strip of canvas or like material folded with one central and two side folds, with filling-strips secured between the folds, substantially as described.

3. A blank-book comprising sections or signatures, a series of stubs, each stub composed of a strip folded once in the center and then each half folded, and filling-strips secured to said folded strip between the folds, said sections or signatures being secured to the folds in said strip, substantially as described.

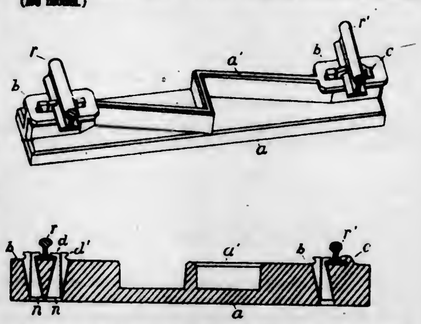
4. A blank-book comprising sections or signatures, a series of stubs, each compound of a strip of canvas or other fabric folded with one central and two side folds, filling-strips secured to the fabric between the folds and on the under side of said fabric, and means for securing the leaves of the section or signature together and to the side folds, substantially as described.

487,015. CUTTER-HEAD. EDWARD B. JUDKINS, East Providence, R. I. Filed Dec. 16, 1891. Serial No. 415,262. (No model.)



Claim.—The combination, with the sleeve 6, having the face-plate 7, and the guides 8 8, formed in the surface thereof and provided with the slotted openings 9, of the standards 10 and 10′, carried on the bases 11 11, movable in said guides and secured therein by the bolts 12, rotatable cutters journaled on shafts secured to said standards 10 and rotatable guides journaled on shafts adjustably secured in slots provided in said standards 10′, and means for revolving said sleeve, for the purpose described.

487,016. METALLIC RAILWAY-TIE AND FASTENING. LOUIS A. KENTON, Fairwater, Wis. Filed Feb. 24, 1890. Serial No. 341,469. (No model.)



Claim.—1. In combination with the rails, the tie formed with a broad base, a zigzag rib or upward extension running lengthwise of the tie, rail-supports at each end of the tie, and means whereby the rails may be adjustably secured to said tie, substantially as and for the purpose set forth.

2. In combination with the rails, a metallic railway-tie formed with slots or channels running downward from the upper face of said tie at an angle underneath the edges of the rails, adjustable wedge-shaped keys adapted to engage at the wide end underneath the upper inclined faces of said slots or channels and provided with heads or lateral projections at their narrow ends adapted to engage with the rails, and wedges whereby said keys may be adjustably secured in place, as desired, substantially as and for the purposes set forth.

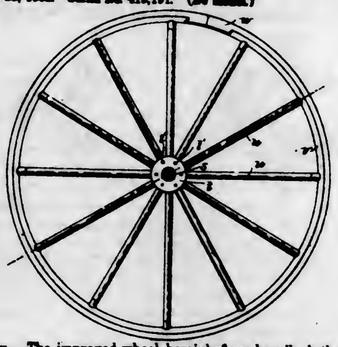
3. In combination with the rails, the tie formed with wedge-shaped portions underneath the rails, slots or channels *n n* at the sides of said wedge-shaped portions, wedge-shaped keys *d d*, adapted to engage with the rails and underneath the sides of said wedge-shaped portions of the tie, and wedges *d′ d′*, adapted to hold or lock said keys *d d* in position, substantially as and for the purposes set forth.

4. The tie formed with a base *a*, a zigzag rib *a′*, rail-supports *b b*, channels *n n*, keys *d d*, and wedges *d′ d′*, substantially as and for the purposes set forth.

5. As an improved article of manufacture, a railway-tie consisting of a base and a zigzag rib projecting above said base, substantially as set forth.

6. In a metallic rail tie and fastening, the combination, with a tie having each extremity provided with vertical slots or channels, the edges of the central partitions therebetween being inclined inwardly from the upper surface of the tie and the outer bordering walls of the channels having corresponding inclinations, of rails or tracks supported upon said partitions, keys provided with inwardly-extending heads adapted to rest upon the bases of the rails and having their inner edges inclined to register with the inclined edges of the partitions and their outer edges straight, and wedges having straight inner edges registering with the contiguous edges of the keys and inclined outer edges registering with the inclinations of the bordering walls of the slots or channels, substantially as set forth.

487,017. WHEEL. Stephen H. Kimball, Everett, Mass. Filed Jan. 25, 1892. Serial No. 419,191. (No model.)



Claim.—The improved wheel hereinbefore described, the same consisting of the grooved rim made in one piece, the rubber tire inserted in the groove of said rim, the hub portion composed of the tubular sleeve and the spoke-receiving collars independently adjustable on said sleeve, the said collars having spoke-receiving sockets with solid bottoms, and the spokes arranged in two series with their ends abutting against the bottoms of said sockets and against the rim, whereby they are adapted to exert an outward thrust upon the rim by an inward movement of said collars, as set forth.

487,018. BICYCLE. Stephen H. Kimball, Everett, Mass. Filed Mar. 12, 1892. Serial No. 424,622. (No model.)

Claim.—1. In a bicycle, the drop-frame composed of the backbone curved downwardly from its forward end and provided with the separated extensions at opposite sides of the rear wheel and the arched seat-supporting pieces attached at their rear ends to the rear portions of said extensions and at their front ends to the lower portion of the backbone, as set forth.

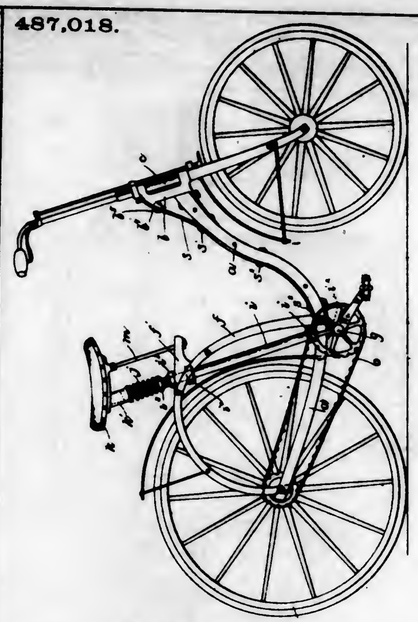
2. In a drop-frame for bicycles, the combination of the backbone curved downwardly from its upper end and provided with the separated rear extensions, the arched seat-supporting pieces, and the brace attached to the upper portions of the arched pieces and to the lower portion of the backbone, as set forth.

3. In a drop-frame for bicycles, the combination of the backbone curved downwardly from its upper end and provided with the separated rear extensions, the arched seat-supporting pieces having a connecting block or bracket at their upper portions, the brace attached at its lower end to the backbone and at its upper portion to said bracket, the said brace extending above the bracket and being provided with a nut b^3, the seat having a tubular projection receiving the upper end of the brace, and the spring interposed between said projection and nut.

4. In a drop-frame bicycle, the backbone composed of one or more strips of wood and having a strip of metal attached to its upper side, the upper portion of said strip being extended or bent upwardly from the wood and constituting a brace, combined with the head attached at its lower portion to the upper end of the backbone and at its upper portion to said brace, as set forth.

5. In a drop-frame bicycle, the combination of the head having the rearwardly-projecting ears at its lower and upper portions, the backbone attached to the lower ear, and the brace attached to the backbone and to the upper ear, as set forth.

487,018.



487,019. ROD-PACKING. George W. Knowlton, Boston, Mass. Filed June 13, 1892. Serial No. 436,426. (No model.)

Claim.—1. The improved rod-packing hereinbefore described, composed of a ring molded and formed to fit a piston-rod and having relatively-inelastic inner and outer sections and an intermediate elastic section of partially-vulcanized rubber, said rubber being in a partially-compressed state, as set forth.

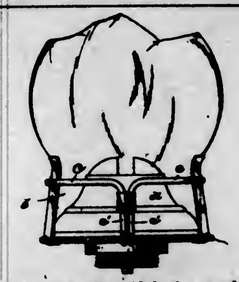
2. The improved ring packing hereinbefore described, the same consisting of three parts, namely: first, the permanently formed or molded inner section made of a strip or strips of textile fabric cut bias and arranged in layers or convolutions, forming a tube, the sides of the layers or convolutions being cemented together and arranged substantially at right angles with the length of the rod encircled by the packing, while their inner edges collectively constitute the wearing-surface of the packing and present the ends of the threads at said surface; secondly, the intermediate section or continuous molded ring of partially-vulcanized rubber inclosing the inner section, said rubber being in a partially-compressed state, and, thirdly, an outer section adapted to protect the rubber, the convolutions of both the inner and outer sections being saturated with a lubricant, as set forth.

3. The improved method hereinbefore described of making ring packing, the same consisting in interposing between relatively-inelastic ring-shaped inner and outer sections a continuous ring-shaped section of unvulcanized rubber prepared to be only partially vulcanized by the degree of heat to which the packing is to be subjected when in use, the whole forming a three-part continuous ring, and subjecting said ring to heat and pressure, the degree of heat being such as to leave the compressed rubber in a partially-vulcanized condition, as set forth.

487,020. LAMP-BURNER. Bartlett P. Lyon, Boston, Mass. Filed Feb. 1, 1892. Serial No. 419,906. (No model.)

Claim.—A lamp-burner having a chimney seat or support *a*, diverging elastic arms projecting upwardly from said seat, a flexible or yielding chimney-clamp connected with said arms and consisting of a band having downturned arms connected with said seat, and means

487,020.



for compressing the clamp upon the said elastic arms, the clamp being adapted to hold the chimney above said seat and with a yielding pressure by its own elasticity and by the elasticity of those portions of the arms that project above the clamp, whereby expansion of the chimney by heat is permitted and the clamp is adapted to conform to variations in the size of chimneys, as set forth.

487,021. BELT-FASTENER. Elias L. Matthews, Randolph, N. Y. Filed Sept. 30, 1891. Serial No. 407,231. (No model.)

Claim.—1. The herein-described belt-fastener, formed of spring-wire and consisting of a central body portion bent in zigzag form and at points at opposite sides of its center bent in similar directions and at a right angle to the body portion to form shanks for engaging the belt, the extremities of the shanks being outwardly bent and laterally deflected in opposite directions with relation to each other and parallel to the body of the fastener, substantially as specified.

2. The herein-described improved belt-fastener, consisting of a series of independent spring-wire fasteners, each consisting of a central body portion bent in zigzag form and at points at opposite sides of its center bent in similar directions and in directions at a right angle to said body portion to form shanks for engaging the belt, the extremities of the shanks being outwardly bent and laterally deflected in opposite directions with relation to each other and parallel to the body of the fastener, substantially as specified.

487,022. ADJUSTABLE ELECTRIC-LIGHT HOLDER. Lemot & Frost, Canton, Ohio. Filed Feb. 24, 1892. Serial No. 422,893. (No model.)

Claim.—1. The casing A, having journaled thereto the shaft *a*, the spool B, mounted upon said shaft *a*, the disk D, provided with the annular bands d^3 and d', the wires *d* and d', and the spring C, substantially as and for the purpose specified.

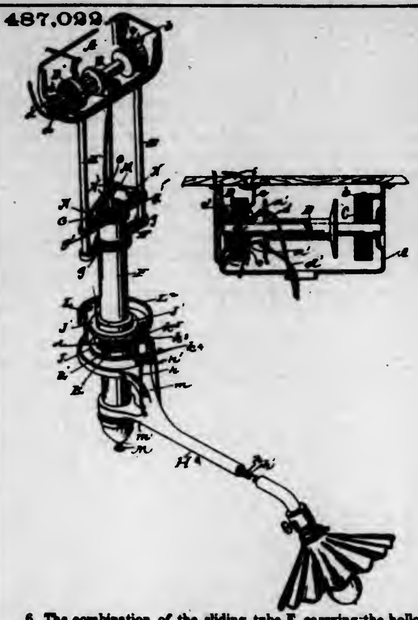
2. The combination of the casing A, having located therein the rotating shaft, an insulating-disk mounted upon said shaft, a spool fixed to the shaft, a spring fixed to the shaft, the pendent arms E, the sliding tube F, the metal collar H, located within the insulating-collar I, the tube H', and the pivoted arm H^2, substantially as and for the purpose specified.

3. In an adjustable electric-light holder, a sliding tube having located therein a feed-wire, the insulating band or collar I, provided with conducting-bands, the sliding shoes K and K', the hollow arm pivoted to a hollow tube, and feed-wires located within said rotating tube, substantially as and for the purpose specified.

4. The combination of the winding-spool B, located upon the shaft *a*, the feed-wire *d*, the return-wire d', the arms E, the sliding tube F, provided at its top or upper end with the collar G, having the arms g', and the yoke or guide F, substantially as and for the purpose specified.

5. The insulating-collar I, provided with the metallic bands J and J', the sliding shoes K and K', and the helical spring h^3, substantially as and for the purpose specified.

487,022.

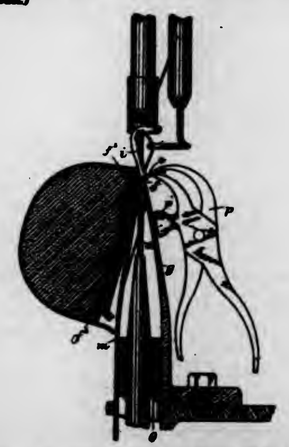


6. The combination of the sliding tube F, carrying the hollow tube H', the bars L, the band L^2, the sliding shoes K and K', suitable feed-wires, and the pivoted arm H^2, substantially as and for the purpose specified.

7. The combination of a sliding tube provided with suitable guide-arms and guide-bars, the eccentrics N, provided with arms N', the rod M, provided with the elongated slot *o*, and the spring O, substantially as and for the purpose specified.

8. The combination of the hollow tube carrying electric wires, the pivoted arm H^2, provided with branches *m* and *m'*, the bars L, the sliding shoes K and K', and the metallic bands J and J', substantially as and for the purpose specified.

487,023. SEWING-MACHINE FOR LASTING BOOTS OR SHOES. Augustus Seaver, Boston, Mass. Filed Nov. 27, 1891. Serial No. 413,179. (No model.)



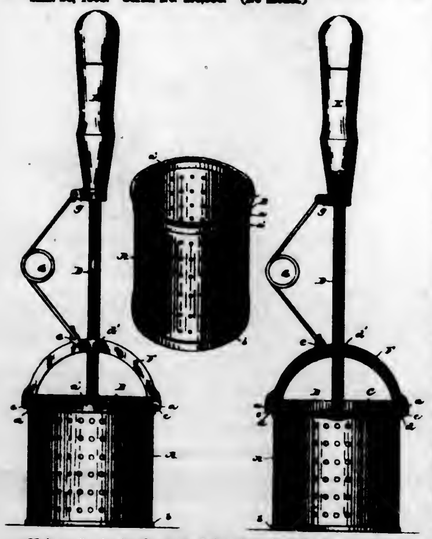
Claim.—1. In a sewing-machine for lasting boots or shoes, the combination of a stitch-forming mechanism, including a work-feeding needle, an elevated narrow work-support formed to bear on the inner side of the lip on the inner sole of a welted boot or shoe, a correspondingly-narrow presser-foot formed to bear on the upper at one side of the edge of the inner sole and to hold the upper against said

lip, and a rest or bearing for the pinchers used to stretch and adjust the upper upon the lip, as set forth.

2. In a sewing-machine for lasting boots or shoes, the combination of a stitch-forming mechanism, including a work-feeding needle, an elevated narrow work-support formed to bear on the inner side of the lip on the inner sole of a welted boot or shoe, a correspondingly-narrow presser-foot formed to bear on the upper at one side of the edge of the inner sole and to hold the upper against said lip, a rest or bearing for the pinchers used to stretch and adjust the upper upon the lip, and an automatic stop-motion whereby the movement of the needle is arrested after the formation of each stitch to afford time for the adjustment of the upper by the pinchers, as set forth.

3. In a sewing-machine for lasting boots or shoes, the combination of the stitch-forming mechanism, including a laterally-movable needle, an elevated narrow work-support located, mainly, at the inner side of the needle, and a shield attached to the needle-carrier and adapted to cover the channel in the face of the inner sole, as set forth.

487,024. EGG-BEATER. URIAH D. SELTZER, Lebanon, Pa. Filed Mar. 26, 1892. Serial No. 426,803. (No model.)



Claim.—1. An implement of the class described, comprising the ring B, the yoke F, formed integral therewith, the open-ended cylinder A, detachably secured to said ring, the spring-actuated plunger C, adapted to reciprocate within said cylinder, the handle E, and lugs *g e*, cast, respectively, upon the yoke F and handle E for retaining the spring G in position, substantially as described.

2. An implement of the class described, comprising the ring B, having lugs e thereon, the cylinder A, detachably secured to said ring and provided with the flange or bead *a*, with notches *a'* therein, the yoke F, formed integral with said ring B, the spring-actuated plunger C, adapted to reciprocate within said cylinder, the plunger-rod D, attached to said plunger, and the handle E for operating said device, substantially as described.

3. An implement of the class described, comprising the ring B, the cylinder detachably secured thereto, the cross-head or yoke F, formed integral with said ring, the plunger C, adapted to reciprocate within said cylinder, the plunger-rod D, operating-handle E, and spring G, formed of a single piece of wire looped in the middle, as shown, and having the straight arms attached the one to the handle E, the other to the cross-head or yoke F, substantially as described.

487,025. STEAM-ENGINE. STEPHEN BAADER, Philadelphia, Pa., assignor of one-fifth to Martin Schuster, same place. Filed May 3, 1892. Serial No. 431,564. (No model.)

Claim.—In a vibrating-wing-piston engine for motive power, the combination of a pivoted lever having a segmental-formed head, to which head is centrally fixed a single wing-piston, and a semicylinder piston-chamber, in which chamber the wing-piston is vibrated by steam-pressure acting alternately on each side of said wing-piston, the

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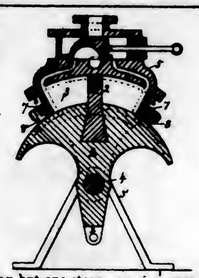
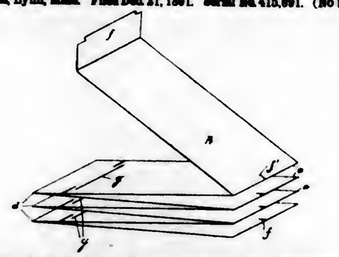


semicylinder having but one steam opening or passage on each side of the piston, through which opening both live and exhaust steam pass in and out of the cylinder in operating the engine, substantially as shown and described.

487,026. TOILET OR WRAPPING PAPER. EDWARD H. CUSHMAN, Lynn, Mass. Filed Dec. 21, 1891. Serial No. 415,691. (No model.)



Claim.—1. A package of paper consisting of a continuous sheet reversely folded upon itself, as described, and partially severed on alternate lengths, the points of severance being intermediate the folds, substantially as set forth.

2. A package of paper consisting of a continuous sheet reversely folded upon itself, as described, and partially severed on alternate lengths at points intermediate the folds, and a securing and suspending wire passing through one end of said package, the folds of said paper being slitted adjacent said wire, for the purposes and substantially as set forth.

3. A package of paper consisting of a continuous sheet reversely folded upon itself and partially severed on alternate lengths at points intermediate the folds, as described, and a case or covering inclosing the same and having at the front lower portion thereof a removable strip, whereby when the said strip is removed the paper may be readily withdrawn, as required, substantially as set forth.

4. A package of paper consisting of a continuous sheet reversely folded upon itself, as described, and partially severed on alternate lengths at points intermediate the folds, a case or covering inclosing the same, and a securing and suspending wire passing through one end of the said package, for the purposes and substantially as set forth.

487,027. STILL. JULIUS C. DEITRICH and FREDERICK M. GRUNBAGHER, New York, N. Y., assignors to the Ozone Manufacturing Company, of New Jersey. Filed Nov. 12, 1891. Serial No. 411,788. (No model.)

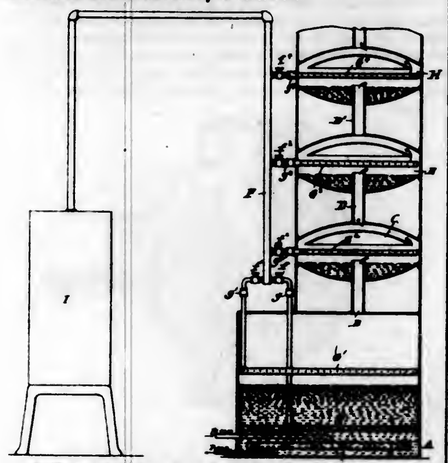
Claim.—1. The combination of a gas reservoir or generator, a still, condensers therefor with pipes or passages between the still and the condensers, and pipes extending into the condensers and having perforations or openings therein for allowing gas to escape into the condensation-chambers and to intermingle with the vapor therein, said pipes communicating with said reservoir or generator, substantially as described.

2. The combination of a still, means for heating the same, condensation-chambers communicating with the still, a feed-pipe, and branches extending therefrom into the condensation-chambers and having perforations or openings therein for allowing gas to escape into said chambers, substantially as described.

3. The combination of a still, means for heating the same, condensation-chambers communicating with the still, a general feed-pipe, and perforated branches extending from said feed-pipe into the still and into each chamber, substantially as described.

4. The combination of a still and means for heating the same, several condensation-chambers, one above another, an ozone reservoir

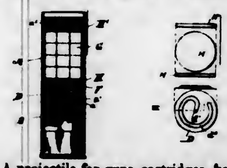
or generator, and perforated pipes communicating with said reservoir or generator and extending into each chamber for conducting ozone into said chambers, substantially as described.



5. The combination of a still, condensation-chambers connected therewith, a feed-pipe extending from a suitable reservoir or generator, branch pipes extending from the feed-pipe into the still at different levels, whereby a pipe will be below the level of the liquid in the still and another pipe will be above the same, and branch pipes extending from the feed-pipe into the condensation-chambers, substantially as described.

6. The combination of an ozone-generator, a still, condensation-chambers, a feed-pipe between the generator and still, perforated branch pipes extending from the feed-pipe into the still and occupying different levels therein, perforated branch pipes G^2 G^3, extending from the feed-pipe into the condensation-chambers, and means for controlling the passage of gas through said pipes, substantially as described.

487,028. GUN-CARTRIDGE. VLADISLAV GHALSKY, Kiev, Russia. Filed May 14, 1892. Serial No. 433,062. (No model.)



Claim.—1. A projectile for guns, cartridges, &c., consisting of a cylinder of separate cut or compressed shot having the angular contiguous portions in close contact, so as to form a compact mass without the usual interstices between the shot, substantially as described.

2. In a cartridge, the shrapnel provided with a distance-tube and a cylinder of cut or compressed shot having their contiguous angular portions or sides in close contact, so as to form a compact mass without interstices between the shot, substantially as described.

3. In combination with the cartridge having the cylindrical case with perforated wadding therein, the shrapnel fitted over said wadding and provided with a spirally-grooved bottom having a distance-tube therein, and a cylinder of cut or compressed shot, substantially as described.

4. In a shrapnel for guns and cartridges, a cylindrical case or covering adapted to contain a charge of shot, suitable wadding therefor, a charge of powder, and a bottom plate provided with a time-fuse or distance-tube for regulating the time of explosion, substantially as described.

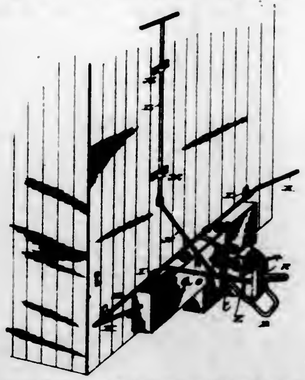
487,029. POP SAFETY-VALVE. WILLIAM L. GRAY and JOSEPH RIVERS, Evanston, Wyo. Filed June 22, 1892. Serial No. 437,016. (No model.)

Claim.—The valve body or casing having an inner beveled and an adjacent horizontal valve-seat at one end thereof, an annular groove surrounding the flat valve-seat and having a raised outer wall extending above the plane of the same and an exteriorly-threaded portion, a winged valve working over the upper end of the casing and having a

487,029.

beveled and unbeveled contact-face adapted to register with the valve-seats, an annular cushioned groove on its under side directly over the horizontal portion of the valve-seat and a circular series of vertical steam-openings leading from the under cushion-groove, a circularly-adjustable ring-slide working on the valve and provided with a series of perforations adapted to cover and uncover the steam-openings in the valve, and adjusting-slots, adjustment-screws passing through said slots into the valve, a bridge or yoke having an interiorly-threaded ring engaging the threaded portion of the valve-body and an upper threaded perforation, a spring-support having a pointed bearing-pin resting on the center of the valve, a spring arranged on said support, a follower-block mounted on the upper end of the spring, and an adjusting-screw passing through said upper threaded perforation and bearing on said block, substantially as set forth.

487,030. CAR-COUPLING. WILLIAM H. HOOPER, Moscow, Idaho. Filed June 10, 1892. Serial No. 436,230. (No model.)

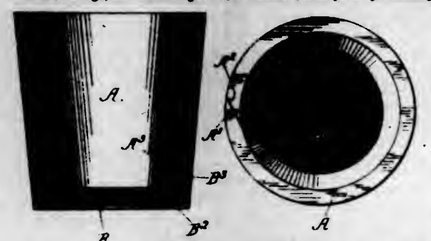


Claim.—1. In a car-coupling, the combination of a draw-head recessed at its upper surface to receive and hold a clevis, with a clevis pivotally suspended from the draw-head, a shaft pivotally connected with the car, and two arms extending at right angles to said shaft, one of which is connected to said clevis, while the other extends directly over said recess, substantially as and for the purpose set forth.

2. In a car-coupling, a draw-head provided at its front end with a mouth adapted to receive a link and recessed at its upper surface to receive and hold a clevis, with a clevis pivotally suspended from the draw-head, a shaft pivotally secured to the car, the ends of said shaft being bent at right angles, and two arms extending at right angles from and secured to said shaft, one of said arms being adapted to raise and lower said clevis, while the other is adapted to hold said clevis in said recess, substantially as and for the purpose set forth.

3. In a car-coupling, the combination of a draw-head recessed at its upper surface to receive and hold a clevis, with a clevis pivotally suspended from the draw-head, a shaft pivotally connected with the car, two arms extending at right angles to said shaft, one of which is connected to said clevis, while the other extends directly over said recess, and means for raising or lowering said arms from the top of the car, substantially as and for the purpose set forth.

487,081. MOLDED PAIL FROM FIBROUS PULP. HENRY HUBBARD, Chicago, Ill. Filed May 23, 1892. Serial No. 434,040. (No model.)



Claim.—1. A vessel of fibrous pulp, having a body molded and lapped end upon end, forming a lap-joint from top to bottom, and the bottom molded and lapped onto the body throughout the entire periphery, said body and bottom being rendered integral at such lap-joints, substantially as set forth.

2. The process of making vessels from molded pulp, which consists in molding a sectoral body with the ends and the shorter side beveled and molding a bottom with an upstanding peripheral flange beveled to correspond with the beveled or side edge of the body, curving the body and lapping its beveled ends one upon the other, and applying the beveled side edge of the body to the beveled upstanding edge flange of the bottom and compressing the vessel thus assembled to integrality at the lap-joints formed by the bevels, respectively, substantially as set forth.

487,082. ATTACHING SPOUTS AND LIPS TO SHEET-METAL VESSELS. GEORGE W. KNAPP, Baltimore, Md. Filed Feb. 13, 1892. Serial No. 421,373. (No model.)

Claim.—In an enameled vessel, the combination, with a body provided with an inwardly-flanged opening, of a clamping-clip secured within the flange of the opening and a spout secured within the clamping-clip, the inner end of said spout being flanged and provided with a flanged strainer, the flange of the strainer overlapping the flange of the spout and when in position in the vessel lying against the flange of the opening in the vessel, and the inner portion of the clamping-clip being bent over the end of the spout and strainer and rigidly securing them to the body of the vessel, the whole being covered with a coating of enamel, substantially as set forth.

487,083. COIN-CONTROLLED STRIKING AND STRENGTH TESTER. FRANKLIN W. KEMMER, Cleveland, Ohio. Filed Jan. 4, 1892. Serial No. 416,971. (No model.)

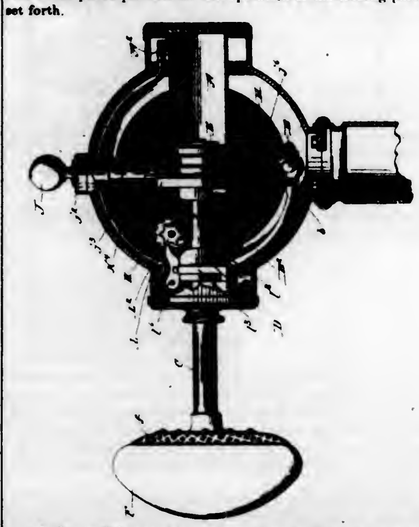
Claim.—1. In a striking-machine, the combination, with a pneumatically-operating buffer, of a movable rod having mounted thereon a piston-head adapted to operate in an air-cylinder and a suitable connection between said air-cylinder and a pressure-gage, substantially as described.

2. In a striking-machine, the combination, with a pneumatically-operating buffer, of the piston rod and head, the air-cylinder communicating with a pressure-gage through a flexible connection, and a non-return valve interposed between said air-cylinder and pressure-gage, substantially as described.

3. In a striking-machine, the combination, with a pneumatically-operating buffer, of a movable rod carrying a piston-head adapted to operate in an air-cylinder, said air-cylinder having communication with a pressure-gage through a flexible connection, and a combined non-return and exhaust valve interposed in said connection between said air-cylinder and pressure-gage, substantially as described, and for the purpose set forth.

4. In a striking-machine, the combination, with a pneumatically-operating buffer secured on the end of a movable rod, of an air-cylinder connecting with a pressure-gage and provided with a piston, said piston being secured on the opposite end of said movable rod and having valves and passages, substantially as described, to form an automatic inlet or supply, as and for the purpose set forth.

5. In a striking-machine, the combination, with a pneumatically-operating buffer, of the automatic locking device comprising the multiple or differential ratchet and pawls and the locking-arm mounted on the rod carrying the coin-actuated arm, all parts being constructed and arranged, substantially as described, to allow for a multiple action of the piston previous to the operation of the locking parts, as set forth.



6. In a striking-machine, an automatic locking device, substantially as described, comprising a double or differential ratchet, said ratchet being toothed proportionately to the number of actions the machine is set for by the insertion of a coin, the pawls engaging said double ratchet, and the locking-arm mounted on a rod carrying the coin-actuated arm, as and for the purpose set forth.

7. In a striking-machine, the combination, with a pneumatically-operating buffer, of a vertically-sliding operating handle or knob connecting with a plunger, an exhaust-valve connecting with said operating-knob, the coin and plunger slots arranged as described, and the spring-pressed rod carrying a locking-arm, and coin-actuated arm for operating said locking-arm, substantially as set forth.

8. In a striking-machine, a pneumatically-operating buffer having a back plate, said buffer and back plate removably secured on a piston-rod guided in a supporting-tube and provided with suitable means adapted to co-operate with a locking device at predetermined intervals, substantially as described.

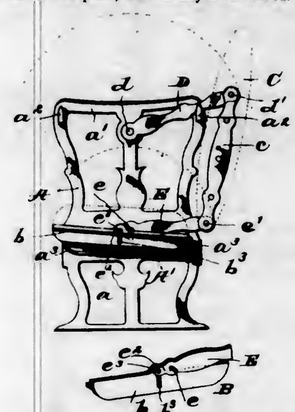
9. In a striking-machine, a pneumatically-operating buffer removably secured on one extremity of a piston-rod having a spring-dog to engage and actuate a locking device, substantially as described.

10. In a striking-machine, the combination, with an automatic locking device, substantially as described, comprising the double ratchet l, l^3, the pawls c c^3, the latter provided with the lug c^5, and the locking-arm F, said arm F mounted on the rod f^3, carrying the coin-actuated arm l, of the standard K, the slots k^2 k^3, formed in said standard, and the plunger k, connecting with the operating-knob J, said knob having a flange j, covering the coin-slot, whereby said knob must be elevated before the insertion of a coin, as and for the purpose set forth.

11. In a striking-machine, the combination, with a pneumatically-operating buffer, of the air-cylinder connecting with a pressure-gage, the combined non-return and exhaust valve interposed in said connection, the piston having a self-acting inlet-valve, the automatic locking device, the coin-actuated mechanism, and the operating-handle connected with said coin-actuated mechanism and exhaust-valve, substantially as and for the purpose described.

487,084. CAR-SEAT. JOHN LEHMAR, Wakefield, Mass. Filed Feb. 10, 1892. Serial No. 420,991. (No model.)

Claim.—1. In a reversible car-seat, the combination, with the main frame, back, and seat, of a link at each end of the car-seat, pivotally connected with the upper part of the back and the main frame, forming the striker-arms, and a seat-operating link at each end of the car-seat, disposed in an approximately-horizontal position when the back and seat are in position for use, pivotally connected with the lower part of the back and with the main frame, and having, also, a connection with the seat, the connections of each of said seat-operating links with the seat, back, and main frame being approximately in a straight line and the connections of the said seat-operating links with the seat and main frame including a compensating connection with one of said parts, substantially as described.



2. In a reversible car-seat, the combination, with the main frame, seat, and back, of a link at each end of the car-seat, pivotally connected with the upper part of the back and the main frame, forming the striker-arms, and a seat-operating link at each end of the car-seat, pivotally connected at one end with the back and having a pivotal connection with the main frame and a connection with the seat, the connection of each of the said seat-operating links with the seat and main frame including a slotted construction, the said seat-operating links being approximately horizontal when the seat and back are in position for use and the connection of each of said seat-operating links with the seat and its points of pivoting being approximately in line, whereby a movement of the seat and locking of the same in position is effected, substantially as described.

3. In a reversible car-seat, the combination, with the main frame, seat, and back, of a link at each end of the car-seat, connecting the upper part of the back with the main frame, forming the striker-arms, and a link at each end of the car-seat, pivoted to the main frame and the lower part of the back, each of said links being connected with the seat by a pin engaging a slot, the said pin and the points of pivoting of the link being approximately in line and the said links being substantially horizontal when the seat and back are in position for use, substantially as described.

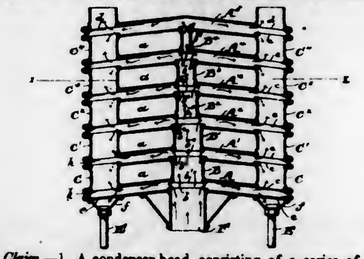
487,085. PENHOLDER. GEORGE B. MORRILL, East Orange, N. J. Filed Sept. 26, 1892. Serial No. 446,888. (No model.)

Claim.—1. The handle portion a and tenon b, having a projection or pin, in combination with a removable sleeve adapted to fit over said tenon and to be removed with an old pen and replaced so as to bring the projection in operation in ejecting the old pen, substantially as set forth.

2. The handle portion a and tenon or reduced end b, having a pin at the outer end, in combination with the connected tube or sleeve d and the sleeve e, adapted to fit over said tenon and to be removed with the pen and replaced so as to bring the projection into operation in ejecting the old pen, substantially as set forth.

3. The metal sleeve d and surrounding sleeve e, of cork, rubber, or similar material, connected together by the bent-over portions d', in combination with the handle portion a and tenon b, having a pin or projection and over which tenon said connected sleeves fit and are frictionally held, the parts being constructed and operating substantially in the manner and for the purposes set forth.

487,086. CONDENSER-HEAD. CHARLES S. OSBORNE, Philadelphia, Pa. Filed May 9, 1892. Serial No. 432,372. (No model.)



Claim.—1. A condenser-head consisting of a series of hollow shells provided with communicating openings of successively-smaller diameters between the adjacent shells.

2. A condenser-head consisting of a series of communicating hollow shells, the upper shell being provided with one or more steam-outlets and the lower shell with a steam-inlet and one or more drip-outlets.

3. A condenser-head consisting of a series of hollow shells A A' A², &c., the connecting steam-necks B B' B², &c., and the connecting drip-necks C C' C², &c., the topmost shell of the series being provided with outlets and the lowermost shell with a steam-inlet, whereby the steam being introduced in the lowermost shell shall pass successively through each one of the series to the topmost shell.

4. A condenser-head consisting of a series of approximately-horizontal hollow shells located one above the other and inclining slightly downward toward their outer edges, with communicating drip passage-ways between their outer portions and communicating steam passage-ways between their central portions.

5. A condenser-head consisting of a series of hollow shells located one above the other, each of said shells, except the topmost one, being provided with openings in their upper and lower faces at or about their centers, the opening in the upper face of each shell being of smaller diameter than the opening in the lower face of the same shell, the topmost shell being closed at the middle portion of its upper face, but provided with the opening in the lower face, necks between the adjacent upper and lower openings of successive shells, a steam-inlet to the outer shell, communicating with the opening at the middle of the lower face thereof, and necks forming communicating passage-ways between said shells adjacent to their outer edges.

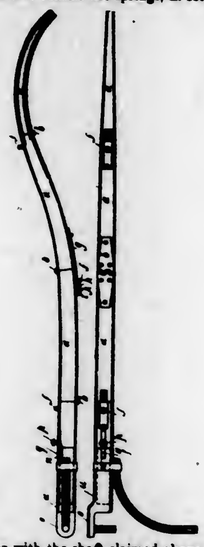
6. A condenser-head consisting of a series of hollow shells arranged one above the other and provided at or about their middle portions with openings in their upper and lower faces, the opening in the upper face being smaller than the opening in the lower face, connecting-necks between the opening in the upper face of each shell with the opening in the lower face of the next shell, and communicating passage-ways between said shells adjacent to their outer edges.

7. A condenser-head consisting of a series of hollow shells having communicating passage-ways between successive shells, with a portion of the upper surface of each shell extending over the passage-way opening to the lower surface of the shell so as to deflect into the shell more or less of the steam entering through the passage, and communicating passage-ways between said shells for the egress of the water of condensation.

487,087. VEHICLE-SHAFTS. REINHARD PFEIFFER, Hamburg, assignor of one-half to Carl Baumer, Berlin, Germany. Filed Aug. 9, 1892. Serial No. 442,502. (No model.)

Claim.—1. A folding shaft or pole for a carriage, consisting of

two or more parts *a*, capable of turning upon hinges *b* and of being held extended by means of the hook *c* and the spring *d*, so as to prevent the opening of the hinges, with the safety-bolt *g*, which engages under the knob *f*, used to release the springs, as set forth.



2. In combination with the shaft claimed above, mechanism enabling a curved shaft to be used on the right or on the left hand side, consisting of an attachment furnished with lateral pins, such as ordinarily used, which attachment is provided with a sheath *o*, in which the shaft end is inserted and which is furnished with an upper and a lower slot *n*, wherein engages a spring-hook *q*, fixed to the said shaft, as described.

487,038. DETACHABLE CALK FOR HORSESHOES. MAXIMILIAN J. L. TOWLER, Detroit, Mich. Filed Apr. 22, 1892. Serial No. 430,518. (No model.)

Claim.—1. The combination, in a horseshoe, of a detachable calk integrally formed with a curved bearing portion or base and a standing flange formed on the outer edge thereof with a central bend to form a spring for the curved base, substantially as described.

2. The combination, in a horseshoe, of a detachable calk formed of sheet metal with a curved bearing portion or base having means for securing it to the shoe, a standing flange extending around the outer edge and ends of the base, and a bend in the middle of the flange to form a spring for the base, substantially as described.

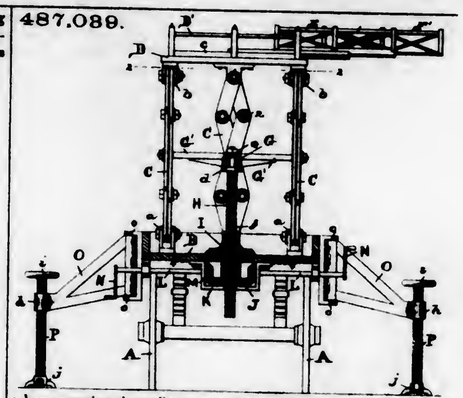
3. The combination, with a horseshoe, of three detachable interchangeable calks formed of spring sheet metal, each provided with a curved base, a standing flange formed thereon and centrally corrugated, and two screws securing the calk to the shoe, substantially as described.

4. As a new article of manufacture, a detachable horseshoe-calk struck up of sheet-steel and consisting of a curved base-section provided with apertures for fastening, a standing flange on the front edge, connected by tapering side wings to the ends, and a corrugation in the middle of said flange, substantially as described.

487,089. PORTABLE TOWER-PLATFORM FIRE-ESCAPE. JOHN VOSS, ADAM VOSS, and HENRY VOSS, Baltimore, Md. Filed Aug. 3, 1892. Serial No. 442,693. (No model.)

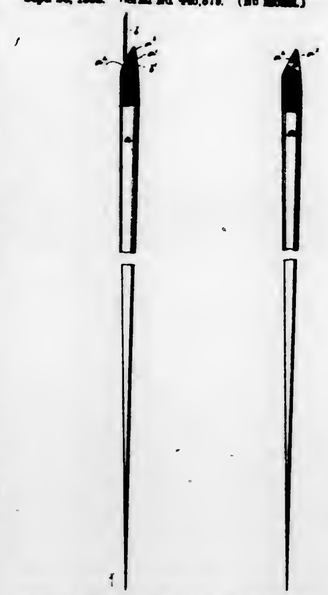
Claim.—In portable fire-escape apparatus, the combination of a body mounted on wheels, a platform above said body, lazy-tongs supporting said platform, a cross-head connected with the lazy-tongs, a screw-shaft having an end joined to said cross-head and said screw-shaft extending down through the body-bottom and having a spline-groove in one side, a threaded box on the body-bottom and engaging the screw-shaft, a gear-wheel on the said screw-shaft and having

487,089.



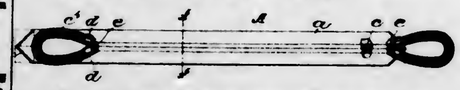
a key engaging the spline-groove therein, and means for revolving said gear-wheel.

487,040. NEEDLE. JOHN WIESSNER, Brooklyn, N. Y. Filed Sept. 26, 1892. Serial No. 446,879. (No model.)



Claim.—A needle provided with a beveled side and with a transverse tapering eye that opens with its reduced end upon the beveled side, substantially as specified.

487,041. SUSPENDER-END. ALFRED M. SIEGLER, Boston, Mass. Filed July 3, 1891. Serial No. 398,236. (No model.)



Claim.—1. A suspender end or web consisting of a woven selvage-edged fabric, the edges of the body of the fabric being one-ply, with a two-ply central portion and end portions woven tubular from selvage to selvage, such end portions being applicable for finishing the body portions, substantially as described.

2. A suspender-end having a longitudinal central pocket therein and a tubular finishing-pocket at its end, inturned diagonally at opposite sides, substantially as described.

3. A suspender-end having a longitudinal central pocket and a

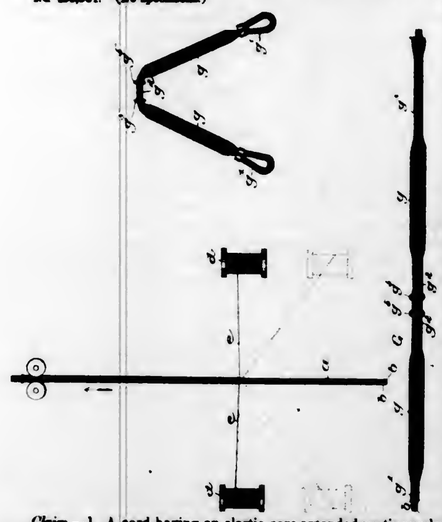
cord contained therein and presenting a loop or end outside the body of the end to engage a button, substantially as described.

4. A suspender-end having a longitudinal central pocket therein and a cord contained in said pocket and presenting a loop or eye outside the body of the end to engage a button, and a clamp to aid in holding said loop or eye closed and entering the web, substantially as described.

5. A suspender-end consisting of a woven web having a pocket for the reception of a cord, and a cord in said pocket, the end of the cord being bent and confined in loop form to constitute an eye to engage a button, the end of the woven web beyond the point at which the cord for the eye emerges from it being turned back upon itself to constitute a finish for the suspender-end and obviate the use of independent binding, substantially as described.

6. A suspender-end composed of a web having a pocket containing a cord, portions of the cord being led out from said pocket to form a loop or eye, and having a portion to overlap the said loop or eye, substantially as described.

487,042. ELASTIC CORD AND METHOD OF MAKING THE SAME. ALFRED M. SIEGLER, Boston, Mass. Filed Apr. 26, 1892. Serial No. 430,581. (No specimens.)



Claim.—1. A cord having an elastic core extended continuously from end to end thereof and a cover composed of threads interlaced and binding the core more snugly at some points than at other points, thus presenting a cord having between its ends a series of bulges separated by smaller or contracted portions, the parts of the core not so closely bound being of larger diameter and possessing the maximum elasticity, substantially as described.

2. A cord having an elastic core extended continuously from end to end thereof and a tubular cover composed of individual threads interlocked about the core to hug some portions of the same closely to prevent such portions of the core from resuming their normal or unstretched condition and loosely covering other parts of the core to allow of greater diameter, owing to the contraction of the core, thus affording a springy portion, substantially as described.

3. A continuous elastic core and a cover therefor, said cover being bound more snugly around the core at some than at other parts of its length, whereby the said core presents elastic and non-elastic sections, substantially as described.

4. A continuous elastic core and a cover therefor, said cover being bound more snugly around the core at some than at other parts of its length, whereby the said core presents elastic and non-elastic sections, and a secondary cover applied to the closest-wound parts of the main cover, substantially as described.

5. The herein-described method of making a cord having elastic and non-elastic sections, which consists in stretching an elastic core, in applying thereto while stretched covering-threads, changing the angle of the covering-threads at predetermined intervals in the production of the cover (more or less) with relation to the center line of the core, and braiding the covering-threads about the core thereafter, substantially as described.

6. An elastic or spring cord having elastic and fibrous strands in the core and a cover composed of threads interlaced together and made to bind said core more snugly at some than at other points in the direction of its length, the parts of the core less closely bound being of largest diameter in the completed cord, the fibrous core-strands acting to limit the extent to which the cord may stretch between its loosely-bound portions when under strain, substantially as described.

7. A continuous elastic core, a cover therefor bound more snugly around the core at some than at other parts of its length, whereby the said cord presents elastic and non-elastic sections, and separated lumps or rings g^3, formed in the cover, substantially as described.

487,043. BUCKLE. ALFRED M. SIEGLER, Boston, Mass. Filed May 9, 1892. Serial No. 433,333. (No model.)

Claim.—1. The herein-described buckle, it consisting of a flat body having an elongated slot provided along its upper edge with a row of outwardly and downwardly projecting teeth and having above said teeth inturned ears located substantially in the plane of the body and substantially a continuation thereof to act upon the face of a suitable strap or web, there being a space between the inner edges of the said ears and the top of the body for the passage of the web therebetween, substantially as described.

2. A buckle-body composed of a sheet-metal plate having within its outer edges an opening partially closed by ears a^4 a^4, behind which the web rests, a slot a', having along its upper edge a series of outwardly and downwardly turned teeth a^5, a slot to receive the upper end of a cast-off, and an opening the mouth of which is contracted in width to engage a part of and aid in keeping the cast-off in place, substantially as described.

3. A buckle consisting of a flat sheet-metal body having a series of integral outwardly-turned teeth, upwardly-projecting ears a^3 above said teeth to receive the web between them and act upon it only near its edges and having an opening at its lower portion and provided with a tongue and lips, combined with a wire-like cast-off adapted to engage and be held in place by the said tongue and lips, the normal width of the cast-off near the said lips being greater than the space between said lips, substantially as described.

4. A buckle consisting of a sheet-metal body having a series of integral outwardly-turned teeth, upwardly-projecting ears a^3 above said teeth to act upon the web only near its edges and having an opening b and lips or shoulders, combined with a cast-off and a spring-loop connected thereto and provided with a brace or bridge, substantially as described.

5. A buckle-body, a slot a' therein, having along its upper edge a series of outwardly and downwardly turned teeth a^5, a slot to receive within it the upper end of a cast-off, and an opening in said buckle-body, the mouth of which is contracted in width to engage a part of and aid in keeping the cast-off in place, substantially as described.

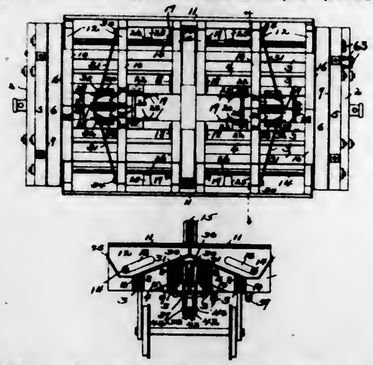
487,044. SUSPENDER-BUCKLE. ALFRED M. SIEGLER, Boston, Mass. Filed June 17, 1892. Serial No. 437,080. (No model.)

Claim.—1. In a suspender-buckle, a sheet-metal plate or frame provided with a hook having a concavo-convex seat and an opening in the plate above the seat, combined with a yielding plate having a semispherical tent to partially close the throat of said hook, but yet yield readily to the introduction and removal of a round cord, as and for the purposes set forth.

2. The herein-described suspender-buckle, it consisting of a one-piece metal plate of single thickness, the plate being cut away between its side edges to leave a single cross-bar with a web-receiving space above and below it, the under edge of the cross-bar having a series of teeth turned outwardly toward the front of the plate to engage the web, the part of the plate below the lowermost space being tapered and bent toward the back of the plate and then upwardly to form a hook, the ends of the spaces in the plate both above and below the cross-bar serving as edge guides for the selvage edges of the web, the space in the plate above the cross-bar having an open mouth through which to lead the web laterally out and then in when the buckle is to be adjusted on the web, substantially as described.

3. The buckle-frame having the two horns, a fixed bar toothed at its under edge, a slot, a hook, and a recess, combined with a plate provided with a hemispherical teat fastened to said frame, substantially as described.

487,045. RAILWAY-CONSTRUCTION CAR. CARVER C. BROWN, El Paso, Tex. Filed Aug. 3, 1892. Serial No. 442,042. (No model.)



Claim.—1. In a railway-construction car, the combination of a dumping-platform, a drum, a flexible connection between said drum and platform, and means for revolving said drum by fluid-pressure, substantially in the manner and for the purpose described.

2. In a railway-construction car, the combination of a dumping-platform, a drum, a flexible connection between said drum and platform, a cylinder for fluid, a piston in said cylinder and having a rod, and suitable connections between the said rod and the drum, whereby the latter may be revolved by application of fluid-pressure to the piston.

3. In a railway-construction car, the combination of a dumping-platform, a drum, a flexible connection between said drum and platform, a cylinder for fluid, a piston in said cylinder and having a rod, and a segment for actuating said drum and connected with the piston-rod, whereby the drum may be revolved by application of fluid-pressure on the piston.

4. In a railway-construction car, the combination of a dumping-platform, a pair of drums, flexible connections between said drums and the said platform, a cylinder for fluid, two pistons in said cylinder, each having a rod, and suitable connections between said rods and the two drums, whereby fluid-pressure acting to move said pistons toward or away from each other operates the platform.

5. In a railway-construction car, the combination of a sliding platform, a cylinder for fluid, a piston in said cylinder and having a rod, suitable connections between said rod and the sliding platform, whereby the latter is operated by fluid-pressure on the piston, a latch to hold the said platform, and suitable connections between said latch and the piston-rod, whereby the platform may be released by the movement of the latter.

6. In a railway-construction car, the combination of a sliding platform, a cylinder for fluid, a piston in said cylinder and having a rod, suitable connections between said rod and the sliding platform, whereby the latter is operated by fluid-pressure on the piston, a sliding latch engaging a projection on the platform, and suitable connections between said latch and the piston-rod, whereby the movement of the latter may throw the latch out of engagement with the projection on the platform.

7. In a railway-construction car, the combination of a sliding platform, a cylinder for fluid, a piston in said cylinder and having a rod, suitable connections between said rod and the sliding platform, whereby the latter is operated by fluid-pressure on the piston, a sliding latch having a projecting inclined part, a spring-arm on the sliding platform having an end to take over the projecting inclined part of said latch, and suitable connections between said latch and the piston-rod, whereby the movement of the latter may throw the latch out of engagement with the projection on the platform.

8. In a railway-construction car, the combination of a sliding platform, a cylinder for fluid, a piston in said cylinder and having a rod, a suitable connection between said rod and the sliding platform, whereby the latter is operated by fluid-pressure on the piston, a sliding latch engaging a projection on the platform, and a rocking arm connecting the latch and piston-rod, whereby the movement of the latter may throw the latch out of engagement with the projection on the platform.

9. In a railway-construction car, the combination of a platform made in two sliding and tilting sections, a drum, flexible connections between said drum and the two sections of the platform, a cylinder for fluid, a piston therein having a rod, and suitable connections between said rod and the drum, whereby the latter may be revolved by application of fluid-pressure on the piston.

10. In a railway-construction car, the combination of a platform made in two sliding and tilting sections, a cylinder, piston, and piston-rod, suitable connections between the said rod and the sections of the platform, whereby the latter may be operated by application of fluid-pressure on the piston, a double sliding latch engaging projections on the two sections of the platform, and connections between the said latch and the piston-rod, whereby it may be moved out of engagement with the platform-sections by said piston-rod.

11. In a railway-construction car, the combination of the car-frame having inclined slideways, two platform-sections having slotted slide-blocks fitting on said slideways, pivot-rods engaging the slots in the said slide-blocks, and suitable means for sliding and tilting said platform-sections.

12. In a construction-car, the combination of a cylinder for fluid, two pistons therein, piston-rods, suitable connections between the latter and the dumping apparatus, whereby the same is operated by movements of the pistons toward and away from each other, a pipe for conducting fluid into the cylinder on the outer sides of the pistons, a pipe for conducting fluid between the two pistons, valves for controlling the flow of fluid through said pipes, and an automatic exhaust-valve in each of the said pipes and having communication with the other pipe, whereby to exhaust the fluid from the cylinder in the manner described.

13. In a construction-car, the combination of a cylinder for fluid, two pistons therein, piston-rods, suitable connections between the latter and the dumping apparatus, whereby the same is operated by movements of the pistons toward and away from each other, a pipe for conducting fluid into the cylinder on the outer sides of the pistons, a pipe for conducting fluid between the two pistons, valves for controlling the flow of fluid through said pipes, and an automatic exhaust-valve in each of the said pipes and having communication with the other pipe, whereby to exhaust the fluid from the cylinder, each of said exhaust-valves comprising a suitable casing into which the pipes lead, and having an exhaust-port, a piston-valve in said casing and having an exterior annular passage and a central through-passage, and a spring acting on said valve.

487,046. ELECTRIC-LIGHT CARBON. JAMES CLERK, London, England. Filed Apr. 10, 1890. Serial No. 347,260. (No specimens.)

Claim.—1. In the manufacture of light-emitters or illuminants for electric lamps, the herein-described treatment of carbon filaments to cause a deposit on them of metallic matter, which consists in electrically heating them to incandescence while they are suspended in a vessel from which all air or oxidizing vapor is excluded above a volatile liquid, such as alcohol having dissolved or suspended in it a haloid or acid salt or an oxide of some one or more suitable metals.

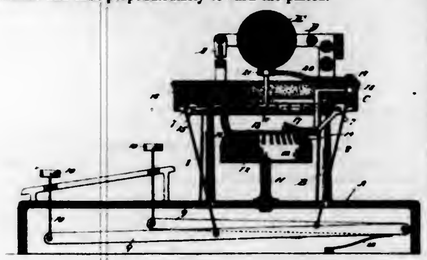
2. The herein-described improvement in the manufacture of incandescent bodies or filaments for electric lamps, which consists in heating to a glow by an electric current a carbon filament in vacuum over a volatile fluid, such as alcohol containing a non-volatile substance, such as a haloid or acid salt, or an oxide of some one or more suitable metals, volatilizing the fluid and causing the non-volatile substance to be carried to and deposited upon the carbon filament.

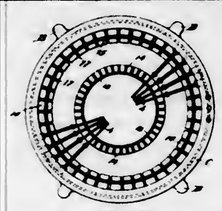
487,047. TYPE-WRITING MACHINE. ALEXANDER DAVIDSON, Springfield, Mass., assignor to the Yost Writing Machine Company, New York, N. Y. Filed Apr. 3, 1888. Serial No. 269,445. (No model.)

Claim.—1. In a type-writing machine, the combination of a platen, an inking-surface, and a series of type-carriers, each of the carriers being adapted to move between the inking-surface and the paper on the platen and impress the type against the inking-surface at the end of its movement in one direction and against the paper at the end of its movement in the other direction.

2. In a type-writing machine, the combination of a platen, a curved inking-surface, and a series of intermediate type-carriers which travel between the two and present the type perpendicularly to both.

3. In a type-writing machine, the combination of a platen, an annular stationary inking-surface, and a series of type-carriers whose type-faces travel first radially from the pad toward the center of the machine and then perpendicularly toward the platen.





4. In a type-writing machine, in combination with a series of type-carriers arranged in a circle, an annular exteriorly-arranged inking-surface.

5. In a type-writing machine, in combination with a central type-guide and a circular inking-surface, an intermediately-arranged type-carrier.

6. In a type-writing machine, the combination of a central type-guide, a type-carrier, and an inking-surface exterior to the type-carrier in the normal position of the latter.

7. In a type-writing machine, the combination of a series of actuating-levers, a series of connecting-rods therefor, a series of type-carriers pivoted each at the inner end of one of the said levers, and a pivotal support for one part of each of said type-carriers and arranged within the series of actuating-levers.

8. In a type-writing machine, the combination of a series of actuating-levers, a series of connecting-rods therefor, a series of type-carriers pivoted one to each of said actuating-levers and having each a slotted tail-piece extending radially inward, and a pivotal support arranged within the series of actuating-levers for said tail-pieces.

9. In a type-writing machine, the combination of a series of radially-arranged actuating-levers and a series of radially-arranged angular type-carriers pivotally supported each at one point upon one of said levers and pivotally supported each at another point independent of said lever and nearer the center of the machine, whereby the type is caused to turn and change its direction while being moved to and from the printing-point.

10. In a type-writing machine, in combination with a lever and a type-guide, a type-carrier pivoted to the lever and pivotally supported at a point beyond said lever.

11. In a type-writing machine, the combination of a series of radially-arranged actuating-levers, a series of radially-arranged type-carriers, each of which is pivoted to one of said levers, and means, substantially as described, within the series of actuating-levers for turning said carriers about their pivotal connections with said levers and for causing the type ends of said carriers to travel first radially toward the center of the machine and then axially thereof.

12. In a type-writing machine, in combination with a central type-guide, a lever and a type-carrier connected to said lever and provided with a pivotally-supported tail-piece or extension projecting in a direction opposite to that of the type.

13. In a type-writing machine, in combination with an operating-lever, a type-carrier provided with a curved slotted tail-piece and a stationary pivotal support for the latter.

14. In a type-writing machine, in combination with a series of radiating operating-levers, a series of radiating type-carriers, each of which is pivoted to one of said levers and provided with a pivotally-supported tail-piece or extension projecting in a direction opposite to that of the type.

15. In a type-writing machine, in combination with a series of radiating operating-levers, a series of radiating type-carriers, each of which is pivoted to one of said levers and provided with a tail-piece or extension, and a pivotal circular support or fulcrum-ring, as 13, for the tail-pieces or extensions of said carriers.

16. In a type-writing machine, in combination with a series of radiating operating-levers, a series of radiating type-carriers, each of which is pivoted to one of said levers and provided with a tail-piece or extension, and a chamber, as 12, provided with a pivotal support or fulcrum-ring, as 13, and with a slotted periphery for the tail-pieces or extensions of said carriers.

17. In a type-writing machine, a top plate or type-ring supporting a series of actuating-levers and provided with a circular inking-pad and a series of vertically-arranged radiating type-carriers within said pad, pivoted to said actuating-levers to be independently and arbitrarily moved therefrom to the printing-point.

18. In a type-writing machine, a type-carrier consisting of an arm 2, a type-bearing arm 3 at right angles thereto, and a slotted extension 4, projecting in a direction opposite to that of the arm 3.

19. In a type-writing machine, a type bar or lever provided with a moving fulcrum, in combination with an actuating key-lever, the interposed arm or lever, and the link.

20. In a type-writing machine, the combination of a centrally-arranged fulcrum-support, a concentric and exteriorly-arranged fulcrum-support, a series of actuating-levers radiating inwardly therefrom, and a series of type-carriers pivotally connected to said centrally-arranged fulcrum-support and to said series of radially-arranged actuating-levers.

21. In a type-writing machine, the combination of a series of inwardly-radiating pivoted actuating-levers, a platen above said actuating-levers, a circular inking-surface above said actuating-levers and between them and the platen, a centrally-arranged fulcrum-support, and a series of type-carriers, each connected to the free end of one of said actuating-levers and to said fulcrum-support.

22. In a type-writing machine, the combination, with an inking-surface and a platen above the same, of an angular type-carrier, an actuating-lever to which said type-carrier is pivoted at one point, and a pivotal support for the type-carrier at another point, whereby the type is given substantially a quarter-turn as it is moved from the inking-surface to the platen.

23. In a type-writing machine, the combination of a platen, a tabular inking-pad arranged beneath the platen, the axis of said pad being in line with the printing-point, a series of radially-arranged type-carriers, and two series of pivotal points for said carriers beneath said inking-pad, the type normally resting around the inner surface of said tubular pad and in moving to print first traveling radially inward and then axially to the platen.

24. In a type-writing machine, a vertically-arranged type-carrier adapted to move radially inward and then axially, substantially as shown, and to change the path of the type-face in moving to and from the printing-point.

25. In a type-writing machine, the combination of an inking-pad, a platen, and a series of vertically-arranged type-carriers having their type-faces flaring or radiating outwardly and resting against said pad in their normal positions and adapted each to move radially inward and then to the printing-point along an axial line common to all of said carriers.

26. In a type-writing machine, the combination of a type-ring, a series of actuating-levers depending therefrom, a circular inking-pad upon said type-ring, and a series of vertically-arranged type-carriers jointed to said actuating-levers and pivotally supported independent of said levers and arranged so that their types stand always above said levers and type-ring and against the inking-pad supported thereby.

27. In a type-writing machine, the combination of a platen and a series of vertically-arranged type-carriers having radially-arranged type-arms adapted each to move first in substantially a horizontal direction to a point opposite the impression-surface and then in a direction substantially at right angles to its first path and perpendicular to the impression-surface.

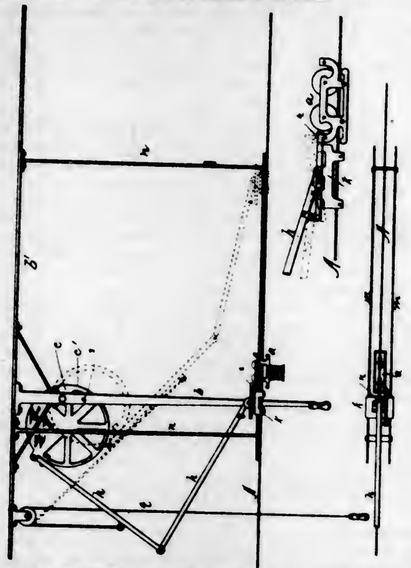
28. In a type-writing machine, the combination of an actuating-lever, a type-carrier pivoted between its ends to said lever and pivotally supported at another point on the opposite side of the arc of vibration of the pivot connecting the type-carrier and actuating-lever, whereby the type-carrier is turned about its pivotal connection with the actuating-lever during and by the vibration of said lever and the type-face reversed or inverted.

487,048. CASH-CARRIER. NOAH DILLENBECK and NORMAN H. DILLENBECK, Syracuse, N. Y. Filed July 9, 1892. Serial No. 439,201. (No model.)

Claim.—1. A carrier mechanism consisting in the combination of an oscillatory and eccentrically-pivoted weight, a carrier, and means to transmit the force exerted by the oscillation of the weight to the carrier to give it the impulse along the wire trackway.

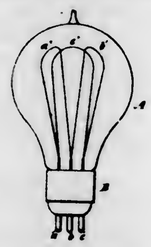
2. An oscillatory and eccentrically-pivoted weight, a propelling-

arm connected thereto, a slide connected to said propelling-arm, and means to detachably connect the carrier to said arm.



3. The combination, with the oscillatory eccentrically-pivoted weight and the propelling-arm pivotally connected to the rim of said weight and also connected to a slide, of the slide, a carrier detachably connected to said slide, and means to set the weight and arm in their normal positions and to release them to give the carrier its impulse along its trackway.

487,049. INCANDESCENT LAMP. JOHANNES H. P. GÖBEL, Berlin, Germany, assignor to Siemens & Halske, same place. Filed Apr. 20, 1892. Serial No. 429,594. (No model.) Patented in Germany Apr. 7, 1891, No. 69,022; in France June 16, 1891, No. 214,173; in Italy June 17, 1891, XXV, 20,910, LVIII, 440; in Belgium June 17, 1891, No. 95,304; in Sweden June 18, 1891, No. 3,411; in Norway June 18, 1891, No. 2,264; in Austria-Hungary June 20, 1891, No. 39,025 and No. 56,025, and in Switzerland June 24, 1891, No. 5,692.



Claim.—1. An incandescent lamp provided with three terminals connected with each other through three independent carbon filaments of equal resistance.

2. An incandescent lamp provided with an uneven number of terminals and an equal number of carbon filaments of equal resistance, connected to said terminals in multiple in pairs and with each other in multiple series.

3. An incandescent lamp provided with a plurality of independent carbon filaments of equal resistance and a plurality of terminals equal in number to the filaments and connected with each other through said filaments.

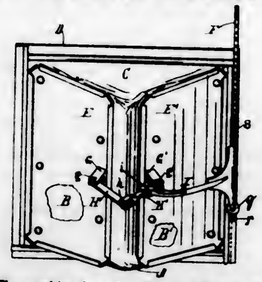
4. An incandescent lamp provided with a plurality of carbon filaments of loop form, having two ends and of equal resistance, a plurality of terminals equal in number to the filaments, and said terminals connected with each other within the lamp by connecting each two of the terminals by a filament.

487,050. CHILD'S CARRIAGE. FRANK HELLER and KALLMAN HIRSCH, New York, N. Y. Filed June 14, 1892. Serial No. 436,662. (No model.)

Claim.—1. The combination of a child's carriage-gear having front and rear axles *a a'*, with springs *d*, rests *e*, supported thereby, a longitudinal bar h^3, secured to the center of the axles and having upwardly-bent forward and rear ends to constitute posts *h h'*, and with a carriage-body adapted to be suspended from said posts, substantially as specified.

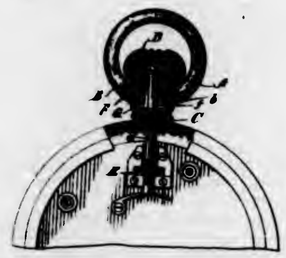
2. The combination of a child's carriage-gear having front and rear axles *a a'* and side bars *b*, with springs *d*, rests *e*, supported thereby, a longitudinal bar h^3, secured to the center of the axles and having upwardly-bent forward and rear ends, a detachable body *f*, having an eye *f'*, and with a spring *g*, secured to the side bars and having hook *g'* for engaging the eye, substantially as specified.

487,051. DIAPHRAGM FOR GAS-METERS. ABEL HERRING, Los Angeles, Cal. Filed Feb. 12, 1892. Serial No. 421,232. (No model.)



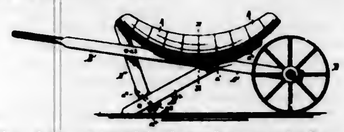
Claim.—The combination of the leather blocked into shape, with two quadrangular faces and two triangular ends, the quadrangular stiffening-plates, the flag-wire, the two posts fixed, respectively, to the stiffening-plates, the toggle-bars H H', pivoted to each other and to their respective posts, and the flag-wire arm fixed to the flag-wire at one end and pivoted to one of the toggle-bars approximately midway between the pivots which secure the said toggle-bar, respectively, to its post and to the other toggle-bar, and such pivots arranged to pivot the parts together, as set forth.

487,052. PENDANT FOR WATCH-CASES. THOMAS A. HOPKINS, Elgin, assignor to M. C. Eppenstein & Co., Chicago, Ill. Filed July 13, 1892. Serial No. 440,469. (No model.)



Claim.—As an improvement in pendants for watch-cases, the combination of a hollow pendant, a threaded bushing adjustably secured therein, a spring-sleeve within said bushing, and mounted rotatively on the stem-arbor and provided with a flange on one of its ends, said flange having a groove adapted to spring over and engage one edge of the threaded bushing, and the longitudinally-rotatable stem-arbor, substantially as described.

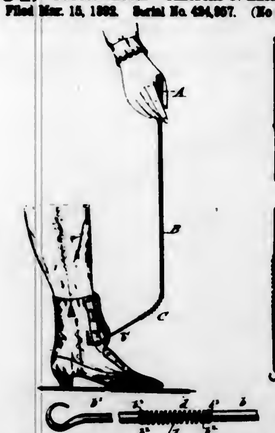
487,053. WHEELBARROW. ARTHUR O. HUBBARD, Robbinsdale, assignor to William R. Sweatt, Minneapolis, Minn. Filed Apr. 20, 1892. Serial No. 431,111. (No model.)



Claim.—1. As a new article of manufacture, a wheelbarrow-tray formed of narrow strips with curved contiguous edges, whereby the proper dishing form is secured when said sections are bent and united, substantially as and for the purpose set forth.

2. In a wheelbarrow, the side bars B', supporting the tray and between which the wheel D is journaled, the legs B^3, inclining backward and downward and secured to said side bars, cross-bar B^5 beneath the lower portion of said legs, and front braces B^4, secured to said side bars and with their lower ends resting upon said inclined legs opposite said cross-bars, whereby one bolt a^4 may be utilized to secure the legs, bars, and braces together, substantially as and for the purpose set forth.

487,054. BUTTON-HOOK. THEODORE F. KRUEGER, New York, N. Y. Filed Mar. 15, 1892. Serial No. 424,867. (No model.)



Claim.—1. A button-hook the shank of which is formed of two sections, one being attached to the handle, while the outer section is connected with the handle-section by a flexible joint formed of an interior chain and an exterior coil-spring, substantially as set forth.

2. A button-hook the shank of which is formed of a handle-section and an outer yielding section that is connected to the handle-section, a flexible joint formed of an interior chain attached to the perforated inner ends of the shank-sections and a coil-spring that surrounds the chain and is secured to the adjacent ends of the section, substantially as set forth.

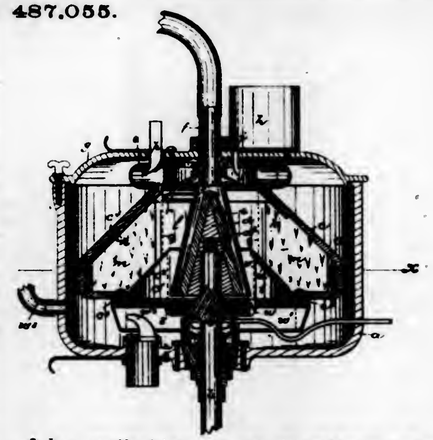
3. A button-hook the shank of which is formed of two sections, a fixed handle-section and an outer section having a hooked-shaped end, said shank-sections being provided with enlarged flattened and perforated inner ends and annular grooves close to said ends and connected by a flexible joint composed of a chain attached to the inner ends of the shank-sections, and a coil-spring the ends of which are attached to the grooves back of the enlarged ends, substantially as set forth.

487,055. CENTRIFUGAL BUTTER-EXTRACTOR. OLAF OLSSON, Newark, N. J. Filed Apr. 14, 1892. Serial No. 429,111. (No model.)

Claim.—1. The process of extracting butter from milk herein described, which consists in separating the cream from the milk by rapidly rotating the same, then directing the cream over a suitable surface in a thin film in a separate chamber from the skim-milk and subjecting it to the action of a rapidly-rotating air-current, and thus imparting rotary movement to the cream and buttery particles therein, substantially as set forth.

2. In combination with the tank *a*, a shaft *b*, having a rotary bowl thereon, a cone *d*, having a wing or fan d^9, a hollow cone forming a fan-chamber with the cone *d*, a duct *f* for cold air, and a passage or opening *e*, providing a way for the cream into said fan-chamber, substantially as set forth.

487,055.



3. In a centrifugal butter-extractor, the combination, with a larger rotary bowl, of a smaller rotary bowl having its upper edge project within the line of the cream-wall of the larger bowl, a duct for conducting the cream into the smaller bowl, a duct for conveying the buttermilk back into the larger bowl, and a duct communicating with the last-mentioned duct for transmitting cold air thereto, and a passage for transferring the butter to the butter-chamber, substantially as set forth.

4. In combination, in a butter-extractor, a rotary shaft *b*, having outer and inner bowls thereon, the chamber in the inner bowl having communication with the outer bowl and a cream-cooling chamber disposed centrally with relation to the inner bowl and having communication with inner bowl to allow the cream to be conveyed or conducted to said inner bowl, and means, substantially as described, for cooling the cream, all substantially as and for the purposes set forth.

5. The process herein described of extracting butter, which consists in transferring the cream from the cream-separating chamber to the butter-separating chamber through a cooling-chamber, in which it is subjected to rapidly-rotating cold air prior to subjecting it to the butter-separating operation, substantially as set forth.

6. The process herein described, consisting in subjecting the cream to the action of rapidly-rotating cold air while said cream is spread in a thin film, then separating the butter therefrom, and then conducting the buttermilk to a cream-chamber and subjecting said buttermilk to further rotary motion and extracting the butter more perfectly therefrom, substantially as set forth.

7. In combination with a rotary bowl for separating cream from milk, a pipe or conduit *r* for directing the cream to a cooling-chamber, said cooling-chamber and a conduit for cold air leading thereto, and a centrifugal fan for giving rotary movement to the cooled air and throwing it outward against wall and against the cream gravitating thereon, and a centrifugal butter-separating chamber communicating with said cooling-chamber, adapted to receive the cooled cream from said cooling-chamber and subject the same to centrifugal force, substantially as set forth.

8. In a butter extracting or separating machine, the combination, with the rotary bowl, of cream-separating means at the outer part of said bowl and at the center of said bowl, a cooling chamber or passage communicating with means for furnishing cold air and cream, and a centrifugal chamber for separating the butter from the cooled cream, substantially as set forth.

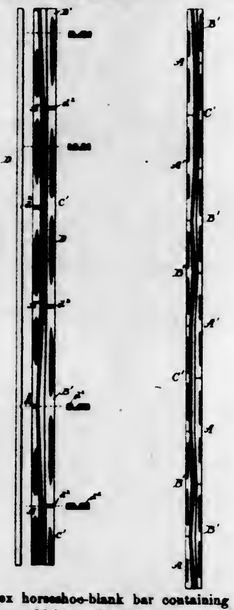
9. In a butter extracting or separating machine, the combination, with a rotary bowl having wings at the outer part forming cream-separating chambers and means for supplying the same with milk and for directing the cream and skim-milk from said chambers, of a hollow cone and an inner cone having a cooling-passage between, and a centrifugal chamber receiving the cooled cream from said passage and separating the butter therefrom.

487,056. HORSESHOE-BLANK BAR. CHARLES H. PERKINS, Providence, R. I., assignor to the Rhode Island Perkins Horse Shoe Company, Jersey City, N. J. Filed Feb. 4, 1892. Serial No. 420,208. (No model.)

Claim.—1. A complex horseshoe-blank bar, substantially as hereinbefore described, containing different forms of blanks for use in the manufacture of horseshoes of different styles or kinds.

2. A complex horseshoe-blank bar, substantially as hereinbefore described, containing three different forms of blanks, respectively,

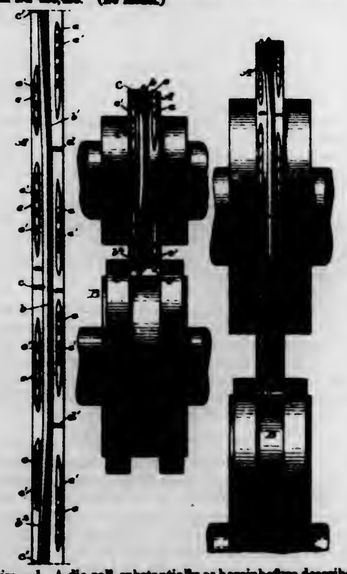
for use in the manufacture of horseshoes of the side-weighted, toe-weighted, and snow-shoe varieties.



3. A complex horseshoe-blank bar containing three forms of blanks in two rows, which are divisible longitudinally, substantially as described.

4. A complex horseshoe-blank bar containing two rows or lines of blanks, the blanks in one of said lines being all for side-weighted shoes and the blanks in the other line being in part for toe-weighted shoes and in part for still another form of shoe, substantially as described.

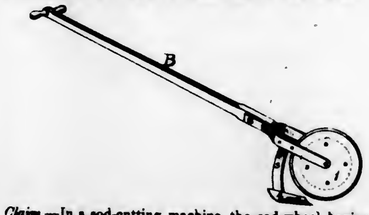
487,057. ROLL FOR MAKING HORSESHOE-BLANK BARS. CHARLES H. PERKINS, Providence, R. I., assignor to the Rhode Island Perkins Horse Shoe Company, Jersey City, N. J. Filed Feb. 5, 1892. Serial No. 420,656. (No model.)



Claim.—1. A die-roll, substantially as hereinbefore described, for forming complex bars containing different kinds of horseshoe-blanks, said roll having a peripheral working face as wide as the combined width of two of the blanks desired and also having a peripheral grooving-tongue, portions of which at intervals in its length are parallel with both edges of said face, each of said portions being preceded by and succeeded by other portions which are laterally inclined or deflected toward the same edge of the face, the space between one edge of the face and a parallel portion being adapted to form one horseshoe-blank of one kind and the spaces between the opposite edge of said face and the connected parallel and deflected portions being adapted in each instance to form a pair of horseshoe-blanks of another kind, each being of uniform width from one end for a portion of its length and tapered toward the other end.

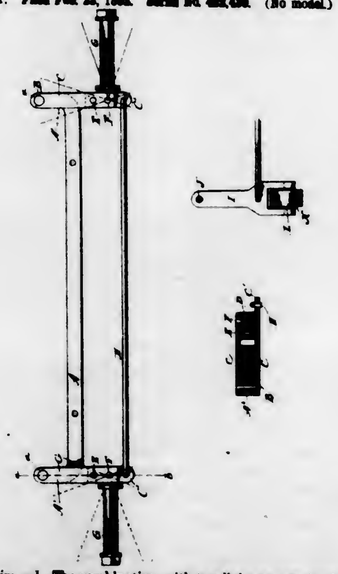
2. A die-roll, substantially as hereinbefore described, for forming complex bars containing three different kinds of horseshoe-blanks, said roll having a peripheral working face and a continuous peripheral grooving-tongue, which at intervals is parallel with both edges of the working face, in lengths conforming to the length of one kind of blank desired, and which between said parallel portions is deflected toward and from one edge of said face, each two connected deflected portions conforming in length with the length of a second form of blank desired and each parallel portion with its connected deflected portions conforming in length to that of two of the third form of blanks desired and the spaces between the tongue and the two edges of the working face varying in width in accordance with the varied widths of the several blanks desired, as the side-weighted, toe-weighted, and snow-shoe varieties.

487,058. SOD-TRIMMING MACHINE. WILLIAM PULLAR, Ithaca, N. Y. Filed May 7, 1892. Serial No. 432,122. (No model.)



Claim.—In a sod-cutting machine, the sod-wheel having a cutting-disk secured thereto, the handle B, and the arm 3, having a mold-board secured thereto, as set forth.

487,059. JOINTED AXLE FOR VEHICLES. ELIJAH F. STEELE, Wallingford, Conn., assignor of one-half to William H. Edsall, Brooklyn, N. Y. Filed Feb. 23, 1892. Serial No. 422,490. (No model.)



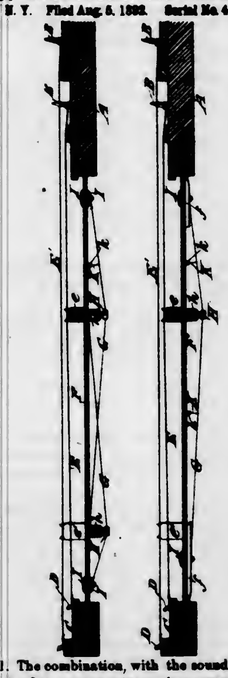
Claim.—1. The combination, with two links or arms having their forward ends swung on vertical pivots and provided in the rear of the said pivots with horizontal spindles or shafts, of a coupler joining the said arms or links at a point in the rear of the said spindles or shafts and free to have endwise movement in either direction, substantially as set forth, and whereby side pressure acts through the surfaces upon which the wheels rest to swing the arms in unison, and thus deflect the wheels in accordance with the direction of the pressure, the said surfaces thus forming points of purchase for turning the wheels by virtue of the tractional engagement of the same with them.

2. The combination, with an axle, of two links respectively pivoted at their forward ends to its ends, spindles located upon the links in the rear of their pivotal connection with the ends of the axle, and a coupler joining the links at points in the rear of the said spindles and free to have endwise movement in either direction, substantially as set forth.

3. The combination, with an axle having its ends bent forward, of links pivoted to the forward extremities of the said bent ends of the axle and extending rearward back of the same, spindles rigidly secured to the rear ends of the links, and a coupler connecting said rear ends of the links and extending parallel with the axle, substantially as described.

4. The combination, with an axle having its ends bent forward at a right angle to it, of two links made open at their forward ends to embrace the said bent ends of the axle, to the forward extremities whereof they are pivoted, and constructed to extend back of the axle, spindles mounted in the solid rear ends of the links, and a coupler pivotally connecting the said rear ends of the links and extending parallel with the axle, the forward ends of the links bearing upon the upper and lower faces of the bent ends of the axle, substantially as described.

487,060. SOUNDING-BOARD FOR PIANOS. EDWARD STROUD, New York, N. Y. Filed Aug. 5, 1892. Serial No. 442,332. (No model.)



Claim.—1. The combination, with the sounding-board of a musical instrument, of one or more truss-wires secured thereto, substantially as set forth.

2. The combination, with the sounding-board of a musical instrument, of one or more truss-wires having their ends anchored to the sounding-board and adjustable rests or struts inserted between the wire and the board, substantially as set forth.

3. The combination, with the sounding-board of a musical instrument and reinforcing-pieces secured thereto, of one or more truss-wires having their ends anchored to the board at the points where the board is reinforced and rests or struts inserted between the board and the truss-wire, substantially as set forth.

4. The combination, with the sounding-board and the truss-wire secured thereto, of the dampers connecting the truss-wire with the board, substantially as set forth.

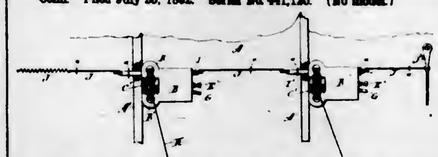
487,061. ROPE-CLUTCH. PER T. SUNDBERG, Domnarfvet, Sweden. Filed Apr. 5, 1892. Serial No. 427,573. (No model.)

Claim.—1. In a cable grip or clutch, the combination, with a casing having the inner faces of its side walls beveled toward both ends, of two loose sliding jaws in said casing, the outer surfaces of the jaws being also beveled toward both ends, substantially as set forth.

2. In a grip or clutch for cables, the combination, with a plate attached to a car or bucket, of a sliding plate mounted on the plate connected with the car or bucket, bolts forming stops for the sliding plate, a casing connected with the sliding plate and provided with a groove having its inner side beveled toward the ends of two loose sliding jaws in said groove, the outer faces of which jaws are also beveled toward the ends, substantially as set forth.

3. The combination, with a supporting-cable and a traction-cable, of a bucket or car, rollers supporting the bucket or car from the traction-cable, obstructions placed upon the supporting-cable adjacent to the supporting-roller for the traction-cable, and a grip on the car, which grip is composed of a sliding casing having a groove the inner sides of which are beveled toward the ends, and sliding jaws in said groove, which sliding jaws have their outer faces beveled toward the ends, substantially as set forth.

487,062. RELEASING DEVICE. SAMUEL G. TODD, New Haven, Conn. Filed July 25, 1892. Serial No. 441,125. (No model.)



Claim.—1. In a releasing device for stables, the combination, with a locking-bolt having an offsetting arm, of a spring for holding the same in its locked position, an uncoupling-bar arranged parallel with the said bolt, adapted at its ends to be connected with other corresponding bars and constructed with an arm to coact with the arm of the bolt, and a case inclosing the said parts and having its rear face constructed with one or more open grooves to receive the said bar, substantially as set forth, and whereby the said bar is made independent of the case, so that if the same should be torn away from its fastenings the bar would not be disturbed.

2. In a releasing device for stables, the combination, with a locking-bolt having an arm, and a stud projecting from it in opposite directions, of a spring for holding the said bolt in its shot or locked position, a releasing-lever having its inner end arranged to stand in line with the said stud of the bolt and provided with a beveled finger, a spring for normally holding the said end of the lever in line with the said stud to prevent the bolt from being shot back, and an uncoupling-bar adapted to have its ends connected with corresponding bars and provided with an arm to coact with the finger of the lever and the arm of the bolt, substantially as set forth.

3. A releasing device for stables, consisting of a case having one end slotted to receive a ring, a bolt mounted for longitudinal movement in the said case, from which its outer end projects, and constructed with an arm and a stud projecting from it in opposite directions, a spring for holding the bolt in its shot or locked position, a releasing-lever having its inner end arranged to normally stand in line with the stud of the bolt and provided with a beveled finger and having its outer end extended through the case, a spring for holding the inner end of the said lever in line with the stud on the bolt, and an uncoupling-bar adapted to have its ends connected with the corresponding bars, mounted in the case for longitudinal movement therein, and provided with an arm adapted to be engaged with the beveled finger of the lever and with the arm of the bolt, substantially as set forth.

487,063. PUZZLE. GEORGE W. BAILEY, Brooklyn, N. Y. Filed Apr. 28, 1892. Serial No. 431,101. (No model.)

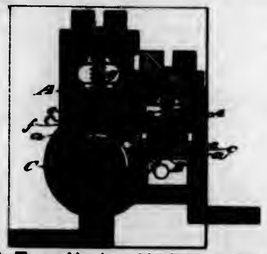
Claim.—1. A puzzle comprising a series of blocks containing characters, so that when the faces of the blocks are correctly arranged the characters will combine to exhibit the solution on a plurality of the exterior faces of the combined blocks, certain of the in-

terior faces of said blocks being indistinguishable from certain exterior faces, substantially as described.

2. A puzzle comprising a series of blocks containing characters, so that when the faces of the blocks are correctly arranged the characters will combine to exhibit the solution on a plurality of the faces of the combined blocks, certain faces of said blocks being duplicates of others, substantially as described.

3. A puzzle comprising a series of blocks having characters revolubly secured to their faces, substantially as described.

487,064. VALVE FOR AIR AND GAS COMPRESSORS. JAMES CLAYTON, Brooklyn, N. Y. Filed May 21, 1892. Serial No. 433,809. (No model.)



Claim.—1. The combination, with a hollow cylindrical valve-box containing a valve-seat at one end and having lateral openings near said seat, of a puppet-valve having a cylindrical head fitted to work in said box, the said box having provided within it between the valve-seat and said lateral openings an annular space for the free passage of air, substantially as herein set forth.

2. The combination, with a hollow cylinder containing a seat for a puppet-valve and having lateral openings, of a puppet-valve having a hollow cylindrical head fitted to said cylinder and having lateral openings in said head, substantially as and for the purpose herein set forth.

487,065. GAS-LAMP. LESLIE A. COGGIN, Springfield, Mass. Filed June 3, 1891. Serial No. 394,991. (No model.)

Claim.—1. The combination, with a gas-lamp having a main burner and adjacent thereto a secondary burner or jet, of a valve having an inlet-way *a* and differently-directed outlet-ways *b d*, the latter of which comprises sub-passages d^2 d^3, and the rotatable valve-plug having a way, the said valve-plug way and the ways of the valve-body being so formed and relatively arranged that there will be at given positions of the plug a communication between the inlet and one or the other of the said three exit-passages and upon the full opening of any one of the said exit-passages the closing of both of the other exit-passages, the inlet-pipe coupled to the inlet-way of the valve, a pipe in communication with both of said sub-passages d^2 d^3 and terminating for gas-delivery at the main burner, and a pipe leading from the other exit-way *b* of the valve to the secondary burner, substantially as and for the purposes set forth.

2. The combination, with a gas-lamp having a main burner and adjacent thereto a secondary burner or jet, of the valve having a rotatable valve-plug with a way *f* transversely through it, the valve-body having a socket for the plug, an inlet-way leading to said socket and having at its junction with said socket the widened aperture *e*, an outlet-passage *b*, leading from one side of said socket, and two adjacent outlet-ways d^2 d^3, leading from another side of the socket, and said way and closing portions of the plug, together with the differently-directed outlet-ways, so relatively arranged that communication may be had between the inlet and the one side outlet *b*, between the inlet and partially with said outlet *b* and one of the paired passages d^2 d^3, or between the inlet and solely with either of the adjacent paired outlet-passages d^2 d^3, the gas-inlet pipe coupled to the valve-inlet, a pipe in communication with said way *b* and leading to the jet or secondary burner, and a pipe in communication with both of said passages d^2 d^3 and terminating for gas-delivery adjacent the main burner, substantially as and for the purposes set forth.

487,066. TYPE-WRITING MACHINE. ALEXANDER DAVIDSON, Springfield, Mass., assignor to the Yost Writing Machine Company, New York, N. Y. Filed Apr. 3, 1883. Serial No. 368,446. (No model.)

Claim.—1. In a type-writing machine, the combination, with a center guide, of a type-bar having a pivotally-connected type free to vibrate longitudinally of the type-bar in either direction, whereby the type may be automatically adjusted in and during its passage through the center guide independently of the type-bar, and means for limiting the said vibrations.

2. In a type-writing machine, the combination, with a center guide, of a type-bar and a type-holder pivotally connected substantially at right angles to said type-bar, the pivot of the type-holder being substantially coincident with the axis of the type-holder and the center guide and the type-holder being constructed and arranged to have a free but limited vibratory motion longitudinally of the type-bar to both sides of a line drawn through its axis when standing in a vertical position or coincident with the axis of the center guide.

3. In combination, a type-bar provided at one end with a pivoted type-holder and means, substantially as described, for limiting the vibration of the type-holder.

4. In a type-writing machine, the combination, with a center guide, of a type-bar provided at one end with a pivoted type-holder and a type fitted thereto.

5. In a type-writing machine, the combination, with a center guide, of a type-bar provided at one end with a pivoted type-holder and means, substantially as described, for limiting the vibration of the type-holder.

6. In a type-writing machine, the combination, with a center guide, of a type-bar provided at one end with a self-adjusting type-holder and a type fitted thereto.

7. In a type-writing machine, the combination, with a center guide, of a type-bar provided at one end with a self-adjusting type-holder and a type fitted thereto and means for limiting the movement of the same.

8. In a type-writing machine, a type-bar having at one end an extension arranged at an angle to the bar and having a type-holder pivoted to said extension.

9. In a type-writing machine, a type-bar having at one end an extension arranged at an angle to the bar, having a type-holder pivoted to said extension, and having means for limiting the vibration of the pivoted type-holder.

10. In a type-writing machine, in combination with a type-bar having at one end an extension arranged at an angle to the bar and having also a stop, a type-holder pivoted to said extension and provided with a slot which embraces said stop to limit the vibration of the type-holder.

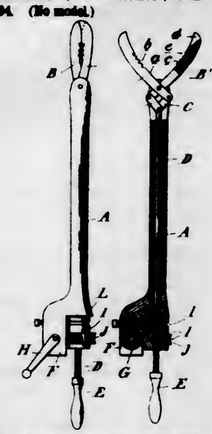
11. In a type-writing machine, a type-bar having a slot at one end, in which is pivoted the thin flat shank of a type-holder.

487,067. MEMBRANOID. JAMES W. DOREMUS, Newark, N. J., assignor to the American Leather and Membranoid Company, same place. Filed Jan. 30, 1892. Serial No. 367,993. (Specimens.)

Claim.—As a new article of manufacture, the product herein designated "membranoid," the same consisting of a leather-like integument having ornamental configurations upon its finished surface, due to the presence thereon of ridge-like or bristle-like projections, substantially as described.

487,067.

487,068. PARTURITION-SHEARS. WILLIAM L. DRINKWATER and JAMES G. DRINKWATER, Mount Clemens, Mich. Filed May 9, 1892. Serial No. 432,204. (No model.)



Claim.—1. In a veterinary surgical instrument, the combination, with a handle, of two movable jaws pivoted to the handle, one jaw having two parallel cutting-edges at its outer end and an intervening space between the edges and the other jaw having a single cutting-edge at its outer end arranged to enter the space between the other cutting-edges, toothed sections on both jaws below the cutting-edges, and means for actuating the jaws, substantially as described.

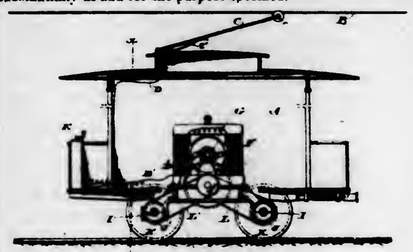
2. In a veterinary surgical shears, the combination of a handle or frame, the jaws pivoted at the end, the toggle-levers C, connected to the jaws, the shaft D, connected to the toggle-levers and extending through the handle, the nut I, having worm gear-wheel J thereon, having a screw-threaded aperture through which the shaft engages, the worm-pinion G, and the crank H, substantially as described.

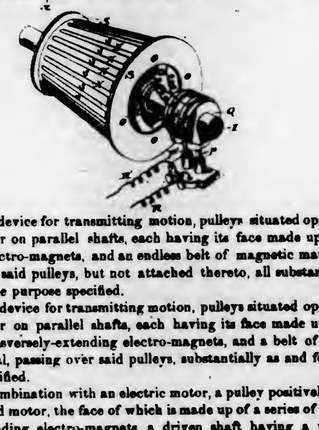
487,069. DEVICE FOR TRANSMITTING MOTION FOR ELECTRIC STREET-CAR MOTORS. WALTER B. HARRINGTON, Atlantic City, N. J., assignor to Francis T. Chambers, Philadelphia, Pa. Filed Oct. 4, 1890. Serial No. 367,055. (No model.)

Claim.—1. The combination, with two pulleys made powerfully magnetic by suitable winding, of an endless belt of magnetic material running over said pulleys and held thereto by magnetic attraction.

2. As a device for transmitting motion, a pulley having its face composed of a series of transversely-extending electro-magnets and a belt of magnetic material, passing over said pulley, substantially as and for the purpose specified.

3. As a device for transmitting motion, a cone-pulley made powerfully magnetic by suitable windings and a belt of magnetic material of less breadth than the face of the pulley, passing over said pulley, substantially as and for the purpose specified.





4. As a device for transmitting motion, pulleys situated opposite to each other on parallel shafts, each having its face made up of a series of electro-magnets, and an endless belt of magnetic material, passing over said pulleys, but not attached thereto, all substantially as and for the purpose specified.

5. As a device for transmitting motion, pulleys situated opposite to each other on parallel shafts, each having its face made up of a series of transversely-extending electro-magnets, and a belt of magnetic material, passing over said pulleys, substantially as and for the purpose specified.

6. In combination with an electric motor, a pulley positively actuated by said motor, the face of which is made up of a series of transversely-extending electro-magnets, a driven shaft having a pulley thereon opposite to the magnetic pulley, and a belt connecting said pulleys and composed of magnetic material, substantially as and for the purpose specified.

7. In combination with a car-truck, an electric motor supported on said truck, a shaft positively driven by said motor, a pulley secured to said shaft, having its face made up of a series of electro-magnets, a pulley secured to the axle of the truck, and a belt passing over said pulleys and composed of magnetic material.

8. In combination with a car-truck having two axles, an electric motor supported on said truck, a shaft positively driven by said motor, two pulleys secured to said shaft and each made powerfully magnetic by suitable windings, pulleys secured to each of the truck-axles, and belts of magnetic material, passing over each magnetic pulley and to the pulleys on the respective axles, all substantially as and for the purpose specified.

9. In combination with a car-truck, an electro-motor situated thereon, a shaft driven positively by said motor, a pulley secured to said shaft and having its face made powerfully magnetic by suitable windings, a similar pulley secured to an axle of the car, and a belt of magnetic material, connecting said pulleys.

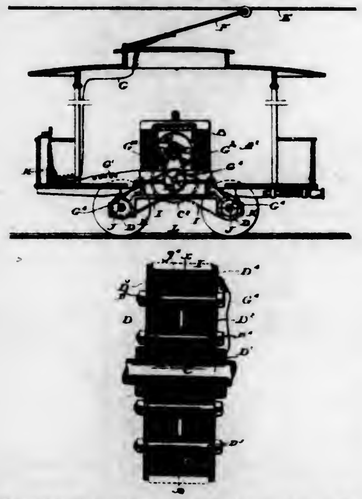
10. In combination with a car-truck, an electro-motor situated thereon, a shaft driven positively by said motor, a cone-pulley secured to said shaft and made powerfully magnetic by suitable windings, a plain-faced pulley of similar construction, secured to an axle of the car, and a belt of magnetic material, connecting said pulleys.

487,070. ELECTRO-MAGNETIC PULLEY. WALTER B. HARRINGTON, Atlantic City, N. J., assignor to Francis T. Chambers, Philadelphia, Pa. Filed June 2, 1891. Serial No. 394,992. (No model.)

Claim.—1. An electro-magnetic pulley having a rim of conducting material made magnetic by suitable windings, a hub of a conducting material, a wheel center of non-conducting material, a connection from the hub to the windings of the rim, and a connection from the windings to the rim.

2. In a car, the combination of an electric motor, a driving-shaft actuated by the motor and constituting part of the motor-circuit, an electro-magnetic pulley secured on said shaft, said pulley having a hub

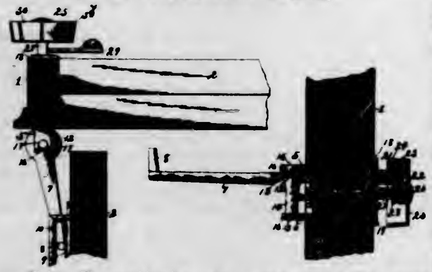
and rim of conducting material, the rim being made magnetic by suitable windings, said pulley having, also, a center of insulating material, electric connection between the hub and rim windings and between the said windings and the rim, a car-axle having a similar pulley secured to it, and a belt of conducting material running over the two pulleys, all substantially as and for the purpose specified.



3. In combination with an electro-magnetic pulley, a belt I, of woven wire, having iron armature-bars I^2 secured to its inner face by rivets passing through the interstices of the wire, substantially as and for the purpose specified.

4. In combination with an electro-magnetic pulley, a belt I, of woven wire, having iron armature-bars I^2 secured to its inner face by rivets passing through the interstices of the wire and through bars placed opposite to the armatures on the outside of the belt.

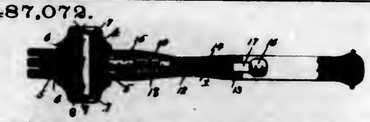
487,071. SHUTTER-WORKER. CHARLES HOFFER, Dayton, Ohio. Filed Aug. 3, 1892. Serial No. 442,041. (No model.)



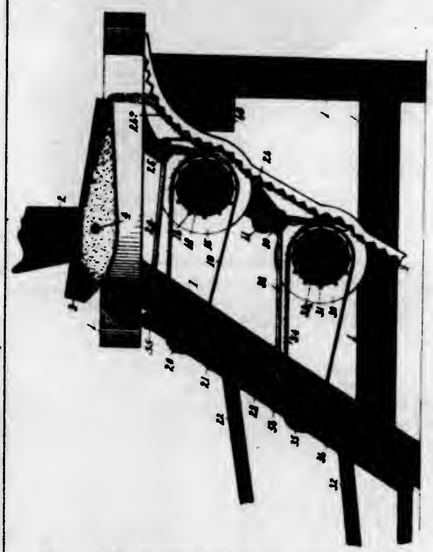
Claim.—The combination, with a window-frame and a shutter hinged thereto and provided with a slotted bracket, of the bracket secured to said frame, the arm having a lug at its free end engaging with said slotted bracket, a gear-wheel and journals working in bearings in the bracket on the window-frame, the shaft passing through said frame having a gear-wheel meshing with the gear-wheel of the arm, a hand-wheel having an annular flange secured to said shaft, a bracket secured to the inner side of said frame, provided with a lug and gravity-pin, and the eccentric on said shaft having an operating-rod, substantially as and for the purpose specified.

487,072. RATCHET-WRENCH. GEORGE H. HUFF, Bourbon, assignor of one-half to Thomas B. Lee and Dwight L. Dickinson, Plymouth, Ind. Filed May 26, 1892. Serial No. 434,709. (No model.)

Claim.—In a ratchet-wrench, the combination, with the handle-sections hinged together, having semicircular end portions provided with slots, intermediate grooves 10 and 12 on their inner sides and recesses 13, of the bars 4, seated in said semicircular portions and having peripheral teeth 5, the rod 14, seated in said grooves, having beveled block 15 at one end, adapted to engage with said teeth, the head

487,072.

16 at the opposite end, the angular portion 17, seated in recesses 13, and the coiled spring 18, substantially as described.

487,078. MAGNETIC SEPARATOR. THOMAS J. LOVETT, Chicago, Ill., assignor, by mesne assignments, to the International Ore Separating Company, of New Jersey. Filed Feb. 13, 1892. Serial No. 421,428. (No model.)



Claim.—1. In a magnetic separator, the combination of two magnetic wheels of different magnetic intensity, two idler-pulleys, two endless belts, each of said belts running around a magnetic wheel and one of the idler-pulleys, and an inclined feed-chute which has riffles therein, which is tangent to each of said magnetic wheels, substantially as described.

2. In a magnetic separator, the combination of two magnetic wheels of different magnetic intensity, two idler-pulleys, two endless belts, each of said belts running around a magnetic wheel and one of the idler-pulleys, and an inclined feed-chute which has horizontal ridges in its bottom and is arranged tangentially to both of said magnetic wheels.

3. In a magnetic separator, the combination of a rotating magnetic wheel, a non-magnetic drum which surrounds said magnetic wheel and revolves at a different speed, an idler-pulley, a belt which runs around said drum and around said pulley, and an inclined feed-chute arranged tangentially to said wheel-drum, substantially as described.

4. In a magnetic separator, the combination of a rotary magnetic wheel, a non-magnetic drum which surrounds said magnetic wheel and revolves at a different speed, an idler-pulley, a belt which runs around said drum and around said pulley, and an inclined feed-chute arranged tangentially to said wheel and drum, together with a perforated water-pipe, located under said belt, substantially as described.

5. In a magnetic separator, the combination of a rotating magnetic wheel, a non-magnetic drum which surrounds said magnetic wheel and revolves at a higher speed, an idler-pulley, a belt which runs around said drum and around said pulley, and an inclined feed-chute, together with a perforated water-pipe, located under said belt, and a second perforated water-pipe located over the magnetic wheel, substantially as described.

6. In a magnetic separator, the combination of a magnetic wheel, an idler-pulley, a belt which runs around said magnetic wheel and said pulley, an inclined feed-chute which has riffles therein, which is arranged tangentially to said magnetic wheel, a shaking-table which

discharges into the upper part of said chute, and mechanism by which said table is vibrated simultaneously with the revolution of said magnetic wheel, substantially as described.

7. In a magnetic separator, the combination of a rotating magnetic wheel, an idler-pulley, a belt which runs around said wheel and around said pulley, an inclined feed-chute arranged tangentially to said wheel, a shaking-table which discharges into said chute, projections on a disk on the end of the shaft of the rotating magnet, and an arm which extends from the axis of the shaking-table and is vibrated by contact with the projections on the disk, substantially as described.

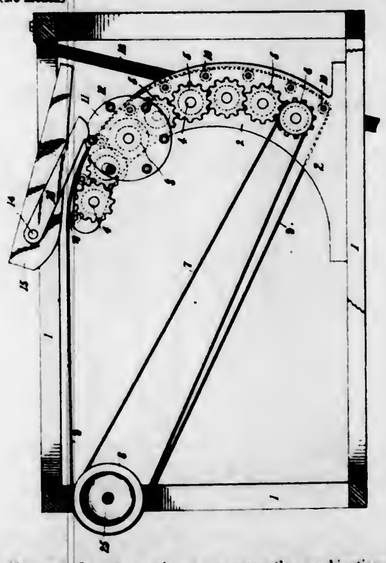
8. In a magnetic separator, the combination of a magnetic wheel, an idler-pulley, an endless belt which runs over said wheel and pulley, an inclined feed-chute which is arranged tangentially to said wheel, and a perforated water-pipe located beneath the under side of said belt, substantially as described.

9. In a magnetic separator, the combination of a main frame, two or more subcombinations each composed of a magnetic wheel, an independently-revolving drum of non-magnetic material which surrounds said magnetic wheel, an idler-pulley, and an endless belt which runs around said wheel, drum, and pulley, together with an inclined feed-chute arranged tangentially to said wheels and drums, a discharge-chute under each idler-pulley, the main shaft, and connecting-gearing by which all of said wheels and drums are driven from said shaft, substantially as described.

10. In a magnetic separator, the combination of a main frame, two or more subcombinations each composed of a magnetic wheel, a drum of non-magnetic material which surrounds said magnetic wheel, an idler-pulley, and an endless belt which runs around said wheel, drum, and pulley, together with an inclined feed-chute arranged tangentially to said wheels and drums, a discharge-chute under each idler-pulley, connecting-gearing by which all of said wheels and drums are driven from said shaft, with a system of perforated water-pipes arranged under said idler-pulleys and over said magnetic wheels, substantially as described.

11. In a magnetic separator, the combination of two sets of rotating electro-magnets, an inclined feed-chute arranged tangentially to said rotating magnets, collecting-rings upon the shafts, on which said magnets revolve, and brushes bearing on the same, electrical connections, a source of current-supply, and a variable resistance in connection with the coils of one of said sets of rotating magnets, substantially as described.

487,074. MAGNETIC SEPARATOR. THOMAS J. LOVETT, Chicago, Ill., assignor, by mesne assignments, to the International Ore Separating Company, of New Jersey. Filed Feb. 13, 1892. Serial No. 421,431. (No model.)



Claim.—1. In a magnetic ore-separator, the combination of a plurality of rotating magnets, each of which has its individual axis of revolution, the curved stationary frame in which said magnets are journaled, an endless belt which passes around said magnets and around said frame, and mechanism for driving said belt and magnets, substantially as described.

2. In a magnetic ore-separator, the combination of a plurality of rotating magnets, each of which has its individual axis of revolution, the curved stationary frame in which said magnets are journaled, an endless belt which passes around said magnets and around said frame, and mechanism for driving said belt and magnets together with an inclined feed-chute which is arranged tangentially to said belt at a point opposite to the rotating magnets, substantially as described.

3. In a magnetic ore-separator, the combination of a plurality of rotating magnets set in a curved stationary frame, connecting gearing which renders their rotation simultaneous, the driving-shaft and gearing by which motion is conveyed to said rotating magnets, the drum on said driving-shaft, and the endless belt which runs around said drum and around the rotating magnets, substantially as described.

4. In a magnetic ore-separator, the combination of a plurality of rotating magnets set in a curved stationary frame, connecting gearing which renders their rotation simultaneous, the driving-shaft and gearing by which motion is conveyed to said rotating magnets, the drum on said driving-shaft, and the endless belt which runs around said drum and around the rotating magnets, together with an inclined feed-chute which is arranged tangentially to said belt at a point opposite to the rotating magnets, substantially as described.

5. In a magnetic ore-separator, the combination of a crescent frame, the rotating magnets journaled in said frame, idler-rollers arranged on the convex side of said crescent frame, the endless belt which runs around said frame upon said idler-rollers, and the driving mechanism for said belt and magnets, substantially as described.

6. In a magnetic ore-separator, the combination of the crescent frame, the rotating magnets journaled in said frame, idler-rollers arranged on the convex side of said crescent frame, the endless belt which runs around said frame upon said idler-rollers, and the driving mechanism for said belt and magnets, together with an inclined feed-chute which is arranged tangentially to said belt at a point opposite to the rotating magnets, substantially as described.

7. In a magnetic ore-separator, the combination of a plurality of rotating magnets, each of which has its individual axis of revolution, the frame in which said magnets are journaled, an endless belt which passes around said magnets, a shaking-table mounted on a shaft over said magnets, a disk with projections thereon mounted on the shaft of one of the magnets, an arm from the shaking-table shaft which engages with said projections, and mechanism for driving said belt and magnets, substantially as described.

8. In a magnetic ore-separator, the combination of a plurality of magnets, the crescent frame in which said magnets are journaled, the idler-rollers arranged on the convex side of said crescent frame, the driving-shaft arranged on the concave side of the crescent frame at a proper distance from the magnets, the drum on said driving-shaft, gearing by which motion is conveyed from said driving-shaft to the rotating magnets, the endless belt which runs around said drum and over the rollers described, and the inclined feed-chute arranged tangentially to said belt at a point opposite said rotating magnets, substantially as described.

9. In a magnetic ore-separator, the combination of a plurality of rotating magnets, the crescent frame in which said magnets are journaled, the idler-rollers arranged on the convex side of said crescent frame, the driving-shaft arranged on the concave side of the crescent frame at a proper distance from the magnets, the drum on said driving-shaft, gearing by which motion is conveyed from said driving-shaft to the rotating magnets, the endless belt which runs around said drum and over the rollers described, and the inclined feed-chute arranged tangentially to said belt at a point opposite said rotating magnets, together with the shaking-table arranged over said magnets, and mechanism by which the rotation of said magnets agitates said table, substantially as described.

487,075. STEAM-BOILER. EDWARD J. MOORE, Philadelphia, Pa. Filed Sept. 26, 1891. Serial No. 406,910. (No model.)

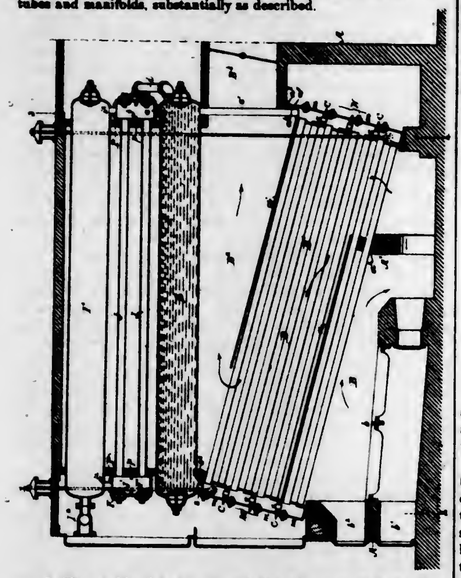
Claim.—1. The combination, in a steam-boiler, of the inclined tubes and front and rear headers with a series of water-drums and a series of water-tubes in line with the water-drums, manifolds at each end communicating with the water-tubes and independent of the water-drums, substantially as described.

2. The combination, in a steam-boiler, of the inclined tubes, the front and rear headers, a series of water-drums separated by a series of water-tubes, and manifolds therefor, said drums and manifolds being connected independently with the front and rear headers, substantially as described.

3. The combination of the inclined tubes, the front and rear headers, a series of water-drums, a series of water-tubes, the front and rear manifolds therefor, nipples connecting the drums and manifolds with the front header, and tubes connecting the rear portions of the drums and the rear manifolds to the rear header with a steam-receiver

mounted above the drums and tubes and connected to the rear portions of the drums and to the rear manifolds, substantially as described.

4. The combination, in a steam-boiler, of the inclined tubes and front and rear headers, the water drums and tubes, manifolds for said tubes, a series of steam-drums mounted above said water drums and tubes, steam-tubes and steam-manifolds for said tubes, the steam drums and manifolds being connected at the rear of the boiler with the water-tubes and manifolds, substantially as described.



5. The combination, in a steam-boiler of a type substantially as described, of a series of water-drums, water-tubes, and manifolds, the steam drums and manifolds mounted above the water drums and manifolds, and nipples and pipes connecting the steam drums and manifolds with the water drums and manifolds at the rear end only, substantially as set forth.

6. The combination, in a steam-boiler, of the inclined tubes, the front and rear headers, the three water-drums arranged in line, the two sets of water-tubes, front and rear manifolds for each set, separating the drums, steam-drums mounted directly above the water-manifolds, and steam tubes and manifolds mounted directly above the central water-drum, and a steam-drum mounted above the steam tubes and manifolds and connected with the manifolds and with the two steam-drums, the said two steam-drums and rear manifolds being connected to the water drums and manifolds at the rear of the boiler, substantially as described.

7. The combination, in a steam-boiler, of the inclined tubes, front and rear headers, and the water and steam drums with front and rear partitions P, arranged back of the nippling of the drums, so that the heads of the drums are exposed for examination at all times, substantially as described.

8. The combination of the inclined tubes, the front and rear headers, the steam-drums and steam-tubes, the water-drums and water-tubes, manifolds for the several tubes, partitions P, arranged at the back of each manifold, and linings for said partitions, said partitions having openings for the drums and tubes, substantially as described.

9. The combination, in a steam-boiler, of the inclined tubes, the front and rear sectional headers, spaces between each section of the headers, and nipples securing the sections together with filling-plates adapted to fit in the spaces between the sections, substantially as described.

10. The combination, in a steam-boiler, of the sectional headers, nipples securing the said sections together and forming a space between each section for the insertion of a cleaning-tool, and filling-plates C, recessed at *d* for the nipples and provided with handles by which they can be removed, substantially as described.

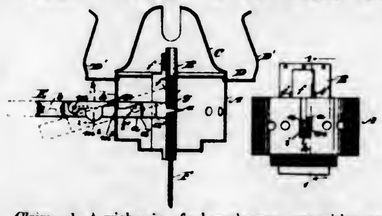
11. The combination of the inclined tubes, the front and rear headers, a drum connected with the front and rear headers, said headers being sectional, spaces between each section, and a deflecting-plate *e*, extending from the front header, the upper surface of said plate being on a line with one of the spaces and with a filling-plate, whereby on the removal of the filling-plate a tool can be introduced to clear the upper surface of the deflecting-plate, substantially as described.

12. A horizontal steam or water drum for steam-boilers, made of a seamless tube contracted at each end to form heads and expanded at the coupling-points, substantially as specified.

13. The combination of the section of a steam-boiler, an opening therein, a cap for said opening, adapted to a ground seat on the outside of said section, a plate on the inside of the section, and perforations in said plate for the passage of steam to the space between the cap and plate, with a securing-bolt confining the plate and cap to the section, substantially as set forth.

14. The combination of the rectangular header-section of a steam-boiler with an extension-section cast on one or both ends of the header-section and coupled to the circulating-tubes, the end plate of the header-section being perforated to permit circulation, substantially as set forth.

487,076. WICK-RAISER FOR LAMP-BURNERS. CHARLES PAINE, Philadelphia, Pa. Filed Mar. 26, 1892. Serial No. 426,543. (No model.)

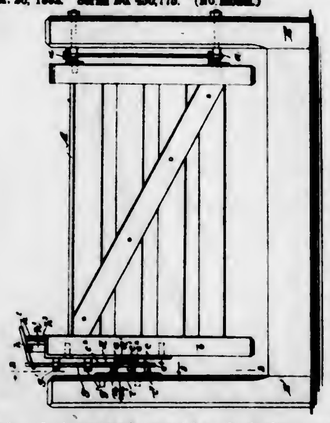


Claim.—1. A wick-raiser for lamp-burners, comprising two parallel limbs, picker-prongs projecting from one end of said limbs, and a locking-dog pivoted on one of said limbs and adapted to engage with the burner-body, substantially as described.

2. A wick-raiser for lamp-burners, comprising two parallel integral limbs held spaced apart by a washer, two parallel picker-points on the ends of said limbs adapted to pass through slots in the wick-tube, and a pivoted dog on one of said limbs, having a hook-shoulder adapted to interlock with the edge of an aperture in the burner-body, through which the limbs and dog are inserted, substantially as described.

3. The combination, with a burner-body having a vertical side aperture and a vertically-slotted wick-tube, of a wick-raiser comprising two parallel limbs held spaced apart by a washer and rivet and adapted to reciprocate and rock in the aperture in the burner-body, two picker-prongs on the inner ends of the limbs entering the slots in the wick-tube, and a locking-dog pivoted at one end to one of the limbs of the wick-raiser and having a hook-shoulder thereon adapted to engage the lower edge of the slot in the burner-body and provided with a finger-knob, substantially as described.

487,077. GATE-LATCH. PHILIP T. RAPSON, Bad Axe, Mich. Filed Apr. 26, 1892. Serial No. 430,775. (No model.)

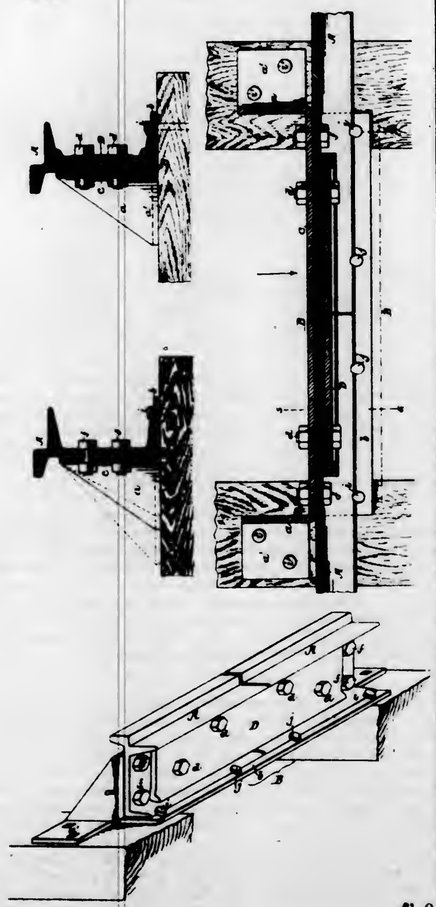


Claim.—1. A gate-latch comprising a back plate secured to the end rail of the gate and having detent-pins projecting therefrom, a locking-plate pivoted on the back plate having an arched top edge formed with a center notch, two oppositely-curved limbs at its lower edge, also formed with a center notch, a check-stud at the rear adapted to engage the pins on the back plate, and an ear on its front face, a bolt mounted to slide above the locking-plate, a spring-pressed lever adapted to trip said bolt, a latch-plate secured to a fence-post opposite the locking-plate on the gate, having a latching-limb thereon and a stud projecting above said limb and adapted to engage the ear on the locking-plate, substantially as described.

2. The combination, with a gate supported to swing and a lock-plate secured to the end rail of the gate, and having detent-pins projecting therefrom, of a locking-plate pivoted on the back plate, having an arched top edge formed with a center notch, two oppositely-curved limbs at its lower edge formed with a center notch, a check-stud at its rear adapted to engage the pins on the back plate, and an ear on its front face, and a bolt mounted to slide above the locking-plate, and a spring-pressed lever adapted to trip said bolt, substantially as described.

3. The combination, with a gate supported to swing and a lock-plate secured to the end rail of the gate and having detent-pins projecting therefrom, of a locking-plate pivoted on the back plate, having an arched top edge formed with a center notch, two oppositely-curved limbs at its lower edge formed with a center notch, a check-stud at its rear adapted to engage the pins on the back plate, and an ear on its front face, and a bolt mounted to slide above the locking-plate, a spring-pressed lever pivoted on a standard on the gate end rail *b* and loosely engaging the upper end of the slide-bolt, and a latch-plate secured to a fence-post opposite the locking-plate on the gate, having a latching-limb thereon and a stud projecting above said limb and adapted to engage the ear on the locking-plate, substantially as described.

487,078. JOINT-PLATE FOR RAILROAD-RAILS. EDWARD SAMUEL, Philadelphia, Pa. Filed Jan. 15, 1892. Serial No. 418,150. (No model.)

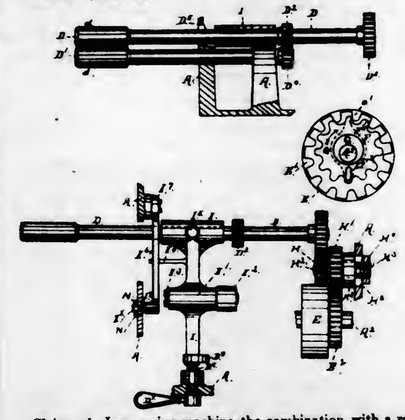


Claim.—1. The within-described joint-plate for railway-rails, said plate having two portions at right angles to each other, one serving as a base-plate for the support of the rails and the other adapted to lie alongside the webs of the rails and to be secured thereto, with braces projecting from said web portion of the joint-plate where the same is intended to rest upon the ties, substantially as specified.

2. The within-described joint-plate for railway-rails, said plate having two portions at right angles to each other, one serving as a base-plate for the support of the rails and the other adapted to lie alongside the webs of the rails and to be secured thereto, and bracing-knees projecting from said web portion of the joint-plate where the same is intended to rest upon the ties, the whole being formed from one piece of metal cut and bent into form, substantially as specified.

3. The combination of the abutting rails, the fish-plate secured to the webs of the rails on one side, a joint-plate longer than the fish-plate and having a rail-supporting base portion and a portion at right angles thereto secured to the webs of the rails on the opposite sides from the fish-plate, and devices for securing said joint-plate to the rails at points beyond the ends of the fish-plate, substantially as specified.

487,079. FEEDING MECHANISM FOR SEWING-MACHINES. GEORGE SHRADE, New York, N. Y. Filed May 8, 1891. Serial No. 392,119. (No model.)



Claim.—1. In a sewing-machine, the combination, with a rotary arbor, of an internal gear-wheel mounted loosely thereon and adapted to be intermittingly operated, mechanism for operatively connecting the arbor and the wheel, and a feeding device connected with and adapted to be operated by said gear-wheel, substantially as set forth.

2. In a sewing-machine, the combination of an arbor provided with a fixed eccentric, an internal gear mounted loosely on said arbor, an intermittent actuating device on the eccentric adapted to engage with the internal gear, a stop for engaging with the actuating device to prevent its rotation with the eccentric, and a feeding device connected with and adapted to be intermittingly operated by said internal gear, substantially as set forth.

3. In a sewing-machine, the combination of an arbor provided with an eccentric, an internal gear-wheel loosely mounted on said arbor, a star-wheel on the eccentric engaging with the internal gear, a stationary stud engaging the said star-wheel, and feeding mechanism connected with and adapted to be intermittingly operated by said internal gear-wheel, substantially as set forth.

4. In a sewing-machine provided with an intermittingly-movable gear-wheel, the combination, with the feed-rolls, the shaft of one of which is provided with a gear-wheel, of a block adjustably secured to the frame of the machine, interchangeable gear-wheels mounted on the block and adapted to engage with the intermittingly-movable gear-wheel and with the gear-wheel of one of the feed-rolls, substantially as set forth.

5. In a sewing-machine, the frame of which is provided with a mortise, the combination, with the feed-rolls, the shaft of one of which is provided with a gear-wheel, of an intermittingly-movable gear-wheel, a block provided with a tenon adjustably secured in said mortise, and interchangeable gear-wheels mounted on said block and adapted to engage with the intermittingly-movable gear-wheel and with the gear-wheel of the shaft of one of the feed-rolls, substantially as set forth.

6. In a sewing-machine, the combination, with a lever pivotally secured to the frame, of an intermittingly-operated feed-roll journaled in one end of the lever, a supplemental feed-roll, an adjustable press-

are-regulator connected with the said journal, and a cam engaging with the other end of the lever, substantially as set forth.

7. In a sewing-machine, the combination, with the upper and lower feed-rolls, one of which is movable toward and from the other one, of a needle-stripper and mechanism engaging with the needle-stripper and with the movable feed-roll, whereby the needle-stripper is raised simultaneously with the separation of the rolls, substantially as set forth.

8. In a sewing-machine, the combination, with the feed-rolls, of a lever, a needle-stripper detachably connected therewith, a second lever engaging with the shaft of one of the feed-rolls, and means for detachably connecting said lever, substantially as set forth.

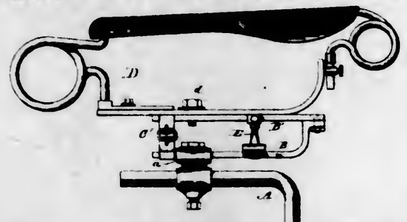
9. In a sewing-machine, the combination, with the lever pivotally secured to the frame and having a laterally-projecting arm near one end, of feed-rollers, the shaft of one of which is journaled in the end of said lever, means for operating the lever, a second lever pivotally secured to the frame and adapted to be engaged by said arm, and a needle-stripper detachably secured to said second lever, substantially as set forth.

487,080. EXPLOSIVE POWDER. JEAN V. SKOGLUND, Stockholm, Sweden. Filed June 22, 1891. Serial No. 397,065. (No specimens.)

Claim.—1. The explosive material herein specified, consisting of dried grains of nitrated cellulose gelatinized by means of a solvent containing a fat or fatty acid.

2. The explosive material herein specified, consisting of dried grains of nitrated cellulose gelatinized by means of a solvent containing a fat or fatty acid and saltpeter.

487,081. SUPPORT FOR BICYCLE-SADDLES. ELIAL H. STAPLES, Elizabeth, N. J. Filed Nov. 7, 1891. Serial No. 411,177. (No model.)



Claim.—1. A bicycle-saddle support consisting of two parts having a pivotal connection at their forward ends so that the rear end of the upper part may swing laterally relative to the lower part, the rear ends of such parts being loosely connected together by a device which limits the lateral movements of the swinging part.

2. A support for bicycle-saddles, consisting of two parts pivotally connected together at their forward ends so that the rear end of the upper part may swing laterally relative to the lower part and loosely connected together at their rear ends by a device which limits the swinging movements of the upper part, combined with an interposed brace or vertical post arranged between the front and rear ends of the saddle-support.

3. A support for bicycle-saddles, consisting of two parts pivotally connected together at their forward ends so that the rear end of the upper part may swing laterally relative to the lower part and loosely connected together at their rear ends by a device which limits the swinging movements of the upper part, combined with an interposed brace or vertical post arranged between the front and rear ends of the saddle-support, the said brace or vertical post having a rounded top and a curved lower portion to permit the upper part of the saddle-support to rock thereon and to allow said brace or vertical post to rock on the lower part of the saddle-support.

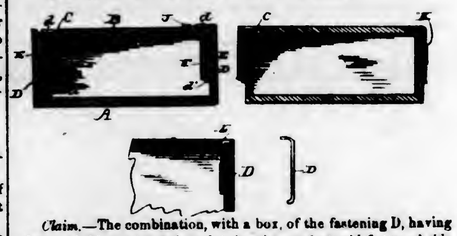
4. A bicycle-saddle support consisting of two separated bars or plates attached together by a pivot or pivots affording a universal joint and connected by a limiting device at their rear ends, combined with a brace interposed between said bars or plates and having at its upper end a universal joint bearing and resting at its lower end upon the lower bar or plate.

5. A bicycle-saddle support consisting of two separated bars or plates attached together at their forward ends and connected by a limiting device at their rear ends, combined with a brace or vertical support interposed between said bars or plates intermediate of their ends.

6. A bicycle-saddle support consisting of two separated bars or plates attached together at their forward ends by a vertical pivot and connected by a limiting device at their rear ends, combined with a longitudinally-adjustable brace or vertical support interposed between said bars or plates intermediate of their ends.

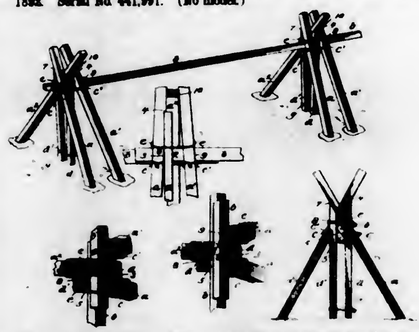
7. A spring-support for bicycle-saddles, consisting of the steel bars or plates B and B', separated from each other, as shown, and connected together at their forward ends by a vertical pivot-bolt b^3, combined with the brace or post E, interposed between said bars or plates intermediate of their ends and constructed to rock laterally, as set forth, and a limiting device joining the rear ends of said bars or plates and serving to limit the sidewise swinging movement of the upper bar or plate B', to which the saddle is to be attached.

487,082. BOX-FASTENER. CHARLES D. SUFFERN, Pickwick, Minn. Filed June 17, 1892. Serial No. 437,094. (No model.)



Claim.—The combination, with a box, of the fastening D, having a flattened side, and a spring-plate bearing against said flattened side and pressing said fastening against the box, whereby said spring performs the double function of permanently securing the fastening to the box and locking said fastening in its operative position, substantially as described.

487,083. FENCE. CARVER C. TROUT, Sharon, Pa. Filed Aug. 3, 1892. Serial No. 441,991. (No model.)

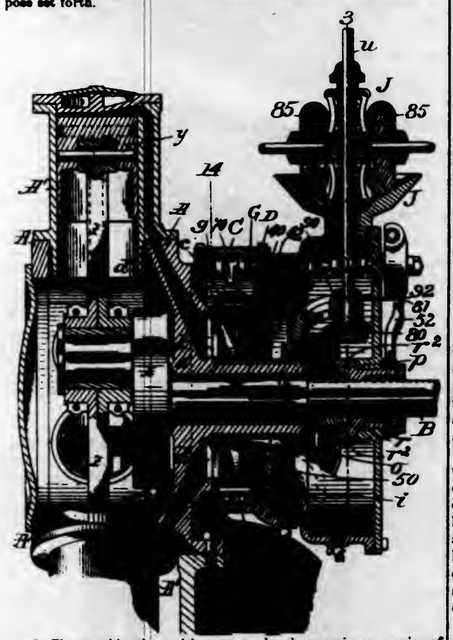


Claim.—1. The skeleton fence-supporting structure herein shown and described, the same consisting of the tripod supports a a' a^3, the separate wires c c', each crossed and connecting and binding said supports together, the tie-rails b, supported upon said separate wires, the vertical bars d d', and the wire e, binding one of said bars d to the middle of the support a^3 at 4, the other bar d' being bound to the support a at 7, whereby the skeleton structure is completed for the placing of the rails.

2. A rail-supporting structure for fences, consisting of the crossed tripod supports a a' a^3, the separate crossed wires c c' for binding said supports together below their crossing, the tie-rails b for connecting the tripod supports to form the panels supported on said separate wires in the under crotch of each tripod, the vertical bars d d', and a single wire e for binding the crossed supports, the bars, and the rails together above the latter, in combination with rider-poles having their taper ends beat down under the tripod supports and anchored in the ground, substantially as described.

487,084. MULTIPLE-CYLINDER ENGINE. ELIJAH B. BENHAM, Providence, R. I. Filed Jan. 26, 1892. Serial No. 419,227. (No model.)

Claim.—1. The combination, with a motor-head comprising a series of cylinders and ports therefor, all of which latter are in the same circle of arrangement, and a steam-supply chamber, of a valve mounted for rotation with a portion against the port-provided motor-head and having several passages therein which are in communication with the steam-supply and which terminate in ports that may register with the cylinder-ports, a series of exhaust-ports respectively adjacent the high-pressure ports, which may establish communication between the cylinder-ports and a chamber, (which is provided separate from the steam-supply,) other registering ports which are in communication with said chamber, and registering ports which are continued in passages through the valve for permitting the escape of the exhaust-steam, and all of the said valve-ports being in the same circle of arrangement to be brought successively into registry with each of the said cylinder-ports for the distribution of effective high and low pressures to the cylinders at one side and for the exhaust of cylinders at the opposite side of the motor-head and the number of valve-ports being unequal to the number of cylinder-ports, for the purpose set forth.



2. The combination, with a motor-head comprising a series of cylinders and ports therefor, all of which are in the same circle of arrangement, and a steam-supply chamber, of a valve mounted for rotation with a portion against the port-provided motor-head and having several passages therein which are in communication with the steam-supply and which terminate in ports that may register with the cylinder-ports, a chamber contained within the valve, having port-openings which may also register with the cylinder-ports, and several other registering ports which are continued in exhaust-passages through the valve, and all of said valve-ports being in the same circle of arrangement to be brought successively into registry with each of the said cylinder-ports for the distribution of high and low pressures to cylinders at one side and for the exhaust of cylinders at the other side of the motor-head, the number of valve-ports being unequal to the number of cylinder-ports, for the purpose set forth.

3. The combination, with a motor-head having a series of cylinders and ports therefor, all of which are in the same circle of arrangement, and a steam-supply chamber back of the motor-head, and an exhaust-chamber separated from the steam-supply chamber, of a valve mounted to rotate with a portion against the port-provided head and having passages therein which are in communication with the steam-supply and terminate in ports for registry with the cylinder-ports, an annular chamber having ports which may register with the cylinder-ports, and several registering ports which are continued in exhaust-passages through the valve and lead to the said exhaust-chamber, the total number of valve-ports being unequal to the number of cylinder-ports and all in a coincident circle of arrangement, substantially as and for the purposes set forth.

4. The combination, with a motor-head comprising a series of cylinders and ports therefor, all of which are in the same circle of arrangement, a steam-supply chamber, and the crank-shaft and cylinder-pistons in connection therewith, of a valve having several registering high-pressure ports which are in communication with the steam-supply chamber and registering ports for the exhaust of the high-pressure steam, which lead to a chamber which is provided for receiving such exhaust-steam, registering ports which communicate with said receiving-chamber, and other registering ports continued in passages through the valve for insuring an absolute exhaust of the secondary-pressure steam, the total number of valve-ports being unequal to the number of cylinder-ports and all in a coincident circle of arrangement, and mechanism for securing a rotation of the valve at a different rate of speed from that of the crank-shaft.

5. In a multiple-cylinder motor, the combination, with a motor-head having the series of cylinders and ports therefor and a steam-supply chamber, of a rotatable valve having several passages through it which lead from its portion next to the steam-supply chamber and terminate in ports for registry with cylinder-ports and arranged to give during the rotation of the valve successive high pressures at different cylinder-ports, a movable apertured cut-off device overlying the surface of the valve in proximity to the steam-chamber and adapted to permit the passage of steam through the valves at times of the port registry, and means for shifting the cut-off ring, whereby the periodicity of steam-inlet to the valve-passages may be modified with relation to that of the port registries, for the purpose set forth.

6. The combination, with the motor-head having cylinder-ports therefor and the rearwardly-extended hub and the crank-shaft therethrough, of a steam-chest at the rear of the head and surrounding the hub, the valve having a tubular shank and cylindrical head which incloses an annular chamber and having high-pressure passages in communication with steam-chamber and terminating in ports A, other ports which communicate with the said annular chamber, and further ports leading through the valve for the discharge of exhaust-steam, the valve being mounted for rotation on the said hub, and means intervening between the valve and crank-shaft for securing a rotation of the valve differential to that of the shaft, for the purpose set forth.

7. The combination, with the multiple-cylinder port-provided motor-head and the steam-chamber, of the valve having a cylindrical head with ports in front end wall for registry with the cylinder-ports and which are extended in passages through the valve-head to the periphery, a cut-off ring located in the steam-chamber and surrounding the valve-head and provided with apertures 60 and the rack, and a rock-shaft and sector-gear which engages said rack, substantially as described.

8. The combination, with the multiple-cylinder port-provided motor-head, the crank-shaft, the steam-chamber, and the valve having a cylindrical head with ports in its front end wall for registry with the cylinder-ports and which are extended in passages through the valve-head to the periphery for communication with the steam-chamber, of a cut-off ring located in the steam-chamber surrounding the valve-head and provided with apertures 60, a governor adapted to be driven by the running of the engine, and connections between same and said cut-off ring for securing on the excessive running of the governor a slight turning of the cut-off ring, substantially as described.

9. The combination, with the multiple-cylinder port-provided motor-head, a steam-chamber, and the valve having a cylindrical head, the ports in its front end wall for registry with the cylinder-ports and which are extended in passages through the valve-head to the periphery, of a cut-off ring located in the steam-chamber and surrounding the valve and provided with apertures, a governor adapted to be driven by the running of the engine, and connections between same and said cut-off ring for securing on the accelerated movement of the governor a slight turning of the cut-off ring, and further devices and connections with the cut-off ring operative to turn the same independently of and without interference by the governor, substantially as and for the purposes set forth.

10. The combination, with the multiple-cylinder and port-provided motor-head, a steam-chamber, and the valve having the cylindrical body with high-pressure ports extended to the periphery, and the apertured cut-off ring having the rack, of the rock-shaft G, having the sector-gear and provided with a sleeve having a worm-wheel fixed thereon, a yoke connected to the said sleeve to have a swinging movement from same as its center of motion, a governor-rod adapted to have a vibration and engaged with said yoke, and a part carried on the said shaft having mounted thereon for rotation a worm-shaft, the worm-screw of which is in engagement with said worm-wheel, substantially as and for the purposes set forth.

11. The combination, with the valve having the cylindrical body and the steam-chest and the passages leading from the steam-chest through the valve, of the apertured cut-off ring having the rack, the rock-shaft G, having the sector and having connected thereon a yoke or arm, and the governor adapted to be driven by the running of the engine and embodying a vibratory shaft which has an engagement with the said rock-shaft arm, substantially as described.

12. The combination, with a cylindrical valve and the cut-off ring surrounding same, provided with a rack, of the rock-shaft G, having the sector-gear 70 and the sleeve 74, with the worm-wheel 73 fixed thereon, the vibratory governor-shaft u, the yoke H, connected on said sleeve to swing therefrom as its center of motion and having the pin-and-slot engagement with said governor-shaft, and the cup-shaped casing 75, fixed on the rock-shaft adjacent the worm-wheel and having the worm-shaft 76 rotatably mounted thereon to engage the worm-wheel, all substantially as shown.

13. In a multiple-cylinder motor, the combination, with a motor-head having a series of cylinder-ports in circular arrangement, the crank-shaft, and the valve mounted for rotation to lie against the part of the motor-head comprising the cylinder-ports and provided with a series of pressure and exhaust ports unequal in number to the cylinder-ports and all so arranged that the distribution of effective pressures given through the valve will be at any given instant opposite to the exhaust-port registry, of an internal gear on the valve, an eccentric on the main shaft, and a surrounding gear-wheel having a less number of teeth than said internal gear, a normally-stationary part through which the shaft rotates, having a portion which is located alongside of the eccentric-carried gear and with one or more circular openings, cylindrical pieces set to rotate in said openings, and pins eccentrically engaging the cylindrical pieces and also engaging the said eccentric-carried gear, substantially as and for the purpose set forth.

14. In a multiple-cylinder motor, the combination, with a motor-head having a series of cylinder-ports in circular arrangement, the crank-shaft, and the valve mounted for rotation to lie against the part of the motor-head comprising the cylinder-ports and provided with a series of pressure and exhaust ports unequal in number to the cylinder-ports and all so arranged that the distribution of effective pressures given through the valve will be at any given instant opposite to the exhaust-port registry, of an internal gear on the valve, an eccentric on the main shaft, and a surrounding gear-wheel having a less number of teeth than said internal gear, a normally-stationary part through which the shaft rotates, having a portion which is located alongside of the eccentric-carried gear and with one or more circular openings, cylindrical pieces set to rotate in said openings, and pins eccentrically engaging the cylindrical pieces and also engaging the said eccentric-carried gear, and a device connected to said normally-stationary part for securing at pleasure a rotational movement thereof, and means for locking said part against movement, substantially as and for the purpose set forth.

15. In combination, a multiple-cylinder motor-head and ports therefor, a valve of a general cylindrical form mounted for rotation against said motor-head, and an annular body surrounding the valve, with an intervening space, and packing and partitioning appliances for dividing said intervening space into supply and exhaust chambers, consisting of a ring-plate secured to the body, a thimble secured to the ring-plate, metallic ring-sections, and a surrounding ring of compressible material in the annular space formed between the thimble and ring-plate, the said metallic sections bearing peripherally on the valve, and passages through the thimble for the admission of steam to a contracting action upon said compressible ring, substantially as described.

16. In a motor, the combination, with the annular body and a valve of general cylindrical form mounted for rotation concentrically therein, of a partitioning appliance consisting of the ring-plate 42, thimble 43, with passage 49, the sectional ring with engaging tongues and sockets, and the restraining-pins 45, and the ring of compressible material surrounding the metallic packing-ring, and all combined and arranged for operation substantially as set forth.

17. In a multiple-cylinder motor, the combination, with a rotary valve having a gear thereon, of the stationary support 90 and the removable strap 92, the pinion 80, having the extended and flanged shank engaged by said support and strap, and the governor-rod spline-engaged with said gear, substantially as and for the purposes set forth.

18. A rotary valve for a multiple-cylinder motor, having a cylindrical head with an annular chamber therein and several ports through its front wall which are contained in passages within the valve-head to apertures at the periphery, other ports through the front wall, communicating with the annular chamber, and other ports through the front wall which are rearwardly continued in exhaust-passages terminating at the rear of the valve-head, substantially as and for the purposes described.

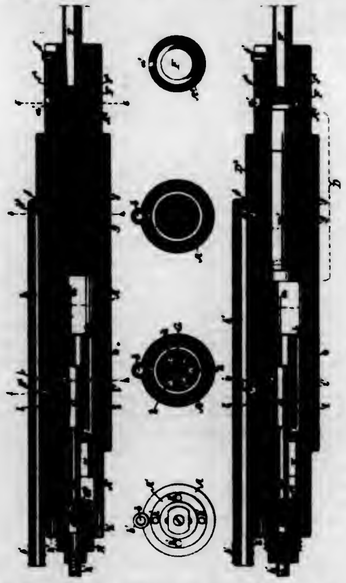
19. A valve for a multiple-cylinder motor, having a head in the form of an annular shell and having at intervals of thirds around its front end wall high-pressure ports which are extended in hooded passages terminating at the periphery of the valve-head and intermediate of pairs of said high-pressure ports, two ports through said end wall leading to the annular chamber within the valve, next a port continued in a hooded passage through and terminating at the rear of the valve, next another port communicating with the said valve-chamber, and next another port continued rearwardly in a hooded passage which terminates at the rear of the valve-head, for the purposes set forth.

487,085. CONFECTIONERY OR OTHER BOX. REUBAHN DORSE, Philadelphia, Pa. Filed May 10, 1892. Serial No. 432,412. (No model.)

Claim.—1. A confectionery-box having a lid with rims projecting from opposite faces thereof, one of said rims being longer and wider than the other rim and adapted to embrace the body of the box and the other rim being adapted to be embraced by the said body when inserted therein, substantially as described.

2. A confectionery-box having a lid with rims projecting from opposite faces thereof, one of said rims being longer and wider than the other rim and adapted to embrace the body of the box and the other rim being adapted to be embraced by the said body when inserted therein, and an ornament held within the latter rim and adapted to be held in the said body, said parts being combined substantially as described.

487,086. PNEUMATIC TOOL. JOHN G. CARLISLE, Philadelphia, Pa., assignor of seven-tenths to James Wolstencroft, William O'Neill, and William H. Soley, same place. Filed Apr. 20, 1892. Serial No. 429,912. (No model.)



Claim.—1. The combination, in a pneumatic tool, of the casing, the striking-plunger D, carrying a tool, and a counteracting plunger E, both mounted in the casing and independent of each other, with ports and valves whereby the plungers are moved from a center line outward and in opposite directions and returned to the center line simultaneously, substantially as specified.

2. The combination of the casing A, the passage at the side of said casing having inlet-ports b^3 b^4, plungers D and E, a tool-head acted upon by the plunger D, a piston G within the plunger E, and ports in said plunger, whereby as compressed air or other fluid is admitted through the inlet-passage the plungers will be moved apart and brought together, substantially as described.

3. The combinaton of the hollow casing A, having extensions A' and A^2, a passage b at the side of the casing, with inlet-ports b^3 b^4 communicating with the interior of the casing, a tool-head carried by the extension A^2, and a piston G, carried by the extension A', the striking-plunger D, and counteracting-plunger E, and passages in said counteracting plunger so situated in respect to the piston G as to automatically cut off the supply and exhaust, substantially as described.

4. The combination of the casing A, the inlet-ports therefor, the plungers D and E within the said casing, a tool-head upon which the plunger D acts, a piston G within the plunger E, and inlet and exhaust ports in the plunger E, with mechanism for regulating the position of the piston G in relation to the ports, substantially as described.

5. The combination of the casing A, inlet-ports therefor, the plunger E, inlet and exhaust ports therein, and a piston acting in conjunction with the said ports with a two-part striking-plunger D, one adapted to slide within the other, substantially as described.

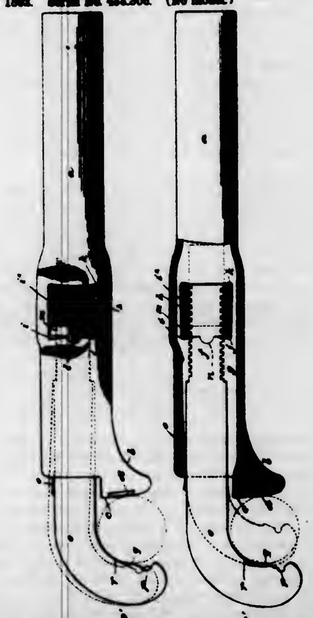
6. The combination of the casing A, the inlet-tube b, passages b^3 and b^4, forming communications between the tube and the interior of the casing, a tool-head carried by the casing, a tool-striking plunger D, having a head d, and a counteracting-plunger E, having a head e, inlet-ports i and exhaust-ports k in the plunger E, and a piston G, mounted within the plunger, the forward movement of the plunger being caused by the air or other fluid entering the central portion of the chamber between the two plungers through the passage b^3 and passage i and the return movement of the plunger being caused by air acting upon the rear of the heads of the plungers, substantially as described.

7. The combination of the casing A, inlet-ports therefor, the tool-head, the tool-plunger D, and the counteracting-plunger E, having inlet and exhaust ports therein, a piston G, mounted within said plunger E, a head G^2, connected to the plunger, and a spring back of said head, substantially as described.

8. The combination, in a casing A, of the inlet-ports therefor, the plungers D and E, inlet and exhaust ports in the plunger E, piston G within the said plunger, a head G^2, carrying said piston, and a spring with mechanism for adjusting the piston G in relation to the ports in the plunger E, substantially as described.

9. The combination, in a pneumatic tool, of the casing, the plungers D and E therein, a tool-head at one end of said casing, and an adjustable valve-carrying plug at the opposite end of the casing whereby the force of the blow is regulated, substantially as described.

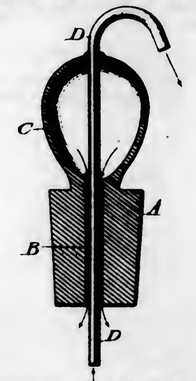
487,087. WRENCH. DANIEL H. CARPENTER, Orlando, Fla. Filed June 28, 1892. Serial No. 438,306. (No model.)



Claim.—1. A wrench having a rocking and longitudinally-movable jaw, combined with a stationary portion having a socket of greater length from front to back than the shank of the movable jaw, a collar pivoted in said stationary portion and in the center line of the said jaw on oppositely-disposed pivots, and a nut applied to said jaw and bearing against said collar, substantially as described.

2. A wrench having a rocking and longitudinally-movable jaw and a stationary portion having a transverse socket whose end walls are projected centrally toward one another and are thickened laterally and also having a longitudinal socket of greater length from front to back than the shank of the movable jaw, combined with a collar pivoted in the outer end walls upon oppositely-disposed pivots, and a nut butting at one end against the collar and at the other against the inner end walls and engaging the movable jaw, substantially as described.

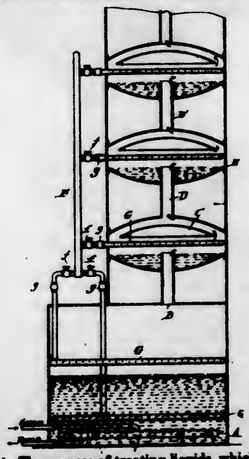
487,088. LIQUID-EJECTING DEVICE FOR BOTTLES, &c. FRANKLIN S. COOLEY, Philadelphia, Pa., assignor of one-half to John E. Goodrich, same place. Filed Jan. 26, 1892. Serial No. 419,009. (No model.)



Claim.—1. A stopper having a hollow bulb connected therewith and provided with an air-conveying passage and a tube partly occupying said passage and tightly fitted in the wall of said bulb, substantially as described.

2. A stopper having a bulb, an air-conveying passage leading from said bulb through the stopper, and a tube partly occupying said passage and adapted to extend through the wall of the bulb outside of the latter, substantially as described.

487,089. PROCESS OF TREATING LIQUIDS WITH OZONE. JULIUS C. DEITRICK and FREDERICK M. GEISELBRECHT, New York, N. Y., assignors to the Ozone Manufacturing Company, of New Jersey. Filed Nov. 12, 1891. Serial No. 411,738. (No model.)



Claim.—1. The process of treating liquids, which consists in vaporizing them and introducing into the vapors a small quantity of ozone, said quantity being sufficient to oxidize impurities in the vapors, but insufficient to change the nature of the substance being treated, substantially as described.

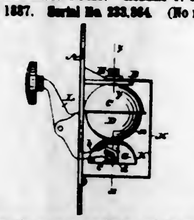
2. The process of purifying liquids, which consists in vaporizing said liquids, passing the same through condensation-chambers, and introducing into said chambers ozone in sufficient quantities to oxidise impurities, but insufficient to change the nature of the substance being treated, substantially as described.

3. The process of purifying liquids, which consists in adding a chemical purifier thereto, vaporizing the liquids thus treated, and ozonizing the vapors to remove impurities existing in the vapors, substantially as described.

4. The process of purifying wood-alcohol, which consists in vaporizing it and introducing into the vapors a quantity of ozone sufficient to oxidise impurities in the vapors, but insufficient to change the nature of the alcohol being treated, substantially as described.

5. The process of purifying wood-alcohol, which consists in placing the same in a suitable vessel, adding quicklime thereto, vaporizing the alcohol, and admitting ozone to the vapors in sufficient quantities only to oxidise impurities therein, but not to reduce the alcohol, substantially as described.

487,090. PNEUMATIC PUMP. ROBERT P. GARNED, Norristown, Pa. Filed Apr. 6, 1887. Serial No. 233,864. (No model.)



Claim.—A pneumatic pump consisting of the plate A, with arm B, the socket C, with elastic barrel D, having plunger K connected thereto, the tube E, leading from said socket and passing through said arm B, the said plunger having the yoke G attached thereto, and the lever L, pivoted to plate A and having the slot *c* and the pin *d*, said parts being combined substantially as and for the purpose set forth.

487,091. PACKAGE FOR BLEACHING AND PACKING ROSIN. DAVID W. KETCHUM, Evanston, Ill. Filed May 7, 1892. Serial No. 433,147. (No model.)

Claim.—1. The shallow flat-bottomed bleaching-tray provided with a white lining and filled with rosin, substantially as described.

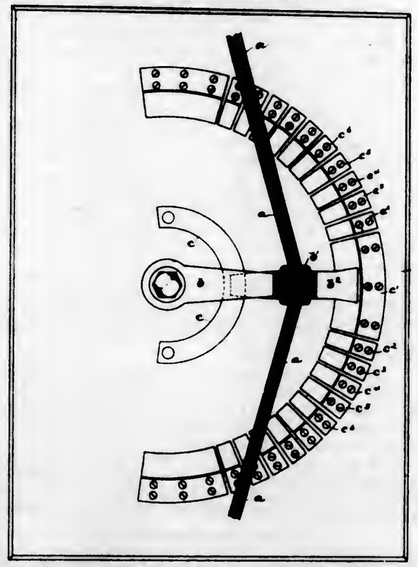
2. The shallow flat-bottomed bleaching-tray provided with a lining of whitewash and filled with rosin, substantially as described.

3. A package of rosin comprising, in combination, a pair of open-faced shallow trays provided with a lining of whitewash and filled with rosin and secured together face to face, substantially as described.

4. A package of rosin comprising, in combination, a pair of open-faced flat-bottomed shallow trays A and B, provided with a lining of whitewash and containing rosin D, the tray B having a marginal flange *r* about the edge of its open face, and the two trays being adjusted together face to face with the tray A, enveloped about its edge by and fastened to the tray B through the flange, substantially as described.

487,092. ELECTRIC SWITCH. JOHN J. HATE, Chicago, Ill. Filed Mar. 26, 1892. Serial No. 426,946. (No model.)

Claim.—1. The combination, with a main circuit and an electric motor, of a rheostat in circuit with the armature of said motor, said rheostat being provided with duplex contact-points arranged symmetrically upon either side of the dead-point, a contact-arm connected with the hand-rope of an elevator and adapted to traverse said contact-points, a switch in circuit with the field of said motor and connected with said hand-rope, said switch being adapted to close the circuit through the field-coils of said motor before said contact-arm is moved from said dead-point, whereby as the hand-rope is moved in either direction circuit is closed through the field-coils in advance of the circuit through the armature and an increasing current is sent through the armature, substantially as described.

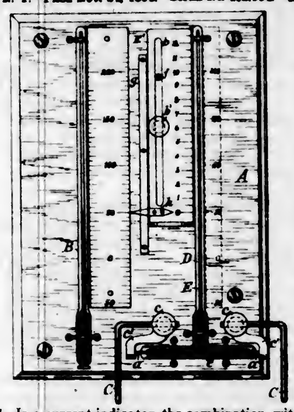


2. The combination, with the hand-rope of an elevator, of a switch adapted to close the circuit through the field-coils of an electric motor when moved in either direction, a rheostat in circuit with the armature of said motor, said rheostat being provided with duplex contact-points arranged symmetrically upon either side of a dead-point, a contact-arm adapted to traverse said contact-points and connected with said hand-rope to permit of lost motion, whereby when said hand-rope is moved in either direction the circuit through the field-coils may be closed in advance of the circuit through the armature and an increasing current sent through the armature, substantially as described.

3. The combination, with the hand-rope of an elevator, of a switch adapted to close the circuit through the field-coils of an electric motor when moved in either direction, a rheostat in circuit with the armature of said motor, said rheostat being provided with duplex contact-points arranged symmetrically upon either side of a dead-point, a contact-arm adapted to traverse said contact-points, said contact-arm being connected with a rope passing by its ends through eyes attached to said hand-rope, said rope being provided with enlargements upon its ends, said enlargements when said rope is drawn taut being at a greater distance apart than are said eyes, so that the rope passing through said eyes may not partake of the motion of the hand-rope until it shall have moved through a certain distance, whereby circuit may be closed through the field-coils in advance of the armature and an increasing current sent through the armature, substantially as described.

4. The combination, with the hand-rope of an elevator, of a switch attached to a wheel, around which said hand-rope passes, said switch being adapted to close circuit through the field-coils of an electric motor when said hand-rope is moved in either direction, a rheostat in circuit with the armature of said motor, said rheostat being provided with duplex contact-points arranged symmetrically upon either side of a dead-point, a contact-arm adapted to traverse said contact-points and attached to a wheel encircled by a rope passing by its ends through eyes carried upon said hand-rope, said ends being provided with enlargements which when pulled taut are a greater distance apart than are said eyes, whereby when said hand-rope is moved in either direction circuit will be closed through the field-coils in advance of the armature and an increasing current sent through the armature, substantially as described.

487,093. ELECTRIC-CURRENT INDICATOR. CHARLES P. L. HOXSIE, Syracuse, N. Y. Filed Nov. 24, 1891. Serial No. 412,994. (No model.)



Claim.—1. In a current-indicator, the combination, with an electric circuit, of a transparent receptacle of an inverted-T shape and a heat and electric conducting fluid in said receptacle, the terminals of the circuit entering the ends of the lower horizontal member of the receptacle at its opposite ends, substantially as described, and for the purpose specified.

2. In a circuit-indicator, the combination, with a thermometer and a fixed scale disposed beside the same, of an electric circuit, a transparent inverted-T-shaped receptacle, a heat and electric conducting fluid in said receptacle, the terminals of the circuit entering the ends of the lower horizontal members of the receptacle at its opposite ends, an adjustable scale in proximity to and parallel with said receptacle and with the fixed scale, and a pointer fixed to the adjustable scale at the zero-point and arranged to point to the degree-marks on the fixed scale, substantially as shown and described, and for the purpose specified.

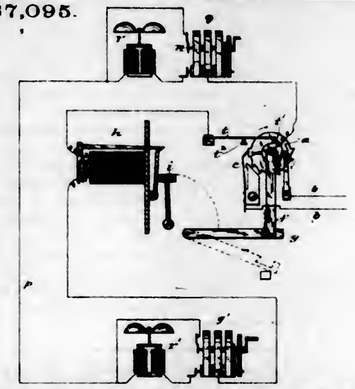
487,094. HOLDER FOR SOAP CAKES. MICHAEL OSTHEIER, Bridgeport, Conn. Filed Dec. 19, 1891. Serial No. 415,695. (No model.)

Claim.—A soap-holder comprising a shank having recesses in its sides receiving wings of sheet metal, which lie flush with the shank when closed, but have curved points projecting beyond the sides of the shank, said wings having ears pivoted to the shank, and a shoulder between said ears to abut against the shank when the wings are wide open, substantially as described.

487,095. AUXILIARY FIRE-ALARM-SIGNAL APPARATUS. CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed June 1, 1892. Serial No. 435,759. (No model.)

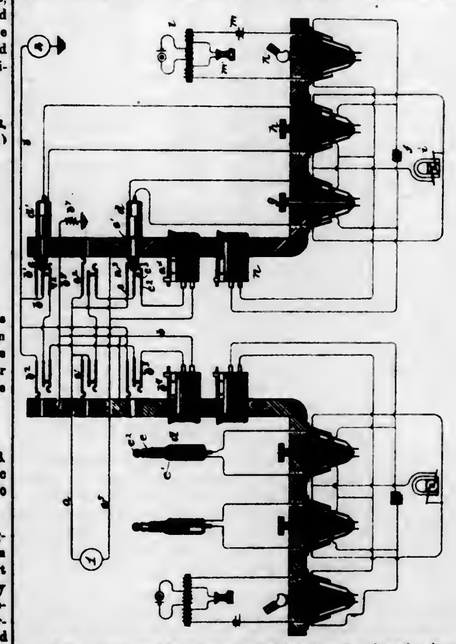
Claim.—1. The combination, with an automatic fire-alarm-signal box, of an auxiliary circuit, including a source of electricity, and an electro-magnetic signal device in a shunt of said circuit, said circuit being connected with a circuit-breaking device which is operated by the fire-alarm-signal box to break the said circuit when the said fire-alarm-signal box is brought into service, whereby the auxiliary circuit is interrupted to cause the electro-magnetic signal device included in shunt thereof to cease operating, substantially as described.

2. A fire-alarm-signal box, in combination with an auxiliary circuit connected at the fire-alarm box with a circuit-breaking device mechanically connected with the signal-box transmitter, and electro-magnetic releasing mechanism included in said auxiliary circuit for releasing the brake-wheel of the signal-box, and at each of two or more stations upon the auxiliary circuit a generator and electro-magnetic signal device, a shunt or short circuit at each station normally closed around the generator and bell at its station, and means for opening said shunt automatically when the generator is operated, whereby the fire-alarm-signal box may be turned in by operating the generator at any one of said points while the auxiliary circuit is opened immediately on the starting of the break-wheel to cause the electro-magnetic signal of the station whose generator has been operated to cease ringing, substantially as described.



487,096. MULTIPLE-SWITCHBOARD SYSTEM. CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Mar. 5, 1892. Serial No. 423,916. (No model.)

Brief.—The spring-jack and the plug are so constructed that when the plug is thrust part way into the jack to make the test the auxiliary springs *b c*[4] are not separated, but the line-spring *b'* and sleeve of the jack rest upon the corresponding contacts, respectively, of the plug.



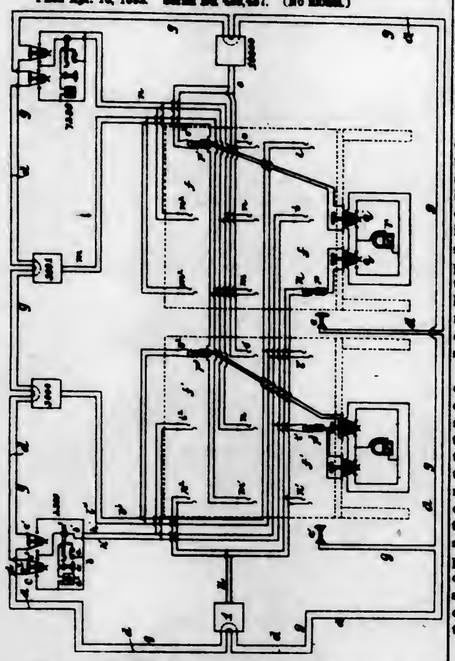
Claim.—1. A connecting-plug consisting of a central conducting-core, a conducting-sleeve concentric with and insulated from said core and of such length as to leave a portion of said core exposed, and an insulated tip secured to said core, substantially as described.

2. The combination, with a spring-jack having a line-spring and a test ring or frame insulated therefrom and an auxiliary spring and contact-anvil insulated from both line-springs and test-rings, of a plug having one contact-piece making contact with the test-ring and another contact-piece making contact with the line-spring and an insulated tip entering under one end of the auxiliary spring and raising it from a contact-anvil, substantially as described.

3. The combination, with a telephone-line extending from a sub-station, of spring-jacks at a central station, each consisting of a line-spring, a test-ring insulated therefrom, and auxiliary springs and contact-anvils, as described, said line-springs and test-rings being connected with the two sides of line, respectively, and a conductor joining the two sides, including in series an annunciator and all the auxiliary springs and contacts, substantially as specified.

4. The combination, with a line-circuit extending from a sub-station to switchboards at a central station and connected at each board to a spring-jack having a test-ring, a line-spring insulated therefrom, and an auxiliary spring and contact, said line-springs and test-rings being connected to the sides of line, respectively, and said auxiliary springs and contacts being normally included in series with an annunciator in a branch connection between the two sides, of a plug inserted into one jack, having contact-pieces making contact with the test-ring and the line-spring of the jack, respectively, and a tip separating the auxiliary spring from its anvil, and a test-battery and responsive device included in a circuit between the two contact-pieces of the plug, substantially as described.

487,097. TELEPHONE-EXCHANGE SYSTEM. CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Apr. 16, 1892. Serial No. 429,487. (No model.)



Claim.—1. The combination, with a telephone-line circuit extending to an exchange, connecting with two spring-jacks upon two switchboards thereat, of two calling-circuits, each including telephone apparatus at the sub-station and each terminating in a telephone-receiver at one of the switchboards, whereby the subscriber is enabled to call the attention of the operator at either switchboard to his line-circuit and to obtain connection thereto at either switchboard, substantially as described.

2. The combination, with a telephone sub-station, of a line-circuit extending to an exchange and connected with a spring-jack upon each of two or more switchboards, two or more calling-circuits extending from the sub-station to the exchange, each calling-circuit terminating in a telephone-receiver upon a different switchboard, and means at the sub-station for including a sub-station telephone apparatus in any calling-circuit, as desired, whereby a subscriber is enabled to call the attention of the operator at any switchboard to his line and to obtain connection therewith, substantially as described.

3. The combination, with a telephone sub-station, of a line-circuit extending therefrom to an exchange and connected to a spring-jack switch upon each of several switchboards thereat, two or more calling-circuits extending from the sub-station to the exchange, each calling-circuit terminating at the exchange in an electro-magnetic indicator, and means at the sub-station for connecting a source of electricity in any particular one of the calling-circuits, whereby a subscriber is enabled to attract the attention of the operator at any switchboard to his line-circuit and the operator at any switchboard may establish connection therewith, substantially as described.

4. The combination, with a telephone sub-station, of a line-circuit extending therefrom to an exchange, connected at the exchange to a spring-jack upon each of several switchboards, several calling-circuits extending from the sub-station to the exchange, each calling-circuit including at the exchange an electro-magnetic indicator, and loop-keys at the sub-station, included in the calling-circuits, adapted to include a source of electricity in said calling-circuit when actuated, substantially as described.

5. The combination, with a telephone sub-station, of a line-circuit extending therefrom to an exchange, connected at the exchange to a spring-jack switch upon each of several switchboards, and connected to a line-jack upon one of the switchboards, several calling-circuits, each including an electro-magnetic indicator at a different switchboard, and means at the sub-station for including a source of electricity in any particular calling-circuit, whereby a subscriber may call the attention of any operator, any operator may answer, and a particular operator may establish connection with the line, substantially as described.

6. The combination, with several telephone sub-stations, of line-circuits, one for each sub-station, extending to an exchange and connected to a spring-jack upon each of several switchboards, several calling-circuits, each extending to several sub-stations and including an electro-magnetic indicator at a different switchboard, and means at each sub-station for including a source of electricity in any one of the calling-circuits extending thereto, substantially as described.

7. The combination, with several telephone sub-stations, of line-circuits, one extending from each sub-station to an exchange and connected to an answering-jack upon each of several switchboards thereat and to a line-jack at one of the boards, the line-jacks being arranged in groups upon the different switchboards, several calling-circuits extending from the exchange to several of the sub-stations, one calling-circuit extending from each of the switchboards to each of the sub-stations, each calling-circuit including a telephone-receiver at its particular switchboard at the exchange, means at the sub-station for telephoning over any of the calling-circuits, and pairs of connected loop-plugs at the exchange, whereby any subscriber of any group may communicate an order to the operator at any switchboard to obtain connection with a member of the same or any other group of subscribers, substantially as described.

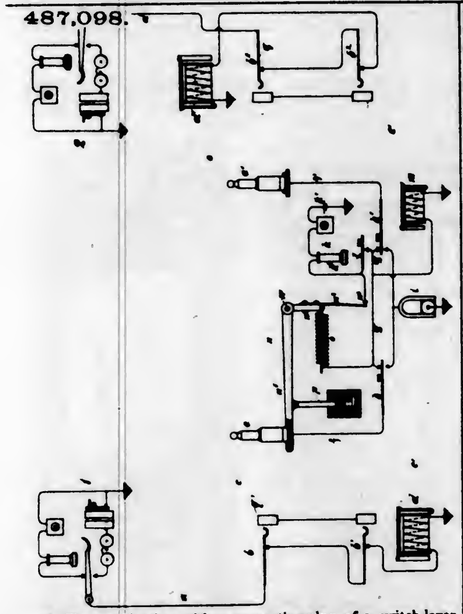
8. The combination, with several telephone sub-stations, of line-circuits, one line-circuit for each sub-station, extending to an exchange and connected thereat with an answering-jack upon each of several switchboards and with a line-jack upon a particular one of the switchboards, several calling-circuits extending from the exchange to the sub-station, one calling-circuit for each switchboard extending to each of the sub-stations, each calling-circuit including a telephone-receiver at its particular switchboard, loop-keys at the sub-station of each line-circuit, each adapted to connect the telephone apparatus of the sub-station in a particular calling-circuit, a signal-bell at the sub-station in the line-circuit, pairs of loop-plugs at the exchange, one plug of each pair being arranged for insertion into an answering-jack of the line and the other plug of the pair being adapted to be inserted into a line-jack of a line, and keys adapted to include a source of calling-current in the plug-circuit to signal to a station, substantially as described.

9. The combination, with several telephone sub-stations, of line-circuits, one for each sub-station, each extending to an exchange and connected to an answering-jack upon one section of each of several multiple switchboards and to a line-jack upon each section of a particular multiple switchboard, calling-circuits, one extending from each section of multiple switchboard to several sub-stations, one calling-circuit extending from each switchboard to each sub-station, calling-circuits of the different sections of one switchboard extending to different sub-stations, each calling-circuit including a telephone-receiver at its particular section of switchboard, means at the sub-station for including the telephone apparatus thereof in any calling-circuit connected thereto, and means upon each section of switchboard at the exchange for establishing connection between any answering-jack at its particular switchboard and any line-jack at the same switchboard, substantially as described.

487,098. TELEPHONE-SWITCHBOARD APPARATUS. CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Apr. 21, 1892. Serial No. 429,198. (No model.)

Claim.—1. The combination, with a connecting-plug, of a switch-lever held in one position by the plug when out of use, switch-contacts thereon, and means for retarding the motion of the switch-lever, substantially as described.

487,098.



2. The combination, with a connecting-plug, of a switch-lever held in one position by the plug when out of use, switch-contacts thereon adapted to be separated when said plug is removed for use, a telephone set connected with one of said switch-contacts, the other switch-contact being connected with the plug-circuit, and means for retarding the motion of said switch-lever, substantially as specified.

3. The combination, with a connecting-plug, of a switch-lever normally held in one position by the weight of the connecting-plug, switch-contacts upon the said lever adapted to be separated when said plug is removed for use, circuit connections with said plug, a telephone set and other circuit connections, whereby the telephone set is normally connected through the switch-contacts with the plug-circuit, and means for retarding the said lever in its motion, substantially as specified.

487,099. MILK-STOOL. MOSES H. SEVIER, Vernon, Tex. Filed Apr. 20, 1892. Serial No. 429,911. (No model.)

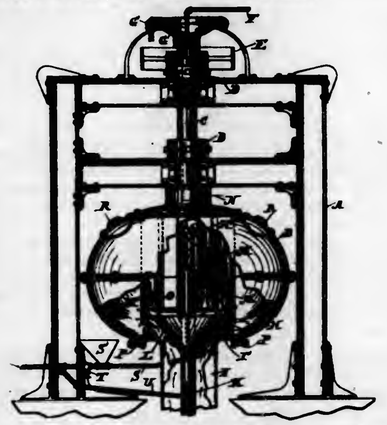
Claim.—1. In a milk-stool, the combination of a bar, a stool on the outer end of the same, a laterally-projecting bar secured to the first-named bar near its forward end, and a shield arranged in the angle formed by the said bar ends, substantially as shown and described.

2. In a milk-stool, the combination of bar A, transverse bar C, arranged at an acute angle to bar A, a two-sided shield secured in the smaller of the angles formed by the said bar ends, a shelf secured to the said shield, and a seat-standard at the rear end of the bar A, substantially as shown and described.

487,100. PROCESS OF AND DEVICE FOR REDUCING VOLATILIZED METALS. CHARLES E. SNYDER, Hurley, Wis. Filed Apr. 13, 1891. Serial No. 389,462. (No model.)

Claim.—1. The process of separating the heavier from the lighter parts of ores or oxides in volatilized products or smoke, consisting in discharging the smoke or the products of volatilization from a furnace or retort into a substantially-closed receptacle and separating the metals or heavier parts therefrom by centrifugal action on the volatilized ores or oxides or smoke while in the substantially-closed receptacle by rapidly revolving the receptacle in which they are contained, as described.

2. The combination, with a frame, of a hollow receptacle supported revolubly thereon, a duct discharging into the receptacle, vertical wings or blades fixed in the receptacle and projecting radially toward but terminating at a distance from the lateral walls, adapted by the rotation of the receptacle to produce a centrifugal motion of the gases or volatile contents of the receptacle toward and into the radially-distant portion of the receptacle-chamber unoccupied by the blades, and suitable means for discharging the separated parts of the contents of the receptacle, substantially as described.



3. In a device for separating volatilized ores by the aid of centrifugal motion, a revoluble receptacle, wings or blades therein affixed thereto at a distance from its lateral walls and arranged about and curving laterally away from the axis and from the line of motion and adapted by the revolution of the receptacle to create a centrifugal movement of the fluid contents of the receptacle, a central aperture in the lower wall of the receptacle, through which the volatilized ores are delivered into the receptacle, and an annular flange projecting upwardly from the wall of the receptacle about the aperture to catch and retain in the receptacle the heavier products of the separation, substantially as described.

4. The combination, with a revoluble and substantially-spherical receptacle suspended on a shaft attached at its top, the receptacle having a central aperture in its lower wall, of a pipe leading through the aperture in the lower wall for discharging into the receptacle the volatilized material to be treated, suitable wings in and fixed to the receptacle about its axis, extending radially and terminating at a distance from the lateral walls of the receptacle and adapted by the rotation of the receptacle to create a centrifugal motion of the volatilized material, and a discharge-pipe opening in the upper portion of the chamber of the receptacle and leading therefrom centrally downwardly through the aperture in the bottom of the receptacle for discharging the lighter products of the separation of the volatilized material, substantially as described.

5. The combination, substantially as described, of a suspended revoluble receptacle, a pipe leading and discharging into the receptacle through an aperture in its lower side, a smaller pipe opening into the upper portion of the receptacle and leading therefrom and discharging through the aperture in the lower wall of the receptacle, an annular flange about the aperture in the lower wall of the receptacle, projecting upwardly into the chamber of the receptacle, and ports through the wall of the receptacle near the annular flange.

6. The combination, with a suspended revoluble receptacle provided with a central aperture in its lower wall and with wings about its vertical axis, fixed in the receptacle, of a pipe leading through the aperture in the lower wall of the receptacle and terminating in a flaring mouth and a cone-shaped flange or spreader arranged centrally in the flaring mouth of the pipe, forming an annular oblique discharge for volatilized ores into the receptacle near the lower part thereof, substantially as described.

7. The combination, with a revoluble receptacle having wings therein fixed thereto about its axis and at a distance from its lateral walls, of a supply-pipe leading thereto through a central aperture therefor in the bottom of the receptacle, a discharge-pipe having its eduction-port in the chamber of the receptacle near the top thereof and leading therefrom through the aperture in the bottom, and an additional pipe entering the chamber through the aperture in the

lower wall for supplying a separating agent, substantially as described.

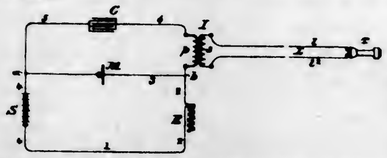
8. The combination, with a revolvable receptacle and a supply-pipe near the bottom, of a discharge-pipe opening in the upper portion of the receptacle and leading therefrom and a blow-pipe leading into the discharge-pipe and serving by the air discharged therethrough to produce a current through the revolving receptacle, substantially as described.

487,101. WIRE-STRETCHER. HERMAN STAHL and AARON F. DERRY, Fridens, Pa. Filed June 25, 1892. Serial No. 437,990. (No model.)

Claim.—1. A wire-stretcher comprising a casting having a longitudinal opening and teeth upon its inner end or face, adapted to engage a post, an outwardly-projecting hub portion around which the wire is wrapped, and a holding and clamping screw or bolt passing through the said stretcher into the post.

2. A wire-stretcher comprising a casting having a longitudinal opening, teeth upon the inner end or face, adapted to engage a post, a hub portion extending outward from the said toothed end and having its outer end made angular, for the purpose described, and a clamping-screw passing through the longitudinal opening into a post.

487,102. DEVELOPMENT AND DISTRIBUTION OF ELECTRICITY. JOHN S. STONE, Boston, Mass., assignor to the American Bell Telephone Company, same place. Filed Oct. 10, 1891. Serial No. 408,330. (No model.)



Claim.—1. The combination of a conductive circuit, an inductive circuit, and a single-bridge connection forming a conductive section common to both of said circuits with an electrical generator in the said conductive circuit, a translating device in the said inductive circuit, and a current-varying device included in the said bridge connection, substantially as described.

2. The combination, substantially as hereinbefore described, in an electrical developing and distributing system, of a source of electricity, a current-varying device, and a suitable resistance associated in a conductive electric circuit with a condenser connected up in an inductive electric circuit comprising that portion of the conductive circuit which includes the said current-varying device and an electro-receptive or translating device included directly or inductively in said inductive circuit.

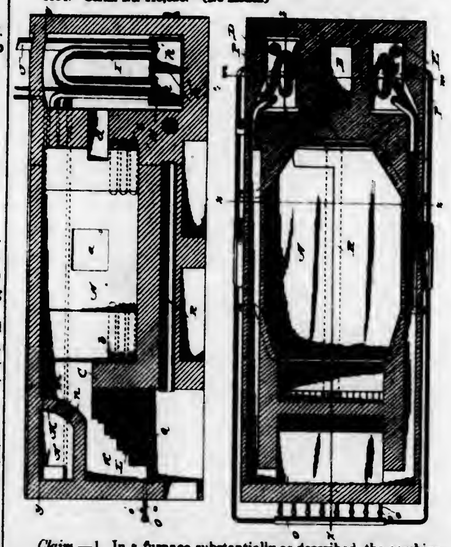
3. The combination, in a system of telephonic transmission, of a variable-resistance transmitter, a source of electricity, and a suitable resistance associated in an electric circuit with a condenser connected in a shunt of the said circuit round the said transmitter and a receiving-telephone connected directly or inductively with the said condenser-shunt, substantially as described.

4. The combination, substantially as hereinbefore described, in a system of telephonic transmission, of a variable-resistance transmitter, a source of electricity, and a suitable resistance associated in an electric circuit with a condenser connected in a shunt of the said circuit round the said transmitter and an induction-coil having its primary helix included in the condenser-shunt and its secondary helix in a main telephone-circuit.

5. In a system of telephonic transmission, a variable-resistance transmitter, a source of electricity, and an inductive resistance associated in a local electric circuit, combined with an electrostatic shunt for the said transmitter, which shunt contains a condenser and is connected with a main telephone-circuit including a receiving-instrument.

6. In a system of telephonic transmission, a series of independent current-varying transmitters, each shunted by a condenser, and a working circuit associated therewith, including a receiving-telephone electrically connected with the said condenser-shunt and adapted to be energized by the currents circulating therein, combined with a source of electricity connected with and common to the said series of transmitters and a suitable resistance to determine the normal current flowing through the transmitters, substantially as shown and described.

487,108. FURNACE. WILLIAM STUBBLEBINE, Bethlehem, assignor to the Stubblebine Furnace Company, Philadelphia, Pa. Filed Dec. 19, 1891. Serial No. 415,626. (No model.)



Claim.—1. In a furnace substantially as described, the combination, with a working chamber, a combustion-chamber, a bridge-wall, and heating-chambers arranged to receive from the rear part of said working chamber, of a chamber N, arranged above the combustion-chamber and having outlets to discharge its contents over the bridge-wall, and the longitudinal flues adapted to convey heat, &c., from the heating-chambers to said elevated chamber N, as and for the purpose described.

2. In a furnace substantially as described, the combination, with a working chamber, a combustion-chamber, and a bridge-wall, of a transverse elevated chamber N, arranged over the combustion-chamber and having the outlets *n*, arranged to discharge the contents over said bridge-wall, the checker-work situated in said combustion-chamber below the elevated chamber, a fuel-supply pipe O, having outlets discharging into said checker-work, and means for supplying heat to said elevated chamber, whereby the currents from the checker-work and the elevated chamber are combined at or over the bridge-wall, as and for the purpose described.

3. In a furnace substantially as herein shown and described, the combination, with a working chamber, a combustion-chamber, a bridge-wall, and the heating-chambers arranged to receive from the rear part of said working chamber, of the transverse elevated chamber N, situated over the combustion-chamber and having at its rear end the outlet-ports *n*, which discharge over the bridge-wall, the mixing-flues arranged longitudinally of the furnace and connected to said heating and elevated chambers, the checker-work in said combustion-chamber below the elevated chamber N, and the fuel-supply pipe O, discharging into the checker-work, as and for the purpose described.

4. In a furnace substantially as described, the combination, with a working chamber, the bridge-wall, heating-chambers, and flues, of an arch forming a chamber in the upper front part of the furnace which receives from the flues, said arch having the rear part thereof perforated for the escape of the currents over the bridge-wall, the checker-work, a supply-pipe, and a blast-pipe, as and for the purpose described.

5. In a furnace substantially as described, the combination, with a working chamber, the bridge-wall, heating-chambers, and flues, of the arch arranged to form the receiving-chamber N in the upper front part of the furnace, having the perforated inclined or curved rear wall *m* overhanging the bridge-wall, the checker-work, the supply-pipe, and the blast-pipe, as and for the purpose specified.

6. In a furnace, the combination, with a working chamber, a combustion-chamber, and a bridge-wall, of the checker-work L, situated in said combustion-chamber, the supply-pipe O, having a series of branches which discharge into said checker-work, and a blast-pipe R, discharging into said combustion-chamber below the checker-work

therein, whereby the blast is commingled with the fuel as the currents pass through the checker-work, as and for the purpose described.

7. In a furnace substantially as described, the combination, with a working chamber and the bridge-wall thereto, of the checker-work, the supply-pipe which discharges into said checker-work, a perforated diaphragm or drip-plate in the checker-work, and a blast-pipe arranged below the working chamber and having its discharge end below the diaphragm or drip-plate, as and for the purposes described.

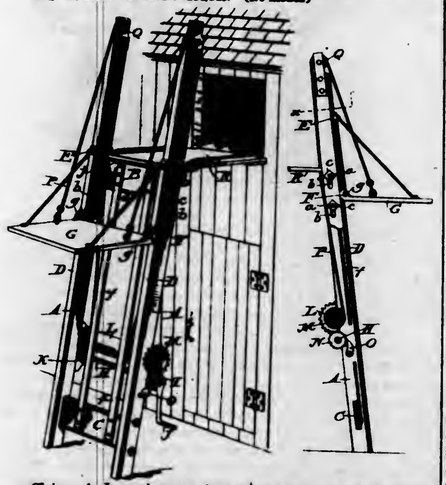
8. In a furnace substantially as described, the combination, with a working chamber and a bridge-wall, of the checker-work, a supply-pipe arranged to discharge fuel into said checker-work, a diaphragm or drip-plate in the checker-work below the discharge-openings of the supply-pipe and having the perforated raised nipples on its upper side, and a blast-pipe arranged below the working chamber and having its discharge end below the diaphragm or drip-plate, as and for the purpose described.

9. In a furnace substantially as described, the combination, with a working chamber, combustion-chamber, bridge-wall, and heating-chambers, of the checker-work in said combustion-chamber, a fuel-supply pipe O, located outside of the furnace and having branches which discharge into the checker-work, the heating-coils P, situated in the heating-chambers, and the connecting-pipes extending longitudinally of the furnace and connecting the heating-coils and supply-pipe, as and for the purpose described.

10. In a furnace substantially as described, the combination, with a working chamber, the heating-chambers, and longitudinal flues or pipes, of a divided blast-box in each heating-chamber having its compartments connected by a circulating-pipe, a blast-pipe connected to one of said compartments, and a jet-pipe leading from the other compartment to the longitudinal flues or pipes, as and for the purpose described.

11. In a furnace substantially as described, the combination, with a working chamber and the heating-chambers, of a single receiving-chamber N at the front of the furnace, the longitudinal flues or pipes extending from the heating-chambers to said chamber N, the divided blast-boxes each having its compartments connected by circulating-pipes, the blast-pipes connected to the blast-boxes, and an individual jet-pipe leading from the blast-box to each longitudinal flue or pipe, as and for the purpose described.

487,104. ELEVATOR. JULES H. TARDY, Glencoe, Minn. Filed Aug. 26, 1892. Serial No. 444,149. (No model.)



Claim.—1. In an elevator, the combination, with a main supporting-frame, of a platform mounted thereupon, means upon the frame for raising and lowering the platform, and a detachable shelf or table applied to the upper end of the frame, substantially as and for the purpose set forth.

2. In combination with the main frame, having a cross-bar B near the upper end thereof, a platform G, mounted upon the main frame, means upon the frame for raising and lowering the platform, and a shelf or table removably attached to the cross-bar and adapted to support the main frame, all substantially as shown and described.

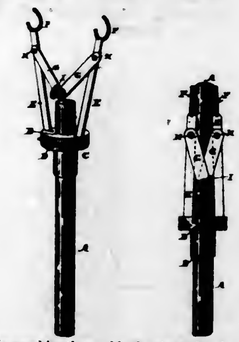
3. In combination with the main frame A, the platform G, mounted thereon, means upon the frame for raising and lowering the platform, and a shelf or table R, adapted to be detachably connected at one end to a building or structure and at the opposite end to the frame of the elevator.

4. In combination with the longitudinal timbers A, the cross brace or bar B, adjustable longitudinally of the timbers A, a platform mounted upon the timbers, means for raising and lowering the platform, and a shelf or table R, detachably connected at one end to a building or structure and at the opposite end to the cross-bar.

5. In combination with the timbers A, a cross bar or brace B, provided on its upper and lower faces with the metal straps or plates *a*, the ends of said plates projecting through slots in the timbers and provided with nuts, a platform mounted upon the timbers, and means for raising and lowering the platform.

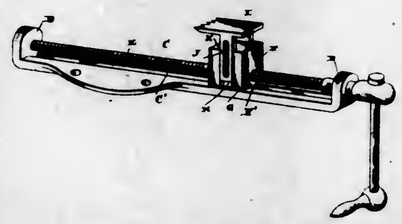
6. In combination with the main frame, the platform mounted thereon, means for raising and lowering the platform, and a table R, provided at one end with hooks *h* to engage eyes *i*, secured to the building and provided at its opposite end with shouldered corners, and with hooks *j* to engage the main frame.

487,105. UNIVERSAL ADJUSTABLE LIFTER. JOSEPHINE L. TEBOOP, Greencastle, Ind. Filed Apr. 26, 1892. Serial No. 430,653. (Model.)



Claim.—In combination, a block adapted to be secured to a handle, rods pivoted to the block, prongs on the outer ends of the rods, an adjusting-link pivoted to the rods, and means for securing said link when adjusted, substantially as set forth.

487,106. BENCH-DOG. COLUMBUS A. WAYLAND, Middlesborough, Ky. Filed Mar. 29, 1892. Serial No. 426,904. (No model.)

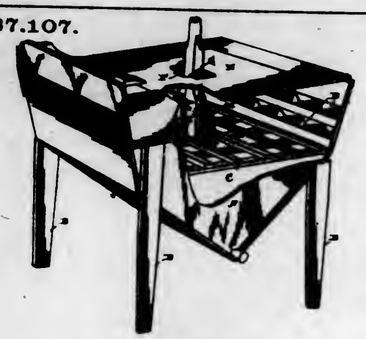


Claim.—The combination of a bench having a slot in its top, a longitudinally-slotted bar supported by the bench immediately below the slot in the top, block F, adapted to move on the bar and in the slot in the bench-top, and which is constructed with grooves H on its sides, projection F' on the lower end of the block, which moves in the slot of the bar, dog I, slotted arms depending from opposite sides thereof into the groove H, and a screw-shaft supported by the said bar and upon which the said block moves, substantially as shown and described.

487,107. WASHING-MACHINE. LOUISDIA J. WILSON, Hardy, Tex. Filed Aug. 16, 1892. Serial No. 442,512. (No model.)

Claim.—The combination of a tub, a pivoted agitator depending therefrom, the latter being formed with an enlarged lower end, a wire extending edgewise through the said end and having its ends doubled and bent downward, and a second wire extending at right angles to the first-named wire and which extends outward at opposite sides of and at right angles to the agitator and finally bent down parallel therewith, substantially as shown and described.

487,107.

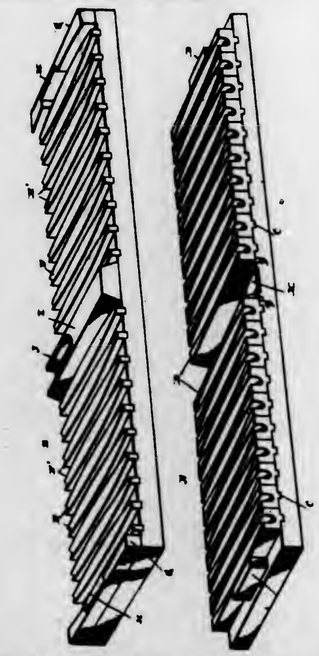


blocks on their adjacent faces, the said tenons and mortises being to one side of the longitudinal center of the mold, for the purpose described.

6. The combination, with mold-sections, of tenons and mortised blocks on the respective adjacent faces of the sections, the same being to one side of the longitudinal center of the mold, the rear ends of the tenons being inclined upward and forward and the lower rear corners of the mortises being cut obliquely, for the purpose shown and described.

7. The combination of a base, molds secured thereto on opposite sides of a vertical transverse space, braces for the molds adjacent the said space, tenons at the opposite ends of the mold series, situated to one side of the mold center and having their rear ends sloping upward and forward, a lid, a vertical block and plungers on each side thereof, all of which depend from the under face of the lid, and an end block depending from the lid and provided with mortises to one side of its center, the rear lower corners of said mortises being cut obliquely, substantially as shown and described.

487,108. CIGAR-MOLD. MARION A. WEBBER, Columbus, Ohio, assignor of one-half to Jerome C. Briggs, same place. Filed Apr. 22, 1892. Serial No. 430,360. (No model.)



Claim.—1. In a cigar-mold, the combination of a base, mold-sections secured thereto, a lid, depending plungers which register with the said mold-sections, and blocks secured to the under side of the top, which extend downward farther than the said plungers, substantially as shown and described.

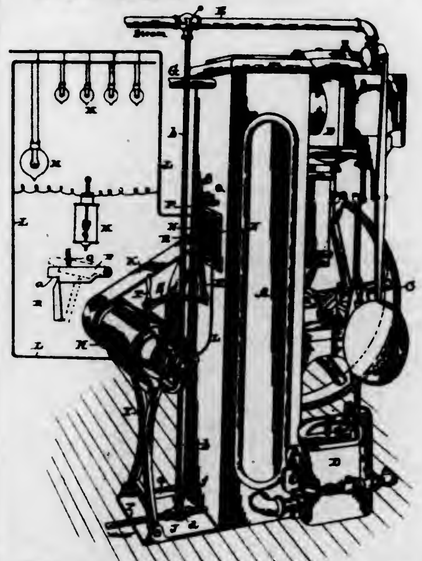
2. The combination, with a base, molds secured thereto on each side of a transverse space, and braces in said space which brace the sides of the adjacent mold, of a lid, plungers secured thereto, and a block which depends from the lid and enters the said space, substantially as shown and described.

3. The combination, with a base and molds secured thereto on each side of a transverse space and inclined braces for the sides of the adjacent molds and which are secured to the bottom of said space, of a lid, plungers, and a wedge-shaped block depending from said lid, the said block being formed with an inwardly-extending recess, substantially as shown and described.

4. The combination, with a base, molds secured thereto on each side of a central transverse space, and tenons at the outer of the mold series, of a lid and plungers, a center, and end blocks depending therefrom, the end blocks being mortised to fit over the said tenons, substantially as shown and described.

5. The combination, with mold-sections, of tenons and mortised

487,109. AUTOMATIC ELECTRIC-LIGHTING APPARATUS. LORENZO G. WORLLEY, Grand Rapids, Mich. Filed June 6, 1892. Serial No. 435,742. (No model.)



Claim.—1. An electric-lighting apparatus comprising a motor, a motor-valve-controlling mechanism, a movable electric generator driven by the motor, an operating connection between the said valve mechanism and generator, an external circuit including electric lights or motors, and an electric device within the circuit for locking and releasing the said valve mechanism, substantially as specified.

2. An electric-lighting apparatus comprising a motor, a motor-valve-controlling mechanism, a movable generator driven by the motor, an external circuit including electric lights or motors, an electrically-operated device within said circuit, an operating connection between said movable generator and valve mechanism, and the said valve mechanism having a movable part locked and released by the said electrically-operated device, substantially as set forth.

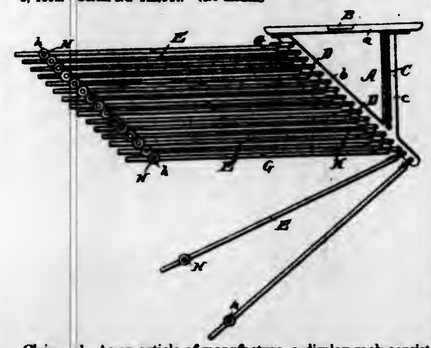
3. An electric-lighting apparatus comprising a motor, a motor-valve-controlling apparatus, a movable generator driven by the motor, an operating connection between said generator and valve mechanism, an external circuit including electric lights or motors, an electrically-operated device within the said circuit, and a lever having one end locking the said generator against movement and the other end engaging the said electrically-operated device, substantially as described.

4. An electric-lighting apparatus comprising a motor, an electric generator, a belt connecting the motor and the said generator, an electric circuit including electric lights or motors, an electro-magnet within said circuit, an armature therefor, and a motor-valve-controlling and belt-tightening mechanism having one part thereof engaged by the said armature for locking and releasing it, substantially as specified.

5. An electric-lighting apparatus comprising a motor, a pivotal support carrying a dynamo, an electric circuit including electric lights or motors, an electro-magnet within the said circuit, an armature therefor, a motor-valve rod, a connection between the said rod and the said pivotal support, and a lever having one end engaging the said armature and its opposite end connected with the dynamo and motor, substantially as described.

6. An electric-lighting apparatus comprising a condensing-engine having a steam-pipe and a water-pipe, a pivotal support carrying a dynamo, a belt connecting the dynamo and motor, a rod carrying a valve for the steam-pipe and a valve for the water-pipe, a connection between the said support and the said valve-rod, an electric circuit including electric lights or motors, an electro-magnet within the circuit, an armature therefor, and a lever mechanism between the dynamo and the magnet, one end thereof engaging the armature for locking and releasing it, substantially as specified.

487,110. DISPLAY-RACK. JESSE H. BEST, Galva, Ill. Filed Aug. 3, 1892. Serial No. 442,047. (No model.)



Claim.—1. As an article of manufacture, a display-rack consisting of two parallel brackets adapted to be attached to a suitable support, a series of straight arms pivotally connected to one of said brackets, and a series of braces attached at one end to said arms and having their other ends pivotally connected to one of the brackets, substantially as described.

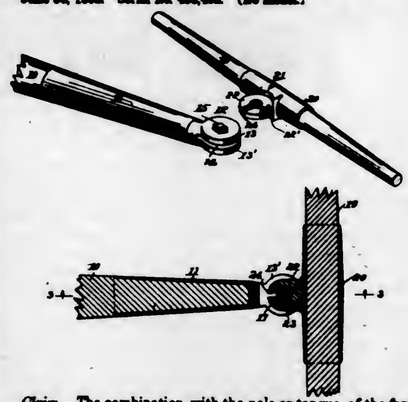
2. As an article of manufacture, a display-rack consisting of two parallel brackets, a series of parallel arms pivotally connected to one of said brackets, a series of rollers mounted on the display-arms and projecting beyond the sides thereof, and braces attached at one end to said arms and having their other ends pivotally connected to one of the brackets, substantially as described.

3. In a display-rack, the combination of two parallel fixed brackets, a series of display-arms having their inner ends bifurcated, plates *k*, fitted in the bifurcations in the display-arms and each provided with two parallel rearwardly-extending arms M, which extend on opposite sides of and are pivotally connected to one of the fixed brackets, and a series of brace-rods attached to the display-arms and pivotally connected to the other bracket, substantially as described.

487,111. RAILROAD-SPIKE. SMITH H. BRADEY, Weston, W. Va. Filed May 9, 1892. Serial No. 432,256. (No model.)

Claim.—The herein-described improved spike, the same consisting of the rectangular body terminating at its lower end in a driving-point and provided at its upper end at its inner and outer sides with shoulders 13 and 14, the inner shoulder being disposed obtusely with relation to the shank-body and adapted to engage over and conform to the base of a rail and the outer shoulder being in a plane below the inner shoulder and the distance therefrom agreeing with the thickness of the base of the rail and disposed at a right angle to the body portion of the spike and terminating at its outer extremity in a spur or point 15, substantially as specified.

487,112. NECK-YOKE. JAMES S. BROWN, Eureka, Cal. Filed June 30, 1892. Serial No. 438,092. (No model.)



Claim.—The combination, with the pole or tongue, of the ferrule on the forward end thereof, constructed with a clevis-like projection in front, composed of an upper arm or cheek and a lower arm or cheek with a space in between them and with a bolt-hole down through them, the neck-yoke with its attached sleeve having a lug in its rear, formed with a flat projecting cheek adapted to fit in between the cheeks on the end of the pole-ferrule and provided with a keyhole bolt-opening up through it, cutting through the edge of it in the rear, and a fixed or non-rotatable pivotal bolt of reduced flattened construction where it passes through the cheek on the lug of the neck-yoke, substantially as shown and described, and for the purposes herein set forth.

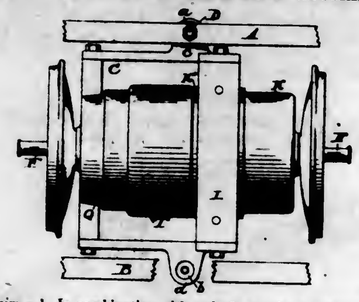
487,118. GARDEN-CULTIVATOR. ANDREW J. BRUNER, Madison, Ind. Filed June 14, 1892. Serial No. 436,719. (No model.)

Claim.—1. In an implement of the class described, the combination, with the tang, of the opposite tooth-carrying bar-sections pivoted to the tang and having their inner adjacent ends provided with a curved series of teeth engaging with each other and means for securing the sections at an angle to each other, substantially as specified.

2. In an implement of the class described, the combination, with the tang terminating at its front end in a transversely-bifurcated head, of a pair of tooth-carrying bar-sections pivoted adjacent to each other in the head and provided at their inner ends at their rear corners with a curved series of interlocking teeth, a threaded stud rising from the tang in rear of its head, curved braces rearwardly and inwardly extended, slotted, and overlapping the tang and receiving the stud, and the set-nut threaded on the stud and impinging upon the braces, substantially as specified.

3. In an implement of the class described, the combination, with a handle, of a pair of harrow-bar sections pivotally connected thereto and a series of teeth extending from each of the bar-sections, said teeth being increased in length toward the outer end of the series, substantially as specified.

487,114. ELECTRIC LOCOMOTIVE. CONRAD M. CORRADSON, Madison, Wis. Filed Dec. 2, 1891. Serial No. 413,790. (No model.)



Claim.—1. In combination with a shaft or axle to be driven, an electric motor, and gearing, substantially such as shown and described, interposed between the motor and the shaft or axle and adapted, at the will of the attendant, to positively lock together the rotating member of the motor and the shaft or axle, and thereby to cause the two to move as one or to transmit motion from the rotating member of the motor to the shaft or axle through intermediate moving parts and at a different rate of speed from that of the rotating member of the motor.

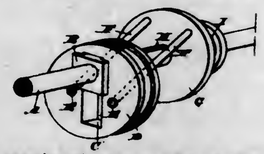
2. In combination with an electric motor and with a shaft to be driven, intermediate gearing, substantially such as described and shown, for transmitting motion differentially from the moving member of the motor to the shaft and a clutch adapted to lock together the moving member of the motor, the shaft, and the gearing and to cause said parts to rotate as one.

3. In combination with the shaft or axle, a sleeve encircling the same and provided with a pinion, an electric motor consisting of a fixed and a rotating member, said rotating member being secured to said sleeve, a pinion rotating with said sleeve, a second pinion meshing with the first and carried by a sleeve or head keyed to the axle or shaft, an annular gear-wheel encircling the shaft or axle and meshing with the second pinion, a fixed shell or head, and means, substantially such as shown, for causing the annular gear-wheel to be locked to the pinion-carrying head or sleeve or to the fixed shell or head at will, whereby the shaft or axle may be made to move at the same speed with, or at a different speed from, the movable member of the motor.

4. In combination with shaft or axle F, sleeve G, provided with pinion *d*, armature H, carried by said sleeve, field-magnet L, and means for supplying electric current to the armature, sleeve M, made fast to shaft or axle F, head or spider O, connected to sleeve M, pinion N, carried by sleeve M and head O, fixed shell Q, and gear-wheel P, adapted to be thrown into engagement with head or spider O or with shell Q at will.

5. In combination with shaft or axle F, sleeve G, provided with pinion *d* and armature H, sleeve M and head O, pinion N, fixed shell Q, and annular gear-wheel P, electro-magnets R S, adapted to move the wheel P into engagement with spider or head O or with shell Q, as one or the other magnet is energized.

487,115. REVERSING-GEAR FOR ENGINES. JOSEPH O. DEL CHAPELLER, Havana, Cuba. Filed Mar. 30, 1892. Serial No. 427,099. (No model.)

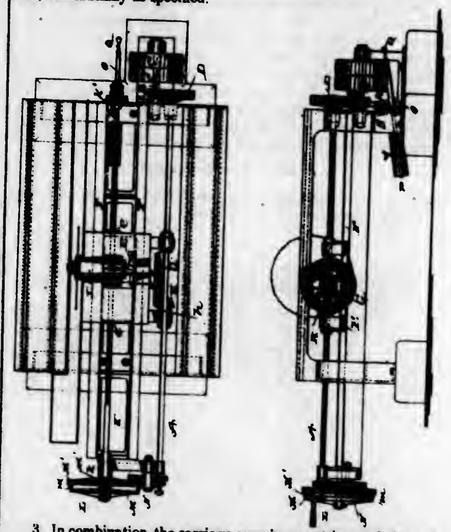


Claim.—A reversing valve-gear comprising the block B, secured on the main driving-shaft, the eccentric disk D, provided with a diametrical groove C, in which the block fits, and with inclined apertures E on opposite sides of the groove, and the sleeve G, fitted to slide on and turn with the shaft and provided with the inclined rods F, projecting from one side through the inclined apertures of the eccentric disk, substantially as herein shown and described.

487,116. SELF-ADJUSTING FEED MECHANISM. OSSIAN EBERHARDT, Pittsburg, Pa. Filed Jan. 11, 1892. Serial No. 417,672. (No model.)

Claim.—1. In combination with a carriage carrying the cutting-tool, a longitudinally-movable feed-screw, a friction-clutch, and a tension device to hold the feed-screw in its normal position, substantially as specified.

2. In combination, the carriage carrying a cutting-tool, the longitudinally-movable feed-screw to operate the carriage, the friction-clutch, one member of which is carried by said feed-screw, and the tension device to normally hold the members of the clutch in contact, substantially as specified.



3. In combination, the carriage carrying a cutting-tool, the main shaft, the feed-screw to operate the carriage and capable of longitudinal movement, the clutch having one of its members geared to the main shaft and its other member carried by the feed-screw, and the tension device connected to the feed-screw to normally hold the members of the clutch in contact, substantially as specified.

4. In combination, the carriage, the feed-screw capable of longitudinal movement, the clutch having a gear or positive member to receive the power and a variable or movable member carried by the feed-screw, and a tension device connected to the feed-screw, substantially as specified.

5. In combination, the carriage, the feed-screw capable of longitudinal movement, the friction-clutch having one of its members carried by the feed-screw, and the tension device having a weighted lever connected to the feed-screw, substantially as specified.

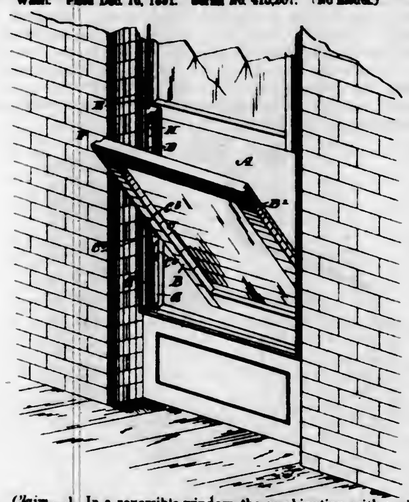
6. In combination, the carriage, the longitudinally-movable feed-screw, the friction-clutch having one of its members carried by the feed-screw, the tension device consisting of a lever having an adjustable weight and provided with a short arm, and an intermediate lever connected at one end to said short arm and at the other end to the feed-screw, substantially as specified.

7. A self-adjusting feed mechanism having a longitudinally-movable feed-screw which is geared to the operating mechanism, a friction-clutch, one member of which is carried by said feed-screw, being interposed between the latter and said operating mechanism, substantially as specified.

487,117. STEP FOR SHELVES. JOHN J. FARNER, Hokomis, Ill. Filed Aug. 14, 1891. Serial No. 402,642. (No model.)

Claim.—The combination, with vertical partitions and a series of shelves, of a series of hinge-bars, each having an angular or drop bend and pivoted at the upper angle thereof to a partition and arranged below a shelf and having its outer and inner portions arranged in different planes, and a series of covers secured to the outer portions of the hinge-bars and being caused by the angular or drop bends to fit into and close the spaces between the shelves when in a vertical position and to drop below the shelves when in a horizontal position, substantially as described.

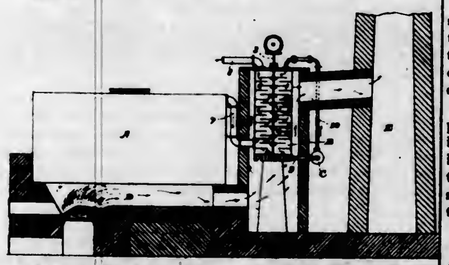
487,118. REVERSIBLE WINDOW. JAMES FARQUHARSON, Tacoma, Wash. Filed Dec. 16, 1891. Serial No. 415,907. (No model.)



Claim.—1. In a reversible window, the combination, with a window-frame formed on the side of its stiles with beads extending upwardly from the middle, of hinges located opposite each other and connected by one member to the said beads at the middle of the stiles, sliding stiles connected with the other members of the said hinges and each formed with a shoulder for engagement with the rear edge of the said window-stile bead and with a bead adapted to be engaged by the front edge of the said window-stile bead, substantially as shown and described.

2. In a reversible window, the combination, with a window-frame formed on the side of its stiles with beads extending upwardly from the middle, of hinges located opposite each other and connected by one member to the said beads at the middle of the stiles, sliding stiles connected with the other members of the said hinges, a bead fixed to the sliding stile at the front and extending downward from the hinges, shoulders formed on the said stiles to form abutments for the rear edges of the said beads, and semicircular recesses formed on the sides of the said stiles to form air-passages when the windows are closed, substantially as shown and described.

487,119. REFINING CANADIAN OR SIMILAR PETROLEUM-OILS. HERMAN FRASCH, London, Canada, assignor to the Solar Refining Company, of Ohio. Filed Feb. 15, 1888. Serial No. 264,131. (No specimens.)



Claim.—1. The process of removing the sulphur compound termed "skunk" from Canadian and similar petroleum, which consists in vaporizing the oil and subjecting the vapors after they are given off from the body of the oil to the action of an oily or resinous liquid holding in solution or solution and suspension one or more metallic oxides soluble in said oil, including the decomposable compounds of such oxides, and condensing such purified vapors, substantially as described.

2. The process of removing the sulphur compound termed "skunk" from Canadian and similar petroleum, which consists in vaporizing the oil and subjecting the same to the action of a solution in an oily or resinous liquid, composed of one or more metallic oxides soluble in said oil, including the decomposable compounds of such oxides, and maintaining an excess of the soluble but as yet undissolved purifying agent in suspension in said solution, whereby the said liquid is kept saturated, substantially as described.

3. The process of removing the sulphur compound termed "skunk" from Canadian and similar petroleum, which consists in vaporizing the oil, subjecting the vapors after they are given off from the body of the oil to the action of films, showers, or sprays of an oily or resinous liquid holding in solution or solution and suspension one or more metallic oxides soluble in said oil, including the decomposable compounds of such oxides, and condensing such purified vapors, substantially as described.

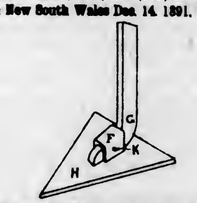
4. The process of removing the sulphur compound termed "skunk" from Canadian and similar petroleum, which consists in vaporizing the oil and subjecting the same to the action of purifying material, composed of or containing one or more of the metallic oxides soluble in said oil, including their decomposable compounds, and one or more fatty or resinous acids, such as oleic, stearic, margaric, colophonic acids, substantially as described.

5. The process of removing the sulphur compound termed "skunk" from Canadian and similar petroleum, which consists in vaporizing the oil and subjecting the vapors to the action of a metallic oleate, colophonate, or other metallic salt of a fatty or resinous acid, substantially as described.

6. The process of removing the sulphur compound termed "skunk" from Canadian and similar petroleum, which consists in vaporizing the oil and subjecting the vapors after they are given off from the body of the oil to the action of an oily or resinous liquid containing said sulphur compound termed "skunk," and one or more metallic oxides soluble in skunk-bearing oil, including the decomposable compounds of such oxides, and condensing such purified vapors, substantially as described.

7. The process of removing the sulphur compound termed "skunk" from Canadian and similar petroleum, which consists in vaporizing the oil and subjecting the vapors after they are given off from the body of the oil to the action of an oily or resinous liquid holding in solution or solution and suspension one or more metallic oxides soluble in said oil, including their decomposable compounds, condensing such purified vapors, and washing the condensed liquid with sulphuric acid, substantially as described.

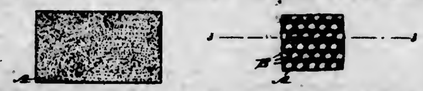
487,120. SHARE ATTACHMENT. JAMES GILBERT, Crystal Brook, assignor of one-half to Henry Allsop Begg, Semaphore, South Australia. Filed May 27, 1892. Serial No. 434,568. (No model.) Patented in South Australia Oct. 31, 1891, No. 2,076; in Victoria Nov. 4, 1891, No. 9,307, and in New South Wales Dec. 14, 1891, No. 3,468.



Claim.—1. In plows and like implements, the combination, with a share or share-plate, of a separate clamp the ends of which are bent to form flanges, said clamp forming an arch or loop at one side of the plate for receiving the foot of a plow and passing through an opening in said plate and engaging by its flanges with the opposite side of the plate, substantially as described.

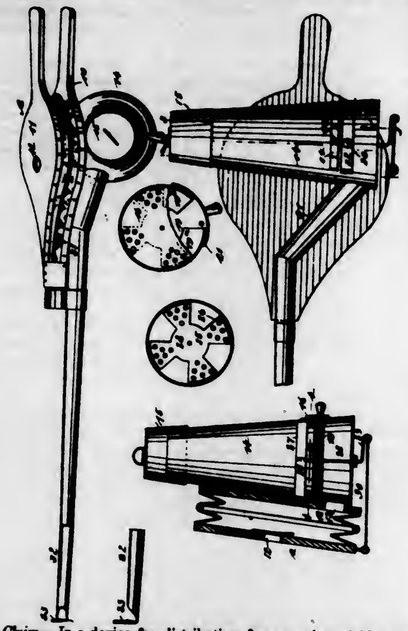
2. The method of attaching a share or share-plate to the foot of a plow, scarifier, or other similar agricultural implement, consisting in inserting the foot of the plow or implement into a clamp or loop which is supported in its position by integral flanges, the clamp passing through the share-plate and pressing upon the opposite side of the same, thus forming a socket and holding the share-plate securely to the foot, substantially in the manner described.

487,121. LITHOGRAPHIC PLATE. FRANKLIN F. HAGENMULLER, New York, N. Y. Filed June 27, 1892. Serial No. 438,206. (No model.)



Claim.—The improved plate for use in practical printing, the same having an embossed stippled surface, as shown and described.

487,122. INSECT-POWDER DISTRIBUTER. CHRISTIAN H. JOOSTEN, New York, N. Y. Filed Aug. 2, 1892. Serial No. 441,910. (No model.)



Claim.—In a device for distributing fungus or insecticide powder, the combination, with a bellows, a receptacle attached to the fixed side of the bellows, a communication being established between the receptacle and the interior of the bellows, and a nozzle projecting from the lower end of the receptacle beyond the bellows, of a partition located in the receptacle above its connection with the nozzle, said partition being provided with a series of apertures arranged in groups, a slide or damper consisting of a hub and a series of wings, the latter being adapted to be carried beneath the apertures in the partition and close them or partially close them, as desired, a scale located upon the outer face of the receptacle, a pointer carried by the slide or damper, an agitator held to revolve over the apertured partition, the said agitator consisting of a hub and a series of wings radiating therefrom, the wings having a grater-like surface, a spider fixedly secured above the agitator, a shaft connected with the agitator and extending down through the damper or slide, the apertured partition, and the bottom of the receptacle, a crank-arm formed at the lower end of the shaft, and a link connection between the crank-arm and the movable portion of the bellows, as and for the purpose set forth.

487,123. BIT-BRACE. ANDREW KNUDSEN, Tucson, Ariz. Filed Apr. 9, 1892. Serial No. 428,851. (No model.)

Claim.—1. In a bit-brace, the combination, with the outer crank-arm, which terminates in a bearing-stem, of a knob having a threaded cup with a socket to fit the end of the bearing-stem, a nut screwed to the outer portion of the cup, and a tube journaled on the crank-arm and screwed within the cup, substantially as described.

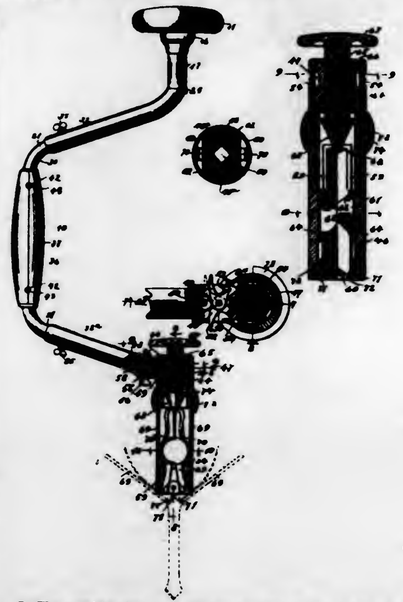
2. The combination, with the crank-arm having a terminal stem which ends in a bearing-cone, of the knob having a screw-cup with a socket therein to fit the cone, a nut screwed to the exterior portion to fit the cup, a sleeve held upon the bearing-stem and journaled to the crank-arm, and adjusting-nuts held within the cup and screwed upon the bearing-stem, substantially as described.

3. The combination, with the crank-arm having a terminal bearing-stem ending in a cone, of the knob, the screw-cup held within the knob and having a socket to fit the bearing-cone and an oil-hole at its inner end, a nut screwed to the outer portion of the cup, and a sleeve journaled on the crank-arm and extending through the nut and into the knob-cup, substantially as described.

4. The combination, with the crank-arm, the tube journaled to the arm, and the knob having a screw connection with the tube, of a spring-pressed slide-bolt mounted on the arm and adapted to engage a notch in the tube, substantially as described.

5. The combination, with the brace-crank, of the two-part handle journaled thereon, the parts of the handle being hinged together and having overlapping portions, and spring-pressed pins held within the handle and adapted to project through the overlapping parts thereof, substantially as described.

6. In a bit-brace, the combination, with the crank and the bit-holder journaled in one of the crank-arms, of a ratchet-wheel formed at one end of the bit-holder, oppositely-extending elbow-pawls pivoted at their angles on the same pivot in an arm of the crank, and springs 54, engaging the outer sides or extremities of the arms 53 to hold either one in or out of engagement with the ratchet-wheel, and a cam journaled in the crank-arm and adapted to press upon the pawls in the angle formed between the outwardly-projecting arms 52 to lock both pawls in engagement with the ratchet, substantially as described.



7. The combination, with the jaw-holding shank and the oscillating jaws pivoted together and reversible end for end in the shank, of a screw held to turn in the shank and having a tapering end to enter between the jaws, substantially as described.

8. The combination, with the jaw-holding shank and the removable jaws held therein, of oppositely-swinging shutters hinged to the lower or outer end of the shank and a fastening-device to hold the shutters against the shank, substantially as described.

9. The combination of the jaw-holding shank, the removable jaws mounted therein, the oscillating spring-pressed shutters held to swing outward from the shank, and a fastening-ring to hold the shutters against the shank, substantially as described.

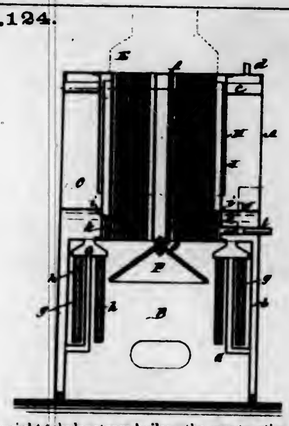
10. The combination, with the jaw-holding shank having a bearing-ledge therein, of oscillating jaws fulcrumed and reversible end for end on the ledge and a screw mechanism for adjusting the jaws, substantially as described.

11. The combination, with the jaw-holding shank having bearing-ledges on its inner walls, of the oscillating jaws, each jaw having centrally on one side a projecting bearing-piece and on the opposite side a socket to receive the bearing-piece of the opposite jaw, the bearing-pieces fulcruming on said ledges to permit the jaws to be reversed end for end thereon, substantially as described.

487,124. UPRIGHT TUBULAR STEAM-BOILER. THOMAS S. LA FRANCE, Elmira, N. Y. Filed June 10, 1892. Serial No. 436,206. (No model.)

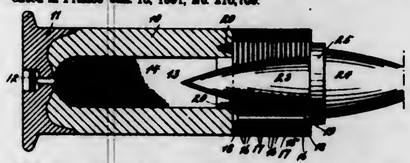
Claim.—1. An upright tubular steam-boiler having its upper water, smoke-flue, and steam space or part of the boiler adapted to keep the upright smoke-flues mainly submerged from their bottoms upward by the feed-water of the boiler and whereby an overflow of the entering water is supplied to the lower portion of the steam-space of the boiler and the choking of the steam space or chamber of the boiler with water is avoided, substantially as specified.

487,124.



2. In upright tubular steam-boilers, the construction and combination of parts, substantially as herein described, consisting of an overflow-feed-water jacket to and inclosing the group of upright smoke-flues open above, a boiler-feed connection supplying said jacket with water, and an outer jacket within the steam-space of the boiler, inclosing the overflow-jacket for a portion of its depth and open below for supplying the water overflowing from the first-named jacket down to the lower portion of the outer steam-chamber of the boiler, substantially as specified.

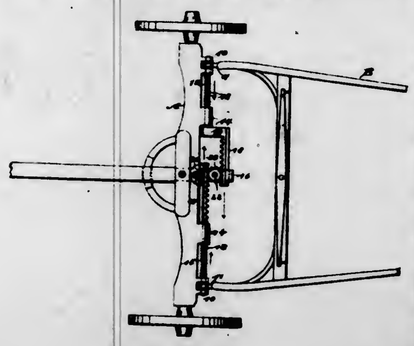
487,125. CARTRIDGE. JACQUES A. CREMET DE LATOUCHE, Paris, France. Filed May 21, 1891. Serial No. 393,054. (No model.) Patented in France Jan. 10, 1891, No. 210,709.



Claim.—1. A cartridge comprising an explosive body having a suitable base and a gas-check secured to the open end of the body or shell, the gas-check comprising a series of layers of waxed washers and having a central bore to seat a projectile, and longitudinal radial slots opening from the bore, substantially as described.

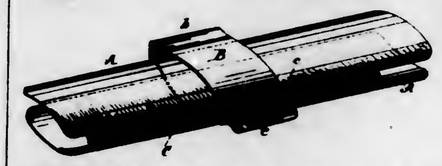
2. The combination, with the cartridge-body, of the gas-check adapted to be secured to the end of the body, the gas-check comprising a series of washers separated by layers of wax, clamping-plates secured to opposite ends of the gas-check, binding-rivets extending through the plates and washers, and the gas-check having a central bore to seat a projectile, and longitudinal radial slots opening from the bore, substantially as described.

487,126. HORSE-DETACHER. HENRY LESHAR, Louisiana, Mo. Filed June 20, 1892. Serial No. 437,340. (No model.)



Claim.—In a vehicle attachment, the combination, with the forward axle provided with ears 10, between which the thill-irons fit, the sleeves 14, the guide-bracket 16, and the post 20, of the pins 12 and 13, sliding in the said sleeves, the pin 12 being provided with the arm 19, springs 15, surrounding the pins between the sleeve and ears, racks 17 and 18, sliding in the bracket and secured to the said pins, and the shaft 22, mounted in a bearing projecting from the post 20 and provided with the pinion 23, engaging the said racks, and with the hand-wheel 24, substantially as described.

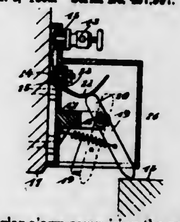
487,127. GLOVE-PACKAGE HOLDER. RICHARD H. MOORE, Great Barrington, Mass. Filed Sept. 28, 1892. Serial No. 447,170. (No model.)



Claim.—1. A holder for gloves in package form, consisting of two independent or detached strips or splints adapted to receive and hold a package of gloves in between them and of an independent spring-jaw-like clamp or clip constructed to receive said splints within or through it and to act with a spring-pressure on the splints with their contained package of gloves and to admit of either splint being moved independently through the clip to expose either end of the package of gloves, substantially as specified.

2. In a glove-package holder, substantially as described, the longitudinal detached strips or splints A A, of curved construction, transversely presenting concave interiors, in combination with the independent spring-jaw-like clamp or clip B for operation together and in relation to the package of gloves in between the splints, as set forth.

487,128. BURGLAR-ALARM. HARRY W. REYNOLDS, Long Branch, N. J. Filed Apr. 6, 1892. Serial No. 427,997. (No model.)



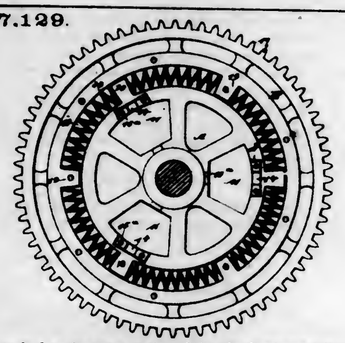
Claim.—A burglar-alarm comprising the vertical back plate 10, provided on its front face with an outwardly-projecting post 17, an arm 19, pivoted between its ends on said post and projecting below the back plate, an insulating-washer 25 on the back plate above the post, a bolt extending therethrough, a spring having an upwardly-projecting apertured arm 23, receiving the said bolt and clamped to the washer by a nut, the spring being curved downward, outward, and upward from its point of attachment over the post and in the path of the upper end 20 of the arm 19, binding-posts secured to the back plate and having insulating-washers, and the electric-circuit connections, substantially as set forth.

487,129. COG-WHEEL. FRANK SAXON, Worthington, Minn. Filed Mar. 22, 1892. Serial No. 426,040. (No model.)

Claim.—1. A compensating cog-wheel comprising an outer section provided with a plurality of chambers, an inner section provided with pinions mounted therein and with lugs projecting into the chambers of the outer section, and springs in the chambers of the said outer sections between the partitions thereof and the lugs of the inner section, substantially as described.

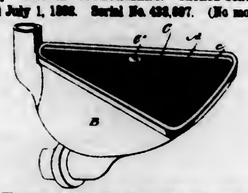
2. A compensating cog-wheel consisting of an inner section and an outer section, the inner wall of the outer section engaging with the peripheral surface of the inner section, the outer section at its inner wall being provided with chambers separated by partitions, the inner section being provided with lugs entering the chambers of the outer section between their partitions, the inner section being also provided with openings in which pinions are journaled, springs located in the chambers of the outer section, each having bearing against a partition of the chambers and the lug of the inner section contained therein, and a cover-plate adapted to conceal the springs, said plate

487,129.



being attached to the outer section of the wheel, substantially as and for the purpose set forth.

487,130. URINAL ATTACHMENT. GEORGE SCHOEN, New York, N. Y. Filed July 1, 1892. Serial No. 438,697. (No model.)



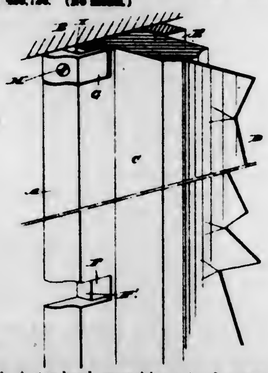
Claim.—1. The herein-described attachment, comprising a frame adapted to be received in a urinal-bowl and a strainer movably held to said frame, substantially as described.

2. The herein-described attachment, comprising a frame adapted to be received in a urinal-bowl and a strainer movably held to said frame and formed with a receptacle for soap, &c., substantially as described.

3. The combination, in a urinal attachment, of a frame adapted to be received within a urinal, a second frame hinged thereto and covered with netting, a lock device for the same, and a depending open-work receptacle supported from said netting and provided with a hinged cover, substantially as described.

4. The combination, with a urinal, of a strainer arranged therein a distance above the outlet aperture for the purpose specified and carrying an open-work receptacle for soap or disinfectant, substantially as described.

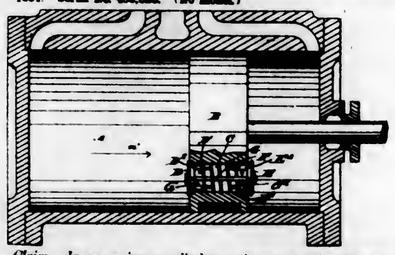
487,131. SASH-HOLDER. IRVIN A. SHAW, Kinsley, Kans., assignor to himself and Henry F. Best, same place. Filed Apr. 19, 1892. Serial No. 429,726. (No model.)



Claim.—1. A stop-bead comprising a bead proper mounted to slide transversely and formed with recesses, a keeper secured to the window-casing and fitting into the said recesses of the bead, and springs concealed and supported in the said keepers and extending transversely to press on the bead, substantially as shown and described.

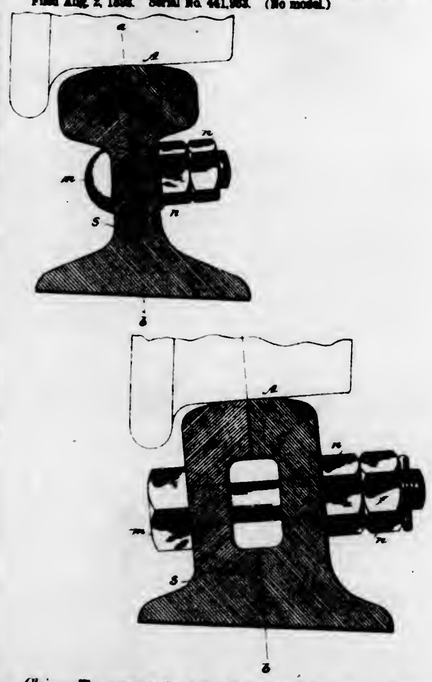
2. In a device of the class described, the combination, with a bead formed with recesses, each formed with a shoulder, of keepers adapted to be secured to the window-casing and fitting into the said recesses, the said keepers conforming to the shape of the said bead and each provided with a seat located opposite the shoulder on the corresponding recess, and a spiral spring held within the said keeper and supported at one end in the seat thereof, the other end of the spring compressed against the shoulder in the corresponding recess, substantially as shown and described.

487,132. ENGINE. JAMES SMITH, Brooklyn, N. Y. Filed Oct. 17, 1891. Serial No. 408,690. (No model.)



Claim.—In an engine, a cylinder, a piston operating therein and provided with a passage-way and bars near the ends of the said passage-way, a spring held in the said passage-way between the bars, and two valves held on the ends of the said passage-way and connected with each other by a valve-stem, the valve being adapted to be closed by compression and the live motive agent, and are arranged to be held off their seats by the said spring at the time the pressures on the two sides of the piston are about equal, substantially as described.

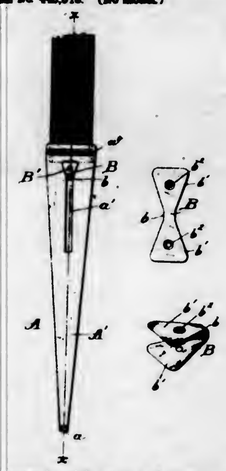
487,133. RAILROAD-RAIL. FREDERICK I. SMITH, Charleston, S. C., assignor of three-fourths to George S. Valentine, New York, N. Y. Filed Aug. 2, 1892. Serial No. 441,963. (No model.)



Claim.—The compound rail herein described, having a body inclined to the base and longitudinally divided into two sections in a plane perpendicular to the inclined tread of the car-wheel, the head of the rail being so formed that the wheel-tread will bear equally upon both sections and these sections being so arranged as to break joint

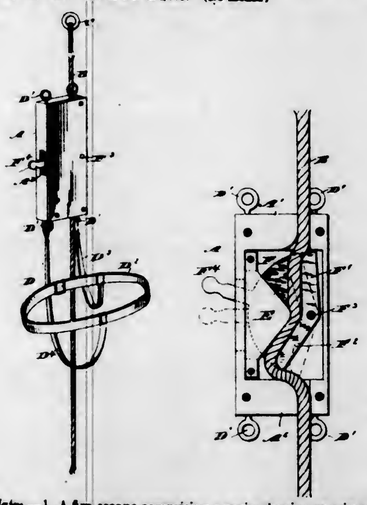
with each other, substantially as and for the purposes hereinbefore set forth.

487,134. BODKIN. PAUL R. STEVENS, Portland, Me. Filed Sept. 10, 1892. Serial No. 445,513. (No model.)



Claim.—An improved article of manufacture, to wit. a bodkin formed of two superimposed plates of resilient material tapering to a blunt point at one end and secured together at or near the said end, the said plates broadening toward the opposite end and being provided near their broad ends with longitudinal slots for the grip-piece, the one plate having a transverse slot near the said broad end and the other plate having a projecting arm adapted to enter said transverse slot, together with a grip-piece bent in the middle to form two side plates and tapering, as shown, adapted to be moved along said longitudinal slots, and means for holding the two side plates at the requisite distance from each other, substantially as and for the purposes described.

487,135. FIRE-ESCAPE. JONATHAN B. STOTT, Aurora, S. D. Filed May 26, 1892. Serial No. 434,275. (No model.)



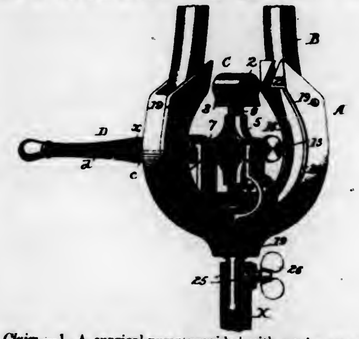
Claim.—1. A fire-escape comprising a casing having openings for the passage of a rope, a fixed block secured in the casing and having two edges, against which the rope is adapted to be pressed, and a clamping-plate pivoted in the casing and adapted to press the rope upon either edge of the said block, substantially as described.

2. A fire-escape comprising a casing having openings for the passage of a rope therethrough, a fixed V-shaped block secured in the casing, and a clamping-plate provided with flanges for clamping the rope upon either edge of the said block and with an operating-handle, substantially as described.

3. A fire-escape comprising a casing having openings in its ends, a fixed V-shaped block secured in the casing, clamping-plate pivoted in the casing and provided with angular flanges and with an operating-handle projecting through the casing, and a rope adapted to pass through the casing between the flanges of the clamping-plate and the V-shaped block, substantially as described.

4. A fire-escape consisting of a casing having openings in its ends, a fixed V-shaped block in the casing, a pivoted clamping-plate having angular flanges and provided with a handle projecting through the casing, a rope, and a supporting device secured to the casing, substantially as herein shown and described.

487,136. SURGICAL PUMP. CHARLES H. TEGAX, Chicago, Ill. Filed Jan. 5, 1892. Serial No. 417,403. (No model.)



Claim.—1. A surgical pump provided with a tube, one or more compressors, and means to operate them to carry them along the tube, and with a support for the tube, comprising a rigid plate or bar, a portion only of which support conforms to a segment of a circle and having open sides to permit access to the tube and compressors, substantially as described.

2. The combination, in a surgical pump, of a support in the form of a rigid plate or bar, a portion only of which support conforms to a segment of a circle and having open sides to permit access to the tube, the tube, guides for retaining the tube upon the inner face of the support, a transverse shaft carrying one or more compressors, and means for supporting the shaft, substantially as described.

3. The combination, in a surgical pump, of a rigid support, a portion of which conforms to a segment of a circle and the ends of which are separated to form a space between them, a tube mounted in the support, a transverse shaft carrying one or more compressors, and means for supporting the shaft, substantially as described.

4. The combination, in a surgical pump, of a rigid support, a portion of which conforms to a segment of a circle and the ends of which are separated to form a space between them, a tube mounted in the support, a transverse shaft carrying one or more compressors, and means for supporting the shaft, connected to the support opposite the space between its ends, substantially as described.

5. The combination, in a surgical pump, of a support in the form of a rigid bar, a portion of which conforms to a segment of a circle and having open sides, standards projecting radially inward from said support, and a shaft mounted in said standards, substantially as described.

6. A surgical pump provided with a tube, and a flange-support for the tube, divided vertically into two sections, and means for securing the sections detachably together, substantially as described.

7. The combination, in a surgical pump, of a curved support for the tube, a transverse shaft, two compressors each carried by a part supported by and sliding at right angles to the shaft, and a transverse shaft having the reverse thread at its opposite ends entering threaded sockets in the supports for the compressors, provided with a disk 10, substantially as described.

8. The combination of the rotating shaft, one or more compressors, adjusting-screw and disk 10, and set-screw arranged to bear upon the adjusting-screw, substantially as described.

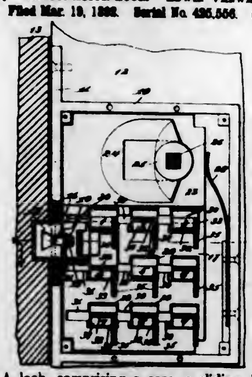
487,137. EXHAUST-NOZZLE. CHARLES W. UMBOLDT, Bristol, Va. Filed Aug. 12, 1892. Serial No. 442,871. (No model.)

Claim.—1. The combination, with the stand-pipe, of the nozzle D, entering at its lower end the upper end of the stand-pipe and spaced therefrom, and transverse centering-screws B, passing through

the upper end of the stand-pipe and engaging the tube and holding it concentric with the stand-pipe, substantially as described.

2. The combination, with the stand-pipe and its concentric spaced nozzle, of the vertical guideway on the outer side of the stand-pipe, an angular arm, the vertical member of which is mounted in or on said guideway having a longitudinal slot, a set-screw extending through the slot into the stand-pipe, and a depending inverted cone on the transverse member of the arm with its axis in line with that of the nozzle, substantially as described.

487,138. COMBINATION-LOCK. EDWIN VANWART, Port Madison, Wash. Filed Mar. 19, 1892. Serial No. 425,556. (No model.)



Claim.—1. A lock comprising a case, a sliding locking-plate mounted therein, said plate having transverse recesses with connecting-slots and the usual spring-and-knob mechanism for operating it, a locking-bolt secured to the plate and adapted to project through the front edge of the case, recessed stationary plates arranged opposite the locking-plate, tumblers held in the recesses of the several plates, said tumblers having flanges at right angles to their bodies, and a plurality of latches pivoted on one side of the lock and adapted to engage the tumblers, substantially as described.

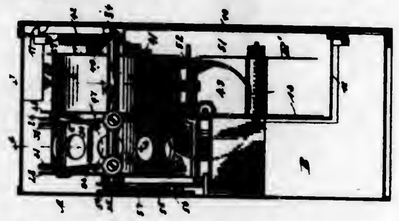
2. A lock comprising a case, a sliding locking-plate mounted therein, said plate having transverse recesses connected by transverse slots and the usual knob-and-spring mechanism for moving it, a locking-bolt produced on the locking-plate and projecting through the front edge of the case, recessed plates arranged on opposite sides of the locking-plate, tumblers held in the recesses of the several plates and adapted to register with the transverse slots of the locking-plate, so as to permit the free movement of the latter, and a plurality of latches pivoted on one side of the plate and adapted to move the tumblers, substantially as described.

3. The combination of the lock-case having recessed side plates, the sliding locking-plate having the transverse recesses, the transverse slots and the locking-bolt, as described, the tumblers held in the recesses of the several plates, and the vertically-movable gate having recesses to receive the tumblers, said gate having a handle projecting through one side of the lock, substantially as described.

4. The combination of the lock-case, the sliding recessed locking-plate having transverse slots therein, the tumblers adapted to register with said slots, the vertically-movable gate held within the case and having recesses to receive the tumblers, the post secured to the gate and extending through one side of the lock, and means for fixing the plate by turning the post, substantially as described.

5. The combination of the lock-case, the sliding locking-bolt having connected recesses, the spring-pressed key adapted to enter said recesses and having a reduced central portion to register with a slot connecting the recesses, and a stop produced on the jam of the door and adapted to engage the free end of the key, substantially as described.

487,139. DEVICE FOR RECEIVING COIN AND DELIVERING TICKETS. JOHN WILLIAMS, Patricroft, England. Filed Aug. 6, 1892. Serial No. 442,396. (No model.) Patented in England Dec. 13, 1889, No. 20,062.



Claim.—1. In a vending-machine, the combination, with a casing provided with a coin-receiving opening, of a drum carrying pins and adapted also to carry the article to be disbursed, the pins being located back of the coin-receiving opening, and lock-levers engaging with the drum, the said levers being released from the drum when a coin is placed in a coin-receiving opening and presses against said levers, the coin being also adapted to revolve the drum by engagement with its pins, as and for the purpose specified.

2. In a vending-machine, the combination, with a casing provided with a coin-receiving opening having slideways in its opposite walls and spring-controlled locking devices extending into the slideways of the said coin-receiving opening, of a drum mounted to turn in the casing and divided into two sections, one section being peripherally provided with a series of pins and the other section with a series of spurs, the spur-section being adapted to carry the article to be vended and the pins upon the other section being so placed as to pass back of the coin-receiving opening when the drum is revolved, and spring-pressed lock-levers located one at each side of the pin-carrying section of the drum and having a locking engagement with said section, the lock-levers being located in the path of the coin when it is entered into the coin-receiving slot, the said coin being also adapted after engaging with the lock-levers and spreading them apart to engage with a pin or set of pins upon the drum, as and for the purpose set forth.

3. In a vending-machine, the combination, with a drum provided with a series of spurs and a driving mechanism connected with the drum and operated by the pressure of an entered coin, of a reel located beneath the spur portion of the drum and adapted to carry a tape of tickets or like articles, a friction-roller located between the reel and the spur portion of the drum, and a chute located above the spur portion of the drum and having an opening for the reception of one end of the tape and an opening for the upward passage of the tape, as and for the purpose set forth.

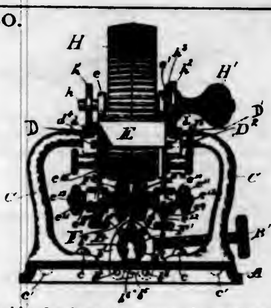
4. In a vending-machine, the combination, with a casing provided with a coin-receiving opening the wall of which is provided with channels or slideways for a coin and spring-controlled retaining devices extending normally into the slideways, of a drum carrying pins and also adapted to carry the article to be disbursed, the pins being located back of the coin-receiving opening, and lock-levers engaging with the drum, the said levers being released from the drum when a coin is placed in the coin-receiving opening and pressed against the said levers, the coin being also adapted to revolve the drum by engagement with the pins, and whereby also when a coin has been forced into the coin-receiving opening it can be removed therefrom only by downward pressure, as specified.

487,140. MACHINE FOR SHARPENING RAZORS. CHARLES A. WORDEN, U. S. Army. Filed July 11, 1892. Serial No. 439,648. (No model.)

Claim.—1. In a machine for sharpening razors, the combination, with a device for holding the razor, of two buttons of suitable abrading material revolving at an angle to the axis of the blade of the razor and traveling along opposite sides of said razor and a device for revolving said buttons.

2. In a machine for sharpening razors, the combination, with a device for holding the razor, of buttons of suitable abrading material arranged at either side of said razor, revolving at an angle to the axis of the blade of the razor, means for adjusting the pressure of said buttons on said razor, a carriage mounted over said razor and adapted carry said buttons along the sides thereof, and a device for revolving said buttons mounted upon said carriage, substantially as described.

487,140.



3. In a machine for sharpening razors, the combination, with a base-plate, of a holder for the razor mounted therein, a frame mounted on said base-plate, a carriage adapted to move forward and backward on said frame, revolving buttons of suitable abrading material mounted on said carriage and adapted to bear against the sides of said razor, and means for revolving said buttons, substantially as described.

4. In a machine for sharpening razors, the combination, with a base-plate, of a holder for the razor mounted therein, a frame approximately parallel to the edge of the razor mounted on said base-plate, a carriage mounted on said frame and adapted to move forward and backward thereon spindles placed in journals carried by said carriage, buttons of suitable abrading material mounted on said spindles, and springs normally pressing said buttons against the sides of said razor, as and for the purposes described.

5. In a machine for sharpening razors, the combination, with a base-plate, of a holder for the razor mounted therein, a frame having tracks approximately parallel to the edge of the razor mounted on said base-plate, a carriage mounted on said tracks and adapted to move forward and backward thereon, spindles placed in journals carried by said carriage, buttons of suitable abrading material mounted on said spindles, and springs normally pressing said buttons against the sides of the said razor, as and for the purposes described.

6. In a machine for sharpening razors, the combination, with a base-plate, of a holder for the razor mounted therein, a frame having tracks and guide-grooves approximately parallel to the edge of the razor mounted on said base-plate, a carriage adapted to move forward and backward on said tracks and having guide-lugs adapted to engage in said grooves, spindles placed in journals carried by said carriage, buttons of suitable abrading material mounted on said spindles, and springs normally pressing said buttons against the sides of said razor, substantially as and for the purposes described.

7. In a machine of the character described, a clamp for the razor, consisting of two jaws lined with rubber, felt, or other soft and elastic material, the said jaws being pivoted in the said base-plate and the one jaw having a cam-face and the second jaw a lever-arm adapted to engage said cam-face, and a clamp-screw bearing against second jaw, substantially as and for the purposes described.

8. In a machine of the character described, the combination, with a base-plate and a holder for the razor mounted therein, of a frame mounted on said base-plate, a traveling carriage carrying revolving buttons for sharpening the razor mounted on said frame, and a sponge with a spring-support therefor mounted in the wake of said buttons near the end of said razor, substantially as described.

9. In a machine of the character described, the combination, with a device for holding the razor in a fixed position, of a carriage adapted to move backward and forward in a direction approximately parallel to the edge of the razor, a spindle mounted in journals carried by said carriage, a conical button of suitable abrading material carried by said spindle, a device for revolving said spindle, a spring normally pressing said button against said razor, and a screw adjusting the tension of said spring, substantially as and for the purposes described.

10. In a machine of the character described, the combination, with a base-plate and a holder for the razor secured thereto, of a track mounted over said holder, a carriage moving along said track, spindles mounted in said carriage, buttons of suitable abrading material mounted on said spindles, pinions also mounted on said spindles, and a combined fly and gear wheel mounted in said carriage and moving therewith, with means for turning the said wheel, substantially as and for the purposes described.

11. In a machine of the character described, the combination, with a base-plate and a holder for the razor secured thereto, of a track mounted over said holder, a rack parallel to said track, a carriage moving along said track, spindles mounted in said carriage, buttons of suitable abrading material mounted on said spindles, pinions also mounted on said spindles, a shaft set across said carriage and moving therewith, rollers on said shaft traveling on said track, a pinion on said shaft engaging in said rack, and a combined fly and gear wheel mounted on said carriage and adapted to turn in one direction only, substantially as and for the purposes described.

12. In a machine of the character described, the combination, with a base-plate and a holder for the razor secured thereto, of a track mounted on said base-plate and approximately parallel with the edge of said razor, a rack parallel to said track, a carriage moving along said track, spindles mounted in said carriage at an angle to the direction of motion thereof, conical buttons made of suitable abrading material and pinions both mounted on said spindles, a shaft set across said carriage and moving therewith, rollers on said shaft moving on said tracks, a pinion on said shaft engaging in said rack, a double-beveled gear-wheel loosely mounted on said shaft and engaging said pinions, a ratchet and pawl connecting said shaft with said gear-wheel, and means for turning said wheel, substantially as described.

13. In a machine of the character described, the combination, with the traveling carriage, and the button-spindles, and the buttons and pinions mounted thereon, of the shaft set transversely to the carriage, with a handle loosely mounted thereon for moving said shaft and said carriage backward and forward, the combined fly and gear wheel loosely mounted on said shaft, and the ratchet and pawl connecting said wheel to said shaft, substantially as and for the purposes described.

14. In a machine of the character described, the combination, with the traveling carriage E, of the side pieces E', carrying the button-spindles and having slots therein and hand-lugs, as shown, the stud e^4, secured to the carriage and engaging in the forward slot, and the clamp-screw e^5, engaging in the rear slot, whereby the height of the said button-spindles and buttons may be adjusted, substantially as described.

487,141. SWING. ISAAC K. ALEXANDER and AMBROSE B MARTINDALE, Hartford City, Ind. Filed June 25, 1892. Serial No. 438,013. (No model.)

Claim.—1. The combination, with the suspended swinging bars, of the cross-rods connecting their lower ends and the removable foot-rest having extended side bars and supported upon said rods and provided with pivoted buttons, as and for the purpose specified.

2. The combination, with the swinging bars and the cross-rods connecting their lower ends, of the removable foot-rest provided with extended side bars, hinged sides, and pivoted buttons, as specified.

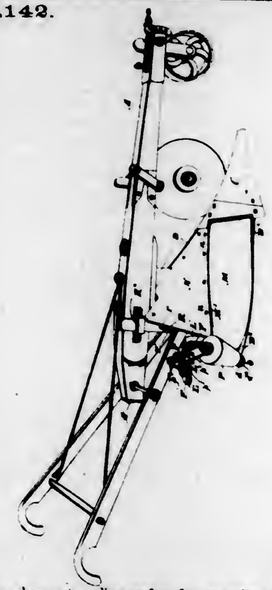
487,142. PLOW. WILLIAM A. BOYD, Boston, Mass. Filed Nov. 24, 1891. Serial No. 412,909. (No model.)

Claim.—1. A plow having both its landside and mold-board provided with traveling endless belts running over supporting-rollers and adapted to engage the sides of the furrow and keep the rollers out of contact therewith, substantially as and for the purpose specified.

2. In a plow, in combination with the upright rollers on the landside, an endless belt traveling over and supported by the rollers, so as to present a vertical traveling surface to engage the landside of the furrow squarely and support the plow therefrom against the side pressure caused by the engagement of the mold-board with the furrow-slice, substantially as and for the purpose shown.

3. In the landside of a plow, in combination with the rollers having their end portions rabbeted or reduced in size, the furrow-side-engaging belt running over and covering the outer sides of the rollers, and guards situated behind the belt and extending into the rabbets in the rollers, substantially as and for the purpose set forth.

487,142.



4. In a plow, a traveling surface for engaging the side of the furrow, consisting of an endless traveling belt of rubber running over and supported by rollers which it covers and keeps out of contact with the furrow side, substantially as and for the purpose specified.

5. In a plow, the mold-board having a traveling belt to afford a traveling surface to engage the furrow-slice, in combination with the two end rollers over which the belt passes and a series of rollers between such end ones journaled in the frame of the mold-board and engaging the inner side of the outer portion of the belt, so as to support the same, substantially as specified.

6. In the mold-board of a plow, in combination with the traveling belt, the supporting-rollers therefor, having their end portions rabbeted or reduced in size, the guards extending along the outer side of the series of rollers between the inner face of the belt and the reduced portions of the rollers, substantially as and for the purpose specified.

7. In the mold-board of a plow, in combination with the upper and lower frame-bars and the rollers journaled thereon, having their end portions rabbeted or reduced in size, the dust-guards attached to the frame-bars and extending along the outer sides of the reduced portions of the rollers within or below the plane of the peripheries of the main parts of the rollers and the traveling belt arranged to engage the furrow-slice, substantially as and for the purpose set forth.

8. In combination with the upper and lower frame-bars having their rear portions slotted longitudinally, the roller, the supporting-rod therefor, passing through it and the slots in the upper and lower frame-bars, the slotted plates on the upper and lower sides of such bars respectively supporting the ends of the roller-rod, and the bolt-rod passing through the frame-bars and the slots in said plates and provided with plate-engaging nuts, substantially as and for the purpose specified.

9. In combination with the lower frame-bar, the mold-board having the extension at its rear end, the sleeve journaled thereon, having the upwardly-extending rod, the roller on the latter having its upper end provided with a loose bushing extending up around the rod beyond the roller end, the adjustable plate having an opening engaging such bushing, and a nut on the rod above such plate, substantially as and for the purpose described.

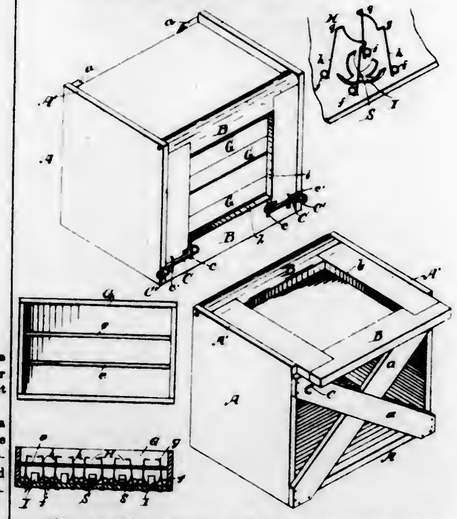
10. In a plow, in combination with the supporting-roller, the fork in which it is journaled, having an upwardly-extending slotted stem, a guide-cleat on the plow-beam engaging and guiding the upper end of the stem, a downwardly-extending standard on the beam, a bolt on such standard engaging the slot in the fork-stem, and a nut on the same to force and clamp the stem against the standard, substantially as and for the purpose specified.

487,143. PEN. FREDERICK J. W. FISCHER, New York, N. Y., assignor to the Eagle Pencil Company, same place. Filed Oct. 6, 1892. Serial No. 448,082. (No model.)

487,143.

Claim.—A pen of otherwise ordinary or suitable construction, having on its under side the cross-piece or dam *b*, connected to the body of the pen by side legs *a*, substantially as and for the purposes hereinbefore set forth.

487,144. EGG-CRATE. WILLIAM T. FISHER, Prigmore, Tenn. Filed June 10, 1892. Serial No. 436,234. (No model.)

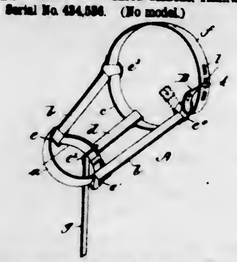


Claim.—1. The combination, with the egg-box, of the skeleton door pivoted to the ends of the box and adapted to form, with the top of the box, a receptacle when thrown back on top of the said box, substantially as shown and described.

2. The combination, with the egg-box and its pivoted skeleton door, of a series of egg-crates having ventilating-slots which register with each other, a series of egg-holders, such as described, secured to said crates, and a series of spring-supports located within the holders and secured to the crates, substantially as and for the purpose set forth.

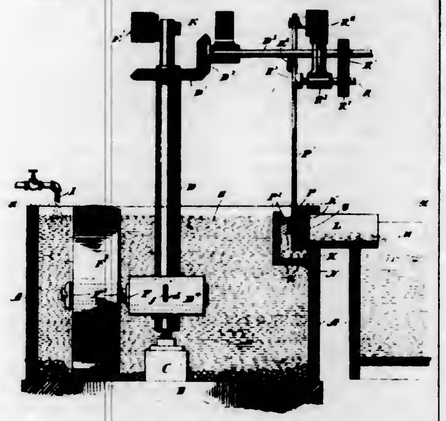
3. The combination, with the egg-box having ends, the top edge of said ends extending above the top surface of the box, of the pivoted skeleton door provided with spring-latches, such as shown, the egg-crates having slots and adapted to slide directly upon each other, and the combined egg holder and support secured to the said crates, substantially as and for the purpose set forth.

487,145. HALTER. NELSON GIBSON, Tiskilwa, Ill. Filed May 27, 1892. Serial No. 434,536. (No model.)



Claim.—The combination, with an ordinary halter of the class described, comprising the cheek and throat straps and the rings c^3 c^4, connecting the same, of the crown-piece *f*, secured at one end to the ring c^3, a series of openings *l* in said crown-piece, and a metallic hook B, secured to the other end of the crown-piece and having a T-head, said end of the crown-piece and the hook being passed through the ring c^4 and doubled back to form the loop described and said T-head being passed through one of the openings *l*, for the purpose specified.

487,146. CRASHING-MILL. HENRY C. HIGGINSON, Newburg, N. Y. Filed May 19, 1891. Renewed Oct. 28, 1892. Serial No. 450,196. (No model.)



Claim.—1. In a mill, in combination with a tank containing liquid and the crushing mechanism working therein, a chamber communicating with the body of the tank so that liquid can flow into it from the latter, the outlet-opening only reached by the liquid after it has passed through the chamber, and a screen across the outlet, substantially as and for the purpose described.

2. In a mill, in combination with a tank containing liquid and the crushing mechanism working therein, means for supplying the liquid to the tank, an outlet from the latter, a screen across the outlet, and a dam separating the outlet from the body of the tank, having an inlet through which liquid from the upper part of the tank can flow over the dam on its way to the outlet, substantially as and for the purpose shown.

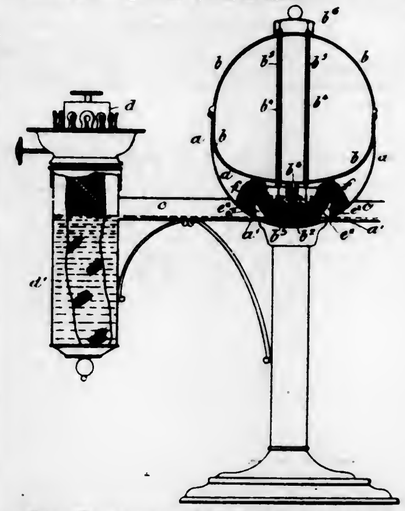
3. In a mill, in combination with a tank containing liquid and the crushing mechanism working therein, means for supplying the liquid to the tank, an outlet from the latter, a screen across the outlet, the dam having a portion of its upper edge made lower than the rest to allow the flow of liquid from the upper part of the tank to the outlet, a brush to engage the inner face of the screen, and means for moving it back and forth over such face, substantially as and for the purpose described.

4. In a mill, in combination with the tank containing liquid and the crushing mechanism working therein, means for supplying the liquid to the tank, an outlet from the latter, a screen across the outlet, and the dam consisting of a casing with open top covering that part of the tank side in which the outlet is situated, having in its bottom apertures to place its interior in communication with the body of the crushing-tank, substantially as and for the purpose specified.

5. In a mill, in combination with the tank containing a body of liquid and the crushing mechanism working therein, means for supplying the liquid to the tank, an outlet from the latter, a screen across the outlet, the dam consisting of a casing with open top covering the part of the tank side in which the outlet is situated and having an inlet through which liquid from the upper part of the liquid-body in the tank can flow, and openings in its bottom, a screen-clearing brush within the casing, a movable arm carrying brush, and means for moving it to carry the brush over the inner face of the screen, substantially as and for the purpose specified.

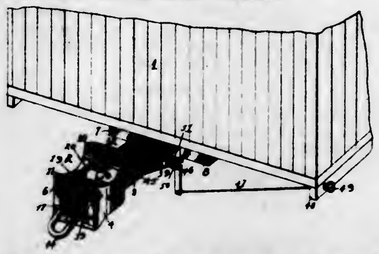
6. In a mill, in combination with a tank containing liquid and the crushing mechanism working therein, means for supplying the liquid to the tank, an outlet from the latter, a screen across the outlet, the dam consisting of a casing with open top dividing the outlet from the rest of the tank interior and having an inlet for the liquid from the tank, the swinging arm, the guide engaging the latter, the screen-clearing brush on the arm, the rotary shaft having a crank-arm, a link connecting the latter with the brush-arm, and suitable gearing to drive the shaft as the crushing mechanism is operated, substantially as and for the purpose described.

487,147. LAMP FOR BURNING HYDROCARBON OR OTHER OILS. SAMUEL A. JOHNSON, London, England. Filed Feb. 26, 1892. Serial No. 422,792. (No model.) Patented in England Jan. 6, 1891, No. 256; in Germany Mar. 1, 1891, No. 59,050; in France Mar. 3, 1891, No. 211,810, and in Belgium Mar. 3, 1891, No. 94,006.



Claim.—The combination, with the fixed oil-tank *c* and the removable reservoir *b*, having an outlet b^6, of the cup c^6, fixed in the bottom of the fixed oil-tank and adapted to receive the oil as it flows from the bottom of the removable reservoir and to seal the outlet therefrom when the oil therein rises level with the outlet, and the capillary siphon-wicks *f*, placed over the edge of the cup, having their inner ends extending to the bottom of the cup and their outer ends extending to the bottom of the fixed oil-tank, substantially as described.

487,148. CAR-COUPLING. DAVID B. KELSEY, St. Louis, Mo. Filed July 25, 1892. Serial No. 441,191. (No model.)



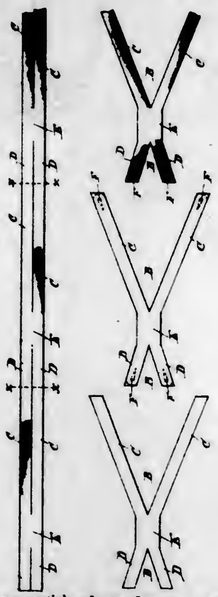
Claim.—1. An improved automatic car-coupler having a pin 17 secured to the slotted end of a lever 20, the opposite end of said lever 20 pivoted in two ears 25, formed with the head of the draw-bar, a projection upon said lever 20, pivoted between two ears 28 of the arm 30 of a lever 16, a rocking lever 34, secured between two ears of the arm 31 of said lever 16, a bell-crank lever having for its axis a pin 37, secured through the draw-bar, the upper extremity of said bell-crank lever pivoted to said lever 34, the opposite extremity forming a handle 39, a V-shaped cavity in the lever 16 between the arm 29 and the arm 31, adapted to fit over a pin 40, and a block having a reciprocating movement upon a pin 41 and constructed to engage the arm 29 when the same is in a specified position, substantially as set forth.

2. An improved automatic car-coupler having a trigger-lever 16, consisting of three arms projecting in different directions, one arm 30 provided with two ears 28 and an additional arm 31 provided with two ears, between which the lever 34 is pivoted, said arm 31 adapted to be pushed upon and held by a pin 40, except when disengaged from said position by the movement of a block 42 against the arm 29, substantially as set forth.

3. An improved automatic car-coupler having a depending bar 45 secured to the beam 7 under the car, a rectangular-shaped lever

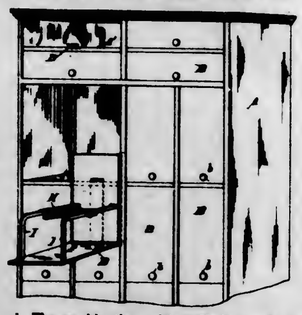
46, to the free end of which is pivotally connected a rod 47, passing through a perforation in the beam 48, having a handle 49 upon its outer end, a tooth 52 to engage the edge of said beam 48 to prevent the slipping of said rod 47, and an L-shaped attachment 51 upon the arm 50 of the lever 46, securing the lever-handle 39, substantially as set forth.

487,149. SUSPENDERS. CHARLES C. KRUSE, HARRY R. MYERS, and CHARLES L. GERARD, Williamsport, Pa.; said Myers and Gerard assignors to said Kruse. Filed Oct. 6, 1891. Serial No. 407,880. (No model.)



Claim.—As a new article of manufacture, a strip of webbing woven with alternate long and short intervals of open spaces to form a series of seamless suspenders in one continuous strip, said strip adapted to be separated by cutting the strip at predetermined points to form suspenders, substantially as set forth.

487,150. FILE-BOX. WILFRED I. OSMER, Dayton, Ohio, assignor to The M. Osmer's Sons' Company, same place. Filed Jan. 23, 1892. Renewed Nov. 2, 1892. Serial No. 450,745. (No model.)



Claim.—1. The combination, with a file-box and a supporting-case therefor, of guides carried by said box and a pivoted piece consisting of two members and constituting a connection between the file-box and said case, one member of said connection having a head adapted to engage with said guides and extend out beyond the edge of the case and the other member pivotally connected to the first member and secured to the case near the edge thereof, whereby the outer member will swing out beyond its pivot-point to adjust itself to the open position of the file-box and swing inward as the box is slid backward into its case.

2. The combination, with a file-box having guides and a case therefor, of a connection between said file-box and case, having a sliding action and a swinging action and consisting of a plate recessed within the bottom of said case near the outer edge, and a pivoted portion hinged to said plate and adapted to extend beyond said edge to slidingly engage with the guides of said file-box and support the same in its open position, the said pivoted portion being thrown backward on its pivot when the file-box is slid into the case.

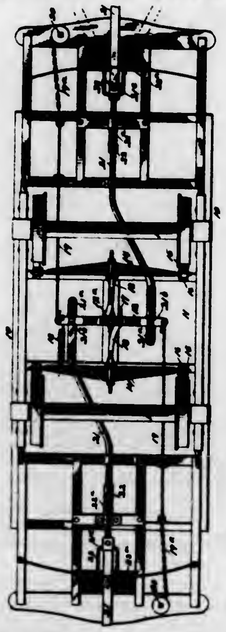
3. The combination, with a file-box and a case therefor, of a guiding-plate secured to the bottom of said box and consisting of guiding edges having entering portions near one end and forming a stop at the other end and a pivotal piece having lugs or fingers adapted to be slidingly engaged with said guide by one end and turn about a fixed point or pivot near the edge of said case at the other end, whereby the said box may be detachably mounted on said pivotal connection and be slid back and forth thereon, substantially as described.

4. The combination, with a file-box and a case, of a guide-plate recessed within the bottom of said box and having guiding edges forming grooves in said recess open at one end and turned-in end portions forming a stop and a connection beyond said case and box, consisting of a pivoted member having fingers turned inward to embrace said guide, the pivotal attachment of said member to the case being near the outer edge thereof, whereby the said open end will admit the fingers of the pivotal piece and the file-box may be turned on the pivot of the connection as a center and slid backward into its case.

5. The herein-described connection between a file-box and case, the same consisting of a plate portion adapted to be screwed to the case and a hinged portion D, provided with fingers *d*, substantially as shown and described.

6. The herein-described guiding-plate, the same consisting of guiding edges C, raised above a central portion adapted to be secured to a file-box, the ends of said guiding portions being turned over to constitute stops, substantially as shown and described.

487,151. CAR-BRAKE. JOHN W. HEURMAN and JOHN R. PFLAUM, Louisville, Ky. Filed May 5, 1892. Serial No. 431,955. (No model.)



Claim.—1. In a brake, the combination, with a brake-lever, of a combined draft-bar and brake-operating rod connected therewith, said combination-bar being composed of two sections, the outer one of which is adapted to swing horizontally upon its pivotal connection with the inner section, which inner section is connected with the brake-lever.

2. The combination, with the brake-operating lever, of the combined draft-bar and brake-rod connected with said lever and capable of operating the lever when moved inward and capable of moving outward without operating the lever, substantially as shown and described.

3. The combination, with a brake-lever, of a combined draft-bar and brake-rod slotted at its inner end and connected with the brake-lever, the outer end of the rod being jointed and free to turn, whereby the brake-lever can be operated while rounding curves, substantially as shown and described.

4. The combination, with a brake-lever, of the brake-bars connected thereto on opposite sides of the pivot, said bars being threaded at their outer ends, the brake-beams arranged upon said ends, and the adjusting-nuts secured upon the threaded ends on each side of the beams, substantially as shown, and for the purpose described.

5. The combination, with the brake-lever, stop-plate, and return-spring, of the brake-arms and beams and draft-rods, all arranged substantially as shown and described.

6. The combination, with the brake-lever, of the combined draw-bars and operating-rods slotted at their inner ends and connected to the opposite ends of the brake-lever, each of said combined rods or bars being adapted to be locked against longitudinal movement, substantially as and for the purpose described.

7. The combination, with the brake-lever, of the combined draw-bar and rod having an upward projection near its forward end, the locking-bail, and the pusher-bar connected thereto, all arranged substantially as shown and described.

8. The combination, with a brake-lever, of the combined draw-bar and rod having an upward projection, the locking-bail, the pusher-bar connected thereto, and the locking device for said pusher-bar, substantially as shown and described.

9. The combination, with the brake-lever, of the brake-arms and beams, the draft-bars, and the combined draw-bars and operating-rods connected with the opposite ends of the levers and extending in opposite directions, substantially as shown and described.

487,152. PAPER-JOGGER. FRANK A. OSBORNE, Grand Rapids, Mich. Filed June 11, 1892. Serial No. 436,366. (No model.)

Claim.—1. The combination, with a supporting-platform and a series of jogger-arms arranged substantially perpendicular and movable in the arcs of circles, of a lever mechanism entirely disconnected from the fly of a printing-press and having a projecting part adapted to be located in the path of the free end of the said fly, so that when the latter descends it will strike the projecting part of the lever mechanism and operate the jogger-arms, substantially as described.

2. The combination of a supporting-table, a series of levers pivotally attached to a sleeve, fulcrums for said levers, jogger-arms extending upward nearly perpendicular from said levers and adjustably connected therewith, and a trip adapted to receive the stroke of the fly of the printing-press, substantially as described.

3. The combination of a series of levers pivotally attached to a sleeve, a series of jogger-arms attached to said levers, fulcrums for supporting said levers, a trip connected with said levers, and a spring adapted to bring the levers and jogger-arms into normal position after the same has been pressed from normal position by means of the fly, substantially as described.

4. The combination of a platform provided with slots through which the jogger-arms are adapted to pass, jogger-arms extending from beneath upward through said slots, levers supporting said jogger-arms, a sleeve to which said levers are pivotally attached, and a spring or other suitable means for bringing the arms to a normal position after having been pressed out of normal position by the fly of the printing-press, the whole adapted to be operated by the stroke of the fly or the finger thereof without any other action of or connection with the press, substantially as described.

487,153. LATCH. CLARK CHITE, Grand Rapids, Mich. Filed June 14, 1892. Serial No. 436,703. (No model.)

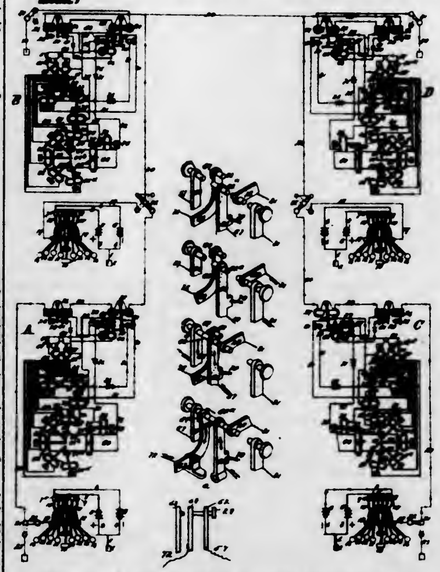
Claim.—1. As a new article of manufacture, a door-catch tubular in form supported with a suitable case held in operative position by means of a spring and having its outer end open for the purpose of receiving the extremity of a door-catch in the door-case, substantially as described.

2. The combination of a shell or case adapted to inclose a tubular bolt, a tubular bolt supported within a shell or case and having an open outer end, a spring adapted to press the tubular bolt into operative position, and a catch adapted to enter the open outer end of said tubular bolt, substantially as described.

3. The combination of a tubular bolt having an open outer end, the spring, and supporting-case, said supporting-case having a flange whereby the same may be attached to the door, and catch adapted to enter the outer open end of the tubular bolt, and suitable means for withdrawing the tubular bolt, substantially as described.

4. The combination of a tubular bolt having an open outer end, a supporting-case surrounding said tubular bolt, a spring located within the supporting-case and adapted to move said tubular bolt into operative position, and a catch located in the door-case, said catch provided with a screw-thread, whereby the same may be adjusted to proper position to enter the open outer end of the tubular bolt, substantially as described.

487,154. TELEGRAPHIC APPARATUS. JOHAN A. PARKER, St. Louis, Mo., and LELAND L. SUMNERS, Chicago, Ill.; said Sumners assignor to said Parker. Filed Jan. 27, 1891. Serial No. 379,308. (No model.)



Claim.—1. The combination, in an electric telegraph, of keys or pairs of keys arranged for the thumbs and corresponding fingers of both hands, so that either of the thumbs or either of the corresponding fingers by action upon its proper key shall produce the same result as the thumb or corresponding finger of the other hand, and electric contacts varying in number for each key or pairs of keys, and a single line-wire for connection with such electric contacts, substantially as set forth.

2. The combination of two or more keys adapted to make and break electric circuit, contacts of one polarity varying in number and of another polarity varying in relative position in the path of keys, a single line-wire, and necessary electrical energy, battery, or dynamo, substantially as set forth.

3. The combination of the divaricate keys adapted, respectively, for the thumbs and like fingers of the two hands, an electric contact-brush on each key, distinct electric contact-pieces 8 for each key in the path of the brushes and varying in number for the several keys, ground or equivalent connection to the contact-pieces 8, a battery, and a line-wire in electric connection with all the keys, substantially as set forth.

4. The combination of the divaricate electric circuit making and breaking keys, the sets of insulated contact-pieces 8 and 9, connected, respectively, with batteries sending positive and negative currents, a contact-brush upon each key, adapted for contact with the pieces 8 and 9 of each set, and a line-wire in electric connection with all the keys, substantially as and for the purposes set forth.

5. The combination of two or more keys adapted to make and break electric circuit, distinct contact-pieces 8 for each key in the path of brushes upon the keys, a battery with ground or equivalent connection, connected with the contact-pieces, a line-wire connected to the keys, a roller 41 with contact-studs 48 48ª, an escapement actuating the roller, a relay in connection with the line-wire and actuating the escapement, brushes 56 56ª, adapted for contact with the studs, and impression-armatures 58 of relays connected with the brushes 56, &c., and studs 48, &c., by a local circuit and battery, substantially as and for the purpose set forth.

6. In an electric telegraph using a single line-wire, the combination of two or more transmitting-keys, a contact-brush on each key, a series of electric contacts of varied polarity for each key in the course of the brush, the different series having an equal number of the contacts 9 of one polarity and an unequal number of the contacts 8 of the other polarity, the contacts 8 of the series having the smaller number being in the same relative position to the key as an equal number of the like contacts of the larger series and one of the contacts 9 of the opposite polarity in the smaller series being intermediate in relative position between two of the contacts 8 of the larger series, so that the brushes of the keys depressed simultaneously and equally will unite in giving the same impulses until the contact of the opposite polarity of the smaller series is reached, substantially as and for the purposes set forth.

7. The combination of two or more sets of contact-pieces 8 9, the sets having a variable number of the pieces 8 in connection with an electric battery sending a positive current and pieces 9 in connection with a battery sending a negative current, two or more keys having brushes adapted for contact with the pieces 8 9, and a single line-wire connected to the several keys and through the keys with the contact-pieces, substantially as and for the purpose set forth.

8. The combination, with two or more sets of contact-pieces 8 9, the sets having a variable number of the pieces 8 in connection with a battery sending a positive current and the pieces 9 in connection with the battery sending a negative current to the line, two or more keys, each key having an electric contact-brush playing upon one of the sets of contact-pieces only, a single line-wire in connection with the keys and through the keys with the contact-pieces, a polarized magnet 24 in the line acting only with a negative current, and a compound polarized magnet 27 in the line acting with both positive and negative currents, a roller 41, having studs 48 48ª 48ᵇ 48ᶜ 48ᵈ arranged as set forth, the described means for turning the roller forward step by step and backward by a single movement, the movable brushes 56 56ª 56ᵇ 56ᶜ 56ᵈ, and relays 52 52ª 52ᵇ 52ᶜ 52ᵈ, with impression-armatures 58, substantially as and for the purpose set forth.

9. The combination, in an exchange-telegraph system, of a central exchange, transmitting-instruments having each key or pair of keys arranged for the thumbs and corresponding fingers of both hands, so that either of the thumbs or either of the corresponding fingers by its action upon its proper key shall produce the same result as the thumb or corresponding finger of the other hand, electric contacts varying in number for each key or pair of keys, a single line-wire for connection with such electric contacts, and suitable receiving-instruments, substantially as and for the purpose set forth.

10. The combination, in an exchange-telegraph system, of a single line-wire extending to all the stations, transmitting devices having two or more keys adapted to make and break electric circuit, contacts of one polarity varying in number in the series of contacts for each key, each series having contacts of another polarity varying in relative position in the different series, suitable receiving-instruments, and necessary electrical energy, battery, or dynamo, substantially as set forth.

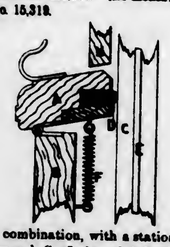
11. In a system of telegraphy over a single line-wire using keys adapted to be pressed down simultaneously, an interlacing arrangement of electrical contacts by which no two signals are completed at the same time and one series of contacts does not conflict with the other series, although the parts of one may be parts of another, substantially as and for the purpose set forth.

12. The combination, in a telegraph system having a number of stations, of a single line-wire extending to all the stations, a transmitting device having a number of keys each adapted to send a varying number of impulses of opposite polarity along the line-wire by a single movement of the key, a selecting device actuated by the impulses of one polarity, and a recording device thrown into circuit with said selecting device by the impulses of the opposite polarity, substantially as set forth.

13. The combination, in a telegraph system having a number of stations, of a single line-wire extending to all the stations, a transmitting device having a number of keys each adapted to send a varying number of impulses of opposite polarity along the line-wire by a single movement of the key, a selecting device actuated by the impulses of one polarity, a normally-open local circuit having within it said selecting device and being closed by the impulses of the opposite polarity, and a recording device included in and actuated by said local circuit, substantially as set forth.

14. The combination, in a recording telegraph, of means for sending a succession of impulses of opposite polarity over the line, a number of relays having markers upon their armatures at the receiving-station, a revoluble drum or cylinder having contact-pins 48 48ª, &c., rotated by the impulses of one polarity in the main line, the local circuit 57, the relay 67, actuated to close said circuit 57 by the impulses of the opposite polarity in the main line, the relay 55, having the contact-brushes 56 56ª, &c., actuated by the circuit 57 to contact with said pins 48 48ª, &c., the recording-relays having connection with said contact-brushes, and the local circuit 51, including within it the said brushes, cylinder, and recording-relays, substantially as set forth.

487,155. SASH-HOLDER. WILLIAM PURDEN, Hull, England. Filed Apr. 6, 1892. Serial No. 428,067. (No model.) Patented in England Sept. 10, 1891, No. 15,312.



Claim.—1. The combination, with a stationary part B and a vertically-sliding window-sash C, of a board A, having at its inner edge a friction-pad D and hinged near its outer edge to the stationary part in front of the window-sash and rocking or oscillating in a vertical plane on its hinged attachment, so that it permits the sash to rise, but automatically engages the sash to prevent its descent, a spring connecting the rocking board with the carriage-door to keep said board in engagement with the sash, and mechanism which retards the descent of the sash when the latter is released from contact with the hinged board, substantially as described.

2. The combination, with a stationary part B and a vertically-sliding window-sash C, of a board A, having at its inner edge a friction-pad D and hinged near its outer edge to the stationary part in front of the window-sash and rocking or oscillating in a vertical plane on its hinged attachment, pulleys or runners attached to the stationary part B, cords attached to the sash and passing over said pulleys or runners, and a counterpoise attached to said cords, substantially as described.

487,156. LAP-RING. JAMES F. PYE, Baldwinville, assignor of one-half to James A. Spain, Talbotton, Ga. Filed Aug. 5, 1892. Serial No. 442,269. (No model.)

Claim.—1. A lap-link composed of two parts in spiral form, pivoted together at the center of the ring formed thereby and provided with a diametrical portion, in the ends of which the pivot of the parts is held, as set forth.

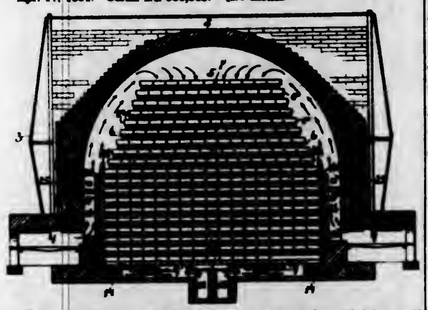
2. A lap-link composed of two parts in spiral form, pivoted together at the center of the link, each provided with a diametrical portion, in the ends of which the pivot of the parts is held and a tapered end, as set forth.

487,157. HAME. JAMES F. PYE, Baldwinville, assignor of one-half to James A. Spain, Talbotton, Ga. Filed Aug. 20, 1892. Serial No. 444,023. (No model.)

Claim.—In a device of the character described, in combination, the hame, the plate B, secured thereto and provided with arm or extension D, having shoulder D', and the plate E, pivoted as described and provided with a series of hooks, all arranged and operating substantially as described, and for the purpose specified.

487,157.

487,158. BRICK-KILN. LOUIS H. RIPPELL, Kansas City, Mo. Filed Apr. 17, 1891. Serial No. 389,265. (No model.)



Claim.—1. The combination, with a vertical close division-wall for preventing the passage of air-currents across the pile, of the double flue 12 13, located beneath and extending parallel with the division-wall, the side flues 14, parallel with the double flue, and the supports 8, extending from the side flues to the double flue, substantially as described.

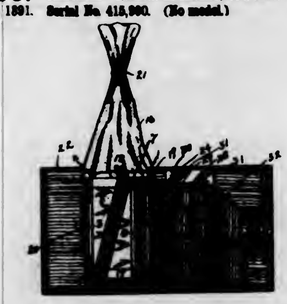
2. A brick-kiln pile or stack having close layers at the outer sides thereof to compel the air-currents to pass to the top of the kiln-chamber before entering the pile or stack and a vertical close division-wall for preventing the passage of air-currents across the pile or stack, a downdraft being caused to pass through the pile or stack between the sides and the division-wall thereof, substantially as described.

3. The combination, with a brick-kiln having side furnaces and flash-walls formed with inwardly-curved portions providing pockets, of the perforated partitions located on the inner side of the flash-walls and through which the heat radiates from the flash-walls and pockets, the partitions keeping the sides of the pile or stack from coming against the flash-walls, substantially as described.

4. The combination, with a brick-kiln having side furnaces and flash-walls formed with inwardly-curved portions providing pockets, of the perforated partitions located on the inner side of the flash-walls and the cross-pieces located over the pockets, substantially as described.

5. The combination, with a brick-kiln having side furnaces and flash-walls, of the partitions located on the inner side of the flash-walls and shorter in height than the latter to provide recesses on the inner side of the flash-walls for the reception of the lower ends of the deflecting-tiles between the flash-walls and the pile or stack, substantially as described.

487,159. CAMERA. ROBERT A. RIPLEY, Stamford, Conn. Filed Dec 23, 1891. Serial No. 415,980. (No model.)



Claim.—1. The magazine for plates or films, comprising a frame having in front and rear open plates or frames 1 2 and the open follower spring-pressed toward the front plate 4.

2. The magazine plate-holder comprising the combination of the front and rear plates 1 2, the side plates 5, uniting the plates 1 and 2, the pins 10, attached to the side plates, the follower 7, the pins 11, projecting from the edges of the follower 7 above and below the plates 5, and the springs 9, connecting the pins 10 to the pins 11 and adapted to feed the follower forward, as set forth.

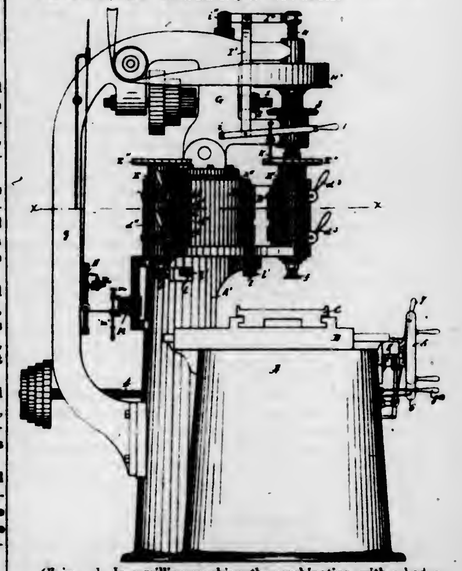
3. The magazine plate-holder comprising the front and rear plates 1 2, formed with openings 3 4 through them, the side plates 5, uniting the plates 1 and 2, the follower 7, having an opening through it, and springs 9, arranged outside of the magazine and adapted to feed the follower forward, as set forth.

4. In a camera, the combination of the plate-magazine having an open follower 7, and springs 9, arranged outside of the magazine, a holder for said magazine open at front and rear and having slides 19 20, and the flexible sleeve fixed at one end at the top of said holder and having an elastic clamp.

5. The combination of the box 22, provided with the front part 25, the rear part thereof including a plate-holding magazine, and a cross-bar 30, fixed to the box 22 and overlying the joint between said part 25 and plate-holder and forming a brace for the camera.

6. The combination of the box 22, provided with the front part 25, the movable plate-holder having extensions overlapping the part 25, the cross-bar 30, fixed to the box, and the pendent shield from said cross-bar, substantially as set forth.

487,160. MILLING-MACHINE. EDWARD RIVETT, Boston, Mass. Filed Dec. 14, 1891. Serial No. 414,936. (No model.)

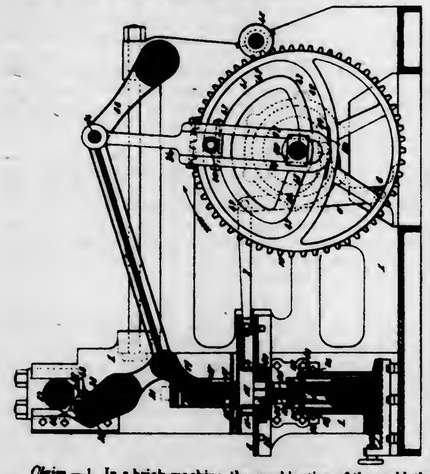


Claim.—1. In a milling-machine, the combination, with a bed, a work-table, and a standard, of a revolving turret journaled on the standard and having radial arms provided with vertical bearings adapted to overhang the work-table, a screw-threaded nut in each bearing, an externally-threaded quill located in each bearing and vertically adjustable by rotating it in engagement with the nut in the bearing, a tool-carrying spindle moving vertically with each quill, adapted to freely revolve therein independent of any rotation of the quill and having its upper end provided with an angular portion, a rotating vertically-movable driving-shaft having an angular portion at its lower end to directly engage the upper end of each tool-carrying spindle, and hand-lever mechanism for raising and lowering the driving-shaft, substantially as described.

2. In a milling-machine, the combination, with a bed, a work-table, and a standard, of a revolving turret journaled on the standard and having radial arms provided with vertical bearings adapted to overhang the work-table, a screw-threaded nut in each bearing, an externally-threaded quill located in each bearing and vertically adjustable by rotating it in engagement with the nut in the bearing, a graduated hand-wheel secured to the upper end of each quill, a tool-

carrying spindle moving vertically with each quill and adapted to freely revolve therein independent of any rotation of the quill, a vertically-adjustable index-point mounted on the frame of the machine, and means for revolving a spindle in a quill while the latter and the tarret stand stationary, substantially as described.

487,161. BRICK-MACHINE. ROBERT H. ROSS and HENRY H. KELLER, St. Louis, Mo., assignors of one-half to Minard S. Bowman, same place. Filed Nov. 14, 1892. Serial No. 471,469. (No model.)



Claim.—1. In a brick-machine, the combination of the mold, the upper and lower plungers, a toggle connecting the upper plunger to a fixed pivot, means for operating the toggle, an extension 23 on the upper arm of the toggle, forked or bifurcated arms 25, pivoted to sliding boxes 27 and having a loose connection with the extension 23, and suitable connections between the sliding boxes 27 and the lower plunger, substantially as herein set forth.

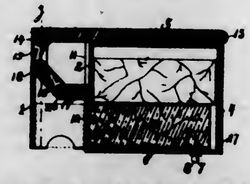
2. The herein-described method of making bricks, which consists in feeding the material to the mold, exerting an initial pressure thereon, retaining said initial pressure while the air is allowed to escape from the material, and finally exerting an increased pressure for completing the brick, as herein set forth.

3. In a brick-machine, the combination of the mold, plungers, mechanism for operating the plungers, and the spring-seated rods 56, substantially as and for the purpose set forth.

4. In a brick-machine, the combination of the mold, plungers, means for operating the plungers, cross-bars 52, springs 55, rods 53, and rods 56, all substantially as and for the purpose set forth.

5. In a brick-machine, the combination of a mold, plungers, means for operating the plungers to form the bricks in the molds, and means for lifting the lower plunger, consisting of the toggles 60, bell-crank lever 63, connecting-rod 62, and cam 66, substantially as and for the purpose set forth.

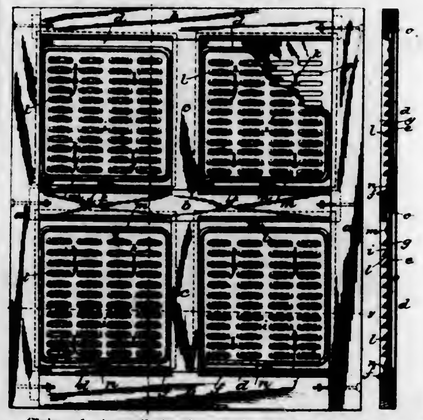
487,162. COMBINED TOBACCO BOX AND CUTTER. HARRY J. SAXTON, St. Louis, Mo., assignor to William H. Baumgartner, Mary B. Harrison, and Shepard Krupp, same place. Filed Nov. 27, 1891. Serial No. 413,293. (Model.)



Claim.—1. As an improvement in pocket tobacco-boxes, the combination, with the box provided with a wall dividing said box into two compartments communicating at the lower end of the box, one of said compartments being open and the other closed at the bottom, of a sliding knife working adjacent to the division-wall and in the compartment having the open bottom, a plug-feeding device working in the bottom of the other compartment, and means for operating the knife, substantially as and for the purpose set forth.

2. As an improvement in pocket tobacco-boxes, the combination, with the box divided into two compartments communicating with each other at the lower end of the box, one of said compartments being provided with a door and the other having an open bottom, of a knife sliding in the latter compartment and a lever pivoted within the box and pivotally connected with the knife, substantially as and for the purpose set forth.

487,163. VENTILATED CAR-DOOR. JOHN L. STAGG and CHARLES W. PENN, Chicago, Ill., and CHARLES T. SCHOEN, Allegheny, Pa. Filed Apr. 7, 1892. Serial No. 428,294. (No model.)



Claim.—1. A ventilating-door having fixed perforated plates at top and bottom and sliding perforated plates applied to such fixed plates by means of slots and pins and normally having their perforations in register, substantially as described.

2. A ventilating-door having a series of panels, each composed of a fixed perforated metal plate and a sliding plate applied thereto and supported by it by means of slots and pins and having hooded openings normally registering with the openings in the fixed plate and adapted to be moved to close the openings in the fixed plate and to be held in such closing position, substantially as described.

3. A ventilator having a fixed perforated metal plate and a sliding plate applied thereto and supported by it by means of slots and pins and having hooded perforations and adapted to be moved to open or close the perforations in the fixed plates, substantially as described.

487,164. DRESS-PAD. SARA B. STANLEY, Portland, Me. Filed Mar. 26, 1892. Serial No. 426,202. (No model.)

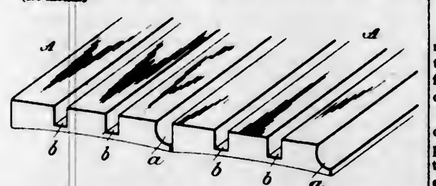
Claim.—A combined dress pad and shield consisting of a pad provided with a suitable filling and a shield having one flap within the covering of the pad and the other on the outside of the pad, substantially as described.

487,165. MUSIC-STAND ATTACHMENT. HENRY C. STRALEY, Granite, Mont. Filed Feb. 26, 1892. Serial No. 422,847. (No model.)

Claim.—1. As a new article of manufacture, the music-stand attachment described, comprising the body, the downwardly-extending branch H, the horizontally-disposed curvilinear seat I at the lower end of the said branch, the spring-loop connected to and resting in the curvilinear seat I, the downwardly-extending branch J, the curvilinear seat K at the lower end of the said branch, the spring-loop connected to and resting in the curvilinear seat K, and a suitable means for fixing the body upon the music-stand, substantially as and for the purpose set forth.

2. As a new article of manufacture, the music-stand attachment described, comprising the body having the semicircular sleeve-section, the curved swinging section pivotally connected to the body, the bail pivotally connected to the body and adapted to engage and hold the swinging sleeve-section to the body, the binding-screw for fixing the body on a music-stand, the spring-loop connected to the body and resting in a curvilinear seat therein, the spring-loop resting in a different horizontal plane from the body, and a branch connecting the latter spring-loop to the body, substantially as and for the purpose set forth.

487,166. LATH. SQUIRE TOSNY, Viroqua, Wis., assignor of one-half to Mary Brown, same place. Filed June 18, 1892. Serial No. 437,130. (No model.)



Claim.—1. A wooden lath or sheathing of less thickness at its center than at its edges and provided with a straight surface on one side, the straight surface having channels or recesses formed therein, substantially as set forth.

2. As an improved article of manufacture, a plastering strip or lath having a concave back, a concave edge, a straight edge, and intermediate rectangular channels or recesses *b*, substantially as shown and for the purpose set forth.

487,167. EUGENOL BENZYL-ETHER AND PROCESS OF PREPARING SAME. FRITZ ACH, Mannheim, assignor to C. F. Boehringer & Soehne, Waldhof, near Mannheim, Germany. Filed July 5, 1892. Serial No. 439,089. (No specimens.)

Claim.—1. The process which consists in dissolving eugenol in rectified spirits, adding thereto alkali hydrate and a halogen compound of benzyl, and heating the mixture, substantially as set forth.

2. The process which consists in dissolving eugenol in rectified spirits, adding thereto caustic potash and benzyl chloride, and then heating the mixture, substantially as set forth.

3. The process which consists in dissolving eugenol in rectified spirits, adding thereto alkaline hydrates and a halogen compound of benzyl, heating the mixture, and then distilling off the spirits and adding water to precipitate eugenol benzyl-ether, substantially as set forth.

4. The process of purifying eugenol benzyl-ether, which consists in shaking the same up with dilute alkali and subsequently distilling the same in a partial vacuum, substantially as set forth.

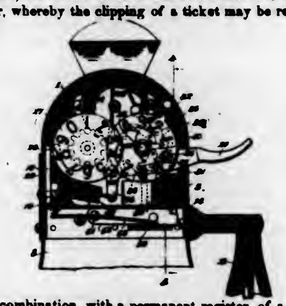
5. The process which consists in dissolving eugenol in rectified spirits, adding thereto alkaline hydrates and a halogen compound of benzyl, heating the mixture, and then distilling off the spirits and adding water to precipitate eugenol benzyl-ether, and finally purifying the eugenol benzyl-ether, substantially as set forth.

6. As a new compound, eugenol benzyl-ether, consisting in a colorless oil, having the formula hereinbefore stated, and which solidifies in thick prisms having a melting-point of 29° to 30° centigrade, substantially as set forth.

487,168. PORTABLE FARE RECEIVER AND REGISTER. JAMES R. ALLEN, Nashville, Tenn. Filed Dec. 19, 1891. Serial No. 415,576. (No model.)

Claim.—1. A fare-receiver having a permanent register and a co-operating temporary register, a casing inclosing said registers and formed with openings through which said registers may be read, a detachable receptacle or pouch having a frame fitting over one end of the said casing and formed with an extension covering the openings through which the permanent register is read, and a lock for locking the receptacle and casing together, whereby the permanent register may only be visible when the receptacle is detached.

2. In a fare-receiver, the combination, with a register provided with a casing, of a receptacle detachably secured to the casing and formed with an opening for inserting the end of a ticket and provided with a cutter or blade sweeping across said opening for clipping the end of an inserted ticket, said cutter or blade connected with and operated by said register, whereby the clipping of a ticket may be registered.



3. The combination, with a permanent register, of a temporary register and a dog intermediate the two registers for locking them together in their forward movement and a hand-operated trip device for said dog for disengaging it and permitting the backward rotation of the temporary register independently of the permanent register.

4. The combination, with a permanent register provided with an operating-shaft projecting from the casing of the register, of a temporary register connected with said shaft and a dog for locking the two registers together in their forward movement, a trip-arm for disengaging the dog and leaving the temporary register free to be rotated backward independently of the permanent register, and a loose sleeve mounted upon the projecting end of the said shaft and carrying said trip-arm, said sleeve being accessible from the exterior of the casing of the register for manipulation in turning back or resetting the temporary register.

5. The combination with a permanent register having an operating-shaft, of a temporary register having its units-wheel mounted loose upon said shaft and a ratchet-wheel mounted fast on said shaft, said ratchet provided with a dog for locking the ratchet and units-wheel together in the forward rotation thereof, and a trip device also mounted upon said shaft for disengaging the dog, whereby the temporary register may be turned back without actuating the permanent register, said trip device extending to the exterior of the casing for convenient manipulation.

6. The combination, with a shaft and a permanent register controlled thereby, of a register-wheel mounted loose upon said shaft and a ratchet-wheel mounted fast on the shaft, an operating-lever provided with a pawl for actuating said ratchet, a dog for locking the register-wheel and ratchet together in their forward movement, and a trip device for disengaging said dog to unlock the two said wheels and by which the said register-wheel may be turned back or forward, and a second dog for locking the ratchet and register wheels together in the forward movement of the trip device, whereby the turning forward of the said register-wheel by the trip device may correspondingly actuate the permanent register.

7. The combination, with a shaft projecting from the casing of the register and a ratchet-wheel mounted fast on said shaft and a lever and pawl for actuating said ratchet, of a loose sleeve arranged upon the projecting end of the shaft and provided at its inner end with a trip-arm, a register-wheel mounted loose on said shaft, and a dog mounted upon the register-wheel for locking it to the ratchet in its forward movement, said dog engaged and operated by said trip-arm upon rotating said sleeve backward, whereby the register-wheel may be turned back or reset without actuating the ratchet.

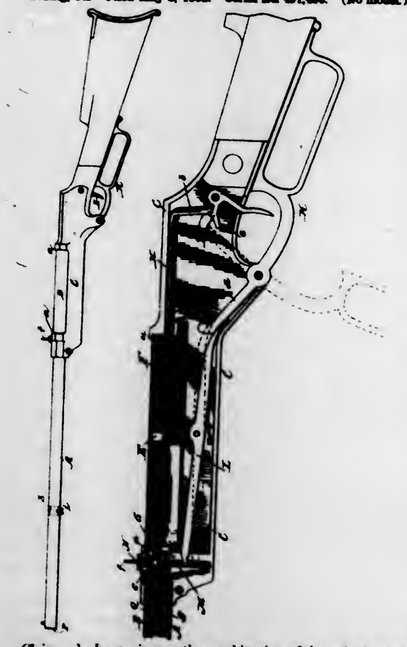
8. The combination, with a shaft projecting from the casing of the register and a permanent register controlled thereby, of a ratchet-wheel mounted fast upon said shaft and provided upon its face with a series of pins or projections corresponding with the teeth of the ratchet, a lever and pawl for operating said ratchet, a loose sleeve arranged upon the projecting end of the shaft and provided with a trip-arm, a register-wheel loosely mounted upon said sleeve and provided with two spring-dogs engaging the pins or projections of the ratchet, one dog locking the said register-wheel and ratchet together in their forward movement and engaged by said trip-arm to effect the unlocking of said register-wheel and ratchet in turning the register-wheel back and the other said dog locking the register-wheel and ratchet together in the turning forward of the register-wheel by the trip device, whereby the said register-wheel cannot be turned forward by the trip or resetting device without actuating the permanent register in a corresponding manner.

9. The combination, with the shaft 25, controlling a permanent register, of a ratchet-wheel 35, mounted fast upon the shaft and provided with a set of projections or pins 36 36, a lever and pawl for actuating said ratchet, a sleeve 41, mounted loosely upon the end of the shaft and provided with a trip-arm 40, and a register-wheel 26, loosely mounted upon said sleeve and provided with a dog 37, adapted to engage with the pins 36 and engaged by the said trip-arm, whereby the backward rotation of said sleeve or trip device may unlock the wheels and permit the turning back of the register-wheel independently of the permanent register, substantially as and for the purpose set forth.

10. The combination, with the shaft 25, controlling a permanent register, of a ratchet-wheel 35, mounted fast upon the shaft and provided with a set of projections or pins 36 36, a lever and pawl for actuating said ratchet, a sleeve 41, mounted loosely upon the end of the shaft and provided with a trip-arm 40, and a register-wheel 26, loosely mounted upon said sleeve and provided with the dogs 37 and 38, adapted to engage the pins 36, the said dog 37 being engaged by the trip-arm, whereby the backward rotation of said sleeve or trip device may unlock the wheels and permit the register-wheel to be turned back independently of the permanent register and the turning forward of the sleeve or trip device may actuate both the temporary and permanent register in a corresponding manner, substantially as and for the purpose set forth.

11. The combination, with a fare receiver and register, of a pivoted spring-actuated cutter 52 for clipping tickets, a register, and the pivoted operating-lever for actuating the register, and a slide 54, having a sliding joint connecting it with the operating-lever and actuated thereby and engaging and operating the cutter when depressed, substantially as and for the purpose set forth.

487,169. REPEATING AIR-GUN. ELMER E. BAILEY, Stanamahoning, Pa. Filed May 9, 1892. Serial No. 431,469. (No model.)



Claim.—1. In an air-gun, the combination of the swinging guard or finger-lever, with the spring-pressed carrier-lever pivoted beneath the air-chamber, and a vertically-sliding carrier connected with the carrier-lever, as shown and described, whereby the closing movement of the guard-lever raises the carrier, as specified.

2. In an air-gun, the combination, with the air-chamber, sliding piston, and piston-rod having the downwardly-bent arm, the carrier, and spring-pressed carrier-lever pivoted centrally beneath the air-chamber, of the pivoted and swinging guard or finger-lever whose inner arm works between the rear extremities of the piston-rod and carrier-lever and acts successively on both for preparing the gun for discharge, as specified.

3. In an air-gun, the combination of the air-chamber and the two-part lock-frame having perforated abutments and flanges projecting toward each other for embracing the ends of said air-chamber, as shown and described.

4. In an air-gun, the combination, with the lock-frame having a horizontal passage aligned with the firing-tube, the carrier working in a vertical passage that intersects the latter, and a lever for operating said carrier, of a sliding detent arranged above the carrier and serving to hold the projectile against accidental displacement, substantially as shown ad described.

5. In an air-gun, the combination, with the lock-frame having a horizontal passage aligned with the firing-tube, of the carrier acting vertically in a passage that intersects the other, and a spring-pressed sliding pin which is arranged above and in alignment with the carrier and thus adapted for cosjoint operation with it for holding a projectile, as shown and described.

6. In an air-gun, the combination, with the magazine and a firing-tube arranged within it and secured at each end, of a support therefor, which is arranged in the magazine and adapted for adjustment for restoring the tube to alignment with the magazine, substantially as shown and described.

7. In an air-gun, the combination, with the magazine and the firing-tube arranged within it and secured at each end, of the axially-adjustable support and means for holding it in any adjustment, substantially as shown and described.

8. In an air-gun, the combination, with the magazine having a circumferential slot and a firing-tube arranged within it and secured at each end, of the apertured support for said firing-tube and a clamp-screw working in said slot, as shown and described.

9. In an air-gun, the combination, with the magazine and a firing-tube arranged within it, of fixed and adjustable plugs which support said firing-tube and have funnel-shaped perforations for passage of projectiles, as shown and described.

10. In an air-gun, the combination, with the barrel, of a spring-retracted pin which slides in an opening directly over the point where the projectile is held ready for discharge, and means for pressing the projectile directly against said pin, whereby the latter serves temporarily as a detent for the projectile, and also is protruded from the barrel to normally indicate the presence of the projectile, as shown and described.

11. In an air-gun, the combination, with the barrel, of the detent or pin N, working in a vertical passage that intersects the horizontal passage through which the projectiles are fired, a spring which holds said pin normally depressed so that it does not project above the barrel, and the carrier arranged in alignment with said pin, substantially as shown and described, whereby when the carrier elevates the projectile into the horizontal passage the projectile comes into contact with and raises the pin above the barrel, whereby a visual indication is given that the gun is ready for discharge.

12. In an air-gun, the combination, with the magazine and firing-tube and a plug inserted in the front end of the magazine and having a charging-aperture, of a disk cover for said aperture, which is pivoted on the upset end of the firing-tube, as shown and described.

13. In an air-gun, the combination, with the delivery end of the magazine, of a detent arranged in the passage for the projectiles and adapted to prevent return of such projectiles that have passed rearward beneath it, as shown and described.

14. In an air-gun, the combination, with the magazine having slots contiguous to the breech, of the lock-frame made in two parts, each having a lug adapted to fit in one of said slots, as shown and described.

487,170. ALBUM. ANTON BARTHOLME, Baltimore, Md. Filed Apr. 30, 1892. Serial No. 431,235. (No model.)

Claim.—1. In an album, two covers or casings hinged together at their lower edges, one of the covers being provided with journals, in combination with standards provided with bearings for the journals, while the other cover is free to be swung open, substantially as set forth.

2. In an album, two covers or casings hinged together at their lower edges, one of the covers being provided with journals, while the other cover is provided with a mirror on its outer surface and free to be swung open, in combination with the standards provided with bearings for the journals, substantially as set forth.

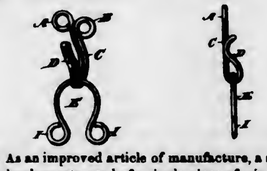
3. In an album, two covers hinged together, one of the covers being provided with journals having eccentric-studs, in combination with standards having bearings for the journals and provided with detents for engaging the eccentric-studs on the journals, substantially as set forth.

4. In an album, two covers hinged together, one of the covers being provided with journals having eccentric-studs, in combination with standards having bearings for the journals, and provided with detents for engaging the eccentric-studs on the journals, one of the album-covers being provided with a mirror on its outer surface, substantially as set forth.

5. In an album, two covers hinged together and a spring-catch attached to one cover, in combination with a lip on the other cover for engaging the spring-catch and a releasing-button adapted to bear down on the spring-catch to release the same, substantially as set forth.

6. An album comprising one cover having a spring-catch secured thereto and having an inclined surface, in combination with a second cover provided with a lip having a lower beveled surface and a releasing-button adapted to bear down on the inclined surface of the spring-catch, substantially as set forth.

487,171. SAFETY DRAPERY OR GARMENT HOOK. JULIUS BERKEY, Grand Rapids, Mich. Filed May 19, 1892. Serial No. 433,584. (No model.)



Claim.—1. As an improved article of manufacture, a safety drapery or garment hook constructed of a single piece of wire or rod and having a lateral bend in the shank of the hook and the hook proper bent laterally in a direction opposite the bend in the shank of the hook, substantially as described.

2. A safety drapery and garment hook consisting of shank-arms provided with a lateral bend and a hook proper bent laterally in a direction opposite the bend in the shank portion, the shank-arms being of different lengths and provided with loops, whereby a means of firmly attaching the hook to the cloth and preventing the same from tilting over is provided, substantially as described.

487,172. SHEET-METAL ROOF. LOUIS H. BRITTON, New Lisbon, Ohio, assignor of one-half to Jacob R. Warner, same place. Filed June 6, 1892. Serial No. 435,691. (No model.)

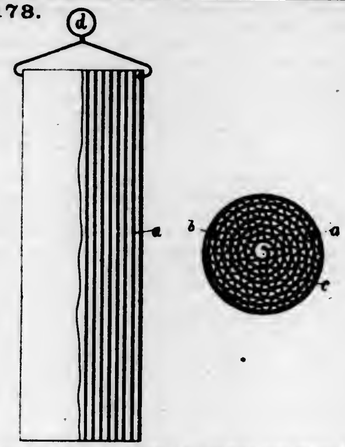
Claim.—1. A sheet-metal roof having a standing seam in which the bent or folded line of the cap-piece is formed with lateral crimps which interlock with the top edges of the upturned flanges of the roofing-plates and extend from the top or apex of the cap-piece downward toward the base thereof, substantially as and for the purposes described.

2. A sheet-metal roof having a standing seam in which the bent or folded line of the cap-piece is formed with pairs of reversely-arranged lateral crimps to interlock with the top edges of the upturned flanges of the roofing-plates and extending from the top or apex of the cap-piece downward toward the base thereof, substantially as and for the purposes described.

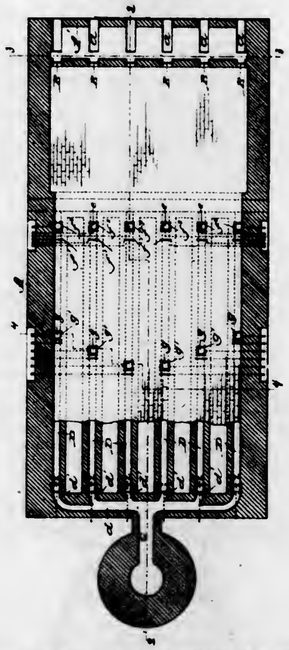
487,178. FUMIGATOR. ROBERT CAMPBELL, Lostock, near Northwich, England. Filed Mar. 22, 1892. Serial No. 426,260. (No model.) Patented in England Apr. 3, 1890, No. 5,207.

Claim.—A fumigator consisting of a combustible sheet coated or impregnated with a poisonous substance and a corrugated or crimped sheet which is convoluted with the coated or impregnated sheet to form a passage for the poisonous fumes and promote combustion when the fumigator is ignited, substantially as described.

487,178.



487,174. BRICK-KILN. JOSEPH COBLEY and JAMES M. WOLFE, Tarkio, Mo. Filed Aug. 11, 1892. Serial No. 442,747. (No model.)



Claim.—1. In a brick-kiln, the combination of a series of furnaces located at one end of the kiln and a chimney at the opposite end, each furnace having apertures one above the other, dampers for closing said apertures, the body of the kiln being susceptible of being divided into sections and provided at the end of the first section beyond the furnaces with a transverse flue, said flue being connected with longitudinal flues which connect with the chimney, substantially as shown, and for the purpose set forth.

2. In combination with a brick-burning furnace or kiln, a series of furnaces at one end of the kiln, a transverse flue, a series of longitudinal flues equal in number with the furnaces, said longitudinal flues being connected with the chimney and provided with dampers covering openings in the longitudinal flues, and dampers which are suscep-

tible of being moved across said flues, substantially as shown, and for the purpose set forth.

3. In a brick-burning furnace or kiln, the combination of a rectangular structure having at one end a series of starting-furnaces and at the opposite end a chimney, an intermediate transverse cold-air flue located between the chimney and furnaces, a series of underground longitudinal flues, each communicating with the chimney and with the transverse cold-air flue, apertures *e*, leading into the hot-air flues, and dampers *f*, *f'*, and *f*², arranged substantially as shown, and for the purpose set forth.

4. In a kiln constructed substantially as shown, the combination of a series of parallel longitudinal hot-air flues D D, communicating at intervals with the interior of the kiln, the ends of said flues connecting with the chimney, and a transverse cold-air flue, dampers or cut-offs *f*, *f'*, and *f*², intermediate dampers operating across said flues, and over the intermediate openings in said flues, and end dampers i, the parts being organized substantially as shown.

5. In a brick-kiln, the combination of a rectangular structure having beneath the ground-floor or base thereof longitudinal flues, which are connected to the chimney, and a transverse underground air-flue, openings connecting the longitudinal flues with the interior of the kiln and with a chimney and the transverse flue, dampers or cut-offs arranged substantially as shown, the starting-furnaces having openings one above the other, with dampers adapted to close said openings, for the purpose set forth.

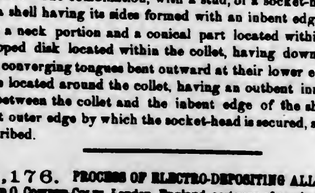
487,175. GLOVE-FASTENING. GUSTAVE COURBOIL and JULES COURBOIL, Paris, France. Filed Jan. 12, 1891. Serial No. 377,497. (No model.)

Claim.—The combination, with a stud, of a socket-head consisting of a shell having its sides formed with an inbent edge, the collet having a neck portion and a conical part located within the shell, the cupped disk located within the collet, having downwardly-projecting converging tongues bent outward at their lower ends, and the thimble located around the collet, having an outbent inner edge located between the collet and the inbent edge of the shell, and the outbent outer edge by which the socket-head is secured, substantially as described.

487,176. PROCESS OF ELECTRO-DEPOSITING ALLOYS. SHERARD O. COWPER-COLES, London, England, assignor of one-half to the London Metallurgical Company, Limited, same place. Filed Nov. 18, 1891. Serial No. 412,313. (No specimens.)

Claim.—The method of depositing by electrolysis an alloy of silver and any known metal or metals other than the rare metals, which has or have a specific gravity between 6.5 and 9.0 at 15° centigrade and boils or boil at a temperature between 710° centigrade and 1045° centigrade under the ordinary atmospheric pressure on metals and other suitable articles, wherein the articles to be coated are placed in a bath of the double cyanides of such metal or metals and silver and potassium, and an anode is employed consisting of an alloy of the metals to be deposited in approximately the proportions of the deposit, substantially as herein described.

487,177. HALLESS HORSESHOE. CHARLES W. CRANNELL, Oberlin, Kans., assignor of one-half to D. R. Grube, same place. Filed Apr. 30, 1892. Serial No. 431,272. (No model.)



Claim.—1. The herein-described fastening device for horseshoes, comprising the clips having means whereby they are rigidly and removably secured to the shoe, the straps connected at one end to said clips, the draw-plates to which the opposite ends of said straps are connected, the binder-plate having a locking engagement with said draw-plates, means for securing said binder-plate in position, and means for operating said plate, substantially as specified.

2. In a horseshoe, the combination, with the shoe proper having the countersunk perforations in its toe and side portions, of the clips designed to be removably secured to said shoe, said clips comprising each a body portion shaped to fit closely against the outer surface of the hoof, the inward horizontal flange having a screw-seat arranged to fit in the countersink in the upper face of the shoe around the perforation, the lower side portions arranged to fit the peripheral edge of the shoe, the securing-screw, and means connected to said clips for bringing and holding the shoe to its place, substantially as specified.

3. In a horseshoe, the combination, with the shoe proper having the countersunk perforations in its toe and side portions, of the clips designed to be removably and rigidly secured to said shoe, said clips each comprising a plate portion concaved on its inner face to fit the outer surface of the hoof, the inward horizontal flange having a screw-seat arranged to fit the countersink of the perforations in the shoe, said flange seating in a cut-away portion of the upper face of the shoe, the horizontal lateral segmental flanges fitting the upper marginal face of the shoe, and the securing-screw, substantially as specified.

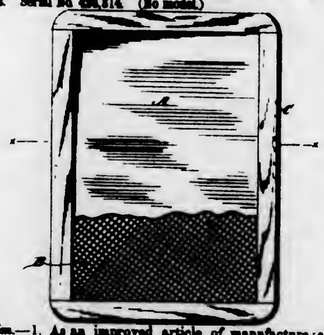
4. In a horseshoe, a clip for holding the shoe to the hoof, said clip comprising a plate portion concaved on its inner face to fit the outer lower surface of the hoof and at its lower portion arranged to fit the peripheral edge of the shoe, the inward horizontal flange designed to engage a notch or shoulder in the outer rim of the hoof, its extended screw-bearing arranged to fit a countersunk perforation in the upper face of the shoe, and the lateral segmental flanges designed to fit the marginal upper face of the shoe, substantially as specified.

5. In a horseshoe, the combination, with the shoe proper having the clips removably secured thereto, one at its toe and one at each intermediate side portion, of the straps, one connected at one end to each of the side clips and two connected to the opposite edge portions of the toe-clip, the draw-plates to which the opposite ends of said straps are connected, the slotted tongue rigidly connected to one of said plates, the binder-plate having a binding engagement with both of said draw-plates, and the bolt for securing said binder-plate in position, substantially as specified.

6. In a horseshoe, the combination, with the shoe proper, the clips removably secured thereto, and the fastening-straps, of the draw-plates to which said straps are connected at one end, the slotted tongue or plate loosely connecting said draw-plates, the camways or grooves in the upper faces of said plates, the binder-plate having lugs or projections engaging said ways or grooves, the bolt held in the slot of said tongue or plate and securing said binder-plate in position, and the cap or guard also held in place by said bolt, substantially as specified.

7. The combination, with the shoe proper, the clips removably secured thereto, the fastening-straps, the draw-plates, the tongue connecting said plates, and the binder-plate, of the bolt working in a slot in said tongue and securing the binder-plate in place, the cap or guard formed in two sections, having a hinge connection, the pintle or pin of said hinge passing through said bolt, and the eccentric eye or barrel of the hinge arranged to bind the parts in place when the guard or cap is down, substantially as specified.

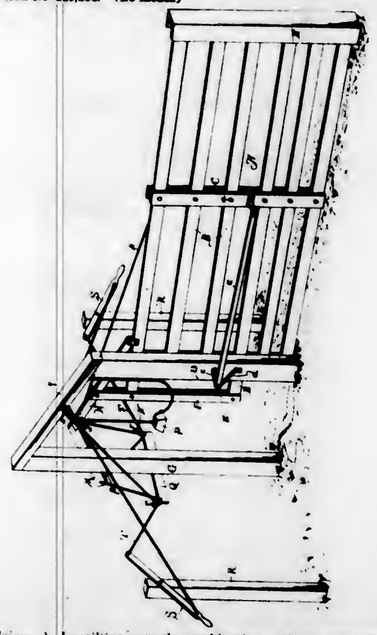
487,178. SCHOOL-SLATE. JOHN H. DE NEUT, Grand Rapids, Mich., assignor of one-half to John H. Colleton, same place. Filed Mar. 28, 1892. Serial No. 426,514. (No model.)



Claim.—1. As an improved article of manufacture, a slate or blackboard having a center of wire-cloth or wire supports and a body and surface composed of pulp filled with a gritty material, substantially as described.

2. As an improved article of manufacture, a slate or blackboard having a center of wire-cloth or wire supports, a body and surface composed of pulp filled with a gritty material, and a frame integral with said body and surface, substantially as described.

487,179. TILTING GATE. NEWTON A. DULL and ANDREW H. MOORE, Santa Fé, Mo. Filed Dec. 22, 1891. Renewed Oct. 18, 1892. Serial No. 449,296. (No model.)



Claim.—1. In a tilting gate, the combination, with the supporting-post, the gate pivotally connected thereto and having the rearwardly-extending longitudinal bars the upright bars pivotally connected to the ends of the extended bars, and the lever-arm pivotally connected at one end to the top longitudinal bar and at an intermediate point in its length to the upright bars, of the cord or rope connected at one end to the gate and passed around a pulley on the lever-arm and connected at its opposite end to the supporting-post, a counterbalance-weight connected to the cord or rope at a point intermediate the lever-arm and the supporting-post, and a suitable means for opening and closing the gate, substantially as specified.

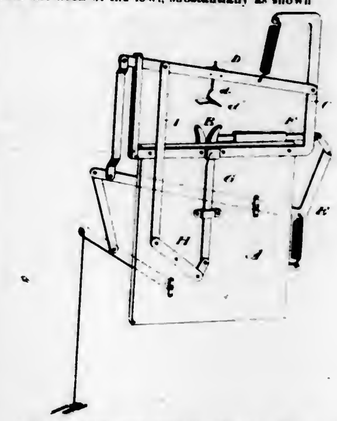
2. In a tilting gate, the combination, with the supporting-post, the frame-post, the frame-bar connecting the supporting and frame posts, the gate pivotally connected to the supporting-post and having the rearwardly-extended longitudinal bars, the upright bars connected to the ends of the extended bars, and the lever-arm pivotally connected at one end to the top longitudinal bar and at an intermediate point in its length to the upright bars, of the latch-lever fulcrumed on the frame-post and adapted to engage the rear end of the lever-arm, the lever Q, fulcrumed on the frame-post beneath the latch-lever and resting at right angles thereto, cords connecting the ends of the lever Q and the rear end of the latch-lever, the hand-levers, and cords or ropes connected at one end to said hand-levers at one side of the fulcrumed points thereof and taking around pulleys on the lever Q, connected to the lever-arm, taking around the pulleys connected to the frame-bar, and connected at their opposite ends to the hand-levers, substantially as and for the purpose set forth.

3. In a tilting gate, the combination, with the supporting-post, the frame-post, the frame-bar connecting said posts, the gate pivotally connected to the supporting-post and having the rearwardly-extended longitudinal bars, the upright bars pivotally connected to the ends of the extended bars, and the lever-arm pivotally connected at one end to the top longitudinal bar and at an intermediate point in its length to the upright bars, of the latch-lever fulcrumed upon the frame-post and adapted automatically to engage the lever-arm of the gate to lock the same and a suitable means for opening and closing the gate and actuating the latch-lever, substantially as specified.

487,180. APPARATUS FOR KILLING POULTRY. WALTER S. FURNAS, Linton, Iowa. Filed Jan. 26, 1892. Serial No. 419,574. (No model.)

Claim.—1. In a device for killing poultry, the combination, with a horizontal curved holder, of knives or lances arranged at angles with each other below the holder and mechanism for reciprocating said knives, for the purpose set forth.

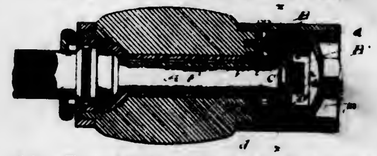
2. In a device for killing poultry, the combination, with a movable holder and a stationary fork located beneath the same, of reciprocating knives adapted to be moved beyond the stationary fork to sever the neck of the fowl, substantially as shown



3 The combination, with the fork B and movable holder, of knives or lances and means for reciprocating in unison the knives when the holder is depressed, for the purpose set forth

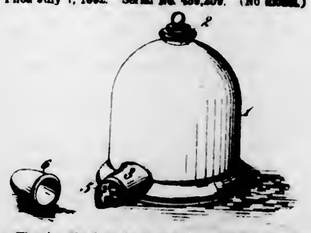
4. In a device for killing poultry, the combination, with the vertical and horizontal reciprocating knives located in different planes, of a forked holder beyond which said knives pass, a retaining-plate above the holder, and means for operating the knives and retaining-plate, substantially as shown, and for the purpose set forth.

487,181. AXLE-LUBRICATOR. HENRY M. GOODMAN, Louisville, Ky. Filed Apr. 16, 1892. Serial No. 429,402. (No model.)



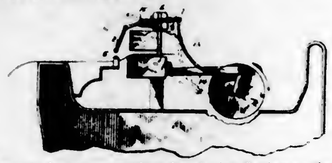
Claim. The combination, with the hub having on its outer end a cap D, formed with an interior oil or lubricant chamber or reservoir D', of the axle-nut B therein, having a threaded engagement with the outer end of the axle, a chamber C in said nut surrounding the outer end of said axle, a series of radial apertures or passages through said nut and connecting said chamber with the reservoir D', and means on said axle whereby the lubricant may flow inwardly thereon, substantially as specified.

487,182. MUCILAGE-HOLDER. WALTER B. GWYN, Asheville, N. C. Filed July 7, 1892. Serial No. 439,269. (No model.)



Claim.—The herein-described mucilage-holder, consisting of a bottle having an elevated bottom, a discharge-nozzle projecting horizontally from the lower portion of said bottle at a lower level than said elevated bottom, a sponge or brush inserted in and projecting from the outer end of said nozzle, and a detachable cap or cover for the nozzle and brush, substantially as specified.

487,188. SHUTTLE-GUARD FOR LOOMS. HERBERT R. HAMILTON and NAPOLEON BONVERT, Salmon Falls, N. H. Filed Mar. 4, 1891. Serial No. 384,048. (No model.)



Claim.—1. In an automatic safety device for looms, the combination, with a hand-rail, a lay-beam, a crank-shaft in rear of said beam, and a pitman pivoted at one end to the lay-beam and connected to said shaft at its other end, of the depending guard pivoted on the hand-rail and arranged over and at one side of the lay-beam and the yielding connection between the pitman and pivot of the guard, substantially as and for the purpose shown and described.

2. In an automatic safety device for loom-shuttles, the combination of a pivoted guard, the rigid arm, the spring-arm secured to said rigid arm and forming therewith a bearing for the guard, the lay-pitman, and connections intermediate of the pitman and said arms to operate the guard, substantially as described.

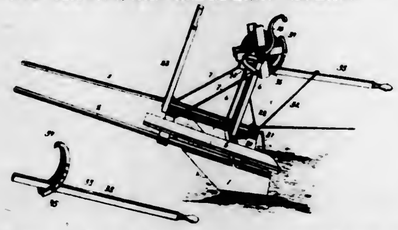
3. In an automatic safety device for loom-shuttles, the combination of a pivoted guard having transverse rods, the rigid and the spring arms having their ends shaped to conform to one of the transverse guard-rods, the main crank-shaft of the loom, the pitman, and a rigid connection between the arms and the pitman, substantially as described.

4. In an automatic safety device for loom-shuttles, the oscillating guard having the polygonal stud, combined with the rigid and the spring arms having their ends shaped to conform to the contour of said stud and clamped tightly thereon, the pitman, and the link connecting the arms with the pitman, substantially as described.

5. In a safety device for loom-shuttles, the combination, with a crank-shaft and a pitman, of a lay-beam, the hand-rail, the guard pivoted on said hand-rail and having the transverse rods and the polygonal stud projecting on one end of the guard, and rigid and spring connections intermediate of the pitman and the guard to automatically operate the latter, substantially as described.

6. In a safety device for loom-shuttles, the combination, with a crank-shaft and a pitman, of a pivoted guard and connections yieldingly secured to the guard and connected to the pitman to adapt the guard to be lifted by hand above its normal operative position, as and for the purpose described.

487,184. WIRE-FENCE MACHINE. JOHN HARPER, Fairfield, Iowa. Filed Feb 3, 1892. Serial No. 420,216. (No model.)



Claim.—1. In a wire-fence machine, a frame mounted upon runners having a reel-shaft mounted to one side thereof, and an operator's platform adjacent thereto on the opposite side, substantially as shown and described.

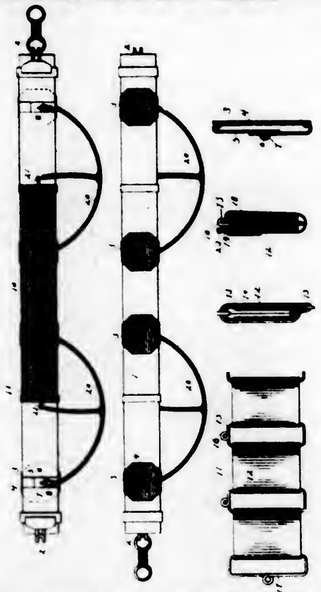
2. A frame for wire-fence machines, having attached thereto an elongated shaft provided with a wire-guide ring projected to one side and in front of the horse, substantially as shown and described.

3. In a wire-fence machine, the combination, with a spool and a reel-shaft, of a shaft-embracing clamp having horizontally-projecting lugs which engage with recesses in the spool and a screw for adjusting the tension of the clamp or securing the same rigidly to the reel-shaft, substantially as shown and described.

4. In a wire-stretching machine, the combination, with a spool of wire, of a hook for engaging with the spool of wire, said hook having a curved and divided shank pivotally mounted upon a lever, substantially as shown and described.

5. In a wire-fence machine, the combination, with a spool of wire, of a lever and a hook pivotally mounted thereon, having a curved and divided shank forming a loop for engaging with the ends or corners of the arms or cross-pieces of the spool of wire.

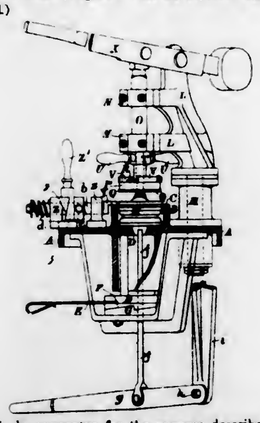
487,185. ELECTRIC BELT. JOHN H. JOHNSON, Dodgeville, Wis. Filed July 21, 1892. Serial No. 440,849. (No model.)



Claim.—1. In an electric belt, an electrode consisting of a flat plate and hinged clasps adapted to surround the belt, provided, respectively, with a staple and a slot, substantially as and for the purposes specified.

2. In an electric belt, the combination, with the plurality of elements provided with conductors having eyelets for the connection of main conductors, of a waterproof envelope adapted to surround the battery, apertures in the envelope for the protrusion of the eyelets, and a longitudinal rib or guard upon the envelope in proximity to the eyelets, substantially as and for the purpose specified.

487,186. APPARATUS FOR MAKING METAL BOXES. FREDERICK J. KING, London, England. Filed Jan. 26, 1892. Serial No. 419,347. (No model.)

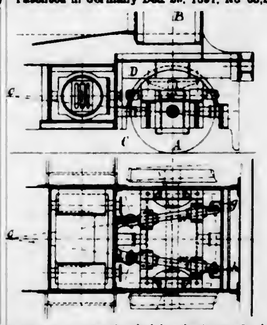


Claim.—1. In apparatus for the purpose described, a recess or chamber having a movable bottom to contain and support the body of the box while fixing the end plate thereto, an anvil or frame to support the said plate while being fixed, means for raising the movable bottom, as required, and sliding plates for folding or bending over the edges of the body of the box and the plate to be attached thereto, the whole being arranged substantially as and for the purpose hereinbefore described.

2. In apparatus for the purpose described, a recess or chamber having a movable bottom to contain and support the body of the box while fixing the end plate thereto, an anvil or frame to support the said plate while being fixed, means for raising the box in the recess or chamber, as required, a block or plunger for holding the said end plate in position on the anvil or frame and provided with sliding pieces capable of being protruded and withdrawn, and sliding plates for folding or bending over the edges of the body of the box and of the end plate, the whole being arranged substantially as and for the purpose hereinbefore described.

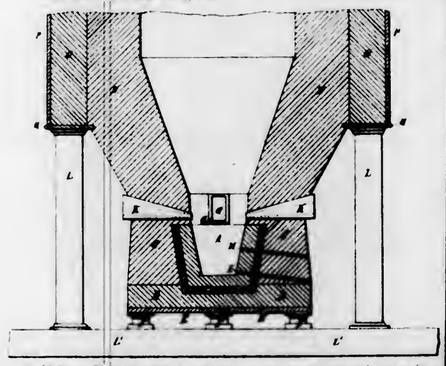
3. In an apparatus for making boxes, the combination of a chamber in which is supported the body of the box while the end plate is being fixed therein, an anvil or support for the said plate while it is being fixed in place, means for moving the anvil, a plunger for holding the said end plate in position on the anvil, the sliding plates Q, carried by the said plunger, the cams R, which engage with the plates and move them, and means for moving the cams, substantially as set forth.

487,187. BOGIE FRAME FOR LOCOMOTIVE-ENGINES. GUSTAV LENTZ, Dusseldorf, Germany. Filed June 18, 1892. Serial No. 437,139. (No model.) Patented in Germany Dec. 29, 1891, No. 65,219.



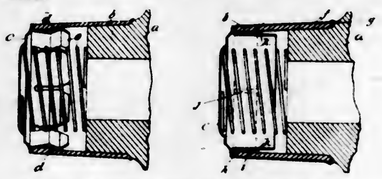
Claim.—In a two or more wheeled bogie-frame for locomotives, shafts carried by the bogie-frame and placed at an angle to the longitudinal center line of the engine, in combination with links or connecting-pieces, one end of which is connected to the said shafts, while the other end is connected to the main frame of the engine.

487,188. PROCESS OF EXTRACTING METALS FROM REFRACTORY ORES. HENRY R. LEWIS, London, and CHARLES B. PHILLIPS, Chester, England. Filed June 26, 1888. Serial No. 278,236. (No specimens.) Patented in Italy Jan. 2, 1888, XXII, 24,746, XLIX, 136; in England Jan. 10, 1888, No. 421; in Belgium Jan. 10, 1888, No. 84,588; in Spain Apr. 15, 1888, No. 9,124; in Victoria July 11, 1888, No. 5,964; in New South Wales July 12, 1888, No. 774; in Tasmania July 14, 1888, No. 589/10; in South Australia July 18, 1888, No. 1,071; in New Zealand July 26, 1888, No. 3,131; in Portugal Aug. 30, 1888, No. 1,383; in Queensland Nov. 27, 1889, No. 818, and in Austria-Hungary May 18, 1891, No. 46,207 and No. 2,769.



Claim.—The improved method or process of extracting precious metals from auriferous or argentiferous ores, consisting in reducing such ores in a blast-furnace, together with ores of manganese, iron, and lead and with a flux in the requisite proportions, having regard to the amount of manganese, iron, and lead present in the ores to be treated, and then drawing off from time to time through tap-holes situated at different levels the iron or its alloy and the alloy of lead with the precious metals, substantially as hereinbefore described.

487,189. DUST AND MUD CAP FOR VEHICLE-HUBS. JARED MARIS, Cincinnati, Ohio. Filed Apr. 12, 1892. Serial No. 428,862. (No model.)



Claim.—1. The combination, with a point-band for vehicle-hubs, having an offset, shoulder, or other abutment on its inner surface forward of the end of the hub when the band is in place, of a dust and mud cap inserted between the end of the hub and the offset, shoulder, or other abutment and a spring bearing against the end of the hub or other bearing attached to or bearing against it and also bearing against the dust and mud cap to keep it in place by pressing it against the offset.

2. The combination, with a band and a sheet-metal thimble, the latter forming an offset inside the band, of a dust and mud cap adapted to engage said offset and a spring acting in a line with the wall of the band and between that part of the cap that bears against the offset formed by the thimble and the end of the hub, forcing it against the offset, substantially as set forth.

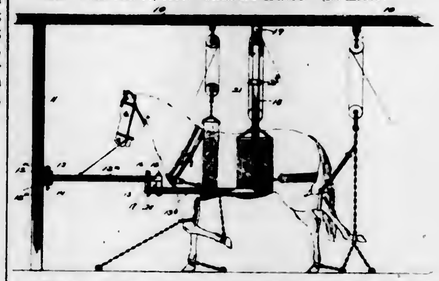
3. The combination, with a point-band, of a sheet-metal cover extending inside the band and so formed as to provide an offset on the inside of the band and supplied with a groove to allow the passage of the lugs on the cap behind the shoulder when turned either way of a dust and mud cap, substantially as set forth.

4. The combination, with a point-band, of a cap and an oil-cup when the cap and oil-cup are held in place by a spring acting substantially as set forth.

5. The combination, with a point-band, of a dust and mud cap when the cap is held by springs locking over a shoulder or offset and supported by a spring and oil-cup, substantially as set forth.

6. The combination, with a point-band dust and mud cap, of an oil-chamber when fitted into a thimble formed in the cap and supplied with a spring to hold it in place, substantially as set forth.

487,190. HORSESHOEING-RACK. SAMUEL M. MARTIN, Sidney, Ohio. Filed Dec. 11, 1891. Serial No. 414,751. (No model.)



Claim.—1. The combination, with the head-block, of the sectional folding rails pivotally connected thereto, the cross-bar connected to the rails at their joint, and the suspending-bars connected with the rear ends of the rails, substantially as shown and described.

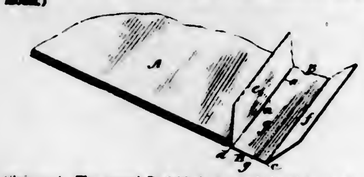
2. The combination, with the forward sections pivoted at their forward ends, of the rear sections, the pivotal bolts and locking-pins, and the suspending-bars connected to the rear ends of the rear sections, substantially as shown and described.

3. The combination, with the forward and rear sections, of the pivotal bolts and locking-pins passed through the meeting ends of said sections, the cross-bar connected to the sections at their juncture, the suspending-bar connected to the rear ends of the rear sections, and the locking-bar secured upon the suspending-bars and adapted to hold the same in place, substantially as shown and described.

4. The combination, with the head-block, of the forward and rear sections pivoted thereto, the pivotal bolts and locking-pins passed through the meeting ends of the sections, the cross-bar connected with

the sections at their juncture, the suspending-bars attached to the rear ends of the rear sections, and the locking-bar secured upon the suspending-bars and adapted to hold them in place, substantially as shown and described.

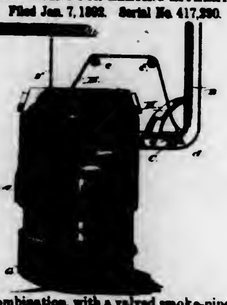
487,191. GUARD FOR BLANK OR OTHER BOOKS. JOHN D. METZ, Dubuque, Iowa. Filed Aug. 20, 1892. Serial No. 443,627. (No model.)



Claim.—1. The guard B, folded at *c* and *d* and having an intermediate portion *f* facing the back edge of the section and an outer folded portion *e*, with its edge facing the bands, the said guard forming sewing and stitching loops at *c* and *d* and being attached at *d* to the book-section and at *c* to the bands, and when thus attached having its broad surfaces on a plane with the outer surfaces of said book-section, substantially as described.

2. The method of forming the guards for books and attaching them to the book-sections and to the bands by twice folding the paper or other material of which each guard is made, then attaching them to the sections by stitching at one of the joints of the guards and attaching them to the bands by sewing at the other joint of the guard, these stitching and sewing operations being effected as follows: First, the guards are sewed to the sections before any portion is turned down, then before the portions which are to form the intermediate portions of the guards are turned down the guards are sewed to the bands, and thereupon the intermediate portions are folded down and the outer portions of the guards folded down upon the said intermediate portions, substantially as described.

487,192. ATTACHMENT FOR HEATING APPARATUS. JUDSON MEAD, Utica, N. Y. Filed Jan. 7, 1892. Serial No. 417,290. (No model.)



Claim.—1. The combination, with a valved smoke-pipe of a heating apparatus, of an auxiliary tapering flue or pipe communicating with the combustion-chamber and with the smoke-exit pipe beyond the valve therein, whereby the products of combustion are carried through said auxiliary tapering flue and the draft reduced when the smoke-exit pipe is closed by the valve therein, substantially as described.

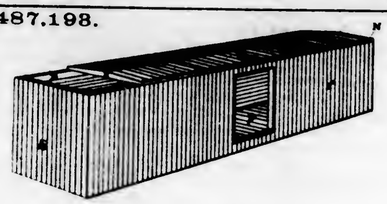
2. The combination, with the smoke-pipe of a heating apparatus, having a damper, of a tapering pipe or flue connecting the combustion-chamber of the apparatus with the smoke-pipe beyond the damper therein, substantially as described.

3. The combination, with a heater and its smoke-exit pipe, of a counterpoised damper in said pipe, an auxiliary pipe communicating with the smoke-exit pipe beyond the damper and with the combustion-chamber of the heater, and connections between the lower draft-door of the heater and the damper, substantially as described.

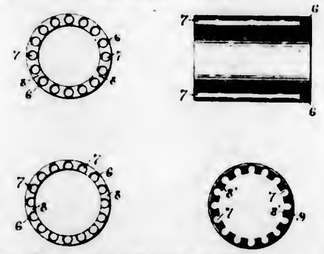
487,198. ROOFING FOR BOX-CARS. WILLIAM S. MORRIS, Grand Rapids, Mich. Filed June 11, 1892. Serial No. 436,263. (No model.)

Claim.—The combination, with the body of the box-car, of a series of boards or planks thickened at the center and tapering toward their opposite ends, said tapering boards or planks being placed together, so as to form an entire sheathing and support for the car and supplying the place of both covering and rafters, thereby leaving the upper and inner ceiling of the car of uniform height from end to end and side to side, substantially as described.

487,198.



487,194. PROCESS OF MAKING CAGES FOR ANTIFRICTION-BEARINGS. FRANK MONNENS, Attleborough, Mass., assignor to the Mossberg Manufacturing Company, same place. Original application filed Dec. 1, 1891, Serial No. 413,659. Divided and this application filed Feb. 24, 1892. Serial No. 422,646. (No model.)



Claim.—The process herein described of forming cages for antifriction-bearings, consisting in boring a series of parallel holes in the walls of a metal sleeve, extending nearly the length of the same, then cutting away the inner surface of said sleeve to a depth beyond the circumference of said bores, and, finally, cutting away the outer surface of the sleeve in a like degree for the whole or a greater portion of its length, as and for the purpose described.

487,195. STEAM-GENERATOR. THOMAS MCBRIDE, Philadelphia, Pa., and EBENEZER FISHER, Kincardine, Canada. Filed Aug. 30, 1892. Serial No. 444,557. (No model.)

Claim.—1. A steam-generator of the character described, comprising a steam drum or receiver, water-tubes connecting with same at their upper or steam ends and extending longitudinally within the fire-chamber, a water-drum to which said water-tubes connect, arranged at the rear of the fire-chamber and transversely thereto, the vertical pipes or chambers communicating with the bottom of the steam-drum at each end and with horizontal pipes at their lower ends, which horizontal pipes or chambers connect with the rear water-drum at its ends, said steam-drum and water-chambers being located wholly without the fire-chamber, substantially as described, and for the purpose set forth.

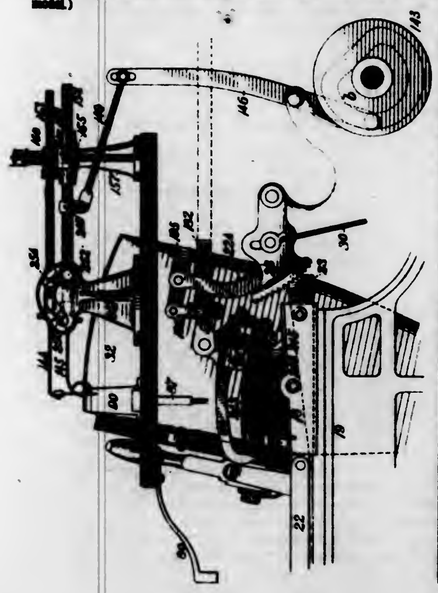
2. A steam-generator of the character described, comprising the steam drum or receiver, the water-drum located at the rear of the fire-chamber and arranged transversely thereto, the water-tubes extending longitudinally of said fire-chamber and connecting with the said water-drum at their lower ends and with the steam drum or receiver at their upper ends, water pipes or chambers extending downward from the steam-drum on each side of the fire-chamber and water pipes or chambers extending along the length of said fire-chamber on each side thereof and connecting, respectively, with the ends of rear water drum or chamber and the downwardly-extending drums, a portion of the water-tubes of the generator being located within the fire-chamber proper while the other portion is arranged within the path of the flame on leaving the fire-chamber, substantially as described, and for the purpose set forth

3. In a steam-generator of the character described, the combination, with the steam-drum, of water-tubes connected therewith at their discharge ends and at their lower ends with a water-drum, water-chambers connecting the steam-drum with the water-drum, and a splash-plate located within the said steam-drum having its upper edge secured to the top of the drum and its lower edge to the bottom of the same and extending down in front of the discharge-openings of the water-tubes and over the level of the water in said drum, substantially as described, and for the purpose set forth.

4. The combination, in a steam-generator, of the steam drum or receiver having the water-tubes connected therewith and water-chambers connecting the same with the water-tubes with the combined separator and water-shield located within the said steam-drum extending downward from the top in front of the water-tube openings, thence curved upwardly and arched over the water-level of the drum, said combined separator and shield being secured to the top of the drum at its upper portion and at its bottom to the side or bottom of the drum, substantially as described.

5. A steam-generator comprising a steam drum or receiver, water-tubes connected therewith, extending longitudinally within the casing of the fire-chamber and connecting with the water-chamber at the rear of the fire-chamber, a partition dividing the collection of water-tubes into an upper and a lower body and directing the flame to the rear of the fire-chamber around the said partition and between the upper body of tubes on its way to the stack, and an enlarged passage for the products of combustion around the said water-tubes at the rear of the fire-chamber, substantially as described, and for the purpose set forth.

487,196. BROOM-SEWING MACHINE. GEORGE F. MCCOMBS, Allegheny, assignor to the Hand Stitch Broom Sewing Machine Company, Limited, Pittsburg, Pa. Filed Feb. 26, 1892. Serial No. 422,530. (No model.)

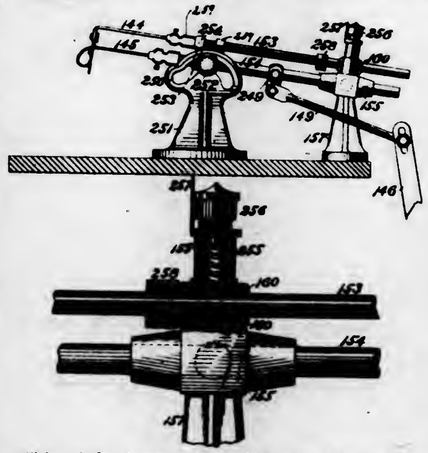


Claim.—1. In a broom-sewing machine, the combination of a pivotally-mounted reciprocating broom vise or clamp and a brake operative on said broom vise or clamp independent of the reciprocating mechanism thereof for controlling the movements of the vise, substantially as set forth.

2. In a broom-sewing machine, the combination of a pivotally-mounted broom vise or clamp and movable past a vertical plane passing through the pivotal point thereof, and a spring-actuated brake adapted to have an increasing frictional bearing on the broom-vise as the latter moves forward from a vertical position, substantially as set forth.

3. In a broom-sewing machine, the combination of a pivotally-mounted broom vise or clamp, a slide having a flexible support at one end and a spring-support at the opposite end and adapted to bear against the vise or a projection therefrom, substantially as set forth.

487,197. BROOM-SEWING MACHINE. GEORGE F. MCCOMBS, Allegheny, assignor to the Hand Stitch Broom Sewing Machine Company, Limited, Pittsburg, Pa. Filed July 23, 1892. Serial No. 441,505. (No model.)



Claim.—1. In a broom-sewing machine, the combination of the reciprocating guide-rods 153 and 154, connected with the capacity of a limited range of independent horizontal movement, a standard provided with a cam-slot, and a pin on the rod 154, projecting into said slot, whereby a vertical movement is imparted to the rods during their back and forth movements, substantially as set forth.

2. In a broom-sewing machine, the combination of reciprocating guide-rods 153 and 154, connected with a capacity of a limited range of independent horizontal movement, a sectional clamp surrounding the rod 153, the rod 153 being actuated by the rod 154, a spring for forcing the clamp against said rod, a screw-plug for regulating the tension of the spring, and a resilient finger for locking the plug as against rotation, substantially as set forth.

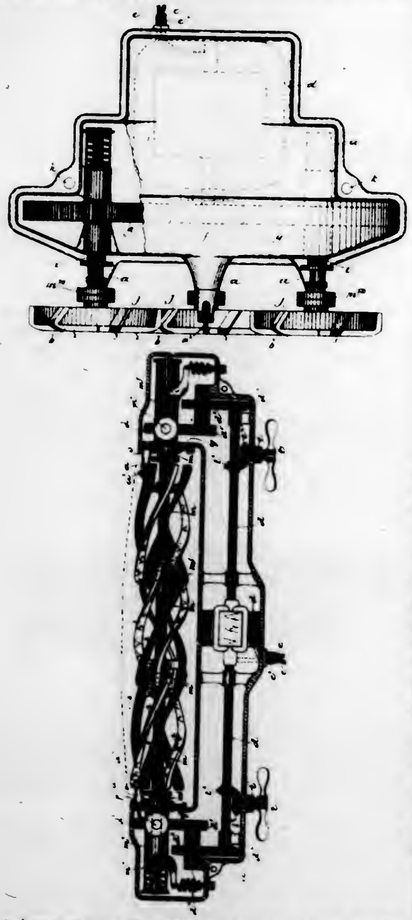
487,198. APPARATUS FOR CLEANING SHIPS' BOTTOMS. JOHN J. MCCUTCHAN, Lynn, Mass. Filed Mar. 26, 1892. Serial No. 426,740. (No model.)

Claim.—1. In an apparatus for cleaning the bottoms of ships, the combination of a portable frame or holder adapted to be moved upon the surface of a ship's hull, a movable cleaning device on said frame, a motor carried by the frame and connected with said cleaning device, and a propeller driven by said motor and arranged to act on the water supporting the hull and thereby press the cleaning device inwardly against the hull, as set forth.

2. An apparatus for cleaning the bottoms of ships, the same comprising in its construction a frame adapted to be moved upon the surface of a ship's hull, a series of rotary cleaning devices journaled in bearings on said frame, an electric motor supported by the frame, connections between the motor and the shafts of the cleaning devices, and propeller blades forming parts of said cleaning devices and adapted to force the latter toward the hull, as set forth.

3. An apparatus for cleaning the bottoms of ships, the same comprising in its construction a frame adapted to be moved upon the surface of a ship's hull, a series of rotary cleaning devices journaled in bearings on said frame, an electric motor supported by the frame,

connections between the motor and the shafts of the cleaning devices, propeller-blades forming parts of said cleaning devices and adapted to force the latter toward the hull, and projections on the frame adapted to limit the approach of the cleaning devices toward the surface of the hull, as set forth.

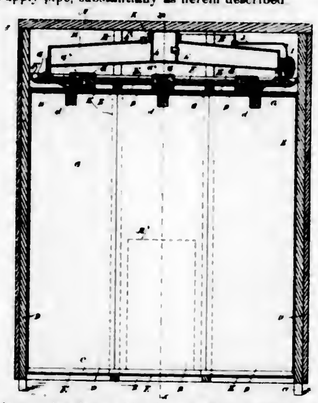


4. In an apparatus for cleaning the bottoms of ships, the combination of a portable frame or holder, a movable or rotary cleaning device on said frame, an electric motor supported by the frame, a sectional shaft connecting the motor with the cleaning device, and flexible couplings connecting the parts of said shaft, whereby the cleaning device may be turned or oscillated independently of the motor, as set forth.

487,199. REFRIGERATOR. ALBERT MCDOWELL, Selma, Cal., assignor of one-half to John A. Stroud, same place. Filed May 4, 1892. Serial No. 431,834. (No model.)

Claim.—1. In a cooler, the combination of an outer casing, an inner chamber separated therefrom to form encircling air-spaces, absorbent coverings wrapped about the inner chamber and exposed to the air-spaces, a trough suspended above and exterior of the chamber, a feed-water vessel having an adjustable discharge-pipe leading to the trough, and the independent capillary conductors or pieces G, arranged around the trough, each having one end dipping into the trough and the other end carried downward into contact with the absorbent covering on the inner chamber, substantially as herein described.

2. In a cooler, the combination of an outer casing, an inner chamber separated from said outer casing by encircling air-spaces, absorbent coverings wrapped about the inner chamber and exposed to the air-spaces, a trough for water in the upper portion of the cooler above and exterior to the inner chamber, independent absorbent pieces having one end resting within the water of the trough and the other end on the exterior of the absorbent coverings of the inner chamber, an air-tight water-feed vessel above the trough, and an adjustable pipe leading from said vessel and entering the water-trough, whereby the flow of water to the trough is automatically cut off and effected as its level in the trough rises above and falls below the exit of the supply-pipe, substantially as herein described.

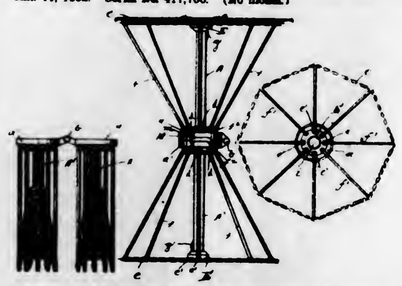


3. In a cooler, the combination of an outer casing, an inner chamber separated from said outer casing by encircling air-spaces, absorbent coverings wrapped about the inner chamber and exposed to the air-spaces, the trough for water about the top of the inner chamber, the absorbent pieces G, resting in the trough and on the absorbent coverings of the inner chamber, the air-tight water-feed vessel above the trough, the hose leading therefrom and having its outer end resting in the trough, and means for lifting and lowering the outer end of said hose, substantially as herein described.

4. In a cooler, the combination of the outer casing, the inner chamber separated therefrom and having its exterior covered with absorbent material, a water-supply trough above and independent of the inner chamber, and capillary conductors therefrom consisting of the independent pieces G, having one end dipping into the trough and the other end carried downward into contact with the absorbent covering, an air-tight water-feed vessel, and a hose therefrom to the trough, substantially as herein described.

5. A cooler consisting of an inner and outer chamber with intervening air-spaces, a covering of absorbent material upon the exterior of the inner chamber, an air-tight water-feed vessel in the upper portion of the outer chamber and above the inner chamber, a trough carried by the water-vessel and a hose from the water-vessel for delivering water to the trough, and capillary conductors having one end dipping into the trough and their opposite ends carried into contact with the exterior covering of the inner chamber, substantially as herein described.

487,200. FOLDING STOOL. ANDREW SMITH, Salem, Ohio. Filed Jan. 11, 1892. Serial No. 417,700. (No model.)



Claim.—1. In a folding stool, the combination of the tubes A A', having heads upon their adjacent ends, said heads being hinged together at one side, pivoted supports, means for operating said supports when the stool is to be extended for use or folded, a tube J within one of said tubes, said tube J having aligned slots, a pin passing loosely through said slots in tube J, whereby the latter may drop by gravity so as to partially project within the other of said first-mentioned tubes, and a spring-latch engaging said heads.

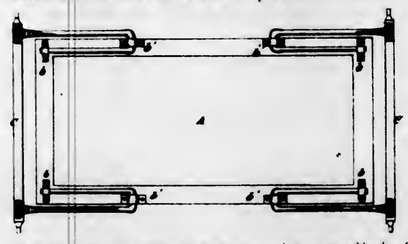
2. In a folding stool, the combination of the tubes A A', heads on the adjacent ends of said tubes, said heads being hinged together at one side, a tube J within one of said first-mentioned tubes, said tube J having aligned slots, a pin passing loosely through said slots, movable sleeves on said tubes A A', a series of rods *f'*, projecting from each of said movable sleeves and pivoted at their inner ends thereto, series of supports *f*, each support being pivoted at one end to the outer end of the adjacent rod *f'* and at its opposite end to the head of the adjacent tube, and means for holding said sleeves in position when the stool is extended for use.

3. In a folding stool, the combination of the tubes A A', having heads upon their adjacent ends, said heads being pivoted together at one side, pivoted supports, means for operating said supports when the stool is to be extended for use or folded, a tube J within one of said first-mentioned tubes, said tube J having aligned slots, and a pin passing loosely through said slots, all substantially as described, and for the purposes specified.

4. In a folding stool, the combination, with a tube having a head, a movable sleeve on said tube, supports pivoted to said head, and rods pivoted at their respective ends to said movable sleeve and to said supports, of a rod within said tube and a pawl operated by said rod, said pawl having one end pivoted to said tube, the inner side of its other end loosely secured to said rod, and the opposite side of said other end adapted to project through an opening in said tube into engagement with said sleeve.

5. In a folding stool, the combination, with the tubes A A', having heads on their adjacent ends, said heads being hinged together at one side, movable sleeves on each of said tubes, a series of rods *f'*, projecting from each of said sleeves and pivoted at their inner ends thereto, and rods pivoted at their respective ends to said rods and heads, of means for securing said tubes together when the stool is extended for use, a rod within each of said tubes, and pawls operated by said rods, each of said pawls being pivoted at one end to said tube and having the inner side of its other end loosely secured to the adjacent rod and the opposite side of said other end adapted to project through an opening in the tube into engagement with the adjacent sleeve.

487,201. VEHICLE-SPRING. HENRY TIMKEN, San Diego, Cal. Filed June 25, 1891. Serial No. 397,596. (No model.)



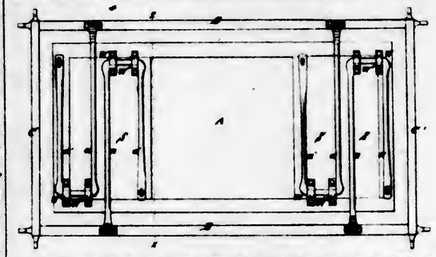
Claim.—1. The combination, with the running-gear and body of a vehicle, of a spring consisting of a wrist portion journaled to said body and flexible arms united to said wrist portion and extending laterally therefrom, the outer end of one of said arms being attached to the said running-gear and the second arm being movably connected to said body, substantially as described.

2. The combination, with the running-gear and body of a vehicle, of a spring consisting of a rigid wrist portion journaled to said body and flexible arms united to said wrist portion and extending laterally therefrom, the outer end of one of said arms being attached to said running-gear and the outer end of the other arm resting on a bearing projecting from the under side of said body, substantially as described.

487,202. VEHICLE-SPRING. HENRY TIMKEN, San Diego, Cal. Filed July 3, 1891. Serial No. 398,402. (No model.)

Claim.—1. The combination, with the body and running-gear of a vehicle, of a spring comprising a wrist portion and flexion-arms extending laterally therefrom and a support on the under side of said body, said wrist portion resting in said support and the outer end of one arm resting against the under side of said body and one of them having a loose connection with its bearing, whereby one end of said arm is free to move in the direction of the length of said arm and one end of said arm being at a distance from said body, the outer end of the other arm being connected to said running-gear, substantially as described.

2. The combination, with the body and running-gear of a vehicle, of a spring consisting of a wrist portion and two flexion-arms extending laterally therefrom and a support fastened to the under side of said body and having an open space larger than said wrist, said wrist resting in said open space, the outer end of one of said arms being against the under side of said body and the outer end of the other arm being connected to said running-gear, substantially as described.



3. A vehicle-spring consisting of a wrist having large rigid ends and an intermediate portion of less thickness, whereby said intermediate portion is susceptible of torsion, and laterally-extending arms integral with said enlarged ends, substantially as described.

487,208. ANTIFRICTION LUBRICATING COMPOUND. JOHN B. WALLACE and JOHN W. STERN, Galion, Ohio, assignors of one-half to Charles A. Allen and Arthur W. Ball, same place. Filed June 20, 1892. Serial No. 436,427. (No specimens.)

Claim.—The herein-described antifriction lubricating composition, consisting of slaked lime, calcined magnesia, pulverized soapstone, chloride of lime, water, and oil, compounded in the manner and in about the proportions substantially as specified.

487,204. PROCESS OF PREPARING VANILLIN. FRITZ ACH, Mannheim, assignor to C. F. Boehringer & Soehne, Waldhof, near Mannheim, Germany. Filed Mar. 22, 1892. Serial No. 425,941. (No specimens.)

Claim.—1. The process which consists in adding sodium chromate to a mixture of sulphuric acid and water and then adding the mixture to isoeugenol benzyl-ether, substantially as set forth.

2. The process which consists in adding sodium chromate to a mixture of sulphuric acid and water, then adding the mixture to isoeugenol benzyl-ether, and then cooling and removing the aldehyde formed as a by-product by filtration, substantially as set forth.

3. As a new compound, vanillin benzyl-ether having the formula hereinbefore stated, which crystallizes in fine needles or transparent plates having a melting-point of 63° to 64° centigrade.

4. In the art of obtaining vanillin, the process which consists in adding hydrochloric acid to vanillin benzyl-ether and allowing the mixture to stand, substantially as set forth.

5. In the art of obtaining vanillin, the process which consists in pouring fuming hydrochloric acid over finely-powdered vanillin benzyl-ether and allowing the mixture to stand, substantially as set forth.

6. In the art of obtaining vanillin, the process which consists in the following steps: first, dissolving eugenol in alcohol, adding thereto alkaline hydrate and a halogen compound of benzyl, and heating the mixture; second, dissolving the resulting eugenol benzyl-ether in alcohol, adding thereto alkaline hydrate, keeping the same at the boiling-point for some time, then partially distilling off the alcohol, and adding water to the residue; third, adding to the resulting isoeugenol benzyl-ether a mixture of sodium chromate, sulphuric acid, and water, and, finally, adding hydrochloric acid to the resulting vanillin benzyl-ether, substantially as set forth.

487,205. ISOEUGENOL BENZYL-ETHER AND PROCESS OF PREPARING THE SAME. FRITZ ACH, Mannheim, assignor to C. F. Boehringer & Soehne, Waldhof, near Mannheim, Germany. Filed Oct. 7, 1892. Serial No. 448,145. (No specimens.)

Claim.—1. The process which consists in dissolving eugenol benzyl-ether in rectified spirits, adding thereto alkali hydrate, and keeping the whole at a boiling-point for some time, substantially as set forth.

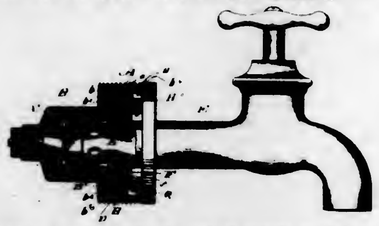
2. The process which consists in dissolving eugenol benzyl-ether in rectified spirits, adding thereto caustic potash, and keeping the same at the boiling-point for from sixteen to twenty-four hours, substantially as set forth.

3. The process which consists in dissolving eugenol benzyl-ether in rectified spirits, adding thereto alkaline hydrate, and keeping the mixture at the boiling-point for some time, then partially distilling off the alcohol, and adding water to the residue, substantially as set forth.

4. The process which consists in dissolving eugenol benzyl-ether in alcohol, adding thereto alkali hydrate, keeping the mixture at the boiling-point for some time, then partially distilling off the alcohol and adding water to the residue, and finally purifying the resulting iso-eugenol benzyl-ether, which is a yellowish-brown crystalline mass, by pressing and recrystallizing from alcohol, substantially as set forth.

5. As a new compound, isoeugenol benzyl-ether having the formula hereinbefore stated, crystallizing in fine felted needles, and having a melting-point of 58° to 59° centigrade, substantially as set forth.

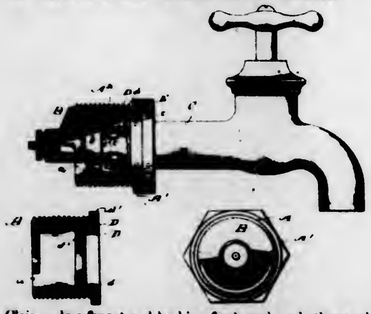
487,206. FAUCET AND BUSHING. MARK ANTHONY, Berkeley, assignor to the Golden Gate Safety Faucet Company, San Francisco, Cal. Filed Jan. 16, 1892. Serial No. 418,300. (No model.)



Claim.—1. The combination, with the bushing having in its interior wall two sets of oppositely-inclined ways or grooves, of the shell having the valve seating in said bushing and the lock-nut or ring for holding said shell in place and formed with lugs engaging one set of said ways or grooves of the faucet, having the lugs formed thereon adapted to engage the other set of said ways above the outer end of said shell, substantially as specified.

2. In a faucet and bushing device for barrels and other packages, the combination, with the shortened valve-shell, the valve, the lock-ring for said shell and the faucet, of the exteriorly-threaded bushing in which said shell seats, said bushing having therein above the end of the shell a double set of inclined ways or grooves, one of which is engaged by said lock-ring and the other by lugs or projections on said faucet, substantially as specified.

487,207. FAUCET AND BUSHING. MARK ANTHONY, Berkeley, assignor to the Golden Gate Safety Faucet Company, San Francisco, Cal. Filed Jan. 30, 1892. Serial No. 419,763. (No model.)

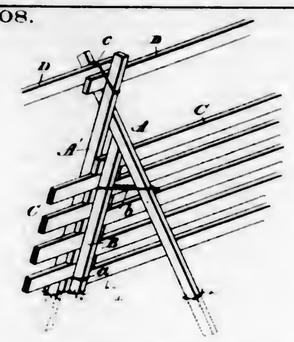


Claim.—In a faucet and bushing for barrels and other packages, the short cylindric bushing A, having a valve-port in its inner end, a lap sector-valve working on the inner end of said bushing and controlling said port, the interior surrounding flange near the outer end of said bushing, and the inclined raised way, in combination with a faucet adapted to enter said bushing into engagement with the stem of said valve and form a joint with said flange, substantially as specified.

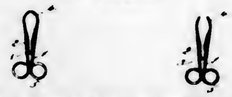
487,208. FENCE. WILLIAM ARTHUR, Dolphus, Ohio, assignor of one-half to Richard R. Arthur and William G. Jones, same place. Filed May 26, 1892. Serial No. 434,453. (No model.)

Claim.—In a fence, the combination of the posts A and A', a shorter post B, having the upper end thereof beveled, said post being adapted to bear against the post A beneath the upper crotch of the fence, said short post being secured at its lower end to the post A' and to the post A, rails adapted to be maintained in position between the posts A' and B, and a rider supported by the posts A and A' above the rails, said rider being secured by a loop, substantially as shown, and for the purpose set forth.

487,208.

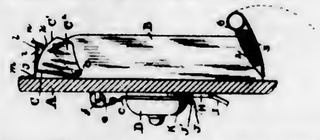


487,209. HOOK AND EYE. CHARLES A. BRYANT, Wakefield, Mass., assignor to Alfred A. Wright, New York, N. Y. Filed May 25, 1892. Serial No. 434,317. (No model.)



Claim.—In a self-retaining hook and eye, a hook having a wedge-shaped portion 2, outward bends 4, and attaching-loops 5, in combination with the spring-eye 6, having the cross-piece 7, for engagement by the hook, suitable attaching-loops, and free-spring ends 8 inside the eye, abutting against said cross-piece and adapted to press inward toward the sides of the hook when the latter is in engagement with said cross-piece, substantially as set forth.

487,210. HOUSE-DOOR LETTER-BOX. CHARLES R. CALVERT, Portsmouth, Va., assignor of one-half to David R. Creecy, Jr., same place. Filed July 12, 1892. Serial No. 439,741. (No model.)



Claim.—1. The combination of a box having a pivoted lid, a gong having a spring-held actuating slide-piece, a flexible connection between said slide-piece and the lid of the box, and an automatic catch to hold said lid open.

2. The combination of a box having a pivoted lid with a lug thereon, a pivoted drop-hook arranged to ride upon said lug and take over the same, a gong having a spring-held actuating slide-piece, and a flexible connection between said slide-piece and the lid of the box.

3. The combination of a box having a movable lid, a gong having an actuating slide-piece which is connected with the lid of the box, a sign, a flap-cover for said sign, a spring-catch for holding said cover over the sign, and suitable connections between the said spring-catch and the slide-piece of the gong.

4. The combination of a box having an outlet-door, a lock for holding said door closed and having a turning piece with a keyhole through it, a movable safety-plate to cover said keyhole, and an alarm device connected with said safety-plate.

5. The combination of a box having an outlet-door, a lock comprising a lever with a hooked end to engage a shoulder on said door, and a turning disk connected with said lever and having a keyhole, a safety-plate to cover said keyhole, and an alarm device connected with said plate.

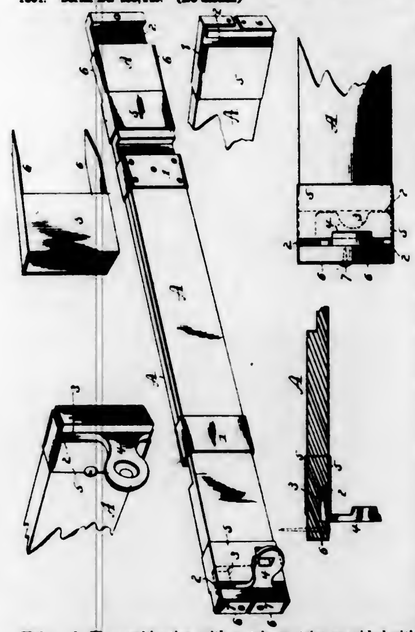
6. The combination of a box having a movable lid and an outlet-door, an alarm device operated by the said lid, a lock for holding the door closed, and means to release the door, said means connected with the lid of the box.

7. The combination of a box having a pivoted lid and a hinged outlet-door, an alarm device operated by said lid, a lock comprising a lever having an end which engages the hinged door, and a disk connected with said lever and having a keyhole through it, and a sliding safety-plate to cover said keyhole and connected with the pivoted lid, substantially in the manner described.

8. The combination of the box having dowaward-extended sides with beveled edges, and a spring-actuated hinged frame having side arms under the beveled edges of the box sides and provided with rounded ends which bear against the outside of the box.

9. The combination of the box having dowaward-extended sides with beveled lower edges, a hinged frame having side arms with rounded ends which bear against the front of the box and also provided with a crank-arm, and a leaf-spring bearing on said crank-arm, in the manner and for the purpose described.

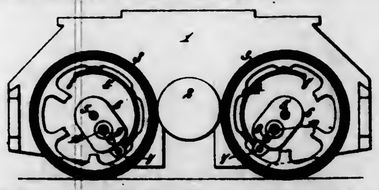
487,211. CURTAIN-SHADE HOLDER. CHARLES R. DODD, Williamsport, Pa., assignor to George Stiger, same place. Filed Aug. 22, 1891. Serial No. 403,445. (No model.)



Claim.—1. The combination, with a strip or strips provided with grooves or recesses formed entirely within the body thereof, adapted each to receive the shank of a curtain-roller bracket and form outer and inner walls for the latter, of bands loosely mounted on the strip or strips whereby they are adapted to be slid into a position to overlap said shanks and hold them within the recesses, substantially as set forth.

2. The combination, with a strip or strips provided at or near their outer ends with recesses adapted to receive the shanks of curtain-roller brackets, of bands surrounding the strip or strips and constructed to slide over the shanks of the brackets, whereby the latter are held firmly in place within the recess, said bands provided with projecting ends at their outer edges in position to be bent around and secured to the ends of the strip or strips, substantially as set forth.

487,212. CARPET-SWEEPER. WALTER J. DREW, Grand Rapids, Mich., assignor to the Bissell Carpet Sweeper Company, same place. Filed Dec. 31, 1891. Serial No. 416,694. (Model.)



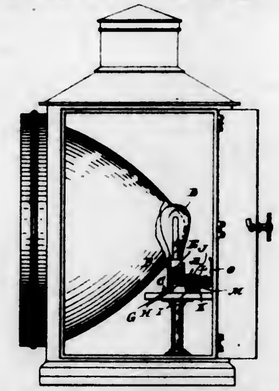
Claim.—1. The combination, with a sweeper-case, a brush-shaft, a drive-wheel, and a spring for pressing the drive-wheel against the brush-shaft, of a stop independent of the brush-shaft, which holds the spring under tension, substantially as described.

2. The combination, with a sweeper-case, a brush-shaft, a drive-wheel, and a spring for pressing the drive-wheel against the brush-shaft, of a stop device independent of the brush-shaft, comprising a plate connected with the drive-wheel and the spring, and a pin or screw for maintaining the spring under tension, substantially as and for the purposes described.

3. The combination, with a sweeper-case, a brush-shaft, a drive-wheel, and a spring for pressing the drive-wheel against the brush-shaft, of a slotted plate connected with the drive-wheel and spring and a pin extending through the slotted portion of the plate and engaged with the sweeper-case for maintaining the spring under tension, substantially as and for the purposes described.

4. The combination, with a sweeper-case, a brush-shaft, a drive-wheel, and a spring for pressing the drive-wheel against the brush-shaft, of a plate connected at one end with the spring and provided at the opposite end with a journal on which the drive-wheel is mounted and a pin which supports the plate on the sweeper-case for maintaining the spring under tension, substantially as and for the purposes described.

487,213. INCANDESCENT-LAMP SOCKET. CHARLES R. ELLIOTT, Boston, Mass., assignor to the Revere Rubber Company, same place. Filed Aug. 8, 1892. Serial No. 442,430. (No model.)



Claim.—An electric-lamp socket having the rigid body A and the contact-poles E F molded permanently therein and provided with the coupling-contacts I J, rigidly held at one end of the body A in a plane at right angles to that of the pole E, said contacts E F and I J being connected within said body by the wires G, substantially as set forth.

487,214. SEWING-MACHINE. ANDREW EPPLER, Newton, Mass. Filed Dec. 4, 1891. Serial No. 414,390. (No model.)

Claim.—1. In a sewing-machine, the combination, with stitch-forming mechanism, including an oscillating curved needle, of an automatic take-up and mechanism for positively actuating said take-up to alternately take up and let out the thread passing to the needle, said take-up being timed to take up the thread during the forward movement of the needle, and thereby shorten the loop last drawn through the material, as set forth.

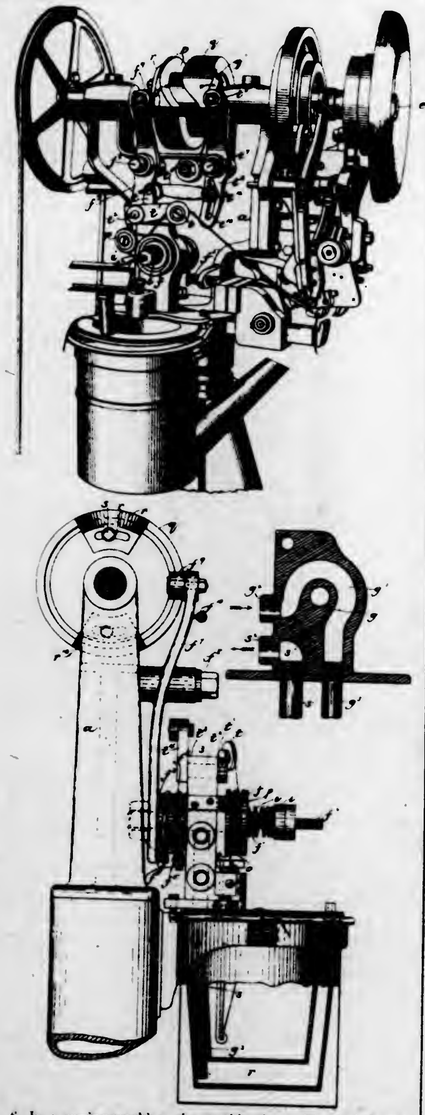
2. In a sewing-machine, the combination, with stitch-forming mechanism, including an oscillating curved needle, of an automatic take-up mechanism for positively actuating said take-up to take up the thread passing to the needle during the forward movement of the needle and to release the thread thereafter, and a thread-locking device adapted to lock the thread between the source of supply and the take-up while the latter is taking up the thread, whereby the take-up is caused to draw the thread from the work and shorten the loop last formed, as set forth.

3. In a sewing-machine, the combination, with stitch-forming mechanism, including an oscillating curved needle, of an automatic take-up arranged to deflect the thread between the source of supply and the work, and mechanism for positively actuating said take-up to cause it to alternately take up and let out the thread passing to the needle, said mechanism being timed to take up the thread when the needle is moving forward and to let out the thread when the needle is moving backward, as set forth.

4. In a sewing-machine, the combination, with stitch-forming mechanism, including an oscillating curved needle, of an automatic take-up arranged to deflect the thread between the source of supply

and the work, mechanism for positively actuating said take-up to cause it to alternately take up and let out the thread passing to the needle, said mechanism being timed to take up the thread when the thread is moving forward to let out the thread and deprive it of tension during a part of the backward movement of the needle and to support the thread and permit the locking of the same during the latter part of the backward movement of the needle, and means for locking the thread while it is being taken up to shorten the loop and during the stitch-setting movement of the needle, as set forth.

5. In a sewing-machine, a tension-wheel having two thread-receiving grooves, combined with a guide adjacent to said wheel, arranged to support a bight or loop of thread between said grooves, as set forth.

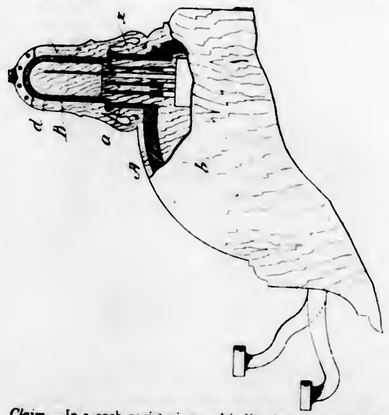


6. In a sewing-machine, the combination, with stitch-forming mechanism, of a tension device for putting a normally-light tension on the thread, a thread-locking device, means for positively locking the latter, first, during a part of the forward movement of the needle while the previously-formed loop is being shortened by the take-up, and, second, during the latter part of the backward movement of the needle, whereby the thread is under a light tension while it is being drawn through the material by the backward movement of the needle and then locked during the stitch-tightening movement of the needle, as set forth.

7. In a sewing-machine, the combination, with stitch-forming mechanism, of a thread-supporting wheel or disk adapted when locked to arrest the thread and when free to permit the movement of the thread, a collar rigidly connected with said wheel, a clamp adapted to engage said collar and normally out of engagement therewith, and means for moving the clamp into engagement with the collar during parts of the forward and backward movements of the needle, and subsequently out of engagement with said collar, whereby the said wheel is alternately locked and released, as set forth.

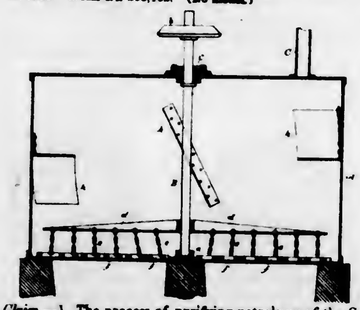
8. In a sewing-machine, the combination, with stitch-forming mechanism, of a thread-supporting wheel having thread-receiving grooves in its periphery, a collar rigidly attached to said wheel, a clamp adapted to engage and lock said collar, a pivoted lever controlling said clamp, a rotating wheel or disk having an adjustable cam adapted to move the lever into position to engage the clamp with the collar, and means for securing said cam at any position to which it may be adjusted, the cam being adapted by its adjustability to regulate or vary the tension or force exerted on the thread by the needle while the thread is locked, as set forth.

487,215. CASH REGISTERING AND INDICATING MACHINE. EDWARD H. FOOTE, Northampton, Mass., assignor to the Boston Cash Register Company, same place. Filed June 14, 1892. Serial No. 436,653. (No model.)



Claim.—In a cash registering and indicating machine, the combination, with the cabinet having at its top the opening for the projection therethrough of the indicator-tags and having the end walls provided with the inwardly-projected panels, of the glass section of inverted-trough shape supported at its ends on said panels, substantially as set forth.

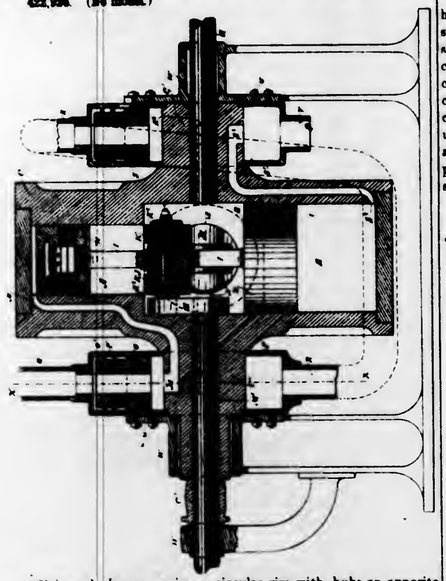
487,216. PURIFYING PETROLEUM. HERMAN FRASCH, Cleveland, Ohio, assignor to the Solar Refining Company, of Ohio. Filed Dec. 10, 1888. Serial No. 293,162. (No model.)



Claim.—1. The process of purifying petroleum of the Canadian and Lima class by distilling the said skunk-bearing petroleum and subjecting the same to the action withis the oil undergoing distillation of the salts of those metals which are precipitable by hydrogen sulphide in acid solution, as the manganates, chromates, borates, sulphates, carbonates, and the like, substantially as described.

2. The process of purifying petroleum of the Canadian and Lima class by distilling said skunk-bearing petroleum and subjecting the same to the action within the oil undergoing distillation of the salts of those metals which are precipitable by hydrogen sulphide in acid solutions and which have non-volatile acid radicals or residues, substantially as described.

487,217. COMPOUND ROTARY ENGINE. JOHN GAMBETTA and CHARLES D. HARRIS, Stockton, Cal. Filed Feb. 26, 1892. Serial No. 422,936. (No model.)



Claim.—1. In an engine, a circular rim with hubs on opposite sides, shafts at opposite sides upon which said hubs rotate, casings surrounding said hubs, steam and exhaust ports entering said casings at opposite sides thereof, a valve fixed in each of said casings, controlling the admission of steam, ports formed in the hub, extending inwardly and connecting with ports or passages in the main rim or casing, cylinders fixed within said casing in pairs opposite to each other, the high-pressure cylinder receiving steam from the inlet-valve through which steam is admitted directly from the boiler and the low-pressure cylinder receiving steam from the valve upon the opposite side, and a pipe connecting the exhaust from the high pressure-cylinder valve with the inlet-opening of the low-pressure valve, whereby steam is transmitted from one to the other, substantially as herein described.

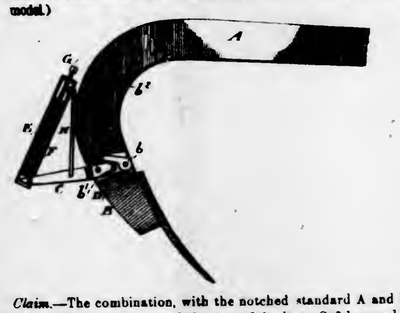
2. In an engine, a rotary casing having hubs projecting and supported upon axes at opposite sides, radial cylinders fixed within said casing opposite to each other in pairs, rods by which the pistons of said cylinders are connected with a common crank-pin which is fixed out of line of their center of rotation, passages connecting one of said cylinders with the hub upon one side of the casing and the opposite cylinder with the hub upon the other side of the casing, segmental valves inclosing each of the hubs with passages through which steam is admitted through the valves and hubs to the respective cylinders and other passages through which steam is exhausted from each of the cylinders after a half-revolution has been completed, and a pipe connecting the exhaust-passage of the initial cylinder with a supply-passage of the second or low-pressure cylinder, substantially as herein described.

3. In an engine, a circular casing having radial cylinders fixed within its rim, hubs projecting from its ends and surrounding shafts which form its center of rotation, a crank-pin fixed out of line of this center of rotation and rods connecting the pistons of the cylinders with said crank-pin, a casing surrounding one of the hubs, a segmental valve within said casing through which steam is admitted from the boiler and ports by which it passes from said casing to the high-pressure cylinders, a similar casing and valve surrounding the opposite hub, a pipe connecting the exhaust-passage of the first-named valve with the inlet-passage of the second, whereby the exhaust-steam of the high-pressure cylinders is transmitted to the low-pressure cylinders, and an exhaust-passage by which the steam is discharged from the low-pressure cylinder through its valve and ports, substantially as herein described.

4. A revoluble rim with radial cylinders fixed therein, projecting hubs with ports communicating, respectively, with the oppositely-placed cylinders in the rim, casings surrounding said hubs, having extensions connecting with the steam-supply pipes, segmental valves fitting within said casings and partially surrounding the hubs, said valves having extensions projecting into the extensions of the casings, and packing-rings whereby tight joints are maintained between the valves and the hub, substantially as herein described.

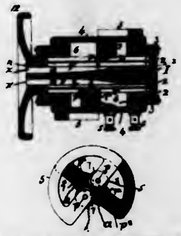
5. In an engine, the combination of a revoluble rim and casing having high and low pressure cylinders fixed radially within it opposite to each other, means for supplying steam to the outer ends of said cylinders and transmitting it from the high to the low pressure cylinder of each pair, pistons reciprocating within the cylinders, the crank-pin F, the connecting-rods having segmental ends inclosing said crank-pin and having tapered outer ends, collars secured upon the crank-pin exterior to the ends of the segments having screw-threads upon their outer peripheries, and rings screw-threaded upon the inside and adjustable upon said collars, said rings having tapered inner ends projecting over and fitting the tapered outer ends of the segments, substantially as herein described.

487,218. TRIP DEVICE FOR CULTIVATORS. JAMES G HALL, Kentland, assignor of one-half to Maggie M. Hall, Monticello, and Laura B. Reed, Idaville, Ind. Filed May 10, 1892. Serial No. 432,477. (No model.)



Claim.—The combination, with the notched standard A and bifurcated plow-holder B, pivoted thereto, of the lever C, fulcrumed to the holder B and carrying the pivoted spring-supported detent *b*, the tube F, the spiral spring E, supported in said tube near the top, and the brace H, connecting the lever and tube, as and for the purpose set forth.

487,219. TELEPHONE. HAMMOND V. HAYES, Cambridge, and WILTON L. RICHARDS, Malden, assignors to the American Bell Telephone Company, Boston, Mass. Filed Sept. 10, 1892. Serial No. 445,558. (No model.)



Claim.—1. A magneto-telephone for two circuits, comprising a double-pole magnet and helices therefor for each circuit, the poles and helices of each magnet being arranged in a position inductively neutral to those of the other.

2. A compound or double-circuit telephone having for each circuit an independent diaphragm and inducing helices and magnet, the poles and helices of each magnet being arranged substantially perpendicular or at right angles to the poles of the other, whereby reciprocal inductive neutrality is secured, substantially as described.

3. A compound or double-circuit magneto-telephone provided with an independent magnet and inducing-coils, and diaphragm for each circuit and having a single and common case and earpiece, each

magnet having its poles and helices so relatively arranged that a straight line uniting its said poles will be substantially perpendicular to a straight line similarly uniting the poles of the other, whereby the two telephone-circuits are made relatively neutral, substantially as described.

4. In a telephone, two double-pole magnets, the poles of each being fitted with inducing helices adapted for connection, respectively, in independent circuits, and each magnet being secured in such a position that each of its poles is substantially equidistant from the two poles of the other.

5. In a compound or double-circuit telephone, the combination of a central non-conducting disk having a shouldered recess on each side to form a vocalizing-chamber and diaphragm-seat, an earpiece secured to the periphery of said disk and connecting with the vocalizing-chambers on the two sides thereof by independent sound-channels, a diaphragm for each recess resting by its edges upon the shoulder thereof, closing-caps or magnet-holding disks for the side recesses of the said central disk adapted to inclose and clamp the edges of the diaphragms, and an independent bipolar magnet and its inducing-coils for each circuit, secured upon and supported by the said caps or disks, respectively, the two magnets being arranged with their poles in close proximity to their respective diaphragms, and substantially at right angles to the poles of the other, substantially as described.

6. In a compound telephone, the combination of two separate bipolar magnets provided with pole-surrounding helices, the respective helices of each being adapted for inclusion in a circuit independent of the other, with means, as indicated, for the angular displacement and adjustment of either magnet relatively to the other, for the purpose of preventing reciprocal inductive effects, as described herein.

487,220. ELECTRODE FOR ARC LAMPS. CHARLES W. HAZELTINE, St. Louis, Mo., assignor to the Hazeltine Electric Company, same place. Filed May 6, 1892. Serial No. 432,005. (No model.)

Claim.—1. An electrode or carbon for arc lamps, provided with a covering materially increasing its life beyond the life of coated carbons of the prior art, substantially as set forth, which covering remains upon and protects the carbon to a point substantially even with the arc, thereby making the carbon burn with a blunt point and preventing substantial penciling or coning of the same at the end and saving the carbon comprised between the ordinarily-coned end and the cylindrical end of the carbon, and which covering does not flake or fuse off in pieces of material size and does not project beyond the electrode or envelop the arc, so as to interfere with the light, but is dissipated by the heat of the arc, so as not to affect the lamp and the light thereof.

2. An arc-lamp electrode or carbon provided with a protective coating by which a single-arc lamp may burn as long as a double-arc lamp provided with the same-sized uncoated carbons of the prior art and by which a double-arc lamp may perform double its duty, substantially as set forth, which coating does not flake or fuse off in pieces of material size and does not project beyond the electrode or envelop the arc, so as to interfere with the light, but is dissipated by the heat of the arc, so as not to affect the lamp and the light thereof.

3. An arc-lamp electrode provided with a coating substantially doubling the life thereof, and which coating does not flake or fuse off in pieces of material size and does not project beyond the electrode or envelop the arc, so as to interfere with the light, but is dissipated by the heat of the arc, so as not to affect the lamp and the light thereof.

4. An arc-lamp electrode provided with a composite metallic coating increasing its conductivity and protecting it, substantially as and for the purpose described.

5. An electrode for arc lamps, provided with a protective coating composed of a plurality of metals.

6. An arc-lamp electrode or carbon provided with a metallic coating protected by a suitable outer covering of different character carried by the electrode.

7. An electrode for arc lamps, having a protective covering composed of a plurality of metallic coatings of different material, for the purpose set forth.

8. An arc-lamp electrode or carbon having an inner metallic coating protected by an outer coating of different material, which outer coating is capable of being oxidized by the heat of the arc, the oxide formed being dissipated by the heat of the arc at a point substantially even with the arc.

9. An electrode or carbon for arc lamps, provided with a plurality of metallic coatings of different materials electro-deposited thereupon, for the purpose described.

10. An electrode or carbon consisting in an ordinary copper-coated carbon provided with a suitable additional coating of different character.

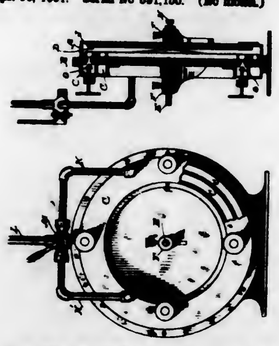
11. An electrode or carbon for an arc lamp, provided with a coating of copper protected by a metallic covering of different material.

12. A protective covering for the electrodes of an arc lamp, made up of a coating of copper and zinc.

13. A protective covering for the electrodes of an arc lamp, consisting of an inner coating of copper and an outer coating of zinc.

14. A protective covering for the electrodes of an arc lamp, consisting of a coating of copper electro-deposited upon the electrodes and a second coating of zinc electro-deposited upon such copper coating.

487,221. ROTARY MOTOR. ROBERT HEWSON, San Francisco, Cal. Filed Apr. 30, 1891. Serial No. 391,155. (No model.)



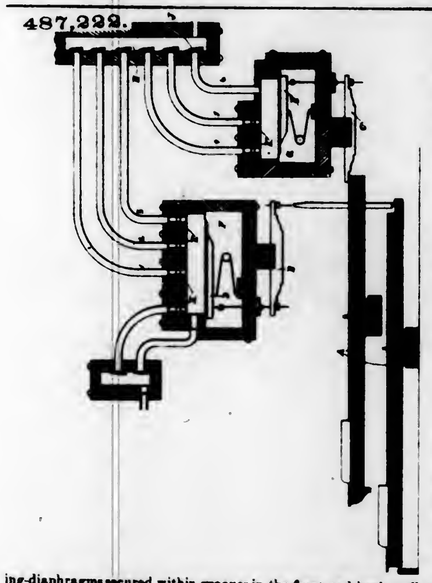
Claim.—In a rotary reactionary engine, a casing having a vertical diaphragm with a wheel-chamber upon one side and independent annular steam-chambers upon the other side, a wheel journaled in the first-named chamber and having a step for the outer end of the shaft, and a screw adjustment thereof, whereby the opposite face of the wheel is regulated with relation to the face of the diaphragm, annular passages extending through the wheel from one side to the other, and a series of oppositely-inclined passages made through the diaphragm from each of the chambers corresponding with the passages in the rim, and valves whereby one or more of these passages may be opened to deliver steam to the wheel at different points in its circumference, substantially as herein described.

487,222. ORGAN. ROBERT HUNTER, London, England, assignor, by mesne assignments, to the Farrand & Votey Organ Company, Detroit, Mich. Filed Jan. 11, 1892. Serial No. 417,764. (No model.) Patented in England June 8, 1885, No. 6,946.

Claim.—1. In an organ, the combination of a key, a swell-chamber divided into compartments, one for each reed, and air-chamber with a valve or pallet therein operated by said key, two or more coupling-tubes leading from said pallet to different compartments of the swell-chamber, and valves over the ends of the tubes and adapted to admit air by the depression of one key to two or more compartments of said swell-chamber, substantially as and for the purpose described.

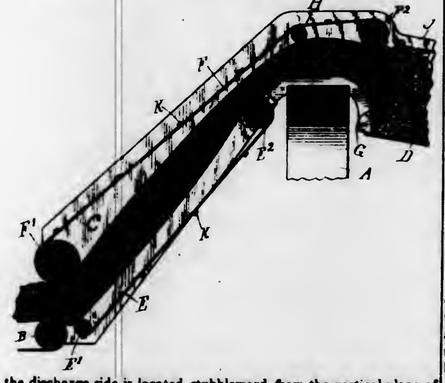
2. In an organ, the combination of a swell-chamber having dividing-diaphragms secured within grooves in the front and back walls of said chamber and two or more coupling-tubes leading into a single compartment of said swell-chamber and operated by different keys, substantially as and for the purpose described.

487,222.



487,223. HARVESTER-ELEVATOR. MAURICE KANE, Chicago, Ill. Filed May 6, 1892. Serial No. 432,026. (No model.)

Claim.—1. In a grain-harvester having the platform conveyer and the binder-deck on opposite sides of the drive-wheel, an elevator which carries the grain from the former to the latter over the wheel, comprising, in combination with suitable support for the grain underneath the same, an endless overhanging carrier-apron whose roller at the discharge side is located stubbleward from the vertical plane of the drive-wheel and a guide for the upper or return ply of such apron, located grainward from said discharge-side roller and within the apron and approximately at the level of said discharge-side roller, whereby the course of the apron is deflected out of the line of the receiving and discharge-side rollers and it is caused to deliver the grain horizontally across the drive-wheel to the stubbleward side thereof, substantially as set forth.

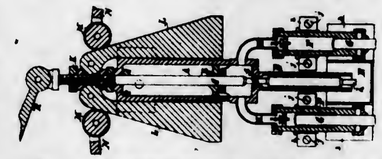


2. In a grain-harvester having a platform conveyer and a binder-deck on opposite sides of the drive-wheel, an elevator which carries the grain from the former to the latter over the wheel, comprising, in combination with the lower endless carrier-apron whose discharge side is located grainward of the vertical plane of the drive-wheel, a stationary bridge or deck extending from the discharge side of said lower elevator-carrier over the drive-wheel to the receiving-side of the binder-deck, and the upper endless-carrier apron whose discharge-side roller is located stubbleward of a fore-and-aft vertical plane of the drive-wheel, and a guide for the upper ply of such upper carrier, located out of line with the receiving-side and discharge-side rollers thereof and substantially as high as the latter of said rollers, whereby the grain is forced horizontally across the wheel to the stubbleward side thereof while lying upon the stationary bridge or deck, substantially as set forth.

3. In a grain-harvester having a platform conveyer and binder-deck located at opposite sides of the drive-wheel, an elevator which carries the grain from the former to the latter over the wheel, comprising, in combination, a suitable support for the grain underneath the same, extending from the discharge side of the platform carrier to the binder-deck, an overhanging endless carrier-apron whose receiving-side roller overhangs the platform carrier and whose discharge-side roller overhangs the binder-deck, and a guide for the upper or return ply of such carrier, which deflects it upward out of a direct course between its two rollers at the part of that course which overhangs the drive-wheel, whereby the grain is forced horizontally across the wheel to the stubbleward side thereof and is delivered in a position to fall vertically onto the binder-deck, substantially as set forth.

4. In combination with the drive-wheel and the binder-deck at the stubbleward side thereof, the lower endless carrier-elevator apron having its discharge side at the grainward side of the drive-wheel and below the level of the top thereof, a stationary bridge or deck extending from the discharge side of said lower apron over the wheel and overhanging the binder-deck, the upper endless carrier-elevator apron having its discharge-roller stubbleward of the fore-and-aft vertical plane of the drive-wheel and provided with a guide for its upper return-ply, located upward from the line of a direct course between the two rollers, whereby the grain is forced horizontally across the wheel to the stubbleward side thereof while lying on the stationary bridge or deck and is delivered in a position to fall vertically onto the binder-deck, substantially as set forth.

487,224. ENGINE-GOVERNOR. WILLIAM H. LAWRENCE, Newburyport, Mass. Filed Mar. 17, 1892. Serial No. 425,332. (No model.)



Claim.—1. The combination, with a cylinder, a piston therein having a piston-rod, a valve to move with the piston, and an apparatus for forcing liquid or air into said cylinder at the same side of the piston as the opening in the cylinder governed by said valve, of a wedge connected with said piston and a thrust-rod, substantially as specified.

2. The combination of a cylinder, a piston therein, and a rod for said piston extending on each side of the piston outward from the cylinder, the part of said rod on one side of the piston being of different diameters or sizes to govern an opening in the end of cylinder through which said rod extends, substantially as specified.

3. The combination of a cylinder closed at one end and having an opening in the other end, a piston in said cylinder, and a rod of different diameters or sizes, connected to said piston and extending through to govern said opening, substantially as specified.

4. The combination of a cylinder, a piston therein having a rod, connected with said piston and extending in both directions therefrom to fit and move in an opening in one end of the cylinder and open and close the opening in the other end of the cylinder, a wedge connected with the piston-rod, to be moved thereby, and a pump to force liquid or air into the cylinder, substantially as specified.

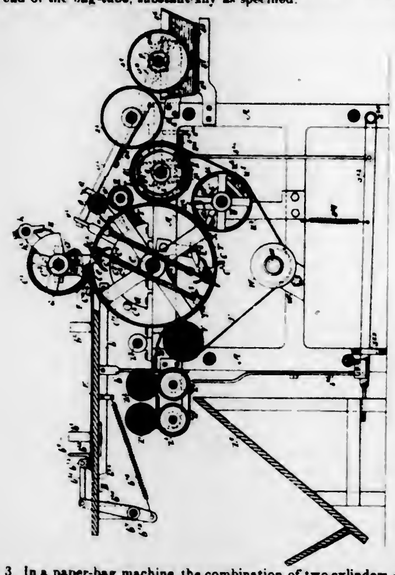
5. The combination of a cylinder, piston, and piston-rod, a wedge connected with the piston-rod, and a thrust-rod to be moved by said wedge, a valve connected with the piston, and an outlet in said cylinder to be governed by said valve, an inlet on the same side of the piston as said outlet, another outlet opened or closed by a cock, and a pump for forcing liquid or air into the cylinder through said inlet, substantially as described.

487,225. PAPER-BAG MACHINE. WILLIAM LIDDELL, Brooklyn, N. Y., assignor to Wells A. Bingham, Bloomfield, N. J. Filed Feb. 11, 1892. Serial No. 421,124. (No model.)

Claim.—1. In a paper-bag machine, the combination of a table, a side guide, a rock-shaft, an arm extending from the rock-shaft and connected with the side guide, a second rock-shaft, and a tappet on

the second rock-shaft coacting with the tappet on the rock-shaft which is connected with the side guide, substantially as specified.

2. In a paper-bag machine, the combination of a cylinder upon which the bag-blank is fed and an upper cylinder having a segment removed, and mechanism operating with said cylinders for opening the end of the bag-tube, substantially as specified.



3. In a paper-bag machine, the combination of two cylinders arranged one opposite the other, one of said cylinders having a portion removed, and means for automatically presenting a bag-blank to such cylinders, and means substantially such as described for opening the mouth of the bag-tube, substantially as specified.

4. In a paper-bag machine, the combination, with a cylinder around which the bag-blank is passed and an opposite cylinder for coacting with the first-mentioned cylinder to separate the sides of a bag-blank and thereby turn in end flaps, of a cylinder for preventing the end flaps from resuming their normal position and tuckers supported on the journals of said cylinder for tucking in the material of the bag-blanks adjacent to the end flaps, substantially as specified.

5. In a paper-bag machine, the combination, with a cylinder around which a bag-blank is fed, of a pasting-roll having an adjustable pasting-segment and mechanism for retracting said segment, substantially as specified.

6. In a paper-bag machine, the combination, with a cylinder around which a bag-blank is fed, of a pasting-roll having a retractable pasting-segment, a toe extending into the shaft of said pasting-roll for retracting said segment, a rod arranged in said shaft for actuating said toe, and a treadle for actuating said rod, substantially as specified.

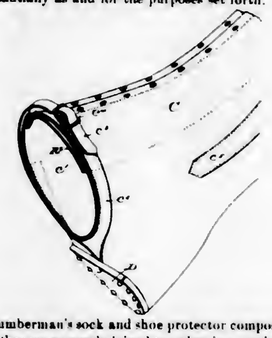
7. In a paper-bag machine, the combination, with a cylinder around which bag-blanks are passed, of a shaft carrying rotarily-adjustable creasers and yielding spring-supporting bearings for said shaft, substantially as specified.

8. In a paper-bag machine, the combination, with a cylinder around which bag-blanks are passed, of a folding-bar, an arm supporting said folding-bar and fulcrumed to a second arm, a cam for moving the folding-bar toward and from the cylinder, and means for oscillating the second arm, substantially as specified.

487,228. LEGGIN. MICHAEL J. MCGUIGAN, Ashland, Wis. Filed Sept. 15, 1891. Serial No. 405,756. (No model.)

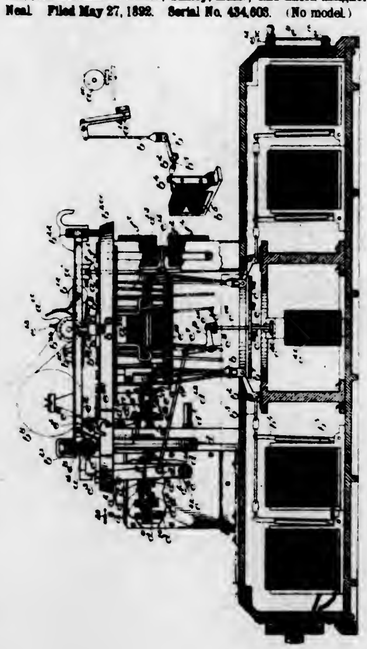
Claim.—1. A lumberman's leggin constructed with a heel-seat adapted to receive and hold the heel of the shoe, an opening in front of the heel-seat for the passage of the foot, a strap passing over the instep and provided with an adjustable fastening for varying the size of said opening to snugly fit around the foot, a longitudinal slit extending from a point at or near said opening to the top of the leg portion, and fastenings for securing and holding the opposite edges of said slit together, substantially as and for the purposes set forth.

2. A lumberman's leggin constructed of two sections of leather or other suitable material and having at the rear portion of the lower end a heel-seat which is adapted to receive and protect the heel of the shoe, and an opening in front of said heel-seat for the passage of the foot, the edge of said opening being provided with a reinforcing-strip adapted to completely encircle the instep and provided with a fastening, said sections being permanently joined at the back and provided in front with suitable fastenings for securing and holding the edges together, one section being provided with a flap which extends underneath the adjacent section so as to close the opening between them, substantially as and for the purposes set forth.



3. A lumberman's sock and shoe protector composed of two sections of leather permanently joined together in a vertical seam at the back and provided in front with suitable fastenings by which their adjacent edges are secured and held together, a flap attached to the inside of one section in front and projecting underneath the adjacent edge of the opposite section so as to close the opening between them, said leggin being formed at the lower end with a heel-seat which is adapted to receive and protect the heel of the shoe and to assist in holding the leggin in place, and an opening for the passage of the foot in front of the heel, the edge of said opening being reinforced by a strap extending over the instep and completely encircling the foot and provided with a fastening by which it is adjusted to and secured upon the foot, gores being cut from the sides of the leggin adjacent to the ankle, and the edges of the openings thus formed being drawn together and joined, thus contracting the leggin about the ankle, substantially as and for the purposes set forth.

487,227. ELECTRICAL TYPE-WRITER. ALBERT D. NEAL, Boston, and HOWARD F. EATON, Quincy, Mass.; said Eaton assignor to said Neal. Filed May 27, 1892. Serial No. 434,603. (No model.)



Claim.—1. In a type-writer system of communication, the combination of the following instrumentalities, viz: a type-writer located at one point or station and provided with character keys or levers, a plurality of circuit-controllers co-operating with the said keys or levers, a type-writer located at a receiving point or station, electro-magnets connected in circuit with the circuit-controllers of the type-writer in the first station, armatures for said electro-magnets operatively connected to the character-levers of the second instrument, a carriage for said second instrument, a movable frame a^{x}, an electro-magnet to move said frame into one position and a second electro-magnet to move the said frame back into its normal or starting position, and independent circuit-controllers at the first station to control the circuit of the frame-moving magnets, substantially as described.

2. In a type-writer system of communication, the combination, with a type-writer located at one station and a plurality of circuit-controllers co-operating with the keys of the said type-writer, of a type-writer located at a receiving-station and having its character-levers operated by movement of the armatures of electro-magnets in circuit with said circuit-controllers, a carriage, a rack-bar on said carriage, a pallet-bar in engagement with said rack-bar, an electro-magnet to operate the said pallet-bar, a motor mechanism to move said carriage in opposite directions, a clutch mechanism to control the direction of movement of the said carriage, cams on the said carriage at its opposite ends, and devices connected to the clutch mechanism and operated by the said cams to actuate the clutch mechanism, substantially as described.

3. In a type-writer system of communication, the combination, with a transmitting type-writer located in one station and provided with normally-open circuit-controllers operated by the keys of the said type-writer, of a receiving type-writer provided with a carriage a^{14}, a movable frame a^{x}, supported thereby, an impression-roller a^{10}, carried by said movable frame, a ratchet-wheel on the said roller, a pawl to engage said ratchet-wheel, a pivoted arm to which said pawl is secured, provided with a roller or projection, and a cam b^{13}, engaged by the said roller or projection to produce rotation of the impression-roller, substantially as described.

4. In a type-writer system of communication, the combination, with a type-writer located at one station and a plurality of circuit-controllers co-operating with the keys of the said type-writer, of a type-writer located at a receiving-station and having its character-levers operated by movement of the armatures of electro-magnets in circuit with said circuit-controllers, a carriage, an impression-roller carried by said carriage, a ratchet-wheel to rotate said roller, an arm provided with a pawl to actuate said ratchet-wheel, and a cam to act on the said arm to produce rotation of the said ratchet-wheel, substantially as described.

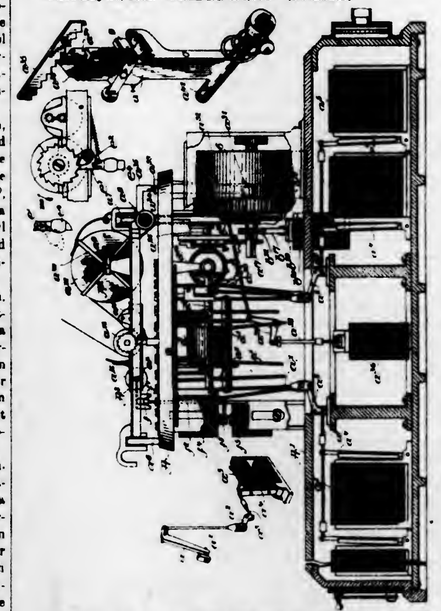
5. In a type-writer system of communication, the combination, with a type-writer located at one station and a plurality of circuit-controllers co-operating with the keys of the said type-writer, of a type-writer located at a receiving-station and having its character-levers operated by movement of the armatures of electro-magnets in circuit with said circuit-controllers, a carriage, a feed mechanism for said carriage consisting of a rack-bar and a pallet-bar provided with a loose and rigid tooth, an electro-magnet having its armature connected to said pallet-bar to operate it, a clock mechanism to move said carriage, cams on said carriage, a shaft having arms adapted to be struck by said cams, and a clutch mechanism connected to the said shaft and adapted to produce movements of the carriage in opposite directions, substantially as described.

6. In a type-writer system of communication, the combination, with a type-writer located at one station and a plurality of circuit-controllers co-operating with the keys of the said type-writer, of a type-writer located at a receiving-station and having its character-levers operated by movement of the armatures of electro-magnets in circuit with said circuit-controllers, a carriage, a feed mechanism for said carriage, consisting of a rack-bar and a pallet-bar provided with a loose and rigid tooth, an electro-magnet having its armature connected to said pallet-bar to operate it, a movable frame a^{x} on said carriage, an impression-roller carried by said frame, a ratchet-wheel on said roller, a pawl-carrying arm and a pawl to engage said ratchet, and a cam to act on said arm and rotate said ratchet-wheel, substantially as described.

7. In a type-writer system of communication, the combination, with a type-writer provided with key-levers, of a plurality of independent circuit-closers located below said key-levers and consisting of a movable member and a fixed member and means to hold the movable member normally out of contact with the fixed member, a type-writer located at a receiving-station and provided with character-levers, a plurality of magnets having their armatures connected to said character-levers, a feed mechanism, a magnet to operate it, having its armature rigidly connected to the said feed mechanism, an impression-roller provided with a ratchet-wheel, an arm provided with a pawl in engagement with said ratchet-wheel, and a cam to act on said arm and rotate said ratchet-wheel, substantially as described.

8. In a type-writer system of communication, the combination, with a type-writer provided with key-levers, of a plurality of independent circuit-closers located below said key-levers and consisting of a movable member and a fixed member and means to hold the movable member normally out of contact with the fixed member, a type-writer located at a receiving-station and provided with character-levers, a plurality of magnets having their armatures connected to said character-levers, a movable carriage, a feed mechanism to move it in one direction, a magnet to operate said feed mechanism, a clock mechanism, and means to restore the movable carriage to its normal position, an impression-roller carried by said carriage, a ratchet-wheel to rotate said roller, an arm on the roller-shaft, a pawl pivoted on said arm, and a cam to act on said arm and rotate the ratchet-wheel when the carriage is restored to its normal position, substantially as described.

487,228. ELECTRIC TYPE-WRITER. ALBERT D. NEAL, Boston, and HOWARD F. EATON, Quincy, Mass.; said Eaton assignor to said Neal. Filed May 27, 1892. Serial No. 434,604. (No model.)



Claim.—1. In a type-writer, the combination, with a movable carriage and a carrier to which said carriage is attached, of a motor mechanism consisting of a main shaft provided with a gear, a segmental gear in mesh with a pinion on a shaft on which the carriage is mounted, and intermediate gearing, substantially as described, to connect the said segmental gear with the gear on the main shaft, and an electro-magnet to rotate the main shaft in a direction opposite to the movement of the said drum, substantially as described.

2. In a type-writer, the combination of the following instrumentalities, viz: a movable carriage, a carrier to which said carriage is attached, a shaft a^{22}, to which the carrier is attached, a motor mechanism to rotate said shaft, an ink-ribbon, shafts upon which the said ribbon is wound, a gear b^{100}, loose on the shaft a^{22}, intermediate gearing to connect the gear b^{100} with gears on the ribbon-shafts, an escapement-wheel d^{18}, fast to the loose gear b^{100}, a disk d^{x}, fast on the shaft a^{22}, a pallet-bar pivoted to the disk d^{x} and provided with oppositely-inclined pawls to engage with said escapement-wheel, a spring to hold one of the said pawls in engagement with the escapement-wheel at a time, a controlling device co-operating with the pallet-bar and consisting of uprights d^{20} d^{21}, a rack-bar to which said arms are secured, a worm engaging with said rack-bar, and gearing to connect the said worm with the gearing operating the feed of the ink-ribbon, substantially as described.

3. In a type-writer, the combination, with a movable carriage and a carrier to which said carriage is connected, consisting of a band and pulleys a^{19} a^{20}, the pulley a^{19} being mounted on a shaft a^{22}, of a motor mechanism consisting of a main shaft provided with a gear, a segmental gear in mesh with a pinion on the shaft a^{22}, a connecting-rod joining said segmental gear to a crank a^{23} on an intermediate shaft

a^{20}, a gear a^{20} on said intermediate shaft, and gearing connecting the gear a^{20} with the gear on the main shaft, substantially as described.

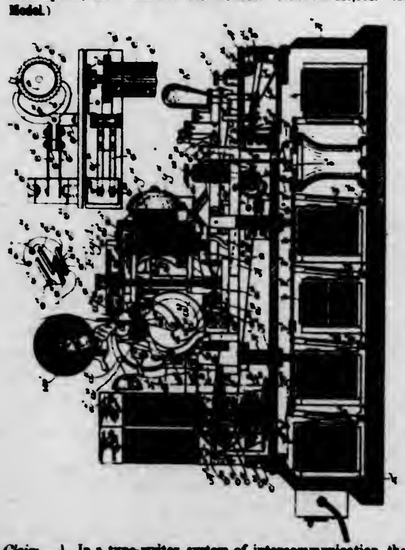
4. In a type-writer, the combination, with a movable carriage and a carrier to which said carriage is connected, consisting of a band and pulleys a^{15} a^{20}, the pulley a^{20} being mounted on a shaft a^{16}, of a motor mechanism to move said carrier, a frame d^{x} on the shaft a^{16}, a pinion d^{15}, and escapement-wheel d^{16}, loose on said shaft, a pallet-bar pivoted to said frame and having oppositely-inclined pawls, and a spring to act on said pallet-bar and keep one of the said pawls in engagement with the escapement-wheel, a bevel-gear d^{9} in mesh with the pinion d^{15}, a shaft d^{8}, on which the said gear is mounted, pinions on said shaft in mesh with pinions on the ink-ribbon shafts d^{3} d^{5}, and a controlling device consisting of a worm-shaft driven from the shaft d^{8}, and a rack or worm bar having posts or studs to engage the pallet-bar, substantially as described.

5. In a type-writer system of communication, the combination, with a type-writer located at one station and a plurality of circuit-controllers co-operating with the keys of the said type-writer, of a receiving type-writer having its character-levers operated by movement of the armatures of electro-magnets in circuit with said circuit-controllers, a carriage, an impression-roller carried by said carriage, a ratchet-wheel to rotate said roller, an arm provided with a pawl to actuate said ratchet-wheel and having a pivoted toe or foot, and a cam to act on the said arm to produce rotation of the said ratchet-wheel, substantially as described.

6. In a type-writer system of communication, the combination, with a transmitting type-writer and a plurality of circuit-controllers co-operating with the keys of the said type-writer, of a receiving type-writer having its character-levers operated by movement of the armatures of electro-magnets in circuit with said circuit-controllers, a carriage provided with an impression roller or surface, a carrier to which said carriage is attached, a motor mechanism to move said carriage, consisting of a winding-drum, a shaft a^{17}, on which said drum is loosely mounted, means to connect the drum to the shaft, intermediate gearing connecting said drum with the carriage-carrier, and a winding-magnet to rotate the shaft a^{17} in a direction opposite to the rotation of the drum, whereby the motor mechanism may be maintained in operative condition, substantially as described.

7. In an electro-mechanical type-writer, the combination of the following instrumentalities, viz: a movable carriage, a carrier to which said carriage is attached, a motor mechanism consisting of a main shaft provided with a drum loose on said shaft, and means to connect the said drum to the shaft, intermediate gearing connecting the said drum with the said carrier, and an electro-magnet to rotate the shaft in a direction opposite to the movement of the drum, substantially as described.

487,229. PRINTING-TELEGRAPH. ALBERT D. NEAL, Boston, and HOWARD F. EATON, Quincy, Mass.; said Eaton assignor to said Neal. Filed Apr. 21, 1891. Renewed Oct. 10, 1892. Serial No. 448,301. (No Model.)



Claim.—1. In a type-writer system of intercommunication, the combination, with a type-writer located at one station and having a character-carrier of the class described, it having a number of characters thereon, a series of electro-magnets, one for each character on the said character-carrier, armatures for said electro-magnets operatively connected to the character-carrier, and an independent circuit-controller for each of said electro-magnets and each consisting of a plurality of circuit-terminals and a movable member co-operating therewith, of a second type writer having a character-carrier of the class described provided with a number of characters thereon, a series of electro-magnets, one for each character, having their armatures operatively connected to the character-carrier of the second type-writer, and an independent circuit-controller for each electro-magnet of the second type-writer, consisting of a plurality of circuit-terminals and a movable member co-operating therewith, substantially as described.

2. In a type-writer system of intercommunication, the combination, with a type-writer located at one station and having its key-levers operatively connected to the armature of electro-magnets and independent circuit-controllers, one for each key-lever, and consisting of a fixed member and a movable member, the latter being adapted to be moved by the said key-levers, of a receiving type-writer having key-levers and electro-magnets in circuit with the circuit-controller of the transmitting type-writer and connected to the said key-levers, circuit controllers governing the circuit of the electro-magnets of the receiving-instruments, one for each electro-magnet, and consisting of fixed and movable members, and means to act on the movable members to change the position of the said circuit-controllers, whereby either instrument may be used as a receiver or transmitter or as a mechanical type-writer, substantially as described.

3. In a type-writer system of intercommunication, the combination of the following instrumentalities, viz: a type-writer provided with a character-carrier of the class described, a hammer or striker co-operating with it, a plurality of key-levers, and intermediate mechanical devices actuated by the key-levers to operate the said character-carrier and hammer, a plurality of electro-magnets having their armatures operatively connected to the said key-levers, a plurality of circuit-controllers operated by the key-levers and consisting of fixed and movable members, and means to act on the movable members of said circuit-controllers to remove them out of the path of movement of the said key-levers, substantially as described.

4. In a type-writer system of intercommunication, two stations or offices, a main-line wire connecting the same, one or more type-writing instruments provided with character-keys and having their character-carriers operatively connected to the armatures of electro-magnets electrically connected to the said stations, and a plurality of circuit-controllers in each instrument, adapted to be operated by the character-keys and consisting of fixed and movable members, and a device to act on the movable members to change the condition of the circuit-controllers to enable the instrument at each station to be used as a transmitter or receiver, substantially as described.

5. A type-writer system of intercommunication containing the following instrumentalities, viz: a series of type-writers, each having a series of electro-magnets adapted to select particular letters or characters to be printed, the said magnets being connected in the same electrical circuit, a series of combination-switches included in the said circuit and having general and special contacts, one switch for each type-writer, whereby when the combination-switches are set on the general contacts a message may be transmitted intelligibly to all the type-writers of the series which are in receptive condition, but when set on the special only those type-writers having like special contacts and in receptive condition on the said like special contacts will receive the message intelligibly, all type-writers not set on like special contacts printing, if in receiving condition, a jumble of letters or an unintelligible message.

6. The combination, with the movable carriage of a type-writer, of an electric motor normally disengaged from the said carriage while the latter is being moved forward, a clutch mechanism operated by the electric motor to couple the said electric motor to the movable carriage, and a circuit-controller to govern the operation of the electric motor and clutch mechanism, substantially as described.

7. The combination, with the movable carriage of a type-writer and a motor mechanism to move it in one direction, of an independent motor mechanism to move the said carriage in the opposite direction, a clutch mechanism normally disengaged from the movable carriage while the latter is moving in one direction, but acted upon by the independent motor mechanism to couple the latter to the carriage, and means to control the operation of the independent motor mechanism, substantially as described.

8. The carriage of a type-writer provided with a rack-bar, a shaft c^{13}, having a gear in operative connection with the said bar, a toothed disk fast on the said shaft, and a gear c^{14}, loose on said shaft and provided with one or more pins or rods extended through the said gear c^{14} and adapted to engage the teeth on the fast disk, combined with an electric motor having a pinion or gear and devices to engage the said pins with the teeth of the said disk when rotated in one direction and to disengage said pins when rotated in the opposite direction, substantially as described.

9. In a type-writer, the following instrumentalities, viz: a series of character-keys, a plurality of independent circuit-controllers adapted to be operated thereby when the said keys are actuated, contact-plates co-operating with said circuit-controllers, and an actuating device to move the said circuit-controllers out of the range of movement of the said keys, substantially as described.

10. In a type-writer, the combination, with the key-levers and a circuit-controller adapted to be operated by said levers, of a depressor or device to remove said circuit-controllers out of the range of movement of the said key-levers and a battery-controlling switch operatively connected to the said depressor to be moved therewith, substantially as described.

11. In a type-writer, the combination, with the key-levers, of electro-magnets having armatures and connecting devices between them and the said key-levers, a plurality of circuit-controllers adapted to be engaged by the key-levers when the latter are operated, contact pens or brushes on said circuit-controllers, a transmitting contact-plate with which one of said pens co-operates, a receiving contact-plate connected in circuit with the electro-magnets, an indicator contact-plate with which the other of said pens co-operates, and an indicator on the type-writer, electrically connected to the indicator contact-plate, substantially as described.

12. The combination, with the movable carriage of a type-writer, of an electric motor normally disengaged from the said carriage while the latter is being moved forward, a clutch mechanism operated by the electric motor to couple the said electric motor to the movable carriage, and a circuit-controller to govern the operation of the electric motor and clutch mechanism, and a second circuit-controller operated by the carriage to govern the circuit of the electric motor, substantially as described.

13. In a type-writer system of intercommunication, the combination, with a series of type-writers having movable carriages, of electromotor mechanisms normally disconnected from the said carriages and clutch mechanisms operated by the electric motors to couple the said motors to the carriages to return the carriages to their starting position, the said electromotor mechanisms being arranged in multiple arc, and a motor-controlling key or switch to control the operation of all the electric motors, substantially as described.

14. In a type-writing system of intercommunication, the combination of the following instrumentalities, viz: a plurality of type-writing instruments having their key-levers operatively connected to the armatures of electro-magnets, a circuit-controller governing the circuit of the electro-magnets of each instrument, a pole-changer on each instrument, a main-line circuit in which the pole-changer is located, and devices to actuate said pole-changer intermittingly, to operate substantially as described.

15. In a type-writer system of intercommunication, the combination of the following instrumentalities, viz: a plurality of type-writers having their key-levers operatively connected to the armatures of electro-magnets, a pole-changer on each instrument, rendered effective by the operation of a key-lever, a main-line circuit in which the said pole-changer is located, a circuit-selecting device, including a series of contacts arranged in a circle and in circuit with the electro-magnets of the instrument, and a rotatable arm having a brush or pen to sweep the said contacts in succession, an electro-magnet in the main-line circuit to control the operation of the said selecting device, a circuit-controller for the circuit of the selecting device, and an electro-magnet in the main-line circuit, governing the operation of the circuit-controller, substantially as described.

16. In a type-writer system of communication, the combination of the following instrumentalities, viz: a plurality of type-writers having their key-levers operatively connected to the armatures of electro-magnets, a selecting-drum, an electromotor to move it, a pole-changer on each instrument and actuated by said drum, a main-line circuit in which the pole-changer is located, a circuit-selecting device containing a circularly-arranged series of contacts in circuit with the electro-magnets of the type-writing instrument, a selecting-arm co-operating with the said contacts, a polarized electro-magnet in the main line, governing the movement of the selecting-arm, a circuit-controller in circuit with the selecting-arm, and an electro-magnet in the main-line circuit to govern the operation around the said circuit-controller to maintain the circuit of the electromotor complete after the said circuit is opened at the circuit-controller, substantially as described.

17. In a type-writer system of communication, the combination, with a main-line circuit, a battery therein, a plurality of type-writers having their key-levers operatively connected to the armatures of the electro-magnets connected in circuit with the battery, circuit-controllers to govern the circuit of the electro-magnets, an indicator on the type-writer in circuit with the battery, a circuit-controller to govern the circuit of the indicator, a transforming-switch on each type-writer to control the battery-circuit, whereby a type-writer may be used as a transmitter or receiver, a call-bell on each type-writer in circuit with the battery, and a switch on the type-writers to control the circuit of the call-bell of each instrument, of an electromotor on each type-writer in circuit with the battery, and connecting devices to return the movable carriage of the said type-writer back to its normal position, and a motor-controlling switch on the type-writer to control the circuit of the motor, substantially as described.

18. In a type-writer system of communication, the combination, with a main-line circuit, a battery therein, a plurality of type-writers having their key-levers operatively connected to the armatures of the electro-magnets connected in circuit with the battery, circuit-controllers to govern the circuit of the electro-magnets, an indicator on the type-writer in circuit with the battery, a circuit-controller to govern the circuit of the indicator, a transforming-switch on each type-writer to control the battery-circuit, whereby a type-writer may be used as a transmitter or receiver, a call-bell on each type-writer in circuit with the battery, and a switch on the type-writers to control the circuit of the call-bell of each instrument, of an electric motor on each type-writer in circuit with the battery to return the movable carriage of the said type-writer back to its normal position, a circuit-breaker for the motor-circuit, automatically operated on the backward movement of the said carriage, and a motor-controlling switch on the type-writer to control the circuit of the motor, substantially as described.

19. In a type-writer system of intercommunication, two stations or offices, a main line connecting them, a battery in each station in circuit with the line-wire, a pole-changer in each station in circuit with the battery, type-writers having their key-levers operatively connected to the armatures of electro-magnets, a circuit-selecting device in each station, to which the electro-magnets are connected, a selecting-drum in each station to operate a pole-changer in said station, a circuit-controller in each station, also operated through the pole-changer, circuit-controllers on each type-writer to control the circuit of the electro-magnets, and character keys or levers to arrest the said selecting devices and pole-changer, to operate substantially as described.

20. In a type-writer system of intercommunication, two stations or offices, a main line connecting them, a battery in each station in circuit with the line-wire, a pole-changer in each station in circuit with the battery, type-writers having their key-levers operatively connected to the armatures of electro-magnets, a segmental circuit-controller in each station, to which the electro-magnets are connected, a selecting-drum in each station to operate a pole-changer in said station, a circuit-controller in each station, operated through the pole-changer, an auxiliary magnet on each machine for capitals or figures, and an unlocking-magnet to break the circuit of the capital or figure magnet, substantially as described.

21. In a type-writer system of intercommunication, two stations or offices, a main line connecting them, a battery in each station in circuit with the line-wire, a pole-changer in each station in circuit with the battery, type-writers having their key-levers operatively connected to the armatures of electro-magnets, a circuit-selecting device in each station, to which the electro-magnets are connected, a selecting-drum in each station to operate the pole-changer in said station, a circuit-controller in each station, also operated through the pole-changer, an auxiliary magnet on each machine for capitals or figures, an unlocking-magnet to break the circuit of the capital or figure magnet; circuit-controllers on each type-writer to control the circuit of the electro-magnets, an electromotor to actuate said selecting-drum in each station, and type-lever keys to stop said selecting-drum, substantially as described.

22. In a type-writer system of intercommunication, the combination, with a plurality of electro-mechanically-operated type-writers provided with a plurality of electro-magnets, each electro-magnet of one instrument being connected in circuit with the corresponding electro-magnet of another instrument, of a combination or individualizing switch for each instrument, said switch consisting of a series of general contacts to which the electro-magnets are normally connected, and a series of specially-arranged contacts with which the said electro-magnets may be connected, whereby special communication may be had between two or more instruments having their electro-magnets connected to the special contacts and at the same time general communication be had between other instruments on the circuit having their electro-magnets connected to the general contacts, substantially as described.

23. The combination, with a type-writer having its key-levers operatively connected to the armatures of electro-magnets, of circuit-controllers for said electro-magnets adapted to be operated by the said key-levers, a circuit-controller actuator moved independently of said key-levers, and a locking device for said armatures, substantially as described.

24. In a type-writer system of intercommunication, two stations, a main line connecting them, a battery in each station in circuit with the line-wire, a pole-changer in each station in circuit with the battery, type-writing instruments having their type-carriers operatively

connected to the armatures of electro-magnets, a circuit-selecting device in each station and to which the said electro-magnets are connected, a selecting device in each station to operate a pole-changer in said station, a circuit-controller in each station, operated through the pole-changer, a step-by-step movement on each type-writing instrument, and means to engage the said movement, to operate substantially as described.

25. In a type-writer system of intercommunication, the combination of the following instrumentalities, viz: a plurality of type-writers, each provided with a type-carrier having a plurality of characters, a plurality of electro-magnets in each instrument, one for each character, on the type-carrier of the said instrument, the said electro-magnets having their armatures operatively connected to the type-carrier of the said instrument, a circuit-selecting device for each instrument, consisting of a series of independent contacts or terminals, to which the electro-magnets of the said instrument are connected, a pole-changer on each instrument, a main-line circuit in which the pole-changer is located, devices to intermittingly move the said pole-changer, and a circuit-controller governed by the operation of the pole-changer to control the circuit of the electro-magnets through the selecting device, substantially as described.

26. The combination, with a circuit-controlling device consisting of a series of independent contacts or terminals and a selecting-arm co-operating therewith, of a series of electro-magnets connected to the said contacts or terminals, there being an independent magnet connected to each contact or terminal, a circuit-closer co-operating with the armature of one of the said magnets, and an auxiliary magnet connected to one of the contacts or terminals and controlled by the selecting-arm to open the circuit closed by the attraction of the said armature, substantially as described.

27. A combination-switch consisting of a plurality of pens or brushes, a series of general and special contacts or buttons, means to change the relative positions of the said brushes or buttons, a series of type-writers having electro-magnets to determine the selection of the different letters, and a series of branch wires f^{30} to connect the different contacts or buttons of the general and special series of contacts or buttons with the wires connecting the magnets of the different type-writers in different stations, substantially as described.

28. A type-writer system of intercommunication, including a series of type keys or levers at one station, a series of magnets, one for each type or key lever, a series of type keys or levers at another station, a series of magnets at said other station, having their armatures operatively connected with the type keys or levers at said station, a circuit between the magnets of the type-writers at the different stations, means to produce a polarized current, a selecting-drum located at one station, a circuit-selecting device at another station and under the influence of said polarized current, said selecting device comprising a series of separate contacts in circuit with the type key or lever magnets at its own station, and a movable brush or pen, and a magnet for said selecting device, the selecting device being adapted to co-operate with said contacts one after another under the influence of said polarized current, substantially as and for the purpose set forth.

29. A type-writer system of intercommunication, including a series of type keys or levers at one station, a series of magnets, one for each type key or lever, a series of type keys or levers at another station, a series of magnets at said other station, having their armatures operatively connected with the type keys or levers at said station, a metallic circuit between the magnets of the type-writers at the different stations, means to produce a polarized current, a selecting-drum located at one station, a circuit-selecting device at another station and under the influence of said polarized current, said selecting device comprising a circularly-arranged series of separate contacts in circuit with the type key or lever magnets at its own station, and a rotatable brush or pen, a magnet for said selecting device, the selecting device being made to travel over the said contacts step by step under the influence of said polarized current, and a combination-switch, including pens and general and special contacts and special wires f^{30}, leading from special contacts and in circuit with the magnets of a type-writer, to operate substantially as described.

30. A line-wire and a series of branch wires combined with a combination-switch composed of a series of pens or brushes, a series of general contacts or brushes, and one or more series of special contacts or brushes, the latter being connected by the branch wires to the line-wire, to operate substantially as described.

31. The combination, with a mechanical type-writer provided with a plurality of key-levers, of a plurality of electro-magnets having their armatures connected to said key-levers, a plurality of circuit-controllers independent of the key-levers and adapted to be operated by the said key-levers when the said type-writer is used as a transmitter, and an actuating device to move the said circuit-controllers out of the path of movement of the said key-levers to permit the said type-writer to be used as a receiver, substantially as described.

32. In a type-writer system of communication, the combination of the following instrumentalities, viz: a plurality of type-writing instruments provided with rack-bars, a plurality of electric motors to move said carriages in one direction and normally disconnected from the rack-bars of the carriages, clutch mechanisms actuated by the motors to couple the said motors to the rack-bars, and a circuit-controller to govern the operation of the electric motors and thereby control the movement of all the carriages in one direction, substantially as described.

33. In a type-writer system of communication, the combination of the following instrumentalities, viz: a type-carrier provided with a plurality of characters and having a horizontal and vertical movement, a series of electro-magnets to effect the horizontal movement of the said type-carrier and a lifting electro-magnet to effect the vertical movement of the said type-carrier, a series of circuit terminals or contacts to which said electro-magnets are connected, a selecting-arm co-operating with the said circuit-terminals, a circuit-closer co-operating with the armature of the said lifting-magnet to maintain closed the circuit of the said magnet, as described, and an auxiliary magnet to open the circuit of the lifting-magnet, substantially as described.

34. The carriage of a type-writer provided with a rack-bar, a shaft c^{13}, having a gear in operative connection with the said rack-bar, a toothed disk fast on the said shaft, a gear c^{14}, loose on said shaft, and a disk loose on said shaft and provided with one or more pins or rods extended through the gear c^{14} and adapted to engage the teeth on the fast disk, combined with a motor mechanism provided with a gear or pinion in mesh with the gear c^{14}, and devices to engage the said pins with the teeth of the disk fast on the shaft when rotated in one direction and to disengage said pins when rotated in the opposite direction, substantially as described.

35. The combination, with a shaft c^{13}, having a toothed disk fast thereon, of a gear loose on said shaft, a disk loose on said shaft and provided with one or more pins or rods extended through the loose gear and adapted to engage the teeth on the fast disk, a motor mechanism provided with a gear or pinion in mesh with the loose gear, and devices to engage the said pin or pins with the teeth of the disk fast on the shaft when rotated in one direction and to disengage said pin or pins when rotated in the opposite direction, substantially as described.

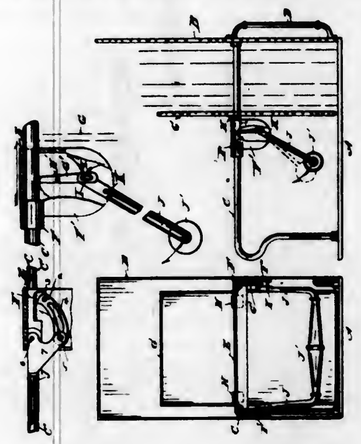
36. In a type-writer, the combination of the following instrumentalities, viz: a feed-roll, a ratchet attached thereto, a pawl in engagement with said ratchet, a plate provided with a guiding groove or passage, a switch-cam normally closing said passage, and intermediate devices in engagement with the said pawl and adapted on the forward movement of the type-writer carriage to enter the guiding-groove and pass under the switch-cam and on the backward movement of the said carriage to pass over or above the said switch-cam to operate the pawl, substantially as described.

37. In a type-writer system of communication, the combination, with a type-carrier provided with a plurality of characters arranged in rows one above the other, of character-levers operatively connected to the type-carrier, electro-magnets having their armatures connected to the said character-levers to actuate them, one or more of said electro-magnets when energized acting to lift the type-carrier, as described, a circuit-selecting device consisting of a series of circuit terminals or contacts, to which the said character-lever-operating electro-magnets are connected, and a selecting-arm co-operating with said terminals, means to move said selecting-arm, a circuit-closer co-operating with the armature of the said lifting electro-magnet to maintain closed the circuit of the said magnet, and an auxiliary magnet, also connected to one of the circuit-terminals and operating to open the circuit closed by the armature of the lifting-magnet to permit the character-carrier to be restored to its normal position, substantially as described.

38. In a type-writer system of communication, the combination, with a type-writer provided with a type-carrier having a plurality of characters, of a carriage, a motor mechanism to move it in one direction, and an electric motor to move it in the other direction, independent electro-magnets to operate said type-carrier, a circuit-selecting device consisting of a series of circuit terminals or contacts, to which the said electro-magnets are connected and to one of which the said electric motor is connected, a selecting-arm co-operating with said circuit-terminals, a circuit-controller connected to said selecting-arm to govern the circuit through said arm, a shunt-circuit for said circuit-controller, and an electro-magnet in circuit with the terminal connected to the electric motor and controlling the shunt-circuit for the circuit-controller, whereby the circuit of the electric motor may be maintained closed after the said circuit is opened at the circuit-controller for the selecting-arm, substantially as described.

39. In a type-writer system of communication, the combination of the following instrumentalities, viz: a type-writer provided with the usual key-levers, electro-magnets to move said key-levers electro-mechanically, circuit-controllers co-operating with the key-levers and consisting of fixed and movable members, a device to act on the said movable members, a transforming-switch to control the operation of the said electro-magnets, and gearing to connect the transforming-switch to the device actuating the movable members of the circuit-controllers, substantially as described.

487,280. PAPER-FILE. WILFRED I. OSMER, Dayton, Ohio. Filed July 30, 1891. Renewed July 15, 1892. Serial No. 440,164. (No model.)



Claim.—1. The combination, with the ways or rods and the sliding bearings and platen or follower of a paper-file, of dogs carried by said bearings and a gravitating handle-lever also carried thereby and engaging with said dogs, the gravitation of the handle-lever throwing the dogs into engagement with the rods or ways in a position which holds them against the back movement of the bearings.

2. The combination, with the rods or ways, the bearings slidable thereon, and the platen or follower of a paper-file, of dogs and a gravitating handle-lever connected with said dogs, the gravitation of the handle-lever throwing the dogs into engagement with the ways or rods and locking the bearings against back movement.

3. The combination, with the ways or rods, the bearings sliding thereon, and a platen or follower of a paper-file, of dogs pivoted to said bearings, and a gravitating handle-lever also pivoted to said bearings, and a connection between the short end of the lever-arms and one end of the pivoted dogs, the normal position of the handle-lever subjecting it to a gravitating action in the longer arms thereof, for the purpose described.

4. The combination, with the ways or rods, the slidable bearings thereon, and a follower or platen of a paper-file, of dogs pivoted to the bearings and a handle-lever also pivoted to said bearings, the shorter arms of said lever engaging through a pin and slot with one end of the dogs, respectively, and the handle-lever arranged to normally tend by gravity to engage the dogs with the ways or rods.

5. The combination, with the ways or rods, the slidable bearings, and the platen or follower of a paper-file, the bearings having depending plates, of a dog pivoted to each plate with its upper end adjacent to the lower side of the rod or way and its lower end slotted, and a handle-lever whose arms are also pivoted to said plates, said arms engaging through a pin with the slots in the dogs and occupying a normal oblique or angular position to a perpendicular, the gravitation of the handle-lever operating to lock the dogs and the elevation thereof to unlock them.

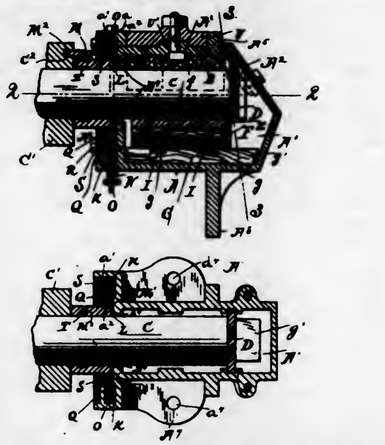
6. The combination, with the ways or rods, the slidable bearings, and the platen or follower of a paper-file, of dogs pivoted to said bearings, a gravitating handle-lever also pivoted to said bearings, and a connection between the dogs and the handle-lever by which the dogs are moved into and out of contact with the ways or rods, the gravitation of the handle-lever effecting the former and the hand manipulation of the lever effecting the latter.

7. The combination, with the ways or rods and the sliding bearings and a platen or follower of a paper-file, of dogs carried by said bearings and adapted at one end to engage with the rods or ways and provided with a slot in the other portion, and a gravitating handle-lever engaging with said dogs through the sliding connection in the slots of the dogs.

8. The combination, with the ways or rods and the bearings and a platen or follower of a paper-file, of dogs pivoted to said bearings, with a slot in one end and adapted at the other to engage with the rods or ways, and a gravitating handle-lever pivoted to the bearings substantially opposite the center of the ways or rods and having projections carrying pins fitted to said slots.

9. The combination, with the rods or ways, the sliding bearings, and the follower or platen of a paper-file, of dogs pivoted to said bearings and a gravitating handle-lever slidingly engaging with said dogs.

487,281. CAR-AXLE BOX. SOREN ROSENTOFT, Cleveland, Ohio. Filed Mar. 4, 1892. Serial No. 423,733. (No model.)



Claim.—1. In a journal-box of the variety indicated, an oil-feeding device located in the oil-chamber of the box and comprising a packing or lubricant-vehicle adapted to be engaged by the journal and secured to a plate or block adapted to rest upon the bottom of the oil-chamber, and a cushion interposed between said plate or block and the top or central portion of the packing or lubricant-vehicle and adapted to hold the latter in contact with the journal, substantially as set forth.

2. In a journal-box of the variety indicated, an oil-feeding device located in the oil-chamber of the box and comprising a packing or lubricant-vehicle adapted to be engaged by the journal, a plate or block to which the packing or lubricant vehicle is secured, said plate or block being adapted to rest upon the bottom of the oil-chamber and terminating at the forward end in a handle, and a cushion interposed between the said plate or block and the top or central portion of the packing and adapted to hold the latter in contact with the journal, substantially as set forth.

3. In a journal-box of the variety indicated, an oil-feeding device located in the oil-chamber of the box, said oil-feeding device comprising a sheet of packing bent approximately to the form of an inverted U in cross-section, the top or central portion of the packing being adapted to be engaged and depressed by the journal and bulged out laterally, substantially as indicated, the sheet of packing at its longitudinal ends being secured to a plate or block adapted to rest upon the bottom of the oil-chamber, and a cushion interposed between said plate or block and the top or central portion of the packing and adapted to hold said packing in contact with the journal, substantially as set forth.

4. In a journal-box of the variety indicated, an oil-feeding device located in the oil-chamber of the box, said oil-feeding device comprising a sheet of packing bent approximately to the form of an inverted U in cross-section, the top or central portion of the packing being adapted to be engaged and depressed by the journal and bulged out laterally, substantially as indicated, the sheet of packing and its longitudinal ends being secured to a plate or block, as at G, adapted to rest upon the bottom of the oil-chamber, a plate or block, as at F, located above the aforesaid plate or block G and below the top or central portion of the sheet of packing, and one or more springs, as at I, interposed between plates or blocks F G and acting in the direction to hold the packing in contact with the journal, substantially as set forth.

5. In a journal-box of the variety indicated, a collar removably attached to and extending rearwardly of the box, said collar being adapted to be mounted upon the journal with the box and connected to the journal, whereby to revolve with the journal, substantially as set forth.

6. In a journal-box of the variety indicated, a collar removably connected with and extending rearwardly of the box, said collar being adapted to be mounted upon the journal with the box and having a rearwardly-projecting lug or member, substantially as and for the purpose set forth.

7. In a journal-box of the variety indicated, a collar removably connected with and extending rearwardly of the box, said collar being adapted to be mounted upon the journal with the box and revolve with the journal and having an internal annular groove filled or adapted to be filled with packing, substantially as and for the purpose set forth.

8. In a journal-box of the variety indicated, the casing whereof is enlarged rearward of the oil-chamber, a collar removably connected with said enlarged portion of the box and adapted to be mounted upon and connected with the journal and revolve with the journal, a wearing disk or plate between the forward end of said collar and the adjacent wall of the enlarged portion of the casing of the box, and suitable means for holding the collar against said wearing plate or disk, substantially as set forth.

9. In a journal-box of the variety indicated, a collar removably connected with the box rearward of the oil-chamber, a chamber in the box surrounding said collar and supplied or adapted to be supplied with packing, said collar being adapted to be mounted upon the journal with the box and revolve with the journal, and suitable means for holding said collar from moving endwise, substantially as set forth.

10. In a journal-box of the variety indicated, a chamber located in the rear portion of the box and supplied or adapted to be supplied with packing to exclude dust and dirt and prevent the escape of oil from the box, a slide located in the lower portion of said chamber, the bottom of the casing of the box being slotted or perforated for the insertion and removal of said slide, and suitable means for manipulating said slide to more or less compress the packing within the chamber aforesaid, substantially as set forth.

11. In a journal-box of the variety indicated, the casing whereof is enlarged rearward of the oil-chamber, a collar removably connected with the enlarged portion of the box and adapted to revolve with the journal, said collar having a lateral annular flange at its forward end, a wearing disk or plate interposed between the forward end of said collar and the adjacent wall of the enlarged portion of the casing of the box, a plate adapted to close the rear end of the box about the collar and rigidly but removably secured to the box, and a gasket interposed between said rigid plate and the lateral annular flange of the collar aforesaid, said rigid plate and gasket being adapted to hold the collar against the wearing plate or disk forward of the collar, substantially as set forth.

12. In a journal-box of the variety indicated, the casing whereof is enlarged rearward of the oil-chamber, a collar removably connected with the enlarged portion of the box and adapted to revolve with the journal, said collar having a lateral annular flange at its forward end, a wearing disk or plate interposed between the forward end of said collar and the adjacent wall of the enlarged portion of the casing of the box, the casing of the box having an inwardly-projecting flange located at the rear and outside of said annular flange on the collar, the chamber thus formed between said annular flange of the collar and the surrounding walls of the casing of the box being supplied or adapted to be supplied with packing, a plate adapted to close the rear end of the box about the collar and rigidly but removably secured to the box, and a gasket interposed between said rigid plate and opposing surfaces of the aforesaid flanges of the casing of the box, said rigid plate and gasket being adapted to hold the collar against the wearing plate or disk forward of the collar, substantially as set forth.

13. In a journal-box of the variety indicated, a plate removably secured to the top of the box, said plate at one side of the box being provided with a boss vertically perforated, substantially as and for the purpose set forth.

14. In a journal-box of the variety indicated, a plate bolted to the top of the box, the top of the main chamber of the box being recessed for receiving the head of the bolt flush therewith, said plate at one side of the box being provided with a boss vertically perforated, substantially as and for the purpose set forth.

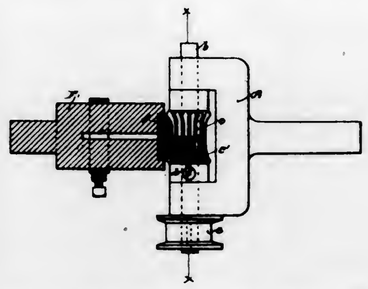
15. In a journal-box of the variety indicated, a plate removably secured to the top of the box, the casing of the box being enlarged, as at a, and having a ridge at the forward portion of the top thereof, as at A^4, and having an upwardly-projecting lug, as at A^5, between parts a and A^3 and adapted to enter a corresponding recess in the under side of the plate aforesaid, said plate at one side of the box being provided with a boss vertically perforated, substantially as and for the purpose set forth.

487,232. IGNITION-CAP FOR CIGARS OR CIGARETTES. Morris R. Sykes, New York, N. Y., assignor of one-third to Jonas Heath, same place. Filed June 2, 1892. Serial No. 435,260. (No model.)

Claim.—1. An ignition-cap for cigars and cigarettes, composed of a combustible sleeve twisted at one end and an ignition-head applied to the twisted end of the same, substantially as set forth.

2. An ignition-cap for cigars and cigarettes, composed of a combustible sleeve open at one end and twisted at the other end, said sleeve being coated at the twisted end by a layer of paraffine or other inflammable material and provided with an ignition-head of a suitable igniting composition, substantially as set forth.

487,233. TOOL FOR MAKING PEARL BUTTONS, &c. Walter H. Taft, Providence, R. I., assignor, by mesne assignments, to the Anchor Pearl Company, same place. Filed July 23, 1891. Serial No. 400,342. (No model.)



Claim.—1. The combination, with a chuck adapted to hold the blank for revolution, of the positively-driven smoothing-cutter arranged at one side of the line of the axis of the chuck and the loose chipping-cutter arranged at the opposite side and made to rotate by pressure against the surface of the revolving blank, substantially as described.

2. The combination, with the chuck adapted to hold the blank, of the cutter-holder adapted for revolution upon its axis, the positively-driven smoothing-cutter arranged at one side of the axis of the holder and the loose chipping-cutter arranged at the opposite side, and means for revolving the cutter-holder, substantially as described.

3. The combination, with a chuck adapted to hold the blank for revolution, of the cutter-shaft, the cutters one of which is tight and the other loose upon the shaft and arranged at opposite sides of the line of the axis of the chuck, and means for revolving the shaft and the attached cutter while the loose cutter is being revolved by contact with the surface of the blank, substantially as described.

4. The combination, with the cutter-holder and the shaft arranged transversely of the axis of the holder, of the cutters one of which is tight and the other loose upon the shaft and arranged upon the shaft at opposite sides of the line of the axis of the holder, and means for revolving the said holder and shaft, substantially as described.

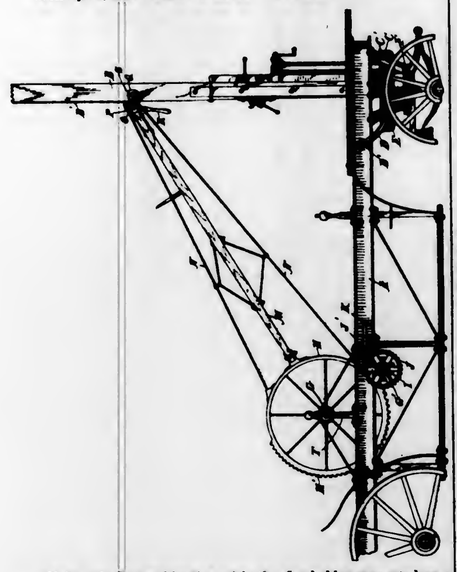
5. The combination, with the chuck adapted to hold the blank for revolution, of the cutter-holder, the shaft arranged transversely of the axis of the holder, the cutters one of which is tight and the other loose upon the shaft and arranged at opposite sides of the line of the axis of the chuck, and means for revolving the shaft and the attached cutter while the loose cutter is being revolved by contact with the surface of the blank, substantially as described.

487,234. METHOD OF MAKING PEARL BUTTONS. Walter H. Taft, Providence, R. I., assignor to the Anchor Pearl Company of Portland, Maine, same place. Filed Jan. 18, 1892. Serial No. 418,483. (No model.)

Claim.—1. The method of working in pearl, shell, or similar material, which consists in first chipping or roughening the surface of the same and then cutting away the said chipped or roughened surface, as set forth.

2. The method of working in pearl, shell, or similar material, which consists in first chipping or roughening the surface to different depths and then cutting away the higher portions of the chipped or roughened surface, as set forth.

487,235. FIRE-LADDER. Richard Brayton, Grand Rapids, Mich., assignor to the Michigan Fire Ladder and Engine Company, same place. Filed Apr. 9, 1892. Serial No. 428,499. (No model.)



Claim.—1. In combination with the fire-ladder supported on a suitable vehicle, a track or way upon said ladder, a lever-arm adapted to raise and lower said ladder, and suitable detachable connections between the free end of said lever-arm and the way upon said ladder, whereby the arm is attached to the ladder in raising and lowering the same and detached from said ladder when the same has been raised to a perpendicular position, substantially as and for the purpose described.

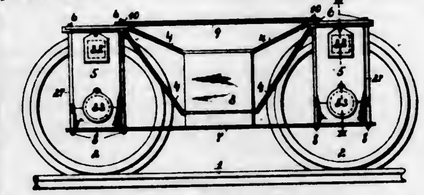
2. The combination of the lever-arm, the ladder provided with ways, and detachable connections upon the free end of the said lever-arm, whereby the lever-arm may be attached to the ladder in raising and lowering the same and detached therefrom when said ladder is in use, substantially as described.

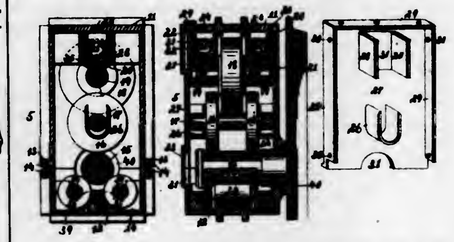
3. The combination of the ladder provided with ways, as B', and lever-arm, as M, provided with friction-rollers, which said rollers may be detached by revolving said shaft, lever-supporting wheel, as H, supported upon the shaft-pinion, as I, engaging with spur-wheels, as J, and pinions, as J', and levers K, substantially as described.

487,236. JOURNAL-BEARING. Clarence A. Burton, Kansas City, Kans., assignor of two-thirds to Loren G. Rowell, same place, and Alexander R. Klebba, St. Louis, Mo. Filed Feb. 3, 1892. Serial No. 420,209. (No model.)

Claim.—1. The combination of the boxing 11, having blocks 20 inclosed therein, roller 18, having a shaft 19, on which said blocks rest, rollers 16, having a shaft 17, on which said roller 18 rests, and an axle on which the rollers 16 rest for the purpose of supporting a journal-box, substantially as set forth.

2. The combination of the box 11, having rollers 18 16, shaft 19 of the roller 18, blocks for supporting said journal-box, said blocks resting on shaft 19 of the roller 18 and having oil-chambers, openings into and from said oil-chambers, rollers 16, having a shaft 17, on which the roller 18 rests, an axle 15, a movable section 12, and rollers 34, journaled in said section, substantially as set forth, and for the purpose described.



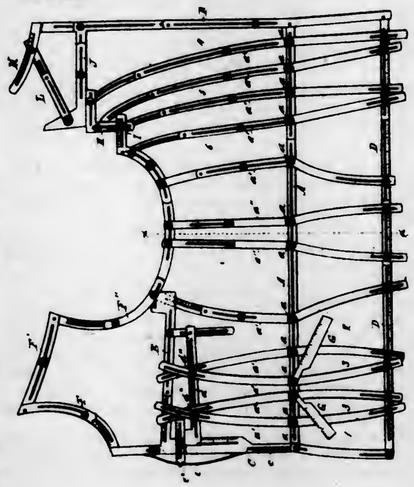


3. The combination of a truck-frame 3, supporting-rods 4, tie-rods 7 and 9, journal-boxes 5, to which said tie-rods and supporting-rods are connected, rollers 18 and 16 within said box for supporting the same on an axle, and a face-plate 27, said face-plate and box having U-shaped flanges 26 for guiding the shaft 17 of the rollers 16, substantially as set forth, and for the purpose described.

4. The combination of the box 11, having rollers 18 16 therein for supporting the same, shaft 17, connected with rollers 16, shaft 19 of roller 18, blocks 20, resting on said shaft 19 and supporting said box, and a face-plate 27, having dust-flanges 29 and guiding-flange 28, substantially as described, and for the purpose set forth.

5. The combination of a journal-box, suitable rollers therein for supporting said box, and a face-plate 27, removably secured to said journal-box, said face-plate having openings 31 for the inspection of the interior of said box, substantially as and for the purpose set forth.

487,237. ADJUSTABLE PATTERN FOR DRAFTING GARMENTS. Jacob C. Cutler, Chicago, Ill. Filed Jan. 30, 1892. Serial No. 419,804. (No model.)



Claim.—1. The adjustable pattern for drafting garments, having the front bar C, the spring *c*, having its ends secured to said bar, and the graduated side *c'*, adjustable on said bar and engaging said spring, substantially as and for the purpose set forth.

2. In an adjustable pattern for drafting garments, the combination, with a series of connected vertical ribs, the bust-drafting bar E, the graduated slotted bar *d*, having a horizontally and vertically adjustable connection at one end with said bust-drafting bar and a vertically-adjustable connection with the front vertical bar of the pattern, of the dart-drafting ribs adjustably connected to said bar *d*, and the series of swinging scales adapted to co-operate with said dart-drafting ribs, substantially as set forth.

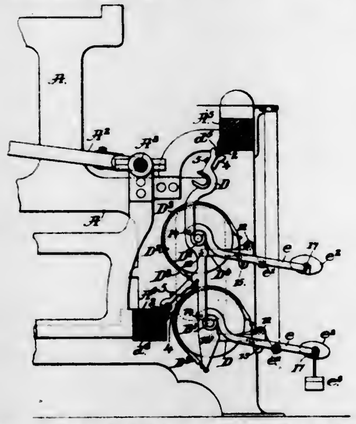
3. In an adjustable pattern for drafting garments, the combination, with a series of connected vertical ribs, a bust-drafting bar, and a graduated slotted bar suitably connected to the bust-drafting bar and one of said vertical ribs, of the dart-drafting ribs and the hooked bolts passed through slots in said graduated slotted bar and dart-drafting ribs, the body of each bolt engaging one dart-drafting rib and the hook engaging the other dart-drafting rib of each pair of said ribs, substantially as specified.

4. In an adjustable pattern for drafting garments, the combination, with the series of vertical ribs, their means of connection, and the dart-drafting ribs adjustably connected to the means of connection between said vertical ribs, of the series of swinging scales adapted to co-operate with said dart-drafting ribs, substantially as set forth.

5. In an adjustable pattern for drafting garments, the combination, with the series of connected vertical ribs and the arm-eye bar, of the slotted angle-bar and its cross-headed adjusting-bolt connecting said angle-bar and arm-eye bar and having the arms of its head lying in slots in said arm-eye bar and said angle-bar, substantially as set forth.

REISSUES.

11,288. FRICTION LET-OFF FOR LOOMS. HORACE WYMAN and ALBERT A. GORDON, Worcester, Mass., assignors to the Crompton Loom Works, same place. Filed Feb. 1, 1892. Serial No. 419,990. Original No. 459,365, dated Sept. 8, 1891.



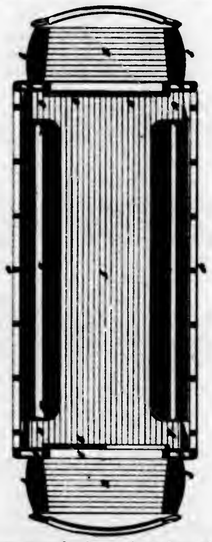
Claim.—1. In a loom, horizontally-arranged guides and means to support them between the loom sides, combined with stands having bearings for the warp-spools, the said stands being adjustable laterally upon the said guides, substantially as described.

2. In a loom, horizontally-arranged guides and means to support them between the loom sides, combined with stands having bearings for the warp-spools, the said stands being adjustable laterally upon the said guides, and a series of let-off levers pivoted on said stands and made adjustable in unison with them, substantially as described.

3. The stands having bearings for the journals of the warp-beams, a friction-band to act upon the warp-beam, and a connected tension bar or roller located under the warp-threads and operatively supported by said friction-band, combined with a let-off lever above the shaft or journals of the warp-beam, said lever having a bar or roll adapted to act upon the upper portions of the warp-threads, to operate substantially as described.

4. The adjustable stands having bearings for the journals of a warp-spool, a friction-band to act upon the warp-spool, and a tension bar or roller in operative connection with said band, combined with a let-off lever mounted on the stands and provided with a bar or roll adapted to bear against the warp-threads, the said tension-roller and let-off lever adapted to be relatively moved to permit the removal of the warp-spool from the stands without cutting the warp-threads, substantially as described.

11,289. STREET-CAR. FREDERICK B. BROWNELL, St. Louis, Mo. Filed Sept. 22, 1892. Serial No. 446,633. Original No. 462,630, dated Nov. 3, 1891.



Claim.—1. A street-car having at the end two sliding doors, each opening from its side of the car toward the other door and each adapted to provide means of ingress and egress at the side of the platform from which it is moved, thereby providing for the passengers getting on and off the platform at the side adjacent to the open door, substantially as set forth.

2. The combination, in a street-car having a platform and two sliding doors at the end for ingress and egress of passengers, of the seats extending endwise along the sides of the car and having ends at a distance from the ends of the car-body, leaving spaces 9 between the seats and doors, substantially as and for the purposes set forth.

3. The combination, in a street-car having an end platform, of two doors 6 at the end, sliding side by side, and seats 7, extending endwise in the car and shorter than the inside length of the car, substantially as and for the purpose set forth.

4. The combination, in a street-car, of two doors 6 at one end of the car, the platform 2, and seats extending endwise along the sides of the car and having rounded ends at a distance from the ends of the car-body, leaving spaces 9 for the passage of passengers, substantially as set forth.

11,290. CORN-POPPER. ANDREW R. OLSON, Kansas City, Mo. Filed Mar. 15, 1892. Serial No. 425,040. Original No. 423,636, dated May 27, 1890.

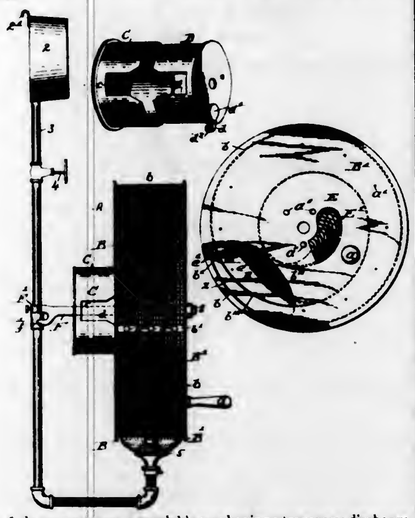
Claim.—1. A corn-popper consisting of a case having a suitable discharge-opening and an interior perforated conveyer having a terminal corrugated chute, substantially as and for the purpose described.

2. A corn-popper consisting of a case having a suitable discharge-opening, an interior perforated conveyer, and a chute at the terminal of said conveyer, substantially as and for the purpose described.

3. A corn-popper consisting of a case having a suitable discharge-opening, an interior convoluted perforated conveyer, and a chute at the terminal of said convoluted conveyer, substantially as and for the purpose described.

4. In a corn-popper, a revoluble case having a suitable discharge-opening near the axis of said case, and an exterior screen composed of fine mesh forming the sides of said case, and an interior convoluted screen composed of coarse mesh having a corrugated terminal portion inclined in the direction of said discharge-opening, substantially as and for the purpose described.

5. In a corn-popper, a revoluble case having heads and an exterior and interior conveyer consisting of a single convoluted mesh, one portion of said conveyer having fine screen and the other coarse and one of said parts movable in respect to the other within the compass of the exterior screen, substantially as and for the purpose described.



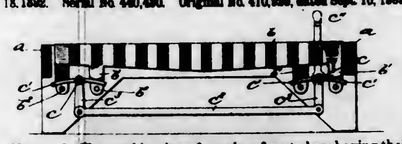
6. In corn-poppers, a revoluble case having a transverse discharge-opening near the axis of said case, an exterior screen having fine mesh composing the sides of said case and having a transverse discharge-opening, a corrugated chute opposite said discharge-opening near the axis of said case, and an interior convoluted conveyer having coarse mesh communicating with said discharge-opening and with said corrugated chute, substantially as and for the purpose described.

7. In a corn-popper, a revoluble case having heads and a transverse discharge-opening in one of said heads, an exterior screen composing the sides of said case having fine mesh, a chute opposite said discharge-opening in the side of said head, and a convoluted perforate conveyer having coarse mesh connected with said heads, having one end connected with said chute and the other movable toward the axis of said case, substantially as and for the purpose described.

8. In a corn-popper, a revoluble case having heads and a transverse discharge-opening in one of said heads, and sides to said case having concentric parts and a discharge-opening between said parts, and an interior convoluted perforate conveyer in communication with one of said concentric parts, and one end of said conveyer movable toward the axis of said case, and a catch supporting said movable end, substantially as and for the purpose described.

9. In a corn-popper consisting of a revoluble case having heads and a transverse feed-opening in one of said heads and sides to said case, the combination of telescopic cups having the bottom of one of said cups connected with one of said heads and having a feed-opening registering with the feed-opening on said head, substantially as and for the purpose described.

10. In a corn-popper consisting of a revoluble case having heads and a transverse feed-opening in one of said heads and a screen composing the sides of said case, the combination of telescopic cups having registering supply-openings in the sides of said cups, and a feed-opening in the bottom of one of said cups registering with the feed-opening in said head, substantially as and for the purpose described.

11,291. FURNACE-GRATE. ROBERT ROSS, Calliope, assignor to W. W. Hall, F. H. Watkins, and T. C. Botts, Hawarden, Iowa. Filed July 18, 1892. Serial No. 440,490. Original No. 410,939, dated Sept. 10, 1889.

Claim.—1. The combination of a series of grate-bars having their opposite sides of corrugated or serpentine form, the projected and cut-out portions both tapering from above downwardly the full depth of the bars, and means for vibrating the bars in opposite directions, whereby a cam or cutting action is exerted on the clinkers coming between them, substantially as described.

2. The combination of a series of solid grate-bars tapering from above downwardly and formed zigzag or serpentine in horizontal section their entire depth, the projections on one side of each bar alternating with those on the opposite side thereof, the bars being placed side by side, so that the projections of each bar will come opposite the cut-out portions of the adjacent bars and form zigzag or serpentine air-passages, widening from above downwardly, and means for vertically vibrating the bars in opposite directions, so that they will exert a cam or cutting action on the clinkers, substantially as described.

3. A series of furnace grate-bars having their opposite sides of serpentine or corrugated form, the projected and cut-out portions both tapering from above downwardly the full depth of the bar, in combination with a furnace, the rock-shafts having bearing-arms for said bars, the bar connecting the rock-shafts, and a lever for rocking one of the shafts, substantially as specified.

4. The combination of a series of bars tapering from above downwardly the full depth and formed corrugated or serpentine or horizontal section their full depth, said bars being each provided with a head at its ends, these heads abutting against each other and serving to keep the bars parallel and their projections opposite the cut-out portions of the adjacent bars, and means for supporting and imparting a bodily vertical vibration to the bar, substantially as described.

5. The combination of a series of parallel grate-bars tapered from above downwardly and formed corrugated in horizontal section, the bars being each provided with abutting heads at their ends, these heads tapering from above downwardly, as shown, and means for loosely supporting and vertically vibrating the bars in opposite directions, substantially as described.

DESIGNS.

22,018. WALL-PAPER. CHARLES BOOER, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Oct. 10, 1892. Serial No. 448,447. Term of patent 3½ years.

Claim.—The design for wall-paper herein shown and described.

22,019. FONT OF PRINTING-TYPE. HERMAN IHLENBURG, Philadelphia, Pa., assignor to the MacKellar, Smiths & Jordan Company, same place. Filed Oct. 28, 1892. Serial No. 450,234. Term of patent 7 years.

ABCDEFGHIJKLMN

OPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

1234567890

Claim.—The design for a font of type, substantially as described, and shown in the accompanying typographical impression.

22,020. FONT OF PRINTING-TYPE. HERMAN IHLENBURG, Philadelphia, Pa., assignor to the MacKellar, Smiths & Jordan Company, same place. Filed Oct. 28, 1892. Serial No. 450,236. Term of patent 7 years.

22,020.

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

1234567890

Claim.—The design for a font of type, substantially as described, and shown in the accompanying typographical impression.

22,021. FONT OF PRINTING-TYPE. HERMAN IHLENBURG, Philadelphia, Pa., assignor to the MacKellar, Smiths & Jordan Company, same place. Filed Oct. 26, 1892. Serial No. 450,260. Term of patent 7 years.

ABCDEFGHIJKLMN

OPQRSTUVWXYZ

1234567890

BCEFKLQRS

TVW

Claim.—The design for a font of type, substantially as described and shown in the accompanying typographical impression.

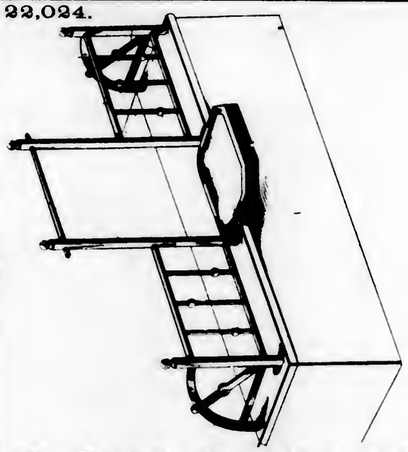
22,022. CHAIR. AUGUST THONET, Vienna, Austria-Hungary, assignor to Thonet Brothers, same place. Filed June 22, 1892. Serial No. 437,858. Term of patent 7 years.

Claim.—The design for a chair, substantially as herein shown and described.

22,023. CHAIR. AUGUST THONET, Vienna, Austria-Hungary, assignor to Thonet Brothers, same place. Filed June 22, 1892. Serial No. 437,859. Term of patent 7 years.

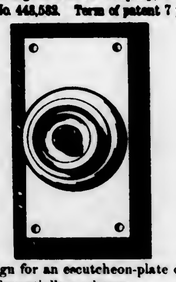
Claim.—The design for a chair, substantially as herein shown and described.

22,024. DESK-RAILING. ADM. C. HOUDE, South Butler, N. Y. Filed Oct. 22, 1892. Serial No. 449,705. Term of patent 7 years.



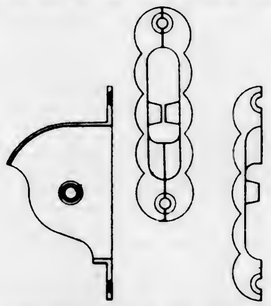
Claim.—The design for a railing, substantially as shown and described.

22,025. ESCUTCHEON-PLATE. MAX SCHWENDNER, Reading, Pa., assignor to the Reading Hardware Company, same place. Filed Oct. 11, 1892. Serial No. 448,583. Term of patent 7 years.



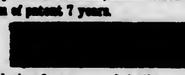
Claim.—The design for an escutcheon-plate or similar article of builders' hardware, substantially as shown.

22,026. SASH-PULLEY CASE. STEPHEN PALMER, Lansingburg, N. Y. Filed Sept. 15, 1892. Serial No. 446,031. Term of patent 7 years.



Claim.—The design for a sash-pulley case herein shown and described.

22,027. TAPE. CHARLES SIMON, Providence, R. I., assignor to Chipman, Colley & Co., Rockland, Mass. Filed Sept. 1, 1892. Serial No. 444,845. Term of patent 7 years.



Claim.—The design for tapes and similar articles, as herein shown and described.

TRADE-MARKS

REGISTERED NOVEMBER 29, 1892.

22,059. MEDICAL PREPARATION OF SARSAPARILLA. LEOPOLD GEISELE, Highland Park, Tenn. Filed Oct. 3, 1892.

Essential feature.—The letters "S. J. S." Used since January 1, 1892.

22,060. REMEDY FOR THE DISEASES OF WOMEN. LEOPOLD GEISELE, Highland Park, Tenn. Filed Oct. 3, 1892.

G.F.P.

Essential feature.—The letters "G. F. P." Used since January 1, 1892.

22,061. REMEDIES FOR INTERNAL USE WHICH CONTAIN QUININE. NEW YORK QUININE AND CHEMICAL WORKS, (Limited,) New York, N. Y. Filed Oct. 13, 1892.

KINOL.

Essential feature.—The word "KINOL." Used since September 15, 1892.

22,062. COSMETICS, LOTIONS, PERFUMERY, CREAM, AND SOAP. THE FIRM OF WILLIAM RINGER, Frankfort-on-the-Main, Germany. Filed June 13, 1892.

PARZIVAL

Essential feature.—The word "PARZIVAL." Used since August, 1890.

22,063. TOILET SOAP. MOLESON & KNOPF, New York, N. Y. Filed Nov. 4, 1892.

MARQUISE

Essential feature.—The word "MARQUISE." Used since November 1, 1892.

22,064. LAUNDRY SOAP AND WASHING-POWDER. MILLARD F. SMITH, Cleveland, Ohio. Filed Oct. 10, 1892.

Nox

Essential feature.—The word "NOX." Used since August 15, 1892.

22,065. CLEANSING COMPOUND. EHRLMAN & BARTLETT, Cleveland, Ohio. Filed Sept. 8, 1892.

Peerless Mottled

Essential feature.—The words "PEERLESS MOTTLED." Used since January 1, 1892.

22,066. WHITE LEAD. JACOBS & MCCAFFERTY, Brooklyn, N. Y. Filed Nov. 5, 1892.

GOLD SEAL

Essential feature.—The words "GOLD SEAL." Used since November, 1869.

22,067. CERTAIN HAIR-CLIPPERS FOR TOILET USE. AMERICAN SHEARER MANUFACTURING COMPANY, Nashua, N. H. Filed Sept. 7, 1892.

COLUMBIAN

Essential feature.—The word "COLUMBIAN." Used since January 1, 1892.

22,068. STEEL AND OTHER PENS. R. R. OSTTINGER & Co., New York, N. Y. Filed Sept. 24, 1892.

LACROSSE.

Essential feature.—The word "LACROSSE." Used since September 1, 1887.

22,069. STEEL AND OTHER PENS. R. R. OSTTINGER & Co., New York, N. Y. Filed Sept. 24, 1892.

LAFAYETTE

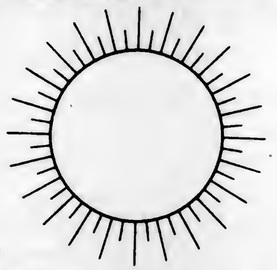
Essential feature.—The word "LAFAYETTE." Used since March 1, 1889.

22,070. WATCHES. THE WATERBURY WATCH COMPANY, Waterbury, Conn. Filed Nov. 7, 1892.

Tuxedo

Essential feature.—The word "TUXEDO." Used since November 1, 1892.

22,071. SWEAT COLLARS OR PADS. EDWARD L. MCCLAIN, Greensfield, Ohio. Filed Aug. 26, 1892.



Essential feature.—The representation of a circle with a number of lines extending outwardly therefrom. Used since July 1, 1892.

22,072. HORSESHOE-NAILS. THE NEW PROCESS NAIL COMPANY, Torrington, Conn. Filed Oct. 13, 1892.

Essential feature.—The representation of a horseshoe-nail having a black head and the shank the color of the polished metal. Used since July 10, 1892.

22,073. FLOWS. SOUTH BEND IRON WORKS, South Bend, Ind. Filed July 28, 1892.

Essential feature.—The representation of a broad circle inclosing the letter "P." Used since May 9, 1892.

22,074. MACHINERY FOR PASTING AND FOLDING ENVELOPES AND MAKING PAPER BOXES. LESTER & WARLEY, Norwich, Conn. Filed Oct. 20, 1892.

LEADER

Essential feature.—The word "LEADER." Used since June 1, 1879.

22,075. OIL OR GAS STOVES. PAGE BROS. & Co., Boston, Mass. Filed Nov. 5, 1892.

LADIES' DELIGHT.

Essential feature.—The words "LADIES' DELIGHT." Used since September 1, 1892.

22,076. WHISKY. C. H. GRAVES & SONS, Boston, Mass. Filed Oct. 5, 1892.

WALNUT HILL

Essential feature.—The representation of the head of a domestic cat and the words "WALNUT HILL." Used since January 5, 1889.

22,077. LAGER-BEER. GEORG WALTER, Appleton, Wis. Filed Sept. 30, 1892.

Essential feature.—The representation of a combination of six hop-leaves and six barley-heads arranged to form a star with their stems converging toward a common center. Used since June 1, 1892.

22,078. LAGER-BEER. C. SCHMIDT & SONS, Philadelphia, Pa. Filed Sept. 30, 1892.

Puritan

Essential feature.—The word "PURITAN." Used since June 1, 1892.

22,079. LAGER-BEER. C. SCHMIDT & SONS, Philadelphia, Pa. Filed Sept. 30, 1892.

Essential feature.—The representation of a shield and the word "PILSNER." Used since June 1, 1892.

22,080. MINERAL WATER. THE MASSANETTA PARK AND SPRINGS COMPANY, Washington, D. C. Filed Oct. 31, 1892.

MATCHLESS MASSANETTA

Essential feature.—The words "MATCHLESS MASSANNETTA." Used since September 1, 1892.

22,081. DESICCATED RAW VEGETABLES AND FOODS PREPARED THEREOF. DAVID AIGLER, St. Louis, Mo. Filed Oct. 10, 1892.

Essential feature.—The word "AIGLER'S" and the pictorial representation of an Irish potato, a sweet potato, a parsnip, and a carrot inclosed by a lozenge-shaped or diamond figure. Used since October 1, 1891.

22,082. CANNED FRUITS AND VEGETABLES. BLOOMINGTON CANNING COMPANY, Bloomington, Ill. Filed Sept. 26, 1892.

PERFECTION

Essential feature.—The word "PERFECTION." Used since September 1, 1889.

22,083. WHOLE, CUT, AND BONELESS FISH. EDWARD G. HOTCHKISS, Gloucester, Mass. Filed Oct. 26, 1892.

WAFER

Essential feature.—The word "WAFER." Used since July 1, 1892.

22,084. CANNED OYSTERS. FAIT & WINNEBRENNER, Baltimore Md. Filed Nov. 1, 1892.

DONKEY

Essential feature.—The word "DONKEY." Used since January 1, 1892.

22,085. DAIRY PRODUCTS. MAX PIOWATY, St. Paul, Hutchinson, and Glencoe, Minn. Filed Sept. 26, 1892.

Essential feature.—The letter "P," surrounded and inclosed by the outline of a six-pointed star. Used since September 15, 1890.

22,086. WHEAT-FLOUR. HARROD MILLING CO., Harrod, Ohio. Filed Sept. 14, 1892.

ROYAL GEM

Essential feature.—The words "ROYAL GEM." Used since July 20, 1892.

22,087. CHEVIOTS. SAMUEL A. CROZER & SON, Upland, Pa. Filed Sept. 29, 1892.

22,087.

Essential feature.—The word "BROOKHAVEN." Used since February 1, 1891.

22,088. LINEN GOODS. LUCAS THOMPSON & Co., New York, N. Y. Filed Oct. 29, 1892.

Essential feature.—The representation of a fleur-de-lis. Used since June 16, 1892.

22,089. BRAIDS, CORDS, AND BINDINGS. BLANK & Co., Barmen, Germany. Filed Feb. 24, 1892.

Essential feature.—The representation of a locomotive. Used since November 26, 1886.

22,090. HATS AND BONNETS FOR LADIES, MISSES, AND YOUNG BOYS, AND TRIMMINGS THEREFOR. CHARLOTTE E. TAYLOR, New York, N. Y., Chicago, Ill., Boston, Mass., and Philadelphia, Pa. Filed Sept. 21, 1892.

LOUISE & Co

Essential feature.—The trade-name "LOUISE & Co." Used since 1870.

22,091. OUTSIDE GARMENTS WORN BY MEN AND BOYS. STEINHART, HEIDELBERG & Co., New York, N. Y. Filed Sept. 29, 1892.

TRACTION

Essential feature.—The word "TRACTION." Used since May 1, 1892.

22,092. CERTAIN UNDER AND OUTER WEARING-APPAREL. JOHN HENRY NORCROSS, Boston, Mass. Filed Oct. 1, 1892.

Essential feature.—The word "OAKLAND," surrounded by the representation of a wreath of oak-leaves. Used since January 1, 1891.

22,093.

Essential feature.—The word "OAKLAND," surrounded by the representation of a wreath of oak-leaves. Used since January 1, 1891.

22,093. LEATHER BOOTS AND SHOES. FRANK BRYANT, Stoneham, Mass. Filed Nov. 1, 1892.

Essential feature.—The word "CENTURY." Used since May 1, 1891.

22,094. TOBACCO, CIGARS, CIGARETTES, CHEROOTS, AND SNUFF. THE AMERICAN TOBACCO COMPANY, Newark, N. J., and New York, N. Y. Filed July 2, 1892.

Essential feature.—The representation of the head and shoulders of an elderly gentleman wearing a hat with broad rolling brim and holding a cigar, cheroot, or cigarette between the teeth. Used since 1876.

22,095. WOOL FAT. NORDDEUTSCHE WOLLKÄMMEREI & KAMMGARNSPINNEREI, Bremen, Germany. Filed Oct. 20, 1892.

Essential feature.—The representation of a sheep. Used since September 16, 1892.

22,096. AXLE-GREASE. KING MANUFACTURING CO., New York, N. Y. Filed Sept. 30, 1892.

KING

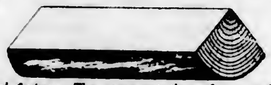
Essential feature.—The word "KING." Used since 1888.

22,097. NURSERY-GROWN PLUM-TREES. THE ALBAUGH NURSERY AND ORCHARD COMPANY, Tadmor, Ohio. Filed Sept. 21, 1892.

22,097.

Essential feature.—The word "MURDY" in connection with and engraved upon the representation of a plum. Used since April 20 1892.

22,098. SAWED LUMBER. FISCHER & BURNETT LUMBER COMPANY, Redovo, Miss., Memphis, Tenn., and New York, N. Y. Filed Oct. 26, 1892.



Essential feature.—The representation of a sawed quarter-log showing one smooth-sawed surface and a portion of the outer surface covered with bark. Used since September 23, 1892.

22,099. EXPLOSIVES. WESTFÄLISCH-ANHALTISCHE SPRENGSTOFF-ACT.-GES., Coswig, Germany. Filed Aug. 4, 1892.

Essential feature.—The word "WESTFALIT" in connection with the representation of two crossed hammers at one side and bolts of lightning at the other side of said word. Used since May 5, 1892.

THE NORRIS PETERS CO.

PATENT LAW OF VICTORIA.

An act to consolidate the Law concerning Letters Patent for Inventions. [*July* 10, 1890.]

Be it enacted by the Queen's Most Excellent Majesty by and with the advice and consent of the Legislative Council and the Legislative Assembly of Victoria in this present Parliament assembled and by the authority of the same as follows—that is to say:

1. This act may be cited as the Patents Act 1890, and shall come into operation on the first day of August, one thousand eight hundred and ninety, and is divided into Parts as follows:

Part I.—Officers and Seal, secs. 4-6.
Part II.—Application for Grant of Patents, secs. 7-18.
Part III.—Provisional Protection, sec. 19.
Part IV.—Complete Protection, sec. 20.
Part V.—Patent, secs 21-23.
Part VI.—Amendment of Specification, secs. 24-27.
Part VII.—Proceedings before Law Officer and Commissioner, secs. 28-32.
Part VIII.—Appeal to Supreme Court, sec. 33.
Part IX.—Register of Patents, secs. 34-40.
Part X.—Fees, sec. 41.
Part XI.—Extension of Term and Confirmation of Invalid Patent, secs. 42-46.
Part XII.—Revocation, sec. 47.
Part XIII.—Crown, sec. 48.
Part XIV.—Legal Proceedings, secs. 49-53.
Part XV.—Arrangements with other portions of British Dominions, secs. 54 and 55.
Part XVI.—Miscellaneous, secs. 56-75.

2. The act mentioned in the first schedule to this act to the extent to which the same is thereby expressed to be repealed is hereby repealed.

The provisions of this act relating to applications for patents and proceedings thereon shall have effect only in respect of applications made after the commencement of "The Patents Act 1889." But all patents whatsoever prepared, sealed, or issued after the commencement of this act shall be prepared, sealed, and issued in manner provided by this act.

This act shall extend to all patents, whether granted before or after the commencement of this act, and in substitution for such enactments (if any) as would have applied thereto if this act had not been passed.

Save as aforesaid the repeal of the said repealed act shall not affect the past operation of the same, nor any patent granted, nor any application pending, nor any appointment, rule, regulation, or order made, nor any report furnished, nor any notice given, nor any memorandum filed, nor any petition presented, nor any advertisement published, nor any summons or certificate issued, nor any warrant or injunction granted under the said repealed act before the commencement of this act; nor

Interfere with the institution or continuance of any action or proceeding (civil or criminal) in respect of the same, and any such action or proceeding may be carried on as if this act had not been passed; nor

Take away or abridge any benefit or protection in relation to any such action or proceeding; nor

Affect any arrangement or Order in Council made under sections nine or ten of "The Patents Act 1884" or under sections fifty-four and fifty-five of "The Patents Act 1889."

3. In this act, unless inconsistent with the subject-matter or context, the words and expressions following shall have the meanings hereinafter respectively assigned to them—that is to say:

"Applicant" shall mean applicant for a patent, and shall include his agent duly appointed in writing under his hand.

"Commissioner" shall mean the Commissioner of Patents holding office in pursuance of this act.

"Examiner" shall mean an Examiner of Patents holding office in pursuance of this act.

"Invention" shall mean any manner of new manufacture which might be in England and Wales the subject of letters patent and grant of privilege within section six of the Statute of Monopolies (that is the act of the twenty-first year of the reign of King James the First, chapter three, intituled "An Act concerning Monopolies and Dispensations with penal laws and the forfeiture thereof,") and shall include an alleged invention.

"Law Officer" shall mean Her Majesty's Attorney-General, Solicitor-General, or Minister of Justice.

"Patent" shall mean letters patent for an invention.

"Patent Office" shall mean the office of the Commissioner.

"Patentee" shall mean the person or persons for the time being entitled to the benefit of any patent.

"Person" shall include corporation.

"Prescribed" shall mean prescribed by any of the Schedules hereto or by any rules made or for the time being in force hereunder.

"True and first inventor" shall mean the person who is the actual inventor of any invention or his assigns, or, if the actual inventor be dead, his legal representatives, or (if the actual inventor, his legal representatives or assigns, is or are not resident in Victoria) any person to whom such invention has been communicated by the actual inventor, his legal representatives or assigns, but shall not include a person importing an invention from any other colony or country without the authority of the actual inventor, his legal representatives or assigns.

PART I.—OFFICERS AND SEAL.

4. The Governor in Council may from time to time appoint some person to be Commissioner of Patents, who shall perform the duties and exercise the functions by this act directed to be performed by the Commissioner. Any person appointed Commissioner of Patents may be by the Governor in Council at any time removed.

5. (1) A seal shall be kept bearing the impression of the Royal Arms and having inscribed in the margin thereof the words "Commissioner of Patents Colony of Victoria," and shall be kept in the custody of the Commissioner, and all patents and such other instruments and documents as may be required by this act or any rules made or for the time being in force hereunder to be sealed in the Patent Office or by the Commissioner shall be sealed with the said seal and shall be signed by the Commissioner. The forging or counterfeiting or uttering, knowing the same to be forged or counterfeited, of the said seal shall be punishable in the same manner as similar offences with respect to the seal of the Colony of Victoria are by law punishable.

(2) Every patent sealed with the said seal shall have the same effect as if it were sealed with the seal of the Colony of Victoria.

(3) All courts, judges, and persons acting judicially shall take judicial notice of the said seal and of the signature of the Commissioner and shall presume that the said seal was properly affixed to any patent, instrument, or document bearing the same and the signature of the Commissioner, and all such patents, instruments, and documents so sealed shall be received in evidence without further proof; and every instrument and document and every certificate as to or certified copy of any entry matter or thing (which the Commissioner is authorized by this act or any rules made or for the time being in force hereunder to make, give, or do or to cause to be made, given, or done) or of anything deposited in the Patent Office under the provisions of this act or of such rules purporting to be signed by the Commissioner shall be *primâ facie* evidence that the same was duly signed and of the contents thereof.

6. The Governor in Council may from time to time, subject to the provisions of the Public Service Act 1890, appoint so many examiners of patents as may be necessary. Such persons shall hold office as such subject to the provisions of the said act and shall perform the duties and exercise the functions which are by this act directed to be performed by the Examiners.

PART II.—APPLICATION FOR AND GRANT OF A PATENT.

7. (1) Any person, whether a British subject or not, may make an application for a patent.

(2) Two or more persons may make joint application for a patent and a patent may be granted to them jointly.

(3) An applicant may be—
(*a*) The actual inventor; or
(*b*) His assigns; or
(*c*) The actual inventor jointly with the assigns of a part interest in the invention; or
(*d*) The legal representatives of a deceased actual inventor or of his assigns; or
(*e*) Any person to whom the invention has been communicated by the actual inventor, his legal representatives or assigns, (if the actual inventor, his legal representatives or assigns, is or are not resident in Victoria.)

8. (1) An application for a patent must be made in the form set forth in the second schedule to this act or in such other form as may be from time to time prescribed, and must be left at or sent by post to the Patent Office in the prescribed manner.

(2) An application must contain a solemn declaration in the prescribed form to the effect that the applicant is in possession of an invention whereof he (or in the case of a joint application they) claims or claim to be the true and first inventor or inventors and for which he or they desires or desire to obtain a patent, and must be accompanied by either a provisional or complete specification.

(3) A provisional specification must be in the form in the second schedule hereto and shall describe the nature of the invention and be accompanied by drawings, if required by the Examiner.

(4) A complete specification whether left on application or subsequently must be in the form in the second schedule hereto and shall particularly describe and ascertain the nature of the invention and in what manner it is to be performed and must be accompanied by drawings if required. Provided, that a reference to the drawings accompanying the provisional specification shall be a sufficient compliance with such requirement.

(5) A specification whether provisional or complete must commence with the title and in the case of a complete specification must end with a distinct statement of the invention claimed.

9. The Commissioner shall refer every application to an Examiner, who shall ascertain and report to the Commissioner whether the nature of the invention has been fairly described and whether the application, specification, and drawings (if any) have been pre-

pared in the prescribed manner and whether the title sufficiently indicates the subject-matter of the invention and whether to the best of the knowledge of such Examiner such invention is not novel or is already in the possession of the public with the consent or allowance of the true and first inventor and upon such other matters as the Commissioner may in any case require.

and that such other invention forms the subject of an application made by the opponent in the interval between the leaving of the provisional specification and the leaving of the complete specification; but on no other ground.

(2) Where such notice is given the Commissioner shall give no-

thereby granted shall cease and determine at the expiration of three years and seven years, respectively, from the date thereof, unless there be paid within the said three and seven years, re-

costs shall be paid, and in and by such writing may fix the amount of such remuneration and costs. Every such order shall be in the form contained in the fourth schedule hereto or to the like effect

pared in the prescribed manner and whether the title sufficiently indicates the subject-matter of the invention and whether to the best of the knowledge of such Examiner such invention is not novel or is already in the possession of the public with the consent or allowance of the true and first inventor and upon such other matters as the Commissioner may in any case require.

10. (1) If the Examiner reports that the nature of the invention is not fairly described, or that the application, specification, or drawings (if any) has not or have not been prepared in the prescribed manner, or that the title does not sufficiently indicate the subject-matter of the invention, or that to the best of his knowledge such invention is not novel or is already in the possession of the public with the consent or allowance of the true and first inventor, or reports adversely to the application upon any matter on which he has been required by the Commissioner to report, the Commissioner may refuse to accept the application or require that the application, specification, or drawings be amended before he proceeds with the application, and in the latter case the application shall, if the Commissioner so direct, bear date as from the time when the requirement is complied with.

(2) Where the Commissioner refuses to accept an application or requires an amendment, the applicant may appeal from his decision to the law officer, as hereinafter provided.

(3) The law officer shall, if required, hear the applicant and the Commissioner, and may make an order determining whether and subject to what conditions (if any) the application shall be accepted.

(4) The Commissioner shall, when an application has been accepted, give notice thereof to the applicant.

(5) If after an application for a patent has been made, but before the patent thereon has been sealed, another application for a patent is made accompanied by a specification bearing the same or a similar title, the Commissioner, if he thinks fit, on the request of the second applicant, may within two months of the grant of a patent on the first application either decline to proceed with the second application or allow the surrender of the patent (if any) granted thereon.

11. (1) If the applicant does not leave a complete specification with his application, he may leave it at any subsequent time within nine months from the date of application or within such extended period not exceeding one month beyond such period of nine months, as the Commissioner may on payment of the prescribed fee allow.

(2) Unless a complete specification is left within that time the application shall be deemed to be abandoned.

12. (1) Where a complete specification is left after a provisional specification, the Commissioner shall refer both specifications to the Examiner for the purpose of ascertaining whether the complete specification has been prepared in the prescribed manner and whether the invention particularly described in the complete specification is substantially the same as that which is described in the provisional specification.

(2) If the Examiner reports that the conditions hereinbefore contained have not been complied with, the Commissioner may refuse to accept the complete specification unless and until the same has been amended to his satisfaction; but any such refusal shall be subject to appeal to the law officer, as hereinafter provided.

(3) The law officer shall, if required, hear the applicant and the Commissioner, and may make an order determining whether and subject to what conditions (if any) the complete specification shall be accepted.

(4) Unless a complete specification is accepted within twelve months from the date of application or within such extended period not exceeding two months beyond such period of twelve months, as the Commissioner may on payment of the prescribed fee allow, then (save in the case of an appeal having been lodged against the refusal to accept) the application shall at the expiration of such period or extended period, as the case may be, become void.

(5) No report of the Examiner shall in any case be published or be open to public inspection and shall not be liable to production or inspection in any legal proceeding unless the court or officer having power to order discovery in such legal proceeding certify that such production or inspection is desirable in the interests of justice and ought to be allowed.

13. On the acceptance of the complete specification the Commissioner shall advertise the acceptance in the prescribed manner, and the application and specification or specifications with the drawings (if any) shall be forthwith open to public inspection.

But where an application has been refused or abandoned, or has become void, the specification or specifications and drawings (if any) accompanying or left in connection with such application shall not at any time be open to public inspection or be published by the Commissioner.

14. Every specification deposited at the Patent Office and the drawings accompanying the same (if any) shall, forthwith after the grant of the patent or if no patent be granted then immediately on the expiration of two years from the time of such deposit, be transferred to and kept in such place as may be prescribed.

15. (1) Any person may at any time within two months from the date of the advertisement of the acceptance of a complete specification give notice at the Patent Office of opposition to the grant of the patent on the ground of the applicant having fraudulently or without his authority obtained the invention from him or from a person of whom he is the legal representative or assignee, or on the ground that the invention has not been communicated to the applicant by the actual inventor, his legal representatives or assigns, (if the actual inventor, his legal representatives or assigns, is or are not resident in Victoria,) or on the ground that the invention has been patented in Victoria on an application of prior date, or on the ground of want of novelty or of the invention having been already published or publicly used, or on the ground that the complete specification describes or claims an invention other than that described in the provisional specification and that such other invention forms the subject of an application made by the opponent in the interval between the leaving of the provisional specification and the leaving of the complete specification; but on no other ground.

(2) Where such notice is given the Commissioner shall give notice of the opposition to the applicant, and shall, on the expiration of such two months after hearing the applicant and the objector, if he be desirous of being heard, decide on the case, but subject to appeal to the law officer, as hereinafter provided.

16. (1) If the Commissioner be satisfied as to the novelty of the invention and there be no opposition, or in case of opposition, if the determination of the Commissioner be in favor of a grant of a patent and no notice of appeal be given within the time limited in that behalf, the Commissioner shall issue a warrant under his hand for the granting of a patent for such invention, and by such warrant shall direct the insertion in such patent of all such restrictions, conditions, and provisions as he may deem useful and expedient or necessary in pursuance of this act.

(2) Such warrant shall be the warrant for the making and sealing of a patent under this act, according to the tenor thereof, and every such warrant shall be in the form contained in the third schedule hereto or in such other form as may be from time to time prescribed.

17. A patent shall be sealed as soon as may be after the issue of the warrant and not after the expiration of sixteen months from the date of application, except in the cases hereinafter mentioned—that is to say:

(*a*) Where the sealing is delayed by an appeal to the law officer or the Supreme Court or by opposition to the grant of the patent, the patent may be sealed at such time as the law officer or such court or a judge thereof may direct.

(*b*) Where the periods within which the complete specification may be left and accepted, respectively, (or either of such periods,) have been extended, as hereinbefore provided, then the patent may be sealed at any time within eighteen months from the date of the application.

(*c*) If the person on whose behalf the application is made dies before the expiration of the sixteen months aforesaid, the patent may be granted to his legal representative and sealed at any time within twelve months after such death.

18. Every patent shall be dated and sealed as of the day of the application; but no proceedings shall be taken in respect of an infringement committed before the publication of the complete specification. In case of more than one application for a patent for the same invention, the sealing of a patent on one of those applications shall not prevent the sealing of a patent on an earlier application.

PART III.—PROVISIONAL PROTECTION.

19. Where an application for a patent in respect of an invention has been accepted, the invention may, during the period between the date of the application and the date of sealing such patent, be used and published without prejudice to the patent to be granted for the same, and such protection from the consequence of use and publication is in this act referred to as "provisional protection."

PART IV.—PROTECTION BY COMPLETE SPECIFICATION.

20. After the acceptance of a complete specification and until the date of sealing a patent in respect thereof or the expiration of the time for sealing the applicant shall have the like privileges and rights as if a patent for the invention had been sealed on the date of the acceptance of the complete specification. An applicant shall not be entitled to institute any proceedings for infringement unless and until a patent for the invention has been granted to him.

PART V.—PATENT.

21. Every patent when sealed shall have effect throughout Victoria.*

22. (1) The term limited in every patent for the duration thereof shall be fourteen years from its date.

(2) But every patent shall, notwithstanding anything therein or in this act, cease if the patentee fails to make the prescribed payments within the prescribed times.

(3) If nevertheless in any case by accident, mistake, or inadvertence a patentee fails to make any prescribed payment within the prescribed time, he may apply to the Commissioner for an enlargement of the time for making that payment.

(4) Thereupon the Commissioner shall, if satisfied that the failure has arisen from any of the above-mentioned causes, on receipt of the prescribed fee for enlargement, not exceeding five pounds, enlarge the time accordingly, subject to the following conditions:

(*a*) The time for making any payment shall not in any case be enlarged for more than six months.

(*b*) If any proceeding be taken in respect of an infringement of the patent committed after a failure to make any payment within the prescribed time and before the enlargement thereof, the court before which the proceeding is proposed to be taken may, if it think fit, refuse to award or give any damages in respect of such infringement.

23. (1) Every patent shall be made subject to the condition that the same shall be void and that the powers and privileges

* Where a patent was taken out in Victoria for an American windmill with improvements and K. purchased in New South Wales and used in Victoria an American windmill with those improvements, *Held* that K.'s use was an infringement of the patentees' rights, although there was no evidence that he knew of the patent or of the improvements. *Held*, also, that the patentees were not entitled to an account of the profits or to the delivering up of the windmill, and upon the facts that they were not entitled to the costs of suit, although they were entitled to their costs of issues found by a jury in their favor. (*McLean* v. *Kettle*, 9 V. L. R., E., 145.)

thereby granted shall cease and determine at the expiration of three years and seven years, respectively, from the date thereof, unless there be paid within the said three and seven years, respectively, the sum or sums of money specified in that behalf in the fifth schedule hereto and hereby required to be paid, and the Commissioner shall issue under his hand a certificate of such payment, and shall endorse a receipt for the same on the patent.

(2) Every patent issuing from the Patent Office may have attached to it a copy of the complete specification and a copy of the drawings (if any) accompanying such complete specification, and such copies shall be prepared at the cost of the patentee, and shall be certified by the Commissioner to be true copies.

PART VI.—AMENDMENT OF SPECIFICATION.

24. (1) An applicant or a patentee may from time to time, by request in writing left at the Patent Office, seek leave to amend his specification, including drawings forming part thereof, by way of disclaimer, correction, or explanation, stating the nature of such amendment and his reasons for the same.

(2) The request and the nature of such proposed amendment shall be advertised by such applicant or patentee in the prescribed manner, and at any time within one month from its first advertisement any person may give notice at the Patent Office of opposition to the amendment.

(3) Where such notice is given, the Commissioner shall give notice of the opposition to the person making the request, and shall hear and decide the case, subject to an appeal to the law officer, as hereinafter provided.

(4) Where no notice of opposition is given or the objector does not appear, the Commissioner shall determine whether and subject to what conditions (if any) the amendment ought to be allowed.

(5) No amendment shall be allowed that would make the specification as amended claim an invention substantially larger than or substantially different from the invention claimed by the specification as it stood before amendment.

(6) Leave to amend shall be conclusive as to the right of the party to make the amendment allowed, except in case of fraud; and the amendment shall in all courts and for all purposes be deemed to form part of the specification.

(7) The foregoing provisions of this section shall not apply when and so long as any action for infringement or other legal proceeding in relation to a patent is pending.

25. In an action for infringement of a patent and in a proceeding for revocation of a patent the court or a judge may at any time order that the patentee shall, subject to such terms as to costs and otherwise as the court or a judge may impose, be at liberty to apply to the Commissioner for leave to amend his specification by way of disclaimer, and may direct that in the meantime the trial or hearing of the action shall be postponed.

26. Where an amendment by way of disclaimer, correction, or explanation has been allowed under this act, no damages shall be given in any action in respect of the use of the invention before the disclaimer, correction, or explanation, unless the patentee establishes to the satisfaction of the court that his original claim was framed in good faith and with reasonable skill and knowledge.

27. Every amendment of a specification shall be advertised by the applicant in the prescribed manner.

PART VII.—PROCEEDINGS BEFORE LAW OFFICER AND COMMISSIONER.

28. (1) Any applicant, patentee, petitioner, or objector (including in the latter term any person who has appeared before the Commissioner as a party on the hearing by him of any application or petition or in any other proceeding or matter before him under this act) who is aggrieved by any decision or determination of the Commissioner in respect of such application, petition, proceeding, or matter, may within fourteen days from the giving of such decision or the announcement by him of his determination, appeal to the law officer.

(2) It shall be a condition precedent to such appeal that the appellant within such period of fourteen days give notice in writing of such appeal to the law officer and to the Commissioner, and if he be an applicant or patentee to the objectors, (if any,) or if he be an objector to the applicant or patentee and to the other objectors, (if any,) and in such notice state the grounds of such appeal and before delivering such notice at the chambers of the law officer pay the prescribed fees, which shall go to and form part of the consolidated revenue.

(3) The law officer shall at a time and place to be fixed by him proceed to rehear and determine the matter of such appeal, and may reverse, vary, or confirm the decision or determination of the Commissioner; and thereupon the law officer may issue a warrant under his hand for the granting of a patent to the applicant for the same in the form in the third schedule hereto or in such other form as may be from time to time prescribed, or may decline to issue the same, as under all the circumstances of the case he may think right and just.

29. (1) The hearing of any appeal, application, petition, or other proceeding or matter under this act before the law officer or the Commissioner may be adjourned from time to time and from place to place.

(2) The law officer or Commissioner (as the case may be) may call to his aid such expert, scientific, and other persons as he thinks fit, and may require a report from or take the opinion of any such expert or scientific person in writing.

(3) The law officer or Commissioner (as the case may be) also may by summons under his hand require the attendance of all such persons as he thinks fit before him for examination, and may by writing under his hand order to be paid to any such persons summoned at the request of any applicant, patentee, petitioner, objector, or other party such reasonable remuneration for their attendance as he thinks fit, and may also in like manner order that such remuneration and the costs of and incidental to any such appeal or to the hearing of any such application, petition, or other proceeding or matter under this act shall be paid by any applicant, patentee, petitioner, objector, or other party and to whom such costs shall be paid, and in and by such writing may fix the amount of such remuneration and costs. Every such order shall be in the form contained in the fourth schedule hereto or to the like effect and may be made a rule of the Supreme Court.

30. The law officer and the Commissioner may examine witnesses on oath and may administer oaths in any proceeding under this act.

31. If any person whose attendance for examination has been by the law officer or the Commissioner so required at the hearing of any such proceeding or matter, and on whom any such summons has been served by the delivery thereof to him or by the leaving thereof at his usual place of abode, and to whom conduct-money and expenses according to the scale for the time being in force with respect to civil suits in the Supreme Court has been paid or tendered, neglect or fail to appear or refuse to make answer to such questions as are put to him touching such proceeding or matter, such person shall forfeit and pay a penalty not exceeding twenty pounds, to be recovered by any person authorized so to do by the law officer in a summary way before a justice of the peace.

32. Every applicant, patentee, petitioner, objector, or other person having a special interest in the subject-matter of any proceeding or matter heard by the law officer or by the Commissioner under this act shall be entitled to be present at such hearing.

PART VIII.—APPEAL TO SUPREME COURT.

33. (1) If any applicant, patentee, petitioner, objector, or other person as aforesaid be dissatisfied with the refusal of the law officer to issue his warrant for the granting of a patent or with any other decision of the law officer with respect to any proceeding or matter under this act, such applicant, patentee, petitioner, objector, or other person as aforesaid may appeal to the Supreme Court.

(2) No such appeal shall be entertained unless before entering the same a certificate under the hand and seal of the Commissioner that the appellant has paid all costs (if any) ordered by the Commissioner or the law officer to be paid by him in respect of any matters arising out of the application, petition, or other proceeding or matter is produced to the proper officer of the Supreme Court. The mode of such appeal and all matters relating to pleading, practice, and procedure therein shall be in accordance with rules of court for the time being in force; and the said court after hearing such appeal shall determine the same, and may reverse, vary, or confirm any decision or determination appealed from and may make such order as to the costs of the appeal as to it may seem fit.*

(3) For the purpose of regulating such appeals the Supreme Court may at any time, with a concurrence of a majority of the judges thereof present at any meeting for that purpose held, make rules of court and may from time to time annul any such rules and make further or additional rules; and the Supreme Court may, subject to such rules and to the prerogative of the Crown, as hereinafter provided, direct a warrant to issue for the granting of such patent, and such warrant shall be to all intents and purposes as valid and effectual as though it were a warrant for the granting of a patent under the hand of the law officer or the Commissioner.

PART IX.—REGISTER OF PATENTS.

34. (1) There shall be kept at the Patent Office a book or books to be called "The Register of Patents," wherein shall be entered and recorded in chronological order—

All patents granted under this act;

The names and addresses of grantees of patents;

Notifications of assignments and of transmission of patents and of licenses under patents;

A memorandum of the deposit and filing of specifications and disclaimers and of amendments of patents and specifications and of confirmations and extensions of patents; and

A memorandum of the expiry, revocation, or other determination of patents;

with the dates of all such, respectively, and such other matters and things affecting the validity of patents as may be prescribed; and such register or a copy thereof shall be open at all convenient times to the inspection of the public subject to any rules which may be made in that behalf, as hereinafter provided.

(2) The provisions in this section contained shall (so far as regards anything done after the commencement of this act) apply as well to patents granted under any act relating to patents in force before the passing of this act as to those granted under this act.

(3) Such entering and recording of patents of assignments and transmission and of licenses under patents and of such deposit and filing of such specifications and disclaimers and of amendments, confirmations, extensions, expiry, revocation, and other determination shall be and be deemed to be an enrollment of record of the same in the Supreme Court.

* An application was made for letters patent for an automatic cask-tilter. An objection was taken that the invention was not new, and the warrant for the granting of letters patent was refused. The applicants appealed (under section 7 of Act No. 808, with which part of this section corresponds) to the full court. It appeared that there were four claims in the specification; that the first claim was not new, the second and third claims were new and meritorious, and the fourth claim was for a combination of all the other claims. *Held* that the warrant should issue upon the applicants obtaining leave to enter a disclaimer as to the first claim. The fact of the first claim being disallowed was not of itself a ground for disallowing it as part of a combination if the combination itself had patentable merit. The objector appeared before the full court and stated that he offered no opposition to the application, but the objection had been lodged on public grounds, and not for the protection of the patents granted to him. *Held* that costs should not be given under these circumstances against the objector. (*In re Schottky*, 14 V. L. R., 218.)

35. "The Register of Patents" and "The Register of Proprietors," kept under the act hereby repealed, shall be deemed parts of the same book as the Register of Patents kept under this act.

36. (1) Where a person becomes entitled by assignment, transmission, or other operation of law to a patent, the Commissioner shall, on request and on proof of title to his satisfaction, cause the name of such person to be entered as proprietor of the patent in the Register of Patents.

(2) The person for the time being entered in the Register of Patents as the proprietor of a patent shall, subject to the provisions of this act and to any rights appearing from such register to be vested in any other person, have power absolutely to assign, grant licenses as to, or otherwise deal with the same, and to give effectual receipts for any consideration for such assignment, license, or dealing: Provided, that any equities in respect of such patent may be enforced as in respect of any other personal property.

37. If any person wilfully make or cause to be made any false entry in the said register, or wilfully make or forge or cause to be made or forged any writing falsely purporting to be a copy of any entry in the said register, or produce or tender or cause or suffer to be produced or tendered in evidence any such writing, knowing the same to be false or forged, he shall be guilty of a misdemeanor, and on conviction thereof shall be liable to imprisonment for any term not exceeding five years.

38. If any person deem himself aggrieved by any entry made under color of this act in the said register, such person may apply by motion to the Supreme Court or by summons to a judge of such court for an order that such entry may be expunged, vacated, or varied, and upon any such application such court or judge may make such order for expunging, vacating, or varying such entry and as to the costs of such application as to such court or judge seems fit; and the officer having the care and custody of such register on the production to him of any such order shall expunge, vacate, or vary the said entry according to such order.

39. The Governor in Council may cause indices to all specifications, amendments of specifications, disclaimers, and memoranda of alterations enrolled or deposited before or after the passing of this act to be prepared in such form as may be thought fit, and such indices shall be open to the inspection of the public at such places as the Governor in Council appoints and subject to the rules made or for the time being in force hereunder.

40. There shall not be entered in the Register of Patents, or be receivable by the Commissioner, any notice of any trust expressed, implied, or constructive.

PART X.—FEES.

41. (1) There shall be paid, in respect of patents applied for or issued as herein mentioned the depositing of specifications, disclaimers, and memoranda of alterations, warrants, certificates, entries, and searches and other matters and things respectively mentioned in the fifth schedule hereto, such fees as are enumerated in that schedule.

(2) There shall also be paid, in respect of any copy of a specification or of any drawing made under the direction of the Commissioner at the request of any patentee by such patentee, the actual cost of the making of such copy.

(3) There shall also be paid, in respect of any notice given or memorandum filed which this act or any rules made or for the time being in force hereunder require the Commissioner to advertise or to give notice of to others, and in respect of every clerical error corrected or other thing done for which, by this act, a fee (the amount of which is not specified) is directed to be paid, such fees as may be directed by any rules made or for the time being in force hereunder.

(4) All fees received by the Commissioner under the authority of this act or the rules made or for the time being in force hereunder shall be accounted for by him, and shall go to and form part of the consolidated revenue.

PART XI.—EXTENSION OF TERM OF PATENT AND CONFIRMATION OF INVALID PATENT.

42. Any patentee, under any act relating to patents in Victoria, may present to the Commissioner a petition for the extension of the term of his patent, and set forth in such petition that he has been unable to obtain reimbursement and a due remuneration for his invention, and that an exclusive right of using and vending the same for some further period to be named in such petition in addition to such term is necessary for his reimbursement and remuneration. No such petition shall be received unless it be presented at least six months before the expiration of such patent.

43. If in any suit or action it be proved or specially found by the verdict of a jury that any patentee of an invention or supposed invention was not the true and first inventor thereof, or of some part thereof by reason of some other person having invented or used the same or some part thereof before the date of such patent, or if such patentee discover that some other person had, unknown to such patentee, invented or used the same or some part thereof before the date of such patent, such patentee may petition the Commissioner to confirm such patent or to grant a new patent.

44. The Commissioner shall, upon the receipt of any such petition, refer the matter to the Examiner for his report, and after receiving the same shall appoint a place and a date at least two months distant for the consideration of the subject-matter of the petition, and shall give notice thereof to the petitioner.

45. (1) Forty clear days at least before the time named by the Commissioner for the consideration of such petition the petitioner shall cause to be published, once in the Government Gazette and three times in some newspaper published in the city of Melbourne, and three times in some newspaper published or circulating in any locality in which the petitioner may use or exercise such invention or supposed invention, an advertisement of such appointment in the form contained in the sixth schedule hereto or to the like effect.

(2) Any person having an interest in opposing the said petition shall be at liberty at any time, not being less than one week before the time appointed for the consideration of such petition, to give notice at the Patent Office of opposition to the prayer of such petition being granted.

46. (1) At the time and place fixed for that purpose the Commissioner shall proceed to consider such petition and to hear and inquire upon the whole matter, and the petitioner or his counsel or agent and his witnesses shall be heard to prove his case as stated in such petition, and the publication of the advertisement and the giving of notices, as required by this act, and the objectors or their counsel or agents and witnesses shall likewise be heard.

(2) The Commissioner may (where the petitioner has prayed for an extension) decide whether any, and if any, what further extension of the term of the patent should be granted, and he may, if he think fit, issue a warrant under his hand for the granting to the petitioner of a new patent for such invention for a term not exceeding fourteen years after the expiration of the first term, anything hereinbefore contained to the contrary notwithstanding; and such new patent shall be sealed and bear date as of the day after the expiration of the term of the first patent.

(3) The Commissioner may, (where the petitioner has prayed for a confirmation of grant as aforesaid,) if he be satisfied that the patentee believed himself to be the true and first inventor, and that such invention or part thereof had not been publicly and generally used before the date of the first patent, decide that the prayer of such petition ought to be complied with and confirm such patent or issue a warrant under his hand for the granting a new patent (as the case may be) accordingly, and the patent so confirmed or the new patent granted in pursuance of such warrant shall be available at law and in equity to give to such petitioner the sole right of using, making, and vending such invention as against all persons whomsoever, notwithstanding anything hereinbefore contained.

(4) Every person who was objector or other party to any former suit or action touching the first patent shall, if resident or carrying on business in Victoria, be entitled to have notice in writing sent to his last-known place of business or residence in Victoria of the time and place fixed by the Commissioner to consider the petition. After his decision has been given it shall not be material or necessary to inquire or ascertain whether any such advertisement has or has not been published, or whether any such notice has or has not been given in the manner hereinbefore directed in that behalf. Every decision of the Commissioner under the provisions of this section shall be subject to appeal, as hereinbefore provided.

PART XII.—REVOCATION.

47. (1) Nothing in this act contained shall be construed to authorize any proceeding by *scire facias* to appeal a patent or to interfere with the abolition of such procedure by "The Patents Act, 1884."

(2) Revocation of a patent may be obtained on petition to the Supreme Court and in no other manner.

(3) Every ground on which a patent might, immediately before the commencement of "The Patents Act, 1884," be repealed by *scire facias* shall be a ground of revocation.

(4) A petition for revocation of a patent may be presented by—

(*a*) The law officer;

(*b*) Any person authorized by the law officer;

(*c*) Any person alleging that the patent was obtained in fraud of his rights or of any person under or through whom he claims;

(*d*) Any person alleging that he or that any person under or through whom he claims was the true and first inventor of any invention included in the claim of the patentee;

(*e*) Any person alleging that he or any person under or through whom he claims an interest in any trade, business, or manufacture had publicly manufactured, used, or sold within Victoria before the date of the patent anything claimed by the patentee as his invention;

(*f*) Any person alleging that the patentee was not the actual inventor, the assignee of the actual inventor, nor his or their legal representative, and that the invention included in the claim of the patentee was not communicated to the patentee by the actual inventor, his legal representatives or assigns, (if the actual inventor, his legal representatives or assigns, is or are not resident in Victoria.)

(5) The plaintiff must deliver with his petition particulars of the objections on which he means to rely, and no evidence shall, except by leave of the Supreme Court or a judge thereof, be admitted in proof of any objection of which particulars are not so delivered.

(6) Particulars delivered may be from time to time amended by leave of the Supreme Court or a judge thereof.

(7) The defendant shall be entitled to begin and give evidence in support of the patent, and if the plaintiff gives evidence impeaching the validity of the patent the defendant shall be entitled to reply.

(8) Where a patent has been revoked on the ground of fraud the Commissioner may, on the application of the registered proprietor made in accordance with the provisions of this act, grant to him a patent in lieu of and bearing the same date as the patent so revoked; but the patent so granted shall cease on the expiration of the term for which the revoked patent was granted.

PART XIII.—CROWN.

48. A patent shall have to all intents the like effect as against Her Majesty the Queen, her heirs and successors, as it has against a subject; but a responsible Minister of the Crown at the head of any department of the public service may use for the public service any patented article or any patented manufacturing process on such terms as may be agreed on with the patentee of such article or process, or, in default of such agreement, on such terms as may be settled by arbitration conducted in the prescribed manner.

PART XIV.—LEGAL PROCEEDINGS.

49. (1) In an action or proceeding for infringement or revocation of a patent, the judge who is trying the action may, if he think fit, and shall, on the request of either of the parties to the proceeding, call in the aid of an assessor specially qualified and try and hear the case wholly or partially with his assistance. The action shall be tried without a jury unless the court otherwise direct.

(2) The remuneration (if any) to be paid to an assessor under this section shall be determined by the judge or judges who have called such assessor to his or their aid and be costs in the cause.

50. (1) In an action for infringement of a patent the plaintiff shall deliver with his statement of claim, or by order of a Judge of the Supreme Court at any subsequent time, particulars of the breaches complained of; or, where the action is brought in a county court, the plaintiff shall deliver or cause to be delivered with his plaint summons particulars of the breaches complained of, and at any subsequent time shall deliver such further particulars as may be required by the defendant under any rules for the time being in force relating to procedure in county courts.

(2) The defendant on pleading thereto shall deliver with his statement of defence or by order of the Supreme Court or a judge thereof at any subsequent time particulars* of any objections on which he relies in support thereof; or where the action is brought in a county court notice of the particulars of any objections on which the defendant relies shall be given by him in the same manner in all respects as though the same were one of the special defences of which notice is required to be given by section sixty-six of the County Court Act 1890, and by any rules for the time being in force under the said act.

(3) If the defendant disputes the validity of the patent, the particulars delivered by him must state on what grounds he disputes it, and if one of those grounds is want of novelty, must state the time and place of the previous publication or user alleged by him.

(4) At the hearing no evidence shall, except by leave of the judge, be admitted in proof of any alleged infringement or objection of which particulars are not so delivered.

(5) Particulars delivered may be from time to time amended by leave of the court in which the action is then pending or a judge thereof.

(6) On taxation of costs regard shall be had to the particulars delivered by the plaintiff and by the defendant, and they respectively shall not be allowed any costs in respect of any particular delivered by them unless the same is certified by the court in which the action was tried or a judge thereof to have been proven or to have been reasonable and proper without regard to the general costs of the case

51. In an action for infringement of a patent the court in which such action is pending or a judge thereof may, on the application of either party, make such order for an injunction, inspection, or account, and impose such terms and give such directions respecting the same and the proceedings thereon as the said court or such judge may see fit.

52. In an action in the Supreme Court for infringement of a patent the court or a judge thereof may certify that the validity of the patent came in question, and if the court or judge so certifies, then in any subsequent action for infringement the plaintiff in that action, on obtaining a final order or judgment in his favour, shall have his full costs, charges, and expenses as between solicitor and client, unless such court or judge before whom the action was tried certifies that he ought not to have the same.

53. Where any person claiming to be the patentee of an invention, by circulars, advertisements, or otherwise, threatens any other person with any legal proceedings or liability in respect of any alleged manufacture, use, sale, or purchase of the invention, any person or persons aggrieved thereby may bring an action against him and may obtain an injunction against the continuance of such threats, and may recover such damage (if any) as may have been sustained thereby if the alleged manufacture, use, sale, or purchase to which the threats related was not in fact an infringement of any legal rights of the person making such threats; but this section shall not apply if the person making such threats with due diligence commences and prosecutes an action for infringement of his patent.

PART XV.—ARRANGEMENTS WITH OTHER PORTIONS OF BRITISH DOMINIONS.

54. (1) If the Governor in Council is pleased to make any arrangement with the Government or Governments of any Australian colony, or with the Government of the colony of New Zealand, or of the colony of Fiji for the mutual protection of inventions, then any person who has applied for the protection of any invention in any such colony shall be entitled to a patent for such invention under this act in priority to other persons whose applications in Victoria for a patent in respect of such invention have been made subsequent to the making of the application of such first-mentioned person in such colony, and such patent shall have the same date as the date of the application in such colony.

(2) Every application of any such first-mentioned person shall be made within six months from his applying for protection in the colony with which the arrangement is in force, and nothing in this section contained shall entitle the patentee to recover damages for infringements happening prior to the commencement of the period of provisional protection.

(3) The publication in Victoria during the period aforesaid of any description of such invention or the use therein during such period of the invention (whether with or without the consent of such patentee) shall not invalidate the patent which may be granted for the invention.

(4) The application for a grant of a patent under this section must be made in the same manner as an ordinary application under this act.

(5) The provisions of this section shall apply only to such of the colonies aforesaid with respect to which the Governor from time to time by Order in Council declares them to be applicable, and so long only in the case of each colony as the Order in Council continues in force with respect to that colony.

55. Where Her Majesty has by Order in Council applied or has signified her intention of applying the provisions of section one hundred and three, or any portion thereof, of an Act of the Imperial Parliament called "The Patents, Designs, and Trade-Marks Act, 1883," as amended by any subsequent act to Victoria, the provisions of the last preceding section may by order of the Governor in Council be applied for the protection of inventions patented in the United Kingdom. Any such Order in Council may be at any time revoked.

PART XVI.—MISCELLANEOUS.

56. (1) Notwithstanding anything in any act of Parliament contained, where any patent or like privilege for the monopoly or exclusive use or exercise in any parts out of Victoria of any invention first invented in parts out of Victoria has been obtained, a patent may be granted for such invention at any time within one year from the date of the granting of the first of any such patents or privileges notwithstanding that such invention has been used or published in Victoria within such period of one year, and such patent when granted shall have the same force and effect as if such prior publication or use had not taken place

(2) If such use or publication have been made in Victoria with the consent of the true and first inventor for the time being, such inventor shall not be entitled to a grant of letters patent under the authority of this section.

57. Every patent may be in the form in the seventh schedule to this act and shall be granted for one invention only, but may contain more than one claim, but it shall not be competent for any person in an action or other proceeding to take any objection to a patent on the ground that it comprises more than one invention.

58. (1) If a person possessed of an invention dies without making application for a patent for the invention, application may be made by and a patent for the invention granted to his legal representatives.

(2) Every such application must be made within twelve months of the decease of such person and must contain a solemn declaration in the prescribed form by the legal representatives that they believe such person to be the true and first inventor of the invention.

59. A patentee may assign his patent for any place in or part of Victoria as effectually as if the patent were originally granted to extend to that place or part only.

60. A patent granted to the true and first inventor shall not be invalidated by an application in fraud of him or by provisional protection obtained thereon or by any use or publication of the invention subsequent to that fraudulent application during the period of provisional protection.

61. If a patent is lost or destroyed or its non-production is accounted for to the satisfaction of the Commissioner, the Commissioner may at any time cause a duplicate thereof to be sealed.

62. The exhibition of an invention at an industrial or international exhibition, or the publication of any description of the invention during the period of the holding of the exhibition, or the use of the invention for the purpose of the exhibition in the place where the exhibition is held, or the use of the invention during the period of the holding of the exhibition by any person elsewhere without the privity or consent of the true and first inventor shall not prejudice the right of the inventor or his legal personal representative to apply for and obtain provisional protection and a patent in respect of the invention or the validity of any patent granted on the application, provided that both the following conditions are complied with, namely:

(*a*) The exhibitor must before exhibiting the invention give the Commissioner one month's notice of his intention to do so; and

(*b*) The application for a patent must be made before or within twelve months from the date of the opening of the exhibition.

63. (1) No patent for any invention granted after the commencement of this act shall extend to prevent the use of such invention in any foreign ship or vessel or for the navigation of any foreign ship or vessel in any port of Victoria or in any of the waters within the jurisdiction of any of Her Majesty's courts of Victoria, where such invention is not so used for the manufacture of any goods or commodities to be vended within or exported from the same.

(2) This enactment shall not extend to the ships or vessels of any foreign state, the laws of which authorize subjects of such foreign state having patents or like privileges for the exclusive use or exercise of inventions within its territories, to prevent or interfere with the use of such inventions in British ships or vessels or in or about the navigation of British ships or vessels while in the port of such foreign state or in the waters within the jurisdiction of its courts where such inventions are not so used for the manufacture of goods or commodities to be vended within or exported from the territories of such foreign state.

64. No patent shall be granted for any invention the use of which would be in the opinion of the Supreme Court law officer or Commissioner (as the case may be) contrary to law or morality or dangerous or injurious or prejudicial to the public interest.

65. The Commissioner may, on request in writing, accompanied by the prescribed fee—

(*a*) Correct any clerical error in or in connection with an application for a patent; or

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*In an action for infringement of a patent, the defendant pleaded want of novelty as a defence, and accompanied defence by particulars of objections, alleging prior publication of the inventions in certain Gazettes and books, but without stating the precise pages, passages, or chapters relied on. *Ordered*, that the defendants deliver further and better particulars. (*The Victorian Cable Traction Company* v. *Melbourne Tramway Trust*, 14 V. L. R., 250.)

(b) Correct any clerical error in the name, style, or address of the registered proprietor of a patent.

66. Where any discretionary power is by this act given to the Commissioner, he shall not exercise that power adversely to the applicant for a patent or for amendment of a specification without (if so required within the prescribed time by the applicant) giving the applicant an opportunity of being heard personally or by his agent.

67. The Commissioner may, in any case of doubt or difficulty arising in the administration of any of the provisions of this act, apply to the law officer for directions in the matter.

68. Any application, petition, or solemn declaration authorized or required to be made under this act may in the case of a corporation be made in the manner prescribed by the rules made or for the time being in force hereunder.

69. (1) Any application, notice, or other document authorized or required to be left, made, or given at the Patent Office or to the Commissioner or to any other person under this act may be sent by a prepaid letter through the post, and if so sent shall be deemed to have been left, made, or given respectively at the time when the letter containing the same would be delivered in the ordinary course of post

(2) In proving such service or sending it shall be sufficient to prove that the letter was properly addressed and put into the post.

70. Whenever the last day fixed by this act or by any rule for the time being in force for leaving any document or paying any fee at the Patent Office shall fall on Sunday or any public holiday, such document may be left or such fee may be paid on the day next following such excluded day or days if two or more of them occur consecutively.

71. If any person is by reason of infancy, lunacy, or other inability incapable of making any declaration or doing anything required or permitted by this act or by any rules made or for the time being in force under the authority of this act, then the guardian or committee (if any) of such incapable person, or if there be none, any person appointed by any court or judge possessing jurisdiction in respect of the property of incapable persons, upon the application of any person on behalf of such incapable person, or of any other person interested in the making such declaration, or doing such thing may make such declaration or a declaration as nearly corresponding thereto as circumstances permit, and do such thing in the name and on behalf of such incapable person, and all acts done by such substitute shall for the purposes of this act be as effectual as if done by the person for whom he is substituted.

72. Any person—

Who writes, paints, prints, moulds, casts, carves, engraves, stamps, or otherwise marks upon anything made, used, or sold by him and for the sole making or selling of which he has not obtained a patent the name or any imitation of the name of any other person who has as patentee obtained a patent for the sole making and selling of such thing without leave in writing of such patentee; or

Who upon such thing not having been purchased from the patentee or not having had the license or consent in writing of such patentee writes, paints, prints, moulds, casts, carves, engraves, stamps, or otherwise marks the word "Patent" or "Patented," or the words "Letters Patent," "Royal Letters Patent," or "Queen's Patent," or any word or words of like import with the intent of counterfeiting or imitating the stamp, mark, or device of the patentee, or of deceiving the public and inducing them to believe that the thing in question was made or sold by or with the consent of the patentee; or

Who puts to sale as patented in Victoria any article not patented in Victoria for the purpose of deceiving the public shall be guilty of a misdemeanor and on conviction thereof be liable to a penalty not exceeding one hundred pounds or to imprisonment for a period not exceeding six months.

73. (1) Nothing herein contained shall extend to abridge or affect the prerogative of the Crown in relation to the granting or withholding the grant of any patent.

(2) The Governor in Council may order the law officer or Commissioner to withhold his warrant, or may order that any patent for the granting whereof a warrant has been issued shall not issue, or may order the insertion in any such patent of any restrictions, conditions, or provisos in addition to or in substitution for any restrictions, conditions, or provisos which would otherwise be inserted therein under this act; and the Governor in Council may order any acceptance of an application for a patent in respect of an invention described and for which no patent has been granted to be canceled, and thereupon the provisional protection shall cease.

74. The Governor in Council may from time to time make, alter, and repeal rules (not inconsistent with this act)—

For regulating the procedure and practice under this act before the Commissioner and the law officer:

For making or requiring duplicates of specifications, amendments, drawings, and other documents;

For providing a scale of costs in all such proceedings;

For prescribing the forms of all applications, notices, warrants, or certificates under this act;

For securing and regulating the inspection, publishing, and selling of copies of specifications, drawings, amendments, indexes, abridgements, and other documents in the Patent Office;

For providing for the settlement by arbitration of disputes with respect to the terms on which any patented invention may be used for the public service;

For fixing the fees to be paid when an extended period for deposit or acceptance of complete specification has been allowed or when an enlarged term for the payment of a fee by a patentee has been allowed;

For fixing the fees to be paid on the giving of any notice or filing of any memorandum which the Commissioner is required by this act or any rules made or for the time being in force hereunder subsequently to advertise or to give notice of to others, or for the correction of any clerical errors as herein before provided, or for the doing of anything for which by this act a fee the amount whereof is not specified is directed to be paid;

For regulating the issue of licences to persons to practise as agents for the procuring and taking out of patents and for fixing the amount or fee to be charged for each such licence per annum; and

Generally for the purposes of and for giving effect to this act.

Any of the forms in the schedules to this act may be altered or amended, or new forms substituted therefor by such rules. All such rules shall be laid before both Houses of Parliament within fourteen days after the making thereof if Parliament be then sitting, and if Parliament be not sitting then within fourteen days after the next meeting of Parliament.

75. All patents granted in the United Kingdom of Great Britain and Ireland after the thirty-first day of December in the year of our Lord one thousand eight hundred and fifty-seven for any invention shall, so far as the same relate to Victoria, be and be deemed to have been utterly void and of none effect and in no wise be put in execution; but all such patents granted in the said United Kingdom on or before that day and which would be or would have been valid in Victoria if this act or any other act relating to patents in force in Victoria had not been passed shall be deemed and taken to have been granted under this act and may be dealt with accordingly.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 61.—No. 10. TUESDAY, DECEMBER 6, 1892. PRICE—$5 per year.

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Notice.

(ORDER No. 789.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., November 26, 1892.

It is hereby directed that in the printing of claims of applications for patents the punctuation of the claims as made by applicants be strictly followed, and that the punctuation of the specification made by applicants be not departed from except to cure a manifest absurdity.

W. E. SIMONDS,
Commissioner.

Withdrawal of Cases from Issue.

Hereafter all amendments proposed to allowed applications which involve a withdrawal from issue, and all petitions and requests relating thereto, shall be filed with the docket clerk, Mr. J. M. Emory, and transmitted by him to the Primary Examiner for report. If the Examiner shall report favorably to the admission of such amendment, the matter will be laid before the Commissioner for immediate determination. If the Examiner shall report unfavorably, the case will be docketed and will be heard and decided by the Commissioner in regular course, unless good reasons shall appear for immediate action.

Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subclassified in the Scientific Library for convenient and ready reference.

Protection of Foreign Exhibitors.

DEPARTMENT OF STATE,
Washington, D. C., July 30, 1892.

To the Diplomatic and Consular Officers of the United States:

GENTLEMEN: I subjoin a transcript of the act of Congress approved April 6, 1892, Public No. 29, entitled "An act to protect foreign exhibitors from prosecution for exhibiting wares protected by American patents and trade-marks," which reads as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That no citizen of any other country shall be held liable for the infringement of any patent granted by the United States, or of any trade-mark or label registered in the United States, where the act complained of is or shall be performed in connection with the exhibition of any article or thing at the World's Columbian Exposition at Chicago.

You will transmit copies of this circular to the government of the country to which you are accredited, and ask that it be given the widest possible circulation for the information of those directly concerned.

I am, gentlemen, your obedient servant,

JOHN W. FOSTER,
Secretary of State.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., August 4, 1892.

Official copy to the Commissioner of Patents for his information and guidance.

E. M. DAWSON,
Chief Clerk.

Indexes to Patents on Electricity.

Indexes to patents relating to electricity, covering the period of time from July 1, 1882, to June 30, 1890, have been issued, and are for sale. These indexes, arranged alphabetically, numerically, and by classes, comprise the following volumes, the prices of which are given below:

Vol. 1. Index to patents relating to electricity granted by the United States prior to June 30, 1881, with an appendix, July 1, 1881, to June 30, 1882. One volume, 250 pages. In paper covers, $3; bound, $5.

Vol. 2. Appendix No. 2, July 1, 1882, to June 30, 1883. One volume, 50 pages. In paper covers, $1.50.

Vol. 3. Appendix No. 3, July 1, 1883, to June 30, 1884. One volume, 60 pages. In paper covers, $1.50.

Vol. 4. Appendix No. 4, July 1, 1884, to June 30, 1885. One volume, 60 pages. In paper covers, $1.50.

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Vol. 6. Appendix No. 6, July 1, 1886, to June 30, 1887. One volume, 52 pages. In paper covers, $1.50.

Vol. 7. Appendix No. 7, July 1, 1887, to June 30, 1888. One volume, 69 pages. In paper covers, $1.50.

Vol. 8. Appendix No. 8, July 1, 1888, to June 30, 1889. One volume, 72 pages. In paper covers, $1.50.

Vol. 9. Appendix No. 9, July 1, 1889, to June 30, 1890. One volume, 84 pages. In paper covers, $1.50.

Vol. 10. Appendix No. 10, July 1, 1890, to June 30, 1891. One volume, 98 pages. In paper covers, $1.50.

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Issue of December 6, 1892.

Patents	464	No. 487,238 to No. 487,701, inclusive.
Designs	28	No. 22,028 to No. 22,055, inclusive.
Trade-Marks	51	No. 22,100 to No. 22,150, inclusive.
Labels	None.	
Reissues	2	No. 11,292 to No. 11,293, inclusive.
Total issue	545	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama			Nevada		
Arizona Territory			New Hampshire	1	
Arkansas			New Jersey	26	2
California	15		New Mexico Ter		
Colorado	11		New York	75	6
Connecticut	30	3	North Carolina	2	
Delaware	1		North Dakota	1	
District of Columbia	5		Ohio	23	1
Florida	1		Oregon	2	
Georgia			Pennsylvania	37	11
Idaho			Rhode Island	8	1
Illinois	30	4	South Carolina		
Indian Territory			South Dakota		
Indiana	18		Tennessee	1	
Iowa	11		Texas	8	
Kansas	9		Utah Territory	2	
Kentucky	9		Vermont	2	
Louisiana	3		Virginia	3	
Maine	3		Washington	3	
Maryland	4	6	West Virginia		
Massachusetts	31	4	Wisconsin	19	1
Michigan	20	3	Wyoming	1	
Minnesota	12	1	U. S. Army	1	
Mississippi		1	U. S. Navy	1	
Missouri	15	2			
Montana	3		Total to citizens of the United States	460	46
Nebraska	4				

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic			Netherlands	1	
Austria-Hungary			Newfoundland		
Belgium			New South Wales		
Brazil			New Zealand		
British Guiana			Norway	1	
Canada	8	1	Porto Rico		
Chile, Republic of			Portugal		
Cuba			Russia	1	
Denmark			Scotland		
England	11	1	South Australia		
France	4	1	Spain		
Germany	4		Sweden	1	
Guatemala			Switzerland	1	2
India			Victoria		
Hawaii			West Indies		
Ireland					
Italy			Total to citizens of foreign countries	32	5
Mexico					

APPLICATIONS UNDER EXAMINATION.

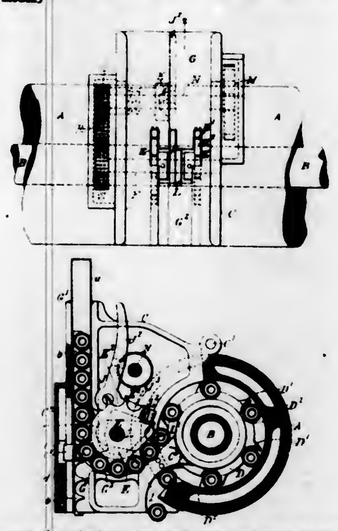
Condition at Close of Business November 29, 1892.

Division No.	Subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended.	No. of applications awaiting action.
	Under one month in arrears.			
31	Gas, Painting, Leather, Tanning, Alcohol, Oils, Fats, and Glue, etc.	Oct. 31	Nov. 16	76
	Between one and two months in arrears.			
2	Farm Stock, Products, etc	Oct. 1	Nov. 21	218
16	Telegraphy, Telephony, Electric Lighting and Signaling.	Oct 1	Nov. 19	186
14	Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, etc.	Sept. 29	Nov. 18	125
8	Furniture, Toilet, Umbrellas and Canes, etc.	Oct. 3	Nov. 16	246
12	Mechanical Engineering, Stores-Service, etc.	Oct. 1	Nov. 12	213
10	Carriages and Wagons and Railway-Cars.	Oct. 1	Nov. 12	360
25	Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, etc.	Oct. 3	Nov. 9	161
21	Textiles, etc	Oct. 8	Nov. 3	167
30	Lamps, Gas-Fittings, Type-Writers, Matrix-Making Machines.	Sept. 30	Oct. 29	205
18	Steam-Engineering, etc	Sept. 30	Oct. 27	149
9	Hydraulics, Fire-Extinguishers, etc.	Sept. 30	Oct. 24	398
11	Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting.	Oct. 1	Oct. 20	268
19	Stoves and Furnaces	Sept. 29	Oct. 15	364
17	Paper-Manufactures and Printing.	Oct. 1	Oct. 13	208
5	Fine Arts, Stationery, Book-Binding, Music, etc.	Oct. 1	Oct. 11	238
20	Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc.	Sept. 29	Oct. 5	314
6	Chemistry, Medicines, Fertilisers, Preserving, Photography, Sugar and Salt, etc.	Sept. 29	Oct. 4	268
1	Tillage and Fences	Oct. 5	Oct. 1	281
27	Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	Sept. 29	Oct. 1	260
24	Sewing-Machines and Apparel	Oct. 6	Sept. 29	140
15	Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc.	Sept. 29	Sept. 29	262
	Between two and three months in arrears.			
22	Fire-Arms, Navigation, Signals, etc.	Sept. 19	Nov. 8	218
7	Harvesters, Games and Toys	Sept. 1	Nov. 5	545
23	Instruments of Precision, Acoustics, Optics, etc.	Sept. 16	Oct. 26	261
3	Metallurgy, Metal Founding, Forging, Rolling, Coating, Annealing and Tempering, etc.	Sept. 16	Oct. 3	228
4	Civil Engineering, etc	Sept. 28	Sept. 27	377
	Between three and four months in arrears.			
13	Metal-Working, Arms and Projectiles, etc.	Aug. 1	Nov. 8	234
32	Advertising, Baggage, Packing and Storing Vessels, etc.	Aug. 19	Nov. 1	270
28	Pneumatics, Refrigeration, Air and Gas Engines, etc.	Aug. 24	Sept. 17	399
	Between four and five months in arrears.			
29	Wood-Working Machines, Carpentry, Coopering and Roofing, etc.	July 8	Oct. 25	397
	Between six and seven months in arrears.			
26	Electricity, Generation, Distribution, etc.	May 14	Oct. 3	569
	Total number of applications awaiting action			8,605
	Under one month in arrears.			
	Designs	Nov. 22	Nov. 22	34
	Trade-Marks	Nov. 25	Nov. 26	33

PATENTS

GRANTED DECEMBER 6, 1892.

487,238. FEED MECHANISM FOR MACHINE-GUNS. JAMES G. ACCLES, Birmingham, England. Filed Jan. 26, 1892. Serial No. 419,334. (No model.)



Claim.—1. In a feed mechanism for machine-guns, the combination of a hopper, a rotatable receiver, a feed mechanism between said hopper and receiver, means projecting into the hopper and actuated by the cartridges therein for shifting said feed mechanism into operative connection with the receiver, whereby the former is actuated by the shaft upon which the latter is mounted, and means for automatically disengaging said shifting mechanism when the last cartridge is passed into the receiver.

2. In a feed mechanism for machine-guns, the combination of a hopper provided with a feed-channel or guide, a corrugated or fluted slide or guide-strip moving in said channel, a feed-wheel, means for actuating said feed-wheel, a lever having its end projecting into said feed-channel or guide, so that the cartridge in passing through the channel will move said lever, and mechanism operated by said lever for shifting the feed-wheel into operative connection with its actuating mechanism.

3. In a feed mechanism for machine-guns, the combination of a hopper provided with a feed-channel or guide, a corrugated or fluted slide or guide-strip moving in said channel, a feed-wheel, a lever having its end projecting into said channel or guide, so that the cartridge in passing through the channel will move said lever, a clutch mechanism for rotating said clutch, a projection on said lever adapted to shift the members of the clutch into operative connection, and mechanism operated by said clutch for moving the feed-wheel.

4. In a feed mechanism for machine-guns, the combination of the hopper provided with a feed-channel or guide, a feed-strip moving in said channel, a guide on said hopper, a piston in said guide provided with a projection extending through a slot in the hopper and into contact with said feed-strip, and a spring on said piston for ejecting the empty feed-case, as set forth.

5. In a feed mechanism for machine-guns, the combination of a hopper provided with a feed-channel or guide, a feed-wheel, mechanism for rotating said feed-wheel, a lever having one end projecting into said channel, an auxiliary arm projecting into said channel, one end engaging the lever, and mechanism operated by said lever for shifting the feed-wheel into engagement with its operating mechanism when said lever or auxiliary arm is moved by a cartridge.

6. In a feed mechanism for machine-guns, the combination of a hopper provided with a feed-channel or guide, a feed-wheel, mechanism for operating said feed-wheel, a three-armed lever, one arm of said lever projecting into the feed-channel or guide, an auxiliary pivoted arm also projecting into the said channel or guide and engaging one arm of said lever, and a clutch engaged by a projection on one arm of said lever for bringing the feed-wheel into operative connection with its operating mechanism.

7. In a mechanism for a machine-gun, the combination of a hopper provided with a feed-channel or guide, a lever having a projection in said channel, a clutch the members of which are engaged by the action of said lever, means for rotating said clutch, a gear-wheel operated by said clutch, a pinion meshing with said gear-wheel, a shaft, a spur-wheel on said shaft meshing with said pinion, and a toothed feed-wheel on the spur-wheel shaft, the teeth of said wheel projecting into the channel of the hopper.

8. In a mechanism for machine-guns, the combination of a hopper provided with a feed-channel or guide, a feed-wheel in said hopper, a main spindle for operating the gun mechanism, a receiver on said spindle, a wheel mounted on said spindle provided with studs, a clutch-shaft in said hopper, a wheel on said shaft provided with teeth meshing with said wheel on the spindle, a lever in said hopper, one end projecting into said channel, a clutch on said shaft adapted to be operated by said lever, and mechanism operated by said clutch for bringing the feed-wheel into operative connection with its operating mechanism.

9. In a mechanism for machine-guns, the combination of a hopper provided with a feed-channel or guide, a feed-wheel in said hopper, a main spindle for operating the gun mechanism, a receiver on said spindle provided with recesses in the circumference, a clutch in said hopper, a lever for shifting one member of said clutch, mechanism operated by said spindle for rotating said clutch, and mechanism connecting the other member of said clutch with the feed-wheel.

10. In a feed mechanism for machine-guns, the combination of a hopper provided with a channel or guide for feeding the cartridges to the gun, a spindle for operating the gun mechanism, a receiver on said spindle into which said channel opens, another channel I in said hopper for the empty cartridges, an ejector for ejecting said cartridges, formed between the channel I and said feed-channel, a feed-wheel in said hopper having one end projecting into said feed-channel, a lever also in said hopper, and mechanism for operating said wheel when said lever is moved by a cartridge.

11. In a gun mechanism, the combination of a hopper provided with a feed-channel or guide, a feed-wheel in said hopper, a cartridge-receiver, a holder provided with a corrugated strip containing cartridges adapted to be placed in said channel, so that the feed-wheels can remove the cartridges directly from the fluted strip and deliver them to the receiver, and mechanism for operating said feed-wheel and receiver.

487,239. BLOTTER. SAMUEL AXTELL, Elkhart, Ind. Filed Apr. 6, 1892. Serial No. 428,043. (No model.)

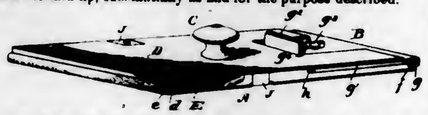
Claim.—1. A holder for blotter, sand, and other paper, having a clasp at one end and having a lip and a slide provided with a recurved end at the opposite end, substantially as and for the purpose described.

2. A holder for blotter, sand, and other paper, having a clasp at one end and having a tapering lip and a slide provided with a recurved

end at the opposite end, substantially as and for the purpose described.

3. A holder for blotter, sand, and other paper, having a clasp at one end and having the other end provided with a projecting lip and with a kerf and having a slide constructed with a recurved end adapted to work in the said kerf, substantially as described.

4. A holder for blotter, sand, and other paper, having a clasp at one end and having the other end provided with a projecting lip and with a kerf and having the portion of the holder above the kerf recessed, and a slide working in the said kerf and having a projection to enter the said recess and having its outer end recurved to coact with the said lip, substantially as and for the purpose described.



5. A holder for blotter, sand, and other paper, having a clasp at one end and having the other end provided with a projecting lip and with a kerf and having the portion of the holder above the kerf elastic, and a slide having a recurved end working in the said kerf, substantially as described.

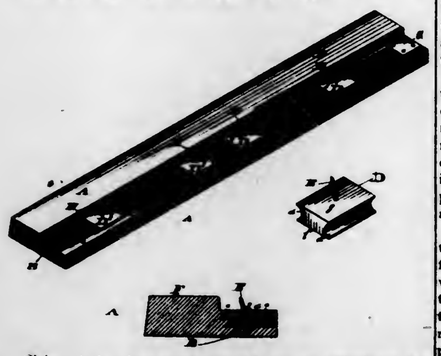
6. A holder for blotter, sand, and other paper, having a clasp at one end and having the other end provided with a projecting lip and with a kerf, and a slide having a recurved end working in the said kerf and having its edges bent to embrace the edges of the holder, substantially as described.

7. The combination, with a paper-holder, of a clasp composed of two plates which are secured to the opposite sides of the said holder and which have their ends projected beyond the end of the holder and bent in opposite directions, substantially as shown, for the purpose described.

8. In a blotter, the combination, with the holder adapted to have the paper secured thereto at its ends, of clips secured to the edges of the said holder between the ends thereof and adapted to have their ends extend over the paper for a short distance and come flush with the bottom side of the said holder, substantially as and for the purpose set forth.

487,240. QUILTING-FRAME. WILLIAM C. BACKUS, St. Louis, Mo.

Filed Dec. 3, 1891. Serial No. 413,891. (No model.)

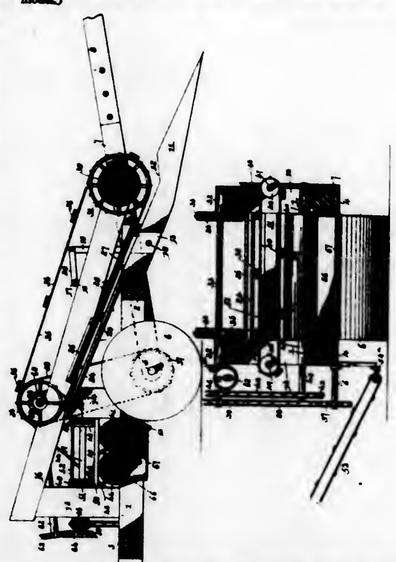


Claim.—1. In a lace-curtain-stretcher bar, the combination of a bar having a rabbeted inner edge, a series of slide-blocks, holding pins or devices having heads passing, as specified, through the slide-blocks, and a groove in the bar, in which the slide-blocks are adjustably secured to operate and slide in the groove and in or upon the rabbeted edge of the bar, with the heads of the holding pins or devices on their under sides, so that the heads of the pins or holding devices will be between the slide-blocks and the upper surface of the rabbeted edge of the bar, all substantially as described.

2. In a lace-curtain-stretcher bar, the combination of a bar A, having the unrabbeted edge F and the rabbeted edge B, the groove C with its beads *c*, the slide-blocks D with their grooves *d* operating adjustably in groove C on beads *c* and grooves *d*, and stop-blocks G, all substantially as described.

3. In a lace-curtain-stretcher bar, the combination of a bar A, having a rabbeted inner edge B, and the groove C with its beads *c*, the slide-blocks D with their grooves *d* adjustably secured in groove C by means of beads *c* and grooves *d*, the pins or holding devices E, having heads *e* and passing through slide-blocks D from their under sides *f*, which rest upon the bottom of groove C, so that the heads of the pins or holding devices are between the under sides of the blocks and the bottom of the groove, and stop-blocks G, all substantially as described.

487,241. CORN-HUSKER. OSCAR E. BEARDSLEY and OTTO BEARDSLEY, Trempealeau, Wis. Filed Apr. 11, 1892. Serial No. 428,687. (No model.)



Claim.—1. In a corn-husker, the combination, with a supporting-frame having a front cross-beam, the husking-rolls, and the traveling carrier extending from the front of the frame to said rolls, of picker-bars arranged at their rear ends in contact with said cross-beam, the transverse bolt extending through registering perforations in said bars, and spacing-blocks arranged upon said bolt between the bars, substantially as specified.

2. In a corn-husker, the combination, with the rectangular frame, the superimposed inclined frame, the rotary husking-rolls, means for operating the same, the superimposed platform open at one end of the rolls, the endless open belt passing over the platform and rolls, and means for operating said belt, of picker mechanism located at the front end of the frame, a pair of inclined spaced-apart boards having their inner faces studded with spurs, and an endless belt located above and passing between the boards and extending from the picker mechanism and terminating over the platform, substantially as specified.

3. In a corn-husker, the combination, with a rectangular frame, the axle journaled in the under side thereof, the superimposed inclined frame, and the roller mounted on the axle, of the forwardly and inwardly disposed hounds, the draft-pole clamped by the front ends of the hounds, the rear ends of the hounds being loosely connected with the axle, the transversely-opposite bearings in the inclined frame, the rock-shaft journaled in the bearings and provided with rock-arms, links pivotally connected at their upper ends to the rock-arms and at their lower ends to the hounds, and a lever mounted upon and adapted to operate the rock-shaft, substantially as specified.

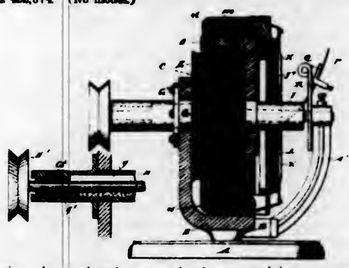
4. In a corn-husker, the combination, with the framework, the superimposed inclined frame, the upper and lower transverse shafts journaled therein, the endless belt or carrier mounted therein, and means for moving the same, of a transverse bolt located below the rectangular frame and in front of the cross-bar thereof, the series of inclined picker-bars perforated to receive the bolt and below the lower end of the carrier recessed to receive the latter, substantially as specified.

5. In a corn-husker, the combination, with a supporting-frame, of picker-bars 11, husking-rolls 42, an upwardly and rearwardly inclined platform 24, an upper parallel platform 27, said platforms having spurs upon their facing surfaces and terminating above the said rolls, an endless open belt 35 passing between said parallel platforms, and means for operating said belt and rolls, substantially as specified.

6. In combination, the supporting-frame, the picker-bars carried by said frame, the roller 6, the parallel spurred boards 24 and 27, the sprocket 34, connected by chain to said roller, the open endless belt 35, traveling over said sprocket and passing between the adjacent spurred faces of said boards, the husking-rolls located beneath the

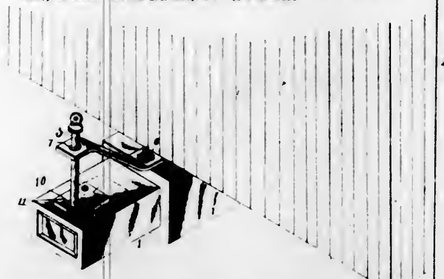
rear ends of said boards and geared together, and the chain connecting one of these rolls to said sprocket, substantially as specified.

487,242. ELECTRIC MOTOR. FRANKLIN H. BEERS, Newark, assignor to himself and William M. Tallman, Plainfield, N. J., and Brastus Hayes and Al. R. Brandly, New York, N. Y. Filed Feb. 26, 1892. Serial No. 422,874. (No model.)



Claim.—In an electric motor having a revolving armature, one field-magnet pole arranged exteriorly to such armature and one field-magnet pole mounted interiorly to such armature, the said field-magnet poles being arranged on opposite sides of the axis of motion, substantially as herein specified.

487,243. CAR-COUPLING. JOHN BRADFORD, Marceline, Ill. Filed Aug. 2, 1892. Serial No. 441,947. (No model.)



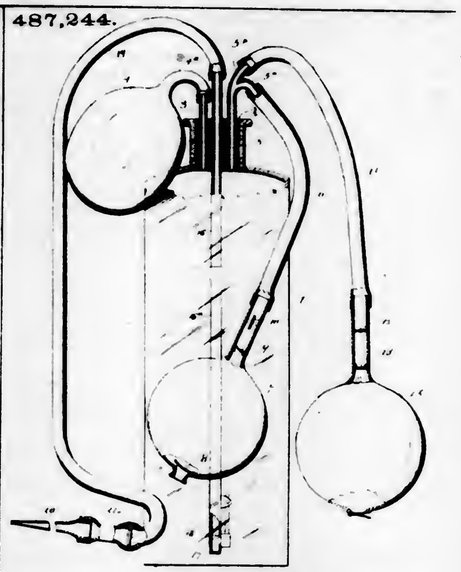
Claim.—1. In a car-coupling, the combination of a draw-head, a plate pivotally mounted on the draw-head and provided with a pin-receiving socket-opening, a pin-holding arm adapted to be swung to one side and extending upward and forward and having its upper end arranged over the pivoted plate and provided with a pin-opening, and a coupling-pin supported above the draw-head and having its lower end arranged in the socket-opening of the plate and its upper end arranged in the opening of the arm, substantially as described.

2. The combination of a draw-head having a coupling-pin perforation, a spring-actuated pin-support arranged within the draw-head, a plate pivoted to the draw-head and arranged on the upper face of the same and provided with a socket-opening, and a pin-supporting arm having its lower end pivoted and having its upper end arranged over said plate and provided with a pin-opening, substantially as described.

487,244. EMBALMING APPARATUS. HERBERT J. BARNES, Olean, N. Y. Filed Mar. 4, 1891. Serial No. 383,736. (No model.)

Claim.—1. In an embalming apparatus, the combination of a suitable bottle 1, the stopper 2, formed with the three longitudinal openings, the tube 3, the storage-bulb 4, connected with the upper end of the same, the tube 16, the removable extension-tube 16ª, having the opening 17 and the valve 18 at its lower end, the combined suction and injection tube 19, connected to the tube 16 and having the cut-off valve 21 and the hollow needle at its outer end, the tube 6, the injector-bulb 7, connected to the tube 5 and provided with the valves 8 and 9 and the cut-off valve 10, and the exhaust-bulb 12, connected to the tube 5 and provided with the valves 13 and 14 and the cut-off valve 15, substantially as set forth.

2. The combination of a suitable bottle 1, the stopper 2, formed with the three longitudinal openings, the tube 16, the tube 19, connected to the tube 16 and having the hollow needle at its outer end, a tube extending through the third opening of the stopper, and the exhaust-bulb 12, connected to the said tube and provided with the valves 13 and 14, substantially as set forth.



487,245. FRICTION-CLUTCH. ALFRED BRIGGS, Ottumwa, Iowa, assignor to himself and James T. Hackworth. Filed July 23, 1892. Serial No. 440,974. (No model.)

Claim.—1. A friction-clutch comprising a stationary part and a movable part, one of which is provided with friction-blocks D', supported in segments D, which are independently adjustable for taking up wear, substantially as specified.

2. The friction-clutch comprising a movable and a stationary part, one of which is provided with friction-blocks supported in adjustable segments D and with wedges E for effecting the adjustment, substantially as specified.

3. The combination, in a friction-clutch, of a series of L-shaped segments D, friction-blocks D', composed of friction-exerting material confined in said segments by bolts, and means for adjusting said segments to take up the wear upon the friction-blocks, substantially as specified.

4. In the friction-clutch, the combination of wheel B, provided with adjustable segments D, friction-block D', and means for adjusting said segments, with the sliding part of the clutch provided with a fric-

tion-surface *e*, and means for moving the sliding part into and out of engagement, substantially as specified.

5. The combination, with the moving part of a clutch, of a sliding sleeve, means for imparting the sliding movement to said sleeve, rocking levers L, carrying rollers engaging with inclined longitudinal grooves in said sleeve and provided with short arms engaging with and adapted to move the sliding part of the clutch, and an interior sleeve K, in which said levers have bearings, substantially as specified.

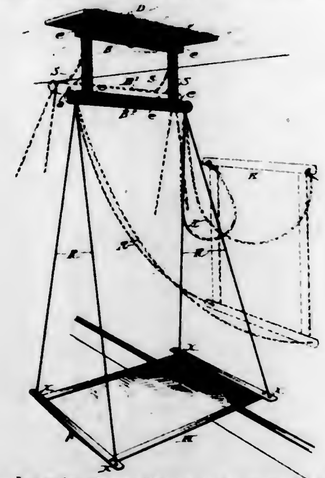
6. The combination, with the moving part of a clutch, of a sliding sleeve, means for imparting the sliding movement to said sleeve, rocking lever L, located in said sleeve and carrying rollers engaging with inclined longitudinal grooves in said sleeve and provided with short arms engaging with and adapted to move the sliding part of the clutch, and an interior sleeve K, in which said levers have bearings, substantially as specified.

7. As a means for actuating the sliding part of a clutch, the combination, with such part, of rocking levers L, located at opposite sides of the supporting-shaft and nearly parallel therewith, and a sliding sleeve having inclined grooves engaging with and adapted to rock said levers, said levers having short arms engaging with the sliding part of the clutch, substantially as specified.

8. In a friction-clutch, a sleeve recessed to receive one or more levers and having an inclined groove or grooves, in combination with a rocking lever or levers L and a second sleeve in which said lever or levers are centered, substantially as specified.

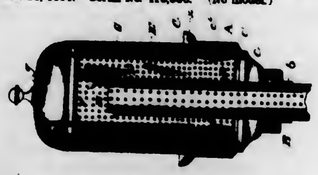
9. The rocking levers L, having short arms projecting beyond their centers and engaging with the sliding part of the clutch, in combination with a sleeve having inclined grooves engaging with the swinging ends of the levers, substantially as specified.

487,246. SWING. WILLIAM O. BUSKER, Nevada, Mo. Filed Feb. 9, 1892. Serial No. 420,851. (No model.)



Claim.—In a swing, the combination of flat springs S S with an upper fixed cross-bar B and a lower swinging cross-bar B^3, supporting the swing-seat, said springs being secured at their ends to both cross-bars, substantially as described.

487,247. VAPORIZER. ALFONSO H. CARPENTER, Springfield, Vt. Filed Dec. 23, 1891. Serial No. 416,338. (No model.)

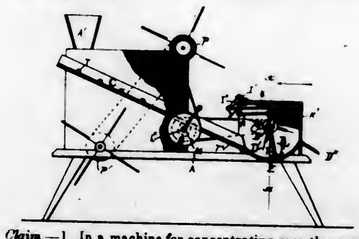


Claim.—1. As an improved article of manufacture, a disinfectant-exhaler comprising a base formed in its mouth with two annular shoulders, the lower one being of less diameter than the upper, a foraminated cylinder adapted to fit within the mouth of the base and be supported by said lower annular shoulder, an imperforate cover normally disposed over the foraminated cylinder and supported by said upper annular shoulder, and means for retaining the cover in elevated position, substantially as and for the purpose set forth.

2. As an improved article of manufacture, a disinfectant-exhaler consisting of a cup provided with an annular attaching-flange depending from the base thereof and with an upwardly-flaring mouth, a foraminated wick-tube passing through said flange and adapted for carrying a wick upon its exterior, a removable foraminated cylinder surrounding the exterior portion of the wick-tube and closed at its upper end by a plate, said plate having radially-arranged apertures, and an imperforate cover inclosing said cylinder and provided with interior depending rods normally coinciding with the aperture, said rods terminating above the lower end of the cover, substantially as set forth.

3. In a disinfectant-exhaler, the combination, with a receptacle provided with an interiorly-threaded neck or mouth, of a cup provided with an exteriorly-threaded attaching-flange depending therefrom and with an upwardly-flaring mouth, a foraminated wick-tube passing through said flange and adapted for carrying a wick upon its exterior, a foraminated cylinder fitting within said cup and inclosing the exterior portion of the wick-tube, said cylinder being closed at its upper end by a plate having radially-arranged apertures provided in a vertical plane without the wick-tube, and an imperforate cover inclosing said cylinder and provided with interior depending rods normally coinciding with the apertures, substantially as and for the purpose set forth.

487,248. ORE SEPARATOR AND CONCENTRATOR. GEORGE CARSON, Council Bluffs, Iowa. Filed Jan. 28, 1892. Serial No. 419,605. (No model.)



Claim.—1. In a machine for concentrating ores, the combination of a supporting-standard and a vibrating apron pivoted to an agitator, said agitator comprising an open-sided concaved trunk provided with a discharge-rod and a revolving spiked drum and an agitating spiked comb, the mineral being forced over said apron and through said trunk, substantially as and for the purpose set forth.

2. The combination, with the supporting-standard, of an open-sided agitator-trunk, a vibrating apron pivoted to said agitator, said apron being held within a suitable frame and supported upon a cam-shaft in belt connection with the agitator mechanism and adapted to vibrate said apron, and rotary fans mounted above and below said vibrating apron, adapted to direct an air-blast upon the mineral in its passage from the apron to the agitator-trunk, substantially as shown, and for the purpose set forth.

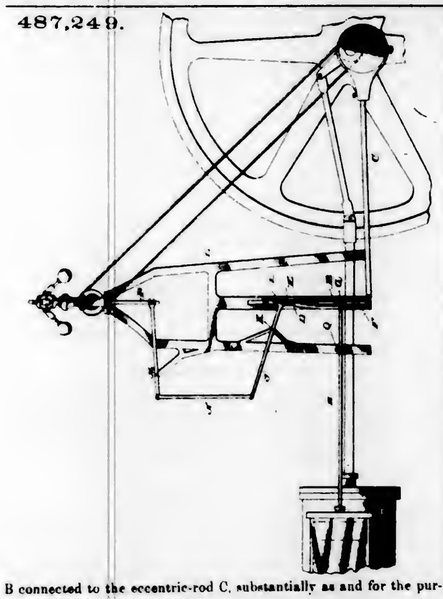
3. The combination, with the supporting-standard, of an open-sided agitator-trunk, a vibrating apron pivoted to said agitator, said apron being held within a suitable frame and supported upon a cam-shaft in belt connection with the agitator mechanism and adapted to vibrate said apron, rotary fans mounted above and below said vibrating apron, adapted to direct an air-blast upon the mineral in its passage over said apron to the agitator-trunk, said agitator being provided with a concave bottom, a discharge-valve within said bottom, and a rotary spiked drum working within said trunk and above an oscillating spiked comb, said cam-shaft, drum, and fans being in proper belt connection, all substantially as and for the purpose set forth.

487,249. VALVE-GEAR. STEPHEN CHAPLIN, Buckley, Wash. Filed July 12, 1892. Serial No. 439,808. (No model.)

Claim.—1. In an automatic cut-off, the oscillating link B, pivoted at its upper end to a sliding piece E and connected at its lower end to the rod C of an eccentric A and rod H of a valve, substantially as and for the purpose set forth.

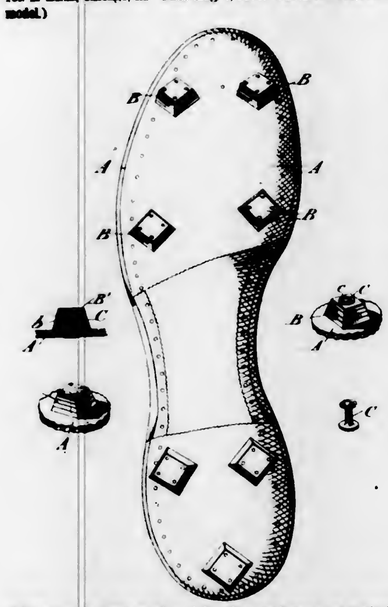
2. In an automatic cut-off, the oscillating link B, slotted at its lower end, its upper end pivoted to a sliding piece E, said sliding piece being connected to the governor-stem P by means of a series of levers and connections, and said slotted part of the link B carrying a sliding piece G, to which is connected the valve-rod H, and the lower end of

487,249.



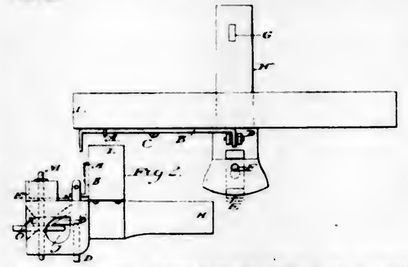
B connected to the eccentric-rod C, substantially as and for the purpose set forth.

487,250. SHOE. WALDO M. CLAFLIN, Philadelphia, Pa., and KNOWLTON L. AMES, Chicago, Ill. Filed Aug. 7, 1891. Serial No. 402,060. (No model.)



Claim.—As an improved article of manufacture, an athletic or sporting shoe the sole and heel whereof are provided with pyramidal-shaped studs or projections formed of leather lifts, said studs being secured to the sole and heel by rivets passing entirely through the latter and through the studs, the heads of the rivets being on the inside of the shoe and the outer ends of the rivets projecting through the studs, where they are clinched and provided with an outer lift or protecting-piece secured to the stud, substantially as described.

487,251. CAR-COUPLING. ISADORE L. COFFMAN and DAVID P. DENNEY, Uniontown, Pa. Filed Mar. 11, 1892. Serial No. 424,516. (No model.)



Claim.—The lever B, fastened to the bumper L and attached to vertical bar D, with its arm D' working in link-cavity J, in combination with the loose slide E, substantially as described.

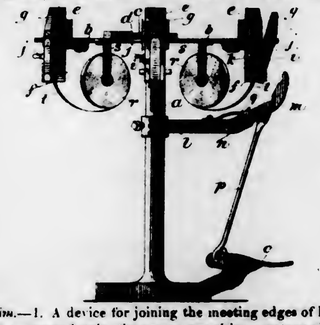
487,252. MACHINE FOR FITTING HAT-SWEATS. KEROS L. COMSTOCK, Danbury, Conn., assignor to Meeker Bros., same place. Filed Mar 1, 1892. Serial No. 423,385. (No model.)

Claim.—1. In a machine for fitting sweat-bands, the combination of expanding devices around which the bands are placed with their ends overlapping, means for operating said devices, a stop which limits the expansion of the latter, and a knife whereby the band is cut to the expanded size, substantially as set forth.

2. In a machine for fitting sweat-bands, the combination of mechanism for expanding the bands, a clamp for holding them during expansion, a stop for controlling the expansion, and a knife for cutting them when expanded, substantially as shown and set forth.

3. The combination of the expanding mechanism around which the sweat-bands are placed with their ends overlapping, the forked clamp whereby said ends are held during expansion, the adjustable stop by which said mechanism is arrested, and the knife adapted to be operated between the forks of said clamp, substantially as shown and set forth.

487,253. MACHINE FOR JOINING THE MEETING ENDS OF HAT-SWEATS. KEROS L. COMSTOCK, Danbury, Conn., assignor to Meeker Bros., same place. Filed Mar 1, 1892. Serial No. 423,389. (No model.)

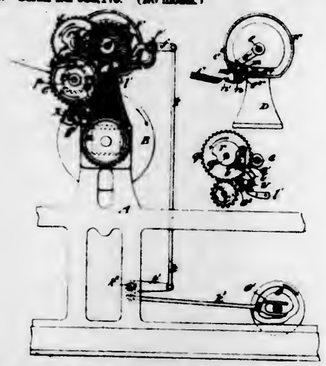


Claim.—1. A device for joining the meeting edges of hat sweat-bands by a gummed strip, the same comprising a rotary platform, a series of clamping-jaws secured at intervals in the edge of said platform and normally distended, whereby the sweat-band and gummed strip in proper relative position may be introduced between said jaws, means for operating said jaws, and means for locking the latter in closed position, substantially as set forth.

2. The combination of the rotary platform, the normally-distended clamping-jaws secured at intervals in the edge of said platform, the pivoted lever, the treadle, and operative connections between said lever and treadle, substantially as set forth.

3. In a device of the character set forth, the combination of a rotary platform, a series of clamping-jaws secured to the edge of said platform, a lever whereby said jaws are effectively operated, means for operating said lever, and means, as a pawl, carried by said platform and co-operating with a stationary ratchet for arresting the rotation of the platform at predetermined times, whereby the jaws are positively brought into proper position relative to said lever, substantially as and for the purposes described.

487,254. FEEDING MECHANISM FOR CYLINDER PRINTING-MACHINES. CALVERT R. COTTRELL, Westerly, R. I. Filed Aug. 26, 1889. Serial No. 322,173. (No model.)



Claim.—1. The combination, with the continuously-revolving cylinder of a printing-machine and grippers on said cylinder, of an intermittently-rotating gripper-carrier and grippers thereon for receiving a sheet during the intermission of the rotation of said carrier and transferring the said sheet to the grippers on the cylinder during said rotation, substantially as herein set forth.

2. The combination, with the continuously-revolving cylinder of a printing-machine and a set of grippers on said cylinder, of an intermittently-rotating gripper-carrier and a set of feeding-grippers thereon, a concentric sector secured fixedly on the shaft of said carrier, a cam-actuated toothed sector-lever engaging with said concentric sector for starting and stopping the said carrier, and concentric toothed gears between the said cylinder and concentric sector for driving the said carrier from the cylinder with the points of their respective sets of grippers at the same speed, substantially as herein described.

3. The combination, with the continuously-revolving cylinder of a printing-machine and grippers on said cylinder, of an intermittently-rotating gripper-carrier and feeding-grippers thereon, and a cam-actuated lever having a toothed sector, and a toothed sector on said cylinder gearing with the first-named sector for starting and stopping said carrier, substantially as herein set forth.

4. The combination, with the continuously-revolving cylinder of a printing-machine and grippers on said cylinder, of an intermittently-rotating gripper-carrier and grippers thereon, a cam-actuated lever having a toothed sector, a sector on said gripper-carrier to gear with the first-named sector for starting and stopping said carrier, and eccentric segments through which said carrier is geared with the cylinder for the purpose of gradually accelerating the speed of said carrier after starting and gradually reducing the speed thereof before stoppage, substantially as herein set forth.

5. The combination, with the continuously-revolving cylinder of a printing-machine and a set of grippers on said cylinder, of an intermittently-rotating gripper-carrier and a set of grippers thereon, a concentric toothed sector and two eccentric toothed sectors attached to said carrier, a gear rotating with the cylinder and gearing with said concentric toothed sector, eccentric toothed sectors carried by said gear and gearing with the first-named eccentric sectors, and a cam-actuated starting-lever having a toothed sector for gearing with said concentric sector on the carrier, substantially as and for the purpose herein described.

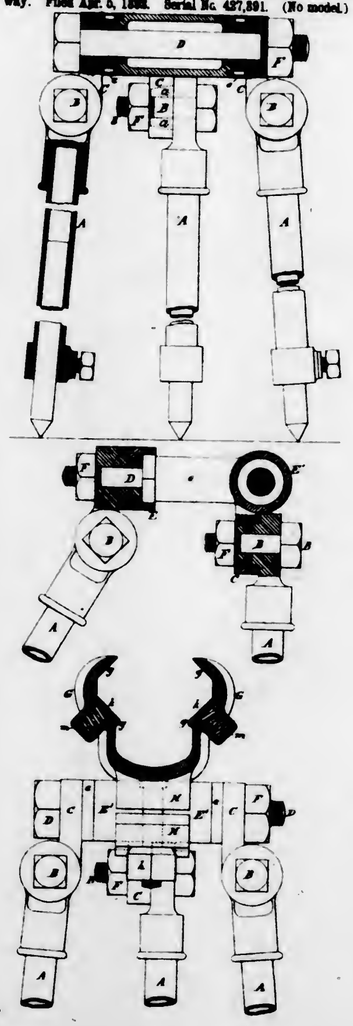
6. The combination, with the feed-board and continuously-revolving cylinder of a printing-machine, of a rotary gripper-carrier, consisting in part of rotating arms c' and a shaft for carrying the same, a shaft c^3, journaled in said arms, hangers c^4 c^{40}, secured to the said shaft c^3, grippers supported in said hangers c^4 c^{40}, an arm c^6 on said shaft c^3, and a stationary cam F, with which said arm engages to direct the movement of the points of the grippers during the rotation of the carrier, substantially as and for the purpose herein set forth.

7. The combination, with the continuously-revolving cylinder of a printing-press and a rotary gripper-carrier, consisting in part of rotating arms c' and a shaft for carrying the same, of the shaft c^3, journaled in the said arms, the hangers c^4 c^{40}, carried by said shaft c^3, and one of which is toothed, grippers supported in said hangers, the stationary cam F, the arm c^6 on said shaft c^3, engaging with said cam, and the toothed sector X on the cylinder for gearing with said toothed plate, substantially as and for the purpose herein set forth.

487,255. STOVE-LEG FASTENING. LOUIS R. COVERT and CHARLES W. MCCUTCHEN, Peekskill, N. Y. Filed Mar. 4, 1892. Serial No. 423,788. (No model.)

Claim.—In combination, the plate *b*, having lugs *d* with plain inner surfaces, bridge-piece *c*, with ends *f f* bent and notched, as shown, and embedded in the casting.

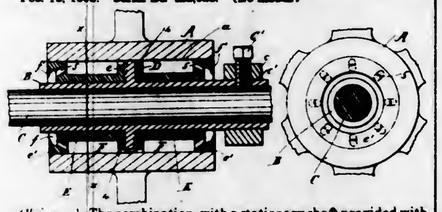
487,256. CONSTRUCTION OF STANDS OR TRIPODS FOR ROCK-DRILLS, &c. ALBERT W. DAW and ZACHARIAS W. DAW, Laurvig, Norway. Filed Apr. 5, 1892. Serial No. 427,891. (No model.)



Claim.—1. The improved tripod or stand for rock-drills, consisting in a head E, adapted to receive the drill and which is provided with as many conical seats as the stand has legs, parts C, each having a conical projection c to enter one of each seats, bolts D and nuts F for tightening or binding such parts C in the seats of the head, each part C also having a conical seat in a plane at right angles to its conical projection *c*, a conical projection *a*, formed on each leg A and entering the conical recess in one of the parts C, and bolts B and nuts F for tightening or binding each leg A in the seats of parts C, substantially as set forth.

2. In a cradle for rock-drills, the combination of a liner mounted in a recess in the guides thereof and of a spring or springs acting upon the rear of such liner, substantially as and for the purpose specified.

487,257. LOOSE-PULLEY LUBRICATOR. EDWARD DAWSON, Terre Haute, Ind., assignor of one-half to George Burt, same place. Filed Feb. 18, 1892. Serial No. 422,063. (No model.)



Claim.—1. The combination, with a stationary shaft provided with a collar having grooves in its sides, of a revoluble hub, a bush secured in the hub and provided with a flange having cross-grooves in its edge and arranged next to the said collar, a chamber for oil between the said bush and hub, and an annular chamber at its other end around the shaft and communicating with the said oil-chamber, substantially as set forth.

2. The combination, with a stationary shaft provided with a collar having grooves in its sides, of a revoluble hub and bushes secured in the hub on each side of the said collar and provided with inner flanges having grooves in their peripheries communicating with the said grooves in the collar and outer flanges provided with annular end chambers and inclined holes, chambers for oil being formed between the bushes and the hub and connected with the annular chambers by the said holes, substantially as set forth.

3. The combination, with a stationary shaft provided with a collar having grooves in its sides, of a revoluble hub and bushes provided with outer flanges having annular end chambers and inclined holes, chambers for oil being formed between the bushes and hub and communicating with the said grooves in the collar and with the said annular chambers, substantially as and for the purpose set forth.

4. The combination, with a central shaft, of a removable hollow shaft secured on the central shaft and provided with a collar having grooves in its sides, a revoluble hub, and bushes secured in the hub and running on the said hollow shaft and provided with annular chambers at their outer ends, chambers for oil being formed between the said bushes and the hub and communicating with the said annular chambers and with the said grooves in the stationary collar, substantially as and for the purpose set forth.

487,258. GRAIN-DRILL. JAMES R. M. DAY and LUCRER MOORE, Winfield, Kans., assignors of one-third to J. Lawrence and S. Compton, same place. Filed Apr. 28, 1892. Serial No. 431,014. (No model.)

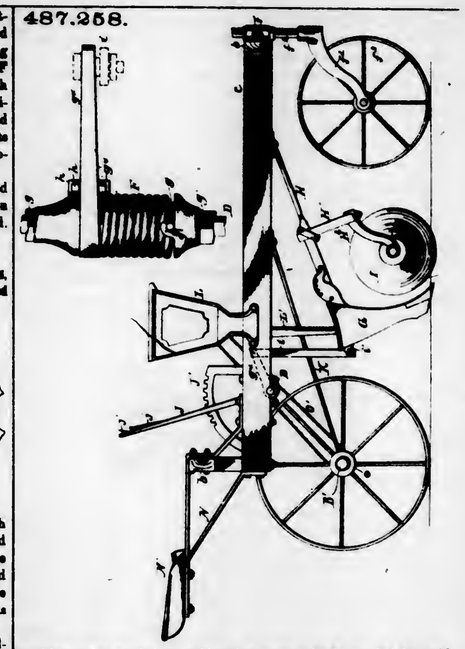
Claim.—1. In a grain-drill, the combination, with a shaft and a series of springs carried thereby, of a hoe connected with each spring, a draw-bar connecting each hoe with the frame of the machine, said hoes being pivotally connected with the draw-bars, and a colter carried by each draw-bar, substantially as set forth.

2. In a grain-drill, the combination, with a shaft and a series of springs carried thereby, of a hoe connected with each spring, a draw-bar connecting each hoe with the frame of the machine, said hoes being pivotally connected with the draw-bars, and a colter carried by each draw-bar, said colters being so mounted as to project below the lower end of the hoes, substantially as and for the purpose set forth.

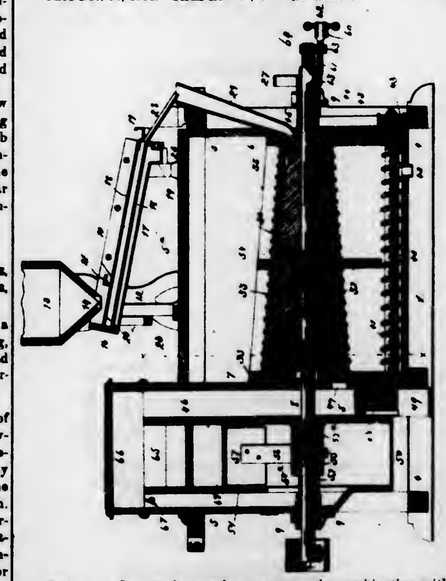
3. In a grain-drill, the combination, with a frame and a shaft carried thereby, of springs carried by said shaft, arms adapted to be actuated by said springs, arms or bars depending from said first-mentioned arms, hoes pivotally connected with said depending arms or bars, draw-bars pivotally connected at one end to said hoes and at their other ends to the frame of the machine, and colters carried by said draw-bars, substantially as set forth.

4. In a grain-drill, the combination, with a frame, of depending yokes pivotally connected thereto in order to tilt transversely of the machine, axles carried by said yokes, press-wheels carried by said axles, hoes in advance of said press-wheels, draw-bars connecting said axles with the frame, and caster-wheels located at the front end of the machine, substantially as set forth.

487,258.



487,259. GRAIN-SCOURER. FRANCIS M. DRAKE, Waldo, Ohio. Filed Nov. 30, 1891. Serial No. 413,567. (No model.)



Claim.—1. In a grain-scouring apparatus, the combination, with the frame, the revoluble main shaft, the cone mounted thereon, and the stationary casing, of the loose collars mounted on said shaft, the hub carried by said collar, having a feather engaging with a slot in the shaft and provided with fan arms and blades, the bracket at the

other end of the apparatus, the screw-shaft journaled in said bracket, and a bracket secured to the main shaft, engaging with said screw-shaft, substantially as described.

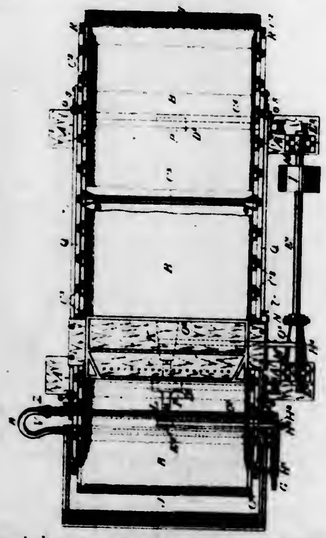
2. In a grain-scouring apparatus, the combination, with the frame, the main shaft, the scouring cone and casing, and the fan and its casing located at the rear of the apparatus, of the vertical chamber communicating near its lower end with the cone-casing and having a perforated bottom, the screenings and chaff-box communicating with the upper end of said chamber, the vertical chamber communicating at its upper end with the chaff-box and at its lower end with the fan-casing, the adjustable valve located in said chamber, the chute connected and communicating with the chaff-box, having a hinged door at its end and provided on its upper side with an opening and a pivoted cover for said opening, substantially as described.

487,260. PACKING. ROBERT G. FERGUSON, Lakewood, N. J., assignor of two-thirds to William A. Williams, Scarborough, N. Y. Filed Feb. 19, 1892. Serial No. 422,071. (No model.)

Claim.—1. In combination, a rod or stem, a bearing for the same, and a member whereby the packing between said rod or stem and said bearing is held in place, said member being provided with a packing-chamber and an opening thereinto adapted to admit of the entrance of the packing material as the same is wound around said rod or stem by the rotation on said rod or stem of said member, substantially as described.

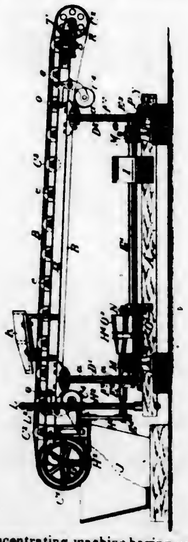
2. As a means for applying packing material to a rod or stem and the bearing thereof, in combination with the rod or stem and bearing, a rotatable member surrounding said rod or stem provided with an opening adapted to admit of the entrance of the packing material as the same is wound around the rod or stem by the rotation thereon of said member, and means whereby said member is secured to said bearing, substantially as described.

487,261. ORE-CONCENTRATING MACHINE. ANDREW FRASER, San Francisco, Cal. Filed Dec. 30, 1891. Serial No. 416,588. (No model.)



Claim.—1. In an ore-concentrating machine as herein described, an oscillating frame having a rocking motion on rolling faces, as herein described, placed at or near the plane in which the actuating-cranks are situated and at the base of the machine, so that the action of the cranks will be transverse to the rolling supporting-faces and in a vertical or nearly-vertical plane and so the momentum of the vibrating table and its attachments will fall vertically on the foundation-frame, in the manner substantially as and for the purposes specified and set forth.

2. In an ore-concentrating machine, an endless apron and supporting-frame for the same having a rocking or oscillating movement, as herein described, mounted on pivotal rolling supports on the foundation-frame, and a crank-shaft to actuate the apron, also set on the foundation-frame and connected to the apron-frame by links, which can be lengthened or shortened, so that the upper or working surface of the apron can be set by such adjustment and the ore be equally distributed thereon, in the manner substantially as and for the purposes specified.



3. In an ore-concentrating machine having an oscillating movement, as herein described, rolling supports for the same placed at or on the foundation-frame, branched supporting-standards resting on the rolling-faces and extending to the outer rails of the apron-supporting frame, so as to dispense with framing other than the foundation, in the manner and for the purposes herein set forth and described.

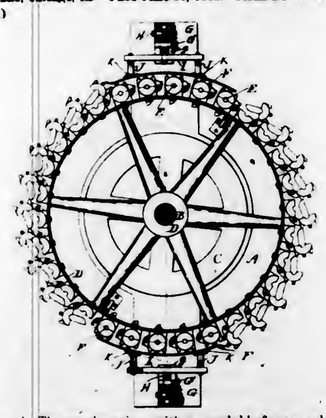
4. In an ore-concentrating machine, an oscillating apron-supporting frame supported on branched standards provided with rolling bearings set on the foundation-frame, an actuating crank-shaft set at the side of the machine also on the foundation-frame, the shaft divided into two coupled parts, and a driving-pulley placed between its bearings, and the cranks overhung at each end, so that they can be made solid with the shafts and the connections conveniently removed without disturbing the driving-gearing, substantially in the manner and for the purpose specified.

5. In an ore-concentrating machine, an oscillating apron-supporting frame with an endless apron thereon, the frame mounted on standards supported on rolling bearings placed on the foundation-frame, and an intermediate feeding-shaft mounted in the supporting-standards near the center of their oscillation and connected to the main or crank shaft by means of a belt and conical drums also to the driving-apron drum by tangent gearing, in the manner substantially as and for the purposes set forth.

487,262. REGISTERING DEVICE FOR PHOTOGRAPHIC CAMERAS. JOHN J. GREEN, Sr., Chicago, Ill. Filed July 24, 1891. Serial No. 400,561. (No model.)

Claim.—The combination, substantially as hereinbefore set forth, in a photographic camera, of the roller-frame, the supply and take-up rollers mounted in bearings in the sides of the same, a measuring-roller mounted, also, in bearings in said frame and over which the film passes and having its shaft passing through the side of the roller-frame, a plate or disk 8 on the end of said shaft outside of said roller-frame, provided with a mark or notch 12, an eccentric-pin 13 on said plate or disk 8, an opening 9 in the casing of the apparatus, located over said disk or plate 8 when the roller-frame is located within said casing and provided with a notch or mark 11, a revoluble disk C, located within a recess in said roller-frame and having a toothed edge located to be engaged by said eccentric-pin 13, a series of indicating characters arranged concentrically upon the side of said disk, and an opening in the casing of the apparatus, located over said indicating characters when the roller-frame is located within the said casing, substantially as described.

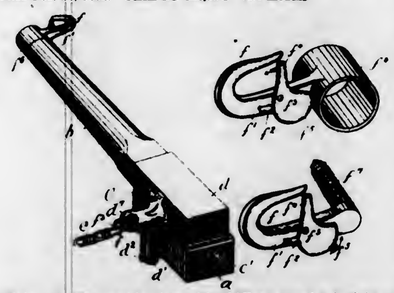
487,263. MACHINE FOR CASTING SASH-WEIGHTS. JACOB GOLDBERG, Chicago, Ill. Filed June 28, 1892. Serial No. 438,291. (No model.)



Claim.—1. The combination, with a revoluble frame and a number of molds carried thereby and having movable sections, of a curved pressure-plate located in proximity to said molds, a pair of springs engaging said plate, a single bar engaging both of said springs, and a single pressure-regulating device engaging said bar between the points of attachment of the springs, substantially as set forth.

2. The combination, with a revoluble frame and a number of molds carried thereby and having movable sections, of a curved pressure-plate located in proximity to said molds, a pair of springs connected to said plate, the bar I, to which said springs are secured, the standard G', having a flange engaging said bar and having a threaded perforation, and a hand-screw fitting in said perforation and engaging said bar, substantially as set forth.

487,264. WHIPPLETREE. SAMUEL H. HAAS, Philadelphia, Pa. Filed Feb. 27, 1892. Serial No. 423,964. (No model.)

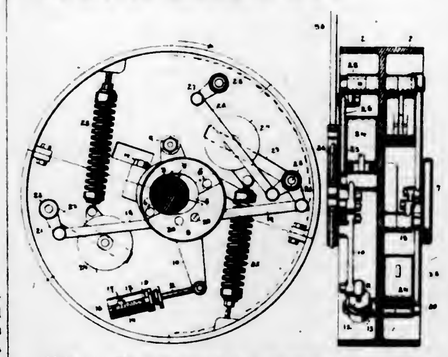


Claim.—1. The combination, with whiffletrees and a draft-bar, of a detachable coupling comprising a rectangular cap fitted over the end of the draft-bar and having a transversely-ranging slotted socket, a rectangular bushing having an inclined bore for the reception of the singletree and adapted to play on the cap, a draft-chain eye projecting from the rear of the bushing, and a pintle connected with the shank of said eye and provided with a lug, substantially as and for the purposes set forth.

2. The combination, with whiffletrees and a draft-bar, of a detachable coupling comprising a cap fitted over the end of the draft-bar and having a transversely-ranging slotted socket, a bushing for the reception of the singletree and adapted to play on the cap, a draft-chain eye projecting from the rear of the bushing, a pintle connected with the shank of said eye and provided with a lug, substantially as and for the purposes set forth.

3. The combination, in whiffletrees and a draft-bar, of a detachable coupling comprising a cap fitted over the end of the draft-bar and having a transversely-ranging slotted socket, a bushing for the reception of a singletree and adapted to play on the cap, a draft-chain eye projecting from the rear of the bushing, a pintle connected with the shank of the eye and provided with a lug, a hook attached to the respective extremities of the whiffletrees and formed with a shank and bill, a weighted pawl pivotally connected with the side of the shank beneath the point of the bill, a latch integral with the pawl and adapted in a vertical position to stand to one side of the bill and across the open end of the hook and also to be turned away from the point of the bill and into alignment with the shank, and a stop on the side of the shank for limiting the range of motion of the weighted pawl, substantially as and for the purposes set forth.

487,265. GOVERNOR. JOHN C. HENDERSON, New York, N. Y. Filed Apr. 24, 1891. Serial No. 390,266. (No model.)



Claim.—1. The combination, in a governor, of a frame or disk secured or adapted to be secured to a shaft, an eccentric on one side of the frame or disk, having arms, one of which is pivoted to the frame, a dash-pot mounted on the frame and having a piston connected to another arm of the eccentric, an eccentric on the opposite side of the frame or disk, having an arm pivoted to said frame or disk, but without the dash-pot arm, weights on both sides of the frame or disk and carried by arms pivoted to the frame, means for transferring motion from said weights to the eccentrics, and springs opposing movement of the weights under centrifugal action, substantially as described.

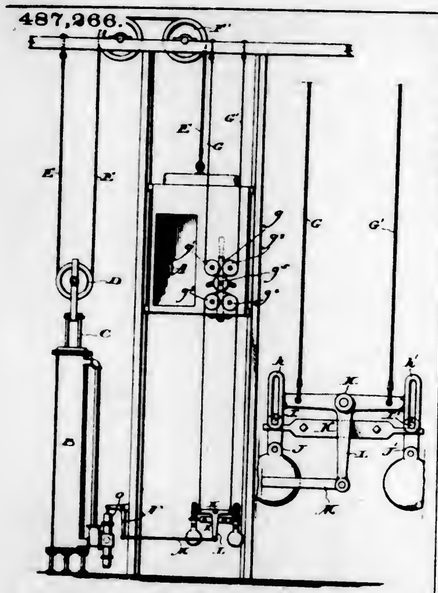
2. The combination, in a governor, of a sectional frame or disk secured or adapted to be secured to a shaft, an eccentric on one side of the frame or disk, having arms 9 10, the former being pivoted to the frame, a dash-pot mounted on the frame and having a piston connected to the other arm of the eccentric, an eccentric on the opposite side of the frame or disk, having an arm pivoted to said frame or disk, but without the dash-pot arm, weights on both sides of the frame or disk and carried by arms pivoted to the frame, means for transferring motion from said weights to the eccentrics, and springs opposing movement of the weights under centrifugal action, substantially as described.

487,266. ELEVATOR. FRANK E. HERRMAN, Indianapolis, Ind. Filed Mar. 8, 1892. Serial No. 424,134. (No model.)

Claim.—1. In an elevating apparatus, the combination of the operating-cables, a lever to which said cables are connected, said levers being provided with slotted ends, pins in said slot, means for exerting a downward force upon said pins, operating mechanism, and intermediate mechanism between the operating-cables and the operating mechanism.

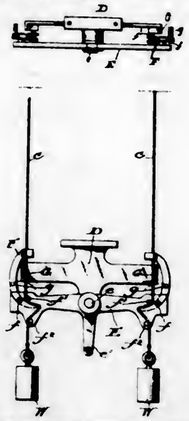
2. In an elevating apparatus, the combination of the operating-cables, a lever to which said cables are connected, said levers being provided with slotted ends, pins in said slot, means for exerting a downward force upon said pins, a bar the ends of which are in line of said pins, operating mechanism, and intermediate mechanism between the operating-cables and the operating mechanism.

487,266.



cables pass, levers F at each end of said lever E, around the ends of which lever F the cables pass, and intermedial mechanism between the operating-cables and the operating mechanism.

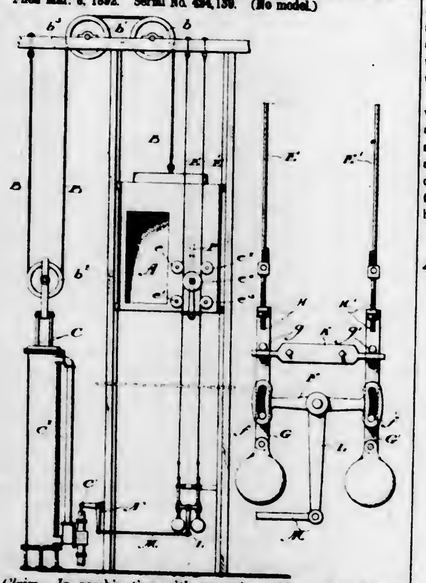
2. In an elevating apparatus, the combination of the operating-cables, means for exerting a downward strain upon each of said cables, a lever, as E, a bracket, as D, to which said lever is pivoted, projections upon said bracket, pins upon said lever, around which said cables pass, levers F at each end of said lever E, around the ends of which levers F said cables pass, and pins upon said levers in line with the projections upon the bracket.



3. In an elevating apparatus, in combination, the operating-cables, valve-operating lever, means for exerting downward and normally-counterbalancing strains upon said cables and lever, and means, substantially as described, when the cable in action breaks to retain the counterbalancing strain upon the corresponding side of said lever until said lever is brought to the center and to retain the said strain upon the lever when the lever attains its central position.

4. In an elevating apparatus, in combination, the operating-cables, valve-operating lever, means for exerting downward and normally-counterbalancing strains upon said cables and lever, and means, substantially as described, when the cable in action breaks to retain the counterbalancing strain upon a portion of the broken cable and the corresponding side of said lever until the lever is brought to its central position and to relieve the said strain upon the portion of the broken cable and upon the lever when said central position is attained

487,267. ELEVATOR. FRANK E. HERDMAN, Indianapolis, Ind. Filed Mar. 8, 1892. Serial No. 424,139. (No model.)

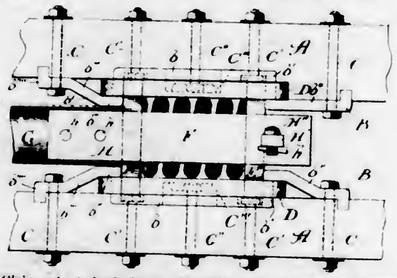


Claim.—In combination with operating-cables, a slotted lever, bars provided with pins resting in said slotted lever, said cables being connected to said bars, pins, as *g g'*, upon said bars above said slotted lever, a bar, as K, the ends of said bar being in line with said pins, operating mechanism, and intermediate connection between said slotted lever and operating mechanism.

487,268. ELEVATOR. FRANK E. HERDMAN, Indianapolis, Ind. Filed July 19, 1892. Serial No. 440,456. (No model.)

Claim.—1. In an elevating apparatus, the combination of the operating-cables, means for exerting a downward strain upon each of said cables, a pivoted lever E, pins upon said lever, around which said

487,269. DRAFT-RIGGING FOR RAILWAY-CARS. JAMES A. HIBBON, Chicago, Ill. Filed Jan. 9, 1892. Serial No. 417,469. (No model.)



Claim.—1. A draft-rigging for railway-cars, comprising wear-plates adapted to be secured to the car-timbers, each of which plates consists of two parts forming suitable pockets or depressions, follower-plates sliding in such pockets, a spring placed between such follower-plates, and a draft-bar engaging with such plates, substantially as described.

2. In a draft-rigging for railway-cars, the combination of a wearing-plate provided with a depressed portion and a strap encircling such portion, such plate and strap forming a pocket to receive the follower-plates, substantially as described.

3. A draft-rigging for railway-cars, comprising wearing-plates secured to the car-timbers and provided with recessed portions, straps embracing such portions, and follower-plates sliding within the pockets

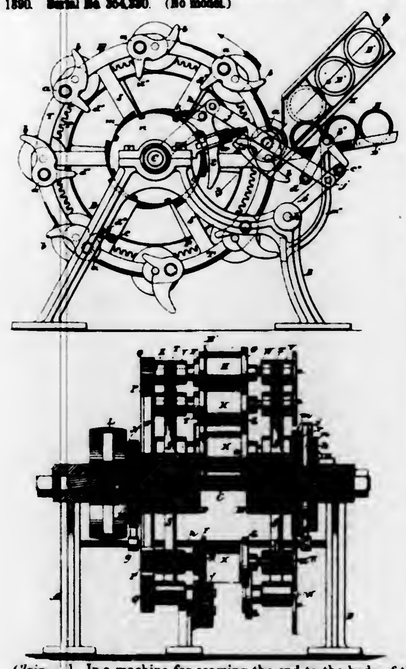
formed by such straps and depressed portions, substantially as described.

4. In a draft-rigging for railway-cars, the combination of wearing-plates provided with openings registering with mortises in the car-timbers and follower-plates provided with lugs sliding in the pockets formed by such orifices, substantially as described.

5. A draft-rigging provided with suitable pockets, such pockets being formed by means of depressions in the wearing-plates, and straps encircling such depressions without the use of bolts or nuts, substantially as described.

6. In a draft-rigging for railway-cars, the combination of wearing-plates secured to the car-timbers, follower-plates sliding between such wearing-plates, and blocks C‴, aiding to secure the wearing-plates in place and engaging with the forward follower-plate as it moves back, thereby taking part of the strain off of the rear follower-plate, substantially as described.

487,270. MACHINE FOR MANUFACTURING TIN CANS. WILLIAM HIPPERLING, New York, N. Y., assignor to Stephen A. Sinan, Plainfield, N. J., and Richard A. Donaldson, Brooklyn, N. Y. Filed June 5, 1890. Serial No. 354,330. (No model.)



Claim.—1. In a machine for seaming the end to the body of tin cans, the revoluble wheels D E, mounted on the horizontal shaft C and having journaled in their periphery the series of horizontal revoluble axles R W, carrying the clamping-heads F G, combined with mechanism, substantially as described, for causing the heads G to approach or recede from the heads F, gearing for imparting to said heads and the can-body clamped between them a rapid revolution independent of the intermittent movement of said wheels D E, chutes for feeding the can bodies and ends to the said clamping-heads, and seaming-rollers for folding the flanges of the can body and end, substantially as set forth.

2. In a machine for seaming the end to the body of tin cans, the wheels D E, mounted on the shaft C and having journaled in their periphery the series of axles R W, carrying the clamping-heads F G, the springs I for forcing the heads G outward from the can-body, the pivoted latches *a*, carried by the wheel E, for locking the heads G against the can-bodies, and the contacts *d e* for turning the latches *a* at regular intervals, combined with chutes for feeding the can bodies and bottoms, mechanism, substantially as described, for imparting to said clamping-heads and the cans between them a rapid revolution on their own axes, and the seaming-rollers in the path of the flanges of the cans, carried by said clamping-heads, substantially as set forth.

3. In a machine for seaming the end to the body of tin cans, the revolving wheels D E, mounted on the shaft C and carrying, respectively, the axles R W, the series of clamping-heads F G, secured on said axles, the gearing for imparting a rapid revolution to said heads and the cans between them on their own axes, mechanism, substantially as described, for automatically causing the heads G to approach or recede from the heads F, and chutes for automatically feeding the can bodies and ends, combined with the rigid seaming-rollers for folding the flanges of said can-body and its ends, substantially as set forth.

4. In a machine for seaming the end to the body of tin cans, the wheels keyed on the horizontal driving-shaft and carrying on their facing sides the series of clamping-heads F G, and mechanism, substantially as described, for automatically moving the heads G toward or from the heads F, combined with the belt-wheel loosely mounted on said shaft, the gear-wheel O, keyed to said belt-wheel, the pinions Q on the axles of the heads F and engaging said gear-wheel, the eccentric also keyed to said belt-wheel, mechanism, substantially as described, for imparting from said eccentric an intermittent motion to the driving-shaft and wheel-frames thereon, and the seaming-rollers, substantially as set forth.

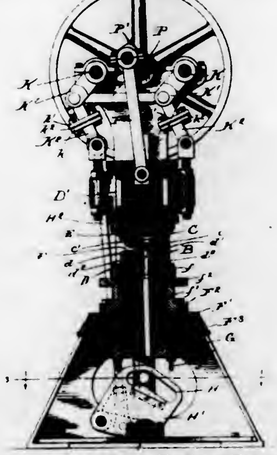
5. The revoluble wheels D E, mounted on the horizontal shaft C and carrying upon their facing sides the series of revoluble clamping-heads F G, the latter being movable toward or from the former, combined with the chutes D' E' for feeding the can bodies and ends between the vertical faces of said heads, and the seaming-rollers J K for seaming the ends to the can-bodies, substantially as set forth.

6. The revoluble wheel-frames D E, carrying clamping-heads F G on their facing sides, the heads G being movable toward or from the heads F, combined with the chute D', having at its end the hinged arms E' F', forming the pocket H', substantially as set forth.

7. The revoluble wheels D E, having journaled in their periphery the axes R W, carrying the revoluble clamping-heads F G, the heads G being movable toward or from the heads F, combined with mechanism for imparting an intermittent motion to the said wheel-frames, the chutes D' K' for the can bodies and ends and having the pockets H' L' at their discharge end, and the seaming-rollers J K for double-seaming the ends to the can-bodies, substantially as set forth.

8. In tin-can machinery, the can-feeding chute D', having at its discharge end the hinged arms E' F', forming the pocket H', and provided with the spring I' and a stop J', substantially as set forth.

487,271. SHEET-METAL-STAMPING PRESS. JOHN G. HODGSON, Maywood, Ill., assignor to Edwin Norton, same place, and Oliver W. Norton, Chicago, Ill. Filed July 9, 1892. Serial No. 439,462. (No model.)



Claim.—1. In a press, the combination, with a movable die and follower, of a movable follower-support and a spring or cushion interposed between the follower and its movable support, substantially as specified.

2. In a press, the combination, with a movable die C, an opposing die, and yielding follower F, of a movable support G for said follower and means for operating said movable support in conjunction with said movable die, substantially as specified.

3. In a press, the combination, with a movable die and follower, of a movable follower-support and a spring or cushion interposed between the follower and its movable support and mechanism connecting said movable support with the die or its cross-head for operating

said support in conjunction with said die, substantially as specified.

4. In a press, the combination, with a movable die and follower, of a movable follower-support and a spring or cushion interposed between the follower and its movable support, and mechanism connecting said movable support with the die or its cross-head for operating said support in conjunction with said die, said mechanism consisting in a cam H, rocking arm H', and connecting-link H^3, substantially as specified.

5. The combination, with a compound drawing-die B C D E and its follower F, of movable follower-support G, spring or cushion F', supporting-pins connecting the cap-plate of said spring with said follower F, cranks and connecting-links for operating said die C and plunger E, cam H, and connecting-link H^3 for operating said cam, substantially as specified.

6. The combination, with a compound drawing-die B C D E and its follower F, of movable follower-support G, spring or cushion F', supporting-pins connecting the cap-plate of said spring with said follower F, cranks and connecting-links for operating said die C and plunger E, cam H, and connecting-link H^3 for operating said cam, the connecting-links K^3, through which motion is communicated to said die C, being furnished with yielding cushions k^2, substantially as specified.

7. The combination, with a compound drawing-die comprising cutting-die B, movable annular cutting and drawing die C, annular drawing-die D, and movable punch or male die E, of a cross-head D', carrying said movable die C, and the operating-crank K' and connecting-links K^3, furnished with yielding cushions k^2, substantially as specified.

8. In a press, the combination, with a movable die C, of an opposing die, a cross-head D', carrying said movable die C, and an operating-crank and connecting-link furnished with a yielding cushion to compensate for differences in the thickness of the stock, substantially as specified.

9. In a press, the combination, with a movable die and follower, of a movable follower-support and a spring or cushion interposed between the follower and its movable support, and mechanism connecting said movable support with the die or its cross-head for operating said support in conjunction with said die, and an adjustable confection or screw between said follower-support and the bottom plate of said spring or cushion, substantially as specified.

487,272. PRICE-SCALE. AUSTIN D. HOFFMAN, Minneapolis, Minn., assignor to the Hoffman Manufacturing Company, same place. Filed Feb. 9, 1892. Serial No. 420,901. (No model.)

Claim.—1. In a scale, a revoluble beam provided on its surface with graduation-marks denoting weight-units and fractions thereof arranged to be visible from all sides of the beam, and with other graduation-marks arranged in series, each series extending along a line parallel with the axis of the beam, the said series of graduation-marks dividing the spaces between the unit weight-marks into different numbers of parts, substantially as set forth.

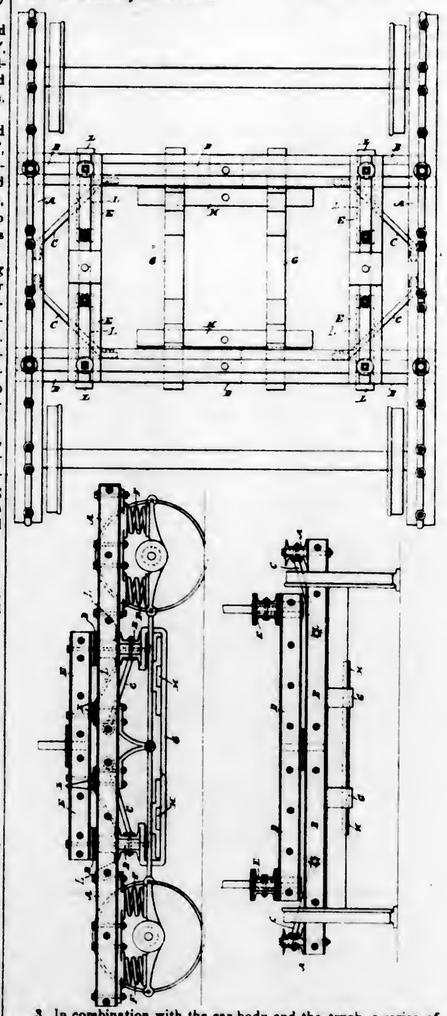
2. In a scale, a revoluble beam provided on its surface with graduation-marks denoting weight-units and fractions thereof arranged so as to be visible from all sides of the beam and with other graduation-marks arranged in series, each series extending along a line parallel with the axis of the beam, the said series of graduation-marks dividing the spaces between the unit weight-marks into different numbers of parts, in combination with a poise movable longitudinally upon said beam and provided along its edge with numbers which denote the number of parts into which that part of the beam opposite each number is divided between the units of weight-marks, and means for preventing the poise from turning upon the beam, substantially as set forth.

3. In combination with the beam of a scale, a poise movable thereon, consisting of a sleeve or ferrule upon the beam, a weight-ring adjustable upon the sleeve or ferrule, and means for securing the sleeve and weight-ring together, substantially as set forth.

487,273. CAR-TRUCK. MOSES G. HUNNARD, Philadelphia, Pa. Filed May 11, 1892. Serial No. 310,462. (No model.)

Claim.—1. In combination with the car-body and the truck, a series of bars pivotally connected together successively and pivoted alternately to the car-body and to the truck, substantially as and for the purpose set forth.

2. In combination with the car-body and the truck, a series of bars pivotally connected together successively and pivoted alternately to the car-body and to the truck and arranged in pairs whose individuals are parallel and on opposite sides of the vertical axis of the truck, substantially as set forth.



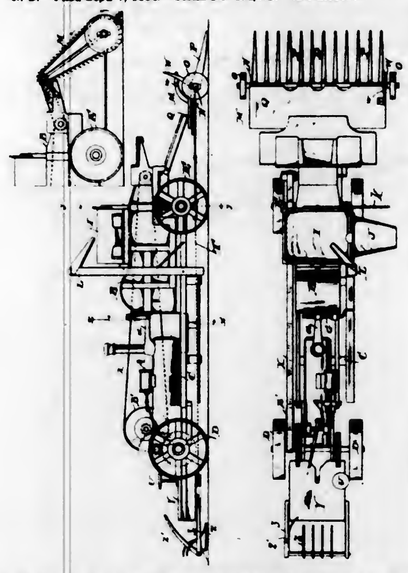
3. In combination with the car-body and the truck, a series of bars pivotally connected together successively and pivoted alternately to the car-body and to the truck, the longitudinal bars of such series being pivoted to the transverse bars above the latter, whereby space is left between the bottom of the car and the transverse bars for reach and brake rods, substantially as set forth.

4. In combination with the car-body and truck, a series of bars pivotally connected together successively and pivoted alternately to the car-body and to the truck, the car-body having an opening through the floor surrounding the vertical axis of the truck and said bars being arranged outside of such opening, substantially as set forth.

5. The wheel-pieces and the cross-sills secured permanently thereto, in combination with the parallel-motion attachment pivoted to the cross-sills and to the car, substantially as and for the purposes described.

6. The combination of the truck-frame and the parallel-motion attachment with a cable-car body having an opening in its floor for introducing or removing the grip, substantially as set forth.

487,274. THRASHING-MACHINE. EDWARD W. JENKINS, Durbin, N. D. Filed Sept. 7, 1891. Serial No. 404,973. (No model.)



Claim.—1. In a traveling thrashing-machine, the combination, with a wheeled frame or carriage having means to steer the front wheels thereof, of a thrashing-machine carried by said carriage, a movable gleaner also carried by said frame or carriage, so as to move therewith, and steering connections between the front wheels of the frame or carriage and the gleaner, whereby the gleaner is steered with said front wheels.

2. In a traveling thrashing-machine, the combination of a wheeled frame or carriage, a thrashing-machine carried thereby, means to steer the frame or carriage, a movable gleaner also carried by the frame or carriage, and steering connections between the gleaner and the means for steering the frame or carriage, whereby the gleaner is steered therewith.

3. In a thrashing-machine, the combination of a wheeled frame or carriage, an engine carried thereby and arranged to propel the carriage, a harvesting-machine carried by said frame or carriage, a gleaner pivotally connected with said frame adjacent to and in front of the carriage, steering devices to steer the gleaner while the carriage is traveling over the field, and connections between the steering devices and the front wheels of the carriage to steer the carriage simultaneously with the gleaner.

4. In a thrashing-machine, the combination of a wheeled carriage, an engine carried thereby and adapted to drive the carriage, and a harvesting-machine pivotally supported upon said carriage on a horizontal axis, whereby the harvesting-machine may be moved over the field, receiving and thrashing the grain while in motion

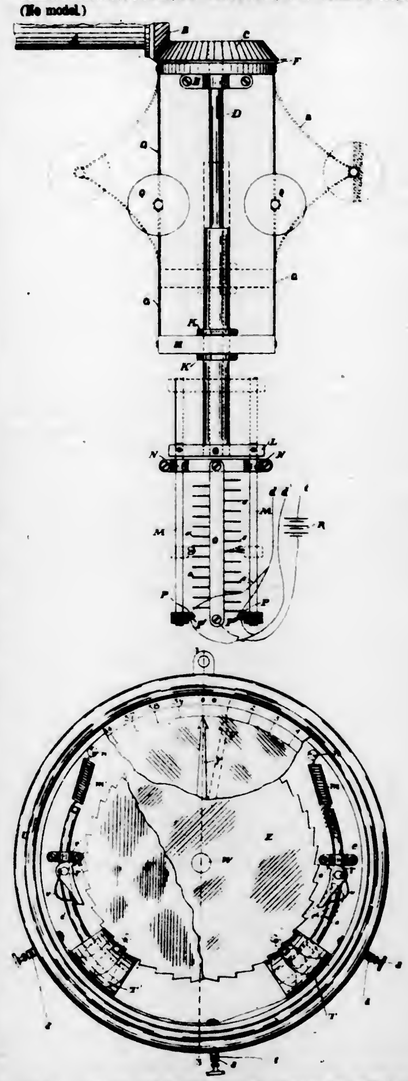
5. A traction thrashing-machine for taking up, thrashing, and separating the cut grain as the machine moves over the field, consisting of a wheeled frame or carriage, a thrashing-machine carried thereby, a gleaner carried by said harvesting-machine and adapted to pick up the cut grain as the machine is moved over the field, an engine to drive said machine over the field, and means to steer the carriage and gleaner while the machine is in motion.

6. A traction thrashing-machine for taking up, thrashing, and separating the cut grain as the machine moves over the field, consisting of a wheeled frame or carriage, a thrashing-machine carried thereby, a gleaner also carried by said frame and arranged in front of the harvester, adapted to pick up the cut grain as the machine is moved over the field, an engine carried by said frame or carriage and driving it over the field, and interdependent means to steer the carriage and gleaner while the same are moving.

7. In a traveling thrashing-machine, the combination of a wheeled frame or carriage having its front axles movable upon vertical axes for the purpose of steering the frame or carriage, a gleaner carried by the frame or carriage, steering devices connected with said gleaner for operating the same, and a connection between said steering devices and the axles for moving the same upon their vertical axes simultaneously with the movement of the gleaner.

8. In a traveling thrashing-machine, the combination, with the axles of the front wheels of the wheeled frame or carriage, of the rods R R, movable upon vertical axes and carrying the axles of the front wheels, the arms R' R', the rods R R, a movable gleaner, and the steering-chain T T for operating the arms R' R', also connected with the gleaner.

487,275. SPEED-INDICATOR. FRANK. L. JOHNSTON and WENDELL C. FLETCHER, St. Louis, Mo. Filed Oct. 20, 1891. Serial No. 409,331. (No model.)



Claim.—1. In a speed-indicator, a ball-governor, in combination with a frame adapted to be given a longitudinal movement relative to the axis of rotation of the ball-governor by the centrifugal movement of the weights on said governor, the said frame carrying electrical contact-making plates adapted in the movement of said frame to successively close and open an electric circuit, substantially as described, and for the purposes specified.

2. In a speed-indicator, a ball-governor, in combination with a frame adapted to be given a longitudinal movement relative to the axis of rotation of said governor by the centrifugal movement of the

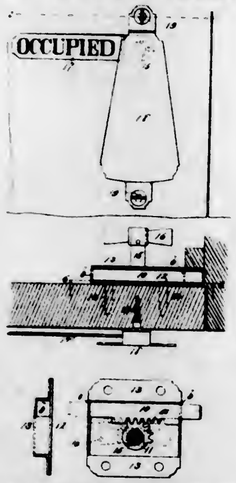
weights of the said governor, the said frame carrying two electrical contact-making plates or sets of plates adapted in the movement of said frame to successively close and open electrical circuits in the forward and backward movement, respectively, of said frame, substantially as described, and for the purposes specified.

3. In a speed-gage, in combination with the herein-described dial-indicator, consisting in a casing, a dial numbered corresponding to the different rates of speed, an index-hand rigidly secured to a pivot-shaft, ratchet-wheels rigidly secured to said pivot-shaft, said ratchet-wheels having their ratchet-teeth turned in opposite directions, respectively, pawls adapted to engage with said wheels and electro-magnets adapted to operate said pawls, and a longitudinally-movable frame carrying contact-making plates adapted to close an electric circuit to said electro-magnets in the forward and backward movement of said frame, respectively, combined and operating substantially as described, and for the purposes specified.

4. In a dial-indicator of the character described, a ratchet-wheel or wheels formed with oppositely-extending ratchet-teeth adapted to operate the index-hand of said dial, pawls adapted to engage with and operate said ratchet wheel or wheels, said pawls being formed with laterally-projecting shoulders adapted to normally retain the said pawls in a position of non-engagement with said ratchet wheel or wheels, and means for operating said pawls, combined and operating substantially as described, and for the purposes specified.

5. In a speed-gage, a ball-governor, a contact-making device adapted to be given a longitudinal movement by the rotation of said governor, said contact-making device being adapted to successively close and open an electric circuit, a dial-indicator consisting in a dial and index-hand, a ratchet wheel or wheels to operate said index-hand, said ratchet wheel or wheels having ratchet-teeth extending in opposite directions, pawls adapted to engage with and operate said ratchet wheel or wheels, said pawls being normally in a position of non-engagement with said ratchet-teeth, electro-magnets adapted to operate said pawls, electric circuits connecting said contact-making device with said magnets, and an electric battery interposed in said circuit, the whole combined and operating substantially as described, and for the purposes described.

487,276. INDICATOR-LOCK. LINCOLN KING, New York, N. Y. Filed July 27, 1892. Serial No. 441,408. (No model.)

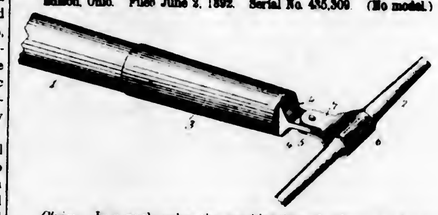


Claim.—1. An improved indicator-lock composed of a rim-lock having a horizontal bolt either end of which may be used and which has a central rack and a toothed sector in mesh with said rack, a spindle provided with a knob or handle at its inner end and serving to actuate said sector, a reversible signal-arm carried by the outer end of said spindle, and an escutcheon which masks said signal-arm when the bolt is retracted, substantially as hereinbefore specified.

2. In an indicator-lock, the combination, with the bolt mechanism and its spindle and with an escutcheon at the outer end of said spindle, of a signal-arm which is carried by said outer end of the spindle, is rigid in the direction of the movement of the spindle, and projects from behind said escutcheon when said bolt is projected, and is thus adapted to be used as a lever-arm to retract said bolt in case of emergencies, substantially as hereinbefore specified.

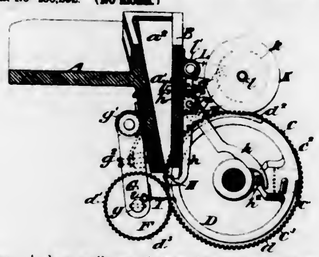
3. In an indicator-lock, the combination, with a rim-lock and an escutcheon adapted to be used at the free edge of either a right-hand or a left-hand door and with the lock-spindle, of a reversible signal-arm carried by the outer end of said spindle, substantially as hereinbefore specified.

487,277. NECK-YOKE. FRANK W. KLINE and GEORGE G. THOMAS, Edison, Ohio. Filed June 2, 1892. Serial No. 435,309. (No model.)



Claim.—In a neck-yoke, the combination of a sleeve or thimble fitted over the front end of a pole and having a front tapered end of increased thickness and of quadrangular pyramidal form, from the center of which horizontally projects a flat arm or extension with a vertical opening therethrough, and a sleeve mounted on the neck-yoke and having rearwardly-extending horizontal arms spaced apart and embracing and pivoted to the aforesaid arm or extension, thereby holding the neck-yoke at a distance from the end of the pole and sustaining it in a horizontal position, and the front end of the sleeve or thimble reinforcing the same against wear and fracture, the rear ends of the said horizontal arms being rounded and located in advance of the lower termination of the quadrangular pyramidal center, and the pivot connecting said parts, extending through the same, and headed on both ends, substantially as described.

487,278. MAIL CANCELING AND POSTMARKING MACHINE. WILLIAM R. LANDWEAR, Brooklyn, N. Y., assignor of two-thirds to Timothy Merrick and George H. Tyner, Holyoke, Mass. Filed July 23, 1891. Serial No. 400,292. (No model.)



Claim.—1. In a mail-canceling machine, a receiving-hopper having a position oblique to the horizontal plane, its ends substantially parallel and gradually contracting in width from the top downwardly, the interior of said hopper also contracting in size from one end or edge toward the other, substantially as set forth.

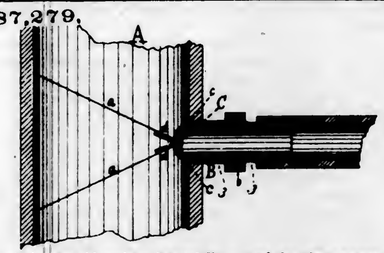
2. The combination, with the hopper, the impression-roller, and the canceling wheel or cylinder, of a stop under the control of the wheel or cylinder to release the mail at intervals and a second stop under the control of the advancing mail-matter for holding the mail-matter in position to be acted upon by the wheel or cylinder, substantially as set forth.

3. The combination, with the canceling wheel or cylinder and means for operating it, of the inking-roller, a movable support in which the inking-roller is mounted to permit it to move into and out of engagement with the canceling wheel or cylinder, an intermediate roller, and a swinging support in which the intermediate roller is mounted, whereby the intermediate roller is swung into and out of position between the canceling wheel or cylinder and a bearing-rim on the inking-roller, substantially as set forth.

487,279. GAS-WASHER. FRED H. LANE, Wallingford, Conn. Filed Aug. 6, 1890. Serial No. 361,181. (No model.)

Claim.—The combination, with a gas-main, of a water-supply pipe and nozzle, said nozzle projecting through one side of said main and provided with two unbroken parallel discharge-slots approximately at right angles to the gas-main, and a Y-shaped partition located between said slots and forming two inwardly-divergent members constructed to deflect the discharged liquid in sheets obliquely

487,279.



with relation to said main, substantially as and for the purpose set forth.

487,280. METAL WHEEL. JAMES R. LITTLE, Quincy, Ill. Filed Feb. 24, 1892. Serial No. 422,700. (No model.)

Claim.—1. A metal wheel in which each of the spokes and the hub are united by means of a thimble which is secured upon the inner end of the spoke and has its inner end expanded into and caused to fill a peripheral socket that is provided within said hub, substantially as and for the purpose specified.

2. A metal wheel in which each of the spokes is united to the hub by means of a metal thimble which is secured upon the inner end of the spoke and by longitudinal compression has its inner end expanded into and caused to fill a socket that is formed within the periphery of the hub, substantially as and for the purpose shown.

3. A metal wheel in which each spoke is united to the hub by means of a metal thimble which by lateral compression is secured upon the inner end of the spoke and by longitudinal compression has its inner end expanded into and caused to closely fill a peripheral socket that is provided in said hub, substantially as and for the purpose set forth.

4. A metal wheel in which is combined a hub having equidistant peripheral sockets and a central recess in the bottom of each, spokes that have their inner ends contained within such recesses, and thimbles which surround and are caused to closely embrace the inner portions of the spokes and have their inner ends expanded into and caused to fill said sockets, substantially as and for the purpose shown and described.

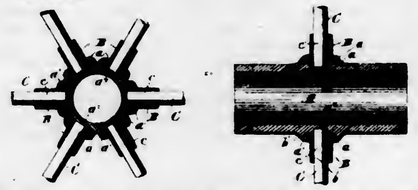
487,281. METAL WHEEL. JAMES R. LITTLE, Quincy, Ill. Filed Feb. 24, 1892. Serial No. 422,701. (No model.)

Claim.—1. A metal wheel in which the spokes are provided at their inner ends with enlargements that are securely clamped between oppositely-arranged curbs or lips, which are pressed inward and caused to embrace such enlargements, substantially as and for the purpose specified.

2. A metal wheel in which each spoke has secured upon its inner end a thimble with an enlarged inner end and such enlarged end is securely clamped between oppositely-arranged curbs or lips which are provided upon the periphery of the hub and are bent inward and caused to embrace such enlargement, substantially as and for the purpose shown.

3. A metal wheel in which is combined a hub that is provided with equidistant recesses around its periphery and curbs or lips upon opposite sides of each recess, spokes which have their inner ends placed within such recesses, and thimbles that are secured upon said spokes and have their inner enlarged ends contained between said curbs or lips and are securely clamped in place by the bending inward of the same, substantially as and for the purpose set forth.

487,282. METHOD OF MANUFACTURING METAL WHEELS. JAMES R. LITTLE, Quincy, Ill. Filed Feb. 24, 1892. Serial No. 422,702. (No model.)



Claim.—1. As an improvement in the manufacture of metal wheels, the method employed for combining a spoke with a hub, which consists in providing an enlargement at the end of the spoke and a projection upon the hub, and then bending said projection over and upon the enlargement, substantially as and for the purpose specified.

2. As an improvement in the manufacture of metal wheels, the method of combining the hub and spokes, which consists in confining the enlarged ends of the spokes by peripheral projections that are formed upon the hub and are pressed into close contact with such enlargements, substantially as and for the purpose shown.

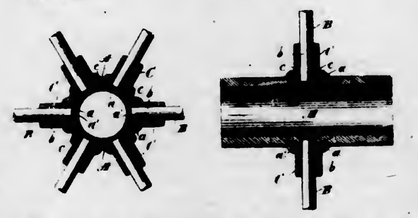
3. As an improvement in the manufacture of metal wheels, the method which consists in combining with the inner end of a spoke a compressible thimble having an enlarged inner end and then confining such thimble by a projection that is formed upon the periphery of the hub and is pressed inward upon and caused to closely embrace the enlarged end of said thimble, substantially as and for the purpose set forth.

4. As an improvement in the manufacture of metal wheels, the method which consists in combining, by pressure with the inner end of a spoke, a compressible thimble having an enlarged inner end, placing such thimble within a suitable peripheral cavity upon the hub and then by the inward compression of the wall forming such cavity, closely confining said thimble in place, substantially as and for the purpose shown and described.

5. As an improvement in the manufacture of metal wheels, the method which consists in securing upon the inner end of a spoke a thimble which is provided at its inner end with a peripheral enlargement, placing such thimble within a suitable peripheral cavity upon the hub and then by the inward compression of the wall forming such cavity, closely confining said thimble in place, substantially as and for the purpose specified.

6. As an improvement in the manufacture of metal wheels, the method which consists in combining with the inner portion of a spoke a thimble which is provided with an enlarged inner end, placing such thimble within a cavity and the projecting end of such spoke within a recess which is formed upon or within the periphery of the hub, and then turning inward the wall that forms the cavity and causing the same to closely embrace the enlarged end of said thimble, substantially as and for the purpose shown.

487,283. METHOD OF MANUFACTURING METAL WHEELS. JAMES R. LITTLE, Quincy, Ill. Filed Feb. 24, 1892. Serial No. 422,703. (No model.)



Claim.—1. As an improvement in the manufacture of metal wheels, the method employed for combining a spoke with a hub, which consists in securing upon the inner end of a spoke a metal thimble and compressing said thimble longitudinally until its inner end is caused to closely fill a peripheral socket that is formed within a hub, substantially as and for the purpose specified.

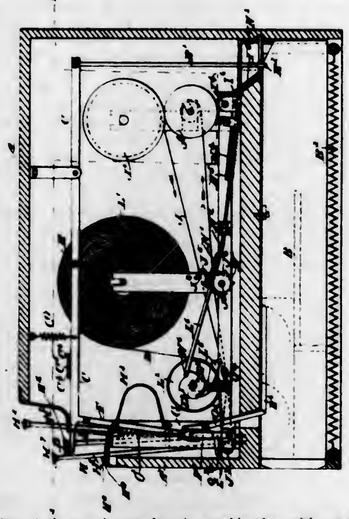
2. As an improvement in the manufacture of metal wheels, the method employed for combining a spoke with a hub, which consists in securing a metal thimble by lateral compression upon the inner end of a spoke and by the longitudinal compression of such thimble causing its inner end to expand into and to fill a peripheral socket that is formed within a hub, substantially as and for the purpose shown.

3. As an improvement in the manufacture of metal wheels, the method employed for combining a spoke with a hub, which consists in securing upon the inner portion of the spoke a metal thimble, inserting such thimble within a peripheral socket in the hub and the projecting inner end on said spoke into a recess in the bottom of such socket and expanding the inner end of said thimble until it closely fills said socket, substantially as and for the purpose shown and described.

4. As an improvement in the manufacture of metal wheels, the method employed for combining a spoke with a hub, which consists in securing a heated metal thimble by lateral compression upon the inner end of a spoke and by the longitudinal compression of such thimble causing its inner end to expand into and to fill a peripheral socket that is formed within a hub, substantially as and for the purpose shown.

5. As an improvement in the manufacture of metal wheels, the method employed for combining a spoke with a hub, which consists in securing upon the inner end of a spoke a metal thimble and compressing said thimble longitudinally until its inner end is caused to closely fill a peripheral socket that is formed within a heated hub, substantially as and for the purpose specified.

487,284. CASH RECORDER AND DRAWER. LLOYD M. MILLS, Grand Rapids, Mich. Filed Sept. 5, 1891. Serial No. 404,836. (No model.)



Claim.—1. In a cash-recorder, the combination, with a series of type-bars mounted to slide to and from a common center, of a paper-carriage mounted to slide transversely and carrying the paper and two tapes, a series of levers for shifting the said carriage in one direction, and a drawer mounted to slide and adapted to shift the carriage in the opposite direction, substantially as shown and described.

2. In a cash-recorder, the combination, with a series of type-bars mounted to slide to and from a common center, of a paper-carriage mounted to slide transversely and carrying the paper and two tapes, a series of levers for shifting the said carriage in one direction and a drawer mounted to slide and adapted to shift the carriage in the opposite direction, and intermediate mechanism for connecting the said lever with the said carriage to shift the latter according to the amount to be printed on the tapes, substantially as shown and described.

3. In a cash-recorder, the combination, with a series of type-bars mounted to slide to and from a common center, of a paper-carriage mounted to slide transversely and carrying the paper and two tapes, a series of levers for shifting the said carriage in one direction and a drawer mounted to slide and adapted to shift the carriage in the opposite direction, and a separate type-bar mounted to turn and carrying an inclined type-plate, substantially as shown and described.

4. In a cash-recorder, the combination, with a paper-carriage mounted to slide transversely, of a lever connected with the said carriage to shift the latter transversely when the said lever is pressed and a series of levers fulcrumed on the said first-named lever and each provided with a plate extending over the next following lever, so that when either of the levers of the series is pressed the said first-named lever is pressed and the carriage is shifted, substantially as shown and described.

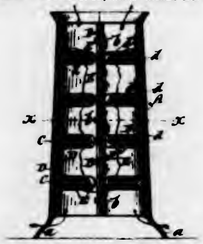
5. In a cash-recorder, the combination, with a paper-carriage mounted to slide transversely, of a lever connected with the said carriage to shift the latter transversely when the said lever is pressed and a series of levers fulcrumed on the said first-named lever and each provided with a plate extending over the next following lever, so that when either of the levers of the series is pressed the said first-named lever is pressed and the carriage is shifted, and means, substantially as described, for limiting the downward movement of the said series of levers to shift the carriage different distances, substantially as shown and described.

6. In a cash-recorder, the combination, with a series of type-bars mounted to slide to and from a common point, of a paper-carriage mounted to slide transversely and carrying the paper and two tapes, a lever connected with the said carriage to shift the latter transversely, and a series of levers fulcrumed on the said first-named lever and each provided with a plate extending over the next following lever, so that when either of the levers in the series is pressed the first-named lever is actuated and the carriage is shifted, substantially as shown and described.

7. In a cash-recorder, the combination, with a series of type-bars mounted to slide to and from a common point, of a paper-carriage mounted to slide transversely and carrying the paper and two tapes, a lever connected with the said carriage to shift the latter transversely, and a series of levers fulcrumed on the said first-named lever and each provided with a plate extending over the next following lever, so that when either of the levers in the series is pressed the first-named lever is actuated and the carriage is shifted, and means to graduate and limit the downward swinging motion of the levers to shift the carriage different distances, substantially as shown and described.

8. In a cash-recorder, the combination, with a drawer, of a locking-bolt adapted to engage a notch in the said drawer, a spring-pressed lever pivotally connected with the said bolt to disengage the latter from the notch in the said drawer, and a series of levers pivoted on the said first-named lever and each provided with a plate extending over the next adjacent lever to the left and over the said first-named lever, so that when either lever is pressed the said bolt is withdrawn, substantially as shown and described.

487,285. ELECTRICAL HEATER. WILLIS MITCHELL, Malden, assignor, by mesne assignments, to the American Electric Heating Company, Boston, Mass. Filed Mar. 15, 1892. Serial No. 425,004. (No model.)



Claim.—1. A stove or furnace partly or wholly composed of magnetic material, provided with studs or cores of the same, in combination with wire wound on the said studs and conducting electricity, for the purposes set forth.

2. A stove or furnace partly or wholly composed of magnetic material and provided with studs or cores of the same, in combination with electric heaters applied to the said studs and containing helices, whereby the said studs and the magnetic material of the stove are magnetized in order that the said stove may be heated by magnetic lag as well as by resistance, substantially as set forth.

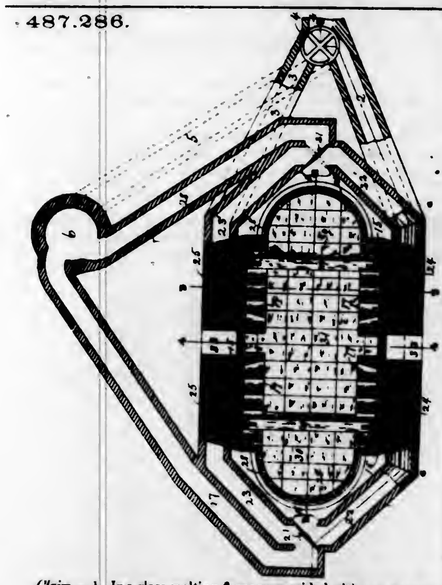
3. A stove or furnace partly or wholly composed of magnetic material and provided with inwardly-extending studs of the same, in combination with a wire wound thereon and forming part of an electric circuit, substantially as set forth.

4. A stove consisting of several sections of magnetic material, each section being provided with flanges for fastening and with inwardly-extending studs, in combination with electric heaters applied to the said studs and including wire helices, for the purpose set forth.

5. A stove consisting partly or wholly of magnetic material, open at top and bottom for the draft of air through it and provided with cores, in combination with an electric conductor arranged on the said cores, so as to magnetize the said stove, substantially as set forth.

487,286. GLASS TANK-FURNACE. WILLIAM F. HOOSE, Streator, Ill. Filed May 5, 1892. Serial No. 431,931. (No model.)

487,286.



Claim.—1. In a glass-melting furnace provided with regenerators along the sides of the same, the combination, with a central melting part and two working parts, one situated at each end of the melting part and separated therefrom by a skimmer-wall, of charging openings in each side of the melting part, and a passage-way leading to the said charging-opening and extending between the said regenerative chambers, dividing the same into two operatively-separate parts, substantially as and for the purposes described.

2. In a glass-melting furnace, the combination, with two independent regenerators on each side of the furnace, of independent air-conduction flues leading thereto, gas-flues leading to each side of the furnace and extending continuously the full length of the two regenerators, and gas and air induction ports opening into the interior of the furnace along the upper edges of the side walls, substantially as and for the purposes described.

3. In a glass-melting furnace, the combination, with the central melting part, working-out parts situated at each end thereof, and charging-openings to the melting part, of two independently-operative regenerative chambers situated on each side of the furnace, the adjacent end walls of said chambers forming a passage-way to the charging-opening, substantially as and for the purposes described.

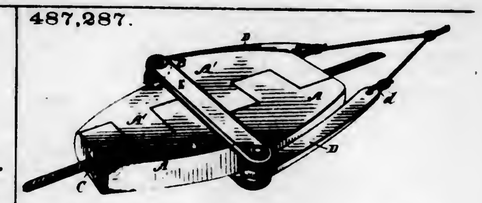
4. In a glass-melting furnace provided with regenerators along each side of the same, the combination, with a central melting part and two working parts situated at each end of the melting part and separated therefrom by a skimmer-wall, of charging-openings in the sides of the melting part, a passage-way leading to the charging-openings and dividing the regenerators on each side of the furnace into two distinct portions, individual air-flues leading to the different regenerators, gas-flues extending continuously along each side of the furnace, and gas and air induction ports opening into the interior of the furnace along the upper edge of the side walls, substantially as and for the purposes described.

5. A glass tank-furnace of the character described, consisting in a middle melting part and a working-out part at either end, and gas and air flues terminating in ports common to both, leading to the interior of the furnace, the openings through said ports being comparatively larger at the middle of the length of said furnace than near the end of the furnace, substantially as described, and for the purposes specified.

487,287. ROPE-CLAMP. HENRY J. MOORE, Sigourney, Iowa. Filed Apr. 19, 1892. Serial No. 429,773. (No model.)

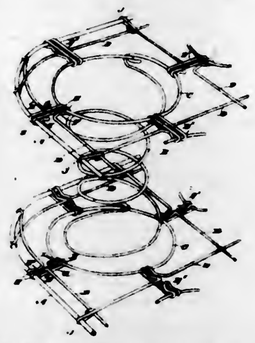
Claim.—1. In a rope-clamp, the combination of the two interlocking parts A A', each provided with a semicircular slot or groove C, with two or more transverse projections extending at an angle from the groove C, the corresponding depressions G, the brace or cross-pieces E, and the levers D, enlarged at the under side of their pivoted end, forming a fulcrum for pressing the parts A A' together, and provided with an eye at the end of their arms, all substantially as shown and described.

487,287.



2. In a rope-clamp, the parts A A', each provided with a longitudinal groove C, with two or more projections F, each of the said parts having two or more depressions G, adapted to receive the opposite projections in each of the opposite pieces, the braces or cross-pieces E, and the arm-levers D, enlarged at the inner peripheries of their pivoted ends, all substantially as shown and described.

487,288. BED-SPRING. JOHN MOSHEL, Chicago, assignor of one-half to B. F. Windsor, Joliet, Ill. Filed Jan. 15, 1892. Serial No. 418,138. (No model.)



Claim.—In a spring bed-bottom, the combination, with the springs and the inclosing wire frames, of the coupling-wires arranged longitudinally and transversely between the longitudinal and transverse rows of springs, said coupling-wires being made of a single piece of wire and provided with a regular series of right-angularly-disposed coupling-links, each of said links comprising closed hook-loops bent to one side of the straight or body portion of the wire, which forms end stops at the mouth or entrance-space to said loops when the same are in engagement, said closed loops also having parallel top portions projecting back over said straight or body portion of the wire and above the same to leave a mouth or an entrance-space to the loops, end hooks formed at the ends of the parallel top loop-forming wires and upon the opposite side of the straight or body portion of the main wire, said end hooks having their inner terminals projecting in close proximity to the straight or body portion of the wire to leave but a small space between the entrance to the hook-loops and said end hooks, and integral upwardly-bent stop-shoulders bent from the wire within the closed loops and the end hooks and meeting the upper parallel top wires, substantially as set forth.

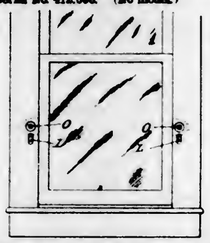
487,289. WAGON-SPOKE. FRANK T. MYRARD, Dushore, Pa. Filed June 18, 1892. Serial No. 437,234. (No model.)

Claim.—1. The device herein described for connecting the felly and spoke of a vehicle-wheel, comprising the case or shell adapted to receive the end of the spoke and having at one end a tenon to en-

ter the felly, a detachable section constituting a portion of the wall of the shell, said shell forming a continuation of the spoke, and means passing through the detachable portion of the shell and adapted to enter the spoke to secure the detachable portion in place and to the spoke, substantially as and for the purposes described.

2. The device herein described for connecting the felly and spoke of a vehicle-wheel, comprising a case or shell adapted to receive one end of the spoke and having at one end a tenon to enter the felly and provided with a detachable section constituting a part of the wall of the shell, one portion of the shell having a tongue to enter the recess in the other portion, substantially as and for the purposes described.

487,290. SASH-BALANCE. PETER H. NILES, Topeka, Kans. Filed Nov. 21, 1891. Serial No. 412,698. (No model.)



Claim.—In a sash-balance, the combination of a rack attached to the sash, a shaft journaled in the window-casing adjacent to the sash, a gear loosely mounted upon the shaft and meshing with the rack upon the shaft, a ratchet-wheel rigidly secured to the shaft, a pawl attached to the gear and engaging with the ratchet, and an actuating-spring, one end whereof is secured at a point outside of the gear and the other to the shaft, whereby as the sash is lowered the gear will act by means of the engagement of the pawl and ratchet to revolve the shaft and wind up the spring and when the sash is raised the unwinding of the spring will tend to revolve the gear and thereby aid in raising the sash, substantially as described.

487,291. COOKING UTENSIL. ADOLPH W. OBERMANN, Pittsburg, Pa. Filed Oct. 12, 1891. Serial No. 408,482. (No model.)

Claim.—1. A cooking utensil comprising a pan having lateral projections extending above the upper edge thereof and vertically-swinging clamping-dogs secured to said projections above the upper edge of the pan and adapted to engage and hold a cover thereon.

2. A cooking utensil comprising a pan and vertically-swinging clamping-dogs secured to handles upon said pan and adapted to engage and hold a cover thereon.

3. A cooking utensil comprising a pan and swinging clamping-dogs 5, having bent ends 6 secured to said pan, said bent ends being adapted to engage and hold a cover upon said pan.

4. A cooking utensil comprising a pan, a cover therefor having openings therein, and swinging clamping-dogs secured to said pan and adapted to engage and hold said cover thereon and located in position to cover said openings.

5. A cooking utensil comprising a pan, a cover therefor, having openings therein, and swinging clamping-dogs secured to said pan and provided with shoulders, said dogs being adapted to engage and hold said cover upon the pan and located so that said shoulders enter the said openings.

6. A cover for a cooking utensil, having a swinging handle 3, provided with a plate 10, and an opening 9 in said cover adjacent said handle and adapted to be closed by said plate.

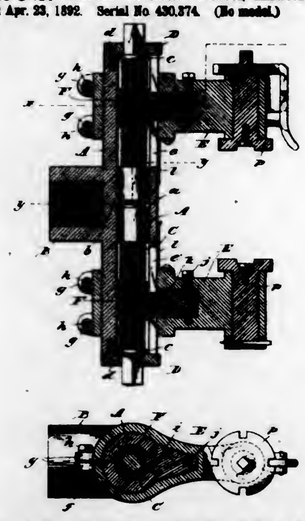
7. A cooking utensil comprising a pan and swinging clamping-dogs secured to flexible projections upon said pan and adapted to engage and hold a cover thereon.

8. A cooking utensil comprising a pan and swinging clamping-dogs secured to projections upon said pan and adapted to engage and hold a cover thereon, the side pieces of said projections having bends 11.

9. A cooking utensil comprising a pan and swinging clamping-dogs secured to flexible handles upon said pan and adapted to engage and hold the cover thereon.

10. A cooking utensil comprising a pan and a swinging clamping-dog secured to handles upon said pan and adapted to engage and hold the cover thereon, the side pieces of said handles having spring-bends 11.

487,292. CHUCK. WILLIAM PORTBOUR, Elmwood Place, Ohio. Filed Apr. 23, 1892. Serial No. 430,374. (No model.)



Claim.—1. In a chuck, the combination of the hollow body, a right-and-left screw journaled therein, and the jaws having their inner ends encompassing the body and engaged by said screw.

2. In a chuck, the combination of the hollow body, a right-and-left screw journaled therein, the jaws having their inner ends encompassing the body and engaged by said screw, and clamping-bolts passed through the split ends of the jaws, substantially as described.

3. In a chuck, the combination, with the body, of the jaws having their inner ends encompassing the body, clamping-bolts therefor, wedges between the jaws and body, actuated by the clamping-bolts, and means for adjusting the jaws.

4. In a chuck, the combination of the hollow body, the jaws having their ends encompassing the body, the right-and-left screw for adjusting the jaws, and a detent at or near the middle of said screw engaging the same to prevent endwise movement, substantially as described.

5. In a chuck, the combination of the hollow body having a right-and-left screw journaled therein, jaws encompassing the body, and nuts on said screw having stems extending through slots in the body and connected to the jaws, substantially as described.

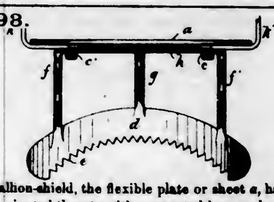
6. In a chuck, the combination of the hollow body having a right-and-left screw journaled therein, jaws encompassing the body and provided with clamping-bolts, nuts on said screw having stems extending through slots in the body and connected to the jaws, and wedges interposed between the jaws and body, substantially as described.

7. In a chuck, the combination of the hollow slotted body A, the right-and-left screw C, journaled therein, the recessed jaws E, clipping said body, and the nuts F, engaging the screw C and having stems *i*, secured in recesses in the jaws and provided with wedges, substantially as described.

487,298. STALLION-SHIELD. CHARLES A. RAHN, Cleveland, Ohio. Filed May 26, 1892. Serial No. 434,730. (No model.)

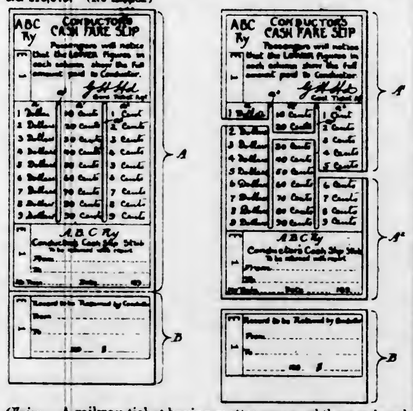
Claim.—1. In a stallion-shield, a bifurcated plate having two ribs extending upon the bottom thereof near the edges, with eyes therein, in combination with a serrated guard having hangers attached to said eyes and a cross-piece at the top, convex forward, attached to said hangers and further connected to the guard by a central hanger, in the manner substantially as and for the purpose set forth.

487,298.



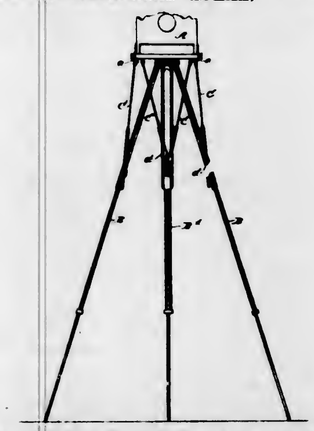
2. In a stallion-shield, the flexible plate or sheet *a*, having a depending guard pivoted thereto with a serrated lower edge, in combination with the cross-piece A, curved forward of the pivotal points, whereby the said guard is prevented from tipping forward out of place, arranged in the manner and for the purpose substantially as described.

487,294. RAILWAY-TICKET. JOHN REID, Chicago, Ill., assignor to the Rand, McNally & Company, same place. Filed Jan. 2, 1892. Serial No. 416,875. (No model.)



Claim.—A railway-ticket having matter arranged thereon in columns and an open slot between said columns, formed by removing a strip of the paper on which the ticket is printed, substantially as set forth.

487,295. CAMERA-TRIPOD. JOSEPH RODEE, San Diego, Cal. Filed Feb. 27, 1892. Serial No. 423,022. (No model.)

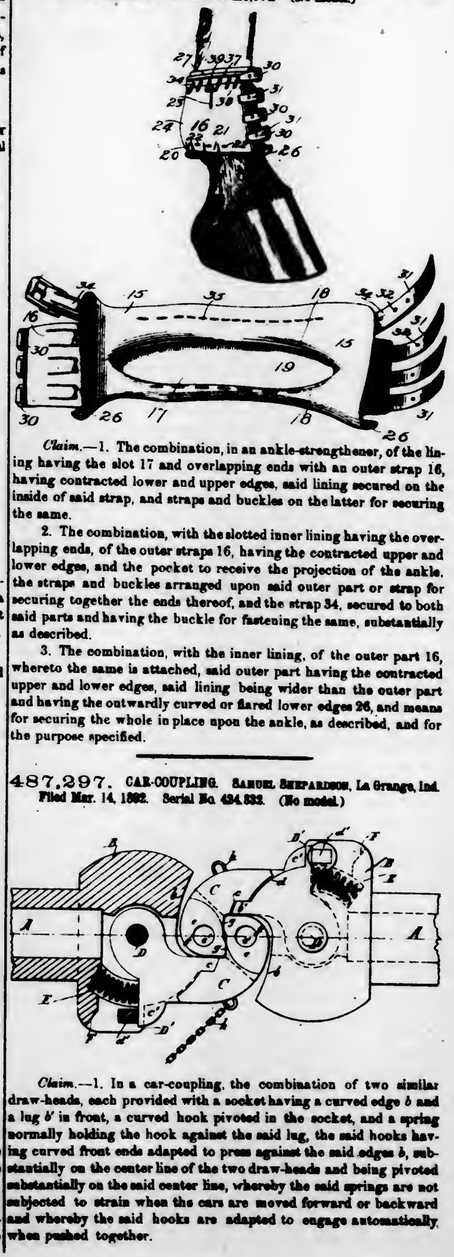


Claim.—1. In a photographic apparatus, in combination, a camera, a tripod supporting the same, and braces extending from the camera to the legs of the tripod, whereby the camera and tripod are braced and steadied with reference to each other, substantially as described.

2. In a photographic apparatus, in combination, a camera, a folding tripod supporting the same, braces extending from the camera to the tripod, and means whereby the braces are adjustably secured to the tripod, substantially as described.

3. In a photographic apparatus, in combination, the camera A, folding tripod B B', and braces C, having the hooks *c*, whereby they are attached to the camera, and the slots *c'*, by which they are adjustably secured to the tripod by the screws *d*, substantially as described.

487,296. HORSE-BOOT. JAMES H. ROWELL, Minneapolis, Minn. Filed Mar. 22, 1892. Serial No. 425,974. (No model.)



Claim.—1. The combination, in an ankle-strengthener, of the lining having the slot 17 and overlapping ends with an outer strap 16, having contracted lower and upper edges, said lining secured on the inside of said strap, and straps and buckles on the latter for securing the same.

2. The combination, with the slotted inner lining having the overlapping ends, of the outer straps 16, having the contracted upper and lower edges, and the pocket to receive the projection of the ankle, the straps and buckles arranged upon said outer part or strap for securing together the ends thereof, and the strap 34, secured to both said parts and having the buckle for fastening the same, substantially as described.

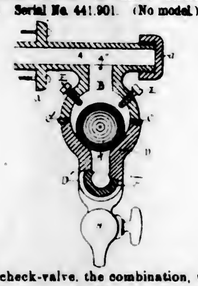
3. The combination, with the inner lining, of the outer part 16, whereto the same is attached, said outer part having the contracted upper and lower edges, said lining being wider than the outer part and having the outwardly curved or flared lower edges 26, and means for securing the whole in place upon the ankle, as described, and for the purpose specified.

487,297. CAR-COUPLING. SAMUEL SHEPARDSON, La Grange, Ind. Filed Mar. 14, 1892. Serial No. 424,832. (No model.)

Claim.—1. In a car-coupling, the combination of two similar draw-heads, each provided with a socket having a curved edge *b* and a lug *b'* in front, a curved hook pivoted in the socket, and a spring normally holding the hook against the said lug, the said hooks having curved front ends adapted to press against the said edges *b*, substantially on the center line of the two draw-heads and being pivoted substantially on the said center line, whereby the said springs are not subjected to strain when the cars are moved forward or backward and whereby the said hooks are adapted to engage automatically when pushed together.

2. In a car-coupling, the combination, with a draw-head provided with a socket having lugs *b'*, of a hook provided with a forked front end having a hole for a coupling-pin and the projection *c'*, the removable pin passing through the socket behind the said projection and adapted to hold the hook against the said lugs, and a vertical pin pivoting the said hook in the socket, the said pin and hole being arranged substantially on the center line passing through the draw-head longitudinally.

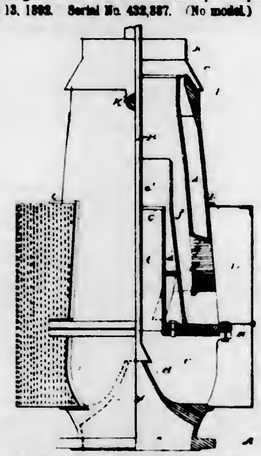
487,298. CHECK-VALVE. EDWARD J. SINCLAIR, Omaha, Nebr. Filed Aug. 1, 1892. Serial No. 441,901. (No model.)



Claim.—1. In a check-valve, the combination, with a threaded tubular stem provided at one end with a cap and at the other with an attaching-flange, of a semispherical shell threaded at the lower edge, integral with said stem and having a communicating escape-way, a lower semispherical shell screwed to said upper shell and provided with a seating adapted to accommodate a ball, a pipe-opening leading into said lower shell below the valve-seating, and a stop-cock at the lower end of said shell, all arranged to operate substantially as and for the purpose set forth.

2. In a check-valve, the combination, with the tube A, provided with the flange *a*, cap *a'*, threaded upon one end of said tube, and shell B, integral with said tube A, of the set-screws E E within said shell, the lower shell D, screwing into the shell B, provided with the pipe-opening and cock H, and the ball K within the said shell, all arranged to operate substantially as described.

487,299. TRIPLE-EXHAUST NOZZLE. JOHN Y. SMITH, Doylestown, Pa., assignor to the Smith Exhaust Pipe Company, same place. Filed May 13, 1892. Serial No. 432,887. (No model.)



Claim.—1. In an exhaust apparatus, the ejector having the divided passage with the branches diametrically opposite each other and merging in annular nozzles near the top and the upper and lower air or gas openings in the side walls located on diametrically-opposite sides and between the branches of the divided passage below their point of union, substantially as described.

2. In an exhaust apparatus, the ejector having the divided passage in the base for the entry of steam, merging into independent annular nozzles above the base, the diametrically-opposite lateral air or gas opening in the base between the branches of the divided passage passing to the center of the ejector, and the lateral air or gas opening above the first-mentioned openings and also entering between the branches of the divided passage leading to the outer nozzle and communicating with an annular duct between the steam-nozzles, substantially as described.

3. In an exhaust apparatus, the ejector having the divided passage with the branches merging in annular nozzles at the top and the air or gas openings in the side walls between the branches, having the conical bridge over the same, whereby the steam in the branches of the divided passages pass upward without forming eddies, substantially as described.

4. In an exhaust apparatus, the ejector having the divided passage with the branches merging in annular nozzles at the top, the air or gas opening in the side wall of the base, having the conical bridge over the same, and the air or gas opening above the first-mentioned openings, having the top thereof conical, whereby the branches of the divided passage approach gradually, substantially as described.

5. In an exhaust apparatus, the ejector having the divided passage with the branches merging in annular nozzles at the top and the central nozzle at the bottom, the air or gas opening in the base between the branches of the divided passage opposite the central nozzle, the air or gas openings in the side wall above the first-mentioned openings, also between the branches of the divided passage, and the annular duct between the steam-nozzle, to which said openings lead, substantially as described.

6. In an exhaust mechanism, the combination, with the ejector having the steam-passages in the base and the lateral air or gas openings, of the screens surrounding said air or gas openings, connected to and carried by the body of the ejector, substantially as described.

7. In an exhaust mechanism, the combination, with the ejector having the steam-passages in the base and the lateral air or gas openings, of the convex screens bridging the said air or gas openings, mounted on and having their edges held by the body of the ejector, substantially as described.

8. In an exhaust mechanism, the combination, with the ejector having the air or gas openings in its side walls and the flanges on the outer surface, surrounding said openings, of the screens having their edges held by the flanges, substantially as described.

9. An ejector for exhaust mechanism, consisting of the integral base-section having the divided passage and lateral air or gas openings between the branches of the divided passage and the integral upper section fastened directly on the base-section and having the annular nozzles in communication with the passages in the lower section, substantially as described.

10. An ejector for exhaust mechanism, consisting of the integral base-section having the divided passage and lateral air or gas openings between the branches of the divided passage and the integral upper section fastened directly on the base-section and having the lateral air or gas openings, the ducts registering with the branches of the divided passage and through which the air or gas openings pass, and the annular nozzles in the upper portion, substantially as described.

11. In an ejector for exhaust mechanism, the combination, with the lower central nozzle and upper annular nozzle, of the central cylindrical duct having its entrance over the central nozzle at the bottom and its exit above the annular nozzles and in position to discharge in line with the discharge from said annular nozzles, substantially as described.

12. In an ejector for exhaust mechanism, the combination, with the lower central nozzle with lateral air or gas openings thereto and the upper annular nozzles, of the central cylindrical duct having its entrance over the central nozzle extending vertically through the ejector and discharging above the same, substantially as described.

13. In an ejector for exhaust mechanism, the combination, with the annular nozzle at the top, of the shield K above the nozzle for the reception of accumulations, substantially as described.

14. In an ejector for exhaust mechanism, the combination, with the annular nozzle at the top and the air and gas openings at the bottom and means for preventing the entry of ashes therein, of the shield K above the nozzle, with its bottom open around the outside of the ejector, whereby ashes are drawn through it and accumulations removed, substantially as described.

15. In an ejector for exhaust mechanism, the combination, with the base-section, of the upper section cast integral with the annular ducts therein and the annular nozzle removably secured at the top of the ejector, substantially as described.

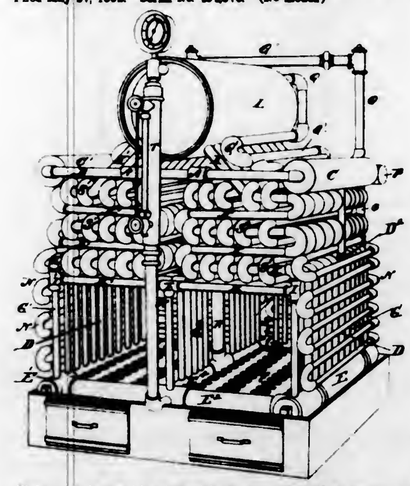
16. In an exhaust apparatus, the combination, with the boiler having flues therein, the smoke-box, and the ejector located therein, of the apron or deflector-plate depending between the flues and ejector, having the vertical series of independently-operated dampers therein, substantially as described.

17. In an exhaust apparatus, the combination, with the boiler having flues therein, the fire-box, the smoke-box, and the ejector located therein, of the apron or deflector-plate depending between the ejector and flues, the vertical series of independently-pivoted dampers in said plate, and the independent cranks for operating the same, substantially as described.

18. In an ejector such as described, the combination, with the upper nozzles, of the small central nozzle at the bottom, having the converging walls extending from side to side of the steam-passages, whereby oily products are caught and carried out at the top of the nozzle, substantially as described.

19. In an ejector such as described, having the divided passage in the base and the nozzles at the top, the small central nozzle at the bottom, having the converging walls extending from side to side of each branch of the divided passage, whereby oily products are caught and carried out at the top of the nozzle, substantially as described.

487,300. STEAM-GENERATOR. WILBERT D. SMITH, Detroit, Mich., assignor to the Huyette & Smith Manufacturing Company, same place. Filed May 27, 1892. Serial No. 434,576. (No model.)



Claim.—1. In combination with the base-pipes E E' E², the vertical series of tubes G G' S, forming the sides and rear end of the fire-box, and the double series of coil-tubes N, receiving water through the tubes M and extending horizontally along the side and half-way along the back series of vertical tubes, thus forming a double system of pipes around the sides and back end of the fire-box, substantially as set forth.

2. In combination with the base-pipes E, E', E², and E⁴, the vertical series of tubes G, G', G², and S, forming the back end and partition of the fire-box, and a series of tubes H H', placed in horizontal plane and respectively connecting the side and partition vertical tubes at the upper end and forming the crown of the fire-box, substantially as set forth.

3. In combination with the base-pipes, vertical tubes forming the sides, end, and partition of the fire-box, the series of horizontal tubes H H', connecting the side and partition tubes, and the double series of coil-pipes K, K', and S', supported on the crown-pipes, substantially as set forth.

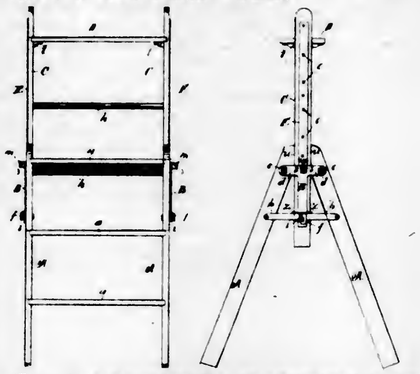
4. The double series of transverse coils K K' and interlaced longitudinal coils S', arranged, respectively, in vertical planes and at right angles to one another and forming rectangular flues extending from the crown-tubes to the space above the boiler, substantially as set forth.

5. The combination of a series of transverse pipes H H', each connected at the ends and center with the base-pipes E, E', and E⁴ and with the independent transverse coils K K', respectively discharging into the steam-drum on opposite sides thereof, substantially as set forth.

6. In combination with the receiver and feed-water heater placed over the coils of the boiler between the high and low water lines and a feed-water pipe connected thereto, the base-pipes and a conduit for delivering water thereto from the former, substantially as set forth.

7. In combination with a connected system of base-pipes which inclose the grate-bars, the steam-drum and system of pipes leading from the former to the latter, and a return or drop pipe opening out of the bottom of the steam-drum midway between its ends, passing down through the fire-box, and discharging into the central element E⁴ of the connected base-pipes, substantially as set forth.

487,301. EXTENSION-LADDER. ALBERT A. SOSS, Ann Arbor, Mich., assignor of one-half to George M. Clarken, same place. Filed Sept. 26, 1891. Serial No. 406,880. (No model.)



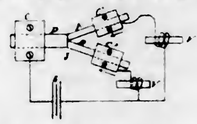
Claim.—1. In an extension-ladder, the combination of the side plates, the supporting-legs pivotally coupled to said plates, the vertically-adjustable section mounted between said legs, and the detents for supporting said section when elevated, substantially as specified.

2. In a ladder, the combination of the T-shaped plate, the supporting-legs pivoted thereto, the dog or detent mounted on said plate, and the adjustable section adapted to slide vertically between said legs and having notches or apertures to receive said detent, substantially as set forth.

3. In a ladder, the combination of the pivotally-coupled supporting-legs, the brace-arms attached at their outer ends to said legs and pivotally coupled at their inner ends, and the gravitating catch for locking said arms when in their horizontal position to brace said legs, as set forth.

4. In a ladder, the combination of the T-shaped plates, the legs pivoted thereto, and the detents mounted on said plates, the adjustable section adapted to slide vertically between said plates and having notches or apertures in which said detents engage, the brace-arms attached at their outer ends to the legs and pivotally coupled at their inner ends, the hooks or lugs on the lower ends of said plates, upon which said arms are adapted to rest when extended, and the catch adapted to engage said hooks to lock said arms, substantially as specified.

487,302. METHOD OF ELECTRIC WELDING. ELIHU THOMSON, Swampscott, Mass., assignor to the Thomson Electric Welding Company, of Maine. Filed Oct. 2, 1890. Serial No. 366,901. (No model.)



Claim.—1. The herein-described improvement in welding metals electrically, consisting in making contact with both pieces to be united and passing a current of greater strength through one piece than through the other.

2. The herein-described improvement in welding together electrically pieces of metal of different conductivity, consisting in making contact with both pieces to be united and passing a current of greater strength through the piece having the least resistance than through the other.

3. The herein-described improvement in welding together pieces of metal of different conductivity, consisting in making contact with both pieces to be united, passing currents through both pieces, and proportioning the strength of the currents to the conductivity of the pieces to produce the same welding temperature in both pieces simultaneously.

4. The method of manufacturing angle-joints of pieces of metal, consisting in clamping the pieces to be welded together at the desired angle to each other, passing a current through the said pieces until they are sufficiently softened, and then pressing the pieces together to unite them while maintaining them at the angle at which they were clamped.

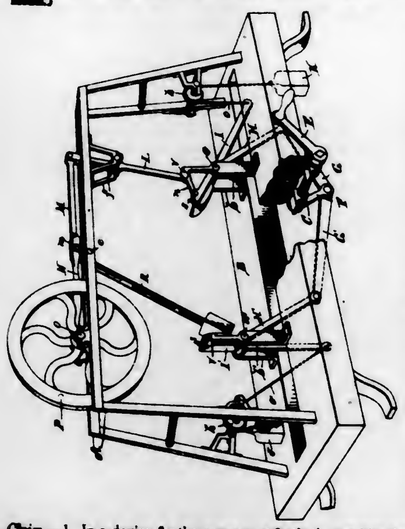
5. The method of making joints between pieces of metal, consisting in clamping the pieces to be welded at any desired angle or position with respect to each other, passing a current through each of the said

pieces until they are sufficiently softened, proportioning the strength of the current to the conductivity of the pieces, and pressing the pieces together to unite them while maintaining them in the relative position or direction of angle in which they were clamped.

6. The method of welding, consisting in putting together two or more pieces of metal in contact, passing an electric current through the meeting-point or joint between the two pieces, and passing in addition a branch current or separate current through the larger of the pieces and not through the smaller, so as to add to the heating effect in the larger piece, while leaving the heating in the smaller unaffected.

7. The method of electric welding, which consists in placing pieces together for union by electric heat and pressure and in combining the currents passing through the smaller pieces and through the joint to traverse summatively the larger piece or pieces, and thereby increase the heating effect in the larger piece to the amount required to complete the joint.

487,803. DEVICE FOR THE TRANSMISSION OF POWER. LEWIS TIBBE, Detroit, Mich. Filed Sept. 26, 1891. Serial No. 406,919. (No model.)



Claim.—1. In a device for the purpose set forth, the combination of the driving-shaft carrying a crank-arm, a pair of levers fulcrumed in suitable supports, the connecting-bars coupling one end of said levers with the crank-arm, the opposite end of said levers being unattached, whereby the rotation of said shaft imparts a simultaneous and alternating reciprocation to said levers, and the pendulum adapted to vibrate between the unattached ends of said levers, substantially as set forth.

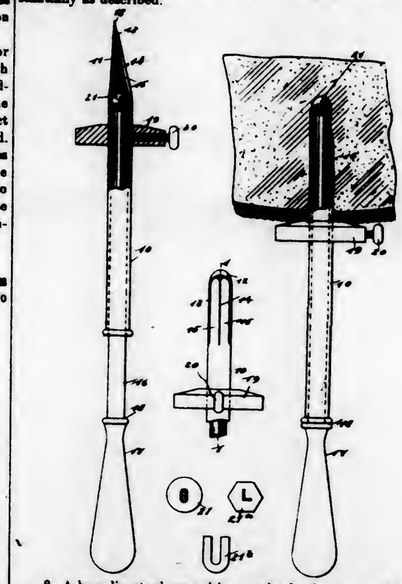
2. The combination of the driving-shaft carrying a crank-arm, the levers H H', connected with said crank-arm, and the levers I I', each having a weight attached at one end and at the opposite end means for engagement with and disengagement from the levers coupled with the crank-arm, substantially as specified.

3. The combination of the driving-shaft carrying a crank-arm, the levers H H', connected with said crank-arm, the auxiliary levers having the weights attached thereto, the pendulum adapted to vibrate between the free ends of the auxiliary levers, and the pitman coupling the upper end of the vibrating pendulum with the crank-shaft having a wheel mounted thereon, as specified.

4. The combination of the frame, the driving-shaft carrying a crank-arm journaled in said frame, the lever connected with said crank-arm, the connecting-rod and the pitman coupled to the crank-shaft carrying a wheel, the vertical lever L, and horizontal link coupling the connecting-rod with the upper end of the lever coupled to the crank-arm of the driving-shaft, and the vibrating lever fulcrumed in the frame and coupled at its upper end to the connecting-rod and pitman, substantially as specified.

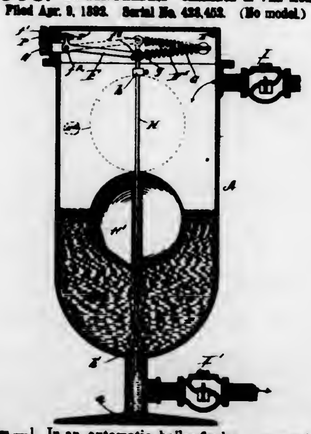
487,804. BRANDING-TOOL. JOHN R. TODD, Glenrock, Wyo. Filed Jan. 12, 1892. Serial No. 417,891. (No model.)

Claim.—1. A branding-tool comprising a tube having one end flattened and pointed and provided with springs the points of which rest upon the said flattened portion, and a plunger in the tube, substantially as described.



2. A branding-tool comprising a tube having one end flattened and split, a plunger held to slide in the tube, and a gage adjustably mounted upon the tube, substantially as described.

487,805. BOILER-FEEDER. CLARENCE E. VAN AUKEN, Chicago, Ill. Filed Apr. 9, 1892. Serial No. 428,452. (No model.)



Claim.—1. In an automatic boiler-feeder, a reservoir having a pipe extending thereinto from the feed-water supply, a valve in such pipe permitting fluid to flow into the reservoir and preventing fluid from flowing out of the reservoir, and a pipe extending from a boiler above the water-line thereof, a valve interposed in such pipe between the boiler and the reservoir, and a pipe extending out of the reservoir to the boiler, having a valve therein, permitting fluid to pass from the reservoir into the boiler and preventing fluid from passing from the boiler into the reservoir, in combination with a lever in the reservoir fulcrumed at one end to a rigid abutment and at the other end pivoted to a second lever movably fulcrumed in a rotatable socket, a spring mounted on the second lever and abutting at one end against an abutment on the lever and at the other end against an abutment not connected to such lever, a rod suspended at the point of connection of the two levers within the reservoir, stops on the rod, and a float, the float adapted to slide between the stops and actuate the rod and levers when moved by water contained in the reservoir, and the first-named lever attached to and operating by its movement the valve interposed between the reservoir and the boiler, substantially as described.

2. In an automatic boiler-feeder, a reservoir, a pipe extending thereinto from the feed-water supply, a valve in such pipe permitting fluid to flow into the reservoir and preventing it from flowing out of the reservoir, a pipe extending from the reservoir to a boiler, a valve in such pipe, permitting fluid to pass from the reservoir into the boiler and preventing fluid from passing from the boiler into the reservoir, a lever in the reservoir, fulcrumed at one end to a rigid abutment and at the other end pivoted to a second lever movably fulcrumed in a rotatable socket, a spring mounted on the second lever and abutting at one end against an abutment on the lever and at the other end against an abutment not connected to such lever, a rod suspended at the point of connection of the two levers within the reservoir, stops on the rod, and a float, the float adapted to slide between the stops and actuate the rod and levers when moved by water contained in the reservoir, in combination with a valve attached to the reservoir above the water-line thereof, such valve consisting of a plunger, a valve on the plunger, and a disk on the plunger of greater area than the valve, a chamber above the disk, a passage-way extending from such chamber into the main passage-way of the valve between the valve and the disk, and a piston adapted to open and close the passage-way extending from the chamber above the disk, such piston actuated by the first-named lever contained in the reservoir, and a pipe extending from the valve to the boiler above the water-line of such boiler, substantially as described.

3 A valve for an automatic boiler-feeder, consisting of a casing, a plunger movable in the casing, having a valve at one end thereof and a disk of greater area than such valve at the other end thereof, a chamber above the disk, a passage-way extending from the chamber to the passage-way between the valve and the disk, a movable piston adapted to alternately close such passage-way extending to the chamber above the disk and to open the exhaust from the chamber, and a valve-seat for the valve, whereby when the piston is moved so as to open the passage-way into the chamber above the disk the valve on the plunger is closed on the seat therefor by the steam extending into such chamber, and when such piston is moved so as to permit the steam to be exhausted from such chamber above the disk the valve is opened by the pressure of the steam on the under side of the disk, substantially as described.

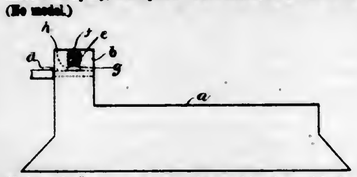
4. A valve for an automatic boiler-feeder, consisting of a casing, a plunger movable in the casing, having a disk at one end thereof and a valve of less area than such disk at the other end thereof, an extension on the under side of the valve, and a second valve on the end of such extension, a chamber above the disk, a passage-way extending from the chamber to the passage-way between the valve and the disk, a movable piston adapted to alternately close such passage-way extending to the chamber above the disk and to open the exhaust from the chamber, and valve-seats for such valves in the passage-way extending from the valve-casing, such valve-seats being arranged so that when the valve of one thereof is seated the valve of the other is unseated, whereby when the piston is moved so as to open the passage-way into the chamber above the disk the upper valve on the plunger is closed by the steam extending into such chamber and the lower valve is opened, and when such piston is moved so as to permit the steam to be exhausted from such chamber above the disk the upper valve is opened and the lower valve is closed by the pressure of the steam on the under side of the disk, substantially as described.

487,806. RESISTANCE-BOX. JOHN WARNER, Manchester, Conn. Filed Apr. 23, 1892. Serial No. 431,062. (No model.)

Claim.—1. A resistance-box consisting of a bottom having a chamber for the resistance-coils and a chamber for the contact-plugs separated by insulation, with perforations through the top to coincide with the plug-sockets between the blocks, substantially as specified.

2. A resistance-box consisting of a bottom having an insulating-slab adapted to support upon one side resistance-coils and upon the other side contact-blocks with plug-sockets, and a removable part located above the insulating-slab over the contact-blocks and below the plug-handles, with perforations corresponding to and coinciding with the plug-sockets between the blocks, substantially as specified.

487,807. CONNECTION FOR COMMUTATORS AND ARMATURE-WIRES. ESTHER P. WARREN, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Mar. 5, 1892. Serial No. 423,981. (No model.)



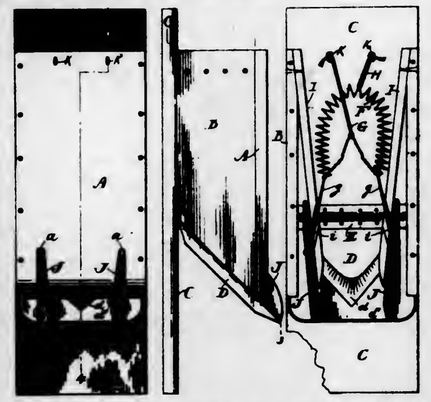
Claim.—1. In a commutator, the combination, with the connecting-wires *d*, of the commutator-bar provided with the holes *c c* and the hole *e* at right angles thereto, the screw *f*, adapted to screw in said hole *e*, and a button or plate *h*, adapted to rest upon the wires and receive the pressure of said screw *f*, substantially as described.

2. The combination, with the connecting-wires inserted in holes in the commutator-segment, of a plate adapted to rest upon said wires and a screw adapted to bear by its end upon said plate, whereby the pressure of said screw is distributed equally between said wires, substantially as described.

3. The combination, with a commutator-segment provided with holes, of wires inserted therein, a plate adapted to rest upon said wires, and a screw adapted to always press upon said plate at or near the center thereof irrespective of the relative sizes of the wires, substantially as described.

4. The combination, with a commutator-segment provided with holes, of wires inserted therein, a plate adapted to rest upon said wires, and a screw adapted to bear by its end upon said plate intermediate between said wires, whereby the pressure of said screw is distributed between said wires, substantially as described.

487,808. FEED-BOX. SOLOMON F. WEAVER, Downs, Kans. Filed Jan. 11, 1892. Serial No. 417,676. (No model.)



Claim.—1. The combination of a box, a hinged bottom having a portion projecting beyond the box, and a coiled spring connected with the bottom for holding it normally closed and situated within the box so as to agitate the contents when the bottom is moved, substantially as set forth.

2. The combination of a box, a bottom hinged thereto and having a portion projecting beyond the box, and a coiled spring of inverted-U shape situated within the box and connected with the bottom for holding it normally closed, substantially as set forth.

3. The combination of a box having the bottom of its sides beveled off, the bottom D, hinged to the back C and having the projecting portion *d'* and the bait-receptacle *d*, and means for holding said bottom normally elevated, substantially as set forth.

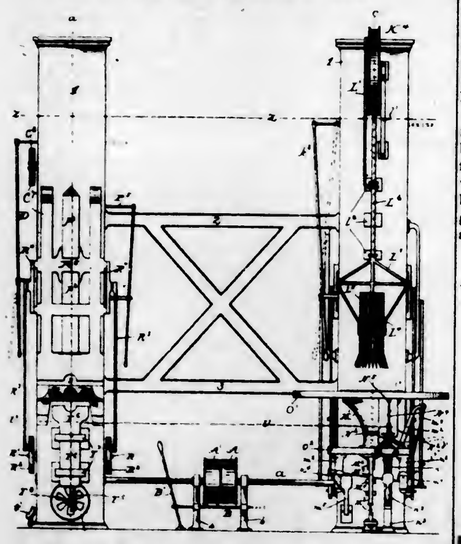
4. The combination of the box, the hinged bottom D, having the portion *d'* projecting beyond the box, means for holding said bottom normally closed, and the partitions I, situated within the box and extending from front to back and nearly to the bottom thereof, substantially as set forth.

5. The combination of the box, the hinged bottom having the projection *d'* and bait-receptacle *d*, the flanges J, projecting upward from said bottom and forming a trough, and means for holding said bottom normally closed, substantially as set forth.

6. The combination of the box, the hinged bottom having the projection d' and bait-receptacle d, the flanges J, projecting upward from said bottom, the partitions I, extending downward between said flanges nearly to the bottom, and means for holding the bottom normally closed, substantially as set forth.

7. The combination, with the box and the hinged bottom, of the wires K, having portions that are parallel and other portions that diverge and a flexible device connected to the bottom and adapted to be secured between the parallel portions of said wires, substantially as set forth.

487,309. MACHINE FOR THE MANUFACTURE OF BRIDLES FOR PAINT-BRUSHES. FREDERICK W. H. WESSAUPT, Washington, D. C. Filed Aug. 8, 1892. Serial No. 442,504. (No model.)



Claim.—1. The combination, with the main frame comprising the two hollow uprights connected by parallel bracing-bars and provided near their bases with a horizontal power-shaft a, supported in bearings in short centrally-disposed uprights and having a fixed pulley and a loose pulley between said uprights and miter-gears G' G' near one end of the shaft, of a belt-shifter for shifting a driving-belt from one to the other of said pulleys, a counter-shaft T^3, arranged in one of the hollow uprights and at right angles to the shaft a, a miter-gearing secured to one end of the shaft T^3 and engaging the two similar gear-wheels G' G' upon the main power-shaft a, and cog-gears G', connecting with a miter cog-gear G^3 on shaft g' and carrying a cog-gear G^4, and a pulley-wheel G^5, connected by a belt to a wheel G^6 on shaft g^2, supported parallel to and below shaft g^2 in bearings in the hollow upright in which it is located, a treadle and a slide for shifting the belt from the loose to the fixed pulleys G^6 G^5 on shaft g^2, a plunger-cap E^3, connected to a hand-wheel G^6 on the shaft g^2, a plunger E', working in the brackets F' and provided with a knife E^4, the connecting-rod d', connecting the plunger E' to the eccentric shaft c^3, provided with the cog-wheel C^7, pulleys C^4 C^5 on shaft c^3, shaft c', provided with large pulley C^8 and pulley C^9, a belt connecting pulleys C^4 C^9 to pulley C^5 on shaft c', and the large pulley C' on shaft a, connected by endless belt to pulley C^8 on shaft c', substantially as specified.

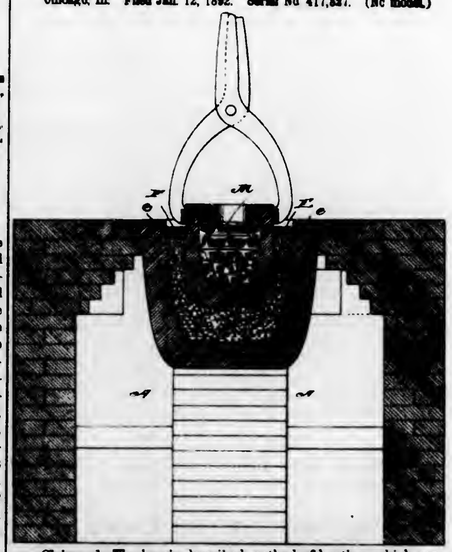
2. The combination, with the main frame, comprising the two hollow uprights 1 1, connected by parallel braced connecting-bars and provided near their bases with a horizontal power-shaft a, supported in bearings in short centrally-disposed uprights and having a fixed pulley and a loose pulley mounted thereon between said centrally-disposed uprights, of a belt-shifter for shifting a driving-belt from one to the other of said pulleys, a miter-gear secured to the shaft T^3 and engaging two similar miter-gears upon the power-shaft a, provided, also, with a cog-gear G', connecting with a miter cog-gear G^3 on the shaft g', and the plunger E^3, sliding in brackets F^3 and provided with steel pins E^5 in its top face, which slide through openings in the bed-plate E^3, and a plunger E', working in guides F' F' and connected at its upper end by a rod d' to an eccentric shaft c^3, mounted in bearings d d of its proper upright 1 and provided at its projecting end with a cog-wheel C^7, which meshes with a cog-wheel C^8 to operate the plunger F' and punch the aligned holes in the sheet-metal blank, substantially as specified.

3. The combination, with the horizontal table J', provided with grooves I^3, the horizontal slide I', a double arm I^2, secured to the slide, the angle-arm I^4, working against a rolling pulley I^5, and a working arm I^1, connecting the angle-arm to a treadle I^7, of a vertical slide H', the bed H^6, the treadle H^5, and springs within the grooves H^2 for forcing the vertical slide H' and the treadle H^3 upward, substantially as specified.

4. The combination, with the funnel-shaped metal reservoir made in two parts hinged together at the top, the stationary part being secured at its upper end to the table O' and resting on the bench O^3, supported on an upright m^3, of an angle-arm m^2, connected to the hopper by a short working arm m', the leather belt-m^4, secured at its upper end to the angle-arm m^2, running thence over pulley m^5, and connected to treadle m^6, the metal core or plunger M^3, the metal cylinder N', partially hollow and partially solid, resting on table O^2 and provided with a slide N^7, extending entirely through its length, the slide N^2, inclosed in slide N^7, the support or slide N^4, sliding in groove N^5, and the leather belt n', attached to slide N^4 at one end and to treadle n^3 at the lower end, substantially as specified.

5. The combination, with the hollow upright at the left side of the machine, provided with the bed-plate E^4 and the laterally-projecting brackets F^3, and the lower vertically-disposed plunger E^3, having the face-plate E^5 and the pitman-rod G', connecting the plunger E^3 with the wheel G^4 on the short shaft g^3, of the plunger E', provided with the hammer-face E^4 and the face-plate, the pitman e', connecting the plunger E' to the shaft c^3 of the gear C^7, and the gear-wheel C^8, shaft c^3, and shifting-lever D, substantially as described.

487,310. METHOD OF HEATING BY METAL BATH. FREDERICK L. WHITE, Milwaukee, Wis., assignor of one-half to Albert J. Pickett, Chicago, Ill. Filed Jan. 12, 1892. Serial No. 417,827. (No model.)



Claim.—1. The herein-described method of heating, which consists in employing a metal bath having a supernatant seal of liquid aluminum.

2. The herein-described method of heating, which consists in employing a lead bath having a supernatant seal of liquid aluminum and subjecting the articles to be heated to contact with the bath below the seal.

487,311. REEL. MORRIS WISE, New York, N. Y. Filed Mar. 10, 1892. Serial No. 424,445. (No model.)

Claim.—1. The combination, with a removable heel, of independently-removable staples C, formed of flat pieces of sheet metal and provided with eyes at one end, a plate E, struck up from sheet metal with a series of loop projections F, corresponding in shape to the eyes in the staples, and a key passing through the loops and eyes, substantially as described.

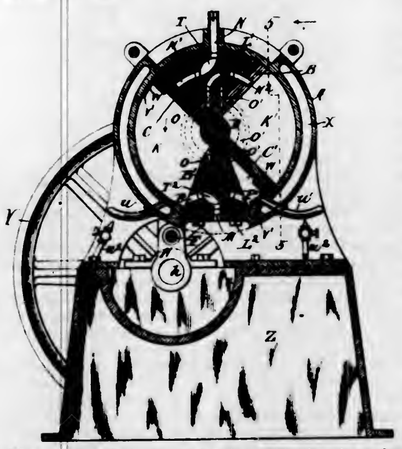
2. The combination, with a sole and a removable heel, each having interlocking eyes, of a key for engaging said eyes, said sole having an interior or concealed channel or way located within the boot or shoe for the key, substantially as described.

3. The combination, with a sole and a removable heel, each having interlocking eyes, of a key for engaging said eyes, said sole having an interior or concealed channel or way located within the boot or shoe for the key, and a filling-piece for said channel or way, substantially as described.

487,312. INTERCHANGEABLE HEEL. MORRIS WISE, New York, N. Y. Filed Aug. 20, 1891. Renewed June 8, 1892. Serial No. 436,943. (No model.)

Claim.—The sole A, having the attached plate C struck up with the series of outwardly-projecting eyes D, in combination with the heel B, having the attached plate E arranged on its upper surface and provided with the series of struck-up eyes F, which pass between the eyes of the sole-plate, and the lengthwise-sliding key G, composed of a flat rectangular plate inserted through the struck-up eyes of the two plates, substantially as shown and described.

487,313. GAS-ENGINE. SAMUEL WITHERS, London, England, and D'ESTAING S. COVERT, Chicago, Ill. Filed Oct. 12, 1891. Serial No. 408,447. (No model.)



Claim.—1. In a duplex gas-engine, the combination of two alternating single-acting engines having oscillating pistons, induction-ports in the end of the cylinder-chambers remote from the seat of explosion, ducts uniting the opposite ends of the cylinder-chambers, valves for controlling the induction ports and ducts and adapted to close the induction-port of each cylinder during the pressure-stroke and to open it during the return stroke of its piston and to open the duct-opening behind the returning and before the advancing piston, eduction-ports leading from each cylinder-chamber behind its piston, and valves for controlling said ports and adapted to open the same during the first one-half of the return stroke of the piston, substantially as described.

2. In a duplex gas-engine, the combination, with two alternating single-acting engines, each adapted to draw in a new explosive charge after its returning piston and force that charge behind the piston of the other engine during the succeeding stroke, of ignition-tubes opening into the explosion-chambers behind the pistons, gas-burners for heating said tubes, flaps, as v' v', attached to the pistons and sliding on the surface of the explosion-chamber and adapted to cover the inner ends of the ignition-tubes and having apertures, as w w, adapted to register with the mouths of the tubes at the end of the return strokes of the pistons, substantially as described.

3. In a duplex gas-engine, the combination, with a pair of alternating single-acting piston engines having ducts uniting the opposite ends of the two cylinder-chambers and valve mechanism adapted to open the duct leading from before the advancing piston to behind the returning piston, of an induction-duct for each cylinder-chamber, located on the side of the piston remote from the seat of inflammation and opening externally, valve mechanism adapted to open the induction-ducts during the return strokes of the pistons and close them during their out or power stroke, gas-supply pipe opening into the induction-ducts, valve mechanism for opening the gas-pipe during a part only of each return stroke of the pistons, eduction-ducts leading from the cylinder-chambers behind the pistons, and valve mechanism for opening the eduction-ducts during a part of the return strokes of the pistons, substantially as described.

4. In a duplex gas-engine, the combination, with a pair of alternating single-acting piston engines having ducts uniting the opposite ends of the two cylinder-chambers and induction-ducts leading to the ends of the cylinder-chambers remote from the seat of inflammation, of eduction-ducts leading from the ends of the cylinder-chambers at which inflammation occurs and valve mechanism for opening the eduction-ports during a portion only of each return stroke of the pistons, substantially as described.

487,314. FASTENER FOR THE MEETING-RAILS OF SASHES. CLAYTON WOLCOTT, Hartford, Conn. Filed May 26, 1891. Serial No. 434,467. (No model.)

Claim.—1. In a window-fastener, in combination, the base-piece, the swinging catch pivoted to the base-piece and having a chamber opening on the under side and cover-plate closing the opening, the angular support located within the catch, forming a concealed bearing, the tilting bolt removably mounted on the angular support within the catch-piece and having a downturned lug adapted to engage sockets in the base-piece, the push-pin mounted in the outer end of the catch, and the striking-plate, all substantially as described.

2. In combination, in a window-fastener, a base-plate, a swinging catch pivoted thereto, and a striking-plate having a guard extending from the side adjacent to the edge of the meeting-rail and underlying the path of movement of the outer end of the catch, all substantially as described.

3. In a window-fastener, in combination with a base-piece having locking-sockets in its upper surface, a chambered swinging catch pivoted to the base-piece and open on the under side, a cover underlying said opening and having a fulcrum for a tilting bolt, the tilting bolt supported within the catch and having a lug held normally in engagement with a locking-socket in the base-piece, the push-button engaging the outer end of the bolt, the catch-plate, and the striking-plate, all substantially as described.

487,315. ELECTRIC-ARC LAMP. JAMES J. WOOD, Fort Wayne, Ind. Filed July 25, 1892. Serial No. 441,096. (No model.)

Claim.—1. In an arc lamp, in combination with a fixed clutch-releasing abutment, a feed-clutch consisting of a sleeve embracing the feed-rod and a clutch-lever pivoted to said sleeve, having a brake-shoe engaging the rod, an arm connected to the feed-regulator, and a tail adapted upon the lowering of the clutch to strike an abutment, and thereby to tilt the lever in the direction to release the clutch.

2. In an arc lamp, a feed-clutch consisting of a sleeve embracing the feed-rod and a clutch-lever pivoted to said sleeve, having a brake-shoe engaging the rod beneath its pivot, an arm connected to the feed mechanism, and an opposite tail engaging an abutment to release the clutch.

3. In an arc lamp, the combination, with the feed-rod and the feed-clutch hung at one side so that the rod tends to hang out of the vertical, of the conductor-springs arranged to press against the rod in such lateral direction as to tend to correct the casting effect of its one-sided suspension.

4. In an arc lamp, a final cut-out consisting of a metallic spring-arm in electric connection with one terminal beneath the top plate and having a toe projecting upwardly through the top plate to be engaged by a projecting shoulder on the feed-rod when the latter reaches its lowest position and a conducting-arm in electric connection with the opposite terminal, arranged beneath said spring-arm, to be touched thereby when the latter is pressed down, and thereby short-circuit the terminals through the respective arms.

5. In an arc lamp, the top plate of the mechanism-case in electric

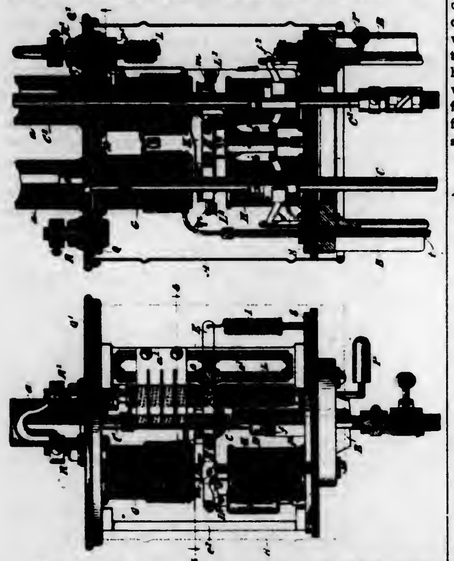
connection with the positive terminal, a spring-arm mounted beneath the top plate in conductive contact therewith, having a toe projecting up through the top plate, the feed-rod having an annular shoulder or head arranged to depress said toe when the rod feeds down to its lowest position, and a conducting-arm in electric connection with the

ary clutch, the primary clutch being hung from said regulator at less mechanical advantage than the engagement therewith of said transfer device, by which the weight of the primary feed-rod is transferred to the regulator, the difference in mechanical advantage being proportioned to compensate for the lightening of the primary feed-rod

ranged to lie in the cream-wall, one or more outlets above the partition, and one or more outlets below the partition, substantially as set forth.

partition arranged in the upper part of the drum and having its inner edge or lip arranged to lie in the cream-wall, one or more butter-outlets above the partition, and one or more blue-milk outlets below the partition, the nozzles or openings m^3 in the comb m' being formed

connection with the positive terminal, a spring-arm mounted beneath the top plate in conductive contact therewith, having a toe projecting up through the top plate, the feed-rod having an annular shoulder or head arranged to depress said toe when the rod feeds down to its lowest position, and a conducting-arm in electric connection with the insulated negative terminal, projecting beneath said spring-arm in position to be touched thereby when the latter is depressed.



6. In a double-arc lamp, the combination, with a feed-regulator comprising a lever E and with primary and secondary feed-clutches D D^2 and links b b^2, by which said clutches are hung therefrom, and releasing-abutments f f^2 for said clutches, the secondary clutch being initially hung above the range of feeding movement of the lever, so that it does not touch its abutment f^2, and consequently does not feed during the feeding of the primary clutch, of a transfer-lever K, mounted on said lever E and to which the link b^2 of the secondary clutch is hung, a spring for normally pressing up said transfer-lever, and a push-rod N, arranged to be depressed by the first feed-rod on descending to its lowest position and connected to said transfer-lever to depress it and lower the secondary clutch into operative contact with its abutment.

7. In a double-arc lamp, the combination, with a feed-regulator comprising a lever E, and with primary and secondary feed-clutches D D^2, hung therefrom, the secondary clutch being initially hung above the range of feeding movements, of a transfer-lever K, pivoted on said lever, having a stop-arm k abutting against said lever to limit the ascent of the transfer-lever, and a spring for pressing up the transfer-lever.

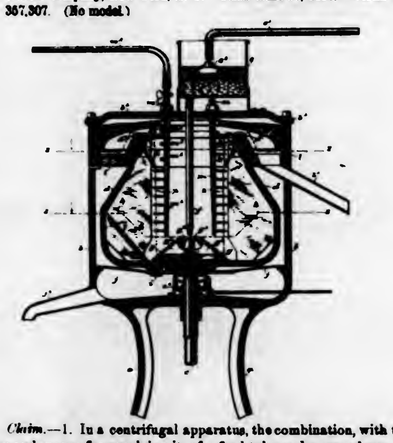
8. In a double-arc lamp, the combination, with a feed-regulator and primary and secondary feed-clutches connected thereto and supported thereby, the secondary clutch being initially connected above the range of feeding movement, of a transfer device for lowering the secondary clutch into operative position, consisting of a movable part from which the secondary clutch is hung, mounted on the regulator, a push-rod arranged to be depressed by the first feed-rod when it reaches its lowest position and connected to said movable part to press it down, and a spring interposed between the first feed-rod and said movable part, through which spring the movement is communicated, whereby no greater thrust can be exerted against the said movable part than the tension of said spring.

9. In a double-arc lamp, the combination, with a feed-regulator comprising an armature-lever E and primary and secondary feed-clutches connected to said lever, of a transfer device consisting of a transfer-lever K, mounted on the armature-lever and from which the secondary clutch is hung, a spring s for pressing it up, and a push-rod N, connected to said lever and projecting up through the top of the case into position to be depressed by the first feed-rod upon completing its descent and formed with a spring portion N'.

10. In a double-arc lamp, the combination, with a feed-regulator and primary and secondary feed-clutches connected thereto and supported thereby, of a transfer device operated by the descent of the first feed-rod to its lowest position to transfer the feed to the secondary clutch, the primary clutch being hung from said regulator at less mechanical advantage than the engagement therewith of said transfer device, by which the weight of the primary feed-rod is transferred to the regulator, the difference in mechanical advantage being proportioned to compensate for the lightening of the primary feed-rod by reason of the consumption of the carbon.

11. In a double-arc lamp, the combination, with a feed-regulator comprising an armature-lever E, of primary and secondary feed-clutches hung from said lever and a transfer device acted on by the weight of the primary feed-rod when it reaches its lowest position to transfer the feed to the secondary clutch, the primary clutch being hung from said lever at a point nearer its fulcrum than the point to which the weight of the primary feed-rod is transmitted by said transfer device in order that the weight of the primary feed-rod after transferring may exert the same pull upon said lever that the weight of said rod and its carbon did before starting the lamp.

487,316. CENTRIFUGAL BUTTER-EXTRACTOR. GUSTAV M. ANDERSSON, Newark, N. J., assignor to the United States Butter Extractor Company, New York, N. Y. Filed June 30, 1890. Serial No. 357,307. (No model.)



Claim.—1. In a centrifugal apparatus, the combination, with the drum and means for revolving it, of a feed-tube and a spread-cup arranged within the drum adjacent to the mouth of the feed-tube, consisting of a conical partition, a central spreader, one or more passages from the lower part of the spread-cup to the drum, and radial blades or ribs within the spread-cup for imparting rotation to the fluid passing through the spread-cup, substantially as set forth.

2. In a centrifugal butter-extracting apparatus, the combination, with the drum provided with one or more butter-outlets and means for revolving the drum, of a fluid-supply duct arranged adjacent to the butter-outlets, substantially as set forth.

3. In a butter-extracting apparatus, a centrifugal vessel provided with a separating-chamber and a butter-chamber communicating therewith and having separate outlets from said chambers, in combination with means for introducing milk or cream into the apparatus and means for separately introducing water or similar fluid into such butter-chamber, substantially as set forth.

4. In a centrifugal apparatus, the combination, with the drum and means for revolving it, a feed-tube, a spread-cup arranged within the drum adjacent to the mouth of the feed-tube and covered by a conical partition, the lower edge of which projects within the wall of lighter fluid in the drum and having openings at the bottom of such conical partition, and blades within the spread-cup for imparting rotation to the fluid passing through the spread-cup, of an inwardly-extending partition arranged in the upper part of the drum, with its inner edge or lip arranged to lie in the wall of lighter fluid in the drum, one or more outlets above such partition, and one or more outlets below such partition, substantially as set forth.

5. In a centrifugal butter-extracting apparatus, the combination, with the drum and means for revolving it, a feed-tube, a spread-cup arranged within the drum adjacent to the mouth of the feed-tube covered by a conical partition, the lower edge of which projects within the cream-wall and having openings in the bottom of such conical partition, and blades within the spread-cup for imparting rotation to the fluid passing through the spread-cup, of a cream-disturber arranged within the drum and arranged to project into the inner layer of the rapidly-revolving cream-wall, and an inwardly-extending partition arranged in the upper part of the drum and having its edge or lip arranged to lie in the cream-wall, one or more outlets above the partition, and one or more outlets below the partition, substantially as set forth.

6. In a centrifugal butter-extracting apparatus, the combination, with a drum provided with a separating-chamber and with a butter-chamber and butter-outlet and means for revolving the drum, of a fluid-supply duct provided with one or more nozzles adjacent to the butter-outlet, substantially as set forth.

7. In a centrifugal apparatus, the combination, with the drum and means for revolving it, of the feed-tube f and a spread-cup arranged at the bottom of the drum adjacent to the mouth of the feed-tube, consisting of the conical partition g, arranged above the bottom of the drum, with an opening around its lower edge, and the central spreader g^2 and the radial blades or ribs g', secured to the bottom of the drum and supporting the conical partition g, substantially as set forth.

8. In a centrifugal apparatus, the combination, with the drum and means for revolving it, the feed-tube f, and a spread-cup arranged at the bottom of the drum adjacent to the mouth of the feed-tube and consisting of the conical partition g, arranged above the bottom of the drum with an opening around its lower edge, and the central spreader g^2 and the radial blades or ribs g', secured to the bottom of the drum and supporting the conical partition g, of an inwardly-extending partition arranged in the upper part of the drum concentric therewith and having its inner edge or lip arranged to lie in the wall of the lighter particles in the drum, one or more outlets above the partition, and one or more outlets below the partition, substantially as set forth.

9. In a centrifugal butter-extracting apparatus, the combination, with the drum and means for revolving it, the feed-tube f, and a spread-cup arranged at the bottom of the drum adjacent to the mouth of the feed-tube and consisting of the partition g, arranged above the bottom of the drum, with an opening around its lower edge, and the central spreader g^2, and the radial blades or ribs g', secured to the bottom of the drum and supporting the partition g, of an inwardly-extending partition arranged in the upper part of the drum concentric therewith and having its inner edge or lip arranged to lie in the cream-wall, a fluid-supply duct provided with one or more nozzles above the inclined partition, a cream-disturber, one or more butter-outlets above the partition, and one or more blue-milk outlets below the partition, substantially as set forth.

10. In a centrifugal butter-extracting apparatus, the combination, with the drum and means for revolving it and suitable outlets for the separated blue milk and butter, of an upright stationary cream-disturber arranged to extend within the drum, a fluid-supply duct formed in the cream-disturber, and nozzles or openings from the ducts adjacent to the butter-outlet, substantially as set forth.

11. In a centrifugal butter-separating apparatus, the combination, with the drum provided with a separating-chamber and with a butter-chamber and butter-outlet and means for revolving the drum, of an upright stationary cream-disturber arranged to extend within the drum and a fluid-supply duct formed in such cream-disturber and having one or more nozzles or openings adjacent to the butter-outlet, substantially as set forth.

12. In a centrifugal butter-extractor, the combination, with the drum d, the top of which is provided with the flange d', and means for revolving the drum, of an inwardly-extending partition arranged in the upper part of the drum and having its lower edge or lip arranged to lie in the cream-wall, one or more blue-milk outlets below such partition, one or more butter-outlets formed through the top of the drum, and the butter-receiver l, substantially as set forth.

13. In a centrifugal butter-separating apparatus, the combination, with the drum provided with a separating-chamber and with a butter-chamber and butter-outlet and means for revolving the drum, of the combined cream-disturber and fluid-supply device consisting of the rotatively-adjustable upright comb m', having teeth adapted to project into the inner layer of the rapidly-revolving cream-wall, a suitable nut for adjustably clamping the comb to the cover of the casing, and the fluid-supply duct and the nozzles or openings m^3, formed in the comb m', substantially as set forth.

14. In a centrifugal butter-extracting apparatus, the combination, with the drum d, having its lower part substantially cylindrical, its middle part conical or tapering, and its extreme upper part cylindrical and smaller than the lower part, and means for revolving the drum and a cream-disturber, of the inwardly and downwardly inclined partition k, one or more butter-outlets above the partition k, and one or more blue-milk outlets below the partition k, substantially as set forth.

15. In a centrifugal butter-extractor, the combination, with the drum and means for revolving it, of the combined cream-disturber and fluid-supply device consisting of the rotatively-adjustable upright comb m', having teeth adapted to project into the inner layer of the rapidly-revolving cream-wall, a suitable nut for adjustably clamping the comb to the cover of the casing and the fluid-supply duct and the nozzles or openings m^3, formed in the comb m', an inwardly-extending partition arranged in the upper part of the drum and having its inner edge or lip arranged to lie in the cream-wall, one or more butter-outlets above the partition, and one or more blue-milk outlets below the partition, the nozzles or openings m^3 in the comb m' being formed above such partition, substantially as set forth.

16. In a centrifugal butter-extracting apparatus, the combination, with the drum and means for revolving it, the feed-tube f, and a spread-cup arranged at the bottom of the drum adjacent to the mouth of the feed-tube and consisting of the partition g, arranged above the bottom of the drum with an opening around its lower edge, and the central spreader g^2 and the radial blades or ribs g', secured to the bottom of the drum and supporting the partition g, of an inwardly-extending partition arranged in the upper part of the drum concentric therewith and having its inner edge or lip arranged to lie in the wall of the lighter particles in the drum, one or more butter-outlets above the partition, and one or more blue-milk outlets below the partition, and the combined cream-disturber and fluid-supply device consisting of the rotatively-adjustable upright comb m', having teeth adapted to project into the inner layer of the rapidly-revolving cream-wall, a suitable nut for adjustably clamping the comb to the cover of the casing, and the fluid-supply duct and the nozzles or openings m^3, formed in the comb m' above the partition in the upper part of the drum, substantially as set forth.

17. In a centrifugal butter-extracting apparatus, the combination, with the drum d, having its lower part substantially cylindrical, its middle part conical or tapering, and its extreme upper part cylindrical and smaller than the lower part, and means for revolving the drum, of the inwardly and downwardly inclined partition k, the feed-tube f, and a spread-cup arranged at the bottom of the drum adjacent to the mouth of the feed-tube and consisting of the partition g, arranged above the bottom of the drum, with an opening around its lower edge, and the central spreader g^2 and the radial blades or ribs g', secured to the bottom of the drum and supporting the partition g, and one or more butter-outlets above the partition k and one or more blue-milk outlets below the partition k, substantially as set forth.

18. In a centrifugal butter-extracting apparatus, the combination, with the drum d, having its lower part substantially cylindrical, its middle part conical or tapering, and its extreme upper part cylindrical and smaller than the lower part, and means for revolving the drum, of the inwardly and downwardly inclined partition k, the feed-tube f, and a spread-cup arranged at the bottom of the drum adjacent to the mouth of the feed-tube and consisting of the partition g, arranged above the bottom of the drum, with an opening around its lower edge, and the central spreader g^2 and the radial blades or ribs g', secured to the bottom of the drum and supporting the partition g, and one or more butter-outlets above the partition k and one or more blue-milk outlets below the partition k, and the combined cream-disturber and fluid-supply device, consisting of the rotatively-adjustable upright comb m', having teeth to project into the inner layer of the rapidly-revolving cream-wall, a suitable nut for adjustably clamping the comb to the cover of the casing, and the fluid-supply duct, and the nozzles or openings m^3, formed in the comb m' above the partition k, substantially as set forth.

19. In a centrifugal butter-extracting apparatus, the combination, with the drum and means for revolving it, of the cream-disturber consisting of one or more rotatively-adjustable upright stationary combs arranged to extend within the drum and arranged so that their teeth will project into the inner layer of the rapidly-revolving cream-wall, means for adjustably clamping the combs, an inwardly-extending partition arranged within the drum concentric therewith, having its inner edge or lip arranged to lie in the cream-wall, one or more butter-outlets above the partition, and one or more blue-milk outlets below the partition, substantially as set forth.

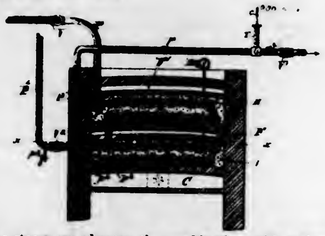
487,317. MEANS FOR SUPERHEATING STEAM. ALEXANDER BRATOLUBOFF, Bielsk Tsarkov, Russia. Filed Sept. 1, 1892. Serial No. 444,755. (No model.)

Claim.—1. A steam-superheater comprising a plurality of heating-chambers, superheating-pipes arranged therein, said superheating-pipes being embedded in a bad conductor of heat, a combustion-chamber at one end of the series of heating-chambers, heating-flues connected with the combustion-chamber and encompassing said heating-chambers, and suitable steam supply and exhaust pipes connected with the initial and terminal of the superheating-pipes, for the purpose set forth.

2. A steam-superheater comprising a plurality of heating-chambers, steam-coils arranged therein and connected in a continuous series, a combustion-chamber at one end of the series of heating-chambers, heating-flues connected with said combustion-chamber and extending around three sides of the heating-chambers, and steam connections for supplying steam to and taking steam from the coils, arranged relatively to the latter to cause the steam to be superheated to flow through the coils in a direction opposite to that of the hot

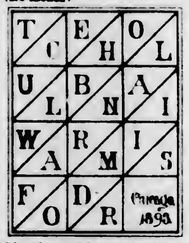
gases and products of combustion in the heater-flues, for the purpose set forth.

3. A steam-superheater comprising a plurality of heating-chambers, superheater-pipes arranged in said chambers and connected to form a continuous conduit, said pipes being embedded in a material that is a bad conductor of heat, a source of heat-supply, circulating-ducts for conveying the heat about the chambers successively, a steam-supply pipe connected with the end of the superheating-conduit farthest from the source of heat-supply, and a steam-exhaust pipe connected with the end of said conduit nearest to said source of heat-supply, for the purpose set forth



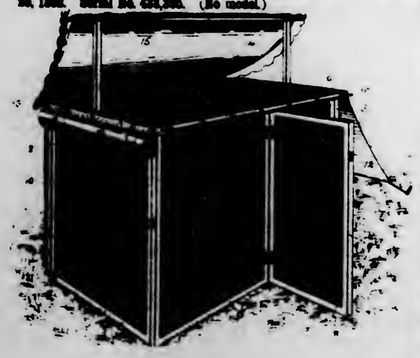
4. In a steam-superheater, the combination, with a plurality of superheating-pipes arranged in sets in separate heating-chambers and connected to form a continuous conduit, a combustion-chamber, means for conducting the hot gases and products of combustion around the chambers successively, a steam-supply pipe connected with the end of the superheater-pipe in the chamber farthest from the combustion-chamber, and a steam-exhaust pipe connected with the end of said superheater-pipe in the chamber nearest to the combustion-chamber, of an auxiliary steam-supply pipe connected with the superheater-pipe between its terminals and proximate to the exhaust end thereof, for the purpose set forth.

487,318. PUZZLE. CHARLES H. CLARKE, Saginaw, Mich., assignor of one-half to George A. Reynolds, same place. Filed Apr. 8, 1892. Serial No. 428,301. (No model.)



Claim.—The combination, with a square or rectangular box, of movable blocks within the box of uniform triangular form, two of which will form a square, said blocks being movable diagonally in line with the long side of each block, as well as at right angles, and adapted to be arranged in different orders, and one square block to be removed when the triangular blocks are moved, substantially as and for the purpose set forth.

487,319. TENT. LYDIA L. DAVIS, Mendon, Mass. Filed June 20, 1892. Serial No. 436,995. (No model.)



Claim.—1. A wall-tent composed of a structural frame covered with reticulated material upon the sides, ends, and top, combined with textile fabric adapted to inclose said frame, the wall portions being removably attached at the top only to said frame and the roof portion located thereabove in order to permit air-circulation between the reticulated material and the textile fabric, substantially as explained.

2. In combination with a knockdown structure having ends, sides, and top composed of framework covered with reticulated material, an elevated rafter, a roof of flexible fabric supported upon said rafter, and guy-ropes to secure said fabric, substantially as described.

3. The combination, with a rectangular frame consisting of the ends 3, sides 4, top 6, and the reticulated material which covers the same, with means for ingress and egress to the space inclosed by said frame, of a wire extending about the frame near its top and the exterior flexible material adapted to inclose said frame and protect it from the weather, substantially as explained and set forth.

4. In a wall-tent, the combination, with a knockdown structure having ends, sides, and top covered with reticulated material, of a series of textile wall portions removably attached at the top to said structure, a roof portion located above the frame, together with means for holding the free lower ends of the walls, and roof portions at any distance from the structure for free air-circulation, substantially as specified.

487,320. METAL-SEAMING TOOL. CASTOR H. A. DEBRINGER, Wrightsville, Pa. Filed June 30, 1892. Serial No. 438,562. (No model.)

Claim.—1. In a metal-seaming tool, pivoted hand-levers connecting jaws A and C through the medium of a link S, the jaw A having stanchions *m m'*, engaging offsets *n n'* on jaw C, the jaw A being provided with a groove *h*, and the jaw C with a tongue *f* and a member D, substantially as and for the purpose set forth.

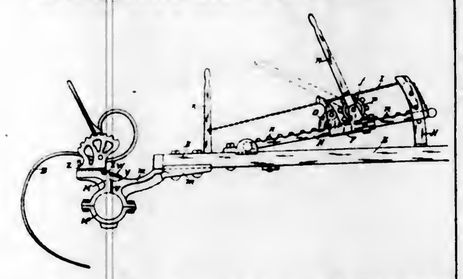
2. In a metal-seaming tool, the pivoted levers and link S, and jaws A, B, and C, the jaw B having a circular movement and the jaw C a vertical movement, the jaw A being provided with stanchions *m m'*, and the jaw C with angular guides *n n'*, substantially as described.

487,321. SEAL-PRESS. ALBERT G. DOUTHIT, Elkhart, Tex. Filed Apr. 19, 1892. Serial No. 429,777. (No model.)

Claim.—In a seal-press, the combination of a stationary horizontally-disposed jaw having a transverse shouldered nose rising from and extending across the front end thereof and ears vertically rising from opposite sides thereof in rear of said nose, having parallel straight

inner sides and forming a transverse opening with the latter and also providing side walls inclosing a socket having a rear terminating shoulder, said ears having upper inwardly-projecting lugs, a horizontally-sliding block formed with a top curved recess and mounted in said socket and movably confined under the said lugs, the distance between the rearmost terminations of said lugs and the front of the said rear shoulder being less than the length of the block, and an operating or clamping lever movable in a vertical plane from the horizontal jaw and pivoted between the ears, said lever having a free curved end fitting in the top curved recess of the sliding block, substantially as described.

487,322. SPADE-HARROW. JOSEPH DRADER and ANDREW R. MCKAY, London, Canada; said McKay assignor to said Drader. Filed Jan. 16, 1892. Serial No. 418,330. (No model.)



Claim.—1. The bar N, pivoted on the tongue E or other suitable support, and the block F, slidingly supported on said pivotal bar, and means for holding said pivotal bar and block at the positions to which they may be adjusted, in combination with the draw-braces D and spade-spindles C, substantially as shown and described, and for the purpose specified.

2. The bar N, formed with the teeth *n* and pivoted on the tongue E or other suitable support, the block F, slidingly supported on said pivotal bar, and the dog *o*, pivoted on said block, and means for adjusting said block F and adjusting and holding said bar N at the position to which they may be adjusted, in combination with the draw-braces D and spade-spindles C, substantially as shown and described, and for the purpose specified.

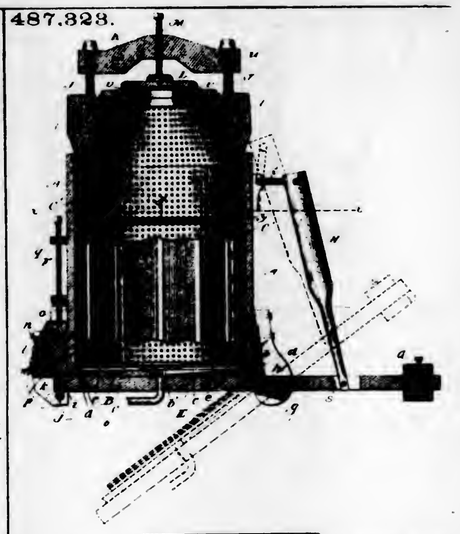
3. The combination of the pivotal bar N, formed with the teeth *n*, the block F, the dog *o*, the lever R, formed with the tooth *r* and slot *s*, and the toothed wheel P, in combination with the draw-braces D and spade-spindles C, substantially as shown and described, and for the purpose specified.

4. The standard H, the chain I, the lever K, and means for holding the latter at the position to which it is adjusted, in combination with the pivotal bar N, the block F, dog *o*, draw-braces D, and spade-spindles C, substantially as shown and described, and for the purpose specified.

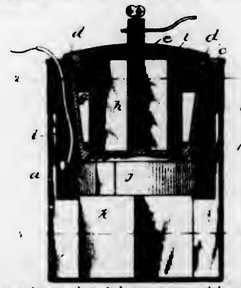
5. The cover Q, in the upwardly-inclined end of which the elongated slot *q* is formed and having a downwardly-inclined end with the opening *p* therein, and the flanges *i*, in combination with the stud-pin U, having an elongated head *u*, fitted to the slot *q* in the cover Q, and the lubricant-reservoir T, formed with the flange *j* and pin *k*, substantially as shown and described, and for the purpose specified.

6. The cover W, formed with the notches *w'*, in combination with the bearing-box M, having a lubricant-reservoir V and passage V' therein and formed with the studs X, and the spring-tooth casting *s*, substantially as shown and described, and for the purpose specified.

487,323.

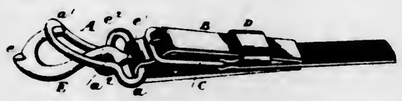


487,324. GALVANIC BATTERY. JAMES L. GETHINS, Boston, Mass., assignor to the Gethins Electrical Manufacturing Company, of Maine. Filed May 15, 1891. Serial No. 392,871. (No model.)



Claim.—A galvano-electric battery comprising in its construction a jar or cell, a porous cup in said cell, a zinc electrode in said cup, and a copper electrode consisting of a cylindrical portion surrounding the sides of the cup and a plurality of radiating wings underneath the cup, substantially as described.

487,325. COMBINED BUCKLE AND SNAP-HOOK. GEORGE DE B. HAVEN, Chetek, Wis. Filed May 14, 1892. Serial No. 432,946. (No model.)



Claim.—A combined snap-hook and buckle consisting of frame A, having cross-loop *a*, longitudinal loop *a'*, and cross-bar or pivot a^2, and the hook E, having the tongue *d* and bearing d^2 for the pivot a^3, the frame and hook being relatively constructed and arranged to operate together in the manner described

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487,326. LAMP-KETTLE. WILLIAM H. HOLDEN, Hamilton, Canada. Filed Mar. 7, 1892. Serial No. 424,010. (No model.)

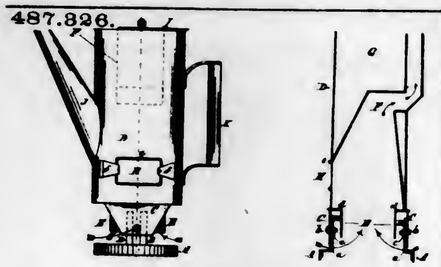
Claim.—A lamp-kettle consisting of a body D, an interior funnel E, having its exit in the top or at one side of the body D, a mica light H, a collar E, a base A, lugs C C, vertical slides B B, adjustably securing the base A to the lugs C of the body D, a spout J, cover I, and handle K, all arranged and constructed to fit over a lamp, substantially as and for the purpose specified.

487,328. APPARATUS FOR SEPARATING MOLASSES FROM SUGAR. ROBERT A. ELLIS, Sartartia, Tex. Filed Feb 26, 1892. Serial No. 422,491. (No model.)

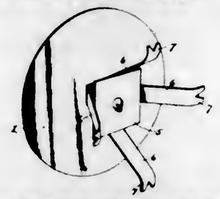
Claim.—1. In an apparatus for separating molasses from sugar, the combination, with the containing-vessel provided with the removable bottom B, of the beam, the swinging jaws supporting the end of said beam, the vertical slide and the screw therefor, the rod or lever connecting the projecting end of the beam with the casing, and the counterbalancing-weight, all substantially as described.

2. In an apparatus for separating molasses from sugar, the combination of the outer closed vessel or casing provided with a removable or dumping bottom, the inner perforated screen or vessel having, also, a removable perforated bottom, the beam, the swinging jaws supporting the end of said beam, the vertical slide and the screw therefor, the rod connecting the projecting end of the beam with the casing, and the counterbalancing-weight, substantially as described.

487,326.



487,327. FLUE-STOPPER. JAMES D. HOPKINS, Midway, Ky. Filed Sept. 6, 1892. Serial No. 445,173. (No model.)



Claim.—1. A flue-stopper comprising a shield, the resilient diverging arms rigidly secured at their inner ends to the shield, a threaded stem passing through the shield, a spreader-plate arranged at the inner end of the stem and engaging the inner faces of the arms, and a nut arranged on the threaded stem and located at the outer face of the shield and adapted to draw the spreader-plate toward the same to force the arms outward, substantially as described.

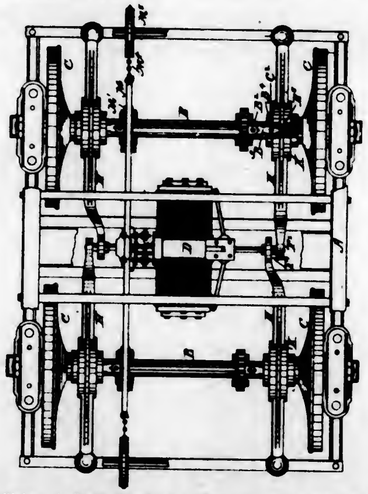
2. A flue-stopper comprising a shield, the resilient diverging arms rigidly secured at their inner ends to the shield and having their outer ends curved outward and formed into claws, said arms being arranged in pairs and each pair being formed integral and provided with an opening, a threaded stem passing through the shield and the openings of the arms, a polygonal spreader-plate arranged at the inner end of the stem and adapted to force the arm outward, and a nut arranged on the stem and located on the outer face of the shield, substantially as described.

487,328. TOOL-SHARPENER. EDWARD HOULBROOK, Russell, England. Filed May 20, 1892. Serial No. 433,751. (No model.)

Claim.—1. In combination with a sharpening-stone adapted to be reciprocated in suitable guides, the two vertically-adjustable tool-rests *g g*, the rear one being higher than the front one and located at a distance from it, all substantially as shown and described.

2. In combination with the frame, its sliding rods b^3, vertically-adjustable rests *g g*, spring *f*, and cord *e'*, the combination being and operating substantially as set forth.

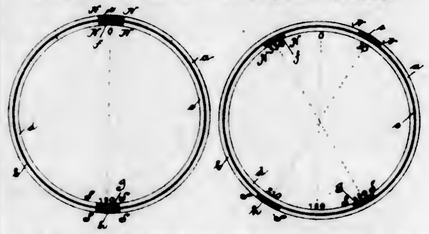
487,329. ELECTRIC MOTOR FOR CARS. CHARLES A. JACKSON, Reading, Mass. Filed Aug. 3, 1891. Renewed Sept. 29, 1892. Serial No. 447,340. (No model.)



Claim.—1. In an electric propelling device, the combination of an electric-motor-driven crank-pin F, link F', adapted to oscillate the levers H H, and the oscillating levers H H, having attached to each a friction-clutch ring K, with the rings C^3, buttress-pieces L L', and the recessed ring-pieces C', attached to the car-axles B, all operating together, substantially as and for the purpose set forth.

2. In an electric propelling device, the combination of a sliding rod M, having projections M^2, gear-wheel B', and lever B^2, adapted to operate the clutch-ring C and recessed rings C', with said buttress-ring C^2 and recessed rings C', and buttresses L L', clutch-roller K', and oscillating clutch-ring K, substantially as and for the purpose set forth.

487,330. COMPASS. PIETER J. KAMER, Leyden Hoorieinde, Netherlands. Filed Feb 11, 1891. Serial No. 381,074. (No model.)

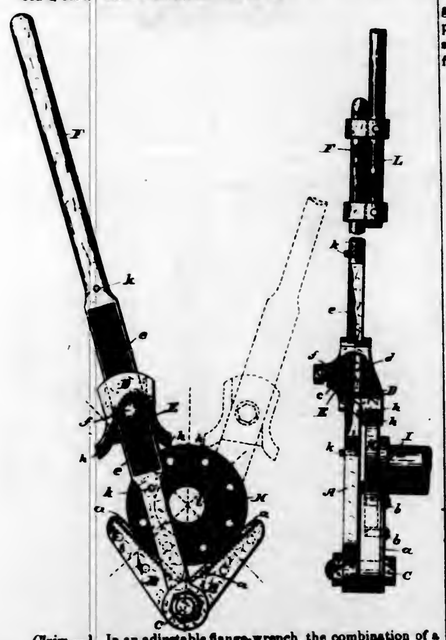


Claim.—1. In a compass, the combination of a series of curved magnets with non-magnetic material connecting the magnets so as to form rings and separating poles of the same names, substantially as and for the purpose described.

2. A magnet-ring system composed of curved magnets *a b c d* and non-magnetic material *e h f g*, inserted between poles of the same name, one ring being placed within the other, substantially as and for the purpose described.

3. The combination of the magnet systems composed of two magnets *a b c d* with a card *k*, made of silk or the like, said card covering the space inclosed by the rings, the whole device being adapted to rotate on a pivot, substantially as and for the purpose as described.

487,331. ADJUSTABLE FLANGE-WRENCH. JULIUS W. KELLAM, Brooklyn, N. Y., assignor to Minnie R. Kellam, same place. Filed Oct. 4, 1892. Serial No. 447,861. (No model.)



Claim.—1. In an adjustable flange-wrench, the combination of a doubled right-angled integral swivel-jaw pivoted to the lower end of a straight lever-bar extended across the face of the flange when applied with a suitable movable adjustable dog carried by said lever-bar, substantially as and for the purposes shown and described.

2. In an adjustable flange-wrench, the combination of a double right-angled integral swivel-jaw pivoted to the lower end of a straight lever-bar extended across the face of the flange when applied with a movable duo-formed adjustable dog and means of clamping the same to said lever-bar, constructed and to operate substantially as and for the purposes shown and described.

3. In an adjustable flange-wrench, the combination of a double right-angled integral swivel-jaw provided with a lip to overhang the rim of the flange, pivoted to the lower end of a lever-bar extended across the face of the flange when applied, with a movable adjustable dog carried by said lever-bar, substantially as and for the purposes shown and described.

4. In an adjustable flange-wrench, the combination of a lever-bar extended across the face of the flange when applied and a right-angled serrated swivel-jaw pivoted to the lower end thereof with an adjustable movable dog provided with biting edges operating in the same plane as the jaw, substantially as and for the purposes shown and described.

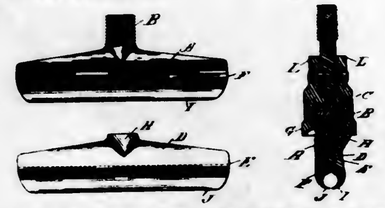
5. In an adjustable flange-wrench, the combination of a lever-bar extended across the face of the flange when applied and a right-angled serrated swivel-jaw pivoted to the lower end of the same with an adjustable movable duo-formed reversible dog and means of clamping the latter to said lever-bar, substantially as and for the purposes shown and described.

6. As a new article of manufacture, the herein-described adjustable flange-wrench, consisting of lever-bar A, swivel angular jaw B, secured to the lower end of said lever-bar by pivotal bolt C, said jaw having lip *a*, adjustable movable reversible dog D, mortised to slide upon said lever-bar and provided with biting edges or edge *h h*, clamping-disk E, set-screw *f* for securing the same, and stops *k k*, the whole constructed, arranged, and to operate substantially as and for the purposes shown and described.

487,332. CLAMP FOR ELECTRIC CONDUCTORS. HENRY LINDAHL, Chicago, Ill., assignor of one-half to John S. Gustin, same place. Filed Feb 5, 1892. Serial No. 420,417. (No model.)

Claim.—1. A wire clamp or holder consisting of two plates secured together by the engagement of tongues or dogs, one upon each of said plates, and means for holding such tongues or dogs in engagement.

2. A wire clamp or holder consisting of two plates secured together by the engagement of tongues or dogs, one upon each of said plates, and means for holding such tongues or dogs in engagement, said tongues or dogs being at angles other than right angles to the faces of their respective plates.



3. A wire clamp or holder consisting of two plates secured together by the engagement of tongues or dogs, one upon each of said plates, and means for holding such tongues or dogs adjustably in engagement.

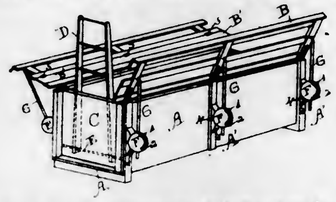
4. A wire clamp or holder consisting of two plates secured together by the engagement of tongues or dogs, one upon each of said plates, and means for holding such tongues or dogs in engagement, said means consisting of a nut screw-threaded upon a portion of one plate and bearing against the other plate.

5. A wire clamp or holder consisting of two plates having tongues adapted to engage each other upon their respective faces and means for locking said plates together by holding the tongues in engagement.

6. A wire clamp or holder consisting of two plates the inner faces of which have opposed tongues or dogs adapted to engage each other, said plates secured together by a device and the engagement of the tongue, substantially as shown and described.

7. In a wire-clamping device, two plates having tongues or dogs upon their inner surfaces to engage each other, one of the plates being provided with a screw-threaded portion and a nut adapted to bear against the other plate, the tongues being at such angles to the surfaces of their respective plates that the distance which the tongues overlap will be regulated by the position of the nut upon the screw-threaded portion, substantially as shown and described.

487,333. HAY-RACK FOR FARM-WAGONS. AARON MILLER, Midland, Mich. Filed Feb. 4, 1892. Serial No. 420,262. (No model.)



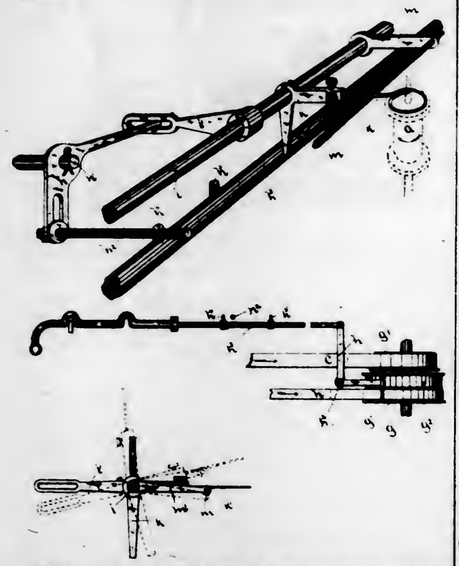
Claim.—1. In an adjustable rack for farm-wagons, the combination, with a box having side pieces A', provided with a lug *a*, of removable hinged wings B B, cams 5 5 for securing a removable board in the wings B B, depending supporting-rods G G G, removable supporting-rod-adjusting mechanism F, 1, and 2, and removable side brackets H H H, substantially as specified.

2. In an adjustable wagon-rack, the adjusting mechanism consisting of the sphere F, pivoted to the side of the wagon-box and having a perpendicular central groove for receiving the supporting-rod G, said groove having two side openings for receiving the eccentrics 1 and 2, and the opposite eccentrics 1 and 2, pivoted within the sphere, so as to operate upon the supporting-rod as it is raised or lowered, substantially as described.

3. In an adjustable wagon-rack, the combination, with the box A and removable line-rack D, of the wings B B, hinged to the top edge of the box, the separable hinges 3 and 4, supporting-rods G G G, depending from the wings B B, the sphere F F F, eccentrics 1 and 2 within the sphere and operating on the rods G G G to hold them in the desired position, and removable side brackets H H H, removably secured to the side of the box, substantially as described.

487,334. KINK-PREVENTER FOR SILK-SPINNING MACHINERY. ROWLS OLDFIELD and PETER FLYER, Norwich, Conn. Filed Mar. 2, 1892. Serial No. 423,542. (No model.)

Brief.—To the belt-shipping rod are attached studs which operate a bell-crank lever which actuates an arm on a rock-shaft. To the rock-shaft are attached arms with a connecting-rod which engages arms with open rings on their ends. When the machine is stopped, the rings are lowered onto the bobbin-heads, thus stopping their rotation.



Claim.—1. In a spinning-frame, the combination, with a series of spindles and delivery-bobbins, of a corresponding series of wire rings of less diameter than the bobbin-flanges and at least a complete circle of which is in the same plane and adapted to touch the top surface of the bobbin at all points when resting thereon, whereby the threads may be clamped between the ring and the top of the bobbin, and mechanism for lowering said rings upon said flanges, substantially as and for the purpose specified.

2. The combination, with the delivery-bobbins, of a spinning-frame, a series of wire rings of less diameter than the bobbin-flanges, as herein set forth, at least a complete circle of which is in the same plane and is adapted to touch the top surface of the bobbin at all points when resting thereon, whereby the threads may be clamped between the ring and the top of the bobbin, said rings being formed helically and with an open space between the inner and outer coils, and means for raising and lowering said rings relatively to the bobbins, for the purpose specified.

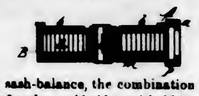
3. In a spinning-frame, in combination with the belt-shifting devices and the series of delivery-bobbins, a series of kink-preventers consisting of wire rings of less diameter than the bobbin-flanges with which they coact, at least a complete circle of each of said rings being in the same plane and adapted to touch the top surface of the bobbin at all points when resting thereon, whereby the threads may be clamped between it and the top of the bobbin, and mechanism intermediate the belt-shipper and said preventer-rings for lowering and elevating said rings, all being substantially as and for the purpose specified.

4. In a spinning-frame, the combination, with the belt-shifting mechanism provided with stops, of a rock-shaft provided with a rearwardly projecting arm, a series of kink-preventers secured to said shaft, an angle-lever one end of which engages with the arm of the shaft, and a stud secured to the other arm of the lever, the front end of which is adapted to be engaged by the stops upon the belt-shifter, substantially as set forth.

5. In a spinning-frame, the combination, with the belt-shifting mechanism, of a rock-shaft adapted to be connected with and operated by the movement of the belt-shifter, forwardly-projecting arms rigidly secured to said shaft, a rod in the outer ends of said arms, and a series of kink-preventers loosely secured upon said shaft and having their outer portions resting upon and adapted to be raised by the rod when the shaft is rotated upon its axis, substantially as set forth.

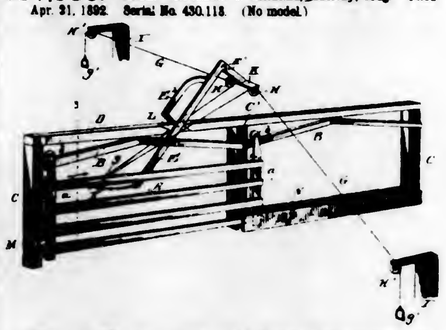
487,335. SASH-BALANCE. FRANK L. ROSENTHEIM, Rochester, N. Y., assignor to the Caldwell Manufacturing Company, same place. Filed Mar. 16, 1892. Serial No. 425,195. (No model.)

487,885.



Claim.—In a sash-balance, the combination of a case having one side only, a drum fitted to said side and held by a rivet, a spring attached to the drum and to the hub of the case for operating the drum, a tape winding on the drum, and a thin plate forming the brake to the drum and a cover to the side of the case opposite from the fixed side of the same, as and for the purpose specified.

487,886. GATE. CLARENCE J. SIMERAL, Macleay, Oreg. Filed Apr. 21, 1892. Serial No. 430,118. (No model.)



Claim.—1. The combination, with the gate, of the cord connected thereto and extending to the side of the gate, where it is provided with a handle, a pulley around which the cord passes, a vibrating support for the pulley, and a connection between the gate and the said pulley-support, whereby as the gate is moved in one direction the pulley is moved in the opposite direction, substantially as set forth.

2. The combination, with the gate, of the operating-cords G, the pulleys around which the cords pass, a lever mounted upon a stationary support situated at one side of the gate and supporting the pulleys H, and a connection between the gate and lever, whereby the latter is vibrated as the gate is opened and closed, substantially as set forth.

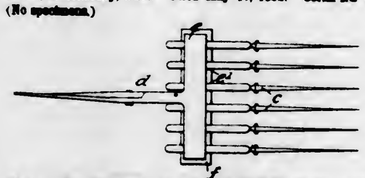
3. The combination, with the gate, of the operating-cords G, the pulleys around which the cords pass, the lever which carries the pulleys, and a flexible connection between the gate and the lever, substantially as set forth.

4. The combination, with the gate, of the operating-cords G, the lever E, connected with the gate and provided with the angular extension E' at its upper end, the cross-bar K, and the pulleys H, around which the cords G pass, supported at the ends of the cross-bar K, substantially as set forth.

5. The combination, with the gate, of the double-inclined track upon which the gate moves in the direction of its length, the operating-cords, the pulleys H, around which the cords turn, and a lever mounted upon a stationary support at one side of the gate, connected with the gate, and carrying the said pulleys, substantially as set forth.

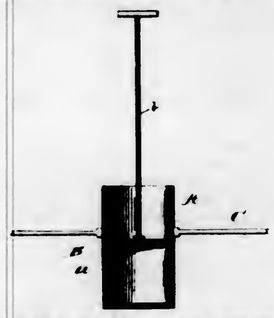
6. The combination, with the gate, of the double-inclined track B, upon which the gate slides, the operating-cords G, the pulleys H, around which the cords turn, the lever E, which supports the pulleys, and the flexible connection between the gate and the lever, substantially as set forth.

487,887. METHOD OF HARDENING CUTLERY. GEORGE E. SMITH, Glastonbury, Conn. Filed May 17, 1892. Serial No. 433,276. (No specimens.)



Claim.—The improved method of hardening cutlery, which consists in placing the blanks in a filling-block on the table or like support, then simultaneously removing such blanks, as by means of tongs, from the filling-block on the table to a holding-rack on the furnace, and finally simultaneously removing the blanks from the furnace and plunging them in a hardening-bath, all substantially as described.

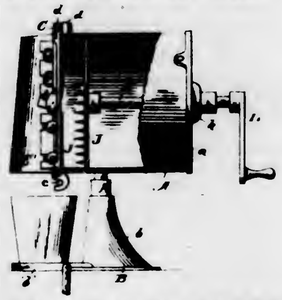
487,888. METHOD OF MIXING ALLOYS. WILLIAM B. THOMAS, Catasauqua, Pa. Filed Aug. 18, 1892. Serial No. 443,419. (No specimens.)



Claim.—1. The method of mixing alloys, which consists in pouring the molten metals into a vessel and subsequently breaking or dividing the mixture into numerous streams in said vessel.

2. The method of mixing alloys, which consists in breaking or dividing the molten metals into numerous streams while pouring them into a vessel and subsequently further breaking or dividing the mixture into numerous streams.

487,889. ICE-SHAVING MACHINE. GEORGE B. WISE, Kinston, N. C. Filed Jan. 8, 1892. Serial No. 417,382. (No model.)



Claim.—1. In an ice-shaving machine, the longitudinally-slotted knife-plate provided with the central enlargements and the two blades carried by said knife-plate, one of said blades having its inner end extended into the central enlargement of the slot in the knife-plate, as and for the purpose described.

2. In an ice-shaving machine, the knife-plate having the longitudinal slot and the oppositely-inclined blades, one of which has the inner end beveled or inclined and extended to the center of the slot and toward the adjacent end of the other blade, as and for the purpose described.

3. In an ice-shaving machine, the combination of a horizontal cylinder having a bearing at one end, a shaft journaled in said bearing and carrying a follower, the vertical head or cover hinged to the open end of the cylinder and having the transverse slot and the external upright discharge-conduit, and the knives or blades supported on the slotted cover or head to permit the comminuted ice to pass through said cover and into the conduit, substantially as and for the purpose described.

4. In an ice-shaving machine, substantially as described, the combination of a horizontal fixed cylinder having a bearing at one end, a shaft journaled therein and carrying a follower, a vertical slotted head or cover secured over the open end of said cylinder and having the external upright conduit, and a slotted knife-plate detachably connected to the fixed head or cover and having the knives or blades arranged to permit the material to pass through the slot in the knife-plate, as and for the purpose described.

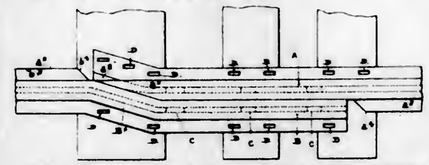
5. In an ice-shaving machine, substantially as described, the combination of a horizontal fixed cylinder, a shaft having a follower, the hinged slotted cover fastened to one end of said cylinder, the transversely-slotted knife-plate arranged in the slot of the head or cover flush with the inner side thereof and detachably connected to said cover, and the knives or blades secured to said slotted knife-plate, as and for the purpose described.

6. In an ice-shaving machine, the combination of the horizontal cylinder, the shaft having a follower, the hinged vertical head or cover C, having the transverse slot and the external upright conduit, a slotted knife-plate seated in the slot of the head or cover and arranged with one or both ends against the edge of the cylinder to be held in place by and between the cylinder and its hinged cover, and the blades or knives rigid with the slotted knife-plate, as and for the purpose described.

7. In an ice-shaving machine, the combination of a horizontal fixed cylinder, a shaft having a follower, the transversely-slotted head or cover fastened over one end of said cylinder and having the external upright conduit, the slotted knife-plate secured in said slotted cover, and the oppositely-inclined knives or blades F G, arranged at opposite ends of the slotted knife-plate and rigidly secured in place thereon, said blades being arranged to permit ice to pass through said knife-plate and cover into the conduit, as and for the purpose described.

8. In an ice-shaving machine, the combination of a cylinder, a shaft carrying a follower, a slotted cover or head secured to the cylinder, the slotted knife-plate fastened to the cover or head, and the stationary oppositely-inclined blades rigid with the knife-plate on opposite sides of the center of the slot therein and having the spaced bits of one blade arranged out of the path described by the bits on the other blade, as and for the purpose described.

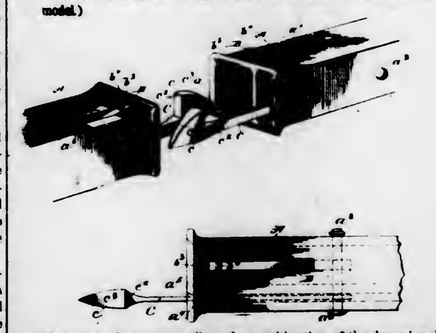
487,340. RAIL-JOINT. GEORGE WEBER, Oakland, Cal. Filed July 7, 1891. Serial No. 398,713. (No model.)



Claim.—1. A splice-joint for railway-rails, consisting of a bend on one rail having a point and a head beveled on the inner side lying over the web, a bend on the end portion of the other rail to which the said beveled head is fitted, cut-away flanges or bottoms on both rails, and elongated holes for the fastenings to secure the ends of the rails to the ties and to unite the ends of the splice to each other, substantially as set forth.

2. A railway-rail having the head or surface bent as described and beveled on the inner side at the point and a cut-away flange and on the opposite end a bent or offset portion with a cut-away flange, said ends being adapted to fit corresponding ends of rails and form splice-joints.

487,341. CAR-COUPLING. RICHARD W. WEYMOUTH and HENRY T. FULTON, Pueblo, Colo. Filed Mar. 12, 1892. Serial No. 424,637. (No model.)



Claim.—1. In a car-coupling, the combination of the draw-heads having the subdivisions as described, the gravity-latches and coupling-bars pivotally mounted in said subdivisions, said coupling-bars provided with enlarged heads, and cut-away portions of the gravity-latches, whereby the coupling may be accomplished automatically, substantially as set forth.

2. In a car-coupling, the combination of the draw-heads having the subdivisions as described, the pivoted gravity-latches adapted to operate in suitably-arranged slots and supported in the end of said slots by means of the lips or projections, being further provided with inclined faces and cut-away portions forming shoulders which are designed to engage oppositely-inclined faces and shoulders of the pivoted

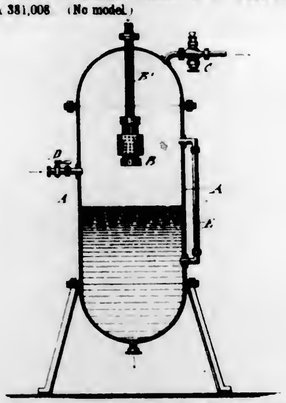
coupling-bars, whereby the coupling is automatically operated, and suitable means for operating the parts to uncouple the same by hand, substantially as set forth.

3. In a car-coupling, the draw-head having a partition by which the chamber is subdivided and adapted to contain a coupling-bar and gravity-latch, a suitably-formed slot in the upper wall of the latch-chamber, and a pin on which said bar and latch are pivotally mounted, substantially as described.

4. In a car-coupling, a gravity-latch consisting of a bar provided at or near the end with an enlarged head having an inclined face and shoulder, a lip by which the latch is supported, and at the other end with an apertured head for the reception of a pivotal pin, substantially as described.

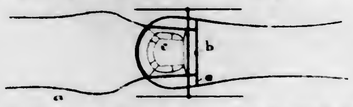
5. In a car-coupling, a coupling-bar consisting of a bar having at one end an apertured head for the reception of a pivotal pin and at the other an enlargement constructed approximately in the form of an arrow-head, provided with inclined face and a shoulder, substantially as described.

487,342. PROCESS OF CARBONATING FERMENTED BEVERAGES. JACOB F WITTEMANN, Yonkers, N. Y. Filed Feb. 10, 1891. Serial No. 381,006. (No model.)



Claim.—The process herein described of preserving fermented beverages, which consists in subjecting the beverage to an atomizing or spraying action in an atmosphere of carbonic-acid gas under pressure, permitting the beverage to accumulate under pressure below said carbonic-acid gas, permitting the air liberated from the atomized beverage to accumulate under pressure above the carbonic-acid gas and to automatically blow off at intervals, and drawing off the beverage under pressure of the gas and bottling said beverage under said pressure, substantially as set forth.

487,343. TRAINING-SULKY. PETER H. BALD, Louisville, Ky. Filed Aug. 16, 1892. Serial No. 443,313. (No model.)



Claim.—1. The combination, in a training-sulky, speed-cart, or other vehicle, of a pair of shafts *a*, connected and extending to the rear thereof, substantially as described.

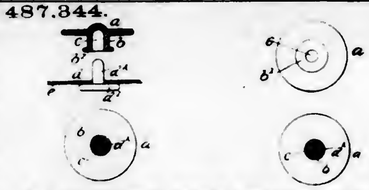
2. The combination, in a training-sulky, speed-cart, or other vehicle, of a pair of rear shafts *a*, connected to the seat *c* and working on a pivot or king-bolt *b*, substantially as described.

3. The combination, in a training-sulky, speed-cart, or other vehicle, of a pair of rear shafts *a* with seat *c*, attached and connected thereto.

487,344. BUTTON. GEORGE J. CAPEWELL, Cheshire, Conn. Filed June 17, 1889. Serial No. 314,596. (No model.)

Claim.—1. A separable button in the body part of which is located a socket, a stem having a broadened head, a pin that is adapted to enter said socket, the pin having an oblong or oval form in cross-section, with its greatest diameter slightly greater than the diameter of the socket in the body part of the button, and the interengaging surfaces otherwise smooth and regular in form, all substantially as described.

487,344.



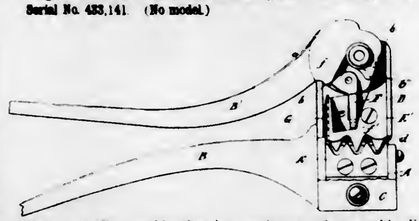
2. A separable button comprising two parts, a shank and shoe, and a cap or button front having a tubular socket part projecting from its under side, the socket being adapted to receive the shank, one of said interengaging parts being formed cylindrical in cross-section and the other oval, all substantially as described.

487,345. BUTTON. GEORGE J. CAPEWELL, Cheshire, Conn. Filed June 17, 1889. Serial No. 314,596. (No model.)

Claim.—1. A separable button comprising two parts, a shank and shoe in the one part and a cap or button-front having a tubular socket *b*, formed of a coiled piece of wire with the integral flanges b' b^3, located at opposite ends of the socket part, all substantially as described.

2. In combination, in a button, a shank or shoe composed of a headed pin or stud *c*, and the body *a*, comprising a spring-shank or socket *b*, formed of a coiled spring-wire with integral flanges b' and b^3 at opposite ends of the socket-piece, and a covering part secured to and embracing the outer coil of the flange b^3, all substantially as described.

487,346. SEAL-PRESS. SAMUEL E. CHESEBRAH, Milldale, Ky., assignor of one-half to A. L. France, same place. Filed May 16, 1892. Serial No. 433,141. (No model.)



Claim.—1. The combination, in a seal-press, of a movable die, an actuating-lever, and a die-withdrawing device adapted to automatically engage the die at the limit of its impression movement, substantially as and for the purpose described.

2. The combination, in a seal-press, of a movable die and an actuating-lever having thereon a hook adapted to automatically engage the die at the limit of its impression movement and to automatically release the same at the limit of its outward movement, substantially as and for the purpose described.

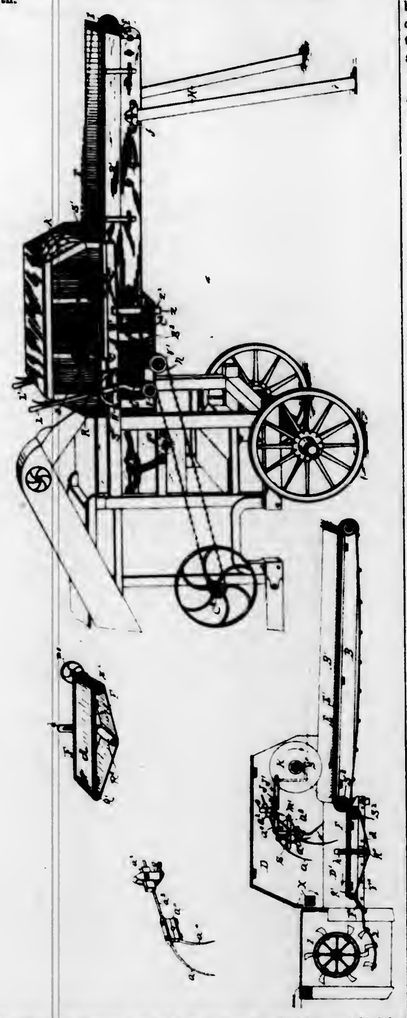
3. The combination, in a seal-press, of a movable die, a cam-lever whereby the die is forced against the seal, and a hook on the lever adapted to automatically engage the die at the limit of its impression movement and withdraw the die, substantially as and for the purpose described.

4. The combination, in a seal-press, of a press-head A, levers B B', fixed die E, movable die E', having an L-shaped recess therein, hook F, and cams b' b'' on lever B, substantially as and for the purpose described.

5. The combination, in a seal-press, of a press-head A, levers B B', fixed die E, movable die E', having an L-shaped recess *e* therein, hook F, cams b b' b'' on lever B', and friction-spring G, substantially as and for the purpose described.

487,347. BAND-CUTTER AND FEEDER FOR THRASHING-MACHINES. WILLIAM COSH, Kellogg, Kans. Filed Feb. 24, 1891. Serial No. 382,367. (No model.)

Claim.—1. A feeder and band-cutter for thrashing-machines, consisting of the combination, with the arms A A, the hood D, and side-boards D', of the carrier-frame B, held in end recesses of said side-boards by means of the adjustable bars Z, and provided with the endless slatted carrier-belts E, and shafts and pulleys for operating said belts of the endless apron *d*, supported by the pivoted frame F, resting on cleats between said side-boards D' for receiving grain from the carrier and delivering it to thrasher-cylinder, the guideways *c'*, fixed upon the arms A, the sliding bars *c*, arranged in said ways, the standard-boxes I and I', fixed to and carried by said sliding bars, the picker-finger and band-cutting mechanism supported by said standard-boxes, the lever mechanism for adjusting said picker-finger and band-cutting mechanism, and the belt-wheels and belts for operating the several parts of the machine, substantially as and for the purpose set forth.



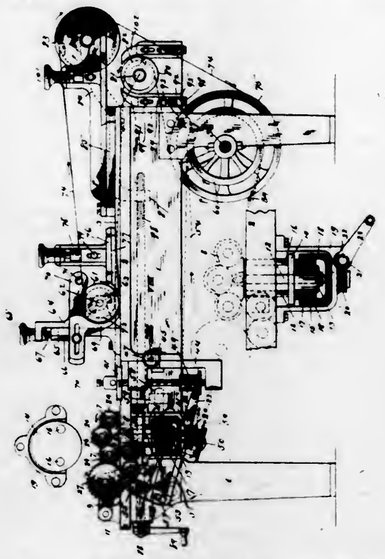
2. The combination, with the endless carrier B and apron *d*, of the picker-finger and cutter mechanism supported and operated by the shafts S S' above said carrier and apron, the standard-boxes jointly supported and carried by the sliding bars and supporting and carrying said shafts therewith, and the lever and connecting-rod mechanism for adjusting said picker-finger and cutter mechanism, substantially as and for the purpose set forth.

3. The combination, with the driven crank-shaft S, of the boxes a'' on the cranks of said shaft, the picker-fingers a^4, fixed to the under side of and extending downward from said boxes, the picker-finger a, oppositely fixed to said boxes and extending forward and downward therefrom in line with the fingers a^4 and provided with the rear extending arms a^3 of the cross-board J, provided with the standards *o*, and the blocks a^5, pivotally supported by said standards and chambered to receive said extending arms a^3 of the picker-fingers for governing the movement of said fingers, substantially as set forth.

4. The combination, with the belt-driving mechanism and the band-cutting and picker-finger and connected lever mechanism, of the idler-pulleys fixed to and carried by the said adjusting-levers of the machine for taking up or letting out the slack of the belts when the levers are adjusted, substantially as set forth.

5. A feeder and band-cutter for thrashing-machines, provided with a series of picker-fingers operated by cranks and a series of rotary band-cutters jointly supported on and carried by means of sliding bars or heads and with adjusting-levers for moving said finger and cutting mechanism toward or from the thrasher-throat for adapting the machine to grain having straw of different lengths, substantially as set forth.

487,348. MOLDING AND BLIND SLAT-PLANING MACHINE. ELI R. HAYES, Oshkosh, Wis. Filed Nov. 9, 1891. Serial No. 411,313. (No model.)



Claim.—1. The herein-described molding or blind-slat-planing machine having at the outer sides thereof a bed and guiding devices for the slats or other material, a horizontal transverse shaft carrying top cutters above said beds, a transverse horizontal shaft carrying bottom cutters below said bed, drive-pulleys arranged centrally on said shafts, and inside and outside edge cutters at the sides of each bed, substantially as set forth.

2. In a machine of the character described, the combination of two beds and guiding devices, said beds being arranged, respectively, at the outer sides of the machine, edge cutters arranged at the sides of said beds, a horizontal shaft carrying top cutters, a bottom shaft carrying bottom cutters, pulleys on said shafts, a power-pulley, and a single central belt passing around said pulleys, substantially as set forth.

3. In a planing or molding machine, the combination, with the feed-rolls and their actuating-shafts, of saddle-pieces carrying bearings for the same, a plate or support adjustable toward and from said rolls, a bar or connection extending from one of said saddle-pieces beyond said support, a spring interposed between said support and connection and tending normally to force the feed-rolls toward the material fed, and means for adjusting the support, substantially as set forth.

4. The combination, with the feed-rolls and shafts, of bearings for the latter, saddles carrying said bearings, a main frame engaging and guiding said saddles, connecting-bars pivoted to said saddles, springs engaging said bars, supports oppositely engaging said springs and engaging the saddles, and a transverse shaft provided with means for simultaneously adjusting said supports, substantially as set forth.

5. In a planing or molding machine, the combination, with the edge cutters mounted on vertical shafts and a power-pulley mounted on a horizontal shaft, of an idler-pulley mounted upon an inclined axis and a single belt passing around said pulleys and actuating said cutters, substantially as set forth.

6. The combination of the edge-cutters, vertical shafts carrying the same and provided with pulleys, a main frame provided with an inclined guide, a support fitting said guide and carrying upon an inclined axis an idler-pulley, a power-pulley mounted on a horizontal axis, a single belt passing around said pulleys, and means for adjust-

487,349.

on said shaft, a cord and spring for holding said plate in its normal position, a stop for limiting its forward movement, and a tongue carried by the rock-shaft, which acts in connection with the oscillating plate to pinch belts from the chips.

outer ends b^3, and set-screws b' for retaining said hooks at position of adjustment, as set forth.

6. The combination of the edge-cutters, vertical shafts carrying the same and provided with pulleys, a main frame provided with an inclined guide, a support fitting said guide and carrying upon an inclined axis an idler-pulley, a power-pulley mounted on a horizontal axis, a single belt passing around said pulleys, and means for adjusting said support, substantially as set forth.

7. The combination, with the main frame having a planing-bed and feeding and guiding devices at each side thereof, of a transverse shaft provided with a pulley and top cutters, a transverse shaft provided with a similar pulley and bottom cutters, a power-pulley and an idler-pulley mounted centrally of said frame, and a single belt passing around all of said pulleys, substantially as set forth.

8. The combination, with the main frame having a planing-bed and feeding and guiding devices at each side thereof, of a transverse shaft provided with a pulley and top cutters, a transverse shaft provided with a similar pulley and bottom cutters, a power-pulley, and an idler-pulley, a single belt passing around all of said pulleys, a sliding support carrying said idler-pulley, and a longitudinal rod extending from the front of the machine to said support for operating the latter, substantially as set forth.

9. The combination, with the top planing-bed, of an under rotary cutter, a yielding chip-breaker mounted in advance of said cutter, and a yielding support for the material, mounted in rear of the cutter and below the path of the material and adapted to hold the latter up and to yield downward to admit it, substantially as set forth.

10. The combination, with the feed-rolls and their transverse shafts, of gear-pinions 24 on the latter, an idler gear-pinion connecting said pinions and forming a train of gears, a transverse counter-shaft provided with a belt-pulley and a power-pinion 29, an idler-pinion 28, engaged by the latter, an idler gear-wheel 27, engaged by the last-mentioned idler and engaging one of the gears of said train, and means for adjusting the feed-rolls with said pinions 24 toward and from the bed of the machine, substantially as set forth.

11. The combination, with the cutter 61, of the vertically-adjustable bracket 65, having the arm 72, the arm 70, pivoted and adjustable thereon, and the slotted chip-breaker 69, longitudinally adjustable on the latter arm, substantially as set forth.

12. The combination, with the edge-cutter 41, of the segmental adjustable chip-breaker 103, a pivoted support on which said chip-breaker is adjustable on a curve concentric with said cutter, and the spring 108, substantially as set forth.

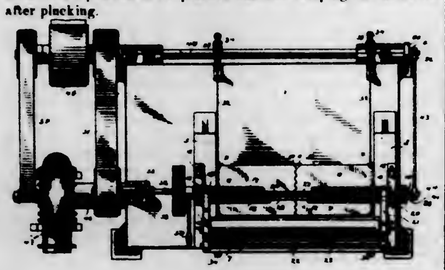
13. The combination, with the cutter 80 and the top bed 100, of the chip-breaker 91, mounted in guides 92, the adjusting bolt or screw 94, having a fixed collar 96, and a spring sustaining the latter, substantially as set forth.

14. The combination, with the top and bottom cutters, of the central driving-pulleys 73 and 82, the pulley 75, the idler 83, the central belt 74, the adjustable frame 85 in the vertical plane of the belt carrying said idler and having a belt-opening 99, and means for adjusting said frame, substantially as set forth.

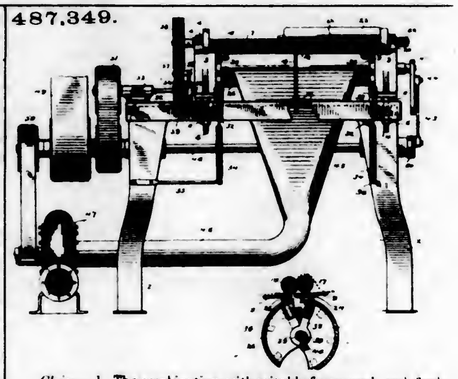
487,349. MACHINE FOR PLUCKING HAIRS FROM SKINS.

FRANK J. MURPHY, Danbury, Conn., assignor of one-half to Anthony M. Rundle, same place. Filed Jan. 22, 1892. Renewed Nov. 5, 1892. Serial No. 451,101. (No model.)

Brief.—The machine includes a hinged frame carrying a pressure-roller and connected with a pair of feed-rollers. This frame may be swung out of operative position in order to introduce the skin whose water-hairs are to be plucked. Adjoining the feed-rollers and below them are two sectional platforms, adjustable in order to accommodate furs with hair of varying length. The edge of one of the platforms is furnished with prongs, and between the two platforms and nearly under the bite of the feed-rollers is a slot, underneath which is a plucking device. Under the plucking mechanism is a funnel, connected with an exhaust-fan, the blast causing the hairs to be drawn between the prongs and through the slot between the platforms into a position to be plucked and also carrying off such hairs after plucking.



487,349.



Claim.—1. The combination, with suitable framework and feeding mechanism, of platforms by which the skins are supported, said platforms having a slot 24 between them, gripping-jaws underneath the slot, and suitable means for operating the gripping-jaws to pluck hairs from skins.

2. The combination, with suitable framework and feeding mechanism, of platforms by which the skins are supported, said platforms having a slot between them and prongs extending partially across said slot from one of the platforms which support the skin but permit the hairs to pass through, gripping-jaws underneath the slot, and suitable means for operating said jaws.

3. The combination, with suitable framework and feeding mechanism, of hinged plates 8, having slot 24, means for raising and lowering said plates at the center for the purpose set forth, gripping-jaws underneath the slot, and suitable means for operating said jaws.

4. The combination, with suitable framework and feeding mechanism, of plates 8, having slot 24 and hinged at their outer ends, the inner ends of said plates engaging, substantially as described and shown, rods 13 and nuts 14, by which said plates may be raised or lowered at the center, gripping-jaws underneath the slot, and suitable means for operating said jaws.

5. The combination, with the framework, plates 8, having slot 24, and the gripping-jaws, of hinged frame B, the feed-rollers, and roller 23, carried thereby.

6. The combination, with the framework, plates 8, having slot 24, and the gripping-jaws, of hinged frame B, the feed-rollers, and roller 23, carried thereby, movable blocks in said frame, in which one of the feed-rollers is journaled, springs 65, bearing against the blocks, and screws for adjusting the tension of the springs so as to regulate the grip of the feed-rollers upon the skin.

7. The combination, with suitable framework, plates 8, having slot 24, and gripping-jaws beneath the plates, of the hinged frame, the feed-rollers carried thereby, one of which is provided with a gear 55, gear 54, means for imparting rotation thereto, and an intermediate gear 57, carried by an angle-lever, which is adapted to be thrown into or out of engagement with gears 54 and 55, whereby motion is communicated to the feed-rollers or their rotation is stopped.

8. The combination, with the framework, plates 8, having slot 24, and the gripping-jaws, of hinged frame B, the feed-rollers carried thereby, brackets 3, to which said frame is hinged, and suitable means for raising and lowering said brackets relatively to the gripping-jaws.

9. The combination, with the framework, plates 8, having slot 24, and the gripping-jaws, of the hinged frame, brackets 3, bearing-plates 15, adjustable on said brackets, the hinged frame, and the feed-rollers, one of which is journaled in the adjustable bearing-plates, the other being journaled in the hinged frame.

10. The combination, with the framework, plates 8, having slot 24, and the gripping-jaws, of the hinged frame, the feed-rollers, shafts 19 and 20, by which they are carried, and adjustable bearing-plates 15, in which shaft 19 is journaled, said hinged frame turning freely on said shaft and shaft 20 of the other feed-roller being journaled in said frame.

11. The combination, with the framework, plates 8, having slot 24, and the gripping-jaws, of the feed-rollers, shafts 19 and 20, by which they are carried, and adjustable bearing-plates 15, in which shaft 19 is journaled, said hinged frame turning freely on said shaft, and shaft 20 of the other feed-roller being journaled in said frame, both of said shafts being provided with pinions whereby motion is communicated from one to the other and one of said shafts having a gear 55, by which motion is imparted thereto.

12. The combination, with the framework, the feed-rollers, and plates 8, having slot 24, of rock-shaft 29, oscillating plate 26, mounted on said shaft, a cord and spring for holding said plate in its normal position, a stop for limiting its forward movement, and a tongue carried by the rock-shaft, which acts in connection with the oscillating plate to pluck hairs from the skins.

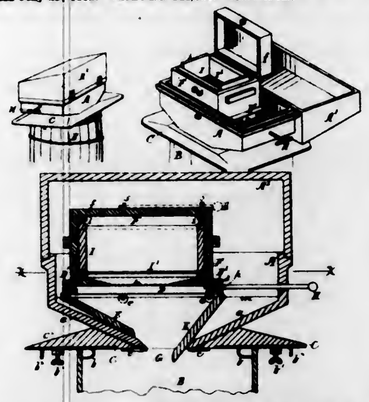
13. The combination, with the framework and feed-rollers, of the rock-shaft, a tongue carried thereby, an oscillating plate mounted on said shaft, and means, as a spring, for holding the oscillating plate in its normal position and keeping it in contact with the tongue in the act of gripping.

14. The combination, with the framework and the feed-rollers, of the rock-shaft carrying the tongue, an oscillating plate mounted on the rock-shaft and acting in connection with the tongue, means, as a spring, for holding said oscillating plate in its normal position, a similarly-shaped plate on the opposite side of the tongue, and a funnel and exhaust-fan whereby hair plucked from the skin by the gripping-jaws is carried away.

15. The combination, with the framework and the feed-rollers, of the rock-shaft, a tongue carried thereby, an oscillating plate mounted on the rock-shaft, a spring for holding said oscillating plate in operative position, an arm attached to said rock-shaft, and a connecting-rod engaging the arm, whereby motion is imparted to said rock-shaft.

16. The combination, with the framework and the feed-rollers, of the rock-shaft, a tongue carried thereby and having a pad 27ª, the oscillating plate, and a spring and cord for holding the latter in operative position.

487,350. ASH-SIFTER. LEVI PELLIGAR, Southborough, Mass. Filed July 25, 1892. Serial No. 441,098. (No model.)



Claim.—1. The combination, as described, of the exterior chest having the inclined bottom and the closing cover, the inner chest having the inclined open bottom and the closing cover and movably fitting within said exterior chest, a reciprocating carrier whereon said inner chest is supported, and the removable sifter-box fitting within said inner chest, all substantially as set forth.

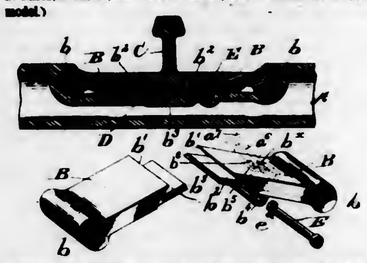
2. The ash-sifter comprising the outer casing having a closing cover and a base adapted for covering a barrel or receptacle, the closable inner box or chest having the hinged cover and the auxiliary removable bottom, and a removable sifter-box with netting bottom arranged within said inner chest, said inner chest being removable, together with the sifter-box, from the outer casing, substantially as and for the purpose set forth.

3. The combination of the exterior case having the double inclined bottom and top cover, the inner chest and sifter fitted therein, and the movable carrier-frame supporting said chest and provided with the oppositely-directed hinged delivery-plates, substantially as set forth.

4. The combination of the outer casing having interior side ledges, the inner chest having the sifter-box arranged therein, the movable carrier or frame for supporting said inner chest, provided with shoulders for retaining the same thereon and having a perforated catch-plate fixed on its end, and the detachable handle, the end of its rod fitted with a T-head adapted for entering through a hole in the outer casing and engaging by a half-turn with said perforated catch-plate, substantially as set forth.

5. In combination with the base-plate having the outer casing, the inner chest and sifter mechanism mounted thereon, the means for attaching the apparatus to a barrel or ash-receptacle, consisting of the adjustable wire hooks *b*, fitted to slide longitudinally in grooves or guideways formed in said bed-plate and having downwardly-turned outer ends b^3, and set-screws *b'* for retaining said hooks at position of adjustment, as set forth.

487,351. RAILWAY-TIE AND TRACK-FASTENING. RUSSELL D. PRICE, Parkside, Pa. Filed Jan. 26, 1892. Serial No. 419,352. (No model.)



Claim.—1. A railway-track fastening comprising the hinged jaws having portions adapted to engage the upper face of the rail-foot and interlocking portions adapted to engage the under side of the same, the rail-engaging portions of each jaw being at the end of the same opposite its hinge connection, substantially as described.

2. A railway-track fastening comprising the hinged jaws having beveled portions adapted to engage the upper face of the rail-foot and interlocking portions for engaging the under side of the same and a retaining device for one of said jaws, the rail-engaging portions of each jaw being at the end of the same opposite its hinge connection, substantially as described.

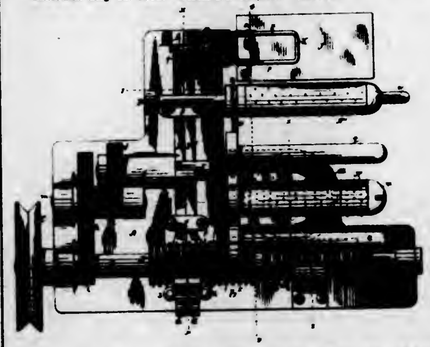
3. The combination, with the hinged gripping-jaws for engaging the foot of the rail, said jaws having portions extending beneath said rail and forming a seat therefor, of an elastic cushion located beneath said seat portions of the jaws, substantially as described.

4. The combination, with the recessed cross-tie having lateral flanges notched to receive the foot of a rail, of the gripping-jaws for engaging the feet of the rail, connected to said tie by hinge connections, said jaws having portions adapted to fit between said flanges to prevent lateral movement of said jaws, substantially as described.

5. The combination, with the cross-tie, of the hinged gripping-jaws adapted to engage the foot of a rail, having interlocking portions provided the one with a recess to receive the other, said tie and one of said jaws being provided the one with a perforated part adapted to engage a recess in the other part, and a retaining-pin, substantially as described.

6. The combination, with the cross-tie and hinged jaws having interlocking portions, of a retaining device for one of said jaws, comprising a perforated part secured to the cross-tie and engaging an aperture or recess in said jaw, and the wedge-pin, substantially as described.

487,352. MACHINE FOR GUIDING THE EDGES OF TEXTILE WEBS. JOSEPH J. SCHOLFIELD, Providence, R. I. Filed May 16, 1890. Renewed May 12, 1892. Serial No. 432,726. (Model.)



Claim.—1. The combination, with a rotating shaft and a sliding sleeve made to rotate with the shaft, of a movable guide-roller operatively connected with the rotating and sliding sleeve, whereby upon the sliding movement of the sleeve in either direction upon the shaft a guiding movement will be imparted to the guide-roller, substantially as described.

2. The combination, with the rotating shaft and a sliding sleeve

made to rotate with the shaft and provided with the right and left hand spiral grooves of the engaging members which are adapted to cause the movement of the sleeve in opposite directions, means for actuating the engaging members, and a detector for limiting the

mounted therein, having a curved toe-piece, an extended guide portion, a recessed portion, and an inclined locking projection, substantially as described.

4. The combination, with the coupler-head, of the knuckle piv-

out of the same by a heavy strain upon the fence, and a guard-wire secured to the flexible support, substantially as described.

3. In a barbed-wire fence, the combination of horizontal barbed

487,356. APPARATUS FOR DISTRIBUTION OF ELECTRICITY. THOMAS TOMLINSON, London, England. Filed May 26, 1891. Serial No. 394,045. (No model.)

made to rotate with the shaft and provided with the right and left hand spiral grooves of the engaging members which are adapted to cause the movement of the sleeve in opposite directions, means for actuating the engaging members, and a detector for limiting the movement of the engaging members as required, substantially as described.

3. The combination, with the rotating shaft and a sliding sleeve made to rotate with the shaft and provided with the right and left hand spiral grooves, of the engaging members which are adapted to cause the movement of the sleeve in opposite directions, means for actuating the engaging members, the detector for limiting the movement of the engaging members as required, and a guide-roller having its axis adapted for angular movement and operatively connected with the sleeve, substantially as described.

4. The combination, with the slotted table and the pivoted detector adapted to enter the slot in the table and bear upon the edge of the fabric, of the engaging members adapted to engage with the opposite end of the detector and means for operating the engaging members, substantially as described.

5. The combination, with the means for drawing the web forward through the machine, a shaft rotated by the forward movement of the web, and a sliding sleeve made to rotate with the shaft, of a guide-roller having its axis adapted for angular movement and operatively connected with the rotating sliding sleeve to impart a guiding movement to the edge of the web, substantially as described.

6. The combination, with the detector, the engaging members, the operating cam and springs, and the sliding sleeve provided with the right and left hand spiral grooves, which together constitute a reversing mechanism, of a pivoted guide-roller in operative connection with the reversing mechanism, a direct-acting guide-roller in operative connection with the reversing mechanism, and the driving-roller which is actuated by the forwardly-drawn web to produce the required regulating movement of the guide-roller, substantially as described.

7. The combination, with the detector, the engaging members, the operating cam and springs, and the sliding sleeve provided with right and left hand spiral grooves, which together constitute a reversing mechanism, of a guide-roller and guide-roller support adapted for angular movement and operatively connected with the reversing mechanism and the driving-roller which is actuated by the forwardly-drawn web to produce the required regulating movement of the guide-roller, substantially as described.

8. The combination, with the detector, the engaging members, the operating cam and springs, and the sliding sleeve provided with the right and left hand spiral grooves, which together constitute a reversing mechanism, of a guide-roller and guide-roller support adapted for angular movement, and a direct-acting guide-roller, both of said guide-rollers being operatively connected with the reversing mechanism, and the driving-roller, which is actuated by the forwardly-drawn web to produce the required regulating movement of both guide-rollers, substantially as described.

9. The combination, with a cloth-finishing machine, of duplicate automatic guiding devices, one set of said devices being located at each side of the machine, and a driving-roller which is actuated by contact with the forwardly-drawn web for connectedly driving said guiding devices.

10. The combination, with an automatic guiding device, of a stationarily-supported driving-roller adapted for engagement with the forwardly-drawn web to operate the said guiding device.

11. A cloth-guiding machine automatically actuated and controlled by the fabric passing through it, consisting, substantially, of a guide-roller, a roller-support adapted for angular movement, the engaging members, the cam and springs for operating the engaging members, the frictionally-resisted sliding sleeve having the right and left hand spiral grooves to receive the engaging members and in operative connection with the roller-support, the cloth-driven roller for rotating the cam and the sleeve, and the detector for limiting the movement of the engaging members to effect the proper regulating action of the guide-roller upon the running edge of the web.

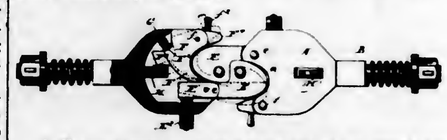
487,858. CAR-COUPLING. WILLIAM H. SNOW, Campbell County, Va. Filed June 11, 1892. Serial No. 436,314. (No model.)

Claim.—1. The combination, with the recessed coupler-head, of a knuckle pivotally mounted therein, the knuckle having a shank extending in the recessed head, and a spring connected to the shank and extending laterally through an opening in the side of the coupler-head, substantially as described.

2. The combination, with the coupler-head, of the knuckle pivotally mounted therein, having a tapering groove and a coupling-pin extending through the knuckle and through the groove, substantially as described.

3. The combination, with the coupler-head, of the clamping-jaw mounted therein, having a curved toe-piece, an extended guide portion, a recessed portion, and an inclined locking projection, substantially as described.

4. The combination, with the coupler-head, of the knuckle pivotally mounted therein, having a shank extended into the coupler-head, a clamp-jaw having an extended portion forming a guide, a locking-toe, and an inclined projection and a locking-pawl passing through the coupler-head and arranged to engage the locking projection, substantially as described.



5. The combination, with the coupler-head, of the knuckle pivotally mounted therein and having a shank extending into the coupler-head, a spring connected to the shank, a clamp-jaw also pivotally mounted in the coupler-head, a spring for throwing the clamp-jaw outward, and a locking-pawl for holding the clamp-jaw in its locked position, substantially as described.

6. The combination, with the recessed coupler-head, of a knuckle pivotally mounted therein and having a shank, a spring connected to the shank, a locking-pawl also mounted in the coupler-head, having an extended guide portion, a curved toe portion, and an inclined locking projection, a spring bearing against said locking-jaw, a gravity locking-pawl engaging the clamp-jaw, and means connected with the gravity-pawl for raising it outside of the car limits, substantially as described.

7. The combination, with the coupler-head, of the knuckle, clamp-jaw, and the gravity locking-pawl, the pawl having an offset *h* and securing device H^3, and means for raising the gravity-pawl from the outside limits of the car, substantially as described.

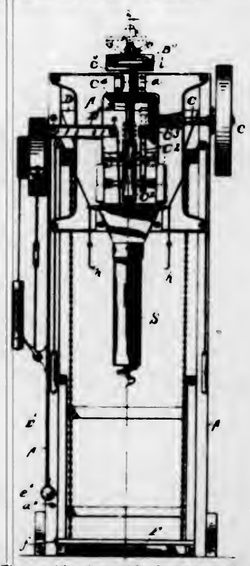
487,854. WIRE FENCE. MOSES W. ST. JOHN, Cedar Falls, Iowa. Filed Feb. 10, 1892. Serial No. 420,966. (No model.)

Claim.—1. In a barbed-wire fence, the combination of horizontal barbed wires, a flexible support comprising parallel posts, the outer one having the barbed wires secured to it and having its lower end pivoted, and inclined crossed braces connecting the posts, and a guard-wire secured to the inner post, substantially as and for the purpose described.

2. In a barbed-wire fence, the combination of horizontal barbed wires, a short post designed to project slightly above the ground, the flexible support pivoted to the short post and comprising parallel posts and crossed braces connecting the posts and pivotally secured to them, a wire stay connected to the flexible support, a stake fastened to the wire stay and designed to be driven into the ground and to be pulled out of the same by a heavy strain upon the fence, and a guard-wire secured to the flexible support, substantially as described.

3. In a barbed-wire fence, the combination of horizontal barbed wires, a short post designed to project slightly above the ground, the flexible support pivoted to the short post and comprising parallel posts and crossed braces connecting the posts and pivotally secured to them, a wire stay connected to the flexible support, a stake fastened to the wire stay and designed to be driven into the ground and to be pulled out of the same by a heavy strain upon the fence, a guard-wire secured to the flexible support, and a fence-stay comprising the vertical bar secured to the horizontal wires and a horizontal bar connected to the guard-wire and to one of the horizontal fence-wires, substantially as described.

487,855. PACKING-MACHINE. EVERT M. THOMPSON, Indianapolis, Ind., assignor to Nordyke & Marmon Company, same place. Filed Feb. 27, 1892. Serial No. 423,055. (No model.)



Claim.—1. The combination, with the auger of a packing-machine, of a driving mechanism therefor consisting of a driven sleeve-like device surrounding said shaft but not rigid therewith and pivoted links connecting said shaft and said device, whereby both a rotary motion is secured and a vertical movement permitted, substantially as set forth.

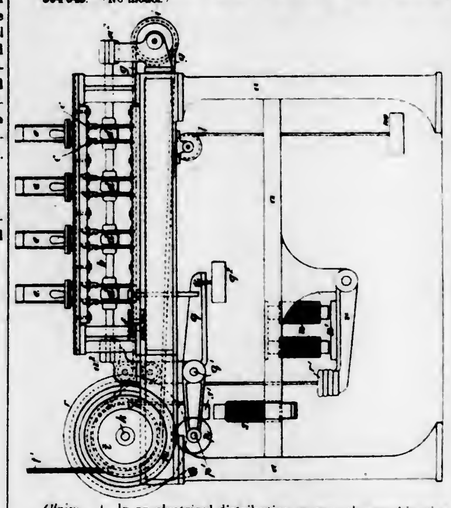
2. The combination, in a packing-machine, of the auger-shaft, a driving-shaft at right angles therewith, a gear-wheel on said driving-shaft, a gear-wheel having a sleeve-like hub surrounding the auger-shaft and driven by said gear-wheel on the driving-shaft, and a link connection between said sleeve-like hub and said auger-shaft, substantially as shown and described.

3. The combination, in a packing-machine, of the auger-shaft, the driving-shaft set at right angles therewith, a cross-head attached to said auger-shaft, whereby it is given a reciprocating motion and driven by a pitman from a wheel on the driving-shaft, another wheel, also driven from said wheel on the driving-shaft and having a sleeve-like hub surrounding the auger-shaft, and a link connection between said wheel and said auger-shaft, whereby both a reciprocal and rotary motion are secured, substantially as set forth.

4. In a packing-machine, a packing-auger having a taper-point, in combination with mechanism whereby it is given both a reciprocal and a rotary movement, substantially as and for the purposes set forth.

5. The combination, in a packing-machine, of a hopper terminating in a spout, a valve E, located at the bottom of said hopper, a rope E', running up through said hopper and over sheaves *e e* to the side of the machine, and thence down to near the bottom, where it is provided with a weight *e'*, adapted to engage with a catch, said catch *a'* on the framework, with which said weight will engage, and the traveling platform for carrying the receptacle to be filled, having a projection *f*, which will come in contact with and disengage the weight from the catch, thus releasing the gate and permitting it to close, all substantially as shown and described.

487,856. APPARATUS FOR DISTRIBUTION OF ELECTRICITY. THOMAS TOMLINSON, London, England. Filed May 25, 1891. Serial No. 394,045. (No model.)



Claim.—1. In an electrical distribution system, the combination of an electric circuit, transformers adapted to have their primaries connected with or disconnected from said circuit, their secondary circuits independent of said electric circuit, a motor mechanism driven by a power independent of variations of electrical condition in said secondary circuits, contacts and circuit connections whereby when said motor is actuated by its driving-power one or more of said transformers are disconnected from said circuit, means for storing power from said motor mechanism when thus operated, and subsequently applying such stored power to re-establish the connection of the primary circuit of said transformer or transformers with said circuit.

2. In apparatus for throwing transformers or other units of electrical apparatus into and out of circuit, the combination of a power-driven-motor mechanism controlled by variations of the load on said circuit, electro-magnetic means operated upon a decrease in the load on said circuit that permit the actuation of said motor, transformers and their contacts and connections, whereby on such actuation of the motor one or more transformers are thrown out of circuit, means for storing power from the motor while it is thus operating to throw one or more transformers out of circuit, and electro-magnetic means controlling such stored power operated by an increase of load on the circuit, whereby the stored power is then applied to effect the throwing of one or more transformers into circuit.

3. In apparatus for throwing transformers or other units of electrical apparatus into and out of circuit, the combination of transformers and their contacts and circuit connections, whereby they are connected in or disconnected out of circuit, switch mechanism controlling said contacts or connections, a power-driven motor that operates said switch mechanism, controlling devices operated by a decrease of the load on the circuit that then effect the actuation of said switch devices by the motor to throw one or more transformers out of circuit, means for storing power from the motor while thus operating, means whereby such stored power may be applied to said switch mechanism to throw one or more transformers into circuit, and means controlled by an increase of load on the circuit for then effecting such application of the stored power.

4. In apparatus for throwing transformers or other units of electrical apparatus into and out of circuit, the combination of the transformers, their switch devices, a motor-shaft, connecting mechanism between the shaft and switch devices whereby transformers may be thrown out of circuit by the actuation of the shaft, electro-magnetic devices for disconnecting the connecting mechanism from the shaft, and means for then operating said mechanism in a reverse direction to throw transformers into circuit, substantially as set forth.

5. In apparatus for throwing transformers or other units of electrical apparatus into and out of circuit, the combination of the transformers, their switch devices, a motor-shaft, connecting mechanism between the shaft and switch devices whereby transformers may be thrown out of circuit by the actuation of the shaft, a weight connected with the connecting mechanism that is then raised by the power from the shaft, and electro-magnetic devices for disconnecting the connecting mechanism from the shaft, whereupon the weight oper-

ates to move the connecting mechanism in a reverse direction to throw transformers into circuit, substantially as set forth.

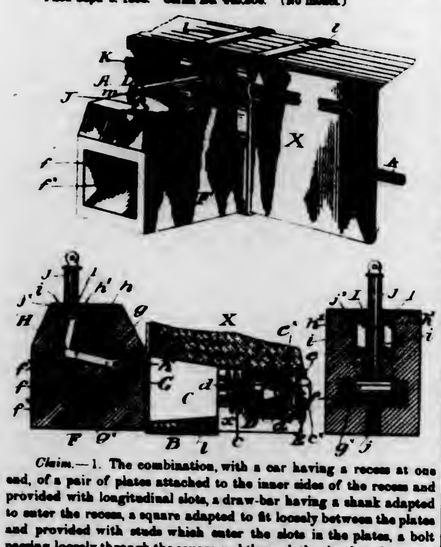
6. In apparatus for connecting and disconnecting transformers or other electrical units, the combination of parts consisting of the contact-arms *d* and contact parts in connection therewith, the weighted rocking levers *e*, operating upon the arms to close and open the contacts, and the wedge-piece *f* and its carriage *f'*, which in traversing causes the levers *e* to fall over from side to side, substantially as described.

7. In apparatus for connecting and disconnecting transformers or other electrical units, the combination of parts consisting of the axis *k*, motor mechanism for rotating the axis *k*, electrical mechanism for starting and stopping the rotation of the axis *k*, the chain-wheel *h*, electrical mechanism putting the chain-wheel into and out of gear with the axis *k*, the endless chain *g*, and the wedge *f*, moved by the chain *g* and operating the switches, substantially as described.

8. In apparatus for connecting and disconnecting transformers and other electrical units, the combination, with the transformer contact-plates having sockets thereon, of a conducting bridge-piece having hollow metal plugs that fit in said sockets, the plugs being lined with paraffine or like material containing mercury and having each a conducting-pin dipping into the mercury, substantially as set forth.

9. In apparatus for connecting and disconnecting transformers, the combination of a transformer, its terminal contacts, a rocking lever carrying contact parts for both the primary and secondary circuits of the transformer, a second gravity-lever normally disconnected from the contact-lever and adapted when moved past its center to fall against and operate it, and means for moving the gravity-lever to either side of its pivot, whereby when it falls upon the contact-lever the primary and secondary circuits of the transformer are simultaneously opened or closed.

487,357. CAR-COUPLING. FLAVIUS H. WARD, Springfield, Mo. Filed Sept. 5, 1892. Serial No. 445,206. (No model.)



Claim.—1. The combination, with a car having a recess at one end, of a pair of plates attached to the inner sides of the recess and provided with longitudinal slots, a draw-bar having a shank adapted to enter the recess, a square adapted to fit loosely between the plates and provided with studs which enter the slots in the plates, a bolt passing loosely through the square and through the shank and secured with a nut, and a spring attached to the square at one end and to the shank of the draw-bar at the other end, substantially as described, and for the purpose set forth.

2. The combination, with the draw-head having a recess for the reception of the link and an intersecting recess for the reception of the coupling-pin, of a wedge mounted in said first-mentioned recess, being the recess for the coupling-pin, the coupling-pin mounted in its recess and having projecting wings and two levers connected with said wedge at one end and having their other ends arranged, respectively, under one of the projecting wings on the pin, whereby when said wedge is struck by the link the pin is dropped through the same, substantially as set forth.

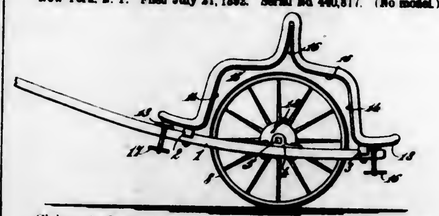
487,358. HACK-SAW FRAME. JAMES A. WEHLPLEY, Keene, N. H., assignor to the Keen Manufacturing Company, same place. Filed Feb. 11, 1891. Serial No. 381,068. (No model.)

Claim.—1. A hack-saw frame consisting of two parts A A', the portion A being provided at its upper inner end with teeth *b* and the part A' having a connecting-piece B secured thereto, said connecting-piece having holes *c* to receive the teeth *b*, a rivet *c*, and spring C, substantially as set forth.

2. In a hack-saw frame, the screw-threaded rod or bar E for holding one end of the saw, said bar being formed with slots or grooves into which a bolt I passes, the spring J for retaining the bolt in place, and nut H, in combination with a split bar or rod E', secured to the handle F for holding the other end of the saw, substantially as and for the purposes set forth.

3. In a hack-saw frame, the rod or bar E and screw-threaded rod or bar E', the bar E having a pin or projection G fitted into one of a series of recesses in the end of the frame and the bar E' being formed with a similar number of grooves, and a bolt I for entering one of said grooves, whereby the saw-blade is locked in the described position, substantially as set forth.

487,359. ONE-WHEEL VEHICLE. HARRIETT D. T. WILSON, New York, N. Y. Filed July 21, 1892. Serial No. 440,817. (No model.)

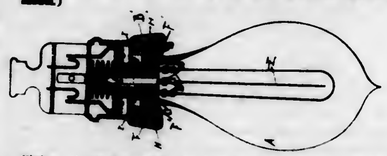


Claim.—1. In a vehicle of the type described, the combination, with the vehicle-frame, of a seat-frame composed of similar side frames, each having a base, a seat-supporting portion, and a back, said parts being in duplicate in each frame and united by the backs, so that the seats shall lie upon both sides of the axle, substantially as described.

2. In a vehicle of the type described, the combination, with a vehicle-frame, of two open or skeleton seat-frames arranged upon the lateral bars of the vehicle-frame, the seats being arranged to face in opposite directions and to lie upon both sides of the axle, the backs of the seat-frames being united, substantially as described.

3. A one-wheeled vehicle consisting of a vehicle-frame, open or skeleton seat-frames united by their backs and arranged upon each side of the vehicle-frame, a rigid axle having conical or conoidal equalizing-supporters, a wheel having a hub of increased diameter, revolving between said supporters, and steps arranged to serve as props, also the hub of the wheel having an oil-opening closed by a screw-plug, substantially as described.

487,360. INCANDESCENT ELECTRIC LAMP. EUGENE W. APPLEGATE, Omaha, Nebr., assignor to the Applegate Electric Light and Power Company, Chicago, Ill. Filed Feb. 29, 1892. Serial No. 423,307. (No model.)



Claim.—1. An incandescent pear-shaped lamp provided with a stem-opening and a flanged stock, the combination of a cap adapted to fit within and upon said opening and stock, said cap being provided with a central tube and four or more projecting threaded carbon clamps, semispherical nuts upon said clamps, carbons removably held within said clamps, an interior and exterior threaded sleeve surrounding said lamp-stock, a stub-sleeve encompassing it, and a threaded collar within said sleeve to secure said sleeve and stock, all substantially as and for the purpose set forth.

2. An incandescent lamp provided with a stem-opening and a flanged stock, a cap adapted to fit within and upon said stock, provided with a central tube and two or more projecting clamps of carbon, said cap and lamp forming an air-tight seal, and a threaded spring-sleeve secured to said stock, in combination with a stock comprising the shell K, the spring-actuated contact-arms M M, adapted to be in electrical connection with said carbon clamps, the *J*-shaped spring-arms, and the key S, all arranged substantially as and for the purpose set forth.

3. In an incandescent lamp of a suitable configuration, provided with a stem-opening and a flanged stock B, the cap C, adapted to fit within and upon said opening and stock and provided with the central tube C', the projecting carbon clamps D, provided with the nuts D', the spring-sleeve F, provided with an outwardly-extending groove at its upper and an inwardly-extending flange at its lower end, the lower portion of said sleeve being further interiorly and exteriorly threaded, the sleeve H', and collar I, in combination with a socket, comprising the shell K, the spring-actuated contact-arms M M, adapted to be in electrical connection with said carbon clamps D D, the *J*-shaped spring-arms, and the key S, all arranged substantially as and for the purpose set forth.

487,361. ROOFING-MACHINE. WILLIAM C. BELL, Syracuse, N. Y. Filed Apr 30, 1890. Serial No. 350,034. (No model.)

Claim.—1. In a roofing-machine, double gages arranged in front of and in combination with a system of flanging-rollers, said gages having sections capable of a reciprocating motion, adapted to receive two or more plain metallic strips and guide them into position between the rollers, whereby by the continuous action of the rollers thereon the strips are simultaneously nested one within the other and their side edges flanged to any required angle and height, substantially as described.

2. In a roofing-machine, right and left hand gages arranged in front of and in combination with a system of flanging-rollers, said gages having sections capable of a reciprocating motion, adapted to receive plain metallic strips and guide them into position between the rollers, whereby by the continuous action of the rollers thereon the strips are simultaneously nested one within the other and their side edges flanged to any required angle, but differing in height, substantially as described.

3. In a roofing-machine, reversible gages arranged in front of and in combination with a system of flanging-rollers, said gages having sections capable of a reciprocating motion, adapted to receive two or more metallic strips and guide them into position between the rollers, whereby by the continuous action of the rollers thereon the side edges of the roofing-strips are simultaneously flanged to any required angle and height, producing them in right-hand and left-hand pairs, substantially as described.

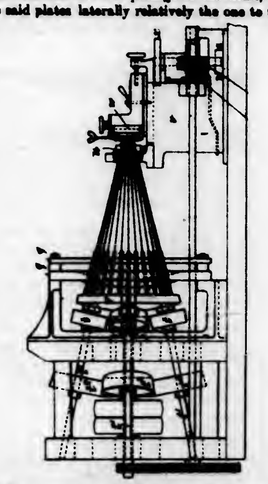
4. In a roofing-machine, gages having different sets of channels arranged one over the other in front of and in combination with a system of flanging-rollers, said gages having sections capable of a reciprocating motion, adapted to receive a metallic roofing-strip and guide it into position between the rollers, whereby by the action of the rollers thereon the side edges of the strip are simultaneously flanged to any required angle, producing flanges differing in height and a reversal of the height of flanges effected by using alternately either set of channels and with means for greater side variation in flange *e* and flange *l*, substantially as described.

487,362. APPARATUS FOR DRILLING BROOMS OR BRUSHES. HYPPOLYTE BESSES, London, England, assignor of one-half to George Harold Kent, Arthur Burton Kent, and Ernest Webb Kent, same place. Filed June 18, 1892. Serial No. 436,511. (No model.) Patented in England Dec. 22, 1890, No. 20,997, and in France Sept. 28, 1891, No. 216,388.

Claim.—1. A drilling apparatus comprising a series of cranked or bent drills, a driving-plate into which the cranked ends of the drills are inserted, a single driving-crank for giving circular motion to the driving-plate, a series of freely-rotating guiding-cranks, and counterbalance-weights for the guiding-cranks for compensating the weight of the driving-plate and crank-pins.

2. In drilling apparatus, the combination of a number of cranked or bent drills, a driving-plate provided with holes for receiving the cranked ends of the said drills, a fixed plate supporting the bearing of a single driven crank whose crank-pin enters a hole in the driven plate, and bosses on the fixed plate, bored to receive pins fixed to a number of freely-rotating guiding-cranks, each consisting of a disk carrying a crank-pin entering a hole in the driven plate, the said disks being recessed, the walls of the recesses surrounding the bosses on the fixed plate and being of unequal thickness, so as to form counterbalance-weights, balancing the weight of the driving-plate and crank-pins.

3. In drilling apparatus, the combination of a number of drills, means for simultaneously rotating the same, a compound bearing or pattern journal consisting of a box or holder containing a series of plates bored with holes for the passage of the drills, and means for moving the said plates laterally relatively the one to the other.

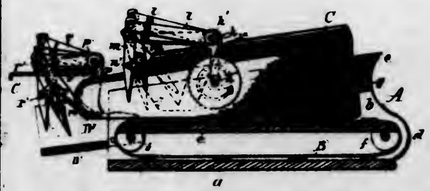


4. In drilling apparatus, the combination of a number of drills, means for simultaneously rotating the same, a compound bearing or pattern journal consisting of a box or holder containing a number of plates bored with holes for the passage of the drills, the edges of some of such plates being in contact with one side of the box and the edges of the remainder in contact with the opposite side, means for causing the said opposite sides to approach each other, and means for forcing the faces of the said plates into contact with each other.

5. A drilling apparatus comprising a series of radially-arranged cranked or bent drills, a driving-plate for simultaneously rotating the drills, said driving-plate where it receives the drills having a face of spherical form, and a driving-crank and guiding-rolls on radial shafts for giving a spherical movement to the driving-plate.

6. In drilling apparatus, the combination of a number of drills inclined the one to the other, a pattern-journal in which the drills are set, intermediate spindles, each having one end connected by a universal joint to the end of one of the drills and the other end connected, also, by a universal joint to the end of one of a number of crank-shafts, the ends of the said cranks being received into holes in a driving-plate, by which said shafts are simultaneously rotated, projections on the said shafts, a plate received between the said projections, and means for moving the said plate longitudinally.

487,363. SAND-CUTTER AND FEEDER. JACOB R. BOLER, Alta, Iowa, assignor of one-half to A. Wilson, same place. Filed Dec. 1, 1891. Serial No. 413,670. (No model.)



Claim.—1. The combination, with a box or trough, of pickers adapted to operate therein, a pivotally-connected feed-board at the discharge end of the trough or box, and pickers supported by the pivotally-connected feed-board and adapted to operate over the same, substantially as set forth.

2. The combination, with a box or trough and a pivotally-connected feed-board at its forward end, of a shaft over said box, arms loosely connected to said shaft, pickers depending from and pivotally connected to said arms, a crank-shaft connected to said pickers, a

shaft supported by the feed-board, arms loosely connected to said shaft, pickers pivotally connected to said arms, a crank-shaft connected with said pickers, a shaft carrying cutters, band-wheels on said crank-shafts and the cutter-shaft, and a band passing over said band-wheels, substantially as set forth.

Claim.—1. The combination, in an oil-cloth-printing press, of a series of troughs, devices for reciprocating the troughs, and a fluid-governor connected with said devices, and means for relieving the governor of pressure when the troughs reach the limit of their movement in either direction, substantially as set forth.

2. The combination, with the reciprocating troughs and operat

weighted rod having a head at its outer end, a rock-shaft located adjacent to said rod and connected therewith, an uncoupling-lever connected with said rock-shaft, and a latch engaging said lever when the same is in raised position.

vided with teeth or equivalents for taking into the flange of the hoof and also provided at one end with depending lugs (preferably conical in form) designed to be removably pivoted in corresponding recesses formed in a lug of the shoe and at or near the other end with thick-

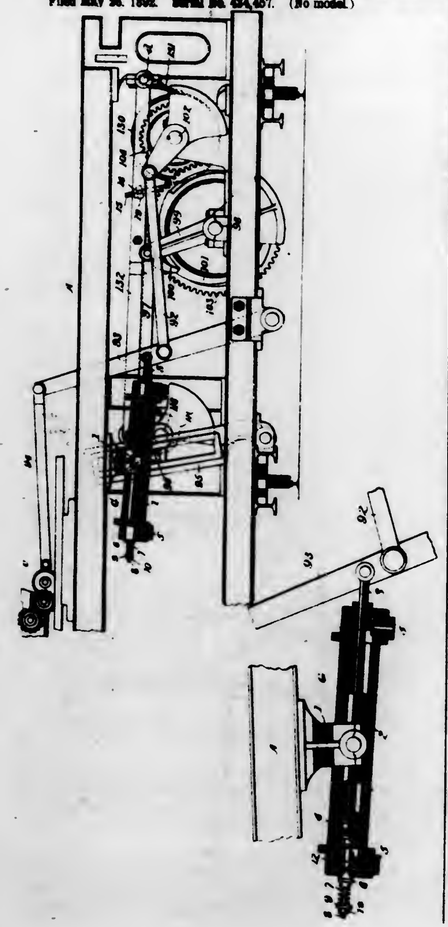
shaft supported by the feed-board, arms loosely connected to said shaft, pickers pivotally connected to said arms, a crank-shaft connected with said pickers, a shaft carrying cutters, band-wheels on said crank-shafts and the cutter-shaft, and a band passing over said band-wheels, substantially as set forth.

487,364. COMBINED BLOTTER-PAD AND RULER. CHARLES W. CHAMBLER, Xenia, Ohio. Filed Sept. 7, 1892. Serial No. 445,217. (No model.)

Claim.—1. In a blotter-pad, the combination of a strip having straps upon the opposite ends of its upper surface and a spring-slide adapted to be inserted beneath the said straps and to clamp the blotter, substantially as described.

2. In a combined blotter-pad and ruler, the combination of a strip having a beveled straight-edge and having straps upon the opposite ends of its upper surface and a spring-slide adapted to slide beneath each of the said straps, having an upwardly-projecting outer end and adapted to engage a blotter, substantially as described.

487,365. OIL-CLOTH-PRINTING MACHINE. GEORGE F. EBERHARDT, Philadelphia, Pa., assignor to Dilbelt & Eisenhardt, same place. Filed May 26, 1892. Serial No. 434,457. (No model.)



Claim.—1. The combination, in an oil-cloth-printing press, of a series of troughs, devices for reciprocating the troughs, and a fluid-governor connected with said devices, and means for relieving the governor of pressure when the troughs reach the limit of their movement in either direction, substantially as set forth.

2. The combination, with the reciprocating troughs and operating devices of an oil-cloth-printing machine, of a fluid-governor comprising a cylinder and piston and means for relieving the same of pressure when the troughs reach the limits of their position in either direction, substantially as set forth.

3. The combination, with the reciprocating troughs and operating devices, of a fluid-governor consisting of a cylinder-piston and piston-rod connected to a reciprocating part of the machine, inlet-openings and valves at the opposite ends of the cylinder, outlet openings and valves at the opposite ends of the cylinder, springs bearing upon said outlet-valves, and means for opening the valves as the piston reaches the limit of its movement in either direction, substantially as set forth.

4. The combination of reciprocating troughs and operating devices, a cylinder provided with a piston connected with part of the operating devices and having inlet and outlet openings and valves, springs bearing against the outlet-valves, and means for compressing the springs, and stems projecting from the outlet-valves in position to be struck by the piston, substantially as set forth.

5. The combination, with the reciprocating troughs and operating parts, of an oscillating cylinder having a piston connected with one of the reciprocating parts of the machine, inlet ports and valves, outlet ports and valves, and springs for varying the pressure upon the outlet-valves, substantially as set forth.

6. The combination of the troughs, the ratchet-wheel and pawl and connections for moving the troughs, shafts 102 and 116, a band-pulley on the shaft 102 and gears between the latter shaft and the ratchet-wheel, a band adapted to said pulley and carried by a lever, and a cam on the shaft 116, operating upon the free end of said lever to reciprocate the same, substantially as set forth.

7. The combination, with the devices for reciprocating the trough, of a band-wheel, a lever composed of two parallel connected bars and provided with a band arranged to bear upon said wheel, and a shaft provided with a cam arranged to operate the outer end of said lever substantially as set forth.

487,366. MEANS FOR SEALING JARS OR SIMILAR VESSELS. JAMES W. FULLER, St. Paul, Minn. Filed Mar. 22, 1892. Serial No. 426,888. (No model.)

Claim.—1. In a closure for vessels, the combination, with the vessel, of the vessel-neck having an indentation or score therein, the cap covering the vessel and having an indentation or score registering with the score in the vessel-neck, and the chamber below said scores containing sealing material for uniting the cap and neck, substantially as described.

2. The combination, with the vessel-neck having screw-threads at the top, of the cap fitting down over the neck and having co-operating screw-threads and a score or indentation below said threads and a sealing substance uniting the cap and neck below the score or indentation, substantially as described.

3. The combination, with the vessel-neck having screw-threads at top, of the cap fitting over the neck and having co-operating screw-threads, a score or indentation below said threads, and an annular chamber below the score or indentation, and a sealing substance in said chamber for uniting the cap and vessel-neck, substantially as described.

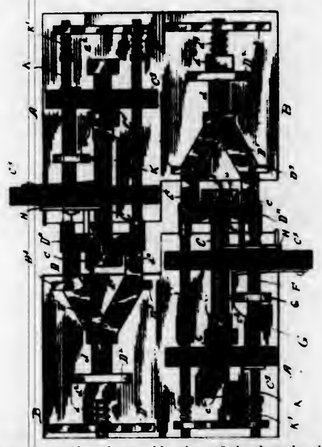
4. The combination, with the vessel-neck having screw-threads at top, of the cap fitting over the neck, seating on the neck at the bottom and having the intermediate screw-thread and indentation or score, and the sealing substance interposed between the cap and neck below the score and above the bottom edge of the cap, substantially as described.

5. The combination, with the vessel having the screw-threaded neck, of the cap fitting over the same, having co-operating screw-threads, and a score or indentation for severing the cap with a sealing substance uniting the cap and neck below the score or indentation, substantially as described.

487,367. CAR COUPLING. THOMAS C. GIBSON, Washington, D. C. Filed Sept. 1, 1892. Serial No. 444,812. (No model.)

Claim.—1. In a car-coupler, the combination of the draw-head, a weighted rod having a head at its outer end, a rock-shaft located adjacent to said rod and connected therewith, an uncoupling-lever connected with said rock-shaft, and a latch engaging said lever when the same is in raised position.

2. In a car-coupler, the combination of the draw-head having shoulders within its mouth, the weighted rod C, having a headed end, a rock-shaft connected with said rod, an uncoupling-lever connected with the said rock-shaft, and a spring-pressed latch engaging said lever when the same is in raised position, said latch having a projection designed to be engaged by the draw-head of the co-operating coupler when the cars are being brought together for coupling, for the purpose specified.



3. In a car-coupler, the combination of the draw-head having shoulders within its mouth, a rod having a headed end, a weight connected with one side of said rod, a rock-shaft having a disk, a chain connecting said disk with the side of said rod opposite said weight, an uncoupling-lever secured to the end of said rock-shaft, and a spring-pressed latch engaging said uncoupling-lever when the same is in raised position, said latch having a projection designed to be engaged by the draw-head on an approaching car, substantially as described, and for the purposes specified.

4. In a car-coupler, the combination of the draw-head having shoulders within its mouth, a weighted rod C, having a headed end, an uncoupling-lever connected with said rod and serving to partly rotate the same, and a spring-pressed latch engaging said uncoupling-lever when the same is in raised position, said latch having a projection designed to be engaged by the draw-head on an approaching car, substantially as described.

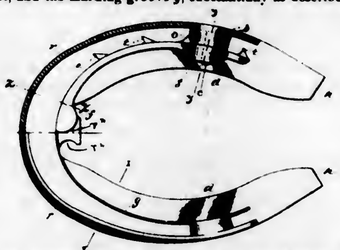
5. In a car-coupler, the combination of the draw-head having its draw-bar provided with an encircling coil-spring, the coupling-rod C, having an encircling coil-spring and provided on its outer end with a head, and spring-pressed bumper-rods movably supported beneath the car-body in line with the draw-head on the next adjacent car, all substantially as described, and for the purposes specified.

6. In a car-coupler, the combination of the draw-head having shoulders within its mouth, a weighted coupling-rod having a headed end, an uncoupling-lever connected with said rod, a spring-pressed latch engaging said lever when the same is in raised position, said latch having a projection designed to be engaged by the draw-head on an approaching car, and a pin adapted to be inserted in an opening in the coupler adjacent to the lever when the same is in its raised position and serving to hold said lever in said position when the latch is disengaged therefrom, thereby rendering the coupling inoperative, substantially as described.

487,368. HORSESHOE. FREDERICK KORSPEAT, Glenwood Springs, Colo. Filed Mar 23, 1891. Serial No. 386,174. (No model.)

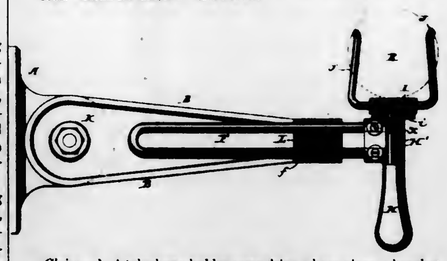
Claim.—1. A horseshoe having a groove adapted to receive a depending flange of the hoof, the front wall of said groove being formed by a rim or flange corresponding to the contour of the hoof, the rear wall being formed by removably-pivoted fastening-arms, said arms provided with engaging devices for taking into the flange of the hoof, whereby said flange may be securely clamped between said rim and fastening-arms, substantially as described.

2. In a horseshoe, a groove *g*, formed between an inwardly-projecting rim and loosely-pivoted fastening-arms, for the reception of a depending flange cut on the hoof, said fastening-arms being provided with teeth or equivalents for taking into the flange of the hoof and also provided at one end with depending lugs (preferably conical in form) designed to be removably pivoted in corresponding recesses formed in a lug of the shoe and at or near the other end with thickened portions having threaded apertures adapted to coincide with similar threaded apertured portions of the shoe, the screws for connecting the ends of said fastening-arms and the shoe, whereby said shoe may be securely clamped in position to a depending flange of the hoof, and the marking-groove *g*, substantially as described.



3. The combination, with a horseshoe, of the fastening devices, substantially as described, comprising the curved arms provided with hoof-engaging projections *t*, the lugs *s*, formed integral with said curved arms, the lugs *b* of the shoe, the coincident threaded apertures of said lugs *s* and *b*, the screws *c*, entering said threaded apertures, the conical studs *l*, and the correspondingly-formed recesses r^2, wherein said studs are removably secured, as and for the purpose set forth.

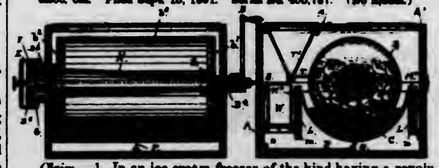
487,369. TELEPHONE-HOLDER. EVERETT C. LEWIS, Woonsocket, R. I., assignor of one-half to Leroy B. Pease, same place. Filed Apr. 29, 1892. Serial No. 431,194. (No model.)



Claim.—1. A telephone-holder comprising a base-piece, a bracket connected to the base-piece, a block pivotally and adjustably connected to the head of the bracket, a rod bent to form parallel portions, sliding in said block, a head-piece mounted on the end of said bent rod, and a holder mounted on the head-piece and having adjustable fingers arranged for the reception of the head or ear piece of the ordinary telephone-receiver, substantially as described.

2. A telephone-holder comprising the base-piece, the bracket pivotally mounted thereon, a block adjustably mounted on the head of the bracket, a bent rod sliding on said block and having a friction-spring mounted in the block, a head-piece mounted on the rod, and a holder having a shank pivotally mounted in a head-piece and provided with a support having adjustable spring-fingers for the reception of the head of the telephone-receiver, substantially as described.

487,370. ICE-CREAM FREEZER. HENRY MAYERS, San Francisco, Cal. Filed Sept. 15, 1891. Serial No. 405,787. (No model.)



Claim.—1. In an ice-cream freezer of the kind having a revoluble freezing-cylinder, the combination of a suitable inclosing case, the revoluble cylinder mounted for rotation in said case, having an interior space for the freezing agent, a neck or portion on one end of reduced diameter extending through the case to the outside, a storage cylinder or receptacle for the frozen cream insertible into and removable from the freezing-cylinder through its neck, and a cap closing said opening, constructed for operation as specified.

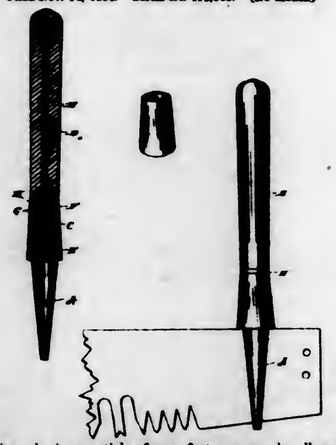
2. In an ice-cream freezer, the combination, with the freezing-cylinder mounted for rotation within a casing in a cream-holding pan and having an opening in one end for introducing the freezing agent, and having an opening in one end for introducing the cream, of the inner receptacle insertible and removable through said opening,

movable from the freezing-cylinder through its neck, and a cap closing said opening, constructed for operation as specified.

2. In an ice-cream freezer, the combination, with the freezing-cylinder mounted for rotation within a casing in a cream-holding pan and having an opening in one end for introducing the freezing agent, of the inner reservoir insertible and removable through said opening, the support G for one end of said reservoir in the head of the freezing-cylinder, and the cap closing the freezing-cylinder and forming a support for the other end of the reservoir within the cylinder, substantially as described.

3. In an ice-cream freezer, the combination, with a revoluble freezing-cylinder, of a casing within which the freezing-cylinder is mounted for rotation, having a hinged outwardly-movable lid forming part of the top of the casing, and a scraping-blade suspended from the under side of said lid by rigid hangers, substantially as described.

487,871. CROSSCUT-SAW HANDLE. JOHN W. MILLER, Penfield, Pa. Filed Nov. 14, 1891. Serial No. 411,986. (No model.)



Claim.—1. As an article of manufacture, a saw-handle consisting of a slotted shank or loop having an internally-screw-threaded socket formed at one end, a handle proper provided with a screw-threaded end of less diameter than the remaining portion of the handle, so that a shoulder is formed between them, and a ferrule fitted over the socket end of the shank and adapted to be driven against the saw-blade held in the shank, the upper end of the ferrule fitted to the restricted end of the handle proper and its exterior flush with the exterior of the handle proper, substantially as set forth.

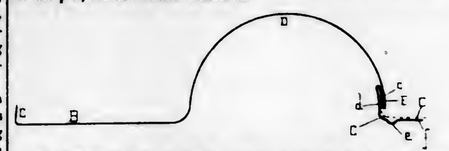
2. As an article of manufacture, a saw-handle comprising a shank or loop having a slot therein adapted to receive a saw-blade and provided at one end with an internally-screw-threaded socket, a ferrule fitted over the socket end of the shank or loop and provided with an internal annular shoulder adapted to strike the end of the socket, and a handle proper having a threaded portion adapted to turn in the socket and provided with a shoulder which bears on the adjacent end of the ferrule for the purpose of forcing the ferrule against the saw-blade, substantially as set forth.

3. As an article of manufacture, a saw-handle comprising a slotted shank or loop provided with an internally-screw-threaded socket at one end, a ferrule fitted over this socket end, and a handle proper having a hole formed through its longitudinal center, a screw fitted on one end of the handle proper, having a hole through its longitudinal center in alignment with the hole in the handle proper, a bolt passed through these holes, having a screw-threaded end, and a nut screwed on this end, whereby to hold the screw on the handle proper, substantially as set forth.

487,872. ROOFING PLATE OR SHINGLE. LEVI H. MORRISON, Camden, N. J., assignor to Merchant & Co., Philadelphia, Pa. Filed Feb. 24, 1892. Serial No. 422,922. (No model.)

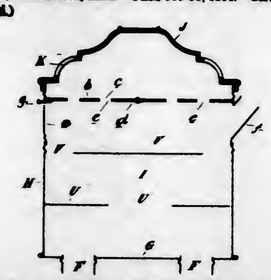
Claim.—1. A roofing plate or shingle composed of a single piece of sheet metal or other suitable material, which is longitudinally ribbed, said rib having its depending edge bent inwardly and upwardly upon itself and return-bent to form a vertical or upright longitudinal locking loop or groove, having a gutter integral therewith, for the purpose shown and described.

2. A roofing plate or shingle composed of a single piece of sheet metal or other suitable material, which is longitudinally ribbed, said rib having its depending edge bent inwardly and upwardly upon itself and return-bent to form a vertical or upright longitudinal locking loop or groove, having a gutter and a nailing-strip integral therewith, for the purpose shown and described.



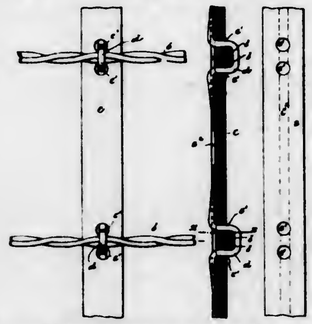
3. A roofing plate or shingle composed of a single piece of sheet metal or other suitable material, which has one edge turned up for forming a vertical or upright locking-tongue and the other edge longitudinally ribbed, which rib is bent inwardly and upwardly upon itself to form a vertical or upright longitudinal locking loop or groove, having a gutter and a nailing-strip integral therewith, for the purpose shown and described.

487,873. GASOLINE-HEATER. ARTHUR J. PARKER and ROBERT G. HOUTZ, Williamston, Mich. Filed Oct. 30, 1891. Serial No. 410,691. (No model.)



Claim.—In a heating-stove, the combination, with the casing, of a removable section constituting an extension of the casing and fitted on the top thereof, a damper formed in the upper portion of the section, an exit-flue extending out from the side of the section below the the damper, and a removable perforated cap on the upper edge of the section of a size corresponding with the top of the casing on which it is adapted to fit when the section is removed, substantially as described.

487,874. FENCE-STAY. ARTHUR A. PARKER, Jersey City, N. J. Filed July 22, 1892. Serial No. 440,909. (No model.)

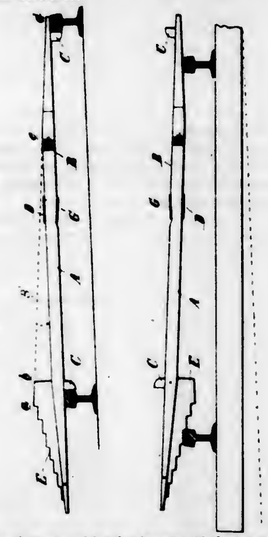


Claim.—A fence-stay composed of a strip of metal having two flat sides, a groove in the center of its rear side, and perforations entering the groove, substantially as specified.

487,875. TRACK GAGE AND LEVEL. CYRUS ROGERS, Three Rivers, Mich. Filed July 1, 1891. Serial No. 398,194. (No model.)

Claim.—1. In a track gage and level, a bar provided upon one edge with gage-pins adapted for gaging the track and upon the other with a series of degrees arranged to engage with and adapted for leveling the track upon different heights of rails, substantially as described.

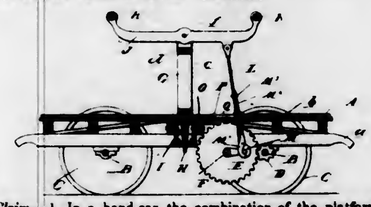
2. In a track gage and level, a bar provided upon one edge with gage-pins and upon the opposite edge with a graduated plate secured to an extension of the bar at one end, said gage-plate having its farthest projecting edge formed in a straight line with the edge on the end of the bar, and a level secured in the bar parallel to said line, substantially as described.



3. In a track gage and level, a bar provided upon one edge with gage-pins and upon the opposite edge with a graduated plate, said gage-plate being secured to an extension of the bar at one end and having its farthest projecting edge formed in a straight line with the edge on the opposite end of said bar, a level parallel to said straight line, and a level parallel to the edge having the gage-pins, said edge being straight, substantially as described.

4. In a track-gage, the combination, with the gage-bar having gage-pins, of a series of degrees on the bar, arranged to engage with the track, and a level on the bar, substantially as described.

487,876. HAND-CAR. CYRUS ROGERS, Three Rivers, Mich. Filed Apr. 28, 1892. Serial No. 431,039. (No model.)



Claim.—1. In a hand-car, the combination of the platform, a removable standard thereon, an actuating-lever journaled in the top of said standard, and a detachable direct connection from said lever to the drive mechanism of the car, substantially as described.

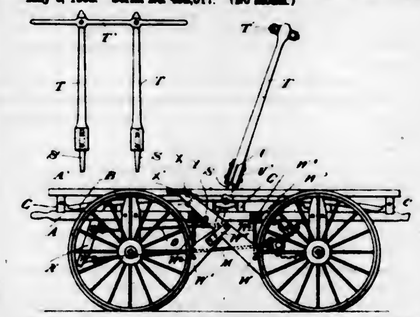
2. In a hand-car, the combination of the platform, a removable standard detachably secured therein, an actuating-lever journaled in the top of said standard, and a detachable direct connection from said lever to the drive mechanism of the car, substantially as described.

3. In a hand-car, the combination of the platform having a central socket therein, a standard having a bearing at its lower end, detachably engaging in said socket, a bifurcation at the upper end of the standard, a lever journaled in the bifurcation, and a detachable direct connection from said lever to the drive mechanism of the car, substantially as described.

4. In a hand-car, the combination of the platform, a socket therein, a standard detachably engaging therein, an actuating-lever journaled in the upper end of the standard, and a direct connecting-rod between the lever and the drive mechanism, having a detachable connection with the crank extending above the platform, substantially as described.

5. In a hand-car, the combination of the platform, a socket therein, a standard detachably engaging therein, an actuating-lever journaled in the standard, a connecting-rod between the lever and crank of the actuating mechanism, a half-bearing formed in the end of the rod, a lever pivoted to the rod, having a complementary half-bearing, and the locking-rings, substantially as described.

487,877. HAND-CAR. CYRUS ROGERS, Three Rivers, Mich. Filed May 6, 1892. Serial No. 432,017. (No model.)



Claim.—1. In a hand-car, the combination, with the wheel-supported platform, of a drive mechanism comprising an oscillating lever extending above the platform, a rocker journaled on fixed pivots centrally beneath the platform and with which the oscillating lever engages, and a connection from the rocker to the drive-axle, substantially as described.

2. In a hand-car, the combination, with the wheel-supported platform, of a drive mechanism comprising an oscillating lever extending above the platform, a detachable rocker, with which said lever is adapted to engage, journaled centrally below the platform, and a connection from the rocker to the drive-axle, substantially as described.

3. In a hand-car, the combination, with the wheel-supported platform, of a drive mechanism comprising an oscillating lever extending above the platform, a rocker with which said lever is adapted to detachably engage, a pivot upon which said rocker is journaled, detachably secured in position, and a connection from the rocker to the drive-axle, substantially as described.

4. In a hand-car, the combination, with the wheel-frame comprising longitudinal and cross timbers arranged to form a well, of the platform apertured above the well, a rocker detachably journaled in the well, a connection from the rocker to the drive-axle, and an oscillating lever extending above the platform, engaging with said rocker, substantially as described.

5. In a hand-car, the combination, with the wheeled frame comprising longitudinal and cross timbers arranged to form a well, of a socketed rocker detachably journaled in said well, a connection from the rocker to the drive-axle, and an oscillating lever having a bearing at its lower end, adapted to engage in the sockets in said rocker and extending above the platform, substantially as described.

6. In a hand-car, the combination, with the wheeled frame comprising longitudinal and cross timbers arranged to form a central well, of a rocker in said well, brackets at each end of the well, pivots detachably secured in said brackets, upon which the rocker is journaled, and an actuating-lever secured to the rocker, extending above the platform, substantially as described.

7. In a hand-car, the combination, with the wheeled frame comprising longitudinal and cross timbers arranged to form a well, of two U-shaped brackets secured at opposite ends of the well, pivots extending inwardly from said brackets, detachable cross-bolts extending through the brackets and the ends of the pivots, the rocker journaled on the pivots, and the actuating-lever connected with the rocker, substantially as described.

8. In a hand-car, the rocker formed of a single piece of metal shaped into a frame having parallel separated sides having corresponding apertures in line and a rock-arm, substantially as described.

9. In a hand-car, the rocker formed of a single piece of metal shaped into a frame having parallel separated sides having corresponding apertures in line, and pivots engaging the ends between the sides, substantially as described.

10. In a hand-car, the combination, with the wheels, of a brake therefor consisting of levers pivoted together and suspended at their lower ends free to swing and means for separating the lower ends by pressure applied to the upper ends above the pivots, substantially as described.

11. In a hand-car, a brake consisting of two toggle-levers pivoted together at their upper ends, links suspending the lower ends of the levers free to swing, and an extension of one lever forming a means of separating the lower ends of the levers, substantially as described.

12. In a hand-car, the combination, with the frame and axle, of a supporting-pedestal secured to and projecting below the frame and having a half-bearing formed therein at its lower end, substantially as described.

13. In a hand-car, the combination, with the frame and axle, of a pedestal consisting of vertical securing-arms and a horizontal bearing portion and a half-bearing formed in such horizontal portion, substantially as described.

14. In a hand-car, the combination, with the frame and axle, of a pedestal of sheet metal shaped to form the securing-arms *a b* and a bearing portion *c*, having the lips *e* struck up therefrom, substantially as described.

15. In a hand-car, the combination, with the frame and axle, of the pedestal having the horizontal portion *c* and half-bearing formed therein and the half-box *g*, secured to said horizontal portion, substantially as described.

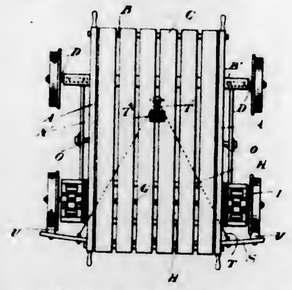
16. In a hand-car, the combination of the frame and axle, a wheel secured to the axle and having a groove formed on the inner face of the hub, and the journal-bearing on the axle, having a flange *k* entering said groove, substantially as described.

17. In a hand-car, the combination of the frame and axle, wheels keyed to the axle by the key *n*, a cap *o*, and the screw-bolt *p* for securing said cap in position, substantially as described.

18. In a hand-car of the kind described, the actuating-lever T, split at the lower end and socketed, a socket-pin S in said socket, and the reinforced plates U', having flanges V, bearing against the sides of the pin, and the bolts V', substantially as described.

19. In a hand-car, the combination, with the wheels, of a brake therefor consisting of two levers pivotally connected, supports for the levers connected to the lower ends thereof, and means for separating the lower ends of the levers by engaging one of the same above its connection, substantially as described.

487,378. HAND-CAR. CYRUS ROBERTS, Three Rivers, Mich. Filed May 23, 1892. Serial No. 434,004. (No model.)



Claim.—1. In a hand-car, a frame comprising longitudinal timbers, cross-timbers, and a platform, and axles formed by extensions of the cross-timbers, substantially as described.

2. In a hand-car, a frame comprising longitudinal timbers, cross-timbers, and a platform, and stub-axles secured in the end of the cross-timbers and wheels journaled thereon, substantially as described.

3. In a hand-car, a frame comprising longitudinal timbers, cross-timbers, and a platform, stub-axles secured in the end of the cross-timbers, and a truss-rod for the cross-timbers, substantially as described.

4. In a hand-car, the combination of the frame comprising longitudinal and cross timbers, a truss for said frame, comprising a looped metal rod, bolts over which the ends engage, and a central adjustable post, substantially as described

5. In a hand-car, the combination, with the platform, of cross-bars beneath the same, extending at each end beyond the sides thereof, a connecting-block between said cross-bars at the extension, boxes secured centrally to said cross-bar, and the drive-axle journaled in said boxes, substantially as described.

6. In a hand-car, the combination, with the frame comprising the cross-bars extending beyond the sides thereof, of the drive-axle journaled between the cross-bars, the pedestal supported upon the extensions, the drive-shaft journaled in the pedestals, the gear-wheel on the drive-shaft, the actuating-levers for driving the gear-wheel, and the pinion on the drive-axle, with which said gear-wheel engages, substantially as described.

7. In a hand-car, the combination, with the frame, of the pedestal I, extending above and located beyond the side of the platform, the boxes formed upon the top of said pedestal, the drive-shaft journaled in said boxes, the gear-wheel on the drive-shaft, and means for actuating the gear-wheel, the drive-axle, and the pinion on the axle, with which said gear-wheel engages, substantially as described.

8. In a hand-car, the combination, with the platform, the drive-levers, the actuating mechanism, and the connecting-rod from the drive-levers to the actuating mechanism, of a guard for the connecting-rod above the platform, substantially as described.

9. The combination, in a hand-car, with the platform, of the drive-levers, the actuating mechanism above the platform, the connecting-rod between the drive-lever and the actuating mechanism, and a guard for the drive mechanism and the connecting-rod, substantially as described.

10. In a hand-car, the combination, with the wheeled platform and the drive mechanism, of a brake consisting of the flexible brake-beam S, centrally secured to the frame, having brake-shoes at the ends, the connecting-rods T, extending from near the ends of the brake-beam to a central actuating-lever, and an actuating-lever extending above the platform, substantially as described.

11. In a hand-car, the combination, with a platform comprising longitudinal side timbers and the brace-timbers N', extending parallel therewith, of a pivotal bolt between the two, the actuating-levers N, bifurcated to embrace said bolt, and a saddle O', substantially as described.

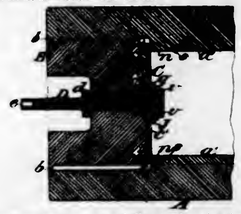
487,379. HAME-TUG. MARION W. RYLAND, Warsaw, Ind., assignor to Charles J. Keen, Toledo, Ohio. Filed Feb. 2, 1892. Serial No. 420,096. (No model.)

Claim.—1. In a hame-tug, the combination of a connecting-plate having a transverse elongated slot in the back end thereof and a tug loop or frame consisting of two cross-bars and two connecting end bars set diagonally, so as to bring the cross-bars in different vertical planes, one of said cross-bars being provided with a projecting stem having an elongated head and engaging loosely with said slotted plate, substantially as set forth.

2. In a hame-tug, the combination, with a connecting-plate provided with a transverse slot in the back end and a number of elongated apertures throughout its length, of a tug-loop loosely engaging with said transverse slot and a detachable trace-clip having a hook at one end with a strengthening-rib on the concave side thereof, said hook being adapted to be inserted in any of said apertures and prevented from becoming accidentally disengaged therefrom by stop-lugs, substantially as set forth.

487,380. GAS-CHECK FOR BREECH-LOADING ORDNANCE. SAMUEL SEABURY, U. S. Navy. Filed Aug. 3, 1892. Serial No. 442,054. (No model.)

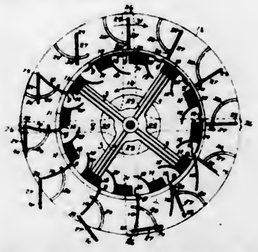
Claim.—1. The combination, substantially as herein described, of a breech-loading gun, a breech-block therefor having a portion of its face concave, and a gas-check disk, the marginal portion of which disk, adapted to overlap the bore of the gun, is received between the front face of the breech-block seat and the marginal portion of the face of the breech-block and the other portion of which disk nearer to its center is free to move backward within the concave of the breech-block face for the purpose of exerting a forward pressure on its marginal portion, as herein set forth.



2. The combination, substantially as herein described, with a breech-loading gun and a breech-block therefor having a portion of its face concave, of a disk C and a flanged collar J, fitted to a central opening in said disk, and a central bolt for attaching said disk and collar to the breech-block, the said disk being adapted to overlap the bore of the gun and to be received between the face of the breech-block and the front face of the breech-block seat and the collar and the central portion of said disk being free to move backward on said bolt, for the purpose herein set forth.

3. The combination, with the breech-block, of a gas-check disk, a central bolt for attaching said disk to the face of the breech-block, and a collar fitted to said bolt to bear against the front of the disk and constructed with a flexible lip *z* to prevent the escape of gas around said bolt, substantially as herein set forth.

487,381. WATER OR WIND WHEEL. JACOB SUTER, New York, N. Y. Filed Apr. 29, 1891. Serial No. 390,961. (No model.) Patented in Switzerland Feb. 20, 1891, No. 2,910.



Claim.—1. In a wind or water wheel, the combination of an inner wheel secured to a central shaft, an outer wheel concentrically disposed about the inner wheel, a series of straight blades pivotally secured to the outer wheel, segmental guides for the same, a plurality of series of segmental blades carried by the inner wheel, one of said series being pivoted, the other fixed, the pivoted blades being alternated between the fixed blades, substantially as described.

2. In a wind or water wheel, the combination of an inner wheel secured to a central shaft, an outer wheel concentrically disposed about the inner wheel and rotatably supported upon the said shaft, a series of straight blades secured to the outer wheel, a series of segmental guides for co-operation with the said blades, means for limiting the movement of said blades, a plurality of series of said blades carried by the inner wheel, one series being pivoted, the other fixed, the fixed series being alternated with the pivoted series, and means carried by the pivoted blades for limiting their movement, substantially as described.

3. In a wind or water wheel, the combination of wheels concentrically supported upon the same shaft, a series of pivoted blades carried by each wheel, pins on the blades of one series, and a series of grooves in the corresponding wheel for co-operation with the said pins, substantially as described.

4. In a wind or water wheel, the combination of a wheel, a series of blades pivoted thereon, and stops for said blades, one surface of each stop limiting the movement of its corresponding blade when the latter arrives at its radial position and another surface limiting its movement when it arrives at its tangential position, substantially as described.

5. In a wind or water wheel, the combination of an inner wheel, an outer wheel concentrically disposed about the inner wheel, a mutual shaft for both wheels, and a series of pivoted blades carried by each wheel, the width of the blades of one series being slightly less than the minimum distance between the pivotal axes of the two series, so that the free edges of said blades pass close to the pivotal axes of the other series, substantially as described.

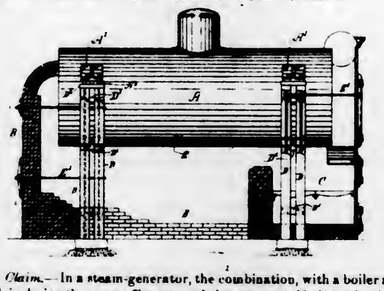
6. In a wind or water wheel, the combination of an inner wheel and an outer wheel concentrically disposed about the inner wheel, stops on the wheels, a series of blades pivoted at or near the edge of the outer wheel and disposed inwardly when limited by their stops, and a series of blades pivoted at or near the edge of the inner wheel and disposed outwardly when limited by their stops, substantially as described.

7. In a wind or water wheel, the combination of an inner wheel, an outer wheel concentrically disposed about the inner wheel, a mutual shaft for both wheels, a series of pivoted blades carried by each wheel, and stops arranged to limit the inward movements of both series when the blades so limited are at right angles to each other, substantially as described.

8. In a wind or water wheel, the combination of an inner wheel and an outer wheel concentrically disposed about the inner wheel, a series of pivoted blades carried by the outer wheel, a series of inwardly-radiating blades carried by the inner wheel, and a series of outwardly-radiating blades carried by said wheel, both of said series presenting a concave surface in the same direction, substantially as described.

9. In a wind or water wheel, the combination of an inner wheel, an outer wheel concentrically disposed about the inner wheel, and a series of pivoted blades carried by each wheel, the blades upon the outer wheel being inwardly disposed in their limited position and the blades upon the inner wheel being provided with rear extensions adapted to overlap the adjoining blade when in a tangential position, forming a continuous wall, substantially as described.

487,382. STEAM-GENERATOR. GEORGE VARMAR, Jr., New York, N. Y. Filed June 17, 1892. Serial No. 437,041. (No model.)



Claim.—In a steam-generator, the combination, with a boiler and walls inclosing the same, of beams or girders supported independently of the walls and each consisting of I-beams arranged in pairs and secured together, a cap having lugs to engage the top of each pair of beams or girders, lugs extending from the boiler near the front and rear ends and sustained on the tops of said beams or girders, and rollers intermediate of said lugs and the caps, substantially as specified

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487,383. SEWING-MACHINE. WILLIAM R. WEEATON, Springfield, Mass. Filed Nov. 4, 1889. Serial No. 329,247. (No model.)

Claim.—1. The combination of a sewing-machine suitably mounted on wheels, a track for said wheels to traverse, means to give the machine motion on said track, a ratchet-wheel and gear mounted on a shaft *j*, a rack *o*, arranged with its teeth engaging the teeth on said gear, and a stop pivotally mounted, one end of which engages the teeth on the ratchet-wheel, and thus prevents revolution of the same, and the other end of which engages a cam *l*, and a spring arranged to disengage the pawl from the ratchet-teeth when free to be moved therefrom, substantially as shown.

2. The combination of a sewing-machine mounted upon a table or base, wheels arranged to support said table or base, tracks for said wheels to traverse, a rack mounted below the base, a gear mounted upon the base and arranged to mesh with the teeth on the rack, a ratchet-wheel *e*, mounted upon the same shaft with gear N, a pawl *d*, arranged to engage the teeth on ratchet-wheel *e*, a ratchet-wheel *f*, mounted upon the same shaft with ratchet-wheel *e*, a stop-pawl *g*, arranged to engage the teeth on ratchet-wheel *f*, and means, substantially as shown, to operate said pawls, a driving-wheel C, a driven wheel B, and cams to *l*, all arranged and operating substantially as shown

3. The combination, with a sewing-machine, of a driving-gear C, suitably mounted and provided with a crank D, a driven gear B, mounted upon the needle-bar shaft and arranged with its teeth to

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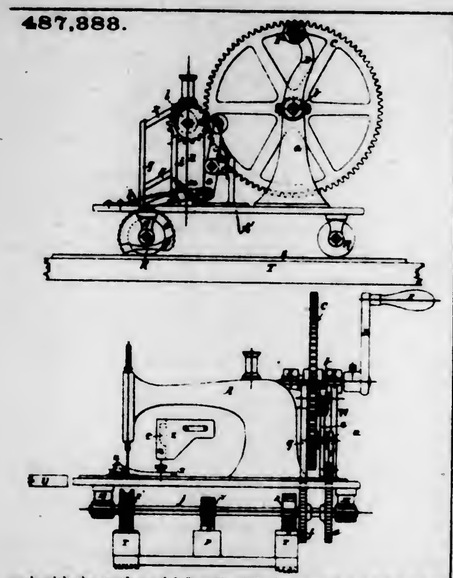
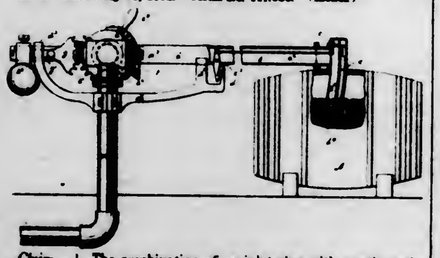


mesh with the teeth on driving-wheel C, the cams G I, fixed to mesh with the driven gear B, a lever *e*, pivotally mounted and arranged with one end bearing against the cam G and having at its opposite end a pawl *d*, the free end of which pawl engages the ratchet-wheel *c*, and a stop device consisting of an upright *i*, pivotally mounted at the base and having its upper portion arranged to bear against the cam I and having a pawl *g* mounted thereon, the free end of which pawl engages the ratchet-wheel *f*, the supporting-wheels, gear N, mounted upon the same shaft with ratchet-wheels *c* and *f*, and a rack the teeth of which engage the teeth on gear N, all in combination substantially as shown.

487,884. AUTOMATIC FAUCET. AARON A. BELLEAU, Brooklyn, N. Y. Filed July 23, 1892. Serial No. 441,080. (Model.)



Claim.—1. The combination of an inlet-pipe with a cock, a pivoted weighted outlet-pipe having a nozzle and a catch, a hook engaging the catch for holding the pivoted pipe in its lowermost position, and with a float within the nozzle connected to the catch, substantially as specified.

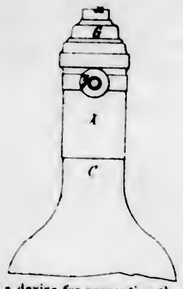
2. The combination of an inlet-pipe with a cock, a pivoted outlet-pipe having a nozzle and a catch, a float, a toothed segment *f* upon the cock-spindle, and a toothed segment *e*, having a shoulder e^2 and adapted to operate segment *f*, substantially as specified.

3. The combination of an inlet-pipe with a cock, a pivoted outlet-pipe having a nozzle and a catch, a float, a loosely-turning toothed segment *e*, having teeth e' e^2, and with a fixed segment *f* upon the cock-spindle, and a pivoted segment *g*, adapted to engage segment *e*, substantially as specified.

4. The combination of an inlet-pipe with a cock, a pivoted outlet-pipe having a nozzle and a catch, a float, intergeared segments *e f g*, and a stop e^2 and catch e^3, substantially as specified.

5. The combination of an inlet-pipe with a cock, an outlet-pipe, a double-toothed segment *e*, free to turn in one direction, a toothed segment *f*, fast on the cock-spindle and engaging segment *e*, and with a pivoted segment *g*, also engaging segment *e*, substantially as specified.

487,885. DEVICE FOR CLOSING BOTTLES OR SIMILAR VESSELS. JULES E. CLERC, Bordeaux, France. Filed July 23, 1892. Serial No. 441,471. (No model.)

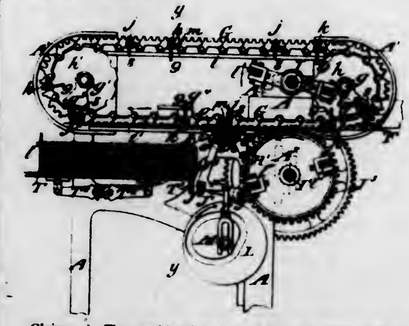


Claim.—1. In a device for preventing the fraudulent filling of a bottle or other vessel, the combination, with a tubular sheath having a conical valve-seat at its inner end and an apertured conical cage within said sheath and exterior to said valve-sheath, of a light ball or ball-valve *b* within said sheath and a heavier ball *m* within said sheath and exterior to the ball *b*, said balls occupying the double conical inclosure formed by the valve-seat and the cage, substantially as set forth.

2. In a device for preventing the fraudulent filling of a bottle or other vessel, the combination, with a tubular casing having a valve-seat at its inner open end, the open cap G at the outer end of said sheath, the apertured and flared cage fixed in said sheath and forming with the contracted inner end of the latter an inclosure for the balls, the lighter ball *b* within said inclosure, and the heavier ball *m*, also within said inclosure and exterior to the ball *b*, of the screen within the cap G to prevent the insertion of an instrument for displacing the ball *b*, substantially as set forth.

3. A device for preventing the fraudulent filling of a bottle or other vessel, having a double conical inclosure containing a light ball-valve *b*, controlling the filling-inlet, and a heavy ball *m*, arranged exterior to the ball *b*, whereby the ball *m* serves to hold the ball-valve to its seat when the bottle is erect and when it is horizontal or inclined, as set forth.

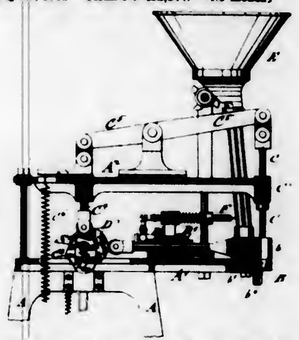
487,886. DELIVERY APPARATUS FOR PRINTING-MACHINES. CALVERT B. COTTRELL, Westerly, R. I. Filed Oct. 27, 1891. Serial No. 409,970. (No model.)



Claim.—1. The combination, in a printing-machine, of an endless carrier having grippers at its sides for taking hold of the sides of a web, a cutter for cutting the web into sheets in said carrier, a receptacle for the cut sheets, depositing-grippers and levers for carrying the same with their points in a forward direction, rotary cams for operating said levers to give the said depositing-grippers a backward-and-forward motion and an upward-and-downward motion, the said levers and cams being arranged in front of the cutters and behind said receptacle, stationary cams for opening the grippers of the carrier, and stationary cams for opening said depositing-grippers, substantially as herein described.

2. The mechanism for operating the depositing-grippers *o o'*, consisting of the combination of the swinging arms J^3, carrying said grippers, the rock-shaft J^3, carrying said arms J^2, the rock-shaft J, having fixed bearings and having arms J' for carrying the rock-shaft J^3, the rotary cams K L and their connections with said arms J' and rock-shaft J for operating the said arms J^2, and the stationary cams *s s'* for opening said grippers, all substantially as herein set forth.

487,387. BOTTLE-CORKING MACHINE. EDWARD ERNOLD, New York, N. Y. Filed Oct. 3, 1890. Renewed Sept. 22, 1891. Again renewed May 11, 1892. Serial No. 432,577. (No model.)



Claim.—1. The combination, with a fixed cork guiding and compressing tube formed of an upper portion having an open rear part and a conically-tapering lower portion, of a reciprocating squeezer adapted to enter the upper portion of the cork-guiding tube, a reciprocating plunger guided in line with said tube, and mechanism whereby the downward motion of the plunger is accomplished in two steps, the first step forcing the partly-compressed cork into the lower part of the cork-guiding tube, while the second step forces the cork through said lower part and imparts thereby the final compression to the cork, substantially as set forth.

2. The combination, with a fixed cork guiding and compressing tube formed of an upper portion having an open rear part and a conically-tapering lower portion, of a reciprocating squeezer adapted to enter the open rear part of the cork-guiding tube, a plunger guided in line with said tube, a rotary shaft having a plain cam and a cam provided with a projecting nose, and actuating mechanisms interposed, respectively, between the plain cam and the squeezer and the nosed cam and the plunger, whereby the primary compression of the cork is imparted by the squeezer and the final compression by the plunger and lower portion of the cork-guiding tube, substantially as described.

3. The combination, with a cork guiding and compressing tube having a lower conically-tapering portion, of a vertically-reciprocating plunger, a cam-shaft having a cam provided with a projecting nose, intermediate mechanism between said cam and plunger, a rotary driving-shaft, and transmitting gear wheels between the driving-shaft and cam-shaft, substantially as set forth.

487,388. MACHINE FOR PASTING VAMPS TO UPPERS. HERMAN FISCHER, Brooklyn, N. Y. Filed Nov. 21, 1891. Serial No. 412,645. (No model.)

Claim.—1. The combination, with a supporting-arm having an upwardly-inclined outer end, of a horizontally-adjustable stretcher-piece moving in said arm, a vertical heel-retaining jaw applied to said stretcher-piece, an instep retaining jaw applied to the top part of the supporting-arm, side jaws at opposite sides of the arm, and means for adjusting the latter to the vamp, substantially as set forth.

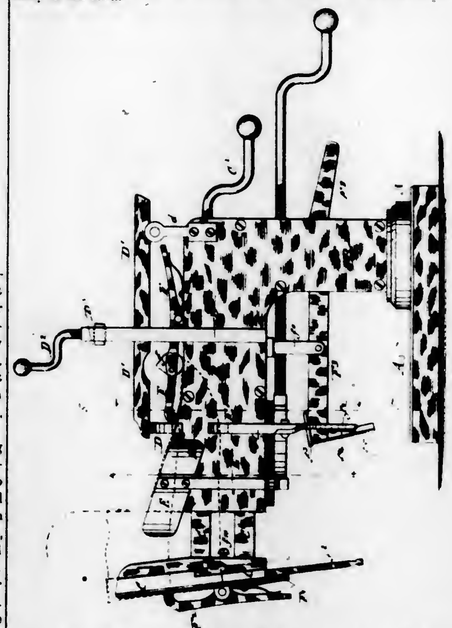
2. The combination, with a supporting-arm having an upwardly-inclined outer end, of a stretcher-piece guided in said arm, means for adjusting the stretcher-piece, retaining-jaws fulcrumed, respectively, to the top and sides of the supporting-arm and to the stretcher-piece, means for operating the side jaws, a top clamping-jaw and side clamping-jaws applied to the instep and sides of the upper, and means for actuating the side clamping jaws, substantially as set forth.

3. The combination, with the supporting-arms *a'* and stretcher-piece guided in said arm and having guide-grooves, of a guide-piece inserted in said groove, a spring-actuated retaining-jaw fulcrumed to said guide-piece, a slide-piece guided in the stretcher-piece, a clamping-screw for said slide-piece, and a locking device for attaching the guide-piece to the slide-piece, substantially as set forth.

4. The combination of a supporting-arm having an upwardly-inclined outer end, a horizontal lever connected to said arm, a yoke-shaped clamping-jaw attached to said lever for the instep of the upper, means for applying the clamping-jaw firmly to the upper, side-clamping jaws fulcrumed to the supporting-arm, means for actuating said jaws, a stretcher-piece guided in the supporting-arm, and a spring-actuated jaw fulcrumed to the stretcher-piece and applied to the upper after the same is in position, substantially as set forth.

5. The combination, with a supporting-arm having an upwardly-inclined outer end and a stretcher-piece guided in said arm, of a spring-actuated retaining-jaw fulcrumed to the top part of the arm and provided with a pivoted and pointed cam, substantially as set forth.

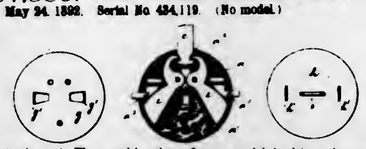
6. The combination of a supporting-arm having serrated side cheeks, fulcrumed jaws for the sides of the vamp, a centrally-recessed transverse stop-plate, and a fulcrumed operating-lever having a transverse plate for engaging the lower ends of the jaw-levers, substantially as set forth.



7. The combination, with a supporting-arm having an upwardly-inclined outer end, of clamping-jaws for the sides of the uppers, fulcrumed and spring-actuating levers for said jaws, transverse pivot-arms connected with the lower ends of the jaw-levers, transverse ways for guiding the pivot-arms, a tapering cam adapted to engage the projecting ends of the pivot-arms, and an actuating screw-rod for said arms, substantially as set forth.

8. The combination, with a supporting-arm having an upwardly-inclined outer end, of a stretcher-piece guided in said arms, retaining-jaws for the vamp, clamping-jaws for the upper, and a wedge-key inserted between the end of the arm and the stretcher-piece, substantially as set forth.

487,389. BUTTON. CHARLES S. FRASER, Brooklyn, N. Y. Filed May 24, 1892. Serial No. 434,119. (No model.)



Claim.—1. The combination of case *a*, with locking-plates *e*, push-pins *d*, spring *f*, back-plate *g*, having projections *g'*, a fastening-plate *h*, having a pin, and a flexible cover that incloses the case and push-pins, substantially as specified.

2. The combination of case *a*, with locking-plates *e*, spring *f*, push-pins *d*, and with back-plate *g*, having projections *g'*, fastening-plate *h*, having slots *h'*, and a pin secured to the fastening-plate, substantially as specified.

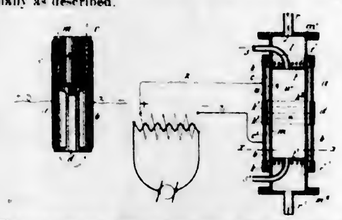
487,390. OZONE-TUBE. OSCAR FRÖLICH, Berlin, Germany, assignor to Siemens & Halske, same place. Filed Nov. 14, 1891. Serial No. 411,948. (No model.) Patented in Germany Mar. 26, 1891, No. 59,866; in France May 26, 1891, No. 213,696; in Belgium May 26, 1891, No. 96,001, and in Italy May 26, 1891, No. 29,731/266.

Claim.—1. In ozone apparatus, the combination, with a dielectric layer or plate, of independent electrodes located at one side of the same and a metallic body facing both electrodes, located at the oppo-

site side of and at some distance from the dielectric plate, substantially as described.

2. In ozone apparatus, the combination, with a dielectric layer or plate, of independent electrodes located at one side of the same and insulated from each other by a guard or shield and a metallic body facing both electrodes, located at the opposite side of and at some distance from the said layer or plate, substantially as described.

3. In ozone apparatus, the combination, with a cylindrical metallic body, of a removable sleeve applied thereto to form an ozonising-space and carrying the conducting-surfaces insulated from each other, together with a dielectric layer located in said ozonizing-space, substantially as described.



4. The combination, in ozone apparatus, of a dielectric layer, independent electrodes at one side of the same, and a metallic body facing both electrodes at the other side thereof, the elements being disposed to present an ozonizing-chamber, and a cooling-compartment located adjacent to said chamber, substantially as described.

5. The combination, in ozone apparatus, of a cylindrical metallic body, an adjacently-arranged sleeve, and interposed layer of dielectric material, said sleeve being composed of separable parts insulated from each other and each including an independent electrode, substantially as set forth.

6. The combination, in ozone apparatus, of a cylindrical body *m*, having perforations *f f'*, an adjacently-arranged sleeve carrying independent electrodes and forming in part the oxonizing-chamber, with the respective end portions of which the said openings communicate for the circulation of air therethrough, and a layer of dielectric material interposed between the cylindrical body *m* and sleeve, substantially as set forth.

7. The combination, in ozone apparatus, of ring-sections of insulating material and having opposite recesses, independent electrodes and dielectric layers seated in said recesses, the electrode and layer of one section being insulated from those of the other section, and the cylindrical body *m*, arranged at the side of the layers opposite to that occupied by the electrodes, substantially as described.

8. The combination, in ozone apparatus, of the headed cylinder *m*, provided with supply and exhaust pipes, respectively, and perforations *f f'*, inner disks *t t'* within the cylinder and inside of the location of the said perforations, said disk having pipes *s* and *s'*, as described, and a sleeve forming an ozonising-space, with the respective ends of which said openings *f f'* communicate for the circulation of air therethrough, said sleeve comprising rings carrying independent electrodes, together with layers of dielectric material interposed between said electrodes and said cylinder, each electrode and its dielectric material being insulated from the other electrode and its dielectric layer, substantially as set forth.

9. In ozone apparatus, the combination, with the dielectric layer or plate, of independent electrodes located at one side of the same and a conducting-body facing both electrodes, located at the opposite side of and at some distance from said layer or plate and having a surface of poorly-oxidizable metal, substantially as described.

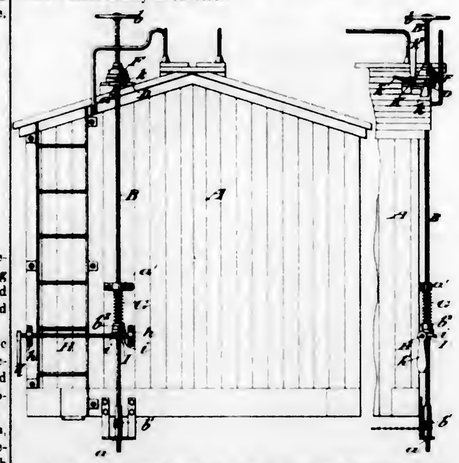
10. The combination, in ozone apparatus, of a dielectric layer or plate having a surface provided with an ozone-resisting preparation, independent electrodes located at one side of said layer or plate, and a metallic body facing both electrodes, located at the opposite side of and at some distance from the dielectric plate, substantially as described.

11. The combination, in ozone apparatus, of a dielectric layer or plate consisting of a vegetable material having a surface of insulating and ozone-resisting material, independent electrodes located at one side of said layer, and a metallic body facing both electrodes, located at the opposite side of and at some distance from the dielectric plate, substantially as described.

487,391. CAR-BRAKE. William H. Harris, Nyack, assignor of one-half to Frances J. Hasbrouck, New York, N. Y. Filed Mar. 15, 1892. Serial No. 425,094. (No model.)

Claim.—1. The combination, with the rotary and vertically-yielding brake-operating spindle and means for holding it in its rotary adjustment against the pressure exerted thereon by the brake, of a spindle-operating device located at the top of the car and a releasing device located within reach of the ground, substantially as set forth.

2. The combination, with the rotary and vertically-yielding brake-operating spindle and the clutch-sections secured one to the spindle and the other to the car at the top of the car for locking the spindle in rotary adjustment, of a rock-shaft secured to the car and provided with an operating-handle within reach of a person on the ground, the said rock-shaft being further provided with a spindle-operating arm in position to engage and lift the spindle when the shaft is rocked, substantially as set forth

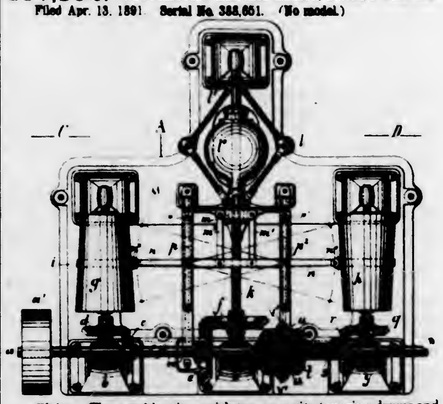


3. The combination, with the rotary and vertically-yielding spindle and clutch-sections, one fixed to the spindle and the other to the car, for locking the spindle in rotary adjustment, of a spindle-releasing device located at the top of the car and a second spindle-releasing device located at a point within reach of the ground, substantially as set forth.

4. The combination, with the rotary and vertically-yielding spindle, of a clutch-section fixed to the car, and a second clutch-section fixed to the spindle, and a lip extending downwardly from around the upper clutch-section in position to embrace the lower clutch-section, and means for lifting the spindle for releasing the clutch-sections, substantially as set forth.

5. The combination, with the rotary and vertically-yielding spindle and the clutch-sections, one fixed to the spindle and the other to the car, of a spindle-releasing lever provided with a curved arm for lifting the spindle and with a treadle and a hand-arm for operating it by foot or hand, substantially as set forth.

487,392. REGULATOR. Heinrich Keller, Zurich, Switzerland. Filed Apr. 13, 1891. Serial No. 388,651. (No model.)



Claim.—The combination, with two opposite tapering drums and endless belt passing around the same, of a governor, pivoted levers having forks for guiding the endless belt, means for operating said levers from the governor, a driving-shaft for rotating one of the drums, a driver-shaft in line with said driving-shaft, a sleeve surrounding the driven shaft, means for rotating said sleeve from the other drum, bevel cog-wheels on the driving-shaft and on the driven shaft, a sleeve surrounding the driven shaft, means for rotating said sleeve from the other drum, bevel cog-wheels on the driven shaft, a head keyed on the driven shaft and having opposite pivots, and bevel cog-wheels mounted on said head and engaging the bevel cog-wheels on the driving and driven shafts, substantially as set forth.

487,393. FLEXIBLE LADDER. Adolf Kirchhoff, Long Island City, N. Y. Filed Feb. 5, 1892. Serial No. 420,886. (No model.)

Claim.—1. A flexible ladder provided with rungs or steps, consisting of two parallel strips occupying a horizontal plane, in combination with cross-heads applied to the ends of said strips and arranged at right angles to the rope or uprights, said cross-heads extending in both directions beyond the strips, in the manner and for the purpose described.

2. A flexible ladder provided with rungs or steps, consisting of two parallel strips occupying a horizontal plane, in combination with cross-heads applied to the ends of said strips and arranged at right angles to the rope or uprights, said cross-heads extending in both directions beyond the strips, the line of the rope being in a plane between the parallel strips, substantially as described.

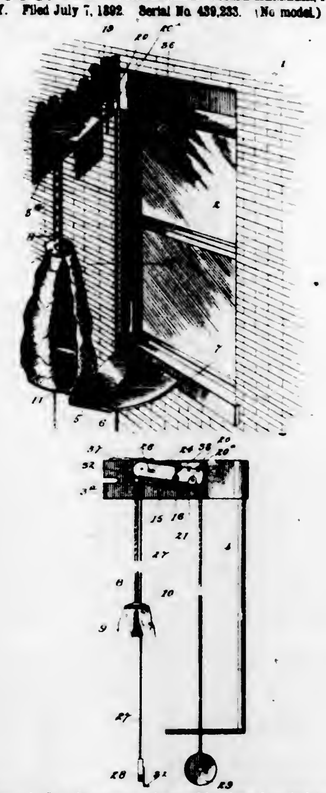
487,394. APPARATUS FOR DISPLAYING SIGNS. David L. MacDonald, Fairview, N. J. Filed July 22, 1892. Serial No. 440,959. (No model.)

Claim.—1. In combination with an axletree and wheel of a vehicle, a detachable plate or disk adapted to be secured to the end of said axletree in a fixed position, and upon which plate or disk signs or advertisements are to be displayed, substantially as herein set forth and shown.

2. In combination with an axletree and wheel of a vehicle, a detachable plate or disk of fibrous material adapted to be secured to the end of said axletree in a fixed position, and upon which plate or disk signs or advertisements are to be displayed, said plate or disk being provided with a metal rim, substantially as and for the purpose set forth.

3. In combination with an axletree and wheel of a vehicle, a detachable plate or disk adapted to be secured to the end of said axletree in a fixed position, and upon which plate or disk signs or advertisements are to be displayed, said plate or disk being punched or formed so as to extend over the hub of a wheel, substantially as and for the purpose herein set forth.

487,395. SAFETY FIRE-ESCAPE. Joseph Mannheim, New York, N. Y. Filed July 7, 1892. Serial No. 439,233. (No model.)



Claim.—1. In a fire-escape, the combination of a window-casing, a hinged panel in the upper portion thereof, means for swinging said hinged panel outward, and a lowering apparatus depending from said hinged panel when swung outward and concealed behind said panel when the latter is swung back into its place, together with a folding platform located in the window-sill and operated in unison with the swinging panel, substantially as described.

2. In a fire-escape, the combination of a window-casing which has a recess formed in its upper part, a hinged panel which closes said recess, a rope attached to said panel and concealed in said recess, means by which an operator within the room may swing said panel, and a lug which sweeps the rope out of the recess and causes it to fall when the panel is swung out, together with a fireproof-bag attached to one end of said rope, a winding-reel attached to the other, and a friction apparatus by means of which the bag will not descend except when loaded with the weight of an adult, but may be easily drawn up again by pulling on the other end of the rope, substantially as described.

3. In a fire-escape, the combination of a window-casing which has a recess formed in its upper part, a hinged panel which closes said recess, a rope attached to said panel and concealed in said recess, means by which an operator within the room may swing said panel, and a lug which sweeps the rope out of the recess and causes it to fall when the panel is swung out, together with a fireproof-bag attached to one end of said rope, a winding-reel attached to the other, and a friction apparatus by means of which the bag will not descend except when loaded with the weight of an adult, but may be easily drawn up again by pulling on the other end of the rope, and the check-rope by which the person in the bag can control the said friction apparatus, substantially as described.

4. In a friction lowering apparatus, the combination of the rope,

the pivoted arm having pulleys at either end, over which the rope runs, and the stationary pulleys up against which the pulley on the inner end of the pivoted arm presses the rope, substantially as described.

5. In a friction lowering apparatus, the combination of the rope, the pivoted arm having pulleys at either end, over which the rope runs, and the stationary pulleys up against which the pulley on the inner end of the pivoted arm presses the rope, together with the pivoted brake-lever by which the outer end of the pivoted arm may be depressed, substantially as described.

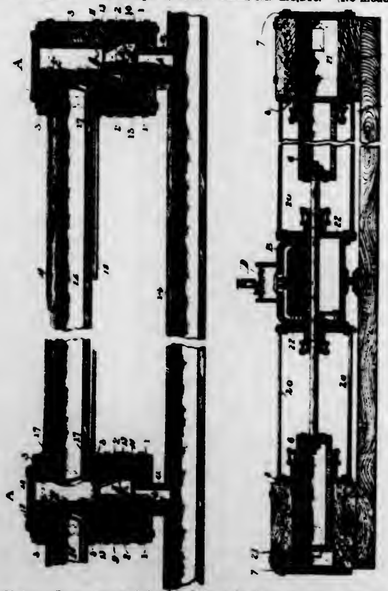
487,396. COMBINED INKSTAND AND PENHOLDER. HUGO SIEGERT, Brunau, Germany. Filed Mar. 28, 1892. Serial No. 426,745. (No model.)

Claim.—1. The combination of an inkstand with a flexible tube connected therewith and a penholder connected to the flexible tube, substantially as specified.

2. The combination of an inkstand with a flexible tube connected therewith, a penholder connected to the flexible tube, and a flexible bulb *d*, connected to the inkstand, substantially as specified.

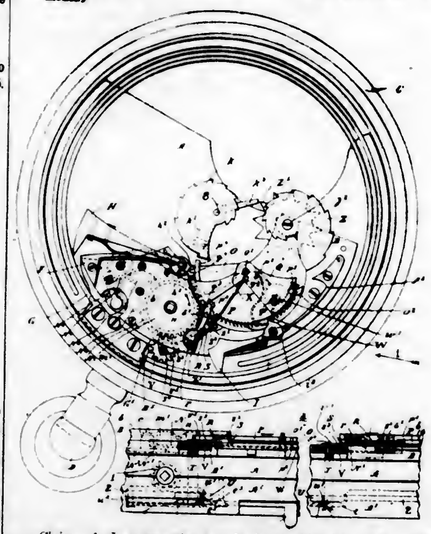
3. The combination of inkstand A with perforated stopper *a'*, a pair of tubes a^3 *d'*, of unequal length, projecting through the stopper into the stand, a flexible tube *b*, connected to the tube a^3, a flexible bulb *d*, connected to tube *d'*, and a penholder connected to the tube *b*, substantially as specified.

487,397. PUMP. JULIUS F. STONE, Columbus, and FRED MILLER, Corning, Ohio. Filed Apr. 7, 1892. Serial No. 428,216. (No model.)



Claim.—In a pump of the kind described, a valve-chamber composed of superposed bored wooden sections 1 2 3, the section 3 having the removable tube E in its bore, a metallic valve-seat 10, resting upon the section 1 and held in position by the section 2, and a metallic valve-seat resting upon the section 2 and held in position by the removable tube E in the bore of the section 3, substantially as shown.

487,398. TIMEPIECE REPEATING MECHANISM. FRED TERSTEGEN, Elizabeth, N. J. Filed Apr. 5, 1890. Serial No. 346,780. (No model.)



Claim.—1. In a repeating-watch, the combination, with a winding-stem connected by suitable gearing with a motor or spring, of a repeating mechanism for actuating and setting the same and mechanism consisting of a releasing device suitably connected with the repeating mechanism and with the stem-arbor and operated by the same after the motor or spring has been actuated sufficiently to returo the striking mechanism back to its initial position, substantially as specified.

2. The combination of a winding-stem that actuates the motor-spring and starts the repeating mechanism through suitable mechanism, a motor-spring, and a releasing device that is caused to release a repeating mechanism by a winding-stem, the construction being such that after the motor-spring is actuated sufficiently the releasing device is operated, substantially as specified.

3. The combination, with a time-movement, of a repeating mechanism, suitable gearing for retracting a motor or spring by a winding-stem, and mechanism consisting of a suitable releasing device connected suitably with the gearing and the repeating mechanism for releasing the same and operated by the stem-arbor after the said motor or spring has been retracted sufficiently by the said stem-arbor for striking in full the hour and its divisions, substantially as specified.

4. In a watch-movement, the combination of a repeating mechanism, a winding-stem connected by suitable gearing with a motor or spring for winding the same, and a releasing device suitably connected with the repeating mechanism and with the stem-arbor and operated thereby, the said stem-arbor performing each operation separately—viz., the winding of the motor or spring of the repeating mechanism being effected first by the said stem-arbor and sufficiently to move the striking mechanism back to its initial position and after the necessary winding of the motor the stem-arbor operates the device for releasing the striking mechanism, substantially as specified.

5. In a watch-movement having a repeating mechanism and having its motor-spring operated by suitable gearing connected with a winding-pinion, the combination, with the repeating mechanism, of a suitable device for releasing the repeating mechanism when the motor-spring is wound up and a winding-pinion, the said parts being operated in the following manner: the winding or setting of the motor or spring of the repeating mechanism is done first by the winding-pinion as much as is required for the full operation of striking the hour and its divisions and after the necessary winding of the motor or spring the releasing device is operated by the pinion, substantially as specified.

6. In a repeating-watch, the combination, with a stem-driven train, of suitable gearing connected with the stem-driven train and with a motor or spring of a repeating mechanism, the said gearing

for the motor or spring being operated by the said stem-driven train for actuating or setting the spring as is required for the full operation of the striking mechanism, and mechanism consisting of a suitable releasing device for releasing a rack of the repeating mechanism when its motor or spring has been operated by the said stem-driven train, the said releasing device being suitably connected with the repeating mechanism and the stem-driven train and operated thereby, substantially as specified.

7. A repeating-watch having a winding-stem and a suitable releasing device for releasing a rack of a repeating mechanism, the said releasing device being suitably connected with a rack of the repeating mechanism and with the stem by which the said releasing device is operated by winding the said stem, substantially as specified.

8. A repeating-watch having a winding-pinion and a suitable releasing device for releasing a rack of a repeating mechanism, the said releasing device being suitably connected with a rack of the repeating mechanism and with the winding-pinion and operated by the said pinion, substantially as specified.

9. In a repeating mechanism, the combination of a winding-stem connected by suitable gearing with a motor or spring of a repeating mechanism for actuating or setting the same and a suitable releasing device by which the repeating mechanism is released, operated by winding the stem, substantially as specified.

10. In a repeating mechanism, the combination of a winding-pinion connected by suitable gearing with a motor or spring of a repeating mechanism for winding or setting the same and a suitable releasing device by which the repeating mechanism is released, operated by the said pinion, substantially as specified.

11. A repeating-watch having a motor or spring connected by suitable gearing with a winding-pinion connected with a winding-stem and a suitable device for releasing a repeating mechanism, the said device being suitably connected with the repeating mechanism and with the winding-stem, so that the said releasing device is operated by turning the said stem, as and for the purpose specified.

12. A repeating-watch having a suitable releasing device for the repeating mechanism, a winding-pinion connected by suitable gearing with a motor or spring of the repeating mechanism for winding or setting the same, and mechanism consisting of a suitable projection or guide device and operated by the winding-pinion for disengaging the releasing device from a rack in the operation of starting the repeating mechanism, as and for the purpose specified.

13. The combination, with a watch, of a repeating mechanism and a winding-pinion of the watch, means for operating the winding and setting gearing of the watch from the said pinion, and means for releasing the repeating mechanism by a suitable device and operated by the said pinion, substantially as specified.

14. In a repeating-watch, the combination, with the stem, winding-pinion connected by suitable gearing with a motor or spring of the repeating mechanism for winding and setting the same, and a suitable device for releasing the repeating mechanism, of suitable gearing connected with the winding mechanism, adapted to operate the releasing device to start the repeating mechanism, substantially as specified.

15. In a repeating-watch, the combination, with the stem-winding train of the watch mechanism, connected by suitable gearing with a motor or spring of a repeating mechanism for winding and setting the same, and a suitable device for releasing the repeating mechanism, of suitable gearing connected with the winding mechanism, adapted to operate the device to start the repeating mechanism, substantially as specified.

16. The combination, with a repeating mechanism of a motor or spring connected with a suitable winding mechanism for winding and setting the same and a suitable releasing device for releasing the repeating mechanism, of a setting device and a suitable projection or guide device operated by the winding mechanism, adapted to operate the setting device and a releasing device at such proper intervals that first the motor or spring is wound sufficiently by the winding mechanism, substantially as specified.

17. In a repeating mechanism, in combination with a device for releasing a rack, a wheel O, having a projection O^2 or other suitable guide device for operating the releasing device of a repeating mechanism, substantially as specified.

18. In a repeating mechanism, in combination with a setting-lever, the wheel O, having a projection O^2 or other suitable guide device for engaging and operating the setting device of a repeating mechanism, substantially as specified.

19. In a repeating mechanism, in combination with a setting-lever and a device for releasing a rack, a wheel O, having a projection O^2 or other suitable guide device for operating a setting-lever and releasing device of a repeating mechanism, substantially as specified.

20. In a repeating mechanism, in combination with a setting-lever and the winding-gear of a motor, a wheel O, having a projection O^2 or other suitable guide device for operating a setting-lever for disconnecting the winding-gear of the motor from the stem-driven train of a watch, substantially as specified.

21. In combination with a suitable winding mechanism for winding-wheel N' of wheel O, provided with a projection O^2 or other suitable guide device and a suitable releasing device for stopping the winding mechanism, substantially as specified.

22. In a repeating mechanism, a striking-rack having its snail-piece projecting approximately in line with the circle of the rack-teeth, in combination with a snail and a hammer-tooth receiving its motion from the rack, substantially as specified.

23. In a repeating-watch, the combination, with a striking-rack P, having its snail-piece p^4 projecting approximately in line with the circle of the rack-teeth, of a snail Z and a hammer-tooth receiving its motion from the rack for operating a hammer, substantially as specified.

24. In a repeating-watch, the combination, with a rack Q, having its snail-piece q^4 projecting approximately in the circle of the rack-teeth, of a snail and a hammer-tooth receiving its motion from the rack for operating a hammer, substantially as specified.

25. In a repeating mechanism, the combination of an hour-snail, a hammer, and a hammer-tooth, an hour-striking rack, and a rack-spring, with a releasing device adapted to set free the hour-rack, which by its rack-spring is set against the hour-snail, and a hammer-tooth to operate a hammer for striking the hour, substantially as specified.

26. In a repeating mechanism, the combination of an hour-snail, a hammer, and a hammer-tooth, an hour-striking rack, and a rack-spring, with a releasing device operated by a winding-pinion and adapted to release an hour-striking rack connected with its rack-spring and set thereby in contact with an hour-snail and with a hammer-tooth to operate a hammer for striking the hour, substantially as specified.

27. In a repeating mechanism, the combination of a snail and a striking-rack for the divisions of the hour and its rack-spring, an hour snail, an hour-striking rack and its rack-spring, a releasing device adapted to release an hour-striking rack, a rack-spring that sets the said rack in contact with an hour-snail, a striking-rack for the divisions of the hour, and a rack-spring which sets the said rack in contact with a snail for the divisions of the hour, substantially as specified.

28. In a repeating-watch, a striking-rack P, having its snail-piece p^4 projecting approximately in the circle of the rack-teeth and provided with an incut p^3 and a pin p^2 near its center, and a rack-spring for setting the rack in contact with the snail, substantially as specified.

29. In a repeating-watch, in combination with a releasing device, a striking-rack P, provided with an incut p^3 to form a seat for a releasing device for holding the rack, substantially as specified.

30. In a repeating-watch, a striking-rack P with its snail-piece p^4 in one piece or directly attached to it and projecting approximately in the circle of the rack-teeth and having near its center a pin or shoulder p^3, in combination with a spring W, acting on said pin for pressing the rack P and its snail-piece p^4 against the hour-snail Z, substantially as specified.

31. In a repeating-watch, the combination of a striking-rack P, having the snail-piece p^4 projecting nearly in the circle of the rack-teeth, with a striking-rack Q, having the snail-piece q^4 projecting approximately in the circle of the rack-teeth and which is pivoted on the same center as rack P and by which the said rack Q is moved by means of a pin or catch q', substantially as specified.

32. In a repeating-watch, the combination of a wheel O, suitably connected with a motor or spring for moving the racks, with the striking-rack P, having its snail-piece p^4 projecting nearly in the circle or line of the rack-teeth, and the striking-rack Q, having its snail-piece q^4 projecting nearly in the circle or line of the rack-teeth, the said striking-racks P and Q being pivoted on the same center of wheel O, whereby the striking-rack P is first moved by the pin or catch p' and then the striking-rack Q by the pin or catch q', substantially as specified.

33. In a repeating-watch, the combination of the wheel O, formed as a segment, with an hour-striking rack, having a pin p' in position to come in contact with the edge on the end of the segment-wheel O, whereby the wheel O moves the said rack backward, substantially as specified.

34. In a repeating mechanism, the combination of a suitable winding mechanism with the wheel N' on the arbor N for operating a motor-spring and a wheel for driving the rack, substantially as specified.

35. In a repeating mechanism, the combination of a suitable winding mechanism for winding the motor or spring with the wheel N', engaging the moderating-gear and wheel O, the said wheels N' and O being moved forward by winding the motor or spring and back by the said spring, substantially as specified.

36. In a repeating-watch, the combination of the stem-driven

train of a watch with a wheel O, suitable gearing connecting the said stem-driven train with said wheel, and a snail-piece of a repeating mechanism, the said snail-piece being brought in contact with the snail by winding the stem-driven train of the watch, substantially as specified.

37. In a repeating-watch, the combination, with the stem-winding train of the watch, of a motor or spring of a repeating mechanism connected by suitable gearing with the stem-winding train for winding and setting the same, the said gearing being adapted to be set in and out of connection with the motor or spring, and mechanism consisting of a projection or suitable guide device connected with a gear-wheel and operated by the said winding-train for operating a setting-lever and a releasing device, the said releasing device being operated to release the repeating mechanism and the setting-lever to disconnect the winding-gearing of the motor or spring from the stem-winding train and in the operation of starting the repeating mechanism, substantially as specified.

38. In a repeating-watch, the combination, with the stem-driven train of the watch, of a motor or spring of a repeating mechanism connected by suitable gearing with the stem-driven train for winding and setting the same and which moves a projection or suitable guide device connected with the gearing in contact with a setting device adapted to disconnect the winding-gearing of the motor or spring from the stem-driven train, substantially as specified.

39. In a repeating-watch, the combination, with the stem-driven train of a watch, of a motor or spring of a repeating mechanism connected by suitable gearing with the stem-driven train for winding and setting the same and of a suitable device connected with the gearing and operated when the said motor or spring is being wound, by which the said stem-driven train is disconnected from the gearing of the motor or spring of the repeating mechanism, substantially as specified.

40. In a watch, the combination, with a repeating mechanism having its motor or spring connected by suitable gearing with the stem-driven train of the watch for winding and setting the motor or spring, of a releasing device by which the repeating mechanism is released and a setting device operated by the gearing mechanism and by which the stem-driven train is automatically disconnected from the motor or spring of the repeating mechanism, substantially as specified.

41. In a watch, the combination, with a repeating mechanism, of a winding-pinion and suitable gearing connected therewith for winding a motor or spring of the repeating mechanism, a setting-lever or similar device operated by the winding mechanism, and means adapted to disconnect the winding-gearing of the motor or spring from the winding-pinion, substantially as specified.

42. In a watch, the combination, with a repeating mechanism, of a stem-driven train of a watch and suitable gearing connected therewith and with a motor or spring of the repeating mechanism for winding and setting the same, the said gearing adapted to be automatically disconnected from the stem-driven train by suitable mechanism when the motor or spring has been wound by the said stem-driven train, substantially as specified.

43. In a watch, the combination, with a repeating mechanism, of the stem-driven train of a watch and suitable gearing connected therewith and with a motor or spring of the repeating mechanism for winding and setting the same and set thereby one or more racks and one or more snail-pieces in contact with one or more snails, whereby the further operation of the stem-driven train is stopped, and a suitable device operated by the winding mechanism by which the said gearing of the motor or spring of the repeating mechanism is disconnected from the stem-driven train of the watch, substantially as specified.

44. In a watch, the combination, with a stem-driven train, a motor-spring of a repeating mechanism, and suitable gearing for winding or setting the same, of a wheel V, forming part of the winding mechanism, arranged to be directly connected and disconnected from the gearing of the motor-spring of the repeating mechanism by a suitable device operated by the repeating mechanism, substantially as specified.

45. In a repeating-watch, the combination, with a repeating mechanism and a stem-driven train of a watch for winding the motor or spring of the repeating mechanism, of a suitable device connected with the repeating mechanism and operated thereby by which the said stem-driven train is connected with the motor or spring of the repeating mechanism, substantially as specified.

46. In a watch, the combination, with a repeating mechanism, of the stem-driven train of a watch and suitable gearing connected therewith and with a motor or spring of the repeating mechanism for winding and setting the same and set thereby a suitable projection or guide device connected with the gearing in contact with a setting-lever, adapted to disconnect the winding-gearing of the motor or spring from the stem-driven train and operating a releasing device to release the repeating mechanism to a striking position, which by its motor or spring is moved back again to its initial position, whereby the said winding-gearing of the motor or spring of the repeating mechanism is brought in position to be automatically connected again with the stem-driven train of the watch, substantially as specified.

47. In a repeating-watch having the repeating mechanism driven by a motor or spring and so arranged that the said spring is set or wound and operated by suitable gearing connected with the stem-driven train of the watch, the combination of a stem-driven train and suitable gearing adapted to be connected or disconnected from the same and a suitable device operated by the repeating mechanism by which the said stem-driven train is connected with the gearing of the motor or spring of the repeating mechanism when the same has finished striking the time, substantially as specified.

48. The combination, with a repeating mechanism, of a setting-lever adapted to connect a winding-gearing of a motor-spring with the stem-driven train of a watch, the said lever being moved by the repeating mechanism to its initial or connecting position, substantially as specified.

49. The combination, with a repeating mechanism, of a setting-lever adapted to connect a winding-gearing of a repeater-motor with the stem-driven train of a watch and a striking-rack for moving the said lever to its initial or connecting position when the striking is completed, substantially as specified.

50. In a repeating-watch, the combination, with a releasing device and a setting-lever, of a rack Q, adapted to move the said releasing device and setting-lever to connect automatically a winding-gearing of the motor or spring with the stem-driven train, substantially as specified.

51. In a repeating-watch, the combination, with a releasing device and setting-lever, of a rack Q, provided with an arm or projection q^3 for moving the said releasing device and setting-lever to connect automatically the winding-gearing of the motor or spring with the stem-driven train, substantially as specified.

52. In a repeating mechanism, the combination of a setting-lever with a rack for moving the said setting-lever to its normal position, substantially as described, and for the purposes set forth.

53. In a repeating mechanism, the combination of a releasing device and setting-lever, with a rack for moving the said releasing device and setting-lever to its normal position, substantially as specified.

54. In a repeating mechanism driven by a motor or spring and released by a suitable device, the combination of a setting-lever with the releasing device operated by a rack to move the setting-lever back, substantially as described, and for the purpose set forth.

55. A repeating-watch, having a repeater-setting lever S, operated by the repeating mechanism to connect and disconnect a winding-gearing for the motor or spring of the repeating mechanism from the stem-driven train of a watch, in combination with a stem-driven train, substantially as specified.

56. A repeating-watch having a setting-lever S, provided with the finger or part s' and the spring part s^2, substantially as specified.

57. In a repeating-watch having a setting-lever S, provided with the finger or part s' and the spring part s^2, provided with an edge, incut, or hole s^3, substantially as specified.

58. In a stem-winding watch, the combination, with a winding-pinion and crown-wheel, of a wheel U for transmitting motion to a winding-gearing for actuating a motor or spring of a repeating mechanism, suitable means for coupling the said wheel with and uncoupling it from the gearing that actuates the motor of the repeating mechanism, and a device for retaining the wheel in engagement with the coupling devices, substantially as specified.

59. In a watch, the combination, with the winding-pinion 1 and crown-wheel 2, of a wheel U for transmitting motion to a winding-gearing for actuating a motor or spring of a repeating mechanism, the said wheel U being provided with a coupling or clutch device u', and an arbor T, connected with a coupling or clutch device t' and spring t^2 to keep one of the coupling devices engaged with the other coupling device, substantially as specified.

60. In a watch, the combination, with a winding-pinion and crown-wheel, of a wheel U for transmitting motion to a winding-gearing for actuating a motor or spring of a repeating mechanism and suitable means for uncoupling the said wheel from the gearing that actuates the motor of the repeating mechanism when the stem-driven train is in its hand-setting position, substantially as specified.

61. In a watch, the combination, with a winding-pinion, a crown-wheel, and suitable gearing for setting the dial-wheels of the watch, of a wheel U for transmitting motion to a winding-gearing for actuating a motor or spring of a repeating mechanism, the said wheel U suitably connected with the crown-wheel and provided with a coupling or clutch device and connected with gearing provided with a coupling or clutch device, and suitable mechanism operated by a yoke-lever E, whereby the stem-driven train is adjusted to its hand-setting position and whereby the said wheel is uncoupled from the gearing that actuates the motor or spring of the repeating mechanism when the stem-driven train is in its hand-setting position, substantially as specified.

62. In a watch having a stem-driven train, the combination of a yoke Y, having a suitable projection y^2 for disengaging the winding-gearing with the motor-spring of a repeating mechanism and with the said stem-driven train of the watch, substantially as specified.

63. A repeating attachment for watches, made separate from the watch-movement, provided with a special motor-spring and with suitable gearing for winding the same, and adapted to be connected suitably with a watch and with its stem-driven train by suitable gearing for winding the special motor-spring of the repeating mechanism, substantially as specified.

64. In a repeating attachment for watches, the combination of the bridge b, a motor-spring placed on the said bridge, a winding-wheel N', the moderating-gear, and wheel O, substantially as specified.

65. The combination of a repeater-plate B and bridge b, provided with a seat for the motor-spring of the repeating mechanism, the said seat for the motor-spring arranged on the under side of the bridge b, substantially as specified.

66. The combination of a motor-wheel, a motor-spring, and the arbor N therefor, in a repeater mechanism, with the winding-pinion D' of a watch in direct connection with the said motor-wheel, substantially as specified.

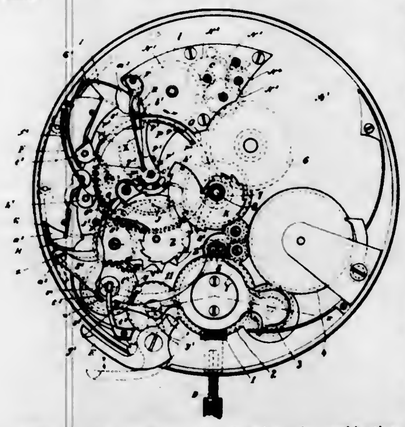
67. The combination, in a repeating attachment for watches, of a motor-spring connected with a suitable winding mechanism for winding and setting the same and a suitable device for releasing the repeating mechanism and a projection or suitable guide device connected with the repeating mechanism, adapted to operate the releasing device, the said projection or guide device being always set to the same point or position in which it comes in contact with the releasing device, which is then actuated thereby, substantially as specified.

68. The combination, with the repeater-plate B of the bridge b and a mainspring placed in the bridge b, of a wheel N', provided with a depression or seat for the mainspring and connected by its winding-arbor with the mainspring, substantially as specified.

69. The combination of the repeater-plate B, bridge b, and a mainspring placed in the said bridge b, with a wheel N' on a winding-arbor N, the said wheel N' being placed in the repeater-plate B and its winding-arbor placed in the bridge b and connected with the mainspring in the said bridge, substantially as specified.

70. The combination, with a longitudinally-movable stem for actuating a winding and setting mechanism of a watch, of striking mechanism and mechanism consisting of suitable gearing for transmitting the motion of the stem-driven train to the striking mechanism, said transmitting-gearing being connectible and disconnectible from the said stem by moving the stem longitudinally, substantially as described.

487,399. TIMEPIECE REPEATING MECHANISM. FRED TRENTEHAM, Elizabeth, N. J. Filed Apr. 5, 1890. Serial No. 346,781. (No model.)



Claim.—1. In a watch or other timepiece, the combination of separate motor-springs for operating a repeating mechanism and a time mechanism, a winding-pinion for actuating the said motor-springs, gearing for transmitting the motion of the said pinion to the time-motor, and gearing for transmitting the motion of the said pinion to the repeater-motor, the connection between the said pinion and the transmitting-gearing of the said repeater-motor spring being breakable automatically or positively, substantially as specified.

2. In a watch or other timepiece, the combination of a stem-arbor suitably connected with a winding-pinion for actuating separate motor-springs, gearing for transmitting the motion of the said pinion to a time-motor, and gearing for transmitting the motion of the said pinion to a repeater-motor, the gearing between the said pinion and the repeater-motor spring being connectible automatically or positively so that the said motor-spring can be actuated by the said pinion, substantially as specified.

3. In a watch or other timepiece having a winding-pinion and wheel 2 for transmitting the motion to a gearing for actuating a time-motor, the combination; with the wheel 2, of suitable gearing for actuating a repeater-motor, the said gearing adapted to be connected with and disconnected from the wheel 2, substantially as specified.

4. The combination, with a time-motor and a stem-driven train to wind the same, of a separate repeater-motor and suitable gearing interposed between the repeater-motor and the stem-driven train, the said gearing adapted to be brought in and out of connection with the stem-driven train, substantially as specified.

5. The combination, with a front plate of a watch, of gearing for actuating a time-motor spring, and suitable gearing for actuating a repeater-motor spring, both sets of gearing being placed on the front plate of the watch, and a stem-winding pinion for actuating both sets of gearing, substantially as specified.

6. The combination, in a repeating-watch, of a shiftable setting wheel that is movable in and out of gear with a dial-wheel, a winding-pinion, gearing for operating the setting-wheel, gearing for transmitting the motion of the said pinion to a time-motor spring, and gearing interposed between the said pinion and a repeater-motor spring independent of the time-motor spring, a shiftable wheel of the said gearing for transmitting the motion of the winding-pinion to the said repeater-motor spring and adapted to break the connection between the winding-pinion and the repeater-motor spring when the motion of the said pinion is transferred to the dial-wheels, substantially as described.

7. In a repeating-watch, the combination of a motor-spring of a repeating mechanism independent of the time-motor spring, a winding-pinion, and suitable gearing for transmitting the motion of the same to the repeater-motor spring, the connection between the said pinion and the transmitting-gearing of the repeater-motor spring being breakable by mechanism operated by a device for setting the stem-driven train to its hand-setting position when the pinion is in connection with the dial-wheels, substantially as specified.

8. In a watch having a stem-driven train and suitable gearing for actuating a motor-spring of a repeating mechanism connected with the said stem-driven train, the combination of a yoke-lever and a spring-bar adapted to disconnect the said gearing of the repeater-motor spring from the stem-driven train by suitable mechanism connected with the said yoke-lever when the same is set to its hand-setting position, substantially as specified.

9. In a watch, the combination, with a winding-pinion and suitable gearing for actuating a motor-spring of a time mechanism and a separate motor-spring of a repeating mechanism, of special gearing for transmitting motion to the said motor-spring and a suitable setting device, said special gearing adapted to be set in connection with the said pinion by said setting device, substantially as specified.

10. In a watch, the combination, with a winding-pinion, wheel 2, and gearing that actuates a motor-spring of a time mechanism, of special gearing for actuating a separate motor-spring of a repeating mechanism and a suitable setting device, said special gearing adapted to be connected with the said wheel 2 by said setting device, substantially as specified.

11. In a watch having a stem-driven train for actuating a motor-spring of a time mechanism, the combination, with the stem-driven train, of special gearing for actuating a separate motor-spring of a repeating mechanism and a suitable setting device, said special gearing adapted to be connected with the stem-driven train by said setting device, substantially as specified.

12. A setting-lever for a repeating mechanism, provided with an arm s^3 and an arm s^4, in combination with a special gearing of a motor-spring, of a repeating mechanism and a stem-driven train, substantially as specified.

13. The combination of a yoke-lever having its arm set in contact with a yoke to set the stem-driven train out of gear with the time-motor spring, a yoke, a stem-driven train, and interposed gearing for actuating a repeating mechanism, the said gearing adapted to be set in connection with the stem-driven train by moving the said yoke-lever in contact with the said yoke, substantially as specified.

14. In a repeating-watch, the combination of a repeating mechanism, a stem-driven train, a repeater-motor spring, and gearing interposed between the stem-driven train and the said repeater-motor, a shiftable wheel of the said gearing adapted to transmit the motion of the stem-driven train to the repeater-motor, and a device operated by the said repeating mechanism that connects the shiftable wheel automatically with the gearing of the repeater-motor and the stem-driven train, substantially as specified.

15. The combination of a stem-driven train, a repeater-motor spring, and suitable gearing for transmitting the motion of the stem-

driven train to the said motor-spring, a repeating mechanism, and a suitable device operated thereby for disconnecting the gearing of the repeater-motor spring from the stem-driven train, substantially as specified

16. The combination of a stem-driven train, a repeater-motor spring, and gearing interposed between the said stem-driven train and the said motor-spring, a shiftable wheel of the said gearing for transmitting the motion of the stem-driven train to the repeater-motor, a striking-rack, and a suitable device operated thereby for disconnecting the said wheel from the repeater-motor, substantially as specified.

17. In a watch, the combination, with a repeating mechanism having its motor-spring retracted by suitable gearing connected with a stem-driven train, of a device suitably connected with the repeating mechanism for disconnecting automatically the said gearing from the stem-driven train and being operated when the said repeating mechanism is released, substantially as specified.

18. In a repeating-watch, the combination, with a stem-driven train and suitable gearing connected with a motor-spring of the repeating mechanism for actuating the same, the said gearing adapted to be disconnected from the stem-driven train, of a striking-rack and a suitable device connected therewith and which operates on the said gearing when the striking-rack is being released, whereby the said gearing is automatically disconnected from the stem-driven train, substantially as specified.

19. In a repeating-watch, the combination of a suitable setting device, a spring for actuating the same, and suitable gearing for transmitting the motion of a stem-driven train to a repeater-motor spring, the said setting device adapted by the pressure of its spring to break the connection of the said gearing between the stem-driven train and the repeater-motor spring, substantially as specified.

20. In a repeating-watch, the combination of a stem-driven train and suitable gearing for actuating a repeater-motor spring and also for setting the repeating mechanism to a striking position, a repeating mechanism, and a setting device arranged to disconnect the said gearing from the stem-driven train when the repeating mechanism is being set to a striking position, substantially as specified.

21. In a repeating-watch, the combination of a gear-wheel for moving a striking-rack, a striking-rack, suitable gearing which connects the said wheel with a stem-driven train and turned thereby, and a suitable device that breaks the connection between the said wheel and the stem-driven train when the rack is in its striking position, substantially as specified.

22. In a repeating-watch, the combination of the wheel O, provided with an opening o^2 to give place for the seconds-hand staff of the time mechanism, a striking-rack placed upon the wheel O, and a device for moving the said rack, substantially as specified.

23. In a repeating-watch, a front plate of a watch, provided with an opening a^2 for the hammer-head, in combination with a gong-spring and a hammer for striking the time, said hammer being pivoted to the plate and moving its head in the said opening, the construction being such that when the time is struck the hammer-head is moved parallel to the said plate within the said opening, substantially as specified.

24. In a repeating-watch, the combination, with a front plate of a watch, of a bridge provided with a seat for a motor-spring, and a motor-spring placed in the said seat of the bridge and arranged to be attached on the exterior surface of the said watch-plate, substantially as specified.

25. The combination, with a front plate of a watch, of a bridge provided with a seat for a motor-spring and which is placed in the same, the said bridge arranged with suitable seats for a moderating-gear pivoted in the said bridge and in the front plate, and means of fastening the bridge on the exterior surface of the said watch-plate, substantially as specified.

26. The combination, with a front plate of a watch, of a bridge placed on the exterior surface thereof, a motor-spring placed in a seat in the said bridge, a gear-wheel provided with a depression or seat for the said motor-spring, and a winding-arbor that carries the said gear-wheel, the said arbor being connected with the motor-spring and pivoted in the bridge, substantially as specified.

27. In a repeating-watch, the combination, with a front plate of a watch, of a bridge suitably attached to the exterior surface of the said plate, a motor-spring placed in a seat in the said bridge, and a gear-wheel provided with an arbor for actuating the said motor-spring, and a gear-wheel for moving the striking-racks, connected with the gear-wheel of the repeater-motor spring, substantially as specified.

28. In a watch or other timepiece, the combination of a winding-pinion connected by suitable gearing with a motor-spring of a repeating mechanism for actuating or setting the same and mechanism consisting of a releasing device suitably connected with a repeating mechanism and operated by the said pinion, a repeating mechanism, and a suitable device that breaks the connection of the gearing between the repeater-motor spring and the said pinion automatically and operating when the repeating mechanism is released at its striking position, substantially as specified.

29. The combination of a winding-stem that actuates the repeater-motor spring and releases the repeating mechanism, a motor-spring and suitable gearing for actuating the same and operated by a winding-stem, a releasing device that is caused to release a repeating mechanism operated by the said stem, and a device suitably connected with the repeating mechanism, that disconnects the said gearing of the repeater-motor spring from the stem-winding gear when the repeating mechanism is set to its striking position, substantially as described

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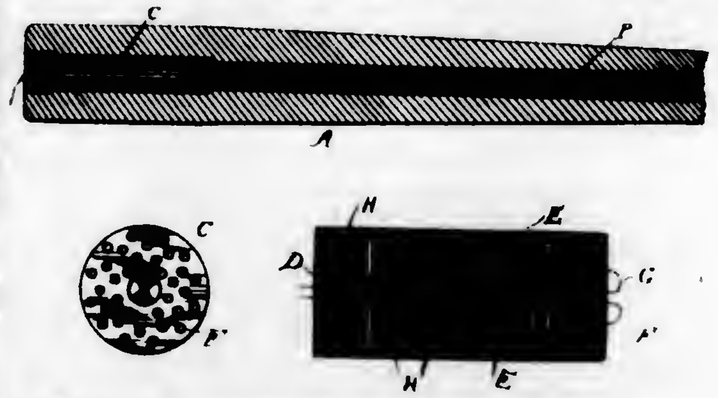
487,400. ARTILLERY-CARTRIDGE. Edmund L. Zalinski, U. S. Army. Filed June 19, 1888. Serial No. 277,517. (No model.)



Claim.—1. In combination with the bore of a gun and communicating therewith, a cartridge having a casing composed of a material which is a non-conductor of heat and a plurality of permanent charge-containing chambers in said casing, said chambers communicating to a single passage which communicates to the bore of the gun in rear of the projectile, all substantially as described.

2. A permanent cartridge-casing for explosive charges, having a plurality of charge-chambers and composed of material strong enough to withstand the firing of the contained powder-charges, and a sufficient non-conductor of heat, so that one charge may not ignite another by heat radiated through the casing, substantially as described.

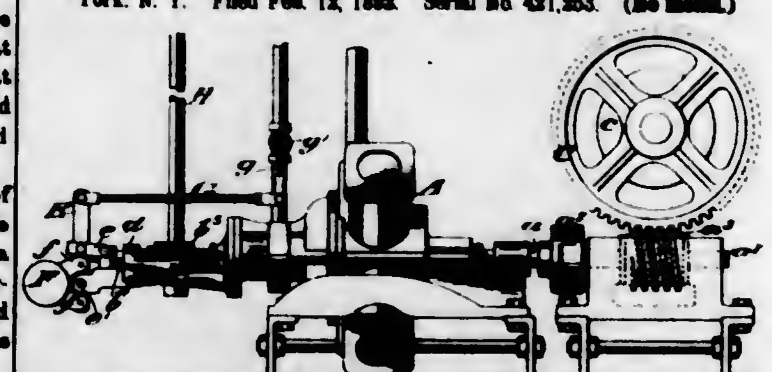
3. A cartridge for heavy guns, consisting of a cylindrical body having a longitudinal passage and a plurality of chambers radiating therefrom and closed at their outer ends, said body being of a material which cannot be ruptured by the explosion of the charges, substantially as described.

4. A cartridge for heavy guns, consisting of a permanent casing having a passage which opens in a direction toward the bore of the gun and in rear of the projectile when the cartridge is used in a gun, said casing having a plurality of permanent chambers opening into this main chamber and each supplied with an explosive charge, substantially as described.

5. The cylindrical cartridge-casing having a central passage and a plurality of practically-radial passages communicating therewith, and an inclosing ring covering the outer ends of the radial chambers, substantially as described.

6. The cartridge-casing having a central passage and a plurality of practically-radial chambers communicating therewith, said chambers being of greater diameter toward their outer ends, and a ring or casing closing the outer ends of these chambers, all substantially as described.

487,401. STEAM STEERING-GEAR. Gaston A. Bronder, New York, N. Y. Filed Feb. 12, 1892. Serial No. 421,253. (No model.)



Claim.—1. The combination, with the engine and its connection with the rudder-operating wheel, of a rotary and longitudinally-sliding valve having a valve-stem fixed to rotate therewith and provided with a worm, a worm-wheel having an engagement with the worm on the valve-stem for sliding it, and hence the valve, longitudinally, and means for operating the worm-wheel, substantially as set forth.

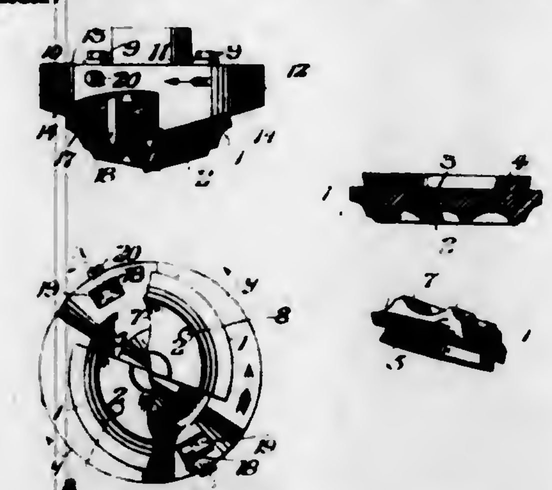
2. The combination, with the valve for admitting steam to the engine, having a longitudinally-sliding movement within its box and the valve-stem fixed to slide and rotate with the valve, of the steam-supply pipe leading to the valve-box, a valve for admitting the steam within the valve-box, a vibrating arm connected with the said valve in the steam-supply pipe, a connection between said vibrating arm and the valve-stem, and a counterbalance secured to said vibrating arm and exerting its strain in the direction to draw the said valve-stem and valve toward the outer end of the valve-box, substantially as set forth.

3. The combination, with the shaft for operating the valve and the steering-wheel shaft geared thereto and provided with a screw-threaded portion, of the traveling nut engaged with said screw-threaded portion, an index-hand connected with the traveling nut, and collars seated on the steering-wheel shaft and provided with abutments arranged transversely to the rotary movement of the shaft for limiting the movement of the traveling nut, substantially as set forth.

4. The combination, with the steering-wheel shaft provided with a screw-threaded portion and having a longitudinal groove along the face of the said screw-threaded portion, of a traveling nut engaged with the screw-threaded portion, an index-hand connected with the nut, collars seated on the steering-wheel shaft and provided with abutments on their adjacent edges, and a feather or key adapted to seat within the groove in the shaft and travel longitudinally with the nut and in a rotary direction with the shaft, said feather or key being provided with ends adapted to engage the abutment on the said collars, substantially as set forth.

5. The combination, with the steering-wheel shaft provided with a screw-threaded portion, the traveling nut engaged with the screw-threaded portion, and the collars seated at intervals on the shaft, said collars being provided with perforations at intervals therein, of a supporting-frame extending along the shaft and collars and spaced from the shaft and a fastening device engaged with the supporting-frame and adapted to enter the perforations in the collars to hold them in the desired longitudinal and rotary adjustment, substantially as set forth.

487,402. MOLDING-CUTTER AND HEAD THEREFOR. Frank E. Byerly, Philadelphia, Pa. Filed Apr. 14, 1892. Serial No. 429,240. (No model.)



Claim.—1. Improved molding-cutters consisting of segments turned to a counterpart of the desired face-molding, embracing parts of the center or core and provided with concentric keels upon the reverse side, in combination with beveled cutting-edges extending from the periphery to the axis of rotation, sustantially as set forth.

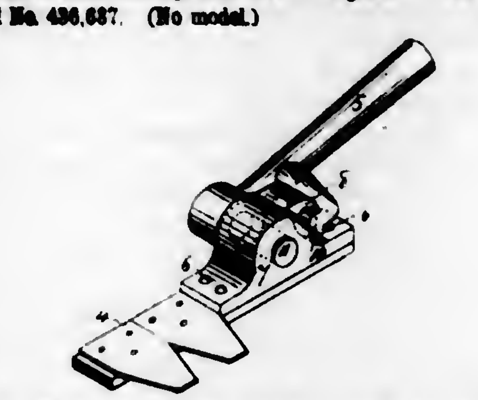
2. In an end-cutting molding-cutter, beveled circular segments having face-profiles corresponding in form to the molding and provided with concentric keels upon the back and with beveled cutting-edges extending from the center of rotation to the periphery, in combination with a cutter-head having oblique surfaces adapted to support said cutters, evolute guides adapted to hold and guide said cutters, and a holding mechanism arranged to clamp said cutters to said cutter-head, substantially as and for the purpose set forth.

3. Segmental cutters having turned clearances and beveled cutting-edges extending from their axis of rotation to their periphery, in combination with guiding-keels concentric with said turned faces, arranged to operate as set forth.

4. A cutter-head having beveled surfaces, as described and shown, in combination with evolute guides adapted to hold segmental cutters having concentrically-turned front surfaces and guiding-keels, as set forth and shown.

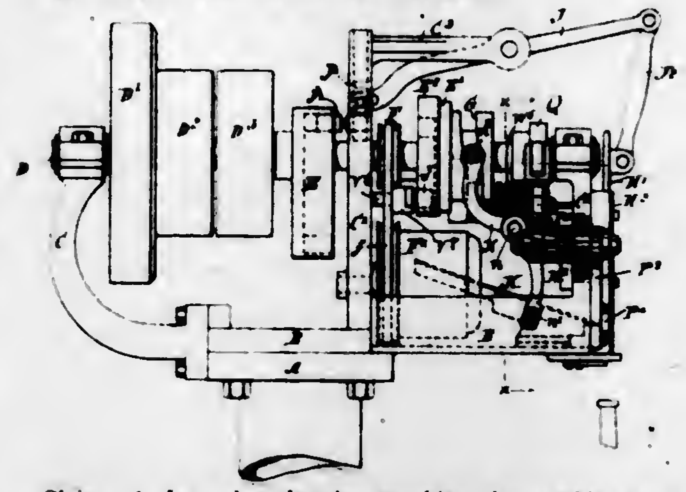
5. The segmental face-cutters having turned clearance-surfaces, turned guiding-keels concentric with said clearance-surfaces, and a cutter-head having beveled surfaces and evolute guides, in combination with scoring-cutters adjustably inserted in said cutter-head, as set forth and described.

487,408. PITMAN CONNECTION FOR MOWING-MACHINES. Troward Clark, Eastry, near Dover, England. Filed June 14, 1892. Serial No. 436,687. (No model.)



Claim.—The combination, with the knife-bar, of the knife-eye secured to the bar and having formed integrally therewith at its side next to the connecting-rod a boss extending part of the width of the knife-eye, so as to leave a space at the outer side of the knife-eye, and the connecting-rod having a pivot to fit in the knife-eye and an arm extending laterally from said rod and formed integral with a rectangular extension to lie in the space at the outer side of the knife-eye and against the outer side of its boss, substantially as and for the purposes described.

487,404. SHOE-SLUGGING MACHINE. Solomon M. Cutter, Quebec, Canada, assignor to William Alfred Marsh, same place. Filed July 11, 1892. Serial No. 439,719. (No model.)



Claim.—1. In a shoe-slugging machine, the combination, with the slug-driver, slug-supply, and the movable raceway provided with slug-releaser at its lower end, of the slug-receiving throat or guide-tube proper diminished in height to allow the nose of the raceway carrying the slug to project in and locate the slug directly over the throat and in the axis of the driver and having a bearing-plate at one side thereof and a combined reciprocating detent and holder, the former operating the slug-releaser and the latter acting in conjunction with said bearing-plate to hold the slug during the withdrawal of the raceway, as set forth.

2. In a shoe-slugging machine, the combination, with the slug-driver, the slug-receiving throat or guide-tube with the lower portion of one side cut away to furnish an opening, and means for supplying slugs thereto, of a movable awl and a carrier for same having a horizontal inwardly-projecting foot portion carrying the awl, so that it is located in said opening and adapted to enter the stock at a point out of line with said throat, to move to within the axis of said throat, to be withdrawn from said stock, and be substituted for said cut-away portion in effecting the complete formation of said throat, and means for actuating said carrier, as set forth

3. In a shoe-slugging-machine, the combination, with the slug-driver, slug-supply, the movable raceway provided with the slug-releaser at its lower end, and the diminished slug-receiving throat or guide-tube having an upwardly-projecting bearing-plate at one side thereof, of the combined reciprocating detent and holder working above said throat, as and for the purposes set forth.

4. In a shoe-slugging machine, the combination, with the slug-driver, slug-supply, the movable raceway provided with the slug-releaser at its lower end, and the diminished slug-receiving throat or guide-tube having an upwardly-projecting bearing-plate at one side thereof, of the combined reciprocating detent and holder working above said throat, cam and lever mechanism for operating same, and a flexible or yielding connection intermediate of such operating mechanism and the parts operated, as shown and described.

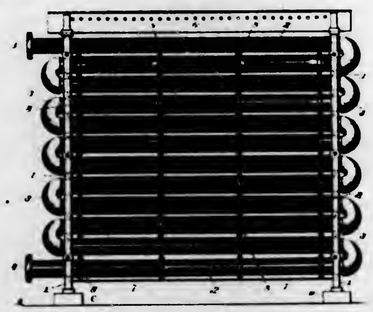
5. In a shoe-slugging machine, the combination, with the slug-driver, the slug-receiving throat or guide-tube with the lower portion of one side cut away to furnish an opening, and means for supplying slugs thereto, of a work-feeding awl and an adjustable carrier for

same having a horizontal inwardly-projecting foot portion carrying the awl, so that it is located in said opening and adapted to both feed the stock and be substituted for said cut-away portion in effecting the complete formation of said throat during the passage of the slug therethrough, and mechanism for imparting an intermittent four-way movement to said carrier, as set forth.

6. In a shoe-slugging machine, the combination, with the main driving-shaft, the slug-driver, the partly-formed slug-receiving throat or guide-tube, and means for supplying slugs thereto, of a work-feeding awl adapted to both feed the stock and to form a part of said throat during the passage of the slug therethrough, a carrier for said awl, an auxiliary shaft running parallel with said main shaft, a rocking arm set on the forward end of said auxiliary shaft and having a pivotal connection with said awl-carrier, a sleeve encircling said auxiliary shaft for a portion of its length and a rocking arm set on the forward end of said sleeve and provided with a finger extension to intermittently bear upon said carrier, a flexible or yielding connection between this latter arm and the carrier, and mechanism for imparting independent rocking motion to said shaft and sleeve, as set forth.

7. In a shoe-slugging machine having a slug-driver, a slug-receiving throat or guide-tube with cut-away portion to form an opening, a work-feeding awl having an arm or neck horizontal or at right angles to its axis proper, a carrier for same adapted to receive the horizontal arm, and mechanism, substantially as described, for operating said carrier to locate the awl in said opening to feed the stock and effect a complete formation of the throat during the passage of the slug therethrough.

487,405. BEER-COOLER. JOHN F. DUFFY, Brooklyn, N. Y., assignor to the National Ice Machine Company, same place. Filed Feb. 25, 1890. Serial No. 341,771. (No model.)



Claim.—1. A condenser or cooler constructed and arranged to admit of the passage of a liquid over its exterior surface, the combination, with a pipe of such condenser, of a plate, fin, or strip attached thereto by clamps or other fastenings when the said plate or fin is adjustable to or from the said pipe or another pipe in line therewith and is arranged and operates to distribute a liquid brought in contact with it over a pipe or pipes beneath it, substantially as described.

2. In a condenser or cooler constructed and arranged to admit of the passage of a liquid over its exterior surface, the combination, with a pipe of such condenser, of a removable and adjustable plate, fin, or strip attached thereto by clamps or other fastenings, when the said plate or fin is arranged and operates to distribute a liquid brought in contact therewith over a pipe or pipes beneath it, substantially as described.

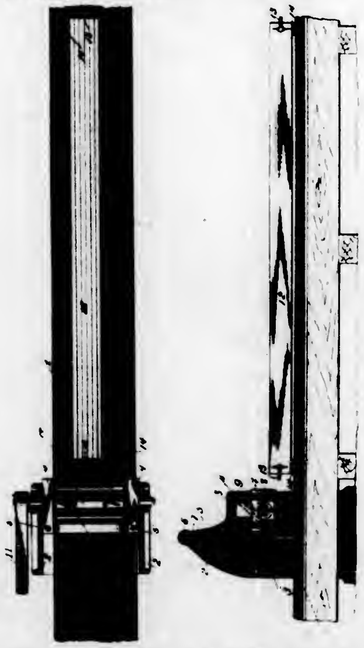
3. In a condenser or cooler constructed and arranged to admit of the passage of a liquid over its exterior surface, the combination, with a pipe of such condenser or cooler and suitable fastenings, of a removable plate, fin, or strip having one or more perforations or slots that admit of its adjustment to or from the said pipe to which it is attached or of its adjustment to or from another pipe in line therewith when the said plate, fin, or strip is attached by said fastenings to a pipe of such condenser or cooler and operates to distribute a liquid brought in contact therewith over a pipe or pipes beneath it, substantially as described.

4. In a condenser or cooler constructed and arranged to admit of the passage of a liquid over its exterior surface, the combination, with a pipe of such condenser or cooler, of one or more clamps having a section thereof corresponding in form to the exterior of said pipe and having the ends at right angles with the horizontal axis of the said pipe thereof, extending in opposite directions and adapted for being secured to other clamps or other objects by bolts or other fastenings, and a plate, fin, or strip attached by said clamps and by bolts or other fastenings to said pipes when the said plate, fin, or strip is arranged to operate to distribute a liquid brought in contact therewith over a pipe or pipes beneath it, substantially as described.

5. In a condenser or cooler constructed and arranged to admit of the passage of a liquid over its exterior surface, the combination, with a pipe of such condenser or cooler, of two plates, fins or strips connected therewith by clamps and bolts or other fastenings when the said plates, fins, or strips are arranged and operate to distribute a liquid brought in contact therewith over a pipe or pipes beneath it, substantially as described.

6. In a condenser or cooler constructed and arranged to admit of the passage of a liquid over its exterior surface, the combination, with pipes of such condenser or cooler, of plates, fins, or strips attached thereto by clamps and bolts or other fastenings when the said plates, fins, or strips or any of them are held in contact with said pipe and are connected together by clamps which bear against a section of pipe, but alternately on opposite sides of said pipe, and the said plates, fins, or strips or any of them are so connected and operate to distribute a liquid brought in contact therewith over the said condenser or a part thereof, substantially as described.

487,406. ART OF CROWNING FLOOR-JOISTS AND APPARATUS THEREFOR. JOSEPH FRIEDRICHS, St. Louis, Mo. Filed May 2, 1892. Serial No. 431,480. (No model.)



Claim.—1. The method herein described for crowning floor-joists, which consists in subjecting the same to a deflecting strain and leveling one surface while so subjected, substantially as and for the purposes described.

2. The method herein described for crowning floor-joists, which consists in supporting the same at their ends and planing or otherwise leveling the upper surfaces of the same, substantially as and for the purposes described.

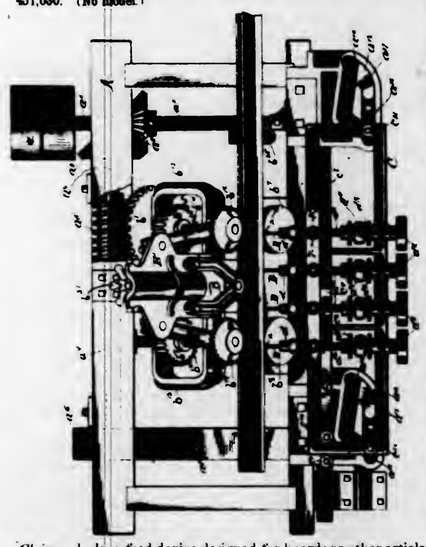
3. In a machine for crowning floor-joists, the combination, with the leveling-cutter, of a supporting and carrying platform and means for deflecting the stock while it is being operated on by the cutter substantially as and for the purposes specified.

4. In a machine for crowning floor-joists, the combination, with the cutter, of a supporting and carrying platform and means supported directly by and carried with the platform by which the joists are supported at their ends only, substantially as and for the purposes specified.

5. In a machine for crowning floor-joists, the combination, with an adjustable cutter, of a supporting and carrying platform provided with means for supporting the stock away from the platform, thereby permitting the joists to be deflected while being cut, substantially as and for the purposes specified.

6. As a new article of manufacture, a crowned floor-joist bellied on one side, said bellied portion being formed by planing or otherwise leveling one surface of the joist while it is being deflected from the normal, substantially as and for the purposes specified.

487,407. BORING-MACHINE. SAMUEL A. GOULD, Chicago, Ill., assignor of two-thirds to George R. Blanchard and Alfred H. Brown, same place. Filed Jan. 19, 1891. Renewed Nov. 5, 1892. Serial No. 451,030. (No model.)



Claim.—1. In a feed device designed for boards or other articles of varying dimensions, the combination of a feed-roller adapted to engage one side or edge of the board mounted upon a shaft journaled in the frame of the machine and rotated by the driving-gear thereof, an oscillating frame pivoted to the frame of the machine and provided with means for holding it firmly in different positions, a gear-wheel rotated by the driving-gear about an axis coincident with the pivot of the oscillating frame, a second gear-wheel driven by the first and fast upon a shaft journaled in the oscillating frame, and a second feed-roller mounted upon the last-mentioned shaft and adapted to engage with the opposite side or edge of the board, substantially as described.

2. In a feeding device adjustable to different-sized timbers, the combination of a supporting-frame, a feed-roller mounted upon a shaft journaled in said frame and rotated by suitable driving mechanism, an oscillating frame and a connecting gear-wheel mounted upon the same axis, the latter being also rotated by the driving mechanism, a second feed-roller mounted upon a shaft journaled in the oscillating frame and driven by the connecting-gear, and a frame adjustable upon the supporting-frame and engaging with the oscillating frame to carry the latter with it in its adjustments, substantially as described.

3. In a feed device adjustable to different-sized timbers, the combination of a supporting-frame, a feed-roller fast upon a shaft journaled in the supporting-frame and rotated by driving-gear, an oscillating frame and a connecting gear-wheel, both journaled upon the same axis in the supporting-frame and the latter rotated by the driving-gear, a second feed-roller fast upon a shaft journaled in the oscillating frame and driven by the connecting gear-wheel, an adjustable frame sliding in guides in the supporting-frame, and an arm pivoted to the sliding frame and to the swinging portion of the oscillating frame, substantially as described.

4. The combination of the frame B, the driven shaft b, geared to the wheel b^{10} and carrying the roller b^7, the frame b^{18}, oscillating upon the axis of the wheel b^{10}, the shaft b^{14}, carrying the roller b^{19} and geared to the wheel b^{10}, the frame B', provided with means for adjustment, and the connecting-arm b^{20}, substantially as described.

5. The combination, with the frame A and the frame B, of the driven shaft b, the roller b^7, the gear b^9, the gear b^{10}, driven by the gear b^9, the frame b^{18}, the shaft b^{14}, the gear b^{16}, the roller b^{19}, the frame B', and the adjusting-screw b^{20}, substantially as described.

6. In a feeding device for tongue-and-groove boards, the combination, with a suitable frame, of two rollers journaled thereon, fitted to the tongue and groove of the board, respectively, and one of them rotated by suitable connections with the driving-gear, substantially as described.

7. In a feed device for a continuous-boring machine designed to bore nail-holes in tongue-and-groove flooring, the combination, with a suitable frame provided with devices for operating the boring-bit, of two rollers fitted, respectively, to the tongue and groove of the boards, one of said rollers being provided with notches in its periphery to receive the boring-bit, substantially as described.

8. In a boring-machine, a feed device adapted to present the timbers to the bits, a bit-carrying frame having suitable devices for carrying the bits with the timber while advancing them into the same and for withdrawing them and returning it to the proper position, a gang of bits mounted upon shafts journaled in said frame, pulleys fast upon said shafts, a roller rotated in suitable bearings by driving mechanism, and a series of belts geared to the pulleys and the roller and adapted to travel back and forth upon the latter, substantially as described.

9. In a boring-machine, the combination of a feed device adapted to present the timber to the bits at the required angle, a horizontally-sliding frame having suitable connections with the driving-gear for reciprocating it parallel to the timber and for giving it an independent lateral reciprocation toward and from said timber, and a series of bits carried by shafts journaled in the frame and rotated by the driving-gear, substantially as described.

10. In a boring-machine, the combination of a feed device, a bit-carrying frame, a driving-gear adapted to move the timber and the frame in parallel lines at the same speed while the boring is done, mechanism for alternately advancing and withdrawing the frame from the timber, a reversing-gear adapted to move the frame in the same direction as the timber while the bit is forced into the same and return the frame to its first position when the bit is removed, a bit mounted upon a shaft journaled in the frame, and a pulley fast upon said shaft and rotated by suitable connections with the driving-gear, substantially as described.

11. In a boring-machine, the combination of a feed mechanism, a bit-carrying frame having suitable devices for forcing the bit into the timber and withdrawing it therefrom, and a bit mounted upon a shaft rotated by the driving-gear and journaled in the frame adjacent to the bit by means of a journal-block having a slight play in said frame, substantially as described.

12. In a boring machine, the combination of suitable mechanism for presenting the timber to be bored to a bit, a bit-carrying frame having suitable devices for forcing the bit into the timber and withdrawing it therefrom, and a bit mounted upon a shaft rotated by the driving-gear and journaled in the frame adjacent to the bit by means of a block having a slight play therein against a spring force, substantially as described.

13. In a boring-machine, the combination of feed mechanism adapted to carry the timber in continuous motion through the machine, a bit-carrying frame having suitable connections with the driving-gear for simultaneously moving it in the same direction at the same speed as the timber and advancing it toward the latter and also for withdrawing it therefrom and returning it to the first position, and a bit mounted upon a shaft rotated by the driving-gear and journaled in the frame adjacent to the bit by means of a journal-block having a slight play in said frame against a spring force, substantially as described.

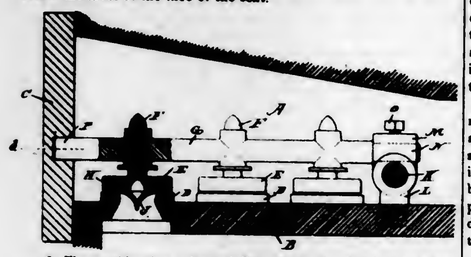
14. The combination of a feed device adapted to carry a timber in continuous motion and present it in proper position for boring, a bit-carrying frame having suitable connections with driving-gear for imparting reciprocating motion parallel to the timber and guided toward or from the timber by a projection running in a cam-slot, and a bit mounted upon a shaft journaled in the frame and rotated by the driving-gear, substantially as described.

15. The combination, in a boring-machine, with suitable feed devices to carry a timber in continuous motion through the machine and present it in proper position for boring, of a bit-carrying frame having a bit mounted on a shaft journaled therein and rotated by the driving-gear, connecting-gear between the frame and the driving-gear adapted to impart motion to the frame in the same direction and at the same speed as the timber while the boring is done, reversing-gear adapted to return the frame after the boring is completed, and an endless cam-groove adapted to guide the frame toward and from the timber and having an oscillating dog interposed therein, substantially as described.

487,408. VALVE AND VALVE-SUPPORT. JAMES R. MAXWELL, Cincinnati, Ohio. Filed June 29, 1892. Serial No. 438,481. (No model.)

Claim.—1. The combination, substantially as set forth, of a valve arranged to work in conjunction with a seat, an annular disk, of rubber or analogous material, disposed at the face of the valve and adapted to make contact with the seat, a piece screwing to the valve within the rubber disk and having a flange projecting outwardly under the rubber disk and serving to clamp the rubber disk to the valve,

and a seat adapted to have its face engaged by said disk and having its bore-wall projecting inwardly beyond the periphery of said flange below the level of the face of the seat.

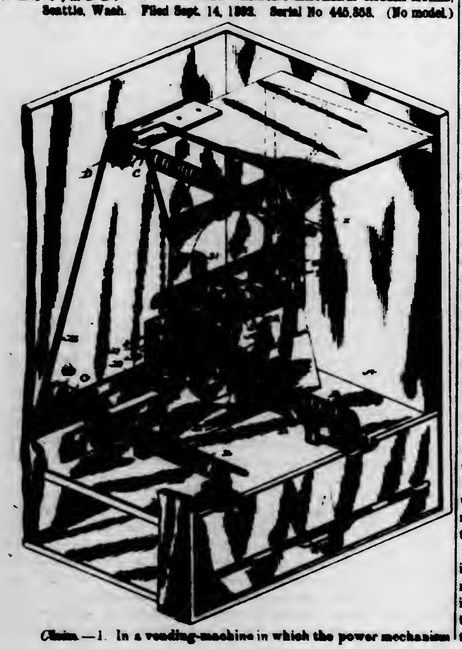


2. The combination, substantially as set forth, of a chamber-floor or analogous structure containing a row of valve-seats, a guide-bar extending over said row of seats and carrying a valve-guide over each seat, a valve at each seat, a hinge with its axis at right angles to said guide-bar and uniting one end of said guide-bar articulately to said chamber-floor, and means for holding the other end of said guide-bar in fixed relationship to said chamber-floor.

3. The combination, substantially as set forth, of a chamber-floor or analogous structure containing a row of valve-seats, a valve at each of said seats and provided with stems, a guide-bar disposed over said row of valve-seats and carrying a guide, sockets for each valve, the axes of said sockets intersecting the axis of said bar and provided at one end with a journal parallel with the length of the bar, a bearing supported by said chamber-floor and engaging said journal, a set-screw or equivalent device for preventing the rotation of said guide-bar, and means for holding the other end of the guide-bar in fixed relationship to said chamber-floor.

4. The combination, substantially as set forth, of a chamber-floor or analogous structure containing a row of valve-seats, a valve at each valve-seat, a guide-bar disposed over said row and carrying a guide for each valve and having at one end a journal parallel with the bar, a bearing for said journal, a set-screw or equivalent device for preventing the rotation of the guide-bar, a hinge arranged with its axis at right angles to the guide-bar and serving to unite said bearing articulately to said chamber-floor, and means for holding the other end of said guide-bar in fixed relationship to said chamber-floor.

487,409. COIN-ACTUATED VENDING-MACHINE. ROBERT MORAN, Seattle, Wash. Filed Sept. 14, 1892. Serial No. 445,858. (No model.)



Claim.—1. In a vending-machine in which the power mechanism is set in motion by the passage of a coin, a wheel or disk on the feeding device, having exposed stops upon its surface, the number of which corresponds with the full value of the article to be vended, a pawl engaging said stops, a cut-off for covering one or more of said stops to correspond with the change in value of the article to be vended, and a mechanism depending for its operation upon the deposit of a coin in the machine for releasing the wheel or disk and allowing it to be turned until arrested by the next exposed stop being engaged.

2. In a vending-machine in which the power mechanism is set in motion by the passage of a coin, a device carried by the feeding mechanism, having stops equivalent to the full number of movements necessary to impart a full movement to the feeding device, a pawl engaging said stops, and a means whereby one or more of said stops may be cut off or covered to increase the distance between successive exposed stops, thereby increasing the extent of rotation of the feeding devices to correspond with the value of the coin deposited and article to be vended.

3. In a vending-machine in which the power mechanism is set in motion by the passage of a coin, a device carried by the feeding mechanism, having stops on its surface, a means for covering a part of or all of said stops, and a pawl engaging said stops, whereby a full movement of the feeding devices is obtained upon the deposit of one coin of predetermined value or is dependent upon the deposit of a number of coins of lesser value equivalent to the number of stops exposed.

4. In a vending-machine having horizontal revoluble feeding-screws between the threads of which the articles to be vended are fitted, an escapement-wheel on the shaft of one of said screws, having notches in its edge, the number of which is equivalent to the full value of the articles vended, a pawl normally in engagement with the wheel, and a pivoted trip-lever having one end arranged in the path of the coin and the other end connected with the pawl, whereby the passage of the coin depresses the lever and raises the pawl out of contact with the wheel and permits the latter to be revolved a distance equivalent to the space between two adjacent notches.

5. In a vending-machine in which the power mechanism is set in motion by the passage of a coin, a means for holding the power mechanism normally at rest, a trip-lever having one end in the coin-chute in the path of the coin and its opposite end in contact with the devices for controlling the power devices to release said devices and set the power mechanism in motion, and a means for temporarily suspending the coin upon the trip-lever during the complete movement of the feeding devices and then automatically releasing the coin.

6. In a vending-machine in which the power mechanism is set in motion by the passage of a coin, a disk or escapement-wheel on the feeding devices, having stops on its surfaces, each of which denotes a coin of small value and whose combined number is equivalent to the full value of the article vended, a pawl normally in contact with said stops to hold the disk and power devices at rest, and a pivoted trip-lever having one end in the path of the coin and the other end adapted to lift the pawl out of contact with its engaged stop, but allowing it to engage the succeeding stop to check the power mechanism, whereby the full movement of the feeding devices is dependent upon the number and value of the coins deposited and the number of stops with which the pawl engages.

7. In a vending-machine in which the power mechanism is set in motion by the passage of a coin, the feeding devices, a disk or escapement-wheel on the feeding devices, having its surfaces formed or provided with stops, each of which denotes a component of a coin of the full value of the article vended, a pawl engaging said stops to check the power devices, whereby a partial movement only is given the feeding devices, and a trip-lever having one end in the path of the coins to be tripped thereby and its opposite end connected with the pawl, whereby upon the deposit of each component coin the pawl is lifted out of contact with its engaging stop and is adapted to engage the succeeding stop to check the feeding devices and power mechanism.

8. In a vending-machine in which the power devices are set in motion by the passage of a coin, a disk or escapement-wheel connected with the feeding devices and having stops upon its surface, the number of which is dependent upon the number of coins of small value whose combined values equal the value of the article vended, a cut-off for covering any one or more of said stops, and a mechanism for periodically releasing the power devices upon the deposit of each fractional coin and permitting the feeding devices to make a partial movement equivalent to the distance between two adjoining exposed stops, whereby the combined movements necessary to produce a full movement of the feeding devices to discharge the vended article is equal to the number of stops exposed and fractional coins deposited.

9. In a vending-machine in which the power mechanism and feeding devices are set in motion by the deposit of a coin, a disk or escapement-wheel connected with the feeding devices and having stops on its surface, each of which represents a fraction of the full value of the article vended, a retaining and releasing mechanism actuated by the trip-lever of the machine for starting and stopping the power devices upon the deposit of coins representing fractions of the value of the article vended, and a means for holding the trip-lever depressed and the starting and stopping devices out of contact with the power devices upon the deposit of a single coin of the full value of the article vended, whereby the article is advanced to its discharge upon the deposit of a plurality of coins whose combined value equals the value of the article or upon the deposit of a single coin of the full value of said article.

10. In a vending-machine having revoluble screws between the threads of which the articles to be vended are fitted, a disk or escapement-wheel on the axis of one of the screws, having its edge notched to represent fractional parts of the full value of the article vended, a motor and a train of gearing connected therewith, a cam-wheel actuated by said gearing and having a stop or shoulder, a pivoted trip-lever having one end in the path of the coin, and a rock-shaft with its pawls, one of said pawls being in normal engagement with the trip-lever and the shoulder or stop of the cam-wheel and the other pawl being in contact with the notches of the escapement-wheel, whereby the deposit of the coin lifts both pawls out of contact with their stops and sets the power and feeding devices in motion.

11. In a vending-machine having revoluble feed-screws between the threads of which the articles to be vended are fitted, the disk or escapement-wheel on the axis of one of the feed-screws, having its surface formed with stops representing fractions of the value of the article vended, a quadrant or cut-off for covering one or more of said notches to correspond with the change in value of the article vended, a pivoted trip-lever actuated by the passage of the coin, and a pawl engaging said notched escapement-wheel and actuated by the trip-lever to start and stop the power devices and feed-screws.

12. In a vending-machine having revoluble screws between the threads of which the articles to be vended are fitted, the disk or escapement-wheel on the axis of one of said screws and having its edge notched to represent fractions of the full value of the article vended, a revoluble quadrant or disk on the feed-screw and operating against the face of the escapement-wheel to cover all or a part of its notches, a means for holding the quadrant in position, a power device for operating the feed-screw, a pawl engaging the notches of the escapement-wheel, and a trip-lever actuated by the coin and having one end connected with the pawl and operating it, substantially as herein described.

13. In a vending-machine having the revoluble feed-screws between the threads of which the articles to be vended are fitted, a motor mechanism and train of gearing for operating the screws, a coin-chute with independent passages for coins of different values, a trip-lever having one end in the path of the coins from both passages, a lever partially closing the discharge of the coins, so as to permit the escape of coins of lesser value, but to temporarily hold the coins of greater value suspended upon the trip-lever, whereby the power devices and feed-screws are released and kept in motion during the period of suspension of said coin, and a cam in the train of gearing for operating against the retaining-lever to cause it to uncover the coin-discharge and release the suspended coin and enable the trip-lever to resume its normal position.

14. In a vending-machine having revoluble feed-screws between the threads of which the articles to be vended are fitted, a notched disk or escapement-wheel on the axis of one of the feed-screws, a quadrant or cut-off controlling said notches, a spring motor and a train of gearing operated thereby and including the gear-wheel 20 on the axis of the feed-screw and provided with a cam, the cam-wheel F on a counter-shaft in said train of gearing, a rock-shaft having pawls engaging, respectively, the cam-wheel and escapement-wheel for controlling the power and feeding devices, a pivoted trip-lever for actuating the rock-shaft, having one end in the path of the coins, and a second lever controlling the discharge of the coins of predetermined value, said lever being in the path of and actuated by the cam, substantially as and for the purposes described.

15. In a vending-machine, the upper and lower revoluble feed-screws, the follower engaging the threads thereof and supporting the articles to be vended, a loosely-suspended bar for retaining the upper ends of the articles against the follower and prevent their falling forward, the sprocket-wheel and chain, and a power device for operating the same, substantially as herein described.

16. In a vending-machine, the upper and lower screws having sprocket-wheels on their inner ends, the endless chains, the guide-pulley therefor, and a spring-power device connected with one of the lower feed-screws, said upper screw having its shaft or outer end adapted to receive a socketed handle-piece, whereby the spring-power device may be wound, substantially as herein described.

17. In a vending-machine, the combination of the power and feeding devices, a coin-chute having separate passages for coins of different values, a cam at the entrance to each of the coin-passages for separating the coins and directing them into their passages, a trip-lever in the path of the coins of lesser value and actuated thereby to start the feeding mechanism in motion, and a second lever closing the discharge of the chute for the coins of greater value and actuated at predetermined times by the power mechanism, whereby the coins of greater value are temporarily held within their passage during the movements of the feeding devices, substantially as herein described.

487,410. AUTOMATIC STOP FOR MICROMETER-GAGES. GEORGE SYLVIA, Waltham, Mass., assignor to the Brown & Sharpe Manufacturing Company, Providence, R. I. Filed Apr. 26, 1892. Serial No. 430,464. (No model.)

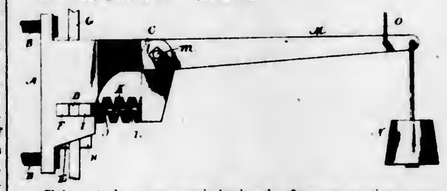
Claim.—1. In a micrometer-gage, a spindle provided with a tapering end, a sleeve fitting upon said tapering end, and a tension device whereby the interior wall of said sleeve is brought to bear with such force upon the exterior wall of the spindle that normally the rotation of one necessitates the rotation of the other, substantially as described.

2. In a micrometer-gage, a spindle provided with a tapering end, a sleeve fitting upon said tapering end, and a spring between the spindle and the sleeve, whereby the interior wall of the sleeve is brought to bear with such force upon the exterior wall of the spindle that normally the rotation of one necessitates the rotation of the other, substantially as described.

487,411. LACING-STRING. ASHER L. WILD, Providence, R. I. Filed July 5, 1892. Serial No. 438,905. (No model.)

Claim.—In a lacing, the combination, with a braid or tape of textile material, of a metallic strand extending longitudinally therethrough and having its ends coiled around the ends thereof as and for the purpose described.

487,412. AUTOMATIC BRAKE. JOHN R. WILSON, Pittsburg, Pa., assignor of one-half to Nathan P. Hyndman, same place. Filed July 13, 1892. Serial No. 439,910. (No model.)



Claim.—1. In an automatic brake, the frame or casting, a stationary flat brake-plate removably supported within said frame and resting against the inner wall thereof, and a correspondingly-shaped opposing freely movable or sliding combined spring and weight actuated brake-shoe mounted to slide in said frame in a direct line with said stationary brake-plate and adapted to normally bear against one side of an intermediate brake or friction bar, substantially as set forth.

2. In a brake, the open frame having opposite side slots, a stationary brake-plate having opposite supporting-lugs removably resting in said side slots, the movable friction or brake bar adapted to work in front of said brake-plate, and an opposing spring-actuated brake-shoe having side lugs moving in said side slots, substantially as set forth.

3. In a brake, the open frame, a stationary brake-plate removably mounted in said frame, an opposing spring-actuated brake-shoe mounted to slide within said frame opposite the brake-plate, a spring arranged against one face of said brake-shoe, and a weighted lever pivotally connected to said frame and bearing against the other end of said spring, substantially as set forth.

4. In an automatic brake, the combination of a frame or casting having forwardly-extending arms and side slots below said arms, a stationary brake-plate having side lugs mounted in said slots, an opposing brake-shoe having similar side lugs mounted to slide in said

slots, a weighted bell-crank lever pivoted between said forwardly-extending arms and having one arm thereof project below the same, and a spring arranged between said brake-shoe and the projecting arm of said lever, substantially as set forth.

487,418. MILK-AERATOR. THOMAS W. WOOD and BERTINI T. WOOD, Berlin, Wis. Filed Apr. 7, 1892. Serial No. 428,158. (No model.)

Claim.—In a milk-aerator, the combination of a receptacle having a tube depending therefrom and detachably connected thereto and provided with a removable collar on the lower end thereof, a separable head loosely and rotatably mounted on the lower end of said tube, the upper part of said head being adapted to be slid upward on the said tube to allow the said collar to be removed and limited in its downward movement by the collar when the latter is secured in position on the lower end of the tube, and arms radially extending from the lower portion of said head at a downward angle of inclination and provided with apertures or openings in alternate sides thereof and having the outer ends of the same closed, the said head being separable and adjustable to provide for cleansing the several parts of the device, substantially as described.

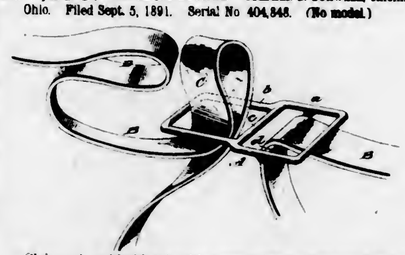
487,414. VEHICLE-SPRING. NICKLOS H. BLOOM, Nashua, Iowa, assignor of one-half to John F. Loos, same place. Filed July 15, 1892. Serial No. 440,154. (No model.)

Claim.—1. The combination, with side bars, of cross-bars, a rock-shaft journaled in the cross-bars and having laterally-extending arms suspended from the side bars, levers provided intermediate their ends with sockets receiving the rock-shafts and being rigid with the same, crossed bars connecting the opposite ends of each lever, and springs disposed on the rock-shaft and each consisting of a bend connected with the adjacent lever and coils extending from opposite sides of the bend and arranged on opposite sides of the lever, substantially as described.

2. The combination, with side bars, of end cross-bars, squared rock-shafts arranged parallel with the side bars and having their ends journaled in the cross-bars, laterally-extending arms having rectangular socket-openings at their inner ends to receive the rock-shafts and having their outer ends suspended from the side bars, the levers provided intermediate their ends with rectangular socket-openings to receive the rock-shaft and provided in their upper arms with recesses, the crossed bars connecting the opposite ends of the levers, and the spiral springs disposed on the rock-shafts and each provided with a central bend engaging the recess of one of the levers and the oppositely-disposed coils having outwardly-extending arms, substantially as described.

3. The combination of side bars, the longitudinally-disposed squared rock-shafts provided at their ends with journals, cross-bars receiving the ends of the rock-shafts, the laterally-extending arms having their inner ends provided with sockets receiving the rock-shafts and having at their outer ends eyes, clips mounted on the side bars and having clip-plates provided with transverse bearings, the shackles arranged in the latter and connecting the outer ends of the laterally-extending arms of the clips, the levers having sockets receiving the rock-shafts and extending upward and downward therefrom, the crossed bars connecting the opposite ends of the levers, and the springs connected with the levers, substantially as described.

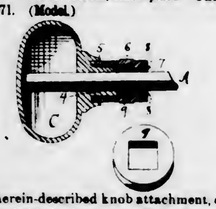
487,415. HITCHING-BUCKLE. STEPHEN B. BURWELL, Cincinnati, Ohio. Filed Sept. 5, 1891. Serial No. 404,848. (No model.)



Claim.—1. A hitching-buckle comprising a substantially-rectangular frame having a central cross-bar in the same plane as the frame, the latter being contracted in width and extended in length in front of said cross-bar and the rear wider portion of the frame having a central cross-bar below and in a parallel plane with said frame, substantially as and for the purpose set forth.

2. As an improved article of manufacture, a hitching-buckle consisting of a rectangular frame divided transversely into two loops by a cross-bar, said loops being of different lengths and widths, the widest of the loops having a cross-bar on a plane below the rectangular frame, substantially as specified.

487,416. KNOB ATTACHMENT. CROMWELL O. CASE, New Britain, Conn., assignor to P. & F. Corbin, same place. Filed June 29, 1892. Serial No. 438,371. (Model.)



Claim.—The herein-described knob attachment, consisting of the knob having a threaded hub, the thimble 6, having a collar 7 secured therein in a rotary manner, and the locking-disk having oblique side walls for its central hole, substantially as described, and for the purpose specified.

487,417. PILE-WIRE FOR LOOMS. CHARLES FORD, Lowell, Mass. Filed July 6, 1892. Serial No. 439,141. (No model.)

487,417.

Claim.—1. As a new article of manufacture, a pile-wire longitudinally slit in part at one end to receive a knife and formed with a transverse notch or recess adapted to bring the upper edge of the pile-wire at this portion below the corresponding edge of the body of the pile-wire and create a shoulder upon each side of the knife, substantially as and for the purposes specified.

2. In a pile-wire, the combination, with a metallic bar having a straight knife end with a longitudinal slit therein and a notch extending to within a short distance of the extremity of said wire, but transversely of said slit, of a removable knife adapted to enter said slit and be secured therein and a removable perforated head at the opposite end of said bar, substantially as stated.

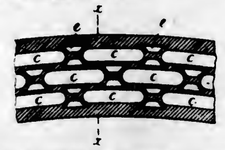
3. The combination, with a straight bar, as a pile-wire, of a perforated head at one end and a removable shouldered knife at the opposite end, said bar being provided with a longitudinal slit to receive the knife, and a transverse notch upon the upper part of the pile-wire in order to create ledges laterally of the knife in which to insert solder, substantially as described and set forth.

487,418. FIRE APPLIANCE. JAMES M. KIRKER and FREDERICK M. BENDER, Louisville, Ky. Filed Mar. 21, 1892. Serial No. 426,833. (No model.)

Claim.—1. In a fire appliance, a stationary tower A, a central water-pipe and a spiral-slide fire-escape held therein, a series of entrance-passages leading to the interior of said tower, automatically-operating doors normally closing said entrance-passages, an exit-door at the lower end of said tower, a spring-plate J on the upper surface of the slide, a pivoted lever held beneath said slide and plate, a vertically-movable latch M, normally in engagement with said door N, and suitable connections between said latch and the outer end of said lever to raise said latch and release the door when downward pressure is applied to said plate, substantially as and for the purpose specified and shown.

2. In a fire appliance, a stationary tower A, a central vertical water-pipe and a spiral slide held therein, a series of entrance-passages leading to the interior of said tower, automatically-operating doors normally closing said entrances, an exit-door at the bottom of the tower with suitable releasing devices operated by a weight moving down the spiral slide, laterally-projecting fire-plugs leading to the exterior of the tower, laterally-projecting spray-pipes *a a'*, and valve-operating handles *b*, projecting beyond the exterior of the tower for convenient operation, substantially as and for the purpose set forth and shown.

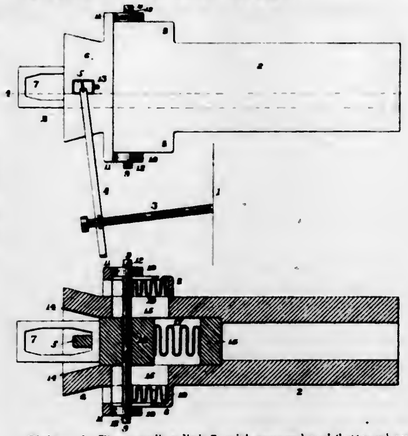
487,419. INDIA-RUBBER TIRE. HENRY H. LEE, London, England. Filed Jan. 12, 1892. Serial No. 417,833. (No model.) Patented in England June 27, 1891, No. 10,987; in Belgium Jan. 4, 1892, No. 97,797, and in France Jan. 4, 1892, No. 218,441.



Claim.—1. The described compound tire, consisting of a series of tubes, each having a series of cells filled with compressed air or gas and each having a series of indented and united parts, as shown and described, the whole being inclosed in an outer covering and further reduced by being compressed and then finally vulcanized.

2. The described method of forming a tire having a series of cells filled with compressed air or gas, consisting in inflating a series of tubes with compressed air, forming indentations in the said tubes, and then inclosing a number of the same in an outer covering, the whole being then compressed into a mold and vulcanized, substantially in the manner described.

487,420. CAR-COUPLING. CHARLES LEE, San Antonio, Tex. Filed Mar. 15, 1892. Serial No. 425,067. (No model.)



Claim.—1. The coupling-link 7, with squared and flattened ends, as shown and described, in combination with the notched coupling-pin 5, the perforated sliding block 18, back spring 17, and movable block 16, all as shown and described.

2. The combination of the slotted receptacles 8 8 with the side springs 19 19, sliding rod 9, and perforated sliding block 18, all as shown and described.

3. The two eccentrics 10 10, with attached bent handle 20, in combination with the sliding rod 9, all as shown and described.

4. The rectangular coupling-pin 5, with notched and beveled end, in combination with the perforated sliding block 18, all as shown and described.

5. The perforated sliding block 18, in combination with the sliding rod 9, as shown and described.

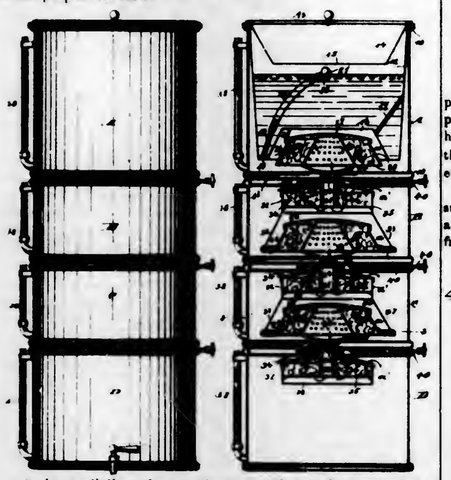
6. The back or rear spring 17, in combination with the perforated sliding block 18 and the movable block 16, all as shown and described.

487,421. OIL-FILTER. OSKAR LINDBERG, Helsingborg, Sweden, assignor of one-half to Johan E. Sandelin, New York, N. Y. Filed June 18, 1892. Serial No. 437,192. (No model.) Patented in Sweden Mar. 12, 1891, No. 2,868; in Norway Apr. 20, 1891, No. 2,077, and in Denmark Apr. 29, 1891.

Claim.—1. In a filter, the combination, with the body constructed of superposed sections, of an oil-reservoir arranged in the first section

and having an outlet, a flexible tube connected with said outlet and having a float-controlled inlet, and two filters located one in one section and the other in the next and connected by a passage, as shown and described

2. In a filter, the combination, with the body portion thereof constructed in sections, one detachable from the other, and a reservoir contained in the first section, having an outlet and a flexible tube connected with the outlet and having a float-controlling inlet, of a filter comprising strainer-casings, connected by a tube, one casing being located in the upper section of the body and the other filter-casing in the next lower section, interior strainers contained in the strainer-casings, and a valve held to slide in the two strainer-casings, whereby communication between them may be cut off or established, as and for the purpose set forth



3. In an oil-filter, the combination, with a body constructed in sections, the upper section being provided with a closed bottom and an open top, as is likewise the next section below the upper section, the sections being removably connected, a reservoir located within the upper section of less diameter at its lower end than the lower diameter of the section, the said reservoir being provided with an outlet, and a flexible tube connected with the outlet, having an inlet-opening and carrying a float, of strainer-casings located one in each of the sections, a tube connecting the strainer-casings, each strainer-casing being provided with a removable top, the upper strainer-casing having only its sides perforated and provided with an interior strainer communicating with the connecting-tube between the upper and lower casings, and a packing of filtering material between the two strainer-surfaces, substantially as shown and described

4. In an oil-filter, the combination, with a body constructed in sections, the upper section being provided with a closed bottom and an open top, as is likewise the next section below the upper section, the sections being removably connected, a reservoir located within the upper section of less diameter at its lower end than the lower diameter of the section, the said reservoir being provided with an outlet, and a flexible tube connected with the outlet, having an inlet-opening and carrying a float, of strainer-casings located one in each of the sections, a tube connecting the strainer-casings, each strainer-casing being provided with a removable top, the upper strainer-casing having only its sides perforated, and provided with an interior strainer communicating with the connecting-tube between the upper and lower casings, and a packing of filtering material between the strainer and perforated sides, the lower strainer-casing having only its removable top perforated and provided with an inner strainer, a packing of filtering material between the two strainer-surfaces, a valve having sliding movement between the upper and the lower strainer-casings, and an essentially-bell-shaped extension formed upon the lower portion of the lower strainer-casing, substantially as shown and described, and for the purpose specified

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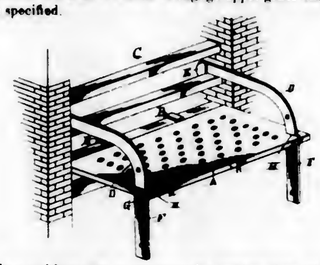
487,422. GRATE-SHELF. JOHN W. MILLER, Bellmore, Ind. Filed July 15, 1892. Serial No. 440,170. (No model.)

Claim.—1. In a sad-iron rest or support, the combination, with the supporting-plate provided at its rear edge with clips to engage the grate-bars, of supporting arms or braces connected at their lower ends to the supporting-plate near its front edge and provided at their upper ends with heads or hooks to engage upper grate-bars, substantially as specified.



2. In a sad-iron rest or support, the combination, with the supporting-plate provided with clips to engage the grate-bars, of supporting arms or braces provided at their rear ends with heads or hooks to engage upper grate-bars and extending at their front ends through guide-openings in the supporting-plate, and pins or keys to engage perforations in said arms or braces, substantially as specified

3. In combination with the supporting-plate of a sad-iron rest or support, the curved or arc-shaped supporting arms or braces attached at their rear ends to upper grate-bars and adjustably attached at their front ends to the said plate, substantially as specified

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487,423. FIREARM. JOHN W. MULLINS, Pariston, Ky. Filed Oct. 22, 1891. Serial No. 409,518. (No model.)

Claim.—1. In a firearm, the combination, with cartridge-ejecting devices comprising a sliding cartridge-extractor, of a hammer, a rebound-block, and a trigger arranged to operate the hammer when moved in one direction and to actuate the cartridge-ejecting devices when moved in the opposite direction, as set forth

2. In a firearm, the combination, with a sliding cartridge-extractor and a pivoted block, of a trigger having a portion designed to engage said block to elevate the same, as set forth

3. In a firearm, the combination, with a sliding cartridge-extractor and a pivoted block, of a trigger having a portion designed to engage said block to elevate the same, and working through a slot in the extractor, as set forth.

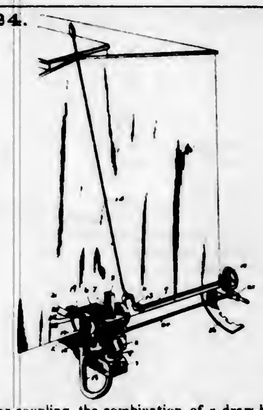
4. In a firearm, the combination, with a sliding cartridge-extractor and a pivoted block, of a trigger having a portion designed to engage said block and working through a slot in the extractor, and a portion to engage and move said extractor, whereby the extractor is moved horizontally and the block thrown up on its pivot simultaneously, as set forth.

5. In a firearm, the combination, with a movable cartridge-extractor having slot, raised portion, and depending portion, of a pivoted brace-block of said raised portion and a pivoted trigger having a portion working through said slot to engage the block and a portion to engage said depending portion, substantially as specified.

487,424. CAR-COUPLING. JOHN MCFARLANE, Wiota, Wis. Filed Mar. 15, 1892. Serial No. 425,010. (No model.)

Claim.—1. In a car-coupling, the combination of a draw-head having a pin-mounted in the draw-head and provided with ratchet-teeth, a shaft, a pinion mounted on the shaft and meshing with the teeth of the pin, a coiled spring connected with the shaft, and means for holding the pin elevated against the action of the spring and for tripping the pin, substantially as described

487,424.



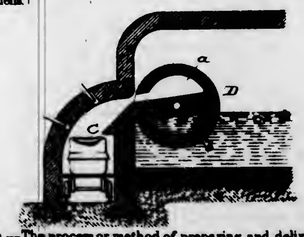
2. In a car-coupling, the combination of a draw-head having a pin-opening, a casing mounted on the draw-head, a coupling-pin arranged in the casing and provided with ratchet-teeth, a shaft journaled in the casing, a pinion mounted on the shaft and meshing with the teeth of the pin, a coiled spring connected with the shaft, a notched disk secured to the shaft and arranged at one side of the casing, and a vertically-movable plate having a projection arranged to engage the notched disk to hold the coupling-pin elevated, substantially as described.

3. In a car-coupling, the combination of a draw-head having a pin-opening, a casing mounted on the draw-head, a coupling-pin arranged in the casing and provided with ratchet-teeth, a shaft journaled in the casing, a ratchet-wheel carried by the shaft and meshing with the teeth of the pin, a coiled spring connected with the shaft, a notched disk carried by the shaft, a vertically-movable plate provided with a projection adapted to engage the notched disk to hold the coupling-pin elevated, and a trip connected with the plate and arranged to be engaged by the link of an approaching car to release the coupling-pin, substantially as described.

4. In a car-coupling, the combination of a draw-head having a pin-opening, a casing mounted on the draw-head, a coupling-pin arranged in the casing and provided with ratchet-teeth, a shaft journaled in the casing, a pinion mounted on the shaft and meshing with the teeth of the pin, a coiled spring connected with the shaft, a notched disk secure to the shaft and arranged at one side of the casing, a vertically-movable plate having a projection arranged to engage the notched disk, and a spring-pressed plate engaging the projection to hold the same in engagement with the disk, substantially as described

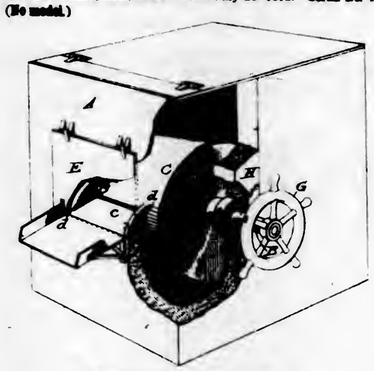
5. In a car-coupling, the combination of a draw-head having the diverging bumper portions, a U-shaped link having its sides arranged on the sides of the draw-head, a shaft carrying the link, a coupling-pin provided with a ratchet, a shaft carrying a pinion meshing with the ratchet, a spring for causing the coupling-pin to descend, means for holding the coupling-pin elevated against the action of the spring, and a trip arranged between the bumper portions to release the coupling-pin and adapted to be engaged and operated by the link, substantially as described.

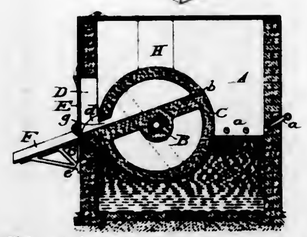
487,425. METHOD OF PREPARING GLASS METAL. ROGER S. PEASE, Rose, Minn. Filed July 25, 1892. Serial No. 441,190. (No specimens.)



Claim.—The process or method of preparing and delivering glass metal, which consists in the following steps, performed in the order stated: first, melting the batch in a tank; second, delivering said molten metal to a series of pots; third, placing the pots in an oven and maintaining a proper temperature therein until the metal is fined; fourth, removing the pots from the oven and pouring their contents; fifth, delivering molten metal from the tanks to the emptied pots, and, sixth, replacing the pots within the oven for fining the metal.

487,426. APPARATUS FOR MOLDING GLASS, METAL, &c. ROGER S. PEASE, Rose, Minn. Filed July 25, 1892. Serial No. 441,189. (No model.)





Claim.—1. In combination with a receptacle to contain material in a fluid condition, a drum journaled in or above said receptacle and provided with a diaphragm or partition, and with an opening through its circumferential wall, substantially as described, whereby the drum is adapted to dip into the fluid material, receive a charge or supply thereof, carry the same above the axis of the drum, and discharge it, substantially as set forth

2. In combination with chamber A, drum C, provided with longitudinal diaphragm or wall *b*, opening *g* at one side of said diaphragm or wall, and pouring-lip *c* in front of said opening, the drum being adapted to rock or turn, substantially as described.

3. In combination with chamber A, drum C, mounted within said chamber and provided with longitudinal wall or diaphragm *b*, circumferential opening *g* and lip *c* in front of said opening, and shaft B, extending through said drum and serving to support the same and as an axle upon which it may turn.

4. The combination of chamber A, provided with wall-opening D, shaft B, extending through the said chamber, and drum C, mounted upon said shaft, provided with longitudinal wall or partition *b*, circumferential opening *g*, and lip *c* in front of said opening and adapted to rock or turn, substantially as described.

5. In combination with chamber A, having recessed walls, shaft B, extending through said chamber, and drum C, mounted upon said shaft and having the portion *f* encircling the shaft B and extending into the recesses of the walls, said drum C and extensions *f* being made of refractory material and adapted to rock or turn, substantially as described, and the drum being provided with an internal chamber and with a circumferential opening *g* into said chamber.

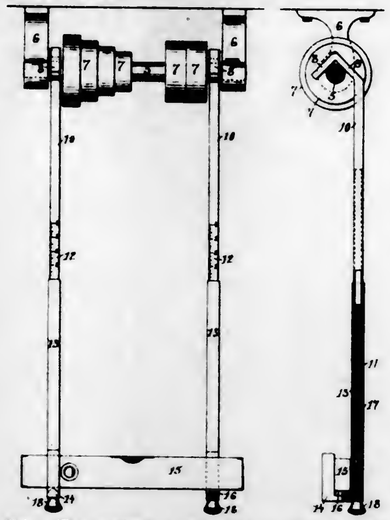
6. In combination with chamber A, provided with opening D in its wall, door E, covering said opening, and shelf or table F, extending outward from the lower side of said opening, drum C, mounted and adapted to turn within the chamber A close to opening D and provided with longitudinal wall or diaphragm *b*, circumferential opening *g*, and pouring-lip *c* in front of the opening *g*, all substantially as set forth.

7. In combination with chamber A and pouring-drum C, having longitudinal wall or partition *b* and circumferential opening *g*, shaft B, extending through the walls of the chamber and through the cylinder and removable therefrom, whereby the shaft is adapted to be withdrawn longitudinally and the cylinder is thereby permitted to be removed from the chamber A.

8. In combination with a chamber to contain molten matter, a pouring-drum mounted within said chamber and supported by axial journals, said drum being constructed with a diaphragm or partition

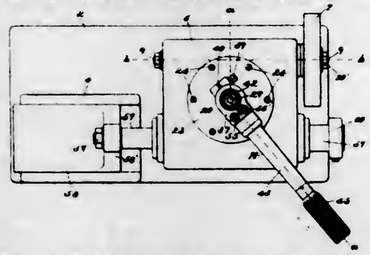
and an opening through the wall of the drum into the space between the partition and the inner wall of the cylinder at one side of the diaphragm, the space on the opposite side thereof being closed, substantially as described, whereby the drum is adapted to be floated by the contents of the chamber and the bearings are relieved of pressure due to the weight of the cylinder and its contents.

487,427. LEVEL-HANGER FOR SHAFTING. NATHANIEL D. POOLE, North Attleborough, Mass. Filed July 5, 1892. Serial No. 439,076. (No model.)



Claim.—The combination, with the shank 10, having a hook formed of the members 8 and 9 at its upper end and a tubular lower portion, and a block 11, secured at the lower end of the shank and having a threaded perforation, of the tubular member 13, adapted to receive the shank 10, a hook 14, formed at the lower end of the member, and a screw 17, having the head 18 and adapted to engage with the threaded perforation in the block 11, as and for the purpose described.

487,428. FEED MECHANISM. FRANCIS H. RICHARDS, Hartford, Conn. Filed Feb. 3, 1892. Serial No. 420,170. (No model.)



Claim.—1. In a feed mechanism, the combination, with the feed-shaft and a clutch, of a clutch-wheel and means actuating the same, a hand-lever carried on the feed-shaft and having the handle thereof movable thereon, and connections operatively connecting the handle with the clutch, whereby the clutch may be actuated to engage and disengage the same, substantially as described.

2. In a feed mechanism, the combination, with a feed-shaft carrying a clutch, of two clutch-wheels and means actuating the same in opposite directions, respectively, the hand-lever carried on the feed-shaft and having the handle thereof movable thereon, and connections operatively connecting the handle with the clutch, whereby the clutch may be actuated to engage and disengage either clutch-wheel, substantially as described.

3. In a feed mechanism, the combination, with the feed-shaft and a clutch, of a clutch-wheel and means actuating the same, the hand-lever carried on the feed-shaft, and the lever-handle carried by a shaft journaled longitudinally of the lever and having a crank, and a rod operatively connecting the crank of said hand-lever shaft with the clutch, whereby the clutch may be actuated by turning the handle of the hand-lever, substantially as described.

4. In a feed mechanism, the combination, with the feed-shaft provided with a clutch, of two clutch worm-wheels mounted on said shaft, gearing revolving said wheels in opposite directions, respectively, a hand-lever fixed to the feed-shaft for actuating the same by hand, and a handle movable on the lever and operatively connected with the clutch for actuating the feed-shaft by power in either direction, substantially as described.

5. In a feed mechanism, the combination, with a machine part to be actuated and with a slide, substantially as described, connected to actuate the machine part, of the feed-shaft geared to said slide and provided with a clutch, a clutch-wheel and means actuating the same, a hand-lever for actuating the feed-shaft by hand, and means, substantially as described, actuating the clutch from the handle of the lever, substantially as described.

6. In a feed mechanism, the combination, with a clutch mechanism and with the hand-lever carried by the feed-shaft of the mechanism and having the rod 44 connected to actuate the clutch devices of the mechanism, of thrust-spring devices, substantially as described, acting on said rod to return the same from its terminal positions to its medial position, substantially as described.

7. In a feed mechanism, the combination, with the feed-shaft and the hand-lever, of the rod 44, having the portion 52 and the crank-pin 50, and the spring-actuated plugs bearing on the opposite ends of said portion 52, substantially as shown and described.

8. In a feed mechanism, the combination, with the feed-shaft provided with a clutch, of the clutch-wheels 31 and 32, the shafts 16 and 9, each having a worm meshing with said wheels, respectively, gearing connecting said shafts, means revolving the shafts, and the hand-lever, the lever-handle movable on the lever, and connections from said handle to the clutch for engaging and disengaging the clutch with and from either of the clutch-wheels, substantially as described.

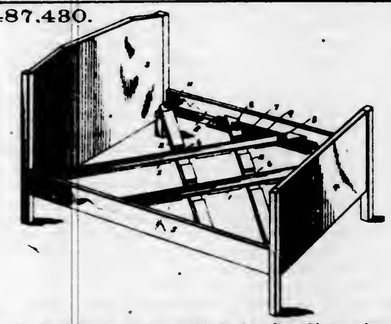
487,429. CLOTHES-DRIER. JAMES H. RUEDE, Woodville, Mo. Filed July 19, 1892. Serial No. 440,511. (No model.)

Claim.—A clothes-drier comprising the standards, the bottom piece or horizontal bar 2, connecting the lower end of the standard, the clothes-supporting rods connecting the standards, the folding racks pivoted to the standards, the cross-pieces 10, secured to the horizontal board or bottom piece 2 and provided at their outer side edges with stops 15, the feet pivoted beneath the horizontal board or bottom piece 2 and adapted to be turned out longitudinally of the cross-pieces 10 to form a broad base and to be folded beneath the bottom bar or cross-piece and provided with grooves and with sockets, and T-bolts arranged on the lower face of the bottom piece or horizontal bar and adapted to engage the grooves and sockets, substantially as described.

487,430. BED-BOTTOM. WILLIAM H. SCOTT, San Francisco, Cal. Filed Dec. 31, 1891. Serial No. 416,639. (No model.)

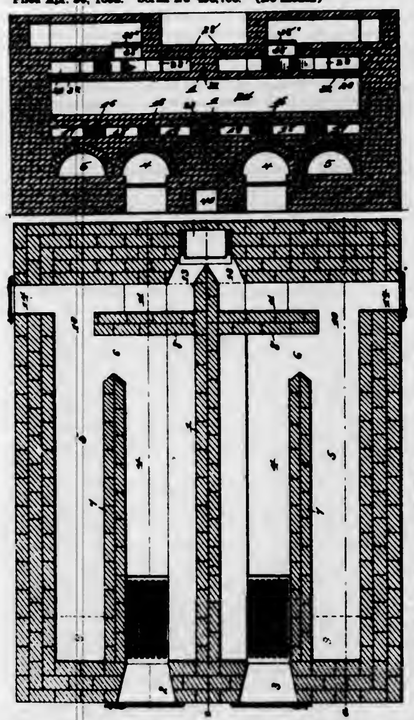
Claim.—The combination, with the rectangular bed-frame comprising the foot and head board and the opposite side rails provided with the usual ledges and connecting the foot and head board, of blocks 11, secured to the head and foot boards in line with the adjacent portions of the side rails, an elongated slotted plate secured to the inner central portion of each of the side rails and resting on the ledges of the same and disposed longitudinally, two pairs of diagonally-disposed bracing-bars crossing each other in such manner as to bring one pair above the other and having their inner ends adjustably attached to the elongated slotted plates and their outer ends secured to the blocks

487,480.



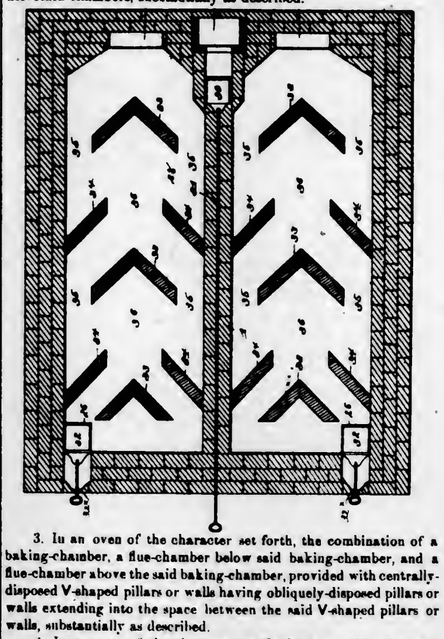
11 of the head and foot board, and bolts for adjustably securing said ends to the said parts, said pairs of braces having their opposed faces recessed at the point of crossing to bring the upper and lower faces in the same horizontal planes to provide a flush upper surface, said recesses in the opposed faces of the braces being longer than the width of said braces to permit a sliding adjustment without detaching or disconnecting the parts, the said outer ends of each pair of braces being pivotally attached to the head and foot boards, substantially as described.

487,481. BAKER'S OVEN. GEORGE R. SKILLMAN, Baltimore, Md. Filed Apr. 26, 1892. Serial No. 430,703. (No model.)



Claim.—1. In an oven of the character set forth the combination of a baking-chamber and flue-chambers arranged above and below the same, the said flue-chamber below the baking-chamber having vertical pillars arranged therein at intervals and spaced apart and the flue-chamber above being provided with angularly-disposed centrally-located walls intersected by oblique walls, substantially as described.

2. In an oven of the character set forth, the combination of a baking-chamber, a flue-chamber below said baking-chamber, having parallel pillars or walls arranged therein to form tortuous flues, and a flue-chamber over said baking-chamber, having angularly-disposed pillars or walls, a damper located between the front upper part of the baking-chamber and the flue-chamber, immediately above the latter, for the purpose of establishing a communication between said parts, flues connecting the said flue-chambers, and a lower furnace-chamber having arched walls and also provided with transverse walls at the back thereof, forming transverse flues opening out at the opposite sides of the oven and also into a centrally-located rear chimney-flue, the latter also being in communication with a portion of the aforesaid chambers, substantially as described.



3. In an oven of the character set forth, the combination of a baking-chamber, a flue-chamber below said baking-chamber, and a flue-chamber above the said baking-chamber, provided with centrally-disposed V-shaped pillars or walls having obliquely-disposed pillars or walls extending into the space between the said V-shaped pillars or walls, substantially as described.

4. In an oven of the character set forth, the combination of a baking-chamber, a lower furnace-chamber having flues therein, transverse flues or passages at the rear of said furnace-chamber and opening out of the side walls of the oven and communicating with the chimney-flue, and a longitudinal flue below the furnace-chamber and extending centrally into the lower portion of the oven to the back thereof, substantially as described.

5. In an oven of the character set forth, a baking-chamber having a dividing-wall located above and below the same, and duplicate furnace-chambers and flue-chambers on each side of said wall and connected with each other by independent vertical flues and suitable dampers at opposite ends, substantially as described.

6. In an oven of the character set forth, the combination of a baking-chamber, a flue-chamber below the same, a single chimney-flue in rear of the central part of said flue-chamber, a damper mounted in said chimney-flue, a flue-chamber above the said baking-chamber, and a damper in the top of said baking-chamber, communicating with the chimney-flue, substantially as described.

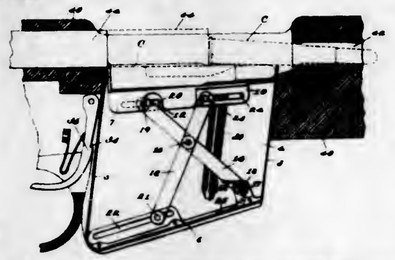
7. In an oven of the character set forth, the combination of independent furnace-chambers separated by a central dividing-wall with lateral extensions, forming fire-walls, and said chambers each partially divided by other walls to form outer flues, each of said chambers also having a communicating passage to a single chimney-flue in rear of the lateral extensions of the said central dividing-wall, lower double tortuous flue-chambers above said furnace-chambers, an undivided baking-chamber above said tortuous flue-chambers and having a top damper connection with the chimney-flue and also adapted to be thrown into communication with said lower tortuous flue-chambers, upper tortuous flue-chambers next above the baking-chamber, having communicating flues with lower tortuous flue-chambers and supplied with dampers for controlling said communication, and a double topmost flue-chamber, all adapted to be thrown into communication or only partially connected, substantially as described.

487,482. MAGAZINE FOR FIREARMS. CHARLES W. SPOONER, Hartford, Conn. Filed Dec. 7, 1891. Serial No. 414,214. (No model.)

Claim.—1. In a magazine, the combination, with the case and with the platform movable in the case, of a pair of crossed levers piv-

otally connected medially of the length thereof and connected at one end of each lever with the case and at the other end of each lever with the platform and means actuating the levers to elevate the platform, substantially as set forth.

2. In a magazine, the combination, with the case and with the platform movable in the case, of two crossed levers pivotally connected medially of the length thereof and of different proportions, respectively, one end of each of said levers being connected with the case and the other end thereof connected with the platform, whereby the two ends of the platform are given different velocities, substantially as set forth.

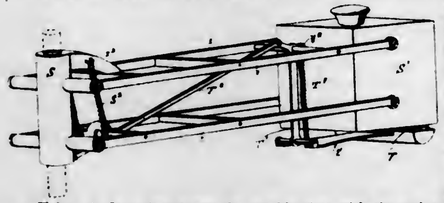


3. In a magazine, the combination, with the case and with the platform movable in the case, of two crossed pivotally-connected levers of different proportions connecting at their upper ends with the platform by pin-and-slot connections and connecting at their lower ends with the magazine-case by one pivot connection and one pin-and-slot connection and means actuating the levers to elevate the platform, whereby the position of the platform is positively controlled during the elevation thereof, substantially as set forth.

4. In a magazine, the combination, with the magazine-case carrying the pivot 18 and having the slot 22 and with the platform constructed, substantially as described, for engagement with the upper ends of two crossed levers, of the lever 14, carried by the pivot 18 and connecting by a pin-and-slot connection with the rearward end of the platform, and the lever 16, pivotally connected to the lever 14 at the point 15 and connecting at its upper end by a pin-and-slot connection with the platform and at its lower end having a pin working in the slot 22, substantially as set forth.

5. In a magazine of the class specified, the improved cartridge-platform herein described, consisting of the table or plate having its edges folded upon the under side thereof and then bent downwardly and said depending parts fitted to receive the lever-pivots of the platform-elevating devices, substantially as set forth.

487,433. TIME-STAMP. CHARLES STAHLBERG, New York, N. Y., assignor to the Accurate Time Stamp Company, of West Virginia. Filed Feb. 18, 1891. Renewed Apr. 21, 1892. Serial No. 430,065. (No model.)



Claim.—1. In a time-stamp, the combination, with the spring-impelled printing mechanism for indicating the phases of time and locking-levers co-operating with said printing mechanism and holding the same against the tension of the impelling-springs, of the minute printing mechanism controlling said locking-levers to release the same at predetermined intervals and permit the impelling-springs to actuate the printing mechanism, substantially as described.

2. In a time-stamp, the combination, with the spring-impelled type-wheels for indicating the phases of time, the locking-wheels thereon, and the locking-levers engaging said wheels and holding them against rotation under the influence of their impelling-springs, of the minute-wheel controlling the locking-levers for the said printing-wheels, whereby the same are released and the wheels permitted to rotate under the influence of their said impelling-springs, substantially as described.

3. In a time-stamp, the combination, with the month, date, and hour type-wheels having independent impelling-springs independent of the releasing mechanism for the locking-levers, of the minute-wheel, the locking-lever for the hour-wheel moved thereby, the locking-lever for the date-wheel moved by the hour-wheel, and the locking-lever for the month-wheel moved by the date-wheel, said locking-levers being adapted when released to lock the wheels against movement under the influence of their impelling-springs, substantially as described.

4. In a time-stamp, the combination, with the month, date, and hour type-wheels having independent impelling-springs independent of the releasing mechanism for the locking-levers and a locking-lever for each wheel for holding them against the power of their impelling-springs, of the minute-wheel, the pin thereon controlling the locking-lever of the hour-wheel, the pin on the hour-wheel controlling the locking-lever of the date-wheel, and the pin on the latter controlling the locking-lever of the month-wheel, substantially as described.

5. In a time-stamp, the combination, with a series of independent printing-wheels for the various phases of time to be indicated and a corresponding series of independent impelling-springs normally connected with and tending to rotate said wheels forward, of locking-levers engaging and holding the wheels from rotation under the influence of said springs and periodically-operated releasing mechanism for throwing said locking-levers out of engagement and permitting the springs to operate, substantially as described.

6. In a time-stamp, the combination, with a series of independent printing-wheels for the various phases of time to be indicated, and a corresponding series of independent impelling-springs normally connected with and tending to rotate said wheels forward, and periodically-released locking-levers engaging and normally holding said wheels from rotation under the influence of their impelling-springs, of a driven train of gearing for rewinding each of said series of springs, substantially as described.

7. In a time-stamp, the combination, with a series of independent printing-wheels for the various phases of time to be indicated, a corresponding series of independent impelling-springs normally connected with and tending to rotate said wheels forward, and periodically-released locking-levers engaging and normally holding said wheels from rotation under the influence of their impelling-springs, of a driven train of gearing carrying mutilated gears for resetting the springs during the periods of rest of the type-wheels, substantially as described.

8. In a time-stamp, the combination, with a series of independent printing-wheels for the various phases of time to be indicated, a corresponding series of independent impelling-springs normally connected with and tending to rotate said wheels forward, and periodically-released locking-levers engaging and normally holding said wheels from rotation under the influence of their impelling-springs, of a driven train of gearing carrying mutilated gears for resetting the springs during the time the type-wheels are at rest, the teeth of the mutilated gears being proportional and connected in the train to move at the same ratio as the type-wheels, whereby the springs are rewound the exact amount that they are run down by the movement of the type-wheels, substantially as described.

9. In a time-stamp, the combination, with the type-wheels, of the segments engaging the same to advance the wheels, the springs for turning the segments in one direction, and the power-gearing for turning them in the opposite direction, substantially as described.

10. In a time-stamp, the combination, with the type-wheels, of the segments, the pawl connections between the segments and said wheels, the springs for turning said segments in one direction, and the power-driven mutilated gears for turning them in the opposite direction, substantially as described.

11. In a time-stamp, the combination, with the type-wheels mounted on a common shaft, of the operating-segments mounted on the same shaft between the wheels, the springs for moving said segments, and the train of gearing for rewinding the springs, substantially as described.

12. In a time-stamp, the combination, with the type-wheels mounted on a common shaft, of the toothed operating-segments mounted on the same shaft between the wheels, the pawl connections between the segments and wheel-springs for moving the segments in one direction, and the driven mutilated gearing engaging the segments and moving them in the opposite direction, substantially as described.

13. In a time-stamp, the combination, with the type-wheels mounted on a common shaft and carrying the lock-wheels, of the toothed operating-segments mounted on said shaft between the wheels and having the pawls engaging the lock-wheels, the gears meshing with said segments, the springs connected to the same to move the segments in one direction, the power-train, and the mutilated gears carried by said train for moving the segments in the opposite direction and rewinding the springs, substantially as described.

14. In a time-stamp, the combination, with the minute-unite wheel having a series of sets of digits thereon, a spring for turning the same, and escapement controlling its movements, of the minute-tens wheel, the spring for rotating the same, the locking-lever, and the pins on the units-wheel engaging the locking-lever as the end of each set of digits passes from the indicating-point, substantially as described.

15. In a time-stamp, the combination, with two printing-wheels arranged side by side, the lock-wheel on one of them, and a pin on the other, of a locking-lever having the rectangular projection engaging the lock-wheel and the inclined end projecting into the path of the pin on the other type-wheel, whereby the rotation of the latter causes the release of the former, substantially as described.

16. In a time-stamp, the combination, with the date-units wheel having a set of digits thereon with a duplicate figure "1" and a date-tens wheel having duplicate figures "1" and "2," a figure "3," and a blank or zero space thereon, of a locking-lever for the tens-wheel and a pair of releasing-pins on the units-wheel for releasing the said lever twice in succession and permitting the same to remain at rest during the time the units-wheel is passing the digits from "2" to "9," substantially as described.

17. In a time-stamp, the combination, with the date-units wheel and the date-tens wheel, of a locking-lever for the date-tens wheel and a pair of relatively-closely-spaced pins on the units-wheel for releasing said levers twice in succession, whereby the tens-wheel is caused to move at irregular intervals and the proper registration made, substantially as described.

18. In a time-stamp, the combination, with the date-units wheel and the date-tens wheel controlled thereby, of the locking-lever for the units-wheel, a skipping-wheel for holding said lever out of engagement, and a cam for moving said skipping-wheel into operative position at the tenth and twentieth days, substantially as described.

19. In a time-stamp, the combination, with the date-units wheel and the date-tens wheel controlled thereby, of the locking-lever for the units-wheel, a skipping-wheel for holding said lever out of engagement, and a cam having two points moved by the units-wheel for throwing the skipping-wheel into operative position at the tenth and twentieth days, substantially as described.

20. In a time-stamp, the combination, with the spring-impelled date-wheel, locking-lever therefor, and month-wheel having the cams thereon, of the skipping-wheel separate from the date-wheel for holding the locking-lever out of engagement and a retarding-arm moved by the month-wheel and engaging the skipping-wheel at the end of short months to cause the proper skipping of indices, substantially as described.

21. In a time-stamp, the combination, with the spring-impelled date-wheel, locking-lever therefor, and month-wheel having the cams thereon, of the skipping-wheel separate from the date-wheel, the retarding-lever moved by the month-wheel and engaging the skipping-wheel at the end of short months, and the cam engaging and moving said lever into position to engage the skipping-wheel at the tenth and twentieth days, substantially as described.

22. In a time-stamp, the combination, with the date-units wheel having a set of digits thereon with duplicate figures "1," of a date-tens wheel having a partial set of digits with the figures in duplicate, save the last one, a skipping-wheel and operating mechanism therefor controlling the skipping of the units-wheel from "0" to the second figure "1," and a locking-lever for the tens-wheel, controlled by the units-wheel and operated during the passage of the units-wheel from the first figure "1" to the second figure "1," substantially as described.

23. In a time-stamp, the combination, with the date-wheel, the skipping-wheel, the gears between said date-wheel and skipping-wheel, and the spring forming the connection between the skipping-wheel and said gears, of the retarding-lever engaging said skipping-wheel and the locking-lever for the date-wheel, held out of engagement by the skipping-wheel when in operative position, substantially as described.

24. In a time-stamp, the combination, with the date-wheel, driving mechanism, and the wheel D^4, connected by gearing with said date-wheel, of the skipping-wheel M, mounted in proximity to the wheel D^4, a spring connecting the said wheels, the locking-lever for the date-wheel held out of engagement by the skipping-wheel, and the retarding-arm engaging the skipping-wheel to hold it in operative position, substantially as described.

25. In a time-stamp, the combination, with the date-wheel, driving mechanism, and the wheel D^4, connected by gearing with said date-wheel, of the skipping-wheel M, mounted in proximity to the wheel D^4, a spring connecting the said wheels, the locking-lever for the date-wheel held out of engagement by the skipping-wheel, the retarding-arm engaging the skipping-wheel to hold it in operative position, and the cam moving with the wheel D^4 and engaging the retarding-arm to set the same, substantially as described.

26. In a time-stamp, the combination, with the date-wheel, driving mechanism, and the wheel D^4, connected by gearing with said date-wheel, of the skipping-wheel M, mounted in proximity to the wheel D^4, a spring connecting the said wheels, the locking-lever for the date-wheel held out of engagement by the skipping-wheel, the retarding-arm engaging the skipping-wheel to hold it in operative position, the cam moving with the wheel D^4 and engaging the retarding-arm to set the same, and the stop for arresting the movement of the wheel D^4, substantially as described.

27. In a time-stamp, the combination, with the date-wheel, driving mechanism, the wheels D^3 D^4, connected by gearing with said date-wheel, skipping-wheel mounted between the wheels D^3 D^4, and the spring connecting the skipping-wheel and wheels D^3 D^4, of the locking-lever for the date-wheel held out of engagement by the skipping-wheel, the retarding-arm engaging the skipping-wheel to set the same, the cam on the wheel D^4 for moving the arm, and the stops on the wheel D^3 for arresting the movement of the date-wheel, substantially as described.

28. In a time-stamp, the combination, with the printing mechanism, substantially as described, and the train of gearing for driving said printing mechanism, of the sprig for driving said train, a winding mechanism for said spring, an electric motor for driving said winding mechanism at short predetermined intervals, and an escapement controlling the movement of the printing mechanism operated by the winding mechanism, substantially as described.

29. In a time-stamp, the combination, with the type-wheels, independent impelling-springs therefor, and a train of gearing for rewinding said springs, of the minute-wheel-impelling spring connected in said train, to drive the same and an electric motor for rewinding said minute-wheel-impelling spring, substantially as described.

30. In a time-stamp, the combination, with the type-wheels, independent impelling-springs therefor, and a train of gearing for rewinding said springs, of the minute-wheel-impelling spring connected in said train to drive the same, an electric motor for rewinding said minute-wheel-impelling spring, and an escapement controlling the movement of the minute-wheel operated by said electric motor, substantially as described.

31. In a time-stamp, the combination, with the type-wheels, independent impelling-springs therefor, and a train of gearing for rewinding said springs, of the minute-wheel-impelling spring connected in said train to drive the same, a ratchet-wheel for rewinding the last-mentioned spring, an electric motor for turning said ratchet-wheel, an escapement controlling the movement of the minute-wheel, and a series of pins on the ratchet-wheel for operating the escapement, substantially as described.

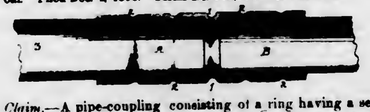
32. In a time-stamp, the combination, with the printing mechanism and the casing therefor, of the parallel arms carrying said casing mounted on a pivoted support, substantially as described.

33. In a time-stamp, the combination, with the printing mechanism and the casing therefor, of the parallel arms carrying said casing, the pivotal support to which said arms are connected, and the springs for elevating the casing, substantially as described.

34. In a time-stamp, the combination, with the printing mechanism and the casing therefor, of the parallel arms carrying said casing, the pivotal support to which said arms are connected, the spring for elevating the casing, the inking-roller, the lever carrying the same, pivoted on the arms, and the link connected to said lever for moving the inking-roller, substantially as described.

35. In a time-stamp, the combination, with the printing mechanism and the casing therefor, of the parallel arms carrying said casing, the pivoted support to which said arms are connected, the spring for elevating the casing, the inking-roller, the lever carrying the same pivoted on the arms, the link connected to said lever for moving the inking-roller, and the spring for holding the roller in contact with the types while passing over the same, substantially as described.

487,434. PIPE-COUPLING. EDWARD T. STEEL, San Francisco, Cal. Filed Dec. 4, 1890. Serial No. 373,584. (No model.)



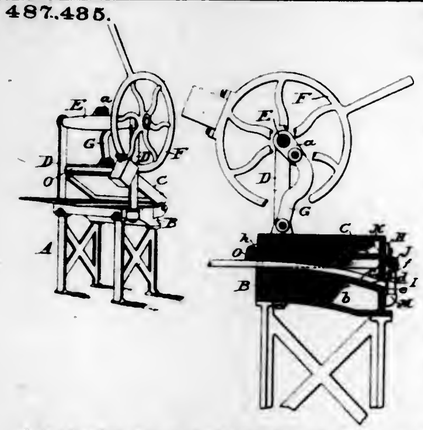
Claim.—A pipe-coupling consisting of a ring having a series of circumferential corrugations formed in the metal and producing alternate grooves and ribs or projections in the inner surface of the ring, with the middle corrugation of greater projection on the inside than the corrugations or projections on either side of it, substantially as described.

487,435. BENDING-PRESS. SAMUEL SWARTZ, Detroit, Mich. Filed July 1, 1892. Serial No. 438,068. (No model.)

Claim.—1. In a bending-press, the two boxes B and C, each having a steam-chamber and having their edges extended to meet and to form an intermediate hot-air chamber to receive the article to be bent.

2. In a bending-press, the box B, provided with a die *d* and the holes *e* to receive the ends of the bars to be bent.

487,435.



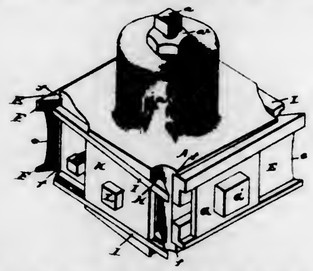
3. In a bending-press, the box B, provided with die *d* and holes *e* and having its front edge or wall notched.

4. In a bending-press, the combination, with the box B, having a die *d*, of a frame or box C, having a yielding bearing bar or ledge O.

5. In a press, the combination, with a fixed frame or box and a movable frame or box, of a die and a yielding pressure-bar interposed between the frames or boxes.

6. In a bending-press, the combination, with a fixed frame or box having a die or former, of a movable frame or box having a pivoted presser-bar.

487,436. ROTARY CUTTER-HEAD. FRANK H. VAN HOUTEN, Matteawan, assignor to the Dutchess Tool Company, Fishkill-on-the-Hudson, N. Y. Filed June 23, 1892. Serial No. 437,727. (No model.)



Claim.—1. In a rotary cutter-head such as described, the combination, with the stock, of the side-dressing cutter secured rigidly on one face thereof and the converging edge rounding and dressing cutters secured rigidly on another face thereof with the cutting-edges at the forward and converging ends, substantially as described.

2. In a rotary cutter-head such as described, the combination, with the stock and the side-dressing cutter secured rigidly on one face thereof with the projecting width-reducing cutters, of the converging edge rounding and dressing cutters secured rigidly on another face with the cutting-edges at the forward and converging ends, substantially as described.

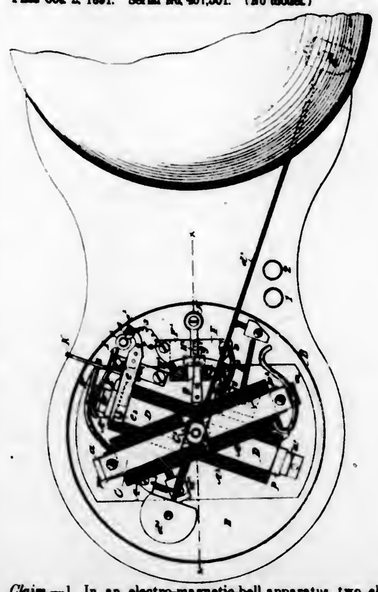
3. In a rotary cutter-head, the stock having a plane face with side-dressing cutter secured therein in a plane at right angles to the center of rotation of the head, a face having seats dressed therein converging toward the forward end, and edge-dressing cutters secured therein with the cutting-edges at the converging ends, substantially as described.

4. In a rotary cutter-head, the combination, with the stock, of the side-dressing cutter secured thereon, having the concave outer face, projecting edge-cutting surface, and a plane grinding or sharpening surface for all said edges, substantially as described.

5. In a rotary cutter-head, the combination, with the stock having the seats or grooves dressed therein at top and bottom and converging toward the forward end, of the cutters in said seats, the converging plate interposed between said cutters, and the set-screw for clamping the plate to the stock, substantially as described.

6. In a rotary cutter-head, the combination, with the stock having the central concavity for the shaft with the groove or seat therein and the external cutters, of the hardened key fastened in said seat in the stock and the set-screw passing through the stock and bearing on said key, substantially as described.

487,437. ELECTRIC BELL. PETER WAGNER, New York, N. Y. Filed Oct. 2, 1891. Serial No. 407,501. (No model.)



Claim.—1. In an electro-magnetic-bell apparatus, two electro-magnets placed in different horizontal planes, crossing each other diagonally but with coinciding centers, in combination with an armature pivoted between said magnets and adapted to be attracted by and swing between their respective poles, and a bell or gong operated by the movement of said armature, substantially in the manner set forth.

2. In an electro-magnetic-bell apparatus, the diagonally-arranged magnets A and A', each constructed with a space between the coils, exposing the cores, in combination with the swinging armature D, arranged between said magnets, its shaft *d*, passing centrally through said cores within the spaces, and a striker and bell operated by said armature, substantially as and for the purpose specified.

3. The combination, with the diagonally-placed magnets of the swinging armature D, having vertical shaft *d* and proper bearings therefor, of the rod d', fixed to the central part of said armature and having counterbalance d^2 at one end and hammer or striker d^3 at the other, and a suitable bell or gong, substantially as set forth.

4. The combination, with the electro-magnets A A' and armature D, working between their respective poles and having pin e^2 near its end, of the auxiliary armature E, a suitable support and connections therefor, and spring *e*, having hook or projection e^1, adapted to engage with said pin, substantially as and for the purpose described.

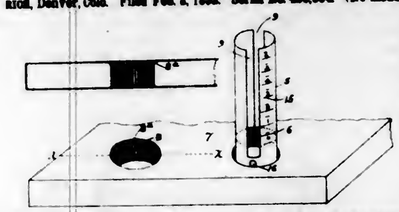
5. The combination, with the electro-magnets and their armature, the auxiliary armature E, carrying contact-screw 4, and support I, of the lever K, pillar 5, having contact 6, plates F F', switch 8, and proper electrical connections, substantially as and for the purpose specified.

6. The combination, with the magnets and their swinging armature, of the hammer-rod d', fixed to said armature, switch 8, having upwardly-projecting arm 10, plates F F', contacts 4 and 6, armature E, and spring *e*, adapted to engage with the swinging armature, substantially in the manner and for the purpose specified.

7. The combination, with the electro-magnets, swinging armature, and hammer-rod, of the terminal plates F F', pivoted strip *g*, adapted to form contact with said terminals alternately and having upright pins g' g^2, the spring H', bearing upon said strip-stud H, and proper electrical connections, all arranged to operate substantially in the manner and for the purpose set forth.

8. In an electro-magnetic-bell apparatus, the combination of electro-magnets A A', armature D, striker-rod d', armature E, switch 8, terminal plates F F', studs H and 5, spring H', the movable metal strip *g*, provided with pins g' g^2, and the electrical connections, as described, with the binding-screws 1 2, as and for the purpose specified.

487,438. COIN-HOLDER. ROBERT J. WALLACE and LOUIS A. HERRICK, Denver, Colo. Filed Feb. 8, 1892. Serial No. 420,804. (No model.)



Claim.—1. In a coin-holder, the combination of a coin-tube slotted on opposite sides from the top downward, and a base provided with a suitable socket for the reception of the tube, which is removable or detachable, substantially as described.

2. A coin-holder consisting of a tube having two oppositely-disposed longitudinal slots, a coin-rest, and a graduated outer surface, in combination with a socketed base for the reception of the tube, substantially as described.

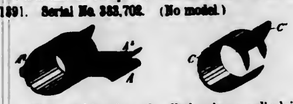
3. The combination, with a series of tubes, each provided with two longitudinal slots and a suitable coin rest or stop, of a socketed base adapted to receive the tubes and support them in a vertical position, substantially as described.

4. A coin-holder consisting of a tube having two longitudinal slots, a coin rest or stop, and openings in the bottom for the attachment or insertion of a string or other fastening device adapted to lock the coins in the holder, substantially as described.

487,439. PROCESS OF MANUFACTURING SUGAR. EDWARD C. BARTHELMEY, New Orleans, La. Filed Apr. 13, 1891. Serial No. 388,694. (No specimens.)

Claim.—The process herein described of manufacturing sugar, consisting in boiling each strike of first sugars to a finish with semi-sirup or reduced cane-juice, then letting the same out of the vacuum-pan with the exception of a portion designed to form a nucleus for another strike, then thickening or reducing the consistency of the molasses resulting from the first strike, then liming the same to produce neutrality or alkalinity, then adding the prepared molasses to the nucleus of sugar left from the first strike in an evaporating-pan, evaporating to the finish of a second strike, then adding water sufficient to dilute the molasses and bring it to a proper consistency to pass freely through the meshes of a centrifugal device, then boiling the molasses resulting from this last step until it is of such consistency that it may be drawn into a string, then adding to the string-sugar a portion of the first sugars and molasses therefrom, evaporating the same to a strike, and finally centrifuging to separate the sugar from the molasses, substantially as specified.

487,440. PAPER-FASTENER. SYLVESTER P. DARLINGTON, Brooklyn, assignor of one-half to Joseph W. Cushman, New York, N. Y. Filed Mar. 4, 1891. Serial No. 383,702. (No model.)



Claim.—1. The combination of a clip having a cylindrical portion A^1 and adjacent flat lips A^2 with coincident apertures therein, a shell mounted upon and turning on the cylindrical portion of the clip, and a perforating and paper-retaining pin carried by the shell and adapted to pass through the coincident openings in the lips of the clip and the thumb-piece C^2 of the shell.

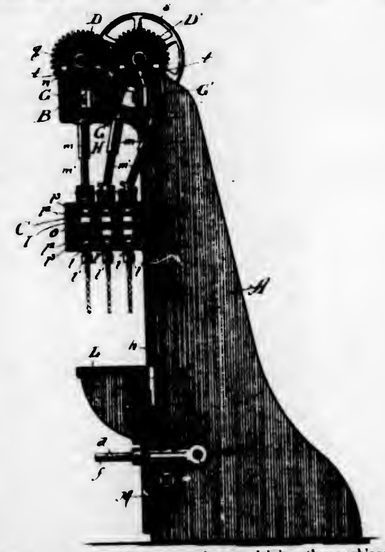
2. The combination of the clip having a cylindrical portion and adjacent flat lips with coincident apertures therein, a shell mounted upon and turning on the cylindrical portion of the clip, the paper perforating and retaining pin carried by the shell, and the lips *b* for retaining the shell in place.

3. The combination of a clip having a head or enlarged portion A^3 and flat lips A^2 extending therefrom for embracing the sheets of paper, said lips having coincident apertures therein, and a hinged part mounted on the head and having a perforating and retaining pin adapted to pass through said apertures, substantially as and for the purpose set forth.

487,441. BORING AND SCREW-DRIVING MACHINE. EDWIN FISH, Elkhart, Ind. Filed Apr. 12, 1892. Serial No. 428,869. (No model.)

Claim.—1. A compound machine for use in boring or screw-driving, comprising, in combination, parallel series of simultaneously-driven, separably-mounted, laterally and longitudinally adjustable, and vertically-fixed tool stocks or sockets and a movable table to support the material operated upon and carry it to and from the tools, substantially as described.

2. In a compound machine for use in boring or screw-driving, in combination with the frame, the simultaneously-driven parallel shafts, and a series of tool-stocks independently supported and laterally and longitudinally adjustable, said stocks connected with said shafts to be operated thereby, substantially as described.



3. In a machine for boring and screw-driving, the combination, with the frame and with the bar I, having a vertical slot through the same, of vertically-arranged sectional bit-stocks H, supported in the frame and passing through and supported in the slotted bar to be transversely adjustable on the latter, a shaft having gear connections at intervals with said bit-stocks, and means for driving said shafts, substantially as described.

4. In a boring and screw-driving machine, in combination, a frame A, a drive-shaft extending across the frame, a guide-bar F, extending across said frame below the drive-shaft, and a vertically-slotted bar I, extending across and adjustably supported in said frame below the guide-bar, bit-stock connections supported toward their upper ends on the guide-bar to be laterally adjustable thereon and toward their lower ends in the slotted bar to be laterally and independently adjustable thereon, and beveled gears on the drive-shaft and bit-stock connections, meshing with each other, substantially as described.

5. In a machine for boring and screw-driving, in combination with the bit-stocks and their connections and means for revolving the same, the independently-slotted bar I to receive the bit-stocks, adjustably supported in guides C in the frame to be held against movement in the direction of boring and to be capable of adjustment forward and backward, and means, substantially as described, for affording an adjustable connection between the bit-stocks and slotted bars, substantially as described.

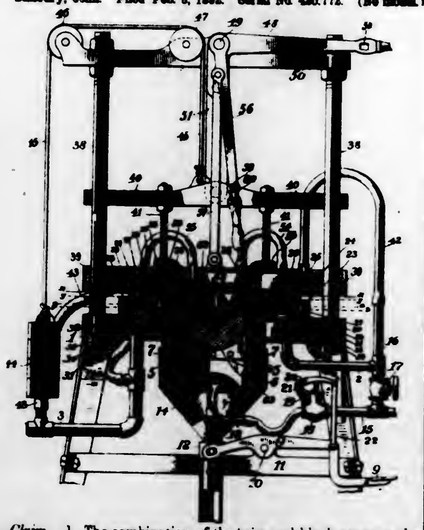
6. In a boring-machine, in combination, slot-bar I, the bit-stock-carrier segment p^2, passing through the slot-bar, washers P^2 upon said segment, and nuts P^1, whereby the segment p^2 may be adjustably secured at a predetermined location in the slot-bar, all as set forth.

7. In a boring-machine, in combination with the fixed vertical revoluble boring-tool, a table having a sliding connection with the frame below the boring-tool, and curved arms joined to co-operate, mounted, respectively, upon the frame toward the opposite ends of the table and movable on their pivots in a vertical direction to raise and lower both sides of the table in their movement, substantially as described.

8 In a boring-machine, in combination with the boring-tools supported in fixed position, a table supported below the tools to have a free vertical movement, said table comprising sections K L, the latter pivotally supported on the former, whereby it may be adjusted to an inclined position, if desired, and means for raising said table, comprising simultaneously-moving curved arms M, supported below the table and engaging and lifting the latter, substantially as described.

9. A boring-machine comprising, in combination, the following elements: a frame A, provided at its upper end with a shaft-supporting head, toward its lower end with vertical grooves, and at an intermediate point with horizontal ways C, simultaneously-driven shafts extending across the frame and carrying at intervals bevel-gears, slotted bars I, having their ends introduced into the guide C, bit connections made of connected members, engaging the pinions on the shafts, respectively, to be revolved thereby and passing through the slot-bars I and held therein against vertical displacement, a table laterally supported in the machine, guideways on the frame to move freely therein, curved arms M, mounted, respectively, on shafts, each carrying a bevel-gear, said bevel-gears being connected to co-operate, and means, substantially as described, for turning at will either of said curved arms on its shaft, thereby turning the other to elevate the table toward the bits, substantially as described.

487,442. MACHINE FOR BLOCKING HATS. FREDERICK D. FRY, Danbury, Conn. Filed Feb. 8, 1892. Serial No. 420,772. (No model.)



Claim.—1. The combination of the brim and block pressers, the bell-crank 48 and lever 56, pivoted to a stationary part of the machine, the toggle-links 51 57, whose upper ends are respectively pivoted to said crank and lever and whose lower ends are respectively pivoted to the frame of the brim-presser and to the block-presser, and means, as a bolt or latch, for locking the crank and lever together, substantially as set forth.

2. The combination of the drum, the pot inclosing the same and capable of a vertical movement, said drum and pot having openings which register when the pot is in its normal or lowermost position, suitable connections whereby steam is admitted to the pot and drum, and means for raising said pot when steam is admitted, whereby said openings are thrown out of alignment, substantially as set forth.

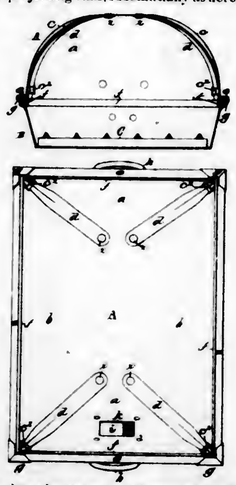
3. The combination of the circumferentially-arranged and radially-operating banding-clamps, the hat-block, the block-presser which extends circumferentially beyond the block and overlaps the brim of the hat, and the brim-presser which operates upon the brim in a plane without the circumference of the block-presser, and means for operating said brim-presser in advance of the block-presser, substantially as set forth.

487,443. PAN-COVER. HERMAN HOLLANDT, Jersey City, N. J., assignor to the Silver & Company, New York, N. Y. Filed July 13, 1892. Serial No. 439,893. (No model.)

Claim.—1. A dome-shaped pan-cover of bent-up sheet metal, having convex-curved ends and sides, with the seams between closed and masked externally by overlying metallic ribs, substantially as hereinbefore specified.

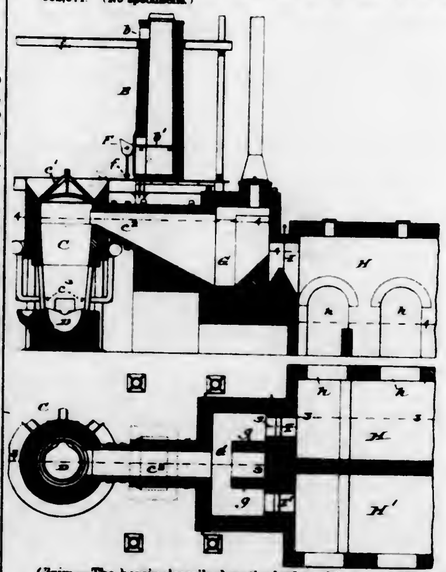
2. A dome-shaped pan-cover of bent-up sheet metal, having convex-curved ends and sides, with the seams between closed and masked by external ribs and internal seam-strips which are attached at their upper ends by rivets common to both and interlocked with each other and with the cover-body at their lower ends by clinched clips projecting from said ribs through slots in said cover-body on both sides of each seam, substantially as hereinbefore specified.

3. A dome-shaped pan-cover of bent-up sheet metal, having convex-curved ends and sides and outwardly-projecting rim-sections and provided with outwardly-projecting hollow rims which inclose said rim-sections and downwardly-projecting hollow rims integral with said outwardly-projecting rims, substantially as hereinbefore specified.



4. A dome-shaped pan-cover of bent-up sheet metal, having convex-curved ends and sides and outwardly-projecting rim-sections forming parts of the cover-body, rim-strips embracing said rim-sections and interlocked with each other at the corners of the cover, and corner-pieces interlocked with said rim-strips at top and clinched at bottom, substantially as hereinbefore specified.

487,444. PROCESS OF SMELTING ORES CONTAINING ZINC. HENRY A. HUNTOON, St. Louis, Mo. Filed Aug. 21, 1890. Serial No. 362,671. (No specimens.)



Claim.—The herein-described method of smelting argentiferous or auriferous lead ores containing zinc, which consists in preheating the previously-roasted ores and the fuel, but separately from each other and respectively in separate furnaces, to at least the temperature at which carbonic oxide reduces zinc oxide, then charging said preheated ore and fuel into a blast-furnace, and after so introducing said charge of preheated ore and fuel maintaining it at all parts thereof at said temperature and carrying off the zinc and discharging it in a volatile form through an escape-flue at the upper part of said blast-furnace into a separate chamber and simultaneously reducing and collecting the principal metal or metals of said ores at the bottom of said furnace.

487,445. INDICATOR. NELSON A. MILLER, Elmira, N. Y. Filed Jan. 23, 1892. Serial No. 419,044. (No model.)

Claim.—1. The indicator for pew-doors, chair-backs, &c., consisting of the flat semicircular plate A, formed with the integral inwardly-extending edge flange to adapt it to be secured against a flat surface and leave an open space behind the plate, the disk D, fitting on the inner side of said plate, and the pivot-screw B, passing through the plate and the disk, forming a retaining device for the plate and a pivot for the disk, substantially as set forth.

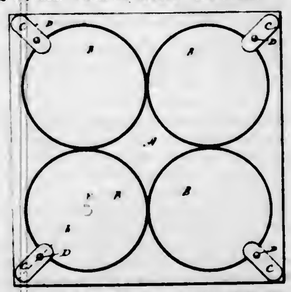
2. The herein-described indicator for pew-doors, chair-backs, &c., consisting of the flat semicircular plate A, formed with the inwardly-extending integral edge flange and the aperture *g*, the straight pin G, working through said aperture, the spiral spring H, arranged upon the pin, as shown, the disk D, fitting on the inner side of the plate A and formed with the opposite transverse apertures *d d*, with which the pin G engages, and the central pivot-screw B, substantially as and for the purposes set forth.

487,446. KNIFE-CLEANER. THOMAS MURPHY, Deal, England. Filed June 27, 1891. Serial No. 397,735. (No model.) Patented in England Nov. 27, 1890. No. 19,311.

Claim.—1. In a knife-polishing device, the combination of the imperforated pads B B', containing a filling of finely-divided non-elastic material capable of a shifting action, with cases A A', containing the said pads, springs forcing the said frames together, and the strips A^3, confining the said pads in the said frames, substantially as set forth.

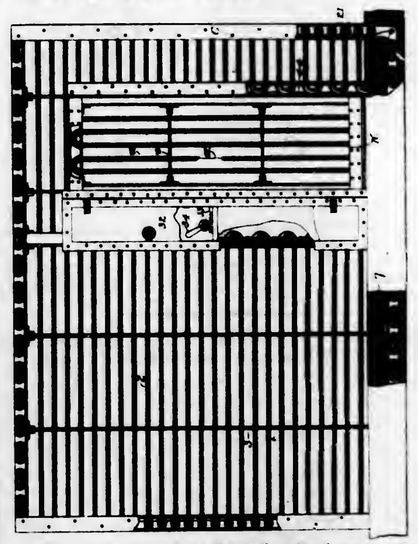
2. In a knife-polishing device, the combination of a pad containing a filling of finely-divided non-elastic material capable of a shifting action with a frame containing said pad, a series of bars C behind the said pad, and two strips of rubber D between the said bars and the said frame, substantially as and for the purpose set forth.

487,447. GAME-BOARD. EDWIN P. MCLANE, Mount Carmel, Conn. Filed May 31, 1892. Serial No. 434,856. (No model.)



Claim.—The combination, with a flat board having its surface divided into compartments or spaces, of one or more revoluble rocking snappers loosely pinned directly to the said surface of the board upon which they rest and each consisting of a short piece of sheet metal having one of its ends formed to normally stand above the said surface, against which the said end is suddenly impinged when the snapper is operated, substantially as described, and whereby by properly revolving or training the snappers any portion of the said surface may be covered.

487,448. JAIL. DAVID K. OSBOURNE, St. Paul, Minn. Filed Aug. 6, 1891. Serial No. 401,937. (No model.)



Claim.—1. In a barrier or wall for jails and analogous structures, the combination of the hollow electric conductor and the insulated electric conductor arranged therein.

2. In a wall or barrier for jails or analogous structures, the combination of the tubular electric conductor and the electric conductor included therein, but insulated therefrom.

3. In a barrier or wall for jails and analogous structures, the combination of the tubular electric conductor and the electric conductor arranged therein, but insulated therefrom, and in circuit with a source of electrical energy and a signaling apparatus.

4. In jails and analogous structures, an open-work wall or barrier comprising, in combination, a series of tubular electric conductors, a supporting-frame therefor, and electric conductors threaded through said tubular conductors, substantially as described.

5. In jails and analogous structures, an open-work wall or barrier comprising, in combination, a supporting-frame, a series of tubular electric conductors arranged therein, and insulated electric conductors threaded therethrough in circuit with a source of electrical energy, and a signaling apparatus, substantially as described.

6. A jail-cell comprising, in combination, a series of metallic pipes, a perforate frame holding and supporting said pipes, angle-bars incasing the joints of said pipes, electric conductors threaded through some of said pipes and connected with a source of electrical energy, and a signaling apparatus, and means for connecting other of said pipes with a source of heat, substantially as described.

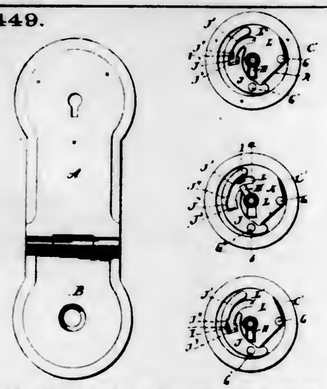
7. In a device of the class described, having walls composed of series of pipes, the combination therewith of series of wires threaded through said pipes and oppositely connected in closed circuit with a suitable source of electrical energy and a signaling apparatus, substantially as described.

487,449. TRUNK-LOCK. JAMES ROCHE, Terryville, Conn., assignor to the Eagle Lock Company, same place. Filed Aug. 22, 1892. Serial No. 443,686. (No model.)

Claim.—1. In a trunk-lock, the combination, with a stump and its carrier, of one or more locking-tumblers, one or more of which is provided with an intermediate or safety notch, substantially as described, to receive the stump before the tumblers have been fully moved into their locked positions.

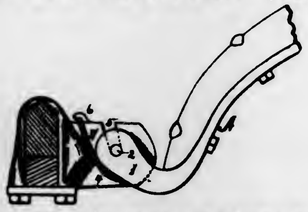
2. In a trunk-lock, the combination, with the case thereof, of a rotatable stump-carrier located in the bottom of the said case and furnished with a stump, a locking-button located without the said case

487,449.



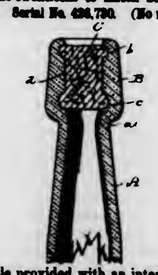
but connected with the stump-carrier, a ward-plate placed on the said carrier, and one or more pivotal locking-tumblers, one or more of which has an intermediate locking-notch to receive the same before the tumblers are fully moved into their locked positions, substantially as described.

487,450. THILL-COUPLING. WILLIAM B. ROOT, Springfield Centre, N. Y. Filed Aug. 1, 1892. Serial No. 441,791. (No model.)



Claim.—A thill-coupling comprising the thill-iron A, having arms 1, the inner wall of the recess being concaved and adapted to travel upon the edge of the shoulder 4, the shoulder provided with a forward and downwardly extending slotway, and a U wire spring 7, interposed between the front face of the clip and the rear edge of the arms 1, substantially as described, for the purposes set forth.

487,451. CORKING BOTTLES. CONRAD SOMRORDER, Milwaukee, Wis., assignor of nine-twentieths to Anton Stollewerk, same place. Filed Mar. 28, 1892. Serial No. 426,720. (No model.)



Claim.—1. A bottle provided with an interior concave circular groove in its head just below the top thereof, a choke or contraction in the bottle-neck in line with the base of the bottle-head, and an annular enlargement of the bore of the head, having its greatest diameter just above the choke, in combination with a free short stopper of cork whose upper and lower portions are expanded, respectively, into the said groove and enlargement, thereby closing the entire bore of the bottle-head from a point immediately below the top to a point immediately above the choke, substantially as set forth.

2. A bottle provided with interior annular enlargements in its head adjacent to the extremities thereof and a choke or contraction in the bottle-neck in line with the base of the bottle-head, in combination with a free short stopper of cork expanded into said enlargements below the top and above the choke of the bottle and constricted at a point intermediate of said points of expansion, whereby the greater length of said cork will be between the points of greatest diameter of the bore of said bottle-head, substantially as set forth.

3. A bottle provided with an interior concave circular groove in its head immediately below the top thereof, a choke or contraction in the bottle-neck in line with the base of the bottle-head, and an annular enlargement of the bore of the head having its greatest diameter immediately above the choke, the wall of said bore presenting a smooth surface between its points of greatest diameter, in combination with a free short stopper of cork whose upper and lower portions are expanded, respectively, into the said bore at said points of greatest diameter, said cork being entirely below the top and above the choke of the bottle-head, substantially as set forth.

4. A bottle provided with an interior concave circular groove in its head just below the top thereof, a choke or contraction in the bottle-neck in line with the base of the bottle-head, and an annular downward-flaring enlargement of the bore below said groove, having its greatest diameter just above the choke, in combination with a free short stopper of cork whose upper and lower portions are expanded, respectively, into the said groove and enlargement, thereby closing the entire bore of the bottle-head from a point immediately below the top to a point immediately above the choke, substantially as set forth.

487,452. CORKING BOTTLES. CONRAD SOMRORDER, Milwaukee, Wis. Filed Sept. 13, 1892. Serial No. 445,767. (No model.)

Claim.—1. A bottle having its head provided with an internal annular recess undercut at its upper end, substantially as described.

2. A bottle having its head provided internally with the flaring part *l* and annular recess below the same, undercut at its upper end, substantially as described.

3. A bottle having its head provided internally with an annular recess having the under-cut *r* at its upper end and inclined shoulder *q* at its lower end, whereby the recess has an upward incline, substantially as and for the purpose described.

4. A bottle having its head provided internally with the annular recess *s*, having its inner wall approximately straight and having the under-cut *r* at its upper end and inclined shoulder *q* at its lower end, substantially as described.

5. A bottle having its head provided internally with an annular recess having the under-cut *r* at its upper end and inclined shoulder *q* at its lower end, whereby the recess has an upward incline, and with the flaring part *l* above and flaring part *p* below the recess, substantially as described.

6. A bottle having its head provided internally with an annular recess, a flaring part *l* above the recess and a flaring part *p* below the recess, the smallest diameter of the lower flaring part exceeding the smallest diameter of the upper flaring part, substantially as described.

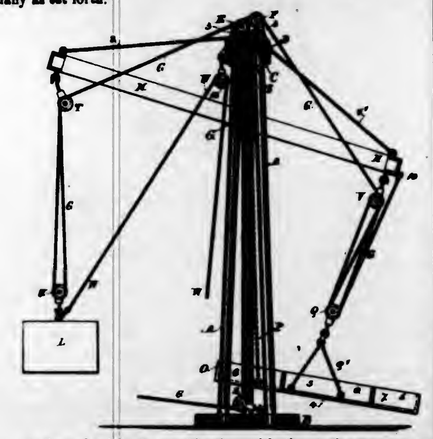
7. A bottle having its head provided with the upwardly-inclined recess *s* and with the flaring part *l* above and flaring part *p* below the recess, in combination with the cork C, fitting closely within the head throughout its whole extent and extending to the choke, substantially as described.

487,453. DERRICK. JAMES R. SERRELL, New York, N. Y.; Mary J. Thomson administratrix of said Serrell, deceased. Filed Mar. 4, 1892. Serial No. 423,713. (No model.)

Claim.—1. The combination, with a stationary supporting mast or frame, of a turn-table at the upper end of such mast or frame, such turn-table having a central or nearly central opening, a boom composed of two pieces passing the mast freely at opposite sides and united at their ends, and devices for suspending the same from the turn-table, a counterpoise suspended at one end of the boom, a sheave upon the turn-table, and a flexible hoist passing through the turn-table over the sheave to the hoist-block, substantially as set forth.

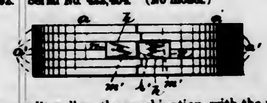
2. The combination, in a derrick, of a stationary supporting mast or frame, a turn-table upon the upper end thereof with a central opening, a boom composed of two pieces passing the mast freely at opposite sides and united at their ends and devices for suspending the same from the turn-table, a counterpoise connected with one end of the boom, a sheave upon the turn-table, a flexible hoist, a block at the lower part of the mast or frame through which the hoist passes and extends up through the turn-table and over the sheave thereon, a hoist-block at one end of the boom, and another to be connected with the weight and through which the flexible hoist passes, substantially as set forth.

3. The combination, in a derrick, of a stationary mast or frame, a turn-table upon the upper end thereof, two sheaves supported by the turn-table, a boom composed of two pieces passing the mast freely at opposite sides and united at their ends and devices by which it is suspended from the turn-table, a counterpoise, and the blocks at the respective ends of the boom, and the flexible hoist passing through the turn-table over one of the sheaves to the blocks of the weight to be raised and returning over the other sheave to the blocks of the counterpoise, whereby the power is first exerted to raise the counterpoise until it has sufficient leverage for lifting the weight, substantially as set forth.



4. In a derrick, the combination, with the stationary mast or frame, the turn-table at the top thereof, and the boom composed of two pieces passing the mast freely at opposite sides and united at their ends, and devices for suspending the boom from the turn-table, of a counterpoise-platform having side extensions at the sides of the mast and suspending devices to the turn-table and a block and tackle for acting upon the counterpoise-platform, substantially as set forth.

5. The combination, in a derrick, of a stationary mast or frame, a turn-table at the upper end thereof, a boom composed of two pieces passing the mast freely at opposite sides and united at their ends and devices for suspending the same from the turn-table, a counterpoise, and hoisting mechanism, the flexible hoist passing through the middle of the turn-table at the top of the mast, so that the turn-table and boom can be revolved, substantially as set forth.

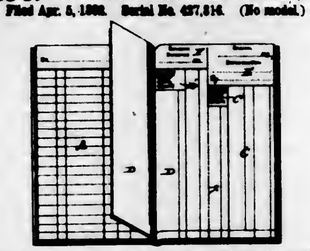
487,454. PULLEY. EDGAR T. SHEPARD, Fulton, N. Y. Filed Feb. 23, 1892. Serial No. 422,404. (No model.)

Claim.—In a split pulley, the combination, with the rim-sections composed of layers, of the cross-beams having two of their faces secured to the rim-layers and the other two unsecured to the rim, leaving spaces between the adjacent faces of the ends of the cross-beams, a central bushing in said cross-beams, and means for securing said beams together adjacent to said bushing.

487,455. BURNER-FASTENING. BERNARD T. STREBE, Utica, N. Y. Filed Mar. 3, 1892. Serial No. 423,567. (No model.)

Claim.—1. The combination, with the oil-pot having a burner-socket, an air-chamber surrounding said socket and provided with inwardly-projecting ears, and the burner, of a burner-cone resting upon the air-chamber and a horizontal bow-spring secured to the cone and provided at its ends with shoulders which engage with the ears of the air-chamber, substantially as set forth.

2. The combination, with the oil-pot having a burner-socket and an air-chamber surrounding said socket and provided with inwardly-projecting ears, of a burner seated in said socket, a cone resting upon the air-chamber and provided with openings in its side, and a bow-spring secured to the outer side of the cone and provided with catches which pass inwardly through the openings in the cone and engage with the ears of the air-chamber, substantially as set forth.

487,456. BANK-ACCOUNT BOOK. HENRY J. STEBE, Milwaukee, Wis. Filed Apr. 5, 1892. Serial No. 427,814. (No model.)



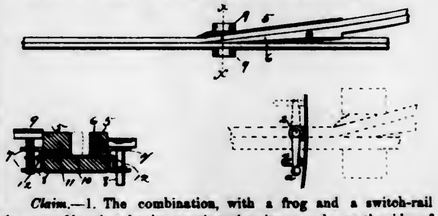
Claim.—1. The combination, with a suitable binding, of a series of account-leaves and a series of leaves provided with detachable portions ruled and printed for the entries of the items of deposits, substantially as set forth.

2. The combination, with a suitable binding, of a series of account-leaves and a series of leaves each provided with duplicate sets of rulings for entries of the items of deposits, the portion bearing one set of rulings being detachable from the portion bearing the other set of said rulings, substantially as set forth.

3. The combination, with a suitable binding, of a series of account-leaves and a series of deposit-slip leaves bound therein, the said deposit-slip leaves being equal in number to or more than the number of spaces for entries upon the account-leaves, substantially as set forth.

4. In a bank-account book, the combination, with a suitable binding, of a series of leaves ruled for the entries of the bank-account and a series of leaves each provided with duplicate sets of rulings for entries of the items of deposits, said leaves being equal in number to or more than the spaces for entries of deposits upon the account-leaves, the portion of each of said leaves bearing one set of rulings being made detachable and the other portion being permanently bound into the cover or binding with the account-leaves and serving as a permanent record of said items, substantially as set forth.

487,457. SWITCH-OPERATING DEVICE. JOHN D. STONE, Syracuse, N. Y. Filed Aug. 6, 1892. Serial No. 442,394. (No model.)



Claim.—1. The combination, with a frog and a switch-rail thereon, of brackets having openings therein secured upon the sides of said frog, shanks adapted to travel in said openings, and a flexible connection between said shanks and adapted to move laterally the switch-rail.

2. The combination, with a frog, of brackets having openings therein secured upon the sides of said frog, shanks adapted to travel in said openings, treads secured to the top of said shanks, and a flexible connection between said shanks and adapted to move laterally the switch-rail.

3. The combination, with a frog, of brackets having openings therein secured upon the sides of said frog, shanks adapted to travel in said openings, antifriction-rollers upon the lower side of the openings in the frog, and a flexible connection between said shanks passing through said openings and over said rollers and adapted to move the switch-rail laterally.

4. The combination, with a frog and switch-rail, of brackets having openings therein secured upon the sides of the frog, shanks adapted to travel in said openings, treads upon said shanks, a flexible connec-

tion between said shanks, and means upon the car for depressing said treads, as set forth.

487,458. SWITCH-RAIL-ADJUSTING ATTACHMENT. AXEL A.

2. A tool for twisting wire, consisting of the stem, handle, and cross-head, said head having ways in its opposed edges, and the engaging-studs and attaching-pins extending from said stem, and all of said parts being formed integral, substantially as specified.

Claim.—1. In a device for curing horses of cribbing, the combination of a neck-strap provided with circuit-terminals and a circuit-changer between them, controlled by the throat of the animal, and

them under friction upon the opposite faces of the trace, substantially as set forth, and whereby the said lock is adjustable on the trace within the limits of its eye.

tion between said shanks, and means upon the car for depressing said treads, as set forth.

487,458. SWITCH-RAIL-ADJUSTING ATTACHMENT. AXEL A. STROM, Austin, assignor to the Strom Manufacturing Company, Chicago, Ill. Filed Aug. 13, 1892. Serial No. 443,051. (No model.)

Claim.—1. In a switch-rail-adjusting attachment, the combination of a clip to be fastened to the switch-rail and provided with a screw-stem extension and a swivel-support on the tie-bar, having a bearing for the said stem, substantially as described.

2. In a switch-rail-adjusting attachment, the combination of a clip to be fastened to the switch-rail and provided with a screw-stem extension, a swivel-support on the tie-bar, having a bearing into which the said stem is screwed, and a nut on the stem for tightening the bearing against the stem-thread, substantially as described.

3. In combination with a switch-rail and a tie-bar, a switch-rail-adjusting attachment formed with a clip fastened to the switch-rail and having a screw-stem extension *q*, a knee E, comprising a bar *p*, and a bearing *p'*, engaging the stem *q*, and a pivot-post swiveling the knee at its said bar to the tie-bar, substantially as described.

4. In combination with a switch-rail and a tie-bar, a switch-rail-adjusting attachment formed with a clip fastened to the switch-rail and having a screw-stem extension *q*, a knee E, comprising a bar *p* and a bearing *p'*, engaging the stem *q*, a pivot-bolt *o*, having an enlargement *o'* and passing through the tie-bar and bar *p*, and a nut o^3 on the said bolt, substantially as described.

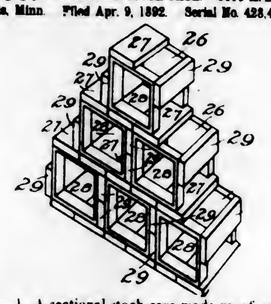
5. In combination with a switch-rail and a tie-bar, a switch-rail-adjusting attachment comprising a clip fastened to the switch-rail and having a screw-stem extension *q*, carrying a nut *n*, a knee E, comprising a bar *p*, and a bearing *p'*, engaging the stem *q*, a pivot-bolt *o*, passed through the tie-bar and bar *p*, being riveted to the tie-bar and having an enlargement in the bar *p*, and a nut o^3 on the said bolt, the whole being constructed and arranged to operate substantially as described.

487,459. TOOL FOR TWISTING WIRE. CHRISTIAN A. UNDERKIRCHER, Allegan, Mich. Filed June 15, 1892. Serial No. 436,781. (No model.)

Claim.—1. In a tool for twisting wire, the combination of the stem having the handle and cross-head formed at right angles thereto, said cross-head having the reversed ways in the opposed edges thereof for the reception of the wire, and the pins projecting from the body of said stem that retain the wire while being twisted, substantially as specified.

2. A tool for twisting wire, consisting of the stem, handle, and cross-head, said head having ways in its opposed edges, and the engaging-studs and attaching-pins extending from said stem, and all of said parts being formed integral, substantially as specified.

487,460. SECTIONAL STOCK-CASE. OTTO H. L. WERRICKE, Minneapolis, Minn. Filed Apr. 9, 1892. Serial No. 428,460. (No model.)



Claim.—1. A sectional stock-case made up of separable crates, having individually-incomplete walls composed of separated slats or boards, the slats of each filling the openings between the slats of adjoining crates to complete the several walls, substantially as described.

2. A sectional stock-rack composed of several crates adapted to rest upon or against one another and having alternately-arranged slats, which when the crates are so placed form solid walls between them, said walls being of the thickness of a single board or slat, and dividing-partitions arranged in said crates, substantially as and for the purpose specified.

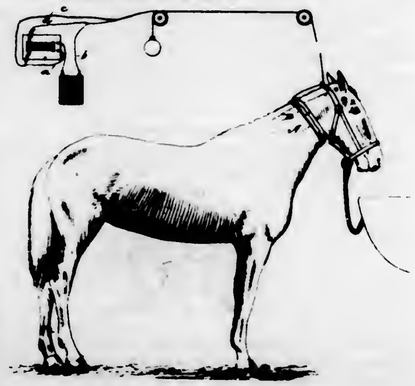
3. The combination, with large crates, of smaller or narrower ones arranged thereon, the larger crates having tops to extend beyond the others to form ledges, dividing-partitions in said crates, the side and top walls thereof and said walls being completed by the overlapping or intermeshing of the slats upon the several crates, substantially as described.

4. The combination, in the stock-rack, of several crates, each having end and partition pieces, an even number of parts on the bottom and an uneven number on the top, completing the crate, equal spaces being left between said parts, whereby any number of such crates may be placed together one upon the other to complete solid walls between them.

5. The combination, with the several crates provided with the intermeshing floor-partitions, of transverse partitions therein and the depending and overlapping retaining-strips provided upon the outer edges, substantially as described.

6. The combination, with the large crates each provided with compartments, of the boards 6 upon one and a board 7 upon the other to constitute the vertical partition between them, the top boards 11 and 12 of each crate and each of the overlying crates having the alternately-arranged strips or boards, whereby complete partitions are constituted between the several parts and the whole firmly locked together, substantially as described.

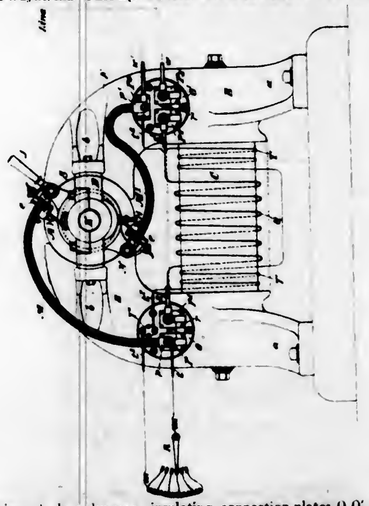
487,461. ELECTRICAL DEVICE FOR PREVENTING CRIBBING IN HORSES. GEORGE W. WHITEFIELD, Evanston, Ill. Filed Sept. 4, 1891. Serial No. 404,751. (No model.)



Claim.—1. In a device for curing horses of cribbing, the combination of a neck-strap provided with circuit-terminals and a circuit-changer between them, controlled by the throat of the animal, and electric terminals adapted to come into contact with the animal and included in a circuit controlled by the circuit-changer, substantially as described.

2. In a device of the character described, the combination, with the collar A, having flexible adjusting-strap B, of an insulated plate bearing binding-screws forming terminals for an electrical secondary circuit, substantially as described.

487,462. CONNECTION-PLATE FOR DYNAMOS. JAMES J. WOOD, Fort Wayne, Ind. Filed Apr. 18, 1892. Serial No. 429,544. (No model.)



Claim.—1. In a dynamo, insulating connection-plates O O', applied to the frame thereof, and conducting terminal and fuse connectors carried thereby, adapted to connect with the respective commutator-brush cables, field-coil terminals, and line-terminals.

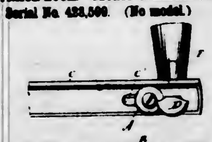
2. In a dynamo, the combination of commutator-brush cables M M', conducting-connectors P and P^4, joined to said cables, the connector P^4 adapted for connection with the line-circuit, the other line-circuit terminal P^3, and the field-coil connections interposed between the connectors P and P^3.

3. In a dynamo, the combination of commutator-brush cables M M', conducting-connectors P and P^4, joined to said cables, the connector P and connectors P', P^3, and P^3, constructed as fuse connections, and the connectors P^3 and P^4 adapted for connection with the line-circuit.

4. In a dynamo, insulating connection-plates O O', applied to the frame thereof, fuse-connectors P and P', carried by one of said plates, fuse-connectors P^3 and P^3, carried by the other, and line and commutator connections carried by said plates.

5. In a dynamo, insulating connection-plates O O', applied to the frame thereof, fuse-connectors P and P', carried by one of said plates, fuse-connectors P^3 and P^3, carried by the other, field magnet-coil Q, connected between said connectors P' P^3, a terminal connector P^4, the line-conductors connected to connectors P^3 and P^4, the commutator-cables joined to connectors P and P^4, and a shunt-circuit extending between connectors P and P^4 and including a shunt-field coil T and rheostat R and an intermediate shunt connection-piece T'.

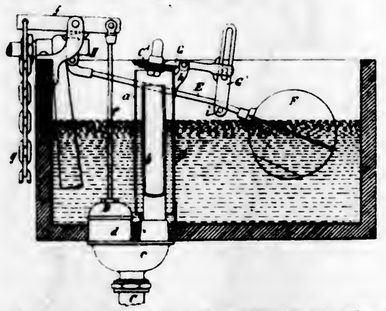
487,463. TRACE-LOCK. GEORGE T. ALFREDS, Bristol, Conn. Filed Apr. 11, 1892. Serial No. 428,599. (No model.)



Claim.—1. The combination, with a hitch member, such as a trace, of a hitch-lock composed of two perforated friction-plates and a coupling-screw passing through the perforations of said plates and through the eye of the trace and screwed into one of the plates for clamping them under friction upon the opposite faces of the trace, substantially as set forth, and whereby the said lock is adjustable on the trace within the limits of its eye.

2. The combination, with a hitch member, such as a trace, of a hitch-lock composed of two perforated friction-plates, an internally-threaded bushing inserted into the perforation of one of them, and a coupling-screw entered into the said bushing through the perforation of the other plate, passing through the said eye and clamping the plates in friction upon the opposite faces of the trace, substantially as set forth, and whereby the said lock is adjustable upon the trace within the limits of the eye therein.

487,464. SIPHON FLUSHING-TANK. THOMAS C. BEAUMONT, New York, N. Y., assignor to the Henry Huber Company, same place. Filed June 10, 1892. Serial No. 436,187. (No model.)



Claim.—1. In a flushing-tank, the combination of a siphon B, an air-valve C, applied thereto, a starting-valve D, a ball-cock H for refilling the tank, a float F for operating said ball-cock, and an adjustable mechanical connection between said float and air-valve, adapted upon the descent of the float to a greater or shorter distance to open the air-valve and admit air to break the siphon.

2. In a flushing-tank, the combination of a siphon B, an air-valve C, applied thereto, a float F, mounted to rise and fall in the tank, and an adjustable mechanical connection between said float and air-valve, consisting of a lever G, connected to the air-valve, and a movable piece G', adjustable relatively to said lever and carrying a projecting part arranged to be encountered and depressed by the float in its descent.

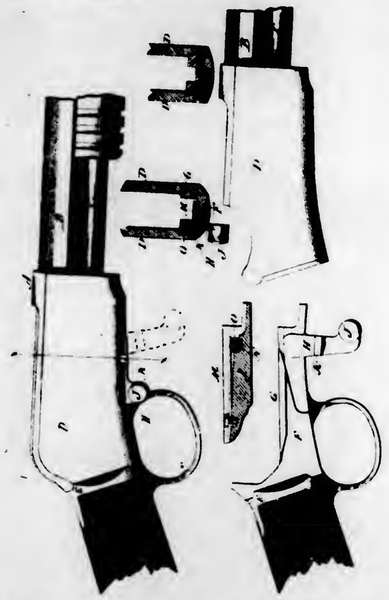
3. In a flushing-tank, the combination of a siphon B, an outlet-valve D for starting the outflow, an operating-lever *f*, connected to said valve, an air-valve C, applied to said siphon above the water-level, a ball-cock H for refilling the tank, a float F for operating said ball-cock, having a stem E connecting it thereto, an adjustable mechanical connection between said float and air-valve, consisting of a lever G, connected to the air-valve, a sliding piece G', movable relatively to said lever, with an adjusting-screw for fastening it thereto, and a stop consisting of a pin *i*, projecting from said arm beneath the stem E of the float in position to be encountered thereby and depressed upon the descent of the float, and thereby to open the air-valve.

4. In a flushing-tank, the combination of a siphon B, constructed with an inner tube *b*, connected to the flushing outlet-pipe and ascending within the tank to above the water-level therein, and an outer tube *a*, inclosing the tube *b*, open at the bottom and communicating with the water in the tank and open at its upper end, an air-valve C, consisting of a disk having a soft face seating against the upper end of said tube *a*, and a float mounted to rise and fall in the tank and connected to said air-valve, so that upon its descent to a predetermined level it lifts said air-valve and admits air to the siphon.

487,465. MEANS FOR SEPARABLY UNITING BARRELS TO STOCKS OF GUNS. THOMAS G. BENNETT, New Haven, Conn., assignor to the Winchester Repeating Arms Company, same place. Filed Apr. 4, 1892. Serial No. 427,782. (No model.)

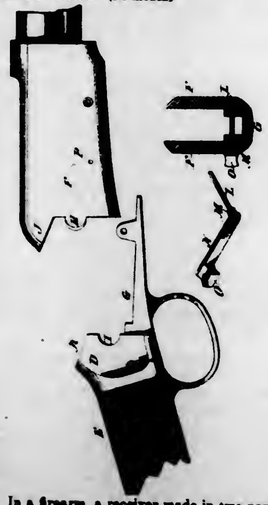
Claim.—1. In a firearm, a receiver having a barrel attached to the forward end of the receiver, the receiver constructed in two parts, the forward part carrying the two sides and barrel, the rear part carrying the stock, the said rear part constructed with a forwardly-projecting arm adapted to removably set between the two sides of the forward part of the receiver and the two sides adapted to abut against the rear portion of the receiver, the one part constructed with longitudinal ribs and the other with corresponding longitudinal grooves, and a locking device substantially such as described between the two

parts, whereby they may be detachably secured when set together, substantially as specified.



2. A receiver for firearms, made in two parts, the forward arm carrying the barrel and the two sides of the receiver, the rear part carrying the stock and constructed with an arm projecting forward, adapted to set between the two sides and form the bottom of the receiver, means, substantially such as described, to interlock the two parts against vertical movement, a swinging lever arranged upon a transverse axis in one part near the forward end, the said lever constructed with a rib and the other part constructed with a groove corresponding to said rib on the lever, and whereby the said two parts may be interlocked against longitudinal movement, substantially as specified.

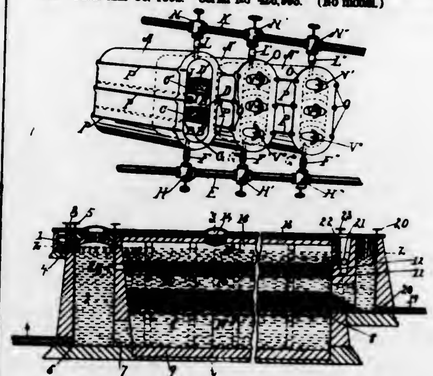
487,466. MEANS FOR SEPARABLY UNITING GUN-BARRELS TO THE STOCKS. THOMAS G. BENNETT, New Haven, Conn., assignor to the Winchester Repeating Arms Company, same place. Filed Apr. 4, 1892. Serial No. 427,783. (No model.)



Claim.—1. In a firearm, a receiver made in two parts, the barrel attached to the forward part and the said forward part constructed with two rearwardly-projecting sides, the second or rear part adapted for attachment to the stock and constructed with a forwardly-projecting arm between the two sides, the rear end of the two sides abutting against the said rear part, the meeting edges of the said two parts being of irregular shape, whereby they interlock against vertical movement, combined with a transverse locking device near the forward end between the two parts, and whereby the said two parts are locked together both against vertical and longitudinal movement, substantially as described.

2. In a firearm, a receiver composed of two parts A D, the one part A carrying the barrel at its forward end and constructed with rearwardly-projecting sides F F, the rear part D, adapted for attachment to the stock, the two sides at their rear ends abutting against the said rear part D, the meeting edges of the said sides and the rear part being of irregular shape, whereby the said two parts are interlocked against vertical movement, the rear part constructed with a forwardly-projecting arm G between the two sides, combined with a pin L transversely through the two sides and through the arm, the pin screw-threaded into one side and constructed with a spring-arm M on its one end, the arm constructed with a lateral projection to serve as a handle, and the side of the receiver against which the said arm may rest, and the adjacent side of the arm constructed the one with a notch and the other with a corresponding projection, whereby the arm may interlock with the side of the receiver, substantially as described.

487,467. FILTERING SYSTEM. ROBERT BEVILL, Los Angeles, Cal. Filed Mar 30, 1892. Serial No 426,993. (No model.)



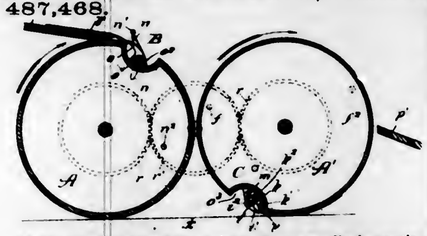
Claim.—1. A filtering system comprising a series of filtering-tanks respectively provided with a series of porous filter-partitions and the superimposed compartments, the supply-conduit communicating through suitable connections with the lowest compartments of the several tanks, valves arranged, respectively, to close and open the several passages leading from the supply-conduit into such lowest compartment, the discharge-conduit communicating through suitable connections with the several top compartments, such connections and suitable valves arranged, respectively, to close the passages leading from the several tanks to the discharge-conduit.

2. A filtering system consisting of the combination of a supply-conduit, a series of non-communicating reservoirs, each comprising a receiving-well having an inlet at the top communicating with the supply-conduit, and a chamber, such chamber having an outlet at the top and communicating at the bottom with such well and divided by horizontal porous partitions into a series of superimposed compartments, all of which, except the lowest one, are separated from the receiving-well, layers of filtering material placed upon such porous partitions, a discharge-conduit connected with and leading from the upper compartments, means of ingress into the several compartments, valved blow-off pipes connected, respectively, with each of the compartments, and valves to control the flow of water into and out of the reservoirs.

487,468. PRINTING-PRESS. EDWARD A. BLAKE, Chicago, Ill. Filed Feb. 20, 1892. Serial No. 422,214. (No model.)

Claim.—1. In a printing-press having the two correspondingly-rotated cylinders and means for holding and releasing the sheet on one cylinder, transfer mechanism on the other cylinder operating immediately therefrom to engage the sheet on the preceding cylinder in the rotation of the cylinders and transfer it to the said other cylinder with the same surface uppermost thereon as was uppermost on the said preceding cylinder, substantially as described.

487,468.



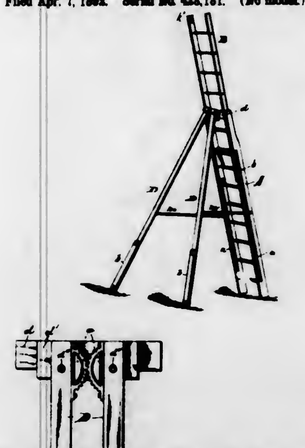
2. In a printing-press having the two correspondingly-rotating cylinders and means for holding and releasing the sheet on one cylinder, rocking transfer mechanism on the other cylinder, and means, substantially as described, operating in the rotation of the cylinders to turn said transfer mechanism toward the direction of rotation of the cylinder carrying it directly to engage the sheet on the preceding cylinder and then to turn it in the opposite direction and transfer the sheet immediately to the cylinder carrying said transfer mechanism with the same surface uppermost as was uppermost on the preceding cylinder, substantially as described.

3. In a printing-press having correspondingly-rotating cylinders A and A' and gripping means for the sheet on the cylinder A, transfer mechanism on the cylinder A', comprising a rock-shaft carrying grippers and actuating means therefor, a reciprocable cam, and means, substantially as described, for engaging the cam with the rock-shaft in the alternate revolutions of the cylinders to turn the rock-shaft and actuate the grippers thereon to engage directly a sheet on the cylinder A and then reverse and transfer the sheet immediately with its printed side uppermost to the cylinder A', substantially as described.

4. In a printing-press having correspondingly-rotating cylinders A and A' and gripping means for the sheet on the cylinder A, a cam E at one end of the cylinder A', and a bell-crank F thereon to engage at one arm the cam and having a rack on the other arm, and transfer mechanism on the cylinder A', compricing a rock-shaft *m*, carrying gripping means and provided with a pinion *l* to be engaged by the said rack, the whole being constructed and arranged to operate substantially as described.

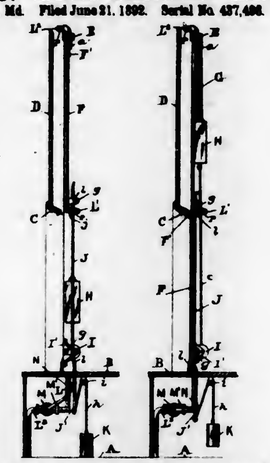
5. In a printing-press having correspondingly-rotating cylinders A and A' and gripping means B for the sheet on the cylinder A, a cam E at one end of the cylinder A and a bell-crank F thereon to engage at one arm the cam and having a rack on the other arm, and transfer mechanism on the cylinder A', comprising a rock-shaft *m*, carrying bearings supporting rock-shafts *k* and *i*, carrying spring-controlled gripping-fingers *k'* and *i'*, geared together to co-operate in pairs, and a pinion *l* on the rock-shaft *m* to be engaged by the said rack, the whole being constructed and arranged to operate substantially as described.

487,469. EXTENSION-LADDER. JAMES S. BURGESS, Marathon, N. Y. Filed Apr. 7, 1892. Serial No. 428,181. (No model.)



Claim.—An extension-ladder consisting of an upper and lower section, a dog pivoted upon the lower section and engaging with the upper section, a board hinged to the lower section, braces pivotally connected to said board, and gear-segments upon said braces meshing together in combination, as set forth.

487,470. FIREPROOF STAGE-CURTAIN. HENRY S. COCKRILL, Baltimore, Md. Filed June 21, 1892. Serial No. 437,498. (No model.)



Claim.—1. In stage apparatus, the combination of a drop-curtain, vertical guide-strips having lugs projecting in the path of a projecting part of the curtain, and links connecting the guide-strips with a stationary part of the stage, whereby the curtain in lowering draws the guide-strips against it.

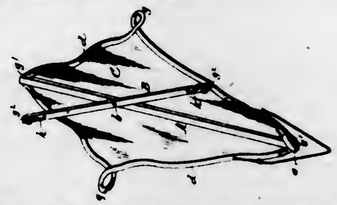
2. The combination of the front wall of a stage, a drop-curtain behind said wall, vertical guide-strips, one at each side of the stage and each having a lug in the path of a projecting part of the curtain, links connecting said strips with the front wall of the stage, and a weight for holding the guide-strips up with the said connecting-links substantially horizontal.

3. The combination of the front wall of a stage, a drop-curtain behind said wall, vertical guide-strips, one at each side of the stage and each having a lug in the path of a projecting part of the curtain and an end extending below the stage-platform, links connecting said strips with the front wall of the stage, weights below the stage-platform, and flexible connections between said weights and the strips, respectively, and passing over pulleys, substantially in the manner and for the purpose described.

4. In stage apparatus, the combination of a drop-curtain, movable guide-pieces for said curtain and actuated thereby, a water-pipe for sprinkling the curtain, a valve in said pipe, and suitable connections between said valve and one of the movable guide-pieces, substantially as and for the purpose described.

5. In stage apparatus, the combination of a drop-curtain, movable guide-pieces for said curtain and actuated thereby to hold the curtain against the front part of the stage, one of said guide-pieces having an end extending below the stage-platform, a water-pipe for sprinkling the curtain, a rotary valve in said pipe and having a handle, and a link connecting said handle and the downward-extending end of the guide-pieces.

487,471. KITE. GEORGE S. CROSBY, Buffalo, N. Y. Filed Dec. 14, 1891. Serial No. 414,906. (No model.)



Claim.—1. The combination, with the longitudinal stick and the cross-stick connected together to form the folding frame of a kite, of the covering secured to the longitudinal stick and having its side portions detachably connected with the cross-stick, whereby upon detaching the side portions from the cross-stick and folding the frame

the covering can be compactly wound upon the folded frame, substantially as set forth.

2. The combination, with the folding frame-sticks of the kite, of a covering attached at its central portion to the longitudinal stick of the kite and having its lateral portions detachably secured to the cross-stick of the kite, substantially as set forth.

3. The combination, with the folding frame-sticks of the kite, of a covering applied to said sticks and provided with side loops and hooks or catches arranged on the cross-stick of the kite, with which the side loops of the covering engage, substantially as set forth.

4. The combination, with the folding frame-sticks of the kite, of the covering applied to said sticks and provided with side loops extending around the ends of the cross-stick, and pivoted hooks or catches arranged on the cross-stick and engaging with said side loops, substantially as set forth.

5. The combination, with the kite-frame, of a covering provided on its rear side with a tape extending along the margin of the covering and having its outer edge arranged in line with the outer edge of the covering, whereby the latter is secured to the flat front face of the tape and the doubling back of the marginal portion of the covering is avoided, substantially as set forth

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487,472. TOY. GEORGE S. CROSBY, Buffalo, N. Y., assignor to Pratt & Letchworth, same place. Filed July 7, 1892. Serial No. 439,308. (No model.)

Claim.—1. A toy consisting of a cart having a forwardly-extending pole, a movable figure supported on said pole, a bell, and a bell-hammer arranged adjacent to the bell and operated by the movable figure, substantially as set forth.

2. A toy consisting of a cart having a pole, a rocking figure supported on said pole and means whereby the same is actuated, a bell supported on said cart in rear of said figure, and a spring-arm carrying a bell-hammer and projecting into the path of the rocking figure, substantially as set forth.

3. A toy consisting of a cart having a pole, a figure of a horse or other animal pivoted upon said pole, means whereby an up-and-down motion is imparted to the figure, a bell supported on the cart, and a spring-arm carrying a bell-hammer and having a trip-finger arranged in the path of one of the hind legs of the movable figure, substantially as set forth

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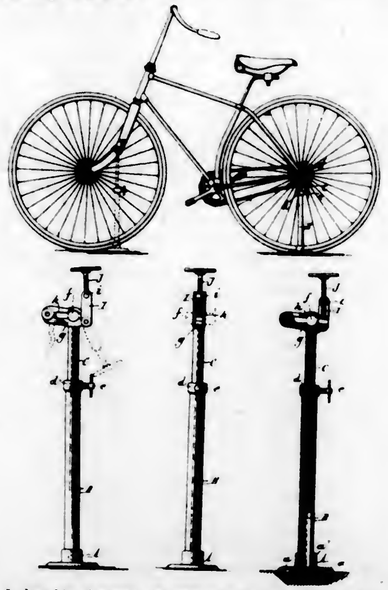
487,473. BICYCLE-STAND. GEORGE S. CROSBY, Buffalo, N. Y., assignor to Pratt & Letchworth, same place. Filed July 7, 1892. Serial No. 439,309. (No model.)

Claim.—1. A bicycle-stand consisting of a post or standard and a support adapted to be attached to the bicycle and capable of turning on said post or standard, substantially as set forth.

2. A bicycle-stand consisting of a hollow post or standard and a supporting-rod adapted to be attached to the bicycle, capable of turning in said standard and provided with a collar or stop whereby the same is supported in the standard, substantially as set forth.

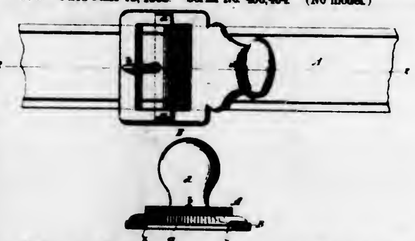
3. A bicycle-stand consisting of a hollow standard, a supporting-rod arranged in said standard and capable of turning therein, and a collar or stop adjustably secured to said rod and resting upon the standard, substantially as set forth.

4. A bicycle-stand consisting of a hollow standard and a supporting-rod capable of turning in said standard and provided with an adjustable stop or collar resting on the standard and a clamp or locking device for attaching it to the step or similar projection of a bicycle, substantially as set forth.



5. In a bicycle-stand, the combination, with a hollow standard, of a supporting-rod arranged in said standard and provided with an adjustable stop or collar whereby it is supported on the standard and a clamping device carried by the supporting-rod and composed of a stationary jaw secured to the upper end of the supporting-rod, a jaw hinged at one end to the stationary jaw, a yoke pivoted to the opposite end of the stationary jaw and embracing the free end of the hinged jaw, and a clamping-screw carried by said yoke and bearing against the hinged jaw, substantially as set forth.

487,474. BUCKLE FOR REINS. WILLIAM C. EDGE, Montrose, N. J. Filed June 13, 1892. Serial No. 436,464. (No model.)



Claim.—1. The combination of the buckle-frame B and wholly-disconnected longitudinally-movable cross-bar *a*, having shoulders *x*, said cross-bar being adapted to slide on said buckle-frame in the direction from which pressure is applied and being prevented from twisting or from transverse movement by the shoulders *x*, substantially as described.

2. The combination of the buckle-frame B, wholly-disconnected longitudinally-movable cross-bar *a*, having shoulders *x*, which engage with the buckle-frame when the parts are in operative position, and handle *d*, said cross-bar *a* being adapted to jam against and secure the strap within said buckle-frame, substantially as described

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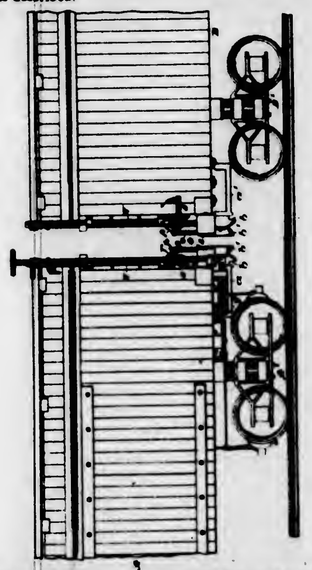
487,475. CAR-COUPLING. THOMAS J. EMERY, Boston, Mass. Filed July 5, 1892. Serial No. 438,957. (No model.)

Claim.—1. In a car-coupling, the combination, with a draw-head, a contained coupling-link and carrier to which the link is attached, and actuating devices for said carrier, of a coupling-pin, a crank-shaft, and means for connecting said pin and crank-shaft, whereby the pin may be made to enter or be withdrawn from the coupling-link, substantially as described.



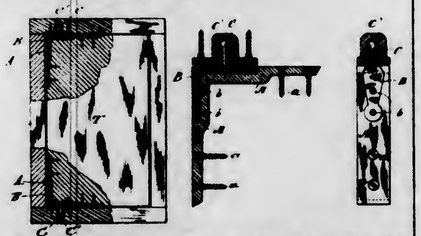
2. The combination, with a car, of a shell *a*, a spring-supported draw-head having an open mouth, and a hollow shank, combined with a carrier movable in said shank, an attached coupling-link, and devices to move the said carrier back and forth and with it the coupling-link longitudinally with relation to the said draw-head, the coupling-link being contained wholly within the shank of the draw-head when not in use, substantially as described.

3. In a car-coupling, the casing, a carrier therein provided with a coupling-link, and a lever extended to the outer side of the car-body, combined with intermediate actuating devices to actuate the said carrier by the movement of said lever and with a link, a vertical shaft, as *m*, and connecting devices, to operate substantially as described.

4. The rock-shaft, its attached gear, the upright shaft *w*, its attached gear, the crank-arm, and link, combined with the coupling-pin and the draw-head having the guide 2 for the said pin, substantially as described.

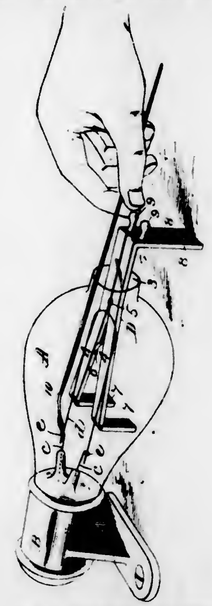
5. In a car-coupling, a draw-head having an open mouth and a hollow shank in communication therewith, and a guide for the coupling-pin, combined with a coupling-link adapted to be contained in the said hollow shank when the link is not in use as a shackle and a pin supported in said guide, substantially as described.

487,476. HINGE. FRIEDRICH A. H. FAULHABER and CHRISTOPH F. KOCH, Schwibisch Hall, Germany. Filed Dec. 31, 1890. Renewed May 21, 1892. Serial No. 433,792. (No model.)



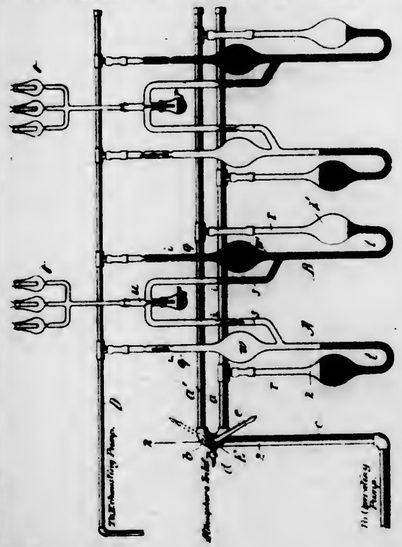
Claim.—The combination, in a door-hinge, of an angle-iron adapted to be fastened on the door and provided with a dovetail groove, an angle-iron provided with a dovetail part adapted to slide in the dovetail groove of the angle-iron on the door, a pivot on said sliding angle-iron, screws for fastening an angle-iron on the door, and screws for fastening the angle-iron bearing the pivot to the angle-iron on the door, substantially as set forth.

487,477. INCANDESCENT ELECTRIC LAMP. GUSTAV A. PERL, Springfield, Mass. Filed Mar. 14, 1892. Serial No. 424,835. (No model.)



Claim.—The filament-supporting device consisting of a table having the pivotally-united divergent members 4 4 with the hinged legs 7 7, the handle members with the legs 8 8, and the spring for normally insuring the divergence of said members 4, but permitting the approached relations thereof, substantially as described.

487,478. MERCURIAL AIR-PUMP. GUSTAV A. PERL, Springfield, Mass. Filed Apr. 11, 1892. Serial No. 428,569. (No model.)



Claim.—1. As an improvement in a mercurial air-exhaust pump, the combination, with a common exhaust-conduit, of two double bulbs, each double bulb united by a tubular stem and one bulb of each pair being in communication with said common exhaust-conduit, two pipes having, respectively, communications with the other bulbs of said pairs, and means for establishing in each of said pipes alternately an air-suction and an atmospheric pressure.

2. In an improved air-exhaust pump, the combination, with a common conduit, as D, of two pairs of double bulbs *w z* and *w' z'* with the uniting tubular stems *t t* and the stems *q q*, connecting the bulbs *w w'* with said common conduit and the stems *s s*, the pipes *a a'*, connected, respectively, to the bulbs *z* and *z'*, a suction-pipe *c*, and a double-branched valved coupling connecting the same with both of said pipes *a a'*, provided with an air-inlet and having a valve-plug therein for insuring under one position thereof suction communication between the pipe *c* and the one of said pipes *a a'* and air communication to the other of said pipes, and under another position of the valve a reversal of said communications, substantially as and for the purpose set forth.

3. In an improved air-exhaust pump, the combination, with the pipes *a a'* and the suction-pipe *c*, of the elbow-coupling and socketed valve-body having laterally connected thereto the said suction-pipe and having connected to its return-bent extremities the said pipes *a a'*, and also provided through its back with the air-outlet *d*, and the valve-plug having the axial way 1, the radial way 2, and the peripheral way 3, and the bulbs *z z'* of double-acting Geissler pumps having connections with said pipes *a a'*, substantially as and for the purpose set forth.

487,479. INCANDESCENT ELECTRIC LAMP. GUSTAV A. PERL, Springfield, Mass. Filed Apr. 11, 1892. Serial No. 428,570. (No model.)

Claim.—1. In an incandescent electric lamp, the combination, with a head of non-conducting material having the spindle passed through it, which is provided with an extension having a binding-post and another metallic piece on said head also having a binding-post, of a sealed filament-containing globe having leading-in wires, the outwardly-extended extremities of which are detachably connected to said binding-screws, and a secondary globe inclosing the filament-containing globe, substantially as described.

2. In an electric incandescent lamp, the combination, with a head having insulated metallic pieces and a sealed globe having a filament and leading-in wires detachably connected to said metallic pieces, of a ferrule detachably connected to the head and surrounding the connection between the globe and head, substantially as described.

3. In an incandescent electric lamp, the combination, with a head provided with insulated metallic devices, each comprising binding-screws, one of said metallic devices having an extension *e*, which extends upwardly through and beyond the head, and the other metallic device having a member *j*, which is extended laterally to the border of the head, of a filament-containing globe having leading-in wires, the free ends of which are connected by the binding-screws to said metallic devices, and the outer globe having the open neck and a metallic ferrule thereat detachably connected to the head and having the ferrule in contact with the said member *j*, substantially as and for the purpose set forth.

4. In an incandescent electric lamp, the combination, with a head A of non-conductive material having the recesses *d d*, of the spindle *e*, passed through and upwardly beyond the head and having the extension *f*, the angular member of which is disposed in one of said recesses, a metallic piece on the under side of the head, having the lug *h* located in the other of said recesses, the sealed globe B, having the filament and leading-in wires detachably connected to the said head and in electric connection with the said lug *h*, substantially as described.

5. In an electric incandescent lamp, the combination, with a head having insulated metallic pieces and globe-grasping devices, substantially as described, and the sealed globe B, adapted for engagement with said grasping devices and having the filament and leading-in wires detachably connected to said metallic pieces, of a ferrule surrounding the joint between the globe and head and detachably connected to the head, substantially as described.

6. In an electric incandescent lamp, the combination, with a head having the rabbet *a* and the recesses *d d*, the spindle *e*, passed through the head and having the angular extension *f* with the binding-screw 12 in one of the recesses, the ring-plate *g*, having the prongs *i*, and the lug *h*, with the binding-screw 15, located in the other of said recesses, and the lug *j*, extended across the surface of the rabbet, of the globe engaged by said prongs and having the filament and leading-in wires which are detachably connected to the binding-screws and the ferrule *m*, seated in said rabbet and connected to the head and in contact with the lug *j*, substantially as and for the purpose set forth.

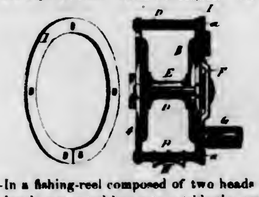
487,480. LOCKET. JAKOB GRAFF, Paterson, N. J. Filed Sept. 13, 1892. Serial No. 445,763. (No model.)

Claim.—1. A locket consisting of two sections, each of said sections being provided with a movable dial, again provided with a slot, a pin to which said dial is pivotally secured, a ratchet arranged on said pin and operated by a pawl, the latter being controlled by a spring, a lever operating said pawl, and means for controlling the said ratchet, all said parts being arranged and combined to operate substantially as described, and for the purposes set forth.

2. A locket combining therein two sections, each section consisting of a ring, a bottom secured to said ring and provided in one section with the numerals corresponding to the number of the days in a month, in the other section with the names of the months, a dial or disk arranged on said bottom and provided with a slot, said slot in one section being of a size sufficient to expose seven numerals, in the other section of a size sufficient to expose one name at a time, and means for operating each dial independently of the other, all said parts substantially as described, and for the purposes set forth.

3. A locket combining therein two sections, each section consisting of a ring, a bottom secured to said ring and provided in one section with the numerals corresponding to the number of days in a month, in the other section with the names of the months, a dial or disk arranged on said bottom and provided with a slot, said slot in one section being of a size sufficient to expose seven numerals, in the other sections of a size sufficient to expose one name at a time, a pin secured in the center of the dial and extending through the bottom, a ratchet secured to said pin, a pawl engaging said ratchet and pivoted to a lever, said lever being again pivoted at one end to the bottom, the other end of said lever projecting through a slot in the ring, a spring controlling said pawl, and means for controlling the ratchet, all said parts substantially as described, and for the purposes set forth.

487,481. FISHING-REEL. ANDREW B. HENDRYX, New Haven, Conn. Filed Sept. 21, 1892. Serial No. 446,368. (No model.)

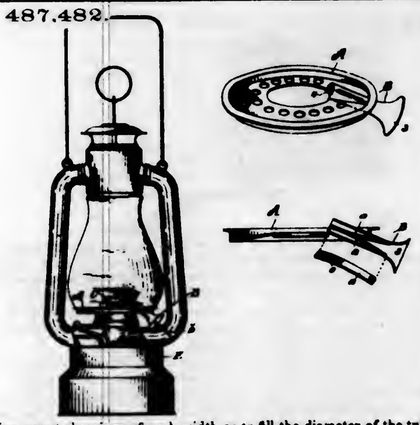


Claim.—In a fishing-reel composed of two heads with the spool between, the heads connected by posts outside the spool and having a crank outside one of the heads, by which the spool may be rotated, the combination therewith of a detachable ring outside the head upon which the crank is arranged, the internal diameter of the ring being somewhat greater than the length of the crank and so that the crank may swing within said ring, substantially as described.

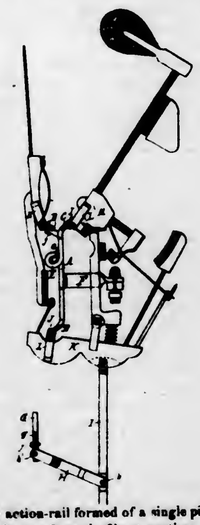
487,482. LAMP ATTACHMENT. ADOLPH BOMMERSHEIMER and CHARLES R. MUELLER, Jr., Detroit, Mich. Filed July 20, 1891. Serial No. 400,071. (No model.)

Claim.—The combination, with the burner, of the gallery mounted thereon, the tube passing through the gallery, and the set of converging serrated springs of such width as to fill the diameter of the tube and attached to opposite walls thereof, the inner serrated ends of said springs meeting in the center of the tube and normally closing the aperture therethrough, substantially as set forth.

487,482.



487,483. PIANO-ACTION. HENRY KELLER and CONSTANTINE KELLER, New York, N. Y. Filed Feb. 25, 1892. Serial No. 423,751. (No model.)



Claim.—1. An action-rail formed of a single piece of sheet metal and provided with flanges formed of bent portions of the same sheet of metal and integral therewith, to support the parts of the action, substantially as and for the purposes set forth.

2. An action-rail formed of a single piece of sheet metal, provided with flanges formed of bent portions of the same sheet of metal to support the whip, butt, damper, damper-rod, and rail-prop, substantially as and for the purposes set forth.

3. The combination, with a metal action-rail, of the damper-rod flange E, provided with the bushing *e*, secured therein, substantially and in the manner specified.

4. The metal action-rail provided with the butt-flange C, bent over so that the screw J shall be in a vertical position, or nearly so, substantially as and for the purposes set forth.

5. The hammer-butt made of the mortised piece M and the double forked flange-piece L, fitting into said mortise, substantially as and for the purposes set forth.

6. An action-rail made of a single piece of sheet metal, provided with flanges of bent strips of the same sheet of metal, said flanges being slotted to admit the pivot-pins laterally, substantially as and for the purposes set forth.

7. In a piano-action, the combination of a metal action-rail formed of a single piece of sheet metal and provided with flanges B B B, C C C, D D D, E, and F, formed of portions of the same sheet of metal and integral therewith, with the butt, damper, and whip, substantially as and for the purposes set forth.

8. The combination, with the sticker and tongue, of the metal bottom rail G, provided with the slotted flanges *g g*, substantially as and for the purposes set forth.

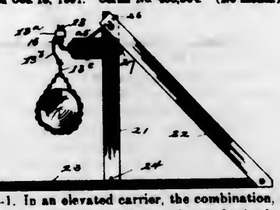
9. The combination, with the bottom rail and sticker, of the tongue H, forked at both ends, substantially as and for the purposes set forth.

10. The combination of the metal action-rail A, provided with the flanges B C D E F, of the hammer-butt, damper, and whip, the sticker I, tongue H, and flanged metal bottom rail G, substantially as and for the purposes set forth.

487,484. CENTER-PIN FASTENING FOR PIANO-ACTIONS. HENRY KELLER and CONSTANTINE KELLER, New York, N. Y. Filed June 3, 1892. Serial No. 435,467. (No model.)

Claim.—The combination, with a portion of a piano-action, of a screw provided on the under side of its head with a sharp downwardly-projecting rim, the center pin or pivot grasped between such sharp edge and the portion of the action, and bearings for such center-pin, substantially as and for the purposes set forth.

487,485. ELEVATED CARRIER. ALFRED T. KELLNER, Bethel, Me. Filed Oct. 13, 1891. Serial No. 408,564. (No model.)



Claim.—1. In an elevated carrier, the combination, with a supporting-frame comprising suitable uprights and a horizontal track-beam supported by said uprights, of a track-rail and bearers therefor, said bearers having their shanks adapted to pass into or through the beam and their outer ends upturned and bifurcated to provide seats for the track-rail and said bifurcations being adapted to be bent to securely embrace the rail, substantially as described.

2. In an elevated carrier, the combination, with a supporting-frame comprising suitable uprights and a horizontal track-beam supported by said uprights, of a track-rail comprising a rigid rod or bar and bearers therefor, said bearers having their shanks adapted to pass into or through the beam and their outer ends upturned and bifurcated to provide seats for the track-rail and said bifurcations being adapted to be bent to securely embrace the rail, substantially as described.

3. In an elevated carrier, the combination of a supporting-frame comprising suitable uprights and a track-beam secured to said uprights by hangers, having a shank passed through the beam and arms or branches passed into or through the upright, and a track-rail supported by said beam, substantially as described.

4. In an elevated carrier, the combination of a supporting-framework comprising a ground timber, an upright having a bearing on said ground timber, a stud or pin engaged with the ground timber and the upright and adapted to prevent lateral movement and permit vertical separation of said upright and timber, an inclined timber having a bearing upon the upright and its lower end secured to the ground timber, and a track-rail supported by the frame-work, substantially as described.

5. In an elevated carrier, the combination of a supporting-frame comprising a ground timber, an upright having a bearing on said timber, an inclined timber having one end secured to said ground timber and its upper end to the upright, and a track-beam secured to the upright and a track rail carried by said track-beam, substantially as described.

487,486. MEANS FOR SEPARABLY UNITING GUN-BARRELS TO THE STOCKS. WILLIAM MASON, New Haven, Conn., assignor to the Winchester Repeating Arms Company, same place. Filed Apr. 4, 1892. Serial No. 427,618. (No model.)

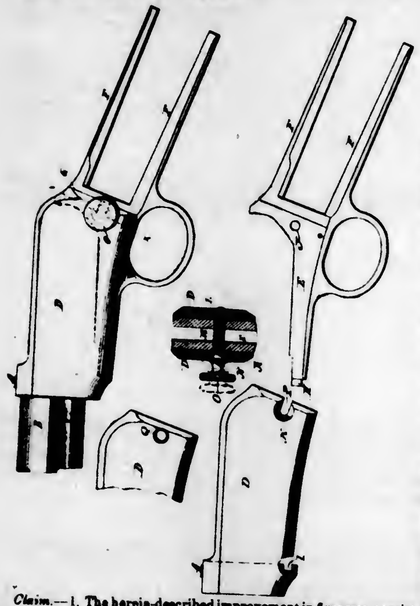
487,487.

downward, the sides upon their inside and near the forward end constructed with vertical recesses, the other portion of the receiver carrying the barrel and adapted to sit between the two sides to form the forward end of the receiver, the said barrel portion of the receiver constructed with vertical ribs upon its sides and adapted to enter the recesses in the sides of the forward end of the receiver, substantially as described.

forward end, but open from the bottom, the other or forward part of the receiver carrying the barrel and adapted to enter between the two sides at the forward end and from below, the inner surface of the two sides and the corresponding surface of the forward part con-

487,486. MEANS FOR SEPARABLY UNITING GUN-BARRELS TO THE STOCK.

WILLIAM MASON, New Haven, Conn., assignor to the Winchester Repeating Arms Company, same place. Filed Apr. 4, 1892. Serial No. 427,618. (No model.)

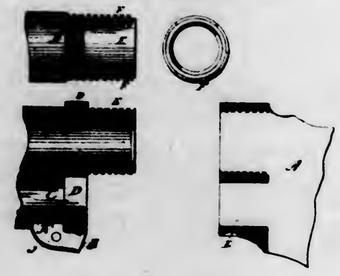


Claim.—1. The herein-described improvement in firearms, consisting in a receiver carrying the barrel at its forward end, the sides or cheeks of the receiver made as a part of such forward end, the rear and bottom portion of the receiver adapted for attachment to the stock and separable from the said forward part and cheeks and so as to set between the cheeks, the forward end of the said bottom portion of the receiver constructed with a tenon and the forward part of the receiver constructed with a corresponding mortise to interlock with said tenon when the parts are set together, combined with a screw or pin through the said cheeks and rear part of the receiver, substantially as described, and whereby the said parts are made separable.

2. In a firearm, a receiver made in two parts, the forward part carrying the barrel and the two sides or cheeks of the receiver, the rear portion carrying the stock, with a projection therefrom forming the bottom of the receiver, the said projection constructed with tenon at its forward end and the forward portion of the receiver with a corresponding mortise to interlock with said tenon, the cheeks and receiver constructed with a screw-hole transversely through them at the rear, one cheek constructed with a slot opening rearward from the said hole and the said slotted hole countersunk, combined with a screw adapted to set through said holes and constructed with a conical neck corresponding to the said countersink, substantially as and for the purpose described.

487,487. MEANS FOR SEPARABLY ATTACHING GUN-BARRELS TO THE STOCKS.

WILLIAM MASON, New Haven, Conn., assignor to the Winchester Repeating Arms Company, same place. Filed Apr. 4, 1892. Serial No. 427,619. (No model.)



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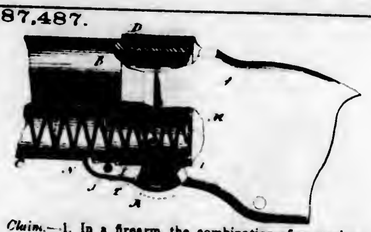


Claim.—1. In a firearm, the combination of a receiver screw-threaded at its forward end to receive the barrel, the barrel threaded at its rear end corresponding to the receiver and so as to be removably attached thereto, with a locking device, substantially such as described, between the barrel and the receiver and adapted to detachably engage the two when the barrel is in the home position in the receiver, substantially as described.

2. In a firearm, the combination of a receiver, a barrel, the rear end of the barrel and the forward end of the receiver screw-threaded for the attachment of the barrel to the receiver, a bracket carried by the barrel forward of the receiver, and a locking-lever between the bracket and the receiver, hung to the one and adapted to engage the other, whereby the two parts are locked together, substantially as described.

3. In a firearm, the combination of a receiver, a barrel, the receiver constructed at its forward end with an opening corresponding to the rear end of the barrel, the opening into the receiver and the rear end of the barrel constructed with corresponding segmental screw-threads, the segmental threads on one part being intermediate between the segmental threads on the other part, and a locking device, substantially such as described, between the two parts to removably engage the two parts when in the home position, substantially as described.

4. In a magazine-firearm, the combination of a receiver, a barrel, a magazine longitudinally under the barrel, the receiver constructed with openings at its forward end corresponding to the barrel and magazine, a band around the rear end of the barrel and magazine, serving to unite the two at the rear, but the barrel projecting rearward beyond the band and such rear projection of the barrel screw-threaded, the barrel opening in the receiver, correspondingly screw-threaded, with a locking device, substantially such as described, between the receiver and the band, whereby the parts are removably interlocked when in their home position.

5. In a magazine-firearm, the combination of a receiver, a barrel, a magazine longitudinally beneath the barrel, the receiver constructed with openings at its forward end corresponding to the magazine and the barrel, a band connecting the barrel and magazine at their rear end, the barrel projecting rearward beyond the band, the said projection of the barrel and the corresponding opening in the receiver screw-threaded, a locking-lever hung to said band and adapted to engage the receiver, the lever constructed with a forwardly-projecting nose, and the follower in the magazine, constructed with a notch adapted to be engaged by the said nose of the lever when the lever is in the unlocked position, substantially as described.

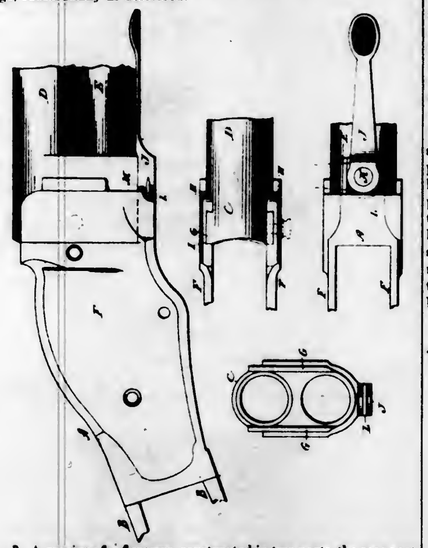
6. In a firearm, the combination of a receiver screw-threaded at its forward end to receive the barrel, the barrel threaded at its rear end corresponding to the receiver and so as to be removably attached thereto, a locking device, substantially such as described, between the barrel and the receiver, and mechanism, substantially such as described, between the forward end of the receiver and the rear end of the barrel portion of the arm to serve as a take-up for the joint between the barrel portion and the receiver portion of the arm, substantially as described.

487,488. MEANS FOR SEPARABLY ATTACHING GUN-BARRELS TO THE STOCKS.

WILLIAM MASON, New Haven, Conn., assignor to the Winchester Repeating Arms Company, same place. Filed Apr. 4, 1892. Serial No. 427,620. (No model.)

Claim.—1. The herein-described improvement in firearms, consisting in a receiver made in two parts, the rear part adapted for attachment to the stock and carrying the two sides of the receiver, the two sides extending forward, open at the top and constructed with undercut vertical recesses upon their inside, and near their forward end the other portion of the receiver carrying the barrel and constructed with vertical undercut ribs corresponding to the said vertical recesses between the two sides and so as to set therein, with a locking device between the two parts, whereby they may be detachably secured together, substantially as described.

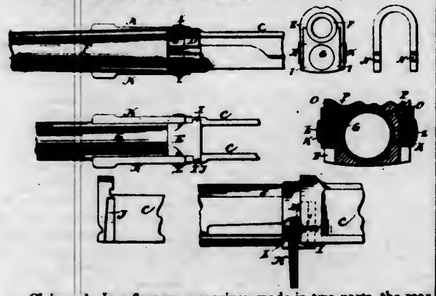
2. In a firearm, the combination of a receiver made in two parts, the rear portion adapted for attachment to the stock and carrying the two sides, which two sides extend forward and open from the top downward, the sides upon their inside and near the forward end constructed with vertical recesses, the other portion of the receiver carrying the barrel and adapted to sit between the two sides to form the forward end of the receiver, the said barrel portion of the receiver constructed with vertical ribs upon its two sides corresponding to the said vertical recesses in the receiver and so as to sit therein, a lever hung upon the under side of one part and so as to swing in a horizontal plane, said lever constructed with a cam upon one side of its hub, the other part constructed with a groove corresponding to said cam on the lever and with which the said cam is adapted to engage, substantially as described.



3. A receiver for firearms, constructed in two parts, the rear part adapted for attachment to the stock and carrying the two sides of the receiver, the said sides extending forward and open through the top, the forward end constructed with vertical grooves upon the inside, the forward part of the receiver carrying the barrel adapted to sit between the forward end of the two sides, and the said forward part of the receiver constructed with ribs corresponding to said grooves, and the forward part of the receiver, also constructed with vertical shoulders upon its sides, adapted to bear against the forward end of the two sides of the receiver, the said ribs and grooves made of wedging shape, whereby the passage of the ribs into the grooves tends to draw the two parts longitudinally together, and so as to bring the said shoulders to their bearing against the forward ends of the sides of the receiver, substantially as described.

487,489. MEANS FOR SEPARABLY ATTACHING GUN-BARRELS TO THE STOCKS.

WILLIAM MASON, New Haven, Conn., assignor to the Winchester Repeating Arms Company, same place. Filed Apr. 4, 1892. Serial No. 427,621. (No model.)

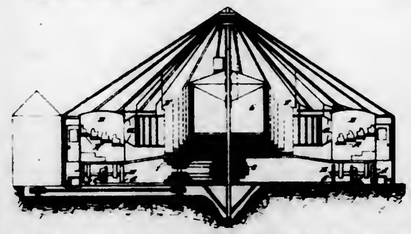


Claim.—1. In a firearm, a receiver made in two parts, the rear part adapted for attachment to the stock and carrying the two sides of the receiver, the two sides extending forward to form the recess to receive the mechanism, the sides connected across the top at their forward end, but open from the bottom, the other or forward part of the receiver carrying the barrel and adapted to enter between the two sides at the forward end and from below, the inner surface of the two sides and the corresponding surface of the forward part constructed the one with vertical ribs and the other with corresponding grooves, the forward part of the receiver constructed with shoulders adapted to abut against the forward end of the two sides of the receiver, and a locking device for engaging the two parts when in their home position, substantially as described.

2. In a firearm, a receiver composed of two parts, the rear part adapted for attachment to the stock and carrying the two sides, the sides projecting forward to form the recess for the mechanism of the arm, open at the forward end and from the bottom, but connected across the top, the second or forward part of the receiver, adapted to carry or made as a part of the barrel, the forward part constructed to pass into the rear part from below and constructed with a shoulder to abut against the forward ends of the sides of the receiver, the inner surface of the two sides and the corresponding surface of the forward part constructed the one with vertical ribs and the other with corresponding vertical grooves to engage with each other as the forward part is introduced from the under side of the receiver with a lever hung upon the outer side of one part and so as to swing in a vertical plane, the lever forming a handle by which it may be conveniently turned upon its pivot and constructed with a projecting nose on the hub, the other part of the receiver constructed with a notch corresponding to said nose of the lever, the nose of the lever and the said notch adapted to engage as the two parts approach their home position and by means of which the two parts may be forced to their home position, substantially as described.

487,490. PANORAMA.

HENRI P. MOTTE, Paris, France. Filed July 14, 1892. Serial No. 439,944. (No model.) Patented in England Aug. 15, 1890, No. 12,845.



Claim.—1. A panorama consisting of images cut out, placed, painted, or otherwise delineated on parallel planes or on concentric surfaces and means by which motion is communicated thereto at different speeds inversely proportionate to the distances that they represent in perspective, whereby is produced the effect or illusion experienced by travelers in railway-carriages, road-carriages, vessels, balloons, or other vehicles, when looking at the country, of the various objects disappearing behind them, substantially as described.

2. In a panorama, the combination, with a scenic display consisting of images cut out, placed, painted, or otherwise delineated on parallel planes or on concentric surfaces, of a viewing-carriage and means for moving the same at an appropriate speed relative to said scenic display, substantially as shown and described.

3. In a panorama, the combination, with a scenic display consisting of images cut out, placed, painted, or otherwise delineated on parallel planes or on concentric surfaces, to which motion is communicated at different speeds proportionate to the distances which the scenic planes or surfaces represent in perspective, of a viewing-carriage and means for moving the same at an appropriate speed relative to said scenic display, substantially as shown and described.

4. In a panorama, the combination, with a viewing-carriage, whether stationary or moving, of two series of object or scenic panels the members of each of which series are movable independently of those of the other series, substantially as described.

5. In a panorama, the combination, with a viewing-carriage, whether stationary or moving, of two inner series of object or scenic panels and an outer panel the members of each of which and of the outer panel are movable independently of those of the other series, substantially as described.

6. A panoramic apparatus consisting of viewing-compartments arranged within or without a circular series of object-carrying panels, the said compartments moving in a circular path with respect to said panels, or vice versa, substantially as described.

7. In a panoramic apparatus in which viewing-compartments are arranged within or without a series of object-carrying panels, the combination therewith of means for removing one or more of said panels

or portions thereof from the vision of the spectator, substantially as described.

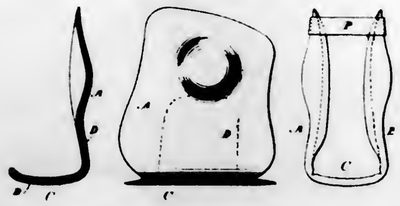
8. In a panoramic apparatus, the combination, with a scenic display arranged centrally within a carriage or series of carriages, of means for moving the latter in a circular path around the former, the inner wall or walls of said carriage or carriages being provided with sight-openings, substantially as shown and described.

9. In a panoramic apparatus, the combination, with a scenic display arranged centrally within a carriage or series of carriages, of means for moving the latter in a circular path around the former, the inner wall or walls of said carriage or carriages being provided with sight-openings and their outer wall or walls with doors accessible from a common entrance-chamber, substantially as shown and described.

487,491. PULLEY. GEORGE W. HOCK, Philadelphia, Pa. Filed May 12, 1892. Serial No. 432,712. (No model.)

Claim.—A pulley formed of a central core, having radiating wedge-shaped tongues and side bosses and a surrounding rim embracing said tongues and bosses, said core and rim being of different metals, said parts being combined substantially as described.

487,492. ANKLE-SUPPORTER. JOHN G. PUDDLEY, South Norwalk, Conn. Filed Mar 4, 1892. Serial No. 423,712. (No model.)



Claim.—1. An ankle-supporter having a sole and side of one piece of material stiffened, the side extending up to the ankle and molded to shape for fitting the same, and the supporter being entirely open at the rear, so as to accommodate different widths of heels and ankles and not to interfere with the forward and backward movement of the parts upon the ankle-joint, substantially as set forth.

2. An ankle-supporter having a sole and two side pieces of one piece of material molded to shape for fitting the ankle and stiffened and extending up at each side of the ankle, the supporter being open at the rear to accommodate differences in widths of heel and ankle and not to interfere with the forward and backward movement of the parts upon the ankle-joint, substantially as set forth.

3. An ankle-supporter having a sole and side of one piece of material molded to shape for fitting the ankle and stiffened by a plate permanently connected with the material and extending up at the side of the ankle, the supporter being open at the rear to accommodate differences in widths of heel and ankle and not to interfere with the forward and backward movement of the parts upon the ankle-joint, substantially as set forth.

487,498. SALESMAN'S SAMPLE-TRUNK. LOUIS H. RAUBE and WILLIAM L. WEEKS, Baltimore, Md. Filed May 4, 1892. Serial No. 431,781. (No model.)

Brief.—The invention consists in the means specified in the claims for adjusting the chaser-rolls to and from each other, in order to accommodate themselves to a greater or less distance between the drawing-rolls, or to be adjusted with reference to the top rolls on which they rest.

Claim.—1. A trunk having a crate, in combination with hoisting mechanism for raising, lowering, and supporting the crate at any desired height and a cover supported in a horizontal plane for displaying merchandise.

2. A trunk provided with a cover and means for supporting it in a horizontal plane, in combination with leaves extensible through the ends of the cover.

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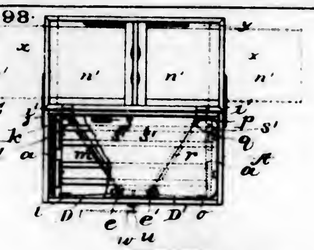
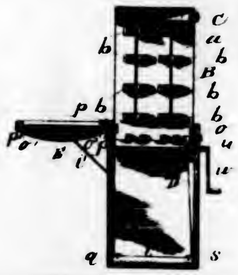
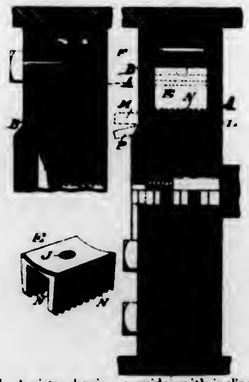




487,494. PISTON-PACKING. JACKSON RICHARDS, Philadelphia, Pa., assignor to the Richards Piston Packing Company, Limited, same place. Filed Feb. 8, 1892. Serial No. 420,869. (No model.)



Claim.—1. A piston having a spider with inclined hub, springs for the packing-rings, clips freely fitted on the arms of the spider and having seats for said springs, filling-pieces located within said clips, pins on the filling-pieces, passing through the clips into the springs, and liners interposed between said clips and arms, substantially as described.

2. In a piston, a clip forming a seat for a packing-ring and an arm of the spider of the piston supporting the same, the side of said clip having teeth for the engagement of a removing-lever, substantially as described.

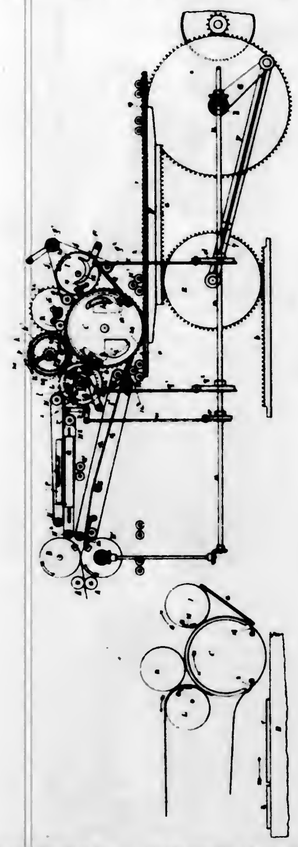
3. A piston having a spider, a clip fitted freely thereon, and a spring for the packing-rings, mounted on said clip, said spider having an inclined plane whereby by means of a proper tool said clip may be moved on its seat, substantially as described.

4. A piston having a head and follower with spider, arms on said spider, inclined planes on the hub of the spider on opposite sides of said arms, clips embracing said arms and having serrations on their sides, filling-pieces with pins passing through openings in said clips, liners between the ends of the arms and the filling-pieces, and springs seated on said clips and bearing against the packing-rings of the piston, said parts being combined substantially as described.

487,495. OSCILLATING-CYLINDER PRINTING-PRESS. WALTER SCOTT, Plainfield, N. J. Filed July 23, 1890. Serial No. 359,623. (No model.)

Claim.—1. The combination, with a reciprocating type-bed and

an oscillating impression-cylinder geared together, of two sets of grippers, one at each end of the impression-surface of said cylinder, a feeding device for supplying sheets of paper to one set of the grippers, a sheet-reversing cylinder and grippers for taking the sheet from the first set of grippers, and ranges of bars or their equivalents for passing the sheet from the grippers of the sheet-reversing cylinder to the second set of grippers upon the impression-cylinder, substantially as set forth.



2. The combination, with a reciprocating bed and an oscillating impression-cylinder geared together, of two sets of grippers upon the impression-cylinder, means for supplying the sheets to one set of grippers, a sheet-reversing cylinder and grippers for receiving the sheet from the first set of grippers after the first impression, sets of belts or tapes for keeping the sheet in proper contact with the sheet-reversing cylinder, and ranges of bars between which the sheet is guided after delivery from the grippers of the sheet-reversing cylinder to the second set of grippers upon the impression-cylinder, substantially as set forth.

3. The combination, with the reciprocating type-bed and impression-cylinder and connecting-gearing, of a sheet-reversing cylinder receiving the sheet directly from the impression-cylinder, two gears directly in gear with the gears of the impression-cylinder, and pawls acting in opposite directions for giving to the sheet-delivery cylinder a progressive movement in one direction from the oscillating impression-cylinder, substantially as set forth.

4. The combination, with the reciprocating type-bed, impression-cylinder, and the connecting-gearing, of the cutting-cylinders K L, the grippers upon the cylinder L, a folding mechanism, and pins for holding the advancing end of the second sheet adjacent to the line of separation, whereby the first sheet is delivered to the folding mechanism during one revolution of the cylinder L and the second sheet is delivered to the folding mechanism during the subsequent revolution, substantially as specified.

5. The combination, with the cutting-cylinders K L, the grippers o, and the pins s, of the folding mechanism and the bridge-bars r between such folding mechanism and the cutting-cylinder L and mechanism for moving the bridge-bars endwise for receiving one sheet during the first revolution and the second sheet during the subsequent revolution of the cylinder L, substantially as set forth.

6. The combination, with the reciprocating type-bed and the oscillating impression-cylinder, of the cylinders K L for delivering the printed sheet of paper, the gearing for connecting the cylinders K and L together and directly with the impression-cylinder, the loose gears, and pawl connections acting in the opposite direction for giving to the cylinders K L a progressive movement in the same direction from the impression-cylinder as it oscillates, substantially as set forth.

7. The combination, with the oscillating impression-cylinder C and the grippers thereupon, of the reciprocating type-bed and the sheet delivering or reversing cylinder and grippers thereon for receiving the sheet direct from the impression-cylinder and gear-wheels and ratchet connections, substantially as specified, for giving to the sheet delivery or reversing cylinder an intermittent movement in one direction from the oscillating impression-cylinder, substantially as set forth.

8. The combination, with a reciprocating bed and an impression-cylinder geared to and receiving its motion from the reciprocating bed, of two sets of grippers upon the impression-cylinder at opposite ends of the impression-surface, means for supplying the sheets to one set of grippers, a sheet-reversing cylinder and grippers for receiving the sheet from the first set of grippers after the first impression, and means for guiding the sheet as it is delivered from the reversing-cylinder to the second set of grippers, substantially as set forth.

9. The combination, with a reciprocating bed and one impression-cylinder receiving its motion therefrom and two sets of grippers on such impression-cylinder, of means for supplying the sheet to the impression-cylinder and printing the sheet upon one side, mechanism for reversing the sheet to print the same upon the other side, and a delivery-cylinder and cutting mechanism for separating the sheet into two products after the second impression and as delivered, substantially as set forth.

10. The combination, with a reciprocating type-bed and an impression-cylinder and its grippers, of cutting-cylinders for supplying to the press sheets of double length of one complete printed product, sheet-reversing mechanism for turning the sheet and presenting the advancing end to the grippers upon the impression-cylinder, and a second set of cutting devices for separating the sheet into two similar complete products, substantially as set forth.

11. The combination, with a reciprocating type-bed and an oscillating impression-cylinder and its grippers, of an oiling device acting upon the surface of the impression-cylinder as it oscillates in contact with the same and a sheet-reversing mechanism, substantially as specified, whereby the operative surface of the impression-cylinder is oiled each reciprocation without the sheet coming in contact with the oiling devices, substantially as set forth.

12. The combination, with a reciprocating type-bed and an oscillating impression-cylinder connected to and reciprocating therewith, of a delivery-cylinder receiving the sheet directly from the impression-cylinder and mechanism, substantially as specified, for rotating the delivery-cylinder progressively in one direction, substantially as set forth.

13. The combination, with a reciprocating type-bed and an oscillating impression-cylinder and its grippers, of the cylinder I and its grippers for receiving the sheet from the grippers of the impression-cylinder C after the first impression and mechanism for communicating to the cylinder I a progressive movement in one direction while the impression-cylinder is moving in each direction, substantially as set forth.

14. The combination, with the impression-cylinder and the reciprocating type-bed therewith connected, of inking-tables at the end portions of the type-bed and groups of inking-rollers at each side of and adjacent to the impression-cylinder, the movement given to the type-bed being sufficient to bring each inking-table into contact with both sets of inking-rollers during the respective reciprocations of the type-bed, substantially as set forth.

15. The combination, with the reciprocating type-bed and an oscillating impression-cylinder therewith connected and the grippers thereon, of automatic cutting and feeding mechanism at one side of the impression-cylinder, a sheet-reversing mechanism at the other side of the impression-cylinder, and a sheet-delivery mechanism at the same side of the impression-cylinder as the sheet-supplying mechanism, and gearing for driving the sheet reversing and delivery cylinders in one direction and in harmony with the oscillations of the impression-cylinder, substantially as set forth.

16. The combination, with a reciprocating type-bed and an oscillating impression-cylinder, its grippers connected therewith, of sheet-supplying mechanism at one side of the impression-cylinder, sheet-reversing mechanism at the other side of the impression-cylinder, a

sheet-delivery cylinder at the same side of the impression-cylinder as the sheet-supplying mechanism, and an oiling device applied to the upper surface of the oscillating impression-cylinder and between the reversing and delivery cylinders, substantially as set forth.

17. The combination, with a reciprocating bed and an impression-cylinder receiving its motion from the reciprocating bed, of two sets of grippers upon the impression-cylinder and at the ends of the impression-surface, means for supplying the sheet to one set of grippers, the sheet-reversing cylinder for receiving the sheet from the first set of grippers after the first impression, and ranges of bars to which the sheet is guided during the reversing movement, substantially as set forth.

18. The combination, in a printing-machine, of a reciprocating type-bed, an oscillating impression-cylinder and grippers, a sheet-reversing cylinder and grippers taking the sheet directly from the impression-cylinder, and means for conveying the sheet therefrom to the impression-cylinder for perfecting the same, and a movable sheet-delivery mechanism adapted to be brought into action to take the sheet directly from the sheet-reversing cylinder after the first impression, substantially as set forth.

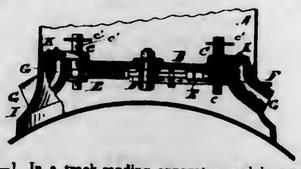
19. The combination, with the reciprocating type-bed and impression-cylinder and grippers and connecting-gearing, of a sheet-receiving cylinder and its grippers receiving the sheet directly from the impression-cylinder, two gears directly in gear with the gears upon the impression-cylinder, and pawls acting in opposite directions upon the respective gears, whereby the sheet-delivery cylinder is driven progressively in one direction from the oscillating impression-cylinder, substantially as set forth.

20. The combination, in a printing-press, of the reciprocating type-bed and oscillating impression-cylinder, two sets of grippers upon such impression-cylinder, a sheet-reversing cylinder, and belts for directing the sheet around the sheet-reversing cylinder and presenting the end of the same to the second set of grippers, substantially as set forth.

21. The combination, with the reciprocating type-bed, of an impression-cylinder, two sets of grippers on the same, a reversing-cylinder and gearing for giving to the same a progressive movement in one direction, a feeding-table or belts at the opposite side of the impression-cylinder to the receiving mechanism, and a sheet-delivery mechanism above the impression-cylinder, substantially as set forth.

22. A reciprocating bed and impression-cylinder and two sets of inking-rolls at opposite sides of the impression-cylinder, a sheet-feeding table or belts at one side of the impression-cylinder and over one set of inking-rollers, a sheet-reversing mechanism at the other side of the impression-cylinder and over the other set of inking-rollers, and a sheet-delivery mechanism above the feeding mechanism, substantially as set forth.

487,496. TRACK-SANDING APPARATUS. CHARLES W. SHERBURNE, Boston, Mass. Filed Oct. 3, 1892. Serial No. 447,606. (No model.)



Claim.—1. In a track-sanding apparatus, and in combination with the sand-box, the improved swing-valve K, consisting of a lower member *l* and an upper member *l'*, separated by a horizontal slot *k*, substantially as and for the purposes described.

2. In a track-sanding apparatus, and in combination with the sand-box, the improved swing-valve K, consisting of a lower member *l*, provided with a bead l^a, and an upper member *l'*, separated by a slot *k*, substantially as and for the purposes described.

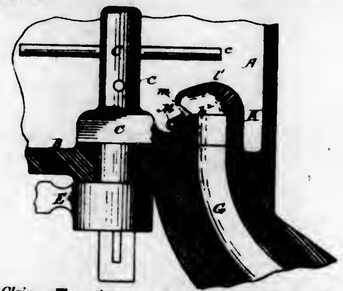
3. In a track-sanding apparatus, and in combination with the sand-box, the improved swing-valve K, consisting of a lower member *l*, an upper member *l'*, and a screw-plug *P*, substantially as and for the purposes described.

4. In a track-sanding apparatus, and in combination with the sand-box, the improved swing-valve K, consisting of a lower member *l* and an upper member *l'*, separated from each other by the slot *k*, and the adjustable plug *P*, substantially as described.

5. In a track-sanding apparatus, and in combination with the sand-box, the improved valve K, having a chamber formed by a horizontal slot *k*, in combination with the air-pipe M, substantially as and for the purposes described.

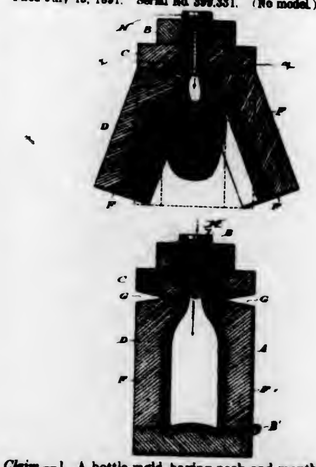
6. In a track-sanding apparatus, and in combination with the sand-box, the improved valve K, consisting of the lower member *l* and the upper member *l'*, separated from each other by an intermediate chamber, in combination with the air-blast pipe M, substantially as described.

487,497. TRACK-SANDING APPARATUS. CHARLES W. SHERBURNE, Boston, Mass. Filed Oct. 3, 1892. Serial No. 447,609. (No model.)



Claim.—The swing-valve K, formed with a hood *l'* and a trap k^a and having the air-pipe M and air-nozzle *m* within said trap, substantially as and for the purposes described.

487,498. BOTTLE-MOLD. THOMAS W. SYMBOTT, Wenonah, N. J. Filed July 13, 1891. Serial No. 399,331. (No model.)



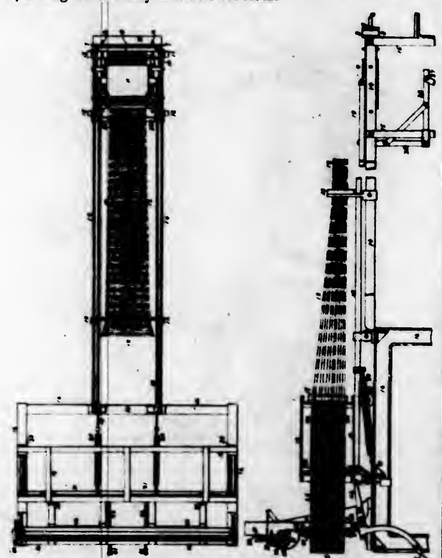
Claim.—1. A bottle-mold having neck and mouth portions and a body portion, consisting of sections, each of which is hinged to the respective neck-section, a flaring space being formed between the body and neck sections, substantially as described.

2. A bottle-mold consisting of a body portion of vertical sections, a neck portion pivoted to the top of each of said vertical sections near the inner part of said neck and body, and a sectional mouth portion hinged to the said neck, the under side of the neck portion being beveled downwardly from the exterior to near the interior thereof and the upper side of the body portion being beveled upwardly, forming a flaring space between the neck and the body, said parts being combined substantially as described.

3. A bottle-mold consisting of hinged neck and mouth portions, a sectional body hinged to said neck portion, and a bottom portion hinged to said body portion, said neck portion being adapted to open horizontally and the body portion to open at an angle thereto, substantially as described.

487,499. JACQUARD PUNCH-SELECTING APPARATUS. BENJAMIN TOZER, Nottingham, England. Filed Aug. 1, 1892. Serial No. 441,806. (No model.) Patented in England Nov. 19, 1868, No. 15,094; in Germany Aug. 30, 1887, No. 45,660, and in France Aug. 27, 1887, No. 186,694.

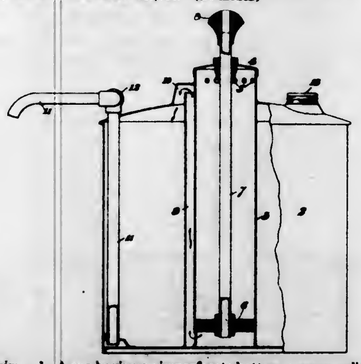
Claim.—1. In combination, back needles to be manipulated by the reader, connected by strings to the punch-selecting needles, a stationary back sley-plate perforated with holes to guide the back needles, notches in the back needles to engage with the back sley-plate when the back needles are pulled out, retracting-springs applied to the back needles, additional wires with vertical angle-plates arranged for acting at once on a plurality of back needles, and outer releasing-plates having holes through which the back needles extend, and on being raised by hand-levers lifting the back needles to clear their notches from the back sley-plate, the said parts being arranged and operating substantially as herein set forth.



2. In combination with the back needles of apparatus of the kind described, additional wires with vertical angle-plates arranged for acting at once on a plurality of back needles, substantially as and for the purposes herein set forth.

3. In combination with the back needles and back sley-plate of apparatus of the kind described, outer releasing-plates having holes through which the back needles extend and on being raised by hand-levers lifting the back needles to clear their notches from the back sley-plate, substantially as and for the purposes herein set forth.

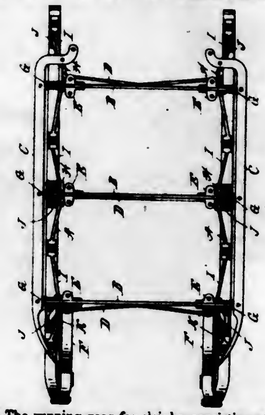
487,500. OIL-CAN. ABRAHAM J. TECHAFTE, Orrville, Ohio. Filed July 21, 1892. Serial No. 440,781. (No model.)



Claim.—1. A can having an imperforate bottom, a pump-cylinder within said can, a tube leading from the lower portion of the cylinder to the upper part of the can, and a piston having a hollow piston-rod movable in the pump-cylinder, substantially as described.

2. A can having a pump-cylinder therein which is provided with a perforated portion projecting above the top of the can, a tube leading from the lower portion of the cylinder to the upper part of the can, and a piston having a hollow piston-rod with an open upper end, substantially as and for the purposes described.

487,501. SLEIGH. HENRY UMPHREY and JAMES WERKER, Carleton Place, Canada. Filed July 11, 1892. Serial No. 439,619. (No model.)



Claim.—The running-gear for sleighs, consisting of a bar B, provided with connections E and G, legs secured to said connections E, foot connections J, secured to the lower ends of the legs for securing the legs to the runners, a stay or bar C, secured to the upper curved ends of the runners and to the connections G for keeping the benches in proper position, braces D for preventing the spreading of the runners, a curved bar F, attached to the runners by a triangular connection and secured to the connections E by means of a bolt or otherwise, and a bar *k*, passing through the connections E and secured by a bolt, the other end of said bar being connected to the runner, all substantially as and for the purposes described.

487,502. ATTACHMENT FOR VARNISH OR SIMILAR BOTTLES. THOMAS G. WATSON, Paris, Canada. Filed Jan. 28, 1892. Serial No. 419,583. (No model.) Patented in Canada Mar. 4, 1892, No. 33,405.

Claim.—1. The pan A, hinged to the bottle B and adapted to partially cover said bottle B, substantially as and for the purpose specified.

2. The pan A, provided with fingers D, pivoted to the band C, surrounding and movably connected to the neck of the bottle B, substantially as and for the purpose specified.

3. The pan A, provided with fingers D, pivoted to the band C, movably connected to the neck of the bottle B, in combination with the cap E, provided with hook F to fit between the band C and neck of the bottle B, substantially as and for the purpose specified.

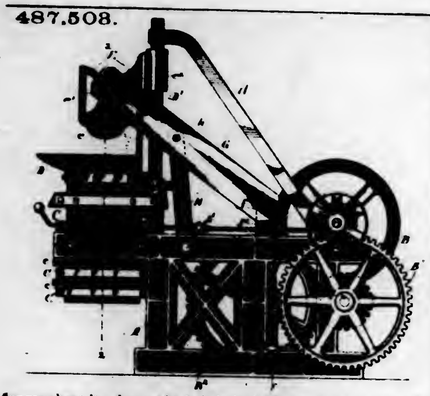
487,503. BALING-PRESS. ANDREW WICKET, Chicago, Ill. Filed Feb. 26, 1892. Serial No. 422,867. (No model.)

Claim.—1. The combination, with the frame of a baling-press and suitable driving mechanism, of a plunger having a convex face and a division-block having a concave forward surface, substantially as described.

2. The combination, with the frame and driving mechanism of a baling-press, of a plunger having a cross-section less than that of the compression-chamber and a division-block concave upon its forward surface, substantially as described.

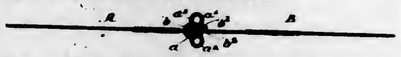
3. The combination, with the frame of a baling-press, of a plunger having a convex face smaller than the cross-section of the compression-chamber and a division-block having forwardly-projecting

487,503.



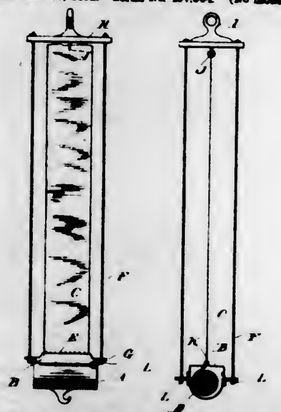
flanges about its edges and a hole in its back adapted to receive the rounded plunger, substantially as described.

487,504. BALE-TIE. EDWARD W. WINKLEY, Chicago, Ill. Filed Mar. 16, 1892. Serial No. 425,108. (No model.)



Claim.—A bale-tie having one end bent into two oppositely-arranged loops a' a^2 and then back upon and fastened to itself, and the other end bent back upon itself to form a loop, and the two strands of which said loop is composed then passed through the end thereof to form a double loop, substantially as described.

487,505. FLY-PAPER HOLDER. WILLIAM H. ALLEN, Detroit, Mich. Filed June 20, 1892. Serial No. 437,304. (No model.)



Claim.—1. In a receptacle for sticky fly-paper, the combination, with a support, of a sliding holder on the support and a sheet of sticky fly-paper connected at opposite ends to the support and holder, respectively, substantially as described.

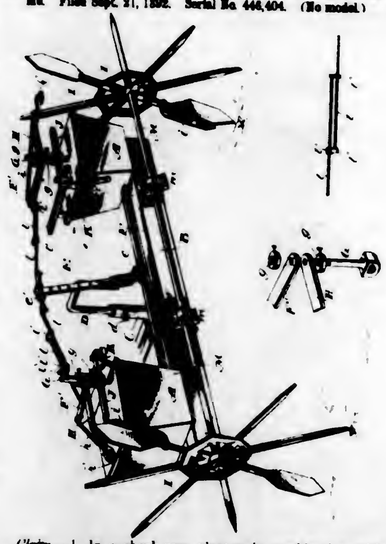
2. In a device of the kind described, the combination of a receptacle apertured on its upper face, a strip of fly-paper therein, and a frame extending from said receptacle above the aperture and adapted to support the paper, substantially as described.

3. In a device of the kind described, the combination of a receptacle, an apertured cover therefor, a shaft therein, a continuous strip of fly-paper wound about said shaft, and a frame extending from the receptacle upon which the paper when extended from the receptacle is adapted to be exhibited, substantially as described.

4. In a device of the kind described, the combination of an apertured receptacle, the fly-paper therein, apertured lugs G on the side of the receptacle, a frame slidingly engaged in said lug and consisting of the standard F, a cross-bar H, and hooks J, substantially as described.

5. In a holder for sticky fly-paper, the combination, with a support, of a sliding hollow holder on the support and a sheet of sticky fly-paper in the holder, having its end carried out and connected to the support, substantially as described.

487,506. CHECK-ROW PLANTER. GEORGE AHER, Green Ridge, Mo. Filed Sept. 21, 1892. Serial No. 446,404. (No model.)

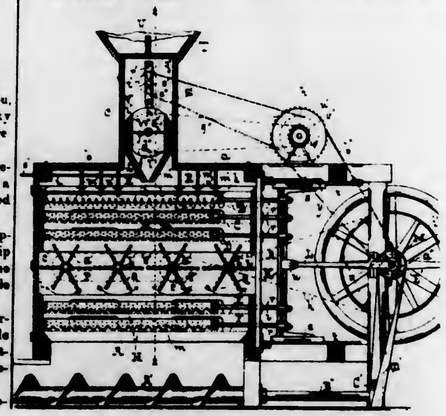


Claim.—1. In a check-row planter, in combination with the wheel, the arm adapted to be engaged thereby, the pivot journaling said arm, the second arm also on said pivot and connected to the former, and the collars on the pivot above and below said arms, substantially as specified.

2. In a check-row planter, in combination, the seed-boxes, the lever pivoted between them and connected with the seed-delivering devices, the wheel, the pivoted arm adapted to be actuated thereby, and the two rods between said lever and said arm, having each a block or lug through which the other passes, substantially as described.

3. In a check-row planter, in combination with the vibratory levers, the mechanism connected to each side thereof, the U-shaped bar to one of whose arms said lever is pivoted, and the standard to which the other arm is adjustably attached, substantially as described, and for the purpose specified.

487,507. APPARATUS FOR MIXING FLOUR, OR OTHER MATERIALS. JOHN D. RAMSEY, Baltimore, Md. Filed Apr. 23, 1892. Serial No. 430,336. (No model.)

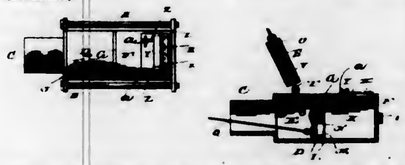


Claim.—1. In an apparatus for mixing substances, a hopper having a removable cross-partition with hinged doors at the bottom, substantially as specified.

2. In an apparatus for mixing materials, a casing and sieving devices within said casing, combined with a feed-hopper, a chute leading from the feed-hopper to the interior of the casing, a rotary beater and an intermittent feed within the chute, the beater being located above the feed, and suitable mechanism to operate the beater and the feed, substantially as described

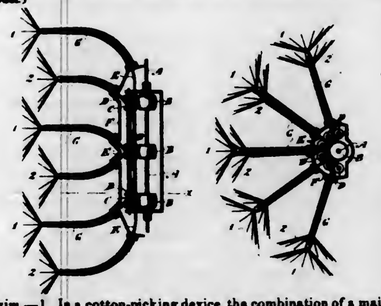
3. In a machine for mixing materials, a casing and a chute for introducing the material thereto, a series of pendent vibratory beaters located in the casing immediately below the chute, a series of fixed sieves arranged one above the other in the casing below the said beaters, a series of reciprocating mixers above the sieves, a series of fans between two of said sieves, and suitable mechanism to operate the mixers and fans, all combined and co-operating substantially as and for the purpose specified.

487,508. STREET-SPRINKLER. ANTHONY W. BROOKS and EDWARD HENRY, Jacksonville, Ill. Filed July 21, 1892. Serial No. 440,836. (No model.)



Claim.—The combination of the central disk having annular shoulders in its edges on both its faces and provided with a valve-opening, the cylinder-sections having their adjacent ends engaging said shoulders, one of said sections having a closed end and provided with a narrow outlet-slot in its upper side, securing-bolts clamping the sections together, a weighted valve mounted on the central disk and adapted to close the valve-opening therein, and a controlling-cord secured to said valve and passing out through the inlet-opening.

487,509. PICKER FOR COTTON-HARVESTERS. GERARD BEEKMAN, New York, N. Y. Filed Jan. 22, 1892. Serial No. 418,871. (No model.)



Claim.—1. In a cotton-picking device, the combination of a main rotary stem or shaft and a plurality of flexibly-attached subordinate stems branched therefrom, having independent extremities.

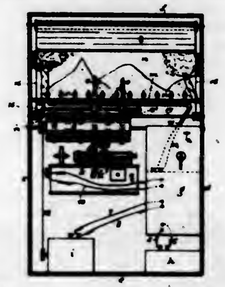
2. In a picker for cotton-harvesters, the combination of a main rotary stem, a plurality of flexibly-attached subdivisional stems having free extremities, each revolving about the axis of the said main stem and adapted to diverge centrifugally when the latter is rotated and to rope upon themselves when arrested in their orbit of centrifugal rotation, for the purpose described.

3. In a picker for cotton-harvesters, a main rotary stem, a non-rotary sheath containing the same, a flexible extension of the main stem projecting beyond the sheath, and at the extremity of said flexible extension a series of subordinate stems adapted to be separated centrifugally by the rotation of the said main stem.

4. In a picker for cotton-harvesters, a main flexible rotary stem, a flexible sheath containing the same, and at the extremity of said stem a multiple stem-picker, substantially as described.

5. The combination, in a picking device for cotton-harvesters, with a suitable support, of an aggrouped series of rotary picking-stems projecting horizontally therefrom, the extremities of alternate members of said stems occupying a comparatively-advanced position, and those of the remaining alternate members a comparatively-retired position of projection beyond the said support, for the purpose described.

487,510. COIN-CONTROLLED THEATRICAL SHOW. EDWARD T. BERRIGAN, New York, N. Y. Filed Aug. 8, 1890. Renewed Nov. 5, 1892. Serial No. 451,031. (No model.)



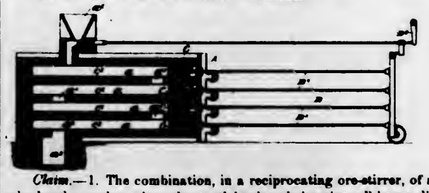
Claim.—1. The combination, with an inclosure and a coin-actuated mechanism, of a motor, a curtain operated from the same, and mechanism for replacing or drawing down the curtain before the coin-actuated mechanism stops, substantially as set forth.

2. The combination, with an inclosure or case and an electrically coin-actuated mechanism, of a motor, a phonograph, performing figures, connections from the electric coin-actuated mechanism to the motor, the phonograph, and the figures, whereby the phonograph is brought into action simultaneously with the performing figures, substantially as set forth.

3. The combination, with a motor and a phonograph, of performing figures and connections from the motor to the phonograph and to the performing figures, whereby the performing figures are brought into action simultaneously with the phonograph, substantially as set forth.

4. The combination, with a motor and a phonograph, of performing figures, connections from the motor to the phonograph and to the performing figures, whereby the performing figures are brought into action simultaneously with the phonograph, and an electric coin-actuated mechanism for bringing the motor into operation, substantially as set forth.

487,511. ORE-RAKE. JOHN C. BLAIR, Wilmington, Del. Filed May 14, 1892. Serial No. 433,286. (No model.)



Claim.—1. The combination, in a reciprocating ore-stirrer, of a rake-head carrying triangular teeth having their points all in one direction and their flat rear surfaces in parallel planes, with a shovel or scraper pivoted to the rake-head in a plane parallel to the flat surfaces of the rake-teeth and on the side of the teeth nearest to said flat surfaces, substantially as and for the purpose set forth.

2. The combination, in a reciprocating ore-stirrer, of a rake-head having projecting from one side of it the bars C^3, having depending brackets c^4, with the shovel or scraper D pivoted in these brackets and limited in its motion by means of lugs thereon, all substantially as and for the purpose set forth.

487,512. CARRIAGE-BRAKE. PHILIPPE BRAILLY, Bellaire, Ohio. Filed Apr. 2, 1892. Serial No. 427,552. (No model.)

Claim.—1. In a carriage-brake, the combination, with the body, of the brake-beam, the operating-rope and guide-pulleys, the winding-drum, the foot-levers, pitmen, and intermittent gripping devices between the pitmen and winding-drum, substantially as shown and described.

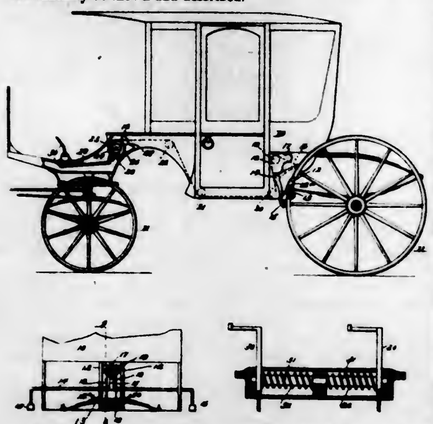
2. In a carriage-brake, the combination, with the body, of the vertical bearing-blocks, the transverse spring upon which the blocks rest, and the brake-beam journaled in said blocks, substantially as shown and described.

3. The combination, with the body, of the brake-beam journaled

thereto, the arm connected thereto, the spring-bearing thereon, the operating-ropes and guide-pulleys, and the winding-drum upon which the operating-rope is wound, substantially as shown and described.

4. The combination, with the body, of the brake-beam journaled thereto and carrying an arm, the spring, the operating-rope, the winding-drum, the ratchet-wheels connected therewith, the pawls engaging said ratchet-wheels, the pitman-rods, and operating foot-levers, all arranged substantially as shown and described.

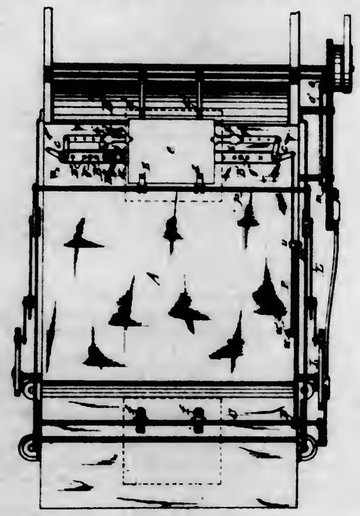
5. The combination, with the winding-drum, of the ratchet-wheels, the pawls engaging said ratchet-wheels, the pitman-rods, the foot-levers, and spring-actuated shaft upon which said levers are fulcrumed, substantially as shown and described.



6. The combination, with the winding-drum, of the shaft upon which it is mounted, the bearings in which the shaft turns, having flanges, the journal-blocks, the ratchet-wheels mounted on the shaft, the pawls pivoted to the flanges, and the pitman-rods, all arranged substantially as shown and described.

7. The combination, with the winding-drum, of the shaft upon which it is mounted, the bearings in which the shaft turns, having flanges, the journal-blocks in which the bearings turn, the ratchet-wheels mounted on the shaft, the pawls pivoted to the flanges, the pitman-rods connected to the pawls, the foot-levers connected with the pitmen, and the spring-actuated shaft to which the levers are attached, substantially as shown and described.

487,518. PAPER-FEEDING MACHINE. THOMAS A. BRIGGS, Arlington, Mass. Filed Mar. 21, 1892. Serial No. 426,668. (No model.)



Claim.—1. In combination with a paper-feed table and gages on said table, oscillatory levers at opposite sides of the paper-feeding path, and a paper-carrier moved by said levers diagonally in relation to the line of feed of the paper and carrying the paper to the gages in the process of feeding the same to the printing-machine, as set forth.

2. In combination with a paper-feed table and gages on said table, oscillatory levers at opposite sides of the paper-feeding path, a paper-carrier moved by said levers diagonally in relation to the line of feed of the paper, a rock-arm, and a pitman transmitting motion from said rock-arm to the aforesaid levers, as set forth.

3. In combination with the paper-feed table and gages on said table, oscillatory levers at opposite sides of the paper-feeding path, a tie extending across the table and connected at opposite ends to the aforesaid levers, and a paper receiving and carrying device connected to said tie and extending rearward therefrom, as set forth.

4. In combination with the paper-feed table and gages on said table, oscillatory levers at opposite sides of the paper-feeding path, a bar extending across the table and connected to said levers, clamps on said bar, and a leaf secured to said clamps and extending rearward therefrom to receive and carry to the aforesaid gages the paper in process of being fed to the printing-machine, substantially as set forth and shown.

5. In combination with the paper-feed table and gages on said table, oscillatory levers at opposite sides of the paper-feeding path, a bar extending across the table and connected to said levers and provided with a series of sockets distributed lengthwise thereof and equidistantly apart, and spring-plates mounted on said bar and formed intermediate of their length with lips embracing opposite edges of the bar and provided at opposite ends with lugs registering with the sockets in said bar, and a leaf of paper or analogous material clamped between the bar and inner ends of the spring-plates, substantially as described and shown.

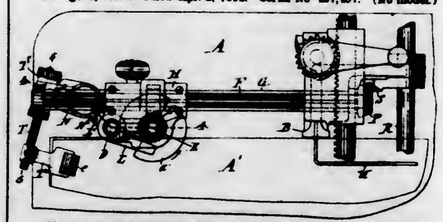
6. In combination with the feed-table, a stationary bar extending across said table, a paper-aligning gage connected to said bar, oscillatory levers pivoted to the ends of the bar, a bar extended across the table and connected to the levers, clamps connected to the latter bar, and a paper receiving and carrying sheet connected to said clamps and extending rearward therefrom, substantially as described and shown.

7. In combination with the feed-table, a bar extending across said table and rigidly secured thereto, a paper-aligning gage mounted on said bar adjustable longitudinally thereof, levers pivoted to the ends of said bar, a bar extending across the table and connected to said levers, clamps connected to the latter bar adjustable lengthwise thereof, and a paper receiving and carrying leaf connected to said clamps and extending rearward therefrom, substantially as described and shown.

8. In combination with a feed-table A, gages *c* and *c'*, reciprocating grippers E, rock-shaft C, and paper-feeding fingers *f f*, attached to said shaft, the levers *c*, tie *d*, paper receiving and carrying sheet *e*, attached to and extending rearward from said tie, the arm D, attached to said rock-shaft, and the pitman P, connecting said arm with one of the levers *c* and having a limited lost motion, substantially as described and shown.

9. In combination with the gages *c c'*, oscillatory crank-arm D, levers *c c*, and paper receiving and carrying devices *d e*, operated by said levers, and the pitman P, made adjustable in length to accommodate it to the distance between the said crank-arm and levers, as set forth.

487,514. PAPER-SEPARATING MECHANISM. THOMAS A. BRIGGS, Arlington, Mass. Filed Apr. 2, 1892. Serial No. 427,457. (No model.)



Claim.—1. In combination with the paper-buckling mechanism, rotary horizontal paper-separating plates disposed diametrically opposite each other in one and the same plane and mounted on one and the same shaft and movable vertically and supported on the top of the pile of paper, as set forth.

2. In combination with the rock-shaft B, segmental gear S, fixed to said shaft, vertical shaft E, paper-separating mechanism actuated by the latter shaft, horizontal shaft F, and gears transmitting motion from the shaft F to the shaft E, the shouldered notches *n* in the sides

of the shaft F, the pinion P, mounted loosely on said shaft and provided with the radial perforation *o* in its hub, the dog *p'* in said perforation, and the spring-hand *p*, encircling the hub of the pinion and secured at one end thereto and bearing with the opposite end on the dog *p'*, substantially as described and shown.

3. In combination with the rod D, shaft E, arm I, supported on said rod and shaft, and the cam C and paper-separating plates fixed to said shaft, the lever L, provided at one end with the toothed segment L', a spring holding said lever with the opposite end in contact with the aforesaid cam, the supplemental lever N, pivoted to the free end of the arm I and formed with a toothed segment N', meshing with the segment L', and a paper-buckling arm extending from the supplemental lever, as set forth.

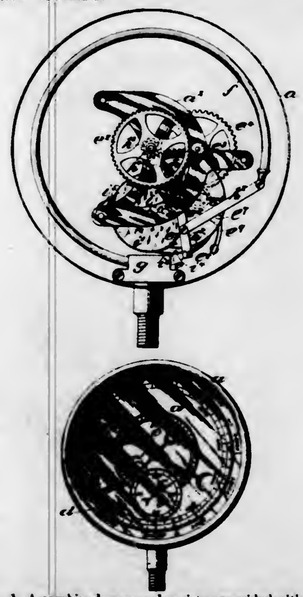
4. In combination with the rod D, shaft E, arm I, supported on said parts, and the cam C and paper-separating plates fixed to said shaft, the lever L, pivoted on the aforesaid rod and having one end in contact with the cam and formed at the opposite end with the toothed segment L', the stud-pin O, rigidly attached to the free end of the arm I, the supplemental lever N, pivoted to said stud-pin and formed with the toothed segment N', the spring N'', connected at opposite ends to said pin and supplemental lever, and a paper-buckling arm extending from said supplemental lever, as set forth.

5. The combination of the oscillatory supplemental lever N, provided with sockets *b b*, the paper-buckling arm T, having its supporting-shank pivoted on said lever, and the pin *b'*, movably connected to said shank and engaging one of the aforesaid sockets, as set forth and shown.

6. The combination of the oscillatory supplemental lever N, formed with the hub N'' and sockets *b b*, the paper-buckling arm T, having its supporting-shank pivoted on said hub and provided with the recess *c*, the pin *b'*, extending vertically through the recessed portion of said arm, and the spring *b''*, seated in the recess and forcing the pin into the socket *b*, substantially as described and shown.

7. In combination with the supplemental lever N, the paper-buckling arm consisting of the sleeve T', pivoted to said lever, the shaft T, extending lengthwise through said sleeve, collars on the shaft at opposite ends of the sleeve and one of said collars clamped adjustably on the shaft by a set-screw, the spring *f*, housed in the sleeve and attached at opposite ends to the adjustable collar and to the sleeve, and the finger T', attached to the free end of the shaft, substantially as described and shown.

487,515. COMBINED PRESSURE GAGE AND REGISTER. WILLIAM J. O. BRYON, Jr., New York, N. Y. Filed Sept. 11, 1891. Serial No. 405,389. (No model.)

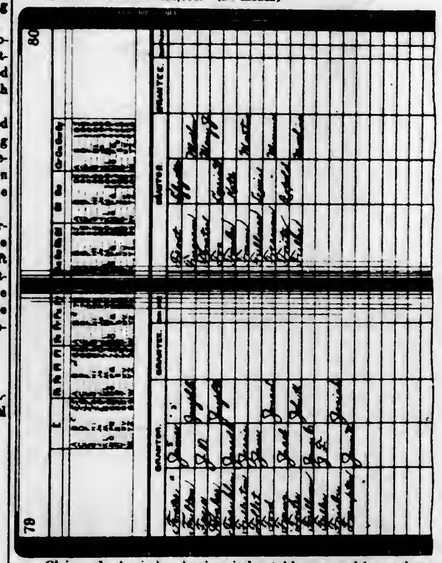


Claim.—1. A combined gage and register provided with a pressure-hand and a distance-indicating hand, suitable dials in combination with said hands, and mechanism for operating said hands in a manner whereby the distance or number of feet gaged by a given number of feet to a given number of pounds pressure covered by a single and successive number of strokes of the pressure-hand may be indicated, substantially as described, and for the purpose set forth.

2. A combined gage and register provided with a dial having a graduated surface to indicate distance and pressure, the indicating-hand *c'*, and mechanism, substantially as described, for operating said indicating-hand in a manner whereby the pressure for a single and successive number of strokes and the distance or number of feet covered by such strokes may be indicated, substantially as described, and for the purpose set forth.

3. A combined gage and register provided with a dial, a pressure-spring, a "stroke-indicating" hand, so called, and mechanism for connecting said pressure-spring and indicating-hand to give the latter a continuous forward step-by-step movement at each stroke of said pressure-spring, substantially as described, and for the purpose set forth.

487,516. INDEX. CHARLES M. COTT, Columbus, Ohio. Filed May 9, 1892. Serial No. 432,363. (No model.)



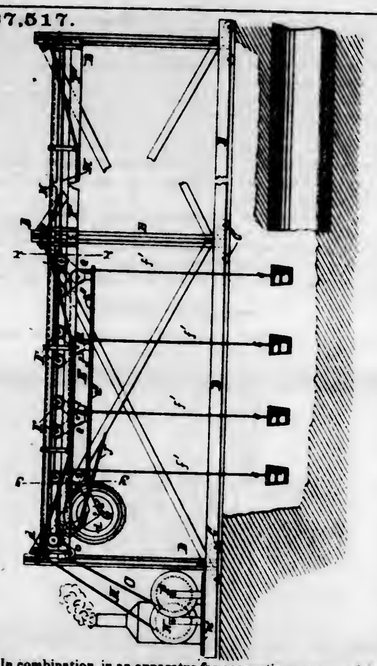
Claim.—1. An index having index-tables comprising column-spaces wherein are contained as headings the first letter or first two or more letters of surnames and with which are associated vertical rows or columns of letters of given names and page-numbers in horizontal alignment with the oppositely-located letters of said rows, substantially as and for the purpose specified.

2. An index having index-tables comprising column-spaces wherein are contained headings indicating surnames, vertical rows of letters indicating given names, and numbers in horizontal alignment with the oppositely-located letters of said rows, in combination with surname-column spaces *a* and one or more given-name columns *b b'*, substantially as specified.

487,517. APPARATUS FOR EXCAVATING AND LAYING SEWERS. JEROME A. CROSS, Fultonville, assignor of one-half to Lauer & Hagarman, Rochester, N. Y. Filed Apr. 7, 1891. Renewed Nov. 8, 1892. Serial No. 451,313. (No model.)

Claim.—1. In combination, in an apparatus for excavating sewers and for analogous purposes, a portable framework provided with tracks or ways F', a carriage consisting of several trucks connected together, the said carriage being provided with pulleys *f* and adapted to travel on the said ways, a rope M, fixed to said carriage, and a windlass therefor for drawing the said carriage in one direction, and a rope O and windlass for drawing the carriage in the opposite direction and for operating the hoisting mechanism, bucket-ropes *f''*, extending over each of the pulleys *f*, a drum G, provided with a separate groove for each of such ropes *f''*, buckets or carriers for each of the said bucket-ropes, the said rope O being wound upon the drum G for operating it, and means for controlling the movement of the drum G, substantially as and for the purposes set forth.

487,517.



2. In combination, in an apparatus for excavating sewers and for like purposes, a portable framework provided with tracks or ways, a series of trucks adapted to travel on the said ways, pulleys *f*, supported on the said trucks, a series of bucket-ropes and buckets therefor, and a grooved winding-drum movable with the said trucks for such ropes and a pawl and ratchet therefor, substantially as and for the purposes set forth.

487,518. CAR-TRUCK. ARTHUR R. DU POST, Louisville, Ky. Filed Aug. 30, 1892. Serial No. 444,559. (No model.)

Claim.—1. The combination, in a railway-car truck, of a pair of equalizing-bars, each comprising two parallel rods and a series of blocks fixed between them, axle-bearings fitted to rest on top of the said bars, and inverted-U-shaped clips fitting over the bearings and passing down between the pairs of rods at each side of a fixed block, and a bolt or key through the ends of each clip beneath and binding upon the said block, substantially as described.

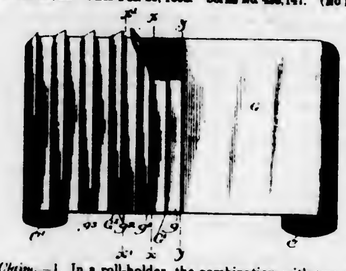
2. The combination, in a railway-car truck, of a pair of equalizing-bars, each comprising two parallel rods and a series of blocks fixed between them, axle-bearings fitted to rest on top of said bars and to be secured thereto, that one of the said blocks next to each bearing and between the bearings having an upward projection serving as a brace to the bearing, and a block at the outer side of each bearing having an upward projection, and a cross-bar attached thereto as a support for a brake, substantially as described.

487,519. THERMOSTAT. FRANKLIN O. ELLIOTT, Catawba, N. C. Filed Aug. 30, 1892. Serial No. 443,644. (No model.)

Claim.—1. In a thermostat, the combination of an independent end piece B, carrying contact-plates and provided with means for independently securing it to a support, a casing A, carrying an automatic spring-actuated rod provided with a contact-plate, and means for independently securing it to a support, the inner sides of one end of said casing being provided with grooves in which work the edges of end piece B, as and for the purpose described.

2. In a circuit-closer, in combination, the casing made in two separable parts, one of which carries the fixed and the other the movable contact, substantially as described.

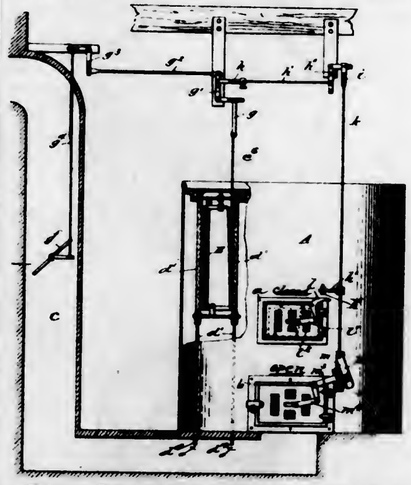
487,520. PHOTOGRAPHIC ROLL-HOLDER. THOMAS S. GILLETTE, Evanston, Ill. Filed Feb. 29, 1892. Serial No. 423,147. (No model.)



Claim.—1. In a roll-holder, the combination, with two coacting rollers, one of which is adapted to receive and support a continuous film wrapped about it, of a flexible strip fastened to the other roller and provided with a series of transverse retaining-flaps fastened to it at suitable intervals and each adapted to receive and secure the end of the film wound about the other roller, substantially as shown and described.

2. The combination, with the roller C, adapted to receive and support a continuous photographic film wrapped about it, of a second roller C' and a flexible strip G', having one of its ends secured to said roller, said strip being provided with a series of transverse flaps of flexible material, each having its rear edge fastened to the strip and its front edge free, and the inner face of the free portion of each of said flaps being coated with a gum adapted to be rendered adhesive by moistening, substantially as shown and described.

487,521. AUTOMATIC DAMPER FOR FURNACES, &c. DAVID W. GLENDENNING, Denver, Colo. Filed June 26, 1892. Serial No. 438,012. (No model.)



Claim.—1. The combination, in a device for operating dampers, of a furnace, the combination of a pair of plates, pipes located within the furnace and rigidly connecting these plates, said pipes having openings at their upper ends and their lower ends extended to the outside of the furnace, and expansion devices mounted between the plates and connected to an operating-rod, substantially as described.

2. The combination of a furnace provided with an upper and a lower door and a fresh-air duct leading to its heating-space, an expansion device B, supported in the heating-space and having its operating-rod c^4 extending up out of the furnace, a damper in the fresh-air duct, and a series of rods connecting the damper to the operating-rod of the expansion device, an automatic damper on the upper door, and an angle-lever on the door for operating it, a vertical operating-rod *k*, connected with the rod c^4, an arm *k'* on this rod and adapted to strike the angle-lever on the door when it is depressed, a damper on the lower door, and an angle-lever m^2 for operating it, and means for swiveling this lever to the rod *k*, substantially as described.

3. The combination of a furnace provided with a door having a draft-opening, a sliding damper carried by the door, an angle-lever *l*, pivoted on the door and pivotally connected to the damper, a vertically-moving operating-rod provided with an arm *k*, and an adjustable bearing-block carried by this arm and adapted to strike the upper arm of the angle lever when the operating-rod is depressed, substantially as described.

4. The combination of a furnace provided with a door having draft-openings, an automatically-closing sliding damper carried by the door, an operating angle-lever pivoted on the door and pivotally connected to the damper, a movable arm for operating said angle-lever, and means for automatically moving said arm, substantially as described.

5. The combination of a furnace provided with a door, a gravitating sliding damper carried by the door and adapted to close automatically, an angle-lever pivoted on the door and connected to the damper, a movable rod carrying an adjustable arm adapted to strike the angle-lever when the rod is depressed, and means for depressing the rod, substantially as described.

6. The combination of a furnace provided with a swinging door, said door having a movable damper, means carried by the door for operating the damper, a vertically-movable operating-rod connected to said means on the door by a swivel connection, whereby the door may be swung without operating the damper, and means for automatically operating the rod, substantially as described.

7. The combination of a furnace provided with a door, a damper carried by the door, an angle-lever pivoted on the door and having one of its arms connected to the damper and its other one extending to the hinge side of the door and provided with a vertical slot, a movable rod provided with a pin working in said slot, and means for automatically operating said rod, whereby the rod will be permitted to have a limited vertical movement the length of the slot without moving the damper, substantially as described.

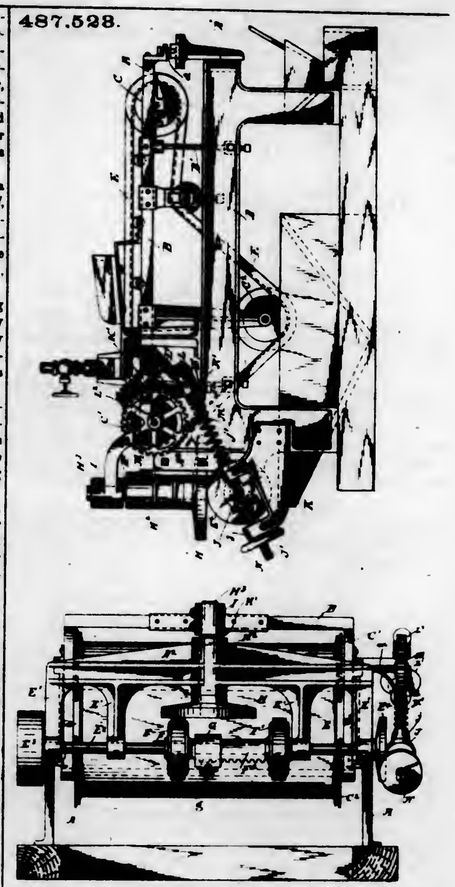
487,522. PNEUMATIC TIRE. WILLIAM GOLDING, Manchester, England, assignor to Charles Macintosh & Company, Limited, same place. Filed Sept. 18, 1891. Serial No. 406,051. (No model.) Patented in England Feb. 21, 1891, No. 3,178.

Claim.—In an inflatable tire for wheels, the covering for a pneumatic tube, consisting of a complete tubular ring, the said covering being made of two curved or crescent-shaped segments of rubber, each overlapping at the edges and cemented and vulcanized together and provided with a tubular lining of textile fabric cut on the bias or cross with the edges overlapped longitudinally for the purpose that when it is made to expand by inflation of air it will contract in length, and thus grasp tightly round the rim of the wheel, substantially as described.

487,523. ORE-CONCENTRATOR. ALFRED GONSALES, San Francisco, Cal. Filed Mar. 11, 1892. Serial No. 424,593. (No model.)

Claim.—1. In an ore-concentrator, the combination, with the movable concentrating-frame, of the eccentric vertical shaft, disk-roller secured thereto, operating-shaft working in bearings of front plate, frictional rollers movably secured upon said shaft, and mechanism for throwing said rollers alternatively in or out of contact with the disk-roller, so as to reverse the movement of the concentrating-frame and to increase or decrease the same, as and for the purpose set forth.

487,524.



2. In an ore-concentrator, the combination, with the movable concentrating-frame and the endless concentrating-belt, of the vertical eccentric shaft provided with a disk-roller, operating-shaft, frictional rollers movably secured upon said shaft, mechanism for moving the rollers alternatively in or out of contact with disk roller or plate of vertical shaft, and independent mechanism receiving motion from operating-shaft in order to impart travel to concentrating-belt, as and for the purpose set forth.

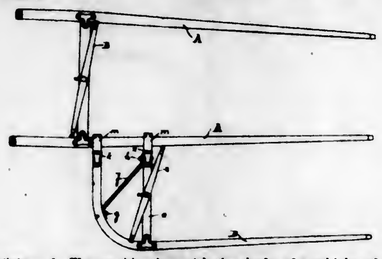
3. In an ore-concentrator, the combination, with the concentrating-frame, of mechanism for imparting an increased or decreased or reversed movement thereto, the concentrating-belt traveling within said frame, and mechanism for imparting travel thereto and adapted to increase or decrease rotation thereof independent of movement of concentrating-frame.

4. In an ore-concentrator, the combination, with the concentrating-frame and the concentrating-belt, of intermeshing gear-wheels secured to concentrating-frame, a flexible shaft for imparting motion to said gears and belt-roller, and mechanism for adjusting the said shaft longitudinally, so as to increase or decrease the rotation thereof, as and for the purpose set forth.

5. In an ore-concentrator, the combination, with the concentrating-belt, of the adjustable flexible shaft, gearing between said shaft and the belt, a disk to rotate the said shaft, and means for shifting the shaft diametrically of the disk, so as to vary the rotation of the shaft.

6. In an ore-concentrator, the combination, with the concentrating-frame, of the vertical eccentric shaft for imparting throw thereto, operating-shaft, movable frictional rollers secured upon said shaft and revolving in unison therewith, and mechanism for adjusting said rollers upon the operating-shaft, as and for the purpose set forth.

487,524. ATTACHMENT FOR VEHICLE-SHAFTS. LUKE G. HAGUE, Bloomington, Ill. Filed Apr. 26, 1892. Serial No. 430,619. (No model.)

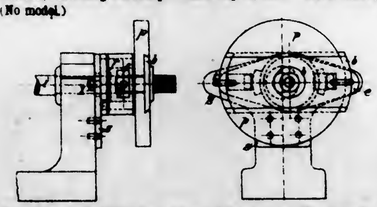


Claim.—1. The combination, with the shafts of a vehicle, of the bent attachment-shaft and cross-bar secured to the shaft of a vehicle, as set forth.

2. The combination, with the shafts of a vehicle, of the bent attachment-shaft with cross-bar and brace attached to the shaft of a vehicle by means of hinge-clips and T-bolt, as shown and described.

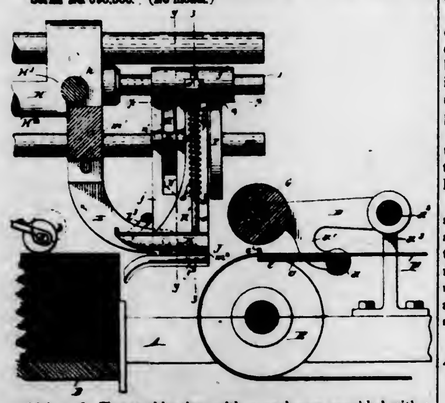
3. An attachment-shaft for vehicles, consisting of a bent shaft and cross-bar with hinge-clips at the end of shaft and cross-bar by means of which the attachment-shaft and cross-bar may be easily and firmly attached to either shaft of a vehicle, as shown and specified.

487,525. LATHE FOR TURNING OVAL OBJECTS. NIELS C. HANSEN, Flensburg, Germany. Filed May 19, 1891. Serial No. 393,370. (No model.)



Claim.—In combination, the head-stock, the live-spindle, the face-plate secured thereto, the plate *s*, bolted to the head-stock, the plate *e*, carrying ring *r*, adjustably secured to plate *s*, the sliding head *b*, carrying lathe-center *b'*, the lugs *g*, projecting from the rear of the sliding head *b* through openings in the face-plate, the bolts *a*, passing through the lugs *g*, and the blocks *f*, carried by said bolts and bearing upon the periphery of the ring *r*, as and for the purpose set forth.

487,526. PAPER-FEEDER. FREDERICK HART, Poughkeepsie, assignor to D. H. Burrell & Co., Little Falls, N. Y. Filed June 3, 1891. Serial No. 395,500. (No model.)



Claim.—1. The combination, with a rock-arm provided with a fixed lower gripper-jaw and an upright registering-face at the rear end of said jaw, of a sliding gripper-jaw arranged above said fixed jaw and in front of said registering-face and capable of movement on said rock-arm toward and from the fixed jaw, substantially as set forth.

2. The combination, with the rock-arm provided with a lower fixed jaw and an upper jaw capable of movement toward and from the fixed jaw, of a spring which tends to press the movable jaw down upon the fixed jaw and a rotating cam which releases the movable jaw and permits the spring to close it upon the fixed jaw after the sheet has entered between the jaws and which raises the movable jaw from the fixed jaw, thereby releasing the sheet when the rock-arm has reached the registering position on its outward stroke, substantially as set forth.

3. The combination, with the rock-arm provided with a lower fixed jaw and a supporting-plate which is provided with the other jaw and which is capable of movement toward and from the fixed jaw, of a rotating cam which actuates the supporting-plate of the movable jaw and which has its working face arranged to control the position of the movable jaw during the various positions of the rock-arm, and a spring which tends to press the movable jaw upon the fixed jaw, substantially as set forth.

4. The combination, with the rock-arm provided with a lower fixed jaw and an upper jaw capable of movement toward and from the fixed jaw, of a spring which tends to press the movable jaw down upon the fixed jaw, a rotating cam which releases the movable jaw and permits the spring to close it upon the fixed jaw after the sheet has entered between the jaws and which raises the movable jaw, thereby releasing the sheet when the rock-arm has reached the registering position on its outward stroke, and a rotating cam whereby the rock-arm is oscillated, substantially as set forth.

5. The combination, with the rock-arm provided with a recess at its upper end and an arbor supporting said rock-arm and provided with a recess adjacent to the recess in the rock-arm, of a fixed jaw secured to the lower end of the rock-arm, a movable jaw arranged above the fixed jaw, a movable plate arranged on the rock-arm and supporting the movable jaw, an ear formed on the supporting-plate and extending into the recesses of the rock-arm and arbor, a roller arranged in said recesses and pivoted on said ear, and a cam engaging with said roller, substantially as set forth.

6. In a gripper having a forward and backward movement, the combination, with the fixed jaw and the movable jaw having a movement toward and from said fixed jaw, of a cam provided in its face with a concentric portion, a shallow depression and a deep depression, whereby the jaws are held wide open when receiving the sheet of paper, nearly closed during their forward movement, entirely closed during their backward movement, and opened at the limit of their backward movement, substantially as set forth.

7. The combination, with the rock-arm provided with a fixed jaw and a movable jaw, of a cam whereby the rock-arm is moved forward, a spring whereby the rock-arm is returned, and an adjustable stop which projects beyond the cam and whereby the return movement of the rock-arm is limited, substantially as set forth.

8. The combination, with the rock-arm provided with a roller and a fixed jaw, of a movable jaw having a movement toward and from the fixed jaw, a stop-arm provided with an adjusting-screw which limits the backward movement of the rock-arm, a rotary cam adapted to bear against the roller of the rock-arm, a bracket secured to the stop-arm, and a spring yieldingly connecting the rock-arm and the bracket, substantially as set forth.

9. The combination, with the feed-table and the receiving-roller of the delivery-tapes, of front guides arranged adjacent to said receiving-roller and a laterally-moving side-registering device arranged between the feed-table and said receiving-roller, whereby the sheet is first front-registered and the sheet is next drawn laterally and side-registered while the greater portion of the sheet is still resting on the pile, substantially as set forth.

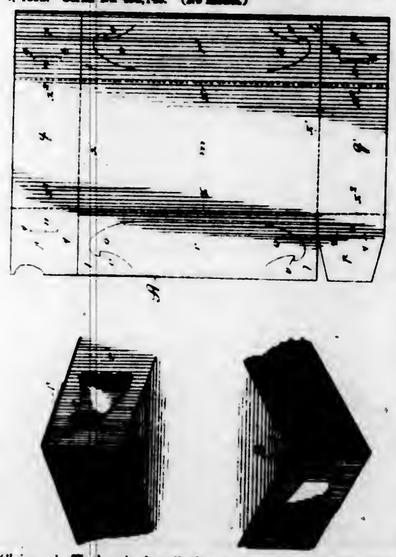
10. The combination, with the stationary frame, the feed-table, the transversely-adjustable frame, and the buckling mechanism mounted thereon, of a side-registering device mounted on the frame of the buckling mechanism and adjustable therewith, substantially as set forth.

11. The combination, with the sheet-feeding device, whereby the sheets are fed successively, of a side-registering device provided with a rock-arm which oscillates transversely with reference to the direction in which the sheets are fed, a fixed jaw and a movable jaw mounted on said rock-arm, an actuating device which oscillates the rock-arm, and a rotating cam which controls the position of the movable jaw in the different positions of the rock-arm, substantially as set forth.

487,527. CUFF-HOLDER. WALTER HAY, Chicago, Ill., assignor to E. R. Towne, same place. Filed July 8, 1892. Serial No. 439,396. (No model.)

Claim.—The combination, with a base-plate provided with means for attaching it to the cuff and having two elastic upright portions, of two jaws B B', pivoted together by depending ears *b b'* and having their free ends pivoted to the elastic uprights, substantially as described.

487,528. PAPER BOX. OLIVER H. HOOD, Chicago, Ill. Filed May 7, 1892. Serial No. 432,149. (No model.)



Claim.—1. The herein-described box, comprising, in combination, the bottom *m*, the sides *r r'*, ends *q q'*, provided with flaps *p*, and hooks *o* and slots *n* for the box-corners in the said sides and flaps, each hook being inserted into an adjacent slot from the exterior of the box and co-operating with the material surrounding it to embrace between them the adjacent ends of the slotted piece, whereby the box-corners are reinforced and the ends of the hooks are shielded, substantially as described.

2. The herein-described box, comprising, in combination, the bottom *m*, sides *r r'*, provided with hooks *o* in their end portions and surrounded by the material out of which they are cut, and ends *q q'*, having flaps *p* provided with slots *n*, each flap being folded to overlap the adjacent hook-containing end of a side at its exterior surface to form a box-corner and each hook being inserted from the exterior of the box into the slot in the adjacent flap and co-operating with the material surrounding it to embrace between them the end portions of the flap beyond its slot, whereby the box-corners are reinforced, the ends of the hooks are shielded, and the inner sides of the box are rendered practically flush, substantially as described.

487,529. APPARATUS FOR BEADING AND CURLING SHEET-METAL VESSELS. GEORGE I. HOLDSHIP, Allegheny, Pa. Filed July 11, 1892. Serial No. 439,672. (No model.)

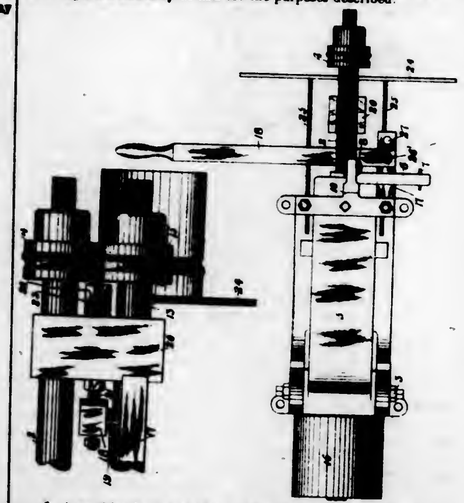
Claim.—1. The combination of rollers adapted to engage and hold the periphery of a can or vessel and to present the edge thereof projecting substantially at right angles and a curling-roller adapted to engage the extreme edge of the can or vessel opposite to the place of engagement of said rollers and to exert thereon pressure substantially in line with the can's side, substantially as and for the purposes described.

2. The combination of rollers adapted to engage and hold the periphery of a can or vessel and to present a projecting edge thereof and a grooved curling-roller adapted to engage the extreme edge of the can or vessel opposite to the place of engagement of said rollers, substantially as and for the purposes described.

3. The combination of grooved beading-rollers adapted to engage and hold the periphery of a can or vessel and to present a projecting edge thereof and a grooved curling-roller adapted to engage the extreme edge of the can or vessel, substantially as and for the purposes described.

4. A machine having beading-rollers set on shafts separable at their outer ends to permit setting of the can or vessel to be treated and a curling-roller set opposite to the inner ends of the rollers between the shafts thereof and movable to engage the projecting edge of the can or vessel, substantially as and for the purposes described.

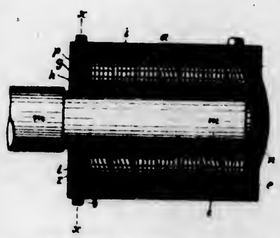
5. A machine having beading-rollers and a curling-roller having a carrier set on at least one of the shafts of the beading-rollers, which serves as a guide therefor, and movable on said shaft to engage the can's edge, substantially as and for the purposes described.



6. A machine having beading-rollers and a curling-roller having a carrier set on the shafts of the beading-rollers, which serve as a guide therefor, and movable on said shafts to engage the can's edge, substantially as and for the purposes described.

7. The combination of rollers adapted to engage and hold the periphery of a can or vessel and to present the edge thereof projecting substantially at right angles, a curling-roller adapted to engage the extreme edge of the can or vessel and to exert thereon pressure substantially in line with the can's side, and a stop by which the degree of projection of the can is limited, substantially as and for the purposes described.

487,530. SPRING-ROLL FOR ROLLER-BEARINGS. JOHN W. HYATT, Newark, N. J. Filed Aug. 16, 1892. Serial No. 443,272. (No model.)



Claim.—1. A roller journal-box consisting in a cylindrical casing having a series of spiral springs inserted movably within its periphery to support the axle, as set forth.

2. An antifriction journal-box consisting in a cylindrical casing having several series of spiral springs inserted within its periphery, with annular plates between the ends of the springs in the several series to hold the springs of each series in place, as set forth.

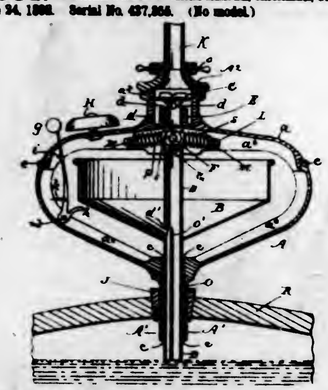
3. In an antifriction journal-bearing, the combination, with a cylindrical casing, of several parallel series of cylindrical springs having the ends of the springs flattened at right angles to their peripheries and annular plates interposed between the flattened ends of the springs, substantially as set forth.

4. The combination, with an axle-box provided with the channel *g*, of the loose metallic shot inserted in the said channel and the spring-plate *l* inserted beneath the shot in the lower part of the channel, as set forth.

5. The combination, with an axle-box provided with the channel *g* and outlet *s*, of the loose metallic shot inserted in the said channel, the elastic plate E', fitted to the lower part of the channel with plug

to close the outlet, and the pull-rod attached to the spring-plate and extended downward into the outlet, as set forth.

487,531. BARREL-FILLER. KARL KIEFER, Cincinnati, Ohio. Filed June 24, 1892. Serial No. 437,356. (No model.)



Claim.—1. In a barrel-filling device, incasement A with lower extending integral tube A′ and upper tubular extension a', within which is concentric valve-seat E, interior funnel-shaped vessel B, the lower central point of which is continued downwardly, and valve-pipe D, said pipe being divided below vessel B into vertical sections O O′, inserted within tube A′, the upper end of one section having aperture d', opening into vessel B, said tube D passing upwardly into valve-seat E and having terminal closing-cap G, below which are fluid-inlet apertures d, substantially as described.

2. In a barrel-filling device, outer incasement A and vessel B, having sloping bottom inclosed within outer incasement and movable vertically therein, in combination with striker g of gong H, adjusted outside of incasement A, said striker at its lower end having inwardly-extending branch arm h and pivoted to rib a^4, whereby as vessel B is moved downwardly it will be brought in contact with said arm and strike an audible alarm, as and for the purpose intended, substantially as described.

3. In a barrel-filling device, vertical tube D, having at its lower end section O′, terminating at its upper end with opening d', communicating with interior of vessel B, above which said tube extends upwardly of uniform diameter, its upper end supplied with valve-cap C, adapted to close valve-seat E, said tube near its upper end provided with transverse tube G, into which is seated inner ends of lever-arms L′ of toggle-joint L, said ends carrying blocks 2, the opposite ends of said arms pivotally connected to rib a^4 of incasement A and having end slots b, through which pass fulcrum-pins M, each of said lever-arms surrounded by spiral springs S, the ends of which bear, respectively, against block 2 and washer 3, substantially as described.

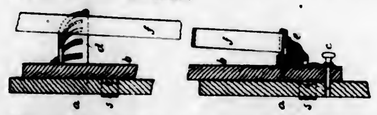
4. The within-described apparatus for filling barrels or like fluid-receptacles, consisting of incasement A, having lower tube A′, and elastic orificed bung J, said incasement having at center of its upper covering upwardly-extending open-ended tube a' and inner concentric valve-seat E, in combination with cap A^3, having depending circumferential flange internally screw-threaded to take onto threads at the upper end of tube a', in combination with supply-pipe K and coupling e, substantially as described.

5. In a barrel-filling apparatus of the character described, supply-pipe K, coupled to cap A^3, incasing-vessel A, valve-seat E, valve-tube D, provided near its upper end with fluid-inlet apertures d and end cap C, adapted to close said seat when the receiving-vessel is filled to a predetermined elevation, and the valve-tube D, continued downwardly and midway of its length, connected to the lower central point of inner vessel B, below which it is divided into sections O O′ and loosely inserted within tube A′ of incasing-vessel A, leaving circumferential air-escape space intermediate of said tubes, all in combination with interior vessel B, whereby as fluid passes into the receiving-vessel air will pass upwardly through section O′ into and within vessel B and when the contents of the vessel reach up to the lower end of valve-pipe D the liquid will rise in said section O′ and pass into and within vessel B, which will thereby gradually fall by gravity and actuate springs of toggle-joint L, bring closing-head C within valve-seat E, and shut off supply of fluid, at the same time actuating striker g, whereby an audible alarm will be sounded on gong H, as and for the purpose intended, substantially as described.

487,532. CAR-COUPLING. JOSEPH W. KLINGLER, Beaver Springs, Pa. Filed Sept. 12, 1892. Serial No. 445,994. (No model.)

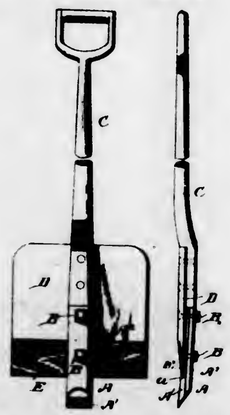
Claim.—A car-coupling comprising the draw-head provided with the intersecting horisontal and transverse slots, the angular swinging jaw G, pivoted in the horizontal slotted part of the draw-head and having the notched inner arm f and the transverse apertures g g' on opposite sides of its pivot, the right-angled latch pivoted in the vertically-slotted part of the draw-head and having the beak i, adapted to take over the notched arm of the swinging jaw, and the auxiliary locking-bolt L, fitted in openings in the draw-head and adapted to fit in either aperture g or g' of the swinging jaw, substantially as described.

487,533. CLOTHES-DRIER. CHARLES E. KNOBLER, Jersey City, N. J., assignor to John A. Sutherland, same place. Filed June 4, 1891. Serial No. 395,061. (No model.)



Claim.—The combination, with a vertical rod a, having holes at various places, of a board b, straps 5, passing around the rod a and connected to the back of the board near its ends, whereby the board is movable lengthwise on the rod a, a spring-catch c at the lower end of the board to enter the holes in the rod and support the board at various heights, a bracket d and shelf e, connected to the face of the board b, and the movable slats f, substantially as set forth.

487,534. SHOVEL. JOHANN KRETTEK, La Crosse, Wis. Filed July 21, 1892. Serial No. 440,860. (No model.)

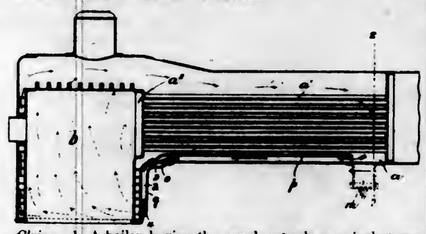


Claim.—1. As an improved article of manufacture, a shovel for simultaneously removing foreign matter from the cracks between the rails and the planking and from the said planking on either side of the rail, having a tongue projected from its lower edge and terminating in a broad square edge to enter the said crack, and having the lower edge of the said shovel in a straight line and extending on each side of the said tongue at right angles thereto to touch the planking on either side of the rail, said tongue having its front side flush with the front face or bottom of the shovel, substantially as specified.

2. The herein-described shovel, composed of the blade D, having its lower end reinforced by a cutting-blade, a handle C, having its lower end bolted to the rear side of the shovel-blade, the tongue A, adapted to be removably attached to the shovel-blade and having its upper end abutting against the lower end of the handle and having its lower end projecting beyond the shovel-blade, said tongue being

composed of a cutting-blade and a reinforce, substantially as described, for the purpose specified.

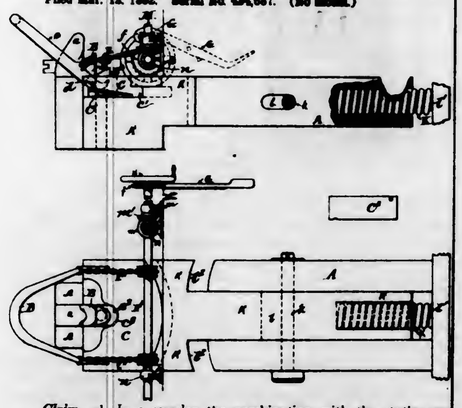
487,535. BOILER. WILLIAM B. MACK, Boston, Mass. Filed Feb. 15, 1892. Serial No. 421,519. (No model.)



Claim.—1. A boiler having the usual water-leg or jacket surrounding the fire-box, said boiler having an orifice in the lower portion of its shell, while the water-leg has one or more orifices in the lower portion of its outer wall, combined with a passage within the boiler, adapted to conduct water from the forward portion of the boiler to the orifice in the boiler-shell, and an external connection between the orifices in the boiler-shell and water-leg, said connection having a water-passage of substantially-uniform capacity and located contiguous to the back of the water-leg, as set forth.

2. A boiler having the usual water-leg or jacket surrounding the fire-box, said boiler having an orifice o in the lower portion of its shell, while the outer wall of the water-leg has a series of orifices o' in its lower portion, combined with a passage within the boiler extending along the lower portion of the boiler and adapted to conduct water from the forward lower portion of the boiler to the orifice o, and an elbow-shaped flanged shell or recessed plate formed to be seated on the bottom of the boiler and on the outer wall of the water-jacket and boiler and forming a conduit connecting the orifice o in the boiler with the orifices in the outer wall of the water-jacket, as set forth.

487,536. CAR-COUPLING. GEORGE W. MASON, Eau Claire, Wis. Filed Mar. 12, 1892. Serial No. 424,667. (No model.)



Claim.—1. In a coupler, the combination, with the stationary part A of the draw-head, of the sliding part A′, having upwardly-projecting and link-retaining horn and bearing B, oscillating draw-plate C, the bail-like link D, pivoted to the draw-plate and formed with cam-lever ends, and springs c for the lever ends of the link to bear upon, substantially as described.

2. The combination of the draw-plate C, having flange C′ and cut away on a circle at C^3, the sliding flanged part A′, having draft-horn with rounded bearing B, confining-pin rounded at its back, spring-acted bail-like link D, pivoted to draft-plate C, and part A of the draw-bar, substantially as described.

3. The part A′, provided on its front end with the draw-plate C, carrying the bail-like link D and having a draft-horn with rounded bearing and at its rear end a socketed tongue and spiral bumper-spring, in combination with the stationary part A of the draw-bar, substantially as described.

4. The part A′, provided on its front end with the draw-plate carrying the bail-like link and having a draft-horn with rounded bearing and at the rear end provided with the socketed tongue, a spiral bumper-spring, and a slot l, in combination with the stationary part A of the draw-bar and with the bolt K, substantially as described.

5. The combination of the stationary part A, sliding part A′, having upwardly-projecting link-retaining draft-horn with rounded bearing, the draw-plate having a bail-like link formed with cam-lever ends pivoted to it, springs bearing forcibly against the said lever ends of the links, the operating-shaft provided with pulleys, connecting-chains, ratchet and hand wheels, and spring-acted or gravitating lever-pawl, substantially as described.

6. The combination of the stationary part A, sliding part A′, the draw-plate having upwardly-projecting link-retaining draft-horn with rounded bearing, the bail-link pivoted to the draw-plate and formed with cam-lever ends, springs bearing forcibly against the said lever ends of the link, operating-shaft provided with pulleys, operating-chains, ratchet and bevel wheels, pawls, connecting-chains, a vertical shaft provided with bevel and ratchet wheels, and a spring-acted lever-pawl, substantially as described.

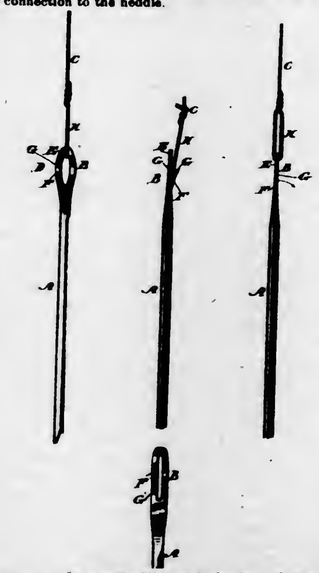
7. The oscillating draw-plate C, provided with receptacles for the springs e and the cam-lever ends of the link and the pivots of the levers, said receptacles having drop-cover plates, substantially as described.

8. A pair of draw-bars, each provided with similar coupling and uncoupling means, either or both of which means can be brought into and kept out of action at will, as circumstances require, the said means comprising the stationary parts A of the draw-heads, the sliding parts A′, having upwardly-projecting and link-retaining draft-horns with bearings, the draw-plates, the bail-links pivoted to the plates and formed with cam-lever ends, springs for the lever ends of the links to bear upon, shaft, connecting-chains, ratchets, and pawls, substantially as described.

9. The oscillating draw-plate having coupling-link attached to it applied on the part A of the draw-bar, substantially as described.

487,537. LINGO OR HEDDLE-WEIGHT FOR JACQUARD LOOMS. STANLEY G. MILLER, Philadelphia, Pa., assignor of one-half to William F. Miller, same place. Filed Mar. 5, 1892. Serial No. 423,883. (No model.)

Brief.—The lingo is provided with a snap-hook at its eye to facilitate connection to the heddle.

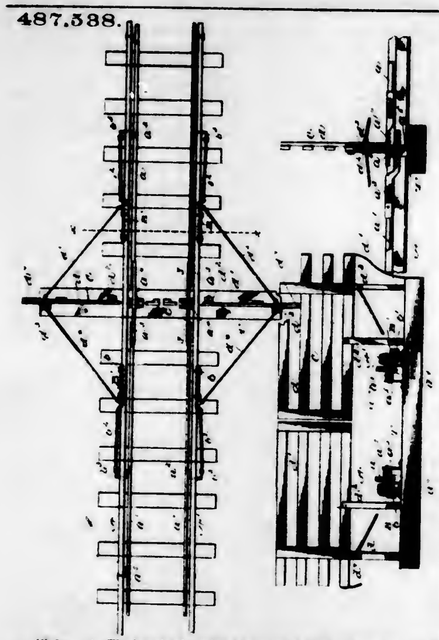


Claim.—1. A lingo or heddle-weight having a flattened eye one side of which is divided, forming a tongue and hook, the tongue being adapted to open in a plane at a right angle to the plane of the eye, said parts being combined substantially as described.

2. A lingo having a flattened eye one side of which is divided, forming a tongue and hook, the contact edges of which are beveled, and the tongue adapted to open in a plane at a right angle to the plane of the eye, said parts being combined substantially as described.

487,538. RAILWAY-GATE. WILLIAM R. MCGUIRE, Fort Dodge, Iowa. Filed June 13, 1892. Serial No. 436,543. (No model.)

487,538.



Claim.—1. The herein-described improved railway gate or cattle-guard, comprising the gate formed in two sections capable of moving backward and forward, pivoted operating-bars extended along the sides of the rails on each side of said gate and having their inner ends in fixed relation with each other, the pivoted crank-rods supporting said bars, the outer sliding bars connected to and operated by said crank-rods, and the divergent rods connected to said sliding bars and also to said gate-sections, substantially as set forth.

2. The herein-described improved railway-gate or cattle-guard, comprising the gate formed in two sections, pivoted operating-bars extending along the sides of the rails on each side of said gate and having overlapping rack-bars at their inner ends, the pinions between said rack-bars, the outer sliding bars operated by said former bars, and the divergent rods connected to said sliding bars and also to said gate-sections, substantially as set forth.

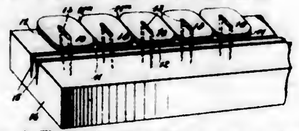
3. The herein-described improved railway-gate or cattle-guard, comprising the gate formed in two sections and having inner and outer pivoted supporting-rods, the operating-bars extended along the inner sides of the rails, the pivoted crank-rods supporting said bars, the rack-bar and pinion connections between the inner ends of said operating-bars, the outer sliding bars, the rods connected to the ends thereof and also to extended ends of said crank-rods, and the divergent rods pivotally connected to said outer sliding bars and also to the outer supporting-rods of said gate-sections, substantially as set forth.

4. The herein-described improved railway-gate or cattle-guard, comprising the gate formed in two sections having inner and outer pivoted supporting-rods, the springs bearing against the outer ends of said gate-sections, the crank-rods supported by the rails, the operating-bars pivotally supported by said crank-rods and having overlapping rack-bars at their inner ends, the pinions located between said rack-bars, the outer sliding bars having slots, the nutted bolts projecting from the rails through said slots, the rods connected to the ends of said outer sliding bars and also to the extended ends of said crank-rods, and the divergent rods pivotally connected to said sliding bars and also to said gate-sections, substantially as set forth.

487,539. PLOW. BEIX PAULSEN, Larchwood, Iowa. Filed Aug. 16, 1892. Serial No. 443,305. (No model.)

Claim.—In a plow, the combination, with the land-bar B, having at its forward portion the integral-pointed horizontal wing-plate F, of the curved brace *g*, secured at one end to the under side of said wing-plate and at the other end to the land-bar, the brace *h*, connecting the brace *g* with the standard, the series of rods forming the mold-board and secured at their forward ends to said plate, the inward integral fingers or projections N on the rear portions of said rods and engaged by staples N' on the furrow-handle, and a flat share and point secured to said wing-plate, substantially as specified.

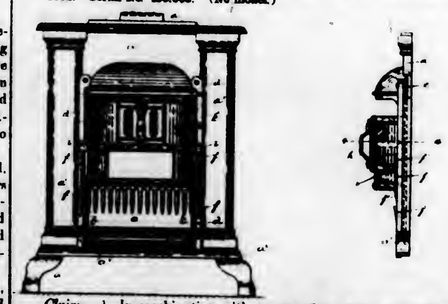
487,540. COMBINATION-TICKET. MARTIN RALPH, Queens, N. Y. Filed Aug. 1, 1892. Serial No. 441,837. (No model.)



Claim.—1. The combination, with a series of tickets, of a continuous strip extending through all of the tickets between their front and rear faces, secured thereto and severable at the meeting edges of the said tickets, substantially as set forth.

2. As an improved article of manufacture, a ticket-strip consisting in a series of tickets separated at their meeting edges and each formed of two sections, and a continuous strip extending through the series of tickets between their two sections and to which the adjacent faces of said ticket-sections are secured, the strip being severable at the meeting edges of the tickets to provide for their ready detachment, substantially as set forth.

487,541. STOVE. JOHN SCHROEPFEL and FRANK L. VOEGTLY, Allegheny, Pa.; said Schroepfel assignor to said Voegtly. Filed July 5, 1892. Serial No. 439,008. (No model.)



Claim.—1. In combination with an open-front stove, removable rods arranged at each side of the grate-opening and having teeth or projections thereon, a front or blower adapted to engage with said teeth or projections, and wings on said front or blower, said wings engaging with the inner faces of said rods, substantially as and for the purposes set forth.

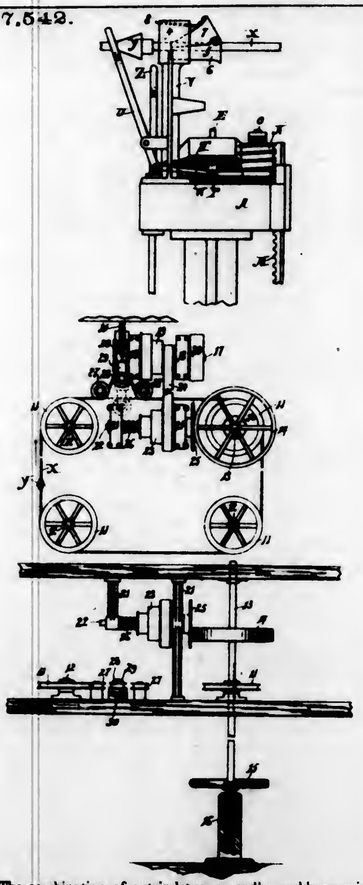
2. In combination with an open-front stove, removable rods arranged at each side of the grate-opening and having teeth or projections thereon, a front or blower engaging with said teeth or projections, and wings on said front or blower, said wings having a greater thickness at one end than at the other and adapted to engage with the inner faces of said rods, substantially as and for the purposes set forth.

3. In combination with an open-front stove, removable rods arranged at each side of the grate-opening and having teeth or projections on the front faces thereof, a front or blower adapted to engage with said teeth or projections, and wings on said front or blower, said wings engaging with the inner faces of said rods, substantially as and for the purposes set forth.

487,542. DEVICE FOR OPERATING ORE-CONCENTRATORS AND ALLIED MACHINES. CHARLES R. SUTHOUR, Lake Geneva, Wis. Filed Feb. 1, 1892. Serial No. 419,890. (No model.)

Claim.—1. The combination, with a machine provided with a tripping lever, by which certain parts are disengaged or operated, of a lever-operating device, consisting of an endless cable, a series of pulleys on which the cable is carried and driven, one of which pulleys is movable yieldingly and is arranged by its yielding movement to permit a predetermined amount of slack on the cable, and a button on the cable, adapted to engage temporarily the lever and tilt it, substantially as set forth.

487,542.



2. The combination of a trip-lever, an endless cable carrying a button, which is adapted to engage the free end of the lever, sheaves or pulleys around which said cable runs, and a series of intermediate supplemental pulleys also engaging the cable, the medial pulley thereof being movable and adapted to be drawn out from its normal position as the cable tightens and to be drawn back laterally to said normal position upon the relaxation of the cable, substantially as set forth.

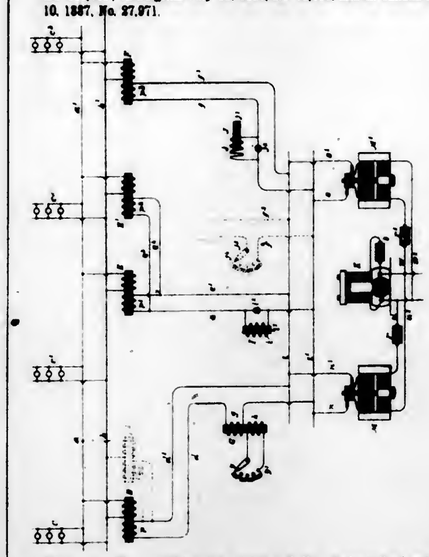
3. The combination of a trip-lever, a motion-checking device, a cable carrying a button adapted to be stopped temporarily by said checking device and to subsequently engage the free end of the trip-lever, sheaves or pulleys around which said cable runs, and a series of intermediate supplemental pulleys also engaging the cable, the medial spring-controlled pulley thereof being movable and adapted to be drawn out from its normal position as the button is stopped by the checking device and to be drawn back laterally to said normal position upon the release of said button, substantially as set forth.

4. In an ore-concentrator having a revolving pan, a flexible discharge-pipe, and an automatic device for elevating the pipe, the combination of an endless cable for operating the automatic device, said cable provided with a button, sheaves or pulleys around which the cable runs, a series of supplemental intermediate pulleys also engaging the cable, the medial pulley thereof being out of line with the outer supplemental pulleys, and a sliding spring-retrieved arm forming a bearing for the shaft of the medial pulley, substantially as set forth.

5. In an ore-concentrator having a revolving pan, a flexible discharge-pipe, and an automatic device for elevating the pipe, the combination of an endless cable for operating the automatic device, sheaves or pulleys around which said endless cable runs, one of the shafts of said pulleys being adjustable longitudinally independent of its pulley and carrying, also, thereon a frictional-driven wheel, and a rotatable shaft carrying on its end a frictional driving-wheel adapted to contact with the corresponding wheel of the pulley-shaft, substantially as set forth.

6. In an ore-concentrator having a revolving pan, a flexible discharge-pipe, and an automatic device for elevating the pipe, the combination of an endless cable for operating the automatic device, sheaves or pulleys around which said endless cable runs, one of the shafts of said pulleys being adjustable longitudinally independent of its pulley and carrying, also, thereon a frictional-driven wheel, a spring-actuated shaft carrying medially a cone-pulley and upon its end a frictional driving-wheel contacting with the corresponding wheel of the pulley-shaft, and a drive-shaft carrying a cone-pulley connected with the cone-pulley of the other shaft by means of a belt, substantially as set forth.

487,543. SYSTEM OF ELECTRICAL DISTRIBUTION. OLIVER B. SHALLENBERGER, Rochester, assignor, by mesne assignments, to the Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Original application filed Oct. 12, 1886, Serial No. 215,992. Divided and this application filed Jan. 9, 1890. Serial No. 336,407. (No model.) Patented in England July 12, 1887, No. 9,735; in France July 12, 1887, No. 184,765; in Belgium July 12, 1887, No. 78,180, and in Canada Nov. 10, 1887, No. 27,971.



Claim.—1. The combination, substantially as described, of a source of electricity, two main lines, converters having their secondary coils connected with different points along the length of said main lines, conductors connecting the source of electricity with the primary coils of the respective converters, and one or more converters having their primary coils respectively included in the last-named conductors, and adjustable resistances included in the circuits of the secondary coils, substantially as described.

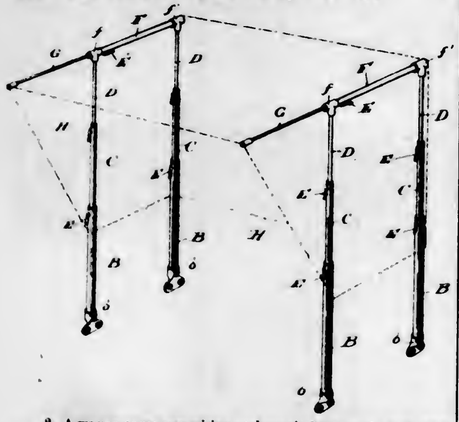
2. The combination, substantially as described, with two or more alternate-current generators, of a source of electrical current supplying the field-magnet coils of the same, conductors with which said generators are connected in multiple arc, a system of feeding-conductors connected therewith, translating devices, and a main line with which said translating devices are connected, and converters located along the main line, having their secondary coils connected therewith in multiple arc and their primary coils connected with the feeding-conductors aforesaid.

3. The combination, with a source of alternating-electric currents, of a main line, translating devices connected with the main line, converters located along the main line and independent conductors connecting the primary coils of the converters in multiple with the source, and conductors connecting the secondary coils in multiple with the main line, and an adjustable resistance in one of the primary circuits, consisting of two coils of wire and a core upon which they are wound, one coil being connected in the primary circuit and an adjustable variable resistance through which the terminals of the other coil are connected.

487,544. WAGON-COVER. ERNST SIMON, Chicago, Ill. Filed Feb. 19, 1892. Serial No. 422,147. (No model.)

Claim.—1. A wagon-cover comprising a telescopic framework capable of being extended into a position for use or shut up in posi-

tion of non-use and a cover of suitable material adapted to be supported by such framework when in position for use and to be removed therefrom when in position of non-use, the framework when collapsed being entirely out of the way, substantially as described.

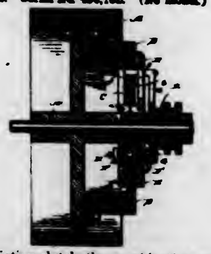


2. A wagon-cover comprising a telescopic framework, each member whereof is made in at least two sections, one fitting within the other, whereby the framework may be extended into a position for use or collapsed into a position of non-use, in which latter position it is entirely out of the way, substantially as described.

3. A wagon-cover comprising a framework which is collapsible and extensible both vertically and horizontally and a cover of suitable material supported thereby, substantially as described.

4. A wagon-cover comprising a telescopic framework capable of vertical and horizontal adjustment to different positions, whereby it can be folded up into a position of non-use or extended into a position for use, means for holding the parts of such framework in an extended position, and a cover of suitable material engaging with and supported by such framework, substantially as described.

487,545. FRICTION-CLUTCH. WILSON R. SMITH, Beloit, Wis. Filed June 9, 1892. Serial No. 436,133. (No model.)



Claim.—In a friction-clutch, the combination, with the pulley having the grip-rim thereon, of the clutches or grips comprising each a pair of oscillatory jaws E E', pivoted at their inner ends in sockets in the hub of the driver, said driver and its rim having seats for said jaws, the clevis or link embracing said jaws near their upper ends and held to the jaw E' by a set-screw, said link or clevis at its other end being loosely connected to a lever G, having an eccentric portion *g*, and a sliding sleeve, to which the inner ends of said levers are connected, substantially as specified.

487,546. CAR-COUPLING. CLINTON A. TOWER, Cleveland, Ohio. Filed June 20, 1892. Serial No. 437,262. (No model.)

Claim.—1. In a car-coupler, the combination of a swinging knuckle and a finger pivotally mounted in the coupler-head and fitting in a longitudinal slot in the knuckle-arm, and means for holding the knuckle in locked position, substantially as and for the purposes described.

2. In a car-coupler, the combination of a swinging knuckle and a finger mounted in the coupler-head and fitting in a longitudinal slot in the knuckle-arm, and a recess into which the finger may drop at its rear position, substantially as and for the purposes described.

3. In a car-coupler, the combination of a swinging knuckle and a finger pivotally mounted in the coupler-head and fitting in a longitudinal slot formed in the rear of the knuckle-arm and open at the end and next to the axis of the knuckle, substantially as and for the purposes described.

4. In a car-coupler, the combination, with a swinging knuckle, of a locking-finger pivotally mounted in the coupler-head connected with the knuckle and carried laterally thereby and a recess or shoulder in the coupler-head with which the finger may engage, substantially as and for the purposes described.

5. In a car-coupler, a knuckle having a locking-finger fitting in a longitudinal recess in the knuckle-arm and adapted to hold the knuckle from longitudinal motion, substantially as and for the purposes described.

6. A car-coupler having a knuckle provided with an inner and outer arm and a laterally-movable opening-finger situate between the inner arm and the side of the jaw and adapted to open the same, substantially as and for the purposes described.

7. In a car-coupler, the combination of a swinging knuckle having an inner and an outer arm and an opening-finger pivotally mounted in the coupler-head between the inner arm and the side of the jaw and adapted to be moved to open the knuckle, substantially as and for the purposes described.

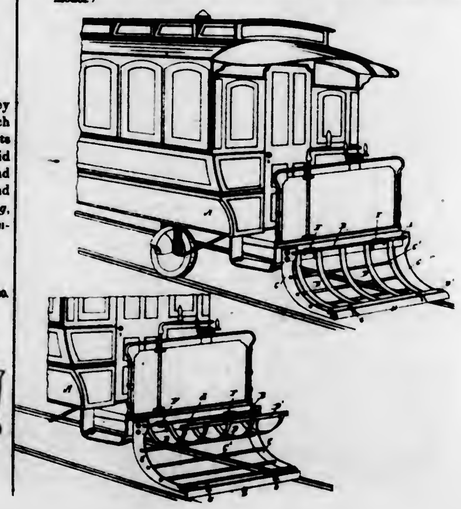
8. In a car-coupler, the combination of a swinging knuckle and a finger which is laterally movable to open the knuckle and is vertically movable to connect the knuckle in locking engagement with the coupler-head, substantially as and for the purposes described.

9. In a car-coupler, the combination of a swinging knuckle and a finger which is pivotally mounted in the coupler-head and is laterally movable to open the knuckle and is vertically movable to connect the knuckle in locking engagement with the coupler-head, substantially as and for the purposes described.

10. In a car-coupler, the combination of a swinging knuckle and a finger mounted in the coupler-head on a vertical axis and connected with the knuckle-arm, so as to be capable of swinging the same, and a recess in the coupler-head into which the finger may drop, substantially as and for the purposes described.

11. In a car-coupler, the combination of a swinging knuckle and a finger vertically movable and an incline or cam surface with which the finger engages and which causes it to turn, substantially as and for the purposes described.

487,547. CAR-FENDER. PHILIPPE WERTHEIM and HENRY RLETZER, Boston, Mass. Filed Sept. 12, 1892. Serial No. 445,605. (No model.)

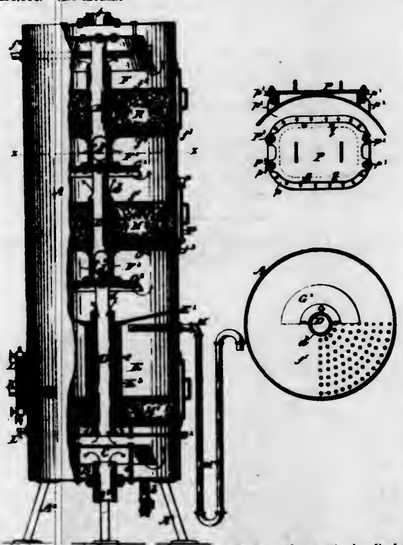


Claim.—In combination with the brackets C C, the spring-actuated cradle or catcher D, pivoted at its upper end, and a locking-bar pivoted to the lower end of said brackets and adapted to normally hold said cradle or catcher in position, substantially as and for the purpose set forth.

487,548. STABLE-GUTTER. ALBERT G. WILSON, Jr., Chicago, Ill. Filed Mar. 5, 1892. Serial No. 423,875. (No model.)

Claim.—The combination of a gutter provided with a seat at one edge and a flange at the other, such flange being provided with a groove running along one edge, a perforated pipe secured in the gutter beneath and protected by the flange, and a removable cover adapted to engage at one side with the groove in the flange and at the other side with the seat, substantially as described.

487,549. FEED-WATER HEATER. WILLIAM J. AUSTIN, Fond du Lac, Wis. Filed Dec. 11, 1891. Renewed Nov. 10, 1892. Serial No. 451,506. (No model.)



Claim.—1. A feed-water heater consisting of a vertical cylindrical shell, a vertical steam-receiving pipe in the bottom thereof, a series of water-chambers and of superposed pipes D, and steam-deflecting plates closing their upper ends, said pipes having lateral opening under and above said deflecting-plates, with a water-holding chamber encircling the lower pipe of said series and having an annular passage between it and said chamber, substantially as described.

2. In a feed-water heater, the combination of a series of water-heating chambers, each one having filterers therein, and a series of superposed steam-pipes passing therethrough and provided with lateral openings above and under deflectors therein, with a water-holding chamber having a water-passage centrally and under the same with the overflow-pipe M, having a downwardly-looped trap M^9, substantially as described.

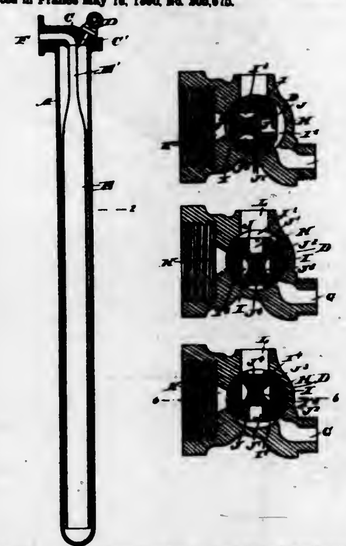
487,550. NON-MAGNETIC WATCH-BALANCE. CHARLES F. CARPENTER, Louisville, Ky. Filed Feb. 6, 1891. Serial No. 380,698. (No model.)

Claim.—1. The non-magnetic compensating balance for watches, having the inner rim of its segments made of aluminium-bronze and its outer rim of cadmium alloyed with silver, substantially as specified.

2. The combination of the arm A and inside rim B B', of aluminium-bronze, and the outside rim C C' of the segments, of cadmium alloyed with silver, substantially as described.

487,550.

487,551. STEAM-GENERATOR. PIERRE A. CHATENET, Paris, France. Filed May 31, 1892. Serial No. 434,943. (No model.) Patented in France May 16, 1890, No. 205,675.



Claim.—1. A generator comprising a casing adapted to be heated and closed at its ends, a water-charging device arranged at one end of the said casing and serving to charge the water in a finely-divided state into this end of the casing, and a tube held within the casing and opening into the latter at the end opposite the charging device, the exterior of the said tube forming, with the interior surface of the casing, a narrow annular space for the passage of the vapors passing through the casing to the open end of the said tube, substantially as shown and described.

2. A generator provided with a charging device comprising an inlet and an outlet, a valve-plug mounted to turn and connected with the inlet and outlet, and a screw-plug held adjustably in the said valve-plug and forming a spraying device with the latter, substantially as shown and described.

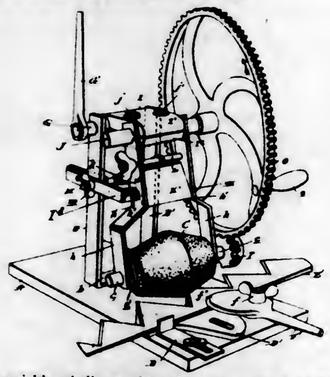
3. A charging device comprising a valve-plug connected with an inlet and an outlet and having a conical valve-seat, and a screw-plug screwing in the said valve-plug and having a conical valve arranged opposite the said valve-seat, the said screw-plug being provided with a recess connected with the water-inlet and from which lead ports to an annular recess in the said screw-plug, the said annular recess discharging into the said conical valve and its seat, substantially as shown and described.

487,552. SICKLE-GRINDER. GEORGE J. CLINE, Goshen, Ind. Filed Mar. 25, 1892. Serial No. 426,407. (No model.)

Claim.—1. In a sickle-grinding machine, the combination of the uprights or supports, the carrier pivoted thereto, a power-shaft journaled in the carrier, the pendent support having its separate laterally-divergent bars fitted on the power-shaft and provided with the transverse tension-bolt and the distance-block, which is confined in place between the bars, and the grindstone journaled in the lower spaced ends of the support-bars and has its shaft geared to the power-shaft, substantially as described.

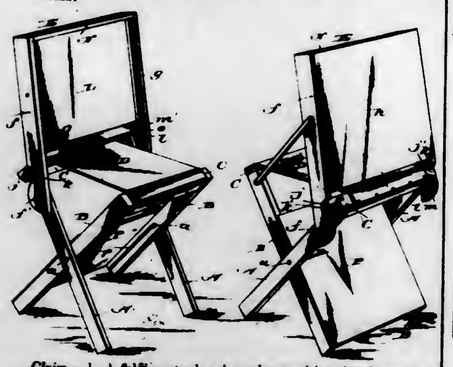
2. In a sickle-grinding machine, the combination of the compressible uprights or standards connected by the tension-bolt, a rock-shaft journaled in the standards, a power-shaft, the sectional carrier fitted

on said shafts between the ends of the standards and having the draw-bolts to positively clamp the sections of said carrier around said shafts, the pendent support having its bars fitted on the power-shaft on opposite sides of the carrier and provided with the transverse tension-bolt, and the grinding-stone journaled in the support and geared to the power-shaft, substantially as described.



3. In a sickle-grinding machine, the combination of the standards, a pivoted carrier, the power-shaft journaled therein, the pendent support comprising the separate bars or straps having the distance-block connected between them, and the tension-bolt K, having the adjusting-nut at one end, the tension-spring connected to the standards and the pendent support, the stop-bar rigid with a standard and arranged in the path of the distance-block, and a grindstone carried by the support, substantially as described.

487,553. PORTABLE SKETCHING EASEL AND STOOL. JOHN D. COLE, Lansing, Iowa. Filed June 18, 1892. Serial No. 437,146. (No model.)



Claim.—1. A folding stool and easel comprising the pivoted legs supporting a pliable seat and an easel pivoted to the legs and adapted to be sustained in an elevated position by stops or projections on the legs, as and for the purpose described.

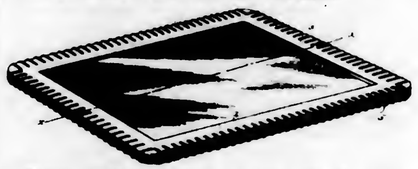
2. A folding stool and easel comprising the pivoted legs and the pliable seat secured to the legs, the easel having its side pieces pivoted to one pair of legs at a point above the pivots of the legs and the stops on the legs above the pivots of the easel, as and for the purpose described.

3. A folding stool and easel comprising the pivoted legs having the fixed stops or projections on their upper rear ends, the pliable seat secured to cross-bars connecting the legs, and the easel pivoted at its lower ends to the legs above the pivots thereof and having the rear edges recessed to bear snugly against the stops, as and for the purpose described.

4. A folding stool and easel comprising the pivoted legs supporting a pliable seat, the easel pivoted to the legs and having the grooves on the inner faces of the side pieces, a drawing-board fitted in the grooves and adapted to be extended beyond the upper end of the easel, and the stops or projections on the legs against which the easel bears when unfolded, as and for the purpose described.

5. A folding stool and easel comprising the pivoted legs having the stops, the pliable seat, the easel recessed and pivoted, as described, and having the grooves and the back provided with the batten, the drawing-board fitted in the grooves and having the strip at its upper end, and the board secured to the legs behind the grooves therein, as and for the purpose described.

487,554. SLATE-FRAME. HENRY E. C. DANIELS, Chicago, Ill. Filed Sept. 11, 1891. Serial No. 405,418. (No model.)



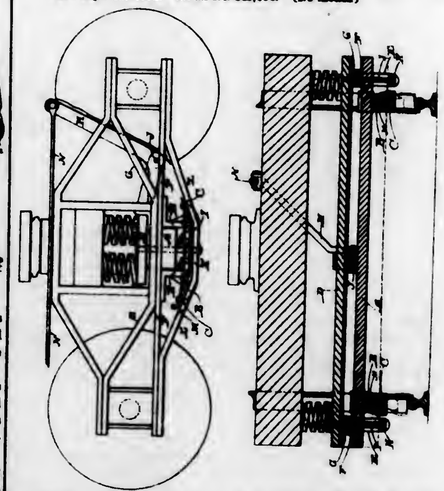
Claim.—1. The combination, with a slate, of two frame-sections applied to opposite sides thereof and secured together by a cord which passes back and forth from one section to the other, the exposed portions of the cord lying upon the surfaces of the frame-sections, whereby the cord subserves the double purpose of a muffler and a means for securing the parts together.

2. The combination, with the slate, of the two frame-sections applied to opposite sides thereof and secured together by a cord passed through the same from side to side, the exposed portions lying upon the surfaces of the frame-sections, whereby the cord subserves the double purpose of a muffler and a means for securing the frame-sections together.

3. The combination, with the slate, of the two frame-sections applied to opposite sides thereof and the cord passed through the said sections and around the outer edges of the same and serving both as a means for holding the parts together and as a muffler for the frame.

4. The combination, with the slate, of the two frame-sections applied face to face to opposite sides of the same, one of said sections provided on its inner face with a groove and the other provided on its inner face with a rib adapted to enter the groove, and means for securing said parts together.

487,555. TRACK-BRAKE. HENRY R. DIKEMAN, Berkeley, Cal. Filed Sept. 12, 1892. Serial No. 445,980. (No model.)

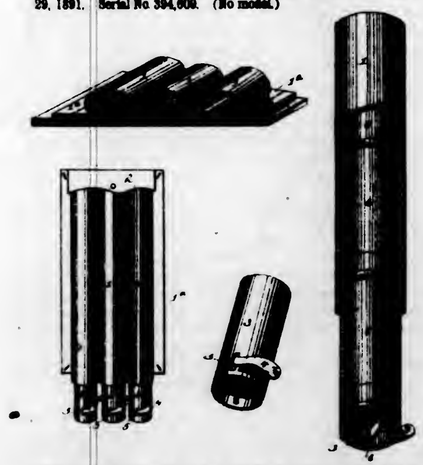


Claim.—1. In a track-brake, and in combination with the truck, bolster, and arch-bars thereof, a vertically-moving brake-beam extending across the truck-frame between the wheels, guides between which the brake-beam is movable, brake blocks and shoes attached to and movable with the beam, and a lever fulcrumed as shown and having one end acting to force the brake-beam down and the other connected with the horizontal rod through which power is applied to the brake-beam, substantially as herein described.

2. In a track-brake, and in combination with the truck, bolster, and arch-bars thereof, a transverse brake-beam having brake-blocks attached at each end in line above the track and shoes removably attached to said brake-blocks and adapted to form a frictional contact with the track when the brake-beam is depressed, a bent lever fulcrumed to the truck-frame, having one end acting to depress the brake-beam and the other connected with a horizontal bar or rod, guides between which the brake-beam moves, and the bar K, extending beneath the ends of the brake-beam, attached to the truck-frame, and serving as a support for the lower ends of the guide-bars, substantially as herein described.

3. In a track-brake, the vertically-moving brake-beam with lever mechanism by which it is actuated and guides between and upon which it moves, brake-blocks secured to the ends of the beam in line above the tracks, said brake-blocks having the notched or corrugated flanges projecting from the bottom, and shoes having corresponding lugs adapted to fit the notches in the brake-blocks, together with rods M, by which the shoes are retained in place and prevented from becoming detached, substantially as herein described.

487,556. CARTRIDGE-POUCH. GEORGE R. DUDLEY, Topeka, Kans., assignor of one-half to Thomas Brower Peacock, same place. Filed May 29, 1891. Serial No. 394,609. (No model.)



Claim.—1. A cartridge-pouch consisting of a number of parallel chambers formed of a single piece of material folded, substantially as shown and described, to form the chambers of requisite number and size, stitched along the backs of the respective chambers and afterward extended, so as to form the backing, each of said chambers being provided at its lower end with an independent discharge-tube and an independent spring-stop and said pouch being provided at top with a covering-flap common to all the chambers, substantially as set forth.

2. A cartridge-pouch consisting of a number of chambers formed of a single piece of material folded and secured substantially in the manner described and provided at their respective lower ends with independent discharge-tubes having suitable slots and spring-stops disposed horizontally on the tubes and adapted to project through the slots, substantially as and for the purpose set forth.

3. A cartridge-pouch consisting of a single piece of material folded to form complete loops, serving as chambers, the folds of each of said loops meeting, whereby a continuous backing is formed free from protuberances on its under surface, and independent discharge-tubes at the lower ends of said chambers, substantially as set forth.

487,557. LOGGING-ROADWAY. DAVID EVANS, Eureka, Cal. Filed Sept. 1, 1892. Serial No. 444,886. (No model.)

Claim.—1. A logging-roadway consisting of a road-bed having at its curves a lateral inclination or slope downwardly away from the inside to the outside arc of the curve and a series of fixed sheaves in the line of the inside arc for receiving and guiding the moving or traveling cable to which the log or log-train is attached, substantially as and for the purpose herein described.

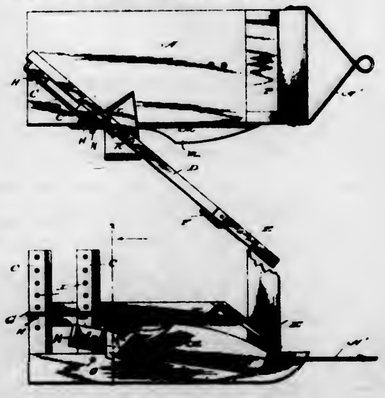
2. A logging-roadway consisting of a road-bed having at its curves a lateral inclination or slope downwardly away from the inside to the outside arc thereof, a series of fixed guide-sheaves in the line of the inside arc of the curves, and a moving or traveling cable following the road-bed, lying normally in the guide-sheaves and connected with the log or log-train, whereby at the curves said log or train slips by gravity down the slope of the curve and removes the cable from its sheaves while passing, substantially as herein described.

3. A logging-roadway consisting of a road-bed having at its curves a lateral inclination or slope downwardly away from the inside to the outside arc thereof, a series of fixed guide-sheaves in the line of the inside arc of the curves, a moving or traveling cable following the road-bed and lying normally in the guide-sheaves, and suitable connections for attaching said cable to both ends of the log or log-train to be propelled thereby, substantially as herein described.

4. A logging-roadway consisting of a road-bed having at its curves a lateral inclination or slope downwardly away from the inside to the outside arc thereof, a series of fixed guide-sheaves in the line of the inside arc of the curves, guard-logs in said line for protecting the sheaves, and a moving or traveling cable following the road-bed and lying normally in the guide-sheaves, said cable to be connected with the log or log-train to be propelled, substantially as herein described.

5. A logging-roadway consisting of a road-bed made of skids and having a lateral slope or inclination at the curves downwardly away from the inside to the outside arc thereof, a series of fixed sheaves at the upper ends of the skids in the line of the inside arc of the curve, and a moving or traveling cable following the road-bed, guided by the sheaves around the curves and secured to the log or log-train, substantially as herein described.

487,558. CORN-HARVESTER. ISAAC N. FICKES, Holland, Kans. Filed May 9, 1892. Serial No. 432,336. (No model.)



Claim.—1. In a corn-harvester, the combination of a vehicle, a cutter-bar carried by said vehicle and having its outer end inclined, a guide-finger pivoted on the inclined end of the cutter-bar, a spring connected to said finger and to the cutter-bar, and a cutting-blade rigidly attached to the cutter-bar, substantially as described.

elevator-leg provided with trunnions engaging the slots in the said braces, of a pusher-arm mounted to swing and engaging the back of the said elevator-leg, a rope carrying a bail engaging with the said trunnions to move the elevator-leg up and down, and a rope and pulley mechanism, substantially as described, and connected with the said

members, of a sliding rest carried by the table member of the body, arms adapted as rear legs and removably located in a channel in the sockets of the supporting member of the body, and a leg supporting

487,568. AUTOMATIC ADVERTISING DEVICE. THOMAS B. HAPERTER, Chicago, Ill. Filed Feb. 27, 1892. Serial No. 422,972. (No model.)

Claim.—1. In a corn-harvester, the combination of a vehicle, a cutter-bar carried by said vehicle and having its outer end inclined, a guide-finger pivoted on the inclined end of the cutter-bar, a spring connected to said finger and to the cutter-bar, and a cutting-blade rigidly attached to the cutter-bar, substantially as described.

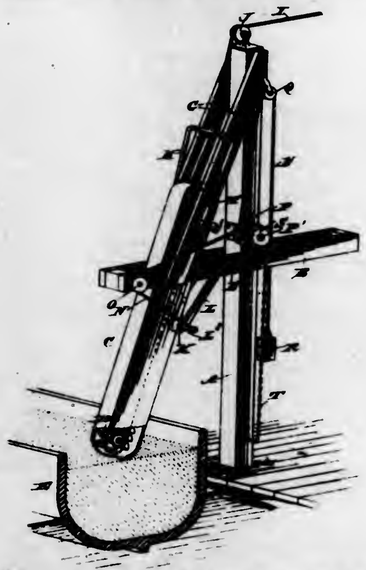
2. In a corn-harvester, the combination of a vehicle, a vertically-adjustable cutter-bar carried by said vehicle, and a cutting-blade formed from a single piece of metal and bent to form a horizontal portion, which is attached to the cutter-bar, and having a cutting-edge which inclines downwardly and rearwardly, substantially as described.

3. In a corn-harvester, the combination of a vehicle, a cutter-bar carried by said vehicle and adapted to be moved vertically thereon, a cutting-blade attached to the cutter-bar, and a transverse guide-block attached to the inner side of the cutter-bar, substantially as described.

4. In a corn-harvester, the combination of a vehicle, a perforated standard secured on said vehicle, a cutter-bar provided with a keeper which fits around the standard, a pin adapted to be secured in one of the apertures in the standard to support the cutter-bar, a cutting-blade carried by the cutter-bar, and a finger pivotally connected to the outer end of the cutter-bar, substantially as described.

5. In a corn-harvester, the combination of a vehicle, a cutter-bar carried by and adjustable vertically on said vehicle, a cutting-blade depending from the cutter-bar, a transverse guide rigidly attached to the inner side of the cutter-bar, and a longitudinal guide connected to one side of the vehicle, substantially as described.

487,559. SHIFTING DEVICE FOR ELEVATORS. JAMES FLEMING, Buffalo, N. Y. Filed Aug. 20, 1892. Serial No. 444,388. (No model.)



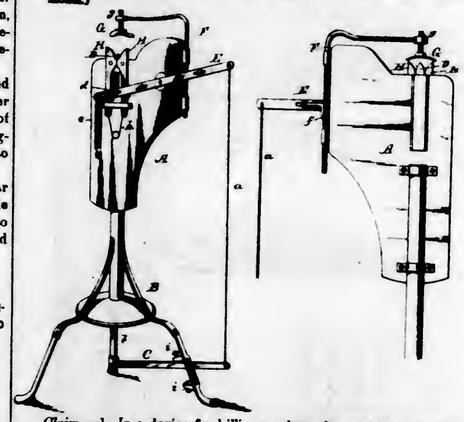
Claim.—1. In combination, the frame, the elevator-leg pivoted at its upper end to the frame, a swinging arm pivoted to the frame, its free end engaging the back of the elevator-leg, a counterweight for holding such free end up against the leg, and means, substantially as shown and described, for operating the swinging arm, for the purposes set forth.

2. The combination, with a frame having slotted braces and an elevator-leg provided with trunnions engaging the slots in the said braces, of a pusher-arm mounted to swing and engaging the back of the said elevator-leg and a rope and pusher mechanism for actuating the pusher, substantially as shown and described.

3. The combination, with a frame having slotted braces and an elevator-leg provided with trunnions engaging the slots in the said braces, of a pusher-arm mounted to swing and engaging the back of the said elevator-leg, the rope and pulley mechanism for actuating the said arm, and a rope carrying a bail engaging with the said trunnions to move the elevator-leg up and down, substantially as shown and described.

4. The combination, with a frame having slotted braces and an elevator-leg provided with trunnions engaging the slots in the said braces, of a pusher-arm mounted to swing and engaging the back of the said elevator-leg, a rope carrying a bail engaging with the said trunnions to move the elevator-leg up and down, and a rope and pulley mechanism, substantially as described, and connected with the said pusher-arm to impart a swinging motion to the latter, as set forth.

487,560. APPARATUS FOR KILLING POULTRY. WALTER S. FURNAS and THEODORE KNEDERINE, Lisbon, Iowa; said Knederine assignor to said Furnas. Filed July 30, 1892. Serial No. 441,061. (No model.)



Claim.—1. In a device for killing poultry, the combination of a suitable supporting-frame carrying a lever, a vertically-movable knife or lance and holder connected to said lever on opposite sides of its fulcrum, a fork having the members thereof pivoted to the frame, and a spring connected to the members of said fork, and means connected to the lever and frame for normally holding the end which carries the lance or knife depressed, substantially as shown, and for the purpose set forth.

2. In a device for killing poultry, the combination of a frame A, having guides for a vertically-movable knife or lance, and a frame carrying an adjustable holder, means carried by the knife or lance and bar which carries the adjustable holder, which engages with slotted portions of a lever E, said lever being fulcrumed near its center to the frame A, a fork carried by the frame to one side of the path of the knife or lance, and a bar for connecting the outer end of the lever to a pivoted bar or treadle for depressing the same, substantially as shown, and for the purpose set forth.

3. In a device for killing poultry, the combination of a suitable supporting-frame carrying a lever which is connected on opposite sides of its fulcrum to a movable knife or lance, and a holder, said lever being connected by a rod to a lever C, which is pivoted to the supporting-frame, said lever C passing through a guide, and set-screws adapted to engage with the lever C for limiting the movement of the lever E, substantially as shown, and for the purpose set forth.

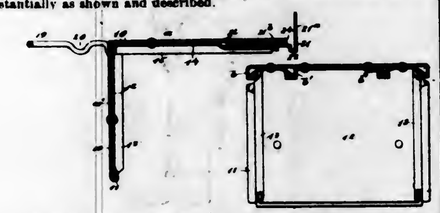
4. In a device for killing poultry, the combination of a movable or reciprocating knife or lance, a holder adjustably mounted on a support, said support being adapted to be moved in an opposite direction with the knife and in unison therewith, and a forked holder the members of which are pivotally attached to the frame to one side of the lance, substantially as set forth.

5. In a device for killing poultry, the combination, with a movable knife and a movable holder, of a retaining-fork made up of two members pivoted to the main frame, the lower ends of said members being connected by a spring, the fork being located to one side of the knife and holder, substantially as shown, and for the purpose set forth.

487,561. BOOK OR COPY HOLDER. BARNEY GARDINER, Chippewa Falls, Wis. Filed Dec. 19, 1891. Serial No. 415,615. (No model.)

Claim.—1. In a book or copy holder, the combination, with an essentially-L-shaped body comprising a table and a supporting member, of a sliding rest carried by the table member and adapted to extend at an angle upward beyond its forward end and a catch to lock the slide to the table member when in its innermost position, substantially as shown and described.

2. In a book or copy holder, the combination, with an essentially-L-shaped body comprising a table and a supporting member and also provided with sockets or slideways upon the inner faces of both members, of a sliding rest carried by the table member of the body, arms adapted as rear legs and removably located in a channel in the sockets of the supporting member of the body, and a leg supporting the forward end of the table member of the body, the said leg being removably introduced into the slideways of the table member, substantially as shown and described.



3. In a book or copy holder, the combination, with an essentially-L-shaped body comprising a table and a supporting member, the table member being provided with slideways upon its under surface and a sliding rest at its forward end and the supporting member with sockets, of legs provided with angular extensions at their upper ends, the said legs being adjustable, and the angular extensions entered in the slideways of the table-section of the body, and arms serving as legs removably introduced into the sockets of the supporting member of the body, substantially as shown and described.

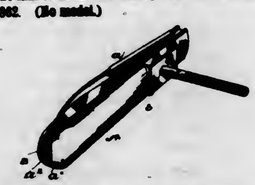
4. In a copy or book support, the combination, with an angular body comprising a table and a supporting member, the table member being provided at its lower edge with a sliding rest and slideways located upon its under surface at or near its side edges, of removable arms adapted as auxiliary supports or extensions of the table, the said arms being essentially L-shaped and provided with a tongue at the extremity of each shorter member, the said tongue being parallel with the arms and also adapted to enter the slideways in the table of the body, substantially as shown and described.

5. In a copy or book support, the combination, with an angular support comprising a table member and a supporting member, the table member being provided with slideways upon its under face and a sliding rest at its lower or front end, of removable extension-arms angular in general contour and polygonal in cross-section to prevent them from turning in the slideways, each arm being provided with a tongue adapted to enter the slideways of the body, substantially as and for the purpose specified.

6. In a copy or book holder, the combination, with an angular body comprising a table and a supporting member, the table member being provided at its lower or forward end with a sliding rest and a lock for said rest, and also provided upon its under face with slideways, in which springs are located, of extension-arms polygonal in cross-section and angular in general contour, one end of said arms being adapted to enter the slideways in the table of the body under the tension of the springs contained therein, substantially as and for the purpose specified.

7. In a book or copy holder, the combination, with an angular body comprising a table and a supporting member, the table member being provided with a sliding rest located at its forward or lower end, a rail projected from its rear end and further provided with slideways upon its under surface, of extension-arms angular in general contour and polygonal in cross-section, the said arms being provided with tongues, and one extremity of the arms being adapted to enter the slideways in the body, substantially as shown and described.

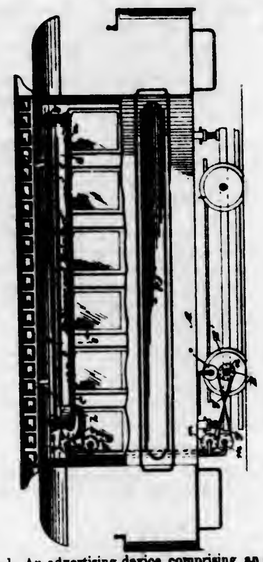
487,562. CAP-ATTACHER. CHARLES H. GRIFFIN, Lake City, Colo., assignor of one-half to L. Kafka, same place. Filed Feb. 9, 1892. Serial No. 420,962. (No model.)



Claim.—1. The herein-described improved cap-attacher, consisting of a pocket-knife having an opening therein and a blade provided with a tooth projecting into said opening, substantially as set forth.

2. The herein-described improved cap-attacher, consisting of a pocket-knife having a transverse opening therethrough, a blade having a tooth projecting into said opening, and a side pocket for holding a crimping-tool for forming a groove or crease on said cap, as set forth.

487,568. AUTOMATIC ADVERTISING DEVICE. THOMAS B. HAFERTEP, Chicago, Ill. Filed Feb. 27, 1892. Serial No. 423,072. (No model.)

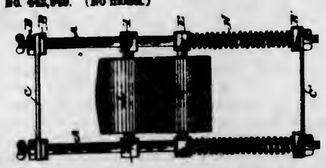


Claim.—1. An advertising device comprising an elongated stationary frame within a wheeled vehicle, guide-plates extending lengthwise of the frame and having return-bent edges, an endless band supported to move on the guide-plates between the bent edges and around the frame, and an endless belt adapted to receive motion from an axle of the vehicle and transmit it to the band and progressively move it, substantially as described.

2. The combination, with a wheeled vehicle, an axle rotatable thereon, a flanged pulley on the axle, and an endless belt engaging said pulley, of a stationary elongated frame with the vehicle, comprising two parallel bars, guide-plates between on the edges of the bars, and return-bent flanges on side edges of said plates, bracket-arms supporting the frame, a flanged drum rotatable between the parallel bars at each end of the frame, a flanged pulley below on one pivoted support of a drum, an endless band on the drums loosely engaging the guide-plates and their return-bent flanges, and idler-pulleys engaging the endless belt to direct it toward the axle below, substantially as described.

3. The combination, with a wheeled vehicle, an axle supported to rotate thereon, a flanged pulley on the axle, and a presser-wheel rotatable on the vehicle above the pulley on the axle, of an elongated frame within the vehicle, held projected therefrom longitudinally, comprising two parallel bars, opposite guide-plates secured near the edges of the bars and having return-bent flanges on side edges, a flanged drum rotatable between the parallel bars at each end of the frame, the shaft of one drum extending below the frame, a flanged pulley on said projection of the shaft, two idler-pulleys above and two idler-pulleys below on the end wall of the vehicle, an endless belt engaging all the pulleys, and an endless band mounted on the drums loosely engaging the guide-plates and their flanges, substantially as described.

487,564. IDLER FOR DRIVING-BELTS. ALEXANDER V. HALL and WILLIAM S. HOLMES, Baton Rouge, La. Filed Aug. 13, 1892. Serial No. 442,949. (No model.)



Claim.—1. In a belt-idler, the combination, with the frame consisting of the guide-rods and connecting cross-bars, of the roller G, having bearings loosely mounted upon said guide-rods, coiled springs arranged upon said guide-rods beneath said bearings, the roller L, journaled in bearings loosely mounted upon said guide-rods, and the regulating-screws M for forcing down said roller, substantially as described.

2. In a belt-idler, the combination, with the frame consisting of

487,567. NAIL-MACHINE. CHARLES B. HOUSTON, Northumberland, Pa., assignor of one-half to Horace Rufus Johnson, same place. Filed Apr. 4, 1892. Serial No. 427,672. (No model.)

ladder, mounted thereon, a drum for guiding the ladder, a lug on the shaft of the drum, a toothed rod for engaging the lug, a friction-lever brake engaging the drum carrying the ladder, and a cord connected

are cooled after leaving the drying-chamber, substantially as herein described.

sealed in bearings loosely mounted upon said guide-rods, and the regulating-screws M for forcing down said roller, substantially as described.

2. In a belt-idler, the combination, with the frame consisting of the guide-rods and connecting cross-bars, of the roller G, having bearings loosely mounted upon said guide-rods, coiled springs H, arranged upon said guide-rods and resting against the under sides of said bearings, the roller L, journaled in bearings loosely mounted upon said guide-rods and independently adjustable, and the regulating-screws M for adjusting said roller, substantially as described, and for the purpose specified.

3. The combination of the guide-rods A and cross-bars B B' C C, connecting said guide-rods at top and bottom, the roller G, journaled in bearing-blocks E, loosely mounted upon said guide-rods, the coiled springs H, interposed between said bearing-blocks and the cross-bars B', the roller L of greater diameter at its center than at its ends and journaled in bearings loosely mounted upon said guide-rods and independently adjustable, and the regulating-screws M for adjusting said roller, substantially as described, and for the purpose specified.

4. The combination of the guide-rods A and cross-bars B B' C C, connecting said guide-rods at top and bottom, the roller G, journaled in bearing-blocks E, loosely mounted upon said guide-rods, coiled springs H, interposed between said bearing-blocks and the cross-bars B', the roller L of greater diameter at its center than at its ends and journaled in bearings J, swiveled upon trunnions i, carried by bearing-blocks I I, loosely mounted upon the guide-rods, and the regulating-screws M, bearing upon the upper sides of said bearings, substantially as described, and for the purpose specified.

487,565. BRIDLE. ALEXANDER HASSELBAUER and LOUIS HASSELBAUER, New York, N. Y. Filed Aug. 9, 1892. Serial No. 442,567. (No model.)

Claim.—1. A bit-support comprising a single endless strap doubled upon itself and formed into the two cheek-sections B B^2 and the throat-latch section B' B^2, loops D D' being formed at the juncture of the lower ends of the respective sections B B' and B^2 B^2, a slide or ring connecting the two throat-latch sections above the bit-loops D, and a slide or ring connecting the upper crossed ends of the cheek and throat-latch sections and a nose-strap, substantially as set forth.

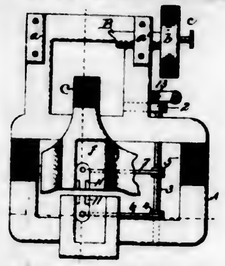
2. A bit-support comprising a single endless strap doubled upon itself and formed into the two cheek-sections B B^2 and the throat-latch sections B' B^2, loops D D' being formed where the lower ends of the cheek-sections B B^2 merge into the throat-latch sections B' B^2, the nose-strap H having loops I secured to the sections B B^2 and through which the sections B' B^2 freely pass at the bit-loops D, the ring or slide G, through which the throat-latch sections B' B^2 freely pass, and the ring or slide C, through which pass the crossed upper ends of the four sections B B' B^2 B^2, substantially as set forth.

487,566. BOX-LID HOLDER. AUSTIN D. HOFFMAN, Minneapolis, Minn., assignor to the Standard Syndicate, of Minnesota. Filed Sept. 27, 1892. Serial No. 447,090. (No model.)

Claim.—1. A box-lid holder and indicating device consisting of the plates A and B, arranged at an angle to each other, and the side or wing plates C, secured to the edges of one of the plates, the slots D being between the said wing-plates and the other plate of the device, substantially as described.

2. The herein-described box-lid holder and indicating device, consisting of the plates A and B, arranged at an angle to each other, and the triangular-shaped wing or side plates C, secured to the edges of the plate A, the upper edges of the wing-plates being parallel with the plate A, but separated therefrom, whereby there are formed the slots D, substantially as and for the purposes set forth.

487,567. NAIL-MACHINE. CHARLES R. HOUGHTON, Northumberland, Pa., assignor of one-half to Horace Rufus Johnson, same place. Filed Apr. 4, 1892. Serial No. 427,672. (No model.)



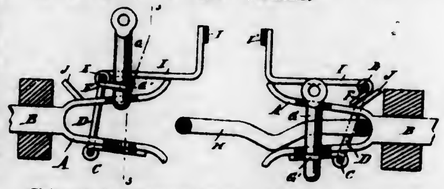
Claim.—1. The combination, with a point-cutting die having a lateral play in its seat and the lever-arm of the cutting-jaw, of a rock-shaft mounted on the frame of the machine, provided with a tappet-bar arranged to be depressed by the stroke of the lever-arm of the cutting-jaw, a lever to move the point-cutting die laterally in its seat, and connecting-rods between the said last-mentioned lever and the rock-shaft, as specified.

2. The combination, with the knife-bed of a nail-machine, the gripping-lever of the machine, said knife-bed and gripping-lever being provided with vertical holes, and the point-cutting dies, of lever-bars arranged in said holes, provided with a lug at the upper ends to engage and take the point-cutting dies, a rock-shaft mounted on the frame of the machine, and connecting-rods between the rock-shaft and the vertical lever-bars and the lever-arm of the cutting-jaw, substantially as described.

3. The combination of the rock-shaft mounted on the frame of the machine and formed with a cross-head provided with a tappet-bar, a lever on the machine arranged to engage the point-cutting die, a point-cutting die having a lateral play in its seat, and connecting-rods between the point-cutting-die lever and the rock-shaft, as set forth.

4. The combination of the rock-shaft mounted on the frame of the machine, formed with a cross-head provided with a tappet-bar, the cutting-jaw lever to engage the tappet-bar, a spring to return the rock-shaft to normal position, levers to engage the point-cutting dies, point-cutting dies having a lateral play in their seats, and connecting-rods between the point-cutting-die levers and the rock-shaft.

487,568. CAR-COUPLING. LEVI W. HOUSTON, Bath, Me. Filed Aug. 16, 1892. Serial No. 443,190. (No model.)



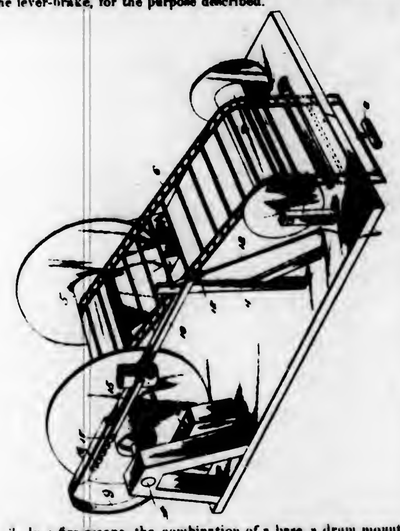
Claim.—1. In a car-coupling, the combination, with a pivoted U-shaped arm carrying on its free end a pin, of supporting-arms held on the said pin and adapted to engage notches formed in the sides of the coupling-pin to support the latter and an arm hung on the said pin and adapted to project beyond the draw-head to be engaged by a like arm on the approaching draw-head, substantially as shown and described.

2. In a car-coupling, the combination, with a pivoted U-shaped arm carrying on its free end a pin, of supporting-arms held on the said pin and adapted to engage notches formed in the sides of the coup-ling-pin to support the latter, an L-shaped arm hung on the said pin and adapted to project beyond the draw-head to be engaged by a like arm on the approaching draw-head, and a fixed projection on the draw-head to limit the rearward swinging motion of the said arms, substantially as shown and described.

487,569. FIRE-ESCAPE. RICHARD HOWELL, Troy Hills, N. J. Filed July 9, 1892. Serial No. 439,508. (No model.)

Claim.—1. In a fire-escape, the combination of a base, a drum mounted thereon, a ladder carried by the drum, a lug on the shaft of the drum, and a lever having means for engaging said lug on the shaft of the drum to control the rotation thereof, for the purpose described.

2. In a fire-escape, the combination of a base, a drum carrying a ladder, mounted thereon, a drum for guiding the ladder, a lug on the shaft of the drum, a toothed rod for engaging the lug, a friction-lever brake engaging the drum carrying the ladder, and a cord connected to the lever-brake, for the purpose described.



3. In a fire-escape, the combination of a base, a drum mounted thereon, a ladder carried by the drum, a lever engaging the drum-shaft, a lug on the shaft, a toothed rod for engaging the lug, a spring connected to said lever, a latch carried by the lever, and a cord for tripping the latch, for the purpose described

4. In a fire-escape, the combination of the base, the drum carrying the ladder, the lever bearing against the drum-shaft, the spring connected to the lever, the latch, the cord for tripping the latch, the weight on the lever, the toothed rod connected to the weight, and the lug on the drum-shaft, engaging the toothed rod, all for the purpose described.

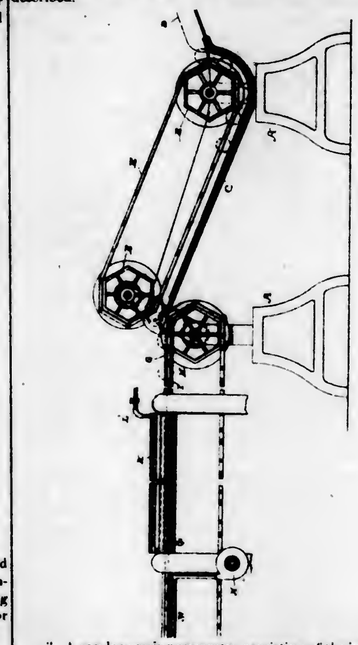
487,570. SASH-CORD FASTENER. MARGARET J. HUFFAM, Ashland, Pa. Filed June 16, 1892. Serial No. 436,922. (No model.)

Claim.—A sash-cord fastener comprising the box C, having an open outer side, a slot D in the outer edge of its top, and pins H H, a hinged cover F, and a double latch G, pivoted between its ends to the outer side of the cover and engaging the pins with its ends, substantially as set forth.

487,571. CAN-LACQUERING MACHINE. ROBERT D. HUME, Gold Beach, Oreg. Filed June 15, 1892. Serial No. 436,534. (No model.)

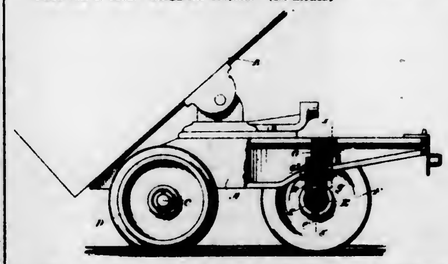
Claim.—1. An apparatus for lacquering cans, consisting of an inclined lacquer-containing trough, a chute by which the cans are delivered into the lower end of the trough, an open-linked chain passing around pulleys and dipping into the lacquer-trough, so as to receive the cans and roll them out at the upper end of the trough, a second chain adapted to receive the cans as they are discharged from the lacquer-trough, and a casing through which said chain passes, within which heat is applied to dry the lacquer, substantially as herein described.

2. An apparatus for lacquering cans, consisting of the inclined lacquer-trough, a chute from which cans are delivered to the lower end thereof, an endless traveling open-linked chain passing around supporting-pulleys and adapted to receive the cans and move them through the lacquer-trough to the discharge end, a receiving-belt consisting of endless chains having transverse pins formed with sharp-edged flanges between the sides of the chain, upon which flanges the cans are received and supported, a drying-chamber through which the chain passes, whereby the lacquer is dried, and a device by which the cans are cooled after leaving the drying-chamber, substantially as herein described.



3. A can-lacquering apparatus consisting of the inclined lacquer-containing trough, an endless open-linked carrying-chain dipping into said trough, a chute by which the cans delivered to the lower end of the trough between the links of the chain by which they are carried to the upper and discharge end, a second belt consisting of open-linked chains having transverse adjustable pins with raised flanges upon which the cans are received, a drying-chamber through which the chains and cans pass to dry the lacquer, and a cooling device consisting of perforated air-pipes and a blast apparatus arranged with relation to the traveling chain to allow the blast of cold air to be delivered upon the cans as they pass over the perforated pipes, substantially as herein described.

487,572. ORE-CAR. FRANK A. HUNTINGTON, San Francisco, Cal. Filed Jan 5, 1892. Serial No. 417,082. (No model.)



Claim. 1. In an ore or other load car, the frame and the wheeled axle E, in combination with the pivotal connection between said frame and axle, consisting of the sleeve on the axle, having the spaced flanges, the cross-plate secured to the frame and seated between the spaced flanges, and the horizontal pivot-bolt passing through the flanges and intervening plate, substantially as herein described.

2. In an ore or other load car, the frame and the wheeled axle E, in combination with the pivotal connection between said frame and axle, consisting of the sleeve on the axle, having the spaced flanges, the cross-plate secured to the frame and seated between the spaced flanges of the sleeve, said cross-plate having a rounded bottom bearing resting on the sleeve, and the horizontal pivot-bolt passing through the flanges and intervening plate, substantially as herein described

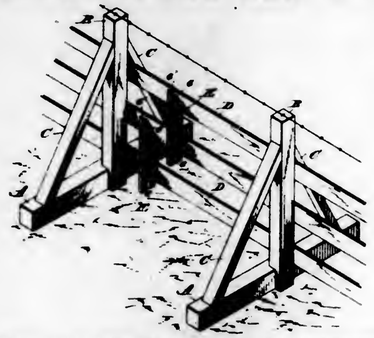
487,573. PLANK FENCE. WARREN JONES, Sr., Hawkins, Tex. Filed Sept. 5, 1892. Serial No. 445,302. (No model.)

duplicates of the intermediate rope adapted at times as guides for the pole and at other times for direct attachment thereto, whereby when serving in the former capacity the auxiliary ropes receive the overplus straw from the delivery apparatus, as and for the purpose set forth.

2. The combination, with a frame constructed to slide vertically and a pin projecting at right angles from the outer face of said frame, of a tilting platform pivoting at one side of its center of gravity upon

Claim.—1. In combination, the frame, the steering-fork and its retaining-sleeve, a spring-actuated lock normally engaging such fork to hold it from rotation in its sleeve, said lock having a vertically-

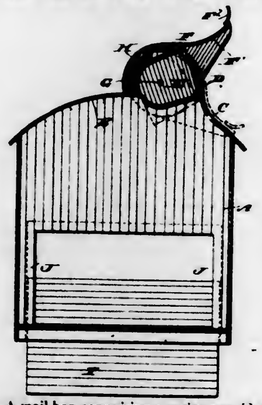
487,578. PLANK FENCE. WARREN JOBE, Sr., Hawkins, Tex. Filed Sept. 8, 1892. Serial No. 445,302. (No model.)



Claim.—1. In a fence, the combination, with the support consisting of a sill-piece, vertical post, and inclined brace secured to the post and sill, of planks or rails located between the upper edge of the sill-piece and beneath the brace, and clamps E E, having the upper and lower ends thereof bifurcated for engagement with the upper and lower edges of adjacent planks or rails, substantially as shown, and for the purpose set forth.

2. The combination, with the posts A, having portions rigidly secured thereto against which the rails of the fence are adapted to abut, of rails arranged one above the other, as shown, and independent clamps having bifurcated ends, which are adapted to engage with different rails, so as to force them apart and in contact with the projecting portions secured to the post, for the purpose set forth.

487,574. LETTER-BOX. OLIVER P. JOHNSTON and CALVIN M. GATES, Butte City, Mont. Filed Aug. 13, 1892. Serial No. 442,963. (No model.)



Claim.—1. A mail-box comprising a casing provided with a slot for the introduction of letters and an opening for the introduction of heavier mail-matter and a pivoted cap for covering the said slot and opening and provided with a pocket secured on the under side of the cap and adapted to register with the said opening, substantially as shown and described.

2. In a mail-box, the combination, with a casing provided with a top having a slot for the introduction of the letters and an opening for the heavier mail-matter, of a cap pivoted on the ends of the casing and having an extended front end adapted to cover the said slot and the said opening and a pocket secured on the under side of the said cap and adapted to register at its mouth with the said opening, substantially as shown and described.

487,575. HAY-SLING. JAMES M. KELLOGG, Bozeman, Mont. Filed Jan. 20, 1892. Serial No. 419,677. (No model.)

Claim.—1. In a hay-carrier, the combination, with a pole, a binding or tie rope connected at its ends near the ends of the pole, and ropes attached at each end of the pole, terminating at their outer ends in loops or rings, of an intermediate rope terminating at both ends in rings or loops and detachably connected with the pole, and duplicates of the intermediate rope adapted at times as guides for the pole and at other times for direct attachment thereto, whereby when serving in the former capacity the auxiliary ropes receive the overplus straw from the delivery apparatus, as and for the purpose set forth.

2. In a hay-carrier, the combination, with a trip mechanism and a tie-rope connected therewith, of a hay-carrier consisting of a pole, a series of ropes projected from the pole, terminating at their outer ends in rings or loops and all adapted for attachment to the trip mechanism, and a back rope having both ends secured to the pole and adapted for connection with the tie-rope of the trip mechanism, as and for the purpose set forth.

3. The combination, with a trip mechanism consisting of a trigger, a keeper engaging with the trigger, and a trip-lever connected with the keeper, of a hay-carrier comprising a pole, a series of ropes connected with and leading from the pole, which ropes are connected with the trigger of the trip mechanism when said trigger is in engagement with its keeper, a tie-rope connected with the casing of the trip mechanism, and a rope which forms a loop by having both ends connected to the pole of the carrier, the said rope being adapted for connection with the tie-rope of the trip mechanism, as and for the purpose set forth.

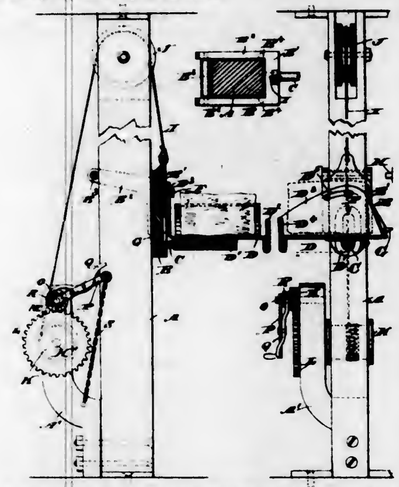
4. The combination, with a trip mechanism comprising a casing, a trigger, a keeper adapted for engagement with the trigger, and a trip-lever connected with the keeper, of a hay-carrier consisting of a pole, a series of ropes projected from the pole, the outer ones being firmly attached to the pole and the inner ones detachable therefrom, all the ropes terminating at their outer ends in rings or loops adapted to receive the trigger of the trip mechanism, a back rope, which forms a loop by having both ends secured to the pole, and a tie-rope attached to the casing of the trip mechanism and adapted for engagement with the back rope of the carrier, all combined for operation substantially as shown and described.

5. The combination, with a tripod carrying a friction-roller, a trip mechanism provided with a trigger and a trip-lever connected therewith, and a draft-rope attached to the trip mechanism and passing over the friction-roller of the tripod, of a hay-carrier consisting of a pole, a series of bottom ropes projected from the pole, all of which are provided with loops or rings to receive the trigger of the trip mechanism, a back rope attached at both ends to the pole of the carrier, a rope secured to the trip mechanism and adapted for engagement with the said back rope, and guide-ropes adapted for use in connection with the carrier, substantially as shown and described.

487,576. ELEVATOR. LUCIAS M. KUEHN, Wabasha, Minn. Filed May 10, 1892. Serial No. 433,490. (No model.)

Claim.—1. The combination, with a vertical post, of a vertically-sliding frame having arms embracing the post and provided with a horizontal pin projecting at right angles from its outer face, a platform pivoting upon the said pin to swing vertically, and means for automatically tilting the platform, substantially as set forth.

2. The combination, with a frame constructed to slide vertically and a pin projecting at right angles from the outer face of said frame, of a tilting platform pivoting at one side of its center of gravity upon said pin and normally lying in and returning to a horizontal position after tilting, substantially as set forth.



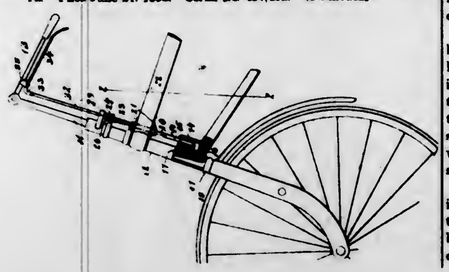
3. The combination, with a vertically-sliding frame provided with a pin projecting at right angles from its outer face, of a tilting platform mounted at one side of its center of gravity upon said pin and normally lying in a horizontal position and a pin-and-slot connection between the platform and the frame to limit the tilting movement of the latter, substantially as set forth.

4. The combination, with the vertically-sliding frame comprising plate B', arms B^3 B^3, and roller B^4, of the horizontal tilting platform on the front face of the plate and having a flange D^2, provided with a slot D^3, a pin passed through the slot into plate B', and the chute E, hinged at its lower edge to the dumping edge of said platform, substantially as set forth.

5. An elevator comprising a vertical post, a winding-drum at the lower end thereof, gearing for operating the drum, a lever having a pawl-and-ratchet connection with the said gearing to operate it, a guide-pulley at the upper end of the post, a frame sliding upon the post and having a pin projecting from its outer face, a normally-horizontal tilting platform mounted on said pin and having a lug and a downward-swinging chute at its dumping edge and a lug in the upward path of the first lug to tilt the platform, and a rope extending from the drum over the guide-pulley and down to the sliding frame, substantially as set forth.

6. The combination, with the vertically-sliding plate comprising a plate B', provided with parallel arms B^3, vertical flanges B^4, roller B^5 between the rear ends of arms B^3, and the pin C, projecting at right angles from the outer face of plate B', of the normally-horizontal platform D, mounted on the pin and having a rear end flange D^4, outer side flange D^5, and inner side flange D^6, having a slot D^7, a pin extending through the slot into the plate B', trip-lug G, and the inward inclined chute E, hinged at its lower edge to the dumping end of the platform, substantially as set forth.

487,577. BICYCLE ATTACHMENT. ALLEN MATTHEWS, Pittsburg, Pa. Filed June 21, 1892. Serial No. 437,482. (No model.)

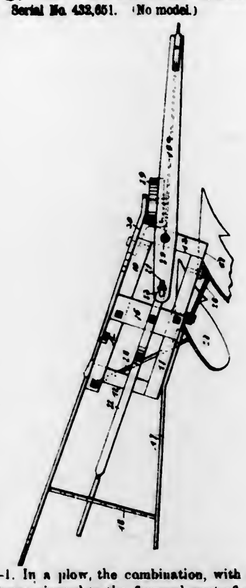


Claim.—1. In combination, the frame, the steering-fork and its retaining-sleeve, a spring-actuated lock normally engaging such fork to hold it from rotation in its sleeve, said lock having a vertically-projecting arm held from lateral movement, a laterally-movable swinging bearing member carried by the fork and engaging the lock-rod, and an operating-lever engaging said bearing, all substantially as and for the purpose described.

2. The combination, with the bicycle, its recessed steering-fork, and the sleeve containing the fork and having a hole opposite the recess, of an elbow-latch pivoted behind the sleeve and adapted to enter the hole in the recess, a spring-pressed rod connected with the latch and extending upward nearly parallel with the fork, a roller carried at the upper end of the rod, a ring hinged to the fork and adapted to press upon the roller, a slide-bolt connected to the ring and extending upwardly therefrom, and a releasing-lever fulcrumed on one of the handle-bars and pivotally connected with the slide-bolt, substantially as described.

3. The combination, with a bicycle, its recessed steering-fork, the sleeve containing the fork and having a hole opposite the recess, and the elbow-latch pivoted behind the sleeve and adapted to enter the hole and recess, of a spring-pressed rod nearly parallel with the fork and connected with one arm of the latch, a keeper at the upper end of the rod, a roller journaled in the keeper and having a central circumferential boss thereon, a ring hinged to the fork and having a groove to receive the boss of the roller, a slide-bolt connected with the ring, and a lever fulcrumed on one of the handle-bars and pivoted to the slide-bolt, substantially as described.

487,578. PLOW. FREDERICK S. MOORE, Hanford, Cal. Filed May 11, 1892. Serial No. 433,651. (No model.)



Claim.—1. In a plow, the combination, with a share-carrying frame, of a beam pivoted to the forward part of the frame a short distance from its inner end and provided with a longitudinal slot in said inner end, an angle-lever fulcrumed on the frame and provided on its inner end with a pin working in the slot of the beam, and a rack between the handles and with which the upper end of the lever engages, substantially as described.

2. In a plow, the combination, with a frame and shares supported by the frame singly or in gangs, of a beam fulcrumed upon the frame, handles attached to the frame, one straight and the other outwardly inclined, a rack-bar connecting the handles, a lever fulcrumed upon the frame, the upper end of which is adapted for engagement with the rack-bar, the lower end being provided with a pin to enter the slot in the inner end of the beam, whereby the direction of the beam with respect to the frame may be changed, as and for the purpose set forth.

3. In a plow, the combination, with a frame, plowshares supported in gangs or singly from the frame, and a guide-arm fulcrumed upon the landside of the frame and carrying a gage-wheel, the said arm being adjustably connected with a support projected from the frame, of a beam fulcrumed upon the frame, the inner end of which is pro-

vided with a slot, a spring-lever likewise fulcrumed upon the frame, handles attached to the frame and carrying a rack adapted for engagement with one end of the lever, the other end of the lever being provided with a pin entering the slot in the plow-beam, and an adjustable connection between the landsides of the plowshares and the frame of the implement, as and for the purpose set forth.

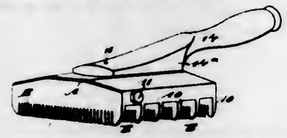
487,579. PROCESS OF TREATING GOLD AND SILVER ORES. GEORGE W. McGEE, Chicago, Ill. Filed July 24, 1891. Serial No. 400,503. (No specimens.)

Claim.—1. The herein-described process of treating ores, which consists in crushing the ore, submerging the crushed ore in a solution of caustic soda or potash, heating the mixture, and adding to the heated mixture salts of oxalic acid and sulphate of copper or blue-stone.

2. The herein-described process of treating ores, which consists in crushing the ore, submerging the crushed ore in a solution of caustic soda or potash, heating the mixture, adding to the mixture salts of oxalic acid and sulphate of copper or blue-stone, and evaporating the liquid from the mixture.

3. The herein-described process of treating ores, which consists in crushing the ore, submerging the ore in a solution of caustic soda or potash, adding to the mixture salts of oxalic acid, and evaporating the liquid from the mixture.

487,580. CURRYCOMB. GEORGE W. NEULS, Kane, Pa. Filed Mar. 3, 1892. Serial No. 424,142. (No model.)

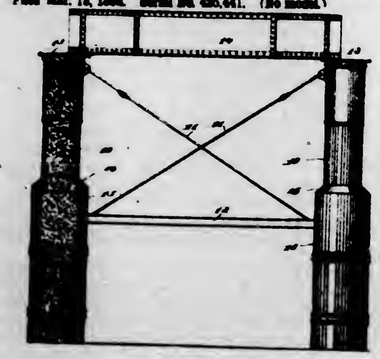


Claim.—A currycomb having its back and teeth formed of a single piece of wood, a transverse aperture through the back from end to end, a bolt or rod extending through said aperture and provided at its ends with buffers or fenders, and a handle secured to the back, substantially as set forth.

487,581. ENVELOPE OR WRAPPER. TIMOTHY J. O'DONNELL, Lawrence, Mass. Filed Dec. 22, 1891. Serial No. 415,852. (No model.)

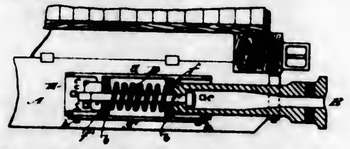
Claim.—As an improved article of manufacture, an envelope or wrapper having its fastening-flap provided with reinforcing or extension flaps adapted to be doubled over the fastening-flap and overlapped at their adjacent ends, said extension-flaps having gummed surfaces, and a gumless surface at the point 13, substantially as described.

487,582. SUBSTRUCTURE. SAMUEL A. OLIVER, Houston, Tex. Filed Mar. 18, 1892. Serial No. 425,441. (No model.)



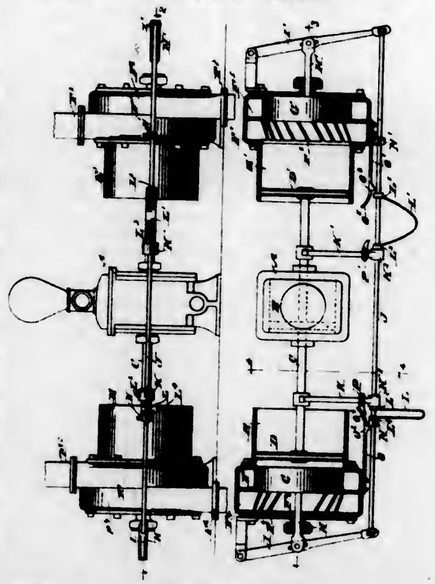
Claim.—The combination, with the main structure, of an inclosing caisson for the lower portion of the same, a filling between the caisson and the main structure, and an inclined protecting-plate for the top of the caisson, substantially as described.

487,583. DRAW-BAR ATTACHMENT FOR CARS. WILBUR B. ORTON, Motorson, Kans. Filed May 17, 1892. Serial No. 433,290. (No model.)



Claim.—A lug-plate for draw-bars forming the spring-pocket, the same having integral vertically-ranging solid lugs for receiving the thrust of the spring-followers, an integral longitudinal flange at the top of the plate, the latter further having longitudinal flanges at the bottom at each end beyond the vertical lugs, and a removable strap forming the bottom of the spring-pocket, the said strap overlapping on the lower end flanges and bolted to the latter beyond the vertical lugs, substantially as described.

487,584. MOTOR. BENJAMIN S. PARTRIDGE, Jacksonville, Fla. Filed Apr. 4, 1892. Serial No. 427,675. (No model.)



Claim.—1. In a motor-engine, the combination, with a balanced valve, valve-stem, and valve-operating mechanism, of a hollow cylindrical valve-seat fitting closely about said valve, a circular series of inlet-ports occupying the inner half of said valve-seat and extending entirely around the same, an inlet-chamber passing entirely around and inclosing said series of inlet-ports and provided with supply-pipe connections, a circular series of outlet-ports occupying the outer half of said valve-seat and extending entirely around the same, an outlet-chamber adjacent to and separated by a common partition from said inlet-chamber and passing entirely around said series of outlet-ports, so as to inclose the same, and provided with discharge-pipe connections, and a circular head bolted to said outlet-chamber, provided with a stuffing-box to receive said valve-stem at its center and closing the outer end of said valve-seat, substantially as specified.

2. In a motor-engine, the combination, with a single-acting piston and cylinder, of a hollow cylindrical valve-seat, a circular series of supply-ports occupying the inner half of said valve-seat and extending entirely around the same, a circular series of exhaust-ports occupying the outer half of said valve-seat and extending entirely around the same, a hollow cylindrical balanced valve adjusted to operate piston-like within said valve-seat and to open and close the aforesaid two series of ports alternately, a valve-stem fastened axially to said valve, a supply-chamber extending entirely around and inclosing said series of supply-ports and provided with supply-pipe connections, an exhaust-chamber extending entirely around and inclosing said series of exhaust-ports and provided with exhaust-pipe connections, and a circular head bolted to said exhaust-chamber so as to close the outer end of said valve-seat and provided with a stuffing-box to receive said valve-stem, substantially as specified.

3. In a motor and with each of a pair of oppositely-arranged cylinders, the combination of a valve-chest provided with a hollow cylindrical valve-seat having a series of inlet-ports around its inner half, a series of outlet-ports around its outer half, an inlet-chamber inclosing said inlet-ports and provided with a supply-pipe and connections, an outlet-chamber inclosing said outlet-ports and provided with a discharge-pipe and connections, and a hollow cylindrical balanced valve provided with an axial stem and adjusted to slide in said valve-seat, substantially as shown and described.

4. In a motor and with each of a pair of oppositely-arranged cylinders containing connected pistons, the combination of a valve-chest comprising a hollow cylindrical valve-seat having a series of inlet-ports around its inner half and a series of outlet-ports around its outer half, an inlet-chamber inclosing said series of inlet-ports and provided with a supply-pipe and connections, an outlet-chamber inclosing said series of outlet-ports and provided with an exhaust-pipe and connections, and a head bolted to said outlet-chamber and provided with a stuffing-box, a hollow cylindrical balanced valve fixed rigidly to an axial stem and adapted to open and close the aforesaid two series of ports alternately, and means for operating said valve by the action of said pistons, substantially as specified.

5. In a motor and with each of a pair of oppositely-arranged cylinders having pistons connected by a power-rod, the combination of a valve-chest comprising a hollow cylindrical valve-seat having a series of inlet-ports around its inner half and a series of outlet-ports around its outer half, an inlet-chamber inclosing said series of inlet-ports and provided with supply-pipe connections, an outlet-chamber inclosing said series of outlet-ports and provided with exhaust-pipe connections, a circular head bolted to said outlet-chamber and provided with a central stuffing-box, a hollow cylindrical balanced valve provided with a central hub and radial spokes and adapted to open and close said two series of ports alternately, and a valve-stem fixed axially to said hub and adapted to slide in said stuffing-box, substantially as specified.

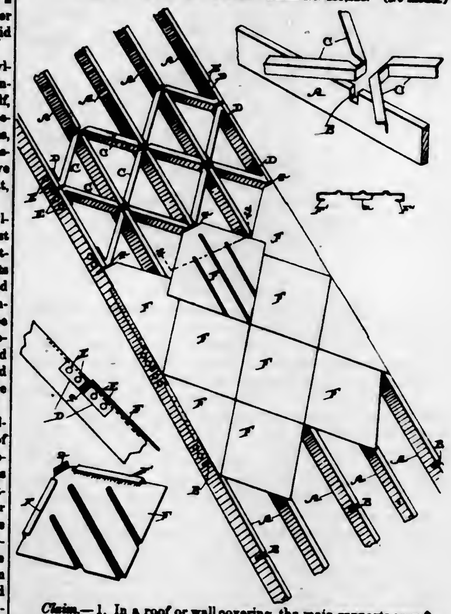
6. In a motor and with two valves mounted to slide and two power pistons connected by a power-rod, the combination of a pair of pivoted levers of the second class connected one with each stem of said valves, a shifting rod connecting the said levers with each other, springs held on the said shifting rod and adapted to abut against collars on the same, spring-catches having curved ends and adapted to lock said shifting rod in place, and arms projecting from said power-rod and adapted by sliding on said shifting rod to compress said springs, and curved lugs on said arms adapted by tripping said spring-catches to unlock said shifting rod, substantially as specified.

7. In a motor, the combination, with two valves mounted to slide, of pivoted arms connected with the stems of the said valves, a rod connecting the said arms with each other, springs held on the said rod and adapted to abut against collars on the same, sliding arms for compressing the said springs, and spring-arms having shoulders for locking the said rod in place and adapted to be tripped by lugs on the said sliding arms, substantially as shown and described.

8. In a motor, the combination, with a balanced valve and a forcing-rod, of a hollow cylindrical valve-seat, a circular series of inlet-ports and a circular series of outlet-ports extending, respectively, around said valve-seat, an inlet-chamber and an outlet-chamber respectively inclosing said inlet-ports and outlet-ports, a circular head-plate covering the outer end of said valve-seat and provided with a stuffing-box, and mechanism for opening and closing said ports alternately, substantially as specified.

9. In a motor and with each of a pair of oppositely-arranged cylinders having pistons connected by a power-rod, the combination of a valve-chest comprising a hollow cylindrical valve-seat having a series of inlet-ports around its inner half and a series of outlet-ports around its outer half, an inlet-chamber inclosing said series of inlet-ports and provided with supply-pipe connections, an outlet-chamber inclosing said series of outlet-ports and provided with exhaust-pipe connections, a circular head bolted to said outlet-chamber and provided with a central stuffing-box, a hollow cylindrical balanced valve provided with a central hub and radial spokes and adapted to open and close said two series of ports alternately, a valve-stem fixed axially to said hub and adapted to slide in said stuffing-box, a lever of the second class attached to said stem by a pivot and slot and secured to said chest by a pivot and bracket, and an actuating mechanism intermediate between said levers and said power-rod, substantially as specified.

487,585. COVERING FOR BUILDINGS. MARX P. SOMERFIELD, San Francisco, Cal. Filed Jan. 26, 1892. Serial No. 419,228. (No model.)



Claim.—1. In a roof or wall covering, the main supports or rafters having transverse notches formed in their outer edges, the intermediate supports C, extending diagonally between the main supports, and plates whereby they are secured to the sides of said support, substantially as described.

2. In a roof or wall covering, the main support or rafters having the transverse notches in their outer edges, the diagonally-disposed intermediate supports made of angle-iron, secured to the main supports by bolts, as shown, and the covering-plates having the turned flanges upon the upper edges to engage the edges of the diagonal intermediate supports, substantially as described.

3. In a roof or wall covering, the parallel supports or rafters having the transverse notches in their outer surfaces, the diagonally-disposed angle-iron, intermediate bars fitting said notches where they cross the main supports and secured to said supports, as shown, and the covering-plates having the flanges bent at the upper angles to fit the notches in the main supports and having the diverging upper sides formed with turned flanges which hook and lock upon the diverging intermediate supports, substantially as described.

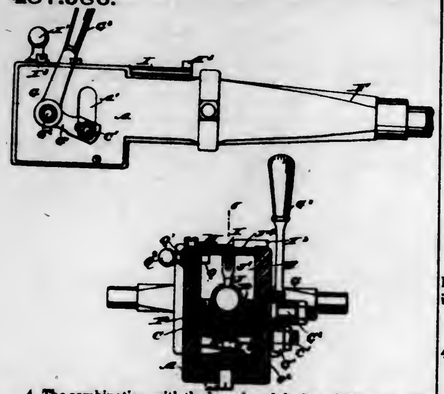
487,586. GUN. ROBERT A. SPRINGER, Washburn, Wis. Filed May 6, 1892. Serial No. 432,092. (No model.)

Claim.—1. The combination, with the breech having a transverse recess through it, of a sliding breech-block mounted in said recess, a spring-projected firing-pin mounted in the said block, a detent or sear to engage the firing-pin and hold it retracted, a cam or incline on the breech in the downward path of the firing-pin to retract it, and a releaser for the firing-pin to release its sear or detent when the breech-block reaches its inner or closed position and adapted, also, to be moved into an inactive position, substantially as set forth.

2. The combination, with a breech-block and its spring-projected firing-pin having a notch in its lower side, of a transverse spring-actuated lever or detent to snap into the notch when the firing-pin is retracted and a vertically-extending pin resting at its lower end on said lever or detent to disengage it from the notch when pressed downwardly, substantially as set forth.

3. The combination, with the breech and the sliding breech-block carrying the spring-projected firing-pin and its locking-lever or detent, of an incline on the breech in the path of the firing-pin when the block is moved downward to retract the said pin and a releasing mechanism for the said locking-lever or detent, substantially as set forth.

487,586.



4. The combination, with the breech and the breech-block therein provided with a spring-projected firing-pin, a detent or lever to lock the pin when retracted, and a releasing-pin, of a lug mounted movably on the breech and having a finger-piece for throwing it into and out of the path of the releasing-pin, substantially as set forth.

5. In a device of the class described, the combination, with a breech-block mounted to slide, of a spring-pressed firing-pin held in the said breech-block, a lever for locking the said firing-pin in position, a pin engaging the said lever and held with the latter in the said breech-block, and a lug held on the stock and adapted to engage the said pin at the time the breech-block slides in position for the firing-pin to engage the cartridge, substantially as shown and described.

6. In a device of the class described, the combination, with a breech-block mounted to slide, of a spring-pressed firing-pin fitted to slide in the said breech-block, a spring-pressed lever held in the said breech-block and adapted to engage the said firing-pin, and a fixed inclined lug adapted to engage the said firing-pin on the downward movement of the said breech-block to move the said firing-pin rearward in engagement with the said spring-pressed lever, substantially as shown and described.

7. In a device of the class described, a cartridge loader and extractor comprising a plate fitted to slide on the breech, a fixed arm on the said plate, and a spring-supported arm arranged in front of the said fixed arm, substantially as shown and described.

8. In a device of the class described, a cartridge loader and extractor comprising a plate fitted to slide on the breech, a fixed arm on the said plate, and a spring-supported arm arranged in front of the said fixed arm, the said spring-supported arm being provided at its foot with an inclined front edge to pass over the flange of the cartridge, substantially as shown and described.

9. The combination, with the breech having a recess open at its top and a portion of its rear end and a breech-block sliding vertically in the recess and having a cartridge-groove in its upper face, of a slide over the upper open end of said recess and provided with a depending arm to push the cartridge forward from the block into the barrel, substantially as set forth.

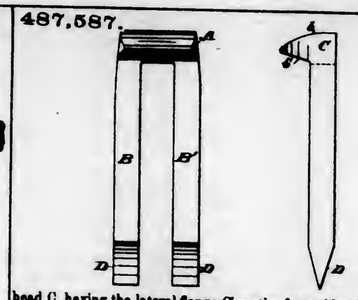
10. The combination, with the breech provided with a recess open at its upper end and rear and the vertically-sliding breech-block carrying the firing mechanism and provided with an operating-lever, of the slide closing the upper end of the recess and having a depending fixed arm to push the cartridge from the slide into the barrel and a spring-supported depending arm in advance of the fixed arm to snap over the cartridge-rim when the slide is pushed inwardly and extract the shell when the slide is slid rearwardly, the said breech-block abutting at its forward upper corner the rear edge of the said depending fixed arm, substantially as set forth.

11. The combination, with the breech-block having a longitudinal bore and a recess through its lower side intersecting said bore, of the notched firing-pin sliding in the bore and the V-shaped spring, the forward-upward projecting member of which extends up through the recess into the notch in the firing-pin and the rear member of the spring being removably secured to the lower side of the block, substantially as set forth.

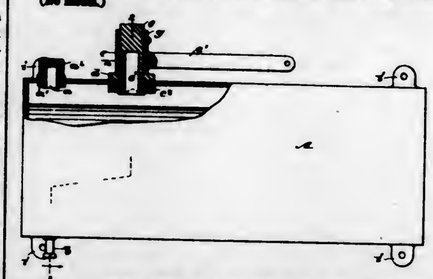
487,587. SPIKE. ELIAS A. SCHNEIDER, New York, and EDWARD W. BUSSING, Rochester, N. Y. Filed Aug. 26, 1892. Serial No. 443,915. (No model.)

Claim.—As an improved article of manufacture, the spike composed of the straight parallel-sided shanks B F, having points D, which are similarly beveled on opposite front and rear sides, and the head C, having the lateral flange C' on the front side, all constructed integrally, as shown and described.

487,587.

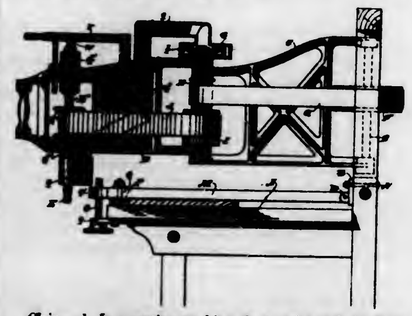


487,588. DISINFECTING APPARATUS. EMIL TAUSSIG and SALOMON TAUSSIG, New York, N. Y. Filed Jan. 19, 1892. Serial No. 418,600. (No model.)



Claim.—A disinfecting apparatus consisting of the vessel A, provided with the filling-nozzle *a*, having a sealing-cap a^2, the discharge-nozzle *b*, and the apertured ears, the cylindrical plug *c*, secured in the vessel and having the axial aperture *c'* and a radial aperture leading thereto, and a gate-ring *e*, fitted to turn on the plug and provided with an aperture adapted to register with the aperture of the plug and with a lever *e'*, adapted to be connected with a water-closet to be operated thereby, substantially as herein shown and described.

487,589. ROUTING-MACHINE. MELVIN A. TAYLOR, Oakland, Cal., assignor of one-half to George M. Blair, same place. Filed Aug. 24, 1891. Serial No. 403,612. (No model.)



Claim.—1. In a routing-machine, the templet and the frame in which it is secured, the adjustable hinge-strips to which the rear of the frame is fulcrumed, and the clamping-screw at the front, whereby the frame and templet are held in position, substantially as described.

2. In a routing-machine, the templet, the frame to which it is secured, having the rear hinged and vertically adjustable, and a clamping-screw by which the front of the frame and the work are secured to the table, in combination with the guide-strip secured to the front of the templet and adjustable thereon, substantially as described.

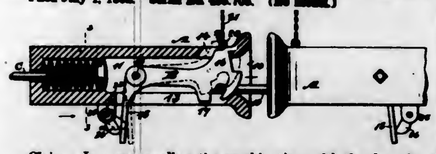
3. In a routing-machine, the templet and the frame in which it is secured, having its rear hinged and vertically adjustable, and the fixing-strips adjustably secured within the templet to regulate its size with relation to the work, substantially as herein described.

4. In a routing-machine, the templet, the frame in which it is secured, having its rear hinged and vertically adjustable, the hinged swinging frames journaled on vertical shafts above the table, a cutter-shaft and means for operating the same, a non-rotating sleeve in which the head of the cutter-shaft is journaled, a guide in one of the swinging frames, within which the sleeve is vertically movable, and a lever and connecting-rod for raising and lowering the sleeve and the shaft, so as to adjust the cutter to the work or remove it therefrom, substantially as herein described.

5. In a routing-machine, and in combination with the adjustable templet, movable frames, cutter-shaft and cutters, the blast or suction-fan fixed within a casing upon an intermediate shaft, a tube connecting the casing with a channel formed within the outer swinging frame and leading to a point just above the cutter-head, and a sleeve inclosing the cutter-shaft and lower end of the suction-tube, substantially as described.

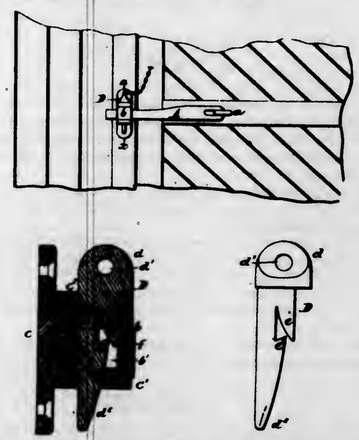
6. In a routing-machine, the adjustable templet, the swinging frames, and adjustable cutter-shaft and cutter-head, a fan secured to the intermediate driving-shaft within a casing, a tube connecting said casing with a channel cast in the outer swinging frame and leading to a point above the cutter-head, and a vertically-movable sleeve inclosing the cutter-shaft above the head and the lower end of the suction-tube and vertically-adjustable with reference thereto, substantially as described.

487,590. CAR-COUPLING. MICHAEL WEBBER, Allegheny, Pa. Filed July 1, 1892. Serial No. 438,703. (No model.)



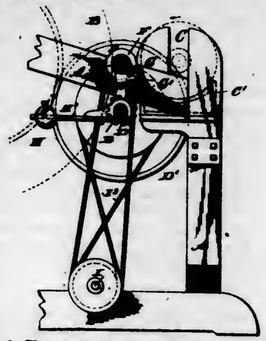
Claim.—In a car-coupling, the combination, with the draw-head A, provided with the longitudinal slot 13 in its base-wall and with the opening 14 in its upper face, of the coupling-hook B, pivoted in the draw-head and provided with the tail 15, projecting down through the slot 13, the lip 17, projecting into the said slot 13, and the extension 16, projecting into the opening 14, and the shaft 23, journaled beneath the draw-head adjacent to the projecting end of the tail-piece and provided with cranks 26 at its ends and with the finger 30 at its center for engaging the tail-piece, substantially as herein shown and described.

487,591. SEAL-LOCK. ORSON B. WHEATON, Grundy Centre, Iowa. Filed June 16, 1891. Serial No. 396,446. (Model.)



Claim.—In a seal-lock, the combination, with a hasp formed with the shouldered tongue having the opening therein, of the locking-plate having the ears, as described, one of which is shouldered and both having openings, a locking-pin adapted to be inserted in such openings and formed with the jaws, and a continuous flexible link adapted to be bent by one of these jaws and to lock the pin in position.

487,592. COMPOUND DOFFER FOR MANGLER. THOMAS S. WILES, Albany, and MINOR R. WHEDELL, Troy, N. Y. Filed May 9, 1892. Serial No. 432,514. (No model.)



Claim.—1. The combination, with two adjacent ironing mechanisms, of an interposed compound rotary and fixed doffer mechanism, substantially as specified.

2. The combination, with adjacent ironing mechanisms, of an interposed compound doffer mechanism involving as one of its elements a fixed doffer, substantially as specified.

3. The combination, with two ironing mechanisms, of an interposed rotary doffer and a fixed doffer arranged in the order specified, substantially as specified.

4. The combination, with a clothed drum, of a rotary doffer and a fixed doffer, the former being mounted yieldingly against the drum and the latter fixedly against the former, substantially as specified.

5. The combination, with a clothed drum, of a rotary doffer and means for yieldingly pressing the same against the drum, and an edged doffer mounted fixedly in relation to the rotary doffer and movable therewith toward and away from the drum, substantially as specified.

6. The combination of a rotary doffer, a fixed doffer, and brackets for supporting the same, and weighted arms secured to the bracket, substantially as specified.

7. The combination, with a rotary and a fixed doffer and with brackets for supporting the same, of means for pivotally supporting the brackets and for yieldingly moving the brackets on their pivots, substantially as specified.

8. The combination, with a clothed drum and with adjacent supplementary ironing mechanism, of a rotary and a fixed doffer pivotally mounted between the drum and the said ironing mechanism and means for rotating the rotary doffer in a direction opposite to that of the drum, substantially as specified.

9. The combination, with a clothed drum, of a rotary doffer having a brush-like periphery, a fixed doffer arranged to project into the periphery of the rotary doffer, and means for rotating the latter, substantially as specified.

10. The combination, with a rotary doffer having its periphery covered with mohair plush, of a fixed doffer-blade arranged to project slightly into the periphery of the rotary doffer and means for yieldingly moving the blade and rotary doffer simultaneously toward the drum, substantially as specified.

11. The combination, with brackets, as E, of a fixed blade, as G, a stiffening-bar, as G', and a rotary doffer, as F, substantially as specified.

487,593. ANIMAL-TRAP. ROBERT T. WILLIAMS, St. Louis, Mo. Filed June 21, 1892. Serial No. 437,510. (No model.)

Claim.—1. In an animal-trap, the combination of the box, openings in the box for the entrance and exit of animals, rotating doors for controlling said openings mounted on a shaft, and spring mechan-

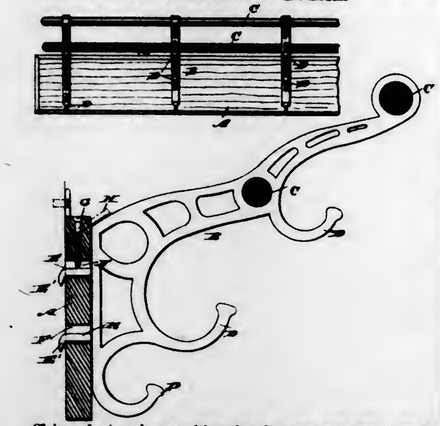
ism for operating said doors, substantially as and for the purpose set forth.

2. In an animal-trap, the combination of the box, openings in the box for the entrance and exit of animals, a shaft loosely mounted in the box, doors secured to the shaft and provided with openings on one side, a pinion on said shaft, a spring, and a toothed wheel for operating said shaft through connection with the pinion, and levers at the ends of the box for regulating the movement of the doors, substantially as and for the purpose set forth.

3. In an animal-trap, the combination of the box, openings in the box for the entrance and exit of animals, doors for controlling said openings operated by a spring, lugs on the doors, levers 15 and 27, that come in contact with said lugs, and treadles 19 and 30 for operating said levers, substantially as and for the purpose set forth.

4. In an animal-trap, the combination of the box, openings for the entrance of animals, an opening for the exit of animals, a tube leading from said exit-openings to a box for receiving the animals, and a treadle in said tube that operates a lever to close the exit-opening, substantially as and for the purpose set forth.

487,594. RACK. HOWARD U. ACKERMAN, North Indianapolis, Ind.
Filed May 17, 1892. Serial No. 433,266. (No model.)



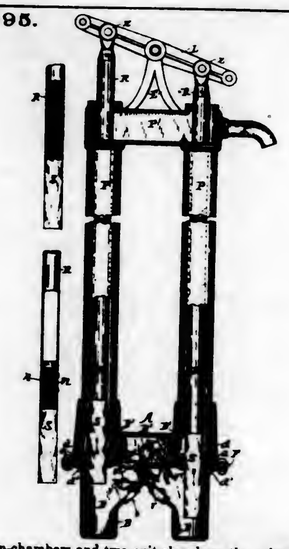
Claim.—1. A rack comprising a bracket, pins projecting from the said bracket and each formed with a downwardly-extending lug, a wall-board formed with enlarged openings for the passage of the said pins and their lugs, and means, substantially as described, for holding the said pins in the bottom of the said openings to engage the lugs of the pins with the back of the wall-board, as set forth.

2. A rack comprising a series of brackets, each formed with hooks, rods connecting the said brackets with each other to form a shelf, pins projecting from the rear end of each bracket, each pin having a downwardly-extending lug, a wall-board formed with enlarged openings for the passage of the said pins and lugs, and a screw or nail for fastening the said bracket in place to hold the pins in the bottoms of the openings, so that the lugs of the pins abut against the back of the wall-board, substantially as shown and described.

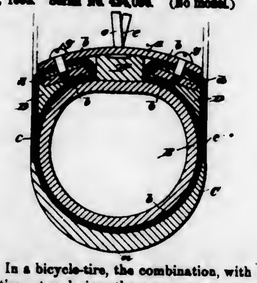
487,595. DISPLACEMENT-PUMP. GEORGE W. BARTHOLOMEW, Wichita, Kans. Filed Mar. 30, 1891. Serial No. 386,904. (No model.)

Claim.—1. The combination, with the case provided with the vertical reversely-curved partition *m*, the duplicate induction-chambers, and the exit-chamber divided from said induction-chambers, of the valves for admitting water into said induction-chamber, the valves for permitting water to pass from said chambers to the exit-chamber, the pump-pipes communicating with the exit-chamber, the rods and pistons thereof made of material which will float in water and of uniform size throughout their length, arranged in said pipes, with their pistons operating through bores of the case-partition, and the mechanism for reciprocating said rods in reverse directions to each other, substantially as and for the purpose set forth.

2. In combination with the exit-pipe, the pump-rods operating therein and provided with the pistons fixed to their lower end and with the rod-operating mechanism, the case A, horizontally divided by an interposed plate and vertically divided by means of partition-walls above and below said plate, one of which walls is curved substantially S-shaped, the upper partition-wall being so arranged as to cross the line of the lower partition-wall, thereby forming two separate induction-chambers and two exit-chambers, the valves arranged to open communication from the induction-chambers to the exit-chambers at the opposite side of the case therefrom, and the piston-bores and packings provided in said horizontal plate for the pistons, and the induction-valves, substantially as and for the purpose set forth.



487,596. BICYCLE-TIRE. GEORGE R. BARRETT, New York, N. Y.
Filed Mar. 7, 1892. Serial No. 424,096. (No model.)



Claim.—1. In a bicycle-tire, the combination, with a wheel-rim, of a pneumatic tire, a tread-piece thereon, two separate cushion-rings between the rim and tire, and a fibrous envelope around the cushion-rings and between the tread-piece and pneumatic tire, substantially as described.

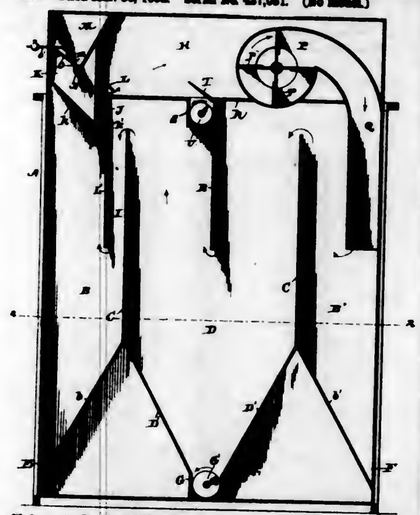
2. In a bicycle-tire, two cushion-rings connected with a tread-piece by a fibrous lining-piece that envelops the cushion-rings, substantially as described.

3. In a bicycle-tire, the combination, with a wheel-rim, of a pneumatic tire, a tread-piece thereon, two cushion-rings, a fibrous lining-piece secured on the inner side of the tread-piece and around the cushion-rings, a spacing-ring, and means to clamp the tread-piece and cushion-rings about the tire and upon the wheel-rim, substantially as described.

4. In a bicycle-tire, two cushion-rings provided with a series of clamping-plates embedded within, a tread-piece connected therewith by a fibrous lining, a spacing-ring, and a cylindric tire which is air-tight and enveloped by the tread-piece lining, spacing-ring, and cushion-rings, all held upon a wheel-rim, substantially as described.

5. In a bicycle-tire, the combination, with a wheel-rim perforated near each edge in series and a spacing-ring seated centrally on the rim, of a pneumatic tire on the spacing-ring, a tread-piece on the tire, a fibrous lining between the tire and tread-piece and secured to said tread-piece, two cushion-rings, one each side of the spacing-ring and enveloped by the lining-piece, a series of clamping-plates embedded in each cushion-ring, having threaded perforations opposite the holes in the wheel-rim, and clamping-screws loosely inserted in the rim-holes and having threaded engagement with the tapped holes in the clamping-plates, substantially as described.

487,597. MIDDLINGS-PURIFIER. ALVIN L. BASSARD, Bristol, Tenn. Filed Mar. 30, 1892. Serial No. 427,081. (No model.)



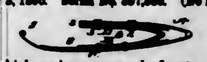
Claim.—1. In a middlings-purifier, the combination, with the closed casing, of a series of collecting or settling chambers or compartments communicating with each other and arranged side by side, a horizontal closed air or suction trunk extending across the top of the casing above the upper open ends of the series of chambers or compartments and terminating short of the casing at one side to form a communicating passage with one end compartment of the series, and a fan located in said closed air or suction trunk and communicating therewith and provided with a depending spout discharging into the opposite end compartment of the series, substantially as set forth.

2. In a middlings-purifier, the combination, with the casing, of the vertical partition-walls within said casing, separating opposite side chambers and a central collecting and settling chamber, a horizontal closed air or suction trunk located in the top of said casing and having the bottom thereof above the upper ends of said walls, a supplemental wall depending from one end of the bottom of said trunk adjacent to and parallel with one of said partition-walls to form an air-passage between the same and said wall, a feeding-box located within said casing opposite and above the supplemental wall to form a suction-passage opening into one end of said trunk, a valve arranged at the upper end of said passage, and a fan located in and communicating with said trunk and having a spout depending into one of the side chambers, substantially as set forth.

3. In a middlings-purifier, the casing, opposite chambers or compartments within said casing, a larger intermediate chamber or compartment communicating with each of said opposite compartments, a conveyer located in the bottom of said intermediate compartment, a closed air or suction trunk located in the top of the casing above said compartment or chamber and communicating with one of said side compartments, a conveyer located in the bottom of said air or suction trunk, a valve working directly over said conveyer within the trunk and arranged to direct the lower portion of the current in the trunk into the conveyer, and a fan discharging from said air or suction trunk into the opposite side compartment, substantially as set forth.

4. A hopper having a bottom escape-opening, a feeding-roller working within said opening, a swinging feed-regulating door working over said opening and against said feed-roller, a weight-controlled lever pivoted to said hopper, and a link connected with said lever and said door, substantially as set forth.

487,598. VEHICLE-SPRING. CHARLES A. BEHLEN, Cincinnati, Ohio. Filed July 2, 1890. Serial No. 357,592. (No model.)

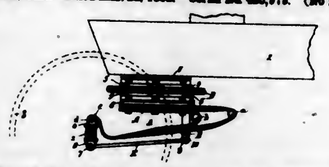


Claim.—1. A vehicle-spring composed of outer sectional leaves pivoted to a common axial center at one end and two inner sectional leaves, each secured at one end within and to the outer leaves, with their opposite ends hinged to a common axial center, over which the outer leaves fulcrum or bend, substantially as specified.

2. A compound vehicle-spring formed of two outer curved leaves, leaves hinged at one end to a common axial center, and an inner spring formed of two leaves, each secured at one end within and to the outer leaves and hinged at the other end to a common axial center, both sets of springs being in coincident vertical planes, the outer leaves turning upon their common axial center and fulcruming over the said axial center of the inner leaves, substantially as specified.

3. A compound vehicle-spring formed of two outer leaves hinged at their spring ends to a common center, one end of said springs adapted to be rigidly attached to a vehicle, the opposite end adapted to be hinged to a vehicle, in combination with the inner spring formed of two leaves attached in coincident vertical planes with the outer springs at one end and the other ends being hinged to a common axial center, which serves as a fulcrum for both the inner and outer springs, substantially as specified.

487,599. VEHICLE RUNNING-GEAR. CHARLES A. BEHLEN, Cincinnati, Ohio. Filed Mar. 22, 1892. Serial No. 426,079. (No model.)



Claim.—1. In a running-gear for a wagon, the combination of a frame 4, attached to the wagon-body, a frame 6, secured to the spring, a fifth-wheel secured to the frame 6 and the frame 4, and devices independent of the spring connecting the frame to the axle, substantially as described.

2. The combination of the frames 4 and 6 with the fifth-wheel and top, the springs A, connected to the frame of the fifth-wheel at one end and hinged to the axle at the front end, and one or more hinged coupling-rods E, hinged to the frame 6 and to the axle, substantially as specified.

3. In a running-gear, in combination with the axle, the springs A, having their free ends hinged to the top of the axle, and one or more coupling-rods E, hinged to the opposite side of the axle and to the frame supporting the fifth-wheel, whereby the strain is transmitted to the opposite sides of the axle, substantially as specified.

4. The combination of the frames 4 and 6 with the fifth-wheel and top attached, respectively, thereto, the springs A, rigidly secured to the fifth-wheel frame and provided with the three joints *a b c*, the latter hinged to the axle, and the coupling device hinged to the axle and the frame of the fifth-wheel, substantially as specified.

5. The combination of the frame 4, secured to the wagon-body, a taper tenon *m*, formed on said frame, a frame 6, having a taper socket *l* to receive the taper tenon *m*, and a fifth-wheel located between said frames 4 and 6, and a bolt passing through said frames, substantially as described.

6. In a running-gear for a wagon, the combination of a frame 4, attached to the wagon-body and provided with bosses 5 and a cross-bar having a central taper tenon *m*, a frame 6, secured to the spring and provided with bosses 5 and a central taper socket *l* for the reception of the taper tenon *m*, a fifth-wheel secured to the frames 4 and 6 and bearing at top and bottom against the bosses 5, and devices independent of the spring connecting the frame 6 with the axle, substantially as described.

7. In combination with the fifth-wheel supported on the frame 6, which is rigidly connected to the arms of the springs A, with their front ends hinged to the top of the axle, the diagonal coupling-rods E E, with their front ends hinged at one end to the lower side of the axle opposite the front arms of springs A and their rear ends hinged to the extension B of frame 6, substantially as specified.

487,600. PORTABLE CYLINDRICAL DRIER FOR FABRICS. ALBERT DURKHARDT, Brooklyn, N. Y.; Louise Durkhardt executrix of said Albert Durkhardt, deceased. Filed Apr. 15, 1892. Serial No. 429,316. (No model.)

Claim.—1. In a portable drying-cylinder, the combination of two light wheels and a hollow cylinder of muslin having its end portions circumferentially inclosing and fastened to said wheels, respectively, with a stretcher for holding said wheels apart, and thereby stretching said muslin cylinder longitudinally.

2. A hollow cylinder of muslin with its end portions circumferentially fastened to the perimeter of two light wheels loosely mounted upon a central shaft provided with removable transverse pins for holding said wheels apart.

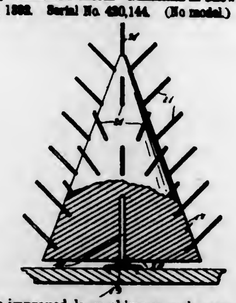
3. A hollow cylinder of muslin with its end portions circumferentially fastened to the perimeter of two light wheels provided with spokes adapted to spring in the direction of the axis of said cylinder, in combination with a central shaft provided with adjustable means for holding said wheels apart, and thereby imposing an elastic outward strain upon the opposite ends, respectively, of said muslin cylinder.

4. The combination, as herein set forth, of the muslin cylinder *a*, the hoop *b*, the cross-pieces *e* and *f*, the hoop *c*, the cross-pieces *d* and *f'*, the shaft *g*, of greater length than the cylinder *a*, and the transverse pins *h'* and *h²*.

5. A tube of muslin, two hoops inserted within the opposite ends thereof, respectively, and fastened to the muslin by having tacked to their outer edges the inwardly-turned end portions of said tube, in combination with two systems of crossed slats having their ends fastened, respectively, to the inner edges of the hoops, a central shaft inserted through perforations in the crossed portions of said slats, suitably-located transverse holes in said shaft, and two pins adapted for insertion in said transverse holes for the purpose of bearing, respectively, upon the inner surfaces of said systems of crossed slats, and thereby holding said hoops at prescribed distances apart.

487,601. CHIMNEY-RACK. HERRMAN H. BROWN, Norwich, N. Y.

Filed Feb. 3, 1892. Serial No. 420,144. (No model.)



Claim.—The improved lamp-chimney rack composed of the rotating cone 17, having pins 21 set in its side at the angle specified, and the base 19 and shaft 18 for supporting said cone, as shown and described.

487,602. STEAM-BOILER FURNACE. JAMES V. DUNKS, Chicago, Ill. Filed July 2, 1892. Serial No. 438,796. (No model.)

Claim.—1. The combination, in an arched-top basket-grate furnace, of the fuel-pockets 4 at the opposite sides of the furnace and removable linings 10, arranged within the fuel-pockets to form air-spaces 11 and provided with top flanges or rims 12, by which they are supported in place, substantially as set forth.

2. The combination, in an arched-top basket-grate furnace, of the side wall 1, cap and sole plates 27 and 28, and tie-bolt 29, arranged within an air-space in the wall, substantially as set forth.

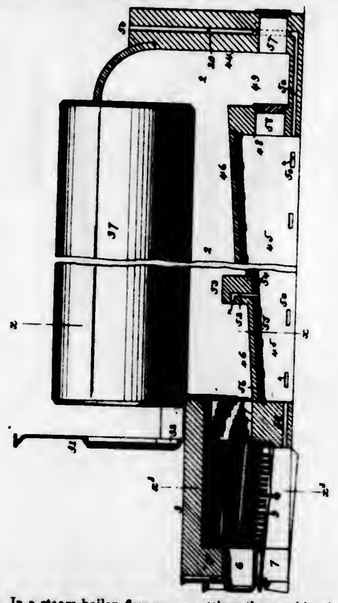
3. The combination, in an arched-top basket-grate furnace, of the side wall 1, cap and sole plates 27 and 28, and tie-bolt 29, arranged within an enlargement of the air-space in the wall, substantially as set forth.

4. The combination, in an arched-top basket-grate furnace and its side fuel-pockets 4, of the front wall 5 and metal front plate 15, formed with hollow posts 19, with the side walls 1, having an air-space 20 and air passages or orifices 21, located immediately beneath the pockets, substantially as set forth.

5. The combination, in an arched-top basket-grate furnace, of the front wall 5 and metal front plate 15, forming the inclosed air-space 16, and the doorway-linings 22, arranged within the front wall 5, so as to form air space or passage 23 between the lining and the front wall, the metal front plate 15 being provided with orifices 25, in line with the air-space 23, substantially as set forth.

6. The combination, in an arched-top basket-grate furnace and its front wall 5, of the metal front 15, formed in sections and provided with a hollow post 19, through which air is introduced into the air-space 20 in the side wall of the furnace, substantially as set forth.

7. In a steam-boiler furnace or setting, the combination of the boiler 36 with the supporting-posts 40, arranged within an air-space in the furnace-walls, substantially as set forth.



8. In a steam-boiler furnace or setting, the combination of the boiler 36 and a column or post 40, arranged within an air-space 20 in the furnace-walls, that has communication with the outer air and with the interior of the furnace, substantially as set forth.

9. In a steam-boiler furnace or setting, the combination, with the boiler 36 and its supporting-brackets 37, of the supporting-track 40, bearing-rollers 39, jack-screws 42, and removable lining-piece 43, substantially as set forth.

10. In a steam-boiler furnace or setting, the combination of the boiler 36 and horizontal partition 46, forming an air-chamber beneath the fire-bed of the furnace, the side and rear walls of the furnace formed with air-spaces 20, open at the top of the walls and communicating with the air-chamber 45 by passages 50 through the side and end walls, and the bridge-wall 53, having an air-passage 52 connecting said chamber with the fire-bed, substantially as set forth.

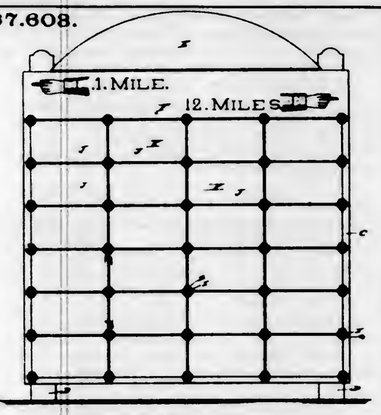
11. In a steam-boiler furnace, the combination, with the metal front 15, having a doorway 7, formed by an outwardly-projecting flange or rim having an oblique bearing-face for the door 33, of the track 34, extending the transverse width of the furnace and supported upon the top of the doorway flange or rim, the door 33, and interposed antifriction rollers or balls 35, substantially as set forth.

12. In a steam-boiler furnace, the combination, with the metal front 15, having a doorway 7, formed by an outwardly-projecting flange or rim having an oblique bearing-face for the door 33, of the track 34, extending the transverse width of the furnace and supported upon the top of the doorway flange or rim, the door 33, and a bracket or shelf 36, arranged above the track and adapted to form a foot-step in gaining access to the top of the furnace, substantially as set forth.

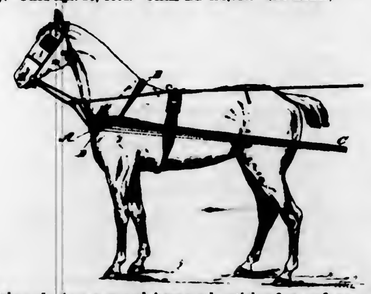
487,603. SIGN OR GUIDE BOARD. ASHTON D. CARLE, Montreal, Canada. Filed Apr. 27, 1892. Serial No. 430,816. (No model.)

Claim.—In an advertising-board for street and road intersections or for mile-boards, the combination of the metallic sheets J, washers G and H, and screws I with the board C, substantially as described, and for the purposes set forth.

487,603.



487,604. BREAST-COLLAR. CORNELIUS T. CAIN, Owensborough, Ky. Filed Apr. 26, 1892. Serial No. 430,716. (No model.)



Claim.—1. As a new and improved article of manufacture, the breast-collar herein described, consisting of the leather sheathing or collar proper formed at the juncture of its front and sides with bends extending upward from the front to the side portions of the collar, the neck-strap connected at its ends with the sides of the collar at points in advance of the rear ends of said sides, and two spring-metal shoulder-plates incased in said sheathing, said plates being arranged with their forward ends terminating on opposite sides of the middle portion of the front of the collar, whereby said middle portion is left flexible and free of metal bracing, and extending thence back up the bent portion of the collar and rearwardly along the sides and terminating at a point in rear of the connection of the neck-strap, whereby to prevent the connection with the shoulder-strap from drawing the sides of the collar out of line, said plates being cut to form the downward bend and bent permanently to conform to the turn of the shoulder at the juncture of the sides and front of the collar, all substantially as and for the purposes set forth.

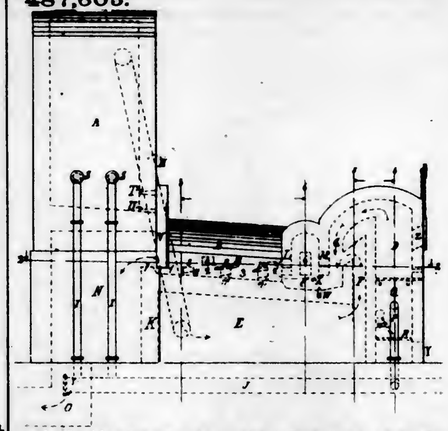
2. As a new manufacture, the permanently-shaped spring-metal shoulder-plate D, bent vertically edgewise between its ends, as shown at D^4, the rear end D' being inclined rearward and downward on a straight line and the forward end D^3 being inclined or curved downward from the bend D^2 and inward to conform to the shape of the shoulder, substantially as and for the purpose set forth.

487,605. COMBINED FURNACE FOR TREATING AND REDUCING ORES AND FOR REFINING THE RESULTING METALS. ASTHUS CHARAUD, L. LEOPOLD VAN HUMME, and LOUIS A. ALLARD, St. Louis, Mo. Filed Apr. 21, 1892. Serial No. 429,960. (No model.)

Claim.—1. The combination of a blast-furnace and a refining-furnace containing a refining-hearth and a heating-furnace with means for conveying the waste gases of the blast-furnace into the flame of the heating-furnace and over the refining-hearth of the refining-furnace.

2. The combination of a blast-furnace and a receiving and refining furnace containing a receiving-hearth, a refining-hearth, and a heating-furnace with means for conveying the waste gases of the blast-furnace into the flame of the heating-furnace and over the refining and receiving hearth.

487,605.



3. The blast-furnace and a receiving, storing, and refining furnace containing a receiving-hearth, a storing-hearth, a refining-hearth, and a heating-furnace, in combination with means for conveying the waste gases of the blast-furnace into the flame of the heating-furnace and over the refining, storing, and receiving hearth.

4. The blast-furnace and a receiving, storing, and refining furnace containing a receiving-hearth, a series of storing-hearths, a refining-hearth, and a heating-furnace, in combination with means for conveying the waste gases of the blast-furnace into the flame of the heating-furnace and over the refining, storing, and receiving hearth.

5. The blast-furnace and the receiving and refining hearth, the metal tap of the blast-furnace arranged to discharge onto the receiving-hearth, in combination with a heating-furnace and means for uniting the waste gases of the blast-furnace with the flame of the heating-furnace and for conveying the mixed gases and flame over the refining and receiving hearth.

6. The blast-furnace and the receiving, storing, and refining hearth, the arrangement of the metal tap of the blast-furnace discharging onto the receiving-hearth, in combination with a heating-furnace and means for conveying the waste gases of the blast-furnace into the flame of the heating-furnace and the mingled gases and flame over the refining, storing, and receiving hearth and under the bottom of the blast-furnace.

7. The blast-furnace and a refining-furnace containing a refining-hearth and a heating-furnace, in combination with means for conveying the waste gases of the blast-furnace under the refining-hearth, thence into the flame of the heating-furnace, and over the surface of the melted metal in the refining-hearth.

8. The blast-furnace and the refining-furnace containing a receiving-hearth, a refining-hearth, and a heating-furnace, in combination with means for conveying the waste gases of the blast-furnace under the refining and receiving hearth, thence into the flame of the heating-furnace, and the mingled gases and flame over the refining and receiving hearth.

9. The blast-furnace, a receiving, a storing, and a refining hearth, and a heating-furnace, in combination with means for conveying the waste gases of the blast-furnace under the receiving, storing, and refining hearth, thence into the flame of the heating-furnace, and the mingled gases and flame over the refining, the storing, and the receiving hearth.

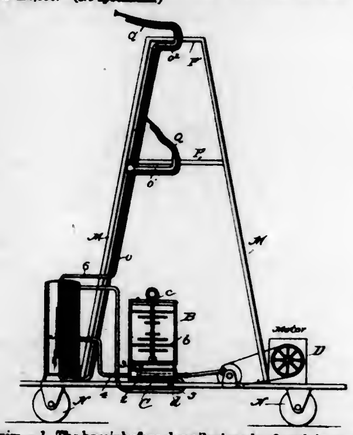
10. The blast-furnace, a receiving-hearth, a series of storing-hearths, a refining-hearth, and a heating-furnace, in combination with means for conveying the waste gases of the blast-furnace under the receiving-hearth, under the series of storing-hearths and under the refining-hearth, and thence into the flame of the heating-furnace, and the mixed gases and flame over the refining, the series of storing, and the receiving hearth.

11. The blast-furnace, a receiving-hearth, a storing-hearth, a refining-hearth, and a heating-furnace with an air-blast pipe, in combination with means for conveying the waste gases of the blast-furnace into the flame of the heating-furnace and the mingled gases and flame over the refining, the storing, and the receiving hearth and under the bottom of the blast-furnace.

12. The blast-furnace, a receiving-hearth, a series of storing-hearths, a refining-hearth, and a heating-furnace with an air-blast pipe, in combination with means for conveying the waste gases of the blast-furnace into the flame of the heating-furnace and the mingled gases.

and flame over the refining, the series of storing, and the receiving hearth and under the bottom of the blast-furnace.

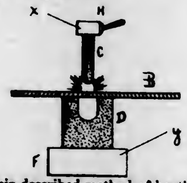
487,606. COATING SURFACES WITH PLASTIC MATERIAL. MELVIN R. CHURCH, Grand Rapids, Mich. Filed Mar. 30, 1892. Serial No. 427,059. (No specimens.)



Claim.—1. The hereinbefore-described mode of applying a plastic or semi-plastic material to walls or other surfaces, the same consisting in impelling said material through a pipe and directing it in a divided condition upon the said surfaces.

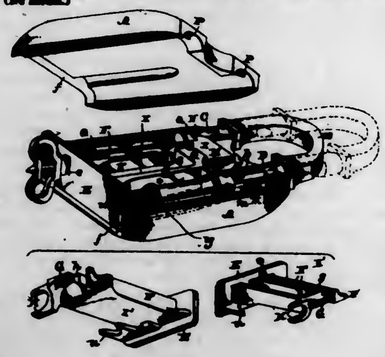
2. The hereinbefore-described mode of applying a plastic or semi-plastic material to walls or other surfaces, consisting in impelling said material through a pipe and directing it in a divided condition upon said surface and then spraying oil or like material over said material.

487,607. METHOD OF ARC AND INCANDESCENT METAL-HEATING. CHARLES L. COFFIN, Detroit, Mich. Filed Aug. 6, 1892. Serial No. 442,335. (No specimens.)



Claim.—The herein-described method of heating metals electrically, consisting in heating the material on one side by contact with a conductor in electrical connection with one terminal of a generator and heating the material on the other side by a voltaic arc.

487,608. PADLOCK. ROBERT J. COLVIN, Lancaster, Pa., assignor to David P. Bitner, same place. Filed July 26, 1892. Serial No. 441,467. (No model.)



Claim.—1. A lock comprising a bolt having a projecting key-operating projection, a keyway at one side thereof, and a hood at one side of the keyway, extending over the said key-operating projection of the bolt, substantially as specified.

2. A lock and a key therefor, consisting of a casing, a bolt having a key-operating projection extending therefrom, a keyway at one side of the said projection, a hood at one side of the keyway and projecting over the said key-operating projection, and a key having a doubled inner end which passes under the said hood for operating the said projection when turned.

3. A lock comprising a bolt having a key-operating projection, a keyway, a hood which extends over the key-operating projection, and a lip at one side of the keyway adjacent to the said operating projection, and a key constructed to operate in conjunction therewith.

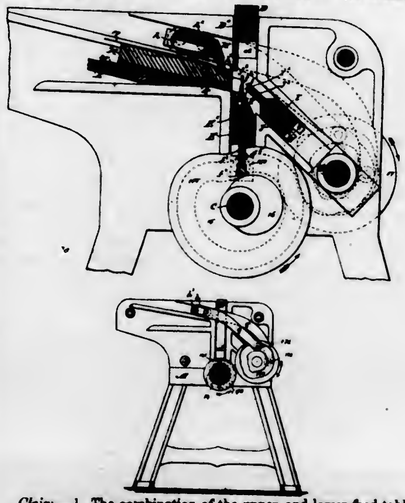
4. A lock comprising a casing provided with two openings, a shackle provided with two arms projecting through the said openings, the said arms having each a recess formed, respectively, in opposite sides thereof, and a bolt placed and adapted to move at right angles to the said arms, one end of the bolt being between the said arms and engaging a recess in the inner side of one of the arms, the other end of the bolt extending around the other arm and into a recess formed in the outer side of that arm, whereby a double lock is formed for the shackle.

5. A lock comprising a casing, a bolt, an end piece having rigidly secured thereto an inwardly-projecting keyway having projecting arms forming a guideway for a shackle-arm, and a shackle having an arm provided with a portion sliding in the said arms.

6. A lock comprising a casing having an open end, a bolt, a shackle extending into the casing, a spring having one end behind the bolt and the other end adjacent to the open end of the casing, a keyway, an end piece, and a projection on the end piece, extending over the opposite end of the spring, substantially as described.

7. A lock comprising a casing having an open end, a shackle having an arm extending into the casing, a bolt for locking the shackle, a spring for the bolt, and an end piece having an extension provided with a longitudinal keyway, a hood for a portion of the bolt, arms for guiding the shackle-arm, and an extension projecting over the said spring.

487,609. MACHINE FOR RIMMING SHOW-CARDS, &c. THOMAS W. G. COOK, New York, N. Y., assignor to himself and Samuel Koffelt, same place. Filed July 14, 1892. Serial No. 440,047. (No model.)



Claim.—1. The combination of the upper and lower feed-tables K and L, a movable knife E and a movable gage F, arranged in juxtaposition to the inner end of the upper feed-table, a movable bending-die H, located above the upper feed-table, a movable compressor D', located above the knife and the gage, a pair of alternately-moving bending-blades I' and J' in rear of the bending-die, and operating devices for imparting timed movements to the knife, the gage, the bending-die, the bending-blades, and the compressor, substantially as described.

2. The combination of the upper and lower feed-tables K and L, a reciprocating knife E and a reciprocating gage F, arranged in juxtaposition to the inner end of the upper feed-table, a reciprocating

and oscillating bending-die H, located above the upper feed-table, a vertically-reciprocating compressor D', arranged above the knife, a pair of alternately-moving bending-blades I' and J', located in rear of the knife and bending-die, and cam mechanism for operating the knife, the gage, the bending-die, the compressor, and the bending-blades, substantially as described.

3. The combination, with a feed-table L, of a rising-and-falling gage F, located in juxtaposition to the inner end of the feed-table, a rising-and-falling knife E', interposed between the gage and the feed-table, a movable bending-die H, arranged above the knife and feed-table, a reciprocating bending-blade located in rear of the gage, and means for imparting timed movements to the gage, the knife, the bending-die, and the bending-blades, substantially as described.

4. The combination, with a feed-table L, of a rising-and-falling gage F, arranged in juxtaposition to the inner end of the feed-table, a rising-and-falling knife E', interposed between the gage and the feed-table, a movable bending-die H, located above the knife, a pair of alternately-reciprocating bending-blades located in rear of the gage, and means for imparting timed movements to the gage, the knife, the bending-die, and the bending-blades, substantially as described.

5. The combination of the upper and lower feed-tables K and L, a shouldered gage F, arranged in juxtaposition to the inner end of the upper feed-table, a shaft C, located below the gage and provided with an eccentric 16, devices acted on by the eccentric and connected with the gage for controlling the position of the latter, a movable knife E', interposed between the gage and the feed-tables, a bending-die H, located above the knife, a pair of alternately-moving bending-blades I' and J', arranged in rear of the gage, a compressor D', located above the gage and bending-blades, and means for imparting timed movements to the gage, the knife, the bending-die, the bending-blades, and the compressor, substantially as described.

6. The combination of the upper and lower feed-tables K and L, a gage F, arranged in juxtaposition to the inner end of the upper feed-table, a knife E', interposed between the gage and the feed-tables, a bending-die H, located above the knife and provided with gudgeons *k*, extending through slots in the frame of the machine, a shaft G, located in rear of the gage and provided with a cam 17, the arms *g g'*, extending from the gudgeons of the bending-die and engaging said cam for operating said die, a pair of alternately-moving bending-blades I' and J', arranged in rear of the gage, a compressor D', located above the knife, and means for imparting timed movements to the gage, the knife, the bending-blades, and the compressor, substantially as described.

7. The combination of the upper and lower feed-tables K and L, a gage F, arranged in juxtaposition to the inner end of the upper feed-table, a knife E', interposed between the gage and the feed-tables, a bending-die H, located above the knife, a shaft G, provided with a cam 18, the alternately-moving bending-blades I' and J', arranged in rear of the gage and provided with arms *i j*, which engage the said cam, a compressor D', located above the knife, and means for imparting timed movements to the gage, the knife, the bending-die, and the compressor, substantially as described.

8. The combination of two separate feed-tables, a reciprocating gage arranged in juxtaposition to the inner ends of the feed-tables, a reciprocating knife interposed between the gage and the feed-tables, a reciprocating compressor which moves between the feed-tables and the gage, a movable bending-die located in juxtaposition to the compressor and to the inner end of one of the feed-tables, a pair of alternately-moving heads provided with bending-blades and located at the side of the gage opposite the knife, a cam mechanism for operating the bending-blades and the bending-die, and a cam mechanism for operating the gage, the knife, and the compressor, substantially as described.

487,610. WITHDRAWN.

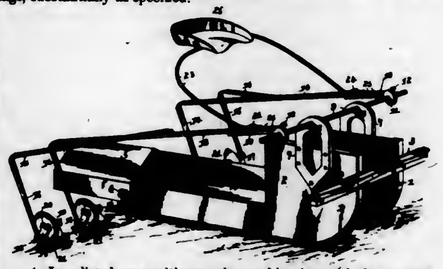
487,611. WITHDRAWN.

487,612. LISTED-CORN CULTIVATOR. JACOB H. DONNER, Aurora, Neb. Filed Sept. 5, 1892. Serial No. 445,076. (No model.)

Claim.—1. In a listed-corn cultivator, the combination, with a suitable framework, of a pair of opposite rearwardly-extending beams terminating at their lower ends in standards, elbow-shaped castings swiveled on the lower ends of the beams, means for locking the castings upon the standards, and cultivator-disks rotatably mounted on bearings with which the castings are provided, substantially as specified.

2. In a listed-corn cultivator, the combination, with a framework, of a pair of rearwardly-disposed cultivator-beams terminating in standards, elbow-shaped castings swiveled on the standards and provided at their inner ends with reduced bearings, disks mounted on the bearings, and set-bolts passed through elbow-shaped castings and bearing on the standards, substantially as specified.

3. In a listed-corn cultivator, the combination, with a framework, of a pair of rearwardly-extending beams terminating at their rear ends in depending standards, supplemental diverging beams secured to the main beams and terminating at their rear ends in depending standards, elbow-shaped castings swiveled on the standards, means for locking them, and cultivator-disks mounted rotatably on the castings, substantially as specified.

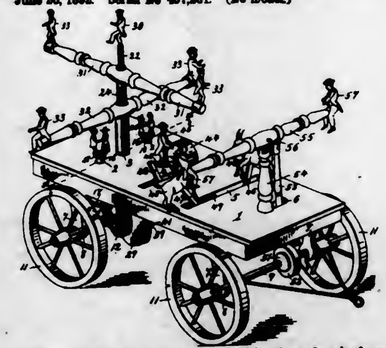


4. In a listed-corn cultivator, the combination, with the opposite runners, bearings located at the front ends of the same, a rock-shaft mounted in the bearings, beams extending rearwardly from the rock-shaft at opposite sides of the runners and terminating at their rear ends in depending standards carrying bearings, diverging supplemental beams secured to the main beams and terminating at their rear ends in standards carrying bearings, and cultivator-disks mounted on the bearings, substantially as specified.

5. In a listed-corn cultivator, the combination, with the opposite runners, the standards rising therefrom and provided with bearings, the transverse rock-shaft mounted in the bearings, the castings mounted on the rock-shaft, and the set-bolts passing through the castings and impinging upon the rock-shaft, of a pair of main beams bolted to the castings and terminating at their rear ends in standards, cultivators mounted on the standards, and the U-shaped seat-supporting standard mounted on the beams, and means for adjusting the seat-supporting standard upon the beams, substantially as specified.

6. In a listed-corn cultivator, the combination, with the opposite runners, standards rising therefrom, a hood connecting the runners, brackets rising from the standards and provided with bearings, a transverse rock-shaft projecting beyond the standards, castings adjustably mounted upon the rock-shaft, beams secured to the castings, supplemental beams secured to the main beams, elbow-shaped castings swiveled on the standards of the beams, means for adjusting the same, and cultivator-disks rotatably mounted on the castings, substantially as specified.

487,613. TOY WAGON. ALBERT G. DOUTHIT, Elkhart, Tex. Filed June 20, 1892. Serial No. 437,231. (No model.)



Claim.—1. In a toy wagon, the combination of a platform having axles in connection therewith and road or ground wheels thereon, eccentrics and friction-wheels on the rear axle, vertical shafts operated by said eccentrics and having tubular shafts thereon supporting figures in couples, and frictional wheels on said tubular shafts engaged by the aforesaid frictional wheels, substantially as described.

2. In a toy wagon, the combination of a platform having axles in connection therewith and road or ground wheels on said axle, a central solid shaft having horizontally-disposed frictional wheels thereon, tubular shafts mounted on said solid shaft and also carrying a simi-

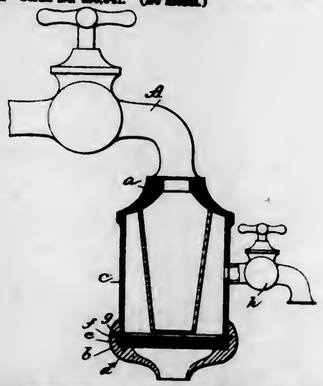
larly-disposed frictional wheel, frictional wheels mounted on said axle, one of which has a double engaging-rim, said wheels being adapted to bear against the aforesaid horizontally-disposed frictional wheels, and arms mounted on the said tubular shafts and adapted to be rotated in reverse directions, said arms and solid shaft supporting figures, substantially as described.

3. In a toy wagon, the combination of a platform having axles in connection therewith with road or ground wheels thereon, wheels on the rear axle, having pins projecting therefrom, a rock-shaft consisting of a solid and tubular portion, each of which is supplied with arms adapted to be engaged by the said pins, an arm supported by the rear portion of the tubular part of said shaft and extending above the platform, a drum adapted to be struck by the upper end of the said arm, an arm secured to the front portion of said tubular part of the shaft and also projecting upwardly through and above the said platform and supporting a figure on the upper end thereof, an arm secured to the front portion of the solid part of the said shaft and also extending upward through and above the platform and supporting a figure on the upper end thereof similarly to the figure of the last-named arm and in reverse position thereto, a stop for one of said arms, and a yielding device connected to each of the said front arms, substantially as described.

4. In a toy wagon, the combination of a platform having axles in connection therewith with road or ground wheels thereon, a rock-shaft mounted between said axles below the said platform, arms at the front part of said rock-shaft, extending above the platform and supporting reversely-arranged figures, another arm at the rear part of said shaft, projecting above the platform, a drum in the plane of oscillation of said latter arm, and wheels on the rear axle, adapted to operate said rock-shaft and the several arms carried thereby, substantially as described.

5. In a toy wagon, the combination of a platform having axles in connection therewith and road or ground wheels on said axle, figures arranged in pairs at the rear part of said platform and having a rising and a rotary movement, arms revolving in reverse directions and supporting figures adjacent to said pairs or figures, a drum in advance of said arms, adapted to be sounded by an oscillating arm, reversely-arranged oscillating figures in advance of said drum, and a teetering arm at the front part of the platform, all of said parts operating substantially as and in the manner set forth.

487,614. FILTER. WARREN R. EVANS, Portland, Me. Filed Feb. 9, 1892. Serial No. 420,841. (No model.)

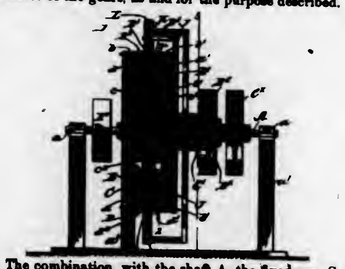


Claim.—In combination, the body portion, the upper and lower heads removably secured thereto, the said lower head carrying the filtering material and the upper head having secured thereto to be removed therewith a central conical directing-tube extending down within the body of the filter, with a space between its lower end and the filtering material, and the space within the said body and about the central tube being free, and the faucet *k*, opening through the body portion to the free space, substantially as described.

487,615. POWER-TRANSMITTING MECHANISM. DAVID G. FRASER, New Market, assignor of one-half to John A. Frosh, Somerville, N. J. Filed Mar. 8, 1892. Serial No. 424,262. (No model.)

Claim.—1. The combination, with a supporting-frame, a shaft journaled therein, and a drive-wheel G, fixed thereon, of a tubular shaft mounted on the main shaft, having one or more toothed wheels C, arranged to mesh with the teeth on and traverse the periphery of the wheel G, and an internally-toothed rim mounted upon the peripheral edges of the wheels C and carried thereby, substantially as and for the purpose described.

2. The combination, with the main shaft A, a drive-gear G, fixed thereto, the casing-sections B and B', having inwardly-projecting flanges, the tubular shaft C', mounted on the shaft A, having one or more radial arms, and the gear-wheels C, journaled thereon and held to traverse the periphery of said wheel G, said wheels having laterally-extending smooth face portions, of the rim D, having an internally-depressed toothed section adapted to mesh with the outer faces of the wheel C and smooth seat portions adapted to seat upon the smooth faces of the gears, as and for the purpose described.



3. The combination, with the shaft A, the fixed gear G, and the tubular shaft C', having a radial arm or arms provided with gears traversing the wheels G, of the casing-sections B B', the internally and externally toothed rim D, its inner teeth held in engagement with the wheels C, the section B fixedly held, the section B' movable on the shaft A and provided with one or more radial arms having gears K, held to mesh with the outer teeth of the rim D, and the second internally-toothed rim L, independently mounted and held to mesh with the gears K, all arranged substantially as and for the purpose described.

4. The combination, with the fixed casing-section B, the shaft A, mounted therein, and a fixed gear G on said shaft, of the tubular shaft C', mounted on the shaft A and carrying one or more gears C, arranged to traverse the gear G, the casing-section B', loosely held on the shaft C', the rim D, having an internally-toothed face held to mesh with the peripheral faces of the gear C, and means for locking such rim to the fixed inner or the loose outer casing-section, substantially as and for the purpose described.

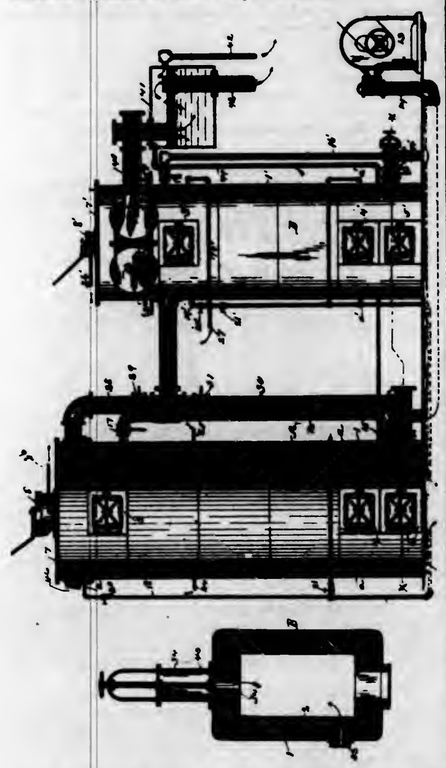
5. The combination, with the shaft A and the gear G, the fixed casing-section D, the tubular shaft C', having spider-arms, gears C, mounted on such arms and held to traverse the gear G, and the rim D, having its outer face formed with a central toothed periphery and adjacent belt-receiving portions, its inner face having gears held for engagement with the gears C, of the casing-section B', having a tubular shaft portion fitting loosely on the shaft C' and spider-arms carrying independently-journaled gears K, said gears held to engage the outer toothed portion of the rim D, the rim L, mounted to engage the gears K, and means for locking the rim D to the section B or B' and the tubular shaft B× to the shaft C', all arranged substantially as shown and described.

487,616. APPARATUS FOR MANUFACTURING GAS. JAMES GRAY, Lima, Ohio. Filed May 23, 1892. Serial No. 434,708. (No model.)

Claim.—1. In gas-producing apparatus, the combination of a gas-generator, one or more retorts located in the combustion-chamber of said generator and communicating with said combustion-chamber, a valve controlling the communication between said combustion-chamber and said retort or retorts, a pipe connecting the bottom of said generator with said retort or retorts, controlled by suitable valves, and a blast device connected with the upper and lower parts of said generator, and valves in said blast connections, substantially as set forth.

2. In gas-producing apparatus, the combination of a gas-generator, a blast device connected with the upper and lower parts of said generator, gas connections from the upper and lower parts of said generator to a second gas-generator, said second gas-generator, and one or more retorts located in the combustion-chamber of said second generator and communicating with said combustion-chamber, the whole system being provided with suitable valves, substantially as set forth.

3. In gas-producing apparatus, the combination of a gas-generator, a blast device connected with said generator, a gas connection to a second gas-generator, said second gas-generator, one or more retorts located in the combustion-chamber of said generator and communicating with said combustion-chamber, a valve controlling the communication between said combustion-chamber and said retort or retorts, a pipe connecting the bottom of said generator with said retort or retorts, controlled by suitable valves, and a blast device connected with the upper and lower parts of said generator, and valves in said blast connections, substantially as set forth.



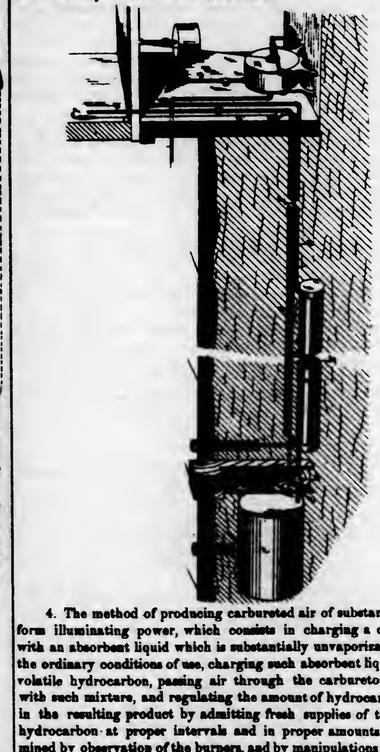
4. In gas-producing apparatus, the combination of a gas-generator, a blast device connected with said generator, a gas connection to a second gas-generator, said second gas-generator, one or more retorts located in the combustion-chamber of said second generator and communicating with said combustion-chamber, and a valve controlling the communication between said retort or retorts and the combustion-chamber, substantially as set forth.

487,617. PROCESS OF CARBURETING AIR. ARTHUR R. GRIFFIN, Newark, and WILLIAM C. CLARKE, Bloomfield, N. J. Filed Apr. 7, 1892. Serial No. 428,248. (No model.)

Claim.—1. The method of producing from the lighter products of petroleum gas of substantially-uniform illuminating power, which consists in charging a carburetor located outside the building lighted or at a distance from the burners with an absorbent liquid not sufficiently volatile to produce the desired quality of gas, charging such absorbent liquid with a more volatile hydrocarbon, passing air through the carburetor charged with such mixture, and regulating the amount of hydrocarbon vapor in the resulting product by admitting fresh supplies of the volatile hydrocarbon at proper intervals and in proper amounts, as determined by observation of the burners, and by manipulations performed in the vicinity thereof, substantially as described.

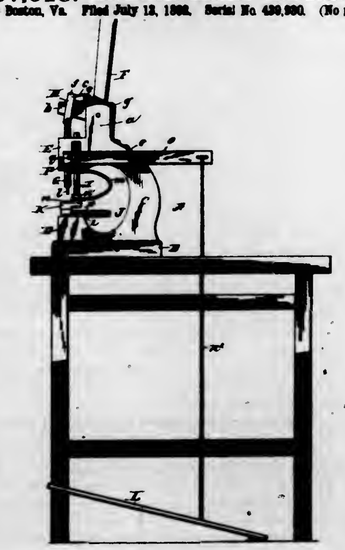
2. The method of regulating to a practically-uniform standard the volatility of the hydrocarbon liquid in a carburetor for carbureting air, which consists in charging the carburetor with an absorbent liquid not sufficiently vaporizable to produce the desired quality of vapor and charging such absorbent with supplies of volatile hydrocarbon at proper intervals and in proper amounts, as determined by observation of the burners, and by manipulations performed in the vicinity thereof, substantially as described.

3. The method of regulating to a practically-uniform standard the volatility of the hydrocarbon liquid in a carburetor for carbureting air, which consists in charging the carburetor with an absorbent liquid which is substantially unvaporizable under the ordinary conditions of use and charging such absorbent liquid with supplies of volatile hydrocarbon at proper intervals and in proper amounts, as determined by observation of the burners.



4. The method of producing carbureted air of substantially-uniform illuminating power, which consists in charging a carburetor with an absorbent liquid which is substantially unvaporizable under the ordinary conditions of use, charging such absorbent liquid with a volatile hydrocarbon, passing air through the carburetor charged with such mixture, and regulating the amount of hydrocarbon vapor in the resulting product by admitting fresh supplies of the volatile hydrocarbon at proper intervals and in proper amounts, as determined by observation of the burners, and by manipulations performed in the vicinity thereof, substantially as described.

487,618. LOOP-RIVETING MACHINE. ELVIS H. GRIFFIN, South Boston, Va. Filed July 12, 1892. Serial No. 439,990. (No model.)



Claim.—1. In a loop-riveting machine, the combination, with a presser-foot, a base below the same, and a spring-anvil having an upper branch pressing upwardly against the foot, of a punch or riveter and means for reciprocating the punch, substantially as specified.

2. In a loop-riveting machine, the combination, with a rivet-holder, a vertical operating rivet-punch adapted to pass therethrough, and means for actuating the same, of a U-shaped spring-anvil, the lower branch of which is secured to and slightly above the base of the machine and the upper branch of which presses upwardly against the under side of the holder, substantially as specified.

3. In a loop-riveting machine, the combination, with a perforated rivet-holding presser-foot, a rivet-punch adapted to pass therethrough, and means for operating the same, of a U-shaped spring-anvil, the lower branch of which is secured to and slightly above the base and the upper branch of which presses upwardly against the foot and is perforated for the passage of the punch, substantially as specified.

4. In a loop-riveting machine, the combination, with a spring loop or anvil for holding the article to be riveted, of a combined rivet-holder and presser-foot, a retracting-spring for normally holding said presser-foot in operative position, a rivet-punch, and a system of levers for actuating said punch, substantially as specified.

5. In a loop-riveting machine, the combination, with a spring loop or anvil for holding the article to be riveted, of a spring-actuated presser-foot in engagement therewith, a retracting-spring for normally holding said presser-foot in operative position, and a treadle and intermediate system of levers for controlling the removal of the presser-foot from the anvil, substantially as specified.

487,619. HARNESS-BUCKLE. THOMAS M. GUTHRIE, Hutchinson, Mo. Filed Apr. 6, 1892. Serial No. 428,051. (No model.)

Claim.—The herein-described harness-buckle, consisting of the side bars 1 2, connected near their forward ends by a broad transverse plate or bar 3, said side bars extending in front of said bar or plate and being divided and flared to form a fork, and rear cross-bars 10, 11, 12, and 13, forming double loops, substantially as described.

487,620. HOT-WATER HEATER. MICHAEL B. HERBERT, St. Joseph, Mo. Filed Mar. 4, 1892. Serial No. 423,793. (No model.)

Claim.—1. The combination, in a hot-water heater essentially as described, with the front and end portions formed with the feed and exit openings, as shown, and the sides or casing, of a hollow top section having a depending water-leg, whereby to divide the upper part of the fire-chamber into two compartments, substantially as and for the purpose described.

2. In a water-heater substantially as described, the combination, with the end sections A and B, of the top compartment C, communicating at its ends with the end sections and formed with a depending water-leg G, substantially as and for the purpose described.

3. In a water-heater substantially as described, the combination of the front and rear sections A B, the feed and exit openings H and N, arranged as shown, and the top section C, communicating with the end sections and formed with a depending water-leg G, of the tubular grates I, connecting the water-leg and front section, substantially as and for the purpose described.

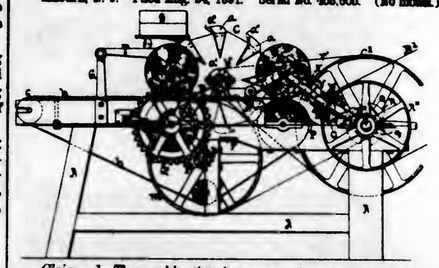
4. A water-heater comprising the end water-sections A and B, the casing-plates E E', the top chamber C, having a depending water-leg G, the tubular heaters K, connecting the front and rear sections A and B, and the tubes J, connecting the headers and the top section C, substantially as and for the purpose described.

5. The combination, in a water-heater essentially as described, of the front and end sections A and B, formed with the feed and exit openings, as shown, the top section C, having a depending water-leg G, whereby to divide the upper part of the fire-chamber into two compartments and having a series of drop-tubes extended down into the rear compartment substantially as and for the purpose described.

6. The combination, with the front and rear sections A and B, the top section C, communicating therewith, having a depending leg G, the grates I, the headers K, connecting the front and rear sections, the pipes J, connecting the headers and the top section C, and the pipes J', connecting the headers and the water-leg, all arranged substantially as shown and described.

7. The combination, with the front and rear sections A and B, the top section C, communicating with the sections A and B, having a depending water-leg, the grate-tubes I, side tubes J, and headers K, of the drop-tubes M, projected down from the upper chamber, the lower ends thereof extending to a point below the intense heat-current of the fire, all arranged substantially as and for the purpose described.

487,621. MACHINE FOR CUTTING RAGS. EDWARD S. HIDDEN, Milburn, N. J. Filed Aug. 24, 1891. Serial No. 403,605. (No model.)



Claim.—1. The combination, in a rag-cutting machine, of revolving slitting-cutters composed of knife-edged blades ranged around a central disk, means of supporting the stock in front of such cutting-blades, feed-rolls above and beneath the stock, which hold it distended against the cutting action of the blades at the cutting-line thereof, and a sectional apron constructed and acting both to convey the stock to the feed-rolls and carry it away from the cutters, substantially as specified.

2. The combination, with the revolving cutters, of under and upper feeding-rolls and a conveying-apron made in longitudinal sections or belts, the upper rolls arranged in pairs, one to each apron-section, and adapted to yield independently to the local irregularities of the stock.

3. In combination, the revolving bladed slitting-cutters, the conveying-apron, a stationary support for the stock in front of said cutters, and the feed-rolls disposed on both sides of the cutters at the cutting-line and holding the stock distended against the action of the cutters thereon.

4. In combination, revolving slitting-cutters for cutting the stock into strips, a feeding device, a conveying-apron which carries the strips past the cutters, and means of contracting the strips and giving freedom thereto as they pass between the cutters, as set forth.

5. In combination with revolving cutters for slitting the stock into strips, means of support for the stock on both sides of the cutters, and a sectional conveying-apron, the shoes I, constructed as described and operating to govern the stock when cut into strips and prevent clogging, as set forth.

6. In combination, the rotary slitting-cutters, the feeding-rolls, means for conveying the stock to the feed-rolls, arranged and serving to carry it past the cutters, and shield-plates at the rear of the cutter-shaft, which prevent the cutter-blades from catching the stock as they rise in their rotary motion.

7. In combination, the revolving slitting-cutters, the feed-rolls, the sectional conveying-apron carrying the stock past the cutters, and a horizontal table set below the axis of the cutters, on which the slitted stock falls in strips.

8. The combination of the slitting-cutters, the conveying-apron, the receiving-table, and clearing-plates P for clearing the cut stock from the surface of the apron and preventing the same from being carried down with the apron as it returns below the table O.

9. The combination of the slitting-cutters, the feeding-rolls, a sectional conveying-apron which both conveys the stock to the feed-rolls and carries it away from the cutters, a table on which the slitted stock falls, and serrated claw-rolls W, which seize the stock and draw it away from the conveying-apron.

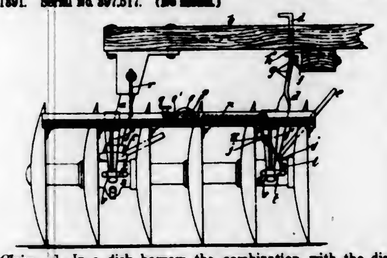
10. The combination, with the slitting-cutters, the feed-rolls therefor, and mechanism for actuating the same, of a clutch arranged for disconnecting the operation of the feed without stopping the machine, as set forth.

11. The combination of revolving chopping-knives, means for feeding the stock thereto in strips, and guiding-ribs which maintain the strips in right lines and guide the strips to the chopping-knives.

12. The combination of revolving slitting-cutters, mechanism for feeding the stock thereto, conveying it away, and discharging it in strips on a receiving-table, cross-cutting knives acting against a stationary blade at the end of the table, and serrated rolls which seize the slitted stock and transfer it to the said chopping-knives.

13. In combination, the table supporting the stock, a chopping device consisting of a series of knives arranged spirally around a cylinder with their cutting-edges set at an angle to the axis thereof and adapted to cut against a stationary blade at the end of the table, serrated claw-rolls to feed the stock thereto in strips, and guiding-ribs to guide the stock and present the strips at right angles to the chopping-cutters.

487,622. DISK HARROW. ANDREW G. HILL, Prescott, Canada; Torrence R. Russell administrator of said Hill, deceased. Filed June 25, 1891. Serial No. 397,517. (No model.)



Claim.—1. In a disk harrow, the combination, with the disk gangs, of a notched bar whereby the disk gangs of a harrow are rendered rigid or flexible in the vertical plane at will of driver while they are working at a fixed angle over the field, substantially as described.

2. In a disk harrow, a scraper-beam pivotally mounted upon the gang and adjusted laterally thereon by means of the vertical spring *j*, connecting-rod *s*, and locking foot-lever *q*, substantially as described.

3. In a disk harrow, the combination, with the scraper-beam and scraper-beam down-hangers, of disk-gang journal-boxes upon which said down-hangers are supported in slots on said boxes, the lower portion of the scraper-beam down-hanger being of semicircular hook shape and having movement in said slots, substantially as described.

487,623. GEM-SETTING. CECIL J. HUBBERT, Philadelphia, Pa. Filed June 15, 1892. Serial No. 436,816. (No model.)

Claim.—1. The combination, in a jewel-setting, of the main stone cut in the usual way with a secondary stone mounted at the rear of and beyond said main stone, substantially as specified.

2. The combination of the setting, the main stone having a faceted face and back, and a secondary stone smaller in diameter than the main stone and held in position at the rear of and beyond the same, substantially as specified.

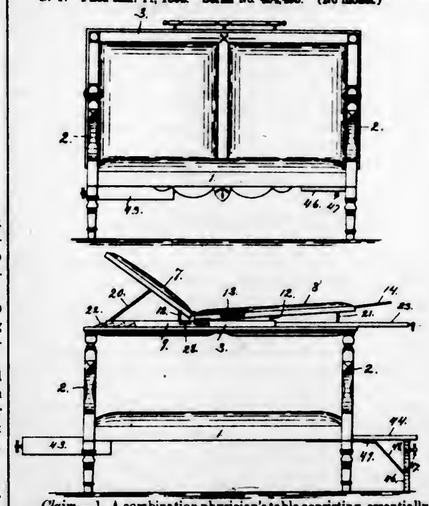
3. The combination of the setting, having a ledge in its base and a rim surrounding said ledge, with a secondary stone mounted in the base and within the rim, prongs on the setting, and a main stone held in position directly above the secondary stone by the said prongs, substantially as specified.

487,624. COVER-PLATE FOR LAMP-CHIMNEYS. JAMES H. HUNT, Massillon, Ohio. Filed Mar. 2, 1892. Serial No. 423,545. (No model.)

Claim.—1. A lamp-chimney cover comprising a main plate adapted to be held on the top of the lamp-chimney, having an aperture of less diameter than the chimney, and an adjustable plate movable on the main plate and adapted to be moved in position to increase or diminish the size of the aperture in the main plate, substantially as and for the purpose described.

2. As a new article of manufacture, a lamp-chimney cover consisting of a non-combustible base, centrally-apertured plate having depending guide-fingers, whereby it is adapted to be held on the lamp-chimney, and guides on its upper face, and a valve or movable member having a central aperture held to slide on the base-plate between its upper guides, substantially as and for the purpose described.

487,625. PHYSICIAN'S TABLE. JOHN W. KALER, Franklinville, N. Y. Filed Mar. 11, 1892. Serial No. 424,496. (No model.)



Claim.—1. A combination physician's table consisting, essentially, of a settee having pivoted back, which may be thrown into a horizontal position upon the frame, forming a table-top, said table-top having hinged leaves on its upper side adapted to be held in inclined positions, adjustable stirrups connected to one of the leaves, a sliding arm-rest mounted in the same leaf, spring-tensioned connections for holding the leaves in place, a sliding extension-board arranged beneath the leaves, pivoted lever secured to the lower end of the table and connected to vertical rods which pass up through the frame for tilting the table-top, and a sliding step with hinged support arranged at one end of the table, the whole combined and operating substantially as shown and described.

2. In a physician's table, stirrups for the patient's heels to rest in, in combination with a supporting-frame having grooved ways therein and sliding blocks held in said ways and having pivoted thereto the inner ends of said stirrups to permit them to have lateral movement, substantially as set forth.

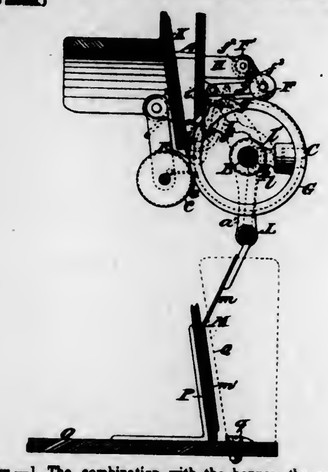
3. In a physician's table, stirrups for the patient's heels to rest in, in combination with a supporting-frame, grooved guideways secured thereto, sliding blocks resting in said guideways and having pivoted thereto the inner ends of said stirrups, and the projections secured to the outer ends of said guideways and adapted to receive between them the arms or shanks of said stirrups, substantially as set forth.

4. In a physician's table consisting, essentially, of the frames 1 and 2 and the table-top 3, and the pivoted levers 31 and 32, pivoted to the vertical rods 35 and 37 for tilting the table to a side incline, substantially as shown and described.

5. In a physician's table, the combination of a settee having its back standards or arms provided upon the rear side near the upper ends with hinged plates, rollers mounted upon the pintles or pivots of said hinged plates, and the table having said hinged plates sliding therein, substantially as specified.

6. In a physician's table consisting, essentially, of a frame with adjustable table-top, the sliding step 44, traveling in grooves 45, and hinged support 46, having the strap 48 secured to it at one end and passing around the step 44 and secured to the frame of the table at its other end, substantially as shown.

487,626. STAMP-CANCELING MACHINE. WILLIAM B. LAMPHEAR, Brooklyn, N. Y., assignor of two-thirds to Timothy Merrick and George H. Tyner, Holyoke, Mass. Filed June 11, 1892. Serial No. 436,894. (No model.)



Claim.—1. The combination, with the hopper, the canceling-wheel, means for operating it, an inking-roller, and means for moving the inking-roller toward and away from the canceling-wheel, of an arm supported to move with the inking-roller and having an engagement with a fixed support to hold the inking-roller away from the faces of the type, said arm being under the control of the falling letter within the hopper to hold it away from said fixed support and allow the inking-roller to engage the type on the canceling-wheel, substantially as set forth.

2. The combination, with the hopper, the canceling-wheel, the ink-supply, and the vibrating inking-roller, of a spring-actuated arm depending from the inking-roller support and extended normally across the interior of the hopper, and a fixed stop with which said arm is adapted to engage and hold the inking-roller away from the canceling-wheel, the said arm being under the control of a letter within the hopper to hold it out of engagement with said fixed stop, substantially as set forth.

3. The combination, with the canceling-wheel and means for operating it, of the reciprocating stacker, the laterally-tilted receiving-trough along which the stacker is adapted to move, and a stop on the face of the trough in position to hold the letter during its passage over it out of its subsequent adjustment under the influence of gravity, substantially as set forth.

487,627. LAST. ARTHUR M. LEIGHTON, Fort Townsend, Wash., assignor of one-half to James Homer Livermore, same place. Filed Nov. 25, 1891. Renewed Nov. 8, 1892. Serial No. 451,314. (No model.)

Claim.—1. The combination, with the toe and heel sections in an adjustable last, of a reach-bar connecting the two and provided with a locking-notch, a spiral spring wound around a portion of the reach-bar and adapted to bear at one end against the heel portion and at the other against the reach to force the toe and heel parts away from each other, and a pivoted catch *c*, fulcrumed to the heel-section and adapted to enter the notch of the reach to lock the parts together against the tension of the spring while inserting the last in the shoe, substantially as described.

2. The combination of the reversible toe-section B, having slot *e*, the heel-section A C, the reach D, having cross-bar *b*, stem *f*, and a notch on the side, the spring *d*, surrounding the stem and pressing at one end against the heel-section and at the other against the reach, and the locking-catch *c*, pivoted or fulcrumed to the heel-piece and adapted to lock in the notch of the reach, substantially as shown and described.

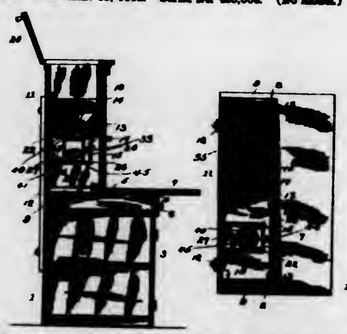
487,628. SPRAY-NOZZLE. WILLIAM C. LOCKHART, Waterloo, Ind. Filed May 11, 1892. Serial No. 432,687. (Model.)

Claim.—1. The combination, with a discharge-nozzle, of a flat spray-plate inclosing one end of said nozzle and provided with a flanged spray-slot, the flanges of the plate projecting from one side or face thereof, substantially as set forth.

2. The combination of a discharge-nozzle having a force-chamber at its outer end and a flat spray-plate inclosing said chamber and provided with a spray-slot and flanges projecting from the sides of said slot into said chamber, substantially as set forth.

3. The combination of a nozzle having a flared force-chamber at its outer end, a flat spray-plate inclosing said chamber and provided with a spray-slot, and opposite flanges projecting from the sides of said slot into said chamber and meeting the plate in rounded corners, and a nozzle-cap removably clamping said spray-plate over said chamber, substantially as set forth.

487,629. KITCHEN-CABINET. ROBERT G. MAY, Grand View, Ind. Filed Mar. 15, 1892. Serial No. 426,008. (No model.)



Claim.—1. A kitchen-cabinet comprising a base whose top has a transverse opening, a drawer within the base under said opening, a kneading-table sliding over said top and adapted to close the opening, a body supported above the table and open at its bottom above the top in rear of said opening, and a sifter in the body, as and for the purpose set forth.

2. A kitchen-cabinet comprising a base, cleats secured across the rear half of the ends of said base, a body resting on said cleats, spring-strips screwed to the backs of the base and body, and a table sliding upon said base under the body, substantially as described.

3. A kitchen-cabinet comprising a base whose top has a transverse opening, cleats secured across the rear half of the ends of said base, a head resting on said cleats, spring-strips screwed to the backs of the base and head, a sifter in the head, a table sliding upon said top and having its rear corners cut away and passing between said cleats, and blocks on the cut-away corners impinging against the front of the head when the table is drawn out, substantially as described.

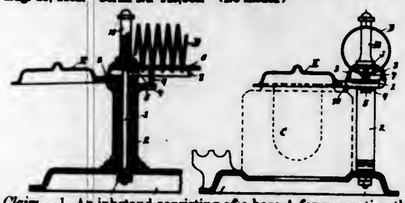
4. The combination, with a hopper having a mouth, a case below the same, a hinged door closing the front of the case and having in its body a central hole and a radiating slot, and a button holding the door closed, of a sifter removably inserted within said case and a rotary stirrer within the sifter and having a crank on its shaft, the latter being adapted to pass through and fit closely in said hole and the crank to pass through said slot, as and for the purpose set forth.

5. In a kitchen-cabinet, the combination, with the base having a horizontal partition provided with a cavity, of two doors hinged to the side edges of the base and their free edges closing together, a shaft journaled through one door, a button on the front end of said shaft and of a length adapted to reach over onto the other door, and a head on the inner end of the shaft set at right angles to the button

and shorter than said button, this head being adapted to seat in the cavity when the button engages the other door, substantially as hereinbefore described.

6. The combination, with a base having cleats secured upon its ends at the rear halves of their lengths and extending inwardly beyond said ends, of a table sliding on the top of the base and having cut-away rear corners to receive said cleats, strips secured under said table and projecting into the cut-away corners so as to pass beneath said cleats, and ledges secured to said ends and on which the strips slide, all as and for the purpose hereinbefore set forth.

487,630. INKSTAND. WALTER S. MENDENHALL, Covington, Ky., assignor to the Samuel C. Tatum Company, Cincinnati, Ohio. Filed Aug. 23, 1892. Serial No. 443,833. (No model.)



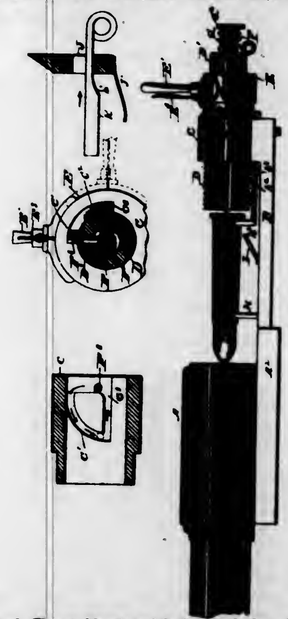
Claim.—1. An inkstand consisting of a base A for supporting the ink-wells, the posts 2, the frame 3, carried by the posts, the coiled rack D, connected at its ends with the said frame, and the lids E, hinged upon the posts, substantially as described.

2. An inkstand consisting of the base A for supporting the ink-wells, the posts 2, the frame 3, carried by the posts, and the laterally-swinging lids E, hinged to said posts beneath the ends of said frame, substantially as described.

3. An inkstand composed of the base A, posts 2, frame 3, provided with stops 9 10, and lids E, hinged to said posts, substantially as specified.

4. The combination, with the base A for supporting the ink-wells, of the posts 2, the frame 3, having its ends mounted on the posts, and a coiled rack D, having its extremities secured to the ends of the said frame, substantially as described.

487,631. RAPID-FIRE BREECH MECHANISM. ALFONSO MERCER, Norfolk, Va. Filed Mar. 26, 1892. Serial No. 426,894. (No model.)



Claim.—1. The combination of the barrel, the breech-block journaled in a carrier movable toward and from the barrel, the firing-pin in said breech-block, and the stud on said pin projecting through a slot in said breech-block and engaging a camway in the interior face of the carrier, whereby when the breech-block is partly turned to lock it in the breech said firing-pin is cocked, substantially as described.

2. The combination of the barrel, the breech-block having a shank journaled in a carrier movable toward and from the barrel, the firing-pin lying longitudinally in said shank and breech-block, the tension-spring thereon, and the stud projecting through a slot in the shank and engaging a triangular slot in the carrier, whereby when the shank is given a partial revolution to lock the breech-block the firing-pin will be automatically cocked and released, substantially as and for the purpose specified.

3. The combination of the barrel, the sliding plate, the breech-block carried thereby, and the cartridge rest and extractor *k'*, carried by said plate, substantially as described.

4. The combination of the barrel, the sliding plate, the breech-block carried thereby, the rest *k'*, and the spring-controlled rest H, carried by said plate, constructed and arranged to operate substantially as described.

5. The combination of the barrel, the carrier, the cartridge loading and unloading devices carried thereby, and the holders and flipper-plate and devices for operating the same, mounted on the carrier, whereby the exploded cartridge is knocked from the holders after it is withdrawn from the barrel, substantially as described.

6. The combination of the barrel, the slotted support attached thereto, the sliding plate moving in said support, the cartridge-rests thereon, and the flipper-plate I, mounted on said plate, and operating devices therefor, substantially as and for the purpose described.

7. The combination of the barrel, the sliding plate B, and the folding rest H, the movable rest *k'*, and the flipper I on said plate, all constructed and arranged to operate substantially as described.

8. The combination of the carrier, the breech-block journaled thereon, the firing-pin in said block, the tension-spring therefor, the stud attached to said pin projecting through a slot in the block and engaging an endless camway in the carrier, and the rebound-spring on said pin, all substantially as and for the purpose specified.

9. The combination of the carrier, the breech-block journaled thereon, the firing-pin in said block, the tension-spring therefor, the stud attached to said pin, projecting through a slot in the block and engaging a camway in the carrier, and the rebound-spring on said pin, and the handle and catch for turning and locking said block, substantially as and for the purpose described.

10. The combination of the barrel, the breech-block journaled in a carrier movable toward and from the barrel, the firing-pin in said breech-block, and the stud on said pin projecting through a slot in said breech-block and engaging a camway in the carrier, whereby when the breech-block is partly turned to lock it in the breech said firing-pin is cocked, in combination with a sear adapted to engage said pin and a sliding bolt for operating said sear, substantially as described.

11. The combination of the carrier, the breech-block journaled thereon, the firing-pin in said block, the tension-spring therefor, the stud attached to said pin projecting through a slot in the block and engaging a camway in the carrier, and the rebound-spring on said pin with the sear for locking said pin and the controlling devices therefor, substantially as and for the purpose set forth.

12. The combination of the barrel, the breech-block, and the interrupted screw-fastening between said breech-block and the barrel, and the rest and extractor attached to said block and adapted to enter a slot in the breech of the barrel below the breech-block, substantially as and for the purpose described.

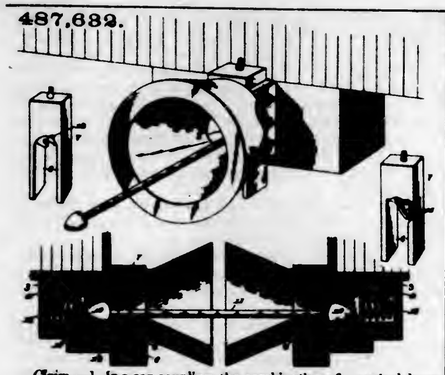
13. The combination, with the firing-pin, of the sear J and slidable bolt K, having an inclined shoulder or bevel *k*, adapted to engage and depress said sear when the bolt is drawn outward, substantially as and for the purpose specified.

14. The combination of the carrier, the sleeve thereon, the breech-block having a shank journaled in said sleeve, the firing-pin journaled in said shank and projecting therethrough, the spring on said pin within the shank, and the stud projecting through a slot in said shank and engaging a triangular camway in the sleeve, and the handle for turning said shank, and the slot and pin for limiting the rotation thereof, substantially as described.

15. The combination of the carrier, the sleeve thereon, the breech-block having a shank journaled in said sleeve, the firing-pin journaled in said shank and projecting therethrough, the spring on said pin within the shank, and the stud projecting through a slot in said shank and engaging a triangular camway in the sleeve, and the handle for turning said shank, and the slot and pin for limiting the rotation thereof, and the cartridge holding and extracting devices carried by said carrier in front of and below said breech-block, substantially as and for the purpose set forth.

487,632. CAR-COUPLING. RANSOM Y. MITCHELL, Findlay, Ohio. Filed Sept. 3, 1892. Serial No. 444,967. (No model.)

487,632.



Claim.—1. In a car-coupling, the combination of a conical draw-head having an opening at its rear end and terminating in a hollow draw-bar and having the bottom thereof inclined back of said opening and forming a fulcrum and a vertically-movable catch mounted in the draw-bar at the rear end of the draw-head and having a bifurcated lower portion engaging the link in the rear of the fulcrum and straddling the link and adapted to hold the latter elevated, substantially as described.

2. In a car-coupling, the combination of a conical draw-head having an opening at its rear end and terminating in a hollow draw-bar provided with opposite ways and having an inclined portion in its bottom, a plate forming the top of the draw-bar and provided on its lower face with a longitudinal boss fitting snugly between the sides of the draw-bar and having its front end beveled, a vertically-movable catch having its lower end bifurcated to form opposite sides arranged in said ways, and a link adapted to be engaged by the catch, substantially as described.

487,633. HOUSE-DOOR LETTER-BOX. JOHN W. MOORE, Washington, D. C. Filed June 20, 1892. Serial No. 437,310. (No model.)

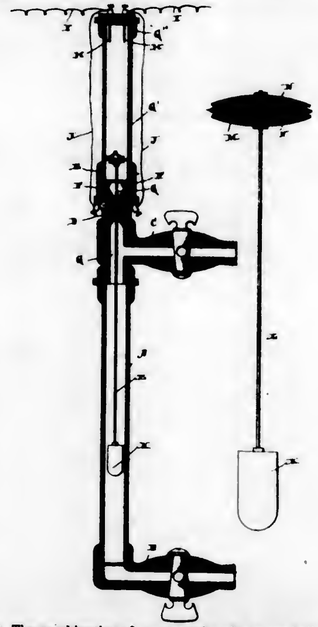
Claim.—1. A door having a recess or opening, a signal-plate adapted to slide therein and having a shoulder, a means for holding the said plate normally in one position, an opening cut in the door adjacent to the signal-plate recess, a door moving therein and carrying a projection, which engages the said signal-plate when the door is closed, and an operating-handle for the slide, substantially as described.

2. A letter-box comprising a door, a signal-plate recess or opening above the door and extending transverse thereof and having a locking-shoulder, a signal-plate sliding endwise therein, and the door having a projection at its upper end, which engages the signal-plate shoulder when the door is closed and the plate set, substantially as specified.

3. A letter-box having a door, a recess extending transverse the door at one end thereof and having an exposed opening F, a signal-plate sliding in said recess and extending beyond each side of the box, a spring for holding the plate normally in one position, an operating-handle connected with one projecting end of the signal-plate, and locking-shoulders upon the door and plate, substantially as specified.

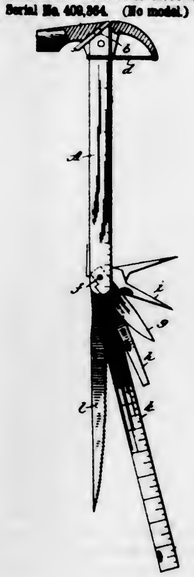
487,634. STEAM-BOILER INDICATOR. GEORGE I. MCDERMOTT, Neenah, Wis. Filed July 20, 1892. Serial No. 441,262. (No model.)

Claim.—1. The combination of a steam-boiler water-tube, a cylinder supported above and in communication with said tube, contact-points at the upper and lower ends of the cylinder, a float in the tube, a rod projecting therefrom into the cylinder, and contact-plates loosely secured to the upper end of the rod, substantially as shown and described.



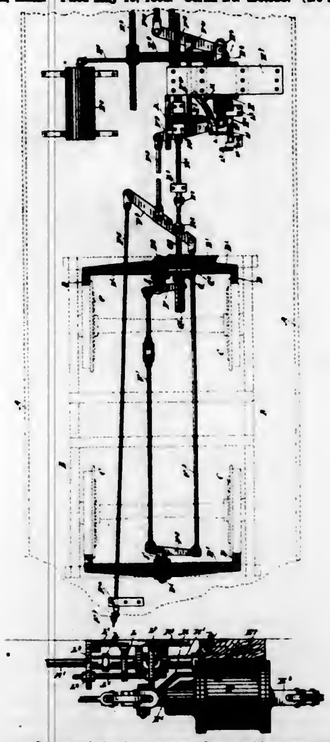
2. The combination of a water-tube of a steam-boiler, a cylinder supported above and in communication with said tube, contact-points at the upper and lower ends of the cylinder, a float in the tube, a rod secured thereto and projecting therefrom into the cylinder, a non-conducting disk secured to the rod near its upper end, and contact-plates loosely secured to the rod above and below the said disk, substantially as shown and described.

487,635. HAMMER. GEORGE H. MCGOWN, Lynn, Mass. Filed Oct. 26, 1891. Serial No. 409,864. (No model.)



Claim.—A hammer-head provided with the usual curved claws, extended walls forming a continuation of the handle-socket, and a strengthening-brace extending between the ends of the claws and the said walls, substantially as described.

487,636. AUTOMATIC BRAKE-ADJUSTER. MARTIN R. MCKIM, St. Paul, Minn. Filed May 19, 1892. Serial No. 433,833. (No model.)



Claim.—1. In an air-brake system, the combination, with the brake-rigging and the brake-setting motor, of a movable resistance-block applied to the dead-lever, a screw-threaded push-rod working through a fixed nut against the said block, and ratchet mechanism applied to operate said push-rod under the control of the movable part of the brake-setting motor.

2. In the system of railway-brakes substantially as shown and described, the combination, with the movable resistance-blocks applied to the dead-levers of the brake-rigging, of the screw-threaded push-rods, the sectional shaft connected to said push-rods and united with a telescoping and wrench-acting joint and having one of its sections fixed against longitudinal movement, the ratchet carried by said longitudinally-fixed section, the ratchet-lever working on said ratchet-wheel, the brake-setting motor, and mechanism controlled thereby for operating the said ratchet, substantially as and for the purpose set forth.

3. The combination, with a brake-rigging, of a fixed yoke embracing the free end of the dead-lever, a resistance-block movable on said yoke as a guide against the free end of said lever, a fixed nut-plate, and a screw-threaded push-rod working through said nut-plate for taking up slack produced by wear and tear on the shoes or in the rigging, substantially as described.

4. In a car-brake, the combination, with a brake-rigging arranged to operate the brakes of both trucks, of a pair of movable resistance-blocks applied to the two dead-levers of the brake-rigging, corresponding pairs of fixed nuts, a corresponding pair of screw-threaded push-rods with oppositely-cut threads working through said nuts against said resistance-blocks, and a sectional operating-shaft having a central section fixed against endwise movement, and a pair of sliding sections, one for each of said push-rods united to said fixed sections with a telescoping and wrench-acting joint, whereby rotation of the shaft will move the resistance-blocks in opposite directions, substantially as and for the purpose set forth.

5. In an air-brake, the combination, with a brake-setting motor and a brake-rigging, of a take-up device applied to said rigging for taking up the slack produced by the wear on the brake-shoes, a ratchet mechanism for operating the said take-up device, a cam controlled from said motor and applicable to the driving member of said ratchet mechanism, a detent normally preventing the cam action, and a trip controlled from said motor to release the said detent and render the cam active, the said cam being constructed and adapted to operate upon said driving member of the ratchet mechanism when active during the initial part of the brake-setting movement of the parts, whereby the slack will be taken up by a positive action and at a time during the brake-setting action before the brake-shoes are moved into contact with the wheels, substantially as and for the purpose set forth.

6. In an air-brake, the combination, with the fixed yokes and movable resistance-blocks applied to the dead-levers of the brake-rigging, of the fixed nut-plates, the right and left screw-threaded push-rods working through said nut-plates against said resistance-blocks, the push-rod operating-shaft having a central section fixed against endwise movement and a pair of sections united thereto with a telescoping and wrench-acting joint, the ratchet-wheel and ratchet-lever applied to said central section of the push-rod-operating shaft, the brake-motor, and devices under the control of the movable part of the motor for operating said ratchet-lever whenever required to take up the slack produced by wear on the brake-shoes.

7. The combination, with a brake-motor and a brake-rigging, of a take-up device applied to said rigging, a ratchet mechanism for operating said take-up device, and a movable cam controlled from the movable part of the motor for operating said ratchet-mechanism.

8. In an air-brake, the combination, with a brake-setting motor and a brake-rigging, of a take-up device applied to said rigging for taking up the slack produced by wear on the brake-shoes, a ratchet mechanism for operating said take-up device, a cam controlled from said motor and applicable to the driving member of said ratchet mechanism, a detent normally preventing the cam action, and a trip controlled from said motor to release the said detent and render the cam active, substantially as described.

9. In an air-brake, the combination, with a brake-motor and a brake-rigging, of a take-up device applied to said rigging, a ratchet-wheel and ratchet-lever for operating the take-up device, a movable cam-arm applicable to said ratchet-lever, and a movable trip-plunger provided with a detent normally holding the ratchet-lever inoperative by the said cam-arm, the said cam-arm and plunger both being under the control of the movable part of the motor, substantially as described.

10. In an air-brake, the combination, with the air-motor and the brake-rigging, of the movable resistance-blocks G, the guide-yokes G', the push-rods G^3, working through fixed nuts G^2, the sectional shaft H H' H^3, having its parts arranged as described, the ratchet-wheel K, fixed to shaft-section H, the ratchet-lever K', with spring-pawl K^3, stop-arm K^2, and the retracting-spring K^4, the cam-arm M, and set-screw M' on the primary brake-lever, and the trip-plunger L', carrying the latch-finger or detent L and provided with the lugs or feet L^2 in the path of a projection on the motor-piston, all arranged and operating substantially as described, and for the purpose set forth.

487,637. WOOD TURNING AND WORKING MACHINE. FRANZ H. NIERMANN, Jefferson, Mo. Filed Feb. 27, 1891. Serial No. 383,131. (No model.)

Claim.—1. The combination of the carriage 7, having longitudinal movement, the frame 15, having vertical adjustment on the carriage, and a table 67, having transverse and universal tilting movement on the frame 15, substantially as and for the purpose set forth.

2. The combination of the base 1, having ways 6, the carriage 7, working on said ways and having the vertical guides 17, the vertically-adjustable frame 15, having the vertical guides 16 and the inclines 18, the sliding frame 20, having the inclines 19, and means for moving said sliding frame, substantially as set forth.

3. The combination of the work-supporting table 67, having slots 98 and 99, the guides 97, pivoted to the common bolt 96 in the slot 98, and the links 101, connecting said guides 97 and pivoted to the common bolt 100 in the slot 99, substantially as and for the purposes set forth.

4. The combination, with the table 67, having universal tilting movement, and the lever 90, fulcrumed on a turning-support 91, and having a bearing-block 92, substantially as set forth.

5. In a wood-working machine, the combination of a suitable bed-frame, the ways 26 thereon, a longitudinally-movable carriage 7, a vertically-adjustable frame 15 on the carriage and having ways 24, a table or carriage adapted to work on ways 24 and 26, and an adjustable rest on the table, substantially as and for the purpose set forth.

6. In a wood-working machine, the combination of a suitable bed-frame having suitable ways, a carriage 7, working on said ways,

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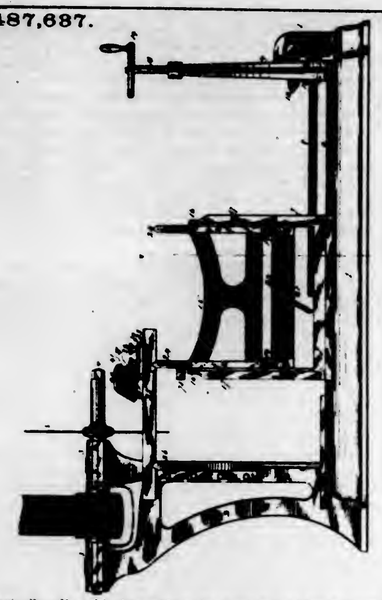
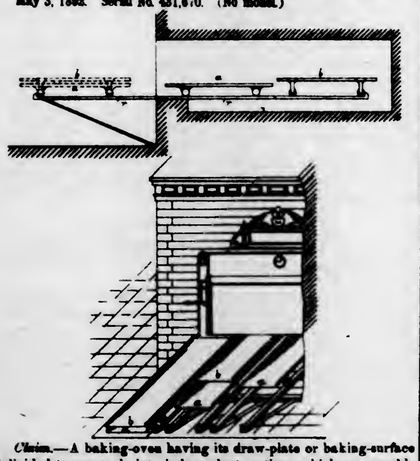


a vertically-adjustable frame 15 on the carriage and having ways 24, a frame 48, working on the ways 24 and carrying the universally-adjustable frame 61, the table 67, supported thereon, and means for holding the object in position upon said table, substantially as and for the purpose set forth.

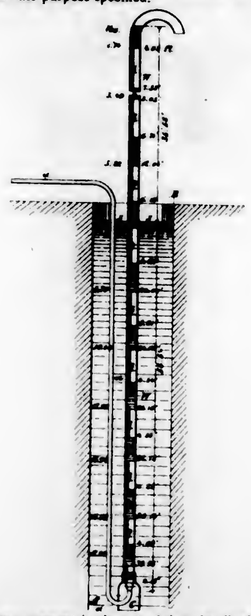
487,638. BAKING-OVEN. PAUL PFLEIDERER, London, England, and HERMANN WERNER, Cannstatt, near Stuttgart, Germany. Filed May 3, 1892. Serial No. 431,670. (No model.)



Claim.—A baking-oven having its draw-plate or baking-surface subdivided transversely into independent sections, which are movable one over another, so that the entire draw-plate or baking-surface can be withdrawn from or inserted into the oven in sections, substantially as described.

487,639. PROCESS OF ELEVATING LIQUIDS. JULIUS G. POHLE, Jersey City, N. J. Filed Oct. 24, 1891. Serial No. 409,701. (No model.)

Claim.—1. As an improvement in the art of elevating liquid, the process which consists in submerging a portion of an open-ended eduction-pipe in a body of the liquid to be raised and continuously introducing into the liquid within the lower part of the pipe a series of bubbles of compressed gaseous fluid containing enough of the fluid to expand immediately across the pipe and fill the same from side to side, forming pipe-fitting piston-like layers at or just above the point of their entrance into the pipe, whereby the column of liquid rising in the pipe after the forcing out of the liquid first standing in the latter is subdivided by the gaseous fluid into small portions before it reaches the level of the liquid outside of the pipe, and a continuously-upward-flowing series of well-defined alternate layers of gaseous fluid and short layers of liquid is formed and forced up the pipe, substantially as and for the purpose specified.



2. As an improvement in the art of elevating liquid, the process which consists in submerging in the body of the liquid to be raised a portion of an open-ended eduction-pipe having an enlarged chamber on its lower end and continuously injecting into such enlargement well below its upper end gaseous fluid under pressure to form bubbles in the pipe above the enlargement large enough to extend across from side to side of the pipe proper and form pipe-fitting piston-like layers therein interposed between and entirely separating well-defined layers of liquid in the pipe, substantially as and for the purpose described.

3. As an improvement in the art of elevating water or other liquid, the process which consists in submerging a portion of an open-ended pipe in a body of the liquid to be raised, removing the upper portion of the column of liquid within the pipe and injecting into the latter at a point well below the level of the liquid in which the pipe is submerged gaseous fluid in quantity sufficient to form bubbles, which will expand immediately across the pipe and fill the same from side to side and under pressure less than the weight of a column of liquid in the pipe extending from the point of entrance of the gaseous fluid to the level of the body of liquid surrounding the pipe, so that a continuous upward-moving series of alternate well-defined gaseous fluid and liquid layers will be formed in and forced up the pipe, substantially as and for the purpose described.

487,640. COMBINED HAY RAKE AND LOADER. ARCHIBALD POSTHUMUS and EPHRAIM C. SOOT, Kansas City, Mo. Filed Dec. 23, 1891. Serial No. 416,297. (No model.)

Claim.—1. As oscillating carrier for raising material, consisting of a table, oscillating slats, means for moving said slats, teeth 19, having right-angle extensions 20, and elongated staples 21, secured in the sides of the slats and spanning the teeth on each side close to the extensions 20 for holding said teeth in connection with said slats and permitting them to rock back and forth in their bearings, substantially as set forth.

2. The combination of a frame, suitable driving mechanism supporting the frame, rock-bar 6, teeth 9, secured to and extending forward of the driving mechanism, and a lever 11 for rocking said bar, connected at one end to the bar by a pivot 12 at right angles to the bar, said lever being thereby adapted to swing in a plane extending across the machine, whereby its free end may be supported by the

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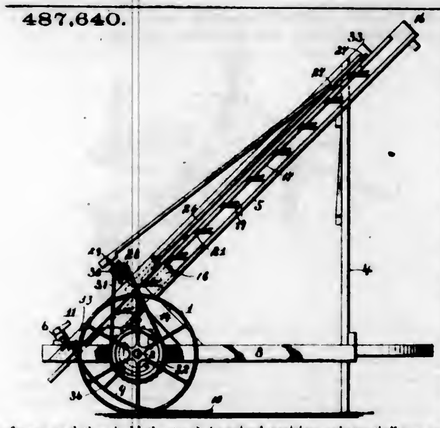
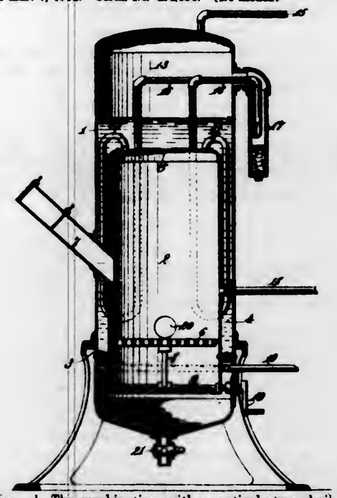


frame, and thus hold the teeth in raised position, substantially as set forth.

487,641. STEAM-BOILER. JOSEPH W. PUTNAM, New Orleans, La. Filed Mar. 7, 1892. Serial No. 424,050. (No model.)

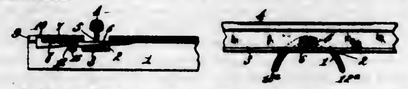


Claim.—1. The combination, with a vertical steam-boiler comprising outer and inner shells to form an intervening water-space, of a flue connected with the top portion of the inner shell, running downward through the water-space and thence rising therethrough into the steam-space above the water-level for the purpose of discharging the products of combustion into the steam-space, from whence they flow with the live steam to the cylinder or cylinders of the engine, substantially as described.

2. The combination, with a vertical steam-boiler comprising inner and outer shells to form an intervening water-space, of a flue connected with the top portion of the inner shell, running downward through the water-space and thence rising therethough into the steam-space above the water-level, where such flue is provided with a goose-neck or bent end terminating in an ash or cinder receptacle having connection with the steam-space of the boiler in such manner that the ashes, cinders, and like heavy matter are deposited in the receptacle, while the remaining light products of combustion are discharged into the steam-space and flow with the live steam to the cylinder or cylinders of the engine, substantially as described.

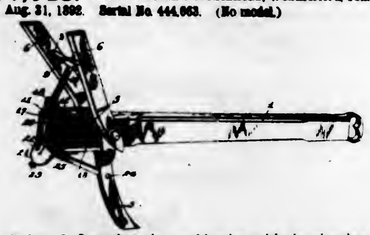
487,642. RAILWAY-TIE AND RAIL-FASTENER. CALVIN M. REED, Hoppenville, Pa. Filed June 27, 1892. Serial No. 438,119. (No model.)

Claim.—1. The combination of an arched metallic railway-tie having a transverse orifice cut in its crown or highest portion to form a rail-seat, a railway-rail having its flanged base arranged in the rail-seat and provided with a transverse perforation which lies or extends beneath the lower or inner surface of the crown of the arch, and a wedge-shaped key passing through the perforation in the rail and bearing against the lower or inner surface of the tie, substantially as described.



2. The combination of an arched metallic railway-tie provided with a transverse orifice in its crown or highest portion and having its lower or inner surface notched, serrated, or corrugated, a railway-rail having its flanged base arranged in the transverse orifice and provided with a perforation which lies or extends beneath the lower or inner surface of the arched tie, and a wedge-shaped key passing through the perforation in the rail and having a toothed portion which engages the notched, serrated, or corrugated part of the tie, substantially as described.

487,643. PLOW. STERLING P. RICHMOND, Weatherford, Tex. Filed Aug. 31, 1892. Serial No. 444,063. (No model.)



Claim.—1. In a plow, the combination, with the plow-beam, the upper side of which is grooved, and a standard depending from the beam, of a cast-metal plate mounted upon the beam, said plate being provided with a longitudinal slot and upon its upper side with a pair of bearing-ears and upon its lower side with a guide-lug taking into the groove of the beam, a bolt passed through the beam and slotted, a pair of handles pivoted to the beam in front of the plate, a rung loosely mounted in the handles and having an opening, a set-screw passing through the rung and communicating with the opening, and a brace pivoted at its lower end between the bearing-ears and having its upper end passed through the opening in the rung and impinged upon by the set-screw, substantially as specified.

2. In a plow, the combination, with the beam, the bifurcated standard embracing the beam, the pair of handles embracing the standard, the bolt passed through the handles, bifurcations of the standards and beam, and the rung mounted in the handles and provided with an opening having a set-screw, of a slotted plate mounted upon the upper side of the beam and provided with bearing-lugs, a brace having its lower end pivotally connected with the bearing-lugs and its upper end passed through the opening in the rung, an L-shaped plate embracing the heel of the plow, a bolt passed through said plate and the slot of the upper plate, a lug having an opening depending from the L-shaped plate, a set-screw passed through the lug and communicating with the opening, and a brace having its rear end passed through the opening and its front end pivotally connected with the standard, substantially as specified.

487,644. PROCESS OF AND APPARATUS FOR GENERATING ELECTRICITY. J. S. ROGERS, New York, N. Y. Filed Apr. 14, 1892. Serial No. 429,185. (No model.)

Claim.—1. The process of generating electricity, which consists in exposing a fusible electrolyte capable of being deoxidized and re-

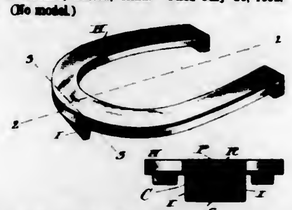
oxidized while in a state of fusion in the presence of suitable electrodes to a current of a deoxidizing gas injected in one direction and to a current of an oxidizing gas injected in the opposite direction, substantially as described.

2. The process of generating electricity, which consists in exposing an electrolyte composed of a fusible metallic oxide while in a state of fusion in the presence of electrodes made of a metal the melting-point of which is higher than that of the electrolyte to a current of deoxidising gas, such as hydrogen or a hydrocarbon gas, injected in one direction and to a current of an oxidizing gas, such as atmospheric air or oxygen, injected in the opposite direction, substantially as described.

3. An electric battery composed of a cell B, containing a suitable electrolyte, two hollow foraminous electrodes D E, a gas-supply pipe D^2, made to connect electrically with the electrode D, a gas-supply pipe E^2, made to connect electrically with the electrode E, and a source of heat, substantially as described.

4. An electric battery composed of a furnace H, a cell B, containing a suitable electrolyte, and two or more electrodes D E and gas-supply pipes D^2 E^2, one being connected electrically to the electrode or electrodes D and the other to the electrode or electrodes E, substantially as described.

487,645. HORSESHOE WITH SELF-SHARPENING CALKS. HALVOR O. SAGEN, Dalton, Minn. Filed July 26, 1892. Serial No. 441,380. (No model.)



Claim.—1. A horseshoe-calk consisting of an iron body having a recess opening through its lower edge and a hole reduced longitudinally of the recess from which it extends through the upper edge of the body, and a steel core fitting said recess and having a reduced shank fitting said hole extending above the body and pointed, as and for the purpose set forth.

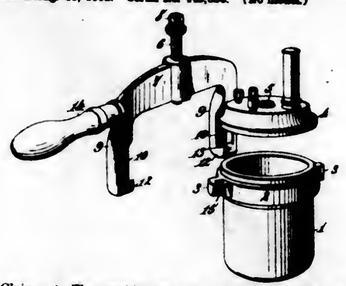
2. A horseshoe-calk consisting of a steel core having a reduced shank rising from the center of its upper edge and an iron body surrounding said core on its sides, standing flush with the lower edge of said core, covering the upper edge thereof, except where said shank passes through the body, and having a flat upper face terminating short of the upper end of said steel shank, whereby the latter projects above the iron body, as and for the purpose set forth.

3. A horseshoe-calk consisting of an iron body having an elongated recess opening through the lower edge of the body throughout the length of the recess and a reduced hole opening through the upper edge of said body from the center of the length of said recess, and a steel core whose body accurately fits said recess with its lower edge flush with that of the iron body, said core having an integral shank rising through said hole and accurately fitting the same above which its sides converge to a smooth point at its upper extremity, in combination with an iron horseshoe having a hole in its lower face of sufficient size to fully receive said point and permit the upper edge of the iron body to strike the lower face of the shoe, the parts being constructed, combined, and connected substantially as described, and for the purpose set forth.

487,646. WIRE-SPLICER. JAMES T. SMITH and OLIVER T. LUGAR, Shaw, Kans. Filed Mar. 16, 1892. Serial No. 425,184. (No model.)

Claim.—The herein-described device, consisting of two handles which are pivotally connected, each of which at one end has a head curved or bent and combined to form a pair of pinchers and the opposite ends of the same constructed as split handles, and a clamping-screw extending through the split portion of each of said handles from opposite sides of the same, substantially as set forth.

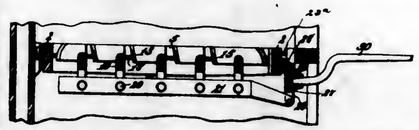
487,647. DENTAL VULCANIZER. GEORGE B. SNOW, Buffalo, N. Y. Filed Aug. 13, 1892. Serial No. 443,023. (No model.)



Claim.—1. The combination of a vulcanizing-pot having lateral side lugs rectangular in cross-section and formed with rounded lower edges, a pot-cover, and a cover-clamping cross-bar carrying a pressure-screw and having rigid depending arms provided with hooked extremities which detachably engage the rounded edges of the rectangular side lugs on the pot, substantially as described.

2. The combination, with a vulcanizing-pot having lateral side lugs and a pot-cover, of a cover-clamping cross-bar carrying a central pressure device and having a longitudinally-projecting carrying-handle and rigid depending arms provided at one edge with recesses having inclined bottom walls to form hooks for detachably engaging the side lugs on the pot, substantially as described.

487,648. FURNACE-GRATE. JOHN THURELL, North Adams, assignor of one-half to James R. Keany, Milford, Mass. Filed Apr. 30, 1892. Serial No. 431,362. (No model.)



Claim.—1. In a fire-grate, a grate-frame composed of end bars 2 and lower side-bar sections 3, cast integral with the end bars, and separate side-bar sections 5, located above and connected with the said lower side-bar sections, substantially as and for the purposes described.

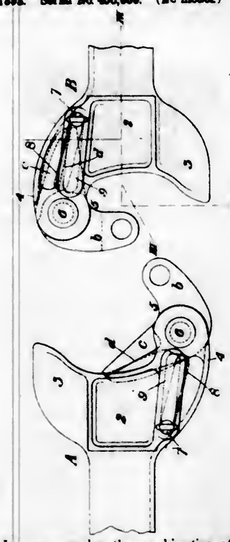
2. In a fire-grate, a grate-frame composed of end bars cast in single piece with longitudinal lower portions of the side bars and complementary sections or portions of the said side bars formed separately, the end bars of the frame being provided with mortises or channels to receive the ends of the complementary sections and the adjacent edges of the upper and lower sections being provided with seats or bearings for the journals of the grate-bars, substantially as described.

3. A grate-frame for stoves and furnaces, consisting of end bars cast in one piece with lower longitudinal portions or sections of the side bars, separately formed complementary sections or portions of said side bars of somewhat greater length than the integral sections, their ends being received in mortises or channels in the inner faces of the end bars, and grate-bars having journals lying in seats or bearings between the lower and the complementary upper sections of the side bars, a space being provided between said upper and lower sections for the passage of air, substantially as described.

4. In a grate for stoves and furnaces, the combination, with the lower sections or portions of a grate-frame cast integral with the end bars and having seats or bearings, of grate-bars having journal-supports lying in said seats and complementary upper sections or portions of the side bars having their ends lying in mortises or channels in the end bars and their edges resting upon the journals of the grate-bars, said complementary sections or portions of the side bars being separated from the integral sections, to which they are connected by a central fastening, substantially as described.

5. In a fire-grate, the combination, with a rocking grate-frame having end journals, of oscillatory grate-bars having pendent lugs 19 and provided with end journals 12, projecting beyond the sides of the grate-frame, clinker-plates 14, mounted directly on the projecting ends of said journals outside the side bars, a shaker-bar 21, engaged with said pendent lugs, a pendent lever 27, pivoted to the grate-frame and to the shaker-bar, and a lever for engaging said pendent lever intermediate the upper and lower pivots thereof, substantially as described.

487,649. CAR-COUPLING. CLIFTON A. TOWER, Cleveland, Ohio. Filed Nov. 1, 1892. Serial No. 450,630. (No model.)



Claim.—1. In a car-coupler, the combination of a knuckle and a locking-finger extending lengthwise of the knuckle-arm when locked and vertically movable in a recess in the coupler-head, said finger having a locking-bearing along the length of the knuckle-arm, substantially as described.

2. In a car-coupler, the combination, with a knuckle, of a locking-finger having a bearing on the knuckle-arm near its axis and adapted to be supported thereby when the knuckle is opened and being adapted to move automatically into engagement with the knuckle-arm and to lock the same when the latter is closed, substantially as and for purposes described.

3. In a car-coupler, the combination of a swinging knuckle and an opening-finger extending along the knuckle-arm a substantial portion of its length and adapted when moved vertically to engage the arm and to open it, substantially as and for the purposes described.

4. In a car-coupler, the combination of a swinging knuckle and a vertically-movable opening-finger having its initial point of contact with the opening-finger at its outer end and whose point of contact therewith approaches the axis as the knuckle-arm moves open, said knuckle-arm having a beveled rear edge to constitute a bearing-surface for the opening-finger, substantially as and for the purposes described.

5. In a car-coupler, the combination of a swinging knuckle and a vertically-movable opening-finger extending lengthwise of the knuckle-arm, said finger being adapted to engage the knuckle progressively from its outer end toward its axis and to throw the knuckle open to a wide extent, substantially as and for the purposes described.

6. In a car-coupler, the combination of a knuckle and a vertically-moving finger or fingers extending longitudinally of the knuckle-arm, adapted when moved in one direction to engage the front of the arm and to hold the same and when moved in the other direction adapted to engage the arm to open it and to be upheld thereby when opened, substantially as and for the purposes described.

7. In a car-coupler, the combination of a knuckle, and two connected vertically-movable fingers extending lengthwise of the knuckle above and below the same, the upper one of said fingers being adapted to engage the knuckle-arm and to hold the same and the other finger being adapted when raised to engage the arm and to open the knuckle, the first-named finger being then upheld by the knuckle, substantially as and for the purposes described.

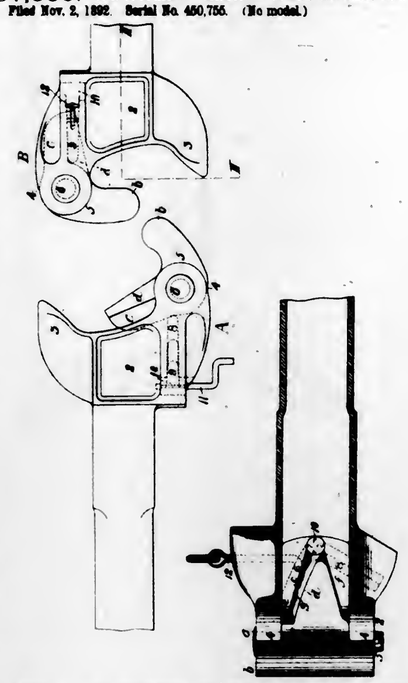
8. In a car-coupler, the combination of a swinging knuckle and vertically-movable connected fingers set in the coupler-head above and below the rear arm of the knuckle, respectively, the upper finger being vertically movable in a recess in the coupler-head and adapted when moved downwardly to engage the arm and hold it and being adapted when raised to release the arm and the lower finger being adapted when raised to engage the arm and open the knuckle, said fingers being separated sufficiently to permit the locking-finger to free itself completely from the knuckle before the engagement of the opening-finger and to afford intermediate loose play, substantially as and for the purposes described.

9. In a car-coupler, the combination of a swinging knuckle, and a movable finger or fingers set in the coupler-head and adapted to lock the knuckle arm, and when moved adapted, successively, to unlock the knuckle-arm and to engage the same to open it, the places of engagement on the knuckle-arm and said finger or fingers being arranged relatively to each other, so that in said motion the knuckle-arm shall be released and opened in succession, there being an intermediate loose play of the finger or fingers between the times of the release and the opening engagement, substantially as and for the purposes described.

10. A swinging knuckle for car-couplers, having its rear arm provided with a beveled bearing-surface extending from its outer end to or nearly to its axis and adapted to be engaged by an opening device, substantially as described.

11. A swinging knuckle for car-couplers, having a holding-arm provided on its front face with a longitudinal recess extending substantially from end to end of the arm and adapted to engage a locking-finger, substantially as described.

487,650. CAR-COUPLING. CLIFTON A. TOWER, Cleveland, Ohio. Filed Nov. 2, 1892. Serial No. 450,755. (No model.)



Claim.—1. In a car-coupler, the combination, with a swinging knuckle, of a locking-finger pivoted to move radially in a vertical plane within a recess or box in the coupler-head, said finger extending lengthwise of the knuckle-arm when locked and adapted to have a locking-bearing thereon, substantially as and for the purposes described.

2. In a car-coupler, the combination, with a pivoted knuckle, of a locking-finger pivoted to move radially in a vertical plane, said finger having a bearing on the knuckle-arm near its axis and adapted to be supported thereby when the knuckle is opened and being adapted to move automatically into engagement with the knuckle-arm and to lock the same when closed, substantially as and for the purposes described.

3. In a car-coupler, the combination of a swinging knuckle and an opening-finger pivoted at the outer end of and extending lengthwise of the inner knuckle-arm when locked and adapted to move radially in a vertical plane and to engage the arm and open it, substantially as and for the purposes described.

4. In a car-coupler, the combination of a swinging knuckle and a finger or fingers extending lengthwise of the knuckle-arm when locked,

pivoted to move radially in a vertical plane in a box in the coupler-head, and adapted when moved in one direction to engage the arm and to hold it and when moved in the other direction adapted to engage the arm to open it and when released to be upheld thereby, substantially as and for the purposes described.

sponding longitudinal rib adapted to loosely engage said recess, one of said sides having a series of welts in relief thereon, substantially as and for the purpose set forth.

c c, an elastic slot-closer arranged on said plates or parts, and clamping-plates *m* for holding the same in position, of conducting-wires *g g*, held beneath the plates or parts *e e* and insulated therefrom, and take-up

conducting body and an exterior flange or shield, an electrode arranged on the inner end of such body and extending rearward, as specified, a water-inlet tube arranged within the said body, but separated

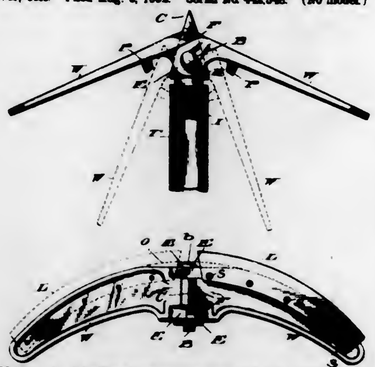
pivoted to move radially in a vertical plane in a box in the coupler-head, and adapted when moved in one direction to engage the arm and to hold it and when moved in the other direction adapted to engage the arm to open it and when released to be upheld thereby, substantially as and for the purposes described.

5. In a car-coupler, the combination of a swinging knuckle and two connected fingers pivoted in the coupler-head and radially movable on said pivot in a vertical plane, one of said fingers being above and the other below the knuckle-arm, one of said fingers being adapted when moved in one direction in a recess or box to engage the arm to hold it and the other finger being adapted when moved in the other direction to engage the arm and open the knuckle, substantially as and for the purposes described.

6. A swinging knuckle for car-couplers, having its rear arm provided on its rear face with a beveled bearing-surface extending from its outer end to or nearly to its axis and adapted to be engaged by an opening device, the bevel of said bearing-surface being of spiral form, increasing toward the axis, substantially as and for the purposes described.

7. A coupler-head having interiorly-projecting vertical boxes, a coupling-knuckle whose rear arm fits between the boxes, and locking and opening fingers extending lengthwise of the knuckle-arm when locked and situate in the upper and lower boxes, respectively, substantially as described.

487,651. STEAM-BOILER CLEANER. GEORGE E. TRUAX, Denver, Colo. Filed Aug. 6, 1892. Serial No. 442,345. (No model.)



Claim.—1. A boiler-cleaner comprising a head secured to the end of a handle and having its body squared and its front end reduced to a chisel edge and curved wings pivoted at their inner ends to opposite sides of said squared portion, as and for the purpose set forth.

2. A boiler-cleaner comprising a head mounted on a handle and having a squared body tapered to a chisel edge at its front end, curved wings having inwardly-extending ears standing at the sides of said body, and a pivot-bolt through said ears and body, the inner ends of said wings between the ears striking the sides of said chisel before the bodies of the wings align, as and for the purpose set forth.

3. A boiler-cleaner comprising a head having a square body tapered to a chisel edge at its front end, curved wings having inwardly-extending ears standing alongside said body, a pivot-bolt through said ears and body, the inner ends of said wings between their ears striking the sides of said chisel before the bodies of the wings align, and pins on the inner faces of the wings, adapted to strike said head before the wings are folded to positions parallel with the length of the head, as and for the purpose set forth.

4. In a boiler-cleaner, the combination, with a head having a chisel-point and two wings pivoted thereto, one edge of the wings when upon forming an arc of a circle slightly flattened opposite said pivot, whereby the pivot-bolt stands within said arc, of two scrapers detachably secured to said wings and projecting beyond their curved edge, the projecting edge of the scrapers forming an arc of the same circle as the edge of the wings, as and for the purpose hereinbefore described.

487,652. PAVING-BRICK. LESLIE C. TURLEY, Portsmouth, Ohio. Filed June 23, 1892. Serial No. 437,806. (No model.)

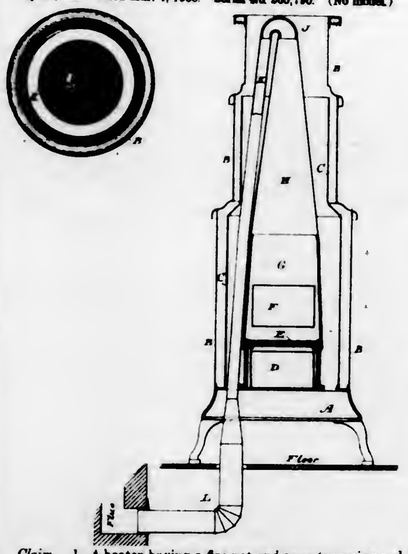
Claim.—1. A paving-brick having its top, bottom, sides, and ends in the form of a right-angled parallelogram, the opposite faces thereof being parallel and equal to each other and having plane surfaces, except two opposite sides, one of which is provided with a longitudinal recess extending the length of the brick and the other with a corresponding longitudinal rib adapted to loosely engage said recess, one of said sides having a series of welts in relief thereon, substantially as and for the purpose set forth.

2. A reversible rectangular paving-brick having plain top, bottom, and ends, and provided with a series of welts in relief upon one or more sides thereof extending longitudinally of the brick, substantially as described.

3. A brick for street-paving purposes, having a longitudinal recess extending the length of the brick on one face thereof and a corresponding interlocking rib on the opposite face and a series of welts in relief on one of said faces, substantially as described.

4. A street-pavement comprising a series of reversible rectangular interlocking bricks, each having upon one side thereof a longitudinal recess and a corresponding rib on its opposite side engaging the recess of an adjacent brick, together with a series of welts in relief upon one or more sides of the brick, substantially as described.

487,653. HEATING APPARATUS. WILLIAM H. TURNER, Indianapolis, Ind. Filed Mar. 1, 1888. Serial No. 265,790. (No model.)



Claim.—1. A heater having a fire-pot and an outer casing and a smoke-pipe connected with the upper part of the said fire-pot and extending in a downward direction and closely alongside the fire-pot and between the latter and the surrounding casing and to a point beneath the heater, substantially as and for the purpose described.

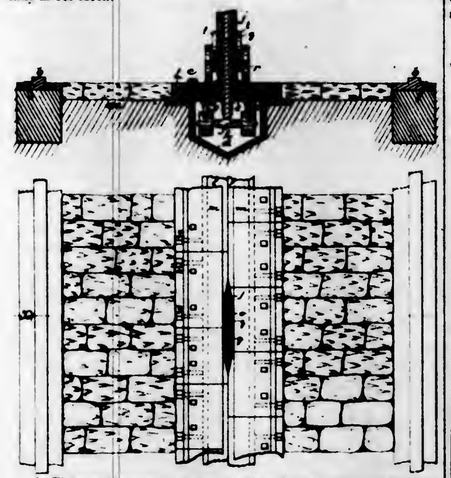
2. A heater having a fire-pot and an outer casing and a smoke-pipe connecting with the fire-pot and extending down in substantially a straight course between the fire-pot and casing beneath the floor and then extended and adapted for connection with a chimney-flue, substantially as and for the purpose hereinbefore set forth.

3. A heater provided with a fire-pot and an outer and an inner casing and a smoke flue or pipe connecting with the fire-pot and extending down within the casings and beneath the heater and the floor, substantially as and for the purpose described.

487,654. CLOSED CONDUIT FOR ELECTRIC RAILWAYS. ALMON A. VANDERPOEL, Newark, N. J., assignor of one-half to David H. Burnett, same place. Filed Mar. 16, 1892. Serial No. 344,990. (No model.)

Claim.—1. In an electric railway, the combination, with a metallic trough closed at the top by longitudinally-slotted plates or parts

c c, an elastic slot-closer arranged on said plates or parts, and clamping-plates *m* for holding the same in position, of conducting-wires *g g*, held beneath the plates or parts *c c* and insulated therefrom, and take-up screws or devices to take up wear on the elastic slot-closers, substantially as set forth.



2. The combination of a trough slotted at the top, conducting-wires arranged in said trough, slot-closers, clamping-plates for holding the same in position, adjusting or setting screws for taking up wear on said slot-closers, and a leg adapted to be secured to the car or vehicle and provided with a foot to engage said conducting-wires and being wedge-shaped at its forward and rear parts and insulated to prevent the escape of electricity, substantially as set forth.

3. In combination with the conduit having elastic slot-closers, a leg connected with a car and having a fender for forcing the water, &c., from the face of said closer before the slot is opened, substantially as set forth.

4. In combination with a trough *d*, clamping-plates *c* and *m*, elastic slot-closers arranged between said plates and engaging one another to form an impervious joint, a leg *j*, having wedge-like edges and fenders, and a spring-truck for steadying said leg, substantially as set forth.

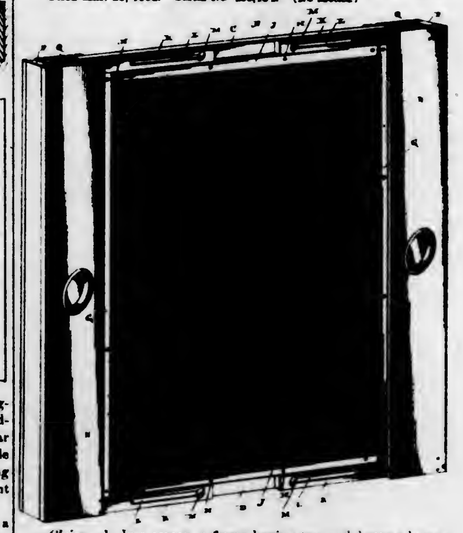
487,655. ELECTRO-THERAPEUTIC PROCESS AND APPARATUS. JOSHUA M. WARDELL, Cadillac, Mich. Filed Feb. 20, 1892. Serial No. 422,302. (No model.)

Claim.—1. In the therapeutical application of electricity, the process hereinbefore described, which consists in injecting into and temporarily confining in the vaginal canal a quantity of liquid sufficient to distend its folds and applying the electrical current directly to and disseminating it throughout such body of water, and thereby conducting it to and securing its tonic and other effects upon the whole surface with which the water is in contact, as shown and described.

2. An instrument for therapeutical application of electricity to the vaginal canal, which consists of a syringe having a hollow non-conducting body and an exterior flange or shield, an electrode arranged on the inner end of such body and extending rearward, as specified, a water-inlet tube arranged within the said body, but separated from it by an air-space, and the water-exit tube arranged within the inlet-tube and secured to it, substantially as shown and described.

3. An instrument for therapeutical application of electricity to the vaginal canal, which consists of a syringe having a hollow non-conducting body and an exterior flange or shield, an electrode arranged on the inner end of such body and extending rearward, as specified, a water-inlet tube arranged within the said body, but separated from it by an air-space, and provided with a stop-cock, and the exit-tube secured within the inlet-tube and also provided with a stop-cock, as and for the purpose specified.

487,656. SCREEN-FRAME. HARRY A. WAY, Burlington, Vt. Filed Mar. 23, 1892. Serial No. 426,154. (No model.)



Claim.—1. In a screen, a frame having top and bottom bars, a netting placed upon one side thereof, strips placed over the netting and over the end pieces of the frame, which have their ends overlapping the end pieces and secured to the top and bottom bars, narrow strips at the inner edges of the top and bottom bars, placed over the netting, longitudinal slots at the ends of the top and bottom bars, having open outer ends, combined with sliding sections comprising guiding-bars having longitudinal slots at their inner ends having closed ends, a boxing at their outer ends, screws which pass through the slots at the inner ends of the said guiding-bars into the top and bottom bars of the frame, and screws which pass through the inner edge of one side of the box, through the slots in the top and bottom bars, and into the said box-guiding bars, substantially as specified.

2. An extension-screen comprising a frame having slots at its corners which extend to the ends of the frame to form outer springing walls, as described, sliding sections having guiding-bars with slots at their inner ends, and screws which pass through the slots of the sliding bars into the frame and screws which pass through one side of the sliding sections and through the open-ended slots of the frame into the said guiding bars or strips of the sliding sections, whereby binding of the sections is prevented, substantially as described.

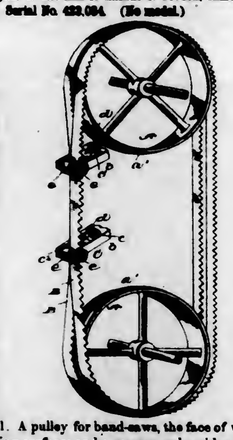
487,657. REGISTERING HAND-STAMP. EDWARD J. BROOKS, East Orange, N. J., assignor to the E. J. Brooks & Company, New York, N. Y. Filed June 4, 1892. Serial No. 435,559. (No model.)

Claim.—1. The combination, in a postmarking-stamp or any like hand-stamp, of a suitable die having a vertical tang, a handle having a limited movement upon said tang relatively to said die, and an annular counting-register surrounding said tang between the die and the ferrule end of the handle and actuated by each depression of the handle relatively to the die, substantially as hereinbefore specified.

2. The combination, in a postmarking-stamp or any like hand-stamp, of a suitable die having a central tang, a handle having a limited downward movement relatively to said die, an annular register surrounding said tang and carried by said handle between its ferrule

end and the die, a spring which re-elevates said handle and register, and suitable mechanism coacting with said tang and transmitting motion to the units-indicator of the register during each re-elevation of the handle and register, substantially as hereinbefore specified.

487,658. GANG BAND-SAW. THEODORE H. BROWN, Viroqua, Wis., assignor of one-half to Hanlon S. Goodell, same place. Filed Feb. 27, 1892. Serial No. 423,094. (No model.)



Claim.—1. A pulley for band-saws, the face of which is provided with two driving-surfaces and a groove and a ridge intermediate said surfaces, said groove extending below the level of the driving-surfaces, substantially as set forth.

2. The combination, with the band-saws, of the pulleys, each having two driving-surfaces separated by a groove and a ridge, said driving-surfaces extending from the edges of the pulley up to the respective groove and ridge, said ridge separating said groove from one of the driving-surfaces, substantially as set forth.

3. In a band sawing-machine, the combination, with the pulleys, each of which has two separate driving-surfaces separated by a groove and a ridge, the groove extending below the level of the driving-surfaces, of a saw on each driving-surface, one in front of the other, and mechanism intermediate the pulleys for moving each of the saws in opposite directions an equal distance out of the direct line of travel between the peripheries of the pulleys, substantially as set forth.

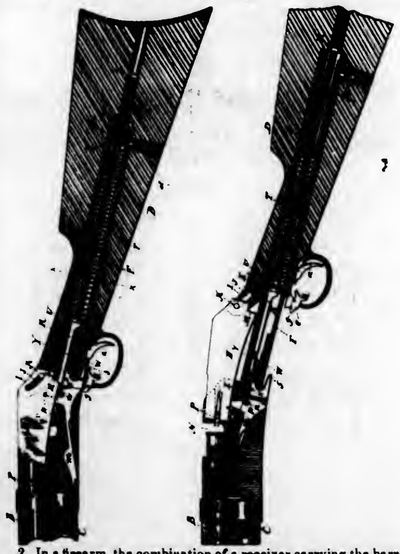
4. In a band sawing-machine, the combination, with the pulleys which have separate driving-surfaces, of two saws thereon, one in front of the other, two brackets on the machine-frame, a slotted hanger on each of said brackets, adjusting-screws on each bracket, engaging the slots in the respective hangers, said hangers having each a tongue projecting from its forward end, slotted arms mounted on each of said tongues on the respective hangers, other slotted arms mounted on the opposite side of each hanger, adjusting-screws in said hangers, engaging the slots in the respective arms, and rollers on said arms bearing on and adapted to press the respective saws apart in opposite directions, substantially as set forth.

5. In a band sawing-machine, the combination, with the pulleys and the band-saws thereon, of two hangers adjustably secured between the pulleys and two spacing-rollers on each hanger, one of which bears against one side of one saw and the other of which bears against the other side of the other saw, whereby the saws may be pressed apart in opposite directions, each of said rollers being capable of independent adjustment on its respective hangers, substantially as set forth.

487,659. MAGAZINE-FIREARM. JOHN M. BROWNING and MATTHEW S. BROWNING, Ogden, Utah, assignors to the Winchester Repeating Arms Company, New Haven, Conn. Filed Mar. 7, 1892. Serial No. 423,998. (No model.)

Brief.—The barrel and receiver move forward from the stock to open the breech, a hollow spindle attached to the receiver sliding in a suitable socket in the stock. Within this spindle is located the hammer. The recoil is taken up by abutting shoulders on the breech-piece and the receiver. The breech-piece is locked and unlocked by means of a cam-slot in the forward part of the stock, which is engaged by a pin on the rear of the piece.

Claim.—1. In a firearm, the combination of a receiver carrying the barrel at the forward end, opening at the rear into the receiver, the receiver constructed with a spindle extending from its rear end into the stock, the stock provided with a suitable guide within which the said spindle may slide, substantially as described, and whereby the receiver and barrel are adapted to be moved forward from the stock in opening and toward the stock in closing.



2. In a firearm, the combination of a receiver carrying the barrel at its forward end, opening at the rear into the receiver, the receiver constructed with a spindle extending longitudinally rearward into the stock, the stock provided with a suitable guide for said spindle, a breech-piece arranged longitudinally in the receiver, and an arm projecting forwardly from the stock and constructed with an upwardly and forwardly inclined slot, the breech-piece constructed to embrace said arm and provided with a pin extending through said slot in the said arm and the breech-piece provided near its forward end with longitudinal guides in the receiver, substantially as described.

3. In a firearm, the combination of a receiver carrying the barrel at its forward end, opening at the rear into the receiver, the receiver constructed with a rearwardly and longitudinally projecting spindle extending into the stock, the stock provided with a suitable guide for said spindle to permit the longitudinal movement of the receiver and spindle, the said spindle tubular, a hammer arranged longitudinally in the said spindle, provided with a spring, a stop to limit the forward movement of the hammer in the spindle, and a sear hung in the receiver and adapted to engage the hammer in the closing movement of the parts, substantially as described.

4. In a firearm, the combination of a receiver, a barrel at the forward end of the receiver, opening at the rear into the receiver, the receiver constructed with a spindle extending rearward into the stock, the stock provided with a longitudinal guide for said spindle, and a breech-piece arranged longitudinally in said receiver, the breech-piece adapted for an upward-and-downward movement at its rear end, the stock constructed with an arm projecting from its forward end, and said arm constructed with an upwardly and forwardly inclined slot, the breech-piece embracing the said arm and having a pin through said slot, whereby in the forward movement of the receiver an upward and forward movement is imparted to the rear end of the breech-piece, the breech-piece constructed with a shoulder at its rear end and the receiver with a corresponding shoulder, the said two shoulders adapted to engage as the parts are brought to the closed position, substantially as described.

5. In a firearm, the combination of a receiver having a barrel attached at its forward end, opening at the rear into the receiver, the receiver constructed with a spindle extending from its rear end longitudinally into the stock, the stock provided with a guide to receive and permit the longitudinal movement of said spindle, and whereby the receiver and barrel may be moved forward from the stock, and a breech-piece arranged in the receiver and adapted to be opened as the receiver is moved forward, with a hammer arranged in said spindle and a sear adapted to engage said hammer, substantially as described.

6. The combination of a receiver having a barrel attached at its forward end, opening at the rear into the receiver, the receiver constructed with a spindle extending from its rear end into the stock, the stock provided with a suitable guide for the back-and-forward movement of said receiver and spindle, and a spring-dog hung upon the stock and adapted to engage the said receiver in the closed position, substantially as described.

7. In a firearm, the combination of a receiver having a barrel at its forward end, opening at the rear into the receiver, the receiver constructed with a spindle extending from its rear end longitudinally into the stock, the stock provided with a guide for the back-and-forward movement of said receiver and its spindle, the spindle made tubular, a hammer arranged in said spindle and adapted for a limited extent of forward movement less than that of the receiver, a sear hung in the receiver and moving therewith and adapted to engage the hammer as the receiver is returned to the closed position, and so as to bring the hammer to full cock, and a dog hung in the stock and adapted to engage said sear in the rear or closed position and while the sear is in engagement with the hammer, substantially as described.

8. The combination, in a firearm, of the receiver having a barrel at its forward end, opening at its rear end into the receiver, a spindle extending from the rear end of the receiver longitudinally into the stock, the stock provided with a guide for the spindle, and so as to permit a forward-and-back movement of the receiver and spindle, and a spring-bolt in the stock adapted to engage the said spindle when the parts are in the closed position, substantially as described.

9. In a firearm, the combination of a receiver having a barrel attached at its forward end and opening at its rear end into the receiver, the receiver constructed with a spindle extending from its rear end into the stock, the stock provided with a tubular guide within which said spindle may move forward and backward in the opening-and-closing movement of the receiver, and a hammer arranged longitudinally in the said spindle, with a spring within the spindle adapted to force the hammer forward, the tail of the hammer extending through the rear end of the guide within which the spindle slides and provided at its rear end with an elongated head, the end of the guide through which the tail of the hammer extends constructed with an elongated slot corresponding in shape to the head of the tail of the hammer, but the said slot and head normally in angular positions with relation to each other, substantially as and for the purpose described.

10. In a firearm, the combination of a receiver carrying a barrel at its forward end, opening at the rear into the receiver, the receiver adapted for longitudinal forward-and-back movement with the barrel from and toward the stock, and a breech-piece arranged longitudinally in said receiver and provided with longitudinal guides at its forward end, the rear end of the receiver connected with the stock by an upwardly and forwardly inclined slot, whereby in the first part of the forward movement of the receiver the rear end of the breech-piece will rise, the breech-piece constructed with a shoulder at its rear end and the receiver with a corresponding shoulder, the said shoulders adapted to engage as the parts are returned to the closed position, substantially as described.

11. In a firearm, the combination of a receiver carrying a barrel at the forward end, opening at the rear into the receiver, the receiver adapted for longitudinal movement from and toward the stock in opening and closing, a breech-piece arranged longitudinally in the receiver and longitudinally guided therein at its forward end and at its rear end connected to the stock by an upwardly and forwardly inclined slot, whereby in the first part of the forward movement of the receiver the rear end of the breech-piece will be raised, a magazine beneath the barrel, opening at the rear into the receiver, a carrier hung below the breech-piece in the receiver, adapted to swing up and down for the transfer of a cartridge from the magazine to the barrel, and a spring between the breech-piece and the carrier adapted to yieldingly hold the carrier in the closed position, substantially as described.

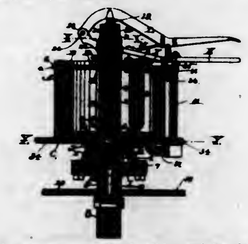
12. In a firearm, the combination of a receiver carrying a barrel at the forward end, opening at the rear into the receiver, the receiver adapted for longitudinal movement from and toward the stock in opening and closing, a breech-piece arranged longitudinally in the receiver and longitudinally guided therein at its forward end and at its rear end connected to the stock by an upwardly and forwardly inclined slot, whereby in the first part of the forward movement of the receiver the rear end of the breech-piece will be raised, a magazine beneath the barrel, opening at the rear into the receiver, a carrier hung below the breech-piece in the receiver, adapted to swing up and down for the transfer of a cartridge from the magazine to the barrel, and an L-shaped lever g, hung to the carrier and so as to swing in a plane at substantially right angles to the carrier, one arm of the lever extending across the carrier, with a spring between the carrier and the said arm, the said lever on its pivot side constructed with a nose s and the receiver with a corresponding notch t, substantially as and for the purpose described.

13. In a firearm, the combination of a receiver provided with a barrel at its forward end, opening at the rear into the receiver, and with a magazine below the barrel, also opening at the rear into the receiver, the receiver adapted for longitudinal movement from and toward the stock in opening and closing, a breech-piece arranged longitudinally in the receiver, hung by its rear end to an upwardly and forwardly inclined slot at the forward end of the stock, and whereby an upward and forward movement is produced upon the breech-piece in the first part of the opening movement and a corresponding rearward and downward movement to the said rear part of the breech-piece in the last part of the closing movement of the receiver, a lever v, hung in the side of the receiver and constructed with a nose w, adapted to engage the head of a cartridge, and a suitable spring the tendency of which is to force the said nose into engagement with the cartridge, the lever extending at the rear of the pivot and constructed with a cam-shaped projection 2 at its rear end, the breech-piece toward its rear end constructed with a corresponding cam-shaped surface 3, substantially as and for the purpose described.

487,660. HOLDER FOR CARTRIDGE-PACKS. JOHN M. BROWNING and MATTHEW S. BROWNING, Ogden, Utah, assignors to the Winchester Repeating Arms Company, New Haven, Conn. Filed Mar. 22, 1892. Serial No. 426,091. (No model.)

Claim.—The herein-described holder for cartridge-packs, consisting of the back A, the two sides B C, projecting therefrom, the two sides turned inward at the bottom to support the cartridges from below, the rear portion E E of the sides at the top turned inward, so as to overhang the rear portion of the cartridges contained in the holder, the upper edges of the two sides inclined downward from the forward ends to the said overhanging rear portion of the two sides and the forward part of the said inclined portions turned inward to overhang the upper cartridge in the pack, and whereby the opening in the top of the holder immediately forward of the rear overhanging portions E E is of a width corresponding to the diameter of a cartridge-head, the said inclined portions turned inward, so as to produce a gradual contraction of that opening forward, and whereby as a cartridge is forced forward from the holder its head will escape forward of the projections E E and ride up the said inclines to raise the rear end of the cartridge, substantially as and for the purpose described.

487,661. LUBRICATOR. JOHN L. CORY, Green Island, assignor of one-half to Robert C. Bischall, Albany, N. Y. Filed June 2, 1892. Serial No. 435,341. (No model.)



Claim.—1. An apparatus for forcibly applying lubricant to the moving parts of machinery, consisting of a lubricant-reservoir provided with a hollow neck for containing a turning plug and having lubricant-conducting pipes extending therefrom, a turning plug provided with a head fitted to rotate in the bore of said neck, said turning plug having a lubricant-chamber provided with an eduction-port, which is adapted to be moved into correspondence with either of said lubricant-conducting pipes or openings leading into the latter, said turning plug being also provided with a valved lubricant-passage between the lubricant-reservoir of the apparatus and the lubricant-chamber of the turning plug, and a valved air-passage leading from the lubricant-chamber of the turning plug into the lubricant-reservoir, and one or more pipes whereby steam or other fluid under pressure can be conducted into the lubricant-chamber of said turning plug, substantially as and for the purpose herein specified.

2. An apparatus for forcibly applying lubricant, consisting of a

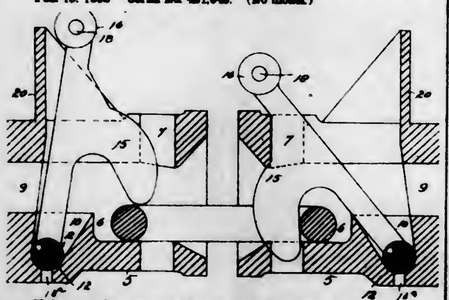
lubricant-reservoir provided with a series of lubricant-conducting pipes leading therefrom, a turning plug fitted to rotate in a neck of said reservoir and provided with an eduction-port leading from a lubricant-chamber in said turning plug and adapted to be turned into correspondence with either of said pipes, said lubricant-chamber having a downward-opening valve in its lower end, lubricant-passages leading from the upper end of said lubricant-chamber into the lubricant-reservoir of the apparatus, a downwardly-moving piston or valve arranged to control said lubricant-passages and to effect the opening movement of the valve at the bottom of said lubricant-chamber, and a lever for operating said piston, as and for the purpose herein specified.

3. In a lubricating apparatus, a lubricant-reservoir having a series of lubricant-conducting pipes leading therefrom, and a series of peripheral notches which correspond in number and position to said conducting-pipes, a turning plug fitted to rotate in a neck of said reservoir and provided with an eduction-port which is adapted to be moved into correspondence with either of said lubricant-conducting pipes, said eduction-port leading from a lubricant-chamber formed in the turning plug, an operating-lever attached to said turning plug and provided with means, substantially as described, for locking said turning plug at any required point of its rotative movement, and one or more pipes leading into said neck, whereby steam or other fluid under pressure can be delivered into the lubricant-chamber of said turning plug, as and for the purpose herein specified.

4. In a lubricating apparatus, the combination of a lubricant-reservoir having a hollow neck from which a series of lubricant-conducting pipes extend, a turning plug fitted to rotate in the bore of said neck and having a lubricant-chamber formed therein, a lubricant-passage leading from said reservoir into said chamber, a piston or valve fitted to control said lubricant-passage, an air-passage which forms a communication between the lubricant-chamber of the turning plug and the upper part of the lubricant-reservoir, and an eduction-port leading from said lubricant-chamber and adapted to form a communication with either of said lubricant-conducting pipes, as and for the purpose herein specified.

5. In a lubricating apparatus, the combination of a lubricant-reservoir and a turning plug fitted to rotate in a neck of said lubricant-reservoir, said turning plug being provided with a lubricant-chamber, which normally contains a required charge of lubricant and having a lubricant-passage and an air-passage which form independent communications between said lubricant-chamber and the lubricant-reservoir of the apparatus, each of said passages being provided with an independent valve for controlling the respective passages, whereby the lubricant may be ejected from said lubricant-chamber without affecting the contents of the lubricant-reservoir, as and for the purpose herein specified.

487,662. CAR-COUPLING. HENRY DEITZ, Denver, Colo. Filed Feb. 15, 1892. Serial No. 421,649. (No model.)



Claim.—1. In a car-coupler, the combination of the draw-head provided with a socket formed in the same below and in the rear of the link-recess, and the coupling device provided with the spherical or ball-shaped lower extremity adapted to enter said socket, and the curve-faced hook in front, substantially as described.

2. In a car-coupling, the combination of the draw-head provided with an independent socket formed in the rear of the link-recess and the loose hook-shaped coupling device having its lower extremity fashioned to enter said socket, substantially as described.

3. In a car-coupler, the combination of the draw-head having an independent socket formed in the rear of the link-recess and the loose locking device having its lower extremity fashioned to engage this socket, its forward portion being formed into a hook fashioned to cause the device to rise when engaged by the link of the opposite draw-head, the upper extremity being fashioned to cause the device to fall by gravity to the locking position, substantially as described.

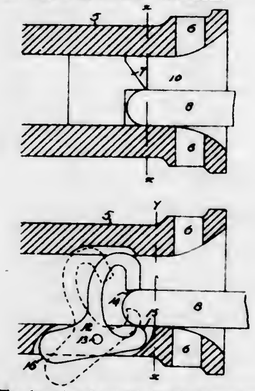
4. In a car-coupling, the combination of the draw-head provided with the pin-hole in front, the slot extending backward therefrom on the top of the draw-head, the longitudinal opening 9, and the socket formed in its bottom in the rear of the link-recess, and the locking device having its lower extremity fashioned to engage said socket, its forward portion hook-shaped and its upper extremity so fashioned as to cause the device to fall by gravity to the locking position, substantially as described.

5. The combination of the draw-head having an independent socket formed below and in the rear of the link-recess and the loose locking device consisting of a body portion having its lower extremity engaging said socket, a weighted upper extremity and a curve-faced front portion forming a hook and bearing against the draw-head both at the top and bottom, substantially as described.

6. A draw-head provided with an independent socket formed in the rear of and below the link-recess for the reception of the pivoted lower extremity of the locking device, the loose locking device, and an opening leading from the socket through the bottom of the draw-head for the escape of water, sand, &c., that might otherwise accumulate in the hollow draw-head, substantially as described.

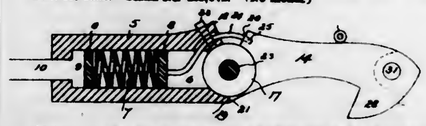
7. In a car-coupling, the combination of the draw-head provided with the link-recess and a socket independent thereof, and the loose coupling device having its lower extremity fashioned to enter said socket, substantially as described.

487,663. CAR-COUPLING. HENRY DEITZ, Denver, Colo. Filed Mar. 15, 1892. Serial No. 425,071. (No model.)



Claim.—The draw-head provided with the stationary lugs 7 and the movable dog 12, substantially as and for the purpose set forth.

487,664. CAR-COUPLING. HENRY DEITZ, Denver, Colo. Filed Mar. 15, 1892. Serial No. 425,072. (No model.)



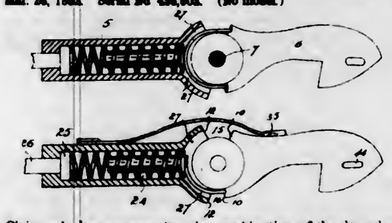
Claim.—1. In a car-coupling, the combination of the draw-head, the hooked coupling-head pivoted thereto, the adjacent extremities of the pivoted parts being shouldered to permit the movement required in coupling and uncoupling, and a spring-actuated plate having one extremity located in the draw-head and the other in the coupling-head, whereby the latter is normally held in the locked or coupled position, substantially as described.

2. In a car-coupling, the combination of the hollow draw-head carrying a coil-spring, the hook-shaped coupling-head pivoted thereto and provided with vertical shoulders limiting its lateral movement in both directions, and a plate engaging the coupling-head at one extremity and the coil-spring of the draw-head at the opposite extremity, substantially as described.

3. In a car-coupler, the combination of the hollow draw-head, the coil-spring located therein, the followers engaging said spring, the hook-shaped curve-faced coupling-head pivoted to the draw-head, a plate engaging the outer follower of the draw-head at one extremity and the coupling-head at the opposite extremity, and a locking-key entering an opening formed in the draw-head and coupling-head, whereby the coupling-head is made rigid on the draw-head, substantially as described.

4. In a car-coupler, the combination of the hollow draw-head, the coil-spring located therein, the coupling-head pivoted thereto and having vertical shoulders limiting its lateral movement in both directions, and a spring-actuated plate having one extremity located in the draw-bar and the other in the coupling-head, the outer extremity of the coupling-head being horizontally recessed and vertically apertured for the purpose of coupling with the ordinary link and pin, substantially as described.

487,665. CAR-COUPLING. HENRY DEITZ, Denver, Colo. Filed Mar. 26, 1892. Serial No. 426,603. (No model.)



Claim.—1. In a car-coupler, the combination of the draw-head, the hooked coupling-head pivoted thereto, the adjacent extremities of the two heads being provided with oppositely-disposed vertical shoulders sufficiently separated to permit the required lateral movement in both directions, a spring located in the draw-head, and a fork having its base engaging the outer extremity of the spring, the shoulders of the coupling-head being provided with recesses to receive the extremities of the fork, the draw-head being recessed to permit the required movement of the fork, substantially as described.

2. In a car-coupler, the combination of a draw-head longitudinally recessed and a spring-actuated forked stem located in said recess, the arms of the fork projecting therefrom, and a coupling-head which said arms engage, substantially as described.

3. In a car-coupler, the combination of the draw-head pivoted thereto and the spring-actuated fork having its base located in the draw-head, while its arms project therefrom and engage the coupling-head, substantially as described.

4. In a car-coupler, the combination, with the recessed draw-head and the coupling-head pivoted thereto, of a spring-actuated curved arm provided with a guide located in the recess of the draw-head, the arm projecting therefrom and engaging the coupling-head on one side, substantially as described.

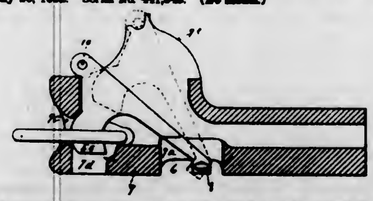
5. In a car-coupler, the combination, with the recessed draw-head, of the hooked coupling-head provided with the curved outer face, the curved buffer formed on the draw-head to engage said face, and a spring-actuated curved arm provided with a guide located in the recess of the draw-head, the arm projecting therefrom to engage the coupling-head on the side opposite from the buffer, substantially as described.

6. In a car-coupler, the curved arm provided with the spring-actuated guide-stem, substantially as described.

7. In a car-coupler, the fork provided with the spring-actuated guide-stem, substantially as described.

8. In a car-coupler, the combination, with the draw-head, of the hooked coupling-head pivoted thereto and provided with an aperture in the outer extremity, and means for locking the coupling-head rigidly upon the draw-head, consisting of a sliding bar having an eye in its outer extremity and provided with a depending pin at its opposite extremity, and a recess formed to receive said pin when in the locked and unlocked positions, the bar being so located that its outer extremity partially closes the vertical aperture in the coupling-head when said bar is in the unlocked position, while the eye of the bar coincides as to position with said aperture when the bar is in the locked position, substantially as described.

487,666. CAR-COUPLING. HENRY DEITZ, Denver, Colo. Filed July 26, 1892. Serial No. 441,343. (No model.)



Claim.—1. In a car-coupler, the hooked coupling device provided with the reduced lower extremity apertured to receive a locking-key, in combination with a draw-head recessed to receive said device, substantially as described.

2. In a car-coupler, the combination, with the draw-head provided with the elevated part, of the coupling-hook located within the draw-head and provided with a bar attached to its upper extremity and adapted to engage the elevated part of the draw-head when said hook is raised to the uncoupled position, substantially as described.

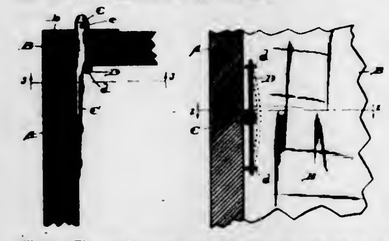
3. In a car-coupler, the combination of the draw-head and locking-hook, the lower extremity of the hook being reduced and apertured to receive a key, the upper part of the hook being provided with a bar adapted to engage a ledge or recess formed in the elevated part of the draw-head, substantially as described.

4. The hooked locking device provided with the reduced and apertured lower extremity and having a bar attached to its upper extremity, substantially as described.

5. In a car-coupler, the combination of the draw-head having an elevated part in which is formed a recess, and a hooked coupling device having a reduced lower extremity provided with a key and having a bar attached to its upper extremity, said bar being adapted to engage the recess formed in the elevated part of the draw-head, substantially as described.

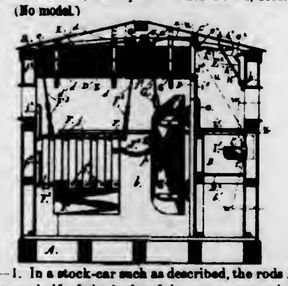
6. The combination, with the draw-bar, of the loose coupling-hook having the keyed lower extremity and suitable means attached to its upper extremity, whereby the same may be manipulated from either side of the car for the purpose of coupling or uncoupling, substantially as described.

487,667. BOX-FASTENER. ESTIL DEITZ, Indianapolis, Ind. Filed Apr. 12, 1892. Serial No. 428,905. (No model.)



Claim.—The combination, with a box or case and its lid, of a pin secured to said box or case and adapted to pass up through a hole in said lid, said pin being provided with a gradually-tapered inclined or overhanging portion, and a spring secured to the lid, which normally extends over the hole therein and is adapted to press in under said inclined or overhanging portion and thereby secure the lid from being easily opened, substantially as set forth.

487,668. STOCK-CAR. GEORGE GROSSMAN, Lancaster, Pa., assignor to Mary M. Grossman, same place. Filed Feb. 3, 1892. Serial No. 420,797. (No model.)



Claim.—1. In a stock-car such as described, the rods E, arranged across about one-half of the body of the car at successively-increasing obliquity from the center to the ends thereof and having their ends secured near the top of the car, the depressions *e* and *e*, formed near the ends of said rods, the suspension devices F^2, comprising the lower chain portions adapted to be linked to the tops of the front and the rear ends of stall-gates, as described, and the upper rod portions having at their upper ends the elongated loop-eyes f^2, said loop-eyes mounted and freely movable back and forth on said rods and adapted to rest in said depressions *e*, and the stall-gates F, as described, having the tops of their front and rear ends secured to the lower ends of said suspension devices to hold said stall-gates in position, substantially as described, and for the purpose set forth

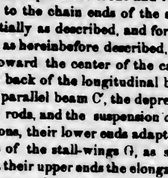
2. In a stock-car as herein described, the stall-gates F, comprising a number of parallel vertical strips, as shown, the interlocking links *f*, embracing and secured to the upper ends of said strips, the hinge-joints formed between said strips by the interlocking of said links, the section F^2 of folds of canvas or rubber packing recessed into and secured to the lower ends of said strips, the link-sections F^3, having one edge hinge-jointed to the rear ends of said stall-gates and the other edge hinged onto two wide staples f^3, said staples arranged lengthwise in the same vertical plane and secured to the rear side wall of the car, and the tops of the front and rear ends of said gates adapted to be linked to the chain ends of the suspension devices F^4, as shown, all substantially as described, and for the purpose set forth.

3. In a stock-car as hereinbefore described, the rods E', arranged diagonally forward toward the center of the car, having their front ends secured into the back of the longitudinal beam C and their rear ends secured into the parallel beam C', the depressions *e'*, formed near the front ends of said rods, and the suspension devices G', comprising the lower chain portions, their lower ends adapted to be linked to the tops of the front ends of the stall-wings G, as shown, and the upper rod portions having at their upper ends the elongated loop-eyes *g'*, said loop-eyes mounted upon and freely movable back and forth on said rods E' and adapted to rest in said depressions *e'*, and the stall-wings G, as described, having the tops of their front ends secured to the lower ends of said suspension devices and their rear ends hinged onto two wide staples secured to the front wall of the manger, as shown, and their front ends adapted to be linked to the front ends of the stall-gates F, as described, substantially as described, and for the purpose set forth.

4. In a stock-car of the class described, the stall-wings G, as shown, having their rear ends hinged onto two wide staples *g*, said staples arranged in pairs lengthwise in the same vertical plane and secured to the front face of the perpendicular posts D, said posts arranged at stall intervals and secured against the front wall of the manger, the tops of the front ends of said wings secured to the chain ends of the suspension devices G', as shown, said suspension devices having the elongated loops *g'* of their upper ends mounted upon and freely movable back and forth on the rods E', as shown, and the rods E', having the depressions *e'*, as shown, said rods secured diagonally in position near the roof of the car, all substantially as described, and for the purpose set forth.

5. In a stock-car such as herein described, the rods E, having the depressions *e* near the ends thereof, and the rods E', having the depressions *e'* near the forward ends thereof, said rods E and E' secured near the top of the car, the suspension devices F^3, having the elongated loop-eyes f^3 at their upper rod ends on said rods E, and their lower chain ends linked to the tops of the front and rear ends of the stall-gates, as shown, said gates at their rear ends, by means of the link-sections F^3, hinged to the rear wall of the car, as shown, and the chains F^4, having the hooks f^4 at their forward ends, and their rear ends secured to the front edge of said gates, the suspension devices G', having the elongated loop-eyes *g'* at their upper rod ends on said rods E, and their lower chain ends linked to the tops of the front ends of the stall-wings G, as shown, said wings hinged at their rear ends to the front wall of the manger, as shown, and the eyes g^3, secured to the front edge of said wings, and the hooks f^4, engaged into the eyes g^3, whereby said gates F and said wings G are linked together and the stall-partitions completed across the body of the car, substantially as described, and for the purpose set forth.

487,669. PNEUMATIC TIRE. WALTER B. HARDY, Boston, Mass., assignor to the Revere Rubber Company, same place. Filed July 9, 1892. Serial No. 439,497. (No model.)

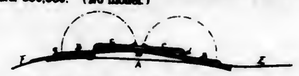


Claim.—1. In a pneumatic tire, an inflatable inner tube, in combination with a wrapper formed of canvas and rubber, the flaps of which are successively wrapped around the outer face of the inner tube and secured around the same, so that a tread portion is provided made up of the superposed flaps of said wrapper embracing the inner tube, substantially as set forth.

2. The concave metallic rim A, the inflatable inner tube B, and the wrapper C D, secured longitudinally along said rim and having flaps *c d*, each extending from the edge of the rim around the tube B and successively secured thereon, substantially as set forth.

3. The described method of forming pneumatic tires, consisting in first applying to a peripherally-concave rim a wrapper composed of rubber compound and canvas, the rubber portion being in contact with the rim, then pressing such wrapper along its central portion closely against said rim by means of a circular core or form and wrapping its flaps or edges around said core and inclosing the whole in a mold or envelope, then vulcanizing the rubber while so confined, subsequently raising said flaps, removing said core, and substituting therefor an inflatable inner tube and then wrapping the flaps successively around the outer portion of said tube and securing them in place, substantially as set forth.

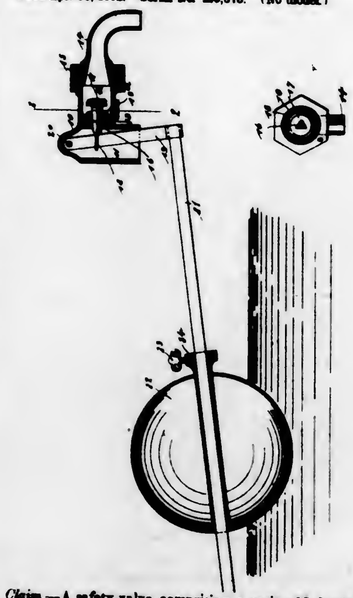
487,670. RUBBER-DAM CLAMP. JOHN W. HADSHAWOUT, Omaha, Nebr., assignor to Albert S. Billings, same place. Filed July 21, 1890. Serial No. 359,389. (No model.)



Claim.—1. As a new article of manufacture, a rubber-dam clasp comprising a suitable frame-plate, flanges centrally and integral with said frame-plate, and a pressure-plate pivoted within and extending beyond said flanges and provided at the ends with suitable depending lips, in combination with suitable operating-levers pivoted between said flanges and above said pressure-plate, substantially as shown and described.

2. As a new article of manufacture, a rubber-dam clasp comprising a suitable frame-plate, a cross-bar at one end of said frame-plate, flanges integral with said frame-plate, and a pressure-plate working within and extending beyond said flanges and provided at the ends with suitable depending lips, in combination with suitable operating-levers, all arranged substantially as shown, and for the purpose set forth.

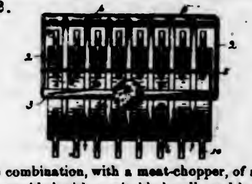
487,671. BALL-COCK. GAYLORD S. HUNTER, Pawtucket, R. I. Filed Apr. 20, 1892. Serial No. 429,573. (No model.)



Claim.—A safety-valve comprising a casing 10, having a vertically-extending-chamber 11, open at its lower end, a transverse inlet-chamber 12, a passage 13, connecting the two chambers, a valve 17 in the chamber 12 and having a stem 16, extending through passage 13 into chamber 11 and there provided with a loop, and a float-operated lever 19, pivoted at its upper end in the upper end of the chamber 11 and extending down through said loop and the lower end of the chamber, substantially as set forth.

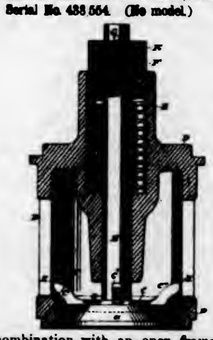
487,672. MEAT-TENDERER. JOHN JEFFERSON, Columbus, assignor of one-half to Henry Hill, Marion, Ohio. Filed June 6, 1892. Serial No. 435,669. (No model.)

487,672.



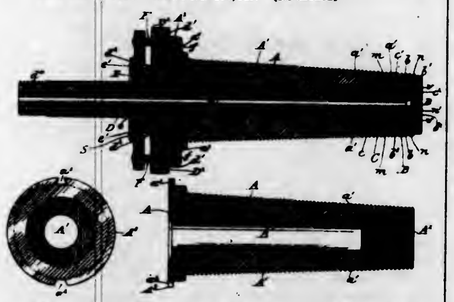
Claim.—The combination, with a meat-chopper, of a roller journaled in a frame provided with a suitable handle and having rows of teeth at regular intervals on its periphery, with a series of intermediate bent-wire bevel-ended strippers mounted on a horizontal rib, and suitable stays whereby they are retained in proper relative position, substantially as specified.

487,673. VALVE. LLEWELLYN H. JENES, New York, N. Y. Filed June 30, 1892. Serial No. 438,554. (No model.)



Claim.—The combination, with an open frame or cage D and with a valve adapted to close inwardly against a seat formed in the cage, of a shoulder J, formed in the cage in juxtaposition to the valve-seat, and a lug or stop removably secured in the valve-disk and adapted to engage said shoulder, substantially as described.

487,674. LOCK-VALVE FAUCET. HIRAM S. JOHNSON, Canaan Four Corners, assignor of one-half to Milford L. Bates, Canaan, N. Y. Filed Oct. 1, 1891. Serial No. 407,445. (No model.)

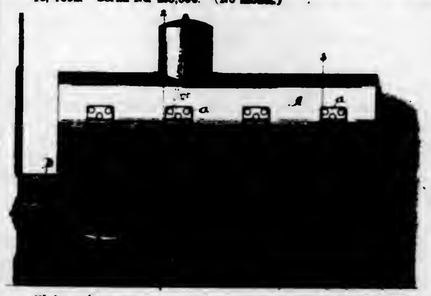


Claim.—1. In a faucet, the combination, with the faucet-body A, having through it the longitudinal central bore A' and in its rear end portion the internal annular recess A^2, provided with the screw-thread *a*, commencing at the rear end of the said faucet-body and extending to shoulder *a'*, and the valve-piece C, provided with a central bore and having the external screw-thread *c*, working in the screw-thread *a* of the annular recess A^2, and provided with the rearwardly-projected ring-form lip c^2, of the liquid-straining piece B, having an internal chamber and provided with a series of ports *v v*, which are set in a circle relatively greater than the outer circumference of the said ring-form lip c^2 of the valve-piece C and secured to close the rear end of the faucet-body, with provision for the longitudinal movement of the said valve-piece to make and close communication of said ports *v* with the central bore of the said valve-piece, substantially as and for the purposes set forth.

2. In a faucet, the combination, with the faucet-body A, provided with a central bore and the screw-threaded annular recess A^2 in its rear end portion, and the chambered liquid-straining piece B, provided with the ring-form recess b^2 in its chambered side and having the circular series of ports *v v*, communicating with said ring-form recess, of the centrally-perforated valve-piece C, provided at its rear end with the rearwardly-projected ring-form lip c^2 and working by a screw-thread within the recess A^2, so as to be capable of being moved in either direction, accordingly as it is revolved, and a hollow key for engagement with the said valve-piece C, with its bore communicating with the central perforation of the said valve-piece C, substantially as and for the purposes set forth.

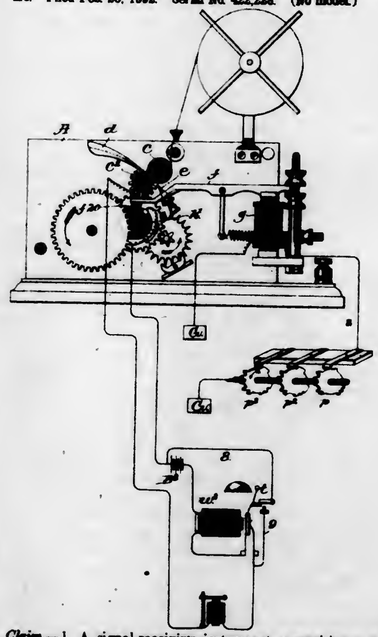
3. In a faucet, the combination, with the faucet-body A, having with it the flange A^3, provided with one or more notches a^3, and the removable key D, centrally perforated, for operating the valve of said faucet by revolving the same and for conducting the liquid out from the faucet and having with it flange D', provided with openings *d'*, of the follower E, spring S between said flange and follower, and one or more clamping-hooks holding said follower and key to the faucet-body, substantially as and for the purposes set forth.

487,675. FURNACE. JAMES KEEGAN, Chicago, Ill. Filed Mar. 16, 1892. Serial No. 425,096. (No model.)



Claim.—In a steam-boiler furnace, the combination of the arch D, the hollow bridge-wall E, having the steam-pipe *e'*, the filling H, and the division-wall G, having an opening in the lower portion thereof, substantially as described.

487,676. ELECTRIC SIGNALING APPARATUS. MORRIS MARTIN, Malden, Mass., assignor to the Municipal Signal Company, Portland, Me. Filed Feb. 20, 1892. Serial No. 422,226. (No model.)



Claim.—1. A signal-receiving instrument comprising a paper feeding train of wheel-work and an electro-magnet and armature

controlled by the transmitting-circuit, combined with a circuit-controller, one member of which is operated by said train of wheelwork and the other member of which is operated by said electro-magnet, substantially as and for the purposes set forth.

2. In an electric signaling apparatus, multiple signal-transmitters at sub-stations constructed and arranged to transmit a distinguishing impulse with some and not with other signals, a message-receiving instrument at the central station and an electric circuit connecting them; an electro-magnetically-operating indicating-signal and circuit-controller for said indicating-signal, one of the members of which is controlled by a magnet effected by the distinguishing impulse and the other member of which is moved by a motor mechanism into position to co-operate with said electro-magnetically-movable member for a short time only, after which co-operation is not possible, whereby the indicating-signal may be sounded with some signals and not others, substantially as described.

3. In an electric signaling apparatus, signal-transmitting instruments at sub-stations and a message-receiving instrument at a central station, and an indicating-signal also at said central station, combined with a plurality of circuit-controllers which control the circuit of said indicating-signal, one of the members of which is operated by a time-train and the other by an electro-magnet, substantially as described.

4. In an electric signaling apparatus, multiple signal-transmitters at sub-stations combined with a message-receiving instrument at a main station connected in circuit with said transmitters and comprising a paper-feeding train, a starting-magnet, several pen-magnets and markers operated by their armatures, an indicating-signal and circuit therefor, and several independent circuit-controllers for the said circuit, one of the members of which is operated by the train and the other by the said pen-magnets, substantially as described

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487,677. MEANS FOR ATTACHING MAGAZINES TO FIREARMS. WILLIAM MARSH, New Haven, Conn., assignor to the Winchester Repeating Arms Company, same place. Filed Aug. 1, 1892. Serial No. 441,824. (No model.)

Claim.—In a magazine-firearm, a magazine constructed with a pin projecting from its forward end, combined with a band having an opening, into which the said pin may set, the band split above the said opening, forming two branches, the branches terminating in jaws constructed to embrace the barrel, with a screw through the two parts between the barrel and said pin, substantially as described

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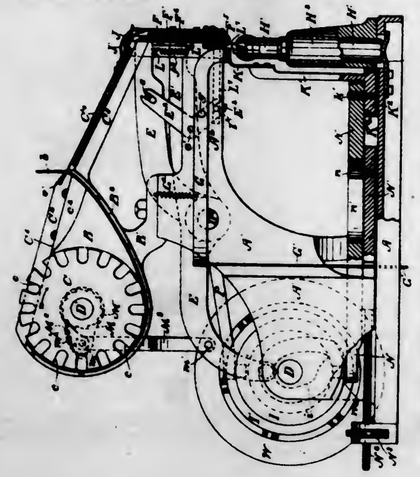
487,678. BUTTON-SETTING MACHINE. EDWARD P. MERWIN and JOHN D. STRICKLER, Boston, Mass., assignors to the Imperial Manufacturing Company, Portland, Me. Filed Sept. 20, 1890. Serial No. 365,616. (No model.)



Claim.—1. In a button-setting machine, a clinching-die and a vertically-sliding button-raceway provided with a spring button-holder at the bottom thereof and having a reciprocating motion alternately to and from said die, in combination with a sliding bar L^7, a movable staple cutting and bending block engaging with said bar, a staple-moving plunger, and suitable guides for both staple and plunger, leading from the staple-forming point to the die independent of the button, substantially as and for the purposes described.

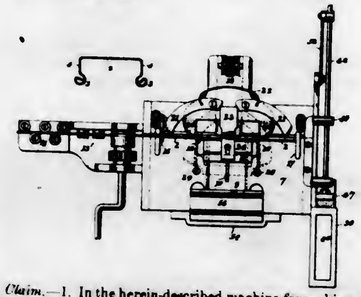
2. In a button-setting machine, a stationary clinching-die, in combination with a plunger, an inclined stationary button-raceway C^9 and a vertically-sliding button-raceway formed of the two plates F, tied together and having the front plate F' provided with a spring button-holder at the bottom, said movable raceway having a reciprocating motion to and from said die, substantially as described.

3. In a button-setting machine, the suitably-guided reciprocating plunger carrying block L^3 and the suitably-guided reciprocating cutter-bearing and staple-bending block L^2, said blocks being vertically movable each independent of the other, in combination with the horizontally-movable reciprocating bar L^7, a stationary clinching-die, a vertically-movable button-raceway, and the cam-operated levers E E', actuating said blocks, bar, and raceway, substantially as described.

4. In a button-setting machine, a stationary clinching-die, in combination with a plunger, an inclined stationary button-raceway provided at the bottom with a vibratory button-separating gate, a vertically-movable button-raceway operating said gate, said movable raceway having a curved path for the buttons and being provided with a spring button-holder at the bottom directly over said die, and suitable means for imparting a reciprocating motion to said movable raceway, all constructed, arranged, and operating substantially as and for the purposes described.

5. In a button-setting machine, the combination, with a movable bushing L^4, of a movable staple cutting and forming block L^2, adapted to receive adjustable cutters of varying thickness, a screw S, provided with nuts S^7 S^8, and a lever P, having a wire-feeding pawl P^2, engaging with the nut S^8, arranged and operated substantially as and for the purposes described.

487,679. MACHINE FOR MAKING PACKAGE-CARRIERS. CYRUS B. MORSE, New York, N. Y., assignor to John H. Comer, same place, and Bessie P. Dummer, Flushing, N. Y. Filed May 14, 1892. Serial No. 433,965. (No model.)



Claim.—1. In the herein-described machine for making wire into package-carrier form, the combination of the die 8, about which the wire is bent, the slide 18, carrying the jaws 20 and adapted to close upon the die to bend the wire around the same, the spring-retracted levers 21, mounted on and moving with the slide, and the arm 23, carried on the die and arranged in the path of the said levers, whereby as the slide advances the levers are swung toward the die and engage and preliminarily bend the ends of the wire blank, substantially as set forth.

2. In combination, the movable die 8, a dogging device for the die, the jaws 20, movable to and from the die to bend the wire around the same, the coilers 29, and automatic connections between the coilers and the dogging device adapted to hold the die stationary while the said jaws advance upon and bend the wire around it and also adapted to free the die and permit it to advance toward the coilers as the same engage the ends of the wire and bend them into hook form.

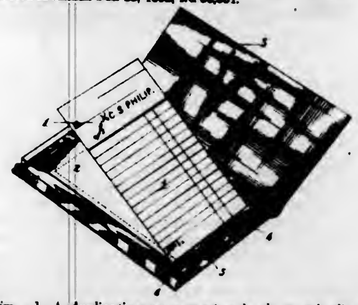
3. In combination, the movable die 8, the slide 18, bearing jaws 20, a dogging device for holding the die stationary, the vertically-movable coilers 29, adapted to withdraw from the plane of the wire being bent and to return to and engage the wire after being bent, and connections between the coilers and said dogging device, operated to free the die as the coilers engage and coil the ends of the wire, substantially as set forth.

4. In combination, the die 8, the jaws 20, moving to and from the die to bend the wire about the same, the vertically-reciprocating

coilers 29, located at the position of the bent ends of the wire, the main shaft 13, and connections between the same and the said jaws, adapted to advance the jaws and thereby bend the wire about the die, and connections between the main shaft and the coilers, adapted to withdraw the coilers from the plane of the wire as the ends of the same are bent around the die and brought to position over the coilers preparatory to being engaged and coiled thereby, substantially as set forth.

5. In combination with the wire-bending die and slide and the coilers, the main shaft 13, bearing cam 12, and gears 33, the lever 26 and its retracting-spring for operating the said slide, the spring-retracted die-dogging lever 10, operated by the said cam to release the die, and the gears 32, driven by said gears 33 and for operating the coilers, substantially as set forth.

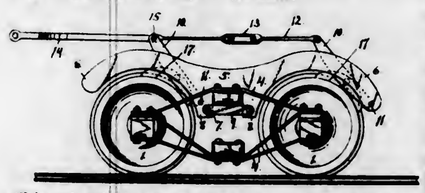
487,680. DUPLICATING MEMORANDUM-BOOK OR SALE-SLIP. WILSON MONROE, Toronto, Canada, assignor to William Richard Cavell, same place. Filed June 18, 1892. Serial No. 437,296. (No specimens.) Patented in Canada Feb 25, 1892, No. 33,351.



Claim.—1. A duplicating memorandum-book or sale-slip consisting of a series of sale-slips and their duplicates, the back of each sale-slip being provided with a transferring composition, by means of which the characters recorded on the sale-slip are recorded on its duplicate, substantially as described.

2. A duplicating memorandum-book or sale-slip consisting of a series of sale-slips and their duplicates, the back of each sale-slip provided with a transferring composition, by means of which the characters recorded on the sale-slip are simultaneously recorded on its duplicate, and a rest adapted to be interposed between the duplicate of the sale-slip in use and the remainder of the book, substantially as described.

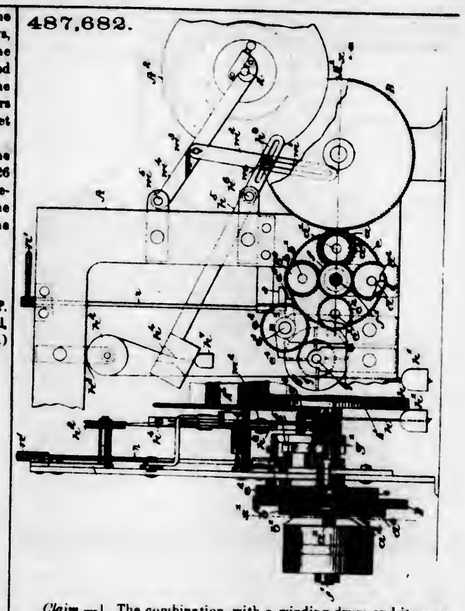
487,681. CAR-BRAKE. PETER MCMULLEN, Buffalo, N. Y. Filed Aug. 31, 1892. Serial No. 444,617. (No model.)



Claim.—1. A brake mechanism for railway-cars, consisting of a framework secured to the upper side of the truck and extending over the wheels, levers pivoted to the framework, and brake-shoes pivoted to the levers over the wheels and located for bearing-down contact with the upper portion of the tread of the wheels, the upper ends of the levers being connected together and operated from the source of power, substantially as shown, and for the purpose stated.

2. A brake mechanism for railway-cars, consisting of the two sets 5 5 and 5 5 of side pieces secured to the cross-beam on the upper side of the truck, the levers 10, pivoted to the securing-bolts 11, the brake-shoes 17, pivoted in a recess in the levers 10, so as to have frictional contact with the upper part of the wheel, the connecting-rod 12, with turnbuckle 13, and the yoke 14, pivoted to the brake mechanism and connected to the source of power, all combined and operating substantially as shown and described.

487,682. WARPING-MACHINE. ALONZO R. RHOADES, Hopedale, Mass., assignor to the Hopedale Machine Company, same place. Filed June 24, 1892. Serial No. 438,264. (No model.)



Claim.—1. The combination, with a winding-drum and its gear, of a speed-changing gear and an escapement, the escapement enabling the speed-changing gear to be operated to effect differences in the speed of the winding-drum, substantially as described.

2. A winding-beam, a winding-drum therefor, a gear *f*, and a series of intermediate pinions of different diameters driven thereby, means for moving the series of pinions bodily, whereby by bringing either series of pinions between the gear *f* and gear of the winding-drum the speed of rotation of the winding-drum may be varied, and connections between the winding-beam and said means for moving the series of pinions, substantially as described.

3. A winding-beam, a winding-drum and its gear B, a shaft provided with a gear, as *f*, a series of gears of varying diameters adapted to be interposed singly between the said gear *f* and gear B, a carrier upon which the said pinions of varying diameter are mounted, and mechanism, including an escapement, to intermittingly rotate said carrier, and connections between said escapement and winding-beam, to operate substantially as described.

4. A winding-beam, a winding-drum therefor, a shaft having an unvariable motion, variable-speed devices conveying rotation from the shaft to the drum, by which the said drum may be intermittingly driven at different speeds, an escapement to enable the speed of said devices to be varied, and connections between the beam and said escapement, whereby the speed of said devices is directly controlled by the beam, substantially as described.

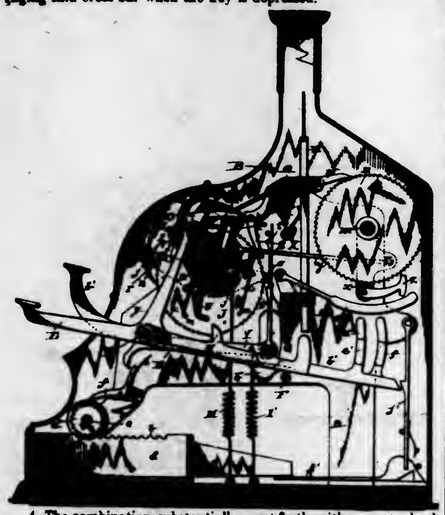
487,683. CASH-REGISTER. EDWARD F. ROBERTS, Columbus, Ohio, assignor to the Roberts Manufacturing Company, same place. Filed May 25, 1892. Serial No. 434,262. (No model.)

Claim.—1. The combination, substantially as set forth, with a ratchet-wheel, a drag-rocker arranged for uniform strokes, and a count-rocker arranged for variable strokes, of a pawl-carrier pivoted to the count-rocker, a count-pawl pivoted to the pawl-carrier, and a drag-pawl pivoted to the drag-rocker and engaging the pawl-carrier.

2. The combination, substantially as set forth, with a ratchet-wheel, a drag-rocker arranged for uniform strokes, and a count-rocker arranged for variable strokes, of a count-pawl carried by the count-rocker, a drag-pawl engaging the drag-rocker and count-rocker and adapted for release under excessive strains, and a locking device carried by the count-rocker and locking said count-pawl to the ratchet-wheel, and a projection on the drag-rocker arranged to hold said locking device out of action when the drag-rocker and count-rocker occupy their closest relation to each other.

3. The combination, substantially as set forth, of a shaft C, a rocker pivoted thereon, a cross-bar rigid with the rocker and disposed parallel with said shaft, a shaft D forward of and below shaft C, and a finger-key pivoted on said shaft D and provided with a rigid arm

V, projecting between said cross-bar and the shaft C and directly engaging said cross-bar when the key is depressed.



4. The combination, substantially as set forth, with a count-wheel, finger-keys, and count-pawl mechanism operated by the finger-keys, of a second count-wheel, a transfer-rocker, a transfer-pawl carried thereby and engaging the second count-wheel, a spring tending to draw the transfer-rocker to position of back stroke, a hook holding the transfer-rocker in position of forward stroke, a series of pins upon the first count-wheel to successively release said hook, a rocker Y, arranged to be moved by any or all finger-keys, and a pawl *s*, carried by said rocker Y and arranged to move said transfer-rocker to position of forward stroke.

5. The combination, substantially as set forth, with count mechanism and finger-keys, of tablets having vertically-moving stems arranged to be lifted by their respective keys, a friction-wing bearing against said stems and serving to support them when elevated, and a releasing-bar connected with the keys and friction-wing and arranged to release the friction-wing from the stems at the first movement of any finger-key.

6. The combination, substantially as set forth, with count mechanism, finger-keys, and a bell, of a bell-lever provided with a striking-spring, a rocker Y, operated by any or all finger-keys, and a bar *g*, reciprocated by said rocker Y, and having a projection *g'*, engaging the bell-lever on the forward stroke of the bar and provided with a zigzag cam engaging a stationary pin and serving to withdraw the projection from the bell-lever.

7. The combination, substantially as set forth, with count mechanism and finger-keys, of a money-drawer provided with racks, a shaft having pinions engaging said racks, a spring coiled upon said shaft and tending by its recoil to turn said shaft and open the drawer, a till-pawl preventing the turning of the shaft when the drawer is shut, and a rocker operated by any or all keys and serving to release said till-pawl when any key is operated.

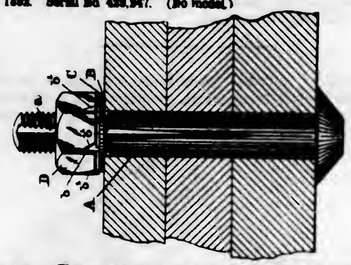
8. The combination, substantially as set forth, with finger-keys and count mechanism operated thereby, of a department count-wheel, a count-pawl therefor moving in unison with the counting mechanism and normally out of engagement with the department-wheel, and a department-key arranged to throw said pawl temporarily into engagement with the department-wheel.

9. The combination, substantially as set forth, with finger-keys and count mechanism operated thereby, of a series of department-wheels, a rocker moving in unison with the counting mechanism, independent pawls for each department-wheel carried by said rocker and normally out of engagement with their wheels, a pawl-guide for each pawl, and department-keys arranged to move said pawl-guides and lock the pawls to their wheels.

10. The combination, substantially as set forth, with finger-keys and count mechanism operated thereby, of department-wheels, a rocker moving in unison with said count mechanism, independent pawls for said department-wheels normally out of engagement with their wheels, a pawl-guide for each department-pawl, a department-key for each department, adapted when operated to lock the appropriate pawls to their wheels, a locking device to lock a department-key in active position, and a moving till arranged to release said locking device as the till closes.

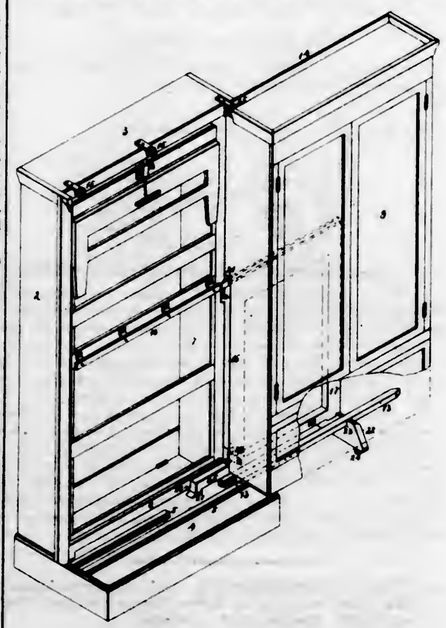
11. The combination, substantially as set forth, of a low-group counting mechanism and group of keys therefor, a high-group counting mechanism and group of keys therefor, independent department-wheels pertinent, respectively, to each of said counting mechanisms, pawls for each of said department-wheels, arranged to move in unison with the respective counting mechanisms and normally out of engagement with their wheels, and a department-key arranged to lock said pawls temporarily to their wheels.

487,684. NUT-LOCK. William D. Rosenson, El Paso, Tex., assignor of one-third to William H. Savage, same place. Filed Apr. 15, 1892. Serial No. 429,947. (No model.)



Claim.—The combination of a bolt, a nut provided with a recess in each of its side faces, each recess having a straight shoulder which extends at right angles both to the side face of the nut and the bottom face thereof, and a beveled surface whose bevel is from the inner end of the said shoulder outward to the side face of the nut, a circular base-washer fitting on the bolt and having projecting pliable teeth around its periphery, which teeth may be bent up substantially at right angles to the washer and into the notches of the nut behind the straight shoulders thereof, whereby the nut is prevented from turning backward, and which may also be bent out of said notches by the beveled sides of the same upon turning forward the nut and flattened out into the plane of the washer by the nut riding over the said teeth, whereby the nut may be tightened without the application of an implement to bend the teeth out of the notches, and means to prevent the washer turning on the bolt.

487,685. FOLDING BED. William D. Snyder, Chicago, assignor to Ralph W. Emerson and William F. Woodruff, Rockford, Ill. Filed Apr. 28, 1892. Serial No. 431,072. (No model.)



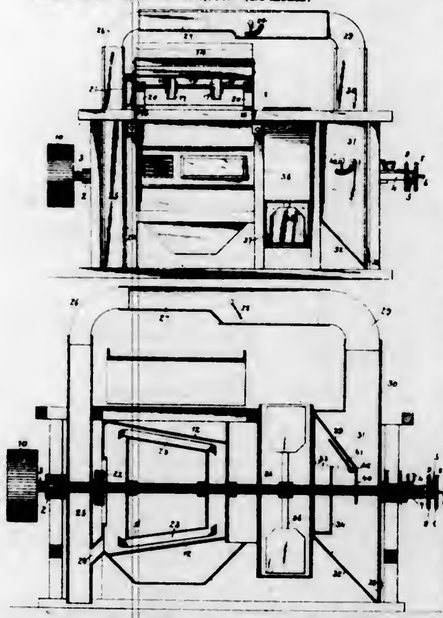
Claim.—1. A folding bed having a stationary case, a bed-frame located therein, a sliding front, a track located between the stationary case and sliding front above the base of the stationary case upon which the front is supported when the bed is closed, and a sliding extension for the track, having a connection with the case and upon which the front is supported when the bed is opened.

2. A folding bed having a stationary case, a bed-frame located therein, a sliding front, a track supported by the bed-frame, and a sliding extension for the track, having a connection with the case and upon which the front is supported when the bed is opened.

3. A folding bed having a stationary case, a bed-frame located therein, a sliding front, a track supported by the bed-frame, and a sliding extension for the track, having a connection with the case, the inner end of the extension having a vertical movement to permit such end to drop below the level of the track of the bed-frame when in its closed position or raise on a level therewith when opened out.

4. A folding bed having a stationary case, a bed-frame located therein, a sliding front, a track supported by the bed-frame, a sliding extension for the track, having a connection with the case, the base of the extension provided with a guideway, and a guide on the under side of the front, engaging the guideway when the bed is opened.

487,686. OAT-CLIPPING MACHINE. Lucious O. Stevens, Peoria, Ill., assignor to the Stevens Manufacturing Company, same place. Filed Jan. 7, 1891. Serial No. 376,990. (No model.)

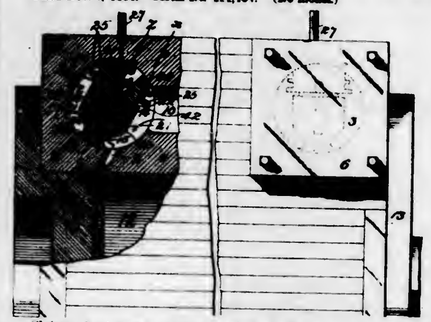


Claim.—1. In a machine of the class described, the combination of the frame, the frustum-shaped casing, the longitudinally-movable shaft carrying the frustum-shaped shell provided with ribs or beaters, a yoke or bracket at one end of the frame, a screw-threaded rod mounted in said yoke and having its inner end connected by a swiveled joint with the longitudinally-movable shaft, and the nuts or hand-wheels mounted upon said screw-threaded rod and bearing, respectively, against the inner and outer sides of said yoke or bracket, substantially as and for the purpose set forth.

2. In a machine of the class described, the combination of the fan-casing and the adjacent chamber, the partition having an opening at its upper end, the inclined deflector having a depending shield, and the rock-shaft arranged in the angle between said shield and deflector and having a damper arranged to close the opening at the upper end of the partition, substantially as and for the purpose set forth.

3. In a machine of the class described, the combination of the frame, the frustum-shaped casing, the longitudinally-movable shaft carrying a frustum-shaped shell provided with ribs or beaters and a suction-fan, a casing for the latter, a chamber arranged adjacent to the fan-case and having an inclined bottom and a door at its lower end, a partition separating said chamber from the fan-case, said partition having an opening at its upper end, the inclined deflector having a depending shield, a rock-shaft arranged in the angle between said shield or deflector and having a damper adapted to close the opening in the partition between the fan-case and the adjacent chamber, a valved flue connecting the latter with the discharge-opening at the rear end of the frustum-shaped casing, suitable feed mechanism, and means for adjusting the main operating-shaft longitudinally in its bearings, substantially as and for the purpose herein set forth.

487,687. ROTARY VALVE. Ferris D. Tought, Minneapolis, Minn., assignor of three-fourths to Franklin C. Johnson, same place. Filed Nov. 7, 1891. Serial No. 411,137. (No model.)



Claim.—1. A rotary valve consisting of two main telescoping parts, one of said parts having an edge adapted to close the port, means for oscillating the valve, one of said parts provided with holes or ducts 15, wherethrough steam may pass to equalize the pressure upon both sides of the valve, and means provided for holding both edges of the valve firmly against the seats provided therefor and for preventing the passage of steam between said parts, substantially as described.

2. The combination, with an engine-cylinder, of a rotary-valve cylinder or sleeves arranged therein, a port 11, connecting the two, means for leading the live steam into said valve-cylinder and a rotary valve arranged in said cylinder, means for operating the same, said valve consisting of telescoping parts and being provided with a normally-closed internal cavity, one of said parts adapted to close said port 11, means for holding both parts in contact with the walls of said cylinder, and means for the exhaust or inlet of steam from or to the cavity of said valve, whereby the valve may be collapsed or reseated, as desired, substantially as described.

3. The combination, with the containing-cylinder provided with a port or ports, of a valve arranged longitudinally in the same and diametrically bridging said cylinder, said valve constituted by a lower part adapted to cover the admission-port and provided with longitudinal slots or channels, springs arranged in said channels, and an upper part having bearings on the opposite walls of the cylinder and telescoping into said lower part and elastically forced upon said walls by said springs in said channels, a chamber being arranged within said valve, and means provided for exhausting the leakage steam therefrom or applying steam to force the lower part of the valve upon its seat, and openings through the bottom of said lower part for supplying steam to the back of the valve to equalize the pressure thereon, substantially as described.

4. The engine-cylinder having in its walls transverse valve-cylinders and admission and exhaust ports, in combination with a two-part valve arranged in each valve-cylinder and having a lower part provided with holes 15, extending through from side to side and having the walls provided with slots 20, springs arranged in said slots, and an upper telescoping part engaging said springs and provided with strengthening-ribs, said valve provided with an internal chamber, and an opening in the upper part extending to the cylinder-wall, means for exhausting steam from said chamber, and means for rotating or oscillating said valve, substantially as described.

5. The combination, with a valve-cylinder, of a two-part rotary valve arranged therein, segmental chambers being left on each side of said valve when in the cylinder, openings wherethrough the steam passes equally to both sides of the valve, an internal chamber arranged within said two-part valve, a packing being provided between the two parts whereby leakage of steam into said chamber is substantially avoided, while said parts are left independently movable, an opening for the exhaust of steam from said chamber, and an opening or openings 43, arranged in the walls of the cylinder above each end of the valve and closed thereby, whereby the pressure thereon is diminished and the valve seated by the force of the steam on its walls, substantially as described.

6. The combination, with a steam-cylinder having the valve-cylinder, of the steam-chest inlet thereto and the admission-port leading

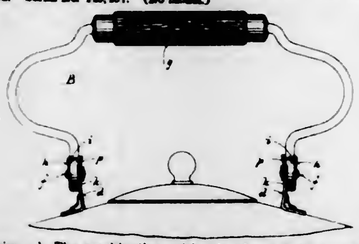
therefrom, the two-part valve having its parts independently movable and the lower edge of which is adapted to be rotated to close said admission-port, the other end or edge of the valve to seat against the opposite wall of the cylinder, and the wall of the cylinder provided with openings or ports 43, arranged to be normally covered thereby, and that part of the valve being provided with surfaces to receive steam-pressure, whereby said part is held in contact with its seat, pressure being thereby relieved from the lower or other part of the valve, substantially as described.

7. The combination, with a steam-cylinder having the valve-cylinder, of the steam-chest inlet thereto and the admission-port leading therefrom, the two-part valve having its parts independently movable and held apart by springs arranged between them, packing being arranged to prevent passage of steam between the parts of the valve, one part of the valve provided with transverse holes or ducts for the equalization of steam-pressure on the sides of the valve, one edge of the valve adapted to close over the admission-port, and air or pressure relief openings or ports arranged at opposite points in the walls of the cylinder and to be at all times closed by the other part of the valve, substantially as and for the purpose specified.

8. The combination, in a rotary valve, of the lower part provided with the grooves or channels 20, springs 21, arranged in said channels, said part provided with openings 15 for the free passage of steam to both sides of the valve, the upper part having the flange 22, adapted to engage said spring, packing-blades arranged between the upper and lower parts, said upper part having the ribs 25, respectively, and an internal opening arranged in the lower part, and the exhaust-pipe 27, connecting with the internal chamber of the valve, substantially as and for the purposes specified.

9. The combination, with the cylinder, of valve-cylinders arranged therein, two-part valves provided in each cylinder, the two parts of each being independently movable, means for holding each part in contact with the wall of the valve-cylinder adapted to receive the same, and an internal chamber arranged within each valve, exhaust-pipes 27, connected with the main exhaust of the engine-cylinder, valves arranged in said pipes, and live-steam connections with said pipes 27, said connections provided, also, with valves whereby the chambers of said valves may be completely exhausted or filled with steam, substantially as described.

487,688. HANDLE FOR UTENSILS. FREDRICK W. WOOD, Norwich, Conn., and JOHN F. BINGHAM, Lawrence, Mass. Filed Sept. 9, 1892. Serial No. 445,467. (No model.)



Claim.—1. The combination, with a kettle or similar utensil, of bail-ears thereon, a bail pivoted to said ears, and a cap mounted on said pivot and slotted to astride said bail, the opposite edge of said cap being in frictional contact with the face of said bail-ear, substantially as and for the purpose set forth.

2. The bail-ear and bail pivoted thereto, in combination with the metallic cap *h*, mounted on the bail-pivot and indented at *i* to receive said bail, all being arranged to operate substantially as described.

3. The combination, with a kettle or similar utensil, of bail-ears secured thereon and provided in their faces with an annular groove, a bail pivoted to said ears, and a cap mounted on said pivot and slotted to astride said bail, the edge of said cap being disposed in the bail-ear grooves, substantially as described.

4. The combination, with the bail-ear provided with the annular groove *m* and a lip *l*, of the bail pivoted to said ear and a cap *h* on the bail, pivoted and slotted to astride said bail and having its edge working in said groove, said cap being movable by said bail, substantially as described.

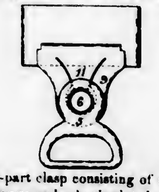
487,689. GARMENT-SUPPORTER. GEORGE H. ADAMS, Providence, R. I. Filed Aug. 9, 1892. Serial No. 442,555. (No model.)

Claim.—1. In a cast-off for garment-supporters, in combination, two oppositely-pivoted members having oppositely-arranged concavities to receive a cord or its equivalent and a latch for positively locking the members together, as described.

3. In a cast-off for garment-supporters, the combination, with a depending plate having a downwardly-curved transverse concavity and a guard-tongue curving upward from the edge thereof, of an oppositely-curved locking member adapted to fit over the guard-tongue, as described.

3. The combination, with the plate 9, having the concavity 10, the guard-tongue 11, and a catch 12 and pivoted to the link 5 by the ears 8 8, of the locking member 14, also pivoted to said link and having a lower concavity adapted to cover said guard-tongue, a lip 15 for engaging the catch 12, and a thumb-piece 16, as and for the purpose described.

487,690. SUSPENDER CAST-OFF. GEORGE E. ADAMS, Providence, R. I. Filed Aug. 24, 1892. Serial No. 443,991. (No model.)



Claim.—1. A two-part clasp consisting of a front plate having an annular concaved flange and a back plate having a circular perforation to receive said flange and a spring-tongue extending slightly into the perforation to engage the concavity of the flange, as described.

2. The combination, with the front plate 5, having the annular concave flange 7, of the back plate 9, having the perforation 10 and the spring-tongue 11, as described.

3. The combination, with the clamping-plate of a buckle having the perforation 10 and the spring-tongue 11, of a cast-off 5, having the annular concave flange 7, as and for the purpose described

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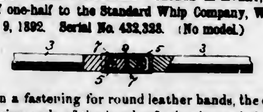
487,691. BELT-FASTENER. GEORGE H. AVERY, Easthampton, assignor of one-half to the Standard Whip Company, Westfield, Mass. Filed May 9, 1892. Serial No. 432,338. (No model.)



Claim.—In a fastening for round leather bands, the combination, with the adjoining ends of the band, of a hook consisting of a length of wire having its ends bent and passed through the adjoining ends of the band and clinched therein, two metallic clamping-shells of semi-circular cross-section applied over the ends of the band on opposite sides thereof, said shells inclosing said hook, and two metallic pins secured at their ends to the respective shells, one of said pins passing through each end of the band inside the hook and at right angles to the bent ends thereof, substantially as set forth.

487,692. POWER-HAMMER. ALEXANDER BEAUDRY, Boston, Mass., assignor to the Beaudry Tool Company, Portland, Me. Filed Feb. 8, 1892. Serial No. 420,635. (No model.)

Claim.—1. In a power-hammer, the combination, with a frame, a hammer-head mounted to play in guides, and a main power-shaft, and crank, of the links G G', pivotally mounted in the frame, the tie-bar H, coupled at its respective ends to the free ends of said links, the connecting-rod which couples one of said links to the crank, and the helve J, having a cushioned connection with the hammer-head at one end and a cushioned connection with the tie-bar H at its other end.

2. In a power-hammer, the combination, with a frame, a hammer-head mounted to play in guides therein, a power-shaft, and a crank on said shaft, of the upper link G, pivotally mounted at its front end in said frame, the lower link G', pivotally mounted at its rear end in said frame, the upright tie-bar H, coupled at its respective ends to the free ends of said links, the connecting-rod which couples the crank to the lower link G', the helve J, having its front end embraced between cushions in the hollow of the hammer-head, the said cushions, the tie-bolts which connect the convex T-shaped head of the helve to the bar H, the cushions on said tie-bolts, and the counter-spring for the hammer head and helve.

3. In a power-hammer, the combination, with a frame, a ham-

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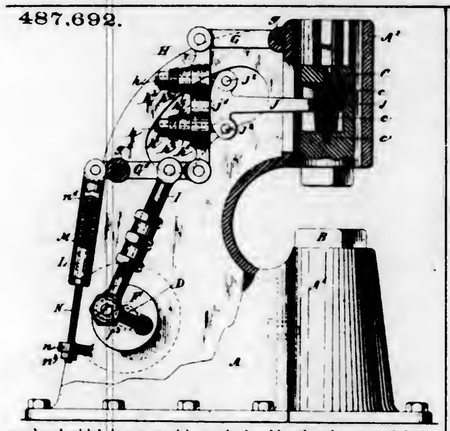
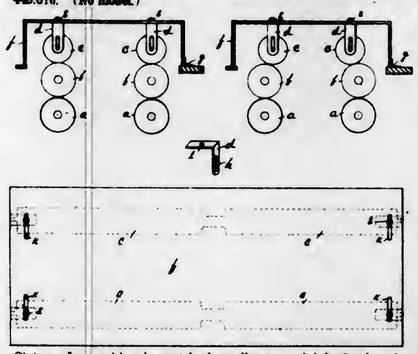


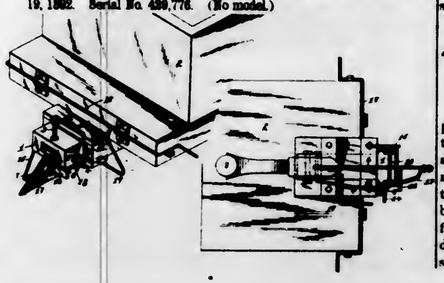
mer-head which is mounted in vertical guides therein, an upright bar H, connected to the frame by links, the said links, and means for imparting to said bar an up-and-down motion, of a helve J, provided with a convex T-shaped rear end having apertures at its extremity, eyebolts which couple the helve to the bar H and hold it firmly up thereto, the elastic cushions on said eyebolts, the stud *k* in the bar H, which engages a recess in the convex face of the helve, the cushions in the hollow of the hammer-head and embracing the end of the helve, and the pin which couples together the helve, hammer-head, and cushions.

487,693. CLEARER-ROLL FOR DRAWING-FRAMES. OWEN ROONEY, New Bedford, Mass., assignor of one-third to John J. Rooney, same place. Filed Sept. 18, 1891. Renewed Sept. 3, 1892. Serial No. 445,016. (No model.)



Claim.—In combination with the rolls *a a* and *b b* of a drawing-frame, the clearer-rolls *c c*, having bearings *d d*, provided with slots *h* and holes *l*, adapted to be secured to the cap *f* by bolts *e*, and the cap *f*, provided with slots *k*, as shown, and for the purpose described.

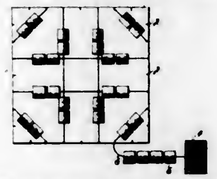
487,694. CAR-COUPLING. THADDEUS R. BROWER, Templeton, assignor of one-half to William H. Scott, San Francisco, Cal. Filed Apr. 19, 1892. Serial No. 429,776. (No model.)



Claim.—1. In a car-coupling, the combination of a draw-head having an opening, a coupling-pin, a pin-lifter pivotally mounted and having its front end attached to the coupling-pin, means for raising the pin-lifter, a catch to hold the pin-lifter elevated, and a link-carrier having an inclined surface to engage and to direct the link and provided with a lug arranged to engage the catch to release a coupling-pin, substantially as described.

2. In a car-coupling, the combination of a draw-head, a coupling-pin, a pivotally-mounted pin-lifter connected with the coupling-pin and provided with a shoulder, a catch consisting of a rock-shaft provided with an arm to engage the shoulder and having a depending extension, and a link-carrier having an inclined face to direct a link and provided with a laterally-extending lug to engage the depending extension of the catch, substantially as described.

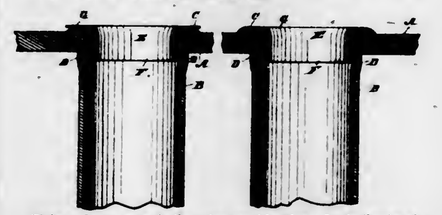
487,695. EDUCATIONAL APPLIANCE. JUDITH L. COLLINS, Monongahela City, Pa. Filed Aug. 24, 1892. Serial No. 444,026. (No model.)



Claim.—1. The herein-described educational appliance, comprising a board provided with notches in its edges, in combination with a cord having buttons loosely strung thereon and adapted to engage said notches, substantially as specified.

2. The herein-described educational appliance, the same consisting of a rectangular board, the four edges of which are provided with odd numbers of notches or kerfs, combined with a cord for removably engaging the notches and a series of buttons loosely strung upon the cord, substantially as specified.

487,696. STEAM-BOILER. NORMAN T. DE GOLYER, Beaver Dam, Wis., assignor of one-half to Everard W. De Golyer, same place; E. W. De Golyer administrator of Norman T. De Golyer, deceased. Filed Mar. 4, 1891. Serial No. 383,661. (No model.)



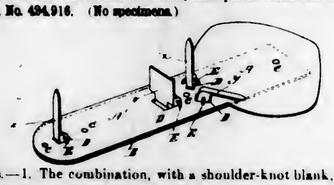
Claim.—In a steam-boiler, the combination of a boiler-head, a tube serving as a flue inserted in the boiler-head and provided at its outer end with a flange overturned against the outer surface of said boiler-head and at a point slightly removed from its end, with a boss engaging the inner surface of the boiler-head, said boss forming a corresponding groove upon its inner surface, and a sheet-metal bushing constructed of tensile metal in undivided tubular form inserted in the end of the tube, the inner end of which bushing is provided with an annular rounded rib or shoulder fitting the complementary groove of the tube and having its outer end turned over outwardly against the boiler-head and covering the flange forming the extremity of the tube, substantially as set forth.

487,697. ARTIFICIAL LIMB. HOMER F. REILE, Helena, Mont., assignor of one-half to Albert C. Stilling, same place. Filed Feb. 12, 1892. Serial No. 421,201. (No model.)

Claim.—An artificial foot composed of a lower section or sole-piece of felt conforming to the size and shape of the lower portion of the human foot, having a flat upper surface sloping backward at a slight angle and firmly attached to a flat middle section of wood or metal extending from the instep to the heel, having the same angular tilt, which is firmly attached in turn to an upper section of soft rubber which conforms to the shape of the upper part of the human foot up to and around the ankle-joint, and which is thicker perpendicularly in front of the ankle-joint than in its rear, substantially as shown and described.

487,697.

487,698. **SHOULDER-KNOT.** JOHN B. FARRELL, Boston, Mass., assignor of one-half to John A. Farrell, same place. Filed Mar. 14, 1892. Serial No. 424,916. (No specimens.)

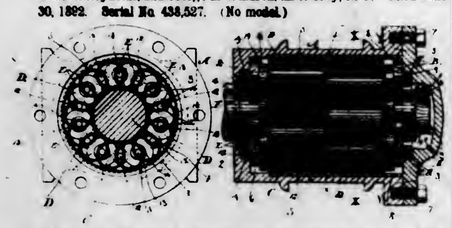


Claim.—1. The combination, with a shoulder-knot blank, of the hinged spring-tongues *x y*, located and arranged near the outer end of the strap part of a shoulder-knot blank, in combination with said shoulder-knot blank and of the folding spring-tongue *z*, located and arranged near the inner end of the same strap part of the same shoulder-knot blank, in combination with said shoulder-knot blank, which said spring-tongues *x y z* are adapted to engage with eyelet-holes in the cloth of the shoulder of a uniform-coat, substantially as and for the purposes described.

2. The combination, with a shoulder-knot blank, of the spring-tongue *c*, located and arranged on the strap portion of the portion of the shoulder-blank between the outer end of the shoulder-knot blank and the inner end of the strap portion of the shoulder-knot blank, substantially as and for the purposes described.

3. The combination, with a coat provided with eyelet-holes G, of a shoulder-knot blank provided upon its strap portion with the folding spring-tongues *x y*, located near the outer end of the strap portion of the shoulder-knot blank, with the folding spring-tongue *z*, located near the inner end of the strap portion of the shoulder-knot blank and with the folding spring-tongue *c*, substantially as and for the purposes described.

487,699. **ROLLER-BEARING.** JOHN GIBBONS, West Troy, assignor, by direct and mesne assignments, of three-fourths to Stephen J. Brown, John H. Reynolds, and George E. Waldron, all of Troy, N. Y. Filed June 30, 1892. Serial No. 438,527. (No model.)



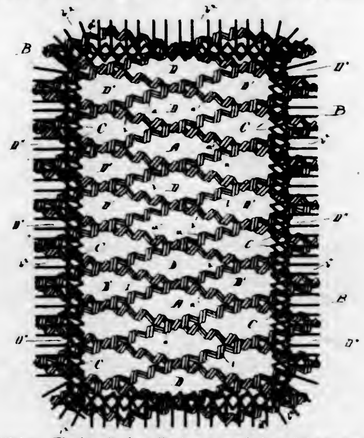
Claim.—1. In a roller-bearing, the combination of two series of rollers of like form arranged in reversed positions and each having a spindle extending from its opposite ends, the length of said extension at one end of said roller exceeding that of the other end, so that when the rollers of one of said series are reversed in respect to the other series the ends of the several spindles will move on the same plane, or substantially so, as and for the purpose herein specified.

2. In a roller-bearing, the combination of two series of rollers so arranged that the rollers of one series will have a rotative movement independently of the other series and each roller being provided with a spindle whose ends move on the same planes with the corresponding ends of the other spindles, and two series of annular links at each end of said spindles so arranged that each spindle will be engaged by different links at its opposite sides, as and for the purpose herein specified.

3. In a roller-bearing, the combination of two series of rollers having a spindle projecting from the opposite ends of each roller and two series of annular links whose outer diameter is less than the diameter of said rollers, the latter being so arranged that the inner ends of the rollers of one series will overlap the adjacent ends of the rollers of the other series, the spindles of each series of said rollers being arranged intermediately the bearing-surfaces of two adjacent rollers of the other series and said links being arranged so that each spindle will be engaged by different links at its opposite sides, substantially as specified.

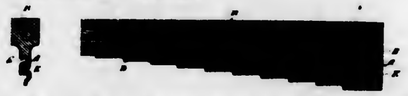
4. In a roller-bearing, the combination of a casing provided with an annular groove in its inner end, a cap for said box, having in its inner face an annular groove which corresponds to the groove of said box, two series of rollers provided with spindles which project from opposite ends of each roller, and two series of annular links which are arranged so that two different links will engage the opposite sides of each spindle, whereby the several rollers will be retained in their proper positions and the ends of spindles will be caused to travel in said annular grooves, substantially as herein specified.

487,700. **WIRE MAT.** HERBERT C. BRITTAIN and PETER J. SHRUM, Beaver Falls, Pa.; said Shrum assignor to Arlington D. Brittain, same place. Filed Dec. 14, 1891. Serial No. 415,085. (No model.)



Claim.—The herein-described mat, consisting of the body A, binding B, and fastener C, said body consisting of the diagonal pieces *a* and *a'*, crossing each other at such angles as to form V-shaped openings at the edge of the body and rhombus-shaped openings within said body, said pieces *a* and *a'* being secured together at their ends and each twisted to form alternating hollows 2 and projections 1, said binding B covering the edges of said body and said fastener C extending in a curvilinear course alternately in and out through the openings in the said binding, engaging the strips *b'* thereof and crossing itself within the openings in said body, said fastener being intercoiled with said body only at the center of the ends thereof, all substantially as described, and for the purpose set forth.

487,701. **TOOL FOR FORMING KEY-SLOTS.** WARREN H. TAYLOR, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed May 7, 1891. Renewed Oct. 26, 1892. Serial No. 450,073. (No model.)



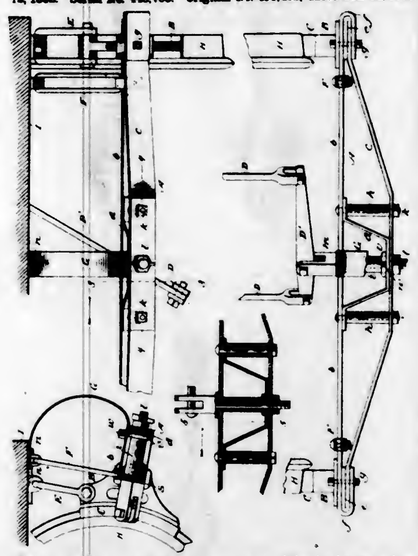
Claim.—1. A broach consisting of a back or rib provided with a cutting-blade having alternating angular recesses on opposite sides thereof and terminating at its cutting-edge in a stepped series of cutting-teeth, substantially as shown and described.

2. A broach-blade provided with a tapering toothed edge sinuous in cross-section and having an angular recess in its side, substantially as set forth.

3. A broach consisting of a back or rib provided with a blade extending at right angles therefrom, said blade being of irregular sinuous cross-section and having a stepped series of cutting-teeth, substantially as shown and described.

REISSUES.

11,292. **BRAKE-BEAM.** JACOB W. BAKER, Dover, N. J., assignor to the National Hollow Brake Beam Company, Chicago, Ill. Filed Oct. 12, 1892. Serial No. 448,705. Original No. 436,462, dated Oct. 14, 1890.



Claim.—1. The combination, in a trussed brake-beam, of an arched back bar and a front bar, the ends of one of said bars doubled over the other of said bars, and fastenings for clamping the ends of both bars together, substantially as and for the purposes specified.

2. The trussed brake-beam, composed of an arched back bar, a front bar having its ends doubled over the ends of the arched bar, and fastenings clamping the doubled ends of both bars together, substantially as specified.

3. The trussed brake-beam, composed of an arched back bar doubled over upon itself at its ends, a front bar having its ends doubled over the folded ends of the arched bar, and fastenings clamping the doubled ends of both bars together, substantially as specified.

4. The combination of the arched back bar and front bar of the beam having their ends engaged with one another, as described, bolts uniting said independent bars at their ends, a center-arch brace-piece between the bars, and tubular stays and bolts passing through said stays uniting the back and front bars of the beam and arch-brace piece together, essentially as described.

5. The combination, with the brake-beam, of the spring G, arranged to lie on top of said beam and having its base constructed with a bent lower extremity *s*, adapted to lie over or against the front of the brake-beam, and the bolt *l*, with its jaw-head *m* arranged to clamp said bent end of the spring to the beam, substantially as specified.

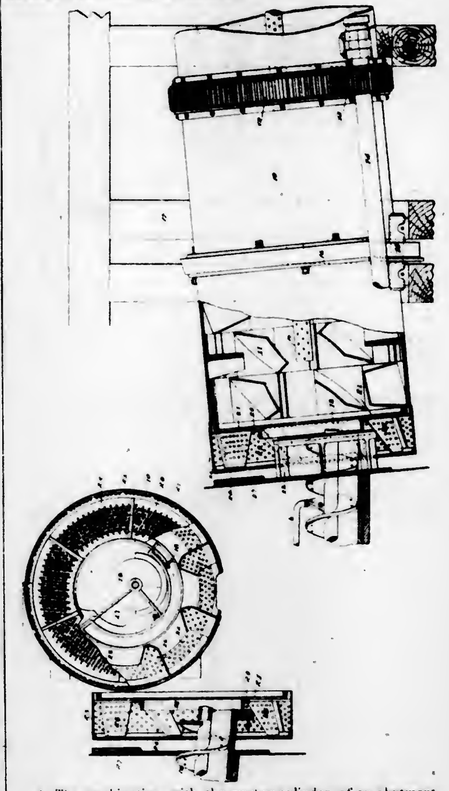
6. In combination with the brake-beam, and the spring G, having its base end constructed to lap over the front of the beam, the clip *c*, applied to said beam and provided with a stud *w*, arranged to pass through the rear portion of the spring and adapted to be secured on the inner side thereof, essentially as specified.

11,293. **ROCK-CATCHER.** GEORGE W. VERDIER, Ten Mile Hill, S. C. Filed Aug. 30, 1892. Serial No. 444,588. Original No. 471,041, dated Mar. 15, 1892.

Claim.—1. The combination, with the cylindrical washer and its feed-screw, of a cylindrical catcher secured to the feed end of the washer, said catcher having a perforated end flange and having curved flanges extending inward from its shell, substantially as described.

2. The combination, with the washer-cylinder and its feed-screw, of a perforated plate secured at the free end of the washer and provided with a central opening to receive material from the screw, and a cylindrical catcher secured to the end of the washer, said catcher having an end flange and having inwardly-extending curved and perforated flanges, substantially as described.

3. The combination, with the washer and its feed-screw, of the perforated cylindrical catcher secured to the lower end of the washer, said catches having a perforated end flange and having inwardly-projecting curved and perforated flanges arranged to deliver upon the feed-screw, substantially as described.



4. The combination, with the washer-cylinder, of an abutment-plate supported at the lower end of the cylinder and a framework arranged between the abutment-plate and the cylinder-head, substantially as described.

5. The combination of the main washer, water-supplying devices, a screen at the feed end of the washer, a rotary catcher at said feed end receiving the material from the said screen, said catcher having screening mechanism, and mechanism for delivering from the catcher to the main washer, substantially as set forth.

6. The combination, with the main rotary washer having a perforated screen-plate at the feed end, through which water and solid materials can pass by backflow from the washer, of the rotary catcher situated to receive the backflowing materials from the main washer and having screen-like walls and lifting devices for depositing one or more of the solid materials in a conveyer, substantially as set forth.

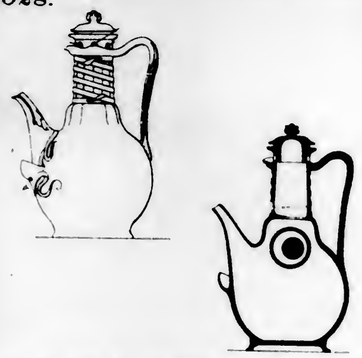
7. The combination, with the main rotary washer, of a screen at the feed end, through which screen water and other material can pass by backflow from the washer, and a rotary catcher supplemental to the main washer and situated to receive the backflowing material, and means for lifting a portion of said material from the catcher and redelivering it to the main washer, substantially as set forth.

8. The combination of the main washer having at the feed end a screen with relatively-large passages, a catcher supplemental to the washer, having a screen with relatively-small passages, and water-supplying devices for the main washer, substantially as set forth.

DESIGNS.

22,028. **SIRUP-JUG.** THEODORE HAVILAND, Ambassc, France. Filed Oct. 11, 1892. Serial No. 448,595. Term of patent 14 years.

22,028.



Claim.—The design for a molasses or syrup jug, substantially as shown and described.

22,029. SPOON. FRANK P. D'ARCY, Kalamazoo, Mich. Filed Oct. 19, 1892. Serial No. 449,403. Term of patent 3½ years.

Claim.—The design for a spoon, substantially as herein shown and described.

22,030. SPOON. JOHN S. RATHBONE, Mystic, Conn. Filed Oct. 22, 1892. Serial No. 449,708. Term of patent 7 years.

Claim.—The design for a spoon, as herein shown and described.

22,031. SPOON. JOHN S. RATHBONE, Mystic, Conn. Filed Oct. 22, 1892. Serial No. 449,704. Term of patent 7 years.

22,031.

Claim.—The design for a spoon, as herein shown and described.

22,032. SPOON. EMIL H. ROSENBLATT, New York, N. Y. Filed July 9, 1892. Serial No. 439,533. Term of patent 3½ years.

Claim.—The design for a spoon herein shown and described.

22,033. SPOON. GUSTAVUS A. SCHLICHTER, Reading, Pa. Filed Sept. 13, 1892. Serial No. 445,806. Term of patent 7 years.

Claim.—The design for the handle of a spoon or similar article, substantially as shown.

22,034. SPOON, &c. WILLIAM C. SOMMER, Springfield, Ill. Filed Apr. 25, 1892. Serial No. 430,640. Term of patent 7 years.

Claim.—The design for a spoon, as herein shown and described.

22,035. HANDLE FOR SPOONS, &c. WILLIAM A. BIGLER, Chicago, Ill. Filed Aug. 27, 1892. Serial No. 444,330. Term of patent 7 years.

Claim.—The design for the handles of spoons, &c., substantially as shown and described.

22,036. SCARF-PIN. JOHN G. BROKAW, Somerville, N. J. Filed Sept. 2, 1892. Serial No. 444,907. Term of patent 3½ years.

Claim.—The design for a scarf-pin herein shown and described.

22,037. MEDAL. EDWIN F. HOPKINS, Woodstock, Ill., assignor of one-half to Gardner Elijah Burbank, same place. Filed Sept. 22, 1892. Serial No. 446,635. Term of patent 3½ years.

Claim.—The design for a medal, as herein shown and described.

22,038. BADGE. LORRAINE J. PITKIN, Chicago, Ill. Filed Aug. 13, 1890. Serial No. 361,937. Term of patent 14 years.

Claim.—1. A design for a badge, consisting of a star with a central group of figures, and bearing in its respective points the figures of a sword and veil, a sheaf of wheat, a crown and scepter, a broken column, and a cup; segmental sections between the points of the star bearing respectively the letters F,—A,—T,—A,—L; a ribbon by which the star is suspended; and a bar at the upper end of the ribbon, bearing the letters O,—E,—S,—substantially as shown.

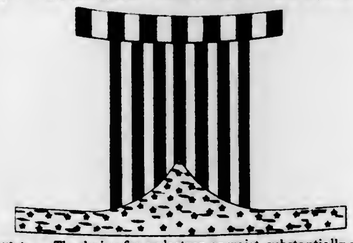
2. In a design for a badge, a star with a central group of figures, and having in its respective points figures of a sword and veil, a sheaf of wheat, a crown and scepter, a broken column, and a cup; and segmental sections between the points of the star bearing respectively the letters F,—A,—T,—A,—L.

3. In a design for a badge, a bar having a rectangular body and a circular central enlargement, both with raised rims, scrolls at the meeting points of the raised rims and the upper side of the bar, and letters O.—E.—S.—upon the face of the bar, substantially as shown.

22,039. POCKET-BOOK OR PURSE. MAX SCHEUER, New York, N. Y. Filed Oct. 10, 1892. Serial No. 448,460. Term of patent 7 years.

Claim.—The design for a pocket-book or purse, as herein described and shown.

22,040. PLASTRON OR WAIST. ABRAHAM FRANK, New York, N. Y. Filed Nov. 3, 1892. Serial No. 450,910. Term of patent 7 years.



Claim.—The design for a plastron or waist, substantially as shown and described.

22,041. CAPE. ABRAHAM FRANK, New York, N. Y. Filed Nov. 3, 1892. Serial No. 450,909. Term of patent 7 years.

Claim.—The design for a cape, substantially as shown and described

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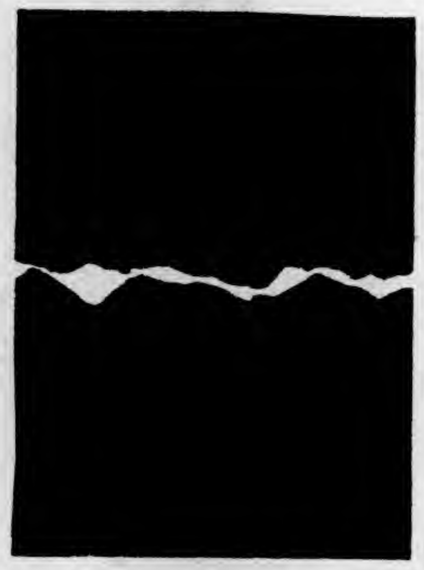
22,042. VEIL. SIMON OPPENHEIMER, New York, N. Y. Filed Nov. 5, 1892. Serial No. 451,387. Term of patent 3½ years.



Claim.—The design for ladies' veils, substantially as shown and described

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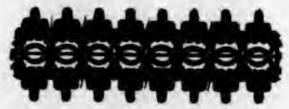
22,043. VEIL. SIMON OPPENHEIMER, New York, N. Y. Filed Nov. 5, 1892. Serial No. 451,388. Term of patent 3½ years.

Claim.—The design for ladies' veils, substantially as shown and described.

22,044. TRIMMING. FRIEDRICH O. HEINIG, Philadelphia, Pa., assignor to M. W. Lipper & Co., same place. Filed Nov. 3, 1892. Serial No. 450,906. Term of patent 3½ years.

Claim.—The design for a trimming, substantially as described and shown.

22,045. TRIMMING. EDWIN ROBINSON, Camden, N. J., assignor to M. W. Lipper & Co., Philadelphia, Pa. Filed Nov. 3, 1892. Serial No. 450,912. Term of patent 3½ years.



Claim.—The design for a trimming, substantially as described and shown.

22,046. TRIMMING. EDWIN ROBINSON, Camden, N. J., assignor to M. W. Lipper & Co., Philadelphia, Pa. Filed Nov. 3, 1892. Serial No. 450,913. Term of patent 3½ years.

Claim.—The design for a trimming, substantially as described and shown

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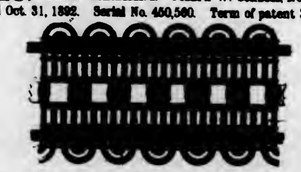
22,047. TRIMMING. EDWIN ROBINSON, Camden, N. J., assignor to M. W. Lipper & Co., Philadelphia, Pa. Filed Nov. 3, 1892. Serial No. 450,914. Term of patent 3½ years.

Claim.—The design for a trimming, substantially as described and shown.

22,048. DRESS-TRIMMING. JOSEPH W. SCHLOSS, New York, N. Y. Filed Oct. 31, 1892. Serial No. 450,560. Term of patent 3½ years.



Claim.—The design for dress-trimmings herein described and illustrated.

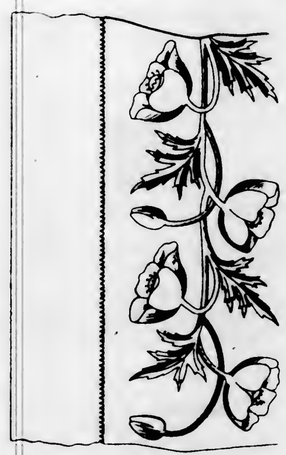
22,049. FRINGE. ALEXANDER C. MASSER, Philadelphia, Pa. Filed Nov. 3, 1892. Serial No. 450,911. Term of patent 7 years.

Claim.—The design for fringes, substantially as herein shown and described.

22,050. PINCUSHION OR SACHET. HENRIETTA L. COOPER, Philadelphia, Pa. Filed Oct. 29, 1892. Serial No. 450,389. Term of patent 7 years.

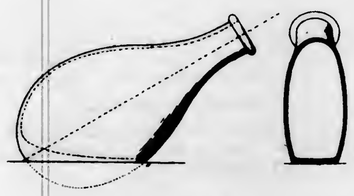
Claim.—The design for a pincushion or sachet, as herein described and shown.

22,051. SHEET. FREDERICK S. PINKUS, New York, N. Y. Filed Oct. 27, 1892. Serial No. 450,187. Term of patent 14 years.



Claim.—The design for a sheet herein shown and described.

22,052. NURSING-BOTTLE. GUSTAV R. SCHIERER, Detroit, Mich. Filed Aug. 10, 1892. Serial No. 442,790. Term of patent 14 years.

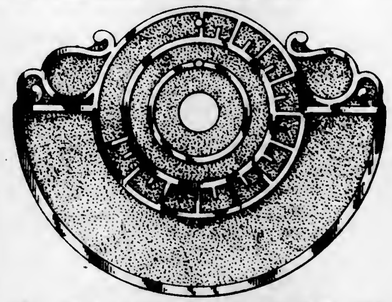


Claim.—The design for a nursing-bottle herein described and shown.

22,053. SIGN-BOARD. WILLIAM GOEBELING, St. Louis, Mo. Filed Aug. 29, 1892. Serial No. 444,454. Term of patent 14 years.

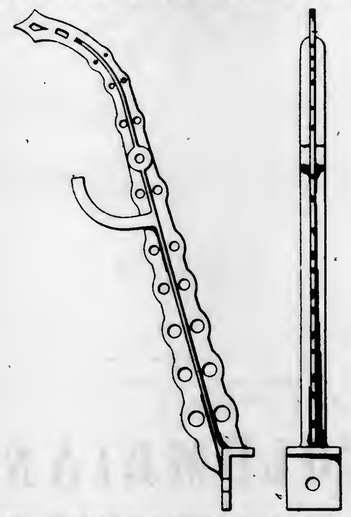
Claim.—The design for sign-boards, substantially as herein shown and described.

22,054. DIAL. OSCAR L. BILLINGS, Philadelphia, Pa. Filed Oct. 18, 1892. Serial No. 449,290. Term of patent 3½ years.



Claim.—The design for a dial, as herein described and shown.

22,055. BRACKET-ARM. ALONZO W. ALLEN, Philadelphia, Pa. Filed Sept. 12, 1892. Serial No. 445,708. Term of patent 14 years.



Claim.—The design for the curved bracket-arm having the ornamentation shown.

TRADE-MARKS

REGISTERED DECEMBER 6, 1892.

22,100. CHINA-WARE. THEODORE HAVILAND, Limoges, France. Filed Oct. 11, 1892.

Essential feature.—The representation of three towers or parapets. Used since August 1, 1892.

22,101. FINGER-RINGS. WILLIAM LOEB & Co., Providence, R. I. Filed Nov. 9, 1892.

W.L.& C O.

Essential feature.—The letters, character, and abbreviation "W. L. & Co." Used since March 17, 1885.

22,102. EYEGLASSES AND SPECTACLES. FRANCIS W. MCALLISTER, Baltimore, Md. Filed Nov. 4, 1892.

Essential feature.—The representation of a human eye with lines radiating therefrom. Used since November 1, 1886.

22,103. THREAD OF COTTON, SILK, FLAX, AND OTHER FIBROUS MATERIALS FOR MACHINE AND HAND SEWING. THE KERR THREAD COMPANY, East Newark, N. J. Filed Nov. 12, 1892.

CULLIVER

Essential feature.—The word "CULLIVER." Used since October 7, 1892.

22,104. LADIES' FACE-VEILS. S. OPPENHEIMER & LEVY, New York, N. Y. Filed Nov. 3, 1892.

COLUMBIAN

Essential feature.—The word "COLUMBIAN." Used since July 10, 1892.

22,105. KNIT UNDERWEAR. THE UNITED KNITTING WORKS COMPANY, LIMITED, Aarburg, Switzerland. Filed Oct. 27, 1892.

Essential feature.—The letter "Z" outlined by an arrangement of dots. Used since August 15, 1890.

22,106. KNIT UNDER VESTS OR WAISTS. THE NAZARETH MANUFACTURING COMPANY, Nazareth, Pa. Filed Nov. 12, 1892.

Essential feature.—The representation of a keystone with the figure of an undervest upon it. Used since October 1, 1892.

22,107. SHOES AND ANALOGOUS ARTICLES OF FOOT-WEAR. N. KOCH & Co., Milwaukee, Wis. Filed Aug. 29, 1892.

Essential feature.—The representation of a shoe, broken away so as to show the front part of a human foot crossed over the outline of a last, disclosing the bottom of a human foot. Used since August 1, 1892.

22,108. ARTICLES OF VULCANIZED RUBBER, INCLUDING MATS AND MATTING. NEW YORK BELTING AND PACKING COMPANY, LIMITED, New York, N. Y. Filed Oct. 26, 1892.

PYRAMID

Essential feature.—The word "PYRAMID." Used since 1886.

22,109. LIQUID ANÆSTHETIC FOR DENTISTS' USE. GEORGE M. MILLER, Detroit, Mich. Filed Oct. 3, 1892.

EXHEDONIC

Essential feature.—The word "EXHEDONIC." Used since April 1, 1892.

22,110. AGUE CURE. THE FIRM OF F. A. DICKS, Natchez, Miss. Filed Nov. 8, 1892.

CHILLIFUGE

Essential feature.—The word "CHILLIFUGE." Used since June 1, 1892.

22,111. MEDICATED TOILET PREPARATION FOR THE SKIN. C. H. & J. PRICE, Salem, Mass. Filed Oct. 17, 1892.

Essential feature.—The representation of an old woman riding a broom-stick through the air, associated with the words "WITCH CREAM." Used since April 1, 1891.

22,112. MEDICAL REMEDY FOR INTERNAL AND EXTERNAL USE. THE BOTANIA CO., New York, N. Y. Filed Nov. 3, 1892.

BOTANIA

Essential feature.—The word "BOTANIA." Used since August 1, 1892.

22,113. MEDICINAL COMPOUNDS THE BASIS OF WHICH IS FORMED OF VEGETABLE EXTRACTS. HENRY KLEINHEINZ, Detroit, Mich. Filed Oct. 10, 1892.

Essential feature.—A representation of the bust figure of a woman in the act of inhaling from between the palms of her hands, which are open and partially conceal her face. Used since September 23, 1892.

22,114. MEDICINES FOR THE CURE OF BLOOD DISEASES. GREEN L. POWLER, Clarksburg, Mo. Filed Nov. 7, 1892.

Essential feature.—A monogram formed of the letters and abbreviation "W C Co." Used since April 1, 1892.

22,115. MEDICINAL TEAS. JAMES W. MOORE, New York, N. Y. Filed Sept. 26, 1892.

Essential feature.—The words "WHITE MOUNTAIN TEAS" arranged above a circular picture of the side of a mountain. Used since August 1, 1892.

22,116. REMEDY FOR COLDS AND THROAT AND LUNG TROUBLE. EDWARD HEFFERNAN, Lynn, Mass. Filed Nov. 3, 1892.

Essential feature.—The representation of a beehive and the words "ROCK, RYE." Used since October 1, 1891.

22,117. REMEDY FOR DYSPEPSIA. KRAMER & MATTHEIS, Ambler, Pa. Filed Oct. 20, 1892.

CAFÉTONIQUE

Essential feature.—The word "CAFÉTONIQUE." Used since October 15, 1892.

22,118. REMEDIES FOR DISEASES OF THE STOMACH, BLOOD, LIVER, AND KIDNEYS. GEORGE WELLINGTON RIDLEY, Danville, Ill. Filed Oct. 22, 1892.

Essential feature.—The representation of a shield bearing a diamond-shaped figure at the top containing the abbreviation "PROF." Used since April 18, 1892.

22,119. REMEDIES FOR DISEASES OF THE STOMACH, BLOOD, LIVER, AND KIDNEYS, AND NERVOUS AFFECTIONS, AND GENERAL DEBILITY. R. RICHARDS & Co., Allegan, Mich. Filed Oct. 17, 1892.

UN-QUA

Essential feature.—The representation of an Indian in full dress and the word "UN-QUA." Used since September 1, 1892.

22,120. PILLS FOR DISEASES OF THE DIGESTIVE ORGANS AND KINDRED DISEASES. FRANK C. FOWLER, Moodus, Conn. Filed Oct. 19, 1892.

Essential feature.—The representation of rectangular packages or boxes piled irregularly one upon the other and supported by the pictorial representation of clouds. Used since October 19, 1890.

22,121. LINIMENTS AND OINTMENTS. FREDERICK P. FOLTZ, Abingdon, Ill. Filed Nov. 12, 1892.

PRESTO

Essential feature.—The word "PRESTO." Used since May, 1891.

22,122. SALVES, OINTMENTS, AND LINIMENTS. FREDERICK J. Lockwood, Bridgeport, Conn. Filed Nov. 5, 1892.

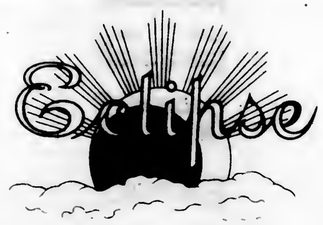
QUICKHEAL

Essential feature.—The word "QUICKHEAL." Used since October 1, 1889.

22,123. SUPPOSITORIES. FRANK C. FOWLER, Moodus, Conn. Filed Oct. 19, 1892.

Essential feature.—The word "VIGOR" and the representation of capsules surrounding the same. Used since August 1, 1892.

22,124. GINGER-ALE. CHICAGO CONSOLIDATED BOTTLING COMPANY Chicago, Ill. Filed Oct. 22, 1892.



Essential feature.—The representation of an eclipse of the sun together with the word "ECLIPSE." Used since January 1, 1892.

22,125. WHISKY. SOLOMON L. KOSCHEWSKY, New York, N. Y. Filed Nov. 3, 1892.

WODKA

Essential feature.—The word "WODKA." Used since August 15, 1892.

22,126. BOURBON WHISKY. MEYER BROTHERS DRUG COMPANY, St. Louis and Kansas City, Mo., and Dallas, Tex. Filed Oct. 3, 1892.

EUREKA

BOURBON

Essential feature.—The words "EUREKA BOURBON" and the monogram "E C B." Used since July 1, 1892.

22,127. RYE WHISKY. MAYER, SONS & CO., Philadelphia, Pa. Filed Aug. 19, 1892.

CHARTER OAK

Essential feature.—The words "CHARTER OAK." Used since March 10, 1892.

22,128. MEAT PRODUCTS, INCLUDING PACKED AND SMOKED BEEF AND PORK, HAMS, SHOULDERS, SIDES, BACON, AND SAUSAGE. BOSTON PACKING AND PROVISION COMPANY, Boston, Mass. Filed Apr. 18, 1892.

22,128.

Essential feature.—The representation of a star, or the word "STAR" when accompanied by the word "NORTH." Used since January, 1891.

22,129. SMOKED MEATS, SUCH AS HAMS AND BACON. FRANK A. FERRIS, New York, N. Y. Filed June 9, 1891.

Essential feature.—A band or tape of webbing applied to the covering-cloth of smoked meats near one end of the same. Used since October 1, 1889.

22,130. PREPARED COD-FISH. AMERICAN EVAPORATED CODFISH Co., Red Bank, N. J. Filed Oct. 27, 1892.

Essential feature.—The representation of a cod-fish having the word "EVAPORATED" printed lengthwise of it. Used since July, 1892.

22,131. RAW AND PROCESSED OYSTERS. WILLIAM A. WHEATLEY, Baltimore, Md. Filed Nov. 11, 1892.

C.O.D. Oyster Co

Essential feature.—The letters, word, and abbreviation "C. O. D. OYSTER CO." Used since September 1, 1892.

22,132. CANNED VEGETABLES AND FRUITS. BLOOMINGTON CANNING COMPANY, Bloomington, Ill. Filed Sept. 14, 1892.

ELEPHANT

Essential feature.—The word "ELEPHANT." Used since August 10, 1888.

22,133. FLAVORING EXTRACTS. HANUS BROS. & WHITE, Philadelphia, Pa. Filed Nov. 5, 1892.

CHERRY RIPE

Essential feature.—The words "CHERRY RIPE." Used since September 10, 1892.

22,134. FLAVORING EXTRACTS. HANUS BROS. & WHITE, Philadelphia, Pa. Filed Nov. 5, 1892.

KASHU

Essential feature.—The word "KASHU." Used since September 12, 1892.

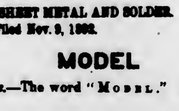
22,135. BAKING-POWDER. DENIS J. O'CONNOR, Springfield, Ohio. Filed Sept. 23, 1892.

Nutro Medicated

Essential feature.—The words "NUTRO MEDICATED." Used since February 25, 1892.

22,136. WASHING-BLUE. PATRICK DIAMOND, Philadelphia, Pa. Filed Oct. 4, 1892.

DIAMOND



Essential feature.—The word or designation "DIAMOND." Used since May, 1881.

22,137. FURNITURE VARNISH OR POLISH. HORACE R. TAYLOR, Philadelphia, Pa. Filed July 23, 1892.

INSECT

Essential feature.—The word "INSECT." Used since July 19, 1889.

22,138. MANUFACTURED GAS FOR HEATING AND LIGHTING PURPOSES. GEORGE M. S. WILSON, Toronto, Canada. Filed Nov. 14, 1892.

SANITARY

Essential feature.—The word "SANITARY." Used since July 1, 1890.

22,139. SAD-IRONS FOR DOMESTIC USE. COLEBROOKDALE IRON COMPANY, Pottstown, Pa. Filed Oct. 7, 1892.

Essential feature.—The representation of a diamond-shaped figure. Used since September 1, 1892.

22,140. ALL SHEET METAL AND SOLDER. E. L. PARKER & Co., Baltimore, Md. Filed Nov. 9, 1892.

MODEL

Essential feature.—The word "MODEL." Used since November, 1884.

22,141. ALL SHEET METAL AND SOLDER. E. L. PARKER & Co., Baltimore, Md. Filed Nov. 9, 1892.

PARKER'S

Essential feature.—The word "PARKER'S." Used since November, 1885.

22,142. ALL SHEET METAL AND SOLDER. E. L. PARKER & Co., Baltimore, Md. Filed Nov. 9, 1892.

PENMAR

Essential feature.—The word "PENMAR." Used since November, 1882.

22,143. ALL SHEET METAL. E. L. PARKER & Co., Baltimore, Md. Filed Nov. 9, 1892.

ORIOLE

Essential feature.—The word "ORIOLE." Used since November, 1886.

22,144. TIN PLATES. THE ASHBURNHAM TIN PLATE COMPANY, (LIMITED,) Burry Port, England. Filed July 12, 1892.

EARL

Essential feature.—The word "EARL." Used since August 1, 1891.

22,145. TIN-PLATE, TERNE-PLATE, AND SHEET METAL, COATED AND UNCOATED. N. & G. TAYLOR Co., Philadelphia, Pa. Filed Nov. 14, 1892.

MAPLE

Essential feature.—The word "MAPLE." Used since July 1, 1892.

22,146. TIN-PLATE, TERNE-PLATE, AND SHEET METAL, COATED AND UNCOATED. N. & G. TAYLOR Co., Philadelphia, Pa. Filed Nov. 14, 1892.

22,146.

BRANCH

Essential feature.—The word "BRANCH." Used since May 1, 1891.

22,147. FILES, CHISELS, GOUGE-CHISELS, SOMETIMES KNOWN AS SCOOPERS, AND GRAVERS. ST. VAUTIER & FILS, Carouge, Switzerland. Filed Oct. 31, 1892.

Essential feature.—The representation of a tobacco-pipe. Used since January 1, 1853.

22,148. ELECTRIC INSULATORS. A. & J. M. ANDERSON, Boston, Mass. Filed Nov. 12, 1892.

"ÆTNA"

Essential feature.—The word "ÆTNA." Used since January 1, 1891.

22,149. CENTRIFUGAL CREAMERS. PHILIP M. SHARPLES, West Chester, Pa. Filed Nov. 9, 1892.

Columbian

Essential feature.—The word "COLUMBIAN." Used since October 19, 1892.

22,150. HARVESTERS AND HARVESTER-BINDERS. WALTER A. WOOD HARVESTER COMPANY, St. Paul and Minneapolis, Minn. Filed June 22, 1892.

MINNEAPOLIS

Essential feature.—The word "MINNEAPOLIS." Used since 1882.

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DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE MCDONOUGH.

Decided October 22, 1892.

PRACTICE—THE MCDONOUGH TELEPHONE APPLICATION HELD FINALLY REJECTED BY DECISION IN MCDONOUGH V. GRAY V. BELL V. EDISON, (C. D., 1889, P. 9.)

The decision of the Commissioner of Patents in *McDonough v. Gray v. Bell v. Edison* (C. D., 1889, p. 9) was a final rejection of the McDonough application, and the Examiner upheld in refusing to consider an amendment thereon subsequently offered by the applicant.

ON petition.

TELELOGE.

Application of James W. McDonough filed April 10, 1876.

Mr. Frank T. Brown for the applicant.

SIMONDS, *Commissioner:*

This is a petition taken from the refusal of the Primary Examiner to consider an amendment which McDonough offers, the Examiner stating his action in Office letter of November 11, 1890, as follows:

The Examiner declines to consider the application. He bases his refusal upon the decision in *McDonough v. Gray v. Bell v. Edison*, (46 O. G., 1245, Feb. 23, 1889.) (See especially page 1276, column 2.) The Commissioner in this case expressly held that he had the power to consider the entire merits of this application. He did so consider them. He in effect finally rejected the application and expressly refused to remand the case to the Primary Examiner for his consideration. The Examiner therefore declines to consider the application.

In the decision above referred to the following words, among others, are quoted from the decision of the United States Supreme Court in the Telephone Cases, (126 U. S.:)

It is impossible to hold that what Reis did was an anticipation of the discovery of Bell. To follow Reis is to fail; but to follow Bell is to succeed. The difference between the two is just the difference between failure and success. If Reis had kept on, he might have found out the way to succeed; but he stopped and failed. * * *

So as to James W. McDonough. We presume that it will not be claimed that he is entitled to more than he asked for in his application for a patent, filed April 10, 1876, and there a "circuit-breaker" so adjusted as to "break the connection by the vibrations of the membrane" is made one of the elements of the invention. The Patent Office was clearly right in holding that he had been anticipated by Reis.

Afterward the Commissioner says:

What has been said of Reis is equally true of McDonough. He built upon the palpable make-and-break system. The fatal vice of giving the wrong description and directions is in his application, and he can never depart from what was and is now in it. If his teleloge has ever talked or can now be made to transmit speech, it must be changed in its construction and mode of operation, so as to become a microphone; or if by the light of later knowledge and experience the makes and breaks, instead of being palpable and of full amplitude, are rendered inappreciable, so that its mode of operation is different, the original invention becomes lost in a newer and later one, which must be presented in a new and later application.

The Commissioner further says this:

It is urged most strenuously, however, that this question of operativeness is one belonging to McDonough's case *ex parte;* that in the interference the Office is bound by the action of the Primary Examiner who declared the interference, and that the only mode of considering or reviewing that question is to remand the case to the Examiner and give McDonough an opportunity to be heard and present proofs before him. Further, it is insisted that when the right to a patent is denied for want of operativeness or utility it must be by rejection by the Primary Examiner, giving the applicant his right of appeal; but this view cannot be maintained. The Commissioner as the ultimate head of the Patent Office has the power to withhold a patent which in his judgment ought not to issue; but the present question does not depend upon the power. There are two modes of rejecting an application—one upon references, want of utility, etc., as an *ex parte* case; the other through the procedure of interference. The former may be appealed from the Commissioner to the Supreme Court of the District of Columbia. In the latter the decision can be reviewed only by a bill in equity.

The statute requires an interference to be instituted whenever in the opinion of the Commissioner there is pending an application which interferes with another or with an unexpired patent. This interference was declared at a time when the nature of the telephone was not so well known and understood as now. I am not prepared to say but that a motion to dissolve should have been sustained if urged upon the ground that McDonough and some others of the parties did not disclose an operative invention. A motion to re-form was made, which, had it been sustained, might have remanded McDonough's case to the Primary Examiner; but he opposed the motion and insisted upon the interference and elected that mode of trial. The trial had progressed through several years, and a final decision has been reached. There is not the slightest doubt that in determining the question of priority in such interference proceeding it is right and proper for the Commissioner to determine and pass upon the entire merits of each invention involved, including utility, operativeness, etc. The very question involved is: When did the respective parties first make the inventions set forth in the issues? If the evidence shows that one of the parties never made any invention, as defined in the statute, and consequently is not entitled to an award of priority, while another party did and is so entitled, the Commissioner is unquestionably authorized to so decide and award priority of invention accordingly. He possesses the power in such case to dissolve the interference, remand and make the case *ex parte*, giving the right of appeal, so that the question could come back to him illuminated by the action of the Primary Examiner and the Examiners-in-Chief. If the doubt as to operativeness should be resolved in favor of the applicant, the interference would be reinstated and decision made accordingly; but where there is no doubt, when the question is one settled in the Office, settled in a number of circuit courts, and by the Supreme Court of the United States, such a course cannot be seriously considered.

This is all that is asked by McDonough. His petition is in effect a motion to dissolve and be permitted to establish to the satisfaction of the Patent Office the operativeness of the invention. He claims that in consequence of the collusion and the manner in which the interference has been conducted he has been deprived of an opportunity to do this. It is expressly stated by his counsel that "it is not supposed to be possible in another hearing that any addition to the testimony could be made."

He was offered on the hearing before me an opportunity to present any experiments or tests proving his case; but none were submitted.

The question of collusion has been disposed of. The record shows that Bell in taking his testimony directly attacked the operativeness of McDonough's invention, and he had knowledge of the fact personally as well as by counsel. He had ample time allowed him to rebut this evidence and establish all he could; but he took no such evidence. Neither did he ask the Office to enlarge the time, nor did he make any motion in that direction. Having had all these opportunities and neglected them, he cannot now complain if he is denied any further time; but it would not avail him if it were given. The alleged fact is incapable of being established. It thus appears that McDonough's application has received the consideration provided for it under the statute. The interference has been pending since 1878. Final decision was rendered by the Commissioner on March 3, 1885, in which it was held that McDonough had never invented a speaking-telephone, and consequently was not entitled to an award of priority as against Bell, who had. The present petitions ask me to vacate this decision, remand the case, etc. It is to be disposed of upon the principles applicable to new trials.

I am not convinced that there has been any error or mistake in the former decision; but, on the contrary, I am satisfied that another trial would necessarily result in the same conclusion. McDonough's petitions are therefore denied.

It thus appears that the McDonough application has been finally rejected by the Commissioner in person, he basing his action upon the decision of the United States Supreme Court. It results that the decision of the Primary Examiner was correct, and the petition is denied.

CRAWFORD *v.* LICHTENSTEIN.

Decided November 25, 1892.

1. PRACTICE—WIFE IS AN INCOMPETENT WITNESS.
   A wife is non-competent as a witness in proceedings before the Patent Office where her husband is a real party in interest and her testimony is offered on his behalf. (Affirming *Dobeck* v. *Novotny*, 58 O. G., 804.)
2. APPEAL ON INTERLOCUTORY MOTION.
   Where the Examiner of Interferences refused to consider a motion to strike out a wife's testimony and reserved the question until final hearing, *Held*, on appeal to the Commissioner, that this was a proper subject for interlocutory action.

APPEAL on motion.

UMBRELLA.

Application of Joseph L. Crawford filed December 12, 1890, No. 374,423. Application of Herman Lichtenstein filed August 7, 1891, No. 402,024.

Mr. John A. Wiedersheim for Crawford.

Messrs. Dodge & Sons for Lichtenstein.

SIMONDS, *Commissioner:*

The junior party in this case introduced in his own behalf the testimony of Amelia Crawford, his wife, whereupon Lichtenstein, the senior party, moved that the testimony so taken be stricken from the record on the ground of the witness's incompetency. The Examiner of Interferences refused to entertain the motion until final hearing, and from this decision Lichtenstein has appealed.

This is not a question of the relevancy of testimony, but of the competency of a witness; not whether what the witness testified to was admissible as evidence, but whether the witness had any business to testify at all. It is a pure question of law, to be decided without reference to a consideration of the actual testimony, and differs, therefore, from those cases which require a study and consideration of the testimony itself for their determination. The Office very properly refuses to go into questions affecting the relevancy of testimony until the case comes up on final hearing; but here the question is not what weight as evidence the judge will accord the testimony submitted to him, but whether a certain witness has any place in the case at all. It is not different in principle from an objection arising from an alleged disqualifying interest of a notary, and the practice which applies in the one case should apply in the other. (*Vanness* v. *Shettler*, 57 O. G., 843.)

It has already been held that—

a wife is not a competent witness in proceedings before the Patent Office where her husband is a real party in interest and her testimony is offered on his behalf. (*Dobeck* v. *Novotny*, 58 O. G., 804.)

To save time, the Examiner of Interferences is instructed to enter an order striking the testimony under consideration from the record and to extend Crawford's time ten days to enable him to take other testimony, if he wishes, in place of that hereby removed from the case.

EX PARTE COOK.

Decided September 30, 1892.

1. PRACTICE—SUPPLEMENTAL OATH—RULE 48.
   It is not necessary that a supplemental oath filed under Rule 48 of the Rules of Practice specify the serial number and date of filing of the application to which it refers if the proposed amendment is otherwise properly identified.
2. FORMS.
   The forms given in the Rules of Practice are merely suggestive and not mandatory.

ON petition.

AUTOMATIC REGISTER.

Application of Hugo Cook filed March 11, 1892, No. 424,581.

Mr. Edward Rector for the applicant.

FROTHINGHAM, *Assistant Commissioner:*

This is a petition requesting that the Examiner in charge of the above-entitled application "be advised that the supplemental oath now on file is sufficient, and be directed to proceed with the examination" of certain claims upon their merits.

It appears that the applicant on June 11, 1892, filed an amendment identifying the application by name, serial number, date of filing, and subject-matter, and presenting a number of new claims, and accompanied said amendment with a supplemental oath under Rule 48. This oath was attached to the end of said amendment and was in the following language:

Hugo Cook, of Dayton, Ohio, being duly sworn, says that he is the applicant named in the foregoing amendment; that the subject-matter of said amendment, and especially that part thereof set forth in claims 15 and 16 and 21 to 24, was part of his original invention and was invented by him before he filed his original application, of which the foregoing is an amendment.

The Examiner, in the official letter dated June 22, 1892, stated:

Claims 15, 16, 21, 22, 23, and 24 cannot have action on their merits because the supplemental oath filed therewith is insufficient. The application should be identified by serial number and date of filing, as required by Rule 48 Rules of Practice. Attention is called to Form No. 21, page 75, Rules of Practice. It will be necessary to cancel the claims referred to and present them again properly attached to the supplemental oath, as provided in Rule 48.

Thereupon applicant made a request for reconsideration of this action, and the Examiner adhered to his action, wherefore the applicant has brought the present petition.

Under this state of facts I am of the opinion that the supplemental oath *properly* identifies the proposed amendment. It is true that in the form of supplemental oath found on page 75 of the Rules of Practice the application is identified by serial number and date of filing, yet it is to be observed that these forms are merely suggestive and not mandatory.

The petition is therefore granted.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the District of Columbia—General Term.

MOULTON, EXECUTOR, *v.* THE COMMISSIONER OF PATENTS.

Decided February 1, 1892.

1. PATENTS FOR INVENTIONS—PROCESS—LASTING OF SHOES.
   Where an applicant's claim is for a process accomplished by machinery, the steps being identical with the process commonly accomplished by hand labor, *Held* not patentable.
2. FUNCTION OF MACHINE.
   A claim which in effect merely covers the operation of a machine describes the function of the machine and not a patentable process.

APPEAL from Commissioner of Patents denying application of appellant's decedent, Matzeliger, for a method of lasting shoes. Commissioner affirmed.

STATEMENT OF THE CASE.

The applicant, Matzeliger, was the inventor of an improved lasting-machine, for which he secured a patent. The present application was for the method employed and involved the use of the applicant's machine. The case was rejected in the Patent Office because (1) the described method differed in no respect from the common process of lasting by hand; (2) because the method claimed described merely the function of the machine employed.

Messrs. Foster & Freeman for the appellant.

Mr. W. S. Case for the appellee.

The Chief-Justice and Justices COX and JAMES present.

JAMES, *J.*, (orally:)

I have to announce the conclusion of the court on this application for a patent for the process in the making of shoes, or rather the lasting of the upper and the insole. It appears that the appellant's decedent, Matzeliger, had already a patent for a machine by means of which that process was operated. He claims in this application that his process itself, apart from the machine, was a new process and as such patentable. The definition of a patentable process has been found by the court to be a difficult matter, and we have carefully studied that question; but we find that a safe rule is laid down by the Supreme Court of the United States in the case of *Corning* v. *Burden*, (15 How., 252.) In that case Mr. Justice Grier said:

It is when the term "process" is used to represent the means or method of producing a result that it is patentable, and it will include all methods or means which are not effected by mechanism or mechanical combinations.

The lasting of shoes had involved certain steps when made by hand. Those steps had been taken since, as the counsel for the Government expressed it, shoes had been worn. They consisted of stretching the upper over the insole, giving to it the necessary yield, and holding it there with the fingers until the tack could be put in. It was claimed that the steps in Matzeliger's process were new steps, because by means of a "mechanical thumb," which was a part of this machine, three of those steps were taken at the same time. That brought it directly within the description given by Mr. Justice Grier that it was a method effected by mechanism or mechanical combinations. There were three of the old steps—long-known steps—effected by this new piece of mechanism. You cannot separate the process from the working of it by means of a mechanism. We have stated this briefly and are forced to the conclusion that this claimant is now asking for a patent for a thing that is only to be done by means of a machine for which he already has a patent. In other words, he is asking now substantially for a patent for the functions of his machine, and that he cannot have. We affirm the decision of the Commissioner for that reason.

U. S. Circuit Court—Eastern District of Pennsylvania.

BROMLEY BROTHERS CARPET FACTORY *v.* STEWART *et al.*

Decided July 1, 1892.

1. PATENTS FOR INVENTIONS—INVENTION—MECHANICAL ADAPTATION—LOOMS.
   First claim of Patent No. 418,349, to Thomas Bromley, Jr., for a power-loom provided with a double shuttle-box on each side thereof, mechanism for operating said boxes pick and pick, and a mechanism which stops the loom after every two picks, does not embrace patentable novelty, in view of the fact that all of the elements were old, in exactly the connection in which they were used, except the stopping mechanism, which was adapted by a perfectly-obvious change from a closely-analogous construction.
2. SAME.
   The second claim of Patent No. 418,349, to Thomas Bromley, Jr., for the combination, with a mechanism which stops the loom after every two shots of weft, of a mechanism which may be started by the foot, does not embrace patentable novelty, in view of the fact that the stop mechanism had been adapted by a perfectly-obvious change from a closely-analogous mechanism and that treadle mechanisms for starting a loom were old in connection with automatic mechanism for stopping it.
3. SAME—ANTICIPATION—ABANDONED EXPERIMENTS.
   A machine which had operated at least once to accomplish its desired result, and subsequently was worked satisfactorily several times without change, is not an abandoned experiment, although several changes not relating to the main operating parts of the machine were suggested, and the use of the machine was discontinued after it had once accomplished its desired result because the persons using it had turned their attention to other matters.
4. SAME—INVENTION.
   That upon the idea of making an improvement an adaptation of an old machine to the new purpose was proposed almost simultaneously by three distinct and independent parties by an alteration of mechanism slightly different structurally, but the same in principle in each case, is evidence that such change was obvious and did not involve invention.

SUIT by the Bromley Bros Carpet Factory against John Stewart and George Stewart, trading as John Stewart & Son, to restrain an infringement of Patent No. 418,349, granted December 31, 1889, to Thomas Bromley, Jr., for a power-loom.

Mr. John Dolman for the complainant.

Mr. Hector T. Fenton for the defendants.

ACHESON, *J.:*

This suit is upon Letters Patent No. 418,349, dated December 31, 1889, granted to Thomas Bromley, Jr., upon an application filed May 16, 1889, for an alleged invention appertaining to looms for weaving by power a class of fabrics made with two wefts, one of jute and the other of chenille, thrown "shot about." The defendants are charged with the infringement of the first and second claims of the patent, which are as follows:

In a power-loom for weaving Smyrna carpets, rugs, and such-like fabrics—

1 A power-loom provided with a double shuttle-box on each side thereof, mechanism for operating said boxes pick and pick, and a mechanism which stops the loom after every two picks, as described.

2. The combination, with a mechanism which stops the loom after every two shots of weft, of a mechanism by which the loom may be started by the foot, as shown, described, and for the purpose specified

Smyrna rugs and carpets are double-faced fabrics, one side being the fac simile of the other side. Before 1888 they were made altogether by hand, and this had been so from their first manufacture, about fourteen years previously. They are woven with one warp and two wefts, one of the latter consisting of coarse jute, the other of party-colored twisted chenille, a thread of each being shot or thrown alternately. After each weft or thread of chenille is shot it is necessary for the weaver to set or adjust it with reference to the preceding thread of chenille, so as to form the figure, and to do this the loom must be thrown out of action or knocked off and stopped after every second shot or pick. To effect this stoppage of the loom after every two shots of weft is the purpose of the mechanism covered by the first claim of the patent in suit, and to start the loom again after the weaver has set his chenille weft is the purpose of the mechanism covered by the second claim. It is admitted that while the defendants' mechanism differs struct-

urally from that described in the patent in suit, yet that their looms contain the construction of the first and second claims.

At the threshold of the case we are confronted by the question whether there is any patentable novelty in either of these constructions. It is very clear from the proof that the entire mechanism described in the patent and entering into the combinations covered by the first and second claims had long previously been employed in power-looms for weaving other fabrics. Double shuttle-boxes on each side of a power-loom operated by the described mechanism "pick and pick" were old, and so, also, was the described mechanism for stopping the loom. The specification states that the "stop motion" is constructed and operated—

the same as a two-shot weft stop-motion, and consists of the usual cam *b*, which cam is placed on the lower or "cam shaft," a lever G, a pawl *d*, slide *g'*, and trigger g^2, all shown in Fig. 5, and which parts are all old and well known to weavers.

"The two-shot weft stop-motion" was quite ancient, but as used was controlled by the weft. To adapt it to stop the loom after every two shots, the patentee made a slight and perfectly-obvious mechanical change to accomplish what he had in view. Again, the Crompton and Wyman United States patent of 1879 shows mechanism which automatically stops the loom after every pick or shot, and it is shown that prior to Bromley's alleged invention power-looms which stopped automatically after every third and fourth pick, as the particular work to be done required, were well known. There is testimony to show, and, indeed, it is indisputable, that the alteration in the mechanism of the old power-loom, whereby the loom could be stopped automatically after every second pick if this were desired, was a matter entirly plain to any skillful loom-builder.

Then, turning to the foot-operated mechanism, we find in Crompton's United States patent of 1869 a treadle to start the loom after each stoppage; and the Crompton and Wyman patent of 1879, already referred to as disclosing a mechanism for stopping the loom after each shot or pick, also shows a treadle mechanism, substantially the same as that of the Bromley patent, whereby the loom is restarted after each stop. Now, if it were conceded that the weaving of Smyrna rugs and carpets by power, instead of by hand, had not been contemplated before, still did the patentee (Bromley) do anything more than simply apply an old machine to an analogous subject, with no result substantially distinct in its nature, by making obvious mechanical modifications to effect the desired purpose? It seems to me that this was all he did, and if so what he accomplished did not rise to the plane of invention. (*Pennsylvania Railroad Co.* v. *Locomotive Truck Co.*, 27 O. G., 207; 110 U. S., 490; 4 Sup. Ct. Rep., 220; *Hollister* v. *Manufacturing Co.*, 113 U. S., 59; 5 Sup. Ct. Rep., 717; *Thompson* v. *Boisselier*, 31 O. G., 377; 114 U. S., 1; 5 Sup. Ct. Rep., 1042; *Aron* v. *Railway Co.*, 49 O. G., 1365; 132 U. S., 84; 10 Sup. Ct. Rep., 24.)

But the merit of being the first to conceive of the weaving of "Smyrnas" by a power-loom and carrying the idea into successful and practical effect must be denied this patentee. An earlier date than the month of April, 1889, cannot be assigned to his invention. But it is proved beyond controversy that as early as December, 1887, Joseph H. Bromley, a member of the firm of John Bromley & Sons, manufacturers of carpets, rugs, etc., at Philadelphia, had conceived the idea of weaving Smyrna rugs by power, and that he gave an order (which at first was verbal, but afterwards as embodied in a letter signed by his firm) to the Knowles Loom Works, of Worcester, Mass., for the construction of a power-loom for that purpose, to contain the same elements as that of the first and second claims of the patent in suit and performing the same functions. The original letter of John Bromley & Sons containing this order, bearing date December 12, 1887, and which was received by the Knowles Loom Works shortly after its date, is in evidence. That company, however, being tardy in executing this order, John Bromley & Sons, early in May, 1888, gave a verbal order to the M. A. Furbush & Son Machine Company, of Camden, N. J., to build such a power-loom. This order was entered May 10, 1888, on the order-book of Furbush & Son, who built the loom and delivered it to John Bromley & Sons at their establishment in Philadelphia about June 19, 1888, the date of the invoice which is in evidence. This loom was provided with double shuttle-boxes on each side, with mechanism to operate them "pick and pick," mechanism to stop the loom after every second pick, and a treadle or foot mechanism to start the loom. It was set up and tested by John Bromley & Sons shortly after its delivery, and was found to be practically operative for weaving Smyrna rugs. At least one entire Smyrna rug was woven upon this loom at that time. It was not an experimental machine, but a complete and finished power-loom, capable of working, and in fact it was then operated successfully. While this suit has been it progress, this loom, without any alteration whatever having been made in it, was set to work, and several complete Smyrna rugs, which are exhibits in this case, were woven thereon.

There is no real foundation for the argument that this Furbish loom belongs to the category of abandoned experiments. It is true that William Hanson, the superintendent of John Bromley & Sons, thought that the loom was a little too narrow, and he also suggested some minor additional improvements for the ease of the weaver; but these proposed additions did not relate to the parts of the loom involved in this controversy. They concerned other distinct parts. When this loom was procured, it was the intention of John Bromley & Sons to proceed to change the weaving of Smyrna rugs in their establishment from hand to power. The change, however, was not then made, but was deferred temporarily, because they had just begun to manufacture chenille curtains, and were then engaged in putting in a number of new looms for that purpose. They commenced to make the change in the manner of weaving Smyrna rugs in December, 1889, and received power-looms for the purpose from the Knowles Loom Works, the first one being shipped there December 14, 1889.

As respects the acts of the defendants here complained of, it appears that some time in the spring of 1889 the idea of weaving Smyrna rugs by power occurred to George William Stewart, a member of the defendants' firm of John Stewart & Son, manufacturers of rugs, etc., and he made drawings of a loom for this purpose. About the middle of September, 1889, he gave a verbal order for such a loom to the Crompton Loom Works. It was finished and tested satisfactorily about the middle of November, 1889, and on the 21st day of that month the defendants ordered from the Crompton Loom Works twenty-five such looms. The delivery thereof commenced in the last week of December, 1889, and these are the looms alleged to infringe the plaintiffs' patent. The proof thus disclosed the significant fact that the conception of weaving Smyrna rugs by power, instead of by hand, occurred about the same time to three different persons—namely, Joseph H. Bromley, Thomas Bromley, Jr., and George William Stewart—engaged in the manufacture of these rugs, whose respective firms, acting independently of each other, gave orders to different loom-builders, who thereupon constructed power-looms for the purpose, different structurally, but all having mechanism to stop the loom after every two picks and for restarting it by the foot. This concidence is confirmatory of our conclusion that no invention in a patentable sense was involved in the first and second claims of the patent in suit. (*Atlantic Works* v. *Brady*, 23 O. G., 1330; 107 U. S., 192, 199; 2 Sup. Ct. Rep., 225.) For the reasons above discussed—first, the lack of patentable novelty, and, second, because of the clear anticipation shown in the Furbush loom made in the summer of 1888—the plaintiffs' case fails.

Let a decree be drawn dismissing the bill, with costs.

U. S. Circuit Court—Northern District of New York.

LORING *v.* BOOTH *et al.*

Decided October 11, 1892.

1. PATENTS FOR INVENTIONS—ASSIGNMENT—INFRINGEMENT BY PATENTEE.

   A patentee assigned all his interest in a patent, agreeing not to manufacture or sell the patented machine or make any improvement thereon which would adapt it to any other kind of work. Subsequently the assignee sued him for infringement in making an improvement on the machine. *Held*, on motion for preliminary injunction, that in the light of the above contract, although the suit was not based thereon, the patentee was not in so favorable a position before a court of equity as one who infringes ignorantly or inadvertently and that the patent should be construed liberally as against him.

2. SAME—INFRINGEMENT—NOTICE TO DESIST—LACHES.

   The defendants were notified to desist from infringement about eight months after knowledge thereof came to the plaintiff, and suit was begun within four months thereafter. *Held* that under the circumstances the delay did not constitute laches.

BILL by Charles M. Loring against Quentin W. Booth and Irving E. Booth for infringement of patent. On motion for preliminary injunction. Order for injunction unless defendants give bond.

Mr. George B. Selden for the complainant.
Mr. Howard L. Osgood for the defendants.

COXE, *J.*:

The bill is in the usual form, alleging infringement of two Letters Patent, numbered, respectively, 318,731 and 344,435, for improvements in shoe-upper machines. The validity of both patents is undisputed. The defendants oppose the motion upon two principal grounds—non-infringement and laches. The question of infringement of the third claim of the patent granted to Charles B. Hatfield, No. 318,731, was decided at the argument. The device which the complainant produces as a sample of the defendants' manufacture certainly infringes when the irons are stationary; but it is thought this condition was produced rather by accident than design. The device which the defendants produce as a sample of their present manufacture does not infringe and when operated as defendants insist it always should be operated cannot be made to infringe. The defendants should not be permitted to sell devices like the former or prevented from selling devices like the latter.

The other patent, No. 344,435, was granted to Quentin W. Booth, one of the defendants, on the 29th of June, 1886. The patent was duly assigned to the complainant. It is intended to cover improvements upon the machine described in No. 318,731, the other patent in suit. The only claim in issue is as follows:

In a machine for beading shoe-uppers, the combination of the arm, the stationary jaw secured to the end of the arm, the movable jaw, the rod connected with the movable jaw, and the eccentric for giving motion to the rod, as set forth.

The machine made by the defendants has all these elements in combination substantially like the combination of the claim; but it is said that an examination of the prior art renders a narrow construction necessary, and if so construed the defendants do not infringe the claim.

At the time the patents were assigned the defendants also transferred by a written agreement—

all of their right, title, and interest in the automatic shoe-beader—i. e., patent, beader mdse. on hand, and beader special tools belonging thereto—as shown in inventory and ledger of the company. The parties of the first part further agree not to manufacture, sell, or handle or cause to be manufactured, sold, or handled any of said shoe-beaders or make any improvement on the same that would adapt it to any other kind of work than that for which it is now intended without the consent of the party of the second part.

It is true that this action is not based on the contract; but the language quoted, if it has no other signification, certainly throws some light upon the interpretation and scope of the claim as understood by the defendants at the time they sold the patents, the machines, and the tools for making them to the complainant's predecessors. They appear to have thought at that time that the purchasers of the patents were invested with a broad monopoly of the business in question. If their present contention is correct, the complainant obtained nothing of real value. Parties situated as the defendants are do not occupy as favorable a position in a court of equity as those who infringe ignorantly or inadvertently. As against the defendants the patents must be liberally construed. Further discussion of this question should be reserved until the final hearing, when it can be determined more satisfactorily than upon the comparatively-crude presentation of a motion of this character. At present it is sufficient to say that I am inclined to think the claim in question has been infringed.

The bill was filed July 15, 1892. Several affidavits tending to show that the existence of the defendants' machine was known to Charles B. Hatfield during the summer of 1891 have been read. Assuming these

statements to be true, and assuming, also, that the knowledge of Hatfield, who assigned his patent in May, 1885, can be imputed to the complainant, still the proof is insufficient. The time which elapsed before the defendants were notified to desist from infringing was only about eight months, and the suit was commenced within four months thereafter. In the circumstances of this cause the delay was too short to constitute laches. (*Collignon* v. *Hayes*, C. D., 1881, 332; 8 Fed. Rep., 912, 916; *Kilbourn* v. *Sunderland*, 130 U. S., 505, 518; 9 Sup. Ct. Rep., 594.) The testimony seeking to fasten knowledge upon the complainant himself as early as the autumn of 1889 is too vague and uncertain to prevail against his positive denial. For the reasons stated at the argument the defendants should have an opportunity to give a bond if they so desire.

An injunction may issue unless within ten days from the date of the service of a copy of the order entered upon this decision the defendants shall give a bond in the sum of $6,000, conditioned, substantially, as in *Swift* v. *Jenks*, (C. D., 1887, 214; 19 Fed. Rep., 641.) If a bond is given, the complainant can at any time move to increase the amount upon sufficient proof that it is inadequate.

U. S. Circuit Court—Southern District of Ohio, Western Division.

SOCIÉTÉ ANONYME DU FILTRE CHAMBERLAND SYSTEME PASTEUR AND THE PASTEUR CHAMBERLAND FILTER COMPANY *v.* BLOUNT *et al.*

Decided August 12, 1892.

PATENT — CIRCUIT COURT OF APPEALS — APPEAL FROM ORDER GRANTING INJUNCTION—SUPERSEDEAS.

In the prosecution of an appeal to the circuit court of appeals under section 7 of act of March 3, 1891, from an order granting an injunction there is no discretion in the court or judge allowing the same to deny or refuse the appellant a supersedeas, and the appellant is entitled to it as a matter of right.

PENDING on motion of the complainant to vacate and set aside the supersedeas heretofore allowed the defendant Blount on the appeal from the order granting the complainant an injunction.

Mr. Paul A. Staley and *Messrs. Kerr & Curtis* for the complainants.

Mr. H. A. Toulmin and *Messrs. Wood & Boyd* for the defendants.

JACKSON, *J.*:

The motion to vacate and set aside the supersedeas heretofore allowed the defendant Blount is denied. Under the seventh section of the act of March 3, 1891, said defendant had the right to appeal from the order of the circuit court granting the injunction, and to make such appeal effectual he had a right to the supersedeas upon such terms as the court or judge granting it might impose. In the prosecution of an appeal under that section there is no discretion in the court or judge allowing the same to deny or refuse the appellant a supersedeas. There is a discretion in respect to the bond that may be required of the appellant for the protection and indemnity of the appellee. Any other construction of said section would defeat the very aim and purpose of its enactment. The previous practice and legislation in relation to appeals and their effect render it very clear that the appeal allowed by said section was intended to suspend and vacate the order granting the injunction.

The motion to vacate and set aside the supersedeas is denied.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 61.—No. 11. TUESDAY, DECEMBER 13, 1892. PRICE—$5 per year.

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Notice.

(ORDER No. 789.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., November 26, 1892.

It is hereby directed that in the printing of claims of applications for patents the punctuation of the claims as made by applicants be strictly followed, and that the punctuation of the specification made by applicants be not departed from except to cure a manifest absurdity.

W. E. SIMONDS,
Commissioner.

World's Columbian Exposition.

To the Inventors and Manufacturers of the United States:

It is the intention of the Patent Office to make at the World's Columbian Exposition at Chicago in 1893 an exhibit which will show that great advance in the several arts which is due, in large measure, to the encouragement and support afforded by our patent system. This exhibit is to consist of models of patented inventions, which will be carefully selected, to show as far as is possible the inception of each art, the stages through which the art has advanced, and the final development reached at the present time. This display of typical inventions, embodied in concrete form and properly arranged, will, it is believed, constitute a grand historical exhibit of the progress of the useful arts and one which will be of great interest not only to inventors and manufacturers, but to the public generally.

The Office collection of models has been seriously impaired by fire, and is further incomplete by reason of the fact that models have not generally been required or received during the last ten years. The Office is not, therefore, in possession of the models of many valuable inventions which might properly be included in such an exhibit, and without which indeed, the exhibit would be incomplete. The limited appropriation for this exhibit will not permit the Office to make such models. An urgent appeal is therefore made to all inventors and manufacturers to come to the assistance of the Office in this matter, either by loans of models already built or by the construction of such models not in the possession of the Office as should properly be placed in such a collection. Of course, where models are loaned to the Office all proper credit will be given both in labels and catalogues to the parties by whom the loans are made, and such disposition will be made of the models after the close of the exhibit as the owners shall direct. Many inventors and manufacturers have already indicated a willingness to co-operate with the Office in this matter, and it is confidently expected that such a response will be made to this general appeal as will assure the unparalleled success of this attempt to graphically and concretely show the development of American invention.

W. E. SIMONDS,
Commissioner.

Protection of Foreign Exhibitors.

DEPARTMENT OF STATE,
Washington, D. C., July 30, 1892.

To the Diplomatic and Consular Officers of the United States:

GENTLEMEN: I subjoin a transcript of the act of Congress approved April 6, 1892, Public No. 29, entitled "An act to protect foreign exhibitors from prosecution for exhibiting wares protected by American patents and trade-marks," which reads as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That no citizen of any other country shall be held liable for the infringement of any patent granted by the United States, or of any trade-mark or label registered in the United States, where the act complained of is or shall be performed in connection with the exhibition of any article or thing at the World's Columbian Exposition at Chicago.

You will transmit copies of this circular to the government of the country to which you are accredited, and ask that it be given the widest possible circulation for the information of those directly concerned.

I am, gentlemen, your obedient servant,

JOHN W. FOSTER,
Secretary of State.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., August 4, 1892.

Official copy to the Commissioner of Patents for his information and guidance.

E. M. DAWSON,
Chief Clerk.

Women Inventors.

The Patent Office has published and has for sale a volume containing a list of women inventors to whom patents have been granted by the United States from 1790 to July 1, 1888. 44 pages. Paper covers, 50 cents.

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Issue of December 13, 1892.

Patents	472	No. 487,702 to No. 488,173, inclusive.
Designs	3	No. 22,056 to No. 22,058, inclusive.
Trade-Marks	28	No. 22,151 to No. 22,178, inclusive.
Labels	None	
Reissues	2	No. 11,294 to No. 11,295, inclusive.
Total issue	505	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States	Patents and Designs.	Trade-Marks and Labels.
Alabama	2	..	Nevada	..	..
Arizona Territory	1	..	New Hampshire	4	..
Arkansas	1	..	New Jersey	20	1
California	9	..	New Mexico Territ'y	..	..
Colorado	3	..	New York	80	6
Connecticut	16	1	North Carolina	..	..
Delaware	..	..	North Dakota	..	..
District of Columbia	3	1	Ohio	37	2
Florida	2	..	Oregon	..	..
Georgia	2	..	Pennsylvania	34	1
Idaho	..	..	Rhode Island	4	1
Illinois	58	5	South Carolina	3	..
Indian Territory	..	..	South Dakota	3	..
Indiana	8	..	Tennessee	1	..
Iowa	8	..	Texas	5	..
Kansas	7	..	Utah Territory	2	..
Kentucky	6	..	Vermont	1	..
Louisiana	3	..	Virginia	4	..
Maine	4	1	Washington	2	..
Maryland	3	1	Wes Virginia	1	..
Massachusetts	36	3	Wisconsin	12	..
Michigan	18	..	Wyoming	..	..
Minnesota	5	..	U. S Army	..	..
Mississippi	3	..	U. S. Navy	..	..
Missouri	24	1			
Montana	1	..	Total to citizens of the United States	440	24
Nebraska	4	..			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels	Countries.	Patents and Designs.	Trade-Marks and Labels
Argentine Republic	..	..	Mexico	1	..
Austria-Hungary	2	..	Netherlands	..	..
Belgium	..	..	Newfoundland	..	..
Bermuda	..	..	New South Wales	1	..
Brazil	..	2	New Zealand	..	..
Canada	12	..	Norway	..	..
Chile, Republic of	..	..	Portugal	..	..
Cuba	..	..	Russia	..	..
Denmark	..	..	Scotland	..	..
Ecuador	..	..	South Australia	..	..
England	9	..	Spain	..	..
France	1	..	Sweden	..	..
Germany	7	2	Switzerland	1	..
Guatemala	..	..	Victoria	..	..
Ireland	1	..			
Italy	..	..	Total to citizens of foreign countries	35	4
Japan	..	..			

APPLICATIONS UNDER EXAMINATION.

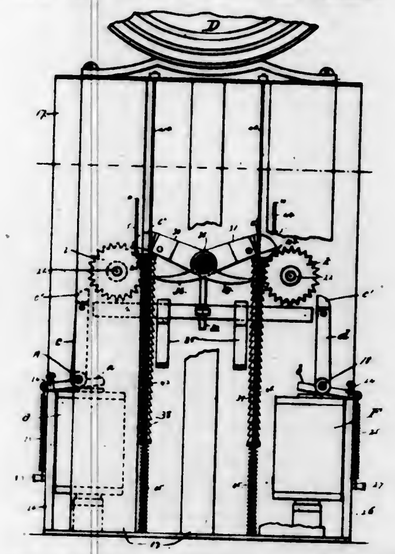
Condition at Close of Business December 6, 1892.

Division No.	Subjects of invention.	Oldest new application and oldest action by applicant awaiting official action: New	Amended	No. of applications awaiting action.
	Under one month in arrears.			
31	Gas, Painting, Leather, Tanning, Alcohol, Oils, Fats, and Glue, etc	Nov. 7	Nov. 26	84
	Between one and two months in arrears.			
2	Farm Stock, Products, etc	Oct. 10	Nov. 30	187
14	Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, etc.	Oct. 6	Nov. 28	121
16	Telegraphy, Telephony, Electric Lighting and Signaling.	Oct. 6	Nov. 26	215
11	Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting.	Oct. 6	Nov. 23	211
8	Furniture, Toilet, Umbrellas and Canes, etc.	Oct. 7	Nov. 22	253
25	Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, etc.	Oct. 10	Nov. 19	141
10	Carriages and Wagons and Railway-Cars	Oct. 8	Nov. 19	339
18	Steam-Engineering, etc	Oct. 10	Nov. 17	96
21	Textiles, etc	Oct. 10	Nov. 12	199
24	Sewing-Machines and Apparel	Oct. 8	Nov. 7	145
30	Lamps, Gas-Fittings, Type-Writers, Matrix-Making Machines.	Oct. 7	Nov. 5	212
12	Mechanical Engineering, Stores-Service, etc.	Oct. 12	Nov. 2	217
19	Stoves and Furnaces	Oct. 7	Oct. 22	391
1	Tillage and Fences	Oct. 12	Oct. 18	293
5	Fine Arts, Stationery, Book-Binding, Music, etc.	Oct. 7	Oct. 17	242
20	Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc.	Oct. 8	Oct. 15	285
17	Paper-Manufactures and Printing.	Oct. 6	Oct. 13	229
15	Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc.	Oct. 6	Oct. 10	262
6	Chemistry, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc.	Oct. 8	Oct. 8	286
27	Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	Oct. 6	Oct. 8	244
4	Civil Engineering, etc	Oct. 7	Oct. 1	374
	Between two and three months in arrears.			
22	Fire-Arms, Navigation, Signals, etc.	Sept. 19	Nov. 10	234
7	Harvesters, Games and Toys	Sept. 12	Nov. 8	509
23	Instruments of Precision, Acoustics, Optics, etc.	Sept. 17	Nov. 4	253
32	Advertising, Baggage, Packing and Storing Vessels, etc.	Sept. 9	Nov. 1	233
9	Hydraulics, Fire-Extinguishers, etc.	Oct. 3	Oct. 24	421
3	Metallurgy, Metal Founding, Forging, Rolling, Coating, Annealing and Tempering, etc.	Sept. 16	Oct. 13	238
28	Pneumatics, Refrigeration, Air and Gas Engines, etc.	Sept. 7	Sept. 23	378
	Between three and four months in arrears.			
13	Metal-Working, Arms and Projectiles, etc.	Aug. 12	Nov. 11	215
	Between four and five months in arrears.			
29	Wood-Working Machines, Carpentry, Coopering and Roofing, etc	July 18	Nov. 15	346
	Between six and seven months in arrears.			
26	Electricity, Generation, Distribution, etc.	May 14	Oct. 3	556
	Total number of applications awaiting action			8,442
	Under one month in arrears.			
	Designs	Dec. 1	Dec. 1	40
	Trade-Marks	Dec. 2	Dec. 5	15

PATENTS

GRANTED DECEMBER 13, 1892.

487,702. SPEED-INDICATOR. WILLIAM H. ABBOTT, Lennoxville, Canada. Filed Aug. 12, 1891. Serial No. 402,495. (No model.)

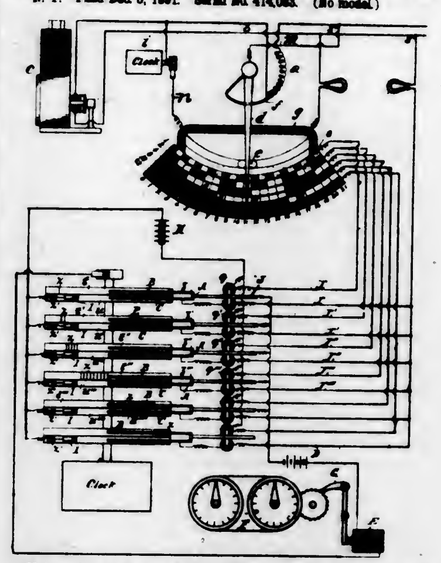


Claim.—1. The combination, with a pair of wheels and axle of a car, &c., of a circuit maker and breaker adapted to make and break the circuit at each revolution of the wheels and axle, with an electric circuit, and with a clock mechanism, having a switching mechanism by which two sets of electro-magnets are alternately brought into and placed out of circuit, the indicator mechanism E, of which said magnets form part, by which the revolutions within a given amount of time will be indicated in miles per hour by fingers 43 and scale 44, the whole substantially as described.

2. The combination, with a pair of wheels and axle of a car, &c., of the mechanism A, adapted to make and break an electric circuit at each revolution of the wheels and axle, with an electrical circuit, and with a clock having a watch-movement provided with a switching device, consisting of the pinion 9, insulated wheels 7 and 8, and arms 12, 13, and 14, adapted to actuate two pairs of electro-magnets alternately, the whole substantially as described.

3. The combination, in an indicator E, of the magnets F and G, actuated alternately, as described, for equal periods of time, rock-shafts 18 and 19, having armatures *a* and *b*, and springs 25, whereby they are rotated, also having arms *c* and *d*, provided with spring-pawls *c'*, shafts 21 and 22, having, respectively, wheels *f* i and *e k*, adapted to be operated by the arms *c* and *d*, rock-shaft 28, having arms 30 and 31, adapted to act upon the wheels *e* and *f*, and also having arms 36 and 37, racks 41 and 42, adapted to be actuated by the wheels i and *k*, racks 38 and 39, adapted to be actuated by the racks 41 and 42 and retained by the arms 36 and 37, fingers 43, attached to the heads of racks 38 and 39, and scales 44, graduated to show the speed per hour, the whole substantially as described.

487,703. ELECTRIC METER. CHARLES W. ATTOS, New York, N. Y. Filed Dec. 5, 1891. Serial No. 414,083. (No model.)



Claim.—1. An electric meter consisting of the combination of an electric indicator—such as, for example, an ammeter—a circuit-controller whose respective poles are attached to the needle of said ammeter and to points directly below the needle at any position which it may occupy for any current for which the ammeter is adapted, electro-magnets located in parallel in the circuit which includes said circuit-controller, the said poles below the said needle forming the terminals of the said magnets and the said magnets being lettered *q*, which are provided with second windings, forked electric terminals attached to the armatures of said magnets *q' q''*, &c., the one tine of each fork normally just escaping projections upon a rotating ring, the said rings and tines being in a third independent circuit in parallel and the said rings rotating with a predetermined uniform speed, and including a magnet which controls a registering device, and the second tines being in circuit with the second windings of said magnets *q' q'' q''' q''''*, &c., and normally just escaping rings which are included in the same circuits, the said rings being complete electric conductors except as to a sufficiently-small part which serves as a circuit-interrupter, the said last-named rings rotating synchronously with the said first-named rings and provided with stationary brushes, which rest upon the rings and serve to make electric contact therewith, an armature upon said needle, and a magnet located under the said needle and sufficiently large to be under the needle in all of the latter's positions and included in a circuit which is closed once for every revolution of both of the two sets of rings.

2. An electric meter consisting of the combination of a registering device controlled by a magnet E, circuit-closers normally in open circuit with said magnet and controlled by magnets in independent electric circuits, an ammeter in the main line of an electric distribution system, the needle of the said ammeter being normally in open

circuit with said second magnets, and an additional magnet so arranged as to be periodically closed and attract the said needle, for the purpose described.

3. An electric meter consisting of the combination of an ammeter having a graduated dial, a needle provided with an armature, a magnet over which said needle moves in its path, insulated contacts corresponding to the number of divisions of the dial and so located relatively to the needle that the same is adapted to come into contact with them, an electric-current generator from which a current flows and adapted to pass through the coils of said magnet at intervals, thereby attracting the said needle and bringing the same in electric connection with one of the said contacts, said contacts being in electric connection with corresponding magnets and a source of electricity, means, such as a clockwork, controlling a circuit-closer for closing and interrupting the circuit through the first-named electro-magnet at intervals, and a registering device controlled by a magnet E independent of the other named magnets and in open circuit with circuit-closers which are adapted to close a circuit through the magnet E a different number of times in a predetermined unit of time, the last-named circuit-closers being mounted upon a shaft adapted to rotate once for every one of said intervals of time above mentioned.

4. An electric meter consisting of the combination of a graduated dial, a vibratory needle mounted above the same, a magnet below said needle, a clock having electrical connection with said magnet, whereby the needle is dipped at a predetermined moment at the point of the dial over which it is resting, a series of magnets energized for each position, respectively, for each position of the needle, means for locking any one of said series of magnet-armatures in that position to which it has been brought by its magnet for a predetermined length of time, and circuit-closers carried by said armatures and adapted to close a circuit through a magnet which controls a registering or indicating device—such as, for instance, a series of geared wheels carrying pointers which move over suitable dials—the said circuit-closers last named consisting of rotary rings provided with projections and of tines or forks actuated by series of magnets above mentioned, the different rings having different numbers of projections and all the projections lying on different radial lines of the rings, which are formed upon a common cylindrical surface.

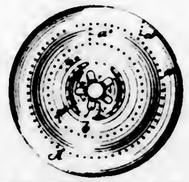
5. An electric meter consisting of the combination of a dial-face, a needle movable over but out of contact with said face, an armature connected to or forming part of said needle, a magnet, a circuit therefor, a circuit-controller whereby the needle may be pressed upon said face at any point at which it may happen to be, insulated contact-pieces located on said face and against which said needle comes in contact when pressed, as above mentioned, the said contacts being insulated from each other in a radial direction and the contacts being arc-shaped and provided with projections rising from the level of the said dial-face and each contact-piece being provided with the projections located in predetermined relative positions, a series of magnets, one or more of which are adapted to be placed in circuit with said needle and projections in virtue of the said needle being pressed thereon, as above stated, a series of rings corresponding to said magnets, rotary upon a common shaft and provided with teeth which are in circuit with a magnet controlling an indicating device, the teeth normally escaping fork-tines carrying the armatures which belong to said series of magnets, and means for locking down the said armatures for predetermined durations of time, whereby the teeth close the circuit through the magnet for operating the indicating device a number of times corresponding to the number of units of current being carried through the said meter.

6. The combination, with the needle of an ammeter, of a series of wheels forming an indicating device which is operated by an armature of an electro-magnet, and means for sending impulses through said magnet, consisting, substantially, of a series of circuit-closers in circuit with said magnet and controlled by magnets which are in circuit with contacts located under said needle which carries an armature in inductive relation to a magnet which is periodically energized by an electric current, the said series of magnets being provided with second windings in circuit with circuit-controllers which are controlled by the armatures of said series of magnets.

7. An electric meter consisting of the combination of a movable needle, arc-shaped insulated contacts concentrically arranged around the center of rotation of the said needle and located within the dipping distance of the said needle, a magnet controlling the dipping of said needle, means for periodically sending a current of electricity through the said magnet, and an indicating-instrument electrically connected to said contacts through the instrumentality of a series of circuit-closers independently operative by circuits which are closed by the periodically-closed currents which are adapted to flow through the said contacts, the said contacts being in open circuit normally with the said needle.

487,704. SPOOL. CARL BACH, Vienna, Austria-Hungary. Filed Oct. 20, 1891. Serial No. 409,208. (No model.) Patented in Germany Sept. 23, 1891, No. 61,805; in Switzerland Sept. 23, 1891, No. 4,083; in France Sept. 23, 1891, No. 216,301; in Belgium Sept. 23, 1891, No. 96,505; in England Sept. 23, 1891, No. 16,185; in Italy Sept. 30, 1891, XXV, 30,468, LXI, 121; in Austria-Hungary Feb. 18, 1892, No. 43,656 and No. 73,439, and in Spain Mar. 5, 1892, No. 12,574.

Brief.—The flanges of the spool are provided with concentric perforations, whereby projecting portions of the flanges may be torn off as the thread is removed. Such perforations also allow ventilation.



Claim.—1. A spool composed of a spindle consisting of a tubular sheet-metal core having flexible tongues or lips *b b'*, alternating with each other, said tongues *b'* being shorter than the tongues *b* and forming, when bent at right angles, the inner abutments for the end disks or flanges of the spool, in combination with said end disks having a central opening and slots arranged around said opening for the passage of the lips *b*, which when bent over form the outer abutments for the disks, substantially as and for the purpose set forth.

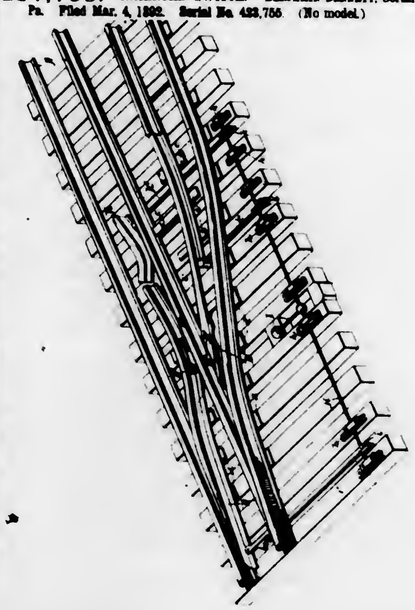
2. A spool having concentric rows of openings formed in its flanges or end disks, substantially as and for the purpose set forth.

3. A spool having flanges or end disks of paper or card-board provided with concentric rows of perforations between the spindle or axis of the spool and the periphery of the flanges or disks, for the purpose set forth.

4. A spool having flanges or end disks of paper or card-board provided with concentric rows or perforations between the spindle or axis of the spool and the periphery of the flanges or disks and with transverse lines of perforations between the several concentric rows and between the periphery and outer row of perforations, for the purpose set forth.

5. A spool composed of a tubular spindle provided at each end with flexible tongues or lips, one of said tongues having a longitudinal slot b^5 formed therein and flanges or end disks secured to the spindle by means of said tongues, as and for the purpose set forth.

487,705. RAILROAD-SWITCH. BENJAMIN BENNETT, Scranton, Pa. Filed Mar. 4, 1892. Serial No. 423,755. (No model.)



Claim.—1. In a switch such as described, the combination, with the main-track rails and switch-points, of the siding-rail between the main-track rails elevated at a point in proximity to one of the main-track rails, a bearing formed on one side thereof at the elevated point, and the movable crossing rail adapted to move across the main-track rail and rest on the said bearing at the elevated point of the center rail, substantially as described.

2. In a switch such as described, the combination, with the main-track rails and switch-points, of the siding-rail between the main-track rails elevated at an intermediate point and having its ends bent down to the level of the main-track rails, a bearing at the elevated point of the side rail, and the movable crossing rail having its end cut at an angle and adapted to cross the main-track rail and rest on said bearing, substantially as described.

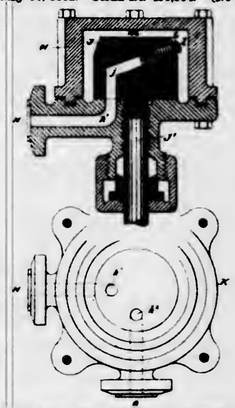
3. In a switch such as described, the combination, with the main-track rails, switch-point between said rails, the siding-rail leading from said switch-point to the opposite main-track rail, at which point it is elevated above the level of the main-track rails, and the long bearing formed on the side of said siding-rail at its highest point, of the crossing rail pivoted outside the main tracks and having the end reduced on the under side and cut off at a sharp angle, adapted to swing across the main-track rail and take its seat on the long bearing on the elevated point of the siding-rail, substantially as described.

4. In a switch such as described, the combination, with the stationary and movable rails, of the joint between the same formed by the plates secured to said rails and having the forwardly-projecting semicircular ends each projecting beneath the opposite rail end and joined together by a central pintle, substantially as described.

5. In a switch such as described, the combination, with the stationary and movable rails, of the joint between the same formed by the plates secured to the under side of the respective rails and each having the forwardly-projecting reduced semicircular end projecting beneath the end of the opposite rail and connected to the plate thereon by a pintle, substantially as described.

6. In a switch such as described, the combination, with the main-track rails, siding-rails, and the crossing rail forming part of said siding-rails and adapted to swing over the main-track rail, of the chair on which said crossing rail moves, having the undercut projection thereon co-operating with the bottom of said rail when closed, and the crank-shaft and link for moving said crossing rail, whereby it is held down when in closed position, substantially as described.

487,706. REFRIGERATING-MACHINE. LOUIS BLOCK, New York, N. Y. Filed July 11, 1892. Serial No. 439,594. (No model.)

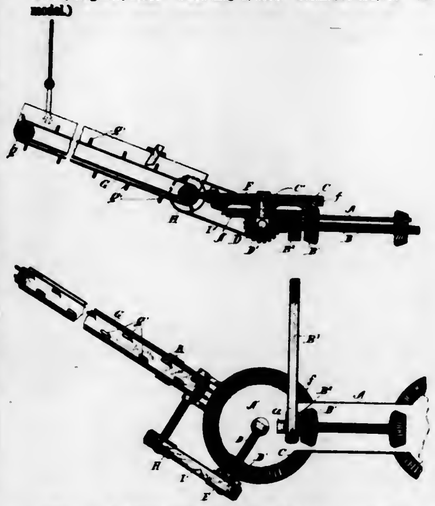


Claim.—1. As a means for introducing liquefied refrigerant in measured quantities into the evaporating-coils of a refrigerating apparatus, the valve J, having a cavity *j*, in combination with a base K, having two widely-separated ports k' k^2, and means, as the shaft J' and worm-wheel J^3, for moving the said valve so that the cavity *j* is presented alternately to each of the said ports, and with a cover M, inclosing the said valve loosely in a gas-tight chamber *m*, the valve being adapted to lift from its seat when subjected to an excess of pressure from below, so as to allow gas to flow into the chamber and induce a pressure therein, holding the valve gently to its seat, all arranged for joint operation, substantially as herein specified.

2. As a means for introducing liquefied refrigerant in measured quantities into the evaporating-coils of a refrigerating apparatus, the valve J, having a cavity *j*, in combination with a base K, having two widely-separated ports k' k^2, and means, as the shaft J' and worm-wheel J^3, for moving the said valve so that the cavity *j* is presented alternately to each of the said ports, and with a device, as the screw L, for varying the capacity of the cavity as may be required, all substantially as and for the purposes herein specified.

3. As a means for introducing liquefied refrigerant in measured quantities into the evaporating-coils of a refrigerating apparatus, the valve J, arranged to rise a little from its seat and having a cavity *j*, in combination with the screw L, adapted to vary the capacity of such cavity, and with the inclosing casing M, leaving a chamber *m*, in which the gas is by the rise of the valve allowed to accumulate to a sufficient pressure to afterward hold the valve to its seat, all arranged for joint operation, substantially as herein specified.

487,707. BUNDLE-CARRIER AND BAND-CUTTER. ALONZO BOOTH, Augusta, Mont. Filed May 3, 1892. Serial No. 431,742. (No model.)



Claim.—1. In a bundle-carrier for thrashing-machines, the combination, with the supporting-plate, a horizontal shaft journaled thereon, a bevel-pinion on the shaft, a pulley on the shaft, a horizontally-disposed gear-wheel mounted on the plate, having teeth on its under face and an apertured hub, an axle passing through said hub, a horizontal shaft having its inner end supported by said axle, a bevel-pinion on the shaft meshing with the teeth of said wheel, a revoluble table or plate mounted on the axle above the wheel, a pulley on the shaft supported by the axle, a bearing depending from the cap through which said shaft passes, a conveyer-trough having an endless apron therein, drums over which said apron passes, a pulley on one of said drums, and a belt connecting said pulley with the pulley on the axle shaft, substantially as described.

2. In a bundle-carrier for thrashing-machines, the combination, with a revoluble table or plate, a conveyer-trough pivotally secured thereto, a gear-wheel below the plate, an axle passing through said wheel and to which the plate is secured, a horizontal shaft supported by said axle and plate, a pinion on said shaft meshing with said gear-wheel, a connection between said shaft and the conveyer for actuating the apron thereof, and means for rotating the gear-wheel, substantially as described.

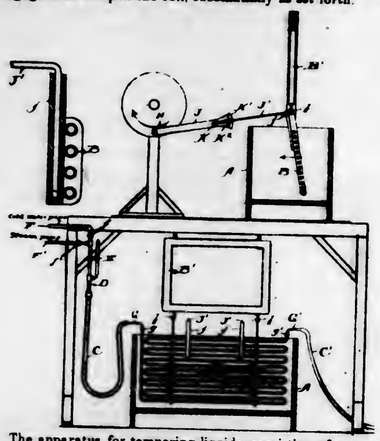
3. In a bundle-carrier for thrashing-machines, the combination, with a revoluble table or plate, a conveyer-trough hinged thereto, a gear-wheel below the plate, an axle passing through the wheel, a shaft, a beveled gear on the shaft, a depending bearing on the plate through which the shaft passes, a pulley on the outer end of the shaft, a pulley on the conveyer-trough, a band connection between the two pulleys, a band-cutter on the conveyer-trough, and means for actuating the several parts, substantially as described.

487,708. APPARATUS FOR TEMPERING CREAM. JOHN BOYD, Rushurst, Ill. Filed Feb. 23, 1892. Serial No. 422,560. (No model.)

Claim.—1. The apparatus for tempering liquids, consisting of the tempering-coil hinged to swing in the vat, combined with a rigidly-connected pitman and a crank for driving the same, substantially as set forth.

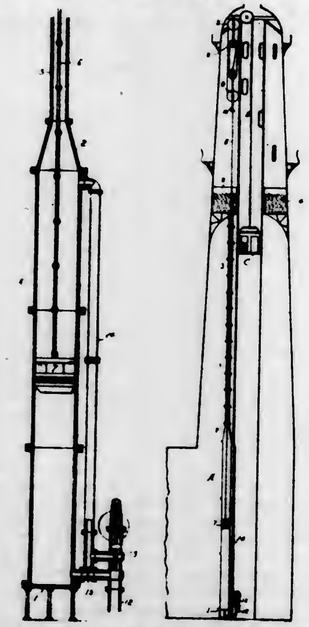
2. The apparatus for tempering liquids, consisting of the temper-

ing-coil hinged to swing in the vat, combined with a rigidly-connected pitman and a crank for driving the same, said pitman being connected to the coil by means of a two-pronged bail the ends of which removably engage sockets upon the coil, substantially as set forth.



3. The apparatus for tempering liquids, consisting of a tempering-coil hinged to swing in the vat, combined with a rigidly-connected pitman and a crank for driving the same, combined with provision for changing the angle of the pitman to the coil of the pipes, substantially as specified.

487,709. **HYDRAULIC ELEVATOR.** THOMAS E. BROWN, Jr., New York, N. Y., assignor, by mesne assignments, to the National Company, Chicago, Ill. Filed Dec. 19, 1889. Serial No. 334,839. (No model.)



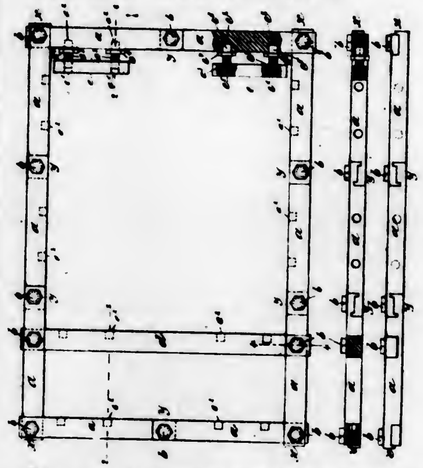
Claim.—1. An elevating apparatus provided with a cylinder and piston, a conducting-tube extending from the top of the cylinder above the limit of travel of the piston to an elevated reservoir containing the motor-fluid, and a cage connected with the piston by connections extending through the said tube and reservoir, and a valve device controlling the flow of said motor-fluid to and from the opposite sides of the piston, substantially as set forth.

2. In an elevating apparatus provided with a cylinder, piston, cage, and elevated reservoir containing the motor-fluid and with a conducting-tube between the top of the cylinder from a point above the limit of travel of the piston and reservoir, the cage attached to the piston by connections extending through the tube, and circulating-tubes connecting the lower end of the cylinder and with the upper end below the conducting-tube, and a valve device for permitting the fluid to circulate from the open space above the piston to the closed space below, substantially as described.

3. The combination, in an elevating apparatus, of a cylinder, piston, elevated tank containing motor-fluid communicating with the open upper end of the cylinder above the limit of travel of the piston through a tubular connecting-pipe, and a cage, flexible suspensories, connections extending from the piston through said pipe, and traveling sheaves arranged above the tank and carrying the suspensories, substantially as set forth.

4. The combination, in an elevator apparatus, of a cylinder, piston, elevated tank containing motor-fluid communicating with the open upper end of the cylinder above the limit of travel of the piston through a tubular connecting-pipe, and connections extending from the piston through said pipe to the traveling sheaves arranged above the tank and carrying the flexible suspensories and cage, substantially as set forth.

487,710. **PRINTER'S CHASE.** JOHN S. BROWN, Jersey City, N. J. Filed Nov. 30, 1891. Serial No. 413,611. (No model.)



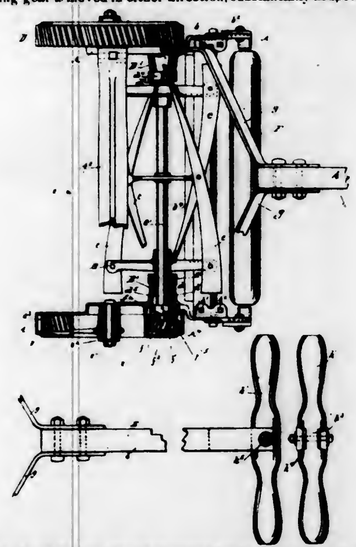
Claim.—1. A printer's chase having its bars made up of elements *a* of rectangular cross-section, each of said elements provided at each end with a locking-lip a', a locking-groove a^2, and the space between said lip and groove having a screw-hole therein, and the clamping-screw whereby said elements are rigidly locked together when assembled, as set forth.

2. A printer's chase having its bars made up of elements *a* of rectangular cross-section, the ends of each element halved or gained, as shown, and provided with locking-lips and locking-grooves, and the space between said lips and grooves having the screw-holes therein, and the clamping-screws whereby said elements are rigidly locked together when assembled, said grooves and lips on the respective ends of said elements being arranged on opposite faces of the same, as set forth.

3. A printer's chase having its bars made up of elements *a* of rectangular cross-section, each of said elements having its ends halved or gained and provided at each end with a locking-lip a', a locking-groove a^2, and the space between said lip and groove having a screw-hole therein, the width of the element being equal to that of the space between the locking-lip and the shoulder of the gain, whereby the joint may be made with the elements arranged end to end or at right angles, and the clamping-screw whereby said elements are rigidly locked together when assembled, as set forth.

487,711. **LAWN-MOWER.** HENRY ROOD, Springfield, Ohio, assignor to Amos Whiteley, same place. Filed May 20, 1892. Serial No. 433,771. (No model.)

Claim.—1. In a lawn-mower, a revolving cutter-shaft and a driving-wheel, a loosely-mounted pinion on said revolving cutter-shaft, clutch mechanism adapted to connect said pinion with said revolving cutter-shaft, and screw-shaped teeth on said driving-gear and pinion, adapted to produce a positive lateral movement of said pinion when the driving-gear is moved in either direction, substantially as specified.



2. In a lawn-mower, the clutch-pinion having screw-shaped teeth adapted to engage in similar teeth in the driving-wheel, and thus produce a positive lateral movement of said pinion in opposite directions when the motion of said driving-wheel is reversed, and thus cause said pinion to connect and disconnect a driving connection, substantially as specified.

3. In a lawn-mower, a revolving cutter and a loosely-mounted pinion thereon, a clutch mechanism between said pinion and cutter, adapted to be connected by a lateral movement of said pinion, and screw-shaped teeth in said pinion, adapted to engage in similar teeth in the driving-gear, substantially as and for the purpose specified.

4. The combination, in a lawn-mower, with a rotary cutter and the main frame, of an outer cone-shaped sleeve on said main frame and an inner box having a curved cone-shaped exterior adapted to fit in a cone-shaped sleeve, said box being provided with a longitudinal opening at one side and with a screw-threaded portion at one end, and an adjusting-nut adapted to screw onto said box, having a concaved face to fit on a corresponding convex seat at the end of said sleeve, and means, substantially as described, for holding said interior box against rotation in said sleeve, substantially as specified.

5. The combination, in a lawn-mower, with an outer cone-shaped sleeve and the interior box having a curved cone-shaped exterior to fit in said sleeve, a longitudinal opening in said box, and an adjusting-nut screw-threaded on the end of said box and bearing against the end of said sleeve, said sleeve having corresponding convex and concave parts, as specified, and a projecting pin through said sleeve into said longitudinal opening in said box, substantially as and for the purpose set forth.

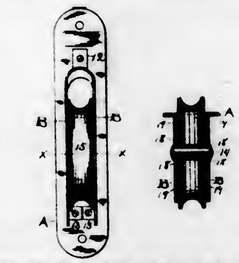
6. In a lawn-mower, a handle formed of a straight bar and a cross-bar connected thereto, said straight bar being provided at its outer extremity with a slotted opening to form a bifurcated part which is beveled inwardly on each side, and a transverse bar provided on opposite sides with a central depression having tapered or beveled seats to engage with the bifurcated part of said bar, substantially as specified.

7. A handle for lawn-mowers, consisting of a straight bar bifurcated at the end and adapted to receive a cross-bar inserted between forks formed by said bifurcation, the engaging parts of the respective bars being provided with tapered seats, and means for clamping said parts together, substantially as specified.

487,712. **SASH-CORD GUIDE.** CHARLES M. DUNHAM, New Britain, Conn., assignor to the Russell & Erwin Manufacturing Company, same place. Filed Aug. 12, 1892. Serial No. 442,932. (No model.)

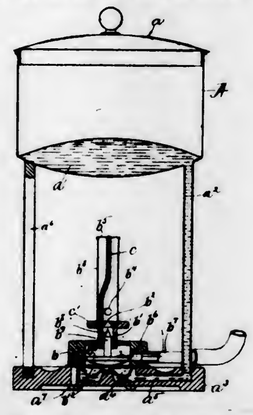
Claim.—1. In a sash-cord guide, the frame consisting of the face-plate A, and the cheeks B B, formed from a piece of sheet metal doubled upon itself at the middle portion and provided with lugs 12 13, by means of which it is secured to said face-plate, substantially as described, and for the purpose specified.

2. The herein-described pulley, consisting of the parts 15 and 17, of sheet metal, the part 15 being in the form of a cup, the bottom of which constitutes one broad side of the pulley, while the part corresponding to the sides of said cup extends inwardly from each corner in the form of a peripheral groove, and the other part 17, which constitutes the remaining side of the pulley, being set into and secured to said part 15, substantially as described, and for the purpose specified.



3. A sheet-metal pulley consisting of the cup-shaped part 15, forming one broad side and periphery of the pulley, having a flange 16 and adjacent interior supporting-shoulder, and the part 17 forming the remaining side of the pulley and having its edge abutting against the inner wall of said flange, while its side adjacent to said flange rests against said supporting-shoulder, substantially as described, and for the purpose specified.

487,713. **THERMOSTATIC VESSEL.** HENRY CARMICHAEL, Malden, Mass. Filed June 22, 1892. Serial No. 437,626. (No model.)



Claim.—1. In a thermostatic vessel, the combination, with a vessel provided with a fluid-containing chamber, of a base having a fluid-containing chamber in connection with the chamber of the said vessel, a gas-burner provided with a gas-chamber and with a gas-outlet, a valve located in said gas-chamber to control said outlet, and a diaphragm interposed between the gas-chamber of the burner and the fluid-chamber of the base and acted upon by the fluid in the chamber of the base to automatically move the valve and close the said gas-outlet when the fluid in the chamber of the vessel has been heated to a predetermined point, substantially as described.

2. In a thermostatic vessel, the combination, with a vessel provided with an auxiliary chamber a', of a base having a chamber in communication with the chamber of the vessel, a gas-burner having a chambered bottom secured to the said base and provided with a gas-outlet, a valve located in the chamber of the burner to control said outlet, and a diaphragm interposed between the chambered bottom of the burner and the chambered base and automatically operating on said valve, and a supplemental gas-outlet, substantially as described.

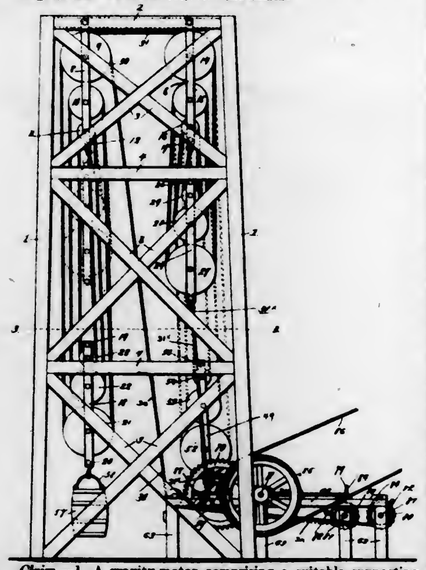
3. In a thermostatic vessel, the combination, with the vessel A, provided with the chamber a', of a base a^2, having a chamber a^4 and a pipe a^5, connecting said chambers, a burner secured to said base and consisting of a chambered bottom *b*, provided with a gas-inlet, a nipple b', having a gas-outlet, a tube b^3, mounted on said nipple, a valve b^6,

co-operating with the gas-outlet, a disk or weight attached to said valve, a diaphragm interposed between the chamber-bottom of the burner and the chambered base and adapted to move said valve to close the gas-outlet, and a supplemental gas-outlet *e*, substantially as described.

487,714. WINDOW-SHADE FIXTURE. FLORENCE M. CARTNY and THOMAS P. FLYNN, Orange, N. J. Filed Feb. 29, 1892. Serial No. 423,249. (No model.)

Claim.—A window-shade fixture consisting of the combination of the movable roller-brackets, the bracket-adjusting cords with a handle on their pendent ends, the single and double cord-guide pulleys, said double pulley having a circumferential groove and teeth, the spring-actuated friction-pawl circumferentially engaging said double pulley, the plates forming bearings for the pulleys, one forming, also, a bearing for said pawl, and the pawl-adjusting cord with a handle on its pendent end, the whole adapted to operate substantially as herein described, for the purpose set forth.

487,715. GRAVITY-MOTOR. JAMES R. CARVER, Gara, Mo. Filed Aug. 1, 1892. Serial No. 441,776. (No model.)

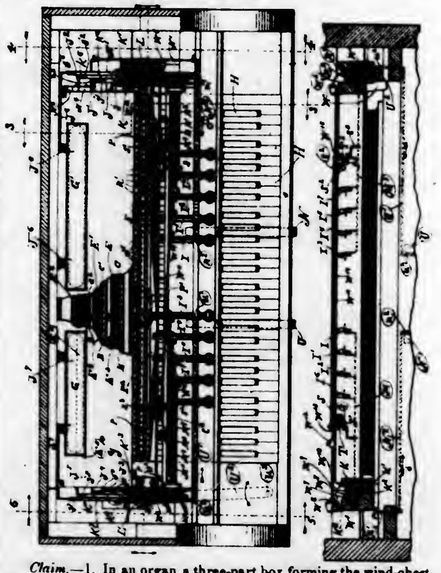


Claim.—1. A gravity-motor comprising a suitable supporting-framework, a set of compound pulleys composed of four series of pulley wheels or sheaves, each journaled in supports, and two of said series of pulleys being secured to the framework, while the other two series are movable, two flexible connections running over the pulley wheels or sheaves and connected at their ends to the supports of one movable series of pulleys, and a weight carried by one series of movable pulleys, substantially as set forth.

2. A gravity-motor comprising a suitable supporting-framework, two sets of compound pulleys, each composed of four series of pulley wheels or sheaves, and each series being journaled in suitable supports, and two series of pulleys of each set being secured to the framework, while the other two series of the set are movable, two sets of flexible connections, each composed of two flexible connections running over the pulleys of one set and being attached at their ends to the fixed-pulley supports and also to one of the movable-pulley supports, and a pair of weights, each of which is connected to one of the movable-pulley supports, substantially as set forth.

3. A gravity-motor comprising a suitable supporting-framework, a number of compound pulleys mounted in said framework, an auxiliary supporting-framework and a pair of windlasses mounted thereon, a pair of drums also mounted on said auxiliary framework, a shaft also mounted upon said framework and carrying a longitudinally-movable hub provided with two gear-pinions, a pair of gear-wheels carried by the windlasses and meshing with the gear-pinions, pawl-and-ratchet connections for the drums and windlasses, and a pivoted lever engaging the pinion-carrying hub for shifting the same, substantially as set forth.

487,716. ORGAN. JOHN CHILLERS, Chicago, Ill. Filed Aug. 11, 1892. Serial No. 442,787. (No model.)



Claim.—1. In an organ, a three-part box forming the wind-chest, the reed-chest, and the grand swell of the organ, the part forming the reed-chest being hinged to the part forming the wind-chest and the part forming the grand swell being hinged to the part forming the reed-chest, with a partition dividing the reed-chest from the wind-chest, such partition having passage-ways therethrough and reeds extending diagonally thereinto across such passage-ways, respectively, substantially as described.

2. In an organ, a valve adapted to be placed on the under side of the partition between the reed-chest and the wind-chest of such organ and to normally close a passage-way extending through such partition, such valve consisting of a body part and wires attached to such body part, the wires having a portion thereof forming the pivotal supports of the valve, the axial line of such pivotal portion of the wires being outside of the body of the valve, but in a plane extending longitudinally through such body of the valve, with an extension on one of such wires to one side of the axial line of the pivotal part thereof, whereby the valve may be actuated when the free end of such extension is raised, substantially as described.

3. In an organ, a valve adapted to be placed on the under side of the partition between the reed-chest and the wind-chest of such organ and to yieldingly close a passage-way extending through such partition, such valve consisting of a body part and wires attached to such body part, such wires having a portion thereof forming the pivotal supports of the valve, the axial line of such pivotal portion of the wires being outside of the body of the valve, but in a plane extending longitudinally through such body of the valve, with an extension on one of such wires to one side of the axial line of the pivotal part thereof, whereby the valve may be actuated, in combination with a vertical movable push-pin, on the upper face whereof such extension of the wire normally rests and by the upward movement whereof the valve is actuated, substantially as described.

4. In an organ, a series of mutes adapted to close a given number of passage-ways extending through the partition between the reed-chest and wind-chest of such organ, wires connected, respectively, to such mutes, each of such wires extending through the end wall of the reed-chest and having a crank-arm thereon outside thereof, a series of levers fulcrumed on a common pivot, and a series of wires adapted to partially rotate in the bearings thereof, respectively, each of such wires having at one end thereof a crank-arm engaging with one end of one of the series of levers and at the other end a crank-arm engaging with a projection extending out from a longitudinally-movable stop and adapted to be partially rotated by the longitudinal movement of such stop, substantially as described.

5. In an organ, a coupling-board hinged to the frame of the organ, a series of coupling-rods journaled on the front face of such board, each one thereof extending diagonally from the lower to the upper edge thereof, with a crank-arm on the lower end resting on one of the keys of the organ and a crank-arm on the upper end extending underneath the one of the push-pins of the organ an octave higher than the first-named key, and a vertically-journaled wire secured in the frame of the organ, in combination with a crank-arm at one end of such wire, adapted to come in contact with the forward face of the coupling-board, and a crank-arm at the other end adapted to come in contact with and be actuated by a projection extending outward from a longitudinally-movable stop when such stop is drawn outward, substantially as described.

6. In an organ, a series of vertically-movable push-pins, the combination of a series of keys, the lower end of each one of the series of vertical pins resting upon the inner end of one of the series of keys, and a coupling-board hinged to the frame of the organ, such coupling-board having a series of diagonally-extending rods journaled on one side thereof, each one of such diagonally-extending rods having crank-arms at the ends thereof, the lower one of such crank-arms extending under the under edge of such board and adapted to be brought by the movement of the board on its hinge over one of the keys of the series and be actuated thereby and the upper one of such crank-arms extending over the upper edge of such board and under the head of that one of the series of push-pins which is an octave higher than the key over which the first-named crank-arm of such rod extends, substantially as described.

7. In an organ, a grand swell consisting of a cover hinged to the reed-chest of the organ, a stop on such cover at one end thereof, and a lever fulcrumed on a horizontal pivot and movable in a vertical plane, the upper end of such lever extending under the stop and the lower end thereof having thereunder the crank-arm of a horizontally-journaled rod, in combination with such horizontally-journaled rod having crank-arms at each end thereof, one of such crank-arms extending horizontally underneath the pivoted lever and the other extending vertically through the case of the organ, a lever forming a knee-swell, pivoted underneath the keyboard of the organ, and a longitudinally-movable rod one end whereof is attached to the inner end of the knee-swell and the other end whereof is attached to the lower end of the crank-arm extending through the frame of the organ, whereby side movement of the knee-swell will produce longitudinal movement in the rod attached thereto and a consequent partial turning of the horizontally-journaled rod, whereof the crank-arm at one end extends under and is in connection with the lever movable on its horizontal point and in contact at its upper end with the stop placed on the end of the grand swell, and such lever can be thereby moved against such stop and the grand swell opened, substantially as described.

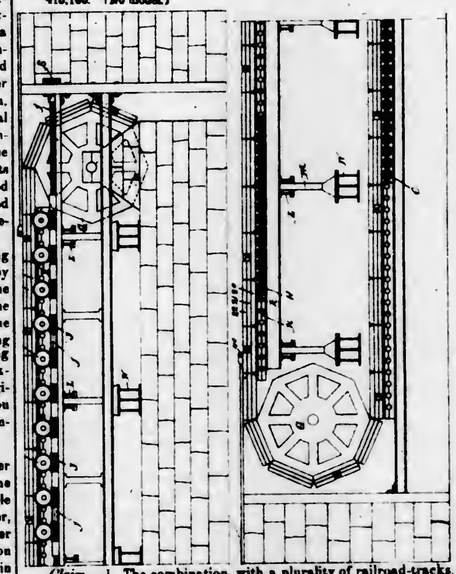
8. In an organ, a swell adapted to normally close an opening through the cover forming the grand swell of the organ, wires by which such swell is hinged to such grand swell, a crank-arm at one end of one of such wires, a lever fulcrumed on a pivot in the frame of the organ, on the inner end of which lever the crank-arm on the hinging rod rests, a rod secured in the frame of the organ, having crank-arms at each end thereof, one of such crank-arms extending over the outer end of the pivoted lever and the other of such crank-arms extending underneath and in front of a projection on a longitudinally-movable stop, and a longitudinal stop having a projection thereon adapted to engage with the last-named crank-arm, substantially as described.

9. In an organ, the combination of a lever pivoted on the under side of the keyboard of the organ and adapted to be actuated by the left leg of the person operating the organ, a longitudinally-movable rod having a crank-arm at one end thereof engaging with such lever, and a crank-arm at the other end thereof engaging with the outer end of a second horizontally-movable pivoted lever, in combination with a vertically-movable pivoted lever the lower end whereof is in front of the inner end of the horizontally-movable pivoted lever and adapted to be actuated thereby and the upper end whereof extends over a series of levers having a common fulcrum, each of such last-named levers actuating one of the bass-mutes of the organ, substantially as described.

10. In an organ, the combination of a lever pivoted on the under side of the keyboard of the organ and adapted to be actuated by the left leg of the person operating the organ, a longitudinally-movable rod having a crank-arm at one end thereof engaging with such lever, and a crank-arm at the other end thereof engaging with the outer end of a second horizontally-movable pivoted lever, in combination with a vertically-movable pivoted lever the lower end whereof is in front of the inner end of the horizontally-movable pivoted lever and adapted to be actuated thereby and the upper end whereof extends over a series of levers having a common fulcrum, each of such last-named levers actuating one of the bass-mutes of the organ, and a wire extending from the upper end of such vertically-movable pivoted lever to the upper end of a like vertically-movable pivoted lever at the other end of the organ, such last-named lever extending over a series of levers actuating the treble-mutes of the organ, substantially as described.

11. In an organ, the combination of a lever pivoted on the under side of the keyboard of the organ and adapted to be actuated by the left leg of the person operating the organ, a longitudinally-movable rod having a crank-arm at one end thereof engaging with such lever, and a crank-arm at the other end thereof engaging with the outer end of a second horizontally-movable pivoted lever, in combination with a vertically-movable pivoted lever the lower end whereof is in front of the inner end of the horizontally-movable pivoted lever and adapted to be actuated thereby and the upper end whereof extends over a series of levers having a common fulcrum, each of such last-named levers actuating one of the bass-mutes of the organ, and a wire extending from the upper end of such vertically-movable pivoted lever to the upper end of a like vertically-movable pivoted lever at the other end of the organ, such last-named lever extending over a series of levers actuating the treble-mutes of the organ, and a stop on such rod adapted to come in contact with one end of a horizontally-movable arm, a second longitudinally-movable rod attached at one end thereof to the other end of the last-named horizontally-movable arm and at the other end to one end of a second like horizontally-movable arm, a hinged treble coupling-board, and a hinged bass coupling-board, and vertically-journaled wires having crank-arms at the lower end thereof in contact with such coupling-boards, respectively, and crank-arms at the upper end thereof in contact with such horizontally-movable arms, respectively, substantially as described.

487,717. APPARATUS FOR TRANSFERRING RAILWAY-CARS. ALEXANDER D. CLARKE, St. Louis, Mo. Filed Nov. 27, 1891. Serial No. 413,166. (No model.)



Claim.—1. The combination, with a plurality of railroad-tracks, of a transversely-moving platform carrying one or more track-sections and also carrying a cam 30, a slide actuated by said cam, mechanism for moving said platform, a motor, and a valve controlling said motor connected to said slide, substantially as specified.

2. The combination, with a plurality of railroad-tracks, of a transversely-moving platform carrying one or more track-sections and also carrying a cam 30, a slide actuated by said cam, a spring 36, mechanism for moving said platform, a motor, and a valve controlling said motor connected to said slide, substantially as specified.

3. The combination, with the railroad-tracks of a switch-yard, of a transversely-movable endless transfer table or platform, drums around which the same passes, and a series of driven rollers H for supporting and moving said platform, substantially as specified.

4. The combination, with the railroad-tracks of a switch-yard, of a transversely-movable endless transfer-platform provided with rack-teeth 28, a series of driven rollers supporting and moving said platform and provided with gear-teeth meshing with said rack-teeth, substantially as specified.

5. A railroad endless transfer-platform supported upon end drums and a series of driven rollers H and actuated by said rollers, in combination with said drums and rollers, substantially as specified.

6. An endless railroad transfer-platform, drums therefor, and a series of driven rollers supporting the platform between the drums and giving motion thereto, all combined substantially as specified.

7. An endless railroad transfer-platform and end drums for the same, in combination with a series of rollers for actuating said platform and a worm-shaft for driving said rollers, substantially as specified.

8. An endless railroad transfer-platform and end drums therefor, in combination with a series of rollers gearing with the platform and a worm-shaft for driving said rollers, substantially as specified.

9. A railroad transfer-platform, in combination with a motor geared to and operating the same, a valve whereby the attendant may set the motor in operation, a branch steam-pipe supplying the motor, a valve controlling said branch pipe, and automatic means for closing the last-named valve, substantially as specified.

10. A railroad transfer-platform, in combination with a motor geared to and operating the same, a valve whereby the attendant may set the motor in operation, a branch steam-pipe supplying the motor, a valve controlling said branch pipe, and means for automatically closing said last-named valve when the tracks come into register and opening it when the tracks move out of register, substantially as specified.

11. The combination, with a railroad transfer-platform and its actuating mechanism, of safety devices for stopping the movement of the platform, such devices consisting of a clutch located in the line of gearing connecting the platform with the source of power, mechanism for opening such clutch, and a device acted upon by the car being transferred for causing the operation of said opening mechanism, substantially as specified.

12. The combination, with a railroad transfer-platform and its actuating mechanism, of safety devices for stopping the movement of the platform, such devices consisting of a clutch located in the line of gearing connecting the platform with the source of power and electrical appliances for opening such clutch, substantially as specified.

13. The railroad transfer apparatus wherein are combined a transversely-moving endless table or platform adapted to carry a car laterally from one track to another, end drums for said table, and a high-speed engine geared to and operating a worm-shaft, said worm-shaft and rollers driven by said shaft and supporting the table between the drums, substantially as specified.

14. The railroad transfer apparatus consisting of the two movable parts D D, each adapted to carry one of the car-trucks, and an intermediate stationary floor E, substantially as specified.

15. The railroad transfer apparatus consisting of two movable endless tables or platforms D D, each adapted to carry one of the car-trucks, and mechanism for moving them in unison, substantially as specified.

16. The railroad transfer-platform consisting of metal plates 20, hinged together and having rack-teeth in their under surfaces, the blocks 21, and upper planking 22, substantially as specified.

17. The railroad transfer-table provided with metal plates 20, forming the base of the platform and provided with teeth adapted to mesh with the driving-gearing, substantially as specified.

18. The railroad transfer-platform provided with hinged metal plates 20, forming the base of the platform, substantially as specified.

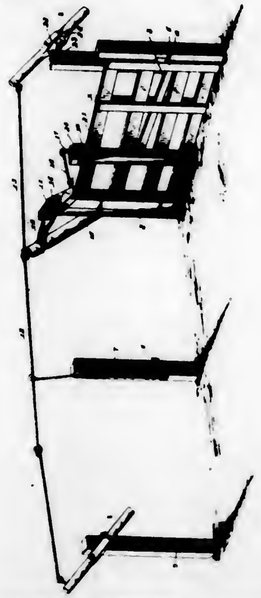
19. The endless railroad transfer-table and its drums, in combination with actuating mechanism engaging with and applying power to the table-sections between the drums, substantially as specified.

20. The endless railroad transfer-table, the sections whereof are provided with rack-teeth and the end drums, in combination with gears located between the drums and engaging said teeth, and means for actuating said gears, substantially as specified.

21. The endless railroad transfer-table, the sections whereof are provided with rack-teeth and the end drums, in combination with gears located between the drums and also located close together, so as to give power to the individual sections of the table, and means for actuating said gears, substantially as set forth.

487,718. GATE. CHARLES R. CLINE and CHARLES H. KILPATRICK, Abingdon, Ill., assignors of one-third to George W. Cline, same place. Filed Aug. 2, 1892. Serial No. 441,966. (No model.)

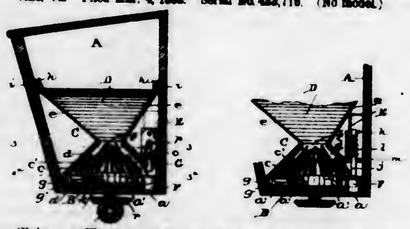
Claim.—1. The combination of a hinge-post, a swinging gate hinged thereto and provided with a vertically-disposed keeper 20, arranged at the top of the gate, a bell-crank lever composed of arms 17 and 19, disposed at an angle to each other, and a connecting-journal portion fulcrumed on the gate, the arm 19 being arranged within the keeper 20, a horizontal latch-bar pivotally mounted on the gate, a rod 21, connecting the inner end of the latch-bar with the arm 19, a horizontal lever fulcrumed intermediate of its ends on the hinge-post, a rod 16, connecting one end of the horizontal lever with the arm 17, an oscillating lever fulcrumed at its lower end on the hinge-post and inclining upward and outward therefrom, a V-shaped connecting-piece attached at its apex to the oscillating lever and having its arms secured to the horizontal lever on opposite sides of the pivotal point of the latter, and operating-levers connected with the oscillating lever, substantially as described.



2. The combination of a hinge-post, a swinging gate hinged thereto, a horizontal gate-lever pivoted to the top of the hinge-post and having one end connected with the gate, an oscillating lever fulcrumed on the hinge-post, a V-shaped connecting-piece having its sides secured to the gate-lever on opposite sides of the pivotal point and provided at its apex with an eye receiving the oscillating lever, and operating-levers connected with the oscillating lever, substantially as described.

3. The combination of a swinging gate, a horizontal gate-lever connected therewith, an oscillating lever connected with the gate-lever, an upright provided with a horizontal bolt, a plate provided with perforated lugs receiving the bolt, said plate having at one end a transverse slot, and an operating-lever pivoted to one end of the plate and engaging the slot at the other end thereof and having its upper end connected with the oscillating lever, substantially as described.

487,719. FERTILIZER-DISTRIBUTER. THOMAS R. CRANE, Heathville, Va. Filed Mar. 4, 1892. Serial No. 423,716. (No model.)

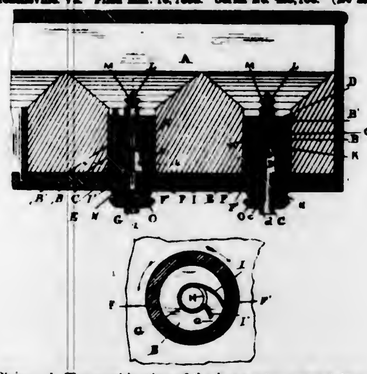


Claim.—1. The combination of the hopper-box having a discharge-opening in its bottom, a revoluble cone-shaped head working over said bottom and having radial stirrer-arms to pass over said openings, and a shell comprising a conical part to fit over the cone-shaped head, and a hopper above the same, said conical part and the cone-shaped head having ribs, substantially as described.

2. The combination of the hopper-box having a discharge-opening in its bottom, a revoluble head working over said bottom and having radial arms to pass over said discharge-opening, a vertically-sliding plunger located at the discharge-opening and engaging in the same and having a stem which fits through a suitable guide, said plunger arranged to be moved upward and out of the said opening by the radial arms on the revolving head, and a spring on the plunger-stem to return said plunger into the discharge-opening after a radial arm has passed, in the manner and for the purpose described.

3. The combination of the hopper-box having a discharge-opening in its bottom, a revoluble cone-shaped head working over said bottom and having radial arms to pass over said discharge-opening, said arms beveled on the upper side, a case secured to the side of the box, a plunger having a stem to slide through said case, said plunger engaging in the discharge-opening and having a beveled under side for contact with the radial stirrer-arms, a spring on the plunger-stem to hold the plunger down, and a vertically-adjustable cut-off plate on the exterior of the plunger-case.

487,720. FEED DEVICE FOR SEED-HOPPERS. THOMAS R. CRANE, Heathville, Va. Filed Mar. 16, 1892. Serial No. 425,108. (No model.)



Claim.—1. The combination of the hopper-box containing a circular chamber into which the grain or seed feeds and a rotary tube extending through the said chamber and having a side opening therein with a curved lateral wing at one side of said opening to conduct the grain or seed thereinto and extending to the inner wall of the circular chamber

2. The combination of the hopper-box containing a circular chamber into which the grain or seed feeds and a rotary tube extending through the said chamber and having a side opening therein, and a curved wing at one side of said opening to conduct the grain or seed thereinto and a shorter wing at the opposite side of the opening, for the purpose described.

3. The combination of the hopper-box, a rotary circular block fitting a socket in said box and having a hopper at its upper end, a chamber at its lower end, and a passage from said hopper to said chamber, and a tube extending through the circular block and the bottom of the hopper-box, said tube having a side opening where it passes through the chamber of the rotary block and a wing at each side of said opening, for the purpose described.

4. The combination of the hopper-box, a rotary circular block fitting a socket in said box and having a hopper at its upper end, a chamber at its lower end, and a passage from said hopper to said chamber and its lower part fitting a groove in the bottom of the hopper-box, a tube extending through the circular block, said tube having a side opening where it passes through the chamber of the block and a wing at each side of said opening, each wing at its upper part fitting a groove in the block, and means for raising the block while the tube remains stationary.

5. The combination of the hopper-box, a rotary circular block fitting a socket in said box and having a hopper at its upper end, a chamber at its lower end, and a passage from said hopper to said chamber and its lower part fitting a groove in the bottom of the hopper-box, a tube extending through the circular block, said tube having a side opening where it passes through the chamber of the block and a wing at each side of said opening, each wing at its upper part fitting a groove in the block, a transverse key extending through slots in the tube and fastening in the block, a threaded stem attached to said key and extending through the top of the tube, and a knob on said stem

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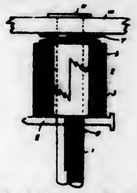
487,721. ADJUSTABLE CONNECTING FOR MACHINERY. COURTNAY DE KALB, New York, N. Y., assignor to Simon Brentano, same place, and L. Eugenie De Kalb, Boston, Mass. Filed Nov. 12, 1890. Serial No. 330,947. (No model.)

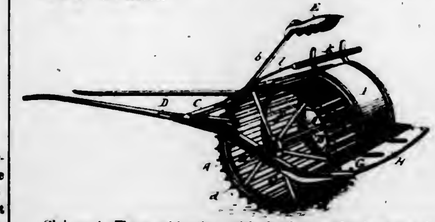


Claim.—1. In an adjustable connecting device, as herein set forth, a block-section having a perforation for a bolt and a double segmental spiral-shaped serrated surface, substantially as shown and described.

2. An adjustable connecting device, as herein set forth, consisting of an unthreaded bolt, an elastic washer, a block with a bolt-hole movable lengthwise on the bolt and composed of sections formed with spiral interlocking meeting surfaces movable upon each other, whereby they can be adjusted upon each other, and means for retaining the block and washer on the bolt.

3. An adjustable connecting device, as herein set forth, consisting of an unthreaded bolt, an elastic washer, a block with a bolt-hole movable lengthwise on the bolt and composed of sections with double segmental spiral interlocking meeting surfaces, whereby the sections can be adjusted upon each other, and means for retaining the block and washer on the bolt.

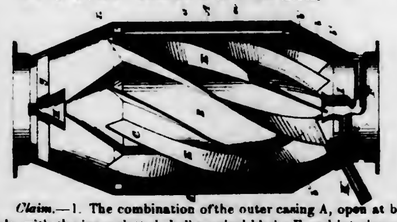
487,722. COMBINED CLOD-CRUSHER AND LAND-ROLLER. HERMAN F. DURNELL, Athens, N. Y. Filed Sept. 17, 1891. Serial No. 406,088. (No model.)



Claim.—1. The combination, with the frame, of a drum consisting of wheels connected by T-shaped bars having their web portions projecting outward to constitute teeth or cutters, boards fitting between said web portions and supported throughout their length upon the lateral portions of the bars, and cleats adapted to engage said lateral portions and detachably secure the boards thereto, substantially as described.

2. The combination of the frame, the drum, the step in rear of the drum, the continuous scraper-blade secured to the forward edge of the step and extending entirely across the drum, and the shield supported upon the step above the scraper and secured at its upper end to a cross-bar carried by brace-rods, substantially as described.

487,723. EXHAUST-HEAD. JULIUS J. J. DE RYCKE, Brooklyn, N. Y. Filed Apr. 30, 1892. Serial No. 431,097. (No model.)



Claim.—1. The combination of the outer casing A, open at both ends, with the inner slotted shell *a*, spiral blades E, and interior cone B, substantially as and for the purpose herein shown and described.

2. The combination of the outer casing A, inner slotted shell *a*, and lower inner shell *b* with the spiral blades E and interior cone B, all arranged so that drip-openings *b'* are formed between the shells *a* and *b* and so that spaces a^2 and b^2 are formed between the casing A and inner shell *a* and between the casing A and inner shell *b*, respectively, substantially as herein shown and described.

3. The combination of the casing A and inner perforated shell *a* with the spiral blades E, central cone B, upper perforated trough L, and lower drip-chamber b^3, having outlet-pipe K, substantially as described, and for the purpose specified.

4. The combination of the outer casing A with the independent inner cone B, open at both ends, whereby the air can be taken in at the bottom and discharged directly into the atmosphere at the top, and with the air-inlet pipe F, connected to said inner cone, all substantially as and for the purpose herein shown and described.

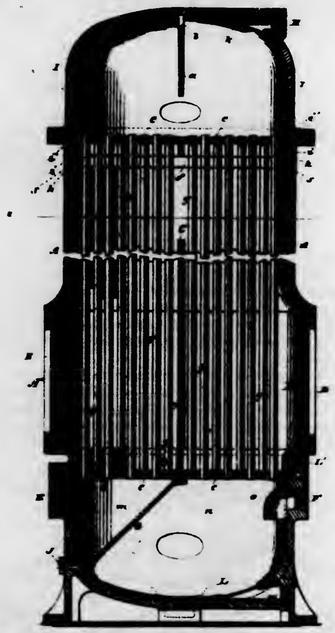
5. The combination of the outer case A, inner cone B, open at both ends, air-inlet pipe F, and central vessel D, placed within the inner cone B, whereby the air is forced against the sides of said inner cones B, substantially as and for the purpose herein shown and described.

6. The combination of the outer case A with the central cone B, open at both ends, air-inlet pipe F, air-outlet pipe *m*, and upper hood H, all arranged substantially as and for the purpose herein shown and described.

7. The combination of the outer casing A, outer chamber b^3, spiral blades E, central cone B, air-inlet pipe F, cup I, and pipe *i*, all arranged substantially as and for the purpose herein shown and described.

8. The combination of the outer casing A with the perforated inner shell *a*, lower shell *b*, forming drip-chamber b^3, upper perforated trough L, spiral blades E, central cone B, open at both ends, air-inlet pipe F, air-outlet pipe *m*, hood H, cap I, and pipe *i*, all arranged substantially as and for the purpose herein shown and described.

487,724. FEED-WATER HEATER AND PURIFIER. JULES J. J. DE RYCKE, Brooklyn, N. Y. Filed May 13, 1892. Serial No. 432,837. (No model.)



Claim.—1. In a feed-water heater, the steam-chamber A, partially divided by partition C, combined with water-pipes traversing the same, enlarged steam-entrance portion B, and steam inlet and outlet openings in said enlarged portion, arranged diametrically opposite each other in said enlarged portion, whereby the steam can readily circulate around said water-pipes, substantially as and for the purpose herein shown and described.

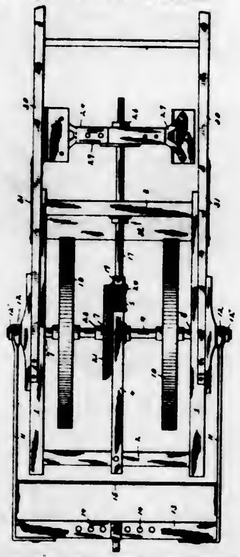
2. The cap I, having scum-outlet H, deflector *k*, partition *a*, and aperture *b* in said partition, combined with the tube-sheet *c*, tubes *g*, steam-chamber A, tube-sheet *c*, and cap L, substantially as and for the purpose specified.

3. The combination of the steam-chamber A, having enlarged portion B of greater diameter than the body thereof, water-circulating pipes *g*, inclined partition G for forcing the water through said circulating-pipes, tube-sheet *c*, adapted to reciprocate within said steam-chamber, inner steam-deflecting partition C, cap I, partition *a*, provided with opening *b* therein, scum-outlet H, and scum-deflector *k*, all arranged substantially as described, and for the purposes set forth.

4. In a feed-water heater, the combination, with the steam-chamber A, tube-sheet *c*, tubes *g*, open at both ends, and cap I, of cap L, having water-inlet E, and plate G, dividing the chamber of cap L into two separate portions inclined toward the opening E, and adapted to force the liquid entering at E into the tubes *g*, substantially as described.

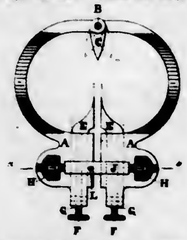
5. In a feed-water heater, the combination, with the steam-chamber, water-pipes traversing the same, and tube-plates, of cap L, water inlet and outlet openings, inclined partition G within said cap, and hood *o* over the water-outlet, substantially as described, and for the purposes set forth.

487,725. COTTON-CHOPPER. JOHN Y. DYE, Knowles, La. Filed Aug. 2, 1892. Serial No. 441,963. (No model.)



Claim.—In a cotton-chopper, the combination, with the rectangular frame provided at opposite sides with bearings, the transverse axle mounted in the bearings and projecting beyond the same, the ground-wheels mounted on the axle between the bearings and within the frame, the rearwardly-disposed rotatable chopping-shaft provided with choppers or hoes, and means for transmitting motion from said axle to the chopping-shaft, of the opposite metal straps outside and independent of the main frame terminating at their rear ends in eyes, said straps having their rear ends engaging the ends of the axle and their front ends inwardly bent to embrace the opposite ends of and bolted to a transverse draft-bar, which latter is provided with a longitudinal series of perforations adapted to receive the draft-clevis, substantially as specified.

487,726. DENTAL REGULATOR. JONATHAN A. ELLARD, Birmingham, Ala. Filed Apr. 15, 1892. Serial No. 429,343. (No model.)

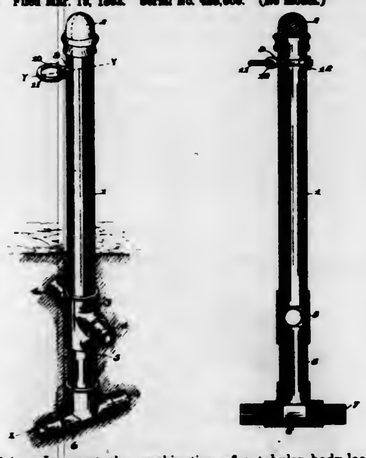


Claim.—1. In a tooth-separator, the combination of a metallic frame made in two pieces with hinge and a wedge-shaped piece between the folds of the hinge, all secured together with a screw, the said frame having two dovetail grooves on the under sides and pieces with pointed ends sliding in the said grooves and operated with thumb-screws, substantially as shown and described.

2. In a tooth-separator, the combination of a metallic frame made in two pieces with hinge and a wedge-shaped piece between the folds of the hinge, all secured together with a screw, the said frame having two dovetail grooves on the under side and pieces with pointed ends operated by thumb-screws sliding in the grooves and on the upper side of the frame having two posts pivoted in holes and connected together with a bar having right and left hand screw-threads on its ends and corresponding screw-threads in the posts, substantially as shown, for the purpose specified.

3. In a tooth-separator, the combination of a metallic frame made in two pieces, having a hinge and wedge-shaped piece between the folds of the hinge, the said folds having a recess formed between them to allow a limited amount of side play to the wedge, the point of the said wedge projecting inwardly in the frame, both parts of the frame and the wedge secured together by a screw, the said frame having two half-wedges sliding in grooves in the frame, forming when closed together a wedge with the point projecting inwardly in the frame and adjustable forward or backward independent of each other, the said frame and wedges being opened or operated by a bar with right and left hand screw-threads, substantially as described.

487,727. HITCHING-POST. CHARLES W. BEATY, Wilkes-Barre, Pa. Filed Mar. 12, 1892. Serial No. 425,009. (No model.)



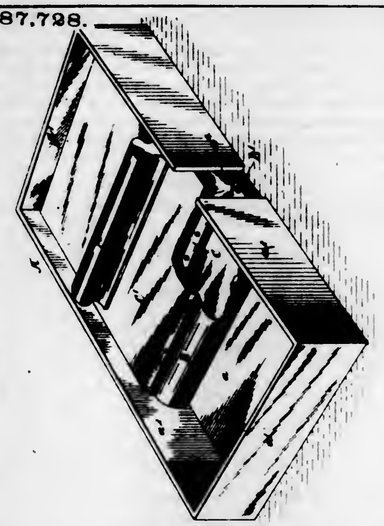
Claim.—In a post, the combination of a tubular body located above the ground, a hollow cross 3, connected thereto by screw-threads below the ground-level and having nipples 4, threaded in the cross, a tubular extension 5, connected by screw-threads to the lower part of said cross, and a T-connection 6, threaded to the lower part of said extension and having threaded nipples 7, projecting therefrom, the T-connection, with its nipples, extending below the line of frost, both the cross and T-connection being arranged in horizontal planes at an angle to each other, and the several parts of the foot composed of the cross, extension, T-connection, and nipples being adjustable in the manner and for the purpose substantially as described.

487,728. KNIFE CLEANER AND POLISHER. JOHN F. C. FARQUHAR, Sydney, New South Wales, assignor to Percy Robert Craft, London, England. Filed May 19, 1892. Serial No. 433,574. (No model.)

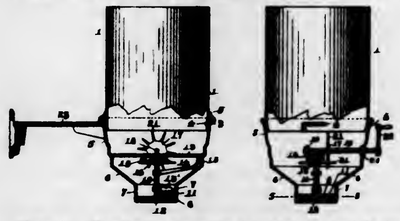
Claim.—1. In polishing apparatus such as described, the combination, with a box or container, of a band and rubber, substantially as described.

2. A polishing apparatus comprising a pad and a band connected to the pad and arranged to receive the article to be polished between the pad and band and to distribute the polishing material, substantially as described.

487,728.



487,729. CAUSTIC-SODA DISTRIBUTER. WILLIAM S. PICKETT, Rochester, N. Y., assignor to Calvin L. Stowell, same place. Filed Feb. 2, 1892. Serial No. 420,093. (No model.)



Claim.—1. The distributer provided with stirring and discharging devices, in combination with a can having an open end secured in the said distributer, substantially as set forth.

2. The distributer provided with stirring and discharging devices, made slightly flaring toward its upper edge, in combination with a can having an open end secured in the said distributer, substantially as set forth.

3. The distributer provided with stirring and discharging devices, made slightly flaring toward its upper edge, in combination with a can having an open end secured in the said distributer and devices for making air-tight the joint between the can and distributer, substantially as set forth.

4. The distributer-hopper having the approximately-cylindrical and frusto-conical portions, the discharging devices situated in the lower cylinder, and the pin or indentation in the upper cylinder, whereby it is adapted to be secured to a can, substantially as set forth.

5. The distributer-hopper having a frusto-conical portion and a cylinder attached to the contracted end of said frustum, the parallel floors fixed in said cylinder and provided with non-registering openings, and the revolable disk situated between said floors and provided with an opening, substantially as set forth.

6. A hopper provided with revoluble discharging mechanism fixed on the vertical shaft, said shaft, the counter-shaft, and the wheels fixed on said shafts, respectively, and provided with stirring-teeth, substantially as set forth.

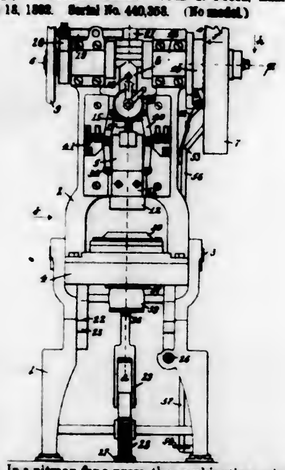
7. The distributer-hopper embracing the upper approximately-cylindrical part and a frusto-conical part, a revolving discharging-disk situated below the frustum, and a vertical shaft secured to said disk and provided with an approximately-horizontal arm near the plane passing between the cylinder and frustum, substantially as set forth.

8. The distributer-hopper embracing the upper approximately-cylindrical part and a frusto-conical part, a revolving discharging-disk situated below the frustum, and a vertical shaft secured to said disk and provided with an approximately-horizontal arm near the plane passing between the cylinder and frustum and having its outer end

turned upwardly near the foot of the cylinder, substantially as set forth.

9. The distributer-hopper embracing the upper approximately-cylindrical part and a frusto-conical part, a revolving discharging-disk situated below the frustum, a vertical shaft secured to said disk and provided with an approximately-horizontal arm near the plane passing between the cylinder and frustum and having its outer end turned upwardly near the foot of the cylinder, and a central stirring device situated in a plane above said arm, substantially as set forth.

487,780. STAMPING-PRESS. JOHN B. POORE, Hamilton, Ohio. Filed July 18, 1892. Serial No. 440,268. (No model.)



Claim.—1. In a pitman for a press, the combination, substantially as set forth, of a pitman part having a wrist-bearing and having a bearing at right angles thereto, an axially-threaded nut journaled in said last-mentioned bearing, means for turning said nut in said bearing, and a pitman part having a wrist-bearing and having a threaded shank engaging said nut.

2. In a pitman for a press, the combination, substantially as set forth, of a pitman part having a wrist-bearing and a bearing at right angles thereto, an axially-threaded nut journaled in said last-mentioned bearing, bevel-gearing carried by said pitman part to serve in turning said nut in said pitman part, and a pitman part having a wrist-bearing and provided with a threaded shank engaging said nut.

3. In a press operated by a cam-shaft, the combination, substantially as set forth, of a part reciprocated by the cam-shaft, a brake-lever pivoted to a fixed part of the press and having one end projecting over and adapted to be engaged by said reciprocating part, and a brake-shoe carried by the other end of the lever and adapted to be pressed into frictional engagement with a part of the shaft when said reciprocating part engages the lever.

4. In a press, the combination, substantially as set forth, of a cross-head having in its lower portion a socket enlarged at its upper end and formed with one vertical half in the cross-head, and a clamp bolted against the cross-head and containing on its inner face a corresponding half-socket.

5. In a press, the combination, substantially as set forth, of a base, a press-body provided with segmental lower portions resting on said base, a crank-shaft journaled in the upper portion of the press-body, trunnions upon the press-body axially disposed with reference to said segmental portions, and upward extensions from said base into steadying engagement with said trunnions.

6. In a press, the combination, substantially as set forth, of a base, a press-body united thereto by a horizontal axis of articulation, and devices, substantially as set forth, connecting said press-body with the floor or foundation on which the press is mounted independent of said base, whereby the angular movement of the press-body with reference to the base causes the base to shift upon the floor or foundation.

7. In a press, the combination, substantially as set forth, of a base, a press-body connected thereto by a horizontal axis of articulation, a rack fixed upon the floor or foundation upon which the press is mounted, a gear journaled in said base and engaging said rack, and a link connecting said gear with the press-body.

8. In a press, the combination, substantially as set forth, of a base, a press-body connected thereto by a horizontal axis of articulation, a movable clutch part, a lever pivoted to the body of the press and connected up with said movable clutch part, a treadle pivoted to the base of the press, and a link connected at one end to said treadle and provided at its other end with a series of pivot-holes for alternative connection with said lever.

9. In a press, the combination, substantially as set forth, with a cutting-die, corrugating-die, cross-head, a punch carried by the cross-head, and a corrugating-punch carried by the cross-head and capable of up-and-down motion in the cross-head, of a pressure-bar above said corrugating-punch, toggles engaging said pressure-bar and cross-head, and fixed blocks controlling the flexure of said toggles.

10. In a stop-clutch for a press, the combination, substantially as set forth, of a shaft provided with a dog-notch, a driving-wheel free on said shaft, a ring encircling said shaft and having two interior grooves, a dog arranged for sliding motion in the hub of said wheel parallel with the axis thereof and having a projection adapted to engage and be controlled by either of said grooves, said dog being adapted to engage and disengage from said driving-notch, a passage through the partition separating said grooves, a switch-block arranged to slide in said ring and switch said dog projection from one of said grooves to the other, a spring tending to hold said switch-block in such position that the dog projection will engage the groove corresponding with the non-driving position of the dog, and devices through which the operator's hand or foot may shift said switch-block from the position in which the spring tends to hold it.

11. In a stop-clutch for a press, the combination, substantially as set forth, of a shaft provided with a dog-notch, a driving-wheel free on said shaft, a ring encircling said shaft and having two interior grooves, a dog arranged for sliding motion in the hub of said wheel parallel with the axis thereof and having a projection adapted to engage and be controlled by either of said grooves, said dog being adapted to engage and disengage from said driving-notch, a passage through the partition separating said grooves, a switch-block arranged to slide in said ring and switch said dog projection from one of said grooves to the other, a spring tending to hold said switch-block in such position that the dog projection will engage the groove corresponding with the non-driving position of the dog, devices through which the operator's hand or foot may shift said switch-block from the position in which the spring tends to hold it, a spring-latch carried by said switch-block, and a groove circumferentially grooved in said shaft, normally engaged by said spring-latch, and provided with a passage to permit the switch-block to be moved when said passage is at said switch-block.

487,781. PAPER-REGISTER. JOHN W. POWLER, Brooklyn, N. Y. Filed Mar. 23, 1892. Serial No. 426,209. (No model.)

Claim.—1. The combination, with the back plate supporting the mechanism, dial, and indicators of the registry, and the glass through which said dial is exposed to view, of a two-part sheet-metal drum, the back part of which has a circumferential rim, a marginal flange projecting from said rim, and radial interlocking pins connected with said flange, while its front part has an interned flange in front of the glass and open L-shaped slots at its meeting edge to coact with said pins, and an inner ring supported against said rim within its marginal flange and having an interned edge by which the glass is supported against said interned flange in front thereof, substantially as hereinbefore specified.

2. In combination with the back plate and glass, the two-part sheet-metal drum one part of which is provided with open L-shaped slots at its meeting edge and the other part is provided with radial pins which coact with said slots and U-shaped shackles which support said pins and mask said slots and the curved locking-bolt and its countersunk nut fitted, respectively, to holes in overlapping portions of both drum parts and to a countersunk hole in the back plate, substantially as hereinbefore specified.

3. In combination with a register-drum and a setting-key in the form of a thumb-screw protruding through a hole in said drum and having a contracted shank, a keeper having a circular portion hollow at the back, which embraces the hub of said key, and an open slot to provide for applying it to said shank of the key before the key is screwed fast, and means for securely attaching said keeper to said drum, substantially as hereinbefore specified.

4. In combination with a sheet-metal drum of two diameters and a setting-key in the form of a thumb-screw protruding through a hole in said drum immediately in front of its offset, the within-described keeper having a circular portion, hollow at back, which embraces the hub of said key, an open slot, a diametrically-opposite projection fitted to a slot in the front drum part, and rear projections on both sides of said open slot through which screws are inserted into the rim of the back part of the drum, substantially as hereinbefore specified.

487,782. WATCH-OILER. IRA L. GREEN, St. Regis Falls, N. Y. Filed Apr. 5, 1892. Serial No. 427,893. (No model.)

Claim.—1. In a watch-oiler, the combination, with a reservoir, of a discharge-point located at the lower end of the reservoir, a casing for the reservoir which is adapted at its lower end to communicate with the discharge-point, and means for supporting the reservoir out of communicating contact with the discharge-point, substantially as specified.

2. In a watch-oiler, the combination, with a casing terminating at its lower end in a bifurcated discharge-point, of a reservoir having its lower end open and adapted to contact and communicate with the upper end of the discharge-point, and means for normally supporting said reservoir out of communicating contact with said point, substantially as specified.

3. In a watch-oiler, the combination, with an outer tube terminating at its lower end in a discharge-point, the same having its upper end extended within the tube to form a seat, of a reservoir mounted in said tube and open at its lower end and means for reciprocating the same into and out of contact with the seat, substantially as specified.

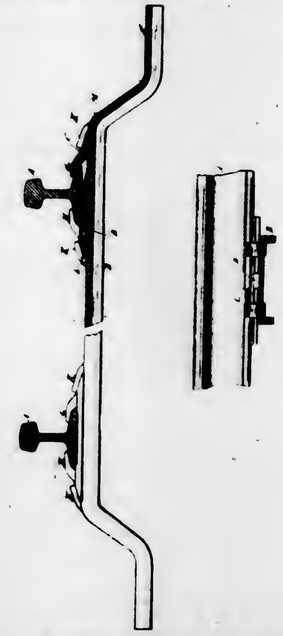
4. In a watch-oiler, the combination, with an outer tube, a lower cap comprising an annular flange removably fitted in the lower end of the tube and a central tent and surrounding polygonal flange, and a discharge-point extending through the tent and terminating above the same in a seat, of a glass reservoir mounted in the outer tube and means for reciprocating the same into and out of contact with the upper end of the discharge-point, substantially as specified.

5. In a watch-oiler, the combination, with the outer tube terminating at its lower end in a discharge-point and continued into the tube to form a seat, of a reservoir-receiving-tube mounted in the outer tube, a tubular reservoir mounted in said receiving-tube, a plunger mounted in the upper end of the receiving-tube, means for retaining the plunger removably in the outer tube, and a spring encircling the inner tube and supporting the plunger, substantially as specified.

6. In a watch-oiler, the combination, with the outer tube having its upper end bent to form an annular flange and notched and terminating at its lower end in a discharge-point, a coiled spring located within the outer tube, and a fluted washer located between the flange of the outer tube and the upper end of the coiled spring, of a reservoir-receiving tube having perforations near its upper end, a glass reservoir mounted in said tube and having its lower end terminating in a point in line with the discharge-point and adapted to contact therewith, the tubular plunger terminating at its lower end in an enlarged boss fitting the reservoir-receiving tube and provided above the boss with a slot, a cap fitting the upper tubular end of the plunger and provided with a threaded perforation, a screw passed through the perforation and into the plunger and adapted to pass through the notch and engage with the flange of the outer tube, and the coiled spring encircling the plunger between its boss and the cap, substantially as specified.

7. In a watch-oiler, the combination, with the outer tube terminating at its lower end in a discharge-point, of a corrugated washer located in the upper end of the tube, means for locking the same in the tube, a reservoir-receiving tube fitting the corrugated washer and below the same provided with perforations, a coiled spring encircling the receiving-tube and bearing against the under side of the washer, a glass reservoir located in the receiving-tube and terminating at its lower end in a point in line with the discharge-point of the outer tube, and a plunger mounted in the upper end of the receiving-tube, substantially as specified.

487,783. METALLIC RAILWAY-TIE. ARTHUR J. HARTFORD, New York, N. Y., assignor, by direct and mesne assignments, to the A. J. Hartford Steel Railway Tie Manufacturing Company, of West Virginia. Filed Mar. 2, 1888. Serial No. 265,972. (No model.)

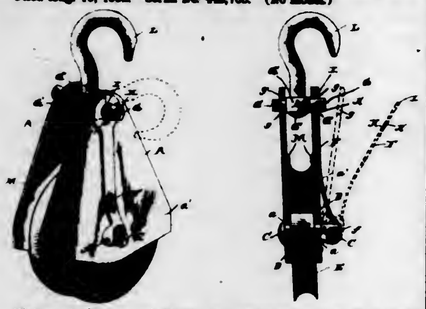


Claim.—1. The combination of a tie having a longitudinal channel and lips for retaining a chair, a chair having a corresponding lon

gitudinal channel, and a bolt for holding the chair upon the tie when it is driven beneath the lips of the tie, substantially as described.

2. The combination of the tie B, having lips K, the chair C, having lips G H, the bolt D, and the rail A, substantially as described.

487,784. SNATCH-BLOCK. GEORGE HARVEY, San Francisco, Cal. Filed Aug. 10, 1892. Serial No. 442,705. (No model.)



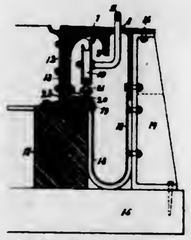
Claim.—1. In a snatch-block, the combination, with the parallel cheek-plates, one of which is removable, the pulley and the pivot-pin upon which said pulley is mounted, of the cam-lever fulcrumed upon the projecting end of said pivot-pin and bearing against the outer surface of the removable cheek-plate to hold it in place, substantially as specified.

2. In a snatch-block, the combination, with the cheek-plates, one of which is removable, the pulley, and the pivot-pin having an enlarged body portion and reduced extremities which extend through the cheek-plates, of the cam-lever pivotally connected to the extremity of the pivot-pin in juxtaposition to the removable cheek-plate, and means for securing the free end of said lever, substantially as specified.

3. In a snatch-block, the combination, with the cheek-plates connected by a pivot-pin provided with shoulders to bear against the inner surfaces of said cheek-plates, of the cross-bar mounted in apertures in the upper ends of the cheek-plates and carrying a hook or bail and a lateral stud, and the cam-lever fulcrumed upon the projecting end of the pivot-pin and provided with an eye having a notch to receive the projecting end of said cross-bar, substantially as specified.

4. In combination with a snatch-block having a removable cheek-plate, a cam-lever fulcrumed thereto in proximity to the removable cheek-plate and adapted to engage the same to hold it in its operative position, substantially as specified.

487,785. CONDUIT FOR ELECTRIC RAILWAYS. JOHN W. HAYDEN, Fort Wayne, Ind. Filed Jan. 16, 1892. Serial No. 418,241. (No model.)



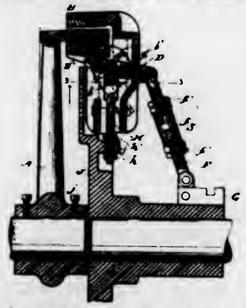
Claim.—1. In a conduit for electric railways, the combination of a shield provided with two flanges, the inner one being adapted to form one side of a slot for the passage of a trolley-lever and the outer one extended downward in like direction, and with the top of the shield and said inner flange forming the upper portion of that part of the conduit in which are placed the conductor and trolley-wheel, a lower plate or flange forming the continuation of said outer flange extending downward and laterally inward beyond the line of the trolley-wheel, the lateral extension forming a support for a standard to which is attached a conductor, the lower plate being also adapted to form with said shield that part of a conduit in which are placed the conductor and contact device, a track-rail and its support attached to said shield and lower plate, forming a support therefor, an outer part or plate extending from the surface down to the drain part and adapted to form one side of the slot for a trolley-lever, a chair or brace extending down and secured to a cross-beam below the drain part and adapted to support said outer plate and maintain it in position, a cross-beam forming a support or foundation for said chair and brace, and a drain part placed below said lower plate directly under the slot and to one side of that portion of the conduit containing the conductor and contact device.

2. In a conduit for electric railways, the combination of a shield provided with two flanges, the inner one being adapted to form one side of a slot for the passage of a trolley-lever and the outer one extended downward in like direction, and with the top of the shield and said inner flange forming the upper portion of that part of the conduit in which are placed the conductor and the trolley-wheel, a lower plate or flange forming the continuation of said outer flange, extending downward and laterally inward beyond the line of the trolley-wheel, the lateral extension forming a support for a standard to which is attached a conductor, the lower plate being also adapted to form with said shield that part of the conduit in which are placed the conductor and contact device, an outer part or plate extending from the surface down to a drain and adapted to form one side of the slot for a trolley-lever, a chair or brace extending down and secured to a suitable support or foundation below a drain and adapted to support said outer plate and maintain it in position, and a drain placed below said lower plate directly under the slot and to one side of that portion of the conduit containing the conductor and contact device.

3. In a conduit for electric railways, the combination of a shield provided with two flanges, the inner one being adapted to form one side of a slot for the passage of a trolley-lever and the outer one extended downward in like direction, and with the top of the shield and said inner flange forming the upper portion of that part of the conduit in which are placed the conductor and the trolley-wheel, a lower plate or flange forming the continuation of said outer flange, extending downward to and laterally inward beyond the line of the trolley-wheel, the lateral extension forming a support for a standard to which is attached a conductor, the lower plate being also adapted to form with said shield that part of the conduit in which are placed the conductor and the contact device, an outer part or plate extending from the surface down to a drain and adapted to form one side of the slot for a trolley-lever, a drain part placed below said outer plate, and means to support the same and preserve the integrity of the slot.

4. In a conduit for electric railways, the combination of one part of the conduit in which is placed the conductor with an outer part or plate extending from the surface of the road-bed down to a drain adapted to form one side of the slot or passage-way for a trolley-lever, a chair or brace attached to said outer plate and adapted to support and maintain it in position, a suitable support or foundation for said chair or brace, placed below a drain, and a drain formed in the lower part of the conduit.

487,786. FRICTION-CLUTCH. LOUIS J. HIRT, Arlington, Mass. Filed Apr. 18, 1892. Serial No. 429,679. (No model.)



Claim.—1. In combination, a pulley, an annular flange thereon, radial jaws adapted to engage opposite surfaces of the flange, a lever pinned at the end nearest the pulley to the outer jaw, at the end farthest from the pulley to an adjustable link, at an intermediate point to the inner jaw, the adjustable link, and a sliding sleeve connected with the adjustable link, as and for the purposes set forth.

2. In a friction-clutch, the combination of an annular flange, radial jaws, one opposite the inner and the other opposite the outer surface of the flange, a lever mounted on a middle pin, an adjustable support for that pin, a second pin connecting the lever and one of the jaws at one side of the middle pin, a third pin upon the other side of the middle pin and connecting the lever with the other jaw, and a fourth pin connecting the lever to the actuating mechanism, all substantially as described.

3. In a friction-clutch, the combination of an annular flange made tapering, as described, and radial clamping-jaws, one opposite the inner and the other opposite the outer surface of the flange, with their bearing-surfaces inclined to correspond with the inclined surfaces of the tapering flange, substantially as and for the purpose specified.

487,787. KEYBOARD-PUNCH. HERMAN HOLLERITH, Washington, D. C. Filed Mar. 10, 1891. Serial No. 384,496. (No model.)

Claim.—1. In a punching-machine of the class described, the combination of a frame having mounted thereon a card-holder and a keyboard, an index-finger arranged to have a universal movement over the keyboard, whereby said finger may be moved to any desired point on said keyboard, a punch adapted to engage and punch a card held by the card-holder, and mechanism for operating the punch and controlled by the index-finger, substantially as shown and described, whereby when the punch is operated it will perforate the card at a point corresponding to the point indicated by the index-finger on the keyboard.

2. A machine of the class described, consisting of a frame having mounted thereon a card-holder and a keyboard and a lever carrying a punch and an index-finger, the construction being such that the said lever has a universal movement and the index-finger may be brought into any desired position over the keyboard and when depressed will cause the punch to perforate the card at a point corresponding to the point indicated upon the key-board by the index-finger, substantially as described.

3. In a punching-machine, the combination, with a frame having mounted thereon a keyboard and a card-holder, of a swinging lever carrying a punch and an index-finger, said index-finger being adapted to be moved in every direction over the keyboard and cause a corresponding movement of the punch over a card held within the card-holder, substantially as shown and described.

4. In a punching-machine, the combination, with a frame having mounted thereon a keyboard and a card-holder, of a swinging frame having a universal movement and a lever pivoted thereto carrying a punch and an index-finger movable in every direction over the face of the keyboard and controlling the position of the punch on the card, substantially as described.

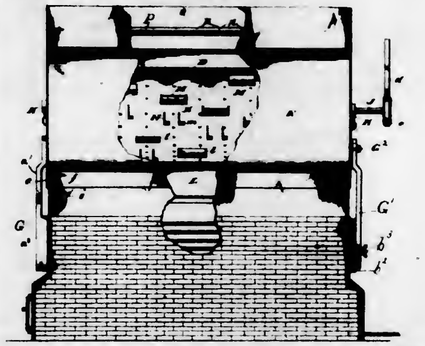
5. In a punching-machine, the combination, with a frame having mounted thereon a card-holder, of a swinging frame having a universal movement and carrying two perforated sleeves registering above and below a card held in said card-holder and a lever pivoted to said swinging frame and carrying a punch adapted to be forced through said perforated sleeves, substantially as described.

6. In a punching-machine such as described, a card-holder consisting of a frame having grooved or recessed sides and provided at one end with pins or stops to engage one end of the card and at the other end and side with springs for retaining the card in position, substantially as shown and described.

7. The combination, with a frame having mounted thereon a keyboard, of an index-finger arranged to move over said keyboard, a card-holder, a punch adapted to engage a card held by the card-holder, and mechanism controlled by the index-finger for adjusting the position of the punch relatively to the card-holder and for operating said punch, whereby when said punch is operated it will perforate the card at a point corresponding to the point indicated by the index-finger on the keyboard, substantially as shown and described.

8. In a punching-machine, the combination, with a frame having mounted thereon a card-holder, of a swinging frame consisting of an upper and lower member which embrace said card-holder and a lever pivoted to said swinging frame and carrying a punch, substantially as shown and described.

487,738. GRAIN-DRIER. HENRY T. HOPKINS, Cape Vincent, assignor of one-half to Erskine M. Parmelee, Dansville, N. Y. Filed Sept. 8, 1891. Serial No. 405,062. (No model.)



Claim.—1. In a drier, the combination, with a vertically-adjustable cylinder to contain the material to be dried and a hot-air chamber below the same, of a vertically-adjustable drum or casing around said cylinder and flanges at the junction of the walls of said drum and said chamber and lapping the walls of one of said parts, so as to permit the adjustment of the drum without uncovering the joint between it and the hot-air chamber, substantially as and for the purposes set forth.

2. In a drier, the combination of the hot-air chamber, the drum mounted above the said chamber, the foraminous cylinder rotatably mounted within the drum, and the valves mounted within the upper part of the hot-air chamber, each being hinged at its lower edge to a vertically-movable plate *h* and at its upper edge to the adjusting-rod *o*, extending to the interior of the chamber, substantially as described.

3. In a drier, the combination of the drum, the hot-air chamber situated beneath the drum, the foraminous cylinder rotatably mounted within the said drum, the elevators arranged within the said cylinder in lines extending around the same substantially spirally, and the blades similarly arranged between the elevators, so that a pair of them will succeed each elevator in its revolution, substantially as described.

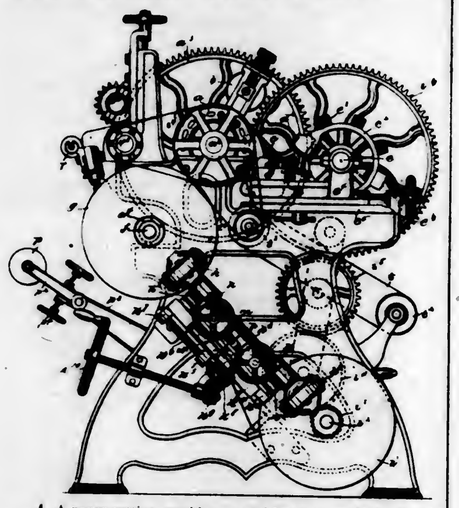
487,739. PAPER-CUTTING MACHINE. JOHN H. HORNE and CHARLES E. BARRETT, Lawrence, Mass., assignors to the J. H. Horne & Sons Company, same place. Filed July 14, 1891. Serial No. 399,523. (No model.)

Claim.—1. In a paper-cutting machine, the combination, with the main driving-shaft, the revolving cutter, its shaft, the stationary cutter, and means for feeding the paper, of direct-contact friction devices receiving prime movement from said driving-shaft, means for altering the relative working positions of said friction devices without stopping their motion or the motion of the machine, and means for transmitting their motion to the shaft of the revolving cutter, substantially as described.

2. In a paper-cutting machine, the combination, with the main driving-shaft, the revolving cutter, its shaft, the stationary cutter, and means for feeding the paper, of a friction-disk on the driving-shaft, friction-rolls bearing upon and rotated by said friction-disk, a carriage for such rolls, means to move said carriage and thereby to adjust such rolls radially with relation to the disk, and means for transmitting the motion of the rolls to the revolving cutter-shaft, substantially as described.

3. A paper-cutting machine comprising a paper-feed roll, a revolving cutter, a shaft for said cutter, a stationary cutter, and a main driving-shaft, combined with friction-disks, one on the main driving-shaft and the other on a supplemental shaft, friction rolls and shafts interposed between these two disks and adjustable relatively thereto.

and means for transmitting the motion from the supplemental shaft to the revolving cutter-shaft, substantially as described.



4. A paper-cutting machine comprising a paper-feed roll, a revolving cutter, a shaft for said cutter, a stationary cutter, and a main driving-shaft geared with the paper-feed roll, combined with a friction-disk on the main driving-shaft, a second friction on a supplemental shaft, which latter is geared with the cutter-shaft, friction rolls and shafts interposed between the two disks with the friction-rolls in engagement with the said disks and adjustable radially toward and from the centers of said disks to vary the speed of the paper-feed roll and the revolving cutter, substantially as described.

5. In a paper-cutting machine, the combination, with the paper-feed roll, of a main driving-shaft geared therewith and provided with a friction-disk, a revolving cutter and shaft therefor, a driving-shaft geared to said cutter-shaft and provided with a friction-disk, an intermediate shaft provided with friction-rolls bearing on the said friction-disks and transmitting power from one to the other, an adjustable carriage for said friction-rolls, whereby their position relative to the said disks may be varied and the speed of rotation of the cutter-shaft relative to that of the feed-rolls correspondingly varied, and a pointer and scale for gaging the movement of said feed-carriage and indicating the length of sheet corresponding to the different positions of the said carriage, substantially as described

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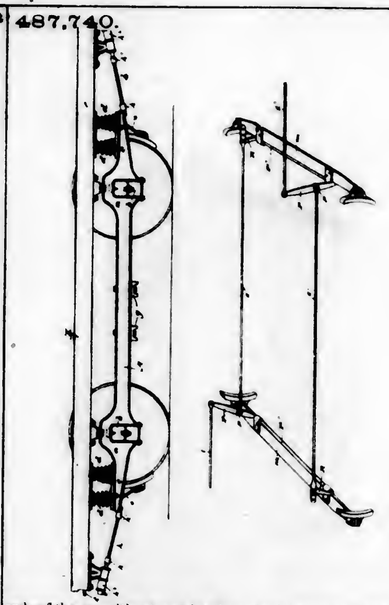
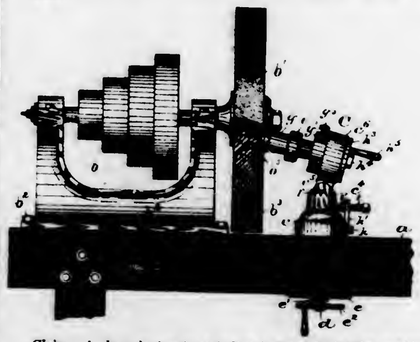
487,740.



ends of the car without crossing the central portion of the truck, substantially as described.

487,741. DEVICE FOR GRINDING BUTTON-BLANKS. JULIUS HUEBNER, Newark, N. J. Filed May 19, 1892. Serial No. 433,500. (No model.)



Claim.—1. In a device for grinding button-blanks, the combination of a base having upwardly-extending arms, a sleeve-like support pivotally secured between said arms, and a revolving chuck in said sleeve-like support provided with spring-jaws for holding a button-blank, said jaws inclining outward, and a tightening-ring *i* on said jaws, substantially as and for the purposes set forth.

2. In a device for grinding button-blanks, the combination of a base having upwardly-extending arms, a sleeve-like support pivotally secured between said arms, a revolving chuck in said sleeve-like support, provided with spring-jaws for holding a button-blank, said jaws inclining outwardly, a tightening-ring *i* on said jaws, and an adjusting-screw arranged in a support on said base, whereby the chuck may be set at an angle, substantially as and for the purposes set forth.

3. In a device for grinding button-blanks, the combination of a base having upwardly-extending arms, a sleeve-like support pivotally secured between said arms, and a revolving chuck in said sleeve-like support, consisting, essentially, of spring-jaws inclining outwardly and having a tightening-ring thereon, said jaws terminating in a stud g', a ring h, in which said stud is secured by means of a set-screw g^3, said ring being provided with a shoulder h' and a smaller portion h^2, adapted to revolve in said sleeve-like support, a washer h^3, a bolt or screw h^4, and a pin or handle on said washer, and means for tilting said sleeve-like support at an angle between the upwardly-extending arms on the base, consisting of a support or post k', an adjusting-screw l, and a lock-nut l', all of said parts being arranged substantially as and for the purposes set forth.

487,740. CAR-TRUCK. MOSES G. HUBBARD, Chicago, Ill. Filed Feb. 13, 1891. Serial No. 381,169. (No model.)

Claim.—1. In a four-wheel car having a car-body supported on spring-base extensions of the side sills of the truck outside of the yoke-pedestals and wheel-base thereof and flexible draft-links connecting said body and spring-base extensions and provided with the springs for taking up slack and permitting a limited longitudinal extension of the links, substantially as described.

2. A flexible draft-link connection between and in combination with a car-truck and the car-body supported thereon, said flexible connection being provided with a spring permitting a limited extension of the link and operating to take up any slack therein due to the relative movements of the car body and truck in turning, substantially as described.

3. In an open-center truck, the combination of the two pairs of rigidly-connected levers pivoted to the brake-beam at their lower ends and at their fulcrums to the ends of the brake connections, and the upper ends of the longer levers pivoted to the brake-rods, which extend therefrom directly to the ends of the car without crossing the open space in the truck.

4. The combination, in a truck-frame, of the single piece, side sills, and the double-brake connections arranged in the same horizontal plane with the wheel-piece portions of the side sills to facilitate side access to central parts of the truck, substantially as described.

5. In an open-center truck, the combination of the two pairs of rigidly-connected levers pivotally connected at their lower ends with the brake-shoes, which they actuate, and pivoted at their fulcrums to the brake connections, the upper ends of the longer levers being pivoted to the brake-rods, which extend therefrom directly toward the

4. In a device for grinding button-blanks, the combination of a base having upwardly-extending arms, a sleeve-like support pivotally secured between said arms, and a revolving chuck in said sleeve-like support, consisting, essentially, of spring-jaws inclining outwardly and having a tightening-ring thereon, said jaws terminating in a stud g', a ring h, in which said stud is secured by means of a set-screw g^3, said ring being provided with a shoulder h' and a smaller portion h^2, adapted to revolve in said sleeve-like support, a washer h^3, a bolt or screw h^4, a pin or handle on said washer, and means for tilting said sleeve-like support at an angle between the upwardly-extending arms on the base, consisting of a support or post k', an adjusting-screw l, and a lock-nut l', all of said parts being arranged substantially as and for the purposes set forth.

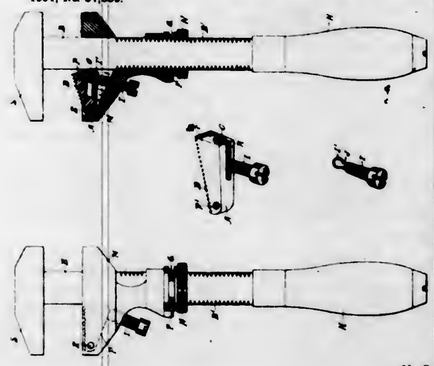
5. In a machine for grinding button-blanks, in combination, a table or bench a, a grinding device secured on said bench, and a button-blank-holding device adjustably arranged on said bench, whereby the button-blank can be ground at an angle and can be brought against the grinding-wheel, the side of the wheel being curved, as at b^2, to grind the button or blank convex, substantially as and for the purposes set forth.

6. In a machine for grinding button-blanks, in combination, a table or bench a, a grinding device secured on said bench, and a button-blank-holding device adjustably arranged on said bench, whereby the button-blank can be ground at an angle and can be brought against the grinding-wheel, the side of the wheel being curved, as at b^2, to grind the button or blank convex, and means for securing said blank-holding device to said bench, consisting, essentially, of a bolt d, a plate e, and a nut or hand-wheel e^3, all arranged substantially as and for the purposes set forth.

7. In a machine for grinding button-blanks, in combination, a table or bench a, a grinding device secured on said bench, and a button-blank-holding device adjustably arranged on said bench, said blank-holding device consisting, essentially, of a base c, having a longitudinal opening c', a larger opening c^2, and ribs c^3, a bolt d, a plate e, and a nut or hand wheel e^3 for securing said blank-holding device to said bench, a sleeve-like support pivotally secured between upwardly-extending arms c^4 on said base c, and a revolving chuck in said sleeve-like support, consisting, essentially, of spring-jaws terminating in a stud g', a ring h, in which said stud is secured by means of a set-screw g^3, said ring being provided with a shoulder h' and a smaller portion h^2, adapted to revolve in said sleeve-like support, a washer h^3, a bolt or screw h^4, and a pin or handle on said washer, all arranged substantially as and for the purposes set forth.

8. In a machine for grinding button-blanks, in combination, a table or bench a, a grinding device secured on said bench, and a button-blank-holding device consisting, essentially, of a base c, having a longitudinal opening c', a larger opening c^2, and ribs c^3, a bolt d, a plate e, and a nut or hand wheel e^3 for securing said blank-holding device to said bench, a sleeve-like support pivotally secured between upwardly-extending arms c^4 on said base c, and a revolving chuck in said sleeve-like support, consisting, essentially, of spring-jaws terminating in a stud g', a ring h, in which said stud is secured by means of a set-screw g^3, said ring being provided with a shoulder h' and a smaller portion h^2, adapted to revolve in said sleeve-like support, a washer h^3, a bolt or screw h^4, a pin or handle on said washer, and an adjusting-screw l for tilting said sleeve-like support at the desired angle, substantially as and for the purposes set forth.

487,742. NUT OR PIPE WRENCH. JOHN P. HUNT, London, Canada, assignor of one-half to Edwin H. Hunt, same place. Filed Nov. 4, 1891. Serial No. 410,896. (No model.) Patented in Canada Dec. 2, 1891, No. 37,889.

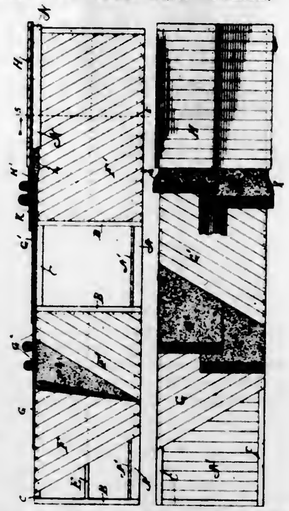


Claim.—1. In a wrench, the combination of a pivotal wrench-jaw P, formed with the serrated face D, a socket O, and opening R, with a screw I, formed with a shank J and a spherical end I', a bar B, jaw S, and movable jaw M, and means for operating the latter, substantially as shown and described, and for the purpose specified.

2. The combination of a pivotal wrench-jaw P, in which a socket P' is formed larger in cross-section than the pivot-pin E, extending therethrough, said jaw P being also formed with a serrated face D, socket O, opening R, and curved face A, with a screw I, formed with a shank J and spherical end I', a bar B, jaw S, and movable jaw M, formed with the curved face, to which the curved face A of the pivotal jaw P is fitted, and means for operating the jaw M, substantially as shown and described, and for the purpose specified.

3. In a wrench, the pivotal jaw P, formed with a socket O and opening R, a screw I, formed with a shank J and spherical end I', in combination with a movable jaw M, formed with a flange F, a nut N, formed with a groove G, a stationary jaw S, a bar B, formed with notches B', and the handle H, substantially as shown and described, and for the purpose specified.

487,743. FREIGHT-CAR. CARLETON B. HUTCHINS, Detroit, Mich. Filed June 27, 1892. Serial No. 438,091. (No model.)



Claim.—1. In a car-body, the combination, with its side and end walls composed of two layers of diagonal boards F F', crossing each other, and an intermediate layer of felt, of a frameless roof composed of two layers of diagonal boards G G', crossing each other at an angle, an interposed layer of roofing-felt G^2, a transverse layer of boards H, and roofing-felt H', and longitudinal beveled boards K to give a pitch to said upper transverse layer of roofing-boards, substantially as specified.

2. In a freight-car body, the combination, with the top plates, of two layers of diagonal roofing-boards G G', crossing each other at an angle, the boards of each layer extending diagonally across the car-body from one of said top plates to the other, substantially as specified.

3. In a car-body, the combination, with the top plates, of two layers of diagonal roofing-boards G G', crossing each other at an angle, and roofing-felt interposed between said two layers of boards, the boards of each layer extending diagonally across the car-body from one of said top plates to the other, substantially as specified.

4. In a freight-car body, the combination, with the top plates, of two layers of diagonal roofing-boards G G', crossing each other at an angle, and transverse boards H, substantially as specified.

5. In a freight-car body, the combination with the top plates, of two layers of diagonal roofing-boards G G', crossing each other at an angle, transverse boards H, and layers of roofing-felt interposed between the two layers of diagonal boards and between the second layer of diagonal boards and the transverse top layer of boards, substantially as specified.

6. In a freight-car, the combination, with the top plates, of two layers of diagonal roofing-boards G G', longitudinal beveled boards K, and transverse roofing-boards H, substantially as specified.

7. The combination, with the layers of diagonal roofing-boards G G', crossing each other at an angle, of a layer of roofing-felt G^2, longi-

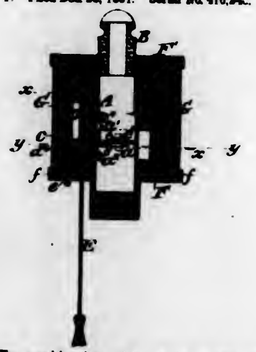
tudinal beveled boards K, roofing-felt H', and transverse roofing-boards H, substantially as specified.

8. The combination, with the layers of diagonal roofing-boards G G', crossing each other at an angle, of a layer of roofing-felt G², longitudinal beveled boards K, roofing-felt H', and transverse roofing-boards H, said layer of roofing-felt H' having its edges folded down and overlapping the ends of said diagonal roofing-boards G G', and a cornice board or band N, substantially as specified.

9. In a freight-car, the combination, with the sills and top plates and corner and door posts, of the side and end walls of a car composed of two layers of diagonal sheathing-boards F F', substantially as specified.

10. The multiple-brace construction of freight-cars herein shown and described and consisting, in connection with the sills, plates, and posts, of diagonal boards F F', forming the side and end walls of the car, and diagonal roofing-boards G G', substantially as specified.

487,744. SELF-LIGHTING GAS-BURNER. ALFRED P. JACOB, Brooklyn, N. Y. Filed Dec. 26, 1891. Serial No. 416,342. (No model.)



Claim.—1. The combination, with a main burner separated into chambers, one communicating with the burner-tip and the other with a gas-supply, of a switch adapted to open and close communication between the two chambers and jet-tubes carried by the switch, one of said jet-tubes being in permanent communication with the chamber leading to the gas-supply and the other having a momentary communication with said chamber during the turning of the switch, substantially as set forth.

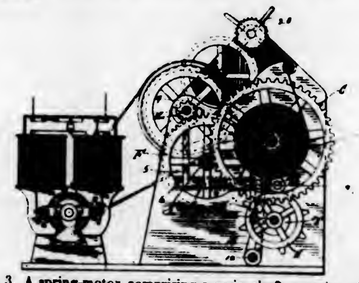
2. The combination, with the pillar of a gas-burner separated into two chambers, one communicating with the tip and the other with the gas-supply, said pillar being provided with openings through its wall, one of said openings communicating with the chamber leading to the tip and the other to the chamber leading to the gas-supply, of a switch seated on the pillar and having a rocking movement thereon forming a gas-tight connection between its inner wall and the pillar, said switch being provided with a recess adapted to bring the opening through the wall of the pillar leading to one of the chambers into communication with the opening through the pillar leading to the other chamber when the switch is turned on, and jet-tubes carried by the switch, each in communication with conduits opening to the inner wall of the switch, the conduit leading to one of the jets being at all times in communication with an opening leading through the pillar to the chamber in communication with the gas-supply and the conduit leading to the other jet having momentary communication with said chamber during the swinging of the switch, substantially as set forth.

3. The combination, with the main burner subdivided into separate chambers and the switch for opening and closing communication between the chambers, of a permanent jet-tube carried by the switch and means for regulating the supply of gas to said permanent jet-tube independent of the means of regulating the supply to the burner, substantially as set forth.

487,745. SPRING-MOTOR. WILLIAM C. JOHNSTON, Melrose, Mass. Filed Jan. 30, 1892. Serial No. 419,686. (No model.)

Claim.—1. A spring-motor comprising a series of independent power-producing mechanisms and having a main shaft, a series of springs for operating said main shaft successively, a series of gears carried thereby, a supplemental power-transmitting shaft also having gears, connections between the gears on the main and supplemental shafts, a second supplemental shaft driven by the gears on the main shaft in succession, a cam on said shaft for locking the mechanism, a shaft, as 12, rocked by said cam at one portion of its movement, and connections between the rock-shaft and the succeeding power-producing mechanism for releasing the same, substantially as described.

2. A spring-motor comprising a series of independent power-producing mechanisms and having a main shaft, a series of springs for operating said main shaft in succession, a series of gears carried by said main shaft, a supplemental power-transmitting shaft also having gears, a clutch for operatively connecting the gears on the main and supplemental shafts, a second supplemental shaft driven by the gears on the main shaft in succession, a cam on said second supplemental shaft for locking the mechanism, a spring for operating the clutch when the mechanism is released from the cam, a shaft, as 12, rocked by said cam at one portion of its movement, and connections between the rock-shaft and the succeeding power-producing mechanism for releasing the same and throwing it into operation, substantially as described.



3. A spring-motor comprising a main shaft, a series of springs for operating said main shaft successively, a series of gears carried thereby, a supplemental power-transmitting shaft having gears, connections between the gears on the main and supplemental shafts, a second supplemental shaft driven by the gears on the main shaft in succession, means for locking the gears, a cam on said shaft having a tooth for locking the mechanism, a rock-shaft 12, having an arm 10, adapted to be struck by the cam-tooth, and an arm, as 14, on said rock-shaft for releasing the mechanism, substantially as described.

4. In combination with a main shaft B, a series of springs for driving the same, a series of gears C thereon, a second shaft, as K, a gear H, loose thereon and driven from the main shaft, a clutch splined on the shaft K and adapted to be moved into engagement with the gear H, a pin on said gears C, a second supplemental shaft M, a toothed wheel thereon engaging the pin on the gear C, a cam on said shaft having a tooth for locking the mechanism, a rock-shaft 12, having an arm 10, adapted to be struck by the cam-tooth, and an arm, as 14, on said rock-shaft for releasing the mechanism, substantially as described.

5. In the herein-described apparatus, the springs A, the gears C, the main shaft B, the pins 8 on the gears C, the shaft K, the gear H, loose thereon, the clutch 4, engaging the gear H, the lever 5 for actuating the clutch pivoted to the frame, the shaft 7, the spiral spring 8, the downwardly-extending arm 9, movable on said shaft 7, the shaft M, the toothed wheel thereon engaging the pins 8, the cam T, having the tooth W for locking the arm 9, the rock-shaft 12, having arm 10, engaging cam-tooth W, and an arm, as 14, on said rock-shaft for moving the arm 9 out from engagement with the cam-tooth, substantially as described.

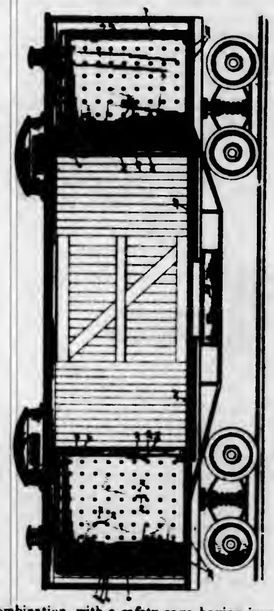
487,746. SAFETY-CAGE FOR CARS. BENJAMIN F. JOHNSON, McComb, Miss. Filed July 1, 1892. Serial No. 438,708. (No model.)

Claim.—1. A safety-cage comprising inner and outer shells forming the top and sides and being separated and providing a ventilating-space between the tops of the shells, the inner shell being provided with ventilating-openings communicating with the interior of the cage and the space between the tops of the shells, a ventilator connected to the top of the outer shell and communicating with the space between the tops of the shells, a fireproof filling arranged between the sides of the shells, and bolts connecting the inner and outer shells, substantially as described.

2. A safety-cage for cars and the like, comprising inner and outer shells forming the top and sides, the tops of the shells being provided with ventilating-openings and ventilators comprising a T-shaped pipe, and a perforated hollow ball interposed between the pipe and the cage, substantially as and for the purpose described.

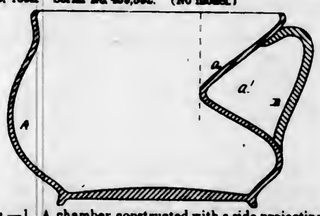
3. A safety-cage having a door, in combination with locking mechanism comprising vertical bolts arranged at the top of the door, horizontal bolts arranged at the sides of the door, a vertically-movable T-shaped bar mounted in the door and having its horizontal arms attached to the inner ends of the vertical bolts, links pivoted to the inner ends of the horizontal bolts and to the vertical portion of the T-shaped bar, and an operating-lever for moving the T-shaped bar vertically to actuate the bolts, substantially as described.

4. The combination, with a safety-cage having inner and outer shells provided with openings, of a roll journaled between the shells and provided with an opening adapted to register with the opening of the shells to form a port-hole and adapted to be turned into a vertical position to close the openings of the shells, substantially as described.



5. The combination, with a safety-cage having inner and outer shells and provided with openings, of a box, a roll journaled in the box and having an opening adapted to register with the openings of the shells, and a weighted handle adapted to turn the roll and to close the opening automatically, substantially as described.

487,747. CHAMBER. OTHO P. JOHNSON, Detroit, Mich. Filed July 8, 1892. Serial No. 439,392. (No model.)



Claim.—1. A chamber constructed with a side projecting inward on an incline intermediate the top and bottom of the chamber, forming an inwardly-projecting ledge, substantially as set forth.

2. A chamber constructed with a side projecting inward intermediate the top and bottom of the chamber, forming an inwardly-projecting ledge, and a handle located adjacent to said side, the inward projection forming a portion of the loop between the handle and side of the chamber, substantially as set forth.

3. A chamber constructed with a ledge projecting inwardly on an incline to an inner point intermediate the top and bottom of the chamber, said ledge carried downward from said inner point and terminating at the base of the chamber, substantially as described.

487,748. STOPPER-LOCK FOR BOTTLES. FRANK JORDAN, New York, N. Y. Filed Mar. 8, 1892. Serial No. 424,126. (No model.)

Claim.—1. The combination, with a collar embracing the neck of a bottle and a plate connected to the collar by side bars pivoted thereto, of a cover or cap independent of and adapted to fit over the stopper and provided with openings through which the side bars extend, a serrated bar connected with the cap and passing up through the plate, and a series of plates containing notches, and intermediate washers containing slots surrounding the serrated bar, forming therewith a combination-lock, as herein set forth.

2. The combination, with a collar adapted to embrace a bottle-neck, of a plate pivotally connected to the same by side bars and adapted to swing over the cork or mouth of the bottle, a cap or cover movable on said side bars, a serrated bar or stem connected therewith and passing up through the plate, a series of annular plates containing notches, an intermediate series of washers containing slots, and a serrated plate or key contained in the slots and adapted to be held in engagement with the serrated bar by the annular disks when the notches therein are not in alignment with the slots in the washers, as set forth.

3. The combination, with the plate A and bars B B', pivotally connected to the neck of a bottle, of the cover C and serrated stem passing through the plate A, the flanged or recessed annular plates K K' K", containing notches O, the intermediate slotted washers L, and the serrated plate or key contained in the slots and engaging with the serrated bar or stem, as set forth.

4. The combination, with the bow or frame carrying the stopper-lock, of the collar for embracing the neck of the bottle and to which the ends of the bow are pivotally connected, the said collar being composed of two connected parts, one provided with a stud or pin, the other formed with a hook adapted to engage therewith and to be locked in such engagement by the bow when turned at right angles to the collar, as set forth.

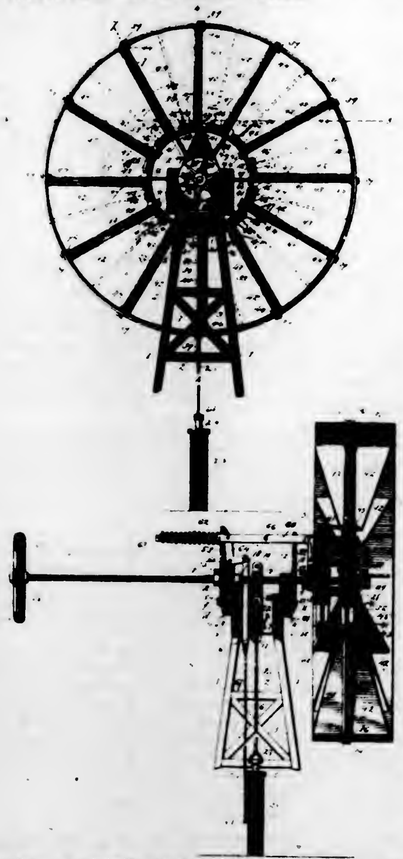
5. The combination, with the bow carrying a locking device and a cap or cover provided with a stem passing through the locking device, of a collar for embracing the neck of a bottle and composed of two parts having a universal movement with respect to each other, to one of which the bow is pivotally connected, one of said parts being provided with a stud, the other with a hook for engaging therewith, and a lug on the bow adapted to pass over the hooked portion of the collar and hold the same in engagement with the stud when the bow is at right angles to said collar, as set forth.

487,749. PLOW. ZACHARIAH R. KEA, Shongaloo, La. Filed Jan 29, 1892. Serial No. 419,672. (No model.)

Claim.—In a plow, the combination, with the shovel-sweep having a straight rearwardly-extending bar under the front edge of the same and terminating in an inner angular joining-edge, of a detachable landside or half-sweep having a curved securing-plate conforming to the front inner curvature of the sweep and detachably secured thereto and provided with a V-shaped notch at the lower edge of the same, engaging the inner edge of said bar, thus joining the landside to the sweep flush with the bar side of the same and forming a continuation thereof, said landside-sweep being curved gently outward from its upper to its lower edge, extended rearwardly from the bar side of the main sweep at an angle greatly less than the angle thereof, and having its lower edge curved slightly downward and rearward at an

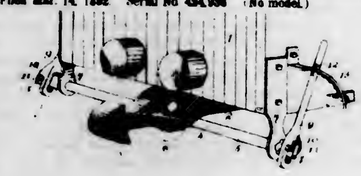
angle from its meeting edge with the bar side of the sweep, substantially as set forth

487,750. WINDMILL. WILLIAM P. KIRSBELL, Beaver City, Nebr. Filed Dec. 7, 1891. Serial No. 414,217. (No model.)



Claim.—A windmill comprising a wind-wheel having a central hub, a circular rim concentric with the hub, and a circular band intermediate of the hub and rim and concentric therewith, a number of shorter hollow radial spokes interposed between the rim and band and internally screw-threaded at their inner and outer ends, a number of bolts having externally-screw-threaded stems and inserted through the rim and band and also into the inner and outer ends of the spokes, a number of longer radial spokes interposed between the shorter spokes and having externally-screw-threaded inner ends to enter the hub and passing through the band and rim and also externally screw-threaded at their outer ends, a number of bolts having externally-screw-threaded stems and passing through the rim and into the outer ends of the longer spokes, and a number of radial and triangular vanes pivotally connected to the longer and shorter spokes and interposed between the band and rim, substantially as set forth

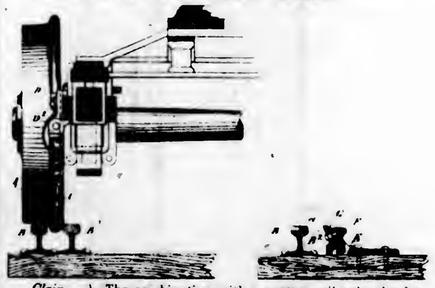
487,751. CAR-COUPLING. CHARLES T. KINCAID, Decatur, Ill. Filed Mar. 14, 1892. Serial No. 424,936. (No model.)



Claim.—1. A car-coupling consisting of a coupling-bar hinged by means of a rule-joint to the draw-bar of a car and having a head approximately arrow-shaped, a rock-shaft extending from side to side of the car and adapted to raise the swinging end of the coupling-bar, ratchet-frames on the sides of the car, and levers swung on the ends of the rock-shaft in such manner that they be made to engage the teeth of the ratchet-frames, but will swing from contact with such frames when free to move, substantially as set forth

2. In car-couplings, the combination, with the car and the draw-bar thereof, of coupling-bar 3, hinged to the draw-bar, the rock-shaft 5, having the lift-bar 6, levers 9, swung at their outer sides on the ends of the rock-shaft some distance from the sides of the car, and the ratchet-frames 13, into engagement with which the levers may be forced and from which the said levers tend normally to swing, substantially as set forth

487,752. CONTACT-RAIL. FRANK E. KIRKHAM, Plainfield, N. J. Filed Feb. 23, 1892. Serial No. 422,347. (No model.)



Claim.—1. The combination, with a contact rail or bar having a contact edge or corner and mounted on the road-bed, of a contact-arm adapted to make rubbing side contact with said edge or corner and carried by the vehicle.

2. In a circuit-closing apparatus for railway-vehicles, a contact-rail consisting of a metal bar set on edge on the road-bed, in combination with a contact-arm carried by the vehicle and adapted to make contact with a corner of the contact-bar.

3. The combination, in a circuit-closing apparatus for railway-vehicles, of a contact-bar B², consisting of a flat metal bar adapted to be bent at its end and set on edge near the main rail in position to be engaged at a corner by a contact-arm carried by the vehicle in line with the wheel-flange.

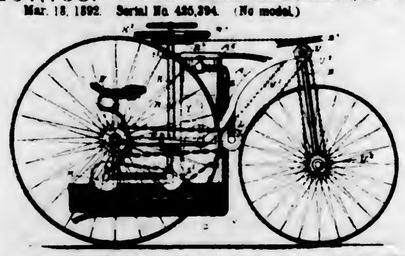
4. A contact-rail set on edge at an inclination to give a clearance space between itself and the base of the main rail and to facilitate the dropping away of foreign substances from its contact edge or corner

5. The combination, substantially as described, with a bar of metal set on edge, of a rubbing contact carried by the vehicle and adapted to engage with a corner of said bar

6. The combination, substantially as described, with a metal bar set on edge, of a contact-arm carried by a vehicle and adapted to yield transversely and to make side contact with the corner of said bar

7. The combination, substantially as described, with the vehicle and the main supporting-rail, of a contact-arm carried by said vehicle and a contact-bar mounted opposite the main rail and having a contact edge or corner beneath which the surface of the bar inclines away from the path of travel of the contact-arm

487,753. TRICYCLE. CHRISTIAN KOENIG, Stockton, Cal. Filed Mar. 18, 1892. Serial No. 425,394. (No model.)

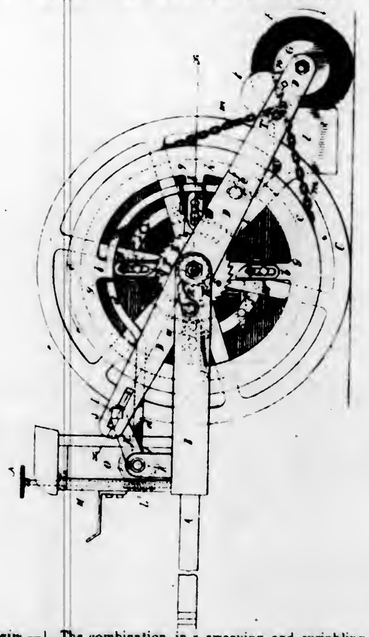


Claim.—1. The combination of the frame A, bolster D, pivoted levers C C, having toothed segments, the pivoted levers E E, having axles E' E' on the outer ends and toothed segments on the inner ends, the spur-gears G G', shaft F, upright shaft H, having a hand-wheel, and the gears *g g'*, constructed to operate as set forth.

2. The combination of the frame A, bolster D, carrying the hind wheels, the yoke B at the front, having the steering-wheel mounted in it, the main driving-shaft I, driving-pulleys L L, connected to the said shaft by clutches, driving-chains J J, pulleys K K, shaft O, friction-clutches N N, pedal-levers P, by which said clutches are operated to obtain rotary motion, pulleys M M, constructed with said clutches, and intermediate chain belts and pulleys arranged to transmit motion from the pulleys M M to the driving-shaft, substantially as described

3. The combination of the frame A, bolster D, carrying the hind wheels, the yoke B at the front of the frame and the steering-wheel mounted in it, the main driving-shaft with pulleys L L, slip-clutches L' L', connecting said pulleys with the shaft, drive-chains J J, pulleys K K, the shaft O, clutches N N, pedal-levers P P, pulleys M M, and chain and pulleys transmitting motion from the pulleys M M to the main driving-shaft, said shaft having a crank for connecting it with an engine or motor on the frame, substantially as set forth.

487,754. STREET-SWEEPER. CHARLES H. LA DUE, New York, N. Y. Filed June 11, 1891. Serial No. 396,890. (No model.)



Claim.—1. The combination, in a sweeping and sprinkling apparatus, of a rotary broom, a receiver for the sweepings, having perforations in its bottom, means to invert the receiver, a bucket-frame encircling the receiver, and a valve for closing the perforations, substantially as set forth.

2. The combination, in a sweeping and sprinkling apparatus, of a rotary broom, a receiver for the sweepings, having perforations in its bottom, a valve to close the perforations, means to invert the receiver, a rotary bucket-frame encircling the receiver, and a spring to depress the valve which closes the perforations, substantially as set forth

3. The combination of a rotary broom, a rotary bucket-frame encircling the receiver, and deflecting-plates against which the sweepings are thrown at or near the ends of the broom, substantially as set forth.

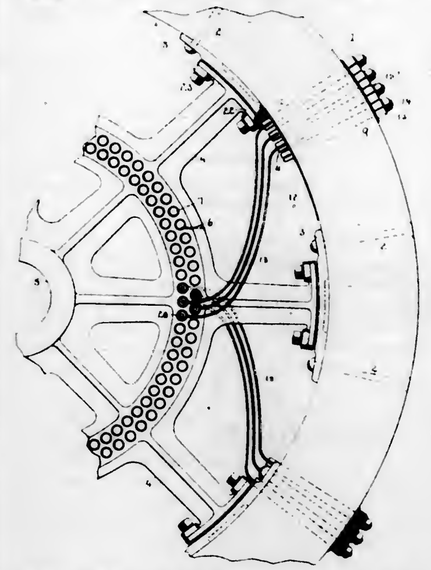
4. The combination of two main driving-wheels and two broom-driving wheels geared together by sliding pawls on one of them, which engages with a ratchet-wheel on the other, and a pawl-deflecting bar thrown into position by the movement of the broom-supporting arms, substantially as set forth.

5. The combination of two main driving-wheels and two broom-driving wheels geared together by sliding pawls on one of them, which engages with a ratchet-wheel on the other, a pawl-deflecting bar thrown into position by the movement of the broom-supporting arms, a shaft having crank-arms which engage with the upper ends of the broom-supporting arms, and a worm-gear to operate the same, substantially as set forth.

6. The combination of a broom supported upon tilting arms pivoted upon the axle of the machine, a fixed shaft, crank-arms fastened to it which engage with the ends of the broom-supporting arms, a worm-gear to operate the same, and a rotary bucket-frame which receives the sweepings from the broom and which encircles the receiver, substantially as set forth.

7. The combination of a broom supported upon tilting arms pivoted upon the axle of the machine, a fixed shaft, crank-arms fastened to it which engage with the ends of the broom-supporting arms, a worm-gear to operate the same, a rotary bucket-frame which receives the sweepings from the broom and which encircles the receiver, and deflecting-plates at or near the ends of the broom, substantially as set forth.

487,755. ARMATURE FOR ELECTRO-MAGNETIC MACHINES. ROBERT LUNDELL, New York, N. Y., assignor of one-half to Edward H. Johnson, same place. Filed Feb. 5, 1892. Serial No. 420,385. (No model.)



Claim.—1. The combination, in an armature, of a core having a series of holes through it near each side face or edge, a series of U-shaped conductors insulated from the core, the legs of which conductors extend through said holes, and means for causing each U-shaped conductor to grasp the core, substantially as described.

2. The combination, in an armature, of a core having a series of holes through it near each side face or edge, a series of U-shaped conductors insulated from the core, the legs of which conductors extend through said holes, means for causing each U-shaped conductor to grasp the core, and means consisting of suitably-supported cross rods or bars, strips or bars symmetrically arranged on one side of the armature between the inner ends of the conductors and cross-rods, and similar strips or bars on the opposite side of the armature for connecting the U-shaped conductors to form the armature-coil, substantially as described.

3. The combination, in an armature, of a suitable spider, a series of transverse insulated cross-rods supported by said spider, an armature-core also supported by the spider, a series of conductors crossing the outer periphery and the two sides of the core, a series of strips or bars connecting the inner ends of the side conductors on one side of the armature to the cross-rods, and a similar series of strips or bars connecting the inner ends of the side conductors on the other side, substantially as described.

4. The combination, in an armature, of a spider having a hub and a perforated web, cross-conductors in said perforations, a ring-core supported by the spider and supporting insulated conductors surrounding the core except on its inner periphery, and series of bent

stripes or bars connecting the inner ends of said conductors to the cross-conductors in regular order, substantially as described.

5. The combination of the armature-conductors, the connecting-conductors 18 18', extending away from the inner surface of the ring, and cross-conductors connecting the same, substantially as described.

6. The combination of the armature-core, the conductors surrounding the same except on its inner periphery, a spider secured to the armature-core, and conductors for connecting the armature-conductors to form the working coil, substantially as described.

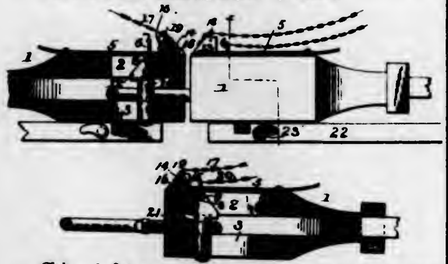
7. The combination of the armature-core, the shoes on the inner periphery thereof, a spider secured to said shoes by radial bolts or devices, said devices being free to move radially within the shoes, whereby the armature-core is free to expand and contract without being distorted, substantially as described.

8. The combination of the armature-core, the shoes arranged on the inner periphery thereof, the spider having flanged arms equal in number to said shoes, and bolts extending through said flanges into holes in said shoes, the bolts being smooth at their outer ends, substantially as described.

9. The combination of an armature-core, a spider for supporting the same, the arms of said spider being slightly shorter when the core is warm than the distance from the center of the spider to the surface to which the arms are connected, and bolts for transferring power from the spider to the ring, said bolts being constructed to allow expansion and contraction, substantially as described.

10. The combination of an armature-core, a spider for supporting the same, radial bolts connecting the spider and armature, the sections of the bolts resting in one of said parts being smooth and free to move in its socket, whereby the bolts are adapted to transfer the power of the shaft to the armature-ring and at the same time to allow said ring to freely expand and contract, substantially as described.

487,756. CAR-COUPLING. ARON C. MERRITT, Allentown, N. Y. Filed Mar. 7, 1892. Serial No. 424,071. (No model.)



Claim.—1. In a car-coupler, the combination, with the draw-head having a flaring mouth and slots in its upper and lower sides, of the plate pivoted to the upper side of the draw-head and carrying a depending coupling-pin, and the pivoted cam-block adapted to engage with the front end of said plate and hold the same in place, substantially as described.

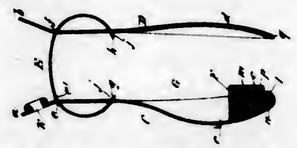
2. In a car-coupler, the combination, with a draw-head having a flaring mouth and slots in its upper and lower sides, of the plate pivoted to the upper side of said draw-head, the depending coupling-pin carried thereby, the cam-block pivoted in uprights secured to the draw-heads, having a curved or beveled rear face and a forward extension, and means for operating said cam-block, substantially as described.

3. In a car-coupler, the combination, with a draw-head having a flaring mouth and slots in its upper and lower sides, of the plate pivoted to the upper side of said draw-head, the depending coupling-pin carried thereby, the bracket secured to the front end of the draw-bar, the cam-block having curved or beveled rear face and forward extension pivoted in said bracket, the stop-bar, and means for operating the cam-block, substantially as described.

4. In a car-coupler, the combination, with the draw-head having a flaring mouth and slots in its upper and lower sides, of the plate pivoted to the upper side of said draw-head, the coupling-pin having lateral lugs in its upper end, the bail consisting of a wire rod bent upon itself with its ends passed through apertures in said plate and formed into loops which engage with said lugs, the pivoted cam-block, and means for operating said plate and block, substantially as described.

5. In a car-coupler, the combination, with the draw-head having a flaring mouth, slots in its upper and lower sides, and lateral recesses in the front end of the upper slot, of the plate pivoted to the upper side of the draw-head, the coupling pin having lateral lugs, a beveled upper end, and a recess intermediate of its ends, the bail connecting the said plate and pin, the pivoted cam-block, and means for operating said block and plate, substantially as described.

487,757. CLIP FOR SUPPORTING DRESSES, &c. EDWARD C. MIX, Jersey City, N. J. Filed July 15, 1892. Serial No. 440,105. (No model.)



Claim.—1. In a clip, the combination, with the gripper-jaws C and D, constructed with handle ends *a* and *b* and with recesses *i i*, of the curved spring E, constructed with slots *e f*, adapted to receive said handle ends, and constructed with inwardly-curved ends adapted to act against said jaws and force them together, and constructed with projecting ends *j j*, adapted to engage said recesses to prevent relative movement of the parts.

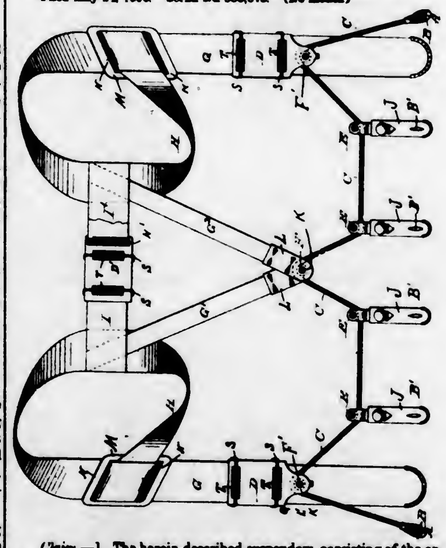
2. In a clip, the combination, with a curved spring E, having slots *e f* at back and having inturned ends adapted to act against the jaws and constructed with notches *g h*, in combination with the jaws of the clip *c d*, constructed to enter said slots, respectively, and adapted when acted on by the inturned ends of the spring to enter said notches *g h*, respectively, whereby their lateral displacement is prevented.

3. In a clip, the combination, with the spring E, of a gripping-jaw C, constructed with a cup-shaped portion *c* and an overturned flange *l*, of a cushion F, constructed with an inner portion *n*, a recess *o*, and an outer portion or lip *p*, overhanging said flange and adapted to receive the impingement of the opposing jaw of the clip.

4. In a clip, the combination, with the spring E and the opposing jaw D, of the jaw C, constructed with the overturned flange *l* and claws *m m*, and the cushion F, having a portion *n* entering behind said flange *l* and adapted to be secured in position by said claws *m*.

5. In a clip, the combination, with a spring E and the opposing jaws C D, the one of said jaws constructed with a cup-shaped gripping end *c* and an overturned flange *l* and the other of said jaws constructed with a cup-shaped gripping end *d* and with a plain edge *q*, adapted to act against said overturned flange when the jaws are in engagement.

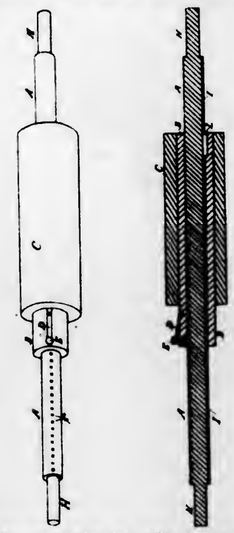
487,758. SUSPENDERS. EDWARD P. MOORE, Argentine, Kans. Filed May 24, 1890. Serial No. 353,873. (No model.)



Claim.—1. The herein-described suspenders, consisting of the ordinary shoulder-straps G and back-straps G' G", connected at their rear ends, the pulley F, secured to and connecting opposite ends of the straps G' G", the buckles D, provided with the pulley-wheels F', the straps J, provided with the pulleys E, and the single cord C for attachment to the front trousers-buttons and engaging with the pulleys E, F, and F', substantially as described.

2. The combined shoulder-braces and suspenders herein described, consisting of shoulder-straps G, provided with extensions H and back-straps G' G", the movable clamp M, connecting-straps G and H, the buckles D, provided with pulley-wheels F', a pulley-wheel F, mounted upon the rear ends of the straps G' G", the straps I I', connected by the buckle D' and to the shoulder-straps, the straps J, provided at their upper ends with the pulley-wheels E, and the running cord C, secured at its ends to the front trousers-buttons and engaging, as described, with the pulley-wheels E, F, and F', all substantially as described and set forth.

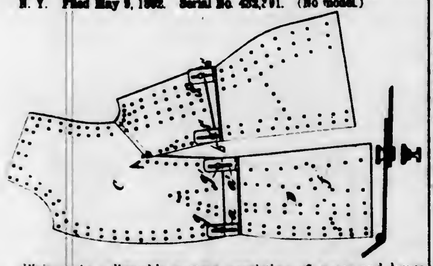
487,759. INK-ROLLER FOR PRINTING-PRESSES. ROBERT W. MURPHY, Seattle, Wash. Filed Sept. 9, 1891. Serial No. 405,240. (No model.)



Claim.—1. The combination, in a roller for a printing-press, of the shaft A, having a keyway I cut thereon throughout its length and having a line of holes upon one side, the sleeve B upon said shaft and having a key or projection fitting the keyway in said shaft, the pin E upon said sleeve, and means for pressing said pin E into engagement with one of the holes F in the shaft A, substantially as set forth.

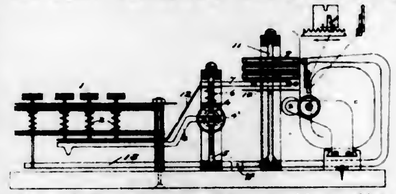
2. The combination, in a roller for a printing-press, of the shaft A, having a keyway I cut therein throughout its length and a row of holes F upon one side, the sleeve B, fitting snugly upon the shaft and having a key or projection fitting said keyway, a pin E upon the sleeve B, and a spring D for pressing said pin into engagement with one of the holes F, substantially as set forth.

487,760. ADJUSTABLE PATTERN. BERTHA MUSSE, New York, N. Y. Filed May 9, 1892. Serial No. 433,201. (No model.)



Claim.—An adjustable pattern consisting of upper and lower sections, the lower section being provided with slotted hinges at the upper end thereof, adapted to slide longitudinally over screw-threaded posts fastened to the upper section near the lower edge thereof, said threaded posts being provided with set-screws for holding the sections in their adjusted position, the said pattern being provided with perforations through which the material may be marked, all substantially as shown and described.

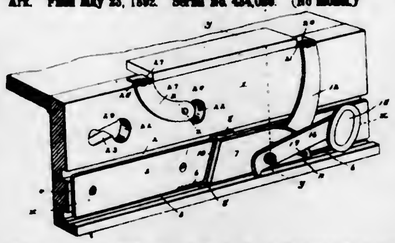
487,761. TYPE-WRITING MACHINE. CHARLES H. MCCLELLAN, New York, N. Y. Filed May 28, 1891. Serial No. 394,416. (No model.)



Claim.—1. The combination, in a type-writing machine, of a type-wheel and key, an intermediate spring adapted to position the type-wheel when operated by the depression of the key, and an escapement and hammer operated by the further depression of the key beyond that required to position the type-wheel.

2. The combination, in a type-writing machine, of button-shanks 1, acting as stops, swing-levers 12, broad levers 3, bevels 4 4×, shaft 6, spring 6, segment-gear 7, gear 8, lock-wheel 10, type-wheel 9, and lever 13, all substantially as described.

487,762. BENCH DOG OR CLAMP. GREEN B. NORMAN, Batesville, Ark. Filed May 23, 1892. Serial No. 434,089. (No model.)



Claim.—1. In a bench dog or clamp, the combination of a ratchet-plate, a clamping-plate having looped lugs to engage said ratchet-plate, located at one end and a biting-lug at the opposite end, said clamping-plate being adjustably mounted in connection with said ratchet-plate, a dog adjustably carried by said clamping-plate, a handle for operating said dog, and a removable dog adapted to be used in connection with the aforesaid dog, substantially as described.

2. In a bench dog or clamp, the combination of a ratchet-plate, a clamping-plate having looped lugs to engage said ratchet-plate, located at one end and an engaging or biting lug located at the opposite end adapted to engage the ratchet-teeth of said ratchet-plate, and a dog adjustably carried by said clamping-plate, substantially as described.

3. In a bench dog or clamp, the combination of a clamping-plate, a disk-shaped head having a stud eccentrically projecting therefrom and formed with a beveled periphery, a clamping-dog engaged by said disk-shaped head and provided with an opening, with a beveled wall to receive said head, and a handle mounted on the said stud and adapted to actuate the said dog, substantially as described.

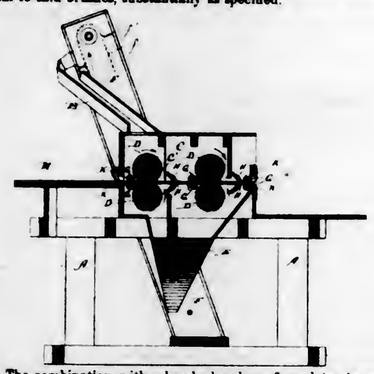
4. In a bench dog or clamp, the combination of a ratchet-plate, a clamping-plate having looped lugs at one end to take hold of the edges of said ratchet-plate in an adjustable manner, and a biting-lug at the opposite end adapted to engage the ratchet-teeth of said ratchet-plate, a disk-shaped head having a beveled periphery provided with a stud extending eccentrically therefrom with a square shoulder thereon, a clamping-dog having an opening therein to fit against the periphery of the said disk-shaped head, a handle on the shoulder of the said stud, and an adjustable dog having a headed stud in connection therewith adapted to engage openings and slots in the bench, substantially as described.

487,763. CLEANING TIN-PLATE OR METALLIC SHEETS. ROWIN HORTON, Maywood, assignor to himself, and OLIVER W. HORTON, Chicago, Ill. Filed Nov. 12, 1890. Serial No. 371,351. (No model.)

Claim.—1. The combination, with a closed brush-chamber, of a pair of revolving brushes D D, mounted therein, feed-rolls G G, and sheet-guides K K, extending through said brush-chamber and between

said revolving brushes and feed-rolls, and means for automatically delivering granular cleaning material to said brushes D D, substantially as specified.

2. The combination, with a brush-chamber C, furnished with revolving brushes and provided with slots or openings in its opposite sides for the admission and discharge of the sheets, of continuous guides K K, extending through the brush-chamber and between the brushes, and means for automatically delivering granular cleaning material to said brushes, substantially as specified.



3. The combination, with a brush-chamber, of revolving brushes mounted therein and upper and lower guide rods or wires extending between the brushes, substantially as specified.

4. The combination, with a closed brush-chamber having slots or openings at its opposite sides for the admission and discharge of the sheets, of a pair of revolving brushes mounted in said chamber, guides for the sheets extending through the chamber and between the brushes, feed-rollers for feeding the sheets along said guides and between the brushes, a feed hopper or spout for delivering granular or pulverized cleaning material to said brushes, an elevator for returning the cleaning material to said spout or hopper, and a second hopper below the brushes for directing said cleaning material from said brush-chamber to said elevator, substantially as specified.

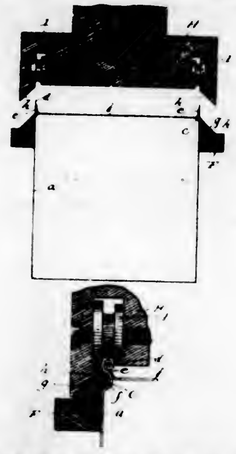
5. The combination of a closed brush-chamber C, having a partition C', dividing it into two parts, and provided with slots or openings for the passage of the sheet through said brush-chamber and through the partition, a pair of revolving brushes mounted in said chamber on each side of said partition, guide rods or wires extending through the brush-chamber and between said brushes, and a series of feed-rollers furnished with grooves for said guide rods or wires, substantially as specified.

6. The combination of a closed brush-chamber C, having a partition C', dividing it into two parts, and provided with slots or openings for the passage of the sheet through said brush-chamber and through the partition, a pair of revolving brushes mounted in said chamber on each side of said partition, guide rods or wires extending through the brush-chamber and between said brushes, a series of feed-rollers furnished with grooves for said guide rods or wires, and a pair of stationary wiper-brushes at the opening in said partition, substantially as specified.

7. The combination of a closed brush-chamber C, having a partition C', dividing it into two parts, and provided with slots or openings for the passage of the sheet through said brush-chamber and through the partition, a pair of revolving brushes mounted in said chamber on each side of said partition, guide rods or wires extending through the brush-chamber and between said brushes, a series of feed-rollers furnished with grooves for said guide rods or wires, a pair of stationary wiper-brushes at the opening in said partition, and a hopper or spout for delivering pulverized cleaning material into said brush-chamber on one side of said partition, substantially as specified.

8. The combination of a closed brush-chamber C, having a partition C', dividing it into two parts, and provided with slots or openings for the passage of the sheet through said brush-chamber and through the partition, a pair of revolving brushes mounted in said chamber on each side of said partition, guide rods or wires extending through the brush-chamber and between said brushes, a series of feed-rollers furnished with grooves for said guide rods or wires, a pair of stationary wiper-brushes at the opening in said partition, a hopper or spout for delivering pulverized cleaning material into said brush-chamber on one side of said partition, and an elevator for returning said cleaning material to said hopper or spout, substantially as specified.

487,764. DEVICE FOR SEAMING THE HEADS UPON CANS. EDWIN NORTON, Maywood, Ill., assignor to himself and Oliver W. Norton, same place. Filed Nov. 20, 1891. Serial No. 412,482. (No model.)



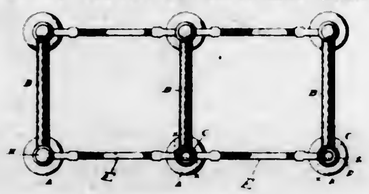
Claim.—1. The device for seaming heads upon cans, having an external groove and an internal bead near the top edge of the can to form a shoulder or support for the head or cover of the can to rest upon within the circumferential line of the can-body, consisting in the combination, with a revolving seaming-head furnished with one or more seaming-rollers, of a sectional chuck adapted to surround the can-body and provided with a flange fitting in the external groove of the can to support the bead and prevent its closing or yielding during the seaming operation, said seaming-head operating to turn or roll the seam inwardly down upon the can-head and within the circumferential line of the can-body, so that the seam will not project outside the periphery of the can-body, substantially as specified.

2. The combination, in a device for seaming the ends or covers upon cans, having an external groove and an internal bead to support the cover within the circumferential line of the can-body, of a sectional chuck surrounding the can and provided with an interior flange fitting in the external groove of the can, and a seaming-head coacting therewith to seam the can to the cover while the walls of the bead are thus supported by the chuck and prevented from collapsing, said seaming-head operating to turn or roll the seam inwardly down upon the can-head and within the circumferential line of the can-body, so that the seam will not project outside the periphery of the can-body, substantially as specified.

3. The combination, with an interior-flanged chuck adapted to surround the can-body and fit in the external groove thereon, of a seaming-head coacting therewith to seam the head to the body of the can, said chuck and seaming-head having coacting bevel rims or flanges *g h*, substantially as specified.

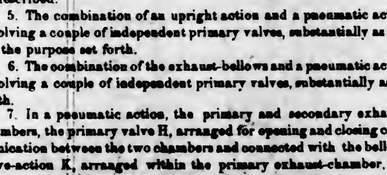
4. The improvement in the art of seaming the final heads or covers upon filled cans, having an external annular groove and an internal bead to form a ledge or support for the cover to rest upon within the circumferential line of the can-body, consisting in supporting the walls of said bead from the outside and simultaneously seaming the cover to the can-body by folding or rolling the top edge of the can-body projecting above the bead inwardly over the upwardly-projecting flange of the can-head and thus forming the seam on top of the can-head and within the circumferential line of the can-body, substantially as specified.

487,765. SECTIONAL SUPPORTING-FRAME. JOHN OEHMROD, Brooklyn, N. Y., assignor to the American Soda Fountain Company, of New Jersey. Filed Dec. 2, 1891. Serial No. 413,782. (No model.)



Claim.—The combination, with supporting-standards provided with a hollow head C, having oppositely-arranged slots D D', of a cap to cover such hollow head, and stretchers E, having a neck G, and head F, adapted to enter said hollow head in the slot thereof and to be covered by said cap, whereby a structure having a complete and integral appearance is produced, substantially as set forth.

487,766. LOCKING-ROD FOR END-GATES. THEODORE M. OWEN, Alexandria, Ohio. Filed Aug. 26, 1892. Serial No. 444,193. (No model.)



Claim.—In combination, the end-gate, the locking-rod having central U-shaped handle and arms C^3, provided with lugs c^4, the eyes or keepers upon the end-gate within which the said rod is sleeved, the side-boards of the box, plates upon the outer faces of the side-boards, and notches or slots in said plates for engagement with the ends of the locking-rod, all arranged and operating as set forth.

487,767. PNEUMATIC ACTION FOR ORGANS. JARVIS PELOUBET, Chicago, Ill., assignor to Lyon & Healy, same place. Filed May 23, 1892. Serial No. 434,091. (No model.)

Claim.—1. A pneumatic action comprising a couple of simultaneously-operating independent primary pneumatic valves, substantially as and for the purpose described.

2. A pneumatic action comprising primary and secondary exhaust-chambers, a primary pneumatic valve for opening communication between the two chambers, and an independently-arranged primary valve for opening and closing communication between the secondary exhaust-chamber and the open air, substantially as described.

3. The combination of a pneumatic bellows, an exhaust-chamber, a primary pneumatic valve for opening and closing communication between the pneumatic bellows and the exhaust-chamber, and a separately-arranged primary valve for opening and closing communication between the pneumatic bellows and the open air, substantially as described.

4. The combination of the primary and secondary exhaust-chambers, a primary pneumatic valve arranged for opening and closing communication between said chambers and including an expansible action subject to the exhaust, a primary valve arranged for opening and closing communication between the secondary exhaust-chamber and the open air and including an expansible action subject to the exhaust, and a valve applied for opening and closing communication between one side of each of said expansible actions and the open air and connected with and operated by one of the keys, substantially as described.

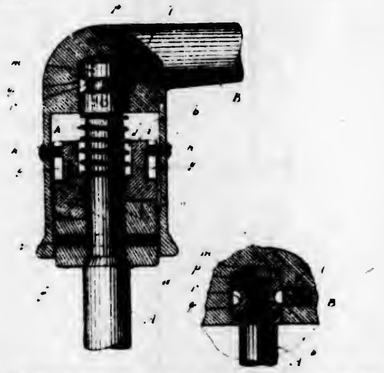
5. The combination of an upright action and a pneumatic action involving a couple of independent primary valves, substantially as and for the purpose set forth.

6. The combination of the exhaust-bellows and a pneumatic action involving a couple of independent primary valves, substantially as set forth.

7. In a pneumatic action, the primary and secondary exhaust-chambers, the primary valve H, arranged for opening and closing communication between the two chambers and connected with the bellows valve-action K, arranged within the primary exhaust-chamber, the primary valve I, connected with the bellows valve-action L, arranged within the primary exhaust-chamber, a duct leading from the open air to the said two bellows valve-action, and a valve connected with a key and arranged for opening and closing said duct, substantially as described.

487,768. CAR-BRAKE. LOUIS PFINGST, Boston, Mass. Filed July 11, 1892. Serial No. 439,610. (No model.)

Claim.—1. The combination, with the staff, of a clutch member fast thereon, a companion member loose on said staff, a brake-handle chambered to receive the clutch mechanism, a socket in the bottom of said handle-chamber, a peripherally-grooved cap fast on the staff and fitted to work in said socket, a projection in the handle-chamber fitted to enter a depression in said loose member, a push-spring interposed between said cap and the loose member, and a removable projection in the handle-socket entering the cap-groove, substantially as described.



2. The combination, with the staff, of a clutch member fast thereon, a companion member loose on said staff, a peripherally-grooved cap fast on the upper end of said staff and projecting beyond the periphery thereof, a brake-handle chambered to receive said clutch mechanism and socketed to receive said cap, a push-spring interposed between the cap and loose member, means for locking the loose member and handle against independent rotation, and a removable projection in the handle-socket working in the cap-groove, substantially as described.

3. The staff, a clutch member fast thereon, and a companion member free to rotate and to move up and down on said staff and provided with vertical slots in its periphery, as specified, combined with the handle and inclosing handle-socket, the latter being provided with pins passing through its walls, entering the vertical slots of the loose clutch member, and adapted to be readily removed from said handle-socket, substantially as and for the purposes set forth.

4. The staff provided at its upper end with a fast collar, a clutch member fast on the staff, and a companion member free to rotate and to move up and down on said staff and provided with vertical slots in its periphery, as specified, combined with the handle and inclosing handle-socket, the latter being provided with pins passing through its walls and adapted to be adjusted in said handle-socket to enter the vertical slots of the loose clutch member and collar, substantially as and for the purposes set forth.

5. The staff provided at its upper end with a fast collar or cap, a clutch member fast on the staff, and a companion clutch member free to rotate and to move independently up and down on said staff, combined with a handle having a socket which incloses the cap and clutch members, a spring interposed between said loose clutch members and cap, and devices to lock the handle-socket and loose clutch members against independent rotation, substantially as set forth.

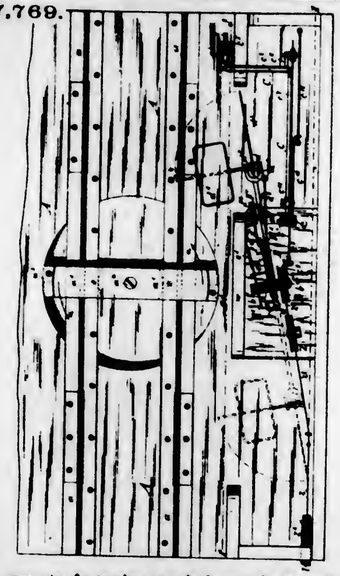
6. The combination, with the staff reduced to form the shoulder *d* and provided with the spindle *m*, of the clutch member *f*, fast on said staff and butting against said shoulder, the grooved cap *p*, fast on said spindle, the loose clutch member *i*, chambered at *j* and provided with the vertical grooves *g*, a push-spring interposed between said cap and loose member, a brake-handle chambered and socketed to receive said clutch and cap, and removable projections on said handle, respectively fitted to work in the clutch member and cap-grooves, substantially as described.

487,769. APPARATUS FOR TURNING OVER THE LEAVES OF MUSIC. CARL PITTRICH, Dresden, Germany. Filed Sept. 17, 1890. Renewed Sept. 24, 1892. Serial No. 446,834. (No model.)

Claim.—1. In an apparatus for turning over the leaves of music and other books, the combination with the arm pivoted at an angle to the book-rest, a frame for engaging the leaves mounted on said arm, a finger pivoted on the end of said arm, and an operating-link therefor, whereby the finger may be moved beneath each succeeding leaf, substantially as described.

2. In a device for turning the leaves of music and other books, the combination, with the friction-roller for giving the initial fold, of an independently-movable arm carrying a frame which overlies the leaf and a finger pivoted on said arm for passing beneath the leaf when moved up by the friction-roller, substantially as described.

487,769.



3. In apparatus for turning over the leaves of music and other books, the combination, with an arm D, carrying a frame d', and finger d^3, of a frictional roller c^4, substantially as described, and illustrated in the accompanying drawings.

4. In apparatus for turning over the leaves of music and other books, the combination, with a rotating disk B, of a cam or tappet c^3, a crank-arm c^3, a link c^7, arms C, c^8, and c^9, shaft c^5, and a frictional roller c^4, substantially as described, and illustrated in the accompanying drawings.

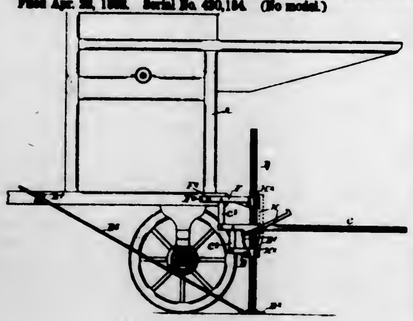
5. In apparatus for turning over the leaves of music and other books, the combination, with a rotating disk B and arm D, carrying a frame d', and finger d^3, of a pin d^7, secured in said disk, and a link d^5 d^6 for operating said arm and finger, substantially as described, and illustrated in the accompanying drawings.

6. In apparatus for turning over the leaves of music and other books, the combination, with a rotating disk B, arm D, a frame d', finger d^3, link d^5 d^6, and pin d^7, of spring-controlled levers, links, or arms F f f', rack F', and pin f^3, substantially as described, and illustrated in the accompanying drawings.

7. In apparatus for turning over the leaves of music and other books, the combination, with a rotating disk B, arm D, frame d', finger d^3, link d^5 d^6, pin d^7, links or arms F f f', and pin f^4, of a pin f^5, secured in link or arm f f', and a cam f^6, substantially as described, and illustrated in the accompanying drawings.

8. In apparatus for turning over the leaves of music and other books, the combination, with a disk B, crank-arm c^3, cam or tappet c^3, link c^7, arms or levers C c^8 c^9, shaft c^5, friction-roller c^4, and ratchet-wheel c^6, of a spring c^{10}, adjustable sleeve c^{11}, and rail c^{12}, substantially as described, and illustrated in the accompanying drawings.

487,770. LIFTING-JACK. WILLIAM R. PROCTOR, Redding, Iowa. Filed Apr. 22, 1892. Serial No. 430,184. (No model.)



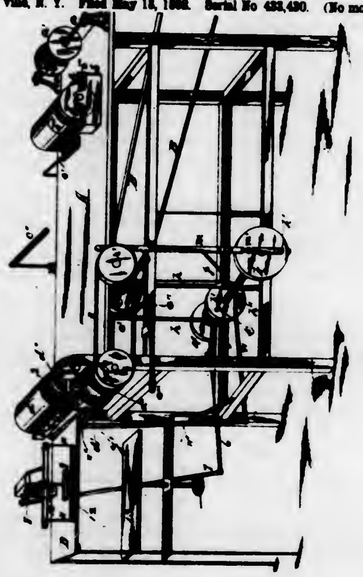
Claim.—1. In a lifting-jack, the combination of a smooth upright standard, a base for the standard, a slotted lever placed on the said standard, two arms pivotally attached to the shorter end of the said lever at slight distances apart, the one extending upwardly and the other downwardly, a grip device pivotally attached to each arm and composed of a bar having a slot at the end extended therethrough at an angle, and a coil-spring connected with the lever and with the lower grip device to normally elevate the latter, to operate in the manner set forth.

2. In a lifting-jack, the combination of a smooth upright standard, a base for the standard, a slotted lever placed on the said standard, two arms pivotally attached to the outer end of the said lever at slight distances apart, the one extending upwardly and the other downwardly, a grip device pivotally attached to each arm and composed of a bar having a slot at its end, extended therethrough at an angle, a coil-spring connected with the lever and with the lower grip device to normally elevate the latter, and a hook pivoted to the said lever between its central portion and the inner one of the said arms, which hook is adapted to engage the slotted ends of both of the grip devices in such a manner that a downward movement of the said bar will cause the said hook to press downwardly upon the grip devices, for the purposes stated.

3. In a lifting-jack, the combination of a smooth upright standard, a base for the standard, a slotted lever placed on the said standard, two arms pivotally attached to the outer end of the said lever at slight distances apart, the one extending upwardly and the other downwardly, a grip device pivotally attached to each arm and composed of a bar having a slot at its end, extended therethrough at an angle, a coil-spring connected with the lever and with the lower grip device to normally elevate the latter, a hook pivoted to the said lever between its center and the inner one of the said arms, which hook is adapted to engage the slotted ends of both of the grip devices in such a manner that a downward movement of the lever will cause the said hook to press downwardly upon the grip device, and a rod pivotally attached to the base of the standard and having a sliding adjustable connection with the object to be elevated, substantially as set forth.

4. A lifting-jack for leveling thrashing-machines and analogous uses, comprising a tubular upright standard supported on a suitable base, a bar pivotally connected with the said base and having a sliding pivotal connection with the thrashing-machine, the lever and grip devices constructed and combined as set forth, means for connecting the upper grip device with the thrashing-machine in such a manner as to provide a limited vertical movement relative thereto, means for elevating the slotted end of the lower grip device when released, and the hook, substantially as shown, adapted to engage the upper and lower grip devices simultaneously to provide means for lowering the grip devices relative to the standard, substantially as and for the purposes stated.

487,771. PAPER-BOX MACHINE. CHARLES R. POWELL, Gloversville, N. Y. Filed May 18, 1892. Serial No. 433,490. (No model.)



Claim.—1. The combination, with the paper-reel, of a paste-box, a shaft mounted transverse thereto, a sectional roller upon said shaft, one section being within said box, and a long tension-rod on one side of the roller and a shorter one on the opposite side.

2. The combination, with the paper-reel, of a paste-box, a shaft mounted transverse thereto, a sectional roller upon said shaft, one section being within said box, a long tension-rod on one side of the roller and a shorter one on the opposite side, and a vertically-adjustable tension-rod over which the paper passes.

3. The combination, with a paper-reel, of a paste-box, a shaft mounted transverse thereto, a sectional roller upon said shaft, one section being within said box, a long tension-rod on one side of the roller and a shorter one on the opposite side, and a vertically-adjustable tension-rod over which the paper passes, and the feed-rollers between which the paper passes.

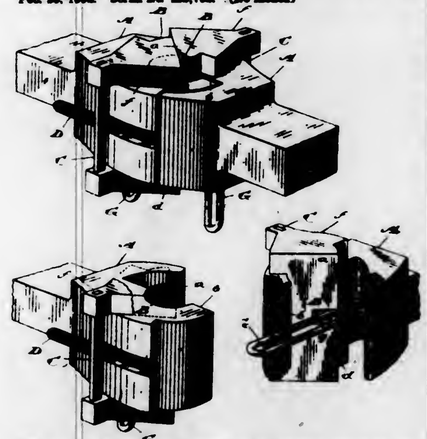
4. The combination, with the work-table and the box-table below it, of a pressure-roller and means to operate it vertically.

5. The combination, with the work-table and the box-table below it, of a pressure-roller and means to operate it vertically in different planes.

6. The combination, with the work-table and the box-table below it, of a pressure-roller movable vertically and means to spring it out of one vertical plane into another.

7. The combination, with the work-table and the box-table below it, of a presser-foot holding the paper upon the work-table and a vertically-movable pressure-roller engaging with the projecting edge of the paper to fold it downward.

487,772. CAR-COUPLING. EDWIN R. REES, Barrie, Canada. Filed Feb. 25, 1892. Serial No. 422,762. (No model.)



Claim.—1. An improved automatic car-coupler consisting of a draw-head shaped substantially as shown and provided with one half of a locking-roller B, a flange f on each end of said half-roller, a key C, connecting said flanges, and a rod D, connected to the key C, and controlled by the spring E, the whole being arranged to engage with a similarly-formed draw-head, substantially as described.

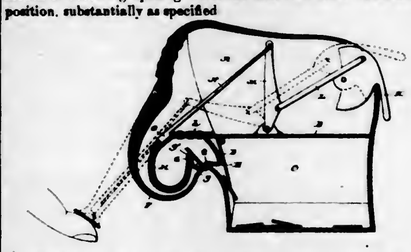
2. An improved automatic car-coupler consisting of a draw-head shaped substantially as shown and provided with one half of a locking-roller B, movably held in position by the key C, actuated by a spiral spring on the rod D and arranged to engage with the other half of a locking-roller carried in a similarly-formed draw-head, substantially as and for the purpose specified.

3. An improved automatic car-coupler consisting of a draw-head constructed substantially as shown and provided with a notch g and a link G, connected to the draw-head and arranged to hang vertically when not in use and to be supported in a substantially-horizontal position by said notch g when coupling with another draw-head, substantially as described.

487,773. AUTOMATIC TOY SAVINGS-BANK. DAVID R. REYNOLDS, Philadelphia, Pa. Filed May 26, 1892. Serial No. 434,515. (No model.)

Claim.—1. In a toy, the combination, with a body portion having a mouth or receiving opening, of an arm or trunk provided with a terminal suction-cup and means to operate the arm or trunk, substantially as specified.

2. In a toy, the combination, with a body portion having a receptacle and a mouth or receiving opening, of an elastic arm or trunk provided with a terminal suction-cup, which is held close to said mouth or receiving opening when the arm or trunk is in its normal position, substantially as specified



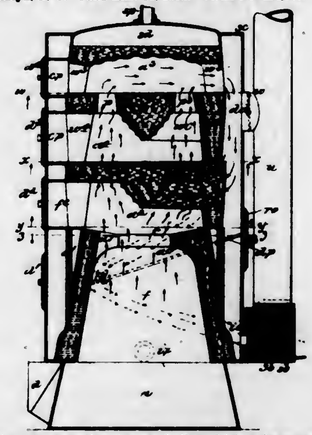
3. In a toy, the combination, with a body portion having a mouth-opening, of a hollow flexible arm or trunk having a terminal suction-cup, which is normally held in proximity to said mouth-opening, a sliding arm adapted to slide into the hollow of said flexible arm or trunk, and means to operate said sliding arm, substantially as specified.

4. In a toy, the combination, with a body portion having a mouth-opening, of a hollow flexible arm or trunk having a terminal suction-cup, which is normally held in proximity to said mouth-opening, a normally curled or bent spring arranged in said arm or trunk, a sliding arm provided with a sleeve to slide upon said spring to straighten it, and means to operate the sliding arm, substantially as specified.

5. In a toy, the combination, with a body portion having a coin-receptacle and provided at one end with a mouth or receiving opening, of a flexible arm or trunk having a terminal suction-cup, a bent or curled spring arranged axially in said arm or trunk to normally hold it in a bent position with its extremity adjacent to the mouth or receiving opening of the receptacle, the sliding arm adapted to slide upon said spring to straighten it, means to operate said sliding arm, and a lip in proximity to the mouth or receiving opening to trip and disengage the coin, substantially as specified.

6. In a toy, the combination, with a body portion having a receiving-compartment and a mouth or opening, of the flexible spring-actuated arm or trunk provided with a suction-cup, the sliding arm adapted to enter and straighten said arm or trunk, an operating-lever, an intermediate lever connected to said sliding arm, and a connecting-rod between the operating and the intermediate levers, substantially as specified.

487,774. SECTIONAL STEAM-BOILER. DWIGHT S. RICHARDSON, Brooklyn, N. Y. Filed Mar. 11, 1892. Serial No. 424,575. (No model.)



Claim.—1. A sectional steam-boiler which embraces an independent base or ash-pit section, a smoke-casing, and a fire-pot or fuel-chamber water-section upon the ash-pit section, a feed-chute water-section upon the fire-pot or fuel-chamber water-section, and a steam-dome or closing-section above the feed-chute water-section, the upper and lower water-sections being connected by vertical smoke-passages which extend through the intermediate water-section and by vertical water-passages which also are provided in such intermediate water-

section, each of the water-sections being composed of a single piece, substantially as set forth.

2. A sectional steam-boiler which embraces an independent base or ash-pit section, a fire-pot water-section, and a smoke-casing which rests upon the base or ash-pit section, the fire-pot section being interiorly indrawn from its base to a point below the upper section thereof and provided at its top with an overhang which has a recess or cut-away portion at its front, a feed-chute water-section which is supported upon the fuel-chamber water-section and which has vertical water-passages and vertical smoke-passages, and a steam-dome water-section at the upper extremity of the apparatus provided at its rear with a smoke-discharge opening and at its front with a closable clearing-opening.

3. A sectional steam-boiler in which are combined an independent base or ash-pit section, a double-walled fire-pot water-section which interiorly is in its main portion upwardly tapered or indrawn, which at its upper extremity is upwardly and inwardly curved, and which at its front has a recess or cut-out portion, a combustion-chamber water-section which has a central downwardly-indrawn water-well, around which are vertical smoke-passages, a covering or steam-dome section above the combustion-chamber water-section, and a smoke-casing or inclosing jacket which encircles the several water-sections.

4. A sectional steam-boiler in which are combined an independent base or ash-pit section, a fire-pot water-section which rests upon the base or ash-pit section, a feed-chute water-section which rests upon the fire-pot water-section which has peripheral water-chambers, a central downwardly-tapered water-well and intermediate equidistant concentric vertical smoke-passages, a water-section which rests upon the feed-chute water-section which has peripheral vertical water-chambers or passages, a central depending water-well and intermediate equidistant concentric vertical smoke-passages which are non-coincident with the smoke-passages in the feed-chute water-section, a covering or steam-dome water-section which rests upon the water-section which is directly supported by the feed-chute water-section, a smoke-casing which incloses the several described superposed water-sections and forms therewith an intermediate diving-flue, and a partially-encircling downwardly and forwardly inclined diaphragm or flue-plate between the smoke-casing and the series of water-sections, which operates to deflect the escaping products of combustion and cause them to pass from the rear of the apparatus to a point near the front of the same before passing to the point of exit at the base and rear of the smoke-casing.

5. In a sectional steam-boiler, a horizontal water-section which has peripheral water-spaces, a central water-well, and a transversely-extending water-passage which at one side extends from the water-well to a peripheral water-space, and smoke-passages which are arranged at intervals around the water-well and extend vertically through such water-sections.

6. In a sectional steam-boiler, a water-section which has upwardly and inwardly inclined walls which incloses and overhang the fuel-space and which at its front and upper extremity has a recess or cut-away portion, combined with a fuel-supply section the door of which is coincident with such recess or cut-away portion, whereby observation of the interior of the fuel-chamber and supply of the fuel thereto are facilitated.

7. In a sectional steam-boiler, an exterior smoke-casing, a base or ash-pit section, a fire-pot or fuel-chamber water-section upon the ash-pit section, and two or more horizontal superposed water-sections upon the fuel-chamber section, each of such superposed sections having a horizontal closable passage which extends from the interior of such water-section outwardly to the smoke-casing, in combination, substantially as and for the purposes set forth.

8. A sectional steam-boiler in which are combined an independent base or ash-pit section and a series of superposed horizontal water-sections which inclose the fuel-chamber and the combustion-chamber and which are inclosed by a smoke-casing, whereby in operation through indirect exit the surfaces of the water-sections are subjected to the action of the heat-currents, first, interiorly as such currents ascend through such sections, and, second, exteriorly, as the currents descend along and around the outer faces of such sections and between them and the inner surface of the smoke-casing.

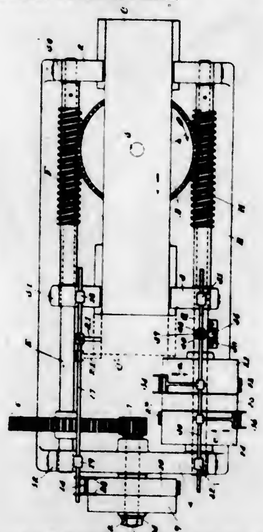
9. A sectional steam-boiler in which are combined an independent base or ash-pit section, an exterior smoke-casing, and a series of superposed horizontal water-sections which together inclose the fuel-chamber and the combustion-chamber and each of which has a lateral passage or way which extends outwardly to the smoke-casing and which is accessible through suitable doors in the same for supply of fuel to the fire-pot or for clearance of accumulations of refuse from the interior of the section.

10. A sectional steam-boiler in which are combined an independent base or ash-pit section, a smoke-chamber encircling the sections of the boiler, a water-section upon the ash-pit section which has interiorly an upwardly-indrawn fuel-chamber and which exteriorly is nearly encircled by a deflecting-plate which divides the smoke-chamber into upper and lower forwardly and backwardly extending smoke-flues, a feed-chute water-section upon the fuel-chamber water-section which has a central water-well, a peripheral water-chamber, and a conduit, which for circulation and clearance connects the central water-well with the peripheral water-chamber, and a covering or closing water-section which is open at its front for clearance and which is open at its rear for smoke-discharge, the several lower water-sections having upwardly-discharging smoke-passages and water-passages, and each water-section being cast as an integer, as set forth.

11. In a sectional steam-boiler, an upwardly-indrawn fire-pot or fuel-chamber water-section having top overhung, whereby restricted and concentrated discharge of the volatile products of combustion is produced, and a feed-chute water-section upon the fuel-chamber water-section provided with peripheral water-spaces, vertical smoke-passages, and a central depending water-well which is suspended directly above the contracted discharge-opening of such fire-pot or fuel-chamber water-section, combined for operation substantially as specified.

12. In a sectional steam-boiler, an upwardly-indrawn fire-pot or fuel-chamber water-section having interior overhang at its upper extremity, whereby restricted and concentrated discharge of the volatile products of combustion is produced, a feed-chute water-section upon the fuel-chamber water-section provided with peripheral water-spaces with a concentrically-arranged series of vertical smoke-passages and with a central depending water-well which is suspended directly above the contracted discharge-opening of the fire-pot or fuel-chamber water-section, and a closing or steam-dome water-section above the feed-chute water-section, its upper or steam-dome portion embracing the entire horizontal area of the section and receiving the direct impact of the discharge through the concentric series of smoke-passages in the subjacent water-sections, combined for operation substantially as described.

487,775. DUPLEX FEED MECHANISM. FRANCIS H. RICHARDS, Hartford, Conn., assignor to Walter Wood, same place. Filed Mar. 26, 1892. Serial No. 426,433. (No model.)



Claim.—1. In a feed mechanism, the combination, with the traveling table, of the revolving feed-wheel carried thereby, two feed-screws engaging said feed-wheel, and means for revolving said screws independently of each other, whereby the table may be fed by either one of the feed-screws when the other feed-screw is at rest.

2. In a feed mechanism, the combination, with the traveling table, of the revolving feed-wheel carried thereby, two feed-screws engaging said feed-wheel, means for revolving one of said screws in one direction, and means for revolving the other of said screws in either direction, substantially as described.

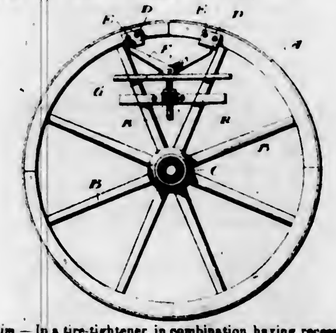
3. In a feed mechanism, the combination, with the traveling table, of the revolving feed-wheel carried thereby, two feed-screws engaging said feed-wheel, feed-gearing operating one of said screws, a stop located in the path of the table movement and connected for stopping said gearing, and means for revolving the other of said screws independently of said feed-gearing, substantially as described.

487,776. VESTIBULE CONNECTION FOR PASSENGER-CARS. EDGAR C. ROSS, Chicago, Ill., assignor to himself, Robert Vierling, and Louis Vierling, same place. Filed Apr. 9, 1891. Serial No. 388,240. (No model.)

Claim.—1. The combination, with a car having a vestibule or covered passage-way leading to an adjacent car, of an elastic tubular connection having its edges arranged and secured at an angle to the frame at the open end of the vestibule, substantially as described.

2. The combination, with a car having a vestibule or covered passage-way leading to an adjacent car when two cars are coupled together and framework D at the open end of the vestibule, of an elastic connection E, secured to the framework D and having its edges turned outward and secured to the frame D at an angle, substantially as and for the purpose specified.

487,777. TIRE-TIGHTENER. JOHN P. ROSS, Waterloo, Ala. Filed July 26, 1892. Serial No. 441,194. (No model.)



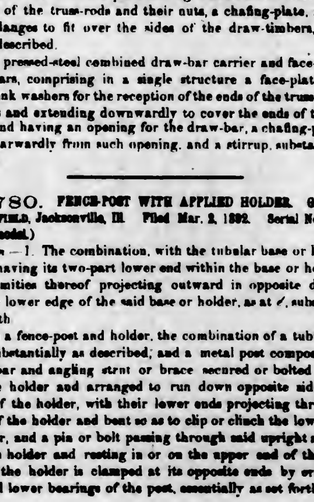
Claim.—In a tire-tightener, in combination, having recessed tire-clamps, the guide-plate G, provided with arms pivoted near the center of the same adapted to bear against the said clamps, of a scondary guide-plate fastened together with bolts, and a threaded bolt having suitable nut and washer, which passes through the sectional guide-plate and bears against the guide-plate G, all substantially as shown and described.

487,778. METALLIC TENON. ADOLPHUS M. SANDERS and ROSCOE J. SANDERS, Reedsburg, Wis. Filed Nov. 27, 1891. Serial No. 413,305. (No model.)

Claim.—1. In a tenon-fastener, a tapering tubular sleeve adapted to be inserted in a mortise and receive the tenon, provided at its innermost end with an integral sharpened wedge extending transversely across the same and projecting within the sleeve, and with spring-tongues on each side of said wedge, substantially as set forth.

2. In a metallic tenon-fastener, a tapering tubular sleeve adapted to be inserted in a mortise and receive the tenon, provided with an integral sharpened wedge located at its innermost end and extending transversely across the same and projecting therein, and spring-tongues on each side of said wedge provided with inner and outer serrated faces, and laterally-projecting ribs or flanges adapted to be forced by the split tenon into the sides of the mortise, substantially as set forth.

487,779. DRAW-BAR CARRIER AND FACE-PLATE. CHARLES T. SCHOEN, Allegheny, Pa. Filed Sept. 28, 1892. Serial No. 447,111. (No model.)



Claim.—1. A draw-bar carrier and face-plate for railway-cars, comprising in a single structure a face-plate, a stirrup, a chafing-plate, and countersunk washers for the reception of the truss-rods, substantially as described.

2. A draw-bar carrier and face-plate for railway-cars, comprising in a single structure a face-plate extending crosswise of the front sill and downwardly over the ends of the draw-timbers and having an opening for the draw-bar provided with a chafing-plate and a stirrup made as a rearwardly-projecting flange at the bottom of the face-plate, substantially as described.

3. A draw-bar carrier and face-plate for railway-cars, comprising in a single structure a face-plate having countersunk washers for the reception of the ends of the truss-rods and their nuts, a longitudinal rib on said plate to stiffen it, a chafing-plate surrounding three sides of the draw-bar opening in said face-plate, and a stirrup, substantially as described.

4. A draw-bar carrier and face-plate for railway-cars, comprising in a single structure a face-plate having countersunk washers for the reception of the truss-rods and their nuts, a chafing-plate, a stirrup, and end flanges to fit over the sides of the draw-timbers, substantially as described.

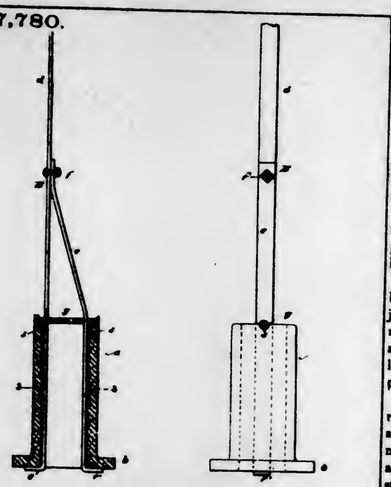
5. A pressed-steel combined draw-bar carrier and face-plate for railway-cars, comprising in a single structure a face-plate having countersunk washers for the reception of the ends of the truss-rods and their nuts and extending downwardly to cover the ends of the draw-timbers and having an opening for the draw-bar, a chafing-plate projecting rearwardly from such opening, and a stirrup, substantially as described.

487,780. FENCE-POST WITH APPLIED HOLDER. GEORGE W. SCHOFIELD, Jacksonville, Ill. Filed Mar. 3, 1892. Serial No. 423,495. (No model.)

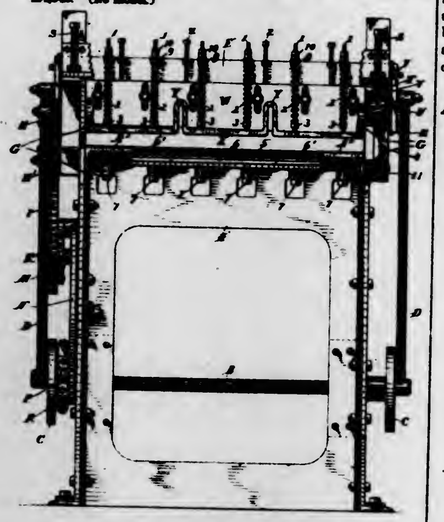
Claim.—1. The combination, with the tubular base or holder, of the post having its two-part lower end within the base or holder and the extremities thereof projecting outward in opposite directions under the lower edge of the said base or holder, as at *c*, substantially as set forth.

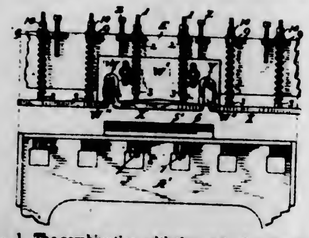
2. In a fence-post and holder, the combination of a tubular post-holder, substantially as described, and a metal post composed of an upright bar and angling strut or brace secured or bolted together above the holder and arranged to run down opposite sides of the interior of the holder, with their lower ends projecting through the bottom of the holder and bent so as to clip or clinch the lower end of the holder, and a pin or bolt passing through said upright and brace above the holder and resting in or on the upper end of the holder, whereby the holder is clamped at its opposite ends by or between upper and lower bearings of the post, essentially as set forth.

487,780.



487,781. SHEARING-MACHINE FOR FRUIT-PACKAGES. JOHN H. SCHLEGEL, Sangatuck, Mich. Filed Mar. 9, 1892. Serial No. 424,346. (No model.)





Claim.—1. The combination, with the vertically-movable bar carrying a cutting-knife and having bosses and a stationary shear-plate, of a pressure-bar having rods extending upward from its upper face, said rods extending through said bosses and having threaded ends, coiled springs encircling said rods and engaging the under side of said bosses at their upper ends, adjustable nuts on the lower ends of said rods engaging the lower end of said coiled springs and serving to adjust the tension thereof, and nuts on said rods above said bosses for lifting said pressure-bar, all substantially as described.

2. In a shearing-machine, in combination with a vibrating knife attached to the same, having laterally-projecting cutting-wings, a stationary shear-plate having side and end edges adjacent to said knife and wings, and a pressure-bar to rest upon and hold the stock, having vertical loops embracing said wings, substantially as described.

3. The combination, with the movable knife-bar and a knife removably attached thereto, of a bed having removable sections and shear-plates removably secured to said bed, substantially as described, and for the purposes specified.

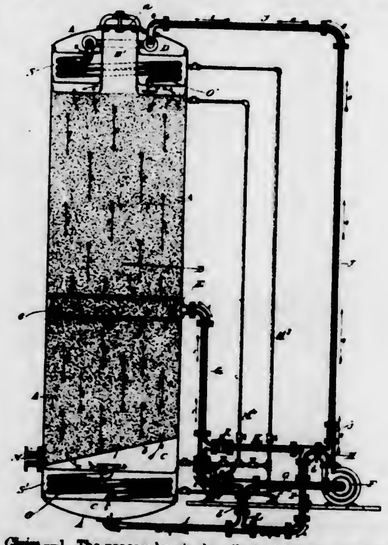
4. The combination, with the movable knife-bar and a knife removably attached thereto, of a bed having removable sections, a shear-plate removably attached to said bed, and a movable pressure-bar having vertical loops, all substantially as shown and described.

5. The combination, with the feed-rolls journaled at their ends in boxes and expansion-gearing connecting said rolls, of means for adjusting the upper roll vertically toward and from the lower roll, said means consisting of plates, bolts attached to the boxes of said rolls and loosely engaging said plates, adjusting-screws attached at their lower ends to said plates, and coiled springs between said boxes and plates, substantially as described.

6. In combination with a vibrating arm having pawls engaging a ratchet to operate the feed mechanism, a cam, a yoke engaging the same, a rocker-arm having slotted openings, and connecting-rods connecting the respective ends of said rocker-arm to said vibrating arm and yoke, said rods having pivot-bolts adjustable in said slots, substantially as described.

7. In combination with feed-rolls having expansion-gearing, a gear engaging the pinion on the stationary roll, said gear having an inwardly-projecting rim, a ratchet on the inner surface of said rim, an arm having a sleeve surrounding the hub of said wheel, a pawl on said arm engaging said ratchet, a rocker-arm connected to said vibrating arm by a rod having an adjustable connection to said rocker-arm, a cam on the driving-shaft, a yoke engaging said cam, and a rod connecting said yoke to said rocker-arm, substantially as described.

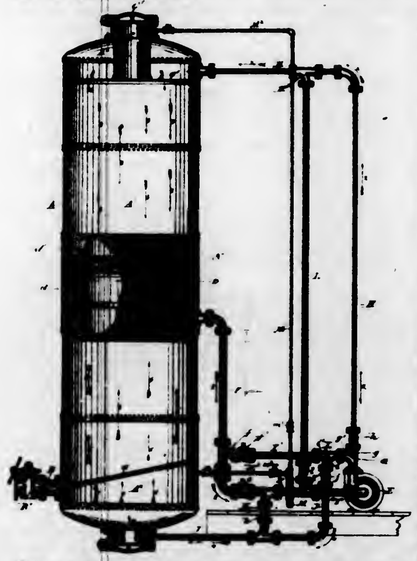
487,782. PROCESS OF DISINTEGRATING VEGETABLE SUBSTANCES. ALEXANDER SOLTSIEN, Albany, assignor, by mesne assignments, to Robert Whitehill and Daniel S. Waring, Newburg, N. Y. Filed Aug. 4, 1888. Serial No. 282,012. (No specimens.) Patented in Germany Aug. 15, 1888, No. 46,940; in England Aug. 16, 1888, No. 11,848; in France Aug. 16, 1888, No. 188,466; in Belgium Aug. 16, 1888, No. 83,989; in Norway Aug. 20, 1888, No. 1,063; in Sweden Aug. 21, 1888, No. 1,900, and in Austria-Hungary Feb. 20, 1889, No. 33,742 and No. 54,310.



Claim.—1. The process herein described of disintegrating vegetable substances, the same consisting in subjecting the substances within a steam-tight vessel and under pressure to the action of two currents of heated cooking liquor simultaneously and continuously circulated from the respective ends of the charge toward each other and the middle portion of the same, as described.

2. The process herein described of disintegrating vegetable substances, the same consisting in submerging about the lower half portions of the body of the charge of material in a cooking liquor of suitable strength, heating this liquor continuously and circulating it by two separate and distinct streams or currents, which are continuously introduced into the body of the charge from its opposite ends and circulated through the interstices between the particles in each half portion of the charge in directions toward each other and to a common outlet all around from about the middle of the charge, as described.

487,783. DIGESTING APPARATUS. ALEXANDER SOLTSIEN, Albany, assignor, by mesne assignments, to Robert Whitehill and Daniel Waring, Newburg, N. Y. Filed May 31, 1888. Serial No. 312,760. (No model.) Patented in Germany Aug. 15, 1888, No. 46,940; in England Aug. 16, 1888, No. 11,848; in France Aug. 16, 1888, No. 188,466; in Belgium Aug. 16, 1888, No. 83,989; in Norway Aug. 20, 1888, No. 1,063; in Sweden Aug. 21, 1888, No. 1,900, and in Austria-Hungary Feb. 20, 1889, No. 33,742 and No. 54,310.



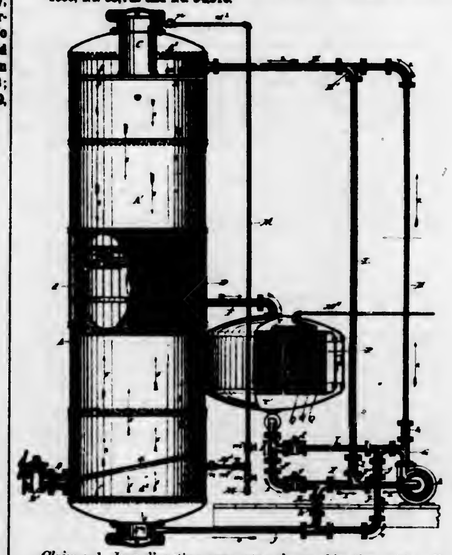
Claim.—1. In a digesting apparatus, the combination, with a digesting-vessel and a pump, of an annular perforated wall supported within the said vessel between the end portions thereof and forming with the wall of said digesting-vessel an annular liquor-chamber, a draft-pipe leading from said annular liquor-chamber to the inlet of the pump, and discharge-pipes leading from the outlet of the pump into the digesting-vessel through the respective end portions thereof, substantially as and for the purposes set forth.

2. In a digesting apparatus, the combination, with a digesting-vessel having a liquor-chamber in its lower end portion separated from digesting-chamber by a perforated diaphragm and an annular liquor-chamber between the end portions of said digesting-chamber and separated therefrom by a perforated annular wall suitably supported from the solid wall of the digesting-vessel, of a pump, a draft-pipe leading from said annular liquor-chamber to the pump, and two discharge-pipes leading, respectively, from the pump into the opposite end portions of the digesting-vessel, one of them into the liquor-chamber below the digesting-chamber, substantially as and for the purposes set forth.

3. In a digesting apparatus, the combination, with the digesting-vessel containing upper and lower liquor-chambers separated from each other by the digesting-chamber and the interposed perforated diaphragms *a a'* and an annular liquor-chamber communicating with the digesting-chamber through the perforated annular wall *d* at about midway between the ends of the said chamber, of a pump, draft-pipe F, and discharge-pipes H and J, provided with suitable valves, substantially as and for the purposes set forth.

4. In a digesting apparatus, the combination, with the digesting-vessel having its digesting-chamber separated from a liquor-chamber below by the perforated diaphragm *a* and an annular liquor-chamber about midway between the ends of said digesting-vessel and communicating with said digesting-chamber through the perforated annular wall *d*, of a pump, pipes F, J, K, I, I', and H, and valves *e*, *f*, *h*, *j*, and *k*, substantially as and for the purposes set forth.

487,784. DIGESTING APPARATUS. ALEXANDER SOLTSIEN, Albany, assignor, by mesne assignments, to Robert Whitehill and Daniel Waring, Newburg, N. Y. Filed May 31, 1888. Serial No. 312,780. (No model.) Patented in Germany Aug. 15, 1888, No. 46,940; in England Aug. 16, 1888, No. 11,848; in France Aug. 16, 1888, No. 188,466; in Belgium Aug. 16, 1888, No. 83,989; in Norway Aug. 20, 1888, No. 1,063; in Sweden Aug. 21, 1888, No. 1,900, and in Austria-Hungary Feb. 20, 1889, No. 33,742 and No. 54,310.

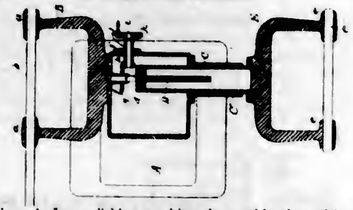


Claim.—1. In a digesting apparatus, the combination, with a digesting-vessel containing a digesting-chamber, an annular liquor-chamber which is relatively between the ends of the digesting-chamber and separated therefrom by a perforated annular wall, and a liquor-chamber communicating with the lower end of said digesting-chamber by a perforated plate, of a circuit of pipes communicating from the outlet of the said annular liquor-chamber to the respective opposite ends of the digesting-vessel, a pump in said circuit of pipes, and a liquor-heating device between the outlet of the said annular liquor-chamber to the pipe-circuit and the inlets of the said circuit to said digesting-chamber for receiving and heating the liquor before its final passage into the said digesting-chamber, substantially as and for the purposes set forth.

2. In a digesting apparatus, the combination, with a digesting-vessel having a digesting-chamber and a perforated wall supported about midway between the ends of said vessel from the solid wall of the same and forming with said solid wall an annular chamber, of a circuit of pipes connecting the said annular chamber with the respective opposite ends of the digesting-vessel, a pump inducing through said pipe-circuit a dual circulation of the liquor through the digesting-chamber from its ends toward its middle portion, and a heating device or devices interposed in the pipe-circuit and between the outlet from said annular chamber to said pipe-circuit and the opposite ends of the digesting-vessel for receiving and heating the liquor before it is applied to the charge from the opposite ends thereof, substantially as and for the purposes set forth.

3. In a digesting apparatus, the combination, with a digesting-vessel which has an annular liquor-chamber at about midway between its ends, liquor-chambers respectively in its opposite ends, and a digesting-chamber communicating with said annular liquor-chamber through a perforated annular wall and with the respective end liquor-chambers through perforated plates, of a pump, a pipe leading from said annular liquor-chamber to the inlet of the pump, discharge-pipes leading from the outlet of the pump to the respective opposite end liquor-chambers, and a liquor-heating device interposed in the circuit of pipes and located outside of the digesting-vessel and through which the liquor will be forced by the action of the pump to have passage before being discharged into the opposite end liquor-chambers for a dual circulation through the charge, substantially as and for the purposes set forth.

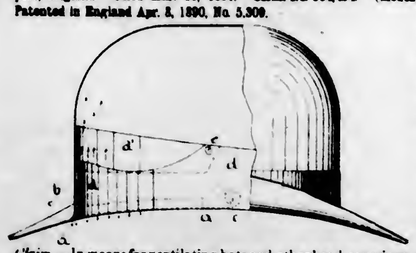
487,785. POLISHING-MACHINE. CHARLES SEYMOUR, Defiance, Ohio, assignor to the Defiance Machine Works, same place. Filed July 20, 1892. Serial No. 441,683. (No model.)



Claim.—1. In a polishing machine, the combination, with a post or upright, of a yoke secured thereto, a pulley carried by said yoke, a sleeve secured to the other side of said post or standard, a tube or cylinder adapted to pass loosely through said sleeve, a yoke secured to the sleeve, a pulley carried by the yoke, a screw passing through one end of the tube or cylinder, a toothed wheel carried by said screw, a shaft passing through the wall of the post or standard, a pinion carried by said shaft and meshing with the toothed wheel, and a hand-wheel carried by said shaft, and a polishing band or belt passing over said pulleys, substantially as set forth.

2. In a polishing-machine, the combination, with a hollow post or upright, of a yoke secured thereto, a pulley carried by said yoke, a sleeve secured to the other side of the post or upright, a cylinder or tube passing loosely through said sleeve and into the hollow post or upright, a screw passing through one end of said cylinder or tube, a bracket secured to said yoke and serving as a bearing for one end of the screw, a toothed wheel carried by the screw, a sleeve passing through the wall of the hollow post or upright, a shaft passing through said sleeve, a pinion carried by said shaft and adapted to mesh with the toothed wheel on the screw, a hand-wheel carried by said shaft, a yoke secured to the cylinder or tube, a pulley carried by said yoke, and a polishing band or belt passing over said pulleys, substantially as set forth.

487,786. HAT-VENTILATING DEVICE. EDWARD J. SHARP, Stockport, England. Filed Mar. 10, 1891. Serial No. 384,454. (Model.) Patented in England Apr. 8, 1890, No. 5,309.



Claim.—In means for ventilating hats and other head-coverings, a spring-band *a*, the ends and middle of which are flexibly secured to the interior of the hat-body, in combination with a sweat-band in front longitudinally divided into two parts *d d'*, the lower part *d* of which is attached to the inner side of the spring-band *a* and the upper part *d'* fitted against the interior of the hat-body to form, respectively, air-spaces *a'* between the lower sweat-band part *d* and the interior of the hat-body, and a passage through the front of the sweat-band for the air to play freely and directly onto the forehead, substantially as and for the purpose set forth.

487,787. TOWER FOR WINDMILLS. KIRK A. SMITH and ANDREW M. WEAD, Kalamazoo, Mich., assignors to Smith & Pomeroy, same place. Filed May 25, 1892. Serial No. 434,336. (No model.)

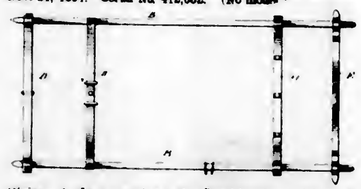
Claim.—1. In a tower for windmills, having posts extending up and down, a coupling-block B to slide up and down the posts and carry the cross-pieces D, said coupling-block provided with a lug *a*, said lug adapted to go through an eye in one end of a brace, and means to hold the brace from slipping off the end of the lug, in combination with a brace for bracing the tower, substantially as specified.

2. In a tower for windmills, the coupling-blocks B, constructed substantially as shown, to have a vertical hole for the upright posts, horizontal holes for the cross-pieces, and a lug or pin *a*, adapted to go through a closed eye or hole in the brace-rods, in combination with suitable brace-rods to brace the tower.

3. In a tower for windmills, the coupling-block B, having an outwardly-projecting lug *a*, in combination with braces having an eye in one end and a thread on the other end, said eye of one brace to go over the lug *a* and to be held in place by means of the threaded end of another brace passing through a hole in the lug *a* outside of the eye of the first brace to act as a key, substantially as specified.

4. In a tower for windmills, braces having an eye or hole in one end and a thread on their other ends, in combination with the projecting lug *a*, adapted to pass through an eye in one brace, while the threaded end of another brace passes through a hole in the outer end of the lug, substantially as and for the purposes specified.

487,788. CARRIAGE. WILLIAM H. SPARKS, Camden, N. J. Filed Nov. 21, 1891. Serial No. 412,632. (No model.)



Claim.—1. In a carriage, the combination, with the body and side bars, of a bar or bolster secured to the rear ends of both said body and said side bars and a spring on which said bar or bolster is secured attached to the rear axle, as set forth.

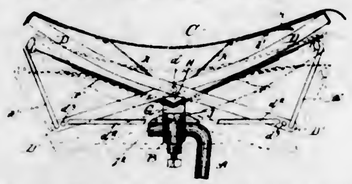
2. In a carriage, the combination, with the body and side bars, of a bar or bolster secured to the rear ends of said side bars and body, a semielliptical spring to which said bar or bolster is secured, and shackles which secure said spring to supports on the rear axle, as set forth.

3. In a carriage, the combination, with the body and side bars, of a bar or bolster secured to the rear ends of said side bars and body, a semielliptical spring, a curved axle and supports thereon, as described, and shackles connecting said supports with the said spring, the spring and bolster being secured together, as set forth.

4. In a carriage, the combination, with the body, side bars, and rear bolster, of an equalizing-bar rigidly secured to said side bars at a suitable point in front of the bolster and a suitable spring secured to said side bars between the equalizing-bar and the front spring of the carriage, as set forth.

5. In a carriage, the combination, with the body and side bars, of an equalizing-bar rigidly secured to said side bars and body and a rear bolster or bar connecting the body, side bars, and rear spring, as set forth.

487,789. BICYCLE-SADDLE. JOHN A. STENBERG, Laverne, Ill. Filed Dec. 7, 1891. Serial No. 414,269. (No model.)



Claim.—1. The saddle for bicycles, consisting of a seat and a rigid frame therefor, combined with a spring and swinging link connections between the frame and the spring, adapted to allow movement in several directions, whereby the saddle may have a backward and forward swinging and a sidewise-rocking motion upon the spring when the rider is on the seat, substantially as specified.

2. The combination of a spring secured to the saddle-shank, a rigid framework carrying the saddle, and links E E', adapted to swing in several directions and connecting the frame-work with the spring, substantially as specified.

3. The saddle having the frame composed of bars having the downwardly-extending pieces D', in combination with the leaf-springs F and the links E E', substantially as specified.

4. The spring for bicycle-saddles, consisting of the leaves F F, combined with the block G, mounted on the saddle-shank, the block H, and screws J, substantially as specified.

5. The spring for bicycle-saddles, consisting of the leaves F F, mounted on the block G between said block, and the clamping-block H, substantially as specified.

6. The frame consisting of the bars D D, having the extensions D' and the rods d^3, in combination with the spring and the links E E', substantially as specified.

7. The saddle-shank for bicycles, having an aperture to receive the saddle-post concaved to fit a convex block, said block b^3 and the set-screws combined together as a means for adjusting the saddle upon the saddle-post into different positions, substantially as specified.

8. The saddle for bicycles, consisting of a saddle-seat and its frame, a spring, and links from the frame to the spring when said links are arranged in such manner that their connection to the spring is nearer to the longitudinal center of the saddle than their connection to the frame, substantially as specified.

9. The spring for bicycle-saddles, composed of the leaves F F, the block G, and the clamping-block H, means for securing the blocks G and H together, and the dowel-pins *g*, passing loosely through holes in the springs, substantially as specified.

10. The combination, with the backwardly and forwardly swinging seat, of a spring supporting said seat, a frame and links connecting said seat and spring, and a strap opposing said spring, the strap being distended by the action of the spring when the rider is not upon the seat and loosened by the depression of the spring when the rider is on the seat, substantially as specified.

11. The combination, in a bicycle, of a seat having a backward and forward swinging motion when occupied, a spring upon which the seat is supported, a frame, and links connecting the seat and spring, and a fastening for rendering the seat rigid when it is not occupied, substantially as specified.

12. The saddle for bicycles, consisting of a saddle-seat and its frame, a spring, and links E and E' from the frame to the spring, said links being arranged to converge downwardly toward each other, substantially as and for the purpose set forth.

13. The saddle for bicycles, consisting of a saddle and its frame, a spring, and two links E and two links E', loosely joined to the spring and frame and arranged in converging lines, as set forth, whereby the saddle is permitted both a backward and forward motion and a sidewise-rocking motion, substantially as described.

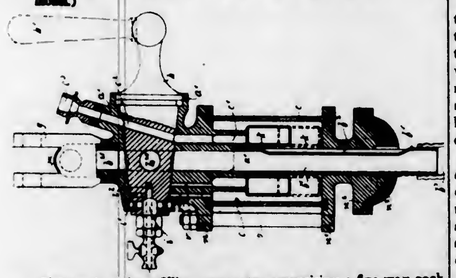
14. The saddle having a frame composed of the pairs of bars D D', each pair fastened together at *d* and suitably joined at the ends, and rods d^3, in combination with the spring and links, substantially as specified.

15. The combination of a saddle, a rigid frame supporting the saddle, a spring mounted upon the seat-post of the bicycle between the sides of the frame and close under the leather top, and swinging and converging links uniting the frame and the springs, substantially as specified.

16. In a bicycle, a saddle, and its frame suspended from a spring by supports, essentially such as described, said supports being adapted to allow a backward and forward vibration compounded with an endwise dropping of the saddle relative to the machine when in use, in combination with said spring and supports, substantially as specified.

17. A sidewise-rocking saddle suspended upon links located at its sides, the links upon each side of the saddle being inclined in an upward direction toward the opposite side, substantially as specified.

487,790. BEER-FILLING APPARATUS. HEINRICH STOCKHEIM, Mannheim, Germany. Filed May 31, 1892. Serial No. 435,051. (No model.)



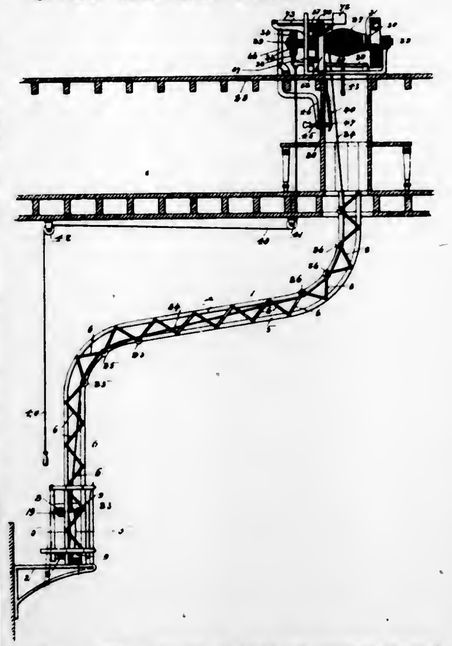
Claim.—1. A beer-filling apparatus comprising a five-way cock for the admission of compressed air, for the entrance of beer, and for the escape of air during and after the filling operation, a float to check automatically the entrance of beer when the cask is filled, an eccentric to lower the apparatus into position for use, and means to counterbalance the weight of the apparatus, for the purpose as described.

2. In a beer-filling apparatus, the combination, with the cock *a'* and its bores *c' c³ b³¹ v v'*, of the plug *h* and its bores *c³ b³⁰ i i' i³*, and the cock *z*, provided in the continuation of bore i, substantially as and for the purpose described.

3. In a beer-filling apparatus, the combination, with the cock *a'*, of the collars *n n'*, the uprights *o*, glass cylinder *c*, float *k*, cap n^1, washer n^2, and tube *b'*, having lateral grooves b^3, substantially as and for the purpose described.

4. In a beer-filling apparatus, the combination, with the cock *a'*, of the forks *g g'*, the bar g^2, and eccentric g^4, substantially as and for the purpose described.

487,791. NEWSPAPER-ELEVATOR. ALLISON R. STOWE, Chicago, Ill., assignor to himself and George A. Montgomery, same place. Filed Apr. 9, 1892. Serial No. 428,587. (No model.)



Claim.—1. The combination of a track, a box adapted to travel on the track, a drum-shaft, a longitudinally-movable hoisting-drum mounted on the drum-shaft, driving mechanism having operative connection with the hoisting-drum for driving the latter, a rope connecting the box with the hoisting-drum, and screw mechanism operated by the action of the box when it reaches its highest elevation for shifting the hoisting-drum longitudinally out of operative connection with the driving mechanism, substantially as described.

2. The combination of a track, a box adapted to travel on the track, a drum-shaft, a lengthwise-movable hoisting-drum mounted on the drum-shaft, driving mechanism having operative connection with the hoisting-drum for driving the latter, a rope connecting the box with the hoisting-drum, a screw-shaft connected with the drum, and rack-and-gear mechanism operated by the action of the box when it reaches its highest position for rotating the screw-shaft to shift the hoisting-drum longitudinally out of operative connection with the driving mechanism, substantially as described.

3. The combination of a shaft, a driving-pulley mounted on the shaft and having a clutch-section, a longitudinally-movable hoisting-drum arranged on the shaft and having a clutch-section, a rope connecting the box with the hoisting-drum, and screw mechanism operated by the action of the box when it reaches its highest position for shifting the hoisting-drum longitudinally out of engagement with the driving-pulley, substantially as described.

4. The combination of a track, a box adapted to travel on the track, a hoisting-drum, a driving mechanism for operating the drum,

a rope connecting the drum with the box, mechanism operated by the action of the box when it reaches its highest position for disengaging the drum from operative connection with the driving mechanism, a device arranged in the path of the box and engaging and supporting the latter when it reaches its highest position, and mechanism under control of an operator for disengaging said device from the box, substantially as described.

5. The combination of a track, a box adapted to travel on the track, a hoisting-drum, a shaft on which the drum is longitudinally movable, driving mechanism having operative connection with the drum for driving the latter, a rope connected with the box and adapted to be wound upon the drum, and mechanism operated by the direct action of the box when it reaches its highest elevation for shifting the drum longitudinally out of operative connection with the driving mechanism, substantially as described.

6. The combination of a track, a box adapted to travel on the track, a hoisting-drum, a driving mechanism having operative connection with the drum for rotating the latter, a rope connected with the box and adapted to be wound upon the drum, devices operated by the box for automatically throwing the driving mechanism out of operative connection with the hoisting-drum when the box reaches its highest position, devices for temporarily supporting the box in its highest position, and means for automatically locking the drum against rotation when thrown out of operative connection with the driving mechanism, substantially as described.

7. The combination, with a shaft, a pulley mounted thereon, and a clutch-section carried by the pulley, of a drum mounted upon the shaft and having a clutch-section at one end, an externally-screw-threaded sleeve mounted upon and movable along the length of the drum-shaft, a screw-threaded bearing for the sleeve, and means for rotating the sleeve on the drum-shaft for shifting the drum and causing its clutch-section to engage the clutch-section on the pulley, substantially as described.

8. The combination of a track, a box having wheels adapted to travel on the track, a drum-shaft, a pulley mounted on the drum-shaft and having a clutch-section, a drum mounted on the said shaft and having a clutch-section, a screw-threaded sleeve mounted upon and movable along the length of the drum-shaft, a screw-threaded bearing for the sleeve, and mechanism operated by the direct action of the box when it reaches its highest elevation for turning the sleeve and causing it to shift the drum and thereby throw the clutch-section on the drum out of operative connection with the clutch-section on the pulley, substantially as described.

9. The combination, with a track, a box adapted to move upon said track, a shaft, a drum mounted upon said shaft, and a clutch-section carried by said drum, of a pulley mounted upon said shaft, a clutch-section carried by said pulley and adapted to engage the clutch-section carried by said drum, a screw-sleeve connected to said drum, means for rotating said sleeve in one direction to throw said clutch-sections into engagement with each other, and automatically-operating mechanism for rotating the sleeve in the opposite direction when the box reaches its highest position, substantially as and for the purpose specified.

10. The combination of a track, a box adapted to travel on the track, a drum-shaft, a drum mounted on the drum-shaft and having a clutch-section, a rope connecting the drum with the box, a pulley mounted on the drum-shaft and having a clutch-section, a screw-threaded sleeve connected with the drum and mounted upon and movable along the length of the drum-shaft, a gear-wheel secured to one end of the sleeve, a screw-threaded bearing for the screw-threaded sleeve, a reciprocating rack engaging the gear-wheel, and means whereby the rack can be operated from a point in juxtaposition to the lower end of the track for throwing the clutch-section of the drum into engagement with the clutch-section of the pulley, substantially as described.

11. The combination of a track, a box adapted to travel on the track, a drum-shaft, a drum mounted on the drum-shaft and having a clutch-section, a rope connecting the drum with the box, a pulley mounted on the shaft and having a clutch-section to engage the clutch-section on the drum, a screw-threaded sleeve connected with the drum and mounted upon and adapted to move along the length of the drum-shaft, a gear-wheel mounted on the sleeve, a screw-threaded bearing for the screw-threaded sleeve, a rack engaging the gear-wheel, means for moving the rack in one direction to throw the clutch-section of the drum into engagement with the clutch-section on the pulley, and devices operated by the box when it reaches its highest position to automatically throw the clutch-section on the drum out of engagement with the clutch-section on the pulley, substantially as described.

12. The combination, with hoisting mechanism, a box adapted to be hoisted thereby, and mechanism operated by the box when it reaches its highest position for throwing the hoisting mechanism out of action, of a device arranged in juxtaposition to the point where the box reaches its highest position for engaging and supporting said box after the hoisting mechanism is thrown out of action and mechanism under control of an operator for disengaging said device from the box, substantially as described.

13. The combination, with a track, a box mounted upon said track, a shaft, a drum mounted upon said shaft, a rope connecting said drum to said box, whereby by the rotation of said drum the rope will be wound upon it, and a clutch-section carried by said drum, of a pulley mounted upon said shaft, a clutch-section carried by said pulley and adapted to engage the clutch-section carried by said drum, a screw-sleeve mounted upon said shaft and connected to said drum, a gear-wheel mounted upon said sleeve, a rack adapted to intermesh with said gear-wheel, a bearing for said sleeve, means for moving said rack downward, and devices for automatically moving said rack upward to throw said clutch-section out of engagement with each other, substantially as and for the purpose specified.

14. The combination, with a track, a box mounted upon said track, a shaft, a drum mounted upon said shaft, a rope connecting said drum to said box, whereby by the rotation of said drum the rope will be wound upon it, and a clutch carried by said drum, of a pulley mounted upon said shaft, a clutch carried by said pulley and adapted to engage the clutch carried by said drum, a screw-sleeve mounted upon said shaft and connected to said drum, a gear-wheel mounted upon said sleeve, a screw-bearing for said screw-sleeve, a rack adapted to intermesh with said gear-wheel, a lever 39, connected to said rack, and a rod 43, depending from said lever 39 in position to be struck by said box when it reaches its uppermost point, whereby said rack will be moved upward and the clutches thrown out of engagement with each other, substantially as and for the purpose specified.

15. The combination, with a shaft, a drum 27, mounted thereupon, and a clutch-section 30 on one end of said drum, of a pulley 32, mounted upon said shaft, a clutch-section 31, carried by said pulley, a screw-sleeve 33, connected to said drum, a fixed bearing 36 for said screw-sleeve, a gear-wheel 34, mounted upon said sleeve, a rack 38, adapted to intermesh with said gear-wheel, a lever 39, connected to said rack, a rod 43, attached to and depending from said lever 39, a rope 24, adapted to be wound upon said drum 27, a box connected to said rope, and a track for said box, the upper end of said track terminating under said rod 43, substantially as and for the purpose specified.

16. The combination, with a track and a box adapted to move upon said track, of a rotatable drum, a rope connecting said drum to said box, whereby by rotating said drum said box may be moved upon said track, a ratchet-wheel 35, connected to said drum, a pawl 51, adapted to engage the teeth on said ratchet-wheel, levers 49 and 50, arm 79, connecting-rod 48, lever 46, pin 45, mounted on the lower end of said lever 46, pin 80, rack-bar 38, a rack 44, depending over said pin 45, spring 47 upon said pin, adapted to hold said rack 44 out of the perpendicular, and a lug 18 on said box, adapted to engage the teeth of said rack 44, substantially as and for the purpose specified.

17. The combination, with a box 7, of a shaft 13, mounted therein, arms 11 and 12, carried by said shaft, and a spring 17 upon said shaft, adapted to hold said arms in a vertical position, substantially as described.

18. The combination, with a drum, a track, a box adapted to travel on the track, and a rope connecting the drum with the box, of mechanism for rotating the drum to wind up the rope, and thereby elevate the box on the track, said rotating mechanism being adapted to be thrown out of gear to permit the box to descend by gravity, and a brake operated by the rotation of the drum when the box is descending for retarding the motion of the drum when the drum-rotating mechanism is thrown out of gear, substantially as described.

19. The combination, with a drum, a track extending downward from a point near said drum, a box adapted to move upon said track, and a rope connecting said drum and said box, of mechanism for rotating said drum to elevate said box, means for throwing said mechanism out of gear to permit said box to descend, a brake to retard the rotation of said drum, and means for automatically throwing said brake into operation when the box has nearly reached its lowermost position, substantially as described.

20. The combination, with a drum, of a disk 70, connected thereto, said disk having a deflected portion 71, a disk 67, pins 68, mounted thereupon, a brake-wheel 53, connected to said drum, a brake-band 52, passing over said brake-wheel, a dog 54, connected to one end of said brake-band, stop adapted to be engaged by said dog to hold said brake-band out of operation, spring adapted to tightly draw said brake-band upon said brake-wheel, and mechanism operated by the rotation of said disk 67 to release said dog 54, substantially as and for the purpose specified.

21. The combination, with a drum, a rope adapted to be wound upon said drum, and a paper-carrying box connected to said rope, of a brake-wheel 53, a brake-band 52, passing over said brake-wheel, dog 54, connected to one end of said brake-band, a stop adapted to be engaged by said dog to hold said brake-band out of operation,

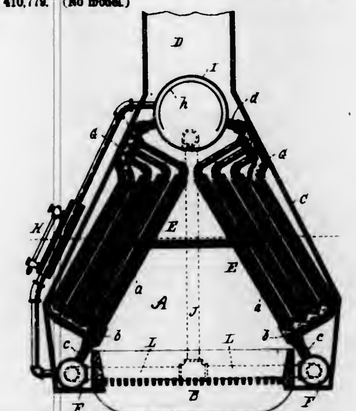
lever 55, connected to said dog 54, spring 56, exerting a downward pressure upon said lever 55, means for releasing said dog to set the brake, and devices for throwing said dog into engagement with its stop, so that the drum may be rotated to wind up said rope, substantially as described.

22. The combination, with a drum, a brake-wheel 53, connected thereto, and a disk 70, connected to said brake-wheel, said disk having a deflected portion 71, of a disk 67, pins 68, mounted upon said disk 67, a pin 69, projecting from the under side of said disk 67, a brake-band 52, passing over said brake-wheel, a dog 54, connected to one of the ends of said brake-wheel, plate 57, adapted to be engaged by said dog, a lever 55, connected to said dog, spring 56, connected to said lever and exerting a downward pressure thereupon, a block 58, mounted upon said plate 57 and adapted to be engaged by said pin 69 and to be thrown outward thereby to disengage said dog 54 from said plate 57, a spring 64, connected to said block and to said plate 57, and means for returning said dog 54 into engagement with said plate 57, substantially as described.

23. The combination, with a shaft, a drum mounted thereupon, and a sleeve 33, mounted upon said shaft and connected to said drum, a gear-wheel 34, mounted upon said sleeve, and a bearing 36 for said sleeve 33, of a rack 38, intermeshing with the teeth of said gear-wheel, said rack having a lug 77, a clutch-section carried by said drum, a pulley mounted upon said shaft, a clutch-section carried by said pulley and adapted to engage the clutch-section carried by said drum, a brake-wheel 53, connected to said drum, a brake-band 52, passing around said brake-wheel, lever 73, connected to said brake-band 52, a weight 72, carried by said lever, and a lever 76, bearing against the under side of said lever 73 and adapted to be engaged by said lug 77 when the rack 38 is depressed, substantially as and for the purpose specified.

24. The combination, with a track 1 and a box 7, of a hinged rod 19 and a spring 21, adapted to hold said rod in position to engage said box to retard the downward motion of said box, substantially as described.

487,792. STEAM-GENERATOR. THOMAS L. STURTEVANT and THOMAS J. STURTEVANT, Framingham, Mass. Filed Nov. 3, 1891. Serial No. 410,779. (No model.)



Claim.—1. In a steam-generator, the combination, with a water-drum extending on one or more sides of the furnace and water-legs connected therewith, of a steam-drum having steam and water receivers connected thereto and a series of inclined steam-generating tubes connecting said water-legs and steam and water receivers, substantially as set forth.

2. In a steam-generator, the combination, with a water-drum extending on one or more sides of the furnace and water-legs connected therewith, of a steam-drum located centrally of the furnace and having steam and water receivers connected thereto, and a series of steam-generating tubes of different lengths connecting said water-legs and steam-receivers, the outer tubes of each series being connected directly to said steam-receivers and serving as water-return pipes, substantially as set forth.

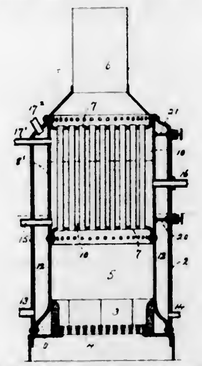
3. In a steam-generator, the combination, with a water-drum and water-legs connected therewith, of a steam-drum having steam and water receivers connected thereto, and a series of steam-generating tubes of different lengths connecting said water-legs and steam-receivers, each of said generating-tubes being provided with an interior circulating-pipe, substantially as set forth.

4. A sectional water-tube boiler having a steam-discharge, the water or mud drum below, and multiple sections connected with and rising therefrom, an intermediate water-leg which connects the individual steam-generating pipes at the bottom with the water-drum, and a steam and water receiver whereby the steam-generating pipes nearest the fire are connected at the top with the corresponding pipes farthest from the fire, so that each pipe of a section shall act as a separator for the other pipes in that section to retain water and deliver steam, and an indicator to show the water-level in said steam-generating pipes, substantially as explained.

5. A sectional water-tube steam-generator consisting of two rows of water-tube sections, substantially as shown, placed upon opposite sides of the fire-chamber and inclined toward each other above the fire, as described, with steam-discharge, a water-supply, and an indicator to show the general water-level existing in the steam-generating pipes of said sections, for the purposes specified and explained.

6. In a steam-generator, the combination, with a steam-drum arranged at the upper part thereof and a water-drum arranged at the base thereof, of a water-leg connected with said water-drum, a steam-receiver connected with the said steam-drum, and a series of inclined independent sections communicating at their lower ends with the said water-leg and connected at their upper ends with the said steam-receiver, the said steam-receiver, inclined sections, and water-leg forming a connection between the said water-drum and steam-drum.

487,798. BOILER. THOMAS L. STURTEVANT and THOMAS J. STURTEVANT, Framingham, Mass. Filed May 9, 1892. Serial No. 432,264. (No model.)



Claim.—1. A boiler for steam-generating purposes composed of two upright water-tight receptacles the tops of which are at approximately the same height, each having an independent water-space, which is separated from the water-space of the other, and each being provided with independent water-supply and blow-off pipes, combined with a common steam-delivery pipe, whereby different water-levels may be carried in the same boiler with a common steam-space, substantially as explained.

2. In a vertical boiler, the combination, with two upright steam-generators the tops of which are at approximately the same height and one of which is inclosed within the other, said generators having independent water-spaces, the water-space of one being separated from the water-space of the other, of a fire-box common to both, a common steam-delivery pipe, and interconnecting steam-spaces at the upper portions of said generators, substantially as specified.

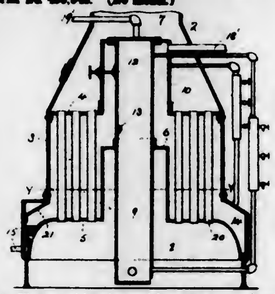
3. The combination, with two steam-boilers, one inclosed by the other and adapted to have the inside shell or partition 8 common to both, of valves for connecting said boilers, a fire-box in common to both, independent supply and blow-off pipes for each, and independent steam-delivery pipes, substantially as described.

4. The combination, with a steam-boiler having the inner shell 8, two independent feed-pipes, and a common steam-delivery, of two water-gages and two independent blow-off pipes, whereby different kinds of water and different water-levels can be carried, substantially as stated and set forth.

5. A vertical tubular steam-generator having a water-space 10, an inclosing outside steam-generator 2, provided with a water-space 12, combined with a fire-box in common to both, independent supply-pipes for each generator, and a common steam-delivery pipe, substantially as explained.

6. A steam-generator, an outside inclosing steam-generator 2, and a fire-box in common to both, combined with means for interconnecting the water-spaces of said generators, separate steam-delivery pipes for each generator, together with independent feed-pipes for the same, substantially as set forth.

487,794. VERTICAL TUBULAR BOILER. THOMAS L. STURTEVANT and THOMAS J. STURTEVANT, Framingham, Mass. Filed July 11, 1892. Serial No. 439,646. (No model.)



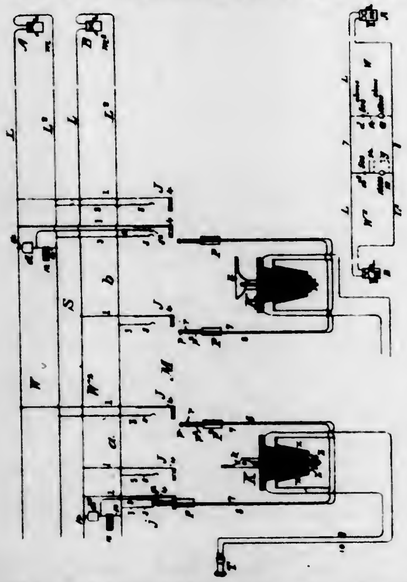
Claim.—1. The combination, with a generator having an annular group of vertical tubes, of a steam-dome surmounting that portion not supplied with tubes and an inclosed central generator adapted to extend within said dome and project below the tubular generator, substantially as specified.

2. In combination, with a vertical tubular generator and its annular offset water-leg, of the steam-dome which surrounds said generator and the generator 9 inclosed by the first and adapted to project into the fire-chamber below and into the steam-dome above, substantially as stated.

3. In a steam-boiler, the combination, with a group of vertical flues, an inclosed central generator, and a steam-dome which surmounts said generator, as described, of a crown-plate provided with a retreating cylindrical portion, whereby the heating-surface of both the inner and outer generators is increased, substantially as and for purposes explained.

4. A vertical tubular boiler consisting of a generator with a group of flues adapted to unite the stack with the fire-chamber, a central inclosed generator, an offset water-leg which surrounds said fire-chamber, a steam-dome surmounting said generator, and a crown-sheet formed with a concave portion serving as the inside wall and bottom of said water-leg, all substantially as shown and described.

487,795. MULTIPLE-SWITCHBOARD SIGNAL. GILES TALBOTT, Keene, N. H., assignor, by mesne assignments, to the Western Electric Company, of Illinois. Filed Apr. 7, 1892. Serial No. 428,199. (No model.)

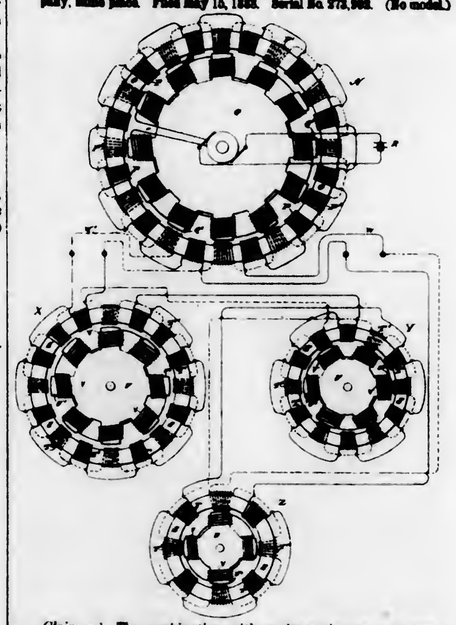


Claim.—1. In a central-station-connecting apparatus, the combination, with the call-annunciator, of an auxiliary resistance normally in circuit therewith, a normally-discontinuous shunt-circuit round said auxiliary resistance, and a circuit-closer therefor, mounted in a spring-jack or plug-socket connected with the main-line circuit of said annunciator and adapted to be operated and to shunt said resistance by the act of inserting the plug in said socket to make a main-line connection.

2. The combination, in a multiple switchboard, of a metallic circuit, a call-annunciator therefor bridged between the conductors thereof at some one of the switchboard sections, a spring-jack or plug-socket connected by branch conductors with said circuit at each switchboard-section, a similarly-connected additional or answering jack or plug-socket at the said annunciator-section, a high auxiliary resistance included in the annunciator-bridge, plug-connectors united in pairs by flexible conductors and adapted to fit the said plug-sockets for the purpose of connecting any two circuits together, and a normally-open shunt-circuit round the said auxiliary resistance, having separated terminals in the answering-jack, which terminals are adapted to be electrically united by the insertion of the plug-connector in said answering-jack, substantially as and for the purposes described.

3. In a system of telephonic intercommunication, two telephone-circuits, each extending from terminal sub-stations to two or more switchboard-sections at a central station and united at one of such sections to form a compound through-circuit, call-sending generators at each sub-station, and two bridge-conductors uniting the direct and return main conductors of said compound circuit at said central station, one containing a call-annunciator located at the switchboard-section where the said two circuits are united and the other located at some other section and containing a call-annunciator and a high supplementary resistance, substantially as described, and for the purpose set forth.

487,796. SYSTEM OF ELECTRICAL TRANSMISSION OF POWER. NIKOLA TESLA, New York, N. Y., assignor to the Tesla Electric Company, same place. Filed May 15, 1888. Serial No. 273,982. (No model.)



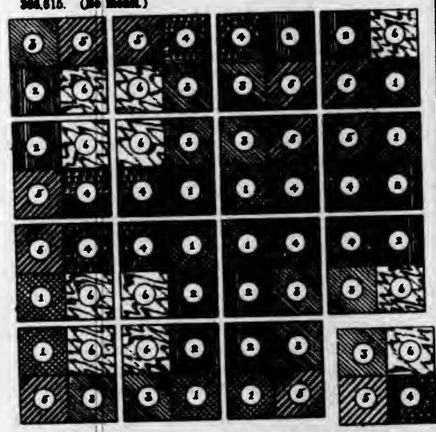
Claim.—1. The combination, with an alternating-current generator comprising independent armature-circuits formed by conductors alternately disposed, so that the currents developed therein will differ in phase, and field-magnet poles in excess of the number of armature-circuits, of a motor having independent energizing-circuits connected to the armature-circuits of the generator, substantially as set forth.

2. The combination, with a source of alternating currents which differ in phase and comprising a rotating magneto-electric machine yielding a given number of current impulses or alternations for each turn or revolution, of a motor or motors having independent energizing-circuits through which the said currents are caused to flow, and poles which in number are less than the number of current impulses produced in each motor-circuit by one turn or revolution of the magneto-machine, as set forth.

3. The combination, with a multipolar alternating-current machine having independent induced or current-generating circuits, of motors having independent energizing-circuits and a smaller number of poles than the generator, as set forth.

4. The combination, with an alternating-current generator having independent induced circuits and constructed or adapted to produce a given number of current impulses or alternations for each turn or revolution, of motors having corresponding energizing-circuits and poles which in number are less than the number of current impulses produced in each circuit in a turn or revolution of the generator, as set forth.

487,797. PUZZLE. EDWIN L. THURSTON, Cleveland, Ohio, assignor to Leonard Watson, Denver, Colo. Filed Sept. 30, 1890. Serial No. 366,615. (No model.)



Claim.—1. A puzzle composed of a number of four-sided tablets in the form of parallelograms, the surface of each tablet being divided into four substantially-equal sections, each section containing one of the several symbols, of which the same symbol does not appear twice on any tablet, and no two tablets bear the same four symbols, said tablets being adapted to be arranged in contact and form some prescribed outline figure when the touching sections of contiguous tablets contain the same symbol.

2. A puzzle composed of fifteen parallelogrammatic tablets, each having its upper surface at and near the edges divided into four substantially-equal sections, each section containing one of six symbols which are disposed upon said tablets in the following manner, viz: the same symbol does not appear twice on any tablet and no two tablets bear the same four symbols, all of said tablets being adapted to be arranged in contact to form a parallelogrammatic outline figure (having one vacant space) when the touching sections of contiguous tablets contain the same symbols.

3. A puzzle composed of fifteen parallelogrammatic tablets, each having its upper surface at and near the edges divided into four substantially-equal sections, each section containing one of six symbols which are disposed upon said tablets in the following manner, viz: the same symbol does not appear twice on any tablet and no two tablets bear the same four symbols, all of said tablets being adapted to be arranged in contact to form a parallelogrammatic outline figure (having one vacant space) when the touching sections of contiguous tablets contain the same symbols, combined with a sixteenth tablet similar to the others in shape and in having its surface similarly divided into sections which contain four of said symbols, said tablet being adapted to fill said vacant space and to match in the described manner with the adjacent tablets.

4. A puzzle composed of fifteen square tablets, each having its upper surface at and near the edges divided into four substantially-equal sections, each section containing one of six symbols which are disposed upon said tablets in the following manner, viz: the same symbol does not appear twice on any tablet and no two tablets bear the same four symbols, said tablets being adapted to be arranged in contact to form a square (having one vacant space) when the touching sections of contiguous tablets contain the same symbols.

5. A puzzle composed of fifteen square tablets, each having its upper surface at and near the edges divided into four substantially-equal sections, each section containing one of six symbols, which are disposed upon said tablets in the following manner, viz: the same symbol does not appear twice on any tablet and no two tablets bear the same four symbols, said tablets being adapted to be arranged in contact to form a square (having one vacant space) when the touching sections of contiguous tablets contain the same symbols, combined with a sixteenth square tablet similar to the other tablets in that its surface is similarly divided into sections which contain four of said symbols, said tablet being adapted to fill said vacant space and to match in the described manner with the adjacent tablets.

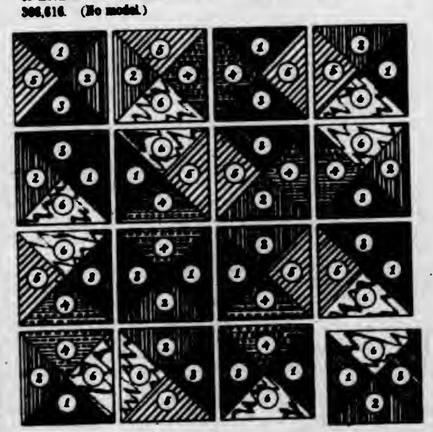
6. A puzzle composed of fifteen square tablets, each having its upper surface at and near the edges divided into four equal sections, each of which extends from the middle of one side to the middle of an adjacent side, each section containing one of six symbols which are disposed upon the tablets in the following manner, viz: the same symbol does not appear twice on any tablet and no two tablets bear the same four symbols, said tablets being adapted to be arranged in contact to form a square (having one vacant space) when the touching sections of contiguous tablets contain the same symbols.

7. A puzzle composed of fifteen square tablets, each having its upper surface at and near the edges divided into four equal sections, each of which extends from the middle of one side to the middle of an adjacent side, each section containing one of six symbols which are disposed upon the tablets in the following manner, viz: the same symbol does not appear twice on any tablet and no two tablets bear the same four symbols, said tablets being adapted to be arranged in contact to form a square (having one vacant space) when the touching sections of contiguous tablets contain the same symbols, combined with a sixteenth square tablet similar to the others in that its surface is similarly divided into sections which contain four of said symbols, said tablet being adapted to fill said vacant space and to match in the described manner with the adjacent tablets.

8. A puzzle composed of fifteen square tablets, each of which is divided into four equal sections by lines which extend from the middle of one side to the middle of the opposite side, each section being colored in one of six different colors which are disposed upon said tablets in the following manner, viz: no tablet has two sections of the same color and no two tablets have four similarly-colored sections, said tablets being adapted to be arranged in contact to form a square (having one vacant space) when all of the touching sections of contiguous tablets are similarly colored.

9. A puzzle composed of fifteen square tablets, each of which is divided into four equal sections by lines which extend from the middle of one side to the middle of the opposite side, each section being colored in one of six different colors which are disposed upon said tablets in the following manner, viz: no tablet has two sections of the same color and no two tablets have four similarly-colored sections, said tablets being adapted to be arranged in contact to form a square (having one vacant space) when all of the touching sections of contiguous tablets are similarly colored, combined with a sixteenth square tablet similar to the others in that its surface is similarly divided into sections which are colored in four of said colors, said tablet being adapted to fill said vacant space and to match in the described manner with the adjacent tablets.

487,798. PUZZLE. EDWIN L. THURSTON, Cleveland, Ohio, assignor to Leonard Watson, Denver, Colo. Filed Sept. 30, 1890. Serial No. 366,616. (No model.)



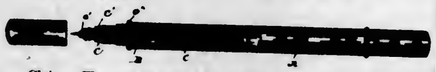
Claim.—1. A puzzle consisting of a number of equal-sized tablets in the form of a parallelogram, the surface of each of which is divided by lines running diagonally from corner to corner into four triangular sections, each section containing a symbol, of which the same symbol

does not appear twice on the same tablet and no two tablets bear the same four symbols, with one possible exception, said symbols being disposed upon the several tablets in such manner that the entire number of tablets may be laid in contact when the touching sections on contiguous tablets contain the same symbol.

2. A puzzle composed of fifteen rectangular tablets, the surface of each tablet being divided into four triangular sections, the division line between them extending diagonally from corner to corner, each section containing one of six different symbols, said symbols being arranged on the several tablets, substantially as shown and described, whereby no two tablets contain the same four symbols, and all the tablets are adapted to be laid in contact and form a rectangle from which one tablet is missing when the touching sections of contiguous blocks contain the same symbol, with or without a sixteenth tablet, similarly shaped and divided, bearing four of said symbols and adapted to fit the vacant space and complete the rectangle.

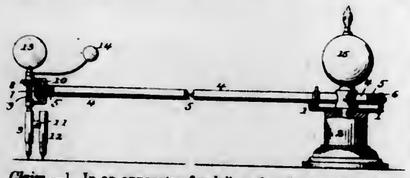
3. A puzzle composed of fifteen square tablets, the surface of each of which is divided into four triangular sections, each section being colored one of six different colors, said colors being applied to the several tablets in such manner, substantially as shown and described, that no two tablets have four similarly-colored sections, and that all the tablets may be laid in contact and form a large square from which one corner-block is missing when the touching sections of contiguous blocks are similarly colored, with or without a tablet similarly shaped and divided and colored to adapt it to fill the said corner space, substantially as specified.

487,799. LEAD-PENCIL ATTACHMENT FOR FOUNTAIN-PENS. JOHN R. TOWNSEND, Bloomsburg, Pa. Filed Feb. 29, 1892. Serial No. 423,196. (No model.)



Claim.—The combination of a tubular pen-body, a plug having an opening extending centrally therethrough, and an exterior limiting-bead adapted to abut against the front end of the said pen-body, and a shoulder in advance of said bead, a tube inserted through and projecting beyond the opposite end of said plug and having an inner closed end and an outer split end, both ends of said tube extending beyond the ends of the plug and adapted to hold and receive lead, and a cap or slide having the inner end thereof bearing against the shoulder of the plug that is located in advance of the bead thereof, and another shoulder of less diameter bearing against the front terminating end of said plug, said slide being removably fitted over the said plug and controlling the feed of the lead in the tube carried by said plug, substantially as described.

487,800. APPARATUS FOR DELINEATING THE MOON'S ORBIT. JOSEPH TROLL, Belleville, Ill. Filed Apr. 12, 1892. Serial No. 429,001. (No model.)

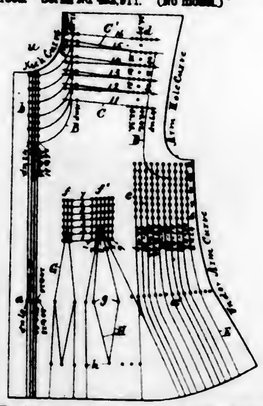


Claim.—1. In an apparatus for delineating the moon's orbit, the combination of the main radial arm 4, pivoted at its inner end, a shaft or sleeve 9, journaled at the outer end of the arm 4 and carrying a marking-point, a shaft or sleeve 12, connected to the shaft 9 and carrying a marking-point, and means for imparting motion to the shaft 12 around the shaft 9, substantially as set forth.

2. In an apparatus for delineating the moon's orbit, the combination of the main radial arm 4, a shaft or sleeve 9, journaled at the outer end of the arm 4 and carrying a marking-point, a shaft or sleeve 12, connected to the shaft 9 and carrying a marking-point, the arbor 3, and fixed gear 1, concentric therewith, the spindle 5, having at one end a gear 6, meshing with the gear 1, and at the other end a bevel-gear 7, and a bevel-gear 8 on the vertical shaft or sleeve 9, meshing with the gear 7, substantially as set forth.

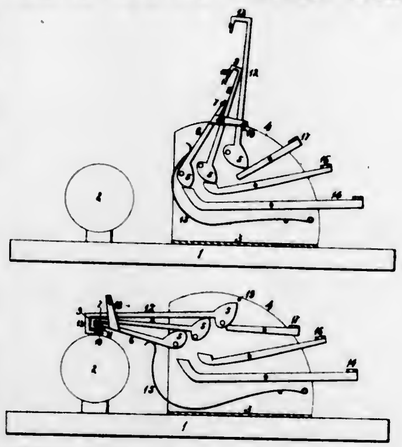
3. In an apparatus for delineating the moon's orbit, the combination of the main radial arm 4, a shaft or sleeve 9, journaled at the outer end of the arm 4 and carrying a marking-point, a shaft or sleeve 12, connected to the shaft 9 and carrying a marking-point, the arbor 3, and fixed gear 1, concentric therewith, the spindle 5, having at one end a gear 6, meshing with the gear 1 and at the other end a bevel-gear 7, the bevel-gear 8 on the vertical shaft or sleeve 9, the globes 13 and 14, carried by the shaft or sleeve 9, and lamp 15, mounted above the arbor 3, substantially as set forth.

487,801. DRESS-CHART. BENJAMIN VIAU, New York, N. Y. Filed May 13, 1892. Serial No. 432,911. (No model.)



Claim.—The front-pattern provided with the series of gage-points *a* and the series of perforations *g* and *a'* upon the waist-line, and provided with the parallelogram of holes *b* for the front of the neck, the parallelogram of holes *e* for length of waist under arm, and the parallelograms of holes *f* and *f'* for the tops of the darts, the said parallelograms being arranged as described and being provided with the scale-numbers corresponding to the various measures, as and for the purpose set forth.

487,802. TYPE-WRITING MACHINE. CHARLES W. WALKER, Strang, Nebr. Filed July 20, 1892. Serial No. 440,690. (No model.)



Claim.—1. In a type-writer, a series of type-bars located one behind the other in the same vertical plane and a key for each type-bar.

2. In a type-writer, a series of type-bars located one behind the other, each type-bar, excepting the first, provided with a hooked end, and a key for each type-bar.

3. In a type-writer, a series of type-bars located one behind the other, each succeeding type-bar covering the type of all preceding type-bars when they are operated, and keys for operating the type-bars.

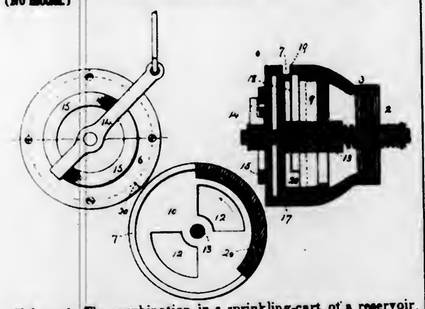
4. In a type-writer, a series of type-bars located one behind the other in the same vertical plane, a key for each type-bar, and a spring for holding the series of type-bars in their normal position.

5. In a type-writer, a series of type-bars located one behind the other, a key for each type-bar, and a guide for the type-bars, secured to the first type-bar.

487,808. APPARATUS FOR ROLLING PLATE-GLASS. EDWARD WALSH, Jr., St. Louis, Mo. Filed Jan. 4, 1892. Serial No. 416,970. (No model.)

Claim.—In apparatus for forming corrugated plate-glass, the combination, with a bed having continuous or uninterrupted longitudinal work-channels and rack-channels parallel therewith, of a roller having ribs or corrugations which correspond with the bed-channels, pinions on the roller-shaft of substantially-equal diameter with the roller, and vertically-adjustable racks arranged in the rack-channel of the bed, substantially as and for the purposes specified.

487,804. STREET-SPRINKLER. HENRY T. WALSH and MATTHEW SALLENGER, Boston, Mass. Filed Mar. 19, 1892. Serial No. 425,587. (No model.)



Claim.—1. The combination, in a sprinkling-cart, of a reservoir, a cylindrical sprinkling-shell suitably communicating therewith and provided with a circumferential discharge-opening, an oscillating valve within said shell to control the water-supply, an interior revoluble gate to regulate the length and width of said circumferential discharge-opening, and means for simultaneously operating said valve and gate, substantially as set forth.

2. A sprinkling or spraying nozzle having a semi-circumferential discharge-aperture, an axially-movable valve-stem with endwise movement, an internal valve thereupon to admit passage of liquid through the nozzle, and a revoluble gate likewise upon said valve-stem to regulate the width and length of the discharge-opening, substantially as described.

3 The combination, in a sprinkling-cart, of a reservoir, cylindrical sprinkler-heads suitably communicating therewith and provided with circumferential discharge-openings, spring-pressed endwise-movable rotary valve-stems within said shells, each of said valve-stems having mounted thereon a valve to control the water-supply to said head, and a gate to regulate the length and width of said circumferential discharge-openings, and thereby control the length of throw and the water-discharge of said sprinkler-head, and means for operating said valve-stem to actuate said valve and gate, substantially as described.

487,805. MEANS FOR TRANSMITTING POWER. WILLIAM R. WALSH, San Francisco, Cal., assignor of one-half to William R. Craig, same place. Filed May 2, 1892. Serial No. 431,451. (No model.)

Claim.—1. In combination with the propelling-cable of an endless-cable railway, the shaft G, having a sheave or pulley H in contact with the cable, the pivoted yoke or carrier M, boxes for the shaft, weight R applied to the said carrier to counterbalance the weight of the shaft and its pulley, supports for said yoke, pulley $H^{\times}$ on said shaft, a dynamo, belt for connecting said pulley with said dynamo, and a storage-battery, all constructed and arranged substantially as and for the purpose set forth.

2. In combination with the propelling-cable of an endless-cable railway, the shaft G, having a sheave or pulley H in contact with the cable, the pivoted yoke or carrier M, supporting said shaft, weight R applied to said carrier to counterbalance the weight of the shaft and its pulley, pulley $H^{\times}$ on said shaft, and a dynamo connected to said pulley, all constructed and arranged substantially in the manner and for the purpose set forth.

3. In combination with the propelling-cable of an endless-cable railway, the shaft G, having a sheave or pulley H in contact with the cable, the pivoted yoke or carrier M, having boxes for the shaft, and a weight R applied to the said carrier to counterbalance the weight of the shaft and its pulley, substantially as hereinbefore described.

487,806. HEATER FOR STOCK-TANKS. CLINTON A. WEED, Racine, Wis. Filed Feb. 20, 1892. Serial No. 422,240. (No model.)

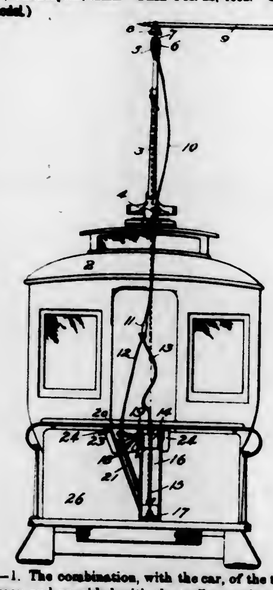
Claim.—The combination, with the tank, of the heater located therein and provided with a smoke-flue and having a flange at its outer end, the bolts for securing the flange to the tank, the hinged door, the longitudinal ribs or ledges upon the interior of the cylinder, and the sliding grate having the downwardly-depending wing or flange, substantially as described.

487,807. CULTIVATOR. JOHN H. WHEDEL, North Topeka, Kans. Filed July 9, 1892. Serial No. 439,503. (No model.)

Claim.—1. The combination, with the standard, the foot U-shaped in cross-section embracing the lower end of the standard pivoted thereto and having its rear upper edges curved and provided with a series of pairs of perforations, and a U-shaped clip embracing the standard near its upper end, bolted thereto, and provided at its rear ends with a pair of perforations, of a flat spring terminating at its ends in eyes, pins passed through the eyes and connecting the spring with the perforations of the foot and clip, substantially as specified.

2. The combination, with the standard, the U-shaped foot embracing the lower end thereof and pivoted to the standard and having its rear upper corner curved and provided with opposite series of pairs of perforations, and the U-shaped clip bolted to the standard and having its rear ends provided with perforations, of the flat spring terminating at its ends in eyes, pins passing through the eyes of the spring and through the perforations of the clip and shoe, a threaded opening formed in the standard between the points of connection of the spring, and a threaded bolt or regulating-screw passed through the opening and at its rear end bearing on the spring, substantially as specified.

487,808. TROLLEY-CATCHER. JOSEPH WERLING and JAMES F. ANDREW, Minneapolis, Minn. Filed Feb. 25, 1892. Serial No. 422,745. (No model.)



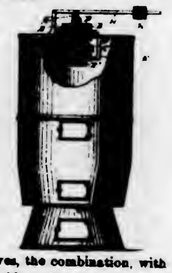
Claim.—1. The combination, with the car, of the trolley-pole arranged thereon and provided with the trolley, as described, the trolley-rope 10, the short rope 12, the rope 13, longer than the rope 12, a retractile device connected with the lower end of the rope 13, and a spring-latch arranged to support the same and wherewith the lower end of the rope 12 is connected, substantially as described, and for the purpose specified.

2. The combination, with the car, of the trolley-pole thereon, the trolley carried thereby, the trolley-wire and the supports thereof, the trolley-rope 10, having ends 12 and 13, a box arranged upon the end of the car, a weight 14, vertically movable in said box, said weight fastened to the lower end of said rope 13, a cushion arranged in the bottom of said box, a pivoted latch 18 to engage said weight when in its upper position, an arm upon said latch, and a spring to normally hold said latch in its forward position, and the lower end of the rope 12 connected with said arm, whereby as the trolley leaves the wire said latch is operated to release said weight and draw down the trolley-pole, substantially as described.

487,809. SAFETY-VALVE. JAMES G. WHITE, Kansas City, Mo. Filed July 21, 1890. Serial No. 359,458. (No model.)

Claim.—1. In safety-valves, the combination, with a vacuum-valve provided with suitable guides, of an escape-valve located within the vacuum-valve, means for loading the escape-valve, and means for holding the vacuum-valve normally closed, substantially as described.

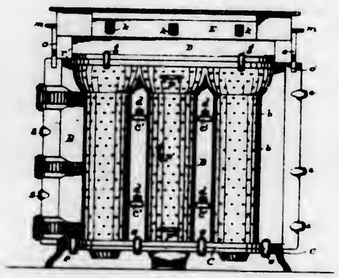
2. In safety-valves, the combination, with a vacuum-valve provided with suitable guides, of an escape-valve located within the vacuum-valve, a pivoted arm carrying a load and connected with the escape-valve, and means for holding the vacuum-valve normally closed, substantially as described.



3. In safety-valves, the combination, with a vacuum-valve provided with suitable guides, of an escape-valve located within the vacuum-valve, a pivoted arm carrying a load and connected with the escape-valve, and a spring holding the vacuum normally closed, substantially as described.

4. In safety-valves, the combination, with a vacuum-valve provided with suitable guides, of an escape-valve located within the vacuum-valve, means for loading the escape-valve, and a spring holding the vacuum-valve normally closed, substantially as described.

487,810. FLASK FOR CASTING PIPE. WILLIAM WHITE, Cleveland, Ohio. Filed Apr. 25, 1892. Serial No. 430,494. (No model.)



Claim.—1. The combination of the three-part flask having a hollow center piece with wings hinged to each side at the same edge thereof, a chill-plate having an opening communicating with the hollow of the center piece, and a flange to register the chill-plate with the flask, a head-frame fitting upon the top of the flask, and a runner-box mounted thereon and having sprue-holes opening above the molds, substantially as described.

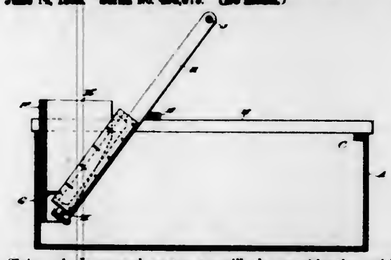
2. The combination, with the flask having hollow center piece and wings hinged to each side at the same edge thereof and a chill-plate having an opening to communicate with the hollow of the center piece, of the head-frame having compartments corresponding with the molds of said flask and the runner-box having sprue-holes opening above the molds, substantially as described.

3. The combination, with the flask having hollow center piece and wings hinged to each side thereof at the same edge and a chill-plate having an opening to communicate with the hollow of the center piece, of the head-frame having compartments corresponding with the molds of the flask and the runner-box mounted thereon and having a sprue-hole over each compartment of the frame, substantially as described.

4. The combination, with the three-part flask having the wings hinged on opposite sides of the hollow center piece at the same edge thereof and having oblong ventilating-openings in the wings and center piece, which openings coincide when the flask is closed, of the double-headed locking-clamp *c'*, passing through the three parts of the flask in the oblong ventilating-openings between the molds and adapted by being rotated in such openings to lock the flask centrally without impairing the ventilation thereof, substantially as described.

5. In a three-part flask having the wings hinged to the center piece on opposite sides at the same edge thereof, the combination, with a center piece having its meeting edges reduced in width from the parting-line of the molds, of wings having their meeting edges correspondingly projecting beyond the parting-line of the molds, whereby a doubly-deflected angular joint is formed between the wings and center piece at each edge of the flask, substantially as described.

487,811. CURD-CUTTER. ADDIS C. WHITING, Lodoga, Wis. Filed June 14, 1892. Serial No. 436,679. (No model.)



Claim.—1. In a curd cutter or mill, the combination, with a frame, of a cutting apparatus pivoted thereto at its lower end and adapted to be brought forwardly against the curd, said cutting apparatus forming an open mesh through which the severed particles of the curd pass as the knives are operated and deposited to the rear of the cutting apparatus, substantially as set forth.

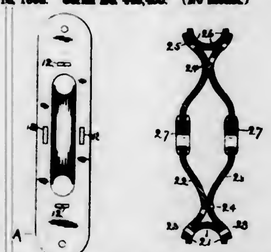
2. In a curd cutter or mill, the combination, with a frame provided near its lower end with a series of horizontal pins adapted to support the curd to be cut, of a cutting apparatus pivoted at its lower end to said frame and consisting of a series of knives forming an open mesh and adapted to be brought forwardly against the curd, the ends of the horizontal supporting-pins extending into the openings formed between the knives, substantially as set forth.

3. In a curd cutter or mill, the combination, with a frame, of a cutting apparatus pivoted at its lower end to said frame, the pivotal point being to one side and back of the cutting-edges of the knives to cause an oblique cut of said knives, substantially as set forth.

4. In a curd cutter or mill, the combination of a frame supported upon an open tank or receptacle, a supplemental frame secured between the side strip of the first-mentioned frame and provided with a suitable supporting medium for the curd, and a cutting apparatus pivoted at its lower end to the supplemental frame, substantially as set forth.

5. In a curd cutter or mill, the combination of a frame consisting of side strips and end and medial transverse strips, a supplemental frame arranged between the side strips of the first-named frame at one end thereof, said supplemental frame provided with a suitable supporting medium, a knife-frame consisting of side pieces and a connecting end bar or handle, said knife-frame pivoted at its lower end to the supplemental frame, and a series of knives arranged longitudinally and transversely of the knife-frame to form an open mesh, substantially as set forth.

487,812. SASH-CORD GUIDE. CLAYTON WOLCOTT, Hartford, Conn. Filed Aug. 13, 1892. Serial No. 443,456. (No model.)

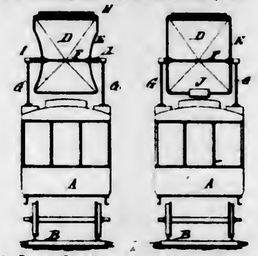


Claim.—1. In a sash-cord guide, the herein-described frame, consisting of the face-plate having perforations or mortises 12 and 13 and the sides or cheeks 15 15, with a narrow middle portion doubled upon itself and forming the rear guard 14, said sides or cheeks having the full lugs 16 secured within the side mortises 13 of the face-plate and the half-lugs 17 at each corner secured within the upper and lower mortises of said face-plate, substantially as described, and for the purpose specified.

2. In a sash-cord guide, the pulley consisting of a peripheral rim with abutting ends and a pair of cross-braces extending diametrically across the pulley from said abutting ends, the same being mechanically secured together, substantially as described, and for the purpose specified.

3. The herein-described pulley, consisting of the peripheral rim, a pair of cross-braces bent as described and arranged within said rim, and integral lugs and mortises for securing the parts together, substantially as described, and for the purpose specified.

487,818. ELECTRIC-RAILWAY TROLLEY. ADOLF WÜRTZER, Buda-Pesth, Austria-Hungary, assignor to Siemens & Halske, Berlin, Germany. Filed Feb. 3, 1892. Serial No. 420,198. (No model.) Patented in France Aug. 11, 1890, No. 207,866; in Germany Oct. 4, 1890, No. 59,763, and in England May 8, 1891, No. 10,762.



Claim.—1. In an electric railway, the combination, with a moving vehicle having an electromotor mounted thereon, of an electric conductor situated above the vehicle, a contact device consisting of a metallic frame provided with a revolving sleeve which covers the upper surface of said frame, said frame pivoted at about its center in suitable supports on the top of said vehicle and adapted to make an upwardly-yielding and laterally-sliding contact through said sleeve with said conductor, and means for maintaining said contact device in apposition with said conductor, irrespective of the direction of motion of said vehicle.

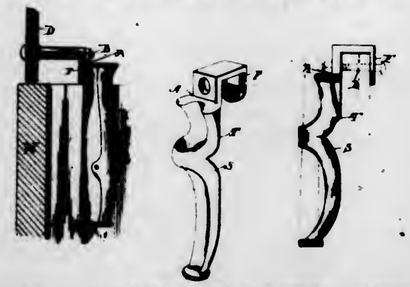
2. An upward-pressure contact for electric railways, comprising the combination of a metallic frame pivoted at about its center, pivotal supports for said frame connected to but extending above the body of the vehicle, and springs for imparting an upward movement to the upper portion of said frame.

3. An upward-pressure contact for electric railways, comprising the combination of a metallic frame pivoted at about its center, pivotal supports for said frame connected to but extending above the body of the vehicle, and means, such as described, whereby the angular inclination of the contact-frame relative to the body of the vehicle may be automatically altered by change of direction of the motion of the vehicle without disturbing the contact between it and the conductor, upon which it bears.

4. An upward-pressure contact for electric railways, comprising the combination of a metallic frame, pivotal supports for the frame connected to but extending above the body of the vehicle and supporting said frame above its center of gravity, whereby upward movement will be given to the upper portion of said frame and contact preserved between it and the conductor upon which it bears, irrespective of the direction of motion of the vehicle upon which it is placed.

5. An upward-pressure contact for electric railways, comprising the combination of a swinging metallic frame, a revolving sleeve covering the upper portion of said frame, pivotal supports for the frame, which carry it so far above the top of the vehicle that its lower portion may swing clear of the top of said vehicle when the angular inclination of the frame is altered by a change of direction in the motion of the vehicle, and a device which will maintain the said contact device in apposition with said conductor, irrespective of the direction of motion of the vehicle upon which it is placed.

487,814. WHIP-SOCKET. FREDERICK A. ABEL, Owensborough, Ky. Filed Aug. 20, 1891. Serial No. 403,210. (No model.)

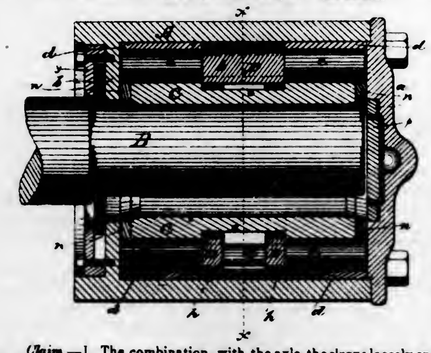


Claim.—1. As an improved article of manufacture, a combined whip-socket and dash-foot, the said dash-foot being provided with a shoulder at the upper portion thereof having an extension therefrom

at an angle provided with an opening to receive a fastening-bolt, the said dash-foot projecting over and bearing upon the corner-post of a wagon-body, substantially as and for the purposes specified.

2. A whip-socket having a transverse hole through its body, and a dash-foot integrally connected with the back of said socket rising above the upper end thereof and then extending forwardly and downwardly, the vertical portions of said foot having aligned holes in a plane above the upper end of the socket, the upper end of the socket terminating to form an angle A with the said foot, so as to permit the application of the nut to the securing-bolt, substantially as described.

487,815. JOURNAL-BEARING. JAMES M. ANDREWS, Syracuse, N. Y. Filed Dec. 21, 1891. Serial No. 415,716. (No model.)



Claim.—1 The combination, with the axle, the sleeve loosely encircling it and of greater diameter than the said axle, and the outer casing, of rollers interposed between said sleeve and casing and centrally reduced in diameter and a cage lying between the sleeve and casing and notched in its periphery to receive the reduced portion of said rollers and hold them apart, said cage having no bearing against said sleeve or casing, and means to close the ends of the casing.

2. The combination, with the axle, the sleeve loosely encircling it, and the outer casing, of rollers centrally reduced in diameter and bearing against said sleeve, loose rings interposed between said rollers and the casing and against which said rollers bear, and a cage lying between said sleeve and casing, but not bearing against either, and notched across its periphery to receive the rollers centrally, and means to close the ends of the casing.

3. The combination, with the loose sleeve receiving the axle and the rollers interposed between said sleeve and casing, of the loose rings concentric with the casing and inserted between the rollers and the casing and rotated by their contact with the rotating rollers.

4. The combination, with the casing, the axle, the sleeve loosely encircling it, and the annular rings concentric with the sleeve and inserted between its ends and the closures of the ends of the casing, of the antifriction-rollers bearing inwardly against said sleeve and rings and outwardly against the casing.

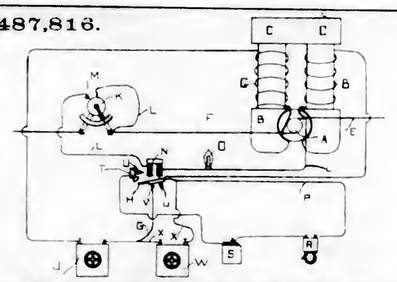
5. The combination, with the casing, the axle, the sleeve loosely encircling the axle, and the annular rings concentric with the sleeve and inserted between its ends and the closures of the ends of the casing, of the rollers bearing inwardly against the sleeve and rings and the loose rings within the casing and concentric therewith, against which the rollers bear outwardly.

6. The combination, with the casing, the axle, the sleeve loosely encircling the axle, and the annular rings between the ends of the sleeve and the closures of the ends of the casing, of the rollers bearing inwardly against the sleeve and rings, the cage, notched in its outer face to receive said rollers, and the loose rings within the casing, against which the rollers bear outwardly.

487,816. AUTOMATIC SAFETY DEVICE FOR DYNAMO-ELECTRIC MACHINES. FREDERIC B BADT, Chicago, Ill. Filed Feb. 19, 1892. Serial No. 422,150. (No model.)

Claim.—1. In a dynamo-electric machine, the combination of a device in the main circuit responsive to variations thereof with a circuit-controller and a local circuit adapted to be made or broken by such circuit-controller when the responsive device has moved to a certain limit, a magnet in such local circuit, a field-magnet circuit, and a resistance adapted to be thrown into such field-magnet circuit responsive to the action of said magnet in the local circuit, and a secondary circuit having an alarm therein and adapted also to be closed by the operation of said magnet.

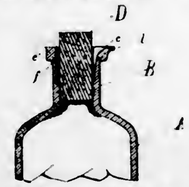
487,816.



2. The combination of a dynamo-electric machine with a main circuit, a responsive device therein, connections whereby such responsive device closes a local circuit when the main current has reached a predetermined maximum, a field-magnet circuit for the dynamo, a resistance normally out of such circuit, and a circuit-changer to throw such resistance into circuit, said circuit-changer being in the local circuit controlled by the responsive device.

3. The combination of a dynamo-electric machine with a main circuit, a responsive device therein, connections whereby such responsive device closes a local circuit when the main current has reached a predetermined maximum, a field-magnet circuit for the dynamo, a resistance normally out of such circuit, a circuit-changer to throw such resistance into circuit, said circuit-changer being in the local circuit controlled by the responsive device, and a stop or lock to keep such resistance in the field-magnet circuit.

487,817. MEANS FOR REGULATING THE FLOW OF LIQUIDS FROM VESSELS. FREDERIC R. BALDWIN, New York, N. Y. Filed Feb. 13, 1892. Serial No. 421,370. (No model.)



Claim.—1. In a device for regulating the flow of liquids from vessels containing the same, the combination of a channel running partly down the neck or other orifice of said vessel for the flow of the liquid and a larger channel running partly down said neck or other orifice for the admission of the atmosphere, with a stopper adapted to be inserted in said neck or other orifice a distance equal to or greater than the length of said channel to close the same and also adapted to be partially or wholly withdrawn for opening said channel, substantially as described.

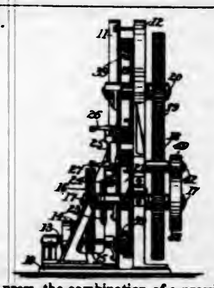
2. In a device for regulating the flow of liquids from vessels containing the same, the combination of a tapering or wedge-shaped channel and of a channel of substantially the same size throughout, said channels running partly down the neck or other orifice of said vessel, with a stopper adapted to be inserted in said neck or other orifice a distance equal to or greater than the length of said channels to close the same and also adapted to be partially or wholly withdrawn for opening said channels, substantially as described.

3. In a device for regulating the flow of liquids from vessels containing the same, the combination of a tapering channel running partly down the neck or other orifice of said vessel for the flow of the liquid, a lip adapted to assist the flow from said tapering channel, and a channel of substantially the same size throughout running partly from the neck or other orifice of said vessel for the admission of the atmosphere, with a stopper adapted to be inserted in said neck or other orifice a distance equal to or greater than the length of said channels to close the same and also adapted to be partially or wholly withdrawn for opening said channels, substantially as described.

487,818. AUTOMATIC SOAP-PRESS. OTTO W. BAUD, Brooklyn, N. Y. Filed Feb. 26, 1892. Serial No. 423,234. (No model.)

Claim.—1. In a soap-press, the combination of a pressing-roll, a series of dies secured about the periphery of said roll and slightly separated from each other, a series of knives supported by said roll and adapted to move radially thereon between said dies, and means to actuate said knives to separate successive cakes, substantially as shown and described.

487,818.



2. In a soap-press, the combination of a pressing-roll, a series of dies secured about the periphery of said roll and slightly separated from each other, a series of knives supported by said roll and adapted to move radially thereon between said dies, an independently-rotatable cam-disk adapted to actuate said knives, and means for driving said cam-disk, substantially as shown and described.

3. In a soap-press, the combination of a pair of pressing-rolls, a series of dies secured about the periphery of each roll, the dies of each series being slightly separated from each other, a series of knives supported by each roll and adapted to move radially thereon between the dies, independently-rotatable cam-disks mounted upon an axis at right angles to the axis of the rolls and adapted to actuate the corresponding knives of each series in unison, and means for driving said cam-disks, substantially as shown and described.

487,819. BRIDGE. LEWIS BARNES, Philadelphia, assignor to William A. Nichols, Wayne, Pa. Filed Mar. 5, 1892. Serial No. 423,924. (No model.)

Claim.—1. An approach for a portable bridge or ditch-covering, consisting of the sills, stringers, and brace-pieces forming wings adapted to be secured to the end of the bridge, as and for the purposes set forth.

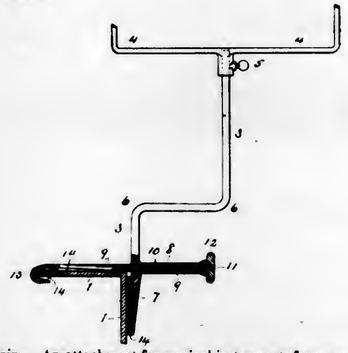
2. The combination, with a bridge or ditch-covering, of the wings attached to the ends of the bridge and consisting of sills, stringer, and connecting-pieces, forming approaches to the bridge, substantially as described.

3. The combination, with the bridge or ditch-covering consisting of a framework, of the wings connected thereto and having a sill extending below the base of the bridge and a stringer connecting the sill to the bridge, substantially as described.

4. The combination, with the bridge, of the wing connected thereto and comprising a base-piece having holes for the reception of anchors, a stringer connecting the base-piece to the bridge, and supports connecting the stringer and base, substantially as described.

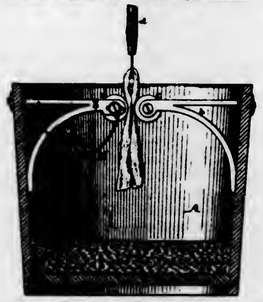
5. The combination, with the portable bridge, of a wing connected to the bridge and forming an approach therefor, the wing being comprised of a base-piece, stringer, and standards and being covered, substantially as described.

487,820. MUSIC-RACK ATTACHMENT FOR GUITARS, &c. PETER BENSON, Minneapolis, Minn. Filed June 14, 1892. Serial No. 436,698. (No model.)



Claim.—An attachment for musical instruments for supporting a music-rack, consisting of an upright stem having a flattened lower portion for engaging the side of an instrument, a hollow lateral arm above the broad portion, a rod arranged to slide in such arm and having a hook for engaging an opening in the instrument, and a screw for operating the rod to clamp the upright stem to the instrument, substantially as set forth.

487,821. MOP-WRINGER. WILLIAM H. BETTS, Lincoln, Nebr., assignor to the Model Mop Pail and Wringer Company, same place. Filed Mar. 10, 1892. Serial No. 424,466. (No model.)



Claim.—1. In combination with a mop-pail A, the rollers c c', supported at one end by the bar e and at the other by the separate brackets b b', in the manner set forth.

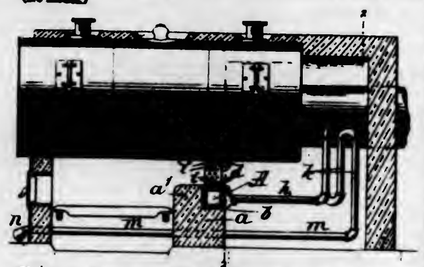
2. The combination of the rollers c c', cross-bar e, brackets b b', pail A, and springs S P, all arranged and operated as and for the purposes set forth.

487,822. GLOVE-FASTENER. THOMAS C. BOOTH and HERBERT G. BUTTY, New York, N. Y. Filed June 23, 1892. Serial No. 437,586. (No model.)

Claim.—In a socket for a glove-fastening, the combination, with an eyelet consisting of a flattened or oval tube having a flange around its end for securing it to the glove and having its side walls contracted at the junction with said flange, whereby an ovate opening

of smaller area than the cross-section of the tube is formed for the reception of the stud, of an oblong ring or collet D, arranged around said flattened tabular portion of the eyelet, an oval anvil-plate arranged over the open end of said tube, and a cap-plate arranged over said anvil-plate and embracing said tube, said cap-plate having an oblong flattened form corresponding to the form of said tube, substantially as set forth.

487,823. SMOKE-CONSUMING FURNACE. GEORGE L. CROSS, Springfield, Mass., assignor of two-thirds to Daniel W. Mellen and William D. McKenzie, same place. Filed Jan. 7, 1892. Serial No. 417,318. (No model.)

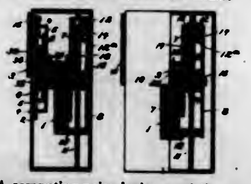


Claim.—1. In a smoke-consuming furnace, the combination, with the bridge-wall having a support at its rear upper portion, of a metallic box mounted upon said support and having a series of perforations through its top, upright metallic conduits at the sides of the furnace-chamber, having at their lower ends free communication with the chamber of said box and having series of perforations through the inwardly-facing walls, and an air-supply pipe leading from outside of the furnace and having sections thereof disposed in the combustion-chamber and entering the chamber of said box, all whereby the highly-heated air from said pipes may in part issue from the top of the box and in part continue through the ends of the box and upwardly in said side conduits to simultaneously issue at the sides of the furnace, substantially as and for the purpose set forth.

2. In a smoke-consuming furnace, the combination, with the bridge-wall having a support at its rear upper portion and its side walls opposite said support vertically recessed, of a metallic box mounted upon said support and having a series of perforations through its top, upright metallic conduits set in said recesses at the sides of the furnace-chamber and having at their lower ends free communication with the chamber of said box and having series of perforations through the inwardly-facing walls, and an air-supply pipe leading from outside of the furnace and having sections thereof disposed in the combustion-chamber and entering the chamber of said box, all substantially as described and shown, for the purposes set forth.

3. In a smoke-consuming furnace, the combination, with the metal box set at the bridge-wall, having a series of perforations through its top and apertures through its end walls, of the upright pipes set at the sides of the furnace, with perforations through their inwardly-faced walls and having the angular members at their lower ends for an adjustable fit and engagement in said end apertures of the box, and the supply-pipes which lead from the outside of the furnace and have portions thereof in the combustion-chamber and thence extended to communication with the box-chamber, substantially as described.

487,824. COMPUTING SCALE-POISE. JOHN W. CULLER, New Brighton, Pa., assignor to the Computing Scale Company, Dayton, Ohio. Filed Feb. 15, 1892. Serial No. 421,860. (No model.)



Claim.—1. A computing-poise device consisting, essentially, of a casing or frame adapted to slide upon a supporting-surface, a primary revolvable disk mounted in said frame, a primary roll or wheel fixed on one end of a spindle and engaging the said supporting-surface and said disk, a secondary roll movable axially on the other end of said spindle, having contact with and actuated by said primary disk, a registering mechanism at the face of the casing, and an adjusting device connecting the secondary roll with the said registering mechanism for changing the relation of the said secondary roll to the said primary disk, substantially in the way and for the purpose stated.

2. A computing device comprising a casing or frame, a registering mechanism, a rate-indicator, a traveling roll or wheel arranged to be operated in contact with a resistance-surface by moving the frame thereon, a disk in contact with and receiving motion from the said traveling roll or wheel, and a secondary roll in contact with and adapted to transmit the motion from the said disk to the registering mechanism and controlled by the said indicator to change its co-operative relation with the registering mechanism and the said disk to vary their relative speeds, substantially as described.

3. A computing device comprising a frame or casing adapted to slide upon a supporting-surface, a series of registering-disks, a central pointer or rate-indicator, a spindle in said casing having a fixed primary roll on one end adapted to engage said supporting-surface and a secondary axially-movable roll on the other end of said spindle, a primary disk in contact with both said rolls, a secondary disk in contact with said axially-movable roll and connected with the units-disk, and a device connecting said rate-indicator and axially-movable roll for changing the relation of the latter roll to the primary disk to vary the relative speed of the rotating elements, substantially as described, for the purpose stated.

4. In a computing device, the combination of a casing or frame, a registering and a rate-indicating mechanism, a traveling roll, a disk in contact with and receiving motion from said roll, and a secondary roll arranged to transmit motion from the said disk to the registering mechanism, the said secondary roll and disk being movable together and adapted to be actuated by the said indicator, whereby the relative speed of the traveling roll and the registering mechanism can be varied, substantially as described, for the purpose stated.

5. In a computing device, the combination of a casing or frame, a registering and a rate-indicating mechanism, a traveling roll, a primary and a secondary disk, the latter having connection with and adapted to actuate the registering mechanism, a spindle arranged between the two disks and fixed with said traveling roll, and a secondary roll mounted on the spindle and adapted to turn freely thereon and transmitting motion from the primary to the secondary disk and adapted to be moved on the said spindle by means of the said indicator device to vary the relative speed of the said disks, substantially as described.

6. In a computing device, the combination of the frame or casing, a registering mechanism, a rate-indicator, a traveling roll, a primary and a secondary disk, a spindle arranged between the two disks, adapted to revolve with the traveling roll, a secondary roll mounted on the spindle and constructed to transmit motion from the primary to the secondary disk, a stem or rod coöcentric with the registering mechanism and with the secondary disk having the rate-indicating pointer on its outer end and having a cam on its inner end, and a movable yoke-frame having positive engagement with said secondary roll and adapted to be moved by the said cam when operating the rate-indicator to change the relative location of the secondary roll with reference to the primary and the secondary disks, substantially as described.

7. In a computing device, the combination of a registering mechanism, a rate-indicator, a secondary disk having connection with and adapted to actuate the registering mechanism, and a traveling roll, of a movable yoke-frame constructed to be actuated by the rate-indicator and a primary disk mounted on and movable with the said yoke and receiving an initial movement from the said traveling roll carried by the said yoke-frame and adapted to transmit motion from the said primary to the secondary disk, substantially as described.

8. In a computing device, the combination of a registering mechanism composed of a series of concentric co-operative decimal-disks, a secondary disk having connection with the outer disk of the series of registering-disks, an indicator to denote the rate, and a traveling roll with a primary disk having engagement with and receiving motion from the traveling roll, a secondary roll for transmitting motion from the primary to the secondary disk, and a yoke-frame carrying the secondary roll and the primary disk and constructed to be actuated by the said rate-indicator, substantially as described.

9. A computing-poise comprising a fixed face-plate having a division of figures indicating prices, an opening to expose figures indicating values, and a radial projection 28, a series of registering-disks containing the value-figures, pawls pivoted at the circumference of said registering-disks, the pawl of one disk being adapted to extend within the path of and to engage the next disk of the series to cause them to move together, a central pointer for the price-indicating figures, and suitable mechanism for operating said disks by moving the poise in a right line with a rotating member of such mechanism in contact with a supporting-surface in the way described.

10. In a computing device, the combination, with the casing or frame having a projection 28 on the inner wall of its front face and a nested series of registering-disks having circumferential notches, of a series of pawls pivotally connected with said disks at one end and having their other ends adapted to engage with the notches in the disks adjacent to those carrying the pawls and normally held out of engagement with said notches and constructed to be pushed into the said notches when actuated by the said projection, substantially as described.

11. A computing-poise consisting, essentially, of a body or frame fitted with a seat to move upon a scale-beam, a wheel or roll rotated by contact with the scale-beam, a series of numbered disks operated by said roll, and a device for changing the relative motion of said disks, whereby different multiples of a given price may be obtained by moving the poise upon the beam, substantially as described.

12. The combination, with the beam or lever of a weighing-scale, of a computing-poise consisting, essentially, of a frame or body fitted to and adapted to be moved on said beam, a roll or wheel in contact with and rotated when moved upon said beam, a disk rotated by and diametrically adjustable to said roll, a second roll in contact with, receiving motion from, and moving with said disk, and a second disk receiving motion from said second roll and actuating the primary disk or plate of a decimally-multiple series of numbered disks, substantially as described.

13. The combination, with a frame or body of a computing-poise, of a primary roll or wheel adapted to operate in contact with a scale beam or lever, a yoke moving upon guides and bearing a primary disk in contact with and rotated by the primary roll and a secondary roll carried by said yoke in contact with and rotated by said disk, a secondary disk attached to and operating the outer one of a series of numbered concentric disks, and a cam rotatable within said yoke and operated by a pointer outside of said poise-frame, whereby said yoke, with its primary disk, is moved diametrically upon the primary roll and its secondary roll is moved diametrically upon the secondary disk and the relation to the motion of the numbered disks to the motion of the poise upon the beam is changed and regulated, and mechanism for automatically connecting the disks for operation in the way described.

14. The combination, with a poise frame or body and a scale-beam, of a primary roll adapted to operate in contact with said beam, a yoke moving on guides and bearing a primary disk in contact with and rotated by the primary roll, a secondary roll carried by said yoke in contact with and rotated by said disk, a secondary disk attached to and operating the outer one of a series of numbered concentric disks, a cam rotatable within said yoke and operated by a pointer outside of said poise-frame, and mechanism for automatically engaging said decimal-disks, whereby the outer disk is caused to move the second disk one-tenth of a revolution for each complete revolution of itself and the second moves the third one-tenth of a revolution for each complete revolution of the second, said revolution being the same and in the same ratio for either direction of the motion of the poise upon the beam.

15. In a computing-poise, the herein-described concentric series of numbered disks, the outer one of which is connected to and rotated with a vertically-adjustable and revoluble disk receiving motion from the moving of the poise, the outer ones of said disks provided with spring-pawls and decimally divided by peripheral notches 40 50 for the reception of the points of said pawls, in combination with the radial projection 28 upon the face-plate 2, whereby the said pawls are caused during the rotation of their respective disks to enter the notches 40 50 and cause the rotation of the inner disks during that portion of their rotation occupied in passing said pawls over the said radial projection 28, a scale-beam, and mechanism for connecting and operating said decimal-disks in the way and for the purpose stated.

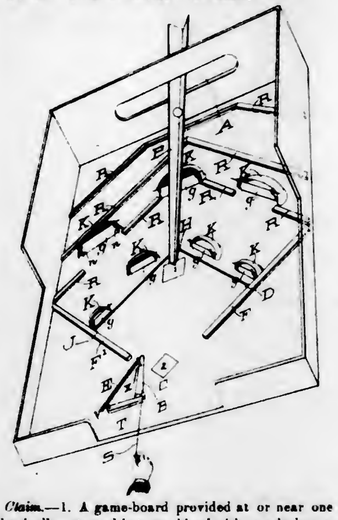
16. The combination of a scale-beam with a weighing-scale, a poise having an interior seat adapting it to slide on said beam, concentric decimal-counting disks, mechanism for actuating the outer decimal-disk, mechanism for automatically connecting said decimal-disks, and mechanism for changing the relative motion of said disks, these said mechanisms co-operatively arranged within said poise for operation in the way described.

17. The combination, with a poise, of a series of concentric decimal-disks, the outer one whereof is fixed on and rotates with a central sleeve, the inner ones mounted rotatively on a fixed sleeve, a rod or stem within the fixed sleeve having a pointer on its outer end and a cam on its inner end, a disk on the inner end of the outer sleeve, a vertically-sliding yoke engaging said cam, a roll carried by said yoke engaging said disk, a disk carried by said yoke engaging said roll, a spindle having a roll engaging said last-named disk, a scale-beam engaging said last-named roll, mechanism for automatically engaging said disk, and a casing or frame having figures indicating the price and an opening to expose the value-figures of the decimal-disks.

18. The combination of a registering mechanism consisting of three concentric disks constructed to fit within each other, each having digits from "1" to "0," the two inner disks divided into ten equal divisions by circumferential notches, the outer or units disk 4, having a fixed relation to a rotative central sleeve 35, the two other disks 5 and 6 mounted rotatively on a fixed inner sleeve 36, in combination with a rod or stem 3, having a cam 18 on its inner end and a pointer 15 on its outer end, a disk 7 on the inner end of the outer sleeve, mechanism for actuating said disk, mechanism for varying the speed of its rotation, mechanism for automatically engaging and disengaging said disks, and a poise containing the above-stated operating mechanism, having a face-line of price-digits concentric with the arc described by the pointer, and a face-opening to expose the value-numerals of the decimal-disks, substantially as described.

19. A hollow sliding poise for a scale-beam, having face-numerals indicating prices and interior mechanism for indicating values exposed at the poise-face, mechanism for automatically operating said value-indicating devices by movement over and in contact with said beam, mechanism for automatically engaging and controlling the movements of the value-indicating mechanism, and coacting devices for varying the movements of the value-indicating mechanism operated by a price-pointer, substantially as described.

487,825. MECHANICAL BALL GAME. GERRY S. CURTIS, Jr., Boston, and JAMES M. HALLOWELL, West Medford, Mass. Filed Aug. 29, 1891. Serial No. 404,063. (No model.)



Claim.—1. A game-board provided at or near one end with a mechanically-actuated bat, combined with angularly-arranged ridges on and within the limits of the board to cause a ball struck by a bat to rebound and be returned to the vicinity of the bat and a downwardly-inclined chute to deliver the ball upon the board at a point between the bat and the said ridges, substantially as described.

2. A game-board provided with a mechanical bat, combined with a series of ridges R, arranged on and within the limits of the said game-board, breaks in the said ridges, and fielding-hoods having substantially-vertical entrances arranged immediately behind said breaks, substantially as described.

3. A game-board provided with a mechanical bat, combined with the several series of ridges arranged in substantially the manner herein shown to divide the board into infield, short outfield, and long outfield, and the foul-ridges F F', substantially as described.

487,826. RAZOR-STROP. JAMES W. DE GRAFF, Plainfield, N. J., assignor to the Howard Manufacturing Company, of Massachusetts. Filed Aug. 10, 1892. Serial No. 442,681. (No model.)

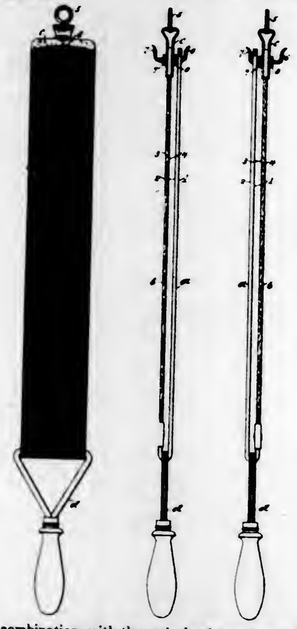
Claim.—1. A swing-strop having a strip provided with means for attachment to a fixed support and a strip detachable from the attaching-strip at one end and reversible, substantially as described.

2. A swing-strop having supports on opposite sides of one strip at the eye end and another strip adapted to be attached to either of the supports, substantially as described.

3. A swing-strop having supports on opposite sides of one strip at the eye end and another strip adapted to be attached to either of the supports and having a handle constructed to be turned about the strop edgewise, substantially as described.

4. A swing-strop having two strips *a b*, provided with strop-surfaces on opposite sides, eye-piece *c* on one of the strips having hooks

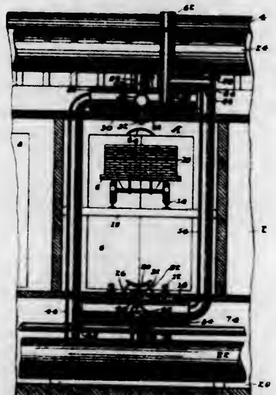
8 7 on opposite sides, and an eye carried by the other strip, substantially as described.



5. The combination, with the strip *b*, of eye-piece *c*, hooks 6 7, having a single screw-threaded shank passing through said eye-piece and strip, fixed collar 8 on said shank on one side of the eye-piece, and nut 9 on the opposite side of the eye-piece, substantially as described.

6. Eye-piece *c*, consisting of a single piece of sheet metal carrying an eye, and hooks 6 7, having a single screw-threaded shank adapted to pass through the eye-piece and having fixed collar 8 on one side of the eye-piece and nut 9 on the opposite side, substantially as described.

487,827. PROCESS OF DRYING BRICK. CHARLES J. DION, St. Paul, Minn. Filed Apr. 11, 1891. Serial No. 388,444. (No model.)

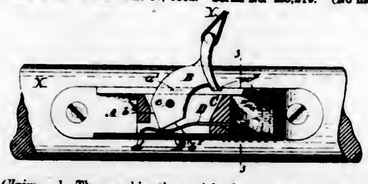


Claim.—1. In the drying of green brick and similar materials in an inclosed chamber by means of a connected circulating hot-air system, the process consisting of charging the air with sufficient moisture before it enters the chamber from the system to prevent the drying of the stock, circulating the air through the chamber until the stock is heated throughout uniformly to a high temperature, and then gradually decreasing the humidity of the air in the chamber, substantially as described.

2. The foregoing-described improved process of drying green brick and similar materials, consisting in first placing the same in an inclosed chamber having a communicating circulating hot-air system, then admitting the air from said system into said chamber, charging the same before entering with sufficient moisture to prevent drying of the stock until it is uniformly heated, reversing the circulation from time to time, and then gradually decreasing the humidity of the air in the chamber and increasing its temperature, substantially as described.

3. The foregoing-described improved process of drying green brick and similar materials in an inclosing chamber by means of a circulating hot-air system consisting of charging the air before it enters said chamber from the system with sufficient moisture to prevent drying of the stock until heated uniformly through and through and then gradually decreasing the humidity of the air and reversing the circulation from time to time, substantially as set forth.

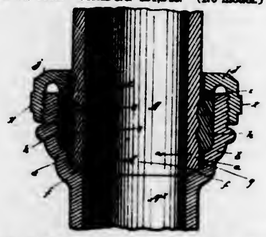
487,828. HOLDBACK FOR VEHICLES. WILLIAM DUHR, New York, N. Y. Filed Mar. 17, 1892. Serial No. 425,219. (No model.)



Claim.—1. The combination, with the open-slotted thill-casing, of a block adapted to slide in the hollow slideway in said casing, a dog pivotally mounted in said block and provided with a strap-loop at its free end and a spring-bearing face at its inner end, and a back spring in said block which bears on said face and holds the dog and block firmly in position in the casing, substantially as set forth.

2. The combination, with the open-slotted thill-casing provided with a ratchet, of a block adapted to slide in the hollow slideway in said casing, a dog pivotally mounted in said block and provided with a strap-loop and a pawl at its free end, the former for attachment to the breeching-strap and the latter to engage said ratchet, and a back spring in said block and bearing on the dog, whereby the pawl on the latter is held in engagement with said ratchet, substantially as and for the purpose set forth.

487,829. PIPE-COUPLING. WILLIAM R. ENGLAND, Chicago, Ill. Filed Feb. 12, 1892. Serial No. 421,240. (No model.)



Claim.—1. A pipe-coupling consisting of one member provided with a longitudinally-corrugated spigot and another member having an interiorly-longitudinally-corrugated bell, the said corrugated portions of the spigot and bell interfitting with each other, and an annular chamber for packing, substantially as described.

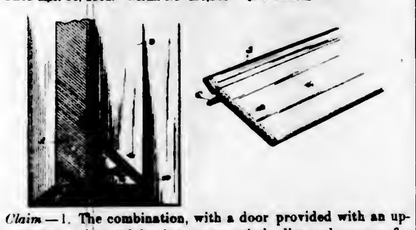
2. A soil or waste pipe provided with a spigot having conical shoulder *d* and corrugated annular projection *e* and with a bell having conical shoulder *f* and corrugated socket *g* and providing an annular chamber for the lead packing *h*, substantially as set forth.

3. A soil or waste pipe provided with a spigot having conical end *d* and corrugated annular projection *e* and with a bell having conical shoulder *f* and corrugated socket *g* and forming an annular chamber for lead packing *h* around the spigot of a similar pipe inserted therein, and in combination therewith the split ring *i* and means for forcing such ring upon the lead for compacting and securing the same, substantially as set forth.

4. A soil or waste pipe provided with a spigot having conical end *d* and corrugated annular projection *e* and with a bell having conical shoulder *f* and corrugated socket *g* and forming an annular chamber for lead packing *h* around the spigot of a similar pipe inserted therein, and in combination therewith the split ring *i* and nut *j* for forcing such ring *i* upon the lead for compacting and securing the same.

5. A soil or waste pipe provided with a spigot having conical end *d* and corrugated annular projection *e* and with a bell having conical shoulder *f* and corrugated socket *g* and forming an annular shoulder for lead packing *h* around the spigot of a similar pipe inserted therein, and in combination therewith the split ring *i* and nut *j*, having projections *k* for forcing such ring *i* upon the lead for compacting the same by means of a spanner-wrench, substantially as set forth.

487,830. WEATHER-STRIP. OLIVER A. GALLATIN, Galt, Mo. Filed Apr. 30, 1892. Serial No. 431,270. (No model.)

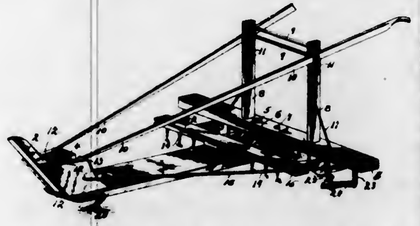


Claim.—1. The combination, with a door provided with an upwardly-inclined slot and having an oppositely-disposed recess, of a resilient weather-strip constructed of metal and having its upper edge arranged in the slot and rigidly connected to the door and provided on its lower face with a downwardly-inclined flange arranged in the recess of the door, substantially as described.

2. The combination, with a door provided with an upwardly-inclined slot and having an oppositely-disposed recess, of a weather-strip constructed of a single piece of sheet metal folded on itself and having its upper edge arranged in the slot and having the lower portion of the fold bent downward to form a flange and arranged in the recess of the door and a spring secured to the weather-strip and the door and holding the former in position, substantially as described.

3. The combination, with a door provided with a slot, of a weather-strip constructed of folded sheet metal, straight springs arranged within the folds of the weather-strip to impart resiliency to the latter, and a spiral spring having one end attached to the door and the other end connected to the weather-strip and securing the latter to the door, substantially as described.

487,831. COTTON-CHOPPER. ISAAC R. GAY, Camden, S. C. Filed July 19, 1892. Serial No. 440,516. (No model.)

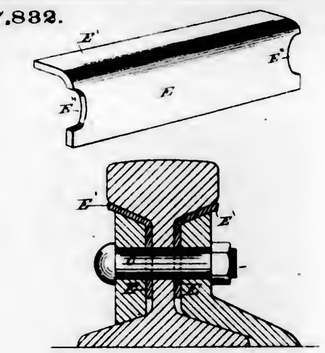


Claim.—In a cotton-chopper, the combination, with the central main beam provided upon its under side near its front end with a depending shovel and upon its upper side at said end with a pair of blocks, an interposed draft device located between the blocks, a rake-head mounted on the beam in rear of the blocks and provided at opposite sides of the beam with depending teeth, a vertically-adjustable chopper bar or beam in rear of and parallel to the rake-head and supported by the beam 1, U-shaped choppers depending from the chopping-beam, forwardly-disposed fenders at the inner sides of and secured to the outer choppers, and a similar fender at each side of the central chopper and extending forward therefrom and connected to the beam 1, teeth depending from the chopping-bar between the fenders, standards rising from the chopping-beam, and handles secured to the standards and at their front ends to the blocks, substantially as specified.

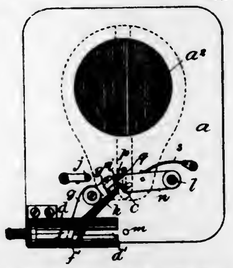
487,832. METAL SHIM AND RAILWAY-RAIL JOINT. WILLIAM F. GOULD, Des Moines, Iowa. Filed Mar. 26, 1890. Serial No. 345,343. (No model.)

Claim.—As an article of manufacture, a metal shim for railway-rail joints, adapted to be placed between the balls of rails and a rail-splice, in the manner set forth, for the purposes stated.

487,832.



487,833. CAMERA-SHUTTER. JOHN W. GRAFFLAND, Philadelphia, Pa. Filed Dec. 17, 1891. Serial No. 415,336. (No model.)



Claim.—1. A photographic shutter comprising a series of normally-closed wings provided with slots, a pin working in said slots to open the wings, a trigger reciprocated by the piston and adapted to yield transversely of the direction of travel thereof, and a lever adapted to shift said pin and provided with a working edge for effecting an instantaneous exposure during the intermediate portion of the forward stroke of the piston and with an inclined or beveled edge for shifting said trigger during the intermediate portion of the return stroke of the piston, substantially as and for the purposes set forth.

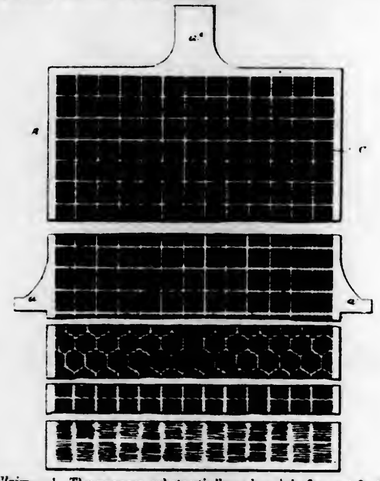
2. A photographic shutter comprising a series of normally-closed wings provided with slots, a pin working in said slots to open the wings, a trigger reciprocated by the piston and adapted to yield transversely of the direction of travel thereof, a lever adapted to shift said pin and provided with a working edge for effecting an instantaneous exposure during the intermediate portion of the forward stroke of the piston and with an inclined or beveled edge for shifting said trigger during the intermediate portion of the return stroke of the piston, and a stop for checking the forward stroke of the piston to prevent the disengagement of the trigger and lever, substantially as and for the purposes set forth

3. A photographic shutter comprising a pneumatic cylinder and its complemental piston, a series of normally-closed wings, a pin for operating said wings, a trigger-lever reciprocated by said piston, a spring-controlled trigger afforded a range of motion transversely of said trigger-lever, and a wing-operating lever provided with a finger and adapted to actuate said pin, substantially as and for the purposes set forth.

4. A photographic shutter comprising a pneumatic cylinder and its complemental piston, a series of normally-closed wings, a pin for operating said wings, a trigger-lever provided with a slot and reciprocated by said piston, a trigger afforded a range of play in said slot, a spring connected with said trigger-lever and trigger, and a wing-operating lever adapted to actuate said pin and provided with a finger having a beveled edge, substantially as and for the purposes set forth.

5. A photographic shutter comprising a pneumatic cylinder and its complemental piston, a series of normally-closed wings, a pin for operating said wings, a pivotal trigger-lever connected with said piston by a suitable connection, a trigger connected with the trigger-lever by a spring, and a wing-operating lever supported by a slotted connection and provided with a finger having a beveled edge, substantially as and for the purposes set forth.

487,834. MANUFACTURE OF SECONDARY-BATTERY ELECTRODES. WILLIAM W. GIBBONS, Haverford, Pa. Filed Sept. 30, 1892. Serial No. 447,414. (No specimens.)



Claim.—1. The process, substantially as hereinbefore set forth, of preparing secondary-battery plates or elements, which consists in subjecting a plate to the action of an alkaline solution, thereby first producing honey-combs in the surface of the plate and subsequently chemically depositing thereon active material or material to become active, and then forming the plate electrolytically in the usual way.

2. The process, substantially as hereinbefore set forth, of preparing secondary-battery plates or elements, which consists in subjecting a lead plate to the action of a hot alkaline solution, thereby first producing honey-combs therein and subsequently chemically depositing active material or material to become active in the honey-combs, and then forming the plate electrolytically in the usual way.

3. The process, substantially as hereinbefore set forth, of preparing secondary-battery plates or elements, which consists in subjecting a lead plate having spaces filled with thin sheets, strips, or bars to the action of a hot solution of nitrate of ammonia, thereby first producing honey-combs in the surface of the plate and subsequently chemically depositing in said honey-combs finely-divided lead, and then forming the plate electrolytically in the usual way.

4. A lead plate or grid consisting of a group of conducting and supporting walls or frames filled with thin integral sheets, strips, or bars with their broad faces opposed to each other and which are separated from one another by narrow interstices, said group being in turn surrounded by a frame forming the boundary of the plate, substantially as described.

5. A lead plate or grid consisting of a group of conducting and supporting frames filled with thin integral sheets, strips, or bars, which are separated from one another by narrow interstices of such a width as to be filled when the sheets, strips, or bars are sufficiently converted into active material, substantially as described.

6. A lead plate or grid consisting of a group of conducting and supporting frames filled with thin integral sheets, strips, or bars, which are separated from one another by narrow interstices of such a width as to be filled when the sheets, strips, or bars are sufficiently converted into active material, the whole being composed of forced lead, substantially as described.

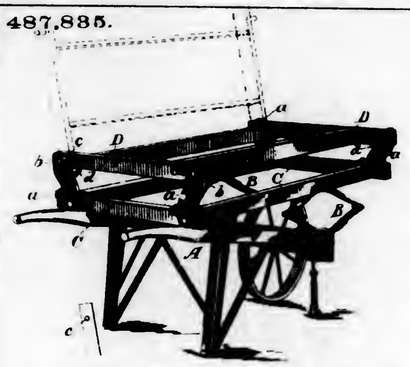
487,835. BRICK-TRUCK. CHARLES H. HORTON, Wellington, Ohio. Filed May 4, 1892. Serial No. 431,761. (No model.)

Claim.—1. The combination, with a truck, of a deck yieldingly supported thereon and an upper deck removably supported on the main deck and capable of swinging from either side thereof and of being supported in a raised position at either side, substantially as set forth.

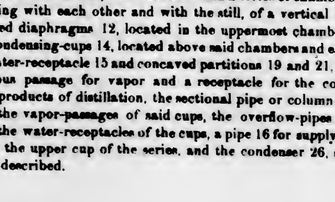
2. The combination, with a truck and a deck thereon, of brackets projecting upwardly from said deck and having recesses in their upper ends, an upper deck, and pintles carried by said upper deck, adapted to enter the recesses in the brackets, substantially as set forth.

3. The combination, with a truck and a deck thereof, of brackets carried by said deck and having recesses in their upper ends, an upper deck, pintles carried by said upper deck and adapted to enter said recesses in the brackets, and lugs projecting from said brackets and adapted to receive the upper deck, substantially as set forth.

487,835.



487,836. HOG-TROUGH. JOHN C. F. HURST, Holton, Kans. Filed Mar. 31, 1892. Serial No. 427,275. (No model.)



Claim.—In a hog-trough, the combination of a trough proper having the inner upper surface of one end thereof beveled or cut away at an angle extending toward the bottom of the trough, a cover connected to the rear side of the trough by pintles and consisting of a series of transverse arched metallic strips connected by longitudinal metallic bars at front and rear, which cover the top edges of the front and rear sides of the trough proper, and a longitudinally-disposed stay-bar secured to the under sides of the central portions of said cross-strips and having one end cut away or beveled and located over the said cut-away or beveled portion of the end of the trough to form an ingress-opening and the opposite end recessed and shouldered to fit over the upper edge of the adjacent end of the trough to prevent longitudinal movement of the said cover, substantially as described.

487,837. PROCESS OF AND APPARATUS FOR MAKING ESSENCES. HECTOR HUVELLE, Weatherford, Tex., assignor of one-half to Gustavus A. Tandy, same place. Filed July 3, 1891. Serial No. 398,430. (No model.)

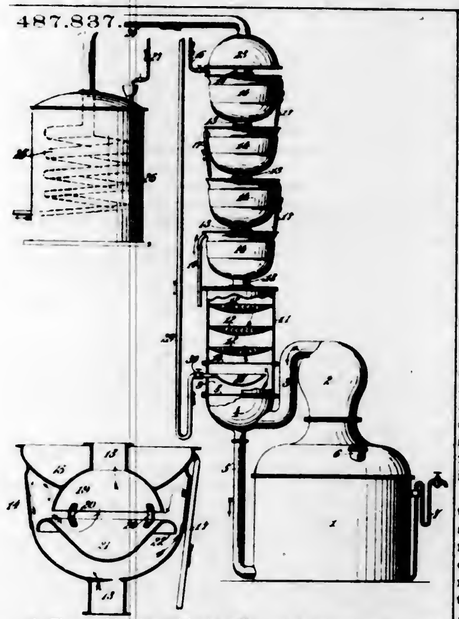
Claim.—1. The process of making essences, which consists in passing solvent vapors from a still through a body of vegetable substances, repeatedly and continuously condensing and reheating the mingled vapors and volatile matters, and finally condensing the vapors and collecting the distillate, substantially as described.

2. The combination, with a still 1 and a receiving or regulating chamber 4, connected with a still by a conduit 3 and return-pipe 5, of the chamber 9, supported on the chamber 4, the chamber 11, supported on the chamber 9 and provided with a vertical series of perforated diaphragms 12, the vertical series of condensing-cups 14, the sectional pipe or column 13, connecting said cups with each other and with the chamber 11, and the condenser 26, connected with the uppermost cup of the series, substantially as described.

3. The combination, with the still 1 and the chambers 4, 9, and 11, communicating with each other and with the still, of a series of perforated diaphragms or screens 12, located in the uppermost chamber 11, a vertical series of condensing-cups 14, the sectional pipe or column 13, connecting said cups, the dome 23, and the condenser 26, substantially as described.

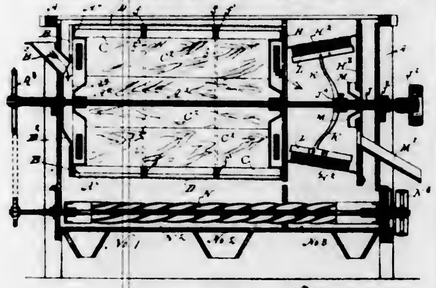
4. The combination, with the still 1 and a series of chambers communicating with each other and with the still, of a vertical series of perforated diaphragms 12, located in the uppermost chamber, a series of condensing-cups 14, located above said chambers and each having a water-receptacle 15 and concaved partitions 19 and 21, forming a tortuous passage for vapor and a receptacle for the condensed heavier products of distillation, the sectional pipe or column 13, connecting the vapor-passages of said cups, the overflow-pipes 17, connecting the water-receptacles of the cups, a pipe 16 for supplying cold water to the upper cup of the series, and the condenser 26, substantially as described.

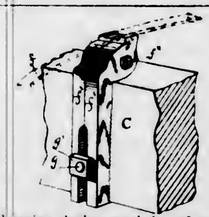
487,837.



5. The combination, with the still 1 and the chamber 4, communicating with the still, of the chamber 9, supported on and communicating with the chamber 4, the cup 28, supported in the chamber 9, the valved pipe 29, leading to said cup, the chamber 11, supported on and communicating with the chamber 9 and provided with perforated diaphragms 12, the vertical series of condensing-cups 14, and the condenser 26, substantially as described.

487,838. FLOUR-BOLTING REEL. GEORGE L. JARRETT, Des Moines, Iowa. Filed Sept. 29, 1891. Serial No. 407,206. (No model.)





Claim.—1. A clamping device consisting of two elbow-shaped jaws adjustably connected by means of a bolt and nut and adjustably and detachably fastened to the rib of a reel by means of a bolt and nut, as shown and described, to fasten a rim or hoop to a reel, as and for the purposes stated.

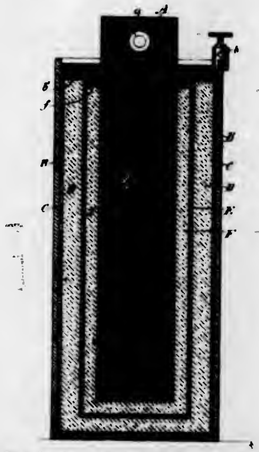
2. A cylindrical screen having an opening at one end to admit bran and one or more openings at its other end to discharge bran, fixed to the end of a flour-bolting reel in concentric position with the axis of the reel, a sleeve on the projecting rear end of the reel-shaft, a belt-pulley on the end of the sleeve, a hub having radial arms fixed to the inner end of the sleeve, brushes on the ends of the said radial arms to engage the inside of the screen, and means for rotating the reel and the screen and the brushes simultaneously, for the purposes stated.

3. A flour-bolting reel and bran-separator comprising a frame and case adapted to inclose and support a reel and screen, a reel consisting of heads connected by a series of ribs, and boards fixed to the ribs to produce a hollow cylinder that has longitudinal shoulders outside adapted to elevate meal, hoops fixed to the ribs to support a bolting-cloth fixed to the heads, a rotating shaft extended through the heads of the reel and fixed thereto, a cylindrical screen fixed to the end of the reel and provided with communication therewith, a rotating sleeve on the end of the said shaft, a hub fixed to the sleeve, radial arms on the hub, and brushes on the free ends of the arms, open-ended pockets on the end of the screen to discharge matter outward, and means for rotating the reel and screen, and the sleeve carrying the brushes, arranged and combined to operate in the manner set forth, for the purposes stated.

4. A vertically-rotating flour-bolting reel provided with openings in the head at its rear end to discharge bran into a screen fixed to said rear head, a screen fixed to the said rear head to rotate therewith, a sleeve on the rear end of the reel-shaft and extended into the screen and provided with radial arms and brushes attached to the ends of said arms to engage the inside of the screen, means for rotating the sleeve upon the reel-shaft, and means for discharging bran rearward from the rear end of the screen, arranged and combined to operate in the manner set forth, for the purposes stated.

5. In combination with a flour-bolting reel, a cylindrical screen that is larger in diameter at one end than the other, having its front and small end fixed concentrically to the rear head of a flour-bolting reel and the reel-shaft extended through the screen, a sleeve on the end of said shaft extended forward into the screen and provided with radial arms and brushes on the ends of the arms, and means for rotating the sleeve to operate the brushes carried thereby upon the inside of the screen, and means for discharging bran rearward from the rear end of the screen, for the purposes stated.

487,839. GALVANIC BATTERY. HARRY T. JOHNSON, New York, N. Y. Original application filed July 22, 1891, Serial No. 400,309. Divided and this application filed Apr. 1, 1892. Serial No. 427,373. (No model.)

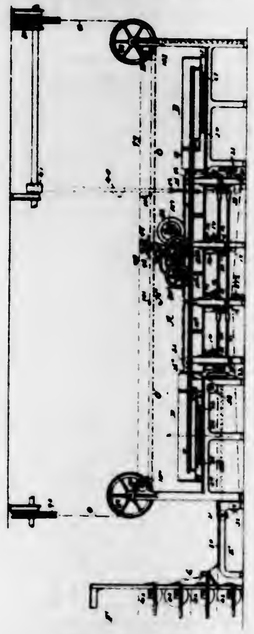


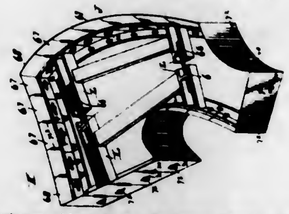
Claim.—In a dry battery, the combination of the positive electrode forming a casing, a negative electrode within the positive electrode, the layers D and F, which contain depolarizing and exciting agents arranged between said electrodes, a layer or lining of absorbent material interposed between the positive electrode and the layer D, and a layer of absorbent material interposed between the layers D and F, substantially as shown.

487,840. CLOTH-CUTTING MACHINE. CHARLES KAUFMAN, New York, N. Y. Filed Nov. 26, 1891. Serial No. 413,453. (No model.)

Claim.—1. In cutting-machines, a knife formed as a section of a hollow cylinder, the vertical edges of which section lie in planes radiating from the longitudinal axis of said cylinder, and the top (or cutting) and the bottom edges of which section lie each in parallel

planes that are at right angles to the longitudinal axis of said cylinder.





2. In cutting-machines, frames for cutting forms, consisting of curved and straight sections, as described, pins with bent heads set at the meeting faces of adjoining sections, and slotted and beveled buttons adapted to fit over and lock adjacent pins.

3. The combination, in cutting-machines, of knives, as described, and frames to support the knives, said frames being each composed of a plurality of pieces and certain of the pieces being sections of hollow cylinders and having vertical edges which are plane surfaces radiating from the longitudinal axis of said cylinder and having bottom edges that are plane surfaces at right angles to the longitudinal axis of said cylinder, long horizontal slots in said pieces, and bolts in said knives, adapted to pass through said slots and fix the knives at variable positions on said frames.

4. In cutting-machines and in combination with sectional cutting-forms, extension-braces consisting of a plurality of U-bars arranged end to end and each bar having the inner end closed by a flange 66, and right and left hand screws threading through the flanges of adjacent U-bars.

5. In cutting-machines, the combination, with cutting-forms, of roller-frames adapted to reciprocate over the cutting-forms and press fabrics thereon, and said roller-frames carrying pressure-rollers rotatably suspended on the lower ends of rods which are pivoted on the frame, and devices to limit the descent of said rollers toward said cutting-forms.

6. In cutting-machines, the combination of roller-frames adapted to traverse over cutting-forms, an endless traveling cable to reciprocate said roller-frames, eccentrics on said roller-frames to grip said cables, a second cable to engage said eccentrics, lugs on said second cable, and stops to engage said lugs, so as to stop said roller-frame.

7. In cutting-machines, the combination of a roller-frame, a main traveling cable to impel said roller-frame, a rotary collar on said roller-frame, eccentrics mounted on said collar and adapted to grip said cable, and a second cable adapted to connect with said eccentrics and release the same from said main cable or cause the same to grip said main cable.

8. In cutting-machines and in combination with a cloth-conveying cable, a cloth-clamp having a long bar curved at each end and shorter bars pivoted at each end of said longer bar and also having oppositely-curved ends which form with the curved ends of the said long bar a grip for said cable, and a swing adapted to cover the ends of said shorter bars and hold the same down on the long bar.

9. In cutting-machines and in combination with a cloth-conveying cable, a cloth-clamp having a cross-bar, arms pivoted on said cross-bar, and said cross-bar and said arms having oppositely-curved ends, which together form a grip for said cable, a pressure-bar parallel to said cross-bar and adjustable in slots in said arms, and screws in said arms for pressing said bar on the cloth.

10. In cutting-machines and in combination with cutting-forms, leaved springs independent of the support for said cutting-forms and adapted to be set in various positions within said cutting-forms, projections on said springs, and vertical guide-slots in said cutting-forms to guide said projections.

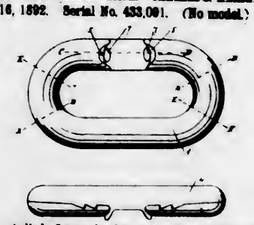
11. In cutting-machines and in combination with cutting-forms, main tables adapted to support the same, roller-frames, rails for said roller-frames on said main tables, and turn-tables having corresponding rails for said roller-frames and adapted to rotate by means of axial pivots, circumferential grooves in both said turn-tables and the supports thereof, and balls in said grooves.

12. In cutting-machines, the combination of a cloth-conveying cable, a cloth-clamp adapted to grip said cable between the curved ends, respectively, of a fixed cross-bar and of short arms pivoted thereon, and a belt-shipper adjacent to said cable and adapted to be engaged by said clamp for the purpose of arresting said cable.

13. In cutting-machines, a roller-frame for pressing fabrics on cutting-forms and having a plurality of pressure-rollers rotatably supported on the lower ends of rods which are pivoted in the frame, threads on said rods, and nuts to limit the motion of said rods through the pivotal supports thereof.

14. The combination, in cutting-machines, of cutting-forms, leaved springs independent of the support of said cutting-forms and adapted to be set at different positions within said forms, slotted cap-pieces adapted to slide lengthwise over said springs and carrying guides which move vertically in guide-slots in the cutting-forms.

487,841. SEPARABLE LINK. CHARLES S. KENSHAW, Rome, N. Y. Filed May 16, 1892. Serial No. 433,091. (No model.)



Claim.—1. A link formed of two duplicate separable parts, each part having an opening at the side of the link and U-shaped or hollow ends 4 at each side of the opening, and the projections 7 at the opposite side of the link, adapted to engage in the hollow ends of the separate parts, substantially as set forth.

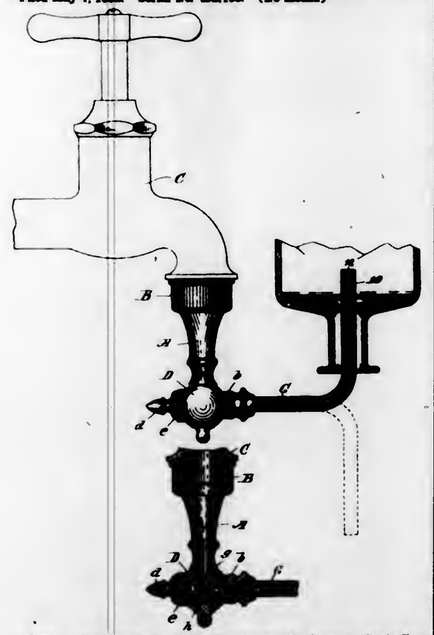
2. A separable link composed of duplicate parts, each part having an open side and U-shaped beveled ends at side of the opening in the side, and the malleable projections on the opposite side of the link from the opening and projecting at right angles from the plane of the link and adapted to be bent into the hollowed beveled ends, substantially as set forth.

3. The combination, in the separable link, of the two parts thereof, each part having an open side, and the ends of the part adjacent to the opening being thinner than the body portion and opposite side of the part and terminating in the hollowed and beveled end, malleable projections on the opposite side of the part from the open side, and serrations on the part adjacent to the projections and adapted to engage in corresponding depressions in the ends of the part adjacent to the open side, substantially as set forth.

4. A link composed of duplicate separable parts, each part having an open side, locking projections on the parts on the opposite side from the open side, adapted to engage the ends of the parts adjacent to the open side, and dowel projections on the engaging faces of the two parts at the ends of the part, and a corresponding dowel depression in the ends of the parts on the opposite sides of the longitudinal central line from the dowel projection for receiving the dowel projection, substantially as set forth.

5. A separable link consisting of two duplicate parts, each part having an open side and malleable locking projections on the side opposite to the open side, projecting at right angles from the plane of the link and adapted to engage the ends of the part adjacent to the open side serrations on the engaging faces of the part adjacent to the malleable projections, and corresponding depressions in the ends adapted to receive the serration and dowel-projection rib on the engaging face of the parts at the end of the part, and a corresponding dowel depression on the opposite side of the central longitudinal line from the projection, adapted to receive the projection, substantially as set forth.

487,842. BOTTLE-WASHER. SAMUEL B. KIRK, Cambridge, Mass. Filed May 7, 1892. Serial No. 432,163. (No model.)



Claim.—In a bottle-washing attachment for faucets, the hollow vertical stem A, having its upper end enlarged and provided with a coupling B for attachment to a faucet, combined with a horizontally-arranged stop-cock or valve D at the lower end of the stem, having a hollow plug extended laterally to form an axially-revoluble discharge-tube G, said tube having its outer portion bent at an angle to adapt it to be turned either upward or downward into a vertical plane, and said hollow plug having two apertures *g h*, adapted to establish communication between the hollow stem A and the discharge-tube when the bent outer portion of the latter is turned to point its mouth or outlet either upward or downward, all constructed to operate substantially as set forth.

487,843. DENTAL PLUGGER. HENRY R. KLINE, Ashtabula, Ohio. Filed Apr. 6, 1892. Serial No. 427,984. (No model.)

Claim.—1. In a dental plugger, the combination, with a hammer-tube, of a plugger-socket loosely connected therewith and operated by the shock imparted to the hammer-tube by its hammer, substantially as described.

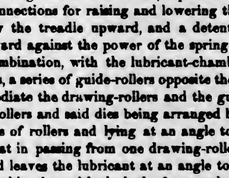
2. The combination, with a pneumatic dental hammer, of a socket held to one side of the hammer-tube and adapted to receive a plugger, substantially as described.

3. The combination, with the hammer-tube having the usual hammer and pneumatic connections, of stay-rings secured to the hammer-tube and a socket carried by the rings and adapted to hold a plugger, substantially as described.

4. The combination, with the hammer-tube having the usual hammer and pneumatic connections, of projecting stay-rings secured to the hammer-tube, a tubular socket held to slide in the stay-rings and having shoulders to engage the same, and a fastening device to fix the plugger in the socket, substantially as described.

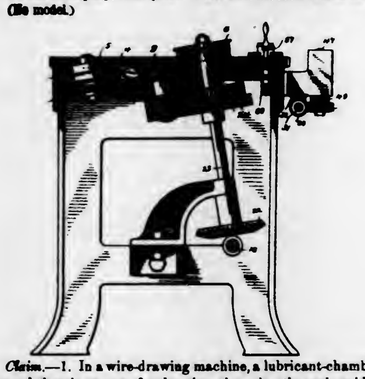
5. The combination, with the pneumatic hammer and the air-tube connected therewith, of a plugger-holding socket held to one side of the hammer and a chain having one end secured to the air-tube and the other end connected with the socket, substantially as described.

6. In a pneumatic plugger, the combination, with the air-tube and hammer, of a pair of air-bulbs arranged side by side and connected with the air-tube, substantially as described.



7. In a dental plugger, the combination, with the pneumatic hammer, of a pair of bulbs provided with a Y-pipe and a cushion-support therefor, and an air-tube leading from the Y-pipe to the hammer, substantially as described.

487,844. WIRE-DRAWING MACHINE. GEORGE B. LAMB and ANDREW C. CAMPBELL, Waterbury, Conn., assignors to the Waterbury Machine Company, same place. Filed Feb. 20, 1892. Serial No. 422,192. (No model.)



Claim.—1. In a wire-drawing machine, a lubricant-chamber, dies arranged therein, means for drawing the wire through said dies, a reservoir under said chamber and communicating therewith, a piston in said chamber, and suitable means for operating said piston, so that the lubricant may be withdrawn from the chamber by a downward movement of the piston and forced outward into the chamber again by an upward movement of the piston.

2. The combination, with the lubricant-chamber, dies arranged therein, and means for drawing the wire through said dies, of a reservoir communicating with said chamber, a piston in said reservoir, a treadle and connections for raising and lowering the piston, a spring acting to draw the treadle upward, and a detent for locking the treadle downward against the power of the spring.

3. The combination, with the lubricant-chamber, of a series of drawing-rollers, a series of guide-rollers opposite thereto, and a series of dies intermediate the drawing-rollers and the guide-rollers, one of said series of rollers and said dies being arranged below the plane of the other series of rollers and lying at an angle to the plane of the machine, so that in passing from one drawing-roller to another the wire enters and leaves the lubricant at an angle to its surface.

4. The combination, with the bed, of a sprocket-chain, sprocket-wheels by which it is carried, mechanism for imparting motion thereto, a slide 57, carrying jaws 59, a hand-lever 63 for operating said jaws, a pivoted engaging arm having a hook to engage the chain, and a spring to hold the hook out of engaging position.

5. The combination, with the bed and sprocket-chain, mechanism for imparting movement thereto, and a die-holder and dies, of slide 57, having grooves which converge toward the end of the slide, jaws having ribs engaging said grooves and slots at the rear end, a pivoted hand-lever having a tongue engaging said slots, whereby parallel movement is imparted to the jaws in opening and closing, and an engaging arm adapted to connect the slide with the chain, substantially as described.

6. The combination, with the block, reel, drawing-rollers, guide-rollers, and die-holders 4, of die-holder 56, suitable dies adapted to engage the several die-holders, roller 72 in front of die-holder 56, and a slide carrying suitable jaws, by which the end of wire may be drawn through the several dies before threading up.

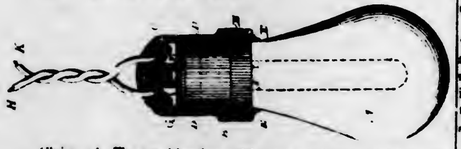
487,845. POCKET-LIGHTER. WILLIAM LAPE, Brooklyn, N. Y. Filed Feb. 6, 1892. Serial No. 420,540. (No model.)

Claim.—1. The combination, with an inclosing case, a lamp having a wick-tube arranged within said casing, a tape having fulminating pellets supported in said casing, a guide-roller for said tape, a spring-actuated contact-roller, a star-wheel applied to said guide-roller, an actuating-hook for intermittently moving said star-wheel, a hinged cover for the casing, having an arm pivoted to the upper end of the actuating-hook, a hammer applied to the spring-arm, said arm being provided with a lug which is engaged by the teeth of the star-wheel, and guide-strips extending from the guide-roller to an outlet-opening in the case for conducting the spent tape to the outside of the casing, substantially as set forth.

2. The combination, with a casing having a detachable side wall, a lamp arranged at the inside of the casing and provided with a lid having a laterally-inclined wick-tube, a hinged cover provided with an arm, a guided and spring-actuated actuating-hook connected with said arm, a guide-roller, a star-wheel applied to said guide-roller and engaged by said hook, a tape having fulminating pellets and applied to a pin on the inside of the casing, a spring-actuated hammer, the spring-arm of which is provided with a lug that is engaged by the teeth of the star-wheel, and a spring-actuated contact-roller that is located below the hammer, and guide-strips between which the spent tape is guided from the contact-roller to an outlet-opening in the bottom of the casing, substantially as set forth.

3. The combination, with a casing, of a guided and spring-actuated hook operated by the hinged cover of the casing, a guide-pulley for the fulminating tape, a star-wheel attached to said pulley and located in the same plane with the actuating-hook, a hammer applied to a spring-arm, a lug on the spring-arm of the hammer, also located in the plane of the star-wheel, so as to actuate the hammer by the star-wheel, and a spring-actuated contact roller that is located below the hammer, substantially as set forth.

487,846. CASING FOR BASES OF INCANDESCENT LAMPS. GEORGE R. LEAR, Boston, and CHARLES B. BURLEIGH, Chelsea, Mass., assignors to the Bernstein Electric Company, of Maine. Filed Nov. 27, 1891. Serial No. 413,153. (No model.)



Claim.—1. The combination, with an incandescent lamp having a base to be protected, of a casing made in two parts, one part ring-shaped surrounding the base, the other part cup-shaped inclosing the end of the base, and two packing-rings, one between the two parts of the casing and the other between the ring part of the casing and the lamp-base.

2. The combination, with an incandescent lamp having a base to be protected, of a casing made in two parts, one part being ring-shaped surrounding the base and the other part being cup-shaped inclosing the end of the base and provided with a screw connection to the base, whereby it both incloses the end of the base and holds the other part of the casing in position.

3. The combination, with an incandescent lamp having a base to be protected, of a case made in two parts, one part being ring-shaped and provided at each end with a packing and embracing the base of the lamp, while the other part is cup-shaped and embraces the end of the base of the lamp and is provided with a screw connection to said base, whereby it both holds in position the former part of the casing and compresses the packing between the two parts.

4. A casing for the base of an incandescent lamp, made in two parts, one part being provided with means of attachment to the base and holding the other part in position around the base, the parts being shaped to receive a packing between them and also between one part and the lamp.

5. A casing for the base of an incandescent lamp, made in two parts, one part being ring-shaped and the other being cup-shaped, the latter extending above the lower end of the base and compressing a packing between itself and the other part of the casing.

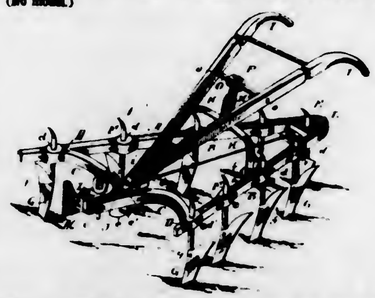
6. A casing for the base of an incandescent lamp, made in two parts, one part embracing said base and the other part provided with a screw-thread for attachment to the said base, the parts being shaped to receive a packing between them.

487,847. DIE-STOCK OILER. GEORGE LE S. LE VESCONTE, Minneapolis, Minn. Filed Feb. 23, 1892. Serial No. 422,415. (No model.)

Claim.—1. The combination, with the body and the handle of a die-stock, of a valve contained in the inner end thereof, a nozzle or duct to lead the oil therefrom to the die, the closed outer end of the handle, and a pin projecting through the same and connected with said valve to operate the same, substantially as described.

2. The combination of the body and the handle of a die-stock, with a sleeve 8, arranged in the inner end thereof and having a nozzle adapted to deliver the oil upon the die, a valve arranged in said sleeve, a spring therein to hold the said valve against its seat, a plug in the outer end of the handle, a push-pin therein, and a rod 16 extending between said push-pin and said valve, substantially as described, and for the purpose specified.

487,848. COMBINED HARROW AND CULTIVATOR. NATHAN P. LEWIS, Hutchins, Miss. Filed June 17, 1892. Serial No. 437,061. (No model.)



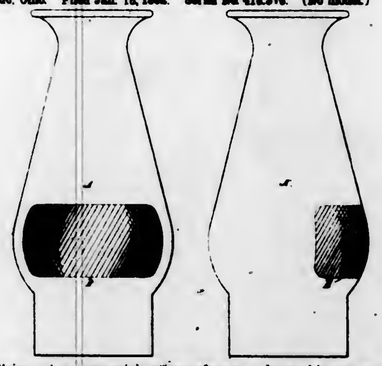
Claim.—1. In an implement of the class described, the combination, with a frame provided with parallel uprights, of handles carrying at their lower ends a coupling-plate adapted to be attached at either end of the frame, a transverse bar intersecting the handles and provided with a centrally-disposed plate with a longitudinally-arranged slot, and a binding-bolt passing through said slot and the uprights, substantially as and for the purpose set forth.

2. In an implement of the class described, the combination, with the frame provided at each end with an aperture, of a plate provided with an aperture adapted to coincide with one of the first-mentioned apertures, said plate carrying handles, a clevis provided with an apertured yoke adapted to embrace the frame end and the plate, a clevis-pin passing through the registering apertures and securing the clevis and plate to the frame, and means for effecting vertical adjustment of the handles, substantially as and for the purpose set forth.

487,849. HAND CORN-PLANTER. ISAAC MACKEY, Hollansburg, Ohio. Filed Dec. 9, 1891. Serial No. 414,485. (No model.)

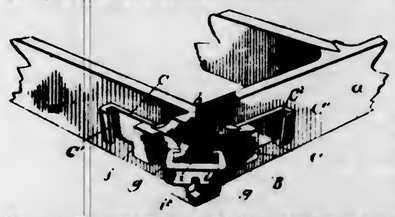
Claim.—The combination of a hand-planter and an adjustable stop to regulate the depth of the planting, comprising a block and a shank receiving the block and having divergent arms, each provided at its end with a series of perforations, and screws passing through the perforations and securing the shank to the edge of one of the hinged sections of the planter, substantially as described.

487,850. SHADED LAMP-CHIMNEY. DAVID M. MEYFORD, Toledo, Ohio. Filed Jan. 18, 1892. Serial No. 418,376. (No model.)



Claim.—As a new article of manufacture, a lamp-chimney having thereon a sectional zone of translucent paint indelibly fixed to the surface by firing, located at a point opposite the point occupied by the flame of the burner to permit an unobstructed passage of the light above and below the shade, substantially as described.

487,851. MOLDER'S FLASK. FRANK MOORE, Alliance, Ohio. Filed Sept. 5, 1891. Serial No. 404,837. (No model.)



Claim.—1. The combination, with a flask comprising separable sides, of blocks secured at or near the ends of the sides, said blocks having recesses formed therein, and corner-pieces passing through the recesses and having sliding connection with the blocks, said corner-pieces having enlarged ends whereby the sides are prevented from entire separation, substantially as set forth.

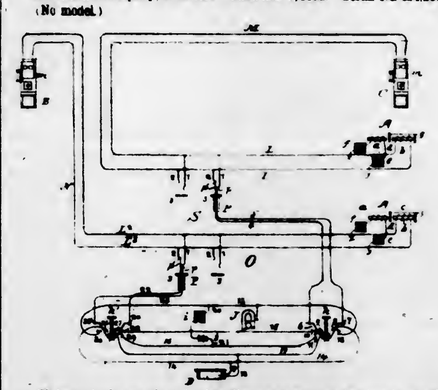
2. The combination, with a flask comprising separable sides, of blocks secured to the sides at or near their ends, corner-pieces passing through the blocks, said corner-pieces being made in sections hinged together, and locking means engaging the blocks, substantially as set forth.

3. The combination, with a flask comprising separable sides, of blocks secured to the sides at or near their ends, corner-pieces passing loosely through the blocks, flanges or lips on said blocks, projections on said corner-pieces, and locking devices adapted to embrace said flanges or lips and bear against the projections on the corner-pieces, substantially as set forth.

4. A molder's flask comprising separable sides and a bar extending from one side to the other, one of said parts provided with pins and the other with holes adapted to receive the pins, substantially as set forth.

5. An adjustable corner for molding-flasks, consisting of blocks having recesses formed therein, corner-pieces located in the recesses, having sliding connection with the blocks and permanently connected therewith, and means for locking these corners, substantially as set forth.

487,852. MULTIPLE-SWITCHBOARD CIRCUIT. ALFRED H. MCGUILLOUGH, Boston, Mass., assignor, by mesne assignments, to the Western Electric Company, of Illinois. Filed Mar. 9, 1892. Serial No. 424,298. (No model.)



Claim.—1. In an electric signaling system, a main circuit, an alternating-current generator, a continuous-current generator, means for connecting both to the said main circuit simultaneously and by the same operation, and an annunciator having a signal-releasing electro-magnet in a branch of said circuit of high actual but relatively-low apparent resistance to alternating currents, and thereby made responsive to said alternating currents, and having, also, a signal-retaining electro-magnet in a parallel branch of said circuit of low actual resistance but relatively-high apparent resistance, and made thereby irresponsive to alternating currents and responsive to continuous currents of lower electro-motive force, substantially as and for the purposes described.

2. An electric signaling system comprising a main circuit, an annunciator having a signal-releasing electro-magnet and a signal-retaining electro-magnet in parallel branches of the said circuit, the actual resistance of the retaining-magnet branch offered to constant currents of single direction being much lower than that of the releasing-magnet branch, while the apparent resistance of both to alternating currents is substantially equal, an alternating-current generator for sending outgoing signals, a continuous or uniform-direction current generator, and a signal-sending key or circuit-controller interposed between the main circuit and both generators and adapted when operated to close the circuit of both through the said circuit simultaneously, substantially as and for the purpose set forth.

3. In an electric signaling system, a main circuit, an alternating-current generator and a continuous-current generator associated together at the same station of the said circuit, a circuit-closer for connecting both to the said main circuit simultaneously and by the same operation, a polarized electro-magnetic bell at a second station, responsive to alternating currents only and adapted to give the signal upon the operation of said circuit-closer, and an annunciator adapted to respond and give a signal when alternating currents only traverse the main circuit, but to remain quiescent when the currents of the said two generators simultaneously traverse said circuit, substantially as described.

4. The combination of an annunciator having two electro-magnets which act oppositely upon a common signal-controlling armature and a main circuit having parallel branches within which the said magnets are respectively included, a source of alternating currents for sending outgoing signals over said circuit, a source of continuous currents for counteracting the influence of said alternating currents upon the annunciator, whereby the said annunciator is prevented from re-

sponding to outgoing signals, and means for connecting both with the circuit simultaneously, substantially as described.

5. The combination, substantially as hereinbefore described, of a closed main circuit, a polarized electro-magnetic call device included therein responsive to alternating currents, an alternating-current generator, a continuous-current generator associated therewith, an annunciator at the same station as the said generators, permanently connected with the said circuit and adapted to respond when alternating currents only traverse the said circuit, but to remain irresponsive when alternating and continuous currents traverse the said circuit simultaneously, and a compound circuit-closing device controlling the terminals of both generators and their connections with the main circuit, so that when operated to make such connections the home-annunciator will be prevented by the continuous currents from responding to the alternating currents transmitted to operate the said polarized bell.

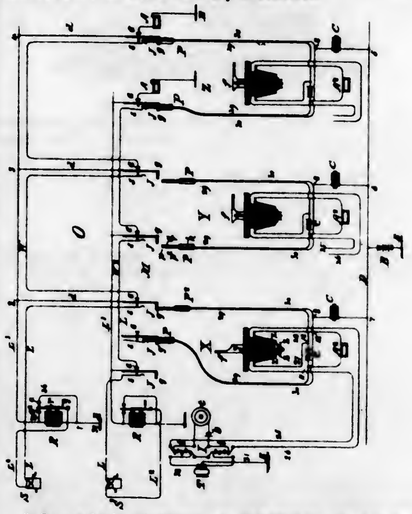
6. In an electric signaling system, the combination of a main circuit, an alternating-current generator, a relatively-low-resistance continuous-current generator, a circuit-closer controlling branch terminals of the said main circuit and also the terminals of both generators and adapted when operated to connect both with the said main circuit, and an electro-magnetic resistance or retardation coil of low actual but high inductive resistance included in the circuit of the continuous-current generator to prevent the currents of the alternating generator from being short-circuited or shunted through the said continuous-current generator, while offering little opposition to the continuous currents developed thereby.

7. The combination, with a telephone-circuit extending between a central station and a sub-station, an alternating-current magneto-generator and a polarized bell located at the sub-station in the said circuit to receive and send signals from and to the central station, an alternating call-generator at the central station to operate the said bell, and a call-annunciator at the central station, having a high-resistance actuating-magnet in the said circuit to receive signals transmitted by the sub-station generator, of auxiliary devices located at the central station and adapted to prevent the said annunciator from responding to outgoing signals, the said devices consisting of an electro-magnet of low resistance included in a parallel branch of the main circuit and adapted when energized to act upon the annunciator-armature in opposition to the actuating-magnet, retardation-coils in the said parallel branch, one on each side of said magnet, whereby the said branch is enabled to offer a high resistance to alternating currents but a relatively-low resistance to continuous currents, a continuous-current generator associated with the central-station alternating generator, an inductive resistance included in circuit therewith, as indicated, and a ringing-key acting to connect the central-station alternating generator with the circuit for the purpose of operating the sub-station bell and simultaneously to connect the continuous-current generator with the same circuit for the purpose of energizing the low-resistance annunciator-magnet, and thereby preventing the operation, also, of the said annunciator.

8. The combination, in a central telephone-station, of a branch-terminal multiple switchboard in which the several converging telephone-circuits are represented by normally-discontinuous branches at each of a number of switch-sections, a call-receiving annunciator for each line, actuated by a high-resistance electro-magnet and located at some one of the said sections, and means for preventing the said annunciator from responding to outgoing signals sent from the other sections over the circuit with which it is connected, while leaving it fully responsive to incoming signals, said means comprising a battery or other continuous-current generator associated with the switchboard alternating-current call-generator, a ringing-key adapted in sending outgoing signals to simultaneously connect both generators with the circuit, and thereby cause a continuous and an alternating current to traverse the said circuit together, and two electro-magnets in parallel branches of the circuit, adapted to act oppositely upon the armature of said annunciator, the relaxing-magnet being wound with many convolutions of fine wire and having a high actual resistance but a relatively-low coefficient of self-induction and the retaining-magnet being wound with few convolutions of coarse wire and placed in circuit with inductive resistance, so that its branch circuit has a low actual resistance but a high coefficient of self-induction, whereby the first-named magnet is enabled to overcome the latter and give the signal when the circuit is traversed by incoming alternating currents, while the last-named magnet is enabled to overcome the former and prevent the signal from being given when the outgoing call-current, accompanied by its associated continuous currents, traverses the circuit.

487,858. MULTIPLE-SWITCHBOARD BUSY-TEST CIRCUIT AND APPARATUS. JAMES L. MCGARRITY, Boston, Mass., assignor, by mesne assignments, to the Western Electric Company, of Illinois. Filed Apr. 7, 1892. Serial No. 428,268. (No model.)

Claim.—1. In a busy-test system and apparatus for multiple switchboards, the combination of the main circuit having plug-sockets at the several switchboard-sections, plug-and-cord connectors for uniting the sockets of any two lines, a test-battery, a normally-open circuit therefor capable of being closed by the insertion of said plug-connectors in the socket of any main circuit, a relay or electro-magnetic device connected with the main line and included in the circuit of a conductor common to said main circuit and said normally-open local circuit, a direct-earth branch normally connected with one side of the main circuit through the armature of said relay and adapted to be disconnected when the said relay is energized by the insertion of a plug-connector in any plug-socket of the main circuit, and a busy-test circuit in which the telephone is directly or inductively included as an indicating-instrument and which is localized and prevented from giving false test-signals by the normal connection of the said relay-controlled earth branch, substantially as described.

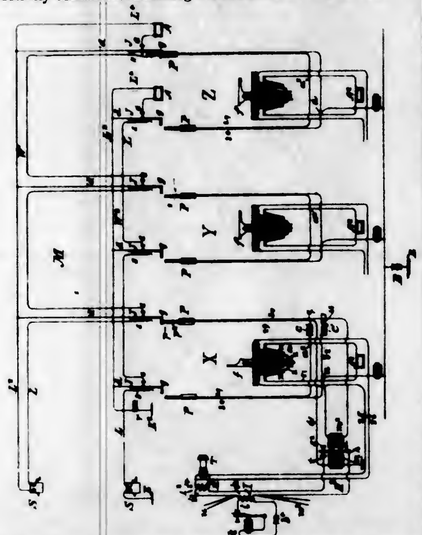


2. In a multiple switchboard, the combination, with each main-line circuit, of an earth branch normally connected therewith at a point external to the said switchboard, an electrical generator, a normally-open local circuit therefor leading through the plug-sockets of said line and adapted to be closed by the insertion of a plug-connector in any of said sockets, and a relay included in such circuit and controlling the continuity of said earth branch, substantially as described.

3. The combination, with a multiple switchboard, main-line circuits connected therewith, each having a direct conductor extending through a series of spring-jack contacts, and a return or test conductor branching to the insulated conducting test frames or rings of the said spring-jacks, a branch extending from a point on said test-conductor external to the spring-jacks to earth direct, and a relay controlling the said earth branch by means of its armature and itself included in an earth branch from the direct main-line conductor, of a plug and connecting-cord therefor at any switchboard-section, whereby any two spring-jacks may be connected, a test-battery connected with the conductor leading from the tip of such plug, and a normally-open circuit therefor adapted to be closed through the relay for the purpose of opening the earth branch upon the insertion of a plug in its jack, a telephone associated with a pair of cord-connected plugs at a second switch-board section, connected inductively with a vibratory circuit-breaker, an electro-magnet in a derived circuit of the test-battery controlling the continuity of said inductive connection, maintaining the same open when its armature is attracted and momentarily closing the same, and thereby producing a signal in the telephone when its armature is retracted, and connections whereby on the application of the test-plug to the test-frame of any spring-jack the said electro-magnet may be short-circuited through the direct-earth branch of the line tested, when the said line is at liberty and the signal thereby given in the telephone, substantially as described.

487,854. BUSY-TEST APPARATUS FOR MULTIPLE SWITCHBOARDS. JAMES L. MCGARRITY, Boston, Mass., assignor, by mesne assignments, to the Western Electric Company, of Illinois. Filed Apr. 7, 1892. Serial No. 428,266. (No model.)

Claim.—1. The combination, substantially as hereinbefore described, of an ordinary multiple switchboard busy-test apparatus comprising an electrical generator connected with the sleeve-uniting conductor of a double conducting-cord extending between the two plugs of a pair with an earth branch leading through a high-resistance relay-magnet from the tip-uniting conductor of other pairs of loop-plugs, and apparatus controlled by said relay and adapted on the operation thereof to produce signals in a telephone with which it is inductively connected, indicating the condition of a tested line.



2. In a busy-test apparatus for multiple switchboards, a series of conducting-plug sockets for each line, all electrically united, a test-battery or like generator, loop or double conductor plug connectors adapted to be inserted in said sockets, and a connection from said test-generator through one of the conductors of said plugs to the several sockets of a line, in any one of which the said plugs is inserted, combined with a test-plug, a branch conductor extending from the tip of said plug to earth and adapted to close the circuit of said test-generator during the test of a busy line, a normally-open test-circuit extending between a telephone and a vibrator or other source of sound, also connected with said circuit and connecting inductively with both, and a relay included in the circuit of the said earth branch conductor, controlling said normally-open test-circuit and adapted to close the same when energized by the act of testing a busy line and to thereby connect the telephone with the source of sound, substantially as described.

3. An apparatus for producing a specialized busy-test for multiple switchboards, comprising a telephone, a source of sound, such as a buzzer or vibrator, producing intermittent currents, a normally-open local circuit extending between said vibrator and said telephone, connecting inductively with both and adapted when closed to reproduce in the latter the sounds transmitted by the former, a test-battery having one pole grounded, means, substantially as indicated, for connecting all the plug-socket frames or test-rings of a line to the other pole thereof by the act of inserting a plug-connector in any one of them, a conductor extending from an earth connection to the tip of a testing-plug, whereby the circuit of said test-battery may be closed by the contact of said tip with any of the plug-sockets so connected, and a relay included in the circuit of said conductor and arranged to close the said normally-open local circuit by the attraction of its armature and to produce the signal in the telephone when the circuit of said test-battery is closed through its coils, but to remain inert when the line tested is unoccupied, substantially as described.

4. The combination, substantially as hereinbefore described, of an ordinary multiple switchboard busy-test apparatus comprising a test-battery or equivalent generator connected with the sleeve-uniting conductor of a double conducting-cord extending between the two plugs of a pair with an earth branch leading through a relay-magnet of high resistance and inductance from the tip-uniting conductor of other pairs of the loop-plugs, apparatus controlled by said relay and inductively connected with a telephone, said apparatus being adapted on the operation of said relay to produce signals in the said telephone indicative of the condition of the tested line, and means, such as a relay or electro-magnet, included in the sleeve-uniting conductor of said pairs of plugs and acting in opposition to the first relay, whereby false signals due to discharges of extraneous currents passing through the coils of said first relay are prevented.

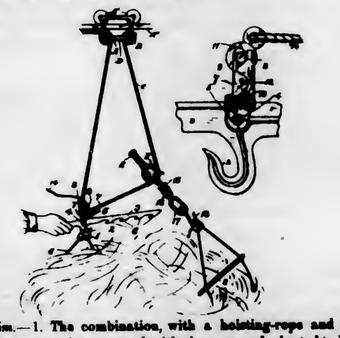
5. In a busy-test apparatus, a telephone for noting the test-signals, a source of sound, such as a vibrator or buzzer, for producing intermittent currents in a local circuit, a normally-open intermediate circuit inductively connecting the circuit of said vibrator with the telephone and adapted when closed to enable the former to produce sounds in the latter, a pair of loop-plug connectors for uniting any two lines, each plug having a tip-conductor and a sleeve-conductor insulated from each other and two conductors uniting the tips and sleeves, respectively, a relay in the circuit of a branch, connecting the tip-uniting conductor with the earth, which conductor in testing a busy line becomes a portion of the test-battery circuit, an armature therefor acting as a circuit-closer of said normally-open circuit and adapted to close the same when attracted by the relay-magnet and to open the same when retracted, and an electro-magnet in circuit with the sleeve-uniting conductor of said plugs, acting upon the same armature in opposition to the said relay-magnet, substantially as and for the purposes specified.

487,855. BELTING. JAMES O'CONNELL and GEORGE R. HINDMARSH, Mount Sterling, Ky. Filed Aug. 24, 1892. Serial No. 443,881. (No model.)

Claim.—1. As an improved article of manufacture, a belt stamped or cut from sheet metal having lugs with openings for the reception of the spindles of antifriction-rollers, in combination with antifriction-rollers having their bearings in said lugs, substantially as described.

2. As an improved article of manufacture, a belt stamped or cut from sheet metal having lugs with openings for the reception of the spindles of antifriction-rollers and rectangular openings between the lugs for the reception of the cogs upon the ordinary sprocket-wheel, in combination with antifriction-rollers having their bearings in said lugs, substantially as described.

487,856. HAY-CARRIER. WHITWORTH G. RISLEY, Rochester, N. Y., assignor to Risley & Montgomery, same place. Filed Mar. 19, 1892. Serial No. 426,262. (No model.)



Claim.—1. The combination, with a hoisting-rope and a hay-sling, of a loop or ring engaged with the rope and adapted to be connected to one end of the sling and the bar adapted to be connected intermediate the ends to the other end, having an outwardly-extending steering end or handle, and a forward portion provided with downwardly and rearwardly extending hooks, arranged to be engaged with the loop and form a secure fastening by the weight of the bar and its load, said bar adapted to be engaged with said hoisting-rope, substantially as described.

2. The combination, with a traveling carriage, a movable frame, and a rope connecting the two, of a hay-sling, a movable frame, connected to one end of the sling, having a detaching-pulley and a latch for securing it, the other end of the sling being connected to the first-mentioned movable frame on the rope, and connections for detachably connecting said frames between said two frames, whereby the ends of the sling may be drawn together and secured and the rope released from one of them, substantially as described.

3. The combination, with the traveling carriage, the rope, and the movable pulley on the rope, adapted to engage and be locked to the carriage, of a hay-sling, a movable frame connected to one end of the sling, having a detaching-pulley thereon and a latch for secur-

ing it, the other end of the sling being connected to the pulley on the rope, and connections for detachably connecting said frames between the pulley and the frame, whereby the ends of the sling may be drawn together and secured, the rope released from one, and the sling raised and locked to the carriage, substantially as described.

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solid ball and projecting above the same, a sleeve loosely and rotatably arranged upon the upper end of said screw or pin, and a pressure-exerting device arranged in said hollow post, adapted to exert a pressure against the surface of said solid ball, substantially as and for

ing it, the other end of the sling being connected to the pulley on the rope, and connections for detachably connecting said frames between the pulley and the frame, whereby the ends of the sling may be drawn together and secured, the rope released from one, and the sling raised and locked to the carriage, substantially as described.

4. The combination, with the carriage, the rope, and the movable pulley on the rope, of the frame having the detaching-pulley and the latch for retaining it, and connections for detachably connecting said frames between the two pulley-frames, embodying a bar provided with a series of hooks or locking projections, and a co-operating ring, substantially as described.

5. The combination, with the carriage, the movable pulley, and the rope, of a frame mounted on the rope, having the detaching-pulley, the hooked bar, and means for the attachment of a hay-sling, the ring on the movable pulley, with which the bar engages, and means for the attachment of a hay-sling, substantially as described.

6. The combination, with a hoisting-rope, a hay-sling, and the frame having the hooked bar thereon connected to one end of the sling, of the pivoted pintle, the pulley mounted thereon, the latch for retaining the pintle, and the frame with which the hooked bar engages, substantially as described.

7. In a hay-carrier, the combination of the frame having the upwardly-extending arms, the pintle pivoted on one of them, and the pulley mounted thereon, the other arm having the socket for the end of the pintle, the latch 11, having the beveled end pivoted on the pin 12, and the spring 13, said frame adapted for connection to one end of a sling, substantially as described.

8. The combination, with the rope, a pulley thereon having a ring or loop thereon, and means for connecting it with one end of a hay-sling, of a second frame having a detaching-pulley thereon, arranged to engage the rope, and a bar pivoted on said frame, having the attaching-hook for a hay-sling, the series of hooks or projections for co-operating with the loop or ring on the other pulley-frame, and the handle portion extending in rear of the pivot, substantially as described.

9. The combination, with the pulley F, the ring connected thereto, having the laterally-extending portion, and the attaching-hook connected to the ring, of the frame having an attaching-hook, and the bar pivoted to said frame, provided with hooks or projections adapted to engage the lateral extension on the pulley F, substantially as described.

10. The combination, with the rope and a movable frame thereon, of a hay-sling, a movable frame connected to one end of the sling, having a detaching-pulley and a latch for securing it, the other end of the sling being connected to the first-mentioned movable frame on the rope, and connections for detachably connecting said frames between said two frames, whereby the ends of the sling may be drawn together and secured and the rope released from one of them, substantially as described.

11. The combination, with the rope and a movable frame thereon, of a hay-sling, a movable frame connected to one end of the sling, having a movable pulley pivoted thereon, under which the rope extends, the other end of the sling being connected to the first-mentioned movable frame on the rope, and connections for detachably connecting said frames between said two frames, whereby the ends of the sling may be drawn together and secured and the rope released from one of them, substantially as described.

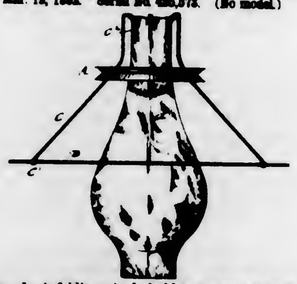
487,857. PROCESS OF PRODUCING HAMMOCK-BODIES. ALBERT O. ROSS, New York, N. Y., assignor to Vincent P. Travers, same place. Filed July 21, 1892. Serial No. 440,777. (No specimens.)

Claim.—1. The method herein described of producing a hammock-body, which consists in consecutively laying straight warp-strands and connecting the last laid of said strands with three previously-laid warp-strands and with the body of the hammock by means of a needle-thread, substantially as described.

2. The method herein described of producing a hammock-body, which consists in joining the braid to one warp-strand by means of a needle-thread and in thereupon laying another warp-strand and connecting said last-laid warp-strand with the strand previously laid and with the braid by means of a needle-thread, and in continuing these steps until the hammock is completed, substantially as described.

3. The method herein described of producing a hammock-body, which consists in consecutively laying warp-strands and by connecting them laid with one another by passing the needle-thread alternately over and under two of the warp-strands in one direction and alternately under and over two warp-strands in an opposite direction, substantially as described.

487,858. SHADE-HOLDER. LEOPOLD SITTNER, New York, N. Y. Filed Mar. 19, 1892. Serial No. 426,573. (No model.)



Claim.—1. A folding shade-holder composed of a sheet-metal ring, a larger wire ring, inclined stays pivoted to the larger ring, and means by which the inclined stays are attached to or detached from the sheet-metal ring, substantially as set forth.

2. A folding shade-holder composed of a sheet-metal ring for the upper end of the shade, a larger wire ring for the lower end of the same, inclined stays pivoted by means of eyes to the lower ring, and keepers pivoted to the sheet-metal ring and adapted to lock the inclined wire stays to the ring, substantially as set forth.

3. A folding shade-holder composed of a sheet-metal ring provided with grooves for inclined wire stays having eyes at their lower ends by which they are pivoted to the lower ring, keepers which are pivoted to the sheet-metal ring at one side of the groove, and lugs arranged at the other side of the groove and adapted to engage or release the outer ends of the keepers or plates, substantially as set forth.

487,859. WINDOW-CHAIR. FELIX STAMBOLI, New York, N. Y. Filed Mar. 10, 1892. Serial No. 424,511. (No model.)

Claim.—In a window-chair having a seat B and means, as the hooks B^3, for engaging strongly within the building and a lever or levers D to press against the face of the building outside, the combination therewith of the casting B^2 and the threaded pin E and nut or hand-wheel G, tapped thereon, the casting, being thicker in the portion toward which the pin is traversed by the sinking of the chair, adapted to act wedgewise, all substantially as herein specified.

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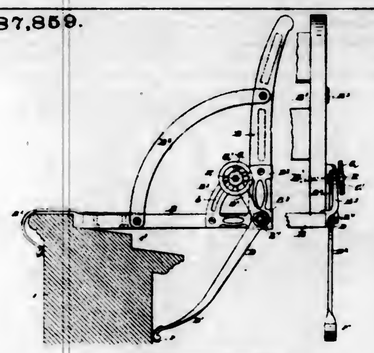
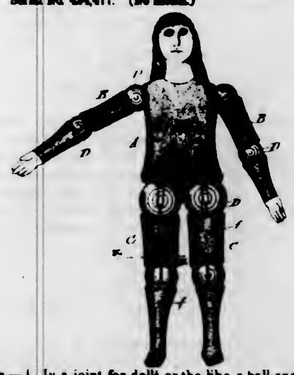


487,860. SHOE-HORN. CHARLES H. VAIL, Salt Lake City, Utah. Filed Sept. 10, 1892. Serial No. 445,543. (No model.)

Claim.—1. As an improved article of manufacture, a shoe-horn comprising two members, one of which is adapted to be attached within the heel of a shoe and the other loosely connected therewith and outwardly and rearwardly adjustable with relation thereto, substantially as set forth.

2. As an improved article of manufacture, a shoe-horn consisting of a plate conforming in contour to and adapted to be secured within the heel of a shoe, said plate being provided with a bearing and guide pin, a longitudinal slot, and with a groove or depression between said slot and pin, and a plate of corresponding contour provided at its back with a longitudinally-arranged bar working upon said pin and adapted to be normally received by said slot and the groove or depression, substantially as set forth.

487,861. JOINT FOR DOLLS. EMIL VERPILLIER, Newark, N. J., assignor of one-half to Charles W. Craven, same place. Filed Mar. 10, 1892. Serial No. 424,477. (No model.)



Claim.—1. In a joint for dolls or the like, a ball-and-socket joint consisting, essentially, of a hollow sphere or globe provided with a hollow post, a solid ball capable of revolving in said globe or sphere, a sleeve arranged on said hollow post, a screw or pin firmly secured in said solid ball and projecting above the same, and a sleeve loosely and rotatably arranged upon the upper end of said screw or pin, substantially as and for the purposes set forth.

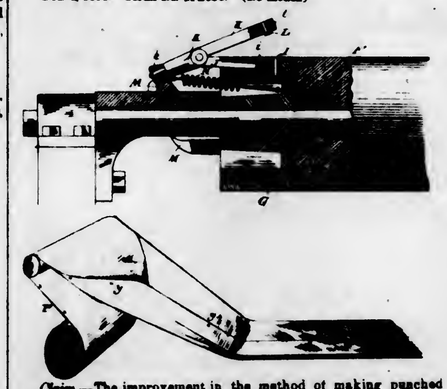
2. In a joint for dolls or the like, a ball-and-socket joint consisting, essentially, of a hollow sphere or globe provided with a hollow post, a solid ball capable of revolving in said globe or sphere, a sleeve arranged on said hollow post, a screw or pin firmly secured in said solid ball and projecting above the same, a sleeve loosely and rotatably arranged upon the upper end of said screw or pin, and a pressure-exerting device arranged in said hollow post, adapted to exert a pressure against the surface of said solid ball, substantially as and for the purposes set forth.

3. In a doll or the like, the combination, with any two parts thereof, of a flexible rotary joint, consisting, essentially, of a hollow sphere or globe provided with a hollow post, a solid ball capable of rotating in said hollow sphere or globe, a sleeve arranged on said hollow post, said post projecting below said sleeve and being provided with an opening or hole and a pin or nail arranged in one of said parts of the doll and passing beneath said sleeve and through the projecting end of said post, a screw or pin firmly secured in said solid ball and projecting above the same, and a sleeve loosely and rotatably arranged upon the upper end of said screw or pin, said sleeve being firmly secured in the other section of the doll, substantially as and for the purposes set forth.

4. In a doll or the like, the combination, with any two parts thereof, of a flexible rotary joint consisting, essentially, of a hollow sphere or globe provided with a hollow post, a solid ball capable of rotating in said hollow sphere or globe, a sleeve arranged on said hollow post, said post projecting below said sleeve and being provided with an opening or hole and a pin or nail arranged in one of said parts of the doll and passing beneath said sleeve and through the projecting end of said post, a screw or pin firmly secured in said solid ball and projecting above the same, a sleeve loosely and rotatably arranged upon the upper end of said screw or pin, said sleeve being firmly secured in the other section of the doll, and a pressure-exerting device arranged in said hollow post, adapted to exert a pressure against the lower surface of said solid ball, substantially as and for the purposes set forth.

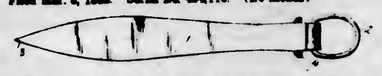
5. A doll, substantially as described, comprising therein hollow members, a sleeve arranged in each member, a ball-and-socket joint connected with one of said sleeves and the other sleeve being loosely and rotatably arranged in connection with the ball of the joint, whereby the member of the doll is capable of a rotary movement about the longitudinal axis of the one sleeve, but is also capable at the same time of a flexible movement in any plane different to the plane of rotation, substantially as and for the purposes set forth.

487,862. MANUFACTURE OF PAPER BAGS. JAMES WEST, St. Louis, Mo., assignor of one-half to Samuel Cupples, same place. Filed Dec. 4, 1891. Serial No. 414,088. (No model.)



Claim.—The improvement in the method of making punched paper bags, consisting of punching a strip of paper at regular intervals and then folding the same into a tube and severing the tube to form bag-sections on transverse lines adjacent to the punched openings, substantially as described.

487,863. HOPPLE. WILLIAM H. WESTON, Traverse City, Mich. Filed Mar. 4, 1892. Serial No. 424,116. (No model.)



Claim.—As a device for preventing fowls from scratching, the hereinbefore-described blade, having the rear end thereof pointed and having upon the lower surface of its forward end a bridge 4, in combination with means for securing the said blade to the leg of the fowl, as described.

487,864. CAR-REPLACER. WILLIAM H. DARLING, Bryan, Ohio, assignor of one-third to R. L. Darling, same place. Filed Mar. 12, 1892. Serial No. 424,692. (No model.)

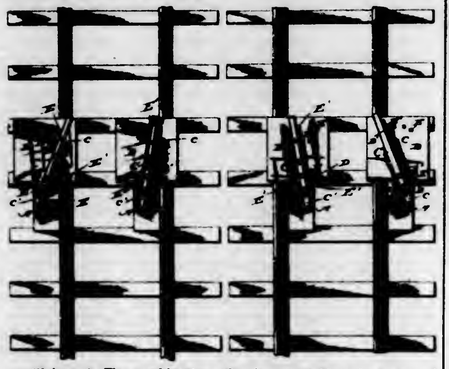
bore air-duct 5, with lower open-ended elbow, and lower liquid-tube 2, within which is air-tube 3, provided with terminal movable extension 6, in combination with glass globe E, into which liquid will flow when the receiving-vessel is filled to a predetermined elevation, as and

up, a lock for holding such step in its lowest position, and an unlocking mechanism which releases the lock automatically upon the starting of the car, as set forth.

connected to the presser-bar, connections between the said lever and the shipping-lever, a brake-beam, and the system of operating-levers, substantially as described.

4. In an automatic car-brake, the combination, with two presser-

487,864. CAR-REPLACER. WILLIAM H. DARLING, Bryan, Ohio, assignor of one-third to H. L. Darling, same place. Filed Mar. 12, 1892. Serial No. 424,638. (No model.)



Claim.—1. The combination of a base, a bridge-plate secured thereon and having the side flanges, and a bar or rail eccentrically pivoted on said bridge-plate and adapted to be adjusted in position and held from movement by pins fitted in holes in said plate on opposite sides of the pivot of the bar or rail, substantially as described.

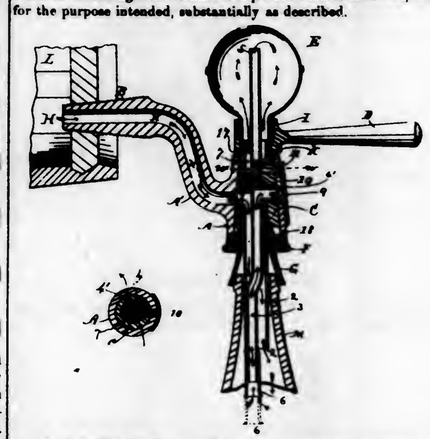
2. The combination of a base, a bridge-plate having the side flanges and a duplicate series of holes E E' on opposite sides thereof, a bar or rail eccentrically pivoted on the plate at or about the central line of the plate near its sloping end, and the pins D, adapted to be fitted in said holes alongside the bar or rail to hold the same rigidly in position, substantially as described.

487,865. COAL-STORAGE CONVEYER. GEORGE H. HULETT, Cleveland, Ohio. Filed Apr. 4, 1892. Serial No. 427,773. (No model.)

Claim.—In a conveying apparatus, a stationary tower B, a bridge structure A, revolubly supported at one end by the tower, a laterally-movable tower interposed intermediate of the length of the bridge, operating-drums located in the tower, a carrier traversing the bridge structure, a propelling cord K, connected to the carrier at one end, running over pulleys to the movable tower, where it is deflected to one operating-drum, and a rope O, passing upwardly from the other operating-drum over pulleys to the end of the bridge structure and from thence over pulleys on the carrier to the hoisting-block, and stay-cords between the movable tower and bridge structure, substantially as described.

487,866. FAUCET. KARL KEMPIN, Cincinnati, Ohio. Filed July 14, 1892. Serial No. 440,258. (No model.)

Claim.—1. A faucet for filling bottles, consisting of conical plug C, body A, into which said plug is seated, tubular extension A', integral with body A, having terminal stem B, adapted to be connected to eduction-opening of supply-tank, said plug having within its upper axial bore air-duct 5, with lower open-ended elbow, and lower liquid-tube 2, within which is air-tube 3, provided with terminal movable extension 6, in combination with glass globe E, into which liquid will flow when the receiving-vessel is filled to a predetermined elevation, as and for the purpose intended, substantially as described.



2. A device for filling bottles or like receptacles, consisting of a faucet composed of an interior conical plug C, upper and lower non-communicating vertical tubes 5, 2, and 3, the plug having diametrical apertures 11 and 9 in vertical alignment, aperture 4', and opposite aperture 1, said plug being seated within body A, provided with apertures 4 and 8, and upon its inner surface recesses 10, 12, and 13, said openings and recesses adapted to register with openings of the plug when rotated therein, the upper end of the plug having circular open-ended chamber 7, surrounding lower section of duct 5, glass globe E whereby through said recesses as a connected receiving-vessel is being filled, the displaced air will pass through said ducts and openings brought into coincidence into and within said glass globe E, attached to the upper end of the faucet, and when said vessel is supplied to a predetermined elevation the condition of the supply will be visibly indicated by uprising of liquid within said globe, substantially as described.

3. In a faucet of the character described, operating-handle D, having apertured interiorly-threaded circular extension I, and globe E, its open-ended threaded neck inserted within extension I, the lower edge of said extension provided with semispherical groove 16, in combination with pin 17, extending from upper edge of body A, whereby reciprocal movement of the handle and connected globe will be limited by opposite terminals of said groove, substantially as described.

4. In a faucet of the character described, a body A, its lower end provided with inner thread, open-flanged cap F, and elastic downwardly-flaring cap G, the upper end of which is overturned on inward peripheral flange of cap F, all in combination with spiral spring 18, substantially as described.

5. In a device for filling bottles and similar receptacles, an outward body A, conical plug C, seated therein, upward vertical air-duct 5, with lower connected elbow and downwardly-extending vertical liquid pipe 2, interior air-duct 3, provided with terminal telescopically-movable section 6, said plug and body provided, respectively, with openings and recesses arranged to register, whereby the flow of liquid and air will be provided with continuous passage-ways by partial revolution of said plug within the surrounding body, and downwardly-flaring open-ended cap G, attached to screw-cap F, having spiral spring 18, upon which bears base of plug C, all in combination with glass globe E, adjusted at upper end of said plug and screwed into circular extension I of handle D, as and for the purpose intended, substantially as described.

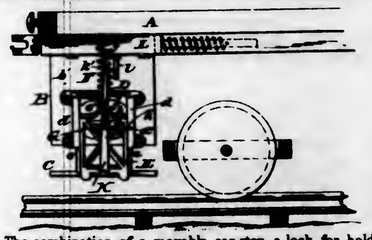
6. In a faucet of the character described, an air-vent tube having lower vertically-extending section 6, adapted to be moved telescopically thereon, whereby said tube can be lengthened or shortened and liquid flowing into receiving-vessel will be gaged to desired elevation, as and for the purpose intended, substantially as described.

487,867. AUTOMATIC CAR-STEP. JOHN MACCOLLAM, Ballston, N. Y. Filed July 20, 1892. Serial No. 440,904. (No model.)

Claim.—1. The combination of a movable car-step, a lock for holding such step in its lowest position, and an unlocking mechanism which releases the lock automatically upon the starting of the car, as set forth.

2. The combination of a movable car-step, a spring for lifting it up, a lock for holding such step in its lowest position, and an unlocking mechanism which releases the lock automatically upon the starting of the car, as set forth.

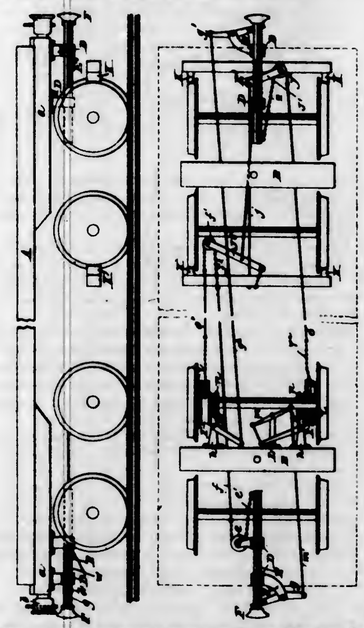
up, a lock for holding such step in its lowest position, and an unlocking mechanism which releases the lock automatically upon the starting of the car, as set forth.



3. The combination of a movable car-step, a lock for holding such step in its lowest position, and an unlocking mechanism, which communicates with a part of the car structure other than the movable step and releases the lock automatically upon the starting of the car, as set forth.

4. The combination of a movable car-step, a spring for lifting it up, a lock for holding such step in its lowest position, and an unlocking mechanism which communicates with a part of the car structure other than the movable step and releases the lock automatically upon the starting of the car, as set forth.

487,868. CAR-BRAKE. THOMAS A. MARRIOTT, Newberry, Mich. Filed May 13, 1891. Serial No. 392,630. (No model.)



Claim.—1. In an automatic car-brake, the combination of an endwise-movable presser-bar, a clutch having a member rigid with a wheel or axle and a loose member on the axle, connections between the loose member and the presser-bar, a brake-beam, and a system of levers connected with said beam and the loose member of the clutch, substantially as described.

2. In an automatic car-brake, the combination of an endwise-movable presser-bar, the clutch having the male member fast on a car wheel or axle and the female member loose on the axle, connections between the loose female member of the clutch and the bar to automatically couple the clutch members on the inward movement of the bar, a brake-beam, and the levers between the brake-beam and the loose member of the clutch, substantially as described.

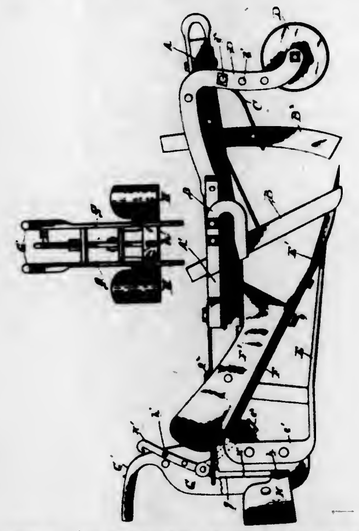
3. In an automatic car-brake, the combination of an endwise-movable presser-bar, a clutch having its male member rigid with a car wheel or axle and its female member loose on the axle, the angular shipping-lever connected to said loose female member, a lever connected to the presser-bar, connections between the said lever and the shipping-lever, a brake-beam, and the system of operating-levers, substantially as described.

4. In an automatic car-brake, the combination, with two presser-bars and a brake-beam, of an automatic clutch mechanism associated with a car axle or wheel, and the presser-bars to be connected to the axle or wheel on the inner endwise movement of either of the presser-bars, a system of levers between the clutch mechanism and the brake-beam, and intermediate mechanism adapted to force one of the presser-bars outwardly when the other is forced inwardly, all substantially as and for the purpose specified.

5. In an automatic car-brake, the combination, with two presser-bars at opposite ends of a car, of a clutch having a male member rigid with the axle or wheel and a loose member, mechanism connecting the loose member of the clutch to the opposite presser-bars, the brake-beams, and a system of levers having connections with the loose clutch members and said brake-beams, substantially as specified.

6. In an automatic car-brake, the combination, with a brake-beam and the presser-bars at opposite ends of a car, of a clutch mechanism having the fast and loose members, the latter connected to both presser-bars, a system of levers between the brake-beam and the loose member of the clutch, and an automatic tripping-lever connected to one of said presser-bars and adapted to engage one of the levers of the system of levers to move the same out of the path of the presser-bar upon the inward movement of the latter, substantially as and for the purpose set forth.

487,869. DITCHING-PLOW. PETER T. MONTGOMERY, Mound Bayou, Miss. Filed Feb. 26, 1892. Serial No. 423,016. (No model.)



Claim.—1. In a ditching-plow, the combination, with the plow, colters, and handle-plates at the rear of the plow having vertical slots therein, of vertically-adjustable spreader-wings having a reduced connecting portion slidingly engaging in said slots and means for securing the wings in an adjusted position, substantially as described.

2. In a ditching-plow, the combination, with the plow, colters, adjustable supporting-wheel at the front of the plow, and handle-plates at the rear end of the plow on opposite sides of the plow-beam, formed with vertical slots therein, of outwardly-curved spreader-wings having a reduced connecting portion at their inner ends slidingly engaging in the vertical slots, an upwardly-extending adjusting-bar secured to the connecting portion, and means for securing the bar in its adjusted position, substantially as described.

487,870. CHURN. ALEXANDER REDFERN, Hollyrood, Kans. Filed Feb. 23, 1892. Serial No. 422,493. (No model.)

Claim.—The combination, with a supporting-frame having oppositely-disposed uprights with open bearings for the support of the pintles of the churn, of a churn-body having centrally-disposed pintles resting in said bearings and beneath said pintles provided with curved flanges on the sides of the churn and adapted to serve as guides in

487,870.

plowshare and a colter-carrying bracket embracing at its rear end the upper part of the plowshare-standard and adjustably connected to each standard above the plowshare, substantially as set forth.

487,873. ATOMIZER. CHARLES M. BLACKMAN, Brooklyn, assignor to the S. H. Westmore Company, New York, N. Y. Filed June 13, 1892. Serial No. 436,694. (No model.)

sliver into an open roll or ball in which the fibers cross one another frequently and at a great angle, then subjecting the cross-wound rove to the action of a heated liquor before being spun to remove adhering glutinous, resinous, or extraneous matter and subsequently twist-

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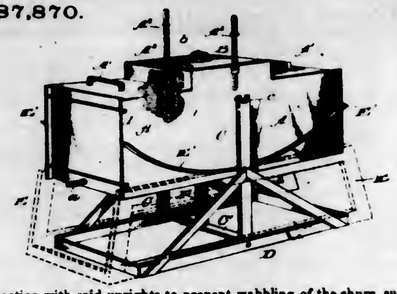


connection with said uprights to prevent wabbling of the churn, substantially as described.

487,871. COMBINED PLOW AND SEEDER. HENRICH SOMMERFELD, Canton, assignor of one-half to S. F. Sacket, Marion, Kans. Filed Mar. 21, 1892. Serial No. 425,681. (No model.)

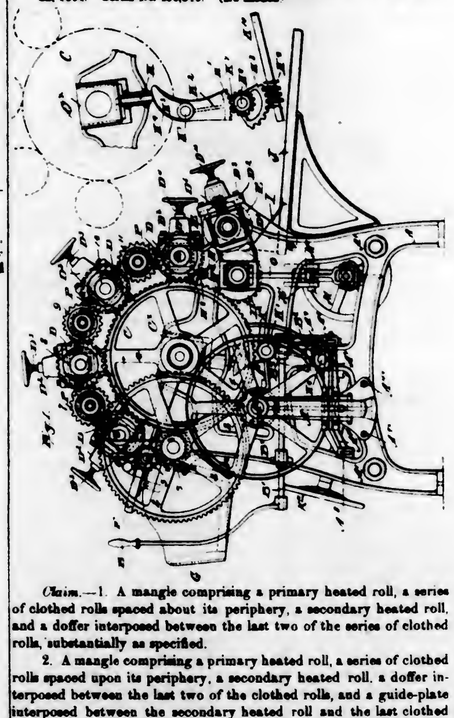
Claim.—1. A combined plow and seeder comprising a suitable supporting-frame, a number of vertically-movable standards for the plowshares, working through said frame, and graduated scales carried by said standards for indicating the depth of cut of the plowshares, substantially as set forth.

2. A combined gang-plow and seeder comprising a rectangular supporting-frame, a horizontal supporting-beam extending from one front corner of the supporting-frame to the diagonally-opposite rear corner of the same, a number of vertical standards carrying each at its lower end a plowshare and vertically adjustable through said beam, horizontal adjusting-levers pivoted upon said beam, and spring-pressed retaining pins or bolts engaging openings in said standards, and link-bars connecting the pins or bolts with the levers, substantially as set forth.

3. A combined gang-plow and seeder comprising a suitable supporting-frame, a horizontal supporting-beam for the plowshare, standards extending obliquely from front to rear of the frame and provided with recesses for the plow-standards, and a bearing-plate having guides for retaining pins or bolts which support the standards, substantially as set forth.

4. A combined gang-plow and seeder comprising a number of vertically-movable plow-standards carrying each at its lower end a plowshare and a colter-carrying bracket embracing at its rear end the upper part of the plowshare-standard and adjustably connected to each standard above the plowshare, substantially as set forth.

487,872. MANGLE. MINOR S. WENDELL, Troy, N. Y. Filed Sept. 22, 1891. Serial No. 406,519. (No model.)



Claim.—1. A mangle comprising a primary heated roll, a series of clothed rolls spaced about its periphery, a secondary heated roll, and a doffer interposed between the last two of the series of clothed rolls, substantially as specified.

2. A mangle comprising a primary heated roll, a series of clothed rolls spaced upon its periphery, a secondary heated roll, a doffer interposed between the last two of the clothed rolls, and a guide-plate interposed between the secondary heated roll and the last clothed roll, substantially as specified.

3. The primary heated roll, the first clothed roll, and a pivoted feed-board having a curved feed-plate, substantially as specified.

4. A vertically-movable goods-box and a pivoted feed-board, in combination with the rolls of a mangle, substantially as specified.

5. A pivoted goods-box and a pivoted feed-board, in combination with the rolls of a mangle, substantially as specified.

6. A feed-board pivotally connected with a goods-box and the latter pivotally connected with the framework, in combination with the rolls, substantially as specified.

7. A goods-box pivotally connected with a mangle and provided with means for vertical adjustment, substantially as specified.

8. A goods-box pivotally connected with the framework and provided with means for adjusting the same upon its pivot and connected with a feed-board to vary the position of the feed-board by the adjustment of the goods-box, substantially as specified.

9. A feed-board pivotally suspended upon the framework and provided with a curved feed-plate and means for retaining the board and feed-plate in an adjusted position, substantially as specified.

10. The combination, with the standard and a tie-rod, of a bracket secured to the tie-rod and to the standard at points at opposite sides of the standard and a device mounted in the standard and in line with the tie-rod, substantially as specified.

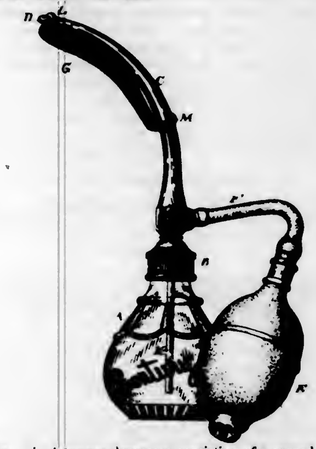
11. A standard, a bracket, a tie-rod, and a gear-stud, constructed and arranged substantially as specified.

12. The combination, with the bearing-boxes of a roll, of pins, pivoted cams extended below their pivots in the form of gears, a threaded shaft, and intermediate power-conveying devices for moving the cams upon their pivots, substantially as specified.

13. The combination, with the bearing-boxes of a roll, of pins and geared cams and gearing connecting the cams at a point below their pivots with a cam-operating shaft, substantially as specified.

14. A bifurcated cam provided with pivot-bearings and having one of the bifurcations extended beyond the other and formed for operative connection with cam-operating gearing, substantially as specified.

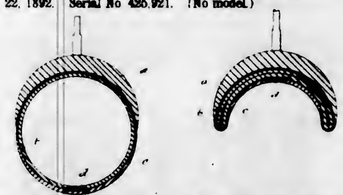
487,873. ATOMIZER. CHARLES M. BLACKMAN, Brooklyn, assignor to the S. H. Wetmore Company, New York, N. Y. Filed June 13, 1892. Serial No. 436,604. (No model.)



Claim.—1. A tongue-depressor consisting of a curved piece with apertures at either end for slipping the same upon a spray-tube.

2. The combination of an atomizer having a tapered spray-tube and a tongue-depressor having apertures of different size adapted to be slipped on and off thereof.

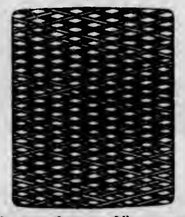
487,874. PNEUMATIC TIRE. STERLING ELLIOTT, Newton, assignor to the Elliott Hickory Cycle Company, Watertown, Mass. Filed Mar. 22, 1892. Serial No. 425,921. (No model.)



Claim.—A wheel having a recessed felly and a pneumatic tire supported thereon, combined with one or more independent contractible strips for drawing the air-tube of said tire into the recess of the felly as said tube collapses, substantially as described.

487,875. ART OF MANUFACTURING YARN FROM SCUTCHED FLAX. JOSHUA V. EVES, Belfast, Ireland. Filed Aug. 11, 1891. Serial No. 402,367. (No specimens.)

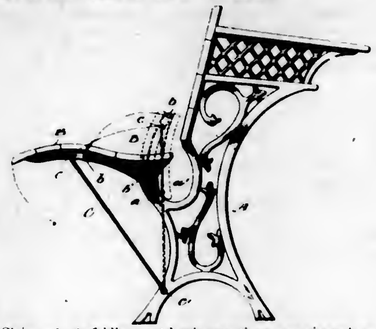
Brief.—The roving of scutched flax, which has very little twist and is easily rendered uneven, is cross-wound into a loose roll, in order that liquids may readily penetrate it, is then cleansed by being subjected to the action of a heated liquor, after which it is unwound, twisted, and spun in the usual way.



Claim.—1. In the manufacture of linen yarn from scutched flax, the process which consists in cross-winding a prepared rove or sliver into an open roll or ball in which the fibers cross one another frequently and at a great angle, then boiling the cross-wound ball of rove before being spun to remove adhering glutinous, resinous, or extraneous matter, and subsequently spinning the boiled rove into yarn.

2. The improvement in the art of manufacturing linen yarn from scutched flax, which consists in cross-winding an untwisted rove or sliver into an open roll or ball in which the fibers cross one another frequently and at a great angle, then subjecting the cross-wound rove to the action of a heated liquor before being spun to remove adhering glutinous, resinous, or extraneous matter and subsequently twisting and spinning the same into yarn, substantially as described.

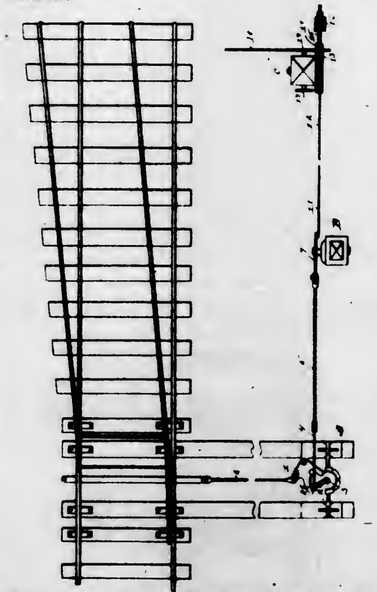
487,876. FOLDING SEAT. JAMES B. JENSEN, Sandy, Utah. Filed Apr. 25, 1892. Serial No. 430,538. (No model.)



Claim.—1. A folding seat having sections, one pivoted to some fixed part and the sections pivotally connected together and a pivoted brace for the front section, the pivot between the sections being above a line drawn through the pivot connection of the inner section to the standard and pivotal connection of the outer section to the brace, as set forth.

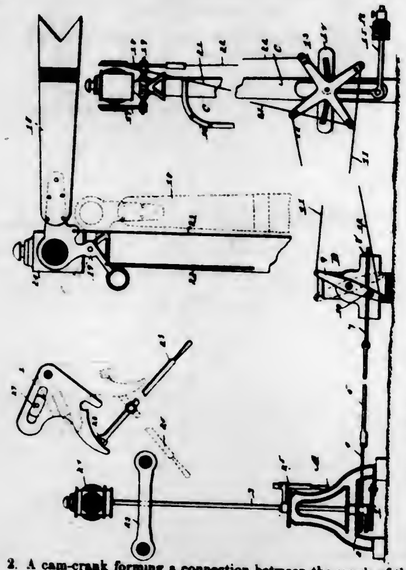
2. The combination, with a standard, of a seat formed of pivoted sections and one section pivoted to the standard, with its pivot below that of the sections, and a brace for supporting the front pivoted section, the pivot between the sections being above a line drawn through the pivot connection of the inner section to the standard and the pivotal connection to the outer section of the brace, as set forth.

487,877. RAILWAY-SWITCH STAND AND DISTANT SIGNAL. WILLIAM W. LE GRANDE, Louisville, Ky.; T. W. Moran administrator of said Le Grande, deceased. Filed Jan. 2, 1892. Serial No. 416,888. (No model.)



Claim.—1. In a switch and distant-signal operating mechanism, the combination, with the switch-stand, its crank mast, and the distant signal having an operating connection with the mast-crank, of

the cam-crank adjacent to said mast-crank and operated by the engagement therewith of a pin or stud on said mast-crank, the switch-rod, and the box 27, adjustably carried by said cam-crank and to which one end of said switch-rod is connected, substantially as specified.

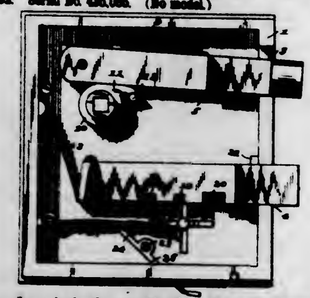


2. A cam-crank forming a connection between the crank of the switch-stand mast and the switch-rod, said crank having a radial slot therein, said slot having corrugated or grooved side walls designed to receive a box provided with similar grooves or corrugations and to which the switch-rod is connected, substantially as specified.

3. The combination, with the switch-stand and the switch-operating mechanism, of the distant signal and its operating mechanism, said latter mechanism comprising crank 2 of the switch-stand mast, the bar 4, connected at one end to said crank, the sliding bar 7, having the notch or shoulder therein, the connection 5 between said bar and the bar 4, the pivoted wire-lever 9, having a stud or projection designed to be engaged by said notch or shoulder during a portion of the movement of said sliding bar, and the wires connecting the signal with said lever, substantially as specified.

4. The combination, with the switch-stand, the mast 3, its crank 2, and the switch-operating mechanism, of the distant signal and its operating mechanism, said mechanism comprising the bar 4, connected at one end to the crank 3, the sliding bar 7, the connection between said bars 5 and 7, the wire-lever 9, having a stud or projection thereon designed to be engaged by a notch or shoulder on the sliding bar during a part of the movement of said bar and disengaged from said notch the remainder of each movement, the signal-operating wires connected to opposite extremities of said lever, and the slack compensator for said wires, substantially as specified.

487,878. LOCK. SAMUEL R. LOSH, Springtown, Pa. Filed May 31, 1892. Serial No. 435,088. (No model.)



Claim.—In a lock, the combination of a casing having a keyhole, a spring-actuated bolt arranged within the casing and located above the keyhole and provided with a key-notch and locking-notches, the former, when the bolt is shot, being in front of the keyhole, a spring arranged below the bolt approximately parallel with the same and provided on its upper face between its ends with an upwardly-extending flange to engage the locking-notches and having its outer end extending beyond the flange and terminating near the opposite side of the keyhole and adapted to be depressed by a key simultaneous with the retraction of the bolt, and the pivoted catch mounted on the casing and having an arm arranged to engage the lower face of the spring to prevent the spring being depressed and having an arm extending through the casing and forming a handle, substantially as described.

487,879. TAIL-PIECE FOR BANJOS OR VIOLINS. HOBART C. MIDDLEBROOK, Rock Rapids, Iowa. Filed Sept. 10, 1891. Serial No. 405,987. (No model.)

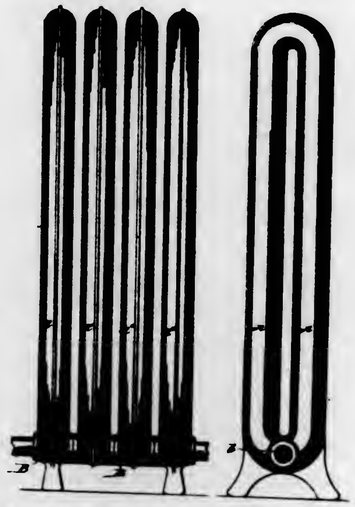
Claim.—1. A tail-piece for a stringed musical instrument, having on its top side between its ends a rearwardly-curved flange which is notched to receive the strings and having hooks at its front end, substantially as and for the purpose described.

2. A tail-piece formed of wood and having on its top side between its ends a rearwardly-curved flange which is notched to receive the strings and having hooks at its front end, substantially as and for the purpose described.

3. A tail-piece for a stringed musical instrument, composed of a wooden piece A, a metal plate B, secured to the piece A and having its front end recurved and notched, and a plate D, fastened to the front end of the wooden piece A and having hooks *d*, substantially as set forth.

4. A metal plate to be attached to a tail-piece, having hooks at its front edge in the plane of the said plate, substantially as and for the purpose specified.

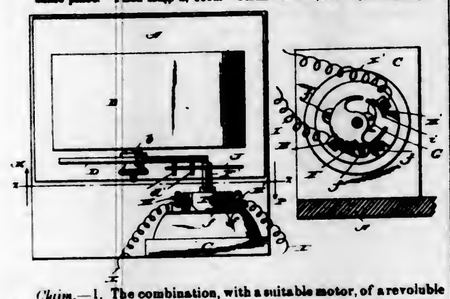
487,880. RADIATOR. CLARENCE C. MULFORD, Galva, assignor to Wallace H. Ryon, Streator, Ill. Filed Mar. 8, 1892. Serial No. 424,234. (No model.)



Claim.—1. A sectional radiator having its meeting surfaces at the base of the sections provided with interlocking projections and recesses to prevent the lateral rocking of the sections independently of each other, substantially as described.

2. A radiator-section having its lower end enlarged and provided with the annular recess *b'* and tubular projection *b²* and with the interlocking projections and recesses to prevent lateral rocking, substantially as described.

487,881. AUTOMATIC SWITCH. HERMAN NEWMAN, Springfield, Ill., assignor of two-thirds to Samuel J. Willett and George A. Sanders, same place. Filed Aug. 2, 1892. Serial No. 441,962. (No model.)

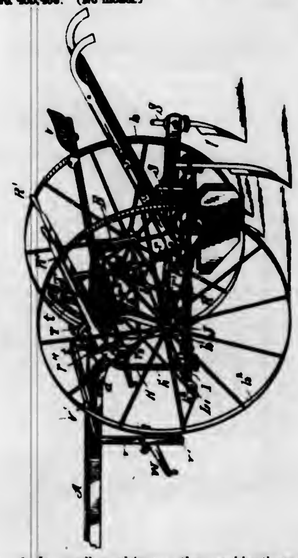


Claim.—1. The combination, with a suitable motor, of a revoluble dial or disk carrying the pins or stops and a switch provided with a rotating spindle and a tappet carried by the spindle and arranged in the path of the stops or pins on the dial, as and for the purpose described.

2. The combination, with a suitable motor, of a revoluble dial or disk provided with a series of adjustable stops or pins, a switch having the contact *i* and the conductors connected thereto, the spindle in electrical connection with the switch and having means adapted to make the contact *i*, and the tappet carried by the spindle and arranged in the path of the pins or stops, as and for the purpose described.

3. The combination, with a suitable motor, of the perforated revoluble dial or disk having the adjustable stops or pins, the switch provided with the contact *i* and having the circuit-conductors connected thereto, the spindle in electrical connection with the switch, the arm rigid with the spindle and adapted to make the contact *i*, and the tappet-wheel carried by the inner end of the spindle and arranged in the path of the stops or pins on the dial, as and for the purpose described.

487,882. WHEEL-CULTIVATOR. ELIJAH A. OVERSMITH, Lansing, Mich., assignor to R. Bement & Sons, same place. Filed Sept. 12, 1891. Serial No. 405,468. (No model.)



Claim.—1. In a sulky-cultivator, the combination of a tongue, cross-bar and brace-irons attached to said tongue, axle-arms secured between the cross-bar and brace-irons, a doubletree crossing said tongue, and a depending arm hung to the doubletree and connected by a draft-rod to the shovel-holding arm, substantially as and for the purpose described.

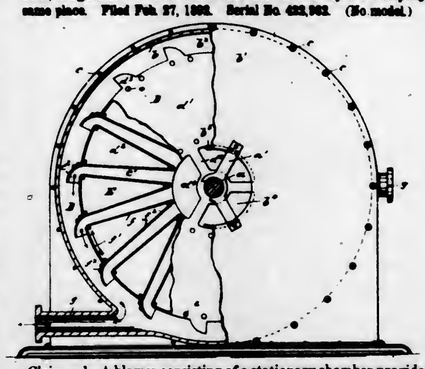
2. In a wheeled cultivator, the combination of a hanger attached to the framework, a shovel-bar hinged thereto, an extension hinged to the rear end of said shovel-bar, and a parallel bar attached to the extension, terminating at its forward end with an eye adapted to rest upon and be secured to the flat corrugated table *k*, substantially as and for the purpose described.

3. In a wheeled cultivator, in combination with a shovel-bar and a hinged extension thereto, a parallel bar hinged to said extension and made in two parts adjustably secured together, one of said parts being made integral with and projecting backward from the hanger to which said shovel-bar is attached, substantially as and for the purpose specified.

4. In a wheeled cultivator, in combination with the cultivator-beams, the combination of the flat corrugated seat-iron *c*, the corrugated foot-iron *c'*, provided with the holding-bolt c^3, and the adjusting-slot c^4, whereby the handle is adjustably secured with both horizontal and vertical adjustments, substantially as described.

5. A tooth-holder consisting of the described disk and slotted lobe, the described cup and hooked lobe, the holding eyebolt and nut, and a break-bolt passing through the slotted lobe and open slot in the hooked lobe, whereby the angle of the tooth-standard may be adjusted and held in adjustment with a predetermined force, substantially as and for the purpose described.

487,888. CENTRIFUGAL BLOWER. MARTIN R. RUBLE, Newark, N. J., assignor to the Ruble American Blower and Injector Company, same place. Filed Feb. 27, 1892. Serial No. 423,062. (No model.)

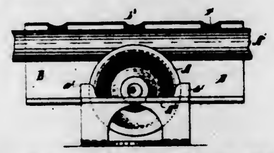


Claim.—1. A blower consisting of a stationary chamber provided with centrally-located openings and a drum adapted to be revolved within said chamber, said drum being divided into a series of triangular-shaped chambers and radial passages, whereby by centrifugal force the air or fluid is conducted through said passages into the stationary chamber, substantially as described and set forth.

2. A blower consisting of a stationary chamber provided with centrally-located openings, a drum adapted to be revolved within said chamber, and a series of metal strips arranged edgewise in said drum and adapted to form triangular-shaped chambers, and radial passages within said drum, substantially as described and set forth.

3. In a blower, the combination, with the stationary chambe provided with centrally-located openings, of a series of triangular chambers consisting of uniform wide metal strips, side plates d' d^2, holding said chambers together and adapted to form with said chambers radially-extending air or fluid passages, curved extensions secured to or made integral with the sides of said triangular chambers, and projections secured to or made integral with the side plates d' d^2, said projections and extensions being adapted to form elbows or pockets at the outer openings of the air or fluid passages, all said parts being arranged and adapted to operate substantially as described, and for the purposes set forth.

487,884. ROLLER AND ROLLER-BEARING. GEORGE A. WEBER, New York, N. Y., assignor to Annie H. Weber, same place. Filed Feb. 18, 1892. Serial No. 421,971. (No model.)



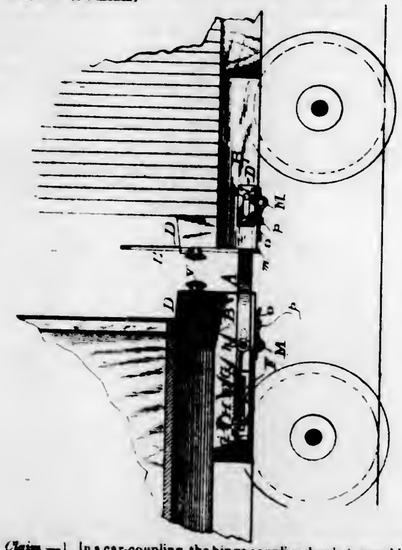
Claim.—1. In combination with the roller, the roller-bearing, and means extending over the roller for operating a signal, the guard or

cover supported by the bearing and extending over said roller, and signal-operating means, substantially as specified.

2. The combination, with a roller, the bearings therefor, and the operating-rod, of the guard or cover secured to lateral projections of the bearings and extended over the roller and operating-rod, substantially as specified.

3. The combination, with a roller, the bearings therefor, and the operating-rod, of the guard or cover having the transverse inwardly-projecting rib or ribs, substantially as specified.

487,885. CAR-COUPLING. PHILIP DOMINICK, Columbia, assignor to John A. Livers, Gettysburg, Pa. Filed Sept. 27, 1892. Serial No. 446,997. (No model.)



Claim.—1. In a car-coupling, the hinge coupling-hook A, provided with a curved and wedge-shaped head and a slitted knuckle *b*, in combination with a draw-head slotted at its sides, slotted boxes at such sides, a rod *h*, extending through the said knuckle into said boxes, and a spring draw-bar secured to the center of the rod *h*, the said rod and bar having a movement the length of said box-slots, substantially as described.

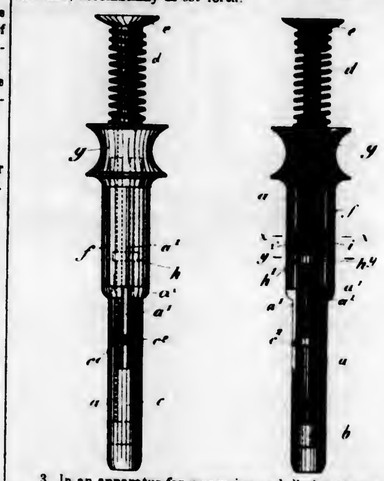
2. In combination with the draw-head and curved hinge coupling-hook, the spring-actuated draw-rod to which said hook is secured, a flat spring-bar with one end secured within the draw-head and the other end resting on the hook to hold it down, and a lever provided with an arm to extend up through a slot in the bottom of the draw-head to engage the under side of said hook, whereby the hook is raised against said spring to uncouple the car, substantially as described.

3. In combination with a box draw-head, a hinge coupling-hook hung in said draw-head, a spring-bar to hold said hook down, a crank-lever extending from the side of the car and having an arm extending up through a slot in said draw-head to strike the under side of said hook to raise it against said spring, a lever at or near the top of the car, and a chain connecting the two said levers, substantially as and for the purpose described.

487,886. CAPSULE-FILLER. CASPAR F. HAUSMANN, St. Gallen, Switzerland. Filed June 18, 1892. Serial No. 437,134. (No model.) Patented in Switzerland Dec. 5, 1891, No. 4,226.

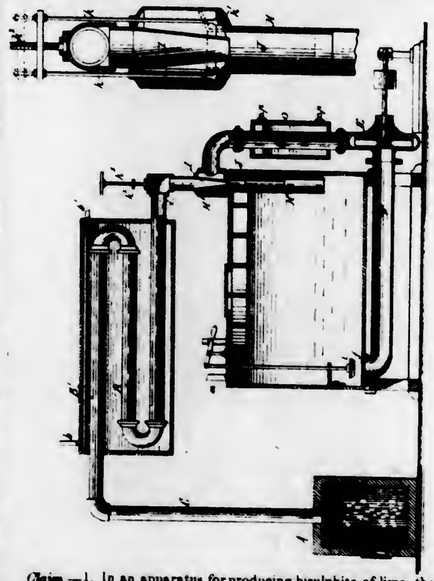
Claim.—1. In an apparatus for measuring and discharging powders, the combination, with a tube, of a plunger in the same, a rod to which the plunger is attached, a spring for pressing the rod upward, of an adjustable sleeve in the tube, and a collar on the rod, which collar on the rod rests against the adjustable sleeve in the tube, substantially as set forth.

2. In an apparatus for measuring and discharging powders, the combination, with a tube, of a plunger in the same, a rod to which the plunger is secured, a spring for pressing the rod and plunger upward, a shoulder on said rod, an adjustable stop-piece in the tube provided with a screw-thread, and a sleeve surrounding the tube and provided with an internal screw-thread engaging the screw-thread on the stop-piece to permit of adjusting said stop-piece higher or lower in the tube, substantially as set forth.



3. In an apparatus for measuring and discharging powders, the combination, with a tube, of a plunger in the same, a rod to which the plunger is attached, a stop-piece for the rod, a rotative sleeve surrounding the tube and serving to adjust said stop-piece higher or lower, and a graduated scale on the end of said sleeve and on an adjacent part of the tube, substantially as set forth.

487,887. APPARATUS FOR MAKING BISULPHITE OF LIME. WILLIAM H. HOWELL, Thorold, Canada, assignor of one-half to Andrew Hansel, same place. Filed May 16, 1892. Serial No. 433,257. (No model.)



Claim.—1. In an apparatus for producing bisulphite of lime, the combination, with a retort or furnace for burning sulphur, of a receiver for containing milk of lime, having an inlet and an outlet, a nozzle or jet-pipe arranged in said inlet and connected with the retort or furnace, and a pump having a suction-pipe connected with the outlet of said tank, and a delivery-pipe connected with the inlet thereof, whereby a circulation of the milk of lime through the tank is produced, substantially as set forth.

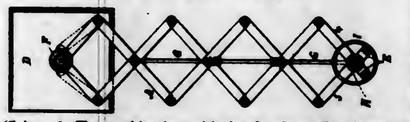
2. In an apparatus for producing bisulphite of lime, the combination, with a retort or furnace for burning sulphur, of a cooler or condenser connected with said retort and receiving the acid fumes from the same, a receiver for containing milk of lime, having an inlet-pipe, a pump whereby the milk of lime is delivered through said pipe, and a nozzle or jet-pipe arranged in said inlet-pipe and receiving the sulphurous-acid gas from the cooler, substantially as set forth.

3. In an apparatus for producing bisulphite of lime, the combination, with a retort or furnace for burning sulphur, of a cooler or condenser connected with said retort and receiving the acid fumes from the same, a receiver for containing milk of lime, having an inlet-pipe, a pump whereby the milk of lime is delivered through said pipe, a nozzle or jet-pipe arranged in said inlet-pipe and receiving the sulphurous-acid gas from the cooler, and a valve arranged in said inlet-pipe, whereby the velocity of the inflowing liquid is regulated, substantially as set forth.

4. In an apparatus for producing bisulphite of lime, the combination, with a retort or furnace, of a receiver for containing milk of lime, having an inlet-pipe provided with a valve-casing, a pump whereby the milk of lime is directed through said inlet-pipe, a tapering nozzle or jet-pipe arranged in said valve-casing and receiving the sulphurous-acid gas from the retort, and a tubular regulating-valve sliding in said inlet-pipe and surrounding the tapering nozzle and having an actuating rod or stem extending through said valve-casing, substantially as set forth.

5. In an apparatus for producing bisulphite of lime, the combination, with a retort or furnace for burning sulphur and a cooler which receives the sulphurous-acid gas from the retort, of a receiver for containing milk of lime, having an inlet-pipe, a nozzle arranged in said inlet-pipe and receiving the gas from the cooler, a pump whereby the milk of lime is circulated through the receiver, and a cooler applied to the pipe or conduit between the pump and the receiver, substantially as set forth.

487,888. WINDOW-CLEANER. AUGUST B. KOLB, New York, N. Y. Filed Feb. 4, 1892. Serial No. 420,327. (No model.)



Claim.—1. The combination, with the cleaning-pads, of two sets of lazy-tong bars, each carrying at one end a pad and a connection at the other end between one set of lazy-tong bars and the other, so that the said lazy-tongs are distended or contracted simultaneously by moving one of the pads, substantially as set forth.

2. The combination, with the cleaning-pads, of two sets of lazy-tong bars with which such pads are connected and U-shaped connections between one set of lazy-tong bars and the other, substantially as set forth.

3. The combination, with two cleaning-pads, of lazy-tong bars with which the pads are connected, U-shaped bars connecting the respective sets of lazy-tongs, and a spring to press the outer pad upon the glass, substantially as set forth.

4. The combination, with the lazy-tong bars and cleaners, of a wheel to bear upon the sill in the cleaning operation, substantially as specified.

5. The combination, with the cleaning-pads and lazy-tong bars, of a handle attached to one of the pads and a spring to press the pad to the glass, substantially as specified.

6. The combination, with the cleaning-pads and lazy-tong bars, of a handle adjacent to and connected with one pad and a handle near the junction of the sets of lazy-tong bars, substantially as specified.

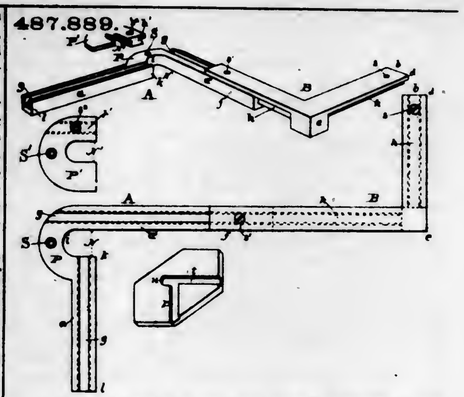
7. The combination, with the lazy-tong bars and cleaners, of a roller to bear upon the lower edge of the sash in the cleaning operation, substantially as specified.

487,889. GUIDE FOR USE IN GAINING STAIR-STRINGERS. ROBERT MARTIN, Philadelphia, Pa. Filed May 17, 1892. Serial No. 433,205. (No model.)

Claim.—1. A guide or gage for use in gaining stair-stringers, the inner or working edge of which is of the outline of the outer and upper sides of the stringer-grooves, provided with means for attaching a number of the gages together for gaining stringers for a number of steps at one operation, substantially as described.

2. A gage for the purpose set forth, consisting of two pieces A and B, together forming the outline of one rise and one tread, adjustably attachable to each other, and capable of being adjustably attached to other similar gages for varying the length of tread and rise of the steps and guiding a cutter in gaining a stringer for the number of steps required in one continuous operation.

487,889.



3. A gage for use in gaining stair-stringers, consisting of two pieces A and B, together forming the outline of one rise and one tread, sliding on each other by means of dovetail tongues and grooves, substantially as shown and described.

4. In a gage for use in gaining stair-stringers, the combination of a piece of the outline of the outer edge of the steps, another piece of the outline of the inner corner of the steps, dovetail tongues and grooves by which the two pieces may be adjusted, set-screws for securing them in their adjusted position, and means for attaching the whole to the plank to be gained, substantially as shown and described.

5. An adjustable gage for gaining stair-stringers, in combination with a detachable piece P', in which the width of the space for gaining the nosing of the tread-gains is less than the corresponding space in the main gage, substantially as shown and described.

6. A gage for gaining stair-stringers, consisting of two pieces, each piece being substantially a right angle formed in a bar of substantially-rectangular cross-section, one of said pieces having a rounded offset at the corner for forming the nosing on the tread-gain and both legs of each piece provided with dovetail tongues or grooves, so that either one piece may be adjustably attached to either end of the other piece, substantially as shown and described.

7. The combination of two or more gages A in the shape of the outline of the outer corner and nosing of the steps, two or more gages B of the shape of the inner corner of the steps, dovetail tongues and grooves by means of which the gages may be alternately attached and adjusted, set-screws for securing them in their adjusted position, and means for fastening the whole series of gages to the plank to be gained, substantially as shown and described.

487,890. MANUFACTURE OF INCANDESCENT ELECTRIC LAMPS. CARMEN PAUTRONIER, Boston, Mass., assignor to Adolph Ladenburg, New York, N. Y., and R. T. MacDonald, Fort Wayne, Ind. Filed Apr. 20, 1892. Serial No. 429,533. (No model.)

Claim.—1. As a mode of manufacturing incandescent electric lamps, consisting in first sealing the leading-in wires into the bulb, then introducing the filament through an opening in the bulb and affixing it in conductive relation to the electrodes, then forming a vacuum within the bulb, and finally sealing the opening through which the filament was introduced.

2. The herein-described mode of manufacturing incandescent electric lamps, which consists in sealing the leading-in wires to the bulb, then introducing the filament through an opening in the bulb and fixing it upon the electrodes, then building up the filament to a uniform resistance, and finally exhausting and sealing the bulb.

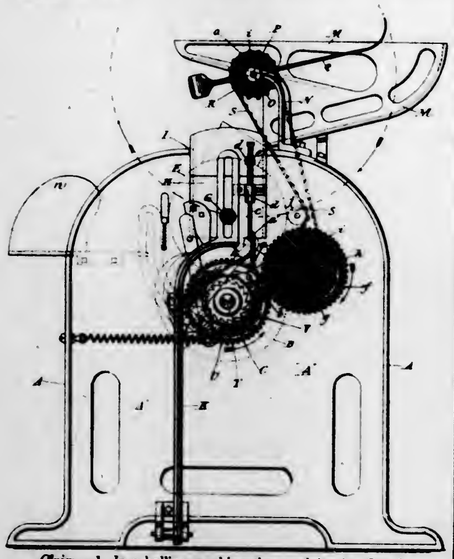
3. The herein-described mode of manufacturing incandescent

electric lamps, which consists in sealing the leading-in wires to the bulb, introducing the filament through an opening in the bulb, then affixing the terminals of the filament to the electrodes by depositing carbon from a suitable hydrocarbon, thus forming a vacuum, and finally sealing the bulb.

4. The herein-described mode of manufacturing incandescent electric lamps, which consists in first sealing into the bulb the leading-in wires upon the electrodes of which is a primer of carbon, then introducing the filament through an opening in the bulb and forming a joint between its extremities and the electrodes by a deposition of carbon from a hydrocarbon, and finally forming a vacuum and sealing the bulb.

487,891. MACHINE FOR BALLING SLIVERS. WILLIAM M. PAWLING, Hagaman's Mills, N. Y., assignor to George J. Torrance, Harrison, N. J. Filed Oct. 8, 1890. Serial No. 367,410. (No model.)

Brief.—An improvement upon patents to G. J. Torrance, Nos. 370,574 and 430,900. The improvement resides in a revolving bat for discharging the filled spools, instead of a bat operating with a sudden shock. When the spool is filled, the parts *a'* and *e* become disengaged, permitting the pawl to engage ratchet V, thus operating the gear-wheels U and *f* and, through the sprocket-chain and wheels, rotating the bat.



Claim.—1. In a balling-machine, the revolving bat Q and means to operate the same from the main shaft at intervals to discharge the ball of sliver automatically.

2. In a balling-machine, the combination of the revolving bat and suitable means for operating the same from the main shaft, the said means consisting of a pawl, ratchet-wheel, spring *k*, gear-wheels, sprocket-wheels connected together with a chain belt, and an adjustable vertical retaining-lever adapted to release the pawl when the ball of sliver attains the desired diameter, thereby allowing the pawl through the medium of the spiral spring *k* to engage the ratchet-wheel, all operating as shown, described, and set forth.

3. In a balling-machine, the shaft C, provided with a pulley by which said shaft is driven, a drum to engage and cause the sliver to wind upon a spool, a ratchet-wheel secured upon the main shaft C, a gear-wheel and cam combined in one piece and held lengthwise upon said shaft by the ratchet-wheel, and a friction-plate Y, a pawl provided with a shank and adapted to engage the ratchet-wheel by the spring *k* when released from the retaining-lever *c*, a revolving bat operated by a chain upon sprocket-wheels, and an intermediate gear-wheel *f*, all combined and operating as described, shown, and set forth.

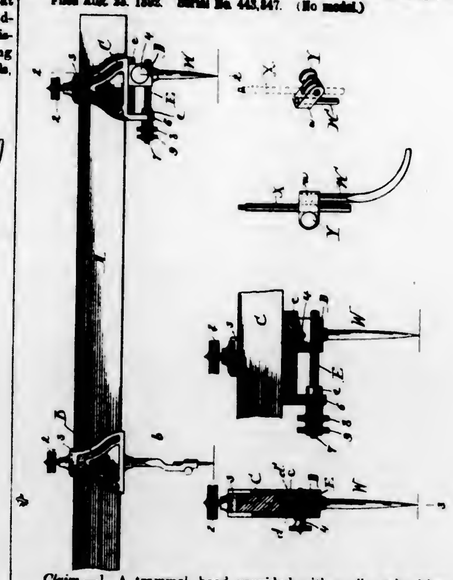
4. In a balling-machine, the combination of the shaft C, provided with a cam, gear-wheel, and ratchet-wheel, a lever actuated by the cam to insert and withdraw the spindle G from the spool F, flanges E, intermediate gear-wheel *f*, having attached thereto a sprocket-wheel, a revolving bat Q, and sprocket-wheel R, a chain belt 8, connecting the sprocket-wheels together, and the said spindle G to receive spool F, said spindle being susceptible of a vertical movement in its bearings as the ball of sliver increases in diameter, and an adjustable vertical retaining-lever, all constructed and operating as and for the purposes set forth.

5. In a balling-machine, the combination of the revolving bat with the cam T, gear-wheel U, and means to connect the revolving bat therewith, the pawl *a*, provided with the shank *a'*, and the retaining-lever *c*, all constructed and operating as and for the purposes set forth.

6. A balling-machine combining therein the flanges E, between which the ball of sliver is wound, a chute *n* for receiving the ball from said flanges, and a revolving bat for throwing the ball of sliver from said flanges into said chute, substantially as set forth.

7. In a balling-machine, the combination of the flanges E, between which the ball of sliver is wound, combined with a revolving bat for throwing the ball from said flanges, substantially as shown, described, and set forth.

487,892. BEAM-COMPASSES. WILLIAM S. ROBINSON, Chicago, Ill. Filed Aug. 23, 1892. Serial No. 443,847. (No model.)



Claim.—1. A trammel-head provided with a rib and with a grooved carrier-slide mounted upon and interlocking with said rib and a screw for adjusting said carrier-slide back and forth upon said rib, substantially as described.

2. A trammel-head provided with a rib and with a carrier-slide movably mounted upon said rib and having adjustable arms embracing said rib and a screw for adjusting said arms, substantially as described.

3. The combination, with the beam A, of the trammel head or slide C, having a rib *c* and a projection or arm 6, a carrier-slide D, having adjustable arms embracing said rib, a screw E for adjusting said carrier-slide, and a thumb-screw for adjusting the arms of said carrier-slide, substantially as described.

4. A trammel-head provided with a rib and with a carrier-slide mounted upon said rib and with a projection or arm 6 and screw for adjusting said carrier-slide, said screw having a plain portion passing through said projection or arm and a shoulder and provided with a threaded end and two nuts thereon, substantially as described.

487,898. HOSE-COUPLING. FREDRICK SCHIMPER, Weehawken, N. J., and CHARLES ZOLLER, New York, N. Y. Filed July 23, 1892. Serial No. 441,456. (No model.)

Claim.—1. In a hose-coupling, the combination, with a male section composed of a neck having a flange and lugs on the inner surface of said neck, of a spring-latch fastened in an exterior longitudinal groove of the neck and flange, a finger-piece on the free end of said spring-latch, a prong on said latch, a female coupling-section composed of a neck provided with exterior L-shaped grooves, and a socket surrounding said neck, which socket is provided at its inner surface with notches for receiving the prong on the latch, substantially as set forth.

2. In a hose-coupling, the combination, with a coupling-section, of a tubular stem adapted to be inserted into the hose, which tubular stem has an annular groove, prongs projecting from the coupling-section and provided near their ends with notches, and a band passed around the tube and prongs and through the notches of the prongs, substantially as set forth.

3. In a hose-coupling, the combination, with a coupling-section having a tubular stem adapted to be inserted into the end of the hose, of detachable prongs having wedge-shaped heads at one end and a notch in the outer surface in the opposite end, and a band passed around the prongs and hose and passing through the notches in said prongs, substantially as set forth.

487,894. CUTTER FOR GASKETS, &c. JAMES H. SHIELDS, Chicago, Ill. Filed Jan. 12, 1892. Serial No. 417,893. (No model.)

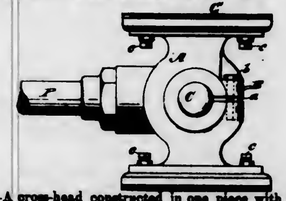
Claim.—1. An apparatus of the class described, comprising a continuous perforated frame, a suitable stationary pattern support or block within said frame, a series of set-screws passing through said frame at different points opposite said stationary support or block, a flexible knife encircling said support or block and interposed between it and the set-screws, whereby the knife may be forced against the edge of the support or block and be made to conform to its outline by said set-screws, said set-screws and said support or block being independent of each other, substantially as described.

2. In apparatus of the class described, comprising a rigid frame, a support or block within said frame, a flexible knife encircling said support or block, a series of pressure devices movable independently of said support or block and serving to force said knife at different points against the support or block, and a second knife within said support or block, substantially as described.

3. An apparatus of the class described, comprising a rigid frame, a support or block C within said frame, a flexible knife D, encircling said support or block, a knife F within said support or block C, and a series of set-screws for forcing said knife D against said support or block C, substantially as described.

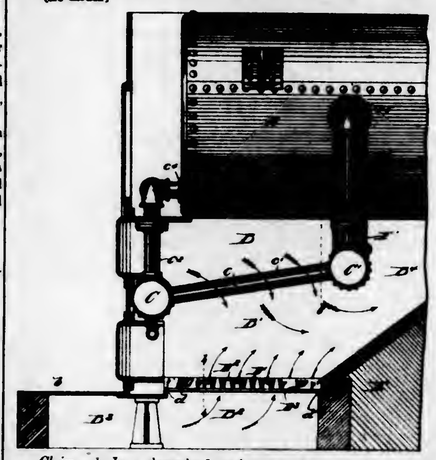
4. In apparatus of the class described, comprising a main frame having a bottom portion A, a perforated raised flange A', screws B, passing through said flange A', presser-blocks E, a support or block C, an inner knife F, and a support or block G, substantially as described.

487,895. CROSS-HEAD. JAMES B. STANWOOD, Cincinnati, Ohio. Filed May 25, 1891. Serial No. 394,060. (No model.)



Claim.—A cross-head constructed in one piece with upper and lower bearings, a vertical slot between for the reception of the pitman, horizontal apertures outward through the side cheeks for the wrist-pin, corresponding horizontal slits forward through said cheeks in the axial plane of and opening into the wrist-pin apertures, in combination with set-bolts passing through the upper and threaded into the lower half of the cheeks through the plane of slit and with adjustable sliding plates covering the upper and lower bearings of the cross-head, substantially as set forth.

487,896. DOWNDRAFT-FURNACE FOR STEAM-BOILERS. JOSEPH F. WAENLER, St. Louis, Mo. Filed Apr. 27, 1892. Serial No. 430,867. (No model.)

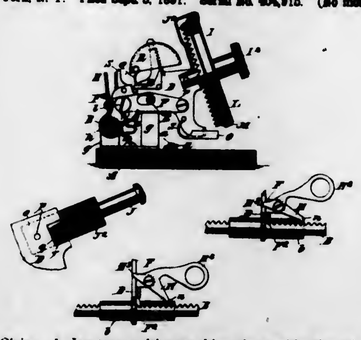


Claim.—1. In a downdraft and water-tube grate-furnace of a steam-boiler, the combination of the depending front and rear water-spaces, having pipe connection with each other and the boiler, and a perforated intermediate table between the ash-pit and the combustion-chamber composed of refractory matter, such as fire brick or tiles, and supported in the furnace, substantially in the manner shown and described, and for the purpose specified.

2. In a downdraft and water-tube grate-furnace of a steam-boiler, the platform D, composed of refractory matter, such as fire brick or tiles, and having holes or openings D^2 D^2 formed larger at the bottom than at the top, substantially in the manner shown and described, and for the purposes specified.

3. In a downdraft and water-tube grate-furnace of a steam-boiler, the combination of the dampers F F', air-box B^2, cover *b*, registers *b'* *b'*, air-space B^3, and perforated refractory table D, composed of refractory matter, such as fire brick or tiles, and supported on the bars D^2, all substantially as shown and described, and for the purpose specified.

487,897. TYPE-WRITING MACHINE. JAMES R. WILSON, New York, N. Y. Filed Sept. 5, 1891. Serial No. 404,915. (No model.)



Claim.—1. In a type-writing machine, the combination of a rack-bar, a lever or frame pivoted on said bar, a type-carrier pivotally carried by said frame, said frame being adapted to travel across the base or platen to space apart letters, a lever pivotally connected with said frame, an abutment to actuate the lever when the frame is depressed, and means connected with said lever for moving the frame step by step.

2. In a type-writing machine, a rack-bar, a frame or lever pivotally carried therein, a head J^3, pivoted on said frame or lever, and a

spring between said frame and head, combined with a type-carrier journaled on said head, substantially as described.

3. In a type-writing machine, the combination of a rack-bar, a frame or lever pivotally carried to slide thereon, a head J^2, pivoted on said frame, a spring between said frame and head, a type-carrier journaled on said head, a series of teeth on said carrier, and a projection on said frame to engage said teeth to lock the carrier, substantially as described.

4. In a type-writing machine, the combination of a rack-bar, a frame or lever to slide thereon, and a type-wheel connected thereto, with a lever pivoted to said frame and having a finger to engage the rack-bar and with a rod upon which said lever operates, substantially as described.

5. In a type-writing machine, the combination of a rack-bar, a frame or lever to slide thereon, and a type-wheel connected thereto, with a lever pivotally connected with said frame, a finger on said lever to engage said rack, a pawl carried by said lever also to engage said rack to feed the frame along, and a rod upon which said lever operates as the frame is actuated, substantially as described.

6. In a type-writing machine, the combination of a frame or lever, a type-carrier connected therewith, and a rack-bar upon which the frame is mounted, with a lever pivoted to said frame, a spring connecting said frame and lever, and a rod upon which said lever acts, substantially as described.

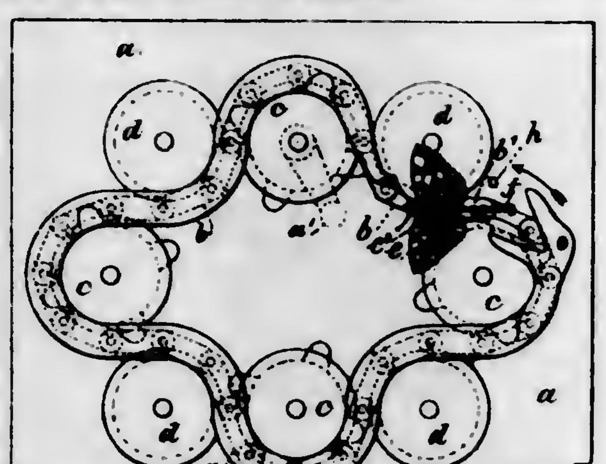
7. In a type-writing machine, the combination of a rack-bar, a frame mounted thereon, and a type-wheel connected to said frame, with a lever pivoted to said frame, a pawl carried by said lever to move the frame step by step, a cam-like projection on said pawl by which the lever can be lifted, and a rod upon which said lever operates, substantially as described.

8. In a type-writing machine, a frame and a type-carrier connected thereto, a bell connected with said frame, and a clapper for said bell also connected with said frame, combined with a lever pivoted to said frame and adapted to actuate said clapper and a rod E, upon which said lever operates, substantially as described.

9. In a type-writing machine, the combination of a frame, a type-carrier connected thereto, a bell carried by said frame, a clapper, and a lever carrying said clapper, with a lever to actuate said clapper, a trigger to hold said clapper, and an arm to trip said trigger, substantially as described.

10. In a type-writing machine, a frame and a type-carrier carried thereby, a bell on said frame, a clapper, a lever carrying the same, and a projection on said lever, combined with a lever to actuate said clapper, a trigger to engage and hold said projection, and an arm to trip said trigger, substantially as described.

487,898. PYROTECHNIC DEVICE. George J. M. Ashby, Coney Island, N. Y., assignor to Arthur Brock, London, England. Filed July 28, 1892. Serial No. 441,441. (No model.)



Claim.—1. The combination, with the endless chain, the pyrotechnic devices connected therewith illustrating a serpent, and the means for operating the same, of the butterfly pyrotechnic device, an arm upon which said device is mounted, and devices capable of liberating said butterfly, so that it may move from a normal position up to the mouth of the serpent, substantially as set forth.

2. The combination, with the backing *a*, and endless chain *b*, and the pyrotechic devices connected upon said endless chain and representing a serpent, and the sprocket-wheels and pulleys for operating said endless chain in a circuitous path, of the pyrotechnic butterfly device *e* and its block *e'*, the arm *f*, connected to the link *b'*, the lever *g*, and a device, such as the device *h*, for liberating the butterfly device and its block to allow the same to move by gravity or centrifugal motion along the arm *f* up to the mouth of the serpent, substantially as described.

487,899. PYROTECHNIC DEVICE. George J. M. Ashby, Coney Island, N. Y., assignor to Arthur Brock, London, England. Filed July 28, 1892. Serial No. 441,442. (No model.)

Claim.—1. The combination, with a frame carrying pyrotechnic devices or figures in design and partially cut away on the profile of the figure, of a supplemental frame carrying a continued part of the same design connected to the main frame and adapted to be moved back and forth, so as to alternately expose and conceal the portion of the figure upon the supplemental frame, substantially as and for the purposes set forth.

2. The combination, with the frame *a* and its backing-piece *a'*, carrying pyrotechnic figures in design and partially cut away on the profile of the figure, of a supplemental frame *b*, pivotally connected at 4 to the frame *a* and carrying a continued portion of the figure and adapted to be moved back and forth to alternately expose and conceal the figure on the frame *b*, substantially as and for the purposes set forth.

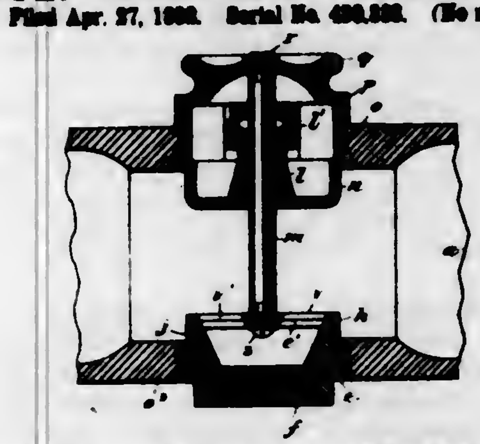
487,900. HARNESS. Benjamin F. Baker, Ballston, N. Y. Filed July 21, 1892. Serial No. 440,752. (No model.)

Claim.—1. The combination, with two bows having their bow ends projected rearwardly, of an evener connected to each of the bows at the bow ends of the latter, a back-strap arranged to pass over the back of each of the animals of a team, with the depending ends of each of said straps connected to one of the opposite sides of each of the bows, hames making a draft connection with each of the bow sides at each side of each of the animals of the team, and a horizontal strap connecting the sides of each of the bows, substantially in the manner as and for the purposes set forth.

2. The combination of the bows B B, each suspended on the animal's back by means of a strap S^2, which at each of its lower ends connects with the opposite side of one of the bows, with the rounded ends of the bows projected rearwardly and laterally, the evener V, connected to the lower end of each of said bows, and the hames H H at each side of each of the animals of the team, connecting with the end of one of the bows, substantially in the manner as and for the purposes set forth.

3. The combination, with the hames H H, of the connections A, made with the forked bars a^1 and a^2, the bows B B, and the chains C, connecting the bows with the hames, and the evener V, connected to said bows, substantially in the manner as and for the purposes set forth.

487,901. RADIATOR-VALVE. George C. Blackmore, Newark, N. J. Filed Apr. 27, 1892. Serial No. 430,222. (No model.)



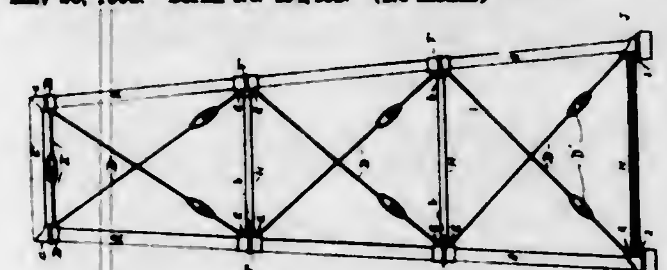
Claim.—1. In a radiator-valve, the combination, with a suitable casing, of the socket *n*, containing the stuffing-box *l*, and the valve-bed *e*, having the valve-seat *e'*, with the disk valve *v*, seated thereon, the valve being provided with suitable ports and with the stem *m*, fitted to the stuffing-box *l*, and the socket *n* and die-bed *e* being threaded externally to secure them in the opposite sides of the casing, as and for the purpose set forth.

2. In a radiator-valve, the combination, with a suitable casing, of the socket *n*, provided with the internal stuffing-box *l* and having the handpiece *q* fitted to the recess *p* at the top, and the die-bed *e*, threaded externally and provided with internal thread *f* and having the valve-seats *e'*, with disk valve *v*, fitted thereto, with stem *m*, fitted to the stuffing-box, substantially as herein set forth.

3. In a radiator-valve, the combination, with the casing *y*, having a nozzle *y'* at the side and provided with threaded apertures *o* and o^2, of the socket *n*, provided with the stuffing-box *l* and handpiece *q* and with external thread, as set forth, and the die-bed *e*, provided with valve-seat *e'*, disk valve *v*, and stem *m*, having handpiece *q* fitted to the top of the socket, substantially as set forth.

4. In a radiator-valve, the combination, with a suitable casing, of a stuffing-box secured in the top of the same, a flat valve-seat attached to the bottom of the same and provided with the apertures e^2 and the tapering flanges *h* and notches *h'*, as set forth, and the valve *v*, having the hooks *j* fitted to the under sides of the tapering flanges and provided with the ports *v'*, and the stem *m*, projected through the stuffing-box, the whole arranged and operated substantially as herein set forth.

487,902. TOWER. William E. Caldwell, Louisville, Ky. Filed May 26, 1892. Serial No. 434,462. (No model.)

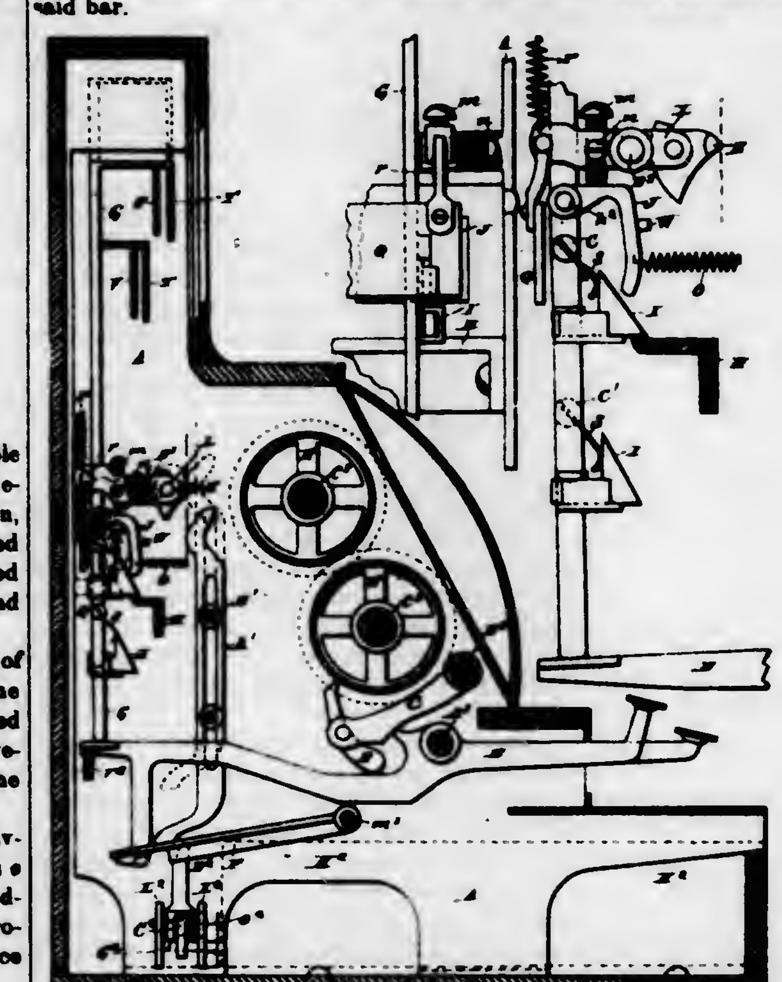


Claim.—1. A supporting-tower composed of timbers or uprights of uniform size from end to end, top and bottom sockets therefor, intermediate sockets provided with internal supporting-flanges, and open-faced studs provided with eyes *g*, extending entirely through them and through one wall of said sockets into the interior thereof, said studs being formed integral with said top, bottom, and intermediate sockets, adapted to receive and hold oblique tie-rods connecting said sockets, all combined substantially as specified.

2. A supporting-tower composed of uprights of uniform diameter from end to end, top, bottom, and intermediate receiving-sockets therefor, and open-faced studs on all of said sockets adapted to receive and hold connecting tie-rods loosely therein, the intermediate sockets having internal supporting-flanges for said uprights and the top sockets having vertical retaining-flanges rising therefrom, adapted to hold the tank-supporting timbers in fixed position above said tower, all combined substantially as specified.

487,903. CASH-REGISTER. Homer A. Herr, Philadelphia, Pa. Filed Aug. 26, 1890. Serial No. 363,208. (No model.)

Claim.—1. In a cash register and indicator, the combination of a series of keys, a series of stationary tablets, a series of screens or covers provided with supporting-rods, a series of spring-actuated pawls or locks, one on each rod, a supporting-bar with which said locks engage, and connecting mechanism whereby on the operation of any key or keys the locks of all previously-raised rods are automatically moved and positively forced downward and the locks of all rods corresponding to the keys moved are forced upward in engagement with said bar.



2. In a cash register and indicator, the combination of a series of keys, a series of stationary tablets, a series of screens or covers provided with supporting-rods, a series of spring-actuated pawls or locks, one on each rod, a supporting-bar with which said lock engages, and a movable frame, whereby on the operation of any key the shield covering its tablet is raised until its lock engages with the supporting-bar and all previously-raised screen-rods are forced down by positive means.

3. In a cash-register, the combination of a series of stationary tablets, a series of movable shields or covers, and a series of individual locks, one for each shield, whereby on the operation of any key its corresponding shield is raised and held in position until some other key of the series is operated.

4. The combination, in a cash register and indicator, of a series of keys, a series of operative indicating parts, each of which has its individual lock, a fixed frame, a movable frame or part common to all the keys and moved by the operation of any one of them by connecting mechanism, whereby on operating any key said movable frame or part disengages all the locks of the indicating parts supported by the fixed frame and allows them to return to their normal position, concealing the indicators.

5. The combination, in a cash register and indicator, of a series of keys, a series of rods operating indicating mechanism, each rod of which is provided with a lock, a common fixed frame or bar, and a movable frame or part, with connecting mechanism whereby on operating any key it engages the lock of its indicating part with the fixed frame and the locks of all previously-raised rods are positively forced from their engagement with said fixed frame and allowed to drop, concealing their indicators.

6. The combination, in a cash register and indicator, of a series of keys, a series of rods operating indicating mechanism, each rod of which is provided with a lock, a fixed frame or bar, an oscillating frame or part, and a vertically-moving frame, whereby on operating any key it engages the lock of its indicating part with the fixed frame and the locks of all previously-raised rods are forced from their engagement with said fixed frame and forced down by positive means.

7. The combination, in a cash register and indicator, of a series of keys combined with a drawer, a frame common to all the keys and operated by any one of them, a pawl secured to said frame and a vertically-swinging drawer-holder, whereby on operating any key said pawl is free to be moved around or pass said drawer-holder, but on release of the key said pawl engages with said drawer-holder, swinging it vertically and releasing the drawer.

8. The combination, in a cash-register, of a series of keys, an oscillating frame common to all the keys and moved by the operation of any one of them, and a vertically-swinging drawer-holder whereby on operating any key the frame is raised without any effect on the

drawer-holder, but on the release of the key said frame operates the drawer-holder, releasing the drawer.

9. In a cash register and indicator, the combination of a series of keys, a drawer, an oscillating frame common to all the keys and moved by the operation of any one of them, a vertically-swinging drawer-holder whereby on operating any key the frame is raised, but without any effect on the drawer-holder, but on the release of the key the drawer-holder is operated by the frame and the drawer released.

10. The combination, in a cash register and indicator, of a series of keys, combined with a drawer, a frame common to all the keys and operated by any one of them, a pawl secured to said frame and a vertically-swinging drawer-holder, and an adjustable part or screw, whereby the drawer-holder can be adjusted to trip the said pawl at any desired time.

11. The combination, in a cash register and indicator, of a series of keys, a drawer, a drawer-holder, a frame common to all the keys and moved by the operation of any one of them, a movable part secured to said frame, whereby one cannot open the drawer until the key has had its full limit of play and all its functions are performed and it is released to return to its normal position.

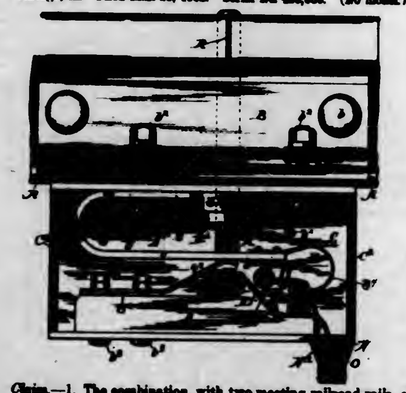
12. The combination, in a cash-register and indicator, of a series of keys, a pivoted vertically-moving drawer-holder, and a drawer with connecting mechanism, whereby the direct operation of the key has no influence on the drawer-holder, but on release of the key after it has performed all its functions the said drawer-opener is operated and the drawer released.

13. In a cash register and indicator, the combination of a series of keys, each provided with a figure or mark to indicate its value, a series of indicating tablets, marks, or figures corresponding in number and value to the keys, a series of movable rods, one for each figure, a series of locks or pawls, one on each rod, a supporting-bar with which said locks engage, and connecting mechanism, whereby on the operation of any key or keys the locks of all previously-raised rods are automatically moved and positively forced downward and the locks of all rods corresponding to the keys moved are forced upward in engagement with said bar.

14. In a cash register and indicator, the combination of a series of keys, a series of rods, each provided with a rectilinear-moving lock, a fixed bar with which said locks engage, a moving frame with connecting mechanism, whereby on operating any key all previously-raised rod-locks are forced off said fixed frame and the rod-locks corresponding to the actuating-key are forced on said fixed frame.

15. In a cash register and indicator, the combination of a series of keys, a series of rods, each provided with a spring-actuated rectilinear-moving lock, a fixed bar with which said locks engage, and a moving part or frame, whereby on operating any key all previously-raised rod-locks are forced off said fixed frame and the rod-locks corresponding to actuating-key are forced on said fixed frame.

487,904. SIGNALING DEVICE FOR RAILWAYS. ERNESTO KERLER, Chicago, Ill. Filed Mar. 26, 1892. Serial No. 426,692. (No model.)



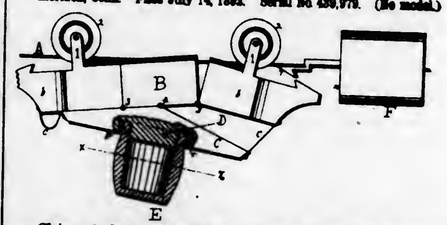
Claim.—1. The combination, with two meeting railroad-rails, of a vertically-sliding rod lying in a chamber formed in the ends of said rails and projecting slightly above the tread of the rails, a spring pressing the rod upward and holding it normally in its raised position, and two terminals of an electric circuit, one of said terminals being operated by said spring and thereby pressed against the other when the spring is pressed downward by downward movement of the rod.

2. The combination, with the rails A A, of the case lying beneath the rails, the rod R, having its lower end in the case and its upper end slightly above the tread of the rails, the spring S, pressing the rod upward, the terminal E, controlled by the spring, the terminal E', and wires W W', attached to said terminals, respectively, substantially as shown and described.

3. The combination, with the rails and the case secured beneath the rails, of the rod R, spring S, terminal E, and wire W of the wire W', the inclined plate E', forming the terminal of the wire and supported beneath the terminal E, and means, substantially as shown and described, for adjusting the plate E' horisontally and thereby varying its distance from the terminal E, substantially as shown and described.

4. The combination, with the rails A A and the case secured beneath the rails, of the rod R, having the collar R', the cushion S^3, the spring S, the spring S^4, and the terminal E, the block D, fastened to the bottom of the case and longitudinally adjustable thereon, the spring S, the inclined plate E', fastened to the block, and the wires W W', connected with the terminal E and plate E', substantially as shown and described.

487,905. CASH-CARRIER APPARATUS. MARVIN W. SHERWOOD, Meriden, Conn. Filed July 14, 1892. Serial No. 439,979. (No model.)

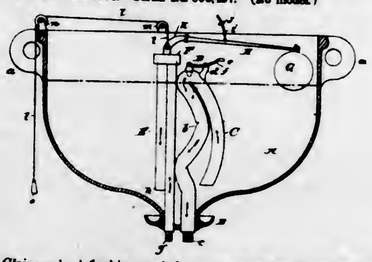


Claim.—1. In a cash-carrier apparatus, a wheeled car or truck composed of a plurality of parts connected together by hinged joints and having an upwardly-projecting rigid hook at each end, in combination with a fixed downwardly-projecting hook located at each end of the car track or way, substantially as described.

2. In a cash-carrier apparatus, a wheeled car or truck composed of three parts connected together by hinge-joints, each end section being provided with a hook, in combination with a cash-receptacle carrier pivotally connected with the central part of the truck and flexibly connected with the end sections, substantially as described.

3. A cash-car having a gravity pawl or latch at each end, adapted to engage with a catch-hook at each end of the line, a disengaging-lever pivoted to the bottom of said car, and a cup secured to the bottom of said lever, substantially as shown and described, and for the purpose specified.

487,906. FLUSHING-TANK. EDWARD C. STOVER, Trenton, N. J. Filed June 16, 1891. Serial No. 396,437. (No model.)



Claim.—1. A flushing-tank for water-closet bowls and similar articles, which consists of a tank-body and siphon made of one solid piece of earthenware or similar substance and in which all the parts below the water-line are of non-corrodible material, and in which the valves and other metallic parts are set above the water-line, substantially as shown, and for the purposes specified.

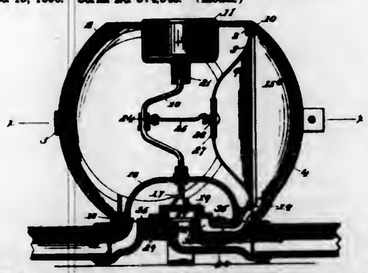
2. A flushing-tank for water-closet bowls and similar articles, which consists of a tank-body, supply-pipe, and a siphon, all made of one solid piece of earthenware or similar substance and in which all the parts below the water-line are of non-corrodible material, and in which the valves and other metallic parts are set above the water-line, substantially as shown, and for the purposes specified.

3. A flushing-tank provided with a suitable supply-pipe, which is cut off by the filling of the tank in the usual manner, a supply-valve which opens and closes said supply-pipe, a pull-cord by which the supply-valve is mechanically forced up and the supply-pipe opened against the action of the float after the tank is filled, a suitable siphon connected with the flushing-pipe, and a valve engaged by the float-arm, whereby the siphon is broken when the water allows the float to drop to a predetermined level, substantially as shown and described.

4. A flushing-tank provided with a suitable supply-pipe, which is cut off by the filling of the tank in the usual manner, a supply-valve which opens and closes said supply-pipe, a pull-cord by which the supply-valve is mechanically forced up and the supply-pipe opened against the action of the float after the tank is filled, a suitable siphon connected with the flushing-pipe, and a valve engaged by the float-arm, whereby the siphon is broken when the water allows the float to drop to a predetermined level, and with an upwardly-projecting pipe which sends an upward jet of water into the shorter leg of the siphon from the supply-pipe, substantially as shown and described.

5. A flushing-tank for water-closet bowls, which consists of a tank-body, a siphoned flushing-pipe, a supply-pipe, and a drip-saucer for receiving and holding the products of atmospheric condensation on the outside of the tank, all formed in one solid piece of earthenware and provided with suitable devices for supplying the tank and flushing the bowl, substantially as shown and described.

487,907. GAS-METER. HENRY A. TOBEY, Toledo, Ohio. Filed Dec. 15, 1890. Serial No. 374,846. (Model.)



Claim.—1. A meter spherical in general outline and having removable caps adapted to form measuring-chambers, in conjunction with the diaphragms, substantially as and for the purpose specified.

2. A meter having a shell composed of a frame provided with equidistant openings having detachable lids, substantially as shown and described, for the purpose specified.

3. A meter having a shell spherical in general outline, comprising in its construction a frame 2, having openings closed by lids, (spherical segments 4,) said lids being held in place by means of encircling band 5, substantially as shown and described, for the purpose specified.

4. A meter having a shell spherical in general outline, composed of a frame provided with equidistant openings having detachable lids, in combination with flexible diaphragms clamped between the margins of said openings and said lids, substantially as shown and described, for the purpose specified.

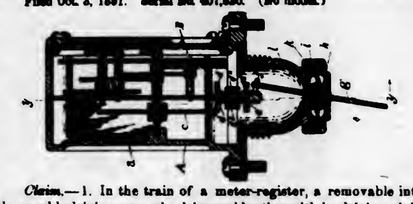
5. A meter having a shell spherical in general outline, composed of a frame provided with equidistant openings having detachable lids, in combination with flexible diaphragms clamped between the margins of said openings and said lids, the spaces between the diaphragms and lids forming measuring-chambers and the margin of the diaphragms serving as gaskets for the joints formed by the juncture of the lids and frames, substantially as shown and described, for the purpose specified.

6. A series of ports in a valve-seat arranged equidistant in the path of a valve adapted to move in a circle, the marginal lines of said ports being segments of the inner and outer circles of the annular face of said valve, substantially as shown and described, for the purpose specified.

7. A valve provided with an annular face and a central concavity and moving by the means described in a circular path, in combination with a valve-seat, having a central opening, and a series of ports of substantially the contour described, adapted by means of their relation to the path of the valve, said central opening, the annular valve-face, and the concavity of the valve to maintain a port-opening through a meter of constant and unvarying area, all substantially as shown and described, for the purpose specified.

8. A gas-meter comprising in its construction a shell spherical in general outline, provided with equidistant openings having detachable lids, a series of flexible diaphragms arranged at intervals upon the interior of the shell, forming diaphragm or measuring chambers between the shell and diaphragms, a crank-shaft connected with said diaphragms, a registering mechanism connected with said crank-shaft, a valve connected with and actuated by said shaft, an inlet to said shell, an outlet therefrom, a series of conduits connecting said measuring-chambers with the central chamber of said shell, said outlet and said conduits being controlled by said valve, substantially as and for the purpose specified.

487,908. GAS-METER REGISTER. HENRY A. TOBEY, Toledo, Ohio. Filed Oct. 3, 1891. Serial No. 407,690. (No model.)

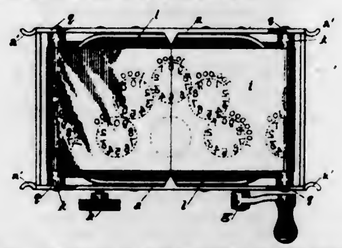


Claim.—1. In the train of a meter-register, a removable interchangeable driving gear-wheel, in combination with its driving-pinion, an externally-threaded sleeve forming a journal for the shaft of said pinion, and an internally-threaded support for said sleeve, substantially as shown and described, for the purpose specified.

2. In a meter-register, a diaphragm secured at its margin, two hemispheres clamping said diaphragm at or near its center between their adjacent faces, and a seat or socket for the ball formed by said two hemispheres, in combination with a shaft or staff passing through said ball and through said diaphragm, substantially as shown and described, for the purpose specified.

3. In a meter-register, a flexible diaphragm clamped at its margin, a screw-threaded shaft or staff passing through said diaphragm, two screw-threaded hemispheres on said shaft adapted to clamp said diaphragm between their adjoining faces, and a seat or socket for said temperatures, in combination with an adjustable pinion in the train of the register, operatively connected with said shaft or staff, substantially as shown and described, for the purpose specified.

487,909. ART OF AND MECHANISM FOR RECORDING THE STATE OF METER-REGISTERS. HENRY A. TOBEY, Toledo, Ohio. Filed Oct. 3, 1891. Serial No. 408,096. (No model.)



Claim.—1. The art or method of recording the state of meter-registers, which consists in printing upon the paper to be used copies of the dial-faces to be read, then taking an impression of the dial-hands and number of meter by pressing said prepared paper between the dial-plate of the meter and a suitable inking pad or ribbon, substantially as shown and described, for the purpose specified.

2. A machine for recording the state of meter-registers, comprising in its construction a case or frame adapted to fit the face of a meter-register and containing two spools with means for revolving the same, a ribbon or paper on said spools, having thereon copies of the faces of the dial-plates of the meters to be recorded, an inking pad or ribbon adjacent to the inner side of said ribbon or paper, and means for pressing said pad against said ribbon or paper, all substantially as shown and described, for the purpose specified.

3. In a machine for recording the state of meter-registers, a strip or ribbon of paper having thereon copies of the faces of the dial-plates of the meters to be recorded, substantially as shown and described, for the purpose specified.

4. In a machine for recording the state of meter-registers, a case having slotted sides, spools with their spindles mounted in said slots, and hinged lids provided with springs adapted to press said spindles into place, in combination with a strip of paper on said spools, an inking pad or ribbon back of said strip of paper, and means for actuating said inking pad or ribbon, substantially as shown and described, for the purpose specified.

487,910. COP-HOLDER FOR SEWING-MACHINE SHUTTLES. CHARLES B. WILKINSON, New Haven, and MARS V. PALMER, Willimantic, Conn. Filed Apr. 11, 1892. Serial No. 428,692. (No model.)

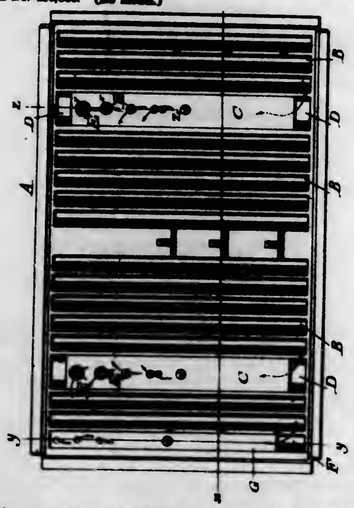
487,910.

Claim.—1. In combination with a shuttle, a cop-holder comprising shells adapted to the opposite ends of the cop, said shells being provided with round-faced spurs or teats for engaging the opposite ends of the core of the cop, and means for holding the shells in position, substantially as set forth.

2. In combination with a shuttle, a cop-holder comprising a pair of shells fitted to the opposite chambers of the shuttle and provided centrally with inwardly-projecting rounded spurs or teats adapted to loosely engage the opposite open ends of the core of the cop, substantially as set forth.

3. In combination with a shuttle, a cop-holder comprising shells fitted to the opposite chambers of the shuttle and provided with flanges at their outer edges and with inwardly-projecting round-faced spurs or teats at their central portions, substantially as set forth.

487,911. OVEN-PLATE. ISAAC BROOKE, Pottstown, assignor to Floyd, Wells, & Company, Boyer's Ford, Pa. Filed Mar. 30, 1892. Serial No. 426,863. (No model.)



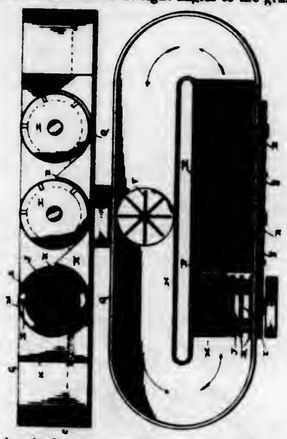
Claim.—1. An oven-plate having a corrugated surface and plates secured to the inner face of the walls of the corrugations, forming flues open at top and bottom, said plates having openings therein, substantially as described.

2. An oven-plate having a corrugated surface, plates secured thereto on the inner face, forming flues open at top and bottom, and a plate secured to said oven-plate, forming a flue open at bottom and having an exit at top through an opening in the oven-plate, said parts being combined substantially as described.

487,912. PROCESS OF AND APPARATUS FOR DISINTEGRATING FIBROUS SUBSTANCES. JOHN B. CARTER and JAMES H. BENNY, Kokomo, Ind. Filed Feb. 9, 1892. Serial No. 420,856. (No model.)

Claim.—1. The herein-described process of disintegrating fibrous substances, consisting in revolving a suitable quantity of the stock to be reduced upon its own axis under pressure.

2. The herein-described process of disintegrating fibrous substances, consisting in revolving a suitable quantity of stock to be reduced upon its own axis and at right angles to the grain thereof.



3. The herein-described process of disintegrating, washing, and felting fibrous substances, consisting in repeatedly rolling upon its own axis under pressure and under water a suitable quantity of stock after each rolling operation, breaking the resulting wad, and then gathering the separated stock into a wad and again rolling it upon its own axis.

4. A fiber-disintegrating apparatus comprising a rolling mechanism for partially disintegrating it, combined with rollers having a screen-surface with water-ways inside thereof and a concaved surface coacting therewith, substantially as shown.

5. A fiber-disintegrating roll having annular ribs to form water-ways and a screen placed around it, combined with a concaved surface coacting therewith, substantially as described.

6. A fiber-disintegrating roll having grooves to form water-ways made in its periphery and a netting placed upon its outer surface, whereby water-ways are formed behind the netting, substantially as and for the purpose set forth.

7. A fiber-disintegrating roll having annular grooves to form water-ways and longitudinal ribs, for the purpose specified, combined with a concaved surface and a wire-netting placed around the said roll, substantially as set forth.

487,913. FIBER-DISINTEGRATING MACHINE. JOHN B. CARTER and JAMES H. BENNY, Kokomo, Ind. Filed Mar. 22, 1892. Serial No. 425,969. (No model.)

Claim.—1. A disintegrating-machine comprising a roller and a curved bed-plate having transverse water-ways, and a perforated rolling-surface over the water-ways, substantially as specified.

2. A disintegrating-machine comprising a roller, a bed-plate having a water way or ways, a wire screen placed over the water-ways, and a pump for forcing water in the water-ways from the inlet to the exit end of the water-way, substantially as described.

3. A disintegrating-machine comprising a roller, a bed-plate having a series of transverse water-ways, a screen placed over the water-ways and coacting with the roller, and a centrifugal pump placed in each water-way below the said screen, substantially as set forth.

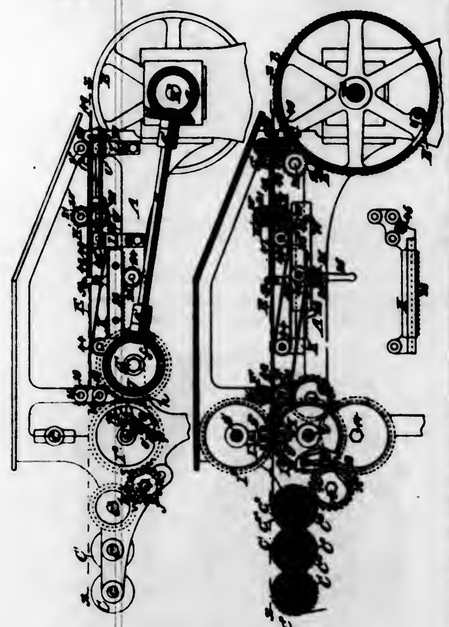
4. A disintegrating-machine comprising a bed-plate having water-ways extending transversely thereof, a roller, a screen placed over the said water-ways, a centrifugal pump placed in the said water-ways, and a shield placed around the inlet side of the said pump, substantially as specified.

5. A disintegrating-machine comprising a bed-plate having water-ways extending transversely thereof, a chamber depending from the said ways and extending longitudinal the said bed-plate, a shaft journaled longitudinally in the said chamber, and fins upon the said shaft in the said water-ways, a screen placed over the water-ways, and a roller coacting with the said screen, substantially as described.

6. In a disintegrating-machine, a bed-plate having transverse water-ways and a pump for forcing water from the inlet to the exit side of the said bed-plate, combined with a roller having water-ways, longitudinal ribs for carrying the water, and a screen placed over the water-ways and ribs, substantially as set forth.

7. In a disintegrating-machine, a curved bed-plate having transverse water-ways and a screen placed over the said water-ways, combined with a roller having water-ways, and a screen placed over the said water-ways for coacting with the curved bed-plate screen, substantially as specified.

487,914. FEEDING APPARATUS FOR PRINTING-MACHINES. CALVERT B. COTTRELL, Westerly, R. I. Filed July 18, 1892. Serial No. 439,860. (No model.)



Claim.—1. The combination, substantially as herein described, with the impression-cylinder of a printing-machine, a pair of feed-rollers for carrying a sheet toward the said cylinder, and mechanism for supplying said feed-rollers with sheets of different lengths, of a second pair of feed-rollers arranged between the first-mentioned rollers and the said cylinder and driven with a surface speed equal to that of the said cylinder and higher than that of the first-mentioned rollers and a liberating device, substantially as herein described, applied to the first-mentioned rollers to permit the acceleration of the speed of the sheet by the second set of rollers, as herein set forth.

2. The combination, with the impression-cylinder of a printing-machine, of a web-feeding apparatus, a cutting apparatus arranged in front of said web-feeding apparatus, a pair of feed-rollers arranged between the said cutting apparatus and the cylinder, means for driving the said web-feeding apparatus, feed-rollers, and cutting apparatus at variable surface velocities relatively to that of the cylinder, a second pair of feed-rollers adjustable to and fro between the first-mentioned feed-rollers and the cylinder and having a surface speed equal to that of the cylinder for taking a sheet from the first-mentioned feed-rollers, and a liberating device applied to the first-mentioned feed-rollers to permit the free movement of the sheet by the second feed-rollers at an accelerated velocity toward the cylinder, all substantially as herein set forth.

3. The combination, with the impression-cylinder of a printing-machine, of a web-feeding apparatus, a cutting apparatus for cutting said web into sheets, a train of gearing for driving the said web-feeding apparatus and cutting apparatus, including a changeable gear for varying the speed of said web feeding and cutting-apparatus relatively to the cylinder, a pair of feed-rollers geared with the said train of gearing to have the same surface speed as said feeding and cutting apparatus, a pair of adjustable feed-rollers arranged between the first-mentioned feed-rollers and the impression-cylinder and having a surface speed equal to that of the cylinder, and a liberating device applied to the first-mentioned feed-rollers, substantially as herein set forth.

4. The combination, with the impression-cylinder of a printing-machine, of a web-feeding apparatus for supplying a web of paper, a cutting apparatus for cutting said web into sheets, a train of gearing for driving the said feeding apparatus and cutting apparatus, including a changeable gear for varying the speed of the said feeding and cutting apparatus relatively to the cylinder, a pair of feed-rollers geared with the said train of gearing to have the same surface speed as the said feeding and cutting apparatus, a second pair of feed-rollers arranged in a fixed position near the cylinder and having the same surface velocity therewith, a third pair of feed-rollers geared with the said second pair of feed-rollers to have the same surface speed therewith and adjustable to and fro between the said first and second pairs of feed-rollers, and a liberating device between said first-mentioned feed-rollers and said train of gearing, substantially as herein set forth.

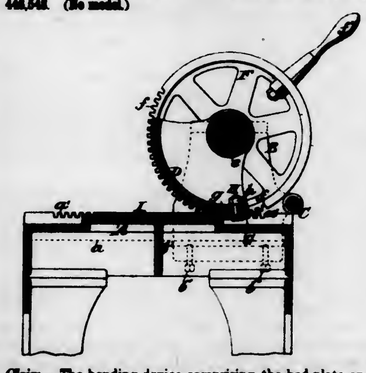
5. The combination, with the impression-cylinder and web feeding and cutting apparatus adapted to feed and cut a web to produce sheets of different lengths, of feed-rollers having the same surface speed as said cylinder, a carriage for said rollers adjustable toward and from said cylinder, and an endless carrier of variable length between the web feeding and cutting apparatus and said feed-rollers, substantially as herein set forth.

6. The combination, with the impression-cylinder and web feeding and cutting apparatus adapted to feed and cut a web to produce sheets of different lengths, of a pair of feed-rollers arranged in a fixed position relatively to the cylinder and having the same surface velocity therewith, a second pair of feed-rollers behind said first-mentioned pair, having the same velocity as said first-mentioned pair and adjustable back and forth toward said first-mentioned pair, an endless carrier of variable length arranged between said web feeding and cutting apparatus and said second pair of feed-rollers, and independent sheet-supports between the said first and second pairs of feed-rollers, substantially as herein set forth.

7. The combination, with the impression-cylinder and web feeding and cutting apparatus adapted to feed and cut a web to produce sheets of different lengths, of a pair of feed-rollers having the same surface speed as the said cylinder, a carriage movable toward and from the said cylinder and in which the said rollers are supported, and an endless carrier consisting of four sets of pulleys and shafts therefor, and a set of tapes or bands running on said sets of pulleys, two of said shafts having fixed bearings and two having bearings on the said carriage, and one of the latter being geared with said feed-rollers to drive the said tapes or bands, substantially as herein set forth.

8. The combination, with the impression-cylinder and web feeding and cutting apparatus adapted to feed and cut a web to produce sheets of different lengths, of a pair of feed-rollers arranged in a fixed position relatively to the cylinder and geared with the cylinder to run at the same surface velocity therewith, a second pair of feed-rollers and a carriage therefor with which they are adjustable toward and from the first pair, a shaft carrying bevel-gears, fixed bearings for said shaft, and bevel-gears, one on one of the rollers of each pair, gearing with the bevel-gears on the said shaft, one of the latter gears being movable lengthwise on said shaft by the said carriage for driving the second pair of feed-rollers at various distances from the first set, all substantially as herein set forth.

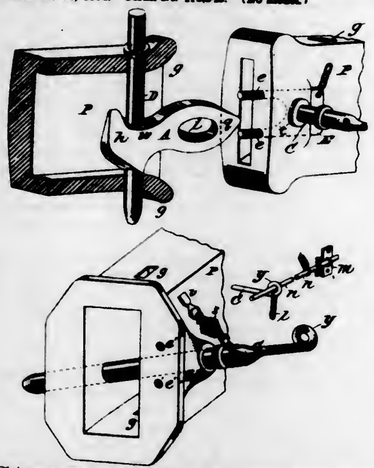
487,915. MEANS FOR BENDING ELECTROTYPE-PLATES. CALVERT B. COTTRELL, Westerly, R. I. Filed Sept. 22, 1892. Serial No. 446,048. (No model.)



Claim.—The bending device comprising the bed-plate on which the plate to be bent is to rest, a supporting-carriage adapted to move

along the bed-plate, a rocking curved-faced bending-tool supported in the carriage, a clamp for securing the edge of the plate to the curved face of the bending-tool, and wheels geared with the table to rock the tool and drive the carriage along the table, substantially as set forth.

487,916. CAR-COUPLING. CHARLES W. DIEDERICH, Concord, N. H. Filed Oct. 31, 1891. Serial No. 410,549. (No model.)



Claim.—1. The coupling-link having a rounded part *h*, an oblong slot *w*, and a pointed end *g*, substantially as set forth.

2. The coupling-link having a rounded part *h*, an oblong slot *w*, and a pointed end *g*, in combination with draw-heads, one of which has an oblong mouth with its longest dimension in the vertical plane, substantially as set forth.

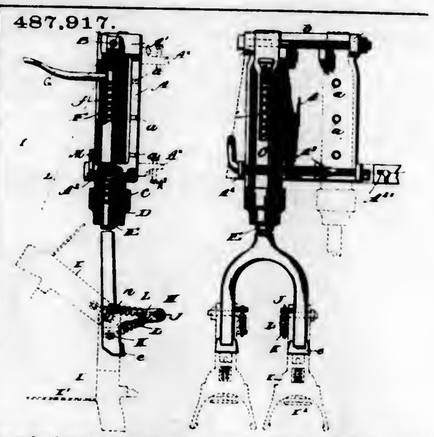
3. A draw-head having an enlargement on its side, provided with a receptacle for a pin-stopping plate and having openings for a leg or pin extending through the face of the draw-head, in combination with a stop-plate having an operating-pin and with a coupling-pin, substantially as set forth.

4. A draw-head having an enlargement on its side, provided with a receptacle for a pin-stopping plate and having openings for a leg or pin extending through the face of the draw-head, in combination with a stop-plate having an operating-pin and with a coupling-pin, said draw-head having a boss or extension about its pin operating to receive and support the pin, substantially as set forth.

5. A draw-head having downwardly-inclined lateral openings for a coupling-pin, substantially as set forth.

6. A draw-head having downwardly-inclined lateral openings for a coupling-pin, in combination with a spring normally tending to force the pin into said openings, substantially as set forth.

487,917. TORPEDO-PLACER. CHARLES F. EDGAR, Wilkes-Barré, Pa. Filed Feb. 13, 1892. Serial No. 421,266. (No model.)



Claim.—1. The combination, in a pivotally-mounted torpedo-placer, of a spring-actuated vertically-movable shank provided with a foot-lever and a torpedo-holder pivotally mounted on the lower end of said shank, substantially as specified.

2. The combination, in a pivotally-mounted torpedo-placer, of a vertically-movable spring-actuated shank with projecting portions, means for holding said shank against pivotal movement, and a torpedo-holder pivotally mounted on the lower end of said shank, substantially as specified.

3. The combination, in a pivotally-mounted torpedo-placer the shank of which has an extension, of a torpedo-holder pivotally mounted on said placer, a spring connecting said holder and extension, and a stop on the placer for limiting the movement of the holder on its pivot, substantially as specified.

4. The combination, with a suitable support, of a torpedo-placer pivoted thereon and free to slide on its pivot in the direction of the length of said pivot horizontally, as set forth.

5. A torpedo-placer pivotally mounted and having bodily movement on its pivot in the direction of the length of said pivot horizontally, combined with means for holding the same against such pivotal and horizontal movement, as set forth.

6. The combination, with a pivotally-mounted torpedo-placer having a shank with a lateral arm, of a torpedo-holder pivotally mounted on the said shank and connected with the said lateral arm by a spring, substantially as specified.

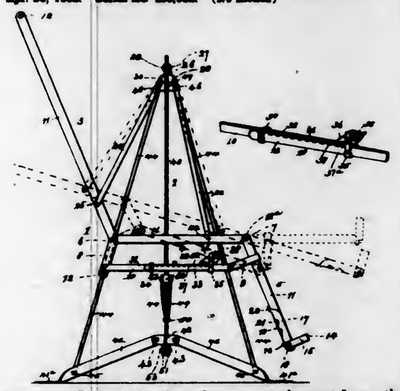
487,918. RAILWAY-CAR. ARTHUR FORDHAM, Chicago, Ill. Filed July 16, 1892. Serial No. 440,198. (No model.)

Claim.—1. The combination, with the car-body having the depressed central floor, of the galleries above said floor, the seats beneath the galleries, brackets F immediately above the backs of the seats and beneath the gallery, and swinging panels F', adapted to lie in pockets between the backs of the seats when not in use and to be swung upward and fitted against the edges of the brackets for the purpose of dividing the car in sections, substantially as described.

2. The combination, in a car having the inclosed apartments at each end and the passages P around the same, of galleries along the opposite sides and the steps S' S², leading to said galleries, respectively, and arranged at the ends of the passages P, substantially as described.

3. The combination, in a car having the inclosed apartments and the passages P at the opposite ends, of the oppositely-arranged galleries provided with steps S' S² at the ends of the passages P and a bridge connecting the two galleries at some intermediate point, substantially as described.

487,919. RECLINING-CHAIR. HENRY I. GALLOWAY, La Grange, Ind., assignor of one-half to Albert F. Steer, Jr., same place. Filed Apr. 30, 1892. Serial No. 430,982. (No model.)



Claim.—1. The combination of a support, the seat-frame, the back-frame pivoted to the seat-frame, having extensions projecting at angles from its rear side, the leg-frame pivoted to the seat-frame, having extensions projecting at angles from its rear side, the overlapping side bars approximately parallel with the seat-frame, connecting the extensions of the back-frame with the extensions of the leg-frame and each side bar consisting of a bar 32, a sleeve 34, a sleeve 35, provided with a dog 36, and a bar 33, formed with notches 37 for the engagement of the dog, and means by which the back-frame and the seat-frame are suspended from the support, substantially as described.

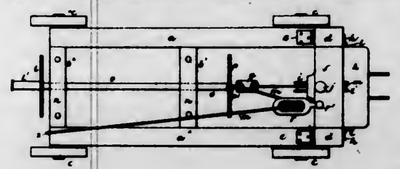
2. The combination of a support, the seat-frame, the back-frame pivoted to the seat-frame, the suspension-rods connected with the back-frame, the suspension-rods connected with the seat-frame, and the double hooks 26, having upper eyes 27, connected with the supports, closed eyes 29, connected with the suspension-rods of the seat-frame, and open eyes 30, connected with the suspension-rods of the back-frame, substantially as described.

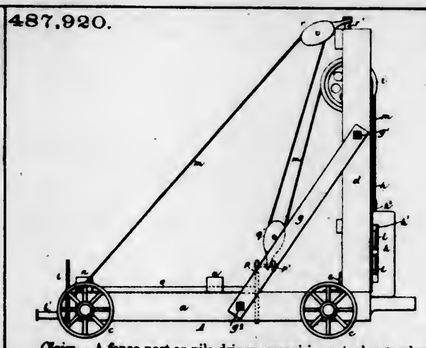
3. The combination, with the chair, of the foot-bar extending across the chair and having the lugs engaging behind the chair-frame, the ratchet-plates pivoted to the foot-bar and having lugs engaging behind the chair-frame, and the pins on the chair-frame between the ratchet and the lugs, substantially as and for the purpose set forth.

4. The combination, with a chair, of a foot-bar extending across the chair and having lugs on its upper side engaging behind the chair-frame, and the ratchet-plates pivoted to the lower side of the foot-bar and having lugs at their upper ends engaging behind the chair-frame and having on their rear sides teeth engaging pins on the chair-frame, all substantially as explained.

5. A chair-support consisting of the uprights 40, having doubly-curved hooks 28, the legs 41, having feet 41ª, the sleeves 42, to which the legs are hinged, sliding on the uprights, the crossed bars 49, pivoted at their intersection, provided at their upper ends with sleeves 52, sliding on the uprights, and the sleeves 51, to which the lower ends of the crossed bars are hinged, located on the uprights beneath the leg-sleeves, substantially as described.

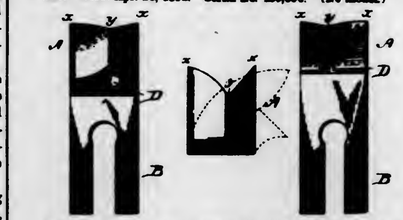
6. A chair-support consisting of the uprights 40, having doubly-curved hooks 28, the legs 41, having feet 41ª, the sleeves 42, to which the legs are hinged, sliding on the uprights, the crossed bars 49, pivoted at their intersection, provided at their upper ends with sleeves 52, sliding on the uprights, the sleeves 51, to which the lower ends of the crossed bars are hinged, located on the uprights beneath the leg-sleeves, the brace-rods 44, hinged to the legs, and the sleeves 47, to which the brace-rods are hinged, sliding on the uprights, substantially as described.

487,920. FILE OR FENCE-POST DRIVER. WALTER L. GREENE, Camden, Ind. Filed July 26, 1892. Serial No. 441,240. (No model.)

487,920.



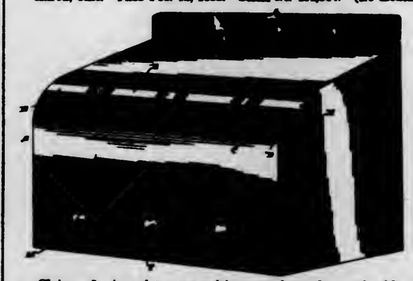
Claim.—A fence-post or pile-driver comprising a body, standards hinged to said body, temporary supports therefor, guides on the standards, a weight having friction-rollers for said guides, a horizontal shaft journaled on the body, having a crank at its inner end and a crank-handle at its outer end, a pulley-block pivotally secured to the crank, pulleys in the upper portion of the standard, and a rope connecting the pulleys, pulley-block, and weight, whereby the latter is actuated at each revolution of the crank, substantially as described.

487,921. DADO OR MOLDING BIT. EDWIN GOLLINS, Columbus, Ohio. Filed Apr. 20, 1892. Serial No. 429,896. (No model.)



Claim.—A bit for rotary cutters for forming molding, dado, and similar work, having its cutting-blade troughed or concaved outwardly and also curved in a direction nearly coincident with its path of motion and its cutting-edge formed in a plane inclined inwardly toward the axis of rotation from a tangent plane touching the deeper-cutting portion of the edge, substantially as shown and described.

487,922. CASH-REGISTER. JOHN GOODENOUGH and LEVI ARTER, Akron, Ohio. Filed Feb. 12, 1892. Serial No. 421,307. (No model.)

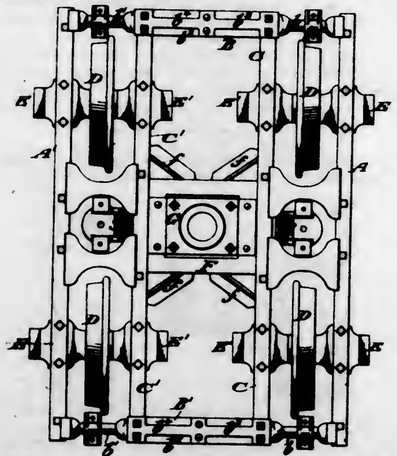


Claim.—1. A register comprising a casing, a large wheel having a ratchet-wheel, a rod extending through the casing, upon which the said wheel is journaled, a frame having one end secured to the said casing, and its front end extending beyond and supported by the said rod, a small wheel journaled upon this extended end, carrying a ratchet-wheel, a spring-actuated lever pivoted upon the said frame inside of the rod, a pawl pivoted to the free end of the lever and engaging the ratchet of the small wheel, the large wheel having a projection for engaging and operating the said spring-actuated lever, an operating-rod carrying a pawl which engages the ratchet of the large wheel, the peripheries of the two wheels having numerals, as described, and the casing having openings through which the peripheries of the wheels are visible, substantially as specified.

2. A register comprising a large and a small indicating-wheel carrying each a ratchet-wheel, a reciprocating operating-rod, a slide having its ends bent upward, to which the rod is attached, a pawl secured to one of the upwardly-bent ends and engaging the large ratchet-wheel, a cover for the slide, having an upwardly-bent end, and a spring placed between the end of the cover and the adjacent end of the slide, substantially as specified.

3. A register comprising two registering-wheels, each having ratchet-wheels, a lever and pawl operated by the wheel for actuating the other wheel, a horizontal operating-rod extending under the ratchets of one wheel and provided with a pawl for engaging it, a spring-actuated shaft at one side of the said operating-rod carrying a bell-clapper at one end and a lateral projection at its opposite end, a bell for the clapper, and a second pawl upon the said operating-lever which engages the lateral projection of the clapper-shaft, all operating substantially as described.

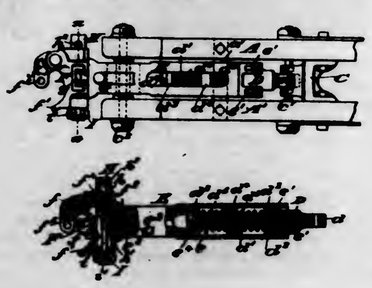
487,928. CAR-TRUCK. WILLIAM H. HARRIS, Nyack, assignor of one-half to Frances J. Hasbrouck, New York, N. Y. Filed Mar. 15, 1892. Serial No. 425,093. (No model.)



Claim.—1. The truck comprising the side frames and stringers formed of angle-bars, T-irons secured to the bottoms of the stringers at their ends, slanting braces extending upwardly and outwardly from the central portions of the T-irons and secured to the tops of the stringers, spacing-bars or girders between the ends of the stringers and side frames, the central frame, diagonal braces connecting the central frame and the stringers, and the wheels journaled in the truck independently of one another, substantially as set forth.

2. The truck comprising the side frame and stringers formed of angle-bars, T-irons connecting the stringers at the ends, the short girders and spacing-bars connecting the ends of the side walls and stringers, the central frame, diagonal braces connecting the central frame and stringers, and the wheels journaled in the frame independently of one another, substantially as set forth.

487,924. CAR-COUPLING. WILLIAM H. HARRIS, Nyack, assignor of one-half to Frances J. Hasbrouck, New York, N. Y. Filed Mar. 15, 1892. Serial No. 425,092. (No model.)

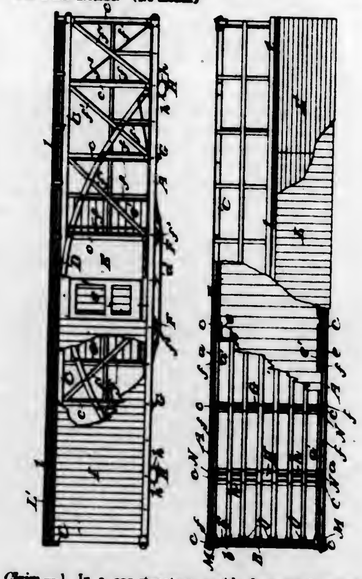


Claim.—1. The draw-head comprising a body portion, a swinging jaw secured thereto, a coupling-pin, and a sliding bar having a loose connection with the swinging jaw and coupling-pin to lock and release the jaw when the bar is locked or released by the pin, substantially as set forth.

2. The draw-head comprising a body portion, a swinging jaw secured thereto, a laterally-sliding bar having a loose connection with the swinging jaw, a locking-pin having a limited movement into and out of engagement with the sliding bar, and a lever having a loose engagement with the locking-pin for operating it and hence releasing the bar, substantially as set forth.

3. The combination, with the draw-bar and draw-head secured thereto, of a plunger inserted within the rear end of the draw-bar, a bearing on the plunger, and keys exteeding downwardly through the draw-bar in engagement with the bearing for locking the plunger therein in removable adjustment, substantially as set forth.

487,925. CAR-BODY. WILLIAM H. HARRIS, Nyack, assignor of one-half to Frances J. Hasbrouck, New York, N. Y. Filed Mar. 17, 1892. Serial No. 425,231. (No model.)



Claim.—1. In a car structure, a side framework comprising a sill, a plate, an arch-bar having its ends secured to the sill and its crown to the plate, and a truss-rod connecting the opposite ends of the arch-bar and extending under the sill, substantially as set forth.

2. In a car structure, a side frame comprising a two-part sill, a plate, posts connecting the sill and plate, an arch-bar connecting sill and plate, hangers connecting the arch-bar and sill, and a truss-rod connecting the opposite ends of the arch-bar and sill, substantially as set forth.

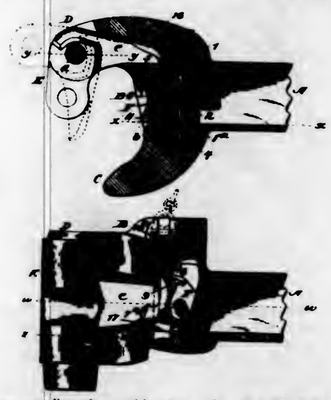
3. In a car structure, an end frame comprising a two-part sill, a beam, diagonal braces connecting the beam and sill, and a truss-rod extending between the parts of the two-part sill, substantially as set forth.

4. The combination, with the side sill, the arch-bar, and a post, of the socket and framing-piece provided with a socket in its top for the reception of the foot of the post, a web for the attachment thereto of the arch-bar, a depending portion extending down within the sill, and a laterally-extending portion extending over the inner portion of the sill, substantially as set forth.

5. The combination, with the joist and the end sill, of a framing-piece comprising a body portion having a socket therein for the reception of the end of the joist and an overhanging portion adapted to engage the upper edge of a portion of the sill, substantially as set forth.

487,926. CAR-COUPLING. PHILLIP HINE, Chicago, Ill. Filed July 1, 1892. Serial No. 438,672. (No model.)

Claim.—1. In a car-coupling, the combination, with a pivoted knuckle or nose, of a vibrating locking-block having an incline arranged below the axis of said block when the block is raised and adapted to engage the tail-piece of the knuckle on the inward movement thereof, whereby the locking-block is caused to revolve toward the effective end of the coupling, substantially as and for the purposes specified.



2. In a car-coupling, the combination, with a pivoted knuckle or nose, of a vibrating locking-block having two inclines, one above and the other below the axis of the block, said inclines adapted to engage the tail-piece of the knuckle on its inward movement, substantially as and for the purposes specified.

3. In a car-coupling, the combination, with a pivoted knuckle or nose, of a vibrating locking-lock having two reverse inclines arranged below the axis of the block, one of said inclines adapted to engage the tail-piece of the knuckle on its inward movement and the other on its outward movement, substantially as and for the purposes specified.

4. In a car-coupling, the combination, with a pivoted knuckle or nose, of a vibrating locking-block having three inclines, one of said inclines adapted to engage the tail-piece of the knuckle on its outward movement and two adapted to engage said tail-piece on its inward movement, substantially as and for the purposes specified.

5. In a car-coupling, the combination, with a pivoted knuckle or nose having a tail-piece adapted to move the locking-block, of a vibrating locking-block and an unlocking-pin adapted to retain the vibrating block in a raised position until said block is struck by the tail-piece, substantially as and for the purposes specified.

6. In a car-coupling, the combination, with a pivoted knuckle or nose having a tail-piece adapted to actuate the locking-block, of a vibrating locking-block having an incline on the end next the unlocking-pin and an unlocking-pin having a lug or incline on its upper part and adjacent to the vibrating locking-block to coact with the aforesaid incline on said block, substantially as and for the purposes specified.

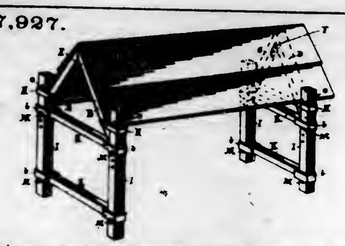
7. In a car-coupling, the combination, with a pivoted knuckle or nose having a tail-piece adapted to actuate a locking-block, of a vibrating locking-block having an incline and a recess in rear thereof, both on that part of the block adjacent to the unlocking-pin, and an unlocking-pin having an inclined projection or lug on its upper part adjacent to the said incline and recess of the vibrating locking-block and adapted to coact therewith, substantially as and for the purposes specified.

8. In a car-coupling, the combination, with a pivoted knuckle or nose having a tail-piece adapted to actuate a locking-block, of a vibrating locking-block having two reverse inclines arranged below its axis and an incline on its end next the unlocking-pin and an unlocking-pin having an incline adapted to engage the incline on the end of the vibrating locking-block, substantially as and for the purposes specified.

9. In a car-coupling, the combination, with the knuckle or nose, of a pivot-pin having inclines on its lower end and an inclined step for the pivot-pin, said step having an opening for the escape of cinder, sand, &c., substantially as and for the purposes specified.

10. In a car-coupling, the combination, with the knuckle or nose, of a detachable pivot-pin having inclines on its lower end, said parts being constructed to move together, a head having a washer or step seat, and a removable washer or step having inclines for the foot of the pivot-pin, substantially as and for the purposes specified.

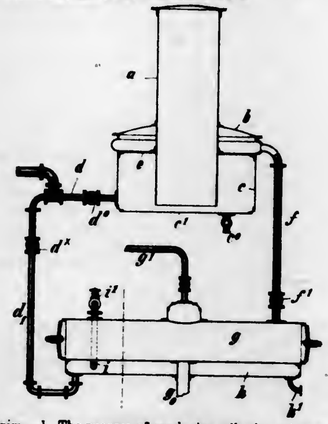
487,927. PORTABLE HAY OR GRAIN SHED. THOMAS J. KELLEY, Avenue City, Mo. Filed June 20, 1892. Serial No. 437,415. (No model.)



Claim.—1. A portable structure consisting of a hinged folding roof with rafters having stirrups at lower ends for engaging four vertical posts and four tie-bars with similar stirrups to engage posts, and pins to hold stirrups in place and for the purpose of adjusting height of roof, substantially as described, and for the purposes specified.

2. A portable frame structure with folding roof having hinged rafters with stirrups at lower ends engaging upper ends of vertical posts, and horizontal tie-bars having stirrups also engaging posts, with pins for holding tie-bars and roof in place and adjusting height of roof, substantially as described.

487,928. PRODUCTION OF ADHESIVES. LUDWIG KERB, Hamburg, Germany. Filed Aug. 31, 1892. Serial No. 444,612. (No model.) Patented in England Dec. 7, 1891, No. 21,370.



Claim.—1. The process of producing adhesive substances soluble in water from resinous substances, such as described, which consists in steeping the pulverized resinous substances in an aqueous solution of sulphuric and muriatic acid, peroxide of hydrogen, and magnesia usta, subjecting the material to the action of steam under pressure, filtering and drying the same, substantially as and for the purpose set forth.

2. The combination of an autoclave, a feed-duct extending nearly to the bottom thereof, an evaporator, a tubular connection between the evaporator and autoclave, a filtering medium interposed in the passage for the solution from the autoclave to the evaporator, and means for supplying heat to said autoclave and evaporator, substantially as and for the purpose set forth.

3. The combination of an autoclave, a feed-duct extending nearly to the bottom thereof and having a portion within the autoclave perforated, a filtering medium within the autoclave above the perforated portion of the feed-duct, an evaporator, a valved conduit connecting the autoclave above said filtering medium with the evaporator, and means for supplying heat to said autoclave and evaporator, substantially as and for the purpose set forth.

4. The combination of an autoclave, a feed-duct extending nearly to the bottom thereof, an evaporator provided with a steam-jacket, a tubular connection between the autoclave and evaporator, a filtering medium interposed in the passage of the solution from the autoclave to the evaporator, and valved steam-supply pipes for supplying steam to said autoclave and evaporator-jacket, substantially as and for the purpose set forth.

5. The combination of an autoclave, a feed-tube extending nearly to the bottom thereof, an evaporator provided with a steam-jacket, a tubular connection between the autoclave and evaporator, a filtering medium interposed in the passage of the solution from the autoclave

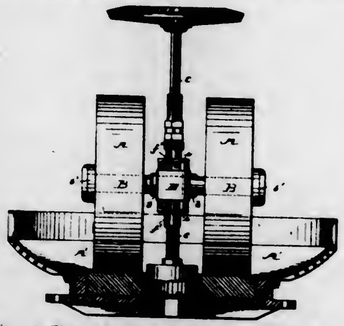
to the evaporator, a valved pipe connecting the steam-jacket with the evaporator, and valved steam-supply pipes for supplying steam to said autoclave and evaporator-jacket, substantially as and for the purpose set forth.

487,929. CALENDAR. LOUIS LASH, Newark, Ohio. Filed June 21, 1892. Serial No. 437,473. (No model.)

Claim.—1. In a calendar such as described, the combination, with a plate provided with two parallel strips, the one having engraved thereon designations for the days of the week in *seriatim* and the other designations for the months of the year, the latter being arranged to bring the designations of the week-day of the first day of each month to the right or left of the designation of that month, of an adjustable plate attached to the first plate and provided with a strip having engraved thereon the numerals from "1" to "31" in *seriatim* and so arranged as to be opposed to the designations of the week-days, substantially as described.

2. In a calendar such as described, the combination, with a circular disk provided with two concentric rings, the one having engraved thereon designations for the days of the week in *seriatim* and on the other designations for the months of the year, the latter being arranged to bring the designation of the week-day of the first day of each month to the right or left of the designation of that month, of a second circular disk pivotally attached to the first disk and provided with a ring of the same dimensions as that on the first plate bearing the designations of the months and having engraved thereon the numerals from "1" to "31" in *seriatim* and so arranged as to be opposed to the designations of the week-days and provided with an opening with reference to the numeral "1" to expose the designations of the months on the first disk as the second disk is adjusted, substantially as described.

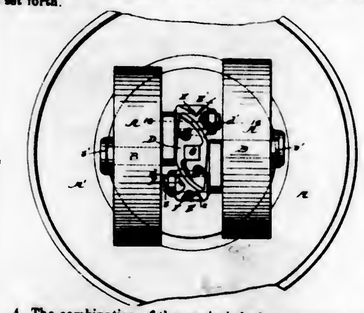
487,930. EDGE-RUNNER OR VERTICAL MILLSTONE. HENRY MAFFEY, Orizava, Mexico. Filed Sept. 5, 1892. Serial No. 445,323. (No model.) Patented in Belgium Feb. 12, 1890, No. 89,696; in France Feb. 12, 1890, No. 208,838; in Mexico Aug. 7, 1890, and in Germany Dec. 24, 1890, No. 58,110.



Claim.—1. The combination of the vertical millstones, the axle or axles upon which said millstones are journaled, means for revolving said millstones around a common center, and means for adjusting the angle of inclination of the axles to the radius of the circle of rotation, substantially as set forth.

2. The combination of the central operating-shaft, the cross-beam or boxing keyed to said shaft, axles adjustably secured to said cross-beam or boxing, and vertical millstones mounted on said axles, whereby the angle of inclination of the axles with relation to the radius of revolution can be adjusted, substantially as set forth.

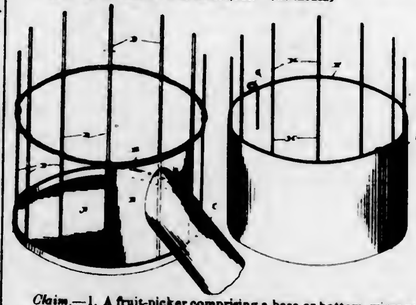
3. The combination of the vertical millstones, the crank-axles upon which the stones are journaled, the vertical operating-shaft, a cross-beam or boxing secured to the shaft, and journal-boxes in which the inner journal ends of the crank-axles are journaled, adjustably secured to the cross-beam or boxing, whereby the angle of inclination of the axles can be adjusted with relation to the radius of revolution, as set forth.



4. The combination of the vertical shaft, the cross-beam or boxing keyed to said shaft and having curved faces or edges, journal-boxes having curved faces fitting against the curved faces of the cross-beam and adjustably secured thereto, and crank-axles having inner and outer journal ends, the inner journal ends being journaled in the adjustable boxes and the outer journal ends supporting the millstones, substantially as and for the purpose set forth.

5. The combination of the vertical shaft, the cross-beam or boxing keyed to said shaft and having the opposite faces or edges curved and the ends horizontally slotted, journal-boxes fitting against the slotted ends of the cross-beam and having curved flanges which fit against the curved portions of the cross-beam, screw-bolts projecting from the curved faces of the cross-beam and engaging slots in the curved flanges of the journal-boxes, crank-axles journaled in the adjustable boxes, and millstones mounted on the crank-axles, substantially as herein set forth.

487,931. FRUIT-PICKER. ROSSANNA MAYS, Strasburg, Ohio. Filed July 9, 1892. Serial No. 439,543. (No model.)

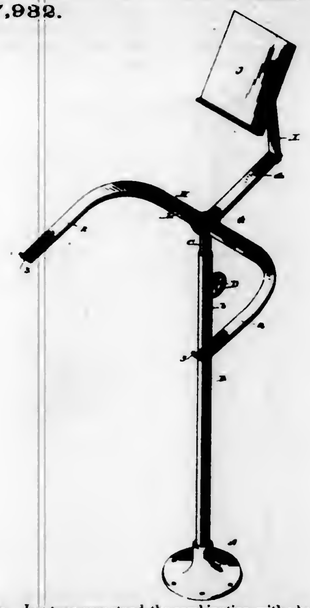


Claim.—1. A fruit-picker comprising a base or bottom, wires projecting vertically from the edge thereof, a vertical removable frame adapted to fit within the space inclosed by the wires and which is of less height than the latter, and wires H, projecting from said frame, substantially as shown and described.

2. A fruit-picker comprising a base or bottom, wires projecting vertically from the edge thereof, a removable frame F, adapted to fit the space inclosed by the wires, but which is of less height than the latter, vertical wires H, secured to said frame, and loops G, arranged on the said frame between the wires H, which fit over the first-named wires, for the purpose shown and described.

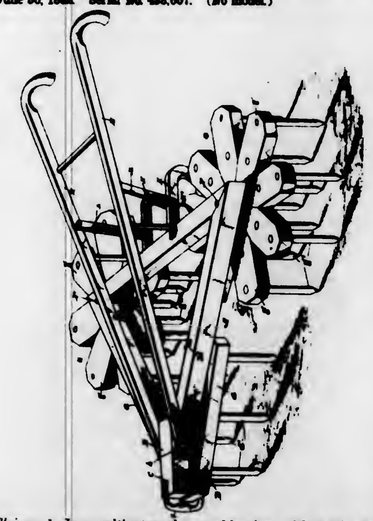
487,932. TYPE-CASE STAND. GEORGE B. MILES, Washington, D. C. Filed Feb. 17, 1892. Serial No. 421,875. (No model.)

487,932.



Claim.—In a type-case stand, the combination, with a bracket and a standard for supporting it, said bracket comprising a straight middle portion, arms projecting forward from said portion, and an arm projecting rearward from said portion, of a stop-arm secured to the rear arm of the bracket and a copy-holder secured to said stop-arm.

487,933. CULTIVATOR. FRANKLIN P. MORGAN, Orono, La. Filed June 30, 1892. Serial No. 438,607. (No model.)



Claim.—1. In a cultivator, the combination, with a triangular frame, of an independent V-shaped harrow pivotally mounted at the front angle of said frame and rotary harrows mounted upon pivots at the side angles of the frame, substantially as specified.

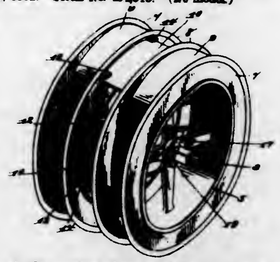
2. In a cultivator, the combination, with a triangular frame having the front ends of its side bars separated, of a swinging block pivoted between said front ends, the V-shaped harrow pivoted at its front end to said block, and the rotary harrows mounted upon vertical pivots at the side angles of the frame, substantially as specified.

3. In a cultivator, the combination, with the triangular frame carrying rotary harrow-frames, of the V-shaped harrow pivoted at its apex to the frame at its front angle and having its divergent arms connected to the side bars of the frame by guard-chains, substantially as specified.

487,934. SASH-HOLDER. PETER MOYLET, Philadelphia, Pa. Filed June 9, 1892. Serial No. 436,060. (No model.)

Claim.—In a sash-holder, the combination, with the frame provided with a recess, of a spiral spring arranged in the said recess next to the material of the frame and pressing against the bottom of the recess, a screw-threaded bush driven into and gripped by the front end coils of the spring, a screw engaging with the said bush and provided with a head projecting from the front of the recess and adapted to be revolved to vary the pressure of the said spring, and a thumb-knob provided with a shank passing through the bottom of the recess from the rear of the spring and screwed upon the end of the said screw, substantially as set forth.

487,935. COTTON-CHOPPER. WILLIAM A. HEVEL, Will's Point, assignor of one-half to Granville Garnett Kemper, Leonard, Tex. Filed May 25, 1892. Serial No. 434,316. (No model.)



Claim.—1. In a cotton-chopper, the combination, with a pair of drums spaced apart and an axle for the same, of a series of pairs of diametrically-opposite plates opposite the space between the drums, rods extending through and connecting the diametrically-opposite plates in pairs and greater in length than the diameter of the drums, and circular hoes mounted upon the drums at opposite sides of the plates, substantially as specified.

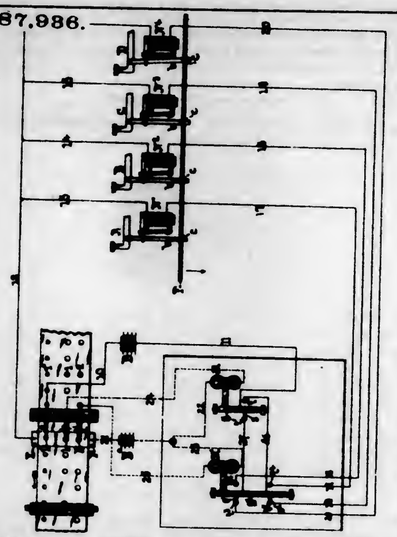
2. In a cotton-chopper, the combination, with the axle and the pair of drums mounted upon the axle and spaced apart and provided at their inner edges with pairs of opposite perforations, of diametrically-opposite pairs of plates mounted over the space between the drums, rods passed through the perforations in the plates and drums and threaded at their extremities, nuts mounted on the rods at the inner and outer sides of the plates, and pairs of circular hoes mounted on the drums, each pair being spaced apart and the inner pair loosely embracing said plates, substantially as specified.

3. In a cotton-chopper, the combination, with the axle, the pair of drums located a slight distance apart, and the pairs of circular knives or hoes encircling the peripheries of the drums, the inner pair being raised near the inner peripheries of the drums, which inner peripheries are provided with perforations, of curved plates mounted between the inner hoes, rods exceeding in length the diameters of the drums, connecting the plates, and circular bands greater in diameter than the drums and located between the outer pairs of hoes, substantially as specified.

4. In a cotton-chopper, the combination, with the axle and the opposite drums, the outer edges of the rims of which are provided with outwardly-disposed flanges, of the series of removable circular knives or hoes encircling the peripheries of the drums, the outer knives or hoes resting against the flanges, and spacing devices between the pair of knives or hoes, substantially as specified.

487,936. AUTOMATIC KEYBOARD-OPERATOR. HENRY S. PRENTISS, Elizabeth, N. J. Filed June 18, 1891. Serial No. 396,812. (No model.)

487,936.



Claim.—1. In a device of the character specified, a series of circuit-closers, a series of switches operated by the passage of a perforated strip between the circuit-closers, and a main-circuit closer for closing the circuit through the contacts set by the switches, substantially as described.

2. In a device of the character specified, a series of switches, secondary-circuit closers operated by the passage of a perforated strip to individually or in combination set the switches for the passage of a current through a particular circuit, and a main-circuit closer for establishing the current through the particular circuit set by the switches, substantially as described.

3. In a device of the character specified, a series of switches, secondary-circuit closers operated by a perforated strip to individually or in combination set the switches for the passage of a current through a particular circuit, and a main-circuit closer operated at regular intervals by a series of perforations in said strip to close the circuit through the contacts set by the switches, substantially as described.

4. In a device of the character specified, a series of switches, secondary-circuit closers operated by the passage of a perforated strip to individually or in combination set the switches for a particular key, and a main-circuit closer for subsequently closing a current through the contacts made by the switches, substantially as described.

5. In a device of the character specified, a series of switches controlled by electro-magnets, a series of circuit-closers constructed to individually or in combination set the switches for a particular circuit, and a main-circuit closer operated at regular intervals to establish the current through the particular circuit set by the switches, substantially as described.

6. In a device of the character specified, a series of switches in which each successive switch has an increased number of contacts, a circuit-closer for each switch adapted to close a circuit to actuate its particular switch, and a main-circuit closer for establishing a current through the particular circuit set by the switches, substantially as described.

7. In a device of the character specified, a series of secondary-circuit closers, a main-circuit closer, and a series of switches in which each successive switch has an increased number of contacts, the moving contact of the first switch being connected to one wire of the main-circuit closer and the contacts of the end switch being in the circuits through which the current is closed by the main-circuit closer and the stationary contacts of the intermediate switches being in electrical connection with the moving contacts, substantially as described.

8. In a keyboard-operator for type-writing machines, an electro-magnet for each key, a series of circuit-closers, a series of switches operated by the passage of a perforated strip between the circuit-closers, and a main-circuit closer for closing the circuit through the contacts set by the switches, substantially as described.

9. In a device of the character specified, the combination of the keys or bars A, provided with pivoted catches, electro-magnets adapted when vitalized to attract the catches, and a vibratory plate having perforations entered by the catches, substantially as described.

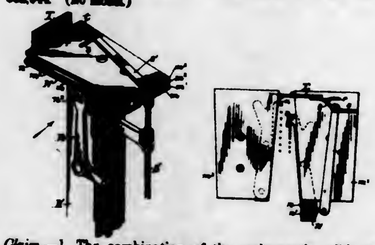
487,937. PHOTOGRAPHIC-PRINTING APPARATUS AND PROCESS. ULYSSES S. ROSS, Tacoma, Wash., assignor of two-thirds to Herbert L. Jenkins and William G. Gamble, same place. Filed Dec. 26, 1891. Serial No. 416,277. (No model.)

Claim.—1. A photographic-printing machine consisting of a rotatable curved support for supporting a flexible negative and the sensitized fabric while they are being exposed to the light, having a length greater than its diameter, whereby it is adapted to have wound thereon in a direction inclined to its axis a long print, and means for revolving the said support, substantially as set forth.

2. In an exposure photographic-printing-machine, the combination of a cylinder *a*, a movable carriage in which it is supported, and means for revolving the said cylinder, substantially as set forth.

3. The improvement in the art of obtaining prints from photographic negatives, which consists in supporting the sensitized fabric and the overlying flexible negative in spiral form, so that the convolutions lie smoothly and nowhere overlap each other, and then rotating the same while exposed to the light, so as to bring all the exposed portions thereof uniformly under the same actinic influences, whereby relatively-long prints may be made all at once of substantially-uniform tint and shade, substantially as specified.

487,938. MACHINE FOR DRAWING IN WARP-THREADS. LEWIS P. SHERMAN, Biddeford, Me. Filed Aug. 31, 1890. Serial No. 363,044. (No model.)

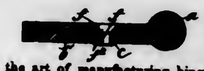


Claim.—1. The combination of the reciprocating slide and its guides, with heddle-separating hooks pivoted to said slides, and devices for advancing and retracting said hooks during their reciprocation, substantially as specified.

2. The combination of the plate T, a lever for vibrating the same, the plate having guiding-slots for controlling the movement of said plate and its lever, substantially as specified.

3. The combination of the upper and lower guiding-plates, the recessed plate held between the two, and a reciprocating hook having a projection adapted to said recessed plate, substantially as specified.

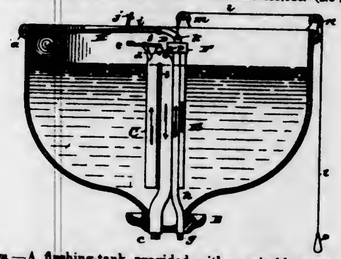
487,939. METHOD OF MAKING BUTT-HINGES. RUSSELL T. SHEPD, Hudson, N. H. Filed May 18, 1892. Serial No. 433,493. (No model.)



Claim.—1. In the art of manufacturing hinges, the within-described method of making the halves of butt-hinges of the type herein described, the same consisting in cutting an aperture in the under folding part of the sheet of metal preparatory to shaping and folding the metal, and also punching or cutting a hole through the upper folding portion, which coincides with said aperture when the hinge is finished, and forming a hollow projecting spur of homogeneous metal with the hinge, which is adapted for extending entirely through the said aperture in the under folding portion, and subsequently pressing down the end of the spur flush with the outer surface of said under folding portion, so as to present a smooth flat finish and solidly and firmly unite and hold the parts together as one, and at the same time leave the hinge finished with a countersunk screw-hole adapted for receiving the fastening-screw in such a manner that its head is substantially flush with the surface of the hinge, as set forth.

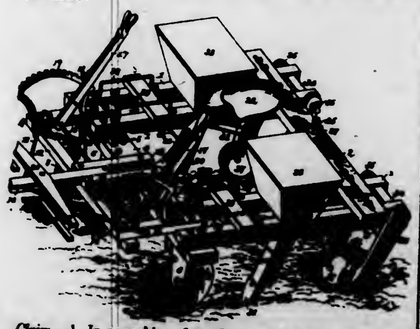
2. The improvement in the art of uniting pieces of metal, the same consisting in forming a hole in one piece, punching a hole in the other piece and forming a projecting fin or flange on the edge thereof, passing the fin or flange through the hole of the first-mentioned piece, and hammering down or upsetting said fin.

487,940. FLUSHING-TANK. EDWARD C. BROWN, Trenton, N. J. Original application filed June 16, 1891, Serial No. 396,627. Divided and this application filed Dec. 22, 1891. Serial No. 415,880. (No model.)



Claim.—A flushing-tank provided with a suitable supply-pipe, which is cut off by the filling of the tank in the usual manner, a supply-valve which opens and closes said supply-pipe, devices which mechanically force up the supply-valve and open the supply-pipe against the action of the float after the tank is filled, a suitable siphon connected with the flushing-pipe, and devices connecting the longer leg of the siphon with said supply-pipe, whereby a downward jet of water is projected from the supply-pipe into the longer leg of the siphon substantially as shown, and for the purposes specified.

487,941. CORN OR COTTON PLANTER ATTACHMENT. STEPHEN J. ADKINS, Grand View, Tex. Filed July 6, 1892. Serial No. 439,103. (No model.)



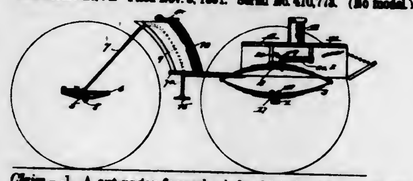
Claim.—1. In a machine of the class described, the combination, with the opposite pairs of side bars, the front and rear slotted connecting-bars, the U-shaped adjusting devices connecting the side bars and cross-bars and mounted in the slots of the connecting-bars, the shovel-carrying standards pivoted between each pair of side bars and having seed-tubes, the hoppers mounted on the side bars and connecting with the tubes and the rear pairs of standards carrying pairs of converging covering-disks pivoted at the rear ends and to the outer side of the side bars, substantially as specified.

2. In a machine of the class described, the combination, with the opposite pairs of side bars, the front and rear slotted cross-bars, the inverted-L-shaped brackets located under the front cross-bar, disks journaled in the brackets, the U-shaped staples passed through perforations in the brackets through the front cross-bar and front ends of the side bars, similar staples embracing the side bars and passed through slots in the rear cross-bar, and adjusting-nuts for the same, of hoppers mounted on each pair of side bars, opposite shovel-carrying standards secured between each pair of side bars, seed-tubes secured to the same and engaging with the hoppers, and rear pairs of furrow-closers located at the rear ends of the side bars, substantially as specified.

3. In a machine of the class described, the combination, with the opposite side bars, the front and rear cross-bars, the wheels at the front and rear ends of the machine, the opposite guides mounted on the side bars, cross-heads mounted for sliding in the guides, levers pivoted on the front end of the machine, means for locking the levers, and connecting-rods between the levers and cross-heads, of a pair of shovel-carrying standards pivoted between the side bars, rods connecting the same with the cross-heads, a superimposed hopper, shafts passed through the side bars and extending beyond the same, standards mounted on the shafts and carrying furrow-closing shafts, and rods connecting the latter standards with the cross-heads, substantially as specified.

4. In a machine of the class described, the combination, with the opposite pairs of side bars, front and rear cross-bars, guides mounted on the side bars, cross-heads mounted for sliding in the guides, front standards pivoted between the side bars, rear standards at the rear ends of the side bars and intermediate hoppers, and rods between the standards and cross-heads, of front extension-bars extending from the front cross-bar, a transverse rod connecting the two levers pivoted on the rod, means for locking the levers, rods connecting the levers with the cross-heads, and a tongue pivoted on the rod, substantially as specified.

487,942. FOUR-WHEELED DOG-CART. WILLIAM H. BARLOW, Charlottesville, Va. Filed Nov. 3, 1891. Serial No. 410,773. (No model.)



Claim.—1. A cut-under four-wheeled vehicle having a dash and a seat arranged in circles concentric with the king-bolt, substantially as set forth.

2. A four-wheeled dog-cart having a body balanced over the rear axle, the upwardly-curved spring-bar connection between the front and rear parts of the vehicle, and a dash and seat arranged in circles concentric with the king-bolt, substantially as set forth.

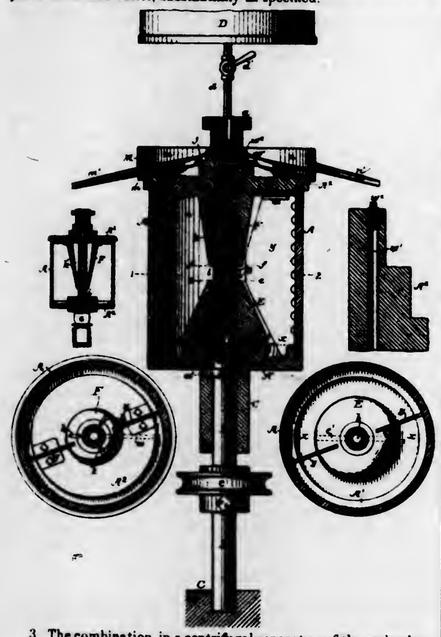
3. In a vehicle, the combination of the front axle, the body having the upwardly and forwardly curved spring-bar connection with said front axle, the rear axle over which the body is substantially balanced and which supports said body mainly and the shifting connections located at the sides of the body by which said body and rear axle are secured together and which transmits the load from the one to the other, said shifting connections consisting each of a socket-piece secured to one of the parts to be connected and a sliding frame secured to the other of said parts, substantially in the manner and for the purpose set forth.

487,948. CENTRIFUGAL LIQUID-SEPARATOR. HENRY F. BOHLIN, Philadelphia, Pa., assignor to James Barber, same place. Filed Sept. 17, 1891. Serial No. 405,992. (No model.)

Claim.—1. The combination, in a centrifugal separator, of the casing having a skim-milk outlet communicating with the outer portion of the separating-chamber, mechanism for rotating said casing, a central cone having its axis coincident with the axis of the cylinder and having formed in it a cream-outlet communicating with the separating-chamber at or near the apex of the cone, and a milk-inlet extending inward beyond the cream-outlet, substantially as specified.

2. The combination, in a centrifugal separator, of the casing having a skim-milk outlet communicating with the outer portion of the

separating-chamber, rotating mechanism for said casing, two reversed cones having their axes coincident with the axis of the cylinder, one of said cones also having a cream-outlet communicating with the separating-chamber at or near the apex of the cone, the central portion of the separator also having a milk-inlet extending inward beyond the cream-outlet, substantially as specified.



3. The combination, in a centrifugal separator, of the casing having formed therein a skim-milk outlet communicating with the outer portion of the separating-chamber, a central cone having its axis coincident with the axis of the cylinder and having formed in it a cream-outlet communicating with the separating-chamber at or near the apex of the cone, a central shaft carrying the casing and having formed in it a central milk-passage with radiating portions extending inward beyond the cream-outlet, and means for rotating said shaft, substantially as specified.

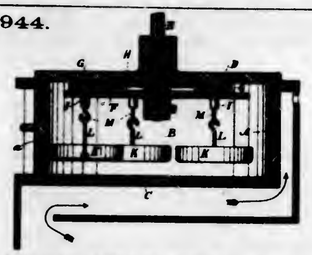
4. The combination, in a centrifugal separator, of the casing having therein a milk-outlet communicating with the outer portion of the separating-chamber, a central cone having its axis coincident with the axis of the cylinder and having formed in it a cream-outlet communicating with the separating-chamber at or near the apex of the cone, receivers for the discharged milk and cream, an axial shaft having formed in it a central milk-passage with radiating portions extending inward beyond the cream-outlet, and a valve for governing the flow of skim-milk from the separator, substantially as specified.

5. The combination, in a centrifugal separator, of the casing having formed therein a skim-milk outlet communicating with the outer portion of the separating-chamber, a central shaft having a milk-inlet passage formed therein, a collar on said shaft serving as a support for the base of the cylinder, a nut on the shaft for confining the cap of the cylinder, and a central cone located within the cylinder and having its axis coincident with the axis of said cylinder, said cone having formed in it a cream-outlet which communicates with the separating-chamber at or near the apex of the cone, substantially as specified.

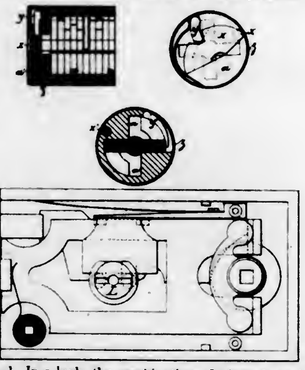
487,944. TEMPERING-FURNACE. WILLIAM H. DAYTON, Torrington, Conn., assignor to the Excelsior Needle Company, same place. Filed Mar. 24, 1892. Serial No. 426,180. (No model.)

Claim.—1. The combination, with an inclosure forming a heating-chamber, of trays for receiving the articles to be heated, a shaft, and a disk supported by such shaft and rotated therewith, a stationary gear-wheel, pinions having axes that are connected to and moved by the revolving shaft and disk, each pinions being rotated by the stationary gear-wheel, and connections between the axes of the pinions and the trays for sustaining such trays and revolving them as they are carried bodily around the heating-chamber, substantially as set forth.

2. The combination, with an inclosure forming a heating-chamber, of a shaft passing through the top of the heating-chamber, a stationary gear-wheel around such shaft, a disk carried by the shaft, pinions gearing with the stationary wheel and having axes projecting down through the disk and provided with hooks and trays for receiving the articles to be heated, and means for suspending the trays from the axes of the pinions, substantially as set forth.



487,945. LOCK. CHARLES E. DENY, Paris, France. Filed Mar. 24, 1892. Serial No. 426,225. (No model.) Patented in France Mar. 9, 1889, No. 196,585; in England May 3, 1890, No. 6,873; in Italy Dec. 31, 1891, No. 30,961, and in Spain Jan. 18, 1892, No. 12,811.



Claim.—1. In a lock, the combination of a barrel provided with a slotted washer a' with a shutter normally covering the slot in the said washer and means for moving aside the said shutter by the key, substantially as set forth.

2. In a lock, the combination of a barrel provided with a slotted washer a' with a spindle working in a recess in the barrel and provided at one end with a shutter adapted to normally cover the slot in the washer a' and at the other end provided with an arm x^3, projecting into the path of the rotation of the key in the barrel, all substantially as and for the purposes set forth.

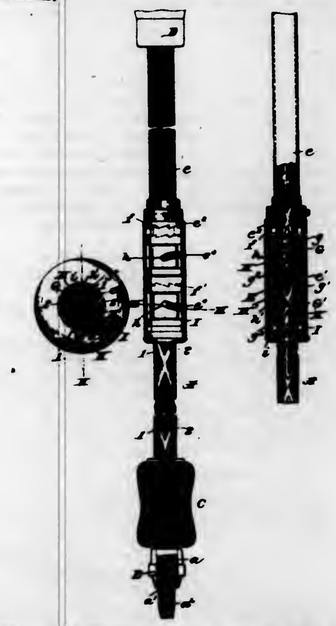
3. In a lock, the combination of a barrel provided with a slotted washer a' with a shutter normally covering the slot in the said washer, a catch to lock the shutter, and means for moving the catch and the shutter by the key, all substantially as and for the purposes set forth.

4. In a lock, the combination of a barrel provided with a slotted washer a' with a shutter normally covering the slot in the said washer, a spindle for the shutter, provided at its extremity with an arm x^3, a catch to engage the shutter, the said catch being provided with a tail y', the said arm x^3 and the said tail y', adapted to be acted upon by the rotation of the key in the barrel, all substantially as and for the purposes set forth.

5. In a lock, the combination of a barrel provided with washers having different-sized openings and a slotted washer a' in front of the lock with a shutter normally covering the slot in the said washer, and an arm x^3, connected to the shutter and projecting into the opening in one of the first-named washers, the said arm adapted to be acted upon by turning the key in the barrel, all substantially as and for the purposes set forth.

6. In a lock, the combination of washers having different-sized openings and a slotted washer a', the said washers being welded together and incased to form a barrel in front of the bolt, with a shutter normally covering the slot in the washer a', a catch to lock the said shutter, and means for releasing the catch and removing the shutter by turning the key in the said barrel, all substantially as set forth.

487,946. SCREW-DRIVER. THOMAS EDWARDS, Jr., and JOHN J. EDWARDS, Grand Rapids, Mich. Filed May 21, 1892. Serial No. 433,870. (No model.)



Claim.—1. The combination, with the stock having right and left hand spiral grooves, of a cylinder or case loosely fitted on said stock and provided with two sets of ratchet-teeth, which are inclined in opposite directions, a pair of thimbles within said cylinder, each provided with a lug or lugs engaging the respective spiral grooves of the stock and with ratchet-teeth adapted to interlock with one set of teeth on the cylinder when properly shifted, and means for shifting either thimble into engagement with the cylinder and simultaneously disengaging the other thimble, substantially as described.

2. The combination of the stock having right and left hand spiral grooves, a cylinder loosely fitted thereon, and a pair of thimbles loosely fitted on the stock within the cylinder having internal lugs engaging the respective grooves of the stock and adapted to be locked to the cylinder, together with the clips loosely connected to said thimbles, having projecting studs, and a sleeve inclosing said cylinder, the wall of said cylinder and the sleeve being slotted and channeled or grooved for the reception of the studs, substantially as described.

3. The combination of the stock having right and left hand spiral grooves, the cylinder thereon having two sets of ratchet-teeth, located the one centrally thereof and the other at one end, and a pair of thimbles loosely fitted on the stock within the cylinder, having internal lugs engaging the respective grooves of the stock, one of said thimbles being adapted to engage the inner set of ratchet-teeth and the other thimble the outer set of teeth, together with mechanism for simultaneously shifting said thimbles, so as to engage one with and disengage the other from the ratchets of the cylinder, substantially as described.

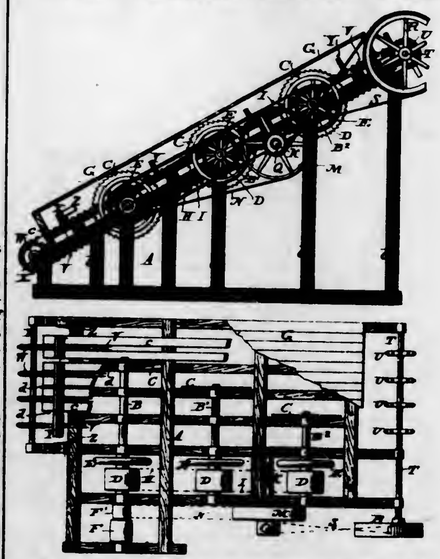
4. The combination of the stock having right and left hand spiral grooves and a cylinder or case loosely fitted on said stock, having a centrally-disposed ring with ratchet-teeth thereon and a head with oppositely-inclined ratchet-teeth, a pair of thimbles within said cylinder, each having ratchet-teeth on its upper end adapted to engage the opposed ratchets at the center and end of the cylinder and each having internal lugs respectively engaging the right and left hand spiral grooves of the stock, and mechanism for throwing either thimble into engagement with the cylinder and simultaneously disengaging the other thimble therefrom, so as to reverse the rotary movement of the stock, substantially as described.

5. In combination with the spirally-grooved stock, the reciprocating handle, the cylinder with oppositely-inclined ratchet-teeth thereon, the thimbles with ratcheted ends adapted to engage or interlock with the corresponding ratchet of the cylinder, the rotatable sleeve fitting over said cylinder, and means connected therewith for effecting the engagement of one thimble and simultaneously disengaging the other, so as to cause the stock to rotate in either forward or backward direction by the reciprocating movements of the handle, substantially as described.

6. In combination with the stock having the opposite spiral grooves, the pair of thimbles thereon having lugs which respectively engage said grooves, said thimbles being provided with ratchets on their upper ends, the cylinder having ratchets adapted to engage the ratchets of said thimbles, the clips loosely connected to said thimbles for longitudinally shifting the same and having projecting studs thereon, the diagonal slots in said cylinder for the passage of said studs, the sleeve fitted on the cylinder and having the internal longitudinal groove to receive the ends of the studs, and the spring interposed between said thimbles and sleeve, so as to retain the same in operative position, substantially as described.

7. In combination with the spirally-grooved stock, the ratcheted cylinder and the thimbles with ratchet-teeth for engaging the ratchets of the cylinder, the sleeve fitted over said cylinder and thimbles, and means connected therewith for effecting the engagement of either one of the thimbles and the simultaneous disengagement of the other, together with the interposed spring adapted to retain the sleeve and thimbles in operative position, substantially as described.

487,947. CIRCULAR SAWING MACHINE. JOHN H. GATELEY, Janesville, Wis. Filed June 4, 1892. Serial No. 435,532. (No model.)



Claim.—In a circular sawing machine, the combination with a frame or table, of a shaft B at the feed end of the table, extending nearly across the same and provided with a saw; a shaft B′ shorter than the shaft B, provided with a saw out of line with the first saw; and a third shaft, B^2, shorter than the shaft B′ and provided with a saw out of line with the second saw, conveying chains working between the saws and between the sides of the table and the saws: means for imparting motion to the shaft B and independent means for imparting motion from said shaft directly to the remaining shafts.

487,948. MANUFACTURE OF AXES. CHARLES W. HUBBARD, Jr., Pittsburg, Pa. Filed Apr. 23, 1892. Serial No. 430,294. (No model.)

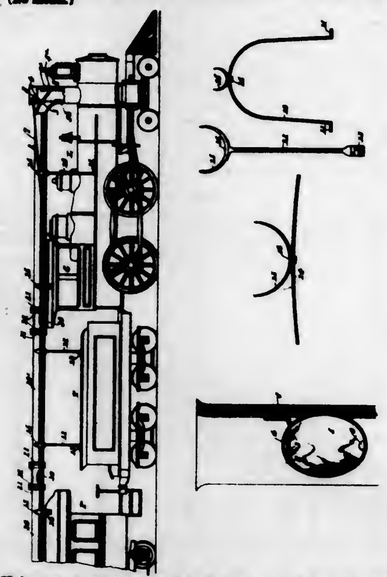
Claim.—1. The method of making ax-polls, consisting in forming a groove in one or both of the edges of the poll-blank through which the punch passes and then punching the same, substantially as and for the purposes described.

2. The method of making ax-polls, consisting in forming grooves or recesses in the two opposite edges of the poll-blank through which

the punch passes and then punching the same, substantially as and for the purposes described.

3. The method of making ax-polls, consisting in forming semicircular grooves in the opposite edges of the blank in line with each other and then forcing a punch through the blank in line with the grooves, substantially as and for the purposes described.

487,949. SMOKE ARRESTER AND CONDUCTOR. FRANK C. LOEBNER, Timmonsville, S. C. Filed Feb. 12, 1892. Serial No. 421,315. (No model.)



Claim.—1. A flexible coupling for pipes, consisting of a spiral sheet of metal whose edges lap each other, bands secured around the ends of the tube thus formed, and a non-combustible covering for said tube, as and for the purpose set forth.

2. The combination, with a pipe, a band encircling the pipe near its end and provided with notches, equidistant boxes on the exterior of said band, latches pivotally mounted on radial pivots in said boxes and having a catch provided with three arms, and a spring bearing toward the center of each catch, of a flexible coupling, an exterior band projecting beyond the end thereof, lugs on the band adapted to engage said notches, and equidistant radial pins on the band adapted to engage said catches, as set forth.

3. The combination, with a pipe having notches at its end and equidistant latches having spring-actuated catches mounted on pivots, of a flexible coupling having lugs adapted to engage said notches and radial pins adapted to engage the catches, as set forth.

4. The combination, with a pipe, equidistant exterior latches pivotally mounted thereon, a catch mounted on a pivot and having three radial arms, and a spring whose free end bears toward the pivot, of a flexible coupling having equidistant pins adapted to engage said catches, as set forth.

487,950. SHAFT-TUG. JOHN A. LEE, Harbinsville, Pa. Filed Feb. 6, 1892. Serial No. 420,867. (No model.)

Claim.—1. An improved shaft-tug comprising the main loop having its ends slightly separated at its top and its front strap provided with an opening a^2 and formed below said opening to receive the shaft, the strap B, passed down between the ends of the loop and out through the opening a^2, and means for securing the strap B to the main loop, all substantially as and for the purposes set forth.

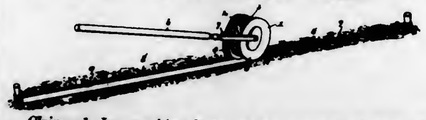
2. In a shaft-tug, the combination of the main loop, the belly-band strap provided with the inner loop arranged and movable within the main loop, and guide-strips within said main loop on opposite sides of and arranged to form edge-guides for the inner loop, whereby to direct the movements thereof, substantially as set forth.

3. The improved shaft-tug, substantially as described, comprising the inner and main loops, the inner loop being fitted in the main loop and having its straps or ends movable through the bottom of the main loop and provided at its sides or edges within the loop with downwardly-facing stop-shoulders, all substantially as and for the purpose set forth.

4. The combination, in a shaft-tug, with the main loop and the inner loop fitted and movable therein, of the side guides secured in the main loop alongside the inner loop and provided at the bottom of the main loop with a connecting-piece extended through the inner loop, substantially as set forth.

5. The improved shaft-tug herein described, consisting of the main loop provided at its bottom with slots C, separated by an intermediate strip C', the inner loop fitted within the main loop, provided at its sides with stop-shoulders *d* and having its ends or straps passed through the slots C, and the side guides E, secured in the main loop alongside the inner loop and having the connecting-strip E' extended through the inner loop, all substantially as and for the purposes set forth.

487,951. TENNIS-MARKER. WALTER M. LINDSAY, West Derby, Vt. Filed Aug. 11, 1892. Serial No. 442,534. (No model.)



Claim.—1. In a marking device of the character set forth, the combination of a wheel for applying the marking material, having a groove on one side thereof, and a guide-line adapted to be secured in position and engaged by the grooved portion of said wheel, substantially as described.

2. In a marking device of the character set forth, the combination of a wheel having a cylinder therein with a perforated rim and a grooved wheel on one side thereof and a guide-line applied to the surface to be marked and adapted to be engaged by said grooved wheel, substantially as described.

487,952. METALLIC RAILROAD-TIE. ANDREAS MATTLIESS, Giddings, Tex. Filed July 6, 1892. Serial No. 439,125. (No model.)

Claim.—1. A metallic railroad-tie comprising a U-shaped channel-iron having its sides extending upward, cross-plates secured to the sides of the said iron and adapted to support the bases of the rails, fastening devices held on the said cross-plates and adapted to engage the bases of the rails to lock the latter in position on the cross-plate, and vertically-extending plates fastened to the said channel-iron near the ends thereof, the said plates passing through slots in the bottom of the channel-iron, substantially as shown and described.

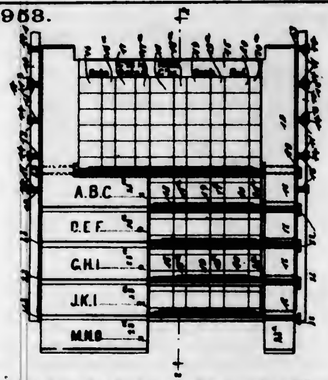
2. A metallic railroad-tie comprising a U-shaped channel-iron having its sides extending upward, inverted-U-shaped cross-plates secured by their sides to the sides of the said channel-iron, flanged lugs secured to the said cross-plates and adapted to engage the bases of the rails to lock the latter in position on the cross-plate, and flanged vertically-extending plates passing through slots in the ends of the channel-iron, the flanges of the said plates being fastened to the sides of the said channel-iron, substantially as shown and described.

487,953. ACCOUNT-KEEPING DEVICE. WILLIAM W. MAXWELL, Champaign, Ill. Filed Mar. 3, 1892. Serial No. 423,687. (No model.)

Claim.—1. In an account-keeping device, a pivoted swinging fly and an account-sheet mounted on the fly and movable across the face thereof, substantially as set forth.

2. The combination, with a support having slots, of a removable swinging fly having pivots entering said slots and an account-sheet movable across the face of the fly, substantially as set forth.

487,953.



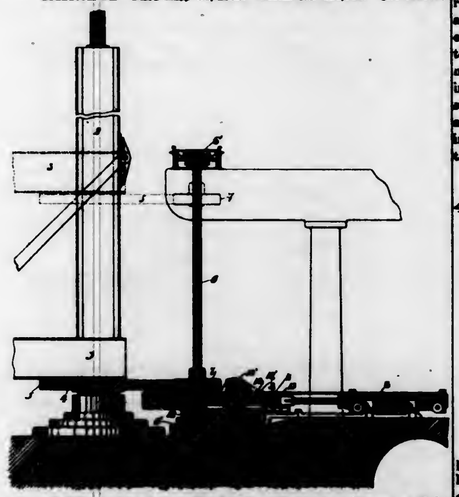
3. An account-keeping device comprising a series of flies and an account-sheet for each fly and movable across the face thereof, the said flies overlapping and normally exposing a narrow transverse portion of every account-sheet, substantially as set forth.

4. An account-keeping device comprising a plurality of movable flies mounted in a suitable frame, each fly having an index-arm, and account-sheets made to travel over the flies, substantially as described.

5. An account-keeping device comprising a plurality of movable flies mounted in a suitable frame, each fly having an index-arm, and account-sheets made in the form of endless belts and held to turn on the middle portions of the flies, substantially as described.

6. The combination, with the movable flies and the account-sheets made to travel over and turn on the middle portions thereof, of rollers mounted in the flies and arranged to clasp the account-sheets, substantially as described.

487,954. CRANE-TURNING MECHANISM. CAMILLE MERCADIER, Braddock, Pa. Filed Aug. 30, 1892. Serial No. 444,518. (No model.)



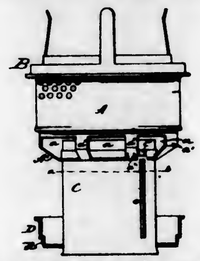
Claim.—1. Turning mechanism for cranes, comprising an upright shaft, a traveling power connection between the crane and shaft, and means for turning the shaft, substantially as and for the purposes described.

2. Turning mechanism for cranes, comprising an upright shaft, a traveling power connection between the crane and shaft, and a motor situate on the mill-floor and connected with the shaft, substantially as and for the purposes described.

3. Turning mechanism for cranes, comprising an upright shaft, a traveling pinion on the shaft, and gearing on the crane meshing therewith, and means for turning the shaft, substantially as and for the purposes described.

4. A crane having a lifting-mast and jib, a turning motor set at the base of the mast, and a traveling power connection between the motor and mast, substantially as described.

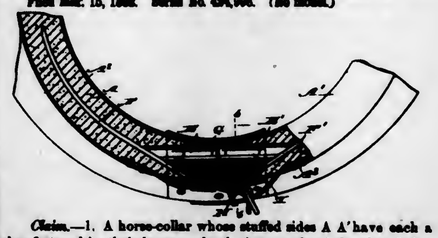
487,955. CENTRAL-DRAFT-LAMP BURNER. JOHN C. MILLER, Waterbury, Conn., assignor to the Matthews & Willard Manufacturing Company, same place. Filed Jan. 6, 1892. Serial No. 417,139. (No model.)



Claim.—1. In a central-draft-lamp burner, the combination, with a cylindrical outer wick-tube provided at its lower end with a shallow cup-like collar adapted to be removably attached to a lamp-fount, of a perforated cylindrical band or skirt having its lower edge constructed with one or more lighting-openings and turned inwardly to meet and ride upon the said tube and shaped to fit down into the said cup-like collar, whereby the said openings are normally closed, and a gallery rigidly secured to the upper edge of the said band, which depends from the tube, and the lower end of the said skirt being constructed and adapted to confine the skirt to a perpendicular movement until it has reached its elevated or lighting and its depressed or normal positions, in which it is rotatable for being locked in the same, substantially as set forth.

2. In a lamp-burner, the combination, with an outer wick-tube provided with one or more vertical outwardly-projecting ribs terminating within its upper and lower ends, and with one or more stops respectively located above the upper ends of the said ribs, of a cup-like collar secured to the lower end of said tube and adapted to be removably connected with the lamp-fount, a gallery vertically movable on the said tube, and a perforated band or skirt having its upper end attached to the said gallery and its lower edge turned inwardly to meet the tube and fit into said collar and constructed with one or more lighting-openings and with one or more grooves corresponding in number and location to the said rib or ribs on the said tube, substantially as described, and whereby the rib or ribs guide the gallery and band as they are raised or lowered and permit them to be locked in either their raised or lowered positions by turning them to carry the ribs and grooves out of line.

487,956. HORSE-COLLAR. WILLIAM MUHR, Fountain City, Wis. Filed Mar. 15, 1892. Serial No. 424,966. (No model.)



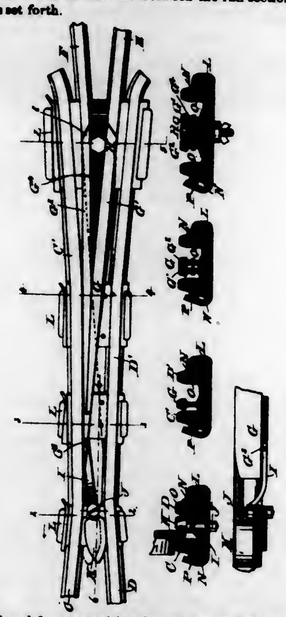
Claim.—1. A horse-collar whose stuffed sides A A' have each a plug fastened in their lower ends, the inner ends of the plugs being beveled, as shown, and curved rods secured flatwise upon such beveled ends and extending upward in the middle of the stuffing, as shown and described.

2. A horse-collar whose sides are provided with a covering of leather, a plug secured in each end of such covering, a rod extending upward from the inner end of each plug, and a stuffing held in the covering and packed around the rods and against the plugs, as shown and described.

487,957. RAILROAD-FROG. JOHN S. MCADAMS, Ashland, Pa. Filed May 23, 1891. Serial No. 393,733. (No model.)

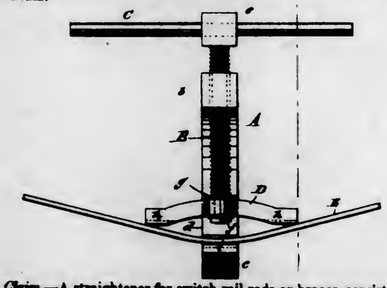
Claim.—1. A railroad-frog comprising the pivoted point G, abutting at its pivoted end the rail-sections B F, and the pivoted lever I, pivoted at its inner end to the free end of the point G and provided at

its opposite end with an offset K between the rail-sections C D, substantially as set forth.



2. A railroad-frog comprising the switch-rails C D, provided with wing-rails C' D', and the rail-sections E F between the diverging rails C' D', the U-shaped clamps L, in which said rails rest and are secured, the blocks N between the sides of the clamps and outer sides of the rails, the point G, formed of two rails G' G², with an intervening throat-piece G⁴, bolted together and pivoted at the juncture of rails E F and aligning the rails C D, and the pivoted lever I, pivotally connected at G² with the free end of the point G and provided at its opposite end with the offset K between the switch-rails C D, substantially as set forth.

487,958. STRAIGHTENER FOR SWITCH-RAIL RODS OR BRACES. PATRICK MCCABE, St. Ignace, Mich., assignor of three-eighths to Peter W. Hembach, same place. Filed Sept. 21, 1892. Serial No. 446,894. (No model.)

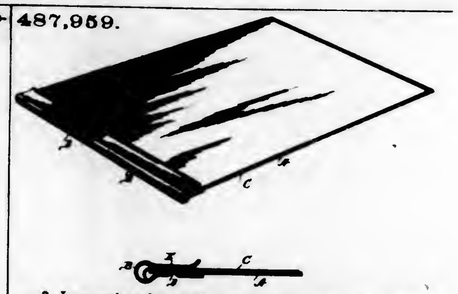


Claim.—A straightener for switch-rail rods or braces, consisting of the body A, provided with the head *b* and the foot-piece *c*, the clamping-screw B, working in the head *b*, and the presser-foot D, arched at its center and having straight ends, the said presser-foot being mounted loosely on the inner end of the screw with its concave inner face downward, substantially as described.

487,959. CARBON-SHEET HOLDER. JAMES R. MCDONALD, Chicago, Ill. Filed July 24, 1891. Serial No. 400,668. (No model.)

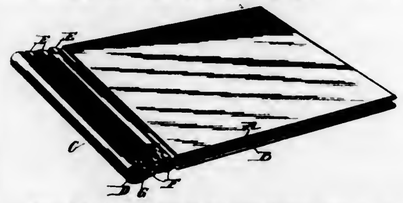
Claim.—1. In a carbon-sheet holder, the combination, with a metallic supporting-plate, of a U-shaped spring-clamp adapted and arranged to embrace the edge of said plate, a series of projections upon one of said members, and a corresponding series of recesses or perforations in the other member, substantially as described.

487,959.



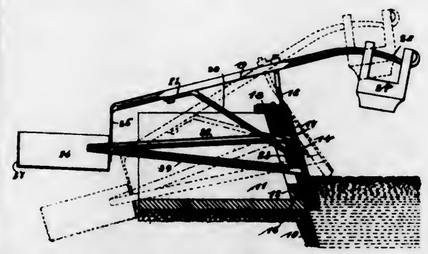
2. In a carbon-sheet holder, the combination, with a metallic supporting-plate and the reinforcing-strip riveted along one edge thereof, of the U-shaped spring-clamp adapted and arranged to embrace said reinforcing-strip and provided with recesses or perforations for reception of the heads of said rivets, substantially as described.

487,960. ORDER-HOLDER. JAMES S. MCDONALD, Jr., Chicago, Ill. Filed Aug. 3, 1891. Serial No. 401,586. (No model.)



Claim.—In an order-holder, the combination, with the covers and the back thereof, of a U-shaped clasp composed of spring metal, secured to the inner surface of the back, the sides of which clasp are corrugated longitudinally, substantially as described.

487,961. AUTOMATIC WATER-GATE. GEORGE W. NORTON, Yuma, Ariz. Filed June 28, 1892. Serial No. 438,302. (No model.)

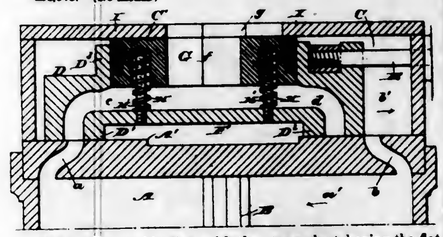


Claim.—1. The combination, with the wasteway opening from a body of water, of a vertically-swinging gate held at the mouth of the wasteway, a lever secured to the top of the gate and having a counterbalance at one end to close the gate, a tank secured to the opposite end of the lever, and pipes opening through the gate and adapted to deliver into the tank, substantially as described.

2. The combination, with a wasteway opening from a body of water, of a swinging gate to close the mouth of the wasteway, a lever secured to the gate, a counterbalance carried at one end of the lever and adapted to hold the gate shut, a tank secured to the opposite end of the lever and adapted when full to raise the counterbalance and open the gate, and pipes leading from the body of water and adapted to deliver into the tank, substantially as described.

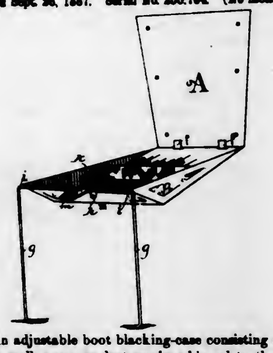
3. The combination, with a wasteway opening from a body of water, of a vertically-swinging gate held to close the wasteway, a lever held to the gate-top and having at one end a counterbalance to close the gate and at its opposite end a tank, which when full will raise the counterbalance and open the gate, and pipes opening through the gate at different levels and held to deliver into the tank, substantially as described.

487,962. BALANCED SLIDE-VALVE. JOHN PARKER and FRED E. CLARK, Sturgeon Falls, Canada. Filed Feb. 18, 1892. Serial No. 421,975. (No model.)



Claim.—The combination, with the steam-chest having the flat cover C', provided with an exhaust-steam opening *g*, of the slide-valve D, having the exhaust-ports *c* and *d* and the exhaust-recess F in its under side, the balance piston-disk G, adapted to slide vertically in the top of the valve D and having an elliptical opening *f*, arranged correspondingly with the aforesaid opening *g* in the cover C', the rods H' H', projecting into recesses in the opposite sides of the disk, and springs encircling said rods and supporting the disk, as shown and described.

487,963. BOOT-BLACKING KIT. HERMAN PREPOSIK, Saginaw, Mich. Filed Sept. 26, 1887. Serial No. 250,764. (No model.)



Claim.—An adjustable boot blacking-case consisting of a lid secured against a wall, a pan or dust-receiver hinged to the lower end of the lid and being shallower at the hinged end and provided with apartments as described, one apartment for receiving the brush, the other provided with a spring attachment described for holding the box, and the automatically-adjusting supports or legs *g g*, hinged to the deep end of the pan, substantially as described, and for purpose set forth.

487,964. CABINET-EASEL. HERMAN PREPOSIK, Saginaw, Mich. Filed Feb. 20, 1892. Serial No. 423,120. (No model.)

Claim.—1. As a new article of manufacture, a revolving cabinet-easel consisting of a base in the form of a cabinet A and having upon the top thereof the plate A', containing an orifice 1, the rack B, consisting of a series of shelves supported by corner-posts C and having upon the bottom of the lower shelf the plate B', provided with a pin 15, adapted to fit and turn in the orifice 1 of plate A', and the pins *c c* in the side posts C of the rack, adapted to hold a picture, substantially as described.

2. As a new article of manufacture, a revolving cabinet-easel consisting of a base in the form of a cabinet, a rack consisting of a series of shelves supported by corner-posts and revolubly supported upon the base, and an easel formed upon the side of the rack by pins *c c* in the corner-posts, adapted to support a picture, and means for revolving the rack upon the base, substantially as described.

487,965. LUMBER-DRIER. JOHN W. PIVER, American, Ga. Filed Aug. 14, 1891. Serial No. 402,695. (No model.)

Claim.—1. An improved lumber-support consisting of a side support inclined to the vertical and a base-support having its upper or bearing surface inclined to the horizontal and at approximately right angle to the inclined side support, all substantially as set forth.

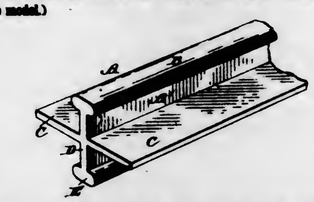
2. In a lumber-drier, the lumber-support herein described consisting of the side support inclined to the vertical and the base-support having its bearing-surface inclined to the horizontal and at approximately a right angle to the side support and formed of a series of step-like block-sections, substantially as set forth.

3. In an apparatus substantially as described, the house having a drying-room provided with a floor and with an inclined side support for lumber and with a base-support including a plurality of series of blocks having their upper surfaces inclined to the horizontal and strips of timber on which the series of blocks rest, all substantially as set forth.

4. In a lumber-drier, a lumber-support consisting of a side support inclined to the vertical and the series of step-like blocks extended from said side support, the upper bearing-surfaces of the several said blocks being formed in parallel planes and at approximately a right angle to the side support, substantially as set forth.

5. The improved apparatus, substantially as described, comprising the house having a drying room or compartment, a heater for said compartment, and a lumber-support arranged in said compartment and composed of a side support inclined to the vertical, and a base-support formed of a series of step-like blocks having their upper or bearing surfaces inclined to the horizontal and arranged at approximately a right angle to the side support, all substantially as described, whereby lumber may be piled on said support in an edgewise-inclined position, for the purposes set forth.

487,966. TRACK FOR HAY CARRIERS AND ELEVATORS. JOSEPH R. PORTER, Ottawa, Ill. Filed Nov. 4, 1892. Serial No. 450,963. (No model.)



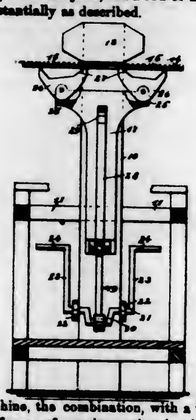
Claim.—A metallic track for a hay-carrier, consisting of an upper T-head for connecting suspending means, a lower T-head for connecting a stop-block or knocker, a deep vertical strengthening-web, and intermediate horizontal wheel-supporting flanges for the wheels of a hay-carrier to run upon, substantially as described.

487,967. BOX-MACHINE. CHARLES W. ROGERS, Lawrence, Kans. Filed Aug. 4, 1891. Serial No. 401,669. (No model.)

Claim.—1. In a box-machine, the combination, with a suitable support, of a stationary form on the same, vertically movable and pivoted jaws below the form, a pivoted bottom plate, and means for simultaneously operating the bottom plate and jaws, substantially as set forth.

2. In a box-machine, the combination, with a frame and a stationary form on the frame, of a reciprocating head below the form, jaws adapted to embrace the form pivoted to the head, a bottom plate pivoted to the frame and adapted to swing against the form, and means for operating the bottom plate from the reciprocating head, substantially as described.

3. In a box-machine, the combination, with a frame and a stationary form on the frame, of vertically movable and pivoted jaws below the form and shaped to embrace the same, a bottom plate pivoted to the frame, a lever pivoted to the frame and adapted to be engaged by the support of the jaws, and a rod or link pivoted to the plate and lever, substantially as described.



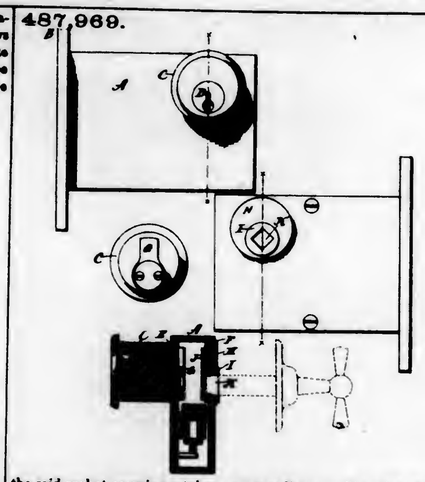
4. In a box-machine, the combination, with a frame and a stationary form on the frame, of a reciprocating head below the form and provided with a block having a beveled upper end, jaws shaped to embrace the form pivoted to the head, a lever pivoted to the frame and having one end engaging the beveled end of said block, a rod or link pivoted to the bottom plate and lever, and a spring secured to the frame and lever, substantially as herein shown and described.

487,968. COIN-CONTROLLED FORTUNE-WHEEL. WILLIAM H. RUSSELL and THOMAS H. GUERRIERE, New Haven, Conn., assignors of one-third to Frank B. Russell, same place. Filed Aug. 1, 1892. Serial No. 441,836. (No model.)

Claim.—1. In a fortune-wheel, the combination, with a train, of two or more independently-mounted differentially-rotating cams driven by the said train, one of the said cams having one or more and the other two or more notches, detents operating in unison for the respective cams, a starter receiving movement from a coin and connected with the said detents for simultaneously lifting them to release the train, and an indicator driven by the train, substantially as set forth.

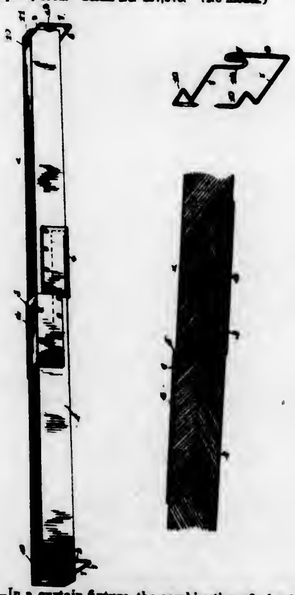
2. In a fortune-wheel, the combination, with a train, of two or more independently-mounted cams differentiated in the rate of their rotation and actuated by the train, one of the said cams having one or more and the other two or more notches, detents operating in unison for the respective cams, a starter receiving movement from a coin introduced into the apparatus and connected with the said detents for simultaneously lifting them to release the train, a horizontal dial, and an indicator arranged to sweep the said dial and connected with the train to be driven thereby, substantially as described.

487,969. CYLINDER-LOCK. RUSSELL SARGENT, New Haven, Conn., assignor to the Sargent & Company, same place. Filed Sept. 19, 1892. Serial No. 446,265. (No model.)



Claim.—A lock or latch case having a like opening through opposite sides, combined with a cylindrical case carrying the key mechanism, the said cylindrical case corresponding to and adapted to set into the said opening on either side of the lock or latch case, a cylindrical disk corresponding to the said cylindrical case and alike adapted to be introduced into either of the said openings in the lock or latch case, a cylindrical socket in the said disk, the opening in the socket of angular shape and adapted to receive a handle-operating spindle, the said socket carrying a talon corresponding to a like talon on the key-cylinder of the said cylindrical case, the said disk and the said cylindrical case being interchangeable with relation to the lock or latch case, substantially as described.

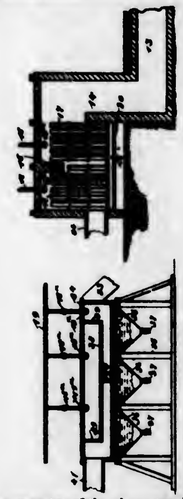
487,970. CURTAIN-FIXTURE. WARREN A. SAUL, Steelton, Pa. Filed Apr. 5, 1892. Serial No. 427,573. (No model.)



Claim.—In a curtain-fixture, the combination of a horizontal bar provided at its end with vertically-projecting stops arranged on its upper and lower edges and resilient roller-brackets adapted to fold flat against the horizontal bar and each constructed of a single piece of wire and of approximately-rectangular form and having the ends of the wire bent vertically and inserted into the bar and forming pivots, the upper and lower portions of the brackets being provided near the pivot with angular bends engaging the stops, and one of the brackets having an eye and the other having a loop, substantially as described.

487,971. APPARATUS FOR CONDENSING FUMES. ALBERT F. SOMERVILLE, St. Louis, Mo. Filed Mar. 16, 1892. Serial No. 425,164. (No model.)

487,971.



Claim.—1. An apparatus of the character described, comprising a cooling-chamber adapted to connect with a furnace and provided with a perforated diaphragm, an inclined floor thereunder discharging outside of the cooling-chamber, and a series of pipes forming cooling-surfaces, a condensing-tank having collecting-chambers therein and a suitable discharge, a flue connection between the cooling-chamber and the condensing-tank, spraying-nozzles arranged to deliver into the chamber and tank, and means for discharging the condensed material from the chamber and tank, substantially as described.

2. In an apparatus of the character described, the cooling-chamber having a flue-inlet at one end and a discharge at the other, a perforated horizontal partition or grating, an inclined floor beneath the partition, which floor delivers through openings into a gutter, a plurality of pipes arranged in tiers upon the perforated partition, and spraying-nozzles extending into the chamber and adapted to connect with a water-supply, substantially as described.

3. In an apparatus of the character described, a cooling-chamber having a flue-inlet at one end and a discharge at the other end, a perforated horizontal partition near the bottom, a plurality of pipes mounted endwise upon the partition, spraying-nozzles arranged to deliver into the chamber, and means for collecting the condensed material beneath the perforated partition, substantially as described.

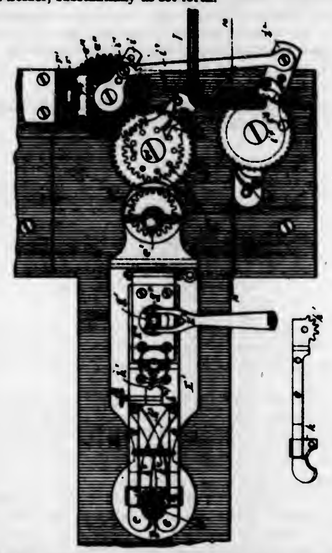
4. In an apparatus of the character described, a cooling-chamber having a flue-inlet at one end and a discharge at the other, a perforated horizontal partition near the bottom, a depending transverse partition arranged near the center and at the top, a plurality of pipes arranged vertically in the chamber, and spraying-nozzles arranged to discharge upon the pipes, substantially as described.

5. In an apparatus of the character described, a condensing-tank having a flue-inlet at one end and a discharge at the other, a plurality of hoppers in the bottom with suitable discharge-pipes therein, a horizontal perforated diaphragm in its upper portion, a deflecting-plate extending transversely beneath the diaphragm, and a series of discharge-nozzles arranged to deliver into the tank, substantially as described.

6. An apparatus of the character described, comprising a cooling-chamber having a suitable inlet, a perforated partition, and an inclined floor arranged to deliver into a gutter at one side of the chamber, a condensing-tank having a flue connection with the cooling-chamber and having a suitable discharge-flue, a perforated diaphragm arranged horizontally in the condensing-tank, a transverse division-plate beneath the diaphragm, a plurality of discharge-hoppers arranged in the bottom of the tank, exhaust-fans arranged to force the draft through the chamber and tank, and a water-supply pipe having spraying-nozzles to deliver into the chamber and tank, substantially as described.

487,972. MACHINE FOR SEWING ON BUTTONS. PAUL SIMON, Hoboken, N. J. Filed Aug. 6, 1891. Serial No. 401,869. (No model.)

Claim.—1. The combination, with the driving-shaft of a sewing-machine, of an oscillating and reciprocating plate, a button-holder supported thereon, a fulcrumed lever having teeth at its lower end and oscillated by a cam on the driving-shaft of the machine, a pinion meshing with the teeth of said oscillating lever, and transmitting mechanism between said pinion and the supporting-plate of the button-holder, whereby oscillating and reciprocating motion is imparted to said button-holder, substantially as set forth.



2. The combination, with the driving-shaft of a sewing-machine, of a main plate, an oscillating and reciprocating plate, a button-holder supported on said oscillating plate, a standard fixed to said main plate, a vertical lever fulcrumed to said standard, a cam on said driving-shaft for actuating said lever, and motion-transmitting mechanism between the lower end of the lever and the supporting-plate of the button-holder, whereby oscillating and reciprocating motion is imparted to said button-holder, substantially as set forth.

3. The combination, with the driving-shaft of a sewing-machine, said shaft having a grooved cam, of an oscillating and reciprocating plate, a button-holder supported thereon, a pinion to which the rear end of said oscillating plate is pivoted eccentrically, a gear-wheel meshing with said pinion and provided with ratchet-studs, a segmental gear, a radial arm attached thereto carrying a spring-pawl for engaging said studs, a second gear-wheel meshing with the segmental gear, a pinion keyed to said gear-wheel, and a fulcrumed lever operated by the cam on the driving-shaft and provided with a toothed section at its lower end that meshes with the pinion on the last gear-wheel, substantially as set forth.

4. The combination, with the driving-shaft of a sewing-machine, of a cam on the same, an oscillating and reciprocating plate, a button-holder supported on said plate, a motion-transmitting mechanism connected with the rear end of the oscillating plate, a fulcrumed lever provided with teeth at its lower end and actuated by the cam on the driving-shaft, a pinion meshing with said teeth and adapted to actuate the transmitting mechanism by which the button-holder is operated, a stop-motion for the driving-shaft of the sewing-machine, a stop-lever, a pawl-and-ratchet mechanism, and a bar connecting said pawl-and-ratchet mechanism with said pinion, said pawl-and-ratchet mechanism being operated by the motion-transmitting mechanism of the button-holder, and adapted to actuate the stop-lever and stop-motion and throw it out of clutch with the driving-shaft when the required number of stitches have been made, substantially as set forth.

5. The combination, with the driving-shaft of a sewing-machine, of a cam on said driving-shaft, an oscillating and reciprocating plate, a button-holder supported on said plate, an oscillating lever supported on an upright standard, said lever being actuated by the cam on the driving-shaft, motion-transmitting mechanism interposed between the lower end of the oscillating lever and the oscillating plate of the button-holder, a pawl-and-ratchet mechanism, a pivot-link connecting the motion-transmitting mechanism of the button-holder with said pawl-and-ratchet mechanism, a stud on said ratchet-wheel, a stop-motion for the driving-shaft, and a stop-lever provided with a bent arm that is adapted to be engaged by the stud on the ratchet-wheel, so as to release the stop-motion at the proper time, substantially as set forth.

6. The combination, with the driving-shaft of a sewing-machine, of a reciprocating and oscillating plate, a button-holder thereon, a

pinion to which the rear end of said plate is pivoted eccentrically, a fixed shaft, a cog-wheel on said shaft engaging said pinion and having fixed pins and removable pins, a segmental gear on said fixed shaft provided with a radial arm, a pawl on said arm engaging the pins on said cog-wheel, a gear meshing with said segmental gear, and means for operating said gear from the driving-shaft, substantially as described.

487,973. DENTAL SEPARATOR. BENJAMIN SIMONS, Charleston, S. C. Filed June 6, 1892. Serial No. 435,775. (No model.)

Claim.—1. The combination, with a pair of tooth-clutching claws, of a pair of right and left screw-shafts arranged side by side and tapped through the claws and geared together, substantially as shown and described.

2. The combination, with the tooth-separator having upper and lower clutching-jaws, with the upper clutching-claw arched to pass over the crown of the tooth, of a stop-plate having a screw-stem tapped through the arched portion of the claw and adapted to rest upon the top of the tooth and adjust the claw to the length of the tooth, substantially as shown and described.

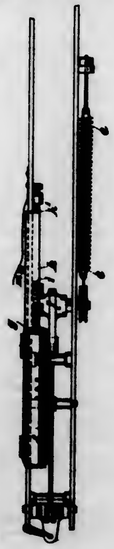
3. The pair of claws having their shanks locked by matched grooves or channels, combined with a tightening-screw, substantially as shown and described.

4. The pair of claws having their shanks made adjustable longitudinally over each other, combined with a fastening-screw and means for adjusting the pairs from or toward each other, substantially as shown and described.

5. The detachable guard G, in combination with the screw-shafts S S, as described.

487,974. KNIFE FOR CUTTING THE PILE OF VELVETS, &c. JAMES H. SMITH, Bacup, assignor to the Fustian Cutting Machine Company, Limited, Salford, England. Filed Aug. 20, 1891. Serial No. 444,463. (No model.)

Brief.—The invention comprises improvements on Patent No. 475,709. The improvements consist in mounting a small tail-piece *a* at the end of the trigger *b*, by which the knife is released, and also in means for checking the sudden turning of the knife upon its pivot, the means consisting of a cylinder filled with air and a piston moving in said cylinder, the piston being moved into the cylinder as the knife begins to turn on its pivot.



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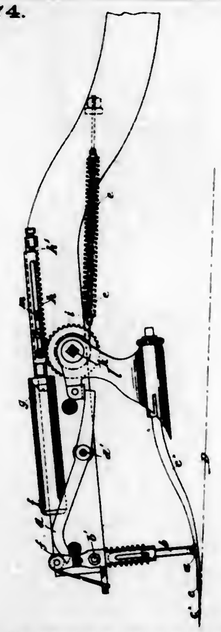
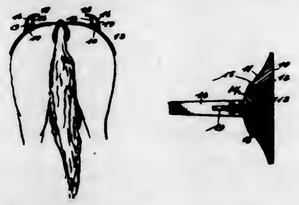


Claim.—1. The combination, with an automatically-released knife for cutting the pile of pile fabrics, of its trigger or pusher, with a tail-piece pivoted thereto and formed substantially as and for the purpose hereinbefore described.

2. In an automatically-released knife for cutting the pile of pile fabrics, the combination, with the knife-holder and spring for actuating the same, of a buffer for gradually retarding the withdrawal of the knife, substantially as and for the purpose hereinbefore described.

3. In an automatically-released knife for cutting the pile of pile fabrics, the combination of the pivoted knife-holder having a pinion, with a rack geared to the pinion, a plunger connected to the rack, a cylinder in which the plunger works, and a spring to turn the knife-holder when released, substantially as described.

487,975. REIN-HOLDER. GEORGE W. THOMPSON, Sag Harbor, N. Y. Filed Feb. 12, 1892. Serial No. 421,277. (No model.)



Claim.—1. A rein-holder comprising a flat-bottomed base having a recess in its top, a curved horn or guard having a base-piece to close the top portion of the recess and forming a space between itself and the base-wall of the recess to receive the hip-strap of a harness, and a fastening device to secure the horn to the strap, substantially as described.

2. A rein-holder comprising a flat-bottomed base having a top recess therein, a wedge-shaped slide dovetailed into the upper portion of the recess and forming a space between itself and the base to receive the hip-strap of a harness, a ring guard or horn carried by the slide, and a thumb-screw extending through the slide and adapted to engage the hip-strap, substantially as described.

3. A rein-holder comprising a base having a top recess to receive the hip-strap of a harness, a wedge-shaped slide dovetailed into the upper portion of the recess, and a curved horn or guard produced upon the outer portion of the slide, substantially as described.

487,976. GAME-BOARD. JOHN S. WILLIAMS, Trenton, N. J. Filed Apr. 25, 1892. Serial No. 430,496. (No model.)

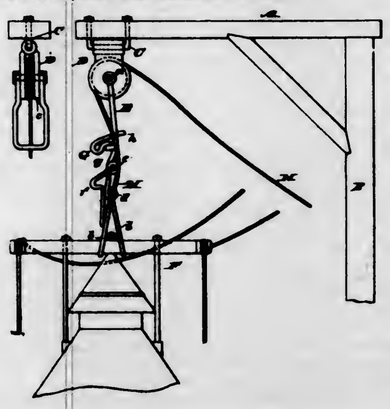
Claim.—1. In a game-board, the combination, with a base, of three circular apertured walls held on the said base, two straight walls placed at angles to each other and connecting the larger circular wall with the two smaller circular walls, and a V-shaped wall connecting the two small circular walls with each other, the apertures in the circular walls opening into the space bounded by the straight and V-shaped walls, substantially as set forth.

2. In a game-board, the combination, with a base, of three circular apertured walls held on the said base, two straight walls placed at angles to each other and connecting the larger circular wall with the two smaller circular walls, a V-shaped wall connecting the two small circular walls with each other, the apertures in the circular walls opening into the space bounded by the straight and V-shaped walls, and a number of marbles held within the said walls, substantially as shown and described.

3. As a new article of manufacture, a game-board comprising a base, a large circular wall having an opening, two smaller circular walls provided with openings and placed opposite each other, two straight walls connecting the larger circular wall with the smaller circular walls, and a wall connecting the two smaller circular walls with each other, the apertures in the circular walls opening into the space bounded by the walls connecting the circular walls, substantially as shown and described.

4. A game-board comprising the base A, the large circular wall B, having an opening H in its side next to the middle of the base, two diverging walls E F, extending from the wall B at opposite sides of its opening and spaced apart a greater distance than the width of said opening, the smaller circular walls C D at the diverging ends of the walls E F and having openings I J in their adjacent sides, and the inclined or curved wall G, the ends of which connect with the walls C D, the ends of the walls C D projecting past the ends of the walls G E F, substantially as set forth.

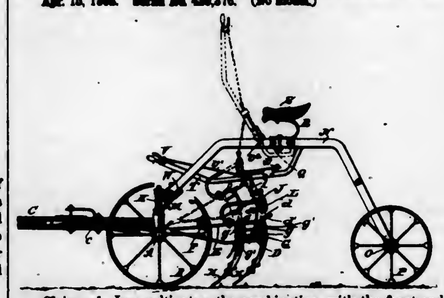
487,977. LAMP-HANGER. GEORGE ALDEN, Susquehanna, Pa. Filed Nov. 15, 1891. Serial No. 412,202. (No model.)



Claim.—1. An electric-lamp hanger comprising a pulley-block, a suspension-loop pivoted upon the axis of the pulley and depending therefrom, a lamp-supporting hook engaging the lower end of the loop, a releasing-lever pivoted to the shank of the said hook, and an operating cord or cable, substantially as set forth.

2. An electric-lamp hanger comprising the laterally-swinging pulley-block D, its attaching-clip C, the loop E, pivotally suspended from the pulley-axis, the hook G, engaging the lower end of the loop, the releasing-lever *f*, and the loop *b*, depending from the lower end of hook G and adapted for connection with the lamp, and its operating cord or cable, substantially as set forth.

487,978. CULTIVATOR. JAMES RIDER, North Ontario, Cal. Filed Apr. 15, 1892. Serial No. 429,376. (No model.)



Claim.—1. In a cultivator, the combination, with the front and rear axles, of the arched frame swiveled to the front axle, the seat, the cultivator-frame attached to the front axle, the lever pivoted to the arched frame behind the seat and adapted to rest normally below the arched frame, and the chain connecting the lever and cultivator-frame, all arranged substantially as shown and described.

2. In a cultivator, the combination, with the front axle having a swivel-post, of the tubular coupling arranged thereon, the arched longitudinal bars connected with the said coupling, the seat carried by said bars, and the rear axle connected to their rear ends, substantially as shown and described.

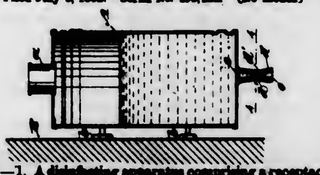
3. In a cultivator, the combination, with the front and rear axles, of the arched frame swiveled to the front axle, the cultivator-frame connected to the front axle, the curved track-bar connected to the rear portion of the cultivator-frame and elevated above the same, the lever, and chain, all arranged substantially as shown and described.

4. The combination, with the main axle and the arched frame pivotally supported thereon, of the cultivator-frame arranged beneath the same, the curved track-bar secured to said cultivator-frame, the lever pivoted to the arched frame, and a chain connecting the lever and track-bar, said chain being adapted to move upon said track-bar, substantially as shown and described.

5. The combination, with the front and rear axles, of the arched frame connecting the same and pivotally supported upon the front axle, the cultivator-frame pivotally connected with the front axle, a curved track-bar secured to the cultivator, the trolley-wheel arranged thereon, the lever, and chain, all arranged substantially as shown and described.

6. The combination, with the axles, of the arched riding-frame, the cultivator-frame, the curved track-bar, the trolley wheel and hanger, the chain, lever, spring-catch, thumb-latch, and pitman, and the latch-bar secured to the riding-frame, all arranged substantially as shown and described.

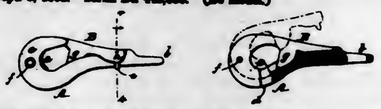
487,979. DISINFECTING DEVICE. JOHN W. BOWERBANK, Jersey City, N. J., assignor to Emil Taussig and Solomon Taussig, New York, N. Y. Filed July 6, 1892. Serial No. 439,122. (No model.)



Claim.—1. A disinfecting apparatus comprising a receptacle having a depending metallic drip-tube provided with an inner rubber-lining tube, the metallic tube being compressed transversely, thereby compressing the rubber tube and forming its bore into a narrow slit through which the liquid is adapted to drip, substantially as set forth.

2. A disinfecting apparatus comprising the vessel A, provided with attaching devices *b*, a filling-opening in the top of the vessel, a depending metallic drip-tube on its bottom having an inner rubber-lining tube, the metallic tube being compressed transversely, thereby compressing the rubber tube and forming its bore into a narrow slit through which the liquid is adapted to drip, substantially as set forth.

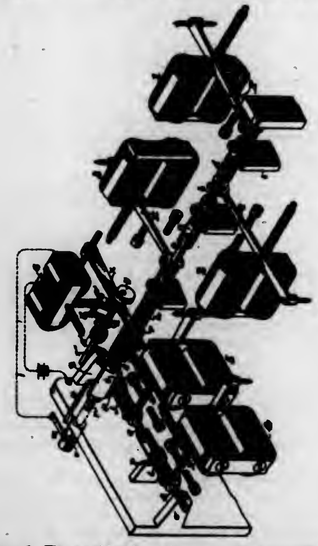
487,980. SNAP-HOOK. SAMUEL BROWN, Quincy, Ohio. Filed Sept. 6, 1892. Serial No. 445,022. (No model.)



Claim.—1. In a snap-hook, the combination, with the hook proper, of a hook-shaped latch pivoted to the nose end of said hook proper and constructed at its free end with a snap or catch adapted to engage by friction with the shank of the hook proper and to open and close in relation thereto essentially as described, and whereby the snap-hook is held closed without the aid of a spring.

2. In a snap-hook, the combination of the hook proper having a bifurcated nose portion, and the hook-shaped latch pivoted to and working within said nose portion, also provided with a closing nose-piece *g*, and backwardly-extended saddle-like projection *h*, having a snapping or catching lip i for engagement with the shank of the hook proper, substantially as described.

487,981. PRINTING-TELEGRAPH. CHARLES L. BUCKINGHAM, New York, N. Y. Filed Nov. 10, 1888. Serial No. 290,449. (No model.)



Claim.—1. The combination of a type-wheel, a series of independent impelling devices for actuating the same, and a driver and follower positively joining the type-wheel with each impelling device and forming a positive operative connection between them both during the single and the combined action of the impelling devices, substantially as described.

2. The combination of a type-wheel, a series of independent impelling devices for rotating the same to any desired position by the single action of one or more of them, and a driver and a follower positively joining each impelling device with said type-wheel both during their single action and their combined action when more than one is operated, all substantially as described.

3. The combination of a type-wheel, a series of rotating axially-fixed followers alternately arranged with a series of axially-adjustable drivers in the same line, and a series of independent impelling devices for positively rotating the type-wheel through the medium of said drivers and followers to any desired position by the single action of one or more of them, all substantially as described.

4. The combination of a type-wheel, a series of independently-rotating followers, a series of independent drivers respectively engaging with the followers and positively and continually connected with the type-wheels through said followers in either the single or combined operation of two or more followers, a series of independent impelling devices respectively actuating said drivers, and a series of magnates for actuating said impelling devices, all substantially as described.

5. The combination of a type-wheel, a series of independent impelling devices, a series of rotary and axially-moving drivers actuated by said impelling devices and movable axially in a line parallel to their axis of rotation, and a series of rotary followers engaging with said drivers for rotating the type-wheel, all substantially as described.

6. The combination of a type-wheel, a sectional shaft for rotating said wheel, consisting of a series of rotating followers alternately arranged with a corresponding series of axially-moving drivers and a series of impelling devices, all substantially as described.

7. The combination of a type-wheel, a sectional shaft for rotating said wheel, consisting of a series of rotating followers, each having a fixed axial support and an alternately-arranged series of axially-movable drivers, each driver at the end facing the type-wheel being joined to the contiguous follower by spiral gearing and with the follower at its other end by axial gearing which only permits longitudinal movement of said driver with reference to said follower, all substantially as described.

8. The combination of a type-wheel, a series of rotating followers *f g*, &c., having spiral and longitudinal grooves, as shown, a series of alternately-arranged drivers *a b*, &c., each driver engaging at one end with the spiral groove of a follower and with the longitudinal slot of another follower at its other end, and a series of impelling devices which engage with friction-collars upon said drivers, all substantially as described.

9. The combination of a type-wheel having three or more rings of type, a series of rotating followers, a series of alternately-arranged drivers engaging with said followers, and a series of impelling devices for rotating said wheel, and means for moving the type-wheel along its axis to bring any desired ring of type over the press-pad, consisting of a second series of independent impelling devices, a corresponding series of drivers, and an alternately-arranged series of rotatory followers gearing with the type-wheel axis, all substantially as described.

10. The combination of a type-wheel having three or more rings of type, means for rotating said type-wheel to any desired position, and means for moving said type-wheel axially, consisting of a series of followers gearing with said wheel to impart axial movement thereto, an alternately-arranged series of drivers for engaging said followers, and a corresponding series of impelling devices, all substantially as described.

11. The combination of a rotating and axially-movable type-wheel having three or more rings of type, a series of followers, drivers, and impelling devices for rotating said wheel, a shaft *r*, rack *t*, pinion *t'*, and a second series of followers, drivers, and impelling devices for moving said wheel axially, all substantially as described.

12. The combination of a type-wheel, a series of rotating followers, an alternately-arranged series of drivers whose degrees of action are represented by the series one, two, four, &c., and a series of impelling devices, the gearing of the last impelling device, driver, and follower being oppositely arranged with reference to the other members of the series, whereby the last impelling device is made to impart rotation to the type-wheel in a direction opposite that due to the others.

13. A series of impelling devices simultaneously coacting to adjust the type-wheel to any desired position for printing, a press-pad, an eccentric for actuating the same, an escapement, magnet 6 for operating said escapement, a local circuit, including said magnet, an insulating-block *v* in the conducting-hub placed upon shaft *r* of the type-wheel, and a spring *w*, which rests upon said insulating-block when the type-wheel is at its initial point, but closes the local circuit upon the first movement of the type-wheel, all substantially as described.

14. The combination of a type-wheel, a series of impelling devices simultaneously coacting by a single movement of one or more of them to rotate the type-wheel to any desired position for printing, a press-pad, an eccentric for operating the same, an unequal step-escapement and magnet for operating the eccentric, a local circuit, including the escapement, and means for opening and closing said circuit upon the operation of any one or more of the impelling devices for rotating the type-wheel, all substantially as described.

15. In a printing-telegraph system in which the type-wheel is adjusted to any one of its positions for printing by the single movement of a series of independent impelling devices operated individually or in various combinations according to the position desired, a series of multiple-telegraph receiving-instruments for operating any one of said impelling devices or two or more of them in the time required for the single main-line transmission by which one alone is actuated, and a corresponding series of multiple-telegraph transmitters for sending the required single or combined transmissions according to the letter to be printed, as and for the purpose described.

16. The combination of a type-wheel in a printing-telegraph, a series of impelling devices capable of conjoint action to adjust the type-wheel to any desired position for printing, a series of multiple-telegraph receivers to actuate or control said impelling devices singly or in various combinations, and an automatic transmitter at a distant station, consisting of a strip of paper upon which each letter is formed by one or more perforations in a single transverse line, such perforations controlling, individually or in combination, the single or simultaneous transmissions corresponding to those transmitted by multiple-telegraph transmitters.

17. In a printing-telegraph system in which the type-wheel is adjusted to any desired position by the conjoint action of a series of impelling devices, a paper strip for automatic transmission upon which each letter is formed by one or more perforations in a single transverse line, the paper being divided longitudinally into as many divisions as there are impelling devices employed, and multiple-telegraph transmitting and receiving apparatus, the individual, single, or simultaneous transmissions of which are individually controlled by the perforations of a division, while the receiving devices responding individually to the transmissions are combined with said series of impelling devices, as and for the purpose described.

18. In a printing-telegraph system in which the type-wheel is adjusted to any one of its positions by the single movement of a series of independent impelling devices operated individually or conjointly in various combinations according to the position desired, a series of harmonic receiving-instruments for operating any one of said impelling devices or two or more of them simultaneously in the time required for transmitting the single main-line transmission by which one alone is actuated, a series of harmonic transmitters at a distant station for sending the required single or combined transmissions, and a perforated paper strip for controlling said harmonic transmitters, all substantially as described.

19. In a printing-telegraph system, the combination of a series of receiving-instruments, (Morse and harmonic,) a type-wheel, a series of impelling devices controlled by said receiving-instruments under whose conjoint action the type-wheel is adjusted to any desired position, a single main line, a series of Morse and harmonic transmitters for said receivers, and a perforated band of paper containing messages for automatically controlling said transmitters, all substantially as described.

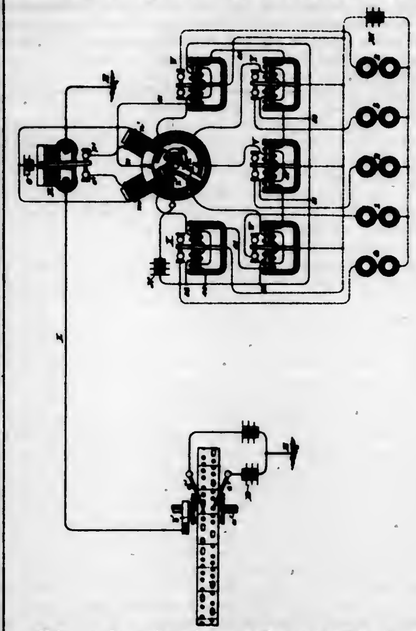
20. In a printing-telegraph receiver, the combination, with the type wheel or carrier having its alphabet distributed in two or more lines of type, of a series of independent impelling devices each positively joined with the type-wheel through devices by which it may by a single action move the type-wheel positively both forward and backward a definite distance different for the different impelling devices, the number of said devices and their combined capacities or ranges of action being such that the type-wheel may be moved to any one of all its printing positions either by the single movement of one impelling device or by the single movement of two or more of them operated in the proper combination either simultaneously or successively.

21. In a printing-telegraph system, a type-wheel upon whose periphery the alphabet is distributed in four rings of type, in combination with a series of independent impelling devices each positively joined with the type-wheel through mechanism by which it may by a single action move the type-wheel positively both forward and backward a definite distance different for different impelling devices, the number of said devices and their combined capacities or range of action being such that the type-wheel may be moved to any one of all its printing positions either by the single movement of one impelling device or by the single movement of two or more of them operated in the proper combination either simultaneously or successively.

22. In a printing-telegraph receiver, the combination, with the type wheel or carrier having the alphabet distributed upon its periphery in two or more rings of type and adapted to have a movement both of rotation and in the direction of its axis, of a series of independent impelling devices each positively joined with the type wheel or carrier through a driver and follower by which it may by a single action move the type-wheel a definite distance different for the different impelling devices, the number of said devices and their combined capacities or range of action being such that the type-wheel may be moved to any one of all its printing positions either by the single movement of one impelling device or by the single movement of two or more of them operated in the proper combination either simultaneously or successively.

23. In a printing-telegraph receiver, the combination, with the type wheel or carrier, of a series of independent impelling devices each positively joined with the type-wheel through a driver and follower by which it may by a single action move the type-wheel a definite distance different for the different impelling devices, the number of said devices and their combined capacities or range of action being such that the type-wheel may be moved to any one of all its printing positions either by the single movement of one impelling device or by the single movement of two or more of them operated in the proper combination either simultaneously or successively.

487,982. PRINTING-TELEGRAPH. CHARLES L. BUCKINGHAM, New York, N. Y. Filed Apr. 24, 1888. Serial No. 272,203. (No model.)



Claim.—1. In a telegraph system, the combination of a main line, an automatic transmitter of the Wheatstone type by which each letter or character is transmitted by a series of pulses succeeding one another, a printing-instrument, a series of type-controlling magnets, and a series of adjusting devices whose limits of action collectively are commensurate with the entire range of type-wheel movement.

2. In a telegraph system, the combination of an unbroken main line, a main-line relay at the receiving-station, an automatic transmitter by which each letter or character is transmitted by a series of pulses succeeding one another, and a printing-instrument having a series of type-adjusters whose limits of action collectively are commensurate with the entire range of type-wheel movement.

3. In a printing-telegraph, the combination of a dot-and-dash alphabet, a single main line, a main-line relay at a receiving-station, a series of selecting-relays controlled by the main-line relay, a series of adjusting-magnets, and a printing-instrument having a series of adjusters whose range of action collectively is commensurate with the maximum movement of the type-carrying apparatus.

4. The combination, in a printing-telegraph in which messages are transmitted by a series of pulses one following another over a single main line, of an automatic transmitter, a main-line relay at a receiving-station, a series of selecting-relays, a series of adjusting-magnets, and a printing-instrument having adjusting mechanisms whose limits of action collectively are commensurate with the maximum range of movement of the type-carrying mechanism.

5. In a printing-telegraph, the combination of an automatic transmitter in which there are for each letter or character sent a series of pulses succeeding one another, a main-line relay or relays at a receiving-station, controlling a series of selecting-relays, and a printing-instrument in which a series of type-carrying adjusters have limits of action collectively commensurate with the maximum range of type-wheel movement.

6. In an automatic telegraph system, the combination of a transmitter, an alphabet formed by perforations or embossures by which an equal number of successive pulses is transmitted for each letter or character, the transmission being determined by spaces between pulses or by prolonging or otherwise modifying one or more of the pulses transmitted, a main line, and a receiving-instrument having a series of adjusters separately responsive, as described, whose range of action collectively is commensurate with the maximum movement of the type-carrying apparatus, said adjusters corresponding in arrangement

with the perforations forming each and every letter or character transmitted.

7. In an automatic printing-telegraph system, the combination of a transmitter employing a paper tape provided with perforations or embossures by which an equal number of alternately positive and negative pulses is transmitted for each letter or character, the transmission being determined by prolonging or otherwise modifying one or more of the pulses transmitted, a main line, and a receiving-instrument having a series of adjusters separately responsive to such prolonged or modified pulses, whose range of action collectively is commensurate with the maximum movement of the type-carrying apparatus, said adjusters corresponding in arrangement with the perforations forming each and every letter or character transmitted.

8. A telegraph-alphabet in which each of its letters is formed by a definite number of transmitted pulses, the character of the letters being determined by prolonging, strengthening, or otherwise modifying one or more of said pulses.

9. In a printing-telegraph system, an alphabet in which each of its letters is formed by a definite number of transmitted pulses, the character of the letters being determined by prolonging some one or more of said pulses.

10. In a printing-telegraph system, an alphabet in which each of its letters is formed by a definite number of alternately positive and negative pulses, the character of the letters being determined by prolonging some one or more of said pulses.

11. In an automatic printing-telegraph system, a perforated or embossed strip of paper for transmitting the message in which each letter or character is represented by an equal number of apertures or embossures adapted to send a succession of pulses the same in number for all letters or characters transmitted.

12. In an automatic printing-telegraph, the combination of a transmitting-tape in which the letters transmitted are distinguished from one another by variations in the number and position of perforations or embossures, and a receiving-instrument having a series of selecting-magnets corresponding in number to the number of different positions which said perforations or embossures may have in a letter-space and adapted to be brought into action one after the other in regular order or succession by the actuating-pulses which are sent by the said distinguishing perforations or embossures.

13. In an automatic printing-telegraph system, the combination of a transmitter employing a paper tape, each letter being represented by an equal number of perforations or embossures and transmitted by an equal number of succeeding pulses, a main line, a relay or relays at a receiving-station, a series of selecting-relays controlled by said main-line relay or relays, a printing-instrument, and a series of type-controlling magnets which are brought into action by said selecting-relays.

14. In an automatic printing-telegraph system, a perforated strip of paper for transmitting the message, having two rows of apertures, one for transmitting positive and the other for transmitting negative pulses, in which each letter is represented by a definite number of apertures, while the character of the letters is determined by the length of the intervening spaces.

15. In a printing-telegraph system, the combination of a single main line, a relay, a sunflower, a rotating arm controlled by said relay, a series of selecting-relays having coils joined with the respective segments of the sunflower, an opposing coil for each relay, all being included in an independent local circuit for resetting the tongues of the selecting-relays, a series of adjusting-magnets, and a type-printer having a series of adjusters whose limits of action are collectively commensurate with the maximum range of movement.

16. In a printing-telegraph system, the combination of a main line, a relay, a sunflower, a rotating arm controlled by said relay, a series of selecting-relays having coils which are brought into action when a pulse is prolonged, strengthened, or modified, resetting-coils which are brought into action during each rotation of the sunflower-arm, a printing-instrument, and a series of adjusting electro-magnets.

17. In a printing-telegraph system, the combination of a main line, a relay, a sunflower, a rotating arm controlled by said relay, a series of selecting-relays, each of which is provided with a resetting-coil, a printing-instrument, a series of type-adjusting magnets, and a press mechanism which is operated simultaneously as or before the operation of resetting occurs.

18. In a printing-telegraph system, the combination of a main line, a polarized relay which is responsive to positive and negative currents, a sunflower, a rotating arm which is controlled by said relay, a series of selecting-relays, each of which is provided with a coil in a branch leading to a sunflower-segment, a second relay which is responsive only to prolonged, strengthened, or modified pulses, which serves to close said sunflower branches when brought into action, a resetting-circuit, a printing-machine, and a series of type-adjusting devices.

19. In a printing-telegraph system, a main line, a polarized relay, a sunflower, a rotating arm controlled by said relay, a second relay, a series of selecting-relays, a printing-machine, and a series of type-adjusting devices.

20. In a printing-telegraph system, an automatic transmitter, a perforated or embossed strip of paper by which a definite number of positive and negative pulses are transmitted for each letter, some of the pulses being prolonged, strengthened, or modified, a polarized and a neutral relay at a receiving-station, a sunflower, a rotating arm controlled by said polarized relay, a series of selecting-relays the circuits of which are closed by the neutral relay when brought into action, a printing-machine, and a series of type-adjusting devices.

21. In a printing-telegraph system, a main line, a polarized relay, a sunflower, a rotating arm, an electromotor-escapement controlled by said relay for actuating said arm, a series of selecting-magnets separately joined with corresponding segments of the sunflower, a resetting-circuit, a printing-machine, and a series of type-adjusters.

22. In a printing-telegraph system, a main line, a polarized and a neutral main-line relay at each station, a sunflower, a rotating arm and a ratchet-escapement controlled by the polarized relay, a series of selecting-relays, each having two coils, one opposing the other, a printing device, and type-adjusters.

23. In a printing-telegraph system, a main line, a polarized relay, a local circuit operated by said relay for controlling the rotation of a sunflower-arm, a series of selecting-magnets having two sets of coils, a neutral relay placed in the local circuit, controlled by the polarized relay, it being adapted to close the branches from the sunflower-segments to the selecting-relays, a printing-machine, and a series of type-adjusting devices.

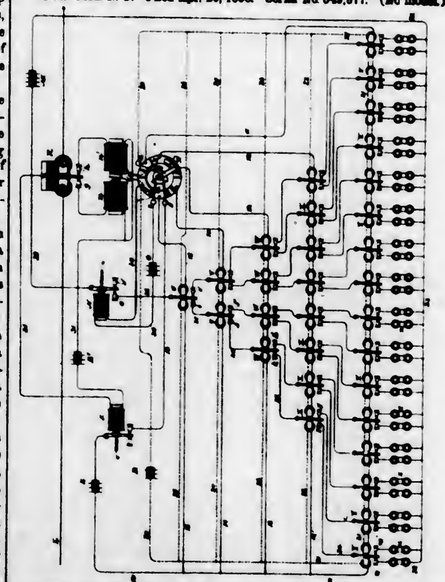
24. In a telegraph system, a main line, a relay, a sunflower, a rotating arm, a series of selecting-relays which are brought into action by prolonging or otherwise modifying main-line pulses, and local branches leading from said selecting-relays to the sunflower.

25. In a telegraph system, a main line, a polarized relay, a sunflower, a rotating arm, a series of selecting-relays, a series of main-line branches for joining the selecting-relays with the sunflower, and a neutral relay for directing main-line currents through said branches.

26. In a printing-telegraph system, a main line, a polarized relay, a sunflower, a rotating arm, a series of selecting-relays formed of polarized magnets, each having two sets of coils, a printing-machine, and a series of type-adjusters.

27. In a printing-telegraph system, a main line, a polarized relay, a sunflower, a series of selecting-relays, each of which is formed of neutral cores, a coil in a local circuit for holding the armature at front contact, and a second auxiliary coil for resetting the tongues, a printing-machine, and a series of type-adjusters.

487,983. PRINTING-TELEGRAPH. CHARLES L. BUCKINGHAM, New York, N. Y. Filed Apr. 29, 1890. Serial No. 349,877. (No model.)



Claim.—1. In a printing-telegraph, the combination of a single main line, a main-line relay, a sunflower, a series of sunflower branches containing selecting-relays, one or more of said relays being brought into action for each character transmitted, a type-writing printer, and a series of printing-circuits, one for each type-character, said printing-circuits being separately selected in each case by one or more of said selecting-relays.

2. In a printing-telegraph, the combination of a single main line, a main-line relay, a sunflower, a series of sunflower branches containing selecting-relays, a type-writing printer, a series of printing-magnets, and a series of printing-circuits, one for each character, joining the printing-magnets one at a time, which are formed through the tongues of the selecting-relays, substantially as described.

3. In a printing-telegraph, the combination of a main line, a relay, a sunflower, a series of sunflower branches containing selecting-relays, a series of actuating-magnets, and a series of circuits formed through the tongues of the selecting-relays, by which the actuating-magnets may be brought into action one at a time to actuate printing-levers.

4. In a printing-telegraph system, the combination of a telegraph-line, a main-line relay operated by alternately positive and negative currents, a series of branches controlled by said relay, which include selecting-relays, one or more of said relays being brought into action for each character transmitted, through whose tongues, taken in series or tandem, are successively formed a series of local circuits, and a series of electro-magnets controlled thereby.

5. The combination of a telegraph-line, a relay, a sunflower, and mechanism for actuating a moving arm, a series of multiple branches or circuits containing selecting-relays, substantially as described, a series of branches formed by the tongues of the selecting-relays, the path of each branch including a series or tandem arrangement of said tongues, and a series of electro-magnets controlled thereby.

6. In an automatic printing-telegraph system, the combination of a transmitter employing a paper tape upon which each letter or character is represented by an equal number of perforations or embossures and which is transmitted by an equal number of succeeding electrical pulses, a single main line, a main-line relay, a series of selecting-relays controlled by the main-line relay, a series of type-magnets, and a series of circuits, one for each type-magnet, formed by the selecting-relays, by which the actuating-magnets may be brought into action one at a time to actuate a corresponding series of printing-levers.

7. The combination of a telegraph-line, a relay, a sunflower, and mechanism for actuating a moving arm, a series of multiple branches or circuits containing selecting-relays, substantially as described, a relay for closing said branches or circuits, a series of multiple branches or circuits formed by the tongues of the selecting-relays, a relay for closing said circuits, controlled by the sunflower, and a series of electro-magnets controlled thereby.

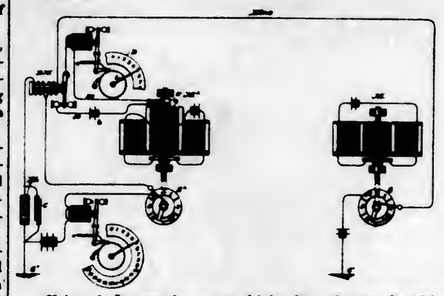
8. In an automatic printing-telegraph, an alphabet in which each of its letters is formed by a definite number of transmitted pulses, the character of the letters being determined by prolonging, strengthening, or otherwise modifying one or more of said pulses, a single main line, a relay at the receiving-station, a sunflower or equivalent device, a series of multiple branches or circuits containing selecting-relays, substantially as described, a series of multiple branches or circuits formed by the tongues of the selecting-relays, a type-writing machine, and a series of actuating electro-magnets Z, as and for the purpose set forth.

9. In an automatic printing-telegraph, an alphabet in which each of its letters is formed by a definite number of transmitted pulses, the character of the letters being determined by prolonging, strengthening, or otherwise modifying one or more of said pulses, a single main line, a relay at the receiving-station, a sunflower or equivalent device, a series of multiple branches or circuits containing selecting-relays, substantially as described, a resetting circuit or circuits, a series of multiple branches or circuits formed by the tongues of the selecting relays, a type-writing machine, and a series of actuating electro-magnets Z, as and for the purpose set forth.

10. In an automatic printing-telegraph in which messages are transmitted by an alphabet in which each letter is formed by a definite number of transmitted pulses, the character of the letters being determined by prolonging, strengthening, or otherwise modifying some one or more of said pulses, the combination of a single main line, a polarized relay R, a sunflower, a series of branches 11 to 15, including selecting-relays, a relay S, a series of actuating-magnets, and circuits formed by the tongues of the selecting-relays, including said actuating-magnet, a relay N, a series of resetting branches or circuits 21 to 25, and a type-writing machine, substantially as described.

11. The combination of a single main line, a polarized relay, a sunflower, a series of branches 11 to 15, including selecting-relays, a relay S, a series of resetting-coils or equivalent devices, a series of actuating-magnets, circuits formed by the tongues of the selecting-relays, including said actuating-magnets, a relay N, and a type-writing machine, substantially as described.

487,984. SYNCHRONOUS MULTIPLE TELEGRAPH. CHARLES L. BUCKINGHAM, New York, N. Y. Filed Apr. 30, 1890. Serial No. 350,008. (No model.)



Claim.—1. In a synchronous multiple telegraph, a synchronizing arrangement consisting of a battery at the receiving-station, a duplex relay at the transmitting-station, a local circuit, and a unison-motor controlled thereby, substantially as described.

2. In a synchronous telegraph, a synchronizing arrangement consisting of a battery in a branch at one station, a duplex relay at the other station, a local circuit, and a unison-motor controlled thereby, substantially as described.

3. In a synchronous telegraph, an independently-actuated motor at each station, a correcting-motor and a duplex relay for controlling the speed of one of said motors, and a synchronizing-battery at a distant station, substantially as described.

4. In a synchronous telegraph, an independently-actuated motor for driving a rotating arm at each station, a synchronizing-relay and a correcting-motor at one station, the armature of the correcting-motor being so constructed that a circuit will be found through certain coils when it is rotating either too fast or too slow, but not otherwise.

5. In a synchronous-telegraph system, an independently-actuated motor M', geared with a trailing arm, a correcting-motor having an armature *c*, provided with a broken Gramme winding, a sectional commutator *p*, a ring *o*, electrically connected with segment *q*, brushes *s s*, relay D M, and a battery at the distant station for operating the same, substantially as described.

6. In a synchronous telegraph, the combination of a trailing arm at one station, adapted to rotate over a circular series of electrical contacts, an actuating-motor M', geared with said arms, a correcting-motor whose armature *c* is provided with a broken winding and is mounted upon the same shaft, a sectional commutator, and a ring with which one of the segments of the sectional commutator is electrically connected, and contact-brushes *s s*, substantially as described.

7. In an electro-magnetic motor, the combination of a ring-armature which is provided with a broken winding, a sectional commutator *p*, a ring *o*, a prolonged segment *q*, and brushes *s s*.

8. In an electro-magnetic motor, the combination of an armature provided with a broken series of actuating-coils, a sectional commutator *p*, ring *o*, brushes *s s*, and a local circuit for actuating said motor, whereby the actuating-current will find a path through certain coils and in such manner as to give it a tendency to rotation either in one direction or the other, substantially as described.

9. In a synchronous-telegraph system, two indicators at one station controlled, respectively, by the rotating arms of the synchronous telegraph, one at each end of the line, whereby it may be determined whether the telegraphic apparatus at opposite ends of the line are rotating at equal speeds, or approximately so.

10. In a synchronous multiple telegraph, two independent step-by-step indicators operated, respectively, by pulses transmitted over the telegraphic circuit from the distant station and by pulses which are called into action by a device moving synchronously with the telegraph apparatus at the same station.

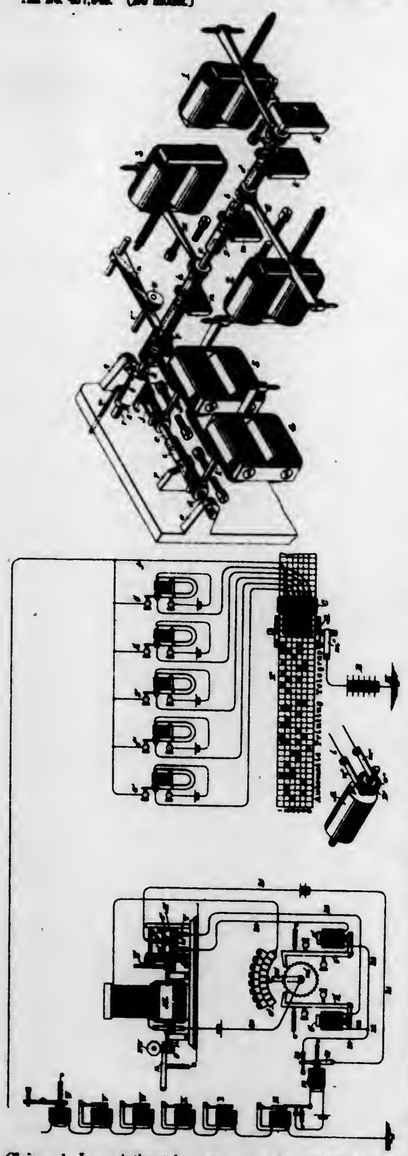
11. In a synchronous multiple telegraph, a sunflower or its equivalent at each station, a synchronizing device insensible to telegraphic current transmitted from the same station as well as to telegraphic currents from the opposite station, and means for transmitting synchronizing-pulses from such opposite station independently of the telegraphic currents.

12. The combination, with the synchronously-operated transmitter and receiver, of a duplex relay at the transmitting-station, an actuating-motor for the transmitter, a local correcting-circuit at such station, a duplex relay for controlling said local circuit, and a synchronizing-battery branch at the receiving-station intermittently closed by the operation of a motor thereat.

13. In a synchronous telegraph, a synchronizing arrangement comprising a generator in a branch at one station and a duplex relay at the other station controlling a local circuit for correcting devices

at the same station with said relay, as and for the purpose described.

487,985. PRINTING-TELEGRAPH. CHARLES L. BUCKINGHAM, New York, N. Y. Filed Dec. 11, 1889. Renewed June 24, 1892. Serial No. 437,843. (No model.)



Claim.—1. In a printing-telegraph system, the combination of an automatic transmitter and a uniformly-moving motor for operating the same, a type-wheel of the receiving-instrument which is periodically adjusted for an impression by said automatic transmitter, a periodically-operating press device for giving impression-blows after the type-wheel has been brought to position for printing, a motor for operating said press mechanism, and a telegraphic unison for causing the motor which actuates said press mechanism to operate synchronously with the motor for driving the transmitter, substantially as described.

2. The combination of a multiple-telegraph system, an automatic transmitter therefor, a motor for operating said transmitter, a receiving-instrument having a type-wheel and a series of impelling devices for periodically adjusting the same for printing, a press mechanism for periodically giving impression-blows to the type-wheel when adjusted, a motor for operating said press mechanism, and a unison mechanism for causing the press-motor to operate synchronously with that of the transmitter, substantially as described.

3. In a printing-telegraph, the combination of a type-wheel and a press mechanism, the two being independent one of the other, an automatic transmitter for periodically adjusting the type-wheel, a motor for periodically operating said press mechanism to give impression-blows after each adjustment, and a unison mechanism connecting the impression devices and transmitter, all substantially as described.

4. In a telegraphic unison, the combination of motors M M', a main telegraph-line, a transmitting-commutator D' for sending unison impulses to line, a receiving-commutator A', a rheostat o' for regulating the speed of motor M, main-line relay Z, a local circuit controlled by said relay and commutator A', and motor mechanism controlled thereby for inserting or removing coils of rheostat o' from the circuit of motor M, all substantially as described.

5. The combination of commutator A', consisting of rings u' s', having projecting conductors v' w', with an intervening section of insulating material, springs p' q' r', magnets b' c', a local circuit therefor, relay Z, rheostat o', motor M, and a local circuit including said rheostat and motor, substantially as described.

6. The combination of motor M in a local circuit, including rheostat o', a switch-arm n', a star-wheel m', arms k' l', magnets b' c', a commutator A', having rings u' s', projecting parts v' w', with an interposed insulating section and springs p' q' r', relay Z, a main line, a unison-transmitter at a distant station, and a motor for operating the same having an approximately-uniform speed of rotation.

7. In a printing-telegraph system, the combination of an automatic transmitter, a main line, a type-wheel which is periodically adjusted to print by said transmitter, a motor for operating said transmitter, press mechanism for periodically giving impression blows to the type-wheel, a motor for actuating said press mechanism, a unison-transmitter operated by said press-motor for transmitting impulses to the transmitting-station, and a regulating mechanism at the transmitter operated by said unison-currents, whereby the transmitter is made to run in unison with and follow the movement of the press-motor, all substantially as described.

8. In a printing-telegraph system, the combination of a type-wheel, a system of multiple transmission in one direction for adjusting the type-wheel, and an additional transmission in the opposite direction to effect unison between the press-motor at one station and the transmitter at the other, differential relays U V, &c., for controlling the type-wheel, differential relay Z at the transmitting-station, commutators D' A', and motors M' M, all substantially as described.

9. In a printing-telegraph, the combination of a type-wheel, a constantly-acting motor M', eccentric y for operating press-lever x, a unison-transmitter operated by said motor, a main line, a unison-receiver at the distant station, a motor controlled by said unison-receiver, and transmitting mechanism for controlling the type-wheel operated by such motor in unison with the press-motor, all substantially as described.

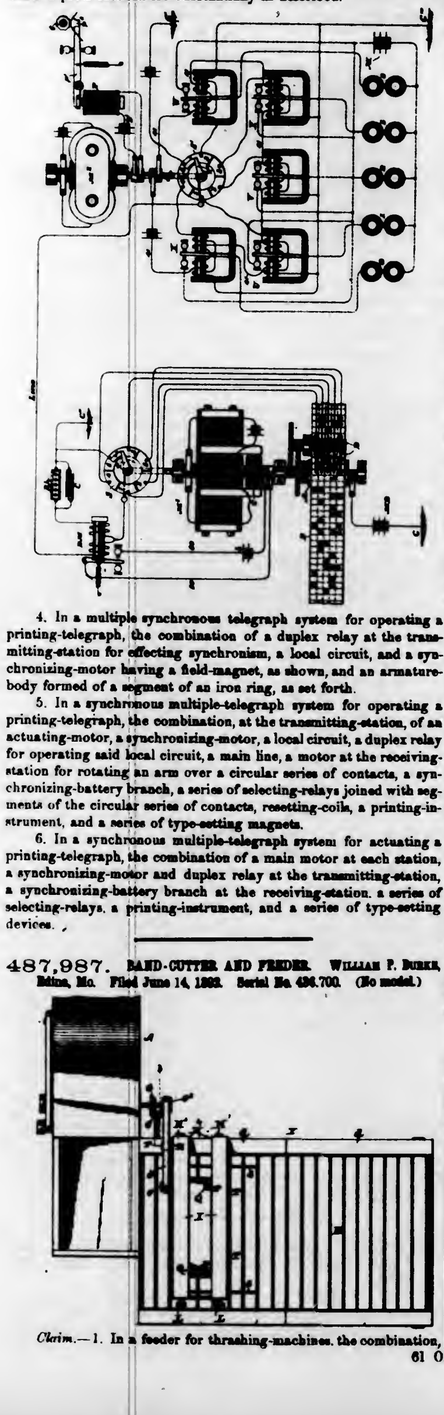
10. In a printing-telegraph, a type-wheel which is adjusted to position for printing at regular intervals and a periodically-acting press mechanism which is disconnected with the type-wheel mechanism, all substantially as described.

487,986. PRINTING-TELEGRAPH. CHARLES L. BUCKINGHAM, New York, N. Y. Filed Apr. 25, 1890. Renewed June 24, 1892. Serial No. 437,844. (No model.)

Claim.—1. In an automatic printing-telegraph, the combination of a multiple synchronous system, a strip of paper in which the characters are perforated in transverse lines, a series of styluses, respectively, connected with segments of a circular series of contacts, a receiving-instrument, a corresponding series of segments at the receiving-station, a series of selecting-relays, a printing-instrument, and a series of adjusters whose limits of action collectively are commensurate with the maximum movement of the type-carrying device, substantially as described.

2. In a multiple synchronous telegraph system for operating a printing-telegraph, the combination of a perforated strip of paper, substantially as described, a series of branches at the transmitting-station, a main line, a series of branches at the receiving-station, a series of selecting-relays provided with resetting devices, substantially as described, and a press-magnet which is automatically brought into operation after the type-wheel has been adjusted to a position for printing.

3. In a synchronous multiple-telegraph system for operating a printing-telegraph, the combination, at the receiving-station, of a rotating arm, a circular series of contact-segments electrically connected to earth, which are successively joined with the main line, a series of selecting-relays, a motor for rotating said arm, and circuit-closers actuated by said motor, one for controlling a resetting-circuit and the other a press mechanism, substantially as described.



4. In a multiple synchronous telegraph system for operating a printing-telegraph, the combination of a duplex relay at the transmitting-station for effecting synchronism, a local circuit, and a synchronizing-motor having a field-magnet, as shown, and an armature-body formed of a segment of an iron ring, as set forth.

5. In a synchronous multiple-telegraph system for operating a printing-telegraph, the combination, at the transmitting-station, of an actuating-motor, a synchronizing-motor, a local circuit, a duplex relay for operating said local circuit, a main line, a motor at the receiving-station for rotating an arm over a circular series of contacts, a synchronizing-battery branch, a series of selecting-relays joined with segments of the circular series of contacts, resetting-coils, a printing-instrument, and a series of type-setting magnets.

6. In a synchronous multiple-telegraph system for actuating a printing-telegraph, the combination of a main motor at each station, a synchronizing-motor and duplex relay at the transmitting-station, a synchronizing-battery branch at the receiving-station, a series of selecting-relays, a printing-instrument, and a series of type-setting devices.

487,987. BAND-CUTTER AND FEEDER. WILLIAM P. BURKE, Edina, Mo. Filed June 14, 1892. Serial No. 436,700. (No model.)

Claim.—1. In a feeder for thrashing-machines, the combination, with the thrasher, of a fixed table secured to one side and end of the thrasher and provided with slots or notches at one edge of the same, a feeder-frame comprising separate hinged members, one of which is provided with securing-bolts depending from one side of the same, adapted to pass through the table, and the other with depending headed bolts adapted to be slipped into and out of said slots in the other side, screw-nuts engaging said securing-bolts, and an endless apron passing through said frame, substantially as set forth.

2. In a band-cutter and feeder, the combination, with the thrasher, of a fixed table secured to one side and end of the thrasher, a sectional feeder-frame comprising separate hinged members, one of which is removably bolted to said fixed table, the endless apron passing through said sectional feeder-frame, a knife-frame removably secured to one side of the bolted frame member and extending transversely over and parallel with the apron therein, an endless knife-carrying belt mounted within the knife-frame and having a series of knives out of line with each other and adapted to travel above the portion of the apron in the bolted frame member, and means for normally elevating the portion of the apron directly under said knives, substantially as set forth.

3. In a band-cutter and feeder, the sectional feeder-frame, the endless apron passing through said frame, a knife-frame removably secured to one side of said feeder-frame and comprising opposite parallel arms extending transversely over said apron and provided with slots near their outer ends, adjustable bearing-blocks mounted in said slots, an adjustable belt-roller mounted in said blocks, a fixed belt-roller mounted in said arms near the other end thereof, and an endless knife-carrying belt mounted over said belt-rollers and having a series of spaced knives out of line with each other, substantially as set forth.

4. In a band-cutter and feeder, the combination, with the frame and the endless apron passing therethrough, of the knife-frame secured to one side of said feeder-frame and extending transversely above and parallel with the apron, an endless knife-carrying belt moving in said knife-frame, opposite parallel guard-rods having horizontal portions secured to the under side of and across said knife-frame at each end of the knife-carrying belt, and outer upturned ends projecting beyond one side of the knife-frame, and depending spring-metal guide-fingers secured to one side of the knife-frame and projecting downwardly therefrom between the projecting ends of said guard-rods, substantially as set forth.

5. In a band-cutter and feeder, the combination, with the frame and the endless apron passing therethrough, of an endless knife-belt arranged to move parallel with and transversely above said apron, an apron-elevating roller mounted within said frame, and spring-bearing arms carrying the journal ends of said rollers and adapted to hold the same in contact with the top portion of the apron to press the latter in close proximity to said knife-belt, substantially as set forth.

6. In a band-cutter and feeder, the combination, with the frame and the endless apron passing therethrough, of an endless knife-belt arranged to move transversely above said apron, a series of knife-nuts fixedly secured to said apron at regular intervals and out of line with each other, and knives having threaded shanks, removably engaging said nuts, substantially as set forth.

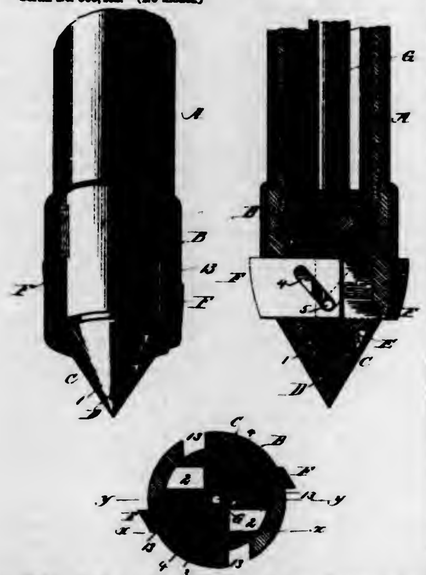
487,988. WATCHMAKER'S TOOL. GEORGE W. CANNON, Poplar Bluff, Mo. Filed Apr. 6, 1892. Serial No. 427,894. (No model.)

Claim.—1. The combination, with the tool-handle and its fork B, having tubular bearings, a sleeve K, held in the lower bearing, and

a spring-sliding block and screw-plug contained in said sleeve, of a sliding sleeve C, fitted in the upper bearing, a sliding block, spring, and screw-threaded plug which are carried by such sleeve, the plug serving to adjust the tension of the spring without changing the position of the block, and the lever mechanism applied to the fork and serving to positively adjust the sliding sleeve and its contained parts up or down, as shown and described.

2. The combination, with the tool-handle, its fork and a threaded sleeve K, held in the lower bearing, the jewel-block, spring, and screw-plug carried by this sleeve, and a nut F, applied to the latter for clamping it in place, of a sliding threaded sleeve C, carried by the upper bearing, the jewel-block and spring contained in such sleeve C, and a screw-plug which serves to adjust the tension of the spring without changing the position of the jewel-block, a nut F, applied to said sleeve and serving as a stop to limit its downward movement, and lever mechanism applied to the handle and fork and adapted to positively adjust the sliding sleeve, substantially as shown and described.

487,989. WELL-DRILLING TOOL. THOMAS G. CHAPMAN, Chicago, Ill., assignor to Frederick C. Austin, same place. Filed July 14, 1891. Serial No. 399,462. (No model.)



Claim.—1. The combination, in a well-drilling machine, of the drill-stock adapted for reception within the well-tube and provided with mortises 2, arranged to form parallel and transversely-extending guideways for the blades, respectively, along opposite sides of the axis of the drill-stock, the longitudinally-sliding blades F, provided with inclined ways or slots and arranged and operative for end movement along said guideways, respectively, in opposite directions, so as to project laterally from and retract within the drill-stock, and an independently and longitudinally movable operating-rod arranged to extend from the drill-stock upwardly within the well-tube, so as to permit the blades to be operated at any desired depth and extended between and connected with the inclined ways or slots of the blades, so as to positively project and retract the blades in accordance with the direction in which the rod is moved longitudinally, substantially as described.

2. The combination of the drill-stock provided with the transversely-arranged sliding blades and a recess 6, the rod engaging the blades, so as to control their adjustment, substantially as set forth, and provided with a stop-shoulder arranged within said recess, and a cap provided with an opening for the passage of the rod and detachably fitted upon the drill-stock, so as to cover the recess, substantially as described.

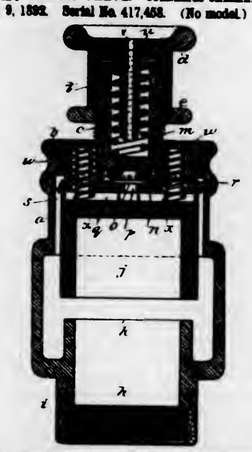
3. The combination of the well-tube A, the shoe B, secured upon the well-tube and provided with side openings, a drill-stock or head C, adapted to fit within the bore of the well-tube and shoe, sliding blades F, carried by the drill-stock and arranged for movement at right angles to the axis of the head and in lines coincident with the openings in the shoe, and an upwardly-extending drill-rod having a movable connection with the drill-stock and connected with the blades as a means for projecting and retracting them, substantially as described.

487,990. ROLLER ATTACHMENT FOR SLEDS. THOMAS CRITTICK, Corning, N. Y. Filed July 25, 1892. Serial No. 441,162. (No model.)

Claim.—1. An attachment for sleds, comprising a plate adapted to be secured to the face of an ordinary runner and provided with vertical ways, a vertically-disposed spindle-plate detachably arranged in the ways and provided with a horizontal spindle, and a roller arranged on the spindle, substantially as described.

2. An attachment for sleds, comprising a plate adapted to be secured to the face of an ordinary runner and provided with a recess extending upward from the lower edge of the plate and having converging beveled sides, the detachable vertically-disposed spindle-plate wedge-shaped and provided with beveled side edges and fitting in the recess and having a horizontal spindle, and a roller arranged on the spindle, substantially as described.

487,991. RELIEF-VALVE. CORNELIUS CALLAHAN, Boston, Mass. Filed Jan. 9, 1892. Serial No. 417,458. (No model.)



Claim.—1. A relief-valve comprising in its construction an inlet-port and an exit-port, a valve to control the exit-port, a chamber *q* outside of the said valve having a water-bearing surface on the valve of greater area or extent than the water-bearing surface on the interior or reverse side of the valve, a piston-chamber communicating with the said exit-port and containing a spring-pressed piston, a port leading from the interior of the valve to the chamber *q*, a port leading from the said chamber *q* to the piston-chamber, a valve carried by said piston for closing the last-mentioned port, and springs bearing upon the controlling-valve, as set forth.

2. A relief-valve comprising in its construction an inlet-port and an exit-port, a valve *j* to control the exit-port, a chamber *q* above said valve having a water-bearing surface on the valve of greater area or extent than the water-bearing surface on the lower face of the valve, ports *x*, leading from the lower surface of the valve to the chamber *q*, a chamber *r*, communicating with the exit-port, a port *p*, communicating with the chambers *q* and *r*, a valve constructed and arranged to control the port *p*, an adjustable spring bearing on the valve, and springs *w*, arranged to bear upon the valve *j* and hold the same normally down upon its seat, as set forth.

487,992. PLATE-HOLDER FOR PRINTING-CYLINDERS. JOHN J. CLAUSS, Chicago, Ill. Filed July 16, 1891. Serial No. 399,653. (No model.)

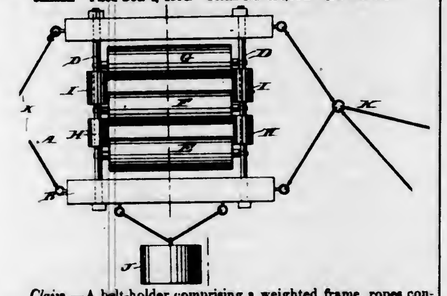
Claim.—1. A printing-cylinder furnished with means for locking segmental stereotype-plates or printing-forms thereto, consisting of a pair of grooved clamping-rings, one of said clamping-rings being secured in place by a sliding sleeve having a projecting rim fitting in an annular groove in the end of the cylinder, substantially as specified.

2. The printing-cylinder B, furnished with grooved clamping-ring D, hubs B' B', provided with annular grooves *b' b'*, grooved clamping-rings F F, and sliding sleeves G G, having rims *g*, adapted to fit in said annular grooves *b'*, said grooved clamping-rings D and F F being adapted to engage the circumferential edges of the segmental stereotype-plates or printing-forms and lock the same in position on the cylinder, substantially as specified.

3. The printing-cylinder B, having a pair of grooved clamping-rings adapted to engage the entire circumference of the segmental stereotype-plates or printing-forms at each end thereof, one of said clamping-rings being carried by a sliding sleeve fitting on the hub of the cylinder, the said cylinder being provided with an annular groove in its end and said sliding sleeve having a ring adapted to fit in said annular groove, and bolts extending through said sleeve and clamping-ring into the end of the cylinder, substantially as specified.

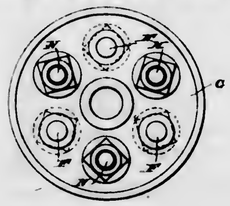
4. A printing-cylinder furnished with means for locking segmental stereotype-plates or printing-forms thereto, consisting of a pair of grooved clamping-rings, one of said clamping-rings being secured in place by a sliding sleeve having a projecting rim fitting in an annular groove in the end of the cylinder, said sleeve and clamping-ring being split into segments, substantially as specified.

487,993. BELT-HOLDER. WILLIAM F. CLEVELAND, Rounthwaite, Canada. Filed Dec. 4, 1891. Serial No. 414,014. (No model.)



Claim.—A belt-holder comprising a weighted frame, ropes connected with the said frame and adapted to be connected with stakes driven in the ground to hold the frame in position, a top roller journaled in the said frame and under which passes the upper part of the endless belt, a bottom roller journaled in the said frame and over which passes the lower part of the belt, a middle roller journaled in the said frame and located in a vertical plane passing through the centers of the top and bottom rollers to prevent the two parts of the belt from striking each other, and end rollers journaled in the said frame at the sides thereof and adapted to be rotated by the said top, bottom, or middle rollers or the belt, substantially as shown and described.

487,994. DIFFERENTIAL HOISTING-MACHINE. CHARLES F. CLIFF, Durham, Canada. Filed Apr. 15, 1892. Serial No. 429,285. (No model.)



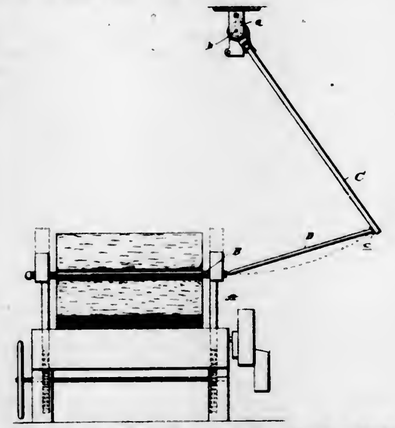
Claim.—1. In a device of the class described, the combination, with a fixed internal gear-wheel and a revoluble internal gear-wheel, of a wheel receiving a rotary motion from the said fixed internal gear-wheel and imparting a motion to the other revoluble internal gear-wheel, intermediate gearing for connecting the said fixed internal gear-wheel with the said wheel, a second intermediate gearing for connecting the wheel with the revoluble internal gear-wheel, and a driving-shaft connected with the said intermediate gearings, substantially as shown and described.

2. In a device of the class described, the combination, with a driving-shaft carrying two pinions, of a wheel held loosely on the said shaft and carrying sets of studs projecting from opposite faces of the said wheel, sets of pinions held on the said sets of studs and in mesh with the said pinions on the driving-shaft, a fixed internal gear-wheel in mesh with one of the said sets of pinions, and a second internal gear-wheel in mesh with the second set of said pinions, substantially as shown and described.

3. In a device of the class described, the combination, with a driving-shaft carrying two pinions, of a wheel held loosely on the said shaft and carrying sets of studs projecting from opposite faces of the said wheel, sets of pinions held on the said sets of studs and in mesh with the said pinions on the driving-shaft, a fixed internal gear-wheel in mesh with one of the said sets of pinions, a second internal gear-wheel in mesh with the second set of said pinions, and a driven shaft carrying the hoisting-drum and the said second internal gear-wheel, substantially as shown and described.

487,995. LAP-STICK INSERTER. AMOS M. COLLER, Woonsocket, R. I. Filed June 18, 1892. Serial No. 437,142. (No model.)

Brief.—One end of the lap-stick D is placed against the end of the lap-roll and the other end is placed against a spring-pressed arm C. When the lap-roll is withdrawn, the lap-stick is forced into its place by the spring-pressed arm.



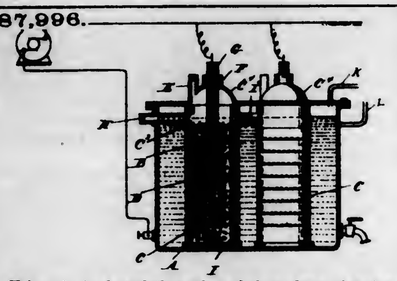
Claim.—1. The combination, with a lap-roller, of a lap-stick adapted to bear against one end of the lap-roller, an arm or rod engaging the lap-stick, and a suitable means for moving the arm or rod so that it will push the lap-stick and cause said stick to follow immediately after the lap-roller upon the displacement of the roller and assume the position in the lap vacated by the roller, substantially as and for the purpose set forth.

2. The combination, with a lap-stick adapted to bear against one end of a lap-roller, of an arm or rod adapted to bear against the lap-stick and a spring bearing against the arm or rod and adapted to move said arm or rod so that it will push the lap-stick and cause said stick to follow immediately after the lap-roller upon the displacement of the roller and assume the position in the lap vacated by said roller, substantially as and for the purpose set forth.

3. The combination, with a lap-stick adapted to bear against one end of a lap-roller, and an arm or rod adapted to bear against the lap-stick, and a coiled spring mounted upon a rod or shaft and having one of its ends bearing against the arm or rod, of a ratchet-wheel mounted on the rod or shaft and connected to one end of the coiled spring and a pawl for engaging said ratchet-wheel, as and for the purpose set forth.

487,996. ELECTROLYTIC APPARATUS. THOMAS CRANEY, Bay City, Mich. Filed Jan. 4, 1892. Serial No. 416,958. (No model.)

487,996.



Claim.—1. An electrolytic cup formed of superimposed sections of stoneware or similar material and provided with interlocking joints between the same and deflecting-flanges on the inner walls thereof, substantially as described.

2. In an electrolytic apparatus, the combination of an electrolytic cup composed of a series of superimposed sections, an inclosing top forming a chamber for the collection of the gaseous product, an anode centrally supported within the cup, and a solid body of the salt to be electrolyzed filled in between said anode and the cup, substantially as described.

3. In an electrolytic apparatus, an electrolytic cup, of stoneware or other indestructible material, built in sections, having upper cylindrical portions and lower conical portions fitting within the cylindrical portions, and deflecting-flanges formed on the inner walls thereof, substantially as described.

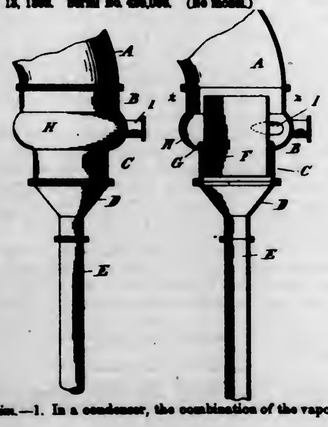
4. In an electrolytic apparatus, an electrolytic cup built of superimposed sections of stone or glassware partly fitting within each other, an apertured ring supported thereon, and a cover having a central aperture for the passage of the anode, substantially as described.

5. In an electrolytic apparatus, the combination of an electrolytic cup consisting of a series of superimposed sections of stoneware or like material, each section having a cylindrical upper portion, a conical lower portion, and a deflecting-flange formed on the inner wall of the section, a ring surmounting the sections and provided with an exit-pipe, and a cover sealed upon the ring and having a central opening for the anode, and a fill-opening, substantially as described.

6. In an electrolytic apparatus, the combination of an anode and an electrolytic cup inclosing said anode, forming a closed receptacle around said anode, said cup consisting of a series of superimposed sections of stoneware or like material and having interlocking joints and open interstices between the sections, an apertured ring supported thereon and having an exit-pipe, and a cover having a central aperture in which the anode is sealed, substantially as described.

7. In an electrolytic apparatus, the combination, with the outer tank for holding the electrolytic solution, of a series of anodes and a series of cups inclosing said anodes and containing a solid body of the salt to be electrolyzed, said cups extending above the surface of the solution in the tank and having communicating pipes for the exit of the gaseous products, and fill-openings, substantially as described.

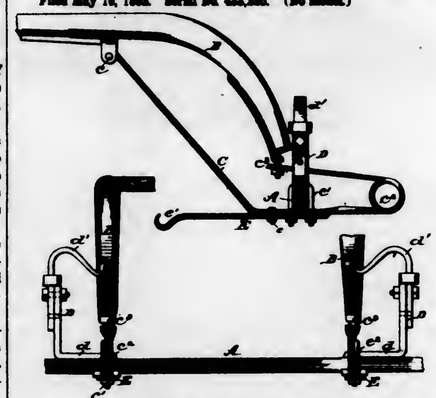
487,997. CONDENSER. THOMAS CRANEY, Bay City, Mich. Filed Apr. 13, 1892. Serial No. 429,066. (No model.)



Claim.—1. In a condenser, the combination of the vapor-pipe, a condensing-chamber into which said pipe leads, and a tangential water-supply adapted to produce a whirlpool in the condensing-chamber, substantially as described.

2. In a condenser, the combination of the vapor-pipe, a condensing-chamber into which said pipe leads, a water-chamber around said condensing-chamber closed at the bottom and open at the top, and a tangential water-supply pipe entering said water-chamber, adapted to force the water over into the condensing-chamber to produce a whirlpool therein, substantially as described.

487,998. ROAD-CART. ALEXANDER D. CURRY, Istachatta, Fla. Filed May 16, 1892. Serial No. 433,265. (No model.)



Claim.—1. The combination, with the axle and thill, of the essentially-bow-shaped spring brace-rod secured centrally to the axle, hinged at its forward end to the under side of the thill and at its rear end to the rear end of thill, and the forwardly-projecting supports connected with the spring brace-rods, substantially as shown and described.

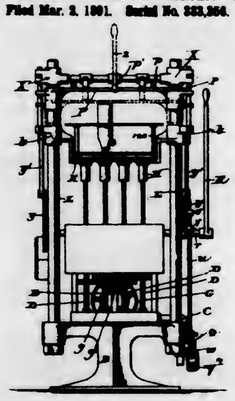
2. The combination, with the axle A and thill B, of the spring brace-rod C, hinged at c and secured to the rear end of brace at c^3, said brace-rod comprising the straight rigid inclined portion, the approximately-parallel horizontal portions, and the coiled-spring portion c^6 between the said horizontal portions, substantially as and for the purpose described.

3. The combination, with the thill and axle, of the adjustable vertical supports and the forwardly-projecting supports, all arranged substantially as shown and described.

4. The combination, with the thill and axle, of the vertically-adjustable supports having inwardly-projecting arms and the forwardly-projecting supporting-arms arranged substantially as shown and described.

5. The combination, with the axle and thill, of the spring brace-rod, the vertical and the horizontal supports, and the clip for connecting said axle, brace, and supports, substantially as shown and described.

487,999. BOTTLE WASHER AND RINSER. OTTO BOX, Philadelphia, Pa. Filed Mar. 2, 1891. Serial No. 383,304. (No model.)



Claim.—1. In a bottle-washing machine, in combination, a basket adapted to support the bodies of the bottles, and a plate, as K, provided with orifices adapted to receive the mouth-pieces of the bottles, the upward extension of which orifices is limited by the upper surface of said plate K.

2. In a bottle-washing machine, in combination, a plate, as K, provided with orifices, a hollow spindle adapted to revolve, a brush on the end of said spindle, a spring-nozzle which surrounds said spindle and brush.

3. In a bottle-washing machine, in combination, a plate, as K, adapted to move vertically provided with orifices, a guide, as M, secured to said plate, a spring secured to said guide, a nozzle resting in said guide, a spindle adapted to revolve, and a brush in the end of said spindle.

4. A bottle-washing machine, a brush which consists of tubes of flexible material connected around a core.

5. In combination, uprights, as L L, a plate, as K, provided with collars, as k k, surrounding said uprights and provided with orifices, a lever, as R, connected to said plate K, a spring-nozzle adapted to be moved by said plate, a spindle adapted to revolve, and a brush at the end of said spindle, said nozzle surrounding said spindle and brush.

6. In a bottle-washing machine, in combination, uprights, as L L, a plate, as K, provided with collars, as k, surrounding said uprights, a lever, as R, connected to said plate K, orifices in said plate K, a guide, as M, secured to said plate, a spring secured in said guide, a nozzle resting in said guide, a spindle adapted to revolve, a brush on the end of said spindle, and means to admit water to said spindle and means to cause said spindle to revolve.

7. In combination, uprights, as L L, a plate, as K, provided with orifices, a plate, as P, provided with sleeves which surround said uprights, and a lever, as Q, connected to said plate, whereby said plate may be moved vertically.

8. In combination, uprights, as L L, a plate, as K, provided with orifices, sleeves connected to said plate K and surrounding said uprights, a plate, as P, provided with sleeves which surround said uprights, and a lever, as R, connected to both plates K and P, whereby said plates are caused to move vertically together.

9. In combination, a plate, as K, provided with orifices, a plate, as P, and means, substantially as described, to move the plate P vertically, and means, substantially as described, to move plate P and plate K vertically together, a spindle adapted to rotate, a brush on the end of said spindle, and a spring-nozzle surrounding said spindle.

10. In combination, uprights, as L L, a plate, as K, provided with orifices, sleeves connected to said plate K and surrounding said uprights, a plate, as P, provided with sleeves which surround said uprights, and a lever, as R, connected to both plates K and P, whereby said plates are caused to move vertically together, a spindle adapted to rotate, a brush on the end of said spindle, and a spring-nozzle surrounding said spindle.

11. In combination, a plate, as K, provided with orifices, a plate, as P, means, substantially as described, to move the plate P vertically, and means, substantially as described, to move plate P and plate K vertically together, a spindle adapted to rotate, a brush on the end of said spindle, a spring-nozzle surrounding said spindle, and means, substantially as described, to automatically admit the water to said spindle when the plates are moved downward and to cut off the water when the plates are moved upward.

12. In combination, uprights, as L L, a plate, as K, provided with orifices, sleeves connected to said plate K and surrounding said uprights, a plate, as P, provided with sleeves which surround said uprights, and a lever, as R, connected to both plates K and P, whereby said plates are caused to move vertically together, a spindle adapted to rotate, a brush on the end of said spindle, a spring-nozzle surrounding said spindle, and means, substantially as described, to automatically admit the water to said spindle when the plates are moved downward and to cut off the water when the plates are moved upward.

13. In combination, uprights, as L L, a plate, as K, provided with orifices, sleeves connected to said plate K and surrounding said uprights, a plate, as P, provided with sleeves which surround said uprights, a lever, as R, connected to both plates K and P, whereby said plates are caused to move vertically together, a spindle adapted to rotate, a brush on the end of said spindle, a spring-nozzle surrounding said spindle, a water-reservoir connection between said water-reservoir and the spindles, a source of water-supply, connection between said source and said reservoir, a valve, as C, connection, substantially as described, between said valve and the lever R, whereby when said lever is operated the water is admitted or shut off from said spindles.

14. In a bottle-washing machine, a brush, which consists of a series of rubber tubes closed at one end and connected to each other, substantially as and in the manner described.

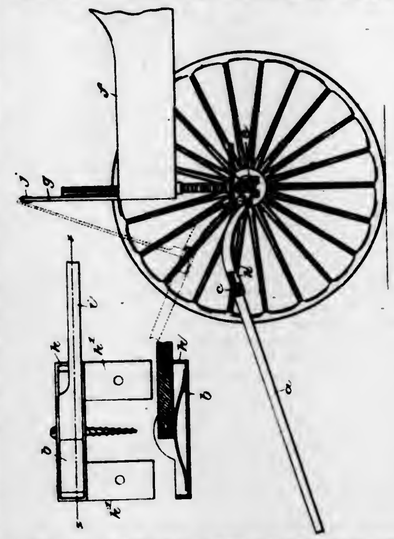
15. In a bottle-washing machine, a brush which consists of a series of rubber tubes closed at one end and containing weighty material at their closed end.

16. In a bottle-washing machine, a brush consisting of rubber tubes, as t t t, closed at one end and provided with weighty material in their closed end, a surface, as t, common to all the tubes, said tubes being wound round a threaded core, as j, and provided with a central hollow water-plug, as J.

17. In a bottle-washing machine, in combination, a spindle, as E, the interior end of said spindle being threaded, a brush consisting of rubber tubes, as t t t t, closed at one end and provided with weighty material in their closed end, a surface, as t, common to all the tubes, said tubes being wound round a central water-plug, as J, the threaded core of said brush being adapted to be secured in the threaded end of the spindle.

18. In a bottle-washing machine, a brush which consists of tubes of flexible material, with a flexible piece connecting said tubes, said flexible tubes being connected around a core.

488,000. VEHICLE-SHAFT SUPPORT. CHARLES H. ELLIS, Hanover, Mass. Filed Jan. 11, 1892. Serial No. 417,780. (No model.)



Claim.—1. A shaft-holder consisting of a frame or structure and means for securing it to the cross-bar c, the hook i, pivoted horizontally to the frame or structure and adapted to swing upwardly into position above the cross-bar to engage a support, and means intermediate said hook and the frame or structure for retaining the hook in its vertical position, substantially as described.

2. A shaft-holder consisting of a frame or structure and means for securing it to the cross-bar, the hook i, pivoted horizontally to said frame or structure and adapted to be swung into position above the cross-bar to engage the dasher, and the bowed or arched spring intermediate the hook and said frame or structure for holding the hook in its vertical and in its horizontal position, substantially as described.

3. The shaft-holder consisting of the box-like frame or structure A, having lugs or ears k' k', and screws for securing said frame to the cross-bar c, the hook i, pivoted horizontally to said frame and adapted to be swung upwardly to engage the dasher, and the bowed or arched spring for holding said hook in its vertical and in its horizontal position, substantially as described.

4. The shaft-holder consisting of the box-like frame or structure A and means for securing it to the cross-bar c, the hook i, having a long slender shank and hooked end, and a clip adapted to be sprung onto the dasher in position to be engaged by said hooked end, and the bowed or arched spring for holding said hook in its vertical and also in its horizontal position, substantially as described.

488,001. STUMP-PULLER. ADAMS G. FISHER, Rapid City, S. D. Filed Jan. 8, 1892. Renewed Nov. 8, 1892. Serial No. 451,493. (No model.)

488,001.

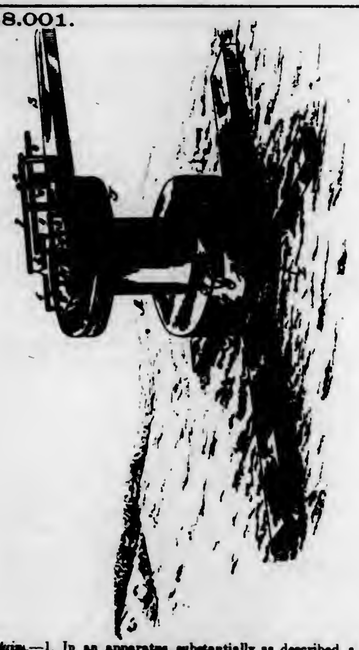
or the second drum, all substantially as and for the purposes set forth.

488,002. LIGHTNING-ARRESTER. WILLIAM B. GARTON, Keokuk, Iowa. Filed July 11, 1892. Serial No. 439,541. (No model.)

let, reels for the manifolding material journaled in extensions of the guides, paper-dispensing rolls mounted in the same vertical plane below the tablet, a reel for one of the strips of paper, supported below the tablet, an extension of the tablet provided with a reel for one of the sheets of manifolding material supported upon the extension, and

488,006. PAPER-FEEDING MACHINE. FREDERICK HAHL, Poughkeepsie, assignor to D. H. Burrell & Co., Little Falls, N. Y. Filed Sept. 14, 1891. Serial No. 405,571. (No model.)

488,001.



Claim.—1. In an apparatus, substantially as described, a drum composed of a receiving-section, a large section arranged next to said receiving-section and in position to receive the cable therefrom and provided with means whereby the cable may be directed thereon from the receiving-section, a small section arranged on the opposite side of the large section from the receiving-section and in position to receive the cable from said large section, and means by which to direct the cable from the large onto the small section, substantially as set forth.

2. In an apparatus, substantially as described, a drum formed with a large drum-section, a small drum-section, and an incline or guide leading from the large to the small section and provided with a pin projecting outward from the surface of the large section and adapted to direct the cable onto the incline or guide, substantially as set forth.

3. In an apparatus, substantially as described, the combination of the necessary framing, the main drum, the second drum, said drums being movable independently, the drive-power, and devices whereby the main drum or the second drum may be keyed to said power, all substantially as and for the purposes set forth.

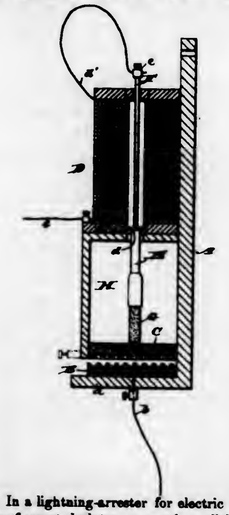
4. In an apparatus, substantially as described, the combination of the upright shaft, the main drum journaled on said shaft and provided at its upper end with a bearing for the second drum, the second drum journaled on said bearing, the sweep journaled on the shaft above the second drum, and the pins supported on the sweep and movable into engagement with the main and second drums, all substantially as and for the purposes set forth.

5. In an apparatus, substantially as described, the combination of the shaft provided with a conical base portion, a large cylindrical portion next thereto, and a small cylindrical portion extended from the large portion, and the drum having a central bore fitting the said shaft and formed exteriorly with a plurality of sections, all substantially as and for the purposes set forth.

6. In an apparatus, substantially as described, the combination of the shaft having a conical base portion and a large cylindrical portion, the rollers journaled in said cylindrical portion, and the drum journaled on the shaft and having conical and cylindrical portions corresponding thereto, all substantially as and for the purposes set forth.

7. The improved apparatus, substantially as described, consisting of the frame having a base and a shaft mounted upright thereon, such shaft being formed with conical large cylindrical and small cylindrical portions, the main drum having its bore conformed to such shaft and provided at its upper end with a tenon-like portion, the second drum journaled on the said tenon-like portion, the sweep journaled on the upright shaft above the second drum, and the pins supported on the sweep and movable into and out of engagement with the main drum or the second drum, all substantially as and for the purposes set forth.

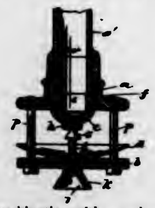
488,002. LIGHTNING-ARRESTER. WILLIAM B. GARTON, Keokuk, Iowa. Filed July 11, 1892. Serial No. 439,561. (No model.)



Claim.—1. In a lightning-arrester for electric lines, the combination of a pair of serrated plates arranged parallel with each other, but electrically insulated from each other, a solenoid arranged above the upper plate, an armature inserted in the solenoid and connected with one terminal of the solenoid, a carbon rod carried by the armature and arranged to contact with the upper plate, and the ground and line connections, substantially as specified.

2. In a lightning-arrester for electric lines, the combination of the serrated plates B C, the air-tight chamber H, the solenoid D, armature E, provided with the guide-rod F, the carbon rod G, carried by the armature, and the electrical connections, substantially as specified.

488,003. AUTOMATIC FIRE-EXTINGUISHER. ROBERT J. GILMORE, Providence, R. I. Filed Jan. 27, 1892. Serial No. 419,414. (No model.)



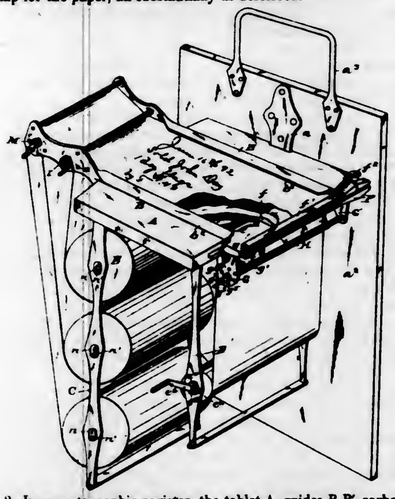
Claim.—1. In combination with a valve-seat, a valve bearing against the same and a flexible seal covering the joint between the valve and its seat by overlapping the same, substantially as described.

2. In combination with a valve-seat, a movable valve and a flexible seal covering the joint between the valve and seat by overlapping the same, said seal being secured at one edge to the stationary part, substantially as described.

3. In an automatic fire-extinguisher, the combination of the head portion having a glass or other suitable non-metallic seat fitted therein, a non-metallic valve or cap bearing against said seat, an interiorly-mounted thin flexible tabular seal *s*, covering the valve-joint or seam and in contact with the adjacent surface of the valve and seat; and mechanism holding the valve in normal contact with the seat arranged to be released by heat upon the breaking out of a fire, substantially as described.

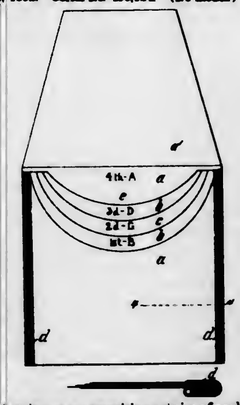
488,004. AUTOGRAPHIC REGISTER. WILLIAM H. GLENDON, Quincy, Mass. Filed July 25, 1892. Serial No. 441,095. (No model.)

Claim.—1. In an autographic register in which a tablet, a plurality of strips of paper, and manifolding material are employed, guides for the paper and manifolding material mounted upon the tablet, reels for the manifolding material journaled in extensions of the guides, paper-dispensing rolls mounted in the same vertical plane below the tablet, a reel for one of the strips of paper, supported below the tablet, an extension of the tablet provided with a reel for one of the sheets of manifolding material supported upon the extension, and a clamp for the paper, all substantially as described.



2. In an autographic register, the tablet A, guides B B', carbon-reels M I, hangers C D, studs *b*, to which said hangers are secured, paper-dispensing rolls E K N, paper-reel e^3, extension F, provided with opening *f* and held between guides B B', hanger D, clamp f', adjusting-nut f^2, and carbon-reel *g'*, all substantially as and for the purposes described.

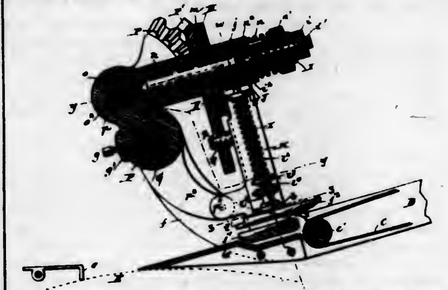
488,005. IMPERVIOUS CASE FOR CONTAINING STRINGS FOR MUSICAL INSTRUMENTS. FRANKLIN H. GRIFFITH, Philadelphia, Pa. Filed June 16, 1892. Serial No. 436,994. (No model.)



Claim.—1. A string-case comprising a series of pockets or pouches and composed of an exterior impervious sheet or leaf provided with a flap and folded upon itself to close the bottom of the case, intermediate impervious sheets or leaves, and side clamps comprising, respectively, a sheet of metal folded over the side edges of all the sheets and also folded upon itself, substantially as and for the purposes set forth.

2. A string-case comprising an exterior impervious sheet or leaf provided with a flap and folded to close the bottom of the case, impervious sheets interposed between the folded portion of the exterior sheet and having their upper portions cut away to form a series of pockets, and metallic side edges comprising, respectively, a sheet of metal, said metallic side edges and sheets being folded together and clamped, substantially as and for the purposes set forth.

488,006. PAPER-PERFORATING MACHINE. FREDERICK HARE, Poughkeepsie, assignor to D. H. Burrell & Co., Little Falls, N. Y. Filed Sept. 14, 1891. Serial No. 405,571. (No model.)



Claim.—1. The combination, with a gripper, of a movable plate having a frictional connection with the gripper, a stop by which the gripper is arrested while the plate continues its movement, and a cam which moves with the plate and by which the gripper-jaws are opened and closed after the movement of the gripper has been arrested, substantially as set forth.

2. The combination, with an oscillating gripper, of an oscillating cam-plate having a frictional connection with the gripper, a stop by which the gripper is arrested while the cam-plate continues its oscillating movement, and a cam formed in said cam-plate and operating to open or close the movable gripper-jaw during this continual movement of the cam-plate, substantially as set forth.

3. The combination, with the gripper, of an oscillating plate having a frictional connection with the gripper, a cam which moves with the plate and by which the gripper-jaws are opened and closed, and adjustable stops arranged on opposite sides of the gripper, whereby the movement of the gripper is regulated, substantially as set forth.

4. The combination, with the gripper provided with a movable jaw, of an oscillating plate having a frictional connection with the gripper, a stop whereby the gripper is arrested, while the plate continues its movement, a cam which moves with the plate and whereby the movable gripper-jaw is opened and closed, a spring bearing upon the movable jaw, and a spring-support which is acted upon by the cam, thereby applying a yielding pressure to the movable jaw, substantially as set forth.

5. The combination, with an oscillating gripper-arm and a fixed jaw secured to the lower end of said arm, of a movable jaw arranged contiguous to said fixed jaw, a movable supporting-plate mounted on said arm, and a yielding connection between said movable plate and the movable jaw, substantially as set forth.

6. The combination, with the oscillating gripper-arm provided with a fixed jaw at its lower end and with slots, and a movable jaw arranged above said fixed jaw and having a movement toward and from said fixed jaw, of a movable supporting-plate arranged upon the gripper-arm, guide-screws secured to said supporting-plate and arranged in said slots of the gripper-arm, and a yielding connection between said movable plate and the movable jaw, substantially as set forth.

7. The combination, with the oscillating arm having a fixed gripper-jaw at its lower end, of a movable jaw arranged above said fixed jaw, a movable supporting-plate mounted on said arm and provided with a perforated ear, a screw-threaded guide-rod arranged in the perforated ear of the supporting-plate and secured with its lower end to the movable jaw, a thumb-nut mounted on said guide-rod, and a spring surrounding said guide-rod and interposed between said thumb-nut and ear, substantially as set forth.

8. The combination, with the oscillating gripper-arm having a fixed jaw at its lower end, of a movable supporting-plate mounted on said gripper-arm and provided with an upper and a lower perforated ear, a guide-rod secured with its lower end to the movable jaw and arranged to slide with its upper end in the ears of said supporting-plate, a tension-nut mounted on said rod, a spring surrounding said rod and interposed between said tension-nut and the upper ear, and a regulating-nut arranged on said rod and bearing on the upper side of the lower ear, substantially as set forth.

9. The combination, with the oscillating carrier-sleeve, of a gripper-arm frictionally connected with said sleeve and having a fixed jaw at its lower end, a movable jaw arranged above the fixed jaw and adapted to move toward and from the same, and a movable supporting-plate mounted on said arm and supporting the movable jaw, substantially as set forth.

10. The combination, with the oscillating carrier-sleeve, of a gripper-arm frictionally connected therewith and having a fixed jaw at its

lower end, a movable jaw arranged above the fixed jaw and capable of moving toward and from the same, a movable plate mounted on said arm, and a yielding connection between said movable plate and the movable jaw, substantially as set forth.

11. The combination, with the oscillating carrier-sleeve provided with a cam-plate, of an oscillating arm provided with gripper-jaws and mounted loosely on said sleeve, a spring whereby the arm is pressed against the cam-plate, thereby establishing a frictional connection between the gripper-arm and the cam-plate, and a cam which moves with said plate, and whereby the gripper-jaws are opened and closed, substantially as set forth.

12. The combination, with the oscillating carrier-sleeve provided with a cam-plate, of a gripper-arm loosely supported on said sleeve and having a fixed gripper-jaw at its lower end, a movable plate mounted on said arm and supporting a movable jaw, a spring pressing said gripper-arm against the cam-plate, a cam which is formed on said plate and engages with said movable plate, and stops which limit the oscillating movement of the gripper, substantially as set forth.

13. The combination, with the arbor and a sleeve surrounding said arbor and provided at one end with a cam-plate, of a gripper-arm hung upon said sleeve and provided with a disk bearing against said cam-plate, a screw-nut arranged upon the opposite end of said sleeve, a spring interposed between the screw-nut and the gripper-arm, a fixed jaw secured to the lower end of the gripper-arm, a movable jaw arranged above the fixed jaw, a movable plate arranged upon the gripper-arm and supporting the movable jaw, and a cam formed on said movable plate, whereby the movable jaw is actuated, substantially as set forth.

14. The combination, with the oscillating gripper-arm provided with a fixed jaw, of a movable jaw arranged to move toward and from the fixed jaw, a movable plate supporting said movable jaw and provided with a pin or roller, and an oscillating plate provided with a slot which receives the pin, said slot being composed of a cam portion and a concentric portion at each end of the cam portion and stops whereby the oscillating movement of the gripper-arm is limited, substantially as set forth.

15. The combination, with the oscillating gripper-arm provided with a registering-face on its inner side and a fixed jaw at its lower end, of a movable jaw adapted to move toward and from the fixed jaw and provided with wings which extend across the registering-face, substantially as set forth.

16. The combination, with the carrier-sleeve provided with a friction-plate having a cam and with a gear-segment, of an oscillating gripper-arm frictionally connected with said plate and provided with a fixed jaw, a movable gripper-jaw which is connected with said cam, stops whereby the oscillating movement of the gripper-arm is arrested, and a rock-shaft provided with a gear-segment which meshes with the gear-segment of the carrier-sleeve, substantially as set forth.

17. The combination, with the main frame and the side bars pivoted to the main frame, of a gripper mechanism mounted upon the free ends of the side bars and provided with a rock-arm, a rock-lever detachably connected at one end with the rock-arm, and a cam engaging with the opposite end of the rock-lever and actuating the latter, substantially as set forth.

18. The combination, with the main frame, of side bars pivoted thereto, a tape-roller arranged concentric with the pivots of the side bars, a tape-roller supported on the side bars near their free ends, tapes running around said rollers, a gripper mechanism mounted upon the free ends of the side bars and provided with a rock-arm, a rock-lever having a bifurcated end with which the rock-arm is detachably connected, and an actuating-cam which moves said rock-lever, substantially as set forth.

488,007. CHANGE MAKER AND RECEIVER. GEORGE M. HILL and FRED P. ALDEN, Centralia, Wis. Filed May 18, 1892. Serial No. 433,477. (No model.)

Claim.—1. A change-maker comprising a casing, a series of coin-holding tubes open at their upper ends and provided at their lower ends with mechanism for discharging the coins for change, and a series of open-ended removable receiving or filling tubes for receiving the coins and discharging them into the coin-holding tubes when placed thereover, and coin retaining and releasing devices on the lower ends of the receiving or filling tubes to hold the coins therein while the said tubes are being transferred to the change-holding tubes, substantially as set forth.

2. A change-maker comprising a casing having a series of openings varying in size, coin-filling tubes below the said openings, a series of coin-receiving tubes in the upper part of the casing, push-bars or slides at the bottom of the tubes, a chute below the said tubes, a change-table below the chute, pivoted and spring-pressed bell-crank levers engaging the slides or push-bars, and sliding keys engaging the bell-crank levers, substantially as described.

3. A change-maker comprising a casing provided in its upper portion with a series of coin-holding tubes open at their upper ends and provided at their lower ends with a coin-discharging mechanism, a series of operating-keys forming part of said discharging mechanism, a change-table between the keys and the lower ends of said tubes to receive the coins therefrom, and a series of removable open-ended receiving or filling tubes in the casing below and in front of the said keys to receive the coins given in change and transfer them to the coin-holding tubes, and outwardly-movable devices entering the lower ends of the receiving or filling tubes to hold the coins and to release them and permit them to drop therefrom into the holding-tubes, substantially as set forth.

4. A change-maker provided with a filling-tube and a pair of tongs held on the said filling-tube and formed on its members with lugs projecting into the filling-tube to form supports for the coin, substantially as shown and described.

5. In a change-maker, the combination, with a series of tubes adapted to receive the various denominations of coins, of filling-tubes of various sizes to correspond with the said coin-receiving tubes and spring-pressed tongs held on the said filling-tubes and provided with lugs projecting into the filling-tube to form a support for the coin in said tube, substantially as shown and described.

6. In a change-maker, a filling-tube formed with a circular hollow offset, in combination with a pair of tongs arranged in said offset and provided with lugs projecting into the tube, substantially as herein shown and described.

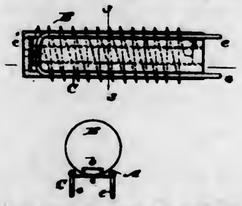
488,008. METHOD OF FORMING DENTAL CROWNS. JEPTHA G. HOLLINGSWORTH, Kansas City, Mo. Filed Apr. 26, 1892. Serial No. 430,677. (No model.)

Claim.—1. In the manufacture of caps for artificial metallic tooth-crowns, the process of forming a number of relief-molds integrally with a metal plate and then separating said molds and mounting them to form core buttons or molds for the dies from which the caps for the crown are made, substantially as described.

2. In the manufacture of caps for artificial metallic tooth-crowns, the process of fitting one of a number of core-buttons upon the band fitted to the root, the casting of molds in intaglio upon a plate from said core or cores, and finally filling said molds with metal from the plate or leaf, substantially as described.

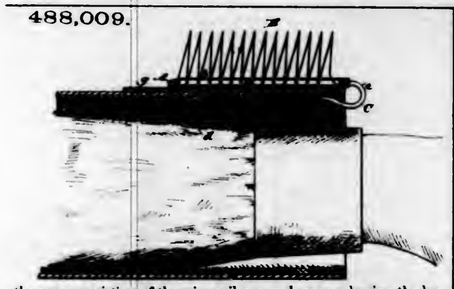
3. In the manufacture of caps for artificial metallic tooth-crowns, the process of first producing from a pattern a model button-core of the surface to be produced, mounting the button-core in a suitable mold and casting a matrix in intaglio upon a plate from said button-core, the swaging of the plate or leaf metal into the matrix to produce a cap the fac-simile of the model, and finally fitting and securing the cap upon the root-band, substantially as described.

488,009. PEN-RACK. ISAAC W. HOUSSER, Winnipeg, Canada. Filed Aug. 2, 1892. Serial No. 441,911. (No model.)



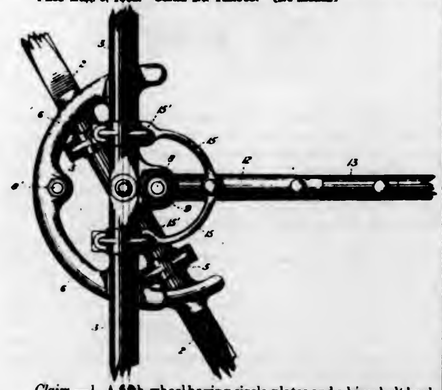
Claim.—As an improved article of manufacture, the pen-rack adapted for attachment to a sleeve or cuff, as shown and described,

488,009.



the same consisting of the wire-coil pen-rack proper having the longitudinal base-plate c and the spring-clamp C, attached to one end of the latter and formed of parallel straight side bars or portions which are bent outward at their free ends, as specified, whereby when the device is applied to a sleeve or cuff the said straight portions of the clamp lie in frictional contact with the inner side of such sleeve or cuff.

488,010. FIFTH-WHEEL. EUGENE L. HOWE, Cleveland, Ohio. Filed Aug. 9, 1892. Serial No. 442,585. (No model.)



Claim.—1. A fifth-wheel having circle-plates and a king-bolt back of the axle and brace-arms extending rearwardly from clip-plates at intermediate portions of the upper circle-plate and adapted to be secured to a perch, substantially as and for the purposes described.

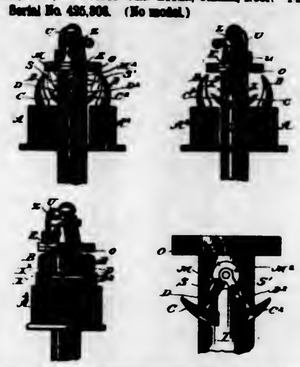
2. A fifth-wheel having circle-plates, a king-bolt back of the axle, a sub-axle connection between the upper circle-plate and king-bolt, a king-bolt socket or collar interfitting with a collar of the circle-plate and having a rearward extension adapted to be secured to the perch, and brace-arms extending from the upper circle-plate and adapted to be secured to the perch or to said rearward extension, substantially as and for the purposes described.

488,011. BATH-TUB SEAT. GEORGE A. KIMBEL, Lynn, assignor of one-half to Byron R. Golder, Swampscott, and Willard C. Stigbee, Lynn, Mass. Filed July 19, 1892. Serial No. 440,881. (No model.)

Claim.—1. A bath-tub seat comprising the seat proper and the sides hinged thereto, said sides being supported from the upper edges of the tub and having their lower ends extending below the ends of the seat and bearing against the inner walls of the tub, substantially as described.

2. A bath-tub seat consisting of the seat *a*, the side pieces *b c*, hinged thereto, the overhanging strips *d*, adapted to be supported by the upper edges of the tub, the lower ends of the side pieces extending below the seat and provided with means for applying pressure thereto, substantially as described.

488,012. ELECTRIC GAS-LIGHTER. LOUREN M. KILBURN, Council Bluffs, Iowa, and SCOTT VAN BUREN, Omaha, Nebr. Filed Mar. 21, 1892. Serial No. 425,808. (No model.)



Claim.—1. In an automatic electric gas lighter and extinguisher, in combination, an oscillating gas-valve, two independently-acting armatures, levers pivotally suspended from and by polar projections of the axis of said gas-valve, one armature and lever acting to open the gas-valve and operate the sparking device, the other armature and lever acting to close said valve, two independently-excitable electro-magnets, one to operate each of said armatures and levers, said electro-magnets having long curved poles of the form described and shown, as and for the purpose set forth.

2. An automatic electric gas-lighter comprising a cut-off valve, the lighting and extinguishing electro-magnets, their polar extensions having their inner faces curved on an arc eccentric to the axis of the valve, armatures independently suspended from axial extensions on the valve and having their outer contact-faces curved on an arc concentric to the valve-axis, substantially as and for the purpose described.

3. The combination, with tube T, the magnets A A^3, the valve E, the armatures C C^3, the armature supports or levers D D^3 X X^3, the fixed electrode Z, the movable electrode U, having its lower end arranged to be engaged by the swinging lever X, said valve E having diametrically-oppositely-arranged projections M M^3, all arranged substantially as shown, whereby the alternate energizing of the magnets A A^3 will alternately rock the valve to open up and close off the gas-supply and operate the spark-electrode U, as set forth.

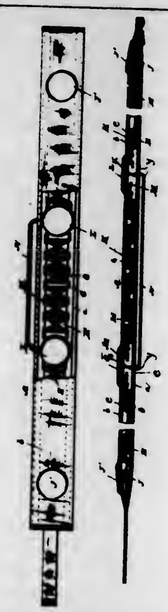
4. The combination, in an electric gas-lighter of the kind described, the rotatable valve, the alternately-operated electro-magnets having their poles extended and curved on their inner face, swinging armatures independently suspended on the axial extensions of the valve, said armatures arranged to swing in an arc eccentric to the curve of the extended poles and having their greatest attraction at the beginning of their movement and the least at the end of their movement, substantially as and for the purpose described.

5. In an electric-lighting apparatus, as described, the combination, with the gas-burner tube T, having a flange O, of the electro-magnets A A^3, the valve E, the armatures C C^3, the levers D D^3 X X^3, pivoted on the axial extensions of the valve, said armatures held to normally engage the tube T and the flange O when swung up, said tube and flange having sound-deadening means at such contacts, all as and for the purpose described.

488,018. ELECTRIC BELT. OLE KREMMAR, Eau Claire, Wis. Filed May 11, 1892. Serial No. 432,632. (No model.)

Claim.—In an electric belt, the combination, with the body-belt having a continuous pocket, of the fixed end and central contact electrodes or plates having connecting-hooks projecting into the pocket, separate battery-sections, each comprising a series of separate pairs of battery-plates and absorbent material between said plates, said pairs of battery-plates being connected in circuit with each other and having at the ends of the battery connecting-loops adapted to removably engage the connecting-hooks of the end and the central contact electrodes or plates, and an intermediate connecting-wire adapted to be removably connected at its ends with the central electrodes or plates to provide for the completion of the circuit between the end battery-sections when the central battery-section is removed, substantially as set forth.

488,018.



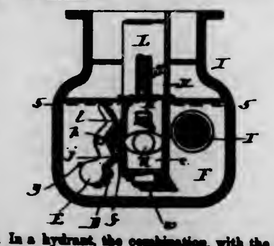
furnished with a guideway or bearing having a raised flange thereon, of the screw-stem, the carrier-block threaded thereto supporting the valve-gate and resting against said way and flange and provided with a projecting lug, and a drip-valve having reverse inclines or cam-edges to engage with said lug, whereby the drip-valve is shifted and coacts, also, with the raised flange of the way to position the valve-gate in its relation to the inlet-port, substantially as described.

3. The combination, with the stand-pipe and with the valve-case below the pipe, having an inlet-port and a waste-educt therein, and a carrier guide or way, of the screw-stem, the carrier-block threaded thereto and having the valve-gate mounted thereon, and the supplemental discharge pipe or pipes located opposite the inlet-port at the side of the guide or way and in free communication with said case irrespective of the position of the inlet-valve, whereby the waste water in said supplemental pipes may escape through the waste-educt, substantially as described.

488,014. DOUGH-RAISER AND FRUIT-DRIER. WINFIELD S. KLINE and JAMES C. PARKS, Bolivar, Ohio. Filed Mar. 24, 1892. Serial No. 426,153. (No model.)

Claim.—The combination of the frame A, provided with the sheet-metal panels *a*, the sheet-metal partition B, the trays D, the dough-trough E, removably attached to the frame A, the combined cover and kneading-board F, the sliding arms L, the flour-chest G, located at one end of the frame and provided with a hot-air chamber upon the bottom and one side of said chest G, and means for heating, substantially as specified.

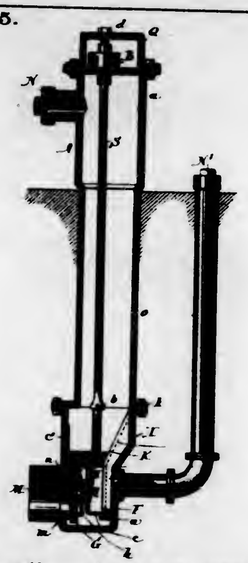
488,015. FIRE HYDRANT OR PLUG. THOMAS A. KIRKENBACKER, Troy, and ROBERT RUSSER, Waterford, N. Y. Filed July 6, 1892. Serial No. 439,317. (No model.)



Claim.—1. In a hydrant, the combination, with the stand-pipe and with the valve-case below the pipe, having a waste-educt therein, of the screw-stem, the carrier-block threaded thereto and having a projecting lug thereon, and a drip-valve provided with reverse inclines or cam-edges engaging alternately with said lug to shift the drip-valve positively in opening or closing the educt, substantially as described.

2. The combination, with the stand-pipe and with the valve-case below the pipe, having an inlet-port and a waste-educt therein and

488,015.



488,016. ARMATURE FOR ELECTRIC MACHINES. BENJAMIN G. LAMME, Pittsburg, Pa., assignor to the Westinghouse Electric and Manufacturing Company, same place. Filed Feb. 8, 1892. Serial No. 420,741. (No model.)

Claim.—1. The combination, with a drum-armature core having radiating teeth, of separately-wound coils placed within the spaces between the teeth, each coil spanning several teeth.

2. The combination, with a drum-armature core having radiating teeth, of coils of insulated wire placed within the spaces between the teeth, each coil spanning several teeth, said coils being separately wound and separately insulated.

3. The combination of a toothed armature-core and machine-wound coils placed in slots between the teeth of said core, each of which coils spans several of the teeth.

4. A coil for the armature of an electric machine, having its two sides lying in converging planes and its two ends each containing a half-turn, whereby the upper wire upon one side becomes the under wire upon the other side.

5. An armature for an electric machine, consisting of a toothed core and two series of coils placed within the spaces between the teeth, each coil of each of said series being separately wound and separately insulated.

6. An armature for electric machines, consisting of a toothed core, a series of insulated armature-coils laid in the spaces between the teeth and each coil spanning two or more teeth, and a second series of insulated coils laid in the spaces upon the first series.

7. An armature for electric machines, consisting of a toothed armature-core, a series of previously-wound armature-coils laid in spaces between teeth and each coil spanning several teeth and having its ends afterward bent down upon the ends of the armature-core, and a second series of previously-wound coils laid above the first-named and having their ends afterward bent down against the end of the armature-core and the underlying coils.

8. In an armature for electric machines, two sets of separately wound and insulated armature-coils, one set being placed radially over the other, the length of the coils of one set being greater than that of the coils of the other set.

9. An armature-coil consisting of convolutions of insulated wire and a longitudinal insulating-sheath applied to two sides of said coil.

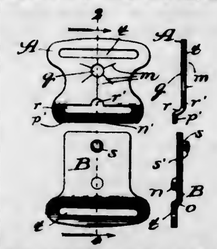
10. The combination, with a toothed armature-core, of coils of wire laid through the teeth and pressed down upon the ends of the core, each coil binding in position the previous coils, substantially as described.

11. In an armature for electric machines, the combination, with a toothed armature-core, of previously wound and insulated coils laid within the spaces between the teeth and each coil spanning several teeth, the ends of the coils being pressed down against the ends of the armature-core and forming two or more rolls or projections at each end of the core, substantially as described.

12. In an armature for electric machines, a toothed armature-core and two layers of armature-coils, each layer divided into sections, all of the coils having their ends pressed down toward the respective ends of the armature-core and the ends of each section forming a roll or projection, the rolls or projections formed by one layer of coils coming between the rolls or projections formed by the other layer of coils.

13. An armature-core for electric machines and previously wound and insulated coils applied thereto, said coils being pressed down against the ends of the armature-core at an angle to the portions lying across the face of the armature, the portions against the ends of the armature having their edges approximately perpendicular to the axis of rotation, substantially as described.

488,017. CLASP. JULES LAPS, D. W. EVANS, and JOHN A. DEVOES, Chicago, Ill. Filed Dec. 23, 1891. Serial No. 415,996. (No model.)



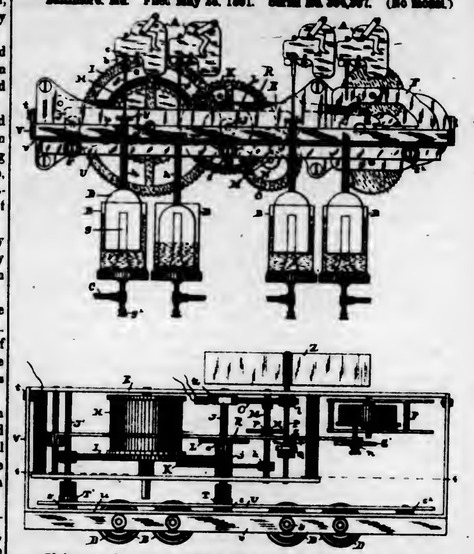
Claim.—1. A clasp comprising members A B, one A of which is provided toward its extremity with a transverse slot to receive the other member and in the body thereof with a hole *q* and the other member B of which is provided on the entering part with a stud to enter the hole *q* when said member has been introduced through the slot, substantially as described.

2. A clasp comprising members A B, one A of which is provided toward its extremity with a transverse slot and deflected portion *p'* and in the body thereof with a hole *q* and the other member B of which is provided with stud *s* to enter the holes *q* when said member has been introduced through the slot, substantially as described.

3. A clasp comprising members A B, one A of which is provided with a hole *q* and radial slots *r* and deflected portion *p'*, produced by bending, as shown, and the other B of which is provided with upward-projecting studs *s* toward its extremity and is bent as indicated at *o*, substantially as described.

4. A clasp comprising members A B, one A of which is provided with holes *q* and at its extremity with a transverse slot *r*, having the enlargement *r'* and the deflected portion *p'*, and the other B of which is provided with upward and downward projecting studs *s n*, substantially as and for the purpose described.

488,018. PNEUMATIC FIRE-ALARM. ANTHONY A. LEHMANN, Baltimore, Md. Filed May 28, 1891. Serial No. 394,267. (No model.)



Claim.—1. In pneumatic fire-alarm-transmitting apparatus, the combination of an air-cup inverted in liquid, a motor or movement connected with said air-cup, whereby it may lift the same to replenish it with air, a stop which holds said motor or movement at rest, and an automatic trip to throw out said stop.

2. In pneumatic fire-alarm-transmitting apparatus, the combination of an air-cup inverted in liquid, a motor or movement connected with said air-cup, whereby it may lift the same to replenish it with air, a pivoted arm which holds the said motor or movement at rest, and an automatic trip which throws out said arm.

3. In pneumatic fire-alarm-transmitting apparatus employing an air-cup inverted in liquid, the combination of a motor or movement normally held in check and operating when released to lift said inverted cup for the purpose of replenishing it with air, said movement having a revoluble stop-piece, a pivoted arm holding the movement in check by engaging said stop-piece, and automatically-operating means for periodically moving said arm to release the lifting-movement, the arm returning after each operation of the movement to its normal position, where it again holds the said movement in check.

4. In pneumatic fire-alarm-transmitting apparatus employing an air-cup inverted in liquid, the combination of a motor or movement normally held in check and operating when released to lift said inverted cup for the purpose of replenishing it with air, said movement having a revoluble stop-arm with a projecting pin, a pivoted arm having a projecting pin engaging that of the stop-arm and thereby holding the movement in check, and automatically-operating means for periodically moving said arm to release the lifting-movement, the arm returning after each operation of the movement to its normal position, where it again holds the said movement in check.

5. In pneumatic fire-alarm-transmitting apparatus employing an air-cup inverted in liquid, the combination of a motor or movement normally held in check and operating when released to lift the inverted air-cup for the purpose of replenishing it with air, said movement having a revoluble stop-arm with a projecting pin, a pivoted arm having two projecting pins with a space between them, against one of which pins the stop-arm pin engages, whereby the lifting-movement is held in check, and a time-movement having a revoluble disk engaging the pivoted arm and provided with a number of teeth, whereby as it revolves the stop-arm is first released from the pin of the pivoted arm with which it normally engages, stops against the other pin of said pivoted arm, and then passes through between the two pins as a tooth of the time-disk passes the pivoted arm, the lifting-movement thus released raising the inverted air-cup and then stopped again by the return of the pivoted arm to its normal position.

6. In pneumatic fire-alarm-transmitting mechanism employing an air-cup inverted in liquid, the combination of a motor or movement normally held in check and operating when released to lift the said air-cup for the purpose of replenishing it with air, said motor or movement having a revoluble stop-piece and a revoluble cam, a pivoted arm holding the movement in check by engaging said stop-piece, and

automatically-operating means for periodically moving the pivoted arm to release the lifting-movement, the revoluble cam serving to hold said arm free of the stop-piece while the movement operates and then allowing it to return to its normal position, where it again holds the said movement in check.

7. In pneumatic fire-alarm-transmitting apparatus employing an air-cup inverted in liquid, the combination of a motor or movement normally held in check and operating when released to lift the said air-cup for the purpose of replenishing it with air, said motor or movement provided with a revoluble stop-piece and two revoluble cams, a pivoted arm holding the movement in check by engaging said stop-piece, and automatically-operating means for moving said pivoted arm to release the lifting-movement, the arm being held free of the stop-piece first by one of the revoluble cams and then by the other while the movement operates, after which the said arm again returns to its normal position, where it holds the movement in check.

8. In pneumatic fire-alarm-transmitting apparatus employing an air-cup inverted in liquid, the combination of a motor or movement normally held in check and operating when released to lift the said air-cup for the purpose of replenishing it with air, said movement having a revoluble stop-piece and two revoluble cams, a crank on the shaft of one of said cams and suitably connected with the inverted air-cup, a pivoted arm holding the movement in check by engaging the stop-piece, and automatically-operating means for moving the said pivoted arm to release the lifting-movement, the arm being held free of the stop-piece first by one of the revoluble cams and then by the other while the movement operates, after which the said arm returns to its normal position, where it holds the movement in check.

9. In pneumatic fire-alarm-transmitting apparatus employing a number of air-cups inverted in liquid, the combination of a motor or movement normally held in check and operating when released to lift said air-cups for the purpose of replenishing them with air, a hinged frame having a loose engagement with each of said air-cups, suitable connections between said frame and the lifting-movement, a pivoted arm holding the movement in check, and automatically-operating means for moving said pivoted arm to release the lifting-movement.

10. In pneumatic fire-alarm-transmitting apparatus employing a number of air-cups inverted in liquid and each having a stem with a shoulder thereon, the combination of a motor or movement normally held in check and operating when released to lift said inverted air-cups for the purpose of replenishing them with air, a hinged frame having holes through which the stems of the air-cups extend, and pins on opposite sides of the holes to receive the shoulders of said stems, suitable connections between said frame and the lifting-movement, a pivoted arm holding said movement in check, and automatically-operating means for moving said arm to release the lifting-movement.

11. In pneumatic fire-alarm-transmitting mechanism, an air-cup inverted in a suitable liquid and having a stem and a call-box provided with a sliding pallet-tail engaged by the stem of said air-cup

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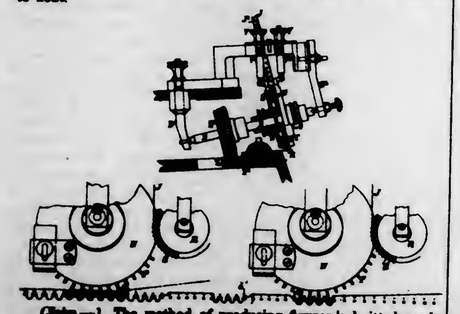
488,019. METHOD OF AND APPARATUS FOR MAKING COLORED FIGURES IN KNIT GOODS. ROBERT LIEB, Rottenburg, Germany, assignor to Pouquet & Franz, same place. Filed Nov. 5, 1891. Serial No. 410,943. (No model.)

Brief.—Each thread is laid upon the needles by a wheel containing mesh-plates (stakers) and press-plates, a pattern-band controlling the action of the plates, the mesh-plates being out of action when the press-plates act, and vice versa. When the mesh-plates act, stitches are formed, but when the press-plates act the same thread is allowed to float.

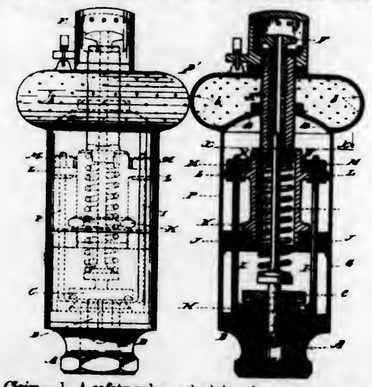


Claim.—1. The method of producing figures in knitted goods, which consists in placing the threads required of each color consecutively into the needles corresponding to the pattern, so that the meshes are made to appear upon the face of the fabric, while each thread is stretched over the needles not provided by it with meshes, whereby it forms a float upon the rear of the fabric, substantially as specified.

2. The combination of plate T with disks S and U, having grooves A and L, and with mesh-plates M and press-plates P, substantially as specified.

3. The combination of plate T with grooved disks S and U, mesh-plates M, press-plates P, wheel R, and a figuring-band J, substantially as specified.

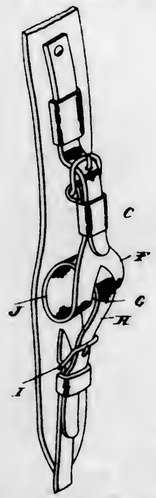
488,020. SAFETY-VALVE AND MUFFLER. ANTON LOMBILLER, Boston, Mass. Filed July 29, 1892. Serial No. 441,618. (No model.)



Claim.—1. A safety-valve embodying the combination of an inclosed valve, valve-seat, depressing-spring, and adjustable ring H, surrounding the valve and having arms I, extending upward therefrom within the valve-case and threaded into suspended nuts M, arranged above the valve-case to be turned to raise and lower the ring through its arms, as and for the purposes specified.

2. In a safety-valve, the combination, with the valve of the adjustable ring H, provided with arms I, extending upward within the valve-case and threaded into suspended nuts arranged above the case to be turned to raise and lower the ring, and latches N, arranged to be turned into position to lock the nuts, all as and for the purposes specified.

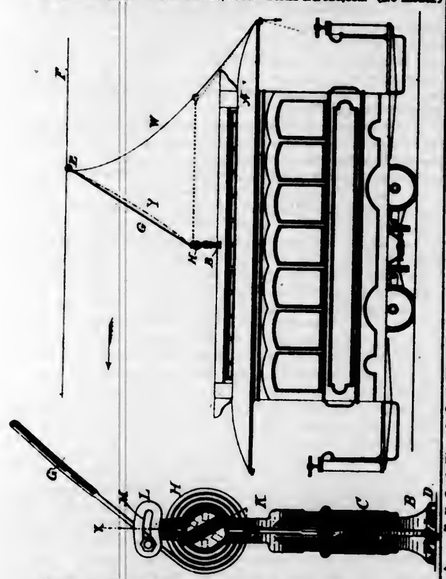
488,021. THILL-TUG. ANDERSON C. MARSHALL, Corunna, Mich. Filed Mar. 14, 1892. Serial No. 425,442. (No model.)



Claim.—In a harness, the combination, with a back-strap having a billet secured on its end, of a tug consisting of a single piece, flexible strap formed with a perforated enlarged portion F, having

unobstructed sides, attaching means on its upper end and arranged to be folded in or out to form shaft-supporting loops, its end passing through the aperture and carried down and secured to the girth, substantially as described.

488,022. ELECTRIC-RAILWAY TROLLEY. DAVID MASON, New York, N. Y., assignor to the Sprague Electric Railway and Motor Company, same place. Filed Nov. 11, 1889. Serial No. 329,892. (No model.)



Claim.—1. The combination, with an electric-railway car and an overhead conductor, of a contact device making underneath contact with said conductor, a pole carrying said contact device, and a flexible resilient support for said pole, substantially as set forth.

2. The combination, with an electric-railway car and an overhead conductor, of a contact device making underneath contact with said conductor, a pole carrying said contact device, and a flexible resilient support for said pole adapted to turn around a vertical axis, substantially as set forth.

3. The combination, with an electric-railway car and an overhead conductor, of a contact device making an underneath contact with said conductor, a pole carrying said contact device, and a spring carrying said pole and supported from the roof of the car, substantially as set forth.

4. The combination, with an electric-railway car and an overhead conductor, of a contact device making an underneath contact with said conductor, a pole carrying said contact device, and a coiled spring supporting said pole and connected with the car, substantially as set forth.

5. The combination, with an electric-railway car and an overhead conductor, of a contact device making an underneath contact with said conductor, a pole carrying said contact device, and a spring coiled on a horizontal axis and connected with the car and exerting an upward pressure upon said pole, substantially as set forth.

6. The combination, with an electric-railway car and an overhead conductor, of a contact device making an underneath contact with said conductor, a pole carrying said contact device, and a spring coiled on a horizontal axis, supporting said pole, and connected with the car, substantially as set forth.

7. The combination, with an electric-railway car and an overhead conductor, of a contact device making underneath contact with said conductor, a pole carrying said contact device, and a spring coiled on a vertical plane, supported from the roof of the car, and exerting an upward pressure upon said pole, substantially as set forth.

8. The combination, with an electric-railway car and an overhead conductor, of a contact device making underneath contact with said conductor, a pole carrying said contact device, and a spring coiled in a vertical plane, carrying said pole, and supported from the roof of the car, substantially as set forth.

9. The combination, with an electric-railway car and an overhead conductor, of a contact device making underneath contact with said conductor, a pole carrying said contact device, a flexible resilient support for said pole, and a stop for said pole, substantially as set forth.

10. The combination, with an electric-railway car and an overhead conductor, of a contact device making underneath contact with said conductor, a pole carrying said contact device, a coiled spring carrying said pole, and a vertical support rising from the roof of the car and carrying said spring, substantially as set forth.

11. The combination, with an electric-railway car and an overhead conductor, of a contact device making underneath contact with said conductor, a coiled spring carrying said contact device, and means for altering the tension of said spring, substantially as set forth.

12. The combination, with an electric-railway car and an overhead conductor, of a contact device making underneath contact with said conductor, a spring coiled on a horizontal axis and exerting upward pressure on said contact device, and means for altering the tension of said spring, substantially as set forth.

13. The combination, with an electric-railway car and an overhead conductor, of a contact device making underneath contact with said conductor, a coiled spring carrying said contact device, and a key and ratchet for altering the tension of said spring, substantially as set forth.

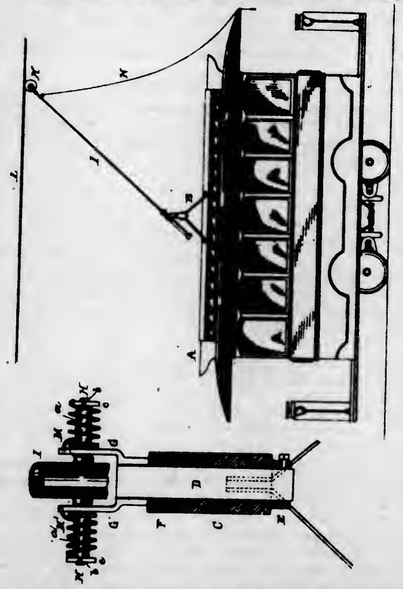
14. The combination, with an electric-railway car having an arched roof, of an arched standard on said roof and a trolley-support carried by said standard, substantially as set forth.

15. The combination, with an electric-railway car and an overhead conductor, of a contact device making an underneath contact with said conductor, a pole carrying said contact device, and a coiled spring carrying said pole and connected by a swiveling connection with the car, substantially as set forth.

16. The combination, with an electric-railway car and an overhead conductor, of a contact device making an underneath contact with said conductor, a pole carrying said contact device, and a spring coiled on a horizontal axis carrying said pole and connected by a swiveling connection with the car, substantially as set forth.

17. The combination, with an electric-railway car and an overhead conductor, of a contact device making an underneath contact with said conductor, a pole carrying said contact device, and a spring coiled on a horizontal axis, exerting an upward pressure on said pole, and connected by a swiveling connection with the car, substantially as set forth.

488,023. ELECTRIC-RAILWAY TROLLEY. DAVID MASON, New York, N. Y., assignor to the Sprague Electric Railway and Motor Company, same place. Filed Mar. 3, 1890. Serial No. 342,447. (No model.)



Claim.—1. The combination, with an electric-railway car and an overhead conductor, of a contact device making an underneath contact with said conductor, a pole carrying said contact device, and a spiral spring coiled on a horizontal axis and connected with the car

and exerting an upward pressure upon the pole, substantially as set forth.

2. The combination, with an electric-railway car and an overhead conductor, of a contact device making an underneath contact with said conductor, a pole carrying said contact device and hinged upon the car, and a spring coiled on the axis of the pole and exerting an upward pressure thereon, substantially as set forth.

3. The combination, with an electric-railway car and an overhead conductor, of a contact device making an underneath contact with said conductor, a pole carrying said contact device and hinged on a horizontal axis transverse of the car, and a spring coiled on the axis of the pole and exerting an upward pressure thereon, substantially as set forth.

4. The combination, with an electric-railway car and an overhead conductor, of a contact device making an underneath contact with said conductor, a pole carrying said contact device hinged to the top of the car, and reversely-coiled springs upon the axis of the hinge supporting the pole, said springs engaging said pole, so as to raise said pole toward a vertical position, substantially as set forth.

5. The combination, with an electric-railway car and an overhead conductor, of a contact device making an underneath contact with said conductor, a pole carrying said contact device hinged to the top of the car, and springs coiled about the axis of the hinge supporting the pole and connected therewith, whereby said arm is normally held upward toward a vertical position, according to the height of the conductor, substantially as set forth.

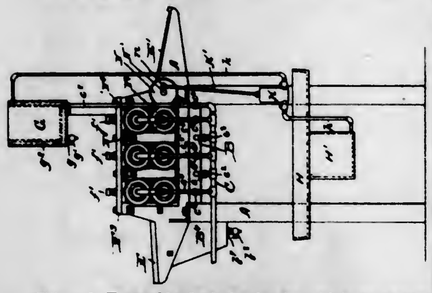
6. The combination, with an electric-railway car and an overhead conductor, of a contact device making an underneath contact with said conductor, a pole carrying said contact device hinged to the top of the car, springs coiled on the axis of the hinge for raising the pole toward a vertical position, said hinged pole being connected with the car by a swiveling support, substantially as set forth.

488,024. WALL-FINISH AND METHOD OF MAKING SAME. BENJAMIN MOSES, Brooklyn, N. Y. Filed Sept. 26, 1892. Serial No. 446,949. (No model.)

Claim.—1. The process of manufacturing a wall-finish, which consists of the following steps: first, boiling thoroughly three pounds of Irish moss in fifty gallons of water; second, straining the resultant solution and mixing it intimately with two thousand pounds of china-clay; third, drying and pulverizing the mixture thus formed and adding alum and glue in the proportions specified, substantially as and for the purposes set forth.

2. As compositions of matter, the improved calcimine or wall-finish composed of the following constituent materials in substantially the following proportion, by weight: china-clay, two thousand parts; Irish moss, three parts; glue, one hundred parts; alum, thirty parts.

488,025. MACHINE FOR DRYING AND FLUXING METAL SHEETS. EDWIN HORTON and JOHN G. HOSKINS, Maywood, assignors to said Horton, and Oliver W. Horton, Chicago, Ill. Filed Apr. 6, 1892. Serial No. 427,863. (No model.)



Claim.—1. The machine for drying, heating, and fluxing pickled sheets of iron or steel preparatory to tinning or coating the same with metal, consisting in a series of pairs of hollow heated rolls D D', means for heating the rolls to different degrees of temperature, the last pair to a higher degree than the first pair, and means for supplying oil flux to the surface of said rolls, said pairs of rolls and the means for supplying oil flux thereto being so combined and arranged in respect to each other, substantially as shown and described, that the wet pickled sheets may pass between the rolls without being immersed in or carried through the hot oil flux, substantially as specified.

2. In a machine for drying, heating, and fluxing wet pickled sheets of iron or steel preparatory to tinning or coating the same with metal, in combination with a series of pairs of heated rolls D D', means for heating said rolls, the succeeding pair to a higher degree than the preceding pair, and oil troughs or compartments, one for each pair of said rolls, said pairs of rolls and oil-troughs being so arranged and combined that the lower roll only of each pair shall come in contact with the oil in the trough, so that the sheets to be dried, heated, and fluxed may pass between the rolls without being immersed in the oil, substantially as specified.

3. In a machine for drying, heating, and fluxing wet pickled sheets of iron or steel preparatory to tinning or coating the same with metal, the combination, with a series of pairs of heated rolls D D', the first pair being at a lower temperature than the last pair, of oil troughs or compartments for each pair of said rolls and means for heating said troughs and compartments and regulating the temperature thereof, substantially as specified.

4. In a machine for drying, heating, and fluxing wet pickled sheets of iron or steel preparatory to tinning or coating the same with metal, the combination, with a series of pairs of heated rolls D D', the first pair being at a lower temperature than the last pair, of oil troughs or compartments for each pair of said rolls and means for heating said troughs and compartments and regulating the temperature thereof, the upper one of each pair of said rolls being movable as to its axis or shaft to admit of the passage of the sheets between the rolls and the surface of the rolls to approach each other when the sheets are not passing between them, so that the oil will be transferred to the upper rolls from the lower rolls, substantially as specified.

5. In a machine for drying, heating, and fluxing wet pickled sheets of iron or steel preparatory to tinning or coating the same with metal, the combination, with a series of pairs of heated rolls D D', the first pair being at a lower temperature than the last pair, of oil troughs or compartments for each pair of said rolls and means for heating said troughs and compartments and regulating the temperature thereof, the upper one of each pair of said rolls being movable as to its axis or shaft to admit of the passage of the sheets between the rolls and the surface of the rolls to approach each other when the sheets are not passing between them, so that the oil will be transferred to the upper rolls from the lower rolls, and springs and adjusting-screws to regulate the pressure between the rolls of each pair, substantially as specified.

6. In a machine for drying, heating, and fluxing wet pickled sheets of iron or steel preparatory to tinning or coating the same with metal, the combination, with a series of pairs of heated rolls D D', the first pair being at a lower temperature than the last pair, and means for heating said rolls and regulating the temperature thereof, of oil troughs or compartments for each of said pairs of rolls and a feed-table E, substantially as specified.

7. In a machine for drying, heating, and fluxing wet pickled sheets of iron or steel preparatory to tinning or coating the same with metal, the combination, with a series of pairs of heated rolls D D', the first pair being at a lower temperature than the last pair, of oil troughs or compartments for each pair of said rolls, and a discharge-table E, and means for heating said rolls and troughs and regulating the temperature thereof, substantially as specified.

8. In a sheet drying, heating, and fluxing machine, the combination, with a series of hollow steam-heated rolls D D', the first pair of said rolls being at a lower temperature than said last pair, of a steam-heated oil-vessel B, having separate troughs or compartments divided by hollow partitions, into which steam is admitted for heating said troughs or compartments, and means for regulating the temperature of the sets of rolls, and means for supplying steam to said hollow rolls and hollow partitions for heating the same, substantially as specified.

9. The combination, with hollow steam-heated rolls D D' D D', of an oil-vessel having separate troughs or compartments, one for each pair of said rolls, separated by a hollow steam-heated partition, and means for supplying steam to said hollow rolls and hollow partitions for heating the same, substantially as specified.

10. In a machine for drying, heating, and fluxing wet pickled sheets of iron or steel preparatory to tinning or coating the same with metal, the combination, with two or more pairs of rolls D D', of an oil-vessel B, having two or more troughs or compartments separated by a hollow steam-heated partition, and means for supplying steam to said hollow partitions, substantially as specified.

11. The fluxing-vessel B, divided into separate troughs or compartments B' B^2 B^3 by hollow partitions b b' and furnished with a steam-pipe C, having separate branch pipes c c', leading to said hollow partitions, substantially as specified.

12. The fluxing-vessel B, divided into separate troughs or compartments B' B^2 B^3 by hollow partitions b b' and furnished with a steam-pipe C, having separate branch pipes c c', leading to said hollow partitions, said branch pipes being provided with valves for regulating the heat, substantially as specified.

13. The combination of oil or fluxing troughs with two or more pairs of hollow steam-heated rolls D D', revolving therein, the upper roll of each pair being movable as to its axis or shaft to permit the sheets to pass between and the rolls to approach each other when the sheets are not so passing, and thus transfer the oil from the lower roll to the upper one, said upper rolls of each pair having movable boxes F', supported on adjusting-screws, and means for supplying steam to said roll, substantially as specified.

14. The combination of oil or fluxing troughs with two or more pairs of hollow steam-heated rolls D D', revolving therein, the upper roll of each pair being movable as to its axis or shaft to permit the sheets to pass between and the rolls to approach each other when the sheets are not so passing, and thus transfer the oil from the lower roll to the upper one, said upper rolls of each pair having movable boxes F', supported on adjusting-screws and provided with springs f^2 and adjusting-screws f, and means for supplying steam to said rolls, substantially as specified.

15. In a machine for drying, heating, and fluxing wet sheets of iron or steel preparatory to coating the same with metal, the combination, with a series of pairs of steam-heated rolls, the first pair being at a lower temperature than the last pair, of steam-heated oil troughs or compartments for each pair of said rolls and means for heating said rolls and oil troughs or compartments and regulating the temperature thereof, substantially as specified.

16. In a machine for drying, heating, and fluxing wet sheets of iron or steel preparatory to coating the same with metal, the combination, with a series of pairs of steam-heated rolls, the first pair being at a lower temperature than the last pair, of steam-heated oil troughs or compartments for each pair of said rolls, and an inclined feed-table for delivering the sheets to the first pair of said rolls, and means for heating said rolls and oil troughs or compartments and regulating the temperature thereof, substantially as set forth.

17. In a machine for drying, heating, and fluxing wet sheets of iron or steel preparatory to coating the same with metal, the combination, with a series of pairs of steam-heated rolls, the first pair being at a lower temperature than the last pair, of steam-heated oil troughs or compartments for each pair of said rolls, and a corrugated or open feed-table for delivering the sheets to the first pair of said rolls, and means for heating said rolls and oil troughs or compartments and regulating the temperature thereof, substantially as specified.

18. In a machine for drying, heating, and fluxing wet sheets of iron or steel preparatory to coating the same with metal, the combination, with a series of pairs of steam-heated rolls, the first pair being at a lower temperature than the last pair, of steam-heated oil troughs or compartments for each pair of said rolls, and a corrugated or open inclined feed-table for delivering the sheets to the first pair of said rolls, and means for heating said rolls and oil troughs or compartments and regulating the temperature thereof, substantially as specified.

19. In a machine for drying, heating, and fluxing wet sheets of iron or steel preparatory to coating the same with metal, the combination, with a series of pairs of steam-heated rolls, the first pair being at a lower temperature than the last pair, of steam-heated oil troughs or compartments for each pair of said rolls, and a discharge-table, and means for heating said rolls and oil troughs or compartments and regulating the temperature thereof, substantially as specified.

20. In a machine for drying, heating, and fluxing wet sheets of iron or steel preparatory to coating the same with metal, the combination, with a series of pairs of steam-heated rolls, the first pair being at a lower temperature than the last pair, of steam-heated oil troughs or compartments for each pair of said rolls, an inclined feed-table for delivering the sheets to the first pair of said rolls, and a discharge-table, and means for heating said rolls and oil troughs or compartments and regulating the temperature thereof, substantially as specified.

21. In a machine for drying, heating, and fluxing wet sheets of iron or steel preparatory to coating the same with metal, the combination, with a series of pairs of steam-heated rolls, the first pair being at a lower temperature than the last pair, of steam-heated oil troughs or compartments for each pair of said rolls, and a corrugated or open inclined feed-table for delivering the sheets to the first pair of said rolls, and a discharge-table, and means for heating said rolls and oil troughs or compartments and regulating the temperature thereof, substantially as specified.

22. In a machine for drying, heating, and fluxing wet sheets of iron or steel preparatory to coating the same with metal, the combination, with a series of pairs of steam-heated rolls, the first pair being at a lower temperature than the last pair, of steam-heated oil troughs or compartments for each pair of said rolls, and an oil-feed tank for delivering oil automatically to said oil-troughs and means for heating said rolls and oil troughs or compartments and regulating the temperature thereof, substantially as specified.

23. In a machine for drying, heating, and fluxing wet sheets of iron or steel preparatory to coating the same with metal, the combination, with a series of pairs of steam-heated rolls, the first pair being at a lower temperature than the last pair, of steam-heated oil troughs or compartments for each pair of said rolls, and a steam-heated oil-feed tank above said troughs and furnished with means for feeding the oil therefrom into said troughs, and means for heating said rolls and oil troughs or compartments and regulating the temperature thereof, substantially as specified.

24. In a machine for drying, heating, and fluxing wet sheets of iron or steel preparatory to coating the same with metal, the combination, with a series of pairs of steam-heated rolls, the first pair being at a lower temperature than the last pair, of steam-heated oil troughs or compartments for each pair of said rolls, a drip-pan below said oil-troughs, and means for heating said rolls and oil troughs or compartments and regulating the temperature thereof, substantially as specified.

25. In a machine for drying, heating, and fluxing wet sheets of iron or steel preparatory to coating the same with metal, the combination, with a series of pairs of steam-heated rolls, the first pair being at a lower temperature than the last pair, of steam-heated oil troughs or compartments for each pair of said rolls, a drip-pan below said oil-troughs, and an overhead oil-feed tank, and means for heating said rolls and oil troughs or compartments and regulating the temperature thereof, substantially as specified.

26. In a machine for drying, heating, and fluxing wet sheets of iron or steel preparatory to coating the same with metal, the combination, with a series of pairs of steam-heated rolls, the first pair being at a lower temperature than the last pair, of steam-heated oil troughs or compartments for each pair of said rolls, a drip-pan below said oil-troughs, an overhead oil-feed tank, and a pump and connecting-pipes for delivering the oil automatically from said drip-pan to said overhead feed-tank, and means for heating said rolls and oil troughs or compartments and regulating the temperature thereof, substantially as specified.

27. The combination of a pair of heated fluxing-rolls, an oil trough or vessel, an oil-supply tank G above said oil-trough furnished with a feed-nozzle g, and means for heating said rolls, substantially as specified.

28. The combination of a pair of heated fluxing-rolls, an oil trough or vessel, an oil-supply tank G above said oil-trough furnished with a feed-nozzle g, a drip-pan below said oil trough or vessel, and means for heating said rolls, substantially as specified.

29. The combination of a pair of heated fluxing-rolls, an oil trough or vessel, an oil-supply tank G above said oil-trough furnished with a feed-nozzle g, a drip-pan below said oil trough or vessel, a pump and connecting-pipes for delivering the oil from said drip-pan to said oil-feed tank, and means for heating said rolls, substantially as specified.

30. The combination of a pair of heated fluxing-rolls, an oil-trough or vessel, an oil-supply tank G above said oil-trough furnished with a feed-vessel g, and a steam-pipe and connections for heating said rolls and said oil trough or vessel, substantially as specified.

31. The combination of a pair of heated fluxing-rolls, an oil trough or vessel, an oil-supply tank G above said oil-trough furnished with a feed-nozzle g, and a steam-pipe and connections for heating said rolls and said oil trough or vessel and said oil-feed tank, substantially as specified.

32. The combination, with steam-heated rolls D D' D D' D D', of an oil-containing vessel B, furnished with separate troughs or compartments B', B^2, B^3, and B^4, having hollow partitions b b' heated by steam, and a drip-pan H, having well H', oil-feed tank G above said oil-trough, having nozzle g, pump K, and connecting-pipes leading from said pump to said drip-pan and feed-tank, and steam-pipes and connections for supplying the steam to said rolls and hollow partitions, substantially as specified.

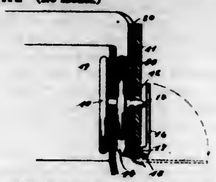
33. The combination of two or more pairs of heated rolls and oil-troughs in which they revolve, the partition between the first two oil-troughs being furnished with an extension b^4, and means for heating said rolls, substantially as specified.

34. The combination, with rolls D D' D D' D D', of an oil vessel or pot divided into troughs or compartments B' B^2 B^3 by hollow heated partitions b b', said partition b between the first two pairs of rolls having an extension b^4, and means for supplying steam to said hollow partitions b b' to heat the same, substantially as specified.

35. The combination, with the frame furnished with guides F^3, of rolls D D', having journal boxes or bearings F F', fitting in said guides F^3, and adjusting-screws f for supporting the boxes F of the upper roll, and a flux-trough in which the lower roll revolves, substantially as specified.

36. The combination, with the frame furnished with guides F^3, of rolls D D', having journal boxes or bearings F F', fitting in said guides F^3, and adjusting-screws f for supporting the boxes F of the upper roll, and a flux-trough in which the lower roll revolves, an adjusting-screw f', and spring f^3, said adjusting-screw f and spring f^3 being above the upper roll, substantially as specified.

488,026. COLLAR-BUTTON. DAVID G. FARER, Denver, Colo., assignor of one-half to William Groves, Camden, N. J. Filed May 16, 1892. Serial No. 433,114. (No model.)



Claim.—1. A collar-button comprising two spaced disks connected together by a shank, a collar-receiving stud secured to and projecting from the outer disk, and a plate hinged at one end to the outer disk and adapted to be swung up parallel with the outer disk and in front of the said stud to hold a collar thereon, substantially as described.

2. A collar-button comprising parallel disks, a spar connecting the two disks and projecting forward from the front disk, a forked arm secured to one edge of the front disk, and a spring-pressed swinging clasp hinged to the arm and adapted to swing in front of the disk, substantially as described.

488,027. ELECTRIC COUPLING. JOHN J. PURCELL, Washington, D. C., assignor of one-half to William H. Allen, same place. Filed June 18, 1892. Serial No. 437,122. (No model.)

Claim.—1. In an underground-cable conductor, in combination, the spliced ends of a cable having a housing, having screw-threaded caps received directly onto the ends of said housing and having apertures conforming to the size of said cable, the screw-threaded plugs with suitable washers for forming a water-tight joint in the apertures i', and an insulating material covering the spliced ends of the said cable, substantially as shown and described.

2. In combination, in an underground conductor, of a spliced cable provided with a suitable housing consisting of a cylindrical tubing, the inner surface being recessed for a short distance from the ends, and provided with washers which are flush with the ends of said tubing, the rubber washers H, and the caps G, received directly onto the ends of said tubing, all substantially as shown and described.

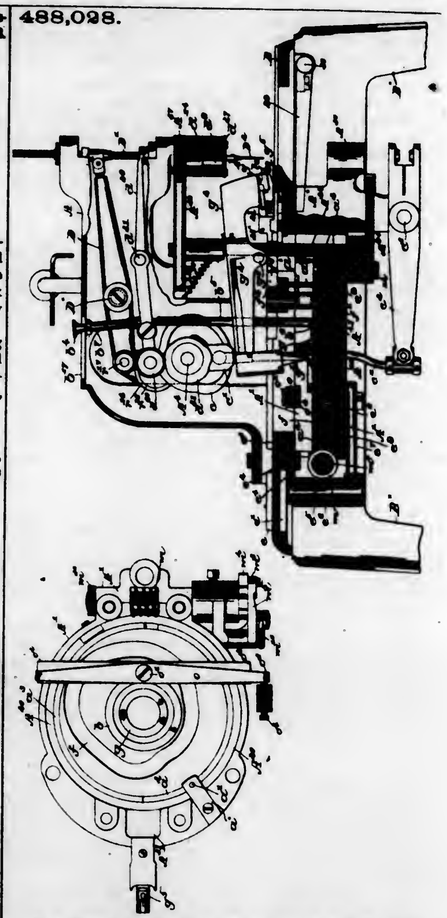
3. The combination, with a spliced cable, of a housing over the spliced ends and formed at each end with exterior threads and interior shoulders, a ring E at each end of the housing, with its inner face bearing against said shoulder and its outer face flush with the outer end of the housing, the washer H over said rings and bearing against the ends of the housing, and the caps G, screwed on the ends of the housing and pressing the washer H against the ends of said housing, substantially as described, and for the purpose specified.

488,028. BUTTONHOLE SEWING-MACHINE. JOHN REISS, Boston, Mass. Filed May 31, 1892. Serial No. 434,261. (No model.)

Claim.—1. In a sewing-machine, the following instrumentalities, viz: a stitch-frame, stitch-forming devices having periodic rotation, a clamp-frame having a work-holding clamp connected to it, a cam device, intermediate connections between said cam and said stitch-forming devices to periodically rotate said stitch-forming devices and to effect the relative change of position of said stitch-frame and clamp-frame, a worm-wheel operatively connected with said cam device, a worm, and devices to automatically operate said worm, substantially as described.

2. In a buttonhole-stitching machine, a stitch-frame, contained stitch-forming devices comprehending a reciprocating eye-pointed needle, and complemental stitch-forming mechanism, each supported at opposite sides of the work-holding clamp and adapted to be turned in unison about coincident centers of motion, and a clamp-frame and attached work-holding-clamp, combined with a worm, a worm-wheel actuated thereby, and devices intermediate said worm-wheel and stitch-forming mechanism to both rotate the said stitch-forming mechanism and to effect the relative change of motion between said stitch-frame and clamp-frame whereby the said stitch-forming mechanism is adapted to stitch the two straight sides and the round eye of a buttonhole, substantially as described.

488,028.



3. A buttonhole-stitching machine containing the following instrumentalities, viz: stitch-forming devices, carrying-blocks therefor adapted to be turned about a center, supports for said blocks, a cam device, connections between it and the said blocks to turn the same about a center coincident with the longitudinal center of the needle-bar, a worm-wheel operatively connected to said cam device, and a worm to rotate said worm-wheel and cam device, to operate substantially as described.

4. In a sewing-machine, the following instrumentalities, viz: stitch-forming devices having periodic rotation, a cam device and suitable intermediate connecting mechanism between it and said stitch-forming devices for periodically rotating the stitch-forming devices, a worm-wheel operatively connected with said cam device, a worm to engage said worm-wheel, and devices to rotate said worm intermittingly, to operate substantially as described.

5. In a sewing-machine, the following instrumentalities, viz: stitch-forming devices, a cam device and suitable intermediate connecting mechanism between it and said stitch-forming devices for turning the latter, a worm-wheel operatively connected with said cam device, a worm to engage said worm-wheel, a friction-clutch, and devices to actuate it to effect the movement of said worm, substantially as described.

6. In a sewing-machine, the following instrumentalities, viz: stitch-forming devices, a cam device and suitable intermediate connecting mechanism between it and said stitch-forming devices for turning the latter, a worm-wheel operatively connected with said cam device, a worm to engage said worm-wheel, a friction-clutch, and worm-actuating devices having as operative elements thereof a link having a circular projection and a rod having a strap to embrace said projection, the said link and rod imparting two movements to the said worm for each rotation of the pulley carrying said link, a shaft, suitable devices set in motion thereby to actuate said stitch-forming devices to make stitches, and a belt-wheel to rotate said shaft, substantially as described.

7. In a sewing-machine for buttonhole stitching, the following instrumentalities, viz: stitch-forming devices, oscillating blocks to support said stitch-forming devices, a cam device and suitable intermediate mechanism for turning said blocks and stitch-forming devices during the operation of stitching the round part of the eye of a buttonhole, a worm-wheel connected to said cam device, a worm engaging said worm-wheel, a length or spacing stitch lever having a circular hub provided with a slot, a slotted link pivotally connected to said belt-wheel and provided with a circular projection or rim and having its slot entered by the hub of said stitch-lever, a connecting-rod actuated by said link, devices between it and the said worm-shaft to actuate it, and means to actuate said slide-lever, whereby by change of position of the hub with relation to the center of rotation of said belt-pulley more or less throw may be given to the said worm and worm-wheel at each rotation of the said link, substantially as described.

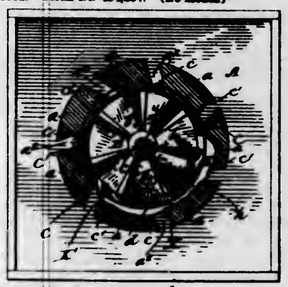
8. In a sewing-machine, the following instrumentalities, viz: stitch-forming mechanism, a work-clamp, and actuating devices cooperating therewith and including two cams to effect a combined longitudinal and lateral movement between said stitch-forming mechanism and work-clamp in the stitching of an eyed buttonhole, combined with a worm-wheel operatively connected with said actuating devices, a worm to engage said worm-wheel, and devices to rotate said worm, substantially as described.

9. In a sewing-machine for cutting and stitching buttonholes, the following instrumentalities, viz: a stitch-frame, a cutting mechanism, a work-holding clamp, a series of cams for changing the relative positions of said stitch-frame, cutting mechanism, and the said clamp-frame and a cam for causing the said cutting mechanism to cut the material held in said work-holding clamp, a worm-wheel, a worm, and actuating devices for the latter, whereby the said worm is made to actuate said cams, substantially as described.

10. In an overedge-stitching mechanism, a needle, a looper having a beak and a point, a throat-plate, and a loop-controller, combined with a device to actuate said looper and a cam device to actuate said loop-controller, whereby the loop taken by the part of the looper at one descent of the needle is held spread by said part and said loop-controller while another loop is put through it, the beak of the looper entering this second loop and drawing it below the material, said second loop during the reverse movement of the looper to engage by its point a third loop of needle-thread being engaged by the loop-controller to prevent the point of the looper again catching the loop then on it and previously entered by the beak of the looper, substantially as described.

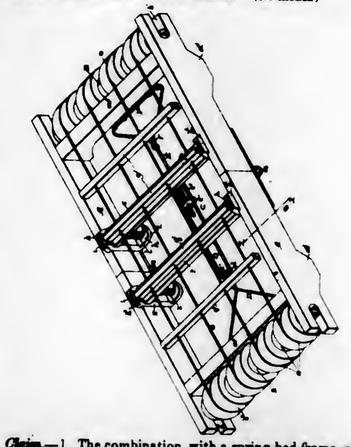
11. The driving-wheel, the worm-wheel, the worm-shaft, its worms, clutch mechanism on the worm-shaft, the link pivoted on the driving-pulley and having as lotted hub m^{13}, and the link m^{16} for actuating the said clutch mechanism, combined with the stitch-regulating lever having a slotted hub and devices to automatically turn said lever, substantially as described.

488,029. TURBINE WATER-WHEEL. WILLIAM W. ROSSMAN, Detroit, Minn., assignor of one-half to Calvin E. Day, same place. Filed May 25, 1892. Serial No. 434,257. (No model.)



Claim.—In a water-wheel in which the water is received and discharged at its periphery, a stationary penstock having outwardly-flaring tangential water-receiving chutes corresponding in number to the buckets of the wheel, each of which causes the water to strike a respective bucket near its outer upper edge on an approximately-parallel line to that in which the water enters the chutes, a wheel having buckets provided with vertical upper portions and downwardly and outwardly curving lower portions, and vertical concavo-convex peripheral discharge-passages at and above the termini of the curved portions of the buckets, substantially as described.

488,030. BED-SPRING. JACOB R. RUSSEL, Willow Street, Pa. Filed Dec. 11, 1891. Serial No. 414,703. (No model.)



Claim.—1. The combination, with a spring-bed frame, of circular bearings at the ends of the frame, spreader-heads under the frame, cords or wires passing over and beneath the bearings and having their ends fastened to said heads, and a spring connection between the heads, substantially as and for the purpose specified.

2. The combination, with a spring-bed frame, of circular bearings at the ends of the frame, spreader-heads under the frame, cords or wires passing over and beneath the bearings and having their ends fastened to said heads, and a tension-adjusting spring connection between the spreader-heads, substantially as and for the purpose specified.

3. The combination, with a spring-bed frame, of circular bearings at the ends of the frame, spreader-heads under the frame, cords or wires passing over and beneath the bearings and having their ends fastened to said heads, a spring connection between the heads, and spreaders engaging the cords or wires between the rollers, substantially as and for the purpose specified.

4. The combination, with a spring-bed frame, of circular bearings at the ends of the frame, cords or wires passing over and beneath said bearings, a spring connection between the ends of the cords or wires located under the frame, springs supported by the side bars of the frame, and bearing-bars extending under the cords or wires and resting on the springs supported by said side bars, substantially as and for the purpose specified.

5. The combination, with a spring-bed frame, of circular bearings at the ends of the frame, cords or wires passing over and beneath said bearings, a spring connection between the ends of the cords or wires located under the frame, springs supported by the side bars of the frame, bearing-bars extending under the cords or wires and resting on the springs supported by said side bars, and spreaders engaged with the cords or wires and resting on the bearing-bars, substantially as and for the purpose specified.

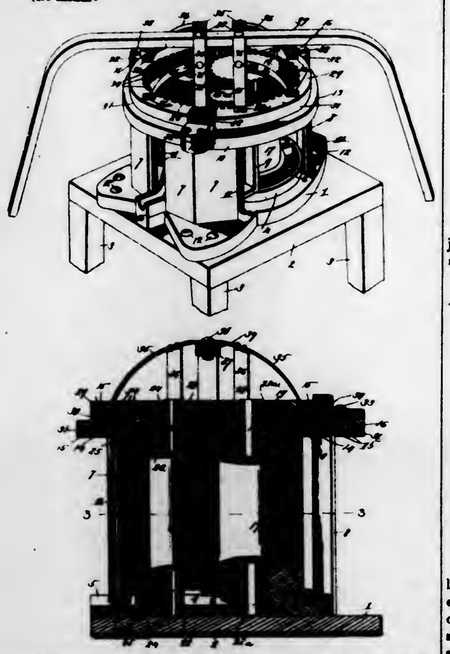
6. The combination, with a spring-bed frame, of circular bearings at the ends of the frame, spreader-heads under the frame, cords or wires passing over and beneath the bearings and having their ends fastened to said heads, a tension-adjusting spring connection between the spreader-heads, springs supported by the side bars of the frame, bearing-bars extending under the cords or wires and resting on the springs supported by the said bars, and spreaders engaged with the cords or wires and resting on the bearing-bars, all constructed and operating substantially as and for the purpose specified.

7. The combination, with a bed-frame having bearings at the ends thereof, of transverse bars engaging slots formed in the side bars of said frame, cords or wires passing over and beneath the end bear-

ings and secured to the transverse bars, and a separable connection between said transverse bars, substantially as and for the purpose specified.

8. The combination, with a bed-frame having side bars divided into sections hinged together, of bearings at the ends of the frame, transverse bars engaging slots formed in the side bars of the frame, cords or wires passing over and beneath said end bearings and secured to the transverse bars, and a separable connection between said transverse bars, substantially as and for the purpose specified.

488,081. CANE-MILL. JASPER H. SANDERS and DAVID C. HENDERSON, Grain Valley, Mo. Filed May 2, 1892. Serial No. 431,440. (No model.)



Claim.—1. A cane-mill comprising a framework having a top or cap, a number of parallel vertical rolls mounted in said framework, a circular groove formed upon the top of the cap, and an internally-toothed gear-ring having a circular rib to engage said groove, substantially as set forth.

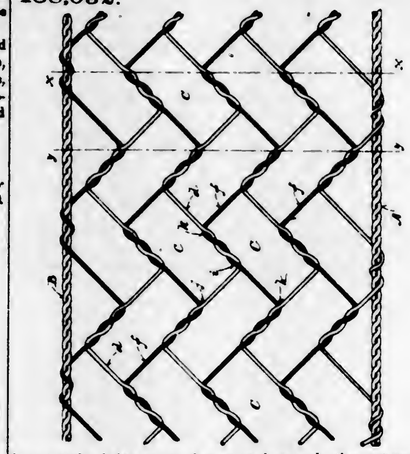
2. A cane-mill comprising a suitable framework having a top or cap provided with a circular groove and also with outwardly-projecting lugs or ears, an internally-toothed gear-ring mounted on said top or cap and having a circular rib to engage said groove, and a number of retaining-pieces secured to the lugs or ears and overlying the ring, substantially as set forth.

3. In a cane-mill comprising a suitable framework having a top or cap and a number of vertical rolls mounted parallel with each other within the frame and carrying at their upper ends intermeshing gear-wheels, and an internally-toothed gear-ring mounted to turn horizontally upon the top or cap, a pair of arches arranged parallel with each other and fastened at their opposite ends to the gear-ring and bent downwardly at their middle to form sockets or recesses into which a sweep or beam is placed, and arched braces secured at one end to the parallel arches and at their opposite ends to the ring or annulus, substantially as described.

488,082. WIRE-NETTING. BENJAMIN SCARLES, Clinton, Mass. Filed July 11, 1892. Serial No. 439,615. (No model.)

Claim.—1. A wire-netting comprising mesh-forming wires twisted together, the twisted portion of each succeeding mesh being arranged at an angle to that of the preceding mesh, and such portions running diagonally of the fabric, substantially as described.

2. A wire-netting having the wires forming the same twisted to form parallelogrammic meshes running diagonally of the fabric, adjacent meshes being arranged at an angle to each other, substantially as set forth.



488,083. SPRING-JACK SWITCH. CHARLES R. SCRIBNER, and HENRY P. WARNER, Chicago, Ill., assignors to the Western Electric Company, same place. Filed July 3, 1888. Serial No. 278,905. (No model.)

Claim.—1. A circuit-changing device consisting of two springs or line-terminals, each spring adjusted to normally press against a different contact-piece, and a tube or guide placed in front of said springs, in combination with a loop-plug having a tip smaller than the metallic sleeve of the shank thereof, said loop-plug being adapted to be inserted in said guide to separate said springs from their contacts, respectively, while each spring is at the same time closed to a different terminal of the loop-plug.

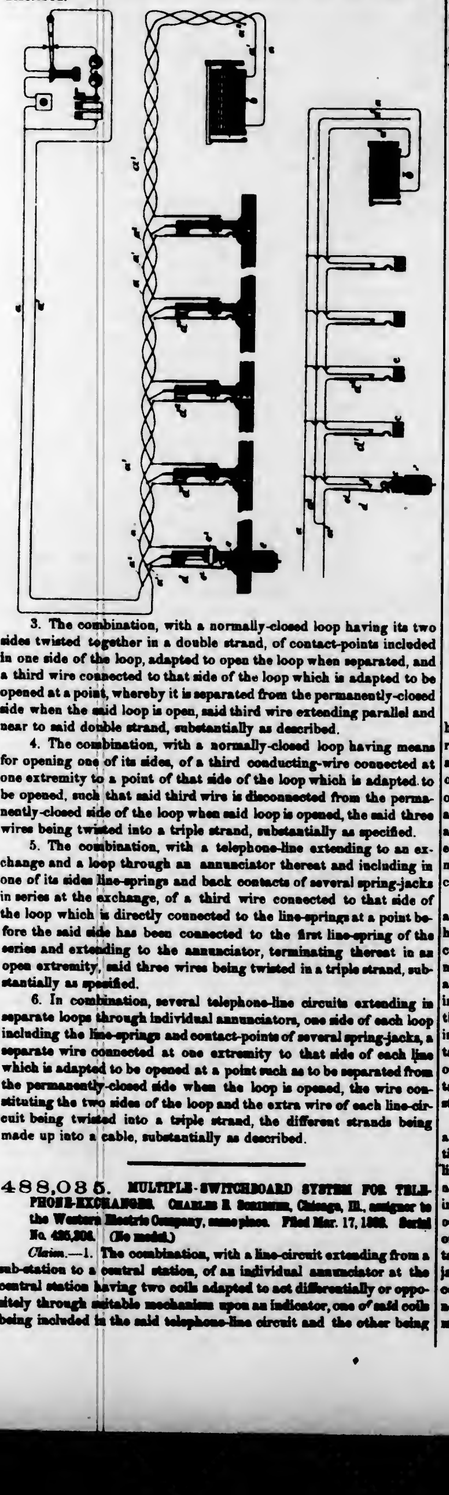
2. The combination, with the springs of a circuit-changer adjusted to press normally each against a different contact-piece placed between the springs, of a metallic tube or test-piece placed in front of the free ends of said springs, said tube being permanently connected with one of said springs by piece *f*, substantially as and for the purpose specified.

3. In a circuit-changing device, the combination, with two insulated springs of different lengths, having their free ends in the same direction, of a guide in front of said springs and a plug provided with two terminals, one terminal upon the tip and the other upon the shank thereof, whereby on inserting the plug into the guide the springs are respectively closed to different terminals of said loop-plug, the shorter spring being closed upon the tip and the longer spring upon the sleeve, substantially as and for the purpose specified.

488,084. MEANS FOR PREVENTING INDUCTION IN CABLES OF MULTIPLE SWITCHBOARDS. CHARLES R. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Mar. 5, 1888. Serial No. 266,919. (No model.)

Claim.—1. The combination, with a normally-closed conducting-loop having one of its sides arranged to be opened, of a conducting-wire connected at one end to that side of the loop which is adapted to be opened at such point as to be disconnected from the permanently-closed side of the loop when the normally-closed side is opened and extending parallel with the permanently-closed side of said loop, whereby the electrostatic inductive effect of the permanently-closed side of the loop is neutralized when the loop is opened, substantially as specified.

2. The combination, with a normally-closed conducting-loop having one side, including contact-pieces, adapted to open the loop when separated, of a third wire connected at one extremity to that side of the loop which is adapted to be opened and to a point thereof whereby it is separated from the permanently-continuous branch of the loop when said loop is open, said third wire extending parallel and near to said permanently-closed side of the loop, substantially as described.



3. The combination, with a normally-closed loop having its two sides twisted together in a double strand, of contact-points included in one side of the loop, adapted to open the loop when separated, and a third wire connected to that side of the loop which is adapted to be opened at a point, whereby it is separated from the permanently-closed side when the said loop is open, said third wire extending parallel and near to said double strand, substantially as described.

4. The combination, with a normally-closed loop having means for opening one of its sides, of a third conducting-wire connected at one extremity to a point of that side of the loop which is adapted to be opened, such that said third wire is disconnected from the permanently-closed side of the loop when said loop is opened, the said three wires being twisted into a triple strand, substantially as specified.

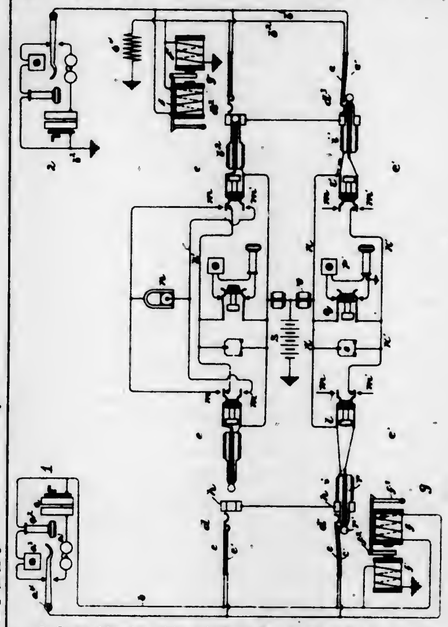
5. The combination, with a telephone-line extending to an exchange and a loop through an annunciator thereat and including in one of its sides line-springs and back contacts of several spring-jacks in series at the exchange, of a third wire connected to that side of the loop which is directly connected to the line-springs at a point before the said side has been connected to the first line-spring of the series and extending to the annunciator, terminating thereat in an open extremity, said three wires being twisted in a triple strand, substantially as specified.

6. In combination, several telephone-line circuits extending in separate loops through individual annunciators, one side of each loop including the line-springs and contact-points of several spring-jacks, a separate wire connected at one extremity to that side of each line which is adapted to be opened at a point such as to be separated from the permanently-closed side when the loop is opened, the wire constituting the two sides of the loop and the extra wire of each line-circuit being twisted into a triple strand, the different strands being made up into a cable, substantially as described.

488,085. MULTIPLE-SWITCHBOARD SYSTEM FOR TELEPHONE-EXCHANGES. CHARLES R. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Mar. 17, 1888. Serial No. 268,206. (No model.)

Claim.—1. The combination, with a line-circuit extending from a sub-station to a central station, of an individual annunciator at the central station having two coils adapted to act differentially or oppositely through suitable mechanism upon an indicator, one of said coils being included in the said telephone-line circuit and the other being included in a branch from one side thereof to earth, substantially as described.

2. The combination, with a telephone-line extending from a sub-station to a central station, of an individual annunciator at the central station provided with two coils adapted to act differentially or oppositely upon an indicator, one of said coils being included in the said line-circuit and the other being included in a branch therefrom to earth, and means for connecting a grounded source of electricity to that side of line to which the grounded coil is attached, substantially as described.



3. In combination with a telephone-line circuit, spring-jacks, each having two contact-pieces connected to the different sides of line, respectively, an individual annunciator having two electro-magnets adapted to act oppositely or differentially upon indicating mechanism, one of said electro-magnets being included in said line-circuit and the other being included in a branch from one side of said line to earth, and a connecting-plug adapted for insertion into a spring-jack of the line and having a contact-piece connected to one terminal of a source of electricity whose other terminal is connected to earth adapted to make contact with that line-contact which is connected through a coil of the annunciator to earth, substantially as described.

4. The combination, with a telephone-line circuit extending from a sub-station to an exchange, of spring-jacks at the exchange, each having two contact-pieces connected to the different sides of the line-circuit, respectively, an individual annunciator having two electro-magnets, one being included in the line-circuit and arranged to actuate a suitable indicator when energized and the other being included in a branch from one side of the line-circuit and arranged to prevent the operation of said indicator when energized, a connecting-plug having two contact-pieces adapted to make contact with the line-contacts of a spring-jack, respectively, and a source of electricity having one of its terminals grounded and the other connected to that contact-piece of the plug which connects with the said grounded coil, substantially as described.

5. The combination, with a telephone-line circuit extending from a sub-station to a central station, of spring-jacks at the central station, each having two contact-pieces connected to the two sides of line, respectively, an individual annunciator having two electro-magnets, one included in the line-circuit, adapted to actuate a suitable indicator when energized and the other included in a branch from one side of the line to earth and arranged to prevent the actuation of said indicator when energized, a connecting-plug having two contact-pieces making connection with the two line-contacts of a spring-jack, respectively, a source of electricity having one of its terminals connected to that contact-piece of the connecting-plug which connects with the grounded coil of the annunciator and its other terminal connected to earth, and a clearing-out annunciator included in

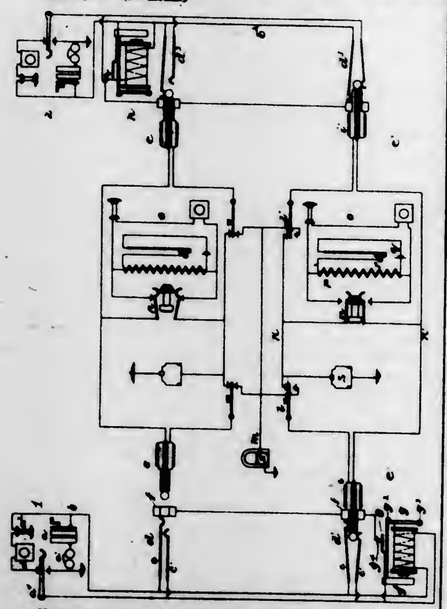
a conductor joining the different contact-pieces of the plug, substantially as described.

6. In combination with a telephone-line extending from a substation to a central station, spring-jacks at the central station, each having three insulated contact-pieces, two of said contact-pieces being connected to the two sides of the line-circuit, respectively, and the remaining contact-pieces of all the jacks being connected together, an individual annunciator having two electro-magnets arranged to act differentially upon a suitable indicating mechanism, one of said electro-magnets being included in the line-circuit and the other in a branch from one side of the line-circuit to earth, a connecting-plug having two contact-pieces, one adapted to make contact with one of the line-contacts of the jack and with the extra contact or test ring and the other adapted to make contact with the remaining line-spring of the spring-jack, and a source of electricity having one of its terminals connected to that contact-piece of the connecting-plug which touches the test-ring of the jack and its other terminal connected to ground, substantially as described.

7. In combination, two telephone-lines extending from a sub-station to a central station, two groups of spring-jacks, each spring-jack having two contact-pieces connected to the different sides of one of the lines, two individual annunciators, each having two coils arranged to act oppositely upon a common armature, one of said magnets of each annunciator being included in its particular line-circuit and the other being included in a branch from one side of its particular line to earth, a connecting-plug in a spring-jack of each line, each plug having two contact-pieces making contact with the two line-contacts of the spring-jack, respectively, conductors joining like contact-pieces of the two plugs, a clearing-out annunciator in circuit between the different contact-pieces of the plugs, and a source of electricity having one of its terminals connected to the ground and the other connected to the conductor joining those contact-pieces of the two plugs which make connection to the grounded coils of the individual annunciators, whereby the individual annunciators of two connected lines are rendered unresponsive to subsequent signaling-currents and the clearing-out annunciator is connected with the lines to respond to such subsequent signals, substantially as described.

488,086. MULTIPLE-SWITCHBOARD SYSTEM FOR TELEPHONE-EXCHANGES.

CHARLES R. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Apr. 16, 1892. Serial No. 429,483. (No model.)



Claim.—1. The combination, with an individual annunciator, of an electro-magnetic switch adapted to close the circuit when energized, a shunt or short circuit about the said annunciator normally open at two points, adapted to be closed at one point by the said electro-magnetic switch, and means for closing the short circuit at another point when connection is made with the line, substantially as described.

2. The combination, with a telephone-line circuit, of an annunciator included in circuit therewith, an electro-magnetic switch also in circuit between the different sides of line, adapted to close the circuit when energized, a shunt or short circuit about the said annunciator normally open at two points, but connected with the said electro-magnetic switch to be closed at one point when said switch is actuated, and means for closing the short circuit at the remaining break when connection is made with the line, substantially as described.

3. The combination, with a telephone-line circuit, of an individual annunciator included therein, contact-points upon said annunciator, adapted to be closed together when the magnet of the annunciator is energized, a shunt or short circuit about the annunciator normally open at two points, connected with the contact-points of said annunciator so as to be closed at one point when said annunciator is energized, and means for closing the remaining break when connection is established with the line, substantially as described.

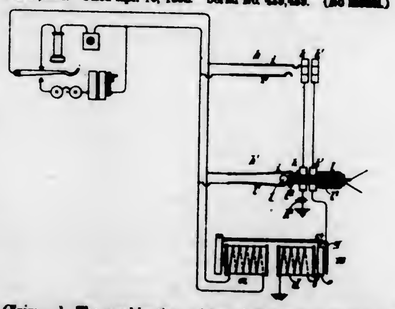
4. The combination, with a telephone-line extending from a substation to an exchange, of spring-jacks at the exchange, each having two contact-pieces connected with the different sides of the line-circuit, respectively, and a third contact-piece insulated from the said line-contacts, a connecting-plug inserted in the said spring-jack having two contact-pieces, one making contact with one of the line-contacts and the other with the remaining line-contact and the extra contact-piece of the spring-jack, an individual annunciator having its electro-magnet coil included in circuit between the different sides of the line-circuit and provided with contact-points adapted to be closed by the first movement of the annunciator, and circuit connections joining one of the said contact-points with the extra contact-piece upon all the spring-jacks of the line and the other point with that side of the line-circuit which is not crossed with the said extra contact-piece, substantially as described.

5. The combination, with a telephone-line extending from a substation to an exchange, of spring-jacks at the exchange, each having two line-contacts connected with the different sides of the line-circuit respectively, and a third piece normally insulated from the line-contacts, and an individual annunciator having its coil included in the line-circuit, provided with an armature and with contact-points adapted to be closed by the first movement of the armature, and an indicator adapted to be actuated by a subsequent movement of the armature, circuit-connections joining one of said contact-points with the normally-insulated contact-piece upon the different spring-jacks and joining the remaining contact-point with one side of the line-circuit, and a connecting-plug inserted into the spring-jack having two contact-pieces, one making contact with that line-contact which is connected with one of the said contact-points and the other to cross together the remaining contact-pieces of the jack, substantially as described.

6. The combination, with a source of calling-current at a substation, of the line-circuit extending therefrom to an exchange, spring-jacks connected with the line-circuit at the exchange, an individual annunciator thereat, a shunt-circuit about said annunciator normally open at two points, contact-points upon the spring-jacks adapted to close the said shunt-circuit at one point when connection is established with the line, an electro-magnetic device adapted to be actuated by the signaling-current to close the remaining break of the shunt-circuit, substantially as described.

488,087. TELEPHONE-SWITCHBOARD APPARATUS.

CHARLES R. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Apr. 16, 1892. Serial No. 429,489. (No model.)



Claim.—1. The combination, with an individual annunciator, of an electro-magnetic device adapted to prevent the actuation of the indicator thereof when energized, a local circuit including a source of electricity and the said electro-magnetic device normally open at two points, means for closing the local circuit at one point when a connection is established with the line, and an electro-magnetic switch adapted to be actuated by calling-currents in the line-circuit and when actuated to close the remaining break of the said local circuit, substantially as described.

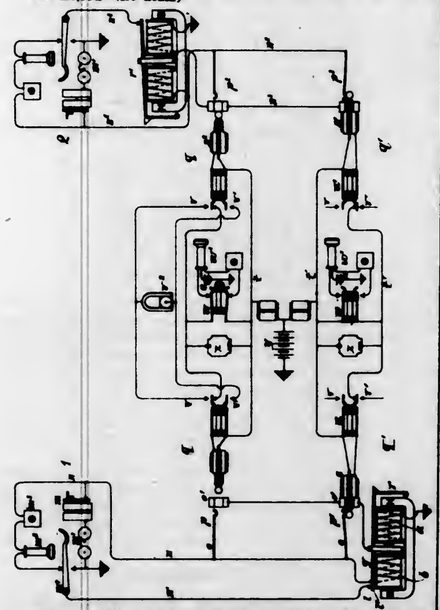
2. The combination, with a telephone-line, of spring-jacks connected therewith and an individual annunciator in circuit therein, an electro-magnetic device adapted to prevent the actuation of the indicator thereof, a local circuit including the said electro-magnetic device with a source of electricity normally open at two points, contact-pieces upon the spring-jacks adapted to be crossed together when connection is made with the line, and an electro-magnetic switch in the line-circuit adapted to close the remaining break in the local circuit when actuated, substantially as specified.

3. The combination, with a telephone-line, of spring-jacks connected therewith and an individual annunciator in circuit therein, an electro-magnetic device adapted when energized to prevent the actuation of the indicator of the annunciator, a local circuit including the said electro-magnetic device and a source of electricity normally open at two points, contact-points upon the spring-jacks forming the terminals of one of the breaks in the local circuit, an electro-magnetic device in the line-circuit, and contact-points thereon adapted to be closed together when said device is energized, said contact-points forming the terminals of the remaining break in the local circuit, substantially as specified.

4. The combination, with a telephone-line, of spring-jacks connected therewith, an annunciator in circuit therein, an electro-magnet adapted when energized to restore the indicator of the annunciator to its normal position, a local circuit including the said electro-magnet and a source of electricity normally open at two points, contact-pieces upon the spring-jacks adapted to be crossed together by a plug inserted into the jack and when crossed together to close one of the breaks in the local circuit, contact-points upon the annunciator adapted to be closed together by the first motion of the annunciator and when so closed to complete the remaining break of the said local circuit, substantially as described.

488,088. MULTIPLE-SWITCHBOARD SYSTEM FOR TELEPHONE-EXCHANGES.

CHARLES R. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Apr. 16, 1892. Serial No. 429,864. (No model.)



Claim.—1. The combination, with a telephone-line circuit, of spring-jacks having contact-pieces normally disconnected from the line-circuit and an electro-magnetic device in the line-circuit, adapted when energized to connect the contact-pieces of the said spring-jacks with the line-circuit, substantially as described.

2. The combination, with a telephone-line circuit, of spring-jack switches having contact-pieces normally insulated therefrom and an electro-magnetic device included in the line-circuit or in a branch therefrom, adapted when energized to connect the contacts of the spring-jack switches to the line-circuit, and means for energizing the said electro-magnetic device, substantially as described.

3. The combination, with a telephone-line circuit, of spring-jack switches, each having two contact-pieces, one permanently connected with one side of the line-circuit and the other normally insulated, an electro-magnetic device in a grounded branch from the line-circuit, provided with contact-points adapted when actuated to connect the normally-insulated contact-pieces of the spring-jacks to the other side of the line-circuit, a grounded source of electricity at the exchange, and means for connecting the same to the permanently-connected contact-pieces of any spring-jack to energize the electro-magnetic device to complete the connection from the normally-open side of the line-circuit to the normally-insulated contact-pieces of the spring-jacks, substantially as described.

4. The combination, with a telephone-line circuit connected to spring-jacks at an exchange, of normally-insulated contact-pieces upon the spring-jacks, an electro-magnetic device in a branch from one side of the line-circuit to earth, provided with contact-points adapted to be closed together when actuated and when closed to complete a connection from the normally-insulated contact-pieces of the spring-jacks to a conductor adapted to alter the electrical condition of the said test-rings, a grounded source of electricity, and means for connecting the same to the side of the line-circuit containing the said electro-magnetic device when connection is established with the line, substantially as described.

5. The combination, with a telephone-line extending from a substation to an exchange, of spring-jacks at the exchange, connected with the line-circuit, each having two contact-pieces, one of which is normally connected to the line-circuit, the remaining contact-pieces of all the jacks being connected together and normally insulated, an electro-magnetic device in a branch to earth from that side of the line-circuit which is permanently connected to the spring-jack contacts, contact-points adapted to be actuated by the electro-magnetic device when energized, connected to the normally-open side of the line-circuit and to the normally-insulated contact-pieces of the spring-jacks respectively, a connecting-plug at the exchange adapted for insertion into any spring-jack provided with two contact-pieces to make contact with the different contact-points of the spring-jack, and a grounded source of electricity connected to that contact-piece which makes contact with the permanently-connected contact-piece of the spring-jack, whereby the normally-open side of the line is connected to the normally-insulated contact-piece of the spring-jack when the connecting-plug is inserted into any spring-jack of the line, substantially as described.

6. In an individual annunciator, the combination, with two permanently-polarized electro-magnets, of an armature normally retained in an intermediate position between them, indicating mechanism adapted to be actuated by movement of such armature in one direction, and contact-points adapted to be closed by the movement of the armature in the other direction, said indicating mechanism being at the same time prevented from operating, substantially as described.

7. The combination, with the electro-magnets *a* and *b*, of the bar *n*, arranged to produce constant polarity of the electro-magnets *a* and *b*, pivoted armature *f*, adapted to move toward either electro-magnet *a* or *b*, but normally retained in an intermediate or neutral position, the arm *g*, connected with said armature, provided with a catch engaging with an indicator or shutter *k'* and provided with a contact-point *l'*, disposed to be closed upon a contact-anvil *l* when said armature is attracted by one of the magnets, substantially as described.

8. The combination, with a telephone-line extending from a substation to an exchange, of an annunciator at the exchange connected with the line-circuit and provided with contact-points adapted to be closed when the annunciator-magnet is energized, spring-jacks, each having two contact-pieces, one of which is permanently connected with one side of the line-circuit, the other side of the line-circuit terminating normally at one of the contact-pieces upon the annunciator, the other contact-piece upon the annunciator being connected with the remaining contact-piece of each of the spring-jacks, a source of electricity, and circuit connections and means for including the source of electricity in circuit with the individual annunciator when desired, whereby the sub-station is connected with the spring-jacks at the exchange in a metallic circuit when the annunciator is energized, substantially as described.

9. The combination, with a telephone-line extending from a substation to an exchange, of an individual annunciator at the exchange provided with contact-points adapted to be closed together when the electro-magnet of the annunciator is energized, spring-jack switches connected with the line-circuit at the exchange, and normally-insulated contact-pieces upon the spring-jack switches connected with one of

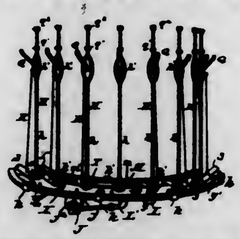
the contact-pieces upon the annunciator, the other contact-piece thereupon being permanently connected with a conductor adapted to alter the electrical condition of the normally-insulated contact-pieces upon the spring-jacks, substantially as described.

10. The combination, with a telephone-line extending from a sub-station to an exchange, of a polarized individual annunciator in an earth connection from one side of the line-circuit, provided with an indicator adapted to be released by the movement of its armature in one direction, two contact-points arranged to be closed by movement of the armature in the other direction, spring-jack switches, each having two contact-pieces, one of which is permanently connected to the grounded side of the line-circuit, the other being normally insulated and connected to one of the contact-points of the annunciator, the remaining contact-point forming the terminal of the normally-open side of the line-circuit, a loop-plug adapted for insertion into any spring-jack of the line, provided with contact-pieces arranged to make contact with the corresponding contact-pieces upon the spring-jack, a source of electricity connected with that contact-piece of the loop-plug arranged to make contact with the contact-piece of the jack which is permanently connected with the line, said source of electricity being of such polarity as to energize the polarized annunciator to close the said contact, and a source of electricity at the sub-station adapted to be connected to the permanently-grounded side of the line-circuit and of such polarity as to actuate the annunciator to operate its indicator when connected with the line-circuit, substantially as described.

11. The combination, with two telephone-lines extending from two sub-stations to an exchange, each being provided with a polarized individual annunciator having an armature adapted to move in either direction, of an indicator arranged to be operated by movement in one direction, and contact-points arranged to be closed by movement of the armature in the other direction, one of said contact-points being permanently connected to a normally-open side of its particular line-circuit, the electro-magnets of each annunciator being included in a permanently-grounded branch from the other side of its particular line, spring-jack switches, each having two contact-pieces, one of which is connected with the grounded side of the line-circuit, the other of which is connected with the remaining contact-piece of its particular annunciator, two loop-plugs inserted one into a spring-jack of each line, having contact-pieces connecting with corresponding contact-pieces of the spring-jacks, like contacts of the two plugs being connected by conductors, and a grounded source of electricity connected with these contact-pieces of both loop-plugs which connect with the permanently-grounded sides of the two line-circuits and of such polarity as to energize the annunciator to close together the contact-points thereupon, and a grounded source of current at each sub-station adapted to be connected with the grounded side of its line-circuit, of such polarity as to tend to actuate the annunciator to release the indicator, but of insufficient strength to effect its release, substantially as described.

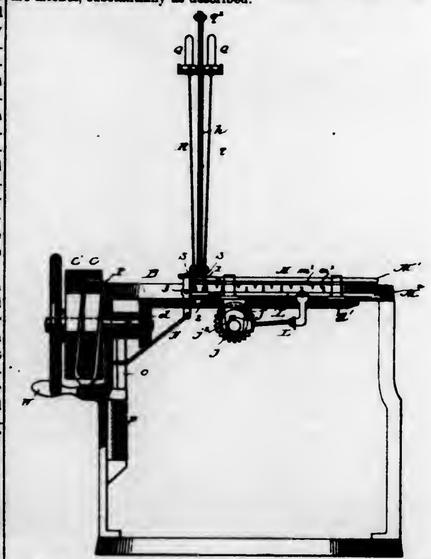
488,039. STOP MECHANISM FOR CIRCULAR-KNITTING MACHINES. HERMAN P. SNYDER and MICHAEL J. FISHER, Little Falls, N. Y. Filed May 14, 1892. Serial No. 433,094. (No model.)

Brief.—The belt-shifter is locked in position by an arm connected by a link to a movable inner segmental plate normally stationary, provided with a series of pins adapted to be engaged by one end of a pivoted dog. The outer end of the dog has a latch connected to a thread-yoke and thereby held up out of the path of pins carried by an outer reciprocating plate. When the thread is deranged by breakage, running out, &c., the yoke falls, allowing the latch on the dog to drop into the path of the reciprocating pins and stop the machine.



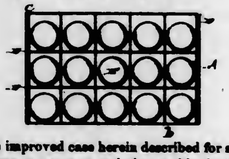
Claim.—1. In a circular-knitting machine, the combination of a reciprocating segmental plate, a series of pins carried thereby, a movable segmental plate, normally stationary, a series of pins carried thereby, a belt-shifting mechanism, a link connecting the normally-stationary plate thereto, a series of pivoted dogs latches connected thereto, and yokes for holding the latches out of operative contact with the pins, said latches serving to make connection between the reciprocating plate and the movable plate and operate the shifting-lever.

2. In a stop-motion for circular-knitting machines, the combination of a reciprocating segmental plate provided with pins and adapted to be driven from the cylinder of the machine, a movable segmental plate normally stationary, provided with pins and a belt-shifting device, a link connecting the movable plate and belt-shifting device, thread-guides, dogs pivoted thereto, latches carried by the dogs, and yokes sustained by the thread, controlling the action of the latches, substantially as described.



3. In a knitting-machine, the combination of a reciprocating segmental plate, a movable plate normally stationary, connected to the belt-shifter, dogs for making connection between the plates, yokes sustained by the thread for controlling the action of the dogs, and eccentric guides controlling the yokes, as and for the purpose described.

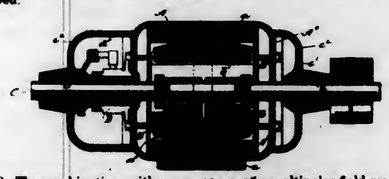
488,040. FRUIT-BOX. WELLS R. STOKELY, Anastasia, Fla. Filed Sept. 8, 1891. Serial No. 405,145. (No model.)



Claim.—The improved case herein described for shipping perishable fruit in a compact manner and thoroughly draining and ventilating the same during transportation, consisting, essentially, of the circular case A, the top B, and the bottom *b*, respectively perforated, the individual perforated cells arranged in horizontal tiers and impinging against each other, so that one cell may be placed in the center and other cells grouped in circular courses about the same, the lining-strips C, surrounding the outer circular course of cells of each tier and having their bodies perforated to align with the perforations in the side wall of the case, and also having their edges notched to align with the perforations in the said side wall of the case and drain and ventilate the horizontal partitions, the said lining-strips C being of a height corresponding with that of the individual cells, and the aforesaid perforated horizontal partitions separating each course or tier and interposed between the contiguous edges of the lining-strips, substantially as specified.

488,041. ELECTRIC MOTOR. ISLES H. STOREY Boulder, Colo., assignor to the Storey Electric Drill and Power Company. Original application filed Feb. 4, 1892, Serial No. 420,690. Divided and this application filed June 9, 1892. Serial No. 436,554. (No model.)

Claim.—1. In an electric motor, a field-magnet consisting of a cylinder surrounding a coil or coils of wire, in combination with pole-pieces extending from opposite points at the edges of the cylinder around the coil or coils and toward each other, and other pole-pieces extending inward from a point or points about midway between the edges of the cylinder and extending in both directions toward the edges of the cylinder and embracing the coils, substantially as described.

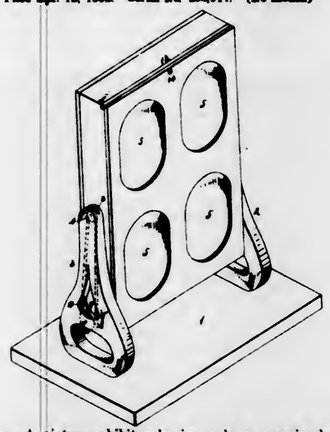


2. The combination, with an armature, of a multipolar field-magnet consisting of a cylinder surrounding the armature and having pole-pieces projecting from its edges inward and other pole-pieces projecting from its middle portion inward, the different pole-pieces alternating with one another around the armature, and exciting-coils confined between the cylinder and the pole-pieces.

3. The combination, with the cylinder A, provided with one set of pole-pieces, of the end rings provided with the inward projections, constituting the other set of pole-pieces, as set forth.

4. The combination, with the cylinder A, provided with one set of pole-pieces, of the end rings provided with the inward projections constituting the other set of pole-pieces, and bolts, as a^4, connecting the two rings and securing them to the cylinder, substantially as described.

488,042. PICTURE-EXHIBITOR. ALFRED SVENSSON, Rockford, Ill. Filed Apr. 12, 1892. Serial No. 428,917. (No model.)



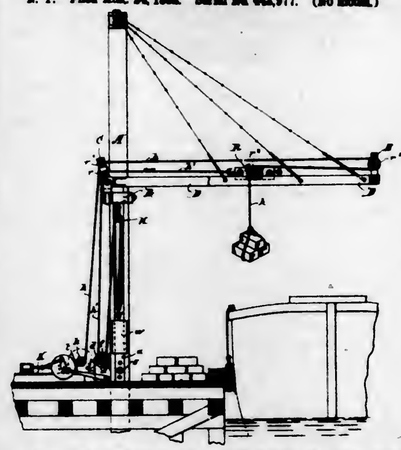
Claim.—A picture-exhibitor having a base, securing-brackets thereon, a shaft journaled in the brackets, a case rigidly secured to the shaft, one of the brackets being vertically grooved, within which is located a pulley on the shaft and pulley near the lower end of the bracket, a belt connection between the pulleys, a knob located outside of the bracket for operating the case, the case having two faces provided with apertures for exposing the pictures, a partition in the case, forming two compartments therein, a passage from one compartment to the other at each edge of the partition, frames in the compartments for holding the pictures, an opening in the case for removing the frames, and a closure for the opening.

488,043. SCISSORS-SHARPENER. KARL A. TUBBELL, Northampton, Mass. Filed Apr. 18, 1892. Serial No. 429,501. (No model.)

Claim.—1. A scissors-sharpener comprising a cylindrical head having a peripheral groove with a sharpening-surface and a handle extending laterally from the head and in line with the axis thereof, substantially as described.

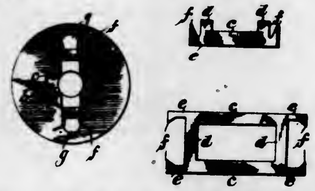
2. A scissors-sharpener comprising a cylindrical head having a peripheral groove with a sharpening-surface and a handle extending laterally from the side of the head and in line with the axis thereof, said handle being an integral extension of the head, substantially as described.

488,044. HOISTING APPARATUS. JOHN E. WALSH, New York, N. Y. Filed Aug. 24, 1892. Serial No. 443,977. (No model.)



Claim.—The combination of a mast erected on a dock or other place, arms supported thereon and adapted to be swung around in different positions, trolleys traveling upon said arms, hoisting-machines for working the hoisting-ropes, tackle-ropes passing each from one end of a trolley over a pulley or pulleys to and around a drum connected with a brake and from there over the pulleys of two blocks of hoisting-tackle, to one of which blocks the other end of a tackle-rope is secured, and weights guided in the mast and suspended each from one of the blocks, while the other is secured to the mast, as and for the purposes herein shown and described.

488,045. BOBBIN USED IN SPINNING AND TWISTING FRAMES. JOSHUA H. WILSON, Todmorden, England. Filed Sept. 5, 1892. Serial No. 445,126. (No model.) Patented in England May 14, 1891, No. 8,263.



Claim.—1. A bushing for bobbins, made from a blank consisting of two side strips *c c*, having a tooth *f* at their outer end and two cross-strips *d d*, connecting the side strips some distance in rear of the toothed end thereof, substantially as set forth.

2. The combination, with a bobbin provided in its under face with a circular recess encompassing its bore and two or more grooves or recesses *g*, radiating from the bore and extending through said recess, of a bushing comprising a substantially-circular body seated in the corresponding recess and arms radiating from said body and extending into the radial grooves of the bobbin to form a bushing or lining therefor, said radial arms having a vertical tooth at their outer end adapted to penetrate into the bobbin and hold the bushing in place, substantially as and for the purpose set forth.

488,046. INSULATOR. CHARLES WIRT, Chicago, Ill. Filed Jan. 4, 1892. Serial No. 417,041. (No model.)

Claim.—1. In a strain-insulator, the combination of two parts, each provided with an eye and hook at one end and one with a cup, the other with a body adapted to be received within the cup, the opposed surfaces of both cup and body being grooved or corrugated,

and a mass of insulation between the opposed surfaces and entirely surrounding both cup and body.

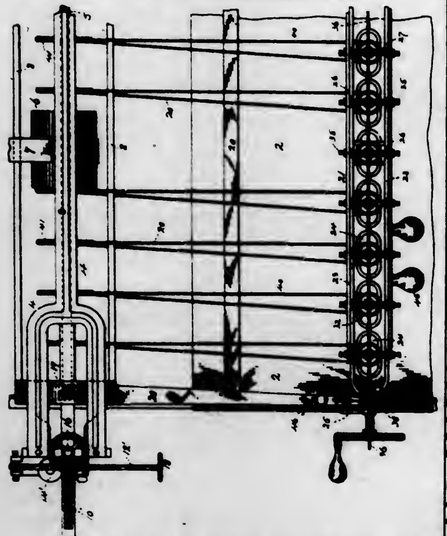
2. In a strain-insulator, the combination of two pieces, each provided with an eye or hook at one end and one with a cup, the other with a body adapted to be received within the cup, and insulating material interposed between such body and cup and entirely covering all the surface of both parts.

3. In a strain-insulator, the combination of two parts, each provided with an eye and hook at each end, the one with a cup, the other with a body adapted to be received within the cup, the body increasing in diameter toward its end and the cup decreasing in diameter toward its end, and a mass of insulation interposed between the cup and body.

4. In a strain-insulator, the combination of two parts, each provided with an eye and hook at each end, the one with a cup, the other with a body adapted to be received within the cup, the body increasing in diameter toward its end and the cup decreasing in diameter toward its end, and a mass of insulation interposed between the cup and body and entirely surrounding both cup and body.

5. In a strain-insulator, the combination of two parts, one having a cup-shaped portion, the other a portion adapted to be received within the same, the opposed surfaces shaped so as not to interlock but to present faces at an angle to the line of strain, and interposed insulation hardened in place.

488,047. CARVING-MACHINE. HARRON H. ADAMS, Everett, Mass. Filed Oct. 26, 1891. Serial No. 410,046. (No model.)



Claim.—1.. In a carving-machine, the combination, with fixed uprights, a rigid support pivotally mounted in said uprights and movable endwise therein, means whereby vertical adjustment of said support as a whole on said uprights is effected, and a horizontal extension-frame secured at one end to said support, of a tool-carriage rocking transversely in the free end of said frame, a non-revolvable pattern-tool, and one or more revolvable cutting-tools mounted in said carriage, substantially as specified

2. In a carving-machine, the combination, with fixed uprights, a support pivotally mounted in said uprights and movable endwise therein, means whereby vertical movement of said support as a whole on said upright is effected, a frame attached to said support to swing therewith, and a carriage mounted to rock transversely in the free end of said frame, of a series of independent tool-heads pivotally mounted in said carriage, a non-revolvable pattern-tool, and one or more revolvable cutting-tools secured in said heads and adapted for universal movement, substantially as explained.

3. In a carving-machine, the combination, with a work-table, a support free to move endwise and to rock on its axis and in which is supported a counter-shaft, a frame attached at one end to said support and rocking or swinging therewith, and an axially-rocking tool-carriage in the free end of said frame, of a series of tool-heads adapted to swing pivotally in planes coincident with the longitudinal axis of the carriage, one or more removable cutting-tools, and a single pattern-tool in the lower end of said heads, and mechanism for rotating said cutting-tools independently from said counter-shaft, substantially as described.

4. In a carving-machine, an endwise-movable swinging frame, means for adjusting said frame as a whole vertically and for moving it as a whole horizontally when required, an axially-rocking tool-carriage composed of an apertured plate with upright ears arranged in pairs at intervals thereacross, and upright end arms 37, connected with said bar 36, combined with independent tool-heads, means for clamping them together when desired, and a bar 36, passing between said arms 37, a non-revolvable pattern-tool, a series of revolvable cutting-tools, and means for actuating the cutting-tools, substantially as set forth and stated.

5. In a carving-machine, the combination, with a swinging frame having horizontal and vertical adjustment and a tool-carriage adapted to rock axially in its free end and be held in any position, of a series of tool-heads oscillating at right angles to the rocking movement of the carriage and mounted thereupon, a series of revolvable spindles in said head, operating-tools, a longitudinally-movable rod pivotally attached to each tool-head to produce simultaneous and similar movement of every head, and a clamp whereby the said rod and connected parts may be held in desired position of adjustment, substantially as set forth.

6. In a carving-machine, a swinging frame capable of horizontal and vertical adjustment, an axially-rocking tool-carriage in its free end, composed of an apertured plate 23, its journal-supports, the upright ears in pairs thereacross, a reciprocating bar 36, and end arms 37, combined with a series of tool-heads, each composed of a frame 28, trunnions 35, a revolvable spindle to receive a cutting-tool and furnished with a pulley, and guide-rolls 48, all operating substantially as explained.

7. In a carving-machine, the combination, with a swinging frame, an axially-rocking tool-carriage in its free end, a series of tool-heads pivotally mounted in said carriage, a non-revolvable pattern-tool, and a series of revolvable cutting-tools adapted for universal movement, of an oscillating hanger-frame which upholds the pivoted end of the swinging frame, the fixed supports, and mechanism to provide right-line movement of the hanger-frame upon its supports, substantially as stated.

8. In a carving-machine, a rigid swinging frame, a support capable as a whole of horizontal endwise movement and also vertical adjustment, and the counterpoise springs or weights, combined with a tool-carriage adapted to rock upon its axis parallel with the horizontal axis on which the frame swings, a pattern-tool and one or more cutting-tools, and tool-heads which receive said tools and are capable of adjustment pivotally in planes coincident the longitudinal axis of the tool-carriage, substantially as explained.

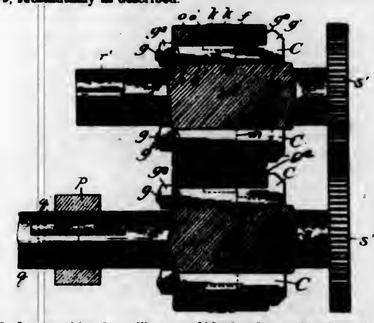
9. The fixed uprights 3, an oscillating extension-frame 20, upon which is mounted a pivotal tool-carriage with rocking tool-heads, combined with a movable support 4, which interconnects said extension-frame with the uprights and is composed of end heads 9, supporting-shafts 10, and longitudinal connecting-bars 8, and with the pivotally-supported shaft and its toothed wheel 12, and hand-wheel 13, said toothed wheel being adapted to be engaged with one of the shafts 10 when desired, substantially as specified and set forth.

10. In combination with fixed uprights, a movable support capable of vertical and longitudinal adjustment thereupon, an oscillating extension-frame pivoted at one end to said support, the pivotal tool-carriage with rocking tool-heads in the free end of said frame, and a counter-shaft 5, actuated by some prime motor and having journal-supports 19 in the end heads of said support, a series of pulleys upon said shaft, and belts therefrom to operate the individual cutting-tools in the tool-heads, substantially as explained.

488,048. METAL-ROLLING MACHINE. JAMES J. ANDERSON, Chicago, Ill. Filed Mar. 28, 1892. Serial No. 426,744. (No model.)

Claim.—1. In a machine for rolling metal blanks, the combination of two companion rolls formed with coincident annular transversely-recessed die-receiving faces, drivers in the said recesses, a series of abutting, removable, and replaceable segmental dies around the die-receiving faces of each roll, the series of dies being provided at their inner circumference with transverse recesses into which the said drivers extend, and fastening means upon the rolls engaging the opposite sides of the dies, substantially as and for the purpose set forth.

2. In a machine for rolling metal blanks, the combination of two companion rolls formed with coincident annular transversely-recessed die-receiving faces and annular shoulders *o* at one side of the said die-receiving faces, drivers in the recesses of the die-receiving faces, a series of abutting, removable, and replaceable segmental dies around the die-receiving faces of each roll, the series of dies being provided at their inner circumferences with transverse recesses into which the said drivers extend, adjustable clamping-rings upon the rolls, and means for tightening the rings in place to clamp the dies against the shoulders *o*, substantially as described.



3. In a machine for rolling metal blanks, the combination of two companion rolls formed with coincident annular transversely-recessed die-receiving faces and annular shoulders *o*, having recessed faces *o'* at one side of the said die-receiving faces, drivers in the recesses of the die-receiving faces, a series of abutting, removable, and replaceable segmental dies around the die-receiving face of each roll, each die being shaped at its side adjacent to a face *o'* to conform to and engage the same, and the series of dies being provided at their inner circumferences with transverse recesses into which the said drivers extend, adjustable clamping-rings upon the rolls, and means for tightening the rings in place to clamp the dies against the shoulders *o*, substantially as described.

4. In a machine for rolling metal blanks, the combination of two companion rolls formed with coincident annular die-receiving faces having transverse recesses *k'* and annular shoulders *o* at one side of the die-receiving faces, openings *k* in the rolls below the shoulders *o* at the recess *k'*, a series of abutting, removable, and replaceable segmental dies extending around the die-receiving faces against the shoulders *o* and having transverse recesses *i* in their under sides which register with the recesses *k'*, adjustable clamping-rings at the sides of the dies opposite the shoulders *o*, drivers C, engaging at one end portion the outer surfaces of the rings and extending thence through openings formed by coincident recesses *k'* *i* and through the respectively-adjacent openings *k*, and tightening means upon the drivers for forcing the same against the rings to clamp the dies against the shoulders *o*, substantially as and for the purpose set forth.

5. In a machine for rolling metal blanks, the combination of two companion rolls formed with coincident annular transversely-recessed die-receiving faces and annular shoulders *o*, having inclined faces *o'* at one side of the said die-receiving faces, adjustable clamping-rings D upon the rolls at the opposite side of said die-receiving faces, having inclined faces *f*, drivers in the recesses of the die-receiving faces, a series of abutting, removable, and replaceable dies around the said die-receiving faces of dovetail shape in cross-section to conform at opposite sides, respectively, to the faces *o' f*, the series of dies being provided with transverse recesses into which the said drivers extend, and means for tightening the rings D to clamp the dies in place, substantially as described.

488,049. BRICK-PRESS. GEORGE H. BABCOCK, Plainfield, N. J. Filed Feb. 13, 1891. Serial No. 381,128. (No model.)

Claim.—1. In a press, a pair of coacting platens having a swinging movement, one maintaining parallelism to a given plane and the other having a swinging movement intersecting said plane, as set forth.

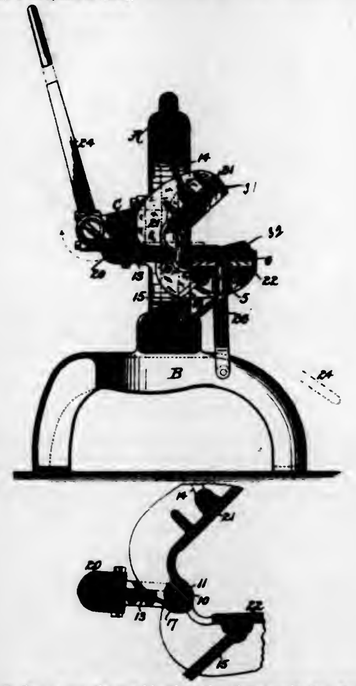
2. In a press, a pair of coacting platens pivoted together, one having a combined swinging and parallel movement and the other a combined swinging and revolving movement, whereby, when brought together, the supporting and resisting parts shall be in the line of compression and when separated shall be moved out of said line of compression, as set forth.

3. In a press, a pair of coacting platens having a swinging movement, one supported upon two parallel pivoted links and the other suspended from a single link and adapted to move from and into parallel planes, as set forth.

4. In a press, a pair of coacting platens, a single link for controlling the motion of one of the platens, a pair of parallel links for controlling the motion of the other platen, and a connected crank for simultaneously moving both platens, substantially as described.

5. In a press, the combination of a pair of hinged platens, a link sustaining one of the platens, a pair of links supporting the other platen, a crank for moving the platens, and a link connecting the crank with the pivot of the platens, substantially as described.

6. In a press, a pair of platens hinged together and having a swinging and separating motion, substantially as described, the hinge of one of said platens being slotted and bearing upon a spring whereby the respective platens assume a relative parallel position previous to compression, as set forth.



7. In a press, the combination of a platen swinging upon two substantially-parallel links, a die carried by and movable relative to said platen, and an abutment located to cause said relative movement of the die and platen, substantially as described.

8. In a press, the combination, with a platen having both swinging and parallel movement, a die-carrier by and movable with respect to said platen, and an abutment located to cause the relative movement of the die while permitting the continued movement of the platen, substantially as described.

9. In a press, the combination, with a platen having a swinging movement, of a movable die supported thereby, and a swinging abutment adapted to be moved in or out of engagement, substantially as described.

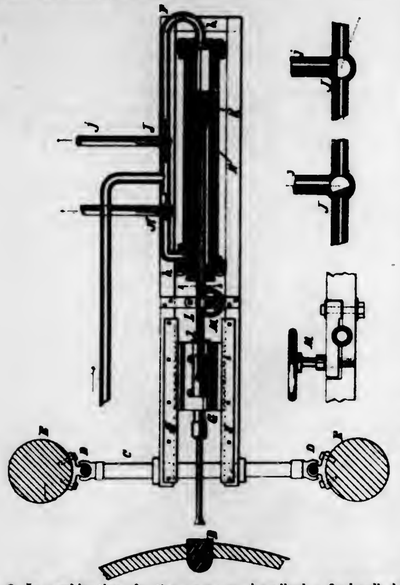
10. In a press, the combination of two coacting platens, one of which is controlled by two links and the other by a single link, whereby, when said links are in position for compression, the plane of the single link of one platen stands midway the planes of the two links of the other platen, substantially as described.

11. In a press, the combination and arrangement of two coacting platens, one being controlled by one link and the other by two substantially-parallel links, a crank for giving motion to the platens, and a link connecting the crank with the platens, whereby the crank and its connecting-link shall come into the same plane at substantially the same instant that the three supporting-links come into substantially-parallel planes, substantially as described.

488,050. DRILL. DAVID BAKER, Spartow's Point, Md. Filed June 21, 1892. Serial No. 437,493. (No model.)

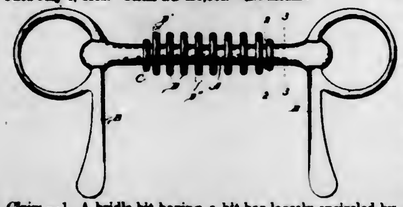
Claim.—1. In combination, for the purposes described, a feed-cylinder, piston, and piston-rod, a drill traveling with the said piston-

rod, admission and exhaust ports for the said cylinder, and a valve therefor, substantially as set forth.



2. In combination, for the purposes described, a feed-cylinder, piston, and tubular piston-rod, a frame therefor, connections for admitting fluid-pressure to the said cylinder, a drill mounted upon the said frame and secured to the said piston-rod, a fluid connection between the said tubular piston-rod and the said drill, and means for controlling the fluid-pressure upon the said piston, substantially as set forth.

488,051. BRIDLE-BIT. WINFIELD J. RABBEDEAU, Pueblo, Colo. Filed July 6, 1892. Serial No. 439,111. (No model.)



Claim.—1. A bridle-bit having a bit-bar loosely encircled by a series of unconnected rings whose internal diameter is materially greater than that of the bar.

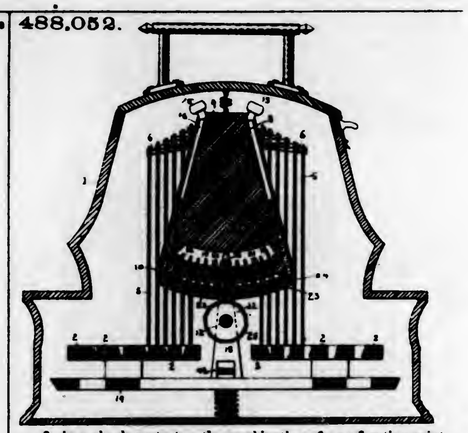
2. The combination, with the bar of a bit, of rings placed upon the middle portion of the bar and having an internal diameter greater than the bar's diameter and rings fixed to the bar near its ends to prevent the rings first named from passing to the ends of the bar.

488,052. CHECK-PUNCH. BROWN G. RAPP, New York, N. Y., assignor to the Rapp Manufacturing Company, of New York. Filed Sept. 16, 1892. Serial No. 445,667. (No model.)

Claim.—1. In a check-protector, the combination of a perforating printing-punch provided with a series of pins arranged in the form of a character and an inking device permanently located in the path of said punch and traversed by the pins thereof, said pins being normally—that is, when the apparatus is not in use—in contact with the inking device and above the printing-surface, whereby as the pins are moved forward to perforate the paper they ink the same around the perforations, substantially as described.

2. In a check-protector of the character indicated, the combination of a perforating-punch arranged to form the desired character, a printing-bed, and an inking device above the printing-bed for applying ink to the punch above the paper to be perforated, whereby as the punch moves forward it will be inked and will ink the paper, substantially as described.

488,052.



3. In a check-protector, the combination of a perforating printing-punch provided with a series of pins arranged in the form of a character, an inking device permanently located in the path of said punch and traversed by the pins thereof, whereby the latter are inked, and a printing-bed provided with a series of holes adapted to register with the said pins, substantially as set forth.

4. In a check-protector, the combination, with a perforating printing-punch, inking device, and printing-bed, of a lever adapted to be depressed by the depression of the printing-key, and a piece, as 18, between said punch and lever adapted to effect the outward movement of the punch, substantially as set forth.

5. In a check-protector, the combination, with the perforating-punch carrier, of perforating-punches carried thereby, a printing-bed below said carrier, gearing connecting said carrier and printing-bed, a key-lever mechanism connecting said punches and key-lever, and connections between said key-lever and gearing, whereby the movement of the carrier and printing-bed is effected synchronously by movement of the key-lever, substantially as set forth.

6. In a check-protector, the combination, with a pendulum punch-carrier case, of perforating-punches carried thereby, a rotary printing-bed, gearing connecting said carrier and bed, a key-lever, mechanism connecting said punches and key-lever, and connections between said key-lever and gearing, whereby the movement of the carrier and the bed is effected synchronously by movement of the key-lever, substantially as set forth.

7. In a check-protector, the combination, with the punch-carrier, perforating-punches, printing-bed, gearing connecting said carrier and bed, and a key-lever, and connections between said key-lever and gearing, whereby the movement of the carrier and bed is effected synchronously by the movement of the key-lever, of mechanism operated by the key-lever for depressing the perforating-punches after the carrier and bed have been brought into printing position, substantially as set forth.

8. In a check-protector, the combination, with the perforating-punch carrier, printing-bed, gearing connecting said carrier and bed, and a key-lever, and connections between said key-lever and said gearing, whereby the movement of the carrier and bed is effected synchronously by the movement of the key-lever, of a plate-lever in the path of said key-lever, a connection between the perforating-punch and the plate-lever, and means carried by the key-lever for depressing said plate-lever after the printing-punch has been brought into printing position, substantially as set forth.

9. In a check-protector, the combination of a case 9, carrying perforating-punches 10, a printing-bed 11, a shaft 8, on which said case 9 is mounted, a shaft 12, on which said printing-bed 11 is mounted, gearing between said shafts, a key-lever 2, and connecting-rods 5 6, connecting said key-lever with shaft 8, whereby on the depression of the key-lever said case and printing-bed are moved synchronously, substantially as set forth.

10. In a check-protector, the combination of a case 9, carrying perforating-punches 10, a printing-bed 11, a shaft 8, on which said case 9 is mounted, a shaft 12, on which said printing-bed 11 is mounted, gearing between said shafts, a key-lever 2, connecting-rods 5 6, connecting said key-lever with shaft 8, a key 4, adapted to project beyond the range of movement of the key-lever 2, a lever 19, adapted to be moved by the act of projecting said key beyond the range of movement of the key-lever, and a piece 18, carried by said lever 19, adapted to engage with the perforating-punches, whereby by the continued depression of the key the printing-punches and printing-bed are

synchronously moved into position and the perforating-punches operated, substantially as set forth.

11. The combination, in a check-protector, of a perforating-punch, a pivoted lever, an upwardly-projecting hook or piece for depressing said perforating-punch, said punch being operatively connected to said lever, a printing-bed, a ratchet supported independently of said lever and printing-bed, and a pawl carried by said lever, substantially as set forth.

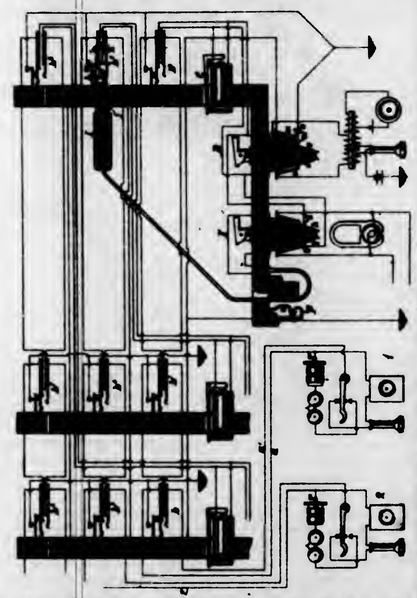
12. In a check-protector, a perforating printing-punch having a series of pins forming the character, one or more of said pins being provided with a channel adapted to carry the printing-ink, and an inking device permanently located in the path of said punch and traversed by the pins thereof, substantially as set forth.

13. In a check-protector, the combination of a key-lever having a limited range of movement, a key on the key-lever, depressible beyond the lowest position of the key-lever, perforating-punches, and a lever-plate carrying a piece adapted to move the perforating-punches, said lever being operated by the further movement of the key, substantially as set forth.

14. In a check-protector, the combination, with the case carrying the perforating-punches, of a printing-bed, a device for depressing the punches, a coacting registering mechanism carried partly by said device and partly by said printing-bed and carrying-case, respectively, the parts on said device co-operating both with the carrying-case and printing-bed, whereby if either is out of alignment the operating device cannot be moved to advance the punch which has been brought to position, substantially as set forth.

15. In a check-protector, the combination, with the case carrying the perforating-punches, of a printing-bed, a device for depressing the punches, a coacting registering mechanism consisting of suitable parts carried by said device and adapted to register with openings both in the printing-bed and carrying-case when the machine is adjusted and preventing movement when either the bed or case is out of alignment, substantially as described.

488,053. TEST-CIRCUIT FOR MULTIPLE SWITCHBOARDS. ORO A. BELL, Brooklyn, N. Y., assignor to the Western Electric Company, Chicago, Ill. Filed Mar. 12, 1891. Serial No. 384,734. (No model.)



Claim.—1. The combination of a spring-jack having line-springs connected to the two sides of a telephone-line, and a test-ring insulated from the line-springs with a plug having an inner conducting-core adapted to come into contact with one of the line-springs, a sleeve of insulating material surrounding the core, except at that portion which comes into contact with the line-spring, and a metallic tube surrounding the insulated core and terminating near the tip of the plug in an enlarged portion adapted to make contact with the other line-spring and having an insulating-covering surrounding it for such portion of its length as to prevent its coming in contact with the test-ring of the jack, in the manner and for the purpose specified.

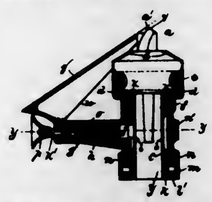
2. In a listening-key for telephone-exchange systems, the combination of normally-open contacts adapted when closed to connect the operator's telephone to a subscriber's line, means for closing the contacts, a test-ring and ground connection therefrom, and contacts in said ground connection closed by the act of connecting the operator's telephone to line, substantially as specified.

3. The combination, with telephone-lines extending from the subscriber's station through the line-springs and contacts, of spring-jack switches provided with test-rings insulated from the line-springs, respectively, thereof, the test-rings of the spring-jack switches of each line being electrically connected together, of a listening-key provided with contacts, which contacts are closed to complete a ground connection to the test-rings when the listening-key is operated, to connect the telephone of the operator to a line, substantially as specified.

4. The combination, with two telephone-lines, each provided with switches on two or more switchboards, and one of said lines being provided with a flexible cord and plug adapted to be inserted in the spring-jack switch of the other line to loop the two lines together, of a listening-key provided with contacts, one of which is connected to earth and the other to the series of test-rings of the lines, and a socket adapted to receive the plug when not in use, said socket being provided with normally-open contacts, said contacts being adapted to close together upon the removal of the plug from the socket and to connect the test-rings of the switches to earth, substantially as specified.

5. The combination, with a spring-jack having two line-springs and a test-ring insulated from said line-springs, of a connecting-plug having a central core furnished with a tip making contact with one of said line-springs, a conducting-sleeve insulated from the core and making contact with the other of said line-springs, and a sleeve insulating the said conducting-sleeve from the test-ring, substantially as and for the purpose specified.

488,054. HOLDER FOR GRINDING TWIST-DRILLS. JOHN H. BINNERMAN, Brooklyn, N. Y. Filed Sept. 15, 1891. Serial No. 405,811. (Model.)



Claim.—1. The combination of the socket-holder, drill-holding chuck in said holder, and the segmental conic gage-plate attached to the socket-holder, said chuck being revolvable relatively to the plate and having a stop device to hold it in the positions required, substantially as described.

2. The combination of the socket-holder, drill-holding chuck in said holder, segmental conic gage-plate attached to the socket-holder, and the spring stop-bolt, said chuck being revolvable relatively to the gage-plate, substantially as described.

3. The combination of the socket-holder, drill-holding chuck in said holder, segmental conic gage-plate, and the feed-screw, said chuck being revolvable relatively to the gage-plate and having a stop device to hold it in position, substantially as described.

4. The combination of the socket-holder, drill-holding chuck in said holder, and segmental conic gage-plate, the axis of the drill-chuck being offset back of the edge of the said plate gaging the cutting-edge of the drill, substantially as described.

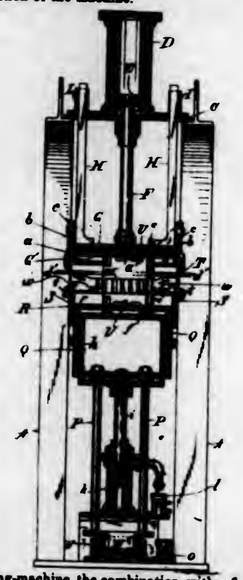
5. The combination of the drill-chuck, holding-socket for said chuck, the segmental conic gage-plate attached to said socket, the locking-bolt for the shank of the chuck, the feeding-ring fastened on the socket, and the screw-flange on the shank of the chuck, substantially as described.

488,055. MOLDING-MACHINE. HENRY A. BILLINGS, Dayton, Ohio. Filed Mar. 24, 1892. Serial No. 426,179. (No model.)

Claim.—1. In a molding-machine, the combination, with a flask and an open pattern parted at its upper and lower sides for a hollow casting to be made therein, of ramming mechanism for said flask and a core-support carried by said flask and arranged within said pattern and adapted to receive and hold the green sand packed about it by said ramming mechanism.

2. In a molding-machine, the combination, with a flask and a pat-

tern therefor open on opposite sides and adapted to form hollow-ware castings, of a core-support arranged within said pattern and supported by said flask and oppositely-acting sets of ramming mechanisms operating upon the loam in said flask to pack the same about said core-support and pattern and form a mold for the article and a core therefor at one operation of the machine.



3. In a molding-machine, the combination, with a flask and a pattern for a journal-box, parted at its upper and lower sides, of a core-support mounted in said flask and arranged within the pattern, upper and lower ramming-heads, means to operate them to ram the loam within said flask, and detachable plates for said heads, having projections corresponding with said pattern and the sides thereof, whereby the loam packed within said pattern by said ramming mechanism will be held by said support and impressed by said plates according to the style of pattern molded and the projections on said plates.

4. In a molding-machine, the combination, with a flask, of a core-support mounted within said flask, adapted to receive and hold the loam rammed therein and constitute a green-sand core-support, and removable rods extending from near the upper portion of said core-support to the outside of said flask; whereby vents for gases are formed on the removal of said rods after ramming.

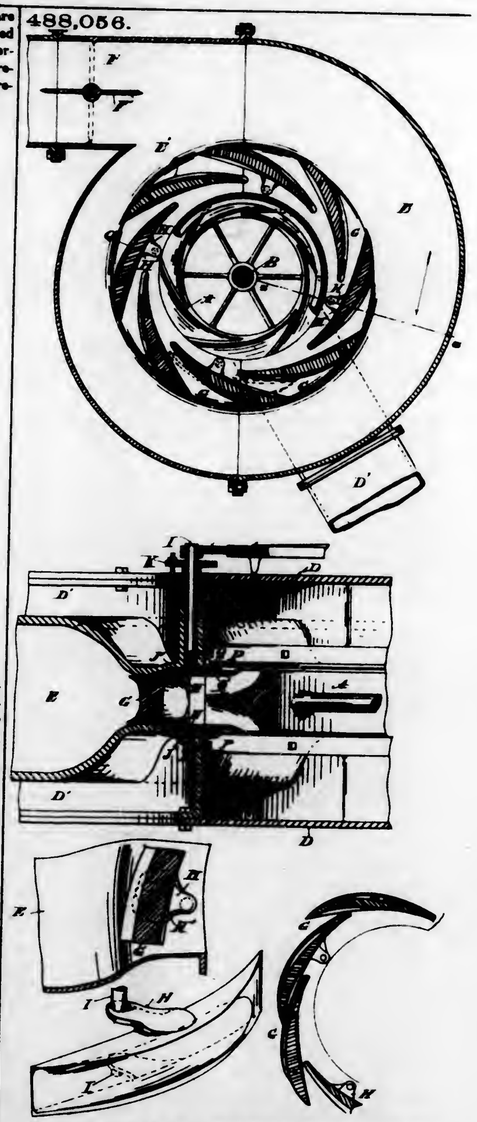
5. In a molding-machine, the combination, with a flask and a pattern for a journal-box, parted at the upper and lower sides, substantially as described, of a core-support for said journal-box, the said core-support being arranged within the pattern which is used within said flask, upper and lower ramming-plates having projections corresponding to the portions of the sides extending within said box, and auxiliary pieces for the back walls of said oil-box, and means to support and press them into said core within the flask.

6. In a molding-machine, the combination, with a flask and a pattern for a journal-box, said pattern being parted along the inner walls of the upper and lower sides thereof when resting on its side, substantially as shown and described, of a core-support for said box, carried by said flask and arranged within said pattern, ramming-plates having projections, substantially as described, and means to operate said ramming-plates, detachable pieces adapted to form substantially half the rear walls of said box when mounted in the upper ramming-plate, and a secondary plate adapted to carry the other half of said rear walls formed by said detachable pieces, and means to operate one or both of said plates and force the side pieces into said core to shape the mold-cavities for said rear walls, substantially as shown and described.

488,056. WATER-WHEEL. JOHN W. BOOKWALTER and FRANCIS M. BOOKWALTER, Springfield, Ohio. Filed Apr. 29, 1892. Serial No. 431,126. (No model.)

Claim.—1. In a water-wheel, the combination, with a casing and a wheel proper, of pivoted gates having the front and the back of each gate stooped or concave, substantially as shown and described, and means to operate said gates.

488,056.



2. In a water-wheel, the herein-described spout-gate, consisting of a curved body portion acting as a chute at the outer end and provided with lateral flanges at the front and rear sides toward the inner end, and having trunnion-bearing arms projecting above and below the flanges, substantially as shown and described.

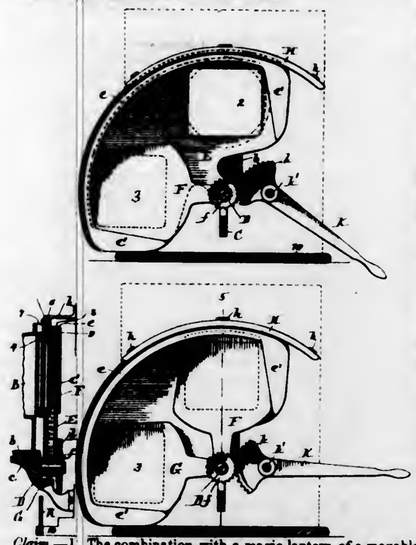
3. In a water-wheel, the combination, with a casing and a wheel proper, of alternately stationary and oscillating gates, each set having their front and rear sides concaved along portions matching with adjacent gates to constitute spouts, and the oscillating gates adjustable in the same direction to effect an increase or a lessening of the size of opening, while preserving the spout form of gate-opening.

4. In a water-wheel, the combination, with a wheel proper and a convolute casing therefor having the inner walls of the side plates drawn in nearer together than the outer portions of the casing and rounded the one into the other, of oscillating gates concave along their front and rear sides and having inwardly-extending trunnion-bearing arms above and below the said sides and mounted in recesses in the drawn-in portion of said side plates, the outer ends of the gates being adapted to extend outward into the convolute chamber and to close up within said narrowed portion when closed, and means to oscillate said gates.

5. In a water-wheel, the combination, with a wheel proper and its shaft, of an inclosing casing therefor, gates mounted in said casing between the side plates thereof and provided with arms extending inward toward the wheel proper and located in recesses within said side plates, trunnions at the ends of said arms, stuffing-boxes constituting bearings for said trunnions, extending outside the casing, and operative mechanism connecting said trunnion-mounted gates outside said stuffing-box bearings.

6. In a water-wheel, the combination, with a wheel proper and its shaft, of an inclosing casing, oscillating gates mounted between the side plates thereof and concave in cross-section at opposing points of the respective gate-openings, having arms extending in toward the wheel proper and mounted in recesses within the side plates, trunnions on said arms extending outward through the casing, stuffing-box bearings for said trunnions, and operative connections for said trunnions outside said bearings.

488,057. MAGIC LANTERN. DAVID R. BREED, Chicago, Ill. Filed May 7, 1892. Serial No. 432,107. (No model.)



Claim.—1. The combination, with a magic lantern, of a movable slide-carrier provided with two slide-openings and slide-holders, two shutters, each arranged to be moved in front of either of the slide-openings of the carrier, and means for imparting movement to said carrier to bring its slide-openings in front of the lantern-lens and for imparting movement to the shutters to bring them in front of either of the slide-openings of the carrier, substantially as described.

2. The combination, with a magic lantern, of a slide-carrier having the slide-openings therein and mounted to move in curvilinear direction in front of the lens-opening, two shutters, each arranged to be moved in front of either of said slide-openings, and means for imparting curvilinear movement to said carrier and to said shutters, substantially as described.

3. The combination, with a magic lantern, of a movable slide-carrier provided with two slide-openings, two shutters movable with respect to said slide-carrier, one of said shutters being arranged to fall by gravity when the slide-carrier is shifted to bring said shutter beyond its vertical position, and means for imparting a curvilinear movement to said slide-carrier and said shutters in order to bring the slide-opening opposite the lens and in order to bring one of said shutters in position to fall by gravity, substantially as described.

4. The combination, with a magic lantern, of a movable slide-carrier having two slide-openings, two shutters shiftable to obstruct either of said slide-openings, and means for moving one of said shutters in front of the slide-openings opposite the lens before the slide-carrier is shifted and for shifting the carrier to bring the other slide-opening in front of the lens with the shutter opposite thereto, whereby in changing the slides the exposed slide will be obscured and removed before the new slide is brought in front of the lens, substantially as described.

5. The combination, with a magic lantern, of a slide-carrier having slide-openings therein, a movable shutter arranged to shift said carrier, means for actuating said shutter, and a second shutter arranged to be shifted by said carrier, substantially as described.

6. The combination, with a magic lantern, of a pivoted slide-carrier having slide-openings therein, two pivoted shutters for obstructing the openings of said slide-carrier and shiftable in front of either of said openings, said slide-carrier and shutter being sustained to move in curvilinear direction, and suitable means for shifting said slide-carrier and shutters, substantially as described.

7. The combination, with a magic lantern, of a pivoted slide-carrier having slide-openings therein, two pivoted shutters, and an operating-lever for swinging one of said shutters and causing said shutter to operate the slide-carrier, substantially as described.

8. The combination, with a magic lantern, of a pivoted slide-carrier having slide-openings therein, a curved guideway for said slide-carrier, and suitable lever mechanism for rocking said carrier about its pivot-point and for effecting the shifting of the shutters, substantially as described.

9. The combination, with a magic lantern, of a pivoted slide-carrier, two pivoted shutters, a shaft whereon said slide-carrier and shutters are pivoted, a pinion connected to one of said shutters, and a rack-bar and operating-lever for operating said slide-carrier and shutters, substantially as described.

10. The combination, with a magic lantern, of a pivoted slide-carrier, two shutters pivoted concentrically with said slide-carrier, and a rack-bar and pinion and operating-lever for shifting said slide-carrier and shutters, substantially as described.

11. The combination, with a magic lantern, of a pivoted slide-carrier provided with a rim having curved grooves therein, two pivoted shutters having their edges held in a manner free to move within said grooves of the slide-carrier, a gear-pinion connected to one of said shutters, and an operating-lever provided with a curved rack-bar engaging the said pinion, whereby the slide-carrier and shutters may be shifted, substantially as described.

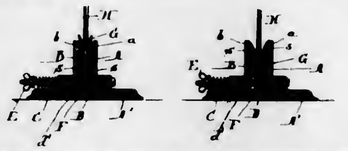
12. The combination, with a magic lantern, of a pivoted slide-carrier having slide-openings therein and having stops at each end with which the shutters may engage, two pivoted shutters for obstructing the sight-openings of the carrier, a pinion connected to one of said shutters, and an operating-lever and rack-bar for engaging with said pinion, substantially as described.

13. The combination, with a magic lantern, of a slide-carrier having openings therein, two shutters, a pinion and rack-bar for operating one of said shutters, the other of said shutters being free to turn about its pivot-point, and stops on the slide-carrier for engagement with the shutters, substantially as described.

14. The combination, with a magic lantern, of a pivoted slide-carrier having slide-openings therein, suitable rims or holders about said slide-openings, and pins for partially lifting the slides from said rim or holder, substantially as described.

15. The combination, with a magic lantern, of a pivoted slide-carrier having slide-openings therein and having open rims or holders for the slides and a shifting stop for preventing the slides being thrown from the slide-carrier during its swinging movement, substantially as described.

488,058. CLAMP FOR BINDING THE EDGES OF LANTERN-SLIDES. DAVID R. BREED, Chicago, Ill. Filed May 12, 1892. Serial No. 432,729. (No model.)



Claim.—1. An apparatus of the character described, comprising the separable jaws A and B, having a flaring mouth, spring mechanism for clamping articles between said jaws, and a suitable stop or rib interposed at the base of said jaws, substantially as described.

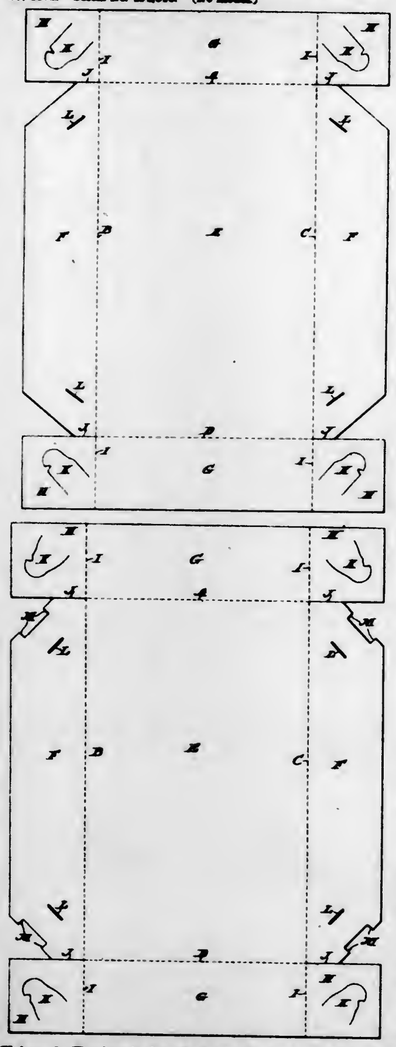
2. An apparatus of the character described, comprising the jaws A and B, having a flaring mouth, one of said jaws being mounted to slide with respect to the other, and a suitable stop or rib interposed at the base of said jaws, substantially as described.

3. An apparatus of the character described, comprising separable jaws A and B, having a flaring mouth, spring mechanism for clamping articles between said jaws, and a base whereon said jaws are mounted, said base being provided with a part extending across and closing the space at the bottom of said jaws and serving as a bearing for the edge of the article clamped between the jaws, substantially as described.

4. An apparatus of the character described, comprising two jaws A and B, spring mechanism for forcing said jaws normally toward each other, said jaws having opposing edges cut away, as at *a* and *b*, and a suitable stop or strip between said jaws, substantially as described.

5. In apparatus of the character described, the combination of a jaw A, a sliding jaw B, a stop or strip F, intermediate said jaws, rods D, whereon said jaw B is mounted, and suitable springs C for forcing said jaws normally toward each other, substantially as described.

488,059. PAPER BOX. JAMES R. BUNKER, Anderson, Ind., assignor to the J. W. Sefton Manufacturing Company, same place. Filed May 23, 1892. Serial No. 434,013. (No model.)



Claim.—1. The herein-described box-blank, provided with the corner flaps H, having the locking-tongues K cut therein, the adjacent ends of the side or end pieces being provided with slits L and adapted to be confined between the respective tongues and corner flaps when the blank is folded into box form, with the body of each corner flap fitting inside the adjacent side or end piece, and the tongue overlapping its end and passed from the exterior through the slit L, substantially as described.

2. The herein-described paper box, having its side and end walls fastened together by means of the corner flaps H and the locking-tongues K cut therein, the adjacent end of each side or end wall of the box being provided with a slit L and confined between the flap H and its tongue K, the body of the flap fitting inside the wall and the tongue overlapping its end and passed from the exterior through its slit L, substantially as described.

3. The herein-described paper box, having its side and end walls fastened together by means of the corner flaps H and the locking-tongues K cut therein, the adjacent end of each side or end wall of the box being provided with a slit L and locking-shoulders M M and confined between the flap H and its tongue K, the body of the flap fitting inside the wall and the tongue overlapping its end and passed from the exterior through its slit L and confined between the shoulders M M, substantially as described.

488,060. SPRING. WILLIAM I. BUNKER, La Grange, Ill. Filed May 9, 1892. Serial No. 433,311. (No model.)

Claim.—1. As a new article of manufacture, a spring formed of coils or loops of wire secured to a base or support, the spring having its coils or loops leaned or inclined in the same direction and adapted when subjected to pressure in cross-section to fold one upon the other to change the elastic action of the springs from a longitudinal to a transverse direction, said springs having sufficient resiliency to resume their normal position when relieved from pressure, substantially as described.

2. As a new article of manufacture, a spring formed of coils or loops of wire secured to a base or support, the spring having its coils or loops leaned or inclined in the same direction and adapted when subjected to pressure in cross-section to fold one upon the other to change the elastic action of the springs from a longitudinal to a transverse direction, said springs having sufficient resiliency to resume their normal position when relieved from pressure and being held in series by a connection extending from one to the other, substantially as described.

3. As a new article of manufacture, a spring formed of coils or loops of wire secured to a base or support, the spring having its coils or loops leaned or inclined in the same direction and adapted when subjected to pressure in cross-section to fold one upon the other to change the elastic action of the springs from a longitudinal to a transverse direction, said springs having sufficient resiliency to resume their normal position when relieved from pressure and being united in an endless ring, substantially as described.

488,061. VEHICLE-TIRE. WILLIAM I. BUNKER, La Grange, Ill. Filed May 31, 1892. Serial No. 434,946. (No model.)

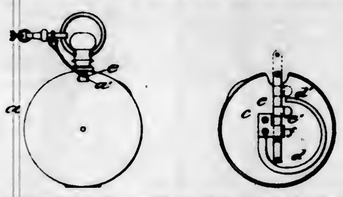
Claim.—1. The combination of a flexible inclosing case and separate elastic cushions therein of less diameter severally than the interior of the inclosing case and imparting the desired tension thereto by pressure against a resistant interposed between one side of each cushion and the side of the case, substantially as described.

2. The combination of a flexible inclosing case and separate elastic cushions therein of less diameter severally than the interior of the inclosing case and imparting the desired tension thereto by pressure against a resistant interposed between one side of each cushion and the side of the case, and means for inserting the cushion under pressure, substantially as described.

3. In a bicycle-tire, the combination of a flexible tube, a partition dividing the same into compartments, and elastic cushions filling one of the compartments and forcing the partition into the space of the other, substantially as described.

488,062. ALARM ATTACHMENT FOR WATCHES. GEORGE J. CAPEWELL, Hartford, Conn. Filed Apr. 8, 1892. Serial No. 428,202. (No model.)

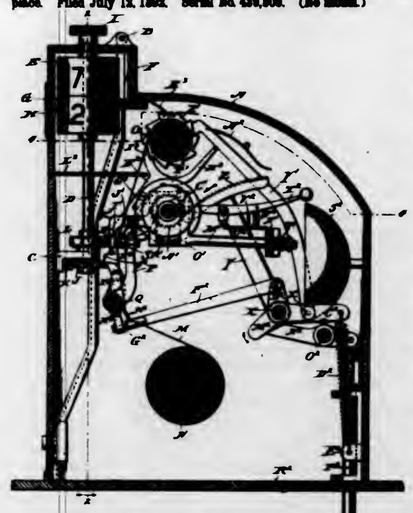
Claim.—1. In combination with a watch or like case, an alarm device comprising a spring secured at one end to the case and a sliding trip device bearing a cam adapted to engage and disengage the spring in the movement of the sliding bar, all substantially as described.



2. In combination with a watch, an alarm attachment comprising the sounding part secured to the case, a movable trip device bearing a cam adapted to engage the sounding part, and a cord or like part secured to the trip device and extending beyond the case, all substantially as described.

3. In combination with a watch, a spring secured within the case at one end and having a free end located in the path of movement of a sliding trip device, the sliding trip device bearing a cam adapted to temporarily engage the end of the spring, a flexible connection between the outer end of the bar and a watch-chain, and the watch-chain secured to the ring of the watch, all substantially as described.

488,068. CASH INDICATOR AND RECORDER. THOMAS CARNEY, Dayton, Ohio, assignor to the National Cash Register Company, same place. Filed July 12, 1892. Serial No. 439,809. (No model.)



Claim.—1. In a cash-recorder, the combination of a casing provided with a sight-opening or window, a vertical spindle journaled in said casing and provided with a thumb-piece outside the casing, an indicating-cylinder fast upon said spindle within the casing and bearing numbers arranged to be exposed singly at the sight-opening, a type-wheel also fast upon said spindle and bearing type-numbers corresponding to the numbers upon the indicating-cylinder, an impression-platen co-operating with the type-wheel, the rock-shaft X, having the operating-handle W affixed to it, the rotary shaft C', carrying the cam F', co-operating with the platen to effect the printing, and mechanism intermediate the rock-shaft X and rotary shaft C' for converting the oscillatory movements of the former into rotary movement in the latter, substantially as described.

2. In a cash-recorder, the combination of a casing provided with two sight-openings on opposite sides of the indicating-chamber, a vertical spindle journaled in said casing and provided with a thumb-piece outside the casing, two indicating-cylinders fast upon said spindle and provided with corresponding indicating-numbers arranged in reverse position, whereby when any number upon one cylinder is exposed to view at one of the sight-openings the same number upon the other cylinder will be exposed to view at the opposite opening, a type-wheel also fast upon said spindle and bearing type-numbers corresponding to those on the indicating-cylinders, an impression-platen co-operating with the type-wheel, the rock-shaft X, having the operating-handle W affixed to it, the rotary shaft C', carrying the cam F', co-operating with the platen and mechanism intermediate the rock-shaft and rotary shaft for converting the oscillatory movements of the former into rotary movement in the latter, and means intermediate the rock-shaft and locking-arm for actuating the latter, substantially as described.

3. In a cash-recorder, the combination of a casing provided with a sight-opening, a vertical spindle journaled therein and provided with a thumb-piece outside the casing, an indicating-cylinder fast upon said spindle and provided with numbers arranged to be exposed singly through said sight-opening, a type-wheel also fast upon said spindle and bearing type-numbers corresponding to the numbers upon the indicating-cylinder, an impression-platen co-operating with the type-wheel, a ratchet also fast upon said spindle, a locking arm or frame co-operating with the ratchet to lock the spindle in different positions, the rock-shaft X, having the operating-handle W affixed to it, the rotary shaft C', carrying the cam F', co-operating with the platen, and mechanism intermediate the rock-shaft and rotary shaft for converting the oscillatory movements of the former into rotary movement in the latter, and means intermediate the rock-shaft and locking-arm for actuating the latter, substantially as described.

4. In a cash-recorder, the combination of the casing A, having the hinged wall, the vertical spindles D, carried by said wall and provided with the thumb-pieces I for turning them, the indicating-cylinders G, fast upon said spindles and provided with numbers arranged to be exposed through the sight-openings H, the type-wheels L, also fast upon the spindles D, the supply-reel N for the record-strip mounted in the main portion of the casing, the storage-reel O for the record-strip, also journaled in the main portion of the casing, the impression-frame R, provided with the platens S for forcing the record-strip against the type-wheels, the rock-shaft X, having the operating-handle W affixed to it, the rotary shaft C', carrying the shaft F', co-operating with the platen, and means intermediate the rock-shaft and rotary shaft for converting the oscillatory movements of the former into rotary movement in the latter, substantially as described.

5. In a cash-recorder, the combination of the vertical spindles D, journaled in the casing and provided with thumb-pieces I for turning them, the indicating-cylinders fast on said spindles and arranged to expose their numbers at sight-openings in the casing, the type-wheels L, also fast upon said spindles, the impression-frame R, co-operating with the type-wheels, the rock-shaft X, the handle W, fast thereon, the arm Y, also fast thereon and carrying the segmental rack Z, the rotary shaft C', the clutch-sleeve B', loose thereon and carrying the pinion A', meshing with the rack Z, the clutch-sleeve D', mounted to slide upon and turn with the shaft C', the spring E', bearing against the sleeve D', and the cam F', fast upon the shaft C' and co-operating with the wiper-block or bearing-surface G' upon the impression-frame, substantially as described.

6. In a cash-recorder, the combination of the type-wheels L, the impression-frame R, co-operating therewith, the inking-pad frame normally resting between the impression-frame and type-wheels, the rock-shaft X, having the operating-handle W affixed to it, the rotary shaft C', mechanism intermediate the shafts for converting the oscillatory movements of the one into rotary movement in the other, and the cams upon the shaft C', co-operating with the inking-pad frame and with the impression-frame to press the inking-pad against the type-wheels and lift its frame out of the path of the impression-frame and then force the latter against the type-wheels, substantially as described.

7. In a cash-recorder, the combination of the type-wheels L, the impression-frame R, the platens S, carried by pins T, loosely mounted in the frame R, the springs V, co-operating with the pins T, and means for actuating said frame, substantially as described.

8. In a cash-recorder, the combination of the vertical spindles D, the indicators and type-wheels carried thereby, the ratchets J, fast upon said spindles, the locking-frame I^3, provided with arms J^3, co-operating with the ratchets, the rock-shaft X, the operating-handle W, fast thereon, the arm B^3, also fast thereon, the arm H^3 of the locking-frame, and the link F^3 and pin G^3, connecting the arms H^3 and B^3, substantially as described.

9. In a cash-recorder, the combination of the type-wheels L, the inking-pad frame co-operating therewith, the frame O' and rod M', rigid with the inking-pad frame, the rod M' being passed through the cross-piece N' of the framework, the spring V', confined between said cross-piece and the front end of the rod, the rotary shaft C', and the cams R' and S', co-operating with the frame O' to force the inking-pad against the type-wheels and then lift it above them, substantially as described.

10. In a cash-recorder, the combination of the storage-reel O, provided with the ratchet Z', the actuating-pawl Y', and holding-pawl E^3, co-operating with said ratchet, and the forked shifter-plate F^3, co-operating with said pawls and provided with the notch J^3, co-operating with the pin K, substantially as described.

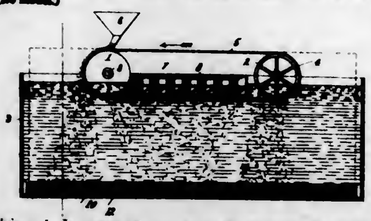
11. In a cash-recorder, the combination of the storage-reel O, provided with the ratchet Z', the actuating-pawl Y', and holding-pawl E², engaging the ratchet, the forked plate F², co-operating with the pawls and provided with the notch J², co-operating with the pin K², and the hinged wall of the casing, provided with the rod L², co-operating with the plate F², substantially as described.

12. In a cash-recorder, the combination of the storage-reel O, provided with the ratchet Z', the rock-shaft X, the operating-handle W, fast thereon, the arm X', also fast thereon, and the pawl-arm Y', connected to the arm X' and co-operating with the ratchet Z', substantially as described.

13. In a cash-recorder, the combination of the storage-reel O, having its spindle journaled at one end in a fixed bearing Y², the ratchet Z', mounted upon said bearing and provided with a lug Z², engaging a notch in the roller, the spring A², fitting within a recess in the opposite end of the roller, the disk B² and collar C², fastened to the end of said spring and fitting loosely over the roller-spindle, and the annular bearing D² for the collar C², substantially as described.

14. In a cash-recorder, the combination of the supply-spindle N for the record-strip, the storage-reel O therefor provided with the ratchet Z', the rock-shaft X and operating-handle W, and the arms X' B², fast on said shaft, the pawl-arm Y', connected to the arm X' and engaging the ratchet Z', the vibrating guide-wire K², over which the record-strip is passed, and a connection between the arm B² and said guide-wire for vibrating the latter, substantially as described.

488,064. MAGNETIC SEPARATOR. HARVEY S. CHASE, Boston, Mass., assignor, by mesne assignments, to the International Ore Separating Company, of New Jersey. Filed Jan. 29, 1892. Serial No. 419,668. (No model.)



Claim.—1. In a magnetic ore-separating machine, the combination of an endless belt traveling around pulleys whose axes are arranged horizontally and in or nearly in the same horizontal plane, a system of magnets creating a magnetic field about the under side of said belt and about the downwardly-traveling end thereon and the feed-hopper arranged above said belt, together with a water-tight tank in which the under portion of said belt is immersed, and means for removing separately the particles falling upon different parts of the bottom of said tank, substantially as described.

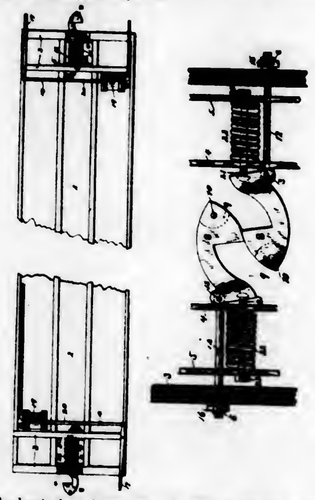
2. In a magnetic ore-separating machine, the combination of an endless belt traveling around pulleys whose axes are arranged horizontally and in or nearly in the same horizontal plane, a system of magnets creating a magnetic field about the under side of said belt and about the downwardly-traveling end thereof, and the feed-hopper arranged above said belt, together with a water-tight tank with an inclosed bottom in which the under portion of said belt is immersed, and a carrier-belt running up said inclined bottom and over the edge of the tank, substantially as described.

3. In combination with the operative parts of a magnetic separating-machine, a magnet composed of a flat core, a series of coils wound alternately in opposite directions on said core, and a series of pole-pieces placed crosswise of said core between said coils, substantially as described.

4. In a magnetic ore-separating machine, the combination of a water-tight tank, an endless belt traveling around pulleys having horizontal axes, a portion of the under side of said belt and of the downward-traveling end thereof being immersed in said tank, a system of magnets creating a magnetic field about the under side of said belt, and the feed-hopper situated above said belt, substantially as described.

488,065. CAR-COUPLING. WILLIAM S. EDWARDS, Charleston, W. Va. Filed Oct. 27, 1892. Serial No. 450,117. (No model.)

Claim.—1. The hook-shaped draw-head having the curved recess in the base thereof, in combination with the bar pivoted to a shoulder of the draw-head and passing back through a cross-timber of the car-bottom and having a key projected from its circumference at the rear end, the crank supported upon or around the rear end of the aforesaid bar and having a groove within its hub in engagement with the key of said bar, and suitable means to turn said crank upon its axis, all substantially as herein described, for the purpose of turning the aforesaid draw-head from a horizontal to a vertical position in the operation of uncoupling railway-cars.



2. The hook-shaped draw-head having the curved recess in the base thereof, in combination with the bar pivoted to a shoulder of the draw-head and passing back through a cross-timber of the car-bottom and having a key projected from its circumference at the rear end, the crank supported upon or around the rear end of the aforesaid bar and having a groove within its hub in engagement with the key of said bar, the spring mounted on the rear face of the aforesaid cross-timber and bearing at its free end against said crank, and suitable means to turn said crank upon its axis against the resistance of said spring, all substantially in the manner described, whereby the aforesaid draw-head is turned from a horizontal to a vertical position in the operation of uncoupling railway-cars and restored to a horizontal position by reaction of said spring in readiness for the operation of coupling such cars.

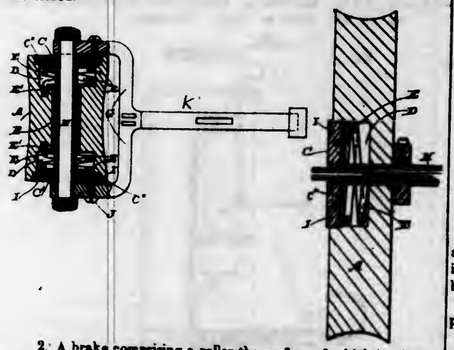
3. The hook-shaped draw-head having the curved recess in the base thereof, in combination with the bar pivoted to a shoulder of the draw-head and passing back through a cross-timber of the car-bottom and having a key projected from its circumference at the rear end, the crank supported upon or around the rear end of the aforesaid bar and having a groove within its hub in engagement with the key of said bar, the spring mounted on the rear face of the aforesaid cross-timber and bearing at its free end against said crank, the hand-lever pivoted outside the car, the rod pivoted at one end to the said lever and at the other end to the aforesaid crank, the cylinder beneath the car, having suitable air or steam power connections with the engine of the train, and the piston connecting said cylinder with the aforesaid crank, all substantially as described, whereby the aforesaid draw-head is turned from a horizontal to a vertical position in the operation of uncoupling railway-cars by an application of manual power from without or of mechanical power from within the train and restored to its normal horizontal position after the uncoupling has been effected.

4. The hook-shaped draw-head having the curved recess in the base thereof and pivoted at its outer shoulder to a suitable support by a vertical pivot, in combination with the backwardly-extending draw-bar normally engaged by its head in said recess, the forward plate loosely mounted on said draw-bar and bearing against the base and ordinary framework of the draw-head, the rearward plate loosely mounted on said draw-bar and bearing against the front face of the proximate cross-timber, the spiral spring wound loosely upon the draw-bar between said plates and bearing against their inner faces, the said draw-bar having a nut at its rear end bearing against the outer face of the said rearward plate, all substantially as described, whereby the aforesaid draw-head is enabled to swing outwardly in the operation of coupling railway-cars and restored to and held in draft position at the completion of said operation.

488,066. ROLLER-BRAKE. HENRY C. FIEHLER, San Francisco, Cal. Filed Aug. 26, 1892. Serial No. 444,495. (No model.)

Claim.—1. A brake comprising a roller having a central hole and

chambered ends, elastic springs fitting into the chambers at the ends of the roller, a sleeve passing through the center of the roller and the springs, disks at its ends against which the outer faces of the springs contact, one of said disks being movable and the other stationary, a pin or shaft passing through the sleeve, and a yoke or support in which the pin is mounted, and locking devices whereby one of the frictional surfaces is prevented from rotation, substantially as herein described.



2. A brake comprising a roller the surface of which is adapted to contact with the opposing surface which is to be held or checked, a pin passing through the center of the roller and a yoke or support in which said pin is fixed, a sleeve surrounding said pin, turning loosely thereon and within the roller, said roller having chambers formed in its ends surrounding the sleeve, elastic springs fitting said chambers and connected with the roller, so as to rotate therewith, disks upon the outer ends of the sleeve, against which the outer faces of the springs contact, said disks having holes or notches formed in them, and pins passing through the supporting-yoke and engaging said notches, whereby the disks and sleeve are prevented from rotating with the roller and springs, substantially as herein described.

3. A brake comprising a roller having a central opening and chambers formed around it in the opposite ends, a sleeve passing through said opening, disks upon the outer ends of the sleeve, springs fitting the chambers of the roller interior to the disks and connected with the roller, so as to rotate therewith, and having their exterior faces adapted to frictionally contact with the disks, a yoke, and a pin passing through the ends of the yoke and through the sleeve, whereby the roller is supported and moved to contact with the opposing surface or to be retracted therefrom, said yoke and disks having holes made through them, and pins by which the disks are locked at any point of adjustment, substantially as herein described.

4. A brake comprising a roller adapted to have a rolling contact with an opposing surface and turning upon a shaft, said roller having a chamber in its end, a spiral spring fitting said chamber, and a disk adjustable with relation to the spring and chamber and having frictional contact with the end of the spring, said spring and disk being arranged in a manner whereby one is movable with the roller and the other locked to the shaft, substantially as herein described.

488,067. PULP-SCREENING MACHINE. CHARLES J. FOSTER, Westbrook, assignor to Charles R. Milliken, Portland, Me. Filed Apr. 22, 1891. Serial No. 389,906. (No model.)

Claim.—1. In a pulp-screening machine, the combination, with suitable tank, screen-plates and diaphragms, and mechanism for operating said diaphragms, of air-tubes opening into the space between the screen-plates and the diaphragms, and an automatic valve to prevent the outflow of air, substantially as and for the purposes set forth.

2. In a pulp-screening machine, the combination, with suitable tank, screen-plates, and diaphragms, of air-tubes opening into the space between the screen-plates and diaphragms, said air-tubes having automatic valves to prevent the outflow of air, and an adjusting-valve to regulate the amount of inflowing air, substantially as and for the purposes set forth.

3. In a pulp-screening machine, the combination, with a suitable tank, screen-plates, diaphragms, and a pulp-receiving trough located in front of said tank, of a leakage-trough located beneath said diaphragms, and outlet-tubes from said leakage-troughs into the receiving-trough, substantially as and for the purposes set forth.

4. In a pulp-screening machine, the combination, with a receiving-tank having screen-plates in the bottom thereof, balancing-diaphragms, means for imparting an alternate up-and-down motion to the same, a collecting-trough located outside of said tank, and a leakage-trough located below said diaphragms, of independent outlets opening one from the space between the diaphragms and screen-plates and the other from the leakage-trough into the collecting-trough, substantially as and for the purposes set forth.

488,068. GARMENT-FASTENING. HENRY A. FRASER, Toronto, Canada. Filed Jan. 21, 1891. Serial No. 418,726. (No model.) Patented in Canada Nov. 26, 1891, No. 37,245.

Claim.—1. A garment-fastening consisting of an eye-pin having a loop at its center to form the eye, the body of the fastening extending in opposite directions on each side of the loop, and one end of the body sharpened to form a piercing-point, substantially as described.

2. The combination of the fabric with the looped and pointed pin set to place by piercing the fabric, substantially as described.

488,069. WATCHMAKER'S TOOL. URIAH W. FRINK, Chicago Ill., assignor of one-half to Charles W. Spalding, same place. Filed Jan. 22, 1891. Serial No. 378,670. (No model.)

Claim.—1. A watchmaker's tool or holder, whereby the location of points in the pillar-plate may be accurately indicated on the dial, consisting of a frame having male centers adjustable toward or from each other and adapted to engage orifices of the dial, and adjustable points adapted to indicate the dial-foot locations, substantially as described.

2. A watchmaker's tool or holder for the purpose described, consisting of a frame having male centers adjustable toward or from each other and adapted to engage the hand center and wheel center of the plate and dial, adjustable points for indicating the location of the dial-foot orifices, and means for holding the plate or dial in place, substantially as described.

3. A watchmaker's tool or holder for the purpose described, consisting of a frame having a fixed male center and an adjustable male center, said centers adapted to be set for and to engage the hand-orifice and wheel-orifice in the plate and dial, and adjustable arms having orifices c^4 on their ends, adapted to register with the dial-feet orifices in the plate and to hold the dial-feet while being attached to the dial, substantially as described.

4. A watchmaker's tool or holder for the purpose described, consisting of a frame carrying a fixed male center adapted to engage the hand-orifice of the plate and dial, and an adjustable male center adapted to engage the wheel-orifice, and adjustable arms having orifices c^4 in their ends adapted to register with the dial-feet orifices in the plate, substantially as described.

5. A watchmaker's tool or holder for the purpose described, consisting of a frame having two spring-impelled male centers adjustable toward or from each other, and adjustable arms having orifices c^4 in their ends, substantially as described.

6. A watchmaker's tool or holder for the purpose described, consisting of a frame carrying the male centers E G, and adjustable arms C, having orifices c^4, and in connection therewith the pin K for causing the orifices c^4 to register with the dial-feet orifices in the plate, substantially as described.

7. A watchmaker's tool or holder for the purpose described, consisting of a frame carrying spring-impelled adjustable male centers E G, adjustable arms C to indicate the dial-feet locations, and spring J for holding the plate or dial to the frame, substantially as described.

8. A watchmaker's tool or holder for the purpose described, con-

sisting of a frame provided with means for engaging the center orifices in the pillar-plate and dial, adjustable arms C, having posts c', the latter provided with through-orifices c^2, adapted to hold the dial-feet, and means for holding the dial against the feet in soldering the latter to the dial, substantially as described.

9. A watchmaker's tool or holder for the purpose described, consisting of a frame carrying the spring-impelled male centers E G, adjustable arms C, having posts c', and orifices c^2, and spring J, substantially as described.

488,070. GATE-HINGE. GEORGE W. GOSS, Renovo, Pa. Filed July 19, 1892. Serial No. 440,495. (No model.)

Claim.—1. The combination of a swinging gate and a post, brackets *b*, secured on the post and gate, and horizontal links *a*, connected to each other and to the brackets, the outer ends of the links being pivoted on the brackets and their inner ends pivoted together, said links setting at oblique angles to the gate and post and to each other, substantially as described.

2. The combination of a swinging gate and a post, brackets *b*, secured on the post and gate, horizontal links *a*, connected to each other and to the brackets, the outer ends of the links being pivoted on the brackets and their inner ends overlapped and pivoted together, said links setting at oblique angles to the gate and post and to each other, and a horizontally-adjustable stop carried by the gate and adapted to abut against the adjacent link when the gate is swung open, substantially as described.

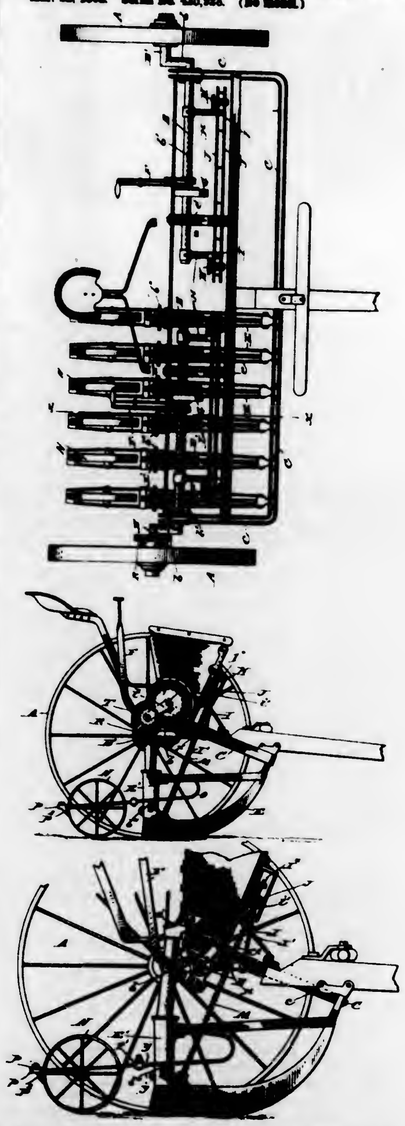
3. The combination of a swinging gate and a post, brackets secured to the post and adjacent part of the gate, and a hinge connecting said brackets, said hinge consisting of a series of four horizontal pivotal links connected together at their ends, the outer ends of the two outer links being pivotally connected to the post-bracket, and the connected ends of the two inner links being connected to the gate-bracket, all the links setting obliquely to the post and gate and forming approximately a diamond or square, substantially as described.

488,071. GEOGRAPHICAL GLOBE. ISAAC HODGSON and MARY A. HODGSON, Springfield, Mass. Filed Aug. 17, 1891. Serial No. 403,140. (No model.)

Claim.—1. The combination of an inflatable geographic globe having a suitable opening with an air-pump secured thereto and comprising a cylinder, a piston operating within the same, a valve opening inward within the cylinder and adjacent to the opening in the globe, valves opening inward on the piston, a piston-rod, and a tripod carried thereby, substantially as set forth.

2. The combination of an inflatable geographic globe having a suitable opening with the sleeve *p*, inserted therein and having a lateral vent *l*, the sleeve *q* revolving about the same, an air-pump attached to sleeve *p* and comprising a cylinder, a piston operating within the same, a valve *i* within the cylinder adjacent to the opening in the globe and the vent *l* and opening inward, valves *e e* on said piston opening inward, a piston-rod, legs *b b*, and extensible leg *b'*, substantially as set forth.

488,072. SEED-DRILL. RUFUS P. HOWARD, La Crosse, Wis. Filed Mar. 23, 1892. Serial No. 426,262. (No model.)



Claim.—1. The combination of supporting-wheels and a cranked axle, the cranked portion of the axle extending forwardly, a frame C, having its rear end supported upon the cranked portion of the axle, a tongue projecting forwardly from frame C, furrow-opening devices depending from the frame and connected by suitable tubes to a hopper on the frame, a curved rack G, secured to frame C directly over the cranked portion of the axle, a lever F, secured rigidly to the cranked portion of the axle and extending rearwardly beyond the pivotal points

of the axle, and a spring-pawl d^2, carried by an extension of the lever and working in rack G, as and for the purpose described.

2. The combination of a cranked axle mounted on wheels, a frame pivotally supported on its cranked portion, and a forwardly-extending tongue secured to the frame, a hopper on the frame, furrow-opening devices pivoted to the frame and carrying spouts communicating with the hopper, a rack on the frame and a lever on the axle engaging this rack, arms H, secured to the axle and extending forwardly therefrom and carrying upwardly-extending rods I, a presser-bar carried by these rods, and spring-surrounded rods connecting the presser-bar to the furrow-opening devices, substantially as described.

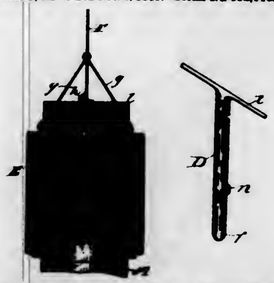
3. The combination of a cranked axle mounted on wheels, a frame pivotally supported on the cranked part of the axle and provided with a tongue extending forwardly, a hopper and seed-feeding devices mounted on the frame above the axle, a rack on the frame and a lever on the cranked part of the axle adapted to engage the rack, a gear-wheel on the end of the axle and one on the adjacent end of the feed-shaft, a rearwardly and downwardly extending arm pivoted to the feed-shaft and carrying a gravitating gear-wheel adapted to mesh with both said gears, a stationary stop S for holding this gravitating gear out of mesh when the furrow devices are raised, and furrow-opening devices, substantially as described.

488,073. LAP-SEAM GUIDE FOR SEWING-MACHINES. ANTON IVERSEN, Chicago, Ill. Filed Apr. 21, 1892. Serial No. 430,068. (No model.)

Claim.—1. The combination, with a presser-foot for sewing-machines, of a screw *c*, adapted to fit a thread in the shank of said presser-foot, a guide-bar *g*, adapted to pass freely through a channel in the shank of the presser-foot, said bar carrying a shoulder or collar *r* to serve as a guide for the sliding of the guide-arm, a guide-arm provided with slots *k* and *m*, a plate *e*, rigidly attached to said guide-bar *g*, a shoulder or collar *i* upon the screw *c*, and a thumb-nut *f*, adapted to clamp said guide-arm between said plate *e* and shoulder or collar *i*.

2. The combination, with a presser-foot, of two bars passing through the shank thereof, one of said bars being provided with a thread, said presser-foot being provided with a screw-threaded opening to receive the same, the other bar being provided with graduations, a guide-arm held parallel to said presser-foot and provided with slots, through which said bars are adapted to pass, a plate supported by said bars, between which and shoulders upon said bars said guide-arm is adapted to slide, and means for clamping said guide-arm against said plate, whereby said guide-arm may be given a vertical and a horizontal movement, substantially as described.

488,074. ROTARY CHIMNEY-COWL. HENRY IWAN and LOUIS IWAN, Streator, Ill. Filed Dec. 7, 1889. Serial No. 333,910. (No model.)



Claim.—1. In a rotary chimney-cowl, the combination, with a spindle carrying the cowl and provided with a feather or pin *n*, of a rim to fit upon the chimney and a socket-piece supported from the rim to form a bearing for the spindle and provided with a vertical groove *m* for the passage of the pin and with a shoulder below the groove, whereby the cowl is readily placed in position and is retained there against displacement by the wind, substantially as described.

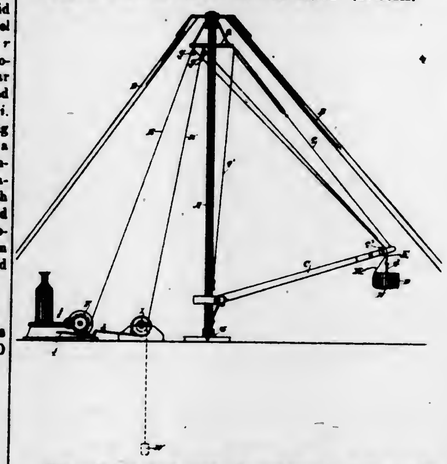
2. In a chimney-cowl, a rim having integral converging arms, a cylindrical socket formed integral with said arms, an annular recess e, formed in the socket, a groove *m*, leading from the exterior of the socket to the recess, a spindle fitting within and supported by the socket and provided with a feather *n* to enter the groove *m* and adapted to rest beneath the shoulder formed by the recess, in combination with the cowl and vane secured to the spindle, substantially as described.

3. The combination, with the spindle D, having the inclined bar *l*, rigid upon its top and provided with bolt-holes, of the cowl E, vane F, provided with the flange *i* and crimped or deflected above the flange, as shown at *h*, and bolts *k*, securing the bar *l*, cowl, and vane together, substantially as described.

488,075. EAVES-TROUGH FASTENER. ROBERT G. KELSO, Cleveland, Ohio. Filed Jan. 28, 1892. Serial No. 419,673. (No model.)

Claim.—An eaves-trough fastener consisting of the end-slotted cross-bar B, the band C, which passes around under the eaves-trough, and the roof-band D, the three pieces being held together by a rivet E on top and by the engagement of one end of the band C in the slot of cross-bar, substantially as shown and described.

488,076. SWINGING CRANE. JAMES W. KINSMAN, San Francisco, Cal. Filed Mar. 5, 1892. Serial No. 423,914. (No model.)

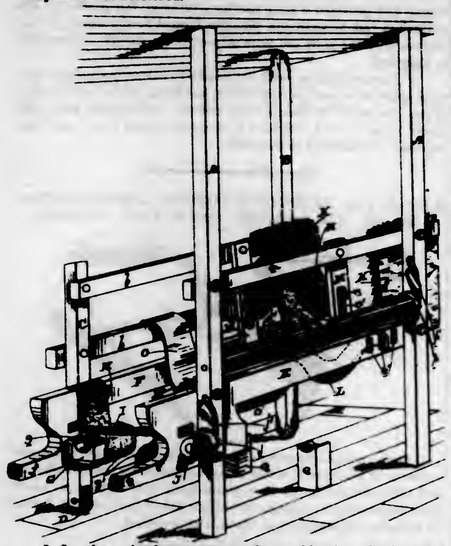


Claim.—In a swinging crane, the combination of the axially-turnable mast having a boom, a means secured to the upper end of the mast constituting a leverage and carrying the guide-pulleys or blocks *g g'*, the hoisting-rope passing through one of said pulleys or blocks and suspending the bucket or tub from the outer end of the boom, a winding-drum for operating said rope, a tripping-rope passing through the other of said pulleys or blocks and secured to the bucket or tub in a position to invert it when pulled upon, a separate drum for holding and relieving said tripping-rope, means for revolving the drum to take up the slack of the tilting-rope when the hoisting-rope is being wound up, and a brake mechanism for controlling said separate drum, substantially as herein described.

488,077. HORSESHOEING APPARATUS. JAMES LAMB, San José, Cal. Filed July 27, 1892. Serial No. 441,022. (No model.)

Claim.—1. In a horseshoeing apparatus, a frame for receiving the horse between its sides, the rear portion of said frame being provided with the opposing supporting-blocks G to press against the hind legs

of the animal and to receive them when lifted for shoeing, substantially as herein described.



2. In a horseshoeing apparatus, the combination of a frame between the opposing sides of which the horse is received, the bars E and F, secured to the sides of said frame and having the rearwardly-extending points, and the supporting-blocks G, secured to said bars in advance of said points, substantially as herein described.

3. In a horseshoeing apparatus, the combination of a frame adapted to receive the horse between its sides and provided with opposing blocks G at its rear portion to support the hind legs of the animal and a cross-chain extending between the sides of the frame and passing behind the legs of the horse, substantially as herein described.

4. A horseshoeing apparatus consisting of a frame having a fixed side and a laterally-movable side, the blocks G at the rear portion of the frame, adapted to support the hind legs of the animal when lifted for shoeing, a chain traversing the rear of the frame and connected with the fixed and movable side thereof and adapted to pass behind the horse, means for adjusting the chain, and a breast-plate between the sides of the frame at its front portion and adapted to pass in front of the breast of the horse, substantially as herein described.

5. In a horseshoeing apparatus, the combination of a frame adapted to receive the horse between its sides, said frame having a laterally-swinging side and a fixed side, and opposing blocks carried by said sides and adapted to pass over the neck of the horse, substantially as herein described.

6. In a horseshoeing apparatus, the combination of a frame adapted to receive the horse between its sides, the downwardly-extending swinging arms carried by said frame and having the blocks passing over and on each side of the neck of the horse, and the fixed breast-plate between the sides of the frame, against which the swinging arms come in contact, substantially as herein described.

7. In a horseshoeing apparatus, the combination of a frame to receive the horse between its sides, the supporting-blocks G and cross-chain at the rear end of the frame, and the horizontally-adjustable breast-plate at the front end of the frame, substantially as herein described.

8. A horseshoeing apparatus consisting of a frame to receive the horse between its sides, the supporting-blocks G and cross-chain at the rear portion of the frame, and the breast-plate and opposing neck-blocks at the front portion of said frame, substantially as herein described.

9. A horseshoeing apparatus consisting of a frame to receive the horse between its sides, the supporting-blocks G and cross-chain at the rear portion of the frame, the breast-plate at the front portion, the swinging arms carried by the sides of the frame and adapted to be limited forwardly by the breast-plate, and the neck-blocks carried by said arms, substantially as herein described.

10. In a horseshoeing apparatus, the combination of the frame to receive the horse, said frame having a fixed side and a laterally-swinging side, the cross-chain at the rear portion of the frame connecting said sides, and the winding-drum for tightening the cross-chain, substantially as herein described.

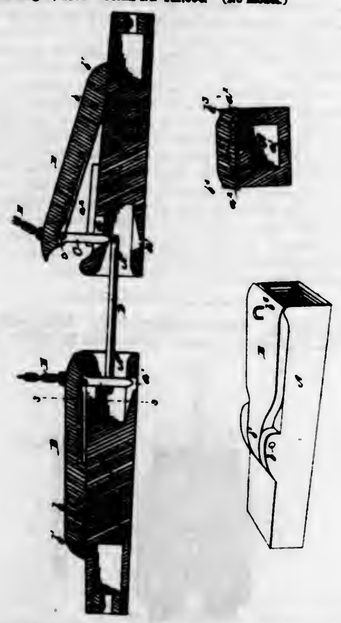
11. In a horseshoeing apparatus, the combination of the fixed posts A A and connecting tie-bars forming one side of the frame, the pivotal post B, post C, and connecting tie-bars forming the swinging other side of the frame, whereby the horse may be received between the two sides, the fixed bars E and F, secured to said sides, and the supporting-blocks G at the rear ends of said bars, substantially as herein described.

12. In a horseshoeing apparatus, the combination of the fixed posts A A and connecting tie-bars forming one side of the frame, the pivotal post B and post C, forming the swinging other side of the frame, whereby the horse may be received between the two sides, the bars E and F, secured to said sides, the supporting-blocks G at the rear ends of said bars, and the cross-chain between the two bars at their back portions, whereby they are held together and the horse is confined between them, substantially as herein described.

13. In a horseshoeing apparatus, the combination of the fixed posts A A and connecting tie-bars forming one side of the frame, the pivotal post B and post C, forming the other side, the bars E and F of said sides, the blocks G at the rear ends of the bars, the cross-chain between the rear ends of the bars for holding the frame sides together and preventing the horse from moving back, and the breast-plate extending between said bars at their front portion for preventing the horse from moving forward, substantially as herein described.

14. A horseshoeing apparatus consisting of the fixed posts A A and connecting tie-bars forming one side of the frame, the pivotal post B, post C, and connecting tie-bars forming the swinging other side of the frame, whereby the horse may be received between the two sides, the bars E and F of said sides, the supporting-blocks G at the rear ends of said bars, the cross-chain between the two bars at their back portions, the breast-plate between said bars at their forward portion, the swinging arms secured to the frame sides and limited by the breast-plate, and the neck-blocks carried by said arms, substantially as herein described.

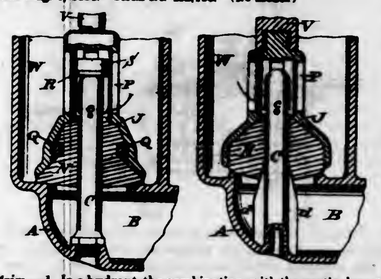
488,078. CAR-COUPLING. CHARLES LEBOUEF, Bad Pierre, S. D. Filed Aug. 2, 1892. Serial No. 441,902. (No model.)



Claim.—1. In a car-coupler, the combination of a draw-head having longitudinal slots in top and bottom with a yoke pivoted to the top of the draw-head and a coupling-pin depending from the under side thereof and provided with an upper forward lug, as *c*, adapted to bear against the under side of the yoke to limit its motion, substantially as set forth.

2. In a car-coupler, the combination of a draw-head having vertical slots and longitudinal ribs, a yoke pivoted to the top of the draw-head and provided with longitudinal grooves adapted to engage the ribs on the draw-head, and a coupling-pin depending from the yoke, substantially as set forth.

488,079. HYDRANT-VALVE. SAMUEL W. LEWIS, Brooklyn, N. Y. Filed Aug. 5, 1891. Serial No. 402,102. (No model.)



Claim.—1. In a hydrant, the combination, with the vertical waste-tube and a suitable valve-seat, of a plunger surrounding said waste-tube and provided with an interior annular sloping surface forming an inclined plane and a valve of corresponding form, which valve when compressed by closure upon its seat or pressure of water upward within said plunger will be forced along said inclined plane to and around said waste-tube, substantially as described.

2. The combination, with the vertical waste-tube and a suitable valve-seat, of the plunger J, surrounding the said waste-tube and provided with the interior sloping surface, and valve N, wholly filling the space within said sloping surface and bearing upon it in such manner that when compressed upward it will be forced within said plunger and against the waste-tube C, substantially as and for the purpose set forth.

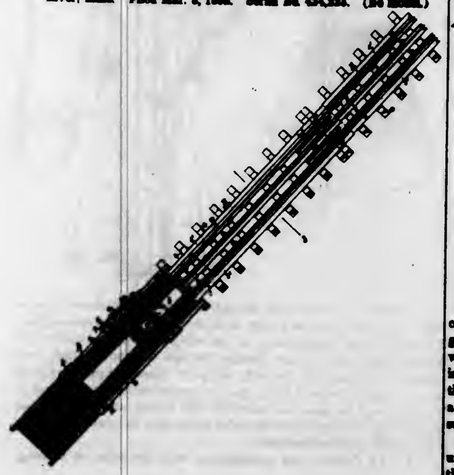
3. In a hydrant, the combination, with the valve-seat, the waste-tube having an inclined enlargement, and a valve-plunger surrounding said waste-tube, of a valve carried by said plunger and surrounding said waste-tube and arranged to engage the inclined enlargement when closed, whereby said valve is caused to pack the waste-tube, substantially as described.

4. In combination with the valve-seat, the waste-tube C, valve N, and plunger J, the adjustable and removable holder Q, divided in sections and connecting the valve and plunger, substantially as described.

5. The combination, with the waste-tube valve surrounding said waste-tube and hollow plunger carrying said valve, of the valve-holder Q Q', fitting into and securing said valve against the inclined plane within the plunger, substantially as described.

6. The combination of the valve-seat, waste-tube C, plunger J, having interior inclined surfaces, and valve N, filling the space within and bearing upon said inclined surfaces, substantially as and for the purposes described.

488,080. PORTABLE ICE-RUN. ISAAC A. MANCHESTER, Fall River, Mass. Filed Mar. 3, 1892. Serial No. 424,233. (No model.)



Claim.—1. An ice-run comprising a removable inclined section, in combination with the pivotal attaching means and the yielding brake-blade adapted to check the forward movement of the cake of ice as it leaves the said section, substantially as described.

2. An ice-run comprising two or more removable interlocked sections, each provided with parallel metallic rails adapted to guide the ice in its forward movement and to allow its ready lateral removal therefrom, the interlocking projection of one of the said sections being provided with a supplementary metallic rail, substantially as described.

3. In an ice-run, the combination, with the removable inclined section provided with the pivotal attaching means and the yielding brake-blade adapted to check the forward movement of the cake of ice as it leaves the said section, of the interlocked removable horizontal section provided with parallel metallic rails adapted to guide the ice in its forward movement and to allow its ready lateral movement therefrom and the cross-ties having beveled ends, whereby the cakes of ice as they pass laterally from the rails will be brought gradually to the surface upon which they are to be deposited, substantially as described.

4. In an ice-run, the combination, with the pivotal attaching means, of the adjustably-pivoted brake-blade, the adjustably-pivoted cam, the weighted arm, and stop means for controlling the movement of the weighted arm, substantially as described.

488,081. WAGON-BODY. ISAAC A. MANCHESTER, Fall River, Mass. Filed Mar. 3, 1892. Serial No. 424,234. (No model.)

Claim.—1. A wagon-body having its sills formed of bars of angle-iron, one of the flanges of the said angle-iron being made to extend inwardly and the other downwardly from the corner of the bar, with the cross-bars of the wagon-bottom bolted to the under side of the inwardly-extending flange and with the side braces of the wagon-body bolted to the outer side of the downwardly-extending outer flange, substantially as described.

2. A wagon-body having its sills formed of bars of angle-iron, one of the flanges of the said angle-iron being made to extend inwardly and the other downwardly from the corner and having a recess *d* at the rear end, formed by cutting away the downwardly-extending outer flange, and an inwardly-turned forward end formed with the narrowed inwardly-directed flange to form a support for the foot-rest at the wagon-seat, substantially as described.

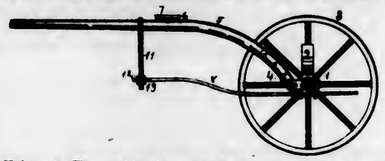
488,082. AUTOMATIC CUT-OFF FOR GAS-BURNERS. FRANCIS W. MERSHAM, London, Canada. Filed Mar. 31, 1892. Serial No. 427,231. (No model.) Patented in Canada May 17, 1892, No. 33,959.

Claim.—1. An automatic cut-off for gas-burners, consisting of a column of mercury contained in a siphon communicating with the gas-channel of the burner, with a reservoir containing mercury and with a hollow chamber in proximity to the lighting end of the burner in such a manner that the cooling of the hollow chamber shall cause the mercury to flow from the chamber into the siphon so as to force a sufficient quantity of mercury into the gas-channel to cut-off the supply from the burner, substantially as and for the purpose specified.

2. In an automatic cut-off for gas-burners, consisting of a column of mercury caused to flow into the gas-channel of the burner by the cooling off of a hollow chamber, the combination of a pipe lead-

ing from the hollow chamber to the two-way cut-off valve of the burner, substantially as and for the purpose specified.

488,083. VEHICLE ATTACHMENT. WILLIAM R. MILLER, Brooklyn, N. Y. Filed June 28, 1892. Serial No. 437,716. (No model.)

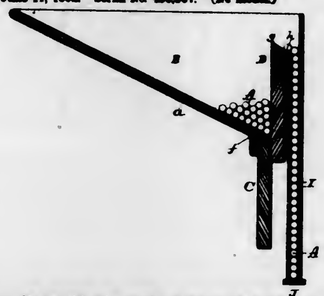


Claim.—1. The combination, with the forward axle and the thills of a vehicle, of supporting-arms rigidly secured to the axle, extending beneath the thills, and bearing yokes wherein the thills rest, substantially as shown and described.

2. The combination, with the forward axle and the thills of a vehicle, of supporting-arms adjustably secured to the axle and bearing yokes at their outer extremities, wherein the thills rest, substantially as shown and described.

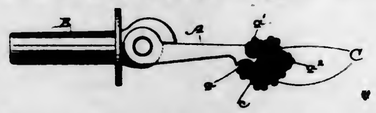
3. The combination, with the forward axle and thills of a vehicle, of arms rigidly secured to the axle, extending beneath the thills, and bearing vertically-adjustable yokes wherein the thills rest and are supported, substantially as shown and described.

488,084. BLANK-FEEDING DEVICE. WILLIAM W. MINER, New Haven, assignor to the New Process Rail Company, Torrington, Conn. Filed June 11, 1892. Serial No. 436,267. (No model.)



Claim.—The combination, with a hopper and feed-trough, of two oppositely-reciprocating slides, one of which is arranged to descend into the blanks contained in the hopper, while the other is arranged to descend only to the limit of the upward movement of the lower slide and to receive the blank from the latter and carry it to and deliver it into the feed-trough, substantially as set forth.

488,085. CLIP FOR WIRE ROPEWAYS. BARTLETT McINTIRE, San Francisco, Cal., assignor to the Vulcan Iron Works, same place. Filed Mar. 24, 1892. Serial No. 426,326. (No model.)

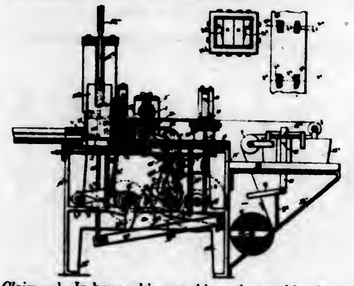


Claim.—1. A clip for wire ropeways, having a body portion the end of which is adapted to enter between the strands of the cable and is formed with a hook on its extremity for fitting over the soft core or heart of said cable, substantially as herein described.

2. A clip for wire ropeways, having a body portion the end of which is adapted to enter the cable, said end having grooves for engaging and fitting the cable-strands and a hook on its extremity for fitting over the soft core or heart of said cable, substantially as herein described.

3. A clip for wire ropeways, having a body portion the end of which is formed with a groove on its under surface for fitting a strand of the cable, a groove on its upper surface for fitting another strand of the cable, both of said grooves being inclined or spirally directed to conform to the lay or direction of the strands which they fit, and a straight end hook to conform to and fit over the soft core or heart of the cable, substantially as herein described.

488,086. BOX-MACHINE. JOHN HENRY, Akron, Ohio. Filed Nov. 14, 1892. Serial No. 292,510. (No model.)

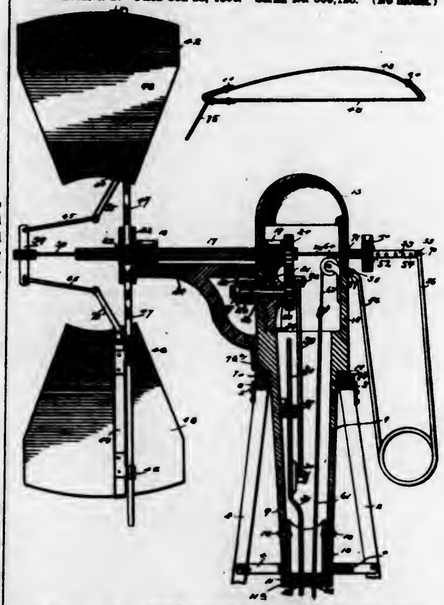


Claim.—1. In box-making machines, the combination, with vertically-reciprocating punches, substantially as indicated, of co-operating dies consisting of four blocks adjustably secured in a band, the outer blocks at their intersection with the inner blocks having vertical recesses for receiving the punches, substantially as set forth.

2. The combination of feed-rollers, one of which is provided with circular and transverse cutters and the other with a depression, and yielding bands located on opposite sides of such depression.

3. The combination, with stationary folding-dies *m* N, shouldered, as described, to permit the box to expand after it has passed below the shoulders, of a vertically-reciprocating plunger, a stationary seat immediately below the plunger onto which the box is forced by the plunger, and a horizontally-reciprocating push-bar located over the stationary seat for moving the box horizontally from under the plunger, substantially as set forth.

488,087. WINDMILL. JOSEPH OPPEBUD and JACOB I. RHODES, Madison, S. D. Filed Oct. 22, 1890. Serial No. 369,123. (No model.)



Claim.—1. In a windmill, the combination, with the dome or housing, the rotatable hollow power-shaft, the pump-rod and connections, and the hub and angle-spokes, of the sails pivoted to said spokes, the horizontally-movable shaft passing through said power-shaft, connected at one end with the sails and at its other end provided with a bar having a series of holes, the bent spring secured at one end to the dome and its other end provided with an eye, and the pin passing through said eye and the holes in the said bar, substantially as and for the purpose described.

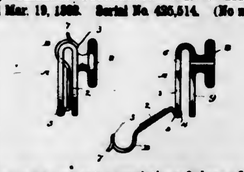
2. In a windmill, the combination, with the dome or housing, the rotatable hollow power-shaft, the pump-rod and connections, and the hub and angle-spokes, of the sails pivoted to said spokes, the horizontally-movable shaft passing through the power-shaft connected with the sails, the two-part swivel-block provided with a head connected with said movable shaft, the bifurcated rod secured to said block, provided with a series of holes, the bent spring secured at one end to the dome and provided at its other end with an eye, and the pin passing through said eye and the holes in said rod, substantially as described.

3. In a windmill, the combination, with the fans and the angle-spokes therefor, having their portions 49 at an angle with their ends 50, engaging the hub on the power-shaft, said fans being substantially triangular and presenting concave surfaces to the action of the wind, of the stay-rods 43, having the eye-bearings 46 and extending between the ends of the fans, said stay-rods being located in positions forward of the middle points of said fans, and the arms 75, engaging the governor-rod 38 by means of the spider 39 and the links 45, and the spring connected with said rod 38 and tending to normally draw said rod forward, substantially as described.

4. The combination, in a windmill, of fans 41, each consisting of a substantially-triangular plate of suitable material, said plate being curved to present a concave surface to the action of the wind, the rod 43, extending between the ends of the fan and placed forward of the middle thereof, and means whereby said fans are pivotally connected with the spokes of the wheel, substantially as described.

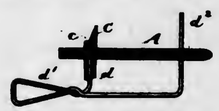
5. The combination, in a windmill, of the dome 10 with the shank 9, means whereby said dome is pivoted upon the top of the tower, the power-shaft 17, the rod 38, adapted to move longitudinally thereon, the bearing-block 21, provided within the dome and having bearings for the power-shaft 17 and for the shaft 26, the gear 25, secured on said shaft 26, the spring 36, secured to the forward side of the dome, the swivel-block 40, the rod 25, having the openings 54 and a pin 55, engaging the outer end of said spring, the bracket 20, provided with the bearing 18, the hub 22, the spokes 47, rigidly extending therefrom, the fans 41, pivoted upon said spokes, arms 44, provided on said fans, the spider 39, and the links 45, connecting said arms and fan, substantially as and for the purpose specified.

488,088. GARMENT-SUPPORTER. JOHN C. PETTIBONE, Ansonia, Conn. Filed Mar. 19, 1892. Serial No. 425,514. (No model.)



Claim.—A garment-supporter consisting of a loop of metal adapted to pass on opposite sides of the garment, said loop having an opening in the front plate, a clasp pivoted at the lower end of the opening and provided with an engaging-plate adapted to pass through said opening and lie close to the back plate, and a catch engaging the top of the loop in the closed position, whereby the garment is retained.

488,089. URETHRAL SYRINGE. EDWARD P. ROCHE, Bath, Me. Filed Nov. 18, 1891. Serial No. 412,343. (No model.)



Claim.—1. The combination, with a catheter, of a disk or shield and a spring gripping device, the latter having a middle portion secured to the catheter and shield to form a torsional spring, handles projecting to the rear of the shield, and gripping portions projecting in front of said shield, substantially as and for the purposes described.

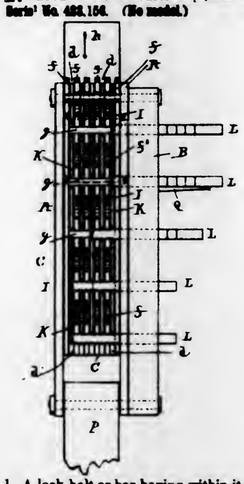
2. The combination, with a catheter, of a disk or shield on the catheter, said shield having a seat or recess, and a spring gripping device formed of a single piece of wire bent to form a looped portion to fit around the catheter and rest in the seat in the shield, handles projecting to the rear of the looped portion, and gripping portions projecting in front of the looped portion, substantially as described.

488,090. ADJUSTABLE BUTTON AND BUTTONHOLE. FREDERICK S. RENNE, Brooklyn, N. Y. Filed June 20, 1892. Serial No. 436,891. (No model.)

488,090.

Claim.—The combination, with the disks D G, of the disk C, having shank C', and the disk E, having spring-post F, and projection *e*, substantially as described, and as and for the purposes set forth.

488,091. LOCK. JOHN F. SCHLOSSBERGER, Buffalo, Wis. Filed Apr. 7, 1892. Serial No. 428,156. (No model.)



Claim.—1. A lock bolt or bar having within it two or more longitudinal parallel grooves divided into separate chambers, combined with a set of removable and interchangeable blocks or pins adapted to be loosely lodged in such chambers and a set of adjustable hooked keys corresponding in number to the number of grooves, the combination being and operating substantially as set forth.

2. The described lock bar or bolt, having, in combination with parallel partitions notched at *a*, as described, and having between these partitions a series chambers of uniform shape and size, a set of interchangeable blocks or pins K, each adapted to be loosely lodged in such chambers and to be lifted by one's fingers and transferred at will from any one to any other of said chambers to effect a change in the combination, a set of hooked keys L, and the handle Q, projecting through a longitudinal slot in the door.

488,092. COMBINED SIGN BRACKET AND FRAME. FREDERICK H. SCHOENBERG, St. Louis, Mo. Filed Nov. 10, 1891. Serial No. 411,483. (No model.)

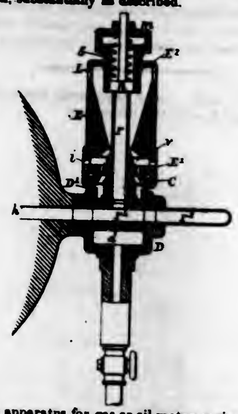
Claim.—1. A sign consisting of the integral side sections having longitudinal rabbets or grooves, the integral end sections having notches or cuts, the cover, and the bead, substantially as described.

2. A sign consisting of the integral side sections having longitudinal rabbets or grooves and longitudinal channels, the integral end sections having notches or cuts, the outer bead, the cover, the inner bead, and the board, substantially as described.

488,093. IGNITING APPARATUS FOR GAS-ENGINES. HERMANN SCHWEER, Cologne, Germany, assignor to the Gas-Motoren-Fabrik-Deutz, same place. Filed Oct. 31, 1891. Serial No. 409,622. (No model.) Patented in England Aug. 27, 1891, No. 14,519; in France Sept. 11, 1891, No. 217,662; in Belgium Sept. 14, 1891, No. 96,283; in Italy Oct. 13, 1891, LIX, 436; in Spain Dec. 10, 1891, No. 12,585; in Germany Feb 26, 1892, No. 62,405, and in Austria-Hungary June 9, 1892, No. 43,804 and No. 5,407.

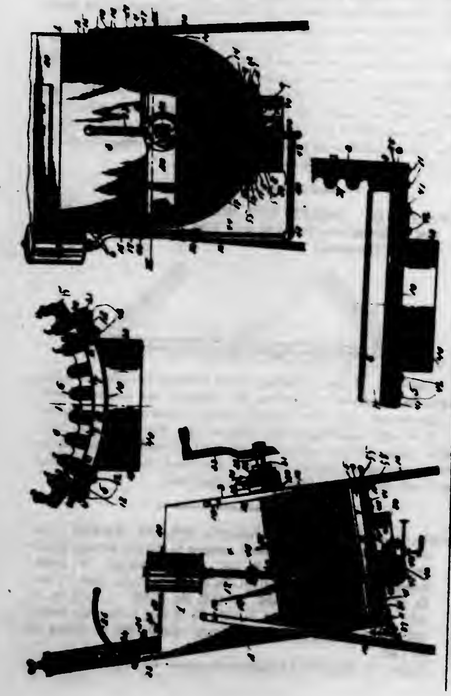
Claim.—1. In igniting apparatus for gas or oil motor engines, the

combination, with a casing D, having a socket D', of an igniting-tube r, a loose disk C, having holes surrounding the tube for the issue of the heating-flames, and a lined chimney E, inclosing the tube and screwing onto the socket of the casing, said chimney being provided with an internal rim E', which bears upon the burner-disk C, so as to hold it in position, substantially as described.



2. In igniting apparatus for gas or oil motor engines, the combination, with a casing D, of an igniting-tube r, a disk C, having holes surrounding the tube for the issue of the heating-flames, a lined chimney E, surrounding the igniting-tube and screwed to the casing, so as to hold the disk in position, a piston s contained in a tubular extension of the chimney, and a helical spring S, pressing the piston s against the end of the igniting-tube, so as to hold it elastically in position, said spring having its tension regulated by a screw-cap m, screwing onto the tubular extension of the chimney, substantially as described.

488,094. WASHING-MACHINE. FREDERICK W. SCHUSTER and WILLIAM R. SCHUSTER, St. Louis, Mo. Filed Feb. 29, 1892. Serial No. 423,283. (No model.)



Claim.—1. In a washing-machine, the combination of the drum-tank tilted from the bottom rearward, the drum of said tank having the arc-placed corrugated bars 6, the said bars integrally connected by the marginal strips 8 and provided with intervening open spaces 7 for the free intercourse of the water, the heating-plate 10, and the burners beneath said plate, substantially as described.

2. In a washing-machine, the combination of the tilted drum-tank of the machine, the drum of said tank having the arc-placed corrugated bars 6, the said bars being integrally connected at their ends and provided with intervening open spaces for the intercourse of the water, the heating-plate 10 beneath said openings, the burners beneath said plate, the said drum also having the corrugated sectional bars 14 and the vertical surmounting plurally-corrugated sections 15, the casing-plate 17, and the inclined self-adjusting rotary corrugated rubber disk 34, substantially as described.

3. In a washing-machine, the combination of the inclined drum-tank, the internally-corrugated back of said tank, the internally-corrugated drum, the said drum having separably-spaced corrugated bars at its lower end, the said bars being connected by the integral margin-strips 8 at their ends and provided with intervening spaces 7 for the intercourse of the water, the heating-plate 10 beneath said open spaces, the burners beneath said heating-plate, the metal-wall inclosure around said burners, and the spacing-strips 12, provided with the channel-spaces 13, which strips connect said heating-plate to said drum, and the self-adjusting corrugated rotary rubber disk 34, substantially as described.

4. In a washing-machine, the combination of the tilted drum-tank having the internally-corrugated rear side and the internally-corrugated drum and having interspaced corrugated bars 6 at the bottom of said drum, provided with the intervening water-channels 7, the heating-plate 10, the hot-air inclosed chamber beneath said heating-plate, the burner secured to said drum-tank, the self-adjusting inclined rotary rubber disk having a corrugated face, the lid 21 of said tank, and the straddle-legs 18, that support the inclined tank in its tilted position, substantially as described.

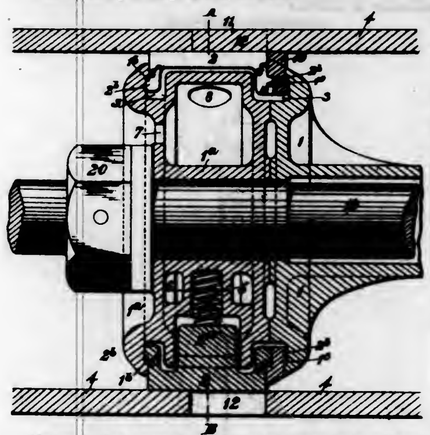
5. In a washing-machine, the combination of the inwardly-corrugated drum-tank 1, provided with the open spaces 7 between its lower corrugations for the passage of suds and water, the spacing bed-frame 55, provided with channel-groove and suds and water courses on its sides 12, and said frame inclosing around the heating-chamber 58, the heating-plate 10, and the tubular inclosure 40 of the hot-air chamber 39, substantially as described.

488,095. KNOCKDOWN FOLDING CHAIR. HENRY C. SCOTT and FREDERICK SCHAAF, St. Louis, Mo. Filed Jan. 8, 1892. Serial No. 417,395. (No model.)

Claim.—1. The combination of the front legs having dowel extensions, the elbows removably secured to the front legs, the front cross-round secured to the elbows, the back legs having dowel extensions, the T-sockets removably secured to the back legs, the back cross-round secured to the sockets, the back posts removably secured to the sockets, webbing secured to the cross-rounds, webbing secured to the posts, and the folding bars by which the legs and the posts are hinged so as to fold, substantially as described.

2. The combination of the front legs having dowel extensions, the elbows removably secured to the front legs, the front cross-round secured to the elbows, the back legs having dowel extensions, the T-sockets removably secured to the back legs, the back cross-round secured to the sockets, the back posts removably secured to the sockets, webbing secured to the cross-rounds, webbing secured to the posts, and the locking-bars by which the front and back legs are connected, consisting of the body having a twist and an angle-flange, the block having a dovetail extension, and the block having a dovetail recess, the locking-bars being pivoted, substantially as described.

488,096. PISTON-VALVE. WALTER M. SMITH, Newcastle-upon-Tyne, England. Filed Mar. 28, 1892. Serial No. 426,812. (No model.) Patented in England Aug. 20, 1891, No. 14,067.



Claim.—1. A piston-valve comprising the hollow body, the packing-ring made in segments, and spaces between the segments to permit of the packing-rings moving radially inward, substantially as described, for the purpose specified.

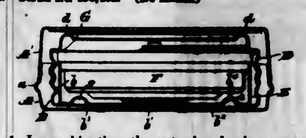
2. A piston-valve comprising the hollow body, the packing-ring made in segments, and spaces between the segments, and means for preventing passage of steam to the exhaust through the said openings, substantially as described, for the purpose specified.

3. A piston-valve comprising the hollow body formed with openings, such as 7 and 8, a packing-ring made in segments 2, and means for preventing the passage of steam between said segments to the exhaust, substantially as herein described.

4. A piston-valve comprising a hollow piston-body formed with openings, such as 7 and 8, a packing-ring made in segments 2, a ring 4, having projections arranged opposite the openings between said segments and a tongue 15, and springs arranged to act outwardly upon said segments, substantially as described.

5. A piston-valve comprising the hollow piston-body 1 1^5, with steam inlet and outlet openings 7 and 8, and recesses 6, a packing-ring made in segments 2, each having a projection 2^p, springs 5, arranged to act against said segments, a ring 10, with projections arranged opposite the openings between said segments, and means to prevent rotation of said segments and ring 10, substantially as herein described, for the purposes specified.

488,097. WATCH-MOVEMENT BOX. CARLOS H. SMITH, Elgin, assignor to the Elgin National Watch Company, Chicago, Ill. Filed June 10, 1892. Serial No. 436,402. (No model.)



Claim.—1. In combination, the outer box having a cover, the inner box to receive a watch-movement having a separate cover and yieldingly supported from the outer box, and the movement-holder in the inner box, the cover of the latter engaging the movement to hold it therein, substantially as and for the purpose specified.

2. In combination with a casing or holder to inclose a movement, a box to inclose such holder and projections on the bottom of one part to engage recesses in the bottom of the other to center the holder within the box, substantially as and for the purpose set forth.

3. In combination with a casing or holder to inclose a movement having a groove in its bottom, a box inclosing said casing or holder having a rib at its bottom to engage said groove, substantially as and for the purpose described.

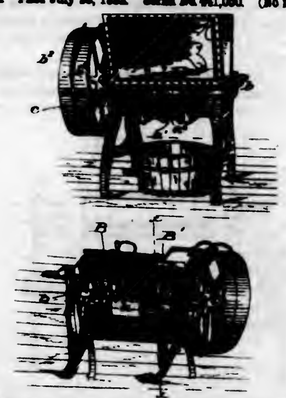
4. In combination with a casing or holder to inclose a movement having a groove in its bottom, the box inclosing said casing, and the spring-arms at the bottom of the box having ribs to engage said groove, substantially as and for the purpose specified.

5. In combination with a casing or holder to inclose a movement having a groove in its bottom, the box inclosing said casing, the spring-arms attached to the box-bottom having ribs to engage said groove, and the outer box inclosing all to whose bottom said arms are also attached, substantially as and for the purpose set forth.

6. In combination with a cup-shaped holder to receive and contain a movement, the box inclosing the same having a removable cover, and a washer of soft flexible material interposed between said cover and the watch-dial, substantially as and for the purpose shown.

7. In combination with a cup-shaped holder to receive and contain a movement, the box inclosing the same having a removable cover, a washer of soft flexible material interposed between said cover and the watch-dial, means for centering said holder in its box, and a second box inclosing the latter and yieldingly supporting the same, substantially as and for the purpose described.

488,098. MEAT-MIXING MACHINE. JOSEPH TATZ, Burlington, Iowa. Filed July 23, 1892. Serial No. 441,060. (No model.)



Claim.—In a meat-mixing machine, the combination, with a receptacle having a central discharge or opening, of two series of stirrers or arms set spirally around their shaft, the outermost arms beginning at the ends of the shaft, respectively, and having the general outline of their backs inclined or tapering toward the center of said receptacle, substantially as set forth.

488,099. INJECTOR. JOHN TAIT, Detroit, Mich., assignor to the American Injector Company, same place. Filed Apr. 28, 1892. Serial No. 430,220. (Model.)

Claim.—1. In a steam-lifting and forcing injector, the combination, with the upper and lower overflow-chambers provided with contiguous escape-openings, of a single discharge-chamber and an intermediate double-seated valve, the elements of which act on the respective openings successively, substantially as set forth.

2. In combination with the casing of a lifting and forcing injector, which together with the internal diaphragms form overflow-chambers F and G, the outlet-orifices of which are concentric, the chamber H, and the intermediate valve I, and seats K and K', formed around said orifices on which the elements of the valve are seated successively, substantially as set forth.

3. In a lifting and forcing injector, concentric escape-openings provided with valve-seats, and a valve made up of cylindrical and flat faces, also concentric, the outer acting only after the inner has been closed, substantially as set forth.

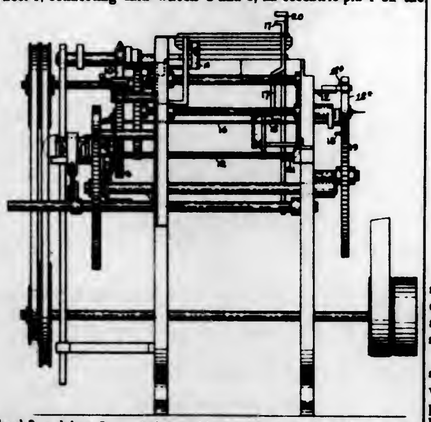
4. In an injector, a valve with two seat-faces, in combination with

the outlet-openings from the chambers F and G, the arrangement being such that the valve is pressed upon the opening from G with a pressure increased by that of the external atmosphere produced by a condition of minus pressure created in F, substantially as set forth.

488,100. CIRCULAR-KNITTING MACHINE. WILLIAM S. WARD and HERBERT F. LADDINGTON, Nottingham, assignors to Isaac Lovell Berridge, Leicester, England. Filed Jan. 20, 1892. Serial No. 418,731. (No model.)

Brief.—The sliding clutch member of the reversing mechanism is connected by a lever with a ratchet-wheel having cams on its faces. The slide which raises and lowers the needles not used in fashioning is connected by a link to the said lever. The pawl which actuates the ratchet-wheel of the narrowing and widening apparatus is controlled by a horizontal bar actuated by the cam-wheel. The two vertical bars which control the introduction of the splicing-thread are actuated by cams on horizontal bars, one of which is actuated by the cam-wheel and the other by a projection on the wheel of the fashioning apparatus.

Claim.—1. In a circular-knitting machine, the combination, with a clutch-boss A, of a main driving-wheel 2, a toothed wheel 3, a toothed wheel 1, connecting said wheels 2 and 3, an eccentric-pin 4 on the



wheel 3, a driver 5, carried by said pin, a toothed wheel 6, driven by the driver 5, cams 7 and 8, carried by the wheel 6, and a lever 10, one end of which engages the clutch-boss A and the other end of which carries a stud 9, engaging with the cams 7 and 8, substantially as described.

2. In a circular-knitting machine, the combination, with a ratchet-wheel 19, of a driver 19ª, a sliding bar 12, one end of which engages said driver, and a wheel 6, having a cam 11 to engage the other end of the sliding bar 12 to throw the driver in the proper direction to start the ratchet-wheel, substantially as described.

3. In a circular-knitting machine, the combination, with a slide 14, of a wheel 6, carrying a cam, a lever 10, carrying a stud for engaging said cam, and a link 13, carried by said lever 10 for automatically traversing said slide to lower the needles, substantially as described.

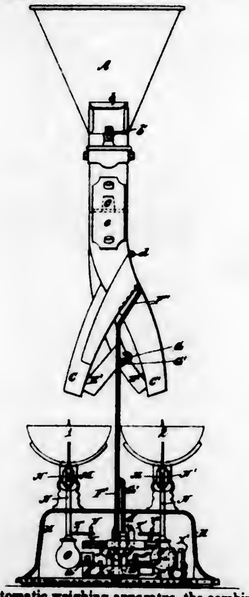
4. In a circular-knitting machine, the combination, with a narrowing-wheel, of a stud 18, carried by said wheel, a sliding rod 16, operated by said stud, a cam-bit 15, carried by the sliding rod 16, and a vertical rod 17, raised by said cam-bit 15 to prevent the splicing-thread running in when not required.

5. In a circular-knitting machine, the combination, with a sliding rod 12, of a cam-bit 21, carried thereby, and a vertical rod lowered by said cam-bit, substantially as and for the purpose described.

488,101. FEEDING AND WEIGHING APPARATUS. SAMUEL WARBURTON, Harpurhey, assignor to himself, JOHN CRABTREE SQUIRES, Manchester, and THOMAS ALDRED, Salmon, Boston, England. Filed July 18, 1892. Serial No. 440,498. (No model.)

Claim.—1. In an automatic weighing apparatus, the combination, with a spout or chute comprising two main branches, of auxiliary spouts or chutes operatively connected therewith for diverting the stream fed to the scale-pans into a major and minor stream, substantially as described.

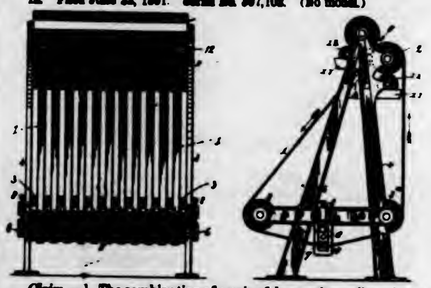
2. In an automatic weighing apparatus, the combination, with a spout or chute comprising two main branches, of auxiliary spouts or chutes operatively connected therewith for diverting the stream fed to the scale-pans into a major and minor stream, and valves for diverting the stream from one branch of the said chute or spout to the other, substantially as described.



3. In an automatic weighing apparatus, the combination, with a spout or chute comprising two main branches of auxiliary spouts or chutes operatively connected therewith, and valves operated by the action of the scales for controlling the flow of material to be weighed, substantially as described.

4. In an automatic weighing apparatus, the combination, with a spout or chute comprising two main and two auxiliary branches, of vertical arms connected to the scale-beams and carrying the scale-pans, pins or projections extending from said vertical arms, of weighted levers resting upon said pins or projections, and valves in operative contact with said weighted levers for controlling the flow of the material to be weighed, said levers being operated to open and close the valves, substantially as described.

488,102. DAMPENING-MACHINE. FRANK H. WEEKS, Quincy, Ill. Filed June 23, 1891. Serial No. 397,102. (No model.)

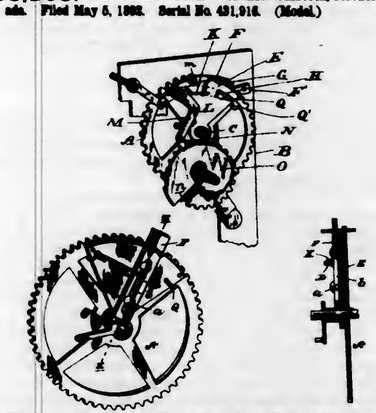


Claim.—1. The combination of a pair of dampening-rollers, dampening devices for said rollers, the series of guide-tapes for conducting the goods away from the dampening-rollers, and mechanism for holding the guide-tapes taut and causing them to travel with the dampening-rollers, substantially as described.

2. The combination of a pair of dampening-rollers, dampening devices for said rollers, the series of guide-tapes for conducting the goods away from the dampening-rollers, the lower roller 3, the lower fluted roller 3ª for spacing the guide-tapes, and the roller 5 for tightening the latter, substantially as described.

3. The combination of a pair of dampening-rollers, dampening devices for said rollers, the series of guide-tapes for conducting the goods away from the dampening-rollers, the lower rollers, the frame having guides, boxes sliding in the guides, tightening-roller journaled in the boxes, and set-screws bearing on the boxes, substantially as described.

488,103. REPEATING-CLOCK. STEPHEN WILLCOCK, Toronto, Canada. Filed May 5, 1892. Serial No. 431,916. (Model.)



Claim.—1. A count-wheel geared to the striking mechanism of a clock, a snail geared to the center arbor and rotated by the time-movement and arranged in connection with mechanism to release the count-wheel by the starting of the striking mechanism, and means, as the finger H, arranged in connection with the snail to regulate the motion of the striking mechanism, substantially as and for the purpose specified.

2. A count-wheel geared to the striking mechanism of a clock and a snail geared to the center arbor, in combination with a plate loosely journaled on the journal of the count-wheel, a bar loosely held to the said plate and provided with a pin to engage with the teeth of the count-wheel, and a finger fixed to and extending from the spindle of the locking-arm, substantially as and for the purpose specified.

3. A count-wheel geared to the striking mechanism of a clock, a snail geared to the center arbor, and a plate loosely journaled on the journal of the count-wheel and provided with a finger having a pin projecting from it in the path of the snail, in combination with a pin projecting from the journaled plate in the path of the curved finger fixed to the spindle of the locking-arm, substantially as and for the purpose specified.

4. A count-wheel A, geared to the striking mechanism of the clock; a journaled plate E, having an arm F loosely connected to it, a pin G, projecting through the bar F and engaging with the teeth in the count-wheel A, and a pin L, projecting from the face of the bar F, in combination with a spring K′ and curved finger H, substantially as and for the purpose specified.

5. The combination, with a sleeve loosely journaled on the center arbor P and having a V-shaped notch made in one end of it and a spring located behind it to hold the sleeve in mesh with the V-shaped notch, of a finger extending from the sleeve to a point in the path of a wire and mechanism to connect the said wire to the locking-arm J, substantially as and for the purpose specified.

488,104. APPARATUS FOR AGING AND PURIFYING LIQUORS. AMOS L. WEED, Boston, Mass. Filed Mar. 26, 1892. Serial No. 426,498. (No model.)

Claim.—1. In an apparatus for aging and purifying liquors, the combination, with an air-forcing device and a heater-drum having vertical tubes communicating at one end with the air-forcing device and at the opposite end with an air-space in the drum, of an independent air-chamber surmounting the heater-drum and having an imperforate bottom wall detachably secured to the upper end of the heater-drum, an external pipe connecting the air-space of the heater-drum with the air-chamber and provided with a cut-off valve for controlling the flow of air from the air-space of the drum into the air-chamber, a series of saving or overflow chambers for the barrels or vessels containing the liquor to be aged, and pipes leading from the air-chamber to the saving or overflow chambers, substantially as described.

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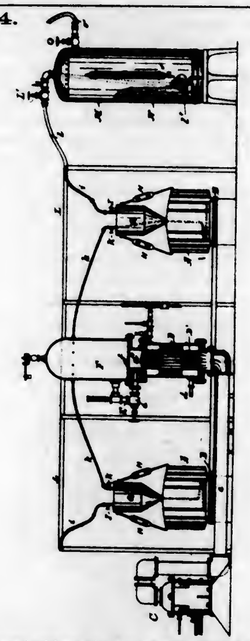


at the opposite end with an air-space in the upper end of the heater-drum, of an independent air-chamber surmounting the heater-drum and having the imperforate bottom wall detachably secured to the upper end of the heater-drum, an external pipe connecting the air-space of the heater-drum with the air-chamber and provided with a cut-off valve for controlling the flow of air from the air-space of the drum into the air-chamber, a series of saving or overflow chambers for the barrels or vessels containing the liquor to be aged, and pipes leading from the air-chamber to the saving or overflow chambers, substantially as described.

488,105. SLIDING GATE. WILLIAM ASHPAUGH, Cairo, Mo. Filed June 30, 1892. Serial No. 438,559. (No model.)

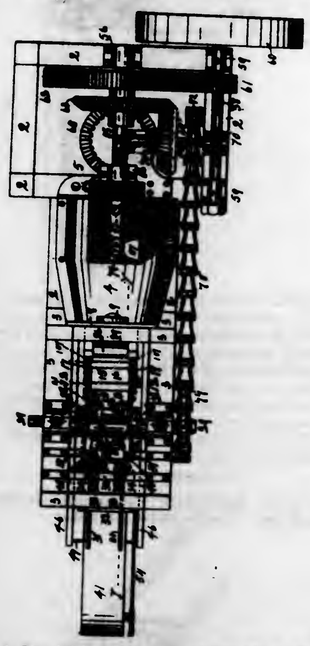
Claim.—1. The combination of a frame, a sliding gate provided with vertical ways, a gate-lever fulcrumed intermediate its ends on the frame, having its lower end provided with a roller arranged in

said ways, a rock-shaft having an arm connected with the upper end of the gate-lever, and means for turning the rock-shaft, substantially as described.

2. The combination of a frame, a sliding gate, a lever fulcrumed on the frame and having its lower end connected with the sliding gate, a rock-shaft having a long arm connected with the upper end of the gate-lever, a hinged frame arranged below the gate, track-levers connected with the frame, a V-shaped connecting-frame connecting the hinged frame with the rock-shaft, and a spring attached to the frame and to the long arm of the rock-shaft, substantially as described.

3. The combination of a frame, a sliding gate provided with vertical ways, a gate-lever having a roller at its lower end arranged in said ways, a rock-shaft provided with a long arm connected with the upper end of the gate-lever and having a short arm, hinged track-levers connected with the short arm of the rock-shaft, and a spring for closing the gate, substantially as described.

488,106. BRICK-MACHINE. SYLVESTER P. BABCOCK, Adrian, Mich. Filed Feb. 20, 1892. Serial No. 422,173. (No model.)



Claim.—1. In a brick-machine, the combination of the mold-wheel 12, pull-bolts 17 on said mold-wheel, followers 16, adapted to reciprocate in said mold-wheel, push-pins 21 upon said followers, a sliding cross-head 44, pull-hooks 80, secured to said cross-head and adapted to engage with said pull-bolts, push-arms 49, secured to said cross-head and adapted to engage the push-pins 21, and mechanism for reciprocating said cross-head, substantially as shown and described.

2. In a brick-machine, the combination of a mold-wheel 12, a re-pressing plunger 26, means for reciprocating said plunger, guide-arms 100, secured to said plunger, and lugs 103, extending from said guide-arms and bearing against opposite faces of said mold-wheel, substantially as and for the purpose described.

3. In a brick-machine, the mold-wheel 12, pull-bolts 17, extending from the faces of said mold-wheel, a re-pressing plunger, guide-arms 100, secured to said plunger, lugs 103, extending from said guide-arms and adapted to fit closely against the sides of pull-bolts 17 when said plunger is near said wheel and to permit the passage of said pull-bolts when said plunger is further away from said wheel, substantially as shown, and for the purpose described.

4. In a brick-machine, the combination of a re-pressing plunger 26, a shaft 29, adapted to reciprocate said plunger, a bell-crank lever 33, an idler 30, adapted to be reciprocated in ways by the oscillation of said bell-crank lever, an arm 71 upon the shaft 29, adapted to strike against an arm of and to oscillate said bell-crank lever, and means for retracting said bell-crank lever, substantially as shown and described.

5. A double belt-carrier for brick-machines, consisting of rollers 42 42, mounted in a suitable frame, a belt 104, passing around said rollers, a deflector 106, mounted in the frame of said carrier above the belt 104 and above one of said rollers, and a belt 105, passing over the belt 104 and over said deflector, substantially as shown and described.

6. In a brick-machine, the combination, with a carrier consisting of one or more belts passing over rollers 42, of a ratchet-wheel 43, mounted on the shaft of one of said rollers, said ratchet-wheel being provided with teeth of unequal length, alternately one short and one long tooth, and a pawl engaging with the teeth of said ratchet-wheel, substantially as and for the purpose described.

7. In a brick-machine, a mouthpiece 8 for the mixing-barrel 4, a slot formed in said mouthpiece in a plane that forms an angle with the periphery of said mold-wheel, said slot extending into the mouth of said mixing-barrel, and a cut-off plate 89 in said slot, substantially as and for the purpose described.

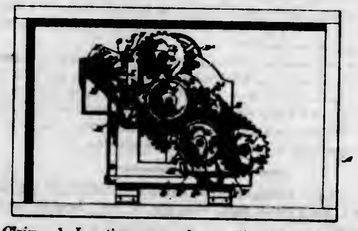
8. In a brick-machine, a mold-wheel 12, consisting of disks 107 107, provided with recesses 113 upon the inner sides of said disks near their peripheries, plates 114, provided with shoulders 115 at their ends, said plates being adapted to fit into said recesses with said shoulders extending beyond said recesses, wedge-shaped posts 117, adapted to fit against the end edges of said plates, the ends of said posts resting upon said shoulders, and means for securing the ends of said posts to said disks, substantially as shown and described.

9. In a brick-machine, a mold-wheel 12, consisting of disks 107 107, provided with recesses 113 upon the inner sides of said disks near their peripheries, plates 114, provided with shoulders 115 at their ends, said plates being adapted to fit into said recesses with said shoulders extending beyond said recesses, wedge-shaped posts 117, adapted to fit snugly against the end edges of said plates, the ends of said posts resting upon said shoulders, and pull-bolts 17, provided with screw-threaded shanks, said shanks passing through apertures in said disks and screwing into apertures 118 in the ends of said posts to bind said posts and said disks together, substantially as shown and described.

10. A carrier for brick-machines, consisting of an endless belt passing over two rolls and driven by one of said rolls, an outer endless belt, and a support for the inner end of said outer belt, substantially as shown and described.

11. In a brick-machine, the combination of a mold-wheel 12, a re-pressing plunger 26, said re-pressing plunger consisting of a plunger 88, a frame 87, surrounding the plunger 88 at the sides and end of plunger 88, the lower edge of said frame extending normally below the lower surface of the plunger 88, strips 90 90 and stay-bails 91 91 upon said frame, rods 92 92, extending from plunger 88 through the strips 90 90 and stay-bails 91 91, nuts 94 94 upon said rods, coil-springs 93 93, pressing against said nuts and said strips, and means for reciprocating the plunger 26, substantially as and for the purpose specified.

488,107. TIME-METER FOR ELECTRIC-LIGHTING SYSTEMS. JUDSON C. BALL, Mount Pleasant, Iowa. Filed Feb. 20, 1892. Serial No. 422,261. (No model.)



Claim.—1. In a time-meter, the combination, with an ordinary clock mechanism, of a movable registering device and a cut-off connected with said registering device and adapted to throw the same into engagement and out of engagement with the clock mechanism when the electric circuit is closed or opened, respectively, substantially as set forth.

2. In a time-meter, the combination, with the balance-wheel and the hand-arbor of a clock mechanism, having a pinion, of a sliding registering device mounted to slide upon the clock-mechanism frame and means for engaging and disengaging the said registering device with said arbor-pinion and stopping and starting the balance-wheel at a point away from its center of motion, substantially as set forth.

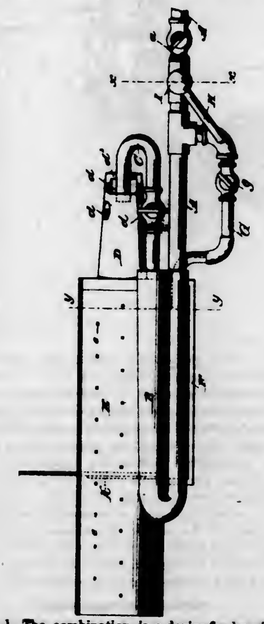
3. In a time-meter, the combination, with the clock mechanism having a balance-wheel and a hand-arbor provided with a pinion, of a spring-arm secured adjacent to said balance-wheel and adapted to normally engage and check the same at a point away from its center of motion, a registering device mounted to slide upon the clock-mechanism frame and connected with said spring-arm, and a sliding cut-off or switch connected with said registering device, substantially as set forth.

4. In a time-meter, the combination, with a balance-wheel and a hand-arbor of a clock mechanism, said arbor having a pinion, of a spring-arm adjacent to said balance-wheel and adapted to normally engage and check the same at a point away from its center of motion, registering devices mounted to slide upon the clock-mechanism frame to and from said arbor-pinion, and connected independently with said spring-arm, and sliding cut-offs or switches connected with said registering devices, substantially as set forth.

5. In a time-meter, the combination, with the clock mechanism having a balance-wheel and a hand-arbor provided with a pinion, of a spring-arm secured adjacent to said balance-wheel and adapted to normally engage and check the same at a point away from its center of motion, a registering device mounted to slide upon the clock-mechanism frame and provided with opposite stub-shafts, dial-carrying non-meshing cog-wheels mounted on said shafts, a disk carried by one of said cog-wheels and provided with fingers engaging the other cog-wheel at every revolution, said registering device being connected with said spring-arm, and a sliding electric switch connected with said registering device, substantially as set forth.

6. In a time-meter, the combination, with the box or casing having a slot and the clock mechanism having a balance-wheel and a hand-arbor provided with a pinion, of a spring-arm adjacent to said balance-wheel and normally engaging and checking the same at a point away from its center of motion, a registering device sliding upon the clock-mechanism frame and provided with opposite stub-shafts, dial-carrying non-meshing cog-wheels mounted on said shafts, a disk carried by one of said cog-wheels and provided with fingers engaging the other cog-wheel at every revolution, a cap-plate working in said slot, and a sliding electric switch working over said slot and connected with said cap-plate, substantially as set forth.

488,108. OIL-BURNER. JACOB BARROW, Winfield, assignor to John S. Moore, Muncie, Ind. Filed Mar. 24, 1892. Serial No. 426,253. (No model.)



Claim.—1. The combination, in a device for burning gas generated from oil, of a burner and a gas-generator made of a single piece which is tapered longitudinally and bent upon itself, said generator being connected at one end to the burner and at the other end with an oil-supply pipe, substantially as shown, and for the purpose set forth.

2. In a device for generating gas from oil and burning the same, a burner E, having apertures *e* and a trough F, a mixer D, attached to one end of the burner, said mixer having apertures *d* and *d'*, a pipe C, entering the mixer at one end and connected to the generator at the other end, a generator B, located above the trough F and connected to an oil-supply pipe, and a branch pipe leading from said oil-supply pipe to the trough F, substantially as shown, and for the purpose set forth.

3. In a device for generating gas from oil and burning the same, the combination of a burner, a mixer and generator, an oil-supply pipe leading to the generator, having a branch supply-pipe G, a pipe H, leading from the branch pipe G to a safety-valve I, and a cut-off cock *c*, located between the mixer and generator, substantially as shown, and for the purpose set forth.

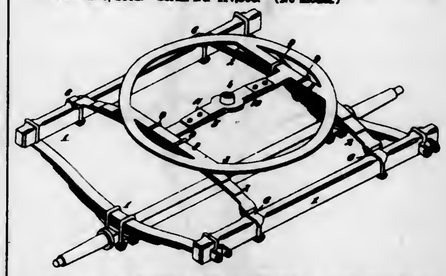
4. In a device for burning gas generated from oil, an oil-supply pipe having a cock *a* and pressure-actuated valve I, a branch pipe G, which leads into a trough beneath the gas-generator, said pipe having a cock *g*, and a pipe C, leading from the generator to the burner, said pipe having a cock *c* between the generator and burner, substantially as shown, and for the purpose set forth.

5. As an improved article of manufacture, a gas-burner for heating purposes, consisting of a body portion having a flat base and a curved or semicircular upper portion with apertures *e e* and a turning damper or dampers K, located within the burner and provided with means for turning said dampers, which extends beyond the burner, substantially as shown.

488,109. WHIP-SOCKET FASTENER. FRANCIS B. BENTON, Stoughton, Mass. Filed Nov. 18, 1891. Renewed Nov. 14, 1892. Serial No. 452,472. (No model.)

Claim.—The described fastener for whip-sockets, having the curved arms or jaws *d d* for holding the whip-socket, jaws *d' d'* for clamping the dash-rail, the vertical prongs d^3 d^3, and an attaching-screw for holding the arms together and to a dash-rail, substantially as described.

488,110. FIFTH-WHEEL. HERMAN H. BOTHE, St. Louis, Mo. Filed Jan. 8, 1892. Serial No. 417,868. (No model.)



Claim.—1. An improved fifth-wheel having parallel straight side pieces and a cross-bar extending between and connecting the side pieces and formed with a reinforced or thickened central portion, as set forth.

2. A fifth-wheel having side pieces 8, a cross-piece 5, connecting the side pieces, and a strengthening-piece 11, having a boss 4, substantially as set forth.

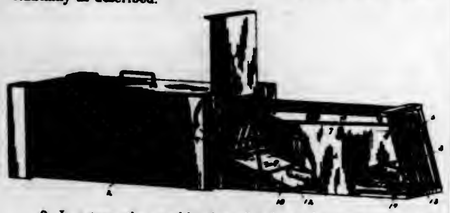
3. A fifth-wheel comprising a circular member 3, side pieces 8, having curved extensions or ends, and the cross-bar 5, extending between said side pieces, said cross-bar and side pieces being formed in an integral piece and secured to the member 3 by rivets passing through the curved ends of the side pieces, substantially as set forth.

4. The combination of the forward part of the running-gear, the lower circular member of the fifth-wheel secured to said running-gear, the body and the upper circular member of the fifth-wheel secured to the body, both of said circular members being formed with side pieces 8 and a connecting cross-bar 5, and said cross-bars being formed, respectively, with a boss and corresponding opening for fitting together, substantially as set forth.

488,111. ANIMAL-TRAP. JOHN R. BRIDWELL, Nashville, Tenn., assignor to Charles A. Black, same place. Filed June 8, 1892. Serial No. 435,964. (No model.)

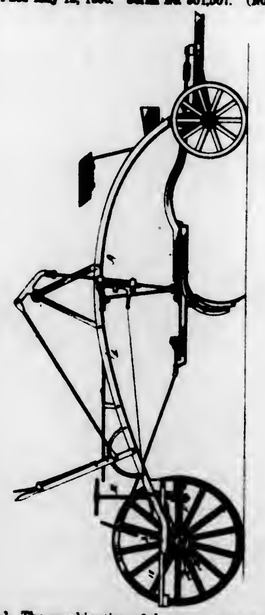
Claim.—1. In a trap, the combination of a frame having its ends

open, oscillating doors arranged at the ends of the frame, a tilting platform arranged within the frame and connected with the door at the outer end of the frame and adapted to be depressed by an animal to close the door, and a latch arranged at the outer end of the trap and adapted to lock the adjacent door and connected with the door at the inner end of the trap and adapted to be withdrawn from engagement with the outer door by the opening of the inner door, substantially as described.



2. In a trap, the combination of a frame having its ends open, the inner and outer doors pivoted at the ends of the frame, the former being provided with an arm, a tilting platform having an arm, a rod connecting said arm, a rock-shaft having an arm provided with a latch to engage the outer door and having an arm 16, and a rod connected with the arm 16 and provided with a loop connected with the inner door, substantially as described.

488,112. MACHINE FOR MAKING AND REPAIRING ROADS. MORTON G. BENNETT, Chicago, Ill., assignor to Frederick C. Austin, same place. Filed May 12, 1890. Serial No. 351,507. (No model.)



Claim.—1. The combination of the stop on the shifting rear axle with the cross-bar engaged by said stop.

2. The combination of the stop, rear axle, latch-bar H, and cross-bar.

3. The combination, with the shifting rear axle, of the notched latch-bar and a tooth or stop on the axle for engaging the latch-bar.

4. The combination, with the shifting rear axle, of the notched latch-bar and a foot-lever for operating the same.

5. The combination of the rear axle, the shifting body-frame, the collar G, secured to the axle, the cross-bar C, engaged by the collar, the chains F, attached to the collar, and means for operating the chain.

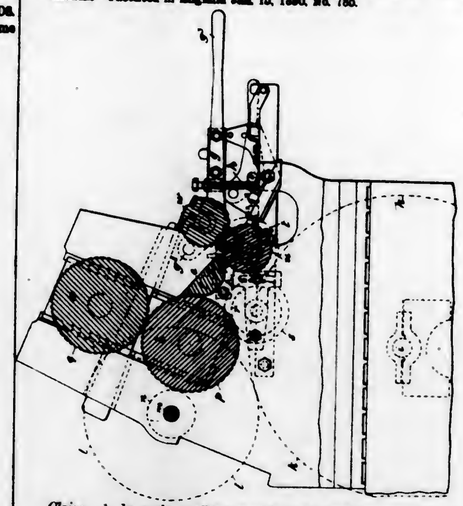
488,118. SPOKE-SOCKET. ADOLPHUS C. BOMER, Clearport, assignor of one-half to C. M. Strietzer, Lancaster, Ohio. Filed July 30, 1892. Serial No. 441,297. (No model.)

Claim.—1. A spoke-socket having a face-plate, an outer socket, and an inner reduced extension or barrel provided with exterior spurs or teeth, substantially as specified.

2. A spoke-socket provided with a reduced extension or barrel having laterally-projecting spurs or teeth and spirally-arranged grooves upon its outer surface to engage the rim, substantially as specified.

3. A spoke-socket having a face-plate provided with rearwardly-projecting spurs, the socket upon the front side of said face-plate, the bracing-webs, and the rearwardly-extending barrel or reduced portion communicating with said socket and provided at the plane of the face-plate with a shoulder, substantially as specified.

488,114. MACHINERY FOR ROLLING GLASS. EDWARD F. CHANCE, West Smethwick, England, assignor to Chance Brothers & Co., Limited, same place. Filed June 14, 1892. Serial No. 436,712. (No model.) Patented in England Jan. 18, 1890. No. 785.



Claim.—1. In a glass-rolling machine, the combination, with a pair of cylindrical primary pressing-rolls *a* and *b*, of the cylindrical secondary pressing-rolls *c* and *d*, the inclined plate *e*, interposed between the primary and the secondary pressing-rolls, and the inclined plate e^3, located in rear of the secondary pressing-rolls and serving to receive the sheet of glass therefrom, substantially as described.

2. In a glass-rolling machine, the combination, with a pair of cylindrical primary pressing-rolls *a* and *b* and the inclined plate *e*, of the cylindrical secondary pressing-rolls *c* and *d*, having their shafts geared to the primary rolls and one arranged in advance of the other, so that the plane of the axes of the secondary rolls is situated approximately at right angles to the plane of the said inclined plate, and the inclined plate e^3, arranged in rear of the secondary pressing-rolls to receive the sheet of glass therefrom, substantially as described.

488,115. FOLDING CHAIR. JOSEPH CORNELL, Pottsdam, N. Y. Filed June 30, 1892. Serial No. 438,566. (No model.)

Claim.—1. In a chair of the character described, the combination of a seat, a back having bars or uprights to which said seat is pivotally connected at its rear end, rockers pivotally attached to the lower ends of said bars or uprights by angle-plates having a portion thereof rigidly secured to the said rockers, a pair of arms unattached to the seat and pivotally connected to the forward ends of the said rockers and at their upper ends united by a cross-rod, depending supports 12, pivoted to the opposite sides of the front portion of the seat and to the said arms, ratchet-plates in connection with the bars or uprights of the back with which the said rod at the upper ends of the arms engages, guard-rods mounted over the said ratchet-plates, and a foot-rest adjustably mounted in connection with the seat, substantially as described.

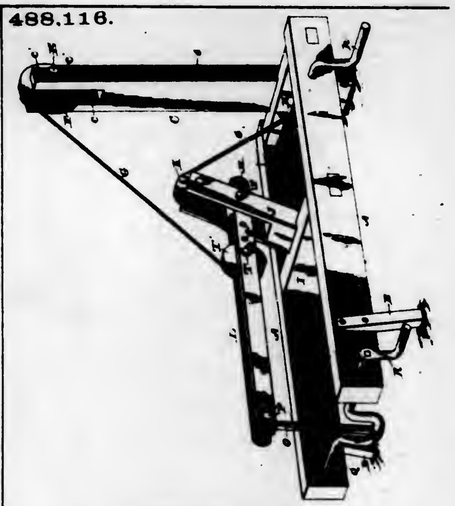
2. In a chair of the character described, the combination of a seat having L-shaped rods secured to the front cross-bar thereof and the lower ends of the same inturned toward each other, a foot-rest movably mounted under the said seat and having side bars with grooves therein on the outer sides of the same engaged by said L-shaped rods, the rear ends of said side bars of the foot-rest being curved downward and the grooves therein conforming to the contour thereof, a pair of legs pivotally connected at their upper ends to the inner opposing portions of the front end of said side bars of the foot-rest, said legs being folded up under the said foot-rest, and supports for said legs pivotally connected to the lower ends thereof, substantially as described.

3. The combination, with a rocking-chair of the character set forth having a seat, of a pair of rods secured to the front cross-bar of said seat and having lower inturned angular ends, a foot-rest having oppositely-disposed side bars with rear downwardly-curved ends and formed with grooves therein on the outer sides thereof with upwardly-extending terminating notches, said grooves and notches being loosely engaged by the lower inturned angular ends of said rods to thereby make the foot-rest adjustable and freely movable under and outward from the seat of the chair, a pair of legs connected to each other and having their upper ends pivoted to the inner side of the outer ends of the side bars of said foot-rest to adapt the same to be folded up under the foot-rest, and blocks pivotally attached to the lower ends of said legs and having the lower ends thereof arched or cut away to form a pair of feet in connection with each leg that are supplied with spurs or spikes to be pressed into a bearing-surface to prevent falling of the said legs and of the foot-rest supported thereby during the movement of the chair and when arranged in operative position, substantially as described.

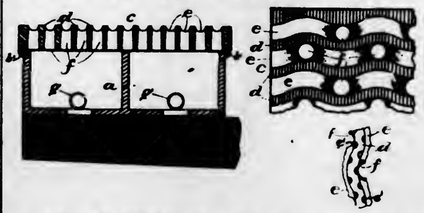
488,116. APPARATUS FOR DRILLING WELLS. THOMAS DE LA MARE and JOSEPH MERRIAM, Tooele, Utah; said Merriam assignor to said De La Mare. Filed May 31, 1892. Serial No. 435,094. (No model.)

Claim.—In an apparatus for drilling wells, the combination of the horizontal frame, a derrick secured to and supporting one end of the frame and provided with an upper bifurcated end, a derrick-wheel adjustably mounted in said upper bifurcated end, a winding-drum journaled in the frame at the derrick end thereof and normally stationary, a bifurcated supporting-arm mounted in the frame and inclining toward the derrick, a fixed guide-pulley journaled in the upper end of said arm, a horizontally-slotted walking-beam or lever having adjustment perforations at both ends and at an intermediate point, a pivot-bolt adjustably pivoting one end of the lever within said bifurcated arm below the upper fixed guide-roller, an operating crank-shaft journaled at one end of the frame, a connecting-rod connected to said shaft and adjustable in the perforations at the free end of the walking-beam or lever, a rope-actuating roller or pulley having its journals adjustably mounted in the intermediate perforations of the slotted walking-beam or lever adjacent to and below the plane of the guide-pulley, and the drill-rope winding on said winding-drum, passing therefrom over the top of the fixed guide-roller, thence through the walking-beam or lever and around the adjustable actuating-roller therein, and then over the top of the derrick-wheel to the drill, substantially as set forth.

488,116.



488,117. STREET-CROSSING. GEORGE W. DOOLITTLE, Chicago, Ill. Filed Feb. 26, 1892. Serial No. 423,232. (No model.)



Claim.—The herein-described street-crossing, consisting of the substantially-U-shaped trough extending across a street and the metal plates resting on the upper edges of said trough at or about the level of the street and having the closely-arranged series of serpentine ribs *d*, provided with edge notches *d'*, the grooves *e* between the ribs having their bottoms inclined in opposite directions to the transverse apertures *f*, substantially as described.

488,118. CAR-BRAKE. SIMON FAIRMAN, Baltimore, Md., assignor to R. G. Harris, same place. Filed Oct. 18, 1892. Serial No. 449,204. (No model.)

Claim.—1. In combination, in a car-brake, the transverse push-rod, the push-pawl, the lever carrying the same, the cam on the axle, the means for releasing the said push-pawl, consisting of the sliding bar L, having the depending inclines meeting at a point, the vertically-movable bar suspended from and operated by the said inclines to lift in releasing the pawl, the connection from said suspended bar for operating the pawl, and the means for operating the bar L, substantially as described.

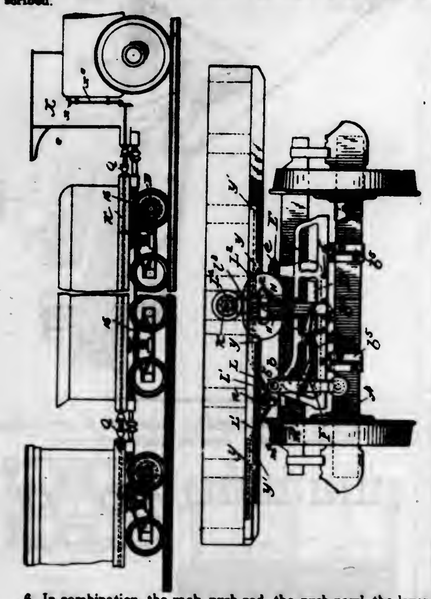
2. In combination, the push-rod, the push-pawl and the means for operating the same, the plate pivotally supported and arranged to engage the said pawl, the vertically-movable rod pivoted to said plate at its free end, the sheave on said rod, the double-incline rod L L, passing under said sheave to lift the same in releasing the pawl, and the means for operating the rod L, substantially as described.

3. In combination, the push-rod, the push-pawl for operating the same, the means for operating the pawl through the momentum of the car, the hand operating devices for controlling the position of said pawl in relation to the push-rod, the holding-pawl, and the independent connections for controlling the same to engage with or disengage from the push-bar, substantially as described.

4. In combination, the push-pawl, the means operated thereby for applying a tension to the brake, the hand controlling connections for said pawl, the holding-pawl arranged to hold the brake on when operated, and the controlling connections for said holding-pawl, extending to the coupling and adapted to be strained when the cars are pulled to release the pawl, substantially as described.

5. In combination, the push-pawl, with means for operating the

same, the means actuated by said pawl for applying the brakes, the hand controlling connections for the said push-pawl, the holding-pawl, the lifting-bar connected therewith, and the two slide-rods having inclines arranged reversely to each other and extending to opposite ends of the car to connect with the couplings for operating the holding-pawl when the car is pulled in either direction, substantially as described.



6. In combination, the rack push-rod, the push-pawl, the lever carrying the same, the cam for operating the lever, the holding-pawl, the controlling connections for the said pawls, and the channel-frame for supporting the rack push-rod, the push-pawl lever, and the holding-pawl, said frame being supported from the truck-frame, substantially as described.

488,119. DUPLEX PENHOLDER. CHARLES F. GREEN and GEORGE A. HALEY, National Soldiers' Home, Va. Filed May 10, 1892. Serial No. 432,445. (No model.)

Claim.—1. A duplex penholder provided with pen-point-retaining slides located within said holder and held therein by pressure and adapted to operate by gravity when said pressure is removed, as and for the purpose set forth.

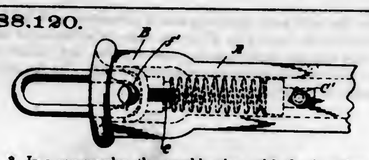
2. A hollow duplex penholder provided with pen-point-retaining slides having a nib, substantially as described, which when a particular pen is in use the nib on its slide will form a lock therefor and when said pen is not in use said nib will act as a bar to prevent any surplus ink forming a seal between the holder and said slide, as set forth.

488,120. CAR-COUPLING. CHARLES G. HAMS and JOHN F. DAMM, San Francisco, Cal. Filed Feb. 8, 1892. Serial No. 420,893. (No model.)

Claim.—1. In a car-coupler, the combination, with the spring-actuated head-block, of the link-guide secured thereto, as and for the purpose set forth.

2. The combination, with the spring-actuated head-block, of the guide-piece secured thereto and the projecting ears, as and for the purpose set forth.

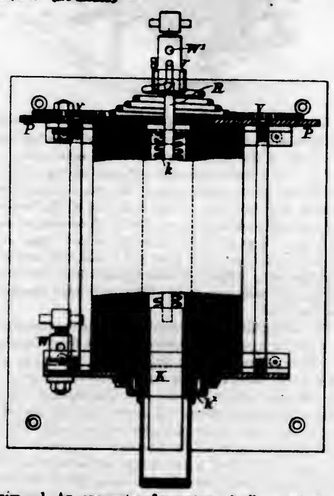
488,120.



3. In a car-coupler, the combination, with the draw-bar, of the tail-piece located therein, spring secured thereto, head-block connected to opposite end of said spring, link-guide secured thereto, and the coupling-link.

4. In a car-coupler, the combination, with the spring-actuated head-block, of the coupling-pin and the pin-support operated by the movement of the spring-actuated head-block, said support provided with forwardly-extending arms between which the coupling-pin is secured.

488,121. AUTOMATIC REGULATOR. EDWARD J. HOUSTON and WILLIAM WHITE, London, England. Filed Mar. 26, 1892. Serial No. 426,626. (No model.)



Claim.—1. An apparatus for automatically regulating electric currents, consisting of a solenoid-coil S, a core K movable therein, a spiral resisting-wire V, forming part of an electric circuit and having a greater or less number of its convolutions short-circuited, and a rod R, connecting the core with the innermost convolution of the spiral resisting-wire, substantially as described.

2. The combination, in an apparatus for automatically regulating electric currents, of a solenoid-coil S, a core K, movable therein, a spiral resisting-wire V, forming part of an electric circuit and having a greater or less number of its convolutions short-circuited, a connection between the core and the innermost convolution of the spiral wire, and a spring *k*, acting to press the core outward from the solenoid-coil, substantially as described.

488,122. ILLUMINATING-TILE. JACOB JACOBS, Brooklyn, N. Y. Filed June 21, 1892. Serial No. 437,479. (No model.)

Claim.—1. A lens for illuminating-tiles, vault-covers, &c., having the screw-threaded glass body and a jacket separate from the plate or frame for supporting the lens and screwed upon the portion of the lens-body to be surrounded by the holding-cement on the frame, substantially as and for the purpose specified.

2. A lens for illuminating-tiles, vault-covers, &c., having the screw-threaded glass body, a jacket screwed thereon, and a layer of waterproof material between the jacket and body filling the opposing threads on the jacket and body, substantially as and for the purpose shown.

3. A lens for illuminating-tiles, vault-covers, &c., having the screw-threaded body, a projecting base, and a jacket screwed upon the body, substantially as and for the purpose set forth.

4. A lens for illuminating-tiles, vault-covers, &c., having the screw-threaded body, a projecting base, and a jacket screwed upon the body, provided with a projecting lip or flange on its lower end, substantially as and for the purpose described.

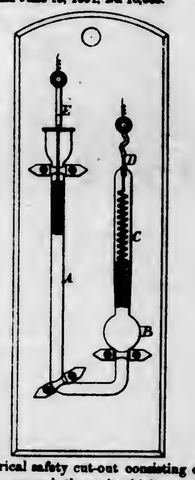
5. A lens for illuminating-tiles, vault-covers, &c., having the screw-threaded body and the jacket screwed thereon having at its upper end a portion extending in over a portion of the body, substantially as and for the purpose specified.

6. A lens for illuminating-tiles, vault-covers, &c., having the screw-threaded body provided with a rabbet around its upper end and the jacket screwed upon such body, having the inturned lip to enter the rabbet, substantially as and for the purpose shown.

7. A lens for illuminating-tiles, vault-covers, &c., having the screw-threaded glass body and the jacket around the latter corrugated to engage the threads on the body and leave projecting ribs and grooves on its outer side, substantially as and for the purpose set forth.

8. A lens for illuminating-tiles, vault-covers, &c., having the screw-threaded body, the jacket of thin material corrugated to engage the thread or threads on the body, and a coating or layer of waterproof material between the opposing surfaces of jacket and body, substantially as and for the purpose described.

488,123. ELECTRICAL SAFETY CUT-OUT. HENRY S. KEATING, London, England. Filed Aug. 31, 1892. Serial No. 444,672. (No model.) Patented in England June 13, 1891, No. 10,088.



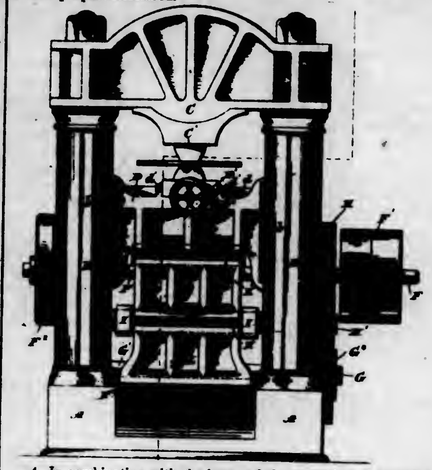
Claim.—An electrical safety cut-out consisting of a U-tube hermetically closed at its one end, through which passes a conducting-wire into a space in the tube charged with nitrogen or equivalent gas, a charge of mercury in the tube such that the lower end of the said wire dips into it, and another conducting-wire which dips into the mercury in the other limb of the tube, arranged and operating substantially as herein described.

488,124. MACHINE FOR MAKING METAL WHEELS. JAMES R. LITTLE, Quincy, Ill. Filed Feb. 24, 1892. Serial No. 422,704. (No model.)

Claim.—1. In combination with a stationary head, a movable bed having an inclined surface, a table having the inclined under face to engage the inclined surface on the bed and its upper side made flat, means for adjusting the table longitudinally on the bed, mechanism for forcing the bed toward the head, and the two dies made independent of head and table, with the under one provided with a flat surface to rest upon the table, substantially as and for the purpose described.

2. In combination with a suitable base and a movable bed, the two links between the same, having their outer ends pivotally connected with the base and bed, respectively, and their inner ends provided with sockets in the form of open grooves, the bar engaging such sockets, the two connecting-rods pivotally connected with the ends of the bar, and means for actuating such rods, substantially as and for the purpose set forth.

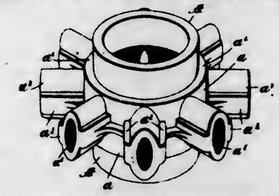
3. In combination with the base and movable bed, both provided with sockets in the shape of open rounded grooves, the bars in such sockets, the two links having on their outer ends sockets in the shape of open rounded grooves to engage the bars in the sockets on the bed and base, respectively, and the pivotal bar between the inner ends of the links engaging sockets on such ends, substantially as and for the purpose described.



4. In combination with the base and the movable bed provided with sockets in the shape of open grooves on their inner opposing sides, the two links having sockets on their opposite ends, also in the shape of open grooves, the two bars engaged by the sockets in the base and bed and the adjacent outer ends of the links, the bar engaged by the sockets on the inner ends of the links, and one or more connecting-rods pivotally connected with such bar and means for actuating them, substantially as and for the purpose specified.

5. In combination with the base and movable bed provided with long rounded grooves or sockets on their inner opposing sides, the plates forming broad swinging links between the base and bed, provided with the rounded grooves extending along the outer and inner edges, the cylindrical pivotal bars resting in the sockets on the base and bed and engaged by the sockets in the outer edges of the respective plates forming the links, the cylindrical pivotal bar engaged by the sockets on the inner edges of such plates, the two connecting-rods pivotally connected with the ends of such bar, the crank-shaft for actuating the rods, and means for driving the shaft, substantially as and for the purpose shown.

488,125. HUB-BLANK FOR METAL WHEELS. JAMES R. LITTLE, Quincy, Ill. Filed Feb. 24, 1892. Serial No. 422,706. (No model.)



Claim.—1. A blank for metal wheel-hubs, having the body provided with the annular enlargement with shoulders for engagement by the compressing-dies, spoke-receiving sockets on such enlargement to receive and be compressed upon the spoke ends, and the annular offset from the bore within the hub-body, substantially as and for the purpose described.

2. A blank for metal wheel-hubs, having the body provided with the annular enlargement having shoulders to be engaged by the compressing-dies and the spoke-receiving hollow bosses projecting out from the annular enlargement to be compressed upon the spoke ends, and an offset within the hub to bring the inner face of the main part of the enlargement to or outside of the plane of the outer periphery of the hub-body, substantially as and for the purpose specified.

3. A blank for metal wheel-hubs, having the body and the spoke-receiving hollow bosses to be compressed upon the ends of the spokes, each having the ribs or ridges on opposite sides to be engaged and

compressed by the dies, and the offsets from its bore situated within the ribs or ridges, substantially as and for the purpose set forth.

4. A blank for metal wheel-hubs, having the body and the spoke-receiving hollow bosses to be compressed upon the ends of the spokes, each provided with the longitudinal ribs with sides to be engaged by hub parts which carry the part bosses, substantially as and for the purpose specified.

5. As an improvement in the art of making metal wheels, the process which consists in forming the hub in two parts, each having a series of half-tubular bosses, one part having a series of riveting pro-

from such opening, a series of radial cavities to receive the spoke-holding half-bosses on the hub-half, and plane faces adjoining the edges of such cavities, the riveting-plungers guided in suitable passages between the boss-receiving cavities on one of the opposing die parts, the stationary knee with reference to which the two opposing parts of

with spools *c* and journaled upon spring-arms which yield vertically, and a spring-plate E, co-operating with the knife of the feeding-roll to sever a web of paper, substantially as described.

3. In a roll-paper cutter, the combination of a roll A, provided

compressed by the dies, and the offsets from its bore situated within the ribs or ridges, substantially as and for the purpose set forth.

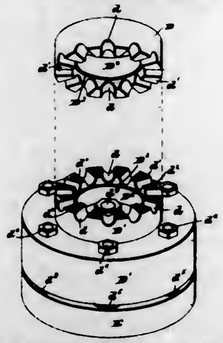
4. A blank for metal wheel-hubs, having the body and the spoke-receiving hollow bosses to be compressed upon the ends of the spokes, each provided with the longitudinal ribs with sides to be engaged by the faces of the compressing-dies, and the offset from the bore of the boss of such depth as to bring the inner sides of the ribs or ridges substantially to or outside of the outer periphery of the body of the boss, substantially as and for the purpose described.

5. A blank for metal wheel-hubs, having the hollow spoke-receiving bosses to be compressed upon portions of the spokes provided within with one or more longitudinally-extending grooves, forming offsets from their bores, substantially as and for the purpose specified.

6. A blank for metal wheel-hubs, having the spoke-receiving hollow bosses to be compressed upon portions of the spokes provided with projecting longitudinal ribs or ridges on their outer sides to be engaged by abrupt faces on the boss-compressing dies adjoining the edges of the boss-receiving cavities, substantially as and for the purpose shown.

7. A blank for metal wheel-hubs, having the body provided with an annular enlargement within which is an annular offset from the hub-bore and the spoke-receiving hollow bosses to receive and be compressed upon the ends of the spokes situated on the annular enlargement of the hub-body and each provided with ribs or ridges to overlap the edges of the boss-receiving cavities in the compressing-dies, and an offset from its bore on the inner side of each rib or ridge, substantially as and for the purpose shown.

488,126. ART OF MAKING METAL WHEELS. JAMES R. LITTLE, Quincy, Ill. Filed Mar. 14, 1892. Serial No. 424,854. (No model.)



Claim.—1. As an improvement in the art of making metal wheels, the process which consists in forming the hub in two parts having corresponding spoke-receiving cavities, placing such parts on opposite sides of the spokes to be secured to the hub, compressing them upon the spokes so as to compress the latter in the cavities, and riveting the two parts of the hub together as they are compressed upon the spokes, substantially as and for the purpose specified.

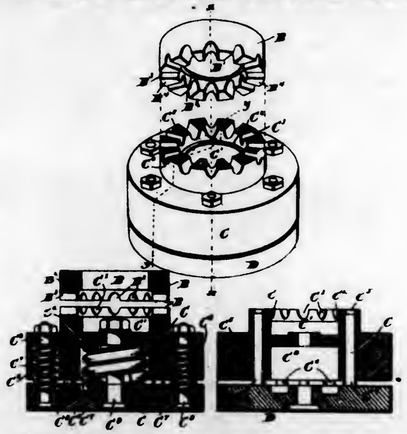
2. As an improvement in the art of making metal wheels, the process which consists in forming the hub in two parts, each having a series of cavities to partly inclose portions of the spokes, one part having riveting projections and the other openings to receive the latter, placing the two parts of the hub on opposite sides of the spokes with portions of the latter in their corresponding cavities, compressing the hub parts upon the spokes to compress the material of the inclosed portions of the latter, and heading down the riveting projections on the one part of the hub into the openings in the other part, substantially as and for the purpose shown.

3. As an improvement in the art of making metal wheels, the process which consists in forming the hub in two parts having corresponding part sockets for the spokes, one part having riveting projections and the other having openings to receive the latter, placing the hub parts on opposite sides of the spokes inserted in their cavities, compressing them upon the inclosed portions of the spokes so as to compress the material of the latter, and during such compression heading the riveting projections on one part down in the openings in the other, substantially as and for the purpose set forth.

4. As an improvement in the art of making metal wheels, the process which consists in forming the hub in two parts, each having a series of half-tubular bosses, one part having a series of riveting projections and the other a series of openings to receive such projections, placing the parts of the hub on opposite sides of the spokes inserted in their bosses, compressing the bosses upon the spokes to compress the latter, and simultaneously compressing the portions of the hub parts which carry the part bosses, substantially as and for the purpose specified.

5. As an improvement in the art of making metal wheels, the process which consists in forming the hub in two parts, each having a series of half-tubular bosses, one part having a series of riveting projections and the other a series of openings to receive such projections, placing the parts of the hub on opposite sides of the spokes inserted in their bosses, compressing the bosses upon the spokes to compress the latter, and simultaneously compressing the portions of the hub parts which carry the part bosses, and heading down the riveting projections in the receiving-openings so as to hold the hub parts compressed upon the spokes, substantially as and for the purpose shown.

488,127. DIE FOR MAKING METAL WHEELS. JAMES R. LITTLE, Quincy, Ill. Filed Mar. 14, 1892. Serial No. 424,855. (No model.)



Claim.—1. In a die, in combination with the two opposing parts having suitable cavities to receive and engage portions of the article to be compressed and the series of riveting-plungers made movable with reference to such parts, substantially as and for the purpose specified.

2. In a die, in combination with the two opposing parts having suitable cavities to receive and engage the portions of the article to be compressed, the series of the riveting-plungers made movable with reference to such die parts, and a suitable base against which the plungers rest and toward and from which the two opposing parts of the die can move, substantially as and for the purpose shown.

3. In a die, in combination with the two opposite parts having suitable cavities to receive and engage the portions of the article to be compressed, a base toward and from which such parts are movable, riveting-plungers in one of said parts having their outer ends engaging the base, and springs to hold the plunger-containing part normally away from the base, substantially as and for the purpose set forth.

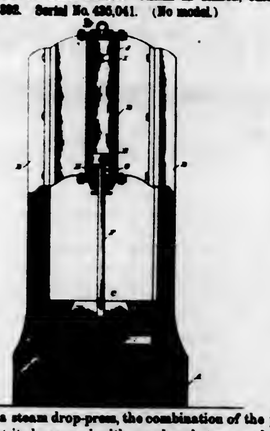
4. In a die, in combination with the two opposing parts having their faces formed to receive and engage portions of the article to be compressed, the base, the riveting-plungers suitably guided in the die part adjoining the base, springs situated in recesses in such part and engaging the base, so as to force and hold the part normally away from the latter, and suitable guiding-bolts to guide said part in its movements toward and from the base and limit its motion from the latter, substantially as and for the purpose described.

5. In a die for compressing the halves of a divided wheel-hub upon the spokes and riveting such halves together, in combination with the base, the die part made movable with reference thereto, having in its upper face cavities to receive and engage a half of the hub with its spoke-receiving half-bosses to be compressed upon the spokes, the riveting-plungers guided in suitable passages in such die part and having their lower ends adapted to be engaged by the base, one or more springs to force and hold the part normally away from the latter, and the outer die part having its lower face provided with cavities to receive and engage the other half of the hub, with its spoke-receiving half-bosses to be compressed upon the spokes, substantially as and for the purpose specified.

6. In a die for compressing the halves of a divided wheel-hub upon the spokes and riveting the halves together, in combination with the opposing parts of the die, each provided with a central recess to receive the outer end of the respective hub-half, a rabbet or offset

from such opening, a series of radial cavities to receive the spoke-holding half-bosses on the hub-half, and plane faces adjoining the edges of such cavities, the riveting-plungers guided in suitable passages between the boss-receiving cavities on one of the opposing die parts, the stationary base with reference to which the two opposing parts of the die are movable engaging the outer ends of the riveting-plungers, and one or more springs for holding the plunger-containing part normally away from the base to allow the plungers to stand with upper ends below the surfaces between the boss-receiving cavities on the inner face of the latter die part, substantially as and for the purpose shown.

488,128. STEAM DROP-PRESS. JAMES H. MASON, Chicago, Ill. Filed May 31, 1892. Serial No. 435,041. (No model.)



Claim.—1. In a steam drop-press, the combination of the piston-cylinder provided at its lower end with a reduced steam and an enlarged exhaust port side by side, a steam-escape-vent port located at a point near the top thereof, and an air-vent directly above the steam-vent, a supplemental steam-chest or valve-casing secured to said cylinder and having corresponding ports registering with the cylinder-ports, a rotary valve mounted in said chest or casing and provided with separated reduced steam and enlarged exhaust passages disposed at an angle to each other and adapted to alternately register, with their respective ports opening into said cylinder, and a removal-car inclosing the valve at one end within the casing, substantially as set forth.

2. In a steam drop-press, the combination, with the cylinder having a reduced steam and an enlarged exhaust port at its lower end and side by side, of a supplemental steam-chest or valve-casing secured to said cylinder over said ports and provided with an annular or circular recess in the side or body thereof, a rotary valve provided with separate transverse steam and exhaust passages disposed at an angle to each other, an end annular flange taking and working in said circular recess in the body of said casing, and means for controlling said valve, substantially as set forth.

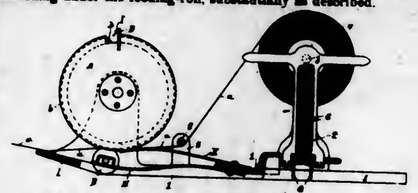
3. The combination, with the cylinder having a steam and exhaust port side by side and located at the bottom thereof, of a supplemental steam-chest inclosing said ports and provided with a circular recess or seat in one side of the body thereof, a rotary valve provided with separated transverse steam and exhaust passages disposed at an angle to each other and with an end annular flange taking and working in said circular recess and having a circular groove in the outer face thereof, an inclosing side or cap fitting over said flange and secured to the body of said chest and provided with a circular groove registering with said flange-groove, packing inserted in said registering grooves, and means for controlling said valve, substantially as set forth.

488,129. ROLL-PAPER CUTTER. WALTER S. MERRIMBALL, Covington, Ky., assignor to the Samuel C. Tatum Company, Cincinnati, Ohio. Filed Feb 10, 1892. Serial No. 421,695. (No model.)

Claim.—1. The combination, with supports for a paper-roll, of a rotating feeding-roll A, having annular bands *c* and a radiating knife D, and a spring-plate E, secured at one end and having its opposite free end extending beneath the feeding-roll to co-operate with the knife thereof to cut a web of paper and by its resiliency springing toward the feeding-roll against the annular bands, substantially as and for the purposes described.

2. In a roll-paper cutter, the combination of the feeding-roll A, provided with a knife D and bands *b*, the coacting roll B, provided with spools *c* and journaled upon spring-arms which yield vertically, and a spring-plate E, co-operating with the knife of the feeding-roll to sever a web of paper, substantially as described.

3. In a roll-paper cutter, the combination of a roll A, provided with a knife D, bands *b*, and radially-projecting bands *c*, the coacting roll B, provided with spools *c*, and having grooves between the spools to register with the radially-projecting bands, and a spring-plate E, extending under the feeding-roll, substantially as described.



4. In a roll-paper cutter, the combination of the measuring-roll A, provided with a knife D and having the shoulder I and bands *b*, the vertically-movable roll B, having the spools *c* bearing against the bands of the knife-carrying roll, and the spring-plate E, coacting with the knife to sever and strip the paper and force it in contact with the shoulder of the measuring-roll, substantially as described.

5. In a roll-paper cutter, the feeding-roll A, provided with the rubber bands *b*, the radially-extending bands *c*, the knife D, and the shoulder I in rear of the knife, in combination with the roll B and the spring-plate E, substantially as described.

6. In a paper-roll cutter, the combination of the measuring-roll A, armed with knife D, having the feeding-bands *b b*, the vertical moving feed-roll B, having the spools *c* in contact with the bands *b b*, and the spring-plate E, coacting with said knife D to cut and strip the paper and force it in contact with the shoulder I of said measuring-roll, substantially as specified.

7. In a paper-roll cutter, the feeding-roll A, provided with the series of rubber bands *b*, the radially-extending bands *c*, the knife D, the shoulder I in rear of said knife, in combination with coacting spring-plate E, substantially as specified

488,130. THILL-SUPPORT. DANIEL B. MORGAN, Wabash, Ind. Filed Mar. 30, 1892. Serial No. 427,048. (No model.)

Claim.—1. In a shaft-holder, the combination of a laterally-swinging spring catch or bolt, a box or casing therefor secured to the shaft, and the holding-bracket secured to the axle and having the holding and cam edges to coact with said bolt, as and for the purpose set forth.

2. In a shaft-holder, the combination of a box secured to the shaft, a spring catch or bolt mounted therein to swing laterally within the box, a spring yieldingly holding the bolt at one edge of the box, and a holding-arm secured to the axle and provided with curved and straight edges, as set forth.

3. In a shaft-holder, the combination of a box secured to the shaft, a bolt in said box mounted to move longitudinally and swing laterally, a spring formed in a single piece to yieldingly hold the bolt in its normal longitudinal position and also yieldingly against lateral swing, and means carried by the axle, substantially as described, to engage said bolt and hold the shaft raised, in the manner substantially as set forth.

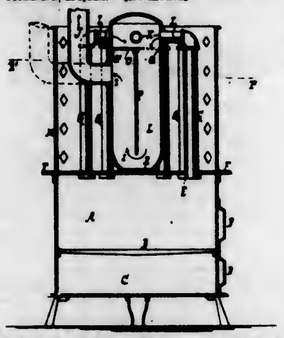
4. In a shaft-holder, the combination of a laterally-swinging spring-bolt carried by the shaft, and a holding-arm carried by the axle and provided with a rearwardly-facing holding-edge to hold the shaft raised through the medium of said bolt or catch and with a curved edge to throw the bolt laterally up over the end of the arm and release the shaft, substantially as as set forth.

5. In a shaft-holder, the combination of the longitudinally and laterally movable spring-bolt carried by the shaft, and a holding-arm rigid with the axle, having a rearwardly-facing holding-edge and a front edge to operate the bolt to slip by, so as to engage said holding-edge, and a rear curved edge to swing the bolt upwardly over the

holding-arm and release the shaft when the same is moved forwardly, substantially as described.

6. In combination, the laterally and longitudinally movable spring-bolt carried by the shaft, having the bëveled head, and the holding-arm rigid with the axle and having the front edge to throw the bolt longitudinally, the opening provided with the front holding-edge, and the rear edge to throw the bolt longitudinally, the rear edge of said arm being curved upwardly and forwardly to throw the bolt up over the same, substantially as described.

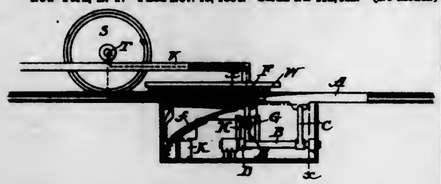
488,181. HEATER. JOHN HELSEL, Brooklyn, N. Y. Filed June 9, 1892. Serial No. 436,122. (No model.)



Claim.—1. In heaters, the combination, with the body or fire-pot A, of the pipes G I, the exit-pipe J, and the chamber L, provided in its bottom with a slide or damper R, substantially as shown and described.

2. In heaters, the combination, with the body or fire-pot A, of the pipes G I, the exit-pipe J, and the chamber L, provided with a partition P and reversible damper O, substantially as shown and described.

488,182. TRAMWAY-SWITCH. JAMES H. REINHARDT, Newark, N. J., assignor of two-thirds to Pierre Van Alstyne and Charles R. Hill, New York, N. Y. Filed Nov. 19, 1891. Serial No. 412,412. (No model.)

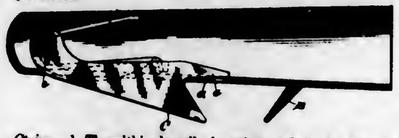


Claim.—1. The combination, with a movable switch-tongue and a spring-supported plate adapted to be depressed by the movement of a car, of a rock-shaft journaled beneath said tongue, a vertical arm fixed to one end of said shaft and directly engaging said tongue, a horizontal arm fixed to the other end of said shaft, a vertical lever pivoted to said horizontal arm beneath said plate and bearing the armature for a magnet, an electric circuit adapted to be closed by the passage of a car, and an electro-magnet included in said circuit and adapted to move said lever into the path of said plate, substantially as shown and described.

2. The combination, with a movable switch-tongue and a spring-supported plate adapted to be depressed by the movement of a car, of a rock-shaft journaled beneath said tongue, a vertical arm fixed to one end of said shaft and directly engaging said tongue, a horizontal arm fixed to the other end of said shaft, a vertical lever pivoted to said horizontal arm beneath said plate and bearing the armature for a magnet, an electro-magnet adapted to move said lever into the path of said plate, an electric circuit including said magnet and having one pole connected to a track-rail and the other to a fixed contact plate or bar, and a contact carried by the car and connected by an electric conductor to a wheel of the car, substantially as shown and described.

3. The combination, with a movable switch-tongue and a spring-supported plate adapted to be depressed by the movement of a car, of a rock-shaft journaled beneath said tongue, a vertical arm fixed to one end of said shaft and directly engaging said tongue, a horizontal arm fixed to the other end of said shaft, a lever pivoted upon said arm and having a vertical arm beneath said plate and a horizontal arm, a permanent magnet pivoted with its neutral point overlying the horizontal arm of said lever and with its poles near the surface, and an armature for said magnet carried by the car, substantially as shown and described.

488,183. CARRIAGE-POLE TIP. REINHARD W. RIDER, Racine, Wis. Filed July 13, 1891. Renewed May 31, 1892. Serial No. 434,975. (No model.)



Claim.—1. The within-described carriage-pole tip, having a downwardly-extending external lug B and slotted at *a*, combined with dog C, which is constructed with depressions *c'* *c²* and teat *c³* and pivoted to move in slot *a* and having at one end the lip *c* to engage on the inside of this tip, substantially as and for the purposes set forth.

2. In combination with the hollow pole-tip A, slotted at *a*, the pivoted dog C, having in its side depressions to hold the spring, and the spring passing around the pivot-pin of the dog, its free ends pressing, respectively, against the inside of the tip and the dog, substantially as described.

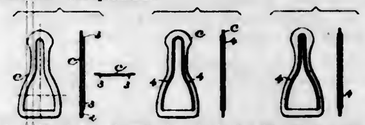
3. In combination with the hollow pole-tip, the dog C, pivoted within and combined with the spring D, which passes around the pivot of the dog and at one end rests against the inside of the tip and at the other against the dog, substantially as shown and described.

488,184. PICTURE-EXHIBITOR. DAVID J. ROGERS, Lebanon, Ky., assignor of two-thirds to Mike W. Rogers, same place, and Thompson T. Rogers, Perry, Mo. Filed May 27, 1892. Serial No. 434,546. (No model.)

Claim.—1. In a combined picture frame and exhibitor, the combination of the external rectangular frame having an exhibiting-opening and an internal rib surrounding said opening to form a rear flanged seat, the glass and marginal mat resting in said seat, a smaller separate box back having upper and lower flanges registering with and seated within said seat flush with the back of the picture-frame, turn-buckles pivoted to the back of the external frame and engaging said flanges to removably hold the box back to its seat, opposite spring-retarded winding-rollers removably journaled or mounted within said box back, and a cushioned false back mounted in the open front of the removable box and interposed between said rollers and the picture-roll, substantially as set forth.

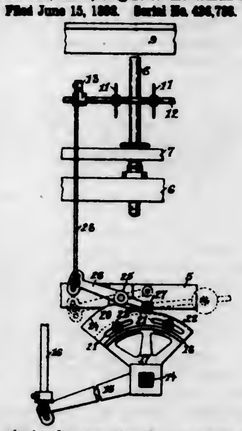
2. The combination, with the picture-frame and the separate and independent box back removably secured within the back of said frame and having bearing slots in its lower edge, of the opposite winding-rollers removably mounted within said box and having their lower ends journaled in said slots and terminating below the slots in squared shaft ends projecting below the box and short of the lower edge of the picture-frame and upper socketed ends, tension-springs mounted within said sockets of the rollers and bearing against the top of the box to force the lower ends of the rollers against the lower edge of the box, bearing-washers for said rollers and springs, the picture-roll winding upon said rollers, and a square socketed key adapted to removably engage the squared ends of said roller-shafts, substantially as set forth.

488,185. METHOD OF MAKING GARMENT-CATCHER. EDWARD S. SMITH, Waterbury, Conn., assignor to George Frost, George H. Phelps, and George A. Frost, Newton, Mass. Filed June 6, 1891. Serial No. 395,372. (No specimens.)



Claim.—The herein-described method of making V-shaped loops for stocking-supporters, consisting in forcing a portion of the central part of the body of the catch through to one side thereof to form a lip wholly at one side of the body, then upsetting and swaging the said lip to form a bead, and thereafter carrying said bead portion bodily back to and upon the other side of the body of the catch, leaving a central opening shaped substantially as shown and having a flange 4 extended from both sides of the catch, substantially as described.

488,186. YARN-SEPARATOR FOR SPINNING-MACHINES. CYRUS A. TAFT, Whitinsville, Mass., assignor to the Whitin Machine Works, same place. Filed June 15, 1892. Serial No. 436,793. (No model.)



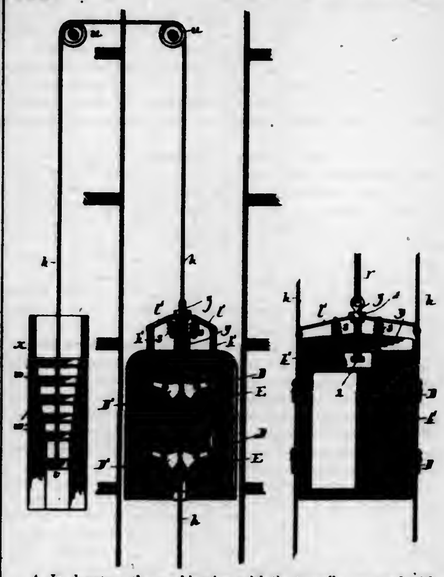
Claim.—In a device for operating the separators of a spinning-machine, the combination, with the rock-shaft 14 and the segmental arm 17, having the curved bearing 18 and lugs 19, of the cam 20, provided with the segmental slots 21, the separators, and mechanism, substantially as described, intermediate the cam and the separators adapted to operate the separators, as described.

488,187. SAFETY APPLIANCE FOR ELEVATORS. RICHARD URIE, Ripley, assignor of one-half to Matthew Van Orden, Houghton, Mich. Filed June 13, 1892. Serial No. 436,627. (No model.)

Claim.—1. In elevators, the combination, with the traveling car and with its main cable, of the yielding connector between them, the shifting grip controlled thereby, the supplemental or safety cable located along the path of said grip, and the counterpoise attached to said safety-cable, substantially as described.

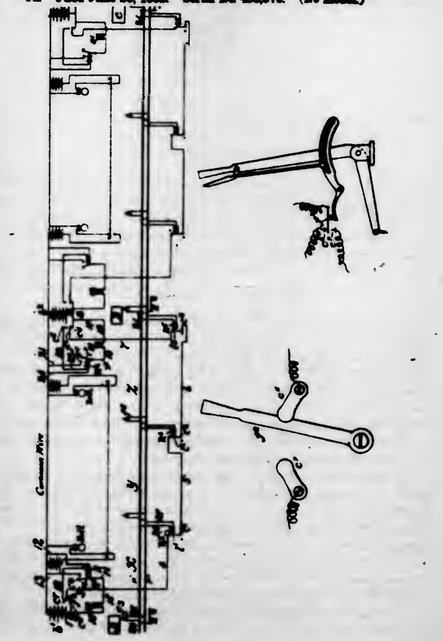
2. In elevators, the combination, with the traveling car and with its main cable, of the intermediate yielding connector attached, respectively, thereto, the gripper mounted upon said car, the shifting-bar between said connector and gripper to actuate the latter, the supplemental or safety cable located along the path of said gripper, and the cumulative counterpoise attached at one end of said safety-cable, substantially as described.

3. In elevators, the combination, with the traveling car and with its main cable, of the yielding connector between them, the dual grippers mounted upon opposite sides of said car, the shifting-bars therefor located at opposite car-sides and joining said grippers, respectively, with the yielding connector, the dual safety-cables arranged along the paths of the respective grippers, and the cumulative counterpoise attached at one end of each of said safety-cables, substantially as described.



4. In elevators, the combination, with the traveling car and with its main cable, of the yielding spring-connector between them, the confronting and intermeshing clamp-plates or grip-jaws pivoted to the car, the shifting-bar joined, respectively, to said grip and connector, the safety-cable located along the path of the grip and between the jaws thereof, and the cumulative counterpoise attached at one end of said safety-cable, substantially as described.

488,188. ELECTRIC SIGNAL-CIRCUIT. JOHN V. YOUNG, Boston, Mass., assignor to the Union Switch and Signal Company, Swissvale, Pa. Filed June 20, 1892. Serial No. 438,278. (No model.)



Claim.—1. The combination of a signal operating or controlling circuit arranged at or near the entrance end of a signal-section, a signal-circuit extending along said section and controlling through a relay or other device the signal-operating circuit, and a battery and a circuit-controller included in the signal-circuit at or near the exit end of the signal-section, the circuit-controller being so connected to the signal at the exit end of the signal-section as to require the signal to be at "danger" before the signal-circuit can be closed to permit of the closing of the signal-operating circuit at the entrance of the section, substantially as set forth.

2. The combination of a signal operating or controlling circuit arranged at or near the entrance end of a signal-section, a series of one or more track-circuits, each having a relay, a signal-circuit looping through the contact-points of the track-circuit relays and controlling through a relay or other device the signal-operating circuit, and a battery and circuit-controller included in the signal-circuit at or near the exit end of the signal-section, the circuit-controller being so connected to the signal at the exit end of the signal-section as to require the signal to be at "danger" before the signal-circuit can be closed, and thereby close the signal-operating circuit at the entrance end of the section, substantially as set forth.

3. The combination of signal operating or controlling circuits arranged at or near the end of a signal-section and looping through contact-points of relays included in a signal-circuit extending along the signal-section, and batteries and circuit-controllers arranged at or near the ends of the signal-section and included in the signal-circuit, said controllers being so connected to the signals at the ends of the section that when said signals are at "danger" the batteries will neutralize each other, substantially as set forth.

4. The combination of batteries located at or near each end of a signal-section, signal controlling or operating circuits connected to said batteries and looping through contact-points of relays included in a signal-circuit also connected to said batteries and extending along the signal-section, and circuit-controllers so constructed that when shifted to break the signal-circuit they will complete the signal-operating circuit, substantially as set forth.

488,139. INCANDESCENT LAMP. ROBERT W. APPLEGATE, Omaha, Nebr., assignor to the Applegate Electric Light and Power Company, Chicago, Ill. Filed Apr. 7, 1892. Serial No. 428,139. (No model.)

Claim.—1. The herein-described improved incandescent lamp, comprising the bulb, the cap or plug having a lower cylindrical portion and an upper widened end supported by the neck of said bulb and hermetically connected thereto, the leading-in wires formed of aluminium, extended through said cylindrical portion of said cap or plug, and the vertical air-exhaust tube or opening leading centrally through said cylindrical portion of the cap or plug, substantially as set forth.

2. The herein-described improved incandescent lamp, comprising the bulb, the lava cap or plug having a cylindrical portion and upper widened end supported by said bulb, the leading-in wires of aluminium, extended through said cap or plug, the carbon filament connected at its ends to said leading-in wires, the vertical exhaust-tube leading centrally through said cylindrical portion of said cap or plug, the socket removably secured to said cap or plug and having circuit-wires extending therein, and the connection between the latter and said leading-in wires, substantially as set forth.

3. The herein-described improved incandescent lamp, comprising the bulb provided at its neck with an inner peripheral flange, a cap or plug having a head at its upper end resting on said flange, the leading-in wires extended through said cap or plug, the carbon filament connected at its ends to said leading-in wires, the electrodes over the upper ends of said leading-in wires, the removable socket having the circuit-wires extending therein, the plates designed to engage said electrodes, and the key, substantially as set forth.

4. The herein-described improved incandescent lamp, comprising the bulb provided at its neck with a peripheral flange, a cap or plug of lava, having a head resting on said flange, the air-exhaust tube extending through said cap or plug, the leading-in wires having electrodes over their upper ends, a covering around said electrodes, the removable socket or papier-maché having a cross-bar therein, the spring-plates extending from said cross-bar to said electrodes, the circuit-wires one of which is connected directly to one of said spring-plates, and the key designed to form connection between the other circuit-wire and spring-plate, substantially set forth.

488,140. NAPKIN-ADJUSTER. WILLIAM P. BURNETT, Hamilton, Ohio, assignor of one-half to Herbert R. Twitchell, same place. Filed July 14, 1892. Serial No. 440,007. (No model.)

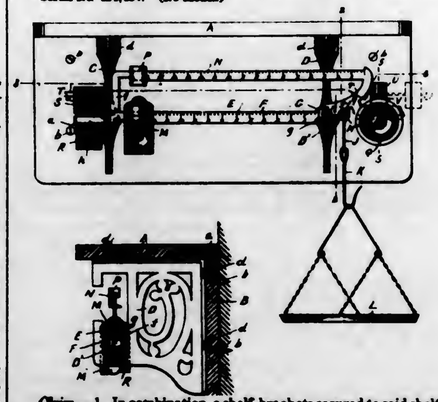
Claim.—1. A napkin-adjuster consisting of a wire, said wire having its central portion formed into a hook, a portion near each of its ends formed into a coil, its extremities reduced to a point to form pins, said pins being surrounded by and having directions opposite to each other and across the respective coils, substantially as shown and for the purpose set forth.

2. A napkin-adjuster consisting of a wire having its central portion formed into a hook, a portion of each of its ends formed into a coil, its extremities pointed to form integral pins, said pins terminating within and in opposite directions across the respective coils, and coils formed in said wire between said end coils and the hook, substantially as specified.

488,141. PROCESS OF INSULATING ELECTRIC CONDUCTORS. CHARLES CUTTRISS, New York, N. Y., assignor to the Knudson-Cuttriss Wire Company, Limited, of New York. Filed Jan. 20, 1892. Serial No. 418,642. (No model.)

Claim.—The method of preparing cotton sliver for application to electrical conductors, which consists in drawing the sliver in its natural state through a boiling non-viscous insulating fluid, such as oil, and then matting or felting the same and expressing the surplus oil taken up by it.

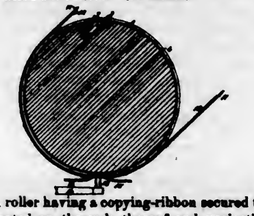
488,142. BALANCE. LEVI DA ROSER, West Somerville, Mass., assignor of one-half to Louis P. Cotè, same place. Filed Feb. 13, 1892. Serial No. 421,437. (No model.)



Claim.—1. In combination, a shelf, brackets secured to said shelf, one of said brackets provided with a whole *m*, a scale-beam one end of which extends through the opening *m* and the other end of which is supported by the other bracket, a balance or weight on one end of said scale-beam, and a weight having an arm pivoted to said weight, substantially as described.

2. A scale-beam for a scale, a balance or weight on one end, and a weight having an arm pivoted to said weight, for the purpose specified.

488,148. TYPE-WRITER LETTER-COPIER. JOHN T. DAVIS, St. Louis, Mo., assignor of one-half to Charles J. Moffett, same place. Filed Apr. 5, 1890. Serial No. 346,639. (No model.)



Claim.—1. A roller having a copying-ribbon secured thereto and rings or hoops located on the ends thereof and projecting beyond the surface of the copying-ribbon for keeping the copying-sheet normally out of contact with the copying-ribbon, substantially as described.

2. The combination of the letter-ribbon and the roller having a copying-ribbon secured thereto, between which and the letter-ribbon the copy and letter sheets are passed, substantially as described.

3. In a type-writer attachment, the combination of the roller of a type-writer, the peripheral projecting rings or hoops 3, mounted on said roller, and the copying-ribbon 4, secured around said roller, the said ribbon carbonized or inked on the outer side only, the meeting edges of said copy-ribbon being cut bias and made to overlap each other, so as to make a clinging bias joint, substantially as and for the purpose set forth.

4. In a type-writer attachment, the combination of the roller of a type-writer, the peripheral projecting rings or hoops 3, mounted on said roller and provided with countersink recesses 8, the bias-cut copying-ribbon 4, secured around said roller, the meeting edges of said copying-ribbon being made to overlap each other, so as to provide a clinging bias joint, and the clamp-lock buttons 7, having a pivot connection within said countersinks to said rings, the said buttons being arranged when turned into engagement with said bias overlap-joint of the copying-ribbon to clamp-lock the same, substantially as and for the purpose set forth.

5. In a type-writer attachment, the combination of the roller of a type-writer, the peripheral projecting rings or hoops 3, mounted on said roller, the copying carbonized or inked ribbon 4, wrapped around said roller between said peripheral projecting rings, the ink-ribbon 15, and the type that makes the impression, substantially as and for the purpose set forth.

6. The combination, in a type-writer, of the platen, the manifolding sheet wrapped around said platen with the impression side out, and the ink-ribbon from which the direct impression is made interposed between the printing mechanism and the wrapped platen, whereby by the interposition of two sheets of paper two independent impressions may be made.

488,144. BEER-COOLER. WYATT GIBSON, Dodd, Tex., assignor of one-half to James F. Sadler, same place. Filed Dec. 22, 1891. Serial No. 415,916. (No model.)

Claim.—1. In a cooler of the class described, the combination, with a lower casing-section and the upper casing-section hinged to the same and provided with a faucet extending therethrough, of a tank mounted in the lower casing-section, and a pipe connected to the faucet, coiled about the tank, and adapted at its inner end for connection with a keg, substantially as specified.

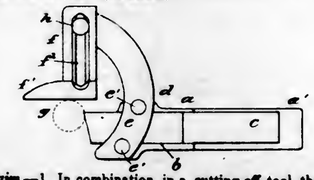
2. In a cooler of the class described, the combination, with a lower casing-section and the upper casing-section hinged to the same and provided with a faucet extending therethrough, of a tank mounted in the lower casing-section, and a flexible pipe connected to the faucet, coiled about the tank, and adapted at its inner end for connection with a keg, substantially as specified.

3. In a cooler of the class described, the combination, with a lower casing-section and the upper casing-section mounted thereon and provided with a draw-off faucet extending through the wall thereof, of a tank provided with handles or bails and removably mounted in the lower casing-section and of a diameter less than the same and combining therewith to form an ice-space, and a coiled pipe arranged about the tank within the space and having one end connected with the faucet and the other adapted for connection with a keg, substantially as specified.

4. In a cooler of the class described, the combination, with the lower cylindrical section-casing and the upper cylindrical casing-section hinged removably thereto, of the lid removably mounted on the upper section and adapted to fit the lower section, and a tank less in diameter than the lower casing-section and removably mounted therein and combining with the same to form an annular ice-space, substantially as specified.

5. In a cooler of the class described, the combination, with the double-walled lower casing-section, the upper casing-section similarly constructed and mounted on the same, and an internal tank located in the casing and combining therewith to form an annular ice-space, of a faucet extending through the wall of the casing and into said ice-space, substantially as specified.

488,145. LATHE-TOOL. JAMES H. HURLEY, Hartford, Conn., assignor of one-half to William J. Shea, same place. Filed Apr. 26, 1892. Serial No. 430,456. (No model.)



Claim.—1. In combination, in a cutting-off tool, the body part having the tool-holding socket, the cutter-blade fitting the tool-socket, the tool-clamp comprising a strap with its upper end projecting above and beyond the end of the tool-body, the adjustable work-rest, and means for clamping the work-rest to the arm, all substantially as described.

2. In combination, in a cutting-off tool, the body part with the blade-holding socket formed in the side of the stock, the cutting-blade fitting the tool-socket, the tool-clamp comprising clamping-bolts, a strap overlying the socket and projecting above the stock, and the work-rest comprising the slotted foot-piece adjustably secured to the strap, all substantially as described.

3. In combination, in a cutting-off tool, the body part having the tool-holding socket, the cutter-blade fitting said socket, the tool-clamp comprising a strap with its upper end projecting above and beyond the end of the tool-body, and the adjustable work-rest secured to the arm and having a movement across the axis of the work in the same plane and coincident with the cutting-off tool, all substantially as described.

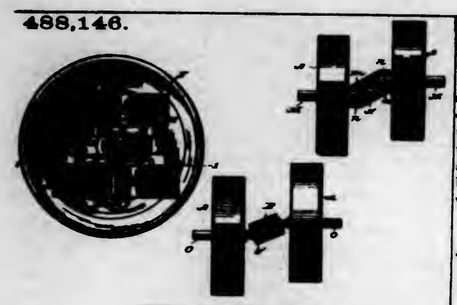
4. In combination, in a cutting-off tool, the body part having the tool-holding socket, the cutter-blade fitting said socket, the tool-clamp comprising a strap with its upper end projecting above and beyond the end of the tool-body, and the work-rest comprising the slotted foot-piece having a flat under surface and adjustably secured to the strap, all substantially as described.

488,146. EDGE-RUNNER OR VERTICAL MILLSTONE. HENRY MAPPES, Magdeburg, Germany, assignor to the Grusonwerk, same place. Filed Jan. 6, 1892. Serial No. 417,196. (No model.) Patented in Belgium Feb. 12, 1890, No. 89,495; in France Feb. 12, 1890, No. 208,736; in Mexico Aug. 7, 1890, and in Germany Dec. 24, 1890, No. 56,110.

Claim.—1. The combination of the vertical millstones, the axle or axles upon which said millstones are journaled, and means for revolving said millstones around a common center, said axle or axles extending horizontally from the center of rotation and inclining forward with relation to the radius of revolution, substantially as set forth.

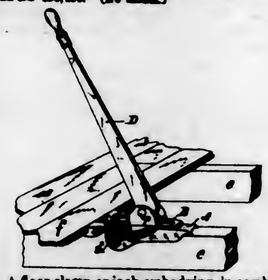
2. The combination of a vertical driving-shaft, a cross-beam secured to said shaft and having bearings on its opposite ends, and crank-axles supported in said bearings at their inner journal ends and having outer journal ends upon which vertical millstones are supported, said outer journal ends being inclined forward with relation to the radius of revolution, substantially as set forth.

488,146.



Claim.—In a fireproof garment, the combination, with a body-covering having a neck-opening and surrounding buttonholes, of a mask or head-covering provided with mouth and eye openings, outwardly and reversely extended flaps inclosing said mouth-opening, a skirt portion extending through said neck-opening under the body-covering and provided with buttons engaging said buttonholes, a fastening device secured to the neck of said mask, and a supplemental throat or neck flap fastened at one end to the neck of said mask and adapted to have its free end engage said fastening device at a point beyond the same to tightly draw the mask about the neck of the wearer, substantially as set forth.

488,147. FLOOR-CLAMP. FRANK MARTIN, Cincinnati, Ohio, assignor to the Samuel C. Tatem Company, same place. Filed June 13, 1892. Serial No. 436,690. (No model.)



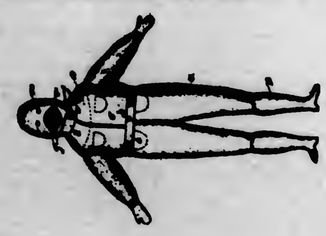
Claim.—1. A floor clamp or jack embodying, in combination, the following elements, namely: a joist-plate, a rack-bar sliding thereon, a lever pivoted to the joist-plate and operatively engaging the rack-bar, a cross bar or plate sliding laterally upon the joist-plate and provided with a depending detent-lug, and a connection between the lever and the cross-bar, whereby in operating the rack-bar the lever also operates the cross-bar detent to engage the joist and prevent rear displacement of the apparatus, substantially as set forth.

2. In a floor-clamp, the combination of a joist-plate having a depending flange at one side provided with a detent upon the inner side, a sliding cross-bar resting upon and guided by the joist-plate, an adjustable dog upon the cross-bar provided with a detent upon its inner side, and means, substantially as described, for operating the cross-bar and its detent in opposition to the joist-plate flange and its detent to engage the joists at opposite sides and retain the parts fixedly to the joist during the operation of compressing the flooring-board, substantially as set forth.

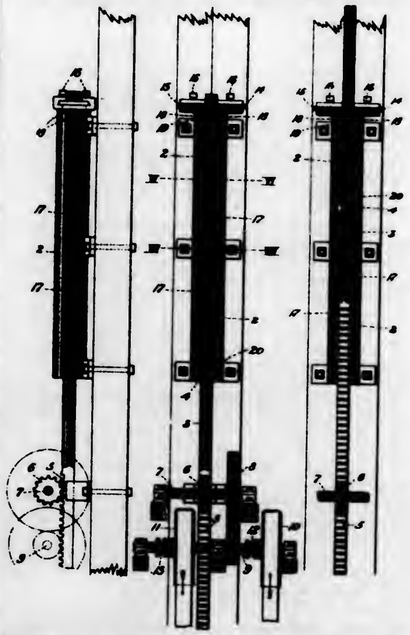
3. The combination of the joist-plate provided with the cross-recess, the side ears or lugs, and the side flange, the sliding or clamp plate provided with the inclined slot, the cross-bar provided with the upwardly-projecting stud and adjustable dog with detent, and the hand-lever secured to the joist-plate and operating the clamp-plate, substantially as set forth.

4. The combination and arrangement of the joist-plate formed as described, the cross-bar formed to slide in the cross-recess flush with the surface of the joist-plate, the clamp-plate resting upon the joist-plate and covering the cross-bar, and the lever pivoted to the guide-lugs above the clamp-plate and holding all parts together into an integral implement, substantially as set forth.

488,148. FIREPROOF GARMENT. BENJ. J. MARTIN, Pomona, Kans., assignor of one-third to Walter D. Bagby, same place. Filed Oct. 6, 1892. Serial No. 447,617. (No model.)



488,149. MACHINE FOR MAKING TUBES FROM PAPER-PULP. EDWARD MARTENS, Pittsburg, assignor of one-half to James Peters, Latrobe, Pa. Filed Jan. 18, 1892. Serial No. 418,396. (No model.)



Claim.—1. A machine for making tubes from pulp, comprising a vertical forming-cylinder, a compressing-plunger having an annular water-chamber fitting about the same, and movable plates having recesses to fit about the plunger and close the upper end of the cylinder, substantially as and for the purposes described.

2. A machine for making tubes from paper-pulp, comprising a vertical forming-cylinder, a compressing-plunger movable therein and having an annular flange, and a ring having supporting-pins arranged to rest upon the flange, substantially as and for the purposes described.

3. A machine for making tubes from paper-pulp, comprising a vertical forming-cylinder, a compressing-plunger movable therein and having an annular flange, and an annular water-chamber arranged to fit about the plunger at the upper end of the cylinder, substantially as and for the purposes described.

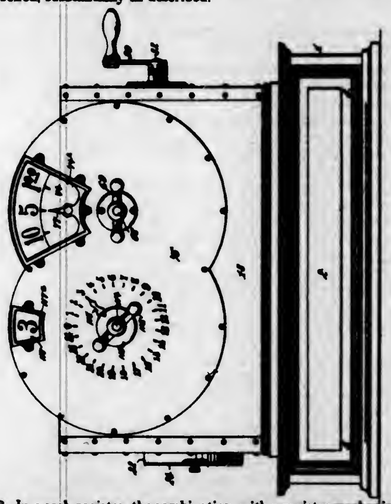
4. A machine for making tubes from paper-pulp, comprising a vertical forming-cylinder, a compressing-plunger movable therein and having an annular flange, a ring having supporting-pins arranged to rest upon the flange, and an annular water-chamber arranged to fit about the plunger at the upper end of the cylinder, substantially as and for the purposes described.

5. A machine for making tubes from paper-pulp, comprising a forming-cylinder, a compressing-plunger, and a water-chamber arranged to fit about the plunger, substantially as and for the purposes described.

488,150. CASH REGISTER AND INDICATOR. EDWARD MURPHY, New York, N. Y. Filed May 17, 1892. Serial No. 433,203. (No model.)

Claim.—1. In a cash-register, the combination, with a register

mechanism and a rock-shaft provided with a lever for actuating said register mechanism, of a cash-drawer, a spring locking-bolt for said drawer, a series of levers actuated from the levers on the rock-shaft of the register mechanism to automatically disengage said bolt and release the drawer after an amount has been registered, and a locking-lever adapted to be released by one of the bolt-actuating levers in the operation of automatically unlocking and opening the drawer, whereby said locking-lever is permitted to engage the lever on the rock-shaft of the register mechanism and lock said register mechanism against further operation until the cash-drawer is again closed and locked, substantially as described.



2. In a cash-register, the combination, with a register mechanism and a rock-shaft provided with a lever for actuating said register mechanism, of a cash-drawer, a bolt for automatically locking said drawer when closed, a series of levers actuated from the lever on the rock-shaft of the register mechanism to automatically disengage said bolt and release the drawer after an amount has been registered, a locking-lever adapted to be released by one of the bolt-actuating levers in the operation of automatically unlocking the drawer, and a spring for causing the said released locking-lever to engage the lever on the rock-shaft of the register mechanism, and thereby lock said register mechanism against further operation until the cash-drawer is again closed and locked, substantially as described.

3. In a cash-register, the combination, with a register mechanism provided with an actuating rock-shaft, of a cash-drawer, a bolt for automatically locking said drawer when closed, a series of levers actuated from the said rock-shaft to automatically disengage the bolt and release the drawer after an amount has been registered, and an alarm operated by one of the bolt-actuating levers in the operation of automatically unlocking the drawer, substantially as described.

4. In a cash-register, the combination, with a register mechanism and a rock-shaft provided with a lever for actuating said register mechanism, of a cash-drawer, a bolt for automatically locking said drawer when closed, a series of levers actuated from the lever on said rock-shaft to automatically disengage the bolt and release the drawer after an amount has been registered, an alarm operated by one of the series of bolt-actuating levers in the operation of unlocking the drawer, and a locking-lever adapted to be automatically engaged with the lever on the rock-shaft of the register mechanism simultaneously with the sounding of the alarm to lock said register mechanism against further operation until the cash-drawer is again closed and automatically locked, substantially as described.

5. In a cash-register, the combination of a register mechanism provided with an actuating rock-shaft, a setting mechanism for the register devices, a locking-wheel on a rotary shaft of the setting mechanism, a vertically-movable spring-latch in yielding engagement with the under side of said locking-wheel, an automatically-opening cash-drawer, a vertically-movable spring-bolt for automatically locking said drawer when closed, a series of levers actuated from the rock-shaft of the register mechanism to automatically disengage said bolt and release the drawer after an amount has been registered, and a locking-bar carried by one of the series of bolt-actuating levers and adapted to bear upward against the lever end of the vertically-movable spring-latch to hold said latch in rigid engagement with the locking-wheel on the shaft of the setting mechanism, and thereby lock said setting mechanism against movement in either direction until the cash-drawer is closed and automatically locked, substantially as described.

6. In a cash-register, the combination of a register mechanism, a rock-shaft provided with a lever for actuating said register mechanism, a setting mechanism for controlling the amount to be registered, a locking-wheel on a rotary actuating-shaft of the setting mechanism, a spring-latch in yielding engagement with said locking-wheel, an automatically-opening cash-drawer, a spring-bolt for automatically locking said drawer when closed, a series of levers actuated from the lever on the rock-shaft of the register mechanism to automatically disengage said bolt and release the drawer after an amount has been registered, a locking-bar carried by one of the series of bolt-actuating levers and adapted to engage the spring-latch and hold it in rigid engagement with the locking-wheel on the actuating-shaft of the setting mechanism, and a spring locking-lever adapted to be automatically engaged with the lever on the rock-shaft of the register-operating mechanism simultaneously with the unlocking and opening of the drawer, whereby the register mechanism and its setting mechanism are locked against further operation until the said drawer is again closed and locked, substantially as described.

7. In a cash-register, the combination of a register mechanism, a rock-shaft provided with a lever for actuating said register mechanism, a setting mechanism for controlling the amount to be registered, an operating-handle for the setting mechanism, a rotary dial actuated from the handle of the setting mechanism to indicate and display the amount to be registered, a locking-wheel for the setting mechanism, a spring-latch in yielding engagement with said locking-wheel, an automatically-opening cash-drawer, a spring-bolt for automatically locking said drawer when closed, a series of levers actuated from the lever on the rock-shaft of the register mechanism to automatically disengage said bolt and release the drawer after an amount has been registered, a locking device carried by one of the series of bolt-actuating levers and adapted to engage the spring-latch and hold it in locking engagement with the locking-wheel of the setting mechanism, a locking-lever adapted to be automatically engaged with the lever on the rock-shaft of the register mechanism in the operation of automatically unlocking and opening the cash-drawer, and an alarm, substantially as described.

8. In a cash-register, the combination of a register mechanism, a rock-shaft provided with an operating-handle and carrying a lever for actuating the gearing of said register mechanism, a setting mechanism for controlling the extent of operation to be imparted to the register mechanism according to the amount to be registered, an operating-handle for the setting mechanism, a rotary dial actuated from the handle of the setting mechanism to indicate and display the amount to be registered, an automatically-opening cash-drawer, a bolt for automatically locking said drawer when closed, a series of levers actuated from the lever on the rock-shaft of the register mechanism to automatically disengage said bolt and release the drawer after the register mechanism has been operated, an alarm actuated from one of said levers simultaneously with the automatic unlocking and opening of said drawer, and automatically-actuated devices for locking the register mechanism and setting mechanism until the cash-drawer is again closed and automatically locked, substantially as described.

9. In a cash-register, the combination of an automatically-opening cash-drawer having a stop to limit its outward movement, a vertically-movable spring-bolt for automatically locking said drawer, a register mechanism provided with an actuating rock-shaft, a series of levers actuated from said rock-shaft to automatically disengage said bolt and release the drawer after the register mechanism has been operated, and automatically-actuated locking mechanism for locking the register mechanism against further operation until the cash-drawer is again closed and locked, substantially as described.

10. In a cash-register, the combination of a register mechanism, a rock-shaft provided with operating means, pawl-and-ratchet gearing operated from said rock-shaft to actuate the register mechanism, a setting mechanism for controlling the extent of operation to be imparted to the register mechanism according to the amount to be registered, an operating-handle for the setting mechanism, a rotary dial actuated from the handle of the setting mechanism to indicate and display the amount to be registered, an automatically-opening cash-drawer having a stop to limit its outward movement, a vertically-movable spring-bolt for automatically locking said drawer, a series of levers actuated from the rock-shaft of the register mechanism to automatically disengage said bolt and release the drawer after the register mechanism has been operated, and automatically-actuated devices for locking the register mechanism and the setting mechanism against further operation until the drawer is again closed and locked, substantially as described.

11. In a cash-register, the combination of a register mechanism, a rock-shaft provided with operating means, gearing operated from said rock-shaft to actuate the register mechanism when the rock-shaft is turned in one direction, an automatically-opening cash-drawer, a

spring-bolt for automatically locking said drawer, a series of levers actuated from the rock-shaft to automatically disengage the said bolt and release the drawer after the register mechanism has been operated, a recoil mechanism for automatically turning the rock-shaft backward when released, and automatically-actuated locking mechanism for locking the register mechanism against further operation until the cash-drawer is again closed and locked, substantially as described.

12. In a cash-register, the combination of a register mechanism, a rock-shaft provided with operating means, a sleeve loosely mounted on said rock-shaft and provided with a spur-gear and ratchet-wheel, gearing to connect said spur-gear with the register mechanism, an oscillatory lever secured to said rock-shaft and carrying a driving-pawl to actuate said ratchet-wheel and connected spur-gear, and a setting mechanism comprising an adjustable cam to control the engagement of the pawl with the ratchet-wheel according to the extent of movement to be imparted to the register mechanism, substantially as described.

13. In a cash-register, the combination of a register mechanism, a rock-shaft provided with operating means, a sleeve loosely mounted on said rock-shaft and provided with a spur-gear, ratchet-wheel, and serrated stop-wheel, gearing to connect said spur-gear with the register mechanism, an oscillatory lever secured to said rock-shaft and carrying a driving-pawl to actuate said ratchet-wheel and connected spur-gear, a setting mechanism to control the engagement of the pawl with the ratchet-wheel at a point determined by the amount to be registered, a lever provided at one end with a vertically-movable pin or detent to engage the stop-wheel, and a vertically-movable stop-rod resting on the other end of said lever and actuated by the pawl-carrying lever at the end of its forward throw after the registering mechanism has been operated to prevent further movement of said mechanism, substantially as described.

14. In a cash-register, the combination of a register mechanism, a rock-shaft provided with an operating device, a sleeve loosely mounted on said rock-shaft and provided with a spur-gear and ratchet-wheel, gearing connecting said spur-gear with the register mechanism, an oscillatory lever secured to said rock-shaft and carrying a driving-pawl to actuate said ratchet-wheel and connected spur-gear, a setting mechanism to control the engagement of the pawl with the ratchet-wheel to accord with the amount to be registered, a stationary circular rack, a reversible double-acting pawl carried by the oscillatory lever and adapted to engage said rack to prevent a retrograde movement of said lever until it has completed its throw in either direction, a centrally-fulcrumed reversing-lever actuated by the oscillatory pawl-carrying lever at the end of its stroke and adapted to automatically change the position of the reversible double-acting pawl, and a spring-catch to hold said double-acting pawl in the position to which it is automatically adjusted, substantially as described.

15. In a cash-register, the combination of a register mechanism, a rock-shaft provided with an operating-handle, a sleeve loosely mounted on said rock-shaft and provided with a spur-gear, a ratchet-wheel secured to said sleeve, gearing connecting said spur-gear with the register mechanism, an oscillatory lever secured to said rock-shaft and carrying a driving-pawl to actuate said ratchet-wheel and connected spur-gear, a friction-wheel secured to the loose sleeve that carries the ratchet-wheel and spur-gear, and a friction-block supported in bearing contact with said friction-wheel, substantially as described.

16. In a cash-register, the combination of a register mechanism comprising a tubular dollar-shaft and a concentric cent-shaft projecting beyond one end of said dollar-shaft, a rock-shaft geared with the cent-shaft and provided with an operating-handle, a ratchet-wheel secured to the dollar-shaft, a spring-actuated lever fulcrumed on the cent-shaft and carrying a spring-pawl engaged with said ratchet-wheel, a lever having a link connection with said pawl-carrying lever and provided with a lug or projection, and a cam secured to the cent-shaft and bearing on said lug or projection, whereby when the contracted portion of said cam passes the said lug or projection at the end of each complete revolution of the cent-shaft the spring-actuated pawl-carrying lever will be free to rise, and thereby cause its pawl to impart an impulse to the ratchet-wheel on the dollar-shaft, substantially as described.

17. In a cash-register, the combination of a register mechanism comprising a dollar-shaft and a concentric cent-shaft projecting beyond the dollar-shaft, a rock-shaft loosely geared with the cent-shaft and provided with an operating-handle, a ratchet-wheel fast on the dollar-shaft, a lever having one end fulcrumed on the cent-shaft, a spring supporting the other end of said lever, a pawl carried by said lever to actuate the ratchet-wheel, a lever pivotally supported below the cent-shaft and having its other end connected with the pawl-carrying lever, and a cam secured to the cent-shaft and bearing on a lug projecting from the lever that is supported below said shaft, whereby when the contracted portion of the cam passes said lug the pawl-carrying lever will be actuated by its spring to cause its pawl to impart an impulse to the ratchet-wheel on the dollar-shaft, substantially as described.

18. In a cash-register, the combination of a register mechanism comprising a tubular dollar-shaft and a cent-shaft inclosed by and projecting from said dollar-shaft, a rock-shaft loosely geared with the cent-shaft and provided with an operating device, a ratchet-wheel secured to the dollar-shaft and provided with one hundred teeth, a spring-actuated pawl-carrying lever for operating the dollar-shaft step by step through said ratchet-wheel, and a cam secured to the cent-shaft to control the operation of said pawl-and-ratchet mechanism, substantially as described.

19. In a cash-register, the combination of a register mechanism comprising a tubular dollar-shaft and a cent-shaft inclosed by and projecting from said dollar-shaft, a rock-shaft loosely geared with the dollar-shaft and provided with operating means, a ratchet-wheel secured to the dollar-shaft, a spring-actuated pawl-carrying lever for causing the ratchet-wheel to operate the dollar-shaft at each revolution of the cent-shaft, a cam secured to the cent-shaft to control the operation of said pawl-and-ratchet mechanism, pointers carried by the dollar and cent shafts, and a graduated dial for said pointers, substantially as described.

20. In a cash-register, the combination of a register mechanism comprising concentric dollar and cent shafts provided with pointers, a stationary dial graduated to show dollars and cents by the positions of said pointers, a rotary dial loosely mounted on the rotary dollar-shaft and adapted to indicate hundreds of dollars through an opening in the stationary dial, a ratchet-wheel loosely mounted on one end of the dollar-shaft and connected with said rotary dial, a spring-actuated pawl-carrying lever for causing said ratchet-wheel to operate the rotary dial at each complete revolution of the dollar-shaft, a cam secured to the dollar-shaft to control the operation of said pawl-carrying lever, a ratchet-wheel secured to the other end of said dollar-shaft, a spring-actuated pawl-carrying lever for causing said ratchet-wheel to operate the dollar-shaft at each complete revolution of the cent-shaft, a cam secured to the cent-shaft to control the operation of said pawl-carrying lever, a rock-shaft having an operating-handle, a sleeve loosely mounted on said rock-shaft and geared to the cent-shaft, a ratchet-wheel fast on said sleeve, an oscillatory lever secured to the rock-shaft and provided with a driving-pawl to actuate said ratchet-wheel, a setting mechanism comprising an adjustable cam to control the engagement of said pawl and ratchet-wheel, an operating-handle for said setting mechanism, and a dial to indicate the amount to be registered, substantially as described.

21. In a cash-register, the combination of a register mechanism, a casing having at one end a stationary dial graduated to indicate dollars and cents, in connection with a dollar-pointer and a cent-pointer, a tubular dollar-shaft carrying the dollar-pointer, a cent-shaft carrying the cent-pointer and inclosed by said tubular shaft, a rotary dial loosely mounted on the tubular shaft and graduated to indicate hundreds of dollars through an opening in the stationary dial at the end of the casing, intermittingly-actuated mechanism for moving the said rotary dial a definite distance at each complete revolution of the dollar-shaft, intermittingly-actuated mechanism for imparting a rotary movement to the dollar-shaft at each complete revolution of the cent-shaft, a rock-shaft geared to rotate the cent-shaft in one direction only, a setting mechanism provided with an operating-handle, and a rotary dial actuated from the handle of the setting mechanism to indicate and display the amount to be registered, substantially as described.

22. In a cash-register, the combination of a register mechanism comprising a dollar-shaft and a cent-shaft, a rock-shaft provided with operating means, a sleeve loosely mounted on said rock-shaft and geared with the cent-shaft, a ratchet-wheel secured to said sleeve, an oscillatory lever secured to the rock-shaft and carrying a pawl to engage and actuate said ratchet-wheel, a setting mechanism to control the engagement of said ratchet-wheel and pawl, a pawl-and-ratchet mechanism controlled from the cent-shaft to impart a partial rotation to the dollar-shaft at the completion of each revolution of the cent-shaft, a ratchet-wheel fast on the dollar-shaft, an oscillatory lever loosely mounted on the dollar-shaft and geared with the rock-shaft, a pawl carried by said lever to actuate said ratchet-wheel, a setting mechanism to control the engagement of said ratchet-wheel and pawl, spring-latching devices for normally holding each setting mechanism in the position to which it is adjusted, a trip device connected with the spring-latch of the dollar-setting mechanism, levers actuated from the spring-latch of the cent-setting mechanism to operate said trip device and release the dollar-setting mechanism, and recoil devices connected with said dollar-setting mechanism to automatically return the same to zero when the cent-setting mechanism is manipulated, substantially as described.

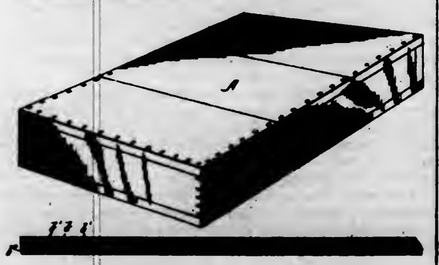
23. In a cash-register, the combination of a register mechanism comprising a dollar-shaft and a cent-shaft, a rock-shaft having an operating device, driving mechanism actuated from the rock-shaft to rotate the cent-shaft only when the rock-shaft is turned in one direction, a setting mechanism to control the operation of said cent-shaft-driving mechanism, a pawl-and-ratchet mechanism controlled from the cent-shaft to impart a partial rotation to the dollar-shaft at the completion of each revolution of the cent-shaft, driving mechanism actuated from the rock-shaft to rotate the dollar-shaft only when the rock-shaft is turned in one direction, a setting mechanism to control the operation of said dollar-shaft-driving mechanism, spring-latching devices for normally holding each setting mechanism in the position to which it is adjusted, a trip device connected with the spring-latch of the dollar-setting mechanism, levers actuated from the spring-latch of the cent-setting mechanism to operate said trip device and release the dollar-setting mechanism, and recoil devices connected with said dollar-setting mechanism to automatically return the same to zero when the cent-setting mechanism is manipulated, substantially as described.

24. In a cash-register, the combination of a register mechanism comprising a dollar-shaft and a cent-shaft, a rock-shaft, means for operating said rock-shaft, driving mechanism actuated from the rock-shaft to rotate the cent-shaft, a pawl-and-ratchet mechanism controlled from the cent-shaft to impart a partial rotation to the dollar-shaft at the completion of each revolution of the cent-shaft, driving mechanism actuated from the rock-shaft to rotate the dollar-shaft, separate setting mechanism to control the operation of the said cent-shaft and dollar-shaft, latching or locking devices for normally holding each setting mechanism in the position to which it is adjusted, a recoil mechanism connected with the dollar-setting mechanism and in which power is stored by operating said setting mechanism to control the amount of dollars to be registered, and mechanism actuated from the cent-setting mechanism to automatically release the dollar-setting mechanism and permit its return to zero under the action of the recoil mechanism when the cent-setting mechanism is manipulated, substantially as described.

25. In a cash-register, the combination of a register mechanism comprising a cent-shaft, a dollar-shaft, pointers carried by said shafts, a stationary dial whereon the said pointers will indicate the amounts registered, a rotary dial carried by the dollar-shaft and graduated to indicate hundreds of dollars through an opening in the stationary dial, separate setting mechanisms for controlling the operation of the dollar and cent shafts, mechanism actuated from the cent-setting mechanism to cause the automatic return of the dollar-setting mechanism to zero, stops for said setting mechanisms, dials and pointers to indicate when the setting mechanisms are in proper position to determine the registration of the desired amount, an automatically-opening cash-drawer, a bolt for automatically locking said drawer when closed, a rock-shaft from which the register mechanism is actuated, levers actuated from said rock-shaft to automatically disengage said bolt and release the drawer after the register mechanism has been operated, and devices for automatically locking the setting mechanisms and the register mechanism until the cash-drawer is again closed and locked, substantially as described.

26. In a cash-register, the combination of a register mechanism comprising dials and pointers for showing the total amount registered, setting mechanism for controlling the amount to be registered at any operation of the machine, a rotary dial actuated from the handle of the setting mechanism to indicate and display the amount to be registered, a rock-shaft from which the register mechanism is actuated, an automatically-opening cash-drawer having an automatic locking mechanism, a series of levers actuated from the rock-shaft to unlock and release the drawer after the register mechanism has been operated, an alarm automatically sounded by the movement of one of said levers on the unlocking and opening of the drawer, and devices actuated by said levers to automatically lock the setting mechanism and the register mechanism against further operation until the drawer is again closed and automatically locked, substantially as described.

488,151. SHEET-METAL PLATE FOR TINNING AND THE ART OF ITS MANUFACTURE. ELVIN HORTON, Maywood, assignor to himself and Oliver W. Horton, Chicago, Ill. Filed June 13, 1892. Serial No. 436,622. (No model.)



Claim.—1. As a new article of manufacture, the shipping or storage package of iron or steel sheets for tinning hereinbefore described and consisting of a number of white or pickled sheets of iron or steel coated with palm-oil, the same serving the double function of a preservative against oxidation during storage or shipment and of a flux in the subsequent tinning operation, so that the sheets after being stored or shipped may be tinned without further pickling or fluxing, the individual sheets being placed or piled close together and having the air expelled from between the same, substantially as specified.

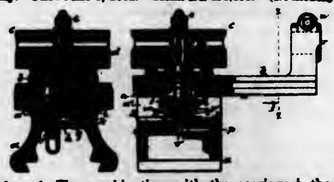
2. The process of preparing tinning sheets of iron or steel for shipment or storage and subsequent tinning, consisting in first pickling and cleaning the black sheets, then drying, heating, and fluxing the white or pickled sheets with a flux which will also serve as a preservative against oxidation, and then piling or placing a large number of the white dried and fluxed sheets closely together in a package suitable for shipment or storage and allowing the sheets and their flux coating to cool, and thus cause the sheets to adhere together in the package, so that the sheets after being shipped or stored may be subsequently tinned without further pickling or cleaning and the preservative coating utilized as the flux in the tinning operation, substantially as specified.

3. The process of preparing tinning sheets of iron or steel for shipment or storage, consisting in first pickling the black sheets, then fluxing the white or pickled sheets with a flux which will also serve as a preventive from rust or oxidation, and then placing the white and fluxed sheets together in a shipping box or package, substantially as specified.

4. As a new article of manufacture, sheets of iron or steel prepared for tinning and consisting of white or pickled sheets of iron or steel coated with palm-oil, the same serving the double function of a preservative against oxidation during storage or shipping and of a flux in the subsequent tinning operation, so that the sheets after being stored or shipped may be tinned without further pickling or fluxing, substantially as specified.

5. The shipping or storage package B of smooth white or pickled palm-oil coated sheets of iron or steel, the individual sheets adhering together by the palm-oil coating between the same and by the atmospheric pressure on the outside of the package, the air being expelled from between the individual sheets, in combination with an inclosing box A, substantially as specified.

488,152. TURRET-HEAD. FRIEDRICH SCHLESINGER, Berlin, Germany. Filed June 9, 1892. Serial No. 436,156. (No model.)



Claim.—1. The combination, with the carriage *b*, the multiple tool-stock *c*, fastened to the carriage, and means for imparting to the carriage a reciprocating motion, of a rotatable hollow spindle *d*, carrying the tool-stock, a spring-actuated pin *f*, fitted into the hollow spindle and provided with lugs which extend through slots in said spindle, a washer *i*, provided with recesses *e* and fitted into the base *a*, so as to be prevented from turning, an uneven support *h* for the foot of the pin *f*, a feed-wheel *k*, and a tappet *l*, substantially as shown and described.

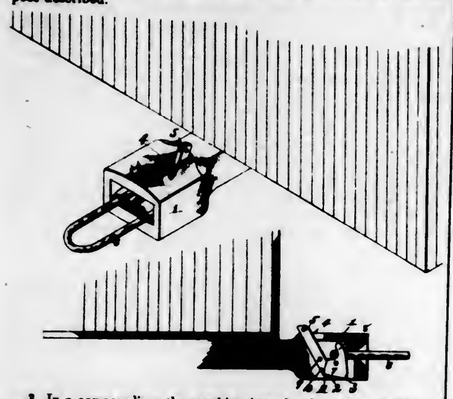
2. The combination, with a base *a* and a rotatable tool-stock *c*, connected with the base, of a carriage *b*, slidable horizontally between the base and the rotatable tool-stock and provided with a split ring *r*, having a clamping-screw *u*, substantially as and for the purposes described.

488,153. CAR-COUPLING. WILLIAM H. SCHLEY, Waverly, Ill., assignor of one-half to A. Rynders and Benjamin A. Witherbee, same place. Filed Aug. 26, 1892. Serial No. 444,093. (No model.)

Claim.—1. In a car-coupling, the combination of a draw-head, a revolving catch mounted therein and provided with a weighted lower portion and having an upwardly-extending link-engaging arm, the rear face of the weighted portion of said catch being straight, and a stop-bar mounted in the draw-head and pivoted near its lower end and having its portion above the pivotal point heavier than the part below, substantially as and for the purpose described.

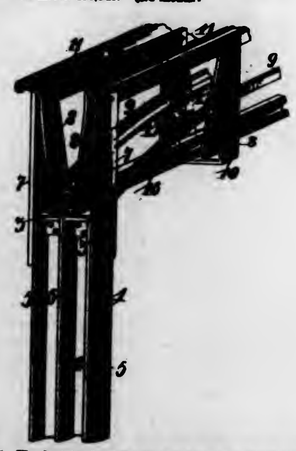
2. In a car-coupling, the combination of a draw-head provided in its top near its rear end with a slot, a revolving catch mounted in the draw-head and having an angular weighted lower portion with a straight rear edge and provided with an upwardly-projecting link-

engaging arm, and a stop-bar pivoted near its lower end in rear of the catch and having its portion above the pivot heavier than that below and arranged in the slot of the draw-head, said slot being sufficiently rearward of the pivot of the stop-bar to prevent the latter assuming a perpendicular position, substantially as and for the purpose described.



3. In a car-coupling, the combination of a draw-head having a longitudinal link-opening and provided in its bottom with a slot and having a slot in its upper portion, a revolving catch mounted in the draw-head and arranged in the slot in the bottom thereof and provided with an upwardly-projecting link-engaging arm and having a lower weighted portion having the rear edge thereof straight and inclined, and a stop-bar pivoted near its lower end and having the latter beveled and having its upper ends arranged in the slot of the upper portion of the draw-head, said slot in the top of the draw-head being located sufficiently rearward of the pivot of the stop-bar to prevent the latter assuming a perpendicular position, substantially as described.

488,154. ELEVATED RAILWAY. EPHRAIM M. TURNER, St. Louis, Mo., assignor of one-half to R. R. Maddox, Fort Worth, Tex. Filed Oct. 12, 1891. Serial No. 408,569. (No model.)



Claim.—1. The herein-described superstructure for elevated electric railways, having rolled supporting posts or columns, cap-plates mounted on or secured to the same, V-shaped supports or braces 8, mounted upon said cap-plates, a main rail located within said V-shaped supports and mounted thereon, guide-rails having a head extending at an obtuse angle to the web thereof, secured to said supports, plates, such as 7, secured to said guide-rails and supporting posts or columns, supports 10 and 8, secured intermediately of the supporting-columns to the guide-rails and suspending therefrom, and arches passing from post to post and secured to said plates 7, supports 10, and guide-rails, substantially as set forth.

2. A three-rail elevated superstructure comprising supporting posts or columns 1, cap-plates 2, mounted on or secured to the same, V-shaped supports or braces 8, mounted upon said cap-plates, a main rail 16, located within said V-shaped supports and mounted thereon, guide-rails 11, having heads 14, extending at an obtuse angle to the webs 12 thereof, secured to said supports, plates, such as 7, secured to said guide-rails and supporting posts or columns, supports 10 and 8, secured intermediately of the supporting-columns to the guide-rails and suspending therefrom for supporting the main rail 16, and arches 9, spanning said posts, and the ends whereof being supported upon the cap-plates 2 and secured to said plates 7, supports 10, and guide-rails, substantially as set forth.

488,155. ELEVATED RAILWAY. EPHRAIM M. TURNER, St. Louis, Mo., assignor of one-half to R. R. Maddox, Fort Worth, Tex. Filed Nov. 2, 1891. Serial No. 410,558. (No model.)

Claim.—1. In an elevated structure for moving vehicles, cross-shaped supporting-columns having their upper terminal portions tapering or wedge-shaped, substantially as set forth.

2. In an elevated structure for moving vehicles, supporting columns or posts in the form of a cross, the lower ends whereof are connected together by cross-piece 2 and the upper terminal portions thereof are tapering and wedge-shaped, substantially as set forth.

3. In an elevated structure for railways, the combination of cross-shaped supporting-columns, the lower ends whereof are connected together by means of a basic cross-piece 2 and the upper terminal portions are tapering or wedge-shaped, guide-rails secured to said tapering ends, and a supporting-rail located within the forks of said supporting-columns and mounted upon a plate or base, substantially as set forth.

4. In an elevated structure for railways, the combination of cross-shaped supporting-columns, the lower ends whereof are connected together by means of a basic cross-piece 2 and the upper terminal portions are tapering or wedge-shaped, guide-rails secured to said tapering ends, a supporting-rail located within the forks of said supporting-column and mounted upon a plate or base, braces 4, secured to said supporting-column and to said guide-rails, a U-shaped support 12, and a V-shaped support 13, secured to said guide-rails intermediately of the supporting-columns for supporting said supporting-rail, substantially as set forth.

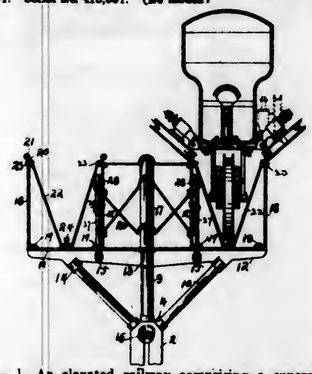
5. An elevated structure for vehicles, having cross-shaped supporting-columns forming a V-shaped way, a supporting-rail mounted in the base of said way, and guide-rails carried by the free ends of the column-uprights and projecting outwardly therefrom, substantially as set forth.

6. An elevated structure for vehicles, having cross-shaped supporting-columns forming a V-shaped way and connected at their lower ends, a base-beam secured in the lower closed end of said way, a supporting-rail mounted on said beam, and guide-rails carried at the upper ends of the column-uprights and projecting in opposite directions, substantially as set forth.

7. In an elevated railway, the combination, with an elevated structure provided with a supporting-rail and with side guide-rails located above the same and arranged obliquely, of a truck provided with a central vertical supporting-wheel and with obliquely-arranged guide-wheels, said wheels being adapted to engage the supporting and guide rails, respectively, substantially as set forth.

8. In an elevated railway, the combination, with an elevated structure comprising cross-shaped columns forming a V-shaped way, a supporting-rail mounted in the contracted base of said way, and guide-rails carried at the upper ends of the column-uprights and projecting outwardly therefrom, said guide-rails being arranged obliquely, of a truck provided with a central vertical supporting-wheel and with opposing obliquely-arranged guide-wheels, said wheels being adapted to respectively engage the supporting and guide rails, substantially as set forth.

488,156. ELEVATED RAILWAY. EPHRAIM M. TURNER, St. Louis, Mo., assignor of one-half to R. R. Maddox, Fort Worth, Tex. Filed Dec. 14, 1891. Serial No. 415,081. (No model.)



Claim.—1. An elevated railway comprising a superstructure, posts or colums located and secured to the ground at a suitable distance apart, sockets formed in the upper ends of the same, base-plates secured to the said posts by means of short posts and braces, main arches, such as 17, leading from post to post and united to the same below the bed of the road, braces, such as 18, secured to the base-plates for holding and supporting suitable guide-rails, and braces leading from said supports 18 and united with the said main arches, substantially as set forth.

2. An elevated railway comprising a superstructure, posts or columns 1, consisting of castings 2, legs or supports 6, secured to the same and supporting the said castings, sockets formed in the upper ends of the said castings, posts 9 and braces 10, secured in the socket 4 and supporting suitable base-plates, supports, such as 18, secured to the said base-plates at a relative distance apart for supporting suitable guide-rails, braces, such as 22, leading from the said guide-rails and resting upon the said base-plates for receiving the traffic-rails, main arches, such as 17, leading from post to post, the ends of which are secured in suitable sockets formed in the said casting 2 below the level of the superstructure, and supplemental arches, such as 27, also leading from post to post and secured to the said plates below the level of the said superstructure, and means for connecting the said braces 18 with the said supplemental arches, substantially as set forth.

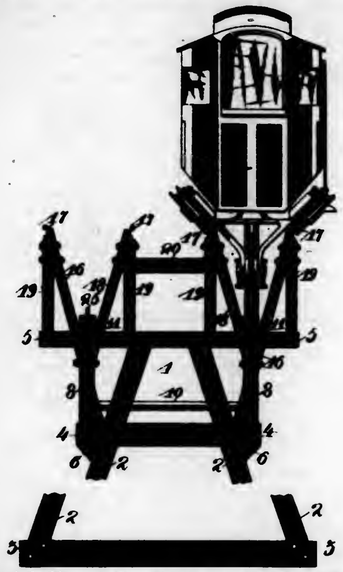
3. An elevated railway comprising posts or columns upon which the superstructure is built, arches, such as 17, leading from post to post and connected to the same below the base of the track-bed, base-plates secured to and mounted upon said posts or columns, and braces or supports 18, secured to said base-plates and located on each side of the said arch for supporting suitable traffic and guide rails, substantially as set forth.

4. The herein-described elevated railway, comprising a superstructure suitably mounted upon posts or columns, supports, such as 18, and braces, such as 22, supporting four guide-rails and two traffic-rails, substantially as set forth.

488,157. DOUBLE-TRACK ELEVATED RAILWAY. EPHRAIM M. TURNER, St. Louis, Mo., assignor of one-half to R. R. Maddox, Fort Worth, Tex. Filed Feb. 15, 1892. Serial No. 421,585. (No model.)

Claim.—1. The herein-described superstructure for double-track elevated railways, consisting of supporting-posts and transverse pieces for strengthening the same, V-shaped supports consisting of timbers 16 and 18, united below the rail-bed, and their upper ends adapted to support suitable guide-rails on each side and above the supporting-rail, substantially as described.

2. The herein-described superstructure for double-track elevated railways, consisting of supporting-posts, the lower ends of which are fastened by suitable transverse pieces 3, transverse pieces 4, also secured to the said posts a suitable distance from the ends of the same, transverse pieces 5, secured to said ends of the posts, V-shaped supports comprising supports, such as 16 and 18, the uniting portions of which are below the said transverse pieces 5, and the lower ends of the said supports 16 in contact with the said supporting-posts 2, stringers adapted to rest upon the said transverse pieces 5 and in the forks of said V-shaped supports, and supports—such as 19—for additionally supporting the said V-shaped supports, substantially as described.



3. A double-track elevated railway comprising a superstructure consisting of supporting-posts 2, the lower ends of which are connected by transverse pieces 3 and the upper ends leaning toward one another at a suitable angle, transverse pieces 4, secured to said posts at a suitable distance from the upper ends of the same, upon which the abutting ends of the trusses 8 are adapted to rest, supports—such as 16 and 18—united below the transverse pieces 5, the lower ends of said support 16 in contact with the said posts 2, stringers 11, located between the said supports and adapted to rest upon the transverse pieces 5, additional supports attached to the said transverse pieces 5, the upper ends of which are united to the said support for strengthening the same, short transverse pieces 20, attached to the adjacent supports, and tension-timbers, such as 14, one end of which is attached to the stringers and the opposite end attached to the said trusses intermediate of their length, substantially as described.

4. A double-track elevated railway consisting of supporting-posts 2, transverse pieces 4, secured to the same, transverse pieces 5, secured to the upper ends of the said posts on either side of the same, V-shaped supports located between said transverse pieces 5, the lower ends of which are adapted to rest against the posts 2, additional supports, such as 19, the lower ends of which are also interposed between the said transverse pieces 5 and the upper ends of the same adapted to support the said V-shaped support, transverse pieces 7, located under the stringers 11 between the said posts 2, trusses 8, one of the ends of which is adapted to rest against the said transverse pieces 7 and their abutting ends resting upon their transverse pieces 4, short posts—such as 13—for additionally supporting the said stringers, the lower ends of which rest upon the said posts, transverse pieces 12, secured on either side of the said posts 13 for strengthening the same, and tension-timbers—such as 14—attached to the said stringers and also to the said trusses for partially relieving said trusses of the weight imparted by the posts 13, substantially as described.

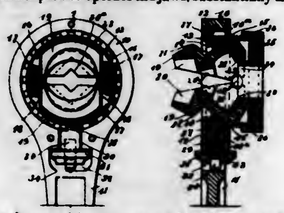
5. A superstructure for double-track elevated railways having V-shaped supports, additional supports—such as 19—for supporting the upper ends of the said V-shaped supports, plates—such as 22—interposed between the said upper ends of the V-shaped supports and the upper ends of the additional supports 19, and plates—such as 24—adapted to be attached to the said first-named plates for holding the guide-rails firmly in position upon the upper ends of the said V-shaped supports, substantially as described.

488,158. WRENCH. DANIEL C. WISE, Mohrsville, Pa. Filed May 8, 1892. Serial No. 494,151. (No model.)

Claim.—1. A wrench comprising a handle having an apertured head, a revolvable jaw-holder mounted in the head and having a ratchet connection therewith, jaws pivoted in the jaw-holder and pro-

jecting therefrom, and a cap having a screw connection with the jaw-holder and adapted to operate the jaws, substantially as described.

2. A wrench comprising an apertured head adapted to be secured to a handle, a jaw-holder held to turn in the head and having a ratchet connection therewith, the jaw-holder having a flaring mouth and a tapering inner wall, a pair of oscillating jaws pivoted in the jaw-holder and projecting therefrom, the jaws being shaped to fit the inner wall of the jaw-holder, and a screw-cap mounted on the back end of the jaw-holder and adapted to operate the jaws, substantially as described.

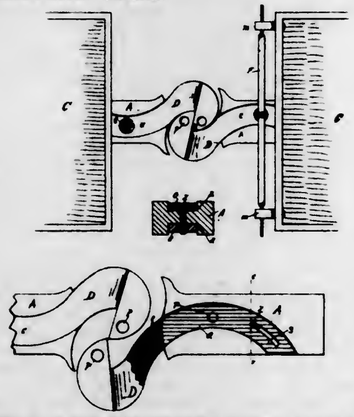


3. A wrench comprising an apertured head, a jaw-holder held to turn in the head and having a shifting ratchet connection therewith, the jaw-holder having a flaring mouth and a tapering inner wall, a pair of oscillating jaws held in the jaw-holder and shaped to fit the wall thereof, and a screw-cap held to turn on the back end of the jaw-holder and having an engagement with the jaws, whereby the latter may be opened and closed by the movement of the cap, substantially as described.

4. In a wrench, the combination, with a handle having an apertured head, of a jaw-holder mounted in the head and having a ratchet connection therewith, jaws pivoted in the jaw-holder, a cap having a screw connection with the jaw-holder and adapted to operate the jaws, and a pawl-and-ratchet mechanism for operating the cap, substantially as described.

5. In a wrench, the combination, with a handle having an apertured head, of a jaw-holder mounted in the head and having a screw-threaded extension, a pawl-and-ratchet mechanism for turning the jaw-holder, jaws pivoted in the said holder, and a screw-cap screwed on the extension of the jaw-holder and provided with an inwardly-extending flange engaging the jaws, substantially as herein shown and described.

488,159. CAR-COUPLING. THOMAS WELCH, Paw Paw, Mich., assignor of one-half to George R. Brock, same place. Filed Apr. 25, 1892. Serial No. 430,550. (No model.)

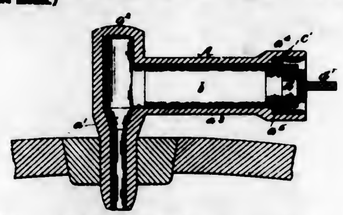


Claim.—1. A car-coupler comprising draw-bars provided with longitudinal curved grooves in their upper and lower sides, hooks having longitudinal curved forked ends which have sliding bearings in said curved grooves, and pins for locking said hooks to the draw-bars when the cars are coupled, substantially as set forth.

2. The combination of the draw-bars having the longitudinal curved grooves, the hooks having the longitudinally-curved ends in the curved grooves, pins for locking said hooks to the draw-bars when the hooks are locked together, the elastic bar attached to the end of the car, and a chain or the like attaching said bar and pin, substantially as set forth.

3. The combination of the draw-bars of cars, automatic coupling devices attached to said draw-bars, means for locking said coupling devices, and springs connecting with said locking devices and with the cars, whereby the recoil of said springs releases said locks when the cars are slackened, substantially as set forth.

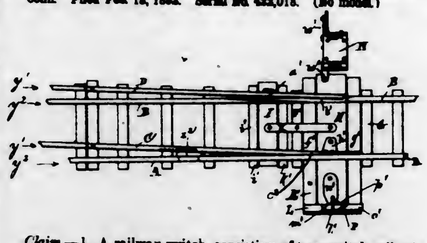
488,160. AUTOMATIC AIR-VENT FOR CASKS. EDWARD R. BOHRMAN, Cincinnati, Ohio. Filed July 18, 1892. Serial No. 440,462. (No model.)



Claim.—1. In a barrel-vent of the character indicated, a driving-nozzle having a lateral elongated extension, and a flattened rubber tube secured in said extension, the extension being of oblong cross-section corresponding with and slightly larger than the tube, substantially as set forth.

2. In a barrel-vent of the character indicated, the combination of a flattened metallic tube provided with a terminal driving-nozzle and an opposite terminal enlargement inclosing an annular ledge or shoulder with a flattened rubber tube provided with a metallic flanged hollow plug attached thereto, and a hollow seating-plug threaded in said terminal enlargement, substantially as set forth.

488,161. RAILWAY-SWITCH. DWIGHT M. CHURCH, Willimantic, Conn. Filed Feb. 18, 1892. Serial No. 422,018. (No model.)



Claim.—1. A railway-switch consisting of two switch-rails pivoted, respectively, one between and one outside of the main rails, and slides severally connected to such switch-rails and also connected severally to the opposite arms of a lever having a fixed fulcrum, whereby the bringing of one of said switch-rails toward its adjacent main rail will separate the other switch-rail from its next adjacent main rail, all as set forth.

2. The combination of the main rail A, the rail B, having the cut-away portions a' b', the pivoted switch-rail C, cut away, as at c^3, the pivoted switch-rail D, cut away, as at d', and a lever connecting these switches C D and adapted to separate the rail C from the rail A and at the same time to draw the rail D against the rail B and close up the cut-away portions a' and b' in the rail B, thus forming a continuous main track, and whereby the separation of rail D from the rail B will bring the rail C toward or in contact with the rail A, all as and for the purpose set forth.

3. In combination with the two switch-rails, two slides I and H, connected, respectively, to said rails and adapted to move parallel with each other, but in opposite directions, and a lever connecting said slides, all arranged and operating substantially as described.

4. In combination with the two main rails and the switch-rails pivoted and located as described, the slide I, secured to one switch-rail, another slide adapted to move parallel with the slide I and secured to the other switch-rail, a lever of the first class, each arm of which is pivoted, respectively, to one of the two slides, all arranged and operating substantially in the manner described.

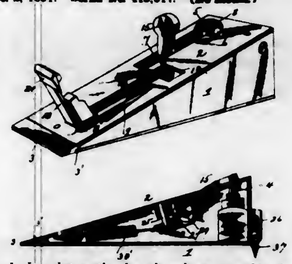
5. The combination, with the parallel guideways F G, of the double slide E H, removable means for securing the slide E to the road-bed, and removable means for securing the two slides E and H together, whereby the slide H may move independently of the slide E, and also whereby both of said slides E and H may move coincidently and together, all substantially as and for the purposes set forth.

6. The combination of the slide H and parallel guideways for said slide, with a yoked standard extending over said slide, the rock-shaft l', cranks m' and o', swinging arm n', the two pivoted switch-rails, one

of which is secured to the slide H, the slide I, lever K, connecting the slides H and I, as described, and said slide I being connected with the other switch-rail, all as set forth.

7. In combination with two switch-rails, simultaneously actuated to move one toward and one away from its respective adjacent main rail, a signal-lever having connections therewith, substantially as described.

488,162. BURGLAR-ALARM. WILLIAM W. CLINEDINST, Honey Brook, assignor to the Honey-Brook Novelty Company, Lancaster, Pa. Filed Dec. 2, 1891. Serial No. 412,817. (No model.)

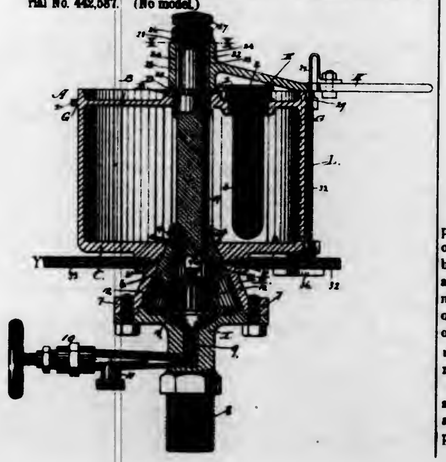


Claim.—1. In a detonating burglar-alarm, a wedge-shaped casing provided with means for holding the same in place and with a slotted cover or top plate, the pivoted hammer, a spring within the casing and connected to the heel of the hammer, the operating-lever, also pivoted with the casing and having the lateral cam-surface, the pivoted detent, and an arm rigid with the detent and lying normally in the path of the operating-lever, substantially as described.

2. As an article of manufacture, a burglar-alarm comprising the casing having its inclined top provided with slots, a spring-controlled trigger pivoted within the case, an operating-lever fulcrumed in the casing and adapted when extended to be operated by the opening of a door, and a detent fulcrumed in the casing close to the trigger to engage with the heel thereof when the latter is raised and provided with an arm which lies at right angles to the detent and in the path of the door-lever to be moved laterally by said lever when the same is depressed and thus release the detent from the trigger, substantially as and for the purpose described.

3. As an article of manufacture, a burglar-alarm comprising the casing having its inclined top provided with slots, a trigger pivoted in the casing and having one end of its fulcrum-pin notched, the spring connected to the heel of the trigger, the door-lever, also fulcrumed in the casing, the fixed post, the detent pivoted on said post to have one end engage with the heel of the trigger and provided with an angular arm that lies in the path of the door-lever, and a spring coiled around said fixed post and having one end bearing against the detent and its other end connected to the notched fulcrum-pin of the trigger, substantially as and for the purpose described.

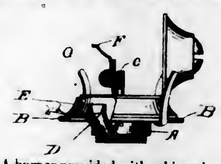
488,163. LUBRICATOR. JOHN L. CORY, Green Island, assignor of one-half to Robert C. Blackall, Albany, N. Y. Filed Aug. 9, 1892. Serial No. 442,587. (No model.)



Claim.—1. An apparatus for forcibly applying lubricant, which consists of a lubricant-reservoir provided with a series of lubricant conductors extending therefrom and a turning-plug fitted to rotate in a neck of said reservoir and provided with a lubricant-chamber having an outlet-port which can be moved into correspondence with either one of said lubricant-conductors, the lower end of said chamber being provided with an upwardly-opening valve, whereby fluid under pressure can be admitted into said lubricant-chamber to effect the ejectment of the lubricant therefrom, as and for the purpose herein specified.

2. A turning-plug provided with a lubricant-chamber having an upwardly-opening valve in its lower end and two downwardly-opening valves in its upper end, one of the latter being arranged to close a lubricant-passage leading into said chamber and the other being arranged to close an air-passage which leads into said chamber, the latter having an outlet-port leading from it, in combination with a lubricant-reservoir provided with a neck in which said turning-plug is fitted to rotate and a series of lubricant-conductors arranged in relation to said turning-plug in such manner that the outlet-port of the latter may be moved into communication with any one of said conductors, as and for the purpose herein specified.

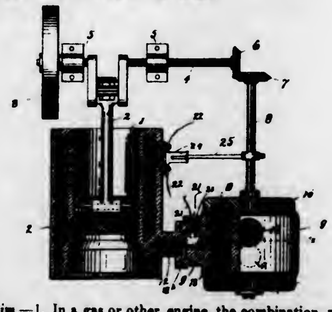
488,164. FILLER ATTACHMENT FOR LAMP-BURNERS. GEORGE B. H. DOW, Manchester, N. H. Filed May 26, 1892. Serial No. 434,337. (No model.)



Claim.—1. A burner provided with a hinged crown or dome and a cap which is cut away, forming an opening in combination with a hinged cover adapted to lay down flush with the face of the cap and provided with a fastening-catch to hold it down and a filler-tube located beneath said cover, said hinged crown or dome adapted to close down over the cap and cover, substantially as described.

2. A burner provided with a hinged crown or dome and a cap which is cut away, forming an opening, and which is provided with a recess b', in combination with a hinged cover provided with a hook at its free edge, which is adapted to register with a recess in the cap, said cover adapted to lay down flush with the face of the cap, and a filling-tube located beneath said cover, said hinged crown or dome adapted to be closed down over the cap and cover, substantially as described.

488,165. GAS-ENGINE. EDWIN W. EVANS, Philadelphia, Pa., assignor to the Evans Gas Engine Company, of New Jersey. Filed July 9, 1892. Serial No. 439,549. (No model.)

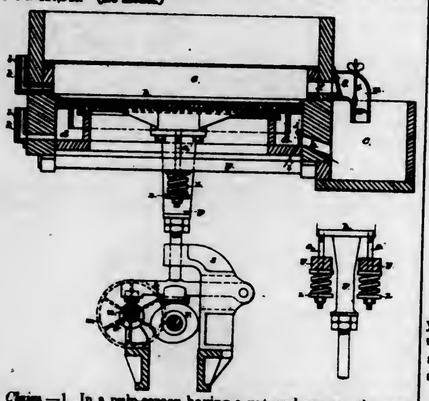


Claim.—1. In a gas or other engine, the combination, with the piston-cylinder, piston, and its connected power-transmitting gearing, of a balance-valve consisting of a fixed body portion having a combined supply and mixing port, a combined exhaust and outlet port, and combined port communication with the piston-cylinder and two movable portions, one on each side of said fixed portion, mounted on a shaft extending through the latter and rotating therewith, each of said movable portions provided with a pocket adapted to communicate with their respective ports in the fixed portion at predetermined intervals, as described.

2. In a gas-engine, a balance-valve of the character herein described, consisting of a fixed body portion having a combined supply and mixing port, a combined exhaust and outlet port, and combined port connection with the compression-cylinder, two movable portions,

one on each side of said fixed portion, mounted on a shaft extending through the latter and rotating therewith, each of the said movable portions provided with a pocket adapted to communicate with their respective ports in the fixed portion at predetermined intervals, and means for timely exploding a charge of gas when taken into the engine, whereby a charge of gas may be taken into the engine and in turn compressed, exploded, and exhausted, for the purposes set forth.

488,166. PULP-SCREEN. JOHN J. FLANDERS, Portland, Me., assignor to Charles R. MERRIAM, same place. Filed Jan. 6, 1892. Serial No. 417,948. (No model.)



Claim.—1. In a pulp-screen having a vat and screens, the combination, with a vibratory diaphragm having a downwardly-extending connecting-rod, of a shaft carrying a cam and a lever pivotally attached to the frame and interposed between the end of the connecting-rod and cam, the lower end of said connecting-rod resting loosely on the top of said lever, substantially as and for the purposes set forth.

2. In a pulp-screen having a vat and screen, the combination, with a vibratory diaphragm and its connecting-rod, of a shaft carrying a cam and a lever having a bearing-block of hard metal interposed between said cam and the end of the connecting-rod, the lower end of said connecting-rod resting loosely on the top of said lever, substantially as and for the purposes set forth.

3. In a pulp-screen having a vat and screen, the combination, with a vibratory diaphragm having a connecting-rod attached to the bottom thereof, a shaft journaled in the frame and carrying a cam, and a lever pivoted to the frame and interposed between the end of the connecting-rod and cam, of a shaft carrying a cam, adapted to engage the free end of the said lever and regulate the length of stroke of the diaphragm, substantially as and for the purposes set forth.

4. In a pulp-screen having vat, screen, vibratory diaphragm, and means for imparting a vibratory movement to said platen, the combination, with a leakage-trough located below the platen and the collecting-trough, of ports opening from the leakage-trough into the collecting-trough and sliding gates adapted to be drawn partly over said ports to regulate the depth of pulp in the leakage-trough, substantially as and for the purposes set forth.

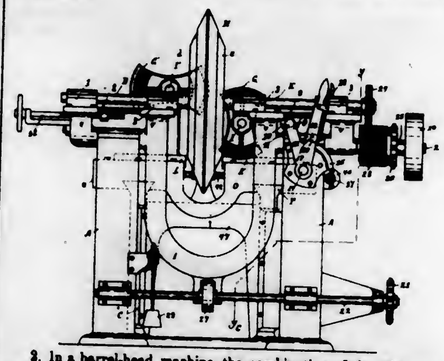
5. In a pulp-screen, a vibratory diaphragm, a leakage-trough below said diaphragm, a collecting-trough, ports connecting said leakage and collecting trough, sliding gates adapted to regulate the depth of pulp in the leakage-trough, and a gage-glass opening at one end into the leakage-trough, substantially as and for the purposes set forth.

6. In a pulp-screen having a vat, screen, and vibratory diaphragm and a chamber between said screen and diaphragm, the combination, with a spout leading from said chamber, of a gate arranged in said spout and adapted to be raised and lowered to regulate the flow of pulp therethrough, substantially as and for the purposes set forth.

7. In a pulp-screen, the combination, with a vat having a screen-plate in the bottom thereof, a vibratory diaphragm, a chamber between said screen-plate and diaphragm, delivery-spouts opening from said chamber, and adjustable gates in said spouts, of a gage-glass opening into said chamber, substantially as and for the purposes set forth.

488,167. BARREL-HEAD MACHINE. FRANK H. KANE, Riverside, Ohio. Filed May 12, 1891. Serial No. 392,468. (No model.)

Claim.—1. In a barrel-head machine, the combination of a vibratory yoke-frame provided with adjustable pillow-blocks, a rotary shaft supported horizontally in said blocks and composed of two sections, a clamping-jaw supported on each section of said shaft, one of said jaws being adjustable to and from the other, two rotary convexed and beveled cutters having their axes in different vertical and horizontal planes, and mechanism for moving said cutters toward and from a barrel-head blank held by the clamping-jaws to simultaneously operate upon opposite sides of said blank and form the circle of the barrel-head simultaneously with the beveling of its peripheral edge, substantially as described.



2. In a barrel-head machine, the combination of the vibratory yoke 1, having brackets 4, the pillow-blocks 3, the rotary sectional shaft D E, the clamping-jaws *d e*, the coupling-arm 8, having lugs 9 and 10, and the setting-lever 13, having arms 12, provided with a stud 11, engaged with said lugs, substantially as described.

3. In a barrel-head machine, the combination of the vibratory yoke-frame 1, provided with adjustable pillow-blocks 3, the rotary sectional shaft D E, supported in said blocks and provided with clamping-jaws *d e*, one of which is adjustable toward and from the other, the coupling-arm 8, connecting the pillow-blocks, the setting-lever 13, adapted to engage said coupling-arm, the shaft 22, having a cam 27 in engagement with the vibratory yoke-frame, and the cutters G G', adjustable toward and from a barrel-head blank held by the clamping-jaws, substantially as shown and described.

4. In a barrel-head machine, the combination of the rotary shaft-section D, supported in adjustable blocks and carrying a clamping-jaw *d*, the regulating screw-shaft 52, the rotary shaft-section E, carrying a clamping-jaw *e* and supported in adjustable pillow-blocks, the coupling-arm 8, connecting the pillow-blocks of said shaft-section E, and the setting-lever 13, connected with said coupling-arm, substantially as described.

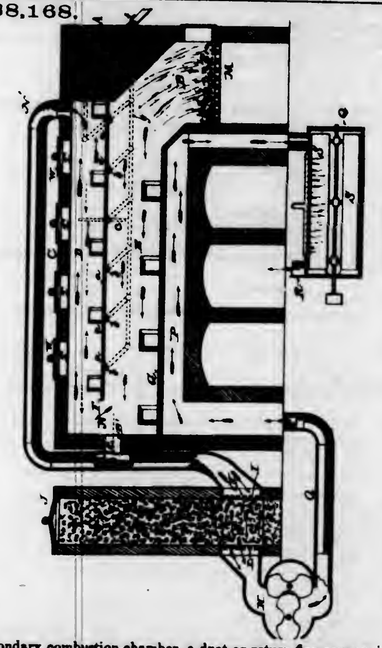
5. In a barrel-head machine, the combination, with the rotary sectional shaft D E, provided with clamping-jaws *d e*, of the rotary cutters G G', the shafts I I', the movable tables K L, on which said shafts are mounted at different elevations, the plates M, that support said tables, the traveling frame O, to which the plates M are secured, the ways P for said traveling frame, and mechanism for actuating said tables and frame to move the cutters to and from the barrel-head blank held by the clamping-jaws, substantially as described.

488,168. FURNACE FOR BURNING GARBAGE. JOHN C. KESSLER, Milwaukee, Wis. Filed Feb. 5, 1892. Serial No. 420,637. (No model.)

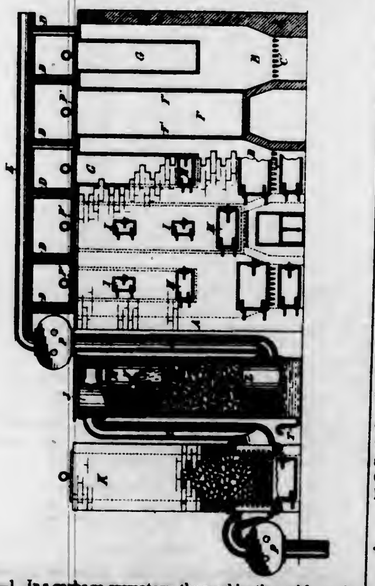
Claim.—1. In a furnace for burning garbage, the combination of a primary combustion-chamber, an oven for the reception of garbage, subdivided into two or more compartments communicating direct with the exhaust-flue of said primary combustion-chamber and forming a continuous passage through said oven between said combustion-chamber and the exhaust-duct of said oven, a secondary combustion-chamber, an exhaust-duct communicating between said oven and said secondary combustion-chamber, an exhaust-duct communicating from said secondary combustion-chamber to the exterior air, and a fan connected with the said exhaust-ducts and adapted as it is operated to promote the draft through said furnace and control the course of the vapors and products of combustion, substantially as and for the purpose specified.

2. In a furnace for burning garbage, the combination of a primary combustion-chamber, an oven for the reception of garbage, subdivided into two or more compartments communicating with the exhaust-flue of said primary combustion-chamber and forming a continuous passage through said oven between said combustion-chamber and the exhaust-duct of said oven, a secondary combustion-chamber, an exhaust-duct communicating between said oven and said secondary combustion-chamber, a fan communicating with the exhaust side of said secondary combustion-chamber, a duct or return-flue communicating from said fan through and beneath the lower floor of said oven, a fluid-receptacle provided with agitating-fan, a duct communicating from said oven to said fluid-receptacle, and an exhaust-duct communicating from said fluid-receptacle to the exterior air, all substantially as and for the purpose specified.

488,168.



488,169. GARBAGE-CREMATORY. JOHN C. KESSLER, Milwaukee, Wis. Filed Mar. 4, 1892. Serial No. 423,696. (No model.)

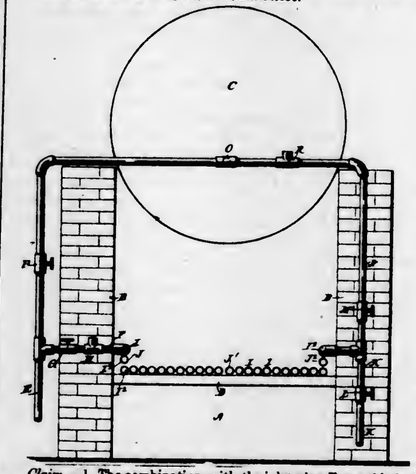


Claim.—1. In a garbage-crematory, the combination, with a series of combustion-chambers and fuel-supporting grates, of a series of vertically-arranged garbage-receptacles located between and above said combustion-chambers, exhaust-flues communicating from each of said combustion-chambers with a secondary furnace or combustion-chamber, and one or more exhaust fans or blowers located in said exhaust-flue between said combustion-chamber and the discharge-flue, substantially as and for the purpose specified.

2. In a garbage-crematory, the combination of a series of combustion-chambers, a series of vertically-arranged garbage-receptacles located between said combustion-chambers, a series of deflecting-receptacles located centrally above said combustion-chamber, all of said receptacles being formed of a series of vertically-arranged grate-bars or perforated plates, an exhaust-flue communicating from the respective combustion-chambers through a fan or blower with a condensing-receiver, a condensing-receiver, a secondary combustion-chamber, and an intermediate flue communicating from said condensing-receiver to said secondary combustion-chamber, substantially as and for the purpose specified.

3. The combination, in a garbage-crematory, of a furnace provided with a series of combustion-chambers, a series of vertically-arranged receptacles having perforated or open gratework sides, a condensing-receiver provided with inlet water-ducts, a coal-receptacle for an absorbent located in said condensing-receiver, a flue communicating from said furnace through a fan or blower to said condensing-receiver, a secondary combustion-chamber, and flues communicating from said condensing-chamber to said secondary combustion-chamber and from said secondary combustion-chamber to the exterior air, all substantially as and for the purpose specified.

488,170. TUBULAR WATER-GRATE. ROBERT MACFARLANE, Magog, Canada. Filed Sept. 12, 1891. Serial No. 405,549. (No model.) Patented in Canada July 24, 1891, No. 37,059.



Claim.—1. The combination, with the inlet-pipe F, provided with the stop-cock G and check-valve H, and the tubular grates J J' J², connected with the pipe F, of the waste-pipe K, provided with the stop-cock L, the pipe N, provided with the stop-cock M and check-valve R, and the connected boiler C, substantially as described.

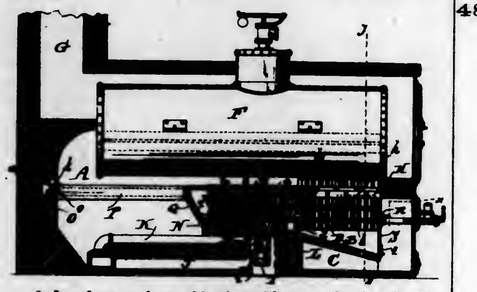
2. The combination, with the boiler C, of the feed-pipe E, provided with the stop-cock P and communicating with the boiler through the pipe O, the branch pipe F, provided with the stop-cock G and check-valve H, the tubular grate J', the waste-pipe K, provided with the stop-cock L, the pipe N, provided with the stop-cock M and check-valve R, and also connecting with the boiler through the pipe O, substantially as described.

3. The combination, with the boiler C, of the pipe O, connected therewith, the feed-pipe E, connected with the pipe O and provided with the stop-cock P, the tubular grate J', connected with the pipe E, and the pipe N, connected with the tubular grate J' and with the pipe O, and provided with the stop-cock M to form a circuit with the pipe E, substantially as described.

488,171. FURNACE. THEODORE P. MASON, Philadelphia, Pa. Filed May 14, 1892. Serial No. 432,962. (No model.)

Claim.—1. In a furnace, the combination, with the combustion-chamber, of an obstruction of refractory material located therein adjacent to the fire-grate and provided with passage-ways for the pas-

sage of heated air, an air-inlet flue opening to the base of said obstruction of refractory material beyond the fire-grate, and a second air-inlet flue independent of the first opening into the rear of the combustion-chamber at a distance from the obstruction of refractory material to introduce a fresh supply of air at the rear of the combustion-chamber.



2. In a furnace, the combination, with the combustion-chamber, of an obstruction of refractory material located therein adjacent to the fire-grate and provided with passage-ways for the passage of heated air, an air-inlet flue opening to the base of said obstruction of refractory material, a second air-inlet flue opening into the rear of the combustion-chamber at a distance from the obstruction of refractory material, and a connecting passage-way between the body of said obstruction of refractory material and a flue at the rear of the combustion-chamber.

3. In a furnace, the combination, with the combustion-chamber, of an obstruction of refractory material located therein adjacent to the fire-grate and provided with passage-ways for the passage of heated air, an air-inlet flue opening to the base of said obstruction of refractory material, a second air-inlet flue opening into the rear of the combustion-chamber at a distance from the obstruction of refractory material, a connecting passage-way between the body of said refractory material and the flue at the rear of the combustion-chamber, and perforated steam-pipes in said inlet-flues to draw the air into them.

4. In a furnace, the combination of a fire-grate, an obstruction of refractory material located within the combustion-chamber and in the rear of the grate and provided with passage-ways for the products of combustion, an air-inlet located adjacent to the front of the combustion-chamber, an air-flue opening adjacent to the front portion of the obstruction of refractory material, and a horizontal passage-way traversing the combustion-chamber and leading from the air-inlet to the rear of the combustion-chamber and thence forward to the air-flue at the front of the obstruction, whereby the external air in passing from the air-inlet to the air-flue leading to the obstruction traverses horizontally the combustion-chamber of the furnace.

5. In a furnace, the combination of the obstruction of refractory material E, located within the combustion-chamber of the furnace, an air-inlet flue located at the rear of the combustion-chamber and at a distance from the obstruction of refractory material, and a communicating passage-way for hot air leading from the obstruction of refractory material to the inlet-flue at the rear of the chamber.

6. In a furnace, the combination of the obstruction of refractory material E, located within the combustion-chamber of the furnace and having a barrier Q, located at the rear thereof and at a distance from the body of the obstruction, so as to form an open space *q*, an air-inlet flue located at the rear of the combustion-chamber and at a distance from the obstruction of refractory material, and a communicating passage-way through the barrier Q from the air-space *q* to the air-inlet flue at the rear of the furnace.

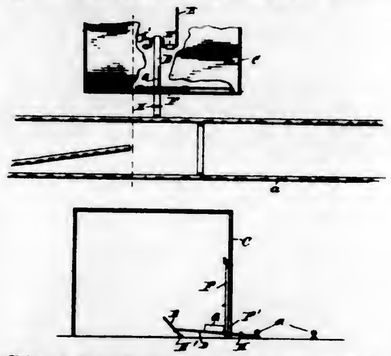
7. In a furnace, the combination of the fire-grate with a perforated barrier D of refractory material located at the inner end of the grate and extending above it, having the vertical portion *d* perforated and immediately above the grate, and its upper portion inclined forward toward the front of the furnace and extending over a portion only of the grate.

8. In a furnace, the combination of a boiler, a grate, and the walls H, formed of refractory material and having their upper portions arranged adjacent to the surface of the boiler and provided with a series of irregular passage-ways A, said passage-ways being inclined radially toward the boiler at the upper portion of the walls.

9. A refractory obstruction for furnaces, &c., consisting of tubular pieces of fire-clay T, provided with projections *t*, substantially as and for the purpose described.

10. In a furnace, the combination of the grate, an obstruction of refractory material located within the combustion-chamber and in the rear of the grate, provided with passage-ways for the products of combustion, an air-inlet flue opening within the obstruction of refractory material, and an angular piece N, arranged over the air-flue and having its two angular sides provided with perforations, whereby the air passing through said angular piece is distributed on each side into the body of the obstruction of refractory material.

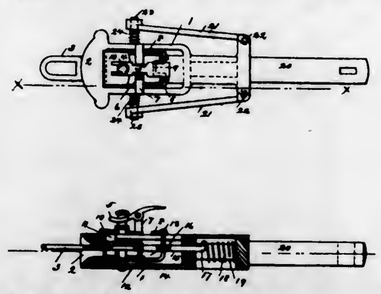
488,172. SAFETY-SWITCH. ROBERT T. MURPHY, Gainesville, Ga. Filed Apr. 2, 1892. Serial No. 427,484. (No model.)



Claim.—1. In combination, a switch, a switch-operating mechanism extending into an inclosure, and a door, said mechanism having a projection arranged to move into the path of and directly lock the door when the switch is thrown to one position and so arranged that the door will lock said mechanism when in the opposite position, substantially as described.

2. In combination, a switch, a switch-rod having a projection, the switch-operating means in an inclosure, and a door for said inclosure, the projection arranged to move into the path of the door when the switch is in one position and the door arranged to move into the path of the projection when the switch is in the other position, substantially as described.

488,173. CAR-COUPLING. FRANCIS S. MCCONNELL, Altoona, assignor of one-half to George P. Rosser, Baldwin Township, and Powell Luther, Pittsburg, Pa. Filed Dec. 30, 1891. Serial No. 416,601. (No model.)



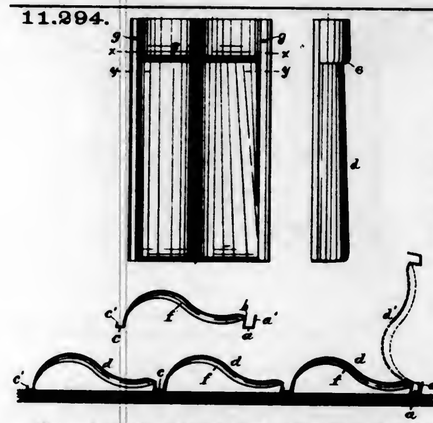
Claim.—1. The herein-described car-coupling, consisting of the draw-head 1, the box 14, arranged therein and provided with a rear extension, the lever 12, loosely connected to the said box, the plate 10 and downward extensions 11, pivoted to the said levers, the pin 5, connected to the said plate 10 and provided with a device for elevating and lowering the same, and the side plates arranged as and for the purpose described, all combined for service as set forth.

2. A car-coupler consisting of a draw-head, a box movable therein, a crank-arm attached to said box, and a plate connected to said crank-arm, said plate having an opening for the pin, said parts being combined substantially as and for the purpose specified.

REISSUES.

11,294. SHEET-METAL TILE. JAMES WHITE, Brooklyn, N. Y. Filed Oct. 28, 1892. Serial No. 449,998. Original No. 471,490, dated Mar. 22, 1892.

11,294.

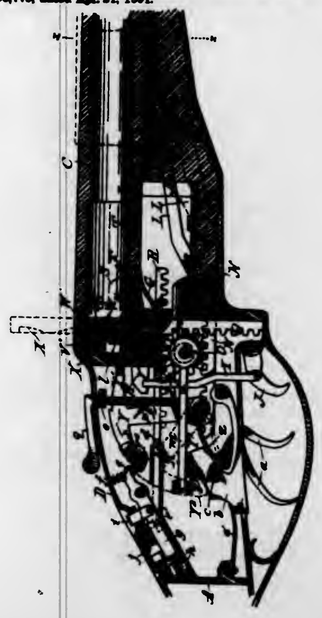


Claim.—1. A series of sheet-metal tiles of ogee cross-section, each tile having an offset extended across its entire width adjacent to the upper end and a lip extended transversely across its entire width at the lower end and its edges beat to interlock with those of the other tiles and the series arranged to form continuous joints between the adjacent rows of tiles, substantially as set forth.

2. A sheet-metal tile of ogee cross-section, having its upper end offset transversely across its entire width, a lip extended transversely across its entire width at the lower end, the open gutter *a* at the concave edge of the tile, and the flange *c* at the convex edge of the tile, adapted to fit within such open gutter, as and for the purpose set forth.

3. A sheet-metal tile of ogee cross-section, having its upper end offset transversely across its entire width, a lip extended transversely across its entire width at the lower end, the inclined open gutter *a*, projected below the margin of the tile at the concave edge and provided upon its outer side with the flange *a'*, adapted to fit inside the convex portion of the tile, and the flange *c*, adjacent to such convex portion and provided with the bent edge *c'*, adapted to fit within the gutter and interlock therewith, substantially as herein set forth.

11,295. REPEATING BREECH-LOADING GUN. WILLIS H. OSTRANDER, Merced, assignor to the Ostrander Repeating Gun Company, San Francisco, Cal. Filed June 16, 1891. Serial No. 396,773. Original No. 450,773, dated Apr. 21, 1891.



Claim.—1. In a gun, the barrels sliding upon the fore-end of the stock, the magazines seated beneath the rear ends of the barrels, a vertically-moving carrier, and the guides within which the flange of the shell travels, in combination with a rotary pinion, a rack-bar connected with the sliding barrels and engaging said pinion, and a vertically-moving rack-bar to which the carrier is attached and by which it is raised and depressed, substantially as herein described.

2. A repeating-gun consisting of a stock, one or more barrels adapted to slide forward and back in guides upon the fore-end of said stock, a horizontally-moving rack-bar and a link connecting said rack-bar with the moving barrel, a pinion journaled within the stock and engaging the sliding rack-bar, a second rack-bar engaging the pinion and moving in vertical guides, a magazine situated beneath the rear end of the barrel, and a carrier adapted to receive the shell within the magazine, said carrier being attached to the vertically-moving rack-bar, so that in its upward movement it will raise the shell to a position opposite the rear end of the barrel, substantially as herein described.

3. In a repeating-gun, a stock, one or more barrels adapted to slide forward and back, a magazine situated beneath the rear end of the barrel, a rack-bar connected by a link with the sliding barrel, a pinion journaled in the stock and engaged by said rack-bar, so as to be rotated by the reciprocation of the latter, a vertical rack-bar actuated by the pinion, and a carrier fixed to the vertically-moving rack-bar and adapted to raise a cartridge from the magazine to a point opposite the rear end of the barrel, in combination with guides within which the flange of the rear end of the shell travels and spring-actuated stop-pins whereby the shell is held after having been lifted to its position ready to enter the barrel, substantially as herein described.

4. The vertically-moving carrier, in combination with the spring-actuated stop-pin in the upper portion of the standing-breech just above the upper edges of the flanges of the shells when said shells are in position and the cam X, connected with the carriers, whereby the stop-pin is retracted or allowed to project, substantially as herein described.

5. A repeating-gun consisting of the stock, one or more barrels sliding in guides upon the fore-end of said stock, a horizontally-moving rack-bar, a pinion journaled in the stock engaged by said rack-bar, and operating mechanism moved by said pinion, in combination with a link extending from the front end of the rack-bar, a spring whereby the front end of said link is raised, a lug fixed upon the front end of the link, and a slot formed in the rib of the sliding barrel and engaged by said lug, so that the movement of the barrel is communicated to the sliding rack-bar, substantially as herein described.

6. A repeating-gun consisting of the stock, one or more barrels sliding in guides upon the fore-end of said stock, a pinion and rack-bars connected with the barrel and actuated by the forward and backward movements of said barrel, a spring-actuated locking-catch F, and a rod I, engaging said catch and trigger J for operating said rod, whereby said catch may be disengaged and the barrel released, substantially as herein described.

7. A repeating-gun consisting of a stock, one or more barrels sliding in guides upon the fore-end of said stock, a horizontally-moving rack-bar connected with and actuated by said barrel, a pinion journaled within the stock and engaging said rack-bar, a vertically-moving rack-bar engaging said pinion and having the cartridge-carrier fixed to it, and a second horizontally-moving rack-bar engaging the pinion, having the lug or pin projecting from it, in combination with the hammer fulcrumed within the casing, so as to be engaged by the lug upon the rack-bar when the latter is moved backwardly, the trigger, and notched trigger-blade adapted to engage and hold the hammer when it is withdrawn, substantially as herein described.

8. The hammer fulcrumed within the casing and the horizontally-moving rack-bar for actuating the same, in combination with a notched trigger-blade within the lower part of the casing, having a notch engaged by the hammer when the latter is drawn back, and a safety-catch in the upper part of the casing in the path of the hammer and adapted to engage a notch therein to hold the hammer independently of the trigger-blade, substantially as herein described.

9. The combination, with the hammer and its actuating mechanism, of the spring-actuated catch in the path of the hammer for holding the latter independently of the trigger, a sliding locking-plate *g*, engaging the arm of the spring-actuated catch out of engagement with the hammer, a thumb-piece on the sliding plate, and a thumb-piece on the catch, substantially as and for the purpose described.

10. The sliding barrel moving in guides upon the fore-end of the stock, a rack-bar connected by a link with said barrel, a pinion journaled within the stock and engaged by said rack-bar, a second rack-bar engaging the pinion, moving horizontally, and having a lug which engages the hammer and forces it backward when the barrels are moved, so as to rotate the pinion, a spring-actuated safety-catch, a sliding latch by which said catch is held out of engagement with the hammer, and an inclined face R' at the rear of the rack-bar, adapted

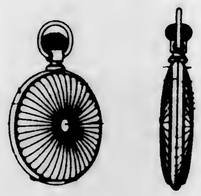
to force the locking-slide backward and disengage it from the safety-catch, substantially as herein described.

11. A magazine-gun consisting of a pair of barrels moving in guides upon the fore-end of the gun-stock, horizontally-moving rack-bars connected by links with each of the barrels, corresponding pinions journaled loosely upon the shaft within the stock and engaged by said rack-bars, loading mechanisms actuated by said pinions to load both barrels simultaneously, clutch-levers engaging each of the pinions, and an arm or lever operatively connected to said clutch-levers, whereby either pinion may be thrown out of engagement with the actuating rack-bar and the mechanism actuated by said pinion remain stationary while the other is operated, substantially as herein described.

12. In a gun, the combination of a stock having two barrels mounted thereon so as to slide forward and backward, a magazine below the rear ends of said barrels, a connecting-rod actuated by the movement of the barrels, and a mechanism, substantially as described, operated by said rod whereby loaded shells are carried from the magazine to a position in rear of and in line with said barrels, discharged shells ejected by the same movement, and the hammers drawn back into position for firing, substantially as set forth.

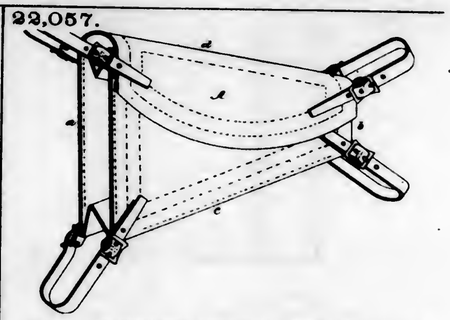
DESIGNS.

22,056. WATCHCASE. JOHN C. DUEBER, Canton, Ohio. Filed Sept. 5, 1892. Serial No. 445,137. Term of patent 14 years.



Claim.—The design for watchcases herein shown and described.

22,057. BICYCLER'S BAG. STEPHEN B. GILSULY, Long Branch, N. J. Filed July 25, 1892. Serial No. 441,201. Term of patent 3½ years.



Claim.—The design for a bicycler's bag, as herein shown and described.

22,058. BOTTLE. FREDERICK S. ROCKWOOD and FRANK R. ROCKWOOD, Hamburg, Ill. Filed Oct. 29, 1892. Serial No. 450,388. Term of patent 7 years.

Claim.—The design for bottles, substantially as herein shown and described.

TRADE-MARKS

REGISTERED DECEMBER 13, 1892.

22,151. FOUNTAIN-PENS. WILLIAM A. LEARY, Holyoke, Mass. Filed Nov. 19, 1892.

PERFECTO.

Essential feature.—The word "PERFECTO." Used since October 15, 1892.

22,152. CALENDARS AND PAPER-WEIGHTS. AUSTIN D. PALMER, Coshocton, Ohio. Filed Aug. 20, 1892.

WORLD'S FAIR

Essential feature.—The words "WORLD'S FAIR." Used since March 1, 1892.

22,153. PHOTOGRAPHIC DEVELOPERS. ACTIEN-GESELLSCHAFT FÜR ANILIN-FABRIKATION, Berlin, Germany. Filed Nov. 18, 1892.

Dr. M. Andresen's

Metol.

Essential feature.—The abbreviation, letter, and words "DR. M. ANDRESEN'S METOL." Used since October 25, 1892.

22,154. PHOTOGRAPHIC DEVELOPERS. ACTIEN-GESELLSCHAFT FÜR ANILIN-FABRIKATION, Berlin, Germany. Filed Nov. 18, 1892.

Dr. M. Andresen's

Amidol.

Essential feature.—The abbreviation, letter, and words "DR. M. ANDRESEN'S AMIDOL." Used since October 25, 1892.

22,155. VAPORIZERS, VOLATILIZERS, AND INHALERS. CHARLES L. OGILVIE, New York, N. Y. Filed Oct. 22, 1892.

CHAMPION

Essential feature.—The word "CHAMPION." Used since October 10, 1891.

22,156. BOTTLES. ALBERT G. SHALLEY, Foxon, Mass. Filed Nov. 10, 1892.

FULL MEASURE

Essential feature.—The words "FULL MEASURE." Used since October 1, 1891.

22,157. BOOTS AND SHOES. MILBURN, PACKARD & LIBBEY, Auburn, Me. Filed Nov. 11, 1892.

Essential feature.—The representation of the head of a caribou. Used since July 1 1892.

22,158. LININGS, EMBRACING SILESIAS, SATEENS, CAMBRICS, AND TWILLS. BURTON BROS. & Co., New York, N. Y. Filed Sept. 30, 1892.

MADISON

Essential feature.—The word "MADISON." Used since January 15, 1892.

22,159. LUBRICATING OIL AND GREASE. MAGIE BROTHERS, Chicago, Ill. Filed Aug. 18, 1892.

Essential feature.—The word "ROCK" and a representation of the Balanced Rock in Colorado. Used since July 1, 1890.

22,160. CERTAIN CHEMICALLY-PREPARED FUEL. THE AMERICAN SAFETY FUEL COMPANY, Jersey City, N. J., and New York, N. Y. Filed Sept. 20, 1892.

Carbonite

Essential feature.—The word "CARBONITE." Used since January 1, 1892.

22,161. PETROLEUM. FERRAS SOBRINHO & Co., Rio Janeiro, Brazil, and New York, N. Y. Filed Oct. 22, 1892.

Essential feature.—The word "VOLCAN" and the representation of a volcano. Used since December 19, 1891.

22,162. SAPONACEOUS COMPOUND FOR CLEANSING CARPETS AND FOR LAUNDRY PURPOSES. JOHN S. SILVER, New York, N. Y. Filed Oct. 26, 1892.

ROYALINE

Essential feature.—The word "ROYALINE." Used since July 1, 1892.

22,163. SOAP FOR LAUNDRY AND HOUSEHOLD USE. MAPLE CITY SOAP WORKS, Monmouth, Ill. Filed Nov. 15, 1892.

ALPHA

Essential feature.—The word "ALPHA." Used since March 28, 1891.

22,164. LAUNDRY SOAP. KENDALL MANUFACTURING COMPANY, Providence, R. I. Filed May 20, 1892.

22,164.

Essential feature.—The words "FRENCH LAUNDRY SOAP" in connection with the representation of a Breton woman washing clothes. Used since January 1, 1865.

22,165. BAKING-POWDER. ANDREW W. RUHL, Baltimore, Md. Filed Nov. 14, 1892.

GILT EDGE

Essential feature.—The words "GILT EDGE." Used since June, 1892.

22,166. BAKING-POWDER. THOMAS PALMER, New York, N. Y. Filed Nov. 4, 1892.

FRANKLIN

Essential feature.—The word "FRANKLIN." Used since May 1, 1892.

22,167. ROLLED OATS. WILLIS JOHNSTON, Washington, D. C. Filed Oct. 31, 1892.

22,167.

THE JOHNSTON ROLLED OATS

Essential feature.—The words "THE JOHNSTON ROLLED OATS" arranged so that the words "Johnston" and "Oats" form an oval inclosing the word "Rolled," which is in a horizontal line, and having the word "The" superposed in a horizontal line over the oval figure, and all displayed upon a colored background. Used since January 1, 1892.

22,168. BUTTER AND CHEESE. FREDERIC M. FOX, Hartford, Conn. Filed Aug. 30, 1892.

Essential feature.—The geometrical figure of a circle with an inscribed square and the words "LETTER BRAND." Used since July 21, 1891.

22,169. SALTED AND PICKLED MEATS. FERRAS SOBRINHO & Co., Rio Janeiro, Brazil, and New York, N. Y. Filed Oct. 20, 1892.

Essential feature.—The words "ILLINOIS IMPORIUM" and the representation of a hog within a diamond-shaped figure. Used since February 23, 1892.

22,170. LAGER-BEER. RUFF BREWING COMPANY, Quincy, Ill. Filed Oct. 7, 1892.

Essential feature.—The letter "R" superimposed upon the combined representations of two hop-leaves and three hop-catkins. Used since May 1, 1892.

22,171. SACCHARATE SIMILAR TO SACCHARIEN. LEHN & FINK, New York, N. Y. Filed Nov. 15, 1892.

22,171.

Dulcin

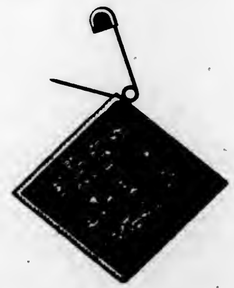
Essential feature.—The word "DULCIN." Used since November 1, 1892.

22,172. MEDICATED BEVERAGES OR TONICS. QUIRYE COMPANY, Chicago, Ill. Filed Nov. 17, 1892.

QUIRYE

Essential feature.—The word "QUIRYE." Used since September 15, 1892.

22,173. PREPARATION FOR THE PREVENTION OF DISEASES CAUSED BY INFECTIOUS AIR. JOHN SCHUCH & Co., Cincinnati, Ohio. Filed Aug. 30, 1892.



Essential feature.—The representation of a square bag suspended at one corner from a safety-pin. Used since July 1, 1892.

22,174. REMEDY FOR ACUTE AND CHRONIC INFLAMMATION. ALBERT J. PIDGEON, Kansas City, Mo. Filed Oct. 31, 1892.

PIGEON

Essential feature.—The word "PIGEON." Used since October 1, 1892.

22,175. REMEDY FOR RHEUMATISM. HOWARD A. POWERS, Brockton, Mass. Filed Nov. 19, 1892.

Essential feature.—The portrait of the registrant and the fac-simile of his autograph. Used since May 1, 1892.

22,176. PIANOS. REMER, COOPER & COMPANY, Chicago, Ill. Filed Oct. 15, 1892.

Florence

Essential feature.—The word "FLORENCE." Used since August 15, 1892.

22,177. BOLTS, NUTS, RIVETS AND SCREWS. J. H. STEINBRENER & Son, Reading, Pa. Filed Nov. 3, 1892.

22,177.

S

Essential feature.—The letter "S." Used since 1870.

22,178. REMEDIES FOR RHEUMATISM AND GOUT. EUGENE X. BRIEVOGELLE, New York, N. Y. Filed Nov. 2, 1892.

JEE HEUNG YOOK SERIES

Essential feature.—The words "JEE HEUNG YOOK SERIES." Used since August 1, 1892.

PHOTO-LITH. THE NORRIS PETERS CO. WASHINGTON, D. C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE POOLE.

Decided December 1, 1892.

1. PRACTICE—DESIGNS—REQUIREMENT OF DRAWING.

The Office rule requiring line-drawings in Design cases *Held* to apply to cases pending at the time of its adoption; but where in such a case the acceptance of a photograph had already been specially approved by the Commissioner ordered that the line-drawing be furnished by the Office.

2. SAME—SECTION 4930, REVISED STATUTES.

The discretion implied in section 4930, Revised Statutes, as to the requirements of drawing or photograph in Design cases is vested in the Office and not in the applicant.

ON petition.

DESIGN FOR A TABLE-COVER.

Application of Edward Poole filed August 31, 1891, No. 404,352.

Mr. H. T. Fenton for the applicant.

SIMONDS, *Commissioner:*

This is a petition taken from the action of the Primary Examiner, the first ground thereof being as follows:

1. This case was filed August 31, 1891, with a mounted photographic drawing and duplicates, which were perfect as such, and were then accepted as the drawings required by the statute and the rules of the Office. No subsequent rules or practice of the Office is competent to affect the status of an application after its completion in that respect.

It is held that a rule of this Office, such as the one referred to, adopted during the pendency of an application, is proper to be enforced in that application. A legislature is master of the question whether its laws when passed shall affect pending cases, and this Office, with the approval of the Secretary of the Interior, is master of the question whether its rules when adopted shall apply to pending cases. But as the acceptance of the photograph has once been specially approved by the Commissioner in this case the line-drawing will be furnished by the Office.

The second ground upon which the petition is based is:

2. The statute authorizing patents for Designs (Revised Statutes, 4930) vests in the inventor an option or discretion (to be exercised by *him* and not by the Office) to file either a line-drawing or a photographic drawing, subject only to the right of the Office to demand a model or specimen to be filed.

The following is—

Sec. 4930. The Commissioner may dispense with models of Designs when the Design can be sufficiently represented by drawings or photographs.

The discretion permitted by this section is to be exercised by the Commissioner. It makes no reference to any discretion to be exercised by the applicant.

The following is—

Sec. 4933. All the regulations and provisions which apply to obtaining or protecting patents for inventions or discoveries not inconsistent with the provisions of this title shall apply to patents for Designs.

The following is a part of—

Sec. 4884. * * * A copy of the specification and drawings shall be annexed to the patent and be a part thereof.

The following is—

Sec. 483. The Commissioner of Patents, subject to the approval of the Secretary of the Interior, may from time to time establish regulations, not inconsistent with law, for the conduct of proceedings in the Patent Office.

These sections of the statute seem to dispose wholly of the contention made by applicant in his second ground of petition.

The following is applicant's third ground of appeal:

3. The Office Rule 82, which drops the words "or photograph" contained in Revised Statutes, 4930, is inconsistent with the statute and is not within the power of the Office or the Secretary to make; and the reservation by the Office in Rule 85 of a discretion to reject a photographic drawing and require a line-drawing in certain cases is derogatory to the statute and inconsistent therewith.

What has been said with reference to applicant's second ground of appeal disposes equally of his third ground. At the hearing applicant urged orally that the present practice of the Office makes meaningless the words "or photographs" at the end of section 4930. That this is a mistake will be seen by a reference to the closing sentence of Rule 83, which is as follows:

83. * * * In case the nature of the Design is such that it cannot properly be represented by such a drawing, upon the recommendation of the Examiner a photograph may be employed.

Except as to the first ground of the petition, already disposed of, the petition is denied.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court of Appeals—First Circuit.

RICHMOND *v.* ATWOOD.

Decided September 27, 1892

1. APPEALABLE ORDERS—INTERLOCUTORY DECREE—INJUNCTION IN PATENT CASES—CIRCUIT COURT OF APPEALS—MEASURE OF RELIEF—FORM OF MANDATE.

A decree which is rendered after full hearing on the merits and which sustains the validity of a patent, declares infringement, and awards a perpetual injunction and an accounting is an "interlocutory decree" granting an injunction, from which an appeal will lie to the circuit court of appeals under section 7 of the act of March 3, 1891. (*Jones Co.* v. *Munger, etc., Co.*, 50 Fed. Rep., 785; 1 C. C A., 688, approved.)

2. SAME—CONSTRUCTION OF STATUTE.

The term "interlocutory order or decree" was used in its broadest sense in this section and should be given full scope, to the end that any party aggrieved by any order or decree granting an injunction at any stage of the proceedings may have a speedy remedy by appeal.

3. SAME—DECISION ON APPEAL—MANDATE.

On such an appeal, where the whole record is before the circuit court of appeals and in order to determine the rightfulness of the injunction the court necessarily examines the whole case on the merits and reaches the conclusion that there is no infringement, it may not only reverse the decree and dissolve the injunction, but may also vacate the order for an accounting and order the bill dismissed, thus rendering such a decree as the lower court should have rendered on the whole case. (*Jones Co.* v. *Munger, etc., Co.*, 50 Fed. Rep., 785; 1 C. C. A., 668, disapproved.)

APPEAL from the Circuit Court of the United States for the District of Massachusetts.

STATEMENT OF THE CASE.

Bill by Benjamin S. Atwood against Charles C. Richmond for infringement of a patent. The circuit court sustained the patent, found infringement, and entered a decree for perpetual injunction and for an accounting. (47 Fed. Rep., 219.) Defendant appealed. The circuit court of appeals, after a hearing on the merits, reversed the decree, holding that the patent was void for want of novelty, or that if sustainable at all defendant had not infringed it. (48 Fed. Rep., 910.) Thereafter the appellee filed a motion for a rehearing and a petition that the question as to the construction of the patent should be certified to the Supreme Court. At the hearing of this motion the court raised the question as to its jurisdiction to entertain an appeal at the stage which the case had reached below and as to the form of its mandate—to wit, whether it should simply order that the decree for an injunction be reversed or should direct that the bill be dismissed—and upon these questions leave was given the appellant to file a brief. Reversed, injunction vacated, and bill ordered dismissed.

Mr. Frederick P. Fish, *Mr. William K. Richardson*, and *Mr. James J. Storrow. Jr.*, for the appellant.

The "Act to establish circuit courts of appeals," printed in 138 U. S., 709, (1 C. C. A. III,) provides, in section 6, that—

the circuit courts of appeals established by this act shall exercise appellate jurisdiction to review, by appeal or by writ of error, final decision in the district court and the existing circuit courts, (in all except certain cases,)

and that—

the judgments or decrees of the circuit courts of appeals shall be final * * * in all cases arising under the patent laws.

Section 7 provides that—

where, upon a hearing in equity in a district court, or in an existing circuit court, an injunction shall be granted or continued by an interlocutory order or decree, in a cause in which an appeal from a final decree may be taken under the provisions of this act to the circuit court of appeals, an appeal may be taken from such interlocutory order or decree granting or continuing such injunction to the circuit court of appeals.

This statute (as will be more fully set forth in the considerations upon the statute hereto annexed) provides an appeal from an interlocutory decree of the circuit court granting an injunction and referring the question of damages and profits to a master. Such a decree is made after final hearing upon the pleadings and proofs, and the merits of the cause between the parties are fully determined thereby. If upon appeal the court of appeals, having before it the entire case, is of opinion that the patent is invalid or has not been infringed, the court will follow the practice of the Supreme Court of the United States in reversing a final decree of the circuit court and will send a mandate to the circuit court directing that the bill be dismissed. The invariable order of the Supreme Court in reversing a final decree of the circuit court sustaining a bill for infringement of Letters Patent is:

The decree is reversed, and the cause remanded, with a direction to dismiss the bill of complaint, with costs.

See, for example, among the recent cases which show the uniform practice: *St. Germain* v. *Brunswick*, (51 O. G., 1129; 135 U. S., 227–231; 10 Sup. Ct. Rep., 822;) *Yale Lock Manufg. Co.* v. *Berkshire Nat. Bank*, (51 O. G., 1291; 135 U. S., 342–403; 10 Sup. Ct. Rep., 884;) *Burt* v. *Evory*, (50 O. G., 1294; 133 U. S., 349–359; 10 Sup. Ct. Rep., 394;) *McCormick* v. *Graham's Admr.*, (129 U. S., 1–19; 9 Sup. Ct. Rep., 213;) *Crescent Brewing Co.* v. *Gottfried*, (45 O. G., 944; 128 U. S., 158–170; 9 Sup. Ct. Rep., 83.) The mandate sent to the circuit court corresponds to this order. See the papers on file in *Evory* v. *Burt*, equity docket of this circuit, case No. 2,753, which shows the form of such a mandate.

It is provided by the act to establish circuit courts of appeals, in section 10, that whenever on appeal a case coming from a district or circuit court is determined in the circuit court of appeals in a case in which the decision of the circuit court of appeals is final—

such case shall be remanded to the said district or circuit court for further proceedings, to be there taken in pursuance of such determination.

Under this section, where an appeal is taken from an interlocutory decree granting an injunction and it is determined upon the merits by the circuit court of appeals that the patent is invalid or that there is no infringement, or, in general, that the complainant's bill cannot be sustained, the decree of the circuit court must be reversed and the cause remanded to that court, with a direction to dismiss the bill of complaint, with costs, following the practice of the Supreme Court. Inasmuch as the decree of the circuit court granting the injunction was made upon final hearing and the appellate court decided upon all the pleadings and proofs that the complainant's case fails it would obviously be insufficient to reverse the decree only in so far as it grants an injunction and remand the case to the circuit court, with directions only to enter a decree denying an injunction. The appellate court has decided upon the merits that the bill cannot be sustained, and any action by the circuit court except to dismiss the bill would therefore simply be reversed again by the court of appeals.

Reference to the well-established practice in such jurisdictions as allow an appeal from interlocutory decrees or orders, granting injunctions and other relief, shows conclusively that the appellate court, when it has the entire case before it, will dispose of the entire case whenever it can do so and will instruct the lower court to enter such a decree as will put an end to the controversy. We note the date of each case, as showing how long the practice has been settled.

In New York (prior to the Code) an appeal was allowable from an interlocutory decree or order, and the practice was expressly settled that on an appeal from an interlocutory order the court of appeals would determine finally between the parties, if the merits of the case were fully before it, as will be seen by reference to early New York cases.

Le Guen v. *Gouverneur*, (1 Johns. Cas., 436, 1800:) The chancellor had made an interlocutory order, after the evidence had been taken in a cause, directing an issue to a jury to try the fact of fraud. The highest court of the State, on an appeal from this interlocutory order, decided that a previous judgment at law between the parties was binding, and the bill of complaint was accordingly dismissed. The case was very elaborately argued, and the judges delivered opinions *seriatim*.

Radcliff, J., says, (page 499:)

I have also no doubt that this court may proceed further, if it appear that the merits are fully in its possession, and determine finally between the parties. That such is the power and frequently the practice of the House of Lords in England is evident from the cases which have been cited.

Kent, J., holds, (page 508:)

It is the settled rule of the House of Lords in England upon appeals always to give such a decree as the court below ought to have given. This is the great and leading maxim in their system of appellate jurisprudence, and instances are accordingly very frequent in which the lords, on appeals from interlocutory orders in chancery, have reversed the order and decided fully on the merits.

See, also, Lansing, C. J., (page 521:) The judges referred to the House of Lords cases very fully and pointed out the idleness of sending back a case for further action by the chancellor when the entire merits are before the court on appeal. It was accordingly ordered that the interlocutory order should be reversed and that the bill should be dismissed.

Bush v. *Livingston*, (2 Caines, Cas. 66, 1805:) This was similarly an appeal from an interlocutory order of the chancellor after the evidence had been taken. The order was reversed and an order entered disposing of the case. The court referred to the preceding case and says that the court in that case directed the complainant's bill to be dismissed—

on precedents from the proceedings of the House of Lords of England on appeals from chancery and because the whole merits of the case were before the court. When it is considered that there can be no further proofs in the cause, that the whole merits have been discussed and reviewed, and that it will save litigation and expense, I am myself contented to be bound with the precedent which has been made.

See, also, to the same effect, *Bebee* v. *Bank*, (1 Johns., 529, 1806.)

The same is the practice in the New Jersey Court of Equity, where an appeal lies from an interlocutory decree granting an injunction. (*Newark & N. Y. R. Co.* v. *Mayor, etc.*, 23 N. J. Eq., 515, 1872.) The court points out, discussing the English and New York cases, that the appellate court will dispose of the entire controversy between the parties.

The general rule is that the appellate court will render such judgment as the inferior court, under all the circumstances, should have given.

In England this principle is so well settled that it is not discussed at all in the books, but is found to be the unquestioned practice from the earliest times. Among the early cases in the House of Lords, cited by Mr. Chancellor Kent, are the following: *Governors, etc.*, v. *Swan*, (5 Brown, Parl. Cas., 429, 1760.) Upon an appeal from an interlocutory order of the chancellor it was—

ordered and adjudged that the decree complained of should be reversed and that the respondent s bill should be dismissed.

See, to the same effect, *Ellis* v. *Segrave*, (7 Brown, Parl. Cas., 331, 1760;) *Bouchier* v. *Taylor*, (4 Brown, Parl. Cas., 708, 1776.)

Similar cases on appeal from interlocutory decrees, where the House of Lords reversed the decree and made an order terminating the controversy, remitting the case to the court of chancery to carry out the decree, are as follows: *White* v. *Lightburne*, (4 Brown, Parl. Cas., 181, 1722;) *Attorney-General* v. *Wall*, (Id., 665. 1760;) *Scribblehill* v. *Brett*, (Id., 144, 1703.) Numerous other cases to the same effect can be discovered in the English books. (*McCan* v. *O'Ferrall*, 8 Clark & F., 30, 1841.)

This decision of the House of Lords shows what their well-established practice is. The case came up upon appeal from a complicated decree in Ireland, with which the House of Lords did not agree. The lord chancellor pointed out that the usual course of the House of Lords was—

to declare the principle on which the decree is to be founded and to refer it back to the court to carry it into execution.

But he pointed out that sometimes mistakes were made by the lower courts in complicated cases:

I think it more exped ent and more calculated to save expense to the parties that this house in making its order should frame the decree in such a manner as to prevent the necessity of any further reference to the court below.

Accordingly the House of Lords made a very long order declaring to what decree the complainants were entitled and ordering that—

the cause be remitted to the court of chancery of Ireland to make a decree conformable to the above declaration and to carry these directions into effect.

The English cases quoted above were all decided long before the judicature acts and show conclusively the well-established practice of courts of equity in cases where appeals from interlocutory decrees are allowed. This practice of the English chancery should be followed by this court. The Revised Statutes of the United States, section 913, provides that—

the forms of mesne process, and the forms and modes of proceedings in suits of equity, * * * in the circuit and district courts, shall be according to the principles, rules, and usages which belong to courts of equity, * * * except when it is otherwise provided by statute or by rules of court made in pursuance thereof.

Under this statute it is well settled that the United States court will—

adopt the principles, rules, and usages of the court of chancery of England. (*Vattier* v. *Hinde*, 7 Pet., 253–274; *Bein* v. *Heath*, 12 How., 168–178.)

And this principle is now embodied in an express rule of the Supreme Court of the United States. (Equity rule 90.) Accordingly this court, upon an appeal from an interloctuory decree granting an injunction, having all the merits of the case before it, will proceed finally to dispose of the case and will remand the case to the circuit court with a direction to dismiss the bill of complaint if, in the opinion of the appellate court, the suit cannot be sustained. The object of the act in establishing the appellate court is to save trouble and expense to suitors, and this object is best attained by a mandate which will obviate any unnecessary proceedings in the court below.

This court in each case will instruct the court below to make the order or decree which it should have made upon the facts before it. If the appeal is from an order granting a preliminary injunction, and this court is of opinion that the validity of the patent is doubtful, or that the complainant will not be irreparably damaged by waiting until final hearing, it will direct the court below to rescind the o der granting a preliminary injunction; then the case proceeds for final hearing. If the appeal is from an interlocutory decree granting an injunction, and this court is of opinion that the bill cannot be sustained, then it will direct the court below to dismiss the bill. In both cases the parties are put in the situation which they would occupy if the court below had decided in accordance with the opinion of the appellate court, and this is the plain intention of the statute.

CONSIDERATIONS UPON THE JURISDICTION OF THIS COURT UNDER THE STATUTE.

We have been requested by the court to submit a short brief bearing upon the meaning of the statute in providing for an appeal from an "interlocutory order or decree granting or continuing an injunction." (See

section 7 of the act to establish circuit courts of appeals, above quoted.)

The intention of Congress in passing this section of the statute is made plain by the following considerations:

It was long ago settled that the Supreme Court had no jurisdiction to entertain an appeal from a decree at final hearing granting an injunction, and referring the cause to a master for an account, either in a patent cause or in other like causes in equity, for such a decree is only "interlocutory." The long, tedious, and expensive process of accounting had first to be gone through with and the final decree, based on the master's report, entered before an appeal could be taken. By the statutes of the United States (Rev. Stat., sec. 692) an appeal to the Supreme Court lies only from "final decrees."

In this respect the practice of the United States chancery courts differs from the English practice: for appeals to the House of Lords may be taken from an interlocutory order of the chancellor, which decides a right of property in dispute. * * * But the case is otherwise in the courts of the United States, where the right to appeal is by law limited to final decrees. (*Forgay* v. *Conrad*, 6 How., 201-205.)

And it has therefore been held in frequent cases that the Supreme Court has no jurisdiction under the acts of Congress to entertain an appeal from an "interlocutory order or decree." The cases are cited and summarized very fully in *Iron Co.* v. *Martin*, (132 U. S., 91; 10 Sup. Ct. Rep., 32.) In this case the decree granted an injunction and ordered a reference to a master for an account. The Court held that the decree was not a final and appealable one. So in *Lodge* v. *Twell* (135 U. S., 232; 10 Sup. Ct. Rep., 745) it was held that a decree setting aside a sale and appointing a receiver "was interlocutory and not final."

In accordance with the preceding cases it has been expressly held that an appeal will not lie to the Supreme Court from a decree for a perpetual injunction in a patent cause, with reference to a master to take accounts, such a decree being interlocutory and not final. (See *Barnard* v. *Gibson*, 7 How., 650; *Humiston* v. *Stainthorp*, 2 Wall., 106; *Railroad Co.* v. *Soutter*, Id., 510-521.)

Under this statutory limitation of the jurisdiction of the Supreme Court it often happens that great hardship is caused to a defendant against whom an erroneous decree is rendered at final hearing by the circuit court, in that he is put to the useless expense of a generally prolonged accounting before a master and is kept during all this period under an injunction, (the well-established practice being that the injuction stands until the appeal is decided.)

The Supreme Court Reports are full of cases like *Clark Thread Co.* v. *Willimantic Linen Co.*, (56 O. G., 895; 140 U. S., 481, 483; 11 Sup. Ct. Rep., 846.) In this case the decree in favor of the patent was rendered in May, 1879. The period from that time until June 17, 1886, was consumed in "a long contest in the master's office" and in deciding the exceptions to the master's report, at the end of which time damages to the amount of over $150,000 were awarded by final decree of the circuit court. Thus a period of over seven years elapsed, during which the defendant was under injunction and vast amounts were consumed in legal expenses. The case then went up to the Supreme Court, which reversed the decree of the circuit court and ordered that the bill should be dismissed.

This is only one example of many to be found in the Supreme Court Reports of the great hardship caused by inability to take an appeal at once from the decree sustaining the patent and granting the injunction. No compensation could ever be awarded to the defendant in the above case for being unjustly deprived by injunction of the use of a valuable construction for seven years, nor could any of the large sums expended in useless fees during the accounting be recovered. This hardship has long been a matter of complaint among the members of the bar who practice in patent cases; and it was a cause of general satisfaction that Congress, in section 7 of this act, had attempted, as was supposed by the bar, to remedy this hardship by allowing an appeal to be taken at once from the interlocutory decree granting the injunction. It may seem to the court that this general understanding among the members of the bar should have some weight in the matter, and upon grounds of public policy it is certainly desirable that the statute should be given this construction, if compatible with the intention of Congress and the language of the statute.

We submit that there can be little doubt of the intention of Congress. The evil complained of was the great delay of appeals during the accounting before the master. To interpret the statute as referring only to orders granting a preliminary injunction would be to take away the chief benefit of the statute. In the first place, preliminary injunctions are seldom asked for, now that it is well established that the court will only grant such injunction in cases where there has been a prior adjudication or acquiescence or some special equity and where the court is reasonably free from doubt. Furthermore, in such cases the court will often dissolve the preliminary injunction upon the defendant's filing a proper bond; and, again, the cause can be rapidly pushed to final hearing by the defendant, so that the hardship arising from the inability to appeal from an order granting preliminary injunction is slight compared to the hardship arising from the inability to appeal from an interlocutory decree granting a perpetual injunction.

It is well settled that the court in construing a statute will endeavor to carry out the intention of Congress and will consider the circumstances which led to the passing of the statute. (*Platt* v. *Railroad Co.*, 99 U. S., 48-64; *Kohlsaat* v. *Murphy*, 96 U. S., 153-160; *Heydenfeldt* v. *Gold & Silver Min. Co.*, 93 U. S., 634-638; *Blake* v. *Banks*, 23 Wall., 307-319; *U. S.* v. *Freeman*, 3 How., 556-565; *Wilkinson* v. *Leland*, 2 Pet., 627-662; *U. S.* v. *Wiltberger*, 5 Wheat., 76-95; *Brown* v. *Barry*, 3 Dall., 365-367.)

It is therefore clear that this court should look at the hardship which this section was passed to remedy and that the intention of Congress should be carried out in construing this statute. Congress certainly intended to provide that the action of a circuit court in granting an injunction at final hearing may be reviewed by the appellate court before the long and expensive process of taking accounts before the master is completed, as is the established practice of the English court of chancery and many other equity courts.

We submit, further, that the meaning of the language of the statute is plain. The words are "interlocutory order or decree granting or continuing an injunction." This language is to be interpreted according to its usual meaning at the time of passing the statute, and no construction can be given it rendering a part of the words meaningless. (*Railroad Co.* v. *Moore*, 121 U. S., 558-572; 7 Sup. Ct. Rep., 1334; *The Abbotsford*, 98 U. S., 440-444; *Minor* v. *Bank*, 1 Pet., 46-64; *Maillard* v. *Lawrence*, 16 How., 251-261; *Platt* v. *Railroad Co.*, 99 U. S., 48-58; *Market Co.* v. *Hoffman*, 101 U. S., 112-115.)

Under these settled rules of construction we submit that there can be no doubt as to the meaning of the section here in question. The words "interlocutory order" can only refer to the order of the court granting a preliminary injunction upon affidavits. This is never properly spoken of as a "decree," although some few cases may be found where the word "decree" is incorrectly used of such an order. On the other hand, the words "interlocutory decree" refer, by the well-settled usage of the courts, to the decree on the merits at final hearing, by which an injunction is granted and the case is referred to a master for an account or other like proceedings.

If the jurisdiction of the court should be limited under this section to appeals from preliminary injunction, the words "or decree" in section 7 become not only superfluous, but also entirely incorrect.

We will first refer to the usage of the Supreme Court of the United States. The difference between the three different determinations of the court of equity in the progress of a suit—namely, "preliminary injunction," "interlocutory decree," and "final decree"—is well shown in *Worden* v. *Searls*, (39 O. G., 359; 121 U. S., 14-19; 7 Sup. Ct. Rep., 814.) This was a bill in equity upon Letters Patent, and the Court distinguishes very clearly, as follows:

A preliminary injunction was issued and served. * * * An interlocutory decree was made, declaring that the reissue was valid, and had been infringed, and awarding a perpetual injunction, and a reference as to profits and damages. * * * On the report of the master on the reference under the interlocutory decree, a final decree was entered that the plaintiffs recover, etc.

In *Lodge* v. *Twell*, above cited, where the Court dismissed an appeal as not being from a final decree, it expressly held that the decree—

was interlocutory and not final, even though it settled the equities of the bill.

In *Beebe* v. *Russell* (19 How., 283-285) the circuit court had decreed that certain conveyances should be executed, and referred the case to the master. The court dismissed the appeal, holding that it was not from a final decree, saying that no case had been decided by the Supreme Court—

in which the distinction between final and interlocutory decree has not been regarded as it was meant to be by the legislation of Congress, and as it was understood by the courts in England and this country before Congress acted upon the subject. A decree is understood to be interlocutory whenever an inquiry as to matter of law or fact is directed preparatory to a final decision.

So, also, in *Perkins* v. *Fourniquet* (14 How., 313-323) the court distinguishes clearly between an "interlocutory decree," referring the case to a master to take an account, and a "final decree" for a stated sum.

In order to ascertain what was the settled meaning of an "interlocutory decree granting an injunction" in patent causes we have looked through the United States Reports as far back as 128 U. S., and we find the following patent cases in which a decree at final hearing, ordering an injunction and referring the case to a master for an accounting, is expressly spoken of as an "interlocutory decree," while the decree based on the master's report is called the "final decree." We have not looked any further, but do not doubt that the cases can be indefinitely increased. Our citations are sufficient to show the established meaning of this phrase.

In *Magowan* v. *Packing Co.* (57 O. G., 845; 141 U. S., 332-337; 12 Sup. Ct. Rep., 71) the Court says:

Issue being joined, proofs were taken, and the case was heard before Judge Nixon, then the district judge, who entered an interlocutory decree in favor of the plaintiff for an account of profits and damages and a perpetual injunction. * * * On the report of the master, * * * a final decree was entered.

In *McCreary* v. *Canal Co.* (141 U. S., 459, 460, 12 Sup. Ct. Rep., 40) it is said:

Upon the hearing in the circuit court, an interlocutory decree was entered in favor of the plaintiff, finding the validity of the patent, and the infringement by the defendant, and ordering a reference to a master for an account.

In *St. Germain* v. *Brunswick* (51 O. G., 1129; 135 U. S., 227, 228, 10 Sup. Ct. Rep., 822) it is said:

Replication having been filed, proofs were taken and an interlocutory decree was entered in favor of the complainant, sustaining the patent, finding that there had been infringement, and referring the case to a master.

In *Yale Lock Manufg. Co.* v. *Berkshire Nat. Bank* (51 O. G., 1291; 135 U. S., 342-344; 10 Sup. Ct. Rep., 884) the Court says:

After replication, proofs were taken on both sides, and the case was heard. * * * An interlocutory decree was entered, adjudging Reissue No. 8,550 to be valid, that the defendants had infringed those claims, and ordering a reference to a master to take an account.

In *Cornely* v. *Marckwald* (47 O. G., 1353; 131 U. S., 159, 160; 9 Sup. Ct. Rep., 744) the Court says:

There was an interlocutory decree for the plaintiff, establishing the validity of the patent and its infringement, and ordering a reference to a master to take an account of profits and damages.

In *Collins Co.* v. *Coes* (47 O. G., 523; 130 U. S., 56 64; 9 Sup. Ct. Rep., 514) it is said:

The circuit court originally granted an interlocutory decree in favor of the plaintiff, in accordance with the opinion of Judge Lowell. * * * But a rehearing was afterward moved for and granted, the interlocutory decree vacated, and the bill dismissed.

In *Hurlbut* v. *Schillinger* (47 O. G., 1067; 130 U. S., 456-458; 9 Sup. Ct. Rep., 584) the Court says:

Issue having been joined, proofs were taken on both sides, and * * * the Court entered an interlocutory decree, adjudging that the reissued patent was valid, that the defendant had infringed it. * * * The decree also ordered a reference to a master to take an account of the profits and damages.

In *McCormick* v. *Graham's Admr.* (129 U. S., 1, 2, 9 Sup. Ct. Rep., 213) the Court says:

After issue joined, proofs were taken on both sides, and * * * the Court made an interlocutory decree, holding the patent to be valid as regards its first and second claims, decreeing that the defendant had infringed those claims, * * * and referring it to a master to take an account of profits and damages.

In *Crescent Brewing Co.* v. *Gottfried* (45 O. G., 944; 128 U. S., 158-163; 9 Sup. Ct. Rep., 83) it is said:

An interlocutory decree was entered, holding the patent to be valid as to claims 1 and 2, and to have been infringed as to those claims, and referring it to a master to take an account of profits and damages.

The distinction is also clearly pointed out in the case of *Potter* v. *Mack*, (3 Fish. Pat. Cas., 428,) in a decision by Mr. Justice Swayne, of the Supreme Court. This case is a leading case upon the proposition that an injunction will not be suspended during the proceedings before the master. Here a decree had been made for a perpetual injunction, and directing an ac-

counting. An application was made that the injunction should be suspended until final decree, and was refused. The Court says:

He cannot appeal from the decree, as it at present stands, because, although the decision is final as to the merits of the case, it is in form an interlocutory decree only, and the rule established by the Supreme Court is that an appeal can be taken only from a final decree. * * * An interlocutory decree was entered, and notice of the injunction has been duly given to the defendant. Now, we are asked to suspend the operation of this injunction until a final decree is made.

Second. We would refer to the established meaning of these words as settled by the text-books.

In Walker on Patents, sections 644–649, the distinction is fully drawn:

An interlocutory decree in an equity patent case is a decree which adjudges that the patent sued upon is valid, and that the defendant has infringed it, and that a master in chancery take and report an account of the profits, * * * and of the damages, * * * and sometimes that the defendant be permanently enjoined from further infringement. No appeal from such a decree lies to the Supreme Court Until a final decree has been made for a specific money recovery, in pursuance of an account of profits and damages, the case is within the control of the Court.

The same text-book shows that the grant of a preliminary injunction is not spoken of as a "decree" at all. (Walk. Pat., secs. 658–662.) (See, also, sec. 698:)

A refusal of a permanent injunction will generally follow from the fact that the patent has expired at the time of the interlocutory decree.

Rob. Pat., sections 1131, 1132, is equally clear on this subject.

An interlocutory decree is a decree in favor of the plaintiff upon the issues created by the bill and answer, and referring the cause to a master in chancery for an account of profits and an award of damages. * * * A final decree is a decree which terminates the litigation, either by awarding to the plaintiff the profits, damages, and other permanent relief to which he is entitled, or by deciding the cause upon its merits in favor of the defendant. The final decree for the plaintiff cannot be granted where an account is necessary until the account has been taken by the master, and reported to and accepted by the Court.

The above citation seems to show conclusively what is the established meaning of the words "interlocutory decree." In the case at bar the court certainly entered a decree, from which an appeal was taken, and this decree certainly granted an injunction. There can be no dispute about that; and, furthermore, it was an "interlocutory decree," as is expressly settled not only by the cases above cited, but by the cases of *Barnard* v. *Gibson* (7 How., 650) and *Humiston* v. *Stainthorp*, (2 Wall., 106,) in which it was expressly held that a decree in a patent cause which was absolutely indistinguishable from the decree here appealed from was not a final decree. In both cases the Court said:

The decree is not final.

As the decree in the case at bar, therefore, was an "interlocutory decree" and "granted an injunction," it is a case which comes within the express language of section 7 of the statute, and also within the intention of Congress, as above set forth.

As to the jurisdiction of the court in this particular case, we submit that there can be no question, for certainly the circuit court has entered a decree. If this decree is an "interlocutory decree," the court plainly has jurisdiction under section 7 of the statute, as the decree grants an injunction. If, on the other hand, this decree is a "final decree," then the court has, of course, jurisdiction under section 6 of the act which makes this court an appellate court, with jurisdiction "to review by appeal or by writ of error final decisions of the district court and the existing circuit courts." The decree of the circuit court in this case must be of either one kind or the other, for there are no other kinds of decrees known to the law. We have pointed out above that in patent causes these are the only kinds of decrees, and the fact is also established by the best text-books upon general equity practice.

In Daniell's Chancery Practice, (5th ed.,) 986, it is said:

A decree is a sentence or order of the court, pronounced on hearing and understanding all the points in issue, and determining the right of all the parties to the suit accordnig to equity and good conscience. It is either interlocutory or final. An interlocutory decree is when the consideration of the principal question to be determined, or the further consideration of the cause generally, is reserved until a future hearing.

This text-book, on pages 1671–1673, further makes it plain that the granting by the court of a preliminary injunction upon affidavits is not a "decree" at all, (as we pointed out above,) but is "an order for an injunction." It is said, on page 1679:

An injunction which has been granted on an interlocutory application is superseded by the decree made at the hearing of the cause The injunction may be permanently continued, or made perpetual, by the decree.

Story's Equity Pleading, (10th ed.,) section 408*a*, also distinguishes between final and interlocutory decrees. Seton's Decrees, (4th ed.,) page 2, which is the leading work upon this subject, says:

Decrees are either final or interlocutory.

So, also, in Foster's Federal Practice, section 318, it is said:

Decrees are either final or interlocutory.

Thus *quacunque via data*, the court has jurisdiction to entertain this appeal. It appears from the record, page B, that the circuit court entered a "decree for perpetual injunction, and for an accounting," from which decree the defendant appealed. If the decree was final, the court plainly has jurisdiction under section 6 of the statute. If the decree was interlocutory, it has jurisdiction under section 7. We believe, however, that upon consideration of the authorities above cited this court will have no doubt that this cause is one of those which was expressly intended by Congress to be covered by section 7 of the statute.

NOTE.—We have not searched the *Federal Reporter* for the use of the words "interlocutory decree," because of the labor involved. We will call attention to *Saddle Co.* v. *Smith*, (38 Fed. Rep., 414, 416,) where Judge Shipman says:

Let there be an interlocutory decree for an injunction and an accounting.

Many other like cases could doubtless be found.

Mr. Payson E. Tucker and *Mr. Charles F. Perkins* for the appellee.

Before COLT, CARPENTER, and ALDRICH, Judges.

ALDRICH, *J.*:

The opinion of this court, through Colt, circuit judge, was rendered upon the general merits involved, February 2, 1892, and the case is reported in 5 U. S. App. 1 (48 Fed. Rep., 910; 1 C. C. A., 144, first circuit) and is now before us upon a motion for rehearing and a petition that the questions of merit be certified to the Supreme Court. Upon reargument of the foregoing motion the question is raised as to the right of this court to entertain an appeal at the stage of the proceeding reached in this cause; and in the event that jurisdiction exists the further question is presented whether the mandate of this court should

direct a final disposition of the cause in the court below.

After considering the briefs and rearguments we find no reason for doubting the correctness of the conclusion stated in the former opinion as to the merits, and the motion for a rehearing and the petition for certification to the Supreme Court are denied, and we do not feel called upon to add anything to the reasons already stated upon this branch of the case.

The questions of jurisdiction and scope of mandate, however, not having been raised on the former arguments or considered in the opinion, seem not only to demand our attention, but that we should state our reasons at some length.

Section 7 of the act of March 3, 1891, creating the circuit court of appeals, provides—

that where, upon a hearing in equity in a district court, or in an existing circuit court, an injunction shall be granted or continued by an interlocutory order or decree, in a cause in which an appeal from a final decree may be taken under the provisions of this act to the circuit court of appeals, an appeal may be taken from such interlocutory order or decree granting or continuing such injunction to the circuit court of appeals;

and in order that such right of appeal should be the more highly remedial in favor of the party aggrieved it was further provided in the same section that—

it shall take precedence in the appellate court. (C. C. A., VII)

Of course, in our endeavor to ascertain the meaning of this section of the statute, we must bear in mind that prior to its enactment an appeal from an interlocutory injunction order was unknown in the Federal courts. Having in view, therefore, this rule of law and the plain language of the statute, considering, also, that the purpose of the law-maker, plainly expressed, was to give a right of appeal not conferred by the general provisions of the statute as to appeals from final decision, it seems to us evident that it was intended to remove the restriction and extend the right to all that class of interlocutory orders or decrees which interfere with the possession of property or operate in restraint of a party's business.

Since Sir William Blackstone's day, at least, decrees and orders in equity proceedings have only been subject to one division and have been classed generally either as final or interlocutory decrees or orders, and an "interlocutory decree" has been repeatedly defined as any decree made before final decision and for the purpose of ascertaining matter of law or fact preparatory to a final decree. Blackstone says, (vol. 2, p. 452:)

The chancellor's decree is either interlocutory or final,

and in Harrison's Practice in Chancery (vol. 1, p. 622) it is said that—

a decree is either final or interlocutory.

Again, Barb. Ch. Pr., 326:

Decrees are of two kinds—interlocutory and final. An interlocutory decree is properly a decree pronounced for the purpose of ascertaining matter of law or fact preparatory to a final decree.

In Seton on Decrees, (page 1,) it is said:

Decrees are either final or interlocontory. If the decree determined all the questions in issue between the parties, and did not adjourn any matter for further consideration, it was called a "final decree." In strictness, however, a decree was said to be 'interlocutory" until it was signed and enrolled. (For. Rom., 183.) But ordinarily it has been termed "interlocutory" when it was pronounced for the purpose of ascertaining matter of law or of fact previously to a final decree.

It is quite clear that this single division of decrees into two classes, and two only—interlocutory and final—has been generally accepted by lawyers and judges in this country and England. (Newl. Ch. Pr., 822; Seton, Decrees, 2; Kerr, Inj., 11, 12; High, Inj., sec. 1694; Adams, Eq., 375; Daniell, Ch. Pr., 986; Fost. Fed. Pr., sec. 318; Walk. Pat., secs. 644, 649; Rob. Pat., secs. 1131, 1132; 2 Madd. Ch., 462; *Kane* v. *Whittick*, 8 Wend., 224; *Jenkins* v. *Wild*, 14 Wend., 539; *Forgay* v. *Conrad*, 6 How., 201; *Barnard* v. *Gibson*, 7 How., 650; *Perkins* v. *Fourniquet*, 14 How., 313; *Beebe* v. *Russell*, 19 How., 283; *Humiston* v. *Stainthorp*, 2 Wall., 106; *Railroad Co.* v. *Soutter*, 2 Wall., 510, 521; *Worden* v. *Searls* 39 O. G., 359; 121 U. S., 14; 7 Sup. Ct. Rep., 814; *Crescent Brewing Co.* v. *Gottfried*, 45 O. G., 944; 128 U. S., 158, 163; 9 Sup. Ct. Rep., 83; *McCormick* v. *Graham's Admr.*, 129 U. S., 1, 2; 9 Sup. Ct. Rep., 213; *Hurlbut* v. *Schillinger*, 47 O. G., 1067; 130 U. S., 456, 458; 9 Sup. Ct. Rep., 584; *Collins Co.* v. *Coes*, 47 O. G., 523; 130 U. S., 56, 64; 9 Sup. Ct. Rep., 514: *Cornely* v. *Marckwald*, 47 O. G., 1358; 131 U. S., 159, 160; 9 Sup. Ct. Rep., 744; *Iron Co.* v. *Martin*, 132 U. S., 91; 10 Sup. Ct. Rep., 32; *Lodge* v. *Twell*, 135 U. S., 232; 10 Sup. Ct. Rep., 745; *St. Germain* v. *Brunswick*, 51 O. G., 1129; 135 U. S., 227, 228; 10 Sup. Ct. Rep., 822; *Yale Lock Manufg. Co.* v. *Berkshire Nat. Bank*, 51 O. G., 1291; 135 U. S., 342, 344; 10 Sup. Ct. Rep., 884; *Magowan* v. *Packing Co.*, 57 O. G., 845; 141 U. S., 333, 337; 12 Sup. Ct. Rep., 71; *McCreary* v. *Canal Co.*, 141 U. S., 459, 460; 12 Sup. Ct. Rep., 40; *Saddle Co.* v. *Smith*, 38 Fed. Rep., 414, 416; *Potter* v. *Mack*, 3 Fish. Pat. Cas., 428; *McVickar* v. *Wolcott*, 4 Johns., 510; *Bennett* v. *Hetherington*, 41 Iowa, 142; *Morgan* v. *Rose*, 22 N. J. Eq., 583, 593.)

It will be observed, from an examination of the cases in the Supreme Court of the United States, that a decree in patent cases, declaring the patent in question valid, and that it has been infringed, and for an injunction and an accounting, has uniformly been referred to as an "interlocutory decree," and the cases are numerous, like *Barnard* v. *Gibson*, *Forgay* v. *Conrad*, *Humiston* v. *Stainthorp*, *Railroad Co.* v. *Soutter*, *Beebe* v. *Russell*, and *Iron Co.* v. *Martin*, *supra*, where, upon an appeal from a decree determining the general property right, granting an injunction, and an order for an accounting before a master, it has been held that the decree was not final or appealable.

It is true that the cases in the Supreme Court are based upon a different statute, and in unmistakable language deny the right of appeal from interlocutory decrees; but they are for that reason none the less significant, as showing what has been understood as the line between interlocutory and final decrees. We must assume that Congress used the term "interlocutory order or decree" in this connection in its common and well-understood sense and as intending the line of distinction accepted and interpreted by the Federal courts, and it follows that all injunction orders and decrees which were interlocutory and not final, within the meaning of the old statute, and for that reason not appealable, are interlocutory under the new statute, and therefore by the same logic and upon the same reasoning are appealable.

We think the term "interlocutory order or decree" was used in its broadest sense and that the purpose of Congress was to confer the right of appeal from any decree or order granting an injunction at any

stage of the proceeding, whether technically preliminary, interlocutory, or final.

As already said, we think the term was used in its broadest sense, and in our opinion full scope should be given to this provision of the statute, to the end that any party aggrieved by any order or decree granting an injunction, at any stage of the proceedings, may have a speedy remedy by appeal. It is plain that the policy intended to be emphasized by this statutory exception to the general provision of the statute and the rule of law limiting the right of appeal to final decision is this: that, as injunction orders deprive parties of the possession and control of property and business and in case of error work irreparable mischief and great injustice, the party upon whom the order operates should have an early opportunity to have the record examined by the appellate court, and, if error is discovered, to have it corrected without the delay necessarily incident to litigation in its various stages before reaching final judgment.

As the statute in question undertakes to introduce a new feature in Federal procedure by conferring the right of appeal from certain orders and decrees before final decision, we have approached a consideration of its scope and effect with caution; and, in view of the doubt which always comes from entering new fields, it is very gratifying to learn that the circuit court of appeals in the fifth circuit has, in a similar case, adopted the same construction in a forcible opinion recently rendered by Pardee, circuit judge, in *Jones Co. v. Munger, etc., Co.*, (50 Fed. Rep., 785; 1 C. C. A., 668.)

The remaining question, however, is more troublesome, especially in view of the conclusion reached by the same court, in the same case, that the mandate to the court below should go to the injunction order merely. Although the report of the case fails to show how fully the question was considered upon argument, and the opinion presents no discussion thereof, we have given due consideration to its weight as an authority, but still feel bound to announce a different conclusion upon the same question.

At the outset we must notice that there are many instances where cases of this character have been before the Supreme Court, upon a full record, in which complete relief has not been granted; but it must be observed that the failure to afford relief resulted from the limitation in the older statute, which conferred the right of appeal from final decision only, the court, under such statute, having no appellate jurisdiction to review and furnish either partial or full relief until after final decision. The failure to make final disposition did not result from a lack of power in a court having appellate jurisdiction to afford complete relief, but from a total lack of jurisdiction, at such a stage of the proceeding, to entertain the appeal or to afford any relief whatever. The former decisions and practice in the Federal courts, therefore, by reason of this distinction, have no force whatever upon the question whether a court having statutory appellate jurisdiction to review at interlocutory stages, and having the complete record of a full hearing upon the general merits, may proceed to correct the fundamental error, and finally dispose of the case in the manner in which it should have been disposed of in the court below.

No practice having been adopted by the Supreme Court upon this subject for the reason stated—that heretofore the statutory right of appeal did not exist—we get no aid from the reported cases in that Court. We must assume that Congress in furnishing equitable remedy by appeal had reference to the equity system as understood and practiced in England and as adopted and applied to our own institutions; and in determining the power and the duty which result from this legislation we must look to the English system, usage, and practice, and to the decisions of our State courts, where a similar right of appeal from such decrees has been conferred by statute. It is, of course, well understood that a court of equity is to decide on the law and fact, (*Le Guen* v. *Gouverneur*, 1 Johns. Cas., 500, 506,) and that an appeal in equity is an appeal upon the law and fact involved in the cause, (Adams Eq., 375,) and that—

> in absence of any restrictive clauses, every appellate tribunal is clothed with all the powers of the tribunal appealed from, and is bound to exercise them upon the same principles. (*Briggs's Petition*, 29 N. H., 553;)

and—

> ordinarily, from the nature of judgments, the decision of an appellate tribunal must have as great force, at least, as the judgment of the inferior tribunal upon the same matter would have had if no appeal had been taken. (*Blake* v. *Orford*, 64 N. H., 302; 10 Atl. Rep., 117.)

Unquestionably the circuit court upon the hearing therein might have found the facts against the complainant and dismissed the bill, and the question presented is whether this court, having an appeal before it involving the same record and the same facts, may, if error is found upon the general question of right, proceed to do what the court below should have done; or shall this court, although it has examined the record and determined the right under the patent the other way, simply dissolve the injunction, permit the accounting to go on, and after the useless expense and annoyance incident to such an investigation, upon re-examination of the same record by the same court, put in execution the right which it had necessarily determined in the appeal theretofore considered? In our view the accounting could in no way aid the final execution of the right already ascertained by this court, and under such circumstances would be worse than idle; and a rule which would permit such circuity and circumlocution is unnecessary and would not be useful to either the parties or the court. Now, this case must be distinguished from the class of cases where the injunction is preliminary and granted upon the bill, or where there is only a partial hearing upon the merits, or where the record is incomplete, or evidence is excluded which should have been considered. We are not called upon to decide as to the scope of the mandate under such circumstances; but it is probable that no one would contend that, as an invariable rule, it should go to a final disposition of the cause upon its merits. (*Deas* v. *Thorne*, 3 Johns., 543; *Huntington* v. *Nicoll*, *Id.*, 566.)

It is quite probable—indeed, quite clear—that a distinction would be made between injunctions granted preliminarily as a matter of discretion and a decree for an injunction granted upon the final determination of a particular right; and the general rule that an appellate court interferes reluctantly with injunctions granted *in limine* as a matter of discretion should not,

in our view, apply to an appeal under the statute from an interlocutory decree for a perpetual injunction based upon a final determination of the substantial property right in a patent cause. In the case under consideration the hearing in the circuit court upon the merits as to the validity and the infringement of the patent was full and complete, and the general property right was determined so far as it could be done by that court, and the perpetual injunction, the order to account, and the appointment of the special master were based upon such determination of the property right. The record before us is complete. Everything is here for our consideration which was before the court below. We must go to the full merits as shown by the record in order to determine whether the interlocutory decree for a perpetual injunction is founded in error, and if we determine the property right adversely to the complainant the injunction should be dissolved; and no sufficient reason has been suggested why the accounting—to which the complainant is not entitled, and which would be an invasion of a right, and therefore inequitable and improper under our view of the case—should proceed.

It is not necessary for purposes of analogy to enlarge upon the well-understood fundamental truth expressed in the constitutions, statutes, and decisions of the various States that the system of common law and equity jurisprudence of England prevail in this country so far as the same are not repugnant to our institutions, for the reason that rule 90 of the Supreme Court, (adopted by this court, rule 8,) regulating the practice of the courts of equity of the United States, provides in effect that in the absence of an express rule or decision the practice shall be regulated by the practice of the high court of chancery in England, so far as the same may be reasonably applied, not as positive rules, but as furnishing just analogies. We do not refer to this as furnishing an absolute rule for the determination of rights, but as indicating a recognition of the system of practice ordinarily controlling equity procedure in the Federal courts. It may still further be observed that as early as 1818 the Supreme Court, in determining a question of procedure, in *Robinson* v. *Campbell*, (3 Wheat., 222,) said:

> The court, therefore, think that, to effectuate the purposes of the legislature, the remedies in the courts of the United States are to be, at common law or in equity, * * * according to the principles of common law and equity as distinguished and defined in that country from which we derive our knowledge of those principles

And in 1851, in *Pennsylvania* v. *Bridge Co.*, (13 How., 518, 563,) it is said:

> The rules of the high court of chancery of England have been adopted by the courts of the United States. * * * The usages of the high court of chancery in England, whenever the jurisdiction is exercised, govern the proceedings. This may be said to be the common law of chancery, and since the organization of the Government it has been observed.

(See, also, Rev. Stats. U. S., sec. 913: *Vattier* v. *Hinde*, 7 Pet., 252, 274; *Bein* v. *Heath*, 12 How., 168, 178.) And to the same effect in the State courts. (*Newark & N. Y. R. Co.* v. *Mayor, etc.*, 23 N. J. Eq., 515, 517; *State* v. *Rollins*, 8 N. H., 550; *Pierce* v. *State*, 13 N. H., 536; *Connecticut River Lumber Co.* v. *Olcott Falls Co.*, 65 N. H., 290; 21 Atl. Rep., 1090; *Le Guen* v. *Gouverneur*, 1 Johns. Cas., 436, 508.)

In the case last referred to Chancellor Kent says, (page 508:)

> Our system of jurisprudence is borrowed from the English system, and in all its great outlines, as well as in its subordinate parts, is happily modeled after that admirable monument of the experience and wisdom of ages.

See, also, "Note by the Court" in *Thomson* v. *Wooster*, (114 U. S., 112; 5 Sup. Ct. Rep., 788.)

Of course it is understood that this adoption is subject to the limitation that it must be in keeping with the principles of our institutions and subject to the acts of Congress limiting or enlarging the same—as, for instance, the old statute limiting the right of appeal, contrary to the English system, to appeals from final decrees; but now that this limitation is removed and the right of appeal from interlocutory injunction orders and decrees has been created by statute, as in England, without any restriction as to the manner in which equity and justice shall be administered thereunder, it only remains to inquire what the chancery practice of England has been in this respect and whether the same may reasonably be applied as consistent with our institutions and as a matter of convenience and safety in equity procedure in this jurisdiction.

In England any person aggrieved by a decree or order of the court of chancery is entitled, as a matter of right, to appeal to the House of Lords, (2 Daniell Ch. Pr., 4th ed., 1471,) and in practice this right extends to interlocutory decrees, (*Id.*, 1492; *Forgay* v. *Conrad*, 6 How., 201, 205,) and later (14 and 15 Vict., c. 68, sec. 10) this right was extended to decisions, decrees, and orders of the court of appeals. Mr. Daniell, speaking of the right of appeal from interlocutory decrees, says, (page 1492, *Id.*:)

> Appeals from courts of equity by petition differ from appeals by writ of error from the judgments of the courts of law, which will only lie where the judgment is final. The reason for this distinction is stated to be that courts of equity often decide the merits of a case in intermediate orders, and the permitting of an appeal in the early stage of the proceedings frequently saves the expense of further prosecuting the suit.

(See, also, 2 Smith, Ch. Pr., 2d ed., p. 40; *McNeill* v. *Cahill*, 2 Bligh, N. S., 316.)

Indeed, it seems to have been the practice from an early period in the House of Lords to direct a final disposition of causes before it with a full record, upon appeal from interlocutory orders and decrees based upon a hearing upon the merits below, whenever it was found that there was no equity in the complainant's cause; and the action of the appellate court in this respect was not confined to causes in which it concurred with the chancellor from whom the appeal was taken, but extended to instances where the findings were reversed upon an examination of the record. (*Bouchier* v. *Taylor*, 4 Brown, Parl. Cas., 708, 1776; *Governors, etc.*, v. *Swan*, 5 Brown, Parl. Cas., 429, 1760; *Ellis* v. *Segrave*, 7 Brown, Parl. Cas. 331; *White* v. *Lightburne*, 4 Brown, Parl. Cas., 181; *Scriblehill* v. *Brett*, *Id.*, 144; *McCan* v. *O'Ferrall*, 8 Clark & F., 30; *Rous* v. *Barker*, 4 Brown, Parl. Cas., 660.) The case of *McCan* v. *O'Ferrall*, *supra*, was before the House of Lords in 1840, and, although in that case the matters involved were not finally disposed of by decree, the lord chancellor states the rule, with the reasons for it, (page 66,) saying:

> Now, my lords, the usual course of proceeding in this house, in arranging the minutes of the decree, has been to declare the principles upon which the decree is to be founded. * * * That, however, has been found to lead, sometimes, to repetition of appeals. * * * Where, therefore, it is possible, I think it more expedient, and more calculated to save expense to the parties

that this house, in making its order, should frame the decree in such a manner as to prevent the necessity of any further reference to the court below.

This practice is by no means new in the equity jurisprudence of our own country. In a very early case in New York involving interests of great magnitude, (*Le Guen* v. *Gouverneur*, 1 Johns. Cas., 436, 1800,) and at a period when Chancellor Kent was a member of the court of errors, the question was under consideration as to the measure of relief to be afforded upon an appeal from an interlocutory order directing the trial of an issue at law. The appellate court determined that the complainant had no equity, and after much argument and full consideration, which involved a review of the English cases and the practice of the House of Lords, proceeded to final judgment, and dismissed the bill. The question was one of new impression in the American courts, and three judges rendered opinions in the cause, Judge Kent, in the course of a luminous opinion, (page 508,) saying:

It is the settled rule of the House of Lords in England, upon appeals, always to give such a decree as the court below ought to have given. This is the great and leading maxim in their system of appellate jurisprudence, and instances are, accordingly, very frequent in which the lords, on appeals from interlocutory orders in chancery, have reversed the order, and decided fully on the merits.

Again, he says, (page 508:)

Their power on appeals is exercised with great latitude in dismissing the bill, or modeling the relief, or granting it conditionally, as may best answer the ends of justice and the exigencies of the case.

Again, (page 509:)

Possessing the authority to decide finally, I think we ought to exercise it in this instance. * * * All the proofs are before us. * * * The cause is as ripe here as it was in the court below, for ultimate decision; and, if we are persuaded in our own minds that the facts before us can never support the allegations of fraud, we ought to say so, and put an end to the contention.

And in the same line and to the same effect Judge Radcliff says, (page 499:)

I have also no doubt that this court may proceed further, if it appear that the merits are fully in its possession, and determine finally between the parties. That such is the power, and frequently the practice, of the House of Lords in England, is evident from the cases which have been cited. * * * On similar appeals, they affirm, reverse, or alter the order for an issue, and sometimes proceed to dismiss the bill, or otherwise decree on the merits. The power of this court is the same in this respect. I can see nothing in our Constitution or laws to restrain it * * * In this case the propriety of making a final decree arises out of the appeal itself, which brings before us the whole merits of the cause.

Again, (page 500:)

The power appears to me essential to a court of appeal in the last resort, and I have no doubt that it is vested here.

The authority last referred to is of unusual value, both by reason of its involving the first American discussion of the question and from the great learning of the court rendering the opinion, and this, together with the fact that a full report of the case (Johns. Cas., 1800) is not easily accessible, would seem to justify the somewhat extensive quotations. Five years later the same court, through Spencer, J., in *Bush* v. *Livingston*, (2 Caines Cas., 66,) in making a final decision of the cause, said, (page 85:)

There remains only one point to be considered; that is, whether the court will finally decide the cause. In the case of *Gouverneur & Kemble* v. *Le Guen*, this court, on an appeal from the order of the chancellor, directing an issue, finally decided the cause, and directed the complainant's bill to be dismissed. It did so on precedents from the proceedings of the House of Lords in England, on appeals from chancery, and because the whole merits of the case were before the court. When it is considered that there can be no further proofs in the cause, that the whole merits have been discussed and reviewed, that it will save litigation and expense, I am myself contented to be bound by the precedent which has been made. (See, also, *Beebe* v. *Bank*, 1 Johns., 529.)

In 1822 the doctrine of *Le Guen* v. *Gouverneur* was referred to with apparent approval in *Dale* v. *Roosevelt*, (6 Johns. Ch., 255, 257,) and, so far as known, the practice obtained in New York until the adoption of the Code; and the fact that a different practice has prevailed since the abridgment of the right of appeal, as said in *Newark & N. Y. R. Co.* v. *Mayor, etc*, (23 N. J. Eq., 519,) is aside from the purpose. In *Terhune* v. *Colton*, (12 N. J. Eq., 312,) although the precise question under consideration was not involved, Judge Elmer (page 318) speaks of an interlocutory order which involved the merits of the case; and in 1872 the precise questions which we are now considering came before the New Jersey Court of Errors and Appeals in the case of *Newark & N. Y. R. Co.* v. *Mayor, etc.*, (23 N. J. Eq., 515.)

The New Jersey statute provided that –

all persons aggrieved by any order or decree of the court of chancery may appeal from the same or any part thereof;

and the case last referred to involved both the right of appeal from an interlocutory order and the power of the court to conclude the cause upon its merits. These questions received careful consideration by the chief justice, who announced the opinion of the court, not only sustaining the right of appeal, but, after reviewing the English and New York cases, said, (page 521:)

In view of these authorities, I can entertain no uncertain opinion with regard to the power of this court to deal with the present case on its merits.

Again:

It seems to me that this court should pass upon the question as to the equity of the bill, etc.

Under the authorities and the equity practice to which we have referred, and upon principle, it seems to us clear that, while the appellate court is not bound by an inflexible rule so to do, it may in its discretion, and should when equity so requires, make full direction as to the manner in which the cause shall be disposed of below. No special or peculiar conditions have been suggested as existing in this case as a reason why the mandate should not be as broad as the decree in the circuit court; but, on the contrary, as it seems to us, there are strong equitable reasons why an accounting in a patent case, which is incident to and based upon a finding and a decree which upon the record appears to the appellate court to be erroneous, should not proceed; and it is our conclusion, as the full record is before us, upon appeal from an injunction granted by an interlocutory decree, after a full hearing and a finding which undertakes to finally dispose of the property right involved, that we should direct a final disposition of the cause in accordance with the view which we hold upon the substantial merits. It therefore follows that the findings of the circuit court are reversed, the decree for an injunction and for an accounting is vacated, and it is ordered that a mandate issue accordingly, and with further direction that the bill be dismissed.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 61.—No. 12. TUESDAY, DECEMBER 20, 1892. PRICE—$5 per year.

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Attorneys.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., December 14, 1892.

SIR: The Secretary of the Interior has ordered that Samuel S. Carson, Chesaning, Mich., be not recognized after this date as agent or attorney in the prosecution of any claim or other matter before this Department or any Bureau thereof.

Very respectfully,

E. M. DAWSON,
Chief Clerk.

The Commissioner of Patents.

Notice.

(ORDER No. 789.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., November 26, 1892.

It is hereby directed that in the printing of claims of applications for patents the punctuation of the claims as made by applicants be strictly followed, and that the punctuation of the specification made by applicants be not departed from except to cure a manifest absurdity.

W. E. SIMONDS,
Commissioner.

Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subclassified in the Scientific Library for convenient and ready reference.

World's Columbian Exposition.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., March 8, 1892.

To the Inventors and Manufacturers of the United States:

It is the intention of the Patent Office to make at the World's Columbian Exposition at Chicago in 1893 an exhibit which will show that great advance in the several arts which is due, in large measure, to the encouragement and support afforded by our patent system. This exhibit is to consist of models of patented inventions, which will be carefully selected, to show as far as is possible the inception of each art, the stages through which the art has advanced, and the final development reached at the present time. This display of typical inventions, embodied in concrete form and properly arranged, will, it is believed, constitute a grand historical exhibit of the progress of the useful arts and one which will be of great interest not only to inventors and manufacturers, but to the public generally.

The Office collection of models has been seriously impaired by fire, and is further incomplete by reason of the fact that models have not generally been required or received during the last ten years. The Office is not, therefore, in possession of the models of many valuable inventions which might properly be included in such an exhibit, and without which, indeed, the exhibit would be incomplete. The limited appropriation for this exhibit will not permit the Office to make such models. An urgent appeal is therefore made to all inventors and manufacturers to come to the assistance of the Office in this matter, either by loans of models already built or by the construction of such models not in the possession of the Office as should properly be placed in such a collection. Of course, where models are loaned to the Office all proper credit will be given both in labels and catalogues to the parties by whom the loans are made, and such disposition will be made of the models after the close of the exhibit as the owners shall direct. Many inventors and manufacturers have already indicated a willingness to co-operate with the Office in this matter, and it is confidently expected that such a response will be made to this general appeal as will assure the unparalleled success of this attempt to graphically and concretely show the development of American invention.

W. E. SIMONDS,
Commissioner.

Withdrawal of Cases from Issue.

Hereafter all amendments proposed to allowed applications which involve a withdrawal from issue, and all petitions and requests relating thereto, shall be filed with the docket clerk, Mr. J. M. Emory, and transmitted by him to the Primary Examiner for report. If the Examiner shall report favorably to the admission of such amendment, the matter will be laid before the Commissioner for immediate determination. If the Examiner shall report unfavorably, the case will be docketed and will be heard and decided by the Commissioner in regular course, unless good reasons shall appear for immediate action.

DISCLAIMER.

11,164, (Reissue.)—*Julian Kennedy*, Latrobe, and *Henry Aiken*, Pittsburg, Pa. IMPROVEMENT IN HYDRAULIC CRANES. Patent dated May 5, 1891. Disclaimer filed December 12, 1892, by the patentees.

Enter their disclaimer to that part of the specification which is printed on page 3, lines 47–58, and is in the following words, to wit:

"While we have described and illustrated our invention for use with a gripping device for gripping and raising ingots, we do not wish to limit ourselves thereto, because the bar 11 may be provided with a forked or spade end, upon which the burden may be placed and by which it may be deposited in the furnace upon suitable rests, which will permit the fork or spade to be withdrawn from or inserted under the burden. In such case the cylinder 26 and the parts operated by it would be dispensed with."

Issue of December 20, 1892.

Patents	360—No. 488,174 to No. 488,533, inclusive.
Designs	28—No. 22,059 to No. 22,086, inclusive.
Trade-Marks	49—No. 22,179 to No. 22,227, inclusive.
Labels	None.
Reissues	None.
Total issue	431

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	5		Nevada		
Arizona Territory			New Hampshire	5	
Arkansas	1		New Jersey	19	4
California	9	1	New Mexico Ter		
Colorado	7		New York	52	13
Connecticut	12	1	North Carolina	1	
Delaware			North Dakota	1	
District of Columbia			Ohio	22	3
Florida			Oregon		
Georgia	1		Pennsylvania	44	
Idaho			Rhode Island	4	3
Illinois	29	4	South Carolina	2	
Indian Territory			South Dakota	1	
Indiana	8	1	Tennessee	6	
Iowa	1		Texas	10	
Kansas	3		Utah Territory		
Kentucky	5		Vermont	1	
Louisiana	4		Virginia	3	
Maine			Washington	3	
Maryland	8	1	West Virginia	2	
Massachusetts	50	1	Wisconsin	8	7
Michigan	7		Wyoming		
Minnesota	8		U. S. Army		
Mississippi			U. S. Navy	1	
Missouri	5	2			
Montana	1		Total to citizens of the United States	354	43
Nebraska	5	1			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Mark and Labels
Argentine Republic			Netherlands		
Austria-Hungary			Newfoundland		
Belgium	2		New South Wales	1	
Brazil			New Zealand	1	
British Guiana			Norway		
Canada	5		Porto Rico		
Chile Republic of			Portugal		
Cuba	1		Russia		
Denmark			Scotland		
England	4	3	South Australia		
France	2		Spain		
Germany	10	4	Sweden		
Guatemala			Switzerland	1	
India			Victoria	1	
Hawaii			West Indies		
Ireland					
Italy			Total to citizens of foreign countries	28	7
Mexico					

APPLICATIONS UNDER EXAMINATION.

Condition at Close of Business December 13, 1892.

Division No.	Subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended	No. of applications awaiting action.
	Under one month in arrears.			
31	Gas, Painting, Leather, Tanning, Alcohol, Oils, Fats, and Glue, etc.	Nov. 16	Dec. 3	87
	Between one and two months in arrears.			
11	Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting.	Oct. 20	Dec. 6	209
14	Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, etc.	Oct. 15	Dec. 6	110
2	Farm Stock, Products, etc	Oct. 14	Nov. 30	224
8	Furniture, Toilet, Umbrellas and Canes, etc.	Oct. 15	Nov. 29	294
26	Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, etc.	Oct. 19	Nov. 26	153
16	Telegraphy, Telephony, Electric Lighting and Signaling.	Oct. 15	Nov. 26	205
10	Carriages and Wagons and Railway-Cars.	Oct. 17	Nov. 23	348
21	Textiles, etc	Oct. 15	Nov. 23	188
24	Sewing-Machines and Apparel	Oct. 14	Nov. 23	124
12	Mechanical Engineering, Stores-Service, etc.	Oct. 21	Nov. 21	215
30	Lamps, Gas-Fittings, Type-Writers, Matrix-Making Machines.	Oct. 14	Nov. 12	230
9	Hydraulics, Fire-Extinguishers, etc.	Oct. 14	Oct. 25	356
27	Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	Oct. 17	Oct. 24	240
15	Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc.	Oct. 14	Oct. 21	264
5	Fine Arts, Stationery, Book-Binding, Music, etc.	Oct. 22	Oct. 19	216
17	Paper-Manufactures and Printing.	Oct. 13	Oct. 19	240
6	Chemistry, Medicines, Fertilisers, Preserving, Photography, Sugar and Salt, etc.	Oct. 18	Oct. 18	255
20	Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc.	Oct. 13	Oct. 15	288
1	Tillage and Fences	Oct. 13	Oct. 15	292
	Between two and three months in arrears.			
32	Advertising, Baggage, Packing and Storing Vessels, etc.	Sept. 21	Nov. 25	289
18	Steam-Engineering, etc	Oct. 12	Nov. 17	119
7	Harvesters, Games and Toys	Sept. 15	Nov. 15	504
22	Fire-Arms, Navigation, Signals, etc.	Sept. 19	Nov. 14	258
28	Instruments of Precision, Acoustics, Optics, etc.	Sept. 21	Nov. 11	231
19	Stoves and Furnaces	Oct. 7	Oct. 24	362
3	Metallurgy, Metal Founding, Forging, Rolling, Coating, Annealing and Tempering, etc.	Sept. 16	Oct. 13	298
4	Civil Engineering, etc	Oct. 11	Oct. 3	381
23	Pneumatics, Refrigeration, Air and Gas Engines, etc.	Sept. 17	Sept. 24	372
	Between three and four months in arrears.			
13	Metal-Working, Arms and Projectiles, etc.	Aug. 17	Nov. 15	295
	Between four and five months in arrears.			
29	Wood-Working Machines, Carpentry, Coopering and Roofing, etc.	Aug. 1	Nov. 19	388
	Between six and seven months in arrears.			
25	Electricity, Generation, Distribution, etc.	May 14	Oct. 3	541
	Total number of applications awaiting action			8,456
	Under one month in arrears.			
	Designs	Dec. 5	Dec. 5	39
	Trade-Marks	Dec. 9	Dec. 10	12

PATENTS

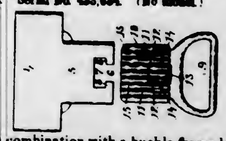
GRANTED DECEMBER 20, 1892.

488,174. BUCKLE. GEORGE R. ADAMS, Providence, R. I. Filed May 20, 1892. Serial No. 433,682. (No model.)

Claim.—1. In a clasp or buckle, the combination with an oblong frame, a back-plate having serrated edges secured to said frame by bent-arms, and a bridge-wire secured at the ends to said frame, extending on a plane parallel with but slightly removed from that of the frame, of a clamping-device having a concaved portion adapted to bear against said bridge-wire, as described.

2. The combination in a buckle, with the frame 5 provided with the bridge-wire 6, and the back-plate 7 having the serrated edges 8, of the clamping-device having the clamping-edge 10, the concaved portion 11 and the end 12, as and for the purpose described.

488,175. BUCKLE. GEORGE R. ADAMS, Providence, R. I. Filed May 20, 1892. Serial No. 433,684. (No model.)



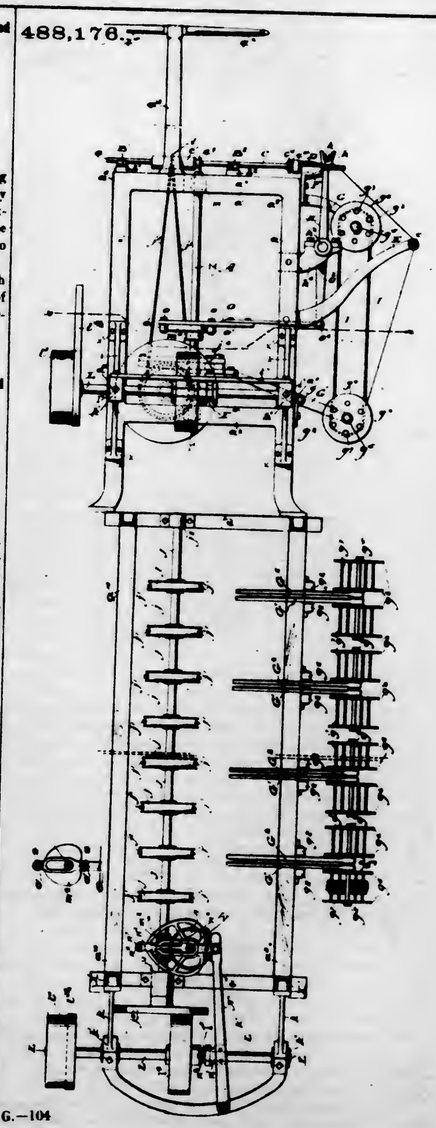
Claim.—The combination with a buckle-frame having a depending member with bent-over sides and provided with the slot 7 having an entrance 6 and the shoulders 8, of a cast-off, consisting of a loop 9, a corrugated-plate 10 extending therefrom, a corrugated spring-tongue 11 stamped out from said plate and bent up from the plane of said plate, and a thumb-piece 13 stamped from the lower portion of the tongue, as described.

488,176. SHUTTLE-BOBBIN WINDER. ALONZO W. ALLEN, Philadelphia, Pa. Filed Dec. 21, 1891. Serial No. 415,892. (No model.)

Brief.—The object is to secure a faster rotation of the bobbin-spindle when the yarn is being wound on the apex of the bobbin. This is accomplished by moving a pulley on the power-shaft toward and from the center of a disk on the spindle-driving shaft while the thread-guide is moving toward and from the apex of the bobbin. The specific mechanism is set forth in the claims.

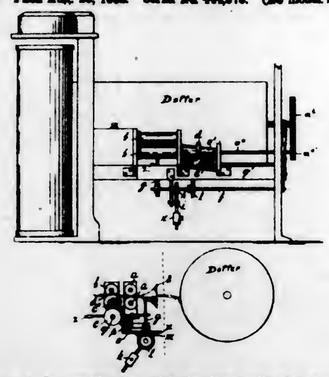
Claim.—1. In combination the bracket K, the shaft L, journaled thereon, the pulleys P^3 and P^4 carried by said shaft, the counter-shaft J, the disk j^4 secured to said counter-shaft, and being in frictional contact with the pulley P^3, the worm z on said counter-shaft, the vertical shaft M, the worm-wheel m' on said shaft, said worm-wheel meshing with said worm, the cams m^3 and m^4 on said shaft M; the cam-levers n^3 and O, lever n^4 being in engagement with cam m^3; the rock-lever N connected to lever n^3 at its inner end and at its outer end fulcrumed on bracket K and also connected with pulley P^3 in such a way that said pulley P^3 can revolve freely with shaft L; cam-lever O engaging with cam m^4 on shaft N; rock shaft A^3 connected to lever O in such a manner that said rock-shaft will rock through the motion imparted to it by the action of cam m^4; the whole being so arranged and operating in such a manner that the pulley P^3 can move toward and away from the center of the disk j^4 as the shaft L revolves.

2. In a thread-winding machine, the combination of the bracket K, the shaft L journaled thereon in such a manner that said shaft can



have a parallel or sidewise movement in its bearings; the cushions l' on each side of shaft L in its bearings; the pulleys l^5 and l^6 carried by shaft L, pulley l^6 having its periphery covered with anti-friction material; the counter-shaft J, the disk j^5 secured to said counter-shaft, having its face covered with anti-friction material and being in frictional contact with the pulley l^6; the worm z on said counter-shaft; the vertical shaft M, the worm-wheel m' on said shaft, said worm-wheel meshing with said worm, the cams m^3 and m^4 on said shaft M; the cam-levers n^2 and O, lever n^2 being in engagement with cam m^3, the rock-lever N connected to lever n^3 at its inner end and at its outer end fulcrumed on bracket K, and also connected with pulley l^5 in such a way that the shaft L and pulley l^5 can revolve freely at the same time that said fulcrumed lever pushes said shaft L in a parallel direction through the action of the cam m^3 on shaft M, moving the pulley l^5 toward and away from the center of the disk j^5; the cam-lever O engaging with cam m^4 on shaft M; the rock-shaft h^3 connected to lever O in such a manner that said rock-shaft will rock through the motion imparted to it by the action of cam m^4; all substantially as and for the purpose specified.

488,177. CARDING-ENGINE. GEORGE A. AYER, New Bedford, Mass. Filed Aug. 20, 1892. Serial No. 444,273. (No model.)



Claim.—1. In combination with the front rolls of a carding engine; a pair of drawing rolls arranged in front of said front rolls; a pair of conical rolls, the upper one of which is mounted on the extended shaft of the lower drawing roll; an endless belt, gripped between said conical rolls; a rack o, sliding in bearings, and having a loop embracing said endless belt; a trumpet mounted on a shaft and behind said front rolls, said shaft being provided with the gear h, taking into the pivoted gear i, and said gear i, having an arm provided with the adjustable weight k, the gear l, taking into the gear m, and said gear m, provided with the gear n, adapted to take into the rack o, whereby, when the trumpet is moved toward the front rolls, or allowed to recede from them, by the sliver, as it passes from the doffer, the speed of the drawing rolls is increased or diminished, as and for the purpose set forth.

2. In combination with the front rolls of a carding engine; a trumpet mounted behind said rolls; a pair of drawing rolls, arranged in front of said front rolls; mechanism intermediate said trumpet and drawing rolls, whereby the speed of said drawing rolls is regulated by the forward or backward movement of said trumpet; and mechanism intermediate said trumpet and the starting and stopping lever of said carding engine, whereby the operation of carding is stopped, when the trumpet has reached its limit of motion forward or backward; as and for the purpose described.

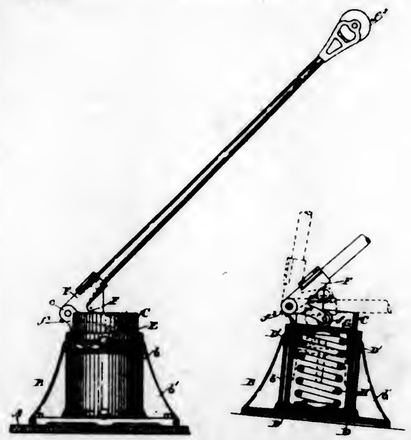
488,178. GARMENT-FASTENER. PEARSON B. BENNETT, Philadelphia, Pa. Filed Dec. 24, 1891. Serial No. 416,042. (No model.)

Claim.—1. A garment fastener formed of wire having a member constructed of an elastic shank with a widened portion and with attaching eyes, and coils at the front end, said coils being outside of the shank, substantially as described.

2. A garment fastener formed of wire having a member constructed with an elastic shank, having coils at the front end outside of the same, and a cross bar connecting said coils, said shank having a widened central portion substantially as described.

3. A garment fastener having the eye member thereof formed of bent wire, constituting a two-part elastic shank provided with securing eyes at one end, and a cross bar near the other end in close contact with said shank; and a hook member with a cross head wider than the transverse space of the shank of the eye member at the cross bar thereof, substantially as described.

488,179. TROLLEY-STAND FOR ELECTRIC CARS. HOWARD M. BENTLEY, Boston, Mass. Filed July 20, 1892. Serial No. 440,649. (No model.)

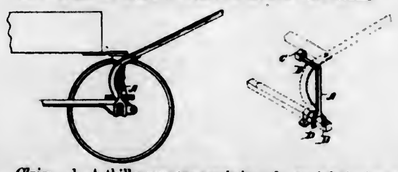


Claim.—1. A trolley stand comprising an upright cylinder, a drum rotatable therein, and adapted to carry a pivoted trolley pole, and a spring plunger sliding in the drum to support said pole, substantially as described.

2. A trolley stand comprising an upright cylinder, a drum rotatable therein, a spring-plunger sliding in the drum, and a trolley pole hinged to the drum, and having an arm bearing upon said plunger, substantially as described.

3. A trolley stand comprising an upright cylinder, a drum rotatable therein, a spring plunger in said drum, and a trolley pole hinged to ears on said drum and having a lateral arm carrying a roller which rests upon the plunger, substantially as set forth.

488,180. THILL-SUPPORT. WILLIAM M. BOEHMAU, Columbia, Tenn. Filed Mar. 16, 1892. Serial No. 426,117. (No model.)



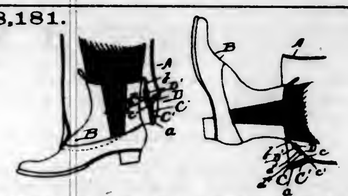
Claim.—1. A thill supporter consisting of a straight body A having one end formed to removably engage the axle, and its other end B bent at right angles to underlie and uphold the shaft, and the extremity of part B again turned upward at right angles as at C, all constructed and arranged to operate substantially as and for the purpose specified.

2. The herein described thill supporter consisting of the straight body A having bifurcations D at one end and adapted to engage the shaft, and its other end turned at right angles to underlie the shaft, and the extremity of the end being turned upward again at right angles, substantially as and for the purpose described.

488,181. TROUSERS-SUPPORTER. SYLVESTER L. CARR, Chicago, Ill. Filed Mar. 21, 1892. Serial No. 425,667. (No model.)

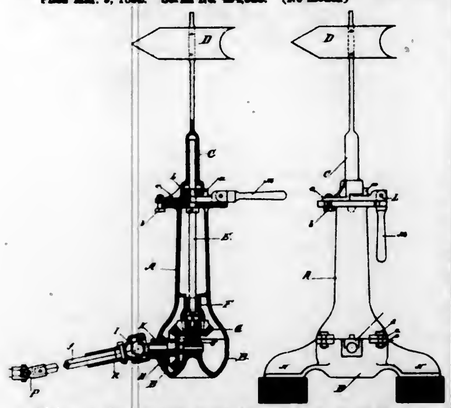
Claim.—The shoe attachment trousers supporter consisting in the combination with clamp plate D having teeth d and pivot ears d', of lever clamp plate D' having teeth d and pivot ears d^3, a pivot pin and a spring surrounding said pivot pin and a hook C hinged to the back plate D having its open end or lip C' on the opposite side from said

488,181.



lever arm D, said hook C being made of flat sheet metal and having its open end or lip C' fitting close to the back plate of said hook, and adapted to clamp and hold the edge of the pants leg and furnished with a bend c', substantially as specified.

488,182. SWITCH-STAND. JOHN CHRISTIANSEN, Quincy, Mass. Filed Mar. 9, 1892. Serial No. 424,235. (No model.)



Claim.—1. In a switch stand for operating vertically moving switch rails, in combination with the crank shaft of the switch, the flexible rotating connecting bar between the switch-stand and the crank shaft, enabling the rotating of the crank shaft properly by the switch-stand, even if placed out of alignment with said crank-shaft, substantially as described.

2. A switch stand for operating vertically moving switch rails, in combination with an intermediate operating bar (f), consisting of a piece of ordinary merchant bar iron, provided at each end with a universal joint, substantially as described.

3. In a switch stand for operating vertically moving switch-rails, the combination of a vertical shaft geared to a horizontal shaft at the bottom of the stand, with a universal joint at the outer end of said horizontal shaft substantially for the purpose specified.

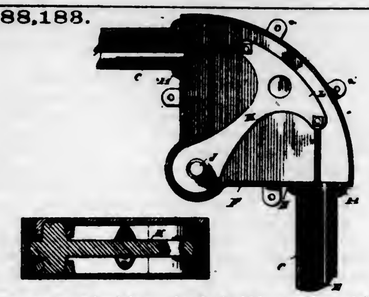
4. In a switch stand for operating vertically moving switch rails, the combination of a hollow base B, having a vertical and a horizontal bevel gear, journaled in same in such a manner, that the cap of the inside journal of the shaft for the vertical gear, forms the pivot for the horizontal gear, with a detachable column A., the dividing line being even with the top of outside journal box (K), thus holding same in place when connected, all substantially as described.

5. In a switch stand for operating vertically moving switch rails, the combination of the target rod C terminating at its lower end in a bell shaped enlargement and having arm c and bolt b., with the operating shaft E. containing dog L having rib a engaging into a slot in the bell-shaped enlargment substantially as and for the purpose specified.

488,183. PUMP ATTACHMENT. ALBERT R. CLANCY, Olivia, Minn. Filed Apr. 22, 1892. Serial No. 430,343. (No model.)

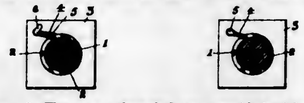
Claim.—In a pump attachment, the combination of the quadrant shaped elbow casing comprising a hollow box-casting and a cap removably inclosing the casting, said elbow casing having opposite threaded openings at its end corners, and inwardly projecting integral circular bearing flanges at the center corner of the quadrant, an oscillating T-shaped lever formed in one piece and having an arc-head and integral journal lugs projecting from opposite sides and at the end of the tail of the lever, said lugs being received by the circular bearing flanges of the casing clamped thereover to hold the lever in position, conducting pipe sections threaded into the openings of said casing, and the pump rod sections working through said pipe sections and pivotally connected at their ends within the elbow cas-

488,183.



ing to opposite ends of the arc head of said lever, substantially as set forth.

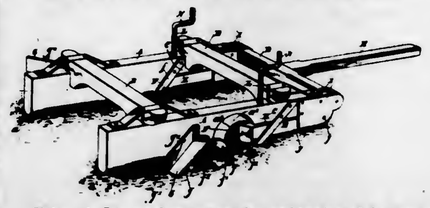
488,184. NUT-LOCK. STEPHEN G. COWAN, Richmond, Va. Filed June 26, 1891. Renewed May 21, 1892. Serial No. 433,795. (No model.)



Claim.—1. The screw threaded nut provided with a recess extending lengthwise through the same and communicating with its screw threaded hole, and a spring catch held in the recess by friction and extending into said hole, and adapted to be driven tightly into either end of the recess and provided with a head projecting out of the recess, substantially as set forth.

2. The screw threaded nut provided with a recess having parallel side walls extending lengthwise through the same, and communicating with its screw threaded hole, and a straight spring catch held in the recess by friction and extending into said hole, and adapted to be driven tightly into either end of the recess, in combination with a screw threaded bolt, having grooves cut transversely of its screw threads, substantially as set forth.

488,185. ROAD-RUT CUTTER. ORRIN CULVER, Grand Rapids, Minn. Filed Jan. 9, 1892. Serial No. 417,562. (No model.)



Claim.—1. In a road rut cutter, the combination of the runners having forwardly extending ends, curved rut cutting knives secured to and projecting beyond the front ends of said runners, advance cutting knives secured to the outer sides of the forwardly extending ends in advance of said rut cutting knives, mold boards secured at an angle to the outer faces of the runners in rear of the front ends thereof, and adjustable gage runners located directly in front of the rut cutting knives at one side of the advance knives, substantially as set forth.

2. In a road rut cutter, opposite parallel runners having forwardly extending ends, curved rut-cutting knives secured to and projecting beyond the front ends of said runners, gage runners or shoes pivoted to the front ends of said forwardly extending runner ends, and means for adjusting said pivoted gage runners or shoes, substantially as set forth.

3. In a road rut cutter, opposite parallel runners having forwardly extending ends, curved rut cutting knives secured to and projecting beyond the front ends of said runners, advance cutting knives secured to the other side of the forwardly extending ends in advance of said rut cutting knives, mold boards in rear of the front ends of said runners, gage runners or shoes pivoted beneath and to said forwardly extending ends, and adjusting crank screws working through said extending ends and upon the top edges of said gage runners there-beneath, substantially as set forth.

4. In a road rut cutter, the combination with opposite parallel runners, having outer beveled concaved ends, of rut cutting knives secured to said beveled ends, the same comprising the straight forwardly and upwardly inclined cutting sides or edges secured to the

inner faces of the runners and projecting beyond the inner front edges thereof, and the semi-circular groove or rut cutting portions fitting under and projecting beyond the bottom front ends of said runners, substantially as set forth.

5. In a road rut cutter, the combination with opposite parallel runners, of curved rut cutting knives secured to and projecting beyond the front ends of said runners, and mold boards secured at a rearwardly and outwardly extending angle to the outer faces of said runners and comprising forwardly and downwardly inclined ledges, to direct the material to the ground and straight back walls arising from the rear edges of said downwardly inclined ledges, to direct the cut material away from the ruts substantially as set forth.

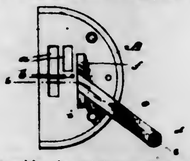
6. In a road rut cutter, the combination with opposite parallel runners having forwardly extending ends, of rut cutting knives secured to the front ends of said runners and having straight forwardly inclined cutting edges secured to the inner faces of the runners and semi-circular groove or rut cutting portions projecting from under the bottom front ends of said runners, mold boards in rear of said rut cutting knives, advance cutting knives secured to the outer sides of the runners in advance of the rut cutting knives and parallel with and at the same angle to the straight cut sides or edges thereof, pivoted gage runners or shoes secured beneath said forwardly extending ends, and means for adjusting said runners or shoes, substantially as set forth.

488,186. SEWING-MACHINE GUIDE. GEORGE H. CURTIS, New York, N. Y., assignor to The Singer Manufacturing Company of New Jersey. Filed Jan. 29, 1892. Serial No. 419,661. (No model.)

Claim.—1. A sewing machine throat plate provided with a groove and with a longitudinal, vertically yielding, elastic guiding rib partly housed in said groove, said rib being free at one end and being secured at its other end to said plate.

2. The combination with the throat-plate A provided with the groove *d* and with feed openings *a* and needle openings *b*, of the vertically yielding elastic guide or guiding rib *c*, partly housed in said groove and secured at one end only to said throat-plate.

488,187. SEWING-MACHINE GUIDE. GEORGE H. CURTIS, New York, N. Y., assignor to The Singer Manufacturing Company of New Jersey. Filed July 9, 1892. Serial No. 439,449. (No model.)



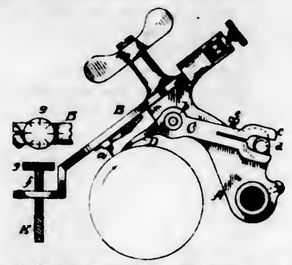
Claim.—1. The combination with a sewing machine throat plate provided with an opening or recess, and with a groove extending therefrom, of a guide extending into the said opening or recess, a spring arm by which the said guide is carried and which is arranged above the said groove so that it will be depressed therein when pressure is applied to the upper surface of the guide or to the said spring arm.

2. A sewing machine throat or work plate A provided with the rigid arm *e* and with the opening *g* and the recess or groove *h* extending from the said recess or opening *g*, combined with the spring-arm *e* attached at its outer end to the said arm *e* and extending partly above said groove *h*, and the guide *f* carried by the said arm and extending into the said recess or opening *g*.

488,188. HELMET ATTACHMENT. FRANCIS E. DRAKE, Columbus, Ohio. Filed Sept. 6, 1892. Serial No. 445,230. (No model.)

Claim.—In combination, a ventilating grommet consisting of a cup-like structure open at its bottom, the interior spider frame or bridge having a socket piece provided with *J*-shaped spiral slits, an ornament having a shank provided with pins to engage the slits, and a spring arranged between the bottom of the cup-like structure and the bridge and adapted to act against the shank to hold the pins in the upwardly turned portion at the lower end of the slits, substantially as shown and described.

488,189. PHONOGRAPH. THOMAS A. EDISON, Llewellyn Park, N. J., assignor to the Edison Phonograph Company, of New Jersey. Filed May 29, 1888. Serial No. 275,441. (No model.)



Claim.—1. In a phonograph, the combination of a recorder and a cutting tool mounted upon the phonograph, with their points in close proximity and having common adjusting means for adjusting their position together and practically to the same extent with relation to the surface of the phonogram blank, substantially as set forth.

2. In a phonograph, the combination of a recorder and a cutting tool having their points in close proximity and having a common means for adjusting them together and practically to the same extent with relation to the surface of the phonogram blank, and adjusting means for varying the relative position of the recording point and the cutting tool, substantially as set forth.

3. In a phonograph, the combination with the rocking holding arm, of a recorder mounted thereon and a cutting tool carried by such rocking holding arm and having its point in such close proximity to the recording point, as to be at substantially the same radial distance from the pivot of said arm, substantially as set forth.

4. In a phonograph, the combination with the rocking holding arm, of a recorder and cutting tool carried thereby and having their points in such close proximity, as to have substantially the same radial distance from the pivot of said arm the guide rest and the adjusting screw riding on such guide rest, substantially as set forth.

5. In a phonograph, the combination with the rocking holding arm, of a lever pivoted thereon carrying a cutting tool at its forward end and having a forked shank embracing a cam, by the turning of which the position of the cutting tool is adjusted, substantially as set forth.

488,190. PHONOGRAPH-REPRODUCER. THOMAS A. EDISON, Llewellyn Park, N. J., assignor to the Edison Phonograph Company, of New Jersey. Filed June 7, 1888. Serial No. 276,363. (No model.)

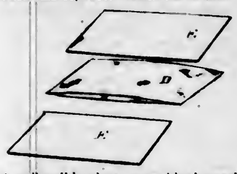
Claim.—1. The combination, in a phonograph reproducer, of a diaphragm composed of a fabric filled with a hardening material, and a reproducing point operatively connected thereto, substantially as set forth.

2. The combination, in a phonograph reproducer, of a diaphragm composed of a stretched fabric such as bolting-cloth filled with shellac or varnish, and a reproducing point operatively connected to said diaphragm, substantially as set forth.

3. In a phonograph reproducer, the combination with the diaphragm and reproducing point, of a solid block of gum rubber connecting such diaphragm and point, substantially as set forth.

4. In a phonograph reproducer, the combination with the diaphragm and reproducing point having a spring tension away from such diaphragm, of a solid block of gum rubber connecting such diaphragm and point, substantially as set forth.

488,191. PHONOGRAM-BLANK. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Jan. 19, 1889. Serial No. 296,876. (No model.)



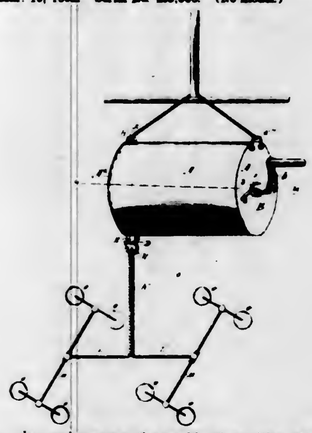
Claim.—1. A collapsible phonogram blank consisting of a cylinder of flexible material with separable sheets of flexible wax or wax like material placed thereon, substantially as set forth.

2. A composite phonogram blank, consisting of two or more separately removable layers of recording material, each layer being of such thickness that a record impressed on one layer will not be transmitted to a succeeding layer substantially as set forth.

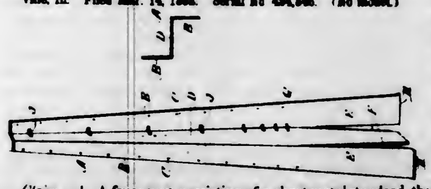
3. A composite phonogram blank, consisting of a cylinder of two or more separately removable layers of recording material, each layer being of such thickness that a record impressed on one layer will not be transmitted to a succeeding layer substantially as set forth.

4. A phonogram blank having in combination super-imposed separable layers of flexible wax or wax like material, substantially as set forth.

488,192. SPRING-MOTOR. JAMES J. FAULKNER, Memphis, Tenn. Filed Mar. 19, 1892. Serial No. 425,600. (No model.)



Claim.—In a spring motor, the combination, with a winding shaft, journaled in the ends of a suitable casing and provided with a crank and locking mechanism at one end, a spider provided with a slotted elongated hub secured to said shaft, and a series of spiders provided with slotted elongated hubs loosely mounted on said shaft, of a series of coil-springs attached to the arms and hubs of the spiders, a driving wheel mounted on said shaft engaging with projecting lugs on the next adjacent spider and gearing with a pinion mounted on the power shaft, and a locking device for controlling said power shaft, substantially as described.

488,193. METALLIC FENCE-POST. HERMANN FISCHER, Prairieville, Ill. Filed Mar. 14, 1892. Serial No. 424,846. (No model.)

Claim.—1. A fence post consisting of a sheet metal standard, the edges of which are bent in opposite directions to form parallel wings, said standard being provided with a series of transverse slots at one of its angles, each of said slots extending into the main portion and into one of the wings and each wing being provided with a series of perforations to receive nails for securing boards thereto, substantially as set forth.

2. A fence post, consisting of a standard formed of a flat sheet of metal having longitudinal wings bent in opposite directions from its edges, the lower end of each of said wings being separated from the standard and said wings lying in substantially parallel planes throughout their whole length, substantially as set forth.

3. A fence post consisting of a standard formed of a flat sheet of metal having longitudinal wings bent in opposite directions from its edges, the lower end of each of said wings being separated from the standard and having an outwardly projecting head formed at its end, and said wings lying in substantially parallel planes throughout their whole length, substantially as set forth

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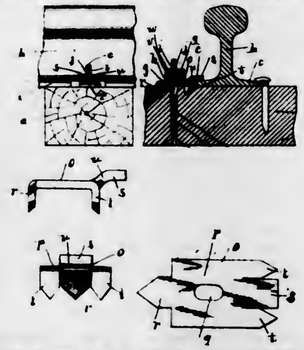
488,194. RUBBER-OVERSHOE RETAINER. MELVIN T. FREESE, Lincoln, Nebr. Filed Sept. 16, 1891. Serial No. 405,934. (No model.)

Claim.—The combination with an overshoe, of the frame herein-described having corresponding vertical spring arms provided with lower apertured flanged ends, holding screws or their equivalents passed through said flanged ends, a curved band connecting said spring arms at about their centers, and an upper curved or right angular transverse portion extending from and connecting the upper ends of said spring arms at approximately right angles thereto, and projecting above the heel part of the shoe all of said parts being formed of one piece of metal, substantially as set forth.

488,195. RAILWAY-RAIL FASTENING. WILLIAM GOLDIE, West Bay City, Mich. Filed Dec. 21, 1891. Serial No. 415,800. (No model.)



Claim.—1. A blank for the manufacture of a rail road brace, consisting of a plate of metal having a body portion *p*, provided with an elongated longitudinal opening *q*, and having the tongue portion *r*, projecting from one end and provided with a V, point and having extended from its opposite edge the lateral tongues *t*, provided with V shaped points and a centrally located tongue *s*, substantially as and for the purpose set forth.

2. A brace for a rail road rail consisting of the body portion *p*, having an elongated centrally located opening *q*, the downwardly turned tongue *r*, upon the rear edge of the body portion, and having on the opposite edge of the body an upwardly bent and forwardly extended central tongue *s*, provided with a shoulder *u*, and with the downwardly turned tongue portions *t*, on the lateral sides of the said tongue *s*, substantially as and for the purpose set forth.

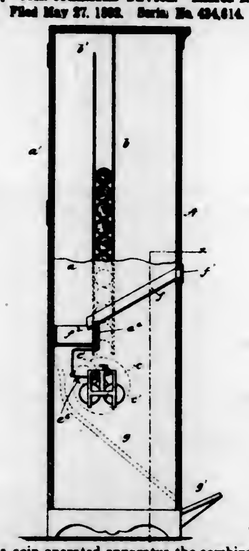
3. The combination of a rail-road rail and the supporting tie beneath the rail, provided with an upwardly projecting fixed stud having a screw thread, with a clamping device, having an elongated opening passed over said stud, and having a portion reaching over the rail flange, and downwardly turned portions driven into the tie, and a nut upon the stud above the clamping device, substantially as set forth.

4. The combination with a rail way rail and the supporting tie provided with an upwardly projecting threaded stud in proximity to the rail, of a clamping device provided with an elongated opening passed over the said stud, and with its inner and outer ends provided with downwardly turned tongue portions driven into the tie, and hav-

ing a portion of its inner end reaching over the rail flange, and a nut upon the upper end of the stud, substantially as set forth.

5. The combination with a rail way tie and the rail, of the clamping device having a body portion for resting on the tie surface and provided with an elongated opening and having its outer end portion turned downwardly and entering the tie, and having a portion of its front end reaching over and provided with a shoulder against the edge of the rail flange the threaded stud permanently secured to the tie and projecting through the said elongated opening, and provided with a threaded nut for holding the said clamping device upon the tie, substantially as set forth.

488,196. COIN-OPERATED DEVICE. MILTON R. GOODKIND, New York, N. Y. Filed May 27, 1892. Serial No. 434,614. (No model.)



Claim.—In a coin operated apparatus, the combination of a vertical reservoir provided with an opening *b'* at its upper end, a roller *c* containing longitudinal pockets, located at the lower end of the reservoir, a notched wheel connected to said roller, a motor geared to the roller, a three armed lever, one of the arms of which is adapted to engage the notches in said wheel, another acting as a detent for the motor, and the third connected with a trip rod, said trip rod extending through the bottom of a coin chute, and the coin chute constructed to allow the coin to pass over the end of the rod, substantially as described.

488,197. BELT-TIGHTENER. EBBERT HAGENEY, South Evanston, Ill., assignor to the Benjamin Machine Company, of Illinois. Filed Jan. 6, 1892. Serial No. 417,290. (No model.)

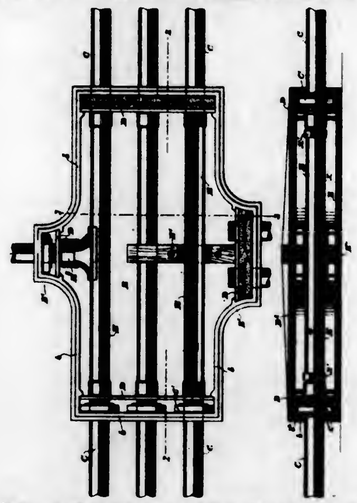
Claim.—1. The combination of a driving-pulley and driven pulley, a belt connecting them, a swing-frame supporting one of said pulleys, a shaft concentric with the pivot of said swing-frame, and power transmitting connections such as gears between said shaft and the pulley supported by said swing-frame, and means for shifting said frame, substantially as described.

2. The combination of a driving-pulley, a driven pulley, a belt connecting them, a swinging-frame supporting one of said pulleys, a shaft concentric with the pivot of said swing-frame, power transmitting connections such as gears between said shaft and the pulley supported in said frame, a hand-lever held in place by a notched quadrant from the connecting-rod of the hand-lever to said swing-frame, substantially as described.

3. The combination of a shaft and the gear-wheel thereon, a bracket supporting said shaft and having journals formed upon it concentric with said shaft, a swing-frame carried by said journals, a shaft supported in the outer extremity of said swing-frame and having on one end a pinion meshing with said gear and having at the other end a pulley, a belt connecting said pulley to a second pulley, and a device for shifting said swing-frame, substantially as described.

4. The combination of the driving pulley, tight and loose pulleys driven therefrom, a belt connecting them, a swing-frame supporting said driven pulleys, a shaft concentric with the pivot of said swing-frame, and power transmitting connections such as gears between said shaft and the pulley supported by said swing-frame, and means for shifting said frame, substantially as described.

488,198. ELECTRICAL DISTRIBUTION-BOX. WILLIAM H. HART, Brooklyn, N. Y. Filed Mar. 23, 1890. Serial No. 344,912. (No model.)



Claim.—1. The combination, substantially as set forth, of the box having double walls with a space between them and co-incident apertures in both walls below the edge of the box, the ducts or pipes passing through the external wall, jam-nuts or devices for securing the pipes, and sealing material surrounding the nuts and filling the space between the walls.

2. The combination, of the box having double walls with a space between them and co-incident apertures in both walls below the edge of the box, the pipes passing through both walls, pipe securing devices, and sealing material in the space between the two walls.

3. The combination, substantially as set forth, of the box having double walls with a space between them and co-incident apertures in the walls below the edges of the box, the pipes leading into the box, and sealing material between the walls.

4. The combination, substantially as set forth, of the box, the ducts or pipes leading thereinto, and the longitudinally divided removable bridging pipe connecting opposite ducts.

5. The combination, substantially as set forth, of the box, the ducts leading thereinto, the sectional removable bridging pipe connecting opposite ducts and the sectional supporting bridges on which the sectional pipes rest.

6. The combination, substantially as set forth, of the box, the ducts leading thereinto, and the longitudinally and transversely divided removable sectional bridging pipes connecting opposite ducts.

7. The combination of the box, the ducts leading thereinto, the sectional removable bridge pipe having a lateral tubular projection and connecting opposite ducts and the lateral outlets or service ducts leading from the box.

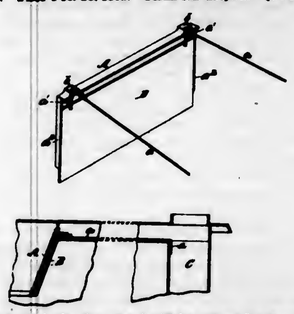
8. The combination, substantially as set forth, of the box, the ducts inserted therein being screw-threaded on their internally projecting ends, jam nuts thereon, partitions through which the inner ends of the ducts pass, water repelling material filling the space between the box wall and the partitions, sectional bridging pipes connecting corresponding terminals of opposite ducts, and horizontally divided intermediate supports or bridge pieces holding the bridge pipes in position.

9. The combination, substantially as set forth, of the box, the screw ended ducts extending therein, to the jam-nuts, the longitudinally divided bridge pipes connecting the terminals of opposite ducts, and the lateral tubular projections connecting the bridge pieces directly with the lateral ducts.

10. The combination, substantially as set forth, of the distribution box, its bead or flange, the covering box, its bead or flange, the internal lid, its water repelling coating, and the external lid or cover flush with the top of the box.

11. The combination, substantially as set forth, of the box, its internal lid flush with the shoulder thereon, the locking bar, the exterior cover, and the interposed moisture repelling coating applied between the two lids to prevent freezing and to repel moisture.

488,199. FIREBACK FOR STOVES. JAMES HATFIELD, Cincinnati, Ohio. Filed Feb. 23, 1892. Serial No. 422,949. (No model.)



Claim.—1. A fireback secured within a stove by means of a wire or rod connected to said fireback, the opposite end of said wire being locked or anchored within the flue-opening, substantially as set forth.

2. The combination of firebacks A and B, and wires *a*, the latter being connected at one end to fireback A, the opposite end of said wires being bent down and locked within the flues C, as set forth.

3. The fireback A having the raised portions *b* on its top flanged portion, with an opening therein between said raised portions, in combination with wires *a* secured at one end within said openings, the other end of said wires being locked within the flue-openings, substantially as specified.

4. As a new article of manufacture, a fireback having an opening in its top flanged portion, said fireback being adapted to be secured within a stove in the manner and for the purposes set forth.

5. Fireback A having openings in its top flanged portion, in combination with auxiliary fireback D, the latter being suitably connected to the former, said fireback A being secured to place by means of wires *a* locked within the flue-openings of the stove, substantially as specified.

488,200. ELEVATED RAILWAY. ARTHUR B. HOTCHKISS, Cheshire, Conn. Filed Nov. 28, 1892. Serial No. 453,114. (No model.)

Claim.—1. The combination with a single supported rail, of a vehicle provided with a frame depending below and on both sides of said rail and having a saddle located above and treadles below said rail and brake mechanism connected with said vehicle, substantially as and for the purposes described.

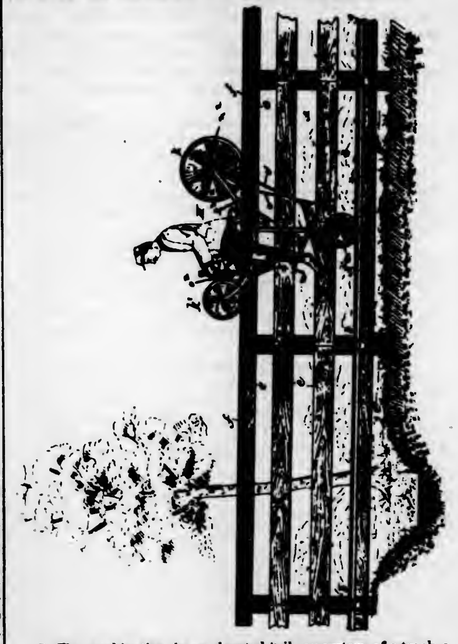
2. The combination with a supported track, of a vehicle having a seat or saddle arranged and adapted to carry the rider astride the track, treadles located below the track and brake mechanism connected with the vehicle, substantially as and for the purposes described.

3. The combination with an elevated structure provided with a single rail, of a vehicle provided with a saddle or seat arranged and adapted to carry the rider astride said structure and treadles located below and on opposite sides thereof and adapted to be operated by the feet of the rider, substantially as and for the purposes described.

4. The combination with an elevated supporting structure provided with a single rail, of a vehicle provided with a saddle or seat arranged and adapted to carry the rider astride said structure and with treadles located below and on opposite sides of the structure and adapted to be operated by the feet of the rider, a driving wheel adapted to run on the rail and means whereby the driving wheel is connected with the treadles, substantially as and for the purposes described.

5. In an elevated railway system, the combination of the frame of a bicycle or similar vehicle extending below and on opposite sides of the structure and provided with a seat arranged between the supporting wheels and adapted to carry the rider astride thereof and below the axes of the supporting wheels of the vehicle, substantially as and for the purposes described.

6. In an elevated railway system, a vehicle provided with a frame depending below a supporting rail and having a saddle above said rail and a handle-bar arranged and supported in front of said saddle and propelling mechanism connected with a driving-wheel, said driving-wheel and propelling mechanism being located substantially in rear of the rider, substantially as and for the purposes described.



7. The combination, in an elevated railway system, of a track, a bicycle mounted thereon, a bar or bars connecting the axles or journals of the wheels thereof, depending bars and treadles pivotally supported by the depending bars above a lower guide wheel or wheels, substantially as and for the purposes described.

8. In an elevated railway system, a vehicle provided with an upright arm arranged above the track rail and supporting a handle-bar and the front end of a saddle and propelling means located below the plane of said supporting rail, substantially as described.

9. In an elevated railway system, the combination with a structure supporting a single rail, of a vehicle provided with a saddle disposed above the track supporting structure, propelling treadles arranged below the same, means connecting the treadles with a driving wheel, and a guide wheel or wheels supported by the frame of the vehicle on one or both sides of the track structure and serving to maintain the vehicle in an upright position, substantially as described.

10. In an elevated railway system, the combination with the elevated track, of a vehicle provided with a double frame connected with the axles of wheels supported on said track and having a vertical arm to sustain the front end of said saddle and means to secure the rear end of the saddle spring to said double frame, substantially as described.

11. In an elevated railway system, the combination with a track supporting structure, of a vehicle provided with a spring actuated saddle, a handle-bar and brake mechanism arranged and supported above the track rail by the frame of the vehicle, and said frame connected with the axles of the supporting wheels and supporting treadles below said track or rail, substantially as described.

12. The combination with an elevated track, of a vehicle provided with two wheels arranged one in advance of the other and a bar or bars connected with the axles or journals of said wheels and provided with a spring actuated saddle located between the wheels and above the track rail and substantially below the axes of said wheels substantially as described.

13. The combination with an elevated track, of a vehicle provided with two wheels arranged one in advance of the other and a bar or bars connected with the axles or journals of said wheels and provided with a spring actuated saddle arranged above the track rail and substantially below the axes of the said wheels and a stationary handbar connected with forward part of said vehicle, substantially as described.

14. The combination with an elevated track, of a vehicle provided with two wheels arranged one in advance of the other and a bar or bars connected with the journals of said wheels and provided with a saddle, brake mechanism arranged above said track, and a part of the vehicle extending downward and supporting the treadles, substantially as described.

15. The combination with an elevated track, of a vehicle provided with wheels arranged one in advance of the other and a bar or bars connected with the axles of said wheels and carrying a spring actuated and adjustable saddle, handle-bar and brake mechanism and depending arms supporting treadles and said treadles connected with the cranks of one of the wheels of said vehicle, substantially as described.

16. The combination with an elevated track, of a vehicle provided with two wheels arranged one in advance of the other and a bar or bars connected with the axles of said wheels and provided with a seat adapted to carry the rider astride said bar or bars, depending arms supporting propelling treadles and one of said depending arms elongated and provided with a guide-wheel, substantially as and for the purposes described.

17. The combination with an elevated structure provided with a single top supporting rail and one or more lower guide rails, of a vehicle provided with wheels supported and adapted to run over said rails, a seat located substantially above said top rail and below the axes of the supporting wheels and said vehicle being provided with a handle-bar, brake mechanism, and propelling treadles, substantially as described.

18. The combination with an elevated supporting structure provided with a traction rail and guide rail or rails, of a vehicle provided with a seat adapted to carry the rider astride the elevated supporting structure, with propelling means arranged below and on opposite sides of the traction rail, and a guide-wheel or wheels adapted to engage with guide rail or rails, substantially as described and for the purposes set forth.

19. The combination with an elevated track supporting structure, of a two wheeled vehicle provided with a saddle adapted to carry the rider astride said structure, and propelling treadles and a handle-bar, substantially as and for the purposes set forth.

20. In combination with an elevated track supporting structure, of a vehicle provided with a seat adapted to carry the rider astride said structure, propelling means, a handle-bar and a depending frame embracing said structure, substantially as and for the purposes described.

21. In combination with an elevated supporting structure provided with traction and guide rails, of a vehicle provided with traction and guide wheels adapted to engage with said rails, a seat adapted to carry the rider astride said structure, a handle-bar, a frame connected with said wheels and depending on both sides of said structure and provided with means for actuating one of said traction-wheels, substantially as and for the purposes described.

22. The combination with an elevated railway structure, of a vehicle provided with a vertical guide wheel journaled in the lower part of the frame of said vehicle below the propelling treadles, and substantially in a vertical line below a seat or saddle arranged between the supporting wheels, substantially as and for the purposes described.

23. The combination with an elevated railway structure, of a vehicle provided with two supporting wheels adapted to run upon the track or rail of said structure, and a vertical arm supporting a handle-bar, brake mechanism and the front end of a seat or saddle, substantially as described.

24. The combination with an elevated railway structure, of the frame of a bicycle extending below the traction rail and on opposite sides thereof and provided with a saddle adapted to carry the rider astride the structure, a handle-bar and brake mechanism suitably connected with the frame of said bicycle, substantially as and for the purposes described.

25. In an elevated railway system, the combination with a traction-rail, of a vehicle adapted to travel thereon and provided with a saddle and one or more guide wheels, substantially as described.

26. The combination with an elevated track supporting structure, of the frame of a bicycle disposed below the track and on opposite sides thereof and provided with a saddle adapted to carry the rider astride the structure, substantially as and for the purposes described.

27. The combination with a supported rail, of a vehicle provided with a frame connected with the axles or journals of driving and pilot wheels and the axle or journal of a guide wheel or wheels located below the plane of said track and carrying a seat above the plane of the track and provided with a handle-bar and brake mechanism arranged in front of the rider and adapted to engage the pilot or front supporting wheel, substantially as described.

28. The combination with a supported rail, of a vehicle provided with a frame connected with the axles or journals of the driving and pilot wheels and the axle or journal of a guide wheel and carrying a seat above the plane of the track rail and supporting propelling treadle-levers below the plane of said track rail and provided with a handle-bar and brake-mechanism arranged in front of the rider and adapted to engage the pilot or front supporting wheel, substantially as and for the purposes described.

29. In an elevated railway system, a vehicle provided with a seat above the top supporting rail, a driving wheel adapted to run on said rail, treadles located below said rail and on opposite sides thereof, means interposed between and connected with said driving-wheel and treadles to effect the actuation of said vehicle thereby and an arm extending below the plane of the treadles and supporting a guide wheel, substantially as and for the purposes described.

30. In an elevated railway system, a bicycle or similar vehicle provided with a seat located above the track or rail, a driving-wheel adapted to run on said track or rail, treadles located below said track or rail and on opposite sides thereof, means connected with said driving-wheel and treadles to effect the actuation of the vehicle thereby and an upright arm supporting the front end of the saddle or seat, substantially as and for the purposes described.

31. In an elevated railway system, the combination with vertical supports of one or more longitudinal stringers with rail secured thereto to form a track-way and one or more intermediate stringers tying or binding said vertical supports, of a bicycle adapted to engage with said rails and said vehicle provided with a saddle located above the top rail and below the axes of said supporting wheels and adapted to be operated by the rider straddling said vehicle, substantially as described.

32. The combination of an elevated track, a vehicle provided with two wheels arranged one in advance of the other and adapted to travel over said track and a bar or bars connected with the axles or journals of said wheels and provided with a vertical arm supporting the front end of a spring actuated saddle arranged and adjusted to carry the rider astride said elevated track, substantially as described.

33. An elevated railway structure provided with one or more guide rails and a bicycle or similar vehicle provided with a saddle and one or more guide wheels, substantially as described.

34. The combination with a supporting rail, of a vehicle provided with wheels supported and adapted to run on said rail, a saddle located above said rail and in proximity to the axes of the supporting wheels, a frame connected with the axles of the supporting wheels and provided with an upward extending arm supporting the front end of the saddle and a downward extending arm supporting a guide-wheel, substantially as described.

35. The combination with a supported rail, of a vehicle provided with wheels supported and adapted to run on said rail, a seat located above said rail and substantially below the axes of the supporting wheels and arranged and adapted to carry the rider astride said supported rail and said vehicle provided with a handle-bar, propelling treadles, a driving-wheel connected with said treadles and a depending guide-wheel, substantially as and for the purposes described.

36. The combination with a supporting track structure provided with a single top supporting rail, of a vehicle having a depending frame on both sides of said track structure and provided with wheels supported and adapted to run on said supporting rail, one of said wheels being of larger diameter than the other, and connected with treadles journaled in the depending frame below the plane of the top rail, substantially as and for the purposes described.

37. The combination with an elevated track structure provided with one or more guide-rails, of a bicycle or similar vehicle provided with two supporting wheels and a guide wheel or wheels, one of which supporting wheels is of relatively smaller diameter than the other, and said smaller wheel arranged in front of the rider and brake mechanism adapted to be brought into engagement with the periphery of said wheel, substantially as and for the purposes described.

38. The combination of an elevated track structure provided with a single top rail, of a bicycle provided with a saddle arranged above the bottom line of the supporting wheels thereof, propelling treadles arranged below the bottom line of said supporting wheels and one or more depending guide wheels adapted to engage with guide rails to maintain said vehicle in an upright position in its passage over the structure, substantially as described.

39. In an elevated railway system, the combination of a post and rail structure with a rail arranged on one of its stringers, a vehicle provided with wheels supported and adapted to travel over said rail, a divided frame extending downward on opposite sides of said structure and a spring supported saddle connected with said vehicle and arranged to carry the rider astride said structure with the feet in engagement with the propelling mechanism of the vehicle, substantially as shown and described.

40. In an elevated railway system, the combination with a fence having a track rail, a guide rail, and one or more intermediate stringers, of a vehicle adapted to be supported and guided on said rails, a seat and a stationary handle-bar, substantially as shown and described.

41. In an elevated railway system, the combination with a fence or similar structure having a supporting rail, a lower guide rail or rails and one or more intermediate stringers, of a vehicle adapted to be supported and guided on or over said rails and provided with a seat adapted to permit of the rider straddling the frame, a stationary handle-bar and brake mechanism connected with said vehicle, substantially as described.

42. The combination in a railway system, of a fence having a track-rail secured to its top stringer, a guide-rail secured to a lower stringer and one or more interposed stringers, a vehicle adapted to be supported and guided by said rails and provided with a handle-bar, brake and propelling mechanisms, substantially as described.

43. The combination with a post and rail structure having a rail pinned to the top stringer, a guide-rail secured to the lower stringer and one or more interposed stringers, of a vehicle adapted to and capable of being guided on said rail and provided with a spring actuated seat and adapted to carry the rider astride them, a driving wheel and propelling treadles connected with said driving-wheel, substantially as described.

44. The combination with a post and rail structure having a track rail arranged on its top stringer, a guide-rail arranged on its lower stringer and interposed stringers, of a vehicle guided on said track rail and provided with a seat adapted to carry the rider astride thereof, propelling treadles and a guide-wheel located below said treadles, substantially as and for the purposes described.

45. The combination of a post and rail structure having a track-rail arranged on its top stringer, a guide-rail arranged on its lower stringer and one or more interposed stringers, of a vehicle provided with a frame extending downward on opposite sides of the fence and supporting propelling treadles and a lower guide-wheel on one side of the fence in engagement with the guide-rail of the lower stringer, substantially as described.

46. The combination with a post and rail structure having a track secured to its top stringer, a guide-rail arranged on its lower stringer and with one or more interposed stringers, of a vehicle provided with a wheel supporting frame arranged astride the post or rail structure and adapted to carry the rider substantially between said supporting wheels and above a guide-wheel caused to engage with said guide-rail, substantially as described.

47. The combination with a post and rail structure having a track secured thereto and guide rails arranged on opposite sides of said post and rail structure, of a vehicle having wheels supported and adapted to run upon the top rail and a lower guide-wheel arranged to extend below interposed stringers of said structure and to engage with the guide rail on either side of the lower stringer of said structure, as described.

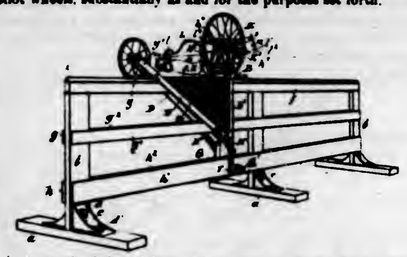
48. The combination with an elevated structure provided with a track rail and one or more guide rails located below said track rail, of a vehicle provided with a double frame and a saddle, handle-bar propelling treadles and means for connecting said treadles with a driving wheel, said vehicle being arranged and adapted to straddle said track structure and supported in a vertical position by the wheels of the vehicle engaging with the supporting and guide rails, and said vehicle and track structure arranged to carry the rider on said saddle with the hands resting on the handle-bar and feet resting upon the treadles while working the propelling treadles located below the plane of the supporting-rail, substantially as described.

49. The combination with an elevated structure provided with a track rail and one or more guide rails located below said track rail, of a vehicle provided with a double frame and a saddle, propelling treadles, and means for connecting said treadles with a driving wheel, said vehicle being arranged and adapted to straddle said track structure and supported in a vertical position by the wheels of the vehicle engaging with the supporting and guide rails, and said vehicle and track structure arranged to carry the rider on said saddle with the feet resting upon the treadles while working the propelling treadles located below the plane of the supporting rail, substantially as described.

488,201. VEHICLE. ARTHUR R. HOVENDEN, Mount Holly, N. J. Filed Mar. 23, 1892. Serial No. 426,714. (No model.)

Claim.—1. A vehicle comprising a main-frame provided with supporting wheels, a seat and brake-mechanism and depending frames located on opposite sides of the main-frame and connected therewith and provided with propelling means and guide-rolls, the construction being such that the rider is carried by the vehicle astride the same, substantially as and for the purposes set forth.

2. A vehicle comprising a main-frame provided with divided depending shield-frames having upper extensions supporting driving and pilot wheels, guide-rolls and propelling mechanism connected with the lower portion of the divided depending frames, a seat, and brake mechanism connected with the main-frame between the driving and pilot wheels, substantially as and for the purposes set forth.



3. A wheeled vehicle comprising a main frame having triangular-shaped depending devices and the upper and lower extensions provided with supporting and guide wheels, a seat or saddle supported by the main-frame and brake mechanism connected with a wing or arm of said main-frame, substantially as and for the purposes set forth.

4. A wheeled vehicle adapted for an elevated course or way provided with a longitudinal main frame and depending frames or devices straddling said structure provided with guide-rolls, supporting wheels journaled to vertical extensions thereof, a seat or saddle and a vertical arm provided with a handle bar and brake mechanism, substantially as and for the purposes set forth.

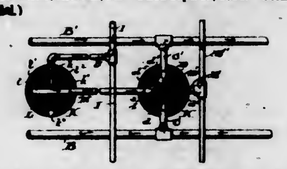
5. The combination, in a vehicle of a main-frame having triangular-shaped depending members, supporting wheels and guide rollers journaled to said frame and the depending members thereof, a seat or saddle supported above the main-frame and brake-mechanism connected with a handle-bar and a saddle or seat partially supported by said bar, substantially as and for the purposes set forth.

6. The combination, in a vehicle of two grooved faced wheels journaled to a frame provided with depending members having guide-wheels journaled thereto, a spring actuated saddle supported above said frame and to a vertical arm provided with a handle-bar, brake mechanism and means for permitting of the actuation of said vehicle, substantially as and for the purposes set forth.

7. The combination with a vehicle adapted to straddle an elevated course or way and provided with two wheels and depending frames having guide-rollers and pedals or treadles pivotally connected therewith, means suitably connected with said depending frames and pedals or treadles and a sprocket-wheel mounted on the shaft of the forward supporting-wheel, substantially as and for the purposes set forth.

8. The combination, in a vehicle for an elevated course or way, of a horizontal frame provided with bifurcated extensions and triangular-shaped depending frames having vertical extensions, supporting wheels journaled thereto and guide-rollers journaled to the lower forward extremital parts of said depending frames, pedals or treadles pivoted to the arms of said depending frames, sprocket-wheels mounted on the journal of the forward supporting wheel and springs and chains connected with the slanting arms of said depending frames, sprocket-wheels and pedals or treadles, a spring actuated saddle or seat and brake-mechanism connected with the handle-bar of the main-frame and adapted to be brought into engagement with the forward supporting wheel, substantially as and for the purposes set forth.

488,202. DEVICE FOR HEATING RAILWAY-CARS BY STEAM. JOHN H. HOWARD, Altoona, Pa. Filed Sept. 15, 1891. Serial No. 405,743. (No model.)



Claim.—In a railway car the combination of a double line of steam pipes D D' adapted to connect with a source of steam supply as described, a radiator system within the car body provided with supply and drain pipes; a valve casing K having a port k connecting with the drain pipe; a port k^2 opening to the air and a port k' connecting to the return steam pipe and a plug valve L turning in said casing K and having the ports l l' l^2 formed and arranged as described.

488,208. BALLOT-BOX. HOWARD HOYT, Everett, Mass. Filed Mar. 4, 1892. Serial No. 423,773. (No model.)

Claim.—1. A ballot box, having a ballot receiving throat or slot,

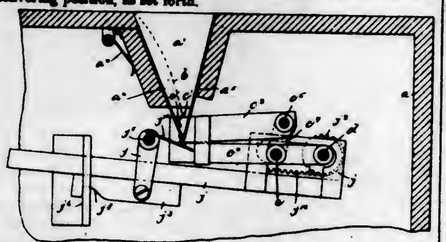
jaws arranged to grasp a ballot in said throat, said jaws being adapted to occupy a ballot receiving position in the throat, and a ballot delivering position below the throat, and mechanism for closing said jaws in their receiving position and for opening said jaws in their

and adapted to operate the locking device, a catch lever pivoted to the switch lever and to the said arm, and a manacle supported in front of the catch lever and adapted to be closed by the said arm when the

carried thereby, each of the terminals, or either of them, being composed of two pieces adapted to grasp a part of said base, and a screw

around the hub 9, the collar 7, hub 9, and hub 8 extending respectively beyond each other and provided with teeth in their ends, while the collar 7 and hub 9 have each a master tooth which is cut to the

jaws arranged to grasp a ballot in said throat, said jaws being adapted to occupy a ballot receiving position in the throat, and a ballot delivering position below the throat, and mechanism for closing said jaws in their receiving position, and for opening said jaws in their delivering position, as set forth.



2. A ballot box, having a ballot receiving throat provided with slots in its sides, combined with jaws adapted to occupy a ballot receiving position in the said slots, and a ballot delivering position below the throat, and mechanism for closing the jaws in their receiving position, and opening the jaws in their delivering position, as set forth.

3. A ballot box, having a ballot receiving throat or slot combined with a rock shaft *d* within the box, arms or shanks affixed to said rock shaft and each provided with a jaw *c*, a second rock shaft *e* journaled in said arms or shanks, jaws *c'* connected with arms affixed to the rock shaft *e*, and adapted to co-operate with the jaws *c*, and means for oscillating the rock shaft *e* and thereby causing the jaws *c'* to co-operate with the jaws *c*, substantially as described.

4. A ballot box, having a ballot receiving throat or slot combined with a rock shaft *d* within the box, a friction device adapted to hold the said rock shaft in any position to which it may be moved, arms or shanks affixed to said rock shaft and each provided with a jaw *c*, a second rock shaft *e* journaled in said arms or shanks, jaws *c'* connected with arms affixed to the rock shaft *e*, and adapted to co-operate with the jaws *c*, and means for oscillating the rock shaft *e* and thereby causing the jaws *c'* to co-operate with the jaws *c*, substantially as described.

5. A ballot box, having a ballot receiving throat or slot combined with a rock shaft *d* within the box, arms or shanks affixed to said rock shaft and each provided with a jaw *c*, a second rock shaft *e* journaled in said arms or shanks, jaws *c'* connected with arms affixed to the rock shaft *e*, and adapted to co-operate with the jaws *c*, and an operating shaft having a handle outside of the box, and a crank or eccentric wrist pin within the box connected by a pitman with a crank on the rock shaft *e*, as set forth.

6. A ballot box, having a ballot receiving throat or slot combined with a rock shaft *d*, jaws carried by said rock shaft, mechanism for operating said jaws as described and thereby oscillating or rocking the rock shaft, a register operating bar, and connections between it and the rock shaft whereby said bar is reciprocated by the movements of the rock shaft, and devices operated by the movement of a ballot into the box whereby said bar is moved to position to operate the register, as set forth.

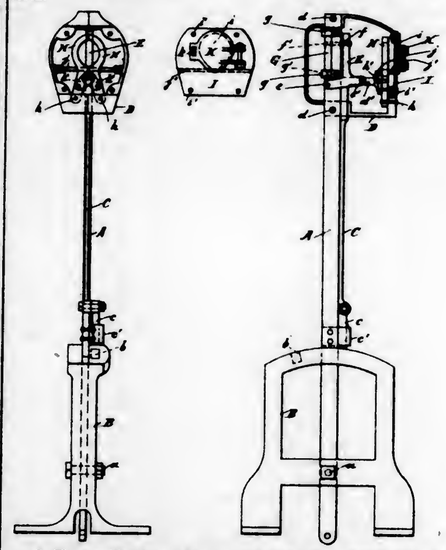
7. A ballot box having a ballot receiving throat or slot, combined with jaws arranged to grasp a ballot in said throat, a register, devices for oscillating said jaws, a normally inoperative connection between the jaw oscillating devices and the register, and devices operated by the movement of a ballot by said jaws to make said connection operative and operate the register, as set forth.

8. A ballot box having a ballot receiving throat or slot, combined with jaws arranged to grasp a ballot in said throat, a register, devices for oscillating said jaws, a normally inoperative connection between the jaw oscillating devices and the register, a rock shaft having projections arranged to be moved with the rock shaft in one direction by a ballot entering the box, devices co-operating with said rock shaft in making said connection operative, and a spring connected with the rock shaft and adapted to make the said connection inoperative as set forth.

488,204. SWITCH-STAND. GEORGE H. BOEMER, Charleston, S. C., assignor of one-half to Robert M. Anderson and William S. Anderson, same place. Filed Apr. 25, 1892. Serial No. 430,808. (No model.)

Claim.—1. The combination, with an oscillatory switch lever provided with a locking device, of a catch lever pivoted to the switch lever and adapted to operate the locking device, and a manacle supported by the free end of the switch lever and operatively connected with the said catch lever and adapted to seize the wrist of the operator when the locking device is moved to release the switch lever, substantially as set forth.

2. The combination, with a switch lever provided with a locking device, of a trip rod provided with a horizontal arm at its upper end and adapted to operate the locking device, a catch lever pivoted to the switch lever and to the said arm, and a manacle supported in front of the catch lever and adapted to be closed by the said arm when the catch lever is pushed back, substantially as and for the purpose set forth.



3. The combination, with a switch lever, and a catch lever pivoted to and adapted to release it when pressed back, of a manacle supported in front of the catch lever and adapted to grasp the wrist of the operator automatically when the catch lever is pressed back, a block sliding in guides at the rear of the switch lever, and a catch pin secured to the catch lever and adapted to prevent the catch lever from being pushed back until the hand of the operator has been thrust through the manacle far enough to grasp the said block and slide it clear of the catch pin, substantially as set forth.

4. The combination, with a switch lever provided with a locking device, of a case secured to the upper end of the said lever and provided with a hand hole, a trip rod provided with a horizontal arm inside the case and adapted to operate the locking device, a catch lever pivoted to the switch lever and to the said arm, the manacle jaws pivoted to the said case between the hand hole and the catch lever, and links pivotally connecting the manacle jaws with the end of the said arm, whereby the manacle jaws are closed when the catch lever is pressed back, substantially as set forth.

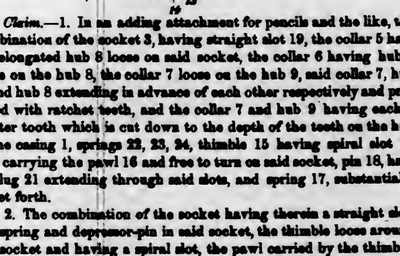
5. The combination, with a switch lever provided with a locking device, of a case secured to the upper end of the said lever and provided at its front with a hand hole, a trip rod provided with a horizontal arm inside the case and adapted to operate the said locking device, a catch lever pivoted to the switch lever and to the said arm, a block sliding in guides at the back of the switch lever, a catch pin projecting from the catch lever and adapted to enter a hole in the said block when the block is raised, the manacle jaws pivoted to the said case in front of the catch lever, and the links pivotally connecting the manacle jaws with the end of the said arm, substantially as and for the purpose set forth.

6. The combination, with a switch lever provided with a locking device, and a catch lever for releasing the said device, of a case secured to the switch lever and inclosing the said catch lever, the manacle jaws pivoted at their lower ends to the case and adapted to close automatically when the catch lever is pushed back, and horizontal guides carried by the case and adapted to support the said jaws, substantially as set forth.

488,205. LAMP-SOCKET AND TERMINAL THEREFOR. JOSEPH HERRMANN, New York, N. Y. Filed Feb. 4, 1892. Serial No. 420,734. (No model.)

Claim.—1. The combination, in a socket, of an insulating body with extensions having depressions, and metal pieces forming or carrying socket terminals fitting into said depressions and clamping said extensions, whereby the terminals are held in place without being screwed to or molded into the body, substantially as described.

2. The combination, in a socket, of an insulating base, terminals carried thereby, each of the terminals, or either of them, being composed of two pieces adapted to grasp a part of said base, and a screw co-operating with said pieces and adapted to draw them together, substantially as described.



3. The combination, in a socket, of a porcelain or other insulating base having standards provided with notches in faces thereof, socket terminals comprising metal pieces having hooked ends adapted to fit into said notches, and means for drawing the pieces together to cause them to clamp the standards, substantially as described.

4. The combination, in a socket, of an insulating base having standards, terminals each consisting of two pieces with means for clamping them to the standards, and said pieces having vertical extensions or arms carrying contact devices for the socket, substantially as described.

5. The combination, in a socket, of an insulating base, one or more terminals each composed of two parts adapted to clamp a portion of the base, said parts together being slightly shorter than the distance between the surfaces which they clamp, means for drawing the two meeting ends of said pieces toward each other thereby causing the pieces to clamp the socket by a yielding or spring action, substantially as described.

6. The combination, in a socket, of an insulating base having standards, metal terminals grasping said standards and thereby being held in position, one of said terminals being electrically discontinuous, and a switch for electrically connecting the separate parts, substantially as described.

488,206. ADDING-PENCIL. CHARLES D. JUDD, Bridgeport, Conn. Filed Aug. 18, 1892. Serial No. 443,304. (No model.)

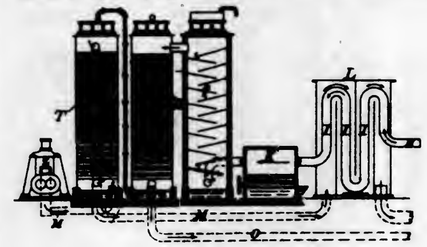
Claim.—1. In an adding attachment for pencils and the like, the combination of the socket 3, having straight slot 19, the collar 5 having elongated hub 8 loose on said socket, the collar 6 having hub 9 loose on the hub 8, the collar 7 loose on the hub 9, said collar 7, hub 9, and hub 8 extending in advance of each other respectively and provided with ratchet teeth, and the collar 7 and hub 9 having each a master tooth which is cut down to the depth of the teeth on the hub 8, the casing 1, springs 22, 23, 24, thimble 15 having spiral slot 20 and carrying the pawl 16 and free to turn on said socket, pin 18, having lug 21 extending through said slots, and spring 17, substantially as set forth.

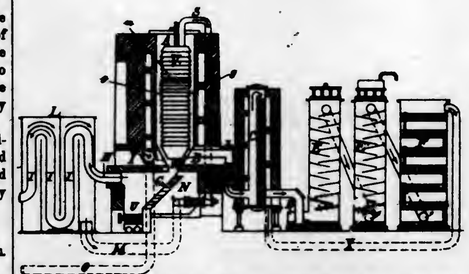
2. The combination of the socket having therein a straight slot, the spring and depressor-pin in said socket, the thimble loose around the socket and having a spiral slot, the pawl carried by the thimble, the lug extending from the pin through said slots, the collars assembled and having numbers and teeth as described, the casing to which the socket is secured, and the friction springs which extend separately from the collars against the casing, substantially as shown and described.

3. The combination of the socket having therein a straight slot, the spring and depressor pin in said socket, the thimble loose around the socket and having a spiral slot, the pawl carried by the thimble, the lug extending from the pin through said slot, a telescoping series of collars loosely mounted on said socket and capable each of independent rotation, the ends of said collars being graduated and provided with ratchet teeth adapted to be engaged by said pawl, while all the collars except the one most remote from the pawl are each provided with a master-tooth which is cut to the depth of the teeth on each remote collar, the casing surrounding aforesaid parts, and the springs which extend from said collars against the casing, substantially as set forth.

4. The combination of the collar 5 having hub 8, the collar 6 having hub 9 journaled around the hub 8, the collar 7 journaled around the hub 9, the collar 7, hub 9, and hub 8 extending respectively beyond each other and provided with teeth in their ends, while the collar 7 and hub 9 have each a master tooth which is cut to the depth of the teeth on the hub 8, a pawl engaging said teeth—for revolving said collars, and frictional devices for preventing the turning of the collars except by the positive action of the pawl, substantially as shown and set forth.

488,207. PROCESS OF AND APPARATUS FOR MAKING AMMONIA. PAUL KUPFER, Aschersleben, Germany. Filed Dec. 3, 1891. Serial No. 413,980. (No model.)





Claim.—1. The process of making ammonia and tar, which consists in drying and calcining nitrogenous material—such as peat, to drive off separately the aqueous and tarry vapors, passing the tarry vapors through incandescent material, thereby forming tar, ammonia and combustible gas, the said incandescent material being heated by the said combustible gas; and simultaneously treating the calcined material with heated air and the said aqueous vapor to form ammonia and heating gases, the said heating gases being utilized for heating the said air and calcining the said nitrogenous material, substantially as set forth.

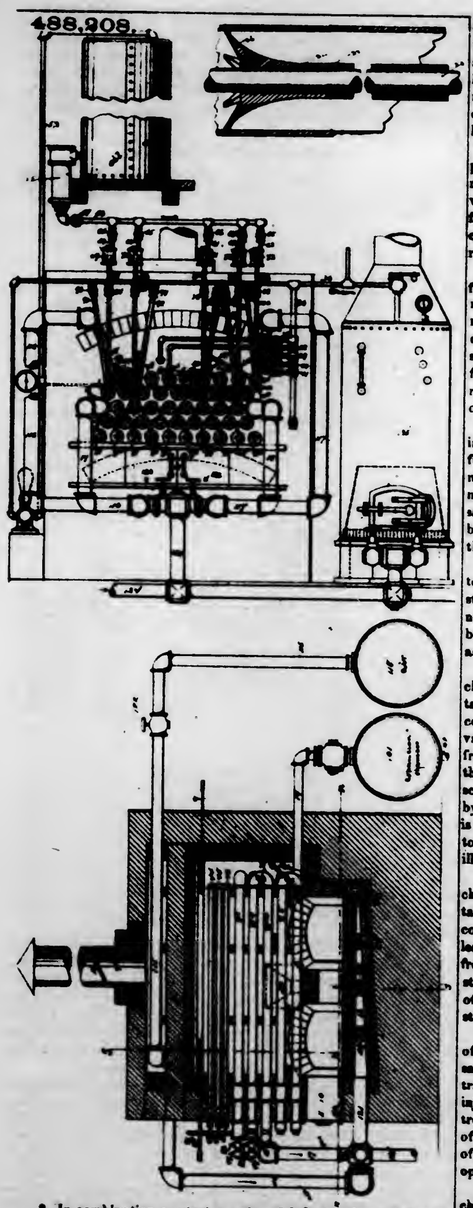
2. The combination, with the calcining furnace provided with a central receptacle consisting of a series of overlapping rings *g* having the partition *a* and pipes at its upper and lower ends for the collection and removal of vapors, of a generator provided with an inclined grate arranged directly beneath the said furnace, and an inlet for moist heated air below the said grate, whereby the calcined material is fed from the furnace in a uniform stream to the generator by gravity, and is gasified upon the said grate, substantially as set forth.

3. The combination, with the shell of the calcining furnace, of a central receptacle formed of a series of overlapping rings each provided with lugs 21 and certain of the rings having also the arms 22 and bosses 23 and the said receptacle being divided into two parts by the horizontal partition *a*, arranged at that part of the furnace where the drying of the material ceases and the calcining action begins, the central supporting rod secured to the said bosses, and pipes connected to the upper and lower ends of the said receptacle for the escape of the aqueous and tarry vapors respectively, substantially as set forth.

488,208. APPARATUS FOR GENERATING GAS. CESAR LAUNE, Brooklyn, N. Y., assignor to the American Light and Fuel Company, of New Jersey. Filed Oct. 22, 1890. Serial No. 369,089. (No model.)

Claim.—1. In combination, a retort, a series of deflectors located therein constructed for throwing a current repeatedly against the interior surface of the retort, an injector constructed for forcing a current of oil spray into one end of said retort with a jet of superheated steam, and an exhaust constructed for exhausting said current at the other end of said retort; whereby the oil spray is forced forward at one end by the injector steam jet and drawn forward at the other end by the exhaust, substantially as described.

488,208.



cated in each constructed for throwing currents repeatedly against the interior surfaces of the retorts, an injector constructed for forcing a current of oil spray into one end of each retort with a jet of superheated steam, an expansion drum with which the outlets of all the retorts are connected, an outlet passage from said drum greater in cross-section than the combined sections of said retorts and an exhaust in said passage, substantially as described.

5. In combination a retort, an injector at one end constructed for producing a current of oil spray, a rod running longitudinally in the retort, a series of deflectors on said rod each enlarging gradually toward the interior walls of the retort and provided with centering fingers; all surfaces of the deflector opposed to the current being inclined with the current whereby the current is deflected without abruptly arresting the flow, substantially as described.

6. In combination a furnace, a retort located wholly within said furnace consisting of a series of pipes connected at alternate ends, nipples in alignment with said pipes extending out through the furnace wall, plugs or caps for said nipples, a separate series of deflectors in each pipe and a rod connecting the several members of each series whereby the said deflectors may be withdrawn outside the furnace through said nipples while the products passing through said retort are retained continuously within the furnace, substantially as described.

7. A furnace containing a heating-chamber and a communicating fuel chamber beneath the same a retort located wholly within said furnace consisting of a series of pipes connected at alternate ends and nipples in alignment with said pipes extending out through the furnace wall, an injector injecting oil spray into said retort; the first of said pipes being provided with a free passage and other of which pipes being provided with deflectors whereby the current is thrown against the heated internal surfaces, substantially as described.

8. In combination, two retorts, a separate injector constructed to discharge oil spray into each retort with a jet of superheated steam, deflectors within said retorts, a furnace and a passage connecting the outlet from one of said retorts with the combustion chamber of said furnace whereby the product of one retort is employed as fuel for heating the other, substantially as described.

9. In combination, a heating chamber, a communicating fuel chamber located beneath the same, a plurality of retorts each containing a series of pipes traversing said heating chamber, an injector constructed for injecting oil spray into each of said retorts, a separate valve controlling the supply of oil to each injector, a passage leading from one of said retorts to the gas holder and a passage leading from the other of said retorts to said fuel chamber, substantially as described: whereby the fuel for heating both of said retorts is supplied by the products of one and the temperature of the heating chamber is controllable by the percentage of oil admitted to the fuel gas retort independently of the regulation of the ingredients entering the illuminating gas retort.

10. In combination, a heating chamber, a communicating fuel chamber located beneath the same, a plurality of retorts each containing a series of pipes traversing said heating chamber, an injector constructed for injecting oil spray into each of said retorts, a passage leading from one of said retorts to the gas holder, a passage leading from the other of said retorts to said fuel chamber, an injector constructed for injecting said fuel gas into said fuel chamber with a jet of air, an air forcing apparatus constructed to supply said jet, substantially as described.

11. In combination, a heating chamber provided with a plurality of flue openings, a communicating fuel chamber located beneath the same, two series of pipes each constituting a gas generating retort traversing said heating chamber, two injectors each constructed for injecting steam and oil into one of said retorts, a separate valve controlling the supply of oil to each injector, a passage leading from one of said retorts to the gas holder and a passage leading from the other of said retorts to said fuel chamber, a damper for each of said flue openings, substantially as described.

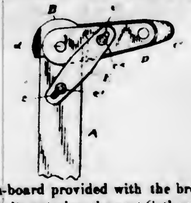
12. In combination, a heating chamber, a communicating fuel chamber located beneath the same, a series of pipes provided with deflectors constituting a gas generating retort traversing said heating chamber, an injector constructed for injecting steam and oil into said retort, an injector for injecting fuel gas into said fuel chamber with a jet of air, an air forcing apparatus constructed to supply said jet, a nozzle through which the combined fuel gas and air is injected into the fuel chamber, substantially as described.

13. In combination a combustion chamber, a retort comprising a series of pipes containing deflectors, an injector injecting oil and steam into the retort a fuel chamber underlying said combustion chamber, a perforated hearth, between said chambers an injector constructed to discharge fuel gas into said fuel chamber with a jet of air directed substantially parallel with said hearth and an air forcing apparatus, substantially as described.

14. In combination a combustion chamber, a retort comprising a series of pipes containing deflectors, an injector injecting oil and steam into the retort a perforated hearth, a fuel chamber underlying said perforated hearth, an injector constructed to inject fuel gas into said fuel chamber by a jet of air directed substantially parallel with said hearth; the bottom of said combustion chamber converging toward said hearth toward the side opposite the injector, substantially as described.

15. In combination, a heating chamber, a communicating fuel chamber located beneath the same, a series of pipes provided with deflectors constituting a gas generating retort traversing said heating chamber, an injector constructed for injecting steam and oil into said retort, an injector constructed for injecting fuel gas into said fuel chamber with a jet of air, an air forcing apparatus constructed to supply said jet, a hearth separating the heating chamber from the fuel chamber provided with perforations proportioned, substantially as described, whereby the combustion in the heating chamber is prevented from igniting the gas in the fuel chamber, substantially as described.

488,209. WASHBOARD. OWEN T. LAPHAM and JOSEPH H. LAPHAM, Cleveland, Ohio. Filed July 12, 1892. Serial No. 439,779. (No model.)

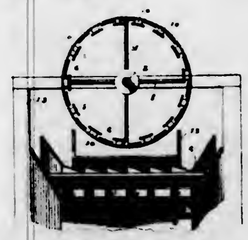


Claim.—A wash-board provided with the breast-rest consisting of part B rounded on its exterior, the part C, the pivot straps D fixed to part C and pivoted in the ends of part B, and the stops E, having slots *e*, and pins *e'* and *e''* securing the ends of the stops E, substantially as described.

488,210. METALLIC FENCE. JAMES G. LINDSAY, Philadelphia, Pa., assignor of one-half to Albert L. Bonnaffon, same place. Filed June 24, 1892. Serial No. 437,530. (No model.)

Claim.—In a metallic fence in combination with the post, A, and rail ends, C, C', a key, P, having two prongs, p, p' of unequal lengths engaged on opposite sides of the post, A, connected through the medium of the right-angled arm, p^3, said prongs passing through the orifices provided in the rails, C, C', having the end of the long prong, p', bent against the rail, C', at right angles to line of the main length of the prong p', substantially as described.

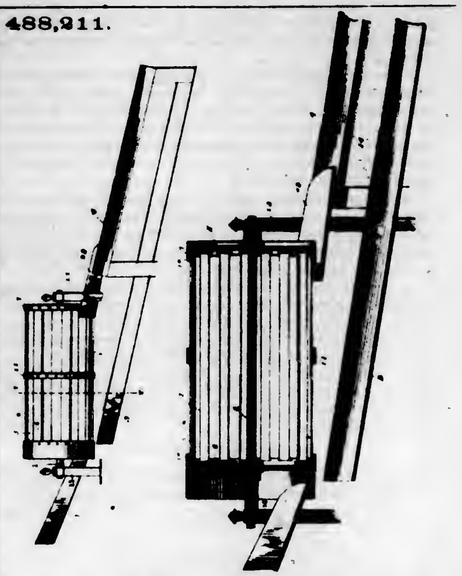
488,211. COAL-SEPARATOR. EUGENE F. LOVE, Scranton, Pa., assignor of one-half to Ezra H. Rippie, same place. Filed June 30, 1892. Serial No. 438,560. (No model.)



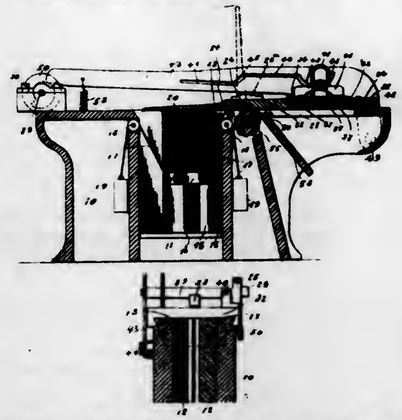
Claim.—1. In a separator, a rotary screen comprising series of inner and outer bars of equal width arranged at regular intervals, the inner series of bars being spaced from the outer ones and disposed opposite the intervals of the outer bars, whereby slate discharge openings are formed, substantially as described.

2. In a separator, a rotary screen comprising bands, outer bars secured to the bands and arranged at intervals, spacing blocks secured to the inner faces of the bands, and the inner bars secured to the spacing blocks and arranged opposite the intervals of the outer bars, substantially as and for the purpose described.

488,211.



488,212. SKIVING-MACHINE. HERBERT MASTERSON, Jefferson City, Mo., assignor to himself and John A. Linhardt, same place. Filed Mar. 30, 1892. Serial No. 427,096. (No model.)



Claim.—1. A skiving machine, comprising a vertical open topped holder, a reciprocating slide held to move above the holder, a knife arranged beneath the slide, a carrying form held in the slide, and vertically movable brads mounted in the form and adapted to engage the articles in the holder, substantially as described.

2. A skiving machine, comprising an open topped holder, a follower held to move therein, a reciprocating slide adapted to move over the holder, a roller and knife arranged beneath the slide, a carrying form carried by the slide, movable brads held in the form and adapted to engage the articles in the holder, and a cam mechanism for moving the brads, substantially as described.

3. A skiving machine, comprising an open topped holder, a movable follower mounted therein, a reciprocating slide held to move over the top of the holder, a roller and skiving knife arranged beneath and adjacent to the slide, a form carried by the slide and adapted to register with the holder, and a cam operated fastening device to secure an article in the form, substantially as described.

4. A skiving machine, comprising an open topped holder, a slide held to reciprocate above the holder, a roller and knife arranged beneath and adjacent to the slide, a form carried by the slide and adapted to register with the holder, a cross head mounted above the form and having downwardly-extending brads piercing the form and adapted

to engage the articles in the holder, and a cam operated lever mechanism for raising and lowering the cross head, substantially as described.

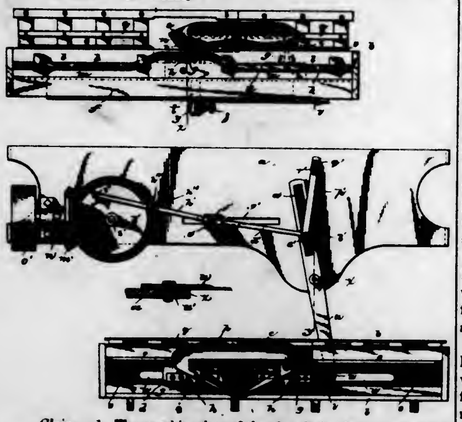
5. In a skiving machine, the combination of the holder, the reciprocating slide, the form carried by the slide, the movable cross head having brads adapted to pierce the slide and enter the holder, the transverse arm to which the cross head is secured, the cam lever arranged at right angles to the transverse arm and having a cam slot to receive the same, and a revolving cam to raise and lower the cam lever, substantially as described.

6. A skiving machine, comprising an open topped holder having a follower therein, a reciprocating form held to slide above the holder, a knife arranged beneath the path of the form, and cam operated mechanism for lifting articles from the holder and retaining them in the form, substantially as described.

7. In a skiving machine, the combination with the reciprocating form and the cutting mechanism arranged adjacent thereto, of the two part removable holder arranged beneath the form and having a recess to receive the articles to be skived, substantially as described.

8. The combination of the frame, the central movable holder therein, the reciprocating form-carrying slide, the leaf hinged to the slide and adapted to overlap the holder, a skiving knife held beneath the path of the slide and a fastening device to hold down the leaf substantially as described.

488,218. SHUTTLE-OPERATING MECHANISM FOR NARROW-WARE LOOMS. GEORGE C. MOORE, Easthampton, Mass., assignor of one-half to Joseph W. Green, Jr., same place. Filed Apr. 6, 1892. Serial No. 428,005. (No model.)



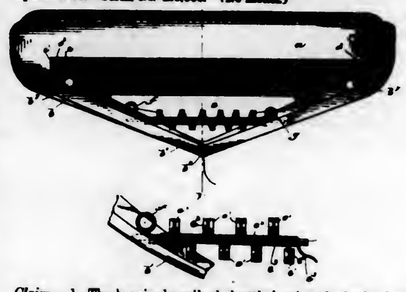
Claim.—1. The combination of the shuttle having a groove *r* in its rear side and a shoulder *s* on its under side, of the lathe or batten provided with plain guiding boards *o* on the upper edges of which the shuttle rests with the shoulder in contact with the rear sides of the said boards, the guide ribs or rails *q* beveled or dovetailed as described and entering the groove *r*, the carrier *d*, the levers *h* engaging with the shuttle, and the boards or rails *l m*, having the slot *k* between them into which the forward ends of the levers *h* enter, substantially as described.

2. The combination with the carrier-operating lever *w*, and the rotating wheel *k'*, of an intermediately placed block or box *f'* having a guide therefor in line with the axis of the said wheel, connecting rods interposed between a crank pin carried by the said wheel and the said block or box and also between the latter and the lever, and a radius bar in connection with one end of the rod which extends from the block or box to the carrier-operating lever, substantially as described.

3. The combination with a rotating wheel carrying a crank-pin, of a carrier-operating lever and pivotal stud for the said lever having provisions for adjusting the same, a radius bar having provisions for enabling the same to be adjusted in the direction of its length, and operating connections intermediate the crank-pin and the carrier-operating lever, the said radius bar controlling the action of the said crank-pin upon the carrier-operating lever through its connections, substantially as described.

4. The combination with the rotating wheel *k'* carrying a crank pin, of the carrier-operating lever *w* having the slot *x'* therein, the pivotal stud *x* having provisions to enable it to be adjusted in position, the block *b'* moving in said slot, the radius bar *y'* controlling position of the said block in the slot and itself having provisions to enable it to be adjusted in the direction of its length, the intermediate block or box *f'* having a guide in line with the axis of the revolving wheel *k'*, and rods whereby the said block *f'* is connected with the crank pin and with the block *b'*, substantially as described.

488,214. LOOM-SHUTTLE. GEORGE C. MOORE, Easthampton, Mass., assignor of one-half to Joseph W. Green, Jr., same place. Filed Apr. 6, 1892. Serial No. 428,006. (No model.)



Claim.—1. The herein described shuttle having the body thereof hollowed out to form the chamber *b*, and having the trough-shaped shell provided with the protecting portions b^3 b^3 extended forward to partially inclose the load of yarn within the shuttle and shield it from contact with the warp-threads in a loom, the said shuttle having the guiding groove b^4 in the rear side thereof, and the rabbet and shoulder on the under side thereof, substantially as described.

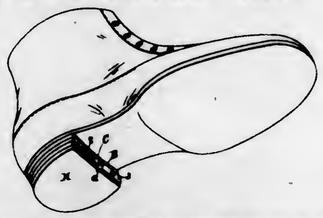
2. The combination with the shuttle body, of the cop-holder consisting of a spindle fixed rigidly to the said shuttle body and formed with a groove along one side thereof having secured therein by one end a bent spring provided with cop-engaging spurs or points on a portion thereof which projects out of the groove, and formed with a finger-hold by means of which the spring may be sheathed within the groove, substantially as described.

3. The combination with the shuttle body, of a tension regulating device consisting of a spirally wound wire having portions thereof projecting at intervals to form arms, the said arms being alternately disposed in different lines and provided with yarn-guiding eyes, substantially as described.

4. The combination with the shuttle body, of the tension regulating device consisting of a wire formed in alternating reversely wound spirals and having portions thereof projecting at intervals to form arms, the said arms being alternately disposed in different lines and provided with yarn-guiding eyes, substantially as described.

5. The combination with the shuttle body, of the tension regulating device consisting of a wire formed in alternating reversely wound spirals and having portions thereof projecting at intervals to form arms, the said arms radially varying in length and being alternately disposed in different lines and provided with yarn-guiding eyes, substantially as described.

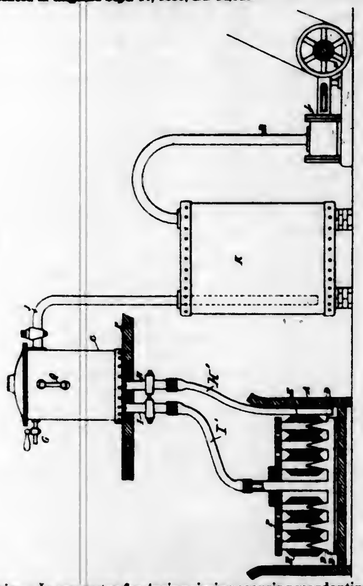
488,215. ICE-CREEPER. GEORGE D. MOONEY, Detroit, Mich. Filed Aug. 24, 1891. Serial No. 403,636. (No model.)



Claim.—1. In an ice-creeper, the combination with the base-plate, said plate having a projection at each end thereof, of a swinging spring-arm having a spurred head at one end, said head being pivoted to the longitudinal center of said base-plate, the free end of said arm being adapted to spring over and engage the projections on the base plate to lock it in position.

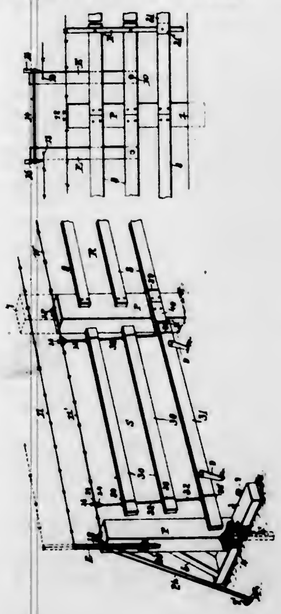
2. In an ice-creeper, the combination with a base-plate having means for attachment to the shoe and provided with a pin at each end projecting from the face of said plate, of the swinging-arm eccentrically pivoted at one end to said plate, said arm having a spur at its pivoted end, and a hole in its free end that receives the pins of the base-plate, as and for the purposes specified.

488,216. APPARATUS FOR DYEING. RODOLPHE HUGUES, Lorraine, France. Filed Jan. 8, 1890. Serial No. 336,524. (No model.) Patented in England Sept. 17, 1889, No. 14,610.



Claim.—In apparatus for dyeing rinsing scouring mordanting and similarly treating textile materials in slivers rovings yarn and similar states of preparation, the combination of a vat, a hollow plate, perforated tubes communicating with the interior of the hollow plate, a closed receiver having an air cock and nozzles having flexible pipes communicating with the vat and hollow plate respectively, a closed reservoir communicating with the upper part of the receiver, and an air pump communicating with the reservoir; all constructed and arranged substantially as hereinbefore described.

488,217. PORTABLE FENCE. JONATHAN G. URR, Danville, Ala. Filed Oct. 16, 1891. Serial No. 408,890. (No model.)



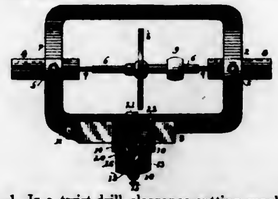
Claim.—1. In a fence, the combination of a pair of posts having vertical extensions, a supporting wire running from one post to the other, and another wire connected to said extensions and located above the tops of said posts, a loosely-suspended panel consisting of parallel bars, and connecting-wires vertically disposed at the ends of the bars, said connecting-wires having their upper ends detachably secured to the said supporting-wire, substantially as described.

2. In a fence, the combination with a horizontal supporting wire, and supports therefor; of a suspended panel comprising bars connected at each end by an upright twisted wire, the bend at the upper end of said wire passing over the supporting wire and through its body, and a nail removably inserted therein.

3. In a fence, the combination with posts, a rigid panel supported thereby, and a supporting wire carried by the posts, of a suspended panel on the side of a post opposite a rigid panel and consisting of bars and a twisted wire, the latter being connected at its upper end with said supporting wire formed into loops embracing the rails, and having its lower ends extending from the lowermost loop behind the post and connected with the rigid panel, substantially as described.

4. In a fence, the combination with a post, and a horizontal bar secured thereto; of an extension at each side of and rising above the post, said extension being pivoted to said bar, a wire connected to each extension and leading away from the post, a loop embracing the extensions, and a wedge in each end of the loop outside the extension.

488,218. CLEARANCE-CUTTING MACHINERY FOR TWIST-DRILLS. OTTO PARPART, Akron, Ohio. Filed Dec. 14, 1891. Serial No. 414,997. (No model.)



Claim.—1. In a twist-drill clearance-cutting machine, the supporting frame and the emery-wheel journaled therein, and the horizontally-adjustable carriage and the sliding-plate mounted on said carriage and arranged to approach and recede from said wheel, and provided with an adjustable stop to limit its motion toward said wheel, combined with the upright arm adjustably attached to said sliding plate and arranged to be rigidly connected and move therewith, and provided in its upper end with an opening to receive a sleeve to hold the drill while being ground, substantially as shown and described.

2. In a clearance-cutting machine for twist-drills the journaled emery wheel and horizontally-adjustable carriage, and the sliding-plate mounted on said carriage and arranged to approach and recede from said wheel and provided with an adjustable stop to limit its motion toward said wheel, combined with the upright arm adjustably attached to said sliding plate and arranged to be rigidly connected and move therewith, and provided in its upper end with an opening to receive a sleeve to hold the drill while being ground, and having the adjustable holding mechanism connected therewith for retaining a guide-pin in the drill groove, substantially as shown and described.

488,219. BACHELOR BUTTON. JOSEPH F. PLATT, Waterbury, Conn. Filed July 7, 1892. Serial No. 439,276. (No model.)

Claim.—In a button of the character set forth, the combination of a head having a back-securing plate consisting of a cylindrical depending cup, whose entire bottom is concaved or struck up and transversely slotted, said slot extending up the sides of the cup, the said struck-up bottom portion having a central opening in its slot, and the said slot in the cup terminating in openings at the upper ends thereof on opposite sides, said plate further consisting of a flange secured to the head, and a shank having one or more recesses therein, substantially as described.

488,220. NOZZLE. CHARLES V. POLLOCK, Des Moines, Iowa. Filed Aug. 24, 1891. Serial No. 403,543. (No model.)

Claim.—1. A nozzle having a longitudinal bore, a bell-shaped mouth at the end of the bore, an annular shoulder at the junction of

the mouth and bore, and a round ball placed in said mouth, substantially as described.

2. A nozzle having a longitudinal bore, a bell-shaped mouth at the end of the bore and an annular shoulder at the junction of the mouth and bore, and a round ball having grooves in its surface, placed loosely in the mouth, as and for the purposes stated.

3. A spraying nozzle adapted to be connected with a suitable source of supply, comprising a body having a longitudinal bore, a bell shaped mouth at the end of the bore, an annular shoulder at the junction of the mouth and bore, a round ball, and means for retaining the ball connected with the bell-shaped mouth, to operate in the manner set forth

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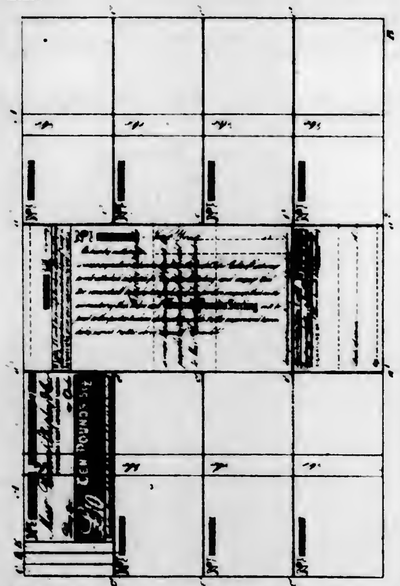
488,221. CIRCULAR LETTER OF CREDIT. HOWARD POTTER, New York, N. Y. Filed Apr. 11, 1892. Serial No. 428,571. (No specimens.)



Claim.—1. As a new article of manufacture, a circular letter of credit, printed on a single sheet of paper containing a credit or authorization to draw and one or more checks, which the person accredited by the letter of credit is authorized to draw.

2. The combination on a single sheet of paper with a credit of the kind known as a "circular credit," of checks separable therefrom to be signed by the person accredited as authorized to draw under it which on their face are non-negotiable apart from the credit.

3. The combination substantially as hereinbefore described, on a single sheet of paper, of a credit of the kind known as a circular credit, with any number of checks forming part thereof, so arranged that the removal and negotiation of any one of the same, shall, by changing the shape, size, and physical appearance of the letter of credit, reduce on its face, the amount remaining available to the drawee thereunder.

4. The combination substantially as hereinbefore set forth on a single sheet of paper of a credit of the kind known as a circular credit having on its face an authorization to draw to any given amount signed by the banker issuing the same, and on its back a list of bankers to whom the same is directed, of one or more checks, of any given amount forming part thereof and separable therefrom arranged to be signed by the person authorized by the credit to draw.

5. The combination substantially as hereinbefore set forth on a single sheet of paper, of a credit of the kind known as the circular credit, having on its face an authorization to draw to any given amount, signed by the banker issuing the same, and a space for the signature of the party to whom the same is issued and an advice note printed in connection therewith, and on its back a list of bankers to whom the same is directed: of one or more checks of any given amount forming part thereof and separable therefrom, arranged to be signed by the person authorized by the credit to draw, and on the reverse side thereof a certificate to be signed by the banker paying the check.

6. The combination with a credit substantially of the character indicated, of one or more checks forming a part thereof, each having on its face one or more spaces containing directions as to signing and detaching the check as may be directed by the banker negotiating the same.

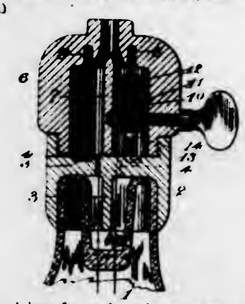
7. The combination with a credit of the character indicated of one or more checks forming a part of the same, each having on its back a certificate to be signed by the banker negotiating the same.

8. The combination with a credit of the character indicated of one or more checks forming a part of the same each having on its face an order on the banker issuing the credit to pay, which on being detached from the credit indicates the amount still available thereunder.

9. The combination with a credit of the character indicated, of a space at one end of the main obligation for the signature of the bearer of the credit, so arranged that said signature when signed shall be inverted with respect to the printed or written matter upon all other parts of the credit, for the purposes set forth.

10. The combination with a credit of the character indicated, of one or more checks forming part of the same, each having on its back a certificate arranged to be signed by the banker cashing the same, setting forth the correct fulfillment of the requisite formalities for the negotiation thereof.

488,222. INCANDESCENT-ELECTRIC-LAMP BASE. FREDERICK C. ROCKWELL, Hartford, Conn. Filed Dec. 26, 1891. Serial No. 416,162. (No model.)



Claim.—1. A base for an incandescent electric lamp consisting of a bottom formed of a single piece secured to the globe and bearing conducting pieces, and a shell formed of a single piece having two longitudinal chambers, with one end closed and the other secured to the bottom, with wire perforations through the closed end to each chamber also bearing conducting pieces, substantially as specified.

2. A base for an incandescent electric lamp consisting of a bottom formed of a single piece of insulating material secured to the globe, with conducting pieces molded therein, and provided with a thread and a shell formed of a single piece of insulating material with one end closed and the other threaded and screwed onto the threaded bottom, with conducting pieces also molded therein, substantially as specified.

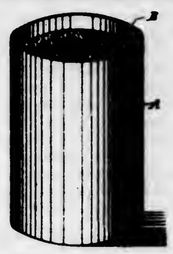
3. In combination with a base for an incandescent electric lamp consisting of a battery formed of a single piece of insulating material bearing conducting pieces, a shell formed of a single piece of insulating material with conducting posts molded therein, one being bent and having its shank molded into the insulating material leaving projecting ends, one of which carries the movable member of a switch and the other being split to receive a circuit wire, substantially as specified.

4. A base for an incandescent electric lamp consisting of a bottom formed of a single piece of insulating material secured to the globe and bearing conducting pieces, and a shell formed of a single piece of insulating material bearing conducting posts adapted to receive the circuit wires, conducting tubes sliding on said posts, a key for drawing the tubes in one direction and springs for drawing the tubes in the opposite direction, substantially as specified.

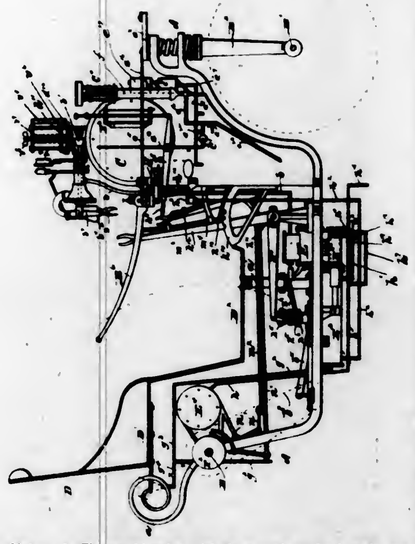
488,223. FIRE-KINDLER. SILAS M. B. ROGERS, Bell's, Tex. Filed May 13, 1892. Serial No. 433,236. (No model.)

Claim.—Fire-kindling, consisting of a wet paste formed of equal parts of pulverized charcoal and wood-ashes mixed with mineral oil, substantially as set forth.

488,223.



488,224. STEAM-PROPELLED VEHICLE. GEORGE J. SAUBERAN, Columbus, Ohio. Filed May 21, 1891. Serial No. 393,060. (No model.)



Claim.—1. The combination with the carrying-wheels and a propelling motor, of an intermediate revolving wheel connected to and revolving with said motor, means for changing the direction of revolution of said motor, and ratchet connections adapted to alternately engage and disengage to connect said intermediate wheel to the driving-wheel to cause the driving-wheel to move positively with the intermediate wheel in the direction of rotation, and permit it to turn independent of said wheel in the other direction, substantially as specified.

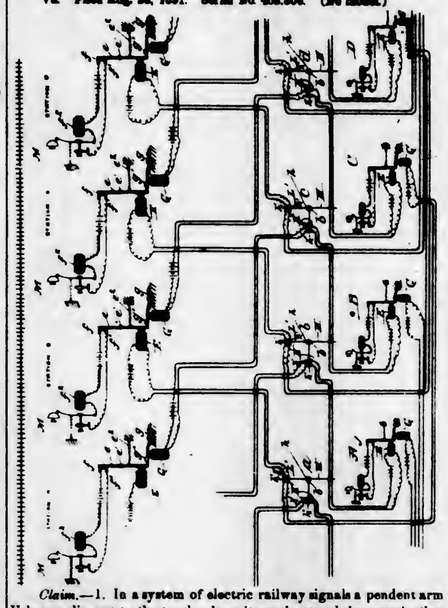
2. The combination with a motor and driving-wheel, of an intermediate wheel revolving with said motor, ratchet-wheels having teeth extending in opposite directions connected to said driving-wheel, and oppositely engaging pawls for the respective ratchets, said pawls being connected together and adapted to be moved simultaneously to and from the respective ratchets, substantially as specified.

3. The combination with a reversible motor and a driving-wheel, of an intermediate connecting-wheel revolving with said motor, oppositely arranged ratchets on each side of said intermediate wheel connected with said driving-wheel, pivoted pawls on said intermediate wheel adapted to engage alternately with the respective ratchets, and a spring connection between the respective pawls, substantially as specified.

4. The combination with a reversible driving motor and a driving-wheel, of an intermediate connecting-wheel revolving with said motor, oppositely arranged ratchets on each side of said ratchet-wheel, pivoted pawls on opposite sides of said intermediate wheel adapted to engage with the respective ratchets, an intermediate connection between the pawls to cause them to move simultaneously in different directions with reference to the ratchet-wheels, means for forcing said pawls positively in one direction, and a spring for returning them to their normal positions when released, substantially as specified.

5. The combination with an intermediate connecting-wheel and a driving-wheel, of oppositely arranged ratchets connected to said driving-wheel, pivoted pawls on said intermediate wheel adapted to engage alternately with the respective ratchets, said pawls being connected together so as to move simultaneously in opposite directions, an operating projection having bearing-faces, and a sliding disk-wheel to contact with said operating projection to move said pawls simultaneously out of and into engagement with the respective ratchet-wheels, substantially as specified.

488,225. RAILWAY-SIGNAL. EDMUND SCHAMPER, Lynchburg, Va. Filed Aug. 26, 1891. Serial No. 403,806. (No model.)



Claim.—1. In a system of electric railway signals a pendent arm H hung adjacent to the track where it can be struck by a projecting arm on a passing train, said arm hanging from a shaft A carrying an insulated cam A' in combination with two pairs of spring terminal plates of two electric circuits, the plates being located on opposite sides of the cam A', together with a spring L for stopping the swinging of the arm, whereby the swinging of the arm by a train passing in one direction will close one of the circuits, and the swinging of the arm by a train passing in an opposite direction will close the other circuit.

2. In a system of electric railway signals a pendent arm H hung adjacent to the track where it can be struck by a projecting arm on a passing train, said arm hanging from a shaft A in combination with a pair of insulated cams A' and two sets of circuit terminal plates arranged on opposite sides of the cams A', together with springs L for checking the movement of the arm, whereby the swinging of the arm H by a train passing in one direction will close the circuits of one set of signals, and the swinging of the arm in an opposite direction by a train passing in that direction will close the circuits of the other signals, as and for the purpose set forth.

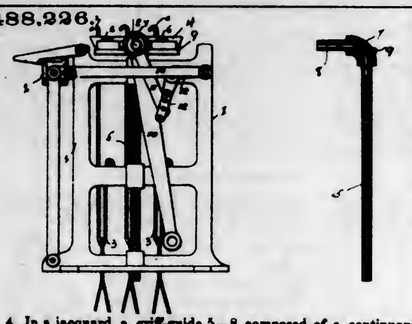
488,226. GRIFF-GUIDE FOR JACQUARD MECHANISM. OTTO W. SCHAHN, Philadelphia, Pa. Filed May 12, 1892. Serial No. 432,721. (No model.)

Claim.—1. In a jacquard a griff guide 5—8 composed of a continuous piece of bent wrought metal forming the shank and lifting pin, in combination with a griff bracket 9 fastened thereon, substantially as described.

2. In a jacquard, a griff guide 5—8 composed of a continuous piece of bent wrought metal forming the shank and lifting pin, in combination with a griff bracket 9 cast around the guide, substantially as specified.

3. In a jacquard a griff-guide 5—8 composed of a continuous piece of bent wrought metal forming the shank and lifting pin, in combination with a griff bracket 9 cast around the bend of said guide substantially as specified.

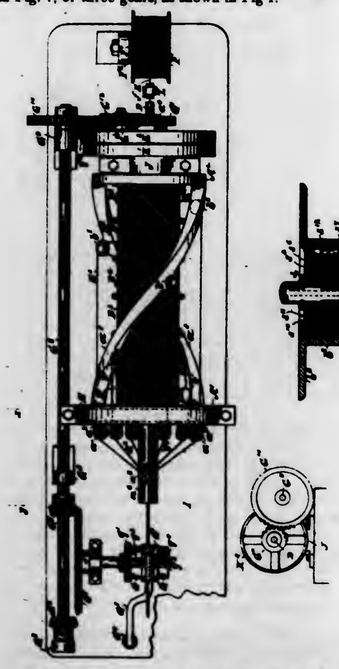
488,226.

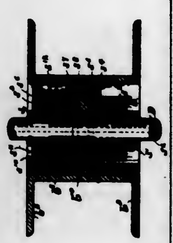


4. In a jacquard, a griff-guide 5—8 composed of a continuous piece of bent wrought metal forming the shank and lifting pin in combination with a griff bracket 9 secured to the head of said guide, substantially as specified.

488,227. TWISTING OR WINDING MACHINE. WILLIAM H. H. SMITH, Brooklyn, N. Y. Filed Oct. 31, 1889. Serial No. 328,796. (No model.)

Brief.—The improvement consists in providing a spring frictional clutch between the spools and the central shaft of the construction shown in Fig. 5, and also in driving the draw-off rollers by either of two gears on the shaft G^2 according as the said shaft is rotated either to the right or left by change gearing of either two gears, as shown in Fig. 7, or three gears, as shown in Fig 1.



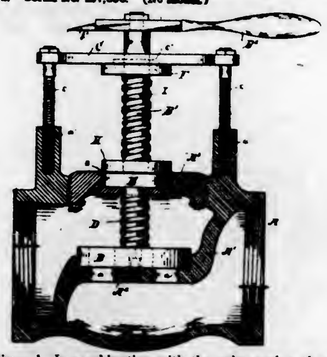


Claim.—1. In a twisting or winding machine, the combination of a number of spools or reels, a tubular shaft extending axially through the said spools or reels, friction clutches between the spools or reels and said shaft the said friction clutches being wholly within the reels or spools, guides for receiving the wire or material from the spools or reels, means substantially such as described for rotating the guides and a die receiving the wire or material after it passes around the guides, substantially as specified.

2. In a twisting or winding machine, the combination of a number of spools or reels, a tubular shaft extending axially through the said spools or reels, guides for receiving the wire or material from the spools or reels, a rotary head receiving the wire or material from the guides and rotating said guides, a die receiving the wire or material after it passes around the guides, take away rollers, a driving shaft for said rollers, mechanism for rotating said shaft in opposite directions, and gears carried by the shaft movable into engagement at opposite sides with a gear on the shaft of one of said take away rollers, substantially as specified.

3. In a twisting or winding machine the combination with a spool or reel supporting shaft of a sleeve mounted on the shaft and having a cylindric shell, a spool or reel having a cylindric hub fitting loosely on the sleeve and extended within the cylindric shell, another cylindric shell arranged between the spool or reel and the sleeve and engaging a portion of the cylindric hub, an adjustable plate on the sleeve and a spring between said plate and last named shell, substantially as specified.

488,228. VALVE. ALFRED S. SLYKER, Laflin, Pa. Filed Mar. 30, 1892. Serial No. 427,050. (No model.)



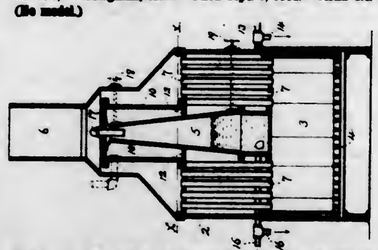
Claim.—1. In combination with the valve casing, the valve disk seated therein, the spring-pressed valve stem having the disk formed integrally therewith, the cap-piece or cover having the countersink adapted to receive said disk and forming a ground joint connection between said valve stem and casing, the spring adapted to press said disk to its seat, and the actuating lever for rotating the disk valve, substantially as described.

2. A rotary valve comprising a suitable casing with disk valve seated therein, the valve stem, the actuating lever, the disk rigid with said valve stem, the cross-bar, the adjusting screws connecting said cross-bar and casing, the washers fitted loosely on said valve stem between said cross-bar and casing, the spring interposed between said washers, and a second spring for holding the disk valve to its seat, substantially as described.

3. In combination with the valve casing having the disk valve seated therein, the valve stem having the disk rigid therewith seated above said disk valve so as to form a ground joint above the valve stem, the loose washer having the friction rollers bearing on said rigid disk, and the spring bearing on said washer so as as to force said disk to its seat, substantially as described.

4. In combination with the valve casing having the valve seat with disk valve seated therein, the valve stem having the disk rigid therewith seated above said disk valve so as to form a ground joint about the valve stem, the cross-bar and adjusting screws for centering said stem and disks, the loose washer having the friction rollers bearing on said rigid disk, the spring bearing on said washer so as to force said disk to its seat, and the actuating lever substantially as described.

488,229. BOILER. THOMAS L. STURTEVANT and THOMAS J. STURTEVANT, Framingham, Mass. Filed Sept. 7, 1892. Serial No. 445,290. (No model.)



Claim.—1. In a boiler the combination with a steam generator, and a drum for extended steam space of a second steam and water receptacle inclosed by said steam generator and adapted to extend within the drum, a common steam delivery together with separate supply and discharge pipes adapted to maintain independent water levels, substantially as explained.

2. In a compound boiler, the combination with a steam and water receptacle having a series of vertical flues which interconnect the fire-box and stack, of a second receptacle inclosed by the first, and a steam drum common to both receptacles and which is surmounted on the first-named receptacle and covers the part thereof not furnished with flues, substantially as set forth.

3. In a compound boiler, an exterior steam generating section, having supply and discharge pipes, a series of flues, a stack which co-operates with said flues, and a drum for extended steam, space within said stack, combined with a cylindrical, steam generating section inclosed within the first, independent supply and discharge pipes, therefor, a fire-box in common to both sections, and a common steam delivery, substantially as set forth.

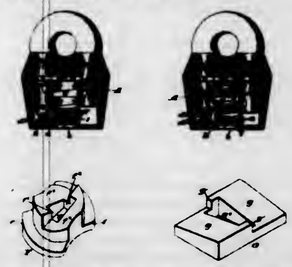
4. A compound boiler, composed of an exterior steam generating section, having a series of flues therethrough, an apertured top portion, and a drum which surmounts said apertured portion, combined with a coniform section secured to the bottom of the exterior section and adapted to extend within the drum, and communicate therewith, a steam delivery common to both sections, and separate supply and discharge pipes, as likewise separate water-gages for independent water levels, substantially as described.

5. In a boiler the combination with an exterior water and steam receptacle, its independent feed and discharge pipes, and drum for extended steam space, of an interior cone-shaped partition attached to the base of said receptacle, and extending into the drum with which it communicates, feed and discharge pipes to maintain a separate water-level within said partition, and a fire-box, and steam delivery pipe in common to both steam-generating portions, substantially as explained.

488,230. TENSION DEVICE. SAMUEL S. TAYLOR, Schooley's Mountain, assignor of one-half to Frank Bell, Jersey City, N. J. Filed July 14, 1892. Serial No. 440,053. (No model.)

Claim.—The herein described tension device for fence-wires, the same comprising a helical spring with an integral loop at each end, and a stop consisting of a stiff wire passing through the spring and having each end laterally bent, as and for the purpose hereinbefore set forth.

488,231. PADLOCK. WILLIAM F. TROAST and SAMUEL R. SLAYMAKER, Lancaster, Pa., assignors to Slaymaker, Barry & Co., same place. Filed Feb. 20, 1892. Serial No. 422,211. (No model.)



Claim.—1. In a padlock, the combination of a tumbler having an inclined bottom surface formed on its lower face adapted to engage and register with a similarly inclined top surface on the upper face of a stationary plate, whereby when the tumbler is revolved in a given direction said inclined surfaces slide upon each other and force the stationary plate and tumbler apart vertically, and a yielding support for the stationary plate and tumbler, substantially as and for the purpose specified.

2. In a padlock, the combination, with a stationary plate having a bearing face formed of oppositely inclined surfaces, of a tumbler having a bearing face formed of oppositely inclined surfaces adapted to register with the inclined surfaces of the stationary plate, and a yielding support for the plate and tumbler, substantially as and for the purpose specified.

3. In a padlock, the combination, with a stationary plate having a bearing face formed of oppositely inclined surfaces, one end of each of said surfaces terminating against a shoulder and the other being connected therewith by a horizontal surface, of a tumbler having a bearing face formed of oppositely inclined surfaces terminating in shoulders and adapted to engage the inclined surfaces of said plate, and a yielding support for the plate and tumbler, substantially as and for the purpose specified.

4. In a padlock, the combination, with a shackle having notched arms, the longer arm having an annular flange formed on the end thereof, of a top plate having jaws adapted to embrace said long arm and engage the annular flange thereon, a tost formed on the lower face of said plate and constructed to be received in an opening in the tumbler below it, stationary plates having bearing surfaces formed of oppositely inclined faces terminating in shoulders, tumblers having the ends tapered in the same direction, hubs formed on the tumblers and having oppositely inclined faces terminating in shoulders adapted to engage the shoulders of the stationary plates, the lower stationary plate having a hollow cylinder formed on the bottom thereof, and a spring coiled around said cylinder and resting on the bottom plate of the case, substantially as and for the purpose specified.

488,232. ANIMAL-TRAP. ORIN S. WARD, Los Gatos, Cal. Filed July 6, 1892. Serial No. 439,189. (No model.)

Claim.—1. In a trap the combination of a bar, curved jaws pivoted at their inner ends to the same and provided with longitudinal slots, spring-actuated arms arranged in the slots and adapted to move in the same, and loosely engaging the jaws to close the jaws, and means for setting the trap, substantially as described.

2. In a trap, the combination of a bar, curved jaws pivotally secured to the bar and provided with longitudinal slots, a spring mounted on the bar and comprising a central loop, side coils and spring arms engaging the openings of the jaws, and means for setting the trap, substantially as described.

3. In a trap, the combination of a bar, curved jaws pivotally secured to the same and provided with longitudinal slots, a spring mounted on the bar and having spring arms engaging the slots, a cross-bar connecting the arms, a trigger mounted on the bar and provided with a hook to engage the cross-bar, and a plate hinged to the bar and provided with an opening to receive the trigger, substantially as described.

4. In a trap the combination of a bar, curved jaws pivotally secured to the same and provided with longitudinal slots, a transverse pin mounted on the bar, the spring provided with a central loop receiving the bar and having side coils disposed on the transverse pin and having arms engaging the slots of the jaws, cross-bars connecting the spring arms, a trigger provided with an eye and pivotally mounted on the bar and having a hook to engage one of said cross-bars and a plate hinged to the bar and provided with an opening to receive the trigger, substantially as described.

488,233. STORAGE-BATTERY. GEORGE A. WARBURN, Cleveland, Ohio, assignor, by mesne assignments, to the Ford-Washburn Storelectric Company, same place. Filed Dec. 10, 1889. Serial No. 333,230. (No model.)

Claim.—In a secondary battery, the combination, substantially as set forth, of perforated metallic electrodes, separated by an interposed porous diaphragm, and insoluble active material permeated by an electrolytic solution, placed between and held in position by said diaphragm and electrodes.

488,233.

posed therein and the seat suspended in rear of the axle; substantially as described.

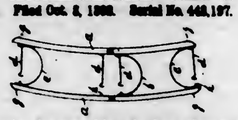
4. In a sulky, the combination with the shafts, axle having the forwardly cranked central portion and ground wheels, of the cranked pedal shaft hung below the level of the axle, the gearing between the

circumference of said orifice and doubled within said slit to increase the friction of said reed on the sides of said slit to retain said reed in said slit, as and for the purpose specified.

paring tool, a locking device for securing the gage to position after it has been moved by the calipering device, and a longitudinally reciprocating slide, carrying a transversely reciprocating slide provided

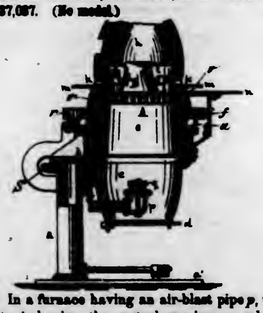
488,283.

488,284. TROUSERS-STRETCHER. FRANK W. WATKINS, New Bedford, Mass. Filed Oct. 8, 1892. Serial No. 448,197. (No model.)



Claim.—A device for stretching the legs of trousers, both laterally and longitudinally, consisting of the two curved parallel bars *a*, *a*, divided centrally and having their meeting ends provided with the slots *l*, and headed studs *k*, and their outer ends provided with the springs *c*, and spurs *g*, the intermediate spring *b*, the contracting hooks *d* and eyes *h*, all as shown and described.

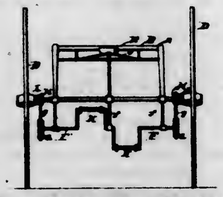
488,285. CENTER PIECE FOR THE GRATES OF FORGE-FURNACES. GEORGE H. WEBB, Pawtucket, R. I. Filed June 17, 1892. Serial No. 437,027. (No model.)



Claim.—1. In a furnace having an air-blast pipe *p*, the combination of the grate A, having the central opening *w* and the dome B having the annular flange C with air-passages D and the flange E fitting into the opening *w* of the grate A, substantially as shown and for the purpose specified.

2. In a furnace having an air-blast pipe *p*, the combination of the grate A having the central opening *w*, the dome B having the flange C with air-passages D, the flange E fitting into said opening *w*, the bosses F with the grooved seats G, and the bars I and J connected by the bolt K and adapted to fasten said grate and dome together substantially as specified.

488,286. SULKY. ISAAC WOOD, Minneapolis, Minn. Filed Jan. 20, 1892. Serial No. 419,067. (No model.)



Claim.—1. The combination with a sulky adapted to be drawn by a horse and its ground wheels, of a treadle gear propelling mechanism and a clutch interposed between said propelling mechanism and ground wheels; substantially as described.

2. The combination with a sulky adapted to be drawn by a horse and its ground wheels, of a treadle gear propelling mechanism, sprocket wheels driven thereby and a pawl and ratchet connection between said sprocket wheels and ground wheels; substantially as described.

3. In a sulky, the combination with the shafts, axle and ground wheels, of the cranked pedal shaft hung below the level of the axle, the gearing between the pedal shaft and axle having a clutch interposed therein and the seat suspended in rear of the axle; substantially as described.

4. In a sulky, the combination with the shafts, axle having the forwardly cranked central portion and ground wheels, of the cranked pedal shaft hung below the level of the axle, the gearing between the pedal shaft and axle having a clutch interposed therein, and the seat suspended in rear of the central forwardly cranked portion of the axle; substantially as described.

488,287. FIFTH-WHEEL. ALFRED H. WORREST, Lancaster, Pa. Filed Dec. 11, 1891. Serial No. 414,732. (No model.)

Claim.—1. The combination, with an axle, of the lower plate of a fifth-wheel having a circular bar formed on the lower side thereof and engaging a semicircular recess in the top of the axle, a king-bolt connected with said bar, means for retaining the bar in the recess, and thills rigidly connected with the axle, substantially as and for the purpose specified.

2. The combination, with an axle having a semicircular recess formed in the top thereof, of a circular bar engaging the recess and having bearings or posts thereon, the lower plate of a fifth-wheel formed on or with said posts, a king-post connected with the bar, means for retaining the bar in the recess, and thills rigidly connected with the axle, substantially as and for the purpose specified.

3. The combination, with an axle, of the lower plate of a fifth-wheel having a circular bar formed on the lower side thereof and engaging a semicircular recess in the top of the axle, a king-bolt connected with the bar, a cap or shield covering the hinge formed by the bar and axle and having a slot therein through which the king-bolt passes, clips securing the bar and cap or shield to the axle, and thills rigidly connected with the axle, substantially as and for the purpose specified.

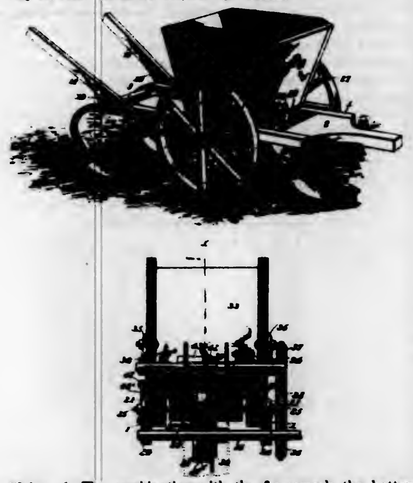
488,288. HORN. HARLAN P. YOUNG, Lowell, Mass. Filed June 27, 1891. Serial No. 397,703. (No model.)

Claim.—1. The combination of the bell or cone, having an internal taper, the mouthpiece, having an internal taper, the reed and the reed-holder, having an external taper to enter the tapering portions of said bell or cone and said mouthpiece and to compress said cone between said mouthpiece and said reed-holder, as and for the purpose specified.

2. The combination of the reed-holder, having a central orifice and a slit, and a reed arranged in said slit and lying partly within the circumference of said orifice and retained in place by friction on sides of the said slit, as and for the purpose specified.

3. The combination of the reed-holder, having a central orifice and a slit, and a reed, arranged in said slit and lying partly within the circumference of said orifice and doubled within said slit to increase the friction of said reed on the sides of said slit to retain said reed in said slit, as and for the purpose specified.

488,289. PLANTER. JAMES C. GAYNOR, Thornton, Tex. Filed July 30, 1892. Serial No. 441,733. (No model.)



Claim.—1. The combination with the framework, the bottom mounted thereon and provided at one side of its longitudinal center with a slot and at the opposite side of its center with a hopper surmounting the bottom, a shaft journaled under the bottom, a wheel mounted on a shaft and provided with an annular series of countersunk seed-cups and at one side thereof with a series of radiating spokes or arms, the cups being in the path of the opening in the bottom and the arms extending through the slot in said bottom, and the half-bottom, L-shaped in cross-section, reversibly mounted in the hopper, substantially as specified.

2. The combination with the framework, the bottom mounted thereon and provided at one side of its longitudinal center with a slot and at the opposite side of its center with an opening, a hopper surmounting the bottom, a half-bottom of inverted L-shape terminating at its ends in walls bent at an angle to the bottom, the inner edge of said half-bottom constituting a flange and taking between the cup and arm portion of the wheel, bolts passing through the end walls of the hopper and the end wall of the half-bottom, and the brush carrying a plate mounted on the front bolt, said brush contacting with the periphery of the wheel, substantially as specified.

3. The combination with the opposite parallel side-bars connected at their front and rear ends, the hopper supported thereon, and the handles bolted to the side-bars, of the spout depending from the hopper, the opposite standard secured to the side-bars and located at opposite sides of the spout, the shovel secured to the lower ends of the standards and located in front of the spout, and the inclined braces secured at their front ends to the standards and at their rear ends to those bolts connecting the handles and side-bars, substantially as specified.

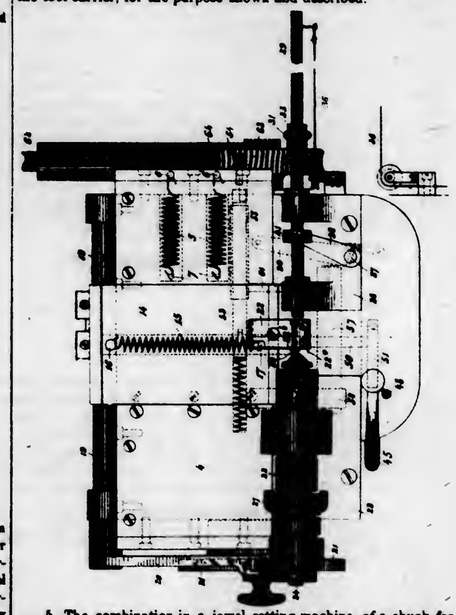
488,240. JEWEL-SETTING MACHINE. DUANE H. OSBORN, Waltham, Mass. Filed Mar. 1, 1892. Serial No. 423,415. (No model.)

Claim.—1. A jewel-setting machine provided with a calipering device for measuring the depth of the jewel, and means controlled by said calipering device for determining the depth of the recess formed to receive the jewel, as set forth.

2. A jewel-setting machine provided with a calipering device for measuring the depth of the jewel, and a gage controlled by said calipering device for limiting the movement of the setting-preparing tool, substantially as described and shown.

3. The combination in a jewel-setting machine, of a calipering device for measuring the depth of the jewel, a gage controlled by said calipering device for limiting the movement of the setting-preparing tool, and a locking device for securing the gage to position after it has been moved by the calipering device, as and for the purpose described.

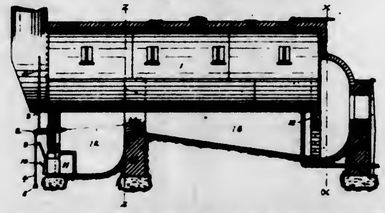
4. The combination in a jewel-setting machine, of a calipering device for measuring the depth of the jewel, a gage controlled by said calipering device for limiting the movement of the setting-preparing tool, a locking device for securing the gage to position after it has been moved by the calipering device, and a longitudinally reciprocating slide, carrying a transversely reciprocating slide provided with a tool-carrier, said slides co-operating to advance and withdraw the tool-carrier, for the purpose shown and described.



5. The combination in a jewel setting machine, of a chuck for holding and rotating the setting, a setting-carrier provided with a feeding device and with a latch adapted to automatically lock said device to the carrier, means for moving said carrier longitudinally to first insert a setting in the chuck and then withdraw the carrier from the chuck and means for unlocking the feeding device when the carrier is moved to present a setting to the chuck, as set forth.

6. The combination in a jewel setting machine, of a chuck for holding and rotating the setting, a slide carrying tool adapted to operate successively on a setting held by the chuck, mechanism for operating said slide, substantially as described, a calipering device for measuring the depth of a jewel, a movable gage for limiting the first operative movement of the tool carrying slide, connections between said gage and the calipering device whereby the position of the gage is determined by the depth of the jewel and means for locking the gage in the position to which it is moved by the calipering device, as set forth.

488,241. BOILER-SETTING. FRED G. GASCHE, Chicago, Ill. Filed Sept. 19, 1891. Serial No. 406,574. (No model.)



Claim.—1. In a boiler setting for liquid or oil fuel the combination of a combustion and mixing chamber, an injector burner adapted to discharge across said mixing chamber, a conical outlet in line with the axis of said burner, and a combustion chamber communicating with the said conical outlet and gradually increasing in size toward its rear end, the size of the conical outlet between the combustion and mixing chambers being sufficient for the passage of the column of flame from the burner and yet to prevent material accession of air to the combustion chamber, as and for the purpose specified.

2. In a boiler setting for liquid or oil fuel the combination of a combustion and mixing chamber provided with air induction cham-

bers, an injector burner adapted to discharge across said mixing chamber, a conical outlet in line with the axis of said burner, and a combustion chamber communicating with said conical outlet, said combustion chamber gradually increasing in size toward its rear end, and an arch between the sides of said combustion chamber at the rear

3. A fruit gatherer comprising a guiding ring, a plate pivotally supported above the said guiding ring, a spring actuated rod upon the plate, having its outer end provided with a knife edge, a cord attached to the opposite end carrying a ring or stirrup, stops for the ring, and a lever having its upper end connected to the pivoted plate

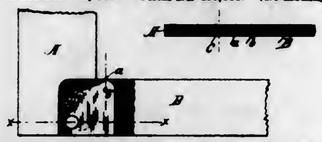
being provided with the inlets I, and outlets I', for the admission and exhaust of a cooling medium, the passages O connecting said outlets with a main flue M, the exhaust pipe L, and an inclosing casing, substantially as and for the purpose described.

secured at right angles to each other upon their respective shafts and provided with receiving openings at one end, and oppositely located discharge tubes discharging from the other end of the buckets, said upper buckets being each further provided with flared mouths inclosing the receiving openings thereof and a walled bridge connecting

bers, an injector burner adapted to discharge across said mixing chamber, a conical outlet in line with the axis of said burner, and a combustion chamber communicating with said conical outlet, said combustion chamber gradually increasing in size toward its rear end, and an arch between the sides of said combustion chamber at the rear end of the boiler, as and for the purpose specified.

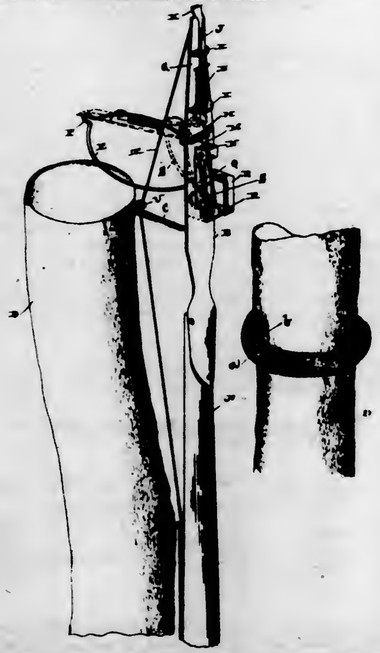
3. In a boiler setting for liquid or oil fuel the combination of a combustion and mixing chamber—air inlets for said mixing chamber provided with adjustable covers, an injector burner adapted to discharge across said mixing chamber, a conical outlet in line with the axis of said burner, and a combustion chamber communicating with said conical outlet, and gradually increasing in size toward its rear end, and an arch across said combustion chamber at the rear end of the boiler, as and for the purpose specified.

488,242. **FOLDING SQUARE.** HENRY F. HEGEMANN, Milwaukee, Wis. Filed Mar. 26, 1892. Serial No. 426,612. (No model.)



Claim.—A right-angle square having one arm provided with an ear, said ear projecting beyond the inner edge thereof, the other arm provided with a corresponding groove across its inner end, the former pivoted within the latter, a locking pin for locking the blades in working position, said pin tapering and screw-threaded throughout its length, and passing transversely through the hinge at a suitable distance from its pivot, substantially as and for the purpose set forth.

488,243. **FRUIT-PICKER.** ALEXANDER HOSE, Akron, Ohio. Filed July 27, 1892. Serial No. 441,366. (No model.)



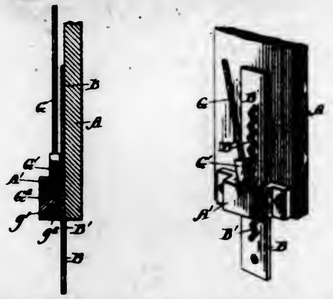
Claim.—1. A fruit gatherer, comprising a handle, a guiding ring, a pivoted plate above the guiding ring, a spring actuated knife, a setting cord attached thereto, and a tripping means operated by the said pivoted plate, substantially as specified.

2. A fruit gatherer comprising a handle, a guide ring, a plate pivoted above the said ring, a spring actuated knife rod upon the said pivoted plate, a cord attached to the inner end of the rod carrying a ring or stirrup at its opposite end, stops for the ring, and a tripping lever operated by the said pivoted plate, substantially as described.

3. A fruit gatherer comprising a guiding ring, a plate pivotally supported above the said guiding ring, a spring actuated rod upon the plate, having its outer end provided with a knife edge, a cord attached to the opposite end carrying a ring or stirrup, stops for the ring, and a lever having its upper end connected to the pivoted plate and its lower end engaging the ring for throwing it off the stops, substantially as set forth.

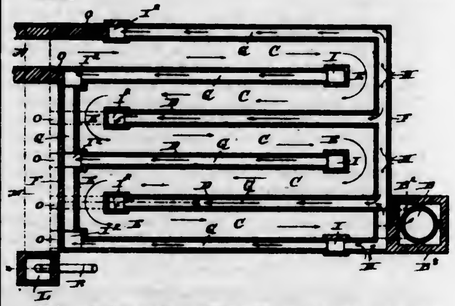
4. A fruit gatherer comprising a handle a ring carrying a bag, a guiding ring above the bag having its outer periphery over the center of the bag and provided with a bead for the stem of the fruit, a pivoted plate carrying a spring actuated knife, a means for setting the knife, and a means operated by the said pivoted plate for tripping the knife, substantially as specified.

488,244. **DOOR-BELL.** ANTHONY IMES, Lancaster, Pa., assignor to J. Walter Miller, same place. Filed Jan. 26, 1892. Serial No. 419,500. (No model.)



Claim.—The hammer handle G provided at its inner end with a block G', having a stud g^2 formed on it and central hole g' formed in it in combination with a longitudinally movable bar B provided with a zigzag groove B' receiving the said stud, and a fixed guideway A' provided on its inner side with a stud G^2 integral with the said guideway fitting into the said hole g' and serving as a pivot for the said hammer substantially as set forth.

488,245. **METHOD OF AND APPARATUS FOR TREATING THE SMOKE AND FUMES OF METALLURGICAL FURNACES.** WILLIAM H. JAMES, Denver, Colo. Filed Mar. 26, 1892. Serial No. 426,853. (No model.)



Claim.—1. In a cooling chamber, the combination with a series of partitions forming a tortuous flue for the reception of the products of combustion gases fumes &c. from a furnace, of the outer shell or casing inclosing said partitions, said outer shell and partitions being hollow to admit of the passage of an oppositely moving cooling current therethrough, which surrounds said current of the products of combustion, substantially as and for the purpose described.

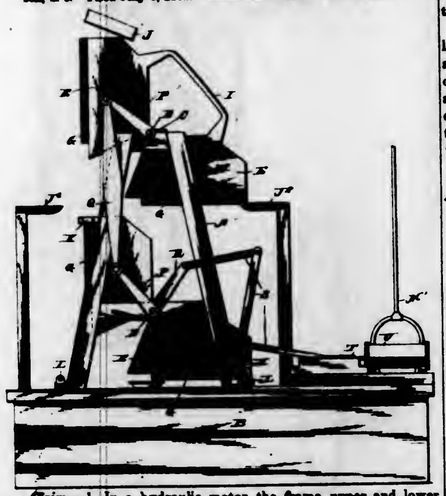
2. In a cooling chamber, the combination with a series of partitions forming a tortuous flue for the reception of the products of combustion gases, fumes, &c. from a furnace, of an inclosing casing comprising the end and side walls and the roof, all of which are formed with flues to admit of the passage of an oppositely moving cooling current, and a main flue communicating with passages of said side and end walls, roof and partitions, substantially as and for the purpose described.

3. In a cooling chamber, the combination of a series of hollow partitions forming a tortuous flue for the reception of the products of combustion gases, fumes &c. from a furnace, each of said partitions

being provided with the inlets I, and outlets I^1, for the admission and exhaust of a cooling medium, the passages O connecting said outlets with a main flue M, the exhaust pipe L, and an inclosing casing, substantially as and for the purpose described.

4. In a cooling or condensing chamber for treating the fumes, smoke, &c. of smelting or other metallurgical furnaces in the process of reclaiming or recovering substances contained therein in a volatilized or gaseous form, the combination of the side and end walls F, the roof Q, the partitions D, projecting alternately from the opposite end walls and forming a zig-zag passage O through said chamber for the smoke &c. to be treated, a main flue M communicating with an exhaust or exit pipe or flue L, the said roof, partitions, and side, and end walls being provided with passages or flues J and G communicating with said main flue, and also communicating with the air or other cooling medium, a blast device for securing a circulation through said passages or flues, an inlet A at one end of said chamber for the column of smoke, &c. to be treated, and a chimney B at the opposite end of said chamber for creating a draft for said smoke, &c., whereby the said smoke, fumes, &c. laden with volatilized substances are cooled, and said substances are condensed and precipitated, as set forth.

488,246. **HYDRAULIC MOTOR.** MATTHEW G. LENNEY, Anderson, S. C. Filed July 6, 1892. Serial No. 439,107. (No model.)



Claim.—1. In a hydraulic motor, the frame, upper and lower parallel shafts mounted within said frame, upper and lower pairs of water buckets secured at right angles to each other upon their respective shafts, and provided with oppositely located inlet and discharge openings, and means for supplying the upper buckets with water substantially as set forth.

2. In a hydraulic motor, simultaneously operating rock shafts arranged parallel with and one above the other, upper and lower pairs of water buckets secured at right angles to each other upon their respective shafts and provided with receiving openings and oppositely arranged discharge tubes, the open ends of the discharge tubes of the upper buckets being designed to project over and feed into the receiving openings of the lower buckets, substantially as set forth.

3. In a hydraulic motor, simultaneously operating rock shafts arranged one above the other, upper and lower pairs of water buckets arranged in corresponding planes with each other and secured to their respective shafts at right angles to each other, the upper buckets being adapted to receive the first charge of water and to alternately discharge into the lower buckets, substantially as set forth.

4. In a hydraulic motor, connected rock shafts arranged one above the other, upper and lower pairs of water buckets secured to said shafts respectively and arranged in corresponding planes with each other upon the same side of their shafts and provided with receiving openings, escape openings arranged opposite said receiving openings and discharge tubes covering said escape openings and open at their other ends, the discharge tubes of the upper buckets being adapted to discharge into the receiving openings of the lower buckets, and the discharge tubes of the lower buckets into a suitable tank, substantially as set forth.

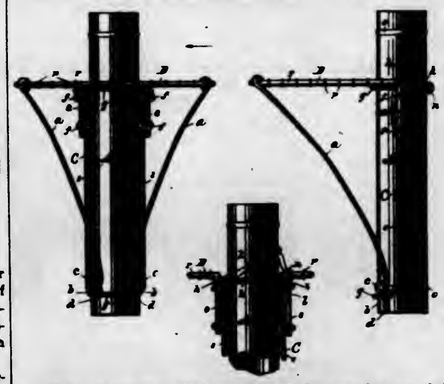
5. In a hydraulic motor, simultaneously operating rock shafts arranged one above the other, upper and lower pairs of water buckets secured at right angles to each other upon their respective shafts and provided with receiving openings at one end, and oppositely located discharge tubes discharging from the other end of the buckets, said upper buckets being each further provided with flared mouths inclosing the receiving openings thereof and a walled bridge connecting said mouths, and a supply flume or pipe arranged over said upper buckets, substantially as set forth.

6. In a hydraulic motor, simultaneously operating rock shafts arranged one above the other, upper and lower pairs of right angularly disposed water buckets secured to said shafts and feeding alternately into each other and a suitable tank, stops arranged in the path of the upper buckets to stop and hold the same in a true horizontal position, while discharging into the lower buckets, and corresponding buffers arranged to stop and break the force of the lower buckets upon reaching their horizontal positions, substantially as set forth.

7. In a hydraulic motor, the combination with the upper and lower pairs of oscillating or rocking water buckets feeding continuously into each other and a suitable tank; of the depending flanged retaining arms secured to each of the lowermost buckets, and the spring actuated and sliding catches pivotally mounted at one end to suitable points of attachment in the path of said retaining arms and adapted to hold the same until released by the over-balancing weight of the filled water buckets said sliding catches being adapted to have their unpivoted ends lifted by the rising bucket until such ends disengage the retaining arms, substantially as set forth.

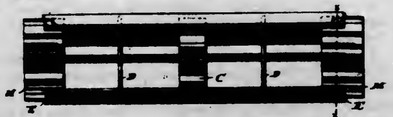
8. In a hydraulic motor, the combination with the pairs of oscillating water buckets feeding continuously into each other and a suitable tank, of the depending flanged retaining arms secured to each of the lower buckets, spring actuated catch plates pivotally mounted at one end to suitable points of attachment, and spring actuated catches moving in said plates and adapted to engage said flanged retaining arms until the catch plates are lifted by the overbalancing weight of the filled water buckets, substantially as set forth.

488,247. **STOVEPIPE-SHELF.** EDWARD A. LOEBS, Rochester, N. Y. Filed Feb. 20, 1892. Serial No. 422,975. (No model.)



Claim.—A stovepipe shelf consisting of a horizontal part or shelf proper indented at its edge to meet the pipe and having downturned rigid tines and brace rods, in combination with a frame to hold the shelf consisting of vertical side pieces joined by cross-bars curved to meet the pipe and formed with loops to receive said tines and other loops to receive the ends of said braces, the latter and said tines being adapted to slip vertically out of said respective loops, and a fastening clamp for the shelf, substantially as shown and described.

488,248. **NON-HEAT-CONDUCTING COVERING.** WILLIAM H. HOLMES, Spokane, Wash. Filed Jan. 6, 1892. Serial No. 417,172. (No model.)



Claim.—1. In a non-heat conducting covering for steam pipes, substantially as described, the combination with a jacket; of the end collars M, formed by bending fluted sheets of metal into circles; the said collars having their ends loosely lapped and also having the struck up wings E, adapted to engage the ends of the jacket; and the non-

conducting fillings interposed between the end collars and the pipe on which the covering is mounted adapted to create a dead air space within the jacket between the end collars, substantially as and for the purpose set forth.

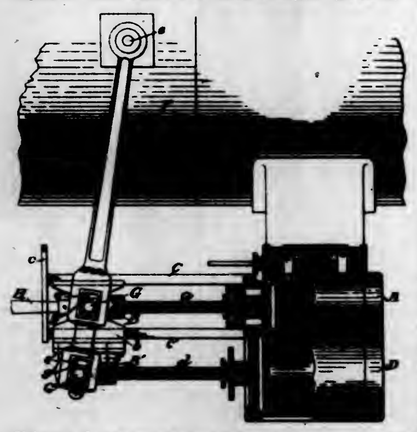
2. In a non-heat conducting covering for steam pipes and the like, the combination with a jacket comprising two longitudinal sections flexibly connected together, the middle collar C, formed from a sheet of fluted metal and the intermediate collars D, formed from fluted wire, interposed between the jacket and the pipe upon which it is mounted; of the end collars M, formed by bending fluted sheets of metal into circles; the said collars having their ends loosely lapped and also having the struck up wings E, adapted to engage the ends of the jacket; and the non-conducting fillings interposed between the end collars and the pipe on which the covering is mounted adapted to create a dead air space within the jacket between the end collars, substantially as and for the purpose set forth.

488,249. TERRET. JAMES C. PAGE, AKRON, KANS. Filed Dec. 15, 1890. Renewed Aug. 26, 1892. Serial No. 444,182. (No model.)

Claim.—1. In a terret the combination with a terret-ring and a guiding-roller of a removable spindle upon which the guiding-roller turns and a spring-latch at the side of the terret-ring for keeping the said spindle in position, substantially as described.

2. A terret provided with a guiding-slot for the reins and a depending lug extending downward at one side of the terret, whereby the terret may be attached in an upright position to the hame, substantially as set forth.

488,250. COMPOUND ENGINE. HARRY G. REAGAN, Jr., Philadelphia, Pa. Filed May 20, 1892. Serial No. 433,712. (No model.)



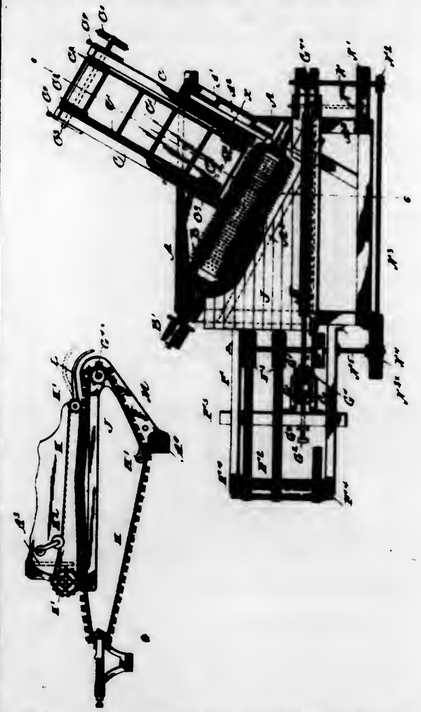
Claim.—1. In a compound engine the combination with a high pressure cylinder, of a low pressure cylinder having a longer stroke than the high pressure cylinder and located at one side of the line of motion of the main cross head, an auxiliary cross head sliding on the main cross head and a lever connected with the low pressure piston rod and transmitting its power to the main cross head, substantially as described.

2. The combination with the high pressure cylinder A of the low pressure cylinder D having a longer stroke, the main cross head B connected with the high pressure piston rod, the auxiliary cross head B' connected with the low pressure piston rod and having a T-headed flange sliding in a groove in the main crosshead, and the lever E transmitting the power of the low pressure cylinder to the main crosshead, substantially as described.

3. The combination with the cylinders A D and their piston rods a d of the main crosshead B and the auxiliary crosshead B', the forked lever E straddling the main crosshead and having slots e', and pins G G' received in said slots and rigidly connected with the piston rods a d respectively, substantially as described.

4. In a locomotive the combination with a high pressure cylinder, of a low pressure cylinder, having a longer stroke, separate cross heads connected respectively with the piston rods of said cylinders, and sliding in parallel straight lines, a lever fulcrumed on a fixed pivot above the cross heads, and connected with said cross heads by joints permitting relative vertical movement of the lever and cross heads, and a connecting rod jointed to the cross head of the high pressure cylinder, substantially as described.

488,251. BROOM-CORN CLEANER. FREDERICK W. REESE, Paris, Ill. Filed Feb. 27, 1892. Serial No. 423,080. (No model.)



Claim.—1. The combination of a toothed feed belt, a sprocket chain running parallel therewith, and a convex track for the feed belt, substantially as specified.

2. The combination with a feed belt and curved tracks at the delivery end thereof, of a movable curved arm, substantially as specified.

3. The combination with a toothed feed belt, of tracks arranged at its delivery end above its teeth, and an arm operating to restrict the passage of the material over said tracks, substantially as specified.

4. The combination with a toothed feed belt, of tracks arranged at its delivery end and above its teeth, and a movable arm operating to restrict the passage of the material over said tracks, substantially as specified.

5. The casing A having the rear transversely-inclined wall and provided with the elevator, arranged parallel with said wall, and with the cleaning cylinders arranged parallel with the shafts of the elevator and at a right angle with said end wall, substantially as specified.

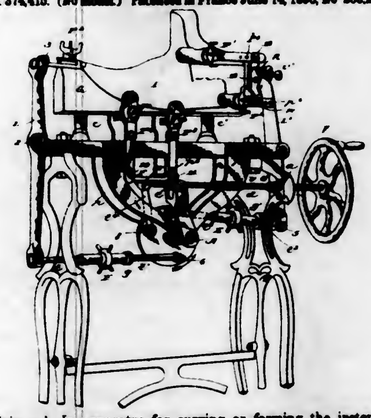
6. The casing provided with a floor J, the partition A^2, the inclined wall A' and the elevator arranged parallel with said wall A', substantially as specified.

7. In a broom corn cleaner, a closed casing having front and rear openings for the passage of material, a floor having a convex belt track, and a side board or skirting conforming at its edge with the convexity of the feed belt and track, substantially as specified.

8. In a broom corn cleaner, the cylinders, means for producing a current of air, and a casing having an inclined rear wall provided with an air inlet having an inner inclined deflecting board substantially as specified.

9. The combination of the belt the brackets M, provided with bearings and with curved edges, with cross sill A^4 arms L and the floor J, substantially as specified.

488,252. CRIMPING-MACHINE. ALEXANDRE ROTTÉ, PIERRE GAUTHIER, and PAUL GAUTHIER, Blois, France. Filed Dec. 11, 1890. Serial No. 374,415. (No model.) Patented in France June 14, 1890, No. 208,347.



Claim.—1. In apparatus for curving or forming the instep of boots and shoes the combination with a block C of levers L and L' and clamps P' P^3 substantially as described and illustrated in the accompanying drawings.

2. In apparatus for curving or forming the instep of boots and shoes the combination with a block C of levers F and L' clamps P' P^3 pivot I^3 adjustable pins or pivots I^3, I^4 adjusting screw s' and spring R substantially as described and illustrated in the accompanying drawings.

3. In apparatus for curving or forming the instep of boots and shoes the combination with a block C and levers L L' of divided links and nuts $t\,t'$ E g and t^3 t^4 E' g' and crank disk D substantially as described and illustrated in the accompanying drawings.

4. In apparatus for curving or forming the instep of boots and shoes the combination with a block C of clamps P^3 P^4 bar or lever F' connecting the clamps and crank disk D and link t^5 connecting the bar and disk substantially as described and illustrated in the accompanying drawings.

5. In apparatus for curving or forming the instep of boots and shoes the combination with a block C clamps P^3 P^4 lever F' link t^5 and disk D of shaft A arm M and screwed shaft v substantially as described and illustrated in the accompanying drawings.

6. In apparatus for curving or forming the instep of boots and shoes the combination with a block C levers L L' and links $t\,t'$ t^3 t^4 and nuts E E' $g\,g'$ and disk D of shaft A arm M and screwed shaft v substantially as described and illustrated in the accompanying drawings.

7. In apparatus for curving or forming the instep of boots and shoes the combination with a block C of clamps P' P^3 P^3 P^4 P^4 levers F' L L' links $t\,t'$ t^3 t^3 t^4 t^4 nuts E E' $g\,g'$ disk D shaft A crank arm M right and left handed screwed shaft v and pivoted nuts $e\,e'$ substantially as described and illustrated in the accompanying drawings.

488,253. SPLIT PULLEY. HARRISON RUDD and CHARLES R. RUDD, Fulton, N. Y. Filed Apr. 7, 1892. Serial No. 428,300. (No model.)

Claim.—1. In a split-pulley, the combination of a rim consisting of series of wood sections, one side having long inward projections which form an interior flange with an opening therein extending entirely around the inner side of the rim of the pulley, a pair of contiguously arranged arms extending diametrically across the pulley and having the ends thereof removably fitted in said flange, a pair of angle plates secured to the outer sides of said arms and provided with inclined flanges, a pair of braces having their inner ends connected to said angle plates, and their outer ends secured in said flange, and tie-bolts connecting the several parts, substantially as described.

2. In a split-pulley, the combination of a rim consisting of series of wood sections one side having long inward projections which form an interior flange, with an opening therein extending entirely around the inner side of the rim of the pulley, a pair of contiguously arranged arms extending diametrically across the pulley and having the ends thereof removably fitted in said flange, said arms being provided with

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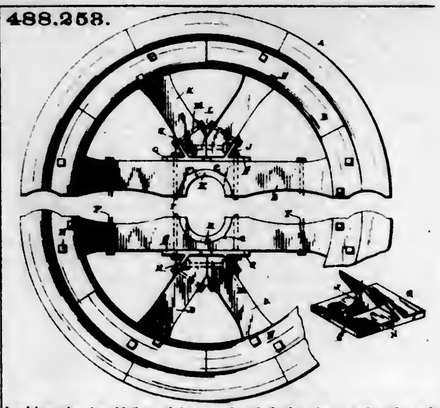
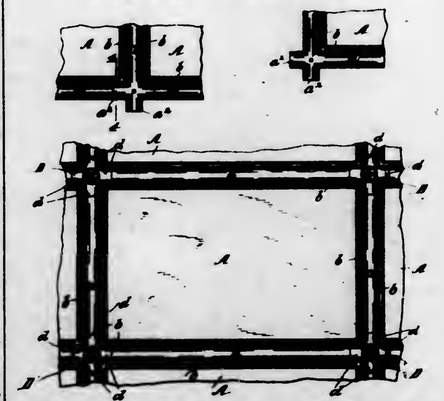


bushings having V-shaped lugs embedded therein, a pair of angle plates secured to the outer sides of the said arms and provided with inclined flanges, a pair of inclined braces with outer diverging ends secured to the aforesaid flange, and the inner ends thereof attached to said angle plates and bearing against each other, bolts connecting the inner ends of said braces, other bolts secured to said braces and said flanges of the angle plates and arranged at an angle of inclination, and tie-bolts extending through said arms alone, and also through said arms and the bases of said angle plates, substantially as described.

488,254. METALLIC CEILING-PLATE. LOMBLEY L. SAGMEISTER, Philadelphia, Pa., assignor of one-half to Charles H. Harder, Philmont, N. Y. Filed Sept. 12, 1892. Serial No. 445,566. (No model.)



Claim.—1. A metallic plate having a raised margin or molding on each side thereof, said moldings at the corners extending out beyond the margin of the plate, substantially as set forth.

2. A metallic plate having a continuous raised molding a around its margin, said moldings extending out beyond their intersecting points, substantially as specified.

3. A metallic plate having a continuous marginal molding a on each side thereof, and an inner continuous raised bead b adjacent to said molding; the latter extending out beyond their points of intersection, forming projections a^2, as and for the purposes set forth.

4. A metallic ceiling composed of plates, each of which having a raised marginal molding a at each side thereof, said moldings extending out beyond their intersecting points forming projections a^2, which latter are adapted to overlap a portion of the molding on adjacent plates, and a suitable rosette for each corner thus formed, substantially as set forth.

5. In a metallic ceiling, the plates A having a raised continuous molding at each side thereof and extending beyond their points of intersection forming projections a^2, the latter overlapping a portion of the molding on adjacent plates at the corners thereof, and a rosette D having lateral arms d overlapping the corner moldings and their projections a^2, and properly secured thereto, substantially as set forth.

488,255. TRUCK FOR STREET-CARS. HENRY F. SHAW, Boston, Mass. Filed Aug. 26, 1892. Serial No. 444,107. (No model.)

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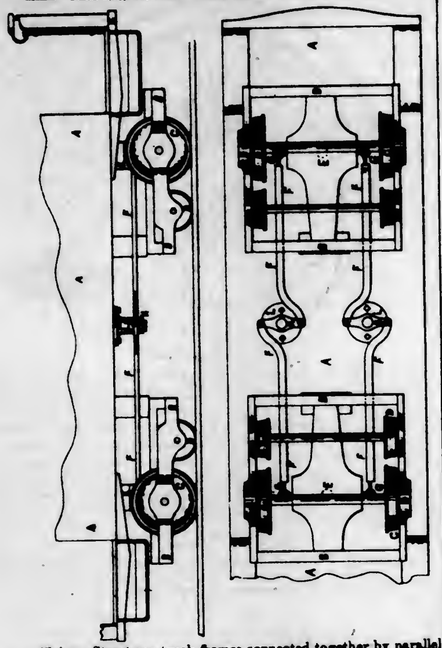
488,259. TOTE-BOX. WILLIAM G. AVERY, Cleveland, Ohio. Filed Mar. 14, 1892. Serial No. 425,417. (No model.)

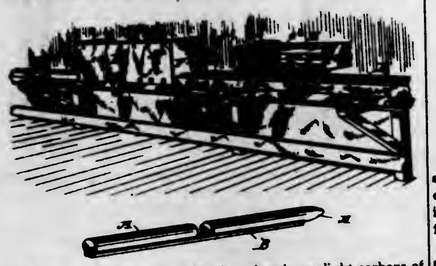
normally contacting with the said guide plate, a swinging lever arm pivoted to one end of said vibrating lever and having an off-standing strike lug adapted to be engaged by one of said strike pins to force the lever down, and a contact roller adapted to move over said guide

488,255. TRUCK FOR STREET-CARS. HENRY P. SHAW, Boston, Mass. Filed Aug. 29, 1892. Serial No. 444,107. (No model.)



Claim.—Street car truck-frames connected together by parallel bars pivoted at their outward ends to the opposite truck-frames, and their inward ends pivoted to the opposite ends of short cross-bars pivoted to the car body, whereby the turning of one truck on entering a curve in the track shall cause the other truck to turn in the opposite direction, so as to bring both trucks radially on a segment of the same circle, substantially as set forth

488,256. PROCESS OF UNITING BROKEN PIECES OF ARC-LIGHT CARBONS. NATHAN P. STEVENS, Concord, N. H. Filed July 1, 1892. Serial No. 438,712. (No model.)



Claim.—1. The process of forming electric arc-light carbons of waste fragments, which consists in facing off or otherwise fitting the adjoining ends and applying thereto a suitable adhesive paste for holding the pieces together, and baking the same until thoroughly homogeneous.

2. The process of converting fragments of electric arc-light carbons into a homogeneous carbon of any desired length which consists in uniting the pieces by means of a paste composed of pulverized carbon and coal tar, mixed in about equal parts and applied hot, and baking the carbons until hard.

488,257. AUTOMATIC SPRINKLER. PHINEAS W. SWAN, Winchester, Mass. Filed Aug. 20, 1892. Serial No. 444,248. (No model.)

Claim.—1. A sprinkler formed with a frame consisting of ring *c*, arms *b*, and part *c*, a valve seat and valve; the struts *g*, *h* constructed and arranged as shown, and having the respective curved arms *l*, *m*,

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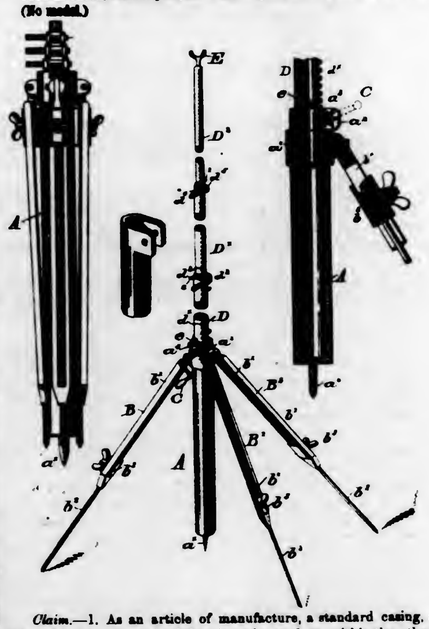
and the soldered clutch *i* arranged thereon; substantially as specified.

2. In a sprinkler formed and provided with a valve seat and valve, and a distributer; the struts *g*, *h*, of a length slightly greater than the distance from the valve to the lower part of the frame and formed with the respective curved arms *l*, *m* and a fusible metal holder to confine said arms in place; substantially as specified.

488,258. HOSE AND WIRE BRIDGE. WILLIAM WILLIAMS and JOHN H. CROOK, Philadelphia, Pa. Filed May 11, 1892. Serial No. 433,560. (No model.)



Claim.—1. As an article of manufacture, a standard casing, a series of members contained therein and nested one within the other, each embodying a series of teeth, a pinion wheel mounted in said casing and in each except the upper of said members, substantially as set forth.

2. As an article of manufacture, a standard casing, means for supporting it in position, a pinion supported upon said casing, a series of telescopically related members, each except the upper provided with a pinion, and each provided with a series of teeth, substantially as set forth.

3. As an article of manufacture, a standard casing, a series of telescopically related members mounted therein each embodying a series of teeth and each adapted to be elevated by an independently operated pinion wheel, substantially as set forth.

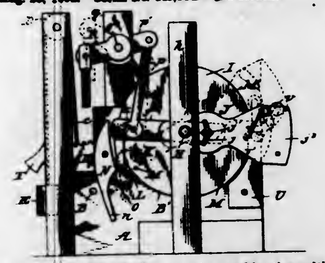
4. As an article of manufacture, a standard casing, means for supporting it in vertical position, a pinion supported by said casing, a series of telescopically related members each provided with a series of teeth, and each, except the one which when the device is extended is the upper, provided with a pinion adapted to mesh with the teeth of an adjacent member, and means by which each member, when elevated or extended, is, in its extended position, secured to the next larger or succeeding member, so as to be carried up by said succeeding member when the latter is elevated, substantially as set forth.

488,259. TOY-BOX. WILLIAM G. AVERY, Cleveland, Ohio. Filed Mar. 18, 1892. Serial No. 425,417. (No model.)

Claim.—1. A blank for the purpose described, the blank being formed from a single piece of sheet metal having its corners cut out, with projections upon its side wings, and perforations in its end wings to receive the projections, and extensions on the end wings to form handles for the box, substantially as described.

2. A box of the character described, consisting of a single piece of sheet metal having its corners cut out, with projections upon its side wings, and perforations in its end wings to receive said projections, and integral extensions on the end wings to form handles for the box, substantially as shown and described.

488,260. MECHANICAL MOTOR. GUSTAVE F. BAMS, De Witt, Nebr., assignor of two-thirds to S. L. Berg and J. M. Mann, same place. Filed Aug. 23, 1892. Serial No. 443,864. (No model.)



Claim.—1. In a mechanical motor, the combination with a train of gearing; of an intermittently rotating strike wheel connected with said gearing, and having a concentric series of strike pins near its edge, a sectional adjustable vibrating lever arranged adjacent to and mounted to oscillate on the same shaft as said strike wheel and moved in one direction by the same, stop and releasing devices carried by and arranged at opposite ends of said lever, and a pendulum shaft connected with one end of said lever and adapted to move the same in the other direction, substantially as set forth.

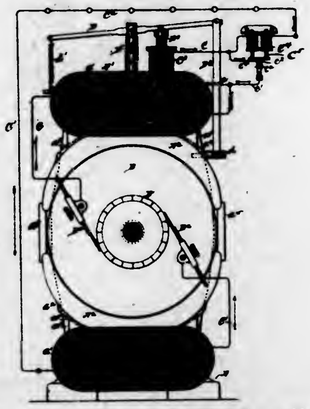
2. In a mechanical motor, the combination of the automatically controlled gearing, a shaft mounted in suitable bearings and carrying a pinion at one end meshing with said pinion, a ratchet wheel fixedly secured to said shaft, an adjacent intermittently rotating wheel having a pawl engaging said ratchet wheel and a series of strike pins near its edge, a sectional adjustable vibrating lever mounted to vibrate upon the same shaft as and moved in one direction by the adjacent wheel, stop and releasing devices carried by said lever and engaging said pins, and an oscillating pendulum shaft connected with one end of said vibrating lever and adapted to move the same in the other direction, substantially as set forth.

3. In a mechanical motor, an intermittently rotating strike wheel having a concentric series of strike pins near its edge, a vibrating lever mounted adjacent to the pin-face of said strike wheel, a swinging lever arm pivoted to one end of said lever and adapted to be engaged by one of said strike pins to lower the lever, a guide arranged adjacent to said lever arm, a stop lever arm arranged adjacent to the other end of the lever and adapted to hold the wheel while the opposite lever arm is being raised, and an oscillating combined pendulum and drive shaft connected with one end of said vibrating lever, substantially as set forth.

4. In a mechanical motor, an intermittently rotating strike wheel having a concentric series of strike pins, a sectional adjustable lever mounted adjacent to said strike wheel, a curved guide plate arranged adjacent to one side of said wheel and having a reduced guide arm, a spring-actuated guide dog pivoted adjacent to said guide arm and normally contacting with the said guide plate, a swinging lever arm pivoted to one end of said vibrating lever and having an off-standing strike lug adapted to be engaged by one of said strike pins to force the lever down, and a contact roller adapted to move over said guide plate, the guide dog, and said guide arm, an oscillating pendulum shaft, means for holding and releasing said shaft, an arm connecting said pendulum shaft with said vibrating lever, and means for holding the strike wheel stationary while the swinging lever arm is being raised, substantially as set forth.

5. In a mechanical motor, an intermittently rotating strike wheel having a series of concentric strike pins, a sectional adjustable vibrating lever mounted adjacent to said strike wheel, a swinging lever arm pivoted to one end of said lever and lowered by said strike pins, an oscillating pendulum shaft connected with the same end of said vibrating lever to raise the lever arm to the next pin, a guide plate secured to the other end of said lever, a spring actuated guide dog pivoted adjacent to the upper end of said guide plate and having the lower end thereof normally contacting with the same, and a stop lever arm pivoted adjacent to said guides and having an off standing strike lug adapted to form a stop for said strike pins, and a contact roller moving over said guide plate and guide dog, substantially as set forth.

488,261. DYNAMO-REGULATOR. CHARLES J. BOSUR, New York, N. Y. Filed Feb. 18, 1892. Serial No. 421,892. (No model.)



Claim.—1. In a dynamo electric machine the combination with an armature and an electro-magnet in the circuit of said dynamo of pole pieces movable circumferentially by an overload of current in the electro-magnet, substantially as specified.

2. In a dynamo electric machine, the combination with an armature, of circumferentially movable pole pieces, an electric circuit comprising an electro-magnet a lever operated in one direction by the electro-magnet and a connection between said lever and the movable pole pieces, substantially as specified.

3. In a current regulator for dynamo electric machines, the combination with circumferentially movable segmental pole pieces and an electric circuit of an electro-magnet in said circuit operating to control the movements of the pole pieces and an automatic cut-out in said circuit serving to direct all of the current through said electro-magnet, substantially as specified.

488,262. CABLE-CROSSING. WILLIAM BOWERS, New York, N. Y. assignor of one-half to Charles M. Woolcott, same place. Filed June 23, 1892. Serial No. 437,672. (No model.)

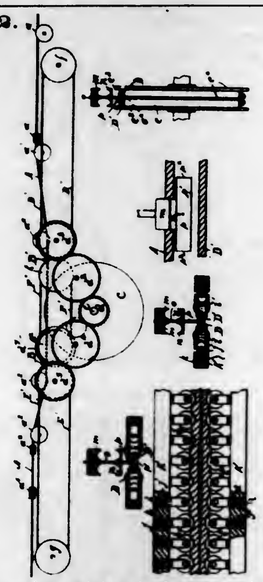
Claim.—1. A cable-crossing consisting of auxiliary clamping cables traveling in the direction of the main crossing cable.

2. A cable-crossing consisting of auxiliary cables arranged in pairs tensionally pressed together, and traveling in the direction of the main crossing.

3. A cable-crossing consisting of three sets of auxiliary cables arranged in pairs tensionally pressed together, one set approaching the crossing, another set between the crossed cables, and the third set receding from the crossing, and all traveling in the same direction as the main crossing cable.

4. A cable-crossing consisting of auxiliary cables arranged in pairs and traveling in the same direction as the main crossing cable, and tensional rolls along the length of said auxiliary cables and pressing the cables of the pair together.

488,262.



5. A cable-crossing consisting of a drum actuated by the main crossing cable, a sheave actuated from said drum and propelling a pair of auxiliary cables in the same direction as the main crossing cable, and tensional rolls along the length of the auxiliary cables, pressing the said cables together.

6. A cable-crossing consisting of a laterally and vertically deflected length of the main crossing cable, and auxiliary cables in the main line direction of the said main crossing cable, arranged in pairs tensionally pressed together, and traveling in the same direction as the said main crossing cable.

7. In combination with the auxiliary cables in pairs, as described, a grip having a plate and adopted to enter between the auxiliary cables.

8. In a cable-crossing apparatus, and in combination with auxiliary cables arranged in pairs, tension sheaves to press said cables together, set rotatably on rods reciprocating in housings which contain springs actuating said rods.

9. A cable crossing consisting of one or more sets of auxiliary cables arranged in pairs tensionally pressed together, and all traveling in the same direction as the main cable.

488,268. RAILWAY-SWITCH. WILLIAM R. BROWN, Wheatena, Pa., and LEWIS H. SMITH, Hamburg, N. Y., assignors of one-third to Albert G. Miller, Hamburg, N. Y. Filed Mar. 12, 1892. Serial No. 424,700. (No model.)

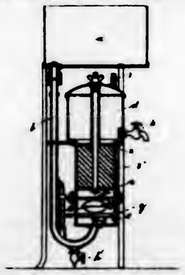
Claim.—1. The combination with a lever for actuating the switch of a pair of spring-actuated arms depending from the car and having rollers *k* and *l* fixed to their lower end, substantially as described.

2. The combination with the herein described lever for actuating a switch, of a pair of inwardly bent arms depending from a car, springs for actuating the arms, hangers through which the arms pass, and two sets of rollers fixed to the arms, one for supporting or carrying the same and the other for actuating the switch, substantially as described.

3. The combination with the herein described lever for actuating a switch, of one or more arms depending from a car, and two sets of rollers secured to the lower end of the arm or arms, one set serving to engage and actuate the lever and the other set being used to support the arm to which it is attached, substantially as described.

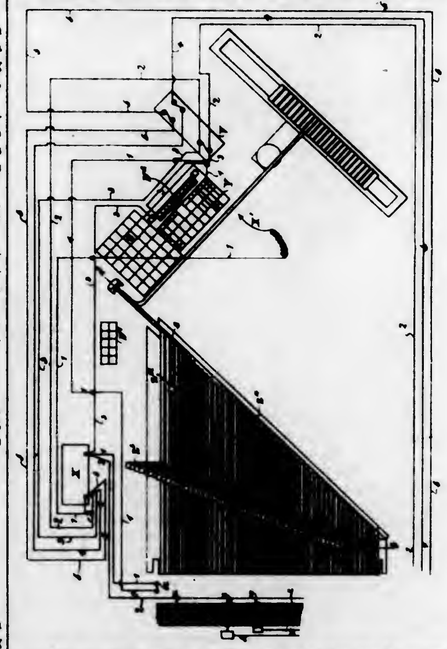
4. The combination with a railway switch of a lever located between the rails having one end connected to the switch, a cam fixed on the other end, a pair of inwardly bent spring-actuated arms depending from the car, and rollers *k* and *l* secured to the lower ends of the arms, substantially as and for purpose set forth.

488,264. OIL-FILTER. JOSEPH DECHS, Gladbach, Germany. Filed Sept. 17, 1891. Serial No. 405,944. (No model.)



Claim.—The combination of bent inlet pipe *b* with a communicating filtering chamber, a perforated diaphragm within the same, a float beneath the diaphragm having a specific gravity greater than oil and less than water, and with a percolator above the diaphragm and an accumulator, substantially as specified.

488,265. MACHINERY FOR SETTING UP TYPE. JOHN HOOKER, Boston, England. Filed Nov. 23, 1891. Serial No. 412,814. (No model.)



Claim.—1. The combination of a channel mechanism for setting up type in line and for causing the line to travel forward continuously along the channel—guides parallel with the channel—a finger or feeler—a block by which it is carried, means for sliding it along said guides—a spring for pressing the finger lightly against the type—means for drawing each block back into its normal position—a pusher means for reciprocating it to and fro continuously parallel with the channel and clear of the finger when the finger is resting upon the type but which when the end of the finger drops into a gap in the type comes against the finger and pushes it forward so causing the finger to carry forward all type that are in front of it into the galley.

2. The combination of a channel mechanism for setting up type in line and for causing the type to travel forward continuously along the channel—the finger or feeler bearing lightly upon the type—the

block by which the finger is carried—means for drawing the block back into its normal position—the pusher means for reciprocating it to and fro clear of the finger so long as the finger is resting upon the type but which pushes the finger forward when the finger drops—the galley and mechanism for shifting the galley a step endwise when the pusher goes back after each forward movement of the finger.

3. The combination of a channel mechanism for setting up type in line and for causing the type to travel forward continuously along the channel—the finger or feeler bearing lightly upon the type—the block by which the finger is carried—means for drawing the block back into its normal position—the pusher means for reciprocating it to and fro clear of the finger so long as the finger is resting upon the type but which pushes the finger forward when the finger drops—and the incline for lifting the finger on its next backward movement and so setting it free from the pusher.

4. The combination of a channel mechanism for setting up type in line and for causing the type to travel forward continuously along a channel—the finger or feeler bearing lightly upon the type—the block by which the finger is carried—means for drawing the block back into its normal position—the pusher means for reciprocating it to and fro clear of the finger so long as the finger is resting upon the type but which pushes the finger forward when the finger drops—and the incline for lifting the finger and disengaging it from the pusher so soon as it commences its forward movement if the finger has not dropped to its lowest position.

5. In a type setting machine the combination of a series of reservoirs containing the various type used—mechanism for ejecting the type one by one from the reservoirs and setting them up in line—a series of electro magnets one for every thickness of type used—contact mechanism for completing an electric circuit through the coils of one or other of these magnets whenever a type is ejected from any one of the reservoirs—magnet armatures normally held away from the magnets each at a different distance to the others—a pointer or indicator and mechanism interposed between it and the armatures by which each time an armature is attracted it is moved a greater or less distance according to which armature is attracted.

6. In a type setting machine the combination of a series of reservoirs containing the various type and spaces used—mechanism for ejecting the type and spaces one by one from the reservoirs and setting them up in line—a series of electro magnets one for every thickness of type used—an electro magnet for the spaces—contact mechanism for completing an electric circuit through the coils of one or other of the magnets whenever a type or space is ejected—the armatures of the series of type magnets normally held away from the magnets each at a different distance to the others—the armature of the space magnet also held normally away from this magnet—a pointer or indicator and mechanism interposed between it and the armatures of the type and space magnets by which each time that one of these armatures is attracted it is moved a greater or less distance according to which armature is attracted—another pointer or indicator and mechanism interposed between it and the armature of the space magnet by which when this armature is attracted the pointer or indicator is moved a distance as well as the pointer or indicator worked by the other armatures.

7. In a type setting machine the combination of a series of reservoirs containing the various type used—mechanism for ejecting the type one by one from the reservoirs and setting them up in line—a series of electro magnets one for every thickness of type used—contact mechanism for completing an electric circuit through the coils of one or other of these magnets whenever a type is ejected from any one of the reservoirs—the armatures of the magnets—a spindle on which they are mounted loosely—a spring or weight for normally holding each armature away from its magnet, each at a different distance to the others—a spring or weight for normally holding the spindle in one position—arms extending from the spindle which come below the armatures so that the spindle is rocked whenever any armature is attracted—a pawl carried by an arm extending from the spindle—a ratchet wheel with which the pawl engages—an indicator or pointer and a clutch coupling it to the ratchet wheel—an electro magnet through the coils of which an electric circuit is completed whenever a line dividing space is ejected from the reservoir containing it to be set up in line—the armature of this magnet and mechanism interposed between it and the clutch by which whenever the armature is attracted the clutch is disengaged and the indicator or pointer allowed to be moved back to zero by a spring or weight.

8. In a type setting machine the combination of a series of reservoirs containing the various type used—mechanism for ejecting the type one by one from the reservoirs and setting them up in line—a series of electro magnets one for every thickness of type used—contact mechanism for completing an electric circuit through the coils of one or other of these magnets whenever a type is ejected from any one of the reservoirs—the armatures of the magnets—a spindle on which they are mounted loosely—a spring or weight for normally holding each armature away from its magnet each at a different distance to the others—a spring or weight for normally holding the spindle in one position—arms extending from the spindle which come below the armatures so that the spindle is rocked whenever any armature is attracted—a pawl carried by an arm extending from the spindle—a ratchet wheel with which the pawl engages—an indicator or pointer and a clutch coupling it to the ratchet wheel—a pawl carried by an arm extending from the armature of the space magnet—a ratchet wheel with which the pawl engages—an indicator or pointer and a clutch coupling it to the ratchet-wheel.

9. In a type setting machine the combination of a series of reservoirs containing the various type and spaces used—mechanism for ejecting the type and spaces one by one from the reservoirs and setting them up in line—a series of electro magnets one for every thickness of type used—an electro magnet for the spaces—contact mechanism for completing an electric circuit through the coils of one or other of the magnets whenever a type or space is ejected—the armatures of the magnets—a spindle on which they are mounted loosely—a spring or weight for normally holding each armature away from its magnet each at a different distance to the others—a spring or weight for normally holding the spindle in one position—arms extending from the spindle which come below the armatures so that the spindle is rocked whenever any armature is attracted—a pawl carried by an arm extending from the spindle—a ratchet wheel with which the pawl engages—an indicator or pointer and a clutch coupling it to the ratchet wheel—a pawl carried by an arm extending from the armature of the space magnet—a ratchet wheel with which the pawl engages—an indicator or pointer and a clutch coupling it to the ratchet-wheel.

10. In a type setting machine the combination of a series of reservoirs containing the various type and spaces used—mechanism for ejecting the type and spaces one by one from the reservoirs and setting them up in line—a series of electro magnets one for every thickness of type used—an electro magnet for the spaces—contact mechanism for completing an electric circuit through the coils of one or other of the magnets whenever a type or space is ejected—the armatures of the magnets—a spindle on which they are mounted loosely—a spring or weight for normally holding each armature away from its magnet each at a different distance to the others—a spring or weight for normally holding the spindle in one position—arms extending from the spindle which come below the armatures so that the spindle is rocked whenever any armature is attracted—a pawl carried by an arm extending from the spindle—a ratchet wheel with which the pawl engages—an indicator or pointer and a clutch coupling it to the ratchet wheel—an electro magnet through the coils of which an electric circuit is completed whenever a line dividing space is ejected from the reservoir containing it to be set up in line—the armature of this magnet and mechanism interposed between it and the clutches by which whenever the armature is attracted the clutches are disengaged and the indicators or pointers allowed to be moved back to zero.

11. In a type setting machine the combination of a series of reservoirs containing the various type and spaces used—mechanism for ejecting the type and spaces one by one from the reservoirs and for setting them up in line—an electro magnet—contact mechanism for completing an electric circuit through the coils of this magnet whenever a space is ejected—the armature of the magnet normally held away from the magnet—an arc with consecutive numbers upon it—mechanism interposed between it and the armature by which it is turned a distance each time the armature is attracted—a hammer by which a strip of paper is struck—a magnet armature carrying this hammer—its magnet—mechanism for introducing a dividing space into the line at the end of each short line into which the continuous line is to be divided and contact mechanism for sending an electric current through the coils of the magnet whenever a dividing space is inserted into the line so as then to cause the armature to be attracted and the paper to be struck by the hammer against one or other of the figures on the arc.

488,266. SLED-SHOE. ROBERT H. JORDAN, Jefferson, Pa. Filed May 13, 1892. Serial No. 433,717. (No model.)

Claim.—1. A sled shoe consisting of a plurality of short sections secured to the runner, substantially as described.

2. A sled shoe consisting of a plurality of short sections of hard steel secured to a strip of tougher metal, substantially as described.

3. A sled shoe consisting of a strip of metal having a dove tail groove and a plurality of sections having dove-tail tenons fitting into

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488,269. ROCK-DRILL. SAMUEL G. MCKIERNAN, Paterson, N. J. Filed June 3, 1892. Serial No. 435,220. (No model.)

at right angles to the rollers, substantially as described and shown.

4. In combination with the folding rollers, a folding blade over said rollers, a paper passage between said parts, a feed-table over said passage at one side of the rollers, and a paster disposed in a line at

14. In combination with the folding rollers, folding-blade and feed-table arranged as described, the gage-bar *c*—, supplemental bar *c'*—hinged to said gage-bar and projecting from the bottom of the gage-bar, the cushion *c*—attached to the projection of the supple-

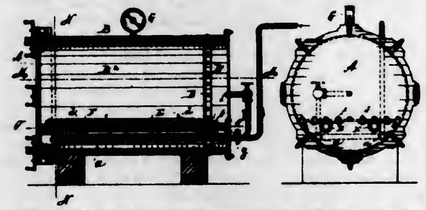
2. A sled shoe consisting of a plurality of short sections of hard steel secured to a strip of tougher metal, substantially as described.

3. A sled shoe consisting of a strip of metal having a dove tail groove and a plurality of sections having dove-tail tenons fitting into said groove, substantially as described.

4. A sled shoe consisting of a strip of tough metal having a dove tail groove, and a plurality of short sections of hard metal, each having a tenon fitting said groove, substantially as described.

5. The combination with the sled runner, of the strip C having dove tail groove *c*, the sections B having tenons *b* fitting said groove, the block D, and the stop E, substantially as described.

488,267. APPARATUS FOR SMOOTHING AND HARDENING THREADS. PAUL KLUG, Ortmannsdorf, Germany. Filed Aug. 4, 1891. Serial No. 401,677. (No model.)



Claim.—The combination of receptacle B, divided into chambers $B' B^2$, with steam pipe *a*, sliding perforated pipe E entering both chambers and with spring *g* and lid A, bearing against pipe E, substantially as specified.

488,268. SHOE-LACE FASTENER. AUGUST MEYER, Baltimore, Md., assignor to Dexter H. Miller, Jr., and Meyer S. Hess, same place. Filed Feb. 23, 1892. Serial No. 422,531. (No model.)

Claim.—1. A shoe-lace loop or bow holder consisting of a base-plate provided with lugs bent inwardly from the base upward and inclined downward on their upper edges, and means for securing it to a shoe: in combination with a tongue-lever compressible at its rear end and journaled in said lugs below the upper edges thereof.

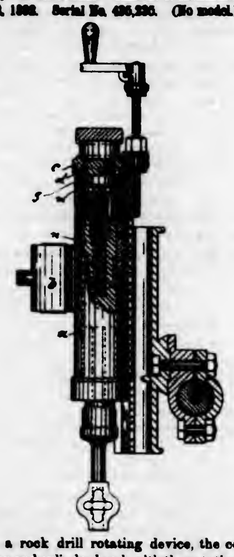
2. A shoe-lace loop or bow holder consisting of a base-plate provided with lugs bent toward each other from the base upward and an elongated opening widest at the rear and between the upper edges of said lugs, in combination with a tongue-lever compressible at its rear end and journaled in said lugs.

3. A shoe-lace loop or bow holder consisting of a base-plate provided with a tubular projection forming an eyelet on one side and lugs bent inwardly from the base upward and having cam surfaces on the opposite side and end of the plate, in combination with a tongue-lever compressible at its rear end supported between said lugs to close below the upper edges thereof.

4. A shoe-lace loop or bow holder consisting of a base-plate provided with lugs bent toward each other from the base upward, in combination with a tongue-lever compressible at its rear end having journals on the sides and extensions in the rear of the journals engaging the inner surfaces of said lugs and limiting the throw of the tongue-lever in its open position.

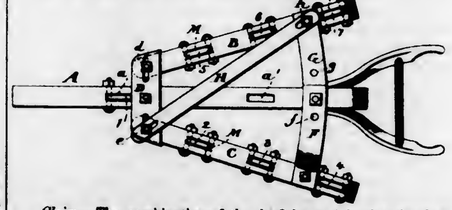
5. A shoe-lace loop or bow holder consisting of a base-plate having lugs bent inwardly from the base upward, in combination with a tongue-lever compressible at its rear end and journaled between said lugs and having transverse corrugations in its lower surface and bent downward at its outer end.

488,269. ROCK-DRILL. SAMUEL G. MCKIERNAN, Paterson, N. J. Filed June 2, 1892. Serial No. 435,293. (No model.)



Claim.—In a rock drill rotating device, the combination of a cylinder, its piston and cylinder head, with the rotating bar and clutch-wheels *g*, *m*, said cylinder head furnishing a bearing for said rotating bar and carrying a series of pins arranged radially about the bearing point of said rotating bar and adapted to engage in a corresponding series of sockets in the upper clutch wheel *g*, said cylinder head and upper clutch wheel being provided also with a series of registering sockets arranged radially about the bearing point of said rotating bar and with a series of spiral springs placed in said sockets and adapted to depress evenly said upper clutch wheel, substantially as described.

488,270. CULTIVATOR. ADOLPHUS COWART, Judson, Ala. Filed May 31, 1892. Serial No. 434,845. (No model.)



Claim.—The combination of the draft-beam A having the slots *a a'* for teeth, the wings B C, the plates D E slotted near their ends, the plates F G having a series of holes near their interlapping ends, the bar H slotted near the ends and the teeth 1, 2, 3, 4, 4, 5, 6, 7; whereby may be conveniently formed six different harrows or cultivators for special use at different stages of growth in the crops as described.

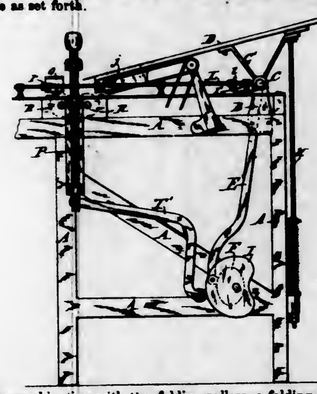
488,271. PAPER FOLDING AND PASTING MACHINE. TALBOT C. DEXTER, Fulton, N. Y. Filed June 20, 1892. Serial No. 437,979. (No model.)

Claim.—1. In combination with the folding rollers and paper-passage over said rollers, a feed-table over said passage and morable with its delivery edge toward and from the bite of the rollers as set forth.

2. In combination with the folding rollers and paper-passage over said rollers, a feed-table over said passage at one side of the folding rollers, and a paster carried on the under side of said table near the delivery edge thereof and in line at right angles to the rollers, substantially as set forth.

3. In combination with the folding rollers and paper-passage over said rollers, a feed-table over said passage and tilting with its delivery edge toward the bite of the rollers, and a paster carried on the under side of the feed-table near the delivery edge thereof and in a line at right angles to the rollers, substantially as described and shown.

4. In combination with the folding rollers, a folding blade over said rollers, a paper passage between said parts, a feed-table over said passage at one side of the rollers, and a paster disposed in a line at right angles to the rollers and carried on the under side of the said feed table as set forth.



5. In combination with the folding rollers, a folding blade over said rollers, a paper-passage between said parts, a feed-table over said passage at one side of the rollers and movable with its delivery edge toward and from the bite of the rollers, and a paster carried on the under side of said table and in a line at right angles to the rollers, as set forth.

6. In combination with the folding rollers, folding blade and paper-passage between said parts, a paster at one side of the rollers in a line at right angles thereto and over the paper-passage, a feed-table over the paper-passage at the opposite side of the rollers and tilting toward said rollers, and a paster carried on the under side of the said table and in line with the other paster, substantially as described and shown.

7. In combination with the folding rollers, folding blade over said rollers, and a paper-passage between said parts, a feed-table over said passage at one side of the rollers and tilting with its delivery edge toward the bite of the rollers, a gage in front of said edge of the table, and a paster carried on the under side of the feed-table near the delivery edge thereof, substantially as described and shown.

8. In combination with the folding rollers, folding blade over said rollers, and a paper-passage between said parts, a rock-shaft parallel with the folding rollers, a feed-table mounted on said rock-shaft and having its delivery edge over the bite of the folding rollers, and a gage in front of said edge of the table as and for the purpose set forth.

9. In combination with the folding rollers, folding blade and paper passage between said parts, a rock-shaft parallel with the folding rollers, a feed-table mounted on said rock-shaft and having its delivery edge over the bite of said rollers, a rotary cam, an arm fastened to the rock shaft and bearing with its free end on the cam, and a spring pressing on the table in opposition to the pressure received from the aforesaid cam and arm, substantially as described and shown.

10. In combination with the folding rollers, folding blade and paper-passage between said parts, a feed-table over said passage at one side of the rollers and having its delivery edge over the bite of the rollers, a gage in front of said edge of the table, and a cushion on the base of said gage and having its free edge in the path of the edge of the folding blade, substantially as and for the purpose set forth.

11. In combination with the folding rollers, folding blade and paper-passage between said parts, a feed-table at one side of said rollers and tilting with its delivery edge toward the bite of said rollers, a gage in front of said edge of the table, and a cushion on the base of said gage and having its free edge in the path of the edge of the folding blade.

12. In combination with the folding-rollers, folding blade and paper passage between said parts, a feed-table over said passage at one side of the folding rollers, a gage-bar in front of the delivery edge of the table and parallel with the folding rollers, stops connected to said bar adjustably in relation to their distance from the edge of the table, and a cushion on the base of said bar and having its free edge in the path of the folding blade, substantially as described and shown.

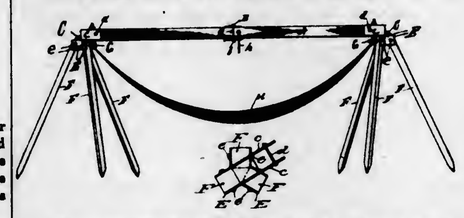
13. In combination with the folding-rollers, folding-blade and feed-table arranged as described, the gage bar *c*—perforated transversely, the stops *b*—having stems *b'*—passing through the perforations of said bar, set screws *b''*—engaging said stems, and a cushion on the base of the aforesaid bar and having its free edge in the path of the folding blade, substantially as described and shown.

14. In combination with the folding rollers, folding-blade and feed-table arranged as described, the gage-bar *c*—, supplemental bar *c'*—hinged to said gage-bar and projecting from the bottom of the gage-bar, the cushion *c*—attached to the projection of the supplemental bar, the bolts *d'*—attached to the gage-bar, and springs connected to said bolts and holding the supplemental bar in its normal position as set forth and shown.

15. In combination with the folding rollers R R—feed-table D—and cushion *c*—, the folding blade G—and pins *d d*—extending downward from said blade, substantially as and for the purpose set forth.

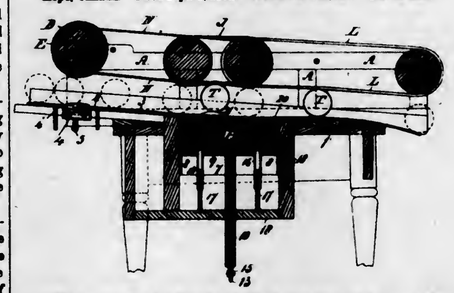
16. In combination with the folding rollers, a rock-shaft at one side of said rollers and parallel therewith, a feed-table mounted on said rock-shaft, a paster attached to said table, a paster supported movable vertically at the opposite side of the folding rollers, and a supplemental rock-shaft actuated by the aforesaid rock-shaft and lifting the latter paster, all combined to raise and lower the two pasters, substantially as set forth.

488,272. FOLDING HAMMOCK-FRAME. HARRY G. ELSE, Erie, Pa. Filed Aug. 10, 1891. Serial No. 402,314. (No model.)



Claim.—The combination in a folding hammock support, of two tripod supports, having radially and downwardly projecting flanges as E E, between which the upper ends of tripod legs as F are pivoted, with upwardly and inwardly projecting flanges as *c c*, on the tops of said tripod supports, a horizontal bar as A, pivoted between the flanges *c c* by means of bolts as *d* passing through the inner ends of said flanges, and hammock hooks as G passing through said bar A between the pivot bolts *d* and the tops of the tripod supports, substantially as and for the purpose set forth.

488,273. CAN-LABELING MACHINE. FRANCIS X. GAUDRIE, Port Hope, Canada. Filed Sept. 3, 1892. Serial No. 445,360. (No model.)

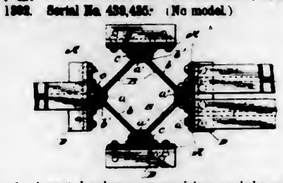


Claim.—1. The combination with the track-rails 3, 3, gumming pad 4, and a label-receptacle 7, intervening said rails, of the roller D, rolling the can over the surface of the gumming pad by frictional contact with the can, rollers H, and K, and belt J, rolling the can over the label-receptacle by frictional contact of the belt with the can, and the belts L, carried by rollers K, M, rolling the cans by frictional contact with the can from the machine after being labeled, as set forth.

2. In a can-labeling machine, the combination with a track having parallel rails, a gumming pad and label-receptacle intervening said rails, said receptacle having a yielding bottom or plunger 9, a frame carrying a roller D, having raised peripheral rings E, to move the cans over the surface of the gumming pad, and rollers H, K, carrying an endless belt J, above the label receptacle, as set forth.

3. The combination with a frame or support 1, carrying a track 2, having parallel rails 3, 3, a gumming pad 4, and a label-receptacle 7, intervening said rails, of a frame A, carrying a roller D, above the gumming pad, and rollers H, K, connected by an endless belt J, above the label-receptacle, endless belts L, following the line of track and intervening said rails to discharge the labeled cans, and a belt or belts N, driving the belted rollers, as set forth.

488,274. METAL COLUMN. JOHN H. GRAY, Chicago, Ill. Filed July 9, 1892. Serial No. 439,435. (No model.)



Claim.—1. A metal column, comprising upright members so arranged that the opposite members are parallel and the adjacent members at right angles to each other, each upright member comprising a flat body portion having a central rib on its rear face, and straps or diagonals having their edges secured to said ribs and connecting the adjacent upright members, substantially as described.

2. A metal column, hollow in its center and having its load carrying portion at a distance from the neutral axis and composed of upright members, the opposite ones parallel to each other, and the adjacent ones at right angles to each other and separated by intervening spaces, each upright member having a central longitudinal rib on its rear face, and diagonal connecting members having their edges secured to said ribs, substantially as described.

3. A metal column, comprising upright members arranged with the opposite ones parallel and the adjacent ones at right angles, and each composed of two L-shaped angle pieces united to form a flat body with a central rib on its rear face, and diagonal connecting members having their edges secured to said ribs, substantially as described.

488,275. NECKTIE-FASTENER. LOUIS GREENWALD, Leadville, Colo. Filed July 27, 1892. Serial No. 441,394. (No model.)

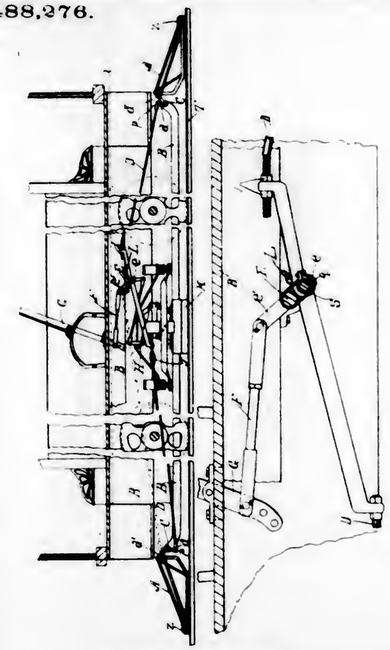
Claim.—A necktie fastener constructed of a single piece of sheet metal and consisting of a casing to receive the neckband of a necktie and comprising the front 4 having its lower edge bent outward at right angles to form a guard, the back 5 having its lower portion 8 free and forming a spring and provided at the lower end thereof with an inwardly projecting rectangular extension, said extension having its sides arranged flat against the casing and provided with the jaw 14 L-shaped in cross-section, and the sides 6 and 7, the former provided with a plate 10 arranged beneath the spring portion and completing the casing and having its lower edge extended to form a jaw and having its upper edge bent outward to form a heel for supporting the spring portion 8, substantially as specified.

488,276. STREET-CAR FENDER. GEORGE T. HALL, Monrovia, assignor of one-half to R. F. Spence, Los Angeles, Cal.; Anna M. Spence executrix of said R. F. Spence, deceased. Filed Apr. 5, 1892. Serial No. 427,789. (No model.)

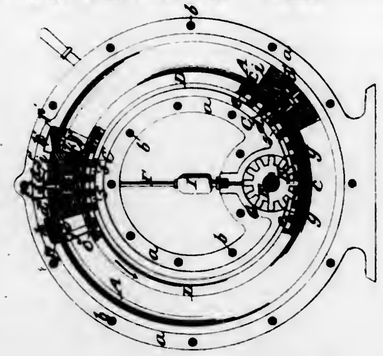
Claim.—1. The combination set forth of the car, the fender pivoted to the car to allow vertical movement of such fender; a connecting rod arranged to reciprocate longitudinally of the car and pivoted immediately or through intermediate means to the fender at a point above or below the axis of the pivot which sustains the fender; the crank *e* of the crank-shaft E pivoted to the reciprocating rod; such crank-shaft journaled to the car and provided with the crank arm *e'* projecting therefrom opposite the crank arm *e*; the lever-and-crank connecting rod F pivoted at one end to the crank arm *e'* and at the other end to the operating lever G, and such operating lever, pivoted to the car.

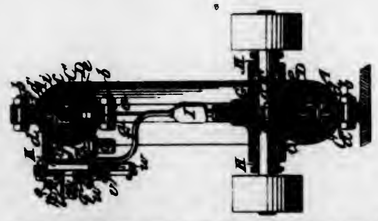
2. The combination set forth of the car, the fender pivoted to the car to allow vertical movement of such fender; a connecting rod arranged to reciprocate longitudinal of the car and pivoted immediately or through intermediate means to the fender at a point above or below the axis of the pivot which sustains the fender; the crank *e* of the crank-shaft E pivoted to the reciprocating rod; such crank-shaft journaled to the car and provided with the crank arm *e'* projecting therefrom opposite the crank arm *e*; the lever-and-crank connecting rod F pivoted at one end to the crank arm *e'* and at the other end to the operating lever G; such operating lever, pivoted to the car, and the brake-operating mechanism connected with the crank arm *e*.

488,276.



488,277. ROTARY ENGINE. JOHN R. HAMILTON, New York, N. Y. Filed Apr. 13, 1892. Serial No. 428,977. (No model.)





Claim.—1. The combination with the cylinder of a rotary engine, a rotary power transmitting ring arranged within said cylinder and two pistons fitted to said cylinder, of engaging devices in the pistons and a stop in the cylinder for alternately engaging said pistons with said ring and arresting them within the cylinder, and a main shaft eccentric to the cylinder geared with said ring, substantially as herein set forth.

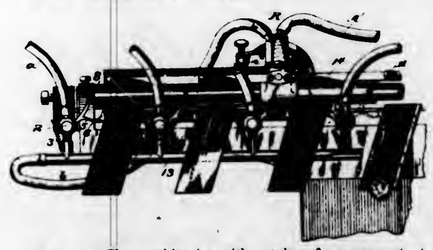
2. The combination with the cylinder of a rotary engine having in its bore a recess at one point in its circumference, a rotary power transmitting ring arranged within said cylinder, a piston fitted to said cylinder, a bolt in said piston for engaging it with said ring, and a spring applied to said bolt to force it away from the said ring and into said recess in the cylinder for the disengagement of the piston from the ring, the said recess being inclined at one end to produce the re-engagement of the said bolt and the piston with said ring, substantially as herein described.

3. The combination with the cylinder of a rotary engine having a recess from its bore at one point in its circumference, a rotary power transmitting ring arranged within said cylinder, two pistons fitted to said cylinder and engaging devices for engaging either of said pistons with said ring and leaving the other disengaged therefrom, of a stop pivoted in said cylinder within said recess to fall into the cylinder bore behind and stop the piston which may be disengaged from said ring and to be moved out by either piston which may be engaged with said ring, substantially as and for the purpose herein described.

4. The combination of the cylinder having ports *j j'*, a recess *f* and a recess or recesses *k k'*; the power transmitting ring D having cogs *e e* and notches *e e*; the pistons C C and the spring-actuated bolts *d d* provided therein; the eccentric shaft F; and the cog wheel on said shaft gearing with the cogs *e e* in the ring D, all substantially as and for the purpose herein described.

5. The combination with the cylinder of a rotary engine, a power transmitting ring arranged within said cylinder and two pistons fitted to said cylinder, of engaging devices in said pistons for engaging either one with and leaving the other disengaged from said ring, two stops one for acting as a stop in one direction and the other for acting as a stop in the other direction to the disengaged piston and means of throwing either stop out of operation while permitting the operation of the other, substantially as herein set forth.

488,278. COIN-CONTROLLED PHONOGRAPH. HENRY HORSMEN, Omaha, Nebr., assignor to Erastus A. Benson, same place. Filed Oct. 6, 1890. Serial No. 367,248. (No model.)



Claim.—1. The combination with a tube, of a power actuated valve arranged therein, a coin chute, and a trip and detent arranged therein and in such relation to the valve of the tube as to hold the valve and normally close the tube; substantially as and for the purposes specified.

2. The combination with a phonograph and its reproducer, of a hearing tube, a power actuated valve arranged in the hearing tube, a coin chute, and a trip and detent arranged in the coin chute and with relation to the valve of the hearing tube to hold the valve and normally close the hearing tube; substantially as and for the purposes specified.

3. The combination with a phonograph, its carriage, and reproducer, of a hearing tube provided with a power actuated valve, a coin chute, a trip and detent arranged in the coin chute with relation to the valve to hold the valve and normally close the hearing tube, and means on the carriage for bringing the valve within the control of the detent and trip, substantially as and for the purposes specified.

4. The combination, with a phonograph and its reproducer, of a series of hearing tubes, a main conducting tube having a series of branches, each provided with a normally closed valve said main tube interposed between the reproducer and the hearing tubes, and power mechanism for opening the valves when released by the detents a series of independent coin-chutes having detents which control the respective valves of the main conducting tube; substantially as and for the purposes specified.

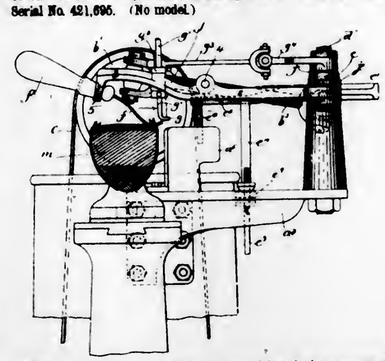
5. The combination, with a phonograph and its reproducer, of a series of hearing tubes, an interposed main conducting tube, having branches, each provided with a normally closed valve a series of coin chutes having detents which control the respective valves of the main conducting tube, and means for actuating the several valves from the carriage of the phonograph to place the valves within the control of the respective detents; substantially as and for the purposes specified.

6. The combination with a tube of a power actuated rotary valve, a stop to limit the rotation of the valve by the power devices, an arm which projects from the valve, and a coin chute provided with a trip and detent arranged in the path of and adapted to engage the arm which projects from the valve—; substantially as and for the purposes specified.

7. The combination with a tube, of a power actuated valve having a bifurcated arm projecting therefrom, a coin chute having a trip and detent arranged with relation to the bifurcated arm of the valve to engage one fork thereof, and suitable means adapted and arranged to move in the path of said bifurcated arm, and engage the other fork of said arm; substantially as and for the purposes specified.

8. The combination with a tube, of a power actuated valve having a bifurcated arm projecting therefrom, a coin chute provided with a trip and detent arranged in the path of one fork of said arm, means adapted and arranged to move in the path of said bifurcated arm and engage the other fork of said arm, a stop for said valve, and a relief spring which permits the bifurcated arm to recede before the reverse movement of the device which moves the valve into engagement with the detent; substantially as and for the purposes specified.

488,279. SEWING-MACHINE FOR LASTING BOOTS OR SHOES. THOMAS K. KEITH, Boston, assignor, by direct and mesne assignments, to Charles F. Brown, trustee, Reading, Mass. Filed Feb. 16, 1892. Serial No. 421,696. (No model.)



Claim.—1. A sewing machine, comprising in its construction a barbed needle having a handle, and a reciprocating carrier with which said needle is loosely connected, whereby the operator is enabled to guide the movements of the needle caused by said carrier, as set forth.

2. A sewing machine, comprising in its construction a reciprocating carrier adapted to move freely in two directions in addition to its reciprocating movement, and a barbed needle having a handle connected with said carrier, the described movability of the carrier enabling the needle to conform to the curvatures of the sole, as set forth.

3. In a sewing machine, a carrier composed of a jointed arm and an oscillatory lever to which said arm is pivoted, the outer end of said arm being adapted to swing laterally in two directions independently of the lever, combined with a barbed needle having a handle loosely connected with the outer end of said arm, and adapted to be guided by the operator as set forth.

4. In a sewing machine, the combination of a barbed needle having a handle, a reciprocating carrier with which said handle is loosely connected, a looper arranged to engage thread with the barb of the needle, and mechanism for operating the said carrier and looper, as set forth.

5. In a sewing machine, the combination of a barbed needle having a handle, a reciprocating carrier with which said handle is loosely connected, a looper arranged to engage thread with the barb of the needle, a continuously operating driver, normally inoperative connections between said driver and carrier, and a coupling device controlled by the operator whereby the driver and carrier may be operatively connected, as set forth.

488,280. MICROMETER-GAGE. JOSEPH P. LAVIGNE, New Haven, Conn. Filed July 18, 1892. Serial No. 440,341. (No model.)

Claim.—1. In a micrometer gage, a tubular beam carrying a stationary head at one end, combined with a slide longitudinally adjustable on said beam, the said slide carrying the longitudinally adjustable spindle, the beam made tubular and constructed with a longitudinal slot opening into the interior of the beam, a projection from

said slide through said slot into the interior of the beam, removable spindles adapted for insertion into said beam upon opposite sides of said projection from the slide, a bearing near the end of the said beam against which the end of the spindle forward of the projection on the slide may bear, and a screw at the opposite end of the beam adapted and also having an opening and a yielding retaining device arranged over the disk and adapted to prevent the same from turning outwardly, as and for the purpose specified.

combination with channel bars D and angle irons D', said angle irons lying parallel with said I beam A, and said channel bars D lying at right angles thereto and being riveted to said angle irons D', the whole furnishing a support for the girders and track, as set forth.

488,285. SIGNAL-REPEATER. THOMAS H. PATENALL, Rahway, N. J. Filed Jan. 2, 1892. Serial No. 416,776. (No model.)

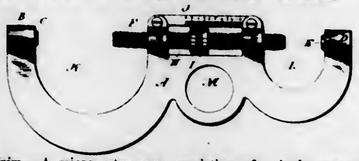
said slide through said slot into the interior of the beam, removable spindles adapted for insertion into said beam upon opposite sides of said projection from the slide, a bearing near the end of the said beam against which the end of the spindle forward of the projection on the slide may bear, and a screw at the opposite end of the beam adapted to bear against the end of the spindle on the opposite side of said projection, substantially as described, and whereby the said slide may be held at a predetermined position on the beam.

2. In a micrometer gage the combination of a beam carrying a stationary head at one end, with a slide longitudinally adjustable on the beam, the said slide carrying the longitudinally adjustable spindle, the beam made tubular and constructed with a longitudinal slot opening from the outside into the interior of the beam, a projection from said slide through said slot into the interior of the beam, a screw-spindle longitudinally adjustable in the head end of the beam, with an adjusting screw in the opposite end of the beam, removable spindles adapted for arrangement within the beam upon opposite sides of said projection and between the spindle at one end and screw at the opposite end, substantially as described.

3. In a micrometer gage the combination of a tubular beam carrying a stationary head at one end, a slide longitudinally adjustable on the beam and carrying the other head, the said head carrying the adjustable spindle, the beam made tubular, and constructed with a longitudinal slot opening into the interior of the beam, the said slide constructed with a projection extending through said slot into the interior of the beam, a longitudinally adjustable screw-spindle at one end of the beam, a corresponding screw at the opposite end of the beam, removable spindles adapted for introduction within the beam and between the said projection and the screw-spindle and screw, the said screw-spindle having its thread according to a predetermined fraction of measurement, a graduated scale and an indicator on the head of the screw spindle adapted to show on said scale the extent of rotation imparted to said screw, substantially as described.

4. In a micrometer gage the combination of a tubular beam carrying a stationary head at one end, a slide longitudinally adjustable on said beam and carrying the adjustable spindle, the beam made tubular and constructed with a longitudinal slot opening into the interior of the beam, a longitudinally adjustable screw-spindle in the head end of the beam, the slide constructed with a projection extending through said slot into the interior of the beam, and adapted to bear against the end of said screw-spindle in the beam, a graduated scale and an indicator on the head of said screw-spindle adapted to show on said scale the extent of rotation imparted to the screw, substantially as described.

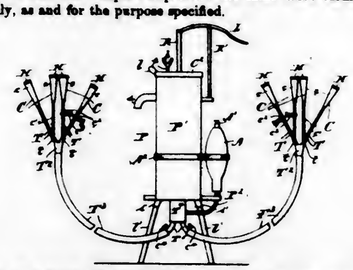
488,281. MICROMETER-GAGE. JOSEPH P. LAVIGNE, New Haven, Conn. Filed July 18, 1892. Serial No. 440,343. (No model.)



Claim.—A micrometer-gage consisting of a body constructed with two heads in longitudinal line with each other, each head carrying its own independent fixed point, combined with a longitudinal screw-spindle arranged in the body in axial line with the said two fixed points, and adjustable by its rotation toward or from either of said fixed points, one of said fixed points being normally distant from its end of the screw-spindle greater than the distance between the other fixed point and its end of the spindle, the screw provided with a graduated head which rotates with it, and a scale fixed to the body parallel with the said spindle and along which said head runs, substantially as described.

488,282. COW-MILKER. WILLIAM M. MERRIDE, York Road, Md. Filed May 4, 1892. Serial No. 431,888. (No model.)

Claim.—1. In a device of the character described, the combination with the conical teat-cup of an elastic disk fitted over the larger end of said cup and having an opening, and a cap fitted over said disk and also having an opening and a yielding retaining device arranged over the disk and adapted to prevent the same from turning outwardly, as and for the purpose specified.



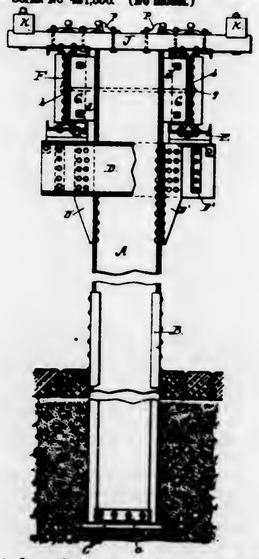
2. In a device of the character described, the combination with the conical teat-cup, of an elastic disk fitted over the larger end of the cup and having an opening, a cap fitted over said disk and also having an opening, and a spring fitted between the cap and the disk and straddling the opening in the latter, as and for the purpose specified.

3. In a device of the character described, the combination with the conical teat-cup, of an elastic disk fitted over the larger end of said cup and having an opening, a second elastic disk fitted within the cup adjacent to the outer disk and a cap fitted over the outer disk and also having an opening, and a yielding retaining device arranged over the said outer disk and adapted to prevent the same from turning outwardly, as and for the purpose specified.

4. In a device of the character described, the combination with the conical teat-cups, of elastic disks fitted over the larger ends of the cups and each having an opening, caps fitted over said disks and also having each an opening, the head T^3 having short tubes t, provided each with a valve, elastic tubes connecting the tubes t, with the teat-cups, a tube T^3 connected with the head T^3, a pump, and valved connections between the same and the tube T^3 as and for the purpose specified.

5. In combination with a milking device of the chararcter described, a pump provided with screw-cap C having projection A, the bottom having sockets, legs fitted in said sockets, and a central opening in said bottom and a tube depending from the bottom and having branch tubes as described, and an air tube extending upwardly without the pump cylinder and communicating with an air chamber, as described.

488,283. ELEVATED-RAILWAY STRUCTURE. JAMES L. MEIGS, Boston, Mass., assignor to Walter M. Lowney, same place. Filed Feb 15, 1892. Serial No. 421,550. (No model.)



Claim.—1. In an elevated railroad construction, an I beam A in combination with channel bars D and angle irons D', said angle irons lying parallel with said I beam A, and said channel bars D lying at right angles thereto and being riveted to said angle irons D', the whole furnishing a support for the girders and track, as set forth.

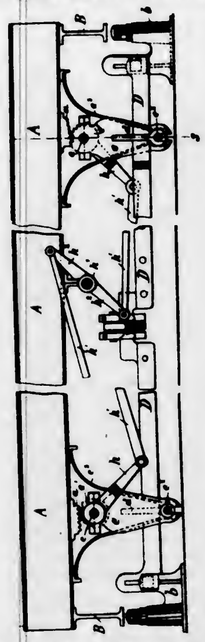
2. In an elevated railroad structure, in combination with girders F the doubly curved friction plates E suitably supported and each carrying the adjoining ends of two girders F, the end of each girder being supported by one of the curved surfaces on said friction plates and being in lineal contact therewith, the line of contact being crosswise of said girder, all as and for the purposes set forth.

3. In an elevated railroad structure, the posts A and girders F supported by said posts and lying parallel, in combination with blocks G of the kind described, each block lying between the post and the side of a girder, all as set forth.

4. In an elevated railroad structure, in combination, two girders lying end to end, and two wooden blocks G, each attached to one of said girders, the two being attached together all substantially as described.

5. In a railroad structure, the friction plates E curved as described and grooved in a line at right angles to the axis of said curvature, all as and for the purposes set forth.

488,284. PLATFORM-SCALE. MARTIN M. MOLLHAU, Halle-on-the-Saale, Germany. Filed June 16, 1892. Serial No. 437,135. (No model.)

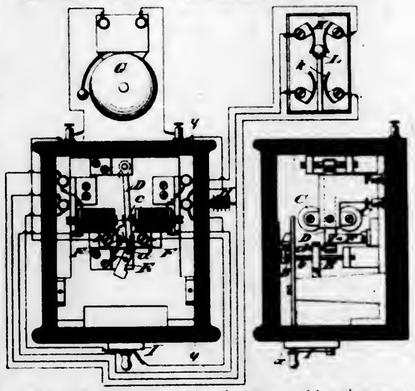


Claim.—1. In a platform scale, the combination, with a platform, of cogged wedge-shaped pieces on the under sides of the platform, rocking legs for supporting the platform and means for moving the upper ends of said legs along said wedge-shaped pieces, substantially as set forth.

2. In a platform scale, the combination, with a platform, of cogged wedge-shaped pieces in the under sides of the platform, swinging supports on said platform, shafts in said supports, cogged heads on said shafts engaging the cogged wedge-pieces on the platform and means for turning the shafts in the upper ends of said legs, substantially as set forth.

3. In a platform scale, the combination, with a platform, of cogged wedge-shaped pieces on the undersides of the same, cogged heads engaging said wedges, a rocking-shaft on which the cogged heads are fixed, swinging legs in which the shafts are mounted, a shaft supporting said legs, stirrups supporting said shaft, beams supporting said stirrups, an arm on each rocking-shaft and means for connecting the rocking shafts at the opposite ends of the scale to support and operate together, substantially as set forth.

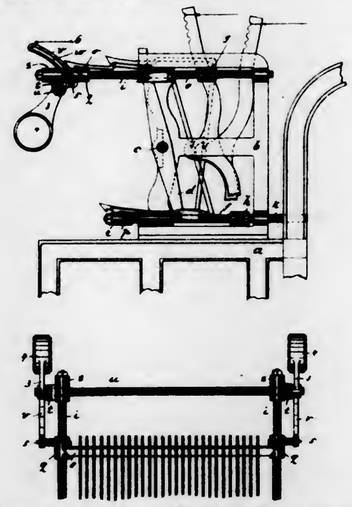
488,285. SIGNAL-REPEATER. THOMAS H. PATTERSON, Rahway, N. J. Filed Jan. 2, 1892. Serial No. 416,776. (No model.)



Claim.—The signal repeating device comprising the separated magnets each in independent circuit, the swinging armature common to the two magnets, the visible signal supported to swing, an arm connected with the swinging visible signal and having a loose engagement with the free end of the swinging armature, the yielding contact pieces having a normal tendency to rest in electrical contact, and the audible signal in circuit with the yielding contact pieces, the swinging armature being located between the yielding contact pieces and when in its middle position free from pressure from either of the yielding contact pieces and adapted to engage one of the contact pieces just before it reaches the limit of its movement toward the magnet to which it is attached and thereby break the audible signal circuit, substantially as set forth.

488,286. HARNESS-LEVELING DEVICE FOR LOOMS. ROBERT J. KIRK, Paterson, N. J., assignor to Benjamin Eastwood, same place. Filed Aug. 20, 1892. Serial No. 443,558. (No model.)

Brief.—The upper griff, movable upon the side rods of the griff-frame, is held in normal position by weighted cam-levers. By turning such levers the griff is moved inward and the harnesses operated by it are lowered to the plane of the others.



Claim.—1. In a harness leveling device, the combination with the griff frame and the knife carrying sleeves, of a lever pivotally secured to the forward end of the griff frame and provided with a slot, arranged eccentrically to the fulcrum of said lever, and a pin, secured to the knife carrying sleeve and adapted to engage said eccentric slot, all said parts, substantially as described and for the purposes set forth.

2. In a harness leveling device, the combination with the griff frame and the knife carrying sleeves, of a sleeve secured to the forward end of the griff frame, a lever pivotally secured to said sleeve, one arm of said lever being provided with a slot, arranged eccen-

which the wire passes from the first pair of feed-rolls, the surface movement of the second pair of feed-rolls being greater than that of the first pair of rolls, a covering mechanism substantially such as described between said two pairs of rolls, and through which the wire to be covered passes to said second pair of rolls, a cutting mechanism

feed-rolls, the said slide having a longitudinal movement imparted to it corresponding to the surface movement of said second pair of rolls, the said slide carrying a cutting mechanism through which the wire passes, and adapted to cut the wire while the slide is moving with the

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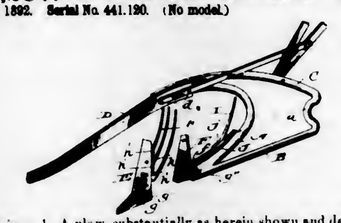
488,290. PROCESS OF MAKING OXYUVITIC ACID. BRUNO R. SEIFERT, Radebeul, near Dresden, Germany, assignor to F. von Heyden Nachfolger, same place. Filed May 12, 1892. Serial No. 432,719. (Specimens.)

2. In a harness leveling device, the combination with the griff frame and the knife carrying sleeves, of a sleeve secured to the forward end of the griff frame, a lever pivotally secured to said sleeve, one arm of said lever being provided with a slot, arranged eccentrically to the fulcrum, a pin secured to the knife carrying sleeve and adapted to engage said eccentric slot, and a counter weight secured to or arranged on the other arm of the lever, and adapted to control the return motion of the latter, all said parts, substantially as described and for the purposes set forth.

488,287. PLOW. RICHARD G. ROACH, Lebanon, Tex. Filed July 26, 1892. Serial No. 441,120. (No model.)



Claim.—1. A plow, substantially as herein shown and described, having the landside, stock and brace bent from a single continuous bar of metal and provided with a lateral offset *a* between the contiguous ends of the brace and landside, the free ends of the stock and brace being united together and adapted to have the beam secured thereto, as and for the purpose described.

2. A plow, substantially such as described, having the landside B, the stock A and the brace C between the landside and stock bent from a single continuous bar of metal, the meeting ends of said metallic bar being united together and affording convenient means for the attachment of the plow beam, as set forth.

3. In a plow, the stock and landside having the lateral frog F at their united ends, the vertical cutter J at the outer front edge of the stock, the shoulders *f*, *f'*, at the lower end of the cutter J and the united ends of the stock and landside, and the share E fitted against the frog to lie against the shoulder *f* flush with the cutter, and provided with the lip *g* that fits over the point and against the shoulder *f'*, substantially as described.

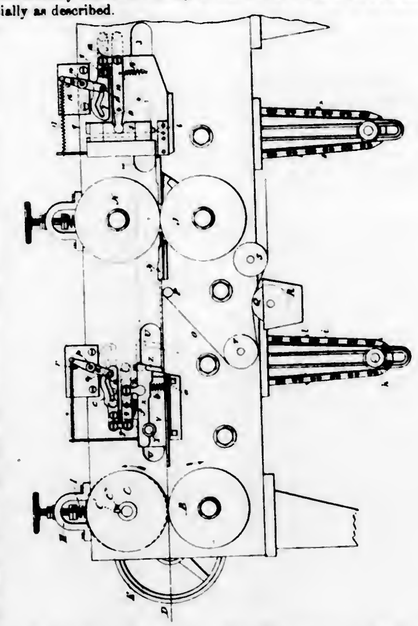
4. In a plow, the combination of the stock, the share seat rigid therewith the share having the inclined upper edge A, and the series of elastic rods or fingers H, I, the fingers H being fastened at their lower ends to the share and the inner finger I of the series secured directly to the stock, on the side adjacent to the share, substantially as described.

488,288. MACHINE FOR COVERING DRESS-STAYS. GEORGE O. SCHELLER, Ansonia, Conn. Filed July 18, 1892. Serial No. 440,355. (No model.)

Claim.—1. In a machine for covering wire, the combination of a pair of feed-rolls adapted to produce a continuous feed for the wire, a second pair of feed-rolls to which the wire passes from the first pair of feed-rolls, the second pair of feed-rolls having a surface movement more rapid than that of the first pair of rolls, a covering mechanism substantially such as described between the two pairs of rolls, and through which the wire to be covered passes to said second pair of rolls, with mechanism substantially such as described between the said covering device and the said first pair of rolls to automatically cut the wire at a predetermined time, substantially as described, and whereby the pieces so cut from the wire will be advanced by the second pair of rolls more rapidly than the body of the wire is advanced by the first pair of rolls.

2. In a machine for covering wire, the combination of a pair of feed-rolls between which the wire to be covered passes, a second pair of feed-rolls to which the wire passes from the said first pair of feed-rolls, the surface movement of the said second feed-rolls being greater than that of the first pair of feed-rolls, a covering mechanism between the said two pairs of rolls, and through which the wire to be covered passes to said second pair of rolls, a cutting mechanism between the covering device and the said first pair of rolls, and through which cutting mechanism the wire passes, the said cutting mechanism being adapted to cut the wire at a predetermined time, and whereby the piece so cut is advanced by the second pair of feed-rolls at a greater velocity than the body of the wire is advanced by the first pair of feed-rolls, and whereby a space will be formed within the covering between successive pieces of wire, a second cutter beyond the said second pair of feed-rolls adapted to cut the covering between the adjacent ends of the covered pieces of wire, substantially as described.

3. In a machine for covering wire, a pair of feed-rolls between which the wire to be covered passes, a second pair of feed-rolls to which the wire passes from the first pair of feed-rolls, the surface movement of the second pair of feed-rolls being greater than that of the first pair of rolls, a covering mechanism substantially such as described between said two pairs of rolls, and through which the wire to be covered passes to said second pair of rolls, a cutting mechanism between the covering devices and said first pair of rolls, and through which cutting mechanism the wire passes, the said cutting mechanism being adapted to cut the wire at a predetermined time, with mechanism for imparting to said cutting mechanism a movement with and substantially the same velocity as that of the covered wire, substantially as described.



4. In a machine for covering wire, the combination of a pair of feed-rolls adapted to produce a continuous feed for the wire, a second pair of feed-rolls to which the wire passes from the first pair of feed-rolls, the second pair of feed-rolls having a surface movement more rapid than that of the first pair of rolls, a folding device between the said two pairs of rolls, and leading between the said second pair of rolls, and through which the wire must pass, mechanism substantially such as described to coat the strip of covering with adhesive material and conduct said strip into said folding device, with mechanism substantially such as described between the said folding device and the first pair of feed-rolls to automatically cut the wire at a predetermined time, substantially as described, and whereby the piece so cut from the wire will be advanced by the second pair of rolls more rapidly than the body of the wire is advanced by the first pair of rolls.

5. In a machine for covering wire, a pair of continuously revolving feed-rolls between which the wire to be covered passes, a second pair of feed-rolls to which the wire passes from the said first pair of feed-rolls, the surface movement of the said second pair of feed-rolls being greater than that of the first pair of feed-rolls, a folder arranged between the said two pairs of rolls, and leading between the said second pair of rolls, and through which folder the wire must pass, mechanism substantially such as described to coat and present to said folder a strip of material with which the wire is to be covered, a cutting mechanism between the folder and the first pair of feed-rolls through which cutting mechanism the wire passes, the said mechanism being adapted to cut the wire at a predetermined time, and mechanism adapted to impart to said cutting mechanism a movement with and at substantially the same velocity as that of the surface movement of the said second pair of rolls, substantially as described.

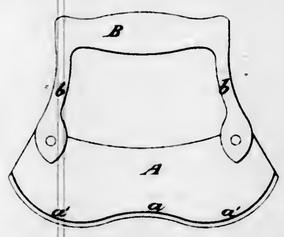
6. In a machine for covering wire, the combination of a pair of continuously revolving feed-rolls, one of said rolls arranged upon its arbor to permit a limited extent of over-motion, a second pair of feed-rolls through which the wire passes from the first pair of feed-rolls, the surface movement of the second pair of feed-rolls being greater than that of the first pair of feed-rolls, a covering mechanism through which the wire passes to said second pair of feed-rolls, a longitudinal slide arranged between the covering mechanism and said first pair of feed-rolls, the said slide having a longitudinal movement imparted to it corresponding to the surface movement of said second pair of rolls, the said slide carrying a cutting mechanism through which the wire passes, and adapted to cut the wire while the slide is moving with the wire, mechanism between the said slide and the said first pair of rolls, substantially as described and whereby in the return movement of said slide, the said first pair of rolls are separated.

7. In a machine for covering wire, in which a mechanism is provided for a continuous feed of the wire, the combination therewith of a longitudinal slide arranged to move in a path parallel with the advancing movement of the wire, mechanism substantially such as described to impart to said slide an advancing movement corresponding to the advancing movement of the wire, a cutter stationary on said slide, a lever hung to said slide, and carrying a second cutter, between which two cutters the wire passes, a second lever hung to said slide and in connection with said cutter-lever, the said second lever constructed with a cam-shaped groove, and a lever hung upon a stationary axis and so as to swing in a plane parallel with the path of movement of the slide, the said stationary lever carrying a stud adapted to work in the said cam-shaped groove on the said second lever, the said stud-carrying lever held stationary in one direction, but free in the opposite direction, substantially as described, with mechanism to return said slide, and whereby under the advancing movement of said slide the cutters will close, and then open before the slide returns.

8. In a machine for covering wire, the combination of a pair of feed-rolls between which the wire passes, a second pair of feed-rolls through which the wire also passes, the surface movement of said second pair of feed-rolls being greater than that of said first pair of feed-rolls, a folder between said pairs of rolls, and through which the wire passes to said second pair of rolls, mechanism substantially such as described to coat and conduct to said folder a strip of material, a cutting mechanism between the folder and the first pair of rolls, adapted to cut the wire at a predetermined time, and so that the portion so cut from the body of the wire will advance under the revolution of the second pair of rolls more rapidly than that of the body of the wire, and thereby leave a space of the covering material between the end of the one piece so cut and the end of the next piece, a second cutting mechanism arranged beyond the said second pair of rolls, and adapted to cut the covering between the ends of the covered pieces of wire, substantially as described.

9. In a machine for covering wire, a pair of feed-rolls between which the wire to be covered passes, a second pair of feed-rolls through which the wire also passes, the said second pair of feed-rolls having a surface velocity greater than that of the first pair of feed-rolls, a covering mechanism substantially such as described between the two pairs of rolls, and through which the wire to be covered passes to said second pair of rolls, a cutter between said covering mechanism and the said first pair of rolls, adapted to cut the wire at a predetermined time, the portion so cut being engaged by the second pair of rolls, and consequently advanced at a greater velocity than that of the body of the wire fed by the first pair of rolls, and whereby a space will be formed within the covering between succeeding pieces of wire, a cutter beyond the said second pair of feed-rolls arranged to separate the covered pieces at a point in the covering between the adjacent ends of the pieces of wire, mechanism substantially such as described for imparting to both said cutters a longitudinal movement during the cutting operations at substantially the same velocity as that of the covered wire, and substantially as described.

488,289. CHOPPING-KNIFE. ALBERT R. SCHOFIELD, Brooklyn, N. Y. Filed June 11, 1892. Serial No. 436,318. (No model.)

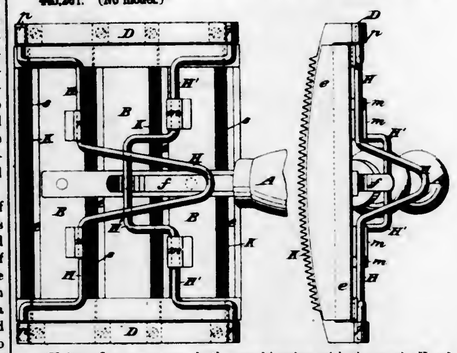


Claim.—A chopping knife comprising a cutting blade, the central portion of the cutting edge of which recedes from the end portions of the cutting edge, substantially as set forth.

488,290. PROCESS OF MAKING OXYUVITIC ACID. BRUNO R. SEIFERT, Radebeul, near Dresden, Germany, assignor to F. von Heyden Nachfolger, same place. Filed May 12, 1892. Serial No. 432,719. (Specimens.)

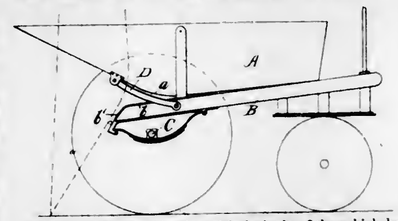
Claim.—The process of making alpha oxyuvitic acid which consists in subjecting alkaline or earthy alkaline salts of cresol to the action of carbonic acid at a temperature of about from 160° to 220° centigrade, substantially as herein described.

488,291. CURRYCOMB. CLAUS J. SCHWEIN, Glückstadt, and WILHELM SCHWEIN, Krempdorf, Germany. Filed Sept. 7, 1892. Serial No. 445,261. (No model.)



Claim.—In a curry-comb, the combination with the combs K, of lateral stripping plates *e e*, a frame carrying said combs and a frame carrying said plates, one of said frames being connected to a handle A while the other is movably supported by wire bows H H', adapted to be operated as described, together with a spring or springs for maintaining the frames in a position whereby the combs protrude beyond the plates, the whole for the purpose set forth.

488,292. DUMP-WAGON. MARTIN L. SENDERLING, Jersey City, N. J. Filed Dec. 31, 1891. Serial No. 416,674. (No model.)



Claim.—1. The combination with the body of the vehicle having a curved bearing fixed thereto, and a support on which the body rests, of a link pivotally secured at one end to the body and at the other end to the support for retaining the body in position with its curved bearing on the support, the body being free to change the position of its fulcrum on the support during its tilting movement, substantially as set forth.

2. In combination, the body of the vehicle having a curved bearing thereon, and the supporting frame having a smooth curved bearing surface in position to engage the smooth curved bearing on the body, the body being free to move bodily as the bearing moves along its support and a link pivotally secured at one end to the body and at the other end to the supporting frame for retaining the body in position on the bearing, substantially as set forth.

488,293. SUPPORTING-FRAME FOR ROTARY FANS. SYLVANUS D. SHEPPARD, Newark, N. J., assignor to the Backus Water Motor Company, same place. Filed Nov. 18, 1891. Serial No. 412,341. (No model.)

Claim.—In a supporting frame for rotary fans, the combination, with an annular top-frame having sockets at its under side, of a bottom socket-piece having sockets in its upper and under sides, an intermediate circular frame also having sockets in its upper and under sides and a central sleeve forming a bearing for the fan-shaft, rods connecting the top frame and the socket-piece and passing through apertures in the intermediate frame, top-sections surrounding said

488,293.

Claim.—1. In a transport car, the combination of a car body made substantially triangular in cross section and provided with lateral discharge openings; and plates located below the car body and sloping toward the sides of the car, for receiving the discharged

to the suspension and conducting cord, and a flexible connection secured to the spring actuated drum, and provided with a clamp for attachment to the suspension and conducting cord of the light, substantially as and for the purposes specified.

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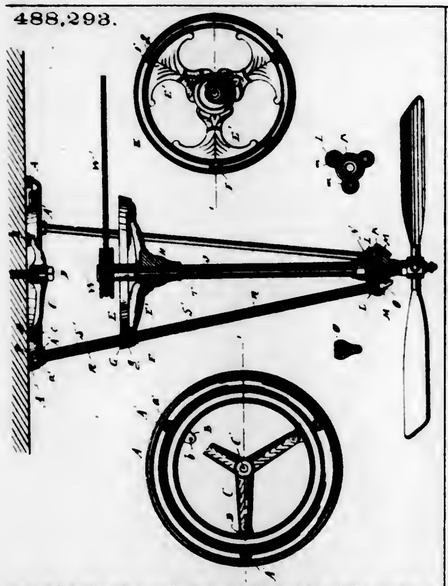
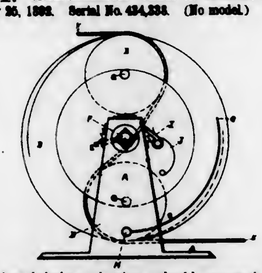


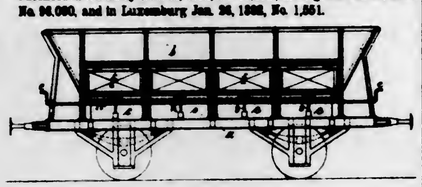
rods and having their ends resting in the sockets of the top-frame, intermediate frame and socket-piece, nuts screwed on the upper ends of said rods above the upper surface of the top-piece, nuts screwed on the lower ends of said rods and resting on the upper edges of the socket-piece, a tube extending from the annular piece to the intermediate piece, a fan-shaft having bearings in the sleeve of the intermediate piece and in the socket-piece, a pulley fixed on said shaft above the intermediate piece and fan-wings secured on said shaft below the annular piece, substantially as set forth.

488,294. SASH-BALANCE. JAMES M. SHELSER, Richmond, Ind. Filed May 25, 1892. Serial No. 434,338. (No model.)



Claim.—A sash balance having a double grooved, cone shaped reel or pulley B, with equalizing, inside pulleys D D, held in position by screws or rivets G; with sleeve E provided with a square shoulder on one end, and notches on the other end for engaging catch I, in combination with, frame A, operating spring C, center pin N, catch I, spring J, cord K, substantially as set forth in specification and drawings.

488,295. RAILWAY DUMPING-CAR. GUSTAV TALBOT, Aix-la-Chapelle, Germany. Filed July 11, 1892. Serial No. 439,645. (No model.) Patented in Germany Nov. 11, 1891, No. 63,123; in Belgium Jan. 26, 1892, No. 96,080, and in Luxemburg Jan. 26, 1892, No. 1,851.

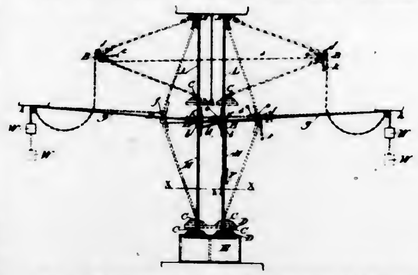


Claim.—1. In a transport car, the combination of a car body made substantially triangular in cross section and provided with lateral discharge openings; and plates located below the car body and sloping toward the sides of the car, for receiving the discharged material and conducting the same over the sides of the car, substantially as described.

2. In a transport car, the combination of a car body provided with lateral discharge openings and hinged plates located below the car body and extending beyond the sides of the car, substantially as described.

3. In a transport car, the combination of the truck frame, a car body made substantially triangular in cross section secured to said frame, and provided with lateral discharge doors, bolts for locking said doors, levers A for withdrawing the bolts, and hinged plates located beneath the car body and adapted to receive the material discharged from the car and to conduct the same to a distance beyond the track, substantially as described.

488,296. PRESS. CHARLES M. TERRELL and GEORGE T. BARTLETT, San Antonio, Tex. Filed Jan. 7, 1892. Serial No. 417,339. (No model.)



Claim.—The combination in a fruit-packing press, of double toggle-jointed hinged levers L M, L M, secured by hinges at their upper ends to a fixed support, with the open platen D hinged to their lower ends: the pulleys *b*, *b*, inserted in the levers M, M, with the power cord *d*, passing over them, and having one end fastened to one end of the levers L, L, at "*o*," the cleat F on one of the levers M for securing the cord *d*; the counterpoise cords *g*, *g*, fastened to the levers L, L, and with the weights W, W, attached; the pulleys *h*, *h*, secured to a fixed support; over which cords, *g*, *g*, pass; all substantially as set forth in the foregoing specification and illustrated in the drawings.

488,297. DISTRIBUTING FEED-NOZZLE FOR FILTERS. HENRY C. THURSTON, Norwich, Conn., assignor to the Morison-Allen Company, New York, N. Y. Filed Dec. 9, 1891. Serial No. 414,483. (No model.)

Claim.—1. In combination with a filter tank a supply pipe B' extending over the top thereof concentric domes, the upper ones having central openings for the passage of water, and the upper one suspended below the mouth of pipe B' substantially as and for the purpose specified.

2. A filter supply nozzle having in combination a supply pipe B' a dome provided with a central opening suspended below the mouth of pipe B and a peripheral ridge d^3 and a perforated deflector D^3.

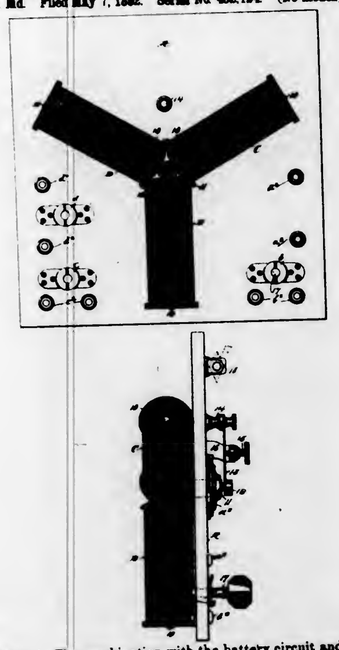
3. A filter supply nozzle having in combination a supply pipe B a dome provided with a central opening suspended below the mouth of pipe B and a peripheral ridge d^3, and a perforated deflector D situated in the dome and having a peripheral ridge d^4.

488,298. DEVICE FOR RAISING OR LOWERING SUSPENDED ELECTRIC LIGHTS. FRANKLIN P. WELSH, Omaha, Nebr. Filed June 14, 1892. Serial No. 436,737. (No model.)

Claim.—1. In devices for raising and lowering incandescent—and like flexibly suspended—lights, the combination with a case having a contained spring actuated drum, of means for clamping said case to the suspension and conducting cord, and a flexible connection secured to the spring actuated drum, and provided with a clamp for attachment to the suspension and conducting cord of the light, substantially as and for the purposes specified.

2. In devices for raising and lowering incandescent—and like suspended—lights, the combination of a case having a clamp for the attachment of said case to the suspension cord of the light, a spring actuated drum, arranged within the case and having a shaft provided with a ratchet, a pawl to engage the ratchet, and a flexible connection secured to the spring actuated drum, and provided with a clamp for attachment to the suspension cord of the light; substantially as and for the purposes specified.

488,299. INDUCTION APPARATUS. CHARLES WILLIS, Baltimore, Md. Filed May 7, 1892. Serial No. 432,134. (No model.)



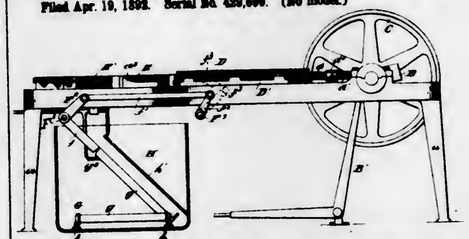
Claim.—1. The combination with the battery circuit and an automatic circuit breaker, of a plurality of induction coils constructed to be thrown into or out of the circuit independently of each other, and controlled by said circuit breaker, substantially as described.

2. The combination with the battery circuit and an automatic circuit breaker, of a plurality of induction coils constructed to be thrown into or out of the circuit independently of each other, and an electro magnetic post connected to the cores of each of the induction coils and co-acting with the armature of said circuit breaker, substantially as described.

488,300. JACK. JOSEPH J. ADGATE, Liberty, N. Y. Filed May 2, 1892. Serial No. 431,492. (No model.)

Claim.—The combination of the standard A and base B made of wood, duplicate metal rack plates C C, each provided with the lip *i*, holes *g*, *g*, downwardly projecting series of points *d d d*, and upwardly projecting series of points *e e e*, the lever D provided with the hook E, hole *m* to engage with the upwardly projecting points *e e* and straight slot *n* to engage with the downwardly projecting points, *d d*, substantially as set forth.

488,301. APPARATUS FOR SHAPING, HARDENING, AND TEMPERING STEEL PLATES, &c. JOHN R. ARMSTRONG, Guelph, Canada. Filed Apr. 19, 1892. Serial No. 429,690. (No model.)



Claim.—1. In apparatus for shaping and hardening metals, the combination with shaping mechanism, and a hardening bath arranged beneath said shaping mechanism, of interposed vibratory transfer fingers, and means for actuating said fingers; substantially as and for the purposes specified.

2. In an apparatus for shaping and hardening metals, the combination with shaping mechanism (having a movable section and means for actuating it,) and a hardening bath, of interposed transfer mechanism, and means for actuating the transfer mechanism from the movable section of the shaping mechanism; substantially as and for the purposes specified.

3. In apparatus for hardening and tempering metal, the combination with shaping mechanism having a movable section, and means for actuating it, of an interposed adjustable connection, a hardening bath, transfer mechanism interposed between the shaping mechanism and the bath, and means for actuating the transfer mechanism from the movable section of the shaping mechanism; substantially as and for the purposes specified.

4. In apparatus for shaping and hardening metal, the combination with shaping mechanism having a fixed section E' and a movable section E, of supports for the article to be operated on, said supports arranged at the ends of the sections, and a hardening bath arranged beneath the shaping mechanism, substantially as and for the purposes specified.

5. In apparatus for shaping metals, the combination with shaping mechanism, of a rock-shaft provided with fingers which extend beneath the shaping mechanism and receive the article when released thereby; substantially as and for the purposes specified.

6. In apparatus for shaping and hardening metals, the combina-

tion with shaping mechanism and a hardening bath or tank, of a truck adapted to travel in the tank, and interposed transfer mechanism for receiving the article operated on and delivering it to the truck; substantially as and for the purposes specified.

7. In apparatus for shaping and hardening metal, the combina-

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by the latter will take but little current until the motor attains synchronism.

6. An alternating current motor provided with two armature circuits, one being continuously wound and connected with a commu-

tion with shaping mechanism and a hardening bath or tank, of a truck adapted to travel in the tank, and interposed transfer mechanism for receiving the article operated on and delivering it to the truck; substantially as and for the purposes specified.

7. In apparatus for shaping and hardening metal, the combination with shaping mechanism and a hardening bath or tank, of a movable incline arranged in the tank, and interposed transfer mechanism; substantially as and for the purposes specified.

8. In apparatus for shaping and hardening metal, the combination with shaping mechanism and a hardening bath or tank, of a receiving incline within the tank, a guide above the incline, and transfer mechanism interposed between the former and the incline; substantially as and for the purposes specified.

9. In apparatus for shaping and hardening metal, the combination with shaping mechanism and a bath or tank, of a truck adapted to travel in the tank and provided with a pivoted frame, means for holding the pivoted frame of the truck in an inclined position, and a rock-shaft arranged beneath the former and provided with transfer fingers; substantially as and for the purposes specified.

10. In apparatus for shaping and hardening metal, the combination with shaping mechanism, of a rock-shaft arranged beneath the same and provided with transfer fingers, a tank arranged beneath the transfer fingers, a truck adapted to travel in the tank and provided with a movable frame, and a guide arranged in the tank, substantially as and for the purposes specified.

11. In apparatus for shaping and hardening metal, the combination with shaping mechanism, of a hardening bath or tank, interposed transfer mechanism, a truck adapted to travel in the tank, a carrier for conveying the articles to a tempering oven, and a hoist interposed between the tank and the carrier; substantially as and for the purposes specified.

12. In apparatus for shaping and hardening metal, the combination with shaping mechanism, of a hardening tank, having a refrigerating coil connected therewith, a truck adapted to travel in the hardening tank, transfer mechanism interposed between the shaping mechanism and the tank, and a hoist arranged in or over the tank; substantially as and for the purposes specified.

488,302. BALE-TIE. PROSPER BARDON, Waco, Tex. Filed Apr. 16, 1892. Serial No. 429,389. (No model.)

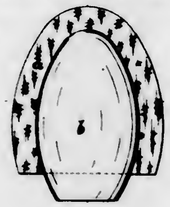
Claim.—1. The tie buckle adapted for use with wire cable or wire binding, constructed with a passage *a* for one end of the bale wire cable to be passed through, a crotch *c* formed between an oblique or divergent wing *c'* and the edge c^3 of that portion of the buckle in which the passage *a* is formed, and a transverse slot *b*, open at one edge and closed at the other edge of the buckle, substantially as described.

2. The tie buckle formed with a passage *a*, a V-shaped crotch *c* and a transverse passage which is open at one edge and closed at the other edge of the buckle, and formed between top and bottom jaws of the buckle, and open through to the end of the buckle, substantially as described.

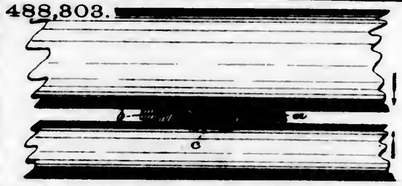
3. The tie buckle formed with an oval and flaring passage *a*, a V-shaped crotch c between hook *c'* and edge c^3 of the buckle, and a transverse slot, substantially as described.

4. The combination of the wire cable or wire binding, with the buckle formed with a tubular passage *a*, a V-shaped crotch c between wing or hook *c'*, and edge c^3 of the buckle, and transverse slot *b*, open at one edge and closed at the other, all substantially as described.

488,308. METHOD OF SKIVING HEEL-LIFTS. HENRY O. BEACH, Livingston, N. J. Filed Feb 25, 1891. Serial No. 382,729. (No model.)

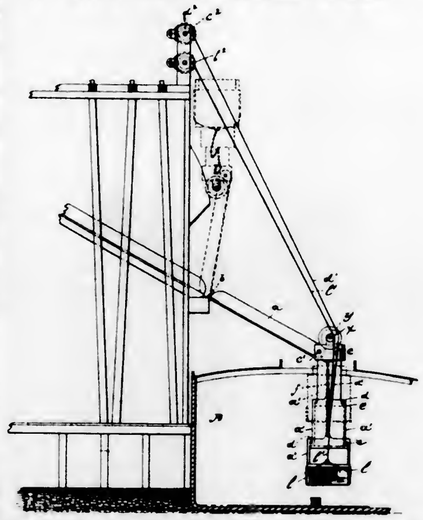


488,303.



Claim.—In the art of stacking heels for boots and shoes, the method which consists in subjecting a blank heel lift to graduated compressing force, the compression being greatest at the center and least toward the curved sides and rear of the lift, and, while the lift is under such compression, skiving the same and then removing the pressure and allowing the lift to assume a concavous shape comformable to the heel substantially as set forth.

488,304. COAL-LOADING APPARATUS. PETER BERT, Newark, N. J. Filed Apr. 15, 1891. Serial No. 389,011. (No model.)



Claim.—1. In combination, the supporting structure, the inclined chute hinged thereto, a hopper pivoted to the end of the chute, a sectional tube, the lower section having a stationary inclined bottom and with a lateral outlet, the door having a fixed pivot in relation to the bottom section, an operating rope extending from the lower section, a second operating rope extending from the hinged door, both of said ropes being carried up along the sectional tube and around the pulleys on the hopper, and thence to the supporting structure.

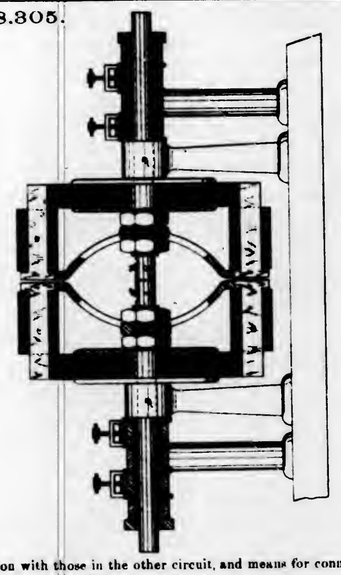
2. In a loading apparatus, the combination with a structure, of the chute hinged thereto, the conductor communicating with said chute, and comprising a series of telescoping sections, the lower section having an inclined bottom and lateral discharge openings, doors for controlling said openings, a shaft carried by the conductor and having guide pulleys, chains connected to the doors and passing over the pulleys, chains connected to the lower section and passing over the pulleys for elevating the sections, and the frame carrying drums on which the chains are wound, all as shown and described.

488,305. ELECTRIC MOTOR. CHARLES S. BRADLEY, Yonkers, N. Y. Filed June 23, 1890. Serial No. 356,306. (No model.)

Claim.—1. An alternating current motor having its two members adapted to rotate in opposite directions, each member being provided with a differential phase winding such that a relative shifting of the magnetic poles will be effected upon connection with a circuit supplying differential phase currents.

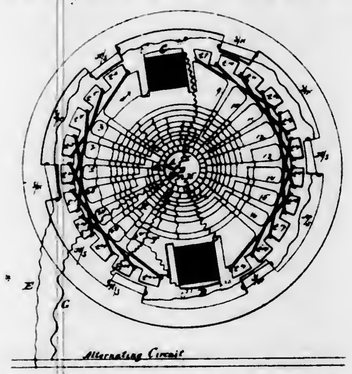
2. An alternating current electric motor composed of two oppositely rotating members, each member comprising a circular series of electro-magnets suitably mounted upon a shaft and divided into two separate circuits such that the magnets in one circuit alternate

488,305.



in position with those in the other circuit, and means for connecting the motor circuits with the supply circuits.

488,306. ALTERNATING-CURRENT MOTOR. CHARLES S. BRADLEY, Avon, N. Y. Filed Mar. 15, 1892. Serial No. 425,037. (No model.)



Claim.—1. An alternating current motor provided with a self-starting and a synchronous winding on its armature, the two being arranged in shunt relation.

2. A combined self-starting and synchronous alternating current motor having two circuits both connected to the supply terminals, the synchronous circuit being wound to offer at starting high counter-electro-motive-force relatively to the self-starting circuit.

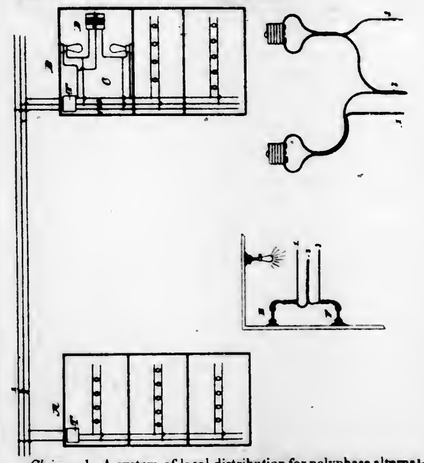
3. The combined self-starting and synchronous alternating current motor provided with a common field-magnet circuit and two armature circuits in shunt relation, the self-starting circuit being of low counter-electro-motive-force relatively to the synchronous circuit.

4. A combined self-starting and synchronous alternating current motor having two armature circuits in shunt relation to each other, the self-starting circuit being provided with a commutator to maintain a progression of the polar line, and the synchronous circuit being adapted to offer a higher counter-electro-motive-force when the motor is starting and wound to maintain fixed poles in the armature core.

5. A multipolar alternating current motor provided with two windings in shunt relation, one provided with a commutator to maintain a progression of the polar line, and the other wound to oppose high counter-electro-motive-force when the motor is out of synchronism, and adapted to maintain fixed poles in the armature core, whereby the latter will take but little current until the motor attains synchronism.

6. An alternating current motor provided with two armature circuits, one being continuously wound and connected with a commutator to maintain a progression of the polar line, the other being wound to maintain fixed poles in the armature core and offer high counter-electro-motive-force to flow of current when out of synchronism, and a common field-magnet-circuit.

488,307. SYSTEM OF DISTRIBUTION FOR POLYPHASE ALTERNATING CURRENTS. CHARLES S. BRADLEY, Avon, N. Y. Filed July 29, 1892. Serial No. 441,553. (No model.)



Claim.—1. A system of local distribution for polyphase alternating currents having the several wires distributed in pairs among a number of lamp circuits, two or more adjacent circuits including all wires of the polyphase system and motor circuits connected with the wires of the several lamp circuits so as to include all of the polyphase currents in the motor system.

2. The combination with a polyphase alternating current circuit of two or more lamp circuits connected in pairs with all of the polyphase wires, the lamp leads being distributed so that the several wires of the polyphase system will lie in near relation to each other, whereby a polyphase motor may be readily supplied.

3. The combination with a triphase alternating current circuit of two or more lamp circuits including the several wires of the polyphase systems in pairs, the lamp leads being distributed so that three wires differing in phase will be readily accessible from a point or points, whereby triphase motors may be supplied by the system.

4. The combination with a triphase alternating current circuit of two or more lamp circuits including the several wires of the polyphase systems in pairs, the lamp brackets or sockets being so distributed that the three third-phase wires will be accessible from one or more points, and polyphase motors having their terminals connected with the triphase circuits at two or more sockets as described.

5. The combination with a triphase alternating current circuit of two or more lamp circuits including the several wires of the polyphase system in pairs, said lamp circuits being so distributed that two embracing the three leads of the system will lie in the same neighborhood at points where motor service is wanted, and motor leads connected at said points with the three wires.

488,308. STAPLE-INSERTING DEVICE. WILLIAM J. BROWN, Philadelphia, Pa. Filed Feb. 27, 1892. Serial No. 422,955. (No model.)

Claim.—1. In a tool for clinching metallic staples by means of a detachable staple driver, the combination with a stationary base plate provided with one or more clinching recesses thereon, of an overhanging guide plate having staple driver-guiding recesses therein; and vertically sliding sleeve-like mechanism between said parts whereby the guide plate may be reciprocated with relation to the clinching base in a perpendicular plane; substantially as described.

2. A staple driver-guiding and staple clinching device, consisting of the combination with a stationary base plate provided with one or more clinching recesses, an overhanging guide plate suitably recessed to register with said clinching recesses and receive and guide the

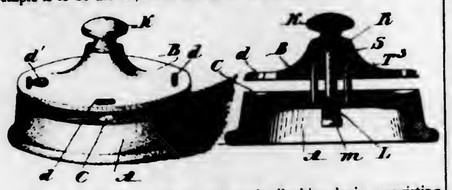
open end of the staple driver; vertically sliding sleeve-like mechanism between said base and guide plate whereby the latter may be reciprocated with relation to the clinching base in a perpendicular plane; and means to return said guide plate to its normal position when a

flange and the other in the other flange of said sprocket wheel having between them the support i^3, said cross pieces having the center perforations *g* and side perforations i^4, said bearings grooved to fit on to the bow *u* and secured on said bow by proper bolts and nuts, sub-

488,312. SPECTACLES. BENJAMIN A. GILBERT, Boston, Mass., assignor to the Geneva Optical Company, of Illinois. Filed Aug. 13, 1892. Serial No. 442,921. (No model.)

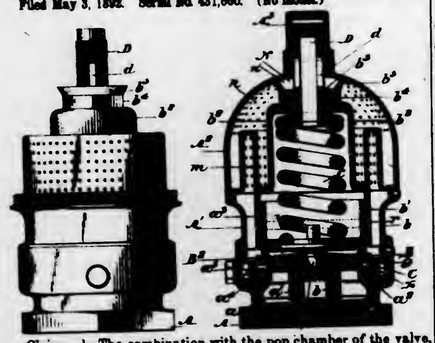
stantially as hereinbefore set forth, of the dead lever, a windlass shaft, a flexible connection between the shaft and lever, and means for turning the shaft to shift the fulcrum of the lever while the brakes are being applied.

open end of the staple driver; vertically sliding sleeve-like mechanism between said base and guide plate whereby the latter may be reciprocated with relation to the clinching base in a perpendicular plane; and means to return said guide plate to its normal position when a staple is to be driven, substantially as described.



3. A staple driver-guiding and staple clinching device, consisting of the combination with a stationary base plate provided with one or more clinching recesses, an overhanging guide plate suitably recessed to register with said clinching recesses and receive and guide the open end of the staple driver; a vertically sliding sleeve like mechanism between said base and guide plate whereby the latter may be reciprocated with relation to the clinching base in a perpendicular plane; and guiding devices to prevent rotation of said guide plate during its reciprocation; substantially as described.

488,309. SAFETY-VALVE. JOSEPH M. COALE, Baltimore, Md. Filed May 3, 1892. Serial No. 431,660. (No model.)



Claim.—1. The combination with the pop chamber of the valve, annularly surrounding the initial valve seat, and with the screw threaded valve casing of the mechanism herein described consisting of the adjustable ring C having the parts 8, 9, 10 and 11, for forming a supplemental valve seat and regulating and adjusting thereby the area of the supplemental passage for the escape of steam from the pop chamber, substantially as and for the purpose described.

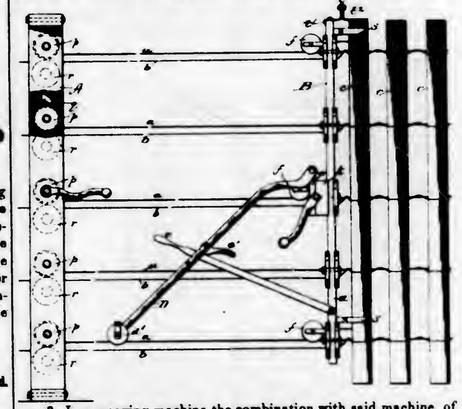
2. The combination with the valve casing the initial valve seat formed thereon, the supporting arms, and a guide-bearing constructed in sections, of a valve adapted to said valve seat, and having a stem adapted to be reciprocated vertically in said guide-bearing; substantially as described.

3. The combination with a valve casing, its valve, an interior spring-casing having an upwardly extended annular wall, a perforated external muffler chamber, partitioned by said annular wall to form an interior chamber open to the air through one or more series of said perforations, and a hollow spring-adjusting screw passing through said interior chamber, provided with a recess opening into the same; substantially as described.

488,310. PICKET-WIRING FENCE-MACHINE. JOHNSTON H. FRAZE, Eden, Ind. Filed Apr. 7, 1892. Serial No. 428,228. (No model.)

Claim.—1. The combination of the framework of the stretcher and tension rack or frame A, the spools *p* journaled in said frame having ratchet-teeth; dogs *q*, adapted to catch in said teeth, bolts *r'* passing through one beam of said frame; grooved tension spools *r* turning on said bolts; washers r^6 having square perforations fitting on the square parts of said bolts, and nuts adapted to bind said washers against said tension spools, substantially as shown and described and for the purposes set forth.

2. In a weaving machine, substantially as shown and described, the twisting device, consisting of the bearings *k* having openings *j* to receive the flanges of the sprocket wheels *i*; sprocket wheels *i* having the upper and lower flanges; cross pieces A secured one in one flange and the other in the other flange of said sprocket wheel having between them the support *i'*, said cross pieces having the center perforations *g* and side perforations i^4, said bearings grooved to fit on to the bow *u* and secured on said bow by proper bolts and nuts, substantially as shown and described and for the purposes set forth.



3 In a weaving machine the combination with said machine, of the extension *w* attached to the bearing *k*; plumbing device D having attached to its lower end a wheel *d'* and its upper end pivoted to the extension *w*; loop d^3 bolted to the arm of said plumbing device, stay-rod *e*, one end pivoted to the bow *u* and the other passing under said loop, and cam *e'* pivoted to said arm and adapted to hold said stay-rod in place, substantially as shown and described and for the purposes set forth.

4. In a weaving machine, as described, the leveling device *t* having the lower end of part *t'* secured to the upper part of bow *u*, with its upper end slotted, the elbow part t^3 having a similar slot and being secured to the other part by a bolt and nut, substantially as shown and described and for the purposes set forth.

5. The weaving device B, consisting of bow *u*, the leveling device *t* secured to its upper part; picket holders *s* secured to the rear face of said weaver; twisting devices consisting of the bearings *k* secured to the bow *u*, sprocket wheels *i* working in said bearings, cross pieces *h* fitting in the recesses *h'* of the flanges of said sprocket wheels, supports *i'* situated between said cross pieces and supporting the same, and wheels *f* borne on extensions extending from the flanges of said sprocket wheels; crank *l* and gearing *m* adapted to turn one of said sprocket wheels, and sprocket chain *n* drawn by said wheel and adapted to turn the other sprocket wheels, substantially as shown and described and for the purposes set forth.

6. The weaving device B, consisting of bow *u*, the leveling device *t* secured to its upper part; picket holders *s* secured to the rear face of said weaver; twisting devices consisting of the bearings *k*, sprocket wheels *i*, supports *i'*, cross pieces *h*, and wheels *f* borne in extensions extending from the flanges of said sprocket wheels; crank *l* and gearing *m* adapted to turn one of said sprocket wheels, and sprocket chain *n* drawn by said wheel and adapted to turn the other sprocket wheels; plumbing device D pivoted to extension *w*, secured to bow *u*; stay-rod *e* pivoted to the bow *u*, and cam *e'* adapted to hold said plumbing device in place, substantially as shown and described and for the purposes set forth.

488,311. TOE-WEIGHT. BERNARD D. GEER, Cleveland, Ohio. Filed May 13, 1892. Serial No. 433,916. (No model.)

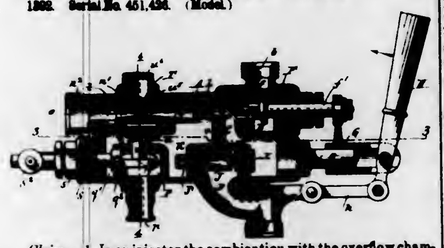
Claim.—In a toe-weight, the combination with shoe A, of standard B having lug *b* and spurs b^2, hook bolt C clamping the standard to the shoe, and weight D recessed to receive the standard B and having recess *d* engaging the nut on the bolt C, and screw S having partly plain and partly screw threaded body for securing the weight to the standard, substantially as described.

488,312. SPECTACLES. BENJAMIN A. GILBERT, Boston, Mass., assignor to the Geneva Optical Company, of Illinois. Filed Aug. 12, 1892. Serial No. 442,921. (No model.)

Claim.—1. The combination with an eye-glass frame of a nose-clamp comprising brackets as D D rigidly secured to and extending from the frame B and having a rearwardly bending portion D' and a downwardly bending lower portion D^2, said bends forming an off-set and the springs E rigidly attached at their lower ends to the parts D^2 of said nose-piece, their free ends extending upwardly substantially in the same line as the portion D^2 of said brackets, said upper ends being free to accommodate themselves to the nose, substantially as described.

2. The combination with an eye-glass frame of a nose clamp comprising brackets as D D rigidly secured to said frame and having the part D' rearwardly bent and the part D^2 forward bent, said bent portions forming an off-set substantially as described, the space *d* formed upon the lower end of the portion D^2 and having a perforation therein; and springs E rigidly secured to said portion D^2 by the tongue or projection E', and a rivet or screw *h*, substantially as and for the purpose set forth.

488,313. INJECTOR. THOMAS J. HART, Buffalo, N. Y., assignor to the Sherwood Manufacturing Company, same place. Filed Nov. 9, 1892. Serial No. 451,436. (Model.)



Claim.—1. In an injector the combination with the overflow chamber and an overflow valve applied to said chamber, of a valve stem and a lifting pawl pivoted to said stem and engaging against the overflow valve, substantially as set forth.

2. In an injector, the combination with the overflow chamber and an overflow valve applied thereto, of a valve stem and a lifting pawl pivoted to said stem and provided with a shoulder adapted to bear against the valve, substantially as set forth.

3. In an injector, the combination with the overflow chamber and an overflow valve applied thereto and provided with a tubular stem of a sliding valve stem arranged underneath the tubular stem of said valve, and a lifting pawl pivoted to said sliding valve stem and provided with a shoulder adapted to bear against the underside of the tubular stem, and beyond the shoulder with a finger adapted to enter said tubular stem, substantially as set forth.

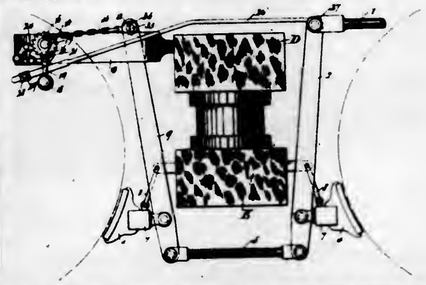
4. In an injector, the combination with the overflow chamber, and the primary and secondary overflow passages, of a tubular connection extending from the secondary overflow passage through the primary overflow passage into the overflow chamber, a secondary overflow valve seated in said tubular connection, a primary overflow valve seated in the rear wall of the overflow chamber, and mechanism connecting the primary with the secondary valve, for operating the secondary valve by the movement of the primary valve, substantially as set forth.

488,314. CAR-BRAKE. HOWARD HIDDLEY, Trenton, N. J. Filed Aug. 22, 1890. Renewed Nov. 12, 1892. Serial No. 451,793. (No model.)

Claim.—1. In a slack take-up for railway brakes, the combination, substantially as hereinbefore set forth, of the dead lever, a windlass shaft, and a flexible connection between the shaft and the lever, whereby the fulcrum of the lever may be shifted.

2. In a slack take-up for railway brakes, the combination, substantially as hereinbefore set forth, of the dead lever, a windlass shaft, a flexible connection between the shaft and lever, means for turning the shaft to shorten the connection and shift the fulcrum of the lever, and means to lock the shaft against backward movement.

3. In a slack take-up for railway brakes, the combination, substantially as hereinbefore set forth, of the dead lever, a windlass shaft, a flexible connection between the shaft and lever, and means for turning the shaft to shift the fulcrum of the lever while the brakes are being applied.



4. In a slack take-up for railway brakes, the combination, substantially as hereinbefore set forth, of the dead lever, a windlass shaft, a flexible connection between the shaft and the lever, and positively acting mechanism for turning the shaft to shift the fulcrum of the lever while the brakes are being applied.

5. In a slack take-up for railway brakes, the combination, substantially as hereinbefore set forth, of the dead lever guide, the lever guided thereby and having a movable fulcrum, and mechanism to automatically shift the fulcrum while the brakes are being applied.

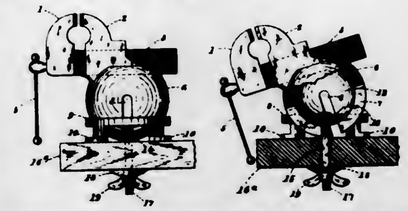
6. In a slack take-up for railway brakes, the combination, substantially as hereinbefore set forth, of the live lever, the dead lever link-connected therewith at one end, the dead lever guide, a fulcrum for the dead lever movable lengthwise of the guide, mechanism for shifting the fulcrum, and positively acting mechanism connected with the opposite end of the live lever for actuating the fulcrum shifting mechanism when the lever is operated to apply the brakes.

7. In a slack take-up for railway brakes, the combination, substantially as hereinbefore set forth, of the live lever, the dead lever link-connected thereto at one end, the dead lever guide, a movable fulcrum for the dead lever, a windlass shaft, a flexible connection between the shaft and the dead lever, a pawl carrying arm for turning the shaft, and a connection from said arm to the live lever, whereby the forward movement of the latter turns the shaft.

8. In a slack take-up for railway brakes, the combination, substantially as hereinbefore set forth, of the live lever, the dead lever link-connected thereto at one end, the dead lever guide, a movable fulcrum for the lever, a windlass shaft, a flexible connection between the shaft and the dead lever, a fixed ratchet on the shaft, a locking dog for the ratchet, a pivoted arm carrying an operating pawl engaging the ratchet, and a loose-link connection between the arm and the live lever.

9. In a slack take-up for railway brakes, the combination, substantially as hereinbefore set forth, of the live lever, the dead lever link-connected thereto at one end, the dead lever guide, a movable fulcrum for the lever, a windlass shaft, a flexible connection between the shaft and the dead lever, a ratchet fixed on the shaft, a locking dog for the ratchet, a pivoted arm carrying an operating pawl engaging the ratchet, a link connected at one end with the live lever and having a loose connection with the pawl carrying arm, and an adjustable stop on the link.

488,315. VISE. ALBERT KAHN, Buffalo, N. Y. Filed July 5, 1892. Serial No. 439,333. (No model.)



Claim.—In a vise, the combination with the jaw, 2, which carries and supports the jaw, 1, its parallel guiding bar and operating parts, of a spherical portion having an interior spherical chamber provided with narrow cross-openings in its lower half, a socket frame in which the spherical portion rests and a bolt having an enlarged head located within the spherical chamber, the bolt extending down through the

cross-openings and terminating in a screw portion adapted to pass through a bench and provided with a thumb nut for securing it in position and to a bench substantially as described.

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the frame, the combination, with the shell ejectors, and the main springs, of the ejector actuating hammers pivoted in the fore-end vibrating levers pivoted in said frame, and having the same vertical vibrating motion at the barrels, and adapted to engage with the

488,319. SPIDER FOR WHEELS. REUBEN T. MARKEY, Philadelphia, Pa. Filed May 20, 1891. Serial No. 394,014. (No model.)

bead or flange of the fluid receptacle and compressing the packing to make a tight joint, said bolt clamps also engaging lower parts of the

cross-openings and terminating in a screw portion adapted to pass through a beach and provided with a thumb nut for securing it in position and to a beach substantially as described.

488,316. AUTOMATIC SHELL-EJECTOR FOR BREECH-LOADING GUNS. MOSES A. KELLER, Batavia, N. Y. Filed Oct. 23, 1891. Renewed Sept. 20, 1892. Serial No. 447,227. (No model.)

Claim.—1. In a breech loading gun in which the barrels are hinged to the frame, the combination of the shell ejectors fitted to the barrels, hammers actuating said shell ejectors pivoted in the fore-end or forward of the hinge upon which the barrels swing, vibrating levers pivoted in the frame at the hinge end with their pivot located at a point between the barrels and the center of the hinge upon which the barrels swing, mechanism connecting said levers with the main springs, said levers being adapted to actuate the ejector actuating hammers, sliding sears mounted in the fore-end and provided with springs, and adapted to engage with the vibrating levers and depress said levers against the resistance of the main springs when the barrels are tilted after the gun has been fired, reciprocating rods operating in conjunction with the main springs and firing hammers, and adapted to operate in conjunction with the sears in the fore-end whereby the automatic action of the ejector actuating mechanism is controlled, all substantially as shown and described.

2. In a breech loading gun in which the barrels are hinged upon the frame, the combination, with the shell ejectors and the ejector actuating hammers, of the vibrating levers pivoted in the frame with their pivot at a point away from the center of the hinge upon which the barrels swing, whereby said levers have an eccentric movement to the axis or hinge center on which the barrels swing, but to vibrate in the same vertical plane as the barrels, the sliding sears in the fore-end or located forward of the hinge of the barrels and adapted to engage with said vibrating levers, springs holding said sears in contact with the levers, means whereby said levers are caused to slip off the sears automatically as the barrels reach their limit of tilt and cause the levers to force the ejector actuating hammers against the shell ejectors, as and for the purpose set forth.

3. In a breech loading gun, in which the barrels are hinged upon the frame, the combination with the shell ejectors and the main frame, of the ejector actuating hammers pivoted in the fore-end or forward of the hinge upon which the barrels swing, levers pivoted in said frame, having their pivot located at a point distant from the center of the hinge upon which the barrels swing, and having a vibrating motion in the same vertical plane as the barrels and adapted to engage with the ejector actuating hammers, the intermediate mechanism connecting said levers with the main springs, whereby they receive their power for actuating the ejector actuating hammers, the sears in the fore-end provided with springs and adapted to engage and disengage with the levers, as described, reciprocating rods connected with and operated positively by the main cocking plungers, and adapted to operate in conjunction with said sears, and control the action of the same, substantially as and for the purpose described.

4. In a breech loading gun in which the barrels are hinged upon the frame, the combination, with the shell ejectors, and the main springs, of the ejector actuating hammers pivoted in the fore-end vibrating levers pivoted in said frame, and having the same vertical vibrating motion at the barrels, and adapted to engage with the ejector actuating hammers, and cause them to operate said hammers as described, movable disks connecting said levers with the main springs, sears in the fore-end and adapted to engage and disengage with said levers as described, rods connected with and operated positively by the reciprocating cocking plungers and adapted to operate in conjunction with said sears and hold the same out of engagement with the vibrating levers, and against the resistance of the sear springs while the gun or firing hammers are cocked, and to recede from said sears when the firing hammers are snapped, or the gun fired and allow said sears to engage with the vibrating levers and cause said levers to compress the main springs, and operate the ejector actuating hammers when the gun is opened, as set forth.

5. The plungers *b*, alternately reciprocated by the hammers M, and the main springs E, and provided with the rods A, and connecting with or operating in conjunction with the sears N, and controls the automatic action of the ejector mechanism.

6. The vibrating levers F, pivoted in the frame A, at the opposite end of the main springs, as the plungers *b*, the intermediate movable disk S, adapted to connect the levers F, with the main springs E, and cause said levers to operate as and for the purpose set forth.

7. The ejector actuating hammers *e*, having the downwardly projecting arm or stud *j*, and adapted to engage with the levers F, as and for the purpose set forth.

8. The combination with the main frame, the main springs, and the fore-end, of the ejector hammers pivoted in said fore-end, the levers for actuating the ejector hammers pivoted in the main frame, the sears for holding said levers against the resistance of the main springs when the gun is opened, said levers being adapted to slip off the sears and strike the ejector hammers when the locks have been snapped, or hammers let down, the rods on the cocking plungers of the main hammers extending through the main springs and the end of the frame and operating in conjunction with the sears and hold the same out of action with the levers that actuate the ejector hammers so that said levers can not compress the main springs, when gun is opened, while the firing hammers remain cocked and thereby prevent the ejector hammers operating or striking the shell ejectors, all substantially as shown and described.

488,317. FILTERING MATERIAL. FERDINAND LASCAR, New York, N. Y., assignor to Frederick Spiegelberg, same place. Filed Feb. 11, 1892. Serial No. 421,069. (No specimens.)

Claim.—1. A filtering material consisting of jute impregnated with tannate of iron, substantially as described.

2. A filtering material consisting of jute impregnated with an iron salt, substantially as described.

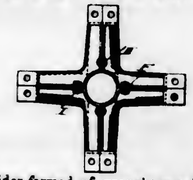
3. A filtering material consisting of jute impregnated with digallate and tetra-gallate of iron, substantially as described.

488,318. OAR-LOCK ATTACHMENT. JOSEPH R. LIVINGSTON, Velasco, Tex. Filed May 31, 1892. Serial No. 435,040. (No model.)

Claim.—1. An oar having a hook adapted to engage an eye upon the gunwale of the boat, and a plate connected to the oar and adapted to normally close the mouth of the hook, substantially as specified.

2. In an oar and oar lock, substantially as specified, the combination with an eye connected to the gunwale of a boat; of an oar, a hook carried by the oar and adapted to engage the eye, and a spring connected at one end to the oar and having an eye for the passage of the shank of the hook, substantially as specified.

488,319. SPIDER FOR WHEELS. REUBEN T. MARKEE, Philadelphia, Pa. Filed May 29, 1891. Serial No. 394,614. (No model.)

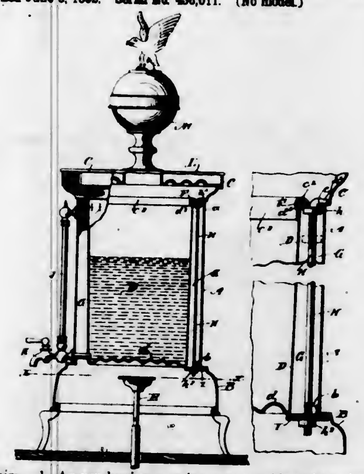


Claim.—1. A spider formed of wrought metal sheets or blanks in which separable halves of two spokes and a section of the hub, are formed in one integral piece and provided with a continuous longitudinal corrugation or strengthening rib extending through the hub and spokes, substantially as described.

2. A spider formed of wrought metal sheets or blanks in which separable halves of two spokes and a section of the hub are formed in one integral piece and provided with a continuous longitudinal corrugation or strengthening rib extending through the hub and spokes, and with pockets at the extremity of the spokes; substantially as described.

3. A spider formed of wrought metal sheets or blanks in which separable halves of two spokes and a section of the hub, are formed in one integral piece and provided with a continuous longitudinal corrugation or strengthening rib extending through the hub and spokes, and in which the ends forming the separable halves of two contiguous spokes are bent at a right or other angle to each other; substantially as described.

488,320. HOT-WATER URN. THOMAS MILLER, Jersey City, N. J. Filed June 8, 1892. Serial No. 436,011. (No model.)



Claim.—1. An urn having a casing, a removable or interchangeable fluid receptacle abutting the upper part of the casing, and fastenings engaging the casing and receptacle and sustaining the latter within the casing, substantially as described.

2. An urn having a casing, a removable or interchangeable fluid receptacle, and fastenings comprising bolt clamps engaging the casing and receptacle and sustaining the latter within the casing, substantially as described.

3. An urn having a casing, a removable or interchangeable fluid receptacle therein and providing a hot air space between them, and fastenings comprising bolt clamps within said hot air space and engaging the casing and fluid receptacle and holding the latter in place, substantially as described.

4. An urn made with a casing having a detachable or loose head piece, a removable or interchangeable fluid receptacle having an upper bead or flange, and bolt clamps engaging the casing head piece and the upper bead or flange of the fluid receptacle, and also engaging the lower parts of the casing and receptacle, substantially as described.

5. An urn made with a casing having a detachable head piece, a removable or interchangeable fluid receptacle having an upper bead or flange, a packing interposed between the fluid receptacle and head piece, and bolt clamps engaging the casing head piece and the upper bead or flange of the fluid receptacle and compressing the packing to make a tight joint, said bolt clamps also engaging lower parts of the casing and receptacle, substantially as described.

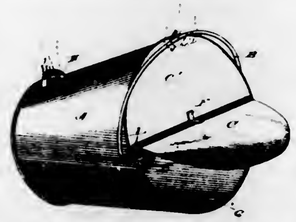
6. An urn made with a casing having a shell or drum, a detachable head piece and a detachable base piece fitted thereto; a removable or interchangeable fluid receptacle, and fastenings comprising bolt clamps engaging the head and base pieces of the casing and the fluid receptacle and holding the parts together, substantially as described.

7. An urn made with a casing having on its head piece a pendent flange c^4, a removable or interchangeable fluid receptacle fitted to the head piece and its flange c^4, and fastenings engaging the casing and receptacle and sustaining the latter within the casing, substantially as described.

8. An urn made with a casing having on its head piece a pendent flange c^4, a removable or interchangeable fluid receptacle fitted to the head piece and its flange c^4, a packing interposed between the head piece and fluid receptacle and behind the flange c^4, and fastenings engaging the casing and receptacle and sustaining the latter within the casing, substantially as described.

9. The combination, in an urn, of a casing comprising detachable parts A, B, C, a removable or interchangeable fluid receptacle D, and bolt clamps H, h, I, i^3, binding the parts together, substantially as described, for the purposes set forth.

488,321. FIRE-BUCKET. JOSEPH M. MILLER, Chicago, Ill. Filed Aug. 22, 1892. Serial No. 443,814. (No model.)



Claim.—1. The combination with a pail, bucket or similar receptacle, such as described, and a lid hinged thereon, of a bail pivoted to the pail and crank ends on the bail co-operating with the lid to open the same when the bail is turned down to one side; substantially as described.

2. The combination with a pail, bucket or similar receptacle, such as described, and a lid hinged thereon, of a bail having its ends passed through the sides of the pail and provided with crank ends within the same for co-operating with the lid to open the same when the bail is turned down to one side; substantially as described.

3. The combination with a pail, bucket or similar receptacle, such as described, and a lid hinged thereon, of a bail pivoted to the pail and having the wide crank ends co-operating with the lid to open the same and bridging the angle between the lid and rim of the pail on each side, thereby forming side guards when the lid is opened; substantially as described.

4. The combination with the pail or bucket and lid hinged loosely thereon to close by its own weight, of the bail pivoted to the pail and co-operating with the lid to open the same against the force of gravity, and a stop for arresting the opening of the lid before it reaches its center of gravity, whereby when the bail is turned up the lid closes automatically substantially as described.

488,322. RAILWAY-GATE. FRANK W. MILLS, Chicago, Ill. Filed Aug. 29, 1892. Serial No. 444,268. (No model.)

Claim.—1. In combination with a gate-post and a swinging arm thereon, a lever E in the post geared directly to the axis of the arm to operate it by turning on its fulcrum, a suitable stop in the post, a lever fulcrumed in the post adjacent to the lever E, a collapsible and expansible tube closed at one end and extended and confined between the said levers and between the stop and adjacent lever, and air-pressure mechanism for directing air under pressure into the said tube, substantially as and for the purpose set forth.

2. In combination with a gate-post and a swinging arm thereon, a lever E in the post connected with the arm to operate it by turning on its fulcrum, a suitable stop in the post, a lever fulcrumed in the post adjacent to the lever E, a collapsible and expansible tube closed at one end and extended and confined between the said levers and between the stop and adjacent lever, air-pressure mechanism for directing air under pressure into the said tube, a band K surrounding

the tube and intermediate parts and movable therewith, and a lock comprising a jointed bar connected at opposite ends respectively with the lever E and adjacent stop and a trip-finger A on and actuated by the movement of the frame K, substantially as and for the purpose set forth.

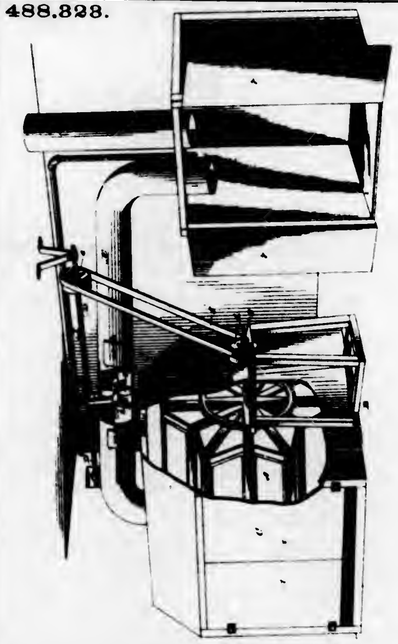
3. In combination with a gate-post A and an arm B journaled thereon and having a gear *m* on its journal, frames C and D respectively in the base and upper portion of the post, levers E and G fulcrumed on the lower frame and extending upward therefrom, the lever E terminating in a segmental rack *m* meshing with the gear *m'*, a stop F fastened toward its opposite ends between said frames, rubber hose I closed at one end and passed over the said stop and lever G and folded and confined between them and extended and confined between the two said levers, and air-pressure mechanism for directing air under pressure into the said tubes, substantially as and for the purpose set forth.

4. In combination with a gate-post A and an arm B journaled thereon and having a gear *m'* on its journal, frames C and D respectively in the base and upper portion of the post, a lever E fulcrumed on the lower frame and flanked by levers G and G' also fulcrumed thereon, the lever E terminating in a segmental rack *m* meshing with the gear *m'*, stop-bars F and F' confined on the said frames near opposite sides of the post, sections of rubber hose I and I', each closed at one end and each passed over a stop and adjacent lever and folded between the two and extended between the lever E and adjacent lever, air-pressure mechanism for directing air under pressure into either tube at will and thereby opening communication of the other tube with the outer air, and an automatic lock L comprising the band K surrounding the tubing and carrying the pivotal trip-finger *h* fulcrumed on the post, a jointed bar *k* pivotally connected with the lever E, and links *i* and *i'* connecting the bar *k* from its opposite ends respectively with the stops F and F', the whole being constructed and arranged to operate substantially as described.

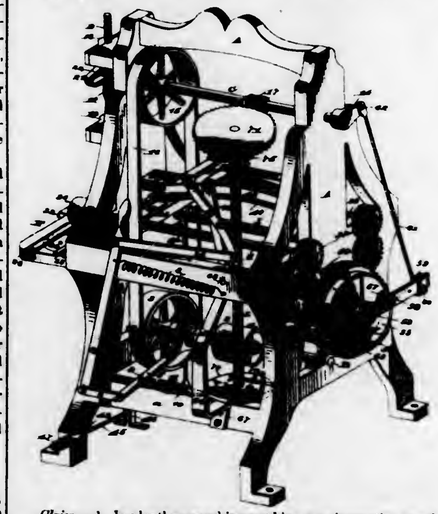
488,828. CARPET-CLEANING APPARATUS. ALICE A. PYLE, Richmond, Va. Filed May 17, 1892. Serial No. 433,274. (No model.)

Claim.—In a carpet-cleaning apparatus, a carpet-cleaning machine, a casing inclosing the same and having an air-inlet near the bottom on one side, a dust-receptacle provided with a ventilator, a dust-conduit in open communication with the interior of the casing near the top and opposite the air-inlet, and leading into the dust-receptacle, an exhaust-fan located in the conduit, means for operating the fan and machine, and an exhaust-steam pipe leading downward into the dust-receptacle and terminating at a point contiguous to the lower end of the ventilator.

488,828.



488,824. LEATHER-PUNCHING MACHINE. PETER W. RODECKER, Sidney, Ohio, assignor of one-half to Charles E. Given, Joseph C. Royon, and John F. Given, same place. Filed May 16, 1892. Serial No. 433,196. (No model.)



Claim.—1. In a leather-punching machine, a reciprocating punch-bar carrying a punch, mechanism for operating the same, a finger actuated by the punch-bar-operating mechanism, a dial over which the finger travels, a stop-pin inserted in the dial and against which the finger normally rests, and punch-bar-stopping mechanism actuated by the finger for stopping the punch-bar after it has made a predetermined number of reciprocations governed by the position of the stop-pin in the dial.

2. In a leather-punching machine, a power shaft, a band-wheel loose thereon, a clutch mechanism normally locking said band-wheel

to the shaft, a punch, a punch-operating shaft deriving motion from said band-wheel, and pre-adjustable automatic clutch releasing mechanism for disengaging the clutch from the band-wheel after a predetermined and variable number of revolutions of the punch-operating shaft.

3. In a leather-punching machine, a power-shaft, a band-wheel loose thereon, a clutch mechanism normally locking said wheel to the shaft, a punch a punch-operating shaft deriving motion from said band-wheel, a spring-actuated clutch-lever engaging with the clutch and provided with a detent-pin, a detent adapted to engage with said pin, and trip mechanism for automatically releasing said detent from the detent-pin after a predetermined number of revolutions of the punch-operating shaft, whereby the clutch is thrown out of engagement with said band-wheel.

4. In a leather-punching machine, a power-shaft, a punch a punch-operating shaft deriving motion from the power-shaft, a shaft perpendicular to the punch-operating shaft and deriving motion therefrom, and pre-adjustable stop mechanism actuated by the perpendicular shaft for automatically stopping the punch-operating shaft after it has made a predetermined number of revolutions.

5. In a leather-punching machine, a power-shaft, a band-wheel loose thereon, a clutch mechanism normally locking the band-wheel to the shaft, a spring-actuated clutch-lever engaging with the clutch and provided with a detent-pin, a detent adapted to engage with said pin, a punch a punch-operating shaft deriving motion from said band-wheel, a finger-shaft driven by the punch-operating shaft, and a finger mounted thereon and adapted to release the detent from the detent-pin after a predetermined number of revolutions of the punch operating shaft, whereby the clutch is thrown out of engagement with the band-wheel.

6. In a leather-punching machine, a power-shaft, a band-wheel loose thereon, a clutch mechanism normally locking the wheel to said shaft, a punch a punch-operating shaft deriving motion from said band-wheel, a worm-gear on the punch-operating shaft, a worm-wheel shaft, a worm-wheel thereon adapted to engage with the worm-gear, mechanism operated by the worm-wheel shaft for automatically releasing the clutch from the band-wheel, and a lever adapted to simultaneously engage the clutch with the band-wheel and the worm-wheel with the worm-gear.

7. In a leather-punching machine, a power-shaft, a punch a punch-operating shaft deriving motion from the power shaft, a worm-gear on the punch-operating shaft, an oscillating finger-shaft carrying a finger and provided with a worm-wheel adapted to engage with the worm-gear, and mechanism actuated by the finger for stopping the punch-operating shaft after it has made a predetermined number of revolutions and simultaneously oscillating the finger-shaft to disengage the worm-wheel from the worm-gear.

8. In a leather-punchingmachine, a power-shaft, a punch a punch-operating shaft deriving motion from the power shaft, a finger-shaft driven by the punch-operating shaft, automatic mechanism actuated by the finger-shaft for stopping the punch-operating shaft after it has made a predetermined number of revolutions, and means for automatically rotating the finger-shaft back to its normal position.

9. In a leather-punching machine, a power-shaft, a punch a punch-operating shaft deriving motion therefrom, a finger-shaft driven by the punch-operating shaft, a finger mounted thereon, a dial over which the finger travels, a stop-pin inserted in the dial and against which the finger normally rests, and mechanism actuated by the finger for stopping the punch-operating shaft after it has moved the finger a predetermined distance from the stop-pin.

10. In a leather-punching machine, a power-shaft, a punch a punch-operating shaft deriving motion from the power shaft, a finger-shaft driven by the punch-operating shaft, a finger mounted thereon, a dial over which the finger travels, having a series of holes, a stop-pin insertible in any given hole in the dial and against which the finger normally rests, and mechanism actuated by the finger for stopping the punch-operating shaft after it has made a number of revolutions predetermined by the position of the stop-pin in the dial.

11. In a leather-punching machine, a power-shaft, a punch a punch-operating shaft deriving motion from the power shaft, a finger-shaft driven by the punch-operating shaft, a finger mounted thereon, a dial over which the finger travels, a stop-pin inserted in the dial and against which the finger normally rests, mechanism actuated by the finger for stopping the punch-operating shaft after it has moved the finger a predetermined distance from the stop-pin, and means for revolving the finger back over the dial to its normal position against the stop-pin.

12. In a leather-punching machine, a power-shaft, a punch a punch-operating shaft deriving motion from the power shaft, a worm-gear on the punch-operating shaft, a finger-shaft, a worm-wheel thereon normally in engagement with said worm-gear, a stationary dial having a series of holes and contiguous numbers, a finger mounted on the finger-shaft and adapted to travel over the dial, a stop-pin insertible in any given hole in the dial and against which the finger normally rests, and mechanism actuated by the finger for simultaneously stopping the punch-operating shaft and disengaging the worm-wheel from the worm-gear after the punch-operating shaft has made a number of revolutions predetermined by the position of the stop-pin in the dial and indicated by the number opposite the stop-pin.

13. In a leather-punching machine, a power-shaft, a punch a punch-operating shaft deriving motion from the power shaft, a worm-gear on the punch-operating shaft, a finger-shaft, a worm-wheel thereon normally in engagement with the worm-gear, a stationary dial having a series of holes and contiguous numbers, a finger mounted on the finger-shaft and adapted to travel over the dial, a stop-pin insertible in any desired hole in the dial and against which the finger normally rests, mechanism actuated by the finger for simultaneously stopping the punch-operating shaft and disengaging the worm-wheel from the worm-gear after the said shaft has made a given number of revolutions predetermined by the position of the stop-pin in the dial and indicated by the number opposite the stop-pin, and means for revolving the finger-shaft backward until the finger is brought into its normal position against the stop-pin.

14. In a leather-punching machine, a power-shaft, a band-wheel loose thereon, a clutch mechanism normally locking the band-wheel to said shaft, a clutch-lever engaging the clutch and provided with a detent-pin, a detent normally in engagement with said pin, a spring-actuated hand-lever connected to the clutch-lever, a punch a punch-operating shaft deriving motion from the said band-wheel, a worm-gear on the punch-operating shaft, a finger-shaft, a worm-wheel thereon normally in engagement with said worm-gear, a stationary dial through which the punch-operating shaft loosely passes, a stop-pin inserted in the dial, a finger carried by the finger-shaft, adapted to travel over the dial and disengage the detent from the detent-pin, thereby permitting the clutch-lever to release the clutch from the band-wheel after the punch-operating shaft has made a number of revolutions predetermined by the position of the pin in the dial, means for disengaging the worm-wheel from the worm-gear, and a spring for rotating the finger-shaft backward until the finger is brought into its normal position against the stop-pin.

15. In a leather-punching machine, a power-shaft, a band-wheel loose thereon, a clutch mechanism normally locking said wheel to the shaft, a clutch-lever in engagement with the clutch and carrying a detent-pin, a spring-held hand-lever connected to the clutch-lever, a spring-pressed detent, normally in engagement with the detent-pin, a punch a punch-operating shaft deriving motion from the band-wheel on the power-shaft, a worm-gear on the punch-operating shaft, an oscillating finger-shaft carrying a finger for releasing the detent and provided with a worm-wheel normally in engagement with said worm-gear, a cam-lever provided with a slotted cam-plate, through which the finger-shaft passes, said cam-lever being pivotally connected with the hand-lever, a dial having a series of holes and numbers contiguous thereto, a stop-pin adapted to be inserted in any given hole in the dial for limiting the backward movement of the finger, and a spring for rotating the finger-shaft backward, by which mechanism the punch-operating shaft will be automatically stopped after a given number of revolutions predetermined by the position of the stop-pin in the dial and indicated by the contiguous number, the worm-wheel will be disengaged from the worm-gear, and the finger-shaft will be rotated backward until the finger reaches its normal position.

16. In a leather-punching machine, feed-roll shafts carrying feed-rolls and gear-wheels, a driving gear-wheel in mesh with the latter and having an interior friction-surface, an expanding center inside of said friction-surface, and means for expanding said center into frictional contact with the friction-surface, imparting a rotary motion to said center, and then contracting the latter out of contact with said friction-surface.

17. In a leather-punching machine, feed-roll shafts carrying feed-rolls and gear-wheels, a driving gear-wheel in mesh with the latter and having an interior annular friction-surface, a sectional expanding center within the annular portion of the driving gear-wheel, a link pivoted to each section, a lever to which said links are pivoted, a punch, a punch-operating shaft, means for operating the same, and connections between said shaft and lever for giving the latter an oscillating movement, whereby in one movement of the lever the center will be expanded into contact with the friction-surface of the driving gear-wheel and impart motion to said wheel, and in the opposite movement of the lever the center will be contracted, permitting the wheel to remain at rest.

18. In a leather-punching machine, feed-roll shafts carrying feed-rolls and gear-wheels, a driving gear-wheel in mesh with the latter and having an interior annular friction-surface, a sectional expanding center within the annular portion of the driving gear-wheel, a link pivoted to each section, a lever to which said links are pivoted, a clip adjustable on the lever, a punch a punch-operating shaft provided with a crank, means for operating said shaft, and a rod con-

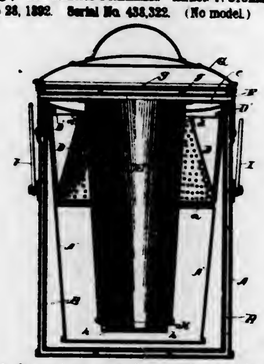
necting said crank and clip, whereby an adjustable intermittent revolution is imparted to the feed-rolls.

19. In a leather-punching machine, the combination, with the frame, a work-shelf attached thereto, and open journal-bearings in the frame, of a pair of feed-roll shafts mounted in said bearings and carrying feed-rolls which operate above the shelf, means for driving said shafts, a lifting-yoke beneath one and of the shafts, pressure-yokes bearing on the shafts, a tension-spring bearing on the pressure-yokes, a foot-lever, and a rod connecting said lever and the lifting-yoke, whereby the feed-rolls may be lifted out of their normal position, for the purpose stated.

20. In a leather-punching machine, the combination, with the frame, a work-shelf attached thereto, having an opening near each end, and open journal-bearings in the frame, of a pair of upper feed-roll shafts mounted in said bearings and carrying feed-rolls which operate over the openings in the shelf, a pair of lower feed-roll shafts journaled in the frame and carrying feed-rolls which operate in openings in the shelf, means for driving both pairs of shafts, a lifting-yoke beneath one end of the upper shafts, pressure-yokes bearing on the upper shafts, a tension-spring bearing on the pressure-yokes, a foot-lever, and a rod connecting said lever and the lifting-yoke, for the purposes stated.

21. In a leather-punching machine, the combination, with the frame and a work-shelf attached thereto, of an adjustable work-guide comprising two parallel bars, a series of disks located in recesses in the shelf and pivoted to the bars, and means for holding the disks in position.

488,325. ICE-CREAM FREEZER. AARON P. STORRS, Owego, N. Y. Filed June 28, 1892. Serial No. 438,322. (No model.)



Claim.—1. In an ice cream freezer, the combination with the outer receptacle, of the inner receptacle having the disk at the top thereof, the ring united to the outer edge of said disk and projecting above and below the same, the lower edge of the ring seating on the outer receptacle to form a cover thereof and the cover proper seating on the upper edge of the ring; substantially as described.

2. In an ice cream freezer, the combination with the outer receptacle, of the inner or cream receptacle having the disk secured thereto at the upper edge, the ring surrounding and secured to said disk, the second disk secured to the receptacle below the first mentioned disk and united to the ring at the outer edge; whereby a rigid structure is formed, and the cover for said receptacle; substantially as described.

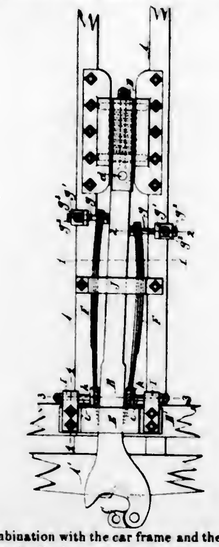
3. In an ice cream freezer, the combination with the outer receptacle having the supporting bead or projection and retaining lugs or projections, of the inner or cream receptacle, the perforated frusto conical partition seating on the supporting bead or projection and having the arms co-operating with the retaining lugs or projections on the outer receptacle; whereby the partition is held in place; substantially as described.

4. In an ice cream freezer, the combination with the outer receptacle, of the inner receptacle having the convex bottom with the series of wings or projections thereon whereby the entry of the vessel through the broken ice in the outer vessel is facilitated; substantially as described.

488,326. DRAW-BAR FOR RAILWAY-CARS. THOMAS A. BENELL, Buffalo, N. Y. Filed Sept. 19, 1892. Serial No. 446,262. (No model.)

Claim.—1. The combination with the car frame and the laterally movable draw bar, of longitudinal centering springs connected at their inner portions to the car frame and bearing with their outer portions against opposite sides of the draw bar, and transversely movable supports guided on the car frame and attached to the free outer portions of the centering springs, substantially as set forth.

2. The combination with the car frame and the laterally movable draw bar, of longitudinal centering springs attached at their rear ends to the car frame and bearing with their front ends against the draw bar and laterally movable loops guided in the car frame and embracing the front portions of the centering springs, substantially as set forth.

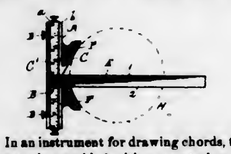


3. The combination with the car frame and the laterally movable draw bar, of longitudinal centering springs bearing with their front portions against opposite sides of the draw-bar and having their rear ends adjustably attached to the car frame, and stops arranged on the car frame between the ends of the springs, against which the springs abut with their outer sides, substantially as set forth.

4. The combination with the car frame and the laterally movable draw bar, of laterally adjustable bolts arranged on the car frame, longitudinal centering springs attached at their rear ends to said adjustable bolts and bearing with their front ends against opposite sides of the draw bar, and stops arranged on the car frame between the ends of the springs, against which the springs abut, substantially as set forth.

5. The combination with the car frame and the laterally movable draw bar, of laterally adjustable bolts arranged on the car frame, longitudinal centering springs attached at their rear ends to said bolts and bearing with their front ends against opposite sides of the draw bar, brackets secured to the car frame and having transverse eyes or openings, loops embracing the front portions of the centering springs and having guide bolts which slide in the eyes of said brackets, and a strap secured to the car frame between the ends of the centering springs and having upright side bars against which the springs bear, substantially as set forth.

488,327. INSTRUMENT FOR DRAWING CHORDS. WILLIAM H. BROWN, Worcester, Mass. Filed Mar. 5, 1890. Serial No. 342,731. (No model.)



Claim.—1. In an instrument for drawing chords, the combination with the head or stock, provided with a re-entering angle and having a way at right angles with a line bisecting said angle and extending laterally upon each side of said angle, a slide moving in said way, and a drafting blade attached midway of said slide, whereby said drafting blade can be moved upon either side of said angle, substantially as described.

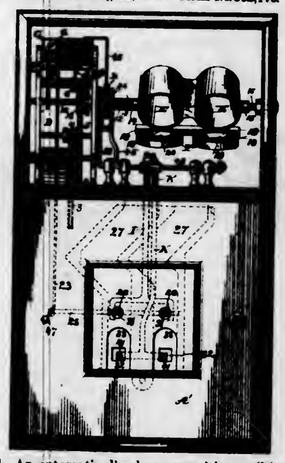
2. In an instrument for drawing chords, the combination with a head, or stock, provided with a reentering angle and having a way extending laterally upon each side of said angle, a slide moving in said way, a drafting blade attached midway of said slide, and a clamping gib, or bar, with means substantially as described for tightening the same, whereby said drafting blade is held in the desired position upon either side of said reentering angle, substantially as described.

3. In an instrument for drawing chords, the combination of a head, or stock, provided with a reentering angle, adapted to incloss an arc of a circular body and having a way extending laterally upon each side of said angle, a drafting blade attached to a slide and a slide sliding in said way and having the drafting blade attached to its central section, and having its edges graduated from the drafting blade toward either end, substantially as described.

4. In an instrument for drawing chords, the combination with a head or stock provided with a way to receive a sliding plate, of a sliding plate having a drafting blade attached at right angles thereto, and buttons pivoted upon the ends of said head or stock and arranged to bear against the ends of said sliding plate and hold the same from movement in said way, substantially as described.

5. In an instrument for drawing chords, the combination with a head or stock provided with gibs C, and C', forming a way for a sliding plate, said gibs C being separable from said head or stock, of a sliding plate carrying a drafting blade, and sliding in said way, and tightening screws D, D, by which said separable gib is clamped upon the edge of said sliding plate, substantially as described.

488,328. COIN-CONTROLLED DICE-THROWER. CLEMENT C. CLAWSON, Newark, N. J. Filed Aug. 16, 1890. Serial No. 362,176. (No model.)



Claim.—1. An automatic dice box comprising a tilting table or dice receiving and returning tray, and one or more cups which alternately occupy a position above and below said table or tray, substantially as described.

2. The combination with a tilting table or dice receiving and returning tray, and a dice box which alternately occupies a position above and below said table or tray, of a motor connected with said table or tray and dice box, for operating the same, substantially as described.

3. A coin controlled automatic dice box, provided with a tilting table or dice receiving and returning tray and one or more cups which occupy positions alternately above and below said table or tray, and also with a coin controlled mechanism for said box, substantially as described.

4. The combination of a tilting table or dice receiving and returning tray, a dice box which alternately occupies a position above and below said table or tray, and a coin controlled motor connected with said box and tray, substantially as described.

5. In combination with a dice box, a dice receiving and returning tray provided with a rim for retaining the dice, and means whereby said tray is applied to said box to place the dice therein and is automatically returned into position to receive them again when thrown, substantially as described.

6. A dice box comprising one or more cups mounted to turn about a transverse horizontal axis, and a tray hinged to the cups on a parallel axis, substantially as described.

7. The dice box comprising one or more cups mounted to turn about a transverse horizontal axis, and a tray hinged to said cups on a parallel axis, in combination with a motor, such as a clock work, operating said cups and tray, substantially as described.

8. The dice box comprising one or more cups mounted to turn about a transverse horizontal axis and a tray hinged to said cups on a parallel axis, in combination with a coin controlled mechanism, substantially as described.

9. The dice box comprising one or more cups mounted to turn about a transverse horizontal axis, and a tray hinged to said cups on a parallel axis, in combination with a coin controlled motor or clock-work for operating the said cups and tray, substantially as described.

10. The dice box comprising one or more cups mounted to turn about a transverse horizontal axis and a counterbalanced tray hinged to said cups on a parallel axis, substantially as described.

11. The dice box comprising one or more cups mounted to turn about a transverse horizontal axis and a counterbalanced rimmed tray hinged to said cups on a parallel axis, substantially as described.

12. The dice box comprising one or more cups mounted to turn about a transverse horizontal axis and a rimmed tray hinged to said cups on a parallel axis, substantially as described.

13. The combination with the clockwork or motor, of the latch, latch releasing means comprising one or more arms projected across one or more coin passages, carrier for said latch releasing means, and means for moving the said carrier, substantially as described.

14. The combination with a coin passage, of latch releasing means comprising an arm arranged relatively to said passage so as to be acted upon by the coins or tokens, and a movable carrier for said releasing means, substantially as described.

15. The combination with a coin passage formed by and between plates provided with holes for the reception of the arm to be acted upon by the coins, of latch releasing means comprising an arm which enter said holes, a movable carrier for said releasing means, and a stop for limiting the forward motion of said carrier so that the end of said arm is left free, substantially as described.

16. The combination with a clockwork or motor, and its latch, of latch releasing means comprising an arm or arms arranged relatively to one or more coin passages so as to be acted upon by the coins, a movable carrier for said releasing means, carrier operating means driven by said clockwork, and means for temporarily holding up the latch after the carrier has been drawn back, substantially as described.

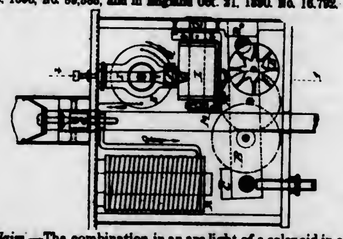
17. The combination with the clockwork and its latch, of the two carriers, the latch releasing means on one carrier, the coin supporting fingers on the other, and means for operating said carriers, substantially as described.

18. The combination with the clockwork or motor and its latch, of the two carriers, the latch releasing means on one carrier, the coin supporting fingers on the other carrier, the arm on said latch for temporarily upholding the same when released by the coin, and the notched disks and pins moved by said clockwork or motor, substantially as described.

19. The plates provided with one or more zigzag coin passages between them, and with an upper and a lower set of holes or openings at the lower part of said plates, in combination with the two carriers, the latch releasing means on one carrier with arms at the height of the upper set of holes, and the fingers on the other carrier at the height of the lower set of holes, substantially as described.

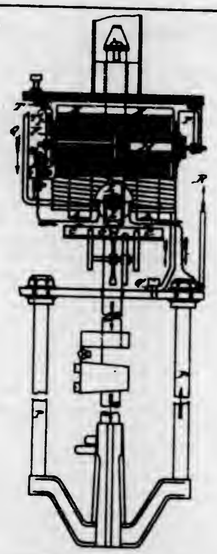
20. A coin controlled instrument or apparatus, comprising the clockwork or motor, and the devices driven thereby, in combination with the latch engaging the fly and arranged to impart first a retrograde motion in releasing the same, the two carriers, the latch releasing means on one carrier, the coin supporting fingers on the other carrier, and the means for upholding the latch when the coin is discharged from said latch releasing means, substantially as described.

488,329. ELECTRIC-ARC LAMP. ALBERT DE PUYDT, Liége, Belgium. Filed Feb. 17, 1892. Serial No. 421,906. (No model.) Patented in Belgium Dec. 19, 1888, No. 84,349, Dec. 14, 1889, No. 88,852, and Feb. 3, 1890, No. 89,383, and in England Oct. 21, 1890, No. 16,792.

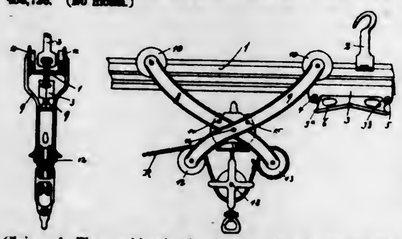


Claim.—The combination in an arc light of a solenoid in a circuit about the carbons, carrying a stationary core and a movable core, the latter being suspended from two blade springs, and carrying contacts controlling the circuit including the feed regulating magnet.

488,329.



488,330. HAY-CARRIER. HENRY H. DURR, Utica, N. Y., assignor to Charles H. Childs & Co., same place. Filed July 1, 1892. Serial No. 438,726. (No model.)



Claim.—1. The combination in a hay carrier of a car having an opening for receiving the bail pulley, a pair of independent jaws pivoted upon a common pivot located directly over the bail pulley opening, each jaw having an upwardly extending projection, a sliding catch block having shoulders adapted to hold the projections together in locked position and to engage upon the ends of the projections and become itself locked, a trip block having inclined face and retaining shoulders, and a bail pulley, substantially as set forth.

2. The combination of a car having a bail pulley opening, a pair of jaws pivoted upon a common pivot located directly over the bail opening, each jaw having a projection extending above the pivotal point, a catch block having shoulders adapted to engage the projections from the outer sides and hold them together, and a bail pulley having a headed spindle, substantially as set forth.

3. In a hay carrier the combination of a car frame, pairs of arms extending above and below the frame, intersecting each other, and carrying the track wheels on their upper ends and the rope sheaves between their lower ends below the frame, the frame having notches or recesses for receiving the arms and retaining them in their proper positions, substantially as set forth.

488,331. COMBINED CAMERA AND PHOTOGRAPH-EXHIBITOR. WILLIAM V. RENOUD, Chicago, Ill., assignor of one-half to Alfred C. Kemper, same place. Filed July 5, 1892. Serial No. 438,979. (No model.)

Claim.—1. A convertible camera and photograph exhibitor, comprising in combination, a light-tight inclosing-case having an opening *t* in the front side, an opening *m* in the line of vision through the opening *t*, a lens *t'* and a shutter at the opening *t*, a removable light-tight cover for the opening *m*, and rollers in the case, at opposite sides of the plane of the opening *t*, adapted to hold a strip of sensitized material for the taking of negatives, or a strip provided with transparencies to supplant the sensitized strip, and operative to move the strip across the field of view, substantially as described.

2. In a camera, the combination with the inclosing case and film-carrying rolls, of a resilient self-adjusting mat in the case, having an opening through it, and pressing at opposite sides of its opening normally against the rolls, whereby as the film is unrolled from one roll upon the other the mat by self-adjustment will maintain contact with each roll, substantially as and for the purpose set forth.

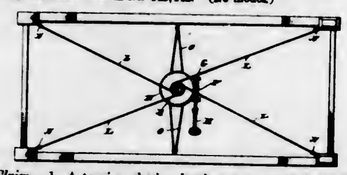
3. In a camera, the combination with the inclosing-case and film carrying rolls, of grooves *i i'* in the case adjacent to the rolls, and a mat C in the grooves provided with springs *k'* operating to maintain the mat in contact with the rolls, substantially as and for the purpose set forth.

4. In a roll holder for cameras the combination with the roll-holder frame, and rolls supported therein, of stops in the frame and a mat and springs confined in the frame between the said stops and rolls, the springs operating to press the mat normally against the rolls, substantially as described.

488,332. SOFA. WILLIAM FLAMM, Denver, Colo. Filed Apr. 27, 1892. Serial No. 430,534. (No model.)

Claim.—In a combined sofa and bed, the combination of an upholstered frame having hinged end-arms forming containing receptacles, and an end hinged pillow or rest adapted to be elevated, said frame having legs inward from the edges thereof to provide for proper positioning of the side-bars containing the operating mechanism, and a combined back and bed hingedly connected to the aforesaid frame by plates 6 mounted in slots and connected at their inner ends at a distance from the rear edge of the said frame, said combined back and bed being formed with a right-angular flange 19× extending longitudinally the length thereof and adapted to bear against the legs at the back of the frame to hold the said combined back and bed in a stable position when arranged as a sofa-back, and to prevent movement over the upholstered frame beyond a certain point when arranged as a bed, and operating cords attached to the said combined back and bed adjacent to the opposite ends thereof and at the lower edge of the same, whereby it may be raised and thrown over the upholstered frame to form a bed, said combined back and bed being similarly upholstered and supplied with springs on the front and rear sides thereof, substantially as described.

488,333. FURNITURE-BRACE TIGHTENER. HORACE L. FREEMAN, Lexington, N. C., assignor to Baxter Shemwell, same place. Filed Aug. 18, 1892. Serial No. 443,442. (No model.)



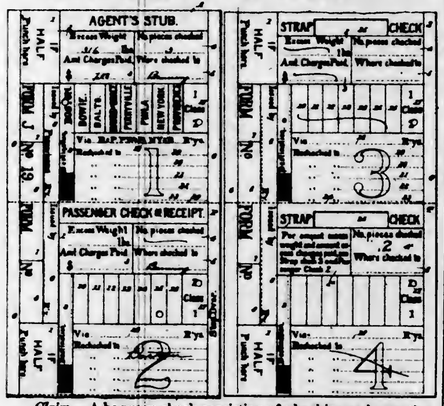
Claim.—1. A tension device having concentric, independently-rotatable disks, carrying twisting hubs, and provided, respectively, with a worm and worm-teeth, substantially as specified.

2. A tension-device having concentric, concaved disks mounted upon a common pivot-pin and provided with twisting-hubs, and a worm mounted upon one disk and engaging worm teeth upon the other, substantially as specified.

3. A tension-device having concentric disks provided with twisting-hubs having diametrically-opposite receiving slots, and the worm carried by one disk to engage worm teeth upon the other, substantially as specified.

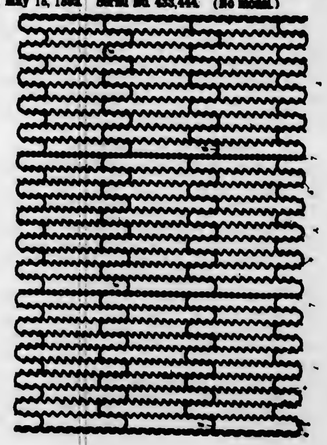
4. In combination with intersecting, bracing-wires, the tension device comprising concentric twisting disks, provided with slotted hubs to receive the wires, and a worm mounted upon one disk to engage peripheral worm-teeth upon the other disk, substantially as specified.

488,334. BAGGAGE-CHECK. ARCH A. GLENNON, Memphis, Tenn. Filed Dec. 12, 1891. Serial No. 414,840. (No model.)



Claim.—A baggage check consisting of a backing and a continuous strip in one piece divided into four sections and comprising a stub, a receipt, and a pair of duplicate checks, the latter being closely arranged and attached to each other and all of the sections separated by perforated or indented lines and adapted to be folded accordionlike, each check being supplied with a top rectangular opening to receive a check-strap, a space 17 adapted for punching, a space 9 arranged longitudinally of said check and having a designating black spot thereon at the lowermost end thereof, a margin on each side of the check for insertion in a metallic shell, said checks having also the various specific spaces named and further supplied with the punching spaces 1, and spaces 7 and 8, by which provision is made to have the checks correspond in form and number with the tickets for passage with which the checks will be issued, all of said spaces being adapted to align and register with each other when the several parts of the check are folded in the manner stated, substantially as described.

488,335. WIRE MAT. JOHN T. HOWARTH, Beaver Falls, Pa. Filed May 18, 1892. Serial No. 433,444. (No model.)

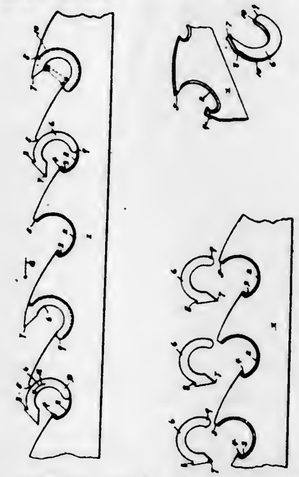


Claim.—1. A wire mat or matting consisting of a series of independent sections, each comprising a series of parallel coiled strands, and end-binding-wires, the adjacent coils of the sections interlocking to form a hinge-connection, substantially as specified.

2. A wire mat or matting consisting of a series of sections, each comprising a series of parallel coiled wire strands, the adjacent strands of adjacent sections interlocking to form hinge-joints, the outer coils of the outer sections consisting of a series of strands and the binding-strands or wires for each of the sections engaging the ends of the parallel coils, and terminating in the end coils of each section, substantially as specified.

3. A mat or matting consisting of a series of coiled wire strands arranged parallel, and a series of binding-wires bent into flat sinuous-form or in reverse directions to form U-shaped branches, the terminal of each U-shaped branch engaging a series of coils of a strand, substantially as specified.

488,336. REMOVABLE SAW-TOOTH. ISAAC N. KENDALL and JAMES O. KENDALL, Vancouver, Canada. Filed May 21, 1892. Serial No. 433,889. (No model.)



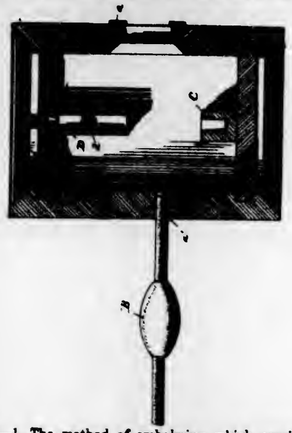
Claim.—A saw plate or blade having a seat or socket therein continuously curved and formed upon arcs of gradually decreasing circles and terminating in an abruptly-curved socket to form an overhanging shoulder that is continuous of the line of the socket and unbroken at any point, the upper portion of said seat or socket being formed with a straight abutting end, and a tooth correspondingly curved and adapted to fit said seat and also provided with an upper shoulder at its front end and a lower rounded end to engage respectively the abutting end of the seat or socket and be embraced by the lower overhanging shoulder of the blade or plate, said lower end being forced upward under said overhanging shoulder by reason of the contour of the seat and tooth and thereby locked in position in connection with the blade, substantially as described.

488,337. NUT-LOCK. SIDNEY A. LAKE, Lake View, Wash. Filed Apr. 16, 1892. Serial No. 429,405. (No model.)

Claim.—In combination, a bolt having a single longitudinal groove, and a nut engaging said bolt and having its rear or inner angles severally under-cut or chamfered, the locking-cap corresponding in shape to the outer face of the nut and having a series of rearwardly or inwardly disposed flanges, 8, corresponding in number to the sides of the nut and lying, respectively, in contact therewith, said flanges being inwardly bent at their extremities 6, to engage and lie in contact with the chamfered edges of the nut, the cap being further pro-

vided with a bolt-hole 10, and a tongue 11, to engage the groove in the bolt, substantially as specified.

488,838. PROCESS OF EMBALMING. TAYLOR MARTIN, Fairmont, W. Va. Filed May 19, 1892. Serial No. 433,568. (No specimens.)

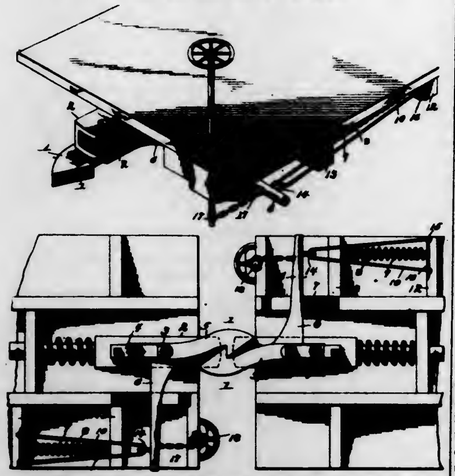


Claim.—1. The method of embalming, which consists, first, in injecting into the corpse intermingled, disinfectant gases subsequently passing said gases through a purifying liquid, and finally, injecting into the corpse the said purifying liquid impregnated with the same gases and an embalming compound, substantially as specified.

2. The method of embalming, which consists, first, in injecting into the corpse intermingled disinfectant gases, second, passing said gases through strong lime water whereby the same becomes impregnated with the gases, third, adding an embalming fluid to the lime water and injecting the whole into the corpse, substantially as specified.

3. The herein described method of embalming, which consists, first, in injecting into the corpse intermingled disinfectant gases, second, purifying the same, and third, combining the gases with an embalming fluid and injecting the whole into the body, substantially as specified.

488,839. CAR-COUPLING. CHARLES R. MARTIN, Waupun, Wis. Filed Oct. 27, 1892. Serial No. 450,120. (No model.)

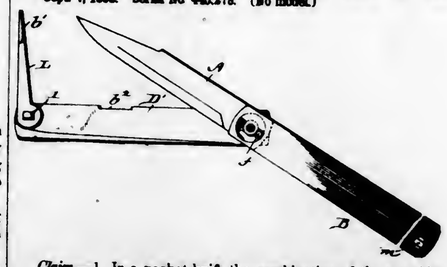


Claim.—1. In a car coupling, the combination with a car having an ordinary draw-head, of a hook pivoted to the lower face of the draw-head, and having a curved neck, a bracket plate arranged in rear of the hook and extending forward beneath the shank of the hook and receiving the pivot thereof and supporting the hook, and a spring for holding the hook coupled, substantially as described.

2. In a car coupling, the combination with a car having a draw-head, a hook pivoted to the lower face of the draw-head and having a laterally extending arm provided at the outer end with an eye, a longitudinally disposed guide-bar mounted on the car, a spiral spring disposed on the guide bar, a plate arranged on the guide-bar at the inner end thereof and having an opening to receive the same and engaging the inner end of the spring, and a U-shaped connecting piece engaging the eye of the arm and having its ends secured to the plate, substantially as described.

3. In a car coupling, the combination of a car provided with a shoulder and having a draw-head, a hook pivotally mounted on the lower face of the draw-head and having a laterally extending arm provided at its outer end with an eye and bearing against said shoulder, a longitudinally disposed guide-bar mounted on the car, a spiral spring arranged on the guide-bar, a plate having an opening receiving the guide bar and extending from opposite sides thereof, a U-shaped connecting piece receiving the eye of the arm in its bend and having the ends of its sides secured to said plate, a vertical shaft mounted on the car and a chain connecting the lower end of the shaft with said arm, substantially as described.

488,840. POCKET-KNIFE. GUST SKOGLUND, Kersey, Pa. Filed Sept. 7, 1892. Serial No. 445,278. (No model.)



Claim.—1. In a pocket knife the combination of the two sides of the handle pivoted together at their front ends and having semi-circular recesses formed in their inner faces, concentric with the pivotal point, the blade pivoted between the said sides by the same pivot that connects the latter and having lugs projecting from its shank, one on each side and on opposite sides of the pivotal point and each registering with the semi-circular groove of the adjacent side, and the lever pivoted to the inner face of the rear end of one of the sides and provided with a button shaped to register in one position with a recess in the side of the handle and to be turned out of register with said recess to lock the sides of the handle together in either the open or closed position of the blade, substantially as and for the purposes described.

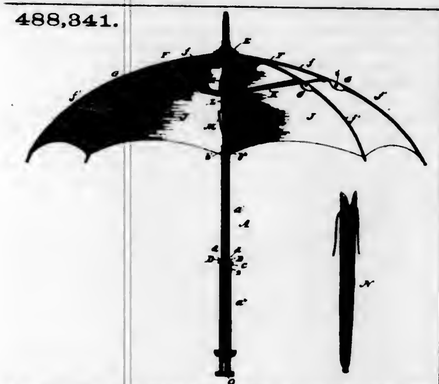
2. In a pocket knife, the combination of the steel plates, the sides riveted thereto, the said plates and sides being pivoted together at their front ends and the former having semi-circular grooves cut in them concentric with their pivoted points, the blades pivoted between the said plates and the sides by the same pivot connecting the latter and having lugs projecting out from each side of its shank and on opposite sides of the pivotal point, and each registering with the semi-circular groove of the adjacent plate, the dust guard secured between the said plates along one edge of the knife handle and the lever pivoted to the inner face of one of the plates near its free end and lying on the opposite edge of the handle to said dust guard and closing the space between the top edge of the blade and the handle when the lever is closed, substantially as and for the purposes described.

488,841. FOLDING UMBRELLA. GEORGE H. VANHAUKEN, Shickshinny, Pa. Filed May 31, 1892. Serial No. 435,083. (No model.)

Claim.—1. In a folding umbrella, the sectional stick, having the fixed notched collar at one end, the sectional ribs connected to said collar and comprising inner and outer rib sections which latter are adapted to be folded over the inner rib sections, lock hinges connecting said sections and comprising bifurcated hinge members connected to the ends of the inner rib sections and provided with upper curved edges, inner stop walls and outer stop rests connecting the outer ends thereof, and angularly disposed pivot lugs connected to the inner ends of the outer rib sections and pivotally mounted between the walls of said bifurcated members adjacent to the stop walls thereof, and raising and lowering devices, substantially as set forth.

2. A sectional umbrella stick comprising an inner stick member having a longitudinally disposed guide groove and a right angularly disposed short end groove at the outer end of the longitudinal groove,

488,841.



an outwardly pressing spring catch secured to said inner stick member near its inner end and in a line with and opposite to said short end groove, telescoping tube sections sliding within each other and over said stick, the outer tube section having an inner shoulder at one end, and the inner or intermediate tube section, sliding within the outer section, being provided with a shoulder at one end adapted to strike the shoulder of the outer section to limit the extension of the same, an inner projecting pin at its other end adapted to travel in said longitudinal guide groove and short end groove, and a locking notch or opening opposite said pin and adapted to receive the outwardly pressing spring catch at the moment the pin has been thrown to the end of the short end groove by a turn of the innermost tube section, and opposite catches arranged within the intermediate tube section and adapted to take over the inner end of the outer tube section, substantially as set forth.

3. In a folding umbrella, the combination, of a sectional stick comprising a series of telescoping tube sections, a removable screw cap inclosing the outer open end of the outer tube section, and the umbrella case or covering adapted to be attached to the outer end of the intermediate tube section when the stick is collapsed, and be drawn within the outer tube section and inclosed thereby when the stick is extended, substantially as set forth.

488,842. WHEEL TOY. JAMES S. WILKINS, Jr., Keene, N. H. Filed July 6, 1892. Serial No. 439,151. (No model.)

Claim.—1. A wheeled toy having a gong or bell, the axle connecting the wheels being provided with a cross-head, the striking-pin mounted in guides in position to strike said gong or bell, and springs attached to the striking pin, substantially as specified.

2. A wheeled toy having a gong or bell, and a cross-head carried by its axle, the striking-pin mounted in guide-eyes, the impulse spring and retraction spring, arranged substantially as specified.

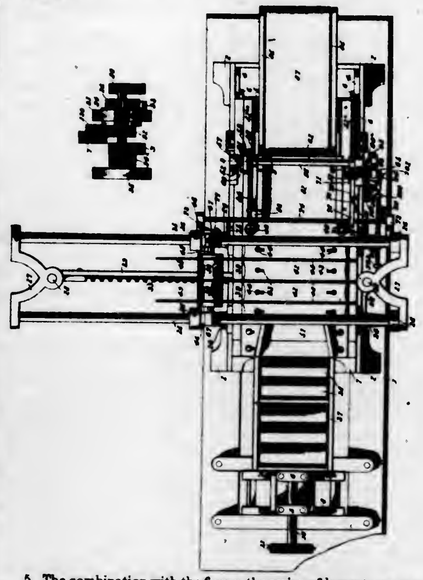
488,848. BRICK OR TILE CUTTER. A. Z. WILLIAMS, Chicago, Ohio. Filed Oct. 12, 1891. Serial No. 408,504. (No model.)

Claim.—1. In a machine of the class described, the combination with a frame, a series of brick-receiving frames mounted thereon and spaces between the same, of transverse guide-rods thereabove, rotatable cutting-disks mounted in the spaces and upon the guide-rods, and means for reciprocating the disks, substantially as specified.

2. In a machine of the class described, the combination with a frame, a series of brick-receiving frames spaced apart and mounted thereon, of a series of cutting disks one for each space, a shaft for supporting the disks, bearings mounted at opposite sides of the frames, rods connected at their ends and mounted for reciprocation in the bearings, boxes secured to the rods and receiving the disk-carrying shaft, and means for reciprocating the rods, substantially as specified.

3. In a machine of the class described, the combination with the frame, a series of brick-frames having intervening spaces, of opposite pairs of bearing-standards having openings, rods mounted loosely in the openings and adapted to reciprocate, heads connecting the rods, standards depending from the heads, an upper and a lower toothed rack-bar connecting the standards below the rods, a shaft located between the rack-bars, a gear of a less diameter than the distance between the rack-bars, means for rotating the gear, a shaft connecting the rods and a series of disks agreeing with and opposite the spaces between the frames mounted on the shaft, substantially as specified.

4. In a machine of the class described, the combination with the frame, of the series of adjustable brick-frames spaced apart and mounted on the frame, the cutters mounted for movement between the brick-frames and means for reciprocating the cutters, substantially as specified.



5. The combination with the frame, the series of lower transverse strips spaced apart and mounted on the frame the series of slotted L-shaped standards flanged at their upper ends, and mounted at opposite ends of the cross-strip, the series of upper cross-strips provided with slots and adjusting-bolts passed through the slots of the upper cross-strips and the standards, of the series of cutters mounted for reciprocation between the frames thus formed and means for reciprocating the cutters, substantially as specified.

6. In a machine of the class described, the combination with the frame, a series of brick-frames mounted thereon, and spaced apart, of pairs of standards located at opposite sides of the frames, cutter-carrying rods mounted for reciprocation in the standards, heads connecting the rods, standards depending from the heads, toothed rack-bars connecting the lower ends of the standards and provided at diagonally opposite ends with untoothed portions, a bearing standard located at one side of the framework, a sectional shaft journaled therein and having its sections connected by a gimbal-joint, a gear mounted on the inner end of the shaft and of a lesser diameter than the distance between the rack-bars, and means for raising and lowering the inner section of the shaft when the rack-bar's untoothed surface arrives opposite the gear, substantially as specified.

7. In a machine of the class described, the combination with the lower framework, and the upper reciprocating frame, of a stop mounted upon the movable frame, cutting mechanism arranged in advance of the stop, mechanism for operating said cutting mechanism, and devices operated by the reciprocation of the frame as caused by the arrival of clay against the stop, for operating or throwing into gear said cutter-operating mechanism, substantially as specified.

8. In a machine of the class described, the combination with the lower frame, and the reciprocating frame mounted thereon, of a stop mounted upon the reciprocating frame and adapted through the medium of the incoming blade to reciprocate the movable frame, brick-frames mounted in advance of the stop, standards located at opposite sides of the brick-frames, rods mounted for reciprocation in the standards, a shaft and heads connecting the rod, the disks mounted upon the shaft for reciprocation between the frames upper and lower rack-bars connecting the upper and lower ends of the standards, a loosely-hung power-shaft, a gear mounted on the same, and of lesser diameter

than the distance between the rack-bars, and mechanism operated by the movements of the frame as caused by the force brought to bear against the stop, for raising and lowering said gear into and out of engagement with the said rack-bars, substantially as specified.

9. In a machine of the class described, the combination with the lower frame of the upper reciprocating frame, cutting mechanism, upper and lower rack-bars connected therewith for moving said mechanism, a shaft located between the rack-bars, a gear of a lesser diameter than the distance between the rack-bars mounted on the shaft, a pivoted bearing-bar for supporting the rear end of the shaft, a lower transverse shaft, a pitman on the inner end of the same, and devices between the movable frame and transverse shaft, for rotating said shaft and raising and lowering the bearing-bar, substantially as specified.

10. In a machine of the class described, the combination with the frame, the reciprocating upper frame mounted thereon, the cutting mechanism, the upper and lower rack-bars for operating the same, the loosely-hung shaft between the rack-bars, the gear mounted on the shaft for engaging with the rack-bars, and of a lesser diameter than the width between the same, a pivoted bearing-bar for the reception of the rear end of the gear-supporting shaft, a lower transverse shaft, a disk on one end of the same and a gear on the other, a pitman connecting the disk with the bearing-bar, a rear transverse shaft, a fast and loose gear mounted thereon, the fast gear engaging with the gear before mentioned of the transverse shaft, a ratchet located at one side of the loose gear, a pawl upon the loose gear, spring-pressed into engagement with the ratchet, a rack-bar on the movable frame engaging the teeth of the loose gear, an extensible spring-pitman connecting to the lower stationary frame a disk mounted on the rear transverse shaft and connected by a wrist-pin to the pitman, and means for pushing the reciprocating frame to the rear, substantially as specified.

11. In a machine of the class described, the combination with the lower frame and the upper stationary frame having a rack-bar, of a transverse shaft mounted in the lower frame, a loose gear mounted thereon, a ratchet wheel at one side of the gear, a pawl spring-pressed into engagement with the ratchet-wheel and fixedly connected with the loose gear, a disk on the outer end of the shaft, a bracket extending from the lower frame, a head pivoted on the bracket, rods extending from the head, a perforated head connecting the ends of the rod, a perforated head mounted for reciprocation on the rods, a pitman pivoted to the disk and passed through the rear perforated head and connected to the reciprocating-head, a coiled-spring interposed between the two heads and mounted on the pitman, and means for reciprocating the frame in one direction, substantially as specified.

12. In a machine of the class described, the combination with the frame, and brick-cutting mechanism, together with means for operating the latter, of a reciprocating delivery-table located in rear of the cutting mechanism, means for locking the table against reciprocation, and devices between the cutting mechanism and the table for liberating the same, substantially as specified.

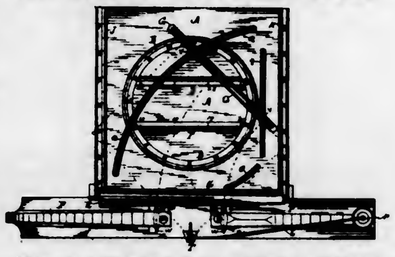
13. The combination with the lower frame, of the upper movable frame having ways, a delivery platform mounted on the ways and designed to reciprocate, cutting mechanism located in front of the ways and platform, standards located at opposite sides of the ways, a shaft mounted for rotation in the standards and provided with a central depending ring, and with a depending arm, a pivoted catch-lever for engaging said arm, a spring for normally elevating the front end of the catch-lever in the path of the arm, and means intermediate the cutting mechanism and operated thereby for elevating said rear end of the catch-lever and liberating the arm, substantially as specified.

14. In a machine of the class described, the combination with the lower main stationary frame provided with tracks, rollers mounted thereon, and a reciprocating-frame mounted upon the rollers; of opposite pairs of standards secured to the opposite sides of the reciprocating frame, a pair of rods mounted for transverse reciprocation in the standards, boxes fixedly mounted upon the rods, a cutter-carrying shaft journaled in the boxes, a bevel-faced trip lug mounted on the rear box, brackets extending from the rear standards, a rock-shaft journaled in the brackets and having near its opposite ends forwardly-disposed pins arranged in the path of the lug, and a rearwardly-disposed arm, a reciprocating mechanism for operating the rods and cutter shaft, a pair of standards arranged in rear of the rock-shaft, a shaft journaled in standards and carrying a depending wing adapted to serve as a stop, a lever depending from the shaft, a catch-lever located below the same and adapted to engage the free end of said lever, a link connecting the rear end of the rock-arm with the front end of the catch-lever, a spring for depressing the arm, and means for throwing the cutter-shaft operating mechanism into operation, said means being operated by the movement of the upper frame substantially as specified.

15. In a machine of the class described, the combination with the stationary frame, of a superimposed movable frame having tracks, a delivery table mounted for reciprocation in the tracks and provided at one side with a rack-bar, standards secured to the movable frame at the sides of the delivery-table, a shaft journaled in the standards, a ratchet-wheel rigidly mounted on the shaft, a gear loosely mounted on the shaft at one side of the ratchet, engaged by the rack-bar of the table and carrying a spring-pressed pawl for engaging the ratchet-wheel, a wing depending from the center of the shaft over the table, a cutting mechanism arranged in front of the table, mechanism for operating the cutting mechanism, which operating mechanism is set in motion by the movements of the movable frame, locking-devices for the wing carrying shaft whereby the same is made rigid with the movable frame, and devices operated by the cutting mechanism for liberating the said locking-devices and wing-carrying shaft, substantially as specified.

16. In a machine of the class described, the combination with the movable frame having ways, a delivery-table mounted in the ways, opposite standards located at the sides of the frame, a wing-carrying shaft journaled in the standards, mechanism between the table and shaft for operating the latter by the movement of the table, of locking-devices for the shaft, a cutting mechanism arranged in front of the table, devices between the cutting mechanism and locking mechanism whereby the latter is operated by the former, an arm extending from the shaft at an angle to the wing and carrying a weight, and a spring-catch for engaging the arm, substantially as specified.

488,844. PATTERN-TABLE FOR SHEET-METAL-SHEARING MACHINES. CHARLES A. WILLIAMS and LEVI K. WILLIAMS, Chicago, Ill.; Arthur W. McAllister administrator of said Levi K. Williams, deceased. Filed Apr. 14, 1892. Serial No. 429,101. (No model.)



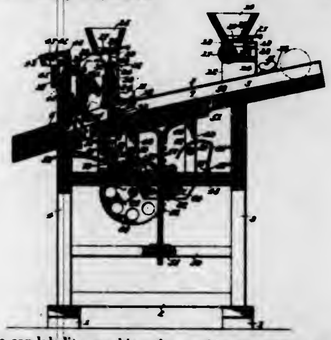
Claim.—In a sheet metal shearing machine the table A having the central circular scale B, the parallel scales D and F arranged within said circular scale, the parallel scales H and J arranged one at either side of said circular scale, the scale K arranged between and at right angles with scales H and J and at one side of circular scale B, the curved slot *a* arranged to cross said circular scale, slots *r*, *c* arranged at the side of said circular scale, the gage G, and the thumb nuts and screws V for adjustably securing said gage to the table, all arranged to operate substantially as and for the purpose set forth.

488,845. LISTED-CORN CULTIVATOR. ABRAHAM WOOLSTONCROFT, Centralia, Kans. Filed Aug. 4, 1892. Serial No. 442,153. (No model.)

Claim.—In a cultivator, the combination with divergent moldboards A carrying cutters C and fingers E, and connected by the horizontal platform B of the transverse laterally-projecting guide F, secured horizontally to the platform B at its front end and provided with the front inclined plate H, the draft-chain attached to the plate H, and the parallel inverted runners K K secured to the upper surface of the guard F and terminating at the plate H, all substantially as specified.

488,846. CAN-LABELING MACHINE. BEVERLEY W. WEBSTER and EDWARD B. ROGERS, Preston, Md. Filed May 10, 1892. Serial No. 433,502. (No model.)

Claim.—1. In a can-labeling machine the combination with an inclined way and label-applying devices located therein, of opposite standards located at the sides of the way in advance of the label-applying devices, said standards having upper horizontal ends provided with front and rear mortises the paste-box having a slot near one edge and formed in its bottom, tenons depending from the bottom near the opposite edge to where the slot is located, and adapted to fit removably in the mortises of the standards, front and rear bearings located in the standards and a paste-roll removably mounted in the bearings and adapted to contact with the paste-discharging-slot of the box, substantially as specified.



2. In a can-labeling machine, the combination with an inclined way having an opening, paste-delivering mechanism located in front of the opening, a paste-delivering device located near the rear end of the opening and above the same, a brush the opposite ends of which are provided with bristles pivoted between the rear end of the opening, and the paste-delivering receptacle, said brush having its lower end located in the path of a can when moving down the inclined way, means for temporarily holding the brush in a vertical position until struck by a can, of a label-carrying table mounted in the opening of the way and means for raising the same, substantially as specified.

3. In a can-labeling machine, the combination with an inclined way having an opening, paste mechanism in front of the opening, the label-carrying table mounted below the opening, means for raising said table, of a paste-receptacle having a discharge, supported above the rear end of the opening, and a brush having bristles at its upper and lower ends and pivoted for rotation between the rear end of the opening and the paste-receptacle, said brush being provided with a weight, adapted to move from end to end thereof, during the rotations of the brush, substantially as specified.

4. In a can-labeling machine, the combination with an inclined way having an opening, paste-distributing mechanism located in front of the opening, a label-supporting table mounted in the opening, mechanism for raising the table, of a paste-discharge located in rear of the opening and above the same, a rotatable brush mounted in bearings between the paste-discharge and opening, and provided at its upper and lower ends with a line of bristles, a tube passed diagonally through the brush and a shifting weight mounted in the tube and adapted to move from end to end of the same, substantially as specified.

5. In a can-labeling machine, the combination with an inclined-way having an opening, a table supported therein and adapted to support the labels, means for raising the table, and mechanism for applying paste to cans located in front of the opening of the opposite supports arranged in rear of the opening, the paste-discharging receptacle supported thereby, a brush rotatably mounted under the paste receptacle and having its opposite ends provided with bristles adapted to receive paste from the discharge of the receptacle, a shifting-weight mounted for sliding upon the brush, and a second brush loosely pivoted between the supports and spring-pressed into the path of the cans, substantially as specified.

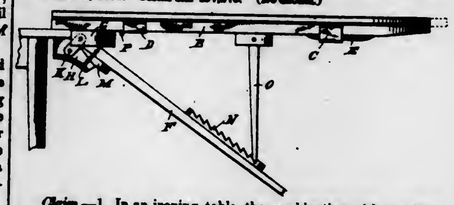
6. In a can-labeling machine, the combination with the inclined way, the opposite standards supporting the same the platform below the way supported by the standards, recesses formed in the sides of the way and in line with an opening formed in the bottom of the way, of opposite frames hinged to the platform, springs for drawing the same inwardly, an intermediate table for supporting the labels, loosely fitting in the opening between the frames, a head-board at the lower end of the opening, and means for raising the table, substantially as specified.

7. In a can-labeling machine, the combination with the inclined way, the opposite standards supporting the same, the platform below the way supported by the standards, recesses formed in the sides of the way and in line with an opening formed in the bottom of the way, of opposite frames hinged to the platform, springs for drawing the same inwardly, an intermediate table for supporting the labels loosely fitting in the opening between the frames, means for raising the table, and means for spreading the frames during the loading of the table with labels, substantially as specified.

8. In a can-labeling machine, the combination with the inclined way, the opposite standards supporting the same, the platform below the way supported by the standards, recesses formed in the sides of the way and in line with an opening formed in the bottom of the way, of opposite frames hinged to the platform, springs for drawing the same inwardly, an intermediate table for supporting the labels loosely fitting in the opening between the frames, means for raising the table, a pair of bearings upon the platform in front of the frames, a transverse shaft journaled in the bearings, and a pair of spring-arms rising from the ends of the shaft and extending forwardly and adapted to be interposed between the opposite frames, substantially as specified.

9. In a can-labeling machine, the combination with the inclined way, having the opening, the plunger mounted in an opening formed in a platform below the way, and supporting a table within the opening of the way, said plunger being provided with rack-teeth, a shaft journaled below the platform, a pinion and gear mounted on the shaft, the former engaging with the rack-teeth, a transverse shaft at the opposite side of the plunger, a small gear thereon engaging with the gear-wheel of the first-mentioned shaft, and a finely-toothed ratchet-wheel also on the second shaft, a rock-shaft journaled in rear of the ratchet-wheel, said rock-shaft being provided with a rock-arm, a drawing-pawl pivoted to the free end of the rock-arm, and at its free end engaging the teeth of the ratchet-wheel, a rocking-lever mounted on the rock-shaft, means for normally depressing its front end, and a vertical trip-rod pivoted at its lower end to the rocking-lever and extending up into the way, whereby it is adapted to be operated by a can, of pasting-mechanism arranged above the way, substantially as specified.

488,847. IRONING-TABLE. OSCAR J. BAILEY, Kane, Pa. Filed June 20, 1892. Serial No. 437,275. (No model.)

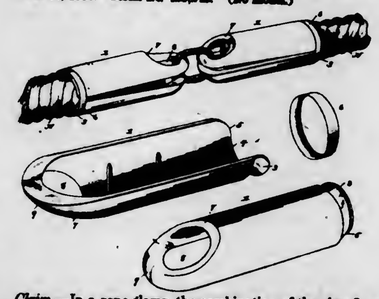


Claim.—1. In an ironing table, the combination with a strip or board, of a supporting leg pivoted thereto, a clamping block loosely connected to and carried by said leg, and an adjusting screw carried by the block to engage the leg to vary the relative positions of said block and leg, substantially as specified.

2. In an ironing table, the combination with a strip or board, of a pivoted supporting leg, fulcrumed to said strip or board, the clamping block, connected to the said leg by links, the adjusting screw, and the wedge-block, all arranged and operated, substantially as specified.

3. In an ironing table, the combination of the strip or board, the pivoted supporting leg having a rack, the pivoted brace, the adjustable clamping block fulcrumed to said leg, the adjusting screw, and the wedge, substantially as specified.

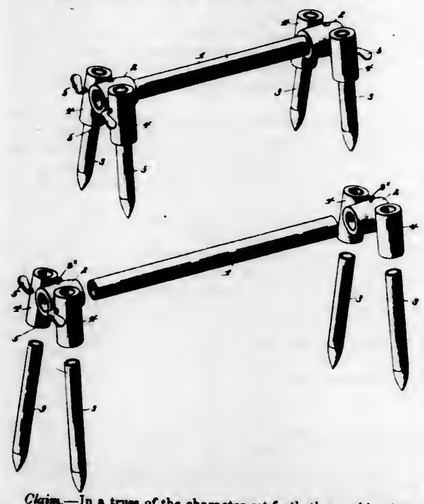
488,848. ROPE-CLAMP. OREN J. BALDWIN, Youngsville, Pa. Filed Mar. 17, 1892. Serial No. 425,245. (No model.)



Claim.—In a rope clamp, the combination of the ring 6, and the two semi-cylindrical tubular shells provided internally with spurs, and having their rear ends circumferentially channeled or grooved, and cut away or rounded at the corners, whereby said shells may be held

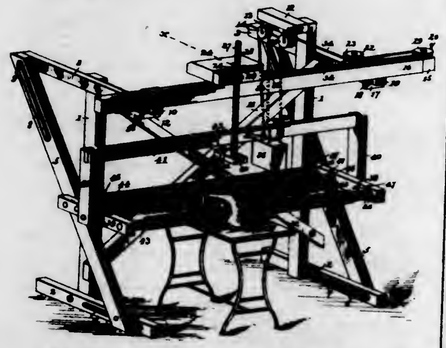
at an angle of inclination to each other and thus introduced into the ring, and the two shells subsequently brought together securing the ring and forming one of two parts of a rope clamp, substantially as described.

488,349. TRUSS FOR MINING-MACHINES. LINDSAY H. BRADLEY, Flushing, Ohio. Filed July 6, 1892. Serial No. 439,117. (No model.)



Claim.—In a truss of the character set forth, the combination of opposite heads composed of horizontally-extending collars having integral collars on opposite sides thereof arranged at an angle thereto obliquely in vertical planes and divergent therefrom, the said integral collars extending below the said horizontally-extending collars, legs adjustably and removably mounted in said integral collars and formed with lower tapered ends, a connecting-bar removably engaging said horizontally-extending collars and having perforations therein at the opposite ends thereof, drop-pins for engaging the perforations, and clamping thumb or hand screws mounted in said integral collars for holding said legs in their adjusted position, substantially as described.

488,350. QUILTING ATTACHMENT FOR SEWING-MACHINES. JOHN S. DICKEY, Blanket, Tex. Filed May 9, 1892. Serial No. 432,392. (No model.)

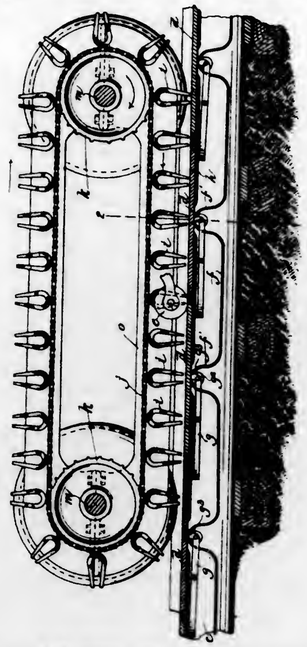


Claim.—1. In a quilting frame, the combination of a track-bar, horizontally disposed pulleys mounted at one end of said track bar, an upright carrying vertically disposed pulleys at a distance from the aforesaid pulleys a carriage block movably mounted on said track-bar and carrying a vertically adjustable foot, a cord secured to said carriage-block at one end and passing over said pulleys, a weight having a pulley in connection therewith over which said cord also passes and to which the opposite end of the latter is secured, and a quilting frame proper freely suspended from said foot, substantially as described.

2. In a quilting frame, the combination of a single track bar, a carriage block having a grooved roller or wheel engaging said track bar and a vertical opening therein, a standard or rod vertically adjustable in the opening of said carriage block and having a foot secured to the lower end thereof and provided with a recess in the upper side near its free end, and a quilting frame proper having a vertically depending pin or stud loosely engaging said recess of the foot, whereby the said frame is freely suspended, substantially as described.

3. In a quilting frame, the combination of lower slotted cross-strips, upper cross-strips with headed pins or studs at one end thereof, uprights connecting said cross strips, and cross-braces having studs at the lower ends thereof engaging the slots of the lower cross-strips and slots at the upper ends thereof engaging the headed studs or pins of the upper cross-strips, the said parts being pivotally connected for the purpose of folding, substantially as described.

488,351. CLOSED CONDUIT FOR ELECTRIC RAILWAYS. LEON O. DION, Natick, Mass. Filed Nov. 9, 1891. Serial No. 411,247. (No model.)



Claim.—1. In an electric railway system, the combination of a fixed trolley track composed of insulated conducting sections located on the road-bed, a vertically movable conducting wire located below and normally out of contact with the track, said wire having a series of bends or loops and a series of magnets pivoted to fixed supports below the track and provided between their poles with supports of insulating material engaged with the loops of the wire, as set forth.

2. A magnet adapted to be pivotally connected to a fixed support, so that its poles can rise and fall, and provided with off-set or upwardly extended poles and with an insulating support between said poles, as set forth.

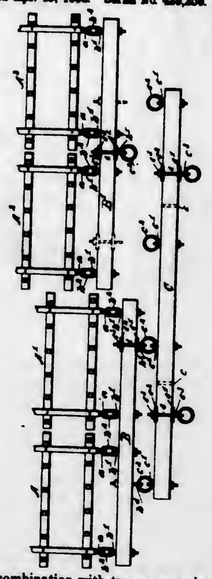
3. In an electric railway system, the combination of a fixed trolley track composed of insulated conducting sections, a vertically movable conducting wire located below said track and adapted to be raised to make contact therewith, and a series of pivoted supports having rests of insulating material on which the wire bears, said supports being arranged to counterbalance the wire and permit it to be raised with the minimum of resistance, as set forth.

4. In an electric railway system, the combination of a way or conduit, a series of magnets pivotally connected with the sides of said conduit, a conducting wire supported by the pole ends of said magnets and adapted thereby to rise and fall, a removable cover for said conduit, and a trolley track supported by said cover over the wire and composed of a series of insulated conducting sections arranged to make contact with the wire when the latter is raised from its normal position, as set forth.

5. In an electric railway system, the combination of a fixed trolley track composed of insulated conducting sections located on the road-bed, a vertically movable conducting wire located below said track and normally out of contact therewith, a series of pivoted magnets the pole ends of which support said wire, and a car having a trolley adapted to run on said track, an electric motor connected with the trolley, and one or more magnets arranged with their poles in such relation to the poles of the wire-supporting magnets as to raise the latter and the wire, as set forth.

6. In an electric railway system, the combination of a fixed trolley track composed of insulated conducting sections located on the road-bed, a vertically movable conducting wire located below said track and normally out of contact therewith, and a car having a trolley adapted to run on said track, an electric motor connected with the trolley, and one or more magnets arranged on a chain or carrier receiving motion from the running gear of the car, said magnets being adapted to raise the wire into contact with the trolley track, as set forth.

488,352. SPREADER FOR HARROWS. LOUIS C. EVANS, Springfield, Ohio. Filed Apr. 15, 1892. Serial No. 429,259. (No model.)

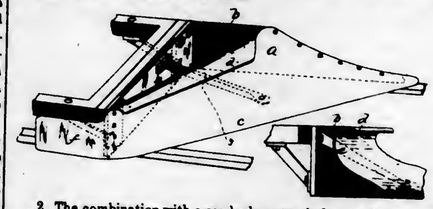


Claim.—1. The combination with two or more harrow sections, of a main hitching bar and two or more intermediate connecting bars, each of said intermediate bars and said main bar having lateral openings to receive eye-bolts corresponding to the hitching connections of said harrow sections, each of said bars being further provided on the opposite side with hitching connections which correspond to the eye-bolts in the other bars, one of said hitching connections in each bar being detachable, substantially as and for the purpose specified.

2. The combination with two or more harrow sections, of a main hitching bar, and one or more intermediate connecting bars, each of said bars being provided with lateral openings adapted to receive eye-bolts corresponding to the hitching points of said harrow sections, said bars being each further provided on the opposite side with hitching connections which correspond to the connecting eye-bolts of the other bar, one of said hitching connections having a permanently secured eye-bolt and the other a detachable connection, consisting of a U-shaped connecting loop, clamping plates and adjusting nuts, substantially as specified.

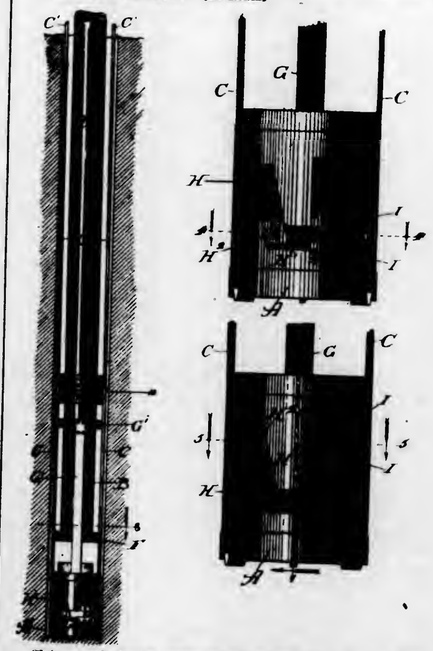
488,353. FENDER FOR CARS. HENRY A. GANAGE and WILLIAM H. SCHMIDT, Boston, Mass. Filed June 13, 1892. Serial No. 436,417. (No model.)

Claim.—1. A life-guard for cars adapted to be attached to a car body or truck frame, and to extend from side to side of the car across the track, said guard consisting of a sheet metal fender having its lower edge extending in a straight oblique direction from end to end, and from said lower edge, being inclined upward and rearward, the inclination gradually increasing from one end to the other, substantially as and for the purpose set forth.



2. The combination with a car-body or truck frame, of a smooth metallic guard or fender having its lower edge extending from a point outside the path of the wheels on one side in an oblique direction to a point outside the path of the wheels on the other side, said guard or fender being inclined upward and rearward from said lower edge, the inclination gradually increasing from one end to the other, and straight rearward extensions from the ends of said guard or fender, parallel with and outside the path of the wheels, substantially as described.

488,354. BORING APPARATUS. FULTON GARDNER, Chicago, Ill., assignor of one-half to Samuel T. White, same place. Filed Aug. 19 1892. Serial No. 443,482. (No model.)



Claim.—1. In boring apparatus, the combination of a rotatable boring head, means for rotating the boring head core cutting mechanism progressing with the head a pre-determined distance, and means for stopping the progress of the core cutting mechanism while the head still further progresses, substantially as described.

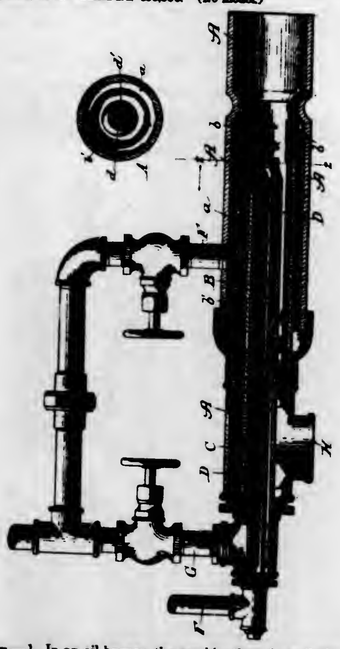
2. In boring apparatus, the combination of a rotatable boring head provided with an inclined slot in the same, means for rotating the boring head core cutting mechanism engaging with the slot and progressing with the head a pre-determined distance, and means for stopping the progress of the core cutting mechanism while the head still further progresses, substantially as described.

3. In boring apparatus, the combination of a rotatable boring head provided with an inclined slot in the same, means for rotating the boring head core cutting mechanism comprising, among other things, a sliding segment engaging at one end with the slot, a core cutting blade having a pivotal movement on its non-cutting end, and

a link pivotally connecting the sliding segment and the cutting blade, and means for stopping the progress of the core cutting mechanism while the head still further progresses, whereby, through the engagement of the sliding segment with the slot in the boring head, the core cutting blade is moved toward the center of the core to cut the same off at a rate of speed determined by the rate of speed at which the boring head progresses, substantially as described.

4. In a boring apparatus, the combination of a rotatable boring head provided with an inclined slot in the same, means for rotating the boring head core cutting mechanism comprising, among other things, a sliding segment engaging at one end with the slot, a core-cutting blade having a pivotal movement on its non-cutting end, a link pivotally connecting the sliding segment and the cutting blade and a lifting dog movable into the channel made by the cutting blade, and means for stopping the progress of the core cutting mechanism while the head still further progresses, substantially as described.

488,855. OIL-BURNER. ALFRED R. HARPER, Chicago, Ill. Filed Sept. 23, 1891. Serial No. 406,556. (No model.)



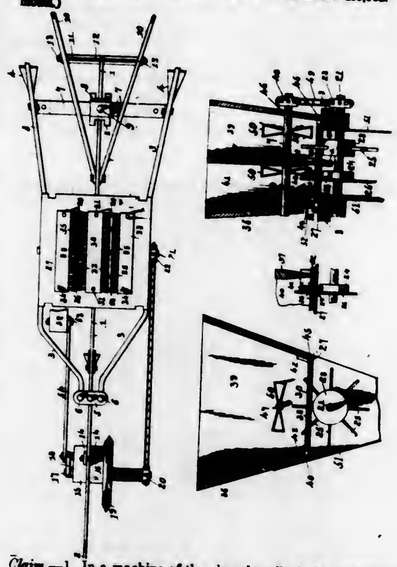
Claim.—1. In an oil burner, the combination of an oil pipe provided with an opening for the escape of oil and with channels in its outer end circumference, a steam pipe inclosing the oil pipe and closed down upon its end and an air pipe inclosing the steam pipe and extending forward of the oil and steam pipes to form an expansion chamber in front thereof and provided with ports or openings for introducing steam into the expansion chamber, substantially as described.

2. In an oil burner, the combination of an oil pipe provided with an opening for the escape of oil and with channels in its outer end circumference, a steam pipe inclosing the oil pipe and closed down upon its end and an air pipe inclosing the steam pipe and extending forward of the oil and steam pipe to form an expansion chamber in the front thereof and provided with diagonal forwardly directed ports or openings for introducing steam into the expansion chamber, substantially as described.

3. In an oil burner, the combination of an oil pipe communicating with a source of oil supply, provided with an opening for the escape of oil, and with channels in its outer end circumference, a steam pipe communicating with a source of steam supply, surrounding the oil pipe, and closed down upon its end, and a surrounding air pipe extending forward of the oil pipe and main steam pipe, and provided with means for introducing heated air, substantially as described.

4. In an oil burner, the combination of an oil pipe communicating with a source of oil supply, and provided with an opening for the escape of oil and with channels in its outer end circumference, a steam pipe communicating with a source of steam supply surrounding the oil pipe and closed down upon its end, an air pipe provided with means for introducing heated air, and a surrounding steam pipe communicating with a source of steam supply, the air pipe extending forward of the oil pipe and main steam pipe, and being provided with ports or openings whereby steam may be introduced into an expansion chamber in front of the end of the oil pipe and main steam pipe, substantially as described.

488,856. PLANTER AND FERTILIZER-DISTRIBUTER. ROBERT HARRIS, Gadsden, Ala. Filed Aug. 28, 1891. Serial No. 403,962. (No model.)



Claim.—1. In a machine of the class described, the combination with a central beam, the opposite side-beams, the shovels, and the hopper mounted on the beams, of an agitator-shaft mounted in the hopper, a feed-shaft journaled below the hopper and each provided with sprockets, a seed-slide mounted at one side of the hopper, a standard depending from the main beam near the front end of the same, a block having a transverse bearing swiveled on the standard, a screw passing through the block for adjusting the same, a transverse axle terminating at one side of the block in a crank, a pitman connecting the crank with the seed-slide, a colter mounted on the axle at the opposite side of the block, a sprocket on the axle at one side of the colter, and an endless sprocket-chain passing around said sprocket and those of the agitator and feed-shafts, substantially as specified.

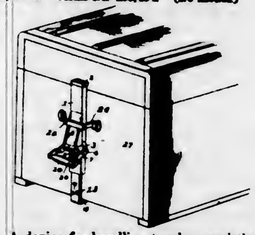
2. In a machine of the class described, the combination with the framework and the hopper, the latter provided with a recess in its bottom, and with an opening in its side walls of the seed-slide mounted in the recess and means for operating the slide, said slide being provided with seed-openings formed in its inner edge, and transverse recesses or ways above the same, L-shaped seed-plates mounted in the ways and screws passing through the slides and into the plates for adjusting the latter, and located opposite the opening in said side wall of the hopper substantially as specified.

3. In a machine of the class described, the combination with the framework and the hopper, the latter provided with a recess in its bottom, of the seed-slide mounted in the recess, means for operating the slide, said slide being provided at its inner edge with inverted V-shaped seed-openings having ways thereabove, transversely adjustable seed-plates mounted in the ways, screws passing through the slide and into the plates, and a metal plate secured to the outer side of the slide and at its upper edge projecting into a groove in the roof of the slide-receiving recess of the hopper and provided with perforations, opposite the adjusting-screws, substantially as specified.

4. In a machine of the class described, the combination with the framework, the subdivided hopper, and the interposed plate slotted opposite the hoppers, the feed-wheels journaled below the slots and extending through the same, the central block provided with brushes at its opposite edges, and located between the wheels, and the opposite side-blocks slotted and adjustably connected by set-screws outside

of the wheels, and provided at their inner edges with brushes, substantially as specified.

488,857. TRUNK-CARRIER. GEORGE W. HILL, Oberlin, Ohio. Filed Feb. 6, 1892. Serial No. 420,494. (No model.)



Claim.—1. A device for handling trunks, consisting of a sheath adapted to be passed through the handle of a trunk, a handle secured to the sheath, and an extensible leg or bar adjustably mounted in the sheath and terminating at its lower end in a foot adapted to take under the trunk, substantially as specified.

2. A telescopic device for handling trunks, the same being adapted to be passed upwardly through the handle of a trunk and provided opposite the handle with an inclined face for wedging within the handle, a foot at the lower end of the device, and a handle projecting from the device, substantially as specified.

3. In a trunk-handling device, the combination with the metal sheath, rectangular in cross-section, the handle pivoted to the opposite sides of the sheath and provided with an inclined stop against which the bar may come and adapted to wedge within the handle of the trunk, of the perforated extension-bar terminating at its lower end in a foot adapted to take under the trunk, a bored boss secured to the sheath and provided with bayonet-shaped grooves, a spring-pressed locking-pin mounted in the bored boss and provided with lateral pins for engaging the bayonet-shaped grooves, substantially as specified.

488,858. FASTENER FOR THE MEETING-RAILS OF SASHES. HORACE W. HOOD, Nashua, N. H. Filed Mar. 15, 1892. Serial No. 425,045. (Model.)

Claim.—A sash-lock, comprising in its construction a base plate attached to one sash; a stump plate attached to the other sash, the said base plate being provided with a single slot *k*, having an angular portion *u* extending inward therefrom a catch *b* pivotally connected with the base plate and provided with an angular slot *o* at one side of the center, and a pin *j* extending into the slot of the base plate, and a lever *c* provided with a pin *i* at one side of its fulcrum and extending into the slot of the catch as described.

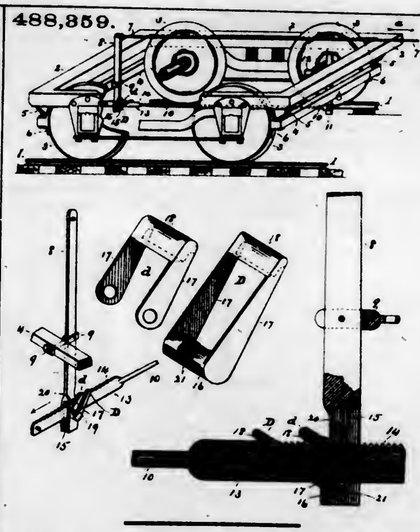
488,859. CAR-BRAKE ADJUSTER. LOUIS T. KNOWLES, Minneapolis, Minn., assignor of one-half to James M. Pullman and George Taylor, same place. Filed Aug. 13, 1892. Serial No. 442,999. (No model.)

Claim.—1. In a car-brake adjuster, a lever having a forked arm below its fulcrum, a rack connecting the brake-beams and extending through the slot of said arm, a dog pivoted to the lever below the rack, its pivot providing the support for the rack, and a shorter dog pivoted to the lever above the longer dog but below the rack teeth, whereby the dogs will engage and advance alternately in accordance with the direction and extent of movement of the lever, substantially as and for the purpose set forth.

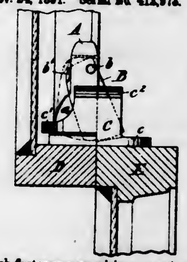
2. In a car-brake adjuster, a rack connecting the brake beams, a lever for supporting and reciprocating it, and dogs of unequal length carried by the lever for engaging the rack at the same side of the lever in alternation corresponding with the opposite movements of the lever and arranged to advance when the throw of the lever is increased, substantially as set forth.

3. In a car-brake adjuster, a rack, a lever, a dog pivoted thereto and supporting the rack on its pivot, the latter having an inclined surface on which the rack bears to hold the dog in engagement with the rack-teeth, and a second and shorter dog pivoted to the lever above the first, substantially as and for the purpose set forth.

488,859.



488,860. FASTENING FOR THE MEETING-RAILS OF SASHES. ARTHUR LAMPLOUGH, London, England, assignor to Percy Wood, same place. Filed Nov. 24, 1891. Serial No. 412,972. (No model.)

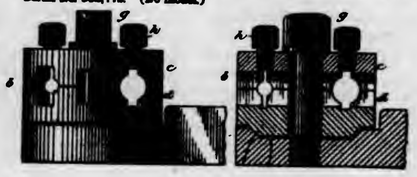


Claim.—1. A sash fastener comprising a vertical standard mounted upon one sash and having at its rear an inclined or bulging surface and provided with a gravity-catch swinging outwardly from the front face of the standard and adapted to automatically engage and lock with the other sash or a fixture thereon, combined with an arm or ring-piece fixed upon the other sash and projecting therefrom for engaging the said inclined or bulging surface upon the back of the standard, substantially as set forth.

2. In a sash-fastener, the combination of a catch or lock mounted upon the meeting rails of the sashes, and a hook-shaped or curved guard c^2 projecting laterally from each side of the catch or lock with its free end curving upwardly and outwardly and arranged with its shank or stem at right-angles across the meeting line of the sashes, whereby a blade entered between the sashes from the exterior thereof in attempting to pick the lock may be caught and held, substantially as described.

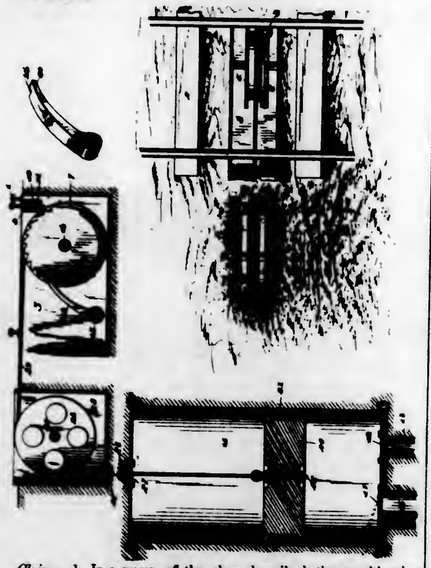
3. In a sash fastener, the combination with the catch for locking the parts together, of the ring-piece C provided with the upwardly and outwardly curved or flaring wings or guards c^3, c^3, serving as guards for the catch and as handles or finger-pieces in raising the sash.

488,861. TOOL-HOLDER. WILLIAM LAWSON, Hartford, Conn., assignor of one-half to Edward Smith, same place. Filed Feb. 25, 1891. Serial No. 382,772. (No model.)



Claim.—In combination with a support for a tool holder, a rotary tool holding head formed in sections and having a plural number of tool sockets extending transversely through the substance of the sections, the tool holder support having a socket with tapered walls, the corresponding projection on the lower part of the tool holder located in said socket, the clamping bolt extending centrally through the tool-holder and the tool holding clamps appurtenant to the several tool holding sockets in the head, all substantially as described.

488,362. RAILWAY PUMP OR WATER-ELEVATOR. HIRAM D. LATHAM, Little Rock, Ark. Filed Mar. 28, 1891. Serial No. 386,573. (No model.)



Claim.—1. In a pump of the class described, the combination with the track, the drum located below the same, the shaft for the drum, a ratchet wheel mounted upon the shaft, a spring-pressed plunger located at one side of one of the rails and adapted to actuate the wheel, a pawl for locking the ratchet wheel, a cylinder having supply and discharge pipes at the lower end thereof, a weighted plunger mounted in the cylinder, a cable wound upon the drum and connected to the plunger, and means for withdrawing the pawl from the ratchet wheel at each partial rotation of the latter, substantially as specified.

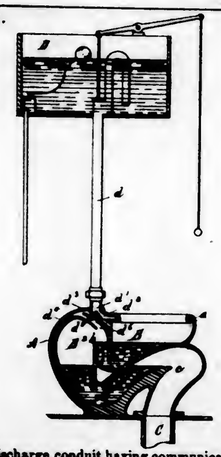
2. In a pump mechanism of the class described, the combination with the track, the shaft 4 located between the rails thereof, the drum mounted on the shaft, the ratchet wheel at one side of the drum having the plain portion 7, and flange 8 at one side of the same, and the pawl 3 for engaging the teeth of the ratchet-wheel, and having its free end provided with the notch 14 and finger 30, the latter adapted to be actuated by the flange, of the cylinder 15 arranged below the drum and provided with the supply-pipe 16 having the inwardly opening valve 17 and the discharge pipe 18 having the downwardly opening valve 19, the weighted plunger 20 having the eye 22 the casing 23 located above the cylinder, the pulley 25 rotatably mounted thereon, the tube 28 connected with the upper end of the cylinder with the casing, the cable connected to the drum passing over the pulley and connected to the eye of the plunger, the casing 9 arranged above the ratchet wheel, the vertical reciprocating plunger 10 located in the casing, and the spring for normally elevating the same, substantially as specified.

488,363. WATER-CLOSET. CHARLES H. MUCKENHIRN, Detroit, Mich. Filed Feb. 4, 1892. Serial No. 420,903. (No model.)

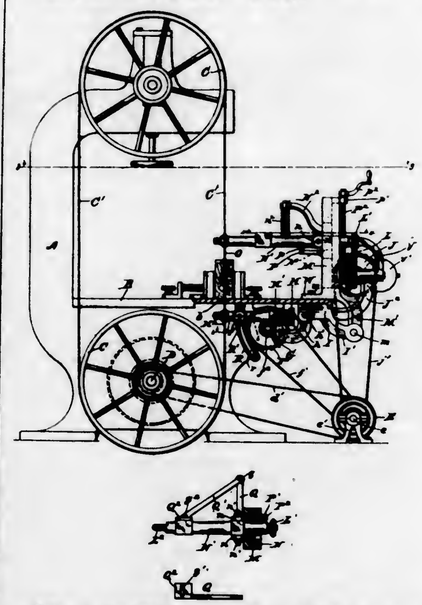
Claim.—1. In a water closet the combination with the bowl having a dead air space—and a discharge conduit communicating with the air space, of a water supply conduit entering the discharge conduit of a diameter less than the smallest diameter of the discharge conduit and means at the end of the supply for spraying the water into the discharge conduit substantially as described.

2. In a water closet the combination with a bowl having a dead air space and a discharge conduit having communication with the upper end of the air space, of a water supply conduit entering the discharge conduit, and a curved deflector at the end of the water supply in the discharge conduit, substantially as described.

488,368.



488,364. BAND SAWING-MACHINE. GEORGE P. MYERS, Sheboygan, Wis., assignor of one-half to Henry G. Pott, same place. Filed June 6, 1892. Serial No. 435,641. (No model.)



Claim.—1. In a band saw feeding device, a standard and means whereby it is removably supported upon the saw table, a sliding head having a vertically adjustable engagement with said standard, a sleeve pivotally engaged with said head and carrying a revoluble shaft, a toothed disk secured upon one end of said shaft and means for imparting a rotary motion to said shaft, substantially as set forth.

2. In a band saw feeding device a standard and means whereby it is removably secured upon the top of the saw table, a sliding head having a vertically adjustable engagement with said standard, a sleeve pivotally engaged with said head and carrying a revoluble shaft, a toothed disk secured to one end of said shaft, an actuating gear secured to the other end of said shaft, an arm extending from the sliding head above said sleeve and a spring interposed between said arm and said sleeve and adapted to press downwardly upon the latter, substantially as set forth.

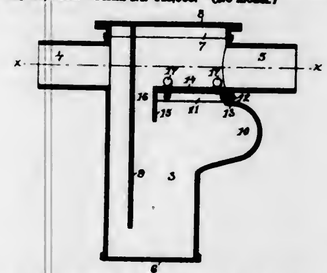
3. In a band saw feeding device a standard and means whereby it is removably secured upon the top of the saw table, a sliding head having a vertically adjustable engagement with said standard a sleeve pivotally engaged with said head and carrying a revoluble shaft, a toothed disk secured to one end of said shaft, an actuating gear secured to the other end of said shaft, an arm extending from the sliding head above said sleeve, a spring interposed between said arm and the sleeve and arranged to press the latter downwardly and a second arm extending from the sliding head below the sleeve and arranged to engage therewith to limit its downward movement, substantially as set forth.

4. In a band saw feeding device, a standard and means whereby it is removably secured upon the saw table a sliding head having a vertically adjustable engagement with said standard lateral lugs upon said head and a sleeve pivotally engaged between said lugs and carrying a revoluble shaft, a toothed disk secured to one end of said shaft, an actuating gear upon the other end of said shaft, an arm extending horizontally from said head at one side of the sleeve, and a link engaged with the extremity of said arm and provided at its other end with a vertical face slotted for engagement with a stud or bolt upon the side of said sleeve, substantially as set forth.

5. In a band saw feeding device, the combination with a standard and means whereby it is secured upon the top of the saw table vertical guides or ways in said standard, of a sliding head movably engaged with said ways, a screw for vertically adjusting said head, a sleeve pivotally engaged with said head and carrying a revolable shaft, a toothed disk secured to one end of said shaft and an actuating gear secured to the other end of said shaft, an arm extending from the sliding head above the sleeve, a spring interposed between the said arm and said sleeve, an arm extending from said head below the sleeve and serving as a stop to limit the downward movement of the latter, an arm extending horizontally from said head at one side of said sleeve, and an oblique link connecting the end of said arm and the sleeve, substantially as set forth.

6. In a band saw feeding mechanism, the combination with an upper feeding device removably supported upon the saw table, of a sleeve having pivotal engagement below the table and carrying a revoluble shaft, a toothed disk secured to one end and an actuating gear secured to the other end of said shaft, a curved arm arranged adjacent to one side of said sleeve and provided with an arc shaped slot concentric with said pivotal connection a screw threaded pin upon said sleeve arranged to project through said slot, and a hand nut engaged with said pin and adapted to secure said sleeve in its adjusted position, substantially as set forth.

488,365. SEWER-TRAP. ROBERT NEWTON, Providence, R. I. Filed July 23, 1892. Serial No. 440,995. (No model.)

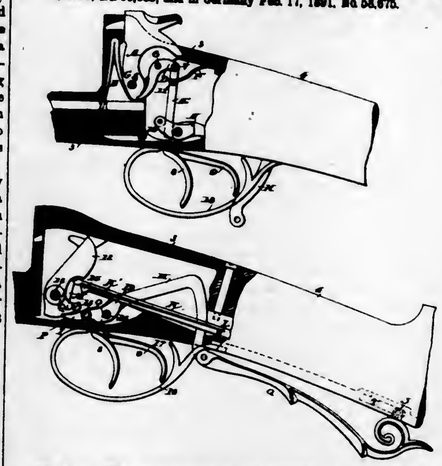


Claim.—1. In a sewer-trap, the combination with a suitable casing having inlets and outlets, of a frame removably secured below the outlets and a horizontal partition having a depending-lip secured to said frame, as described.

2. In a sewer-trap, the combination with a chamber divided by a downwardly-extending partition, and lateral inlets and outlets provided at opposite sides of said chamber, of a horizontal deflector removably secured below the outlet and having a depending-lip, as described.

3. In a sewer-trap, the combination with a chamber having an inlet and outlet, a recess 10 formed below the outlet, and a vertical partition extending from the top of the chamber nearly to the bottom of the same, of the frame 11 removably clamped to the side of the chamber below the outlet, and the removable partition 14, having the depending-lip 15, secured to said frame 11, as and for the purpose set forth.

488,366. GUN-LOCK. HENRI PIEPER, Liege, Belgium. Filed Feb. 1, 1892. Serial No. 420,081. (No model.) Patented in Belgium Dec. 12, 1890, No. 93,605, and in Germany Feb. 17, 1891, No. 58,675.



Claim.—1. The combination of the hammer 12, provided with its notch for the sear, the mainspring K, arranged to impel the hammer upon the cartridge, the lever H, pivoted at 16 in the frame, the sear I having one end formed to engage with the hammer notch, and pivoted at 15 in the lever H with its tail end projecting beyond the pivot, and the trigger, 8, pivoted in the frame and arranged to engage with the projecting tail end of the sear to release the latter, substantially as described.

2. The combination of the hammer, 12, provided with its notch for the sear and with the shoulder N, the mainspring K arranged to impel the hammer upon the cartridge, the spring K′ arranged to bear upon the shoulder N and rebound the hammer, the lever H pivoted at 16 in the frame, and having the shoulder 19 arranged to lift the spring K′ off of shoulder N, the sear I having one end formed to engage with the hammer notch and pivoted at 15 in the lever H, with its tail end projecting beyond the pivot, and the trigger 8 pivoted in the frame and arranged to engage with the projecting tail end of the sear to release the latter, substantially as described.

3. The combination of the hammer 12 provided with its notch for the sear, the mainspring K arranged to impel the hammer upon the cartridge, the lever H, pivoted at 16 in the frame, and the sear I having one end formed to engage with and turn in the hammer notch as a pivot, and pivoted at 15 in the lever H in position to bring the lever pivot 16, the pivot 15, and the point of the sear substantially in a right line when the hammer is cocked, substantially as described.

4. The combination of the hammer 12 provided with its notch for the sear, and with the shoulder N, the mainspring K arranged to impel the hammer upon the cartridge, the spring K′ arranged to bear on shoulder N, the lever H pivoted at 16, and provided with the shoulder 19 arranged to engage with and lift spring K′ off of shoulder N. the sear I pivoted in lever H and arranged to engage with the hammer, and the trigger arranged to release the sear and discharge the hammer, substantially as described.

5. The combination of two hammers mounted in the frame side by side, respectively having notches for their sears, and each provided with a mainspring, K, arranged to independently impel it upon the cartridge, and a single lever, H, pivoted at 16 in the frame and carrying two sears I, I, pivoted in its outer end and arranged to respectively engage with the two hammers, and two triggers 8, 9, each arranged to engage with one of said sears and discharge its hammer from engagement therewith. substantially as described.

6. The combination of the lower hammer 12, provided with a sear notch, the lever H pivoted in the frame, the sear I pivoted in the lever and arranged to engage with said hammer, the upper hammer A, its sear C, and attached piston E depending alongside of said sear I, and the trigger 8 adapted to be brought in contact with either the sear I or the piston E, when either is within the range of movement of the trigger substantially as described.

7. The combination of the lower hammer 12 provided with a sear notch, the lever H pivoted in the frame, the sear I pivoted in the lever and arranged to engage with said hammer, the upper hammer A, its sear C, and the attached piston E depending alongside of said sear I, the trigger 8 adapted to be brought in contact with either sear

I or piston E, when brought within its range of movement, and the shoulder P on the frame, arranged to limit the movement of the sear I and arrest the trigger before it reaches the piston, substantially as described.

8. The combination of two lower hammers 12, 12, each provided with a sear notch, the lever H pivoted in the frame, two sears I, I, pivoted in the lever and respectively arranged to engage with said hammers, the upper hammer A, its sear C and the attached piston, E, depending between said sears I, I, and two triggers 8, 9, each arranged to engage with one of said sears I and the depending piston E, when respectively brought within its range of movement, substantially as described.

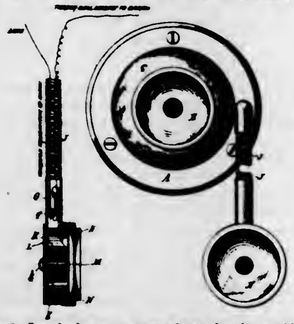
9. The combination of two hammers 12, 12, mounted side by side in the frame, each provided with its notch for the sear and mainspring arranged to impel it upon the cartridge, the lever H pivoted at 16 in the frame, and two sears I, I, each having one end formed to engage with and turn in its hammer notch as a pivot, and pivoted at 15 in lever H in position to bring the lever pivot 16, the sear pivot 15, and the point of the sear substantially in a right line when the hammer is cocked, whereby one of said sears may be discharged from its hammer and discharge the latter, while the other hammer is held in a cocked position ready to be discharged, substantially as described.

10. The combination of the hammer 12 provided with its notch for the sear, the mainspring K arranged to impel the hammer upon the cartridge, the lever H pivoted at 16 in the frame, the sear I having one end formed to engage with and turn in the hammer notch, and pivoted at 15 in lever H in position to bring the lever pivot 16, the pivot 15 and the point of the sear substantially in a right line when the hammer is cocked, and a spring provided with a shoulder or catch arranged to engage with a shoulder on the lever and hold it in this position while the sear is being released and the hammer discharged, substantially as described.

11. The combination of the hammer 12 provided with its notch for the sear, the mainspring K arranged to impel the hammer upon the cartridge, the lever H pivoted at 16 in the frame and provided with the shoulder 19, the sear I having one end formed to engage with and turn in the hammer notch, and pivoted at 15 in lever H in position to bring the lever pivot 16, the pivot 15 and the point of the sear substantially in a right line when the hammer is cocked, and the spring K' provided with the shoulder, 20, arranged to engage with the shoulder 19 and hold the lever in its position while the sear is being released and the hammer discharged, substantially as described.

12. The combination of the upper hammer A provided with sear notches, its mainspring B mounted in the frame on the forward side of it, the sear C provided with the attached piston E depending into the path of movement of the trigger, the lower hammer 12 provided with its sear notch, with its mainspring K mounted in the frame on the rear side of it, the lever H pivoted in the frame and provided with the sear I pivoted thereto, and having its tail end arranged to come in the path of the trigger when the lower hammer is at full cock, and to be lifted out of the path of the trigger and above the lower end of piston E when the lower hammer is at safety cock, whereby the discharging of the upper hammer and that of the lower hammer by the same trigger are rendered independent of each other, substantially as described.

488,367. TELEPHONE. PARNELL RAMSDEN, Sydney, New South Wales. Filed Mar. 3, 1892. Serial No. 423,670. (No model.)



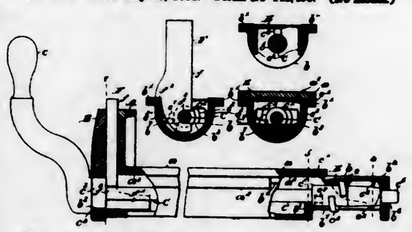
Claim.—1. In telephones, a transmitter that is provided with a metal cup or mouth-piece the transmitter being superimposed upon a gong or call, in combination with a stem or screw by which the transmitter is secured to the framing that supports the gong or call, and with a contact piece (that is insulated from the stem or screw) and which makes contact with the metal cup or mouth piece of the transmitter, whereby a circuit is established through the metal cup, the diaphragm, the microphone and the stem or screw as specified.

2. In telephone transmitters a microphone consisting of granular or powdered conducting material such as granular carbon contained in cells or compartments formed in or by any suitable elastic non-conducting material such as india rubber the whole being placed between two non-oxidizable surfaces or electrodes and provided with an adjustable cap or cover for the purpose of regulating the normal degree of intimacy of contact between the granular material and the electrodes as herein described.

3. In telephone transmitters, a microphone consisting of granular or powdered conducting material such as granular carbon, confined between two metallic contact plates coated with a film of carbon on their faces next to the granular carbon, to minimise oxidation of said metal contact plates substantially as described.

4. In telephones the combination of a receiver and transmitter with a flexible mechanical connection consisting of a helix of wire which serves as a conductor from the receiver magnet to the battery, substantially as described.

488,368. VISE. DAVID G. SABOURIN and JOSEPH SABOURIN, Lowell, Mass. Filed July 28, 1892. Serial No. 441,495. (No model.)



Claim.—1. The combination of a fixed jaw, provided with a rack, a movable jaw, a screw, journaled in said movable jaw, a rocking dog, supported directly by said screw and engaged directly by said screw and normally in engagement with said rack, and a lifter, to rock said dog and disengage the same from said rack, as and for the purpose specified.

2. The combination of a fixed jaw, provided with a rack, a movable jaw, a screw, journaled therein, a dog, engaged directly by said screw and adapted to be rocked in one direction on said screw, by its own weight, into engagement with said rack, and a lifter, to rock said dog in the other direction, out of engagement with said rack, as and for the purpose specified.

3. The combination of a fixed jaw, provided with a rack, a movable jaw, a screw, journaled therein, said movable jaw having a slide, provided with a concavity in its upper surface, a dog, arranged in said concavity, and having a notch, engaged by the thread of said screw, and having lateral down-hanging guides, to fill said concavity laterally and prevent the lateral tipping of said dog, said dog being adapted to be rocked in one direction into engagement with said rack, and a lifter, to rock said dog in the other direction, out of such engagement, as and for the purpose specified.

4. The combination of the jaw, provided with a hole, the slide, secured to said jaw and having an abutment and a rear wall, provided with a hole, and a screw-rod, having its journals in the holes in said jaw and rear wall and having a boss or enlargement, arranged between said abutment and said rear wall, and extending from said abutment to said rear wall to prevent a longitudinal movement of said screw-rod, as and for the purpose specified.

5. The combination of a movable jaw, provided with a hole, the slide, having an abutment or upward projection, and a rear wall, provided with a hole, a screw-rod, having a hub, arranged to turn in the hole in said jaw and having a boss or enlargement of a sufficient length to fill the space between said abutment and rear wall, and having a screw, adapted to be passed through the hole in said front jaw, the rear end of said screw-rod extending beyond said enlargement, to form a journal for said rod and to enter the hole in said rear wall, as and for the purpose specified.

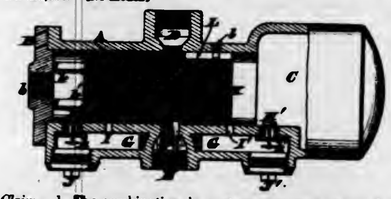
6. The combination of a movable jaw, provided with a hole, the slide, having an abutment or upward projection, and a rear wall, provided with a hole, and a screw-rod, having a hub, arranged to turn in the hole in said jaw and having a boss or enlargement of a sufficient length to fill the space between said abutment and rear wall, and having a screw, adapted to be passed through the hole in said front jaw, the rear end of said screw-rod extending beyond said enlargement for a distance greater than the length of said hub, said screw-rod being adapted to be bent to enable said enlargement to be passed over said abutment and to straighten out, to throw said enlargement

between said abutment and said rear wall, as and for the purpose specified.

7. The hook, provided with a vertical part, adapted to rest against the inner face of the movable jaw of a vise and to project above the same, and having a horizontal part, adapted to extend under the screw-rod of said vise, and said hook being adapted to be moved with said movable jaw toward the fixed jaw of said vise, as and for the purpose specified.

8. The combination of the fixed jaw, the movable jaw, the screw-rod, journaled thereon, and the hook, provided with a vertical part, adapted to rest against the inner face of said movable jaw, and with a horizontal part, adapted to extend under said screw-rod, said hook being adapted to be moved with said movable jaw toward said fixed jaw, as and for the purpose specified.

488,369. GOVERNOR FOR AIR-BRAKES. JOHN D. P. SCHENCK, Nashville, Tenn., assignor of one-half to George Mathews, Cincinnati, and William W. Peabody, Madisonville, Ohio. Filed Mar. 1, 1892. Serial No. 423,339. (No model.)



Claim.—1. The combination, in a steam-governor operated by compressed air, of the closed cylinder A, having an inlet D, outlet E, side channels F, F', passage G, ports I, I', and valves H, H', and the reciprocating piston K, having a channel M, that opens communication between said outlet E, and channels F, F', when said piston is in its normal position, substantially as herein described.

2. In a steam governor, operated by compressed air, a cylinder having a steam inlet and outlet, an air inlet at or near one end, a closed chamber at its other end, and a longitudinal passage having two ports and two valves, that permit a flow of air from one end of said cylinder to the other, in combination with a reciprocating piston having a channel that opens communication between said steam-inlet and outlet when said piston is in one position, and cuts off communication between said inlet and outlet when it is shifted to an opposite position, substantially as described.

3. In a steam governor, operated by compressed air, a cylinder having a steam inlet and outlet, an air inlet at or near one end, but closed at its other end, and a longitudinal passage having two ports and two valves that permit a flow of air from one end of said cylinder to the other, in combination with a reciprocating piston having a channel that opens communication between said steam inlet and outlet when said piston is in one position, and cuts off communication between said inlet and outlet when it is shifted to an opposite position, substantially as described.

4. A steam governor consisting of the cylinder A, having a steam inlet D, an outlet E, an air inlet *b*, a channel F, a longitudinal passage G, a pair of ports I, I', a pair of inwardly-opening valves H, H', and a reciprocating piston K, having a channel M, in combination with an air-pressure regulator provided with a pipe connection leading to said cylinder and having a pair of automatic valves, one of which opens when the air pressure reaches a maximum, while the other valve opens when the pressure falls to a minimum, substantially as herein described.

5. A steam governor for air brakes, consisting of a cylinder having a steam inlet and outlet, and a reciprocating piston that is retracted by a full pressure of air and advanced by a reduction of pressure, in combination with an air-pressure regulator having connection with said cylinder and provided with a valve that opens when the air pressure reaches a maximum, and a valve that opens when the pressure falls to a minimum, substantially as described.

488,370. PRESSURE-REGULATOR. JOHN D. P. SCHENCK, Nashville, Tenn., assignor of one-half to George Mathews, Cincinnati, and William W. Peabody, Madisonville, Ohio. Filed Apr. 23, 1892. Serial No. 430,391. (No model.)

Claim.—1. In an air-brake reservoir provided with a pair of automatically-acting valves communicating with a chamber adapted to connect with a steam governor, the arrangement of these devices being such that one valve will open when a maximum pressure is reached, while the other valve will open when this pressure is reduced, substantially as described.

2. The combination in an air-brake pressure-regulator, of a shell

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including three chambers C, D, E, having, respectively, passages *c*, *d*, *g*, an automatic valve J, opening into the chamber C, and affording communication with chamber E, which latter has an outlet at *e*, a valve L housed within the chamber D, a spring M that closes this valve, and an adjusting nut N, for regulating the tension of said spring, all as herein described.

488,371. SLATTED STRUCTURE FOR FLOORS, STAIRS, &c. NATHAN B. SMITH, Baltimore, Md. Filed Apr. 19, 1892. Serial No. 429,721. (No model.)

Claim.—1. The combination with a slat and a slat-connecting device, of means for connecting the two and holding the same in their relative positions while permitting adjustment of the slats toward or from each other without the removal of said means, as set forth.

2. The combination with slats, of slat-connecting devices, and means held transversely in the slats and engaging said slat-connecting devices to frictionally hold the slats and devices in their relative positions while permitting adjustment thereof without removal of said means, as set forth.

3. A slatted structure, consisting of slats, slat-connecting devices seated in channels in the slats and flexibly connected between the slats, and means held in the slats and frictionally engaging the said devices to hold the slats and connecting devices at a regulated distance apart while permitting of their adjustment without removal of such means, as set forth.

4. A slatted structure consisting of slats with channels, linked slat-connecting devices seated in said channels and flexibly connecting the slats, and means passed transversely through the slats and frictionally engaged with the walls of a link within the channels to frictionally hold the slats in their adjusted positions and yet permit of their adjustment without removal of said means, as set forth.

5. The combination with a series of slats, of flexible connecting devices therefor, and wedges for adjustably securing the slats to the connecting devices, as set forth.

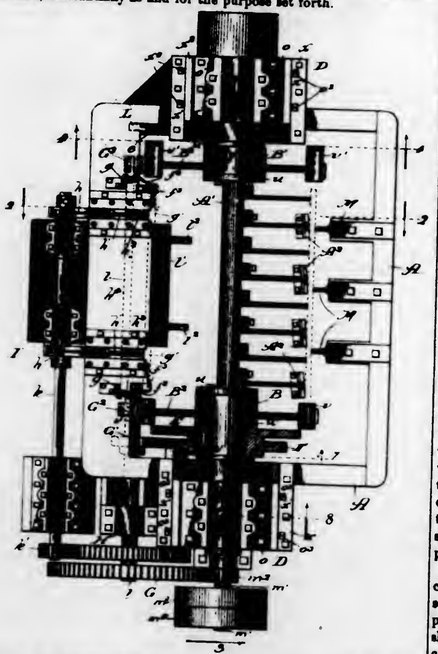
488,372. ROTARY LATHE. HORACE W. TINDLEY, Michigan City, Ind., assignor to the Automatic Turning Company, Chicago, Ill. Filed Apr. 23, 1891. Renewed June 20, 1892. Serial No. 437,344. (No model.)

Claim.—1. In a lathe the combination with the rotary knives, of the rotary spindle-supports permanently adjusted eccentrically with relation to the cutter-axis and carrying the radially disposed spindles, operated to rotate the blanks on their own axes and describing at their centers, by the said eccentricity, a circular path inclining toward the knives from one side to another of the machine, substantially as and for the purpose set forth.

2. In a lathe the combination with the rotary knives, of the rotary spindle-supports eccentrically adjusted with relation to the cutter-axis and carrying the radially disposed spindles operated to rotate the blanks on their own axes and describing at their centers, by the said eccentricity, a circular path inclining toward the knives from one side to another of the machine, and a steady-rest for the blanks conforming on its bearing side to the exterior contour of the path described by a blank while undergoing reduction, substantially as and for the purpose set forth.

3. In a lathe the combination of a rotary shaft carrying the knives

in a circle concentric with the said shaft, rotary spindle-supports permanently adjusted eccentrically with relation to the cutter-axis and actuated independently thereof, spindles radially disposed on the said supports to describe at their centers, by the said eccentricity, a circular path inclining toward the knives from one side to another of the machine, and operated to rotate the blanks on their own axes, and a feed for the blanks actuated from the spindle-support driving-mechanism, substantially as and for the purpose set forth.



4. In a lathe the combination of a rotary shaft carrying the knives in a circle concentric with the said shaft, rotary spindle-supports eccentrically adjusted with relation to the cutter-axis and actuated independently thereof, spindles radially disposed on the said supports to describe at their centers, by the said eccentricity, a circular path inclining toward the knives from one side to another of the machine and operated to rotate the blanks on their own axes, a steady-rest for the blanks conforming on its bearing-side to the exterior contour of the path described by a blank while undergoing reduction, and a feed for the blanks actuated from the spindle-support driving-mechanism, substantially as and for the purposes set forth.

5. In a lathe the combination with the frame A of a cutter-shaft A′ having the knives radially supported upon it to describe a circle concentric with the shaft and journaled in adjustable bearings D, rotary gear-wheels B^3 supported on stationary bearings eccentrically surrounding the cutter-shaft and actuated independently thereof, and live-spindles C and dead-spindles C′ supported, respectively, on the said gear-wheels to extend across the plane of their rotation in pairs on the two gear-wheels and disposed to describe at their centers, by the said eccentricity, a circular path inclining toward the knives from one side to another of the machine, substantially as and for the purpose set forth.

6. In a lathe the combination with the frame A of a rotary cutter-shaft A′ having the knives radially supported upon it to describe a circle concentric with the shaft, rotary gear-wheels B^3 supported on stationary bearings eccentrically surrounding the cutter-shaft and actuated independently thereof, live-spindles C and dead-spindles C′ supported, respectively, on the said gear-wheels to extend across the planes of their rotation in pairs on the two gear-wheels and disposed to describe at their centers by the said eccentricity, a circular path inclining toward the knives from one side to another of the machine, and a steady-rest M for the blanks extending from one side of the machine nearly to the feed at the opposite side thereof and conforming at its bearing side to the exterior contour of the path described by a blank in undergoing reduction, substantially as and for the purpose set forth.

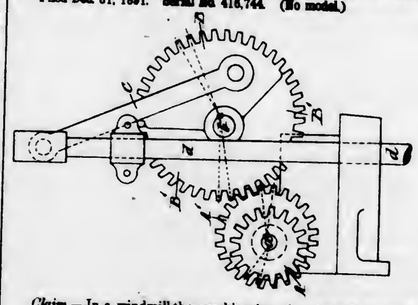
7. In a lathe the combination with the frame, the cutter-carrying shaft the rotary spindle-supports carrying the radially disposed live and dead spindles and surrounding and driven independently of the cutter-shaft, of a feed I comprising a hopper *g* for the blanks open at its base and provided at opposite sides with clamping-springs f^2 and in advance thereof with seating-spring f^3, eccentrics *h* on a counter-shaft *k* driven by the spindle-support actuating-mechanism, and pushers A^3 confined in guides and connected with the said eccentrics to be reciprocated horizontally across the open base of the hopper, substantially as and for the purpose set forth.

8. In a lathe the combination with the frame A of a rotary cutter-shaft A′ having the knives radially supported upon it to describe a circle concentric with the shaft, rotary gear-wheels B^3 supported on stationary bearings B and B′ eccentrically surrounding said shaft and actuated independently thereof, live-spindles C and dead-spindles C′ supported, respectively, on the said gear-wheels to extend across the planes of their rotation in pairs on the two gear-wheels and disposed to describe at their centers, by the said eccentricity, a circular path inclining toward the knives from one side to another of the machine, a steady-rest M for the blanks, extending from one side of the machine nearly to the feed at the opposite side thereof and conforming at its bearing side to the exterior contour of the path described by a blank in undergoing reduction, and a feed comprising a hopper *g* for the blanks, a counter-shaft *k* carrying eccentrics *h* and driven by the spindle-support driving-mechanism, pushers A^3 connected with the eccentrics to be reciprocated across the open base of the hopper, clamping-springs f^2 at the opposite sides of the hopper and seating springs f^3 in advance thereof, for the blanks, substantially as and for the purpose set forth.

9. In a lathe the combination with the frame A of a rotary cutter-shaft A′ having the cutters radially supported upon it to describe a circle concentric with the shaft, rotary gear-wheels B^3 supported on stationary bearings B and B′ eccentrically surrounding said shaft and actuated independently thereof, live-spindles C and spring-controlled dead-spindles C′ supported, respectively, on the said gear-wheels to extend across the planes of their rotation in pairs on the two gear-wheels and disposed to describe at their centers, by the said eccentricity, a circular path inclining toward the knives from one side to another of the machine, a feed, and a cam-guide L for the dead-spindles terminating near the feed, substantially as and for the purpose set forth.

10. In a lathe, the combination with the frame A of a rotary cutter-shaft A′ having the cutters radially supported upon it to describe a circle concentric with the shaft, rotary gear-wheels B^3 supported on stationary bearings B and B′ eccentrically surrounding said shaft and actuated independently thereof, live-spindles C and spring-controlled dead-spindles C′ supported, respectively, on the gear-wheels B and B′ to extend across the planes of their rotation in pairs on the two gear-wheels and disposed to describe at their centers, by the said eccentricity, a path narrowing toward the cutters from one side to another of the machine, a steady-rest M for the blanks, extending from one side of the machine nearly to the feed at the opposite side thereof and conforming at its bearing side exterior contour of the path described by a blank in undergoing reduction, a feed I comprising a hopper *g* for the blanks, a counter-shaft *k* carrying eccentrics *h* and driven by the spindle-support driving-mechanism, pushers A^3 connected with the said eccentrics to be reciprocated across the open base of the hopper, clamping-springs f^2 in advance thereof, for the blanks, and a cam-guide L in the path of the dead-spindles and terminating at its forward end adjacent to a clamping-spring f^3, the whole being constructed and arranged to operate substantially as described.

488,373. GEARING. JOHN R. TOOGE, Christchurch, New Zealand. Filed Dec. 31, 1891. Serial No. 416,744. (No model.)



Claim.—In a windmill the combination of a windmill shaft *a* and actuating rod *d*, and connecting rod C with wheels A A′ and segments B and B′ substantially as described herein and illustrated in the accompanying drawings.

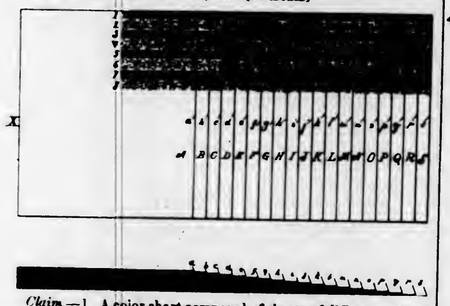
488,374. PROCESS OF MAKING WHITE LEAD. ELWYN WALLER and CHARLES A. SHIPPIN, New York, N. Y. Filed Feb. 27, 1892. Serial No. 423,074. (No specimens.)

Claim.—1. The herein described method of making white lead, which consists in subjecting a solution of basic lead acetate with water, in mass, to the action of carbon dioxide gas while said solution is under a pressure above the atmospheric pressure and maintaining said pressure during precipitation of lead from said solution in the form of lead hydrocarbonate.

2. The herein described method of making white lead, which consists in subjecting a solution of basic lead acetate mixed with water impregnated with carbon dioxide, while said mixture is under a pressure above the atmospheric pressure and in mass, to the action of carbon dioxide gas, and maintaining said pressure during precipitation of lead from said solution in the form of lead hydrocarbonate.

3. The herein described method of making white lead, which consists in subjecting a solution of basic lead acetate mixed with water impregnated with carbon dioxide, while said mixture is in mass and under a pressure above the atmospheric pressure, to the action of carbon dioxide gas, and agitating the mixture during the admixture of the gas therewith, said pressure being maintained during precipitation of lead from the solution in the form of lead hydrocarbonate.

488,375. COLOR-CHART. JAMES WHITE, Chicago, Ill. Filed July 11, 1892. Serial No. 439,649. (No model.)



Claim.—1. A color chart composed of sheets of different colored material of different length; one edge of all the sheets being in the same plane, whereby a background of different colored bars is formed, in combination with different colored bars composed of masses of color extending transversely across the bars of the background; substantially as described.

2. A color chart composed of sheets of different colored material of different length; one edge of all the sheets being in the same plane, whereby a background of different colored bars is formed, in combination with different colored bars composed of lines of color extending transversely across the bars of the background; substantially as described.

3. A color chart composed of sheets of different colored material of different length; one edge of all the sheets being in the same plane, whereby a background of different colored bars is formed, in combination with different colored bars composed of masses of color extending transversely across the bars of the background; with intermediate bars composed of lines of color also extending laterally across such background; substantially as described.

488,376. TUBE-EXPANDER. ORIN A. WHITE, Boston, Mass. Filed Aug. 19, 1892. Serial No. 443,536. (No model.)

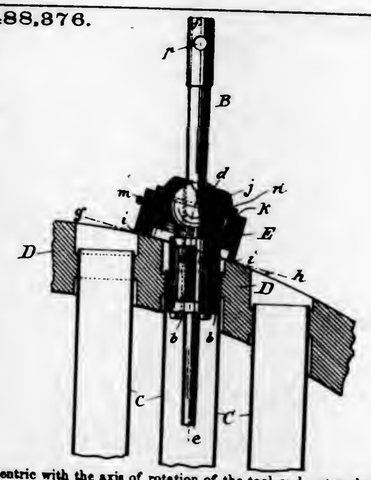
Claim.—1. In a tube expanding tool, a stop shoulder universally jointed thereto so as to adapt itself to different angular positions to the axis of the tool, for the purposes described.

2. In a tube expanding tool, a stop shoulder universally jointed thereto by a revoluble joint concentric with the axis of the tool, for the purposes described.

3. In a tube expanding tool, a stop shoulder universally jointed thereto so as to adapt itself to different angular positions to the axis of the tool, and means for adjusting the longitudinal position of the abutting surface of said stop shoulder, for the purposes described.

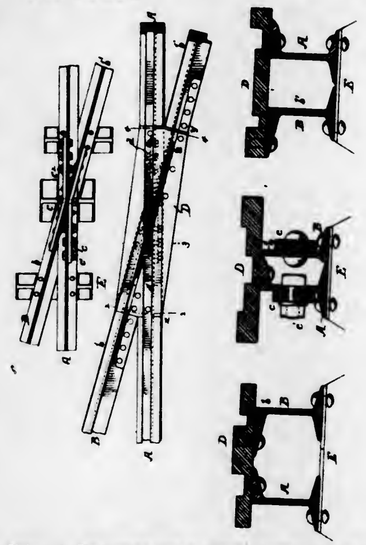
4. The combination in an expanding tool, of a stock or body, expanding rollers supported therein, a tapered mandrel inserted between the rollers, and at the extremity of the stock or body a ball

488,376.



concentric with the axis of rotation of the tool, and a stop shoulder provided with a socket fitting the said ball, substantially as described.

488,377. TRACK STRUCTURE. VICTOR ADGERER and CHARLES A. PHILANDER, Philadelphia, Pa., assignors to the William Wharton, Jr., & Company, Incorporated, same place. Filed May 16, 1892. Serial No. 433,146. (No model.)



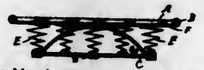
Claim.—1. The combination in a track structure, in which two or more rails meet or cross, of the continuous rails partly cut away at the junction, with a crossing or joint plate set into the cut away portions and onto the remaining portions of the rails, substantially as set forth.

2. The combination in a switch or frog structure, of the rails having the abutting points cut away with a crossing or joint plate set into the cut away portion and onto the remaining portions of the rails, forming a crossing without seams, substantially as set forth.

3. The combination in a frog structure, of the continuous main rail, the crossing rail secured thereto, the heads of said rails being cut away at the crossing, with a plate grooved to align with the rails and forming solid points, substantially as set forth.

488,378. WOVEN-WIRE MATTRESS. ALONZO BELL, Philadelphia, Pa. Filed July 26, 1892. Serial No. 441,366. (No model.)

488,878.



Claim.—The combination in a mattress of a sheet of woven wire, a frame to which the edges of said sheet of woven wire are secured, a strip or strips of metal, the ends of which are secured to the lower part of the said frame at some distance below the woven wire and which extend transversely from one side of said frame to the other and beneath said sheet of woven wire, a bottom constructed of transverse and longitudinal slats, helical springs secured to said bottom and to said sheet of woven wire and springs secured to said bottom and to the center of said transverse strips of metal carried by the frame of the woven wire.

488,879. PHONOGRAPH. CHARLES BUTTEL, New York, N. Y. Filed Jan. 27, 1891. Serial No. 419,498. (No model.)

Claim.—1. The described method of compensating for the effects of irregularities in a phonogram cylinder or surface consisting in supporting the weight of the diaphragm and its attached parts free of the cylinder or surface and simultaneously giving to it a rocking motion as the cylinder or surface moves or advances, whereby the recording or reproducing stylus is caused to assume different angular positions.

2. The described method of compensating for irregularities of a phonogram cylinder consisting in supporting the weight of the diaphragm and its attached parts free of the cylinder or surface and simultaneously varying the angular relation of the stylus to the axis of the cylinder, said stylus being rigidly secured to the diaphragm.

3. The described method of compensating for irregularities in the surface of a phonogram cylinder consisting in giving to a rigidly supported stylus a vibrating motion in the direction of the cylinder's rotation and about a fixed or axial line of support in a plane substantially parallel with the axis of the cylinder.

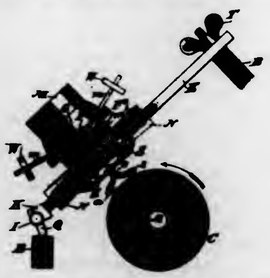
4. A stylus carried by a diaphragm pivotally secured to a support and provided with adjustable means as a weight for causing the stylus to vary its angular relation so as to conform to the phonogram surface, substantially as described.

5. A phonograph having a diaphragm provided with a sound receiving chamber on one side with an inlet thereto for the sound waves in combination with a protecting shield on the other side which covers the entire surface of the diaphragm and has a perforation through which the recording or reproducing stylus extends substantially as described.

6. A phonograph provided with a sound protector or shield which covers the entire face of the diaphragm and has an opening through which the recording stylus projects, substantially as described.

7. A phonograph having a pivoted diaphragm with a sound concentrating chamber on one side and a sound protector or shield on the other through which the stylus projects substantially as described.

488,880. PHONOGRAPH. CHARLES BUTTEL, New York, N. Y. Filed Mar. 14, 1892. Serial No. 424,814. (No model.)



Claim.—1. A phonograph having a record producing stylus and an independent record reproducing stylus, said styles being attached by a rigid support to the diaphragm or other resonant medium substantially as described.

2. In a phonograph a pair of styles secured by a rigid support to a diaphragm and located in the same plane whereby one may be utilized for producing a record and the other for reproducing it—substantially as described—

3. In a phonograph a pair of styles secured to a diaphragm by a spider, one style being adapted to produce a record and the other to reproduce it—substantially as described—

4. In a phonograph a pivoted diaphragm having a record producing stylus and a second or record reproducing stylus rigidly secured to it—substantially as described—

5. In a phonograph a pivoted diaphragm having a record producing stylus, and a second or record reproducing stylus rigidly secured to said diaphragm in combination with means for causing either stylus to bear upon the phonogram surface—substantially as described—

6. In a phonograph, a loosely pivoted diaphragm having a pair of styles rigidly secured to it in combination with adjustable means for causing either stylus to act at will—as described—

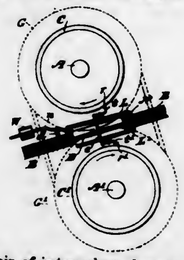
7. In a phonograph a loosely pivoted diaphragm; a pair of styles rigidly secured to said diaphragm in combination with reversible adjustable means for utilizing either style at will—as described—

8. In a phonograph a pair of styles located in a vertical plane and rigidly secured to the diaphragm—as described—

9. In a phonograph a pivoted diaphragm carrying a pair of styles in combination with a reversible weighted indicator adapted to indicate which style is in contact with the surface and to maintain it in that position until reversed, substantially as described.

10. A phonograph having a pair of independent styles rigidly secured to a pivoted diaphragm and a reversible weighted lever adapted to cause either style at will to bear upon the phonogram surface.

488,881. PHONOGRAPH. CHARLES BUTTEL, New York, N. Y. Filed Mar. 14, 1892. Serial No. 424,815. (No model.)



Claim.—1. A pair of independent phonogram surfaces, one of which has a record on its face; intermediate gearing as a belt and pulleys for causing said surfaces to move simultaneously; a stylus adapted to follow the conformation of the record, and a second stylus with intermediate connections adapted to reproduce the record on the second surface—substantially as described—

2. A pair of independent phonogram surfaces, one of which has a record on its face; intermediate gearing as a belt and pulleys for causing said surfaces to move together; a stylus resting on the record on the first surface; a second stylus resting on the face of the second surface, and an intermediate elastic or yielding support as a diaphragm with adjustable connections, as described—

3. A pair of independent phonogram cylinders sustained by parallel axles geared together, one of said cylinders having a record on its face; a reproducing stylus adapted to follow this record; a recording stylus attached to the reproducing stylus by intermediate connections, and adapted to make a duplicate record on the face of the second cylinder—substantially as described—

4. A pair of phonogram cylinders sustained by parallel axles geared together, one of said cylinders having a prepared record on its face; a pivoted reproducing stylus fulcrumed to a lever; a pivoted record producing stylus resting normally on the face of the second phonogram cylinder and fulcrumed to a second lever with connections between said styles, whereby a duplicate record is made upon the face of the second cylinder, as the two are revolved—substantially as described—

488,882. DRILL AND ECCENTRIC CHUCK. HARRY W. BUCKLAND, Waterbury, Conn., assignor of one-half to Andrew Baird, same place. Filed July 16, 1892. Serial No. 440,230. (No model.)

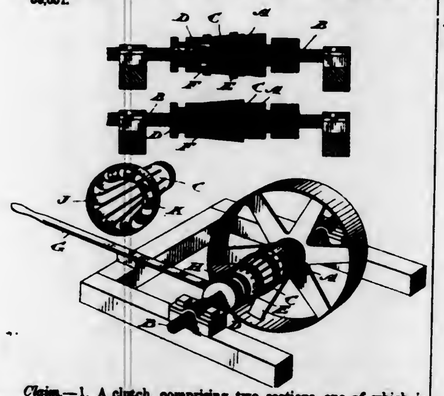
Claim.—1. The body having a slot in one side, and sliding jaws

having screw seats, in combination with a right and left threaded operating screw engaging the screw seats, and having an unthreaded portion, a movable yoke engaging said unthreaded portion and having a shank lying in the slot, so that the yoke, operating screw and jaws may be moved together without rotation of the operating screw, and suitable means whereby the yoke operating screw and jaws may be locked in either a central or eccentric position leaving the jaws free to be moved in or out by rotation of the operating screw.

2. The body having a slot 11 and a seat 15 at the outer end thereof, and sliding jaws having screw seats, in combination with a right and left threaded operating screw engaging the screw seats and having an unthreaded portion a yoke engaging said unthreaded portion and having a shank lying in the slot, and a screw 14 engaging the shank and having a head adapted to engage the seat so that when said screw is loosened the yoke, operating screw and jaws may be adjusted either centrally or eccentrically without rotation of the operating screw, and may be held in position after adjustment by tightening up screw 14.

3. The body having a slot in one side and sliding jaws having screw seats, in combination with a right and left threaded operating screw engaging the screw seats and having an unthreaded portion, a yoke engaging said unthreaded portion and having a shank flattened to correspond with the shape of the slot for the purpose set forth, and a screw 14 engaging the shank to lock the yoke, operating screw and jaws in position after adjustment.

488,883. CLUTCH. HARMAN BUSHEE, Barrie, Canada, assignor of one-half to James Herbert McKeggie, same place. Filed May 27, 1892. Serial No. 434,532. (No model.) Patented in Canada June 1, 1892, No. 39,051.



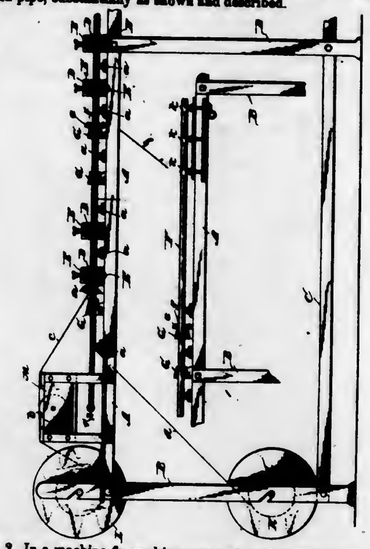
Claim.—1. A clutch, comprising two sections, one of which is movable endwise, and a series of flexible metallic strips, each having one end rigidly fastened to one section of the clutch and its free end acting on the opposite section, as set forth.

2. A clutch comprising two sections, one of which is movable endwise, a series of flexible metallic strips, each having one end rigidly fastened to one section of a clutch and its free end acting on the opposite section, and means for preventing too great expansion of strips, substantially as described.

3. A clutch comprising two sections, one of which is movable, a series of flexible strips attached to one section and having its opposite ends coiled outwardly and acting on the other section, and a band surrounding the outwardly coiled ends, substantially as described.

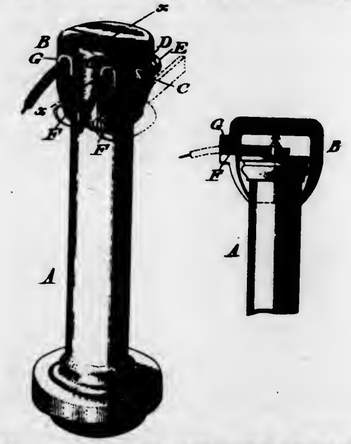
488,884. MACHINE FOR MAKING PAPER TUBES. PHILIP CASEY, Cincinnati, Ohio. Filed Nov. 25, 1890. Serial No. 372,611. (No model.)

Claim.—1. In a machine for making paper tubes, the combination with a series of forming rollers of a series of funnels, forming pipe running directly through the same, and rubber collars pressing around said pipe, substantially as shown and described.



2. In a machine for making paper tubes, the combination with a series of forming rolls and funnels, of a steam pipe running between the same, upon which the tubes are to be formed and a small pipe within said steam pipe, opening therein at its further end and running longitudinally through the same, to carry off the condensed water and waste steam, substantially as shown and described.

488,885. GUARD FOR TELEPHONES. EDWARD R. CRASH, Philadelphia, Pa. Filed July 30, 1892. Serial No. 441,671. (No model.)



Claim.—1. A cap formed in sections adapted to sheath the end of a telephone, and means for securing said sections together, said sections having slots in their sides for the passage of the wires, said parts being combined substantially as described.

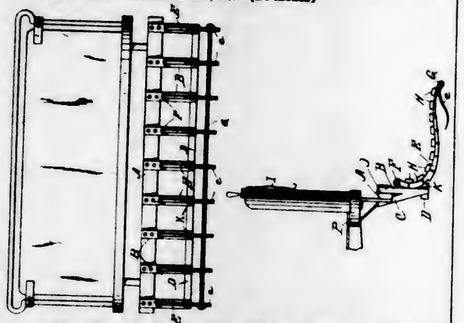
2. A cap adapted to sheath the end of a telephone, the same being formed in sections and provided with a screw for connecting the sections and retaining them on the telephone, substantially as described.

3. A cap adapted to sheath the end of a telephone and to be secured thereto, and provided with slots for the wires and projecting bosses on the inner ends of said slots, substantially as described.

4. A cap adapted to sheath the end of a telephone and provided with means for holding the same thereon and having slots for the wires and projecting bosses on the inner ends of said slots, said parts being combined substantially as described.

5. A sectional cap having a contracted inner end, and provided with slots for the wires, said slots having projecting bosses on their inner ends, substantially as described.

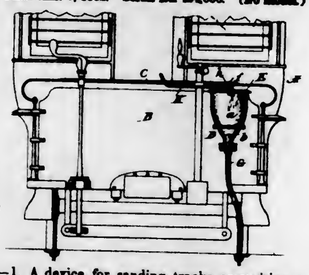
488,886. CAR-FENDER. SAMUEL I. CRAFTS, Boston, Mass. Filed July 2, 1892. Serial No. 438,770. (No model.)



Claim.—1. A street-car fender consisting of a series of inclined arms pivoted at one end to a bar or frame on the car-body and turned downward and backward at their front ends where they are connected by a transverse rod, in combination with suitable slats or netting supported upon said arms, substantially as set forth.

2. A car fender comprising a series of slats or net work extending across the front of the car, a series of arms supporting such slats or net work and each pivoted to a bar or frame on the car, each arm having at its front end a downwardly and rearwardly-extending spring runner adapted to slide upon the ground and support the front of the fender when a weight is received thereon, substantially as set forth.

488,887. SAND-BOX FOR CARS. SAMUEL CROBY, Cambridge, Mass. Filed Mar. 7, 1892. Serial No. 424,068. (No model.)



Claim.—1. A device for sanding tracks comprising a suitable box or hopper, a stationary gate secured therein having perforations, a shaft rotating in said box and carrying at its lower end a cut-off gate revolving above said stationary gate, said cut-off gate being rotated by said shaft and means for directly rotating said shaft; substantially as described.

2. A device for sanding tracks comprising a box or hopper removably secured to the car, a gate secured in said box and having perforations, a shaft passing through said gate and keyed on the under side thereof, a cut-off gate secured to said shaft above the stationary gate, stirrers on said shaft and means for directly rotating the same; substantially as described.

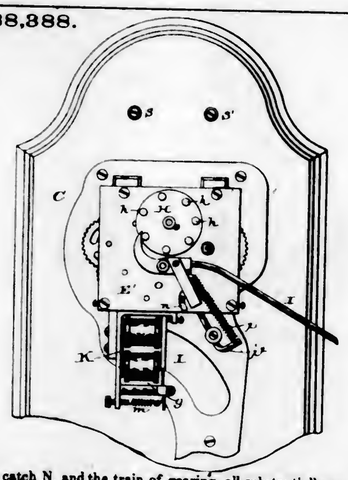
3. In a device for sanding tracks, in combination with the rotating shaft, cut-off valve, and box, hooks secured to said box, openings in the rear of said box and a removable cover having lips passing through said openings; substantially as described.

488,888. FIRE-ALARM APPARATUS. AUGUSTUS G. DAVIS, Baltimore, Md. Filed May 27, 1892. Serial No. 434,570. (No model.)

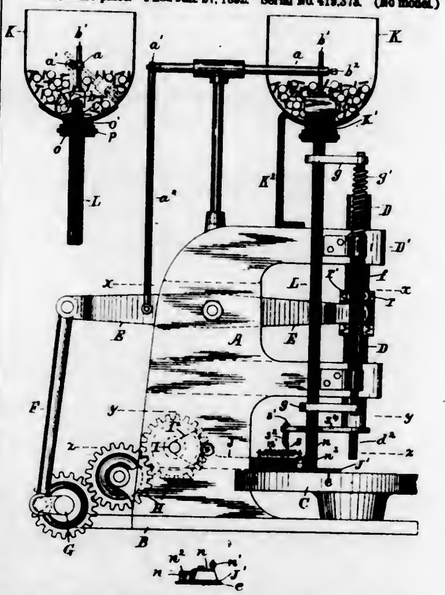
Claim.—1. An improved fire alarm apparatus composed of the striking mechanism A, the alarm checking mechanism consisting of the arms M and O, catch N, and the trip P on the hammer I, and the magnets K and armature L, substantially as and for the purpose specified.

2. In an alarm operating mechanism, the hammer I provided with the trip P, in combinations with the arms M and O, armature L, magnet K, catch N, and the train of gearing, all substantially as and for the purpose specified.

488,888.



488,889. AUTOMATIC DEVICE FOR FEEDING BLANKS. WILLIAM P. DEVINE, Newark, N. J., assignor of one-half to William D. Donovan, same place. Filed Jan. 27, 1892. Serial No. 419,373. (No model.)



Claim.—1. The combination, with the hopper K having the feeder tube inserted in its bottom, of the oscillating shaft *a*, and the brush holder *b* secured upon the shaft and provided with the guards *t* and the bristles projected from the brush holder between the guards, as and for the purpose set forth.

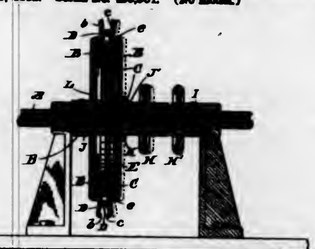
2. The combination, with the hopper K having the perforated and threaded nozzle K', of the feeder tube L provided each with collar O and fitted interchangeably to the nozzle K', and a threaded socket *p* for securing them thereon, as set forth.

3. The combination, with the hopper K, of the shaft *a* and vibrating link a^2 to oscillate the same, the brush holder *b* secured movably to the shaft and adjustable to and from the hopper, a feeder tube extended from the bottom of the hopper, means for removing the blanks successively from the bottom of the feeder tube, and beaters vibrated automatically in contact with the tube to jar the contents and loosen the same when jammed therein, substantially as set forth.

4. The combination, with a feeder tube supplied with blanks, of a feeder slide having an angular cavity formed therein, and a finger pressed normally toward the cavity to clamp the blank therein, as set forth.

5. The combination, with the hopper K formed with spherical bottom and having the feeder tube inserted in its bottom, of the oscillating shaft *a* and the brush holder *b* secured movably to the shaft and adjustable to and from the bottom of the hopper, as set forth.

488,890. DRIVING-PULLEY. EDWARD F. GORDON, Concord, N. H. Filed Apr. 15, 1892. Serial No. 429,201. (No model.)



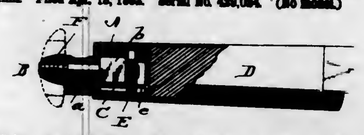
Claim.—1. A driving pulley formed of two laterally-separable rotating parts with driving faces sharply inclined toward each other, in combination with hand wheels loose on the driving shaft and having threaded hubs, whereby the distance between said parts of the pulley and their grip on the belt, may be varied, substantially as and for the purpose set forth.

2. A driving pulley formed in two laterally-separable rotary parts having oblique and sharply inclined driving surfaces, and an inclosed spring tending to separate them, in combination with a loose pulley inclosed between said rotary parts and having a belt-supporting periphery within and at the foot of said inclined surfaces, and with means mounted on the shaft, independent of the pulley, adapted to press its parts toward each other, substantially as and for the purpose set forth.

3. A two-part driving-pulley with inclined driving surfaces and an inclosed loose pulley with its periphery adjacent to such surfaces, in combination with an internal sleeve rotating with the shaft, formed with a flange controlling the loose pulley and having projections entering recesses in the laterally-movable part of the driving pulley, substantially as and for the purpose set forth.

4. The driving pulley described having laterally-separable parts B C, with inclined driving surfaces *b c*, and the inclosed loose pulley E with its periphery *e* beneath such inclined surfaces, in combination with the internal sleeve J around which said loose pulley revolves, the spring L within said sleeve acting to press the part C of the pulley away from the part B, and with the threaded parts H H' adapted to press said parts toward each other, substantially as and for the purpose set forth.

488,891. WHIFFLETREE-HOOK. JOHN F. GRAVES, Ellsworth, Minn. Filed Apr. 13, 1892. Serial No. 429,094. (No model.)

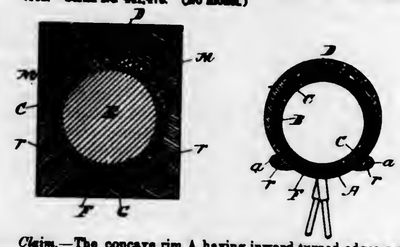


Claim.—1. A whiffletree clip consisting of a plug having a projection at one end to receive the trace, a pin journaled in the said plug and formed with a flat sided head at its inner end, and provided with a turn button at its outer end, and a flat spring adapted to press laterally on the flat side of said head to retain the said pin and turn button in proper position, substantially as and for the purpose set forth.

2. A whiffletree clip comprising a hollow plug having a projection at the closed end to receive a trace, a pin journaled in the said closed end of the plug and having a flat sided head at its inner end, and having a turn button at its outer end, a flat spring having its ends let into the sides of the plug, and a cap plate secured to the said pin and adapted to protect and retain the said spring in place, substantially as described.

3. The herein described whiffletree clip comprising a hollow plug having a projection at the closed end to receive a trace, a pin journaled in the said closed end of the plug and having a flat sided head at its inner end and having a turn button at its outer end, a spring having its ends let into the sides of the plug and adapted to act on the flat sides of the said head, a cap plate secured to the inner end of the pin, and a thimble embracing the plug and the ends of the flat spring to hold the latter from longitudinal displacement substantially as specified.

488,892. PNEUMATIC TIRE. WALTER B. HARDY, Boston, Mass., assignor to the Revere Rubber Company, same place. Filed July 23, 1892. Serial No. 441,473. (No model.)



Claim.—The concave rim A having inward-turned edges *a* constituting marginal grooves, in combination with an inflatable inner tube and with the wrapper C D permanently secured along its longitudinal center to the rim, and having ribs or beads *r* fitting into said grooves, substantially as and for the purpose set forth.

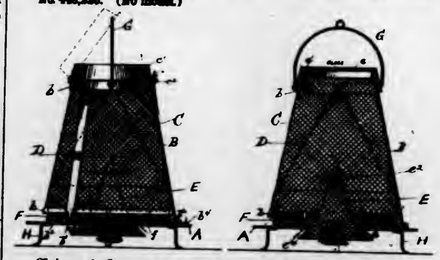
488,893. SOAP CAKE. NATHAN JEWETT, Chicago, Ill. Filed July 29, 1892. Serial No. 441,565. (No specimens.)

Claim.—1. As a new article of manufacture, a cake of soap having incorporated or inclosed therein a body of connected fibers extending radially through the body of soap to the surface.

2. In combination with a cake of soap a holder completely surrounded and held in place thereby, and a series of fibers attached to said holder and extending therefrom radially to the surface of the soap.

3. In combination with a cake of soap the grooved spool therein, the fibers surrounding the same, and projecting therefrom into or through the soap and the wire binding said fibers to the spool.

488,894. INSECT-TRAP. CHARLES F. JOLITZ, Carolina, assignor of one-half to Albert Menting, Phlox, Wis. Filed Oct. 8, 1892. Serial No. 448,223. (No model.)



Claim.—1. In an insect trap, the combination of the supporting plate, the screen supported thereon by standards, the conical screen supported within the first mentioned screen, the conical screen supported in an annular opening formed in the base plate, and the cylindrical screen secured to the base plate within the lower edge of the first mentioned screen, substantially as and for the purposes described.

2. In an insect trap, the combination of the supporting plate, the screen removably supported thereon by standards, the conical screen supported within the first mentioned screen, the conical screen in an annular opening formed in the base plate, the bait plate carried by the last mentioned screen, and the cylindrical screen secured upon the base-plate within the lower edge of the first mentioned screen, substantially as and for the purposes described.

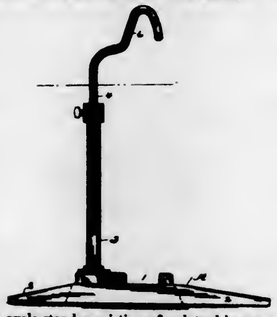
3. In an insect trap, the combination of the supporting plate, the screen removably supported thereon by standards, the conical screen

supported within the first mentioned screen and having an outlet in its apex opening into the same, the conical screen supported in an annular opening in the base plate and having an outlet in its apex opening into the first mentioned conical screen, and a flaring base that projects beneath the base plate, the rosette supported in the mouth of the last mentioned screen, the bait plate, and the cylindrical screen secured to the base within the lower edge of the first mentioned screen, substantially as and for the purposes described.

4. In an insect trap, the combination of the supporting plate, the brackets having T-shaped sockets secured to the said plate, the standards having T-shaped ends adapted to engage with the said sockets, the spring catch for securing the standards in place, the screen supported by the said standards, and conical screen supported one within the other and within the first mentioned screen, substantially as and for the purposes described.

5. In an insect trap, the combination of the base, the frame removably secured thereon consisting of standards united by annular bands, the screen carried by said frame, the glass lid hinged over the upper end of the said screen, and the conical screens supported one within the other and within the first mentioned screen by the latter and the bottom plate respectively, substantially as and for the purposes described.

488,895. CYCLE-STAND. WILLIAM M. JOHNSON, Pittsburg, Pa. Filed Apr. 15, 1892. Serial No. 429,534. (No model.)



Claim.—A cycle stand consisting of a slotted base to receive the bottom of the wheel tire, and an upright secured to said base and provided with a clamp to reach over the top of the tire at a point diametrically opposite to the slot in the base, thus making a rigid wheel, substantially as described and shown.

488,896. THILL-COUPLING. ADAM C. LAYMON, Kingston, Pa. Filed Mar. 3, 1892. Serial No. 423,671. (No model.)

Claim.—1. The thill coupling herein described composed of the open hook or eye provided with the anti-rattler in combination with the thill iron formed with pintles to fit in said open eyes and with a tongue to bear against said anti-rattler, said tongue having its rear portion cut away so that the distance between the pintles and the point *b* will be greater than between the pintles and point *a*, the distance gradually increasing from the point above to the point below the pintles, substantially as and for the purposes described.

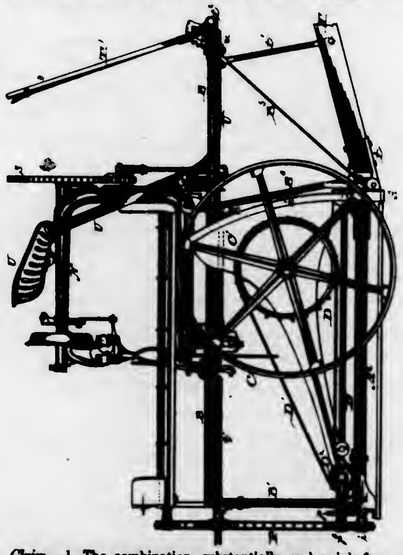
2. The thill coupling herein described composed of the open hook or eye provided with the anti-rattler in combination with the thill iron having shoulders on opposite sides to bear against the face of the hook eye and formed with a tongue having pintles projecting from opposite sides thereof, the rear end of the tongue being cut on a gradual curve from the point *a* above to the point *b* below the pintles so that the distance between the pintles and the point *b* is greater than between the pintles and the point *a* or any other point between these two points, substantially as and for the purposes described.

488,897. HAND-PLOW. JAMES I. METTLER, Creston, Ill., assignor of one-half to Frank W. Mettler, Helena, Mont. Filed Apr. 7, 1892. Serial No. 428,176. (No model.)

Claim.—1. The herein-described improved hand plow, comprising the frame, the handle-bar pivotally secured to said frame, the pivoted arm having a slot therein and a grooved or corrugated inner face, the washer-plate located between said handle bar and arm and having a central aperture and an outer grooved or corrugated face, and the set-screw or bolt passed through said arm and washer-plate, substantially as set forth.

2. The herein-described improved hand-plow, comprising the bail or frame having corresponding side-bars, the wheel having its axle supported by said side-bars, the handle bar pivotally mounted at its lower end between said side-bars, the arm also pivoted between said side-bars and having a slot therein and grooved or corrugated on its inner face, the apertured washer-plate also grooved or corrugated, the set-screw or bolt whereby said arm is held to said handle-bar and the plow-point having its standard provided with grooves or recesses in its edge and located between said side-bars, and the pin holding said standard passed through apertures in said side bars, as set forth.

488,898. GRAIN-BINDING HARVESTER. LEWIS MILLER, Akron, Ohio. Filed Nov. 16, 1889. Serial No. 330,607. (No model.)



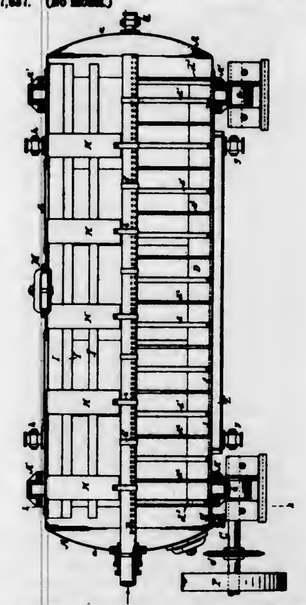
Claim.—1. The combination, substantially as hereinbefore set forth, of the platform-frame; the forwardly projecting longitudinal binder-frame bar securely connected therewith; the hinged tongue; its link and crank-arm; the rocking-lever and detent mounted on the front end of the longitudinal binder-frame bar.

2. The combination, substantially as hereinbefore set forth, of the platform-frame; the forwardly projecting longitudinal binder-frame bar securely connected therewith, the hinged tongue; its link; crank-arm and rocking-lever on the front end of the longitudinal binder-frame bar; the driver's seat; and its supporting-bar or standard secured at its forward end to the projecting end of the longitudinal binder-frame bar, and at an intermediate point to the forward support of said bar.

3. The combination, substantially as hereinbefore set forth, of the transverse frame-bars or sills; the longitudinal frame-bar connecting their stubble ends, the corner-pieces uniting these bars; the projecting brackets or lugs of the front and rear corner-pieces; the short counter-shaft or cross-shaft mounted in the rear bracket; the driving-wheel; its supporting-arm or plate pivoted outside the frame concentrically with the cross-shaft, and extending in advance of the driving-axle, the supporting-arm guide mounted on the front lug; the sprocket-gearing connecting the driving-axle and cross-shaft, and arranged between the driving-wheel and its supporting-arm; the longitudinal actuating shaft or cross shaft extending through the frame both in front and rear; the crank and pitman actuating the cutters; sprocket-gearing actuating the butt-rakes and the reel-driving gearing from the front end of the crank-shaft; and corresponding gearing at the rear actuating the shafts which give motion to the platform-aprons, the elevator, the packer, and the gearing by which the binder and compressor are actuated.

4. The combination, substantially as hereinbefore set forth, of the transverse frame-bars or sills; the longitudinal frame-bar connecting their stubble ends; the short counter-shaft or cross-shaft mounted on the projecting rear bracket of the frame; the driving-wheel outside the frame; its supporting arm pivoted concentrically with the cross-shaft; its front guide; the sprocket-gearing connecting the driving axle and cross-shaft; the longitudinal actuating or crank-shaft extending through the frame and driven by gearing from the cross-shaft; the elevating-aprons; the butt-rakes; the binder-table overhanging the driving-wheel; the packing, compressing and binding mechanism interposed between the driving-wheel and elevator-aprons; sprocket-gearing actuating the butt-rakes from the front; and corresponding gearing at the rear actuating the shafts which give motion to the platform-aprons, the elevator, the packer, and the gearing by which the binder and compressor are actuated.

488,899. WOOD-PULP DRAINER. GEORGE M. NEWHALL and CHARLES I. HAMILTON, Philadelphia, Pa. Filed Jan. 21, 1890. Serial No. 337,637. (No model.)

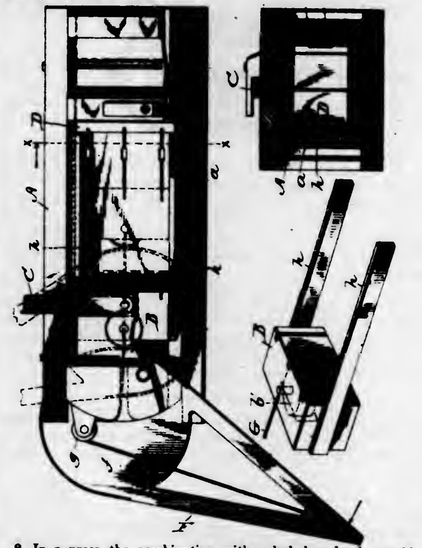


Claim.—1. A filter comprising a closed cylindrical chamber, a semi-cylindrical screen therein, and forming between the casing and the screen a closed chamber *c*, a receiving box E, below said chamber *c* and communicating therewith, outlet pipes leading from said receiving box, a perforated pipe extending from one end of the cylinder to or nearly to the opposite end thereof, blades H extending from said perforated pipe to the casing and inlet and outlet for the material to be treated, substantially as specified.

2. The combination of the screen sections *d*, the bars *d'* connecting said sections and intermediate strengthening bars *d*^{2} between said connecting bars, substantially as specified.

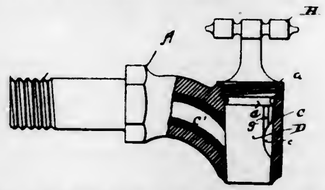
488,400. HAY-PRESS. JOSEPH L. ORR, administrator of JAMES J. Corley, deceased, Chesnuiceu, Ala. Filed Apr. 20, 1892. Serial No. 431,215. (No model.)

Claim.—1. In a press the combination with the bale box, and a follower having a centrally disposed roller on its outer face, of a lever having a cam head, which latter is adaped to travel upon the said roller to move the follower in, a guide roller *g* located to one side of the center of the bale box, and a cable connected at one end with the said follower, passing over the said guide roller and attached at its other end to the outer end of the said lever, substantially as described for the purpose specified.



2. In a press, the combination with a bale-box having guide grooves in its sides, and having transverse grooves, and a block adapted to slide in the transverse grooves and having notches in its ends, of a follower having guides projected from its ends and constructed to work in the said guide grooves and enter the notches in the ends of the said block, substantially as described.

488,401. FAUCET. FRANK S. OWELLS, Morrison, Ill. Filed Apr. 30, 1892. Serial No. 431,292. (No model.)



Claim.—1. A faucet having a tapering plug, said plug having a threaded portion thereon for engagement with the body or casing of the faucet, an opening or passage through said plug, and a surface groove communicating with said opening, substantially as specified.

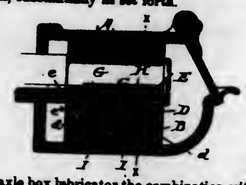
2. The combination with the body portion or casing having the passage therethrough and the chamber in its outer portion, of the tapered plug engaging said chamber, said plug having a handle formed on its upper end, an opening or passage through its inner end, a screw-threaded portion for engagement with the casing, a surrounding groove below said threaded portion, and a channel connecting said groove and the opening through said plug, substantially as specified.

488,402. AXLE-LUBRICATOR. WILLIAM H. POOR, Minneapolis, Minn. Filed June 20, 1892. Serial No. 436,633. (No model.)

Claim.—1. In a car axle box lubricator the combination with an oil reservoir, of a removable apertured cover therefor a guide in the opening in said cover and detachably connected with the said oil cover, a tube adapted to work in said guide and forced toward the journal to be lubricated by spring pressure, stops to limit the upward movement of said tube by engaging with said journal, and an oil feeding material carried by said tube and adapted to feed the oil from the collar by capillary attraction, substantially as set forth.

2. In a car axle box lubricator the combination with an oil reser-

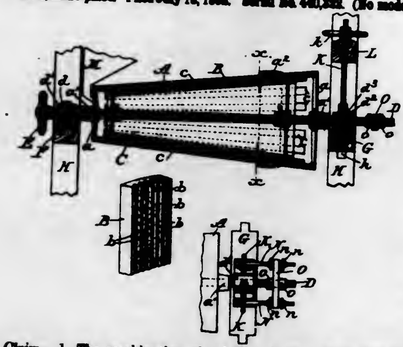
voir, of an apertured cover removably inserted in said reservoir and provided with feet to properly support the same, a guide having a head portion to overlap the sides of the openings in the said cover, and a tube adapted to work in said guide and provided with an oil feeding material, substantially as set forth.



3. In a car axle box lubricator the combination with an oil reservoir, of a guide having projections at one end to enter openings in the corresponding ends of the said reservoir and having a spring at the opposite end provided with projections to enter openings in the opposite end of the said reservoir, and a tube carrying an oil feeding material adapted to work in said guide, substantially as and for the purpose set forth.

4. In a car axle box lubricator the combination with an oil reservoir and a guide, of a tube made in two halves, blocks inserted between the halves, fastenings for securing the parts of the tube and said blocks together, springs for advancing the tube toward the journal, and an oil feeding material carried by said tube, substantially as described for the purpose specified.

488,408. MACHINE FOR CLEANING MALT. ERNST KIRSTEN, New York, N. Y., assignor of two-thirds to Adam Schaefer and Karl Fr. Jonas, same place. Filed July 18, 1892. Serial No. 440,822. (No model.)



Claim.—1. The combination of a shell, a drum, a shaft supporting said drum and shell, swing bearings for said shaft, a vertically adjustable support for one of said bearings, screw-threaded bolts loosely attached to said support in the line of the bearing, a bar engaging said shaft, and nuts on said bolts engaging said bar, substantially as shown and described.

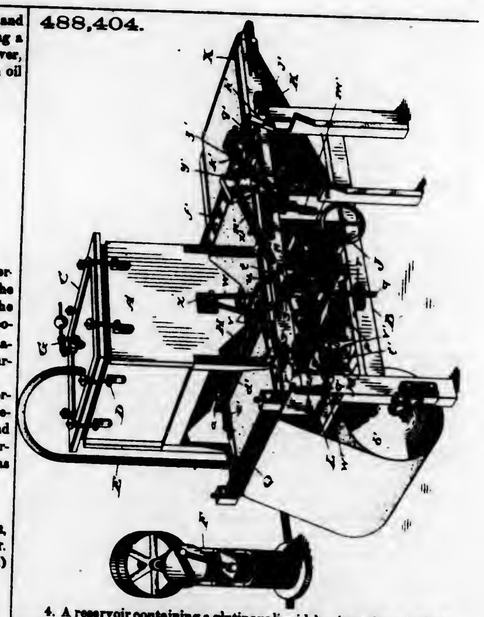
2. The combination with a drum having brushes on its surface and means to rotate said drum, of a shell inclosing said drum, said shell having an interior lining of stone with longitudinal grooves formed in its surface, said grooves being rectangular in cross section and of a width less than their depth, substantially as shown and described.

488,404. CONFECTIONERY-MACHINE. THOMAS ROBERTSON, Toronto, Canada. Filed July 7, 1892. Serial No. 439,208. (No model.)

Claim.—1. A reservoir containing a glutinous liquid and having a tube of rubber or other compressible material extending from it, in combination with means for squeezing the tube to cut off the glutinous liquid and permit the "drop" to fall from the end of the tube; substantially as and for the purpose specified.

2. A reservoir containing a glutinous liquid, and having a tube of rubber or other compressible material extending from it, pneumatic or other means for expelling the glutinous liquid, in combination with means for squeezing the tube to cut off the glutinous liquid and permit the "drop" to fall from the end of the tube; substantially as and for the purpose specified.

3. A reservoir containing a glutinous liquid, having tubes of rubber or other compressible material extending from it, and means for squeezing the tube to cut off the glutinous liquid in combination with a drop receiver intermittently moved in a horizontal direction; substantially as and for the purpose specified.



4. A reservoir containing a glutinous liquid, having tubes of rubber or other compressible material extending from it, and means for squeezing the tube to cut off the glutinous liquid in combination with a drop receiver intermittently moved in a horizontal direction, and mechanism to cause the tubes and drop receiver to part when the "drops" are deposited thereon, substantially as and for the purpose specified.

5. A hermetically sealed reservoir containing a glutinous liquid and having tubes of rubber or other compressible material extending from it, in combination with an air pump connected to the reservoir and a safety valve located thereon, substantially as and for the purpose specified.

6. A hermetically sealed reservoir containing a glutinous liquid, subjected to pneumatic pressure, a safety valve placed upon the reservoir from which reservoir tubes of rubber or other compressible material project, and means for squeezing the tube to cut off the glutinous liquid in combination with intermittently moving paper carried below the tubes, substantially as and for the purpose specified.

7. A reservoir containing a glutinous liquid and having tubes of rubber or other compressible material extending from it, a web of paper carried below the tubes and intermittently moved in a horizontal direction, in combination with mechanism by which the paper receives at regular intervals an extra horizontal movement and mechanism for cutting the paper immediately after said extra movement, substantially as and for the purpose specified.

8. A reservoir containing a glutinous liquid and having tubes of rubber or other compressible material extending from it, pneumatic or other means for expelling the glutinous liquid from the tubes, means for squeezing the tubes to restrain at given intervals the flow of glutinous liquid through them, in combination with a drop receiver intermittently moved in a horizontal direction, and mechanism to cause the paper to recede from the tubes when the "drops" are deposited thereon, substantially as and for the purpose specified.

9. A reservoir containing a glutinous liquid and having tubes of rubber or other compressible material extending from it, pneumatic or other means for expelling the glutinous liquid from the tubes, means for squeezing the tubes to restrain at given intervals the flow of glutinous liquid through them, in combination with an endless apron carrying a drop receiver intermittently moved in a horizontal direction, mechanism to cause the drop receiver to recede from the tubes when the "drops" are deposited and mechanism to impart a vibratory motion to the drop receiver after it has receded from the tubes, substantially as and for the purpose specified.

10. A hopper-shaped reservoir A, containing a glutinous liquid and provided with a hermetically sealed detachable cover C, a pipe E, connecting the interior of the reservoir A, with the air pump F, a series of tubes I, extending from the bottom H, of the reservoir and a pair of jaws e, extending across and on each side of the tubes, in combination with means for intermittently moving the jaws to grip the tubes, substantially as and for the purpose specified.

11. A reservoir containing a glutinous liquid, a series of tubes extending from it, a pair of jaws v, suspended from the arms w, which are respectively pivoted on the independent vertical plate, a bracket y, located between the arms w, each provided with a spring z, arranged to act against the bracket y, a pin a', projecting from each jaw v, in combination with a vertically moving plunger having a crosshead l, with horns u, formed on it and operated so that the horns u, will intermittently come in contact with the pin a', in such a manner as to force the jaws v, against the tubes, substantially as and for the purpose specified.

12. An endless apron K, supported at one end by the drum L, and carrying a web of paper b', a suitably journaled shaft M, fixed to the drum L, and having a spur-wheel N, fixed to it which drives the rollers Q, and a ratchet wheel R, fixed to the shaft M, in combination with an eccentric U, fixed to the driving shaft J, adapted to operate the pawl with the ratchet-wheel for the purpose of imparting an intermittent motion to the endless apron K, and paper b', substantially as and for the purpose specified.

13. A hinged table d located below the endless apron K, and paper b', which derives an intermittent motion, in combination with a cam i fixed to the shaft J, rocking beam h operated by said cam, and the rod g connecting the beam to the table and arranged to impart at regular intervals a vertical movement to the table, substantially as and for the purpose specified.

14. The combination with an intermittently moving apron K supporting a drop receiver of a revolving agitator 5, arranged to impart a vibratory motion to the said apron, substantially as and for the purpose specified.

15. A long arm n', pivoted on the shaft M, and supported by the block o', formed on the spring dog p', a crank arm r' extending from the arm n' and carrying the pawl s', in combination with the disk t' fixed to the shaft M, a projection u', and a finger v', arranged substantially as and for the purpose specified.

16. A cutter f', suitably journaled in the frame of the machine and extending across the face of the paper b', a crank arm k', fixed to the cutter f' and actuated by a spring j', in combination with the arm k' and mechanism for causing the said arm to fall and strike the crank k', substantially as and for the purpose specified.

17. A cutter f', suitably journaled in the frame of the machine and extending across the face of the paper b', a crank arm k', fixed to the cutter f' and actuated by a spring j', in combination with the dog m', pin x', pivoted arm n' and spring dog p', substantially as and for the purpose specified.

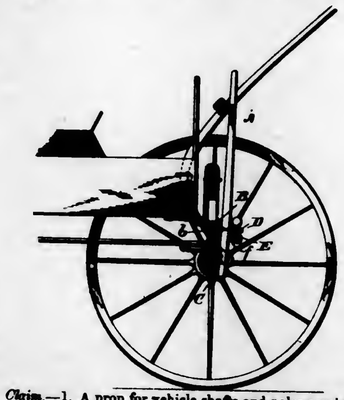
18. An endless apron intermittently moved and supporting a web of paper, a grooved metal plate held stationary on a line with the main surface of the apron and below the paper, rollers to carry the apron below and clear of the stationary plate, in combination with a cutter extending across the surface of the paper immediately above the grooved plate and operated by mechanism to bring it at certain intervals in contact with the paper, substantially as and for the purpose specified.

488,405. SWITCH AND FROG. EDWARD SAMUEL, VICTOR ARGERER, and CHARLES A. PHILANDER, Philadelphia, Pa., assignors to the William Wharton, Jr., & Company, Incorporated, same place. Filed May 16, 1892. Serial No. 433,163. (No model.)

Claim.—1. The combination of the main rail and switch rail, the head portion of the main rail being cut away between the points x and y, the flange of the switch rail being turned down and cut on a taper to fit into the space in the main rail, substantially as described.

2. The combination of the main girder rail, having the head portion cut away between the points x and y, with a switch rail having its guard portion partly cut away and partly bent over and extended between the points x and y, said switch rail being secured to the main rail, a block between the two rails, a pivoted tongue, a pivot for said tongue having its bearing in the block, the tongue resting directly upon the rails, substantially as described.

488,406. PROP FOR POLES OR SHAFTS. ALFRED SCARLETT, West Superior, Wis. Filed June 4, 1892. Serial No. 435,522. (No model.)



Claim.—1. A prop for vehicle shafts and poles consisting of the lever, a grab hook having pivotal connection with said lever, and means for adjusting the said grab hook to and from the lever, substantially as and for the purpose set forth.

2. A prop for vehicle shafts and poles consisting of a lever, a plate secured to said lever, a grab hook having pivotal connection with said plate, and means for adjusting the said grab hook to and from the lever, substantially as and for the purpose set forth.

3. A prop for vehicle shafts and poles consisting of a lever, plate C attached to said lever, grab hook B pivotally connected with plate C and having lug b on its rear face, rod D extending through a transverse opening in the lever A and pivotally connected with the lug b and threaded at its outer end, and a thumb nut mounted on the threaded portion of said rod D, substantially as set forth.

488,407. UMBRELLA. CARROLL THOMAS, Omaha, Nebr. Filed Apr. 27, 1892. Serial No. 430,838. (No model.)

Claim.—1. The herein-described improved umbrella having its stick provided with a cylindrical end for supporting the notch of the umbrella frame, the removable drip cup, and the connection between said drip cup and cylindrical end for binding said notch, substantially as set forth.

2. An umbrella having its tip made hollow and provided with a catch basin and a removable ferrule, substantially as set forth.

3. An umbrella having its tip made hollow and composed of an inner cylindrical section having a mouth at one end, and an outer cylindrical section inclosing said former section, and having a removable ferrule, substantially as set forth.

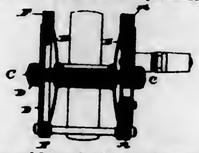
4. The herein-described improved umbrella having its tip made hollow and composed of two telescoping sections, and a catch-basin attached to one of said sections, as set forth.

5. The herein-described improved umbrella, having its stick provided with a threaded extension, the drip-cup comprising a tube having a threaded end engaging said extension and also having holes or ports, the bell or flared mouth inclosing said holes or ports, and the removable end-plug or ferrule, substantially as set forth.

6. The herein-described improved umbrella having its stick provided with a threaded extension, the drip-cup comprising an inner tube having a threaded end engaging said extension and also having holes or ports, the bell or flared mouth inclosing said holes or ports, the outer tube movable on said inner tube and having an elastic ring or washer, and the removable end-plug or ferrule in the outer end of said outer tube, substantially as set forth.

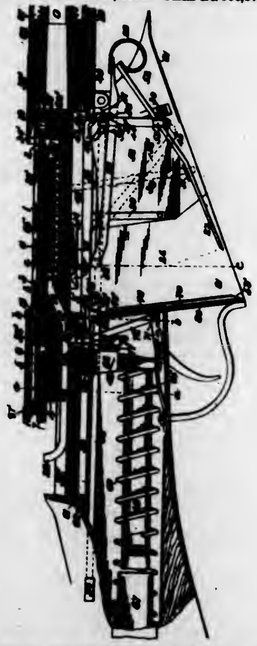
7. In an umbrella, the combination with the stick having a tube or cylinder secured thereto and internally screw threaded at its outer end, of the double threaded rod screwed in said end of said tube or cylinder and having a flange or collar, the set screw for holding said rod, the notch held by said flange or collar, and the drip cup removably secured to the outer portion of said double threaded rod, substantially as set forth.

488,408. FISHING-REEL. JULIUS VON HOFE, Brooklyn, N. Y. Filed July 20, 1892. Serial No. 440,666. (No model.)



Claim.—A fishing reel frame having a side opening, a detachable plate located within the frame and covering said opening, in combination with an axially perforated spool, and a removable headed spindle passing axially through said spool and detachable plate and provided with a screw and nut, substantially as shown and described.

488,409. RECOIL-OPERATED MAGAZINE-FIREARM. HARRY K. WHITE, U. S. Navy, assignor to the White Magazine Rifle Company, Alexandria, Va. Filed Mar. 27, 1891. Serial No. 386,679. (No model.)



Claim.—1. The combination with an inclosing stock or casing, of a gun barrel having external grooves to permit a circulation of air between the barrel and casing, and offer increased heat radiating surface, substantially as described.

2. The combination with the inclosing casing having internal grooves, of the gun barrel having external grooves, thus forming an air space between the barrel and casing, substantially as described.

3. The combination with the gun barrel, of an inclosing casing having internal grooves and ridges, forming air spaces between the casing and barrel, substantially as described.

4. The combination with the barrel having external ribs and grooves extending circumferentially, of the inclosing casing having internal longitudinal ribs and grooves forming air passages, substantially as described.

5. The combination with a gun barrel, of an inclosing casing about the muzzle thereof, there being passages between the barrel and casing, near the muzzle, and an air inlet at the rear thereof, so that the blast of discharge will draw a current of air between the barrel and casing, substantially as described.

6. The combination of a gun barrel and an inclosing casing therefor, and longitudinal ribs between the barrel and casing, and air passages between said ribs, substantially as described.

7. The combination with the gun barrel, of a casing inclosing the barrel, leaving an air space between, and an air compressor communicating to said air space, substantially as described.

8. The combination with the gun casing, of a barrel having a longitudinal movement therein, and a space between the same, and an air compressor having a moving part connected to the barrel, so that the movement of the barrel actuates the compressor to force air into the space between the barrel and casing, substantially as described.

9. The combination with the casing and the gun barrel longitudinally movable therein and having a space between the same, of an air compressing cylinder connected to the barrel, a piston in said cylinder connected to the casing, and connections whereby an air jet is guided from the compressor to the space between the barrel and casing, substantially as described.

10. The barrel supported in the stock to have longitudinal movement therein, a piston plunger connected to the barrel, and an open ended cylinder in the stock into which cylinder the piston closes on the recoil of the barrel (forming a buffer), the parts in combination substantially as described.

11. The barrel supported in the stock to have longitudinal movement therein, the piston plunger connected to said barrel, a cylinder in the stock into which the piston closes on recoil, and a coil spring surrounding the cylinder and piston and acting to return the barrel after recoil, substantially as described.

12. The barrel supported in the stock to have recoil therein, the plunger connected to said barrel, the cylinder into which said plunger fits closely and having a valve therein in position to be opened by the plunger near the end of its rearward movement to relieve air pressure, and a spring to close the valve as the plunger moves forward, substantially as described.

13. In a breech loading gun, the combination with the barrel, of the longitudinally sliding bolt, having a transverse passage through the bolt the movable bolt locking bar extending transversely of said passage and moving with said bolt, and locking shoulders in the frame with which said locking bar engages substantially as described.

14. In a breech loading gun, the combination with the longitudinally sliding bolt, of the locking bar extending transversely of the bolt and having a groove in one face, and a locking shoulder on the frame, with which the locking bar engages said shoulder constructed to enter the groove in the locking bar and permit the backward movement of the locking bar and bolt when the locking bar is properly shifted, substantially as described.

15. In a breech loading gun, the combination with the bolt, having two pieces with independent longitudinal movement, of the transverse locking bar and shoulders on the frame with which said bar engages, and inclines on one of the bolt pieces engaging a projection on the locking bar to shift said bar laterally, substantially as described.

16. The combination with the barrel or chamber having a recess for the extractor, of the sliding bolt having an extractor which enters said recess and engages the cartridge when the breech is closed, and a movable piece on the bolt in position to enter said recess and firmly hold the extractor in its engagement with the cartridge, substantially as described.

17. The combination with the bolt having cylindrical headed firing pin with its striking point in eccentric relation to the pin head, of the spring having its rear bearing against the bolt, and its front end in line with the firing pin point and bearing against the pin head, substantially as described.

18. The combination, with the bolt of the firing pin having a projection thereon, and the transverse locking bar having an incline which engages the projection on the pin to start the firing pin back, substantially as described.

19. The combination with the bolt and its firing pin having a projection, of the transverse locking bar having a recess which is in the line of movement of said projection when the bar is in locking position, substantially as described.

20. The combination with the bolt and firing pin, of the transverse locking bar having an abutment in position to engage the firing pin, in one position of said pin, whereby the shifting of said transverse bar is prevented, substantially as described.

21. The barrel and connections supported in the stock and having a longitudinal movement therein under the impulse of recoil, a locking bar engaging therewith, and the trigger connected to the locking bar so as to unlock the barrel when the trigger is pulled, in combination substantially as described.

22. The combination of the sear and a link connected thereto, the trigger connected to said link, the stock and barrel having a longitudinal movement in the stock, and a barrel locking bar connected to the trigger in such manner as to be released when the sear is released, substantially as described.

23. The combination of the stock barrel and connections having a longitudinal movement in the stock under impulse of recoil, a locking bar engaging the barrel mechanism, a spring acting to hold said bar in locking engagement, and the trigger having a surface in position to compress the spring and unlock the bar when the trigger is pulled, substantially as described.

24. The combination with the corrugated or fluted barrel and its inclosing casing, of a cylindrical barrel cover for the breech portion of the barrel, extending within the casing proper and attached to the barrel, substantially as described.

25. The combination with the barrel having fluted surface, of a cover over the same and supporting pieces connected to said barrel cover, and resting on the barrel substantially as described.

26. The barrel having fluted or corrugated surface, the filling pieces attached to the barrel, a cover for the rear portion of the barrel resting on said filling pieces, and the sight attached to the barrel by screws passing through the cover and into the filling pieces, in combination substantially as described.

27. The bolt and its locking connections, the transversely moving locking bar, the slide having inclines engaging said bar to shift the same, and a spring actuated draw rod having operative engagement with said slide, in combination substantially as described.

28. The bolt and its longitudinal slide operatively connected, the locking bar, the bolt closing spring, and a draw rod engaged by said spring said rod having a projection movable into or out of engagement with the bolt operating slide, in combination, substantially as described.

29. The frame, the bolt moving longitudinally therein, and having a detent, the magazine and a movable frame near the front of the bolt and in the path of movement of the cartridges, said frame operatively connected to the bolt detent, all combined substantially as described.

30. The magazine receiver having a central partition, and a spring catch extending along said partition and overhanging the opposite compartment, so that the cartridge bodies in the compartment having the spring will hold said spring to place as a detent to the other compartment, substantially as described.

31. The magazine open at both edges and having a central partition and having its side plates composed of thin metal, and corrugated near each edge so that the corrugations serve as clasps, in combination with the magazine receiver having projections with which either of said clasps on the magazine may engage, substantially as described.

32. The magazine receiver having a partition plate at the front of the magazine, in combination with the detachable magazine having a partition which aligns with and forms a continuation of the said receiver partition when the magazine is in place, substantially as described.

33. The magazine receiver having a recess at its forward end, and a movable spring follower in position to press upward on the cartridges in the magazine under the receiver proper, or to move forward into said recess away from the magazine, in combination with the detachable magazine having its mouth opening upwardly into the receiver proper, substantially as described.

34. The combination with the magazine-receiver having a recess at the front thereof, of a spring follower, and an incline in said receiver engaging a projection on said follower, whereby said follower may be put under tension by a longitudinal movement in said recess, substantially as described.

35. The partitioned open ended magazine and recessed magazine receiver, and a spring follower for each compartment of the magazine located in said receiver, all the followers being connected to a single frame and movable therewith, in combination, substantially as described.

36. The magazine-receiver provided with spring catches in position to hold down the cartridge follower when entering the magazine from the front, said receiver having a recess in front of the magazine, in combination with the follower having projections in position to disengage said catches by the longitudinal movement of said follower, all substantially as described.

37. The barrel, the frame, the bolt, and bolt closing mechanism substantially as described, a detent engaging the bolt to hold it open, and a thumb piece at the side of the frame connected to the bolt, and engaging the bolt detent as the bolt reaches its extreme rear position, all combined substantially as described.

38. The spring actuated bolt closing mechanism and a detent therefor, the magazine, and a swinging frame at the front of the magazine in the path of movement of the cartridges, the frame having an actuating rod connected to said detent, in combination substantially as described.

39. The magazine, the bolt and bolt detent, the swinging frame in proximity to the magazine and hung on movable pivots in the frame, and the actuating rod connecting the swinging frame and bolt detent, in combination substantially as described.

40. The receiver, the magazine, the bolt and bolt detent arranged substantially as described, the swinging frame connected to said detent, and the safety stop in the path of movement of the frame, to prevent the movement of said frame when a cartridge is in the gun-chamber, all combined substantially as described.

41. The receiver, magazine, and the bolt closing mechanism constructed to operate substantially as described, the rocking frame connected to the bolt closing mechanism and having an inclined face, and the safety stop engaging said frame when held by a cartridge in the chamber, and provided also with an inclined operating face, all combined substantially as described.

42. The magazine and the movable magazine stop, and the movable cartridge follower in the magazine, said follower having a part or arm which engages the magazine stop to close the same, whenever the follower is moved from its feeding position, the parts combined substantially as described.

43. The receiver and the bolt having an actuating arm connected thereto, and the removable thumb piece connected to said arm by a spring actuated pin, in combination substantially as described.

44. The combination with the magazine having a spring actuated follower, of a rock shaft having projections at definite distances apart to act as detents to said follower, and an engaging surface on the movable part of the breech in position to engage and swing said rock shaft to release the follower during the bolt movement, substantially as described.

45. The combination with the double magazine having a spring follower in each compartment, of a rock shaft at each side of the magazine having spaced projections acting as detents to the followers, and projections from the moving part of the breech in position to engage and swing the rock shafts, and a detent for the cartridges in one apartment whereby the magazines may be made to feed successively, substantially as described.

46. The frame having an inclined slot in its side, and the magazine follower having a pin projecting through said slot, in combination substantially as described.

47. The combination with the receiver the magazine and breech bolt of a curved plate hung in the receiver to turn about the breech bolt and act as a magazine stop and loading floor, substantially as described.

48. The receiver and a bolt moving longitudinally therein, said bolt having an extractor, the magazine, and the magazine stop at the mouth of the magazine and in the path of movement of a cartridge which is retracted by the extractor, in combination substantially as described.

49. The combination with the magazine and the curved piece constituting the magazine stop, said piece having a spiral groove therein, of the movable magazine follower having a projection which enters said groove in the magazine stop, substantially as described.

50. A magazine gun having a magazine receiver provided with spreaders, and a magazine having spring sides and a contracted mouth, said magazine engaging said spreaders as the magazine is forced into the receiver, whereby the mouth of the magazine is opened to pass cartridges, all substantially as described.

51. A magazine gun having a magazine receiver, a movable magazine ejector in said receiver, and a magazine having elastic holding catches, which catches are detached by means of said magazine ejector, where it engages the magazine all substantially as described.

52. The gun having a magazine receiver, the spring actuated follower movable in said receiver out of the way of the magazine and contained cartridges, and the detachable magazine having its sides bent in to guide the cartridge heads, and open at front so that the said follower may pass under the cartridges when the magazine is in its receiver, all substantially as described.

53. The combination with the magazine, of the tray or follower therein, and a curved spring secured to the front of said tray and to a frame independent of the magazine, and acting to lift said tray when in operation, substantially as described.

54. The combination with the bolt and its operating slide, of a handle or thumb piece having a spring leaf in contact with the operating slide, a retaining pin serving to retain said thumb piece in contact with the slide, and a pin on the frame in position to press back

and disengage said retaining pin at the proper time to disconnect the slide and thumb piece, substantially as described.

55. The combination with the stock and recoil-actuated barrel moving longitudinally therein, the spring for returning the barrel, and the cylinder and piston working therein, said piston and cylinder constructed to act as a vacuum buffer to check the return of the barrel to its forward position, substantially as described.

56. The combination with the stock and barrel arranged to move longitudinally therein, a cylinder in the stock with its mouth open to the front, a piston attached to the barrel to close into the cylinder on the recoil, a spring valve at the rear end of said cylinder, in position to be opened by the piston in its extreme backward movement, and a spring acting on the barrel to press it forward, substantially as described.

57. The combination with the barrel, of a spirally coiled wire wound on the barrel and presenting ridges on the outer surface of said barrel to secure quick radiations of heat, substantially as described.

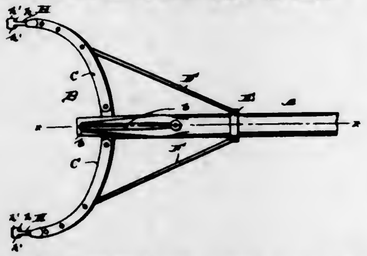
58. The combination with the barrel and inclosing casing having a space between, of the wire spirally wound on the barrel and presenting exterior ridges, the rear ends of the wire extending back in about a right line into the enlarged or screw threaded portion of the barrel.

59. The barrel having a recess for the extractor, the bolt having an extractor in position to enter said recess, a movable piece actuated by the bolt locking mechanism to enter said recess and lock the extractor to the cartridge, and a retaining catch acting on said movable piece to hold the same out of engagement with the extractor when the bolt starts to close, the parts in combination substantially as described.

60. The breech bolt consisting of a cylindical body portion having transverse perforations and slotted longitudinally for the reception of the firing pin, and the cover extending lengthwise in the upper portion of the said bolt body, and having a transverse perforation in line with the hole in the body, and securing devices, combined substantially as described.

61. The receiver having shoulders or abutments, the bolts, and the locking bar extending across the bolt in position to engage said abutments, and an operating means moving in line with the bolt for throwing the locking bar into or out of locked position, all in combination substantially as described.

488,410. ADJUSTABLE WAGON-POLE. FRANK L. WOOD, Racine, Wis. Filed June 9, 1892. Serial No. 436,126. (No model.)



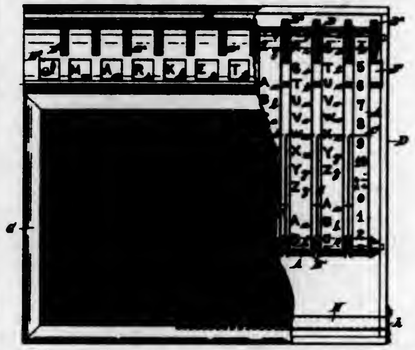
Claim.—1. The combination with a vehicle pole or tongue, having guide loops on the under side of its rear portion, of the curved arms B, B, loosely connected at their inner ends to each other, and adjustably held in said loop, and the brace links, for said arms, substantially as specified.

2. The vehicle pole or tongue, comprising the pole or tongue proper, the plate secured to the under side thereof, a slotted guide loop in said plate, the circle arms loosely connected to each other at their inner ends and adjustably held in said guides by their connecting bolt engaging the slot thereof, the adjusting and securing screw for said bolt, and the brace links for said arms, substantially as specified.

3. In a vehicle pole or tongue, the combination with the pole or tongue proper, of the circle arms loosely connected to each other at their forward ends, and capable of a lateral, radial expansion and contraction with relation to each other, and to the pole or tongue, said arms at their rear ends having perforated barrels to receive the coupling bolts of the shackles, the perforations in said barrels being of larger diameter at the ends than at the center, substantially as specified.

4. In a vehicle pole or tongue, the circle arms B, B, having barrels H, H, on their rear ends, said barrels having an oval shape at their ends, and formed with perforations to receive the coupling bolts, said perforations being larger at their ends, substantially as specified.

488,411. SLATE ATTACHMENT. MAUD WYMAN, San Francisco, Cal. Filed Apr. 11, 1892. Serial No. 428,642. (No model.)



Claim.—1. The combination with the box D, the slate G, extending from the lower nearly to the upper edge of such box the metal plate E extending over the upper portion of the box, and connecting the slate and the upper end of such box, said plate having a series of sight openings E', and a series of elongated openings, arranged above and intermediate the sight openings, of the shafts *b b'* journaled in the box, a series of independently journaled spools B B' mounted on such shafts, the spools on the upper shaft *b* having collars B^3 projecting through the elongated slots in the plate E, a series of endless bands provided with letters &c. mounted over the said spools, and a series of tension springs C located within the box, engaging the bands, all substantially as and for the purposes described.

2. A device of the character described, consisting of a box having a cover portion formed with a slate or black board section, and a remaining cover portion having a series of sight apertures and a series of elongated openings arranged intermediate, and above the sight apertures, roller shafts journaled in the said box, a series of endless bands provided with letters, movable under the sight apertures, said bands held spaced apart and held on spools independently and loosely journaled on the said shafts, serrated disk portions formed on the upper spool sections, projecting through the aforesaid elongated slots whereby any one of the bands can be independently moved by finger pressure, and tension devices mounted within the box engaging each separate tape, to hold it in frictional contact with its respective spools all substantially as and for the purpose described.

3. The combination with the box D, the slate G, and the plate E forming the top thereof, said plate having a series of sight apertures E' E^2, a concaved depression *e* at its lower edge, and a series of elongated slots, at its upper end, the central support, the shafts *b* and *b'* mounted in the sides of the box and on the said central support a series of spools B' independently journaled on the shaft *b'*, a series of spools B independently journaled on the shaft *b*, and having flanges or collars B projecting up through the elongated slots in the plate E, the endless bands provided with letters &c. mounted upon the spools B B' and the tension springs C, all arranged substantially as and for the purpose described.

488,412. DRYING-KILN FOR LUMBER. HERMANN C. ZAPPERT, St. Louis, Mo. Filed Apr. 12, 1892. Serial No. 428,884. (No model.)

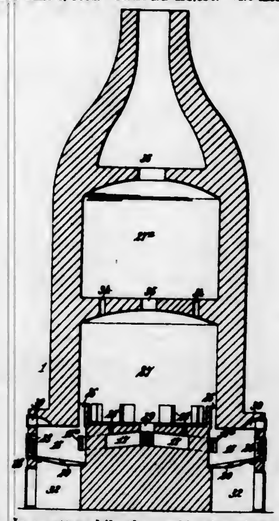
Claim.—1. The combination, in a lumber drier, of a duct extending beneath one side of the compartment containing the lumber and discharging into said compartment and a receiving duct beneath the floor of the compartment with a receiving aperture varying in width and a suction duct communicating with the receiving duct in proximity of the narrowest part of the receiving aperture.

2. The combination, in a lumber drier, of a suction duct, a receiving duct in communication with the suction duct and tapering from the point of communication and an aperture extending lengthwise of the receiving duct and connecting the same with a compartment for the lumber, substantially as set forth.

3. In a lumber drier, a receiving duct lessening in section toward the ends, a suction duct in connection with the wider part of the receiving duct, and an aperture giving communication between the receiving duct and the drying compartment and decreasing in width toward the suction duct, substantially as, and for the purpose set forth.

4. The combination, in a lumber drier, of a drying compartment, two air-supply ducts extending endwise beneath one side of the compartment and having damper governed openings forming means of communication with the compartment, a steam coil in one of the ducts, a receiving duct running beneath the compartment at a distance from the air supply ducts with an aperture receiving air from the compartment, and a suction duct in communication with the receiving duct and with the exhausting device, substantially as set forth.

488,413. POTTERY-KILN. WERNER H. SCHMIDT and OTTO G. HESS, Wheeling, W. Va., assignors to the Ohio Valley China Company, same place. Filed June 6, 1892. Serial No. 436,057. (No model.)



Claim.—1. In a pottery kiln, the combination with the inclosing wall thereof, of one or more girdles, surrounding the same at suitable intervals, and having their ends lapped and confined by loops, wedges engaging opposite shoulders on said overlapping ends for taking up any slack in said girdles produced by expansion and subsequent contraction of the wall of the kiln, and a series of vertical supports, interposed between the wall of the kiln and the surrounding girdles, substantially as described.

2. In a pottery kiln, the combination with the wall of girdles arranged upon its exterior face and tightly clasping the wall to prevent excessive expansion, said girdles having overlapping, shouldered ends confined by loops, and wedges engaging said shoulders to take up any slack in said girdles, the latter being provided, at points near the entrance-opening of the kiln, with pivotally attached sections, the pivotal point being upon one side of the said entrance and the overlapping ends of said sections upon the other side of said entrance-opening of the kiln, substantially as described.

3. In a pottery kiln, the combination with the combustion-chambers having grates inclined downward from their outer toward their inner ends, the higher ends being arranged adjacent to an air and fuel-supply opening of air-directing plates arranged in said opening at substantially the same angle with the grate, substantially as described.

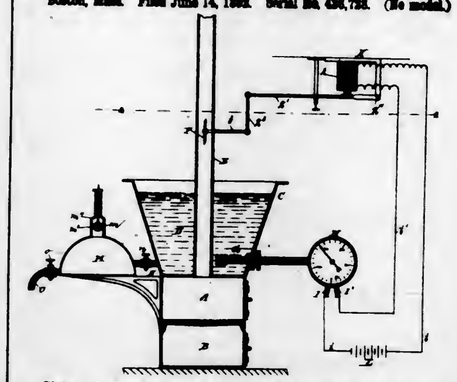
4. In a pottery kiln, the combination with the wall of the kiln of surrounding girdles, one or more, their overlapping ends provided with opposite shoulders, wedges inserted between said shoulders and vertical rails interposed between the wall and girdles and supporting the latter, substantially as described.

5. In a pottery kiln, the combination with a kiln-chamber having a central heat passage in its floor, of a series of combustion chambers arranged about the foundation of the kiln, radial passages opening into said central passage and communicating with flues diverging from their outer ends and entering the rear of the combustion chambers at or near the sides thereof, a series of vertical heat passages entering the kiln-chamber and communicating with the radial passages last referred to and a separate series of vertical heat passages having communication with said kiln-chamber and with the combustion chambers direct, substantially as described.

6. In a pottery kiln the combination with a kiln-chamber having a central heat-passage in its floor, of two series of heat-passages radiating from said opening, one series supplied by flues which open from the rear of the combustion-chambers on both sides the median line thereof and converge to points of communication with said passages, between the said combustion-chambers and the central-heat passage and the second series alternating with the first and supplied from curved passages opening through the adjacent lateral walls of the combustion-chambers, at or near the rear of said chambers, substantially as described.

7. In a pottery kiln, the combination with a kiln-chamber of a series of combustion-chambers arranged around the same and having heat-passages communicating therewith, a corresponding series of draft-openings in the front wall inclosing the combustion-chambers and above the outer ends of the downwardly and rearwardly inclined grates therein, each draft-opening having a series of air-directing and air-heating plates, arranged at an angle substantially equal to the angle of inclination to the fire-grates, and means for regulating the admission of air, or entirely cutting off the same, substantially as described.

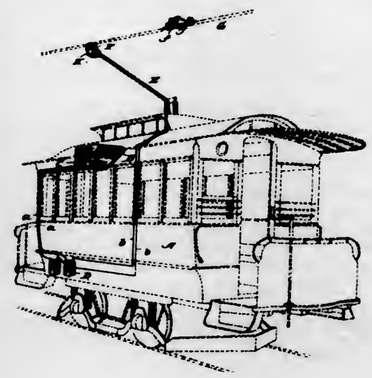
488,414. APPARATUS FOR HEATING TAR. JOHN H. G. SOMMER, Boston, Mass. Filed June 14, 1892. Serial No. 436,738. (No model.)



Claim.—1. In an apparatus for pitching barrels, the combination with the kettle C and means for heating the same, of the quantity chamber M having a valved air inlet *m* and a valved discharge pipe O, and the valved pipe N that connects said kettle and chamber, substantially as shown and described.

2. The herein described apparatus for pitching barrels consisting of the furnace A having a smoke stack E provided with a damper F, the kettle C, a thermometer and thermostat connected with the kettle, an electro-motor and connections between the thermostat and the damper, the quantity chamber M having a valved discharge pipe O, and the valved pipe N that connects said kettle and chamber, substantially as described.

488,415. MEANS FOR OPERATING STATION-INDICATORS. ROBERT B. AYERS, New York, N. Y. Filed Sept. 1, 1892. Serial No. 444,795. (No model.)



Claim.—1. In means for operating station indicators of railway car systems, the combination with the trolley wire and trolley, and an automatic indicator located within a car, of electric contacts carried by the trolley, movable devices for closing said contacts from the trolley wire mechanically, and a suitable battery and wire connections, substantially as described.

2. In means for operating station indicators of railway car systems, electrical contacts carried by the trolley and movable mechanical devices for automatically closing said contact directly from the trolley wire, substantially as described.

3. In means for operating station indicators of railway car systems, electrical contacts supported by the trolley, mechanical devices for acting upon or closing said contact, and means for operating said mechanical devices from the trolley wire substantially as described.

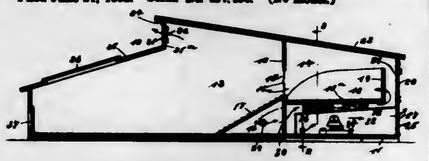
4. In means for operating station indicators of railway car systems, electrical contacts supported by the trolley, and a movable spring restored arm the depression of which arm automatically closes said contact, substantially as described.

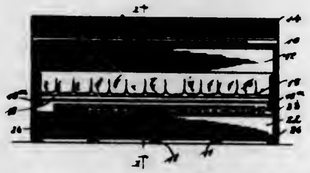
5. The movable carved arm with its rods and springs, and the box or casing in which the same works, the contact spring working in connection with one of said rods, and the spring-pressed pawl held by the other rod, the ratchet wheel formed with teeth of separate fineness, and the lever-escapement provided with an adjustable weight, the whole being arranged and operating substantially as described and shown.

488,416. COMPOSITION FOR REMOVING PAINT OR VARNISH FROM WOOD. GEORGE I. BALL, Allegheny, Pa. Filed Aug. 17, 1892. Serial No. 443,268. (No specimens.)

Claim.—The herein described composition of matter for removing paint and varnish from wood or other substances, consisting of benzol, fusel oil, and alcohol, mixed in about the proportions stated.

488,417. CHICKEN-BROODER. EARL BARNEY, Schenectady, N. Y. Filed June 21, 1892. Serial No. 437,460. (No model.)

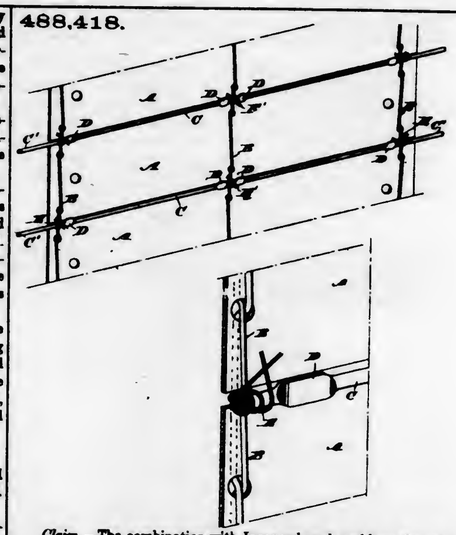




Claim.—1. A brooder comprising a main coop or structure having communicating compartments, one serving as an exercising room and the other as a mother, an air inlet connected with the mother compartment and an air outlet opening from the exercising room, a chick-supporting tray arranged within the mother, and a heating chamber arranged beneath the tray, said chamber having an independent air inlet and outlet and being entirely separated from the mother, and a passage 28 extending from the air inlet of the mother compartment between the lower side of the tray and upper closed wall of the heating chamber to a space between the rear end of the tray and the adjacent wall of the mother compartment, substantially as described.

2. A brooder comprising a main coop or structure having communicating compartments, one serving as an exercising room and having a suitable door therein and the other as a brooder proper or mother, air inlets opening into the brooder proper, air outlets opening from the exercising room, a removable tray arranged within the brooder proper, a heating chamber formed in the lower portion of the brooder proper and entirely shut off from the same, an evaporating pan supported above the heating chamber and between it and the tray, suitable doors for the heating chamber and for the brooder proper, and independent air inlets and outlets for the heating chamber, substantially as described.

488,418. JACQUARD-CARD WIRE. ALFRED BENTLEY and THOMAS W. BENTLEY, Paterson, N. J. Filed Apr. 4, 1892. Serial No. 427,671. (No model.)



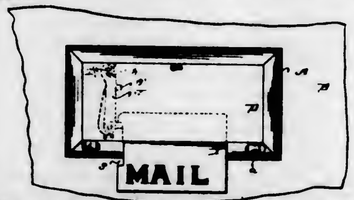
Claim.—The combination with Jacquard cards and laces for connecting the same, of a wire extending between the adjacent cards and formed with flattening parts, and tying strings engaging the said wires at the flattened parts, the said tying strings also engaging the said laces, substantially as shown and described.

488,419. HOUSE-DOOR LETTER-BOX. BENONA A. BLAKENEY, Grand Haven, Mich. Filed Oct. 24, 1891. Serial No. 409,726. (No model.)

Claim.—1. In a mail box of the character herein described, the combination with the door having the slot E therein, of the box or receptacle secured to said door and having a slot E' in its rear wall registering with said slot E, the slot *e* in the top of said box, the hinged plate C inclosing said slot and opening inwardly, said plate being also arranged when operated to close the lower portion of the box, the pivot rod I having the thumb plate, and the signal, all substantially as specified.

2. In a mail box of the character herein described, the combination with the door, having the slot E therein, of the box or receptacle having a slot E' in its rear wall registering with said slot E, the hinged door provided with a slot, the slot *e* in the upper end of said box, the plate C arranged to close said slot, and operated as specified, the signal plate hinged to the upper portion of said box, the rod or plunger extending through the door, a catch or hook on the outer end of said plunger, acting to normally hold said signal plate down, and a spring arranged to throw said plate upwardly when released from said hook or catch, substantially as specified.

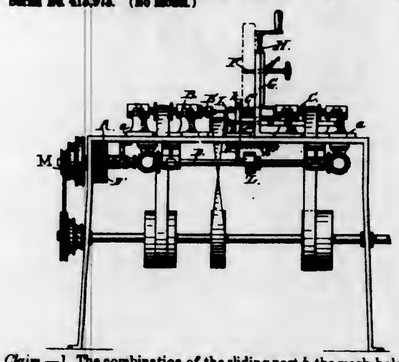
488,420. HOUSE-DOOR LETTER-BOX. BENONA A. BLAKENEY, Grand Haven, Mich. Filed Dec. 18, 1891. Serial No. 415,563. (No model.)



Claim.—1. In a combined delivery and deposit mail box, the combination with the door having the slot cut therethrough, of the plate affixed to the outer face of the door over said slot, the door in said plate, its lock, the extension of said plate fitting into said slot, the box or receptacle, and the sliding signal plate and its holding and releasing devices, substantially as specified.

2. In a combined deposit and delivery mail box, the combination with the door having the slot cut therethrough, and the box or receptacle secured to the inner face of said door, around said slot, of the plate secured to the outer face of the door, the door D in said plate, the extension fitting in said slot, the sliding signal plate normally concealed by the door D, the pivoted spring-pressed arm for holding said plate in its concealed position, and the push rod or bolt, arranged to release said plate, substantially as specified.

488,421. METHOD OF AND MACHINE FOR FORMING SPOOL-BLANKS. CHARLES A. BROUGHTON, Conway, N. H. Filed Dec. 4, 1891. Serial No. 413,973. (No model.)

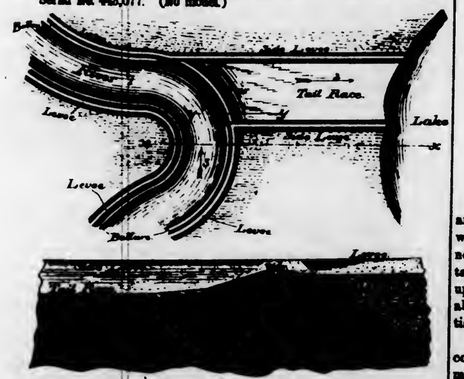


Claim.—1. The combination of the sliding post *k*, the work-holder lever K fulcrumed thereon, the spring *k'*, pin and slot connection *k²*, and cam L, for the purpose set forth.

2. In the art of forming spool blanks, the improved method of preparing the stock which consists in first truing its periphery, and afterward sawing out the blanks from the periphery so trued by a cut slightly intersecting the same, whereby is secured an additional kerf for the relief of saw-dust as described.

3. The combination with suitable devices for feeding the stock circularly, of a cutter E located in the path of the stock when so fed, and adapted thereby to true the periphery of the same, and a hollow saw set opposite the said trued periphery and slightly intersecting the same for the purpose set forth.

488,422. SYSTEM OF PROTECTING RIPARIAN LANDS FROM OVERFLOW. LOUIS W. BROWN, New Orleans, La. Filed Aug. 15, 1892. Serial No. 443,077. (No model.)



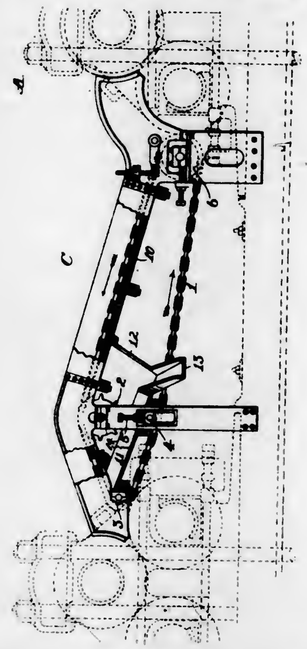
Claim.—1. A means of preventing disastrous overflow to low-lying riparian lands protected by levees, which consists in a portion of said leves lowered, at a bend in the river, and said lowered portion being protected against erosion, and an overflow channel in rear of said lowered portion, opening into a reservoir of sufficient capacity, substantially as and for the purposes described.

2. The hereinbefore described means for preventing disastrous overflow to low-lying riparian lands protected by levees which consists of a non-erosive weir forming a portion of the line of levees and arranged with its top at a predetermined distance below the tops of said levees, a channel back of said weir, means for confining the water in said channel, and a reservoir of sufficient capacity in rear of said channel, substantially as and for the purposes described.

3. The herein-described means for preventing disastrous overflow to low-lying riparian lands protected by levees, which consists of a weir forming a portion of the line of levees and arranged with its top at a predetermined distance below the tops of said levees, the said weir and its approaches being protected from erosion by a masonary facing; a channel back of said weir, banks for confining the water in said channel, and a reservoir of sufficient capacity in rear of said channel, substantially as and for the purposes described.

4. The hereindescribed means for preventing disastrous overflow to low-lying riparian lands protected by levees, which consists of a weir forming a portion of the line of levees and arranged with its top at a predetermined distance above low water mark, the said weir and its approaches being protected from erosion by a non-erosive apron sloping to the front and rear; a channel back of said weir; banks for confining the water in said channel, and a reservoir of sufficient capacity in rear of said channel, substantially as and for the purposes described.

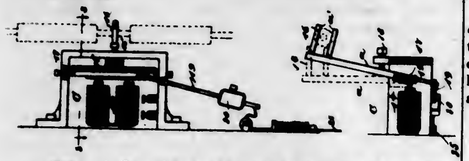
488,423. BAGASSE-CARRIER. LOUIS W. BROWN, New Orleans, La. Filed Aug. 15, 1892. Serial No. 443,078. (No model.)



Claim.—1. An apparatus for carrying bagasse from one mill to another, comprising an endless apron formed of slats and side chains, with means of driving the same, a floor extending part of the way beneath the upper portion of said apron and terminating at some distance from the second mill, and a floor situated beneath the end of the upper floor and the remainder of the upper portion of the apron and above the return portion of the apron and sloping backward, substantially as and for the purposes described.

2. An apparatus for carrying bagasse from one mill to another, comprising an endless apron formed of slats and side chains, with means of driving the same, a floor extending part of the way beneath the upper portion of said apron and terminating at some distance from the second mill, and a floor situated beneath the end of the upper floor and the remainder of the upper portion of the apron and above the return portion of the apron and sloping backward, with side guards to the said lower floor and a chute extending from the lower end thereof, substantially as and for the purposes described.

488,424. SAFETY ATTACHMENT FOR ELEVATORS. LOUIS W. BUELER, Brooklyn, N. Y. Filed Apr. 6, 1892. Serial No. 428,353. (No model.)



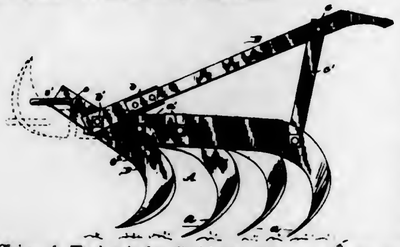
Claim.—1. In an elevator, the combination with an elevator door, and the valve rope provided with stops of a pivoted and counterbalanced keeper adapted to engage the rope when the door is open, and an electrical device for moving the keeper in one direction, said device being controlled by the opening and closing of the car door, substantially as described.

2. In an elevator, the combination with an elevator door, and the valve rope, provided with stops, of an electro magnet, a pivoted and counterbalanced armature carrying a keeper adapted to engage the rope when the door is open, an electric circuit in which the magnet is located, and a make and break device for the electric circuit controlled by the opening and closing of the door, substantially as described.

3. In an elevator, the combination with the valve rope provided with stops, the elevator door and its latch, of an electro magnet, a pivoted and counterbalanced armature, carrying a keeper adapted to engage the valve rope when the door is open, an electric circuit in which the magnet is located, and a contact in the circuit and with which the door latch engages when the door is closed, substantially as described.

4. In an elevator, the combination with the valve rope provided with buttons, the elevator door, and its latch, of an electro magnet, a pivoted armature carrying a keeper adapted to engage the valve rope between its buttons when the door is open, a pivoted and weighted lever connected to the armature, an electric circuit, and spring plates in the circuit and between which the door latch projects when the door is closed, substantially as herein shown and described.

488,425. HARROW. JAMES W. CASON, Blackburn, La. Filed Aug. 3, 1891. Serial No. 401,558. (No model.)



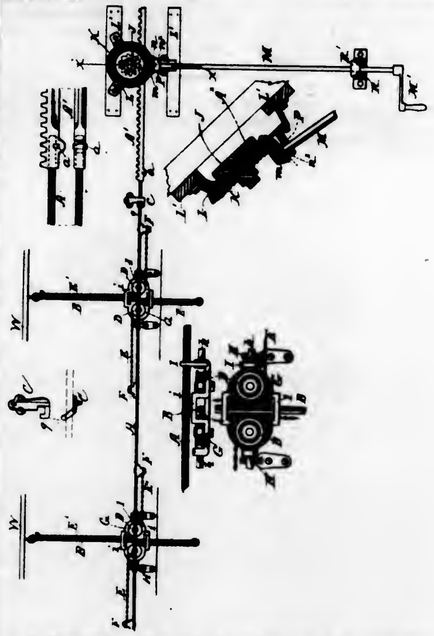
Claim.—1. The herein-described improved harrow, having two sets or series of teeth, said teeth being pivotally connected together, and an independent tooth pivotally mounted between the forward ends of said sets or series and provided with two points of connection for a clevis, whereby said tooth can be turned on its pivotal bearing, substantially as and for the purposes set forth.

2. The herein-described improved harrow, comprising two sets or series of teeth pivotally connected together, the U-shape bar secured to the rearmost teeth of said sets or series, the handle bars connected at their lower forward ends to the front teeth of said sets or series, the threaded rods projected through said handle bars and supported by said U-shape bar and having inner or outer nuts, and the independent tooth pivotally mounted between the forward ends of said sets or series of teeth and provided with two points of connection for a clevis, whereby said tooth can be turned on its pivotal bearing, substantially as and for the purpose set forth.

488,426. TRANSOM-LIFTER. CHARLES P. CRAMBURN, New Garden, and GEORGE W. TAPP, Kennett Square, Pa. Filed July 28, 1892. Serial No. 441,402. (No model.)

Claim.—1. The combination, substantially as hereinbefore described, of the endwise movable main rod having the rack connected therewith, the spur pinion meshing with said rack, the operator gear connected to the pinion axis, the crank shaft provided with a pinion that meshes with said operator gear, the series of lifting-rods, the oppositely disposed cords or chains connecting said main rod and lifting rods, the chain-guiding sheaves, and the pivoted sheave-supporting plate, for the purposes set forth.

2. The sheave-supporting plate G provided with trunnions *h* at its ends, guiding loops *i* at its sides, and having the sheaves D pivoted thereon in the manner shown, in combination with the cords, bands or chains E E', and the lifting rods B disposed through said guiding loops, and the plate-supporting brackets H embracing the trunnions, as set forth.



3. The attaching clasp F having the groove 4, the chain-receiving notch 6, and the clamp bolt 5 and washer 7, in combination with the main rod A, transversely disposed lifting rod B, guiding-sheaves D and lifting-rod chain, as and for the purpose described.

4. The slotted support-bracket R having the bearing-block R' adjustably mounted thereon, as shown, in combination with the operating crank-shaft M carrying pinion *m*, the beveled gear K, pinion J, rack A', rod A and window-operating devices, substantially as described.

5. The pinion *m* and its bearing P provided with an inter-engaging lug and recess, in combination with the operating shaft M, the endwise movable rod A, its rack and pinion, the right and left connecting chains, the sheaves D and the window-operating rods controlled thereby, for the purpose set forth.

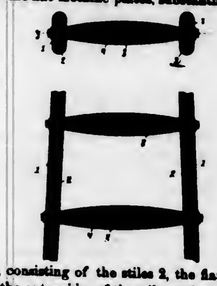
6. The rack A' having the longitudinally hollowed end and transverse key-seat, the rod A having the transverse notch matching into the same, and the key *a*, in combination with the window-lifting rods and chains, and the rack-operating gearing, as and for the purpose set forth.

488,427. INHALER. HENRY D. CORNMAN, Three Rivers, Mich. Filed Feb. 2, 1892. Renewed Nov. 17, 1892. Serial No. 452,295. (No model.)

Claim.—The combination with a centrally screw-threaded casing open at both ends, of a divided sleeve correspondingly screw-threaded and open at both ends and adapted to have its parts rotated so as to simultaneously open the apertures in the casing and the parts of the sleeve, substantially as set forth.

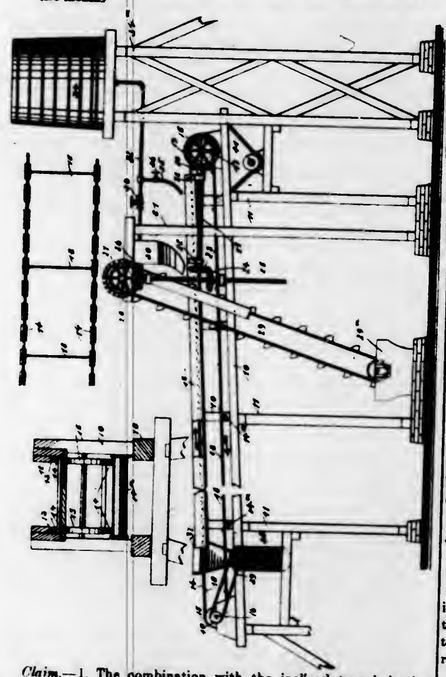
488,428. LADDER. JOHN H. FRYE and BERRY PITMAN, Cincinnati, Ohio. Filed Aug. 8, 1892. Serial No. 442,482. (No model.)

Claim.—1. A ladder, consisting of the stiles 2, the flat metallic plates 1 extending along the outer sides of the stiles and provided at intervals with bolt holes, the wooden rungs 3, and the tie bolts 4 supporting the rungs and extending at their opposite end portions through the bolt holes in the flat metallic plates, substantially as described.



2. A ladder, consisting of the stiles 2, the flat metallic plates 1 extending along the outer sides of the stiles and provided at intervals with bolt holes, the wooden rungs 3, the tie bolts 4 supporting the rungs and extending at their opposite end portions through the bolt holes in the flat metallic plates, and the nuts applied to the bolts for securing the latter and tightening the parts, substantially as described.

488,429. COAL-WASHING MACHINE. JAMES GALLAGHER and GEORGE LAMB, Chickasaw, Ala. Filed July 1, 1892. Serial No. 438,675. (No model.)



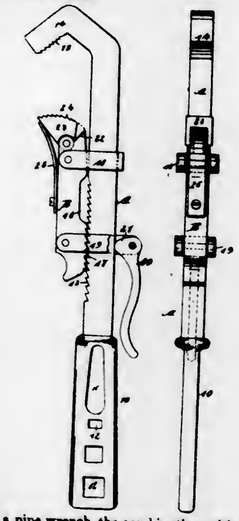
Claim.—1. The combination with the inclined trough having grooves 13 in its sides, of the endless chains arranged in said grooves, one portion of the chains traveling upward over the bottom of said trough while the other portion travels reversely or downward beneath the trough, scrapers attached to the chains and projecting downward therefrom, whereby they work in contact with the trough bottom, and the chute and pipe arranged at the upper end of the latter, all as shown and described.

2. The combination with the inclined trough, the upwardly-moving scrapers arranged to move through the trough, and the coal and water-delivering mechanism adapted to discharge into the trough, of a receiving screen and chute arranged at the lower end of the trough, and a conveyer arranged beneath the upper end of the trough, substantially as described.

488,430. BASIC YELLOW DYE. ROBERT GERBER and JAKOB SCHMID, Basle, Switzerland, assignors to the Society of Chemical Industry in Basle, same place. Filed June 23, 1892. Serial No. 437,569. (Specimens.)

Claim.—As a new product, the yellow coloring matter or dyestuff obtained from dimethyl-diamido-diorthotolyl-methane which is a yellow powder, readily soluble in water and in alcohol but insoluble in benzene and which on treatment with acetic acid, zinc dust and hydrochloric acid gives a violet red solution.

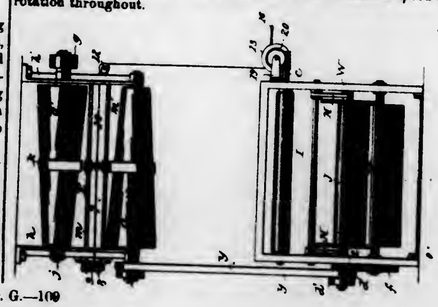
488,431. WRENCH. JOHN H. GREGORY, Ione, Cal., assignor to himself and Jacob Fourman, same place. Filed Mar. 28, 1892. Serial No. 426,694. (No model.)



Claim.—In a pipe wrench, the combination, with a body bar having an angular jaw formed at its upper end, the outer member of which is toothed and provided also at its forward edge with a series of teeth, a sliding bar having a toothed lower surface adapted for engagement with the toothed surface of the body bar, and having the inclined wall 22 in one end, and straps pivoted at the upper and lower portions of the sliding bar and encircling the body bar, the lower strap being longer than the upper one, of a jaw pivoted in the upper end of the sliding bar opposite the inclined wall, one end of said jaw being inclined or beveled to meet the inclined wall of the sliding bar, a spring attached to the outer side of the sliding bar and bearing against the outer side of the pivoted jaw, and a cam or eccentric lever fulcrumed upon the lower strap of the sliding bar and adapted for locking engagement with the body bar, substantially as shown and described.

488,432. REGULATING DEVICE FOR WARPING-MACHINES. NEHEMIAH HICKS, Wilkinsonville, Mass. Filed Jan. 9, 1892. Serial No. 417,877. (No model.)

Brief.—The warping-drum is driven from variable-speed gearing which is actuated from the measuring-roll, whereby the draw of the yarn is gradually reduced to compensate for the decreasing diameters of the bobbins so that the latter shall have a uniform speed of rotation throughout.



Claim.—1. The combination of a warping machine, a driving shaft, and variable gearing and means substantially as described to shift said gearing to gradually reduce the speed of travel of the thread as it is drawn from the spools, substantially as set forth.

2. The combination with the warping machine and the spools and a driving shaft, of the reverse cones, the belt connecting the cones, the belt shifting device, and means including a spring for moving the belt shifter with a gradual movement as the beam is being filled, substantially as described.

3. The combination in a warping machine and with the beam thereof, of supports for the spools, mechanism for turning the beam, and automatic variable driving devices and means for shifting the latter to gradually reduce the speed of travel of the thread as the diameter of the load on the spools decreases, substantially as set forth.

4. The combination with the warping beam, of a driving cylinder, in frictional contact with and driving the beam, a driving shaft, and variable gearing disposed between the driving shaft and the cylinder and arranged substantially as described to gradually reduce the speed of the yarn from the spools to the beam as the yarn load on the spools decreases by winding off the yarn.

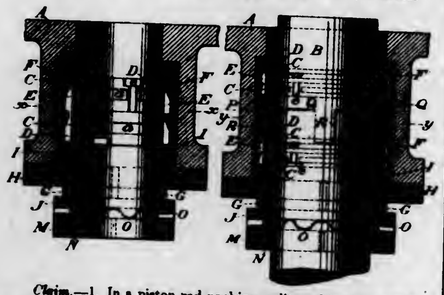
5. The combination with the warping beam, of a driving cylinder having frictional contact with and driving the warping beam, a driving shaft, and variable gearing disposed between the driving shaft and cylinder arranged substantially as described to gradually reduce the speed of the cylinder as the yarn load on the spools decreases by winding off the yarn.

488,433. COMPOUND FOR TEMPERING STEEL. Hiland E. Hopkins, Barton, Vt., assignor of one-half to Willard W. Miles, same place. Filed Sept. 3, 1892. Serial No. 445,362. (No specimens.)

Claim.—1. A compound for tempering metals, consisting of bromide of potassium, oil and water mixed, substantially as set forth.

2. A liquid composition for tempering metals, consisting of twenty grains of bromide of potassium to one gallon of crude lubricating oil and double the quantity of soft water, substantially as set forth.

488,434. PISTON-ROD PACKING. John R. Houston, San Francisco, Cal. Filed Mar. 15, 1892. Serial No. 424,904. (No model.)



Claim.—1. In a piston rod packing, split packing rings embracing the piston rod at two or more points, around these corrugated or wave like springs as herein described, with angular grooves or beveled faces transverse to the corrugations and bearing upon correspondingly fixed beveled faces on the outside of the corrugated rings, so as to produce compression of the packing by adjustment of the latter; a bearing ring beneath or at the end of the corrugated one, and pressing stems to act thereon from the outside, in the manner substantially as and for the purposes specified.

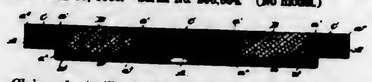
2. In a piston-rod packing, split packing rings, embracing the rod at two or more points, surrounding these rings, a thin collar, and, outside of this, a corrugated ring having on its outer face a groove with beveled sides. Wedge rings having reversed grooves of similar form so the beveled faces of the two will produce lateral adjustment of the rings as they are moved outward or inward, thus producing an equal pressure on the packing rings around the piston rod, uniformly and at a number of points, in the manner, substantially, and for the purposes specified.

3. In a piston-rod packing, one or more split packing rings embracing the piston rod, corrugated rings as herein described, embracing and bearing upon the packing rings. A wedge collar with beveled faces placed around and acting on the rings, as the latter are adjusted inward or outward in the line of the piston rod; sliding stems passing in from the exterior, operated by a screw collar, and bearing at several points on the rings, so the latter can be adjusted while the piston rod is in motion, in the manner substantially and for the purposes described.

4. In a piston-rod packing, split packing rings surrounding and bearing upon the piston rod; adjustable corrugated rings bearing thereon, as herein described, a ring bearing upon and adjusting the rings in the line of the piston rod's movement; studs extending out to the exterior of the packing box, and operated by a screw collar that moves the studs uniformly so adjustment can be made while the piston rod is in motion, in the manner, substantially, and for the purposes specified.

5. In a piston-rod packing, a corrugated ring having beveled ledges or grooves on its exterior, a corresponding ring surrounding the same, having like beveled grooves or ledges, studs and intermediate rings or collars between the studs and the corrugated ring, a screw collar, and a sliding one with a wave spring interposed, the whole combined and operating in the manner, substantially as described and for the purposes specified.

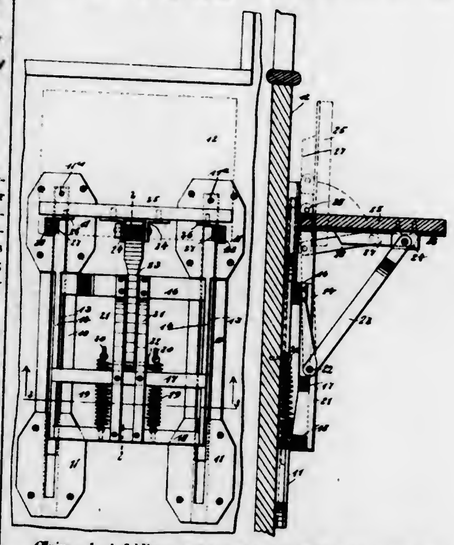
488,435. ILLUMINATING-TILE. Jacob Jacobs, New York, N. Y. Filed Jan. 19, 1889. Serial No. 296,834. (No model.)



Claim.—1. An illuminating tile which is composed of a metal body that is provided with light openings each of which has a kerb around its upper and its lower ends that extends respectively, above and below the upper and lower sides of the body, the latter being provided with lens-supporting seats, glass lenses set into and secured within such light openings so as to be entirely inclosed on their sides by the kerbs thereof, and cement, or other like material placed in cavities formed upon the upper sides of such metal body by the kerbs provided on said upper side and an upwardly extending kerb formed on the edges of such body, substantially as and for the purpose specified.

2. An illuminating tile which is composed of a metal body that is provided with dodged or staggered rows of light openings, each of which openings has a kerb around its upper and its lower ends that projects, respectively, above and below the upper and lower sides of the body, glass lenses secured within such light openings so as to be entirely inclosed on their sides by the kerbs thereof, and cement, or other like material placed in cavities formed upon the upper side of such metal body by the kerbs provided on its upper side and an upwardly extending kerb formed on its edges, substantially as and for the purpose shown.

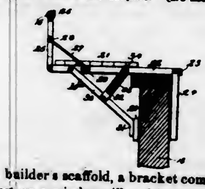
488,436. FOLDING SEAT. John S. Kilgore, Salida, Colo. Filed Mar. 1, 1892. Serial No. 423,366. (No model.)



Claim.—1. A folding seat comprising a fixed support, parallel slideways secured to the support, a spring suspended frame held to slide in the slideways, an upwardly folding seat bottom, links pivoted to the seat bottom, near its ends, and also pivoted to the sliding frame, and an end brace pivoted centrally to the sliding frame and pivotally connected with the under side of the seat bottom, substantially as described.

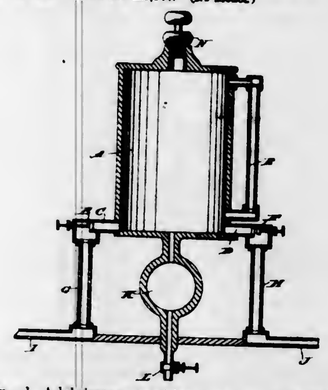
2. A folding seat, comprising a fixed support, parallel vertical slideways secured to the support, a sliding frame held to move in the slideways, spiral springs secured to the support and to the sliding frame, parallel bars secured centrally and vertically to the frame, a seat bottom having links pivotally connecting its ends with the sliding frame, clips secured to the seat bottom, and a main brace pivoted at one end between the clips and at its opposite end between the frame bars, substantially as described.

488,437. BUILDER'S SCAFFOLD. Louis Koer, New York, N. Y. Filed Jan. 16, 1892. Serial No. 418,238. (No model.)



Claim.—In a builder's scaffold, a bracket comprising a body portion adapted to rest on a window sill and having at one end a lateral projection 23 and a pivoted depending arm and at the other a pivoted vertical post provided with a hook or brace 27 to detachably engage the body portion, a diagonal brace pivotally secured to the under side of the body and having its inner end adapted to rest against a building wall, and a short slotted brace pivotally connecting the diagonal brace with the body, substantially as described.

488,438. LUBRICATOR. Henry H. Lafleur, Thibodeaux, La. Filed Mar 19, 1892. Serial No. 425,577. (No model.)



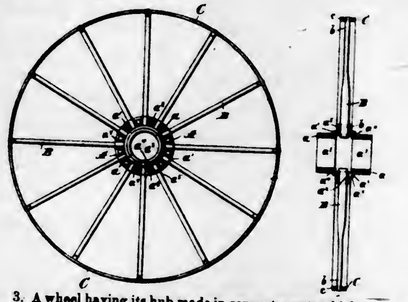
Claim.—1. A lubricator comprising a reservoir, outlet pipes leading from the lower end of the said reservoir, and each provided with a valve, glass tubes connected with the said outlet pipes, pipes leading from the said glass tubes to the cylinder to be lubricated, and a water receptacle held on the lower end of the said reservoir and in communication with the same, substantially as shown and described.

2. A lubricator comprising a reservoir, outlet pipes leading from the lower end of the said reservoir, and each provided with a valve, glass tubes connected with the said outlet pipes, pipes leading from the said glass tubes to the cylinder to be lubricated, a water receptacle held on the lower end of the said reservoir and in communication with the same, and a valve held on the outlet of the said water receptacle to control the discharge of water from the said receptacle, substantially as shown and described.

488,439. METAL WHEEL. James R. Little, Quincy, Ill. Filed Apr. 12, 1892. Serial No. 428,902. (No model.)

Claim.—1. As an article of manufacture, a wheel having its hub made in separate parts inclosing portions of the spokes and fastened together, and the outer ends of its spokes fastened to the rim by portions of the latter being compressed upon them, substantially as and for the purpose specified.

2. As an article of manufacture, a wheel having its hub made in separate parts compressed upon portions of the spokes, and fastened together, and the outer ends of its spokes attached to the rim by tenons inserted in holes made by spreading the metal of the rim and secured there by compression of the spread metal upon them, substantially as and for the purpose shown.



3. A wheel having its hub made in separate parts which are compressed upon portions of the spokes, so as to compress the material of the latter and hold the spokes without welding, and are secured to each other, so as to maintain the compression of the inclosed spoke portions, substantially as and for the purpose described.

4. In a wheel, in combination with the spokes, the hub made in separate parts compressed upon portions of the spokes and riveted together, substantially as and for the purpose specified.

5. In a wheel, in combination with the spokes, the hub made in two halves, provided with cavities to receive the portions of the spokes, one half having rivet openings, and the other being provided with riveting pins or projections entering the openings in the other half, and headed down, substantially as and for the purpose shown.

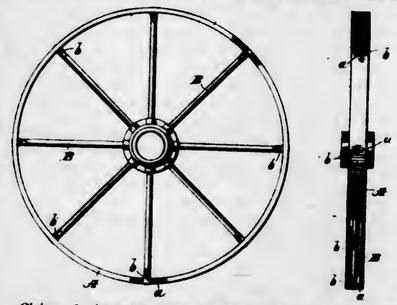
6. In a wheel, in combination with the spokes, the rim having openings or mortises receiving the spoke ends, made by spreading the metal of the rim and its spread metal forced in upon the spoke ends, substantially as and for the purpose set forth.

7. In a wheel, in combination with the spokes provided with tenons to enter the openings in the rim, the rim having its spoke tenon-receiving openings made so as to spread its metal, and the portions so spread compressed upon the spoke tenons, substantially as and for the purpose shown.

8. In a wheel, in combination with the rim having the spoke receiving openings made so as to spread its metal, the spokes having portions inserted in the openings and gripped by the metal of the rim compressed upon them, such portions of the spokes being formed so that they interlock with the engaging metal of the rim, substantially as and for the purpose specified.

9. In a wheel, in combination with the rim having spoke tenon receiving openings, made so as to spread the metal of the rim, the spokes having tenons engaging such openings, fastened therein by compressing and shrinking the spread metal upon them, substantially as and for the purpose set forth.

488,440. MANUFACTURE OF METAL WHEELS. James R. Little, Quincy, Ill. Filed Apr. 12, 1892. Serial No. 428,903. (No model.)



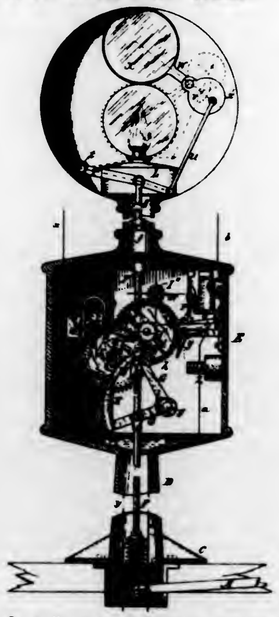
Claim.—1. As an improvement in the art of making metal wheels, the process of attaching the spoke ends to the part to which they are to be secured, which consists in making openings in such part, so as to spread the material thereof, inserting the spokes in such openings, and forcing back the spread material, to compress it upon the inclosed portions of the spokes, substantially as and for the purpose specified.

2. As an improvement in the art of making metal wheels, the

process of attaching the spoke ends to the part to which they are to be secured, which consists in making spoke receiving openings in such part, so as to spread the metal thereof, inserting portions of the spokes into the openings, heating the spread metal, and forcing it back, while hot, to compress it upon the inclosed portions of the spokes, substantially as and for the purpose described.

3. As an improvement in the art of making metal wheels, the process of attaching the spoke ends to the parts to which they are to be secured, which consists in preparing spoke receiving openings in said part, by spreading the metal thereof, forming tenons and shoulders on the spokes, inserting such tenons in the openings therefor, with the shoulders abutting against the part containing the latter, and forcing back the spread metal, to cause it to inclose the spoke tenons, substantially as and for the purpose described.

488,441. RAILWAY-SIGNAL. GEORGE H. LOTHROP, Detroit, Mich. Filed Mar. 28, 1892. Serial No. 426,815. (No model.)

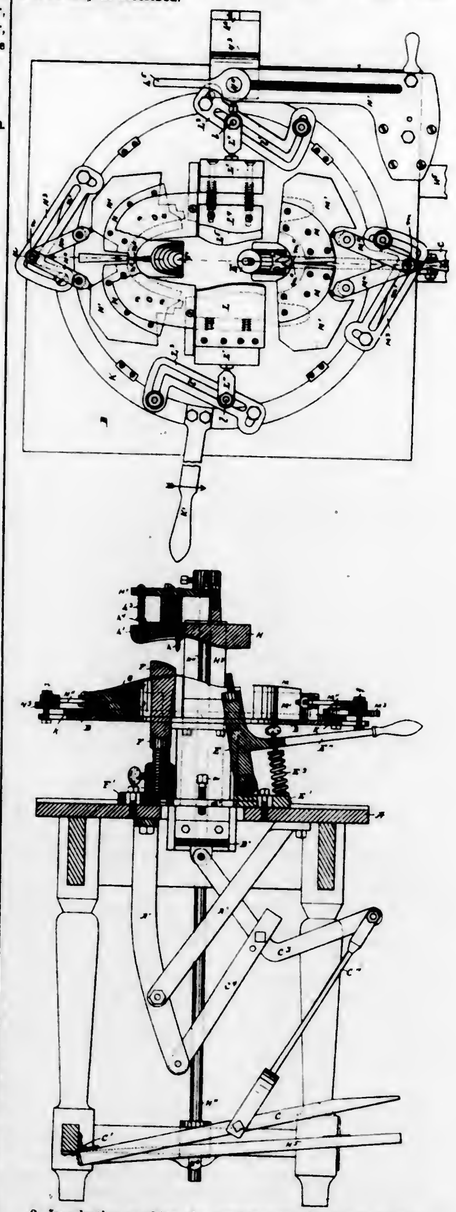


Claim.—1. In a railway signal system, the combination with a track lever adapted to be actuated by a passing train, of a signal normally tending to go to danger, a connection between said track lever and said signal whereby said lever when actuated by a train releases said signal and permits it to go to the danger position, and on its return draws said signal to the safety position, a detent adapted to lock said signal actuating mechanism at danger position, an electro-magnet adapted when energized to withdraw said detent and release said signal actuating mechanism, a second track lever placed at a distance in advance of said signal, a dynamo or magneto electric generator connected with said second track lever, and an electric circuit including said electro-magnet and said dynamo or magneto, whereby the passage of a train over the first track lever permits said signal to go to danger and lock in that position, and the passage of said train over the second track lever electrically releases said lock, substantially as and for the purposes set forth.

2. A railway signal consisting of a track lever, a signal constantly tending to move to the "danger" position, a sliding connection from the track lever to the signal, a detent positively operated by the track lever to hold up the track lever when raised, an electro-magnet controlling said detent, a second track lever at a distance, a dynamo or magneto connected with said second track lever, and a connection from said dynamo to the detent-controlling-magnet, substantially as and for the purposes set forth.

488,442. LASTING-MACHINE. JAMES H. MERRILL, Salem, Mass. Filed Aug. 10, 1891. Serial No. 402,574. (No model.)

Claim.—1. In a lasting machine, the combination of a bench provided with a horizontally adjustable block and upright guides, a rocking last holder pivoted at its lower end to the adjustable block and having a laterally projecting hand lever, a toe support mounted on the bench, a spring acting on the rocking last holder to press it toward the toe support, a vertically movable table engaged with the upright guides of the bench, a series of folder blades slidable horizontally on the vertically movable table, means for sliding the folder blades horizontally, and lever mechanism for raising and lowering the blade carrying table independent of the last holder and its supporting bench, substantially as described.



2. In a lasting machine, the combination of a bench having a horizontally adjustable block, a rocking last holder pivoted at its lower end to the adjustable block and provided with a lateral hand

lever, a toe support on the bench a vertically movable table having pendent posts engaging the guides of the bench and connected at their lower ends by a cross bar, a series of folder blades slidable horizontally on the vertically movable table, an oscillating ring turning on the table and connected with the folder blades to slide them horizontally, and a lever mechanism connected with the cross bar of the table posts for raising and lowering the table independent of the last holder and its supporting bench, substantially as described.

3. In a lasting machine, the combination of a bench provided with a horizontally adjustable block, means substantially as described for holding the block in any position of adjustment, a rocking last holder pivoted at its lower extremity to the block and adjustable therewith, a vertically movable table engaged with the bench, a series of folder blades slidable horizontally on the table, means for sliding the folder blades horizontally, and lever mechanism for raising and lowering the blade carrying table independent of the last holder and its supporting bench, substantially as described.

4. In a lasting machine, the combination of a bench having a last holder, a vertically movable table engaged with the bench, a series of laterally movable folder blades carried by the table, means for raising and lowering the blade carrying table independent of the last holder and its supporting bench, and a vertical rod having at its upper end a pressure head to bear against an insole on the last holder and provided with a vertical orifice through which extends a spring pressed pin h' having its lower end projecting below the pressure head to come in contact with the insole prior to such pressure head, substantially as described.

5. In a lasting machine, the combination of a bench having a last holder, a vertically movable table engaged with the bench, a series of laterally movable folder blades carried by the table, means for raising and lowering the blade carrying table independent of the last holder and its supporting bench, and a vertically movable and axially rotatable rod journaled on the bench and having at its upper end a pressure head adapted to bear against an insole on the last holder and provided with a vertical orifice through which extends a spring pressed pin h' having its lower end projecting below the pressure head to come in contact with the insole prior to such pressure head, substantially as described.

6. In a lasting machine, the combination of a bench having a last holder, a vertically movable table engaged with the bench, and having the pairs of slots m' a series of laterally movable folder blades mounted on blocks M' having guide pins M^4 engaging the slots in the table, and a lever mechanism for raising and lowering the blade-carrying-table independent of the last holder and its supporting bench, substantially as described.

7. In a lasting machine, the combination of a bench having an adjustable block and upright guides, a vertically movable table having pendent posts engaging the guides, a rocking last holder pivoted to the adjustable block and having an operating lever arm, a series of laterally movable folder blades carried by the table, an oscillating ring mounted on the table and having a series of plates provided with inclined slots, a series of links engaging the said slots and connected with the folder blades, and a lever mechanism for raising and lowering the table independent of the rocking last holder, substantially as described.

8. In a lasting machine, the combination of a bench having a last holder, a vertically movable table having an attached jaw and engaging the bench, a series of laterally movable folder blades carried by the table, means for raising and lowering the blade-carrying-table independent of the last holder, a vertically movable rod supported by the bench and having at its upper end a pressure head, and a yielding shaping and holding jaw located at one end of the pressure head and against which the toe portion of the upper is pressed by the jaw on the table when the latter ascends, substantially as described.

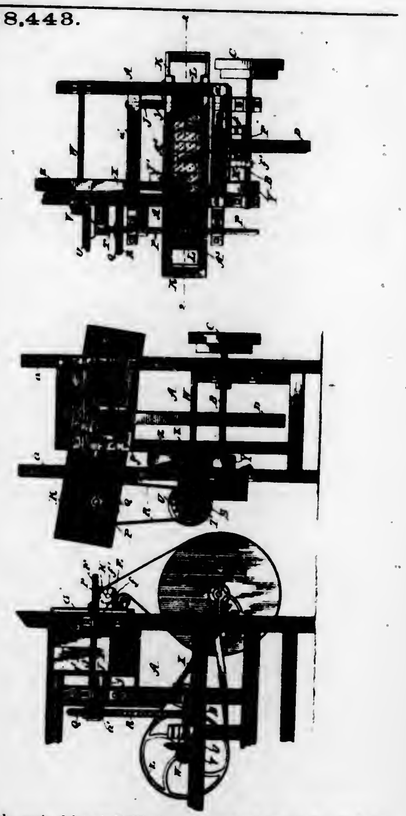
9. The combination in a lasting machine of the upper jaw h', and lower jaw O, movable toward each other, the jack and laterally movable folder blades N, N, substantially as shown and described.

488,443. COCKLE-SEPARATOR. ANDREW G. MILLER, Rutil Springs, Tenn. Filed July 27, 1892. Serial No. 441,494. (No model.)

Claim.—1. In a cockle separator, the combination with the supporting frame, the shafts J J', the inclined shaker box K held to vibrate laterally on such shafts J J', said box extended at one end beyond the frame, the shaft P journaled on such end, the pulleys O and N, held on the shafts P and J respectively, the endless separator belt mounted on such pulleys, knocker devices adapted to engage one side of the box, and the buffer spring j on the shafts J J' all arranged substantially as and for the purposes described.

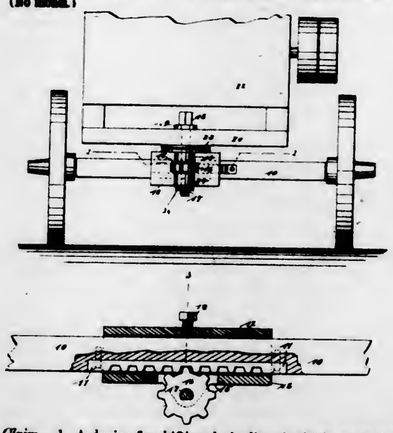
2. The combination of the frame, the shafts J J', the box K held for lateral vibration on such shafts, one end of such box projected beyond the frame, the shaft P, journaled in such end, the conveyer L, having cockle holding depressions, mounted to turn with the shafts J

488,448.



and P, the main drive shaft W, the counter shaft B and the shaft T, belted to the main drive shaft W, the shaft T also belted to the shaft P, the shaft F having a knocker arm h, adapted to engage the box K, the buffer springs j j and the belt connection between the shafts B and F, all arranged substantially in the manner and for the purposes described.

488,444. SHIFTING DEVICE FOR VEHICLE-BODIES. CHARLES H. MITCHELL, Oxford, Ohio. Filed Apr. 4, 1892. Serial No. 427,682. (No model.)



Claim.—1. A device for shifting the bodies of vehicles upon their axles, consisting of a rack adapted for attachment to the axle, a

sleeve capable of sliding upon the axle over the rack, a bolt held to turn in the sleeve, and a pinion carried by the bolt and adapted for engagement with the rack, as and for the purpose specified.

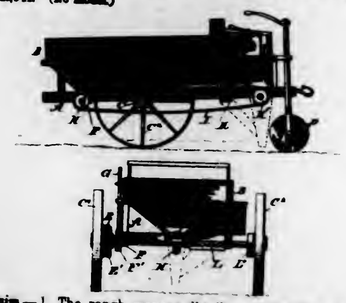
2. A device for shifting the bodies of vehicles upon their axles, which consists in a rack adapted for attachment to the axle, a sleeve adapted to slide upon the axle over the rack, a king bolt held to turn in the sleeve, a pinion attached to the king bolt and adapted to engage with the rack, and a locking device carried by the sleeve, as and for the purpose set forth.

3. The combination, with the body of the vehicle, its axle and a rack formed upon a face of the axle, of a sleeve held to slide upon the axle over the rack, a bolt connecting the body of the vehicle with the sleeve and capable of turning in its seat, and a pinion secured to the bolt and engaging with the rack, as and for the purpose set forth.

4. The combination, with the body of a vehicle and an axle having a rack formed upon its face, of a sleeve held to slide upon the axle over the rack, a king bolt connecting the body of the vehicle and the sleeve, the said bolt being capable of turning in its seat, a pinion secured to the bolt and engaging with the rack, and a locking mechanism carried by the sleeve and adapted for engagement by the axle, as and for the purpose specified.

5. The combination, with a vehicle body and an axle located beneath the body, the said axle having a rack formed upon the inner face, of a sleeve capable of sliding movement on the axle over the rack, a king bolt passed through a portion of the body of the vehicle and through the sleeve and connecting the two, one end of the king bolt being polygonal in cross section, a pinion secured to the king bolt, in engagement with the rack, and a locking device adapted for rigidly attaching the sleeve to the axle, as and for the purpose specified.

488,445. MANURE-DISTRIBUTER. ROBERT J. MORRIS and ROBERT L. WIGGINS, Alexanderville, Ga. Filed Aug. 12, 1892. Serial No. 442,941. (No model.)



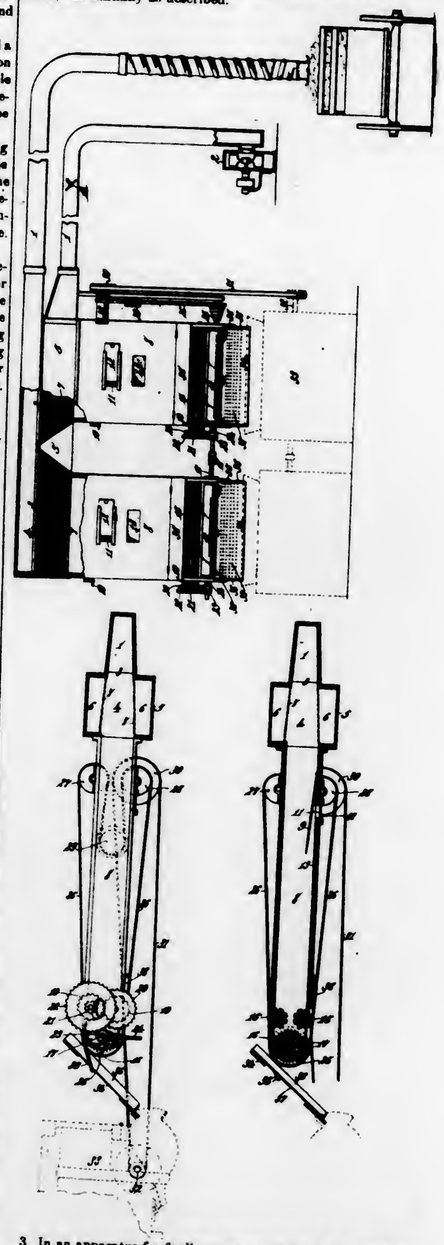
Claim.—1. The rough manure distributer consisting of a long trough shaped body having a forwardly moving endless chain I in its bottom, and feed regulating devices J at the front end; in combination with a distributer for commercial fertilizers arranged on the side and at the front end of the trough shaped body and consisting of a hopper shaped box K with feed slot in its bottom and a revolving shaft L arranged therein with pulley L′ and belt L^3 for operating it, the said coarse manure distributer and commercial fertilizer distributer being arranged to discharge together into the furrow at the front end of the machine substantially as shown and described.

2. The combination of the main frame composed of sub-sills, the trough shaped body arranged above it and having discharge outlet at its front end; the endless chain belt I, sprocket wheels H H′, shaft F with band pulley L^3 and loose sprocket F^3 and clutch section F, the chain belt E′ and running wheel with sprocket E, adjusting lever G, and the guano distributer arranged upon the side and provided with belt L^3, and the furrow wheel arranged in front and carried by a vertical axis as described.

488,446. APPARATUS FOR FEEDING SEED-COTTON TO GINS. STEPHEN D. MURRAY, Dallas, Tex., assignor to William Burr, same place. Filed Apr. 2, 1892. Serial No. 427,502. (No model.)

Claim.—1. In an apparatus for feeding seed-cotton to gins, the combination of a pneumatic tube, means for causing an air draft through said tube, a chute or feeder communicating with the pneumatic tube and provided near its upper end with an air inlet and a transparent panel, a valve suspended in said feeder above the said air inlet which inlet is adapted to admit air to the rear and under side of the valve, and a gate for controlling the air inlet, substantially as described.

2. In an apparatus for feeding seed-cotton to gins, the combination of a pneumatic tube provided with a valve, means for causing an air draft through said tube, a chute or feeder communicating with the pneumatic tube and provided near its upper end with a controllable air inlet, a valve suspended in said feeder above the said air inlet which is adapted to admit air to the rear and under side of the valve, and a transparent panel inserted in the wall of the feeder below said valve, substantially as described.



3. In an apparatus for feeding seed-cotton to gins, the combination with a suitable supply device, of a rigidly depending chute or feeder, feed rollers mounted in the lower end of said feeder, a valve located in the feeder above the feed rollers, and an inclined board or trough adjustably suspended beneath the feeder to deliver the cotton to the gin, said trough being capable of adjustment to allow turning back of the gin breasts to give access to the gin, substantially as described.

4. In an apparatus for feeding seed cotton to gins, the combination with a gin, a distributing box or casing, and a depending chute or feeder rigidly suspended from the distributing box or casing above the gin, of a board or trough located between the feeder and the gin, and hangers pivotally engaging the chute or feeder and suspending the board or trough so that the latter can be swung out of the way of the gins, substantially as described.

5. In an apparatus for feeding seed-cotton to gins, the combination with a gin and a rigidly depending chute or feeder suspended above the gin, of an adjustably suspended board or trough provided with a screened bottom and located intermediate the feeder and gin, substantially as described.

6. In an apparatus for feeding seed-cotton to gins, the combination of a chute or feeder, feed rollers mounted in the lower end of the feeder, and a door arranged in one side of the lower portion of the feeder above the feed rollers to permit removal of foreign substances, substantially as described.

7. In an apparatus for feeding seed-cotton to gins, the combination of a chute or feeder, a pair of feed rollers mounted in the lower end of the feeder and having their shafts provided with intermeshing spur-gears, a spur-gear and pinion loosely mounted on the shaft of one of said feed rollers, a rigidly attached spur-gear on the other feed roller shaft meshing with said pinion, a picker roller secured to a rotary shaft below the feed rollers, a clutch-pinion mounted on the picker roller shaft and meshing with the loose spur-gear on the shaft of one of the feed rollers, a clutch shifter for making said clutch-pinion fast or loose on the picker-roller shaft, and means for applying power to said picker-roller shaft, substantially as described.

8. In an apparatus for feeding seed-cotton to gins, the combination of a chute or feeder, a pair of feed rollers mounted in the lower end of said feeder, a picker-roller mounted below the feed-rollers and having its shaft geared with the feed roller shafts, a speed changing cone-pulley secured to one end of the picker-roller shaft, two pulleys mounted in elevated positions above said cone-pulley, a belt connecting said cone pulley with the elevated pulleys, a belt-tightener hung in a depending portion of said belt above the speed changing cone pulley, and means for applying power to the shaft of one of the elevated pulleys, substantially as described.

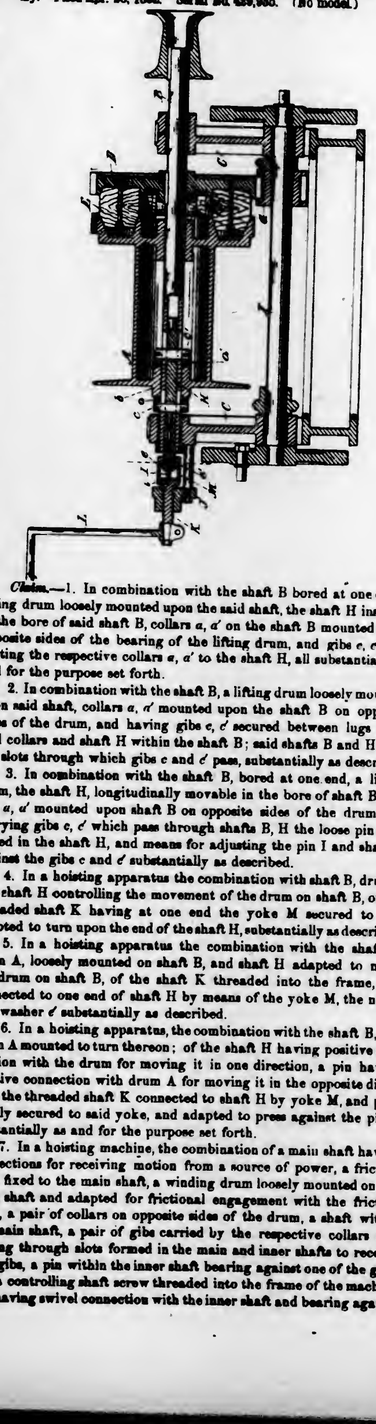
9. In an apparatus for feeding seed cotton to gins, the combination with a suitable supply device, and a series of rigidly depending chutes or feeders each having a pair of feed rollers journaled in its lower end, of a rotary shaft carrying a number of picker-rollers one of which is arranged beneath each pair of feed rollers to co-operate therewith, gearing connecting the feed roller shafts with the rotary shaft that carries the several picker-rollers, and speed-changing mechanism connected to one end of said picker-roller shaft, substantially as described.

10. In an apparatus for feeding seed-cotton to gins, the combination of a suitable supply device, a series of rigidly depending chutes or feeders having feed rollers journaled in their lower ends, a rotary shaft composed of sections connected by couplings, a picker-roller secured to each section of said shaft beneath the feed rollers of the several chutes or feeders, and gearing connecting the feed roller shafts with the shaft that carries the picker-rollers, substantially as described.

11. In an apparatus for feeding seed-cotton to gins, the combination of a series of rigidly depending chutes or feeders each having a pair of feed rollers journaled in its lower end, a rotary shaft carrying a number of picker-rollers one of which is arranged beneath each pair of feed-rollers, intermeshing gears secured to the shafts of the feed rollers, a spur-gear and attached pinion loosely mounted on the shaft of one feed roller in each pair, a rigidly attached spur-gear mounted on the shaft of the other feed roller in each pair and meshing with said loose pinion-gear, clutch-pinions mounted on the rotary picker-roller shaft and meshing with the loose spur-gears of the feed-rollers, clutch-shifters for making said clutch-pinions fast or loose on the picker-roller shaft, and mechanism for applying power to and changing the speed of the picker-roller shaft, substantially as described.

12. In an apparatus for feeding seed-cotton to gins, the combination of a pneumatic tube having a horizontal portion provided in its under side with a longitudinal opening, a distributer-box or casing communicating with the pneumatic tube through said opening and having side air passages and a number of central screened compartments, a series of rigidly depending chutes or feeders communicating with said compartments and provided with valves and feed-rollers, a rotary picker roller shaft carrying a number of picker-rollers one of which is arranged beneath the feed rollers of each chute or feeder, gearing connecting the picker-roller shaft with the shafts of the feed rollers, mechanism connected to one end of the picker-roller shaft for applying power to said shaft and for changing its speed to vary the feed, and a number of swinging troughs suspended beneath the picker rollers—of the several rigidly depending feeders to convey the cotton to the gins, substantially as described.

488,447. HOISTING MACHINERY. HUGH J. MCKNOWN, Newport, Ky. Filed Apr. 20, 1892. Serial No. 429,935. (No model.)



Claim.—1. In combination with the shaft B bored at one end, a lifting drum loosely mounted upon the said shaft, the shaft H inserted in the bore of said shaft B, collars *a*, *a′* on the shaft B mounted upon opposite sides of the bearing of the lifting drum, and gibs *c*, *c′* connecting the respective collars *a*, *a′* to the shaft H, all substantially as and for the purpose set forth.

2. In combination with the shaft B, a lifting drum loosely mounted upon said shaft, collars *a*, *a′* mounted upon the shaft B on opposite sides of the drum, and having gibs *c*, *c′* secured between lugs upon said collars and shaft H within the shaft B; said shafts B and H having slots through which gibs c and *c′* pass, substantially as described.

3. In combination with the shaft B, bored at one end, a lifting drum, the shaft H, longitudinally movable in the bore of shaft B, collars *a*, *a′* mounted upon shaft B on opposite sides of the drum and carrying gibs *c*, *c′* which pass through shafts B, H the loose pin I inserted in the shaft H, and means for adjusting the pin I and shaft H against the gibs c and *c′* substantially as described.

4. In a hoisting apparatus the combination with shaft B, drum A and shaft H controlling the movement of the drum on shaft B, of the threaded shaft K having at one end the yoke M secured to and adapted to turn upon the end of the shaft H, substantially as described.

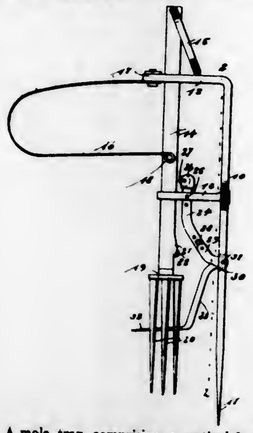
5. In a hoisting apparatus the combination with the shaft B, drum A, loosely mounted on shaft B, and shaft H adapted to move the drum on shaft B, of the shaft K threaded into the frame, and connected to one end of shaft H by means of the yoke M, the nut *e*, and washer *e′* substantially as described.

6. In a hoisting apparatus, the combination with the shaft B, and drum A mounted to turn thereon; of the shaft H having positive connection with the drum for moving it in one direction, a pin having positive connection with drum A for moving it in the opposite direction, the threaded shaft K connected to shaft H by yoke M, and pin i rigidly secured to said yoke, and adapted to press against the pin I, substantially as and for the purpose set forth.

7. In a hoisting machine, the combination of a main shaft having connections for receiving motion from a source of power, a friction head fixed to the main shaft, a winding drum loosely mounted on the main shaft and adapted for frictional engagement with the friction head, a pair of collars on opposite sides of the drum, a shaft within the main shaft, a pair of gibs carried by the respective collars and passing through slots formed in the main and inner shafts to receive said gibs, a pin within the inner shaft bearing against one of the gibs, and a controlling shaft screw threaded into the frame of the machine and having swivel connection with the inner shaft and bearing against

the pin, whereby, movement of the controlling shaft out or in, communicates motion to the winding drum, through the inner shaft or the pin, all substantially as set forth.

488,448. MOLE-TRAP. GEORGE NELSON, Livingston, Tex., assignor of one-half to Lillian Ray Fih, same place. Filed Apr. 23, 1892. Serial No. 430,267. (No model.)



Claim.—1. A mole trap, comprising a vertical frame or standard, a vertically sliding spring pressed plunger mounted thereon and having the impaling devices on its lower end and a shoulder or offset between its ends, a transverse stationary arm on the frame or standard and upon which said shoulder or offset rests when the plunger is raised or retracted, a lever pivoted to the frame or standard with one end adjacent to and movable toward the shouldered or offset side of the plunger to push it laterally and disengage its shoulder or offset from said arm, and a trigger pivotally connected with said lever, substantially as set forth.

2. The combination, with the standard having forwardly-extending arms, of the spring-pressed plunger held to move in the arms, said plunger terminating at its lower end in a cross-head having depending tines, a roller journaled in a shoulder on the plunger and adapted to engage the lower arm of the standard, a swinging lever pivoted in the lower arm of the standard and having a roller at its free end to contact with the plunger, and a bell crank lever pivoted in the standard, the upper arm of the lever being pivoted to the tripping lever carrying the roller, and the lower arm being formed into a trigger which extends between the plunger tines, substantially as described.

3. A mole trap, comprising a vertical frame or standard, a vertically sliding spring pressed plunger mounted thereon and having the impaling devices on its lower end and a shoulder or offset between its ends, a transverse stationary arm on the frame or standard and upon which said shoulder or offset rests when the plunger is raised or retracted, a lever pivoted to the frame or standard with one end adjacent to and movable toward the shouldered or offset side of the plunger to push it laterally and disengage its shoulder or offset from said arm, a trigger pivotally connected with said lever, and a bow spring connected at its ends to the frame and plunger to throw the latter and also pressing it laterally and hold its offset or shoulder in engagement with said stationary arm, substantially as set forth.

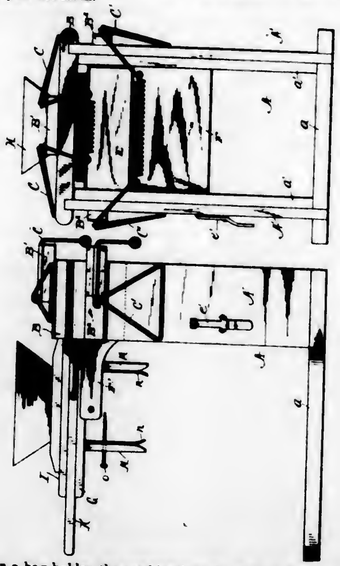
488,449. DEVICE FOR HOLDING BAGS. JOHN PEER, Claremont, Ill. Filed July 23, 1892. Serial No. 441,504. (No model.)

Claim.—1. In a bag holder, the combination of a suitably constructed supporting frame, bars bent to provide a transverse portion which is adapted to move toward the rigid portion of the frame, cross-pieces pivoted to the rigid frame, and terminal portions having hooks with which a helical spring engages, substantially as shown, and for the purpose set forth.

2. In a bag holder, the combination of a pivoted frame having arms carried by a rigid portion thereof, a slide carrying similar arms, whereby the bag holder arms can be moved toward and away from each other, substantially as shown, and for the purpose set forth.

3. In a bag holder, the combination of a vertically movable frame E having outwardly projecting arms or supports, a frame pivotally attached thereto, said frame carrying a slide with bag supporting arms, similar arms being also carried by the pivoted frame, substantially as shown, and for the purpose set forth.

4. In a bag holder, the combination of a main frame A having uprights A', a vertically adjustable frame supported between said uprights, a frame carrying a hopper, and a pair of bag supporting arms, a sliding frame also carrying bag supporting arms, said frame being connected to the frame E by rods *k*, substantially as shown, and for the purpose set forth.



5. In a bag holder, the combination of a pivoted frame having a central opening and a slide, of arms M M having spring holders *n*, the arms being pivoted within the opening and to the slide, links connecting each pair of arms, said links being attached to one pair of said arms above and below their pivots, the ends of the arms adjacent to the links being beveled, substantially as shown, and for the purpose set forth.

6. In a bag holder, the combination of a pivoted frame grooved for the reception of a slide, said slide having a cross-bar L to which are pivoted bag supporting arms M, similar arms secured to the pivoted frame, a hopper secured above the opening in the pivoted frame, and a rod *k* pivotally attached to the slide and to the support for the pivoted frame, substantially as set forth.

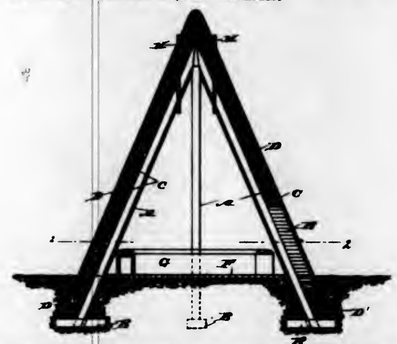
488,450. TOE-WEIGHT. JAMES FISHERMAN, Columbus, Ohio. Filed Sept. 9, 1892. Serial No. 445,440. (No model.)

Claim.—1. The combination with a spur or standard having a screw-threaded socket, of a toe-weight having a transverse orifice, and a screw passing through the orifice to engage the socket and provided with a collar which is loosely engaged with the toe-weight for preventing displacement of the screw, substantially as described.

2. The combination with a dove-tailed spur or standard having a screw-threaded socket, of a toe-weight having a transverse orifice and a dove-tailed groove which engages the dove-tailed spur or standard, and a screw having a laterally projecting part loosely engaging with the toe-weight to prevent lengthwise displacement of the screw while permitting it to freely rotate for engaging and disengaging the screw-threaded socket, substantially as described.

3. The combination with a spur or standard having a screw-threaded socket, of a toe-weight having a transverse orifice, and a screw passing through the orifice to engage the socket and held in permanent operative connection with the toe-weight to prevent its lengthwise displacement or loss while permitting the screw to freely rotate for engaging and disengaging the screw-threaded socket, substantially as described.

488,451. BUILDING. REUBEN QUATERMAN, Molino, Kans. Filed July 11, 1892. Serial No. 439,562. (No model.)



Claim.—1. A building made conical and having a metallic covering extending below the surface of the ground to form an earth connection for electrical currents, substantially as shown and described.

2. A building comprising a framework made of a series of posts anchored at their lower ends in the ground and connected with each other at their upper ends, and a sheathing for the said framework secured on the said posts, and made of planks laid flat and conforming to the conical shape of the building, substantially as shown and described.

3. A building comprising a framework made of a series of posts anchored at their lower ends in the ground and connected with each other at their upper ends, a sheathing for the said framework secured on the said posts and made of planks laid flat and conforming to the conical shape of the building, and a metallic covering for the said sheathing and extending at its lower edge below the surface of the ground, substantially as shown and described.

4. A building, comprising a framework formed of posts anchored at their lower ends and connected with each other at the top, a sheathing made of horizontally extending planks secured to the said posts and having their outer edges circular, a metallic covering for the said sheathing extending at its lower edge below the surface of the ground, and a floor for the said building extending at its outer edge close to the posts, substantially as shown and described.

5. A building comprising a framework made of a series of posts anchored at their lower ends in the ground and connected with each other at their upper ends, a sheathing for the said framework secured on the said posts and made of planks laid flat and conforming to the conical shape of the building, a metallic covering for the said sheathing and extending at its lower edge below the surface of the ground, and ventilating pipes arranged in the top of the sheathing and covering, substantially as shown and described.

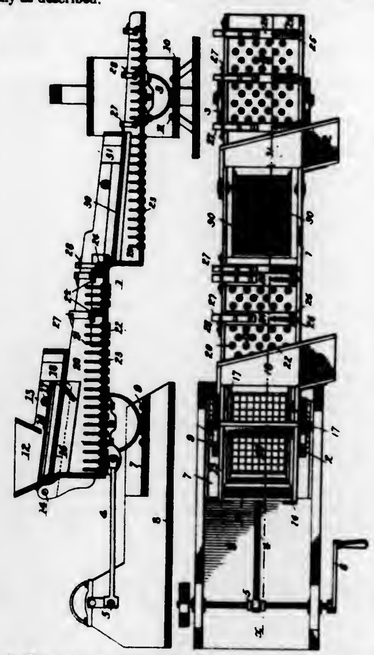
6. A building comprising a series of posts extending into the ground and connected with each other at the top, anchor beams connected with the lower ends of the said posts and set in the ground, a sheathing made of segmental planks arranged horizontally and secured to the said posts, and a door in the said sheathing and fitting snugly therein, substantially as shown and described.

7. A building comprising a series of posts extending into the ground and connected with each other at the top, anchor beams connected with the lower ends of the said posts and set in the ground, a sheathing made of segmental planks arranged horizontally and secured to the said posts, a door in the said sheathing and fitting snugly therein, and a metallic covering for the said sheathing and for the said door, substantially as shown and described.

488,452. PLACER-MACHINE. GEORGE M. REED, Waltham, assignor of one-half to Daniel H. Bishop, Boston, Mass. Filed May 27, 1892. Serial No. 434,063. (No model.)

Claim.—1. The combination with the reciprocating sluice-way having wheels at each end supporting the sluice-way, of supports for the wheels provided with ribs or ridges, means for reciprocating the sluice-way, a frame pivotally mounted on the sluice-way, a screen in the frame, and a sluice-box connected to the frame and having its mouth projecting laterally beyond the sluice-way whereby a combined reciprocating and jogging motion is given to the sluice-way and the material is screened, and the coarse material deposited on one side of the sluice-way, substantially as described.

2. The combination with the sluice-way, of a frame pivotally mounted thereon, a screen removably mounted in the frame and a sluice box arranged to dump the coarser material at one side of the sluice-way, the said sluice box being pivoted to the frame, substantially as described.



3. The combination with the sluice-way, of the riffles pivotally mounted to the side of the sluice-way, and provided with springs arranged to normally hold the riffles in a raised position, substantially as described.

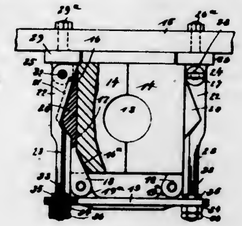
4. The combination with the sluice way, of the riffles mounted thereon, the free ends of the riffles being provided with a spring arm, and hooks mounted on the sluice-way arranged to engage said spring arms and hold the riffles in place, substantially as described.

5. The combination with the sluice-way, of the pivoted riffles having springs for normally raising them, and spring arms arranged to engage the hooks attached to the sluice way for holding the riffles in place, substantially as described.

6. The combination with the sluice-way, of a series of pivoted frames, each frame being provided with a screen, and with a sluice box pivotally connected thereto and arranged to deliver the matter not passing through the screen to one side of the sluice-way, substantially as described.

7. The combination with the sluice-way, of means for imparting to it a jogging motion, a sluice-way provided with the separating pins and riffles, and a series of screens and sluice boxes, substantially as described.

488,453. GUIDE-HOLDER FOR STAMP-MILLS. PETER C. ROBERTSON, Phillipsburg, Mont. Filed Aug. 3, 1892. Serial No. 442,009. (No model.)



Claim.—1. The combination with the stamp guides, of clamps secured to an adjacent support and arranged to embrace the guides, and a wedge mechanism for forcing the front and rear portions of the guides together by tightening the clamps, substantially as described.

2. The combination, with the guides having grooves in their sides, of bolts pivoted to an adjacent support and extending parallel with the sides of the guides, keys carried by the bolts and held in grooves in the guides, and a wedge mechanism for forcing the front and rear portions of the guides together by tightening the bolts, substantially as described.

3. The combination, with the guides having side grooves with inclined walls near the front of the guides, of keys held in the grooves, the keys having wedges near their rear ends and on their outer sides and wedges near their front ends to fit the inclined walls of the guide grooves, bolts pivoted to an adjacent support and having wedges to contact with the outer wedges on the keys, and face plates carried by the bolts and connected with the keys, substantially as described.

4. The combination of the frame of the machine, the separable guides held therein and provided on their outer sides with horizontal grooves having inclined walls near the front, the keys held to slide in the guide grooves, the said keys having wedges near their front ends to engage the walls of the grooves and exterior wedges near their rear ends, the face plates connecting the two keys, keepers secured to the machine frame adjacent to the guides, bolts pivoted in the keepers and adapted to extend through the face plate, the bolts having wedges near their pivoted ends to engage the exterior wedges of the keys, and nuts on the outer ends of the bolts, substantially as described.

5. The combination of the grooved guides, the movable keys held in the grooves of the guides and having grooved wedges on their outer sides, the clamping bolts pivoted adjacent to the guides and having wedges which enter the grooves of the key wedges, and a face plate connected with the keys and adjustable in and out on the bolts, substantially as described.

6. The combination of the guide fastening keys, the face plate connecting the keys, the clamping bolts held adjacent to the keys and projecting through holes in the face plate, and the nuts secured to the bolts and having shanks to enter holes in the face plate, substantially as described.

488,454. THERMOCAUTER. FERNAND M. ST. OMER ROY, New York, N. Y. Filed May 26, 1892. Serial No. 434,511. (No model.)

Claim.—1. The combination with a cauter, of a carburetor provided at one end with a mixing cock and at the opposite end with a regulating cock located between the cauter and the carburetor and adapted to connect with a blow pipe, substantially as described.

2. The combination with a cauter, and a combustion chamber having a pipe or tube *b* communicating with the interior of the cauter, of an escape tube *c* extending from the combustion chamber through the cauter and discharging the products of combustion laterally therethrough to the exterior thereof, said cauter being provided with an insulating layer and a central tube through which the carbureted air is conducted to the tube in the combustion chamber, substantially as described.

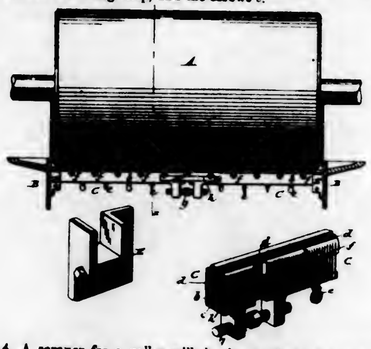
3. The combination with an impregnator or carburetor D, a combustion chamber F, and a bulb or forcing device A connected with the impregnator or carburetor, of a valve casing having two channels interposed between the cauter and impregnator or carburetor, one channel leading to the combustion chamber and the other channel leading to the exterior for the purpose of supplying the combustible to the exterior of the combustion chamber for the preliminary heating thereof, substantially as described.

488,455. ROLLER GRINDING-MILL. DANIEL A. SCALLEN, Hiscott City, Md. Filed Dec. 4, 1886. Serial No. 220,667. (No model.)

Claim.—1. As an improvement in roller grinding mills, the combination of the smooth grinding roll, the fixed channeled support C, the flexible metal strip *e*, therein, the leather strip seated in said support against the flexible strip and bearing edgewise against the roll, and the series of adjusting screws beneath the strip at different points in its length as shown: whereby the leather is sustained and held adjustably in contact with the roll.

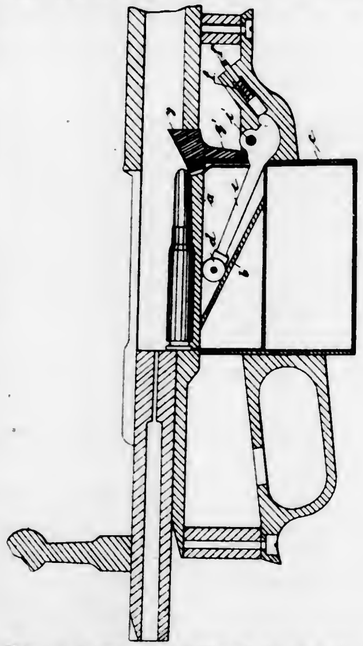
2. In a roller grinding mill, and in combination with the smooth grinding roll, the leather strip presented edgewise against the roll, the fixed grooved support C, the flexible strips *e*, *d*, therein bearing beneath and against the side of the leather, and the adjusting screws *e*, *f*, applied as shown: whereby the leather is compressed, sustained and held adjustably in contact with the roll.

3. The scraper attachment for roller mills consisting of the channeled extensible frame with its adjusting screw *g*, the leather strip, its flexible sustaining strip, and the screws *e*.



4. A scraper for a roller mill, having a clamped non-metallic scraper strip, a metallic follower bar below said strip, and set screws to vertically adjust the follower-bar, independently of the clamping device.

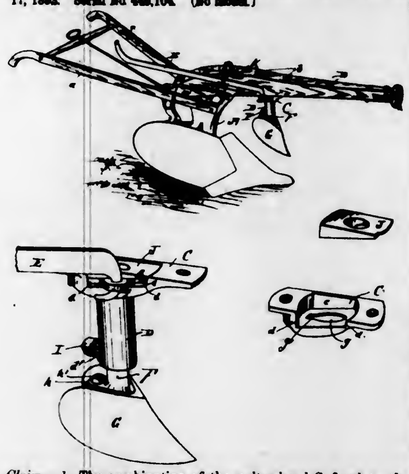
488,456. CARTRIDGE-MAGAZINE FOR BREECH-LOADING SMALL-ARMS. CARL SCHNIPPERING, Cassel, Germany. Filed May 24, 1892. Serial No. 434,296. (No model.)



Claim.—1. A repeating mechanism for breech loading small arms fitted with a cylinder breech or bolt comprising a magazine compartment, a carrier *a*, mounted in said compartment, a spring actuated lever carrying the pulley engaging the carrier and tending to press the carrier upward, and a tappet standing in the path of the movable breech or bolt and engaging the lever for depressing the carrier when the cylinder or bolt is closed, substantially as described.

2. A repeating mechanism for breech loading small arms fitting a cylinder breech or bolt comprising a magazine, a carrier mounted in said magazine, a guide bar connected to the carrier, a spring actuated lever having a pulley engaging the carrier and guide bar, and a vertically reciprocating tappet standing in the path of the movable cylinder or bolt and bearing upon the lever, substantially as described.

488,457. COLTER. WILLIAM B. SMITH, Canton, Ohio. Filed Oct. 17, 1892. Serial No. 449,104. (No model.)

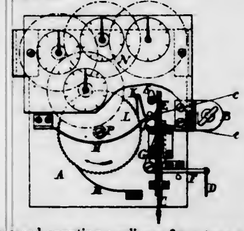


Claim.—1. The combination of the colter-head C, fixed to the beam of a plow, the thimble or socket D, provided with the head *e*, having the extension *f*, the colter stem F, having fixed thereto the colter-blades G, and the lever or handle E, pivotally connected to the extension *f*, substantially as and for the purpose specified.

2. The combination of the colter-head C, provided with the recess *c*, and the stops *d*, the thimble or socket D, carrying the colter-stem F, the filling-block or plate J, the colter blades G, the set-screw I, and the lever or handle E, substantially as and for the purpose specified.

3. The combination of the colter-head C and the side extension *f*, the colter-stem F, having fixed to the bottom or lower end thereof the colter-blades G, and adjustably attached to the thimble or socket D, and means for adjusting the colter blades to alignment with the land-side of the plow, substantially as and for the purpose specified.

488,458. WORD-COUNTING APPLIANCE FOR TYPE-WRITERS. EDWARD C. DE SEGUNDO, London, England. Filed July 21, 1892. Serial No. 440,813. (No model.)

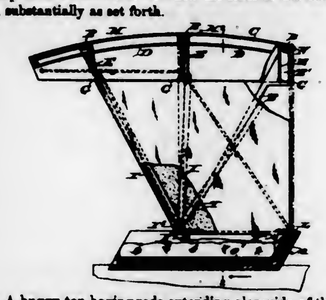


Claim.—In a word counting appliance for a type writer, in combination with the ratchet wheel of a counter and its latch ended spring-pawl lever, a latch headed rod moved down for every character impressed and a latch headed stationary rod at its side, a bell crank having its one arm linked to a rod moved down for every space, and its other arm bearing against the two latch headed rods, arranged and operating substantially as described.

488,459. BUGGY-TOP. DAVID SHIVELL, Arlington, Ind. Filed Mar. 17, 1892. Serial No. 425,302. (No model.)

Claim.—1. The combination with a buggy top having a lining detachably connected at its side edges therewith, and means for securing the side edges of the lining to the sides of the top, of side curtains concealed within the space above the lining and adapted to be drawn down when the free edges of the lining are released, substantially as set forth.

2. The combination with the carriage top having a lining detachably connected at its side edges therewith, and means for securing the side edges of the lining to the top, of rods extending along the upper portion of the bows and terminating at the upper ends of the side of the bows, and curtains having eyes sliding on said rods and adapted to be drawn down when the sides of the lining are released, substantially as set forth.



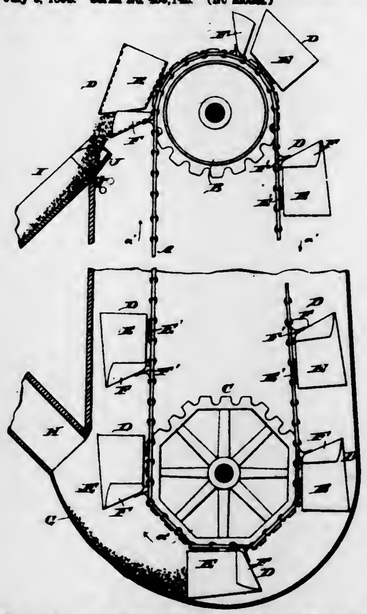
3. A buggy top having rods extending alongside of the top portions of the bows in the horizontal plane thereof, the ends of the rods being secured to the bows at the upper ends of their sides, and sliding curtains having eyes I' at their upper or inner edges only sliding on said rods; the curtains being of a length to extend from the ends of the said rods down to the sides of the seat and from the middle of the rods to the ends thereof, and a lining for securing the curtains when drawn or closed, the side edges of the lining having spring catches to engage the bows at the juncture of the sides and top, substantially as set forth.

4. A buggy top provided with rods pivoted to the bows and each adapted to be fastened to the side bow, the several rods supporting the lining, substantially as shown and described.

5. In a buggy top, the combination with the bows and the lining, of rods pivoted to the said bows and supporting the said lining, substantially as shown and described.

6. In a buggy top, the combination with the bows and the lining, of rods pivoted to the said bows and supporting the said lining, and a spring catch for fastening the free ends of the said rods to the said bows, substantially as shown and described.

488,460. CONVEYER. GEORGE H. TESCH, Pottsville, Pa. Filed July 6, 1892. Serial No. 439,142. (No model.)

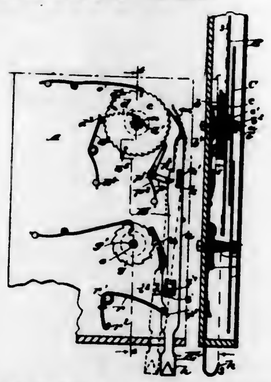


Claim.—1. The combination with an endless chain, of a bucket rigidly connected with the chain, and an end gate forming a closure of one end of the bucket, the said gate being also rigidly secured to the chain independently of the bucket, said chain being capable of flexure between the connections of the bucket and gate, and all of

said parts being adapted for conjoint operation, substantially as shown and described.

2. In a device of the character described, the combination, with an endless chain, of a bucket formed of a body and a gate separate and independent from each other and each rigidly secured to a different link of the chain, the body having an open top and one open end, substantially as herein shown and described.

488,461. CALENDAR. JOSEPH WALLIN, Boston, Mass. Filed May 6, 1892. Serial No. 431,962. (No model.)



Claim.—1. In a calendar, the combination with a case, three dials mounted to rotate in the case and expose indications on their faces, and ratchet wheels for the dials, of a pull bar in the case adapted to engage two of the ratchet wheels and move two of the dials together when vertically reciprocated, and to rotate the other dial and its ratchet wheel when laterally swung below the lower end of the case, and then reciprocated, substantially as described.

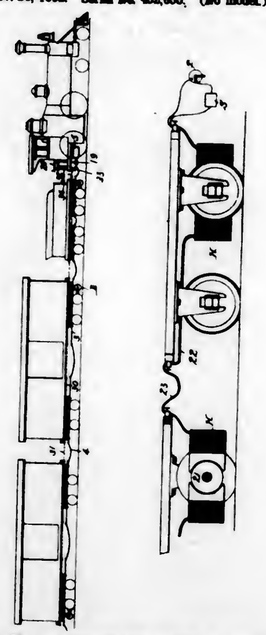
2. In a calendar, the combination with a case, a day name dial and a day date dial each rotatable on a journal stud in the case, a ratchet wheel for each dial on said studs, and a detent for each wheel, of a pull bar vertically movable and reciprocable in the case, and a spring dog on the upper end of said bar adapted to actuate both of said ratchet wheels and their dials, substantially as described.

3. In a calendar, the combination with a case, a journal stud projected within the upper part of the case, two ratchet wheels on said stud and having an equal number of teeth, one wheel being loose on the hub of the other wheel, a day name-dial secured on said hub projection near its outer end, and a date-dial secured on the hub projection of the other ratchet wheel, of a spring detent pawl for each ratchet wheel, a vibratable pull bar adapted to slide vertically in the case, and a spring dog on the top end of the bar adapted to hook onto both ratchet wheels, substantially as described.

4. In a calendar, the combination with a case apertured in its front at three points, a journal stud within the upper part of the case, a day-name-dial and a day-date dial on said stud, a ratchet wheel for the name-dial and having a projected hub, a ratchet wheel for the date-dial rotatable on the hub of the other ratchet wheel, a spring detent for each ratchet wheel, and a month dial and a ratchet wheel for said dial both rotatable on a stud within the lower part of the case, of an upright pull bar supported to slide and vibrate in the case, and spring dogs adapted to actuate the dials when reciprocated in connection with the ratchet wheels bearing said dials, substantially as described.

5. In a calendar, the combination with a rectangular case, apertured at three points in its front wall, two spaced journal studs within the case, two ratchet wheels with hubs one mounted on the other and both rotatable on the upper journal stud, a spring pawl for one of the ratchet wheels, a spring-pressed bell crank, a detent arm on said bell crank engaging the other ratchet wheel, a retracting coiled spring for the wheel engaged by the bell crank detent, a dial plate for each of said ratchet wheels and movable therewith, a ratchet wheel on the lower journal stud, and a dial plate secured on the hub of said wheel, of an upright pull bar provided with parallel slots near its lower end, joined by a transverse slot, a single slot near the upper end of said bar, two pins seated in the case and engaging said slots, an upper and a lower spring dog on the pull bar, adapted to engage the ratchet wheels, and a lug near the upper end of the pull bar adapted to rock the bell crank detent, substantially as described.

488,462. CAR-STARTER. WILLIAM WEAVER, Westport, assignor to himself, and William A. Curtis, Arthur C. Wheeler, Dexter Hitchcock, and Charles Lapham, Norwalk, Conn. Filed Oct. 28, 1891. Renewed Nov. 21, 1892. Serial No. 452,655. (No model.)



Claim.—1. The combination with a train of cars and a locomotive, of a car starter upon each car, and a rotary motor for each starter, all of the motors being connected to receive motor fluid from a single source, and means upon the locomotive for shutting off or controlling the flow of the motor fluid while the train is being propelled by the locomotive and for reversing the motion of the starter, substantially as described.

2. The combination in a car starter with a train of cars and a locomotive, of a rotary motor upon each car, all the motors being connected to receive the motor fluid from the same source, and means upon the locomotive for controlling the flow of the motor fluid and for reversing the motion of the starter and disconnecting it from the car wheels, substantially as set forth.

3. In a car starter the combination with the axle of a railway car and a gear wheel upon said axle, of a rotary motor and a frame carrying two sets of gears driven by said motor, said frame being adjustable to bring the final gear of either set into mesh with the wheel upon the axle of the car whereby the direction of rotation of the axle may be changed, substantially as set forth.

4. The combination in a car starter with the locomotive and cars, of a rotary motor upon each car, a train carrying two sets of gears driven by said motor said frame being adjustable to bring either set into mesh with a gear upon the axle, a lever connected with the frame to lift the latter by movement in either direction, and connections between all of the levers, and an operating device upon the locomotive, substantially as set forth.

488,468. AUGER-HANDLE. DAVID R. WHITEHILL, North Clarendon, Pa. Filed Apr. 23, 1892. Serial No. 430,395. (No model.)

Claim.—1. The combination with a handle having a mortise therein, and clamps in the mortise, of eccentric cams adapted to bear one on each of the clamps whereby the latter are forced together against the tool to be held, substantially as set forth.

2. The combination with an auger handle having a mortise located therein, which latter is of greater diameter at one end than at the other, of adjustable clamps provided with V-shaped grooves for the reception of the shank of an auger or other tool, and an eccentric roller having a handle thereon, of a cam mounted on a shaft in said mortise, the cam and roller adapted to cause the clamps to hold the shank of an auger against movement, substantially as set forth.

488,464. STAND FOR BICYCLES. HERMAN C. WIEDENMANN, Philadelphia, Pa. Filed Mar. 21, 1892. Serial No. 426,753. (No model.)

Claim.—1. A bicycle stand, comprising two independent frames adapted to engage the hubs of the front and rear wheels of the bicycle, each of the said frames being provided with laterally adjustable standards, substantially as shown and described.

2. A bicycle stand, provided with a frame for the front wheel of the bicycle, and comprising two standards connected with each other at the top and bottom, and each formed with a fork adapted to be engaged by the hub of the wheel at opposite sides of the latter, substantially as shown and described.

3. A bicycle stand, provided with a frame adapted to engage the front wheel of the bicycle, and comprising two standards connected with each other at the top and bottom and formed with forks adapted to receive the hub of the wheel, and a rest secured on each of the said standards and adapted to engage the fork for the front wheel, substantially as shown and described.

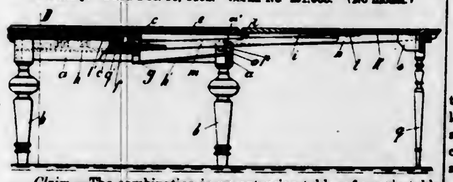
4. A bicycle stand, provided with a frame adapted to engage the front wheel of the bicycle, and comprising two standards connected with each other at the top and bottom and formed with forks adapted to receive the hub of the wheel, a rest secured on each of the said standards and adapted to engage the fork for the front wheel, and means, substantially as described, for transversely adjusting each rest so as to fit onto the respective arm of the fork, as set forth.

5. A bicycle stand, provided with a frame adapted to engage the front wheel of the bicycle, and comprising two standards connected with each other at the top and bottom and formed with forks adapted to receive the hub of the wheel, a rest secured on each of the said standards and adapted to engage the fork for the front wheel, and rubber tipped screws screwing in lugs on the lower ends of the said standards, substantially as shown and described.

6. A bicycle stand, provided with a frame for supporting the front wheel of the bicycle, and comprising two standards formed with forks adapted to receive the hub of the wheel, a rest held on each of the standards and engaging an arm of the fork of the wheel, and slotted transversely extending bars for connecting the upper ends and the lower ends of the said standards with each other, substantially as shown and described.

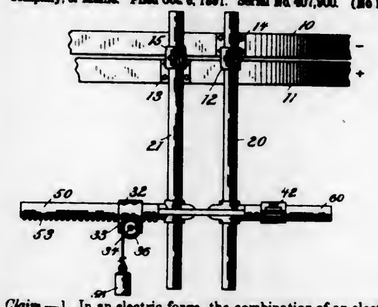
7. A bicycle stand, provided with a rear frame adapted to support the rear wheel of the bicycle, and comprising a base formed with lugs at its lower ends, rubber tipped screws screwing in said lugs, and standards held transversely adjustable on the said base and each formed at its upper end with a fork to receive the hub of the rear wheel, substantially as shown and described.

488,465. EXTENSION-TABLE. JOHANN F. WIEGERS, Hanover, Germany. Filed Feb. 16, 1892. Serial No. 421,663. (No model.)



Claim.—The combination in an extension table, of a main table having a central cross piece *g* provided with vertically spaced lateral projections, fixed guides and supports *k*, *k'*, leading to said projections from the end pieces of the main table frame, the guides *k'* being inclined, and extension leaves having folding legs, said legs being guided by the supports *k*, *k'*, and resting thereon when in the inner positions, substantially as described.

488,466. ELECTRIC FORGE. GEORGE D. BURTON, Boston, and EDWIN R. ARGELL, Somerville, Mass., assignors to the Electrical Forging Company, of Maine. Filed Oct. 6, 1891. Serial No. 407,900. (No model.)

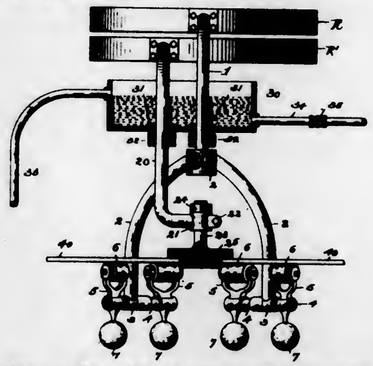


Claim.—1. In an electric forge, the combination of an electrode provided with an end socket and with a rack, a conductor provided with a clamp, in which said electrode is movable, a crank-shaft supported in said clamp and provided with a pinion meshing with said rack, another electrode, and conductors connecting said electrodes with the source of a heating current.

2. The combination of two rings constituting opposite poles of an electric converter, rigid conductors connected with said rings, clamps at the outer ends of said conductors, an electrode supported in one of said clamps, and consisting of a solid bar provided with a cup-shaped socket at its inner end and another electrode supported in the other clamp and consisting of a solid bar provided with a cup-shaped socket at its inner end, said electrodes being adapted to receive the opposite ends of the bar to be heated, substantially as set forth.

3. The combination of two rings constituting opposite poles of an electric converter, conductive brackets attached to said rings respectively, and provided with clamps at their outer ends, vertical rods adjustable in said clamps, composed of conductive material, horizontal angular rods, connected with said vertical rods, clamps at the outer ends of said angular rods, and electrodes adjustable in said clamps and provided with cup-shaped sockets at their inner ends.

488,467. ELECTRIC METAL-HEATING APPARATUS. GEORGE D. BURTON, Boston, and EDWIN R. ARGELL, Somerville, Mass., assignors to the Electrical Forging Company, of Maine. Filed Aug. 5, 1892. Serial No. 442,479. (No model.)



Claim.—1. The combination of a converter for converting electrical currents of high potential into those of low potential, conductors leading from said converter and provided with metal heating appliances at a suitable distance therefrom, and a liquid bridge or short circuit placed between the converter and said metal heating appliances substantially as described.

2. The combination of a converter for converting electrical currents of high potential into those of low potential, conductors leading

from said converter and provided with metal heating appliances at a suitable distance therefrom, and a liquid bridge or short circuit contained in a metal reservoir, between the converter and said metal heating appliances, substantially as described.

3. The combination of a converter for converting electrical currents of high potential into those of low potential, conductors leading from said converter and provided with metal heating appliances at a suitable distance therefrom, and a body of cooling liquid contained in a reservoir around each of said conductors, between the converter and said metal heating appliances, substantially as described.

4. The combination of two electrodes connected with opposite electric poles, one of said electrodes comprising a pivoted freely swinging arm provided with a roller at its upper end and a counter balancing weight at its lower end, substantially as set forth.

5. The combination, in an electrical apparatus for heating metals, of the central heating plate, 25, attached to one electric terminal, and a series of pivoted swinging rollers, 6, arranged around said plate and attached to the opposite electric terminal, substantially as described.

6. In an electric heating apparatus, an arm, 2, constituting one electric terminal thereof, and having the cross bar, 4, and two rollers, 6, 6, mounted thereon, in combination with the heater plate, 25, arranged to receive the ends of the bar to be heated under it and connected to the other electric terminal, substantially as described.

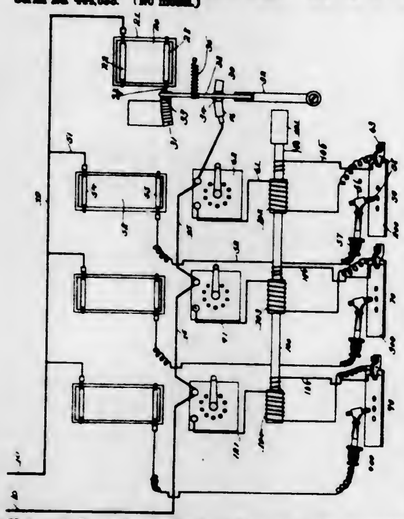
7. In an electric heating apparatus, an adjustable central heating plate, 25, arranged to receive against it the ends of the bars to be heated and connected to one electric terminal, and a series of contact rollers, 6, 6, disposed radially around the said plate and connected to the other electric terminal, substantially as described.

8. The combination of two electrodes connected with opposite electric poles, one of said electrodes comprising a pivoted freely swinging arm, provided with a contact face at its upper end and a counterbalancing weight at its lower end, substantially as set forth.

9. The combination in an electric apparatus for heating metal of a central heating plate connected with one electric pole and provided with an overhanging flange, and electrodes connected with the opposite electric pole and having their contact faces on their upper sides, substantially as set forth.

10. The combination of two non-clamping electrodes connected with opposite electric poles, one of said electrodes having a yielding contact face on its upper side and the other electrode having a contact face on its under side, substantially as set forth.

488,468. ELECTRIC METAL-WORKING APPARATUS. GEORGE D. BURTON, Boston, and EDWIN R. ARGELL, Somerville, Mass., assignors to the Electrical Forging Company, of Maine. Filed Aug. 31, 1892. Serial No. 444,633. (No model.)



Claim.—1. In an electric metal working apparatus, the combination of a main circuit, a variable resistance disposed in said circuit, a branch working circuit connected with said main circuit, one terminal of said working circuit being provided with a work holder and the other terminal with a movable holder having an insulated handle, and carrying a carbon pencil, and an electro-magnet the core of which is disposed in proximity to said variable resistance for actuating the latter, the coil of said magnet being formed from one of the wires of the working circuit.

2. In an electric metal working apparatus, the combination of a main circuit, a variable resistance disposed in said circuit, a branch working circuit connected with said main circuit, one terminal of said working circuit being provided with a work holder, and the other terminal with a movable holder having an insulated handle and carrying a carbon pencil, and an electro-magnet the core of which is disposed in proximity to said variable resistance for actuating the latter, the coil of said magnet being formed from one of the wires of the working circuit, and a wire connecting the core of said magnet with the work.

3. In an electric arc metal working apparatus, the combination of a main circuit, a branch working circuit connected with said main circuit, the terminals of said branch circuit being provided respectively with a carbon holder and a work holder, a variable resistance in the main circuit comprising a series of resistance coils, a pivoted lever provided with a brush for contact with said coils, a plate connected with one of the wires of the main circuit, a brush on said lever in contact with said plate, and a spring for retracting said lever, and an electro-magnet, the core of which is disposed in proximity to said lever for actuating it, the coil of said magnet being formed from one of the wires of the working circuit.

4. In an electric arc metal working apparatus, the combination of a main circuit, two or more branch working circuits connected therewith, the terminals of each branch circuit being provided respectively with carbon and work holders, a variable resistance in said main circuit, and an electro-magnet the core of which is common to said working circuits, one end thereof being disposed in proximity to said variable resistance, and the cores of said magnet being formed from the wires of said working circuits.

5. In an electric arc metal working apparatus, the combination of a main circuit, two or more branch working circuits connected therewith, the terminals of each branch circuit being provided respectively with carbon and work holders, a variable resistance in said main circuit, and an electro-magnet the core of which is common to said working circuits, one end thereof being disposed in proximity to said variable resistance, and the coil of said magnet being formed from the wires of said working circuits, and rheostats disposed in said working circuits.

6. In an electric arc metal working apparatus, the combination of a main circuit, a working circuit connected therewith, the terminals of said working circuit being provided with carbon and work holders respectively, a resistance tank in said working circuit, a variable resistance tank in the main circuit, and an electro-magnet for actuating said variable resistance operated by the working circuit.

7. In an electric arc metal working apparatus, the combination of a working circuit having a conductor adapted for connection with the metal to be heated or worked, a conductor provided with a movable terminal for forming an electric arc in connection with said work, and a liquid resistance disposed in said working circuit and serving as a cushion for the current on the formation and cessation of the arc.

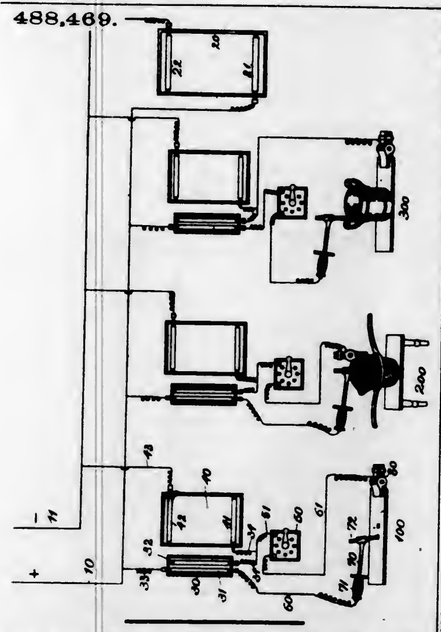
488,469. ELECTRIC METAL-HEATING APPARATUS. GEORGE D. BURTON, Boston, and EDWIN R. ARGELL, Somerville, Mass., assignors to the Electrical Forging Company, of Maine. Filed Sept. 22, 1892. Serial No. 446,532. (No model.)

Claim.—1. The combination of the main circuit conductors, a high resistance tank having two terminal plates, one of which is connected with one of said conductors, a low resistance tank having two terminal plates, one of which is connected with the other main conductor, a short circuit conductor connecting the intermediate terminal plates of said tanks, and a working circuit having one of its conductors connected with the outer plate of one of said tanks and its other conductor connected with the inner plate of the other tank.

2. The combination of the main circuit conductors, a high resistance tank having two terminal plates, one of which is connected with one of said conductors, a low resistance tank having two terminal plates, one of which is connected with the other main conductor, a short circuit conductor connecting the intermediates of said tanks, a working circuit having one of its conductors connected with the outer plate of one of said tanks and its other conductor connected with the inner plate of the other tank, and a rheostat disposed in said working circuit.

3. The combination of the main circuit conductors, a resistance tank for containing a liquid resistance connected with said conductors and two or more working circuits connected with said conductors, each of said working circuits embracing a high resistance tank, a working conductor connected with the outer plate of the high resistance tank, a working conductor connected with the inner plate of the low resistance tank, and a short circuit conductor connecting the intermediate plates of said high and low resistance tanks.

488,469.



488,470. PROCESS OF REDUCING FRANKLINITE ORES. GEORGE G. CONVERS, Salisbury, Pa. Filed Feb. 29, 1892. Serial No. 423,231. (No model.)

Claim.—1. The herein described process of treating ores containing franklinite, willemite and zincite, which consists in treating the franklinite to render it magnetic, separating it by magnets from the willemite and zincite, reducing the willemite and zincite to spelter by a Belgian or other suitable furnace, treating the franklinite in the Wetherill or other suitable furnace for the manufacture of oxide of zinc and smelting the residuum from the franklinite for spiegeleisen, substantially as set forth.

2. For the manufacture of spelter from ores containing franklinite, willemite and zincite, the process consisting in treating the franklinite to render it magnetic, separating it by magnets from the willemite and zincite, and reducing the willemite and zincite to spelter by a Belgian or other suitable furnace, substantially as set forth.

3. For the manufacture of the oxide of zinc from ores containing franklinite, willemite and zincite, the process consisting in treating the franklinite to render it magnetic, separating it by magnets from the willemite and zincite, reducing the willemite and zincite to spelter by the Belgian or other suitable furnace, and treating the franklinite in the Wetherill or other suitable furnace for the manufacture of oxide of zinc, substantially as set forth.

4. For the manufacture of oxide of zinc from ores containing franklinite, willemite and zincite, the process of consisting in treating the franklinite to render it magnetic, separating it by magnets from the willemite and zincite, and treating the separated franklinite alone and the willemite and zincite together in the Wetherill or other suitable furnace for the manufacture of the oxide of zinc, substantially as set forth.

488,471. PROCESS OF TREATING FRANKLINITE AND WILLEMITE. GEORGE G. CONVERS, Salisbury, Pa. Filed July 25, 1892. Serial No. 441,178. (No specimens.)

Claim.—1. The herein described process of treating ores containing franklinite and willemite, which consists in treating the ore to render the franklinite magnetic, separating it by magnets from the willemite, reducing the willemite to spelter in a Belgian or other suitable furnace, treating the franklinite in the Wetherill or other suitable furnace for the manufacture of oxide of zinc, and smelting the residuum from the franklinite for spiegeleisen; substantially as set forth.

2. For the manufacture of spelter from ores containing franklinite and willemite, the process of treating the ore to render the franklinite magnetic, separating it by magnets from the willemite, reducing the willemite to spelter by a Belgian or other suitable furnace; substantially as set forth.

3. For the manufacture of oxide of zinc from ores containing franklinite and willemite, the process of treating the ore to render the franklinite magnetic, separating it by magnets from the willemite, reducing the willemite to spelter by the Belgian or other suitable furnace, and treating the franklinite in the Wetherill or other suitable furnace for the manufacture of oxide of zinc; substantially as described.

4. In the metallurgy of ore containing franklinite and willemite, the process of treating the ore to render the franklinite magnetic, separating it by magnets from the willemite, subjecting the franklinite and willemite separately to furnace operations to obtain their final products, and smelting the residuum from the franklinite for spiegeleisen; substantially as described.

5. The herein described process of treating ores containing franklinite and willemite, which consists in crushing the ore so as to cause the main portion of the particles of willemite to be of larger grain than the particles of franklinite; rendering the franklinite magnetic as described; separating the franklinite by magnets from the willemite; and subsequently subjecting the franklinite and willemite separately to furnace operations to obtain their final products; substantially as described.

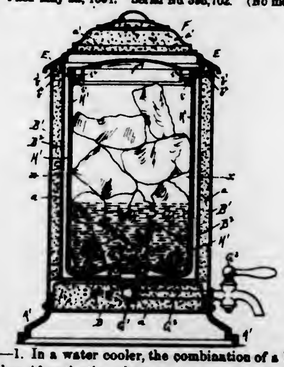
488,472. NUT-LOCK. JAMES R. CRISP, Brownwood, Tex., assignor of one-half to Wash W. Brooks, same place. Filed Aug. 26, 1892. Serial No. 444,185. (No model.)

Claim.—1. In a nut-locking device the combination of the bolt provided with a dove-tailed groove, the nut engaging said bolt, and the key, fitting in said groove, and provided with a beveled shoulder overhanging the outer surface of the nut to engage angles or shoulders thereon, substantially as specified.

2. In a nut locking device the combination of the bolt provided with a longitudinal groove, the nut engaging said bolt and provided upon its outer face with a series of diametrical cuts or channels forming angles or shoulders at their intersections with the bore of the nut, and the tapered key fitting in the groove of the bolt and provided with a beveled, overhanging shoulder to engage the angles or shoulders of the nut, substantially as specified.

3. In a nut-locking device the combination of the bolt provided with a longitudinal groove, the nut engaging said bolt and provided upon its outer face with transverse cuts or channels intersecting the bore of the nut and forming angles at such intersections, and the key-fitting in the groove of the bolt and having a concaved outer edge to form a beveled shoulder which overhangs the outer face of the nut to engage the angles thereof, substantially as specified.

488,478. WATER-COOLER. WILLIAM H. FRUEH, Minneapolis, Minn. Filed May 22, 1891. Serial No. 393,702. (No model.)



Claim.—1. In a water cooler, the combination of a base A′ having a cross-bar A^2 projecting above and connecting its opposite upper edges, an outer casing B′ connected by its lower edge to the upper outer edge of said base, a disk D connected to said base and forming a bottom thereto below the line of said outer casing or shell, an inner shell H′ resting upon said cross bar within said outer shell, an annular ring E uniting the upper edge of said inner and outer shell, and nos-

conducting filling *a* between said shells and disk D, substantially as and for the purpose set forth, whereby the weight of said inner shell is borne by said cross bar.

2. In a water cooler, the combination of a base A′ having a cross bar D projecting above and connecting its opposite upper edges, an outer casing B′ connected by its lower edge to the upper outer edge of said base, an inner shell H′ resting upon said cross bar within said outer shell, an annular ring E uniting the upper edges of said inner and outer shell, non-conducting filling *a* between said shells and disk, a faucet pipe G^3 passing horizontally through the side of said base and with its inner perforated end G′ upturned and projecting through said cross bar and inner shell and secured therein, an ice receptacle H′ having a spring valve in its bottom adapted to be actuated by said upwardly projecting end G′ when said receptacle is inserted into said inner shell, substantially as and for the purpose set forth.

3. In a water cooler, the combination with the casing or shell having a perforated plug G′ projecting upward into its interior and connected to an exterior faucet, of an inner ice receptacle H′, a valve seat f' inserted through the bottom of said receptacle, a combined nut and cap f^2, provided with perforations and screwed over said valve seat within said receptacle, a valve resting upon said seat within said cap, a spring within said cap and above said valve for holding it closed, and a rubber gasket *d* surrounding the lower part of said plug, whereby when said receptacle is inserted into said shell said plug will open said valve and form a connection between said receptacle and said faucet, and said valve be automatically closed when said receptacle is removed, substantially as and for the purpose set forth.

488,474. CAR-SPRING. GEORGE GIBBS, Milwaukee, Wis. Filed Nov. 23, 1891. Serial No. 412,833. (No model.)

Claim.—1. A dampening mechanism for springs, consisting essentially of a plurality of flat friction plates lying face to face in planes parallel to the line of action of the spring, and a spring independent in its action of the movement of the parts and adapted to press and hold said plates together with a constant pressure, substantially as shown and described.

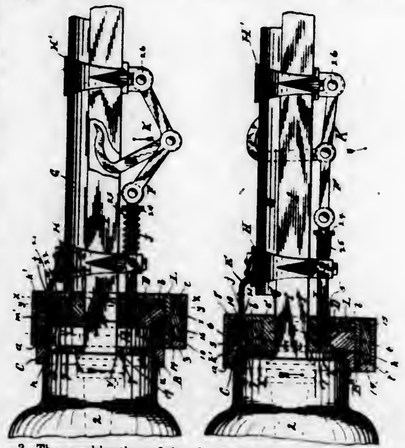
2. In combination with a car spring, a dampening or retarding mechanism comprising a plurality of flat parallel plates secured to one of the parts between which the spring acts, and a plurality of similar plates secured to the other parts, said plates alternating with each other, a bolt passing through coinciding slots in the plates, and a spring mounted on the bolt and acting to press the plates together and to maintain a constant frictional contact, substantially as shown and described.

3. The combination with a car spring of a dampening or retarding apparatus, comprising a plurality of flat friction plates secured alternately to the opposite parts between which the spring works and lying together face to face in planes parallel to the line of action of the spring, and a spring for pressing said plates together with a constant pressure, substantially as shown and described.

488,475. HORSE-HITCHING DEVICE. LOUIS HOUSE, Syracuse, N. Y. Filed Jan. 9, 1892. Serial No. 417,568. (No model.)

Claim.—1. In a hitching and checking device, the combination of an outer clutch member mounted upon and rotatable with the hub of a vehicle wheel, an inner clutch member supported upon the axle of the vehicle and longitudinally movable thereon, said inner clutch member having a non-rotatable hub and a rotatable line spool, the hitching line engaging said line spool, a spring-actuated pawl 9, pivoted at one end within an opening in said line spool, a barrier adjacent to said line spool, and means for so actuating said pawl that its free end will drop out of said opening into engagement with said barrier, whereby rotation of the line spool may be prevented the instant the hitching line is unwound from the line spool.

2. The combination, in a hitching and checking device, of an outer clutch-member mounted upon and rotatable with the hub of a vehicle wheel, an inner clutch-member supported upon the axle of the vehicle and longitudinally movable thereon, means for forcing said clutch members into and out of gear with each other, said inner clutch member having a non-rotatable hub and a rotatable line-spool, a hitching line engaging said line-spool, a barrier supported adjacent to said spool, and a spring-pressed pawl pivoted at one end within an opening in said spool and having at its opposite end a transverse pin received by a curvilinear slot in said spool, said pin being engaged by the hitching line, as specified, whereby when said hitching line is unwound from said spool said pawl will be caused to drop into engagement with said barrier and further rotation of the spool thereby prevented.



3. The combination of the clutch of a hitching and checking device, one member of which is mounted upon and rotatable with a rotating part of a vehicle, and a hitching line coiled around the other member of said clutch, with a pawl pivoted at one end to said last-mentioned clutch-member and having a transverse pin at its opposite end, said pin being engaged by said hitching line, and the pawl thereby normally held in its innermost position, and a barrier adapted to be engaged by said pawl when said line is disengaged from the latter, substantially as described and for the purposes specified.

4. In a hitching and checking device, the inner and outer members of the clutch, said outer member being mounted upon and rotatable with the hub of the vehicle wheel, and said inner member being supported by the axle of the vehicle and longitudinally movable thereon, and having a non-rotatable hub, a rotatable line spool, and a casing secured to said hub, a hitching line having its ends passing through openings in said casing, said hitching line being coiled around said line-spool, a pawl engaged and supported at its non-pivoted end by said hitching line, and a barrier supported by said case adjacent to said pawl and adapted to be engaged by the pawl when the hitching line is unwound from the spool.

5. In a hitching and checking device, the inner and outer members of the clutch, said outer member being mounted upon and rotatable with the hub of the vehicle wheel, and said inner member being supported by the axle of the vehicle wheel and longitudinally movable thereon, and having a non-rotatable hub, a casing secured thereto and a line-spool mounted on said hub, in combination with a hitching line having its ends passing through openings in said casing, a pawl within an opening in said line-spool, said pawl being pivoted at one end and having a projection at its opposite end, said projection being engaged and the pawl normally held within said opening by said hitching line, a buffer plate supported by said casing adjacent to said pawl, and an elastic backing for said buffer plate, all substantially as shown and described.

6. In a hitching and checking device, the combination of a hitching line an outer rotating clutch member mounted upon a rotatable part of a vehicle, an inner longitudinally-movable clutch member, said inner member having a rotatable line-spool formed with an opening, a pawl pivoted at one end within said opening, means for normally holding said pawl within the opening but permitting its free end to drop out of said opening when the hitching line is disengaged from the line spool, and a barrier adjacent to said pawl and adapted to be engaged by the same when its free end is out of said opening, substantially as described and for the purposes specified.

7. A hitching and checking device, consisting of a hitching line an outer rotating clutch member mounted upon a rotatable part of a vehicle an inner longitudinally movable clutch member, said inner clutch member consisting of a non-rotatable hub, a collar or bushing thereon, and a rotatable line-spool upon said collar, said line-spool having an opening, a pawl pivoted at one end within said opening, means for normally holding the pawl within the opening but permitting its free end to drop out of the same when the hitching line is disengaged from the line spool, and a barrier adjacent to said pawl and adapted to be engaged by the same when its free end is out of said opening, said barrier having an elastic backing, substantially as described and for the purposes specified.

8. In a hitching and checking device, the outer and inner clutch members, said outer member being mounted upon a rotatable part of a vehicle and said inner clutch member being movable longitudinally and having an opening, and a spring dog pivoted within said opening and adapted to project beyond the face of the inner clutch-member and engage the outer clutch-member, in combination with a stationary finger projecting into said inner clutch member in line with an end of said dog and adapted to engage the same and keep the dog within the opening in the inner clutch member when the members of the clutch are out of engagement with each other, and a hitching line engaging said inner clutch member.

9. The combination of the outer and inner members, of the clutch, said outer member being mounted upon a rotatable part of a vehicle and said inner member consisting of a case having an open outer end, the vertical wall of said case having an orifice, a plate closing said orifice, a segmental hub, said plate and the vertical wall of the case being formed to provide an opening coincident with that through the hub, for the passage of the supporting means, a collar encircling said hub, a rotatable line spool supported on said collar, and a hitching line engaging said line spool.

10. The combination of the outer and inner members of the clutch, said outer member being mounted upon a rotatable part of a vehicle and said inner member consisting of a case having an open outer end, the vertical wall of said case having an orifice, a detachable plate closing said orifice, and a segmental hub, the upper segment of which is formed integral with said plate and the lower segment of which is formed integral with said vertical wall of the case, said plate and the vertical wall of the case being also formed to provide an opening coincident with that through the hub, for the passage of the supporting means, a collar encircling said hub, said collar being secured to said hub and also to the vertical wall of the case, a rotatable line-spool supported on said collar, and a hitching line engaging said line spool.

11. In a hitching and checking device, the combination of the inner and outer clutch members, said outer member being mounted upon a rotatable part of a vehicle, said inner clutch member having a non-rotating hub, a rotatable line-spool, and a case secured to said hub and projecting over and protecting said line spool and hub, said case having an aperture 11, formed with a contracted end, and an opening 12, and a hitching line passing through said aperture 11 to and around said line spool and thence through said opening 12, said hitching line having an enlargement at one end to prevent said end from being drawn into said case through said aperture, all substantially as shown and described.

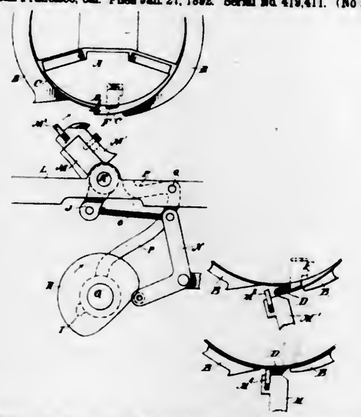
12. In a hitching and checking device, the combination of the inner and outer clutch members, said outer member being mounted upon a rotatable part of a vehicle and said inner clutch member having a non-rotating hub, a collar or bushing, encircling said hub and having a peripheral groove at one end, a line spool having a flange received by said groove in the collar and a hitching line engaging said line spool.

13. In a hitching and checking device, the combination of the inner and outer clutch members, said outer member being mounted upon a rotable part of a vehicle and said inner clutch-member having a non-rotating hub, a cylindrical inclosing box or casing, to which said hub is secured, said casing being open at its outer end, a collar or bushing encircling said hub, said collar having a peripheral groove at one end, a line spool having a flange received by said groove in the collar and a hitching line engaging said line spool.

14. In a hitching-device comprising a hitching line outer and inner clutch-members and mechanism for impelling the inner member to and from the outer companion-member, said outer member being mounted upon a rotatable part of a vehicle, an annular-shaped line-spool provided peripherally with a groove for the wound-up hitching line, and at a side thereof with a recess wherein is pivotally secured a dog or pawl provided with a projecting pin adapted to travel in a slot in the spool-body, a second dog or pawl pivotally secured in a recess entering into the flat face of the spool-body, and an orifice or pocket also entering the spool's face adapted to receive and retain the end of a hitching line extending therefrom through a contracted opening out into the line-groove of the spool, said spool being adaptable for mounting upon or within the inner-member of the clutch, substantially as described.

15. A hitching and checking device consisting of a hitching line an outer clutch-member comprising an annular plate having radial equi-distant lugs abrupt at one end and beveled at the opposite, secured to the inner end of a vehicle-wheel and an inner clutch-member comprising a non-rotary case or box upheld by a sectional non-rotating hub portion on the axle of the vehicle contiguous to the outer member, a flanged stationary collar surrounding the hub, a rotatable line-spool encircling the collar and retained against longitudinal displacement by the circumferential flange of the collar fitting within a peripheral groove in the spool, a spring-actuated dog pivotally disposed within a recess entering the vertical face of the spool, a passage extending therefrom backward through the spool-body and back-wall of the case, a finger or rod connected with the vehicle-axle projecting therein and adapted at certain times to bear against the spring-provided extremity of the dog, a peripheral groove in the line-spool adapted to receive the wound portion of the hitching-line, another spring-actuated dog pivotally erected within a recess entering into the periphery of the line-spool and adapted under certain conditions to engage with the buffer-plate of the buffer erected at the bottom of the case of said inner clutch-member, and mechaniam for carrying the inner member of the clutch to and from the outer-member and retaining same firmly in either position, substantially as described.

488,476. CAN-BODY-FORMING MACHINE. ROBERT D. HUME, San Francisco, Cal. Filed Jan. 27, 1892. Serial No. 419,411. (No model.)



Claim.— 1. In a car body forming machine, the combination with a horn supporting the sheet metal can body, of a rotary shaft parallel with the line of the side seam of the can body, and in the radial plane projected through the seam of the can body to the line of the shaft, a bar M projecting radially from said shaft, a second bar M′ guided by and sliding radially upon the bar M, mechanism by which these bars may be turned so as to stand in the plane of the seam of the can body and a mechanism by which the movable portion is forced up so as to close and lock the full length of the seam at one motion, substantially as herein described.

2. In a can body forming machine, the combination with the horn supporting the sheet metal can body, of a shaft situated exterior to the can body, and in the radial plane passing through the seam of said body, the longitudinal bar M projecting radially from said shaft, a bar M′ sliding upon and guided radially upon the first bar, a second shaft G carrying the cams H and I, the lever N and the connecting rod O by which motion is transmitted from the cam H to rotate the shaft J and move the bars M and M′ into position, and the lever arm P P′ whereby motion is transmitted from the cam I to force the bar M′ radially outward whereby the seam upon the side of the cam is closed and locked, substantially as herein described.

3. In a can body forming machine, the stationary horn, a spring actuated retractile stop F projecting therefrom against which the interlocking edges of the seam are closed, the rotatory oscillating bar M′, and mechanism by which it receives a radial motion to close the seam after it is interlocked, and a spring actuated retractile lug M^3 projecting from the compressing face of the bar M′, whereby the folds of the seam are closely interlocked against the stock, and retained while the pressure bar M′ is forced against the seam, the lug yielding during the compression, substantially as herein described.

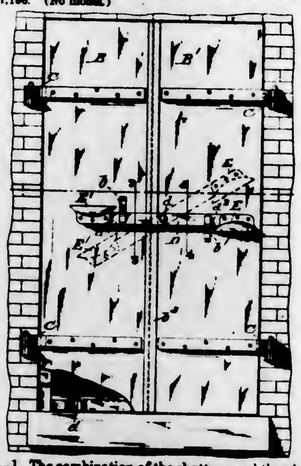
488,477. SAFETY ATTACHMENT FOR CARS. ROBERT L. LYNCH, Lexport, Ky. Filed Sept. 13, 1892. Serial No. 445,799. (No model.)

Claim.—1. An attachment for car-trucks, comprising a fixed supporting-bar, a vertically movable yoke whose arms extend through said supporting-bar, a cap-plate K connecting said arms above the supporting-bar and held in place thereon by adjusting-nuts, a pressure-

spring located between the cap-plate and the supporting-bar, and a roller carried by the yoke, substantially as specified.

2. In a safety attachment for car-trucks, the combination of the supporting-bar provided with parallel, bifurcated arms, adapted to be bolted to the undersides of the boxes of the truck, the vertically movable yoke provided with stems extending through the supporting-bar and fitted with a tension spring, and a roller mounted upon the yoke to engage a horizontal flange upon the track-rail, substantially as specified.

488,478. SHUTTER-FASTENER. FRANK MERKER, St. Louis, Mo., assignor to Merker & Bro., same place. Filed Sept. 28, 1892. Serial No. 447,188. (No model.)



Claim.—1. The combination of the shutters, and the pivoted bar, the shutter B having the keeper, and said bar having shoulders at opposite sides respectively of its pivot, substantially as and for the purpose described.

2. The combination of the shutters, the pivoted bar, the window-frame, and the spring, the shutter B having the keeper, the bar having shoulders at opposite sides respectively of its pivot, and the spring acting to open the shutters when unfastened, substantially as described.

488,479. ANTI-FOULING PAINT. ARNOR L. MUNSON, East Oakland, assignor of one-half to Thomas S. McLeran, San Francisco, Cal. Filed Nov. 30, 1891. Serial No. 412,564. (No specimens.)

Claim.—1. An anti-fouling paint composed of a pigment, mercurous chloride, and a vehicle consisting of coal tar, chloride of zinc and oil of turpentine, substantially as herein described.

2. An anti-fouling paint, composed of the peroxide of iron, mercurous chloride, and a vehicle consisting of coal tar, chloride of zinc and oil of turpentine, substantially as herein described.

3. A vehicle for an anti-fouling paint containing mercury as the poisonous agent, the same consisting of coal tar, chloride of zinc and oil of turpentine, substantially as herein described.

488,480. BILLIARD SCORER AND REGISTER. RODERICK H. MONTGOMERY, Melbourne, Victoria. Filed Jan. 9, 1892. Serial No. 417,868. (No model.)

Claim.—1. In a billiard scoring board, the combination of a rack provided with notches or recesses and a ratchet wheel connected with the rack intermediate of its ends, with a pointer, having motion along the rack, provided with a gravitating pawl adapted to trail over the recessed face of the rack and over the ratchet wheel, said pawl engaging a recess and locking the pointer against motion when the movement of said pointer is reversed before it reaches the end of the rack, for the purpose set forth.

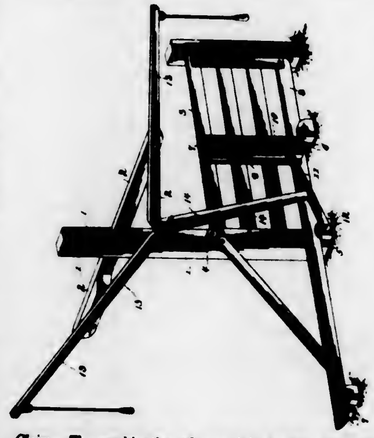
488,480.

2. In a billiard scoring board, the combination of a rack provided with notches or recesses, and a bell hammer near one end of said rack, with a pointer having motion along the rack provided with a pawl adapted to engage the bell hammer when the pointer moves in one direction, and with a gravitating pawl adapted to trail over the recessed portion of said rack engage one of the recesses and lock the pointer against motion whenever its direction of motion is changed before it reaches the end of the rack for the purpose set forth.

3. In a billiard scoring board, the combination of a rack provided with notches or recesses, a ratchet wheel mounted in the rack intermediate of its ends, and a bell hammer near one end thereof, with a pointer having motion along the rack provided with two pawls one of which engages the bell hammer, the other trailing over the notched or recessed face of the rack and engaging the ratchet wheel when the pointer is moved in one direction said notches or recesses arranged to lock the pointer against movement in a reverse direction and means at each end of the rack for changing the position of the locking pawl to permit the reversal of the motion of the pointer, for the purpose set forth.

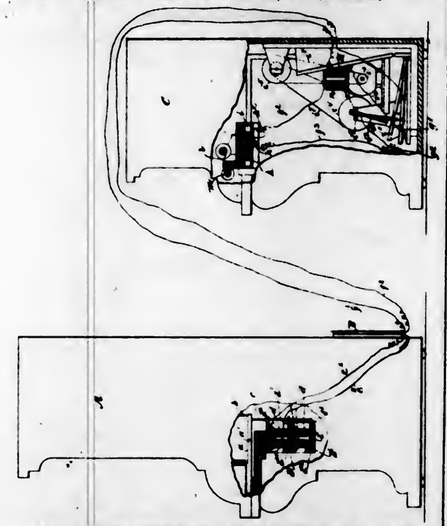
4. In a billiard scoring board, the combination with a registering mechanism, a registering dial and hand on the front face of the scoring board, and a movable pointer for operating said registering mechanism, of a cover for said dial and hand provided with a slate and chalk receptacle on its inner face and a lock for locking said cover to the board, for the purpose set forth.

488,481. SLIDING GATE. JOHN R. PAYNE, Freedom, Ind., assignor of one-half to George W. Jean, same place. Filed Sept. 10, 1892. Serial No. 445,806. (No model.)



Claim.—The combination of an upright having a horizontal arm extending from it in opposite directions; upper and lower rollers mounted on the upright and having circumferential grooves: the grooved lower rollers 6 and 7: the sliding gate mounted on the lower rollers and received in the groove of the upper roller, and having a rearward extension; the vertical plates secured on the gate and arranged parallel with each other and provided with opposite L-shaped flanges extending out from the gate and forming vertical ways; an oscillating lever having its lower end fulcrumed on the pivot of the lower roller of the upright and provided at its other end with a grooved roller arranged in said ways and receiving the edges of the L-shaped flanges in its groove, the operating levers fulcrumed on the ends of said arm, and the connecting bar connecting the inner ends of the operating levers with the oscillating lever, substantially as described.

488,482. MUSICAL INSTRUMENT. ROBERT W. PAIN, New York N. Y. Filed Dec. 4, 1890. Serial No. 373,807. (No model.)



Claim.—1. The combination, with a pianoforte, of a number of electro-magnets arranged within the same and acting upon the keys thereof, electric circuit-wires extending from said electro-magnets and an apparatus at a distance from the pianoforte and connected with said electric circuit wires and comprising movable contact pieces, a coupling piece whereby the circuits may be disrupted, pneumatic motors for operating the contact pieces and a music sheet, card, tablet or roller controlling the pneumatic motors, substantially as specified.

2. The combination, with a pianoforte, of a number of electro-magnets arranged within the same and acting upon the keys thereof, electric circuit wires extending from said electro-magnets and an apparatus at a distance from the pianoforte and connected with said electric circuit wires and comprising movable contact pieces, a coupling piece whereby the circuits may be disrupted, pneumatic motors for operating the contact pieces and a music sheet, card, tablet or roller controlling the pneumatic motors and also comprising bellows for effecting the operation of the said pneumatic motors, substantially as specified.

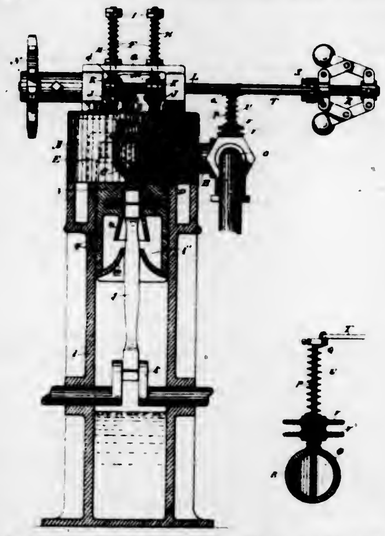
3. The combination, with a pianoforte, of a number of electro-magnets arranged within the same and acting upon the keys thereof, electric circuit wires extending from said electro-magnets and an apparatus at a distance from the pianoforte and connected with said electric circuit wires and comprising movable contact pieces, a coupling piece whereby the circuits may be disrupted, pneumatic motors for operating the contact pieces and a music sheet, card, tablet or roller controlling the pneumatic motors and also comprising bellows for effecting the operation of the said pneumatic motors and an electro-magnetic motor for driving said bellows, substantially as specified.

4. The combination with a pianoforte provided with a number of electro-magnets for operating its keys and an apparatus for effecting the operation of said electro-magnets and controlled by a traveling music sheet, card, tablet or roller and a coupling piece, B, whereby circuits extending between said apparatus and pianoforte may be disrupted and connected, substantially as specified.

5. The combination with a pianoforte provided with a number of electro-magnets for operating its keys and an apparatus for effecting the operation of said electro-magnets and controlled by a traveling music sheet, card, tablet or roller and a coupling piece comprising a grooved section fitted with springs and a secondary section provided with holes, substantially as specified.

488,488. GAS-ENGINE. JOHN W. RAYMOND, San Francisco, Cal. Filed Nov. 20, 1891. Serial No. 412,967. (No model.)

Claim.—1. A gas engine consisting of the cylinder and piston reciprocating therein and ignition chamber with inlet and exhaust passages, puppet valves by which these passages are closed within the chamber, valve stems extending outwardly from said valves through the head of the chamber, and having shoulders or collars formed upon them, springs by which the valves are normally closed, tappets fitting loosely upon the valve stems exterior to the shoulders, and held normally in contact with the shoulders or collars by springs whereby they are acted upon by cams upon a rotary shaft to open the valves, while the springs allow the tappets to slip along the valve stems without action upon the other parts when the cams are rotated so as to strike the tappets from the opposite direction, substantially as herein described.



2. A gas engine consisting of the cylinder, a reciprocating piston, a head containing the ignition chamber, valves within the chamber, and a mechanism exterior thereto by which they are independently operated so as to alternately admit an explosive gas into the ignition chamber and allow the waste products to be exhausted therefrom, a shaft extending into the chamber, having a projecting lug or tappet upon its inner end, a beveled gear by which it is constantly rotated from the shaft which operates the valves, said shaft having connection with one pole of a battery, a spring arm with which the other pole of the battery is connected, which arm makes and breaks contact with the lug or tappet at each revolution of the shaft, a screw shank extension of said spring arm having a milled head upon the outer end by which it may be turned so as to move the spring arm and adjust its contact with the rotating lug, substantially as herein described.

3. The rotary shaft extending through the head into the ignition chamber having a lug or tappet upon its inner end and connected with one pole of a battery, an elastic arm having a screw threaded shank connected with the other pole of the battery, said shank passing through a screw-threaded sleeve which is contained within and insulated from an exterior screw-threaded sleeve within which it is movable to adjust the point of the spring with relation to the rotary lug, the exterior sleeve and spring being removable together from the ignition chamber, substantially as herein described.

4. A gas engine comprising the combination of a cylinder, a reciprocating piston and ignition chamber, independently actuated valves through which the explosive gas is admitted and the products of explosion are exhausted, the supply pipe B, the valve O therein having its stem projecting vertically through the pipe and provided at its upper end with a crank arm, a rod connecting the crank with the governor whereby the valve O is closed by an increase of speed, a torsional spring surrounding the valve stem having one end attached to the crank, a disk adjustable upon the pipe and having the opposite end of the spring connected with it to regulate the tension of the spring, and a lock nut to hold the disk in its adjusted position, substantially as herein described.

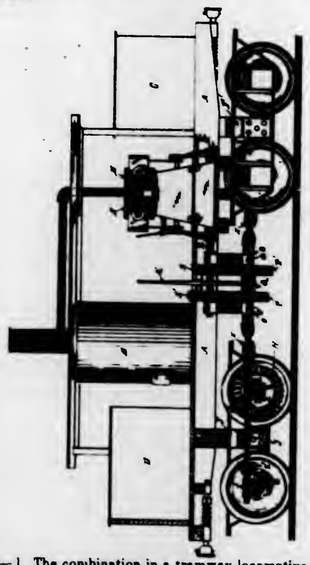
5. A gas engine consisting of a cylinder, a reciprocating piston, a head containing the ignition chamber, independent puppet valves with seats on the inner end of the chamber, stems extending out through the head, with shoulders exterior thereto, tappets moving loosely upon the stems exterior to the shoulders and held in contact therewith by springs, a shaft journaled across the outer end of the head transversely to the valve stems and rotating devices connecting it with the engine shaft, cams upon the transverse shaft which engage the tappets to open the valves, springs acting upon the valve stems to close the valves when released from the cams, and screw nuts by

which the tension of the springs is regulated, substantially as herein described.

6. A gas engine having a cylinder, a piston reciprocating therein, a chamber extending downwardly and forming a continuation of the cylinder, a crank shaft extending through said continuation having a crank rotating within this chamber connected by a rod with the reciprocating piston, said chamber containing a lubricant into which the crank dips at each revolution, a chamber or chambers forming an extension of the lower part of the piston with openings in the lower part into which the lubricant is splashed by the action of the crank, annular passages surrounding this extension, and holes connecting the interior of the chambers with these passages whereby the lubricant is constantly supplied between the piston and the cylinder, substantially as herein described.

7. In a gas engine, a cylinder, a piston reciprocating therein, a closed chamber containing lubricant and forming an extension of the cylinder, a crank shaft journaled transversely across the chamber, a pitman connecting the crank with the piston, an extension of the piston having a central transverse slot through which the pitman passes to the piston, chambers upon each side of the slot with flanges *m* and *n*, holes *o* through the outer sides of the chambers, and annular grooves around the exterior of the extension, with which the holes connect, substantially as herein described.

488,484. PROPELLING-GEAR FOR TRAMWAY-LOCOMOTIVES. CHARLES D. SCOTT, Sanford, Pa. Filed Mar. 3, 1891. Serial No. 383,504. (No model.)

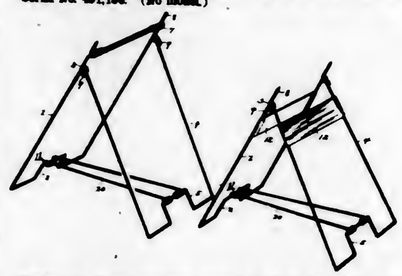


Claim.—1. The combination in a tramway locomotive truck, of beveled skew-gear wheels secured to the axles of said truck, with cross boxes mounted on said axles adjacent to the hubs of said beveled skew-gear wheels, a longitudinal driving shaft mounted in and supported by said cross boxes, and beveled skew-gear pinions on said longitudinal driving shaft intermeshing with the beveled skew-gear wheels on the truck axles, substantially as and for the purpose set forth.

2. The combination in a tramway-locomotive, of trucks, as F and F', supporting a locomotive frame A, beveled skew-gear wheels secured to the axles of said trucks, cross-boxes, as I and I', mounted on the truck axles adjacent to the beveled skew-gears thereon, and collars on the axles to prevent the cross-boxes from moving away from the skew-gear wheels thereon, with longitudinal shafts, as J and J', mounted in said cross boxes and having beveled skew-gear pinions thereon intermeshing with the beveled skew-gear wheels on the truck axles, a longitudinal shaft, as O, mounted in bearings on the locomotive frame, and flexible universal joints connecting the ends of the shaft O to the ends of the shafts J and J', substantially as and for the purpose set forth.

3. The combination in a tramway locomotive truck, of cross boxes I and I' mounted on the axles G and G' of said truck, and collars L secured to said axles adjacent to the ends of said cross boxes thereon, with sleeves M adapted to be clamped over and engage both the end of said cross boxes and the collars on the axles, substantially as and for the purpose set forth.

488,485. BOX-SUPPORT. WALTON D. SMITH, Prophetstown, Ill., assignor of one-half to John S. Hunter, same place. Filed Apr. 29, 1892. Serial No. 431,158. (No model.)

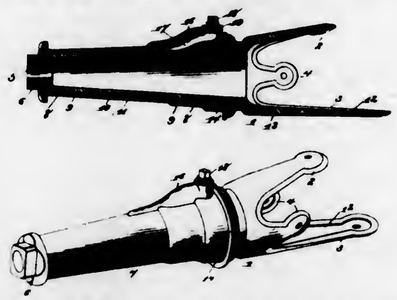


Claim.—1. A box support, comprising two wire frames, one of which is hinged to the other, and having pointed spurs, projecting from the upper end thereof, and a lower connecting tie-brace, substantially as described.

2. In a box support, the combination of a supporting leg consisting of a wire frame of substantially rectangular form having an indentation or bend at the lower portion thereof supporting a tie-brace having a hooked end, a brace-leg or support consisting of a wire frame of similar form having a lower indentation adapted to be engaged by the hooked end of said tie-brace, and eyes to which the supporting leg is hingedly connected, and carrying pointed spurs at the upper end thereof which project therefrom at an angle, substantially as described.

3. In a box support, the combination of a supporting leg, and a brace-leg or support, pivotally connected to each other, and bands attached to the upper portion of the said parts and adapted for advertising purposes, substantially as described.

488,486. VEHICLE AXLE AND BOX. GEORGE W. SMITH, Darlington, Wis., assignor of one-half to Edward C. King, same place. Filed July 26, 1892. Serial No. 441,167. (No model.)



Claim.—1. The combination of an axle box having a central annular recess and end bearings and having a hollow longitudinal flange forming an oil chamber terminating at its inner end at the annular recess, and an axle skein provided with end bearings and an annular recess corresponding with those of the axle box, substantially as described.

2. An axle skein provided at its inner end with securing arms and having their inner faces recessed to form an air chamber and provided with an opening communicating with the recess, substantially as and for the purpose described.

3. An axle box having a sand band extension and provided with a longitudinal flange having an opening or bore forming an oil cell the inner terminus of the ball being threaded and arranged on the sand band and the inner terminus being arranged with the axle box proper, in combination with a threaded plug screwing into the bore and provided in its lower end with an air recess, substantially as described.

488,487. STOCKING. EDWARD TERRY and WILLIAM HAYTER, London, England. Filed Apr. 4, 1892. Serial No. 427,732. (No specimens.) Patented in England Dec. 27, 1889, No. 20,778.

488,487

Claim.—A stocking having the lower part thereof reinforced in rear by a stout thread and in front by a fine thread, substantially as and for the purposes described.

488,488. BALANCED SLIDE-VALVE. PIERRE D. TOUSEY, Minneapolis, Minn., assignor of three-fourths to Franklin C. Johnson, same place. Filed Nov. 17, 1891. Serial No. 412,223. (No model.)

Claim.—1. The combination in a device of the class described, of a valve, a chest wherein the same is contained and two valve seats, one containing the usual steam port or ports and the other provided with pressure relief ports opening against the upper surface of said valve, substantially as described.

2. The combination of a two part valve, with a steam chest wherein the same is arranged, a fixed seat having a steam port or ports and another fixed seat and arranged opposite the first having pressure relief ports normally closed by the upper surface of the upper part of said valve, said valve adapted to operate between said seats, substantially as described.

3. The combination with a valve composed of telescoping parts, of a steam chest for the same, a seat whereon one side of the valve rests and in which a steam port or ports is provided, a second seat fixed parallel with respect to the first seat and provided with pressure relief ports, opening against the top of the upper part and normally closed thereby, each part of said valve being provided with a surface whereon the steam pressure is exerted to hold that part of the valve against its seat, substantially as described.

4. The combination with a valve composed of telescoping parts of a steam chest wherein the same is contained, a seat for the valve provided therein and containing a steam port or ports, a second seat arranged in connection with a head or face of the steam chest and parallel with the first seat, said valve provided on each part with a surface to receive steam pressure acting to hold that part on its seat, and said second seat provided with a pressure relief or atmospheric port or ports normally closed by the top surface of the valve which bears on said seat, and a duct arranged in the steam chest head and communicating with said port or ports and the outer air, substantially as described.

5. The combination with the steam chest and the cylinder, of the valve seat having ports leading into said cylinder, a second valve seat arranged on the inside of the chest head or plate, relief or air ports arranged therein and communicating with the open air and a valve adapted to operate between said seats and having an upper surface adapted to normally close said air port, said valve made up of two parts telescoping into one another, steam pressure surfaces arranged on the inner edges of each part, and whereon the steam pressure is exerted to hold each part to its seat, and packing blades provided on one part of the valve and engaging the other to make the joint between them steam tight, and means being provided for operating said valve, substantially as described.

6. The combination with the cylinder and the steam chest of the engine, of parallel seats arranged on opposite sides of the steam chest, ducts arranged in the steam chest head or cover above or outside of the seat arranged in connection therewith whereby an equal pressure of steam is attained in both ends of the chest, said seat provided with openings to the air, the other seat provided with steam ports, a valve arranged to slide between said seats and consisting of two parts telescooping into one another and having an internal exhaust cavity, metallic packing blades arranged between the parts of the valve, that part engaging the seat having the air openings being provided with extended edges whereby a steam surface is provided whereon pressure may be exerted to hold that part of the valve against its seat, said part of the valve adapted to always close said air openings while pressure exists and said parts of the valve adapted to telescope into one another when the pressure is relieved whereby the engagement with the seats is broken, as described.

7. The combination with the steam chest of a seat therein having a steam port or ports, a second seat arranged parallel with the first and fixed on the cover of the chest and provided with the pressure relief ports, a valve composed of male and female parts and having an upper surface to normally close said relief ports, suitable packing blades arranged between the said parts, a duct arranged in the steam chest and communicating with the air openings or ports thereof and a valve arranged in connection with said duct for regulating the escape of air or steam therefrom or admission therethrough, as described.

8. The combination in a two part slide valve, of seats whereon the same operates, a yoke embracing that part of the valve adapted to cover the steam ports, the inner edges of the end of the yoke provided with supplementary bars arranged between the same and the valve, the end of the yoke and the outer side of said slide being convex and concave, said bars loosely engaging the valve, whereby said valve is adapted to move freely to or from the valve seat, substantially as described.

9. The combination with the valve arranged in two parts, male and female, with packing blades arranged in grooves provided in one of said parts and having faces to engage the other part, said blades arranged so that the end of one blade abuts against the side of the other in each case, said blades being grooved and staples 29 for holding said blades in the relation described whereby said blades are adapted to press evenly and freely upon the packing surfaces, as described.

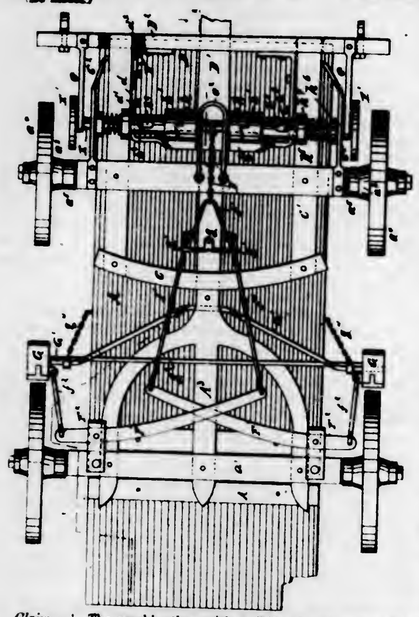
10. The combination in a device of the class described, of a two part valve, with metallic packing blades or plates arranged between the parts of the same, the valve seat or table, the steam chest, a plate of a length substantially equal to said seat and extending into said chest and parallel with said seat, the upper part of said valve provided with a surface to engage the plate, openings or ducts extending between the ends of the chest to equalize the pressure in the ends of the valve, and openings to the atmosphere through said plate, said openings normally closed by the top of the valve, substantially as described.

11. The combination in a device of the class described, of the valve seat or table provided with the ports, with the steam chest provided with the plate 22 parallel with said seat and having openings or ports 23 and a channel leading to the atmosphere, a valve 25 in connection therewith, the two part valve having the upper part of an area equal to the lower part, a packing between said parts and openings through the upper part to admit steam to contact with said plates, and means for reciprocating the valve, substantially as described.

12. The combination in a device of the class described, of the valve seat having the ports, with the steam chest, the head thereof, the plate 22 formed thereon and parallel with said seat, ducts 27 provided to conduct steam equally to the ends of the chest, said plate and seat being of the same length the valve consisting of the lower part 11 and the upper part 13 telescoping therewith, the metallic packing blades 14 therefor, the extended edges 16 of said upper part, and openings through the middle part, atmospheric ports in said plates and sleeves 26 arranged therein, substantially as described.

13. The combination with the steam-chest, of parallel seats arranged therein opposite one another, a valve to operate between said seats, steam-ports arranged in one of them, and a duct or ducts 27 arranged above the other in the head of the steam chest and extending therethrough and from which steam may pass from one end of the chest to the other to equalize the pressure upon the ends of the valve, substantially as described.

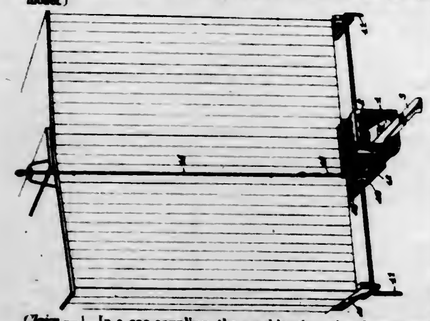
488,489. WAGON-BRAKE. DITLEV P. WEBSTER and ARNOLD A. BELTHAM, Tower City, N. D. Filed July 19, 1892. Serial No. 440,692. (No model.)



Claim.—1. The combination, with a sliding-frame supported on the side-pieces of the fifth wheel, said sliding-frame supporting the wagon-tongue, of a shaft that is supported in bracket-arms of the sliding-frame and provided with friction-disks forming contact with the hubs of the front-wheels, a chain applied to the transverse shaft, brake-shoes suspended near the hind-wheels, fulcrumed levers connected with the brake-shoes and by intermediate links with the chain attached to the transverse shaft, substantially as set forth.

2. The combination, with the side-pieces of a fifth wheel, of a sliding-frame to which the wagon-tongue is attached, said sliding-frame being guided on the side-pieces of the fifth wheel by means of a strap, to the rear part of which the tongue is attached, a transverse shaft supported in brackets of the sliding-frame and provided with friction-disks that form contact with the hubs of the front-wheels, a bracket attached to the front-axle and adapted to support the middle portion of the transverse shaft, spring-clutches arranged on the shaft, a chain connected to the transverse shaft, brake-shoes suspended near the hind-wheels, a brake lever mechanism and links by which the actuating chain is connected with the brake-levers, so as to apply the same when the slide-frame is moved in backward direction, substantially as set forth.

488,490. CAR-COUPLING. JOHN A. WILLIAMS and LEONIDAS R. WILLIAMS, Omark, Mo. Filed Sept. 6, 1892. Serial No. 445,180. (No model.)



Claim.—1. In a car coupling, the combination of a draw-head provided at one side with a stationary catch having its front face bevoled, and its rear face shouldered, a pivoted hook arranged adjacent to the catch and extending forward and projecting from the draw-head, and a rock-shaft arranged in rear of the hook and the catch and provided with cams located within the drawhead, one of which is arranged to engage and depress the inner end of the hook, and the other of which is arranged in rear of the catch and adapted to lift a hook out of engagement with the same, substantially as described.

2. In a car coupling, the combination of a draw-head provided at one side with a stationary catch having its front face beveled and its rear face shouldered, a hook pivoted at the other side of the draw-head and projecting therefrom and provided at its rear end with an extension, a rock-shaft arranged in rear of the hook and the catch, a rearwardly projecting cam located within the draw-head arranged above the extension of the hook and adapted to depress the same and mounted on the rock shaft, and a forwardly extending cam located within the draw-head mounted on the rock shaft and arranged in rear of the stationary catch and adapted to disengage a hook therefrom, and means for holding the forwardly extending cam normally depressed and the rearwardly extending cam normally elevated, substantially as described.

3. In a car-coupling, the combination of a draw-head provided at one side with a stationary catch, a hook pivotally mounted at the other side of the draw-head and projecting therefrom and provided with a rearward extension, a rock shaft arranged in rear of the hook and the catch, the cams located within the draw-head and mounted on the shaft and extending therefrom in opposite directions, and the depending weighted handles arranged at the ends of the rock shaft and holding the cams out of engagement, substantially as described.

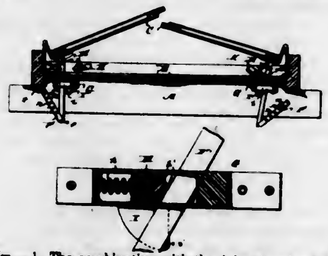
4. In a car-coupling, the combination of a draw-head having a stationary catch, a hook pivotally mounted in the draw-head and extending therefrom, a rock shaft provided with weighted handles, the oppositely disposed cams mounted on the rock shaft, a pulley mounted on the rock shaft, and connections between the top of the car and the pulley whereby the shaft may be rocked, substantially as described.

488,491. WHIFFLETREE-HOOK. DAVID Y. WILSON, Gum Tree, assignor of one-half to Enoch P. Moore, Parkesburg, Pa. Filed Sept. 15, 1892. Serial No. 445,982. (No model.)

Claim.—1. A whiffletree-hook comprising a shank, a tongue pivoted to the outer end of the same and adapted to be turned longitudinally and transversely of the shank, and a spring actuated collar loosely mounted on the exterior of the shank and adapted to hold a trace close to the tongue to prevent the latter accidentally dropping to a horizontal position, substantially as described.

2. A whiffletree-hook comprising a threaded shank, a tongue pivoted to the outer end of the shank, a collar loosely sliding on the outer portion of the shank, a threaded collar engaging the threads of the shank and rigidly connected with the latter, and a spiral spring disposed on the outer portion of the shank and interposed between the collars and having its ends secured to the same, substantially as described.

488,492. SHUTTER-WORKER. CHARLES ZIMMERMAN, Brooklyn, N. Y., assignor of two-thirds to George F. S. Zimmerman and Mary J. C. Zimmerman, Frederick, Md. Filed Aug. 31, 1892. Serial No. 404,639. (No model.)



Claim.—1. The combination with the jointed rod, of the guide therefor, said guide being affixed to the window sill and comprising a plate or casting having a slot therein for said rod, a bearing block, having oblique bearing faces, seated within said slot, and a spring acting upon said block, substantially as specified.

2. The combination with the jointed rod, of the guide therefor, said guide being affixed to the window sill and comprising a plate or casting, having a slot therein for said rod, a bearing block in said slot, a spring acting upon said block, and an extension on said plate or casting, having a lip or catch forming a lock for said rod, substantially as specified.

3. The combination with the jointed rod, the guide therefor having the movable, spring-actuated bearing block, and the lock or catch, of the sash having the cut-away portions *l*, *l*, *l*, the notched plate secured thereto, and the notched sliding plate, substantially as specified.

4. The combination with the shutter having the integral chambered lug or projection, the jointed rod secured loosely at one end within said lug or projection, and the adjustable securing devices for the other end of said rod, of the guide affixed to the sill and slotted for said rod, its catch or lock the movable sliding guide in the sash, and an angular plate affixed to the sill outside of the sash, and forming a lock for said jointed rod when the shutter is opened, substantially as specified.

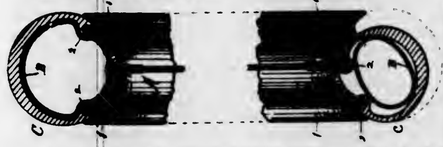
488,493. CHOCOLATE-CUTTER. CHARLES M. ASHBY and HENRY M. SEYBOLD, Sioux Falls, S. D.; said Ashby assignor to Henry Schaper, same place. Filed Feb. 26, 1892. Serial No. 422,892. (No model.)

Claim.—1. In a scraper or chipper, the combination, with a screw and its follower, of the bracket adapted to support said screw and follower, and having its forward end provided with a frame or holder to receive one end of the chocolate cake or other substance, substantially as set forth.

2. In a scraper or chipper, the combination, with means for supporting and actuating it, of the follower or feeder consisting of the bifurcated standard having secured to its arms or branches the rectangular sheet metal support or holder having longitudinal rows of teeth or projections and bent backward at its ends, into flanges for connection to said arms or branches, substantially as specified.

3. The scraper or chipper consisting of the bracket-bar having projecting end-extensions one terminating in an approximately rectangular frame or support, itself having integral, right angled tang-like extension for the connection of a handle therewith, the screw supported in said end-extensions and actuated by the cutter or bladed disk, itself provided with a handle, and the follower having a clip or sliding connection with said bracket bar and the bifurcated bar adapted to be actuated by said screw and having connected to its arms or branches the toothed, rectangular sheet-metal support, substantially as set forth.

488,494. PNEUMATIC TIRE FOR VEHICLES. ALEXANDER T. BROWN and GEORGE F. STILLMAN, Syracuse, N. Y. Filed June 20, 1891. Serial No. 396,963. (No model.)



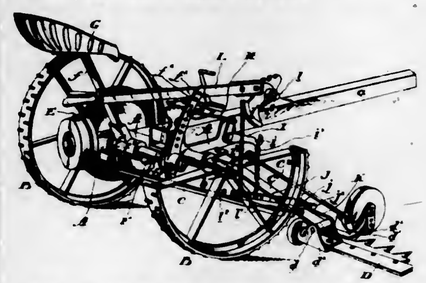
Claim.—1. In combination with an exteriorly grooved rim having divergent side edges or flanges, a tire comprising, or confining, an inflatable tube, seated and contained partly within the grooved rim, and made rigid or inextensible circumferentially along two lines lying within the groove below the edges but above the deepest part of the same by means of circumferential reinforcements secured to or incorporated with it, and adapted to be held in place in the rim by the action of the internal air pressure.

2. The combination with a wheel rim having diverging side edges or flanges of a tire having endless bands embedded in its side edges, and an inflatable tube within the tire substantially as and for the purposes hereinbefore set forth.

3. A wheel rim having a central peripheral groove and a shoulder or supplemental groove of increased diameter at each side of said central groove, in combination with a pneumatic tire having its expansible tube disposed in said central groove, and a wire annulus secured in each edge of the tire casing and disposed in said supplemental grooves, substantially as and for the purposes hereinbefore set forth.

4. The combination with a peripherally grooved wheel rim having divergent side edges or flanges, of a pneumatic tire having secured to or incorporated within it two circumferential lines of inextensible reinforcing material so located and of such diameter relatively to the grooved rim as to permit the tire to be applied to or removed from the rim only when it is in deflated condition, substantially as set forth.

488,495. MOWING-MACHINE. THOMAS S. BROWN, Poughkeepsie, N. Y., assignor to the Adriance Platt & Company, same place. Filed Dec. 24, 1891. Serial No. 416,076. (No model.)



Claim.—1. In a mowing machine, in combination: a main frame, a coupling frame, a finger bar, a seat pivoted upon the main frame, connective mechanism, exclusive and independently operative of the main frame, between the seat and the finger bar, through which the weight of the driver is utilized to balance said finger bar without action upon or movement of the main frame due to the weight of the driver, substantially as set forth.

2. In a mowing machine, in combination: a main frame, a coupling frame, a finger bar, a seat pivoted upon the main frame, the gag lug, the gag lever, and connective mechanism between the seat and the gag lever through which the weight of the driver is utilized to balance said finger bar and maintain the latter in a normal position, substantially as set forth.

3. In a mowing machine, in combination, the main frame, the coupling frame, the finger bar, the gag lug projecting from the finger bar, the gag lever pivotally mounted on the coupling frame and bearing on said lug, the lifting device or chain connected with the gag lever at such point that traction exerted upon it tends to elevate the coupling frame and finger bar alike, a seat free for rocking or tilting movement, and a mechanical connection between said seat and lifting chain, substantially as set forth.

4. In a mowing machine, in combination: a main frame, a coupling frame, a finger bar, a seat pivotally supported on the main frame, a gag lug on the finger bar, a gag lever on the coupling frame, and mechanical devices comprising means for adjustment, connecting said seat to the gag lever, substantially as set forth.

5. In a mowing machine, in combination: a main frame, a coupling frame, a finger bar, a seat pivotally supported on the main frame, a gag lug on the finger bar, a gag lever on the coupling frame, and a mechanical device connecting said seat to the gag lever, a lifting hand lever, and a chain connecting said lever to the gag lever, substantially as set forth.

6. In a mowing machine, in combination: a main frame, a coupling frame, a finger bar, a seat and seat standard, a rock shaft to which said seat standard is affixed, an arm, a link, a bell crank lever, chain, a gag lever, and a gag lug upon the finger bar, substantially as set forth.

7. In a mowing machine, in combination: a main frame, a coupling frame, a finger bar, a seat and seat standard, a rock shaft to which said seat standard is affixed, an arm, a link, a bell crank lever, a chain, a gag lever, a gag lug upon the finger bar, a lifting hand lever and a chain connecting said hand lever with the gag lever, substantially as set forth.

8. In a mowing machine, in combination:—a main frame, a coupling frame, a finger bar, a gag lever pivoted on the coupling frame, a gag lug on the inner end of the finger bar, a seat pivoted with respect to the main frame and a train of levers and links intermediate between and connective of the pivot of the seat and the gag lever, substantially as set forth.

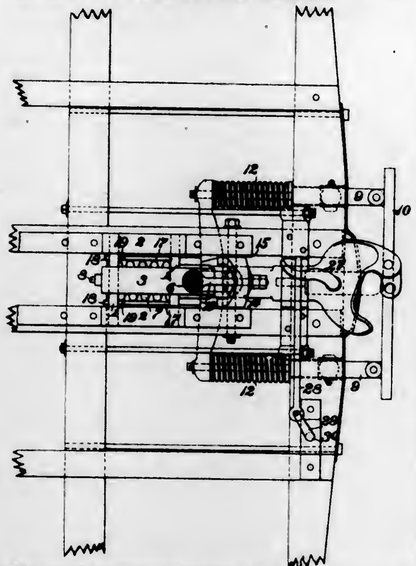
9. In a mowing machine, in combination:—a main frame, a coupling frame, a finger bar, a gag lever pivoted on the coupling frame, a

gag lug on the inner end of the finger bar, a seat pivoted with respect to the main frame, a train of levers and links intermediate between and connective of the pivot of the seat and the gag lever, and a lifting hand lever pivoted upon the main frame and provided with a lifting chain adapted to be connected with either the coupling frame or the gag lever, substantially as set forth.

10. In a mowing machine, in combination: a main frame, a coupling frame, a finger bar, a gag lever pivotally mounted on the coupling frame, a seat mounted on the main frame and free for rocking or tilting movement, a mechanical connection between said seat and gag lever whereby the weight of the driver counterbalances the weight of the finger bar,—a lifting hand lever pivoted upon the main frame, a mechanical connection between said hand lever and said gag lever whereby the finger bar may be lifted, substantially as set forth.

11. In a mowing machine, in combination: a main frame, a coupling frame, a finger bar, and a seat pivoted upon the main frame, connective mechanism between the seat and finger bar through which the weight of the driver is utilized to balance said finger bar and maintain the latter in a normal position, a hand lever, a chain connecting said lever to said coupling frame or its connections, the hand lever and seat moving respectively in opposite directions to occasion the elevation of the finger bar, substantially as set forth.

488,496. CAR COUPLING AND BUFFING MECHANISM. HENRY C. DUNCOMB, Chicago, Ill., assignor to William McConway, Pittsburg, Pa. Filed July 26, 1892. Serial No. 441,242. (No model.)



Claim.—1. The combination of a coupling mechanism, a buffing mechanism and a pivotally mounted yoke lever connected above its pivotal point to the buffing mechanism and having a rearwardly extending connection below its pivotal point to the coupling mechanism, substantially as set forth.

2. The combination of a coupling mechanism, a buffing mechanism, a yoke connected at points above and below its pivotal point to the buffing mechanism and coupling mechanism respectively, and a brace or strut interposed between the coupling and buffing mechanisms, substantially as set forth.

3. The combination of a spring, follower plates arranged at opposite ends of the spring, a spring pocket or strap arranged around the follower plates, a buffing mechanism, a yoke lever connected at one end to the buffing mechanism and at its opposite end to the spring pocket or strap, and a coupling mechanism connected to the spring pocket or strap, substantially as set forth.

4. The combination of a spring, follower plates arranged at opposite ends of the spring, a pocket or strap arranged around the follower plates, a buffing mechanism, a yoke lever connected at its ends to the buffing mechanism and the pocket or strap, a brace or strut interposed between the yoke lever and the rear follower plate, and a coupler connected to the pocket or strap, substantially as set forth.

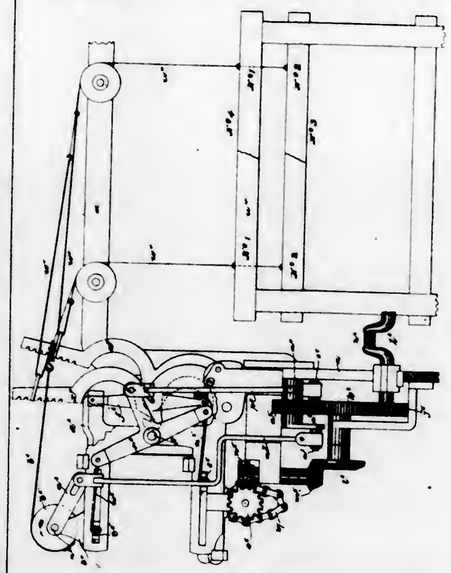
5. The combination of a coupling mechanism, a buffing mechanism, a yoke lever connected to the buffing mechanism and a brace or strut provided with an adjustable bearing block, interposed between the yoke lever and the rear follower plate of the coupling mechanism, substantially as set forth.

6. The combination of a pivotally mounted equalizing lever, springs interposed between the ends of the equalizing lever and the front sill of the car and normally bearing at their ends against the equalizing lever and the sill of the car, and buffer stems passing through the sill and adapted to engage the front ends of the springs when forced inwardly, substantially as set forth.

7. The combination of a pivotally mounted equalizing lever, springs interposed between the ends of the equalizing lever and the front sill of the car or platform, buffer stems having their inner ends pivotally connected to the equalizing lever and provided with shoulders adapted to engage the front ends of the springs when moved inwardly and a buffer plate pivotally connected to the outer ends of the buffer stems, substantially as set forth.

8. The combination of the catch lever of a swinging hook coupler, a shaft provided with a crank arm at its lower end, a link connecting the crank arm and catch lever, and a handle provided with an angular socket and so pivoted to the shaft that when raised to an angular position in relation to the shaft the socket will engage the correspondingly shaped end of the shaft, substantially as set forth.

488,497. SHEDDING MECHANISM FOR LOOMS FOR CROSS-WEAVING. JOSEPH COLDWELL, New Bedford, assignor to the Crompton Loom Works, Worcester, Mass. Filed Sept. 17, 1889. Serial No. 324,240. (No model.)

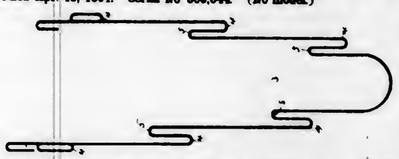


Claim.—1. In a dobby loom, a main lifting motion for the harness levers to thereby make sheds in the warp for the passage of the shuttle; an auxiliary lifting motion adapted to give a half-way lift more or less, and return movement to one of said levers, said auxiliary lifting motion co-operating in time with the main lifting motion, combined with a flexible connection between the auxiliary motion and said harness lever, whereby each lifting motion may operate independently of the other, substantially as described.

2. A rock-shaft; a pulley or an arm thereon; means to oscillate the rock-shaft; flexible connections from the arm or pulley to a harness lever; the harness lever; and harness frame and connections thereto; combined with a spring to carry the harness lever into its lowest position, substantially as described.

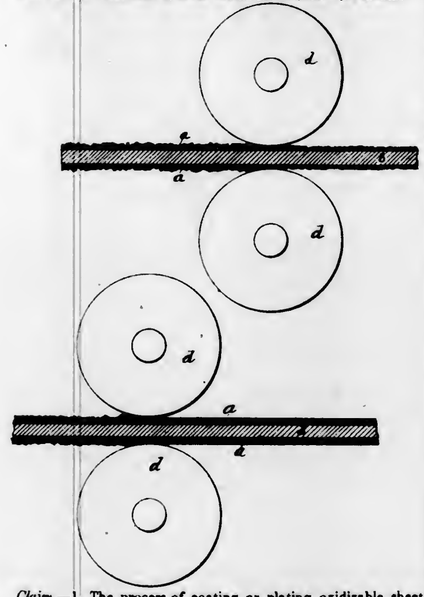
3. A rock-shaft; a pulley or an arm thereon; means to oscillate the rock-shaft; flexible connections from the arm or pulley to a harness lever; the harness lever; and harness frame and connections thereto; combined with a spring to carry the harness lever into its lowest position, and with a crank rotating at the same speed as the lathe crank, and connections between the said crank and an arm on the said rock-shaft, substantially as described.

488,498. HEDGE-FENCE STAY. EDWIN J. GRIFFIN, Elon, Ky. Filed Apr. 15, 1891. Serial No. 389,044. (No model.)



Claim.—The combination with the horizontal wires and the plants, of the wire wires, each constructed of a single piece of wire doubled to form opposite sides provided at intervals with depending loops to form crotches to receive the horizontal wires and twisted around the latter, and the curved hooks 6 formed integral with the twisted portions and embracing the plants and securing them to the horizontal wire, substantially as described.

488,499. COMPOUND SHEET-METAL PLATE. WILLIAM R. HOLLINSHEAD, Bronxville, assignor of one-half to Sydney H. Carney, New York, N. Y. Filed Mar. 2, 1892. Serial No. 423,443. (No model.)

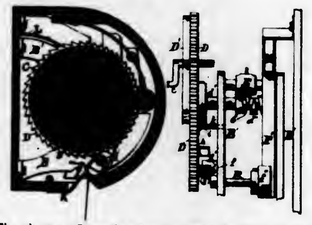


Claim.—1. The process of coating or plating oxidizable sheet metal plates with ductile protective metals or alloys, which consists in applying a layer of the coating material adhesively on the surfaces of the plates in crystalline form by electro-deposition, and producing surfaces of the coating material impervious to atmospheric effects by rolling, hammering or planishing the said layer to a limited extent, and thus condensing smoothing and uniting an exterior portion of less thickness than the depth of the deposited material, and, without disturbance of the portions of the crystals in adhering contact with the plates, then depositing a second layer of the said material in like manner and again rolling, hammering or planishing the same also to a limited extent, for the protection of the said crystals adhering to the plates, these two layers so applied constituting a homogeneous skin for the protected material, the inner portion adhering to the plates being in the natural crystalline condition of deposition substantially as described.

2. The improved article of manufacture consisting of an oxidizable metal plate coated with protective metals or alloys having wrought surfaces impervious to atmospheric effects and also having the natural or undisturbed crystalline inner form as deposited on and adhering to the surfaces of the metal plate substantially as described.

488,500. TOILET-PAPER SLOT-MACHINE. FRANK H. HOUSE, Boston, Mass. Filed May 18, 1892. Serial No. 433,423. (No model.)

Claim.—1. In a slot machine for delivery of paper in rolls, the core, having a longitudinal slit, in combination with a removable tube having an inwardly projecting flange to correspond with the slit, and a series of punctured holes on the exterior, substantially as and for the purpose described.



2. The shutter, I, made of any suitable form and suspended on a shaft, I', which has at one end a cam lever, *i*, controlled by a spring, *j*, in combination with the lug, *h*, on the side of the ratchet wheel, D, and the wrist, *f'*, and arm, *f*, of the shaft, F, and the coin arm, F', substantially as and for the purpose described.

3. The ratchet wheel, D, with its lugs, *h* and *h'*, and counterweight, D', in combination with the shutter, I, hinged to a shaft, I', having a cam lever, *i*, whereby the loose end of the paper in a slot machine is controlled and to insure its perfect delivery, substantially as and for the purpose described.

4. The combination of the reversing screw *d'* and thread *e'*, coin arm or lever F', shaft F crank arm *f* the wrist *f'*, ratchet wheel D having lugs *h*, *h'*, and counter weight D', shutter I hinged on the shaft I' having a cam lever *i*, all substantially as and for the purpose described.

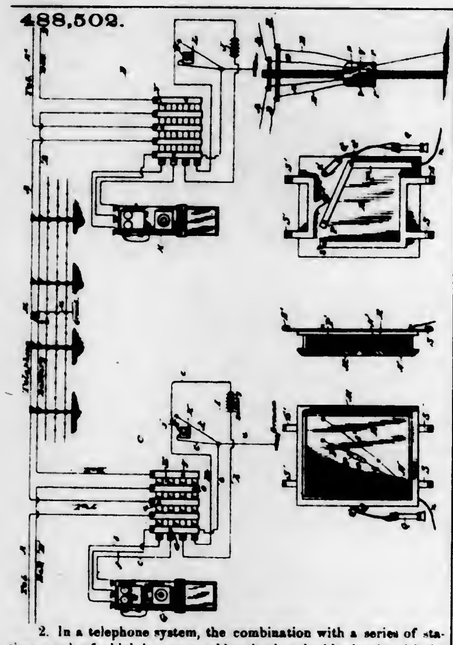
488,501. BROOM-SUPPORT. CHARLIE A. HUDSON, Schroon Lake, N. Y., assignor to the Leach, Rooster & Baker Company. Filed Mar. 23, 1892. Serial No. 426,066. (No model.)

Claim.—The yoke-shaped rod B having the ends bent outwardly at *b b* and provided with eyes or loops *b' b'*, in combination with the spring A coiled around it and having the ends hooked together; to form a device adapted to be attached to a wall or other vertical support and there hold a broom in the manner described.

488,502. TELEPHONE SYSTEM. CHARLES C. JENNINGS, Chicago, Ill., assignor to Charles H. Thompson and George A. Sholey, Detroit, Mich. Filed Oct. 23, 1888. Serial No. 288,917. (No model.)

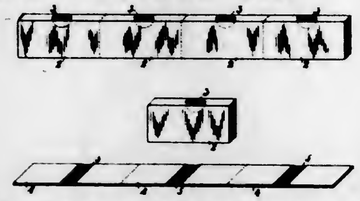
Claim.—1. In a telephone system the combination with a series of stations connected with each other by a series of broken double circuits, each of which is closed through one of the two stations connected thereby, a battery and fixed telephone at each of said stations, and electro-magnetic bells included in the telephone loop circuit, of a portable telephone unaccompanied by a battery, adapted and arranged to close any one of said broken circuits at any point intermediate said stations, substantially as and for the purpose described.

488,502.



2. In a telephone system, the combination with a series of stations, each of which is connected by a broken double circuit, with the stations on each side thereof, said circuits being closed through one of the stations only, with which it is connected, and having a telephone in the circuit at such station, of batteries, located at each of said stations, the loop circuit of each of which is adapted to be placed in circuit with the broken double circuit terminating at said station, whereby all the intermediate stations may be connected into a single broken circuit between the two stations, and a portable telephone unaccompanied by a battery, adapted and arranged to close said circuit, at any point between said end stations, substantially as described.

488,503. METHOD OF MAKING SHOVELS. WILLIAM R. KEELER, Beaver Falls, Pa., assignor to himself and Christian F. Grau, same place. Filed May 11, 1892. Serial No. 432,635. (No model.)



Claim.—1. The method of making shovels consisting in forming a recess in an unfinished body-blank of greater thickness than the shovel, butt-welding a strap-blank thereto, and then finishing the same.

2. The method of making shovels, consisting in rolling a bar with a series of recesses therein, severing the same into unfinished blanks of greater thickness than the completed shovels each blank having a single recess therein, butt-welding a strap blank thereto, and then finishing the same; substantially as described.

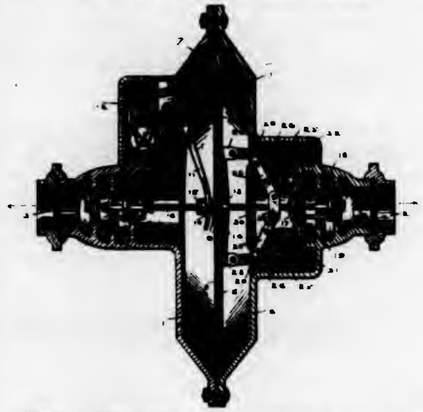
3. The method of making shovels, consisting in forming a recess in an unfinished body-blank of greater thickness than the completed shovel, bending a strip into two portions substantially parallel with each other, and butt-welding the same to the body blank; substantially as described.

4. The method of making shovels consisting in forming a body blank with a recess therein, forming a strap blank with a groove therein, bending the grooved part until the two parts are substantially parallel with each other, butt-welding the same to the body blank, and finishing the same: substantially as described.

5. The method of making shovels, consisting in forming a recess in an unfinished body-blank of greater thickness than the completed shovel, electrically welding a strap blank thereto, and rolling the same; substantially as described.

6. The method of making shovels, consisting in rolling a bar with a series of recesses therein, severing the same into blanks, rolling a strip with grooves therein, severing the same into blanks, and bending the same into parallel strap form, butt-welding the two blanks together, and then rolling the same, substantially as and for the purposes described.

488,504. DIAPHRAGM METER. JAMES R. KNICKERBOCKER, Indianapolis, Ind., assignor to the Knickerbocker Meter Company, same place. Filed June 16, 1892. Serial No. 436,978. (No model.)



Claim.—1. In a gas meter, a casing composed of two equivalent parts, inlet and outlet connections on opposite sides thereof, a single flexible diaphragm centrally secured therein, such casing providing a channel for the passage of the gas through openings in and near the edge of the diaphragm, inlet and outlet valves seated in partitions formed in the halves of the casing adjacent to the inlet and outlet openings and connected by a valve rod passing through a central opening in the diaphragm, a lever connected with and operating a registering mechanism, its opposite end engaging with a notched collar, such collar held in position on a sleeve by a nut, such sleeve surrounding the valve rod and formed integral with a plate on the opposite side of the same, brackets formed on such plate, slotted arms pivoted to such brackets, spring arms pivoted to a bracket rigidly secured to the valve stem, pins passing through their outer ends and through the slotted arms, coiled springs connected to such pins connecting the outer ends of the two spring arms together, a base plate attached to the inside of the casing and provided with brackets having curved slots, pins connected to the spring arms and working in such slots for regulating the movement of the same, such spring arms operating to throw the valves when their outer ends have passed a line with their pivotal point, substantially as shown and described.

2. In a gas meter, a casing, an automatic lever mechanism for effecting the throw of the valves consisting of a plate attached to the diaphragm of the meter, brackets formed thereon, slotted arms pivoted to such brackets, spring arms pivoted to a bracket rigidly attached to the valve stem, pins passing through the outer ends of such spring arms and through the slotted arms, coiled springs attached to such pins and connecting the ends of such arms together, pins passing through such spring arms near their center and working in curved slots formed in brackets attached to the meter casing, the valves of such meter adapted to be thrown by the movement of the spring arms when the outer ends of the same have been forced past the line of their pivotal point by the movement of the diaphragm, substantially as shown and described.

3. In a gas meter having a central diaphragm, a plate secured on one side of the same, a sleeve formed thereon surrounding the valve rod and passing through the diaphragm, the interior of such sleeve cored out, leaving a bearing on the valve rod at one end, a notched collar secured on such sleeve by a nut, a bifurcated lever engaging such notches and connected with the registering mechanism, slotted arms pivoted to the plate on the opposite side of the diaphragm, the ends of such slots adapted to engage with pins passing through the ends of spring arms, the ends of such pins connected by coiled springs, the inner ends of such spring arms pivoted to a block secured on the valve rod, pins passing through the spring arms near their center and working in slots for regulating the movement of the arms, valves adapted to be thrown by the movement of such arms when the outer ends of the same have been carried past a line with their pivotal points, substantially as shown and described.

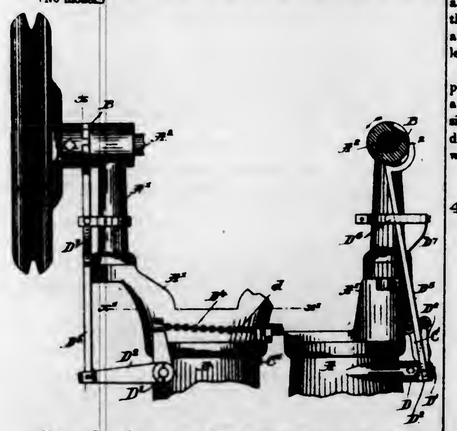
4. In a gas meter, a central diaphragm, a plate on one side of the same connected with the mechanism for throwing the valves, a central sleeve formed on such plate surrounding the valve rod and passing through such diaphragm, the interior of such sleeve cored out, leaving a bearing at one end on the valve rod, a notched collar retained on the opposite end of such sleeve by means of a nut having bearings on the valve rod, a bifurcated lever connected with such notched collar and with the registering mechanism, substantially as shown and described.

5. In a gas meter, a valve rod connecting inlet and outlet valves, a bracket rigidly attached to such valve rod, with arms pivoted thereto, pins passing through their outer ends and connected by springs, a flexible diaphragm through which the valve rod passes, and mechanism connecting the diaphragm to the outer ends of the pivoted arms, whereby the diaphragm operates to force the outer ends of such arms past the center of their pivotal point, thereby actuating the valve rod and its valves alternately in opposite directions, substantially as shown and described.

6. In a gas meter, a casing composed of two equivalent parts, inlet and outlet openings on opposite sides thereof, a flexible diaphragm centrally secured in such casing forming gas chambers on opposite sides of such diaphragm, a channel for the passage of gas through openings in and near the edge of the diaphragm, inlet and outlet valves seated in partitions formed in the halves of the casing adjacent to the inlet and outlet openings, and connected by a valve rod passing through a central opening in the diaphragm, a registering mechanism connected to the outlet side operated by the movement of the diaphragm, a plate centrally secured to the diaphragm and adapted to be carried forward by its movement, such plate provided with slotted arms for receiving the ends of jointed levers rigidly secured to the valve rod, the ends of such levers connected by springs for completing the throw of the valve rod inaugurated by the movement of the diaphragm, substantially as shown and described.

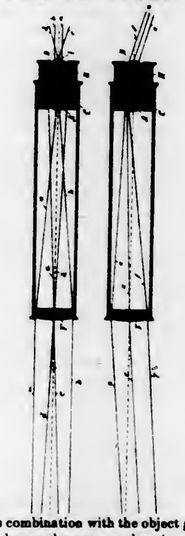
7. In a gas meter, a casing composed of two substantially equivalent parts, inlet and outlet openings on opposite sides thereof, a flexible diaphragm centrally secured therein and dividing the casing into two opposite gas chambers, a channel formed through openings in or near the edge of the diaphragm for permitting the passage of the gas, inlet and outlet valves seated in partitions adjacent to the inlet and outlet openings, and connected by a valve rod passing centrally through the diaphragm, registering mechanism on the outlet side connected to and operated by the movement of the diaphragm, a plate with brackets connected to the diaphragm on the inlet side, a pair of jointed levers rigidly connected to the valve rod, their ends pivoted in slotted arms secured to such bracket plate and connected diametrically across by suitable springs, whereby the movement of the valves inaugurated by that of the diaphragm will be automatically completed by the tension of the springs when the outer ends of the jointed levers have passed the central line of their pivotal points, all combined substantially as shown and described.

488,505. TENSION DEVICE FOR SEWING-MACHINES. ISRAEL LA CHAPELLE, Haverhill, Mass., assignor to the Goodyear Shoe Machinery Company, Hartford, Conn. Filed May 23, 1892. Serial No. 433,949. (No model.)



Claim.—In a thread controlling mechanism for sewing machines, the following instrumentalities, viz:—a tension device, a brake device to act uniformly thereon to produce a constant tension while the machine is being run for sewing; a shaft having a cam or projection, brake actuating devices located between said cam or projection and said brake, said cam being constructed to meet and move the brake actuating devices to release the tension on the needle thread only after the said shaft has been stopped and its direction of rotation reversed, substantially as described.

488,506. EYEPIECE FOR TELESCOPES. HENRY C. MCILWAIN, Hull's Mills, assignor of one-half to J. H. Huston, Connersville, Ind. Filed May 5, 1892. Serial No. 431,982. (No model.)



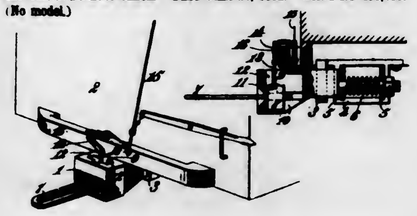
Claim.—1. The combination with the object glass, of a solid glass eye-piece having the larger plano-convex lens A and the smaller plano-convex lens B of such proportion and relation that the image of the distant object through the object glass is formed at the center of the sphere describing the larger lens which is the focus of the smaller lens, substantially as described.

2. The combination with the object glass, of an eye-piece composed of a solid glass cylinder having a larger plano-convex lens A on the front end and a smaller plano-convex lens B on the rear end, said lenses being of such size and the length of the cylinder between the lenses so arranged that the axial rays of object glass are coincident with the axial rays of the smaller lens, substantially as described.

3. In a telescope or similar optical instrument the combination with the object glass of an eye piece consisting of the lenses A, B, and interposed glass cylinder H, the said glasses being arranged so that the image of the object glass is formed in the cylinder H at the axis of a sphere describing the face of lens A, and at a distance from lens B equal to its focal length, substantially as specified.

4. The combination with the object glass, of an eye-piece composed of solid glass having a larger curvature for the front face and a smaller curvature for the rear face, said curvatures being of such size and the length of glass between them securing the faces at such distance apart that the axial rays of the object glass are coincident with the axial rays of the smaller face, substantially as described.

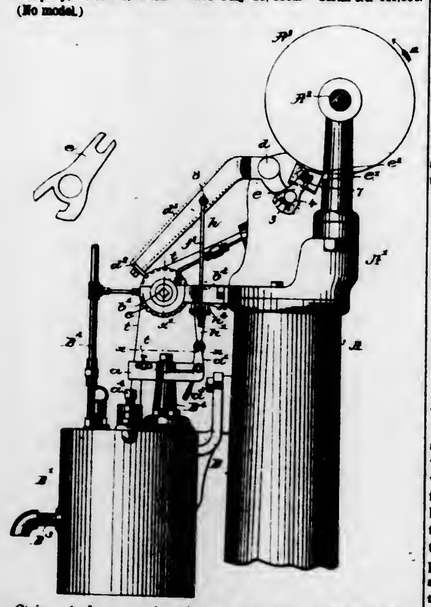
488,507. CAR-COUPLING. HENRY SCHAEFFER, Ridgway, Colo., assignor of two-thirds to Mary Edith Criswell, Charles Enoch Criswell, and James Leander Smith. Filed June 27, 1892. Serial No. 438,136. (No model.)



Claim.—1. In a car coupling, the combination with a drawhead a longitudinal slot in its bottom a T shaped slot in its top and provided in its side walls with oppositely arranged open top recesses or seats, of a vertically movable and rearwardly swinging coupling pin or block having a greater thickness from front to rear than in a lateral direction and provided at its upper front portion or corner with cross arms that are adapted to enter the said seats or recesses of the drawhead and serve as pivotal supports for the said pin, an oscillatory angle lever journaled or mounted above the drawhead and having a flexible connection with said coupling pin or block, and a rod or chain connected with said angle lever to operate the pin in uncoupling, substantially as described.

2. In a car coupling, the combination of the slotted drawhead having the open top recesses or seats 12, the vertically movable and rearwardly swinging coupling pin 8 having at its upper front corner the cross-arms 11 adapted to engage said recesses and serve as pivotal supports for the pin, the guard 16, above the drawhead, the two-armed angle lever 14, the chain 13 connecting said pin and lever, and the rod or chain 15 for operating said lever, substantially as described.

488,508. TENSION DEVICE FOR SEWING-MACHINES. ALVAR C. SPENCER, Boston, Mass., assignor to the Goodyear Shoe Machinery Company, Hartford, Conn. Filed July 23, 1892. Serial No. 441,006. (No model.)

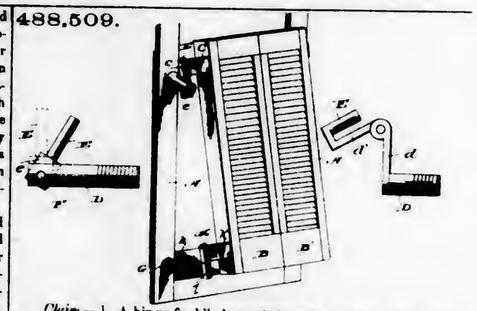


Claim.—1. In a wax thread sewing machine, a tension wheel, a locking wheel against which it is held frictionally, and the levers d^7 and e, combined with a brake block, and the wheel A^3 adapted only in its reverse rotation to act on said brake block and, move the said levers in a direction to release the locking wheel, substantially as described.

2. In a wax thread sewing machine, a tension wheel, a locking wheel against which it is held frictionally, and the levers d^7 and e, combined with the wheel A^3 adapted only in its reverse rotation to move the said levers in a direction to release the locking wheel, clamping jaws for the thread on its way to the wax pot, and connections between said jaws and the said lever d^7 whereby the tension wheel and clamping jaws are made to release the thread simultaneously, substantially as described.

3. The tension wheel, the locking wheel notched at its periphery, the lever d^7 having the plate d^8 and the lever e pivoted on the lever d^7, and the wheel A^3, combined with a brake mounted upon the said lever e and adapted to be acted upon to move the lever d^7 and effect the release of the locking wheel only upon the reverse rotation of the said wheel A^3, substantially as described.

488,509. AWNING-BLIND HINGE. JOHN SWEENEY, New Haven, Conn., assignor of one-half to James Graham & Co., same place. Filed Jan. 12, 1892. Serial No. 418,091. (No model.)

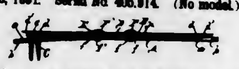


Claim.—1. A hinge for blinds consisting of a member adapted to be attached to the blind and provided at its outer end with a sleeve, another member adapted to be secured to the window frame or casing and provided at its outer end with spring lips, and a pin fitted in the sleeve on the member attached to the blind and between the spring lips of the other member, substantially as described.

2. In an awning blind, the combination of a blind pivotally supported near its upper end, a plate attached to the blind near the lower end thereof and provided at one end with a depending pin, and a shank adapted to be attached to the window frame or casing and provided at its outer end with spring lips arranged to extend on opposite sides of the depending pin carried by the blind, substantially as described.

3. In an awning blind, a locking bar secured on one of the blinds and adapted to extend across the meeting edges of the blinds, said bar being provided with longitudinal slots adapted to receive bolts attached to the blinds, one of said slots opening through one end of the bar, substantially as described.

488,510. RIVET-HOLDER. JACOB J. UEBELHOR, Waltham, Mass., assignor to the Judson L. Thomson Manufacturing Company, same place. Filed Sept. 16, 1891. Serial No. 405,814. (No model.)



Claim.—1. In a rivet holder, the combination with a plate having arms at its opposite ends for engaging the rivet; of a spring plate having its ends above and adapted to normally bear against said arms for holding the rivet in position, and a clamp for securing the central portion of said plates together, substantially as specified.

2. In a rivet holder, the combination with a plate formed with an aperture therethrough and provided with a slot extending inwardly from one edge thereof for receiving the rivet shank and provided with a pair of arms arranged at opposite sides of the slot and formed with bearing faces for supporting the under face of the rivet head, a second plate above the former formed with an aperture registering with the aperture of the former plate and having one end thereof extended beyond a portion of said slot for engaging the upper face of the rivet head, and a rivet having its shank passed through said apertures with its head bearing against the upper face of one of the plates and its shank fastened to the other of said plates, substantially as and for the purpose specified.

3. In a rivet holder, the combination with a plate (D) formed with inclined edges (d'—d'), a plate (A) having slots (a—a) at its opposite extremities beneath the inclined edges (d'—d'), and a clamp for securing the central portions of said plates together, substantially as specified.

488,511. SWIVEL-LOOM. AUGUST WAGNER, Philadelphia, Pa., assignor to Schaum & Uhlinger, same place. Filed May 18, 1891. Serial No. 393,317. (No model.)

Claim.—1. The combination of the beam G with separate and independent swivel carrying blocks H arranged to carry the swivel shuttles and hinged clamps connecting them to the beam, all substantially as described and so that the blocks can be thrown up to the side of the beam.

2. The combination of the beam G with swivel shuttle carrying blocks H arranged to carry the swivel shuttles; hinged clamps connecting said blocks to the beam, and springs as arranged to hold the blocks normally to the beam while permitting them to be turned out from it, all substantially as described and so that the blocks can be thrown up to the side of the beam.

3. The combination of the beam G with swivel shuttle carrying blocks H arranged to carry swivel shuttles, hinged clamps L L′ connecting the blocks to one side of the beam, and a catch arranged to engage and hold the blocks on the opposite face of said beam substantially as specified.

4. The combination of the beam G with swivel shuttle carrying blocks H arranged to carry swivel shuttles, hinged clamps L L′ connecting the blocks to one side of the beam and a catch R arranged to catch and hold block away from the beam, substantially as specified.

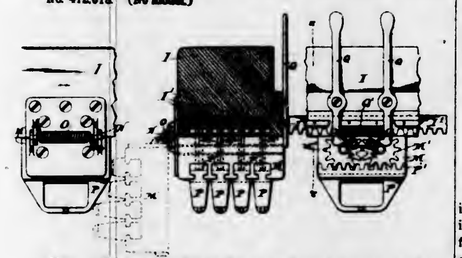
5. A swivel shuttle carrying block H made up of two or more parts grooved on their abutting faces to receive pinions I and in their bottoms to form grooves A^4 in combination with transverse bearing rods running through the sections substantially as specified.

6. A swivel shuttle carrying block H consisting of two or more parts grooved on their abutting faces to receive pinions between them and in their bottoms to form recesses A^4, in combination with tubes J passing through said blocks, pinions I journaled on said tubes and situated in the grooves of the blocks and binding bolts K extending through tubes J and arranged to clamp the parts of the blocks together substantially as specified.

7. A swivel shuttle carrying block H consisting of two or more parts grooved to receive pinions between them in combination with tubes J passing through said blocks pinions I journaled on said tubes and situated in the grooves of the blocks and bearing rods extending through said tubes, substantially as specified.

8. A block H made up of a series of parts H′ H^2, &c., said parts having parallel registering perforations A A and on one or both faces a circular depression A′ concentric with one transverse perforation and of a size to receive a pinion I and a circular depression A^3 concentric with the other transverse perforation and of a size to receive the hub I′ of a pinion in combination with staggered pinions I having hubs I′, tubes J passing through perforations A and serving as bearings for the pinions and clamping bolts K arranged to clamp and hold the parts of the block together.

488,512. SWIVEL-LOOM. AUGUST WAGNER, Philadelphia, Pa., assignor to Schaum & Uhlinger, same place. Filed Nov. 21, 1891. Serial No. 412,618. (No model.)



Claim.—The combination of the beam I with separate and independent shuttle-blocks M arranged to carry the swivel shuttles, said blocks being hinged to one edge of the beam: springs secured to the beam and to each block in such way as to normally hold the blocks away from the face and to one side of the beam: and a catch arranged to hold the block in place on the beam face.

488,513. FLASK-WEIGHT FOR MOLDS. JOHN ANDERSON, Buffalo, N. Y., assignor to the Pierce Steam Heating Company, same place. Filed Mar. 12, 1890. Serial No. 343,792. (No model.)

Claim.—1. A snap flask weight adapted to cover the top of the mold, having handles by which said weight is lifted on or off from the mold and a hole through which the metal is poured, in combination with side and end clamping pieces consisting of the horizontal portions, 4, for covering the seam where the two parts of the mold come together, and vertical portions 7 having angular slotted portions at the top and screw bolts adapted to pass through said slots for securing the side and end clamping pieces to the top weight whereby they are made easily removable and adjustable for flasks varying in size substantially as described.

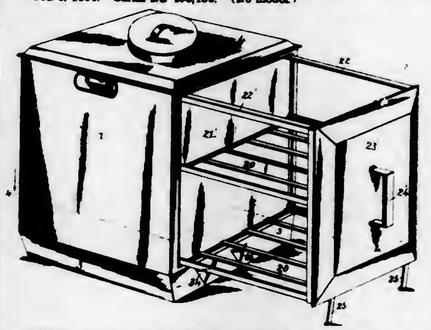
2. A removable snap flask weight consisting of a flat covering weight 2, having handles, 3, by which it is carried, and an opening through which the metal is poured, all formed in one piece in combination with removable end and side clamping pieces having angle pieces, 8, provided with slots, 9, and bolts by which they are adjustably and removably secured to the flat covering weight, substantially as described.

488,514. HARROW-DISK. EVERETT D. ARNOLD, Troy, N. Y., assignor to the Troy Steel and Iron Company, same place. Filed Nov. 5, 1891. Serial No. 410,970. (No model.)

Claim.—1. A concavo-convex harrow-disk provided with a peripheral cutting edge and composed of an integral plate of wrought metal, having a hammer-hardened case on the peripheral portion of the convex side of the disk, substantially as described.

2. A concavo-convex harrow-disk composed of an integral plate of wrought metal having its peripheral portion hammer-hardened on the convex side of the disk, and bevel ground or cut on the concave side of the disk, whereby the peripheral portion of the disk is provided with a hammer-hardened case on the convex side of the disk, and with a cutting edge on the peripheral edge of the hardened case, substantially as described.

488,515. STEAMER. ANDREW A. RISSNER, Harvey, Ill. Filed Oct. 3, 1891. Serial No. 406,139. (No model.)



Claim.—1. A casing, shelves therein, and a steam chamber opening into the bottom of the casing and provided with a partition forming a reservoir: in combination with a condenser closing the open front of the casing, removable therefrom, and connecting at its lower end with said chamber, as and for the purpose set forth.

2. The combination of a casing having an open front, slatted shelves, a steam chamber opening into the bottom of the casing, a reservoir surrounding the steam chamber and communicating therewith and with the interior of the casing, and means for closing the front of the casing, substantially as described.

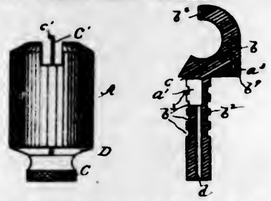
3. The combination of a casing having an open front, slatted shelves, a base arranged below the casing and containing a central steam chamber and having a surrounding reservoir each open at the top and a division wall between the two having perforations, a removable front for closing the casing and a lid opening into the top of the casing, substantially as described.

4. A casing having an open front, a base below said casing containing a steam chamber and a reservoir in front of said chamber both being open at the top, and communication between the reservoir and chamber; in combination with a number of slatted shelves, closed vertical back and front connected at their upper ends by strips and secured to said shelves, and a leg depending from said front, as and for the purpose set forth.

5. The combination with a rectangular casing having an open front, a base below said casing containing a steam chamber and a reservoir in front of the chamber and communicating therewith, both being open at the top, of a number of slatted shelves, a hollow front connecting said shelves and removably closing the front of the casing,

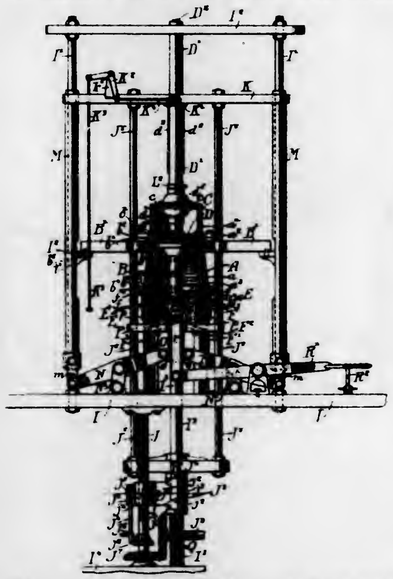
a handle on the outer wall of said front, and an incline at the lower edge of its inner wall, as and for the purpose hereinbefore set forth.

488,516. PERMUTATION-PADLOCK. WILLIAM H. BOLTHOFF, Denver, Colo., assignor to the Milner Manufacturing Company. Filed June 18, 1892. Serial No. 437,114. (No model.)



Claim.—In a padlock the barrel A having the passage *a* a post within said passage, the shackle formed of two pivoted arms *b* and *b'*, arm *b'* having the projection b^4 and arm *b* having the recess *a'* and the hole a^3, said recess being adapted to receive projection b^4 when the shackle is opened and a post C secured to the barrel and adapted to extend within hole a^3, and engage the pin b^5, substantially as described.

488,517. APPARATUS FOR MOLDING PULP. STANLEY I. CHAPMAN, Evanston, Ill. Filed Oct. 6, 1891. Serial No. 407,860. (No model.)



Claim.—1. A mold for forming hollow articles of paper pulp consisting of an inner form, an outer form or jacket surrounding the same and open at both ends, a cylinder forming an extension of the outer form, a plunger sliding in said cylinder, inner and outer annular walls forming extensions of the inner and outer forms, and an annular piston sliding within the annular space formed by said walls, substantially as described.

2. A mold for forming hollow conical articles of paper pulp, consisting of an inner form having conical side walls and an end wall, an outer conical form or jacket surrounding the same, a cylinder forming an extension of the smaller part of the outer form or jacket, a plunger within said cylinder, inner and outer annular cylindric walls forming extensions of the conical inner and outer forms at the larger end thereof, and a cylindric annular piston sliding between said cylindric walls, substantially as described.

3. A mold for forming hollow articles of paper pulp, consisting of an inner form, an outer form or jacket surrounding the same, a cylinder forming an extension of the outer form or jacket, a plunger within said cylinder, inner and outer annular walls forming extensions of the inner and outer forms, and an annular piston sliding between said annular walls, the space between said annular walls being greater than that between the inner and outer forms, substantially as described.

4. A mold for making conical hollow vessels of paper pulp consisting of an inner form having conical side walls and an end wall, an outer conical form open at both ends, a cylinder forming an extension of the smaller end of the outer conical form, a plunger sliding in said cylinder, inner and outer cylinders forming extensions of the larger parts of the inner and outer conical forms, and an annular plunger sliding between said cylinders, said cylinders being stationary, and the outer form or jacket being movable toward and from the stationary outer cylinder, substantially as described.

5. A mold for making hollow conical articles of paper pulp consisting of an inner form having conical side walls and an end wall, an outer conical form open at both ends, a cylinder forming an extension of the smaller end of the outer conical form, a plunger sliding in said cylinder, inner and outer cylinders forming extensions of the larger parts of the inner and outer conical forms, and an annular plunger sliding between said cylinders, said cylinders being stationary, and the outer form or jacket being movable toward and from the stationary outer cylinder, and the inner form being detachably supported in position upon the inner cylinder, substantially as described.

6. A mold for forming hollow vessels from paper pulp, consisting of an inner form, an outer open ended form or jacket surrounding the same, a cylinder forming an extension of the said outer form or jacket, a plunger sliding in said cylinder, a hollow stem attached to said plunger and adapted for supplying pulp to the mold, said plunger having a movable inner part or plate the margin of which is adjacent to the margin of the plunger and which may be separated from the main part of the piston to allow the escape of pulp from the hollow stem to the interior of the mold, substantially as described.

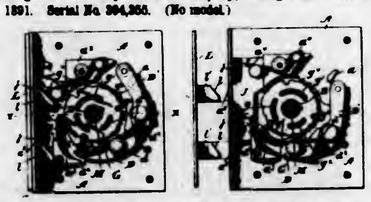
7. A mold for forming conical vessels from paper pulp, consisting of an inner form, an outer open ended form or jacket, a cylinder forming an extension of said outer form or jacket, a piston sliding in said cylinder, a stem attached to said piston and adapted for supplying pulp to the mold, said piston having a movable inner part or plate which may be separated from the main part of the piston to allow the escape of pulp from the stem to the interior of the mold, said plate being mounted to rotate for the purpose of distributing the pulp within the mold, substantially as described.

8. A machine for molding conical articles from paper pulp, comprising an inner form, an outer open ended form or jacket, a cylinder forming an extension of the said outer form or jacket, a plunger sliding within the cylinder, inner and outer annular walls forming extensions of the inner and outer forms, an annular plunger sliding between said inner and outer annular walls, and mechanism for simultaneously actuating or moving said plunger and said annular piston, substantially as described.

9. The combination with an inner stationary form and an outer vertically movable form or jacket, of a cylinder forming an extension of the upper end of said jacket, a plunger sliding in said cylinder, a stem attached to the plunger, a reciprocating yoke for actuating the plunger, and means for detachably engaging the said stem with the said yoke whereby said stem may be disconnected from the yoke for lifting the plunger and outer parts of the mold free from the inner form, substantially as described.

10. The combination with the inner conical form and outer open ended conical form or jacket, a cylinder attached to the smaller end of the conical form or jacket, and a plunger sliding within the cylinder, said outer form or jacket being movable upwardly away from the inner form, and the said inner form being detachably supported, of a movable carrier adapted for engagement with the inner form, and means for lifting the inner form free from its support and into position to be engaged by the said carrier, substantially as described.

488,518. COMBINATION-LOCK. JAMES D. CRAIG, Rogers Park, assignor to the Keyless Lock Company, Chicago, Ill. Filed May 23, 1891. Serial No. 394,355. (No model.)



Claim.—1. A sliding bolt provided with a catch for engagement within a notch of a hasp entering the lock, in combination with a cam-plate provided with a tumbler key, and tumblers, and driving mechanism positively engaging one of the tumblers.

2. A sliding bolt provided with catches, and having one of its sides arranged along side the interior of the lock case flange, through apertures which hasps enter to be locked by the bolt catches, the said bolt being provided with a spring to move it in one direction, in combination with a cam plate to move it in the opposite direction, and one or more regular tumblers and an index tumbler.

3. A sliding bolt in combination with a cam-plate carrying a compound lever provided with a tumbler key at one end of a single lever thereof, the other single lever being provided with mechanism for operating it and thereby the lever carrying the key.

4. A sliding bolt, in combination with a cam-plate having a compound lever provided with a tumbler key, and a switch cam mechanism.

5. A two-part tumbler, one part having a pin, and the other part having an annular series of apertures comprised of holes of suitable size for receiving the pin, and a slot likewise of suitable size in cross section for receiving the pin and affording a course for the travel of the pin therein in combination with the driver index tumbler G, and means for operating the same.

6. A driver index tumbler having an elevated peripheral arc portion g^2, one or more radial notches g^3, serrations continuing throughout the periphery excepting the elevated arc-shaped portion, and the part or parts occupied by the radial notches, and having the slots *g g'* and g^4, in its body combined with a bolt, and with means for operating the tumbler.

7. The combination with a bolt, and with tumbler operating means, of a serrated index tumbler provided with an elevated peripheral arc-shaped smooth portion, and having one or more radial notches g^3, in the remaining portion of the periphery, and provided with slots in its body so located with respect to the radial notch or notches and the serrations that a corresponding end of each slot would be directly beneath the hollow of a serration or a radial notch or where such depression would be in the elevated smooth arc portion if continued therethrough and the other end of each of said slots would have a different relation to said peripheral depressions.

8. The driver index tumbler G, secured to the sleeve M, in combination with the cam-plate C, provided with the compound lever D, D', having the key K, and the spring bolt J provided with one or more catches *j*.

9. The combination, with a knob, of a spring-pressed sleeve secured thereto, and the upper or driver tumbler connected with said sleeve.

10. A knob and a spring-pressed sleeve connected to an index tumbler, in combination with one or more tumblers.

11. A knob containing within its recessed interior an attaching cross-piece in combination with a sleeve connected with a tumbler.

12. A knob and a sleeve connected to a tumbler, in combination with one or more tumblers, a tumbler key and mechanism connecting the latter with a sliding bolt.

13. A base plate A provided with a switch cam block *a*, two lugs a^2, a^3, and a standard.

14. A base plate having the lugs a^3, a^4 each of said lugs having an inner concave surface, and a rim flange provided with one or more openings a^5

488,519. SELF-PURIFYING SUPERHEATING STEAM-GENERATOR. BENJAMIN F. FIELD, Chicago, Ill. Filed Feb. 23, 1892. Serial No. 422,881. (No model.)

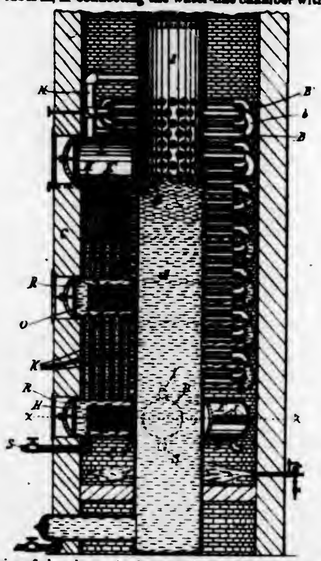
Claim.—1. In a steam generator, the combination set forth of means for superheating the water arranged at the lower part of the generator: scale-collecting plates arranged at the lower part of the generator, and means for preventing the water or steam from rising to the upper part of the generator until it has been fully acted upon by the superheater.

2. In a steam generator, the combination of the furnace: the main body of the generator arranged to receive the heat of the furnace: inter-communicating chambers arranged in horizontal series to receive heat from the furnace and communicating at one end of the series with the feed water, and at the other end of the series with the main body of the generator near the water-line, and the series of scale-collecting plates arranged within such chambers substantially as and for the purpose set forth.

3. In a steam generator, the combination of the scale-collecting plates: the rods passed through such plates; the washers arranged upon such rods between such plates; the legs Q pivoted upon the lower rods *q' q'* and the nuts screwed upon such rods.

4. In a steam generator, the combination set forth of the metal plates; the rods *q* connecting such plates; the washers *s* arranged upon such rods between such plates; and the nuts *r* screwed upon such rods.

5. In a steam generator, the combination set forth of the furnace; the vertical main body A of the generator; the inter-communicating scale-collecting chambers arranged in horizontal series within the furnace; the water-line chamber fixed to and communicating with the main-body of the generator and extending above and below the water-line; the tubes K, K' connecting the water-line chamber with the horizontal series of chambers; the intermediate chamber arranged intermediate the tubes K, K'; scale-collecting plates arranged in the intermediate chamber and in the chambers of such horizontal series; and the feed-water pipe communicating with the first chamber of such series.



6. In a steam generator, the combination of the furnace; the main body of the generator; the feed-water pipe; a series of chambers arranged in the furnace intermediate the main body of the generator and a series of scale-collecting plates arranged within such chambers and having a combined scale-collecting surface several times in excess of the heating area of the shell and tubes of the main body of the generator.

488,520. ELECTRICALLY-OPERATED STRINGED MUSICAL INSTRUMENT. WILLARD H. GILMAN, Boston, Mass. Filed Mar. 9, 1892. Serial No. 424,253. (No model.)

Claim.—1. A stringed musical instrument, comprising in its construction movable fingers arranged over the strings at the frets, which

fingers are adapted to be depressed upon the strings to close the frets, a picking device for picking the strings, said fingers and picking device being embraced within an electric circuit, as described.

2. A stringed musical instrument, comprising in its construction movable fingers arranged over the strings at the frets, which fingers are embraced within an electric circuit, whereby by the closing and breaking of the circuit the fingers may be depressed upon the strings, and be freed therefrom, as described.

3. A stringed musical instrument, comprising in its construction a star wheel arranged in juxtaposition to the strings, an electro magnet and its armature, and actuating mechanism intermediate of the armature and star wheel for moving the latter, as described.

4. A stringed musical instrument, comprising in its construction movable fingers arranged over the strings at the frets for closing the strings at the frets, and movable star wheels arranged over the strings at the head of the instrument, for picking the strings, as described.

5. The combination, with a musical instrument and its strings, of an electro magnet, its armature, and a string-depressing finger connected with the armature and arranged over the string, as described.

6. The combination, with a musical instrument and its strings, of a star wheel arranged in proximity to a string so as to pick the same, a ratchet wheel connected with the star wheel, an electro magnet and its armature, and a dog or pawl connected with the armature and adapted to engage and actuate the ratchet wheel, as set forth.

7. The combination with the fingers *p* and the pivoted fingers *n*, both within an electric circuit and means, as rolls, for passing a perforated sheet between the free ends of the fingers, of the strings of a stringed musical instrument, fingers for depressing the strings at the frets, picking device for picking the strings, and operating means for the fingers and picking device in electrical connection with the fingers *n*, as described.

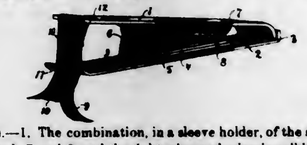
8. A banjo provided with movable fingers for depressing the strings at the frets, and means, as a movable star wheel, for picking the strings at the head, as described.

488,521. APPARATUS FOR REGISTERING THE NUMBER OF WORDS WRITTEN ON TYPE-WRITERS. George R. Hudson, Pittsburg, Pa. Filed Feb. 8, 1892. Serial No. 420,818. (No model.)

Claim.—1. The combination with the frame having a face plate with a dial plate, a shaft having its bearings in the frame and dial, and provided with an indicator a ratchet wheel for operating the indicator a pivoted bar with spring pawl, and a stop pin on said bar, and an arm on said shaft, adapted to check the movement of the indicator, as and for the purpose specified.

2. The combination with the frame having a pivoted bar, a dial plate an operating pawl on said bar, a ratchet wheel H, a shaft having a ratchet wheel E, and an indicator with double points, as and for the purpose specified.

488,522. SLEEVE-HOLDER. William Jones, St. Louis, Mo., assignor of one-half to Martha E. Barron, same place. Filed Apr. 15, 1892. Serial No. 429,279. (No model.)

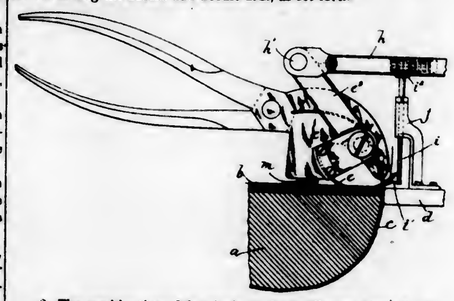


Claim.—1. The combination, in a sleeve holder, of the spring clip with the rods 7 and 8, and the tightening and releasing ribbons 9 and 10 connected to said spring clip, substantially as described.

2. The combination, in a sleeve holder, of the spring clip, the pivot rod 5 and coil spring 6 mounted on said rod 5; said spring having its pressure ends to expand the operative arms of the clip, the flange plates 4, the rods 7 and 8 secured thereto, and the ribbons 9 and 10 to respectively effect the closure and release of the clip.

488,523. SEWING-MACHINE FOR LASTING BOOTS OR SHOES. Thomas K. Keith, Boston, Mass. Filed Mar. 7, 1892. Serial No. 423,966. (No model.)

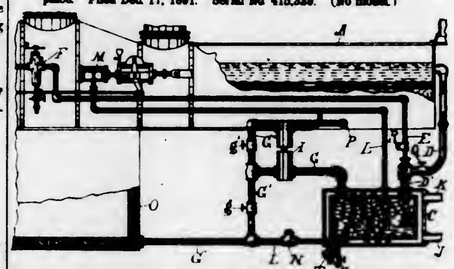
Claim.—1. In a sewing machine, the combination of the curved needle, an arm supporting said needle, a pair of lasting pinchers, the needle-arm being pivoted to one of the jaws of the pinchers, and means for oscillating the needle and needle-arm, as set forth.



2. The combination of the pinchers, the needle-arm pivotally connected to one of the jaws of the pinchers and provided with a curved needle, the lever secured to the needle-arm, a reciprocating slide connected with said lever, and a looper operated by the reciprocating movements of said slide and arranged to present the thread to the barb of the needle, as set forth.

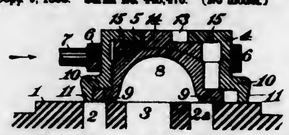
3. The pinchers, having on the lower jaw an adjustable rest *m*, combined with the needle-arm pivoted to said lower jaw and provided with a needle, and mechanism for oscillating said arm and needle, as set forth.

488,524. FEED-WATER HEATER AND PURIFIER. James MacDonald, Los Angeles, Cal., assignor of one-half to Mary MacDonald, same place. Filed Dec. 17, 1891. Serial No. 415,339. (No model.)



Claim.—The combination set forth of the boiler, the purifier tank, the exhaust shell or heater surrounding the purifier tank, the exhaust pipes leading into and out of the shell, the feed water pipe, the hot water pipe leading from the boiler at an intermediate point to the short inlet pipe D', such inlet pipe arranged to lead into the top of the purifier tank, and to receive axially the stream from the feed water pipe, means for forcing water through such pipe, the return pipe leading from the top of the tank to the boiler and supplemental means for maintaining a continuous circulation of water through the purifying device when the injector is at rest.

488,525. SLIDE-VALVE. Julius P. Meyer, Paterson, N. J., assignor to the Leslie Brothers Manufacturing Company, same place. Filed Sept. 9, 1892. Serial No. 445,476. (No model.)

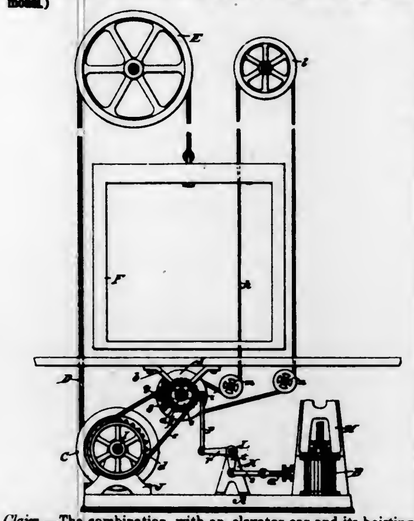


Claim.—1. In a slide valve composed of an outer and an inner valve section, fitted with the capacity of independent movement of the outer section at the beginning of the stroke, the combination of an outer section having an opening through which the inner section is exposed centrally to motive fluid pressure in operation, and an inner section having a completely closed top wall, and bearing at its top against the inner face of the outer section, substantially as set forth.

2. In a slide valve composed of an outer and an inner valve section, fitted with the capacity of independent movement of the outer section at the beginning of the stroke, the combination of an outer section having an opening through which the inner section is exposed centrally to motive fluid pressure in operation, and an inner section having a completely closed top wall, and a continuous upper bearing against the inner face of the outer section, on each side of the top opening therein, substantially as set forth.

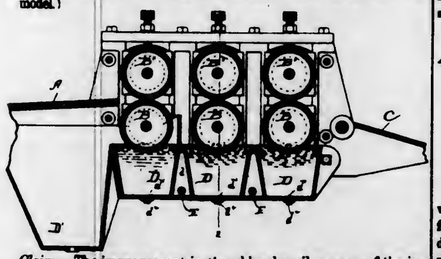
3. In a slide valve composed of an outer and an inner valve section, fitted with the capacity of independent movement of the outer section at the beginning of the stroke, the combination of an outer section having inner bearing faces at each of its ends fitting truly over bridges on the ends of the inner section, an inner section having a completely closed top wall and bearing at its top against the inner face of the outer section, and fluid supply ports formed in the outer section and leading into the end spaces between the sections, substantially as set forth.

488,526. OPERATING MECHANISM FOR ELEVATORS. Charles R. Moore, Boston, Mass. Filed July 5, 1892. Serial No. 438,836. (No model.)



Claim.—The combination, with an elevator car and its hoisting and starting and stopping mechanism, of the shaft *a*, connected with and driven by the hoisting mechanism, the wheel *j* turning on said shaft *a*, the operating rope *k* traveling at the same speed and in the same direction as the car, said rope passing over said wheel *j* and a wheel *l* at the top of the hoistway, and the differential mechanism for transmitting motion from the wheel *j* to the starting and stopping mechanism and from the shaft *a* to the operating rope wheel *j*, said differential mechanism consisting of the miter gear *h* turning loosely on said shaft *a* and having the wheel *j* immovably secured to its hub, the lever *i* connected at one end with the starting and stopping mechanism, a miter gear *f* immovably secured to the shaft *a*, and the miter gear *g* turning loosely on the end of the lever *i* and meshing with both of the gears *h* and *f*, all operating substantially in the manner and for the purpose set forth.

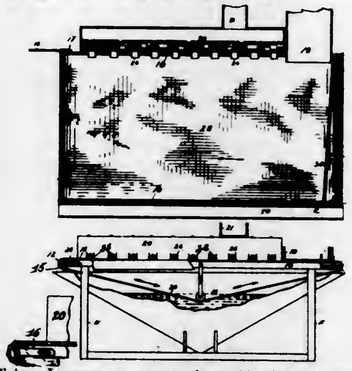
488,527. PROCESS OF COATING SHEET METAL. Edwin Norton, Maywood, assignor to himself and Oliver W. Norton, Chicago, Ill. Filed Nov. 16, 1891. Renewed Nov. 25, 1892. Serial No. 453,107. (No model.)



Claim.—The improvement in the old palm oil process of tinning or coating iron or steel sheets with tin or other metal herein described, and consisting in first taking the wet sheets from their water bath and simultaneously drying off the moisture, heating the sheets and fluxing or coating them with palm oil by passing the sheets between heated metallic rolls supplied with oil, and then immersing the sheets thus heated, dried and fluxed in a bath of molten tin or other metal, substantially as specified.

2.—The process of coating metal plates with molten metal which consists in first pickling the plates, then passing the plates while still wet between hot rolls supplied with an oil flux whereby the sheets are simultaneously dried and fluxed then passing the sheets into the molten metal, substantially as specified.

488,528. CONCENTRATOR. William P. Ogden, Denver, Colo. Filed Jan. 5, 1891. Serial No. 376,796. (No model.)



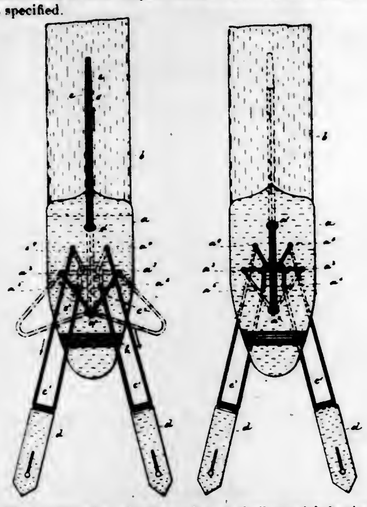
Claim.—In an ore-concentrator the combination with a stationary table inclined transversely, lying in a horizontal plane longitudinally and having end-rollers adjustably supported by slotted projections 13, and an adjustable tension-roller 14, supported transversely beneath the stationary table, of a vessel adapted to contain water supported beneath said table and extending from end to end thereof, a textile apron provided with meshes for receiving and temporarily containing mineral therein, a trough 19 for delivering mobilized material to the upper right-hand corner of the apron, a water-trough or tank 20, provided with an inlet spout 21, and openings 22 provided with pivot-valves 23 having handles 25 projecting above the top of the trough 20, for adjusting said valves to regulate the supply of pure water, the chutes or troughs 26, leading from the opening 22, and adapted to conduct the water therefrom to the apron, the tailings-trough 50, at the lower side of the table, the transverse strip 30 having a strip 40 of yielding material secured to the strip 30, and projecting below the same to engage the horizontal portion of the movable apron, substantially as specified.

488,529. SUSPENDERS. Paul Ortmann, Bittau, assignor of one-half to Maximilian Rost, Dresden, Germany. Filed Jan. 26, 1892. Serial No. 419,311. (No model.) Patented in Germany Sept. 12, 1891, No. 68,604, and Dec. 9, 1891, No. 64,196; in England Dec. 30, 1891, No. 22,784; in France Dec. 30, 1891, No. 218,383; in Belgium Jan. 9, 1892, No. 97,857; in Switzerland Mar. 5, 1892, No. 4,796; in Italy Mar. 8, 1892, No. 21,442/426, and in Austria-Hungary May 8, 1892, No. 1,901 and No. 1,129.

Claim.—1. The combination of a suspender, or similar article which is perforated at its end, with a string *c*, drawn through the perforations, and forming two pair of loops *c'*, and two pair of laterally distensible sections c^3, by which the loops *c'*, may be adjusted, substantially as specified.

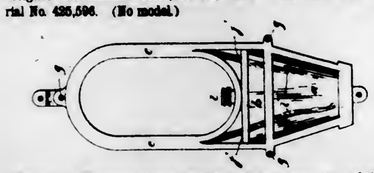
2. The combination of a suspender, or similar article, having upper and lower central perforations *c'* c^3, and three pair of interme-

diate lateral perforations a^3, a^4, a^5, with a string c, drawn through such perforations, to form loops c', and distensible sections c^3, substantially as specified.



3. The combination of a suspender, or similar article having the perforations a', a^3, a^3, a^4, a^5, with strings c, drawn through such perforations and with the cap e, adapted to connect the string ends, and the strap k, substantially as specified.

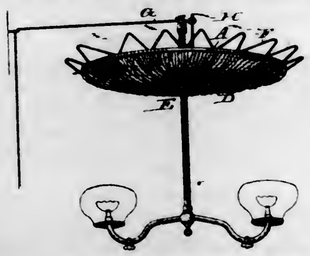
488,580. VAPORIZER. HENRY P. ROBERTS, Jamestown, N. Y., assignor to Frank M. Ferrin, Boston, Mass. Filed Mar. 19, 1892. Serial No. 426,596. (No model.)



Claim.—1. The vaporizer consisting of the reservoir, and the open or inverted U-shaped frame or casing extending above the same and having reticulated or open walls, and the wick extending through said casing with its ends extending into the reservoir, substantially as described.

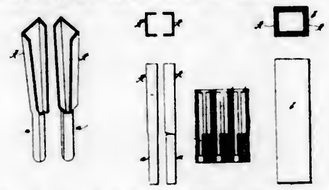
2. The vaporizer consisting of the reservoir, the sectional frame embracing and supporting the reservoir, and extending above the same in open loops, the reticulated sheets clamped between the sections of said frame forming an inverted U-shaped reticulated casing, means securing the sections of the frame together, the wick extending through said casing with its ends in the reservoir, and means whereby the article can be secured in position.

488,581. CEILING ORNAMENT. NELSON TERRIEN, Hammond, Ind. Filed Feb. 16, 1892. Serial No. 421,936. (No model.)



Claim.—As a new article of manufacture, the herein-described ornamental device for the ceilings or walls of rooms, comprising the sectional disk or base A having folding and depending ornamental flies D and folding brackets F; substantially as and for the purpose shown and set forth.

488,582. ELECTRICAL SWITCHBOARD. JAMES W. LYON, Brooklyn, N. Y. Filed June 11, 1889. Renewed Feb 7, 1891. Again renewed June 6, 1892. Serial No. 435,653 (No model.)



Claim.—1. An electrical switch board composed of cards, each consisting of an insulating material molded about a series of contact plates forming a series of sockets.

2. An electric switch board, composed of cards, each consisting of an insulating material molded about a series of pairs of contact plates forming a series of sockets.

3. An electrical switch board, consisting of the rectangular metallic socket pieces having the necks and an insulating material surrounding and supporting said piece to produce a socket or sockets.

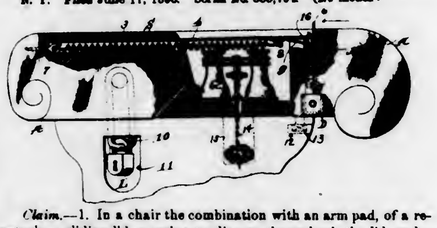
4. In an electrical switch board, the socket pieces having the necks, and the vulcanized rubber surrounding and insulating said pieces, substantially as described.

5. In an electrical switch board the combination of the rectangular key, with the board consisting of the rectangular sockets formed by the socket-pieces having the necks and the insulating material surrounding and supporting said pieces.

6. An electrical key socket, consisting of metallic pieces in juxtaposition, but not in contact, with insulating material molded around them and between their adjacent edges, which material supports and retains them in place, substantially as set forth.

7. A switch board of insulating moldable material, having electrical key sockets therein, each consisting of metallic pieces in juxtaposition, but not in contact, with the insulating material of the switch board molded around them and between their adjacent edges to support and retain them in place, substantially as set forth.

488,583. AUDITORIUM-CHAIR. JAMES W. PATTERSON, New York, N. Y. Filed June 17, 1890. Serial No. 355,764. (No model.)



Claim.—1. In a chair the combination with an arm pad, of a receptacle, a sliding lid, a spring tending to throw back the lid, and a coin controlled mechanism for said lid.

2. In a chair, the combination, with the arm pad of a receptacle adapted to be opened by a coin and nonrelockable in reference to the user.

3. In a chair, the combination, with the arm cap of a receptacle, a lid to close said receptacle, a locking bolt or lever adapted to engage the hasp on the lid, and means to force the locking bolt or lever in the open position after the insertion of a coin.

4. In a coin actuated lock the combination with the coin slide of a locking lever or bolt located directly behind the coin slide, said locking lever or bolt having a bent end projecting into the coin slide and adapted to engage with the coin and to be moved in the unlocked position by the thrust of the coin.

5. In a chair an arm cap with a cavity in the front part of the arm cap to hold an object to be rented or vended, said arm cap having a recess in the back part to receive a sliding lid and a groove for the insertion of a spring, a spring tending to open the lid, and a coin controlled lock with a locking bolt or lever adapted to engage with the hasp on the lid, and means to disconnect the lid from the locking bolt or lever after the insertion of a coin as described.

6. In a chair the combination with the arm pad of a receptacle having a sliding lid and a spring tending to throw back the lid substantially as described.

7. In a chair the combination with the arm pad of a receptacle a sliding lid, a spring tending to throw back the lid and a coin controlled locking mechanism substantially as described.

DESIGNS.

22,059. SPOON, &c. GEORGE U. ROULET, Toledo, Ohio. Filed Oct. 19, 1892. Serial No. 449,402. Term of patent 7 years.

Claim.—The design for a spoon, substantially as herein shown and described.

22,060. SPOON, &c. GEORGE B. STOCKING, Tacoma, Wash. Filed Nov. 23, 1892. Serial No. 452,955. Term of patent 7 years.

Claim.—The design for a spoon substantially as shown and described.

22,061. HANDLE FOR SPOONS, &c. AUSTIN F. JACKSON, Taunton, Mass., assignor to the Reed & Barton Corporation, same place. Filed Nov. 22, 1892. Serial No. 452,876. Term of patent 7 years.

Claim.—The design for the handles of spoons and other similar articles as herein shown and described.

22,062. HANDLE FOR SPOONS, &c. AUSTIN F. JACKSON, Taunton, Mass., assignor to the Reed & Barton Corporation, same place. Filed Nov. 22, 1892. Serial No. 452,878. Term of patent 7 years.

Claim.—The design for the handles of spoons and other similar articles as herein shown and described.

22,063. HANDLE FOR SPOONS, &c. AUSTIN F. JACKSON, Taunton, Mass., assignor to the Reed & Barton Corporation, same place. Filed Nov. 22, 1892. Serial No. 452,880. Term of patent 7 years.

Claim.—The design for the handles of spoons and other similar articles as herein shown and described.

22,064. HANDLE FOR SPOONS, &c. AUSTIN F. JACKSON, Taunton, Mass., assignor to the Reed & Barton Corporation, same place. Filed Nov. 22, 1892. Serial No. 452,881. Term of patent 7 years.

Claim.—The design for the handle of spoons and other similar articles as herein shown and described.

22,065. HANDLE FOR SPOONS, &c. AUSTIN F. JACKSON, Taunton, Mass., assignor to the Reed & Barton Corporation, same place. Filed Nov. 22, 1892. Serial No. 452,882. Term of patent 7 years.

22,065.

Claim.—The design for the handle of spoons and other similar articles as herein shown and described.

22,066. HANDLE FOR SPOONS, &c. AUSTIN F. JACKSON, Taunton, Mass., assignor to the Reed & Barton Corporation, same place. Filed Nov. 22, 1892. Serial No. 452,834. Term of patent 7 years.

Claim.—The design for the handles of spoons and other similar articles as herein shown and described.

22,067. HANDLE FOR SPOONS, &c. AUSTIN F. JACKSON, Taunton, Mass., assignor to the Reed & Barton Corporation, same place. Filed Nov. 22, 1892. Serial No. 452,835. Term of patent 7 years.

Claim.—The design for the handles of spoons and other similar articles as herein shown and described.

22,068. HANDLE FOR SPOONS, &c. AUSTIN F. JACKSON, Taunton, Mass., assignor to the Reed & Barton Corporation, same place. Filed Nov. 22, 1892. Serial No. 452,837. Term of patent 7 years.

Claim.—The design for the handles of spoons and other similar articles as herein shown and described.

22,069. HANDLE FOR CANES, &c. HARRY B. SNYDER, Chicago, Ill. Filed Nov. 23, 1892. Serial No. 452,956. Term of patent 3½ years.

Claim.—The design for a cane, umbrella and parasol handle herein shown and described.

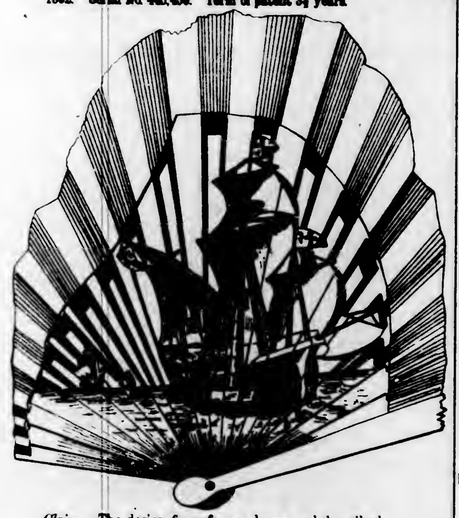
22,070. HANDLE FOR CANES, &c. HARRY B. SNYDER, Chicago, Ill. Filed Nov. 23, 1892. Serial No. 452,957. Term of patent 3½ years.

Claim.—The design for a cane, umbrella and parasol handle herein shown and described.

22,071. DRESS-TRIMMING. BENJAMIN LIPPER, Philadelphia, Pa., assignor to himself, Augustus A. Lazarus, and Isaac A. Schwartz, same place. Filed Nov. 23, 1892. Serial No. 452,954. Term of patent 3½ years.

Claim.—The design for a dress trimming substantially as described and as shown in the accompanying drawing.

22,072. FAN. MANUEL CARRANZA, Havana, Cuba. Filed Sept. 9, 1892. Serial No. 445,459. Term of patent 3½ years.



Claim.—The design for a fan as shown and described.

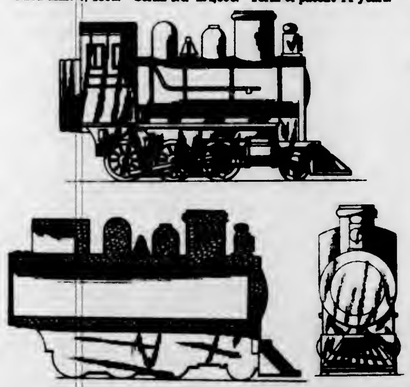
22,073. BAR-PIN. EDWARD H. CROSHEGER, Covington, Ky. Filed Nov. 14, 1892. Serial No. 452,008. Term of patent 14 years.

Claim.—The design for a bar pin as described and shown.

22,074. LOCKET. LUDWIG J. ROEER, Newark, N. J., assignor to the Bassett Jewelry Co., New York, N. Y. Filed Oct. 22, 1892. Serial No. 449,701. Term of patent 3½ years.

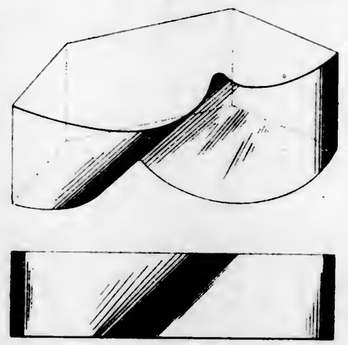
Claim.—The design for a locket, substantially as herein illustrated and described.

22,075. GLASS VESSEL. DILLON R. MAPOTHER, Louisville, Ky. Filed Mar. 7, 1892. Serial No. 424,090. Term of patent 14 years.



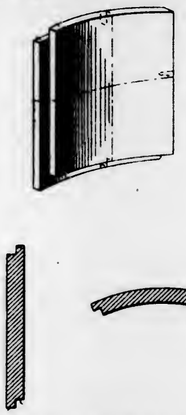
Claim.—The design for a glass vessel, substantially as herein shown and described.

22,076. BRICK OR STONE. FRANCIS LAFLAFTE, Boston, Mass. Filed Nov. 19, 1892. Serial No. 452,585. Term of patent 14 years.



Claim.—The design for an ornamental brick, substantially as herein shown and described.

22,077. LINING-TILE. CHARLES CURTIS, Newton, Mass., and NATHANIEL M. JOSHUA, Bangor, Me. Filed Nov. 19, 1892. Serial No. 452,586. Term of patent 14 years.

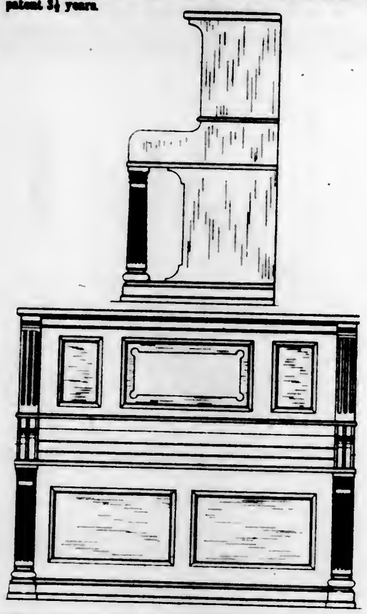


Claim.—The design for a lining tile, substantially as shown and described.

22,078. CURTAIN-POLE. CYRUS HUSSEY, Toledo, Ohio, assignor to the Toledo Moulding Company, same place. Filed May 24, 1892. Serial No. 434,234. Term of patent 14 years.

Claim.—The design for a curtain pole, substantially as shown and described.

22,079. PIANO-CASE. WILLIAM STEINER and PAUL M. SIEDLER, New York, N. Y. Filed Oct. 1, 1892. Serial No. 447,555. Term of patent 3½ years.



Claim.—The design for a piano case, as herein described and shown.

22,080. CASE FOR COIN-OPERATED MACHINES. JOHN R. LIGHTON, Syracuse, N. Y. Filed Nov. 11, 1892. Serial No. 451,690. Term of patent 7 years.

Claim.—The design for a case for coin-operated machine, as shown.

TRADE-MARKS

REGISTERED DECEMBER 20, 1892.

22,179. PRINTED TICKETS. ARTHUR DYSON, London, England. Filed Oct. 26, 1892.

A. Dyson

Essential feature.—The fac-simile signature "A. DYSON," printed upon a ticket. Used since May 2, 1890.

22,180. WATCHES. HAMPDEN WATCH COMPANY, Canton, Ohio. Filed Nov. 14, 1892.

Essential feature.—The representation of a human hand grasping the body of a figure, representing Old Father Time holding a scythe. Used since September 1, 1892.

22,181. WATCHES AND PORTABLE CLOCKS. WEBSTER C. BALL, Cleveland, Ohio. Filed Nov. 15, 1892.

College Queen

Essential feature.—The words "COLLEGE QUEEN." Used since October 29, 1892.

22,182. GLOVES. PERRIN FRÈRES ET CIE, New York, N. Y. Filed Nov. 23, 1892.

BAYARD

Essential feature.—The word "BAYARD." Used January 1, 1886.

22,183. GLOVES. PERRIN FRÈRES ET CIE, New York, N. Y. Filed Nov. 23, 1892.

Elk-Tan

Essential feature.—The word "ELK-TAN." Used since January 1, 1888.

22,184. GLOVES. PERRIN FRÈRES ET CIE, New York, N. Y. Filed Nov. 23, 1892.

CALMO

Essential feature.—The word "CALMO." Used since January 1, 1886.

22,185. GLOVES. PERRIN FRÈRES ET CIE, New York, N. Y. Filed Nov. 23, 1892.

DAUPHIN

Essential feature.—The word "DAUPHIN" Used since January 1, 1892.

22,186. CORSETS. EMIL SCHWERDUBS, New York, N. Y. Filed Nov. 25, 1892.

Juno

Essential feature.—The word "JUNO." Used since March 4, 1890.

22,187. CORSET SHIELDS OR SUPPORTS. ROSINE PEARL, New York, N. Y. Filed Oct. 31, 1892.

Essential feature.—The representation of a half-length figure of a woman clasping a corset about her waist. Used since January 1, 1892.

22,188. KNITTED UNDERWEAR. GLASTENBURY KNITTING COMPANY, Addison, Conn. Filed Nov. 14, 1892.

GLASTENBURY

Essential feature.—The word "GLASTENBURY" within an ellipse. Used since March 1, 1855.

22,189. BOOTS, SHOES, SLIPPERS, RUBBERS, SANDALS, AND ANALOGOUS FOOT-WEAR. H. KOCH & CO., Milwaukee, Wis. Filed Nov. 22, 1892.

NUFORM

Essential feature.—The word "NUFORM." Used since September 15, 1892.

22,190. KID-LEATHER. WM. ZAHN LEATHER COMPANY, Newark, N. J. Filed Oct. 25, 1892.

Essential feature.—The representation of a bell bearing the word "PIONEER." Used since October 15, 1892.

22,191. CANDIES. CANDY BROS., St. Louis, Mo. Filed Nov. 18, 1892.

MIDGETS

Essential feature.—The word "MIDGETS." Used since May 15, 1892.

22,192. MEDICATED GUM DROPS. SYLVAN REMEDY CO., Peoria, Ill. Filed June 20, 1892.

SYLVAN
LAXATIVE
GUM DROPS

Essential feature.—The words "SYLVAN LAXATIVE GUM DROPS." Used since February 1, 1892.

22,193. COUGH BALSAM. HARVEY M. HENDERSON, Chicago, Ill. Filed July 14, 1892.

Essential feature.—The representation of an ornamental disk bearing a monogram of the letters "H. D. H." Used since January 1, 1892.

22,194. CERTAIN NAMED LINE OF PROPRIETARY MEDICINES. TURNER-SHAKER MEDICINE CO., St. Louis, Mo., and Union Village, Ohio. Filed Nov. 8, 1892.

HERBS

Essential feature.—The portrait of Louis Turner, M. D., and the words "SHAKER HERBS." Used since January 1, 1872.

22,195. TONICS, REMEDIES FOR DISEASES OF THE LIVER AND BLOOD AND FOR BILIOUS DISORDERS. FRANCIS PELL DAVIS, New York, N. Y. Filed Oct. 12, 1892.

Essential feature.—The representation of a dove in the act of flying, carrying a spray in its beak and holding in its claws the monogram of the letters "P. D.," the dove being surrounded by a sunburst. Used since September 1, 1892.

22,196. LAXATIVE MEDICINE. MARSHALL R. OSBORN, San Francisco, Cal. Filed Sept. 27, 1892.

Essential feature.—The words "CREAM OF DATES" imprinted on a background representing the foliage and fruit of dates. Used since July 1, 1892.

22,197. SALVE FOR EYE DISEASES. JOHN SPITZELER and WILLIAM DREXLER, Paterson, N. J. Filed Aug. 6, 1892.

EYESOLINE

Essential feature.—The word "EYESOLENE." Used since July 15, 1892.

22,198. PILLS AND GRANULES. LYMAN D. MERRIMAN, Sharon Springs, N. Y. Filed Oct. 14, 1892.

EARL'S BEST

Essential feature.—The words "EARL'S BEST." Used since January, 1879.

22,199. WITHDRAWN.

22,200. WITHDRAWN.

22,201. LAUNDRY AND TOILET SOAP. WM. GOSSAGE & SONS, Widnes and Liverpool, England. Filed May 27, 1892.

Magical

Essential feature.—The word "MAGICAL." Used since 1885.

22,202. LAUNDRY AND TOILET SOAP. WM. GOSSAGE & SONS, Widnes and Liverpool, England. Filed May 27, 1892.

THE HOUSEWIFE'S FRIEND

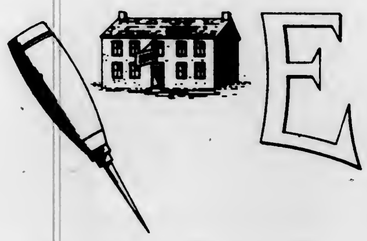
Essential feature.—The words "THE HOUSEWIFE'S FRIEND." Used since 1888.

22,203. SOAP AND SOAP POWDERS. MERIDAN ANGLE SOAP COMPANY, Peoria, Ill. Filed Nov. 21, 1892.

AMOLE-INE

Essential feature.—The word "AMOLE-INE." Used since November 1, 1890.

22,204. SOFT OR LIQUID SOAP. GEORGE W. DYARMAN, Columbus, Ohio. Filed Nov. 12, 1892.



Essential feature.—The representation of a shoemaker's awl, a building representing an inn which has a sign with the word "INN" printed thereon and at the right of it the letter "E." Used since October 25, 1892.

22,205. CLOTHES-CLEANING PREPARATIONS. THE RELIANCE MANUFACTURING COMPANY, New York, N. Y. Filed Nov. 25, 1892.

Egyptian

Essential feature.—The word "EGYPTIAN." Used since November 11, 1892.

22,206. LUBRICANTS. ABSORBAN SHAFT HOLDER CO., Wabash, Ind. Filed Nov. 2, 1892.

ROCK CITY

Essential feature.—The words "ROCK CITY." Used since August 1, 1891.

22,207. SHOE-BLACKING. THE RELIANCE MANUFACTURING COMPANY, New York, N. Y. Filed Nov. 25, 1892.

Royal

Essential feature.—The word "ROYAL." Used since November 11, 1892.

22,208. FIRE-LIGHTERS. HERBERT EISENAR, Jersey City, N. J. Filed Nov. 26, 1892.

ELECTRIC

Essential feature.—The word "ELECTRIC." Used since May 1, 1888.

22,209. LEMONS AND ORANGES. GIUSEPPE VILLARI, New York, N. Y. Filed Nov. 14, 1892.

HOME GUARD

Essential feature.—The words "HOME GUARD." Used since January, 1892.

22,210. CHEESE. HERMANN PRIME, Prince Stolberg, Germany. Filed Nov. 25, 1892.

Schloss-Käse.

Essential feature.—The representation of a castle in connection with the words "SCHLOSS-KÄSE." Used since April 12, 1886.

22,211. LARD AND ITS SUBSTITUTES. THE W. J. WILCOX LARD AND REFINING COMPANY, Guttenberg, N. J., and New York, N. Y. Filed Oct. 29, 1892.

Essential feature.—The word "COLUMBUS" and a portrait of Christopher Columbus. Used since October 24, 1892.

22,212. ROLLED OATS, VELVET MEAL, CORN, GRITS, AND SELF-RISING GRIDDLE-CAKE FLOUR. NEBRASKA CITY CEREAL MILLS, Nebraska City, Nebr. Filed Nov. 4, 1892.

QUAIL

Essential feature.—The word "QUAIL." Used since January 1, 1892.

22,213. CIGARS, CHEROOTS, AND CIGARETTES, AND SMOKING, FINE-CUT, AND PLUG TOBACCO. S. C. HERSEY IMPORTING COMPANY, Milwaukee, Wis. Filed Nov. 5, 1892.

Art Gallery

Essential feature.—The words "ART GALLERY." Used since May 15, 1892.

22,214. CIGARS, CHEROOTS, AND CIGARETTES, AND SMOKING, FINE-CUT, AND PLUG TOBACCO. S. G. HERBST IMPORTING COMPANY, Milwaukee, Wis. Filed Nov. 5, 1892.

JNO. E. FITZGERALD

Essential feature.—The name "JNO. E. FITZGERALD." Used since January 4, 1892.

22,215. CIGARS, CHEROOTS, AND CIGARETTES, AND SMOKING, FINE-CUT, AND PLUG TOBACCO. S. G. HERBST IMPORTING COMPANY, Milwaukee, Wis. Filed Nov. 5, 1892.

Gallery

Essential feature.—The word "GALLERY." Used since May 15, 1892.

22,216. CIGARS, CHEROOTS, AND CIGARETTES, AND SMOKING, FINE-CUT, AND PLUG TOBACCO. S. G. HERBST IMPORTING COMPANY, Milwaukee, Wis. Filed Nov. 5, 1892.

Layton

Essential feature.—The word "LAYTON." Used since May 15, 1892.

22,217. CIGARS, CHEROOTS, AND CIGARETTES, AND SMOKING, FINE-CUT, AND PLUG TOBACCO. S. G. HERBST IMPORTING COMPANY, Milwaukee, Wis. Filed Nov. 5, 1892.

Layton Art Gallery

Essential feature.—The words "LAYTON ART GALLERY." Used since May 15, 1892.

22,218. CIGARS, CHEROOTS, AND CIGARETTES, AND SMOKING, FINE-CUT, AND PLUG TOBACCO. S. G. HERBST IMPORTING COMPANY, Milwaukee, Wis. Filed Nov. 5, 1892.

Essential feature.—The representation of two clasped hands, projecting from coat-sleeves, and showing buttoned cuffs, partly covering the wrists, together with an ornamental medallion partly covering the clasped hands. Used since January 4, 1892.

22,219. WHISKY. JAMES OLDWELL & Co., New York, N. Y. Filed Nov. 3, 1892.

LIBERTY

Essential feature.—The word "LIBERTY." Used since January 31, 1887.

22,220. MINERAL WATER. R. AVENARIUS & Co., Stuttgart, Germany. Filed Oct. 18, 1892.

AVE[illegible]-

Essential feature.—The words "AVENARIUS-SPRING" and the representation of a Maltese cross. Used since June, 1892.

22,221. ENAMELED HOLLOW WARE. BOAS BROTHERS, New York, N. Y. Filed Sept. 14, 1892.

ADAMANT

Essential feature.—The word "ADAMANT." Used since August 1, 1892.

22,222. SPRING-BEDS. ATLAS TANK CORPORATION, Boston, Mass. Filed Nov. 25, 1892.

Pilgrim Spring

Essential feature.—The words "PILGRIM SPRING." Used since August 15, 1892.

22,223. SAFETY-BICYCLES. THE HERBST SHARS COMPANY, Chicago, Ill. Filed Nov. 26, 1892.

Phanton

Essential feature.—The word "PHANTOM." Used since March 15, 1892.

22,224. WRINGERS. THE AMERICAN WRINGER COMPANY, Providence, R. I., and New York and Auburn, N. Y. Filed Nov. 21, 1892.

COLUMBIA

Essential feature.—The word "COLUMBIA." Used since February 1, 1891.

22,225. WRINGERS. THE AMERICAN WRINGER COMPANY, Providence, R. I., and New York and Auburn, N. Y. Filed Nov. 21, 1892.

DAISY

Essential feature.—The word "DAISY." Used since May 1, 1886.

22,226. WRINGERS. THE AMERICAN WRINGER COMPANY, Providence, R. I., and New York and Auburn, N. Y. Filed Nov. 21, 1892.

HOUSEHOLD

Essential feature.—The word "HOUSEHOLD." Used since July, 1889.

22,227. GINGER ALE. JOHN HEINEMANN, Baltimore, Md. Filed Oct. 18, 1892.

CLUB ALE

Essential feature.—The representation of the head of a stag and the words "CLUB ALE." Used since May 21, 1892.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE PETZOLD.

Decided December 1, 1892.

1. PRACTICE—DESIGN PATENTS—REQUIREMENT OF LINE-DRAWING—RULE 83.

The discretion under Rule 83 as to permitting the use of photographs in place of line-drawings vests in the Office and not in the applicant.

2. TWO INDEPENDENT AND ALTERNATIVE DESIGNS CANNOT BE JOINED IN ONE PATENT.

While the law may permit claims in one Design patent for the entire Design and for constituent parts complete in themselves, the Patent Office will not permit independent ornamental inventions to be joined in one patent.

3. SAME.

The practice of the Office in refusing to permit independent and alternative mechanical inventions to be joined in one patent is warrant for a like refusal as to two independent and alternative Designs.

ON petition.

DESIGN FOR A RUG.

Application of Adolph Petzold filed August 29, 1890, No. 363,445.

Mr. H. T. Fenton for the applicant.

SIMONDS, *Commissioner:*

This is a petition taken from the action of the Primary Examiner in the matter of the above-entitled application for a patent for a Design for a rug.

The body of the specification as it now stands is as follows:

My invention has relation to a Design for the surface ornamentation of a rug, and will be fully understood by any one skilled in the art of weaving rugs by reference to the photographic illustration, which is a view of the rug Design as I prefer to use it.

As usual in rug patterns, the parts are so proportioned that the parts A and B will be upon each side of a central lateral intersecting line *a b*, so that the complete Design shall consist of two segregable halves A and B and be capable of use as such each without the other. It is obvious, also, that the border B′, which is a vine pattern with isolated leaves, which is a characteristic feature of the Design, may be used in conjunction with a different or partly-different center-piece, and that said border is not only adapted to be used upon a rug, but equally well adapted for use upon a curtain, table-cover, or other like article of manufacture.

I claim—

1. The Design for a rug, substantially as shown and set forth.
2. The Design for a rug, consisting of the part A above the line *a b*, substantially as set forth.
3. The Design for a rug, consisting of the part B below the line *a b*, substantially as set forth.
4. The Design for a border, substantially as shown at B′, and as and for the purpose hereinabove set forth.

The applicant's petition is:

Applicant hereby petitions for an order on the Examiner in charge of above-entitled application, directing him to pass upon the merits of claims 2 and 3 and to withdraw the requirement made by Office letter of October 12, 1892, repeated October 18 and October 26, that applicant shall erase from his specification the words and sentences "photographic," "as I prefer to use it," "segregable," and "and be capable of use as such each without the other," the ground for this petition being that the Examiner's objection that said words and sentences are "redundant," "objectionable," "in the nature of stipulations," and "not descriptive of the Design in its entirety or any of its parts" not being tenable, and for the further reason that this application was before the Commissioner on petition February 12, 1892, as to the form of the specification and finally disposed of by a decision of that date, the requirements of which decision were fully complied with by amendment filed October 7, 1892

Notice of hearing is respectfully requested, and it is suggested that as a petition in another case, germane to this in one respect, has been fixed for hearing on November 11 that the same or a later date be named for the hearing of both cases.

The Examiner's requirement as to the word "photographic" is affirmed under Rule 83, a line-drawing being required, Rule 83 being as follows:

83. The Design must be represented by a drawing made to conform to the rules laid down for drawings of mechanical inventions. In case the nature of the Design is such that it cannot properly be represented by such a drawing, upon the recommendation of the Examiner a photograph may be employed.

The Examiner's requirement as to the words "as I prefer to use it" is disaffirmed.

It remains to consider practically as one matter the Examiner's objection to the use of the word "segregable," his objection to the words "and be capable of use as such each without the other," and his objection to "the paragraph of the description immediately preceding the claim."

The petition purports to present merely a matter of form. It really presents a most important matter of substance. If applicant is entitled to the claims he makes, then he is entitled to use in his specification the language the Examiner objects to; otherwise not. The so-called question of *form* cannot be decided without deciding the question of merits. The real question thus brought up is whether the applicant is entitled to join his different claims in a single Design patent. It is not doubted that, as a matter of law, a patent other than a Design patent may cover a plurality of independent machines when they are capable of co-operating toward a common end, whether they are actually used in that relation or not. (*Hogg* v. *Emerson*, 11 How., 587.) Neither is it doubted that a Design patent may, as a matter of law, contain a plurality of claims, one of them, for instance, being for the entire Design and another or others for what are properly constituent parts thereof, for the Supreme Court has said:

The point is also taken that this patent is void because it has a claim for the entire pattern and three claims for each of three constituent parts of it. No such point is taken in the answer, which speaks of the patent as one for a single Design. If the Patent Office, in view of the question of fees, and for other reasons, grants a patent for an entire Design, with a claim for that, and a claim for each one of various constituent members of it, as a separate Design, we see no objection to it, leaving the novelty of the whole and of each part and the validity of the patent, open to contestation. (*Dobson* v. *Hartford Carpet Company*, 114 U. S., 439.)

But it does not follow from this that the Patent Office must or will allow either independent mechanical inventions or independent ornamental inventions to be joined in one patent. The Patent Office has for a long time refused to join independent mechanical

inventions in one patent, and the courts have amicably acquiesced in that refusal.

In the present case if applicant is permitted to do what he seeks to do he will in one patent have covered (1) a rug Design in conformity with the entirety of his illustration; (2) a rug Design which is merely a double of the upper half of his illustration; (3) a rug Design which is merely a double of the lower half of his illustration, and (4) the border ornamentation at the lower end of the illustration wherever it may be used. The second and third of these rugs are not illustrated, except as to a half of them, and in order to bring about a description thereof the illustration is divided by an imaginary line.

If the Design for the rug in its entirety is new, applicant may of course have his first claim allowed. As to the second and third claims, the practice of the Office in refusing to permit independent and alternative mechanical inventions to be joined in one patent is warrant for a like refusal as to two independent and alternative Designs. As to the fourth claim, applicant is not entitled to select arbitrarily a *portion* of the border ornamentation not itself a unity and have a claim thereto. The border, taken as a whole, is a complete and unitary member of the entire Design, wholly illustrated, capable of transplantation by itself, and, as such, proper subject-matter for a claim if applicant chooses to make such a claim. It is the practice of the Office, sanctioned by the courts, not to allow claims for incomplete sub-combinations of mechanical elements, and that practice warrants the refusal of a claim for an incomplete portion of a constituent member of a Design.

That a discretion is vested in the Office as to such matters is clear from the opinion of the Supreme Court above quoted. The practice of the Office already referred to and warranted by the discretion which is vested in it is based upon, possibly, among other things, first, a consideration of fees, and, second, the desirability of proper classifications in the Office both for the convenience of the public and of the Office.

With the exception noted the petition is denied.

EX PARTE KELLER.

Decided December 9, 1892.

1. PRACTICE—AFFIDAVIT UNDER RULE 75—WHAT IS.

A deposition taken in an interference proceeding is an affidavit within the meaning of Rule 75.

2. SAME.

Where it was necessary to introduce an affidavit in an *ex parte* case under Rule 75, the attorney set up great difficulty and hardship in obtaining applicant's signature to the necessary papers and offered the deposition of the applicant taken in prior interference proceedings and alleged to cover the matter in controversy. *Held* admissible as an affidavit under the rule.

ON petition.

ATTACHMENTS FOR OPERATING PHONOGRAPHS.

Application of Albert K. Keller filed January 31, 1891, No. 379,824.

Mr. Thomas Ewing, Jr., and *Mr. V. M. Dorsey* for the applicant.

FROTHINGHAM, *Assistant Commissioner:*

This is a petition taken from the action of the Primary Examiner in refusing to accept a certain deposition given by the applicant in interference proceedings as an oath under Rule 75, as hereinafter set forth.

The record shows that the said application has been involved in several interferences; that in one of said interferences (No. 15,095) applicant gave certain testimony under oath; that counsel for the opposing parties were invited to attend and cross-examine, and that applicant duly signed the said testimony.

It appears that on July 22, 1892, after the application had become an *ex parte* one, applicant presented an amendment erasing, amending, and changing the order of certain claims. An affidavit signed by the principal attorney for the assignee was attached to this amendment alleging generally great difficulty and hardship in obtaining the signature of the applicant to papers necessary to the case. It was stated in said amendment that in view of the said affidavit—

> it is requested that the Examiner accept the testimony given by Keller in Interference No. 15,095 as an oath under Rule 75. If desired by the Examiner, a certified copy of such testimony and copies of the drawings will be filed, as in the application.

On August 2, 1892, the Examiner in reply stated, among other things, as follows:

> With regard to the attorney's proposed introduction of secondary evidence for the purpose of overcoming the references above referred to, under the provisions of Rule 75, he is advised that such evidence will not be received. It is insisted upon that an affidavit signed by applicant be filed if it is desired to take advantage of the provisions of Rule 75.

Upon this action being repeated the applicant brought the present petition.

The Examiner in his answer to the petition states as follows:

> Rule 75, as construed by the Examiner, does not give him any discretion as to whom the affidavit shall be signed by, but on the contrary specifies the "applicant" as the proper party.

It is to be observed, however, that the testimony above referred to is in the form of a deposition given by this applicant under oath and signed by him. Furthermore, it appears that opportunity was given his opponents to cross-examine him upon the same. It is clear that this is a higher order of evidence than a mere *ex parte* affidavit. (See *Weston* v. *Edison*, 39 MS. Dec., 165, and *Weston* v. *Latimer* v. *Edison*, 27 MS. Dec., 329.)

In the case last above cited the following language of Mr. Commissioner Butterworth is found:

> It appears, however, that in the testimony taken on behalf of Weston the date of his invention is carried back of the date of this patent. If this patent had been cited as a reference as anticipatory of Weston's invention in the treatment of his case *ex parte*, a mere affidavit from Weston showing that he had completed the invention prior to the date of the French patent would have been sufficient to obtain the issue of a patent to him upon this subject-matter in this country. It would seem that testimony taken on his behalf in which those testifying are subject to cross-examination and which testimony is subject to be disproved, if possible, should be even stronger evidence that he had made the invention prior to the date of the French patent than a mere *ex parte* affidavit.

In the case of *Weston* v. *Edison*, *supra*, Mr. Commissioner Hall stated as follows:

> Although the Commissioner, in the decision of February 20, 1885, declared "an inspection of the French patent leaves no doubt that it shows the exact subject-matter of the issue," he yet held, as stated by me, that the applicant had overcome the date of that French patent by laying before the Office testimony subject to cross-examination which established the fact that his invention was carried back of the date of the patent, and this evidence was received by the head of the Office as an equivalent to the *ex parte* affidavit which confessedly would have had that effect and put the patentability of the invention beyond question.

In view of what has been said above, it follows that the said deposition is an affidavit within the meaning of Rule 75. It is not intended, however, to hold herein that said deposition contains sufficient subject-matter to overcome the references cited.

Attention was called at the hearing to the affidavit of the applicant filed February 18, 1891, with reference to the question of public use and abandonment. It does not appear that this has heretofore been called to the attention of the Examiner as an affidavit under Rule 75, taken in connection with the said deposition. The Examiner is therefore directed to consider the said deposition, either alone or taken in connection with said affidavit, for whatever it may be worth as an affidavit under Rule 75.

To the foregoing extent the petition is granted.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—District of Maryland.

BRICKILL *et al. v.* THE MAYOR, ETC., OF BALTIMORE.

PATENT—INFRINGEMENT—STATE STATUTE OF LIMITATIONS.

Defendant in an action at law for infringement of patent pleaded State statute of limitations, to which plaintiff demurred. Demurrer sustained for the purposes of this particular case; but the applicability of such statutes to actions for infringement under the patent laws discussed and upheld.

ACTION at law.

Messrs. Price & Steuart, *Mr. Raphael J. Moses, Jr.*, *Mr. James A. Hudson*, and *Mr. Andrew C. Trippe* for the complainants.

Mr. Albert Ritchie and *Mr. Albert H. Walker* for the defendants.

MORRIS, *J.:*

This is an action on the case for infringement of a patent for improvement in feed-water heaters for steam fire-engines.

The patent was issued August 18, 1868, and expired August 18, 1885. This suit was entered August 15, 1891, three days less than six years after the expiration of the patent, and the declaration alleges infringement by the defendant during the entire period of seventeen years from 1868 to 1885 covered by the existence of the patent.

The defendant has pleaded the Maryland statute of limitations of three years applicable to actions on the case, and to this plea the plaintiffs have demurred.

Since the enactment of the United States patent laws the only statute enacted by Congress limiting actions for infringement of patents was the act of July 8, 1870, which was repealed by the act of Congress, June 22, 1874, adopting the Revised Statutes, so that, except in respect to those matters which come within the saving clause of that repeal, the law was then left as it had been prior to the enactment by Congress of any act of limitation.

The contention of the plaintiffs is that there is now no statute of limitations applicable to actions for infringement of patents, and the contention of the defendants is that the statute of the State in which the Federal court is held is applicable by virtue of section 721 of the Revised Statutes, which provides that—

> The laws of the several States, except where the Constitution, treaties or statutes of the United States otherwise require, or provide, shall be regarded as rules of decision in trials at common law in the courts of the United States in cases where they apply.

The plaintiffs contend that action for infringement of a patent is a case to which the above-quoted section 721 does not apply, because such actions arise out of rights created by an act of Congress as to which Congress has given the Federal courts exclusive jurisdiction and that the section is only applicable to cases where the State and Federal courts have concurrent jurisdiction over the subject-matter.

The question of the applicability of the statutes of limitations of the several States to actions for infringement of patents has been frequently raised in the circuit courts of the United States and has been variously decided. There has as yet been no authoritative decision by any appellate court.

In the present condition of the adjudications on this question eminent judges and careful text-writers have declared that the weight of judicial opinion is that the State statutes are not applicable, and it has been so held in the Circuit Court of the United States for the District of Connecticut in a case now pending there for infringement of this same patent between these plaintiffs and the city of Hartford.*

The question has been fully argued before me, and I have been assisted by the briefs of counsel, and particularly by the unusually able and exhaustive brief filed by the counsel who then represented the city of Baltimore; but in view of the fact that the question has been already so often passed upon and discussed by the circuit courts it would be useless to enter into a discussion of the authorities. The question must wait for its authoritative decision by an appellate tribunal.

I am free to say, however, that I find myself unable to concur in the reasoning by which the decisions adverse to the applicability of the State statutes are sustained. There are, it is quite true, many reasons why Congress should enact a statute of limitation expressly applicable to this peculiar character of property; but this of itself is no reason why, in the absence of such legislation, suits arising out of patents should not be governed by the same rules as govern other similar actions. I am not aware of any common-law action growing out of private rights, even though granted by the United States, to which, in the absence of any Federal statute, the State statutes of limitations have not been held applicable. (*McCluny* v. *Sellman*, 2 Peters, 270; *Bank* v. *Dalton*, 9 How., 522; *Bank* v. *Eldred*, 130 U. S., 693; *Leffingwell* v. *Warren*, 2 Black, 599; *Amy* v. *Dubuque*, 98 U. S., 470.)

I do not appreciate the supposed force of the argument that because Congress, in order to secure uniformity of decisions as to the construction of the patent laws and the validity of patents, has given to the Federal courts the exclusive jurisdiction of questions of infringement, that therefore this class of cases should be held to the sole exception to the prevailing rule which makes the State acts of limitation just as binding upon the Federal courts as they are upon the State courts, more especially as the Supreme Court has held that section 721, so far as it makes the State laws rules of decision as to the competency of witnesses, is applicable to this very class of actions for infringement of patents. (*Vance* v. *Campbell*, 1 Black, 427; *Hausknecht* v. *Claypool*, 1 Black, 431.)

* *Brickill* v. *Hartford*, 49 Fed. Rep., 372; 58 O. G., 1417. See also for late decisions on this point *Brickill* v. *Buffalo*, 49 Fed. Rep., 371, and *California Paving Co.* v. *Starr*, 58 O. G., 1094.

If there be a doubt merely as to whether or not section 721 is applicable, the fact that not to hold it applicable would leave actions for infringement of patents the only private actions not affected by any statute of limitation should in my judgment favor the construction which would make the statute applicable. (*McClurg* v. *Sellman*, 3 Peters, 270; *Hayden* v. *Oriental Mills*, 24 O. G., 601; 15 Fed. Rep., 905; *Copp* v. *Railway Co.*, 50 Fed. Rep., 164.)

Such is my own opinion, notwithstanding the weight of authority which is claimed to be against it, and if there were no appeal, or if the whole of complainants' case were cut off by the statute pleaded, I should feel called upon to overrule the demurrer; but in view of the doubt in which the question rests and of the fact that part of complainants' claim is within the savings of the repeal of the statute of 1870 and that there must be a trial in any event and that the question will probably be carried up to an appellate court in any event I think it best that I should yield my own judgment and let the whole case go to the jury.

The repeal of the statute of 1870 saved to suitors the right to bring suit for any infringement occurring before its repeal within six years from the expiration of the patent. Therefore any infringement by the defendants prior to June 22, 1874, is within the provisions of the Federal statute. If at the trial of this case the verdict should be in favor of the plaintiffs, it will be proper that they shall find separately the amount of damages prior to June 22, 1874, and the amount of damages subsequent to that date, so that however the question of limitation may be ultimately settled there may be no difficulty in entering a proper judgment without a second trial.

For the purposes of this case I shall sustain the demurrer.

U. S. Circuit Court—District of Indiana.

BLAIR *et al. v.* LIPPINCOTT GLASS COMPANY.

Decided September 13, 1892.

1. PATENTS FOR INVENTIONS—ACTION FOR INFRINGEMENT BY PATENTEE AND LICENSEE.
   A joint suit for infringement of a patent cannot be maintained by the patentee and the licensee whose license conveys no exclusive monopoly.
2. SAME—LICENSE—ESTOPPEL.
   A license to manufacture lime-glass chimneys under a patent granted by the patentee with others does not estop the licensee from objecting that such other parties cannot be joined with the patentee in an action against the licensee for infringement by manufacturing lead-glass chimneys without a license.
3. PLEADING—DEMURRER—FACTS NOT SUFFICIENT FOR JOINT CAUSE OF ACTION.
   Where in a joint complaint by two or more parties the facts stated do not show a joint cause of action in them a demurrer on the ground that the complaint does not state facts sufficient to constitute a cause of action must be sustained.

SUIT by George W. Blair and said Blair associated with Paul Zimmerman, partners, as Dithridge & Co., against the Lippincott Glass Company for infringement of a patent. Heard on demurrer to bill. Demurrer sustained.

Messrs. W. Bakewell & Sons and *Mr. W. A. Van Buren* for the complainants.

Mr. Frank O. Loveland for the defendant.

BAKER, *J.*:

The demurrer of the respondent to the complainants' bill of complaint presents the sole question in this case. The sufficiency of the complaint hinges on the question whether a suit in equity for the infringement of a patent-right is maintainable jointly by the patentee and a licensee whose license confers no exclusive monopoly. An exclusive license, to the extent of the interest granted, is construed to be an equitable assignment and clothes the licensee with an interest, *sub modo*, in the monopoly.

The only alienation which can carry the monopoly is that of an exclusive right or of an undivided interest in the exclusive right to practice the invention, including the exclusive right to make, the exclusive right to use, and the exclusive right to sell the patented invention. (Rob. Pat., sec. 807.)

The inventor of a new and useful improvement has no exclusive right to it until he obtains a patent. This right is created by the statute and secured by the patent, and no suit can be maintained by the inventor against any one for using it before the patent is issued. The discoverer has a mere inchoate statutory right, which he may perfect and make absolute by proceeding in the manner which the law prescribes. (*Reeves* v. *Corning*, 51 Fed. Rep., 774.) The monopoly secured to the patentee is for one entire thing. It is the right of making, using, and vending to others to be used the improvement he has invented and for which the patent is granted, to the exclusion of all others. The monopoly did not exist at common law, and the rights which may be exercised under it must be regulated by the law of its creation. It is created by the act of Congress, and no rights can be acquired in it unless authorized by statute and in the manner therein prescribed. (*Gayler* v. *Wilder*, 10 How., 477.) The statute provides that a patentee may assign the whole or any interest in the monopoly. (Rev. Stat. U. S., 1878, sec. 4898.) A suit may be maintained for the infringement of a patent in the name of the party interested either as patentee, assignee, or grantee. (*Id.*, sec. 4919.) But to enable the assignee to sue alone the assignment must undoubtedly convey to him the exclusive monopoly which the patentee held in the territory specified to the exclusion of the patentee and all others. To enable him to sue jointly with the patentee the assignment must convey to him an undivided part of the monopoly in the territory where the infringement occurs. Any assignment short of this is a mere license. It has been well said that it was not the intention of Congress to permit several monopolies to be made out of one and to be divided among different persons within the same limits. Such a division would inevitably lead to fraudulent impositions upon persons who desired to purchase the use of the improvement and would subject a party who, under a mistake as to his rights, used the invention without authority to be harassed by a multiplicity of suits instead of one and to successive recoveries of damages by different persons holding different portions of a patent-right in the same place.

It has been uniformly held that a patentee and an exclusive licensee may join in bringing a bill to restrain an infringement of the patent-right. The reason is that the exclusive licensee either owns the monopoly or an undivided interest therein within the territory specified, so that such license is tantamount to an assignment. It is different with a simple licensee. He has no exclusive right in any particular territory. The patentee may grant licenses at will to others. A simple license amounts merely to a waiver by the patentee of his right to the exclusive enjoyment of his monopoly in favor of such licensee. He acquires no exclusive right in the monopoly within any specified territory. The patentee may, without infringing the rights of a simple licensee, grant licenses to others; or if the patentee chooses he may permit others to enjoy the patent-right without license. If the patentee chooses to permit others to practice his invention without license, the simple licensee has no legal ground for complaint or interference. (*Sewing-Mach. Co.* v. *Sloat*, 2 Fish. Pat. Cas., 112; *Wyeth* v. *Stone*, 1 Story, 275; *Gayler* v. *Wilder*, 10 How., 477; *Nelson* v. *McMann*, 16 O. G., 761; 16 Blatchf., 139; *Hill* v. *Whitcomb*, 1 Holmes, 317; *Ingalls* v. *Tice*, 22 O. G., 2160, 14 Fed. Rep., 297; *Birdsell* v. *Shaliol*, 30 O. G., 261; 112 U. S., 485; 5 Sup. Ct. Rep., 244.)

Language is used by the learned justice who delivered the opinion in the case of *Birdsell* v. *Shaliol*, *supra*, which might, on a casual reading, be thought broad enough to justify the maintenance of a joint bill by the patentee and a simple licensee. He says:

A suit in equity may be brought by the patentee and licensee together—

citing *Gayler* v. *Wilder*, *supra*, and *Littlefield* v. *Perry*, 7 O. G., 964; 21 Wall., 205. The language must be construed as applicable to the license then under consideration. The opinion shows that the judge was speaking about "an exclusive oral license." It must be deemed settled, both upon principle and authority, that a simple licensee has no such interest as to make him either a necessary or proper party to a bill filed to restrain the infringement of a patent-right.

It is urged, if the law be as stated, that it may be gathered from the bill that the license in question was an exclusive one. It suffices to say that a careful consideration of the averments of the complaint precludes any such construction. The complaint fails to show that the parties joined as plaintiffs with the patentee have any exclusive interest in the monopoly. It is insisted, inasmuch as it is alleged in the bill that the respondent has been granted by the complainants a license to manufacture lime-glass chimneys, that it is estopped to say that they may not maintain a joint bill against it for manufacturing lead-glass chimneys without a license. The respondent, if estopped at all, cannot be estopped beyond its license. It may be that Dithridge & Co. have acquired such an exclusive right in the patented invention, so far as relates to the manufacture of lime-glass chimneys, that the patentee could not grant to the respondent a license to manufacture that sort of glass chimneys without his licensees joining in it. This concession, however, would by no means prove that Dithridge & Co. had an exclusive license for the manufacture of lead-glass chimneys. Dithridge & Co. are not shown by the bill to have acquired, either by assignment or license, any exclusive right to practice the invention in the manufacture of lead-glass chimneys. I have carefully examined all the cases cited by complainants' counsel, and I find none which lend support to the complaint. The complaint being a joint one by two parties, one of whom has no interest, it follows that the demurrer must be sustained. When two or more plaintiffs unite in bringing a joint action and the facts stated do not show a joint cause of action in them, a demurrer will lie upon the ground that the complaint does not state facts sufficient to constitute a cause of action. (*Harris* v. *Harris*, 61 Ind., 117, on page 129.) The bill may be amended, if counsel is so advised, within twenty days, upon payment of all costs to and including the filing of the amended bill; otherwise, at the expiration of twenty days, the bill shall stand dismissed, with costs, but without prejudice.

U. S. Circuit Court of Appeals—Third Circuit.

AMERICAN HEAT INSULATING CO., LIMITED, *et al. v.* JOHNSTON & CO., LIMITED.

Decided October 20, 1892.

PATENTS FOR INVENTIONS—REISSUE—ENLARGEMENT OF CLAIMS.
Letters Patent No. 171,425, issued December 21, 1875, to John C. Reed, for a non-conducting covering for "boilers, steam, water, and other pipes," claimed a covering composed of layers or wrappings of paper saturated with adhesive material and compressed while being formed into tubular sections "of a thickness of one-half inch or more," substantially as described. A reissue of the patent—No. 8,752, granted August 10, 1879—omitted from the claims the quoted words. *Held*, that this was an enlargement of the claim, rendering the reissue invalid, and that this effect could not be avoided on the theory that a covering of less than half an inch would not constitute the "thorough non-conductor" of the specifications; for, while a less thickness might not be sufficient for boilers and steam-pipes, it manifestly would be for "water and other pipes." (48 Fed. Rep., 446, reversed.)

APPEAL from the Circuit Court of the United States for the Western District of Pennsylvania.

Bill by A. Johnston & Co., Limited, against the American Heat Insulating Company, Limited, and others, for infringement of reissued Letters Patent No. 8,752, granted August 10, 1879, to John C. Reed, upon original patent No. 171,425, issued to him December 21, 1875. The circuit court sustained the reissue and entered a decree in favor of complainant. (48 Fed. Rep., 446.) Defendant appealed. Reversed.

Mr. William L. Pierce for the appellants.

Mr. James I. Kay (*W. Bakewell* on the brief) for the appellee.

Before DALLAS, BUTLER, and GREEN, Judges.

BUTLER, *J.*:

The plaintiff sues as assignee of reissued Letters Patent No. 8,752, dated August 10, 1879, issued to John C. Reed, to recover for infringement. The invention is an improvement in non-conducting covers for steam-boilers, steam, water, and other pipes. The specifications say:

The invention relates to that class of articles known as "boiler-coverings," or "non-conducting coverings for boilers, steam, water, and other pipes."

After describing the coverings and the process of manufacturing them, the claims are stated as follows:

1. A non-conducting covering for boilers, pipes, and other surfaces, composed of layers or wrappings of paper saturated or coated with suitable adhesive material and compressed while being formed into tubular sections, substantially as described.
2. As a new article of manufacture, a non-conducting covering for boilers, pipes, and other surfaces, composed of layers or wrappings of paper saturated or coated with suitable adhesive materials and compressed while being formed into tubular sections divided longitudinally, so as to be placed around the pipes or other surfaces to be covered, substantially as set forth.

The original specification and patent, issued December 21, 1875, stated the invention as follows:

My invention relates to that class of articles known as "boiler-coverings," or "non-conducting coverings for boilers, steam, water, and other pipes;" and it consists in a non-conducting covering composed of layers or wrappings of paper, preferably roofing-paper, saturated with adhesive material and compressed while being formed into tubular sections of one-half inch or more in thickness.

The claim was for—

a new article of manufacture, a non-conducting covering composed of layers or wrappings of paper saturated with adhesive material and compressed while being formed into tubular sections of a thickness of one-half inch or more, substantially as shown and described.

A fuller statement of the facts is unnecessary to an understanding of our views of the case.

The validity of the reissue is attacked on the allegation that its claims are broader than that of the original. Judged in the light of its terms alone, this allegation is certainly true. The limitation respecting thickness of the coverings, contained in the original, is omitted. The complainant contends, however, that in the light of the proofs the claims in each are in effect the same, because, as he asserts, a covering of less than half an inch would not constitute "a thorough non-conductor," such as the specifications describe, and consequently that the restrictive language of the original patent was inoperative in construing its claims. This view the circuit court adopted. Is it sound? It seems clear that the patentee did not think so when he took either of the patents. When applying for the original he objected to the limitation, as the proofs show, but was required by the Office to insert it; and his object in taking the reissue seems, mainly, to have been to get rid of it. It cannot well be doubted that if a covering below the limit had been manufactured and used subsequently to the reissue he would have objected to it as an infringement. If for no other purpose than to avoid uncertainty, the Office acted wisely in requiring a definite statement of the thickness of coverings sought to be embraced. The language "a thorough non-conductor," employed in the specification, is indefinite. What is or is not such a conductor is matter of individual judgment, about which experts will disagree. If a bare half-inch is such, it would be difficult to affirm that a trifle less is not. As much would depend upon the fineness and firmness of the texture and solidity of the covering as upon the difference in thickness. The terms of the original claim as amended left nothing to doubt. The patentee's rejection of them subsequently seems to be an emphatic declaration that the language is important and that he will not be so limited. His present attitude does not, therefore, commend itself very strongly to favorable consideration. The court says:

If we were shut up to a comparison of what appears on the face of the original patent and the face of the reissue, it might seem that the omission from the latter of the words "of a thickness of one-half inch or more" was a material change, and one prejudicial to the public; but the proofs bring us to a different conclusion. It is shown that a covering of less thickness than half an inch would lack the necessary non-conducting property. A half-inch covering is too thin to retain the heat and prevent radiation.

We have carefully looked through the proofs and cannot so understand them. They probably show that a less thickness would be insufficient for boilers and steam-pipes, to which, doubtless, the coverings are most commonly applied The reissue, however, plainly embraces coverings for hot-water, hot-air, gas, and all other pipes to which their use may be beneficially applied, and we do not find any evidence to justify the conclusion that a thickness of less than half an inch is insufficient for such purposes. Manifestly, we think, the thinner coverings are sufficient for such uses. If not, the burden was on the complainant to prove it. We attach no importance to the complainant's suggestion that coverings of less than half an inch could not be "conveniently packed for transportation," as described in the specification.

The decree of the circuit court must therefore be reversed and the case remanded, with directions to dismiss the bill.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 61.—No. 13. TUESDAY, DECEMBER 27, 1892. PRICE—$5 per year.

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Notice.

(ORDER No. 789.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., November 26, 1892.

It is hereby directed that in the printing of claims of applications for patents the punctuation of the claims as made by applicants be strictly followed, and that the punctuation of the specification made by applicants be not departed from except to cure a manifest absurdity.

W. E. SIMONDS,
Commissioner.

World's Columbian Exposition.

To the Inventors and Manufacturers of the United States:

It is the intention of the Patent Office to make at the World's Columbian Exposition at Chicago in 1893 an exhibit which will show that great advance in the several arts which is due, in large measure, to the encouragement and support afforded by our patent system. This exhibit is to consist of models of patented inventions, which will be carefully selected, to show as far as is possible the inception of each art, the stages through which the art has advanced, and the final development reached at the present time. This display of typical inventions, embodied in concrete form and properly arranged, will, it is believed, constitute a grand historical exhibit of the progress of the useful arts and one which will be of great interest not only to inventors and manufacturers, but to the public generally.

The Office collection of models has been seriously impaired by fire, and is further incomplete by reason of the fact that models have not generally been required or received during the last ten years. The Office is not, therefore, in possession of the models of many valuable inventions which might properly be included in such an exhibit, and without which indeed, the exhibit would be incomplete. The limited appropriation for this exhibit will not permit the Office to make such models. An urgent appeal is therefore made to all inventors and manufacturers to come to the assistance of the Office in this matter, either by loans of models already built or by the construction of such models not in the possession of the Office as should properly be placed in such a collection. Of course, where models are loaned to the Office all proper credit will be given both in labels and catalogues to the parties by whom the loans are made, and such disposition will be made of the models after the close of the exhibit as the owners shall direct. Many inventors and manufacturers have already indicated a willingness to co-operate with the Office in this matter, and it is confidently expected that such a response will be made to this general appeal as will assure the unparalleled success of this attempt to graphically and concretely show the development of American invention.

W. E. SIMONDS,
Commissioner.

Protection of Foreign Exhibitors.

DEPARTMENT OF STATE,
Washington, D. C., July 30, 1892.

To the Diplomatic and Consular Officers of the United States:

GENTLEMEN: I subjoin a transcript of the act of Congress approved April 6, 1892, Public No. 29, entitled "An act to protect foreign exhibitors from prosecution for exhibiting wares protected by American patents and trade-marks," which reads as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That no citizen of any other country shall be held liable for the infringement of any patent granted by the United States, or of any trade-mark or label registered in the United States, where the act complained of is or shall be performed in connection with the exhibition of any article or thing at the World's Columbian Exposition at Chicago.

You will transmit copies of this circular to the government of the country to which you are accredited, and ask that it be given the widest possible circulation for the information of those directly concerned.

I am, gentlemen, your obedient servant,

JOHN W. FOSTER,
Secretary of State.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., August 4, 1892.

Official copy to the Commissioner of Patents for his information and guidance.

E. M. DAWSON,
Chief Clerk.

Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subclassified in the Scientific Library for convenient and ready reference.

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $3.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Issue of December 27, 1892.

Patents	442	No. 488,534 to No. 488,975, inclusive.
Designs	11	No. 22,081 to No. 22,091, inclusive.
Trade-Marks	46	No. 22,228 to No. 22,273, inclusive.
Labels	None.	
Reissues	2	No. 11,296 to No. 11,297, inclusive.
Total issue	501	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	4	.....	Nevada	.....	.....
Arizona Territory	1	.....	New Hampshire	3	.....
Arkansas	1	.....	New Jersey	21	.....
California	8	.....	New Mexico Territ'y	.....	.....
Colorado	3	.....	New York	80	9
Connecticut	11	1	North Carolina	2	.....
Delaware	1	.....	North Dakota	.....	.....
District of Columbia	9	2	Ohio	33	4
Florida	.....	.....	Oregon	2	.....
Georgia	3	.....	Pennsylvania	37	2
Idaho	1	.....	Rhode Island	6	1
Illinois	33	9	South Carolina	2	.....
Indian Territory	.....	.....	South Dakota	1	.....
Indiana	18	.....	Tennessee	1	1
Iowa	6	.....	Texas	5	.....
Kansas	4	.....	Utah Territory	.....	.....
Kentucky	2	1	Vermont	1	.....
Louisiana	2	.....	Virginia	2	1
Maine	5	.....	Washington	.....	.....
Maryland	3	.....	West Virginia	3	.....
Massachusetts	37	4	Wisconsin	7	.....
Michigan	14	.....	Wyoming	1	.....
Minnesota	5	.....	U. S. Army	.....	.....
Mississippi	5	.....	U. S. Navy	.....	.....
Missouri	15	1			
Montana	5	.....	Total to citizens of the United States	409	36
Nebraska	7	.....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	.....	.....	Mexico	1	...
Austria-Hungary	.....	.....	Netherlands	.....	.....
Belgium	.....	.....	Newfoundland	1	...
Bermuda	.....	...	New South Wales	1	...
Brazil	.....	.....	New Zealand	.....	.....
Canada	7	1	Norway	.....	.....
Chile, Republic of	.....	.....	Roumania	1	.....
Cuba	.....	.....	Russia	1	.....
Denmark	.....	.....	Scotland	1	.....
Ecuador	.....	.....	South Australia	.....	.....
England	20	1	Spain	.....	.....
France	2	7	Sweden	.....	.....
Germany	9	1	Switzerland	.....	.....
Guatemala	.....	.....	Victoria	.....	.....
Ireland	.....	.....			
Italy	.....	...	Total to citizens of foreign countries	44	10
Japan	.....	...			

APPLICATIONS UNDER EXAMINATION.

Condition at Close of Business December 20, 1892.

Division No.	Subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New	Amended	No. of applications awaiting action.
	Under one month in arrears.			
31	Gas, Painting, Leather, Tanning, Alcohol, Oils, Fats, and Glue, etc.	Nov. 26	Dec. 14	80
	Between one and two months in arrears.			
11	Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting.	Oct. 29	Dec. 9	235
8	Furniture, Toilet, Umbrellas and Canes, etc.	Oct. 24	Dec. 7	260
14	Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, etc.	Oct. 20	Dec. 6	129
16	Telegraphy, Telephony, Electric Lighting and Signaling.	Nov. 1	Dec. 5	183
24	Sewing-Machines and Apparel	Oct. 29	Dec. 3	123
12	Mechanical Engineering, Store-Service, etc.	Oct. 28	Dec. 2	222
3	Farm Stock, Products, etc	Oct. 22	Dec. 2	263
21	Textiles, etc	Oct. 22	Nov. 30	201
25	Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, etc.	Oct. 20	Nov. 28	177
10	Carriages and Wagons and Railway-Cars.	Oct. 22	Nov. 26	337
30	Lamps, Gas-Fittings, Type-Writers, Matrix-Making Machines.	Oct. 21	Nov. 19	210
7	Harvesters, Games and Toys	Oct. 21	Nov. 15	464
27	Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	Oct. 22	Nov. 9	201
5	Fine Arts, Stationery, Book-Binding, Music, etc.	Nov. 2	Nov. 2	184
6	Chemistry, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc.	Oct. 22	Oct. 27	245
9	Hydraulics, Fire-Extinguishers, etc.	Oct. 22	Oct. 25	378
15	Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc.	Oct. 22	Oct. 24	271
20	Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc.	Oct. 20	Oct. 22	279
28	Pneumatics, Refrigeration, Air and Gas Engines, etc.	Oct. 25	Sept. 30	311
	Between two and three months in arrears.			
32	Advertising, Baggage, Packing and Storing Vessels, etc.	Sept. 24	Nov. 25	269
22	Fire-Arms, Navigation, Signals, etc.	Oct. 1	Nov. 19	270
33	Instruments of Precision, Acoustics, Optics, etc.	Sept. 29	Nov. 18	232
18	Steam-Engineering, etc.	Oct. 12	Nov. 17	123
19	Stoves and Furnaces	Oct. 15	Nov. 4	355
17	Paper-Manufactures and Printing.	Oct. 13	Oct. 19	280
1	Tillage and Fences	Oct. 13	Oct. 15	313
4	Civil Engineering, etc	Oct. 15	Oct. 11	377
	Between three and four months in arrears.			
13	Metal-Working, Arms and Projectiles, etc.	Aug. 29	Nov. 15	245
2	Metallurgy, Metal Founding, Forging, Rolling, Coating, Annealing and Tempering, etc.	Aug. 29	Oct. 13	318
	Between four and five months in arrears.			
29	Wood-Working Machines, Carpentry, Coopering and Roofing, etc.	Aug. 1	Dec. 2	381
	Between seven and eight months in arrears.			
26	Electricity, Generation, Distribution, etc.	May 14	Oct. 20	541
	Total number of applications awaiting action			8,457
	Under one month in arrears.			
	Designs	Dec. 14	Dec. 14	35
	Trade-Marks	Dec. 15	Dec. 17	21

PATENTS

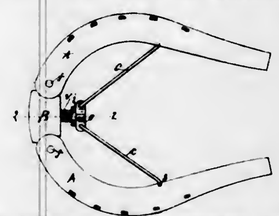
GRANTED DECEMBER 27, 1892.

488,534. EXPLOSIVE. JOHN F. ALEXANDER, Washington, D. C. Filed Mar. 20, 1890. Renewed Mar. 11, 1891. Again renewed Mar. 19, 1892. Serial No. 425,694. (No specimens.)

Claim.—1. A powder composed of naphthaline, or suitable solid hydrocarbon, and sulphur, a potassium salt or salts, and picrate of ammonium, in variable proportions, substantially as described.

2. A powder composed of naphthaline, or suitable solid hydrocarbon, and sulphur, a potassium salt or salts, picrate of ammonium, and sulphate of ammonium, in variable proportions substantially as described.

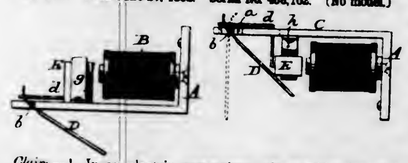
488,535. SHOE FOR EXPANDING HORSES' HOOFS. GEORGE F. ALTOFT, Carlton, Mich. Filed Apr. 22, 1892. Serial No. 430,228. (No model.)



Claim.—1. An expansible horse shoe, comprising a toe piece, the side members pivotally attached thereto, a screw threaded adjusting rod in said toe piece, and the rearwardly extending, diverging spreading-rods, pivotally attached in a swiveled manner to said adjusting rod; substantially as set forth.

2. An expansible horse shoe, comprising a toe piece, the side members pivotally attached thereto and having the holes in the inner edge, a screw threaded adjusting rod in said toe piece, said threaded rod being provided with a wrench seat, a block swiveled to the inner end of said threaded rod, and the spreading-rods pivotally attached at one end to the swiveled block and adapted at the other end to enter the holes in the inner edges of the side members; substantially as set forth.

488,536. ELECTRIC ANNUNCIATOR. JAMES H. BATES, Hoboken, N. J. Filed June 27, 1892. Serial No. 438,102. (No model.)

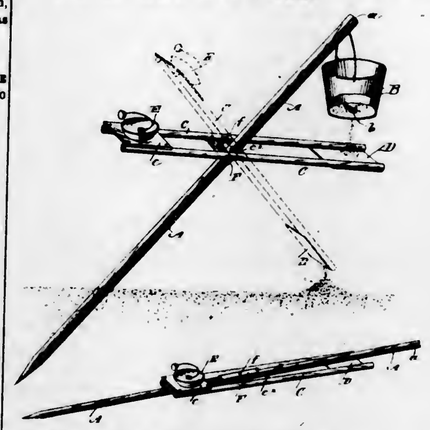


Claim.—1. In an electric annunciator, the combination with a frame or base, of an electro-magnet, an indicator normally out of view, and an armature for the magnet, independent of the indicator, but jointed to the indicator substantially as shown and described, whereby the armature is adapted to positively actuate the indicator.

2. The combination with the base or frame A, of, the electro-magnet B carried thereby; an arm C projecting from the base or frame; an indicator D pivoted in said arm C independently of the armature: the armature E; and an arm *d* jointed to the armature and the indicator, whereby the indicator shall be actuated positively.

3. The combination with the base or frame A having the slotted arm C, the electro-magnet B and its armature E; of the indicator D pivoted in the slotted arm; and an arm *d* secured at one end to the armature, and having at its opposite end a slotted connection with the indicator, whereby the indicator shall be actuated positively.

488,537. TOY. CHARLES R. BENTLEY, New York, N. Y. Filed July 30, 1892. Serial No. 441,646. (No model.)



Claim.—1. A toy balance, comprising a staff or support, a lever fulcrumed thereon and adapted to hold an overbalancing substance at one side of its fulcrum, and carrying an audible signal or an automaton; and a reservoir discharging sand or other flowing substance onto the lever to tilt or overbalance it and operate the signal or automaton, substantially as described.

2. An automatic toy balance, comprising a staff or support, a lever fulcrumed thereon and adapted to hold an overbalancing substance at one side of its fulcrum and carrying an audible signal or automaton; a reservoir discharging sand or other flowing substance on to the lever to tilt or overbalance it, and a stop operating the audible signal or automaton on the tilting movement of the lever, substantially as described.

3. The combination in a toy balance, of a staff or support, a reservoir sustained thereon and adapted to discharge sand or other flowing substance, and a lever fulcrumed on the staff and carrying a plate or vessel receiving the material from the reservoir, and an audible signal or automaton operative as the lever tilts or rocks, substantially as described.

4. The combination, in an automatic toy balance, of a staff or support, a reservoir sustained thereon and adapted to discharge sand or other flowing substance, a lever fulcrumed on the staff and carrying a plate or vessel receiving the material from the reservoir, an audible signal or automaton operative as the lever tilts or rocks, and a stop on the staff temporarily holding the lever in normal position and operating the signal or automaton, substantially as described.

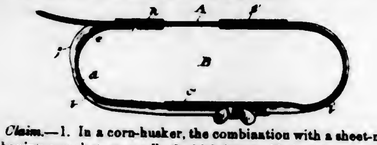
5. In a toy balance comprising a staff or support and a lever thereon adapted to carry a sand receiver and provided with an audible signal or automaton, substantially as described, said staff and lever adapted to fold together, as set forth.

6. In an automatic toy balance comprising a staff or support, a

lever thereon adapted to carry a sand receiver and provided with an audible signal or automaton, and a stop limiting tilting movement of the lever and operating the signal or automaton, said staff, lever, and stop folding together for carriage or transportation, substantially as described.

7. The combination, in a toy balance, of a staff A, reservoir B, lever C, fulcrumed to the staff and having a sand receiving plate D, and an audible signal E, and a stop F, on the staff for the lever, substantially as described.

488,538. CORN-HUSKER. GUSTAV A. BYON, Edgar, Nebr. Filed June 23, 1892. Serial No. 437,736. (No model.)



Claim.—1. In a corn-husker, the combination with a sheet-metal hilt having a socket one wall of which is provided with a struck-up nib, of a husking-pin removably mounted in the socket and provided with an indentation or countersink into which said nib is adapted to spring, whereby the pin is locked against accidental withdrawal, substantially as specified.

2. In a corn-husker, the combination with the hilt, consisting of opposite bowed sections having long and short terminals, the longer adjacent terminals of which overlap and are slidably connected and the remaining two or shorter terminals of which are provided with sockets aligning with each other, of a husking-pin removably secured in the sockets and connecting the shorter terminals, and adjusting devices between the longer terminals, substantially as specified.

3. In a corn-husker, the bowed portions *b b'* mechanically and adjustably connected at two adjacent terminals and the two remaining terminals provided with sockets, in combination with the husking-pin affixed to the socket or portion *b*, and guided loosely by the portion *b'*, substantially as specified.

488,539. ELASTIC WHEEL. HUBERT CLAUS, Thale, Germany. Filed Aug. 18, 1892. Serial No. 443,422. (No model.)

Claim.—1. As a new article of manufacture a wheel constructed as herein described, and consisting of a corrugated or fluted elastic plate interposed between the rim and the hub of the wheel and provided with flat edges and secured thereto, substantially as described.

2. In a wheel or drum, the combination with the hub and outer periphery of a corrugated elastic metallic plate provided with flat edges and secured thereto, substantially as described and for the purposes set forth.

488,540. ART OF MANUFACTURING INLAID WORK FOR DECORATIVE PURPOSES. HENRY A. COUSINS, New York, N. Y. Filed Oct. 8, 1891. Renewed May 24, 1892. Serial No. 434,173. (No specimens.)

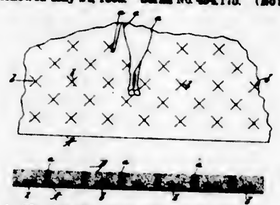
Claim.—The herein described method of producing inlaid work, the same consisting in filling cuts in a templet with projecting bands of metal, embedding in and transferring the bands of metal to an impervious body of cement, then filling the cells or cavities between the bands with colored cements of the desired hues, and finally finishing the article produced, substantially as explained.

488,541. ART OF MANUFACTURING INLAID WORK FOR DECORATIVE PURPOSES. HENRY A. COUSINS, New York, N. Y. Filed Oct. 8, 1891. Renewed May 24, 1892. Serial No. 434,174. (No specimens.)

Claim.—1. In the production of inlaid work of the character herein set forth, the described method of forming and locating the outline strips, which consists in molding them in a previously prepared matrix, substantially as explained.

2. The herein described method of producing inlaid work, the same consisting in preparing a matrix of suitable material with the outlines of the design or picture cut therein, casting the outlines in and on the matrix, removing the matrix and filling the cells or cavities in the casting with proper colored cements, and grinding and finishing the surface, essentially as explained.

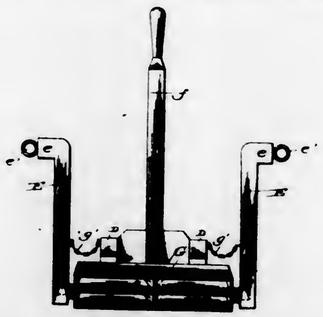
488,542. MANUFACTURE OF INLAID WORK FOR DECORATIVE PURPOSES. HENRY A. COUSINS, New York, N. Y. Filed Oct. 8, 1891. Renewed May 24, 1892. Serial No. 434,175. (No specimens.)



Claim.—1 The herein described method of producing inlaid work, consisting in applying metal outline stripe to a metal backing plate, perforating the plate, bending up the margins of the perforations, applying the filling, and then subjecting the whole to pressure, substantially as and for the purposes set forth.

2. The herein described decorated piece consisting of the perforated metal backing plate, and the filling and outline strips, the margins of the perforations being bent and anchored in the material of the filling, substantially as set forth.

488,543. WASHING-MACHINE. ANDREW J. CURTIS, East Williamson, N. Y. Filed June 20, 1892. Serial No. 437,352. (No model.)

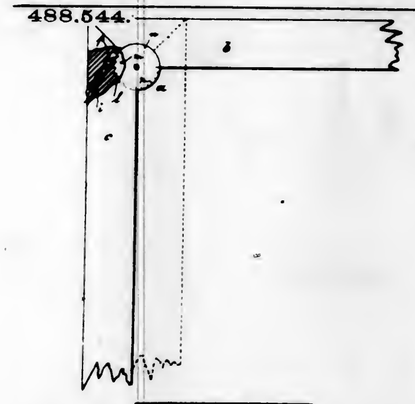


Claim.—In a washing machine, the combination of a suds box provided on its inner surface with parallel vertical ways or grooves, a rubber arrangyd within said box and pivotally connected to the lower ends of vertical guide bars arranged in the ways or grooves in the box, said guide pieces being provided at their upper ends with laterally projecting lugs which extend across the upper edges of the sides of the suds box, and coiled springs detachably connected to said lugs, and rigidly attached to the outside of the suds box, substantially as described.

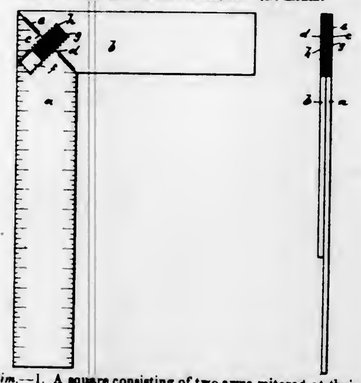
488,544. FOLDING SQUARE. ELIPHALET DE CAMP, Newark, N. J. Filed May 17, 1892. Serial No. 433,260. (No model.)

Claim.—The combination of the arm *c* having the recess *q* and the lugs *n*, the arm *b* having the lug *m* pivoted between the lugs *n* and having ratchet teeth on its edge, a pawl pivoted within the recess *q* and engaging the ratchet teeth, and having its outer end projecting slightly beyond the side of the arm *c* and a spring secured in said recess and bearing against the pawl to hold it normally in engagement with the ratchet teeth.

488,544.



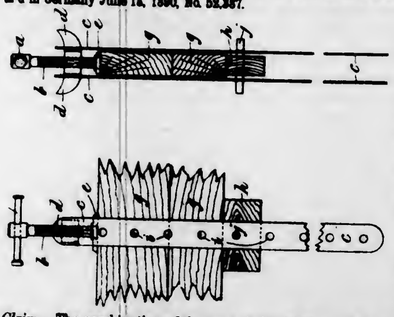
488,545. FOLDING SQUARE. ELIPHALET DE CAMP, Newark, N. J. Filed Oct. 7, 1892. Serial No. 448,108. (No model.)



Claim.—1. A square consisting of two arms mitered at their adjoining end and hinged together at said mitered ends, and a locking mechanism, adapted to hold said arms rigid in normal position, substantially as described and for the purposes set forth.

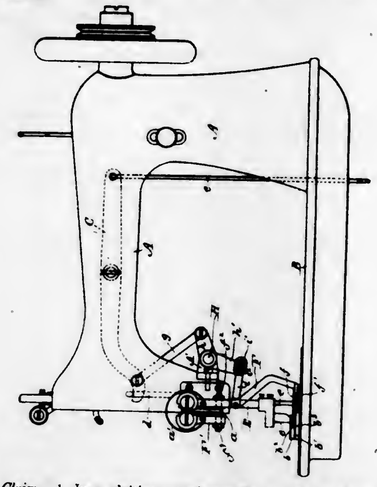
2. In a square the combination with the two arms mitered at their adjoining ends, and provided with grooves approximately at right angles to said mitered joint, of hinges arranged in said mitered joint, and a locking bolt, arranged in said groove, all said parts, substantially as described and for the purposes set forth.

488,546. CLAMP FOR DRAWING TOGETHER WOODEN JOINTS. THOMAS DODSELL, Slough, England. Filed Nov. 12, 1891. Serial No. 411,682. (No model.) Patented in England Nov. 27, 1889, No. 19,052; in France Dec. 14, 1889, No. 33,079; in Belgium Dec. 31, 1889, No. 88,867, and in Germany June 18, 1890, No. 52,367.



Claim.—The combination of the screw bolt with the washer and iron plate fitted to the reduced point, and the steel pin passed through the hole in the other end, the winged nut with the perforated iron strips hung thereon, and the stationary block against which the work is forced with the steel pin wedged through it for drawing together wooden joints, substantially as herein described and according to the accompanying drawings.

488,547. PLAITING ATTACHMENT FOR SEWING-MACHINES. JOHN DOUGLAS, Elizabeth, N. J., assignor to The Singer Manufacturing Company of New Jersey. Filed Oct. 7, 1892. Serial No. 448,135. (No model.)



Claim.—1. In a plaiting attachment for sewing machine, the combination with a movable arm or lever carrying a plurality of plaiting blades having their working edges in different vertical planes and facing in the same direction, of a fixed guide having a plurality of guiding faces in different vertical planes, and a plurality of guiding blades also having their working edges in different vertical planes, said faces and blades all facing in the same direction.

2. The combination with a sewing machine provided with a plurality of stitch-forming devices, of a guide having a plurality of guiding faces in different vertical planes and having also a plurality of guiding blades, said guiding faces and blades all facing in one direction, and the working edges of which are also in different vertical planes, and a plurality of plaiting blades facing in one direction and arranged to intermesh with said guiding blades, said plaiting blades also having their working edges in different vertical planes.

3. The combination with the fixed guide consisting of the guiding parts of blocks *b* and *b'* having their inner or working edges in different vertical planes and the guiding blades b^3 and b^4 also having their guiding edges in different vertical planes, said edges and blades all facing in the same direction, of the pivoted lever F carrying the plaiting blades *f* and *f''* both facing in one direction and normally intermeshing with the said guiding blades and also having their outer or working edges in different vertical planes.

4. In a sewing machine, the combination with a presser-bar and presser foot and a lifting device therefor, of a plaiting attachment comprising swinging plaiting blades connected with the said lifting devices so that they may be swung aside from operative position relative to said presser foot when the latter is raised by said lifting device.

5. In a sewing machine, the combination with a presser bar and a lifting device therefor, of a plaiting attachment comprising movable plaiting blades having a loose connection with the said lifting device, whereby, in the operation of the lifting device, the presser foot may be raised without moving the plaiting blades, or the presser foot be raised and the plaiting blades be subsequently removed from operative position by one and the same operation of the lifting device.

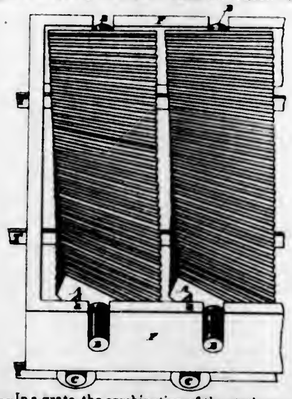
6. In a sewing machine, the combination with a presser bar and a lifter therefor having connections by which it may be operated from beneath the work-plate, of a plaiting attachment comprising movable plaiting blades connected with the said lifter so that they may be removed from operative position thereby.

7. The combination with the presser bar D provided with the arm or bracket *d* and the presser foot *d'*, of the lifting lever C the forward end of which engages the said arm or bracket and the rear end of which is provided with a rod *d'* extending down beneath the work-

plate of the machine, the plaiting-blade carrying-lever F, the rock-shaft H having arms *h* and *h'*, the link *g* connecting said arm *h* with the lever C and the link *i* connecting the said arm *h'* with the said lever F.

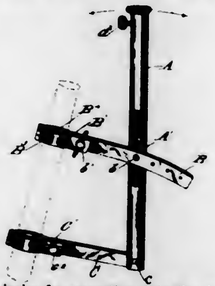
8. The combination with the presser bar D provided with the arm or bracket *d* and the presser foot *d'*, of the lifting lever C the forward end of which engages the said arm or bracket and the rear end of which is provided with a rod *c'* extending down beneath the work-plate of the machine, the plaiting-blade carrying-lever F, the rock-shaft H having arms *h* and *h'*, the link *g* connecting said arm *h* with the lever C and the link *i* connecting the said arm *h'* with the said lever F, said link *i* being provided with the slot *i'* entered by a screw or pin *i²* carried by the said arm *h'* to form a loose connection between the said lifting lever and the said lever F.

488,548. ROCKER-TOOTH GRATE. GEORGE DOWNING, Jr., and WILLIAM F. HALL, Lincoln, Nebr.; said Hall assignor to Thomas Ryan, same place. Filed Sept. 15, 1890. Serial No. 364,947. (No model.)



Claim.—In a grate, the combination of the stationary bars B, fuel-supporting sections A, loosely strung thereon, bars C connecting the lower parts of said sections and operating means connected with both ends of said bars substantially as described.

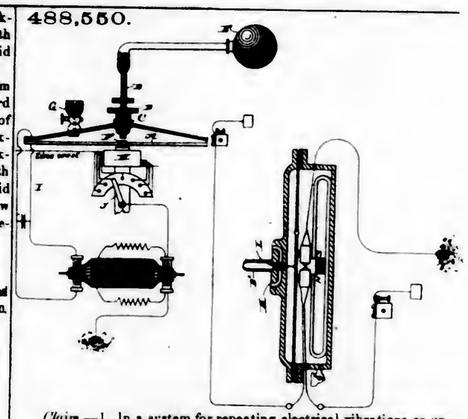
488,549. SUPPORT FOR UMBRELLAS, &c., ON BICYCLES, &c. JAMES DUGAN, Bristol, Pa. Filed July 14, 1892. Serial No. 440,250. (No model.)



Claim.—1. A device for supporting umbrellas, &c., upon bicycles and similar vehicles, said device comprising a supporting and an adjusting arm each adapted to be secured independently to the frame of the vehicle and one above the other, and a standard hinged to said supporting arm and slidably adjustable upon said adjusting arm, substantially as described.

2. A device for supporting umbrellas, &c., upon bicycles and similar vehicles, said device comprising a supporting and an arched adjusting arm each adapted to be secured independently to the frame of the vehicle and one above the other, and a standard hinged to said supporting arm and slidably adjustable upon said adjusting arm, substantially as described.

488,550. ELECTRICALLY-REPEATING SIGNAL. STEPHEN D. FIELD, Yonkers, N. Y. Filed Mar. 5, 1892. Serial No. 423,866. (No model.)



Claim.—1. In a system for repeating electrical vibrations or undulations the combination of two or more lines inductively related at a relay station, means for producing forced electrical vibrations or undulations in the lines at such station, and means for varying the force of such undulations or vibrations at the distant end of either line.

2. A system for repeating electrical vibrations from one circuit to another comprising two circuits inductively related, a generator for maintaining in both rapid forced electrical vibrations, a transmitting instrument at one station for varying the strength of the vibrations, and a receiving instrument at another station adapted to respond to such variations of strength.

3. A signaling instrument consisting of an electrically actuated diaphragm or armature housed in a partial vacuum.

4. The combination of a closed receptacle provided with a vibratory diaphragm or other armature, a tube entering such receptacle and provided with means for exhausting the air therefrom, the diaphragm being adapted to close the mouth of the tube after partial exhaustion, and means for admitting air into the receptacle, whereby a rapid vibratory action of the diaphragm may be produced.

5. The combination of a diaphragm provided with means for maintaining it in rapid forced vibration, a local circuit controlled by the diaphragm, and an induction device having its primary circuit connected with the local circuit, and its secondary circuit connected to two lines leading to different stations.

6. A relay station for electrical vibrations or undulations having the line terminals at the relay station connected with coils inductively related, means for graduating the relative inductive effect of the lines, means for transmitting to the lines at the relay station rapid forced vibrations or undulations, and means at the distant station for varying the intensity of such vibrations or undulations in either line.

7. A system for repeating electrical vibrations or undulations from one line to another, comprising a rapidly-vibrating diaphragm, a magnet inductively related thereto a coil or coils around said magnet, said coil or coils being differentially connected to the two lines.

488,551. CAR-COUPLING. JOSEPH K. FORSYTH and ERSKINE R. MERRELL, Chicago, Ill. Filed Mar. 1, 1892. Serial No. 423,355. (No model.)

Claim.—1. In combination with a car and a car-coupler thereon, a chain attached to the coupler, extending thence backward and fastened to a beam G, the chain being sufficiently slack to avoid interference with the longitudinal play of the coupler, but insufficiently slack to permit withdrawal of the draw-bar, whereby, in case of fracture of the coupler, the chain shall form a supplemental safety coupler, substantially as described.

2. In combination with a car and a car-coupler thereon having a lock for the pivotal jaw of the coupler, a dog pivoted on the coupler in position to engage the lock, and a chain, or the like, connecting the coupler from the dog with the body of the car and slack to avoid interference with the longitudinal play of the coupler, substantially as and for the purpose set forth.

3. In combination with a car and a car-coupler thereon having a lock D for the pivotal jaw C, a dog E pivotally supported on the coupler-head B to engage the lock, and a chain F, or the like, connected between its extremities with the dog and extending, thence, backward and fastened at its ends to the body of the car at opposite sides of the draw-bar, the said chain being slack to avoid interference with the longitudinal play of the coupler, substantially as and for the purpose set forth.

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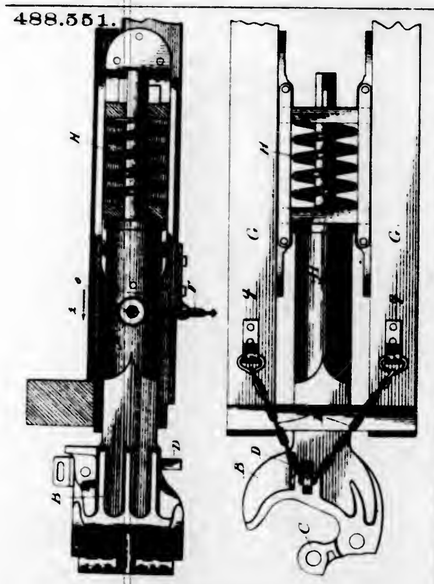


488,552. BELL-BUOY. VINCENT FOUNTAIN, West New Brighton, N. Y., assignor of one-sixteenth to Thomas F. Ryder, same place. Filed Mar. 3, 1892. Serial No. 424,156. (No model.)

Claim.—1. A bell buoy comprising a floating buoy having a chamber provided with an inlet, and an outlet opening, one being substantially opposite the other, a water wheel placed therein, a revolving shaft journaled upon the buoy carrying a bell, and intermediate gearing between the water wheel shaft and the bell shaft, whereby water passing through the chamber operates the wheel revolves the said shaft and rings the bell by revolving its shaft, substantially as specified.

2. A bell buoy comprising a buoy having a horizontal chamber provided with an inlet having inclined side walls for the purpose specified, a horizontal wheel journaled therein having inclined pockets, an outlet substantially opposite the inlet and larger than the inlet, a vertical shaft for the said wheel which extends vertical through the buoy and out of its upper end, a bell shaft journaled upon the upper end of the buoy, and an intermediate gearing between the bell shaft and the wheel shaft, and a bell secured upon the said bell shaft, substantially as specified.

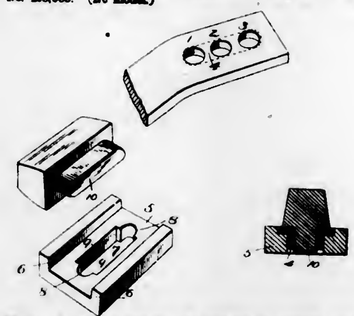
3. A bell buoy comprising a buoy having a horizontal chamber having an inlet and an outlet opening a driving wheel journaled therein, a vertical shaft driven by the wheel and carrying a gear upon its upper end, a horizontal bell shaft journaled upon the buoy carrying a gear wheel meshing with the vertical shaft gear wheel, and a bell secured at its closed end to the said shaft and at right angles thereto, substantially as described.

4. A bell buoy, having a driving wheel operating by the flowing water, a revolving bell shaft driven by the said wheel, a bell secured at its closed end to the shaft, and a counter weight secured to the shaft for the bell substantially as and for the purpose set forth.

5. The combination of the buoy, a driving wheel, a revolving bell shaft driven thereby, a bell secured to the shaft, having parallel clapper guiding plates secured inside thereof, and a clapper pivoted and swinging between the said guiding plates, as and for the purpose set forth.

6. A bell buoy casing consisting of a conical lower end, a vertical portion having a horizontal chamber and inlet and outlet openings through the vertical portion to the said chamber, a vertical tube extending from the top of the chamber to the top of the buoy, and a slightly tapering upper portion having a flat top, combined with the water wheel, the vertical shaft, a bell shaft carrying a bell, and intermeshing gearing, substantially as described.

488,553. METHOD OF AND APPARATUS FOR MAKING LEAF-SPRINGS. OSCAR F. FREEMAN, Drifton, Pa. Filed Apr. 11, 1892. Serial No. 428,683. (No model.)

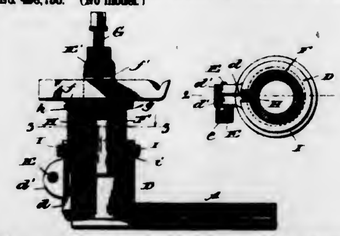


Claim.—1. The hereindescribed method of forming bearings on springs consisting in punching a series of openings through the blank, completing the elongated opening by severing the tongues 4 between the openings upsetting the tongues as severed and finally pressing the said tongues upon the face of the blank about the opening to form the bearings substantially as described.

2. The herein described means for forming bearings on springs consisting of the two sets of dies to be used in succession the first set having a female die, having the opening 7 with lateral extensions 9 and an upper die having a projecting portion to fit the opening 7; the second set having a female die with an opening corresponding to the main opening 7 of the first female die omitting the extensions and the second upper die having a projection to fit the opening 13× and the depression on each side of the projection, substantially as described.

3. In combination, the lower die having opening 13× and the upper die having the projection adapted to fit the opening 13× and having a pair of depressions on each side of the projection both depressions of each pair being arranged adjacent to the projection, substantially as described.

488,554. TOOL-HOLDER FOR LATHES. ALEXANDER FULLER and WALTER B. HORNSHELL, Streator, Ill. Filed July 2, 1892. Serial No. 438,735. (No model.)



Claim.—1. The combination with the socket and the tool post, of a threaded strip independent of the socket and post, and a ring em-

bracing the post and strip for engaging the strip to adjust the post, as set forth.

2. The combination with the post having surrounding groove, of the detachable threaded strip having a flange moving in said groove, as set forth.

3. The combination with the socket having surrounding groove, of the post having surrounding groove, the ring in the groove of the socket and the threaded strip held in the groove of the post and engaged by the threads of the ring, as and for the purpose specified.

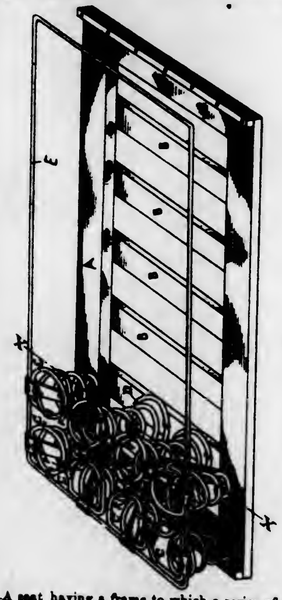
4. The combination with the split socket and its screw rod, of the tool post fitted within the socket, the detachable threaded strip, and the threaded ring engaging said strip, substantially as specified.

5. The combination with the socket of the detachable tool post, the detachable threaded strip carried by the post, and a threaded ring encircling the post and strip and engaging said strip, substantially as specified.

6. The combination with a grooved tool post, of a detachable threaded strip having a flange held in the groove of the post, and a ring embracing the post and fitted in a groove in the post-support and engaging said strip, as shown and described.

7. A tool holder comprising a bed piece with split socket, screw rod, tool post fitted in the socket, and provided with an opening, collar and set screw, threaded strip, and threaded ring, all arranged and operating as set forth.

488,555. SEAT. EMIL G. HARBELER, Dayton, Ohio, assignor to the Barney & Smith Car Company, same place. Filed Oct. 10, 1892. Serial No. 448,387. (No model.)



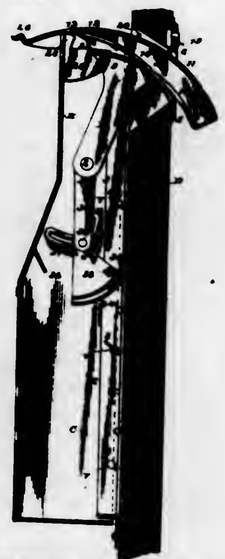
Claim.—A seat having a frame to which a series of springs are connected, a band connecting the frame and spring and an arm extending from the band to one of the intermediate coils of the spring substantially as and for the purpose set forth.

488,556. HOUSE-DOOR LETTER-BOX. GEORGE W. HALL, Washington, D. C. Filed Oct. 7, 1891. Serial No. 407,966. (No model.)

Claim.—1. In a mail box, a movable letter receptacle having a holding pawl attached, and an abutment against which said pawl bears, said pawl being in position to be lifted when a letter is inserted to permit the box to move to another position, substantially as described.

2. A letter receptacle supported on pivoted arms, a pawl partially within the receptacle engaging an abutment outside thereof, said pawl in position to be lifted and held out of engagement by a letter inserted in the receptacle, substantially as described.

3. The combination with an opening or frame, of a curved letter receptacle supported on arms, pivoted at a distance from the opening corresponding to the curve of the receptacle, so that the receptacle may swing through said opening, and open or close the same, substantially as described.



4. The movable letter box, the casing having an opening through which said box moves, a cover hinged to the outer end of the box and closing toward the casing so that the end of the cover is within the opening in the casing when the box is in its inner position, and a lock on the casing engaging said box to prevent the opening of the cover when in said position, all in combination.

5. The movable letter receptacle, the casing having an opening through which said receptacle moves and having a cover which extends into and is retained closed by the casing until said cover is projected beyond the casing, and a lock engaging the box to limit the movement thereof relatively to the casing, in combination substantially as described.

6. The combination with the fixed casing, of the movable letter receptacle, and a catch automatically operated by the deposit of a letter to permit a change of position of the letter receptacle relatively to the casing, substantially as described.

7. The combination with the door or partition having a hole therein, of the letter receptacle constructed to project a greater or lesser distance from the hole, and indicate by its position the presence or absence of contents therein, and means in position to be actuated by the insertion of a letter in the box, acting to retain the box in one of its positions, all substantially as described.

8. The movable letter box having a catch therein, and a support for said box with which said catch engages, said catch in position to be detached by the deposit of a letter in the box, so that the box may then move to a new position, the parts in combination substantially as described.

9. The movable letter box having a receiving slot and a pawl in front of said slot, and a hole through which the end of said pawl drops, and an abutment with which said pawl engages until raised by the insertion of a letter, in combination, substantially as described.

10. The combination with the slotted letter box A, of the fingers 22 therein, and the fingers 24 on the casing which project through the slots in the box when the box is moved toward said fingers.

11. The combination of the casing C, the slotted box A supported on arms pivoted to said casing, the teeth 24 and fingers 28 on the casing in line with slots in the box, and the retaining teeth in the box, substantially as described.

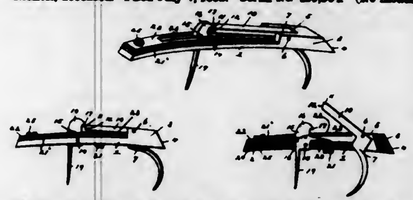
12. The inclosing casing, the letter receptacle supported on levers within said casing and movable to various positions, so as to project from an opening in the door or partition to which the casing is attached toa greater or lesser extent as described, the levers connected to said casing, and the cut off pivoted within the casing and acting to close the passage below the receptacle when the same is swung inward, all combined and relatively arranged substantially as described.

13. The casing C having pivoted plates 33 and cut off 34 connected to said plates, the box A having levers 1 connected thereto and pivoted to the casing, said levers having pins engaging cam slots in plates 33, all combined substantially as described.

14. The combination with perforated door D of the box A having a cover on its upper face, having its outer edge hinged outside the door and movable through the hole in the door, so that the cover may fall open on the outside of the door while the body of the box is in the opening, substantially as described.

15. The combination with the casing having the letter box supported thereon by levers pivoted to the casing of the strips R secured to the door or partition and adjustably connected to the sides of the casing.

16. The combination with the casing C having an attached part to project through a hole in the door, of extension strips at the sides of the casing, whereby the casing is adapted for use with doors of different thicknesses, substantially as described.

488,557. TRIGGER. ARNER S. HARRAH and EMILY A. HARRAH, Mulvane, W. Va.; said Emily A. Harrah administratrix of James H. Nichols, deceased. Filed July 7, 1892. Serial No. 439,304. (No model.)

Claim.—In a trigger, the combination with the trigger-plate having front and rear slots, of a trigger pivoted in the rear slot and provided with a forwardly-disposed beveled arm, a front trigger mounted in the front slot, and pivoted therein, said front trigger being provided with an upper rounded head over which said beveled arm is adapted to ride and provided with notches at its front and rear sides, the latter notch being adapted to engage the front end of the arm of the rear trigger, a metal plate having a reduced spring tongue terminating in the front notch of the front trigger for normally elevating the same out of engagement with the rear notch of the front trigger, and a spring-plate slotted to receive the head of the front trigger and said tongue and terminating at its rear end under the arm of the rear trigger, a screw passed through the spring plates and trigger-plate, substantially as specified.

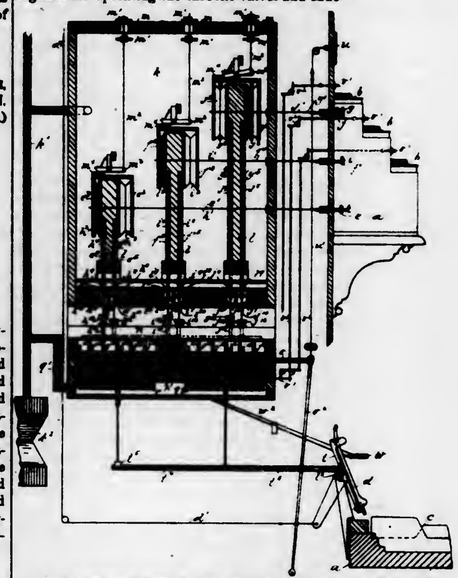
488,558. BED-SLAT HOLDER. MARCELLUS D. HARRELSON, Raleigh, Miss. Filed July 30, 1892. Serial No. 441,720. (No model.)

Claim.—In a device of the character set forth, the combination of a slat having a vertical slot in the end thereof and opening outward therefrom, a catch secured to the under side of said slat consisting of a plate with an upper horizontal face and a lower beveled face running through an enlargement at the outer end of the same through which extends a deep groove parallel to the outer end of such catch and whose upper wall is rounded to provide an outer flange having a lower straight horizontal edge, said catch being also provided with a central vertical slot to align with the slot in the end of the slat to form extended straight side walls and a continuous vertical slot in the end of the slat, and a keeper adapted to be secured to the side rail of the bed-stead consisting of a body plate having a straight vertical outer face and an inner beveled face extending upward at an incline to an upper enlarged or thickened end where a rounded bead is formed having a straight wall on the inner side thereof and at the outer termination of the said bead a short horizontal shoulder, the said bead being bisected by a vertical arm of the same thickness as the upper enlarged end of the keeper, said keeper being engaged by the catch and forming a close joint therewith, substantially as described.

488,559. ORGAN. CHARLES S. HASKELL and WILLIAM E. HASKELL, Philadelphia, Pa. Filed Aug. 16, 1892. Serial No. 443,405. (No model.)

Claim.—1. An organ provided with draw-stops, a swell pedal, pneumatic draw-stop actuating mechanism and a slide connected with the swell pedal and adapted to control said pneumatic mechanism, the construction being such that the opening and closing of the swell causes the slide through the instrumentality of the pneumatic mechanism to shift the draw-stops out and in one after another thereby enhancing and perfecting the tone, quality and power of the swell.

2. An organ provided with draw-stops, pneumatic mechanism adapted to be brought into action for pushing each of said draw-stops out and in, throttle-valves for the pneumatic mechanism, a slide for controlling the pneumatic mechanism to permit of the simultaneous and successive shifting of the draw-stops, and means accessible to the organist for operating the throttle-valves and slide



3. An organ provided with draw-stops, pneumatic mechanism adapted to be brought into action for pushing each of said draw-stops out and in, throttle-valves for said pneumatic mechanism, a slide for controlling the pneumatic mechanism, draw-plates for confining the action of the slide to the pneumatic mechanism appertaining to certain sets or divisions of draw-stops, and means accessible to the organist for controlling the slide, draw-plates and throttle-valves.

4. An organ provided with draw-stops, pneumatic mechanism for shifting each of said draw-stops out and in, a slide adapted to control said mechanism and combination valves respectively adapted to simultaneously effect the pushing out of draw-stops in predetermined combinations or groups and the pushing in of the remaining draw-stops, and means accessible to the organist for operating said valves.

5. An organ provided with draw-stops, an air pressure chamber, a pair of bellows respectively connected with each of the draw-stops, air-conduits leading from the interior of each bellows and adapted to normally communicate with the interior of the air pressure chamber to maintain said bellows in equilibrium and permit of the pushing in and out of stops by hand, valves for permitting said conduits to communicate with the atmosphere to pneumatically effect the movement of the draw-stops, and means accessible to the organist for actuating said valves, substantially as and for the purposes set forth.

6. An organ provided with draw-stops, pneumatic mechanism for pushing each of said draw-stops out and in, two sets of air channels or passages whereof one set effects the pushing in and the other the pushing out of stops throttle valves for admitting a supply of air to the respective sets of channels, a slide for opening and closing all the air channels of each set and for simultaneously opening one and closing the other of the corresponding channels that appertain to the same draw-stop, and means accessible to the organist for operating the throttle-valves and slide, substantially as and for the purposes set forth.

7. An organ provided with draw-stops, pneumatic mechanism for pushing each of said draw-stops out and in, two sets of air channels, whereof one set operate to effect the pushing out and the other set to effect the pushing in of draw-stops, throttle valves for admitting a supply of air into the respective sets of channels, a slide for opening and closing all the air channels of each set and for simultaneously opening one and closing the other of the corresponding channels that

appertain to the same draw-stop, draw-plates for opening and closing all the channels appertaining to certain groups of stops, and means accessible to the organist for operating the throttle valves, slide and draw-plates, substantially as and for the purposes set forth.

8. An organ provided with draw-stops, pneumatic mechanism for pushing each of said draw-stops in and out, two sets of air channels and their accessories, whereof one set operate to effect the pushing out and the other set the pushing in of draw-stops, sets of ancillary openings for admitting air to said channels to simultaneously effect the pushing out of certain stops in combinations or groups and the pushing in of the remaining stops, combination valves for each of said sets of openings, and means accessible to the organist for operating said valves, substantially as and for the purposes set forth.

9. In an organ, a series of draw-stops, pneumatic mechanism for pushing each of the draw-stops in and out, two sets of valves and their complemental bellows, whereof one set effects the pushing out and the other the pushing in of draw stops, two sets of air channels, and two sets of grooves whereof one set communicates with one set of channels and bellows and whereof the other set communicates with the other set of channels and bellows, substantially as and for the purposes set forth.

10. An organ provided with pneumatic draw-stop actuating mechanism comprising draw-stops, an air pressure chamber, pairs of bellows respectively connected with each of the draw-stop rods, air-conduits leading from each of the bellows and provided respectively with ports adapted for communication with the atmosphere and with the air pressure chamber, valves for controlling said ports, valve-bellows for operating said valves, an auxiliary compressed air chamber, two sets of air channels from the auxiliary chamber to the valve-bellows, a throttle-valve for each set of channels, a slide for opening and closing said channels, perforated draw-plates for closing the channels appertaining to certain groups of draw-stops, and pedal devices for actuating the throttle-valves and slide, substantially as and for the purposes set forth.

11. In an organ, draw-stops, a series of pairs of bellows provided with valves and adapted to operate the draw-stops, an auxiliary compressed air chamber, two sets of air channels for supplying air to effect the reversal of the valves of said bellows, a throttle-valve appertaining to each set of air channels, and pedal attachments accessible to the organist for operating said throttle-valves, substantially as and for the purposes set forth.

12. In an organ, draw-stops, a series of pairs of bellows for operating the draw-stops, an air pressure chamber inclosing said bellows, conduits leading to each of the bellows and respectively adapted for communication with the atmosphere and with the air pressure chamber, valves and their complemental valve-bellows for said conduits, an auxiliary compressed air chamber, two sets of channels for actuating the valve-bellows, a throttle-valve appertaining to each set of channels and pedal attachments accessible to the organist for operating said throttle-valves, substantially as and for the purposes set forth.

13. In an organ, draw-stops, a series of pairs of draw-stop bellows for operating the draw-stops, two sets of valves and their complemental valve bellows for reversing the position of the draw-stop bellows, a throttle-valve appertaining to each set of air channels, two sets of air channels communicating with the auxiliary compressed air chamber and with the respective sets of valve bellows, a throttle-valve appertaining to each set of air channels and pedal devices accessible to the organist for operating said valves, substantially as and for the purposes set forth.

14. In an organ, a series of pairs of bellows tending to counter balance each other and adapted to operate the draw-stops, an auxiliary compressed air chamber, two sets of air channels for supplying air to effect the reversal of said bellows, a throttle-valve appertaining to each set of channels and means accessible to the organist for operating said throttle-valves, substantially as and for the purposes set forth.

15. In an organ, draw-stops, a series of pairs of bellows adapted to operate the draw-stops, an auxiliary compressed air-chamber, two sets of air channels for reversing the position of said bellows, a throttle-valve appertaining to each set of channels and a slide for opening and closing the channels of either set simultaneously and successively, substantially as and for the purposes set forth.

16. In an organ, draw-stops, a series of pairs of bellows for operating the draw-stops, an air pressure chamber inclosing said bellows, conduits leading to each of the bellows and respectively adapted for communication with the atmosphere and with the air pressure chamber, valves and their complemental valve bellows for each of said conduits, an auxiliary compressed air chamber, two sets of air channels for actuating the valve-bellows, a throttle-valve appertaining to each set of air channels, and a slide for opening and closing the channels of either set simultaneously and successively, substantially as and for the purposes set forth.

17. In an organ, draw-stops, a series of pairs of draw-stop bellows for operating the draw-stops, two sets of valves and their complemental valve bellows for reversing the position of the draw-stop bellows, an auxiliary compressed air chamber, two sets of air channels communicating with the auxiliary compressed air chamber and with the respective sets of valve-bellows, a throttle-valve appertaining to each set of air channels, and a slide for opening and closing the channels of either set successively and simultaneously, substantially as and for the purposes set forth.

18. In an organ, draw-stops, a series of pairs of bellows provided with valves and adapted to operate the draw-stops, an auxiliary compressed air-chamber, two sets of air channels for supplying air to effect the reversal of the valves of said bellows, a throttle-valve appertaining to each set of channels, a slide for opening and closing said channels, and a pedal accessible to the organist for operating said throttle-valves and slide, substantially as and for the purposes set forth.

19. In an organ, draw-stops, a series of pairs of draw-stop bellows adapted to operate the draw-stops, an auxiliary compressed air chamber, two sets of air channels for supplying air to effect the reversal of the draw-stop bellows, a throttle-valve appertaining to each set of air channels, a slide for opening and closing said air channels, perforated draw-plates for closing certain of the air channels, and means accessible to the organist for actuating said slide, draw-plates and throttle-valves, substantially as and for the purposes set forth.

20. In an organ, draw-stops, a series of pairs of bellows for operating the draw-stops, an air pressure chamber inclosing said bellows, conduits leading to each of the bellows and adapted for communication with the atmosphere and with the air pressure chamber, valves and their complemental valve bellows for said conduits, an auxiliary compressed air chamber two series of air channels for actuating the valve bellows, a throttle-valve appertaining to each set of air channels, a slide for opening and closing said air channels, draw-plates for closing certain of the air channels, and means accessible to the organist for operating said slide, throttle-valves and draw-plates, substantially as and for the purposes set forth.

21. In an organ, draw-stops, a series of pairs of draw-stop bellows connected with the draw-stop rods, two sets of valves and their complemental valve bellows for reversing the position of the draw-stop bellows, an auxiliary compressed air chamber, two sets of air channels communicating with the auxiliary compressed air chamber and with the respective sets of valve-bellows, a throttle-valve appertaining to each set of air channels, a slide for opening and closing said air channels, draw-plates for closing certain of said air channels and means accessible to the organist for actuating said slide, throttle-valves and draw-plates, substantially as and for the purposes set forth.

22. In an organ, a series of draw-stops, pneumatic apparatus for actuating said draw-stops, two sets of air channels for controlling the admission and exhaust valves of said pneumatic apparatus, throttle-valves controlling the respective sets of air channels and means accessible to the organist for actuating said throttle-valves, substantially as and for the purposes set forth.

23. In an organ, draw-stops, pneumatic draw-stop operating apparatus and a pedal and its accessories susceptible of four movements, one for causing draw-stops to be pushed out, a second causing draw-stops to be pushed in, a third for causing the draw-stops to be pushed out successively and collectively and a fourth for causing the draw-stops to be pushed in successively and collectively, substantially as and for the purposes set forth.

24. In an organ, draw-stops, pneumatic draw-stop operating apparatus and its complemental throttle-valves and slide, a pivotal pedal, connections between the pedal and slide, lugs movable transversely of the pedal, and connections between the throttle-valve and lugs, substantially as and for the purposes set forth.

25. In an organ, draw-stops, pneumatic draw-stop operating apparatus and its complemental slide, a visual indicator or telltale, a pedal for operating said slide, and connections between said slide and indicator, substantially as and for the purposes set forth.

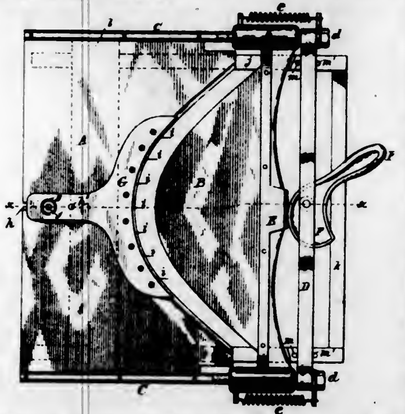
26. In an organ, draw-stops, pneumatic draw-stop operating apparatus and its complemental slide, a visual indicator or telltale and link work interposed between the slide and indicator, substantially as and for the purposes set forth.

27. In an organ, draw-stops, pneumatic draw-stop actuating apparatus, perforated draw-plates for throwing the pneumatic apparatus appertaining to certain groups or divisions of draw-stops out of action, buttons accessible from the key-board, and link-work connected with the buttons and draw-plates, substantially as and for the purposes set forth.

28. In an organ, draw-stops, two sets of draw-stop bellows, whereof one set is adapted to push out draw-stops and the other set is adapted to push in draw-stops, two sets of air channels appertaining respectively to the sets of draw-stop bellows, an ancillary air chamber, openings from said chamber into certain of the channels that operate to push out stops and to the channels that operate to push in the remaining stops, valves for controlling said openings, and means accessible to the organist for operating said valves, substantially as and for the purposes set forth.

29. An organ provided with a series of draw-stops, a swell pedal provided with pivotal lugs, pneumatic mechanism for pushing each of said draw-stops out and in, two sets of air channels whereof one set operate to effect the pushing out and the other set to effect the pushing in of the draw-stops, throttle-valves, a slide, connections between the throttle valves and pivotal lugs, connections between the swell pedal and slide, a visual indicator, connections between the indicator and slide, draw-plates, push buttons connections between the push buttons and draw-plates, and combination pedals and their accessories, substantially as and for the purposes set forth.

488,560. APPARATUS FOR CREASING AND SHAPING COAT-COLLARS. JACOB H. HAWES, Boston, Mass. Filed Sept. 23, 1892. Serial No. 446,667. (No model.)



Claim.—1. In an apparatus for creasing and shaping coat collars, the combination of the plate A having its inner edge recessed, or curved longitudinally and beveled, as set forth; the guide rods C C firmly secured to opposite ends of said plate A; the bar D connecting said rods; the cross-head E mounted upon and movable endwise of said rods; the plate B arranged in the same plane, and made of the same thickness, as the plate A, and having its inner edge curved and grooved longitudinally to fit the curved and beveled edge of the said plate A, and secured to and movable with said cross-head E; and means having provision for moving said plate B toward and from the plate A to clamp a collar between the contiguous edges of said plates.

2. In an apparatus for creasing and shaping coat collars, the combination of two clamping plates having their contact edges curved and beveled and grooved as set forth means having provision for moving one of said plates toward and from the other to clamp the collar; and a gage provided with a series of needle points as a means of registering the collar in position before clamping the same.

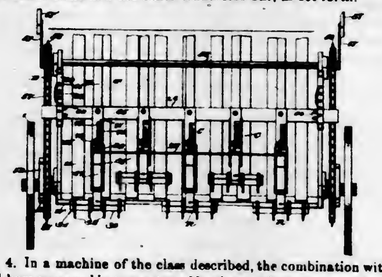
3. In an apparatus for creasing and shaping coat collars, the combination of two clamping plates having curved, grooved and beveled contact edges as set forth; a gage provided with a series of needle points to receive and register the collar in position for being clamped; means having provision for moving one of said plates toward and from the other to clamp the collar; and the supporting frame H provided with two pairs of pins for holding said clamping device in position thereon.

488,561. HAY-LOADER. CHARLES A. HENRY, Monticello, Iowa. Filed Dec. 31, 1891. Serial No. 416,060. (No model.)

Claim.—1. In a hay loader, the combination with an inclined trough, and means for moving the hay up the same, the upper end of the bottom of the trough stopping short of its sides, of guides on the sides of the trough, bars adjustable in said guides and having bars at their upper ends, transverse sills connecting the bars, longitudinal strips on said sills forming an extension frame, and hooks depending from the said bars adapted to engage pins projecting inward from the said guides for holding the frame in adjusted position, as set forth.

2. In a hay loader, the combination with an inclined trough whose sides are continued upward beyond its bottom, and means for moving the hay up said trough; of guides at the upper ends of the sides of the trough, inwardly-projecting pins on the sides of said guides, bars moving in the guides and having hooks detachably engaging said pins, and connections between said bars forming an extension frame, as set forth.

3. In a machine of the class described, the combination with the feed-bars arranged in two sets and having teeth, a transverse bar connected with each set, and means for reciprocating one of the transverse bars; of endless belts moving over idle-wheels and having their upper sides connected to said transverse bar, and connections between their lower sides and the other transverse bar, as set forth.



4. In a machine of the class described, the combination with the feed-bars arranged in two sets and having teeth, a transverse bar connected with each set, and means for reciprocating one of the transverse bars; of endless belts moving over idle-wheels and having one side connected to said transverse bar, rods leading from the ends of the other transverse bar and connected to the other side of said belts, and pins in said rods moving over tracks, as set forth.

5. In a hay rake, the combination with a trough having uprights at its sides near its rear end, perforated guide-brackets thereon, an adjusting-bar passing across the machine and standing loosely in said brackets, and adjusting pins in certain of the perforations; of feed-bars within the trough and having rakes at their lower ends, means for reciprocating the feed-bars, fingers on the bars having pins, and triangular switches and angular tracks on said adjusting bar engaging said pins for causing the vertical movements of the rakes, as set forth.

6. In a hay rake, the combination with the inclined trough, a longitudinally reciprocating toothed feed-bar in the trough, a rake at the rear end of the feed-bar, and an upwardly-projecting finger on said bar having a laterally-projecting pin; of an angular metallic track, a triangular frame pivotally connected with the track around which frame said pin moves, and a spring throwing the frame normally forward, as and for the purpose set forth.

7. The combination, in a hay rake, with an inclined trough, a longitudinally-reciprocating toothed feed-bar in the trough, a rake at the rear end of the feed-bar, and an upwardly-projecting finger on said bar having a laterally-projecting pin; of a transverse adjustable bar sliding in upright guide-brackets, an angular track carried by said transverse bar, a frame pivotally connected with the track around which frame said pin moves, and a spring throwing the frame normally forward, as and for the purpose set forth.

8. In a hay rake, the combination with an inclined trough, a longitudinally-reciprocating toothed feed-bar in the trough, and a U-shaped finger its ends rising from the bar and one of them having an inwardly projecting pin; of an angular track having an ear adjacent its angle, the arms of said finger moving astride this track, a triangular frame pivoted to the ear and around which said pins move, the frame having a straight upper side with lips at its front and rear ends, and an expansible spring between a cup on the ear and the upper side of the frame for throwing the front lip normally into contact with the track, as and for the purpose set forth.

9. In a hay rake, the combination with an inclined trough, a longitudinally-reciprocating toothed feed-bar in the trough, a block thereon near its rear end, and an upwardly-projecting finger having a laterally-projecting pin; of an angular track having an approximately horizontal rear portion, a triangular frame pivotally connected near one of its angles with the track and having a straight upper side with lips at its front and rear ends, said pin moving around the frame, and a spring throwing the frame normally forward at which time said block prevents the pin passing over the rear lip, as set forth.

10. In a hay leader, the combination with an inclined trough mounted on wheels, and an extension frame adjustably connected with the upper end of said trough; of feed-bars in two sets located within the trough and having teeth in their bodies and rakes at their lower ends, means for causing the upper ends of the bars to reciprocate simultaneously and oppositely, uprights projecting from said bars and having projections, and movable triangular switches and angular tracks substantially as described adapted to be engaged by the projections of said uprights to engage the rakes with the hay, the switches and tracks being supported on a transverse adjusting-bar whose ends move in guides supported by the framework, as and for the purpose set forth.

11. In a hay-loader, the combination with an inclined trough mounted on wheels, and an extension frame adjustably connected with

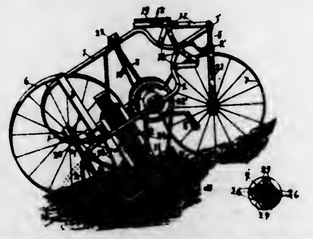
the upper end of the trough; of feed-bars in two sets located within the trough and having teeth in their bodies and rakes at their lower ends, means for causing the upper ends of the bars to reciprocate simultaneously and oppositely, uprights extending from said bars and having projections and movable triangular switches and angular tracks substantially as described adapted to be engaged by said uprights of the bars for causing the lower ends of the latter to move so as to engage the rakes with the hay, as and for the purpose hereinbefore set forth.

12. In a hay loader, the combination with an inclined trough mounted on wheels, of feed-bars in two sets located within the trough and having teeth in their bodies and rakes at their lower ends, means for causing the upper ends of the bars to reciprocate simultaneously and oppositely, and movable switches of triangular form and angular tracks substantially as described for causing the lower ends of said bars to move so as to engage the rakes with the hay, as and for the purpose set forth.

488,562. CARPET-SWEEPER. MARTHA B. HOLDEN, Chicago, Ill. Filed Aug. 16, 1892. Serial No. 443,164. (No model.)

Claim.—A device for removing dust and lint from carpets, floors, and other places, consisting of a roller having holes extending longitudinally along its periphery, in combination with a covering of absorbent material provided upon its respective edges with hooks and holes and connected together and to the roller, substantially as and for the purpose set forth.

488,563. MACHINE FOR DISTRIBUTING AND REELING FENCE-WIRE. JOHN R. HOVENDICK, near Blair, Nebr. Filed July 21, 1892. Serial No. 440,899. (No model.)



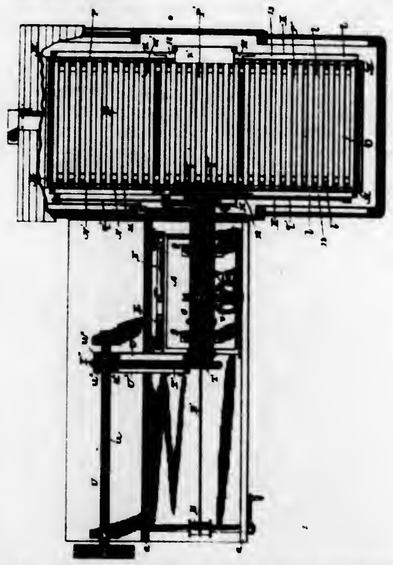
Claim.—1. In a machine for distributing and reeling wire the combination of a frame-work mounted on a pair of forward wheels, a detachable shaft journaled in the frame-work adapted to carry a reel, a rudder-wheel at the rear of the frame, connected with a tiller, a rack on the frame-work, and a spring catch on the tiller set to engage the rack substantially as shown and described.

2. In a machine for distributing and reeling wire the combination of a frame having one end mounted on two wheels the other end mounted on a rudder-wheel controlled by a tiller having a latch set to engage a rack on the frame; a detachable shaft, carrying a reel, journaled in the frame, and a sprocket-wheel mounted on and rotating with the shaft and actuated by a drive-chain running over a sprocket-wheel on a crank-shaft substantially as shown and described.

3. In a machine for distributing and reeling wire the combination of the frame-work consisting of the side-bars 1 and 2 bent as shown; the cross-bar 3; the axle 4; the wheels 6, 6; the rudder wheel 7; shaft 5 with lower bifurcate end 21; the tiller 17 having the spring latch 18 set to engage the sector shaped perforate rack 16; the square shaft 9 having the detachable loop 27; the checks 25 and 25'; the spool 12; the sprocket-wheel 11 having the integral journal 11'; the drive chain 24, the sprocket wheel 10, and crank shaft 8 having the crank 8', all substantially as shown and described.

4. In a wire reeling machine the combination of a spool 12 with a pair of axially perforated checks 25 and 25' shaped like a frustum of a pyramid, having all their faces concave, and seated at their bases, on integral disks, having chamfers adjacent to each face, substantially as shown and described.

488,564. COAL LOADER AND DISTRIBUTER FOR BOX-CARS. JOSEPH A. ISBALLS, Evanston, Wyo. Filed July 6, 1892. Serial No. 439,149. (No model.)



Claim.—1. In a machine of the class described, the combination with a tilting shaft carried by a truck, of a platform supported upon said shaft, substantially as specified.

2. In a machine of the class described, the combination with a tilting shaft carried by a truck, of a platform supported upon said shaft, and comprising pivotally connected foldable sections, substantially as specified.

3. In a machine of the class described, the combination with a tilting shaft carried by a truck, of a platform mounted to slide in a frame upon said shaft, and means whereby the same may be moved longitudinally, substantially as specified.

4. In a machine of the class described, the combination with a tilting shaft carried by a truck, of a platform supported upon said shaft and composed of pivotally-connected, foldable sections, a continuous conveyer or apron carried by rolls at the extremities of the terminal sections and means to operate said conveyer or apron, substantially as specified.

5. In a machine of the class described, the combination with a tilting or rock-shaft supported by a truck, and carrying a guide frame, of a sectional platform mounted to slide in said guide frame, and means to move the platform, substantially as specified.

6. The combination with a tilting shaft carried by a truck, of a platform supported upon said shaft, a stationary plate attached to the platform, an endless conveyer or apron, carried by the platform to traverse said plate, and means to operate the conveyer or apron, substantially as specified.

7. The combination with a supporting shaft, of a platform comprising foldable sections and provided with twin side-bars formed in jointed sections, rolls carried by the terminal sections of the platform, the endless conveyer carried by said rolls, and means to operate the conveyer, substantially as specified.

8. The combination with a truck carrying an elevating mechanism, of a tilting shaft mounted upon said truck, and a folding platform supported by the tilting-shaft and provided with a conveyer or apron, substantially as specified.

9. The combination with a hollow tilting-shaft carrying a guide-frame, and the platform mounted in said guide-frame, of the endless conveyer or apron carried by the platform, and the conveyer shaft mounted in or extending through the tilting-shaft and provided with a gear to operate said conveyer or apron, substantially as specified.

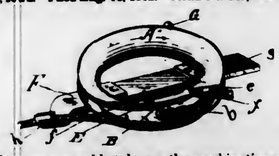
10. The combination with a tilting-shaft carrying a guide-frame, and a worm gear to operate said shaft, of a platform mounted in said guide-frame and provided with an endless conveyer, and means for operating said conveyer and platform, substantially as specified.

11. In combination with a driving-shaft carrying a sprocket or chain gear, the hollow shaft carrying a guide-frame, the platform mounted in the guide-frame, the endless conveyer carried by the platform, and the conveyer shaft mounted in the hollow-shaft and provided at one end with a gear to engage the conveyer and at the other end with a gear which is connected to the said sprocket or chain gear, the hollow shaft being mounted upon a truck, all substantially as specified.

12. The combination with a tilting shaft, carrying a guide-frame, of a platform mounted to slide in the guide-frame, an endless conveyer mounted upon the platform, and a gear mounted upon the frame to engage a rack upon the platform, substantially as specified.

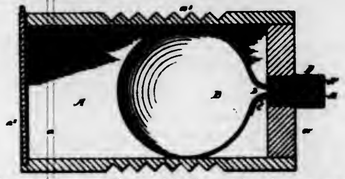
13. In combination with a supporting shaft, a tilting-platform, having an intermediate and terminal sections pivotally connected, and means to fold the terminal sections perpendicular to the intermediate section, substantially as specified.

488,565. ROPE TAKE-UP. ALONS KLEVEN and CARL L. KLEVEN, Sigourney, Iowa. Filed Aug. 18, 1892. Serial No. 443,450. (No model.)



Claim.—In a rope or cable take-up, the combination of an elliptically shaped frame A provided with a groove *e* extending around said frame to receive the rope or cable, with suitable lugs extending inwardly over the rope or cable, and the surface bearing B said surface bearing being provided with grooves *f f*, an upwardly extending hook E, and shoulder D, all substantially as, and for the purpose described.

488,566. TOY. ELIAS B. KOOPMAN, New York, N. Y. Filed Apr. 8, 1892. Serial No. 428,397. (No model.)



Claim.—1. In a toy, the combination with a box or case, of a hollow ball or bulb, the interior of which communicates with the outside of said box or case and a block or slide for causing said ball or bulb to collapse, substantially as described.

2. In a toy the combination with a box or case of a hollow ball or bulb having an orifice, a tube C, sleeve D and collar *d'* and a block or slide for causing said ball or bulb to collapse, substantially as and for the purpose set forth.

3. In a toy, the combination with a box or case of a hollow ball or bulb having an orifice, a tube C, sleeve D and collar *d'* substantially as and for the purpose set forth.

4. In a toy the combination with a box or case of a hollow ball or bulb having an orifice, a tube adapted to fit snugly over the walls of such orifice and a hollow sleeve set into the side of the box or case and provided with a longitudinal perforation, *d*, adapted to receive, guide and hold such tube substantially as and for the purposes set forth.

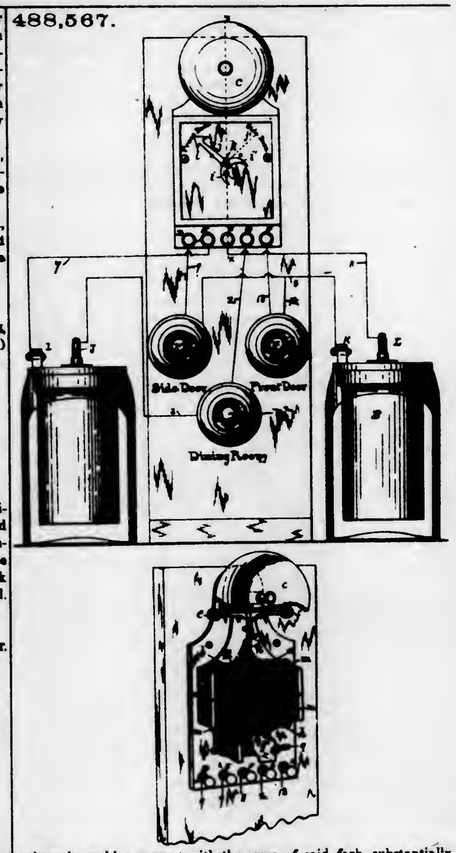
488,567. ELECTRIC ANNUNCIATOR. ADELVIN B. LYMAN, Cleveland, Ohio. Filed Oct. 26, 1891. Serial No. 409,799. (No model.)

Claim.—1. An electric annunciator having a pair of oppositely disposed magnets, a vertical armature free to oscillate between the poles of said magnets and pivoted at its lower end, a pin on said armature, and a pointer pivoted on a support independent of the armature below its center of gravity, and arranged to be actuated by said pin when the armature is oscillated, substantially as described.

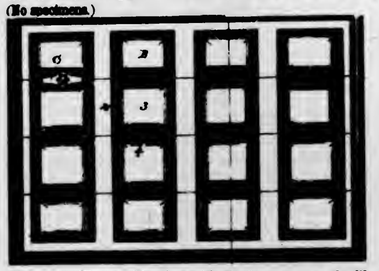
2. In an electric annunciator, the combination with a pair of oppositely disposed magnets, having laterally extended pole pieces, of a vibrating bell hammer and an oscillating armature arranged vertically between said pole pieces, and pivotally supported at their lower ends, a pin on said armature, and a pointer pivoted on a support independent of the armature below its center of gravity and having a forked end, within which said pin plays to actuate the pointer by sudden contact with the arms of said fork, substantially as described.

3. In an electric annunciator, a pair of magnets and push buttons connected in multiple arc, with a vibrating armature common to both magnets and forming a part of each circuit, and an additional battery and push button connected directly with one of said magnets, substantially as described.

488,567.



488,568. LINING FOR JEWELRY-EXHIBITORS. FREDERICK W. MARTINI, Brooklyn, N. Y. Filed Sept. 12, 1890. Serial No. 364,730. (No specimens.)

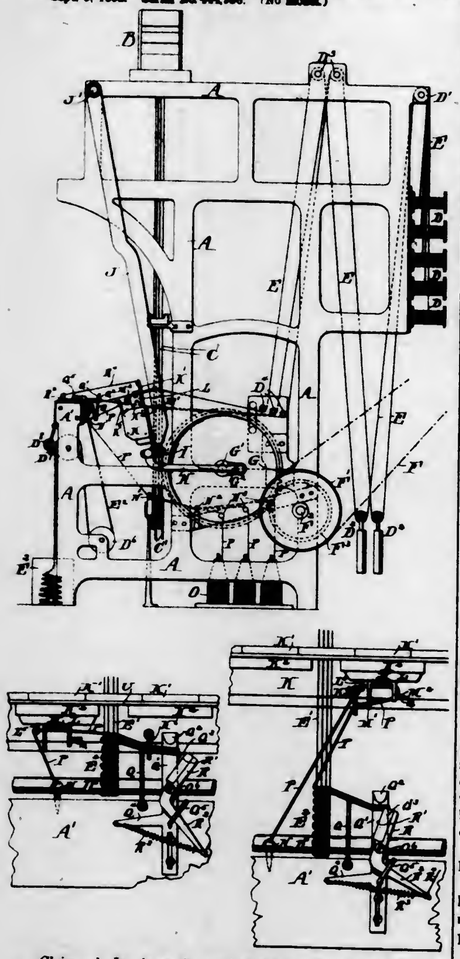


Claim.—1. The combination with the box, tray or the like of a lining composed of a series of shells of elastic pyroxyline material, said shells having on their upper or horizontal sides the raised dome-like portions or elastic cushions 3 requiring no padding for support separated by transverse depressed grooves 2, the lower or vertical sides of said shell having vertical creases or corrugations 4 enabling them to expand in order to receive and hold any article inserted between said shells, substantially as described.

2. The combination with the box, tray, or the like, of a lining composed of a suitable waterproof material formed into a series of shells, said shells having on their upper or horizontal sides the raised elastic cushions 3, requiring no padding for support, separated by transverse depressed grooves 2, and their lower or vertical sides enabling them to expand to receive and hold any article inserted between said shells, substantially as described.

488,569. LOOM.

JOSEPH W. MAURER and ALEXANDER C. MAURER, Philadelphia, Pa., assignors to F. W. Maurer & Sons, same place. Filed Sept. 3, 1892. Serial No. 444,988. (No model.)



Claim.—1. In a loom the combination of a lay, shuttle guides K′ supported on said lay on each side of the warps, a shuttle working between two of such guides, and means for actuating said shuttle, projecting-arms M′ M³ extending out from the face of the shuttle and having notches M⁵ M⁶ in their edges, a hook Q′ Q³ secured to the frame of the loom to one side of the warps, said hook being so situated that its end Q³ will come between the shuttle arms M′ M³ in one forward movement of the lay and engage the weft thread lying in the notches of said arms.

2. In a loom the combination of a lay, shuttle guides K′ supported on said lay on each side of the warps, a shuttle working between two of such guides, and means for actuating said shuttle, projecting arms M′ M³ extending out from the face of the shuttle and having notches M⁵ M⁶ in their edges; a hook Q′ Q³ secured to the frame of the loom to one side of the warps, said hook being so situated that its end Q³ will come between the shuttle arms M′ M³ in one forward movement of the lay and engage the weft thread lying in the notches of said arms; and an intermittently-operating cutter-blade R arranged to co-act with the back of hook Q′ to cut the thread thrown over said hook.

4. In a loom the combination of a lay, shuttle guides K′ supported on said lay on each side of the warps, a shuttle working between two of such guides, and means for actuating said shuttle, projecting arms M′ M³ extending out from the face of the shuttle and having notches M⁵ M⁶ in their edges; a hook Q′ Q³ secured to the frame of the loom to one side of the warps said hook being so situated that its end Q³ will come between the shuttle arms M′ M³ in one forward movement of the lay and engage the weft thread lying in the notches of said arms; a finger K⁶ secured to the lay and lying between the warps and the hook; and a finger Q secured to the frame between the warps and the hook, all substantially as and for the purpose specified.

5. In a loom the combination of the lay, a series of shuttle guides K′ supported on said lay and arranged at a distance apart with a series of warps passing between them; a series of shuttles supported in guides K′ and means for actuating the shuttles simultaneously in the same direction arms M′ M³ extending out from each shuttle and having notches M⁵ M⁶ in their edges to engage the weft thread when the shuttle moves forward; and a series of hooks Q′ Q³, one arranged in front of each guide K′ and so as to come between arms M′ M³ when the lay moves forward with the shuttle in said guide.

6. In a loom the combination of the lay, a series of shuttle guides K′ supported on said lay and arranged at a distance apart with a series of separate warps passing between them; a series of shuttles supported in guides K′ and means for actuating the shuttles simultaneously in the same direction arms M′ M³ extending out from each shuttle and having notches M⁵ M⁶ in their edges to engage the weft thread when the shuttle moves forward; a series of hooks Q′ Q³ one arranged in front of each guide K′ and so as to come between arms M′ M³ when the lay moves forward with the shuttle in said guide; and a series of curved fingers K⁶ secured to the lay so as to come between each set of warps and the hook and push the weft thread under the hook shank pertaining to it as the lay moves forward.

7. In a loom the combination of the lay, a series of shuttle guides K′ supported on said lay and arranged at a distance apart with a series of separate warps passing between them; a series of shuttles supported in guides K′ and means for actuating the shuttles simultaneously in the same direction; arms M′ M³ extending out from each shuttle and having notches M⁵ M⁶ in their edges to engage the weft thread when the shuttle moves forward; a series of hooks Q′ Q³, one arranged in front of each guide K′ and so as to come between arms M′ M³ when the lay moves forward with the shuttle in said guide; a series of curved fingers K⁶ secured to the lay so as to come between each set of warps and the hook pertaining to it and push the weft thread under the hook shank as the lay moves forward; and a cutter-blade R pivoted on the hook shank Q′ and actuated by the movement of the lay as described.

8. The shuttle L having arms M′ M³ each provided with thread holes M³ M⁴ and with thread notches M⁵ M⁶ at their ends.

9. The shuttles L having arms M′ M³ each provided with thread holes M³ M⁴ and with thread notches M⁵ M⁶ at their ends in combination with guide fingers m m′ secured on arm M³ as and for the purpose specified.

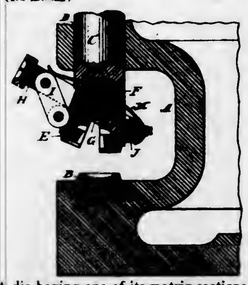
10. In a loom the combination of a lay, a series of shuttle guides K′ secured thereto; a series of shuttles moving in said guides, and means for actuating said shuttles as described; the arms M′ M³ extending out from each shuttle and having holes M³ M⁴ and notches M³ M⁶ as described; a series of warps extending between the shuttle guides; a series of hooks Q′ Q³ secured to the frame and lying in front of the shuttle guides; a series of bobbins O, one or more for each shuttle; and thread guides leading from said bobbins to the back of each set of warps and thence to the arms M′ M³ of the shuttle.

11. In a loom the combination of a lay, a series of shuttle guides K′ secured thereto; a series of shuttles moving in said guides; and means for actuating said shuttles as described; arms M′ M³ extending out from each shuttle and having holes M³ M⁴ and notches M⁵ M⁶ as described; a series of warps extending between the shuttle guides; a series of hooks Q′ Q³ secured to the frame and lying in front of the shuttle guides; a series of bobbins O, one or more for each shuttle; thread guides arranged to lead the thread from said bobbins to the back of each set of warps and thence to the arms M′ M³ of the shuttle; and a series of fingers K⁶ secured to the lay so as to come between the hook and the set of warps pertaining to it and curved so to throw the weft thread to the under side of the hook shank.

12. In a loom the combination of a lay, a series of shuttle guides K′ secured thereto; a series of shuttles moving in said guides, and means for actuating said shuttles as described; the arms M′ M³ extending out from each shuttle and having holes M³ M⁴ and notches M³ M⁶ as described; a series of warps extending between the shuttle guides; a series of hooks Q′ Q³ secured to the frame and lying in front of the shuttle guides; a series of bobbins O, one or more for each shuttle; thread guides arranged to lead the thread from said bobbins to the back of each set of warps and thence to the arms M′ M³ of the shuttle; a series of fingers K⁶ secured to the lay so as to come between the hook and the warps and curved so as to throw the weft thread to the under side of the hook shank; and a cutter blade actuated by the lay and arranged to co-act with the hook shank to sever the threads thrown over said shank.

488,570. DIE FOR FORMING ARTICLES FROM PLASTIC MATERIAL.

HORACE R. MILLER, Newark, N. J. Filed May 11, 1892. Serial No. 432,574. (No model.)

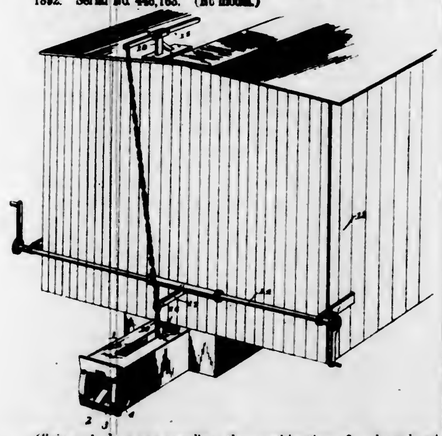


Claim.—1. A die having one of its matrix-sections composed of two portions hinged to each other and provided with a hinged lever and link for opening or closing and locking said portions, substantially as set forth.

2. The die consisting of the section B and movable section C, the latter being composed of the portions E, F, and provided with the lever H and link I, substantially as set forth.

488,571. CAR-COUPLING.

JOEL W. MILLIGAN, Grape Vine, Tex., assignor of one-half to Finly C. Milligan, same place. Filed Sept. 17, 1892. Serial No. 446,163. (No model.)



Claim.—1. In a car coupling, the combination of a draw-head having a longitudinal opening, a draw-hook arranged within the draw-head and having its inner end pivoted thereto, and provided at its outer end with a head having a beveled front edge and being adjustably secured between the sides of the draw-head, substantially as described.

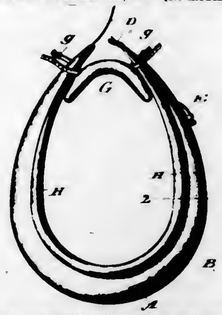
2. In a car coupling, the combination of a draw-head, a draft hook having its front end beveled and having its rear end pivoted between the sides of the draw-head and set-screws arranged at the front of the draw-head at opposite sides thereof and engaging the sides of the hook and adjustably securing the same in the draw-head, substantially as described.

3. In a car coupling, the combination of a draw-head, a draft-hook mounted therein and provided at its front end with a head and having a lug in rear thereof, a transverse pin passing through the draw-head and through the rear end of the draft-hook, and a latch U-shaped in cross-section receiving the body of the hook and provided at its rear end with perforated ears to receive the transverse pin, and having its front end horizontally bifurcated and provided at the top with a cross-piece resting upon the head of the hook, substantially as described.

4. The combination, in a car coupling, of a draw-head having a longitudinal opening and provided in its top with a longitudinal slot, a draft hook mounted in the draw-head, an upward swinging latch hinged at its rear end and having its front end horizontally bifurcated to receive a link, a chain passing through the slot of the draw-head and having its lower end secured to the latch, and means connected with the chain for operating the latch from the top and sides of the car, substantially as described.

488,572. HORSE-COLLAR.

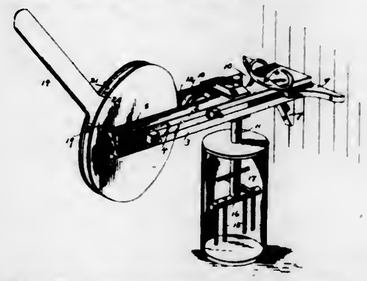
JOHN MILLIDGE, Bailey's Harbor, Wis. Filed July 5, 1892. Serial No. 439,015. (No model.)



Claim.—As an improved article of manufacture, an inflatable horse collar having integral inflatable body and roll thickened or reinforced at the juncture of the two, straps at the ends of the collar, and an independently inflatable neck-pad independent of the collar and curved and provided at each end with straps for securing each end around a portion of the collar proper, substantially as shown and described.

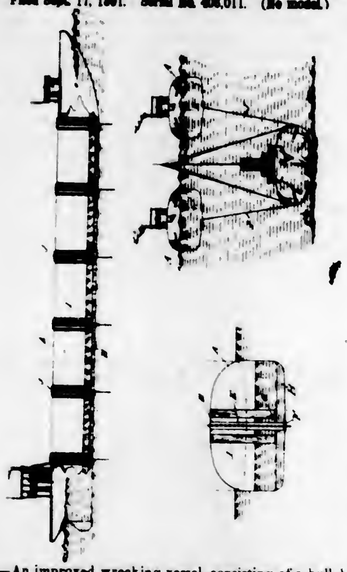
488,578. CHURN.

SAMUEL R. MORGAN, Jasper, Ala. Filed Jan. 28, 1892. Serial No. 419,615. (No model.)



Claim.—In a churn, the combination of a frame composed of upper and lower horizontal bars and longitudinal pieces 4 interposed between the front portions of the bars and spacing the latter, said frame being provided at one of its sides with bearing recesses 10 and being extended rearward beyond the recesses to form a clamp, the lower bar having a slot extending inward from the rear end of the frame, the bracket having a horizontal shelf fitting between the upper and lower bars and provided with a vertical brace arranged in the slot of the lower bar, a clamping bolt passing through the extended portion of the horizontal bars, a dasher shaft journaled in said bearing recesses, a driving wheel mounted at the front of the frame, and a band wound around the dasher shaft and secured to the driving wheel, substantially as described.

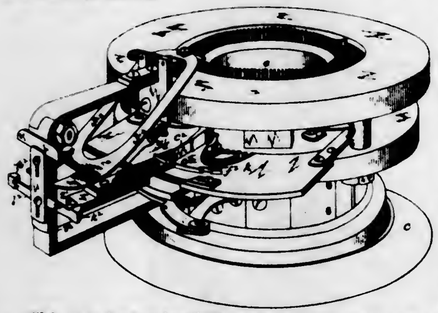
488,574. WRECKING-BOAT. ALEXANDER McDONALL, Duluth, Minn. Filed Sept. 17, 1891. Serial No. 406,011. (No model.)



Claim.—An improved wrecking vessel, consisting of a hull, having a curved top, straight parallel sides,—spoon-shaped bow and skeaged stern, and water-tanks within said hull; vertical pipes E, E, extending through said hull from top to bottom; and chains J. J, passing down through said pipes, substantially as set forth.

488,575. KNITTING-MACHINE. GEORGE F. McKENNEY, Laconia, assignor to Orison Twombly, Lakeport, N. H. Filed Mar 28, 1892. Serial No. 426,723. (No model.)

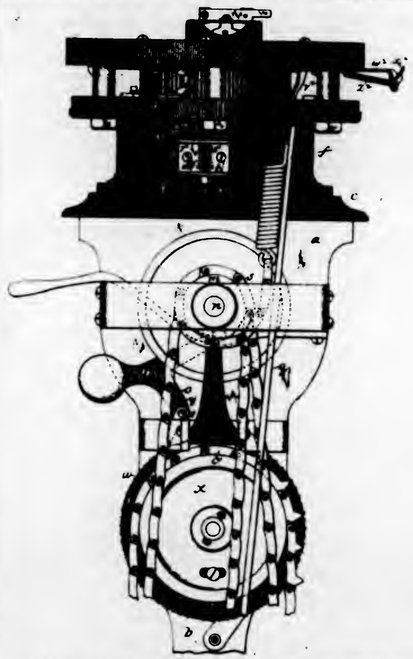
Brief.—The invention consists of improved means for effecting the rotary and reciprocating movements of the cam-cylinder, and of improved means for effecting narrowing and widening and the operations attendant thereon.



Claim.—1. A means for effecting the reciprocating movement of the cam-cylinder comprising in its construction a crank on the driving shaft, a sprocket wheel on the main shaft, a rod pivoted at one end to the said crank, and a chain passed around the said sprocket wheel and connected at its ends to the said rod, as described.

2. A means for changing the movement of the cam-cylinder, comprising in its construction a rotary clutch part loose on the main shaft, a grooved clutch collar splined thereon, a sprocket wheel loose on the said shaft and provided with a clutch part, a crank on the driving shaft, a rod pivoted at one end to the said crank, a chain passed around the said sprocket wheel and engaged at its ends with the said rod, a movable pattern mechanism, an angular lever arranged to at one end engage the groove of the clutch collar and at the other end to be engaged by the pattern mechanism, as described.

3. As a means for effecting the revolution of the cam-cylinder, discontinuing the same and controlling the changes of motion from the main shaft, comprising in its construction a rotary clutch part loose on the main shaft, a grooved clutch collar splined on the said shaft, a sprocket wheel having a ratchet wheel connected therewith, a pattern chain on the said sprocket wheel, an angular lever arranged to at one end engage the groove of the clutch-collar and at the other end to be engaged by the pattern-chain, a pawl to engage and move the said ratchet-wheel, a lever to which the said pawl is pivoted, and an eccentric on the main shaft to operate the said lever, as described.



4. A means to engage the needles and bend the same to throw them out of engagement with the cam path of the cam cylinder, comprising in its construction segmental slides, the slide plate carrying the same, an eccentric pivoted upon the said slide plate, a link pivoted at one end to a stationary part of the machine and at the other end to the said eccentric, an arm or lever connected with the said eccentric and adapted to move the same, and a movable pin on the cam cylinder, adapted to be operated to engage the said lever and move the latter so as to effect a movement of the slide plate and eccentric slides, as described.

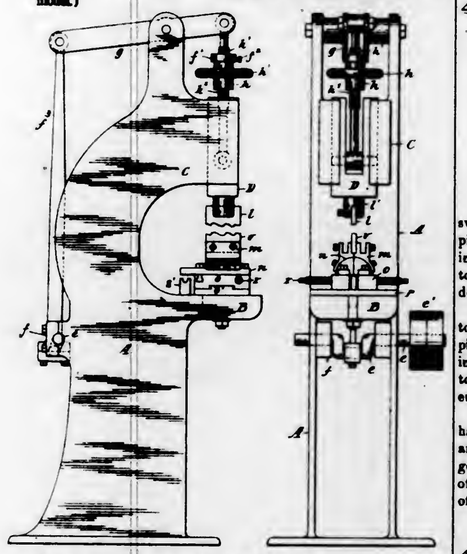
5. A means to engage the needles and bend the same to throw them out of engagement with the cam path of the cam cylinder, comprising in its construction segmental slides, the slide plate carrying the same, an eccentric pivoted upon the said slide plate, a link pivoted at one end to a stationary part of the machine and at the other end to the said eccentric, an arm or lever connected with the said eccentric and adapted to move the same, and a movable pin on the cam cylinder, a movable rod provided at its upper end in the orbit or path of the said pin with a cam shoe, a movable pattern device upon which the said rod rests, and a spring to depress the said pin, as described.

6. A means for engaging the needles to bend the same and release them to throw them out of and allow them to be brought into action, comprising in its construction segmental slides, the slide plate carrying the same, an eccentric pivoted upon the said slide plate, a link pivoted at one end to a stationary part of the machine and at the other end to the said eccentric, two arms or levers connected with the said eccentric and adapted to move the same, and a movable pin on the cam cylinder, adapted to be operated to engage one of the arms of the said eccentric and move the latter, the slide plate and segmental slides into engagement with the needles, and bring the other arm into the orbit of the said movable pin to be engaged by the latter at its next operation to release the needles and allow them to be again brought into operation, as described.

7. A knitting machine, comprising in its construction the peripherically notched segmental slides for engaging the needles to render the same inoperative, an extensible arm or lever x', double acting pawls for engaging the notches of the said slides adapted to be actuated by said lever, an upright on the cam cylinder for engaging the said arm or lever and being stopped thereby, and a catch connected with the said upright to engage the said arm or lever and move it back to actuate the said pawls, as described.

8. A knitting machine comprising in its construction the peripherically notched segmental slides for engaging the needles to render the same inoperative, an extensible arm or lever x', double acting pawls for engaging the notches of the said slides adapted to be actuated by the said lever, a T-shaped arm c^4, provided with the notches g^3 f^3 connected with one of the said pawls to control the position of the same, the spring arm c^5 connected with the other of the said pawls to control its position, and provided with the catch block h^3 for engaging the notches in the said T-shaped arm, the hook-bar s^3 supported upon one of the segmental sides to engage the said spring arm, to move the catch block of the same from one notch in the T-shaped arm to the other, an upright on the cam cylinder for engaging the extensible arm or lever and being stopped thereby, a catch connected with said upright to engage the said extensible arm or lever and move it back to actuate the said pawls, as described.

488,576. MACHINE FOR PROFILING SHEET METAL. GEORGE A. ORR, Newark, N. J. Filed June 11, 1892. Serial No. 436,337. (No model.)



Claim.—1. In a machine for profiling sheet metal, the combination, with the die *l* and mechanism for reciprocating the same, of the bed plate *p*, the carriers *o* fitted to guides thereon, the die-beds *n* secured upon the carriers and formed with segmental cylindrical faces presented outwardly, and the die-holders *m* having concave segmental feet fitted to such faces and provided with the slots n^2 and bolts n', as and for the purpose set forth.

2. In a machine for profiling sheet metal, the combination, with the die *l* and mechanism for reciprocating the same, of the bed plate *p*, the carriers *o* fitted to guides thereon, the right and left hand screw *r* fitted to the carriers and to the bearing *s* upon the bed plate, die holders pivoted at one end to the carriers and at the opposite ends provided with swiveled nuts *t* and the right and left screw t' secured in the bearing t', as and for the purpose set forth.

3. In a machine for profiling sheet metal, the combination, with the die *l* and mechanism for reciprocating the same, of the bed plate *p*, the carriers *o* fitted to guides thereon, the right and left hand screw *r* fitted to the carriers and to the bearing *s* upon the bed plate, die holders pivoted at one end to the carriers and at the opposite ends provided with swiveled nuts *t*, the right and left screw t' fitted to bearing *s* upon the bed plate, and the clamp bolts *u* fitted to the slots u' in the carriers, as and for the purpose set forth.

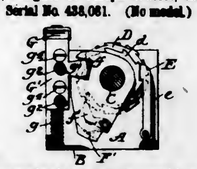
4. In a machine for profiling sheet metal, the combination, with the die *l* and mechanism for reciprocating the same, of the bed plate *p*, the carriers *o* fitted to guides thereon, the die beds *n* with cylindrical faces and pivoted at one end upon the carriers *o* with their opposite ends connected by the right and left hand screw t', and the holders *m* with feet fitted to the cylindrical faces and means for clamping them thereto, as and for the purpose set forth.

5. In a machine for profiling sheet metal, the combination, with the die *l* and mechanism for reciprocating the same, of the bed plate *p*, the carriers *o* fitted to guides thereon, the right and left hand screw *r* fitted to the carriers and to the bearing *s* upon the bed plate, die holders mounted upon such carriers and provided with the shoulders v' for supporting and clamping a die centrally between the die holders, as and for the purpose set forth.

6. In a machine for profiling sheet metal, the combination, with the die *l* and mechanism for reciprocating the same, of the bed plate *p*, the carriers *o* fitted to guides thereon, the right and left hand screw *r* fitted to the carriers and to the bearing *s* upon the bed plate, die holders mounted upon such carriers and provided with the shoulders v', and the segmental sockets v^3 for supporting and clamping a die centrally between the die holders, as and for the purpose set forth.

7. In a machine for profiling sheet metal, the combination, with a crosshead and a lever for reciprocating the same, of a connecting rod formed in two parts with their adjacent ends threaded in opposite directions, the nut *h* applied to such threads and provided with the slits g' forming the tongue g^3, and the band f' with set screw f^3 for adjusting the tongue, substantially as herein set forth.

488,577. CONSECUTIVE-NUMBERING HEAD. FRANK SANDERS, Brooklyn, N. Y., assignor to Joseph Wetter, Memphis, Tenn. Filed June 27, 1892. Serial No. 438,061. (No model.)

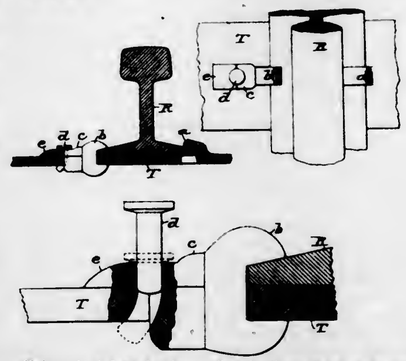


Claim.—1. In a numbering-head, the combination of a pawl-frame swinging on the shaft of the numbering-wheels and composed of cheek-pieces and a cross-bar, said cheek-pieces having notches formed therein, and a plunger parallel with the axis of said shaft and having ears to enter the notches in said cheek-pieces, substantially as shown and described.

2. In a numbering-head, the combination of a pawl-frame mounted to swing on the shaft of the numbering-wheels and composed of cheek-pieces and a cross-bar, said cheek-pieces having notches formed therein, a U-shaped casing having slotted ends, and a plunger having ears to engage the notches in said cheek-pieces and having guide-pins to enter the slots in the casing, substantially as shown and described.

3. In a numbering-head, the combination of a U-shaped casing having slotted ends, a swinging pawl-frame composed of cheek-pieces and a cross-bar, a plunger, and plates secured to the ends of said plunger, said plates having ears to enter the notches in the cheek-pieces of the pawl-frame and having guide-pins to enter the slots in the ends of said casing, substantially as shown and described.

488,578. FASTENING FOR RAILROAD-RAILS. SAMUEL R. SCHARF, Washington, D. C. Filed Apr. 19, 1892. Serial No. 429,796. (No model.)



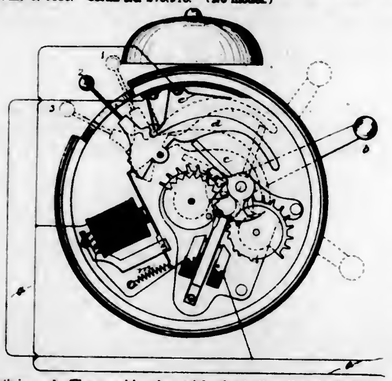
Claim.—1. A fastening for a railroad rail, consisting of the clamp *b*, the block *c* and the bolt or key *d*, said block and the abutting wall of the tie each having recesses for the reception of the bolt or key substantially as shown and described.

2. The metallic tie provided with a permanent clip attached to receive and hold the flange on one side of the rail, with a slot having a curved recess at its end, the clamp *b*, and block *c* with a cor-

responding curved recess in its edge at the opposite side of the rail, and a bolt or key adapted to lock the parts in place substantially as shown and described.

3. A self locking fastening for railroad rails, consisting of a clamp arranged to engage the flange of the rail and the tie, a block or follower to hold the clamp in place, said block and the adjoining wall of the slot in the tie both being provided with a recess curved at their lower portions, and a bolt or key adapted to be forced or driven into the curved hole formed by said recesses, whereby the clamp and the bolt or key are both securely locked in place substantially as set forth.

488,579. **DISTRICT SIGNAL-BOX.** CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed July 3, 1888. Serial No. 278,918. (No model.)



Claim.—1. The combination with the bell striker included in a shunt around an electro magnet, of an answer back signal attachment for district signal boxes, said bell striker being provided with a notch with which the hook is engaged and a spring against which the bell striker is brought to shunt out the electro magnet and bring the hook into position to engage with the notch, substantially as described.

2. The combination with the handle provided with the radially projecting arm, of the pivoted bell striker included in a shunt circuit around the electro magnet provided with a curved surface against which the arm is brought when the handle is pulled down to change the position of the bell striker with respect to the hooked armature lever of said electromagnet, the bell striker being brought into contact first with a connection to short circuit the said electro-magnet and cause the armature to fall away to bring the hook into the path of a notch upon the bell striker to engage and hold the same while the normal current is sent through the electromagnet, said hook being disengaged when the current is increased to release the bell striker, substantially as and for the purpose specified.

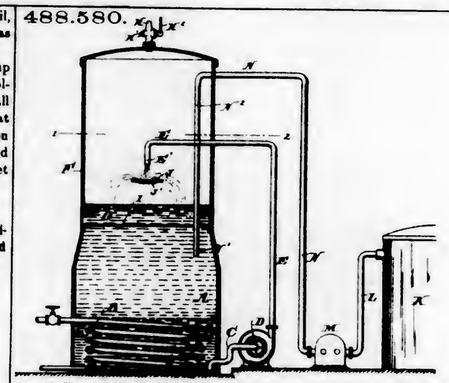
3. The combination with an electro magnet and its armature, of a bell striker which engages with said armature, a shunt around said electro magnets adapted to be closed momentarily by the bell striker, when the box is operated, whereby the armature is released and the engagement of the bell striker with the armature made certain, substantially as described.

488,580. **APPARATUS FOR MAKING ALUMINA.** HENRY W. SHEPARD, Camden, N. J., assignor to the United States Chemical Company, same place, and Philadelphia, Pa. Filed Mar. 3, 1892. Serial No. 423,589. (No model.)

Claim.—1. The combination of a tank A, F, with a conduit C E leading from the lower part of the tank A to the upper part F said conduit having a delivery nozzle E' situated above the level of the fluid in the tank, a pump D arranged to force liquid through conduit C. E., a spraying device as J situated in the tank and acting to spray fluid from nozzle E', a gas receptacle K, a pipe L N leading therefrom to tank F and a regulated gas escape H leading from tank F.

2. The combination of a tank A F with a conduit C E leading from the lower to the upper part thereof said conduit having a delivery nozzle E' situated above the level of the fluid in the tank, a pump D arranged to force liquid through conduit C E, a spraying device as plate J situated in the tank in front of nozzle E', a gas receptacle K, a pipe L N leading therefrom to the tank, a pump or blower M arranged to force gas through conduit L N, and a regulated gas escape H leading from the tank

488,580.



3. The combination of a tank A F with a conduit C E leading from the lower to the upper part thereof, said conduit having a delivery nozzle E' situated above the level of the fluid in the tank, and a spraying device arranged to break up and spray the liquid issuing therefrom, a steam coil B situated in the bottom of the tank, a gas conduit N leading into the tank, and a regulated gas escape leading therefrom, substantially as and for the purpose specified.

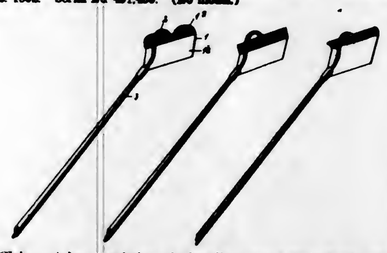
4. The combination of a tank A F with a conduit C E leading from the lower to the upper part thereof said conduit having a delivery nozzle E' situated above the level of the fluid in the tank and a spraying device arranged to break up and spray the liquid issuing therefrom, a perforated diaphragm situated in the tank below the fluid level, a gas conduit N leading into the tank and opening below the diaphragm, and a regulated gas escape H leading from the tank and serving to maintain the gas therein above atmospheric pressure.

488,581. **CLAW-BAR.** MYRON W. SHADES and JOHN P. ELLSTROM, Minneapolis, Minn. Filed Mar. 30, 1892. Serial No. 427,051. (No model.)

Claim.—In a claw-bar, a handle having a claw at the lower end thereof formed by gradually increasing the thickness of the bar at the extreme lower end in cross and transverse sectional directions by convex curves on the sides and rear or heel and concave at the front, the bottom surface of the claw being gradually curved convexly at an angle of inclination from front to rear and broadened at the toe-end, and the curved line of the bottom continued upwardly in an unbroken plane to form a rocking bearing-surface and terminating in a rear heel from the upper portion of which extends a curve toward the handle, the front portion of the claw being elliptically recessed from the front of the toes and rearward to the upper termination of the concave portion of the front of the claw, said elliptically-recessed portion decreasing the metal at the toe-portions of the claw and providing inner oppositely-situated thin engaging edges on opposite sides of the

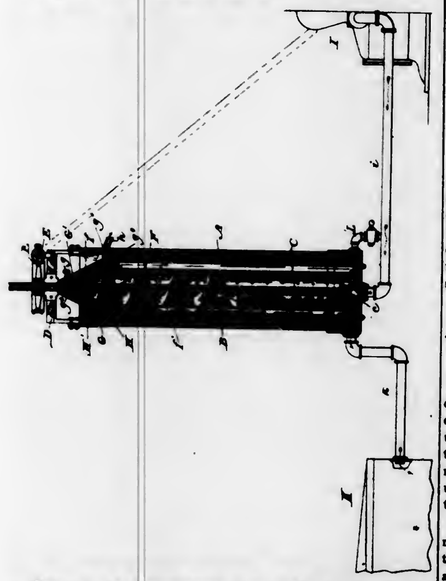
spike-slot that are gradually reduced in thickness toward the front and form abutting outer ends, the said toes being thereby turned inward and merging into the said elliptical recess, the rear portion of the elliptical recess and of the spike-slot communicating with a rearwardly-inclined wall, and the greatest depth of said elliptical recess being slightly in advance of the upper termination of said rearwardly-inclined wall, the lower termination of said rearwardly-inclined wall extending through the bottom of the claw at the point of greatest curvature of the under surface of the latter, said elliptical recess providing for an easy and free movement of the head of the spike being drawn backward toward the rear inclined wall of the spike-slot and the formation of the heel continuous with the under bearing-surface decreasing the amount of power necessary to withdraw the spike, substantially as described.

488,582. **HOE.** MINNIE A. SMITH, Cooperstown, N. Y. Filed May 2, 1892. Serial No. 431,439. (No model.)



Claim.—A hoe consisting of a handle, a goose-neck shank, and a blade consisting of a part 1^a attached to said goose-neck shank and hung at substantially right angles to the longitudinal axis of the handle, and a cutting part 1^b set at an acute angle to the longitudinal axis of the said handle and having a plain straight cutting edge.

488,583. **APPARATUS FOR SEPARATING SOLID MATTER FROM LIQUIDS.** GUSTAV SOBOTKA, New York, and WILLIAM AHRENS, Long Island City, N. Y. Filed Jan. 6, 1892. Serial No. 417,196. (No model.)



Claim.—1. An apparatus for separating solid matter from liquids, comprising the outer casing or shell, the inner perforated cylinder, the revolving spiral blade, the stationary truncated cone or cap, the revolving bell-shaped cover, and means for forcing the liquid matter into the perforated cylinder, substantially as described.

2. In combination with the perforated cylinder, and the revoluble spiral blade working therein, the stationary cap arranged over the upper end of said cylinder, and the revoluble bell-shaped cover fitting over said cap, substantially as described.

3. In combination with the outer casing, the interior perforated cylinder, the revoluble screw working in said cylinder, the cap over the end of the cylinder, the revoluble cover fitting over said cap, independent outlet and inlet openings for the separated liquid and solid matter, the induction pipe and the pump or forcing apparatus connected with said induction pipe, substantially as described.

4. In combination with the vertically disposed outer cylinder or casing, the perforated cylinder fixed concentrically within said casing, the vertical shaft with spiral blade thereon fitting closely within said perforated cylinder; said blade being tapered at its upper end, the truncated cone or cap fitting over the tapered end of said spiral blade, the revoluble bell-shaped cover fitting over said cap, the cylinder head forming a chamber which surrounds said cap and cover, and having an outlet opening therein, the inlet and outlet pipes connecting, respectively, with the inner perforated and outer cylinders, and the pump connected with said inlet pipe, substantially as described.

5. An apparatus for separating solid matter from liquids, comprising a perforated open-ended cylinder or tube, with induction pipe and forcing apparatus connected therewith, a cylindrical casing surrounding said tube provided with a head or extension having a central opening therein and forming a chamber above the outlet end of the tube, the outlet pipe connected with said casing, the conical cap fitting over the upper end of the tube, the vertical shaft or spindle, the bell-shaped cover adjustably secured to said shaft above said cap, the spiral blade fixed on said shaft below the cap, and means for revolving said shaft, substantially as described.

6. In combination with the perforated cylinder, the vertical rotary shaft, the spiral blade on said shaft, the conical cap and the bell-shaped cover fitting over said cap and adjustably secured to the shaft, substantially as described.

488,584. **END-GATE FOR WAGONS.** EDWIN L. STANFIELD, Belden, Nebr. Filed Aug. 11, 1892. Serial No. 442,751. (No model.)

Claim.—1. The combination with a body provided in its sides with upper and lower recesses, an end gate, a securing frame approximately U-shaped carried by the end gate and projecting from the ends thereof and having its parallel sides arranged in said recesses and its connecting piece engaging one side of the body, the opposite ends of the sides of the frame being threaded, and nuts arranged on the threaded ends of the frame and engaging the body, substantially as described.

2. The combination of a body provided with recesses, the metal cleats secured to the outer faces of the sides of the body and provided with recesses registering with those of the body, one of the cleats being provided with a longitudinal flange, an end gate, a rectangular securing frame carried by the end gate and comprising horizontal side rods fitting in the recesses and a cross-piece connecting the rods at one end of the frame and adapted to engage the flange, and means for securing the ends of the rods at the other ends of the frame, substantially as described.

488,585. **ELECTRIC-ARC LAMP.** ELIHU THOMSON, New Britain, Conn., assignor to the Thomson-Houston Electric Company, Boston, Mass. Filed July 2, 1888. Serial No. 99,764. (No model.)

Claim.—1. The combination in an electric lamp, of a derived circuit magnet and a main circuit magnet pulling against one another on the same regulating lever said derived circuit magnet having a uniform magnetic power for the same strength of current in all positions of its parts while the magnetic power of the main circuit magnet decreases as the armature approaches the end of its movement under the influence of the current in the said magnet coils, as and for the purpose described.

2. The combination in a differential lamp, of a main circuit magnet whose pole piece has an attracting face covered as described, so that near the extremity of its armature's movement it will cease to approach the pole, and a derived circuit magnet having a curved attracting pole and armature swinging past the face thereof, the curve of the attracting face being made in the manner described so that the armature shall gradually approach the pole through its whole range of movement, as and for the purpose described.

3. The combination with the feed controlling devices in an electric lamp, of a governing electro magnet having curved attracting pole, and an armature therefor arranged to swing in a curved path

whose general direction is parallel to that of the attracting pole face, said armature being adjustable about an axis parallel with the attracting pole face but transverse to the path described by the armature, whereby its form and mass as presented to the pole may be varied.

4. The combination with the carbon carrier for an electric lamp,

Claim.—1. A car coupling comprising in its construction, a drawhead provided with a groove *k*, a link *h* provided with the slot *i* pivoted in the drawhead, a coupling pin, a spring-pressed rod having bearings on the drawhead and connected with the coupling-link, and a gravity latch to lock the pin back when withdrawn by means of

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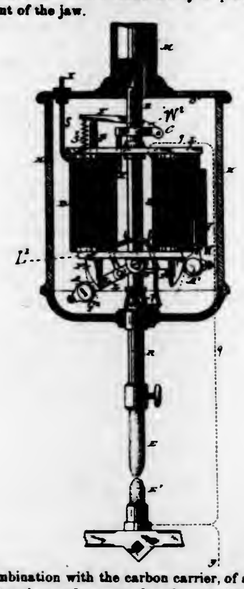
488,588. **TOBACCO-CUTTER.** OSWALD H. TOOLE, Hunnewell, Mo. Filed Apr. 26, 1892. Serial No. 430,545. (No model.)

threaded to engage with the thread in the thickened end of the tube aforesaid and having a handle on its exposed end; a wedging plug adapted to move the expanding devices on the face plate as it is advanced or caused to retreat in the hole in said plate; and a spindle

whose general direction is parallel to that of the attracting pole face, said armature being adjustable about an axis parallel with the attracting pole face but transverse to the path described by the armature, whereby its form and mass as presented to the pole may be varied.

4. The combination with the carbon carrier for an electric lamp, of a clamp body surrounding the carrier, a pivoted clamping jaw pivoted on said body, and a clamp face or surface on the jaw curved on an arc of a circle drawn from a center nearly or quite vertical above the pivotal point of the jaw.



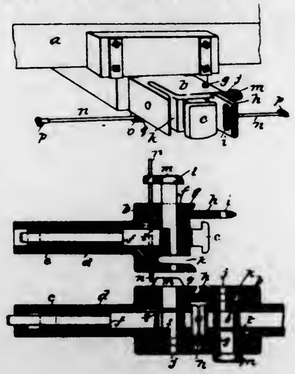
5. The combination with the carbon carrier, of a pivoted clamp jaw having a clamping surface curved on the arc of a circle described from a point vertically above the pivotal point, and removed therefrom approximately one third of the distance of said pivotal point from the side of the carbon carrier.

6. The combination with the clamp and its operating armature of the intermediate elastic bowed connecting piece K, as and for the purpose described.

7. The combination with the carbon adjusting mechanism of the inverted air dash pot cylinder connected therewith, a fixed or stationary piston and rod, and a valve upon the piston rod and exterior to the cylinder for preventing ingress of dust when the lamp is out of action.

8. In an electric arc lamp, a pivoted clamping jaw having a curved biting surface curved on the arc of a circle described from a center above the pivotal point of the jaw, and having a radius less than the distance of the pivot from the surface with which the jaw engages.

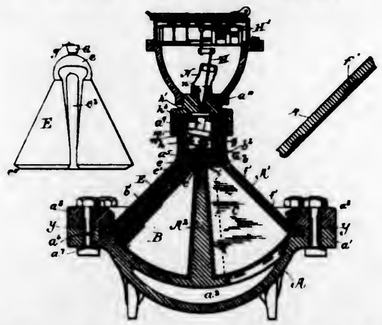
488,586. CAR-COUPLING. GEORGE B. THOMPSON, Brockton, Mass. Filed May 2, 1892. Serial No. 431,596. (No model.)



Claim.—1. A car coupling comprising in its construction, a drawhead provided with a groove *k*, a link *h* provided with the slot *i* pivoted in the drawhead, a coupling pin, a spring-pressed rod having bearings on the drawhead and connected with the coupling-link, and a gravity latch to lock the pin back when withdrawn by means of the rod against the stress of its spring, as described.

2. In a car coupling, the combination, with the drawhead, provided with the groove *k*, and having the link *h* pivoted therein, of the coupling pin *l* provided with the shoulder *s*, the gravity latch adapted to engage the said shoulder, and the spring-pressed rod *n* connected with the coupling pin, as described.

488,587. ROTARY WATER-METER. JAMES A. TILDEN, Hyde Park, Mass., assignor to the Hersey Manufacturing Company, Portland, Me. Filed July 20, 1891. Serial No. 400,190. (No model.)



Claim.—1. In a water meter the combination of a piston chamber having a side wall to form a hollow cone provided with a spherical upper end and a bottom forming a true section of a spherical cavity, and having a chamber underneath the main spherical wall divided to form distributing chambers for the inlet and outlet passages, with a gyrating hollow cone-shaped piston of an angle smaller than that of the conical wall of the piston chamber and mounted in said chamber, as and for the purposes described.

2. In a water meter a piston chamber formed or shaped upon one end or base to a true section of a spherical cavity, and a conical wall extending or rising from the edge of said end or base, a post in said chamber, connected upon one side with the wall by a partition, a port upon each side of said partition, and a gyrating hollow cone-shaped piston mounted upon said support and of a less angle than the angle of the conical wall of the piston chamber, and having a slot in one side to receive the partition, as and for the purposes described.

3. The piston chamber having the regularly curved base, conical wall and regularly curved upper end, the projection or post A^2, the partition C between the post and the wall, the hollow piston E, having the curved or ball apex *e* to fit the curved upper end of the piston chamber, and the slot e^2, and mounted upon said projection and partition, and provided with a gyrating movement in said chamber by the water pressure, substantially as described.

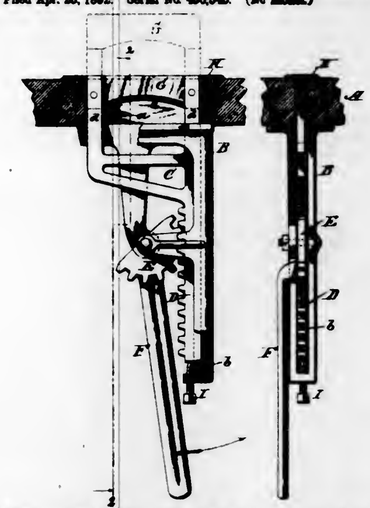
4. The combination of the base A, having a water inlet and a water outlet, ports connecting them with the piston chamber, the piston chamber shaped as specified, the post A^2, partition C, and slotted hollow conical piston E, mounted and operated in the chamber as specified, as and for the purposes described.

5. The combination in a water meter of the base section A, having a water inlet and water outlet, the ports, the post A^2, the flange a' and circular recess a^7, with the clamping ring a^9 to clamp the flange a^4 to the base flange a', the partition C between the post A^2 and the wall of the piston chamber, the slotted hollow piston E, mounted in the piston chamber as specified, as and for the purposes described.

6. The combination of the piston chamber, shaped as specified, the projection A^2 and partition C, the inlet and outlet ports, the piston E, shaped as specified, and mounted in the piston chamber, as described, whereby under water pressure it is provided with a gyrating movement, and an auxiliary device bearing upon the piston to assist the water pressure to maintain the piston in proper contact with the wall of the piston chamber during its gyrating movement, as and for the purposes specified.

7. The combination of the gyrating rod H, provided with a flexible packing *h'* formed thereon, a hole in the stud cap a^{10}, through which it passes, and a flexible hole cover attached to the rod to move with it, as and for the purposes described.

488,588. TOBACCO-CUTTER. OSWALD B. TOOLE, Hunnewell, Mo. Filed Apr. 26, 1892. Serial No. 430,545. (No model.)

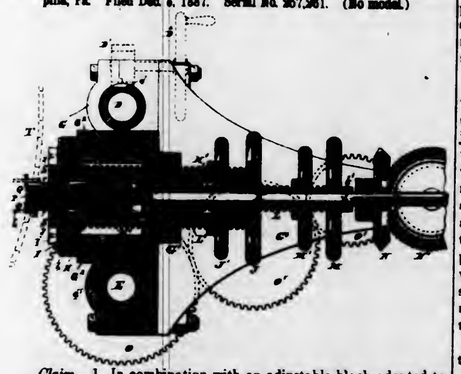


Claim.—1. In a tobacco-cutter, a stationary bracket having an upright guide-groove and a pinion pivoted to said bracket with means for operating it, in combination with a frame carrying at its upper end a knife-blade and adapted to work through a slot in a counter or other like stationary object, and a rack-bar upon the frame and movable within the guide-slot of the bracket, substantially as and for the purpose set forth.

2. In a tobacco-cutter, a stationary bracket and a vertically movable frame carrying a knife-blade adapted to work in a slot in a counter or other like stationary object, in combination with suitable means for operating the frame and knife-blade, and a set screw for regulating the position of the frame and blade with relation to the upper side or top of the counter or other stationary object, said screw being connected to the lower end of the bracket and projecting within the guide-slot, substantially as and for the purpose described.

3. In a tobacco-cutter, a stationary bracket having a vertical guide-groove and a pinion pivoted to the bracket and provided with means for operating it and a set-screw connected to the lower end of said bracket, in combination with a movable frame adapted to work in a slot of a counter or other stationary object and having a rack-bar and knife-blade, substantially as and for the purpose specified.

488,589. BOILER-TUBE EXPANDER. HENRY WARDEN, Philadelphia, Pa. Filed Dec. 8, 1887. Serial No. 257,961. (No model.)



Claim.—1. In combination with an adjustable block adapted to support the bearings of a tube expanding tool; a hollow shaft externally threaded to engage in threads upon the adjustable block having at one end a face plate and at its other end an internal thread formed in a thickened portion of a tube and a handle for turning said shaft; tube expanding devices secured on the face plate aforesaid so as to be movable to and from its hollow center; a hollow shaft externally threaded to engage with the thread in the thickened end of the tube aforesaid and having a handle on its exposed end; a wedging plug adapted to move the expanding devices on the face plate as it is advanced or caused to retreat in the hole in said plate; and a spindle attached to said plug, passing through the internal hollow shaft and so connected with it as to follow its longitudinal movements while revolving freely within it, all substantially as and for the purpose specified.

2. In combination with an adjustable block adapted to support the bearings of a tube expanding tool; a hollow shaft externally threaded to engage in threads upon the adjustable block L' having at one end a face plate and at its other end an internal thread formed in a thickened portion of the tube and a handle for turning said shaft; tube expanding devices secured on the face plate aforesaid so as to be movable to and from its hollow center; a hollow shaft externally threaded to engage with the thread on the thickened end of the tube aforesaid and having a handle on its exposed end; a wedging plug adapted to move the expanding devices on the face plate as it is advanced or retracted in the hole in said plate; a spindle attached to said plug passing through the internal hollow shaft and so connected with it as to follow its longitudinal movements while revolving freely within it; a motor and adjustable mechanism connecting the motor and spindle so as to rotate said spindle in whatever position it may be placed, all substantially as and for the purpose specified.

3. In combination with an adjustable block adapted to support the bearings of a tube expanding tool; a face plate attached to said block as described; a plate secured on the face of said plate by clamps which hold it in place while permitting it to revolve; expanding devices secured on the face of said revolving plate by guides which permit them to move to and from the center and a wedging plug passing through the centers of the plates aforesaid, so as to act on the expanders and having a spindle extending through the adjustable block, substantially as and for the purpose specified.

4. In combination with an adjustable block adapted to support the bearings of a tube expanding tool; a face plate attached to said block as described; a plate secured on the face of said plate by clamps which hold it in place while permitting it to revolve; expanding devices secured on the face of said revolving plate by guides which permit them to move to and from the center; a hollow externally-threaded shaft engaging with threads on or supported by the adjustable block and having a handle on its outer end, and a wedging plug passing through the centers of the plates aforesaid so as to act on the expanders and having a spindle passing through the hollow shaft aforesaid and so secured to it as to be governed by its longitudinal movement while free to revolve independently, all substantially as and for the purpose specified.

5. In combination with an adjustable block adapted to support the bearings of a tube expanding tool; a face plate secured on the end of an externally-threaded tube engaged with a thread on the adjustable block; a plate secured on the face of said plate by clamps which hold it in place while permitting it to revolve; expanding devices secured on the face of said revolving plate by guides which permit them to move to and from the center, a hollow externally-threaded shaft engaging with threads on or supported by the adjustable block and having a handle on its outer end, and a wedging plug passing through the centers of the plates aforesaid so as to act on the expanders and having a spindle passing through the hollow shaft aforesaid and so secured to it as to be governed by its longitudinal movement while free to revolve independently, all substantially as and for the purpose specified.

6. In combination with an adjustable block adapted to support the bearings of a tube expanding tool; a face plate secured on the end of an externally-threaded tube engaged with a thread on the adjustable block; a plate secured on the face of said plate by clamps which hold it in place while permitting it to revolve; expanding devices secured on the face of said revolving plate by guides which permit them to move to and from the center, a hollow externally-threaded shaft engaging with threads on or supported by the adjustable block and having a handle on its outer end, and a wedging plug passing through the centers of the plates aforesaid so as to act on the expanders, said plug having flanges which engage the expanding devices, and having a spindle passing through the hollow shaft aforesaid and so secured to it as to be governed by its longitudinal movements while revolving freely within it, all substantially as and for the purpose specified.

7. In combination with an adjustable block adapted to support the bearings of a tube expanding tool; a face plate secured on the end of an externally-threaded tube engaged with a thread on the adjustable block; a plate secured on the face of said plate by clamps which hold it in place while permitting it to revolve; expanding devices secured on the face of said revolving plate by guides which permit them to move to and from the center, rollers seated in the faces of the sliding expanders, a hollow externally-threaded shaft engaging with threads on or supported by the adjustable block and having a

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handle on its outer end, and a wedging plug passing through the centers of the plates aforesaid so as to act on the expanders, said plug having flanges which engage the expanding devices, and having a spindle passing through the hollow shaft aforesaid and so secured to

tary cutter mounted outside the feed wheel, a bracket, a spindle reciprocating therein constituting a rest, check nuts upon the spindle below the bracket, a lever having one end connected with the spindle; a spring on the spindle between the bracket and the lever, a treadle

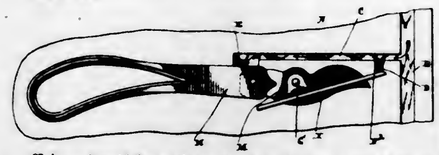
presser, the lever d^3 affixed to said presser, the lever *g* pivoted to the lever d^3, and a spring interposed between said levers, of the wedge, arranged to adjust the said levers and thereby vary the position of

2. In a case of the class described, the combination with a central pivot or standard, of an inner cylindrical casing journaled upon the pivot or spindle, and a series of independent segmental cases, ar-

handle on its outer end, and a wedging plug passing through the centers of the plates aforesaid so as to act on the expanders, said plug having flanges which engage the expanding devices, and having a spindle passing through the hollow shaft aforesaid and so secured to it as to be governed by its longitudinal movement while free to revolve independently, all substantially as and for the purpose specified.

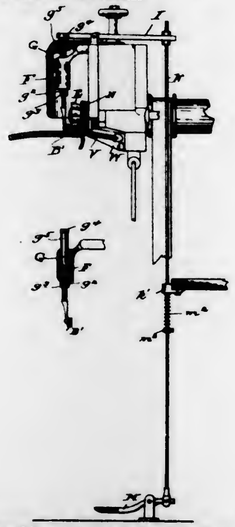
8. In an apparatus for adjusting the bearings and rotating the spindle of a tube expander, the combination with a supporting frame of parallel screw-shafts geared to revolve simultaneously in the said frame, movable blocks each engaged with the threads of one of said screw shafts; a bar extending from one of said movable blocks to the other and secured to said blocks; a shaft having bearings in the said movable blocks and arranged parallel to the said bar; a miter wheel secured on the end of the shaft; a miter wheel secured on a projection of one of the sliding blocks so as to engage with and have its axis at right angles to the first wheel and parallel to the screw shafts beforementioned; a shaft passing through the last-mentioned miter wheel and so engaged with it that they will revolve together while the wheel is free to move longitudinally; a block secured to the bar and shaft connecting the two sliding blocks aforesaid so as to move freely thereon longitudinally; an expanding tool having its bearings in said sliding block, and a spindle extending through the same; a gear wheel secured to said sliding block and upon the rotating shaft so as to rotate with said shaft while free to slide thereon and a train of gear wheels journaled on said sliding block, the last of which is keyed to the spindle on the expanding tool so as to rotate the same while leaving it free to move forward and backward, all substantially as and for the purpose specified.

488,590. MOLD FOR CASTING CAN-OPENERS. WARREN E. WARNER, Rochester, N. Y. Filed Nov. 5, 1891. Serial No. 410,963. (No model.)



Claim.—A mold for casting can-openers having a handle cavity, a fulcrum plate cavity, a blade cavity extending into the handle cavity and through the fulcrum plate cavity, and suitable gates leading to the handle and plate cavities, substantially as specified.

488,591. INSEAM-TRIMMING MACHINE. FRANK H. WARREN, Lynn, assignor to George H. P. Flagg, Boston, Mass. Filed June 26, 1888. Serial No. 437,907. (No model.)



Claim.—In a machine of the character described the combination of a yielding support, a feed wheel opposed to the support, a rotary cutter mounted outside the feed wheel, a bracket, a spindle reciprocating therein constituting a rest, check nuts upon the spindle below the bracket, a lever having one end connected with the spindle; a spring on the spindle between the bracket and the lever, a treadle and an adjustable connection between the treadle and the lever, as and for the purposes set forth.

488,592. COTTON-CHOPPER. ALBERT WHITLEY, Woodville, Miss., assignor of one-half to Frank S. Robinson and Richard O. Hornsby, same place. Filed Aug. 2, 1892. Serial No. 441,969. (No model.)

Claim.—1. In a machine of the class described, the combination with the rectangular frame having bearings in opposite sides thereof and at its rear end, of an axle mounted in the bearings, a rock-shaft journaled in the frame in front of the axle, a lever for rocking the rock-shaft, scraper-carrying standards depending from the rock-shaft, ground wheels for the axle, the chopping shaft mounted in the rear bearing and longitudinally-disposed, a gear wheel thereon, a gear-wheel on the axle and a link on the chopping-shaft loosely connected with the lever of the rock-shaft and connected to the chopping shaft in rear thereof, substantially as specified.

2. In a machine of the class described, the combination with the rectangular frame having the bearings in its opposite side-bars at the front, center, and rear ends, of an axle mounted in the center bearings, front and rear rock-shafts mounted in the front and rear bearings, a lever extending upwardly from the front rock-shaft, scraper-carrying shovels depending from said shaft, a handle-lever rising from the rock-shaft, a standard in front of the same provided with a slot, a bearing-socket in the front rock-shaft, a bearing on the rear rock-shaft, a chopping-shaft mounted for reciprocation and rotation in the latter bearing, a gear-wheel on the same, a master-gear on the axle for operating said gear-wheel, and a link loosely connected at its lower end to the front end of the chopping-shaft, near its upper end passed through the slot in the hand-lever wherein it is pivoted, and having its front end, beyond the hand-lever, engaging with the slot in the standard, substantially as specified.

488,593. UPPER-FOLDING MACHINE. CHARLES E. WILLIAMS, Milford, Mass. Filed Feb. 5, 1892. Serial No. 420,392. (No model.)

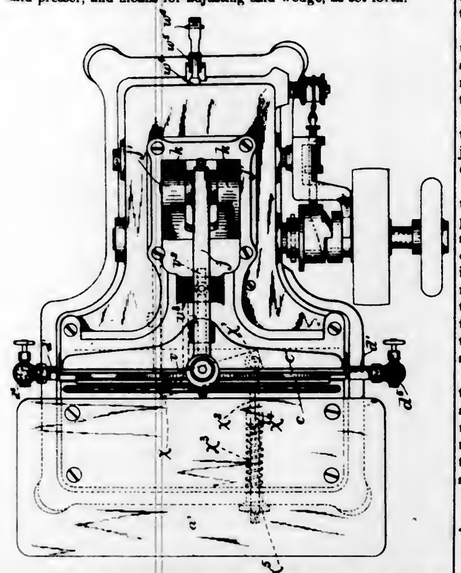
Claim.—1. In a folding machine, the combination of the supporting frame or bed having the pressing shoulder a^3, the fixed steam pipe passing through said frame below said shoulder and having valved steam connections at its ends, the rocking presser mounted to oscillate on said steam pipe and heated thereby, said steam pipe being engaged with the frame at the ends of the presser and serving both to support and heat the presser, the reciprocating folding blade and means for operating said presser and folding blade, as set forth.

2. The combination with the fixed pressing shoulder a^3, the movable presser and the folding blade, of the fixed rod, arranged to support the piece to be folded at one side of the path of the blade, as set forth.

3. The combination with the fixed pressing shoulder, the movable presser and the folding blade, of the gage v, the rod v^3 attached to and extending backward from the gage, and clamping devices for said rod, as set forth.

4. The combination with the fixed pressing shoulder, the rocking

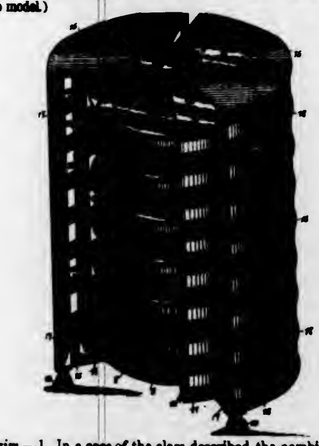
presser, the lever d^3 affixed to said presser, the lever g pivoted to the lever d^3, and a spring interposed between said levers, of the wedge, arranged to adjust the said levers and thereby vary the position of said presser, and means for adjusting said wedge, as set forth.



5. The combination of the fixed pressing shoulder, the rocking presser, the levers g and d^3 connected with said presser, the crank-shaft adapted to move said levers, the latch w arranged to engage the lever g and lock the presser in its pressing position, and devices including the rod w^4 and lever w^5 whereby the operator is enabled to move said latch and unlock the presser, as set forth.

6. The combination of the fixed pressing shoulder, the rocking presser, the levers g and d^3 connected with said presser, the crank-shaft adapted to move said levers and provided with a cam, and the latch adapted to automatically engage the lever g and thereby lock the presser, and arranged to be displaced by said cam for the purpose of releasing the presser, as set forth.

488,594. REVOLVING CASE. WILLIAM L. YOST, Wytheville, Va. Filed Sept. 9, 1890. Renewed Nov. 22, 1892. Serial No. 452,854. (No model.)



Claim.—1. In a case of the class described, the combination with a central pivot or standard, of a central case revolubly mounted thereon, and a series of independent segmental cases inclosing the central case and also revolubly mounted upon the pivot or standard, substantially as specified.

2. In a case of the class described, the combination with a central pivot or standard, of an inner cylindrical casing journaled upon the pivot or spindle, and a series of independent segmental cases, arranged in pairs, inclosing each other and the inner case, journaled on the pivot or standard, substantially as specified.

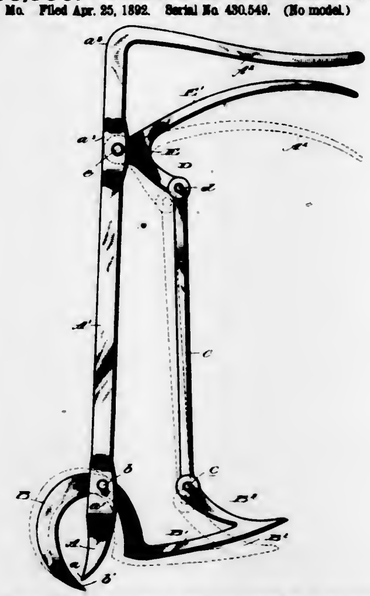
3. In a case of the class described, the combination with a central spindle or standard terminating at its lower end in a caster, of a series of graduated independent sections inclosing each other, of segmental shape and journaled upon the spindle, the bottoms of the sections being also provided with casters, substantially as specified.

4. In a case of the class described, the combination with a central pivot or standard, of a series of independent segmental sections journaled upon the spindle and graduated in size to receive and inclose each other, substantially as specified.

5. In a case of the class described, the combination with a central pivot or spindle, an inner cylindrical receptacle consisting of opposite heads journaled upon the pivot or spindle, a series of vertical strips connecting the heads and shelves connecting the strips, a series of outer independent segmental sections graduated as to size so as to inclose each other, each consisting of opposite segmental heads terminating in bearing plates for the reception of the pivot or spindle, the plates of one section of each pair being off set to receive those of the opposite section the heads of the sections being connected by vertical strips and curved shelves connecting the strips, substantially as specified.

6. In a case of the class described, the combination with a central pivot or standard, of a central case revolubly mounted thereon, and a series of segmental cases inclosing the central case and also revolubly mounted upon the pivot or standard, each of said segmental sections moving independently of each other and of the central section, and the outer sections having independent casters, substantially as described.

488,595. NAIL-EXTRACTOR. FRANK X. ZARRINGER, Bell Air, Md. Filed Apr. 25, 1892. Serial No. 430,549. (No model.)



Claim.—The nail extractor described consisting of the fixed jaw with shank with bifurcations near opposite ends and bent at one end at right angles to its length to form a handle, the curved jaw near the center of its curve pivoted to the fixed jaw in one of the bifurcations thereof and formed with horizontal extension the outer end of which is returned toward the shank of the fixed jaw and terminating in line with the pivot of the curved jaw, the link pivoted to the end of said end and arranged parallel with the shank of the fixed jaw, and the lever pivoted to the shank of the fixed jaw in the other bifurcation thereof and having a short arm pivoted to the link and a long arm at right angles to the said shank and parallel with the handle portion thereof, substantially as specified.

488,596. COMBINED HOE AND PLANTER. JAMES R. AYERS, Petersburg, Va. Filed June 13, 1892. Serial No. 436,502. (No model.)

Claim.—1. In a combined hoe and planter, the combination of a staff or handle made of a solid and hollow section, said hollow section having a discharge opening, a hoe having a ferrule provided with a guide or nozzle for directing the corn from the discharge opening and a reciprocating slide having an opening adapted to receive and carry the corn or grain to the discharge opening, substantially as described.

2. In a combined hoe and planter, the combination of a wooden section and a hollow sheet metal section having a filling opening and discharge opening, a sliding cover for the filling opening, a hoe having a ferrule provided with a guide or nozzle for directing the corn or grain from the discharge opening of the tube, a slide in the tube having an opening, a rod connected to the slide for causing the opening thereof to coincide with the discharge opening, and a spring connected to said rod for returning it to its normal position, for the purpose described.

3. In a combined hoe and planter, the combination of the handle composed of the wooden section and the hollow sheet metal section having a discharge opening, a block or plug fitting in the end of said hollow section, a spring plate secured to said block, a slide arranged in said hollow section and having an opening, a hoe connected to the section and having a ferrule provided with a guide or nozzle, a rod connected to the slide and having a bend, arm or lug, a cap plate through which the rod passes and which limits the movement of the rod, a spring connected to the said lug, and a tube surrounding the rod, all as and for the purpose described.

4. In a combined hoe and planter, the combination of the staff or handle composed of the wooden and sheet metal section having a discharge opening, the hoe having the ferrule provided with a nozzle or guide for directing the corn from the discharge opening, and a spring controlled slide having an opening adapted to coincide with the said discharge opening, substantially as described.

5. In a combined hoe and planter, the combination of the hollow metal section, the rod movable therein, and the tube inclosing said rod, substantially as and for the purpose described.

6. In a combined hoe and planter, the combination of the handle consisting of the solid and hollow sections, the rod movable therein and having the upper end bent to encircle the handle and form a handle for said rod.

7. In a combined hoe and planter, a hoe blade, a shank thereon, and a ferrule on the shank having a discharge opening.

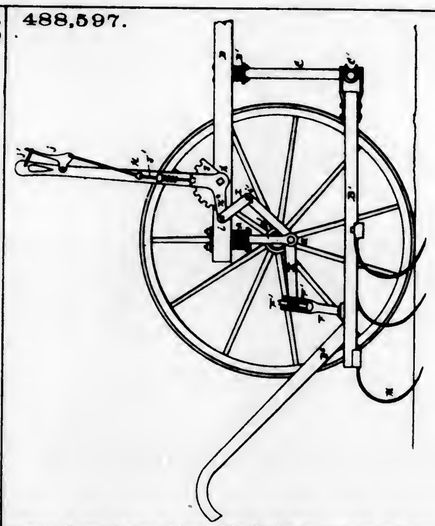
488,597. WHEEL HARROW AND CULTIVATOR. ORRIN R. BALDWIN, Detroit, Mich. Filed Feb 4, 1892. Serial No. 420,363. (No model.)

Claim.—1. In a wheel cultivator, the combination with the main frame and axle, of a lever arm pivotally secured to the axle, the rear portion of which is provided with a lateral extension, a shovel frame jointedly suspended from the main frame at its front end, and from the lateral extension of said lever arm toward the rear end, and laterally vibratory on said lateral extension, and an operating lever to engage with said lever arm adapted thereby to elevate and lower the shovel frame, substantially as set forth.

2. In a wheel cultivator, the combination with the main frame, of a shovel frame jointedly suspended at its forward end therefrom, a lever arm pivotally secured to the axle of the cultivator, the rear end of which is provided with a lateral extension, a lever for operating said arm, a toggle arm jointedly connecting the said lever arm and operating lever whereby the lower end of the operating lever may be thrown past the center to lock the frame in an upward position, said cultivator frames being provided with handles, the construction of the whole being such that a driver by seizing said handles may throw the cultivator frame into a locked upward position, without grasping the operating lever, substantially as set forth.

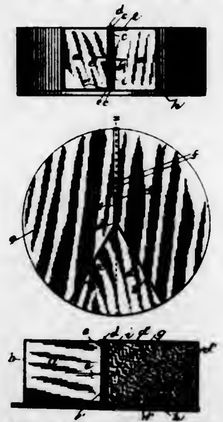
3. In a wheel cultivator, the combination with the main frame, of the shovel frame flexibly suspended therefrom at its front end

488,597.



whereby it may be moved longitudinally thereto, a lever arm pivotally secured to the axle, the rear end of which is provided with a lateral extension, a link pivotally secured to the shovel frame at its lower end and engaging with and laterally movable upon the extension of the lever arm, and a lever for operating the front end of said lever arm, substantially as set forth.

488,598. AUTOMATIC CHEESE-PROTECTOR. DAVID M. BLACK, Newark, Ohio. Filed June 23, 1892. Serial No. 437,784. (No model.)

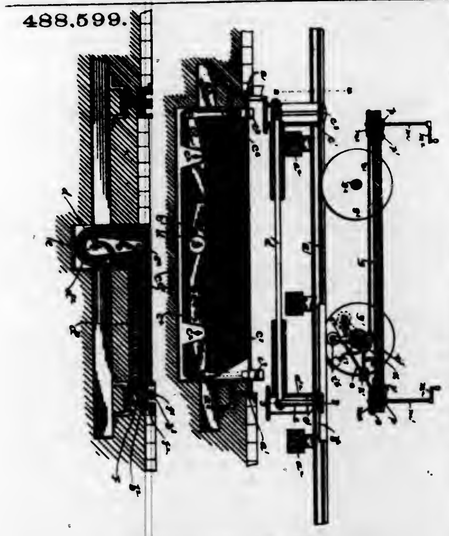


Claim.—In a cheese protector, the combination of the plates *a*, a hinge pin to which one of said plates is secured and to which the remaining plate is pivoted, one or more coiled springs on said hinge-pin, the opposite ends of which are respectively secured to the plates *a a*, and a binding strip *d* having one of its ends secured to one end of said pin and its remaining end adapted to be adjustably connected to the remaining end of said pin, substantially as and for the purpose specified.

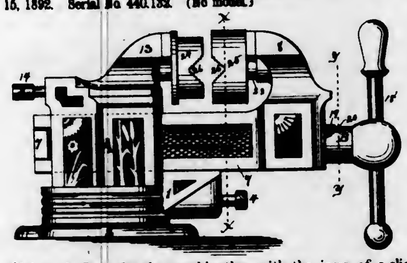
488,599. TRAMWAY-SWITCH. WILLIS G. CARMELL, Columbus, Ohio. Filed Dec. 11, 1891. Serial No. 414,746. (No model.)

Claim.—In a railway switch operating mechanism, the combination with the main and branch track-rails, a switch-plate and pivoted tongue thereon, jointedly connected lever bars as described, between the main track rails and pressure buttons supported therefrom adjacent to the main track rails, of an operating rod *c'* connected with the switch-tongue, connecting rod *d* having one end connected with one of said lever bars and its remaining end connected as described with the operating rod *c'*, through an arm *e*, substantially as specified.

488,599.



488,600. VISE. JULIUS J. COWELL, Woodsport, N. Y. Filed July 15, 1892. Serial No. 440,132. (No model.)



Claim.—1. In a vise the combination with the jaws, of a slide carrying one jaw, and passing through a mortise in the rear jaw, a square threaded half screw within the slide, having the ends of its threads beveled off, and a half nut provided with a shank fitting in a mortise in the body of the rear jaw, and having the ends of its threads beveled off.

2. In a vise the combination with the jaws, of a slide carrying one jaw and passing through a mortise in the rear jaw, a square threaded half screw within the slide, and having the ends of its threads beveled off, a half nut provided with a shank fitting in a mortise in the body of the rear jaw, and having the ends of its threads beveled off, and having a spring secured in the slide and adapted to engage with a groove in said screw and hold it out of engagement with said nut.

3. The combination with the rear jaw swiveled upon a body, and a pin adapted to engage with it, said body being adjustably swiveled upon a base, and a front jaw mounted upon a slide passing through a mortise in said body, a half screw through said slide, and a half nut mounted in a mortise within said body.

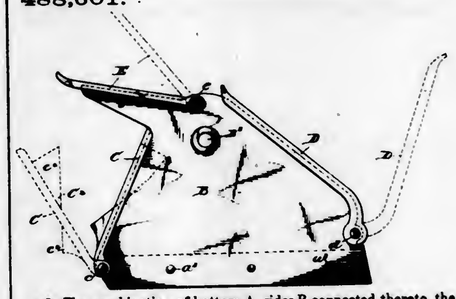
4. The combination with the jaws of a vise, and means to vary the distance between them, of tubular auxiliary jaws of unequal radii, provided with notches in their ends, and connected to the main jaws.

488,601. METALLIC CASING. ALEXANDER D. CURRY, Cincinnati, Ohio. Filed May 2, 1892. Serial No. 431,530. (No model.)

Claim.—1. The vertical side portions B having top brackets *b*, in combination with the lids C, D and E pivotally connected to said side portions, the lid C having a chute C^3 formed therein, substantially as set forth.

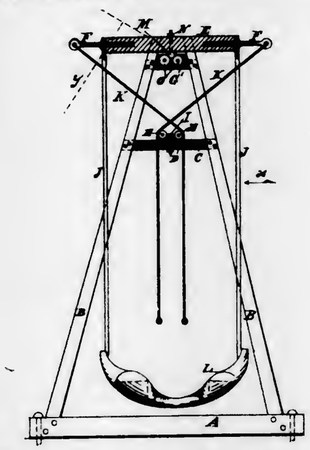
2. The combination of bottom A with side portions B connected thereto, the latter having the inclined brackets *b*, lid E pivotally connected near the top of the sides and adapted to lie against said brackets, and lid C pivotally connected to the lower rear portion of sides B, the lid C being adapted to lie against the rear inclined edges of said sides beneath said brackets, substantially as set forth.

488,601.



3. The combination of bottom A, sides B connected thereto, the latter having the inclined brackets *b*, and the lids C, D and E pivoted respectively to said side portions at the lower, rear, and front portions thereof, and to the top thereof, the lid E resting against said brackets, the lids C and D resting against the inclined rear and front edges of said side portions, substantially as set forth.

488,602. SWING. MICHEL CURON, Spring Lake, Mich. Filed July 8, 1892. Serial No. 439,355. (No model.)



Claim.—An improvement in swings consisting of two pairs of frame supports inclined to each other at their top ends, and the opposing faces of each pair of posts near said ends formed vertically parallel to each other, in combination with a tilting beam having its side bearings between said faces, a transverse shaft secured to said beam, antifriction rollers supporting said shaft, a carriage and suspending supports, and eye-bolts by which said supports are attached to the tilting beam, rollers located between said beam and the carriage, and cords attached to the eye-bolts, crossed to the opposite rollers and brought near to the carriage; substantially as and for the purpose specified.

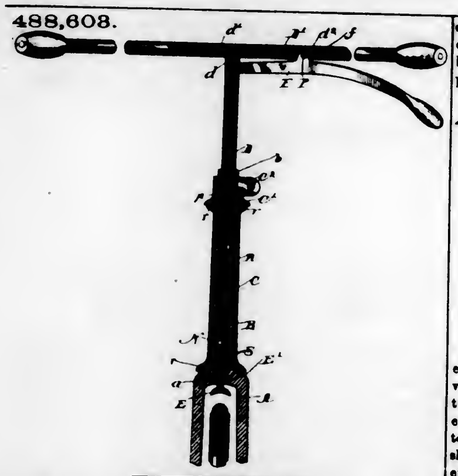
488,603. BICYCLE. LEVI M. DEVORE and CHARLES R. FORBY, Freeport, Ill. Filed Oct. 26, 1891. Serial No. 409,779. (No model.)

Claim.—1. In a bicycle, the combination with the tubular handle bar and handle bar head, of the supplemental tubes fastened together and inserted in the handle bar head and handle bar at their intersection, all of said tubular parts being securely fastened together; substantially as shown and described.

2. The combination with the handle bar head, D, and handle bar, D', of the supplemental tubes, *d*, *d'*, forming a T, and inserted in the handle bar and head at their junction, the handle bar head, handle bar and tubes, *d*, *d'*, being brazed together; substantially as shown and described.

3. The combination with the handle bar of a bicycle, of a brake lever lying below the handle bar and provided with an ear extending upward into a slot in the handle bar, and a pivot passing through the handle bar and the ear upon the brake lever, and connecting the brake lever and the handle bar; substantially as shown and described.

488,608.

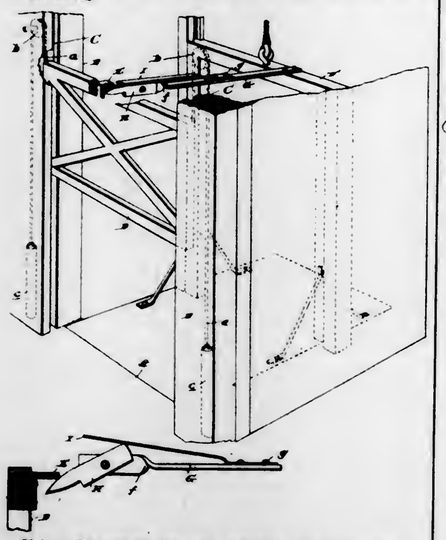


488,604. HOLDER FOR ERASERS, CHALK, OR CRAYONS. KARL T. ERHARD, Brooklyn, N. Y. Filed Apr. 9, 1892. Serial No. 428,468. (No model.)

Claim.—1. The combination of a case with an inclosed tapped slide having outwardly opening jaws that are adapted to grasp the eraser, chalk or crayon and a screw that enters the case and engages the slide, substantially as specified.

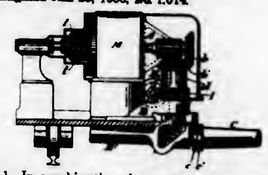
2. The combination of case *a*, having recessed back a^2, with slide *b*, having nut b^2, and with screw *c*, engaging said nut and having folding handle *c'*, substantially as specified.

488,605. GATE-OPERATING DEVICE FOR ELEVATORS. CHARLES A. GLOECKLER, Pittsburg, Pa. Filed Oct. 26, 1892. Serial No. 449,940. (No model.)



Claim.—The combination with a hatchway or elevator shaft, and a vertically movable gate suspended in suitable ways by counterbalance weights and provided with a lug on its upper, inner side; of a car, an arm G, secured to the upper side of the car or elevator, the dog having its free end beveled on its upper and under side respectively and pivoted at an intermediate point in its length to the arm G, so that either of its ends may swing upwardly, and the flat spring secured to the arm and adapted to bear upon the upper side of the dog both in front and rear of its pivotal point, substantially as and for the purpose set forth.

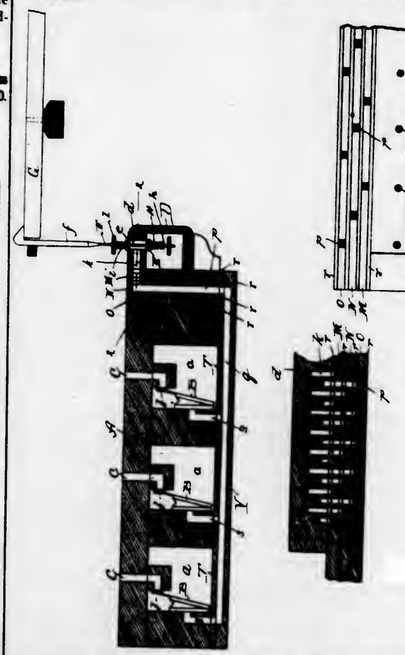
488,606. MACHINE FOR WORKING COAL OR OTHER MINERALS. WALTER T. GOOLDEN and LLEWELYN B. ATKINSON, London, England. Filed Aug. 18, 1891. Serial No. 403,074. (No model.) Patented in England Jan. 23, 1888, No. 1,014.



Claim.—1. In combination the carriage, the vertical shaft at one edge thereof, the bearing therefor the cutter shaft extending transversely across the lower end of the vertical shaft, the gearing between said shafts, the long bearing for the end of the cutter shaft extending laterally in line therewith said bearing having a sleeve extending upwardly through and above the bearing for the vertical shaft and about the said shaft, and means connected with the upper exposed end of the sleeve for turning the long bearing and the cutter shaft to different lateral positions and the means for operating the vertical shaft, substantially as described.

2. In combination the carriage frame, the vertical shaft at one edge thereof the cutter extending below the same the long bearing for the cutter shaft having a sleeve extending upwardly about the vertical shaft through an opening in the floor of the carriage, the said long bearing forming a lateral extension from the sleeve in line with the cutter shaft, substantially as described.

488,607. PNEUMATIC ACTION FOR ORGANS. FREDERICK W. HEDGELAND, Chicago, Ill. Filed Dec. 21, 1891. Serial No. 415,700. (No model.)



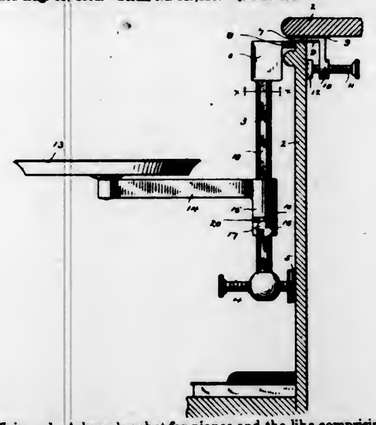
Claim.—1. In an organ, the combination with the pallet box and wind chest, of a channel board, as M, having passages formed therein and connecting the box with the chest, said box and chest being located side by side with the channel board between them, substantially as specified.

2. In an organ, the combination with the pallet box and the wind chest of a vertical channel board connecting the box with the chest, the parts all being relatively arranged as set forth.

3. The combination of the wind chest and channel board placed side by side, as shown, and provided with a bottom T, common to both the chest and board, substantially as specified.

4. The combination of the wind chest and channel board placed side by side, as shown, and provided with a bottom T and a valve way bottom V, both extended under the chest and board and forming the passages connecting the passages of the channel board with the pneumatics of the wind chest, substantially as specified.

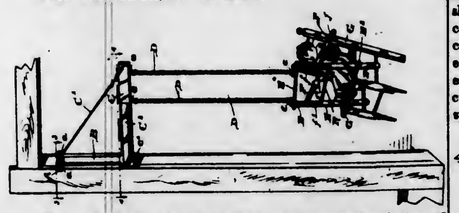
488,608. LAMP-BRACKET FOR PIANOS. CHARLES A. HOTCHKISS, Bridgeport, Conn., assignor of one-half to Harry C. Ives, same place. Filed Aug. 15, 1892. Serial No. 443,123. (No model.)



Claim.—1. A lamp bracket for pianos and the like comprising a single upper plate 7, having a step 8 adapted to bear along the upper outer edge of the piano casing said plate having an extended portion to reach over the said upper edge and provided with a set screw to bear on the inner side of the casing, a single rod depending centrally from the front part of the plate, the adjusting screw 4, at the lower end of said single standard and the bracket arm swiveled to the standard intermediate of the top plate and the lower adjusting screw and adjustable vertically along said standard, substantially as described.

2. A bracket, comprising a single plate and a single standard arranged at right angles to each other, the said standard being fixed centrally of the plate to depend therefrom and the plate having a step 8, and an extended portion with eyes 10, and set screws 11, at the ends thereof, the screw 4, at the lower end of the central standard, the collar 16 adjustable vertically on the standard, the arm 14, swiveled above the collar 16, and about the standard, the latter being free throughout its extent between the right angular upper plate and the lower screw for the vertical adjustment of the collar and arm, substantially as described.

488,609. BABY-JUMPER. BERNARD A. HUSBANDS, Indianapolis, Ind., assignor to Husbands & Werkheiser, same place. Filed July 30, 1892. Serial No. 441,679. (No model.)

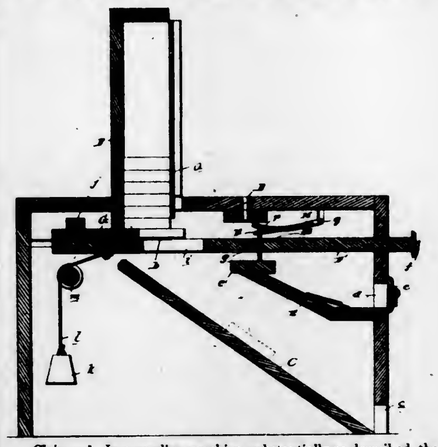


Claim.—1. The combination, with a chair or similar device, of suspending arms E connected by means of a rod E^2 extending under the bottom of the chair, links F pivoted to the sides of the back of the chair and to said suspending bars, and springs extending from a rod connecting said bars at the top, upwardly to the point of attachment, whereby a chair is converted into a baby jumper, substantially as set forth.

2. The combination, with a baby jumper, of a swinging crane consisting of a clamp A, hanger B, and arm C, to which the same is suspended, substantially as shown and described.

3. The combination, with a baby jumper, of a suspending crane consisting of a clamp, a hanger, and an arm hinged to the hanger and provided with braces to prevent lateral swinging, said crane being the immediate point of attachment for the springs of the jumper, substantially as shown and described.

488,610. VENDING-MACHINE. THOMAS C. KIRKHAM, Highland Creek, Canada. Filed Oct. 14, 1892. Serial No. 448,815. (No model.)



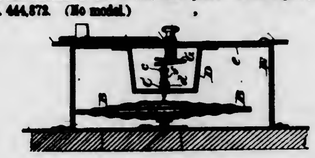
Claim.—1. In a vending machine, substantially as described, the combination with a frame or casing, a stacking frame or holder extending down into the casing and having the ledges *b*, at its lower end, and the inclined chute leading from a point beneath the frame or holder to a delivery opening; of the delivery slide having the projection G, on its upper side and also having the opening *i*, in advance of said projection, substantially as and for the purpose set forth.

2. In a vending machine, substantially as described, the combination with a frame or casing, the delivery slide having the recesses in its upper side provided with inclined bottoms and also having the slot to receive a coin, and a suitable means for supporting the coin in said slot; of the gravitating catch formed from a single piece of material and comprising the lateral trunnions journaled in the side walls of the casing, the straight detents, and the tongue having its free end curved upwardly, substantially as and for the purpose set forth.

3. In a vending machine, substantially as described, the combination with a frame or casing, the stacking frame or holder extending down into the casing and having the ledges *b*, at its lower end, the inclined chute extending from a point below the stacking frame or holder to a discharge opening, and the wall E, serving to form a pocket and having the platform on its upper edge; of the delivery slide having the opening *i*, and the slot to receive the coin and also having the projection G, and the gravitating catch adapted to engage the delivery slide and be engaged by the coin, substantially as and for the purpose set forth.

4. In a vending machine, substantially as described, the combination with a frame or casing, having a delivery chute; of a delivery slide slotted to receive a coin, a support beneath the slide for said coin, said slide having a stop on its under side, and the gravitating catch formed from a single piece of material and comprising the lateral trunnions, journaled in the side walls of the casing, a detent for engaging the stop on the slide, and a tongue having its free end curved upwardly, and adapted to be lifted by a coin, substantially as specified.

488,611. THERMOSTATIC INDICATOR AND ADJUSTER. EMIL C. C. KNOEN, Monmouth, Ill., assignor of one-half to Stephen D. McGovern and Thomas R. McGovern, same place. Filed Sept. 2, 1892. Serial No. 444,672. (No model.)



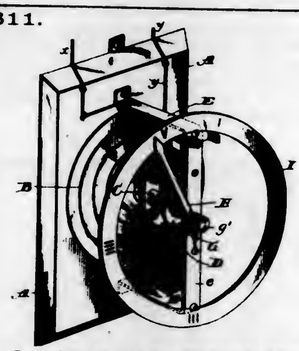
488,611.

the spindle and the other bearing against the cam-lever, and a strap for securing the spindle in place, one end of said strap being provided with adjusting holes, whereby it is adapted to fit various sized thills, substantially as described.

488,616.

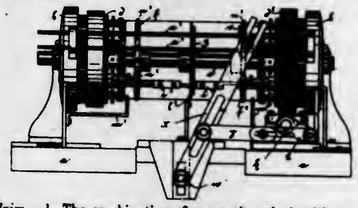
hubs of the said wheels, said bars having racks engaged by pinions on a crank shaft and the horizontal crank shaft whose cranks are pivoted to rods between the ends of which and the friction wheel shaft

488,611.



Claim.—In combination with the temperature-actuating contact of a thermostat, a longitudinally movable rod forming the other contact, the spring for moving said rod in one direction, the cam for moving it in the other direction, and the indicator, substantially as described.

488,612. MACHINE FOR MAKING LOOPS FOR WIRING BOTTLES. JOHN H. W. OETMANN, Hamburg, Germany. Filed Dec. 2, 1890. Serial No. 373,376. (No model.) Patented in Germany Feb. 3, 1889, No. 52,736.



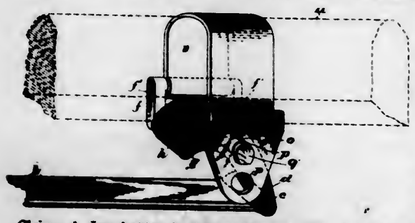
Claim.—1. The combination of a rotating shaft with a pair of disks mounted thereon, intermittently revolved spindles carried by the disks and a reciprocating wire feed between the disks substantially as specified.

2. The combination of a rotating shaft with a pair of disks mounted thereon, spindles carried by the disks, and provided with pinions, a rack intermittently engaging the pinions and with a reciprocating wire feed between the disks, substantially as specified.

3. The combination of a rotating shaft with a pair of disks mounted thereon, spindles carried by the disks and provided with pinions and collars, a rack engaging the pinions, an open ring engaging the collars and with a reciprocating wire feed between the disks, substantially as specified.

4. The combination of a rotating shaft with a pair of disks mounted thereon, intermittently revolved spindles carried by the disks a cutter and curved sliding guides *c'*, between the disks, a reciprocating lever engaged by the guides and a feed funnel secured to the lever, substantially as specified.

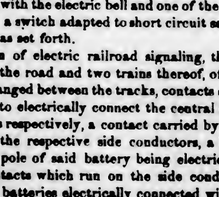
488,618. HOLDBACK FOR VEHICLES. EDWARD P. PARKER, Archdale, N. C. Filed Apr. 1, 1892. Serial No. 427,412. (No model.)



Claim.—1. In a holdback, the combination with a spindle, of a spring coiled around said spindle, a cam-lever on said spindle actuated by said coil spring, and a strap for holding said spindle in place, substantially as described.

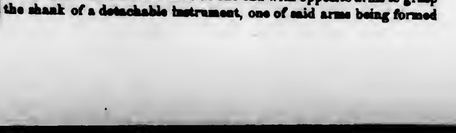
2. In a holdback, the combination with a spindle provided with a button at one end, of a coil spring surrounding said spindle, of a cam-lever on said spindle, one end of said spring being attached to the spindle and the other bearing against the cam-lever, and a strap for securing the spindle in place, one end of said strap being provided with adjusting holes, whereby it is adapted to fit various sized thills, substantially as described.

488,614. FRUIT-JAR. GEORGE L. PFEIFFER, Williamstown, N. J. Filed Mar. 23, 1892. Serial No. 426,731. (No model.)



Claim.—The combination with a jar or can provided integrally near its mouth with an annular shoulder, of a cap or stopper having a shouldered flange to rest upon the top of said can or jar, an annular shoulder within the mouth of the can or jar and a terminal portion E extending from said inner shoulder and beveled upon its outer face, a yielding packing ring held between the shoulder of the jar and the inner shoulder of the cap and adapted to be compressed radially by the engagement therewith of the beveled outer face of the portion E, substantially as and for the purpose specified.

488,615. ELECTRIC RAILWAY-SIGNAL. FRANK P. SCHLOSSER, Birmingham, Ala., assignor, by direct and mesne assignments, to the F. P. Schlosser Electric Signal and Alarm Company, same place. Filed June 21, 1892. Serial No. 437,442. (No model.)



Claim.—1. The combination with three continuous conductors arranged between the rails of a railroad track, of contact devices carried by a train and adapted to make contact with two of said conductors, a contact also carried by the train and adapted to make contact with the other conductor, each of said contacts being adapted to always make contact with the same conductor when the train is running in one direction, a rheotome bell carried by the train and a battery connected with said rheotome bell and contacts, substantially as set forth.

2. The combination with three continuous conductors arranged between the rails of a railroad track, wheels carried by a train and adapted to electrically connect two of said conductors, a wheel insulated from the first mentioned wheels and adapted to make contact with the other conductor, an electric rheotome bell connected with the last mentioned wheel, each contact being adapted to always run on the same conductor when the train is running in one direction, a battery connected with the electric bell and one of the first mentioned pair of wheels, and a switch adapted to short circuit said bell and battery, substantially as set forth.

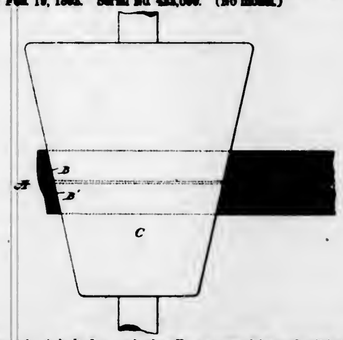
3. In a system of electric railroad signaling, the combination with the tracks of the road and two trains thereof, of three continuous conductors arranged between the tracks, contacts carried by each train and adapted to electrically connect the central conductor with the side conductors respectively, a contact carried by each train and adapted to run on the respective side conductors, a battery carried by each train, one pole of said battery being electrically connected with the single contacts which run on the side conductors, and the other poles of said batteries electrically connected with the contacts which run on the central conductor, and a rheotome bell included in the circuit of each battery, substantially as set forth.

4. The combination with a series of three continuous conductors, of contacts adapted to engage the outer conductors of said series, contacts adapted to electrically connect the outer conductors respectively with the central conductor, two rheotome bells, each electrically connected respectively with the contacts which engage the central conductor, and two batteries, each connected respectively with the single contacts which engage the outer conductors, substantially as set forth.

488,616. SCALPEL. WILLIAM SCHOTT, Brooklyn, N. Y. Filed Feb. 12, 1892. Serial No. 421,367. (No model.)

Claim.—A handle formed at one end with opposite arms to grasp the shank of a detachable instrument, one of said arms being formed with a lip, the other in the form of a spring, in combination with a detachable instrument having a shank to fit between the arms and formed with a notch at the back, substantially as set forth.

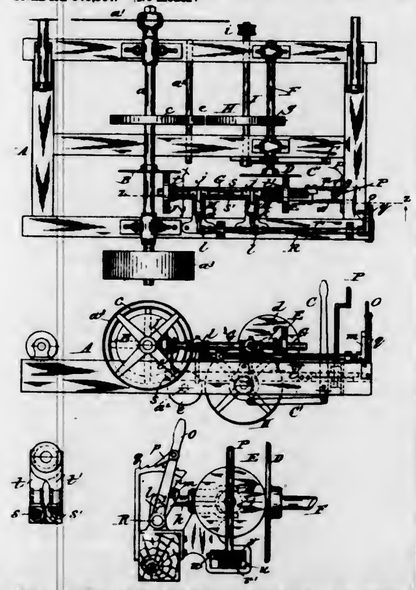
488,617. BELTING. WILLIAM R. SHARPLES, Fall River, Mass. Filed Feb. 19, 1892. Serial No. 422,090. (No model.)



Claim.—1. A belt for conical pulleys comprising a flexible backing having two or more flat narrow sections united thereto at or near one of their edges, with their other edges left free, substantially as set forth.

2. A double belt for conical pulleys, consisting of the flexible backing A, having the sections B B' united thereto at or near one of their edges only, with their free edges adjacent to each other, substantially as set forth.

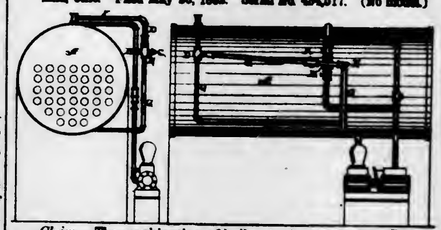
488,618. VARIABLE FRICTION-FEED FOR SAWMILLS. PHILIP STOVALL, Atlanta, Ga., assignor of one-half to John O. Perkins, Nelson W. Perkins, and Shadrick F. Perkins, same place. Filed Jan. 29, 1891. Serial No. 379,567. (No model.)



Claim.—1. The combination of a saw arbor having a disk thereon, a parallel shaft having a disk thereon and a friction wheel, another parallel shaft mounted in suitable bearings so as to be capable of swinging at one end and having a pinion which actuates the saw carriage and also having a friction wheel, the two friction wheels in contact with the disks respectively, the shaft on which said wheels are mounted, the sliding bars carrying yokes or forks that engage the hubs of the said wheels, said bars having racks engaged by pinions on a crank shaft and the horizontal crank shaft whose cranks are pivoted to rods between the ends of which and the friction wheel shaft bearings, are springs, together with the leverage devices for rocking the latter shaft and thus causing the friction wheels to bear with a constant, even pressure upon their adjacent disks, substantially as described.

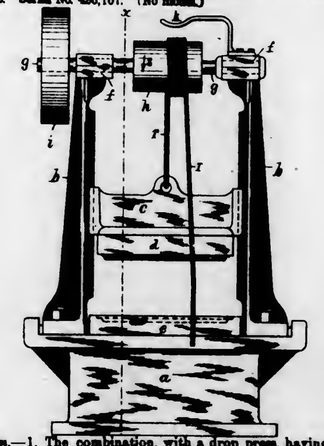
2. In combination with the two adjustable friction wheels and their shaft, the bearings for said shaft carried movably within supporting arms, the rods entering said arms, the springs interposed between the ends of said rods and the bearings, the rocking crank shaft whose cranks are pivoted to the outer ends of said rods, the loose lever on said shaft having a pawl engaging the ratchet and the rigid arms likewise on the shaft adjacent to the lever, together with the spring interposed between said arm and the lever, the saw arbor having the disk thereon, a parallel shaft having a disk thereon and a friction wheel and another parallel shaft mounted adjustably and provided with a pinion which actuates the saw carriage, said latter shaft being geared to the other shafts, substantially as described.

488,619. FEED-WATER REGULATOR. JOSHUA THOMAS, Cleveland, Ohio. Filed May 26, 1892. Serial No. 434,517. (No model.)



Claim.—The combination of boiler A, pipes B C, joined by crossheads D E, crosshead D connected by pipe F with top of boiler, crosshead E connected by pipe G with bottom of boiler, pipe Q connecting pipe F with pipe G; the valve H supported by the yoke K, valve stem J passing through stuffing box I in yoke K and having collar *m*, spring N and rods P P connecting crossbar O with the yoke; the stem being connected with crosshead D by turnbuckle L, all constructed to operate substantially as described.

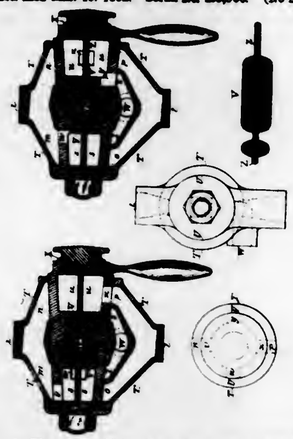
488,620. DROP-HAMMER. FRED. W. THOMPSON, Brooklyn, assignor to the Twist Pipe Company, New York, N. Y. Filed Mar. 23, 1892. Serial No. 426,107. (No model.)



Claim.—1. The combination, with a drop press, having a hammer movable vertically, of a drum with means for continuously revolving the same, and a rope attached at one end to the hammer and wound one or more times around the drum, as set forth.

2. The combination, with a drop press having a hammer movable vertically, of a drum with means for revolving the same, and a rope attached to the hammer and wound entirely around the drum with its free end extended sufficiently to wind around the drum one or more additional turns, as may be required to lift the hammer, substantially as set forth.

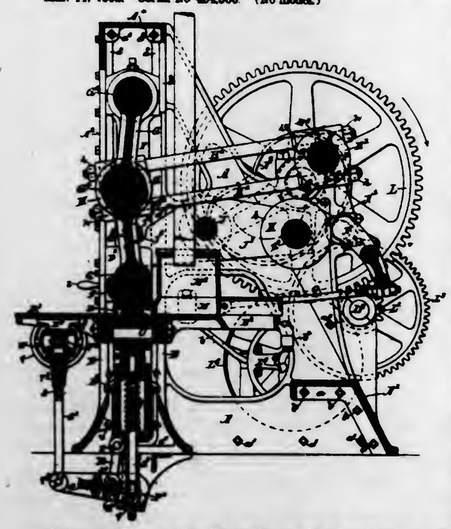
488,621. FILTER. SIDNEY L. WEBB, Washington, D. C. Original application filed May 14, 1891, Serial No. 393,729. Divided and this application filed Mar. 19, 1892. Serial No. 425,500. (No model.)



Claim.—1. The casing T, having inlet *i* and branching passages *m* and *n* leading therefrom, outlet *l* and branching passages *o* and *p* leading thereto, and cleansing outlet W, and branching passages 1, 2, leading thereto, said branches *o*, *p*, 1, and 2, being diametrically opposite to said branches *m* and *n*, in combination with the hollow turning-plug U, having at its central part a filtering medium and chambers *s* and *u* at opposite sides of said filtering medium, said plug having communication with chamber *s*, port *v* adapted to register with branches *m* and *o* and port *w* adapted to register with branches *m* and *l*, and said plug having communication with chamber *u*, port *x* adapted to register with branches *n* and *p* and port *y* adapted to register with branches *n* and 2, said ports *w* and *v* being ninety degrees apart, said ports *x y* being ninety degrees apart, and said ports *v x* and said ports *w y* being one-hundred and eighty degrees apart, substantially as set forth.

2. The casing T, in combination with the hollow turning plug U having a removable cap X, a spindle Z fitting at opposite ends in said cap and in the end of said plug opposite to said cap, and a cage V, surrounding said spindle for holding a filtering material, substantially as set forth.

488,622. BRICK-MACHINE. BRUCE C. WHITE, Chicago, Ill. Filed Mar. 11, 1892. Serial No. 424,506. (No model.)



Claim.—1. The combination, with a mold and plungers working therein, of means for actuating the plungers, embracing a toggle connected with the opposite plungers, and a crank shaft the crank-pin of which is connected with the middle joint of the toggle arms, and the crank-arms of which constitute cams adapted to lift and lower the said plungers and connected parts.

2. The combination with a mold and upper and lower plungers, of a toggle for actuating the same, side bars connecting the lower plunger with the toggle, a crank-shaft connected with and actuating the toggle, and lifting levers engaging the said side bars at points between their ends and the arms of said crank-shaft, which latter are provided with cam surfaces adapted to engage and actuate said lifting levers, substantially as described.

3. The combination with a mold and upper and lower plungers, of a toggle for actuating the same, side bars connecting the lower plunger with the toggle, a crank shaft connected with and actuating the toggle, and lifting levers acting on the said side bars at points between their ends and engaged with the arms of said crank shafts, which latter are provided with cam surfaces adapted to actuate said lifting levers, and studs secured in said bars and extending laterally therefrom for engagement with the lifting levers, substantially as described.

4. The combination with a mold and upper and lower plungers, of a toggle for actuating the same, side bars connecting the lower plunger with the toggle, a crank shaft connected with and actuating the toggle, lifting levers acting on the said side bars and engaging the arms of said crank shaft, which latter are provided with cam surfaces adapted to actuate the said lifting levers, and sleeves or rings on the studs provided with one or more grooves or notches, the said lifting levers being provided with transverse bearing surfaces adapted for engagement with said notches or grooves, substantially as described.

5. The combination with a mold-table and upper and lower plungers, of a toggle for actuating the same, the central joint of which consists of interpenetrating parts provided with cylindric bearing apertures uniform in diameter and with convex and concave segmental bearing surfaces concentric with the bearing apertures, and arranged in contact with each other, and a straight cylindric bearing pin inserted through said bearing apertures, the toggle members being provided with detachable bearing blocks upon which are formed the said concave bearing surfaces, said bearing blocks being provided with projections or ribs arranged parallel with the axis of the said bearing pin and engaging the main parts of the toggle members, whereby said bearing blocks may be removed endwise from engagement with the toggle members, substantially as described.

6. The combination with a mold, of upper and lower plungers sliding therein, a cross-head for supporting the lower plunger, a spring or counterbalance weight sustaining the lower plunger yieldingly on the cross-head, a cross-bar sliding in vertical guideways below the said cross-head, and a stem connecting the said lower plunger with the said cross-bar and passing through the cross-head, said cross-head being provided with apertures for the passage of the stem larger than the latter so as to admit of lateral displacement of the cross-head without disturbing the position of the lower plunger, substantially as described.

7. The combination with a mold, of upper and lower plungers sliding therein, a cross-head for supporting the lower plunger, a spring or counterbalance weight sustaining the lower plunger yieldingly on the cross-head, a cross-bar sliding in vertical guideways below the said cross-head, a stem connecting the said lower plunger with the said cross-bar, and a lever pivotally connected with said cross-bar and engaged with a fulcrum upon the machine frame, said lever being adapted for contact with a part of or upon the lower cross-head which limits the upward movement of the lower plunger at the time of filling the mold, substantially as described.

8. The combination with a mold, of upper and lower plungers sliding therein, a cross-head for supporting the lower plunger, a spring or counterbalance weight sustaining the lower plunger yieldingly on the lower cross-head, a lever connected with the lower plunger and having a fulcrum upon the machine frame, a guide rod engaging the lower cross-head and forked or slotted at its lower end, and a pin secured in said lever and adapted to engage the forked or slotted end of said guide rod to limit the outward movement of the plunger at the time of filling the mold, substantially as described.

9. The combination with a mold, of upper and lower plungers sliding therein, a cross-head supporting the lower plunger, a spring or counterbalance weight serving to sustain the lower plunger yieldingly on the lower cross-head, a lever connected with the lower plunger and having a fulcrum upon the machine frame, a guide rod engaging the lower cross-head and forked or slotted at its lower end, and a pin secured in said lever and adapted to engage the forked or slotted end of said guide rod to limit the upward movement of the plunger at the time of filling the mold, the said pin being provided with an eccentric part which engages the guide rod and being adapted to be turned in the lever for adjusting the position of its eccentric part, substantially as described.

10. The combination with a mold, of upper and lower plungers sliding therein, a cross-head for supporting the lower plunger, a spring or counterbalance weight sustaining the lower plunger yieldingly on the lower cross-head, a lever connected with the lower plunger and having a fulcrum upon the machine frame, a guide rod engaging the lower cross-head and forked or slotted at its lower end, and a pin secured in said lever and adapted to engage the forked or slotted end of said guide rod to limit the upward movement of the plunger at the time of filling the mold, the said pin being provided with an eccentric part which engages the guide rod and being adapted to turn in the lever, and means for securing the said pin in a desired position, consisting of grooves or key-ways in the said pin and the lever, and a key or spline adapted for insertion therein, substantially as described.

11. The combination with a mold, of upper and lower plungers sliding therein, a cross-head for supporting the lower plunger, a spring or counterbalance weight sustaining the lower plunger yieldingly on the lower cross-head, a cross-bar located below the lower plunger and having sliding connection with the machine frame, a stem passing through the lower cross-head and connecting the plunger with the said cross-bar, a lever fulcrumed upon the machine frame and pivotally connected with the said cross-bar, and a stop on the lower cross-head constructed for contact with the said lever to limit the upward movement of the lower plunger under the action of said spring or counterbalance weight, substantially as described.

12. The combination with a mold, of upper and lower plungers sliding therein, a cross-head for supporting the lower plunger, a spring or counterbalance weight sustaining the lower plunger yieldingly on the lower cross-head, a cross-bar located below the lower plunger and having sliding connection with the machine frame, a stem passing through the lower cross-head and connecting the plunger with the said cross-bar, a lever fulcrumed upon the machine frame and pivotally connected with the said cross-bar, and a stop on the lower cross-head constructed for contact with said lever to limit the upward movement of the lower plunger under the action of said spring or counterbalance weight, said lever being provided with a journal bearing one half of which is removable, whereby the lever may engage with the cross-bar between the said stem and guides, substantially as described.

13. The combination with a mold, of upper and lower plungers sliding therein, a cross-head, a spring or counterbalance weight sustaining the lower plunger yieldingly on the lower cross-head, a lever connected with the lower plunger and adapted for contact with a part of or upon the lower cross-head, a vertically movable screw-shaft, a pivot connecting the screw shaft with the lever, a revolving nut mounted on the machine frame and engaging said screw-shaft, and means for rotating said nut, substantially as described.

14. The combination with a mold, of upper and lower plungers sliding therein, a cross-head, a spring or counterbalance weight sustaining the lower plunger yieldingly on the lower cross-head, a lever connected with the lower plunger, a vertically movable screw-shaft, a pivot connecting said screw-shaft with the lever, a revolving nut mounted on the machine frame and engaging said screw-shaft, a frame affording bearings for said nut and mounted upon pivotal supports or trunnions to afford freedom of lateral movement in the lower end of said screw-shaft, substantially as described.

15. The combination with a mold, of upper and lower plungers sliding therein, a lever for controlling the position of the lower plunger, a vertically movable screw-shaft, a pivot connecting said screw-shaft with the lever, a revolving nut mounted on the machine frame and engaging said screw-shaft, a frame affording bearings for said nut and mounted upon pivotal supports or trunnions to afford freedom of lateral movement in the lower end of said screw-shaft, a horizontal shaft mounted upon the machine frame concentrically with the said swinging frame and provided with a hand wheel or wheels, and intermeshing beveled gears upon the said nut and shaft, substantially as described.

16. The combination with a mold table and feed duct or hopper, of a reciprocating feed box, the front wall of which consists in whole or in part of a piece or strip which is materially weaker than the main parts of the feed-box and is detachably secured to the latter, substantially as described.

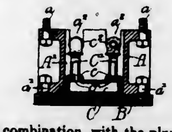
17. The combination with a mold and feed hopper, of a reciprocating feed-box, an oscillating arm by which the feed box is actuated, a pivot rod inserted through said arm, split sleeves placed upon the ends of the said rod at opposite sides of the arm and provided with notches, and connecting rods pivoted to the feed-box and inserted in said notches and provided with nuts on opposite sides of the said split sleeves whereby the latter may be clamped to the pivot rod and the connecting rods secured to the sleeves, substantially as described.

18. The combination with a mold and a feed hopper, of a reciprocating feed box, an oscillating arm by which the feed box is actuated, a pivot rod inserted through said arm, split sleeves placed upon the ends of the pivot rod and provided with notches, and connecting rods pivoted to the feed box and inserted in said notches and provided with nuts on opposite sides of the split sleeves, said split sleeves being provided with depressions or recesses which are engaged by the nuts to hold the rods in place when the nuts are loosened, substantially as described.

19. A frame for a brick-press, comprising two parallel side plates provided upon their inner faces with guides for the vertically movable parts of the machine, and rigidly connected with each other, said plates extending downwardly to the horizontal base or foundation on which the machine rests, and a separate frame for the driving gear of the machine secured against the outer surface of one of the side plates and also extending downwardly to the said base or foundation, substantially as described.

20. A brick machine, comprising upper and lower plungers, a toggle for actuating the same, a crank-shaft for actuating said toggle, a main frame consisting of parallel vertical side plates provided on their inner faces with bearings for the vertically movable parts of the machine, and provided with bearings for said crank-shaft, a gear wheel attached to the crank-shaft outside of one of the frame plates, a driving gear embracing a gear-pinion engaged with said gear-wheel on the crank-shaft, and a separate frame for said driving gear secured to the outer surface of the main frame, substantially as described.

488,623. STEAM-HEATER FOR BRICK-PRESSES. BRUCE C. WHITE, Chicago, Ill. Filed Aug. 11, 1892. Serial No. 442,762. (No model.)



Claim.—1. The combination, with the plunger of a brick press, provided with a cavity or recess, of a heating device comprising a continuous steam pipe made separate from the plunger and passing through the same, a part of said pipe which is located within the recess of the plunger being in immediate contact with a part of the plunger which extends continuously to the working face thereof, to afford direct transmission of heat from the walls of the pipe to the working face of the plunger, substantially as described.

2. The combination, with a plunger consisting of a recessed main part or body and a face plate attached thereto, said main part or body being provided with a recess or cavity extending to the inner surface of the plate, of a heating device comprising a continuous steam pipe made separate from the body and face plate and passing through the recess of the said body, a part of said passage which is within the body being in immediate contact with the inner surface of the said face plate, substantially as described.

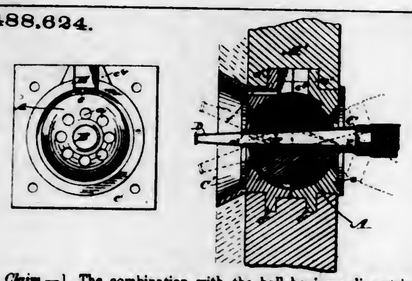
3. The combination with a plunger consisting of a hollow or recessed main part or body and a face plate secured thereto and closing the lower end of the recess or opening in the body, said body being provided with lateral notches or recesses a^2 a^2 in its upper edge, of a steam passage consisting of a hollow casting or box C and pipes C' C extending through said notches and connected with opposite ends of said hollow casting or box, substantially as described.

4. The combination, with a plurality of recessed plungers, of a heating device for the same consisting of a continuous steam pipe made separate from the plungers and passing through the recesses of the same; parts of said pipe which are within the plungers being in immediate contact with the inner surfaces of the plungers in their parts opposite the working faces thereof, but being free from lateral contact with the said inner surfaces of the plunger, whereby the said pipe is free to move laterally with reference to the plungers, substantially as described.

5. The combination, with a plurality of recessed plungers which are provided with face plates and the recesses of which extend to the inner surfaces of said face plates, of a heating device comprising a continuous steam pipe made separate from the plungers and passing through the recesses of the same, parts of said pipe which are within the plungers being in immediate contact with the inner surfaces of the face plates but being free from lateral contact with the inner surfaces of the plungers, whereby said pipe is free to move laterally with reference to the plungers, substantially as described.

488,624. HOSE-HOISTS GUIDE FOR WALLS. JAMES H. BROWNE, Coney Island, N. Y. Filed Feb. 25, 1892. Serial No. 422,782. (No model.)

488,624.



Claim.—1. The combination with the ball having a diametric bore, of the casing C formed in two parts *c c* having registering concavities in their inner abutting faces receiving the ball, embrasured openings c^3, and flanges *c'* bolted together by transverse bolts, and a locking bolt to engage the bore of the ball, substantially as set forth.

2. The combination with the casing C having a spherical opening or recess provided with opposite opening c^3, and an extended flaring mouth C' concentric with one of the said openings, of the transversely bored ball within the opening or recess, substantially as set forth.

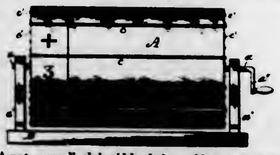
3. The combination with the casing having opposite openings, of the ball mounted to turn in the casing and having a transverse bore and recesses *a* in the ball to receive the end of a tool for turning the ball, substantially as set forth.

4. The combination with a wall or the like, of a hose nozzle guide fitted therein and having a through bore for receiving a hose nozzle, the said guide being mounted to be rocked, for the purpose specified, and means for locking the guide, substantially as described.

5. The combination with the casing having a spherical recess, opposite openings c^3, a vertical recess c^4 communicating with the spherical recess, and a transverse passage *f* leading from the face of the casing to the said vertical recess, of the transversely bored ball in said spherical recess, a bolt in the vertical recess to lock the ball and adapted to be operated through the passage *f*, substantially as set forth.

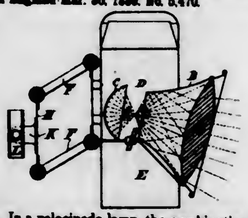
6. A hose nozzle guide, consisting of a casing having a transverse opening, a ball fitted therein and adapted to be rocked, the ball having a diametrical through bore adapted to register with the case opening or to range transversely thereto, and a gravity bolt adapted to enter the said bore when the latter is brought in line therewith, substantially as described.

488,625. ROTARY BLACKBOARD. JAMES F. CLARK, Columbia Sulphur Springs, W. Va. Filed Apr. 13, 1892. Serial No. 429,013. (No model.)



Claim.—A rotary cylindrical black-board having a series of bands arranged axially on the exterior surface, for retaining removable object cards in combination with said cards for the purpose of instruction, substantially as described.

488,626. LAMP FOR VELOCIPEDES. AUGUSTINE C. DAVIDGE, London, England. Filed Jan. 21, 1891. Serial No. 378,575. (No model.) Patented in England Mar. 30, 1889. No. 5,470.



Claim.—1. In a velocipede lamp, the combination with the lamp case and spring carrying arms therefor, of the socket piece adapted to support the whole lamp, and an adjustable connection between the carrying arms and socket piece formed by the lugs at each side of the socket and the bolt passing through the lugs to hold the lamp in adjusted position; substantially as described.

2. In a velocipede lamp the combination of a socket L lugs K screwed pins *k k* and socket plate H constructed arranged and operating substantially as and for the purpose hereinbefore set forth.

488,627. CARTRIDGE. THOMAS F. BUSTACE, St. Louis, Mo. Filed May 7, 1892. Serial No. 432,219. (No model.)

Claim.—1. A shot-cartridge having a case provided with a series of bands, said bands being separately removable at the forward end of the cartridge, and adapted, when the cartridge is fired, to drop successively, and independently of each other, from the rear end of the cartridge, substantially as described.

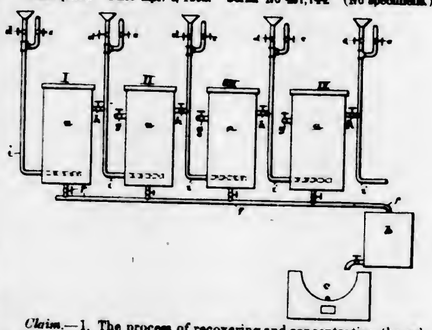
2. A shot-cartridge having a case provided with a series of bands, said bands being of uniform diameter, and arranged successively upon the cartridge, but independently of each other, and the forward one or ones of said bands being attachable to and removable from the cartridge at the forward end thereof, substantially as described.

3. A shot-cartridge case consisting of a shell, a ring or band attached to said shell at the base thereof, and one or more rings or bands which can be attached to or removed from the case by slipping them onto or off the case at the forward end thereof, substantially as described.

4. A shot-cartridge case containing in its construction a shell and one or more detachable, encircling, bands, said bands encircling said shell independently of each other and held in place thereon by means of a shoulder at the base-end of the shell, substantially as described.

5. A shot-cartridge case combining in its construction a shell and a detachable band or ring, said band or ring being held in place upon said case by means of a shoulder at the base-end of the shell, substantially as described.

488,628. METHOD OR PROCESS OF TREATING SLUDGE. HARR A. FRASCH, Cleveland, Ohio, assignor to the Grasselli Chemical Company, same place. Filed Apr. 4, 1892. Serial No. 427,744. (No specimens.)

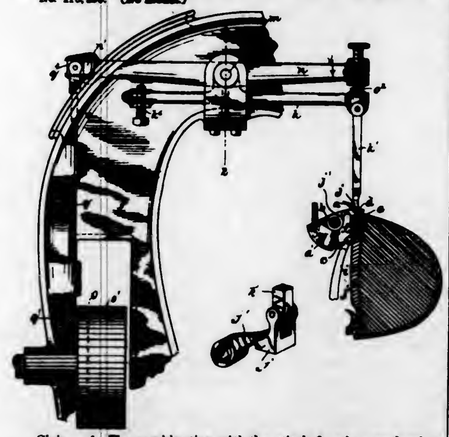


Claim.—1. The process of recovering and concentrating the sulphuric acid of sludge, which consists in leaching the sludge with water, the temperature of which is below the melting point of heavy sludge and the volatilizing point of light sludge, and then passing the watery product from one tank through the sludge of a series of tanks in succession, the accumulating solution being carried from tank to tank until the desired concentration or density of acid is obtained, substantially as described.

2. The method herein described of treating sludge, which consists in removing the free acid from the sludge by means of cool water, and then subjecting the sludge to the action of an alkaline solution and heat until the remaining sulphonic acid combinations are saturated and brought into solution and the oily substance separated therefrom, substantially as described.

3. The process herein described of treating sludge which consists in removing the free acid by means of cool water, then subjecting the sludge to the action of heat and alkali to liberate the oily substances and neutralize the acid combinations, then drawing off the oil, and at last treating the residuum with a neutral or acid salt which is soluble in water, thereby separating off the resinous or pitchy constituent, substantially as described.

488,629. WORK-COMPRESSING MECHANISM FOR SEWING-MACHINES. CHARLES S. GOODING, Brookline, assignor to the Seaver Sewing Machine Company, Boston, Mass. Filed Jan. 18, 1892. Serial No. 418,429. (No model.)



Claim.—1. The combination with the stitch forming mechanism of a sewing machine, including a curved needle, of a work-support, suitably arranged in relation to said needle, a work-clamp or jaw, arranged to oscillate on a fixed stud or bearing, and connections between said jaw and the driving-shaft of the machine, whereby the jaw is positively oscillated and caused to intermittingly compress the material against the work-support, said connections including a spring which acts to give the jaw a yielding pressure when it is compressing the material, as set forth.

2. The combination with the stitch-forming mechanism of a sewing machine, including a curved oscillating needle, of a work-support, suitably arranged with relation to the needle; a work-clamp or jaw, arranged to oscillate on a fixed stud or bearing; a rocking-bar, pivoted to the frame of the machine, and connected at one end with said jaw; a pivoted operating lever, and means for positively oscillating the same by the power of the machine; and a spring, interposed between said lever and bar, whereby the jaw or clamp is permitted to yield in conformity to the thickness of the material on which it bears; as set forth.

488,630. METHOD OF MAKING CORNERS, COVERS, AND LIKE PARTS FOR BOOKS, BOXES, AND SIMILAR ARTICLES OF CELLULOID OR KINDRED MATERIAL. ALFRED C. HAFELY, New York, N. Y. Filed Apr. 27, 1892. Serial No. 430,900. (No model.)

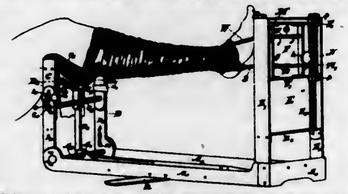
Claim.—1. The method of making covers, corners, and like parts for books, boxes, and other uses, of sheet celluloid or kindred material, rendered plastic by heat, which consists of forming up its border by suitable dies, first at right angles and then parallel to the cover or corner, and uniting them by the application of heat and pressure, substantially as set forth.

2. The method of making covers, corners, and like parts for books, boxes, and other uses, of sheet celluloid or kindred material, rendered plastic by heat, which consists of forming up its border by suitable dies, first at right angles and then parallel to the cover or corner, uniting and blending them by the application of heat and pressure, and padding or filling the interior so formed, substantially as set forth.

3. The method of making corners, covers, and like parts for books, boxes, and other uses, of celluloid or other material that may be rendered plastic by heat, which consists in applying heat and pressure by suitable dies, folding over the borders, and cementing or otherwise securing them together, substantially as set forth.

4. A cover or corner for books, boxes, and like uses consisting of a sheet of celluloid or kindred material, and provided with round corners, the borders of the said cover or corner being folded over upon its back, and a tongue or flap at meeting edges of the said borders, cemented or otherwise secured thereto, substantially as, for other purposes, set forth.

488,631. FRACTURE APPARATUS. GEORGE W. KIRK, Helena, Mont. Filed Feb. 23, 1892. Serial No. 422,576. (No model.)



Claim.—1. An apparatus for the treatment of fractures containing a horizontal base frame; two adjustable standards attached to the ends of said frame; a broad band stretched from one to the other standard; devices for adjusting said band; devices for applying extension and counter-extension to the fractured limb, and devices for holding the standards in adjusted position; all arranged and operated substantially as herein shown and described.

2. In an apparatus designed for the treatment of fractures, the combination with a base frame and two opposite uprights or standards fixed at the ends of the base frame of a band adapted to support the fractured limb, and stretched adjustably between said standards, substantially as herein shown and described.

3. In an apparatus for treating fractures the combination of a base frame with two upright adjustable standards fixed at the ends of the base frame, one provided with a mechanical device for securing extension of the fractured limb, and the other offering a firm brace or rest for the limb above the fracture to secure counter-extension and being adjustable at any angle from the perpendicular, substantially as herein shown.

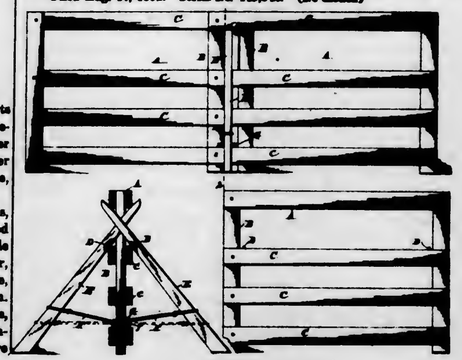
4. In an apparatus for treating fractures, the combination of a band, stretched adjustably between two end standards, supporting the fractured limb in mid-air, with a mechanical device for securing extension of the limb and a firm brace or rest for the limb above the fracture to secure-counter-extension, substantially as herein shown.

5. In an apparatus for treating fractures, the combination with a base board or base frame, of end standards, one of which is adjustable at any angle from the perpendicular, as and for the purpose herein described.

6. In an apparatus for treating fractures, the combination with a base frame, of a standard, having an adjustable sliding frame, carrying two wheel shafts, operated by worm screws, substantially as, and for the purpose, described.

7. In an apparatus for treating fractures, the combination with a base frame, of an end standard, adapted to use as a brace and rest, jointed to the base frame, and jointed in the middle so as to be adjustable at any angle from the perpendicular, substantially as shown and described.

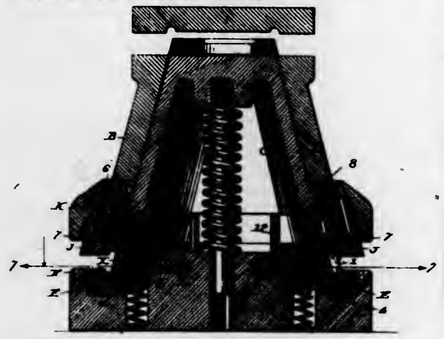
488,632. PORTABLE FENCE. WILLIAM A. NEAL, Bungee's, W. Va. Filed Aug. 17, 1892. Serial No. 443,346. (No model.)



Claim.—1. In a portable fence, the combination of the fence panels adapted to have their ends overlapped by the ends of the adjacent panels pointed securing pins projecting outwardly from an intermediate rail of each panel near their ends, diagonal locking braces crossed between the upper rails of the overlapped ends of the fence panels and having their under binding edges engaged by the projecting pointed securing pins, and a sectional locking device connecting the lower ends of the braces, substantially as set forth.

2. In a portable fence, the combination of the fence panels adapted to have their ends overlapped by the ends of the adjacent panels, securing pins projecting from an intermediate rail of each panel near its ends, diagonal locking braces crossed between the upper rails of the overlapped ends of the fence panels and having their under sides engaged by the projecting securing pins, separate locking wires movably connected at their outer ends to each of said braces and terminating at their inner ends in eyes or loops and locking pins engaging the loops of said wires and arranged on opposite sides of the fence, substantially as set forth.

488,633. MACHINE FOR THE MANUFACTURE OF SHEET-METAL ARTICLES. JAMES R. PADDOCK, Cincinnati, Ohio. Filed Mar. 5, 1892. Serial No. 423,923. (No model.)



Claim.—1. The combination of a curling die consisting of a series of radially movable sections each having a curling groove, and a cap die also in sections movable to and from the curling die, clamps for holding the body of the article, and means for connecting the cap-die with one of the clamps, substantially as set forth.

2. The combination of a base, a curling die consisting of sections supported by said base to move radially thereon, springs for moving the curling die sections outward, and a cap-die having a curling groove and formed in sections and adapted to be applied to and removed from the curling die, substantially as set forth.

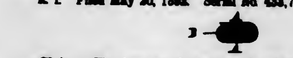
3. The combination of the base, a curling die in sections supported by the base, clamps for supporting the body of the article to be curled, and a cap-die in sections provided with guide rods and carried by one of the clamps, and springs for depressing the sections of the cap-die, substantially as described.

4. The combination of a curling die consisting of radially movable sections and a locking device for holding the sections in place, and means for displacing the locking device after the beginning of the curling action, substantially as described.

5. The combination of the base, a sectional curling die supported thereon, a movable locking device for said sections, a clamp for holding the body of the article to be curled and means for displacing the locking device after the clamp has moved to a limited extent, substantially as set forth.

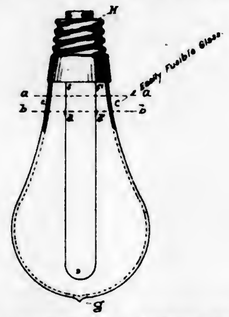
6. The combination of the base, curling die, consisting of sections supported to move radially on the base, locking device G supported by a spring in position to lock said sections, clamps for holding the body of the article and movable to and from the base, and pins 12 extending from one of the clamps in position to make contact with the locking device, substantially as and for the purpose set forth.

488,634. DENTAL FILLING. WILLIAM D. PORTER, Providence, R. I. Filed May 20, 1892. Serial No. 433,743. (No model.)



Claim.—The improved compound gold filling pellet for dentists' use herein described, consisting of a piece of plastic gold inclosed in a wrapper of gold foil, substantially as specified.

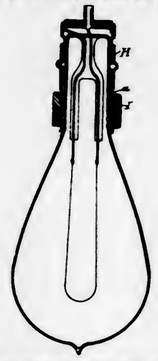
488,635. INCANDESCENT ELECTRIC LAMP. FREDERICK H. PRENTISS, New York, N. Y. Filed Apr. 4, 1892. Serial No. 427,660. (No model.)



Claim.—1. An incandescent lamp for electric lighting having a section of the glass bulb below the metal cap composed of a softer glass than the glass of the other parts of the lamp, in combination with the metal top, platinum wires and filament, substantially as and for the purposes described.

2. An incandescent lamp for electric lighting having the upper portion of the glass bulb, including the part thereof covered by the metal cap, composed of a softer glass than the glass of the other parts of the lamp, in combination with the metal top, platinum wires and filament, substantially as and for the purposes described.

488,636. INCANDESCENT LAMP. FREDERICK H. PRENTISS, New York, N. Y. Filed Apr. 27, 1892. Serial No. 430,860. (No model.)



Claim.—1. In an incandescent lamp for electric lighting, a cap composed of two parts, one of which parts is permanently fastened to the glass bulb; said two parts being easily attachable and detachable to and from each other, in combination with the glass bulb, electrical conductors and filament, substantially as and for the purposes described.

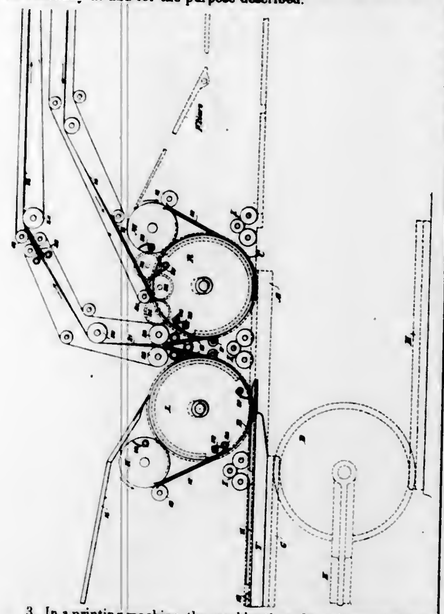
2. In an incandescent lamp for electric lighting, a cap composed of two parts, one of which parts is permanently fastened to the glass bulb, the removable part being held in position by a threaded sleeve connecting the two parts in combination with the glass bulb, electrical conductors and filament, substantially as and for the purposes described.

3. In an incandescent lamp for electric lighting, a cap composed of two parts, one of which parts is permanently fastened to the glass bulb, said two parts being connected by one or more screws in combination with the glass bulb, electrical conductors and the filament, substantially as and for the purposes described.

488,637. PRINTING-MACHINE. WALTER SCOTT, Plainfield, N. J. Filed Feb. 10, 1891. Serial No. 380,889. (No model.)

Claim.—1. In a printing machine, the combination of a reciprocating type bed carrying two forms (an inner and an outer), two oscillating impression cylinders which take impressions in both directions of their movement, feeding devices to each cylinder, and delivery means common to the two cylinders, substantially as described.

2. In a printing machine, the combination of a reciprocating type bed, two oscillating impression cylinders, sheet-feeding devices above each cylinder, sheet-reversing apparatus at the inner half of each cylinder, sheet-delivery means at the inner side of each cylinder, converging guides and tapes for receiving and feeding the delivered sheet, substantially as and for the purpose described.



3. In a printing machine, the combination of a reciprocating type bed, two oscillating impression cylinders, sheet-feeding devices above each cylinder, sheet-reversing apparatus at the outer side of each cylinder, throw-offs on each cylinder and a friction cylinder at the inner side of each cylinder, for delivering the sheets, and converging guides and tapes for receiving and feeding the sheets, substantially as and for the purpose described.

488,638. UMBRELLA-STICK. JAMES H. SPRAGUE, Norwalk, Ohio. Filed Mar. 11, 1892. Serial No. 424,543. (No model.)

Claim.—1. The herein-described improved umbrella-stick, consisting of a metal tube, a threaded plug fixedly secured in the lower end of the same, combined with a hollow handle, a metal tube let into the upper end of the same and receiving and fitting over the lower end of the stick and provided at its lower end with an interiorly threaded internally bushing adapted to fit the plug, substantially as specified.

2. The tubular umbrella-stick longitudinally slotted, the sleeve mounted for movement on the stick and having its lower end provided with inclined teeth, the transverse pin passed through the sleeve and the slot of the stick, the spring for pressing the sleeve toward the lower end of the stick, the threaded plug inserted in the lower end of the stick combined with the hollow handle, the tube fitted therein and having its upper end toothed contrary to that of the sleeve, and a bushing internally threaded and located in the lower end of the holder of the handle, and adapted to receive and fit said threaded plug, substantially as specified.

3. The combination with the umbrella stick, the upper end of which is internally bored and threaded, of the bored tip adapted to take over the upper bored end of the stick; the metal tube mounted in the tip and receiving the stick, and the metal stud secured within the tube and having its lower end reduced and externally threaded to take within and engage the threads of said stick.

4. The combination with the umbrella-stick and the internally-threaded smaller tube fitted in the upper bored end of the same, of the bored tip, the metal tube therein adapted to fit the tube of the stick, and the plug located in the tube of the tip and having its lower portion threaded exteriorly and adapted to be inserted in the tube at the upper end of the stick, substantially as specified.

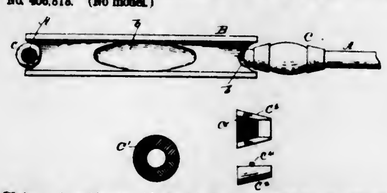
5. The combination with the umbrella handle and stick one of which is threaded removably and inserted in the other, of annular series of teeth located at the upper end of the handle member, and a spring-pressed toothed locking-sleeve mounted for movement upon the stick and adapted to engage with the aforesaid tooth, substantially as specified.

6. The combination with the handle and stick-members of an umbrella, one of which is removably threaded into the other, and a non-rotatable reciprocating locking ring mounted on one of said members and adapted to engage the other and to prevent a retrograde movement between said members whereby a separation would occur, substantially as specified.

488,639. BELT-HOLDER. MUHR TROWBRIDGE, Hackensack, N. J. Filed Apr. 12, 1892. Serial No. 428,850. (No model.)

Claim.—The waist belt catch 1, formed of wire with the back member 2, consisting of two upright extensions 5, having at their top the depending loop button catch 3, two extensions 7 extending upward from the bottom of extensions 5, and the front member 4, consisting of the extensions 8, projecting downward from the upper ends of the extensions 7 and connected together at their lower ends by the cross-wire 9, substantially as shown and described.

488,640. CABLE. JOSIAH H. L. TUCK, San Francisco, assignor of one-half to E. E. Tucker, Stockton, Cal. Filed Sept. 26, 1891. Serial No. 406,518. (No model.)



Claim.—A cable provided with bosses consisting of longitudinally divided sleeves and separable collars threaded thereon, and having means for locking the parts of said collars together, as set forth.

488,641. COTTON-PRESS. JAMES E. VAN DYKE and HARRY STORAGER, Clarksville, Tex., assignors of one-third to Eugene M. Bowers, same place. Filed Apr. 5, 1892. Serial No. 427,884. (No model.)

Claim.—The combination with the framework having the baling-chamber, the plunger-head and plunger mounted for reciprocation therein, the latter being provided at one side with a rack and below the same with a trip-pin, a power-shaft journaled in the framework at one side of the plunger-bar, a gear loosely mounted on the shaft

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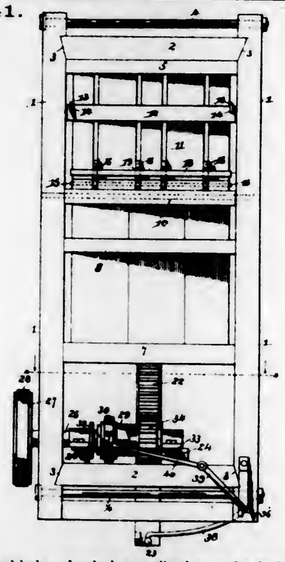
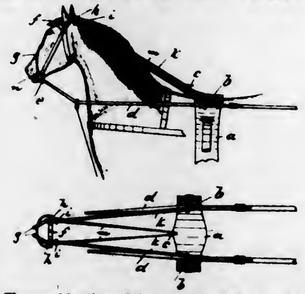


having a toothed hub a clutch-sleeve splined upon the shaft, a clutch-lever having its yoke connected with the clutch-sleeve and fulcrumed at one side of the same to the framework, a transversely disposed rocking-shaft, rock-arms extending to one side of and from the shaft, one of which is arranged in the path of the trip-pin, and the connecting-rod between the remaining rock-arm and the free end of the clutch-lever, substantially as specified.

488,642. CHECKREIN. BENJAMIN R. VAN WAGONER, Waldwick, N. J. Filed Sept. 30, 1892. Serial No. 447,377. (No model.)



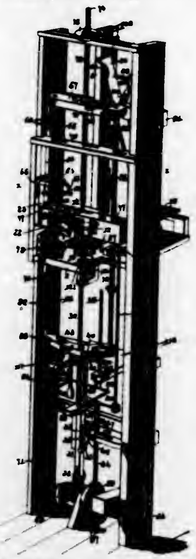
Claim.—The combination of the reins *d*, saddle *a* and bridle bit *e*, with the crown strap *f* and nose strap *g* said nose strap being attached to the bridle bit and passing through the crown strap, and with the check rein *k* attached at its ends to the reins *d* and passing through loops *i* of the nose strap *g*, the middle of said check rein *k* being adapted to play loosely in the hook *c* of the saddle *a*, substantially as described.

488,643. MACHINE FOR REAMING HOLES IN SPOOL-BLOCKS. RICHARD L. WIGGINS, Willimantic, Conn. Filed June 14, 1892. Serial No. 436,730. (No model.)

Claim.—1. In a reaming machine, the combination of a frame, a reamer, a vertically movable centering plug, adapted to enter the opening of a spool block, and means for clamping a spool block after the latter is centered, substantially as described.

2. In a reaming machine, the combination of a frame provided with a spool table having an opening, a reamer, the upper and lower vertically movable centering plugs arranged above and below the spool table and adapted to enter the opening of a spool block to center the latter, and means for clamping the spool block after the latter has been centered, substantially as described.

3. In a reaming machine, the combination of a frame having a spool table, a vertically movable centering plug arranged below the spool table, a vertically movable and horizontally swinging centering plug arranged above the spool table, said centering plug being adapted to enter the opening of the spool block, a reamer arranged above the spool table and means for holding a spool block after the latter has been centered, substantially as described.



4. In a reaming machine, the combination of a frame provided with a spool table, a spurred disk arranged above the spool table, and having an opening and adapted to clamp a spool block when the latter has been centered, a reamer arranged above the spool table and adapted to pass through the opening of the disk into the spool block opening, and a centering plug having a vertical movement and adapted to enter the opening of the spool block through the opening of the disk to center the spool block, and having a horizontal movement to carry it away from the reamer, substantially as described.

5. In a reaming machine, the combination of a frame having a spool table, a vertically movable spurred disk having an opening, a reamer, a centering plug, and a clearing arm adapted to engage the upper end of a spool block to free the latter from the disk, substantially as described.

6. In a reaming machine, the combination of a frame having a spool table, a vertically movable disk adapted to clamp a spool block, and having an opening, a vertically movable rod, an L-shaped lever fulcrumed at its angle on the rod and carried by the same, a centering plug depending from one of the arms and adapted to enter the opening of the disk, and a spring engaging the other arm of the L-shaped lever to carry the centering plug away from the disk, substantially as described.

7. In a reaming machine, the combination of a frame having a spool table, a vertically movable cross-bar a spurred disk having an opening and secured to and carried by the cross-bar, a vertically movable spring actuated rod mounted in the cross-bar and provided at its upper end with a depending parallel portion adapted to enter an opening of the cross-bar to prevent the rod turning, said rod being provided at its upper end with a horizontally extending pin, an L-shaped lever secured at its angle to the rod a depending centering plug carried by one of the arms of the L-shaped lever and adapted to enter the opening of the disk, a spring connected to the other arm of the L-shaped lever and to the cross-bar and adapted to move the centering plug away from the disk, and means for lifting the rod and an inclined guide arranged to engage the horizontal pin to turn the rod and carry the centering plug over the opening of the disc, substantially as described.

8. In a reaming machine, the combination of a frame, a vertically movable reamer carrying frame, a cross-bar vertically movable thereon, a spurred disk having an opening and secured to and carried by the cross-bar, a vertically movable spring actuated rod mounted on the cross-bar and provided at its upper end with a depending parallel portion adapted to enter an opening of the cross-bar to hold the rod against turning, a pin extending horizontally from the upper end of the rod, an L-shaped lever secured at its angle to the rod, a centering plug depending from one arm of the lever, a spring connecting the other arm of the lever with the cross-bar, an inclined guide arranged to engage the pin, and a bell-crank lever fulcrumed on the cross-bar, and actuated by the reamer carrying frame and arranged to engage the horizontal pin to lift the rod, substantially as described.

9. In a reaming machine, the combination of a frame, a vertically movable reamer carrying frame, a cross-bar mounted thereon, a vertically movable rod mounted on the cross-bar, a spring for moving the rod downward, an L-shaped lever secured at its angle to the rod, a centering plug depending from one arm of the L-shaped lever, a spring connecting the other arm of the lever with the cross-bar, and a bell-crank lever fulcrumed on the cross-bar and actuated by the reamer carrying frame and arranged to engage the rod, and having a stop arranged to limit the turning of the rod, substantially as described.

10. In a reaming machine, the combination of a main frame, a reamer carrying frame vertically movable therein and provided with a depending foot, a cross-bar mounted on the reamer carrying frame, a rod mounted for vertical movement on the cross-bar, an L-shaped lever secured at its angle to the rod, and having one arm actuated by a spring, a centering plug depending from the other arm, and a bell-crank lever fulcrumed on the cross-bar and having one arm arranged to engage the rod to lift the same and having its other arm arranged to be engaged by the foot of the reamer carrying frame, substantially as described.

11. In a reaming machine, the combination of a reamer carrying frame, a main frame, a vertically adjustable foot depending from the reamer carrying frame, a cross-bar mounted on the reamer carrying frame, a rod mounted for vertical movement in the cross-bar, a spring actuated L-shaped lever secured at its angle to the rod, a centering plug depending from one of its arms, a horizontal pin projecting from the upper end of the rod, and a bell-crank lever fulcrumed on the cross-bar and having one arm arranged to engage the pin and provided with a stop to limit the swing of the same, and having its other arm provided with a roller and arranged to be engaged by said foot, substantially as described.

12. In a reaming machine, the combination of a main frame, a reamer carrying frame mounted thereon and having a vertical movement and provided with side rods, a cross-bar mounted on the side rods and having a vertical movement and adapted to be raised by the reamer carrying frame, a pitman connected with the cross-bar, and a cam arranged to engage the pitman to move the same downward to cause the cross-bar to clamp a spool block, substantially as described.

13. In a reaming machine, the combination of a main frame, a reamer carrying frame mounted thereon and having a vertical movement, and provided with side rods a cross-bar mounted on the side rods and having a vertical movement and adapted to clamp a spool block, means for moving the cross-bar downward, and collars arranged on the side rods and adapted to engage the cross-bar and raise the same, substantially as described.

14. In a reaming machine, the combination of a main frame, a reamer carrying frame having a vertical movement therein, a reamer, a cross-bar mounted on the reamer carrying frame and having a vertical movement collars secured to the reamer carrying frame and arranged below the cross-bar, and adapted to engage and lift the latter, and means for moving the cross-bar downward to clamp a spool block, substantially as described.

15. In a reaming machine, the combination of a main frame, a vertically movable reamer carrying frame, a clamping frame having a cross-bar adapted to engage a spool block to hold the same, said clamping frame having a vertical movement and being raised by the reamer carrying frame, a horizontal shaft having a crank arm, a pitman connecting the reamer carrying frame with the crank arm, a cam wheel mounted on the horizontal shaft and a pitman 84 having its upper end connected with the clamping frame and having its lower end engaged by the cam wheel to move the clamping frame downward, substantially as described.

16. In a reaming machine, the combination of a main frame, a vertically movable reamer carrying frame, a clamping frame mounted on the reamer carrying frame and having a vertical movement and being raised by the reamer carrying frame, a horizontal shaft having a crank arm connected with the reamer carrying frame, a cam wheel mounted on the horizontal shaft, and a pitman having its upper end connected to the clamping frame and provided at its lower end with a longitudinal slot to receive the shaft and having a laterally extending roller arranged to be engaged by the cam wheel whereby the clamping frame is moved downward to clamp a spool block, substantially as described.

17. In a reaming machine, the combination of a main frame, a vertically movable reamer carrying frame having side rods, a vertically movable clamping frame having a cross-bar mounted on the side rods, collars arranged on the side rods and adapted to engage the cross-bar to lift the clamping frame, a horizontal shaft having a crank arm connected with and actuating the reamer carrying frame, and a cam wheel for depressing the clamping frame, substantially as described.

18. In a reaming machine, the combination of a main frame, vertical parallel guide rods mounted thereon, a vertically movable reamer carrying frame composed of side rods and top and bottom cross-bars, the latter being provided with openings to receive the guide rods, a clamping frame having vertical movement and mounted on the side rods and comprising a cross-bar, side rods having their upper ends secured to the cross-bar and a cross-rod connecting the lower ends of the side rods of the clamping frame, collars arranged on the side rods of the reamer carrying frame and adapted to engage and lift the clamping frame, and means for reciprocating the reamer carrying frame and for depressing the clamping frame, substantially as described.

19. In a reaming machine, the combination of a main frame, a vertically movable reamer carrying frame, a horizontal shaft, a cam mounted on the horizontal shaft, the lower centering plug having a stem arranged to be lifted by the cam, and a push bar depending from the carrying frame and arranged to engage the said stem, substantially as and for the purpose described.

20. In a reaming machine, the combination of a main frame, a vertically movable reamer carrying frame, a lower centering plug having a stem, a longitudinally slotted foot secured to the stem and having a limited movement and provided with an anti-friction wheel, a spring cushioning the foot, a cam wheel arranged to lift the foot and a push bar depending from the reamer carrying frame and adapted to engage the stem, substantially as described.

21. In a reaming machine, the combination of a main frame, a vertically movable reamer carrying frame, a hopper, a reciprocating spool carriage arranged below the hopper, and an oscillating lever fulcrumed intermediate its ends and having its lower end connected with the carriage and having its upper end actuated by the reamer carrying frame, substantially as described.

22. In a reaming machine, the combination of a main frame, a vertically movable reamer carrying frame, a hopper, a reciprocating spool carriage, an oscillating lever fulcrumed intermediate its ends and having its lower end connected with the carriage and having its upper portion inclined toward the reamer carrying frame and provided with a curved edge, a plate arranged on the reamer carrying frame and adapted to engage the curved edge of the lever, and a horizontal pin adapted to engage the inclined portion of the lever, substantially as described.

23. In a reaming machine, the combination of a main frame, a reamer carrying frame, an adjustable plate horizontally disposed on the reamer carrying frame, a vertically adjustable plate mounted on the reamer carrying frame and having a horizontally arranged pin, a carriage, an oscillating lever fulcrumed intermediate its ends and having its lower end connected with the carriage, and having its upper end arranged to be engaged by the pin and the horizontal plate, substantially as described.

24. In a reaming machine, the combination of a main frame, a hopper, and a carriage reciprocating below the hopper and comprising a body, an L-shaped plate secured to the body and having a vertical portion provided with vertical slots, a horizontal plate secured to the said vertical portion, and having set screws arranged in the slots, and spring actuated fingers pivotally mounted on the carriage, substantially as described.

25. In a reaming machine, the combination of a main frame, a reciprocating spool carriage, and a hopper arranged above the spool carriage and comprising the grooved sections, one of which being adjustably secured to the main frame, the slotted plates secured to one of the sections and connected with the other by set screws arranged in the slots, substantially as described.

26. In a reaming machine, the combination of a frame, a reamer, a centering plug adapted to enter the opening of a spool block, and a clamping disk having an opening receiving the centering plug and adapted to clamp a spool block after the latter has been centered, substantially as described.

488,644. AUTOMATIC WAGON-BRAKE. BENAJAH WILCOX, Gibson, N. Y. Filed Sept. 23, 1892. Serial No. 446,612. (No model.)

Claim.—1. The combination with a running gear, the oppositely disposed brake levers carrying brake-shoes at their outer ends, of a lever fulcrumed intermediate of its ends at the rear end of the tongue and arranged in the slot thereof and extending above and below the same, a reach rod having its rear end connected with the brake levers, and its front end provided with a collar loosely sliding on the lower portion of the lever at the rear end of the tongue, and a tongue rod connected with the upper end of the lever at the rear end of the tongue, substantially as described.

2. The combination with a running gear, the oppositely disposed brake levers carrying brake-shoes, of a lever 10 fulcrumed on the rear end of the tongue and extending above and below the same and having its lower portion rounded, a tongue rod connected with the upper end of the lever 10, and a reach rod having its lower end connected with the brake levers and provided at its front end with a collar arranged loosely on the lower portion of the lever 10 and adapted to turn on the lever to permit a cramping of the running gear, substantially as described.

3. The combination with a running gear, of oppositely disposed brake levers carrying brake-shoes, the plate provided at its ends with slots and pivotally connected thereat to the adjacent ends of the brake levers and provided with a central socket, a set screw mounted on the socket, and a connecting rod having its rear end arranged in the socket and adjustably secured to the plate by the set screw, substantially as described.

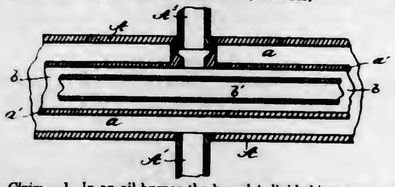
4. The combination with a running gear, of the oppositely disposed brake levers, the lever 10 fulcrumed on the tongue, a reach rod connected with the lower end of the lever 10 and to the inner ends of the brake levers, a guide plate secured to the upper face of the tongue and having upwardly turned edges, a slide having its edges bent inward on its lower face to form ways to receive the guide plate and provided at its rear end with laterally extending ears and connected with the upper end of the lever 10, the stay chains having their front ends attached to said ears, and the tongue rod connected with the front end of the slide, substantially as described.

488,645. PUSH-BUTTON AND THERMOSTAT. EDWARD L. ASHLEY and WALLACE H. CAMP, Waterbury, Conn. Filed May 26, 1892. Serial No. 434,302. (No model.)

Claim.—1. In a combined push-button and fire alarm, the combination of the contact plates with which the two line wires are respectively connected, the thin metallic shell, the push-button supported therein, an electric connection between said shell and one of said wires, a spring finger electrically connected with the other line wire and bearing against the inner wall of the shell, and a fusible coating of insulation interposed between said finger and shell, substantially as set forth.

2. The combination of the thin metal shell mounted upon a base of insulating material, the wire A electrically connected with said shell, the fusible coating of insulation on the inner wall of the shell, the wire h', and the spring-finger i electrically connected with the wire h' and bearing resiliently against said coating, substantially as shown and described.

488,646. INJECTOR-BURNER. AMOS L. AVERY, Bradford, Pa. Filed Feb. 1, 1892. Serial No. 419,891. (No model.)



Claim.—1. In an oil burner the barrel A divided into two chambers a and b the former encircling the latter, each having its respective supply pipe for oil and steam, said oil chamber having an outlet pipe A^3 through which the gas is conveyed to pipe b' substantially as shown.

2. In an oil burner a main barrel A having a steam and an oil compartment the former within the latter said oil compartment having an outlet pipe A^3 which conveys the gas to pipe b' said gas being

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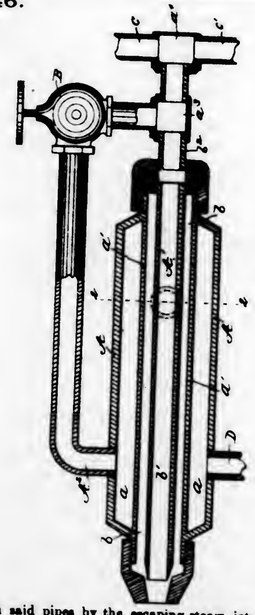
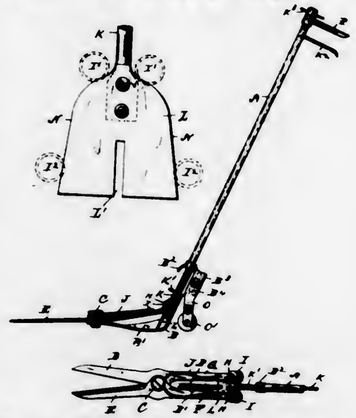


drawn through said pipes by the escaping steam jet at b^3, and the pipes c, c' for supplying hot and cold air respectively to the burner substantially as described.

488,647. GRASS-SHEARS. LORENZO L. BARNES, Worcester, Mass. Filed June 5, 1890. Serial No. 354,399. (No model.)



Claim.—1. The combination of a handle, a bent plate attached to said handle, a pair of shear blades pivoted on said plate and lying in a plane at an angle with said handle, levers extending from said shear blades and a cam plate sliding between the ends of said levers by which the shear blades are closed, substantially as described.

2. The combination of a handle, a bent plate attached to said handle, a pair of shear blades pivoted on said plate and lying in a plane at an angle with said handle, levers extending from said shear blades and a cam plate, sliding between the ends of said levers by which the shear blades are closed and a spring applied to said levers to reverse their motion and open the shear blades, substantially as described.

3. The combination of a tubular handle A, provided with a slot B, an arm P attached to said tubular handle and at right angles thereto, a rod K sliding in said tubular handle, a handle K^2 on said rod extending through said slot and parallel with said arm P, a cam

plate attached to said sliding rod, a pair of pivoted shear blades actuated by said cam plate, substantially as described.

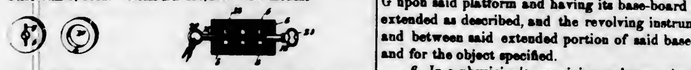
4. The combination of a tubular handle A, shoe B, stud C, shear blades pivoted on said stud and provided with levers F, G, rib B, actuating cam plate provided with a slot inclosing said rib, and a spring acting against said cam plate, all arranged substantially as described.

5. The combination with a handle and a pair of shear blades carried by said handle, of a sliding actuating rod parallel with said handle and provided with an arm at right angles thereto, and an arm adjustably attached to said handle, whereby the distance between said arm and the handle of said rod is varied, substantially as described.

6. The combination of the handle A, shear blades carried by said handle, actuating cam plate L, projecting pin K′ and fixed prong B^3 placed in the path of said pin, substantially as described.

7. The combination of a handle A, shear blades carried by said handle, actuating cam plate L and a fixed stop by which the sliding motion of the cam plate is limited, substantially as described.

488,648. PERMUTATION-LOCK. JOHN I. COVINGTON, Brooklyn, N. Y. Filed Jan. 9, 1892. Serial No. 417,478. (No model.)



Claim.—1. A lock consisting of a series of numbered wheels provided with openings, and a two part key, each part of which is provided with a retaining head and is adapted to pass into the openings in said wheels, said retaining head being so located as to leave a space between it and the nearest wheel when the key is inserted, substantially as described.

2. A lock consisting of a series of numbered wheels provided with openings, and a two part key provided with projections, each part of said key having a retaining head and adapted to enter into the openings in said wheels, said retaining head being so located as to leave a space between it and the nearest wheel when the key is inserted, substantially as described.

3. A lock consisting of a case provided with slots or key holes in its ends, a series of numbered wheels provided with openings, and a headed key adapted to be passed through the slots of the case into said wheels, the heads of said key being so located as to leave a space between the same and the ends of the case when the key is inserted, substantially as described.

4. A lock consisting of a case provided with slots or key holes in its ends, two sets of numbered wheels of which one set is provided with slots and the other set with circular openings, and a headed key adapted to be passed through the slots of the case into said wheels, the heads of said key being so located as to leave a space between the same and the ends of the case when the key is inserted, substantially as described.

5. A lock consisting of a case provided with slots or key holes in its ends, a series of numbered wheels provided with openings, and a two part headed key provided with projections and adapted to be passed through the slots of the case into said wheels, the heads of said key being so located as to leave a space between the same and the ends of the case when the key is inserted, substantially as described.

6. A lock in combination with a key having a split shank forming an open looped handle, the said shank passing into the lock closing the opening to the loop, substantially as described.

488,649. SURGICAL TABLE. BYRON H. DAGGETT, Buffalo, N. Y. Filed Feb. 20, 1890. Serial No. 341,140. (No model.)

Claim.—1. In a physician's table, the stirrup consisting of the frame O having cross-bars 1 and 2 and legs 3, and the foot board O′ having the apertures d', as stated.

2. In a physician's table, the table-frame having curved supports B′ fitted with legs C, spindles D, the hollow base A and the rectangular frame E, said hollow base being provided with a slide having downwardly-projecting lug b and stop c, as stated.

3. In a physician's table, the combination, with the stirrups movably arranged under the fixed table-leaf M at one end thereof, the slide-bar P movably arranged under the hinged table-leaf M′ and adapted to support the hinged table leaf M″, and the curved ankle-rest S having the U-shaped guide pieces s s adapted to engage either the stirrups or the slide-bar, as and for the object stated.

4. In a physician's examining and operating table, the combination, with the fixed table-leaf M, of the middle-leaf M′ hinged to the fixed leaf and provided with a suitable adjusting device to retain said middle leaf in an inclined position, and a third leaf M″, hinged to the middle-leaf by double swing hinges, as described, said middle leaf having guide slats m affixed to its under side and provided with a shouldered notch m' and the slide P having the blade-spring p'', as set forth, said slide being held between the guides by the plates p, as specified.

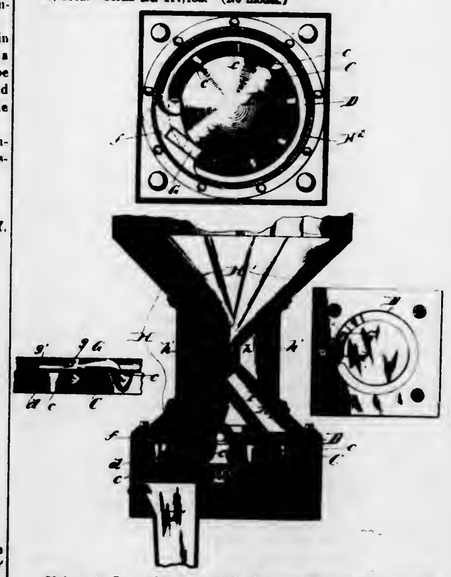
5. In a physician's operating table, the combination, with the table-frame having the platform A provided with the rails B and legs C, and the frame E supported by the spindles D, of the operating case G upon said platform and having its base-board A′ and top-board A^2 extended as described, and the revolving instrument case pivoted to and between said extended portion of said base and top boards, as and for the object specified.

6. In a physician's examining and operating table, the combination, of the platform A having grooves a, the supports B and the legs C, of the step F having the ribs f and the lugs b and c, substantially as set forth.

7. In a physician's examining and operating table, the combination, with the table-frame, substantially as described, of the plate e in one of the spindles of said frame, a table-top proper consisting of a table-top frame connected with the table-frame by a universal joint connection engaging said plate and having at one of its ends a fixed table leaf, a middle leaf hinged to said fixed leaf, and an outer leaf projecting over the table top frame and hinged to said middle leaf and supported by the slide bar P movably arranged within guide slats m affixed to the hinged middle leaf, as and for the object set forth.

8. In a physician's examining and operating table, the combination, with the table-frame, of a table-top frame connected therewith by a universal joint connection, a tapering wing J, hinged to said table frame by spring hinges i causing said wing to assume an upright position whenever the table-top frame is lifted, and a sliding bar X arranged to move in guide-pieces x x affixed to the under side of the table-top frame, said bar X having the stop x' as stated.

488,650. SEED-PLANTER. JOHN A. DODD, Galva, Ill. Filed Jan. 6, 1892. Serial No. 417,132. (No model.)

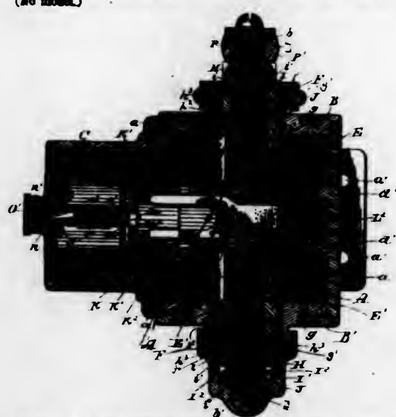


Claim.—1. In a planter or drill, the combination of a rotating

dropping disk, having in the periphery thereof a series of shells which shall in form conform to the external surface of an inverted segment of a cone, said segment being formed by a line cutting it vertically, and not being greater than one-half of said cone; with a surface or wall against which said disk revolves, said wall serving to close the open or vertical side of said cells; substantially as set forth.

2. In a planter or drill, the combination of the seed box H, having the tapering sections H', H², with the contracted passage between them, the conical-deflector F, arranged centrally under the passage, the plate D, and the horizontally rotating disk C, having pockets for the delivery of the seed into the seed-spout E; substantially as and for the purposes set forth.

488,651. COMBINED DOOR CHECK AND SPRING. WILLIAM GILFILLAN, New Britain, Conn. Filed Aug. 31, 1892. Serial No. 444,646. (No model.)



Claim.—1. A door check comprising a spring chamber, a spindle, two independent springs located in the spring chamber, each spring connected with the spindle, and a liquid checking cylinder connected with the spring chamber, substantially as set forth.

2. A door check comprising a spring chamber, a spring located in each end thereof, a liquid checking cylinder communicating with the spring chamber whereby the checking liquid may flow freely from one chamber to the other, a spindle and means for connecting either one of the springs with the spindle, substantially as set forth.

3. A door check comprising a spring chamber, a spring arranged within each end thereof, in combination with a spindle extending through the spring chamber and projecting outwardly from its opposite ends and bearing sleeves, ratchets and devices for connecting the springs with the spindle, substantially as set forth.

4. In a door check the combination with a spring chamber provided with sectional bearing ribs of a spindle having crank disks at or near its central portion which are seated on said ribs and thereby form central bearings for the spindle, substantially as set forth.

5. In a door check the combination with a spring chamber provided with centrally arranged parallel bearing ribs, a spindle provided with centrally arranged crank disks which are seated upon said bearing ribs and afford a central bearing for the spindle of springs located in the spring chamber on opposite sides of said central bearings, substantially as set forth.

6. A door check comprising a spring chamber provided at each end with a screw cap and at one side with a checking cylinder, in combination with a spindle extending through the spring chamber and its screw caps, a spring adjustably connected with each end of the spindle, a piston in the checking cylinder and means for connecting the piston with the spindle, substantially as set forth.

7. In a door check the combination with the spring chamber, spring contained therein and spindle, of a screw cap provided with a screw threaded nipple or boss, a ratchet sleeve or swivel, a packing ring, and a gland for forcing the packing ring to its seat, substantially as set forth.

8. In a door check the combination with the spindle, ratchet sleeve or swivel and packing ring, of a cup-gland which covers and protects the ratchet and end of the spindle, substantially as set forth.

9. In a door check, the combination with the ratchet and locking dog, of a cap gland which secures the locking dog against displacement, substantially as set forth.

10. In a door check, the combination with a spring chamber, a spring arranged in each end thereof, a ratchet swivel or sleeve applied to each end of the spindle and engaging the springs, pivoted arms connected to one end of the spindle, and a locking dog for connecting the ratchet sleeve with the opposite end of the spindle, substantially as set forth.

11. In a door check, the combination with a spindle provided near its end with a collar, of a counterbored ratchet swivel or sleeve which fits upon the collar on the spindle whereby an annular space is provided between the spindle and ratchet swivel or sleeve, substantially as set forth.

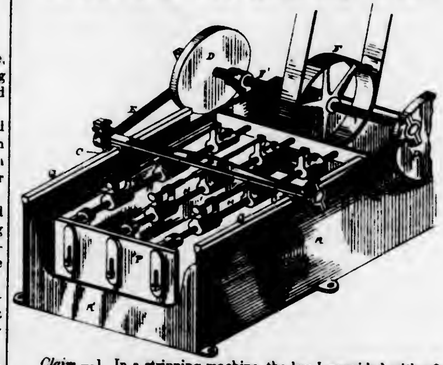
12. In a door check the combination with a spindle provided with a collar near its end, of a counterbored ratchet swivel or sleeve, and packing interposed between the collar on the spindle and the inwardly projecting flange on the interior of the ratchet sleeve, substantially as set forth.

13. In a door check the combination with a spring casing provided with centrally arranged bearing ribs, a spindle provided with two centrally arranged crank-disks which are seated upon said ribs, and a crank-pin located between said crank disks, of a checking cylinder and its piston, a forked pitman and a strap for connecting the pitman with the crank-pin, substantially as set forth.

14. In a door check the combination with the checking cylinder and piston, of a straight venting tube extending through the piston and provided on its exterior with one or more tapered grooves, substantially as set forth.

15. A door check comprising a spring chamber and checking cylinder constructed to form a free passage for the circulation of the checking liquid through both chambers; a spring arranged in each end of the spring chamber, a spindle extending through the spring chamber, means for independently connecting the springs with the spindle; a piston located in the checking cylinder and means for connecting the piston and spindle so that by the rotation of the latter a reciprocating movement will be imparted to the piston, substantially as set forth.

488,652. MACHINE FOR STRIPPING FILES. HENRY J. GOSLINE, Philadelphia, Pa., assignor to George Barnett and Henry Barnett, same place. Filed May 14, 1892. Serial No. 433,008. (No model.)



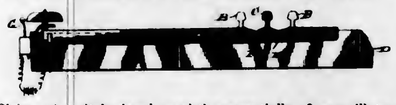
Claim.—1. In a stripping machine, the lug I, provided with a female screw-threaded opening, adjustable thumb-screw T with recessed inner end to receive one end of the blank to be stripped, block K provided with a rest, and bolster, to sustain the other end of said blank, stripper bar B, endowed with reciprocating motion, and sustaining rod H, all combined and operating substantially as described.

2. A holder for stripping machines consisting of lug I, provided with a female screw threaded opening; adjustable thumb screw T with recessed inner end W to receive one end of the blank to be stripped, head or spring V, setting against the flange of end W and also against lug I; block K, provided with a rest and bolster, to sustain the other end of the blank, and sustaining rod H, all combined and operating substantially as described.

488,653. HOLDER AND TURNER FOR STRIPPING-MACHINES. HENRY J. GOSLINE, Philadelphia, Pa., assignor to George Barnett and Henry Barnett, same place. Filed May 14, 1892. Serial No. 433,004. (No model.)

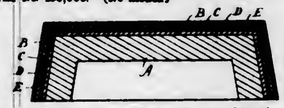
Claim.—A holder and turner for file blanks consisting of an annularly grooved and recessed block A B C; saddle E, to sustain the same, handle D to turn the said block, set screw H in the latter to fix one end of the blank to be stripped in the block, block N, to secure the other end of the file and rod M, all combined and operating substantially as described.

488,654. RAILROAD-SWITCH SIGNAL. FRANK HARRIS, Guildhall, Vt. Filed Aug. 26, 1892. Serial No. 444,213. (No model.)



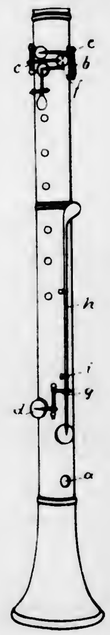
Claim.—A switch signal consisting essentially of an oscillatory trip-bar connected with an alarm and provided with a recess in its upper side in which the end of the switch rail rests when the switch is closed.

488,655. ATTACHABLE LETTER FOR SIGNS. JOHN R. HARTLEY and HERBERT R. HARTLEY, Birmingham, England. Filed June 7, 1892. Serial No. 435,906. (No model.)



Claim.—In sign letters, numerals &c, the combination with the cast metal body, of the coating of copper, and the coating of precious metal and the films of celluloid and seed-lac varnish, substantially as described.

488,656. CLARINET. THEODOR LAUTE and ADOLF PFRETSCHNER, Markneukirchen, Germany. Filed May 31, 1892. Serial No. 345,006. (No model.)



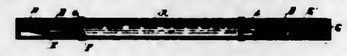
Claim.—1. A clarinet having an additional opening *a* between the keys and its lower end, for the purpose as described.

2. A clarinet having an additional opening *a* between the keys and its lower end, the keys being placed nearer the mouth-piece than usual, the location of the octave-key (*b*) remaining unchanged, for the purpose as described.

3. In a clarinet, the auxiliary key (*c*) in combination with pins (*e* and *f*) fixed to the sixth-key and octave-key (*b*) respectively, these keys being actuated by means of springs, in the manner and for the purpose specified.

4. In a clarinet, the auxiliary key (*d*), having a lever (*g*), in combination with the seventh-key, having a long lever (*h*), substantially and for the purpose as described.

488,657. FINGER-NAIL CLEANER. CHARLES W. LAUBER, Meridian, Miss. Filed Aug. 29, 1892. Serial No. 444,432. (No model.)



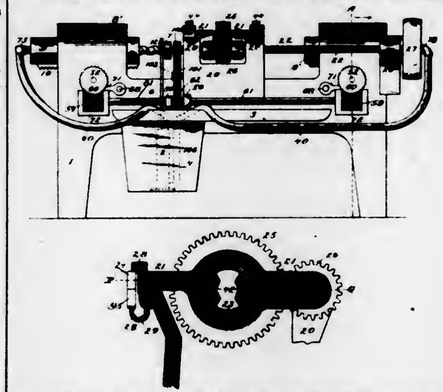
Claim.—1. A finger-nail cleaner comprising a hollow handle or reservoir bearing the nail-cleaning blade and means to feed the liquid contained in the reservoir to the blade during use, substantially as specified.

2. A finger-nail cleaner having a hollow handle or reservior, and a blade attached to one end of the handle and provided with a groove to receive the liquid contained in the handle or reservoir and convey it to the tip or point of the blade, substantially as specified.

3. A finger-nail cleaner having a hollow handle or reservoir, a blade attached to one end of the handle, adjacent to a feed perforation therein and a brush attached to the opposite end, substantially as specified.

4. A finger-nail cleaner having a hollow handle or reservoir, and a concavo-convex tapered blade attached to one end of the handle or reservoir in proximity to a feed perforation in the end of the latter, substantially as specified.

488,658. DUPLEX DRILLING-MACHINE. WILLIAM A. MCCOOL, Beaver Falls, Pa. Filed Jan. 9, 1892. Serial No. 417,535. (No model.)



Claim.—1. In a drilling machine, the combination of a drill slide having a cog rack and a pinion engaging said rack, with a worm-gear on the transverse shaft of said pinion, and a device for operating said worm-gear consisting of a longitudinal shaft having a corresponding worm-gear, a vertically adjustable journal box for said longitudinal shaft, a supplemental shaft having a crank-arm on one end pivotally connecting said journal-box, a latch-lever on the other end, a trip-lever for engaging said latch-lever, and suitable means connected with the drill-slide for tripping said trip-lever, for the purpose stated.

2. In a drilling machine, the drill-slide having a parallel rod 35 provided with an adjustable stop 56, in combination with a trip-lever 67, loosely engaging said rod, a latch-lever engaging said trip-lever, a rack and pinion connection for said slide, a crank-arm 71 on the crank of said latch-lever, a vertically adjustable box, pivotally connected to said crank-arm, a longitudinal shaft, having a worm-gear, journaled in said box, suitable means for operating said shaft, and a corresponding worm-gear on the rack engaging pinion shaft, for operation in the way described.

3. In a drilling machine, the combination of the duplex drill-slides

each having an operating rack and pinion connection, a worm-gear 60 on each rack engaging pinion shaft, a longitudinal shaft of jointed sections having worm-gear 59, a vertically adjustable journal-box on the outer ends of said jointed shafts, and suitable means for operating said jointed shafts, with trip mechanism connecting said adjustable journal-boxes with the drill slides, whereby the movements of the latter toward each other will automatically operate to disengage the said jointed shaft worm-gear to stop the operation of the slides in the way and for the purpose stated.

4. In a drilling machine, a duplex chuck-head consisting of a tabular cylindrical body having radial chuck-dogs at each end, and a circumferential driving gear mediately of its ends, in combination with a bearing for supporting said chuck, duplex drill-slides, and mechanism for operating the chuck and the drill-slides, substantially as described.

5. In a drilling machine, the combination of the duplex drill-slides each having an operating rack and pinion connection, with a duplex work supporting chuck, a hinged supporting head forming journal bearing for said chuck and means for rotating the latter within said hinged head, substantially as described.

6. In a drilling machine, the combination of duplex drill-slides each having an operating rack and pinion connection, with a duplex work holding chuck having a gear wheel mediately of its chuck heads, a hinged supporting head forming a journal for said chuck and a shaft on which said chuck bearing head is hinged having a pinion engaging said chuck gear, substantially as described.

7. In a drilling machine, the combination of duplex drill-slides each having an operating rack and pinion connection, with a rotating duplex work holding chuck and a hinged bearing therefor adapted to be supported in alignment between said drill slides and to be turned over out of the way at the side of the machine, substantially as described for the purpose stated.

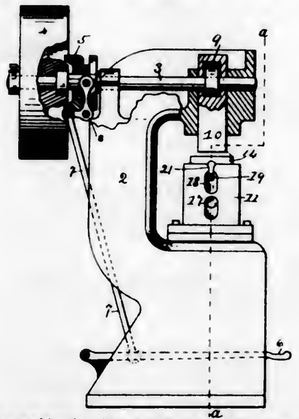
8. In a drilling machine, the combination of duplex drill-slides with a rotating duplex chuck having an axial bore, an enlarged annular head at each end provided with adjustable jaws or dogs, a swinging bearing head for said chuck, and a gear on the latter between its heads for rotating said chuck, substantially as described.

9. In a drilling machine, the combination of duplex drill-slides, mechanism for connecting them for automatic operation, and a rotating duplex work holding chuck, with a trip device for connecting and disconnecting the drill-slides with their operating mechanism consisting of the transverse shafts 68 each having a crank-arm 71 connecting and engaging and disengaging said operative mechanism, the rods 35 on the drill-slides each having an adjustable stop 56, a trip lever 67 pivoted on the frame for each slide-rod and a latch lever 58 on each shaft, and mechanism for operating said drill-slides by hand whereby both drill-slides may be operated together and one of them stopped and drawn out from the work while the other continues to operate for the purpose stated.

10. A duplex drilling machine, consisting essentially of two drill-slides, a shaft at the back of the machine formed of three jointed sections the two end sections whereof are mounted in vertically adjustable boxes at their outer ends and provided each with a worm-gear, a driving shaft above said jointed shafts and geared to the middle section thereof, a transverse shaft beneath each drill-slide having a worm-gear engaging the worm-gear of the jointed shafts and a pinion engaging a rack on the drill-slide, a supplemental shaft beneath each drill-slide having a crank arm pivotally connecting said boxes, and a latch-lever at its front end, a horizontal rod attached to the outer end of each drill-slide, and a trip-lever on the frame connecting said rod and latch-lever, a swinging head, mounted on the power-shaft between the drills, a duplex hollow chuck mounted in said head having a gear mediately of its ends, and a pinion on said power-shaft engaging said chuck gear for operation substantially as described.

488,659. MACHINE FOR SHEARING METAL BARS. WILLIAM A. MCCOOL and WILLIAM G. ALGEO, Beaver Falls, Pa. Filed Mar 26, 1892. Serial No. 426,391. (No model.)

Claim.—1. The combination in a machine for cutting metal bars, of the case having an open top and in one side the cam-shaft slot, the bar slots, and the offset with recessed seat; the carrier, within said case, having the journal bearings and recessed die seat; the shaft, journaled in said case and carrier, and provided with the fixed eccentric cam and the hand lever; the sliding block within the carrier, having the cam slot and the die recess; the springs within the case beneath the carrier; the screw press upon the offset of the case; the two removable dies fitting respectively within the recess of the sliding block and the recessed seat of the carrier and registering together; the two removable dies fitting respectively within the screw press and the recessed seat of the aforesaid offset, and registering together; the shear within the case adjacent to the carrier and having the slot in the face thereof, and the springs pendent from its cutting edge, and the punch, fitting within the case and supported and operated above the open top thereof by and from a suitable power press; the said case being suitably supported beneath the punch, and the whole being constructed and arranged substantially as and for the purposes described.



2. The combination, in a machine for cutting metal bars, of the case having the cam shaft slot and the bar slots in the walls thereof; the carrier, within the case, provided with the journal bearings and die seat; the shaft, journaled in said case and carrier, and having the hand lever and fixed eccentric cam; the sliding block, within the carrier, having the cam slot and the recess for an upper die; the springs within said case beneath the carrier; the two removable dies fitting respectively within the die recesses of sliding block and carrier, and registering together; the shear, having the slot in the face thereof and the springs pendent from its cutting edge, and the punch, fitting within said case and suitably supported and operated above the same; the said case being supported beneath said punch by a proper press or bed; all substantially as and for the purposes described.

3. The combination, in a machine for cutting metal bars, of the carrier, moving in vertical guides and having the journal bearings and lower die seat; the shaft, journaled in said carrier and provided with the fixed eccentric cam; the sliding block, having vertical motion within the carrier and provided with the cam slot and upper die recess; the springs supported beneath the carrier, and having a bearing against the under part thereof; the two removable dies fitting respectively in the die recesses of carrier and sliding block, and registering together, and the shear provided with the slot in the face thereof, moving in vertical guides, and suitably supported by the carrier; the said carrier and shear being relatively so arranged as to move together, and in the same direction, in the operation of the machine, and the whole being constructed substantially as and for the purposes described.

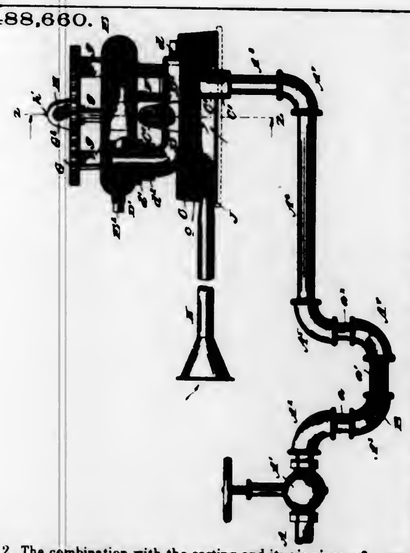
4. The combination, in a machine for cutting metal bars, of the carrier having the journal bearings; the handled shaft, journaled in the carrier and having the fixed eccentric cam, and the sliding block within the carrier, having the cam slot; the said carrier being suitably supported at a proper distance above the ground and the whole constructed and arranged substantially as described, whereby the said carrier and sliding block are adapted to co-operate with each other, for the purpose of grasping and holding a metal bar during the operation of cutting the same crosswise.

5. The combination, in a machine for cutting metal bars, of the perpendicular shear laterally supported and having a vertical, reciprocating motion between a fixed guide; and a carrier the power-operated punch bearing upon the head of said shear and having a vertical reciprocating motion, and a spring supported beneath the shear, and bearing upward against the aforesaid carrier; all substantially as herein described, for the purpose of forcing said shear crosswise through a metal bar placed beneath the shear, and restoring said shear to position for another cut of the bar.

488,660. OIL-BURNER. WILLIAM F. OTIS, Norwalk, Ohio. Filed Apr. 6, 1892. Serial No. 428,056. (No model.)

Claim.—1. The combination with the casting and its diaphragm and curved air pipes, of the generator with central hole, and the elbow pipe communicating with the generator and having a vent beneath the hole in the generator, and the air pipes terminating below said hole and centrally over the vent in said pipe as set forth.

488,660.

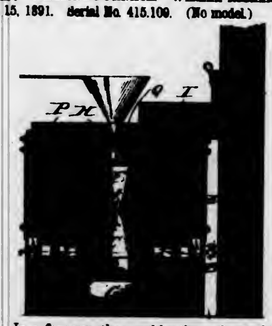


2. The combination with the casting and its air pipes, of a generator with central opening, the supply pipe communicating with the generator and the elbow pipe communicating with the generator and having vent hole beneath the opening in the generator, said air pipes being oppositely curved and terminating over the said vent hole and below the central opening of the generator as and for the purposes specified.

3. The combination with the casting having integral depending flange, horizontal diaphragm, and curved air pipes rising from the diaphragm, of the generating chamber, the pipe having vent below and between the said air pipes and having a nozzle within the generating chamber, the supply pipe and the tube connecting the diaphragm of the casting with the generator and with which the supply pipe communicates, all substantially as shown and described.

4. The combination with the casting having integral depending flange, horizontal diaphragm and curved air pipes rising from the diaphragm, of the generating chamber, the pipe having vent below and between the said air pipes and having a nozzle within the generating chamber, the supply pipe and the tube connecting the said diaphragm with the generator and with which the supply pipe communicates, and a removable funnel-shaped air-mixer, all substantially as shown and described.

488,661. MELTING-FURNACE. WILLIAM REISMANN, Chicago, Ill. Filed Dec. 15, 1891. Serial No. 415,109. (No model.)



Claim.—1. In a furnace, the combination of a melting crucible having a perforation in its bottom and a fire chamber in which said crucible is arranged, the bottom of such fire chamber having an up right opening or passage therein of greater diameter than said perforation in the crucible and located, directly under said perforation, substantially as set forth.

2. In a furnace, the combination of a melting crucible having a perforation in its bottom, a fire chamber in which said crucible is arranged and a cooling chamber arranged under said fire chamber, the bottom of said fire chamber having an upright opening or passage of greater diameter than said perforation in the crucible, leading directly into said cooling chamber, and said passage being located directly under the said perforation in the crucible, substantially as set forth.

3. In a furnace, the combination of the fire chamber having an opening or passage in its bottom, a cooling chamber arranged immediately under said fire chamber, a hollow pedestal arranged over said opening and communicating directly with said cooling chamber and a crucible supported on said pedestal and having a perforation in its bottom, said perforation being remote from the sides of the pedestal and of smaller diameter than the interior of the latter, substantially as set forth.

4. In a furnace, the combination of a fire chamber having an opening in its bottom, a hollow pedestal arranged over said opening and having a downwardly flaring interior, and a perforated crucible supported on said pedestal, substantially as set forth.

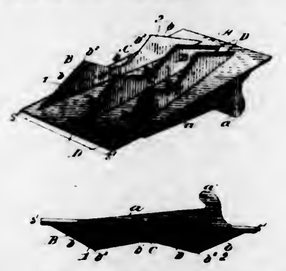
5. In a furnace, the combination of a fire chamber having an opening in its bottom, a hollow pedestal arranged over said opening and being provided with an opening in its upper end surrounded by a flange, and a crucible, having a perforation in its bottom, resting within said flange, substantially as set forth.

6. In a furnace, the combination of the fire chamber having a closed bottom, a melting crucible in said chamber having a discharge opening extending to the exterior of said chamber, said chamber being provided with ash and air ports around its sides flush with its bottom, leading directly to the external atmosphere and fuel feeding ports in its top, substantially as set forth.

7. In a furnace, the combination of the fire chamber having a closed bottom, a melting crucible in said chamber having a discharge opening extending to the exterior of said chamber, said chamber being provided with ash and air ports around its sides, and its top being provided with fuel feeding ports, and an opening above said crucible, removable independent slabs or covers for closing said feeding ports, and a removable cover having a perforation, for covering said opening above the crucible, substantially as set forth.

8. In a furnace, the combination of a fire chamber having an opening in its bottom, a melting crucible arranged over said opening, and having a discharge duct communicating therewith, said chamber having air inlet ports in its sides and on a level with its bottom, the ash holes K, the angle irons L, arranged across said ash holes, and the removable bricks arranged behind said angle irons in said ash holes, substantially as set forth.

488,662. WEAR-PLATE FOR RAILWAY-TIES. BENJAMIN RESOR, Chicago, Ill., assignor to the Q. and C. Company, same place. Filed Feb. 6, 1892. Serial No. 420,600. (No model.)



Claim.—1. A wear plate for railway ties provided on its under side with a longitudinal rib or ribs formed with an underneath trussed portion beneath the margin of the foot flange of the rail and adapted to truss the plate at that point, substantially as and for the purposes described.

2. A wear plate for railway ties provided on its under face with a rib or ribs of V or other underneath truss form beneath the margin of the foot flange of the rail, said rib adapted to truss the plate at that point, substantially as and for the purposes described.

3. A wear plate for railway ties provided with one or more serrated longitudinal flanges, the different sections of said flange or flanges having reversely beveled edges: substantially as and for the purposes specified.

4. A wear plate for railway ties having one or more longitudinal flanges composed of entering points connected by bridges of less width than the flange at the entering points: substantially as and for the purposes specified.

5. A wear plate for railway ties having one or more obliquely arranged serrated flanges: substantially as and for the purposes specified.

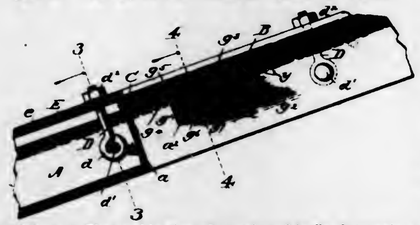
6. A wear plate for railway ties having on one face an inclined rail seat, and on the other face a rib or ribs formed with an under-

neath trussed portion beneath the margin of the foot flange of the rail; substantially as and for the purposes described.

7. A wear plate for railway ties having on one side a rail seat, and on the opposite face one or more serrated flanges obliquely disposed to the longitudinal axis of the plate, substantially as and for the purposes described.

8. A wear plate for railway ties having on one face an inclined rail seat, and on the opposite face one or more serrated flanges arranged obliquely to the axis of the plate: substantially as and for the purposes specified.

488,663. GLAZED STRUCTURE. ARTHUR R. REINDEL, Philadelphia, Pa. Filed May 17, 1892. Serial No. 433,266. (No model.)



Claim.—1. The combination of a series of inclined troughs or astragals, having imperforate bottoms panes of glass supported on the upper edges of the sides of the troughs, caps or strips bearing on the edges of the panes, eye-bolts connected with the strips or caps, and extending downwardly therefrom, and cross bolts d', passing through the eyes in the eye-bolts and attached to the troughs above their lower ends or bottoms, substantially as described.

2. The combination with the inclined troughs or astragals having the caps or covers, of a series of cross troughs resting in recesses in the astragals, each of said cross troughs having a main gutter or channel x, and a supplemental gutter g^3, a supporting ledge g^4 for a pane of glass, and a support for another pane of glass in line with the supporting ledge g^3, and formed integrally with one side of the main trough.

3. The herein described cross trough formed of a single piece of sheet metal having the bottom and sides g g' g^3, a supporting ledge g^3, for a pane of glass arranged between the two sides of the main gutter or channel, and a support for another pane of glass at the top of one of the sides of the main trough and in line with the supporting ledge g^3, and a gutter formed from that part of the sheet of metal which connects the ledge g^3 with the upper end of the side g'.

4. The combination with a series of inclined troughs or astragals, of a series of panes of glass supported thereon, the caps or strips resting on the glass, a series of eye-bolts secured to the caps or strips, a series of cross bolts passing through the eyes in the eye-bolts and secured to the troughs, and a series of cross troughs made in short lengths each adapted to extend from one astragal to the next astragal at its side, and opening into it, each cross trough being formed of sheet metal having a main gutter or channel x, a side g^3, terminating beneath the panes of glass over it to leave the opening y, for the purpose specified, a supporting ledge g^4, arranged between the two sides of the trough, a support on the upper end of the side g', for a pane of glass, and a gutter arranged between this support and the supporting ledge, the organization being such that the panes of glass throughout the structure are all arranged on a level or with butt joints instead of overlapping joints, and with gutters or troughs provided to carry off water which either leaks through from the outside or which accumulates on the inside of the panes on both sides of all joints.

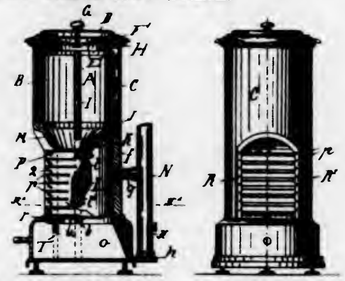
5. The herein described cross trough having the main gutter or channel x, the side piece g', for supporting a pane of glass, the small gutter g^3, emptying into the main gutter, the ledge g^4, for supporting a pane of glass, and the projection g^5, for the purpose specified.

488,664. CONDENSING APPARATUS. MATHIAS J. REUSER and EDWIN G. STOER, Pittsburg, and PETER FOCHS, Lower St. Clair, Pa. Filed Aug. 7 1890. Renewed Nov. 23, 1892. Serial No. 452,843. (No model.)

Claim.—1. In a distilling apparatus, substantially as described, the combination of a pan or reservoir a, the upper chamber b, provided with an internal dome which extends longitudinally of said chamber and out of contact therewith to form an intermediate water space d, which extends continuously between the dome c and the wall of the chamber b, the longitudinal pipe or tube f arranged within the dome c, immediately above the water tank and opening at its ends through the dome to provide for the passage of the water from end to end of the chamber b, and the channels situated at the lower edges of the dome and the horizontal tube to receive the water of condensation from the surfaces of said dome and the longitudinal tube, as and for the purpose set forth.

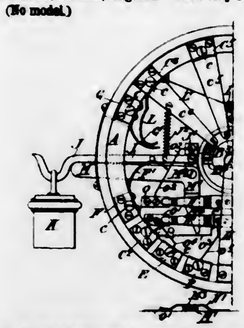
2. In a distilling apparatus, substantially such as herein shown and described, the combination of a water tank or reservoir a, the upper chamber b, provided with the internal dome c which is arranged within said chamber and out of contact with the walls of the same to form the intermediate chamber d which extends continuously between the ends and sides of the wall of the chamber b and the dome c, the inclined channels at the lower edges of the dome c, and extending continuously around the same, the longitudinal tube or pipe f, extending through the dome c immediately above the water tank and having its ends opening through said dome and communicating with the water chamber d, the inclined conduits or channels below the pipe f and extending to the conduits or channels of the dome c, the pipe l leading from the dome c to the water tank, and the discharge pipe k leading from the inclined conduits, as and for the purpose set forth.

488,665. STOVE. MORITZ SEEBOLD, Berlin, Germany. Filed June 9, 1892. Serial No. 436,134. (No model.)



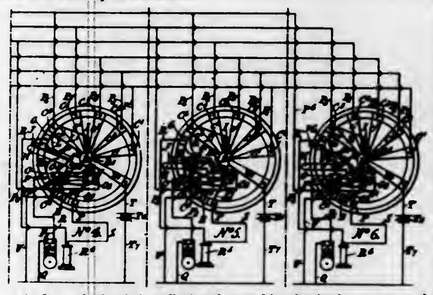
Claim.—In a stove: the combination, with the outer shell C and funnel-shaped lower end M of the shaft A, of the refractory facings K and f, and the refractory grate-plate L, substantially as and for the purpose described.

488,666. ELECTRIC TELEPHONIC SWITCH AND SYSTEM. THOMAS R. SLOPER, Devizes, England. Filed May 18, 1892. Serial No. 433,473. (No model.)



Claim.—1. A telephonic system embodying home, telephone and bell lines switches controlling the communicating home and telephone lines but not the bell line, telephone hooks and contacts moved by said hooks controlling the home line, the telephone line and bell line said contacts being so arranged relative to the hook that when the hook is depressed, the bell circuit is established and the circuits of the home line and telephone are broken and when elevated said circuits are established, substantially as described, whereby the necessity of setting the switch after a conversation is avoided.

2. In a telephonic installation or intercommunication system in which each station has a direct line to each other station and may be placed in communication with any of the other stations without an intermediary the combination with a switch board at each station of a contact permanently connected with the telephone a movable hook arm and another contact which may be connected through the switch with any of the distant lines both of the contacts being out of contact with each other and with the home line when the receiver is on the hook arm and both of which when the receiver is moved from the hook arm make contact with each other and with the line wire substantially as described.



3. In a telephonic installation the combination in the same switch board and with the movable hook arm thereof of a contact permanently connected with the telephone and another contact which may be connected through the switch with any of the distant lines connected to it both of the contacts being out of contact with each other and with the home line when the receiver is on the hook arm and both of which when the receiver is removed from the hook arm make contact with each other and with the line wire substantially as described.

4. In an intercommunication telephonic system the combination with a hook arm such as J connected with the line-wire of a contact such as L connected to the switch used for connecting with different lines and another contact such as G' connected to the telephone so arranged that both contacts are out of contact with the hook J and with each other when the receiver is on its hook and both when the receiver is removed from the hook arm make contact with each other and with the hook arm J substantially as described.

5. In a telephonic installation the combination with a disk or central spindle having an arm and surrounded by a number of spring contacts constituting the terminal of the distant lines and with either of which the arm may make contact, a contact for connecting with the home line and telephone and with which the disk is normally in contact and a battery contact with which the disk is normally out of contact but may be pushed against it substantially as described.

6. In an electrical switch for connecting the home telephone line with either of a number of other lines, the combination with a longitudinally movable spindle B having a projection B^3, a series of springs in circuit with the distant lines and in position to be engaged by said projection, of a home line contact in position to establish the circuit when the spindle is in normal position and a battery contact in position to establish the battery circuit when the spindle is moved longitudinally, whereby the home line is broken and battery sent to the distant line by moving the spindle; substantially as described.

7. In a telephonic installation, the combination with a switch board having a movable hook arm J and rotary and longitudinally movable disk B^4 provided with a contact arm B^5, of a series of spring contacts c', &c., in position to contact with arm B^5, a spring contact D' for the battery circuit out of contact with said disk when the latter is in normal position and in contact therewith when the disk is moved longitudinally and contact F' completing the bell circuit when the hook lever is depressed, and contacts G' and L completing the line circuits when the hook lever is raised; substantially as described.

8. In a telephone installation, the combination with a switch board or block A having a rotary and longitudinally movable spindle B carrying a disk B^4 and arm B^5 and the series of spring contacts c', &c., of the contact D' controlling the battery circuit and contact I controlling the home circuit and contacting respectively with the disk to complete their circuits when said spindle is at opposite extremes of its longitudinal movement; substantially as described.

9. In a telephonic system the combination with a switch board or block A of a three armed lever, one arm J hooked for the suspension therefrom of the receiver, another arm making contact with the home-bell connection F' and being out of contact with the home telephone when the receiver is on the hook and vice versa and the third arm shifting the contact disk B^4 and through it making contact for itself and the disk with the battery substantially as described and illustrated in the accompanying drawings.

10. In an intercommunication system of telephony, the combination with a series of stations each having a home line wire terminating in contacts at each of the other stations a switch at each station for connecting any one of said terminal contacts with the telephone of that station, a ground connection for the telephone of each station, switches in such ground connections and contacts for establishing connection between the telephones of each station and its home line in lieu of the ground connection, whereby a complete metallic circuit may be established between any two stations to the exclusion of the others, substantially as described.

11. In a telephone system, the combination with a series of stations with double line wires between each two stations, a plate O' in each station connected with ground, a plate O in each station, connected with one terminal of the telephone and the terminal of one line wire, a contact N connecting the terminal of the other line wire with the plate O and a contact N' connecting the other terminal of the telephone with plate O', of a contact lever co-operating with the contacts N N' to interrupt their connection with plates O O' and establish the circuit between the said contacts N, N', whereby the ground connection is broken and the line terminal N brought into connection with the telephone terminal to establish a complete metallic circuit.

12. In a telephonic installation the combination with the movable hook arm of a switch board of two contact plates O O' one electrically connected with the hook arm and the other to earth or return wire two spring contacts N N' one connected to the line wire and the other to the home telephone and a lever M M' M^4 substantially as described and illustrated in the accompanying drawings.

488,667. IMPLEMENT FOR CUTTING GRASS. CHARLES STEWART, Washington, D. C. Filed June 1, 1892. Serial No. 435,223. (No model.)

Claim.—The combination of a straight handle provided with rubber grips capable of sliding upon the handle, and a curved blade set in a plane at right angles to the plane of the handle substantially as described in the drawings and specification.

488,668. POTATO-MASHER. ALEXANDER M. ARGO, Buffalo, N. Y. Filed May 16, 1892. Serial No. 433,154. (No model.)

Claim.—1. In a vegetable masher, the combination with the shell A having the slot hole E, of the cross-bar G, having the U shaped wire tongue on one end and the hook-shaped clamps H H' at the other, and the hasp M engaging the outwardly projecting portion h of said hooks, as and for the purpose indicated.

2. In a vegetable masher, the combination with the shell of the removable shield consisting of the U-shaped plate P' having its upper end the hooks Q Q' and at its lower end the wire guard R and clamp as set forth, as and for the purpose specified.

3. In a vegetable masher the masher-wings J J' affixed to the

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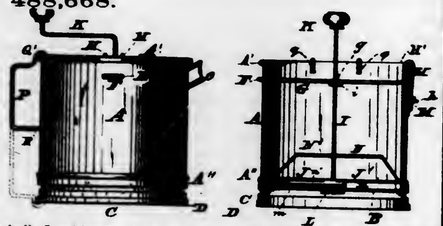


spindle I and having the oppositely arranged inclines n n' one of which is above the plane of the other as stated and the substantially U shaped brace N as and for the object stated.

488,669. GANG LAWN-MOWER. GEORGE W. DAKE and EDWARD U. LOOSE, Minneapolis, Minn.; said Dake assignor to said Loose; said Loose assignor of one-half to Andrew B. Robbins, same place. Filed Oct. 15, 1891. Renewed Nov. 17, 1892. Serial No. 452,963. (No model.)

Claim.—1. The combination in a gang lawn mower, of two or more light mowing sections, with an extension draft beam, draft rods extending on each side of said sections and having their forward ends secured on said beam, and tie bars for said draft rods or bars, substantially as described.

2. The combination in a gang lawn mower, of two or more small mowing machines, with a draft beam, rearwardly extending draft rods having depending ends engaging said mowers, said mowers being thereby independently secured to said beam, tie bars for the rear ends of said rods, and means for raising said mowers from contact with the ground, substantially as described.

3. The combination in a gang lawn mower, of two or more light hand mowers, with an extension draft beam, the parts thereof composed of slotted angle bars, bolts for securing the same rigidly together, draft rods secured thereto by bolts extending through the slots thereof, said rods having depending ends engaging said small mowers, said mowers arranged to overlap with respect to the cut, and tie and brace bars or rods for said draft rods, substantially as described.

4. The combination in a gang lawn mower, of two or more small light lawn mowers, with a a frame whereto the same are independently secured, braces for preventing lateral movement of one with respect to the other, truck rollers or wheels for supporting said frame, and a driver's seat arranged thereon, substantially as described.

5. The combination in a gang lawn mower, of a draft bar or beam, with two or more independent mowing sections, draft rods extending from each side of said sections and having their ends secured on said draft bar, and tie bars extending transversely between the pairs of draft rods, and the connections between said tie bars and their draft rods, and between the draft rods and beam or bar being laterally adjustable, substantially as described.

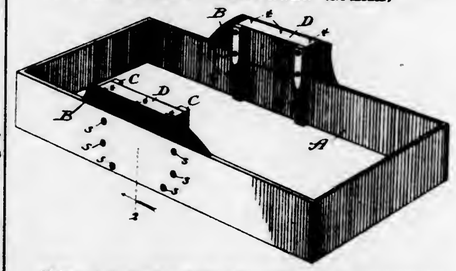
6. The combination with a draft beam, of two or more pairs of draft rods having their forward ends secured thereon, independent mowing sections arranged between the rear ends of said rods, each mowing section being self operating, tie bars extending between the rear ends of said pairs of draft rods, and overlapping with respect to the draft rods of adjoining section or sections, a lever having its rear end arranged to engage the rear part of one of the sections to lift the same and acting through the overlapping tie bars to simultaneously lift the other independently movable sections thereof, a fulcrum roller arranged on said lever, and means for securing the forward end of the lever when the same is forced down to raise said mowing sections from the ground, substantially as described.

7. The combination in a gang lawn mower of a draft beam, independently secured and vertically movable frames secured thereon, independent mowing sections arranged in the several frames and opposite to said draft beam, means for raising the free end of one or more of said frames and the mowing section or sections thereof, and said frame or frames having parts to engage the adjoining frames whereby the latter are also lifted.

488,670. ATTACHMENT FOR RIMS OF WHEELS. PRESTON DAVIES, London, England. Filed Oct. 25, 1892. Serial No. 449,967. (No model.) Patented in France May 17, 1892, No. 221,681, and in Belgium May 17, 1892, No. 99,713.

Claim.—A protective cushion between the rim of a wheel and its tire consisting of tubes, B, adapted to be filled under pressure from a single valve and provided with one or more coverings, C, and, D, of canvas or other similar material secured to the rim and serving to hold the tubes in position between the edges of the rim and the tire substantially as set forth and illustrated in the annexed drawing.

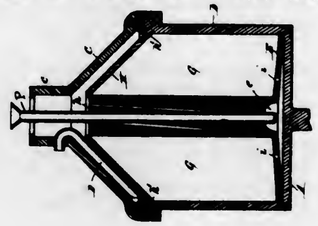
488,671. RISER FOR WAGON-BODIES. EDWIN FISH, Elkhart, Ind. Filed June 21, 1892. Serial No. 437,459. (No model.)



Claim.—1. In a wagon body, the combination with the panel having the integral concave seat riser B, the brace D extending along the inner face of the riser and partway over the panel, substantially as described.

2. In a wagon body, in combination with the panel A having the integral concave seat riser B, seat supports C having the mortise extending from the upper edge to a point below the top of the panel, and concave wedge D introduced between the seat support and riser and panel, substantially as and for the purpose described.

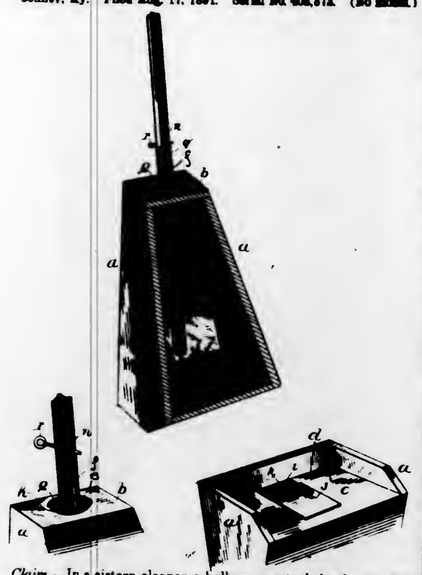
488,672. CENTRIFUGAL LIQUID SEPARATOR. JESSE R. FOLK, Brooklyn, N. Y., assignor to the Aktiebolaget Separator, Stockholm, Sweden. Filed Apr. 25, 1892. Serial No. 430,578. (No model.)



Claim.—1. The combination with a separator bowl, of division plates arranged radially, or nearly so, in the liquid space of the bowl and inclined with reference to the direction in which the bowl rotates, substantially as set forth.

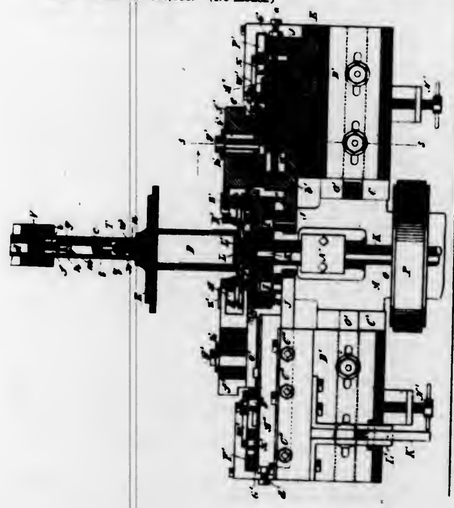
2. The combination with a separator bowl, of division plates arranged radially, or nearly so, in the liquid space of the bowl and having their delivery ends arranged in advance of their receiving ends in the direction in which the bowl rotates, substantially as set forth.

488,673. WATER-PURIFIER. MADDRA J. HEWLETT and DR JOHN C. CROLL, Paducah; said Hewlett assignor to Henry F. Carrico, Graves County, Ky. Filed Aug. 17, 1891. Serial No. 402,872. (No model.)



Claim.—In a cistern cleaner, a hollow receptacle having a valved bottom, a rod passing through the top of said receptacle and connected to the valve and a vent in said rod so arranged that the lower valve may be opened before the vent operates, as described.

488,674. MACHINE FOR MANUFACTURING TIN CANS. WILLIAM HIPPERLING, New York, N. Y., assignor to Stephen A. Ginna, Plainfield, N. J., and Richard A. Donaldson, Brooklyn, N. Y. Filed Mar. 29, 1892. Serial No. 426,886. (No model.)



Claim.—1. In a can seaming machine, the revolving platen and plate between which the can is held, said platen conforming in outline with that of the can in cross section, combined with the cam conforming with the platen and having the continuous groove, a movable slide at each side of said platen, and having rollers held within said groove, seaming devices sustained by said slides, the independent hand levers and intermediate mechanism, whereby first one seaming device and then the other may be moved into contact with the can; substantially as and for the purposes set forth.

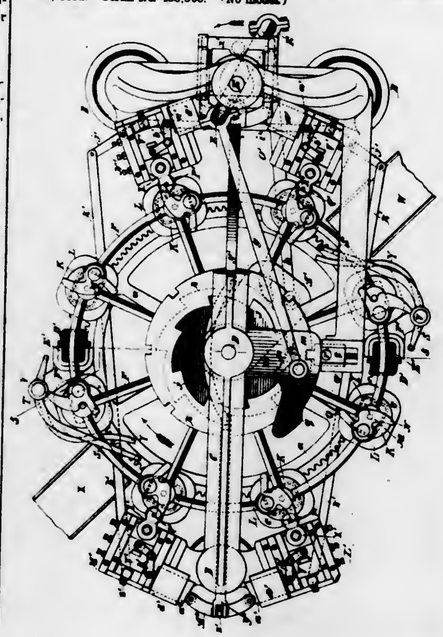
2. In a can seaming machine, the revolving platen and plate clamping the can, said platen conforming in outline with that of the can in cross-section, combined with the cam conforming with the platen and having the continuous groove, the slide having the roller held in said groove, the chuck sustained by said slide, and having a spring tension outward from the platen and carrying the seaming device, and mechanism for moving said chuck toward said platen; substantially as and for the purposes set forth.

3. In a can seaming machine the revolving platen and plate clamping the can, said platen conforming in outline with the can in cross section, combined with the cam conforming with the platen and having the continuous groove, the slides having rollers held in said groove, the chucks sustained by said slides and having a spring tension outward from the platen and carrying seaming rollers, and mechanism for moving said chucks toward said platen, substantially as and for the purposes set forth.

4. In a can seaming machine, the revolving platen and plate clamping the can, said platen conforming in outline with the can in cross section, combined with the cam conforming with the platen and having the continuous groove, the slides having rollers held in said groove, the chucks having a spring tension outwardly sustained by said slides, and carrying the seaming rollers, the bell crank levers, and the independent hand levers for causing said bell crank levers to move first one chuck and then the other toward said platen, substantially as and for the purposes set forth.

5. In a can-seaming machine the revolving platen and plate between which the can is held, said platen conforming in outline to that of the can in cross-section, combined with the cam centered and conforming with the said platen, the slide engaging said cam, the seaming device sustained by said slide, the bell crank lever engaging said slide, and the hand lever adapted to actuate said bell-crank lever and slide; substantially as set forth.

488,675. MACHINE FOR THE MANUFACTURE OF TIN CANS. WILLIAM HIPPERLING, New York, N. Y., assignor to Stephen A. Ginna, Plainfield, N. J., and Richard A. Donaldson, Brooklyn, N. Y. Filed June 3, 1892. Serial No. 435,365. (No model.)



Claim.—1. The traveling frame, the series of revoluble clamps carried thereby, means for retaining said clamps against the opposite ends of the cans during the travel of the frame, and the series of revoluble platens and cams carried by said frame and conforming in outline with that of the cans in cross-section, combined with the independent chuck holding the seaming roller in line with said cans, means for applying pressure to said chuck, the roller engaging said cams in succession, and intermediate connections between said rollers; substantially as and for the purposes set forth

2. The traveling frame, the series of revolubie clamps carried thereby, means for retaining the said clamps against the opposite ends of the cams during the travel of the frame, and the series of revoluble platens and cams carried by said frame and conforming in outline with that of the cans in cross-section, combined with the independent chucks holding the different kinds of seaming rollers in line with said cans, means for applying pressure to said chucks, the cam rollers engaging said cams in succession, and intermediate connections between said chucks and said cam rollers: substantially as and for the purposes set forth.

3. The traveling frame, and the series of revoluble clamps, platens and cams carried by said frame, said platens and cams conforming in outline with the cams in cross-section, combined with the independent seaming roller having a spring tension outward, the roller to engage said cams in succession, mechanism substantially as described for engaging and disengaging said roller and cams, intermediate connections between said rollers and means for moving said seaming roller against the cans in succession: substantially as and for the purposes set forth.

4. The traveling frames, the series of revoluble clamps carried by said frame, and the platens and cams conforming in outline with that of the cans in cross section, combined with the springs imparting an outward tension to the movable set of said clamps, the pivoted latches for closing the clamps upon the cans, the chuck holding the seaming roller in line with said cans, means for applying pressure to the chuck, and intermediate connections between said chuck and said cam; substantially as set forth.

5. The revoluble frames, the clamps for grasping the cans, the platens and cams, mechanism for imparting to said frame an intermittent movement, the pinions connected with the spindles of said clamps, the gear wheel engaging said pinions, mechanism for imparting to said gear wheel an intermittent movement simultaneously with the movement of said revoluble frame, and mechanism for imparting to said gear wheel an independent revoluble movement, combined with the chuck holding the seaming roller in line with said cam, means for applying pressure to the chuck, and intermediate connections between said chuck and said cam; substantially as set forth.

6. The revoluble frames mounted upon the shaft, the clamps carried by said frame, for grasping the cans, the platens and cams and mechanism for imparting to said frame an intermittent movement, combined with the pinions connected with the spindles of said clamps, the gear wheel mounted on a sleeve encompassing said shaft and engaging said pinions, mechanism for imparting to said sleeve and gear wheel an intermittent motion corresponding with that of the clamp carrying frame, mechanism for imparting to said sleeve and gear wheel an independent revolving motion, the chuck holding the seaming roller in line with said cans, means for applying pressure to the chuck, and intermediate connections with said chuck and said cans; substantially as set forth.

7. The traveling frame, the clamps carried by said frame and arranged to grasp the cans, combined with the open receiver for the cans and heads, the narrow tables at opposite edges thereof, the springs for giving said tables an upward tension, and seaming rollers in the path of said traveling frame; substantially as set forth.

8. The traveling frame, the clamps carried thereby for grasping the cans, and the platens and cams conforming in outline with that of the cans in cross-section, combined with the chucks at opposite ends of said frame, seaming rollers for the different operations of double seaming held by said chucks, intermediate connections between said chucks and said cams, means for simultaneously applying pressure to all of said chucks from the driving shaft, and means for causing said intermediate connections to simultaneously engage said cams; substantially as set forth.

9. The revoluble frame, the clamps for grasping the cans, mechanism for imparting to said frame an intermittent motion, the pinions connected with the spindles of said clamps, the gear wheel engaging said pinions, mechanism for imparting to said gear wheel an intermittent motion corresponding with that of the revoluble frame, and mechanism for imparting to said gear wheel an independent revoluble movement, combined with seaming rollers in the path of said cans; substantially as set forth.

488,676. CAR-BRAKE. JAMES HUGHES, Boston, Mass. Filed June 20, 1892. Serial No. 437,342. (No model.)

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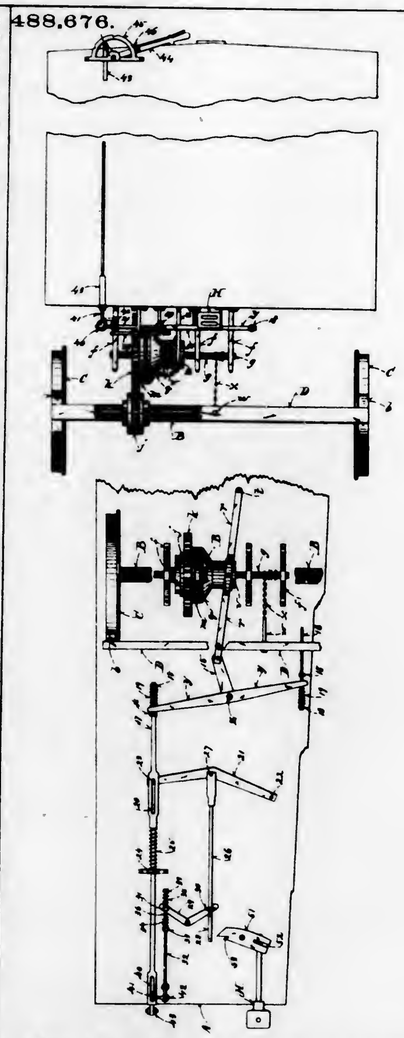


Claim.—1. In a car brake, the brake-beam and axle in combination with the car-body and a rotary-shaft thereon; a loose gear on said shaft; a gear fast on said axle and meshing with the loose gear; a chain connecting the shaft and brake-beam; a friction-clutch on said shaft for fixing the loose gear; a hand-lever on the car and a series of spring-pushed levers connecting the same with said clutch whereby it may be actuated, substantially as set forth.

2. The car and axle provided with the fixed gear, *j*, in combination with the shaft, *g*, the loose gear, *k*, thereon forming a clutch-member; the sliding clutch-member on said shaft; a series of spring-pushed levers pivoted on the car for throwing said sliding member; the draw-bar; a hook-lever actuated thereby; mechanism for throwing a lever of said series into the path of the hook-lever; the brake-beam and a chain connecting it with said shaft, *g*, all being arranged to operate substantially as described.

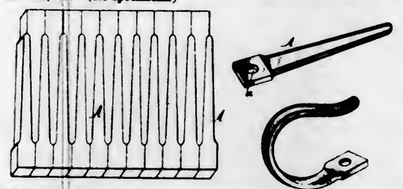
3. In a car-brake the combination of the connected levers, *r*, *y*, pivoted on the car-body; the spring-tensioned rod, 17, connecting with an arm of the lever, *y*,; the hand-lever for actuating said rod; the axle and fixed gear, the winding-shaft and loose-gear meshing with the fixed gear; a clutch actuated by lever, *r*, for locking said gear; the brake-beam and chain connecting with the winding-shaft, substantially as set forth.

4. The axle, winding-shaft connecting-gears and clutch-mechanism in combination with the levers, *r*, *y*, the spring-tensioned rod, 17.

and the hand-lever for actuating the same; the draw-bar; the hook-lever, 51, actuated thereby; a series of levers adapted to be thrown into the path of said hook-lever and actuate said rod by the movement of the draw-bar; the brake-beam and chain connecting the same with the winding-shaft, all being arranged to operate substantially as described.

5. The draw-bar and lever, 51, in combination with the lever, 21, and loop-lever, 26, fitted to be projected into the path of the lever, 51, the spring-tensioned rod, 17, connecting with the lever, 21; the winding-shaft, beam and connecting-chains; the loose clutch-gear on said shaft meshing with a fixed gear on the car-axle; the sliding clutch-member on said shaft and levers connecting the same with said rod, all being arranged to operate substantially as set forth.

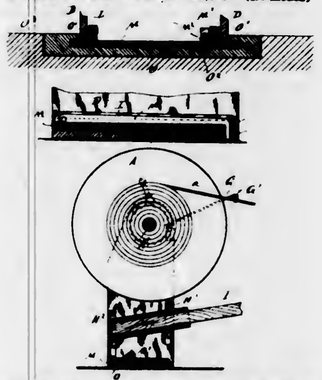
488,677. METHOD OF MAKING HARNESS CHECK-HOOKS. HARRY B. KELLEY, Niagara Falls, N. Y. Filed Nov. 14, 1891. Serial No. 411,926. (No specimens.)



Claim.—1. The herein described method of making a hook from sheet metal consisting in severing the blank from the sheet metal and thereby giving it the proper outlines and dimensions of the finished article, then stamping the blank between dies to impart the desired cross section and condense the metal, and then bending the condensed blank into the form of a hook, substantially as described.

2. The herein described method of making a sheet metal hook, which consists in cutting from a sheet of metal a straight blank having the dimensions and outlines of the hook to be produced, then stamping the blank between dies to impart the desired cross section and condense the metal, then polishing or finishing the stamped blank, and finally bending the polished or finished blank into hook-form, substantially as set forth.

488,678. FISHING-REEL. PANTALEON M. LEFEBVRE, Brooklyn, N. Y. Filed Apr. 5, 1892. Serial No. 427,873. (No model.)



Claim.—1. The combination, with a base-plate, of two standards pivoted on the base-plate so as to swing on the same, plates uniting said standards, a reel mounted in said swinging standards, means for turning the reel and a pole-socket for receiving the end of a pole, held in said standards, substantially as set forth.

2. The combination, with a base-plate, of a socket-plate into which the base-plate can slide, a latch for locking the base-plate to the socket-plate, a frame pivoted to the base-plate, a reel mounted in said frame and a socket for receiving the end of the pole on said frame, substantially as set forth.

488,679. HANDLE. NELSON H. PROUTY, Charlton, Mass. Filed July 23, 1892. Serial No. 440,859. (No model.)

Claim.—As an improved article of manufacture, a handle, consisting of a disk, or circular plate provided with holes or openings in

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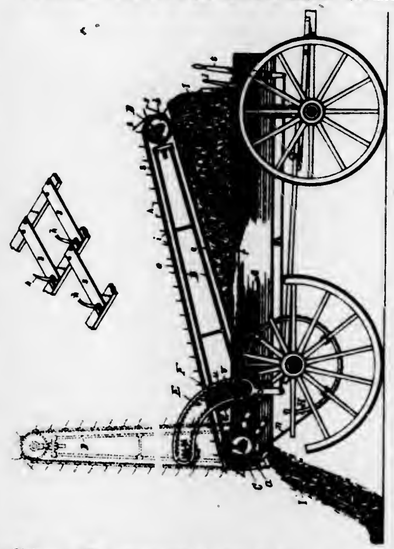
the edge thereof, and a coiled wire extending around the edge of said disk, and passing through the holes therein, substantially as shown and described.

488,680. FERTILIZER-DISTRIBUTER. BENJAMIN F. RIX, Kalamazoo, Mich. Filed Feb. 29, 1892. Serial No. 423,202. (No model.)



Claim.—1. The combination of a suitable frame bearing traveling belts carrying teeth and adapted to be raised, and to move down against the surface of the load as the load is lowered by said traveling teeth, and suitable mechanism connected with said traveling belts, whereby the movement of said belts raises and lowers said frame; substantially as set forth.

2. The combination of a suitable frame bearing traveling belts carrying teeth, and adapted to move down against the surface of the load as said load is lowered, and suitable tooth-cleaners traveling with said teeth: substantially as set forth.

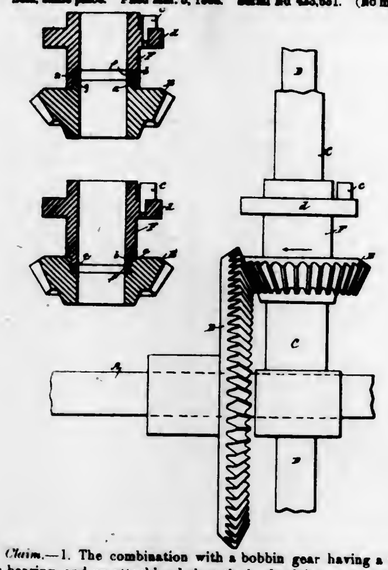
3. The combination of a suitable frame bearing traveling belts provided with teeth and adapted to be raised and to move down against the surface of the load, as said load is lowered by the traveling teeth, and a rack and pinion mechanism connected with said traveling belts, whereby the motion of said belts will raise and lower the frame; substantially as set forth.

4. The combination of a suitable vehicle, a frame pivoted at one end to said vehicle, said frame bearing at the ends sprocket wheels, sprocket chains carried by said sprocket wheels and transverse slats attached to said chains and bearing fertilizer distributing teeth, and means for operating the same, and the forked cleaners attached at one end to one of the tooth slats and astride of the teeth at the other end on the neighboring slat; whereby they will clean the teeth by tilting at the ends of the frame when the slats are carried around the sprocket-wheels, substantially as set forth.

5. The combination of a suitable vehicle, a frame pivoted at one end to said vehicle, said frame bearing at the ends sprocket wheels.

sprocket chains carried by said sprocket wheels and transverse slats attached to said chains and bearing fertilizer distributing teeth, and means for operating the same, a double rack, comprising the two parallel bars, having the cogs on the inner edge of each bar, said rack being pivoted to oscillate, said frame which bears the sprocket chains being provided with a transverse shaft having sprocket wheels engaging the said chain and said shaft being provided with a pinion engaging the oscillating rack during the upward and downward swing of said frame, substantially as set forth.

488,681. MEANS FOR DRIVING BOBBINS IN SPEEDER-FRAMES. SOCRATES SCHOLFIELD, Providence, R. I., assignor to Joseph J. Scholfield, same place. Filed Mar. 3, 1892. Serial No. 423,631. (No model.)



Claim.—1. The combination with a bobbin gear having a running bearing, and an attaching hub at the back of the gear, of a bobbin-driving means, detachably secured to said hub, substantially as described.

2. The combination with a bobbin gear having a running bearing, and an attaching hub at the back of the gear, of the bobbin-driving means, detachably secured to said hub by means of a screw thread, substantially as described.

3. The combination with a bobbin gear having a running bearing, of a bobbin driving means detachably secured to said gear, and forming at the joint between the gear and the driving means, a chamber, for the reception of an absorbent material for holding the lubricating oil, substantially as described.

488,682. ARTIFICIAL STONE. ANTON SLADOMLAWEK, Chicago, Ill. Filed Apr. 21, 1892. Serial No. 430,126. (No specimens.)

Claim.—1. A composition for producing artificial stone, comprising Portland cement, chips, lime water and saltpeter, substantially as described.

2. The composition for artificial stone, comprising Portland cement, chips, lime water, saltpeter and magnesia, combined, substantially as described.

3. The process of producing an artificial stone, which consists in first mixing cement and chips in proper proportion, then adding thereto a mixture of dissolved saltpeter and magnesia, adding to the mass obtained lime water, pressing and drying, substantially as described.

488,688. PRODUCING ENAMELED IRON WARE. CARL A. W. VOLLRATH, Sheboygan, Wis. Filed June 27, 1891. Serial No. 397,740. (No specimens.)

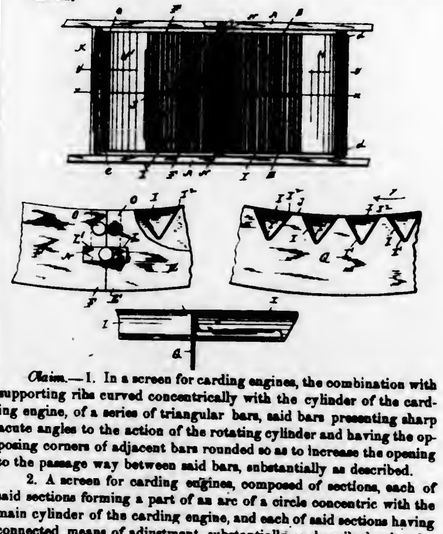
Claim.—1. The process of producing speckled enameled iron-ware, which consists in mixing two enamels having different fusibility and ground to different degrees of coarseness, applying them to the article, drying and fusing, substantially as described.

2. The process of producing speckled enameled iron-ware, which consists in first preparing the enamel paste, adding thereto a granular enamel of contrasting color and fusible more readily than the enamel paste, applying the mixture to the article, drying and fusing, substantially as described.

3. The process of producing speckled cast-iron ware which consists in coating the iron with an enamel and drying and fusing the same, thereupon coating the surface thus produced with a mixture of two enamels, one of which is ground more coarsely and made more readily fusible than the other, and again drying and fusing, substantially as described.

4. A composition for producing speckled enameled iron ware comprising two mixtures, one composed of feldspar, borax, cryolite, soda and saltpeter, and the other composed of substantially the same ingredients with an additional proportion of borax, said mixtures being combined as and for the purpose set forth.

488,684. SCREEN FOR CARDING-ENGINES. JAMES H. WHITTLE, Worcester, Mass. Filed Apr. 5, 1890. Serial No. 346,761. (No model.)



Claim.—1. In a screen for carding engines, the combination with supporting ribs curved concentrically with the cylinder of the carding engine, of a series of triangular bars, said bars presenting sharp acute angles to the action of the rotating cylinder and having the opposing corners of adjacent bars rounded so as to increase the opening to the passage way between said bars, substantially as described.

2. A screen for carding engines, composed of sections, each of said sections forming a part of an arc of a circle concentric with the main cylinder of the carding engine, and each of said sections having connected means of adjustment, substantially as described, whereby said sections can be adjusted relatively to the surface of said cylinder, substantially as described.

3. The combination of the side ribs E and F, provided with the mortised ends E′ and F′, supporting bars N, N, provided with screw threaded bolts N′, N′ and nuts N², N², and frame A provided with the vertically elongated holes N³, substantially as described.

4. In a screen for carding engines, the combination of the sides ribs E and F, of a central rib G, said central rib consisting of a plate lying in a vertical plane and having its upper edge curved concentrically with the main cylinder of the carding engine, and a series of short bars attached at their outer ends to the inner sides of the side ribs E and F and having their inner ends abutting against and attached to the opposites sides of the central rib G, substantially as described.

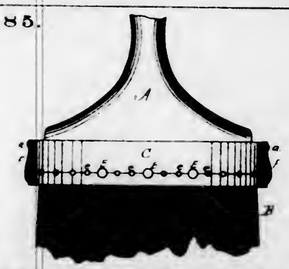
5. The combination of a series of parallel bars forming the body of the screen, of the central rib G and the band J, recessed in the upper surface of said bars, substantially as described.

6. The combination of a series of parallel bars forming the body of the screen, of the central rib G placed between and attached to the inner ends of said parallel bars and a band J attached to one edge of said central rib with the edges of said band overlapping the inner ends of said parallel bars, substantially as described.

7. The angular cast metal shell K attached at its ends to the frame-work and presenting a curved surface, curved concentrically with the main cylinder and upon the opposite side a curved surface, curved concentrically with the licker-in and provided with a flange K′ to which the body of the screen is attached, substantially as described.

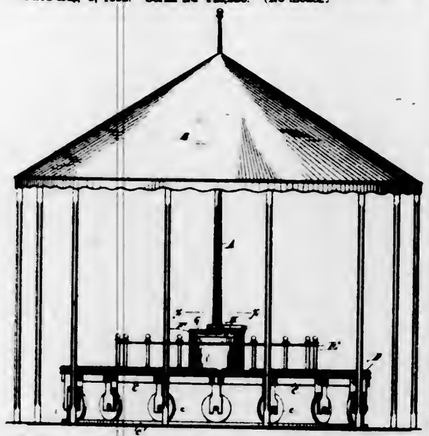
488,685. DEVICE FOR USE IN THE MANUFACTURE OF LEATHER-BOUND BRUSHES. CHARLES R. BAKER, Malden, Mass. Filed Mar. 2, 1892. Serial No. 423,442. (No model.)

488,685.



Claim.—In the manufacture of leather bound brushes, the guide-form described consisting of the two parts C and C′ and provided with the perforations *e*, the line dividing the two said parts cutting the perforations so that a portion of each perforation is situated on each side of said line, the said parts being secured together by suitable catches as F, said form serving as a guide for the securing tacks during the process of manufacture, substantially as set forth.

488,686. MERRY-GO-ROUND. JOHN R. BATT, Martinsville, N. Y. Filed Aug. 5, 1892. Serial No. 443,223. (No model.)



Claim.—1. The combination with a rotary platform and the seats or figures mounted on the platform and provided with numerals, of a dial ring provided with numerals corresponding with the numbers on the seats or figures, and a pointer adapted to traverse the dial ring, substantially as set forth.

2. The combination with the rotary platform and the seats or figures mounted on the platform and provided with numerals, of a rotary dial ring moving with the platform and provided with numerals corresponding with the seats and figures, and a stationary pointer, substantially as set forth.

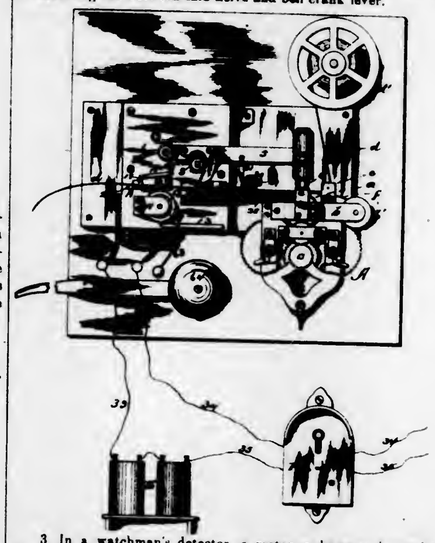
3. The combination with the rotary platform and the seats or figures mounted on the platform and provided with numerals, of a rotary dial ring moving with the platform and provided with a row of teeth, and numerals corresponding with the numerals on the seats or figures, and a pawl mounted on a stationary support and engaging with the teeth of the dial ring, substantially as set forth.

4. The combination with the rotary platform and the seats or figures mounted upon the platform and provided with numerals, of a dial ring rotating with the platform and provided with a row of numbers on its outer and inner sides, and a stationary pointer, substantially as set forth.

488,687. WATCHMAN'S TIME-RECORDER. WILLARD L. BUNDY, Binghamton, N. Y., assignor to the Bundy Manufacturing Company, same place. Filed Oct. 19, 1891. Serial No. 409,118. (No model.)

Claim.—1. In a watchman's detector, a segmental gear rotated by a motor, a hammer mounted upon a bar, a rack bar upon said hammer bar, with which said gear engages, in combination with an arm secured to the bar, a slide, a toothed pawl pivotally mounted in said slide, and a connecting rod connecting said pawl to said arm.

2. In a watchman's detector, a segmental gear rotated by a motor, a hammer mounted upon a bar, a rack bar upon said hammer bar with which said gear engages, in combination with a swinging impression bar, a bell crank lever, a rod connecting it to said bar and a connecting rod between said helve and bell crank lever.



3. In a watchman's detector, a motor, a hammer bar raised thereby, a slide through which the paper strip passes, a toothed pawl pivotally mounted in said slide, and an arm secured to said hammer bar, and a connecting rod between said arm and said pawl, and a push pawl secured to said slide, in combination with the ribbon spool, and the rack gear thereon, with which said push pawl engages.

4. The combination with the motor and the notched stop wheel, upon its shaft, of a lever pivotally mounted and adapted to engage with one notch of said wheel, and the armature of an electro-magnet connected to said lever.

5. The combination with the motor, the notched stop wheel upon its shaft, and the motor escapement pendulum, of a weighted lever pivotally mounted and adapted to engage with one notch of said wheel, and with which said pendulum normally engages, and the armature of an electro-magnet connected to said lever.

6. The combination with the motor, the notched stop wheel upon its shaft, and the motor escapement pendulum, of a weighted lever pivotally mounted and adapted to engage with a notch on said wheel, and with which said pendulum normally engages, the armature connected to said lever and the swing pawl engaging the end of said lever when released from said wheel.

7. The combination with the motor, the notched stop wheel upon its shaft, and the motor escapement pendulum, of a weighted lever pivotally mounted, and adapted to engage with a notch on said wheel, and with which said pendulum normally engages, the armature connected to said lever and the spring pawl engaging the end of said lever when released from said wheel, and the hammer helve adapted to engage with said swing pawl and disengage it from said lever.

8. In a watchman's detector, the combination of a weighted lever pivoted upon the casing, and adapted to engage with the stop wheel, the armature of an electro-magnet connected thereto and a swing pawl engaging with the end of said lever when disengaged from the stop wheel by the operation of the armature.

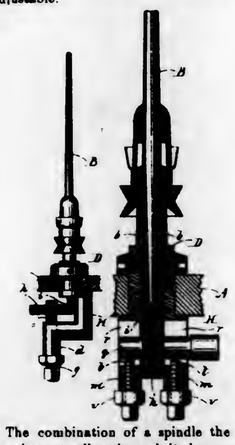
9. In a watchman's detector, a weighted lever pivoted upon the casing, a stop-wheel with which it engages, a swinging pawl engaging with said lever when disengaged from said wheel, and an armature normally engaging with said lever, and operating to disengage it from said wheel, and an impression bar secured to said armature, and vibrated vertically by the vibration of the armature.

10. In a watchman's detector, a weighted lever pivoted upon the casing, a stop wheel with which it engages, a motor operating it, a swinging pawl engaging said lever when disengaged from said wheel, and an armature normally engaging said lever and operating to disengage it from said wheel, and an impression bar pivoted upon the armature and swung vertically by the vibration of the armature.

11. In a watchman's detector, a battery, an electro magnet, an armature, and an impression bar pivoted upon the armature and laterally movable thereon and vibrated vertically by it, in combination with type wheels synchronous with a clock, the paper strip, the ink ribbon, and the vertically operated impression hammer.

488,688. SPINDLE-STEP. EDGAR J. CARROLL, Worcester, Mass., assignor to William T. Carroll, same place. Filed Jan. 4, 1892. Serial No. 416,949. (No model.)

Brief.—The bolster has an opening in its lower end through which the end of the spindle projects. A wheel, of leatheroid, is journaled below the opening and forms a bearing or step for the spindle. The wheel may rotate either horizontally or vertically and its journals are vertically adjustable.



Claim.—1. The combination of a spindle the bolster provided with a spindle opening extending through its lower end with a wheel journaled below said opening in position to support the spindle, substantially as described.

2. The combination with a spindle; a bolster having a spindle opening extending through its lower end; and a wheel journaled below said opening and forming a step for the spindle, the journal of said wheel being vertically adjustable, substantially as described.

3. The combination of a spindle; a bolster having a spindle opening extending through its lower end and with an arm projecting below the rail, a wheel journaled on said arm in position to support the spindle, the journal of said wheel being vertically adjustable, substantially as described.

4. A spindle and a bolster provided with a bracket projecting below the rail and a spindle opening extending through its lower end in combination with a wheel journaled to rotate horizontally in said bracket and projecting under the spindle opening of said bolster and mechanism for adjusting the wheel journal vertically, substantially as described.

5. The bolster, having the spindle opening, the bushing and spindle, in combination with the bracket, H, the arbor, *f*, adjustably journaled in said bracket and the wheel, *A*, on said arbor all being arranged to operate substantially as described.

6. The bolster provided with a spindle opening extending through its lower end in combination with the bushing therein having the taper spindle opening; the taper spindle disposed in said bushing with its end projecting therethrough; and a step for said spindle comprising a wheel journaled below said opening and having a vertically adjustable journal whereby the bearing of the spindle in said bushing may be adjusted.

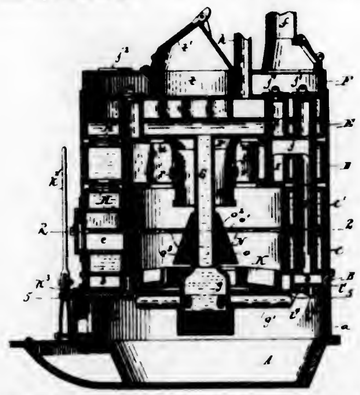
488,689. STEAM-BOILER. MILES L. CLIFTON, Ithaca, N. Y. Filed May 26, 1892. Serial No. 434,440. (No model.)

Claim.—1. The combination with the boiler sections having vertical flues and compartments connecting the lower ends of said flues and provided with openings, of gates arranged in the compartments and adapted to open or close the openings, and a movable ring connecting the gates, whereby the gates are shifted simultaneously, substantially as set forth.

2. The combination with the boiler sections provided with vertical flues and compartments connecting the lower ends of the flues and provided with openings and slots, of gates adapted to close said openings and provided with depending studs arranged in said slots, and a movable ring arranged underneath the compartments and provided with ears to which the lugs of the gates are secured, substantially as set forth.

3. The combination with the flue compartments having openings for the escape of dust, the gates arranged over said openings and the movable ring connecting said gates and provided with stops or projections, of an oscillating grate having an arm which engages between said stops or projections, the distance between the latter being greater than the shaking stroke of the grate-arm and less than the stroke which is required for shifting the ring, substantially as set forth.

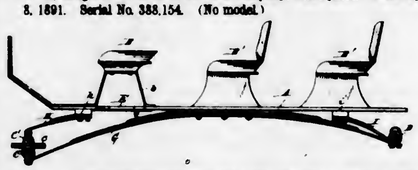
4. The combination with a steam boiler provided with a fire box and a central water column extending into said box, of a sleeve surrounding said column and provided with an annular top flange and a sectional core surrounding the water column and having each of its sections provided with a hook which engages over said flanges, substantially as set forth.



5. The combination with a steam boiler provided with a fire box and a central water column extending into said fire box, of a sleeve surrounding the water column and provided with an annular top flange, and a conical core surrounding said column and composed of sections, each section provided near its upper end with a hook engaging with said flange and on its lower side with vertical ribs which rest against the sleeve, substantially as set forth.

6. The combination with the fire box and the fuel magazine, of an extension applied to the lower portion of the magazine and consisting of sections arranged side by side circumferentially around the magazine and provided each with a separate vertical fastening whereby each section can be raised or lowered on the stationary portion of the magazine, substantially as set forth.

488,690. SPRING-VEHICLE. FRANCIS G. DAVIS, Watertown, N. Y., assignor to the H. H. Babcock Company, same place. Filed Apr. 8, 1891. Serial No. 388,154. (No model.)



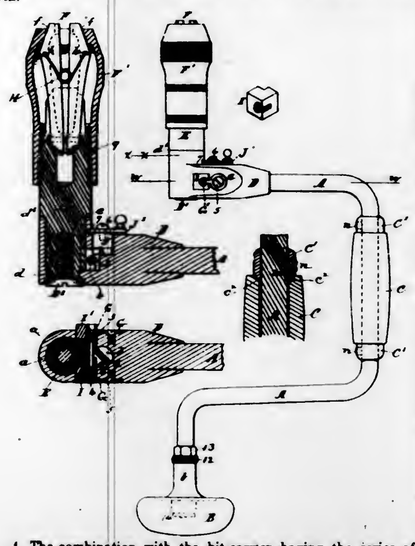
Claim.—The combination with the front and rear axles, of a buckboard having its sides provided with notches or recesses in rear of the front axle, seat standards secured to the sides of the buckboard in front and rear of said notches or recesses and extending over the same, a perch spring secured to the middle portion of the buckboard and extending from the rear axle to the front running gear, rear side springs attached to the rear portion of the buckboard and the rear axle, and front side springs secured to the buckboard in front of said recesses and connected with the front bolster, substantially as set forth.

488,691. BIT-BRACE. ALBERT D. GOODELL, Worcester, Mass. Filed June 22, 1892. Serial No. 437,052. (No model.)

Claim.—1. In a bit brace, the sweep-bar having the journal and screw-thread formed thereon, and the annular disk fixed on the reduced end thereof, in combination with the pressure-knob, its tubular sleeve mounted on said journal adjacent to said disk, the threaded adjustable take-up collar arranged on said thread at the opposite end of the sleeve and the internally threaded nut adjacent to said collar, as and for the purpose set forth.

2. A bit brace, having the sweep-bar, the handle rotative thereon, and provided with adjustable collars fitting the respective ends of the handle, and means for firmly securing said collars in position on said bar, as set forth.

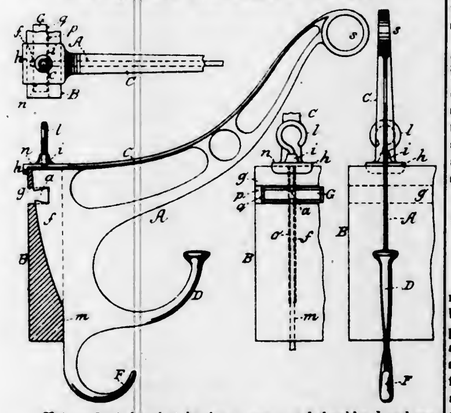
3. A bit brace provided with a sweep-bar having an inclined flat surface on the side thereof, the handle loosely surrounding said bar and having an inwardly tapered cavity at its end, the adjustable collar having a conoidal end fitting said cavity, and a set-screw fitted in a threaded opening through the side of the collar and its point resting on the incline on the sweep-bar, as and for the purpose set forth.



4. The combination with the bit-carrier having the series of grooves, the frame fitted with a bearing for supporting said bit-carrier and having a transverse mortise extending through the same, as shown, of the right angled pawls oppositely disposed within said mortise for engaging the grooves of said bit-carrier, the cap-plates secured to the sides of the frame and having eye-portions that project into said mortise, a guide-bar extending through the pawls and supported at its ends by said cap-plates, the pawl springs arranged on said guide-bar within the pawls, and the shifting dog disposed in a cylindrical opening in the frame and having a flange that engages between said pawls, substantially as and for the purpose set forth.

5. The combination, with the sweep bar, ratcheted bit-carrier, and engaging pawls in a bit-brace of the frame having the under-cut recess, the pawl-shifting dog provided with an operating crank or thumb-plate having a circular edge or flange which extends into said recess, for the purpose set forth.

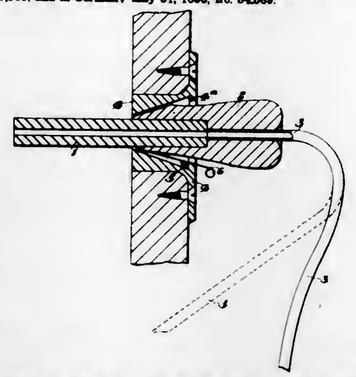
488,692. BRACKET. ROBERT INGAL and JOSEPH INGAL, Chicago, Ill. Filed Aug. 13, 1891. Serial No. 402,571. (No model.)



Claim.—1. A bracket having a cap *n* and shoulder *h* and provided with a rear projection or tongue *f*, said projection being formed with a transverse slot *a*, in combination with a back attaching strip having a transverse and a vertical groove, the projection *f* being adapted to be seated in the vertical groove, and the slot in said projection to coincide with the transverse groove in the attaching strip and a dovetail key adapted to be passed through the dovetail passage or opening formed by the coinciding grooves, whereby the bracket is firmly yet removably attached to the attaching strip, substantially as described.

2. A bracket formed with a cap *n*, shoulder *h*, straight bearing portion *m*, and a rear segmental-shaped projection or tongue *f*, said projection being formed with a transverse, dovetailed slot *a*, in combination with a back attaching strip B having a transverse groove *g* and a vertical curved groove *o*, into which latter groove the projection *f* is adapted to be seated and the transverse dovetail groove in said projection to coincide with the transverse groove in the attaching strip B, and a dovetail key adapted to be passed through the coinciding grooves, whereby the bracket is firmly attached to and capable of ready detachment from the attaching strip, substantially as described.

488,693. APPARATUS FOR FEEDING CALVES. HENRY B. LINFORD and EDWARD LINFORD, Ripon, England. Filed Jan. 26, 1892. Serial No. 419,263. (No model.) Patented in England Mar. 1, 1890, No. 3,309, and in Germany May 31, 1890, No. 54,589.



Claim.—1. In an apparatus for feeding calves, the combination of a device placed in the food receptacle consisting of a flexible disk 8 with rim 8^a and cover 10 with a mouthpiece 1 and tube 3 connecting the mouth-piece to the flexible disk, substantially as described and for the purposes specified.

2. In an apparatus for feeding calves, the combination of a mouthpiece 1, fixed in a plug 2, the plug being attached to the wall or partition of the house containing the animal to be fed, by means of the spring 6 with projections 5 engaging with the flange 4^a, on the metallic ring or socket 4, a device, placed in the receptacle containing the food, consisting of a case or cover 10, inclosing a disk 8, through which the tube 3, communicating with the mouthpiece, opens, substantially as described and shown, and for the purposes specified.

3. In an apparatus for feeding calves, the combination of a mouthpiece 1, fixed in a plug 2, capable of being inserted in the wall of the house containing the animal, with a device placed in the receptacle containing the food, connected with a mouthpiece by a tube 3, consisting of flexible disk 8 with rim 8^a, a cover 10, and a tube 7, connected to the tube 3, containing a valve formed by a small cap 9 on a short tube 9^a, opening through the disk 8, substantially as described and illustrated in the accompanying drawings and for the purposes specified.

488,694. SAFETY-TRIGGER FOR BREECH-LOADING BOLT-GUNS. PAUL MAUSER, Oberndorf, Germany, assignor to the Waffenfabrik Mauser, same place. Filed Apr. 30, 1892. Serial No. 431,300. (No model.)

Claim.—1. A safety trigger for bolt guns consisting of a hollow rectangular frame *a* having a pivotal point *m* for attachment to the breech-case of a gun, and having a trigger-nose *b* at one side of its pivotal point constructed to engage the trigger-beak of a firing pin, and having a projection *d* at the opposite side of its pivotal point constructed to engage the pivotal point of a gun, in combination with a finger-piece *g* entering said hollow frame, pivotally connected thereto at *n*, and constructed when tilted to operate said frame, substantially as and for the purpose set forth.

2. A safety trigger for bolt guns consisting of a hollow frame *a*

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to be held open by the tripping lever of each lamp while the same is burning, substantially as shown and described.

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488,701. ATTACHMENT FOR BRACE-BITS. THEOPHILUS O. SMITH, Oxford, England. Filed Dec. 30, 1891. Serial No. 416,009. (No model.)

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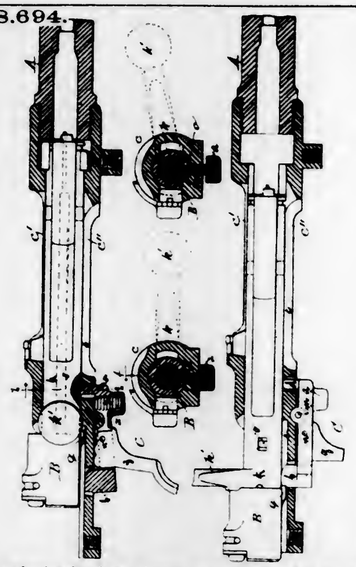
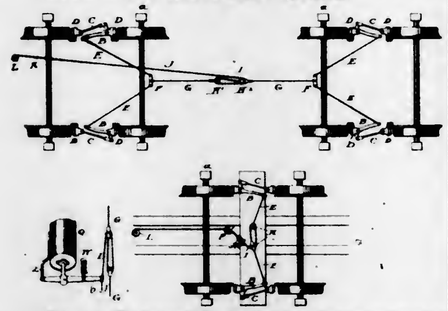


having projection *d* at front, pivotal connection *m* to the rear of said projection, and trigger-nose *b* at rear, in combination with finger-piece *g* entering said frame and pivotally connected thereto at *n* for operating it to depress its trigger-nose, and spring *s* seated in said frame for operating it to raise said nose, substantially as and for the purpose set forth.

488,695. CAR-BRAKE. ISAAC R. MCCORMICK, Logansport, Ind. Filed Nov. 30, 1891. Serial No. 413,627. (No model.)



Claim.—1. The levers B, B, placed as described in combination with spreading bar (C) and brake heads (D) all constructed and operated substantially as set forth.

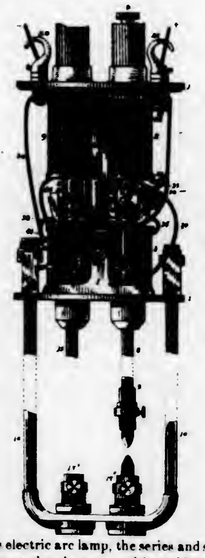
2. The equalizer (F) in combination with rods (G, G,) and pulleys (H, H) and chain (I) and connected with levers (B, B,) by rods (E, E,) as and for the purpose substantially as set forth.

3. The hanger (S) provided with guard arm (V) as shown and substantially as described.

488,696. DUPLEX ARC LAMP. HENRY M. ODELL, Detroit, Mich. Filed Mar. 24, 1892. Serial No. 426,727. (No model.)

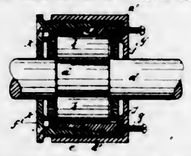
Claim.—1. In a double electric arc lamp the series and shunt coils, and the tripping lever arranged to be actuated by said coils, and the clutch and carbon-carrying rod, combined with a circuit closer interposed between the direct wire and series coil of the second lamp, and arranged to be normally held open while the first lamp is burning, and to be engaged by and closed by the carbon-carrying rod of the first lamp at the end of its descent, substantially as shown and described and for the purpose specified.

2. In a double electric arc lamp, the series and shunt coils and the tripping levers arranged to be actuated by said coils, and the clamps and carbon-carrying rods, combined with a circuit closer interposed between the direct and return wires, normally closed, and arranged to be held open by the tripping lever of each lamp while the same is burning, substantially as shown and described.



3. In a double electric arc lamp, the series and shunt coils, and the tripping levers arranged to be actuated by said coils, and the clamps and carbon-carrying rods, combined with a circuit closer interposed between the direct wire and the series coil of the second magnet, and arranged to be normally held open while the first lamp is burning, and to be closed by the carbon-carrying rod of the first lamp at the end of its descent, and a circuit closer interposed between the direct and return wires, normally closed and arranged to be held open by the tripping lever of each lamp while the same is burning, and provided with a resistance coil graduated to the resistance of the arc between the carbons of each lamp, substantially as shown and for the purpose specified.

488,697. ANTIFRICTION-BEARING. MAXIME O. PARENTEAU, Springfield, Mass. Filed Oct. 14, 1891. Serial No. 408,734. (No model.)

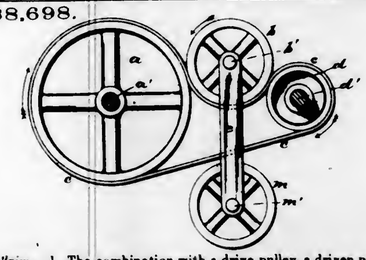


Claim.—1. The combination of the shaft, a cage arranged thereon, having end pieces connected by cross bars *c*, and intermediate bearings between the cross bars in the end pieces, anti-friction rollers mounted in the bearings of the cage, a casing *e* diagonally split and having a tapering exterior surface arranged over the cage and rollers, a casing having threaded exterior surface and a flaring interior to set over the tapering exterior of the casing *e*, and an exterior casing having interior threads to engage the exterior threads of the casing and engaging the end of the split casing *e*, whereby the wear of the rollers may be compensated or taken up, substantially as described.

2. A roller bearing composed of the shaft *d* formed with an annular recess, as shown, a cage mounted on the shaft, composed of end pieces *b* connected by cross pieces *c* and formed with slotted bearings, anti-friction rollers disposed in the said bearings of the cage, the split cylindrical ring *e* having a tapering outer surface a casing *f*" having a threaded exterior, and an interior flaring surface to set over the tapering surface of the split casing *e* and formed with an interior annular flange *k* to set against the end of the anti friction rollers; and the outer casing *d*' formed with interior threads to engage the casing *f*', and a projecting interior annular flange to set against the ends of the anti friction rollers; substantially as and for the purpose specified.

488,698. BELT-TIGHTENER. BENJAMIN H. PAYNE, Elmira, N. Y. Filed Mar. 4, 1892. Serial No. 423,711. (No model.)

488,698.



Claim.—1. The combination with a drive pulley, a driven pulley, and a driving belt, of an idler belt-tightener pulley mounted between said pulleys, and bearing upon the belt and against both of said pulleys, through the belt.

2. The combination, with a drive pulley, a driven pulley, and a driving belt, of a vertically movable frame, and tightening pulleys mounted in it and adapted to respectively engage with the belt and pulleys, as the frame is adjusted vertically.

488,699. SASH-BALANCE. ALBERT J. ROSENTRETER and JOHN G. O'BRIEN, Rochester, N. Y. Filed May 16, 1892. Serial No. 433,060. (No model.)

Claim.—1. In a sash balance, the combination with a pulley, of two coiled springs acting conjointly upon it and in the same direction, for the purpose set forth.

2. In a sash balance, the combination with a pulley, of two coiled springs acting conjointly upon it and in the same direction, and located on opposite sides of its supporting web or spokes, and a brake disk interposed between said web or spokes and one of the springs, and bearing upon the pulley, substantially as described.

3. In a sash balance, a casing formed in two parts, each provided with hubs which are located concentric with each other, a shaft passing through said hubs, and a pulley loosely mounted upon said shaft and held in position upon the shaft by said hubs in the manner described.

4. In a sash balance, the combination with the loose pulley, of a brake disk on a concentric axle, the edges of the disk bearing upon the pulley to produce the required friction, and an adjusting device for regulating the pressure of the disk upon the pulley.

5. In a sash balance, the combination with a pulley loosely mounted upon an axle, of a disk mounted upon a concentric axle, the edges of the disk bearing against the pulley, a spring pressing upon the disk, and an adjusting device for regulating the power of the spring.

6. In a sash balance, the combination of a case, a spring operated pulley located therein, a disk forming a brake bearing against the pulley and means for applying pressure to the disk, substantially as described.

7. In a sash balance, the combination with the case, of the pulley, the brake disk resting against one side of the same, the screw passing through the case, the nut fitted to the screw and the spiral spring interposed between the nut and disk, substantially as shown and described.

488,700. CHECK-HOOK. WILLIAM T. SOMERSON, Marcia, Ill. Filed Mar. 24, 1892. Serial No. 426,208. (No model.)

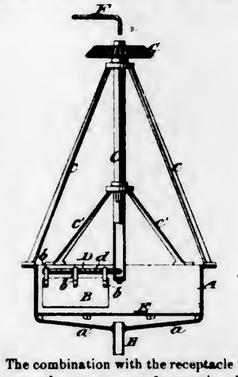
Claim.—The combination of the saddle having the holes for the rivet and stud respectively, the hook riveted to the under side of the saddle and having the stud projected upward through a hole in the saddle, the snap pivoted on the stud and having the side walls, and the spring between the saddle and the snap, substantially as set forth.

488,701. ATTACHMENT FOR BRACE-BITS. THEOPHILUS O. SARRE, Oxford, England. Filed Dec. 30, 1891. Serial No. 416,609. (No model.)

Claim.—1. In an attachment for brace-bits the combination of the gage A with a counter-sinking blade F and the two nuts D and E which adjust the blades and fix the attachment on the bit, substantially as set forth.

2. In an attachment for brace-bits, the combination of the counter-sinking blade F, sliding in a groove in the gage A, and adapted to rest on the concave surface of the bit, with the adjusting and fixing nuts D and E substantially as shown and for the purpose specified.

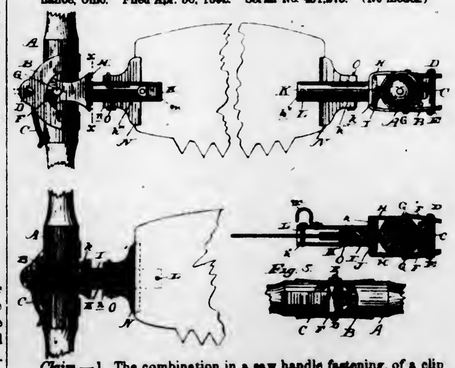
488,702. APPARATUS FOR WASHING SODIUM BICARBONATE. KARL J. SUNDSTROM, Brooklyn, N. Y., assignor to Church & Co., same place. Filed Aug. 7, 1891. Serial No. 401,960. (No model.)



Claim.—1. The combination with the receptacle for the material to be operated upon, of an arm, means for rotating the arm over the surface of the material within the receptacle, and a scraper or packer supported from the arm in position to engage the material within the receptacle and free to exert its weight upon the material to spread the same evenly within the receptacle, substantially as set forth.

2. The combination with the receptacle for the material to be operated upon, the said receptacle being provided with an exit pipe for the attachment thereto of a vacuum apparatus, of a rotary water supply tube supported centrally above the receptacle, a perforated tubular arm secured to and radiating from the said rotary water supply tube and a scraper supported upon said perforated arm, substantially as set forth.

488,703. SAW-HANDLE FASTENING. ROLLIN C. TAGGART, Defiance, Ohio. Filed Apr. 30, 1892. Serial No. 431,275. (No model.)



Claim.—1. The combination in a saw handle fastening, of a clip B, a centrally perforated yoke H having notches *j*, a slotted sleeve K,

provided with the flange *k* and projections *k'*, a pin passing through said sleeve and into the saw held therein, a slide bearing on the saw, and a bolt pressed on said slide to force the saw away from the handle, substantially as described.

2. The combination in a saw-handle fastening, of a clip, a yoke

ing the pin 48, and a flexible shaft 10 secured to the shaft 12 through which rotation may be imparted thereto, as described.

4. The combination, of the rope-winding drum having the groove or sheave thereon, its supporting brackets, actuating springs, ratchets and pawls, the signal-bell, its striker-operating arbor and winding spring; and the cord or pull, connecting said signal-operating arbor

liquids, for heating fresh water comprising a tank adapted to hold a quantity of fresh water, an inlet pipe to said tank provided with a valve which is opened and closed by vertical rod connected to one end of a pivoted lever carrying a float as the water in said tank falls

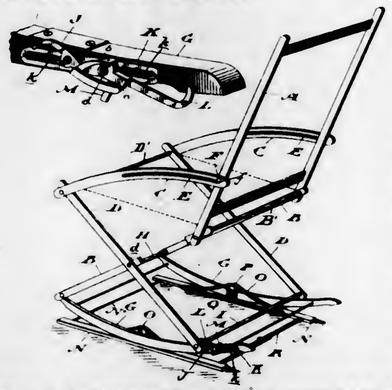
provided with the flange *k* and projections *k'*, a pin passing through said sleeve and into the saw held therein, a slide bearing on the saw, and a bolt pressed on said slide to force the saw away from the handle, substantially as described.

2. The combination in a saw-handle fastening, of a clip, a yoke a slotted sleeve set in said yoke in which the saw is held, a pin passing through both saw and sleeve, a slide bearing on the saw, a bolt bearing on the slide, and a cam acting on the bolt, substantially as described.

3. The combination in a saw-handle fastening of a clip B, a yoke H having notches *j* set in an aperture J in said clip, a sleeve set in a hole in said clip and having a flange *k* with projections *k'*, engaging in notches *j*, and a slot *k''* to receive the saw, a slide N set in the slot of the sleeve and bearing on the saw, a pin L set through both saw and sleeve, a bolt I pressing on the slide, and a cam-lever mounted on clip B and acting on the bolt, all substantially as described.

4. In a saw-handle fastening, the combination with the yoke H, having an aperture J and notches *j*, of the sleeve K having flange *k* and projections *k'* and, means substantially as described, for fastening the saw in the sleeve, whereby the handle can be readily adjusted in two positions, at right angles, as set forth.

488,704. FOLDING ROCKING-CHAIR. JOHN THORNBECK, Malvern, Canada. Filed Feb. 1, 1892. Serial No. 419,963. (No model.) Patented in Canada Feb. 20, 1892, No. 38,312.



Claim.—1. A rocking-chair having rollers Q projecting from its rockers, in combination with a frame, comprising the bars N having brackets O projecting therefrom, said brackets having elongated holes P in which the rollers Q work, and one end of each of the bars N having an adjustable connection, arranged so that the ends of said bars may be opened or closed for the purpose of admitting into or releasing said rollers from the holes P, substantially as described.

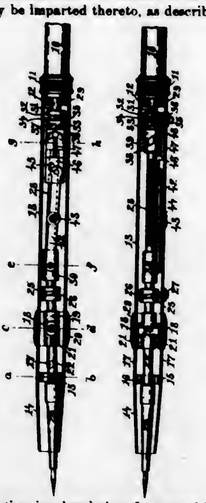
2. A rocking chair, having front and rear legs, a rung H connecting the bottom ends of its rear legs and a rung I resting on the rockers and connecting the ends of the front legs, in combination with the rockers G pivoted on said rung H, a locking dog pivoted on said rockers, and a lever extending beyond said pivot whereby said dog is thrown over said rung I as the rung swings over said lever, thereby locking the rockers to the chair, substantially as described.

3. A rocking chair, having its rockers pivoted on the front rung H, in combination with a locking dog L pivoted on said rockers, and the lever J, provided with tails *a* and *b*, said dog L adapted to be thrown over the rear rung I; when pressure is exerted on the lever J, causing its tails *a* and *b* to act on said dog, substantially as described.

488,705. PHOTOGRAPHIC-NEGATIVE RETOUCHER. ALBERT J. BENNETT, Woonsocket, R. I. Filed Mar. 8, 1892. Serial No. 424,230. (No model.)

Claim.—1. In a mechanical handpiece, the combination with a rotatable, vibratile tool-holder suitably supported in a casing, of a sleeve, 25, having a cam-groove, secured to said holder, a device for engaging said groove carried by the case, and means for operating said holder, as described.

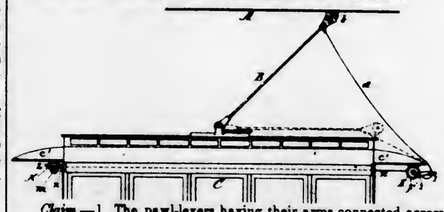
2. The combination in a mechanical hand-piece for retouching photographic negatives having a rotatable, vibratile tool-holder, with the lever 42 pivoted to said holder and to a stud on the casing, and having a pin engaging the slot 45 in the reciprocating-bar 46, and a pin 48 extending from the rear end of said bar, of a sleeve 38 carried by the rotatable shaft 12 and furnished with a cam-groove for engaging the pin 48, and a flexible shaft 10 secured to the shaft 12 through which rotation may be imparted thereto, as described.



3. The combination, in a hand-piece for retouching photographic negatives, with the casing 13 having the tapering end 14, a collar 15, having the slots 16, secured in said casing, the journal-sleeve 19, provided with the pivots 18, extending through the slots 17 and secured in the sleeve 20, and the wings 21 on said sleeve, of the hollow shaft 22, having means for securing a tool to the same, extending through the journal-sleeve 19 and rotatable therein, a cam secured to said shaft, and a device for engaging the same secured to said casing, and means for rotating and vibrating said shaft, as described.

4. The combination, in a hand-piece for retouching photographic negatives, with the casing 13, the shaft 22 journaled in the sleeve 19 pivoted therein, the shaft 12 journaled in the sleeve 29 and having a spline 31, the flexible shaft 28 connecting the ends of said first mentioned shafts, and means for rotating said shafts, of the clutch-sleeve 32, longitudinally movable on the shaft 12 and engaging the spline 31, operated by the pin 35 extending through said casing, the cam-sleeve 38 independently rotatable on said shaft 12, and having a cam-groove 39, a reciprocating-bar 46 having a guide-pin 47 sliding in a slot in the casing, and a pin 48 engaging in the cam-slot 39, a diagonal slot 45 cut through the forward end of said bar, and a lever 42 pivoted to the stud 44 on the casing, and having a pin engaging in the slot 45, pivotally connected to the sleeve 30, carried by the shaft 22, as and for the purpose described.

488,706. TROLLEY-CATCHER. WILLIAM L. BROWNE, Worcester, Mass. Filed July 8, 1892. Serial No. 439,398. (No model.)



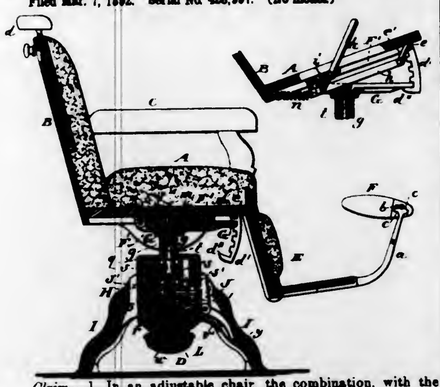
Claim.—1. The pawl-levers having their arms connected across by two bars, or forming an inclosed rope-guiding space, in combination, with the spring-actuated drum, its fulcrum-supporting brackets, the ratchet-wheels, and the trolley-pole rope, substantially as set forth.

2. In a trolley-catcher, the winding drum provided with the snap-dog or gripping device for retaining the rope end in connection with said drum, as set forth, in combination, with the drum-support brackets attached to the hood of the car, the actuating springs, ratchets, pawls, and trolley-pole rope, for the purpose specified.

3. The combination, with the trolley and car, of an automatic trolley-catcher attached to the rear part of the car, a signaling device located at the front part of the car, and a cord or pull connecting said signal and trolley-catcher, whereby the signal device is automatically actuated by the operation of said trolley-catcher, for the purpose set forth.

4. The combination, of the rope-winding drum having the groove or sheave thereon, its supporting brackets, actuating springs, ratchets and pawls, the signal-bell, its striker-operating arbor and winding spring; and the cord or pull connecting said signal-operating arbor with the winding drum sheave, all substantially as and for the purpose set forth.

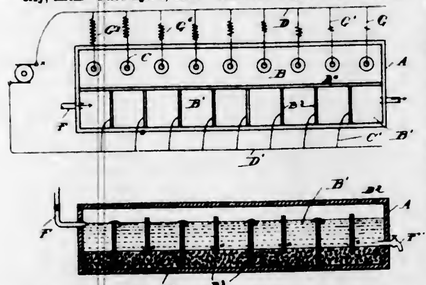
488,707. BARBER'S CHAIR. SAMUEL CLOUTIER, Lewiston, Me. Filed Mar. 7, 1892. Serial No. 423,997. (No model.)



Claim.—1. In an adjustable chair, the combination, with the chair-seat and the standard supporting base of two plates, placed one above another, the upper plate being fastened to the lower side of the seat, and the lower plate being hinged to said upper plate, a rack made fast to a crank-rod which is loosely coupled to said upper plate, said rack being in position to connect with said lower plate, a bar or rod connected with said crank-rod and with a pendant connected with the seat, a spring to retain said rack in connection with the lower plate, a lever, connected with said pendant, and a standard rigidly connected with said lower plate and extending down therefrom, substantially as and for the purposes described.

2. In a chair, the combination, with a seat and a plate F' fastened thereto, of a lower plate hinged to said plate F', a standard, to the upper end of which said lower plate is made fast, a support for said standard, a curved rack *d'*, provided with a hook at its free end and coupled to said plate F', crank-rod *c*, in bearings carried by plate F', crank-rod *i*, in bearings carried by the seat, a rod *h* connected with crank-rods *c* and *i*, a lever *k*, connected with rod *i* at its outer end, and a spring which connects rod *h* with the seat, substantially as set forth and described.

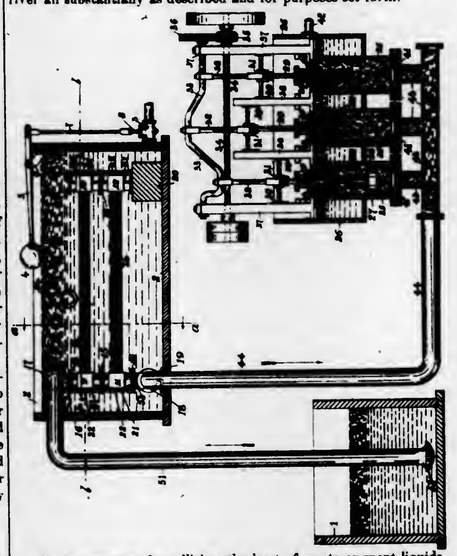
488,708. ELECTROLYTIC APPARATUS. THOMAS CRANEY, Bay City, Mich. Filed Apr. 7, 1892. Serial No. 428,322. (No model.)



Claim.—The combination with an electrolytic apparatus comprising a plurality of electrolytic cells connected to permit the solution to pass successively from one to the other for the fractional decomposition of the solution passing from one into the other, of an electric generator, anodes and cathodes connected in multiple arc in the circuit of said generator and a graduated resistance in the circuit of each electrolytic cell, substantially as described.

488,709. WATER-HEATER. JOHN DAWSON, Huddersfield, England. Filed Aug. 8, 1892. Serial No. 442,426. (No model.)

Claim.—1. The apparatus for utilizing the heat of waste or spent liquids, for heating fresh water comprising a tank adapted to hold a quantity of fresh water, an inlet pipe to said tank provided with a valve which is opened and closed by vertical rod connected to one end of a pivoted lever carrying a float as the water in said tank falls below or attains to a fixed level, tube stacks consisting of boxes arranged a distance apart in said tank and in couples one above the other, those on one side each being divided by partitions into three or more separate chambers or compartments and those on the opposite side being each divided into two or more compartments, the boxes in the same plane being connected together by tubes of small bore and forming water passages between each box, and communicating with the several compartments so as to circulate the liquid drawn or forced therethrough, backward and forward from a compartment in one box to a compartment in the opposite box, two compartments in the boxes 9 and 11 being in communication with each other by a pipe placed intermediate of said boxes and conveying the liquid from the upper to the lower series of tubes and boxes, said tube stacks having an inlet pipe for admitting hot waste liquids thereto and an outlet pipe by which the liquid, after passing through the tubes and boxes and parting with its heat to the fresh water, is discharged into the river all substantially as described and for purposes set forth.



2. In apparatus for utilizing the heat of waste or spent liquids, for heating fresh water, the combination, with tube stacks, consisting of boxes 9 10 and 11 12 sealed up by lids bolted to projecting flanges on said boxes and divided by partitions to form separate chambers, small bore tubes arranged in series one above the other and having their ends projecting through the opposing walls of the tube boxes and forming water passages communicating with the several chambers in said boxes, said tubes being secured in openings in the walls of the boxes by wood bosses or collars which are caused to expand by moisture and make a tight joint between the tube and its corresponding opening in the boxes, an intermediate pipe 50 forming a communication between the boxes 9 and 11, inlet and outlet pipes 17 and 18, and a fresh water tank 2 in which the tube stacks are placed, of a pump comprising three cylinders and pistons working therein which draw the spent liquid from its containing vessel into and through the tubes and boxes and finally discharges it into the cistern 26, from whence it runs out through pipe 42 into the river all substantially as described and for purposes set forth.

488,710. STOP-WATCH. WILLIAM H. DOUGLAS, Stourbridge, England. Filed Mar. 12, 1892. Serial No. 424,641. (No model.)

Claim.—1. The combination, with the seconds-hand shaft, of the additional seconds pointer and its shaft, the beveled toothed wheels secured on the said shafts, the connecting wheel *e* and its supporting spring, the pivoted spring *l* provided with a wedge for raising the said wheel *e* out of gear with the two beveled wheels, and the oscillatory bar *k* journaled in the periphery of the case and provided with a push-piece and an inclined portion for operating the said spring *l*, substantially as set forth.

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ber pieces to frictionally engage the surface of the support, substantially as and for the purpose specified.

3. In combination with a bread board a cleat or strip removably attached thereto, the attaching means consisting of slots in the board and pins placed diagonally in the strip and projecting therefrom at

3. In combination with a draft bar and cross beam, the saddle provided with the obliquely set lugs, and oppositely inclined surfaces composing a seat in which tooth shank is held, the seat provided with

488,716. OVERHEAD TRAVELING CRANE. JOHN R. MORGAN, Alliance, Ohio, assignor of three-fourths to Thomas R. Morgan, Sr., Thomas R. Morgan, Jr., and William H. Morgan, same place. Filed Aug. 31, 1891. Serial No. 404,231. (No model.)

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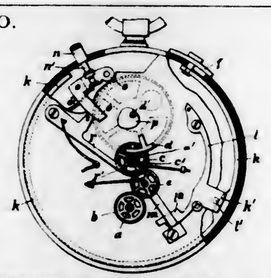
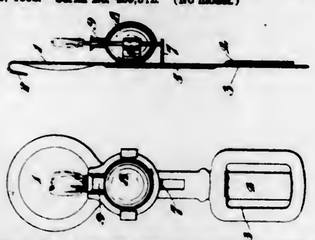


2. The combination, with the pointer *h* and the cam *p* secured on the same shaft, of a pivoted lever adapted to set the said cam and pointer to their zero position, a push-pin *n* provided with a groove and adapted to operate the said lever, and the bar *k* journaled in the case and adapted to engage with the said groove and lock the said pin when the pointer *h* is connected with the watch driving-mechanism, substantially as set forth.

3. The combination, with the pointer *h*, the wheel *d* and the cam *p* all secured on the shaft *d'*, of the pointer *g* and the pinion *c'* secured on the shaft *a'*, the pivoted lever *o* provided with a push-pin and adapted to set the two said pointers, and the spring-actuated lever *r* provided with a heel *s* bearing on the said lever and having a wedge-shaped end adapted to be thrust between the teeth of the said pinion to insure the exact setting of the pointer *g*, substantially as set forth.

488,711. LAMP. OSMOND PERSEUSSON, London, England. Filed Apr. 19, 1892. Serial No. 429,812. (No model.)

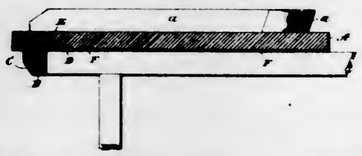


Claim.—1. In a traveling lamp, the combination of the reflector 1 hook clip 3 connecting strip 5, supporting arms 6 and tongue 7, all formed from one piece of metal with a lamp or container 8 held by the arms 6 and tongue 7 substantially as described and shown.

2. In a traveling lamp the combination of a reflector 1, hook 2, supporting arms 6, and tongue 7, projecting from the part 5, all formed from a single piece of metal, with a lamp or container 8, held by the arms 6 and tongue 7, and formed of two pieces of concave metal, each having a rim and projecting piece, one rim being bent round the other, forming a hollow case with a neck at the edge, formed by the projecting pieces through which the wick extends.

3. A container 8, formed of two pieces of concave metal each having a rim and projecting piece, one rim being bent round the other, forming a hollow case with a neck 9 having a wedge shaped opening on either side of the wick as shown for the purpose specified.

488,712. BREAD-BOARD. THOMAS H. KIRKHAM, Omaha, Nebr. Filed May 4, 1891. Serial No. 391,494. (No model.)

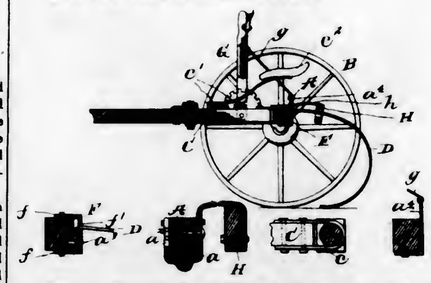


Claim.—1. In combination, a bread board, the slotted plates in its underside the slots therein consisting of wide and narrow portions, the cleat or strip having headed pins to engage such slots, and the springs to engage the pins, substantially as and for the purpose specified.

2. In combination with a bread board, a projection on its underside to engage the edge of a support, as a table top, and the rubber pieces to frictionally engage the surface of the support, substantially as and for the purpose specified.

3. In combination with a bread board a cleat or strip removably attached thereto, the attaching means consisting of slots in the board and pins placed diagonally in the strip and projecting therefrom at its upper rear corner, and springs attached to the board and bearing upon said pins, substantially as and for the purpose set forth.

488,713. HAY-RAKE. THEODORE G. LEE, Cutler, Ohio. Filed July 16, 1892. Serial No. 440,274. (No model.)

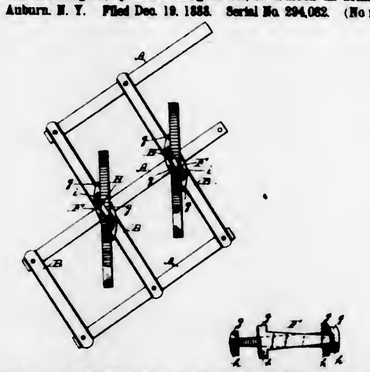


Claim.—1. In a rake the combination with the supporting axle, and its wheels, of the teeth, the headed pins for engaging portions of said teeth and the clips secured to the axle and having portions engaging said teeth in a different horizontal plane from the headed pins, substantially as described.

2. In a rake the combination with the polygonal axle, of the casings having recessed vertical walls to engage said axle and provided with trunnions adapted to be engaged by the supporting wheels. rake teeth rigidly secured to said axle, means for oscillating said axle to raise and lower the teeth, the cleaner bar and the spring brackets therefor secured to said axle and engaging the recesses in said casing walls, substantially as described.

3. In a rake the combination with the axle and supporting wheels revoluble with respect thereto of the teeth secured rigidly to said axle in pairs, each pair of teeth being formed from one piece of metal and having an angularly bent loop portion adjacent to said axle, a headed pin for engaging said loop, a clip secured to said axle and having apertures engaging said teeth adjacent to said bent portion, and means for oscillating said axle to raise and lower the teeth, substantially as described.

488,714. SPRING-TOOTH HARROW. DE WITT C. MARKHAM, Collinsville, assignor, by mesne assignments, to Warren M. Brinkerhoff, Auburn, N. Y. Filed Dec. 19, 1888. Serial No. 294,062. (No model.)



Claim.—1. In combination with the draft bar, and cross-beam of a harrow or cultivator, the seat for the said beam having flanges embracing the sides of the beam and the draft bar, the saddle provided with upwardly and downwardly extending lugs and with a seat for the shank of the tooth composed of oppositely inclined surfaces, the said tooth, and the clip spanning the tooth and holding the parts rigidly together, substantially as described.

2. The combination of the draft bar, the saddle having the oppositely inclined surfaces top and bottom forming seats for the tooth, and the tooth engaging lugs, the clip and the curved tooth, substantially as described.

3. In combination with a draft bar and cross beam, the saddle provided with the obliquely set lugs, and oppositely inclined surfaces composing a seat in which tooth shank is held, the seat provided with lugs mounted on the draft bar and in which the cross beam is held, and a clip for holding the said parts solidly together: substantially as described.

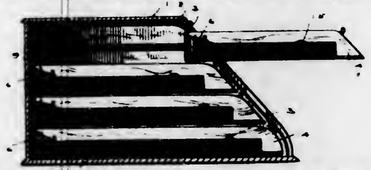
4. The saddle provided upon its upper and lower faces with lugs to embrace the sides of the draft bar and tooth and oppositely inclined surfaces affording a seat for the tooth, whereby either face may be used adjacent to the draft bar, substantially as described.

5. In a harrow the combination with the frame bars the curved spring tooth arranged in the line of draft, a tooth supporting saddle having projections for engaging the walls of the frame bar and having separate tooth engaging projections in line with the edges of the frame bar on which it is mounted and a clip engaging said tooth obliquely between the saddle projections, the inner faces of its tooth engaging walls being parallel with the line of draft, substantially as described.

6. In a harrow the combination with the draft bars and the cross beams, of a saddle having on each of its upper and lower faces a recessed portion for engaging the said draft bars, and oppositely inclined surfaces forming a tooth seat, and means for securing said draft bars, saddle and tooth rigidly together, substantially as described.

7. In a harrow the combination with the frame bars of a tooth saddle having on each of its upper and lower faces a recessed portion to engage the frame bars, and oppositely inclined surfaces forming a tooth seat, and a reversible binding-clip engaging said tooth obliquely and having the inner faces of its side walls, parallel with the line of draft, substantially as described.

488,715. EXHIBITING-CASE. EDWARD P. MATTHEWS, Indianapolis, Ind. Filed July 23, 1892. Serial No. 441,446. (No model.)



Claim.—1. A holder for exhibiting cases consisting of an arm hinged to the case, a cross piece to such arm, a spring wire or rod fixed to such case and adapted to bear against such cross piece and force down the outer end of such arm, a notch in such spring wire or rod adapted to engage with such cross piece when the arm is raised and thereby retain it in such raised position, substantially as shown and described.

2. In an exhibiting case, drawers movable therein, a series of spring controlled holders secured in such drawers adapted to bear upon the exhibited goods, and a number of stiffening pieces adapted to be interposed between the articles exhibited, substantially as shown and described.

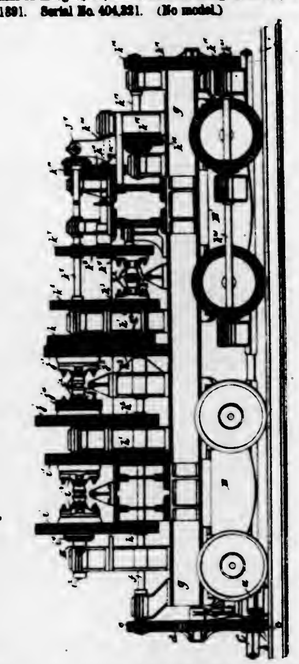
3. A spring holder for exhibiting cases having a pivoted arm adapted to bear on the articles exhibited, a spring wire or rod having a notch in its upper end adapted to engage with a cross piece on such arm when raised to retain it in such position and a number of stiffening pieces adapted to work loosely on such rod and to be interposed between the articles exhibited, substantially as shown and described.

4. A holder for exhibiting cases consisting of a main or base piece, an arm hinged thereto, and a spring secured at such hinging point, whereby the arm is adapted to bear on the articles exhibited, a wire or rod secured to the base of the holder and adapted to engage with a cross piece of the arm when raised, and retain it in such position, and a number of stiffening pieces working loosely on such rod and adapted to be interposed between the articles exhibited, substantially as shown and described.

5. In an exhibiting case, drawers movable therein, a series of spring-controlled holders secured in such drawers and adapted to bear upon the exhibited goods, a wire or rod adapted to engage with the holder when raised, and retain it in such position, and a number of stiffening pieces adapted to work loosely on such rod and to be interposed between the articles exhibited, substantially as shown and described.

6. In an exhibiting case, a number of drawers adapted to move therein, a number of spring controlled holders attached to the back of such drawers and adapted to bear upon the articles exhibited, rods adapted to engage with such holders when raised to retain them in such position, and spring controlled holders or clamps adapted to bear on the outer ends of the exhibited articles, and to which a labeling tag may be attached, substantially as shown and described.

488,716. OVERHEAD TRAVELING CRANE. JOHN R. MORGAN, Alliance, Ohio, assignor of three-fourths to Thomas R. Morgan, Sr., Thomas R. Morgan, Jr., and William H. Morgan, same place. Filed Aug. 31, 1891. Serial No. 404,231. (No model.)



Claim.—1. In an overhead traveling crane, the combination, with a track-way, a traveling bridge thereon, a traveling trolley on the bridge, of a main driving shaft carried by the bridge, and gearing on said trolley engaging toothed wheels connected with the track wheels for propelling the trolley on the bridge, devices for imparting motion to said driving shaft, and gearing and clutches carried by the bridge for actuating and changing the speed of the hoisting drums, for actuating and changing the speed of the trolley, and bridge, and for reversing the direction of movement of the bridge.

2. In an overhead traveling crane, in combination with the bridge thereof, a pair of four wheeled trucks supporting each end of the bridge on its own double railed track, one truck of each pair having its outer pair of wheels bevel geared for drivers, and driven by bevel pinions on one shaft, said pinion shafts on each driving truck being geared together across the bridge so as to operate synchronously and preserve parallelism of movement in the bridge substantially as shown and described.

3. The combination with a traveling bridge, and a movable trolley thereon, of a pair of main hoisting drums carried by the trolley and geared to move in unison, an auxiliary drum adapted to be rotated independently of the main hoisting drums and a chain carried by said auxiliary drum, the said auxiliary drum adapted to assist the main drums, to tilt ladles or other devices suspended from the main drums and to lift and carry comparatively light loads, substantially as set forth.

4. The combination with a traveling bridge, and a traveling trolley thereon, of a pair of main hoisting drums geared to move in unison, a hoisting chain connected to both drums, and an auxiliary drum actuated by gearing independent of the actuating gearing of the main drums, the said auxiliary drum adapted to carry light loads, and also to tilt ladles &c., suspended from the main drums, substantially as set forth.

5. The combination, with a traveling bridge and a traveling trolley, of a pair of main hoisting drums located on opposite sides of the center of the trolley and geared to move in unison, a chain connected to both of said drums, and an auxiliary drum located near one of said main drums but movable independently thereof, substantially as and for the purpose set forth.

6. The combination with a trolley and a hoisting drum thereon, and spur wheels at the opposite ends of said drum, of a driven shaft having two pairs of wheels, the wheels of each pair being secured together but loose on the shaft, one wheel of each pair engaging the

spur wheels at the ends of the drum, a counter shaft driven by said driven shaft and gearing on said counter shaft for actuating the loose wheels on the driven shaft, substantially as set forth

7. The combination, with a trolley and a drum thereon, the latter having a cross shaft thereon, of a pair of main hoisting drums carried by the trolley and geared to move in unison, an auxiliary drum adapted to be rotated independently of the main hoisting drums and a chain carried by said auxiliary drum, the said auxiliary drum adapted to assist the main drums, to tilt ladles or other devices suspended from the main drums and to lift and carry comparatively light loads, substantially as set forth.

8. The combination with a traveling bridge, and a traveling trolley thereon, of a pair of main hoisting drums geared to move in unison, a hoisting chain connected to both drums, and an auxiliary drum actuated by gearing independent of the actuating gearing of the main drums, the said auxiliary drum adapted to carry light loads, and also to tilt ladles &c., suspended from the main drums, substantially as set forth.

9. The combination, with a traveling bridge and a traveling trolley, of a pair of main hoisting drums located on opposite sides of the center of the trolley and geared to move in unison, a chain connected to both of said drums, and an auxiliary drum located near one of said main drums but movable independently thereof, substantially as and for the purpose set forth.

10. The combination with a trolley and a hoisting drum thereon, and spur wheels at the opposite ends of said drum, of a driven shaft having two pairs of wheels, the wheels of each pair being secured together but loose on the shaft, one wheel of each pair engaging the

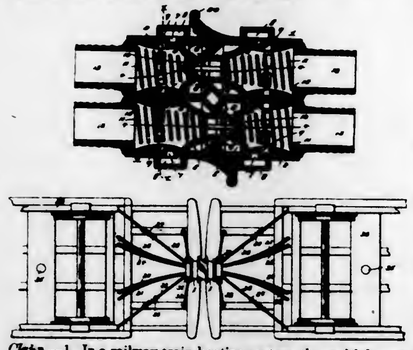
face of said band, a shield loosely connected to the band, and connections between said shield and the supporting straps, to limit the movement or play of said shield, as and for the purpose described.

valve plate and passing through the slotted guide, substantially as herein described.

spur wheels at the ends of the drum, a counter shaft driven by said driven shaft and gearing on said counter shaft for actuating the loose wheels on the driven shaft, substantially as set forth

7. The combination, with a trolley and a drum thereon, the latter having a spur wheel at each end, of a driven shaft carrying a gear wheel keyed thereto, and two pairs of loose wheels, one wheel of each loose pair meshing with a spur wheel on the drum, and a counter shaft driven by the wheel fast to driven shaft and provided with two fixed wheels, each of which meshes with one wheel of each pair of loose wheels on the driven shaft, substantially as set forth.

488,717. COUPLING AND CONDUIT FOR RAILWAY-TRAIN-HEATING APPARATUS. ROBERT S. PEYTON, Atlantic City, N. J. Filed Sept. 8, 1891. Serial No. 405,153. (No model.)



Claim.—1. In a railway train heating system, the multiple couplings, the multiple conduits extending through the cars of a train, and the cylinders 2 inclosed in the said couplings and provided with ports 7, and channels 8, in combination with the tubes 3 having ports 9, the valves 4, and the spiral spring located in the said tubes, whereby the tubes are operated to open and close communication between the ports 7 and 9 as the cars are coupled and uncoupled respectively, substantially as set forth.

2. In a railway train heating system having parallel conduits for a returning circulation. A coupling of two members, each member having several valve chambers partitioned from each other, a valve in each chamber closing the end of each chamber when disconnected and open when connected to the other member, in combination with a channel of communication between the several chambers in each member, said channel having ports uncovered by the several valves when closed and covered by said valves when opened substantially as set forth.

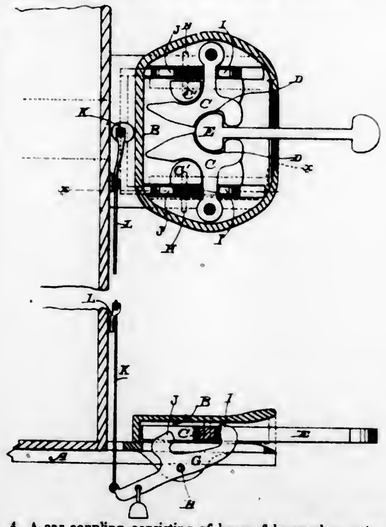
3. In a coupling for conduits in trains of railway cars, having trucks pivotally attached to the bodies thereof, a coupling member adapted to engage in a corresponding member in an adjoining car, in combination with a guiding mechanism connecting said coupling, with the truck so as to participate in the angular motion of the truck substantially as set forth.

488,718. CAR-COUPLING. FRANK M. RYAN, San Francisco, Cal., assignor of one-half to Orveson Smith, same place. Filed Oct. 10, 1892. Serial No. 448,494. (No model.)

Claim.—1. A coupling consisting of the levers fulcrumed to move in a horizontal plane about the central line of the coupling, jaws formed in the meeting faces of said levers, a coupling bar having a head which is clasped by said jaws, vertically swinging levers having hooks or lugs at the front which engage the shanks of the coupling levers to lock them in position when the jaws are closed whereby the bar is retained and the coupling completed, substantially as herein described.

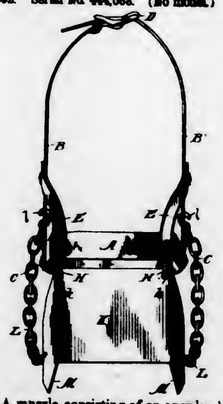
2. In a car coupling, the levers fulcrumed at their outer ends to move in a horizontal plane, having jaws formed in their meeting faces to receive and hold the head of a coupling bar, levers fulcrumed to swing in vertical planes having lugs or hooks adapted to engage and hold the front portion of the coupling lever shanks after the coupling is made, and other hooks or lugs which move upwardly behind the shanks of the coupling levers simultaneously with the withdrawal of the front locking lugs, whereby the jaws are released and forced open to release the head of the coupling bar, substantially as herein described.

3. In a car coupling, the horizontal fulcrum levers having recesses and jaws formed in their meeting faces to receive and hold the head of a coupling bar, and elastic stops against which the rear of the levers abut when the jaws are closed and the coupling completed, vertically swinging levers fulcrumed beneath the coupling levers, having hooks at the front adapted to engage the shanks of the coupling levers and retain them in position when the coupling is completed, and other hooks or lugs adapted to engage the rear of the shanks of the coupling levers when the front hooks are disengaged so as to force the coupling jaws open to release the head of the coupling bar, a hand lever and a connection between it and the locking lever whereby the latter may be actuated to open the coupling, substantially as herein described.



4. A car coupling consisting of levers fulcrumed to swing in a horizontal plane about the central line of the coupling bar, jaws formed in the meeting faces of said levers, a coupling bar having heads to be clasped by the jaws, vertically swinging levers having lugs at the front and rear, which engage corresponding sides of the coupling lever shanks, a hand lever and connection whereby the locking lugs are actuated, and a spring connected therewith whereby the parts are allowed to yield to pressure when cars come together, and are returned so as to leave the jaws open when the cars are separated, substantially as herein described.

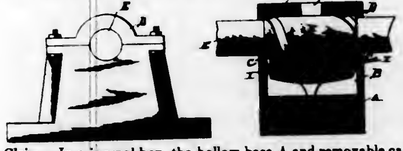
488,719. CALF-MUZZLE. JOHN J. SMITH, Winfield, Iowa. Filed Aug. 25, 1892. Serial No. 444,063. (No model.)



Claim.—1. A muzzle consisting of an angular band, the supporting straps rigidly secured to the sides of said band, and a shield loosely hung from said band and connected with the supporting straps, substantially as described.

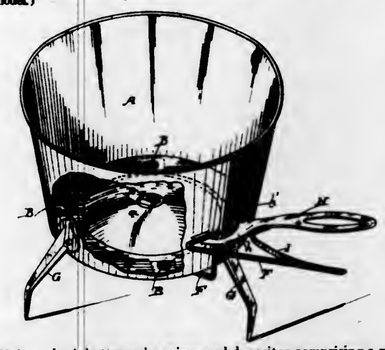
2. As an article of manufacture, a muzzle consisting of a U-shaped band, the supporting straps rigidly connected to said band and adjustably connected together, a pad or cushion secured on the inner face of said band, a shield loosely connected to the band, and connections between said shield and the supporting straps, to limit the movement or play of said shield, as and for the purpose described.

488,720. JOURNAL-BOX. WILLIAM SHEDDON, Houston, Tex., assignor of one-half to John H. Rothwell and James R. Cade, same place. Filed Aug. 2, 1892. Serial No. 441,956. (No model.)



Claim.—In a journal-box, the hollow base A and removable cap D provided with registering rim-bearings C, and a removable pillow-block H disposed in the cavity of the base, with its upper concave surface below the plane of the lower sides of the bearings, in combination with a shaft journaled in the rim-bearings, and provided with a sleeve K, fitting at its ends against the end walls of the base and bearing upon the surface of the pillow-block, the surface of the sleeve being spirally grooved to convey the lubricant to all parts of the surface of the bearing, all substantially as specified.

488,721. BATTER-CAKE MIXER AND DEPOSITOR. EDWARD STEMPEL, Alameda, Cal. Filed Aug. 1, 1892. Serial No. 441,851. (No model.)



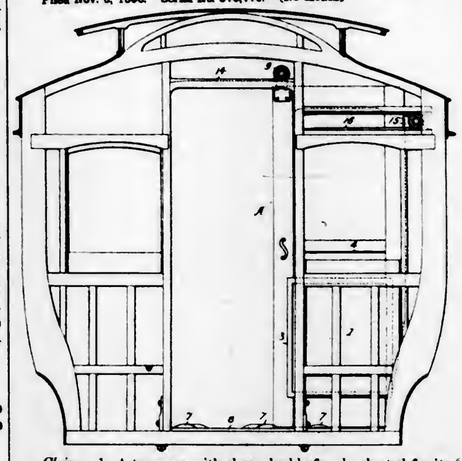
Claim.—1. A batter cake mixer and depositor comprising a vessel adapted to hold the batter and to be supported above a griddle whereby sufficient space is left below said vessel to inspect the amount of batter deposited, said vessel having discharge openings and provided with a raised bottom, a valve controlling said openings and provided with means whereby it may be adjusted, and means for oscillating said valve, substantially as herein described.

2. A batter cake mixer and depositor, consisting of a vessel in which the batter is mixed said vessel having a bottom formed with discharge openings and having flaring legs by which it is supported above a griddle and sufficient space is left between the vessel and griddle to inspect the amount of batter deposited, an adjustable and oscillating valve fitted to the bottom of the vessel having means by which it may be oscillated, and provided with holes adapted to be aligned with the holes in the bottom of the vessel, substantially as herein described.

3. A batter cake mixer and depositor consisting of a vessel in which the batter is to be mixed, said vessel having the central portion *a* of its bottom elevated whereby an annular channel or surface is formed about its rim, a series of equi-distant holes formed in said channel or surface, a plate secured to the under surface of the bottom of the vessel and pivoted centrally thereto, radially extending valve pieces projecting from the rim of said plate and adapted to open and close the holes in the bottom of the vessel, and an outwardly extending rod for operating the valve carrying plate, substantially as herein described.

4. A batter cake mixer and depositor consisting of a vessel in which the batter is mixed, said vessel having in its bottom the annular series of equi-distant discharge apertures or holes, the centrally pivoted valve plate controlling said apertures or holes, the outwardly flaring legs of said vessel, one of said legs having the handle and the slotted guide, and the outwardly extending rod connected with the valve plate and passing through the slotted guide, substantially as herein described.

488,722. TRAM-CAR DOOR. JOHN STEPHENSON, New York, N. Y. Filed Nov. 8, 1890. Serial No. 370,776. (No model.)



Claim.—1. A tram car with door double faced, adapted for its sash to slide between the faces, the panel forming one of the faces, being capable of insertion or removal while the door otherwise is intact, substantially as described.

2. A tram car with door double faced, a sash between the faces accessible by removing one of the face panels in condition to be restored as before the removal, substantially as described.

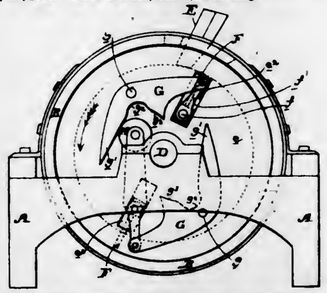
3. A tram car with double faced door, and down between the faces a glass sash having on its lower edge a metal shoe with grooves and a metal sash guard on the door belt rail on which may rest the metal shoe when the sash is up, substantially as described.

4. A tram car with double faced door, and between the faces a glass sash accessible by removing one of the face panels secured in place partly by metal strips covering the margin of the panel, substantially as described.

5. A tram car with double faced door, and between the faces a glass sash accessible by removing one of the face panels secured in place partly by metal strips covering the margin of the panels, the strips, preferably of bronze, being adjusted to preserve the faces of the doors from being chafed when slid into the door pockets, substantially as described.

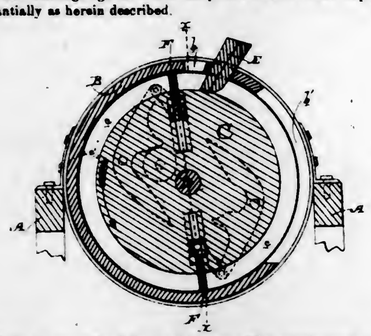
6. A car door double faced with space between the panels the sash sliding therein; the inner upper corner of the belt rail rabbeted in which rabbet is secured a metal sash guard, suitable for repose of the door sash frame, having a metal shoe with a rising flange secured in a rabbet of the sash face, and the shoe sole grooved befitting the metal sash guard on which the sash rests, substantially as described.

488,723. WATER-WHEEL. CLARK YAGER, Sumpter, Oreg. Filed July 21, 1892. Serial No. 440,799. (No model.)



Claim.—1. In a water-wheel, the combination of the exterior casing having the inlet port, the discharge aperture and the fixed abutment, the rotary wheel mounted concentrically within the casing and having the radially reciprocating buckets adapted to traverse the space

between the wheel and casing, and means for operating said buckets consisting of pivoted cam levers carried by said wheel and secured to the buckets at each end and provided with forwardly projecting points and fixed bearings against which the points of said levers impinge, substantially as herein described.



2. In a water-wheel, the combination of the exterior casing having the inlet port, the discharge aperture and the fixed abutment, the rotary wheel mounted concentrically within the casing, and having the radially reciprocating buckets adapted to traverse the space between the wheel and casing, and the means for reciprocating said buckets consisting of the pivoted cam levers carried by the wheel heads, and connected with the ends of the buckets, said cam levers having the forwardly projecting points and the inclined elevations of their lower surfaces and fixed bearings against which the cam levers bear in their revolution, substantially as herein described.

3. In a water-wheel, the combination of the fixed open-ended casing having the inlet port, the discharge aperture and the intervening abutment, the wheel mounted concentrically in said casing and having flanged heads fitting the open ends thereof whereby a chamber is formed between wheel and casing, the reciprocating radially mounted buckets carried by said wheel, and adapted to traverse said chamber, and means for operating said buckets consisting of cam levers carried by the wheel and having forward projections said levers being connected with the buckets and fixed roller bearings against which said extensions of the cam levers impinge, substantially as herein described.

4. In a water-wheel, the combination of the fixed open-ended casing having the inlet port, the discharge aperture and the intervening abutment, the wheel mounted concentrically in said casing and having flanged heads fitting the open ends thereof whereby a chamber is formed between wheel and casing, the reciprocating radially mounted buckets carried by said wheel, and adapted to traverse said chamber, and means for operating said buckets, consisting of the end arms connected with said buckets and playing in slots in the end heads of the wheel, the pivoted cam levers carried by the heads of the wheel and connected with said end arms, said levers having the forwardly-projecting points and the inclined elevations, and the fixed bearings upon which said cam levers impinge, substantially as herein described.

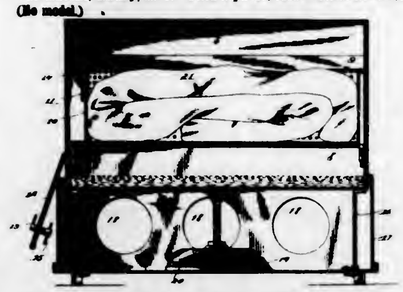
488,724. **FENCE-POST.** GEORGE THOMAS, Royersford, Pa. Filed July 6, 1892. Serial No. 439,144. (No model.)

Claim.—1. A fence post formed in two columns vertically, the columns being composed of sections of tiling or burnt clay, and the sections of one column being connected with those of the adjacent column by tongue and groove joints, substantially as described.

2. In combination with a fence post formed of sections of tiling or burnt clay built up into two columns vertically and said columns being united by a tongue and groove joint, a series of staples adapted to secure the fence strands to the post, said staples passing through the post at the joint so as to lock the tongue of one section into the groove of the opposite section, substantially as described.

3. A sectional hollow fence post formed of tiling or burnt clay or the like material, having its top and bottom sections sealed by plugs inserted before said sections are burned, substantially as described.

488,725. **STERILIZER FOR SURGICAL BANDAGES.** JOHN M. VAN HEUSEN, Albany, N. Y. Filed Sept. 23, 1892. Serial No. 447,115. (No model.)

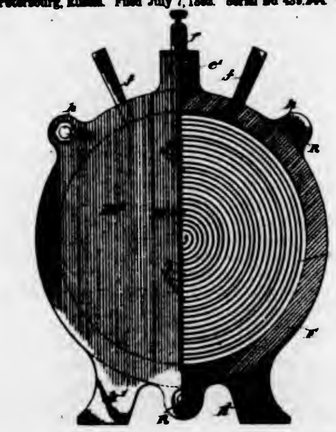


Claim.—1. A sterilizer for surgical bandages and the like consisting of a chamber adapted to be entirely closed at the top and sides and provided with a perforated or reticulated drawer having a closed end adapted to close the opening through which the same is inserted, said chamber having a thin metallic top capable of acting as a condenser, said sterilizer being adapted to be heated by a lamp or other heating device, substantially as described.

2. A sterilizer for surgical bandages and the like, consisting of a chamber adapted to be entirely closed at the top and sides and provided with a perforated or reticulated drawer having a closed end adapted to close the opening through which the same is inserted, said chamber having a thin inclined metallic top capable of acting as a condenser, said sterilizer being adapted to be heated by a lamp or other heating device; substantially as described.

3. A portable, knock-down sterilizer for surgical bandages and the like, consisting of a chamber adapted to be closed at the sides and provided with a perforated or reticulated drawer having a closed end adapted to close the opening through which the same is inserted, said chamber having a thin top capable of acting as a condenser and suspended or held above a lamp or heating device by the folding loops or supports, *a*, *a*, substantially as described.

488,726. **SECONDARY BATTERY.** NICHOLAS WLADIMIROFF, St. Petersburg, Russia. Filed July 7, 1892. Serial No. 439,944. (No model.)



Claim.—1. In a secondary battery, electrodes whose opposite faces are of like chemical character or nature but of unlike polarity and provided with a spiral face groove.

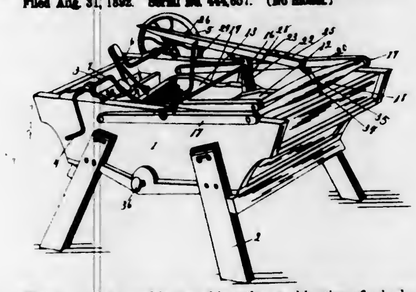
2. A secondary battery comprising a series of elements formed by frames of non-conductive material and electrodes whose opposite faces are of like chemical character or nature but of unlike polarity interposed between said frames, said electrodes being provided with a spiral face groove.

3. A cylindrical secondary battery comprising a series of elements formed by discoidal heads provided with a supporting base or foot, circular frames, and discoidal lead electrodes provided with a spiral face groove interposed between the frames and between the end frames and heads, means for connecting up the initial and terminal electrodes of the series, means for supplying an acid solution to the cells, and clamping rods connecting the two heads, substantially as and for the purpose set forth.

4. A lead electrode for secondary batteries provided with a spiral face groove.

5. A secondary battery composed of a series of elements formed by two heads provided with bosses or projections, a series of frames, a lead electrode interposed between each two frames and provided with a spiral groove in its opposite faces, a lead electrode provided with a spiral groove in its inner face and with an arm or extension interposed between the opposite end frames and the heads, said extension of the electrode being secured to the boss by a binding post, one or more feed apertures formed in each of the frames, and clamping rods connecting the heads, substantially as and for the purpose set forth.

488,727. **WASHING-MACHINE.** HANSON COOK, Hyndman, Pa. Filed Aug. 31, 1892. Serial No. 444,657. (No model.)



Claim.—1. In a washing machine, the combination of a body, a lower oscillating rubber, an upper oscillating rubber, a cross-rod, bars projecting from the upper rubber and provided with longitudinal slots receiving the cross-bar, a connecting frame receiving the rear end of the upper rubber and having V-shaped sides, the upper ends of the front arms of which being connected to and suspended from the cross-rods, and link bars pivotally connected to the V-shaped sides at the angles thereof and pivoted to the upper rubber near the front end thereof, and a lever connected with the upper ends of the slotted bars, whereby the upper rubber may be raised or lowered, substantially as described.

2. In a washing machine, the combination of the body, reversely oscillating upper and lower rubbers, the inner rectangular frame 20 hinged at its rear end to the sides of the body and provided with a cross-rod 19 and adapted to be swung upward and rearward, a shaft, a connecting frame connected with the shaft and receiving the front end of the upper rubber and suspended from the rod 19 and connected with the front of the upper rubber, slotted bars projecting from the upper rubber and receiving the cross-bar, and a lever connected with the slotted bars, substantially as described.

3. In a washing machine, the combination of a body, an outer rectangular frame hinged at its rear end to the outer faces of the sides of the body, a lower oscillating rubber suspended from the sides of said frame, an inner rectangular frame having its rear end hinged to the inner faces of the sides of the body and provided with a cross-rod, a connecting frame receiving the rear end of the upper rubber and having V-shaped sides and suspended from the cross-rod, and connected with the front end of the upper rubber, the slotted plate receiving the cross-rod and projecting from the upper rubber, a lever fulcrumed on the front of the inner hinged frame and connected with the upper ends of the slotted bars, and a shaft provided with oppositely disposed crank loops and connected respectively with the lower rubber and with the connecting frame, substantially as described.

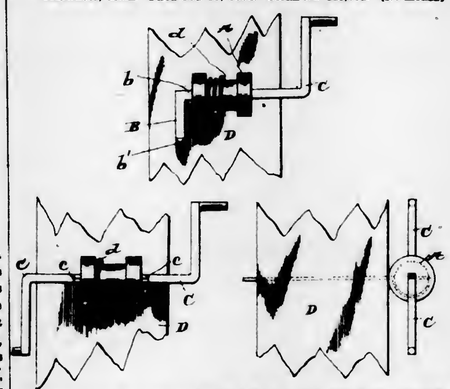
4. In a washing machine, the combination of a body, the inner and outer rectangular hinged frames, the former being provided at its front end with an eye, the upper and lower reversely operating rubbers suspended respectively from the inner and outer frames, and a hook mounted on the body and adapted to engage the eye of the inner hinged frame, substantially as described.

488,728. **SHOEMAKER'S TOOL.** FRANK W. DANIELSON, Portsmouth, N. H. Filed June 22, 1892. Serial No. 437,601. (No model.)

Claim.—1. The herein described device of the character set forth consisting of a handle to be held horizontally and reversed and having a vertical slot extending through the end thereof, a knife adjustably and reversibly mounted in said vertical slot having one end thereof of elongated sharpened form adapted to be disposed longitudinally in a plane parallel with the handle and the opposite end reduced and sharpened in a plane at right angles to the elongated end, a gage adjustably secured to the under side of the front part of the handle, and a set-screw extending inward from the end of said handle and engaging the shank of said knife, substantially as described.

2. In a device of the character set forth the combination of a handle having a support or holder with a vertical slot in the front end thereof and a set screw adapted to extend inward to said slot and also provided with a depending lug, a duplex knife, adjustably and removably fitted in said slot, and a gage adjustably mounted on said depending lug, substantially as described.

488,729. **WIRE-STRETCHING DEVICE.** CHARLES H. DICKINSON, Coldwater, Mich. Filed Oct. 13, 1892. Serial No. 448,792. (No model.)



Claim.—1. The combination with the spool provided with wrench receiving recesses, of a dog having a part adapted to engage one of said recesses, extending at an angle to the main body of the dog, substantially as described.

2. The combination with the spool having wrench receiving recesses, of a dog having a securing point at one end and at the other an arm extending at an angle thereto, for engaging one of the said recesses, substantially as described.

3. The combination with the spool having a wrench receiving recess at each end, of a dog provided with securing points on two sides, adjacent to one end, and having an arm extending from the other end at right angles to the main body of the dog, for engaging one of said recesses, substantially as described.

488,730. **THRASHING-MACHINE.** WILLIAM W. DIBBLE, Racine, Wis. Filed Feb. 15, 1892. Serial No. 421,611. (No model.)

Claim.—1. In a thrashing machine the combination with the check board, composed of a series of stiffening strips supported at their upper ends by a pivot rod, and flexible material connecting said stiffening strips, substantially as described.

2. In a thrashing machine the combination with the cylinder and walking rakes, of a supporting shaft, the stiffening strips pivotally supported from said shaft, the flexible material connecting said strips, said material being provided with slits or recesses adjacent to its lower edge to permit the passage of the rake teeth therethrough, substantially as described.

488,730.

adjusting screws as *c*, for the fulcrumed holders, substantially as described.

4. In a piano, the wrest plank and ribs *b*, thereon as fulcrums, combined with wrest pins having their shanks formed with two oppo-

flange or shank extending inwardly from the central portion of the rails, metal bars to the outer edges of which said flanges are bolted, and supporting timbers to which the inner edges of the plates are bolted whereby the heads of the rails are supported exterior to the

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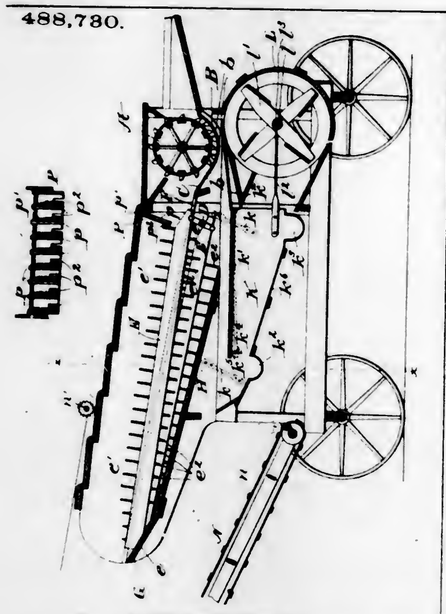
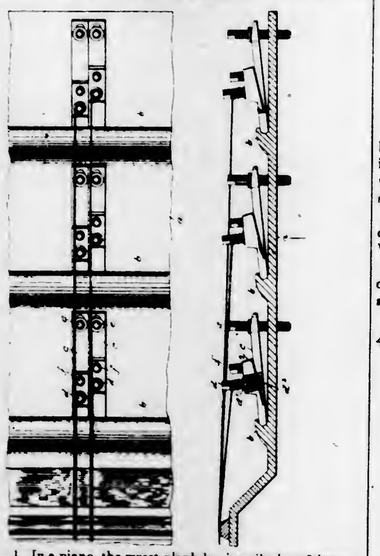
488,730.



488,731. PIANO. WILLIAM H. FARGO, Boston, Mass., assignor of two-thirds to Gilbert R. Balch and Edward P. Balch, same place. Filed July 28, 1892. Serial No. 441,547. (No model.)



Claim.—1. In a piano, the wrest plank having ribs *b*, as fulcrums, combined with wrest pins having their shanks formed with two tapering portions d', d^2, and fulcrumed holders for said wrest pins divided lengthwise horizontally, substantially as described.

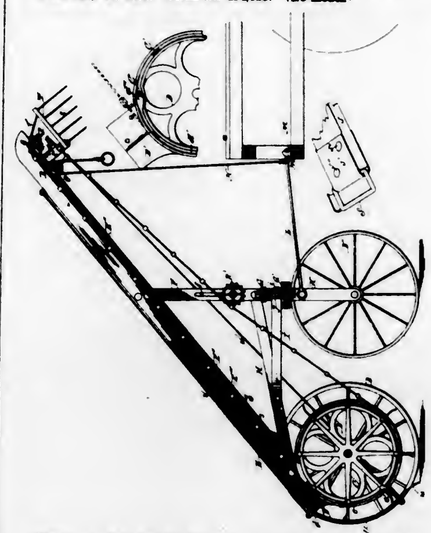
2. In a piano, the wrest plank having ribs *b*, as fulcrums, combined with wrest pins having their shanks formed with two tapering portions d', d^2, and fulcrumed holders for said wrest pins divided in a horizontal line, and adjusting screws *f*, to loosen or tighten the wrest pins in their sockets, substantially as described.

3. In a piano, the wrest plank, and ribs *b*, thereon as fulcrums, combined with wrest pins, and fulcrumed holders, each having a socket for its wrest pin, and tightening devices for the wrest pins, and adjusting screws as *e*, for the fulcrumed holders, substantially as described.

4. In a piano, the wrest plank and ribs *b*, thereon as fulcrums, combined with wrest pins having their shanks formed with two oppositely tapering portions, and fulcrum blocks or holders for said wrest pins divided horizontally, and adjusting screws for loosening or tightening said wrest pins in their sockets, and adjusting screws for said fulcrumed holders, substantially as described.

5. In a piano, a wrest pin, combined with an adjustable fulcrumed block or holder having a socket in which said pin is placed, and a tightening device for tightening the pin in its socket, substantially as described.

488,732. HAY-LOADER. SAMUEL FERGUSON, Cedar Rapids, Iowa. Filed May 24, 1892. Serial No. 434,126. (No model.)



Claim.—1. In a hay-loader, the combination of the cylinder C having picker shafts C C with flattened ends, and the heads D D having an annular groove therein with which said shaft ends engage, with an enlargement in said groove near the upper side to permit the shafts to partially rotate.

2. In a hay-loader, the combination with a rake substantially as described, of the lift-rod *v*, the tension-rod and spring v' v^2, the lever W, and means for moving and locking the same in different positions.

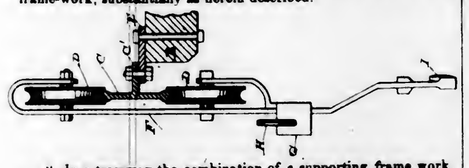
3. In a hay-loader, the combination of the sprocket-chains S, the carrier stripe *s s*, and the fastening loop of thin metal *s'*, substantially as described.

488,733. SIDE-SADDLE. FANNY L. GEE, Burnsville, Ala. Filed Apr. 6, 1892. Serial No. 428,048. (No model.)

Claim.—The herein described side-saddle comprising the usual seat and horns, and two stirrups, both located upon the left side of the saddle, one of said stirrups supported by a long strap for the left foot of the rider, and the other by a shorter strap for the support of the right foot, substantially as described.

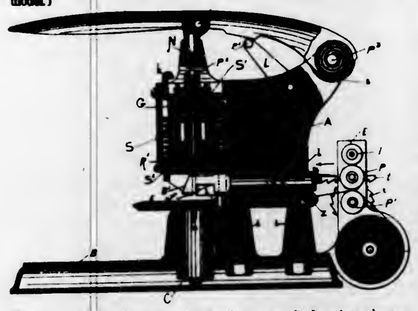
488,734. CABLE TRAMWAY. JOSEPH L. GIROUX, Jerome, Ariz. Filed Mar. 5, 1892. Serial No. 423,913. (No model.)

Claim.—1. The improvement in tramways consisting of the vertical rails having heads at top and bottom for the travel of pulleys, a flange or shank extending inwardly from the central portion of the rails, metal bars to the outer edges of which said flanges are bolted, and supporting timbers to which the inner edges of the plates are bolted whereby the heads of the rails are supported exterior to the frame-work, substantially as herein described.



2. In a tramway the combination of a supporting frame work, the vertical rails having a centrally disposed inwardly projecting flange by which they are secured to the frame work so as to support the rails outside of the plane of the same, hangers having pulleys journaled within them and adapted to travel upon opposite sides of the rails, an endless traveling rope extending parallel with lines of rails, hooks H on the hanger for connection with the rope, and other hooks also on said hangers adapted to suspend articles therefrom, and a keeper for the hooks H, substantially as herein described.

488,735. PAPER-BINDING MACHINE. EDWIN T. GREENFIELD, New York, N. Y. Filed May 13, 1892. Serial No. 432,941. (No model.)



Claim.—1. A binding machine having a staple-forming plunger, a staple driver and a single operating handle for moving the plunger and driver in combination with a staple-forming mandrel adapted to slide into the path of the plunger and driver, and a pivoted lever connecting the mandrel with the operating handle, substantially as described.

2. A binding machine having a staple-forming plunger provided with pivoted arms at its upper end and adapted to move vertically in a hollow guide-way, a staple-driver, a movable or sliding staple-forming mandrel and a single operating lever operatively connected thereto and provided with means for forcing the plunger forward to form the staple, separating the pivoted arms and driving the staple into place, substantially as described.

3. A binding machine having a staple-forming plunger, a staple-driver, a single operating handle for moving both, a staple-forming mandrel adapted to slide into and out of the path of the plunger and driver, an anvil located beneath the plunger and driver, a wiper cam on which the anvil rests, a rock-shaft to which the cam is secured, and an operating handle or lever for moving the cam and imparting vertical motion to the anvil, substantially as described.

4. A binding machine having mechanism for forming and securing a binding staple through the material to be bound, additional mechanism for printing a tag or label, and mechanical connections between the binding and the printing mechanism whereby the machine simultaneously binds the material and marks or labels it with a distinguishing mark or character, substantially as described.

5. A binding machine having mechanism for forming and clinching a staple through the material to be bound or united, printing or recording apparatus for printing or recording a definite mark or record on a tag held between each staple and the bound material, a strip of metal from which the staples are formed, a strip of paper on which the record is made, and mechanical connections between the staple-forming and binding mechanism and the printing apparatus whereby the parts all act conjointly to bind the material and label it, substantially as described.

488,736. COUNTER AND PENCIL-HOLDER. FERDINAND KING, New York, N. Y. Filed July 5, 1892. Serial No. 438,904. (No model.)

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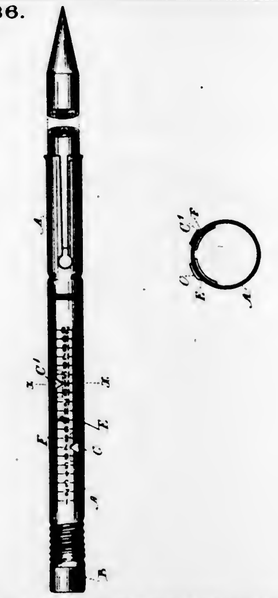
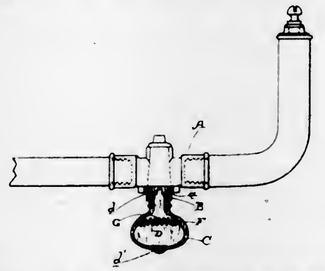


Claim.—1. As a new article of manufacture, a tube having an erasive rubber at one end and open at the other end for the reception of a pencil and slotted longitudinally for the reception of a sliding index, there being a row of figures upon the surface of the tube to form the counter, substantially as set forth.

2. The combined counter and pencil holder, as a new article of manufacture, the same being formed of a metal tube having a block of erasive rubber at one end and open at the other end for the reception of a pencil and having two longitudinal and parallel slots and a row of figures between them, and two indices, one in each slot adapted to being moved lengthwise of the counter, substantially as set forth.

488,737. SAFETY-LOCK FOR GAS-COCKS. FRANK LAWRENCE, San Francisco, Cal. Filed July 21, 1892. Serial No. 440,811. (No model.)



Claim.—1. In a gas cock, the combination of the flange *a* having the notches, one wall of each of which forms a stop, said flange being of reduced diameter at one side between said walls the key of the gas cock, the locking lever opposing the face of the key and pivotally secured thereto, the detent at the upper end of said lever adapted to ride upon the reduced portion of the flange, to engage the notches of the flange, and to be limited by their stop walls, and the stop d' of said lever coming in contact with the key for limiting the pivotal movement of the lever, substantially as herein described.

2. In a gas cock, the flange *a* having the opposing notches with back walls forming stops, and having one of its sides between these walls made thinner than the opposite side the key of the gas cock, the locking lever pivotally connected with the face of the key, the spring for controlling said lever, the detent at the upper end of the lever engaging the notches and limited by their back walls, said detent adapted to ride upon the thinned portion of the flange and the

stop d' at the other end of the lever coming in contact with the key, substantially as herein described.

3. In combination with a notched flange and the key of a gas cock, the safety lock consisting of the plate E adapted to be secured

with a car provided with a pick-up device or plow and a circuit-completing device, of a swinging contact lever 13, comprising a swinging hood or shell 22, formed with a notch 26 at its upper free end, and the arm 24 mounted within the hood with the end thereof projecting

disconnect said member with said plate at times, substantially as described.

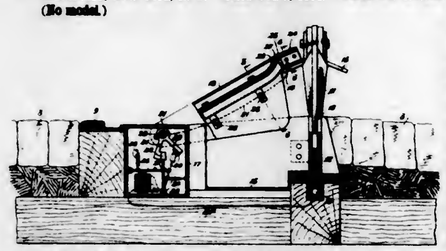
3. In an electric switch, two or more fixed contacts, combined with a base plate, a disk rotatable thereon, a member hinged to said

5. A sheet metal bracket having shelf and wall plates formed each with a strengthening bead on the inner face thereof, and a non-integral brace connecting said wall and shelf plates and secured at its ends to the respective beads on the same.

stop *d* at the other end of the lever coming in contact with the key, substantially as herein described.

3. In combination with a notched flange and the key of a gas cock, the safety lock consisting of the plate E adapted to be secured to the face of the key, the locking lever D having the detent engaging the notches of the flange, the cross pin pivoting the plate and lever together and the spring for controlling the movement of the lever, substantially as herein described.

488,738. CLOSED CONDUIT FOR ELECTRIC RAILWAYS. FRANK MANSFIELD, New York, N. Y. Filed Oct. 1, 1891. Serial No. 407,389. (No model.)



Claim.—1. In an electric railway of the class described, the combination with a swinging-hood or shell provided with interior brackets suitably insulated therefrom, of an insulated arm secured to said brackets within the shell and having one end projecting therefrom and provided with a contact-plate.

2. In an electric railway, the combination with a branch conductor having a switch and an electro-magnet located therein in series, said switch including a pivoted contact having its normal or operative position controlled by said magnet and thrown out of such position upon the passage of an excessive amount of current over the magnet, of a swinging contact lever included within the branch-conductor and controlling the said switch

3. In an electric railway, the combination with a branch conductor having a switch located therein, and a contact-lever also located therein and controlling the switch, of an electro-magnet for indirectly controlling one of the switch contacts and moving it out of operative position upon the passage of an excessive amount of current over the switch, said switch and magnet arranged in series and a resetting device controlled by the movements of the said contact-lever and acting to reset said contact when the lever is moved into its lowest position, for the purpose set forth.

4. In an electric railway, the combination with a branch conductor having a switch located therein having a pivoted contact, tending to move out of operative position, and an electro magnet having its armature holding said contact in operative position during the passage of the normal current thereover, of a swinging contact lever provided with a shaft carrying a contact of the switch and a resetting or push device controlled by said shaft and acting to reset the said pivoted contact into operative position when the contact lever is lowered, for the purpose set forth.

5. In an electric railway, the combination with a branch-conductor having a switch located therein and comprising a pivoted contact provided with a spring tending normally to draw it out of operative position, and an electro-magnet included in said branch, and having its armature engaging said pivoted contact and normally holding it in operative position against the action of its spring and releasing it upon the passage of an excessive amount of current thereover, of a swinging contact lever having a shaft carrying one of the contacts of the switch and serving to close the switch when the lever is elevated and a resetting-finger mounted upon the said shaft and engaging said pivoted contact after the same is thrown out of operative position and moving the same into operative position upon the lowering of the contact lever.

6. In an electric switch, the combination with a pivoted contact tending normally to move out of operative position, and an electro-magnet included in the circuit and having its armature engaging the said contact and holding it in operative position during the passage of the normal current over the magnet, of a second movable contact and a resetting device or finger moving in fixed relation with said second contact and engaging and resetting the pivoted contact when the said second contact is moved in one direction.

7. In an electric railway, of the class described, a swinging contact-lever 13, comprising a swinging hood or shell 22, and an insulated arm 24, mounted within the hood and projecting therefrom, and provided with an insulated contact-plate 14, substantially as and for the purposes described.

8. In an electric railway of the class described, the combination with a car provided with a pick-up device or plow and a circuit-completing device, of a swinging contact lever 13, comprising a swinging hood or shell 22, formed with a notch 26 at its upper free end, and the arm 24 mounted within the hood with the end thereof projecting through the notch 26, and carrying an insulated contact-plate substantially as and for the purpose set forth.

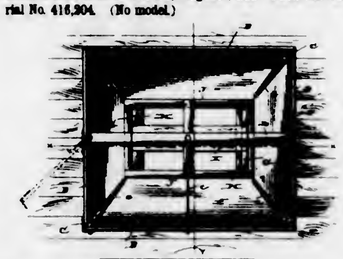
9. In an electric railway, the combination with a swinging contact-lever and a movable contact 31, moving in fixed relation therewith of a pivoted contact 32 normally tending to move out of the range of movement of the said contact 31, and an electro-magnet having its armature engaging and holding the said contact 32 within the range of movement of said first contact, and releasing it to move out of such position upon the passage of an excessive amount of current over the switch, substantially as and for the purpose set forth.

10. In an electric switch, the combination with two movable contacts and means for forcing them apart upon the passage of an excessive amount of current over the switch, of a resetting device controlled by the movement of one of said contacts, whereby the other said contact may be reset in operative position upon the movement of the said contact connected with the resetting device.

11. In an electric switch, the combination with the movable contact 31, of a pivoted contact 32, provided with means for moving it out of reach of the said contact 32 upon the passage of an excessive amount of current over the switch, and a resetting device or push-piece 39, moving in fixed relation to the said contact 31, and adapted to engage and reset said contact 32, substantially as and for the purpose set forth.

12. In an electric switch, the combination with a movable contact 31, and a pivoted contact 32, provided with a spring 34, tending normally to move it out of reach of the contact 31, an electro-magnet 35 having its armature engaging and holding the said contact 32, within reach of the contact 31, and releasing it so as to move out of reach thereof upon the passage of an excessive amount of current over the switch, and a push finger 39 moving in fixed relation to the contact 31, and acting to engage and reset the said pivoted contact 32, substantially as and for the purpose described.

488,739. FARROWING PEN FOR SWINE. BENJAMIN F. OSBORN, NORA, and JOHN R. HARCOURT, Augusta, Ind. Filed Dec. 26, 1891. Serial No. 416,204. (No model.)



Claim.—1. The combination in a hog pen of an outer and an inner pen, an inclosure between the pens, having an inclined floor at different points, the floor being movable in the inclosure, and a frame that is adjustable over the inner inclosure, substantially as set forth

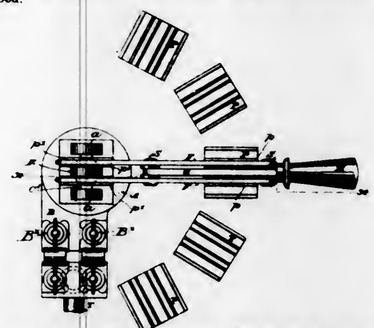
2. The combination in a hog pen of an outer and an inner pen, the latter used as a pig receptacle; the space between the outer and inner pens having an inclined floor at its bottom, with projections on such floor at different points, and such inclined floor being movable, and the inner pen or pig receptacle adjustable by means of a cord or chain passing over a pulley, and secured in place by a rectangular frame, substantially as set forth.

488,740. ELECTRICAL SWITCH. CHARLES H PATTISON, Boston, Mass. Filed Aug. 5, 1892. Serial No. 442,430. (No model.)

Claim.—1. In an electric switch, a fixed contact, a base-plate, and a hinged switch member adapted to be turned on its hinge into and out of electrical engagement with said fixed contact, combined with a circuit establishing device actuated by movement of the switch member about its hinge to electrically connect and disconnect the said base-plate and movable switch member, substantially as described.

2. In an electric switch, two or more fixed contacts combined with a rotatable hinged member adapted to be rotated into position to co-operate with and to be moved on its hinge into engagement with any of said fixed contacts, a plate with relation to which said member rotates, and a circuit establishing device actuated by movement of the said member about its hinge to electrically connect and disconnect said member with said plate at times, substantially as described.

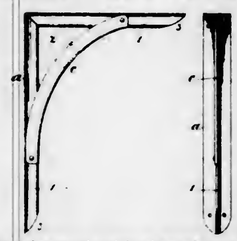
3. In an electric switch, two or more fixed contacts, combined with a base plate, a disk rotatable thereon, a member hinged to said disk and adapted to co-operate with any of said fixed contacts, and means actuated by movement of said member about its hinge to clamp the said disk and base plate firmly together, substantially as described.



4. In an electric switch, two or more fixed contacts, combined with a base plate, a disk rotatable thereon, a member hinged on a pivotal shaft loosely journaled in a part of said disk, to co-operate with one or another of said fixed contacts, an eccentric on said shaft, its strap and means actuated thereby to clamp the disk and its base plate firmly together when the said member is in some positions, to operate, substantially as described.

5. In an electric switch, two or more fixed contacts combined with a base plate, a disk rotatable thereon and provided with ears, a shaft loosely journaled in said ears and having fixed to it two contact blades to co-operate with one or another of said fixed contacts, an eccentric on said shaft between said blades, and eccentric rod moved thereby and extending downwardly through the disk and base plate and provided with one or more adjustable devices on its end, all to operate, substantially as described.

488,741. METAL BRACKET AND ITS MANUFACTURE. FREDERICK REICHT, Brooklyn, N. Y. Filed Mar. 2, 1891. Serial No. 383,465. (No model.)



Claim.—1. As an improved article of manufacture, a sheet metal bracket having a flattened, projecting fold of the metal longitudinally of the inner faces of its members, said fold having a miter joint at the junction of the two members, as set forth.

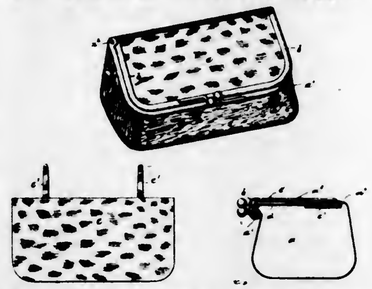
2. As an improved article of manufacture, a sheet metal bracket having a flattened projecting fold of the metal extending longitudinally of the inner faces of its members, and provided with a sheet metal brace *c*, which has a U-shaped cross-section, said brace being secured at its ends to the said projecting folds on the respective members, as set forth.

3. As an improved article of manufacture, a sheet metal bracket having a longitudinal corrugation forming a web 1, on the inner faces of its members, provided with notches 4 at the points where the brace is secured thereto, and having a brace *c*, secured at its extremities to said web, the respective ends of said brace abutting against the shoulders formed by said notches, and its extremities entering into the hollow of the web substantially as set forth.

4. As an improved article of manufacture, a sheet metal bracket having a longitudinal corrugation forming a web 1 on the inner faces of its members, a brace *c*, secured at its respective extremities to the said web, and an L-shaped re-inforcing plate 6, in the hollow of the web at the angle of the bracket, said plate being secured to the web, substantially as set forth.

5. A sheet metal bracket having shelf and wall plates formed each with a strengthening bead on the inner face thereof, and a non-integral brace connecting said wall and shelf plates and secured at its ends to the respective beads on the same.

488,742. PURSE OR POCKET-BOOK. MAX SOMBURG, New York, N. Y. Filed Oct. 10, 1892. Serial No. 448,273. (No model.)

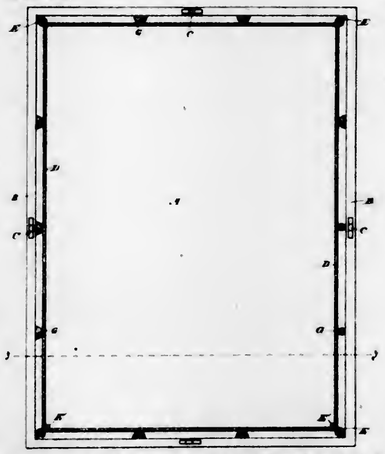


Claim.—1. The combination of a purse or pocket book with a pivoted frame and with a top plate received thereby and having prongs that project through perforations in the purse body, substantially as specified.

2. The combination of a purse or pocket book with a pivoted frame and with a top plate and bottom plate received thereby, the top plate having prongs that project through perforations in the purse body, back of the bottom plate, substantially as specified.

3. The combination of a purse or pocket book having a tongue e^3, with a grooved pivoted frame and with a top plate and bottom plate received thereby and placed above and below the tongue, the top plate being provided with prongs passing through perforations of the purse body and upset against the bottom plate, substantially as specified.

488,743. BILLIARD-TABLE. ALLEN R SCOTT and JOHN W WRIGHT, San Francisco, Cal. Filed June 30, 1892. Serial No. 438,589 (No model.)



Claim.—1. In billiard tables having cushions formed of elastic bands suspended and stretched parallel with the side of the table, the reinforces arranged at intervals between the bands and table and against which the bands are supported, substantially as herein described.

2. In a billiard table, cushions consisting of elastic bands, attachments at the corners to which said bands are connected whereby they are supported parallel with and independent of the sides and ends of the table, in combination with suppemental reinforce blocks G arranged at intervals along the sides and ends of the table against which the elastic bands are supported, substantially as herein described.

488,744. OIL-BURNER. EDWARD M. SPALDING and GEORGE E. WILLIS, Fremont, Nebr. Filed Feb. 16, 1892. Serial No. 421,705. (No model.)

ing of three parts or sections viz. the central section which through the medium of a chain and suitable gearing receives motion from the pedals and two other symmetrical and identical portions connected to the said central part by universal joints and upon each of which is loosely mounted the hub of one of the wheels in addition to which

back of a rectangular structure, a shelf adapted to engage with said side frames and maintain them in their open rectangular position, of an auxiliary shelf adapted to be interposed between, and connect the adjacent sides of, two booths, said booths thus detachably connected

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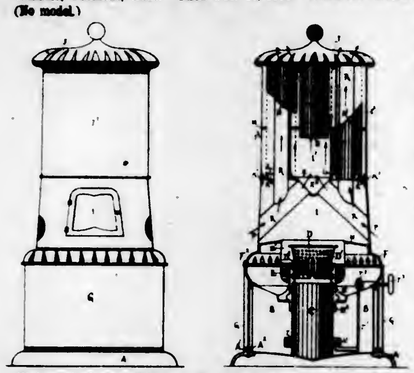
488,749. DEVICE FOR SECURING RAILS. ALEXANDER BEAUDRY, Somerville, and PHINEAS F. KING, Malden, Mass., assignors, by direct and mesne assignments, to the Beaudry Tool Company, Portland, Me. Filed July 26, 1892. Serial No. 441,166. (No model.)

488,744. OIL-BURNER. EDWARD M. SPALDING and GEORGE E. WILLEY, Fremont, Nebr. Filed Feb. 16, 1892. Serial No. 421,705. (No model.)



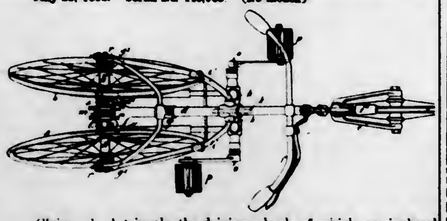
Claim.—1. In an oil heater, the combination of a reservoir, having a central flanged opening, an outer wick tube having a flanged collar adapted to be removably held within said flanged opening, an inside stationary wick tube, having its upper end crimped and being provided with a series of inwardly extending circumferential grooves, ducts connecting said grooves a button having a fluted neck removably held within said inner wick tube, and an adjustable perforated collar upon said outer wick tube, being provided with a cylindrical sleeve, all arranged substantially as and for the purpose set forth.

2. In an oil burner the combination with a reservoir of a supporting rim attached to said reservoir, an open fretted frame plate hinged to said supporting rim, a combustion chamber secured to said hinged supporting rim, having an upper heating chamber, a plate provided with pipe openings positioned within said chambers, vertical combustion tubes leading from the combustion chamber and passing through the heating chamber, inverted T shape hot air pipes leading from without through the combustion chamber to within the upper heating chamber, and having its stem pass through the vertical combustion tubes, all substantially and as for the purpose set forth.

3. The combination of the reservoir and burner, of a hinged heater, comprising the following instrumentalities: to wit: the hinged open fretted frame plate F, having a central opening adapted to receive the burner, the combustion chamber, I, the double flanged plate K', having the dished portion K", provided with suitable pipe openings, and the circular flanged openings L, L, the upper chamber I, the open fretted top J, the combustion tubes N, N, and the inverted T shaped hot air tubes R, R, all arranged substantially as and for the purpose set forth.

4. In an oil burner the combination with a supporting frame, of a reservoir having its deck converging toward a central circular flanged opening, adapted to hold a correspondingly flanged collar, forming part of the outer removable wick tube, an inner wick tube extending beyond the outer tube and having its upper end crimped inwardly, so as to form a seating for a fluted and perforated button, and a removable perforated collar adapted to hold a cylindrical sleeve, all arranged to operate substantially as and for the purpose set forth.

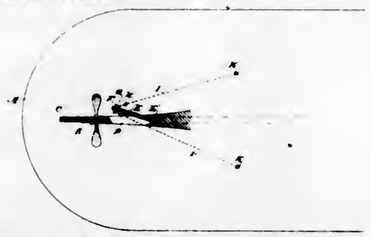
488,745. VELOCIPEDE. ARMET TAITTE, Loigneux, France. Filed July 23, 1892. Serial No. 440,965. (No model.)



Claim.—1. A tricycle the driving wheels of which are inclined toward each other and forwardly toward the longitudinal axis of the machine and thus brought close to each other the saddle being placed above them so that the rider is seated astride of the said wheels and operates the pedals mounted upon a shaft arranged in front and adapted to move externally.

2. In a tricycle such as characterised in the preceding claim the construction of the beat or double axle of the driving-wheels consisting of three parts or sections viz. the central section which through the medium of a chain and suitable gearing receives motion from the pedals and two other symmetrical and identical portions connected to the said central part by universal joints and upon each of which is loosely mounted the hub of one of the wheels in addition to which each carries a rigidly secured clutch adapted to engage with the corresponding hub while the machine is in normal motion while when it is to be turned at a small radius this connection is severed substantially as described.

488,746. AUXILIARY STEERING-GEAR. HERBERT L. WHITNEL, Oakland, Cal. Filed Jan. 15, 1892. Renewed Sept. 12, 1892. Serial No. 445,691. (No model.)

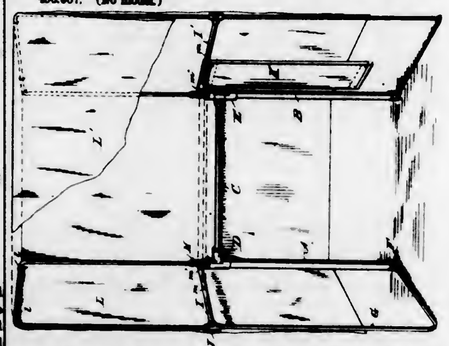


Claim.—1. An opening made in front of the stern post and above the keel of a vessel, a rudder fitted in said opening having pintles upon its front edge, chains connected with the rear edge upon each side, pipes fitted into the counter or run of the vessel curving upward above the water line through which pipes the chains lead, and connections at the upper ends of the chains by which the rudder is held in a central position or moved from side to side, substantially as herein described.

2. An opening made in front of the stern post and above the keel of a vessel, said opening having a concave channel made in its vertical front edge, a rudder fitting said opening having pintles at top and bottom of its front edge which turns within the concave portion of the opening, the sides of which act as stops to limit the motion of the rudder upon each side, chains connecting with the rear edge of the rudder, openings made in the counter of the vessel and pipes fixed in said openings leading upwardly above the water line, whereby the chains may pass through said pipes to points where they may be connected with operating mechanism, substantially as herein described.

3. An opening made in front of the rudder post and above the keel of a vessel, a rudder fitting said opening having pintles upon its front edge about which it turns, eye bolts connected with the top and bottom of the rear edge of the rudder upon each side, links extending from said eye bolts to a ring on each side of the rudder, curved pipes fitted into the counter of the vessel leading upwardly to the deck, chains connected with the rings upon the rudder leading through said pipes, shackles connected with the upper ends of the chain, and ring bolts to which these shackles are attached to hold the rudder rigidly in a central position when not in use, substantially as herein described.

488,747. ELECTION-BOOTH. FREDERICK W. BARRETT, Springfield, Ohio. Filed Aug. 31, 1891. Renewed Nov. 1, 1892. Serial No. 450,607. (No model.)



Claim.—1. In an election booth, the combination with side frames substantially parallelogrammatic, each frame having an interval in one side thereof, coupling pieces pivotally mounted in said intervals and a cross piece rigidly connecting said couplings to constitute the back of a rectangular structure, a shelf adapted to engage with said side frames and maintain them in their open rectangular position, of an auxiliary shelf adapted to be interposed between, and connect the adjacent sides of, two booths, said booths thus detachably connected forming an intermediate booth with said auxiliary shelf, and inclosing curtains for said frame-work to screen the occupants of said booths from observation, and constitute private compartments.

2. In an election booth, the combination with a frame-work consisting of corner posts rigidly connected together, and side frames rotatably secured to, and approximately twice the height of, said corner posts, which posts constitute the remainder of the rectangular sides, of a shelf pivoted to one side frame and adapted to engage with the other side frame to brace them in their unfolded position, and inclosing curtains for said frame work to constitute a private compartment.

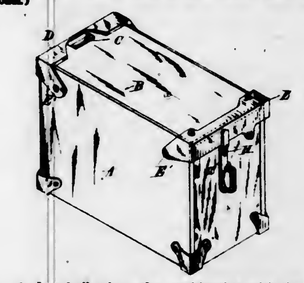
3. In an election booth, the combination with a cornerpost of a side frame having a loosely mounted screw threaded connection with one end of said post, and hinged at the other end thereof whereby said frame may be rotated about the axis of said corner post and a rigidly pivoted joint be provided for said frame.

4. The combination of a plurality of election booths, of auxiliary shelves having dowels and screwthreaded projections from the end thereof, adapted to enter and be secured in matching openings in two adjacent booths substantially as shown and described.

5. In election booths, the combination with an auxiliary shelf adapted to connect two adjacent booths to form an intermediate compartment, of a cross piece at each end of said shelf provided with projections adapted to enter matching openings in the adjacent booth, and be secured thereto to support said shelf and prevent separation of said booths.

6. In an election booth the combination with side frames substantially parallelograms, each frame having an interval in one side thereof, of coupling pieces pivotally mounted in said intervals, and a cross piece rigidly connecting said couplings to constitute the back of a rectangular structure, the side frames forming the sides thereof when opened.

488,748. BALLOT-BOX. FREDERICK W. BARRETT, Springfield, Ohio. Filed Jan. 30, 1892. Renewed Nov. 1, 1892. Serial No. 450,606. (No model.)



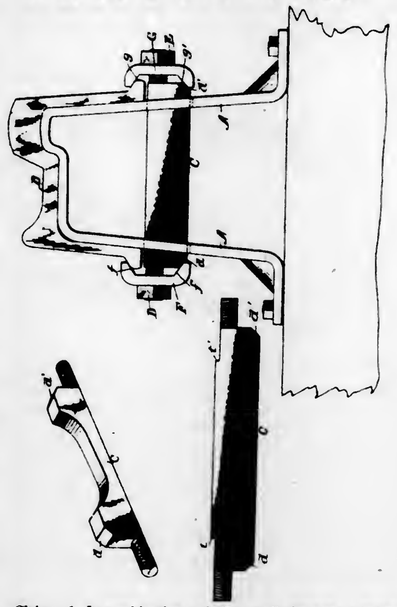
Claim.—1. In a ballot box, the combination with the box and a slidable cover therefor having an opening to admit votes, of a covering piece carried by the box adapted to cover said opening and seal the box in one position, and to expose said opening for voting, in another position of the cover, and means to lock said cover in said voting and sealed positions.

2. In a ballot box, the combination with a box and a cover therefor, adapted for the admission of ballots, of holding pieces or straps at each end, carried by one member and slidingly engaging with the other member, a locking latch adapted to engage with said cover and lock it in both its voting and sealed conditions, and means to secure the latch in its locking position therewith.

3. In a ballot box, the combination with a box, and a sliding cover therefor provided with an opening for the admission of ballots, of a holding piece normally closing said opening, and consisting of a strap secured to the box at one end, another holding piece mounted on the cover at the other end, and provided with an inwardly extending lug engaging with the box to normally prevent raising the cover, the cover being thus held from other than sliding movement, and means to limit said sliding movement to lock the cover at predetermined points.

4. In a ballot box the combination with a box and a sliding cover therefor, and a holding device to prevent other than sliding movement of the cover, of a locking latch pivoted to said box and adapted to engage with said cover at predetermined points to lock the cover, and having a loop or handle portion, a matching loop secured to the box, and means to secure said looped portions together and effect a locked condition of the latch.

488,749. DEVICE FOR SECURING RAILS. ALEXANDER BRADBY, Somerville, and PHINEAS F. KING, Malden, Mass., assignors, by direct and mesne assignments, to the Boundry Tool Company, Portland, Me. Filed July 28, 1892. Serial No. 441,166. (No model.)

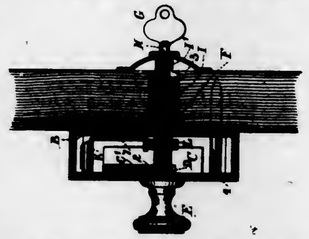


Claim.—1. In combination a chair; a rail thereon; a bolt projecting beyond the sides of the chair, clamps carried by the bolt, and provided with flanges which engage the rail and the bolt substantially as described.

2. In combination a chair, a girder rail thereon, a bolt passed through the legs of the chair and projecting therefrom, clamps having flanges with diverging surfaces which engage the bolt and the flanges of the rail, all substantially as and for the purpose set forth.

3. The improved bolt with screw threads upon both ends, a rectangular body portion enlarged to project to one side of the axis of the screw threads and beveled surfaces at the ends of the enlarged portions, substantially as described.

488,750. LATCH AND LOCK COMBINED. ISAAC BUNSON, New York, N. Y. Filed June 15, 1892. Serial No. 436,802. (No model.)



Claim.—1. The combination with the lock case and bolt having rack teeth upon its shank, of a pinion engaging the rack teeth, a knob upon the pinion arbor at the inner side of the lock case, a tubular bearing for the outer end of the pinion arbor and projecting beyond the same to form a key tube, a spring dog and a circular tumbler flattened at its opposite edges, there being three notches in the bolt shank for the dog, whereby the bolt can be held in its projected, retracted or intermediate positions, substantially as set forth.

2. The combination with the lock case and bolt having a shank with rack teeth upon it, of a pinion, a knob on the pinion arbor at the inner side of the lock case, a tubular bearing for the pinion arbor at the other side of the lock case, a loose key pin projecting from the pinion arbor, such tubular bearing being projected, and of smaller diameter, and slotted for the passage of the key stud, and the end of

the pinion arbor being notched for the reception of such stud, substantially as set forth.

hang over the edge of the tray and whereby the said suspenders are held at opposite sides of the tray, substantially as described.

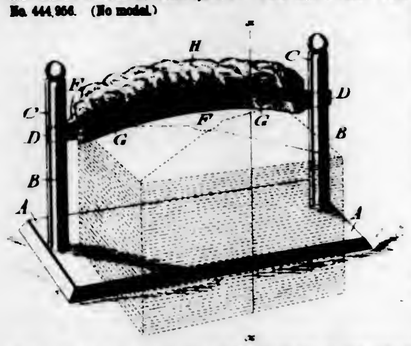
2. A trunk tray for suspenders provided along one side with a series of button studs to which the button straps of suspenders may

draw and adapted to engage the projecting lugs of said shiftable plate, substantially as described.

a lower and an upper head, a number of vertical air-heating tubes connecting and opening through said heads, an outlet-pipe opening

the pinion arbor being notched for the reception of such stud, substantially as set forth.

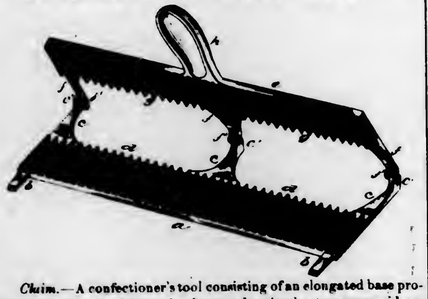
488,751. DEVICE FOR MOISTENING ENVELOPES, WRAPPERS, &c. DAVID W. COLLIER, Philadelphia, Pa. Filed Sept. 3, 1892. Serial No. 444,956. (No model.)



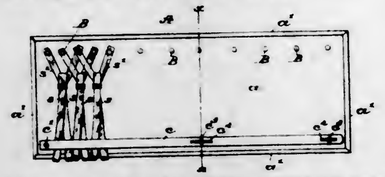
Claim.—1. A base, a standard rising therefrom in combination with a normally gravitating head containing an absorbent, said head being guided on said standard, substantially as described.

2. A gravitating or normally descending head containing an absorbent, a base, standards rising from said base and guiding said head, a follower in said head, a screw bearing against said follower, and a cross piece on the head carrying said screw, said parts being combined substantially as described.

488,752. CONFECTIONER'S TOOL. GEORGE S. COLLIN, Hartford, Conn. Filed Feb. 5, 1890. Serial No. 339,372. (No model.)



Claim.—A confectioner's tool consisting of an elongated base provided with a series of blunt-edged upward projecting transverse ridges, with intervening channels, and rearwardly projecting legs, having upturned ends and a cover having rearwardly projecting arms having downwardly projecting ends pivoted to the up-turned ends of the rear legs of the base, said cover having a corresponding number of similar downwardly projecting blunt edged transverse ridges and a handle for operating it substantially as set forth.

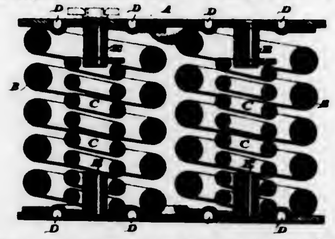
488,753. TRUNK-TRAY. EDWARD J. CUNNIFF, Quincy, Mass. Filed July 5, 1892. Serial No. 438,972. (No model.)

Claim.—1. A trunk tray for suspenders provided along one side with a series of button studs to which the button straps of suspenders may be buttoned, and provided at the side opposite the button studs with a fastening device to hold the free ends of the suspenders, said fastening device being separated from the edge of the tray to leave a space through which the free ends of the suspenders may be passed beyond the fastening device to permit said ends to drop or hang over the edge of the tray and whereby the said suspenders are held at opposite sides of the tray, substantially as described.

2. A trunk tray for suspenders provided along one side with a series of button studs to which the button straps of suspenders may be buttoned, and a fastening device consisting of a strap at the opposite side of the tray to hold the free ends of the suspenders in place, said fastening device being separated from the edge of the tray to leave a space through which the free ends of the suspenders beyond the fastening device may be passed to permit them to drop or hang over the edge of the tray while being displayed, substantially as described.

3. A trunk tray for suspenders provided along one side with a series of button studs each consisting of a single vertical post to which the button straps of suspenders may be buttoned, and a fastening device consisting of a strap *c* having slots c^1, and the studs c^2, at the opposite side of the tray to hold the free ends of the suspenders in place, substantially as described.

4. In a trunk tray for suspenders, the combination with the tray bottom, of a tubular rivet inserted through the tray bottom and headed at the opposite side thereof, and a thimble independent of the rivet interposed between the head of the rivet and the tray bottom, substantially as described.

488,754. CAR-SPRING. NATHAN H. DAVIS and THOMAS C. DAVIS, Philadelphia, Pa. Filed Oct. 12, 1891. Serial No. 408,437. (No model.)

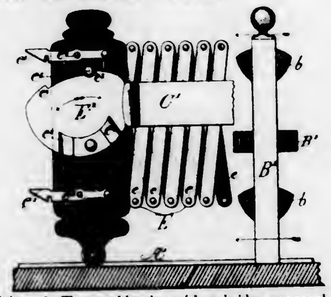


Claim.—1. A car spring plate having beads on one face thereof and guides secured thereto, said parts being combined substantially as described.

2. A car spring plate having struck up beads on one face thereof, and guides secured thereto, said guides having shoulder ends inserted in openings in said plate and swaged thereto, said parts being combined substantially as described.

3. A car spring formed of two plates, each having beads on its inner face, tubular guides secured to said plates and projecting from said inner faces, springs embracing or guided on said beads, and inner graduated springs on said tubular guides, said parts being combined substantially as described.

488,755. BRIDGE-GATE. EUGENE DELIA, Chicago, Ill. Filed July 8, 1892. Serial No. 439,362. (No model.)



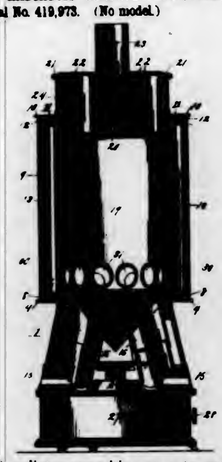
Claim.—1. The combination with a bridge approach or abutment, and a horizontally movable pivoted bridge or draw, of an extensible gate secured to a fixed post on the abutment and provided at its end with a post carrying a shiftable plate having projecting lugs, and a carrier stud connected with the end of the draw to engage the lugs of the shiftable plate of the gate, substantially as described.

2. The combination with a bridge approach or abutment, and a horizontally pivoted bridge or draw, of an extensible gate secured to a fixed post on the abutment and provided at its free end with a centrally pivoted shiftable plate having projecting lugs at opposite sides of its pivotal axis, and a carrier stud secured to a fixed part of the draw and adapted to engage the projecting lugs of said shiftable plate, substantially as described.

3. The combination with a bridge approach or abutment, and a horizontally movable pivoted bridge or draw, of an extensible gate secured at one end to a fixed post on the abutment and provided at its other end with a latch and a shiftable plate having recessed lugs, said draw being provided with a carrier stud and a trip block to engage the recessed lugs and the latch respectively, substantially as described.

4. The combination with a bridge approach or abutment, and a horizontally pivoted bridge or draw, of an extensible gate secured to a fixed post on the abutment and provided at its free end with a pivoted plate shiftable upon its pivot and provided with stops to limit its movement, said plate having also projecting lugs arranged at opposite sides of the pivot which lie in a horizontal plane with said pivot when the plate is at its opposite limits of movement, and a carrier stud secured to a fixed part of the draw adapted to engage said lugs, substantially as described.

488,756. RADIATOR. JOHN F. DONAHOE, Paola, Kans. Filed Feb. 1, 1892. Serial No. 419,973. (No model.)



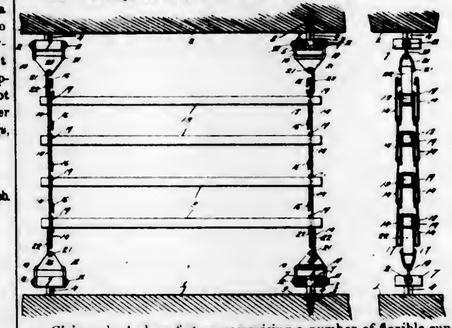
Claim.—1. A radiator comprising an outer vertical cylindrical body portion or casing, an inner vertical cylindrical portion of less diameter than the outer portion, a number of vertical air-heating pipes interposed between said cylindrical portions, a base-plate for said cylindrical portions having a central opening, and an inverted frusto-conical deflector depending below the base-plate, and extending upward through the opening thereof; the said deflector being of less diameter at its point of passage through the base-plate than the opening of said plate, substantially as set forth.

2. A radiator, comprising an outer vertical cylindrical body portion or casing, an inner cylindrical portion of less diameter than the outer portion, a number of vertical air-heating pipes interposed between the said cylindrical portions, a base-plate for said cylindrical portions having a central opening, an inverted frusto-conical deflector depending below the base-plate and extending upward through the opening thereof, the said deflector being of less diameter than the opening at its point of passage through the same, a base upon which the base-plate is supported, and a number of air-heating pipes located within said base and opening through the latter and also through the deflector, substantially as set forth.

3. A radiator, comprising an outer vertical cylindrical body-portion or casing, an inner vertical cylindrical portion of less diameter than the outer portion, a number of vertical air-heating pipes interposed between the said cylindrical portions, a base-plate for said cylindrical portions having a central opening, an inverted frusto-conical deflector depending below the base-plate and extending upward through the opening thereof, the said deflector being of less diameter than the opening, at its point of passage through the same, a top-plate having a central opening and resting upon the cylindrical portions of the radiator, and a top-casing having a number of vertical pipes communicating with the interior of the inner cylindrical portion, and having also at its top an outlet-pipe communicating with the space between the inner and outer cylindrical portions of the radiator, substantially as set forth.

4. A radiator, comprising an inner and an outer vertical cylinder, a circular plate resting upon the upper end of the outer cylinder and having a central opening, and a removable upper section comprising a lower and an upper head, a number of vertical air-heating tubes connecting and opening through said heads, an outlet-pipe opening from the upper head, and a cylindrical casing pendent from the upper head and surrounding the said air-heating pipes, substantially as set forth.

488,757. SHOW-FIXTURE. EMANUEL FRIENDLICH, Kansas City, Mo. Filed Apr. 26, 1892. Serial No. 430,671. (No model.)

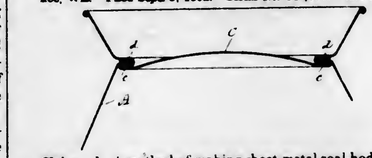


Claim.—1. A show-fixture comprising a number of flexible supports composed each of a number of interlocking links, nuts carrying pivotally attached connecting-pieces and connected to the extremities of the flexible supports, and attaching-screws passing through the nuts and into the upper and lower parts of an adjacent structure, substantially as set forth.

2. A show-fixture, comprising a number of flexible supports composed of a number of interlocking links having openings or eyes, supporting bars or rods entering the eyes, nuts carrying pivotally attached connecting-pieces and connected to the extremities of the flexible supports, and attaching-screws passing through the nuts and into the upper and lower parts of an adjacent structure, substantially as set forth.

3. A show fixture, comprising a number of flexible supports, or linked chains, a number of the links having openings or eyes located oppositely to each other, bars or shelves supported at their ends in said oppositely disposed eyes, with swiveled nuts or fastenings located at each end of each chain through the medium of pivotal ball connections, substantially as described.

488,758. SHEET-METAL COAL-HOD. HENRY L. GATES, Milwaukee, Wis. Filed Sept. 5, 1892. Serial No. 445,067. (No model.)



Claim.—1. A method of making sheet-metal coal-hods, that consists in forming the bottom thereof with a primary vertically disposed wall at an angle to a horizontally disposed portion, encircling said bottom wall with the body portion of the hod primarily devoid of angle or bend at its lower edge, simultaneously bending the parts thus engaged, and subsequently compressing the joint thus established, substantially as set forth.

2. A method of making sheet-metal coal-hods, that consists in forming the bottom thereof with a concave center and a primary vertically disposed wall, the latter being at an angle to a horizontally disposed portion that is on a plane below the concavity, encircling said bottom wall with the body portion of the hod primarily devoid of angle or bend at its lower edge, simultaneously bending the parts thus engaged, and subsequently compressing the joint thus established, substantially as set forth.

3. A method of making a sheet-metal coal-hod that consists in forming its bottom with a primary vertically disposed wall at an angle to a horizontally disposed portion, encircling said bottom wall with the body portion of the hod primarily devoid of angle or bend at its lower edge, bending the bottom and body walls together to thereby fold the body-wall on itself within the bottom wall, and subsequently compressing the engaging folds, substantially as set forth.

4. A two-part sheet-metal coal-hod having the lower edge of its body-wall folded on itself to form a two-layer flange engaging and this flange engaged with a compressed bead in the bottom-wall of said hod, substantially as set forth.

488,759. STONE BREAKING OR CRUSHING MACHINE. RYMSON D. GATES, Chicago, Ill., assignor to the Gates Iron Works, same place. Filed Sept. 22, 1892. Serial No. 446,521. (No model.)

tically therein, said window sash being of less height than the frame space, and a vertically movable strip for closing the space between the sash and frame, substantially as described.

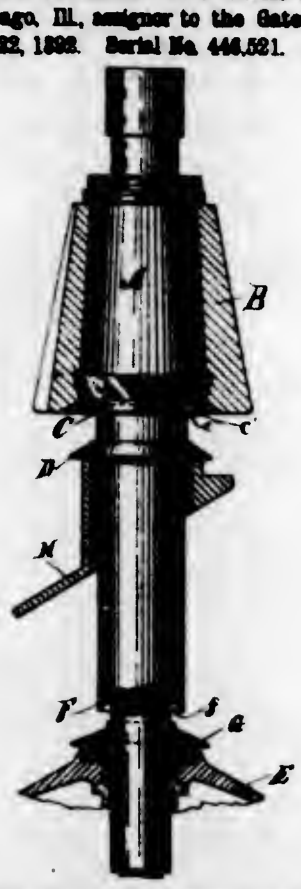
3. A window sash pivoted within the frame and also movable ver-

let *c*, whereby the player may reach under and strike the lower face of the board at any desired point, as set forth.

2. A game apparatus comprising a resilient board of stiff mate-

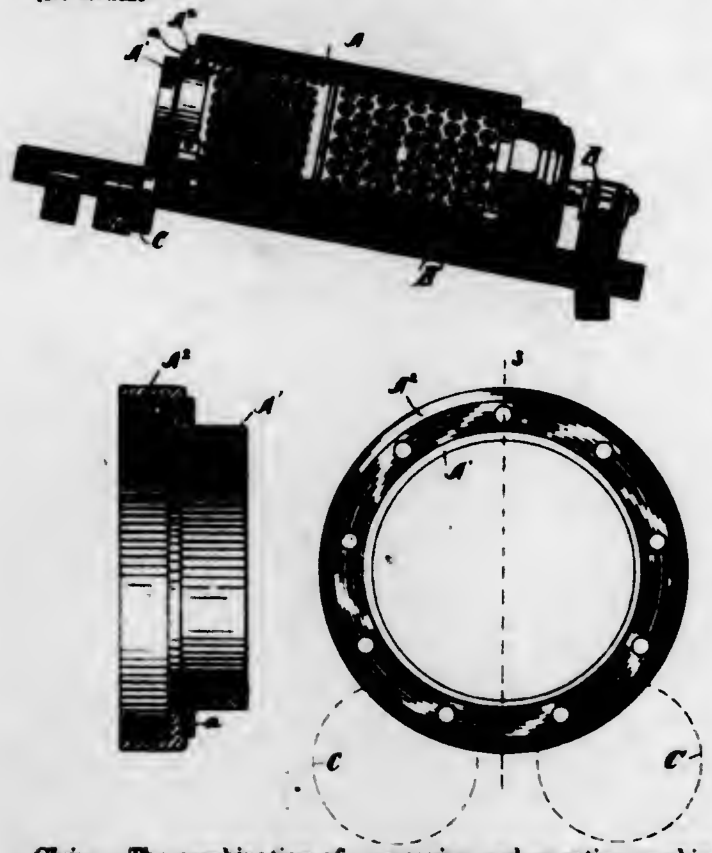
into said receiving body near the top thereof, and a conical discharge nozzle leading from the said body near the bottom thereof into the supply pipe, said parts being combined substantially as described.

488,759. STONE BREAKING OR CRUSHING MACHINE. Ryerson D. Gates, Chicago, Ill., assignor to the Gates Iron Works, same place. Filed Sept. 22, 1892. Serial No. 446,521. (No model.)



Claim.—The combination with a stone breaker or crusher of a gyrating shaft having a crusher head secured thereto, and formed with shoulders, one or more shoulders undercut at their lower edge to prevent or break the passage of water or moisture down along the shaft, substantially as described.

488,760. REMOVABLE TREAD FOR SCREENING AND ASSORTING MACHINES. Philetus W. Gates, Chicago, Ill., assignor to the Gates Iron Works, same place. Filed Sept. 22, 1892. Serial No. 446,571. (No model.)



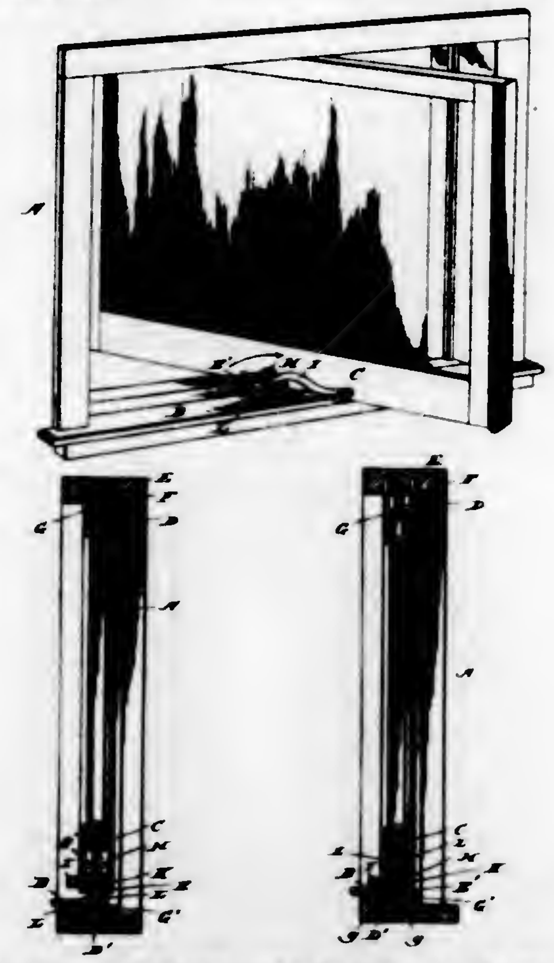
Claim.—The combination of a screening and assorting machine, a ring A^2 of soft metal, and a tread A' of chilled cast iron or steel removably secured to the same and adapted during the revolutions of the screen to rotate on the rolls C, substantially as described.

488,761. WINDOW. James H. Gibney, Highland, Ohio. Filed Sept. 22, 1892. Serial No. 446,667. (No model.)

Claim.—1. A window sash pivoted within the frame and also movable vertically therein, said sash being of less height than the frame space, and having means for closing the opening between the sash and frame, substantially as described.

2. A window sash pivoted within the frame and also movable vertically therein, said window sash being of less height than the frame space, and a vertically movable strip for closing the space between the sash and frame, substantially as described.

3. A window sash pivoted within the frame and also movable vertically therein, said window sash being of less height than the frame space, and having means for closing the opening between the sash and frame, in combination with means for lifting the sash, substantially as described.



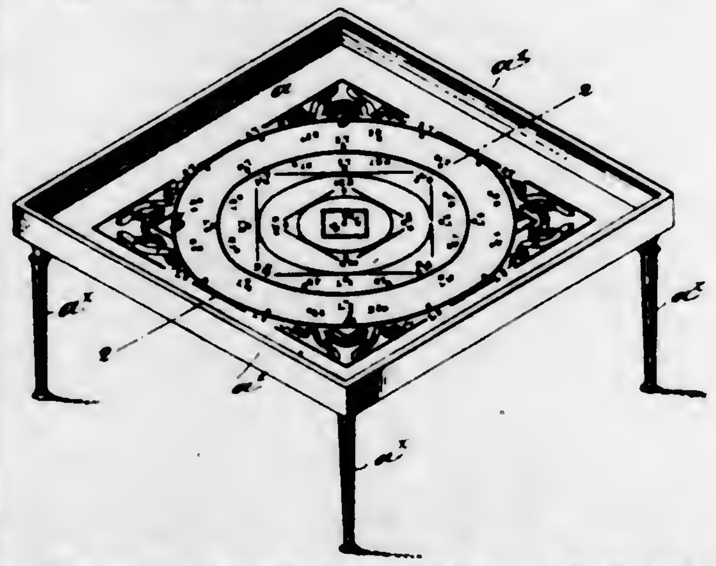
4. A window sash pivoted within the frame and also movable vertically therein, said sash being of less height than the frame space, and having means for closing the opening between the sash and frame, in combination with a lifting device composed of a lever, rotating journal and eccentrics, substantially as described.

5. In combination with the sash the lifting device consisting of a suitable casting or box H, the lever I, journal K and eccentrics L, moving through slots in casting H substantially as described.

6. In combination with the sash the casting or box H provided with a bearing surface for the journal and formed with longitudinal channels *e* to receive and guide the eccentrics, and said eccentrics substantially as described.

7. In combination with the sash the lifting device having the eccentrics L formed with an extension *g* in combination with the slotted plate G' secured to the sill, whereby the sash may be locked, substantially as described.

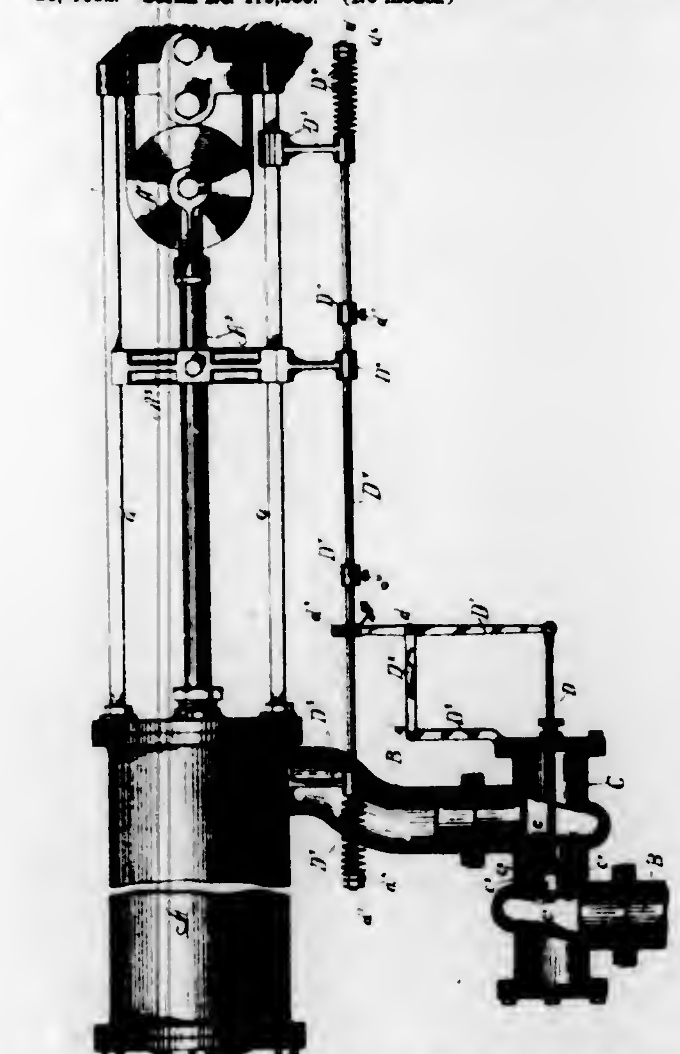
488,762. GAME APPARATUS. Grant G. G. Gist, Wilmington, Del., assignor to McLoughlin Brothers, New York, N. Y. Filed June 4, 1892. Serial No. 435,541. (No model.)



Claim.—1. A game apparatus comprising resilient board of stiff material, as pasteboard, raised on supports and having apertures in it forming lodging points for the piece, a piece or pieces, and a mallet *c*, whereby the player may reach under and strike the lower face of the board at any desired point, as set forth.

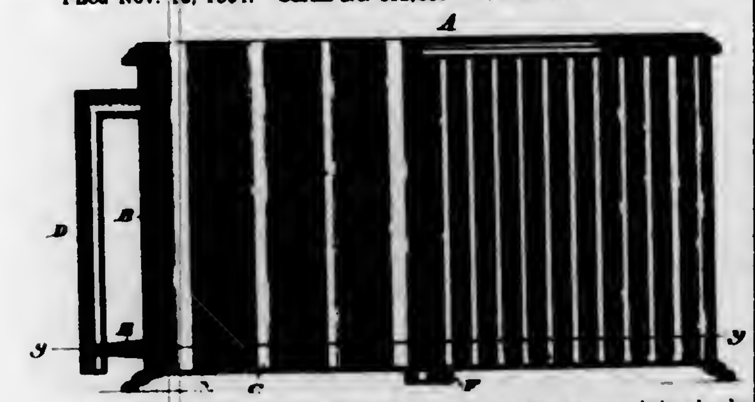
2. A game apparatus comprising a resilient board of stiff material, as pasteboard, raised on supports and having a series of apertures in it to form lodging points for the piece, a self-righting piece or pieces, and a mallet or the like for striking the under surface of the board, as set forth.

488,763. AUTOMATIC STOP-VALVE FOR HYDRAULIC ELEVATORS. William H. Hultgren, Detroit, Mich., assignor of one-half to the Michigan Elevator and Engine Company, same place. Filed Jan. 26, 1892. Serial No. 419,269. (No model.)



Claim.—The combination with the main cylinder and piston of a hydraulic elevator and a passage by which water is supplied to and discharged from said cylinder, of a safety-valve in said passage comprising a tubular casing having two ports which are separated from each other by a central space, and a hollow open-ended valve-piston which stands in said space between the said ports when the valve is open and which may be shifted in either direction from said central position to close the valve, means for actuating the said valve-piston comprising a spring or springs applied to maintain the valve normally in its central position, and a part moving with one of the operative parts of the elevator mechanism and acting to shift the valve over one of said ports against the action of said spring or springs as the main piston approaches the limit of its stroke in either direction, said valve-piston having in its side wall a water opening or passage provided with an inwardly opening check valve, substantially as described.

488,764. RADIATOR. William J. Jackson, Philadelphia, Pa. Filed Nov. 19, 1891. Serial No. 412,413. (No model.)



Claim.—1. A radiator consisting of a closed steam-receiving body with vertical air flues open at both ends, a steam inlet pipe leading into said receiving body near the top thereof, and a conical discharge nozzle leading from the said body near the bottom thereof into the supply pipe, said parts being combined substantially as described.

2. A radiator consisting of a closed steam-receiving body provided with vertical air flues open at both ends, and having a well formed in the bottom thereof, an inlet pipe leading into said body, and a conical nozzle leading into said pipe from said body, said parts being combined substantially as described.

488,765. ELEVATED CARRIER. Alfred T. Kelliher, Bethel, Me. Filed Feb. 6, 1892. Serial No. 420,551. (No model.)

Claim.—1. In a carrier of the class described, the combination with the supporting frame work, of track beams composed of stringers or timbers and a hanger having a shank adapted to engage said frame work and an open body to receive and support the adjacent end of the stringers or timbers, substantially as described.

2. In an elevated carrier, the combination with the supporting frame work of a track composed of independent stringers or timbers, and a hanger having a shank provided with a T-head and an open body to receive the adjacent ends of the stringers, substantially as described.

3. In an elevated carrier, the combination with an upright timber of the supporting frame work, said timber having a notch therein, of a hanger having a shank adapted to enter said notch and a T-head to bear upon the timber, an open body to receive the adjacent ends of the stringers or timbers, and suitable means for securing the timbers therein, substantially as described.

4. In an elevated carrier, the combination with a carriage having a frame and suitable track wheels, of a brake shoe interposed between the frame and the wheel and an adjusting screw threaded into the track frame whereby the shoe may be moved into and out of frictional contact with the wheel, substantially as described.

488,766. ALEMBIC. Victor J. Kuess, Paris, assignor to Clement Henri Joseph Donnadieu, Bordeaux, France. Filed Sept. 21, 1892. Serial No. 446,466. (No model.) Patented in France Feb. 7, 1891, No. 211,296.

Claim.—1. The combination of a receptacle to contain the matters to be distilled, provided with a swan's neck outlet at the top and a steam vessel surrounding the receptacle, with a pipe communicating with the steam vessel passing through the said receptacle and having the end opening into the swan's neck, all substantially as and for the purposes set forth.

2. The combination of a receptacle to contain the matters to be distilled, the said receptacle having a head 4 with a swan's neck outlet, and a water vessel to supply steam to heat the said receptacle, with a pipe communicating at one end with the steam space, traversing the said receptacle, bent over in the said head 4 and entering the swan's neck, all substantially as and for the purposes set forth.

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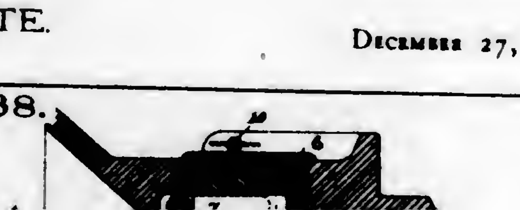

7. In a car-coupler, the hereindescribed inclined notch or shoulder formed in the pin hole of a draw head or knuckle adapted to support the coupling pin mounted thereon, substantially as and for the

of air into said drier, said means being connected by a pipe with the space at one end of said continuous series of troughs; all substantially as shown.

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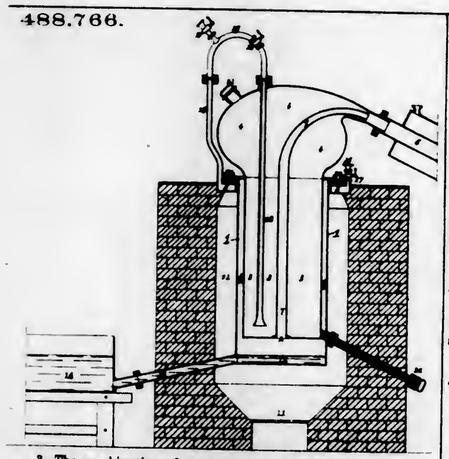
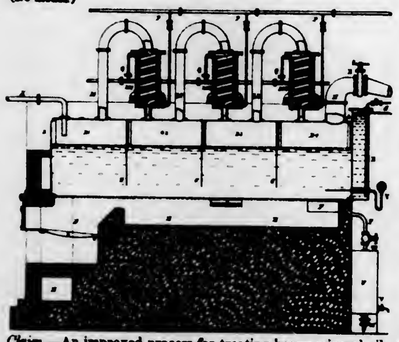


3. The combination of a receptacle to contain the matters to be distilled, provided with a swan's neck outlet at the top, and a water vessel to supply steam to heat the said receptacle, the said vessel communicating with a cistern to maintain the required level in the water vessel, with a pipe of decreasing diameter from the base to the top, passing through the said receptacle, the base communicating with the steam space and the top turned over and entering the swan's neck, all substantially as and for the purposes set forth.

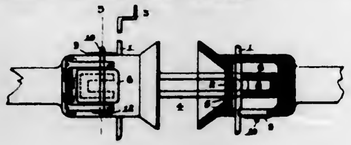
4. The combination of a receptacle to contain the matters to be distilled provided with a swan's neck outlet at the top, a water vessel to supply steam to heat the said receptacle, and a pipe leading from the steam space, through the said receptacle bent over the top and entering the swan's neck, with a boiler 5 and pipe 18 entering in the said receptacle, all substantially as and for the purposes set forth.

488,767. DESTRUCTIVE DISTILLATION OF MINERAL OILS. JOHN LAING, Edinburgh, Scotland. Filed Jan. 8, 1891. Serial No. 377,121. (No model.)



Claim.—An improved process for treating heavy mineral oils to obtain lighter oils, the said process consisting in distilling the oil from a series of compartments or vessels, the liquid in all of which is in communication, and passing the volatilised matters through condensers from each compartment or vessel to the next in order and from the last to ordinary condensers, the condensed products from each condenser but the last being led to the body of oil under treatment in the successive compartments, substantially as hereinbefore described.

488,768. CAR-COUPLING. REUBEN LOOMIS, Batavia, N. Y. Filed Oct. 26, 1892. Serial No. 450,033. (No model.)



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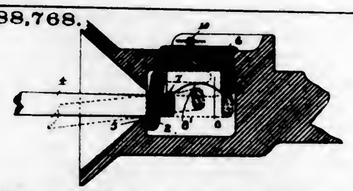
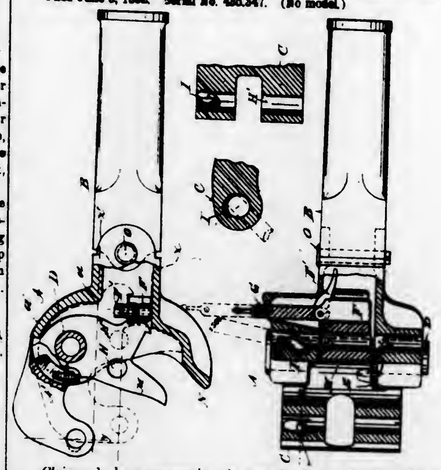


Claim.—1. The draw head provided with projections 7 and the recess 8 and the swinging pin in combination with a link adapted to be supported in the throat of the head and bear against said projections; substantially as set forth.

2. A draw head provided with projections 7, recesses 8 and 8' in combination with a link and pin; substantially as set forth.

3. A draw head having the removable blocks 6 and 9 and provided with a removable rod and swinging coupling pin; substantially as set forth.

488,769. CAR-COUPLING. RODNEY F. LUDLOW, Springfield, Ohio. Filed June 3, 1892. Serial No. 435,347. (No model.)



Claim.—1. In a car-coupler, the combination with a draw-head and a knuckle pivoted therein, of a wheel supporting said knuckle and mounted in one member, the other member having an inclined path for the travel of said wheel, the inclined face of the path being away from the direction of the coupling strain, whereby the strain on the wheel is removed, substantially as described.

2. In a car-coupler, the combination with a draw-head and a knuckle pivoted therein, of a wheel adapted to support said knuckle and mounted in one member, an inclined ledge on the other member affording a path for said wheel, the said ledge being open at the outside and shielded by a web from the other member, the inclination of the ledge being away from the line of thrust when the parts are coupled.

3. In a car-coupler, the combination with a head and a knuckle pivoted therein, of a wheel mounted in said knuckle and traveling on the inclined ledge in said head, the incline being located at the outer side of the knuckle-pivot from the center of the head, whereby the wheel when in the coupled position is relieved of any thrust on the knuckle.

4. In a coupler, the combination with a draw head and a knuckle pivoted therein, of a wheel supporting said knuckle and traveling on an inclined ledge in the head, the axis of the wheel in the coupled position being substantially parallel to the axis of the draw-bar, substantially as and for the purpose described.

5. In a car-coupler, the combination with a coupling-pin, of a knuckle or draw-head provided with a hole for said pin, the inner wall of said pin-hole having an inclined notch or recess adapted to support the pin, substantially as and for the purpose set forth.

6. In a car-coupler, the combination with a coupling-pin, of a knuckle or draw-head having a pin-hole provided with a shoulder or recess to support said pin, the bearing face of said shoulder or recess being inclined or twisted, substantially as shown and described, whereby a rotary motion is given to the supported coupling-pin in the act of coupling.

7. In a car-coupler, the hereindescribed inclined notch or shoulder formed in the pin hole of a draw head or knuckle adapted to support the coupling pin mounted thereon, substantially as and for the purpose described.

8. In a car-coupler, the combination with a draw-head and a knuckle pivoted therein, of a locking pawl or piece pivoted eccentrically on a vertically movable axis, and thus adapted to rest on said knuckle when raised to uncoupling position.

9. In a car-coupler, the combination with a draw-head and a knuckle pivoted therein, of a locking pawl and a vertically sliding piece pivotally connected to said pawl and mounted in the head, the said head being recessed or slotted to allow of raising said pawl to free said knuckle and effect an eccentric action of said pawl to engage with said knuckle.

10. In a car coupler, the combination with a draw-head and a knuckle pivoted therein, of a locking pawl and an auxiliary pawl, a sliding piece pivoted to said locking and auxiliary pawl and adapted to raise them vertically, the auxiliary pawl supporting said locking pawl by engagement with the knuckle till the knuckle swings open.

11. In a car coupler, the combination with a draw-head, and a knuckle pivoted therein, of a coupling pin for said head, and a locking device for said knuckle, and a compound lever for operating either said coupling pin or said locking device, consisting of a sleeve provided with lever extensions, and connected to one coupling device and a lever rod mounted within said sleeve and connected to the other coupling device, whereby either device may be uncoupled independently.

12. In a car-coupler, the combination with a draw-head, a knuckle pivoted therein, and two independent coupling devices for said knuckle, of a compound lever attachment for uncoupling said devices, consisting of a tubular lever for operating one device, and a lever-rod mounted within said tubular lever for operating the other device.

13. In a car-coupler, the combination with a draw-head and a knuckle pivoted therein, of an automatic locking pawl for said knuckle, an operative lever therefor, and a second lever having a clamping attachment adapted to engage with a coupling pin, one lever being inclosed by the other lever, substantially as shown and described.

14. In a car-coupler, the combination with a draw-head and a knuckle pivoted therein, of a locking pawl and a vertically sliding piece pivoted to said pawl and mounted in the head, the said head being recessed to provide a housing for said pawl and adapted to act on one side of the pivot thereof when the pawl is near its upper limit, and thereby throw the said pawl forward to engage with the knuckle, for the purpose described.

15. In a car-coupler, the combination with a draw-head and a knuckle pivoted therein, of a locking pawl or piece mounted in a recess or housing in said draw-head, and means to raise said pawl or piece within said housing or recess, a surface or projection on said pawl being arranged to engage with the part of said head near the upper limit of its movement and thus throw the lower end of said pawl into engagement with the adjacent knuckle to maintain it temporarily in its raised position.

488,770. GRAIN-DRIER. WILLIAM MCKEE, Chicago, Ill. Filed Aug. 22, 1892. Serial No. 443,734. (No model.)

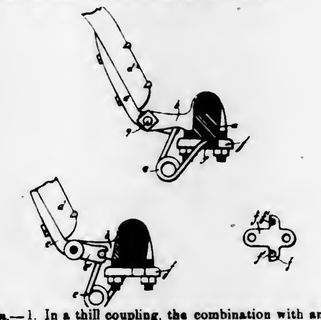
Claim.—1. In a grain drier the combination of an inclosing shell or walls capable of retaining and holding a mass of grain; a series of inverted troughs located and supported therein, the spaces of said troughs being alternately connected with each other at their ends so as to make them continuous; means for forcing a blast or current of air into said drier, said means being connected by a pipe with the space at one end of said continuous series of troughs; all substantially as shown.

2. In a grain drier, the combination of an inclosing shell or walls capable of retaining and holding a mass of grain; a series of perforated inverted troughs located and supported therein, the spaces of said troughs being alternately connected with each other at their ends so as to make them continuous; means for forcing a blast or current of air into said drier, said means being connected by a pipe with the space at one end of said continuous series of troughs; all substantially as shown.

3. In a grain drier, the combination of a bin or receptacle having parts of two opposite sides converging, and provided with a conveyer box and slide therefor; a series of inverted troughs located and supported in said bin or receptacle; pipes or conduits connecting the spaces of said troughs alternately at opposite ends of said receptacle so as to make said spaces continuous; means for forcing a blast or current of air into said drier and through said continuous spaces, said means being connected by a pipe or tube with the space of one of said troughs at the end of the continuous series; all substantially as shown.

4. In a grain drier the combination of a bin or receptacle provided on the interior walls of its two opposite ends with blocks or brackets to support a series of inverted troughs; a series of inverted troughs located and supported in said receptacle, and their opposite ends resting and supported upon said blocks or brackets; a series of pipes each end of which passes through openings in the end walls of said receptacle and through said blocks or brackets, connecting the spaces of said troughs alternately at each end so as to make said spaces of said series of troughs continuous; and means connected by a pipe entering through the wall of said receptacle into the space of one of said troughs at the end of said series, for sending a blast of air into said receptacle, and through the continuous spaces of said series of troughs; all substantially as shown.

488,771. THILL-COUPLING. CHARLES F. NEER, Catawba, Ohio. Filed Aug. 29, 1891. Serial No. 404,074. (No model.)



Claim.—1. In a thill coupling, the combination with an axle or jack clip thereon, and a thill iron pivoted to said clip and having a rearward extension from the pivot, provided with a notch, of a spring having a forward loop or bight portion mounted in said notch and also two branches coiled midway, and a supporting plate provided with notches to engage the rear ends of said spring and constitute a point of support,—the said extension engaged with the spring being substantially horizontal when the thills are down, and substantially vertical when the thills are up,—whereby the forward and rear ends of the spring will be brought nearer together when the thills are down, and the line of strain exerted by said spring, will be directly through the pivot, and thus practically neutral in its effect on the thills.

2. In a thill coupling, the combination with an axle, an axle clip thereon, and a thill iron and attached thill pivoted to said clip, and provided with a rearward extension having a notch, of a spring consisting of a forward loop portion mounted in said notch and coiled in each rearwardly extending branch portion, and a plate having notches for said rear ends adapted to allow their movement as a center of oscillation, and located so as to be substantially in line with the forward end of the spring on the pivot of the thill iron when the thills are down, whereby the spring is neutral in its effect on the thills when the latter are lowered and the spring may swing about its point of support at its rear end as a center, and act on the thill iron with maximum leverage when the thills are up.

488,772. WAGON-SHAFT. GEORGE J. F. PAUL, Philadelphia, Pa., assignor of one-half to Henry Paul, Sr., same place. Filed Mar. 3, 1892. Serial No. 423,504. (No model.)

Claim.—1. A sectional shaft having its rear section provided with a brace rod with a depending limb, a clip to which said shaft is pivoted, said limb normally abutting against said clip, preventing the lowering of said section, substantially as described.

2. A sectional shaft having its rear section provided with a brace rod extending from front to rear thereof, forming a truss, and having a depending limb adapted to be pivotally attached to a clip, against

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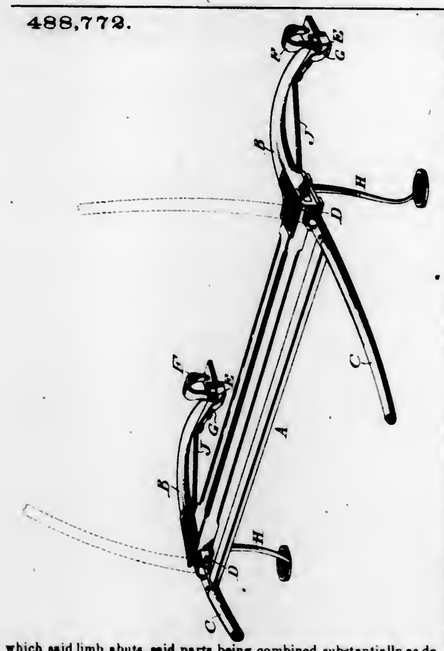
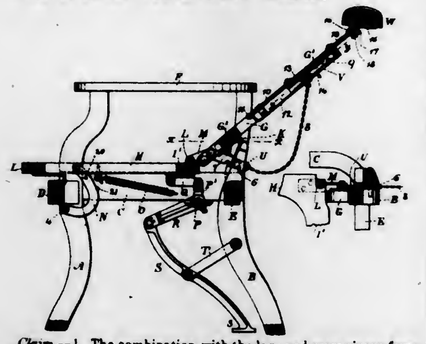


which said limb abuts, said parts being combined substantially as described.

488,773. RECLINING-CHAIR. EDMUND R. PECK, Brooklyn, N. Y. Filed May 23, 1892. Serial No. 433,961. (No model.)

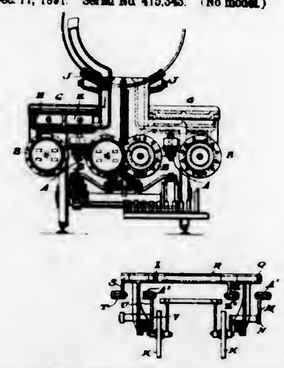


Claim.—1. The combination with the legs and cross pieces forming the chair frame, of a back frame, pivots for connecting the same to the upper portion of the back legs, a seat frame, links connecting the back edges of the seat frame to the lower end of the back frame, curved links pivoted at their lower ends to the chair frame and at their upper ends to the seat frame, and a pivoted latch bar and stud between the back frame and the chair frame for retaining the parts in position, a cross shaft crank and lever connections to be acted upon by the foot, for inclining the chair more or less, substantially as specified.

2. The combination with the legs and cross pieces forming the chair frame, of a back frame, pivots for connecting the same to the upper portions of the back legs, a seat frame, links connecting the back edges of the seat frame to the lower end of the back frame, links pivoted at the lower ends to the chair frame and at their upper ends to the seat frame, and a cross shaft crank and lever connections to be acted on by the foot for inclining the chair more or less substantially as specified.

3. The combination with the legs and connections forming the chair frame, of a back frame pivoted to the back legs, a seat frame and hinge connections having swinging links between the back portion of the seat frame and the lower ends of the back frame, links connected at their upper ends to the seat frame and at their lower ends to the front legs for allowing the chair to be inclined more or less, a cross shaft supported by the chair frame, and crank arms and a connection from one of the crank arms to the seat frame, and a treadle connected to the other crank arm for giving motion to the seat frame, substantially as set forth.

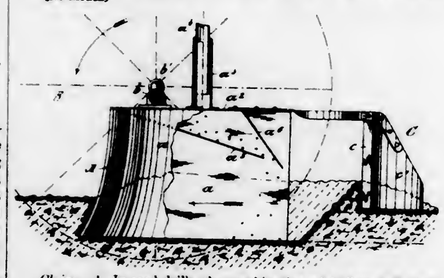
488,774. LOCOMOTIVE-ENGINE. JACKSON RICHARDS, Philadelphia, Pa., assignor to the Richards Balanced Engine Company of Maine. Filed Dec. 17, 1891. Serial No. 415,343. (No model.)



Claim.—1. A four cylinder balanced engine provided with valve gear having two links and two sets of eccentrics for its four valves, a shaft, a rocker arm connected with the right hand outer cylinder valve, mechanism connected with the left hand outer valve and the said shaft substantially as described for moving said valve in an opposite direction to movement of said right hand valve, a rocker arm connected with the left hand inner valve, and mechanism substantially as described connected with the right hand inner cylinder valve and a sleeve fitting loosely on said shaft for moving said valve in an opposite direction to said left hand inner cylinder valve said parts being combined substantially as described.

2. A balanced four-cylinder engine having the valve gear for its four valves provided with two links and two sets of eccentrics, a shaft, a rocker arm connected with one of the outer valves, an arm connected by a rod with said shaft at one end, and an arm on the other end of the shaft connected with the other outer valve, a rocker arm connected with one of the inner valves and an arm connected with a sleeve loosely mounted on the said shaft and connected by an arm to the other inner valve, said parts being combined substantially as described.

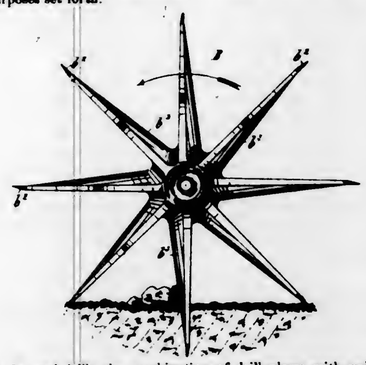
488,775. SEED-DRILL. PETRE SCANDRACOV and IVANCIU DIMOVICH, Brahilor, Roumania. Filed Feb. 13, 1892. Serial No. 421,487. (No model.)



Claim.—1. In seed drills, the combination of hollow drill plows A having a cutting edge a' in front, and widened to the rear, open below and behind and provided with an inlet at the top, with a plate a^3 below the said opening inclined downward toward the rear and a second plate a^4 inclined downward to the rear at a greater degree than the first plate, all substantially as and for the purposes set forth.

2. In seed drills the combination of drill plows with walking wheels B having sharpened teeth and sharpened ribs b^2 the teeth adapted to enter the ground just ahead of the plows, all substantially as and for the purpose set forth.

3. In seed drills, the combination of drill plows with devices C for closing the furrows, the said devices being provided with a perpendicular cutting edge c and perpendicular vanes c' extending from this cutting edge to the rear and sidewise, all substantially as and for the purposes set forth.



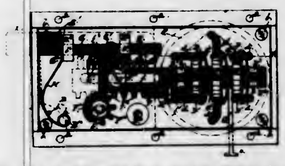
4. In seed drills, the combination of drill plows, with walking wheels at the sides thereof, the said teeth adapted to carry away the earth in front of the plows and facilitate the crushing of the same.

5. In seed drills, the combination of drill plows with walking wheels at the sides thereof and coverers C having a front cutting edge and flaring sides, all substantially as and for the purposes set forth.

488,776. RIDING-HABIT. WILLIAM SHINGLETON, London, England. Filed Nov. 2, 1892. Serial No. 450,744. (No specimens.) Patented in England Oct. 2, 1891, No. 16,758, and in France Nov. 7, 1891, No. 217,269.

Claim.—A riding habit having a skirt and trousers, the skirt being in front and passing at the sides and to the back of the trousers and its edges fastened to the inner seams of the legs and to the seat seam substantially as specified.

488,777. PERMUTATION-LOCK. BENJAMIN F. SINGER and MILES L. DAVIS, Lancaster, Pa. Filed Apr. 14, 1892. Serial No. 429,143. (No model.)



Claim.—1. In a combination-lock, the herein described tumbler, comprising a ratchet-wheel having in its periphery a number of recesses c^3 at equal intervals apart, the same number of ratchet-teeth in each of said intervals, and a washer secured to a side of said ratchet-wheel, said washer having its periphery at the base of said ratchet teeth; said tumbler adapted to be mounted upon a shaft, and mechanism provided to rotate the tumbler whereby any recess c^3 may be brought to the opening line, substantially as described and for the purpose set forth.

2. In a combination lock, having a frame or case A as described, the base plate B possessing the following functional elements: the perpendicular posts B' and B', U-shaped recesses b' in the upper ends of said posts, orifices b^2 transversely through said upper ends, said posts on the horizontal center line, projecting from the inner face in the right hand portion of the plate; the longitudinal slot B^3 through the body of the plate, on said center line between said posts, said slot having the central shaft-orifice surrounded by the tube B^6 having the slots b^3 projecting from the outer face of the plate; the tumbler shaft-orifices through the body of the plate and surrounded by the tubes B^4 having the slots b^4, said tubes projecting from the outer face of the plate; the bridge-wall B^5 having the guide-orifices b^5 projecting from the front edge of the forward post B' and from the inner face of the plate; the perpendicular posts B^6 and B^8 having the guide orifices b^6 projecting from the inner face in the upper left hand portion of the plate; the perpendicular column B^7, through the axis of which is journaled the T-shaped handle b^7, projecting from the outer face in the lower left hand portion of the plate; the pin B^{10} and the pin B^{10} projecting from the lower left hand corner of the plate; the perpendicular column B^{11} having the screw-threaded orifice b^{11} in its top, projecting from the inner face in the lower left hand portion of the plate; and means provided on the horizontal center line to hold and guide a slide-bolt in place; said plate and all its contained elements made integral, forming one body adapted to support the mechanism of the lock, to cover the base of the lock case and to be removably secured thereto, all substantially as described and for the purpose set forth.

3. The combination in a combination lock having a case A as described, with the plate B, as described, secured in position within the body of said case, said plate having the posts B' as described projecting from the inner face on the horizontal center line in the right hand portion of the plate, of the ratchet-tumblers C, C' and C^2 as described, the shaft C^3 passed through the axes of said tumblers, the extremities of said shaft in the U-shaped recesses b' of said posts and secured thereto by the pins c, the collars c^4 and c^4 between the tumblers, and the collars c^4 between the end tumblers and the posts, and mechanism provided to rotate said tumblers, all substantially as described and for the purpose set forth.

4. The combination in a combination lock having a case A as described, with the plate B having the posts B' as described, said plate removably secured to within the body of the case, and the ratchet tumblers C, C' and C^2 as described, said tumblers mounted as described upon the shaft C^3 supported by the posts B' as described, of a pair of pawls to each tumbler, D above and D' below, said pawls having their forward ends to engage the ratchet teeth of the tumblers, and their rear ends pivoted to the stems d having their shafts d' passed through the orifices in the plate and through the surrounding tubes B^4, the springs D^2 surrounding said tubes and secured to said shafts by the washers d^3 and the pins d^4 passed through the shafts and movable in the slots b^4 of the tubes, the springs D^2 having their introverted ends to press upon the forward ends of the pawls, and the push-buttons d^5 secured to the outer ends of the pawl-shafts d', all substantially as described and for the purpose set forth.

5. The combination in a combination lock such as described, having the plate B removably secured in position as shown; the ratchet tumblers C, C' and C^2 as described, said tumblers mounted upon the shaft C^3 supported by the posts B' of the plate, and mechanism provided to rotate the tumblers; and the slot B^3 as described through the body of the plate between the posts; with said tumblers, each having the peripheral recesses c^3 at equal intervals apart in the same tumbler, said intervals being unequal in the different tumblers, of the locking-bar E in the slot B^3, the guide lugs e projecting rearward from the ends of said bar; the recesses e^4 across and in the front edge of said bar, the side-lug e^2 having its rear end integral with the front ends of said bar, the shaft e^4 having its front end secured to the back of the bar, said shaft passed through the central orifice and the tube B^5 of the plate to the outside of the lock, the push-button e^5 secured to the end of the shaft, the spring E' surrounding the tube B^5 and secured to the shaft e^4 by the washer e^6 and the pin e^7 passed through the shaft, and movable in the slot b^3 of the tube, and, means provided such as the dead-latch O to hold the bar in engagement with the recesses c^3 of the tumblers as shown, all substantially as described and for the purpose set forth.

488,778. CATTLE-WASHING DEVICE. JOHN G. SHILEY, Hampton, Nebr. Filed May 24, 1892. Serial No. 434,159. (No model.)

Claim.—1. The cattle washing apparatus comprising a tank, an entrance thereto and an exit therefrom, and a supplemental vertically movable bottom in said tank provided with raising means so that the bottom can be elevated and cleaned when the tank is not in use, substantially as described.

2. The cattle washing apparatus comprising the tank having an entrance and an exit, the vertically movable bottom of said tank, uprights extending above the bottom to guide the bottom when raised for removing sediment and a windlass carried by said uprights to raise the bottom substantially as described.

3. The cattle washing apparatus comprising the tank having an entrance thereto, and the exit passage therefrom, and the inclined deflector in the upper portion of the tank opposite the entrance thereto to throw water over the cattle on entering the tank, substantially as described.

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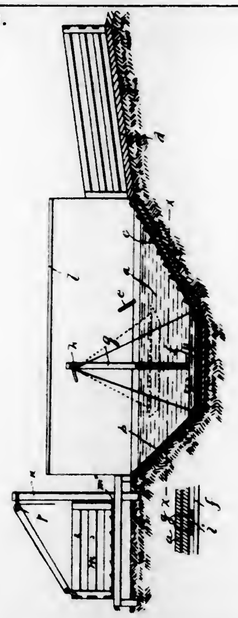
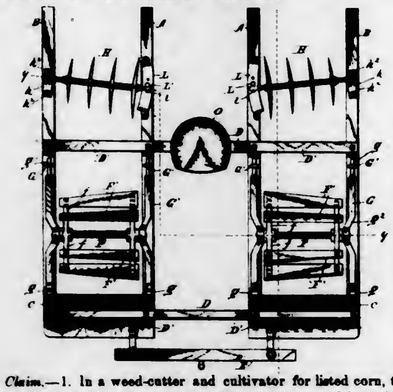


488,779. COMBINED CULTIVATOR AND WEED-CUTTER. CHARLES G. SPAULDING and WILLIAM G. SPAULDING, Whiting, Iowa. Filed Mar. 23, 1892. Serial No. 426,065. (No model.)



Claim.—1. In a weed-cutter and cultivator for listed corn, the combination with the inner runners, of outer runners of less width than the inner runners, means for uniting the runners, cutting reels mounted between the outer and inner runners, on opposite sides, vertically movable bearings for the reels, and adjustable cultivators between the runners in the rear of the cutting-reels, substantially as described.

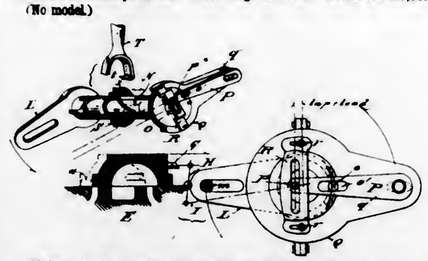
2. In a weed-cutter and cultivator for listed corn, the combination with the inner runners, of the outer runners formed of a width less than the width of the inner runners, U-shaped cross-bars connecting the inner runners and connections for the inner and outer runners, revolving cutting-reels mounted between the inner and outer runners on opposite sides, having cutting knives with inclined outer edges, the inclination of which is longitudinal relative to the reel-shaft, means for permitting the vertical movement of the cutters and cultivators in the rear of the cutters, substantially as described.

3. In a weed-cutter and cultivator the combination with the runners, of a cutting-reel mounted between the runners having knives with downwardly and outwardly inclined edges, supporting bars for the reels, hinged at one end to the runners and elongated guides for the rear ends of the supporting bars, substantially as described.

4. In a weed cutter and cultivator for listed corn, the combination with the runners, of graduated disk cultivators arranged between the runners, a shaft on which the disks are mounted, a journal box mounted on the outer runner having a curved slot in one end thereof a bolt hole in opposite ends bolts passing through the hole and slot, a curved guide bearing having an open outer face a journal block located in the bearing, means for limiting the movement of the block and journals on the ends of the cultivator shaft mounted in said bearings, substantially described.

5. In a weed-cutter and cultivator for listed corn, the combination with the inner runners, of outer runners formed of width less than that of the inner runners, means for connecting the runners, cutting reels mounted between the inner and outer runners consisting of a shaft having radial arms at opposite ends the arms on the outer end being less in length than those on the inner ends, tapered cutting blades secured on the outer ends of the arms and a graduated series of disk cultivators mounted on shafts in the rear of the cutters, substantially described.

488,780. VALVE-OPERATING MECHANISM. ROBERT E. STEPHENSON, Indianapolis, Ind. Filed Aug. 22, 1892. Serial No. 443,515. (No model.)



Claim.—1. In a valve operating mechanism, the combination with the main or side rod of an engine, and a pin or projection carried thereby, of a crank having a slot for said pin or projection, a shaft for said crank, an inner shaft mounted therein, means to rotatively adjust one shaft with respect to the other, and maintain such adjustment, a valve for the engine, operating rods therefor, a pin or projection engaging with the valve rods, and interconnecting means between the latter pin or projection, and the said inner shaft, whereby the throw of the valve is effected, and the same varied according to the adjustment of said pin or projection of the valve rod to and from the center of the shafts.

2. In a valve operating mechanism, the combination with the main or the side rod of an engine, carrying a pin or projection, of a double shaft mounted in bearings adjacent thereto, a crank on one shaft operatively connected to said pin or projection, a pin or stud carried by the other shaft eccentric to the axis, means to rotatively adjust said shafts with respect to each other, a lever rotated by the latter shaft and having a pin or projection, and engaged by the said pin or projection of the inner shaft to vary the position of the lever pin to and from the central shaft axis, a valve, and an interconnection between the lever pin and said valve.

3. In a valve operating mechanism, the combination with the main or the side rod carrying a pin or projection, of a pair of shafts, one mounted within the other, and supported adjacent to said main rod, a slotted crank on the outer shaft, the slot slidingly engaging with said pin or projection, a stud pin rotated by said inner shaft, means to effect and maintain the adjustment of one shaft with regard to the other, an annulus about said inner shaft, a lever pivoted thereto and engaging with the latter stud pin to be oscillated by it as desired, a valve, and operative connections between said pivoted lever and said valve, substantially as and for the purpose described.

4. In a valve operating mechanism, the combination with the main or the side rod of an engine, and a pin or projection therefrom, of a crank operatively connected to said pin or projection, a hollow shaft therefor, an inner shaft and a stud pin rotated with and supported by said inner shaft, an annulus outside of said latter pin and a movable piece supported by said annulus and engaging with the pin carried by the shaft, to be moved thereby, and having a projecting pin, a guide therefor, a valve and interconnections between said valve and pin on said movable piece, whereby the travel of the valve is varied, and means to adjust and maintain said hollow and inner shafts with regard to each other.

5. In a valve operating mechanism, the combination with a hollow crank shaft and means to rotate it, of an inner shaft having a disk and a projecting pin on said disk, means to rotatively adjust said shafts with regard to each other, an annulus loosely mounted on said disk, a movable piece carried by said annulus and having a pin or projection, a slotted guide on said annulus for said pin or projection, the pin on the disk engaging with said movable piece to vary the position of the pin on the movable piece within its guide, a valve, and connections between said valve and the latter pin to vary the throw of the same by the change of position caused by adjustment of the disk and pin with regard to said annulus.

6. In a valve operating mechanism, the combination with a pair of shafts concentrically mounted, and means to rotate the outer shaft, of a disk carried by the inner shaft and having a stud pin projecting therefrom, means to rotatively adjust the shafts with regard to each other, an annulus loosely mounted on said disk, and having an extension, a lever pivoted to said extension at one end and having a pin at the other end, and a slot slidingly engaged by said disk pin or the stud to change the position of the lever pin to and from the axis of the shafts, a slotted guide carried by said annulus and engaging with the lever pin, a valve, and interconnections between the valve and lever pin, substantially as and for the purpose described.

7. In a valve operating mechanism, the herein described disk having a stud pin or projection, and an annulus loosely mounted thereon having an extension, of an adjusting lever pivoted to said extension at one end and having a pin at the other end, and a slot between the ends for engagement with said stud pin on the disk, whereby the lever is oscillated by the adjustment of the disk within the annulus, substantially as and for the purpose described.

8. In a valve operating mechanism, the combination with a shaft and a disk thereon having a stud pin or projection, of an annulus loosely mounted on said disk, and a slotted guide piece adjustably carried by said annulus, the said piece being mounted on the annulus according to the lap and lead of the valve to be operated, an oscillating and adjustable lever adjustably pivoted to said annulus and having a pin at the opposite end engaged by said slot in the guide, and a slot slidingly engaged by a disk pin or projection to operate the lever and carry the lever pin back and forth in its guiding slot, for the purpose described.

9. In a valve operating mechanism, the hereindescribed slotted guide and annulus, the same consisting of a bracket piece having a slot lengthwise therein, and adjustably mounted on said annulus, a rotatable piece loosely mounted within said annulus, a movable piece carried by said annulus and having a pin guided by said slot and engaged by said inner rotatable piece to cause the pin to vary its position in its guiding slot, substantially as and for the purpose described.

10. In a valve operating mechanism, the hereindescribed slotted guide, the same consisting of a bracket piece having a longitudinal slot adapted to guide a pin as described, and transverse slots for adjusting the said piece on its support, substantially as shown and described.

11. In a valve operating mechanism, the combination with a rotatable disk having a pin or projection, and an annulus loosely mounted thereon, of an adjusting lever, one end pivoted to said annulus, and the other end having a pin or projection adapted to be connected to a valve rod, and having a slot slidingly engaged by said pin on the disk to oscillate said lever and maintain it in its adjusted position, and a guide having a longitudinal slot and adjustably mounted on said annulus for the purpose described, whereby the rotation of the disk within its annulus will vary the position of the pin in the guiding slot, substantially as and for the purpose described.

12. In a valve operating mechanism, the herein described slotted bracket M, the same consisting of a slotted plate portion adapted to be mounted on the main rod of an engine, and a pin portion or projection adapted for engagement with adjunctive devices, whereby said engagement may be varied according to the adjustment of the plate portion on said main rod.

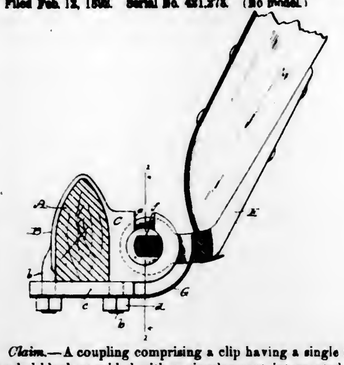
13. In a valve operating mechanism, the combination with the main or the side rod of an engine, and a valve for said engine, of a valve-operating device consisting of a shaft, a crank at one end adjustably connected to the main or side rod to be rotated thereby, and having a pin or projection located out of the axis at the other end of said shaft, operative connections between said pin or projection and said valve to operate the latter.

14. In a valve operating mechanism, the combination with the main or the side rod of an engine, and a valve therefor, of a bracket piece slotted for adjustment on said main or side rod to effect an equal cut-off, and valve operating mechanism consisting of a shaft, a slotted crank at one end slidingly engaged with a pin or projection from said bracket piece, to be rotated thereby, and having a pin or projection from the other end of the shaft eccentric to the axis thereof, and operative connections between said pin or projection and said valve, for the purpose described.

15. The hereindescribed sliding collar S, the same consisting of split pieces, each having a projecting pin or stud *s* extending inward, substantially as and for the purpose described.

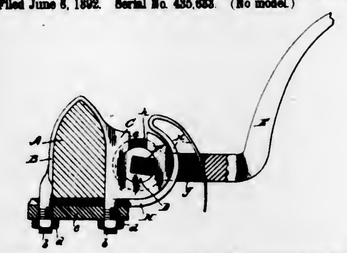
16. In a valve operating mechanism, a rotating shaft having a crank at one end and an eccentric pin or projection at the other end, the said pin or projection being mounted on the inner shaft located within the former shaft, and provided with spiral grooves, the outer shaft having straight slots matching therewith, a split collar slidingly mounted on said outer shaft and adapted to be slid axially, each half of the collar being provided with a projection or stud extending through said slots and adapted to rotate one shaft with respect to the other, according to the axial adjustment of said collar, and means to slide said collar.

488,781. THILL-COUPLING. CHARLES THORP, Trenton, Wis. Filed Feb. 12, 1892. Serial No. 421,273. (No model.)



Claim.—A coupling comprising a clip having a single forwardly extended block provided with a circular seat intercepted by a slot, a slotted tumbler loosely arranged in the seat, a draft iron that is bifurcated at its rear end and has the furcations thereof terminated in guards that come outside the block and tumbler and are united by a bar for detachable engagement with the tumbler-slot, and a spring connected at one end to the clip, the other end of this spring being free, but positioned to oppose the draft-iron, substantially as set forth.

488,782. THILL-COUPLING. CHARLES THORP, Trenton, Wis. Filed June 6, 1892. Serial No. 435,683. (No model.)



Claim.—1. A coupling comprising a clip provided with a slotted block, a bifurcated draft-iron, a transverse bar normally loose in the draft-iron furcations and having one of its ends screw-threaded to engage a corresponding thread in the draft iron furcation that is relative thereto, an arm at the other end of the bar, and suitable means for locking the arm to the draft-iron, substantially as set forth.

2. A coupling comprising a suitable clip, a bifurcated draft-iron, a transverse bar normally loose in the draft-iron furcations and having one of its ends screw-threaded to engage a corresponding thread in the draft iron furcation that is relative thereto, a spring-arm at the other end of the bar, and parallel lugs arranged on the draft-iron at a suitable distance apart to form a retaining seat for the spring-arm, substantially as set forth.

3. A coupling comprising a clip, a slotted tumbler loose in a correspondingly slotted extension of the clip, a bifurcated draft-iron, a transverse bar normally loose on the draft-iron furcations a spring-arm at one end of the bar, and retaining seat on the draft-iron for the free end of the spring-arm, substantially as set forth.

4. A coupling comprising a clip having a single forwardly extended block provided with a circular seat intercepted by a radial slot, a slotted tumbler loosely arranged in the seat a bifurcated draft-iron, a transverse bar normally loose in the draft-iron furcations a spring arm at one end of the bar, and a retaining seat on the draft-iron for the free end of the spring-arm, substantially as set forth.

5. A coupling comprising a clip provided with a slotted block, a bifurcated draft-iron, a transverse bar normally loose in the draft-iron furcations. an arm on one end of the bar, suitable means for locking

the bar to the draft-iron, and a spring connected to said clip and arranged to bear upon said draft-iron, substantially as set forth.

488,783. PAPER BAG OR ENVELOPE. GEORGE W. WEBER, Chi-

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or tension for the contact of the adjacent outer portions of the ribbon, upon the said intermediate portion, substantially as described.

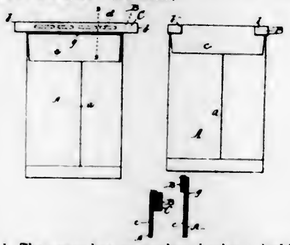
3. The improved method of inking a ribbon which consists in passing the ribbon through a liquid inking material or compound,

out of an upright position to loosen the band from the wick, substantially as described.

2. In a wick fastener, an open annular clamping band to encircle the wick having in combination therewith an oscillatory lever arm

the bar to the draft-iron, and a spring connected to said clip and arranged to bear upon said draft-iron, substantially as set forth.

488,788. **PAPER BAG OR ENVELOPE.** GEORGE W. WEBER, Chicago, Ill., assignor to William A. Vawter, same place. Filed Jan. 21, 1891. Serial No. 378,561. (No model.)



Claim.—1. The paper bag or envelope having a locking metal strip made yielding at the center and rigid at its ends, substantially as specified.

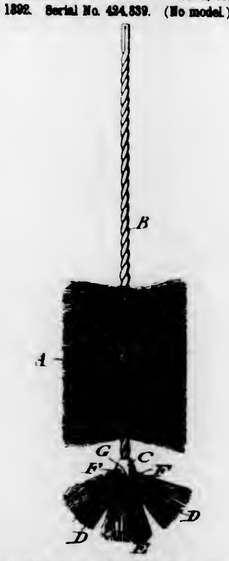
2. A bag having at its mouth a locking metal strip made pliable at its center and less pliable at its ends, substantially as specified.

3. A bag provided at its mouth with a metallic strip projecting beyond the sides or edges of the bag, said projecting end portions of said strip being more rigid than the central portion thereof, substantially as described.

4. A bag or pouch having a tongue at its mouth and a flexible strip folded upon itself and upon said tongue, substantially as described.

5. A bag or pouch having a tongue at its mouth extending across the width of the bag and a metallic strip applied to said tongue adjacent to the mouth of the bag, provided with end portions *b* projecting beyond the edge of the bag, said projecting end portions being less rigid than the main portion of said strip, substantially as described.

488,784. **BOTTLE-BRUSH.** ANTON ZOLPER, Cramer's Hill, N. J. Filed Mar. 14, 1892. Serial No. 424,839. (No model.)

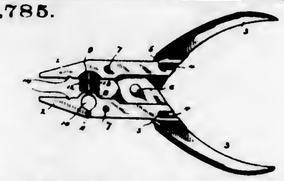


Claim.—1. A brush having a shank with threaded end, a hollow cap screwed on said threaded end and having slots in its sides and open ends, and bristles held in said cap, substantially as described.

2. A hollow cap adapted to be secured to the shank of a brush, and having slots in its sides and open ends, and bristles held in said cap, substantially as described.

488,785. **BELT-PLIERS.** WILLIAM A. BERNARD, New Haven, Conn., assignor to the William Schollhorn Company, same place. Filed Dec. 9, 1891. Serial No. 414,479. (No model.)

488,785.

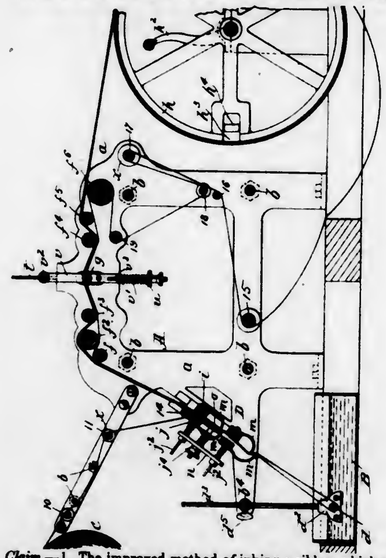


Claim.—1. The combination with the jaws, handles and pivots 5, 6, and 7 of a parallel plier, of an inclosed transverse opening 10 in one of said jaws adapted to receive a belt, an opening 11 at right angles thereto, a punch carried by the opposite jaw which passes through opening 11 and across opening 10, and a cutter secured to said jaw on the opposite side from the punch and in line therewith and adapted to pass closely over the outer side of the other jaw to cut off the end of the belt.

2. The combination with the handles and jaw 2 having an enlargement and an inclosed transverse opening through said enlargement the outer edge of which is made V shape to center a belt, and an opening 11 at right angles to said opening, of jaw 1 having a recess to receive the enlargement and carrying a punch adapted to pass through opening 11 and across the transverse opening, and a cutter on the opposite side from the punch in line therewith, and pivots 5, 6 and 7 by which the handles and jaws are connected together substantially as described.

3. The combination with a pair of plier jaws one of which is provided with an inclosed transverse opening through it and an opening 11 at right angles thereto, of a punch adapted to pass through opening 11 and across the transverse opening, and a cutter on the outer side of said jaw in line therewith adapted to pass over the face of the transverse opening.

488,786. **METHOD OF AND APPARATUS FOR MAKING INKED RIBBONS.** SARAH E. BISHOP, Springfield, Mass., administratrix of George W. Bishop, deceased. Filed Jan. 8, 1892. Serial No. 417,423. (No model.)



Claim.—1. The improved method of inking a ribbon which consists in immersing an intermediate portion of the ribbon in a liquid inking material or compound, and passing and moving such portion between layers or portions of the ribbon which are disposed at different sides thereof, and at the same time imparting a pressure or tension for the contact of the adjacent outer portions of the ribbon upon the said intermediate portion, substantially as described.

2. The improved method of inking a ribbon which consists in immersing an intermediate portion of the ribbon in a liquid inking material or compound, then expressing a portion of the absorbed material from the immersed ribbon portion and passing and moving such portion between layers or portions of the ribbon which are disposed at different sides thereof, and at the same time imparting a pressure

or tension for the contact of the adjacent outer portions of the ribbon, upon the said intermediate portion, substantially as described.

3. The improved method of inking a ribbon which consists in passing the ribbon through a liquid inking material or compound, then expressing a portion of the absorbed material from the immersed ribbon then passing the latter against a layer of similar fabric and imparting a pressure contact upon the adjacent fabrics and a rubbing movement of the one relative to the other substantially as described.

4. In a ribbon inking machine the combination with an ink vat and means for guiding the ribbon thereto and therefrom, and a fixed scraper blade supported edgewise relative to the course of the ribbon of a movably mounted scraper blade also mounted edgewise to the course of the ribbon having springs applied thereto for exerting a pressure thereon away from the fixed blade, and counterbalancing springs for exerting a pressure thereon toward the fixed blade, and means for placing all of the said springs under a greater or less compression, substantially as and for the purpose described.

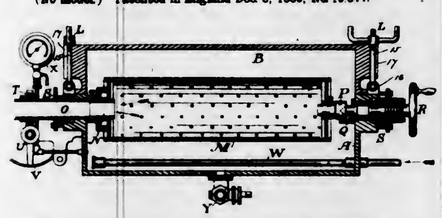
5. In a ribbon-inking machine the combination with a blade and a support on which the same is mounted having the posts extended therefrom with their extremities screw threaded, of the movable frame having the scraper-blade thereon and having the posts at its ends, of the bar apertured and fitted over the said posts, the thumb-nut, and the spring between the two blade-supports, and one or more springs between the movable blade-support and the said bar, substantially as described.

6. In a ribbon-inking machine, the combination with the vat for the inking material having a roll or rod therein, of several guide rolls above the vat, and a means for causing the travel of the ribbon whereby an upper layer thereof may be drawn past and in engagement with said rolls and other rolls in proximity to said rolls with which one or more other layers may have guiding and tension engagements, and by which said layers may have rubbing movements one upon another in opposite directions, and scraper-blades located above the vat in proximity to the course of movement of one of the ribbon layers, substantially as and for the purposes set forth.

7. In a ribbon-inking machine the combination with a vat for holding inking material having a transverse member submerged therein, of a take up drum, separated sets of guide rolls and a yielding tension roller intermediate thereof and a scraper device between the vat and said rolls, substantially as and for the purpose set forth.

8. In a ribbon-inking machine the combination with an ink-vat and means for guiding and moving the ribbon into and away from same, of sets of guide rolls, and a tension device, intermediate thereof, consisting of a bar or roller and a carrier therefor which is mounted for a movement at an angle to the travel of the ribbon through said guide rolls and a spring for imparting a yielding resistance to said support, substantially as described.

488,787. **MACHINE FOR FINISHING WOVEN FABRICS.** ARTHUR T. CLAY, Rochdale, England. Filed July 5, 1892. Serial No. 439,063. (No model.) Patented in England Dec. 3, 1889, No. 19,377.

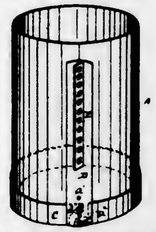


Claim.—In a machine for finishing cloth, the combination, with the inclosing box provided with a stuffing-box at each end, of the hollow shaft and driving mechanism for revolving it, a perforated cylinder for the cloth provided with a hollow journal N at one end inserted into and secured to the said hollow shaft, and having a cup P at the other end, the retractible center Q provided with an operating hand-wheel and adapted to engage with the said cup, and a pipe W communicating with the space in the box around the said cylinder, substantially as and for the purpose set forth.

488,788. **WICK-FASTENER FOR OIL-BURNERS.** BENJAMIN F. GOODRICH, Homer, Mich. Filed Apr. 6, 1892. Serial No. 428,040. (No model.)

Claim.—1. In a wick fastener, an open annular clamping band to encircle the wick, having in combination therewith a lever arm, having a fulcrumed engagement with said band to contract and expand the diameter thereof, said lever arm arranged to be thrown into an upright position to close the band upon the wick, and to be thrown out of an upright position to loosen the band from the wick, substantially as described.

2. In a wick fastener, an open annular clamping band to encircle the wick having in combination therewith an oscillatory lever arm fulcrumed to one extremity of the band, said lever arm arranged to be thrown into an upright position to close the band upon the wick, and to be thrown out of an upright position to loosen the band from the wick, substantially as described.



3. In combination, a wick tube, an annular open clamping band to encircle the wick upon said tube, a lever arm having a fulcrumed engagement with said band to contract and to expand the diameter thereof, said lever arm arranged to be thrown into an upright position to clamp the band upon the wick, and to be thrown out of an upright position to loosen the band from the wick, and means connecting the lever arm when in an upright position with the wick tube, whereby the wick tube may be raised and lowered by said lever arm, substantially as described.

4. In combination, a wick tube, an open annular clamping band to encircle a wick upon said tube, a lever arm having a fulcrumed engagement with said band to contract and expand the diameter thereof, said lever arm arranged to be thrown into an upright position to clamp the band upon the wick, and to be thrown out of an upright position to loosen the band from the wick, said tube provided with a stud engaging said lever arm when thrown into an upright position, substantially as set forth.

5. In combination, an open annular clamping band to encircle a wick, a lever arm having a fulcrumed engagement therewith, to be thrown into an upright position to close the band upon the wick, and to be thrown out of an upright position to loosen the band from the wick, said lever arm provided with a rack bar, substantially as described.

6. In combination, a wick tube, an open annular clamping band to encircle a wick upon said tube, a lever arm having a fulcrumed engagement with the clamping band to contract and expand the diameter thereof, means to engage said lever arm when in an upright position with said wick tube, and means engaged with said lever arm for raising and lowering the same, substantially as described.

7. In a wick fastener an open annular clamping band to encircle the wick, having in combination therewith an oscillatory lever arm engaged with said band at the two extremities thereof, whereby said extremities are forced toward each other when the lever arm is in an upright position and are forced from each other when said lever arm is thrown out of an upright position, substantially as described.

488,789. **OVERDRAW CHECK-LOOP.** SAMUEL E. HARSH, Wabash, Ind., assignor of one-half to John M. Harter, same place. Filed Aug. 2, 1890. Serial No. 360,815. (No model.)

Claim.—The loop cast in a single piece and composed of the base having the central raised rounded bearing *f*, the two flat perforated wings *g g*, extending in opposite directions from the sides of said bearing in the line of movement of the check rein, and the two arms *c d*, extending up from the opposite ends of said bearing with their ends extending toward and in line with each other, the arm *c*, anorter than the arm *d*, so that the opening *e*, is on one side of the center of the loop, as shown and set forth.

488,790. **VAPORIZER.** CHARLES F. JOHNSON, Boston, Mass., assignor of one-half to Henry M. Soule, same place. Filed Jan. 28, 1892. Serial No. 419,568. (No model.)

Claim.—1. The vaporizer, consisting of the box having the top openings, the air inlet pipe extending upwardly within the box from the

bottom thereof, and having the open top, and the strip of absorbent material bent U-shape at its upper portion provided with a stiffening strip of wire, and extending over the top of the pipe as set forth.

2. The vaporizer comprising a casing containing absorbent material, the air inlet pipe, and the ball held in the desired position at an end of the pipe by a spring within and frictionally engaging the

parts and means for seizing and severing the label from the strip by a pulling action and applying the severed label to the can, substantially as described.

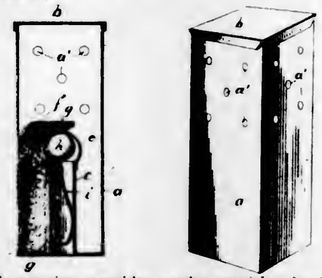
2. The combination, with the label paper strip feeding and supporting rolls, of a guide way for the paper strip, a box for containing adhesive liquid, a paste brush revolving beneath said paper strip and

position to support the other cans in said chute and to be slid forward by the carrier arm and thereby allow another can to descend upon the slideway, a trough and a wheel for applying labels to the cans, substantially as described.

chains; a block fitting in said drawhead; and a spring pressing forward said block and adapted to force the same beneath the pin when the said pin is raised and to be forced back by the link from the adjoining car, substantially as and for the purposes described.

bottom thereof, and having the open top, and the strip of absorbent material bent U-shape at its upper portion provided with a stiffening strip of wire, and extending over the top of the pipe as set forth.

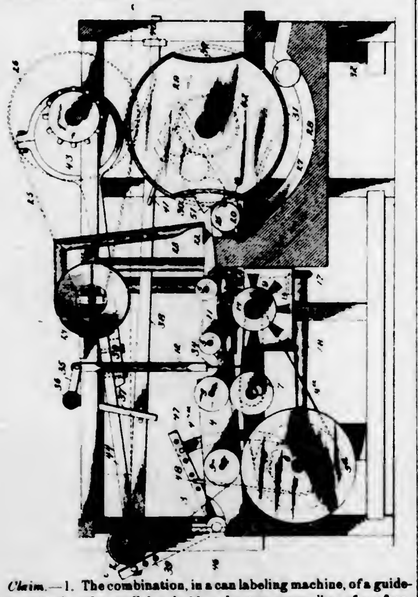
2. The vaporizer comprising a casing containing absorbent material, the air inlet pipe, and the ball held in the desired position at an end of the pipe by a spring, within and frictionally engaging the sides of the pipe, whereby the inflow of air can be regulated substantially as described



3. The vaporizer comprising a casing containing absorbent material with which the air passes in contact, the vertical air inlet pipe having the open upper end, and the ball above said open end to regulate inflow of air, and provided with a bent spring extending down into and bearing against the sides of the pipe to hold the ball in desired position.

4. A vaporizer consisting of a box provided with air exit openings at the upper portion, the air inlet pipe extending up in the box from the lower portion thereof and provided with lateral air discharge openings at its upper end, and the strip of absorbent material in the lower part of the box extending up as an arch over the end of said pipe opposite said discharge openings so that the air passes against and up around the edges of said strip, as set forth.

488,791. MACHINE FOR LABELING CANS. WILLIAM H. LEACH, Chenoa, Ill., assignor of one-half, by mesne assignments, to K. D. Harger, Elgin, Ill., and Lucy A. Harger, Pontiac, Mich. Filed May 13, 1892. Serial No. 432,894. (No model.)



Claim.—1. The combination, in a can labeling machine, of a guideway provided with parallel rods 11 and a transverse line of perforations 33 in its bottom, feeding rolls for the paper-strip, a perforator for said label-strip consisting of a vertical rod 13 having a row of pins 34 arranged to penetrate the strip at said bottom perforations, a paste brush revolving beneath said paper-strip and through the bottom rods in advance of the perforating device, means for operating the several parts and means for seizing and severing the label from the strip by a pulling action and applying the severed label to the can, substantially as described.

2. The combination, with the label paper strip feeding and supporting rolls, of a guide way for the paper strip, a box for containing adhesive liquid, a paste brush revolving beneath said paper strip, and a perforating device reciprocating above said paper strip, a trough and a wheel for applying the labels to cans, substantially as described.

3. The combination, with a feed for the label paper strip, and a guide way for said strip, of a movable shelf for supporting the cans at the delivering end of said guide way, a pasting device for said label strip, and means for feeding and delivering the cans to be labeled upon said shelf, a trough and a wheel for applying labels to cans, substantially as described.

4. The combination, with a feed for the paper label strip, and a guide way for said strip, of a spring sustained shelf for supporting the cans at the delivering end of said guide way, a pasting device for said label paper strip, and a laterally operating carrier for delivering the cans to be labeled upon said shelf, a trough and a wheel for applying labels to the cans, substantially as described.

5. The combination, with a feed for the paper label strip, a movable shelf for supporting the cans in position to receive the same, a pasting device for said paper strip, a yielding trough below said shelf, and a wheel having circumferential recesses for seizing and rolling said cans and the labels thereon within the trough, substantially as described.

6. The combination, with a feed for the paper label strip, a movable shelf for supporting the can in position to receive the same, a pasting device for the paper strip, a laterally operating carrier device for delivering the cans to be labeled upon said shelf, a yielding trough below said shelf, and a wheel having circumferential recesses for seizing and rolling said can and the label thereon within said trough, substantially as described.

7. The combination, with a feed for the paper label strip, a perforating device therefor, a pasting device for said paper strip, a movable shelf for supporting the can in position to receive the same, a laterally operating carrier for delivering the cans to be labeled upon said shelf, a yielding trough below said shelf, and a rotating device above said trough for seizing and rolling said can and the label thereon within said trough, substantially as described.

8. The combination, in a can labeling machine of a feed for the label paper strip, a suitable feeding and supporting guide way therefor, a pasting device, and a suitable support for the can to receive the label, with a blower arranged to deliver an air blast upon the end of the paper overhanging the can, a trough and a wheel for applying labels to cans, substantially as described.

9. The combination, in a can labeling machine of a feed for the label paper strip, a suitable feeding and supporting guideway therefor, a pasting device for said label strip, a movable support for the can to receive the label, a laterally operating carrier to deliver the cans to be labeled, a blower arranged to deliver an air blast upon the end of the label overhanging the can, a spring sustained trough beneath said shelf, and a wheel having circumferential recesses for seizing and rolling said cans and labels thereon within said trough, substantially as described.

10. In a machine for labeling cans, the combination, with a feed for the label paper strip, a pivoted spring sustained shelf for supporting the can in position to receive the same, a pasting device for said paper strip, a yielding trough below said shelf, a rotating device in position above said shelf, for seizing and pressing down, and rolling the can from its shelf, separating the label from the strip and roling the can and label together in the way and for the purpose stated.

11. In a machine for labeling cans, the combination, with a feed for the paper strip, a movable shelf for supporting the can in position to receive the same, a pasting device for said label strip, a yielding trough below said shelf, and an intermittently rotating wheel above said trough having circumferential recesses and a circumferential pad or cushion for the purpose stated.

12. In a machine for labeling cans, the combination, with a feed for the paper strip, a fixed guide way therefor, a movable shelf for supporting the can to receive the end of the label, a pasting device for said paper strip, a laterally arranged fixed slideway for delivering the cans endwise upon said shelf, and a laterally operating endless carrier for moving the cans over said slideway and upon said shelf, a trough and a wheel for applying labels to cans, substantially as described.

13. The combination, in a machine for labeling cans, of a feed for the paper strip, a fixed guideway therefor, a movable shelf for supporting the can to receive the end of the label, a pasting device for said label strip, a laterally arranged fixed slideway for delivering the cans endwise upon said shelf, a laterally operating endless armed carrier for moving the cans over said slideway and upon said shelf, and an inclined chute arranged at the outer end of said slideway for automatically delivering the cans one at a time upon said slideway in

position to support the other cans in said chute and to be slid forward by the carrier arm and thereby allow another can to descend upon the slideway, a trough and a wheel for applying labels to the cans, substantially as described.

14. The combination in a machine for labeling cans, of a feed for the paper strip, a rotating pasting device therefor, a laterally operating endless carrier, and a rotating wrapping wheel, with a suitable fixed guideway for the label strip, a fixed guide way for the cans, a spring sustained shelf at the end of said guideway, a spring sustained trough below said wheel and mechanism for operating the several parts simultaneously in the way described.

15. The combination, in a can labeling machine, of a fixed guide way for the label, a movable shelf, at the delivering end of said guideway, a spring sustained trough below said shelf, and a rotating wheel above said trough, for operation in the way described.

16. The combination, in a can labeling machine, of a fixed guide way for the label paper-strip, a movable shelf at the delivery end of said guideway, a curved trough below said shelf and forming a continuation of said fixed guideway, and a rotating device above said trough for seizing and rolling the can and label together, and means for delivering cans in succession upon said shelf, substantially as described.

17. A device for applying labels to cans consisting of a curved trough, a yielding shelf at the upper end thereof for supporting the can, and a wheel having circumferential recesses for seizing and rolling said can and the label thereon within said trough, substantially as described.

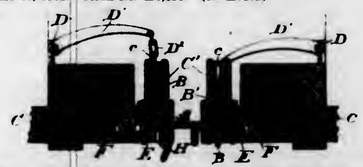
18. In a machine for labeling cans, the combination with a feed and a guideway for the label-paper-strip, a pasting device for said strip, a movable shelf for supporting the can to receive the same, a curved trough below said shelf, and an intermittently rotating wheel above said trough having a covering cushion and adapted to automatically seize, deliver and roll the can into and through said trough in the way substantially as described.

19. In a can-labeling machine, the combination, with a guideway and a feed for the paper-label-strip, of a vertically reciprocating perforating device adapted to partially sever said strip transversely, a paste-brush rotating beneath said paper-strip in advance of said perforating device, a support for the can at the end of said guideway, and a rotating device at the end of said can-support constructed to seize and draw the strip forward, complete the severance of the label from the strip and apply it to the can in the way described.

20. The combination, in a can-labeling machine, of a guideway, and feed-rolls for the label-paper-strip, a rotating paste-brush beneath the paper-strip, and a perforating device above said strip, with mechanism for operating said feed-rolls, the paste-brush and the perforator consisting of the pawls 47ª and 48, the rock-rod 46, having the arms 39, 45 and 47, the eccentric and its rod 44 connecting and operating said pawl arm 45, and the arm 38 connecting and operating said perforator, the shaft 6 and the ratchet-wheel 49 thereon for operating said shaft and the connections from the latter for operating the feed-rolls, substantially as described.

21. In a machine for labeling cans, in combination the eccentric 43, its pitman-rod, the rock-shaft 46, its arms 45, 39 and 47, the pawls on the latter, the shaft 6, the ratchet-wheel 49 thereon, a guideway and a feed-device for the label strip, a paste device for the latter, a vertically reciprocating perforating device for said label-strip, the rod 38 connecting said arm 39, and a crank connection 35 and 37 with said rod 38 for operating the perforating device, an intermittently rotating device for applying said labels to the cans, the ratchet-wheel 42 and pawl connecting it with said rod 38, and means for feeding the cans to the label applying device, the several parts being conjointly operated from said eccentric, substantially as described.

488,792. CAR-COUPLING. SAMUEL F. LESSER, Sumter, S. C. Filed June 18, 1892. Serial No. 437,126. (No model.)



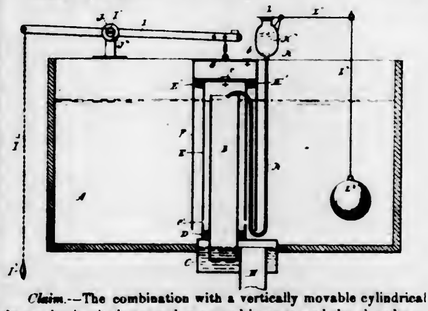
Claim.—1. In a link and pin car coupling, the combination with a hollow drawhead having the usual holes therein for the pin, and a guide frame C mounted thereon and having a movable cap c and open slots C^a; of a pin B having a cross piece B' attached to the upper end thereof, the ends of which pass through the said open slots; chains D^2 attached to the ends of this cross bar, and a lifting bar D having handle *d* and two arms D', the said arms being attached to the said chains; a block fitting in said drawhead; and a spring pressing forward said block and adapted to force the same beneath the pin when the said pin is raised and to be forced back by the link from the adjoining car, substantially as and for the purposes described.

2. In a link and pin car coupling, the combination with a hollow drawhead having the usual holes therein for the pin, and a guide frame C mounted thereon and having a removable cap c and open slots C^a; of a pin B having a cross piece B' attached to the upper end thereof, the ends of which pass through the said open slots; a lifting device attached to said cross piece, a block fitting in said drawhead; and a spring pressing forward said block and adapted to force the same beneath the pin when the said pin is raised and to be forced back by the link from the adjoining car, and a centering device for the link consisting of the luse-shaped support H, the sliding bars h bent at h', and the guides h^2 and h^3, operating substantially as and for the purposes described.

488,798. ATTACHMENT OF COVERS TO TEA OR COFFEE POTS OR OTHER VESSELS. EDWARD B. MANNING and MICHAEL SEIPS, Meriden, Conn., assignors to Manning, Bowman & Co., same place. Filed Feb. 23, 1892. Serial No. 422,422. (No model.)

Claim.—In a tea or coffee-pot provided with a handle, and having a bead around the edge of the pot, the combination therewith of a removable metal clasp, the metal bent to form two legs adapted to set over the bead on the edge of the pot, and embrace the body below the bead, a plate attached to or made as a part of said clasp and extending over the top of the handle, and its end turned up to form a thumb-piece, with a cover and a hinge between the cover and the clasp, substantially as described, and whereby the said clasp, thumb-piece, cover and hinge are removably attached to the pot.

488,794. SIPHON FOR WATER-CLOSETS. ROBERT MORGAN and JOHN MERRIEB, New Haven, Conn. Filed July 26, 1892. Serial No. 441,142. (No model.)



Claim.—The combination with a vertically movable cylindrical plunger having its lower end open, and its upper end closed, and provided with an air-valve; of a fixed outer pipe inclosed by the said plunger, having its lower end closed and provided with inlet openings, a cap applied to the upper end of the said pipe, made larger than the same to form a joint with the plunger and provided with an air-valve; a fixed inner pipe located within the said outer pipe than which it is smaller, and extending above the level of the water in the tank when the same is filled; a trap into which the lower end of the inner pipe extends, a flush pipe leading from the said trap, an air-pipe leading into the space between the upper ends of the outer and inner pipes, and means of controlling the passage of air through the said air-pipe, substantially as described, and whereby the air in the inner pipe is rarefied for starting the siphon by raising the plunger.

488,795. VEHICLE-SPRING. JOHN MCFARTLAND, Wakefield, R. I. Filed Aug. 26, 1892. Serial No. 444,131. (No model.)

488,795.

and means to move said stirrers or rabbles continuously through said furnace from inlet to outlet, substantially as described.

7. An annular ore roasting furnace, comprising an outer wall and an inner wall, the latter having a continuous horizontal slot, the upper edge of which is constituted of skew-backs for the crown of the furnace, angle-bars in which said skew-backs are supported, trans-

both curtains are wound, and means for separating the curtains when the sash is raised.

3. The combination of a window sash, a screen composed of two curtains, a roller on which the curtains are wound, and supporting devices interposed between the curtains and automatically raised and

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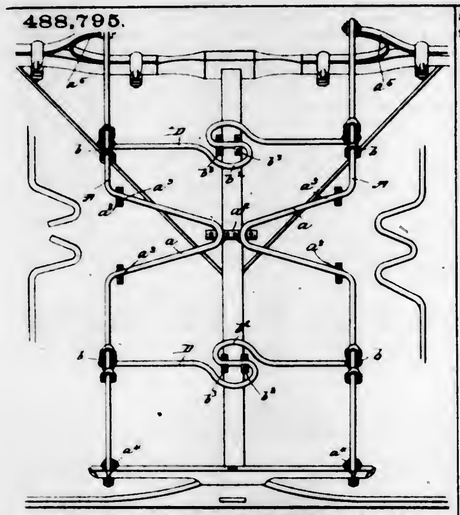


Claim.—1. In a spring for vehicles, comprising the side springs having inwardly bent portions suitably secured to the wagon body, the spring clips supporting the rear ends of said springs and the shackles connecting the forward ends thereof to the running gear, substantially as specified.

2. In a spring for vehicles comprising the side springs having inwardly bent portions supported from the underside of the wagon body at a point approximately the center thereof, suitable spring clips on the rear axle supporting the rear ends of said springs, the opposite ends being connected by shackles to the front bolster and the supporting brackets a^3, substantially as specified.

3. In a spring for vehicles, comprising the side springs having centrally thereof inwardly bent portions secured to the wagon body, the spring clips a^4, supporting the rear ends of said springs as described, the shackles a^4, supporting the forward ends thereof, and the supports a^3, a^3, substantially as described.

4. In a spring for vehicles, the combination with the side springs of the transverse springs having formed centrally thereof S-shaped portions and the supporting brackets or shackles for securing said S-shaped portions at or near the center thereof, substantially as shown and for the purpose set forth.

5. The combination with the side springs having formed centrally thereof inwardly bent portions secured at a point approximately at the center of the wagon body and loosely supported in brackets adjacent to the side thereof, the extreme ends of said springs being pivotally secured to the running gear by the spring clips a^3, and the transverse springs having their ends pivotally secured to the side springs and at or near the center thereof to the wagon body, substantially as shown and described.

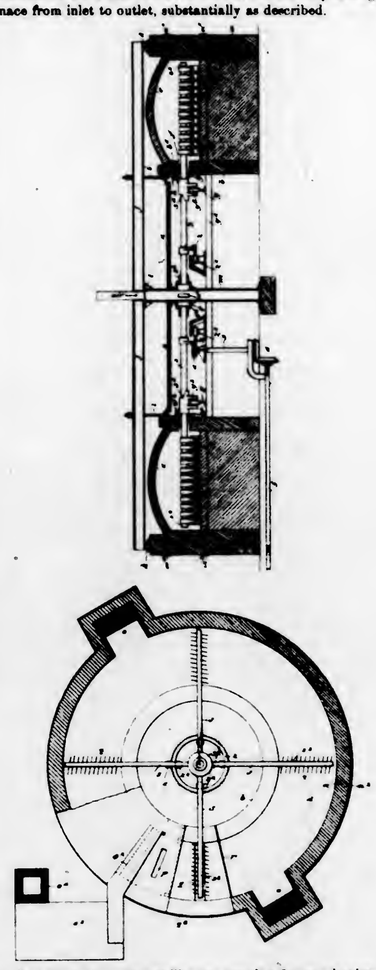
6. In a vehicle spring, the combination with the side springs having inwardly bent V-portions supported as described, of the transverse springs supported from said side springs and bent up centrally to form an approximate S, substantially as specified.

488,796. PROCESS OF UTILIZING TIN-SCRAP. HAROLD B. NYE, Cleveland, Ohio. Filed Mar. 21, 1892. Serial No. 425,694. (No specimens.)

Claim.—The process of utilizing tin scrap and other scrap metal of coated iron, which consists in melting said scraps into an alloy with pig or other iron and removing the tin and other metals and impurities alloyed with the iron by oxidation by forcing blasts of air under pressure into intimate contact with all parts of the molten alloy, substantially as described.

488,797. ORE-ROASTING FURNACE. RICHARD PEARCE, Denver, Colo. Filed July 20, 1892. Serial No. 440,602. (No model.)

Claim.—1. An annular or turret-like ore roasting furnace, composed of an inner wall having a horizontal slot, and an outer wall, a continuous hearth between said walls, an inlet for the material to be treated, and an adjacent outlet for the treated material, combined with stirrers or rabbles projecting into said furnace through said slot, and means to move said stirrers or rabbles continuously through said furnace from inlet to outlet, substantially as described.



2. An annular or turret-like ore roasting furnace, having a continuous slot in its inner wall above the hearth, combined with arms extending through said slot into the furnace, over the hearth thereof and provided with rabbles, and means to move said arms progressively from end to end of the furnace, substantially as described.

3. An annular or turret-like ore roasting furnace, having a continuous, horizontal slot, stirrer arms projecting into the furnace through said slot, a shield carried by the said stirrer-arms and held up against said slot, and means to revolve the said arms, substantially as described.

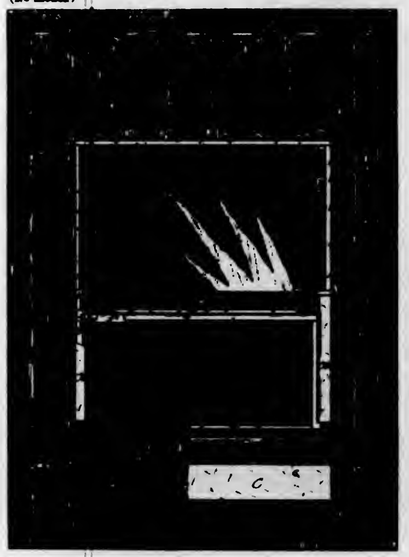
4. An annular or turret-like ore roasting furnace, having a horizontal slot in its inner wall, and stirrer arms projecting into said furnace through said slot and united in a common hub, combined with a central stationary column, and means to revolve the said stirrer-arms about such column, substantially as described.

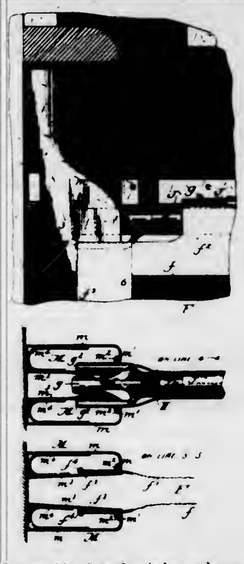
5. An annular or turret-like ore roasting furnace, having a horizontal slot in its inner wall just above the hearth, and hollow stirrer arms projected into said furnace through said slot, combined with a hollow hub in which all of said arms are centered, and a stationary, hollow column having openings communicating with said hollow hub, and air-tight connections between the said hollow hub and hollow column, substantially as described.

6. An annular ore roasting furnace, having its inner wall slotted horizontally, combined with stirrer arms entering said furnace through said slot and composed of sections, couplings for uniting said sections, a supporting track, and rollers on said couplings running upon such track, substantially as described.

7. An annular ore roasting furnace, comprising an outer wall and an inner wall, the latter having a continuous horizontal slot, the upper edge of which is constituted of skew-backs for the crown of the furnace, angle-bars in which said skew-backs are supported, transverse I-beams and supports therefor, and bolts suspending said angle-bars from said I-beams, combined with stirrer-arms projecting into said furnace through said slot, and means to move said arms, substantially as described.

488,798. AIR COOLING AND PURIFYING APPARATUS. GEORGE E. PROCTOR, Washington, D. C. Filed Feb. 26, 1892. Serial No. 423,673. (No model.)





Claim.—1. The combination of a window sash, a screen of reticulated fabric secured to the sash, a roller for automatically winding up the screen as the sash descends, a water supply pipe at the top of the screen, and a drip trough at the bottom.

2. The combination of a window sash, a screen composed of two curtains and connected to the bottom of the sash, a roller on which both curtains are wound, and means for separating the curtains when the sash is raised.

3. The combination of a window sash, a screen composed of two curtains, a roller on which the curtains are wound, and supporting devices interposed between the curtains and automatically raised and lowered as the sash is raised and lowered.

4. The combination of a rising and falling screen composed of two curtains, a roller on which both curtains are wound, toggle levers interposed between the curtains for separating them, and means for raising the curtains and toggle levers, substantially as described.

5. The combination of a window sash, a screen of reticulated fabric secured thereto, means for supplying an evaporating fluid to the sash, a roller on which the screen is wound, vertical guides for the edges of the screen, and means for clamping the screen at its edges, when the sash is raised.

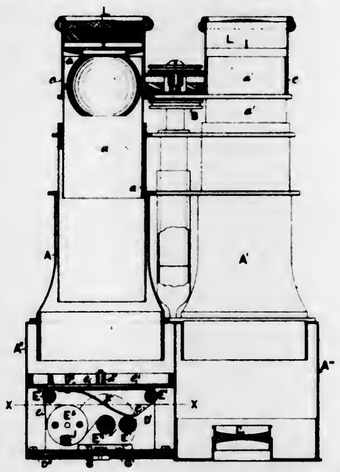
6. The combination of a window sash, a screen of reticulated absorbent material secured thereto, a feed tube through which an evaporating fluid is fed to the screen, a drip trough, a roller therein on which the screen is wound, vertical guides for the edges of the screen having the hinged plates, and cam lugs or arms carried by the screen frame for operating the plates.

7. The combination of a window sash, a screen of reticulated absorbent material, a feed tube, to which the upper end of the screen is secured, means for supplying an evaporating fluid to the screen through the tube, a drip trough, a horizontal rod secured thereto, toggle levers interposed between the feed tube and the rod, and a roller in the drip trough, on which the screen is wound.

8. The combination of a window sash, a screen of reticulated absorbent material, a slotted feed tube to which the screen is secured and which is attached to the sash, a water supply pipe provided with a telescopic or sliding joint connected with the feed tube, and a drip trough into which the lower end of the screen projects.

9. The combination of a window sash, a screen of reticulated absorbent material secured thereto, means for supplying an evaporating fluid to the screen, a drip trough into which the lower end of the screen projects, a spring roller to which the lower end of the screen is attached, and the spring pawl pivoted to the roller and engaging the hub thereof to prevent the spring from unwinding when the roller is removed from the trough, as set forth.

488,799. PHOTOGRAPHIC CAMERA. WILLIAM SANDERS, Liverpool, England. Filed Mar. 9, 1891. Serial No. 384,382. (No model.)



Claim.—1. In a photographic camera, the combination of a film take-up or winding roll, a measuring roll rotated by the movement of the film and having a cam shoulder, as that of the slot e^3, a wheel G′ rotating in unison with the winding and measuring rolls, a self-acting locking device to engage both the measuring roll, and the wheel G′, and thus lock the winding and measuring rolls against rotation, at predetermined intervals of rotation of the measuring roll, and to be disengaged by the said cam-shoulder, and a device applied to the measuring roll to turn the same so as to operate the said releasing cam-shoulder.

2. In a photographic camera, the combination of a film take-up or winding roll, a measuring roll rotated by the movement of the film

having a slot e^3, a toothed wheel G′ geared to the winding roll, and a spring-actuated locking-bar carrying teeth i i' to engage simultaneously the slot e^3 and the teeth of the wheel G′ so as to lock the winding the same, then spraying the same with a liquor containing the aromatic essences of coffee and sugar, and further heating the same until the shell or husk of the malt becomes covered with a saccha-

each other, an angular truss corner piece having its web conforming *Claim.*—1. The combination, with the points, and the notched

having a slot d^3, a toothed wheel G' geared to the winding roll, and a spring-actuated locking-bar carrying teeth i i' to engage simultaneously the slot d^3 and the teeth of the wheel G' so as to lock the winding and measuring rolls against rotation in both directions.

3. In a photographic camera, the combination of a film take-up or winding roll, a measuring roll rotated by the movement of the film having a slot d^3, toothed gear wheels G G' connected with the winding roll to revolve the same, and a spring-actuated locking bar to engage simultaneously the slot d^3 and the gear teeth of one of the wheels G G' to lock the winding and measuring rolls against rotation.

4. In a photographic camera, the combination of a frame D', a film take-up or winding roll E^4, a roll E^2 rotated by the movement of the film having a cam-shoulder, a wheel G' connected and rotating in unison with the rolls E^4 and E^2, a self-acting locking device to engage both the roll E^2 and the wheel G' and lock the rolls E^4 and E^2 against rotation, and to be disengaged by the said cam-shoulder, and a starting device, to turn the roll E^2 and operate said releasing cam-shoulder, comprising a projection J on the roll E^2, and a spindle J' on the frame D' having an arm to engage or be disengaged from the projection J at will.

5. In a photographic camera, the combination of a frame D', a roll E^2 rotated by the movement of the film having a cam-shoulder, a locking device to engage the roll E^2 and be disengaged therefrom by said cam-shoulder, a starting device, to turn the roll E^2 and operate said releasing cam-shoulder, comprising an inclined plane J on the roll E^2 and a spindle capable of being rotated on the frame D' by a key and having an arm to engage the inclined plane J.

488,800. LUBRICATING JOURNAL-BOX. ROBERT D. O. SMITH, Mishawaka, Ind. Filed Apr. 16, 1892. Serial No. 429,262. (No model.)

Claim.—1. A lubricating journal box provided with an open recess or pocket for the lubricant and adapted to receive a lubricating device, and a separate cover plate to partly close the same.

2. A journal box provided with an open recess or pocket d cast integral with said box and adapted to receive the lubricant and a lubricating device, and a separate cover plate f adapted to rest in said box and partly close and cover said pocket, substantially as set forth.

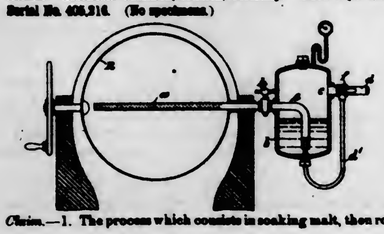
3. A lubricating journal-box half C provided with open pockets d near each end for the lubricant and adapted to receive a lubricating device, and plates f adapted to be supported within said box and partly cover and close said pockets, as set forth.

4. A lubricating journal box half C provided with an open pocket d for the lubricant and adapted to receive a lubricating chain or ring, a separate plate f to partly cover and close said pocket, and interior supports g to sustain said plate upon the bottom of the pocket.

5. A lubricating journal box provided with a drip groove h within the box and close to each end, open pockets d for the lubricant and adapted to receive a lubricating ring or chain, drip channels i, and separate plates f having extensions to partly cover said pockets and channels, as set forth.

6. A lubricating journal box provided with an open recess or pocket for lubricant, a separate cover plate fitting in the recess and leaving a space for the oiler ring or chain, and an anti-friction lining, such as Babbitt metal extending over and supported by said plate, substantially as set forth.

488,801. COFFEE SUBSTITUTE AND METHOD OF PREPARING SAME. HERMANN THELEN, Munich, Germany. Filed Sept. 9, 1891. Serial No. 405,216. (No specimens.)



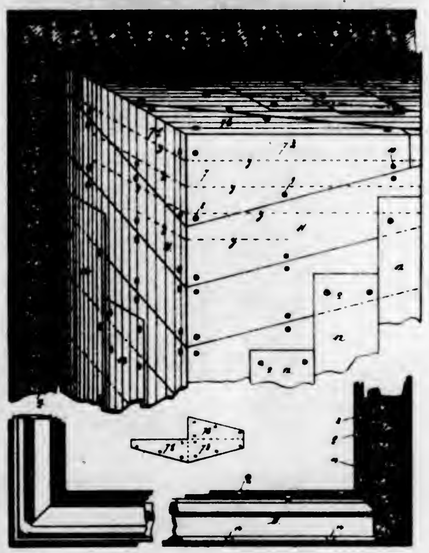
Claim.—1. The process which consists in soaking malt, then roasting the same, then spraying the same with a liquor containing the aromatic essences of coffee and sugar, and further heating the same until the shell or husk of the malt becomes covered with a saccharine coating and finally covering the grains with a film of fat and rapidly cooling the same, substantially as set forth.

2. A new article of food, which consists in grains of malt impregnated with the aromatic essences of coffee to the exclusion of the caffeine and covered with a saccharine coating, substantially as set forth.

488,802. HAIR-COMPRESSING CAP. ADELAIDE S. TURNER, London, England. Filed Oct. 6, 1891. Serial No. 407,853. (No model.) Patented in England Jan. 8, 1891, No. 367.

Claim.—An article of manufacture, to wit, a cap made of a number of strips of tape with elastic webbing let in, one of said strips being made to fit snugly over the forehead, another of said strips being made to fit snugly over the lower portion of the back of the head, and a net work of strips of tape between the two said strips, the said cap terminating in a point just below and in front of the ears, with strings passing beneath the chin for holding said cap in place, substantially as and for the purposes described.

488,803. SAFE. CHARLES O. YALE, New York, N. Y. Filed Mar. 26, 1892. Serial No. 426,264. (No model.)

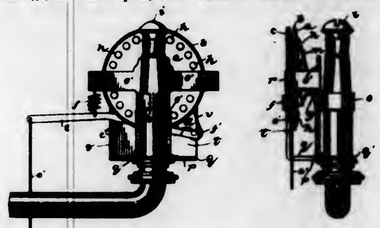


Claim.—1. The combination in a safe vault having the walls thereof formed of beat headed interlocking T-shaped rails, of the corner rails thereof having the inwardly projecting heads contiguous to and adapted to engage each other, an outside corner or truss piece having projecting webs adapted to engage and be secured to the web of the rails, a bracing piece between the angle of the corner piece and the heads of the corner rails and inside corner plate having three integral portions adapted to engage two or more of the rails of the three adjacent sides to the corner and forming a portion of the inside casing and the outside casing, the outside and inside casings being secured to the compiled rails by screws introduced from the inside through the web of the rails and through the casings, substantially as set forth.

2. The combination in a safe vault formed of interlocking metal rails having the heads of the rails adjacent to the corners engaging each other, an angular truss corner piece having its webs conforming in outline to and engaging on the inner surface of the webs of the corner rails and secured thereto and a bracing piece introduced between the engaging heads of the corner rails and the truss corner piece, substantially as set forth.

3. The combination in a safe vault having its walls composed of compiled rails of an inside corner piece formed of one sheet of metal and having three tapering portions bent to engage the three adjacent walls of the corners and secured to the rails and forming a portion of the inside casing composed of plate or sheets fitting onto the tapering wings or portions of the corner piece and secured to the compiled rails, substantially as set forth.

488,804. GAS-LIGHTING ATTACHMENT. THOMAS R. BISHOP, Chicago, Ill. Filed Apr. 5, 1892. Serial No. 427,894. (No model.)

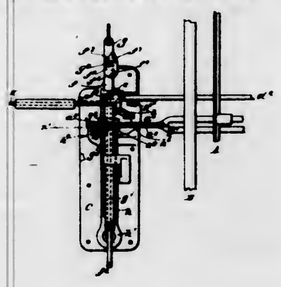


Claim.—1. In a gas lighter the combination with the disk a bearing fulminating caps, of the metal wheel b upon which said disk is mounted, the ratchet wheel c the dog d engaging therewith, the lever e upon which said dog is pivoted, the spring g adapted to bear upon the surface of disk a and to make frictional contact with the fulminating caps and means for attaching said disk in proximity to a gas tip, substantially as described.

2. In a gas lighter the combination with the disk bearing fulminating caps, of a ratchet wheel and pawl adapted to give said disk a step by step rotary movement, a spring bearing upon the surface of said disk and adapted to make contact with said fulminating caps as said disk is rotated and a standard bearing collars adapted to fit the standard of a gas tip, said standard being hinged to a plate supporting said ratchet wheel and disk and adapted to be detachably held parallel with said plate whereby the disk may be held in proximity to the gas tip and may be swung away therefrom to renew said disk, substantially as described.

3. In a gas lighter the combination with the disk bearing fulminating caps of a ratchet wheel and pawl adapted to give said disk a step by step rotary movement, a spring bearing upon the surface of said disk and adapted to make contact with said fulminating caps as said disk is rotated and a standard bearing said spring and collars adapted to fit the standard of the gas tip, said standard being provided with a hinge by which it is attached to a plate t, upon which said ratchet wheel and disk are mounted, said standard being also provided with the grooved arms r r adapted to engage with the projections s s upon said plate t, whereby the disk may be held in proximity to the gas tip and may be swung away therefrom when it is desired to renew said disk, substantially as described.

488,805. SIGNAL AND SWITCH INTERLOCKING APPARATUS. SAMUEL T. DUTTON, Worcester, England. Filed Oct. 12, 1892. Serial No. 448,982. (No model.) Patented in Belgium Nov. 30, 1887, No. 70,745; in England Sept. 20, 1888, No. 13,570; in India May 31, 1889, No. 175; in France July 19, 1889, No. 196,683; in New South Wales Aug. 14, 1889, No. 1,837, and in Victoria Sept. 5, 1889, No. 7,099.

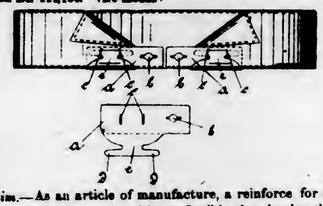


Claim.—1. The combination, with the points, and the notched slides a^3 and a^4, of the pivoted carrier h, the blade g supported by the said carrier and provided with the notched rib g' engaging with the said slides, and the bar f, for working the signal, detachably connected to the said blade g, substantially as and for the purpose set forth.

2. The combination, with the points, and the notched slides a^3 and a^4, of the pivoted carrier h, the blade g supported by the said carrier and provided with the notched rib g' engaging with the said slides, the blade f for working the signal, and the spring-actuated gab f^4 detachably connected to a pin on the blade g, substantially as and for the purpose set forth.

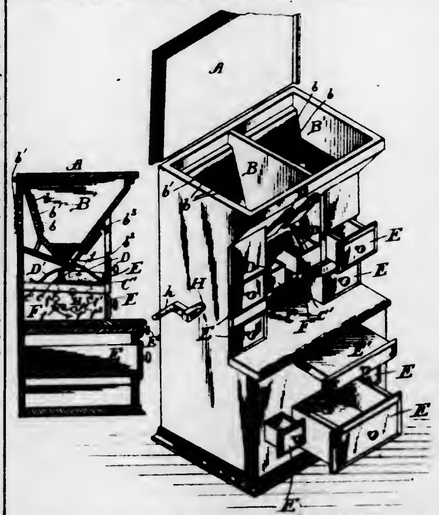
3. The combination, with the points, and the notched slides a^3 and a^4, of the pivoted carrier h, the blade g supported by the said carrier and provided with the notched rib g' engaging with the said slides, the bar f, for working the signal, operatively connected with the blade g, and the pivoted locking plate e connected with the points and adapted to lock the bar f, substantially as and for the purpose set forth.

488,806. BUTTONHOLE-REINFORCE FOR COLLARS. FRIEDRICH ROSENHARD, Hofheim-on-Taunus, Germany. Filed Aug. 26, 1892. Serial No. 444,186. (No model.)



Claim.—As an article of manufacture, a reinforce for the front button holes of collars, comprising a flexible plate having the rectangular portion a provided near one end with a hole b adapted to correspond with the button hole of the collar, and having two slots c, and the extension e provided with a pair of lugs d adapted to pass through the collar and engage in the corresponding slots c, when the said reinforce is applied to a collar, substantially as described.

488,807. KITCHEN-CABINET. CHARLES H. HAGLER, Hackett Ark. Filed Aug. 4, 1892. Serial No. 442,197. (No model.)



Claim.—In a kitchen cabinet of the character described, the combination with a plurality of bins each having an aperture in the bottom thereof with means for closing the same, of a removable sifter beneath each bin, the said sifter having a stud protruding from the side thereof; a cogged wheel having teeth sloping at one side and hooked at the other engaging said stud, by means of which cogged wheel the sifter may be reciprocated when turned in one direction, and be forced out for cleaning when turned in the opposite direction; a

spring engaging the forward end of said sifter, and a bent spring bearing down on the rear end thereof, the said springs being secured to the said bin and operating conjointly with the said cogged wheel

cement, interposing a foundation of open-meshed wire-fabric between them, placing the compound veneer thus formed between elastic coverings and subjecting the whole to pressure substantially as set forth.

488,811. TROLLEY-WHEEL. LOUIS J. HIRT, Arlington, Mass. Filed July 26, 1892. Serial No. 441,548. (No model.)

each other with said vessel between the shelves, substantially as set forth.

3. In a feed water purifier, the combination with the vessel A

spring engaging the forward end of said sifter, and a bent spring bearing down on the rear end thereof, the said springs being secured to the said bin and operating conjointly with the said cogged wheel to impart a reciprocation motion to said sifter, substantially as and for the purposes described

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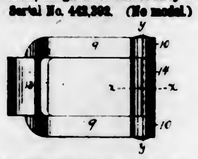
488,808. DRIVE-CHAIN. WILLIAM H. HART and CHARLES R. HART, New Britain, Conn., assignors to the Stanley Works, same place. Filed Aug. 3, 1892. Serial No. 442,302. (No model.)



Claim.—The herein described drive chain link consisting of a hook like knuckle portion and integral flattened side bars with the ends thereof which are farthest from said hook like knuckle portion rolled or coiled into eyes 10 the exterior diameter of which eyes correspond with the inner diameter of said hook like knuckle portion, and a separately formed pintle piece the end portions of which are fitted to and secured within said eyes while the portion of said pintle which lies between them is of a diameter equal to the exterior diameter of said eyes, substantially as described and for the purpose specified.

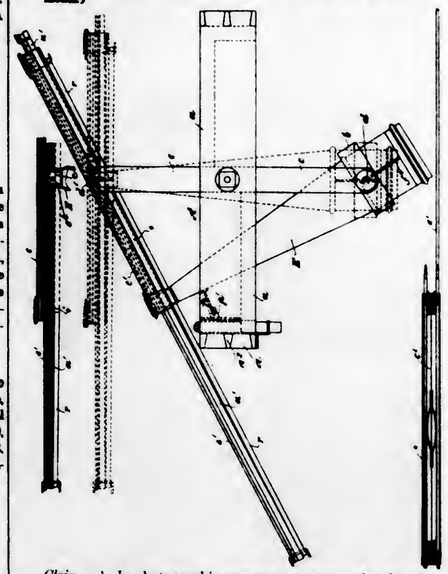
488,809. SUBSTITUTE FOR WOOD AND LEATHER. CONRAD HERPS, Frankfort-on-the-Main, assignor to Vereinigte Holzindust.-in, Fabrik Frankenthal, Frankenthal, Germany. Filed Jan. 16, 1892. Serial No. 418,167. (No specimens.) Patented in Germany Aug. 18, 1889, No. 51,711; in France Sept. 16, 1889, No. 200,805; in Belgium Nov. 23, 1889, No. 88,556; in England Nov. 23, 1889, No. 18,730, and in Austria-Hungary Mar. 15, 1890, No. 51,699 and No. 11,353.

Claim.—1. A compound wood veneer consisting of two sheets or veneers of wood, in combination with an interposed foundation of open-meshed wire-fabric, the inner surfaces of the veneers of wood bending down or dipping into the interstices of the wire fabric, so as to touch each other and be cemented together, substantially as set forth.

2. A compound wood veneer consisting of two sheets or veneers of wood in combination with an interposed foundation of open-meshed wire-fabric, the inner surfaces of the veneers of wood bending down or dipping into the interstices of the wire-fabric, so as to touch each other and be cemented together, and a third veneer as *c*, cemented to the outer veneer to cover the marks of the interposed fabric produced on the outer face of the veneer, substantially as set forth.

3. The method of producing compound wood-veneers, which consists in coating the inner surfaces of two veneers with a suitable cement, interposing a foundation of open-meshed wire-fabric between them, placing the compound veneer thus formed between elastic coverings and subjecting the whole to pressure substantially as set forth.

488,810. PHOTOGRAPHIC CAMERA. SALOMON HIRSCHFELDER, Munich, Germany. Filed Mar. 18, 1892. Serial No. 425,404. (No model.)



Claim.—1. In photographic apparatus a support for the plate-holder pivoted on a suitable frame, a plate-holder mounted thereon and provided with a slide having a slot therein in combination with a camera pivoted at its forward end and provided at its rear end with an exposure-slit, a cover as *a'*, connected to the plate-holder slide and to the frame of the camera and having a slot registering with the exposure slot of the camera and the slot in the plate-holder, and a spring or elastic band, as *r*, connecting the plate-holder support with the cover, *a*, substantially as set forth.

2. In a photographic apparatus a pivotally mounted camera provided with a rear exposure slit, in combination with a sliding plate carrier adapted to slide across the exposure-slit and means for causing the camera to move in and out simultaneously with its pivotal movement, substantially as set forth.

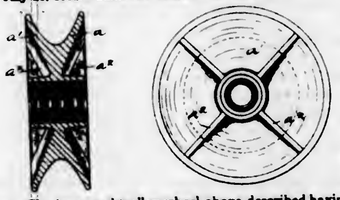
3. In a photographic apparatus a camera supported at its forward end in a pivotal frame and provided with a rear exposure slit, in combination with a plate holder adapted to slide across the exposure slit and means for causing the camera to move in and out simultaneously with its pivotal movement, substantially as set forth.

4. In a photographing apparatus, a pivotal frame mounted in a suitable camera support and provided with a grooved friction roller or rollers, in combination with a camera having an exposure-slit, at its rear and provided with a longitudinal guide-strip or strips engaging the grooved friction-rollers, and a plate-holder pivoted in the camera-support and connected with the rear end of the camera, substantially as set forth.

5. In a photographing apparatus, a pivotally mounted camera having an exposure-slit at its rear and means for causing the camera to slide in and out simultaneously with its pivotal movement in combination with a plate-holder mounted on a pivotal frame and provided with a slotted slide and a sliding cover, as *a'*, provided with a slot registering with the exposure-slit of the camera and the slot in the slide, substantially as set forth.

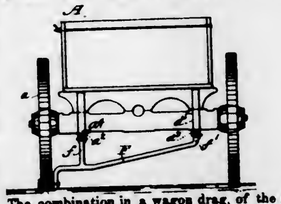
6. In a photographing apparatus, a pivotal frame mounted in a suitable camera-support and provided with a grooved friction roller or rollers, in combination with a camera having an exposure-slit at its rear and provided with a longitudinal guide-strip or strips engaging the grooved friction roller or rollers, a plate-holder mounted on a pivotal frame and provided with a slotted slide longer than the plate-holder, and a sliding cover, as *a'*, having a slot registering with the exposure-slit of the camera and the slot in the slide, substantially as set forth.

488,811. TROLLEY-WHEEL. LOUIS J. HIRT, Arlington, Mass. Filed July 26, 1892. Serial No. 441,548. (No model.)



Claim.—The improved trolley wheel above described having the walls *a' a'* of the groove made thin near the bottom of the groove, and reinforced by the ribs a^3, whereby side wear will become visible from the outside of the wheel, while the wheel is still effective; all substantially as and for the purpose specified.

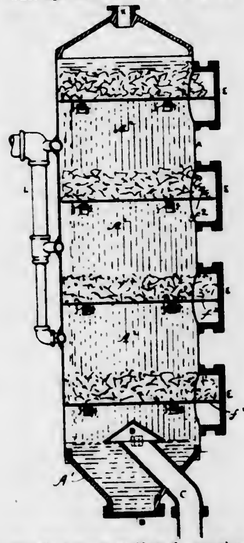
488,812. WAGON-DRAG. GUSTAVE A. HOBBS, St. Louis, Mo. Filed June 13, 1892. Serial No. 436,579. (No model.)



Claim.—1. The combination in a wagon drag, of the shoe, the pivoted arm, and the calk, substantially as described.

2. In a wagon drag, the combination of the shoe and a calk, said calk being in the form of a band adapted to be slipped onto and off from the shoe, substantially as described.

488,818. FEED-WATER PURIFIER. WILLIAM B. HOSFORD, Mishawaka, Ind. Filed Apr. 15, 1892. Serial No. 429,236. (No model.)

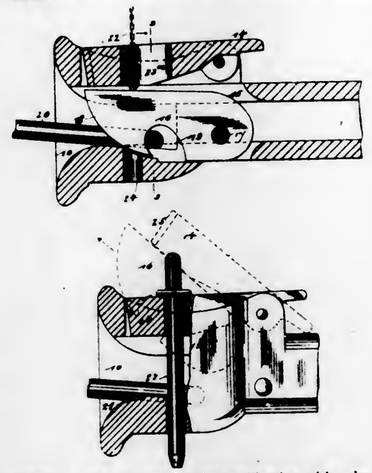


Claim.—1. In a feed water purifier, the vessel or shell provided with hand holes, combined with divided shelves situated in proximity to said hand holes and having along their meeting edges vertical flanges, and supports for the shelves, substantially as set forth.

2. In a feed water purifier the vessel or shell provided with hand-holes E, extending out laterally from said vessel, divided shelves A supported within said vessel and having extensions f^3 projecting outward into said hand-holes, and dividing said vessel into separate compartments, and live steam pipes L communicating independently of each other with said vessel between the shelves, substantially as set forth.

3. In a feed water purifier, the combination with the vessel A having lugs *f*, of the divided shelves A having along their meeting edges flanges *f'*, and supporting bars J mounted within the vessel and having depressions or downward beads *j'* to receive the said flanges of the shelves, the vessel being provided with hand holes E opposite the shelves, substantially as set forth.

488,814. CAR-COUPLING. JOSEPH R. HULETT and LOUIS J. BEERS, Middletown, N. Y. Filed Apr. 12, 1892. Serial No. 428,792. (No model.)



Claim.—1. In a car coupler, the combination, with a drawhead, of a hook shaped coupling pin pivoted therein, and a weight pivoted above the coupling pin and normally maintaining the said pin in a coupling position, as and for the purpose specified.

2. In a car coupler, the combination, with a drawhead, of a coupling pin of the hook type removably pivoted within the interior chamber of the drawhead, the drawhead being provided with a recess in its upper surface leading into said chamber, and a weight fulcrumed within the recess of the drawhead, the said weight being capable of elevation and normally acting to maintain the coupling pin in a coupling position, and means, substantially as shown and described for elevating the coupling pin, as and for the purpose set forth.

3. In a car coupler, the combination, with the drawhead provided with a recess in the bottom wall of its interior chamber, extending through said wall and provided with a recess in its top leading into the said interior chamber, of a coupling pin of the hook type pivoted within the interior chamber of the drawhead, a weight pivoted in the upper recess of the drawhead and provided with an opening therein, and a chain or link leading upward from the coupling pin through the opening in the weight, as and for the purpose set forth.

4. In a car-coupler, the combination, with a drawhead provided with an interior chamber and the usual link opening, an aperture formed in the lower wall of the interior chamber and extending through said wall, and also provided with a recess in its upper face, said recess having a concavity produced in one wall, of a coupling pin of the hook type pivoted within the chamber of the drawhead, a weight fulcrumed within the upper recess of the drawhead, having a lip entering the concavity of the end wall of said recess and provided with an opening extending through and practically of the key-hole type, the larger portion of this opening being in vertical alignment with the aperture in the bottom of the drawhead, and means, substantially as shown and described, for elevating the coupling pin, as and for the purpose set forth.

488,815. ATTACHMENT FOR LATHES. GIDEON E. IRACH and JOHN H. SCHULER, Brooklyn, N. Y. Filed Jan. 11, 1892. Serial No. 417,733. (No model.)

Claim.—1. The combination with a lathe-bed, and a carriage mounted for movement thereon, of a threaded feed-shaft connected with the carriage, a pair of gears fixed upon the shaft, a second shaft located below the feed-shaft, loose gears mounted thereon, one of which is engaged by the corresponding gear of the feed-shaft, a gear

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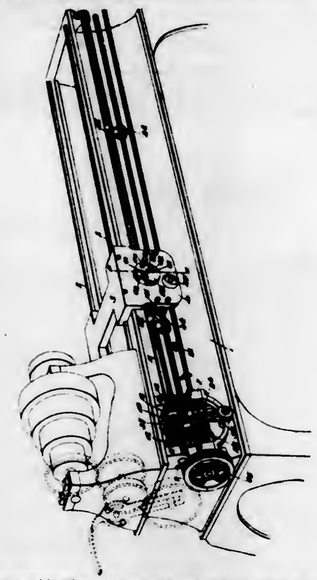
located between and connecting the two remaining gears of the two shafts, a clutch splined upon the second shaft between its gears and adapted to engage with either, means for operating the said second shaft and means for shifting the clutch from one loose gear to the

shaft and adapted to engage either of its gears, a second lever mounted upon the bearing-pin of the shifting-lever and having a block formed on its front face, taking into an oblong eye of greater length formed in the shifting-lever, adjusting-screws located at the opposite

488,818. LEAD-PENCIL. ADOLF KAISER, New York, N. Y., assignor to the Eagle Pencil Company, same place. Filed Nov. 1, 1892. Serial No. 450,963. (No model.)

with its air passage, and each connected to a valve to a reed cell, a valve on the upper end of said vertical air passage, a rod or wire to said passage extending from said upper valve and resting on the valve

located between and connecting the two remaining gears of the two shafts, a clutch splined upon the second shaft between its gears and adapted to engage with either, means for operating the said second shaft and means for shifting the clutch from one loose gear to the other, substantially as specified.



2. The combination with a lathe-bed and a carriage mounted for movement thereon, of a threaded feed-shaft connected with the carriage, a pair of gears fixed upon the shaft, a second shaft located below the feed-shaft, loose gears mounted thereon, one of which is engaged by the corresponding gear of the feed-shaft, a gear located between and connecting the two remaining gears of the two shafts, a clutch splined upon the second shaft between its gears and adapted to engage with either, means for operating the said second shaft, a pivoted shifting lever connected at one side of its fulcrum with the clutch, and devices between the shifting-lever and the carriage whereby the former is operated by the latter, substantially as specified.

3. The combination with a lathe-bed and a carriage mounted for movement thereon, of a threaded feed-shaft connected with the carriage, a pair of gears fixed upon the shaft, a second shaft located below the feed-shaft, loose gears mounted thereon, one of which is engaged by the corresponding gear of the feed-shaft, a gear located between and connecting the two remaining gears of the two shafts, a clutch splined upon the second shaft between its gears and adapted to engage with either, means for operating the said second shaft, and devices for shifting the lever, said devices being operated by the carriage by being arranged in the path of the same, substantially as specified.

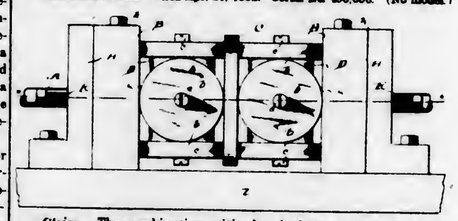
4. The combination with the lathe-bed, and the carriage mounted for reciprocation thereon, of an upper and lower shaft, journaled in the bearings in front of or back of the bed, the upper shaft being threaded to constitute a feed-shaft, a pair of gears spaced apart and mounted fixedly upon the feed-shaft, a pair of loose gears mounted on the lower shaft, power-applying devices mounted on said shaft, a sliding clutch adapted to engage with either of said loose gears, splined upon said lower shaft, a shifting-lever pivoted below and between the pairs of gears, and having an eye engaging a block on the clutch, a spring-actuated plunger located above the clutch and provided with an arrow-shaped head against which the upper end of the shifting-lever rides a shifting-rod connected with the shifting-lever and actuated by the movements of the carriage, substantially as specified.

5. The combination with the lathe-bed, and the carriage mounted for reciprocation thereon, of an upper and lower shaft, journaled in the bearings in front of or back of the bed, the upper shaft being threaded to constitute a feed-shaft, a pair of gears spaced apart and mounted fixedly upon the feed-shaft, a pair of loose gears mounted on the lower shaft, power applying-devices mounted on said shaft, an intermediate gear connecting two of the gears and the upper and lower shafts, the remaining gears intermeshing, the shifting-lever pivoted below and between the gears of the lower shaft and terminating at its upper end in a friction-roller, a clutch splined upon the lower shaft and adapted to engage either of its gears, a second lever mounted upon the bearing-pin of the shifting-lever and having a block formed on its front face, taking into an oblong eye of greater length formed in the shifting-lever, adjusting-screws located at the opposite ends of the eye to limit the movement of the block, a pin extending from the clutch through the block, a shifting-rod connected loosely with the shifting-lever and supported in bearings located upon the apron, clamps provided with set-screws located upon the shifting-rod at opposite sides of the apron and adapted to serve as stops, the casing 14 located in the front wall of the bed above the upper shaft, the headed plunger mounted for reciprocation in the casing and having its rear reduced end extended through the casing and provided with an adjusting-nut, a coiled spring encircling the rear reduced end of the plunger, and interposed between the head of the plunger and the end of the casing, and the arrow-shaped cam located in the head of the plunger and having its opposite inclined edges forming tracks for the friction-roller located at the upper end of the shifting-lever, substantially as specified.

6. The combination with the lathe-bed having the rack-teeth 5 and the carriage having the depending apron, of the shaft 21 having the worm gear 22 adapted to slide thereon, the shaft 46 mounted in bearings 47 and crossing the worm, the hollow shaft 49 mounted on the shaft 46 and having the gear 54, the handle on the outer end of the shaft 46, the recessed gear on the inner end of the shaft 49, the friction-clutch 53 located in the recessed gear, the spreader 51 located on the inner end of the shaft 49, the upper shaft 55 journaled in the apron, carrying the main gear 56 and the hub 57, toothed to engage with the gear 5 of the bed, substantially as specified.

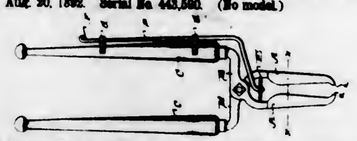
7. The combination with a lathe-bed, reciprocating carriage, and feed-screw, of a lower shaft carrying loose gears, fixed gears upon the feed-screw, two of said gears meshing directly and the other two through an intermediate gear, means to rotate the lower shaft, a clutch arranged upon the lower shaft to engage either loose gear, a shifting lever transversely slotted to receive a block upon the clutch, whereby the lever is allowed a limited play independent of the clutch, and a rod connected to the lever and carrying stops arranged in the path of the carriage, substantially as specified.

488,816. ANTIFRICTION THRUST-BEARING. SIMON INGERSOLL, Glenbrook, Conn. Filed Apr. 21, 1892. Serial No. 430,058. (No model.)



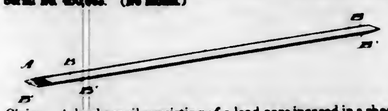
Claim.—The combination with the shaft, its adjustable slotted bearing plates B, B, and the bearing disk C fixed on said shaft, intermediate of the said bearing plates, of the disks D, D, on said shaft, one on each side of the disk C, the anti-friction rollers carried on the periphery of said disks, the end blocks H, H, against said bearing plates, said bearing plates being secured to the base by bolts passing through the slots therein, and into the base, and screws K, K, passing through said end blocks, and into engagement with said bearing plates, substantially as specified.

488,817. LAWN-WEEDER. JAMES E. JOHNS, Kankakee, Ill. Filed Aug. 20, 1892. Serial No. 443,560. (No model.)



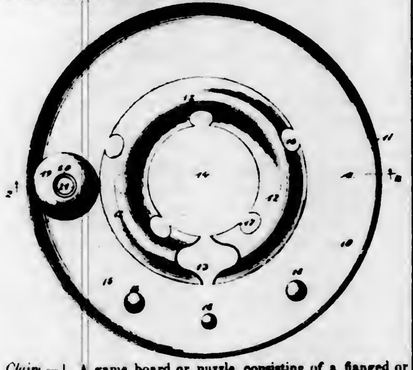
Claim.—The herein described weeding implement, comprising the steel blades A, A, having cutting edges, and concaved on their meeting faces, said blades terminating at their lower ends in inwardly-turned points or nippers, and at their upper ends having tangs or shanks pivoted one to the other, said tangs or shanks above said pivot running horizontally and laterally, and having their ends turned upwardly to receive the parallel handles C, C, and the cleaner comprising the rod or bar running along one of said handles in guides, and carrying at its lower end a disk E, arranged to play up and down between the concave faces of said blades, substantially as specified.

488,818. LEAD-PENCIL. ABSENT KAMEN, New York, N. Y., assignor to the Eagle Pencil Company, same place. Filed Nov. 1, 1892. Serial No. 450,663. (No model.)



Claim.—A lead pencil consisting of a lead core incased in a sheath of rhombic cross section—the plane of juncture of the two strips which make up the sheath passing through opposite parallel sides of the rhomb as shown and described.

488,819. PUZZLE. HENRY F. KELL, New York, N. Y. Filed May 3, 1892. Serial No. 431,630. (No model.)



Claim.—1. A game board or puzzle, consisting of a flanged or dished board or plate, a hollow ball capable of traveling over the surface of the board and provided with several apertures, large and small, and balls or marbles of smaller size than the hollow ball and also capable of rolling around the board, the largest of the smaller balls being capable of passing through the largest opening in the hollow ball, and the smallest of the smaller balls being capable of passing through the smallest opening in the hollow ball, substantially as shown and described.

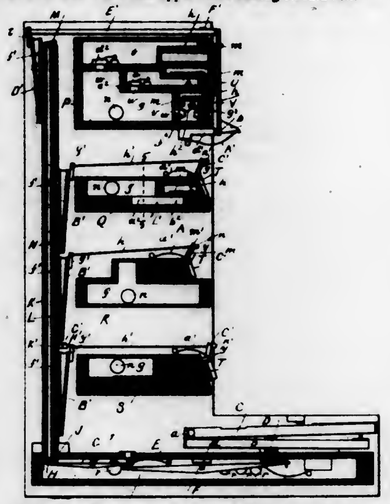
2. A puzzle consisting of a flanged or dished board or plate provided with a partition located between the center and the periphery of the board or plate, the partition being provided with a pass or passage, a large ball capable of rolling around the board or plate, the said ball being hollow and provided with an opening therein, and smaller balls or marbles also capable of rolling around the board and capable of passing through the said partition, the smaller balls or marbles being capable of passing through the opening of the large hollow ball into its interior, as and for the purpose set forth.

3. A puzzle consisting of a flanged or dished board or plate provided with a tunnel-like partition placed between the center of the board or plate and its periphery, the said partition being provided with a passage-way extending through it, and apertures arranged in its sides leading into the tunnel of the partition, a series of balls or marbles capable of rolling upon the board and of passing into the tunnel of the partition and in or out through the tunnel apertures, and a larger ball provided with an opening or openings, the larger opening being of a diameter capable of admitting the largest of the smaller balls or marbles, and the smaller opening capable of permitting the smallest of the smaller balls or marbles to pass through it, as and for the purpose set forth.

488,820. REED-ORGAN. GEORGE B. KELLY, Boston, Mass. Filed Sept. 24, 1892. Serial No. 446,844. (No model.)

Claim.—1. In a reed organ a wind chest, a series of reed boards arranged in a vertical plane one above another, each having a reed chamber, a reed cell and a valve to such cell, a standard or upright having a vertical air passage, communicating with the wind chest pneumatic bellows secured to said standard and having communication with its air passage, and each connected to a valve to a reed cell.

2. In a reed organ a wind chest, a series of reed boards arranged in a vertical plane one above another, each having a reed chamber, a reed cell and a valve to such cell, a standard or upright having a vertical air passage communicating with the wind chest, a valve to said vertical air passage in the wind chest operated by the key, pneumatic bellows secured to said standard and having communication with its air passage, and each connected to a valve to a reed cell, a valve on the upper end of said vertical air passage, a rod or wire to said passage extending from said upper valve and resting on the valve in the wind chest, and said upper valve resting on said rod.



3. In a reed organ a pneumatic bellows connected to a reed valve a projection or arm on the moving board of said pneumatic bellows, a bar between same arm and a suitable stop, and connected to a support by links, in such manner that as the bar is moved on its links it will abut against said bellows arm.

4. A valve to a reed cell, pivoted to a suitable support, a projecting arm near said pivot, and a spring secured to a suitable support and adapted to bear against said arm at the side and on its end when the valve is swung outward.

5. In a reed organ, a wind chest, a standard or upright, a vertical air passage in said standard, a pneumatic bellows communicating with said vertical air passage and a reed valve connected to said bellows.

6. In a reed organ, a wind chest, a standard or upright a vertical air passage in said standard, a series of pneumatic bellows, in the same vertical plane communicating with the vertical air passage and a reed valve connected to each pneumatic bellows.

7. In a reed organ, a reed board, an air chamber in said reed board a reed cell, a reed therein and an air passage communicating by one end with the reed cell and extending back and by its other end with the air chamber, said passage being of narrow width or substantially of the width of the reed tongue.

8. In a reed organ, in combination a reed chamber, an opening thereto from an air chamber, a valve to such opening, an opening to the outside of said reed chamber, a valve to such opening, and an arm to such latter valve, extending into position to be operated by the former valve.

488,821. CLUTCH. ABRAHAM KIPP, Jr., Sing Sing, N. Y. Filed Feb. 19, 1891. Serial No. 382,095. (No model.)

Claim.—In a friction clutch, the combination of an arm having a rectangular recess forming a rear wall 6 and a lower inclined bearing wall 7, the latter being provided with a series of gearing recesses, an engaging shoe disposed opposite the lower wall 7 of the recess and provided with gearing recesses, and a roller interposed between the wall 7 and the shoe and provided with cog teeth disposed on opposite sides of it and meshing with the bearing recesses, whereby the parts are maintained in proper relation, substantially as described.

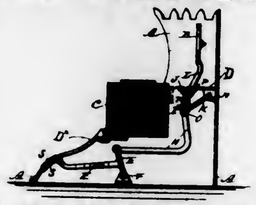
488,822. INKSTAND. CHARLES G. KNOTT, Hamilton, Canada. Filed Sept. 21, 1891. Serial No. 406,206. (No model.)

488,824.

responding to the shapes of the apertures in the curvilinear bar of the quadrant frame, and the colors around or about said apertures, adapt-

and a chute arranged adjacent thereto, of a vertical magazine adapted to drop a shell before each operation of the

488,822. INKSTAND. CHARLES G. KNOTT, Hamilton, Canada. Filed Sept. 21, 1891. Serial No. 406,206. (No model.)



Claim.—1. An ink stand having upper and lower parallel shafts P and F, a top plate or frame D, a series of button levers E hinged to the lower shaft, a bottle holding platform or support D^2 located between the top plate or frame and the button levers for holding the ink bottles exposed to view at their front sides, the hinged bottle lids B, and connections between the button levers and the lids, substantially as described.

2. An ink stand having upper and lower parallel shafts P and F, a top plate or frame D, a series of button levers E hinged to the lower shaft, a bottle holding platform or support D^2 located between the top plate or frame and the button levers for holding the ink bottles exposed to view at their front sides, bottle lids B having shanks I hinged to the upper shaft and provided with tail-pieces I', a slack cord K loosely engaging the said tail-pieces, and elbow levers H pivoted to the tail-pieces of the lid shanks and to the button levers, substantially as described.

3. An ink stand having upper and lower parallel shafts P and F, a series of button levers E hinged to the lower shaft, a bottle holding platform or support D^2, the bottle lids B having shanks I hinged intermediate their ends to the upper shaft to provide each shank with a tail-piece I' which is constructed with an eye O, a slack cord K loosely engaging the eyes of the tail-pieces, and elbow levers H pivoted at one end to the tail-pieces of the lid shanks and at the opposite end to the button levers, substantially as described.

488,823. FENCE. ALFRED P. LE GROS, Louisville, Ky. Filed Mar. 1, 1892. Serial No. 423,390. (No model.)

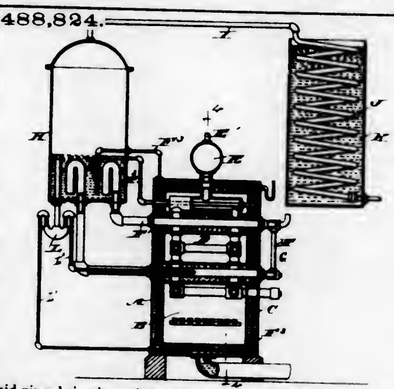
Claim.—The combination, with the body parts of the adjacent sections of an iron fence, of the upper loop or strap-like connections freely linking said body parts together, the lower picket-like legs or members at the one end of each section having laterally-projecting eyes or loops, and the pintle-like projections freely entering down within or through said laterally projecting loops, substantially as shown and described.

488,824. GENERATOR. WILLIAM B. MACDONALD, Allegheny, Pa. Filed Dec. 21, 1891. Serial No. 415,774. (No model.)

Claim.—1. An apparatus of the class described, comprising a hot water heater, a steam generator located therein and heated from the same, and a gas generator arranged in the said hot water heater and deriving its heat from the same, substantially as shown and described.

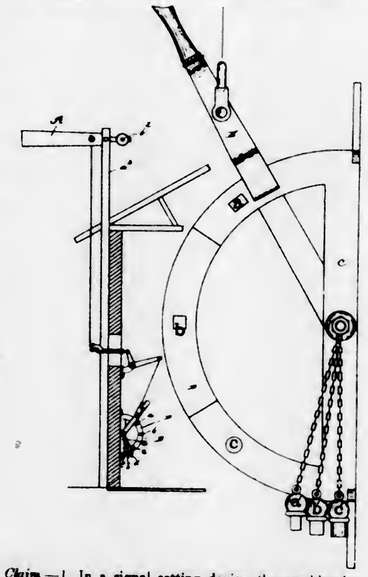
2. In an apparatus of the class described, the combination with a heater having a fire box and water tubes and water compartments, of a steam generator arranged in the said water heater and heated from the said fire box, and an ammonia gas generator extending with its pipes into and through the said water tube compartments and steam generator to derive the necessary heat for producing the gas, substantially as shown and described.

3. In an apparatus of the class described, the combination with a hot water heater, of an ammonia gas generator provided with pipes extending into the water contained in the said hot water heater, the



said pipes being heated thereby to generate gas for cooling purposes, substantially as shown and described.

488,825. DEVICE FOR SETTING SEMAPHORE-SIGNALS. BARNEY MARION, Vicksburg, Miss. Filed May 2, 1892. Serial No. 431,535. (No model.)



Claim.—1. In a signal setting device, the combination with a quadrant having apertures of different shapes at suitable intervals, of a lever pivotally connected to the quadrant, a counterbalanced semaphore arm connected with said lever, and a series of pins of a shape corresponding to the aperture in the quadrant and adapted to be placed therein to limit the movement of the lever, substantially as specified.

2. In a signal setting device, substantially as described, the combination with a quadrant frame having apertures of different shapes at intervals in the length of its curvilinear bar; of a lever pivotally connected to the said frame, and connected with and adapted to set a signal, and a series of pins of different shapes corresponding to the shapes of the apertures in the quadrant frame adapted to be placed in their respective apertures to limit the movement of the signal setting lever; substantially as and for the purpose set forth.

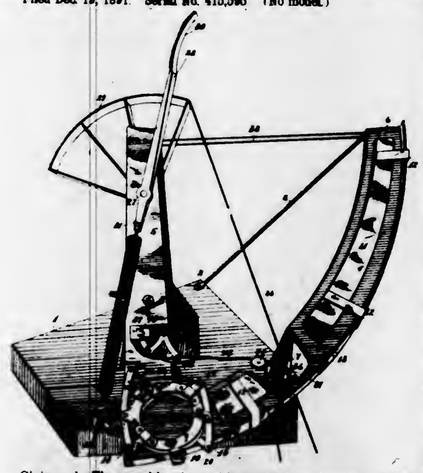
3. In a signal setting device, substantially as described, the combination with a quadrant frame having apertures of different shapes at intervals in the length of its curvilinear bar, and having the bar immediately around said apertures differently colored, of a lever pivotally connected to the said frame and connected with and adapted to set a signal, and a series of pins of different shapes and colors corresponding to the shapes of the apertures in the curvilinear bar of the quadrant frame, and the colors around or about said apertures, adapted to be placed in their respective apertures to limit the movement of the signal setting lever; substantially as specified.

488,826. SOUVENIR MEDALLION OR PLAQUE. SIMON MAY and LEHMAN M. ARON, Brooklyn, N. Y. Filed Oct. 18, 1892. Serial No. 449,302. (No model.)

Claim.—1. A medallion or plaque consisting of a transparent plate provided with a photograph or picture on the reverse side, layers of paint applied to different parts of the plate relative to the picture, and scales of pearl attached thereto, substantially as described.

2. In a medallion or plaque the combination with a transparent plate of a photograph or picture attached to the reverse side, layers of paint placed thereon, scales of pearl embedded in said layers of paint the same being provided with a suitable covering for protection.

488,827. SPORTING-TRAP. JACOB A. MELIUS, Lansing, Mich. Filed Dec. 19, 1891. Serial No. 415,595. (No model.)



Claim.—1. The combination with a platform having one side higher than the other, and one corner higher than any other, so as to give it a peculiarly inclined surface, of a post located thereon, a swinging arm pivoted to the post, and a chute arranged adjacent to the swinging arm, substantially as described.

2. In a trap, the combination with a suitable supporting post, of a swinging arm pivoted thereto, a chute curved concentrically with the axis of rotation of the swinging arm, substantially as set forth.

3. In a sporting-trap, the combination of a spring-actuated pivoted arm, a frame piece for supporting the same, said arm being adapted to move in a plane parallel with the frame piece, of a latch secured to the frame and adapted to catch the arm, and a chute curved concentrically with the axis of rotation of the swinging arm, substantially as described.

4. In a sporting trap, the combination with mechanism for throwing shells consisting essentially of a pivoted spring-operated shooting arm, and a chute arranged adjacent thereto, of a vertical magazine for holding the shells until needed, and mechanism for automatically dropping one shell before each operation, upon the chute, substantially as described.

5. In a sporting trap, the combination with means for throwing shells, consisting essentially of a pivoted spring actuated shooting arm and a chute arranged adjacent thereto, of a vertical magazine adapted to drop a shell before each operation of the throwing mechanism, and a dropping device operatively connected with the shell-throwing mechanism and adapted to operate the dropper, substantially as described.

6. In a sporting trap, the combination with the cage, movably connected levers thereon, sliding lugs connected with the lower ends of the levers, a tripping device connected with the levers, and a chute arranged adjacent to said cage, substantially as described.

7. In a sporting trap, the combination with the cage, movably connected levers thereon, sliding lugs connected with the lower ends of the levers, a tripping device connected with the levers, and a chute arranged adjacent to the cage, substantially as and for the purpose described.

8. In a sporting trap, the combination with the frame-piece, of a rod pivoted therein, a spring-actuated shooting arm secured thereto, a chute curved concentrically with the axis of rotation of the shooting-arm, a lever attached to the rod, and means for operating the lever to operate the shooting arm, substantially as described.

9. In a sporting trap, the combination with a cage and a movable lever thereon, of sliding lugs upon the lower ends of the levers actuated to slide inwardly within the cage, and a chute arranged adjacent to the cage, substantially as described.

10. In a sporting trap, the combination of a frame piece of a rod pivoted therein, a spring actuated shooting arm secured thereto, a lever also secured thereto, means for operating the lever, guides for the lever, and a chute curved concentrically with the axis of rotation of the shooting arm, substantially as described.

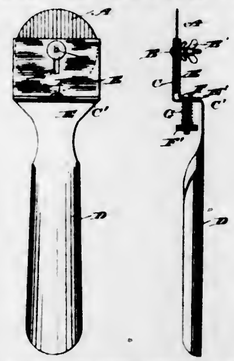
11. In a sporting trap, the combination with suitable supporting parts, of a spring-actuated shooting arm, and a discharge chute located so as to be swept by one end of the shooting arm, substantially as set forth.

12. In a sporting trap, the combination with suitable supporting parts, of a spring-actuated shooting arm, a chute located so as to be swept by one end of the arm, and an automatically discharging shell magazine located above the chute for discharging shells in the path of the shooting arm, substantially as set forth.

13. In a sporting trap, the combination with suitable supporting parts, of a spring-actuated shooting arm, a discharge chute located so as to be swept by one end of the arm, said arm having a curved end, substantially as and for the purpose specified.

14. The combination with a platform having an inclined top, of a frame piece, a spring-actuated shooting-arm thereon, an automatic shell dropping device, tripping mechanism for the same in the path of the arm, and a discharge chute, substantially as set forth.

488,828. MUSICAL INSTRUMENT. CLARK S. MUDGE, Bellaville, Ohio. Filed Sept. 17, 1892. Serial No. 446,203. (No model.)



Claim.—1. A musical instrument comprising a thin, flexible disk, and a plate held adjustably on one face of the disk, substantially as shown and described.

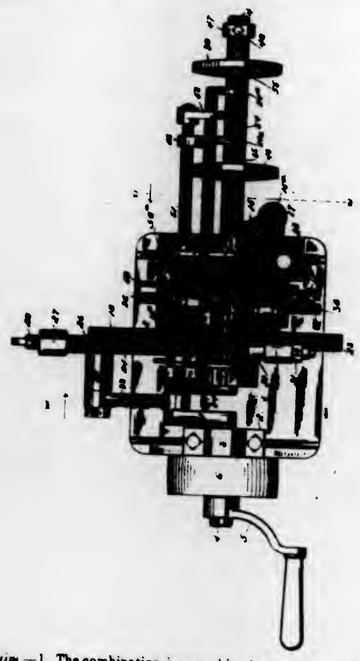
2. A musical instrument comprising a flexible disk, a handle for supporting the said disk, and a plate held adjustably on one face of the disk, substantially as shown and described.

3. A musical instrument comprising a handled plate carrying a stud, a flexible disk supported on the said stud, and a plate fitted to slide on the face of the said disk opposite the handled plate, substantially as shown and described.

4. A musical instrument comprising a handled plate carrying a stud, a flexible disk supported on the said stud, a plate fitted to slide on the face of the said disk opposite the handled plate, a rod secured

on the said movable plate and provided with a nut, and a spring pressing on the said rod, substantially as shown and described.

488,829. SAW SETTING AND FILING MACHINE. ALEXANDER FISHER, St. Louis, Mo. Filed Feb. 12, 1892. Serial No. 421,322. (No model.)



Claim.—1. The combination, in a machine for setting saws, of the vise vertically adjustable pins working in recesses of the vise and having slots at top adapted to receive the saw, a bar in which the pins are supported, and a nut having screw-connection with the back for raising and lowering it, substantially as set forth.

2. The combination in a machine for setting saws, of the simultaneously adjustable, slotted pins 13, a bar 15 on which the pins are supported, the vise having a movable jaw, and the cam-shaft 4 having a cam 12 arranged to close the movable jaw of the vise; substantially as set forth.

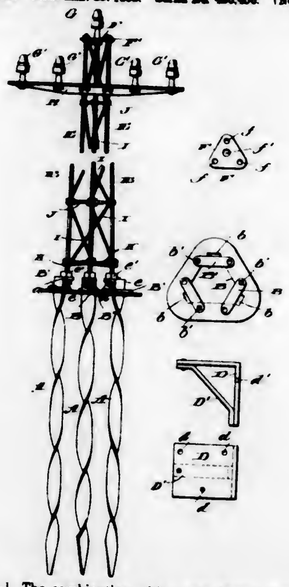
3. The combination, in a machine for setting saws, of the cam-shaft 4 having adjustable cam disks 39, 40, the rock shaft 51 having a pin 54 bearing against the cam disks, feed arm 56 and cam arm 58 on the rock shaft and a cam 12 on the cam shaft, all constructed and adapted to operate substantially as set forth.

4. The combination, in a machine for setting saws, of the automatically closing vise, automatic setting tools working above the vise, a pivoted guide-plate provided with a guide, a frame received by said guide and carrying a file and having transverse and vertical reciprocation, substantially as set forth, and a cam shaft adapted to impart movements to the setting tools, and the file-frame; substantially as, and for the purpose set forth.

5. The combination, in a machine for setting saws, of the automatically closing vise, the vertically adjustable pins supporting the saw, the oscillating feed arms or fingers engaging the teeth, the endwise reciprocating rock-shaft, a cam shaft 4, adjustable cam-disks 39, 40, giving endwise motion to the rock-shaft, an arm extending downward from the rock-shaft, a cam on the cam-shaft adapted to act on the arm 58, and depress the free ends 57 of the feed arms, the hinged set tools actuated by a cam on the cam-shaft, a reciprocating frame carrying the file, a crank 34 upon the cam shaft, giving transverse reciprocation to the file frame, and a cam 22 giving vertical reciprocation to the said frame; substantially as set forth.

6. The combination of the vise having an automatically moving jaw, adapted to clamp the saw, the supporting pins 13 vertically adjustable between the jaws of the vise, the bar 15, supporting the pins, the descending screw stud 15ª, the lugs 16, and the adjusting nut 17; substantially as set forth.

488,830. TELEGRAPH-POLE. WILLIAM H. PRATT, Mount Vernon, Ohio. Filed Mar. 25, 1892. Serial No. 426,454. (No model.)



Claim.—1. The combination with a pole formed of rods, of an anchor having horizontal flanges for the passage of the rods, and an anchor-templet, having movable retaining devices as set forth.

2. The combination with a pole, of an anchor adapted to support the pole, and an anchor-templet provided with pivoted clips, as set forth.

3. The combination with a pole, of an anchor formed of bars with horizontal flanges, and an anchor-templet provided with recesses at its inner angles, and pivoted clips, substantially as specified.

4. The combination with an anchor having horizontal flanges with apertures, of a pole formed of rods having their lower ends passed through said apertures, and nuts upon the said rods above and below the flanges, substantially as specified.

5. A pole formed of rods, sectional inclined brace bars with their ends sleeved on the rods, and tie bands arranged at substantially right angles to the rods and having their outer portions sleeved on the rods between the ends of the brace bars, substantially as shown and described.

488,831. SUPPORT FOR STEW-PANS OR LIKE UTENSILS IN A DOMESTIC BOILER. ORION T. FERREE, Brookville, Ohio. Filed Feb. 1, 1892. Serial No. 419,893. (No model.)

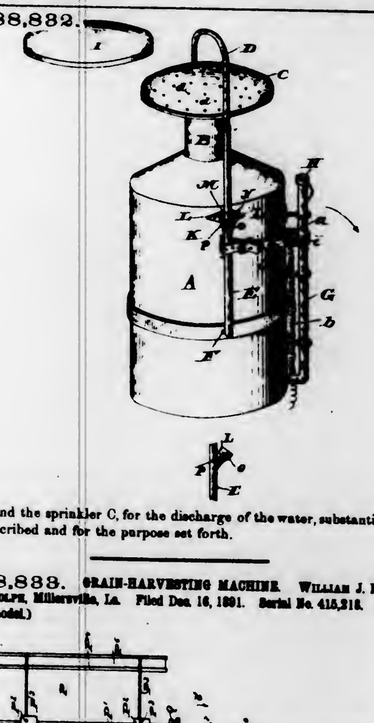
Claim.—1. In combination with a domestic boiler an interior cylinder adapted to rest upon the bottom of the boiler and held in place by catches engaging the upper edge of the boiler, substantially as shown and described.

2. The combination of the boiler A, the cylinder or support B and pan C with the hooks D having spring-hooks at their ends to engage the boiler and the cylinder or support, near their upper edges in the manner and for the purposes set forth.

488,832. AUTOMATIC FIRE-EXTINGUISHER. WILLIAM S. PURIFOY, Furman, Ala. Filed Mar. 26, 1892. Serial No. 426,610. (No model.)

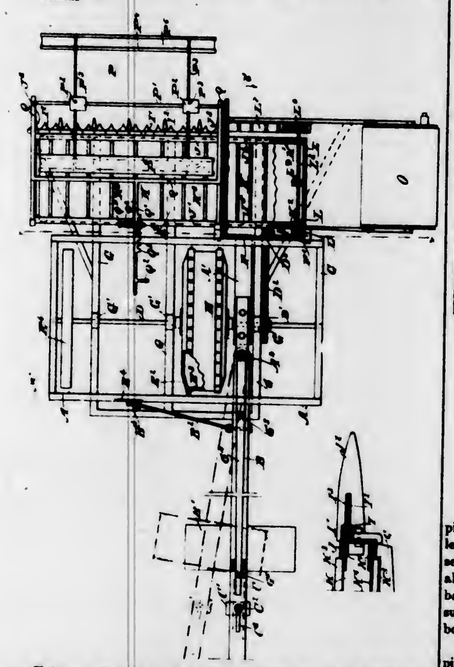
Claim.—In an automatic fire extinguisher, the vessel A, supported by the bail D E pivotally connected thereto at a point below its center of gravity, a strap J, connected to the bail and extending partly around the vessel, to normally hold the same in an upright position, adapted to be parted by the communication of fire thereto, air inlet tube G, communicating with the interior of the vessel A, at its bot-

488,832.



tom and the sprinkler C, for the discharge of the water, substantially as described and for the purpose set forth.

488,833. GRAIN-HARVESTING MACHINE. WILLIAM J. RANDOLPH, Millersville, La. Filed Dec. 16, 1891. Serial No. 415,218. (No model.)



Claim.—1. In a harvester, the main drive wheel formed with closed sides, and a flat closed rim parallel with the axis of the wheel and having beveled edges, substantially as set forth.

2. In a harvester, the main drive wheel formed with closed sides, a flat closed rim parallel with the axis of the wheel, having beveled edges and encircling tires provided with threaded apertures, bolts entering said apertures and lugs held in place by the bolts, substantially as set forth.

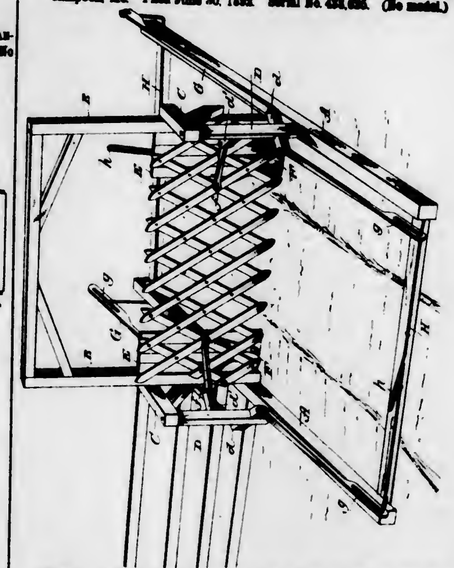
3. In a harvesting machine, the combination with a reel, of a reel frame in which the said reel is journaled, a handle end projecting from the said frame, vertically arranged links pivotally-connected with the said reel frame to support the same and permitting a swinging and a forward and backward motion of the same, a toothed post adapted to be engaged by teeth on the said handle end, and provided on its toothed side with transverse pins and a spring pressed plate mounted loosely on said pins parallel with the said post and pressing on the said handle end, and movable outward by said handle substantially as shown and described.

4. In a harvesting machine, the combination with two beams made U-shaped in cross section and having part inclined upwardly, of sprocket wheels journaled in the ends of the said beams, sprocket chains passing over the said sprocket wheels and along the inside of the beams, slats secured to the sprocket chains and canvas attached to the inside of the slats, substantially as shown and described.

5. In a harvesting machine, the combination with two beams made U-shaped in cross section and having part inclined upwardly, of sprocket wheels journaled in the ends of the said beams, sprocket chains passing over the said sprocket wheels and along the inside of the beams, slats secured to the sprocket chains, canvas attached to the inside of the slats, and a covered pulley held on the shaft of the uppermost set of sprocket wheels, and around which covered pulley passes the said canvas, substantially as shown and described.

6. The combination with the two beams U-shape in cross section, and the guards projecting from the outer face of the forward beam, and the sickle bars reciprocating oppositely in said guards, of the endless carrier, the edges of which travel within the adjacent open sides of said two beams, substantially as set forth.

488,834. GATE. ROBERT W. REASONS and MARSHAL M. OSBURN, Campbell, Mo. Filed June 30, 1892. Serial No. 438,026. (No model.)



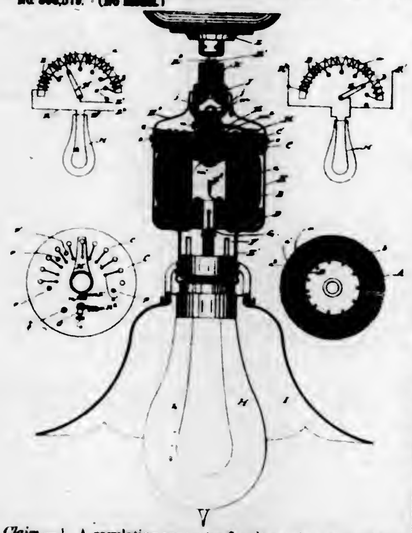
Claim.—1. In a gate, the combination of the expansible sections pivoted to supporting posts and to levers F F, the lower ends of said levers being pivotally maintained in place; rods connecting the gate sections and levers to crank-arms carried by turning posts, said posts also having projecting cross-bars *d*; and rods secured to said cross-bars and provided with slotted ends which engage with crank-arms, substantially as shown, whereby when one of the crank-arms is rocked both sections of the gate will be expanded or contracted.

2. In an expansible gate, the combination of the gate sections pivoted to supports or posts, rods or levers F pivoted at their upper ends to the gate sections and at their lower ends to supports located between the posts, turning posts D D having projecting arms, and rods connecting said arms to the gate sections and to rock shafts, substantially as shown, and for the purpose set forth.

3. In an expansible gate, the combination of a gate section pivoted to a support and provided on one side with a lever F which is pivoted thereto and to a support, a connecting rod *f* connecting the gate section with an arm carried by a turning post, a cross-bar *d* secured to the post, rods G G pivoted to said cross-bar on opposite sides

of the turning post and provided with slotted ends, rock shafts having crank portions located in said slots, and extensions *h* on said rock shafts, for the purpose set forth.

488,885. REGULATING-SOCKET FOR INCANDESCENT ELECTRIC LAMPS. ELIAS H. RIES, Baltimore, Md., assignor to the Ries Electric Specialty Company, same place. Filed July 6, 1891. Serial No. 398,579. (No model.)



Claim.—1. A regulating apparatus for alternating current incandescent lamps and other translating devices, the same comprising a socket or holder for the translating device, a magnetizable core housed within the socket and having a winding arranged to be connected across the terminals of the supply and translating circuits, a series of contacts to which intermediate portions of the winding are connected, and a switch arranged and adapted to vary the length of the winding included in the supply and translating circuits, respectively, substantially as set forth.

2. A regulating apparatus for alternating current incandescent lamps and other translating devices, the same comprising a socket or holder for the translating device a magnetizable core housed within the socket and having a winding arranged to be connected across the terminals of the supply circuit, a series of contacts to which intermediate portions of the winding are connected, a connection from one end of the winding to one side of the translating circuit, and a switch in the other side of the translating circuit arranged and adapted to traverse the said contacts and thereby vary the length of the winding included in said translating circuit, substantially as set forth.

3. A potential or current regulating apparatus for alternating current incandescent lamps and other translating devices, the same comprising a socket or holder for the translating device a reaction or counter electro-motive force coil housed on the socket and having one end of its winding permanently connected with both the supply and translating circuits, a switch for cutting in and out more or less of the winding of the coil, and a connection between an intermediate point of the coil and the other side of the supply or translating circuit, in that portion of the coil which is traversed by the switch, substantially as and for the purpose set forth.

4. A potential or current regulator for alternating current incandescent electric lamps and other translating devices, the same comprising a socket or holder for the translating device, a core within the socket provided with a winding divided into suitable lengths or sections and having one of its ends connected with one side of the supply and translating circuits, a "neutral" connection from an intermediate point or section of the winding to the other side of the supply or translating circuit, a series of contacts or terminals connecting with and representing the divisions or sections of the winding on both sides of the "neutral" connection, and a switch arranged to traverse the said contacts and thereby increase or diminish the normal electro-motive force or current flowing from the supply circuit to the translating device or devices, substantially as set forth.

5. A regulating socket for alternating current incandescent lamps and other translating devices, the same comprising a lamp-holding receptacle or casing containing a magnetizable core having a winding divided into sections, a series of contact terminals within the said casing to which the ends of the sections are connected, and a switch, also supported within said casing, designed and adapted to traverse said contacts and to include more or less of the said sections in circuit, substantially as set forth.

6. A regulating socket for alternating current incandescent lamps and other translating devices, the same comprising a holder or receptacle for the lamp or other device, an inclosing case for the same, a reaction or counter electro-motive force coil within the said casing and having its winding divided into sections normally connected in series with each other and with the lamp or other device, a series of contacts within the said inclosing case to which the coil sections are connected, and a switch designed and adapted to turn on and off the supply of current and to include more or less of the said coil sections in the lamp or supply circuit, substantially as set forth.

7. A regulating socket for alternating current incandescent lamps and other translating devices, the same comprising a holder or receptacle for the lamp or other device, an inclosing case for the same, a magnetizable core within the said case having a winding arranged to be connected across the terminals of the supply conductors leading to the socket, a series of contacts within said case in electrical connections with different portions of said winding, and a switching mechanism arranged and adapted to traverse said contacts and to establish and close the lamp or translating circuit through a greater or less length of the said winding, substantially as and for the purposes set forth.

8. A potential-increasing regulating apparatus for alternating current translating devices, comprising a socket or holder for the translating device, a self inductive coil or counter-electro-motive force device housed within the socket and having a single winding separated by a conductor into two divisions, a series of contacts connecting with different portions of the winding at each side of the dividing conductor, a switch arranged to traverse said contacts, and circuit connections, substantially such as described, whereby when the switch is moved over the contacts at one side of the dividing conductor the electro-motive force supplied to the translating device or devices is increased above that of the supply circuit, and when moved over the contacts at the other side of the dividing conductor it is reduced below that of the supply circuit, substantially as set forth.

9. A socket for incandescent electric lamps, comprising a lamp holder or receptacle, an inclosing case for the same, and a closed iron ring or core within said case, provided with a self-inductive winding designed and adapted to be included in circuit with the lamp when the latter is placed in its holder.

10. A socket for incandescent electric lamps containing a closed iron ring or core wound with insulated wire arranged and adapted to be included in series with the lamp, and a switch for opening the lamp circuit and for closing it through said winding, substantially as described.

11. A socket for incandescent electric lamps containing a closed iron ring or core, said core having a winding divided into a number of sections the ends of which are brought to a series of contact terminals arranged within the lamp socket, and a switch forming part of the socket and arranged and adapted to include more or less of the said sections in the lamp circuit.

12. A regulating socket for alternating current incandescent lamps and other translating devices containing a divided iron ring or core wound with separate coils or sections, a series of contact terminals within the socket to which the ends of said sections are connected, and a circuit-closing switch arranged to traverse the said terminals and to include more or less of the coils in the translating circuit.

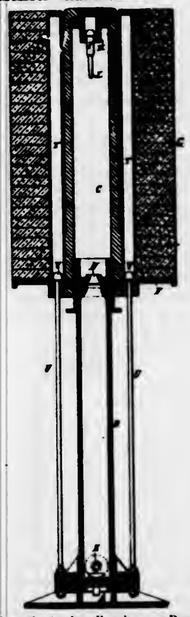
13. In a regulating socket for incandescent electric lamps, &c., the combination, with the lamp holder or receptacle and its inclosing case, of a counter electro-motive force generator or converter inclosed thereby and arranged to have all or a portion of its winding included in the lamp or translating circuit, said generator or converter having its core built up of separate sections connected and assembled to form a closed laminated ring or core, substantially as and for the purpose set forth.

14. In a regulating socket for incandescent electric lamps, &c., the combination of the coil A, the contacts *c* the switch N, and the exchangeable limiting stops *p*, *p*', substantially as and for the purpose set forth.

488,886. HYDRAULIC ELEVATING MACHINERY. THOMAS F. ROWLAND, New York, N. Y. Filed July 8, 1891. Serial No. 398,756. (No model.)

Claim.—1. In combination, a hydraulic cylinder and the plunger or piston thereof, a valve disconnectedly carried on the cylinder or moving member, and an open valve seat on the plunger arranged in line with the valve, whereby as the cylinder descends upon the plunger a body of fluid is confined between them and the cylinder is thereby retarded and gradually brought to rest upon the plunger without shock.

2. In combination with a hydraulic cylinder and the plunger thereof, a movable closed valve disconnectedly carried on the cylinder or moving member, an open valve seat on the plunger or stationary member arranged in line with said valve, whereby as the cylinder descends upon the piston the escape of the fluid from between the two members is retarded and the movable member caused to come to rest upon the stationary member without shock.



3. In combination, the hydraulic plunger B and the cylinder C, a plug valve disconnectedly hung in a valve-inclosing cage on the cylinder, a valve seat on the plunger arranged to receive the said valve as the plunger and cylinder close together, substantially as and for the purpose set forth.

4. In combination in a hydraulic accumulator, the plunger B and the cylinder C, the platform F carried by the cylinder or moving member, the tubes T holding the weights G in position upon the platform, and the headed guide rods U arranged to limit the upward movement of the platform, substantially as and for the purpose set forth.

5. In combination with the plunger or cylinder of a hydraulic apparatus, the socket pipe hole W, the pipe D having its end threaded and extending through the walls B of the cylinder, the threaded collar Z adjustable on the pipe D, and the packing ring Y, combined and operating substantially as and for the purpose set forth.

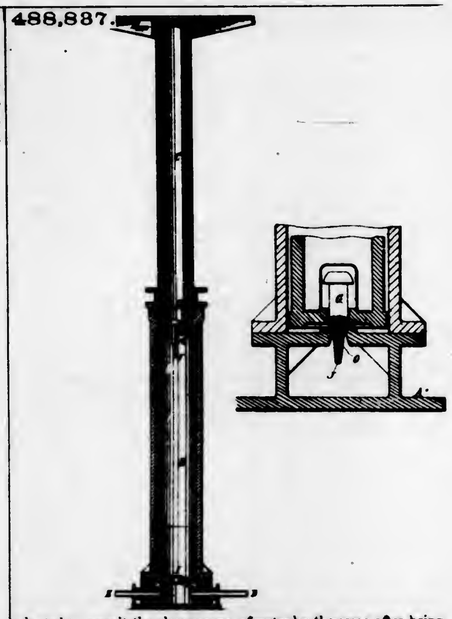
488,887. HYDRAULIC ELEVATING MACHINERY. THOMAS F. ROWLAND, New York, N. Y. Filed May 23, 1892. Serial No. 434,089. (No model.)

Claim.—1. In combination, a hydraulic cylinder and the plunger or piston thereof, a valve disconnectedly carried on the piston or moving member, an open valve seat on the cylinder or stationary member arranged in line with the valve, whereby as the piston descends within the cylinder a body of fluid is confined between them, and a duct or channel adapted to permit the slow escape of the trapped water from between the plunger and piston and thereby cause the plunger to come gradually to rest without shock.

2. In combination, with a hydraulic cylinder and the plunger thereof, a valve disconnectedly carried on the moving member, an open valve seat on the stationary member in line with the valve and a port or passage to establish communication between the space above the valve seat and the space below the same when the valve is closed, substantially as and for the purpose set forth.

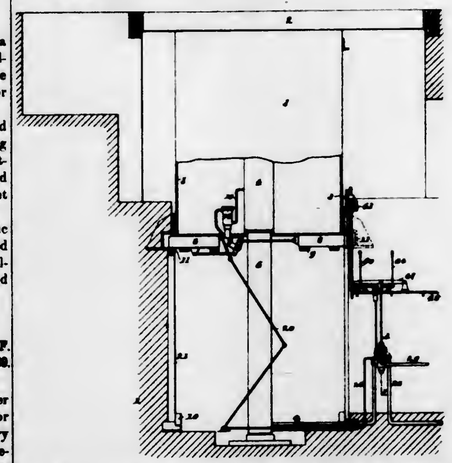
3. In combination with a hydraulic cylinder and the plunger thereof, a valve disconnectedly carried on the moving member, an open valve seat on the stationary member arranged in line with the said valve, the said valve being provided with a duct or passage,

488,887.



adapted to permit the slow escape of water by the same after being seated in the valve seat, substantially as and for the purpose set forth.

488,888. MECHANISM FOR OPERATING ORDNANCE. THOMAS F. ROWLAND, New York, N. Y. Filed Aug. 9, 1892. Serial No. 442,600. (No model.)



Claim.—1. A gun lift and mechanism for elevating the same, in combination with locking-bolt mechanism adapted to engage the walls to support the lift, and hydraulic bolt retracting mechanism independent of the operation of the elevating mechanism.

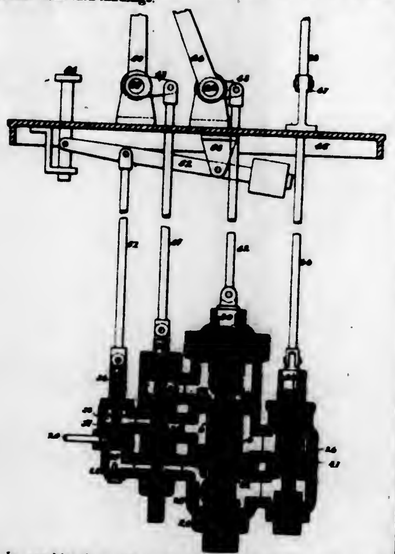
2. In combination, with a gun-elevating lift, a stationary structure adjacent the lift, mechanism for elevating and lowering the lift, sliding locking-bolts carried on the lift and adapted to engage said stationary structure and support the lift thereon, and a hydraulic cylinder and piston mechanism also carried on the lift, and adapted to project and withdraw the said locking bolts.

3. In combination with a vertically movable gun-lift and the superstructure thereof, a locking-bolt mechanism adapted to engage the side walls and support the lift thereon, and a hydraulic mechan-

ism connected with and operating to project and withdraw the locking-bolts.

4. In combination with the gun-lift, hydraulic mechanism for elevating the same, a bolt-locking mechanism carried on the lift and adapted to engage the pit walls and support the lift thereon, and hydraulic mechanism carried on the lift and for operating the bolts and adapted to operate to project the bolts by the lift-elevating pressure.

5. In combination with a vertically movable gun-lift and the side walls or pit structure thereof provided with landings for the lift, a locking-bolt mechanism carried on the lift and adapted to engage the landings of said walls and support the lift thereon, and a hydraulic mechanism connected with and operating to hold said bolts against the side walls as the lift moves vertically and to project them to engagement with said landings.



6. In combination with a vertically operated gun-lift and the mechanism for elevating and lowering the same, vertically adjustable landings for the lift to rest upon when in the elevated position, and bolt mechanism carried on the lift and operated to engage said landings and support the lift thereon.

7. In combination with a vertically moving gun-lift and the mechanism for elevating and lowering the same, bracket landings for the lift to rest upon when elevated, stanchions supporting said brackets, mechanism supporting said stanchions and adapted to vertically adjust the same and the landings, and bolt mechanism carried on the lift and operating to engage said landings and support the lift thereon.

8. In combination in a structure comprising the upper and lower landings of a gun-lift, stanchions or similar vertically arranged supports located between the upper and lower landings, and means for adjusting the landings relatively.

9. In combination with a vertically movable gun-lift, operated by hydraulic mechanism to elevate and lower the lift, hydraulic bolt mechanism carried on the lift, landing supports arranged adjacent the lift and in the paths of the locking bolts of the locking bolt mechanism thereon, and a valve mechanism arranged between said hydraulic mechanisms and their source or sources of fluid pressure and adapted to effect and control the operation of the hydraulic mechanisms.

10. In combination with a gun-lift, hydraulic mechanism for elevating and lowering the same, connections from the hydraulic mechanism to a source of fluid pressure, a main valve in said connections for opening and closing the same, and a passage around the main valve provided with a valve auxiliary to the main valve and adapted to open and close a passage between the feed and exhaust ports of the main valve whereby to graduate the application of pressure to and withdrawal of the same from the elevating mechanism.

11. In combination with a gun lift and hydraulic mechanism for elevating and lowering the same, a main valve acting to control the application of fluid pressure to and the withdrawal of the same from the elevating mechanism, and mechanism for closing and locking the valve and operated by the lift as it approaches a predetermined position, and a valve and passage connecting the feed and exhaust ports of the main valve and adapted to supply and exhaust the fluid pressure while the main valve is closed.

12. In combination with a gun-lift and hydraulic mechanism for operating the same, a main valve operated to control the supply and exhaust of fluid pressure to and from the elevating mechanism, a relief valve connecting the feed and exhaust ports of the main valve, and a mechanism operated by and upon a predetermined movement of the lift to open the relief valve and thereby exhaust the fluid pressure from the elevating mechanism.

13. In combination with a gun-lift and hydraulic mechanism for elevating the same, a valve mechanism composed of two valves of different size, arranged to control the application and exhaust of fluid pressure to and from the elevating mechanism, the smaller valve connecting around the larger valve and serving to graduate the feed and exhaust of the fluid pressure, mechanism operated by the lift and adapted to close and lock the larger valve, and a relief valve mechanism operated by the lift and adapted to exhaust the fluid pressure from the elevating mechanism.

14. In combination with a gun-lift and hydraulic mechanism for elevating the same, bolt mechanism for supporting the lift, a differential hydraulic piston connected to and for operating the bolt mechanism, connections between the elevating and bolt-operating mechanisms, whereby they are simultaneously operated by the same fluid pressure, and a valve mechanism controlling the fluid pressure upon both sides of said piston.

488,839. PRESERVING-CAN. LEANDER K. ROYER, Anderson, Ind. Filed Aug. 20, 1892. Serial No. 444,409. (No model.)

Claim.—The herein described fruit jar, having an enlarged upper neck portion B, forming the interior offset or shoulder *a*, some distance below the mouth of the jar, an inner concavo-convex cover or lid C seating on said interior shoulder, the outer cover E fitting over said inner cover, the packing ring between said covers, the exterior wire extending around underneath said exterior shoulder *b*, the bail secured at one end to said wire and having a depressed central portion, said bail being arranged to extend transversely over the mouth of the jar and to detachably engage said wire, and a spring key swung on said bail, and adapted to be turned down within the mouth of said jar into contact with said outer cover, substantially as specified.

488,840. VENDING-MACHINE. ADOLPH F. SCHNEIDER, New York, N. Y. Filed Sept. 16, 1892. Serial No. 446,090. (No model.)

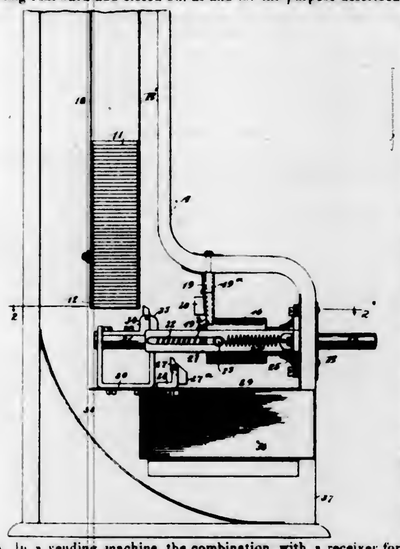
Claim.—1. In a vending machine, in combination, a pusher rod formed of telescopic spring actuated sections, the outer section having a coin receiving pocket, adjacent the front end of the inner section, a pivoted dog adapted to be engaged and swung in one direction by the coin, when the pusher rod sections are locked together by such coin and such rod is forced rearward, and arranged to adjust itself in front of such coin, after the coin has passed same and to trip it, as the rod sections return to their normal positions, all substantially as and for the purposes described.

2. In a vending machine, in combination, the delivery rod 31, the push rod 15, having a hollow cylinder 16 adapted to fit over the section 31 when unlocked and pushed inward, such cylinder 16 having a coin pocket on its rear face, and a slotted portion 26 in its lower edge, the pivoted dog 27, hung for a rearward tilting movement, its upper end projected to fit the slotted portion 26, in the cylinder 16, such upper end having an inclined portion adapted to be engaged by the coin, when the sections 31 and 15 are locked by the coin, all substantially as and for the purposes described.

3. In a vending machine, in combination, a pusher rod having a coin receiving pocket, a coin chute having a discharge throat registering with the aforesaid coin pocket and projected in the path of the movement of such rod, and arranged to swing rearward and rest on such rod when the rod is pushed inward, substantially as and for the purpose described.

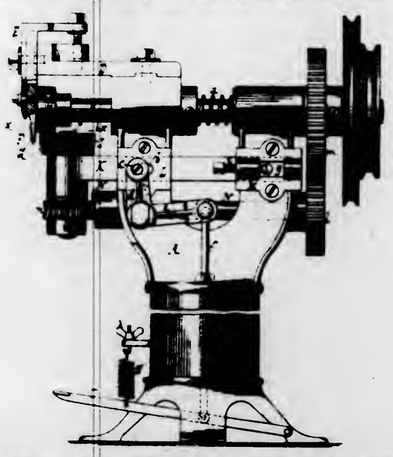
4. In a vending machine, in combination, the pusher rod 15 having a vertical coin receiving pocket in its rear end, a vertically disposed coin chute, having a hinged gravity member registering with

and discharging into the upper edge of the aforesaid coin pocket, and adapted to swing rearward and rest upon the pusher rod when such rod is forced rearward, whereby the lower end of the coin chute will be swung rearward and closed off, as and for the purpose described.



5. In a vending machine, the combination, with a receiver for merchandise, a plunger shaft located beneath the said receiver,—and dogs carried by the plunger shaft and adapted to engage the bottom article in the receiver, the said plunger shaft being spring-controlled, of a hollow coin receiver provided with a pocket at the end adjacent to the plunger shaft and adapted to receive a coin, the coin receiver being also provided with an opening in its bottom leading into the interior, a push pin spring-controlled and connected with the coin receiver, and a fixed dog having movement in but one direction and extending upward through the slot in the coin receiver as and for the purpose set forth.

488,841. SOLE-TRIMMING MACHINE. JACOB R. SCOTT, New York, N. Y. Filed Sept. 8, 1892. Serial No. 445,352. (No model.)



Claim.—1. A sole trimming machine, consisting of the following elements, to wit: the upper rotary shaft B having an attached, circular gage H, the periphery of which bears against the edge of the sole to be trimmed, the rotary shaft J arranged approximately at right angles to the upper shaft and having the attached, feed roller I provided with a beveled face which bears against the side of the sole, and a stationary side gage G and a stationary knife F both located in front of and in juxtaposition to the circular gage, substantially as described.

2. The combination with the rotary edge gage H mounted on the shaft B and with the stationary side gage G and the stationary knife F of the spring actuated slide K, the arbor J carried by the slide and arranged approximately at right angles to said gage carrying shaft, the feed roller I mounted on this arbor, the shaft N geared with the arbor J and with the shaft B the treadle T and suitable connections between the treadle and the slide, substantially as described.

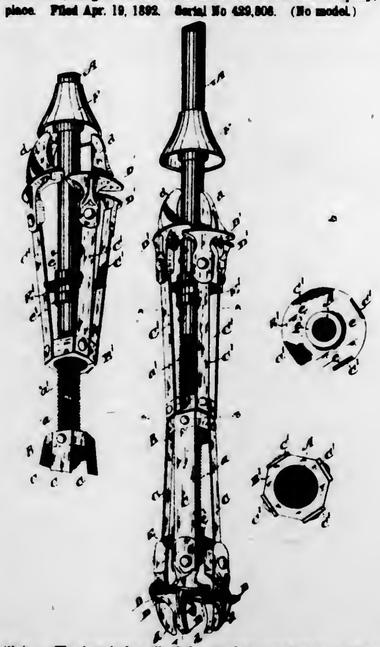
3. The combination with the rotary edge gage H mounted on the shaft B and with the stationary side gage G and the stationary knife F of the spring actuated slide K, the arbor J carried by the slide and arranged approximately at right angles to the gage carrying shaft, the feed roller I and the worm wheel *n* mounted on this arbor, the shaft N, the worm screw *o* mounted on this shaft and gearing into the worm wheel *n*, the treadle T and suitable connections between the treadle and the slide, substantially as described.

4. The combination with the rotary edge gage H mounted on the shaft B and with the side gage G and the knife F of the spring actuated slide K, means for adjusting the throw of and arranged approximately at right angles to the gage carrying shaft, the arbor J carried by the slide, the feed roller I mounted on this arbor, the shaft N geared with the arbor J and with the shaft B, the treadle T and suitable connections between the treadle and the slide, substantially as described.

5. The combination with the rotary edge gage H mounted on the shaft B and with the stationary side gage G and stationary knife F of the slide K, the arbor J carried by the slide, and arranged approximately at right angles to the gage carrying shaft, the feed roller I mounted on the arbor, the guard *q* carried by said slide, the shaft N geared with the arbor J and with the shaft B and means for actuating the slide, substantially as described.

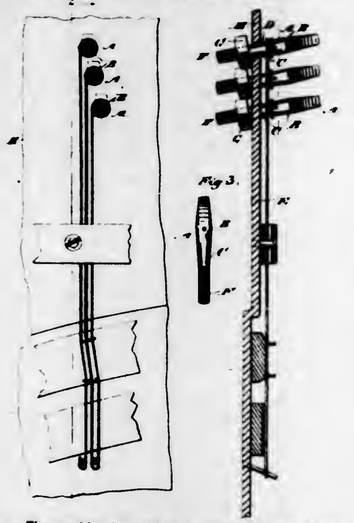
6. The combination with the rotary edge gage H and the bevel faced rotary feed roller I mounted respectively on independent shafts which are arranged approximately at right angles to each other, of the stationary knife F, the stationary side gage G and the lip *r* formed on said side gage, substantially as described.

488,842. BOILER-FLUE CLEANER. LLEWELLYN B. SHULTS, St. Louis, Mo., assignor to the St. Louis Steel Wire Brush Company, same place. Filed Apr. 19, 1892. Serial No. 429,808. (No model.)



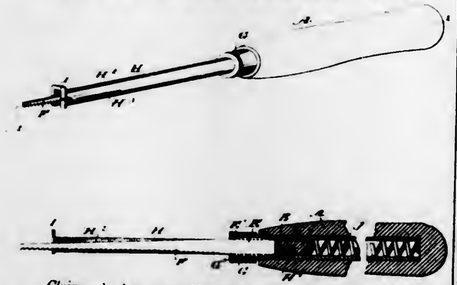
Claim.—The hereindescribed flue-scraper combining in its construction the handle threaded as described, the nuts, the disks, the two sets of scraper arms, and scrapers, said nuts movable toward and from each other, upon said handle, and said disks fixed longitudinally upon the handle, substantially as described.

488,848. TUNING-PIN. WILLIAM A. SMITH, Butte City, Mont. Filed Mar. 26, 1892. Serial No. 426,370. (No model.)



Claim.—The combination with the metallic backing of the frame provided with slanting conical apertures, of a pin comprising a head for connection with the string, a tapering shank fitted into the said conical slanting aperture to stand at an angle from the face of the said backing and a reduced threaded part extending from the small end of the said tapering shank and a nut engaging the said threaded shank part and abutting against the rear surface of the said backing, substantially as shown and described

488,844. SAW. ALBERT SMITH, New York, N. Y. Filed Nov 10, 1891. Renewed Nov. 30, 1892. Serial No. 453,581. (No model.)



Claim.—1. A saw provided with a spring pressed guard fitted to slide on the saw blade, substantially as shown and described

2. A saw provided with a spring pressed guard adapted to slide on the saw blade and having a longitudinal slot for the passage of the saw blade, substantially as shown and described.

3. A saw provided with a guard adapted to slide on the saw blade and formed with a head on which presses a spring, and two arms forming a slot for the passage of the saw blade, substantially as shown and described.

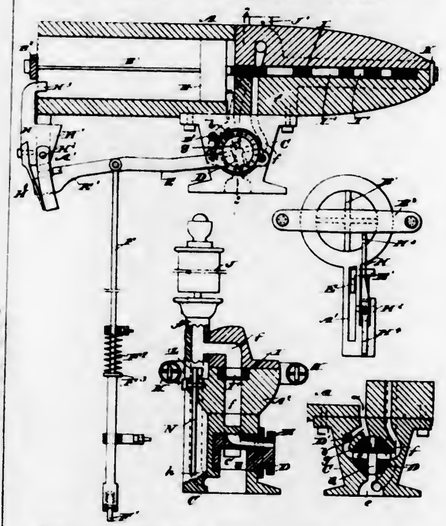
4. A saw provided with a guard adapted to slide on the saw blade and formed with a head on which presses a spring, two arms forming a slot for the passage of the saw blade, and a cap made U-shaped and connecting the outer ends of the arms of the guard, substantially as shown and described.

5. In a saw, the combination with a handle, of a tube held in the said handle and formed at its projecting end with a screw thread and a slot, a saw blade having a head engaging in the screw threaded portion of the tube, and a nut screwing on the said threaded portion of the tube to fasten the head of the saw blade to the said tube, substantially as shown and described.

6. In a saw, the combination with a handle, of a tube held in the said handle and formed at its projecting end with a screw thread and a slot, a saw blade having a head engaging the slot in the screw threaded portion of the tube, and a nut screwing on the said threaded portion of the tube to fasten the head of the saw blade to the said tube, the said nut being provided with an annular flange engaging a shoulder on the said head, substantially as shown and described.

7. In a saw, the combination with a handle, a tube held in the said handle and a saw blade fastened to the said tube, of a guard fitted to slide in the said tube and provided with a slot for the passage of the said saw blade, and a spring held in the said tube and pressing against the inner end of the said guard, substantially as shown and described.

488,845. SIGNAL-WHISTLE. WILLIAM M. SNOUSE, Gettysburg, S. D. Filed Apr. 8, 1892. Serial No. 428,362. (No model.)



Claim.—1. A signal whistle, comprising a valve connected with a steam supply, a cylinder adapted to be connected by the said valve with the steam supply, a piston mounted to slide in the said cylinder, and an apertured plate carried by the said piston and moving across a steam port leading to the whistle, substantially as shown and described.

2. A signal whistle, provided with a piston, and an apertured plate secured thereon and adapted to be drawn across a steam port connected with a steam supply and the whistle, substantially as shown and described.

3. In a signal whistle, the combination with a cylinder provided with a piston carrying an apertured plate adapted to be drawn across the steam port leading to the steam whistle, of a valve for controlling the inlet to the said cylinder and the said port leading to the whistle, and a rod adapted to shift the valve plug of the said valve to connect and disconnect the steam supply to and with the said cylinder and port, substantially as shown and described.

4. In a signal whistle, the combination with a cylinder provided with a piston carrying an apertured plate adapted to be drawn across the steam port leading to the steam whistle, of a valve for controlling the inlet to the said cylinder and the said port leading to the whistle, a rod adapted to shift the valve plug of the said valve to connect and disconnect the steam supply to and with the said cylinder and port, and a mechanism, substantially as described, for locking the valve plug lever in position at the time the connection is made between the steam supply for the cylinder and the said port, substantially as shown and described.

5. In a signal whistle, the combination with a cylinder provided with a piston carrying an apertured plate adapted to be drawn across the steam port leading to the steam whistle, of a valve for controlling the inlet to the said cylinder and the said port leading to the whistle, a rod adapted to shift the valve plug of the said valve to connect and disconnect the steam supply to and with the said cylinder and port, and a spring-pressed arm adapted to be acted on by the said piston and arranged to lock the lever of the valve plug in position, substantially as shown and described.

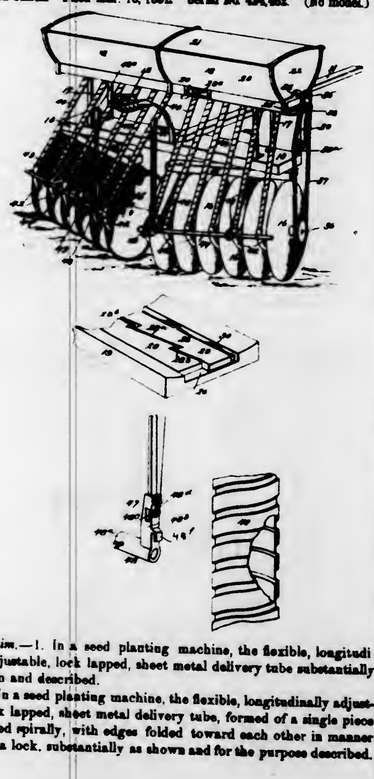
6. In a signal whistle, the combination with a cylinder and a recessed casing extending from the said cylinder, of a piston fitted to slide in the said cylinder, an apertured plate connected with the said piston and fitted to slide in the said casing across a port in the latter, and a valve connected with the steam supply and arranged to connect the said port in the casing and the said cylinder with the steam supply, substantially as shown and described.

7. In a signal whistle, the combination with a cylinder and a recessed casing extending from the said cylinder, of a piston fitted to slide in the said cylinder, an apertured plate connected with the said piston and fitted to slide in the said casing across a port in the latter, a valve connected with the steam supply and arranged to connect the said port in the casing and the said cylinder with the steam supply, a spring-pressed rod connected with the lever of the valve plug of the said valve, and a fixed plate arranged alongside the track and adapted to engage the said rod, substantially as shown and described.

8. In a signal whistle, the combination with a cylinder and a recessed casing extending from the said cylinder, of a piston fitted to slide in the said cylinder, an apertured plate connected with the said piston and fitted to slide in the said casing across a port in the latter, a valve connected with the steam supply and arranged to connect the said port in the casing and the said cylinder with the steam supply, and springs connected with the said piston to regulate the speed of the latter and to insure its return movement, substantially as shown and described.

9. In a signal whistle, the combination with a cylinder and a recessed casing extending from the said cylinder, of a piston fitted to slide in the said cylinder, an apertured plate connected with the said piston and fitted to slide in the said casing across a port in the latter, a valve connected with the steam supply and arranged to connect the said port in the casing and the said cylinder with the steam supply, a rod connected with the valve plug lever and adapted to be actuated by a plate alongside the track, and a spring-pressed arm adapted to be acted on by the said piston and arranged to lock the valve plug lever in position, substantially as shown and described.

488,846. SEED-PLANTING MACHINE. ROBERT B. SHELL and BURTON SMITH, Monument, Kans., assignors, by mesne assignments, to said Smith. Filed Mar. 10, 1892. Serial No. 424,462. (No model.)



Claim.—1. In a seed planting machine, the flexible, longitudinally adjustable, lock lapped, sheet metal delivery tube substantially as shown and described.

2. In a seed planting machine, the flexible, longitudinally adjustable lock lapped, sheet metal delivery tube, formed of a single piece and coiled spirally, with edges folded toward each other in manner to form a lock, substantially as shown and for the purpose described.

3. In a seed planting machine, the combination with the seed hopper of the parallel longitudinally movable gage strips arranged in the bottom of the same, and having zigzag edges, and the spring for holding said edges in contact, substantially as shown and described.

4. The combination with the bottom of the hopper, grooved as described, of the zigzag strips arranged in said groove, the levers for operating said strips and the spring for holding the same in contact, substantially as shown and described.

5. The combination with the bottom of hopper, grooved as described, of the gage strips arranged in the groove, the lever, the spring for holding them in place, and the forward side of hopper extending to cover the spring substantially as shown and described.

6. The combination with bottom of hopper, having a longitudinal groove therein and an opening produced in its side, of the gage strips arranged in the groove, the lever in the opening for operating the strip, and the locking and indicator plates all arranged substantially as shown and described.

7. The combination with the hopper having a grooved bottom, of the adjustable gage strips, the operating-lever and the regulating screw in the end of the hopper, and in the path of one of the strips, substantially as shown and described.

8. The combination with the hopper having a grooved bottom, of the adjustable gage strips, the operating lever, the spring for holding the strips in contact, and the regulating screw in the end of the hopper, all arranged substantially as shown and described.

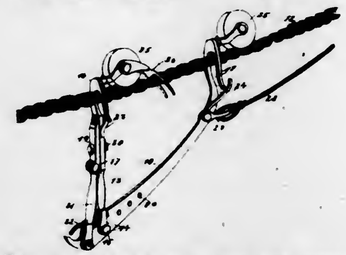
9. The combination with the seed hopper, of the axles, and supporting connections, the rearwardly projecting horizontal brackets, the adjustable shaft journaled in said brackets and the delivery tubes connected with the seed hopper, and adjustable shaft, substantially as shown and described.

10. The combination with the adjustable rock shaft, of the discharge spout, the ring bolt, and concave washers, interposed between the spout and shaft, substantially as shown and described.

11. The combination with the seed hopper, standards and axles, of the horizontal brackets the adjustable shaft journaled in said brackets, the flexible, adjustable, lock coiled sheet metal delivery tubes, connected with the seed box and adjustable shaft, and the lever for adjusting said shaft, substantially as shown and described.

12. The combination with the horizontal brackets, of the adjustable shaft, the lever having a casting upon its lower end, the locking bar passing through said casting, the pawl and finger lever, all arranged substantially as shown and described

488,847. DEVICE FOR CUTTING SHIPS' CABLES. JOHN SQUIRES and CHARLES PETRIE, St. John's, Newfoundland. Filed May 6, 1892. Serial No. 432,097. (No model.)



Claim.—1. A machine for cutting ships' cables, consisting of a hanger provided with a passage at its upper end to receive a rope, a lever fulcrumed in the lower end of the hanger near one extremity, the other end of the lever being provided with a passage for a cable, a knife held to slide upon the hanger, and a link connection between the lever and the knife, substantially as shown and described.

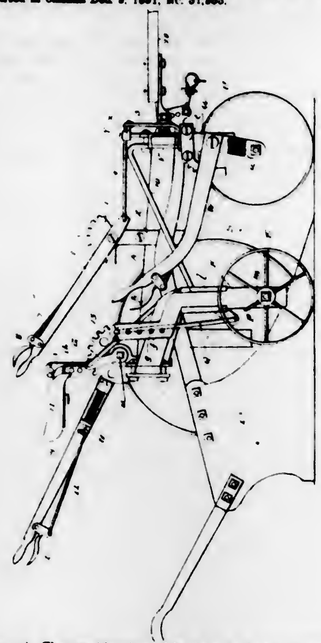
2. A device for cutting ships' cables, consisting of a hanger adapted to travel upon a cable, a lever fulcrumed upon the hanger, a knife carried by the hanger and capable of a sliding movement thereon, and a driving connection between the knife and the lever, as and for the purpose specified.

3. A machine for cutting ships' cables, consisting of a hanger, a lever carried by the hanger, a knife having movement upon the hanger, a connection between the lever and the knife, and means, substantially as shown and described, for operating the lever to impart a desired motion to the knife, as and for the purpose specified.

4. A machine for cutting ships' cables, consisting of a hanger, a lever fulcrumed in the hanger, a knife having sliding movement, a link connection between the knife and the lever, guide rollers connected with the hanger and the lever and adapted to travel upon the

cable, and means, substantially as shown and described, for elevating one end of the lever, as and for the purpose set forth.

488,848. PLOW RIDING ATTACHMENT. WILLIAM R. STAFFORD, Sheddon, Canada. Filed May 14, 1891. Serial No. 392,792. (No model.) Patented in Canada Dec. 9, 1891, No. 37,983.



Claim.—1. The combination with the main frame adapted to receive a plow as described, of the slide bearing arranged on the forward transverse branch of said frame, the segmental rack carried by said bearing, the angle lever pivoted in the bearing and adapted to engage the teeth of the rack and the gage wheel journaled on the short branch of the angle lever whereby said wheel may move laterally and be raised and lowered, substantially as specified.

2. The combination with the frame of the slide bearing arranged on the forward transverse branch thereof, and adapted to carry a gage wheel, a bell crank lever also journaled on said frame and having one branch connected with said slide bearing and its opposite branch connected with a hand lever, substantially as specified.

3. The combination with the main frame of a rock shaft journaled transversely thereon, a channeled box or casting secured to one side of said frame, an upright bar guided in said box or casting and carrying a supporting wheel near its lower end; said upright being bent rearwardly and thence vertically and provided with holes, an arm secured to one end of the rock shaft, and a rod connecting said arm with the perforated end of the upright, and suitable means for moving the rock shaft in its bearings so as to raise and lower said wheel, substantially as specified.

4. The combination with the rock shaft and the main frame having the depending branch; of the angular lever pivoted at its angle on the inner side of said branch, the vertically movable upright arranged to slide in a bearing secured to said branch, and carrying the turning wheel at its lower end, an arm secured to the rock shaft, a rod connecting said arm with one branch of the angular lever, a rod connecting the other branch with the upper end of the upright carrying the turning wheel and a suitable means for rocking said shaft, substantially as specified.

5. The combination with the main frame, of the transversely disposed rock shaft journaled in the rear portion thereof, an arm fixed to opposite ends of said rock shaft and disposed in opposite directions, a segmental rack fixed to the main frame, and receiving through it the rock shaft, the vertically movable uprights arranged in guide bearings on opposite sides of the main frame the wheels journaled in the lower ends of said uprights, a rod connecting one of the uprights with one of the arms of the rock shaft, the angular lever pivoted on the depending branch of the main frame, the rod connecting one arm of said lever with one of the arms of the rock shaft, the rod connecting the opposite arm of said lever with the upper end of the adjacent upright, and the hand lever secured to the rock shaft and adapted to rock with the segmental rack, substantially as specified.

6. The main frame formed from a bar of material in rectangular shape, and having one end terminating in a lateral depending branch and its opposite end terminating in a straight horizontal branch in combination with the brace secured to said main frame as shown and adapted to serve the additional function of a foot rest for the driver, substantially as specified.

7. The combination with the main frame, of the driver's seat having the stem as described and adapted to be moved vertically and laterally on the rear transverse bar of the main frame, the clips for adjustably securing said seat in position, the rock shaft journaled in the main frame in front of the driver's seat, the hand lever keyed to said rock shaft so that it may be shifted on said shaft to either side of the seat, and the segmental rack adapted to be secured to the main frame by clips and having an eye to receive the rock shaft, substantially as specified.

488,849. HOPPLE. LAFAYETTE P. STINE, Roseville, Ohio. Filed July 23, 1892. Serial No. 440,997. (No model.)

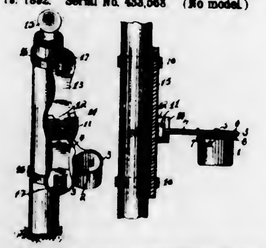
Claim.—The combination with a halter, of a surcingle strap and leg strap, of a connecting piece attached at one end to the halter and connected loosely to the leg strap and the surcingle strap, and fastened to the connecting piece at its opposite end, substantially as described.

488,850. FEED-BAG SUPPORT. DENIS N. STOCK, St. Louis, Mo. Filed May 19, 1892. Serial No. 433,567. (No model.)

Claim.—1. In a feed-bag support, the combination of two arms provided at their opposing ends with reversely-curved members 14, said arms being each provided with an aperture located in the angle formed by the straight and curved portions of said arms, and a pivot pin 13 passing through both of said apertures and pivotally securing said arms together; substantially as and for the purpose set forth.

2. In a feed-bag support, the combination, with a horizontal arm having a bifurcated free end, and cross-bars 16 and 17 connecting the parallel members of said bifurcated end, the cross-bar 17 being located in rear of said cross-bar 16 and in a higher plane, of a detachable bag-supporting arm comprising a member 9 provided with depressions coinciding with and adapted to respectively receive the cross-bars 16 and 17; substantially as and for the purpose set forth.

488,851. FEED-BAG SUPPORT. DENIS N. STOCK, St. Louis, Mo. Filed May 19, 1892. Serial No. 433,568. (No model.)



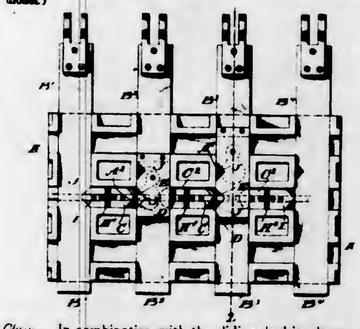
Claim.—1. A nose bag support comprising a portable supporting board or plate 13, means for detachably securing said support to a fixed object, a socket 12 having a slot 14 in its front wall and mounted upon or secured to the front face of said support, a main supporting arm 4 having an enlargement 11 at one end constructed to detachably engage said socket in the portable support, and having at its opposite end arms 3 to support a feed receptacle, substantially as and for the purpose specified.

2. In a bag support, the combination, with a board or plate adapted to carry a supporting arm, and provided at each end with two parallel slots 17, of securing straps passed through said slots and embracing the portion of the board or plate between said slots; substantially as and for the purpose set forth.

488,852. TIRE FOR BICYCLES. WALTER SWAIN and WILLIAM PHILIPSON, Astley Bridge, near Bolton, England. Filed July 7, 1892. Serial No. 439,285. (No model.) Patented in England Jan. 11, 1892, No. 529.

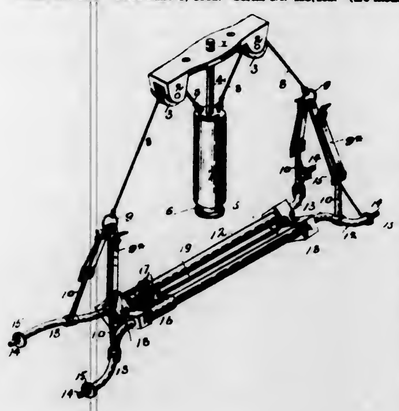
Claim.—As an improved article of manufacture, a pneumatic tire consisting of the tube I, the steel tape L wrapped spirally round the entire circumference of said tube so as to leave spaces between the spirals, a secondary steel tape M wrapped spirally round and breaking joints with said first mentioned steel tape, and a canvas covering N for the said tapes and tube, substantially as described.

488,853. SWITCH AND SIGNAL MECHANISM. JOHN W. THOMAS, Jr., Nashville, Tenn. Filed June 20, 1892. Serial No. 438,453. (No model.)



Claim.—In combination with the sliding locking bars and their attached dogs, the vertical longitudinally movable notched tappets provided with pendulums A^4, A^5 of less width than the tappets, pivoted to said tappets to hang vertically by gravity and capable of swinging freely to each side of their center of gravity from edge to edge of the tappets to which they are severally attached, as hereinbefore set forth.

488,854. HARNESS-SUSPENDING DEVICE. LOUIS TOWNSEND, Evansville, Ind. Filed June 3, 1892. Serial No. 435,402. (No model.)

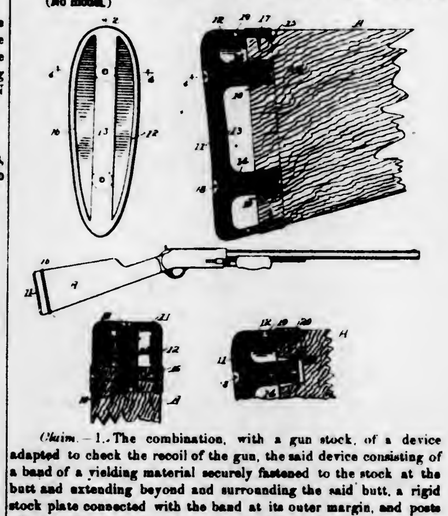


Claim.—1. In a harness suspending device the combination with the plate provided with sheaves, and the depending rod, provided with a head and an elastic buffer, of the weight, the cords or ropes connected therewith, and the suspension arms, substantially as described.

2. In a harness suspending device the combination with the plate provided with sheaves, and the depending rod, provided with a weight, of the hinged suspension bars, and ropes and cords connecting said arms and weight, substantially as described.

3. In a harness suspending device, the combination with the plate having lugs in which are journaled sheaves or pulleys, the depending rod having a head, and an elastic buffer, and a vertically movable weight, of the hinged suspension bars having curved arms, the connecting cords or ropes, and the straps, the tubular sleeves, and the short studs and collars, substantially as described.

488,855. RECOIL ATTACHMENT FOR GUN-STOCKS. RALPH TOWNSEND, New York, N. Y. Filed Aug. 23, 1892. Serial No. 443,848. (No model.)



Claim.—1. The combination, with a gun stock, of a device adapted to check the recoil of the gun, the said device consisting of a band of a yielding material securely fastened to the stock at the butt and extending beyond and surrounding the said butt, a rigid stock plate connected with the band at its outer margin, and posts of an elastic material extending forward from the inner face of the stock plate, the said posts being capable of guided movement in the stock, substantially as and for the purpose specified.

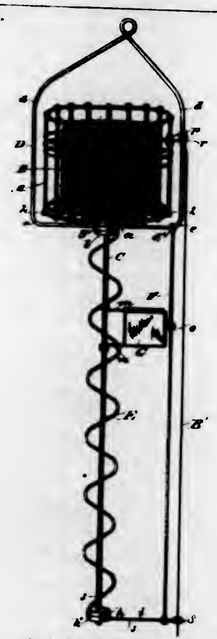
2. The combination, with a gun stock having apertures in its butt, of a device adapted to sustain the recoil of the gun, the said device consisting of a band securely attached at its forward end to the stock at the butt and surrounding and extending beyond the butt, a bridge connecting the top and bottom walls of the band, a body plate attached to the rear end of the band and its bridge whereby an air chamber is formed between the butt of the stock and the rear end of the device, the said air chamber having outlets or vents through the band, and posts of an elastic material forwardly projected from the bridge and entering the openings or apertures in the stock, substantially as and for the purpose set forth.

488,856. TWINE-HOLDER. JOHN B. TRACY and ARTHUR H. GRAHAM, Chicago, Ill. Filed Oct. 6, 1891. Serial No. 407,851. (No model.)

Claim.—1. The combination with a cylindrical wire cage, having a center plate in its bottom, a shaft secured centrally and depending from the plate, a flange on the shaft below and near to the center plate, and a bracket frame having a disk below on it which is loose on the shaft between the center plate and flange, of a spiral track concentric with the shaft, secured below thereto and above to the flange on said shaft, a depending guide rod, and a weight having a frame that is loosely secured on the shaft by its limbs that have contact with the spiral track and a looped engagement with the guide rod, substantially as described.

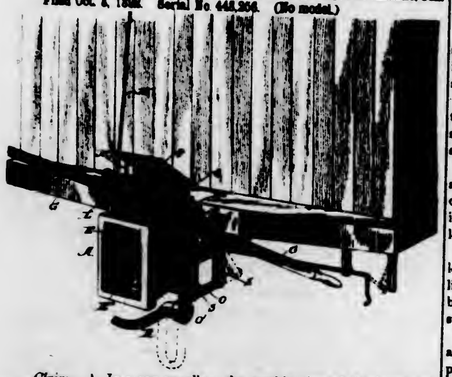
2. The combination with a skeleton wire cage, a center plate on the cage bottom, a depending shaft attached to the center of said plate, a spaced radial flange on the shaft below the plate, an apertured disk loose on the shaft between the center plate and radial flange, and a bent wire bracket frame having its lower part secured to the disk, of a pendent guide rod, a fixed collar below on the shaft, a loose col-

488,856.



lar on the shaft, below the fixed collar, a lateral brace rod projecting from the loose collar engaged by the pendent guide rod and having an eye on its end, a weight held by a frame in loose connection with the shaft and guide rod, and a concentric spiral track secured at its ends to the fixed collar and radial flange on the shaft and having loose contact with the limbs of the weight frame, substantially as described.

488,857. CAR-COUPLING. AUGUST G. VOET, Boerne, assignor of one-third to L. W. Maderass and Wm. G. Kingsbury, San Antonio, Tex. Filed Oct. 8, 1892. Serial No. 448,256. (No model.)



Claim.—1. In a car coupling, the combination of the drawhead and the sectional link holder therein, both the drawhead and the link holder having openings for the coupling pin, and the openings in the link holder being closed at the front, substantially as set forth.

2. In a car coupling, the combination of the drawhead having coupling pin openings, the link holder arranged in said drawhead and formed with upper and lower sections pivoted together near their rear ends to the drawhead and provided near their front ends with pin openings closed at their front sides and the spring arranged between the rear extended ends of said sections, substantially as set forth.

3. In a car coupling, the combination with the drawhead and the link holder formed of pivoted sections of the operating devices whereby the said sections may be flared apart at their front ends, substantially as set forth.

4. In a car coupling the combination with the link holder composed of upper and lower pivoted sections a vertically movable frame embracing and having portions engaging said sections, and devices by which the said frame may be operated, substantially as set forth.

5. In a car coupling, the combination with the pivoted link holding sections of independently movable devices whereby the lower section may be depressed and the upper section elevated, substantially as set forth.

6. In a car coupling, the combination with the link holder formed of upper and lower pivoted sections of the adjusting frame by which to positively raise both such sections and depress the lower one and a rod connected with the upper section whereby to lift the same and devices for operating said frame and rod, substantially as and for the purposes set forth.

7. In a car coupling, the combination of the pivoted link holding sections the adjusting frame engaging said sections and the actuating spring or springs by which to retain said frame and link holding sections normally in the desired position, substantially as set forth.

8. In a car coupling, the combination of the link holder, the vertically movable frame embracing said holder and provided with a slot and the operating lever passed through said slot, substantially as set forth.

9. In a car coupling, the combination of the link holding devices and independently movable levers for operating the same and the coupling pin, one of the said levers being movable independently of its pivotal movement into and out of position to engage the other lever, substantially as set forth.

10. In a car coupling, the combination of the link holder, the lever for operating the coupling pin, and the lever for operating the link holder, the latter being movable longitudinally whereby it may be set into and out of position to engage the pin operating lever, all substantially as set forth.

11. In a car coupling, the combination of the pin operating lever and the lever for operating the link holder both such levers being provided with lateral offsets and one of the levers being movable longitudinally whereby it may be set into and out of engagement with the other, substantially as set forth.

12. In a car-coupling, the combination with a transverse main operating lever of a swinging weighted latch arranged to lock said lever in position, substantially as set forth.

13. In a car coupling, the combination of a latch and a main operating lever having a seat for engagement by said latch and movable longitudinally whereby it may be set into and out of position for engagement by the latch, substantially as set forth.

14. In a car coupling, the combination with the pin and its operating lever of the rods L and M, pivotally united at their lower ends and connected at their upper ends respectively with the lever and with the pin, all substantially as and for the purposes set forth.

15. In a car coupling, the combination of the drawhead, the link holder having an upper pivoted section, the pin operating lever and

connections between said lever and the upper link holder section, substantially as and for the purposes set forth.

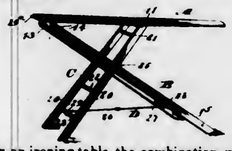
16. In a car coupling, the combination of the pivoted link holder sections, the main lever and connections whereby said lever may positively operate the lower link holding section, the pin operating lever and connections between the same and the upper link holding section, substantially as described, whereby the main lever may operate to depress the lower link holder section and the other lever may operate to elevate the upper link holder section, substantially as set forth.

17. In a car coupling, the combination of a link holder having upper and lower sections, a pair of levers and connections between said levers and sections whereby the joint operation of the levers may serve to flare the sections, substantially as set forth.

18. The combination substantially as described of the drawhead, the link holder sections, the adjusting frame embracing said sections the pin operating lever arranged to operate the upper section, and the main lever arranged to operate the adjusting frame and movable longitudinally into and out of position to engage the pin operating lever substantially as set forth.

19. In a car coupler a drawhead provided with a link catcher comprising a rod or bar arranged to project at its front end normally in advance of the end of the drawhead and supported to swing below the drawhead, substantially as set forth.

488,858. IRONING-TABLE. RICHARD D. VOORHEIS, PHILIP VOORHEIS, and CHARLES VOORHEIS, Flora, Ind. Filed Sept. 13, 1892. Serial No. 445,798. (No model.)



Claim.—1. In an ironing table, the combination, with an ironing board and a batten secured to the under face of the board, of two legs having pivotal connections, one folding within the other, one of the legs having pivotal connection with one end of the ironing board and the other leg at its opposite end being recessed to engage with an edge of the batten, and a brace bar connecting the lower portions of the two legs, the said brace bar being constructed in two hinged sections and of wire, the ends of the wire being coiled around supports forming portions of the legs, and fastened thereto as and for the purpose specified.

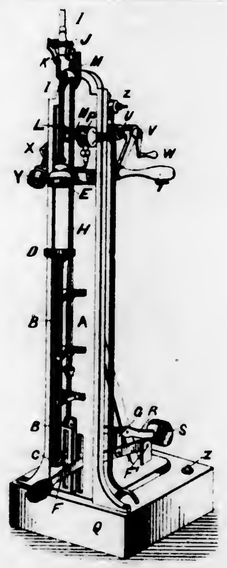
2. In an ironing table, the combination, with an ironing board provided with a batten on its under face near its center, wear plates attached to the batten, and a cross bar located at one end of the board at its under face, provided with trunnions at its ends, of two legs one shorter than the other and pivotally connected, the shorter leg being capable of folding parallel with and in the longer leg, the longer leg at its upper end having a pivotal connection with the trunnions upon the board and the shorter leg at its upper end being provided with recesses to engage with the wear plates of the batten, and a brace connecting the two legs at their lower ends, the said brace consisting of two wire sections having a hinge connection, each section of the wire having a coil produced at its outer end, the coils surrounding two of the rungs of the legs, the outer extremities of the wire at the coil being attached to said rungs, as and for the purpose specified.

488,859. APPARATUS FOR FILLING AND STOPPERING BOTTLES. DENIS WICKHAM, Ware, England. Filed July 7, 1891. Serial No. 398,603. (No model.) Patented in England May 14, 1889, No. 8,037.

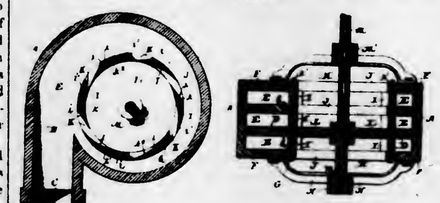
Claim.—1. The combination of the stand A having a fixed head E, the vertically movable rod B having a bottle rest D, the pedal F, the weighted lever R, the link G connecting said pedal and weighted lever, the foot-lever C connecting the weighted lever with the vertically movable rod B, the vertically movable rod H attached to said weighted lever R, and the liquid supply pipe I connected to the rod H, substantially as described.

2. The combination of the stand A having the fixed head E, the vertically movable rod B provided with a bottle rest D, the pedal F, the foot lever C, the weighted lever R connected with said pedal and foot lever, the rods H H', carried by the said weighted lever, the liquid supply pipe I connected to the rod H and provided with a tap J having a lever K, the tappet L, the gas head P having a plug N, said gas head being adapted to establish communication between the bottle and a gas reservoir, the cam M located on the rod H to operate the plug N, and the shaft U connected to the rod H and provided with a crank handle T substantially as described.

488,859.

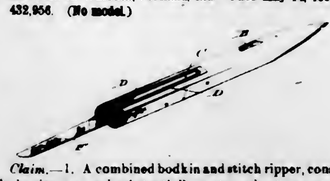


488,860. WATER-MOTOR. CHARLES C. WILSON, Greensborough, N. C., assignor of one-half to Anna V. Jessup, same place. Filed Dec. 29, 1891. Serial No. 416,416. (No model.)



Claim.—In a hydraulic motor, a spirally disposed casing having a series of centrally perforated parallel partitions forming a series of parallel and separate receiving chambers, an open water wheel mounted within said casing and comprising separate and parallel peripheral series of water buckets spaced from each other and working within said chambers, each of said buckets being provided with a flat face and a curved face opposite to and extending beyond said flat face and overlapping the flat face of the next bucket to form a vent opening communicating with the interior of the wheel, a series of interposed spacing rings clamped between each series of buckets and having the flat faces of the buckets which receive the force of water, disposed at an angle to their peripheries between the same, and a partition arranged within the wheel to separate the space within the buckets into upper and lower discharge passages, substantially as set forth.

488,861. BODKIN AND STITCH-RIPPER. SERDINIA WIETERS and SETH A. WIETERS, Portland, Ind. Filed May 14, 1892. Serial No. 432,956. (No model.)

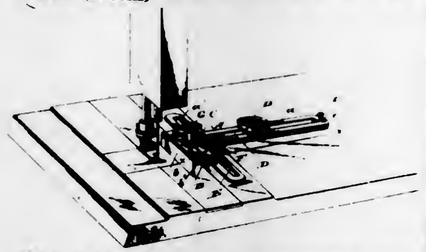


Claim.—1. A combined bodkin and stitch ripper, consisting of the body having one end substantially rectangular to serve as a handle and the other end pointed for forming openings, and having at a short distance in rear of the pointed end a rigid short blade with the knife edge thereof extending gradually upward from the direction

of the point, whereby the stitches may be ripped with a sheath cut, substantially as described.

2. As a new article of manufacture, a combined bodkin and stitch ripper, consisting of the body having one end adapted to receive a knife blade and having the other end pointed to form a bodkin, and a short blade secured in rear of the pointed end to serve as a stitch ripper.

488,862. **GUIDE FOR SEWING-MACHINES.** SERDINIA WITTERS and SETH A. WITTERS, Portland, Ind. Filed July 20, 1892. Serial No. 440,670. (No model.)

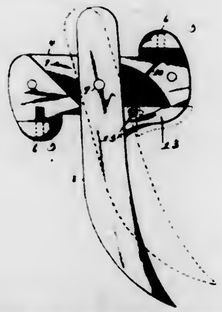


Claim.—1. A guide for sewing machines, comprising the T-shaped supporting plate having its shank provided with the longitudinal slot and its head with a slot at right angles to the other slot, the wide guide member clamped to the slotted head of said plate by a set screw, and the narrow member C also clamped to the head of the supporting plate and independently adjustable by another set screw and having a rib working in the slot thereof and adapted to align with the head of the member B as and for the purpose described.

2. A guide for sewing machines, consisting of the supporting plate adapted to be secured to the bed plate of the sewing machine and having the slotted head, the narrow guide having the loops and adjustably secured in the slot, the wide adjustable and reversible guide having the vertical straight head and the abutment resting against the slotted head, and the set screw for holding the guide in an adjusted or reversed position.

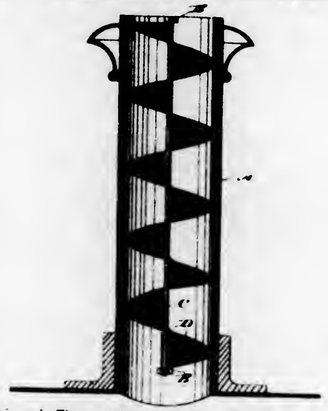
3. In a guide for sewing machines, the combination with the bed plate, of the supporting plate having the shank provided with a longitudinal slot and beveling screw, the transverse slotted head, the narrow guide having its shank mounted upon the underside of the slotted head and provided with the loop and adjustable in the slot of the head, the wide guide also having its shank mounted upon the underside of the slotted-head and having the vertical straight head and being reversible and adjustable in the slot of the head, and having the abutment resting against the slotted head, for the purpose described.

488,868. **PLOW-CUTTER.** CHARLES A. WEBB, Coral, Me. Filed July 23, 1892. Serial No. 441,457. (No model.)



Claim.—In a plow colter, the combination with a frame having a transverse opening, and a guide way extending at an angle thereto, and having means for attaching it to the plow beam, of a blade pivoted in said transverse opening in the frame, a slide plate arranged in the guide way in the frame and bearing at its free end against said blade, and a spring connected to said slide plate whereby it is held elastically against said blade, said transverse opening in the frame having a width greater than the width of the blade, substantially as specified.

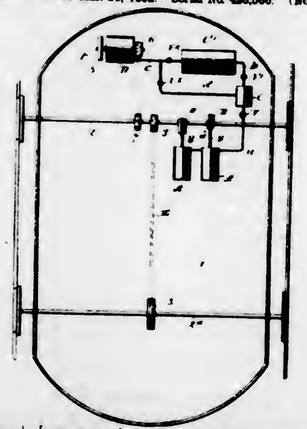
488,864. **SPARK-ARRESTER.** JOHN R. ZIMMERMAN, Trinidad, Colo. Filed Aug. 27, 1892. Serial No. 444,267. (No model.)



Claim.—1. The combination with the smoke stack open at both ends and having imperforate side walls, of a continuous spiral wire netting sheet therein with its outer marginal edge contacting with the inner walls of the stack, substantially as set forth.

2. The combination with the open-ended imperforate smoke stack having a central vertical rod C, and end supports B B therefor, of the continuous wire netting sheet D proceeding spirally about said rod for its axis and contacting at its outer marginal edge with the inner walls of the stack, substantially as set forth.

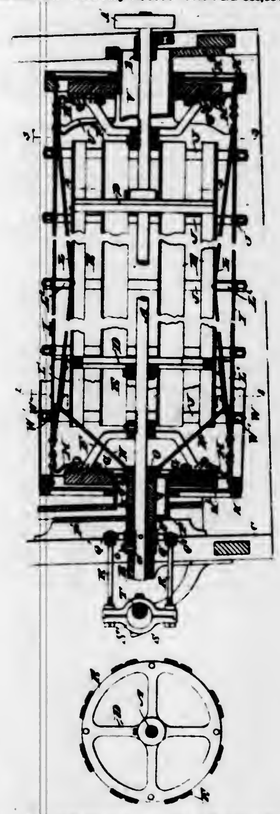
488,865. **CAR STARTER AND BRAKE.** HOMER S. BODLEY, Baton Rouge, La. Filed Mar. 26, 1892. Serial No. 426,506. (No model.)



Claim.—1. In a car starting and braking apparatus, substantially as described, the combination of the rotary axles, having pulley wheels fixed thereon, a belt connecting said pulley wheels, the eccentrics B, fixed on one of the axles, the air pumps having pistons provided with straps to engage said eccentrics, the reservoir C, the pipes *a*, *a'*, connecting said reservoir and the air pumps, the valve V, the engine D, a valve controlled pipe leading from the reservoir to the engine, and a suitable means for transmitting motion from the engine to one of the axles, substantially as specified.

2. In a car starting and braking apparatus, substantially as described, the combination with the rotary axles having pulley wheels fixed thereon, a belt connecting said pulley wheels, the eccentrics B, fixed on one of the axles, the air pumps having pistons provided with straps to engage said eccentrics, the reservoir C, the pipes *a*, *a'*, connecting said reservoir and the air pumps, the valve V, the engine D, a valve controlled pipe *d*, leading from the reservoir C, to the engine, and a suitable means for transmitting motion from the engine to one of the axles: of the auxiliary or secondary reservoir C', the valve controlled pipe *b*, connecting the reservoirs C, C', the pipe *c*, connecting the reservoir C', and the engine and connecting with the pipe *d*, and the valve V', arranged in the pipe *c*, between the pipe *d*, and the reservoir C', all substantially as and for the purpose set forth.

488,866. **BOLTING-REEL.** CYRUS BOLLENBACHER and EBER B. WAGNER, Warsaw, Ind. Filed July 14, 1892. Serial No. 440,097. (No model.)



Claim.—1. The combination with the frame carrying the bolting cloth, the longitudinal central shaft extending therethrough, and a spring connection between the shaft and the ends of said frame, of a reciprocating sleeve or collar mounted upon and rotating with the shaft, and connections between the bolting cloth frame and said collar or sleeve, whereby the said frame will be rotated by its shaft and reciprocated against the action of its springs, substantially as set forth.

2. The combination with the main shaft, and the cylindrical series of agitator plates fixedly secured on the shaft to turn therewith but not move longitudinally, of the outer bolting cloth frame separate and independent from the agitator plates, springs supporting the said bolting cloth frame at its ends from the main shaft, a reciprocating sleeve or collar upon and rotating with the main shaft, and connections between said sleeve or collar and the bolting cloth frame, whereby as the frame rotates it will be reciprocated against the action of its springs, substantially as set forth.

3. A bolting reel comprising a shaft mounted to turn, spiders secured on the said shaft and supporting rims, springs attached to the said rims, and longitudinally extending plates connected with the said springs and supporting the bolting cloth, substantially as shown and described.

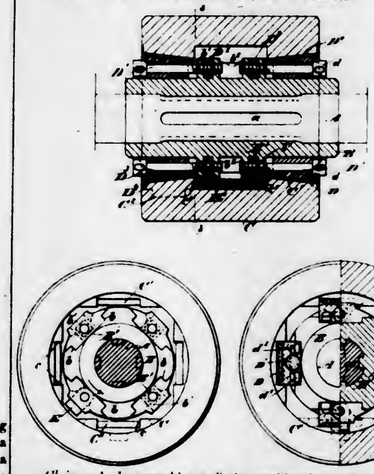
4. A bolting reel comprising a shaft mounted to turn, spiders secured on the said shaft and supporting rims, springs attached to the said rims, longitudinally extending plates connected with the said springs and supporting the bolting cloth, and means, substantially as described, for imparting a longitudinal sliding motion to the said plates to shift the outer bolting cloth reel, substantially as shown and described.

5. A bolting reel comprising a shaft mounted to turn, spiders secured on the said shaft and supporting rims, springs attached to the said rims, longitudinally extending plates connected with the said springs and supporting the bolting cloth, heads carried by the said plates, and concentric rings supported on the said plates and carrying, with the said heads, the bolting cloth, substantially as shown and described.

6. A bolting reel comprising a shaft mounted to turn spiders secured fixedly to the shaft longitudinally extending agitator plates secured to the said spiders, an outer bolting cloth reel comprising heads, longitudinally extending plates connecting the heads with each other and supporting, by means of rings, the bolting cloth, springs connected with the said reel plates, and spiders held on the said shaft and carrying on their rims the said springs, substantially as shown and described.

7. A bolting reel comprising a shaft mounted to turn and carrying an inner cylindrical series of longitudinally grooved agitator plates rotating therewith and secured against longitudinal movement thereon, an outer bolting cloth reel comprising heads, longitudinally extending plates connecting the heads with each other and supporting, by means of rings, the bolting cloth, springs connected with the said plates, spiders held on the said shaft and carrying on their rims the said springs, an inlet chute at the upper head, an outlet spout passing through the lower head and formed with a top opening, and buckets held on the rim of the lowermost spider to scoop up the tailings and discharge the same into the top opening of the outlet spout, substantially as shown and described.

488,867. **CRUSHING-ROLL.** DANIEL BRENNAN, Jr., Bayonne, N. J. Filed Feb. 20, 1892. Serial No. 422,357. (No model.)



Claim.—1. In a crushing roll, the combination, with a center and a separate shell therefor, of interposed centering wedge blocks, and means for locking the shell against longitudinal movement, substantially as described.

2. The combination in a crushing roll, of a center, a separate shell removably held thereon, interposed wedge blocks having flat faces and fitting corresponding surfaces formed at intervals on the center and shell, and means for securing said blocks in position, substantially as described.

3. The combination in a crushing roll, of a center, a separate shell removably held thereon, interposed wedge blocks which extend into recesses formed in the inner surface of the shell and in the inner surface of the center, at intervals there-around, thereby positively interlocking with and engaging said center and shell, substantially as described.

4. The combination in a crushing roll, of a center, a separate shell thereon, interposed wedge blocks, screw bolts for securing the wedge blocks, and nuts with which the screw bolts engage, said nuts being held by said center against movement longitudinally of the roll, substantially as described.

5. The combination in a crushing roll, of a center having lugs formed on its exterior, a separate shell thereon, wedge blocks interposed between the shell and center, and screw bolts extending through the wedge blocks and through nuts arranged between the lugs formed on the center and engaging the inner ends of the screw bolts, substantially as described.

6. The combination in a crushing roll, of a center having flat sur-

faces on its exterior at intervals there-around, a separate shell held thereon, and having flat inclined surfaces on its inner side opposite the flat surfaces of the center, a series of wedge blocks adapted to the flat surfaces of both the center and shell, and screw bolts and nuts for the wedge blocks, substantially as described.

7. The combination in a crushing roll, of a center, and a separate shell removably held thereon, the two having opposed flat faces at intervals there-around at each end, and series of interposed wedge blocks adapted to said surfaces, and means for securing the same, the said blocks serving to accurately center the shell and serving when secured to prevent independent rotary movement thereof, substantially as specified.

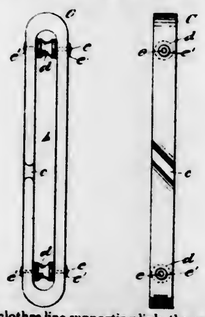
8. The combination in a crushing roll, of a center, a shell removably held thereon, the center having recesses in its exterior and the shell having opposed recesses in its exterior, the bottom walls of such recesses being flat, and wedge blocks interposed between the center and shell and extending into the recesses in both, substantially as described.

9. The combination in a crushing roll, of a center, and a separate shell thereon, and means for securing the shell in place, said means including an interposed keeper block engaging both the center and shell, and preventing longitudinal movement of one relatively to the other, substantially as described.

10. The combination in a crushing roll, of a center, and a separate shell thereon, and means for securing the shell in place, including an interposed keeper block fitted between opposing shoulders on the shell, and having lugs which fit between spaced lugs on the center, substantially as described.

11. The combination in a crushing roll, of a center, formed with lugs on its exterior, a separate shell removably held thereto, wedge blocks interposed between the center and shell at both ends of the roll, a keeper block also interposed between the center and shell, and formed with lugs having threaded apertures and fitting between longitudinally aligning lugs on the center, and screw bolts extending through the wedge blocks, two longitudinally aligning screw bolts engaging the threaded apertures of the keeper block and the remainder engaging fixed nuts, substantially as described.

488,868. CLOTHES-LINE SUPPORTING-LINK. ANDREW BRUNNER, New York, N. Y. Filed Mar. 18, 1892. Serial No. 425,376. (No model.)



Claim.—1. In a clothes line supporting link, the combination with a link bar longitudinally slotted producing parallel members, one member being diagonally cut to form a line-entering slot, of a pulley at each end of the bar and adapted to rotate in the longitudinal slot, substantially as described.

2. A clothes line supporting link, comprising a wooden link bar longitudinally slotted, diagonally severed through one parallel member of the bar, and strengthened at the ends by transverse pintles having washers thereon, which pintles are supports for rotatable pulleys, substantially as described.

488,869. PACKING FOR BUILDERS' USE. SAMUEL CABOT, Boston, Mass. Filed Sept. 15, 1892. Serial No. 445,969. (No model.)

Claim.—1. As an article of manufacture; an elastic sheet packing for builders' use, consisting of a thin fire-proofed base with a fire-proofed layer of elastic fiber, such as hay, fastened thereto: substantially as described.

2. As an article of manufacture: an elastic sheet packing for builders' use, consisting of a thin flexible and porous base, with a layer of elastic fibrous organic material, such as hay, fastened thereto, both substances fire-proofed with a mixture of water-glass and agalite; substantially as described.

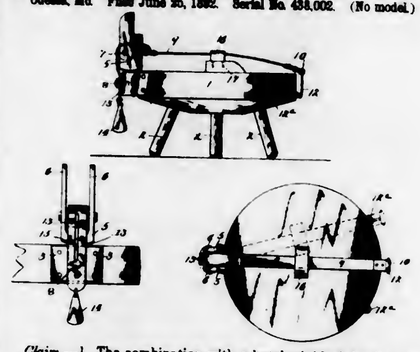
3. As an article of manufacture; an elastic sheet packing for builders' use; consisting of a thin flexible and porous base, with a layer of elastic fibrous organic material stitched thereto, both substances protected from conflagration by fireproofing mineral matter, tenaciously attached to and inclosing the flexible fibers singly, substantially as described.

4. As an article of manufacture; an elastic sheet packing for builders' use; consisting of a thin flexible and porous base, with a layer of elastic fibrous organic material stitched thereto, both substances fire-proofed with a mixture of water-glass and a pure magnesian silicate [such as agalite], tenaciously attached to and inclosing the flexible fibers singly; substantially as described.

5. In sheet packing for builders' use, the combination of a fire-proofed sheet of thin flexible and porous material, with a fire-proofed stratum of disintegrate fibrous matter, and with means for attaching them together; substantially as described.

6. In sheet packing for builders' use, the combination of a sheet of paper fire-proofed by a mixture of water-glass and a pure magnesian silicate in about the quantities stated; with a stratum of disintegrate fibrous matter fire-proofed by the same mixture, and with means for attaching them together; substantially as described.

488,870. MEAT-BLOCK ATTACHMENT. BENJAMIN P. COBB, Odessa, Mo. Filed June 25, 1892. Serial No. 438,002. (No model.)



Claim.—1. The combination with a butcher's block having a series of staples on its periphery and a bracket secured thereto, of the upright journaled in said bracket, the spring clamp pivoted to said upright and provided with a catch adapted to engage with said staples and a slidable block carried by said clamp, substantially as described.

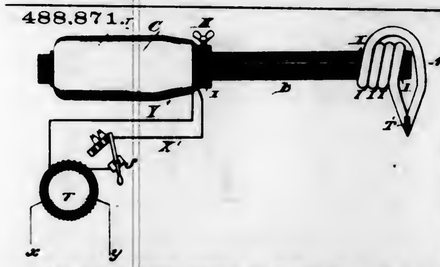
2. The combination with a butcher's block having a series of staples on its periphery and a bracket, of the upright journaled in said bracket, the spring clamp pivoted to said block and provided with a catch adapted to engage with said staples, the slidable block carried by said clamp, and the weighted strap secured to said clamp for automatically throwing the clamp out of engagement with the meat when the clamp is released, substantially as described.

3. The combination with a butcher's block, of the bracket secured thereto, provided with a slot, the upright fitting in said bracket, the head, the upwardly projecting arms secured at their upper inner sides, the roller, the spring clamp pivoted or journaled in said arms, extending across the block and provided at its free end with a catch, the slidable block mounted on said clamp, the weighted strap having a slit or opening, secured to said clamp and the headed pin secured to the upright and passing through the slot in the bracket, substantially as described.

4. The combination with a butcher's block, of the bracket having a slot therein, the oscillating upright provided with a headed pin passing through said slot, the clamp pivotally connected to the upwardly extending arms formed with or secured to said upright, the slidable block on the clamp and the catch connected with said clamp and the staples secured to the block, substantially as described.

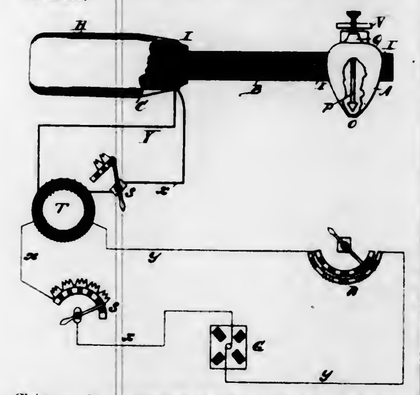
488,871. ELECTRICAL SOLDERING-IRON. CHARLES L. COFFIN, Detroit, Mich. Filed July 20, 1891. Serial No. 400,112. (No model.)

488,871.



Claim.—In an electric soldering or brazing tool, in which the soldering or brazing head constitutes the secondary coil or circuit of an inductive apparatus, the combination of the secondary or soldering head, with a resistance material in circuit at or near the point of application of the head to the work, substantially as shown and described.

488,872. ELECTRICALLY-HEATED SOLDERING-TOOL. CHARLES L. COFFIN, Detroit, Mich. Filed June 11, 1892. Serial No. 436,400. (No model.)



Claim.—1. In an apparatus for electric soldering or brazing a hollow soldering or brazing head, constituting the secondary coil or circuit of an inductive apparatus, adapted to contain solder or brazing material, in combination with means for regulating the flow of solder, substantially as shown and described.

2. In an apparatus for electric soldering or brazing, a hollow soldering or brazing head constituting the secondary coil or circuit of an induction apparatus and adapted to contain fluid solder or brazing material, substantially as shown and described.

3. A magnetic core and a high resistance primary coil thereon in combination with a secondary circuit of general low resistance including a soldering or brazing head having an orifice therein for containing solder or fluid metal alloy or brazing material.

4. Apparatus for electric soldering or brazing, employing electric current as the heating agent and consisting of a source of current of relatively high electromotive force, in combination with a switch and rheostat, and a transformer or converter whose secondary circuit carrying a large volume of electric current includes a soldering or brazing head adapted to contain solder or brazing material and be heated by said current.

5. In an electric soldering or brazing tool, an electric transformer, having as a portion of its secondary circuit a soldering or brazing head adapted to contain solder or brazing material.

488,873. CAR-COUPLING. JOHN H. CRUMB, Burlingame, Kans. Filed Mar. 28, 1892. Serial No. 426,651. (No model.)

Claim.—1. In a car coupling, the combination with a draw head provided with pivoted coupling hooks, and the air brake valve, of mechanism for operating the hooks, and a connection between the said mechanism and the said valve, substantially as and for the purpose set forth.

2. In a car coupling, the combination with a draw head having the cavity *a* for receiving an ordinary coupling link, the nib D on one side and the recess E on the opposite side, of a coupling hook F having its shank provided with the shoulders *c c'* and pivoted in the said recess, and the curved flat spring G, having one end secured in the bottom of the rear end of the recess and its other end projecting forwardly and resting upon the inner wall of the said recess, substantially as herein shown and described.

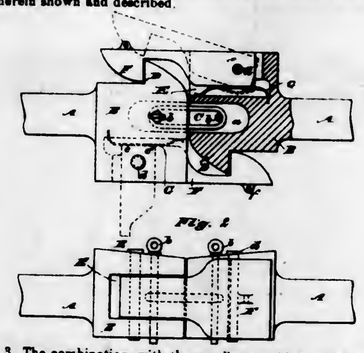
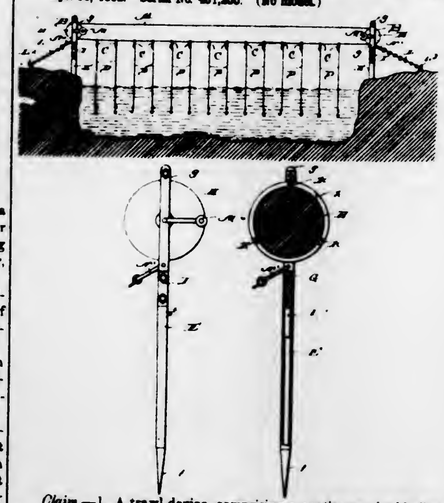


Fig. 1.

3. The combination, with the coupling provided with the spring-pressed hook F, of the sector lever H, the connecting chain *c*, and the rods I, J, substantially as specified.

4. The combination, of the coupling provided with the spring-pressed hook F, the sector lever H, the sliding rods I, J, connected with the sector lever, the air brake valve K provided with a lever *A*, and chains *c*, *i*, connecting the coupling and the lever of the air brake valve with the sector lever H, substantially as specified.

488,874. TRAWL-LINE. THOMAS R. DENNISTON, Peru, Ind. Filed Apr. 30, 1892. Serial No. 431,356. (No model.)

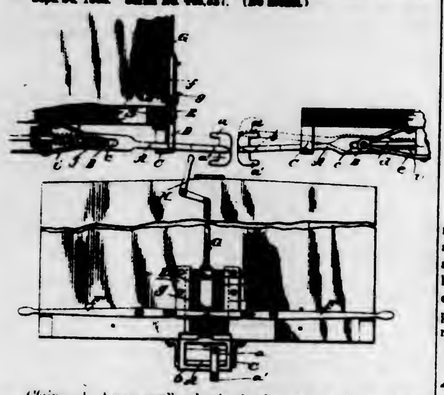


Claim.—1. A trawl device, comprising a continuous double line having a series of detachable short lines carrying hooks, in combination with the reel stands and reels for supporting and operating said lines, said reels and stands consisting each of a tube adapted to be driven in the ground and having a socket in its upper portion, a head fitting in said socket, and a reel carried by said head, substantially as specified.

2. In a trawl device, comprising a continuous double line having a series of hooks attached thereto, a reel stand and reel for supporting and operating said line, said stand comprising a tube pointed at its lower end, a head having a cylindric portion fitting in the upper end of said tube, a pair of reel arms secured to said head, and a reel carried between said arms, substantially as specified.

3. In a trawl device, the combination with the lines, of the reel devices carrying said lines, said reel devices comprising each the hollow pointed tube, the bracket having a loose bearing in said tube, the reel carried in said bracket, the line guides in said reel, and the brace or anchor for the support, substantially as specified.

488,875. CAR-COUPLING. JOHN P. DEER, Greenville, Pa. Filed Sept. 24, 1892. Serial No. 446,897. (No model.)



Claim.—1. A car coupling having its draw bars each constructed with two hooks *a a'* with inturned ends, and with the hooks *a* and *a'* in the same vertical plane and the one immediately below the other, and both upon one side of the middle line of the draw bar, and having upon the other side of the middle line a longitudinal slot to receive the hooks of the other draw bar, said slots being arranged in relation to the hooks to bring the bearing points of the double connection in the same transverse line substantially as shown and described.

2. The combination with the draw bar and its horizontal axis of a lifting stirrup and slide with levers and lift rod operating independently upon the slide substantially as shown and described.

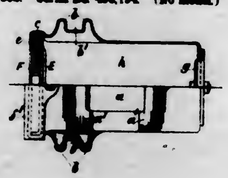
3. The combination with the draw bar and its horizontal axis of a lifting stirrup and attached slide with lug and slot, horizontal levers bearing against the lug and extending to each side of the car, and a lift rod running to the top of the car and having its lower end hooked into the slot substantially as shown and described.

4. The draw bar having a horizontal slot at its rear end, a fixed horizontal draft bar passing through the slot, and a middle longitudinal rod having a spiral spring arranged upon each side of the rear end of the draw bar substantially as shown and described

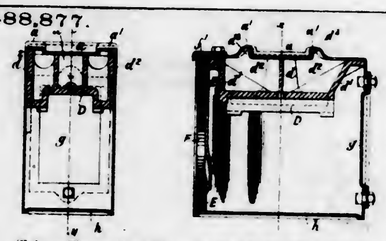
488,876. BUST-FORM. ELLEN DONNELLY, New York, N. Y. Filed June 3, 1892. Serial No. 435,333. (No model.)

Claim.—As an improved article of manufacture, a garment form comprising a casing shaped to simulate a portion of the human figure including the arms, a base support secured to the casing, a standard extending upward within the casing, a cross bar attached to the standard, arm sections having a ball and socket connection with each other and with the cross bar, and a filling located within the casing, substantially as shown and described.

488,877. CAR-AXLE BOX. JOHN DONNELLY, Brockley, England. Filed June 10, 1892. Serial No. 436,194. (No model.)

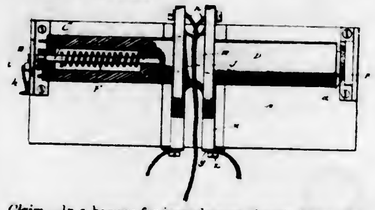


488,877.



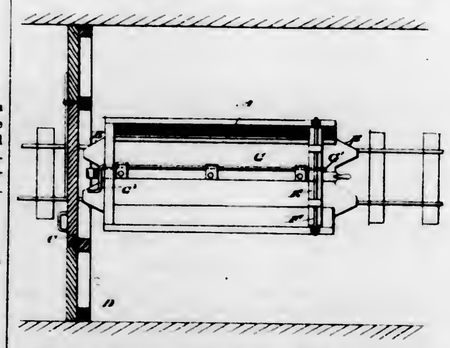
Claim.—The combination, with an axle-box shell formed of a corrugated and embossed steel plate bent to box-like form and welded at the abutting edges as described, of a cast-iron distance-block adapted at its under side to form the journal brass bearing, and made hollow to serve as a grease-box if required, and formed with flanged ends and sides fitting against the top of the box and with a central post also bearing against the top of the box directly beneath the carrying spring, substantially as and for the purpose specified

488,878. DEVICE FOR RAISING OR LOWERING ELECTRIC LAMPS. WILLIAM DORAN, Skowhegan, Me. Filed Dec. 4, 1890. Serial No. 373,623. (No model.)



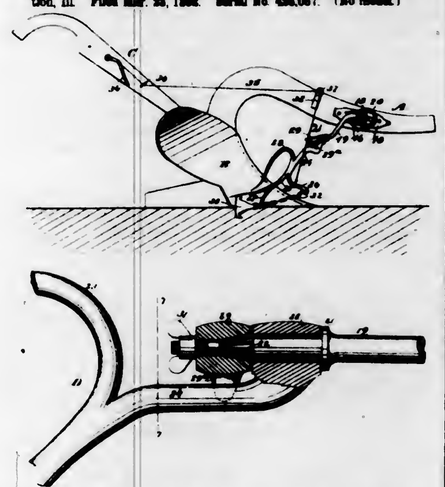
Claim.—In a hanger for incandescent electric lamps, the combination of an attaching plate, a shaft journaled at one end in a hanger and bearing at its opposite end upon a fixed shaft, the lateral studs extending from one end of the pulley shaft, the said fixed shaft keyed in a hanger, the arm carrying a stud adapted to retain the fixed shaft in its seat, the disk fixed upon the fixed shaft and having lugs adapted to engage a gravitating cam, the said gravitating cam having a shoulder adapted to engage the lateral lugs of the pulley shaft, the parallel flexible metallic shoes connected to the attaching plate and with wires leading from a dynamo, the pulley on the pulley shaft provided with flanges having metallic peripheries adapted to engage the flexible metallic shoes, and wires connecting the peripheries of the pulley flanges with a lamp, all adapted to operate, substantially as specified

488,879. MINE-CAR. HOMER DURAND, Starkville, Colo., assignor to Homer Durand & Co., same place. Filed July 15, 1892. Serial No. 440,127. (No model.)



Claim.—A mine car having the bottom of its body extended beyond the ends thereof said extension being cut away at the center to form two projections B, said projections being adapted to engage a door in a mine shaft to open the same, substantially as described.

488,880. TURNING-PLOW. PHILIP J. HERMONT, Centreville Station, Ill. Filed Mar. 28, 1892. Serial No. 426,087. (No model.)



Claim.—1. A weed turning attachment for plows, consisting in a vertically swinging shaft 19 pivoted at its forward end to an attaching plate adapted to be secured to the beam, a laterally swinging fork having an eye pivoting on the rear end of the shaft, and stops carried by the shaft in rear of said eye and between which the fork shank or arm 24 swings, substantially as set forth.

2. An attachment for turning plows, consisting of a shaft adjustably attached to a face plate, a spring having a bearing upon the shaft, a turning fork carried by the shaft, a stop mechanism regulating the lateral movement of the fork, and a drag connected with the fork, substantially as and for the purpose specified.

3. An attachment for turning plows, consisting of a shaft, a face plate, an adjustable connection between the face plate and the shaft, a spring attached to the face plate and having a constant bearing upon the shaft, a turning fork loosely mounted upon the shaft and held in suspension thereby, a stop nut located upon the shaft and controlling the lateral movement of the fork, and a drag having a link connection with one member of the fork, as and for the purpose specified.

4. A weeding attachment, comprising the vertically yielding shaft 19, having a collar 21, teeth or serrations 22, and a threaded rear extremity, a fork having an eye 28 on the shaft between the collar and teeth or serrations, a stop nut on the toothed part of the shaft, and a nut on the shaft in rear of the nut, substantially as set forth.

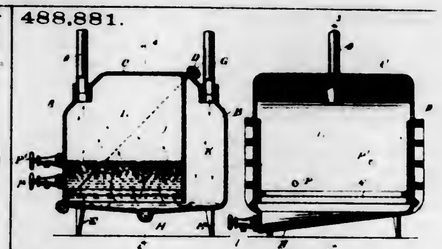
5. A weeding attachment, comprising an attaching plate 10, a laterally projecting nut or bearing longitudinally adjustable thereon and provided with lugs 16, 16, a vertically yielding shaft 19 mounted at its forward end on the nut and resting on the rear lug, a spring secured upon the other lug and curved upward and rearward and bearing at its free end on the upper side of the said shaft, and a turning fork carried by the rear end of the said shaft, substantially as set forth.

6. The combination, with a turning plow, and a shaft adjustably attached to the plow beam, of a turning fork carried by the shaft, a stop device controlling the lateral movement of the shaft, a drag attached to the turning fork, a lift lever, and a connection between the lift lever and the fork, whereby the fork and the drag may be elevated, as and for the purpose set forth.

7. A weeding attachment, comprising the bent shaft 19, a bearing nut 13, on which the front end of the shaft pivots, a lug on the nut limiting the downward movement of the shaft, a spring carried by the nut and bearing down on the shaft, a longitudinally slotted attaching plate, a bolt extending through the slot and nut and provided with a binding nut for securing the nut 13 in position on the plate and also securing the shaft on the nut 13, a collar 21 on the rear end of the shaft, a stop nut 29 on the shaft in rear of the collar and having depending lugs 28, a binding nut securing the stop nut in place, and a laterally swinging fork pivoting on the shaft between the said collar and stop nut, substantially as set forth.

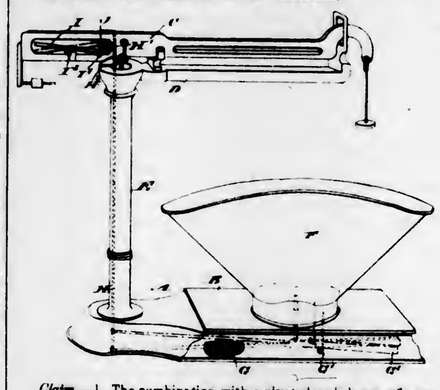
488,881. CARBURETOR. WILLIAM PALLEY and JAMES PALLEY, Lafayette, Ind. Filed Aug. 9, 1892. Serial No. 442,569. (No model.)

488,881.



Claim.—A carburetor casing composed of the two detachable sections B, C, constructed as described, that is to say, the box-like flanged section C, having a gas outlet at the top and an open bottom, and the flanged section B, having a gas inlet at the top and its sides embracing a portion of section C, and constituting the bottom and part of the sides of the latter, whereby chambers K and I, for gas and carbureting liquid are formed in the respective sections, as shown and described.

488,882. WEIGHING-SCALE. JOHN P. FIETH, Titusville, Pa. Filed July 7, 1892. Serial No. 439,192. (No model.)



Claim.—1. The combination with a pivoted scale beam, of a second beam pivoted upon and carried by the scale beam and having a running or traveling weight, and a lever adapted to be actuated by the placing of a scoop on the weighing platform and connected with said second beam, substantially as set forth.

2. An attachment for weighing scales, comprising a weighted lever adapted to be actuated by the scoop, a rod pivotally connected with the said lever and provided with lugs, and a beam journaled on the scale beam and provided with a running weight, the said beam being actuated by the lugs on the said rod, substantially as shown and described.

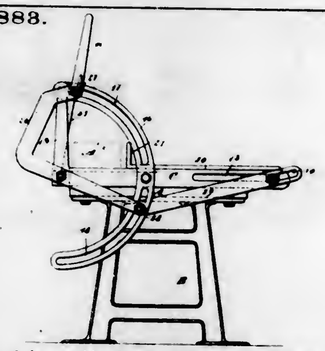
3. In an attachment for weighing scales, the combination with a scoop provided with a pin, of a lever adapted to be engaged by the said pin, and a beam journaled on the scale beam and provided with a running weight, the said beam being actuated from the said lever, substantially as shown and described.

4. In an attachment for weighing-scales, the combination with a scoop provided with a pin, of a lever adapted to be engaged by the said pin, a beam journaled on the scale beam and provided with a running weight, the said beam being actuated from the said lever, and intermediate connection between the said lever and the said beam, substantially as shown and described.

5. The combination with a platform scale of an automatically shifted or actuated scoop-counterbalance or compensator mounted on the scale beam, and a lever mechanism connected with and extending adjacent to the platform and actuated by the placing of a scoop upon, or its removal from, the said platform; whereby the said scoop-counterbalance or compensator will be automatically shifted or actuated to balance the scale beam during the presence or absence of the scoop, substantially as set forth.

488,883. BRICK-CUTTING MACHINE. CHARLES T. FITCH and ANDREW SCHAEFE, Perth Amboy, N. J. Filed Apr. 22, 1892. Serial No. 430,196. (No model.)

488,883.



Claim.—1. In a machine for cutting brick, the combination, with a main table, and levers fulcrumed at the sides of the table, of a feed table held to slide upon the main table, a connection between the levers and the feed table, and a cutter comprising a head connected with the levers, a shaft journaled in the frame and wires stretched between the head and the shaft, substantially as shown and described, whereby the cutters are actuated directly from the levers and the feed table indirectly, or through the medium of its connection with the levers, substantially as and for the purpose specified.

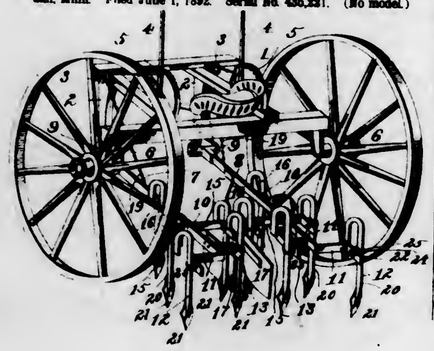
2. In a brick cutting machine, the combination, with a table, angle levers fulcrumed upon the table, one at each side, segmental plates or bars secured to the table back of the levers, said plates or bars being provided with slots, one at each side of the center, and a cutter, consisting of a head bar passed through the upper slots of the segmental plate or bar and counected with the levers near their upper ends, a shaft journaled in the frame, and wires secured to the shaft and to the upper head, of a feed table held to slide upon the main table, a link connection between the feed table and the lower ends of the levers, and pins connecting the levers and the links, and passing through the lower slots in the segmental plates or bars, substantially as described.

3. In a brick cutting machine, the combination, with the levers, and cutters actuated by the levers, of a feed table, and a connection between the feed table and the levers, whereby when the cutters are moved in one direction the feed table is simultaneously moved in an opposite direction, as and for the purpose specified.

4. In a brick cutting machine, the combination, with a table, angle levers fulcrumed thereon, and cutting devices carried by and attached to the levers, of a feed table, and a link connection between the feed table and the levers, substantially as shown and described, whereby as the cutters are moved rearward the feed table is carried forward, delivering the material to be acted upon to the cutters, as and for the purpose set forth.

5. In a machine for cutting bricks, the combination, with the table, an angle lever fulcrumed upon the table, and a cutting device, one portion of which is pivoted upon the table, the other portion being connected with the upper portion of the lever, of a feed table held to slide upon the main table, the feed table being provided with a series of slots to receive the cutters, and a link connection between the feed table and the lower end of the lever, as and for the purpose specified.

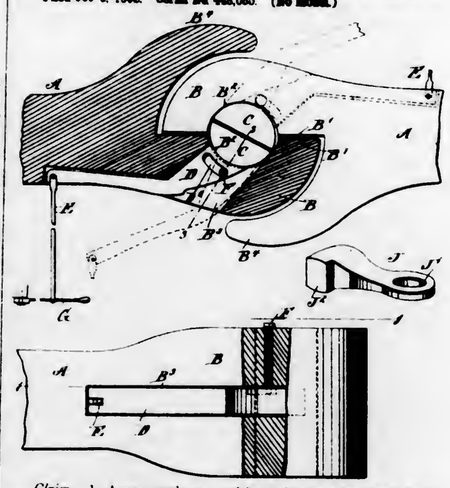
488,884. WHEEL-CULTIVATOR. THOMAS J. FITZSIMONS, Rapidan, Minn. Filed June 1, 1892. Serial No. 435,231. (No model.)



Claim.—1. In a wheel cultivator, the combination with the main frame and the depending bars 2, of shovel frames pivotally secured to the said bars, and each consisting of a main bar 10, terminating at its rear end in an angle-arm 11, and angle-arms 13, 14 and 15 secured on opposite sides of said bar 10, and a guard 17, secured to the bar 10 by a strap 18, substantially as described.

2. In a wheel-cultivator, the combination with the main frame and the pivoted shovel-frames of angle-arms, secured to said shovel-frames, and shovels each secured to said angle-arms, by an eye-bolt 23, and a rosette coupling consisting of the sections 26 and 27, said section 27 being formed with a seat 28, to receive the shank of the shovel, substantially as described.

488,885. CAR-COUPLING. HENRY GALLAGER, Savannah, Ga. Filed Oct. 6, 1892. Serial No. 448,085. (No model.)

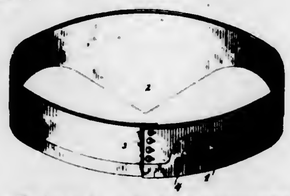


Claim.—1. A car coupler comprising a drawhead having a head formed with an inner longitudinally-extending face containing a vertically-disposed semi-circular recess, a half-bolt mounted to turn in the said recess, an arm connected with the said bolt, and a pin connected with the said arm, substantially as shown and described.

2. A car coupler comprising a drawhead having a head formed with an inner longitudinally-extending face containing a vertically-disposed semi-circular recess, a half-bolt mounted to turn in the said recess, an arm connected with the said bolt, a pin connected with the said arm, and a rod connected with the said arm and reaching to one side of the car, substantially as shown and described.

3. A car coupler comprising a drawhead having a head formed with an inner longitudinally-extending face containing a vertically-disposed semi-circular recess, a half-bolt mounted to turn in the said recess, an arm connected with the said bolt, a pin connected with said arm, and means, substantially as described, for locking the said arm in place, as set forth.

488,886. BELT FOR WOMEN'S UNDERGARMENTS. MARTHA C. GELDOWSKY, St. Louis, Mo. Filed Feb. 6, 1892. Serial No. 420,490. (No model.)



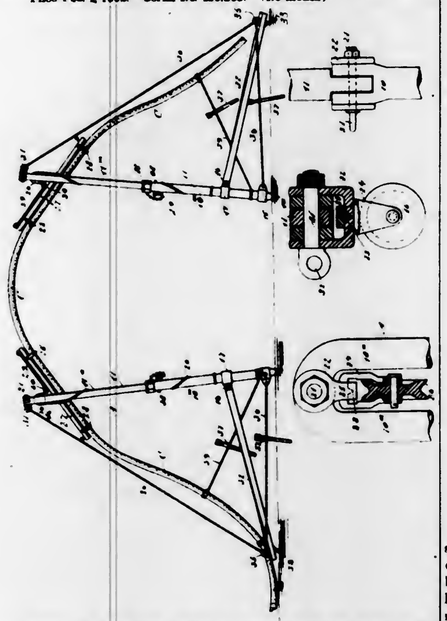
Claim.—The herein-described belt for undergarments, consisting of a belt proper provided upon its outer face with suspending devices, and a flap depending from the upper edge of the belt proper and overlapping said suspending devices, said flap terminating above the lower edge of the belt proper; substantially as and for the purpose set forth.

488,887. UNDERGARMENT. MARTHA C. GELDOWSKY, St. Louis, Mo. Filed Aug. 11, 1892. Serial No. 442,755. (No model.)

Claim.—1. As an improved article of manufacture, an undergarment for women, consisting of a front section provided at its upper edge with a downwardly-convergent cut-away portion, a back section provided at its upper edge with gores, said sections being separated at their opposing edges, and means for suspending said sections from the waist only of the wearer, substantially as and for the purpose set forth.

2. As an improved article of manufacture, an undergarment for women, consisting of a front section provided at its upper edge with a downwardly convergent cut-away portion, a back section provided at its upper edge with a series of V-shaped gores decreasing in length from the center toward each edge, said sections being separated at their opposing edges, and means for suspending said sections from the waist of the wearer: substantially as and for the purpose set forth.

488,888. HOSE-BRIDGE. JOHN H. GLOSINGER, Pittsburg, Pa. Filed Feb. 4, 1892. Serial No. 420,963. (No model.)



Claim.—1. In a hose bridge, a supporting section consisting in legs pivotally connected at their upper ends, braces pivoted to the lower portions of the legs and adjustably pivoted together at their opposite ends, and a downward projecting tooth or spur 30 at the point where the braces are pivoted together, substantially as described.

2. A hose bridge section, comprising longitudinally extensible legs pivoted together at their upper ends; and braces pivoted to the lower leg members and at their opposite ends pivoted together and there provided with a downward projecting spur or tooth, substantially as described.

3. A hose bridge consisting of two sections, each comprising two legs formed in telescopic sections and provided with a locking device holding the sections in predetermined position, braces pivoted to the outer sections of the legs, a locking device pivotally connecting the outer ends of the braces, a tackle carried by the legs, a hoist bar or block, and a cable attached to the hoist bar or block, and passed through the tackle, substantially as and for the purpose set forth.

4. A hose bridge, the same comprising sections, each section comprising legs constructed in telescopic sections, the outer section being provided with key slots and a key, the upper ends of the legs being pivotally connected, whereby they may be spread to an inverted V or A shape, a pulley pivotally and adjustably suspended from the legs at their pivot, a hoist block, or bar a cable attached to the hoist block or bar and passed over the pulley, and braces connected with the legs, as and for the purpose set forth.

5. In a hose bridge, the combination, with a section consisting of pivotally connected and vertically adjustable legs, a tackle suspended from the pivot of the legs, a hoist block or bar, and a cable attached to said block or bar and passed over the tackle, of guide ropes or cables attached to the legs near their base and extending upward therefrom, braces connected with the legs, and clamps adapted for engagement with the hose, as and for the purpose specified.

6. A hose bridge section, consisting in the legs pivotally connected at their upper ends, braces pivoted to the lower ends of the legs and adjustably pivoted together at their opposite ends, eyes on the braces adjacent to their pivotally connected ends, ropes, chains or cables extending from the upper end of the section down through said eyes and secured to the lower ends of the legs and hose straps or clamps secured to said ropes, chains or cables, substantially as described.

488,889. ELECTRIC CIGAR-LIGHTER. EDWARD T. GUTZEKLET and WILLIAM R. IZARD, St. Louis, Mo. Filed June 27, 1892. Serial No. 438,107. (No model.)

Claim.—1. In an electric cigar lighter, the combination, with a stand or upright, a contact brush or brushes, and electrical conductors communicating respectively with the stand or upright and the brush or brushes, of a lamp carried by the stand or upright and insulated therefrom, said lamp being in series with the brush conductor, and a wire netting inclosing the lamp and in electrical connection with the stand or upright: substantially as and for the purpose set forth.

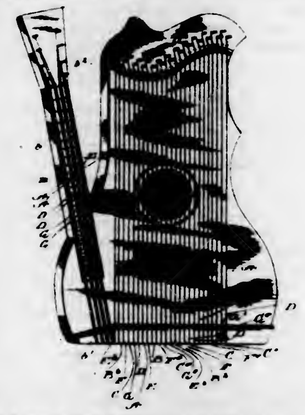
2. In an electric cigar lighter, the combination, with a stand or upright 1, a contact brush or brushes 9, a lamp 4 carried by the stand or upright and insulated therefrom, and a wire netting 16 inclosing the lamp and in electrical contact with the stand or upright, of a conductor 18 leading to the lamp and from thence to the brush or brushes, and a conductor leading directly to the stand or upright: substantially as and for the purpose set forth.

488,890. MUSICAL INSTRUMENT. ROBERT HAGEMAN, Mullan, Idaho. Filed May 24, 1892. Serial No. 434,157. (No model.)

Claim.—1. A zither having the zither-accompaniment-strings, and mandolin melody strings, the latter being arranged in pairs, as set forth.

2. A zither having the zither-accompaniment-strings, and a sin-

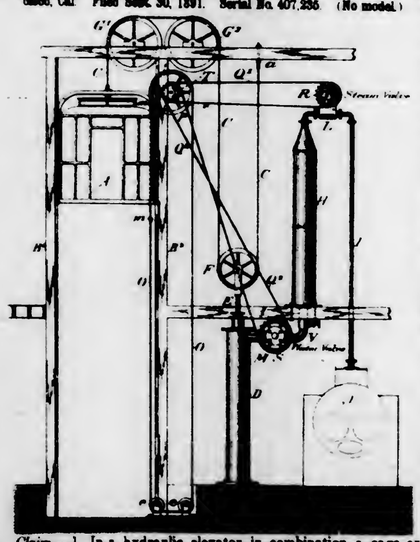
gle arm or neck projecting diagonally therefrom provided with mandolin melody strings, as stated.



3. The herein-described improved mandolin-zither, comprising the zither sound board having the zither-accompaniment-strings, the arm or neck projecting diagonally from said zither sound board, and the mandolin melody strings arranged in pairs thereon, as set forth.

4. The herein-described improved mandolin zither comprising the zither sound board having the zither accompaniment strings, the arm or neck secured at one end to said sound board and projecting diagonally therefrom and having an outer widened end provided with keys, and the mandolin melody strings arranged in pairs secured to said keys, substantially as set forth.

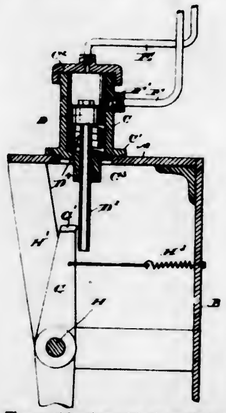
488,891. HYDRAULIC ELEVATOR. COFRAN I. HALL, San Francisco, Cal. Filed Sept. 30, 1891. Serial No. 407,235. (No model.)



Claim.—1. In a hydraulic elevator, in combination, a cage or platform A, a hydraulic cylinder D, a vapor receiver H of the same diameter as cylinder D but having a cubical capacity in excess of said cylinder D, and a piston working in the cylinder D, whereby as the piston rises in the cylinder the water rises the same distance in the vapor receiver H, and as the piston descends in said cylinder the water descends accordingly in the vapor receiver and the water level in receiver H remains a certain distance relative to the piston in cylinder D at different points in the latter's stroke, substantially as described.

2. In a hydraulic elevator, in combination, a cage or platform A, a hydraulic cylinder D provided with a piston, a vapor receiver H having a cubical capacity in excess of the cylinder D but of the same diameter as said cylinder, whereby as the piston rises in the cylinder the water rises the same distance in the vapor receiver, and as the piston descends in the main cylinder the water descends accordingly in the vapor receiver, and the water level in receiver H remains a certain distance relative to the piston in cylinder D, in different points of the latter's stroke, substantially as described.

488,892. AUTOMATIC SIGNAL AND BRAKE MECHANISM FOR LOCOMOTIVES. SAMUEL J. K. HASSALL, Penrith, New South Wales. Filed June 22, 1892. Serial No. 437,582. (No model.) Patented in New South Wales Dec. 3, 1891, No. 3,446, and in Victoria Dec. 18, 1891, No. 9,337.



Claim.—1. The combination with the cylinder having pipe connections with the air brake apparatus and whistle, and the spring pressed piston mounted within the cylinder, of a swinging lever mounted beneath the rod of the piston and adapted to contact therewith, and a movable striking plate held upon the track, in the path of the lever, said striking plate having operative connections with the railway signals, substantially as described.

2. The combination with the cylinder having pipe connections with the air brake apparatus and with the whistle, and the spring pressed piston held to slide in the cylinder and having a depending piston rod, of a spring pressed lever pivoted beneath the cylinder and having its upper end arranged to contact with the piston rod, and a swinging striking plate mounted upon the track and adapted to extend into the path of the lever, substantially as described.

3. The combination with the cylinder having pipe connections with the air brake apparatus and a whistle, as described, and the spring pressed piston held to move in the cylinder, the piston having a depending piston rod, of a spring pressed lever pivoted beneath the cylinder and having its upper end arranged to contact with the piston rod, and a weighted and vertical swinging striking plate mounted upon the track and adapted to extend into the path of the lever, the striking plate having an operative cable connection with the swinging signal arms along the track, substantially as described.

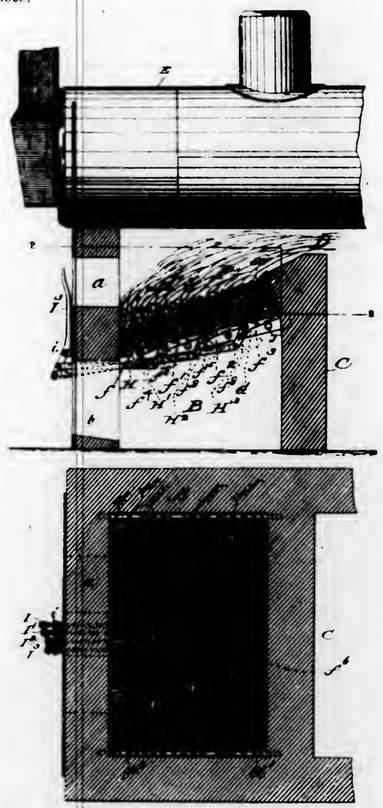
488,893. FURNACE. MELVILLE C. HAWLEY, St. Louis, Mo. Filed Mar. 16, 1892. Serial No. 426,012. (No model.)

Claim.—1. In a furnace, a gate made in sections arranged crosswise, and successively beyond each other, in the furnace, and each being pivoted at or near its upper front corner to enable the sections beginning at or toward the rear end of the furnace, to be separately and successively upturned for the purpose of accumulating the contents of the grate at or toward the forward end of the furnace, substantially as described.

2. A furnace grate made in sections which are arranged transversely, and successively beyond each other, in the furnace, and which are pivoted, and relatively arranged, to enable the sections to be separately upturned toward the front of the furnace, and when upturned, to be in position to dump their contents onto the section next in front, substantially as described.

3. The combination, in a furnace, of the grate-sections and the cross-bars J, said grate sections being arranged crosswise in the furnace, and being pivoted respectively at or near the upper forward corner of the section, substantially as described.

4. The combination, in a furnace, of the grate-sections f, f', f^3, f^4, the rods, and the levers, said section f, being adapted to be turned to dump its contents into the ash-pit, and said other sections each being pivoted at or near the upper forward corner of the section to enable them to be separately upturned toward the front of the furnace, and into position to dump their contents onto the section next in front as described.



5. The herein described method of firing a furnace, the same consisting in filling the grate with fuel, starting a fire therein at the forward end of the body of fuel, extending the fire along the top portion of the fuel to the farther end of the fireplace, consuming the fuel downward toward the grate, concentrating the remnant of the fire at the forward end of the fireplace, refilling the empty portion of the grate with fuel, and extending the fire backward again along the top portion of the fuel, and repeating as set forth.

6. The herein described method of firing a furnace, the same consisting in consuming the fuel downward toward the grate, concentrating the remnant of the fire at the forward end of the fireplace, refilling the empty portion of the grate with fuel, and extending the fire backward again along the top portion of the fuel, and repeating as set forth.

7. The herein described method of firing an upward-draft furnace, the same consisting in consuming the fuel from the surface thereof downward toward the furnace grate, concentrating the remnant of the fire at one part of the grate, refilling the grate with fuel, extending the fire throughout the upper portion of the fuel, and then consuming it downward again toward the grate, and so on.

488,894. WAGON-REACH. JOHN R. HESS, Solon, Iowa, assignor of one-half to Jacob H. Fisher, same place. Filed July 6, 1892. Serial No. 439,154. (No model.)

Claim.—The combination with the front and rear axles, the coupling pole with a series of holes therein, and the hounds of the rear axles secured to a sheath having a hole to receive a pin in connection with the holes of the coupling pole, of the extension pieces secured midway to said sheath and arranged and adapted to slide on opposite sides of the coupling pole, and a guide band secured to the front ends of the extension pieces, substantially as specified.

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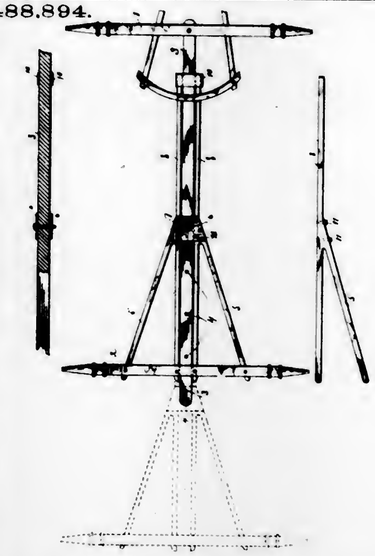


488,895. AUTOMATIC DAMPER-REGULATOR. CHARLES D. HOWARD, Syracuse, N. Y., assignor to the Howard Thermostat Company, same place. Filed Nov. 30, 1892. Serial No. 453,568. (No model.)

Claim.—1. A thermostatic plate consisting of two contiguous sheets of material of different expansible properties, said plate having a broad base fixed to a suitable support, and a gradually narrowed body in combination with the damper operating mechanism connected to the narrow end of the plate, substantially as described.

2. A thermostatic plate, consisting of two contiguous sheets of material of different expansible properties, said plate having a broad base fixed to a suitable support and a gradually narrowed body, a supporting standard to the base of which, the base of the thermostatic plate is securely fastened a bell crank lever fulcrumed to the upper end of the standard and a link or chain connecting the short arm of said lever to the apex of the thermostatic plate, substantially as specified.

3. The combination with the tri-angular thermostatic plate, the standard to which it is secured at its base and the bell crank lever and its connecting link or chain, of the crank shaft having a bearing in the thermostatic plate and a knob and index at its outer end and the chain connecting the crank with the apex of said plate, whereby the thermostat may be set to operate at a predetermined or desired temperature, substantially as described.

4. The combination with the supporting standard, the tri-angular thermostatic plate secured to the same at its base, and the bell crank lever and link connecting the short arm with the apex of the plate, of the damper connected to the long arm of said lever, by a suitable cord or connection, so as to automatically drop as the thermostatic plate expands, and be moved positively by the contraction of said plate, substantially as specified.

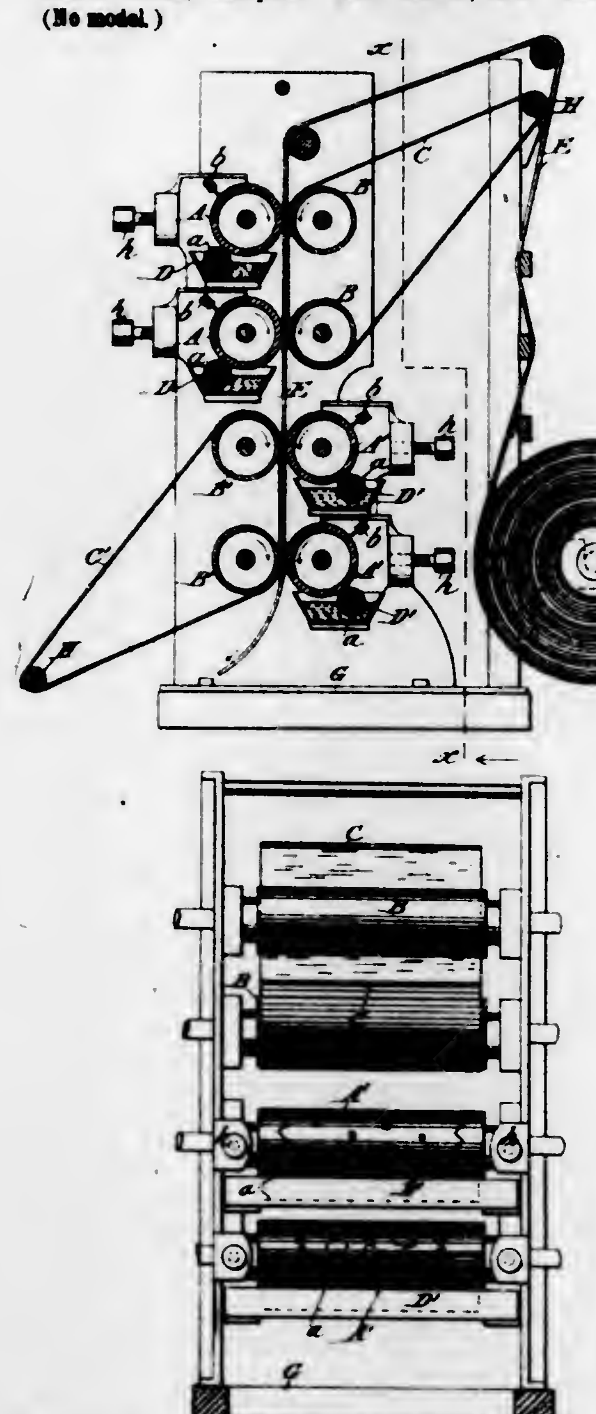
488,896. PILE-PROTECTOR. JOHN W. LOWMAN, Vicksburg, Miss. Filed Mar. 28, 1892. Serial No. 426,828. (No model.)

Claim.—The improved pile provided with a reticulated facing or guard of woven wire incorporated with its impact face whereby the fibers of the pile operate to retain the facing in place and the latter

488,896.

in turn operates to prevent the splitting of the head of the section substantially as set forth.

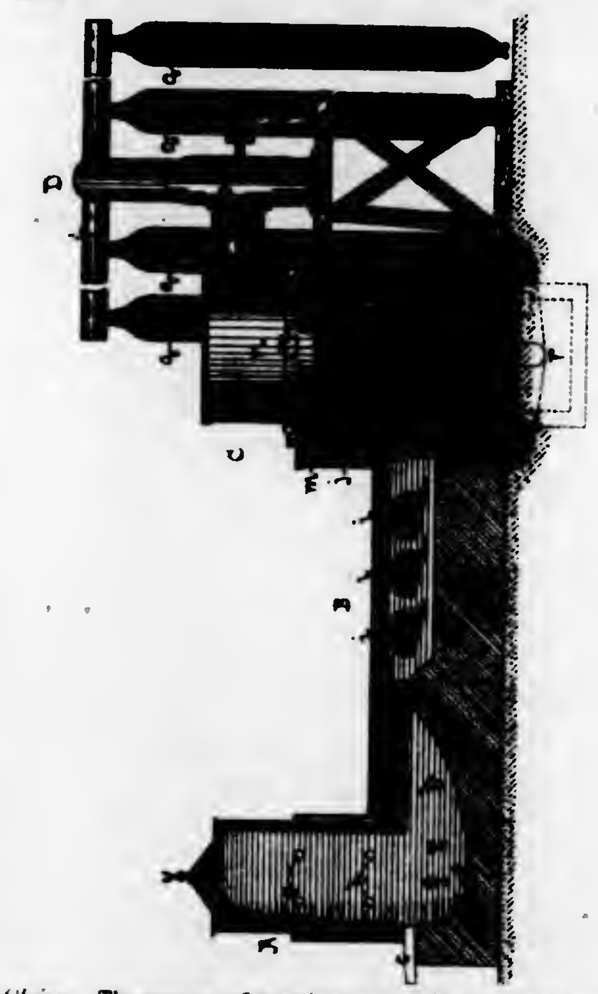
488,897. MACHINE FOR PRINTING FABRICS. Thomas J. Martin, Philadelphia, Pa., assignor of two-thirds to Edwin Martin and William L. Martin, same place. Filed Nov. 22, 1890. Serial No. 372,351. (No model.)



Claim.—1. The combination of the printing rollers which operate on one side of the fabric, their collar boxes, the distributing rollers and doctors therefor, the impression rollers opposite said printing rollers and against which they press, the printing rollers operating against the other side of the fabric, their color boxes, distributing rollers and doctors, the impression rollers directly opposite said printing rollers and against which they press, the impression rollers opposite one set of printing rollers and all the rollers on one side of the fabric being located in line with each other and having the same direction of rotation while those on the other side are likewise in line with each other and have the same direction of rotation and the endless blankets passing around each set of impression rollers as well as around a supporting pulley, all arranged so that the fabric may pass between the printing and impression rollers with an equal and constant tension and be printed on both sides, substantially as described.

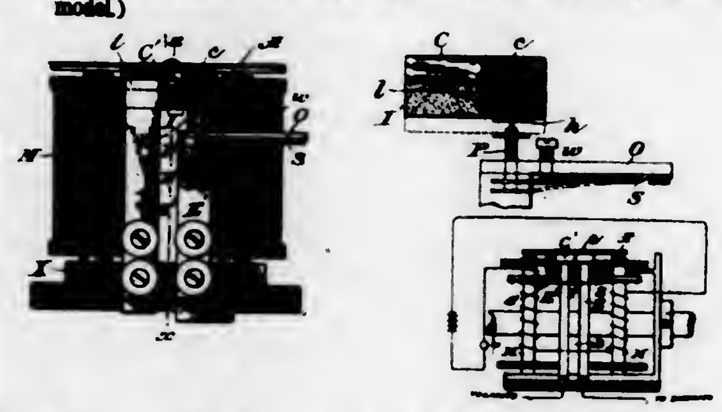
2. The combination in a calico printing machine for printing upon both sides of the fabric, of the two sets of printing and bearing rolls, the printing and bearing rolls for each side of the fabric being arranged in line so as to act upon the fabric while it travels in a straight line, inking devices for the printing rolls, an independent blanket for each set of bearing rolls, and guide rollers for said blankets.

488,898. PROCESS OF TREATING MATERIALS CONTAINING METALS. Robert F. Henninger, Newark, N. J., assignor to Edward J. Ill, same place. Filed June 19, 1891. Serial No. 396,834. (No model.)



Claim.—The process of treating materials containing volatile and non-volatile metals and sulphur, which consists in exposing such materials while descending in a stack together with fuel to the action of air blast at two different levels, causing the gaseous products of combustion to travel downward with the descending materials and separating them from the charge and molten mass below both air blasts and after exposure to the second and lower air blast, substantially as described.

488,899. NON-SPARKING ELECTRIC SWITCH. Gwynne E. Painter, Baltimore, Md. Filed Mar. 11, 1892. Serial No. 424,540. (No model.)



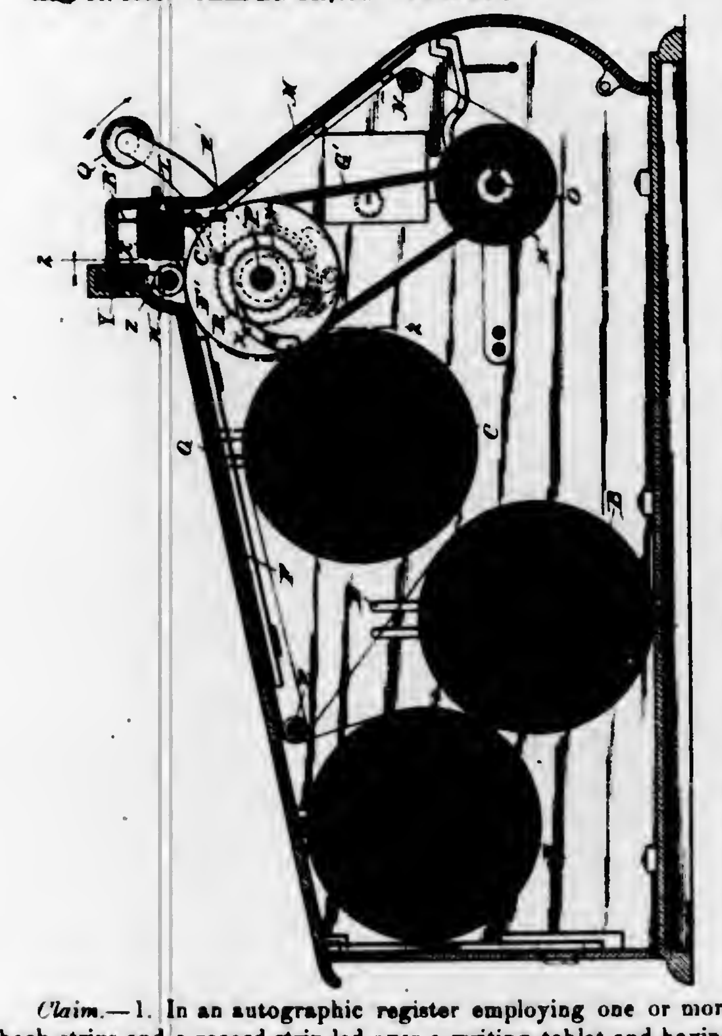
Claim.—1. The combination in an electric switch of a rocking lever, means for operating the same, a contact bar upon each end of the lever, main circuit terminals completing circuit through said bars and a supplemental contact completing circuit in advance of the main terminals.

2. The combination in an electric switch of a rocking lever, means for operating the same, a contact bar upon each end of the lever, main circuit terminals completing circuit through said bars, and two or more supplemental contacts completing circuits in advance of the main terminals.

3. The combination in an electric switch of a rocking lever, means for operating the same, a contact bar upon each end of the lever, brackets supporting the main terminals of the circuit in proximity to said bars, and supplemental contacts upon two or more of the brackets completing circuit before the main terminals.

4. The combination in an electric switch of a rocking lever, means for operating the same, a contact bar upon each end of the lever, main circuit terminals completing circuit through said bars and supplemental spring contacts making a thrust contact with the bars and completing circuit through them in advance of the main terminals.

488,900. AUTOGRAPHIC REGISTER. John Pfeifer, Dayton, Ohio, assignor to the National Cash Register Company, same place. Filed Aug. 16, 1892. Serial No. 443,262. (No model.)



Claim.—1. In an autographic register employing one or more check strips and a record strip led over a writing tablet and having manifolding material interposed between them, the combination of feed rollers for advancing the strips, a storage reel for winding up the record strip, a cutter for severing the check strip or strips, and a single operating handle or driving mechanism actuating said parts to advance all of the strips, cut off the check strips, and wind up the record strip.

2. In an autographic register, the combination of a pair of rollers for advancing the paper strips, a storage reel for winding up the record strip, a cutter for severing the check strips, and a single operating handle or driving mechanism actuating both the storage reel and cutter.

3. In an autographic register, the combination of feed rollers for advancing the paper strips, a storage reel for winding up the record strip, a driving connection between one of the feed rollers and storage reel, a cutter for severing the check strips, and a single operating handle or driving mechanism for actuating the feed rollers to advance the strips and the cutter to sever the check strips.

4. In an autographic register, the combination of feed rollers for advancing the paper strips, a storage reel for winding up the record strip, a frictional driving connection between one of the feed rollers and storage reel, adapted to yield when the storage reel has wound up the length of record strip advanced to it by the feed rollers, a cutter for severing the check strip, and a single operating handle or driving mechanism for actuating the feed rollers to advance all of the strips and the cutter to sever the check strips.

5. In an autographic register, the combination of rollers for advancing the paper strips, a storage reel for winding up the record strip, a cutter for severing the check strips, a single revoluble driving shaft, and connections between said shaft and the storage reel and cutter for winding up the record strip and cutting off the check strips.

6. In an autographic register, the combination of a revoluble driving shaft, feed rollers for advancing the paper strips, one of said rollers being mounted upon said shaft, a storage reel for winding up the record strip, a driving connection between the feed rollers and storage reel and a cutter for severing the check strips, actuated by the revolution of the driving shaft.

7. In an autographic register, the combination of a revoluble driving shaft, feed rollers for advancing the paper strips, one of said rollers being loosely mounted upon said driving shaft and provided with a ratchet, an actuating pawl for the ratchet carried by and revolving with the driving shaft, means for disengaging the pawl from the ratchet and maintaining it out of engagement therewith during a portion of the revolution of the driving shaft, a storage reel for winding up the record strip, a driving connection between said reel and one of the feed rollers, a cutter for severing the check strips, and an actuating cam therefor revolving with the driving shaft, substantially as described.

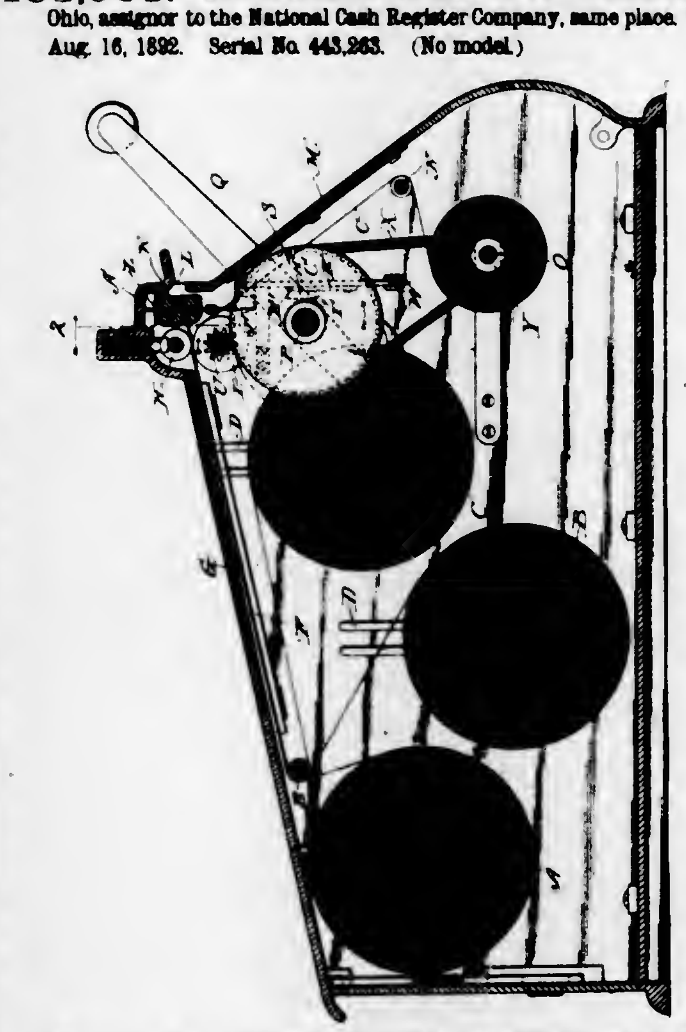
8. In an autographic register, the combination of feed rollers for advancing the paper strips, a storage reel for winding up the record strip, a cutter for severing the check strips, located above said strips, and a single operating handle or driving mechanism for actuating the feed rollers, storage reel and cutter, substantially as described.

9. In an autographic register, the combination of a pair of feed rollers, bearing against each other throughout their length one capable of slight play in its bearings toward and from the other, and a spring applied to the latter roller near its middle whereby the pressure of said roller against the other is equalized throughout its length and a regular and straight feed of the paper strips obtained.

10. In an autographic register, the combination of a pair of feed rollers, one capable of slight play in its bearings toward and from the other and provided at its middle with a circumferential groove or cut-away space, and a bearing block fitting in said groove and spring-pressed against the spindle of the roller, substantially as and for the purpose described.

11. In an autographic register, the combination of the revoluble shaft P, the handle Q applied thereto, the feed rollers H I, the latter loosely mounted upon the shaft P and provided with the ratchet R, the arm T fast on the shaft P and provided with the cam D′, the pawl S carried by the arm T and spring-pressed toward the ratchet R, the curved plate V upon the casing co-operating with a projection, as U, upon the pawl S, the grooved pulley F′ fast upon the feed roller I, the storage reel O, the grooved pulley H′ fast thereon, the yielding band G′ passed around the pulleys F′ H′, the slotted cross bar K, the cutter B′ hinged therein and co-operating with the cam D′ upon the arm T, and the re-setting spring E′ applied to the cutter, substantially as described.

488,901. AUTOGRAPHIC REGISTER. John Pfeifer, Dayton, Ohio, assignor to the National Cash Register Company, same place. Filed Aug. 16, 1892. Serial No. 443,263. (No model.)



Claim.—1. In an autographic register employing one or more check strips and a record strip led over a writing tablet and having manifolding material interposed between them, the combination of feed rollers for advancing the strips, a storage reel for winding up the record strip, a cutter for severing the check strip or strips, a rock-shaft having an operating handle applied to it, and suitable connections, whereby a backward and forward stroke of said handle and shaft will cause all of the strips to be advanced, the check strips cut off, and the record strip wound upon the storage reel.

2. In an autographic register such as described, the combination of feed rollers for advancing the paper strips, a storage reel for winding up the record strip, a driving connection between one of the feed rollers and the storage reel, a cutter for severing the check strips, a

advance the paper strips and a cutter to cut them into slips, the combination, with said feed rollers and cutter, of a lock co-operating therewith to lock either one when the other is operated.

7. In an autographic register employing a pair of feed rollers to

frame and provided with a driving pinion, a swinging rack bar meshing with the pinion at one end and having an adjustable pivotal support normally concentric with that of the swinging frame, a series of operating keys of different values, and connections between said keys

plates to move them different distances proportionate to the values of the keys, and a series of bell cranks connecting the sliding plates and the adjustable bars which support the swinging rack bars, substantially as and for the purpose described.

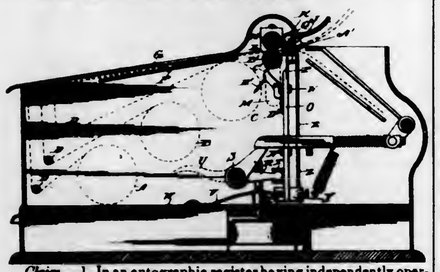
2. In an autographic register such as described, the combination of feed rollers for advancing the paper strips, a storage reel for winding up the record strip, a driving connection between one of the feed rollers and the storage reel, a cutter for severing the check strips, a rock-shaft having an operating handle applied to it, and suitable connections between the rock-shaft and feed rollers and cutter, whereby a single backward and forward movement of said shaft will cause all of said strips to be advanced, the check strips to be cut off and the record strip to be wound upon the storage reel.

3. In an autographic register such as described, the combination of feed rollers for advancing the paper strips, a storage reel for winding up the record strip, a frictional driving connection between one of the feed rollers and storage reel, adapted to yield when the storage reel has wound up the length of the record strip advanced to it by the feed rollers, a cutter for severing the check strips, a rock-shaft, a handle for operating it, and suitable connections between the rock-shaft and the feed rollers and cutter, for the purpose described.

4. In an autographic register such as described, the combination of a pair of feed rollers for advancing the paper strips, a rock-shaft, a gear wheel loose upon said shaft and meshing with a pinion upon one of the feed rollers, an actuating pawl carried by said shaft and co-operating with the gear to turn the latter and the feed rollers during the stroke of the shaft in one direction, a storage reel for winding up the record strip, a driving connection between the gear and storage reel, a hinged cutter for severing the check strips, and a cam and connections for actuating said cutter, whereby upon giving the rock-shaft a stroke in one direction the feed rollers will advance all of the strips and the storage reel will be turned to wind up the record strip, and upon giving it a stroke in the opposite direction the cutter will be actuated to sever the check stripe.

5. In an autographic register, the combination of the rock-shaft P, the handle Q applied thereto, the feed rollers H I, the gear wheel T loose upon the shaft P and meshing with a pinion upon the roller I, the arm V fast upon the shaft P and carrying the pawl W engaging the gear wheel T, the grooved pulley S turning with the gear wheel T, the storage reel O provided with the grooved pulley Y, the yielding band X passed around said pulleys, the hinged cutter A', the link C' pivoted at one end to said cutter, the plate E' pivoted at one end to the link C' and confined at its opposite end between the pin F' and spring G', the beveled lug H' upon the plate E', and the projection I' moving with the rock-shaft and co-operating with the lug H', substantially as and for the purpose described.

488,902. AUTOGRAPHIC REGISTER. JOHN PFEIFER, Dayton, Ohio, assignor to the National Cash Register Company, same place. Filed Aug. 16, 1892. Serial No. 443,264. (No model.)



Claim.—1. In an autographic register having independently operated feeding and cutting mechanisms for advancing and severing the paper strips, the combination, with the feeding mechanism, of a lock automatically thrown into position to lock said mechanism by the operation of the cutting mechanism.

2. In an autographic register having independently operated feeding and cutting mechanisms, the combination, with the cutting mechanism, of a lock automatically thrown into position to lock said mechanism by the operation of the feeding mechanism.

3. In an autographic register having independently operated feeding and cutting mechanisms, the combination, with said mechanisms, of a locking device co-operating therewith to lock either one when the other is operated.

4. In an autographic register employing a pair of feed rollers to advance the paper strips and a cutter to cut them into slips, the combination, with the feed rollers, of a lock arranged to be thrown into position to lock them by the movement of the cutter.

5. In an autographic register employing a pair of feed rollers to advance the paper strips and a cutter to cut them into slips, the combination, with the cutter, of a lock arranged to be automatically thrown into position to lock the cutter by the movement of the feed rollers.

6. In an autographic register employing a pair of feed rollers to advance the paper strips and a cutter to cut them into slips, the combination, with said feed rollers and cutter, of a lock co-operating therewith to lock either one when the other is operated.

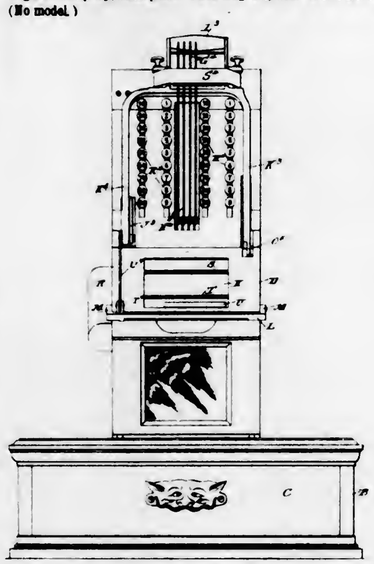
7. In an autographic register employing a pair of feed rollers to advance the paper strips and a cutter to cut them into slips, the combination, with said feed rollers, of a toothed wheel secured to one of them, and a locking dog co-operating with said wheel and arranged to be automatically thrown into engagement therewith, to lock the feed rollers, by the movement of the cutter to sever the strips, substantially as described.

8. In an autographic register employing a pair of feed rollers to advance the paper strips and a cutter to cut them into slips, the combination, with said feed rollers and cutter, of a notched disk secured to one of the rollers, and a locking dog co-operating with said disk and with a projection upon the cutter, to lock the latter when the feed rollers are turned, substantially as described.

9. In an autographic register, the combination of the feed rollers H I, the operating handle M applied to the roller I, the slotted cross piece K through which the paper strips and cutter blade pass, the reciprocating plate O carrying the cutter blade P, the toothed wheel B' secured to the feed roller I, the locking dog C' co-operating with said toothed wheel and with a cam lug D' upon the plate O, and means for lifting the plate O to cause the cutter P to sever the strips, substantially as and for the purpose described.

10. In an autographic register, the combination of the feed rollers H I, the operating handle M applied to the roller I, the slotted cross piece K through which the paper strips and cutter blade pass, the reciprocating plate O carrying the cutter blade P, the notched disk F' secured to the roller I, the locking dog G' co operating with said notched disk and with a projection I' upon the plate O, and means for lifting the plate O to cause the cutter blade P to sever the strips, substantially as and for the purpose described.

488,903. CASH REGISTER, INDICATOR, RECORDER, AND CHECK-PRINTER. JOHN PFEIFER, Dayton, Ohio, assignor to the National Cash Register Company, same place. Filed Aug. 29, 1892. Serial No. 444,419. (No model.)



Claim.—1. The combination of a series of type wheels mounted in a swinging frame, a series of operating keys of different values mounted in a fixed frame, connections between the keys and type wheels for adjusting the latter to bring to the line of print the type numbers representing the values of the operated keys, and a platen co-operating with the type wheels, substantially as described.

2. The combination of a numbered wheel mounted in a swinging frame and provided with a driving pinion, a swinging rack bar meshing with the pinion at one end and having an adjustable support at its other, a series of operating keys of different values, and connections between said keys and the adjustable support of the rack bar for changing the position of said support by the operations of different keys, substantially as and for the purpose described.

3. The combination of a numbered wheel mounted in a swinging frame and provided with a driving pinion, a swinging rack bar meshing with the pinion at one end and having an adjustable pivotal support normally concentric with that of the swinging frame, a series of operating keys of different values, and connections between said keys and the pivotal support of the rack bar for moving said support out of line with the pivotal support of the swinging frame, substantially as and for the purpose described.

4. The combination of a series of type wheels mounted in a swinging frame and each provided with a driving pinion, a series of swinging rack bars meshing with the pinions and having adjustable pivotal supports normally concentric with that of the swinging frame, a series of operating keys of different values, connections between said keys and the pivotal supports of the swinging rack bars, for moving said supports out of line with that of the swinging frame, and a platen co-operating with the type wheels, substantially as and for the purpose described.

5. The combination of a series of type wheels mounted in a swinging frame and each provided with a driving pinion, a series of swinging rack bars meshing with the pinions and having adjustable pivotal supports normally concentric with that of the swinging frame, a series of operating keys of different values, connections between said keys and the pivotal supports of the swinging rack bars for moving said supports out of line with that of the swinging frame, a lock for the adjustable supports of the rack bars, actuated by the swinging frame to lock said supports in their adjusted positions when said frame is swung out of normal position, and a platen co-operating with the type wheels, substantially as and for the purpose described.

6. The combination of a series of type wheels mounted in a swinging frame, a series of operating keys of different values mounted in a fixed frame, a registering mechanism actuated by said keys to register their values, connections between said keys and the type wheels for adjusting the latter to bring to the line of print the numbers representing the values of the operated keys, and a platen co-operating with the type wheels, substantially as described.

7. The combination of a series of type wheels mounted in a swinging frame, a series of sliding plates mounted in a fixed frame and each provided with a series of slots differentially inclined to the line of movement of the plate, a series of operating keys of different values co-operating with the slots in the plates to move them different distances proportionate to the values of the keys, connections between the sliding plates and the type wheels for adjusting the latter to bring to the line of print the type numbers representing the values of the operated keys, and a platen co-operating with the type wheels, substantially as described.

8. The combination of a series of sliding plates mounted in a fixed frame and each provided with a series of slots differentially inclined to the line of movement of the plate, a series of keys co-operating with the slots in said plates to move the plates different distances proportionate to the values of the keys, a registering mechanism actuated by said plates, a swinging printing frame carrying type, a platen co-operating therewith, and means actuated by the movements of said frame to return the slotted sliding plates to normal position after they have been moved by the operated keys, substantially as described.

9. The combination of a series of type wheels mounted in a swinging frame, a series of sliding plates mounted in a fixed frame and each provided with a series of slots differentially inclined to the line of movement of the plate, a series of operating keys co-operating with the slots in the plates to move them different distances proportionate to the values of the operated keys, a series of registering wheels actuated by said plates to register the values of the operated keys, connections between the sliding plates and the type wheels for adjusting the latter to bring to the line of print the type numbers representing the values of the operated keys, a platen co-operating with the type wheels, and means actuated by the swinging frame for returning the sliding plates to normal position after they have been moved by the operated keys, substantially as described.

10. The combination of a series of type wheels mounted in a swinging frame and each provided with a pinion, a series of swinging rack bars meshing with said pinions at one end and connected to adjustable supports at their other, a series of sliding plates mounted in a fixed frame and each provided with a series of slots differentially inclined to its line of movement, a series of operating keys of different values co-operating with the slots in the plates to move the latter different distances proportionate to the values of the operated keys, and connections between the sliding plates and the adjustable supports of the swinging rack bars, for moving said supports to different positions by the operations of different keys, substantially as and for the purpose described.

11. The combination of a series of type wheels mounted in a swinging frame and each provided with a pinion, a series of swinging rack bars meshing with said pinions at one end and pivoted at their opposite ends to a series of adjustable supporting bars, a series of sliding plates mounted in a fixed frame and each provided with a series of slots differentially inclined to the line of movement of the plate, a series of operating keys of different values co-operating with the slots in the plates to move them different distances proportionate to the values of the keys, and a series of bell cranks connecting the sliding plates and the adjustable bars which support the swinging rack bars, substantially as and for the purpose described.

12. The combination of a writing tablet and an impression pad or platen having a series of paper strips led over them and manifolding material interposed between the strips, a swinging frame, and a series of adjustable type wheels mounted therein and adapted to co-operate with the platen to effect the printing of their numbers upon the paper strips passed over the platen, substantially as described.

13. The combination of a writing tablet and an impression platen having a series of paper strips led over them and manifolding material interposed between the strips, a hinged knife bar for severing part of the strips, a swinging frame, connections between said frame and knife bar for actuating the latter by the movements of the former, and a series of adjustable type wheels mounted in the swinging frame and adapted to co-operate with the platen to effect the printing of their numbers upon the paper strips, substantially as described.

14. The combination of a writing tablet and an impression pad or platen having a series of paper strips led over them and manifolding material interposed between the strips, a storage reel for winding up one of said strips after it has been led over the platen, a swinging frame, a series of adjustable type wheels mounted therein and adapted to co-operate with the platen, and connections between said swinging frame and storage reel for actuating the latter by the movement of the former, substantially as described.

15. The combination of a writing tablet and an impression pad or platen having a series of paper strips led over them and manifolding material interposed between the strips, a storage reel for winding up one of said strips and a hinged knife bar for severing the others, a swinging frame, a series of adjustable type wheels mounted therein and adapted to co-operate with the platen to effect the printing of their numbers upon the paper strips, and connections between said swinging frame and the hinged knife bar and storage reel, for actuating said bar and reel by the movement of the swinging frame, substantially as described.

16. The combination of a writing tablet and an impression pad or platen having a series of paper strips led over them and manifolding material interposed between the strips, a swinging frame, a series of adjustable type wheels mounted therein and adapted to co-operate with the platen, a money drawer, a spring for throwing it open, a lock for holding it closed, and connections between the lock and swinging frame for releasing the drawer when said frame is moved to effect the printing of the type numbers upon the paper strips.

17. The combination of a writing tablet and an impression platen having a series of paper strips led over them and manifolding material interposed between the strips, a swinging frame, a series of adjustable type wheels mounted therein and adapted to co-operate with the platen, a money drawer, a spring for throwing it open, a gong, a striker actuated by the opening of the drawer to sound the gong, a lock for holding the drawer closed, and connections between the lock and swinging frame for releasing the drawer when said frame is moved to effect the printing, substantially as described.

18. The combination of a writing tablet having one or more paper strips led over the whole length of it and provided with a transverse opening having a paper strip led through it and over only a portion of the tablet, an impression pad or platen located in that portion of the tablet over which the last mentioned strip is led, a swinging frame carrying a series of adjustable type wheels adapted to co-operate with the platen, and manifolding material interposed between the strips, substantially as described.

19. The combination of a writing tablet and an impression platen having a series of paper strips led over them and manifolding material interposed between the strips, a swinging frame, a series of type wheels mounted therein and adapted to co-operate with the platen to effect the printing of their numbers upon the paper strips, a series of operating keys of different values, and connections between said keys and the type wheels for adjusting the latter to bring to the line of print the type numbers representing the values of the operated keys.

20. The combination of a writing tablet and an impression platen having a series of paper strips led over them and manifolding material interposed between the strips, a swinging frame carrying a series of type wheels adapted to co-operate with the platen to effect the printing of their numbers upon the paper strips, a series of sliding plates each provided with a series of slots differentially inclined to the line of movement of the plate, a series of operating keys of different values co-operating with the plates to move them different distances proportionate to the values of the operated keys, and connections between said sliding plates and the type wheels, for adjusting the latter to bring to the line of print the type numbers representing the values of the operated keys.

21. The combination of a writing tablet and an impression platen having a series of paper strips led over them and manifolding mate-

rial interposed between the strips, a swinging frame, a series of type-wheels mounted therein and adapted to co-operate with the platen to effect the printing of their numbers upon the paper strips, a series of sliding plates each provided with a series of slots differentially inclined to the line of movement of the plate, a series of operating keys of different values co-operating with the slots in said plates to move the plates different distances proportionate to the values of the keys, connections between said sliding plates and the type wheels for adjusting the latter to bring to the line of print the type numbers representing the values of the operated keys, and means actuated by the movement of the swinging frame for returning the sliding plates to normal position after they have been moved by the operated keys.

22. The combination of the swinging frame K^3, the type wheels D^4 mounted therein and provided with pinions F^4, the rack bars H^4 meshing with said pinions at their upper ends and pivoted at their lower ends to the sliding bars J^4, the sliding plates U' provided with the inclined slots V', the operating keys R' provided with pins W' co-operating with the slots V', and the bell cranks interposed between the sliding plates U' and bars J^4, substantially as described.

23. The combination of the swinging frame K^3, the type-wheels D^4 mounted therein and provided with pinions F^4, the rack bars H^4 meshing with the pinions at their upper ends and pivoted at their lower ends to the sliding bars J^4 provided with the locking notches in their upper edges, the sliding plates U' provided with the inclined slots V', the operating keys R' provided with the pins W' co-operating with the slots V', the bell cranks interposed between the plates U' and bars J^4, the locking bar E^3 co-operating with the notches in the bars J^4, and connections between the swinging frame K^3 and bar E^3 for throwing the latter into and out of locking position, substantially as described.

24. The combination of the swinging frame K^3, the type wheels D^4 mounted therein and provided with pinions F^4, the rack bars H^4 meshing at their upper ends with said pinions and pivoted at their lower ends to the sliding bars J^4 having the notches in their upper edges, the series of operating keys and connections between them and the bars J^4, for adjusting the latter to different positions, the rock-shaft G^3, the locking bar E^3 supported thereon by arms F^3, the bar H^3 fast upon the rock-shaft G^3, the cam L^3 on the swinging frame K^3, and the plate I^3 pivoted to the bar H^3 and co-operating with the cam L^3, substantially as described.

25. The combination of a movable bar or plate, a series of keys of different values co-operating therewith to move the bar different distances proportionate to the values of the keys, a series of movable stops co-operating with the keys to prevent operation of two or more of them at the same time but permit the operation of them singly, and a latch or locking device for the movable bar, normally holding the same from movement and arranged to be thrown out of locking position by the stops when the latter are moved by the operation of a single key, substantially as described.

26. The combination of a slotted plate or bar, a series of operating keys of different values co-operating with the slots in the bar to move the latter different distances proportionate to the values of the keys, a series of movable stops co-operating with the keys to prevent operation of two or more of them at once but permit the operation of them singly, and a latch or locking device for the sliding bar, normally holding the same from movement but arranged to be thrown out of locking position by the movement of the stops produced by the operation of a single key, substantially as described.

27. The combination of the sliding plate U' provided with the differentially inclined slots V', the operating keys R' having the pins W' co-operating with the slots in said plates, the disks Z' confined in a guideway adjacent to the inner ends of the keys and co-operating therewith to prevent operation of two or more of them at once but permit operation of them singly, the pivoted latch plate X^2 co-operating with the projection Z^2 on the plate U' and provided with a slot A^4 co-operating with a pin B^4 upon one of the disks Z', substantially as described.

28. The combination of the sliding plates U' having the differentially inclined slots V', the operating keys R' provided with the pins W' co-operating with the slots V', the rock-shaft X^2, the lifting arms N^2 fast thereon and co-operating with the studs M^2 on the plates U', and means for rocking the shaft X^2 to cause the arms N^2 to return the plates U' to normal position after they have been moved by the operations of the keys, substantially as described.

29. The combination of the sliding plates U' provided with the differentially inclined slots V', the operating keys R' having the pins W' co-operating with the slots V', the rock-shaft X^2, the lifting arms N^2 fast thereon and co-operating with projections on the plates U', the arm S^2 fast on the rock-shaft X^2, the arm O^2 loose thereon and arranged to carry the arm S^2 with it when lifted, the oscillating plate U^2 provided with the cam V^2 co-operating with the projection T^2 on the arm O^2, the arm I^2 for oscillating the plate U^2, the swinging frame K^2, and the link J^2 connecting the arm I^2 and frame K^2, substantially as described.

30. The combination of the hinged knife bar L, the bell crank V^4—X^4, the link U^4 connecting the knife bar L with said bell crank, the oscillating arm O^2 co-operating with the arm X^4 of the bell crank, the oscillating plate U^2 provided with the cam V^2 co-operating with the projection T^2 on the arm O^2, the arm I^2 for oscillating the plate U^2, the swinging frame K^2, and the link J^2 connecting the arm I^2 and frame K^2, substantially as described.

31. The combination of the hinged knife bar L, the bell crank V^4—X^4, the link U^4 connecting the knife bar and bell crank, the oscillating arm O^2 co-operating with the projection Y^4 on the bell crank, the locking arm A^2 also co-operating with the projection I^4, the oscillating plate U^2 provided with the cam V^2 co-operating with the projection T^2 on the arm O^2, the arm I^2 for oscillating the plate U^2, the swinging frame K^2, and the link J^2 connecting the arm I^2 and frame K^2, substantially as described.

32. The combination of a primary registering wheel, a secondary registering wheel, an actuating pawl for the secondary registering wheel, a spring normally tending to move said pawl in one direction, a latch for holding the pawl in normal position against the stress of the spring and arranged to be tripped by a projection upon the primary wheel, to release the pawl and permit the spring to move it, and an oscillating cam co-operating with the pawl to restore it to normal position and turn the secondary registering wheel.

33. The combination of a series of registering wheels, each transferring its registrations to the next higher wheel of the series, a series of transfer pawls, one co-operating with each of the wheels excepting the primary wheel of the series, a series of springs tending to pull the pawls in one direction, a series of latches for holding the pawls in normal position against the stress of the springs, each latch arranged to be tripped by a projection upon the next lower wheel in the series, to release its pawl and permit the spring to move it, an oscillating shaft, and a series of cams or projections arranged spirally around said shaft and co-operating with the transfer pawls to return them to normal position in successive order after they have been released by their latches and moved by their springs, substantially as described.

34. The combination of the registering wheels D^3, the pinions B^3 fast upon them, oscillating bell crank plates I^3, the springs L^3 connected to said plates, the pawls J^3 pivoted to said plates and engaging the pinions B^3, the latches N^3 co-operating with catches O^3 upon said plates, the arms R^3 rigid with the latches N^3 and co-operating with projections upon the wheels D^3, the oscillating shaft U^3, and the cams T^3 arranged spirally thereon and co-operating with the plates I^3, substantially as described.

35. The combination of the oscillating shaft U^3, the pinion V^3 fast thereon, the oscillating segment W^3 meshing with the pinion, the spring H^3 connected to the segment, the oscillating arm B^3, the pawl Z^3 carried thereby and co-operating with a projection Y^3 upon the segment, a trip plate G^3 co-operating with the pawl, and means for oscillating the arm B^3, substantially as described.

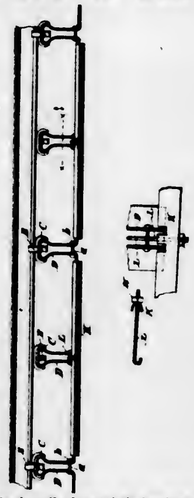
36. The combination of the oscillating shaft U^3, the pinion V^3 fast thereon, the oscillating segment W^3 meshing with the pinion, the spring H^3 connected to the segment, the oscillating arm B^3, the pawl Z^3 carried thereby and co-operating with a projection Y^3 upon the segment, the trip plate G^3 co-operating with the pawl, the rock shaft E^3, the arm D^3 fast thereon, and the link C^3 connecting the arms D^3 and B^3, substantially as described.

37. The combination of an oscillating indicating dial S^3, a vertically reciprocating rack bar W^3 geared thereto, a resetting spring A^3 connected to said rack bar, a lifter C^3 for the rack bar provided with an inclined extension D^3, a sliding plate U' provided with slots V' differentially inclined to its line of movement, a series of operating keys R' having pins W' co-operating with the slots V', and an oscillating bell crank P^4—N^4 actuated by the plate U' and having a projection E^3 co-operating with the inclined portion B^3 of the lifter C^3, substantially as described.

38. The combination of the series of oscillating indicating dials S^3, rack bars W^3 geared thereto, springs A^3 connected to the rack bars, lifters C^3 for the rack bars, sliding plates U' having inclined slots V', series of sets of operating keys R' having pins W' co-operating with the slots V' in the plates U', bell cranks P^4—N^4 actuated by the plates U' and having projections E^3 co-operating with the inclined portions D^3 of the lifters C^3, a series of pawls K^3 co-operating with the dials, an oscillating bar N^3 having projections O^3 co-operating with the pawls, and means for oscillating the bar N^3 to disengage the pawls from the dials, substantially as described.

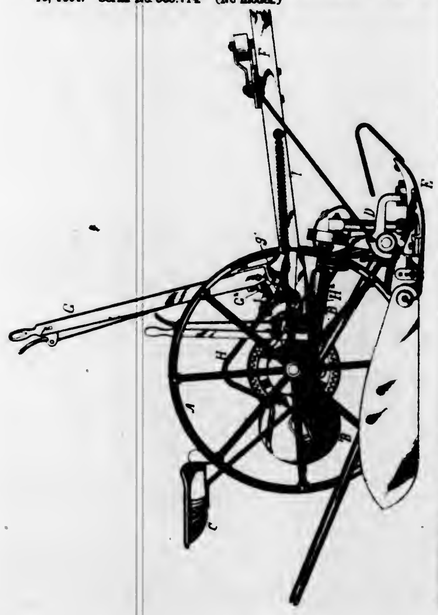
39. The combination of a writing tablet and an impression platen having a series of paper strips led over them and manifolding material interposed between the strips, a swinging frame, adjustable type wheels mounted therein and adapted to co-operate with the platen, a series of indicating dials, resetting springs and retaining pawls co-operating with them, a series of sets of operating keys, connections between the several sets of keys and the respective indicating dials for moving the latter to different positions by the operations of different keys, and means actuated by the movement of the swinging printing frame for simultaneously disengaging the retaining pawls from the dials to permit the springs to return the dials to initial position, substantially as described.

488,904. METAL TIE AND AUTOMATIC CLAMP FOR FASTENING SAME. WILLIAM W. PITTS, San Luis Potosi, Mexico, assignor of one-half to William T. Pegues and Charles E. Jenkins, Mansfield, La. Filed Feb 15, 1892. Serial No. 421,645. (No model.)



Claim.—The herein described metal tie having transverse bolts adjacent to its ends, the brace engaging the ends of ties, and the hooks engaging the transverse bolts of the tie and adapted to hold the brace in position, in combination with a railway rail and a clamp for connecting the rail to the tie, substantially as specified.

488,905. MOWING-MACHINE. HENRY E. PRIDMORE, Chicago, Ill., assignor to the McCormick Harvesting Machine Company. Filed Mar. 19, 1891. Serial No. 385,714. (No model.)



Claim.—1. In combination with a lever pivoted on the frame of the machine, one arm of which is connected with the coupling-frame, a foot-lever pivoted on the other arm, a lug or stop on the lever against which the foot-lever acts, a spring connecting the foot-lever with the machine and reacting between them, substantially as and for the purpose specified.

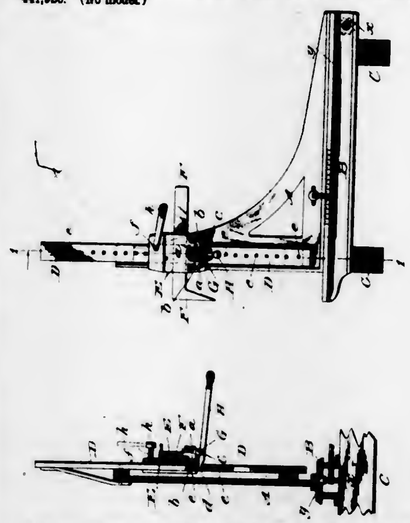
2. In combination with a hand-lever on a mowing machine, one arm of which is connected with a gag-lever on the coupling-frame to simultaneously raise both the coupling frame and finger bar, a foot-lever so pivoted to the hand-lever as to be rigid in the direction in which the pressure of the foot is applied, a spring reacting between the frame of the machine and the lifting device through the foot lever, substantially as and for the purpose specified.

3. In combination with a lever pivoted on the frame of the machine, one arm of which is connected with a gag-lever on the coupling-frame, a foot-lever so pivoted on the hand lever as to be rigid on it in the direction in which the pressure of the foot is applied, a spring reacting between the foot-lever and the tongue, and so attached that the spring is counterbalanced when the coupling frame is down and gains leverage as it raises, substantially as and for the purpose specified.

4. In combination with a lever pivoted to the frame of the machine, one arm of which is connected with the coupling-frame, a foot-lever pivoted on the other arm and having a stop on the hand lever which limits its movement in one direction, a spring reacting between the foot lever and frame, and a secondary stop on the frame of the machine that limits the sweep of the foot-lever, when the coupling frame is being raised substantially as and for the purpose specified.

5. In combination with a hand-lever pivoted on the frame of the machine, one arm of which is connected with the coupling-frame, a foot-lever attached to the other arm, a pawl on the hand-lever, and a segment rack on the frame without notches for the pawl for the sweep of the lever that follows the movement of the foot-lever, and with notches for that portion of the sweep which follows the remaining movement of the lever, substantially as and for the purpose specified.

488,906. SAWMILL-DOG. JAMES N. RICHEY, Carmichael's, and SAMUEL N. HENCH and WALKER A. DROMGOLD, York, Pa.; said Richey assignor to said Hench and Dromgold. Filed Aug. 2, 1892. Serial No. 441,926. (No model.)



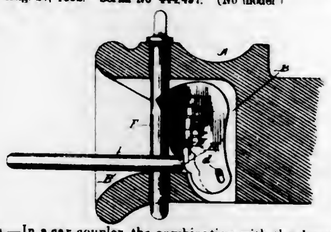
Claim.—1. The combination of the head block, the rack bar, the vertically movable dog-carrying bracket, the swinging lever-carrier pivoted to the bracket, and the rack-engaging lever pivoted to the carrier, substantially as and for the purposes hereinbefore set forth

2. The combination with the head block and the vertically movable dog-carrying bracket of the swinging lever-carrier pivoted to the bracket, the lever hung or pivoted in the free end of said carrier, and having a single tooth, and the rack bar formed with a series of holes to receive said tooth, substantially as and for the purposes hereinbefore set forth.

3. The combination with the head block dog-carrying bracket and rack bar, of the pivoted lever, its swinging carrier and the set screw and its handle for securing the bracket in adjusted position.

both handle and lever projecting from the same side or face of the bracket, as and for the purposes hereinbefore set forth.

488,907. CAR-COUPLING. ALBERT W. SCHOER, Saratoga, Kans. Filed Aug. 27, 1892. Serial No. 444,497. (No model.)



Claim.—In a car coupler, the combination with the drawhead a lip on the drawhead a chamber in the drawhead, a tumbler pivoted eccentrically within the chamber, a bifurcated front face on the tumbler having the shoulder H and depression H' and an inclined groove E at the top of the tumbler, substantially as described.

488,908. THILL-COUPLING. DAVID W. TANNER, Martin, Tex., assignor of one-half to S. P. Rice, same place, and Louis T. Fuller, Calvert, Tex. Filed May 27, 1892. Serial No. 434,551. (No model.)

Claim.—1. The combination of a clip plate adapted to be secured to an axle by an axle clip and provided with forwardly projecting ears and having bearing recesses opening at the top of the ears, a coupling bolt arranged in the recesses, a hinged cap adapted to close the bearing recesses and a combined anti-rattler and securing spring extending vertically in advance of the cap and having two arms one being adapted to bear against an eye of the thill iron and being arranged to engage the upper front edge of the cap piece to lock the latter when closed, substantially as described.

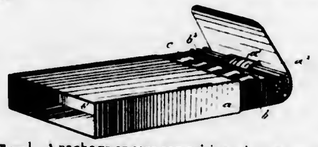
2. The combination of a clip plate provided with forwardly projecting ears and having bearing recesses, a coupling bolt arranged in the recesses, a cap hinged to the clip plate and provided with forward extensions and having depending lugs arranged in the recesses, and a spring arranged between the coupling bolt and the clip plate and having a vertically disposed spring loop adapted to engage the eye of the thill iron and provided with a horizontal coil engaging the cap and locking the same, substantially as described.

3. In a thill coupling, the combination of an axle clip having nuts, a clip plate provided on its lower face with bosses and having forwardly projecting ears provided with bearing recesses, a coupling bolt arranged in the latter, a hinged cap piece provided with forward extensions and closing the recesses, and a spring having parallel sides secured to the lower face of the clip plate by said nuts, said spring having a spring loop adapted to engage a thill iron and being provided with vertical extensions, and a horizontal coil adapted to engage the cap, substantially as described.

488,909. TOOL TO FISH OUT DRILLS, &c., FROM ARTESIAN WELLS. CHARLES H. TAYLOR, Montreal, Canada, assignor of one-half to John W. Carmichael, Wilmington, N. C. Filed Apr. 13, 1892. Serial No. 429,076. (No model.)

Claim.—In a tool of the character described, the socket formed in the lower end thereof having an interior tapering recess, tapering ratchet sections adapted to fit the said tapering recess and a spring ring adapted to impinge against the ratchet faces of the tapering sections and to normally hold them in the upper portion of the tapering recess, said spring ring being dislodged by the entrance of the detached tool and forced up substantially as described, thereby releasing the tapering ratchet sections which descend and engage the detached tool as set forth.

488,910. BOX FOR HOLDING CIGARETTES, &c. BENJAMIN F. WARREN, Brooklyn, N. Y. Filed July 7, 1892. Serial No. 439,241. (No model.)

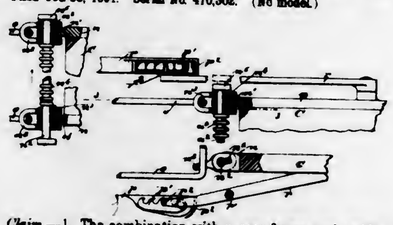


Claim.—1. A package or case comprising a drawer provided with end pieces and adapted to contain cigarettes and similar articles, a housing adapted for the reception of the drawer, a band for securing a supply of matches to the exterior of the case, and a flap for covering said supply of matches, substantially as and for the purposes set forth.

2. A package or case comprising a drawer for containing cigarettes and similar articles, a housing adapted for the reception of the drawer and having a band and its complemental flap secured to the exterior thereof, substantially as and for the purposes set forth.

3. A package or case comprising a drawer for containing cigarettes and similar articles, a housing adapted for the reception of the drawer, a band for securing a supply of matches to the housing, a flap for covering the supply of matches, and a pocket for the reception of said flap, substantially as and for the purposes set forth.

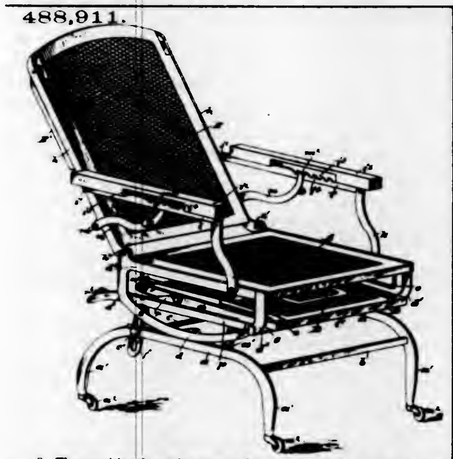
488,911. RECLINING-CHAIR. GEORGE WEBER, New York, N. Y. Filed Oct. 30, 1891. Serial No. 410,302. (No model.)



Claim.—1. The combination with a seat frame, and guide rods thereon, of a leg rest, links engaging the guide rods and having a pivotal connection with the leg rest, and means for locking the links to the leg rest, substantially as described.

2. The combination with a seat frame, and guide rods thereon, of a leg rest, links on the guide rods and having a pivotal connection with the leg rest, and a spring actuated locking mechanism between the links and the leg rest, substantially as described.

488,911.

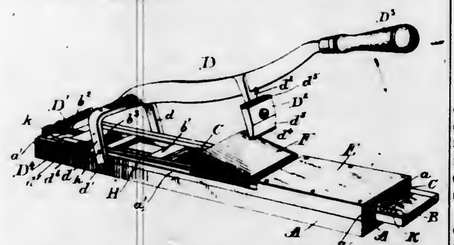


3. The combination with a seat frame, and guide rods thereon, of a joint rod provided with keys at its ends, links on the joint rod, a leg rest provided with ears apertured to receive the joint rod between the members of the links, the ears and links being slotted to receive the keys, and a spring surrounding the said rod between the links, substantially as herein shown and described.

4. The combination with a seat frame and a leg rest having a hinged and sliding connection therewith, of track bars below the seat frame and having their front ends recessed, racks pivoted in the recesses of the said bars, a short distance from the ends thereof, and brace bars pivoted to the leg rest and provided with toes, substantially as and for the purpose set forth.

5. The combination with a base frame, a seat frame, parallel rocker frames depending from the side edges of the seat frame, a device to lock the rockers to the base-frame, and two parallel depending guide rods longitudinally extending below on the seat frame, of two track bars below the guide rods and on the rockers, a leg rest connected by ears thereon, and two links and a joint rod to the guide rods, a spiral spring between the links on the joint rod, a pivoted rack in a recess at the front on each track bar, and two braces pivoted by one end of each upon the sides of the leg rest oppositely, having a laterally bent toe on the opposite ends which will engage any of the teeth of the racks or glide beneath said racks and slide on the track bars, substantially as described.

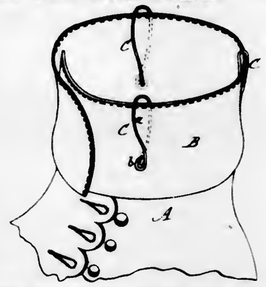
488,912. MACHINE FOR ADDRESSING MAIL-MATTER. CLARMONT A. WHITE, Marcellus, Mich. Filed July 26, 1892. Serial No. 441,172. (No model.)



Claim.—1. In a machine of the character described, the combination with a suitable platform having guides thereon, of an oscillating lever pivoted to said platform and a spring for pulling back said lever, a block faced with leather secured beneath said lever, a block carrying type adapted to move between said guides, and a support for the article to be printed mounted over said block and having an aperture therein in the path of said leather; a bar H pivoted to said oscillating lever and having a hook A', inclined face A^3, and hook A^4, the said hooks A' and A^4 being adapted to engage opposite sides of a series of notches on the type block: and means for throwing either of said hooks into engagement, substantially as and for the purposes described.

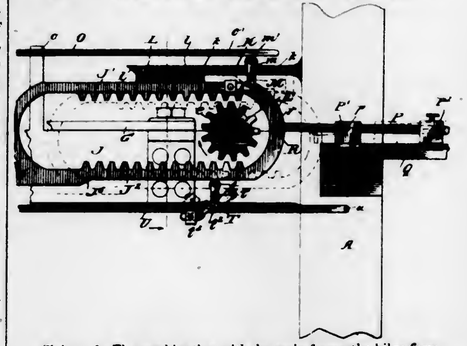
2. In a machine of the character described, the combination with a suitable platform having guides thereon, of an oscillating lever pivoted to said platform and a spring for pulling back said lever, a block faced with leather secured beneath said lever, a block carrying type adapted to move between said guides, and a support for the article to be printed mounted over said block and having an aperture therein in the path of said leather; a bar H pivoted to said oscillating lever and having a hook A', inclined face A^3, and hook A^4, the said hooks A' and A^4 being adapted to engage opposite sides of a series of notches on the type block; and the pivoted button or switch M for throwing either of said hooks into engagement, substantially as and for the purposes described.

488,918. CLAMP FOR UPPERS. WILLIAM H. WOOD, Rochester, N. Y., assignor of one-half to Frederick A. Sherwood, same place. Filed Jan. 21, 1892. Serial No. 418,760. (No model.)



Claim.—The shoe clamp consisting of a spring wire loop bent double, the ends crossed and standing in reverse directions, and adapted to clamp the upper by being turned half way around when in place, as herein shown and described.

488,914. STAVE-JOINTING MACHINE. WILLIAM J. WRIGHT, Cooperstown, assignor to the Stave Jointer and Planer Company, Oil City, Pa. Filed Nov. 3, 1891. Serial No. 410,798. (No model.)



Claim.—1. The combination with the main frame, the bilge formers held to reciprocate thereon, the drive shaft E formed with a gear *e*, a rack frame arranged to be reciprocated by said gear, and normally held from operative connection therewith, of lifting devices arranged to be operated by the passing stave, and operating to throw said rack frame in mesh with the gear *e*, and means for carrying the stave substantially as and for the purpose described.

2. The combination with the main shaft E provided with a gear *e*, the stave carrier, the cross head D, and the reciprocating formers G of the double rack frames J, connected at one end to the formers G and provided at their opposite ends with the racks J' J^3 means operated by the cross head for alternately throwing said racks into engagement with the gear *e* and devices for normally holding the said racks from engagement with such gear *e* substantially as and for the purpose described.

3. The combination with the main frame the cross head, the stave carrier, the carrier drive shaft formed with the gears *e* and the reciprocating bilge formers G of the frames J, formed with racks J' J^3, operating over said gears *e* and normally held from contact therewith, means operated by the cross head for alternately throwing said racks J' J^3 into engagement with the said gears *e*, the guide lugs L on said frames J the guides K on the main frame arranged to engage said lugs L for the purpose stated, substantially as and for the purpose described.

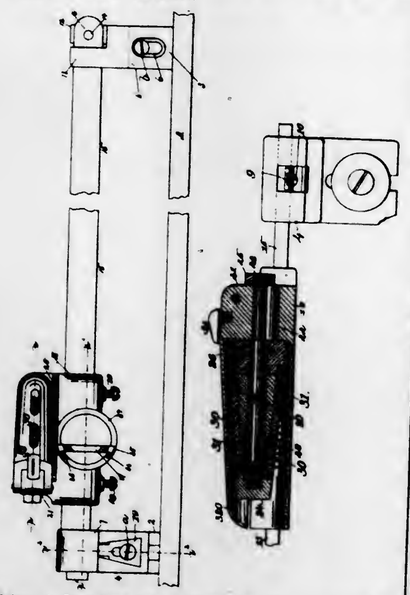
4. The combination with the shaft E formed with gears e the stave carrier operated thereby, the cross head and the bilge formers G held to reciprocate on the main frame, of the frames J, having upper and lower racks J' J^1 operating over the wheels e slots in the outer ends of the frames, the weighted levers P having transverse pins operating in said slots, the sliding fulcrums P', the pivoted levers U arranged below said frames J; the weighted levers T secured thereto, stop lugs V formed on the lower members of the frames J, adapted to engage the lever T, the arms N connected to said levers U, the pivoted levers O connected to said arms N, the weighted levers M on the frames J adapted to be engaged by said levers O and the guide lugs K and L on the main frame and rack frame J respectively, all arranged substantially as and for the purpose described.

488,915. PIANO. PETER ANDERSON, New York, N. Y. Filed July 28, 1892. Serial No. 441,481. (No model.)

Claim.—1. The combination with a wrest plank of a piano, of a bearing strip on the upper surface of the same, over which the strings are stretched, and a node bar, concave on its under surface and fastened at one edge to the wrest plank, with the concave portion directly over the bearing strip, the free edge of the node bar bearing upon the strings in front of the bearing strip, substantially as and for the purposes specified.

2. As a new article of manufacture, a node bar having a concave under surface, one edge of which is adapted to be secured to the wrest plank of a piano, so as to bring the concave surface of the node bar directly over a bearing strip thereon, and the other edge being adapted to bear upon the strings in front of said bearing strip, substantially as and for the purposes specified.

488,916. LOOM-TEMPLE. JOHN C. AYER, Leicester, assignor to the Dutcher Temple Company, Hopedale, Mass. Filed Feb. 13, 1892. Serial No. 421,365. (No model.)



Claim.—1. In a loom temple, a stud or axis, a rotatable bar-carrying conical shell or roll, and a series of longitudinally sliding toothed-bars, and co-operating cam faces to effect the longitudinal sliding of the said bars, to operate substantially as described.

2. In a loom temple, a stationary stud or axis supported at but one end; a longitudinally grooved rotating sleeve mounted thereon; a series of sliding toothed bars carried by and rotating with said sleeve; and actuating cam faces or surfaces for said bars fixed to said stud and rotatable therewith in order to place the faces of the actuating cams in the proper position, combined with a flange located below, and a cover located above the said sleeve and its toothed bars, whereby the cloth may be passed as desired, either under the sleeve and between it and the said flange, or over the sleeve and between it and the cover for the purposes set forth.

3. In a loom temple, the following instrumentalities, viz:—a stud or axis; a rotatable roll; a series of longitudinally-sliding toothed bars carried thereby; two cam faces connected to said stud and adapted to slide the bars, a support for the stud or axis, a block or cover, located between the temple roll and breast beam of the loom, and a toothed or star wheel having upwardly projecting teeth and located in said cover, to operate, substantially as described.

4. A temple roll; its support during rotation; a series of longitudinally-sliding toothed-bars carried thereby, actuating cam surfaces for said bars, and a flange below and a cover above said roll, combined with a block or case located between said roll and the breast beam, and a toothed star wheel located in said case, and having upwardly directed teeth to operate, substantially as described.

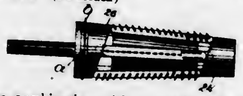
5. In a temple, the combination with the vertically-adjustable supporting brackets, and the longitudinally-adjustable supporting arms, of a temple-bar connected pivotally with one of said arms, and detachably with relation to the other of said arms, substantially as set forth.

6. The arm having forwardly-extending fingers located in different planes, the upper finger being provided with a beveled shoulder at its inner end and the lower finger with an upwardly extending stud, combined with an arm having a flange on its upper side and provided with a spring extending into a longitudinal slot therein and having an upwardly-extending stud, and the temple bar supported by said arms and provided at one end with a perforation to engage the pivoted stud upon the finger of one arm and at its opposite end with a longitudinal slot adapted to be engaged by the stud extending upwardly from the holding spring within said flange, substantially as set forth.

7. The temple-bar, the block or casing having the rearwardly-extending flange and a vertically-slotted lug; the cover hinged to the latter; and an enlargement formed upon the casing and having a slot at right angles to the temple-roller and provided with lateral notches; combined with a toothed wheel mounted in the said enlargement of the casing, and having upwardly-extended teeth, substantially as and for the purpose set forth.

8. The combination of the temple-bar, the block or casing mounted adjustably thereon and having a temple-roller and the toothed wheel, having upwardly extended teeth, the latter being arranged in the casing having a slot at right angles to the temple roller, the said temple roller being mounted adjustably at one end and provided with a movable cover, substantially as set forth.

488,917. LOOM-TEMPLE. JOHN C. AYER, Leicester, assignor to the Dutcher Temple Company, Hopedale, Mass. Filed Aug. 23, 1892. Serial No. 443,662. (No model.)



Claim.—The combination with a temple roller having toothed sliding bars, and a cam device for actuating said bars, of a star-wheel rotating about the center about which the temple roller rotates, substantially as described.

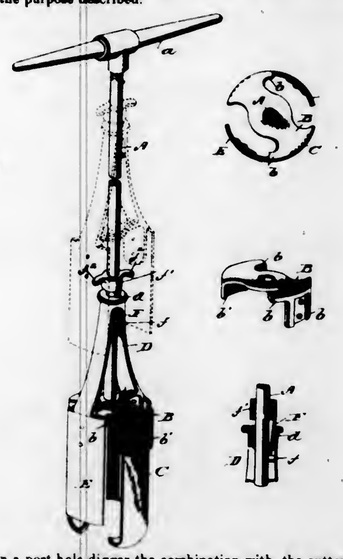
488,918. POST-HOLE DIGGER. JAMES W. CLARK, Etna, Ohio. Filed Feb. 11, 1892. Serial No. 421,153. (No model.)

Claim.—1. In a post hole digger the combination with the cutter head, and a rod attached thereto of a guard adapted to slide and turn on the said rod, and lateral extensions *b* forming stops to hold the guard blades centrally between the cutters, substantially as set forth.

2. In a post hole digger the combination with, the cutter head having vertical extensions to which the cutters are attached, and having lateral extensions *b* which form stops, and a rod connected with the said cutter head, of a guard adapted to slide and turn on the said rod and having its blades held centrally between the cutters by engaging with the said stops, substantially in the manner set forth.

3. In a post hole digger the combination with, the cutter head, and a rod attached thereto, of a guard adapted to slide and turn on the said rod, and a locking key to secure the guard on the said rod at the required position, substantially as described.

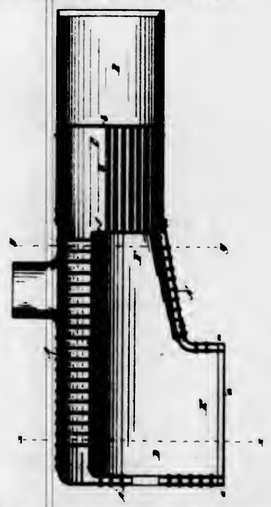
4. In a post hole digger the combination with, the cutter head, and a rod attached thereto, of a guard adapted to slide and turn on the said rod, of a locking key having a head and lateral extensions at one end, and having an extension *f* at its other end, substantially as and for the purpose described.



5. In a post hole digger the combination with, the cutter head, and a rod attached thereto, of a guard adapted to slide and turn on the said rod, the upper end of the guard frame encircling the rod and having a groove *d* on its inner side, of a locking key adapted to slide in the groove *d* and having extension *f* at its lower end, and having the head *f'* at its upper end which embraces the rod A, and which is provided with lateral extensions f^3, substantially as set forth.

6. A post hole digger comprising, a cutter head having stops *b*, a round rod A attached thereto, a guard adapted to slide and turn on the rod A and held centrally between the cutters by the straps of a locking key having a head and lateral extensions at one end, and having an extension *f* at its other end, substantially as and for the purpose described.

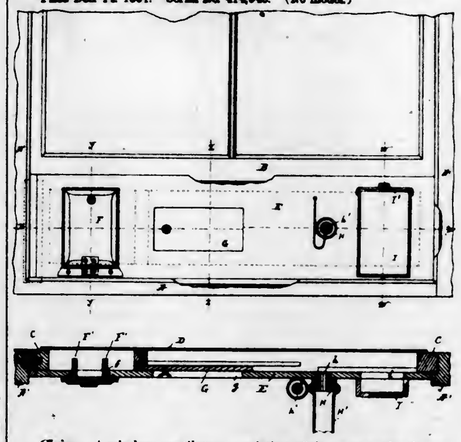
488,919. LOCOMOTIVE-BOILER. JAMES T. CONNELLY, Milton, Pa. Filed May 10, 1892. Serial No. 432,479. (No model.)



Claim.—1. As an improvement in locomotive boilers, a fire-box approximately circular in cross-section, and an extension at the forward end of the same and projecting within the barrel of the boiler, said extension being circular in cross-section at its rear end, and approximately oval at its forward end, and having its bottom inclined from its forward to its rear ends; substantially as set forth.

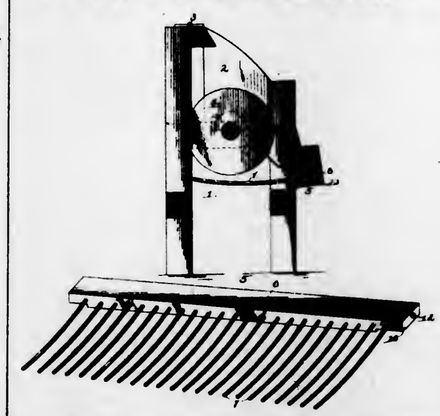
2. A fire-box approximately circular in cross-section, and a forward extension projecting within the barrel of the boiler; said extension being circular in cross-section at its rear end, oval at its forward end, and having its bottom inclined from its forward to its rear ends, in combination with contracted boiler flues secured in the head of the extension, as specified.

488,920. WINDOW-VENTILATOR. DAVID N. COOK, Salem, Mass. Filed Dec. 14, 1891. Serial No. 414,946. (No model.)



Claim.—A window ventilator, consisting of the rectangular frame C covered at its outside with wire gauze or netting D and at its inside provided with a plate E having an air inlet valve and a nozzle H provided with a stopper A, and a tube H' adapted to connect with the nozzle for conducting air to different portions of an apartment, substantially as described.

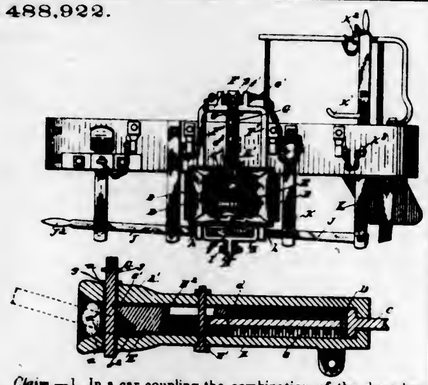
488,921. SAW COTTON-GIN. ABRAHAM S. DUKES, Branchville, S. C. Filed Aug. 12, 1892. Serial No. 442,884. (No model.)



Claim.—In a cotton gin, the combination with the breast having a central brace, and the flanged brackets with openings therein secured to the ends of said breast, of a protector having a back with recessed ends, said protector having its recessed ends engaging the brackets and resting at its central portion on the brace, and the bolts engaging the openings in the brackets to firmly hold the protector in place with its fingers arranged below the edges of the saw, substantially as specified.

488,922. CAR-COUPLING. SAMUEL J. GALLOWAY and GEORGE P. CRAMER, Plainview, Oreg. Filed Oct. 3, 1892. Serial No. 447,708. (No model.)

488,922.



Claim.—1. In a car coupling the combination of the draw bar having pin openings, the sliding block therein, the loose block in the rear end thereof, and the spring interposed between said blocks, substantially as specified.

2. The combination of the draw-bar having pin openings and a transverse interior rib in front of the lower pin opening; with the lipped and slotted block therein, the bolt engaging the slot thereof to limit its movement, and the spring interposed between the rear end of the bar and said block, all constructed and arranged to operate substantially as and for the purpose described.

3. The combination of the draw-bar having pin openings, the pin lifter guided thereby, the lever I attached at one end to the rear end of the draw bar and at the other to the lower end of the pin lifter, and the oscillating lever and connections for shifting said lever I, substantially as and for the purpose specified.

4. In a car coupling the combination of the draw-bar having pin openings, the sliding block therein having a lip on its front end as described, and a spring for forcing said block forward and means for retaining it in the bar, with the pin and pin lifter and levers for operating the same, substantially as and for the purpose described.

5. The combination of the draw-bar having pin openings, the pin, and the vertically movable U-shaped pin lifter having its legs guided beside the pin opening, the swinging bar attached to the lower end of the lifter, the suspended lever pivotally connected to said bar and to a fixed part at its opposite ends, and the oscillating lever and connections for shifting said suspended lever, substantially as set forth.

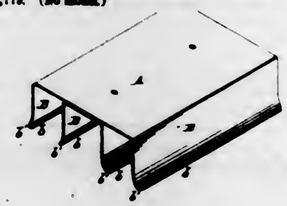
6. The combination of the draw-bar with the vertically movable pin lifter having an opening in its top part and a slot leading into said opening, and the pin having a head provided with upper and lower flanges engaging said openings, substantially as specified.

7. In a car coupling the combination of the draw-bar having pin openings, the sliding block therein, the loose block in the rear end thereof, and the spring interposed between said blocks, with the coupling pin, the pin lifter, and levers for shifting the same, substantially as and for the purpose set forth.

8. The combination of the draw-bar, the coupling pin, and the vertically movable pin lifter: with the hanger bar H, and levers I and J, and connections for shifting the pin lifter, substantially as and for the purpose described.

9. The combination of the draw-bar of a plate attached thereto having upstanding tubes at opposite sides of the draw-bar; with the U-shaped pin lifter whose legs play through said tubes, the pin connected thereto, the suspended lever connected to the lower end thereof, and oscillating lever and connections for shifting said suspended lever, substantially as and for the purpose described.

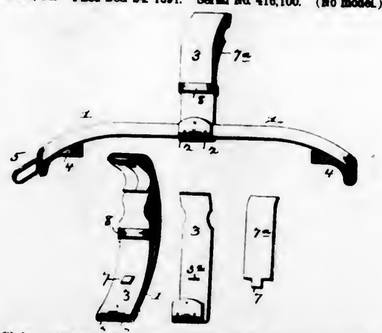
488,923. CURRYCOMB. JOSEPH HUNTER, Chicago, Ill., assignor, by mesne assignments, to Wilber F. Meader and Jennie E. Phillips, same place, and Adolph Powell and Max Sahlin. Filed Jan. 31, 1890. Serial No. 338,779. (No model.)



Claim.—1. In a curry comb comprising a back A, and a series of parallel blades B, the edges of which are made plain and unnotched, and having rounded corners, and disconnected ends, so as to form open ended longitudinal channels, through which the dust &c., is carried out by the currents of air generated by the use of the comb, essentially as set forth.

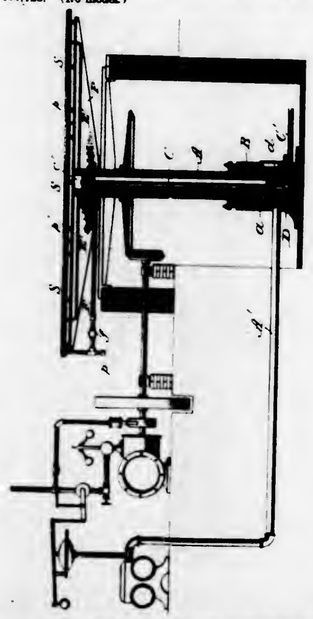
2. A curry comb comprising a back A, and a series of parallel blades B, the edges of which are made plain and unnotched, and having rounded corners and disconnected ends, so as to form open ended longitudinal channels through which the dust, &c., is carried out by the currents of air generated by the use of the comb, the edges of said blades being made to project obliquely in opposite directions from the center or middle of the comb, essentially as set forth.

488,924. NAPKIN-SUPPORTER. WILLIAM H. KOEHLER, Bellefonte, Pa. Filed Dec. 24, 1891. Serial No. 416,100. (No model.)



Claim.—A napkin holder comprising the vertical plate having an aperture therein, the arms pivoted thereto having their ends bent over upon themselves forming spring clamps, the clasp connected with one of said arms, the plate having a bent tongue engaging with said aperture and the slidable clasp embracing said plates, substantially as described.

488,925. GRINDING, SMOOTHING, AND POLISHING GLASS. GEORGE A. MARSH, Jr., Sandusky, Ohio. Filed June 18, 1892. Serial No. 437,123. (No model.)



Claim.—1. A glass holding table having a top made up of a plurality of sections, which are composed of upper and lower portions

divided horizontally into chambers, the upper chamber having induction and eduction openings, the lower chamber having an opening connected with air exhaust mechanism, and means for connecting the parts of the sections to each other and to a support, substantially as shown, and for the purpose set forth.

2. A section for a glass holding table made up of upper and lower portions having an intervening plate, the parts being connected with each other and provided with passages which connect with liquid supply pipes and air exhaust pipes, substantially as shown, and for the purpose set forth

3. A section for a glass holding table made up of upper and lower portions having an intervening plate, the parts being connected to each other and provided with passages which connect with liquid supply pipes and air exhaust pipes, the exterior of the upper part having raised supports, substantially as shown.

4. A section adapted to form a part of a glass holding table having registering inner projecting walls, a dividing plate and packing therefor, and means for connecting the parts of each section to each other and to a support, substantially as shown, and for the purpose set forth

5. In a glass holding table, the combination of a hollow shaft the lower end thereof being apertured and inclosed in a suitable chamber to which an air exhaust pipe is connected, a liquid supply pipe located within the hollow standard and connected with a liquid supply, substantially as shown, and for the purpose set forth.

6. In an apparatus for grinding, polishing and smoothing glass, the combination of a table top and mechanism for holding the glass thereon by atmospheric pressure, a liquid supply pipe leading to the table top and adapted to convey liquid thereto for the purpose set forth, the eduction openings of the sections having spring actuated valves for permitting a circulation of water in the glass holding table when forced therein beyond a predetermined pressure, for the purpose set forth.

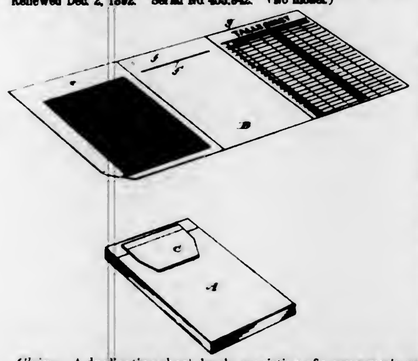
7. A glass holding table made up of a series of hollow sections supported so that the upper surfaces thereof will be on the same plane, each section having marginal walls with a water channel and intermediate projecting portions with spaces between them, and an air exhaust opening common to each section, substantially as shown, and for the purpose set forth.

8. In a glass grinding and polishing table, the combination of a support maintaining a top in position, said top being divided horizontally into air and liquid chambers, pipes connecting said chambers with a shaft, and pipes leading from the shaft, for the purpose set forth.

9. A glass grinding and polishing table having a chamber adjacent to its upper surface, said chamber being connected with a heating or cooling source, whereby the glass placed on the table can be cooled or heated, substantially as set forth.

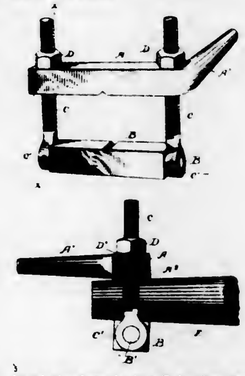
10. A glass grinding or polishing table having a chamber, said chamber being connected with a heat supply.

488,926. DUPLICATING CHECK-BOOK. JOSEPH OLDFIELD, Toronto, Canada, assignor, by direct and mesne assignments, to Rose Jane Oldfield and Frederick Reesor James, same place. Filed Apr. 16, 1892. Renewed Dec. 2, 1892. Serial No. 453,842. (No model.)



Claim.—A duplicating check book, consisting of a cover made up of three sections, with the black leaf on one side and the tally sheet on the other, leaving the back of the cover intermediate, a slit in the upper part of this back section, and a body having a tongue secured thereto, and adapted to pass through the slit to the rear side of the back, substantially as described.

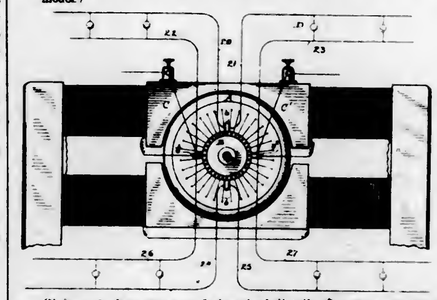
488,927. LATHE-DOG. ROBERT L. STANLEY, Somerville, assignor of one-half to Frank E. Whitney, Melrose, Mass. Filed Mar. 5, 1892. Serial No. 423,842. (No model.)



Claim.—1. In a lathe-dog, the jaw B, having terminal trunnions B', in combination with the bolts, C, having eyes, C', fitting said trunnions, the jaw, A, having holes A^2 receiving said bolts, and the nuts D turning upon said bolts, substantially as and for the purpose set forth

2. In a lathe-dog, the jaw B having terminal trunnions, B', in combination with the bolts C having eyes C' fitting said trunnions, the jaw A having conical holes A^2 receiving said bolts, and the nuts D, having rounded faces D', as and for the purpose specified.

488,928. SYSTEM OF ELECTRIC DISTRIBUTION. CHARLES J. VAN DEPOELE, Lynn, Mass.; C. A. Coffin and Albert Wahl, executors of said Van Depoele, deceased, assignors to the Thomson-Houston Electric Company, Boston, Mass. Filed June 27, 1889. Serial No. 315,766. (No model.)



Claim.—1. In a system of electrical distribution, a generator of electricity; an electric motor having its field magnets and armature coils in circuit with the generator and one or more translating devices connected on one side directly to one commutator brush of the motor, and on the other side to a commutator or contact brush intermediate the motor commutator brushes.

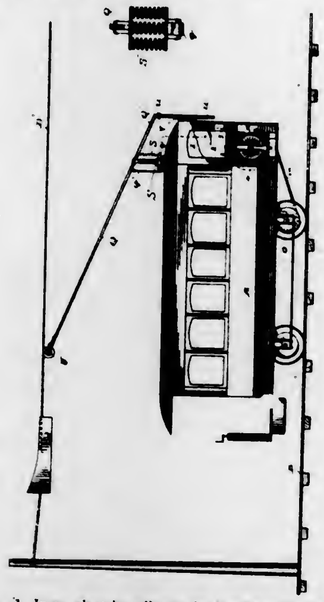
2. A system of electrical distribution comprising an electro-dynamic machine of the continuous current type, main brushes upon the points of maximum potential of the commutator thereof, said brushes connected to independent circuits, an auxiliary set of brushes upon said commutator opposite each other and midway between the main brushes said middle brushes connected to the other side and serving as the return to the circuits supplied by the main brushes, said main and auxiliary brushes always occupying the same relation to each other and acting to distribute the potential equally among the several circuits.

3. A system of electrical distribution comprising an electro-dynamic machine giving continuous currents, main commutator brushes upon the points of maximum potential of the commutator thereof, said brushes connected to two independent circuits or groups of circuits, a second, auxiliary set of brushes upon said commutator diametrically opposite each other and midway between the main brushes, said auxiliary brushes connected to the other side of and serving as the return to the circuits supplied by the main brushes, said main and auxiliary brushes always occupying the same relation to each other and acting to divide the potential equally between the circuits or groups of circuits.

4. A system of electrical distribution comprising a source of current of relatively high potential, a plurality of circuits or groups of working circuits to be supplied with current of reduced potential, an electro-dynamic machine of the continuous current type arranged and connected to receive the supply current, connections between the main commutator brushes of said machine and one side of the working circuits, an auxiliary set of brushes upon the commutator opposite each other midway between the main brushes, said middle brushes connected to the other side of and serving as the return to the circuits supplied by the main brushes, said main and auxiliary brushes always occupying the same relation to each other and acting to distribute the potential equally among the several circuits.

5. A system of electrical distribution comprising a source of current of relatively high potential, working circuits arranged to be supplied with current of reduced potential, electro dynamic motors of the continuous current type arranged and connected to receive the supply current, connections from one of the commutator brushes of the motors to one side of the working circuits, an auxiliary brush upon the commutator midway between the main brushes, and connection from the other sides of said working circuits to the said auxiliary brushes of the motors.

488,929. ELECTRIC-RAILWAY TROLLEY. CHARLES J. VAN DEPOELE, Lynn, Mass.; C. A. Coffin and Albert Wahl, executors of said Van Depoele, deceased, assignors to the Thomson-Houston Electric Company, Boston, Mass. Original application filed June 6, 1888, Serial No. 276,260. Divided and this application filed Jan. 31, 1890. Serial No. 338,736. (No model.)



Claim.—1. In an electric railway, the combination with a suspended conductor having a grounded return, of a vehicle having a contact carrying rod or arm extending to the underside of the suspended conductor, and an insulated operating device for the said contact rod or arm.

2. In an electric railway, the combination of a suspended conductor, a vehicle having upon it a pivoted contact arm, and an operating device for said arm extending down outside of the vehicle.

3. In electric railways, the combination of a moving vehicle, a suspended conductor and a contact arm extending upwardly from the top of the vehicle toward the underside of the conductor and provided with a downwardly extending hand lever at or near its lower extremity whereby said arm can be raised or lowered as desired.

4. In an electric railway, the combination of a suspended conductor, a vehicle having upon it a longitudinally pivoted contact arm, and an operating device for said arm extending down to the end platform of the vehicle.

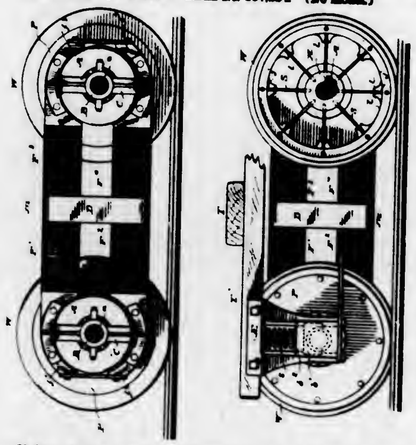
5. In electric railways, the combination of a moving vehicle, a suspended conductor, a contact arm extending upwardly from the top of the vehicle and provided with a downwardly extending hand lever at or near its lower extremity, and stops arranged to engage the said lever to hold the contact arm in any desired position.

6. In an electric railway, the combination of a suspended conductor, a vehicle adapted to be moved parallel with said conductor and carrying a support, a contact-carrying arm pivotally mounted upon said support, an insulated operating device for said arm extending down outside of the vehicle, a spring for imparting upward movement to the outer end of the arm, and a check for limiting the range of upward movement.

7. In an electric railway, the combination of a suspended conductor, a vehicle provided with suitable support, and a contact arm extending between the support upon the vehicle and the suspended conductor and composed of a flattened bar of resilient material, said bar being supported transversely upon the vehicle, and a spring connected thereto for holding the outer end of the bar upward toward the conductor.

8. In an electric railway, the combination of a suspended conductor, a vehicle provided with a suitable support, and a contact arm extending between the support upon the vehicle and the suspended conductor and composed of a flattened bar of resilient material.

488,930. ELECTRIC LOCOMOTIVE. CHARLES J. VAN DEPOELE, Lynn, Mass.; C. A. Coffin and Albert Wahl, executors of said Van Depoele, deceased, assignors to the Thomson-Houston Electric Company, Boston, Mass. Filed Apr. 1, 1891. Serial No. 387,234. (No model.)



Claim.—1. An electric locomotive having a driving axle or axles, driving wheels the hubs of which are rigidly attached to said axle or axles, and radial springs fixedly connected to said hubs and loosely engaging slots in the peripheries of the said driving wheels.

2. An electric locomotive having driving wheels the hubs of which are fixed upon its driving axle or axles, resilient webs between the said hubs and the peripheries of the wheels, and face plates upon the sides of the said wheels inclosing the said resilient webs and an armature or armatures upon the axle or axles.

3. An electric locomotive having a double motor spanning the axles of a motor truck and wholly supported thereon, armatures for the said motor fixed upon the said axles, arms supporting the fields of said motor upon the axles, and motor wheels fixed to the said axles having flexible resilient webs.

4. An electric locomotive having a double motor supported upon the axles of a motor truck, driving wheels fixed upon said axles, said wheels having flexible webs, and a truck frame supported by said axles and retaining them in fixed parallel relation to each other.

5. An electric locomotive having a double motor upon its driving axles the motor wheels thereof having spring webs by which the motors are wholly supported independent of the truck frame.

6. An electric locomotive having spring-webbed traction wheels fixed upon the driving axles thereof, said wheels supporting the driving motor and having exterior supplemental axles upon which the truck frame of the said locomotive is supported.

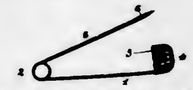
7. In an electric locomotive, a driving wheel or wheels having hubs for attaching them to the driving axle or axles, resilient connections between the said hubs and the peripheries of said wheels, and face plates attached to the outside of said wheels and formed at their centers into supplemental axles for supporting the truck frame of the locomotive independent of the propelling motor.

8. An electric locomotive having driving wheels the hubs of which

are fixed upon its driving axle or axles, coil springs between the hubs and peripheries of said wheels to carry the load borne by the driving axle, and flat curved springs having their apices fixed to the hubs and their ends engaging the rims of the said wheels.

9. The combination with a locomotive the wheels of which are supplied with supplemental axles, of side bars fixed to the bearings of said axles holding them in fixed relation to each other, and a cross-beam spring-supported upon said side-bars.

488,931. SAFETY-PIN. JOHN H. WEIR, Helena, Mont., assignor of seven-tenths to Herman Fligelman, Fred A. Fligelman, and Samuel S. Singer, same place. Filed May 11, 1891. Serial No. 392,368. (No model.)



Claim.—The safety pin herein described, consisting of a shank, having a loop at one end bent back upon itself, and its extremity 5 given a sharp turn inwardly at right angles to form a hooked catch, and a pin at the other end, said pin being provided with a depression upon its outer side near the point, and a hood or guard enveloping both the loop and its hooked catch, substantially as set forth.

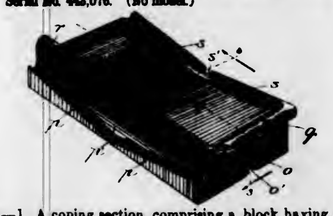
488,932. DISPLAY-CARD FOR JEWELRY. HENRY WOLCOTT, Providence, R. I. Filed June 20, 1892. Serial No. 437,390. (No model.)

Claim.—1. A display card for jewelry, formed of loosely folded layers of paper, so as to present the folded edges *g*, *h*, and *d*, the several layers being perforated for the attachment of the piece of jewelry, substantially as described.

2. A display card for jewelry, formed of loosely folded layers of paper, so as to present the folded edges *g*, *h*, and *d* the several layers being perforated for the attachment of the piece of jewelry, and the exterior provided with printed matter, substantially as described.

3. A display card for jewelry, formed of loosely folded layers of tissue paper, the several layers being perforated for the attachment of the piece of jewelry, substantially as described.

488,933. COPING. CHARLES AXELL, Chicago, Ill. Filed Aug. 15, 1892. Serial No. 443,076. (No model.)



Claim.—1. A coping section, comprising a block having an upper surface concaved in the direction of its length and inclined toward one side, and a gutter at the lower edge of said surface, provided with an outlet, substantially as described.

2. A coping section, comprising a block provided, at one side, with an upward extending ridge, and, at the opposite side, with a gutter having an outlet, substantially as described.

3. A coping section, comprising a block provided with an upward extending ridge, on one side, a gutter at the opposite side having an outlet, and a gutter and an outlet therefor, formed upon the side of the block provided with the ridge, substantially as described.

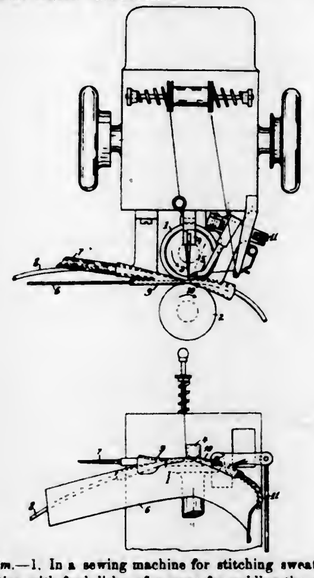
4. A coping section, comprising a block provided with an inwardly curved upward extending ridge, at one side, and a gutter at the opposite side, having an outlet, substantially as described.

5. A coping section, comprising a block provided with an upward extending ridge, at one side, a gutter, at the opposite side having an outlet, and a flange at the end, adapted to overlap the end of the next adjacent section, substantially as described.

6. A coping section, comprising a block formed on opposite sides with gutters having outlets, substantially as described.

7. A coping section, comprising a block A, having an inclined surface, a gutter *s*, on one side, provided with an outlet *s'*, a ridge *r* and gutter *p* and outlet *p'* therefor, on the opposite side, and a flange *q* at one end, substantially as described.

488,934. MACHINE FOR STITCHING SWEAT-BANDS FOR HATS. THOMAS W. BRACHER, New York, and SAMUEL W. BALCH, Yonkers, N. Y.; said Balch assignor to said Bracher. Filed Aug. 6, 1891. Serial No. 401,811. (No model.)



Claim.—1. In a sewing machine for stitching sweat-bands the combination with feed disks, of a gage for guiding the edge of the sweat-band to the sewing mechanism and a deflector for guiding the stitched edge of the sweat-band from the sewing mechanism, said gage and deflector being attached to said sewing machine on opposite sides to and closely adjoining the sewing needle and having each a groove at an angle to the other in a plane between and parallel with the longitudinal axes of the feed-disks whereby the sweat-band is bent in the direction of its width as it passes the stitching point, substantially as and for the purpose set forth.

2. In a sewing-machine for stitching sweat-bands a gage attached thereto with a groove for guiding the edge of the sweat-band to the sewing mechanism in combination with a deflector for guiding the stitched edge from said sewing mechanism, and hinged so that the amount of deflection may be varied, together with means substantially as described for varying said deflection, substantially as and for the purpose set forth.

3. A sewing machine for stitching sweat-bands provided with a gage for guiding and a pair of feed disks for feeding the leather and spring in their proper relative positions to the stitching mechanism, deflecting mechanism for receiving the stitched leather as it comes from the stitching mechanism, and with a stitching mechanism so timed and operated that the stitches are formed while the leather is still held in a bent and stretched position, whereby the flanging of the same is accomplished, substantially as and for the purpose specified.

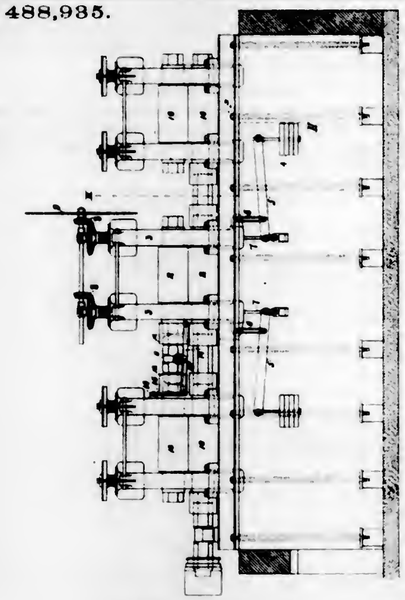
488,935. ROLLING-MILL. CHARLES W. BRAY, Youngstown, Ohio, assignor to the Lloyd Booth Company, same place. Filed Mar. 24, 1892. Serial No. 426,243. (No model.)

Claim.—1. A sheet or plate mill, having a balanced upper roughing-roll, a frictionally driven upper finishing-roll, and direct flexible connections between the same; substantially as described.

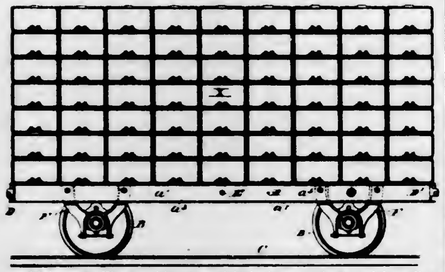
2. A sheet or plate mill, having a set of finishing rolls, means for positively driving the lower finishing roll, a set of roughing rolls, balancing mechanism for the upper roughing-roll, and a flexible connection between the upper frictionally driven finishing and the upper roughing rolls; substantially as and for the purposes described.

3. A sheet or plate-mill having a set of balanced roughing-rolls and one or more sets of finishing-rolls in the same line therewith, direct connections between the lower positively-driven rolls of the finishing and roughing set, and flexible connections between their upper frictionally driven rolls; substantially as and for the purposes described.

488,935.



488,936. BRICK-DRYING CAR. CYRUS CHAMBERS, Jr., Wynnewood, assignor to the Chambers Brothers Company, Philadelphia, Pa. Filed Apr. 26, 1888. Serial No. 271,969. (No model.)



Claim.—1. The combination with the iron car-body, of the splice-plate provided with the central projection or bumper-head, substantially as and for the purpose set forth.

2. The combination with the iron car-body, of the splice-plate provided with the perforated projection or bumper-head, substantially as and for the purpose set forth.

3. The combination with the iron car-body, of the splice-plate provided with the central projection having a horizontal hole therein, and the flange or flanges for guiding a tongue or hook into said hole, substantially as and for the purpose set forth.

4. The combination with the iron car-body, of the splice-plate provided with the projection having a horizontal hole therein, and the flange or flanges for guiding a tongue or hook into said hole, together with the bolt holes adjacent to said flanges, substantially as and for the purpose set forth.

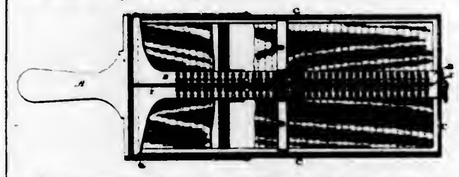
5. The combination with the iron car-body, of the splice-plate provided with the projection having a horizontal hole therein, and the flange or flanges formed with relation to said hole, together with the staggered bolt holes, substantially as and for the purpose set forth.

6. The combination with the car-body composed of a single piece of iron bent into shape, of the splice plate provided with the recesses *d*, substantially as and for the purpose set forth.

488,937. BALLOT-HOLDER FOR VOTING-MACHINES. KENNEDY DOUGAN, Missoula, Mont., assignor to the Montana Vote Registering Machine Company, same place. Filed Apr. 19, 1890. Serial No. 348,656. (No model.)

Claim.—1. In a ballot holder provided with a perforation opposite the name of each candidate and which perforations are placed in any desired relation to each other, the perforation being made larger at one end than the other, substantially as described.

2. The combination of a ballot holder provided with a perforation opposite the name of each candidate with a slide which moves back and forth over the ballot and assists the voter to find the perforation opposite the name of the candidate for whom he wishes to vote, substantially as set forth.



3. The combination of a ballot holder provided with a perforation opposite the name of each candidate, a slide which is applied to the ballot holder to move back and forth thereon, and which is provided with a perforated plate at its center, substantially as specified.

4. The combination of a ballot holder provided with a perforation opposite the name of each candidate and, a guiding flange formed upon the holder, with a slide which moves back and forth over the ballot substantially as shown.

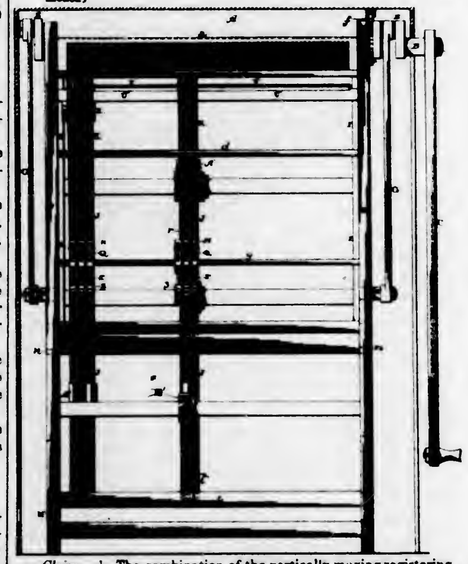
5. The combination of a ballot holder provided with a guiding flange, a slide which moves back and forth over the ballot and which is provided with a perforated plate at its center, substantially as described.

6. The combination of a ballot holder provided with a perforation opposite the name of each candidate and provided with a guiding flange, with a slide provided with perforations at its center, and a pivoted spring actuated covering plate connected to the slide, the plate being adapted to automatically change from one side of the frame to the other and to cover one of the perforations in the slide, substantially as set forth.

7. The combination of a ballot holder composed of a central perforated portion B, provided with a notched locking pin O, and the frame C, with the locking catch P, substantially as specified.

8. The combination with a ballot holder provided with a guiding flange I, with a slide D, provided with a perforated plate J, at its center, and a thumb piece R, with the friction rollers which are applied to opposite sides of the flange, substantially as described.

488,938. VOTE-REGISTERING MACHINE. KENNEDY DOUGAN, Missoula, Mont., assignor to the Montana Vote Registering Machine Company, same place. Filed Apr. 19, 1890. Serial No. 348,657. (No model.)



Claim.—1. The combination of the vertically moving registering plates, with the dogs upon the plates, corresponding registering mechanisms, depressing mechanism for the plates, and an automatic lock for each plate, to prevent them from dropping to be depressed to register, substantially as specified.

2. The combination of a series of registering plates J having portions of their edges cut away, the dogs pivoted upon the plates opposite the cut away portions of the adjoining plates, the registering mechanisms, and depressing plates for forcing the plates J, downward, substantially as described.

3. The combination of the registering plates provided with catches *l*, and arms *n*, with the partially turning shaft provided with a flange, the collars placed upon the shaft and provided with hangers or extensions, substantially as set forth.

4. The combination of the partially revolving shaft provided with a flange which is cut away at one end, a series of collars placed upon the shaft at a point where the flange is cut away, the plates J, provided with catches to catch over the top of the flange, and arms to strike against the extensions on the collars, substantially as specified.

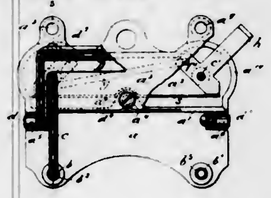
5. The combination of the vertically moving frame provided with grooved guiding rods, the registering plates provided with shoulders, the stop plates, and the stops, which are adapted to be connected to one another, substantially as shown.

6. The combination of a series of weighted stops, each one of which is provided with a locking device for connecting it to the next adjoining stop, the registering plates J, provided with shoulders, and corresponding stop-plates, substantially as described.

7. The combination of a stationary frame, a vertically moving frame, and a mechanism for raising and lowering the vertically moving frame, with the registering plates J, having their dogs pivoted upon them for operating their corresponding registering mechanisms, the stop plates, the stops, and the depressing mechanism, the plates J, being provided with shoulders to engage with both the stops and the depressing mechanism, substantially as set forth.

8. The combination of the stationary frame, the vertically moving frame, and a mechanism for raising and lowering the vertically moving frame, with the plates J, provided with shoulders, the corresponding stop plates, the weighted stops provided with locking devices for connecting them, the depressing mechanism, the dogs connected to the plates, and the corresponding registering mechanisms, substantially as specified.

488,939. COMBINED BILL AND LETTER FILE AND PERFORATING APPLIANCE. JOHN W. GRAFFLAND, Philadelphia, Pa., assignor to Arthur J. Ingraham and William L. Boggs, same place. Filed Oct. 15, 1892. Serial No. 448,935. (No model.)



Claim.—1. A bill and letter file provided with a base plate having receiving pins, a chamber with a removable cover, transfer-wires mounted in crank-arms pivotally supported in the base of the chamber, a link connecting the crank-arms, and one of said crank-arms provided with an integral lever extending through the side wall of said chamber for actuating the transfer-wires, substantially as and for the purposes set forth.

2. In a bill and letter file, transfer-wires provided with spring controlled crank-arms mounted in a chamber provided with a detachable cover having openings therein forming guides for the shanks of said transfer-wires, a link connecting the crank-arms, and one of said crank-arms provided with a lever operated from the outside of the chamber for actuating said transfer-wires, substantially as and for the purposes set forth.

3. In a bill and letter file, transfer-wires connected with crank-arms seated in the base plate of a chamber, a link for connecting the crank-arms with each other and one of said crank-arms provided with a lever operated from the outside of the chamber for actuating the transfer-wires, substantially as and for the purposes set forth.

4. A bill and letter file and perforating device provided with a base-plate having receiving pins, a chamber with a detachable cover having openings therein, transfer-wires journaled in crank-arms mounted in said chamber and operated by a lever connected with one of said arms, and a swinging perforating device provided with punches and spring strippers, substantially as and for the purposes set forth.

5. A bill and letter file and perforating device provided with receiving pins, transfer-wires connected with combined crank-arms mounted in a chamber and provided with a lever operated from the outside thereof, and a spring controlled swinging perforating device provided with punches and strippers, substantially as and for the purposes set forth.

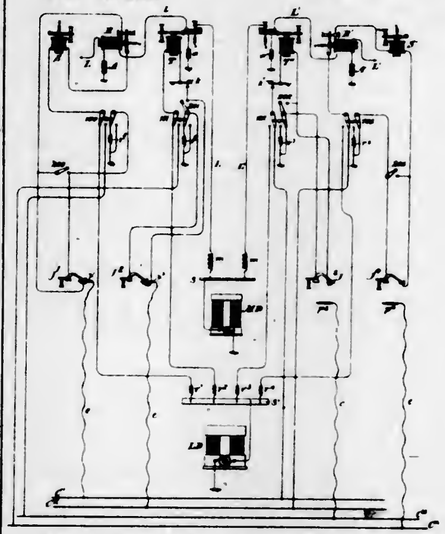
6. In a bill and letter file and perforating device transfer wires connected with combined crank-arms journaled in a detachable covered chamber and operated by means of a lever connected with one of said arms and a spring controlled perforating device having punches and strippers, substantially as and for the purposes set forth.

7. A bill and letter file comprising a base-plate provided with a chamber having a detachable cover with openings therein, transfer-wires connected with crank-arms linked together and pivotally supported in said chamber, a lever connected with one of said crank-arms and operated from the outside of said chamber, and a spring device suitably connected with said crank-arms, substantially as and for the purposes set forth.

8. A bill and letter file and perforating device comprising a base-plate provided with receiving pins, a chamber having a detachable cover with guide and punch apertures therein, transfer-wires connected with combined crank-arms pivotally supported in said chamber and one of said arms provided with a lever operated from the outside of said chamber and a spring controlled swinging perforating device provided with punches and spring-strippers, substantially as and for the purposes set forth.

9. In a bill and letter file, transfer wires connected with combined crank-arms mounted in a chamber provided with a detachable cover having apertures therein and one of said arms provided with a lever, and a spring device connected with said crank-arms, substantially as and for the purposes set forth.

488,940. ELECTRICAL CIRCUIT FOR TELEGRAPH APPARATUS. FRANCIS W. JONES, New York, N. Y. Filed Aug. 12, 1892. Serial No. 443,362. (No model.)



Claim.—1. The combination in an electrical circuit at one station of a main dynamo electric machine; a main telegraph line connected thereto; relay coils in said line; a local dynamo electric machine having a comparatively low electro motive force; a local circuit including said dynamo machine; a circuit breaker and the coils of an electro magnet and having connected thereto two separate artificial resistances substantially equal to each other and to said magnet; a second main line supplied by a main dynamo having comparatively high electro motive force; relay coils in said line; a second local circuit supplied by a local dynamo; a local circuit including said dynamo; a circuit breaker and the coils of an electro magnet and having connected thereto two separate artificial resistances substantially equal to each other and to said electro magnet, and switching devices connected to said local circuits and with said resistances so arranged that the two electro magnet coils may be included in one common circuit, and an equivalent artificial resistance simultaneously excluded whereby the resistance of said circuits are preserved practically uniform, substantially as described.

2. The combination in electrical circuits at one station of a main electric generator; a main telegraph line connected thereto; an artificial resistance for said line; relay coils in said line; a local electric generator having a comparatively low electro motive force; one or more local circuits, each including said generator; a circuit breaker and the coils of an electro magnet and having connected thereto two separate artificial resistances substantially equivalent to each other and to said magnet; a second main line supplied by said main line generator; relay coils in said line; an artificial resistance for said line; two or more additional local circuits supplied by a local generator; local circuits including said generator; a circuit breaker and the coils of an electro magnet, each circuit having connected therewith two separate artificial resistances substantially equivalent to each other and to said electro magnet, and switching devices connected with said local circuits so arranged that two electro magnet coils may be included in one common circuit and an equivalent artificial resistance simultaneously excluded whereby the resistances of said circuits are preserved practically uniform, substantially as described.

3. The combination at one station of two telegraph lines; a dynamo electric machine of comparatively high electro motive force supplying current for said main lines; a main line relay in each main line; a local circuit for each of said relays; a dynamo electric machine of comparatively low electro motive force supplying current for said local circuits, each of said local circuits also including the break points of the relay, the coils of an electro magnet and one or more switching devices, and one or more artificial resistances, each substantially equivalent to the resistance of an electro magnet; one or more additional local circuits, each including the local dynamo, the coils of an electro magnet and switching devices and one or more artificial resistances each substantially equivalent to one of said electro magnets, said switching devices being so connected with respect to each other and the said local circuits that a change in the position of the switches of any two predetermined circuits operates to include the electro magnets of said two circuits into one single circuit and to simultaneously exclude an artificial resistance whereby the resistance of said united circuit is preserved uniform, substantially as described.

4. The combination of two normally separate local circuits, each circuit including a generator of electricity, two electro magnet coils one for each circuit, said coils having substantially the same resistance, a circuit breaker in each of said circuits, one or more artificial resistances connected with each of said circuits, and switching devices for each circuit electrically connected to said resistances, substantially as described, whereby the magnet coil of one circuit may be included in circuit with the magnet coil of the other circuit, and an equivalent artificial resistance, normally in circuit, may be excluded from said circuit, as and for the purpose hereinbefore set forth.

5. The combination of two normally separate local circuits each including a generator of electricity; two electro magnet coils, one for each circuit, said coils having substantially the same resistance, a circuit breaker in each of said circuits, one or more artificial resistances in each of said circuits, a four point switch for each of said circuits, and spring jacks and jack plugs for said circuits arranged substantially as described whereby the coil of one circuit may be included and the artificial resistance of the other circuit may be excluded from a circuit common to both coils.

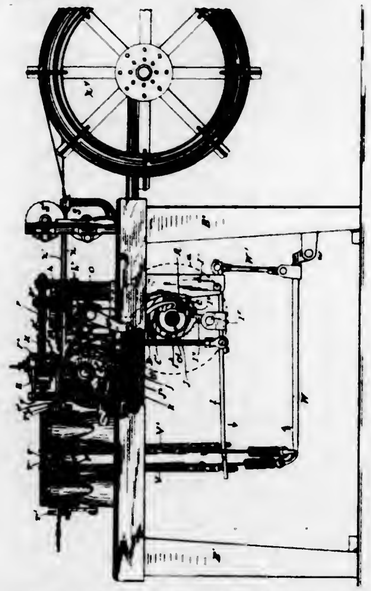
6. The combination of two normally separate local circuits each including a generator of electricity, two electro magnet coils, one for each circuit, said coils having substantially the same resistance, a circuit breaker in each of said circuits, one or more artificial resistances in each of said circuits, a four point switch for each of said circuits, a spring jack plug and cord for each of said circuits and a cut out switch for each spring jack all connected and arranged substantially as and for the purpose described.

7. The combination of two normally separate local circuits each including an electric generator, an electro magnetic coil in each circuit, said coils having substantially the same resistance, a circuit breaker in each of said circuits, an artificial resistance in each of said circuits, each resistance in amount being substantially equivalent to one of said coils, and switching devices for each of said circuits arranged substantially as described whereby a common circuit may be established including both magnet coils and excluding artificial resistance in amount equal to the added coil, as and for the purpose set forth.

8. The combination in a local circuit of a generator of electricity, the circuit breaker of a telegraphic instrument, an electro magnetic coil, and two separate artificial resistances each substantially equivalent to the resistance of said coil, a second electro magnetic coil of substantially the same resistance as the first named coil and a switching device operating to substitute the second named electro magnetic coil for one of said artificial resistances, whereby the resistance of the circuit remains practically unchanged, substantially as described.

9. The combination of a main line telegraph instrument and a local circuit therefor, including a generator of electricity, a circuit breaker, an electro magnet coil, two separate artificial resistances substantially equal to each other and to the said coil and a switch for varying the position of one of said artificial resistances with respect to said circuit, substantially as described.

488,941. MACHINE FOR MAKING ORNAMENTAL WIRE. LOUIS KOSS, Indianapolis, Ind. Filed Sept. 11, 1891. Serial No. 405,330. (No model.)



Claim.—1. In a machine for making ornamental wire, an oscillating head provided with fingers for engaging the wire and bending it into a zigzag pattern, in combination with intermittently operating mechanism for disengaging the fingers from the wire after the bend is made, mechanism for actuating said oscillating head, and a slide provided with fingers, and plates for holding the bends in the wire after they have been formed by the fingers of the oscillating head substantially as described.

2. In a machine for manufacturing ornamental wire, the combination with an oscillating head provided with fingers for engaging the wire and bending it into zigzag loops, of a slide R having fingers Q, and plates P' and e^3 for holding the bends in the wire after they have been formed by the fingers of the oscillating head: intermittently operating mechanism for disengaging the fingers of the head from the wire; the oppositely oscillating drums T and T', through which the zigzag ornamental strand, and the central strand are fed; dogs to engage the zigzag wire and bend it around the central strand; and mechanism for connecting and actuating said oscillating head and its fingers, substantially as described.

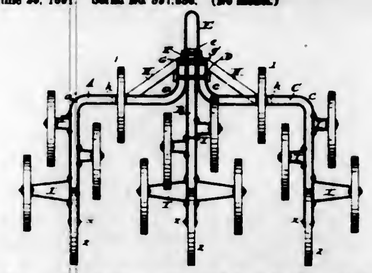
3. In a machine for beading wire, previously formed into a zigzag pattern, around a central strand, the oppositely rotating wheels T and T' provided with central transverse openings through which the wires are fed, and having dogs pivotally secured to the wheels and adapted to engage the zigzag wire, and by the movement of the wheels bend said wire around the central strand, in combination with connecting and actuating mechanism, substantially as described.

4. The combination with the oscillating head and its fingers, and with the oppositely rotating drums, and their spring dogs, of the levers I and W, connected by a rod W', and sprocket connections between said levers and drums, substantially as described.

5. The combination with the oscillating head and its fingers, of a sliding bar R provided with fingers Q; a pivoted arm R' to which said sliding bar is pivotally secured, and a spring R^2, and cam R^4 for operating said arm, and sliding bar, substantially as described.

6. The combination with the oscillating head and its fingers, of the slide R and its fingers Q; the oppositely rotating drums T and T'; and spring dogs pivotally secured to said drums, and slightly hooked at their free ends, substantially as described.

488,942. HARROW. CHARLES LA DOW, Albany, N. Y. Filed June 29, 1891. Serial No. 397,586. (No model.)



Claim.—1. In a harrow, a metal frame beam having a wide surface next the ground so as not to sink deeply therein, combined with an angular flange forming a vertical side wall attached to said wide under portion, tooth supports projecting from said beam, and teeth carried by said supports.

2. In a harrow frame, metal beams having wide under portions combined with angle or flanged vertical side portions, tooth supports projecting from said side portions, and teeth mounted on the tooth supports.

3. In a harrow, a single bar having right and left zig-zag bends and each bend forming the sole support for circular spring teeth mounted at the longitudinal parts of said bar, and on opposite sides thereof.

4. In a harrow, circular teeth in combination with a draft bar having zig-zag bends in different draft lines, and each of said bends forming the only support for a tooth, said teeth being located on opposite sides of said bar.

5. In a harrow, beams having zig-zag bends projecting therefrom, circular teeth thereon having curved or arched shanks, and each tooth supported at its shank by only a single beam, whereby one side of the tooth may be maintained at a distance from any other frame beam, so that rubbish may freely work backwardly among the teeth and they may vibrate and also be adjusted without striking the obliquely inclined parts of the zig-zag beam, in combination with devices for adjusting and holding the teeth in the desired position.

6. In a harrow, a frame having a section with side and front bars, so combined as to form a closed front for the section in one piece of metal, and a flange, or angle, or rib thereon affixed to said bars, in combination with curved teeth, adjustable as to pitch, and draft devices.

7. In a harrow, the combination of sections made of angle or ribbed metal bent to form a closed front and side in one piece for each section, transverse bars and curved teeth carried thereby, and adjustable as to pitch.

8. In a harrow, a metal beam having a flat bottom side, and two vertical sides affixed thereto, constituting substantially a hollow beam having corners, and one which is light and also stiff in every direction, in combination with spring teeth supports projecting from said beam, the angle shape of the beam adapting it to withstand the vibrations of the teeth and affording a base for the tooth supports on which they are not liable to rock.

9. In a harrow, a metal beam having a flat bottom side, adapted to run on the ground and not sink therein, and a vertical side rib made in one piece therewith, making the beam light and also stiff in every direction, in combination with curved spring teeth supported by said beam, and held at a distance therefrom.

10. In a harrow, a zig-zag bar, a projection planted against one side of said bar and forming a support upon which a curved spring tooth may be held at the desired distance from the bar so that the tooth may vibrate and not come into contact with the bar, in combination with a similar projection planted against the opposite side of the same zig-zag bar for supporting a similar tooth thereon.

11. In a harrow, a zig-zag beam and an arm supported thereby, in combination with a curved spring tooth supported by said arm at a distance from the zig-zag beam.

12. In a harrow, angle frame beams having vertical side walls, in combination with tooth bearing devices supported by said vertical side walls.

13. In a harrow, a front and side beam in one piece, made of angle or channel metal so as to be comparatively light and stiff, tooth supporting devices attached thereto, and teeth adapted to be adjusted relatively to said supporting devices.

14. In a harrow, a front and side frame beam in one piece made of metal having a vertical and also a horizontal wall, in combination with transverse arms, beams or supports which carry teeth, and which are attached to said frame-beam.

15. In a harrow, an angle frame beam, a tooth support mounted thereon at only one end, and a tooth adapted to rock or be adjusted from the other end of said support.

16. In a harrow, zig-zag frame beams, in combination with curved spring teeth each attached by its shank to only one of said single frame beams.

17. In a harrow, a frame bar having two oblique portions supporting a longitudinal portion of the same bar, separate from any other portion of the frame, in combination with a curved tooth attached by its inner end to said longitudinal portion of the bar, whereby rubbish may pass by the open side of the tooth.

18. In a harrow, a frame having oblique and longitudinal beads, in combination with spring teeth mounted on said longitudinal beads and each tooth supported solely by a single longitudinal part of the frame.

19. In a harrow, rigid sections hinged together constituting a draft frame closed at its front and open at its rear, in combination with adjustable teeth carried by the frame.

20. In a harrow, a front metal frame bar, and a side bar in one piece, forming a rigid section, and two of said sections placed in such relation as to form a pointed frame, and hinged together to conform to uneven surfaces, in combination with metal teeth adjustably secured directly to said metal beams.

21. In a harrow, metal frame bars having flat bottoms adapted to run on the ground, and tooth bearing devices planted on the vertical side walls of the frame-bars without puncturing the bottoms thereof, in combination with teeth carried by the tooth-bearing devices.

22. In a harrow, a metal frame bar adapted to run on the ground, tooth-bearing devices secured to one side wall of said frame bar, a similar device secured to the opposite side wall of the same bar, in combination with teeth supported by said devices out of direct contact with the frame-bars.

23. In a harrow, the combination of a pair of sections pivotally connected together at their adjacent edges and having a series of oblique tooth bars, each of said bars being provided with a series of removable arms projecting away from the bars and spring teeth secured to the rear ends of said removable arms, as and for the purposes described.

488,943. HARROW. CHARLES LA DOW, Albany, N. Y. Filed July 29, 1891. Serial No. 401,050. (No model.) Patented in Canada Jan. 20, 1891, No. 35,846.

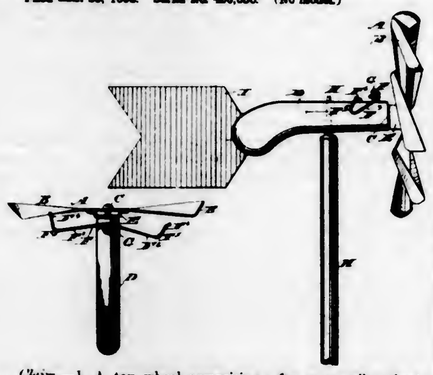
Claim.—1. In a harrow, two or more concaved S-shaped blades arranged on a spindle and clamped together between two disks, substantially as and for the purpose specified, in combination with a draft frame.

2. In a harrow, two or more concaved S-shaped blades arranged on a spindle and clamped together between two disks, the face of each disk being stepped so that the blades shall be in contact with each other, and each blade in contact with the stepped face of a disk, substantially as and for the purpose specified, in combination with a draft frame.

3. In a harrow, a journal-box supporting the blade to the spindle and having trunnions which fit into oval holes made in a forked projection fixed to the frame of the machine, substantially as and for the purpose specified.

4. In a harrow, a rotary gang of cutters, a drag-bar attached to said gang and having a curve on the upper edge of said bar, in combination with a bar extending over the said curve, substantially as and for the purpose specified.

488,944. TOY WHEEL. THOMAS A. MACDONALD, Paterson, N. J. Filed Mar. 23, 1892. Serial No. 426,050. (No model.)



Claim.—1. A toy wheel comprising a fan or propeller wheel a handle on which the said wheel is mounted to turn, and a lever fulcrumed on the said handle and engaging the edges of the blades of the said wheel, substantially as shown and described.

2. A toy wheel comprising a handle, a fan or propeller wheel mounted to turn at one end of the said handle, and a lever pivoted on the said handle and extending across the rear face of the said wheel to engage the blades of the latter at the edges thereof, substantially as shown and described.

3. In a toy wheel, the combination with a handle provided at one end with a pivot pin, of a fan wheel mounted to turn on the said pivot pin, and a lever fulcrumed on the said handle and extending across the rear face of the said wheel, the ends of the said lever being provided with forward extensions adapted to engage the edges of the blades of the said wheel, substantially as shown and described.

4. In a toy wheel, the combination with a handle provided at one end with a pivot pin, of a fan wheel mounted to turn on the said pivot pin, a lever fulcrumed on the said handle and extending across the rear face of the said wheel, the ends of the said lever being provided with forward extensions adapted to engage the edges of the blades of the said wheel, and lugs formed on the extensions of the said lever and adapted to be engaged by the rear faces of the blades, substantially as shown and described.

5. In a toy wheel, the combination with a rod formed with a pivot pin, of a handle mounted to turn on the said pin, a vane held on one end of the said handle, a wheel mounted to turn on the other end of the said handle, and a lever fulcrumed on the said handle and extending across the rear face of the said wheel, the said lever being provided at its ends with forward extensions adapted to engage the edges of the blades of the said wheel, substantially as shown and described.

488,945. WRITING DEVICE. ALEXANDER M. NELSON, Birkenhead, assignor of one-half to John Wilson, Liverpool, England. Filed Sept. 2, 1892. Serial No. 444,900. (No model.)

Claim.—1. The thimble having a pen-holding device, and a pen-slide, adjustable in the pen-holding device, having a head; substantially as described.

2. The thimble having a pencil-holder in line therewith; substantially as described.

3. The thimble having a removable ink-bottle fitted therein; substantially as described.

4. The thimble provided with a pen-holding device, a pencil-holder in line with the thimble and a sheath common to both the pen-holding device, and the pencil-holder; substantially as described.

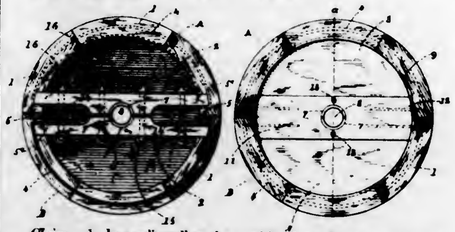
5. A writing device consisting of a thimble having a pen-holder device, a pen-slide, a pencil-holder, and an ink-bottle fitting within the thimble; substantially as described.

488,946. COUPLING FOR LIGHT-FIXTURES. JAMES A. O'NEILL, Boston, Mass., assignor of one-half to John C. Hallings, same place. Filed July 23, 1892. Serial No. 441,007. (No model.)

Claim.—1. In a coupling for gas and electric light fixtures, a separable casing comprising interiorly spherical fixed and movable parts, a ball therein having a gas passage and a hollow stem extended through an opening in the movable part of the casing, and means to adjustably connect said parts, combined with a yielding gas tight packing filling the space between the ball and spherical interior of the fixed part, and a supporting nipple on the fixed part registering with the gas passage and with an opening in the packing, substantially as described.

2. In a coupling for light fixtures, a two-part separable casing, a ball therein having a gas passage, and means to connect the parts of the casing, combined with insulating packing rings interposed between the ball and both parts of the casing, substantially as described.

488,947. SPLIT PULLEY. JOHN F. PARKES, North Tonawanda, assignor to Florence M. Parkes and John L. Parkes, Buffalo, N. Y. Filed Sept. 4, 1891. Serial No. 404,701. (No model.)



Claim.—1. In a split pulley, the combination, of two semicircular portions, each of which is provided with a cross bar, the ends of which bars are rigidly secured thereto, and the central portions of the bars provided with means for holding the pulley to the shaft, and a strengthening band in each portion, the ends of which extend inwardly toward the center of the pulley and are rigidly secured to the ends of the cross-bar substantially as set forth.

2. In a split pulley, the combination, of two semicircular portions, each of which is composed of a number of semicircular sections secured together in pairs, each pair of sections being provided with a groove which extends nearly to the ends thereof, a cross-bar for each portion of the pulley, and a strengthening band in each groove, the ends of which band extend toward the center of the pulley and are rigidly secured to the cross pieces, substantially as set forth.

3. In a split pulley, composed of two semicircular portions, the inner edges of which are provided with two grooves, one upon each side, cross-bars for holding the pulley together, the central portions of which bars are provided with means for the reception of the shaft, and four pieces secured in each groove, two substantially semicircular pieces, one on each side of the cross-bars, and two substantially rectangular central pieces, the outer ends of which are within the groove and the inner ends of which abut against each other and are provided with recesses, and are secured to the cross-bars, whereby the outer sides of the pulley are smooth, substantially as set forth.

488,948. POTATO-HARVESTER. JOHN RADERMACHER, Kaukauna, Wis. Filed May 2, 1892. Serial No. 431,494. (No model.)

Claim.—1. In a potato harvester, the combination with a frame and driving wheels therefor, of arms pivoted to said frame which are bent downward between their ends, a scoop secured to the forward ends of the arms, means for vertically adjusting the frame, a shaft journaled to the heads of the arms, an elevated sprocket shaft above the main frame, an endless carrier which moves around said shafts and a driving mechanism, substantially as shown and described.

2. In a potato harvester, the combination with a main frame, driving wheels therefor, and a scoop, of an endless elevator which conveys the potatoes from the scoop, a rearwardly projecting frame, an endless conveyer supported thereby which receives the potatoes from the first named elevator, a solid bottom in said frame terminating in fingers over which said conveyer works, a depending shaking screen, and a suitable operating mechanism, substantially as shown and described.

3. In a potato harvester, the combination with a frame, drive wheels, a scoop, the endless conveyer and a shaking screen, of shafts M and O', engaging gears on said shafts, a connection between the first named shaft and the driving wheels, a means for operating the conveyers from the shaft O', a bevel gear on said shaft, a rearwardly extending crank shaft having a pinion, and a connection between the said cranks and the screen, whereby the latter is vibrated, substantially as shown and described.

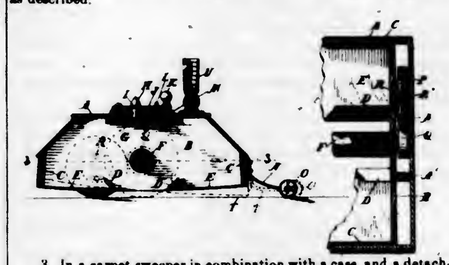
488,949. AUTOMATIC CUT-OFF FOR GAS-BURNERS. CHARLES RATH, Chicago, Ill. Filed Apr. 18, 1892. Serial No. 429,589. (No model.)

Claim.—The combination with the feed-pipe and jet, and with the spring-actuated cock to close said pipe, of the notch plate or disk rigidly secured to the cock plug, and a thermostatic rod mounted in position above said jet and having its free terminal directly dogging a notch of said plate whereby the plug is held adjustably open against the stress of its spring while the gas is burning, substantially as described.

488,950. CARPET-SWEEPER. SILAS H. RAYMOND, Grand Rapids, Mich., assignor to T. Stewart White and Thomas Friant, same place. Filed Jan. 16, 1892. Serial No. 418,327. (No model.)

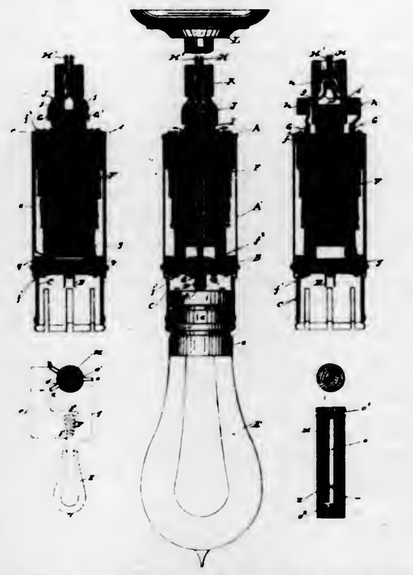
Claim.—1. In a carpet sweeper in combination with an outer case an inner frame consisting of end walls connected by a bar at the top and dust pans at the bottom, all rigidly attached to said end walls, detachable fastenings to secure said frame in the case and a brush shaft and driving wheels journaled on said frame substantially as described.

2. In a carpet sweeper, the combination of the case, the brush shaft, the driving wheels located at one side only of the brush shaft and supporting one side of said case, said driving wheels being journaled on unyielding bearings, and a wheel supporting the other side of said case and journaled in vertically flexible bearings, substantially as described.



3. In a carpet sweeper in combination with a case, and a detachable inner frame, having dust pans, brush shaft, and driving wheels attached, a pointed stud on said frame, engaging an opening in said case, a groove in said stud and a pivoted latch engaging said groove, substantially as described.

488,951. REGULATING-SOCKET FOR INCANDESCENT ELECTRIC LAMPS. ELIAS E RIES, Baltimore, Md., assignor to the Ries Electric Specialty Company, same place. Filed July 6, 1891. Serial No. 398,578. (No model.)



Claim.—1. A regulating socket for incandescent electric lamps, &c., provided with a self inductive conductor within the socket, in the filament circuit, and means for varying the degree of self-induction of said conductor.

2. A socket for incandescent electric lamps, &c., provided with a self-inductive conductor within the socket and in series with the lamp filament or other translating device, and means for varying the degree of self-induction of said conductor.

3. A regulating socket for incandescent electric lamps, &c., provided with a counter electro-motive force coil or reaction device, within the socket and in the filament circuit and means for varying the counter electro-motive force generated by the said coil or device.

4. A regulating socket for incandescent electric lamps and other translating devices having a counter electro-motive force coil or reaction device within the socket and normally in series with the lamp filament or other device, and provided with means for varying the counter electro-motive force or current generated by the said coil or device.

5. A regulating socket for incandescent electric lamps and other translating devices, said socket containing a reaction coil or counter electro-motive force generator normally in series with the lamp filament or other device, and having a switching device arranged to cut

out or short circuit the said coil, substantially as and for the purpose described.

6. A regulating socket for incandescent electric lamps and other translating devices, said socket containing a reaction coil or counter electro-motive force generator normally in series with the lamp filament or other device and a switching device for varying the amount of electro-motive force generated and for cutting out or short circuiting the said generator or coil.

7. A regulating socket for incandescent electric lamps and other translating devices, said socket having a reaction coil or counter electro-motive force generator normally in series with the lamp filament or other device and having a switching device operated by a movement of the lamp or lamp holder itself for varying the amount of counter electro-motive force generated.

8. A regulating socket for incandescent electric lamps and other translating devices, said socket containing a variable counter electro-motive force generator or other current regulating device, and having a switch designed and adapted to be operated by a movement of the lamp or lamp holder itself for varying and controlling the supply of current to the lamp or other translating device.

9. A regulating socket for incandescent electric lamps and other translating devices, said socket comprising a stationary portion arranged and adapted to be secured to a suitable fixture, a movable portion containing the holder or receptacle for the lamp or other translating device, a variable counter electro-motive force generator or other current regulator, and suitable circuit making and breaking devices, the whole arranged to be operated by a movement of the lamp or translating device to establish the circuit and to vary the amount of current flowing through the same in accordance with the position of the lamp or translating device, substantially as described.

10. A socket or holder for incandescent electric lamps and other translating devices supplied with alternating or intermittent currents, the same comprising a contact making receptacle or holder for the translating device secured to a suitable base or support, a reaction coil or counter electro-motive force generator also secured to the said base or support and so arranged as to be included in the circuit of the translating device, an inclosing shell for the receptacle, base and reaction coil, and means for varying the amount of counter electro-motive force or current generated by the said reaction coil or generator, substantially as set forth.

11. A socket or holder for incandescent electric lamps and other translating devices supplied with alternating or intermittent currents, the same comprising a suitable holder for the translating device, a reaction or counter electro-motive force coil attached to and forming part of said holder, and wound in sections varying in their electrical resistance, electrical connections between the said coil and the translating device, whereby when said device is put into operation the coil will become active, and means for successively rendering the sections of the coil active or inactive.

12. A socket or holder for incandescent electric lamps and other translating devices supplied with alternating or intermittent currents, the same comprising a suitable holder for the translating device, a reaction or counter electro-motive force coil attached to and forming part of said holder, circuit connections, substantially such as described, between the coil and the translating device, and an adjustable core for varying the amount of electro-motive force generated by the coil.

13. In a regulating socket or holder for incandescent electric lamps and other translating devices, the combination with the lamp holding device, of a movable coil to which the holding device is attached, a core designed and adapted to enter the coil, and means, substantially such as described, for holding the coil and core in any desired position with relation to each other in which the same may be placed.

14. In a regulating socket for incandescent electric lamps and other translating devices, the combination, with the circuit-wires and the translating device, of a solenoid or coil to which the translating device is attached, a stationary laminated iron core over which the coil is adapted to move, and means, substantially such as set forth, for maintaining electrical connection between the movable coil and the circuit wires.

15. In a regulating socket for incandescent electric lamps, the combination, with the circuit wires and the stationary supporting fixture, of a magnetizable core secured to said fixture, a self inductive solenoid [or reaction coil] arranged to be moved over said core, a lamp attachment or holder secured to said solenoid and having one of its terminals electrically connected therewith, and electrical connections between the solenoid and other lamp terminal and the circuit-wires, substantially as set forth.

16. In a regulating apparatus for translating devices operated by alternating or intermittent currents, the combination, with the circuit-wires, of a divided laminated core having its divided portions electrically insulated from each other and connected with said circuit-wires, a counter electro-motive force coil or solenoid surrounding said core and arranged to traverse or to be traversed by the same, and contact making brushes or detents secured to the coil or its support and adapted to make electrical connection between the coil and its conducting core.

17. In a regulating apparatus for translating devices operated by alternating or intermittent currents, the combination with a coil or coils in the circuit of the translating device, of a longitudinally electrically divided magnetic core for the coil or coils, permanently connected with the leading wires and in sliding contact with the terminals of the coil or coils, substantially as described.

18. In a regulating apparatus for translating devices operated by alternating or intermittent currents, the combination with a coil or coils in the circuit of the translating device, of a longitudinally divided magnetic core having an insulating partition and an insulating slotted sheath; a permanent connection between the leading wires and the divisions of the core, and contacts at the terminals of the coil or coils entering the slots and bearing upon the core section, substantially as described.

19. In a regulating socket for translating devices operated by alternating or intermittent currents, the combination, with the circuit-wires and the translating device, of a counter electro-motive force coil forming part of said socket and connected in series with the translating device, a shunt or short circuiting connection of low resistance around said coil, and a core movable with respect to the coil and arranged to short circuit the latter when withdrawn, substantially as set forth.

20. In a regulating socket for translating devices operated by alternating or intermittent currents the combination, with the circuit wires and the translating device, of a counter electro-motive force coil forming part of said socket and normally in series with said translating device, a core movable with respect to the coil and adapted to vary the amount of counter electro-motive force generated by it, and means, substantially such as set forth, for opening the circuit through the coil and translating device when the relation between the coil and core is such that the latter is fully within the coil, substantially as set forth.

21. In an electric lamp socket, the combination of the lamp holding terminals C, D, the counter electro-motive force coil or solenoid F, and the inclosing shell *g*, substantially as set forth.

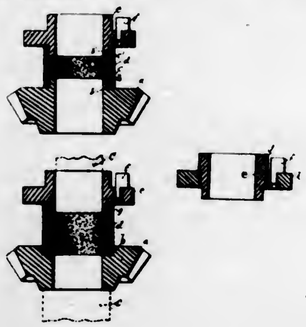
22. In an electric lamp socket, the combination of the lamp holding terminals, the counter electro-motive force coil, the laminated core I and the inclosing shell *g*, substantially as set forth.

23. In a regulating socket for incandescent electric lamps provided with a reaction coil and core movable with reference to each other, an insulating coupling between the core and the socket support or fixture, formed with a central channel for the admission of the leading wires, and with lateral openings for the exit of said wires, substantially as described.

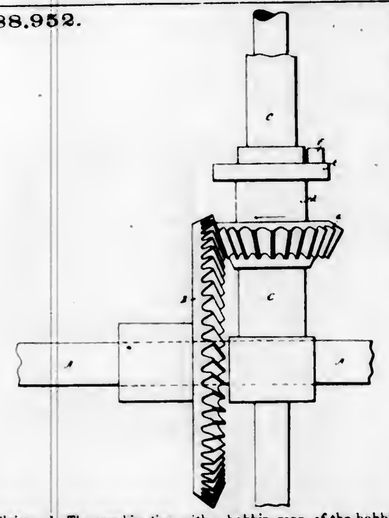
24. In a regulating socket for incandescent electric lamps the combination with a reaction coil and laminated core movable with reference to each other, of notches in the core and detents fixed to the coil and engaging the notches, whereby the coil and core are locked in their adjusted relative positions, substantially as described.

25. In an electric lamp socket, the combination with a reaction coil and longitudinally electrically divided magnetic core permanently connected with the leading wires and formed with notches along its sides, of spring detents bearing upon the core sections and adapted to engage the notches, and electric connections between the detents and terminals of the coil, substantially as described.

488,952. MEANS FOR DRIVING BOBBINS IN ROVING-FRAMES. SOCRATES SCHOLFIELD, Providence, R. I. Filed Mar. 16, 1892. Serial No. 425,172. (No model.)



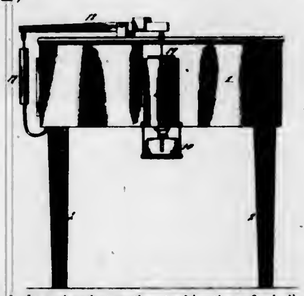
488,952.



Claim.—1. The combination with a bobbin-gear, of the bobbin-driving collar, and an annular coupling which forms the outer wall of a lubricating chamber, and detachably connects said gear and collar, substantially as described.

2. The combination with a bobbin-gear having an annular hub provided with an exterior screw-thread, of the bobbin-driving collar, and an annular coupling, which forms the outer wall of the lubricating chamber, detachably connects said gear and collar, and is provided with an internal screw-thread, which engages with the screw-thread upon the hub of the gear, substantially as described.

488,953. INCUBATOR. HENRY M. SHERR, Quincy, Ill., assignor to Charles M. Ertel, same place. Filed Sept. 8, 1892. Serial No. 445,354. (No model.)



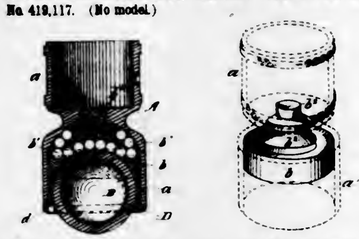
Claim.—1. In an incubator, the combination of a boiler, a water tank, a hot air flue leading from the upper part of the boiler through the water tank, a water pipe surrounding the hot air flue and extending from the boiler through the water tank, to near its end farthest from the boiler, and a return duct extending from the end of the water tank nearest the boiler to the lower part of the boiler; substantially as and for the purpose set forth.

2. In an incubator, the combination of a boiler, a water tank, a hot air flue leading from the boiler centrally through the water tank, a water pipe leading from the upper part of the boiler to near the far end of the tank from the boiler, and which surrounds said hot air flue, deflectors located in said tank and extending from said water pipe to near the sides of the tank, and a return duct leading from the central part of the tank to the lower part of the boiler, substantially as and for the purpose set forth.

3. In an incubator, the combination of a boiler, a water tank, a hot air flue leading from the boiler centrally through the water tank, a water pipe surrounding said air flue, and which extends from the boiler to near the far end of the tank, and a return duct located directly beneath said water pipe, and which carries the water from the tank back to the bottom of the boiler; substantially as and for the purpose set forth.

4. In an incubator, the combination of a water tank, a boiler having a central air chamber, a hot air flue leading from said chamber through said water tank, a water pipe surrounding said hot air flue, and extending from the boiler to near the far end of said tank, a return duct leading from the tank to the bottom of the boiler, and a thermostat controlling the open, upper end of said boiler chamber, whereby the heat from the boiler lamp is allowed to escape directly from said chamber or is caused to pass through said hot air pipe; substantially as and for the purpose set forth.

488,954. CASTER. WILLIAM J. SMITH, Boston, Mass., assignor to Charles S. Larrabee, trustee, same place. Filed Jan. 26, 1892. Serial No. 419,117. (No model.)



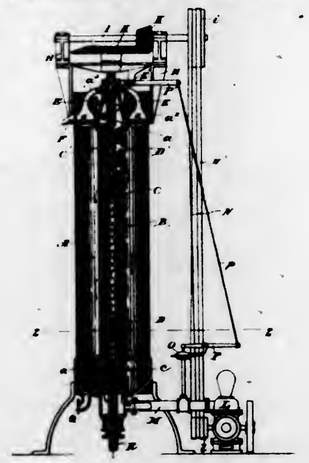
Claim.—1. In combination, case A; ball B; a bearing in case A for ball B; circular spring D; and a groove *d* in case A in which spring D is inserted by bringing its ends together and allowing it to expand, all substantially as described.

2. In combination cylindrical case A; detachable ring *b* concave on its upper and lower surfaces; cup b^2; its shank b^3; ball B; and anti-friction balls, confined in case A by ring *b*, cup b^2, and ball B, substantially as set forth.

488,955. HEDGE-FENCE TRAINER. PIUS S. SNYDER, Jacobus, Pa. Filed Mar. 16, 1892. Serial No. 425,146. (No model.)

Claim.—In a hedge fence trainer, the combination with a continuous line wire, doubled upon itself at intervals, and the doubled portions twisted to form unyielding eyes to adapt the wire to be drawn taut, of a series of independent short hook-loop wires, each having a hook end to engage an eye in the line wire and a straight end to be coiled around the line wire, the said short wires forming with the line wire, a series of loops to inclose the stems of the hedge plant, substantially as set forth.

488,956. APPARATUS FOR SEPARATING SOLID MATTER FROM LIQUIDS. GUSTAVE SOBOTKA, New York, and WILLIAM ARRENS, Long Island City, N. Y. Filed Aug. 16, 1892. Serial No. 443,256. (No model.)



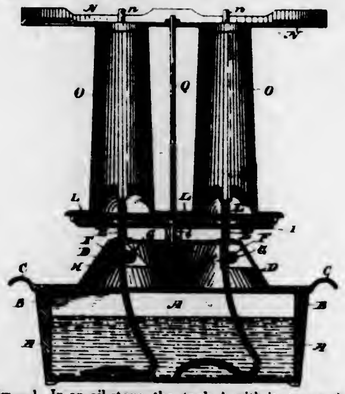
Claim.—1. An apparatus for separating solid matter from liquids, comprising a rotary filtering cylinder and a stationary filtering cylinder arranged the one within the other so as to provide an annular space between the two cylinders for the passage of the material to be filtered, a spiral carrier supported by said rotary cylinder within said annular space and closely fitting the same, inlet and outlet openings communicating with opposite extremities of said annular space, a sliding valve or cover for said outlet adapted to rotate with said rotary cylinder, gearing for imparting motion to said rotary cylinder and carrier, and means for opening or closing said valve accordingly as the pressure within the cylinder is increased or diminished, substantially as described.

2. In combination with the outer casing, the stationary filtering cylinder arranged concentrically therein, a second but shorter filtering cylinder arranged within said stationary cylinder, a spiral carrier extending from the inlet to the filtering cylinders within the annular space between the same to the upper end of the shorter cylinder and provided with an enlarged section fitting the upper end of the outer filtering cylinder and tapered toward its upper end, a cover for said casing having an annular upwardly extending circumferential flange and a central upwardly extending hollow conical projection fitting over the tapered end of said carrier, a sliding cover or valve arranged over said conical projection, and means for imparting motion to said rotary cylinder and carrier, substantially as described.

3. An apparatus for separating solid matter from liquids comprising the cylindrical casing, the perforated stationary cylinder fitted concentrically therein, the rotary shaft arranged within said stationary cylinder and provided with a hollow perforated section forming an inner filtering cylinder, a spiral carrier fixed to said hollow section within the annular space surrounding the same and connecting at its upper end with an enlarged section having a tapered upper end fitting a correspondingly tapered opening in the cover of the outer cylinder, a rotary sliding hub or valve arranged over said tapered opening and provided with laterally and downwardly curved arms or stirrers, an apparatus for forcing the material to be filtered into the annular space between the filtering cylinders, and a pressure regulator connecting with said rotary sliding valve, substantially as described.

4. In combination with the inclosing casing, the outer filtering cylinder, the concentrically arranged hollow filtering shaft having the spiral blade attached exteriorly thereto and adapted to rotate therewith; said blade having a tapered upper end, the combined cylinder head and receptacle having the centrally disposed hollow cone to receive the correspondingly tapered end of said spiral blade, the vertically sliding rotary hub adapted to cover the apex of said hollow cone, and a pressure regulator connecting with said hub, substantially as described.

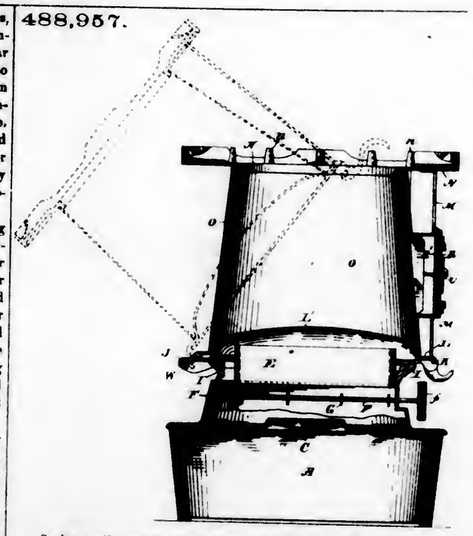
488,957. OIL-STOVE. CHARLES K. STINSON, Chelsea, assignor to the Safety Oil Stove Company, Boston, Mass. Filed Jan. 5, 1892. Serial No. 417,108. (No model.)



Claim.—1. In an oil stove, the tank A with its top or dome D, exterior wick tube E and internal flange or wall H, integral with said top, in combination with the wick-raising device F G mounted within the dome and adapted to press the wick up or down against said flange or wall, substantially as set forth.

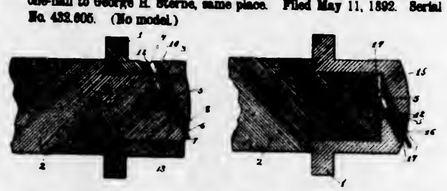
2. In an oil stove, the cone-plate and top-plate, with vertical chimneys having edgewise openings, in combination with the front plate having corresponding openings, and with a door hinged on said front plate, provided with transparent panes, and adapted to close the windows or openings through said front plate, and transmit light through them, substantially as set forth.

488,957.



3. In an oil stove, the cone-plate and top-plate, with vertical chimneys having edgewise openings, and the front plate having corresponding openings and rigid pintles for the door hinges, in combination with the door, formed in two laterally joined parts with panes of transparent material held between them, and with the hinge-eyes formed by semi-circular recesses in lateral projections on such joined parts, arranged to surround and inclose said rigid pintles, substantially as set forth.

488,958. NUT-LOCK. NICOLAS BOSHARD, Chicago, Ill., assignor of one-half to George H. Sterne, same place. Filed May 11, 1892. Serial No. 432,605. (No model.)



Claim.—1. The combination of an axle provided with a socket, a nut provided with a socket, a locking bolt located within one of said sockets and having a stem extending outside thereof, and a spring for holding said locking bolt normally in locked position, said locking bolt and said spring being located within the trace or circle defined by the threaded wall of the nut and being inclined in both rearward and outward directions, substantially as described.

2. The combination of an axle provided with a socket, a nut provided with a socket, a longitudinally movable locking bolt located within one of said sockets, and a coiled spring encircling the stem of said locking bolt, and having a bearing against said bolt and against the outer wall of the socket wherein said bolt is held, said locking bolt and said socket wherein it is held being located within the trace or circle defined by the threaded wall of the nut and being inclined in both rearward and outward directions, the stem of said locking bolt extending in position to be grasped in order that said bolt may be retracted, substantially as described.

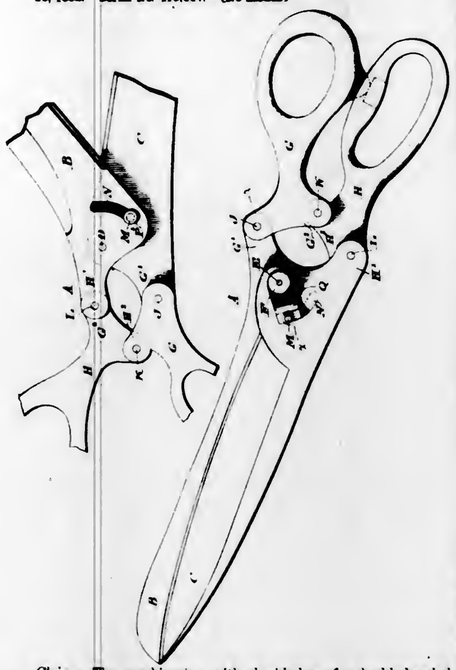
3. The combination of an axle provided with a socket, a nut provided with a socket, and a longitudinally movable and rotatable locking bolt and an actuating spring located within one of said sockets, and provided with a stem extending therethrough, the said socket wherein the locking bolt is held being located within the trace or circle defined by the threaded wall of the nut, an inclined nose or projection located adjacent the outer end of the socket wherein the bolt is held, the stem of said bolt being furnished with an angular hook adapted to ride over said inclined nose or projection as the bolt is rotated and retracted, substantially as described.

4. The combination of a nut having a socket in one side thereof, the axle having a socket extending from the end or face thereof diagonally inward through one side thereof and adapted to register with said socket in the nut, and a locking bolt arranged in such axle socket, substantially as described.

5. The combination of a nut having a socket in its side wall, an axle having a socket adapted to register with a socket of the nut, said axle socket extending from the end or face of the axle diagonally inward through one side of the axle, and a locking bolt and its spring arranged within said axle socket, said locking bolt being provided with a stem extending through the outer end of said axle socket, substantially as described.

6. The combination of a nut having a socket in one side thereof, an axle having a socket extending from its outer end diagonally inward and through one side thereof, the outer end of said axle being provided with a depression and a projection adjacent the outer end of the axle socket, a locking bolt and a spring located within said axle socket and provided with a stem having a hook or angular portion adapted to ride over said projection, substantially as described.

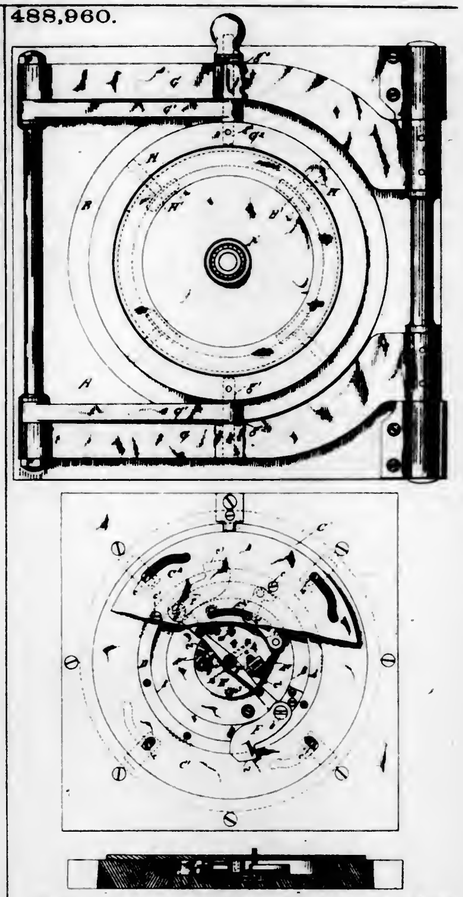
488,959. SHEARS. GEORGE BRANDENBURG, Philadelphia, Pa., assignor of one-half to Frederick C. Brandenburg, same place. Filed Jan. 28, 1892. Serial No. 419,607. (No model.)



Claim.—The combination with the blades, of a double-headed pin, and a rocking arm which is fulcrumed on the contiguous blade, and having one end engaging with the adjacent head of said pin, and the other end with the pivotal pin of the blades, said pivotal pin being provided with an adjusting nut, and said headed pin fitting closely in one blade and freely in a segmental slot in the other blade.

488,960. SAFE. THOMAS M. BRIETHALL, Medina, Ohio. Filed Aug. 27, 1891. Serial No. 403,840. (No model.)

488,960.



Claim.—1. In a circular door safe the combination of the frame or jamb the locking bolts and the door composed of a main portion and a ring or plate portion which is engaged to the frame or jamb by the bolts, said ring or plate engaged to the main portion of the door by a screw or cam engagement, the construction being such that when the door is revolved to shoot the bolts, the screw or cam engagement binds the door to its seat, substantially as described.

2. In a circular door safe the combination with the frame or jamb and the door of dogging mechanism to prevent the rotation of the door consisting of two or more dogs located at opposite points on the door and operated by a lever or plate to force them into and out of their dogging position, substantially as described.

3. In a circular door safe the combination with the frame or jamb and the door of dogging mechanism to prevent the rotation of the door consisting of two or more dogs pivoted to the door and adapted to enter recesses in a stationary portion, a plate adapted when rotated to be engaged and held until intentionally released, and a spring or springs on said plate adapted to simultaneously exert a pressure on the dogs, substantially as described.

4. In a circular door safe the combination with the frame or jamb and the door of two or more dogs adapted to prevent the rotation of the door, a lever connecting said dogs, and a plate carrying springs which exert a pressure on the lever and through it on the dogs, substantially as described.

5. The combination of the bolt ring C—ring D, dogs F, plate E, lever F', and springs adapted to exert a pressure on the lever, substantially as described.

6. The combination with the hinge ring carrying set screws with which to adjust the door, of the door having a groove or recess in which rest shoes, against which the set screws bear, substantially as described.

7. The combination with the hinge ring carrying set screws of the adjacent door ring having a groove in its periphery and shoes

having beveled faces which bear in said groove, the ends of the set screws bearing on the shoes, substantially as described.

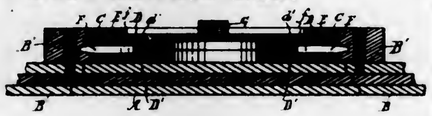
8. The combination with the hinge ring and the adjacent door ring of one or more blocks or shoes having one portion in the hinge ring and the other portion in the door ring, substantially as described.

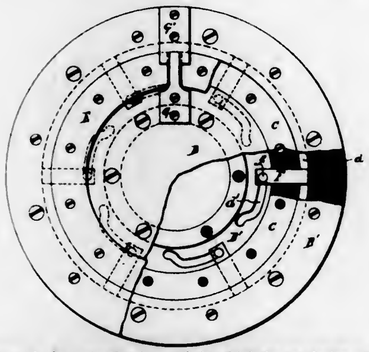
9. The combination with the door of a bolt housed within the main portion of said door, and adapted to enter a recess in the frame or jamb and dog the door against revolution, said bolt operated by a combination lock, substantially as described.

10. The combination with a circular door having a combination lock on its face, of a bolt housed within the main portion of the door and intermediate connections between the said bolt and the combination tumbler bolt whereby the movement of the tumbler bolt moves the main bolt, substantially as described.

11. The combination of the plate L, the tumbler bolt adapted to dog said plate against rotation, the main bolt housed within the main portion of the door, the spindle I and intermediate connections, substantially as described.

488,961. SAFE. THOMAS M. BRIFFHALL, Medina, Ohio. Filed Jan. 23, 1892. Serial No. 419,073. (No model.)





Claim.—1. In a circular door safe in which the revolution of the door acts to shoot the bolts, the combination with the door and its adjacent frame or jamb, of the locking bolts carried by the door and adapted to move therewith, and cam mechanism engaged and held by the frame and adapted to operate the bolts, when the door is revolved substantially as described.

2. In a circular door safe in which the revolution of door acts to operate the bolts, the combination with the door and its adjacent frame or jamb, of the locking bolts carried by the door, cam mechanism located on the door and adapted to operate the bolts when the door is revolved, said cam mechanism engaged by suitable stop mechanism with the frame, substantially as described.

3. In a circular door safe the combination with the door, its adjacent frame or jamb, and the locking bolts carried by the door and adapted to move therewith, of a cam plate or plates engaging said bolts and held against revolution by a stop on the frame, substantially as described.

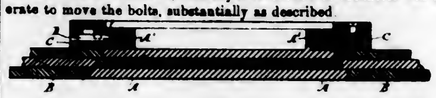
4. In a circular door safe the combination with the door and the adjacent frame or jamb, the locking bolts having their ends beveled and permanent intermediate connecting mechanism, of a stop carried by the frame which engages and holds a stop carried by the door whereby the revolution of the door when it is closed acts to shoot the bolts and bind the door to its seat substantially as described.

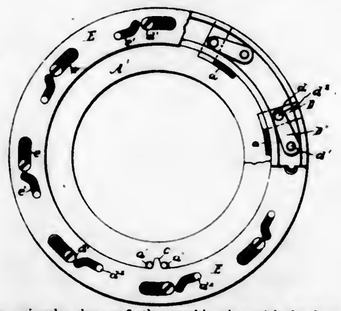
5. In a circular door safe in which the revolution of the door acts to shoot the bolts, the combination with the door and its adjacent frame or jamb, of the locking bolts having their ends beveled, said bolts carried by the door and adapted to move therewith, and cam mechanism engaged by the frame and adapted to operate the bolts substantially as described.

488,962. SAFE. THOMAS M. BRIFFHALL, Medina, Ohio. Filed Jan. 23, 1892. Serial No. 419,073. (No model.)

Claim.—1. In a circular door safe the combination with the door and adjacent frame or jamb, of one or more locking bolts located on said frame or jamb, and connected by intermediate mechanism with the door, whereby a revolution of the latter will operate to move the bolts, substantially as described.

2. In a circular door safe the combination with the door, its adjacent frame or jamb, and one or more locking bolts on the frame or jamb, of suitable cam mechanism on the frame, adapted to engage the door when it is closed, whereby a revolution of the latter will operate to move the bolts, substantially as described.

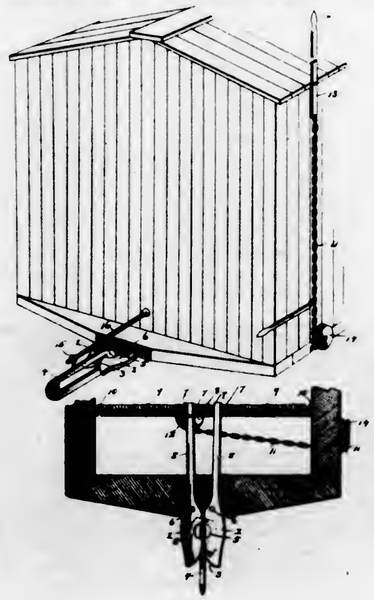




3. In a circular door safe the combination with the door, its adjacent frame or jamb, and the locking bolts located on the frame or jamb, of a cam ring located on the frame or jamb and engaging the bolts, and suitable connecting mechanism between the door and cam ring whereby a revolution of the door when it is closed will operate to shoot the bolts, substantially as described.

4. In a circular door safe the combination with the door, its adjacent frame or jamb, and the locking bolts located on the frame or jamb, of a suitable plate or ring on the door against which the ends of the bolts may bear when the latter are moved to the locked position, one or both of the bearing surfaces being inclined to bind the door to its seat, substantially as described.

488,963. CAR-COUPLING. CONRAD H. CARPENTER, Lannius, Tex., assignor of one-fourth to S. L. Willyerd and G. W. Wolf, same place. Filed Oct. 22, 1892. Serial No. 449,699. (No model.)



Claim.—1. In a car coupling, the combination of the opposite horizontally disposed draw-hooks pivoted intermediate of their ends and having rearwardly extending shanks, said hooks having beveled front ends forming a flaring mouth and having the opposite edges of their necks carved and forming a circular opening, springs for holding the extending shanks separated to close the hooks, and a link arranged edge-wise, substantially as described.

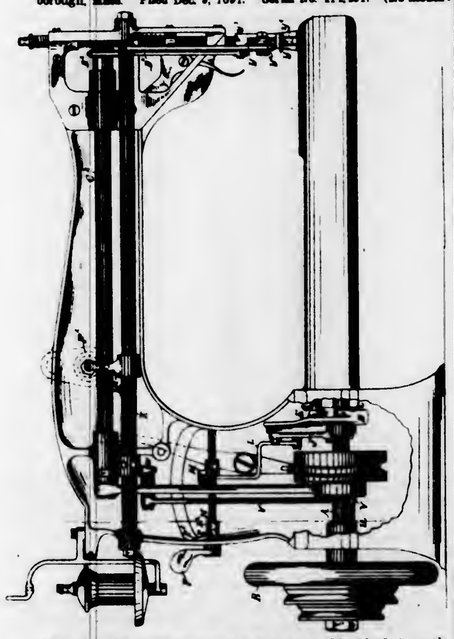
2. In a car coupling, the combination of the opposite horizontally disposed pivoted hooks having rearwardly extending shanks, a spiral spring interposed between the shanks and holding the same separated, spiral springs engaging the shanks at the outer faces thereof, a pulley mounted on one of the shanks and a chain secured to the other shank and passing around the pulley, and adapted to draw the shanks together to open the hooks, substantially as described.

3. In a car coupling, the combination of the opposite horizontally disposed pivoted hooks having rearwardly extending shanks, a spiral spring interposed between the shanks and holding the same separated and closing the hooks, spiral springs engaging the outer faces of the shanks, a pulley mounted on one of the shanks, a chain secured to the other shank and passing around the pulley and extending to one side of the car, a pulley arranged at that side of the car, and a lever fulcrumed on the car and connected with the chain, substantially as described.

4. In a car coupling, the combination of the opposite pivoted hooks, a rod extending outward from the car and a link suspended edgewise from the rod, substantially as described.

5. In a car coupling, the combination of the opposite pivoted hooks, the horizontally disposed resilient rod arranged above the hooks, and the link provided at its upper edge with an eye arranged on said rod, whereby the link is suspended edgewise from the rod, substantially as described.

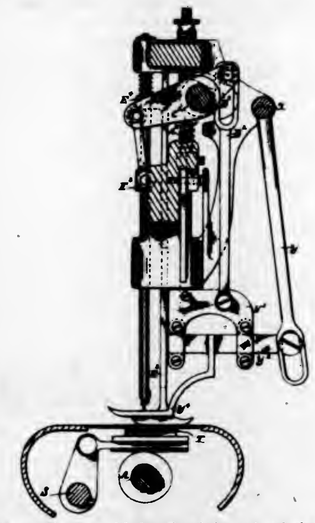
488,964. SEWING-MACHINE. ORVILLE C. DOLLOFF, Chelsea, assignor of two-thirds to John Goettel, Boston, and Frank P. Denfeld, Westborough, Mass. Filed Dec. 9, 1891. Serial No. 414,491. (No model.)



Claim.—1. The combination of cam c revolved by shaft A; rock-shaft G actuated by said cam through lever E; lever E having a grooved arm F; adjustable arm J connected with groove F and with arm I on rock-shaft H; rock-shaft H connected by arm I, link Q and arm R with rock-shaft S; rock-shaft S and bar T whereby movement is imparted to bar T as and for the purposes specified.

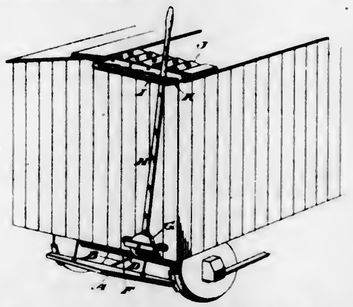
2. The combination of rock-shaft H and its described actuating mechanism, arm u attached to said shaft; rod V pivotally secured at its lower end to arm u and at its upper end to arm W on shaft X; shaft X; bar y rigidly secured to shaft X; bar y^3 attached to bar y and fitted to slide in block y^3 and carrying foot y^4; block y^3 attached to bar A^1; and bar D^2 attached to block y^3 and actuated by shaft C^2, whereby movement is imparted to foot y^4 as and for the purposes specified.

3. The combination with feed bar T and means for actuating the same of cam c revolved by shaft A; grooved lever E mounted upon rock-shaft G and actuated by cam c; rock-shaft H connected with lever E by arms I and J; arm J connected with arm M upon shaft N; and crank P attached to shaft N, whereby the arm J is adjusted in its connection with groove F in lever E so as to vary the extent of vibration of shaft H and its connections, as and for the purposes specified.



4. In combination with bar T and foot y^4 and their actuating mechanism, for giving the four feed motions to both the finger M^2 secured to rock-shaft X; spindle L^3 inserted in stud G^3 secured in the frame of the machine; disk I^3; disks H^3 and H^4; spring J^3, and nut K^3; whereby the tension of the thread is automatically relaxed during the time that bar T and foot y^4 are feeding the goods, as specified.

488,965. CAR-BRAKE. RICHARD FALLIS, Pontypool, assignor of one-half to Roswell H. Staples, Bethelamy, Canada. Filed Mar. 31, 1892. Serial No. 427,244. (No model.)

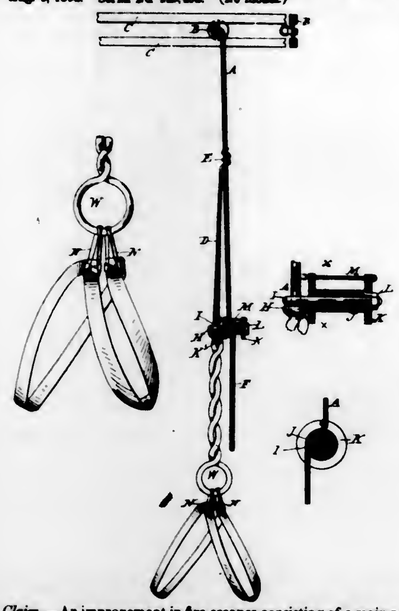


Claim.—1. The combination of a rod attached to each brake beam, the said rods being connected together by means of a lever provided with a chain extending around sheaves arranged below the car, the said chain being connected to a sheaf suitably journaled on the back of the car and provided with a long lever extending above the car and arranged to work in conjunction with notches formed in

a bracket attached to the top of the car: substantially as and for the purpose specified.

2. The combination of a rod attached to each brake beam, the said rods being connected together by means of a lever provided with a chain extending around sheaves arranged below the car, the said chain being connected to a sheaf suitably journaled on the back of the car and provided with a long lever extending above the car and arranged to work in conjunction with notches formed in a bracket attached to the top of the car in proximity to a foot plate provided with steps by which the brakeman can brace himself while operating the lever: substantially as and for the purpose specified.

488,966. FIRE-ESCAPE. WILLIAM J. FLOWERS, Chicago, Ill. Filed Aug. 8, 1892. Serial No. 442,433. (No model.)



Claim.—An improvement in fire escapes consisting of a main part which at its upper portion is provided with one or more coils which are detachable from the rope, and at its lower portion is provided with a ring, and is doubled and twisted on itself, the arm of the returned portion at I being turned outward, and a rope-escape consisting of two disks and an intervening cylinder secured thereon, with a key passing through the disks, in combination with a suspended rope, and body attachment as specified and shown.

488,967. PROCESS OF AND APPARATUS FOR VULCANIZING WOOD. SAMUEL R. HASKIN, Avoca, N. Y. Filed Mar. 29, 1892. Serial No. 426,963. (No model.)

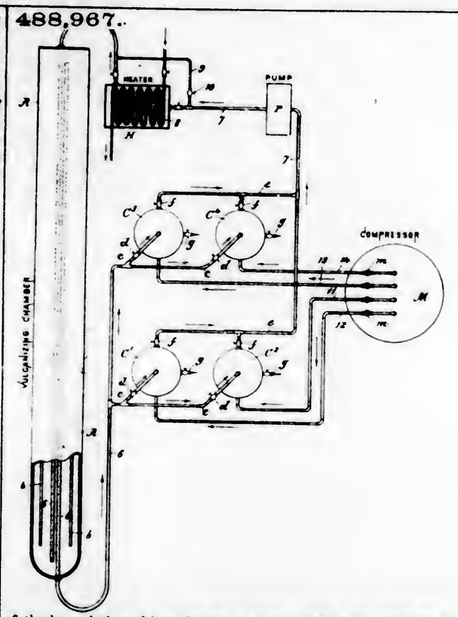
Claim.—1. In apparatus for vulcanizing wood, the combination with the chamber in which the wood is treated, of an air compressor, an air heater, an induction conduit communicating with said chamber through numerous relatively small orifices at different points in said chamber, and a suitable eduction conduit whereby heated compressed air may circulate uniformly through said chamber, substantially as described.

2. In apparatus of the character described the combination with the chamber in which the wood is treated, of an air compressor, an air heater, an induction conduit communicating with said chamber through numerous relatively small orifices, and an eduction conduit likewise communicating with said chamber through numerous small orifices, substantially as and for the purposes set forth.

3. In the art of wood vulcanization, the improvement consisting in circulating through the vulcanizing chamber, heated compressed air, and then without interrupting the circulation or relaxing the pressure introducing into the circulating system successive volumes of cold air, until the wood is cooled down below the boiling point of its liquid or liquefiable constituents, substantially as described.

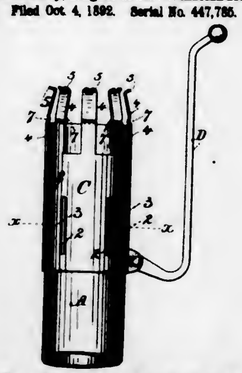
4. The described process of vulcanizing wood consisting in maintaining through the vulcanizing chamber a steady circulation of heated and compressed air, and then cutting out successive volumes

488,967.



of the heated air and introducing in place thereof cold compressed air, constantly maintaining the circulation and pressure, substantially as set forth.

488,968. WICK-RAISER FOR ARGAND LAMPS. THOMAS HIPWELL, Long Island City, assignor to the Manhattan Brass Company, New York, N. Y. Filed Oct. 4, 1892. Serial No. 447,785. (No model.)



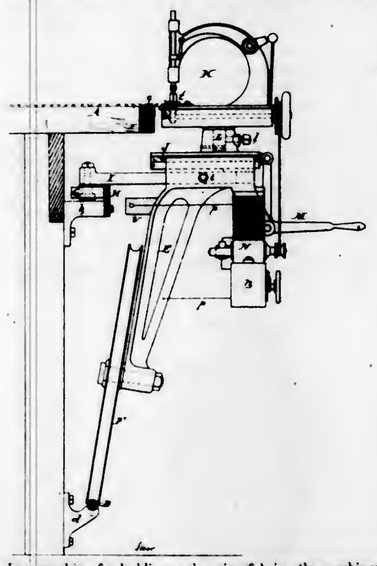
Claim.—1. The wick raising cylinder having upwardly projecting spring tongues at the upper end, outwardly projecting claws at the top ends of the spring tongues and the bends 7 in such tongues forming latches to catch above the upper end of the air tube when the wick raising tube is elevated for the reception of the wick, substantially as set forth.

2. The wick raising cylinder having slots 2 in the body and backwardly projecting springs 3 and upwardly projecting spring tongues at the upper end, outwardly projecting claws at the top ends of the spring tongues and the bends 7 in such tongues forming latches to catch above the upper end of the air tube when the wick raising tube is elevated for the reception of the wick, substantially as set forth.

488,969. APPARATUS FOR HOLDING AND SEWING FABRICS. RUDOLPH M. HUNTER, Philadelphia, Pa. Filed Apr. 18, 1891. Serial No. 389,493. (No model.)

Claim.—1. In a machine for holding and sewing fabrics, the combination of a support upon which the fabric is held, a railway arranged adjacent and parallel to said support, a sewing machine adapted to be moved along adjacent to the lateral edge of said support and being so constructed and arranged as to bring the line of

feed to an angle to and across the edge of the fabric support in advance of the sewing machine so as to tend to draw the fabric toward the sewing machine while it travels adjacent to the edge of the fabric support, a carriage movable upon said railway and supporting the sewing machine, and a power device for operating the sewing machine.



2. In a machine for holding and sewing fabrics, the combination of a support upon which the fabric is held, a railway arranged along said support, a carriage movable on said railway, a sewing machine movably secured to the carriage, power devices to operate the sewing machine, and means to adjust the sewing machine at various angles to the edge of the fabric support to make the line of feed of the sewing machine cross the edge of the support in advance of the sewing machine so as to cause the feeding mechanism to tend to draw the fabric toward the sewing machine while it travels along the edge of the fabric support to greater or less extent.

3. In a machine for holding and sewing fabrics, the combination of a support upon which the fabric is held, a railway arranged along said support, a carriage movable on said railway, a sewing machine pivotally supported on the carriage, power devices for operating the sewing-machine, and means to secure the sewing machine in its adjusted positions about the axis of the pivot whereby the direction of the line of feed may be at an angle to and cross the edge of the fabric in advance of the sewing machine.

4. In a machine for holding and sewing fabrics, the combination of a support upon which the fabric is held, a railway arranged along said support, a carriage movable on said railway, a sewing machine pivotally supported on the carriage by a laterally adjustable frame, power devices for operating the sewing machine, and means to secure the sewing machine in its adjusted positions on the laterally adjustable frame, whereby the line of direction of feed may be at an angle to and cross the edge of the fabric and its support in advance of the sewing machine and the sewing machine may be adjusted laterally to or from the fabric support.

5. In a machine for holding and sewing fabrics, the combination of a support upon which the fabric is held, a railway arranged along said support, a carriage movable on said railway, a sewing machine secured to the carriage and having its feed bar arranged so that the line of feed shall be at an angle to and cross the edge of the fabric support so as to tend to draw the fabric toward the sewing machine while it travels along the edge of the fabric support, an electric motor moving with the carriage for operating the sewing machine, a stationary source of electric energy, and maintained electrical connections between the stationary source of electric energy and movable motor.

6. In a machine for holding and sewing fabrics, the combination of a support upon which the fabric is held, a railway arranged along said support, a carriage movable on said railway, a sewing machine secured to the carriage and having its feed bar arranged so that the line of feed shall be at an angle to and cross the edge of the fabric support in advance of the sewing machine so as to tend to draw the fabric toward the sewing machine while it travels along the edge of the fabric support, power devices to operate the sewing machine, and means to adjust the carriage laterally to or from the support.

7. In a machine for holding and sewing fabrics, the combination of a long support for the fabric, a railway arranged parallel to the support, a traveling carriage for the railway, a sewing machine and an electric motor to run it mounted upon the carriage and movable with it, a fixed conductor arranged parallel with the support, a stationary source of electric energy, a contact device moving in contact with said conductor, guides at each end of the railway and support, and flexible conductors leading from the contact device around the guides at the respective ends of the railway and connected mechanically with the carriage and electrically connected with the motor, whereby the conductor may be moved by the carriage and electric current may be supplied to the motor during its travel.

8. In a machine for holding and sewing fabrics, the combination of a long table for the fabric, a railway arranged parallel to the table, a traveling carriage for the railway, a sewing machine and an electric motor to run it mounted upon the carriage and movable with it, a fixed conductor arranged parallel with the table and close to its under surface, a stationary source of electric energy, a contact device moving in contact with said conductor, guides at each end of the railway and table, and flexible conductors leading from the contact device around the guides at the respective ends of the railway and connected mechanically with the carriage and electrically with the motor, whereby the conductors may be moved by the carriage and electric current may be supplied to the motor during its travel.

9. In a machine for holding and sewing fabrics, the combination of a long table for holding the fabric, a rail secured to the lower part of the table, a guide rail having a lateral face secured near the upper part of the table, a carriage supported upon the lower rail by large wheels and sustained against lateral movement by a wheel in contact with the lateral face of the guide rail, a sewing machine supported in a plane corresponding to the top of the table, power devices for operating the sewing machine and a laterally adjustable support secured to the sewing machine and laterally adjustable on the carriage.

10. In a machine for holding and sewing fabrics, the combination of a support upon which the fabric is held, a railway arranged along said support, a carriage movable on said railway, a sewing machine secured to the carriage and having its feed bar arranged so that the line of feed shall be at an angle to and cross the edge of the fabric support so as to tend to draw the fabric toward the sewing machine while it travels along the edge of the fabric support, power devices to operate the sewing machine and guides upon the sewing machine for receiving the edge of the fabric to guide it between the feed bar and presser foot to limit its movement away from the edge of the fabric support.

488,970. STEAM-GENERATOR. OTIS JONES, Senoia, and HENRY P. ASHLEY, Atlanta, assignors of fifteen thirty-seconds to J. P. Woodson, R. M. Farrar, R. L. Sibley, G. A. Cabannis, and W. G. Paschall, Atlanta, Ga. Filed Nov. 24, 1891. Serial No. 413,018. (No model.)

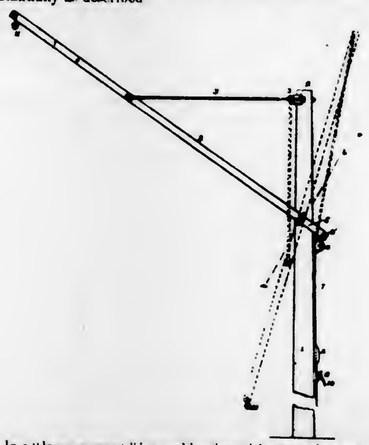
Claim.—In a steam generator, the combination of the two series of coils, substantially conical in form, one placed within the other, the inner series having a cylindrical extension above the outer series and having the coils of its conical portion wound farther apart than those of the outer series, substantially as described.

488,971. LAMP-SUPPORT. DOCTOR F. OLIVER, Oakland, Cal. Filed Dec. 8, 1891. Serial No. 414,462. (No model.)

Claim.—1. In a lamp support, in combination with a mast carrying a cross-arm, the slidable arm supported by the pivoted rods ex-

tending from the middle portion of the arm to the cross-arm, the guide staples supporting the rear end of the arm, said staples being pivotedly secured to the mast, and mechanism for operating the arm: substantially as described.

2. In a lamp support, in combination with the mast having a cross-arm, the pulley mounted upon the mast, the guide-loop bolts 5, pivoted in the mast, the slidable arm adapted to travel in said guide-loops, the supporting rods for said arm and mechanism for operating it, substantially as described



3. In a "lamp support," in combination with a mast its cross arm, the pulley mounted upon the mast, staple guides secured to the mast, the slidable arm adapted to travel in said guides, said arm being composed of separated members 2, 2, having the spreaders 2' bolted between, its supporting rods, the rope attached to its rear end, passing over the pulley and secured by a clutch on the mast substantially as described.

4. In a lamp support, in combination with a mast carrying a cross arm, the pulley, guide staples and clutch secured to the mast, the slidable arm poised in the guide staples, the supporting rods pivoted to the arm and cross arm, the operating rope secured to rear end of arm and passing over pulley attached to mast, the counter-balancing weight attached to rope adapted to graduate the movement of the arm, for the purpose set forth substantially as described.

5. In a lamp support, in combination with a mast and cross arm, the pulley, guide staples and clutch secured to the mast, the slidable arm poised in the guide staples, the supporting rods pivoted to the arm and cross arm, the operating rope attached to rear end of arm and passing over the pulley secured to the mast, and through the clutch secured to the mast, said clutch having the hand lever 10 provided with the "clutch point" "C" and the "friction point" "D" for controlling the rope, substantially as described.

6. In a lamp support, in combination with a mast and cross arm, the pulley, guide staples and clutch secured to the mast, the slidable arm poised in the guide staples, the supporting rods pivoted to the arm and cross arm, the operating rope attached to rear end of the arm and passing over the pulley secured to the mast, and through the clutch secured to the mast, said clutch having the hand lever 10 provided with the "clutch point" "C" and the "friction point" "D" for controlling the rope and the counter-balancing weight, for graduating the movement of the arm substantially as set forth and described.

488,972. LAMP-BURNER. ELIAS B. REQUA, Jersey City, N. J. Filed June 26, 1890. Serial No. 356,639. (No model.)

Claim.—1. In a lamp burner the cylinder A having a flange at its lower end for attachment to the lamp and a flange at its upper end for connection with the burner base, the transverse tubes H, I, extending inward from opposite sides of said cylinder, and the central tube J extending upward from and carried by said tubes H, I, combined with the perforated burner base E, the tube R secured at lower end to the lower end of said base, and the flange at the upper end of said base to receive the chimney frame, the said tube J extending upward from the tubes H, I, to the upper end of the tube R; substantially as and for the purposes set forth

2. In a lamp burner, the perforated burner base E having the flange *g* encircling its upper edge and supporting from its lower contracted end the vertical tube R, combined with the frame A fitting upon the flange *g* and provided with the inwardly extending flange *i*, the cylinder A attached to the lower end of the burner base, and the transverse tubes H, I, and vertical tube J supported within said cylinder, the tube J extending upward within and to the upper end of the tube R, substantially as and for the purposes set forth

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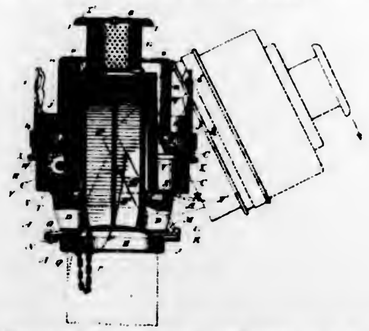
488,973. LAMP-BURNER. ELIAS B. REQUA, Jersey City, N. J. Filed Apr. 30, 1891. Serial No. 391,078. (No model.)



Claim.—1. In a lamp burner the cylinder A having the transverse tubes D and central tube E, combined with the burner base C seated on the upper edge of the cylinder A and having the wick tube V completely encircling and extending upward to the upper end of the tube E, and the cross-partitioned frame F resting upon the base of the tubes D and extending upward to the upper portion of the tube E; substantially as set forth.

2. In a lamp burner the cylinder A having the transverse tubes D and central tube E extending upward from said tubes D, combined with the burner base C detachably secured on the upper edge of the cylinder A and having the wick tube V encircling and extending upward to the upper end of the tube E, the perforated diffuser G on the upper end of the tube E, and the cap H on said diffuser and forming the horizontal flange I' and downwardly deflecting edge I; substantially as and for the purposes set forth.

3. In a lamp burner the cylinder A having tubes D, E and flange B, and the burner base C attached to said cylinder, combined with the externally threaded ring J fitting said flange and having the flange K, the catch N pivoted to the flange K, the arms M, O, secured to the lower surface of the base of the tubes D, and the lug L to which the arm M is hinged; substantially as and for the purposes set forth

4. In a lamp burner the cylinder A having tubes D, E and flange B, and the burner base attached to said cylinder, combined with the externally threaded ring J fitting said flange and having the flange K, the catch N pivoted to the flange K, the arms M, O, secured to said cylinder, the lug L to which the arm M is hinged and the chain B secured at one end to the ring J and at the other to the cylinder A, substantially as and for the purposes set forth.

5. In a lamp burner the cylinder A having the transverse tubes D and central tube E, extending upward from said tubes D, combined with the burner base C detachably secured on the upper edge of the cylinder A and having the wick tube V encircling and extending upward to the upper end of the tube E, the cross-grooves D' in the base of the tubes D, and the cross-partitioned frame F fitting the tube E and detachably resting in the grooves D', substantially as and for the purposes set forth.

6. In a lamp burner, the cylinder A, the burner base C detachably secured on the upper edge of said cylinder, and the draft and wick tubes carried by said cylinder and burner base, combined with the ring A, perforated support *j* and dome *n*, all integral and detachably secured to the said burner-base, the annular recess *j'* and the ring *i'* secured in said recess and having the fingers *i* at its upper edge

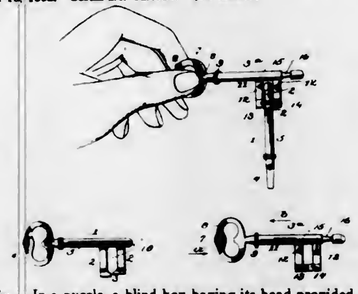
and the securing lips *i''* at its lower edge; substantially as and for the purposes set forth.

7. In a lamp burner the cylinder A having the transverse tubes D and vertical tube E, combined with the burner base C having the tube V terminating at the upper end of the tube E, the segmental extensions *b* at opposite sides of the said burner base, the pins *a* secured to said extensions, and the angular slots *d* cut in said cylinder to receive said pins; substantially as shown and described.

8. In a lamp burner the cylinder A and the tubes D, E, carried thereby, combined with the burner base C attachable to the upper end of said cylinder, the single tube V carried by said burner base and terminating at the upper end of the tube E, the perforated air diffuser G on the upper end of said tube E, the cap H upon said diffuser and extending outward beyond the vertical edges of the same, and the cross-partitioned frame F within the tube E; substantially as and for the purposes set forth.

9. In a lamp burner the cylinder A having the flange B, and the tubes D, E, carried by said cylinder, combined with the threaded ring J hinged to the lower end of said cylinder, the burner base C attachable to the upper end of said cylinder, the tube V carried by said burner base, and the globe support; substantially as and for the purposes set forth.

488,974. PUZZLE. HERBERT L. DAVIS, Washington, D. C. Filed Sept. 10, 1892. Serial No. 445,527. (No model.)



Claim.—In a puzzle, a blind key having its head provided with grooves, and the shank near the head with a shoulder having its opposite faces beveled at an angle to the head, wards on the shank, one of which is provided with a recess in one side at its base and a groove in the shank near its outer end, in combination with a key proper provided with wards too short to reach from the front the groove at the base of the ward of the other key, but adapted by manipulation to pass over the head, around the shoulder, and into engagement with the wards of the other key.

488,975. REIN-HOLDER. OLIVER B. HATHORN, Milo, Me., assignor of one-third to Bert L. Gould, same place. Filed Jan. 5, 1892. Renewed Dec. 5, 1892. Serial No. 454,144. (No model.)

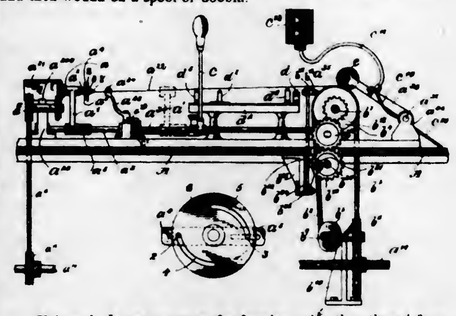
Claim.—1. In a rein-holder, the combination of the cross-bar A provided with overlapping ends hooking over the outer periphery of the ring B, said cross-bar being also depressed midway of the ends to receive the base of a spring-clip, C, secured to said strip of metal or cross-bar A, the spring clip C, combined and arranged substantially as set forth and described.

2. A rein-holder consisting of a bit-ring, B, strip or cross-bar A, and spring clip C, in combination, as shown and set forth.

REISSUES.

11,296. APPARATUS FOR FORMING A KNOTLESS THREAD. ROBERT M. MACKINNON, Boston, Mass. Filed Nov. 14, 1892. Serial No. 452,012. Original No. 434,912, dated Oct. 11, 1890.

Brief.—A knot-catcher stops the machine, whereupon the thread is clamped at two points, untwisted between those points, the knot removed, the individual strands reunited, and the thread again twisted and then wound on a spool or bobbin.



Claim.—1. In an apparatus for forming a knotless thread from a knotted thread composed of a plurality of strands, the combination of the following instrumentalities, viz.—a thread untwisting and twisting portion, consisting of a thread-guide, a clamp or thread-holding device, and means to actuate the said thread-guide to untwist the thread, a winding mechanism consisting of a cylinder or drum, a mechanism to operate it, and a reciprocating thread-guide, and an intermediate strand-uniting portion consisting of stationary strand-holders and a movable strand-holder clamp, substantially as described

2. In an apparatus for forming a knotless thread from a knotted thread composed of a plurality of strands, the combination of the following instrumentalities, viz:—a winding mechanism consisting of a cylinder or drum, a bobbin-holder co-operating therewith, a driving mechanism for said winding mechanism, a reciprocating thread-guide movable in the direction of the length of the cylinder or drum, a clutch to couple the winding mechanism, and a knot-catcher provided with jaws between which the thread is passed and one of which is adjustable toward the other to correspond to the size of thread being operated upon, the said knot-catcher controlling the operation of the clutch in one direction and operated by a knot in the thread to actuate the clutch and disengage the winding mechanism from its driving mechanism, substantially as described.

3. In an apparatus for forming a knotless thread from a knotted thread composed of a plurality of strands, the combination of the following instrumentalities, viz.—a thread-guide and a clamp or thread-holding device, a winding mechanism, a driving mechanism for said winding mechanism, a reciprocating thread-guide co-operating with the winding mechanism, a clutch to couple the winding mechanism to the driving mechanism, a knot-catcher intermediate of the clamp and the winding mechanism controlling the operation of the clutch in one direction, and operated by a knot in the thread to actuate the clutch as described, and a strand-uniting portion consisting of stationary strand-holders and a movable strand-holding clamp, substantially as described.

4. In an apparatus for forming a knotless thread from a knotted thread composed of a plurality of strands, the combination of the following instrumentalities, viz:—a thread untwisting and twisting portion, consisting of a hollow thread-guide *a*, a hub a^2 to which it is connected, a rock-shaft a^3 on which the hub a^2 is mounted to rock therewith and to move longitudinally thereon, means to revolve the thread-guide *a* in opposite directions, a thread-clamping device carried by the said thread-guide, a winding portion consisting of a winding drum or cylinder *b*, a bobbin-holder co-operating therewith, a mechanism to rotate said drum or cylinder, a clutch to connect the winding drum or cylinder with the driving mechanism, a reciprocating thread-guide, and means to reciprocate the same and a knot-catcher normally controlling the operation of the said clutch and adapted to be operated by a knot in the thread to permit the clutch to be operated to disengage the winding drum or cylinder from its driving mechanism, substantially as described.

5. The hereindescribed strand-uniting mechanism, consisting of a table or support d^2, stationary strand-holders d^3 d^5 mounted thereon, and a movable strand-holder d^7, substantially as described

6. The combination with the cylinder *b* mounted on a table A, and mechanism to operate it, of a sleeve or hub b^{23} loosely mounted on the rod b^{22}, an arm b^{21} secured to or forming part of the sleeve b^{23} and extended over the cylinder *b* and provided at its end with an eye, a vibrating arm b^{24} pivoted below the said table and extended up through the same, a link b^{27} joining the said vibrating arm with the sleeve, a cam to vibrate said arm, a bobbin-holder co-operating with the cylinder *b*, and means to press the bobbin-holder toward the said cylinder and keep the thread in engagement with the cylinder *b*, substantially as described.

7. In an apparatus for forming a knotless thread from a knotted

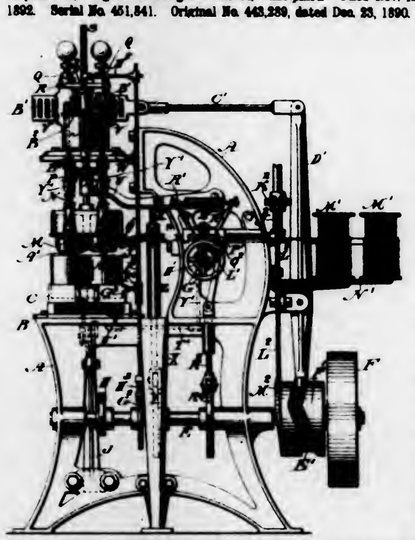
thread composed of a plurality of strands, the combination of the following instrumentalities, viz:—a thread untwisting and twisting portion, consisting of a thread-guide, a clamp or thread-holding device, and means to actuate the said thread-guide to untwist the thread, a winding mechanism consisting of a cylinder or drum, mechanism to operate it, and a reciprocating thread-guide, and an intermediate strand-uniting portion consisting of one or more holders for the individual strands, substantially as described.

8. In an apparatus for forming a knotless thread from a knotted thread composed of a plurality of strands, the combination of the following instrumentalities, viz:—a thread-guide and a clamp or thread-holding device, a winding mechanism, a driving mechanism for said winding mechanism, a reciprocating thread-guide co-operating with the winding mechanism, a clutch to couple the winding mechanism to the driving mechanism, a pivoted knot-catcher intermediate of the clamp and the winding mechanism and having one arm provided with jaws through which the thread is passed and its other arm co-operating with and controlling the operation of the clutch in one direction and operated by a knot in the thread to actuate the clutch as described, and a strand-uniting portion consisting of one or more strand-holders, substantially as described.

9. The combination with a thread untwisting and twisting portion consisting of a thread-guide, a clamp or thread-holding device, and means to actuate the said thread-guide to untwist the thread, of a strand-uniting portion consisting of one or more holders for the individual strands, and a winding mechanism upon which the knotless thread is wound, substantially as described.

10. The combination with a thread untwisting and twisting portion consisting of a thread-guide, a clamp or thread-holding device to clamp the thread on one side of a knot, and means to actuate the said thread-guide to untwist the thread, of a clamp or holding device to clamp the thread on the other side of the knot, and an intermediate strand-uniting portion consisting of one or more holders for the individual strands, substantially as described.

11,297. **CAN-SOLDERING MACHINE.** GEORGE R. LOCKWOOD, Philadelphia, Pa., assignor to George H. Colket, same place. Filed Nov. 12, 1892. Serial No. 451,841. Original No. 443,289, dated Dec. 23, 1890.



Claim.—1. A can-capping machine having a table, a cam thereon, a pivoted lever, and two operating-levers connected with said pivoted lever for moving the trays, said parts being combined substantially as described.

2. The combination of a rotary shaft with a cam thereon, a pivoted lever held against said cam, and two weighted levers pivoted to the first-mentioned pivoted lever at different distances from its pivotal connection, and having engaging or operating ends adapted to travel in the same plane, substantially as and for the purpose described.

3. The combination of a rotary shaft with a cam thereon, a pivoted lever held against said cam, two weighted levers having engaging ends and pivoted to the first lever at different distances from its pivotal connection, and can-trays with projections, substantially as and for the purpose described.

4. In a can-capping machine, an automatic solder-feeding device, an automatic acid-feeding device, a tube having burners therein, a rotary capping-iron having a swivel-connection with hollow spindles supported by said tube, and a rise-and-fall movement, and mechanism for operating said parts at proper time, said parts being combined substantially as described.

5. In a can-capping machine, the combination of a tube having burners thereon, a rotary capping-iron having a swivel-connection with hollow spindles supported by said tube, and a rise-and-fall movement, a rotary spool adapted to hold wire-solder thereon, a tubular guide leading from said rotary spool to the capping-iron, a rotary wheel having a concave periphery adapted to contact with the wire and advance the same through the tubular guide toward the iron, and mechanism intimately connecting, controlling, and operating said parts, substantially as described.

6. The combination of a main driving-shaft with a cam thereon, a rotary capping-iron, a rotatable spool adapted to hold wire-solder thereon, a guide leading from the spool to the capping-iron, a shaft with a wheel thereon, the latter having a periphery adapted to engage the soldering-wire, a clutch mechanism on said shaft, a ratchet-wheel mounted on said shaft, and operated by a pawl raised and lowered by the said cam, and mechanism for operating said clutch, substantially as described

7. The combination of a main driving-shaft with a cam thereon, a rod with pawl operated by the rotation of said cam, a rotary capping-iron, a guiding device, a shaft with a wheel thereon adapted to contact with and when rotated to advance the soldering-wire to said capping-iron, a ratchet-wheel with a clutch on said shaft, and mechanism, substantially as described, operated by the can-tray for engaging the ratchet and wheel on said shaft, substantially as and for the purpose described.

8. In a can-capping machine, a can-carrier, a tank with discharge-ports in said tank, a plunger, a sectional rod adjustable in length connected with said plunger, mechanism substantially as described, connected with said rod and adapted to contact with a cam on said carrier for shortening said rod, and a spring connected with said shortening mechanism and the frame of the machine for lengthening said rod, said parts being combined substantially as described.

9. A can-carrier, an acid-tank with discharge-pipe, a plunger with head in said tank, a sectional rod having screw-threaded ends connected by a collar, and an arm secured to said collar and adapted to contact with a can on said carrier and thereby shorten said rod, so that said plunger will cause the acid to be discharged from said tank, said parts being combined substantially as described.

10. The combination of a stationary frame, an arm pivoted thereto and carrying on one end a hollow-handle brush, a tube or rod vertically movable in said frame and having the other end of the arm pivoted thereto, a rising and falling rod with an arm and plunger secured thereto, and an acid-supply tank with discharge or outlet pipe, the top or opening in the handle of the brush being below the end of the outlet-pipe, and the said plunger lifting the acid to said outlet-pipe, substantially as and for the purpose described.

11. In a can-capping machine, a tank having a chamber therein communicating with the body of the tank at its lower end, a downwardly-projecting pipe leading from the upper part of said chamber, a plunger having openings in its head with flanges surrounding the top edges thereof, and a hollow brush connected to an oscillating arm, said parts being combined substantially as described.

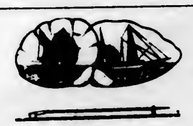
12. In a can-capping machine, the combination of a tank with overflow, a plunger with rod, a shaft with a cam thereon, the said plunger-rod being in sections, each with screw-threads on its adjacent ends, and a collar embracing said ends and provided with an operating-arm, substantially as described.

13. A can-capping machine consisting of a frame, a can-carrier with operating mechanism comprising a table and trays, a cam thereon, a pivoted lever, and two operating-levers connected with said pivoted lever for moving the trays, a gas-supply tube with burners, capping-irons supported by said supply-tube and having oscillating mechanism supported thereby and operated from the main driving-shaft, an automatic intermittent acid-supplying device, an automatic solder-supplying device, mechanism, substantially as described for raising said supply-tube, and a cold-blast supply with intermittently-operated valve, substantially as described.

DESIGNS.

22,081. **BREASTPIN.** HENRY A. PETORIUS, Newburyport, Mass., assignor of two-thirds to Caleb Stickney and George R. Stickney, same place. Filed Nov. 12, 1892. Serial No. 451,823. Term of patent 3½ years.

22,081.



Claim.—The design for a breastpin, substantially as herein described.

22,082. **SPOON.** EUGENE C. BERNHEIM, Washington, D. C., assignor to John H. Flanagan, same place. Filed Nov. 21, 1892. Serial No. 452,733. Term of patent 3½ years.

Claim. The design for a spoon, substantially as herein shown and described

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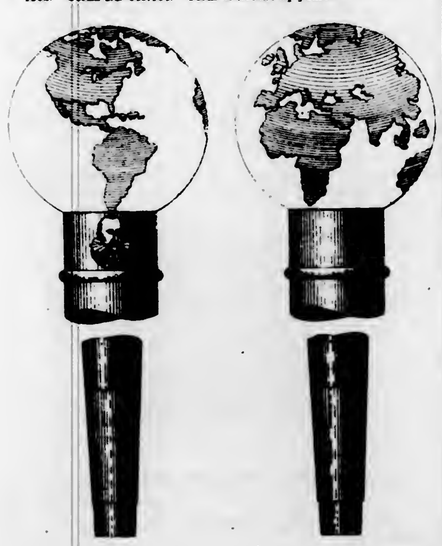
22,083. **HANDLE FOR CANES.** WILLIAM HARVEY, Philadelphia, Pa., and EDWARD OSBORN, New York, N. Y., assignors to themselves, and John Watts and Joseph Watts, Philadelphia, Pa. Filed Oct. 17, 1892. Serial No. 449,160. Term of patent 3½ years.



Claim.—The design for the handle of a cane substantially as shown and described

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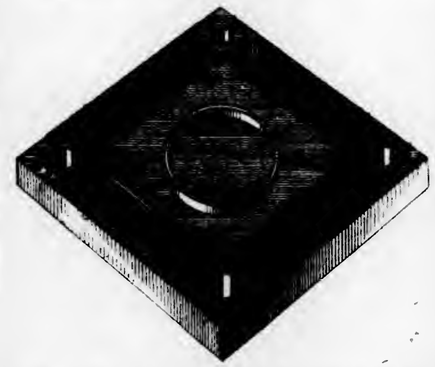
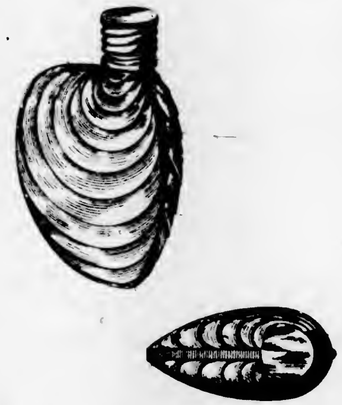
22,084. **INKSTAND.** HARRY N. FREES, Washington, D. C., assignor of one-half to Samuel Beales, Jacksonville, Fla. Filed Oct. 18, 1892. Serial No. 449,389. Term of patent 14 years.



Claim.—The design for an inkstand substantially as herein shown and described.

22,085. **BOTTLE OR FLASK.** WILLIAM T. MURPHY, New York, N. Y. Filed Dec. 10, 1890. Serial No. 374,238. Term of patent 3½ years.



Claim.—The design for a bottle or flask substantially as shown and described

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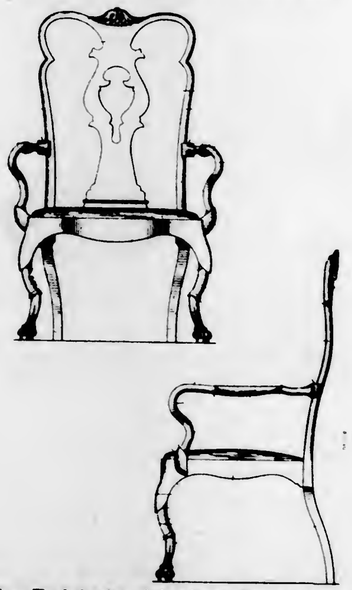
22,086. **SWAB-CUP.** SAMUEL R. WILLET, Philadelphia, Pa. Filed Nov. 12, 1892. Serial No. 451,824. Term of patent 7 years.

Claim.—The design for a swab cup substantially as herein shown and described.

22,087. WINDOW-SHADE. WILLIAM F. PATTERSON, Jersey City, N. J. Filed Nov. 7, 1892. Serial No. 451,940. Term of patent 3½ years.

Claim.—The design for window shades and wall paper, substantially as herein shown and described.

22,088. CHAIR. AUGUSTUS CAMBAGHI, New York, N. Y. Filed Nov. 2, 1892. Serial No. 451,949. Term of patent 3½ years.

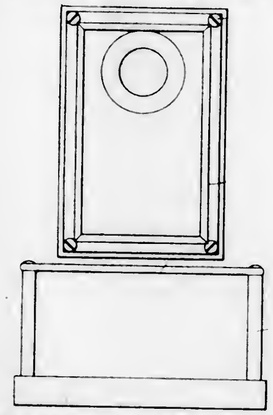


Claim.—The design for a chair, substantially as herein shown and described.

22,089. PIANO-CASE. FREDERIC W. FARNHORN, Jersey City, N. J. Filed Sept. 24, 1892. Serial No. 446,836. Term of patent 7 years.

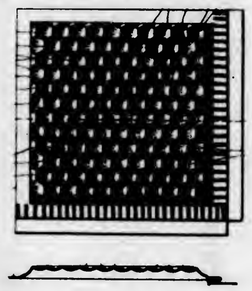
Claim.—The design for a piano-case, substantially as herein shown and described.

22,090. AUXILIARY FIRE-ALARM BOX. JOSEPH SACHS, New York, N. Y. Filed Aug. 5, 1892. Serial No. 442,231. Term of patent 14 years.



Claim.—The design for auxiliary fire alarm box, as herein described and shown.

22,091. SIDING-PLATE. PHILIP A. DESLAURIERS, St. Paul, Minn. Filed May 5, 1892. Serial No. 431,091. Term of patent 14 years.



Claim.—The design for a siding plate for a building front shown and described.

TRADE-MARKS

REGISTERED DECEMBER 27, 1892.

22,228. PERIODICAL PUBLICATIONS. HANNIBAL H. CHANDLER & Co., Chicago, Ill. Filed Aug. 12, 1892.

Essential feature.—The words "FARMERS' REVIEW." Used since 1877.

22,229. BOOKS, MAGAZINES, AND PERIODICALS. BERNHARD STEIN & Co., Chicago, Ill. Filed Oct. 22, 1892.

Essential feature.—The representation of a heart shaped conventional outline figure. Used since August 1., 1892.

22,230. BASE-BALL PLAYERS' GLOVES AND MITTS. ARTHUR A. IRWIN, Boston, Mass. Filed Jan. 26, 1892.

IRWIN'S IMPROVED.

Essential feature.—The words "IRWIN'S IMPROVED," inclosed within a single line rectangular border. Used since June 1, 1885.

22,231. HOSIERY, TEXTILE GLOVES, AND UNDERWEAR. LOUIS HERMSDORF, Chemnitz, Germany. Filed July 18, 1891.

HERMSDORF DYE

Essential feature.—The words "HERMSDORF" and "DYE," printed in plain capital letters and in the form of an arch. Used since 1889.

22,232. TEXTILE FABRICS, SUCH AS COTTON, LINEN, WORSTED, AND SILK GOODS AND VELVETS AND VELVETEENS. ALBION COMPANY, Providence, R. I., and New York, N. Y. Filed Nov. 25, 1892.

White House

Essential feature.—The words "WHITE HOUSE." Used since June 1, 1892.

22,233. RAINPROOF FABRICS FOR GARMENTS. EDWARD W. BRUTHER, Montreal, Canada. Filed Sept. 12, 1892.

MELISSA

Essential feature.—The word "MELISSA." Used since April 20, 1891.

22,234. CARPETS. LOWELL MANUFACTURING COMPANY, Boston, Mass. Filed Apr. 26, 1892.

MIDDLESEX

Essential feature.—The word "MIDDLESEX." Used since November 20, 1891.

22,235. RUGS AND CARPETINGS. ARDEN & RUBIN, New York, N. Y. Filed Nov. 19, 1892.

CLEOPATRA

Essential feature.—The word "CLEOPATRA." Used since October 18, 1892.

22,236. PILLOWS. MORRIS LARY, New York, N. Y. Filed Nov. 17, 1892.

LARY'S

COLUMBUS

Essential feature.—The words "LARY'S COLUMBUS." Used since October 1, 1892.

22,237. RAZOR-STROPS. WILLIAM M. BOWEN, New York, N. Y. Filed Nov. 30, 1892.

MAGNETIC

Essential feature.—The word "MAGNETIC." Used since October, 1890.

22,238. TIN-PLATE, TERNE-PLATE, AND SHEET METAL COATED WITH TIN. E. & G. TAYLOR Co., Philadelphia, Pa. Filed Nov. 14, 1892.

GLOBE

Essential feature.—The word "GLOBE." Used since July 1, 1892.

22,239. MEATS AND FISH. BROWSON & FITZGERALD, Hartford, Conn. Filed Sept. 1, 1892.

SWAN

Essential feature.—The word "SWAN" in connection with the pictorial representation of a swan. Used since July 1, 1882.

22,240. GROUND COFFEE. WILLIS JOHNSTON, Washington, D. C. Filed Nov. 23, 1892.

JOHNSTON'S

BREAKFAST

J.B. COFFEE

Essential feature.—A monogram of the letters "J B," and the words "JOHNSTON'S BREAKFAST COFFEE." Used since January 1, 1892.

22,241. COFFEE. ROYAL PHOSPHORIC COFFEE Co., North Bloomfield, Ohio. Filed Nov. 14, 1892.

Essential feature.—The letters "R P C Co," monogrammatically arranged. Used since June 1, 1892.

22,242. FLOUR. SHIPTON GREEN, New York, N. Y. Filed Dec. 2, 1892.

ROMEO

Essential feature.—The word "ROMEO." Used since June 15, 1892.

22,243. ROSIN. DAVID W. KETCHUM, Evanston, Ill. Filed Nov. 11, 1892.

STAR

Essential feature.—The representation of a star, whether in the form of the star-symbol, or word "STAR;" or both, as represented. Used since July, 1892.

22,244. PORTLAND CEMENT. THE GILLINGHAM PORTLAND CEMENT COMPANY, LIMITED, London and Gillingham, England. Filed Nov. 15, 1892.

Essential feature.—The representation of an open human hand Used since 1877.

22,245. PLUG-TOBACCO. WRIGHT BROTHERS TOBACCO COMPANY, St. Charles, Mo. Filed Sept. 27, 1892

TRADE

Essential feature.—The word "TRADE." Used since 1883.

22,246. PLUG, SMOKING, AND FINE-CUT TOBACCO. THE WELLMAN & DWIRE TOBACCO COMPANY, Quincy, Ill. Filed June 14, 1892.

TEMPLE

Essential feature.—The word "TEMPLE." Used since May 1 1891.

22,247. CHAMPAGNE. KUNKELMANN & Co., Rheims, France. Filed Nov. 26, 1892.

PIPER-HEIDSIECK, BRUT EXTRA

Essential feature.—The words "PIPER-HEIDSIECK, BRUT EXTRA." Used since August 31, 1892.

22,248. CHAMPAGNE. KUNKELMANN & Co., Rheims, France. Filed Nov. 26, 1892.

Essential feature.—The representation of two concentric circles inclosing the words "PIPER-HEIDSIECK," and surrounding the figure of a star having displayed rays extending downward. Used since August 31, 1892.

22,249. CHAMPAGNE. KUNKELMANN & Co., Rheims, France. Filed Nov. 26, 1892.

Essential feature.—The words, character, figures, and abbreviation, "PIPER-HEIDSIECK, ANCIENNE MAISON HEIDSIECK FONDÉE EN 1785, KUNKELMANN & Co., SUCCESSEURS, REIMS, FRANCE, BRUT EXTRA," and the representation of a rectangular shield, upon which are eight Egyptian characters or hieroglyphs resembling an Egyptian cartouch or seal, which characters or hieroglyphs spell the name "Kunkelmann" surmounted by the representation of a knight's helmet, from which issues an ornamental scroll work on either side thereof. Used since August 31, 1892.

22,250. CHAMPAGNE. KUNKELMANN & Co., Rheims, France. Filed Nov. 26, 1892.

Essential feature.—The representation of a knight's helmet and the words "BRUT EXTRA" upon a colored background, and surrounded by an annular band bearing the words, figures, character and abbreviations "PIPER-HEIDSIECK, ANCNE. MON. HEIDSIECK FONDÉE EN 1785, KUNKELMANN & Co. SUCCES. REIMS." Used since August 31, 1892.

22,251. CHAMPAGNE. KUNKELMANN & Co., Rheims, France. Filed Nov. 26, 1892.

Essential feature.—The representation of a star with displayed rays issuing downward between the two lower points of the star, associated with the words, figures, character and abbreviations "ANCNE, MON, HEIDSIECK FONDÉE EN 1785, KUNKELMANN & Co. SUCCES." Used since August 31, 1892.

22,252. CHAMPAGNE. KUNKELMANN & Co., Rheims, France. Filed Nov. 26, 1892.

22,252.

Essential feature.—The representation of an elliptical figure having a notched edge, in blue color. Over the center is an ornamental scroll in the same color surmounted by two grape leaves, and the whole is set off by displayed rays in the same color in which are printed the words "PREMIÈRE QUALITÉ" and "SILLERY MOUSSE." Used since August 31, 1892.

22,253. CHAMPAGNE. KUNKELMANN & Co., Rheims, France. Filed Nov. 26, 1892.

Anc.ne Mon.e HEIDSIECK Fondée en 1785
KUNKELMANN & Cie Succrs

Essential feature.—The representation of a knight's helmet and the words "PIPER HEIDSIECK, REIMS" surrounding the same in a circle, and the said letters, words, figures and abbreviations "ANCNE. MON. HEIDSIECK FONDÉE 1785, KUNKELMANN & Co. SUCCES." Used since August 31, 1892.

22,254. LAGER-BEER. BARTHOLOMAY BREWERY COMPANY, Rochester, N. Y. Filed Nov. 26, 1892.

Knickerbocker

Essential feature.—The word "KNICKERBOCKER." Used since November 1892.

22,255. BLACKBERRY TONIC. ERNST ALTSCHUL, Cleveland, Ohio. Filed Sept. 26, 1892.

E. Altschul

Essential feature.—The representation of a shield surmounted by a crown and the fac-simile signature of the registrant, "A. ALTSCHUL." Used since February 1, 1892.

22,256. MEDICATED BEVERAGES OR TONICS. QUIRYE COMPANY, Chicago, Ill. Filed Nov. 7, 1892.

Essential feature.—The representation of a dog's head and neck, with a partial view of a small barrel suspended from a collar round the neck of the dog. Used since September 15, 1892.

22,257. MEDICINAL TONICS. ALLAIRE, WOODWARD & COMPANY, Peoria, Ill. Filed Nov. 2, 1892.

Essential feature.—The words, "ELIXIR NUTRANS." Used since July 1, 1892.

22,258. BITTERS. FREDERICK H. RINDER, Chicago, Ill. Filed Oct. 22, 1892.

Essential feature.—The letters "F. B. H." in the form of a monogram, circumscribed by the words "HORTUS SICCUS." Used since October 1, 1892.

22,259. DENTIFRICES. HERMAN B. FOULD, New York, N. Y. Filed Nov. 19, 1892.

Pycaline

Essential feature.—The word "RICHALINE." Used since February 1, 1890.

22,260. FILLING OR CEMENT FOR TEETH. ROBERT RICHTER Philadelphia, Pa. Filed Nov. 22, 1892.

Essential feature.—The representation of a shield having the words "HARVARD CEMENT" upon its face, with the abbreviation, word and letters "ROB. RICHTER D. D. S." also applied thereon. Used since April 11, 1892.

22,261. MEDICINAL RYE-WATER. THE JOHN R. DICKEY DRUG COMPANY, Bristol, Va. Filed Nov. 17, 1892.

Old Reliable

Essential feature.—The words "OLD RELIABLE." Used since November, 1890.

22,262. SKIN OINTMENT OR CREAM. GEORGE WAGNER, Washington, D. C. Filed Nov. 22, 1892.

Essential feature.—The abbreviation, figure, and words "NO. 1 PERFECTION SKIN FOOD." Used since June 14, 1888.

22,263. ANTISEPTICS. ALLAIRE, WOODWARD & COMPANY, Peoria, Ill. Filed Nov. 2, 1892.

THYMOLYPTOL

Essential feature.—The word "THYMOLYPTOL." Used since July 1, 1892.

22,264. ANTIPYRETICS AND ANTINEURALGICS. LEHN & FINK, New York, N. Y. Filed Nov. 26, 1892.

Tolypyrin

Essential feature.—The word "TOLYPYRIN." Used since October 25, 1892.

22,265. ANTISEPTICS AND DISINFECTANTS. SCHERING & GLATZ, New York, N. Y. Filed Nov. 26, 1892.

Kresin

Essential feature.—The word "KRESIN." Used since November 1, 1892.

22,266. MEDICINAL PREPARATION FOR DISEASES OF THE LIVER, STOMACH, OR BOWELS. JAMES SCOTT ROBINSON, Memphis, Tenn. Filed Nov. 21, 1892.

STORM'S

Essential feature.—The word "STORM'S." Used since February 1, 1875.

22,267. DERMAL PREPARATIONS, DERMAL SOAPS, CURLING CREAM, HAIR TONIC, AND TOOTH-POWDERS. JENNIE A. MAXIM, Pittsfield, Mass. Filed Nov. 16, 1892.

Lanota

Essential feature.—The word "LANOTA." Used since June 15, 1892.

22,268. REMEDY FOR GONORRHŒA, GLEET, AND LIKE DISEASES. HARRY W. CROLLEY, Cincinnati, Ohio. Filed Nov. 19, 1892.

PDQ

Essential feature.—The letters "PDQ." Used since November 10, 1892.

22,269. REMEDIES FOR COUGHS, COLDS, AND ALL DISEASES OF THE THROAT AND LUNGS. ERNEST C. MARSHALL, Boston, Mass. Filed Oct. 22, 1892.

CHERRY TAR

Essential feature.—The words "CHERRY TAR" upon an ornamental band. Used since August 1, 1892.

22,270. REMEDIES FOR NEUROTIC AND SIMILAR COMPLAINTS. CARLE NEBEL, Cleveland, Ohio. Filed Oct. 27, 1892.

Essential feature.—A monogram composed of the letters "C. N." with the representation of a spray of vine on either side, and the words "RED INDIA OIL." Used since September, 1892.

22,271. VETERINARY REMEDIES. KENTUCKY VETERINARY MEDICINE COMPANY, Mount Sterling, Ky. Filed Nov. 19, 1892.

Essential feature.—The representation of the head and shoulders of a man and horse, the man in the act of putting a pill or bolus into the mouth of the horse. Used since November 1, 1892.

22,272. PIG AND HOG BLADDERS. JAMES HEDGES, Chicago, Ill. Filed June 24, 1892.

Essential feature.—The words "SNOW WHITE," in connection with the representation of a white swan and the words "WHITE SWAN BRAND." Used since January 1, 1878.

22,273. LEAD-PENCILS. AMERICAN LEAD PENCIL COMPANY, New York, N. Y. Filed May 17, 1892.

VELVET LEAD

Essential feature.—The words "VELVET LEAD." Used since May, 1879.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

ROOT *v.* THIRD AVENUE RAILROAD COMPANY.

Decided November 21, 1892.

1. PATENT—INFRINGEMENT—PUBLIC USE—CABLE RAILWAYS.
Letters Patent No. 262,126, to Henry Root, August 1, 1882, for an improvement in the construction of cable railways, are void by reason of public use of the invention by the patentee for more than two years prior to the filing of his application.
2. WHAT IS A PUBLIC USE.
Where an inventor disclosed his invention to a company which adopted it and put it into complete and practical operation in and for the ordinary purposes of trade and commerce, and where it appears that the inventor regarded his invention as complete at the time of its adoption by such company, such use for more than two years before application for patent is a public use within section 4886, Revised Statutes, and not one of experiment.
3. CASES DISTINGUISHED.
Elisabeth v. *Pavement Co.* (97 U. S., 126) distinguished and *Smith & Griggs Mfg. Co.* v. *Sprague* (123 U. S., 249) and *Hall* v. *Macneale* (107 U. S., 90) cited and commented on.

APPEAL from the Circuit Court of the United States for the Southern District of New York.

Mr. F. R. Coudert for the appellant.

Mr. Edmund Wetmore and *Mr. Herbert Knight* for the appellee.

Mr. Justice BLATCHFORD delivered the opinion of the Court.

This is a suit in equity, brought July 12, 1886, in the Circuit Court of the United States for the Southern District of New York, by Henry Root against the Third Avenue Railroad Company, founded on the alleged infringement of Letters Patent No. 262,126, granted August 1, 1882, to the plaintiff, for an "improvement in the construction of cable railways," on an application filed September 3, 1881.

The specification of the patent says:

My invention relates to cable railways; and it consists in the employment of a connecting-tie for the rails and supports for the slot-irons, by which both are rigidly supported from the tie and united to each other. In combination with this construction I employ a substratum of concrete or equivalent material, which will set or solidify and unite the whole into a continuous rigid structure, no part of which is liable to be displaced from its relation to the other, and also provide a support for the roadway.

Previous to my invention all cable railways had been constructed of iron ribs of the form of the tube, set at suitable intervals, to which the slot iron or timber, as the case may be, was bolted, and the spaces between these ribs filled with wood to form a continuous tube. Outside and independent of this tube the rails were laid supported on short ties or other foundations, and were connected horizontally with the iron ribs by short bolts or rods, but were liable to settle by the undermining of their foundation without regard to the tube or the other rail of the track. This would frequently occur by the renewal of the paving outside of the track, the introduction of house-connections with the main sewer, or other disturbances of the street. This settling would cause great inconvenience, as the gripping apparatus, which is carried by the rail through the medium of the car or dummy, must travel in a fixed position in the tube, thus making a frequent adjustment of the rails to the tube necessary. The space between the rails and sides of the tube was filled with sand, which could not be securely confined, as the joints in the tube were liable to open by settling, so as to require a frequent relaying of the paving or planking, and making the whole insecure and expensive to maintain. In my invention the whole forms a single rigid structure.

The following are the drawings of the patent, Figure 1 being a cross-section and Fig. 2 a perspective view:

Fig. 1.

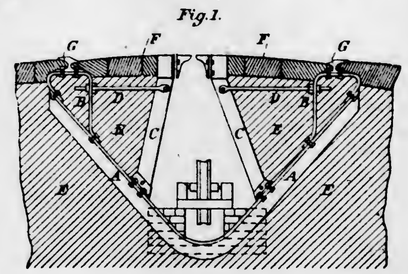
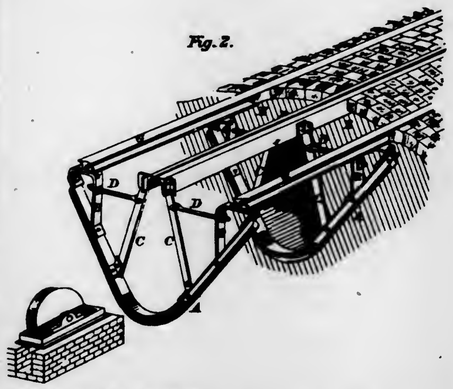


Fig. 2.



The specification says:

A is the main tie, bent so as to embrace the tube, and it has fastened to the ends suitably-formed plates or chairs B, to which the rails G are fastened; or, if stringers are used, they may be fastened directly to the ties. The ties may be of various shapes; but in this case I have used old T-rail turned bottom up, with but one curve or bend, as this requires but one heat, and is thus cheaper.

C are upright supports for the slot-irons, having one end secured to the tie at points each side of the bend, sufficiently separated to form the necessary width for the tube.

D are tie-rods connecting said supports with the main ties or frames through the chairs, rails, or stringers, as the case may be. The rods D may be fixed, or may be screw-bolts having two nuts at one end for the adjustment of the slot-irons to or from each other during construction; or other equivalent means may be employed.

E is the concrete, in which the ties or frames are bedded at suitable distances to support the rails and slot-irons, which form

the top of the tube. This concrete forms a support for the iron-work, the bottom and sides of the tube, and a foundation for the paving F, which fills the space between the rails and slot-iron, thus forming an even and durable roadway, which cannot settle below the level of the rails or slot-irons or cause a side pressure on the tube, as is the case where the roadway is supported on sand or other independent foundation. As nearly all the weight of the traffic is on the rails, the tendency of the rails to go down is resisted by a deep girder, of which the bent tie forms the top and this continuous mass of concrete forms the bottom.

I am aware that concrete as a material for foundations, underground sewers, and conduits has long been well known, and that concrete, brick-work, or iron-stone pipe might be used to form the tube between the iron ribs of the well-known construction without any particular invention, as these materials are as well known as wood; but it would be still subjected to all the danger of unequal settlement, and the short tie and stringer of wood require frequent renewal and adjustment to the level of the tube.

It will be seen that a distinguishing feature of my invention is the connecting of the rails in the same structure as the slot irons and the tube, so that all the parts are maintained in their relative position, and whatever may occur to alter the place of one will have no effect unless the change is sufficient to affect the whole structure.

There are seven claims in the patent.

The answer sets up in defense a denial of the allegation of the bill that the alleged invention was not in public use or on sale for more than two years prior to the application for the patent; and it alleges that the invention had been in public and profitable use in the United States for more than two years before the date of the application. It also sets up want of novelty and non-infringement.

There was a replication to the answer, proofs were taken, and the case was brought to a hearing before the circuit court, held by Judge Wallace; and a decree was entered dismissing the bill. From that decree the plaintiff has appealed.

The opinion of the circuit court, found in 46 O. G., 1393, 37 *Federal Reporter*, 673, passed upon a single question. The invention was put into use on the California-street railroad, a cable road in the city of San Francisco, on April 9, 1878, the road having been built by the plaintiff and put into regular operation at that time, and, as constructed, having embodied in it the invention described in the patent. The defendant contended that such use was a public use of the patented invention more than two years before the application, and that, therefore, the patent was invalid. The plaintiff contended, and now contends, that such use was an experimental use, and that the application was filed within two years after the plaintiff became satisfied that his invention was a practical success.

Section 4886 of the Revised Statutes, which was in force when this patent was applied for and issued, enacts that a patent may be obtained when the invention has not been—

in public use or on sale for more than two years prior to the application;

and section 4920 provides that it may be pleaded and proved as a defense, in a suit at law or in equity on the patent, that the invention—

had been in public use or on sale in this country for more than two years before

the application, or had been abandoned to the public.

From the time the cable road mentioned was put into operation, no change or modification was made in its plan or its details. In the summer of 1876, between May and the 1st of September, the plaintiff conceived the invention. Early in that year certain persons in California obtained a franchise for the construction of a wire cable road on California street in San Francisco, and the plaintiff was led to believe that he would be called upon, as an engineer, to construct the road. He immediately commenced studying up the matter, to be prepared to recommend a plan of construction, whenever called upon. He testifies that he deemed it necessary in a cable road, to get a smooth, even roadway and track, and the tube or tunnel-way for the cable and its carrying machinery strong enough to resist any tendency toward the closing of the slot, to provide for the grip-shank, and to make a structure as a whole so permanent and durable as to stand the wear and jar of heavy street traffic, as well as of the car traffic which it was to carry; and that, for that purpose, he deemed it necessary to have a rib or yoke, with connections to the two rails and the two slot irons, so as to connect them permanently, such yoke to be embedded in and supported by a surrounding mass of concrete to form a support and foundation for the ribs or yokes, the bottom and sides of the cable tube or tunnel, and a foundation for the paving of the roadway. He says that he explained this invention to several persons prior to September 2, 1876, and on that day discussed the subject and explained the invention in a general way at a meeting of the directors of the proposed road. Between that time and January 1, 1877, he made a model containing two of the ribs, with an outside casing and cover, and had the space between filled in with concrete, incasing the skeleton ribs and forming "the shut section" of the completed track and tube.

His invention was adopted by the projectors of the railroad, and active work was commenced upon the structure in July, 1877. The road cost, with the equipment, $418,000, and is about two miles in length, the road-bed and tunnel construction having cost about $225,000. From April 9, 1878, it has been in regular and successful use as a street railroad, carrying passengers for pay. The plaintiff was superintendent of the road from that time until the date of his application for the patent, and afterward until 1883.

In explanation of his delay in applying for the patent, he testifies that before he began the construction of the road one of the projectors expressed a doubt in regard to the durability of such a structure, and a fear that the jar of street traffic, as well as that of the cars, would in time loosen the ribs and separate them from the surrounding concrete, and the structure would thus fail; that doubts were expressed also by others; that, while the plaintiff believed that there was more than an even chance of its proving a durable and desirable structure, he still had some doubt in his own mind, which was somewhat increased by the doubts expressed to him by others, in whom he had confidence; that, as causes which would contribute to the destruction of the road, there were (1) the moving of cars over a rail connected to iron-work without the intervention of any wood; (2) the street traffic of trucks and teams, to which such a structure would necessarily be exposed; (3) the changes of temperature; and (4) the effect of time, and the danger of water following down the different members of the iron-work, and the rust separating them from the concrete; and that there was no way of determining these matters but by a trial in a public street through a long period of time.

He was asked whether his own doubts as to the dura-

bility of the structure were present at any time after the road was in operation, and if so, when, and by what they were caused. He answered "Yes," and said that during the spring of 1879, the road was extended from Fillmore street to Central avenue, by a wooden structure not nearly so durable or costly as the original road: that, in preparaing for the extension, he had occasion to dig out and around, so as to expose some of the old structure; that he saw therein some indication of the loosening of the yokes in the concrete; and that he had some little fear at that time that some trouble might arise in that respect. He further testifies that the reason he did not apply for the patent within two years from the time when he first put the structure into use, was that, if it proved weak or undesirable, he did not want any patent; and he did not feel certain enough of that fact until the year 1881.

But it does not appear that he expressed his doubts to the projectors of the road, either before its construction was commenced, or during its construction, or while he remained its superintendent after it was completed; or that he communicated to any one what he noticed during the spring of 1879, or that he entertained any fear arising therefrom.

The circuit court truly says in its opinion:

Manifestly the complainant received a consideration for devising and consenting to the use of an invention which was designed to be a complete, permanent structure, which was to cost a large sum of money, and which he knew would not meet the expectation of those who had employed him, unless it should prove to be in all respects a practically operative and reasonably durable one. If he had entertained any serious doubts of its adequacy for the purpose for which it was intended, it would seem that he would not have recommended it in view of the considerable sum it was to cost. At all events, he did not treat it as an experimental thing, but allowed it to be appropriated as a complete and perfect invention, fit to be used practically, and just as it was, until it should wear out, or until it should demonstrate its own unsuitableness. He turned it over to the owners without reserving any future control over it, and knowing that, except as a subordinate, he would not be permitted to make any changes in it by way of experiment; and at the time he had no present expectation of making any material changes in it. He never made or suggested a change in it after it went into use, and never made an examination with a view of seeing whether it was defective, or could be improved in any particular.

It is contended by the plaintiff that the principles recognized by this Court in *Elizabeth* v. *Pavement Co.* (97 U. S., 126) establish the patentability of the plaintiff's invention, notwithstanding its embodiment in the California-street railroad. But the circuit court held that the proofs in the present case did not show a use of the invention substantially for experiment, but showed such a public use of it as must defeat the patent. The Court further said that the facts were in marked contrast with those in *Elizabeth* v. *Pavement Co.*, because there the use was solely for experiment.

In *Elizabeth* v. *Pavement Co*, the original patent was granted in August, 1854. The invention dated back as early as 1847 or 1848. Nicholson, the inventor of the pavement in question in that case, filed a caveat in the Patent Office in August, 1847, describing the invention. He constructed a pavement, by way of experiment, in June or July, 1848, in a street near Boston, which comprised all the peculiarities afterward described in his patent, the experiment being successful. The pavement so put down in Boston in 1848 was publicly used for a space of six years before the patent was applied for; and it was contended that that was a public use within the meaning of the statute. This Court, speaking by Mr. Justice Bradley, said that it was perfectly clear from the evidence that Nicholson did not intend to abandon his right to a patent, he having filed a caveat in August, 1847, and having constructed the pavement in Boston by way of experiment, for the purpose of testing its qualities; that he was a stockholder in, and treasurer of, the corporation which owned the road in Boston where the pavement was put down, and which corporation received toll for its use, and that the pavement was constructed by him at his own expense, and was placed by him there in order to see the effect upon it of heavily loaded wagons and of varied and constant use, and also to ascertain its durability and liability to decay. It was shown that he was there almost daily, examining it and its condition, and that he often walked over it, striking it with his cane. This Court held that if the invention was in public use or on sale prior to two years before the application for the patent, that would be conclusive evidence of abandonment, and the patent would be void; but that the use of an invention by the inventor, or by any other person under his direction, by way of experiment and in order to bring the invention to perfection, had never been regarded as a public use of it: and it added:

The nature of a street pavement is such that it cannot be experimented upon satisfactorily except on a highway, which is always public. When the subject of invention is a machine, it may be tested and tried in a building, either with or without closed doors. In either case, such use is not a public use, within the meaning of the statute, so long as the inventor is engaged, in good faith, in testing its operation. He may see cause to alter it and improve it, or not. His experiments will reveal the fact whether any and what alterations may be necessary. If durability is one of the qualities to be attained, a long period, perhaps years, may be necessary to enable the inventor to discover whether his purpose is accomplished. And though, during all that period, he may not find that any changes are necessary, yet he may be justly said to be using his machine only by way of experiment; and no one would say that such a use, pursued with a *bona fide* intent of testing the qualities of the machine, would be a public use within the meaning of the statute. So long as he does not voluntarily allow others to make it and use it, and so long as it is not on sale for general use, he keeps the invention under his own control, and does not lose his title to a patent. It would not be necessary, in such a case, that the machine should be put up and used only in the inventor's own shop or premises. He may have it put up and used in the premises of another, and the use may inure to the benefit of the owner of the establishment. Still, if used under the surveillance of the inventor, and for the purpose of enabling him to test the machine, and ascertain whether it will answer the purpose intended, and make such alterations and improvements as experience demonstrates to be necessary, it will still be a mere experimental use, and not a public use, within the meaning of the statute. While the supposed machine is in such experimental use, the public may be incidentally deriving a benefit from it. If it be a grist-mill, or a carding-machine, customers from the surrounding country may enjoy the use of it by having their grain made into flour, or their wool into rolls, and still it will not be in public use, within the meaning of the law. But if the inventor allows his machine to be used by other persons generally, either with or without compensation, or if it is with his consent put on sale for such use, then it will be in public use and on public sale, within the meaning of the law. If, now, we apply the same principles to this case, the analogy will be seen at once. Nicholson wished to experiment on his pavement. He believed it to be a good thing, but he was not sure; and the only mode in which he could test it was to place a specimen of it in a public roadway. He did this at his own expense, and with the consent of the owners of the road. Durability was one of the qualities to be attained. He wanted to know whether his pavement would stand, and whether it would resist decay. Its character for durability could not be ascertained without its being subjected to use for a considerable time. He subjected it to such use, in good faith, for the simple purpose of ascertaining whether it was what he claimed it to be. Did he do anything more than the inventor of the supposed machine might do in testing his invention? The public had the incidental use of the pavement, it is true; but was the invention in public use, within the meaning of the statute? We think not. The proprietors of the road alone used the invention, and used it at Nicholson's request, by way of experiment. The only way in which they could use it was by allowing the public to pass over the pavement. Had the city of Boston, or other parties, used the invention, by laying down the pavement in other streets and places, with Nicholson's consent and allowance, then, indeed, the invention itself would have been in public use, within the meaning of the law; but this was not the case. Nicholson did not sell it, nor allow others to use it or sell it. He did not let it go beyond his control. He did nothing that indicated any intent to do so. He kept it under his own eyes, and never for a moment abandoned the intent to obtain a patent for it. In this connection it is proper to make an-

other remark. It is not a public knowledge of his invention that precludes the inventor from obtaining a patent for it, but a public use or sale of it. In England, formerly, as well as under our patent act of 1793, if an inventor did not keep his invention secret; if a knowledge of it became public before his application for a patent, he could not obtain one. To be patentable, an invention must not have been known or used before the application; but this has not been the law of this country since the passage of the act of 1836, and it has been very much qualified in England. (*Lewis* v. *Marling*, 10 B & C., 22.) Therefore, if it were true that during the whole period in which the pavement was used, the public knew how it was constructed, it would make no difference in the result. It is sometimes said that an inventor acquires an undue advantage over the public by delaying to take out a patent, inasmuch as he thereby preserves the monopoly to himself for a longer period than is allowed by the policy of the law; but this cannot be said with justice when the delay is occasioned by a *bona fide* effort to bring his invention to perfection, or to ascertain whether it will answer the purpose intended. His monopoly only continues for the allotted period, in any event; and it is the interest of the public, as well as himself, that the invention should be perfect and properly tested, before a patent is granted for it. Any attempt to use it for a profit, and not by way of experiment, for a longer period than two years before the application, would deprive the inventor of his right to a patent.

We think that the present case does not fall within the principles laid down in *Elizabeth* v. *Pavement Co.* The plaintiff did not file a caveat, and there is no evidence that he did not intend to abandon his right to a patent. It does not appear that any part of the structure was made at his own expense, or that he put it down in order to ascertain its durability or its liability to decay, or that what he says he noticed in the spring of 1879 led him to make any further examination in that respect, or to test further the fear which he says he had at that time, or that what he then saw led him to think that the structure was weak or undesirable. It cannot be fairly said from the proofs that the plaintiff was engaged in good faith, from the time the road was put into operation, in testing the working of the structure he afterward patented. He made no experiments with a view to alterations; and we are of opinion, on the evidence, that sufficient time elapsed to test the durability of the structure, and still permit him to apply for his patent within the two years. He did nothing and said nothing which indicated that he was keeping the invention under his own control.

In *Smith & Griggs Mfg. Co.* v. *Sprague* (41 O. G., 1037; 123 U. S., 249, 256, 257) it was said, Mr. Justice Matthews speaking for the Court:

A use by the inventor, for the purpose of testing the machine, in order by experiment to devise additional means for perfecting the success of its operation, is admissible; and where, as incident to such use, the product of its operation is disposed of by sale, such profit from its use does not change its character; but where the use is mainly for the purposes of trade and profit, and the experiment is merely incidental to that, the principal and not the incident must give character to the use. The thing implied as excepted out of the prohibition of the statute is a use which may be properly characterized as substantially for purposes of experiment. Where the substantial use is not for that purpose but is otherwise public, and for more than two years prior to the application, it comes within the prohibition. The language of section 4886 of the Revised Statutes is, that "any person who has invented or discovered any new and useful * * * machine, * * * not in public use or on sale for more than two years prior to his application, * * * may * * * obtain a patent therefor." A single sale to another of such a machine as that shown to have been in use by the complainant more than two years prior to the date of his application would certainly have defeated his right to a patent; and yet, during that period in which its use by another would have defeated his right, he himself used it, for the same purpose for which it would have been used by a purchaser. Why should the similar use by himself not be counted as strongly against his rights as the use by another to whom he had sold it, unless his use was substantially with the motive and for the purpose, by further experiment, of completing the successful operation of his invention?

In that case *Elizabeth* v. *Pavement Co.* (*supra*) was cited with approval, and it was said (p. 264):

In considering the evidence as to the alleged prior use for more than two years of an invention, which, if established, will have the effect of invalidating the patent, and where the defense is met only by the allegation that the use was not a public use in the sense of the statute, because it was for the purpose of perfecting an incomplete invention by tests and experiments, the proof on the part of the patentee, the period covered by the use having been clearly established, should be full, unequivocal, and convincing.

The Court came to the conclusion that the patentee unduly neglected and delayed to apply for his patent, and deprived himself of the right thereto by the public use of the machine in question; and that the proof fell far short of establishing that the main purpose in view, in the use of the machine by the patentee, prior to his application, was to perfect its mechanism and improve its operation.

So, too, in *Hall* v. *Macneale*, (23 O. G., 937; 107 U. S., 90, 96, 97,) it was contended that the use there involved was a use for experiment; but the Court answered that the invention was complete, and was capable of producing the results sought to be accomplished; that the construction, arrangement, purpose, mode of operation, and use of the mechanism involved were necessarily known to the workmen who put it into the safes, which were the articles in question; that, although the mechanism was hidden from view after the safes were completed, and it required a destruction of them to bring it into view, that was no concealment of it or use of it in secret; that it had no more concealment than was inseparable from any legitimate use of it; and that, as to the use being experimental, it was not shown that any attempt was made to expose the mechanism, and thus prove whether or not it was efficient.

In *Egbert* v. *Lippmann*, (14 O. G., 822; 104 U. S., 333, 336,) the Court remarked:

Whether the use of an invention is public or private, does not necessarily depend upon the number of persons to whom its use is known. If an inventor, having made his device, gives or sells it to another, to be used by the donee or vendee, without limitation or restriction, or injunction of secrecy, and it is so used, such use is public, within the meaning of the statute, even though the use and knowledge of the use may be confined to one person.

Without examining any other of the defenses raised, we are of opinion that the bill must be dismissed, for the reason stated by the circuit court.

Decree affirmed.

Supreme Court of the United States.

DERBY *et al. v.* THOMPSON *et al.*

Decided December 5, 1892.

PATENT—INFRINGEMENT—PATENTABLE NOVELTY—CHILD'S CHAIR AND CARRIAGE.

Letters Patent No. 224,923, to Joseph W. Kenna, February 24, 1880, for a combined child's chair and carriage, are void for want of patentable novelty; but, in any event, they are not infringed by defendants.

APPEAL from the Circuit Court of the United States for the District of Massachusetts.

STATEMENT OF THE CASE.

This was a bill in equity for the infringement of Letters-Patent No. 224,923, issued February 24, 1880, to Joseph W. Kenna, for a new and useful improvement in a combined child's chair and carriage.

The invention related to an article of furniture which, by a simple adjustment of the parts, may be converted from a child's high chair for use at a table to a child's carriage, and *vice versa*, as may be desired; and more particularly to the manner of connecting the chair to its supporting-frame, and supporting it thereon. It consisted practically of an ordinary chair, B, with four legs, mounted when used as a high chair upon a standard, A, also having four legs to correspond with those of the chair. The front legs of the chair were pivoted at their lower ends, D, upon the corresponding legs of the standard. Upon

the rear legs of the standard there were pivoted at their lower ends the arms of a bail, E, which turned

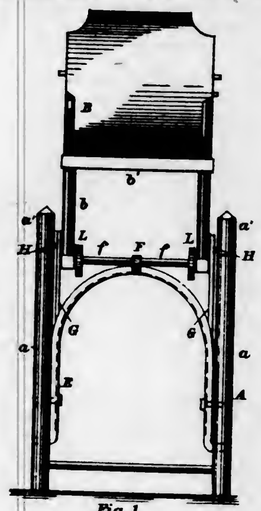


Fig. 1.

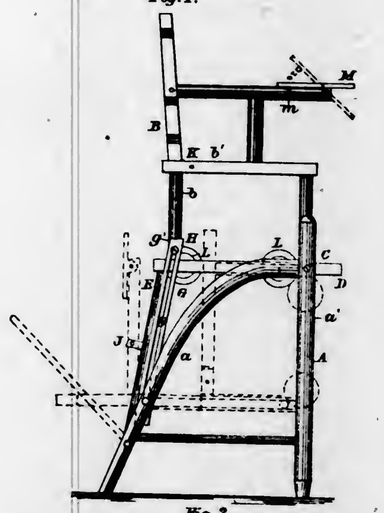


Fig. 2.

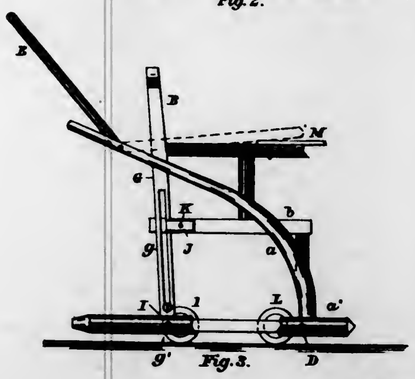


Fig. 3.

up under the rear part of the chair, and supported it by the aid of a catch, F, fastened to a cross-piece or rod between the two rear legs of the chair. When used as a carriage, the bail was unfastened from its catch, which allowed the rear of the chair to fall between the rear legs *a* of the standard. The front legs *a'* of the standard assumed a horizontal position. The chair then rested upon four wheels, L, attached to cross-pieces connecting the front and rear legs, and the bail served as a push-handle for the carriage thus formed. By this adjustment, which is shown in the annexed drawings, the chair is converted into a wheel carriage, on which the child may be pushed by the aid of the bail from place to place.

The patentee says in his specification:

In making these changes it is not necessary to remove the child from the chair, for instead of tilting the chair back, as shown in Fig. 2 of the drawings, it may be held in an upright position, and the frame A tilted forward on its front standard until it assumes the position shown in Fig. 3 of the drawings, and in changing from the latter position to a chair, the supporting-frame may be tilted upward and backward into the position shown in Fig. 2 of the drawings, while at the same time the chair is held in an upright position by the attendant.

The claim relied upon in this suit was the second, which was as follows:

2. The frame A, in combination with the bail E, chair-frame B, pivoted at its lower front corners to the frame A, and the yielding rest or support F, substantially as described.

The case was defended upon the ground of want of novelty, and also of non-infringement. The court ordered a final decree for the plaintiff, (26 Fed. Rep., 299, and 32 Id., 830,) and the defendant was allowed an appeal to this Court.

Mr. A. v. Briesen for the appellant.

Mr. J. E. Maynadier for the appellee.

Mr. Justice BROWN delivered the opinion of the Court.

The first assignment of error turns upon the validity of the second claim of the patent in question, which was for—

the frame A, in combination with the bail E, chair-frame B, pivoted at its lower front corners to the frame A, and the yielding rest or support F, substantially as described.

This claim is practically for the combination of four elements:

1. A low chair, having the usual frame of four legs;

2. A supplemental frame, placed under the chair to raise it, and arranged to fold out of the way when the low chair is used;

3. A bail, forming a part of the rear legs of the supplemental frame; and

4. A catch or fastening device which keeps this bail in place when the chair is used as a high chair.

If Mr. Kenna had been the first to invent a high chair which, by a simple mechanical arrangement, could be converted into a rolling chair or carriage, by the aid of a bail, which served alternately for the support of the high chair and as a push-handle for the rolling chair, his patent would doubtless be entitled to a liberal construction. Such a device is at once ingenious, useful, compact, and convenient. He was not, however, the first in this field of invention. The patent to Caulier of April 23, 1878, exhibits a chair, the seat of which was hinged to the upper end of four legs, corresponding to the frame A of the plaintiff's patent, and provided with rollers secured to the lower part of the legs or stretchers between them, in combination with rollers secured beneath the foot-rest of the chair. The rear legs were secured to the seat by spring-bolts immediately beneath the seat, which bolts, when withdrawn, permitted the front legs to turn, and assume a partially horizontal position, the

chair falling and resting in front on casters or wheels attached to the under side of the step, and in the rear, upon two corresponding wheels journaled in the bottom of the four legs. There was also a swinging push-handle pivoted to the rear legs, but performing no function except when the device was used as a rolling chair. This chair contained a frame corresponding to the frame A of the plaintiff's patent, in combination with a push-handle or bail, and a chair-seat pivoted in front to the supplemental frame; but it did not contain a supporting-chair frame of four legs, nor the yielding rest or support F. While evidently a somewhat crude device, it did contain two, if not three, of the four elements of the plaintiff's patent though combined in a different manner.

The exhibit Pearl chair, which, we agree with the court below, antedates the Kenna invention, also consisted of a chair-seat hinged to the front legs of a frame, corresponding to the Kenna frame A, immediately beneath the seat, while to the rear legs of this frame was pivoted a bail, which served to support the rear of the chair-seat when used as a high chair, and as a push-handle when used as a rolling chair. The wheels were pivoted, as in the Caulier chair, to the underside of the step and to the lower ends of the front legs of the frame A. There was also a catch attached to the rear of the chair seat into which the bail fitted when turned up for use in supporting the high chair. There are found in this chair all the elements of the Kenna chair, except that the chair is pivoted or hinged to the frame immediately beneath the seat, and hence both this and the Caulier chair are less compact, convenient, and sightly than the Kenna device. When used as a rolling chair, the chair-seat was thrust forward in front of the legs, which projected in the rear and made the carriage much less convenient to handle.

In the Patten patent of September 3, 1878, however, the hinges, by means of which the legs of the supplemental frame were turned under, were placed some distance below the seat, which had the effect, when used as a rolling chair, of throwing the chair-seat farther backward and nearer to the bail. This peculiarity is also found in the Chichester patent of July 8, 1879, which, while differing widely from the Kenna patent in other respects, resembles it in the particular of having a complete chair instead of a mere chair-seat.

Plaintiff is evidently not entitled to claim the combination of the chair-frame pivoted to the supplemental frame A, and the bail, without the yielding support or rest, since the latter is not only incorporated in his claim, but a claim which he originally made for—

the supporting-frame A, in combination with the chair-frame hinged thereto at its lower front corners, and the movable support E, substantially as described—

was rejected by the Patent Office upon reference to the Caulier patent, and Kenna acquiesced in such rejection. It is, then, only in connection with the yielding rest or support F that he could possibly claim the combination of the other three elements. But this rest or support is also found in connection with a chair-seat, a standard of four legs, and a bail in the Pearl chair, performing the same function of holding the bail in position, to support the rear of the chair-seat when not in use as a rolling chair, but attached directly to the chair-seat, instead of to a rod connecting the two rear legs of the chair. Although the Pearl chair is referred to in one of the letters of the Department, (December 12, 1879.) it was only as exhibited in the catalogue of Heywood Brothers, the manufacturers, wherein the catch for the support of the bail was not represented; but, appearing as it does in the Pearl chair put in evidence, it is difficult to see why this chair does not contain practically all the elements of the Kenna claim. It is true there is a difference in the manner in which the combination is put together, but the part wherein they differ most widely, namely, the pivoting of the chair-frame at its lower front corners to the front legs of the supplemental frame, is found both in the Patten and prior Chichester patents. What, then, has Mr. Kenna done? He has taken the Patten or Chichester chairs bodily, pivoted as they are at the lower front corners to the supplemental frame, and has applied to them the bail and catch of the Pearl chair, and has thereby made a chair more compact than the Pearl, but not more so than the Patten and Chichester chairs, but perhaps more convenient in other respects. While the question is not altogether free from doubt, the majority of the Court are not disposed to accord to the changes made by Kenna the merit of invention. Though he may not in fact have known of these three chairs, but may have supposed that he was inventing something valuable, we are bound, in passing upon his device, to assume that he had them all before him, and with that knowledge it seems to us that it required nothing more than the skill of an ordinary mechanic to adopt the most valuable features of each in the construction of a new chair. Indeed, the result is rather an aggregation of old elements than the production of a new device. As a high chair the Kenna is not superior to the Pearl chair, and as a rolling chair it is no more compact and apparently no more convenient than the Patten and Chichester chairs. It is pertinent to remark in this connection, as bearing upon the merits of this patent, that the invention described in it never seems to have gone into use, perhaps owing to the fact that the chair was encumbered by a slotted bar G, which was necessary, when used as a high chiar, to prevent it from tilting forward on its pivots, and throwing the child out. Plaintiff's chair as constructed and put upon the market not only dispenses with the catch F, but locates the wheels upon the front legs of the supplemental frame, much as in the Caulier and Pearl chairs. As Kenna was confessedly not the inventor of the three principal elements of his chair, viz., the chair-frame, the frame A, and the bail, either separately or in combination, and as the fourth element, which is claimed to give life to his patent, viz, the catch F, has either been abandoned altogether, or practically abandoned by substituting for it a bail having an elasticity sufficient to hold it in place without a catch, we think the introduction of this catch into the prior combination is insufficient to support the patent.

But, even conceding that the Kenna device does involve a patentable novelty, we are all of the opinion that his claim should receive a narrow construction, and that, in this aspect of the case, neither of the defendant's chairs can be said to infringe. In these devices the frame A is not *pivoted* to the chair frame, but is *hinged* to it in such a manner that the chair cannot tip forward, and hence the slotted bars (which, though not claimed, are an essential feature of the Kenna device) are unnecessary. Neither of the exhibits put in evidence as the defendant's chair has the yielding rest or support F. It is true that, by a slight elasticity in the bail, it is made to catch under the frame of the chair-seat in such manner as to obviate the necessity of a rest or support. But the fact that the defendants have been able, by a skillful contrivance, to dispense with one of the elements of the Kenna claim does not make the device an infringement. In this case the Pearl chair possessed the same feature of elasticity in the bail, which is claimed to be the mechanical equivalent of the yielding rest or support. In the other exhibit a button is used to hold the bail under the frame of the seat; but as this button is not a "*yielding* rest or support," or a "spring catch," the charge of infringement as to this exhibit is not sustained.

The decree of the court below is, therefore, reversed, and the case remanded, with directions to dismiss the bill.

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DIGEST OF DECISIONS.

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ABANDONED APPLICATIONS.

(See Abandoned Experiments: Interference, 3, 5.)

1. ABANDONED APPLICATION—REVIVAL OF.

Where an applicant has delayed four years to meet an Office requirement and seeks a revival of his abandoned application, ill health and financial reverses covering only the first year of his neglect do not form a sufficient excuse.

[*Ex parte* Clarke, 286.

2. ABANDONMENT—SUBSEQUENT APPLICATION.

The lapse of two years from and after the allowance of a patent to an applicant without responsive action on his part does not *per se* work such a forfeiture of rights as will bar the applicant from making a subsequent application for the same improvements and taking a patent therefor. (Discussing and construing sections 4885, 4886, and 4897 of the Revised Statutes.)

[Sibbald *v.* Cassidy and Smith, 1165.

ABANDONED EXPERIMENTS.

ABANDONED EXPERIMENTS.

A machine which had operated at least once to accomplish its desired result, and subsequently was worked satisfactorily several times without change, is not an abandoned experiment, although several changes not relating to the main operating parts of the machine were suggested, and the use of the machine was discontinued after it had once accomplished its desired result because the persons using it had turned their attention to other matters.

[*Bromley Brothers Carpet Factory *v.* Stewart *et al*, 1491.

AFFIDAVITS.

(See Injunction, 6; Interference, 7.)

WHAT IS ADMISSIBLE UNDER RULE 75.

Where it was necessary to introduce an affidavit in an *ex parte* case under Rule 75, the attorney set up great difficulty and hardship in obtaining applicant's signature to the necessary papers and offered the deposit on of the applicant taken in prior interference proceedings and alleged to cover the matter in controversy. *Held* admissible as an affidavit under the rule.

[*Ex parte* Keller, 1790.

AMENDMENTS.

(See Oath; Rejected Cases, 3.)

ANALOGOUS DEVICES.

(See Particular Patents, 1.)

ANTICIPATION.

(See Construction of Specifications and Patents, 4.)

APPEAL IN INTERFERENCE CASES.

PRACTICE—COMMISSIONER WILL NOT EXTEND LIMIT OF APPEAL IN INTERFERENCE CASES, EXCEPT IN AN UNUSUAL CASE.

While it is within the discretion of the Commissioner to extend the limit of appeal in an interference case, he will not exercise it in a case where a party has deliberately allowed the limit for taking appeal to expire without action and the facts show that his subsequent petition is based upon a mere change of mind.

[Guerrant *v.* Cable *v.* Coffee, 285.

APPEAL TO EXAMINERS-IN-CHIEF.

(See Rejected Cases, 2.)

APPEAL TO THE CIRCUIT COURT OF APPEALS.

(See Injunction, 1, 2, 3, 5.)

1. CIRCUIT COURT OF APPEALS—APPEAL FROM ORDER GRANTING INJUNCTION—SUPERSEDEAS.

In the prosecution of an appeal to the circuit court of appeals under section 7 of act of March 3, 1891, from an order granting an injunction there is no discretion in the court or judge allowing the same to deny or refuse the appellant a supersedeas, and the appellant is entitled to it as a matter of right.

[*Société Anonyme du Filtre Chamberland Systeme Pasteur and The Pasteur Chamberland Filter Company *v.* Blount *et al.*, 1484.

2. APPEALABLE ORDERS—INTERLOCUTORY DECREE—INJUNCTION.

A decree which is rendered after full hearing on the merits and which sustains the validity of a patent, declares infringement, and awards a perpetual injunction and an accounting is an "interlocutory decree" granting an injunction, from which an appeal will lie to the Circuit Court of Appeals under section 7 of the act of March 3, 1891. (*Jones Co. v. Munger, etc., Co.*, 50 Fed. Rep., 785; 1 C. C. A., 668, approved.)

[*Richmond *v* Atwood, 1655.

3. SAME—CONSTRUCTION OF SEC. 7, ACT MARCH 3, 1891.

The term "interlocutory order or decree" was used in its broadest sense in this section and should be given full scope, to the end that any party aggrieved by any order or decree granting an injunction at any stage of the proceedings may have a speedy remedy by appeal.

[*Id.

4. SAME—DECISION ON APPEAL—MANDATE

On such an appeal, where the whole record is before the Circuit Court of Appeals and in order to determine the rightfulness of the injunction the court necessarily examines the whole case on the merits and reaches the conclusion that there is no infringement, it may not only reverse the decree and dissolve the injunction, but may also vacate the order for an accounting and order the bill dismissed, thus rendering such a decree as the lower court should have rendered on the whole case. (*Jones Co. v. Munger, etc., Co.*, 50 Fed. Rep., 785; 1 C. C. A., 668, disapproved.)

[*Id.

APPLICATION AFTER ABANDONMENT.

(See Abandoned Applications, 2.)

ASSIGNEES.

(See Interference, 4; Parties to Suit, 1; Priority of Invention.)

ASSIGNMENTS.

(See Infringement, 3.)

BILL IN EQUITY.

(See Trade-Marks, 5, 6.)

EQUITY PLEADING—ALLEGATIONS OF CITIZENSHIP—PRAYER FOR PROCESS.

A bill may be dismissed by the court on its own motion where the proper allegations as to citizenship of the parties are not contained in the introductory part and are not pointed out by counsel elsewhere in the bill or where the prayer for subpœna does not contain the names of the defendants, as required by the rules.

[*City of Carlsbad *et al. v.* Tibbetts *et al.*, 1166.

BOND.

(See Injunction, 7.)

BURDEN OF PROOF.

(See Damages and Profits, 1.)

CANADIAN PATENTS.

(See Limitation of United States Patent by Foreign Patent Previously Granted, 1.)

EXPIRATION OF BY REASON OF PATENTS IN OTHER COUNTRIES.
The Canadian patent act which provides that "when a foreign patent exists, the Canadian patent shall expire at the earliest date at which any foreign patent for the same invention expires" refers only to foreign patents which exist before the issue of the relevant Canadian patent
[*Edison Electric Light Company v. United States Electric Lighting Company, 564.

CERTIFICATES OF CORRECTION.

NO AUTHORITY FOR CERTIFICATE OF CORRECTION BY COMMISSIONER OF PATENTS.
The Commissioner of Patents has no jurisdiction to alter the patent by a certificate of correction, and such certificate is wholly void.
[*Edison Electric Light Company v. United States Electric Lighting Company, 564.

CERTIFIED COPY OF INTERFERING SUBJECT-MATTER.

(See Division of Application, 3.)

CHANGE OF MATERIAL.

(See Invention, 1.)

CHANGE OF STRUCTURE.

(See Particular Patents, 1)

CIRCUIT COURT OF APPEALS

(See Appeal to the Circuit Court of Appeals; Injunction, 1, 2, 3, 5.)

CITIZENSHIP.

(See Bill in Equity.)

CLAIMS.

(See Construction of Specifications and Patents, 2, 3, 6; Oath.)

CLAIMS CONFLICTING IN TWO APPLICATIONS OF SAME INVENTOR.

(See Division of Application, 1.)

COMBINATIONS.

(See Construction of Specifications and Patents, 2, 3, 4)

COMMISSIONER OF PATENTS.

(See Appeal in Interference Cases; Certificates of Correction; Interference, 6; Rejected Cases, 3.)

CONCEPTION OF INVENTION.

(See Interference, 3.)

CONCURRENT APPLICATIONS.

(See Division of Application, 1.)

CONSTRUCTION OF RULES.

(See Affidavits; Division of Application, 3; Drawings; Interference, 7; Oath; Preliminary Statement; Rejected Cases, 1; Rules of Practice.)

CONSTRUCTION OF SPECIFICATIONS AND PATENTS.

(See Invention; Limitation of United States Patent by Foreign Patents Previously Granted, 3; Particular Patents; Patents; Specifications.)

1. SUPPLEMENTING DESCRIPTION BY PRIOR ART.
The specification of a patent may be supplemented by processes of the prior art, although the precise results of such processes have since been discovered
[*Edison Electric Light Company v. United States Electric Lighting Company, 564.

2. CONSTRUCTION OF CLAIMS.
The claims being for combinations expressed in broad and general terms, they are to be construed in the light of the specification and each claim is to be "regarded as including such devices and combinations as are necessary to meet the requirements of the general terms in which it is expressed."
[*Illinois Watch Company v. Robbins and Avery, 721.

3. SAME.
While the five claims in suit are all to the same devices, arranged in a single combination, being only different expressions of that combination, and it may be that there is no essential difference between them, the court does not deem it necessary to consider how far they may be distinguished from each other, but holds them all valid. [*Id.

4. COMBINATION—WHAT DOES NOT CONSTITUTE ANTICIPATION OF.
A combination producing a group of useful results *Held* not to be anticipated by several prior combinations of some of the elements, each producing some, but not all, of said results, the superiority of the patented device over the prior devices resulting not from any particular part or element, but rather from the combination and arrangement of the parts as a whole. (Affirming 50 Fed. Rep., 542) [*Id.

5. EARLIER AND LATER PATENTS TO SAME PARTY—LATTER FOR BROAD INVENTION—CONSTRUCTION OF.
Where pending a long interference as to a broad invention the applicant takes out a patent for a narrow or specific part of that broad invention, which patent states on its face that it is a division of the broad application and which patent describes but does not claim the broad invention, *Held* that the earlier narrow patent should receive a limited construction in accordance with its apparent scope, and that the later broad patent is valid. Courts do not construe Letters Patent for the purpose of their destruction nor in the critical and hostile spirit which a plea in abatement formerly encountered.
[*Electrical Accumulator Company *et al* v. Brush Electric Company, 886.

6. FUNCTION OF MACHINE.
A claim which in effect merely covers the operation of a machine describes the function of the machine and not a patentable process.
[*Moulton, executor, v. Commissioner of Patents, 1480.

CONSTRUCTION OF STATUTES.

(See Abandoned Applications, 2; Appeal to the Circuit Court of Appeals, 2, 3, 4; Drawings, 2; Final Fee; Marking Articles "Patented;" Patents, 3.)

CORPORATIONS.

(See Suits for Infringement; Trade-Marks, 6, 13.)

CORRECTION OF DEFECTIVE PATENT.

(See Certificates of Correction.)

DAMAGES AND PROFITS.

(See Marking Articles "Patented.")

1. REFERENCE TO TAKE ACCOUNT—SEGREGATION OF PROFITS.
In a suit for infringement of a patent for a lifting-jack the court decreed that complainant recover the profits made "from said infringement by the manufacture, use, or sale of the improvements described" in the patent, and referred the cause to a master to take proof and report the profits made from the manufacture, use, or sale "of said improvements or from said infringement" No proof was given before the order of reference was made showing that the patented feature gave the infringing machine its entire commercial value. *Held* that the order did not and could not properly direct the finding of profits on the entire machine, and defendants having claimed at the commencement of the hearing before the master that they were liable only for the profits realized from the infringing feature the burden was on complainant to show either that such feature gave the machine its entire commercial value or else to segregate the profits made on that feature from the profits on the machine as a whole (45 Fed. Rep., 205, affirmed.)
[*Mosher v. Joyce *et al.*, 153.

2. SAME—MASTER'S REPORT—RECOMMITTAL.
Complainant, claiming that the entire commercial value of the infringing machine was due to the patented improvement, offered no evidence to segregate the profits on that feature alone, and the master reported the profits on the whole machine. The court, on exceptions to the report, held that the entire commercial value was not due to the patented feature and thereupon complainant moved to recommit the report for evidence of separate profits. *Held* that it was a proper exercise of discretion for the court to refuse the motion, as complainant, with full notice of defendants' claim, had chosen to rely entirely on his own theory of the case. [*Id.

DECREE.

(See Appeal to the Circuit Court of Appeals, 2, 3, 4.)

DEMURRER.

(See Parties to Suit, 4; State Statutes of Limitation; Trade-Marks, 5, 13)

DEPOSITIONS.

(See Interference, 7.)

DESCRIPTION.

(See Specifications.)

DESIGNS.

(See Drawings.)

1. TWO INDEPENDENT AND ALTERNATIVE DESIGNS CANNOT BE JOINED IN ONE PATENT.
While the law may permit claims in one Design patent for the entire Design and for constituent parts complete in themselves, the Patent Office will not permit independent ornamental inventions to be joined in one patent.
[*Ex parte* Petzold, 1789.

2. SAME.
The practice of the Office in refusing to permit independent and alternative mechanical inventions to be joined in one patent is warrant for a like refusal as to two independent and alternative Designs. [Id.

DISCLAIMERS.

(See Patents, 3.)

DIVISION OF APPLICATION.

(See Designs.)

1. PRACTICE.
If the Examiner is of the opinion that there is a want of divisibility of invention between the claims of an application and the claims of a patent to the same applicant, both applications having been pending concurrently, he should *reject* the claims of the application for that reason.
[*Ex parte* Feister, 152.

2. SAME.
In such a case a petition that the Examiner be instructed that the application is a division of the application for which a patent was granted will not be passed upon, since it presents a question relating to the merits of the case. [Id.

3. PRACTICE UNDER RULE 106—CERTIFIED COPY OF INTERFERING SUBJECT-MATTER.
When an applicant seeks to take advantage of the provisions of Rule 106, he should not be required to file a certified copy of the interfering subject-matter.
[*Ex parte* Perkins, 1015.

4. SAME—SUBSTITUTION OF DIVISIONAL APPLICATION—QUESTIONS FOR THE EXAMINER.
The only questions for the Examiner are whether or not the new application is a legitimate division of the earlier application and whether or not the original application is in proper condition for the substitution of the divisional application.
[Id.

DRAWINGS.

(See Designs.)

1. REQUIREMENT OF DRAWING.
The Office rule requiring line drawings in Design cases *Held* to apply to cases pending at the time of its adoption; but where in such a case the acceptance of a photograph had already been specially approved by the Commissioner ordered that the line-drawing be furnished by the Office.
[*Ex parte* Poole, 1655.

2. SAME—SECTION 4930, REVISED STATUTES.
The discretion implied in section 4930, Revised Statutes, as to the requirements of drawing or photograph in Design cases is vested in the Office and not in the applicant. [Id.

3. PHOTOGRAPHS—REQUIREMENT OF LINE-DRAWING—RULE 83.
The discretion under Rule 83 as to permitting the use of photographs in place of line-drawings vests in the Office and not in the applicant.
[*Ex parte* Petzold, 1789.

EARLIER AND LATER PATENTS TO SAME INVENTOR.

(See Construction of Specifications and Patents, 5.)

EQUIVALENTS.

(See Infringement, 2.)

EXAMINATION OF APPLICATIONS.

(See Division of Application, 1, 3, 4; Rejected Cases.)

EXAMINER OF INTERFERENCES.

(See Interference, 1, 6; Preliminary Statement.)

EXAMINERS.

(See Division of Application, 1, 4; Interference, 1; Rejected Cases.)

EXCEPTIONS TO MASTER'S REPORT.

(See Damages and Profits, 2.)

EXPERIMENTAL USE.

(See Abandoned Experiments.)

FEES.

(See Final Fee; Trade-Marks, 2.)

FEES IN TRADE-MARK CASES.

(See Trade-Marks, 2.)

FINAL FEE.

PAYMENT WITHIN THE SIX MONTHS MANDATORY—SECTION 4885, REVISED STATUTES.
That provision of section 4885 which requires the payment of a final fee within six months after its allowance is mandatory and leaves the Commissioner no discretion to accept it after the expiration of such time.
[*Ex parte* Anderson, 836.

FIRST AND ORIGINAL INVENTOR.

(See Priority of Invention.)

FOREIGN PATENTS.

(See Canadian Patents; Limitation of United States Patent by Foreign Patent Previously Granted.)

FORFEITED CASES.

(See Final Fee.)

FORMER DECISIONS AFFIRMED.

(See Witnesses.)

FORMER DECISIONS CONSTRUED.

(See Public Use, 2.)

FORMS OF OATH, ETC., PRESCRIBED BY THE PATENT OFFICE.

(See Rules of Practice.)

FUNCTIONS.

(See Construction of Specifications and Patents, 6; Rejected Cases, 2.)

IMPROVEMENTS.

(See Infringement, 3; Particular Patents, 9.)

INFRINGEMENT.

(See Damages and Profits; Injunction, 4; Particular Patents, 3, 4, 5, 12, 13; State Statutes of Limitation; Trade-Marks, 3, 4, 5, 6, 11, 13, 14.)

1. ANALOGOUS DEVICES—PAPER BOXES
The second claim of Letters Patent No. 171,866, issued January 4, 1876, to Reuben Ritter, for an improvement in paper boxes, describes a box consisting of a single sheet of paper and retaining its shape by the interlocking of flaps projecting from the sides into slots in the ends. The slots are perpendicular to the bottom of the box and made longer than the width of the flaps, so that when adjusted the straight edge of the flap engages with the straight edge of the slot and does not merely hook into the corner of it. In defendant's box the projections of the flaps are substantially the same as those of the patent.
[*American Paper Pail & Box Company *et al.* v. National Folding Box & Paper Company, 287.

2. CONSTRUCTION OF CLAIM—PROCESS.
The claim for "A new article of manufacture, a smoking pipe made of corncob, in which the interstices are filled with a plastic self-hardening cement, substantially as and for the purposes set forth," *Held* infringed when any plastic mixture—such as ground corncob and starch or ground corncob and shellac—which will set or harden is applied as a filler to the exterior surface of the bowl of a corncob pipe, and that it makes no difference whether the plastic self-hardening mass is moistened and mixed before it is applied or in the act of applying.
[*H. Tibbe & Son Manufacturing Company v. Lamparter, 497.

3. ASSIGNMENT—INFRINGEMENT BY PATENTEE.
A patentee assigned all his interest in a patent, agreeing not to manufacture or sell the patented machine or make any improvement thereon which would adapt it to any other kind of work. Subsequently the assignee sued him for infringement in making an improvement on the machine. *Held*, on motion for preliminary injunction, that in the light of the above contract, although the suit was not based thereon, the patentee was not in so favorable a position before a court of equity as one who infringes ignorantly or inadvertently and that the patent should be construed liberally as against him.

4. NOTICE TO DESIST—LACHES.
The defendants were notified to desist from infringement about eight months after knowledge thereof came to the plaintiff, and suit was begun within four months thereafter. *Held* that under the circumstances the delay did not constitute laches.
[*Loring v. Booth *et al.*, 1483.

INJUNCTION.

(See Appeal to the Circuit Court of Appeals; Infringement, 3; Trade-Marks, 3, 4, 12.)

1. PRELIMINARY INJUNCTION—PRIOR ADJUDICATION—APPEAL.
On appeal from a preliminary injunction the prior adjudication on which such injunction was based will, in the absence of some controlling reason, have the same weight with the Circuit Court of Appeals which it should have had with the circuit court which granted the injunction.
[*American Paper Pail & Box Company *et al.* v. National Folding Box & Paper Company, 287.

2. SAME.
The review of the interlocutory order for an injunction cannot be converted into a review of the final adjudication upon which it is based; but while the circuit court, upon a motion for an injunction, might deem itself constrained, contrary to its own judgment, to adopt the rulings of another circuit court upon questions of law made at final hearing, the Circuit Court of Appeals is at liberty to re examine such rulings, dispose of the questions of law conformably to its own convictions, and accord to the former adjudication such weight as in its own judgment such adjudication was entitled to upon the motion [*Id.

3. SAME—IMPROVEMENT IN PAPER BOXES—INFRINGEMENT.
The Circuit Court for the Southern District of New York having adjudicated the validity of the second claim of Letters Patent No 171,866, for an improvement in paper boxes, (41 Fed. Rep., 180,) thereafter granted a preliminary injunction, based upon such prior adjudication, against a third party, (48 Fed. Rep., 913,) no new defenses having been interposed. *Held*, on appeal to the Circuit Court of Appeals for the second circuit, that the prior adjudication would have the same weight with the Circuit Court of Appeals which it had with the circuit court.
[*Id.

4. BILL QUIA TIMET.
The right to an injunction rests on anticipated and threatened infringements, and where a bill avers reasonable ground for fearing such future infringements a failure to show prior infringements is unimportant except on question of damages.
[*Canton Steel Roofing Company v. Kanneberg *et al.*, 494

5. INTERLOCUTORY DECREE—ORDERS APPEALABLE TO CIRCUIT COURT OF APPEALS.
On a suit for infringement the court passed a decree for a perpetual injunction and accounting, and after an interval of more than two months defendants asked for a rehearing and a dissolution of the injunction. Pending this petition, and before its denial by the court, the Circuit Court of Appeals was created. *Held* that the order denying the petition for a dissolution of the injunction was not an interlocutory order or decree of continuance from which an appeal lies to this court within the meaning of section 7 of the act of March 3, 1891, establishing the Circuit Court of Appeals.
[*Boston and Albany Railroad Company *et al.* v. Pullman's Palace Car Company, 428.

6. PRELIMINARY INJUNCTION—EFFECT OF DECISIONS IN OTHER CIRCUITS.
Where Letters Patent have been twice sustained in another circuit, a preliminary injunction against infringers will issue as a matter of course, and such injunction will not be denied because of *ex parte* affidavits of alleged new evidence in respect to anticipation, especially when it appears doubtful whether such evidence was not known to the defendants in such prior cases, and that the defendant corporation herein was closely allied with the corporations defendant in the prior litigation and contributed to the expenses thereof, either directly or through its individual stockholders.
[*Brush Electric Company *et al* v. Accumulator Company *et al.*, 726.

7. SAME—WHEN BOND REQUIRED.
Where, however, such injunction will seriously affect defendants' business, and it appears that an appeal has been taken from the decisions in the other cases, the court will require complainants to give bond to secure payment of damages in case the injunction is subsequently dissolved. [*Id.

8. SUIT QUIA TIMET—PRELIMINARY INJUNCTION.
Although the complainant has not shown the manufacture by the defendants of the infringing articles, preliminary injunction will be granted based upon proof that they have kept such articles in stock and offered them for sale. Although the defendants may have no present intention of continuing such sales, in view of the fact that there is a final decision sustaining the patent, the court will exercise its discretion to secure the continuance of that intention by the granting of a preliminary injunction.
[*New York Belting and Packing Company v. Gutta-Percha and Rubber Manufacturing Company, 892.

INTERFERENCE.

(See Affidavits; Appeal in Interference Cases; Construction of Specifications and Patents, 5; Division of Application, 3; Preliminary Statement; Trade-Marks, 8, 9.)

1. MOTION TO DISSOLVE ON GROUND OF ESTOPPEL.
Where a party to an interference moved its dissolution on the ground that the opposing party was estopped by a prior interference, and appealed from the action of the Examiner of Interferences transmitting the case to the Primary Examiner for his decision, the appellant alleging that the Examiner of Interferences should have himself decided the motion, since it did not go to the right of the opposing party to make the claim involved, *Held* not to be a real distinction, and the Examiner of Interferences affirmed.
[Foglesong v. Hutt *et al*, 151.

2. MOTION TO VACATE AN INTERFERENCE JUDGMENT—REMISSNESS OF APPLICANT.
On a motion to vacate a judgment rendered in an interference, based upon a misunderstanding as to what applications were included, and where it appears that the Office action was clear and unequivocal, *Held* the Office will not interfere to cure mere remissness and inadvertence of an applicant, and the motion denied.
[Hunter v. Knight, 493.

3. INTERFERENCE—ABANDONMENT—FACTS WHICH SAVE FROM.
Sibbald filed application for a patent in September, 1887, which passed to issue in October, 1888, and became abandoned in October, 1890. Meanwhile Cassidy and Smith filed an application in February, 1890, and took a patent in June, 1890. Sibbald filed his second application in January, 1891. The proofs established priority of conception for Sibbald, and while satisfactorily accounting for his delay on the score of poverty showed that he took steps to file his second application before the two years' limit had expired. *Held* the facts save Sibbald's case from abandonment and judgment of priority in his favor.
[Sibbald v. Cassidy *et al.*, 568.

4. ASSIGNEE MAY PROSECUTE INTERFERENCE OF A DEAD INVENTOR.
The assignee of an entire interest may prosecute an interference on behalf of the application of his principal, who died while the interference proceedings were pending.
[Chase v. Ryder, 885.

5. PRIORITY IS THE ONE QUESTION IN AN INTERFERENCE.
The object of an interference is to determine priority of invention, and if that question is properly raised as to a pending application it ought to be tried to a final issue, leaving questions of abandonment or public use or proper parties to be decided at the proper time. [Id.

6. APPEAL ON INTERLOCUTORY MOTION.
Where the Examiner of Interferences refused to consider a motion to strike out a wife's testimony and reserved the question until final hearing, *Held*, on appeal to the Commissioner, that this was a proper subject for interlocutory action.
[Crawford v. Lichtenstein, 1480.

7. AFFIDAVIT UNDER RULE 75—WHAT IS.
A deposition taken in an interference proceeding is an affidavit within the meaning of Rule 75.
[*Ex parte* Keller, 1790.

INVENTION.

(See Particular Patents, 1, 2.)

1. SUBSTITUTION OF MATERIAL—ELECTRIC LAMP.
The substitution of a carbon filament for a platinum wire as the burner of an incandescent electric lamp in a peculiar lamp chamber involved invention, although pencils of carbon had before been used in other lamp chambers.
[*Edison Electric Light Company v. United States Electric Lighting Company, 564.

2. PROCESS—LASTING OF SHOES.
Where an applicant's claim is for a process accomplished by machinery, the steps being identical with the process commonly accomplished by hand labor, *Held* not patentable.
[Moulton, executor, v. Commissioner of Patents, 1480.

3. CHANGE OF STRUCTURE—NEW USE.
That upon the idea of making an improvement an adaptation of an old machine to the new purpose was proposed almost simultaneously by three distinct and independent parties by an alteration of mechanism slightly different structurally, but the same in principle in each case, is evidence that such change was obvious and did not involve invention.
[*Bromley Brothers Carpet Factory v. Stewart *et al.*, 1481.

INVENTION DESCRIBED BUT NOT CLAIMED.

(See Oath.)

JOINDER OF INVENTION.

(See Designs.)

LACHES.

(See Infringement, 3.)

LICENSES.

(See Parties to Suit.)

LIMITATION OF UNITED STATES PATENT BY FOREIGN PATENT PREVIOUSLY GRANTED.

(See Canadian Patents.)

1. CANADIAN PATENT—LIMITATION BY FOREIGN PATENT.
A prior Canadian patent issued for five years and extended for the further period of ten years should be regarded as having a continuous term for the entire period and as not limiting the United States patent to any shorter term.
[*Edison Electric Light Company v. United States Electric Lighting Company, 564.

2. LIMITATION ON FACE OF PATENT.
The failure to limit the patent on its face to a shorter term than seventeen years, so as to expire at the same time with the prior foreign patent having the shortest term, does not affect its validity. [*Id.

3. IF EARLIER PATENT TAKEN OUT IN FOREIGN COUNTRY—EFFECT UPON DOMESTIC PATENT.
Where a previously-granted foreign patent to the same inventor is not the same in its essential particulars with any one of the inventions which are claimed in the domestic patent, the latter is not limited in its term by the former.
[*Electrical Accumulator Company *et al.* v. Brush Electric Company, 886.

MARKING ARTICLES "PATENTED."

PATENT ON WOODEN DISH—STAMP ON CRATES—REVISED STATUTES, SECTIONS 4900, 4901—IMITATION—NO PENALTY.
The patentee of wooden dishes which might have been marked "Patented," etc., as required by section 4900, Revised Statutes, did not stamp the dishes, but only the crates in which they were packed. Upon a suit for penalties under the second paragraph of section 4901 against the defendants for placing a similar stamp upon crates of similar dishes made by the defendants without license, *Held*, on demurrer to complaint, that sections 4900 and 4901 must be construed together, that the stamping of articles capable of stamping was necessary, and that the stamping of the crates containing them was insufficient and was not protected by sections 4900 and 4901, and that a similar stamping of their own crates by the defendants did not render them liable to any penalty.
[*Smith v. Walton *et al.*, 289.

MASTER'S REPORT.

(See Damages and Profits.)

MECHANICAL SKILL.

(See Invention, 3; Particular Patents, 2.)

MISJOINDER.

(See Trade-Marks, 6.)

MOTION TO DISSOLVE AN INTERFERENCE.

(See Interference, 1.)

MOTION TO EXTEND TIME FOR FILING PRELIMINARY STATEMENT.

(See Preliminary Statement.)

MOTION TO STRIKE OUT TESTIMONY.

(See Interference, 6.)

MOTION TO VACATE JUDGMENT.

(See Interference, 2.)

NEW APPLICATION.

(See Abandoned Applications.)

NEW CLAIMS.

(See Oath.)

OATH.

SUPPLEMENTAL OATH—RULE 48.
It is not necessary that a supplemental oath filed under Rule 48 of the Rules of Practice specify the serial number and date of filing of the application to which it refers if the proposed amendment is otherwise properly identified.
[*Ex parte* Cook, 1460.

OLD ELEMENTS.

(See Particular Patents, 1.)

PARTICULAR PATENTS.

(See Infringement 1; Injunction, 3.)

1. BROMLEY—LOOMS—MECHANICAL ADAPTATION.
First claim of Patent No. 418,349, dated December 31, 1889, to Thomas Bromley, Jr., for a power-loom provided with a double shuttle-box on each side thereof, mechanism for operating said boxes pick and pick, and a mechanism which stops the loom after every two picks, does not embrace patentable novelty, in view of the fact that all of the elements were old, in exactly the connection in which they were used, except the stopping mechanism, which was adapted by a perfectly-obvious change from a closely analogous construction.
[*Bromley Brothers Carpet Factory *v.* Stewart *et al.*, 1481.

2. SAME.
The second claim of Patent No 418,349, dated December 31, 1889, to Thomas Bromley, Jr., for the combination, with a mechanism which stops the loom after every two shots of weft, of a mechanism which may be started by the foot, does not embrace patentable novelty, in view of the fact that the stop mechanism had been adapted by a perfectly-obvious change from a closely-analogous mechanism and that treadle mechanisms for starting a loom were old in connection with automatic mechanism for stopping it. [*Id.

3. BRUSH—SECONDARY BATTERIES—No. 266,090 CONSTRUED AND HELD NOT INFRINGED.
Letters Patent No. 266,090, issued October 17, 1882, to Charles F. Brush, for improvements in secondary batteries, construed in the light of the original application and of a set of contemporaneous applications filed by the same inventor and of other patents issued to him for related subject-matter, and *Held* not infringed, although the literal language of the claims, taken in connection with an amendment filed during the pendency of the application, (which amendment slipped by the scrutiny of the Patent Office,) is broad enough for a construction under which infringement must have been found.
[*Electrical Accumulator Company *et al. v.* Brush Electric Company, 886.

4. CHURCH—STEM-WINDING WATCH—INFRINGEMENT.
The first, third, fourth, fifth, and sixth claims of Letters Patent to Duane H. Church, July 3, 1888, No. 280,719, reissued August 4, 1885, No. 10,631, for stem-winding watch, construed and held valid and infringed by watch-movements manufactured by the appellant under and in accordance with Letters Patent to Thomas F. Sheridan, January 3, 1888, No. 376,015, reissued August 5, 1890, No. 11,100.
[*Illinois Watch Company *v.* Robbins and Avery, 721.

5. EDISON—INCANDESCENT ELECTRIC LAMP—PATENTABILITY—INFRINGEMENT.
The second claim of Letters Patent No. 223,898, issued to Thomas A. Edison, January 27, 1880, for an incandescent electric lamp consisting of a combination of carbon filaments with a receiver made entirely of glass, from which the air is exhausted, and conductors passing through the glass is valid, in view of the state of the art, and is infringed by defendant's lamps.
[*Edison Electric Light Company *v.* United States Electric Lighting Company, 564.

6. KENNA—CHILD'S CHAIR AND CARRIAGE—INFRINGEMENT—PATENTABLE NOVELTY.
Letters Patent No. 294,923, to Joseph W. Kenna, February 24, 1880, for a combined child's chair and carriage, are void for want of patentable novelty; but, in any event, they are not infringed by defendants.
[*Derby *et al. v.* Thompson *et al.*, 1950.

7. MAHON—BENDING-BLOCK—PATENTABLE INVENTION.
Letters Patent No. 337,006, issued March 2, 1886, to David C. Mahon and others, for a "bending-block," consisting of a block or former adapted to the bending or shaping of the loop in guide-rods for grain-car doors, are void for want of patentable invention.
[*Mahon *et al. v.* McGuire Manufacturing Company *et al.*, 1015.

8. MAYBAUM—DEBT INSURANCE.
Letters Patent No. 465,465, issued December 22, 1891, to Levy Maybaum, for means for securing against excessive losses by bad debts, being a plan of insurance against losses from bad debts based on estimates of the different percentages of loss in different lines of business and providing forms for ruling paper, with spaces for entering various details of the insurance transaction, are void for want of invention.
[*United States Credit System Company *v.* American Indemnity Company, 1169.

9. MOSHER—LIFTING-JACKS—IMPROVEMENTS.
Letters Patent Nos 166,663 and 172,471, issued to Samuel E. Mosher, October 11, 1875, and January 18, 1876, respectively, for lever lifting-jacks, are for improvements only, and not for an entirely new machine or jack.
[*Mosher *v.* Joyce *et al.*, 153.

10. REED—NON-CONDUCTING COVERING FOR STEAM-BOILERS AND PIPES—REISSUE—ENLARGEMENT OF CLAIMS.
Letters Patent No. 171,496, issued December 21, 1875, to John C. Reed, for a non-conducting covering for "boilers, steam, water, and other pipes," claimed a covering composed of layers or wrappings of paper saturated with adhesive material and compressed while being formed into tubular sections "of a thickness of one-half inch or more," substantially as described. A reissue of the patent—No. 8,752, granted June 10, 1879—omitted from the claims the quoted words. *Held* that this was an enlargement of the claim, rendering the reissue invalid, and that this effect could not be avoided on the theory that a covering of less than half an inch would not constitute the "thorough non-conductor" of the specifications; for, while a less thickness might not be sufficient for boilers and steam-pipes, it manifestly would be for "water and other pipes." (48 Fed. Rep., 446, reversed.)
[*American Heat Insulating Company, Limited, *et al. v.* Johnston & Co., Limited, 1793.

11. ROOT—CABLE RAILWAYS—INFRINGEMENT—PUBLIC USE.
Letters Patent No. 262,126, to Henry Root, August 1, 1882, for an improvement in the construction of cable railways, are void by reason of public use of the invention by the patentee for more than two years prior to the filing of his application.
[*Root *v.* Third Avenue Railway Company, 1947.

12. SMITH—SHEET-METAL ROOFING—INFRINGEMENT.
Letters Patent No. 188,079, issued March 6, 1877, to Henry W. Smith, for improvement in sheet-metal roofing, sustained and held infringed by Kanneberg's patent, No. 403,844, issued May 21, 1889.
[*Canton Steel Roofing Company *v.* Kanneberg *et al.*, 424.

13. TIBBE—CORNCOB PIPE—INFRINGEMENT.
Letters Patent No. 205,816, granted July 9, 1878, to Henry Tibbe, for a pipe made of corncob, *Held* infringed.
[*H. Tibbe & Son Manufacturing Company *v.* Lamparter, 427.

PARTIES TO SUIT.

(See Suits for Infringement; Trade-Marks, 6, 13.)

1. PARTIES COMPLAINANT NEED NOT INCLUDE HOLDERS OF TERRITORIAL RIGHTS.
The holder of a specified territorial right in a patent, either as licensee or assignee, is not a necessary party complainant to a suit for infringement outside his own territory.
[*Canton Steel Roofing Company *v.* Kanneberg *et al.*, 424.

2. ACTION FOR INFRINGEMENT BY PATENTEE AND LICENSEE.
A joint suit for infringement of a patent cannot be maintained by the patentee and the licensee whose license conveys no exclusive monopoly.
[*Blair *et al. v.* Lippincott Glass Company, 1792.

3. LICENSE—ESTOPPEL.
A license to manufacture lime-glass chimneys under a patent granted by the patentee with others does not estop the licensee from objecting that such other parties cannot be joined with the patentee in an action against the licensee for infringement by manufacturing lead-glass chimneys without a license. [*Id.

4. PLEADING—DEMURRER—FACTS NOT SUFFICIENT FOR JOINT CAUSE OF ACTION.
Where in a joint complaint by two or more parties the facts stated do not show a joint cause of action in them a demurrer on the ground that the complaint does not state facts sufficient to constitute a cause of action must be sustained. [*Id.

PATENTABILITY.

(See Invention, 2; Public Use.)

PATENTS.

(See Certificates of Correction; Construction of Specifications and Patents; Limitation of United States Patent by Foreign Patent Previously Granted.)

1. PATENTS ISSUED ON SAME DAY—SENIORITY UNDETERMINABLE—OWNER BEING OWNER OF BOTH MAY ELECT.
Where two patents exist for the same invention, the applications for which were filed on the same day by the same inventor, the patents were issued on the same day, and are owned by the same person, and the testimony shows that it can never be ascertained which patent actually first received the final signature which rendered it a complete and legal deed, *Held* that there are no known presumptions which can be resorted to upon which to base a finding as to which of the two is the earlier patent, and *Held* that the owner of both patents has the right to elect the one upon which it will rest its title to a monopoly, even though that one be the one having the higher or later serial number.
[*Electrical Accumulator Company *et al. v.* Brush Electric Company, 886.

2. SAME—EFFECT UPON NON-ELECTED PATENT.
Held, also, that in such case in connection with the finding of validity of the one patent the court should adjudge the other patent to be inoperative and should prohibit its assignment or sale. [*Id.

3. SAME—DISCLAIMER.
Held that in such case, where the patentee was the actual and first inventor of the whole of the described and patentable thing which is specified in the patent, the sections of the statutes in regard to disclaimer were not intended to apply and do not apply. [*Id.

PAYMENT OF FEE.

(See Final Fee.)

PENALTIES UNDER SECTION 4901, REVISED STATUTES.

(See Marking Articles "Patented.")

PETITION TO COMMISSIONER.

(See Division of Application, 2.)

PHOTOGRAPHS.

(See Drawings.)

PLEADINGS.

(See Bill in Equity.)

PRACTICE IN THE COURTS.

(See Appeal to the Circuit Court of Appeals; Bill in Equity; Damages and Profits, 2; Injunction; Parties to Suit; Priority of Invention; State Statutes of Limitation; Suits for Infringement; Trade-Marks, 5, 6.)

PRACTICE IN THE PATENT OFFICE.

(See Abandoned Applications; Affidavits; Appeal in Interference Cases; Division of Application; Drawings; Interference; Preliminary Statement; Rejected Cases; Rules of Practice; Witnesses.)

PRELIMINARY STATEMENT.

MOTION TO EXTEND TIME FOR FILING PRELIMINARY STATEMENT—RULE 104.
The provision of Rule 104 which gives the Examiner of Interferences discretion to dispense with service on an opposing party of notice of motion to extend time for filing preliminary statement does not contemplate a case where such service can be reasonably effected, and it should not be exercised in such a case.
[*Illinois Watch Company *v.* Robbins and Avery, 721.

PRIOR ADJUDICATION.

(See Injunction, 1, 2, 3.)

PRIORITY OF INVENTION.

(See Interference, 3, 5.)

PRIORITY OF INVENTION—WHEN RES ADJUDICATA.
The question of priority of invention as between rival inventors having been once thoroughly tried and decided, and the defeated party's assignee having in consequence disclaimed the invention as the condition of obtaining a decree on a narrower and different invention, a renewal of a discussion of the question of priority by that assignee in a suit against it for infringement of the rival inventor's patent is useless.
[*Electrical Accumulator Company *et al. v.* Brush Electric Company, 886.

PROCESS.

(See Construction of Specifications and Patents, 6; Invention, 2; Rejected Cases, 2.)

PUBLIC USE.

(See Interference, 5.)

1. WHAT IS A PUBLIC USE.
Where an inventor disclosed his invention to a company which adopted it and put it into complete and practical operation in and for the ordinary purposes of trade and commerce, and where it appears that the inventor regarded his invention as complete at the time of its adoption by such company, such use for more than two years before application for patent is a public use within section 4886, Revised Statutes, and not one of experiment.
[*Root *v.* Third Avenue Railway Company, 1947.

2. CASES DISTINGUISHED.
Elizabeth v. *Pavement Co.* (97 U. S., 126) distinguished and *Smith & Griggs Mfg. Co.* v. *Sprague* (41 O. G., 1037; 123 U. S., 249) and *Hall* v. *Macneale* (23 O. G., 937; 107 U. S., 90) cited and commented on. [*Id.

REFUNDMENT OF FEES.

(See Trade-Marks, 2.)

REJECTED CASES.

1. RULE 65—PRACTICE.
Rule 65 provides that when a case is rejected by an Examiner "the reasons for such rejection will be fully and precisely stated, and such information and references will be given as may be useful in aiding the applicant to judge of the propriety of prosecuting his application or of altering his specification," and when an applicant receives an Office letter stating objections to his application and he, without demanding action under said rule, proceeds to ask for a reconsideration, which ultimately results in a second rejection, he has waived any right he may have had under the rule.
[*Ex parte* Mahlecke, 285.

2. FUNCTIONAL CLAIM—COURSE OF APPEAL.
The question whether or not a claim for a so called "process" is a claim for the function of a particular machine is one relating to the merits. The Examiner's action in such a case should take the form of a *rejection* and appeal therefrom will lie to the Examiners-in-Chief. (Citing *ex parte McClellan*, 59 O. G., 1763.)
[*Ex parte* Williams, 423.

3. THE MCDONOUGH TELEPHONE APPLICATION HELD FINALLY REJECTED BY DECISION IN MCDONOUGH *v.* GRAY *v.* BELL *v.* EDISON, (C. D., 1889, 9.)
The decision of the Commissioner of Patents in *McDonough v. Gray v. Bell v. Edison* (C. D., 1889, 9) was a final rejection of the McDonough application, and the Examiner upheld in refusing to consider an amendment thereon subsequently offered by the applicant.
[*Ex parte* McDonough, 1479.

REJECTION OF CLAIMS.

(See Division of Application, 1.)

RENEWAL OF ABANDONED APPLICATIONS.

(See Abandoned Applications.)

RES ADJUDICATA.

(See Priority of Invention.)

RULES OF PRACTICE.

FORMS FOR APPLICATIONS, OATHS, ETC., FURNISHED BY THE PATENT OFFICE.
The forms given in the Rules of Practice are merely suggestive and not mandatory.
[*Ex parte* Cook, 1480.

SENIORITY OF PATENTS ISSUED ON SAME DAY.

(See Patents.)

SPECIFICATIONS.

(See Construction of Specifications and Patents, 1.)

SUFFICIENCY OF SPECIFICATION.
The word "filament," used as descriptive of the size of the burner, is sufficiently definite in view of illustrations in the specification and it is not necessary that its maximum and minimum dimensions should be specified, especially since defendant's burners indisputably lie wholly on one side of the dividing-line between rods and filaments.
[*Edison Electric Light Company *v.* United States Electric Lighting Company, 564.

STATE STATUTES OF LIMITATION.

INFRINGEMENT—STATE STATUTES OF LIMITATION
Defendant in an action at law for infringement of patent pleaded State statutes of limitation, to which plaintiff demurred. Demurrer sustained for the purposes of this particular case; but the applicability of such statutes to actions for infringement under the patent laws discussed and upheld.
[*Brickill *et al. v.* Mayor, etc., of Baltimore, 1791.

SUITS FOR INFRINGEMENT.

(See Damages and Profits; Infringement, 3; Parties to Suit; Priority of Invention; State Statutes of Limitation.)

ABATEMENT BY DISSOLUTION OF COMPLAINANT.

Notwithstanding the merger of the complainant with another company into a new corporation, the law of the State of New York providing that pending suits shall not be deemed to have been abated or discontinued by reason of any such consolidation is effective to accomplish that end.

[*Edison Electric Light Company *v.* United States Electric Lighting Company, 564.

SUITS FOR PENALTIES UNDER SECTION 4901, REVISED STATUTES.

(See Marking Articles "Patented.")

TECHNICAL TERMS.

(See Specifications.)

TERM OF PATENT.

(See Limitation of United States Patent by Foreign Patent Previously Granted.)

TESTIMONY.

(See Interference, 6; Witnesses.)

TRADE-MARKS.

1. EFFECT OF REGISTRATION UNDER ACT OF 1870 FOR PURPOSES OF INTERFERENCE WITH PRESENT APPLICATION.

Where the subject-matter of application for Trade-Mark is clearly anticipated by a mark registered under the act of 1870, and the Examiner properly refused to declare an interference because of the nullity of such prior registration, and also properly refused registration to the present applicant because the prior registry makes the mark an anticipation, *Held* the proper course for the Office in such a case is to give the applicant under the law of 1870 notice that an application is pending with which his registry would interfere if it were under the existing act and allow him sixty days to make a new application.

[*Ex parte* American Lead Pencil Company, 151.

2. REFUNDING FEES PAID BY MISTAKE—RULE 224.

Where the domestic branch of a business firm having offices in this country and abroad filed application for Trade-Mark registration, and subsequently learned that application for the same mark had already been filed through the London agent, *Held* that the second filing was a case of mistake under the law, and the fee refunded.

[*Ex parte* Finlayson, Bousfield & Co., 152.

3. FRAUDULENT IMITATION—EVIDENCE.

Complainant, California Fig Syrup Company, manufactured a syrup from figs and put it up in packages, having as a device thereon a fig-tree, with leaves and fruit, and the words "Syrup of Figs," as a Trade-Mark. Respondent, Improved Fig Syrup Company, made and put up the same article in a package with the same device and the words "Improved Syrup of Figs" as a Trade-Mark. Respondent, on remonstrance, changed its device to the figure of a woman holding up a fig, with the words "Fig Syrup" as a Trade-Mark, all of which occupied the same place and space on the package as complainant's device and was, besides, an imitation of complainant's newspaper advertising device. *Held* that complainant was entitled to an injunction.

[*California Fig Syrup Company *v.* Improved Fig Syrup Company, 185.

4. SAME—EFFECT OF PLAINTIFF'S DECEPTION.

The fact that plaintiff's Trade-Mark, "Syrup of Figs," being merely descriptive, was deceptive as a designation of the compound did not affect plaintiff's right to an injunction, the matter in controversy being not the right to the exclusive use of the words, but respondent's simulation of complainant's devices and packages with a view to deceive customers. [*Id.

5. SAME—PLEADING.

An objection to the bill on the ground that it was uncertain whether complaint was made of the use of the words "Fig Syrup" or "Syrup of Figs" by themselves or in combination with other words, devices, etc., could not be sustained, it being enough for the purposes of a demurrer that complainant was entitled to relief in respect of the combined use, which was clearly set forth in the bill. [*Id.

6. SAME—PARTIES.

The bill alleged that respondents B. and others were using respondent corporation as a means of infringement, they being themselves substantially the corporation. *Held* that there was no misjoinder in making them parties defendant. [*Id.

7. JOINT OWNERS—INDEPENDENT REGISTRATION BY ONE.

An applicant will not be granted independent registration of a Trade-Mark when it appears that he is one of two or more parties who have a right to use such mark, section 2 of the Trade-Mark act requiring it to appear that than the applicant "no other person, firm, or corporation has the right to such use."

[*Ex parte* Langdon *et al.*, 256.

8. INTERFERENCE—PRIORITY OF USE.

The dates of adoption as set forth in interfering applications for the registration of a Trade-Mark are not conclusive as to the question of lawful title to the mark.

[Stewart *v.* Einstein *v.* Sawhill, 287.

9. SAME—ADOPTION AND USE—OWNERSHIP.

The main question to be determined in a Trade-Mark interference is priority of such adoption and use as will establish ownership, and this will not be determined in advance of the evidence introduced by the parties in the usual way. [Id.

10. WHAT WILL BE PROTECTED—STAR.

The word "Star" and the symbol of a star, adopted and used during many years by manufacturers of shirts, waists, underwear, and furnishing goods to mark and designate their goods, in combination with the words "Star Shirts" and other words describing the articles, so that the goods become well known by such mark and by the designation of "Star Goods," constitute a valid Trade-Mark.

[*Hutchinson *et al. v.* Blumberg, 1017.

11. SAME—INFRINGEMENT.

Such Trade-Mark is infringed by marking similar goods with a star and crescent, making the star so prominent that such goods may also be designated as "Star Goods," and purchasers may be readily deceived into the belief that the goods were made by the proprietors of the Trade-Mark, even though the star so used is not of the color usually employed for the Trade-Mark, and of a five-pointed star, while that in the Trade-Mark is uniformly six-pointed. [*Id.

12. SAME—INJUNCTION.

The facts that the infringer of a Trade-Mark, on being notified of his infringement, told his customers to erase the Trade-Marks from their goods and had since gone out of business, are not ground for denying an injunction to the true owner of the Trade-Mark, where every step of the suit for an injunction and accounting has been contested by the infringer, and he has put the complainants to the expense of proving every fact necessary to establish their right and his infringement. [*Id.

13. INFRINGEMENT—BILL AGAINST CORPORATION—JOINDER OF DIRECTORS AS PARTIES DEFENDANT.

In a bill against a corporation for infringing a Trade-Mark plaintiff included the directors of the defendant corporation as parties defendant. Upon demurrer, *Held* not a misjoinder, and demurrer overruled.

[*Armstrong & Co *v.* Savannah Soap Works, 1018.

14. INFRINGEMENT—DECEPTIVE REPRESENTATIONS.

Independently of any right of complainants to the exclusive use as a Trade-Mark of the name applied by them to their product the sale by defendants of a deleterious substance represented by the latter to be in part or in whole the same substance in which complainants are dealing, and of which they are the sole producers, and which is admittedly of a beneficial character will be restrained.

[*City of Carlsbad *et al. v.* Tibbetts *et al.*, 1166.

USE AND SALE OF PATENTED ARTICLES.

(See Injunction, 8.)

VACATION OF JUDGMENT.

(See Interference, 2.)

VALID PATENTS.

(See Particular Patents, 4, 5, 12.)

VALIDITY OF PATENTS.

(See Patents, 2.)

VOID PATENTS.

(See Invention, 2; Particular Patents, 1, 6, 7, 8, 10, 11, 12, 13; Patents, 2.)

WIFE AND HUSBAND

(See Witnesses.)

WITNESSES.

WIFE IS AN INCOMPETENT WITNESS.

A wife is non-competent as a witness in proceedings before the Patent Office where her husband is a real party in interest and her testimony is offered on his behalf. (Affirming *Dobeck v. Novotny*, 58 O. G., 804.)

[Crawford *v.* Lichtenstein, 1480.

ALPHABETICAL LIST OF PATENTEES

FOR

THE QUARTER ENDING DECEMBER 31, 1892.

[Claims and drawings of Designs do not appear in the Monthly Volumes. Separate indexes for Designs, Trade-Marks, and Disclaimers follow this.]

Name, residence, and invention.	No.	Date.	Monthly volume.		Official Gazette.	
			Specification.	Drawing.	Volume.	Page.
A. B. Pullman Company. (See Pullman, Albert B., assignor.)						
A. J. Hartford Steel Railway Tie Manufacturing Company. (See Hartford, Arthur J., assignor.)						
Aaronson, Israel M., New York, N. Y. Tronsers-protector	485,807	Nov. 8	985	264	61	791
Abbé, Richard W. F., Brooklyn, assignor to J. R. Alsing Company, New York, N. Y. Treating oxidized or corroded lead	485,730	Nov. 8	893	239	61	772
Abbott, Cary F., Nashua, N. H. Ash-sifter	487,009	Nov. 29	2961	763	61	1232
Abbott, Chauncy, *et al.* (See Dickey, Foster, assignor.)						
Abbott, George F., New Haven, assignor, by mesne assignments, to A. W. Curtis, Meriden, A. M. and F. W. Sigourney, Bristol, Conn., and G. S. Mason, Brooklyn, N. Y. Lock	486,420	Nov. 22	1985	527	61	1023
Abbott, William H., Lennoxville, Canada. Speed-indicator	487,702	Dec. 13	753	{193 {194	{61	1487
Abell, William P. (See Fletcher and Abell.)						
Abendroth & Root Manufacturing Company. (See Rice, Harvey D., assignor.)						
Abojador, Sebastian, Madrid, Spain. Machine for preparing or reducing and comminuting tobacco for cigarettes	485,483	Nov. 1	510	134	61	676
Aborn, Alonzo R., Norwich, Conn. Rack for holding and draining liquid-measures	483,664	Oct. 4	216	53, 54	61	44
Abram, Julius H., Akron, Ohio. Photograph-display rack	486,748	Nov. 22	2491	651	61	1124
Abrams, George H., Brooklyn, N. Y. Attachment for brooms	486,066	Nov. 8	1403	371	61	875
Accles, James G. (See Grenfell and Accles.)						
Accles, James G., Birmingham, England. Feed mechanism for machine-guns	487,238	Dec. 6	1	1, 2	61	1321
Accurate Time Stamp Company. (See Martin, William H., assignor.)						
Accurate Time Stamp Company. (See Stahlberg, Charles, assignor.)						
Ach, Fritz, Mannheim, assignor to C. F. Boehringer & Soehne, Waldhof, near Mannheim, Germany. Eugenol benzyl-ether and preparing same	487,167	Nov. 29	3205	.....	61	1281
Ach, Fritz, Mannheim, assignor to C. F. Boehringer & Soehne, Waldhof, near Mannheim, Germany. Preparing vanillin	487,204	Nov. 29	3261	.....	61	1291
Ach, Fritz, Mannheim, assignor to C. F. Boehringer & Soehne, Waldhof, near Mannheim, Germany. Isoeugenol benzyl-ether and preparing the same	487,205	Nov. 29	3263	.....	61	1291
Ackerman, Howard U., North Indianapolis, Ind. Rack	487,594	Dec. 6	576	147	61	1436
Acosta, John L., Vera Cruz, Mexico. Fiber-preparing machine	485,903	Nov. 8	1138	{301 {309	{61	822
Adams, George E., Providence, R. I. Buckle	484,279	Oct. 11	1154	294	61	948
Adams, George E., Providence, R. I. Clasp	486,342	Nov. 15	1693	448	61	950
Adams, George E., Providence, R. I. Garment-supporter	487,689	Dec. 6	735	188	61	1406
Adams, George E., Providence, R. I. Suspender cast-off	487,690	Dec. 6	736	188	61	1406
Adams, George E., Providence, R. I. Buckle	488,174	Dec. 20	1559	391	61	1667
Adams, George E., Providence, R. I. Buckle	488,175	Dec. 20	1560	391	61	1667
Adams, Hanson H., Everett, Mass. Carving-machine	488,047	Dec. 13	1343	333	61	1606
Adams, John, Chicago, Ill. Money-changer	483,973	Oct. 4	679	{169 {170	{61	140
Adams, John Q., Jamaica, Vt. Propeller	484,511	Oct. 18	1524	387	61	332
Adams, Russell B. (See Bennett and Adams.)						
Adgate, Joseph J., Liberty, N. Y. Jack	488,300	Dec. 20	1759	443	61	1705
Adkins, Stephen J., Grand View, Tex. Corn or cotton planter attachment	487,941	Dec. 13	1157	289	61	1567
Adler, Elkan, Jersey City, N. J. Veneer-cutting machine	484,623	Oct. 18	1691	429	61	366
Adler, Henry, Allegheny, Pa. Burner for burning gaseous fuel	485,594	Nov. 1	673	179	61	712
Adriance, Platt & Company. (See Brown, Thomas S., assignor.)						
Adrianson, John, Chicago, Ill. Stove screen and fender	485,363	Nov. 1	334	88	61	641
Agnew, James F. (See Werling and Agnew.)						
Ahrens, William. (See Sobotka and Ahrens.)						
Aiken, Henry. (See Babbitt, Seward S., assignor.)						
Aiken, Henry, Pittsburg, Pa. Rolling-mill	484,767	Oct. 25	1939	495	61	431
Aiken, Henry, Pittsburg, Pa. Guide device for rolling-mills	484,768	Oct. 25	1940	{495 {496	{61	431
Aiken, Henry, Pittsburg, Pa. Cooling-bed for metal beams and rails	486,364	Nov. 15	1886	{496 {497 {498 {499	{61	989
Aishton, George F., Rochester, N. Y. Faucet-filter	485,024	Oct. 25	2372	610	61	516

Alphabetical list of patentees, October to December, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Akins, Lest. (See Goodenberger and Akins.)						
Aktiebolaget Separator. (See Folk, Jesse E., assignor.)						
Aktiebolaget Separator. (See Hart, Frederick, assignor.)						
Aktiebolaget Separator. (See Jönsson, Johan L., assignor.)						
Aktiebolaget Separator. (See Laval, Carl G. P. de, assignor.)						
Albany Horse Nail Company. (See Williams, David F., assignor.)						
Albee, George, Susquehanna, Pa. Lamp-hanger	487,977	Dec. 13	1205	301	61	1577
Albin, Elmer E., Springfield, Ohio. Hitching device	486,842	Nov. 29	2657	695	61	1173
Albin, Elmer E., Springfield, Ohio. Lifting-jack	486,922	Nov. 29	2826	731	61	1206
Albin, Herman, Louisville, Ky. Rocking-chair exhibitor	485,831	Nov. 8	1021	274	61	798
Albro, Charles E., Philadelphia, Pa. Worm-gear	486,318	Nov. 15	1819	480	61	977
Alderson, William N. E., and J. W. Allen; said Alderson assignor, and said Allen assignor of one-third, to E. R. Ray, Eureka Springs, Ark. Clamp	483,925	Oct. 4	458	114	61	94
Aldrich, Albert T., Worcester, Mass. Combined cape and cap	484,945	Oct. 25	2241	577	61	491
Alexander, Isaac Z., and A. B. Martindale, Hartford City, Ind. Swing	487,141	Nov. 29	3166	811	61	1273
Alexander, John F., Washington, D. C. Explosive	488,534	Dec. 27	2147	.....	61	1797
Alexy, Hugo, Buda-Pesth, Austria-Hungary. Rail-fastening	485,159	Nov. 1	1	1	61	573
Algeo, William G. (See McCool and Algeo.)	483,518	Oct. 4	1	1	61	3
Algonquin Manufacturing Company. (See Chase, Oliver R., assignor.)						
Allam, Edwin P., Romford, assignor of one-half to E. R. Dolby, London, England. Holder for incandescent lamps	483,974	Oct. 4	682	170	61	141
Allan, John W., assignor of one-half to A. G. Schlener, Minneapolis, Minn. Auxiliary fire-pot	486,067	Nov. 15	1407	373	61	895
Allard, Louis A. (See Chabaud, Van Heers, and Allard.)						
Allen, Alonzo W., Philadelphia, Pa. Shuttle-bobbin winder	488,176	Dec. 20	1560	391, 392	61	1667
Allen, Augustus L., Poughkeepsie, N. Y. Apparatus for the manufacture of gas	484,624	Oct. 18	1692	429, 430	61	367
Allen, Bluford F. (See Goodson, William T., assignor.)						
Allen, Charles A., *et al.* (See Wallace and Stemm, assignors.)						
Allen, Charles M., San Francisco, Cal. Range-finder	484,726	Oct. 18	1854	471, 472	61	399
Allen, David H. (See Gamble and Allen.)						
Allen, Eliza, New York, N. Y. Dress-trimming	485,731	Nov. 8	894	240	61	772
Allen, George L., Worcester, Mass. Construction of cast-iron radiators	485,757	Nov. 8	924	248	61	779
Allen, Henry L. (See Pullman, Herbert S., assignor.)						
Allen, Herbert B., St. Louis, Mo., assignor of one-half to J. E. A. Hussey, Brookline, Mass. Paper-knife	483,519	Oct. 4	2	1	61	3
Allen, James W. (See Alderson and Allen.)						
Allen, William H. (See Purcell, John J., assignor.)						
Allen, William H., Detroit, Mich. Fly-paper holder	487,505	Dec. 6	448	116	61	1410
Allendale Company. (See Clark, Jerome B., assignor.)						
Allgier, Andrew. (See Lytle, Alton A., assignor.)						
Allgood, Charles B., Petersburg, Va. Combined pump and dripper for vessels	483,757	Oct. 4	351	88	61	73
Allington, William E., East Saginaw, Mich. Electric locomotive	486,068	Nov. 15	1408	373, 374	61	895
Allis, Thomas V., New York, N. Y. Metallic fencing	486,173	Nov. 15	1503	421	61	930
Allis, Thomas V., New York, N. Y. Method of and apparatus for twisting metallic strips	486,174	Nov. 15	1503	422	61	931
Allison, Alonzo B., and G. B. Scott, Pittsburg, Pa. Mast-arm for electric-light poles	484,565	Oct. 18	1601	407	61	348
Allison, James E., Nashville, Tenn. Portable fare receiver and register	487,168	Nov. 29	3206	821, 822	61	1281
Allman, Frank M. (See McEwan, Peter H., assignor.)						
Almeida, Joaquin J. d', and J. Y da Silva, Lisbon, Portugal. Electric fire-alarm	484,386	Oct. 18	1319	337	61	293
Almén, Karl, Stockholm, Sweden, assignor to F. M. Weiler's Liberty Machine Works, Berlin, Germany. Printing-press	486,365	Nov. 15	1890	499, 500	61	990
Alpress, George T., Bristol, Conn. Trace-lock	487,463	Dec. 6	385	100	61	1397
Alsip, Frank, Chicago, Ill. Setting brick in kilns	484,170	Oct. 11	974	249	61	213
Alter, Fred P. (See Hill and Alter.)						
Althouse, Milo J., *et al.* (See Bunker, Harman, assignor.)						
Althouse, Milo J., Waupun, Wis. Adjustable brace for windmill-towers, &c	483,520	Oct. 4	2	1	61	3
Altoft, George F., Carlton, Mich. Shoe for expanding horses' hoofs	488,535	Dec. 27	2148	531	61	1797
Amend, Edward B. (See Heimann, Salomon, assignor.)						
American Art Stove and Mantel Company. (See Ruehle and Schmidt, assignors.)						
American Automatic Lighting Company. (See Cody and Lawton, assignors.)						
American Bell Telephone Company. (See Hayes and Richards, assignors.)						
American Bell Telephone Company. (See Jacques, William W., assignor.)						
American Bell Telephone Company. (See Stone, John S., assignor.)						
American Bell Telephone Company. (See White, Anthony C., assignor.)						
American Biscuit and Manufacturing Company. (See Langlée, Justin J., assignor.)						
American Electric Heating Company. (See Mitchell, Willis, assignor.)						
American Fiber Association. (See Brown, John H., assignor.)						
American Fire Engine Company. (See Nieman, Hiram H., assignor.)						
American Harrow Company. (See Fraser, John, assignor.)						
American Indicator Company. (See Turner, William A., assignor.)						
American Injector Company. (See Trix, John, assignor.)						
American Leather and Membranoid Company. (See Deckert, James W., assignor.)						
American Light and Fuel Company. (See Langberg, Oscar, assignor.)						
American Press Association. (See Cummings, John R., assignor.)						
American Rapid Motor Company. (See Sheffield, George V., assignor.)						
American Saw Company. (See Brooke, William E., assignor.)						
American Soda Fountain Company. (See Ormerod, John, assignor.)						
American Steam Gauge Company. (See Kinney, Ames P., assignor.)						
American Steel Wheel Company. (See Cushing, George W., assignor.)						
American Steel Wheel Company. (See Cushing and Rampe, assignors.)						
American Sugar Refining Company. (See Sternberg, Lothar, assignor.)						
American Sulphite Pulp Company. (See Russell, George F., assignor.) (Reissue.)						
American Water Transportation Company. (See Briggs, Frank H., assignor.)						
Ames, Frederick A., Owensborough, Ky. Whip-socket	487,814	Dec. 13	951	240	61	1597
Ames, George, Green Ridge, Mo. Check-row planter	487,506	Dec. 6	449	116	61	1410
Ames, Ellewilton L. (See Claflin and Ames.)						
Ames, Alexander M., Buffalo, N. Y. Potato-masher	488,668	Dec. 27	2359	584	61	1839
Ames, William, Providence, R. I. Insect-trap	485,077	Oct. 25	2447	630	61	532

Alphabetical list of patentees, October to December, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Anchor Pearl Company. (See Taft, Walter E., assignor.)						
Anchor Pearl Company of Portland, Me. (See Taft, Walter E., assignor.)						
Anderson, Albert, Boston, Mass. Trolley-wire insulator	484,280	Oct. 11	1155	294	61	248
Anderson, Anders G., Chicago, Ill. Drawbridge-gate	486,843	Nov. 29	2658	695, 696	61	1173
Anderson, Benjamin B. (See Lomax and Anderson.)						
Anderson, George W., and G. M. Huntington, Ladoga, Ind. Expanding device for use in making wash-boilers	485,078	Oct. 25	2447	630	61	532
Anderson, James C., Highland Park, Ill. Manufacturing or burning coke	485,904	Nov. 8	1139	302	61	822
Anderson, James J., Chicago, Ill. Metal-rolling machine	488,048	Dec. 13	1347	334	61	1606
Anderson, John, assignor to Pierce Steam Heating Company, Buffalo, N. Y. Flask-weight for molds	488,513	Dec. 20	2105	532	61	1775
Anderson, Niels, Sioux City, Iowa. Harrow	485,677	Nov. 8	804	214, 215	61	754
Anderson, Olof W., Moorhead, Minn. Copying appliance	483,679	Oct. 4	236	50	61	49
Anderson, Peter, New York, N. Y. Piano	488,915	Dec. 27	2744	677	61	1918
Anderson, Robert M., *et al.* (See Hudgins, George E., assignor.)						
Anderson, William F. (See Gustafson, Axel R., assignor.)						
Anderson, William S., *et al.* (See Hudgins, George E., assignor.)						
Andersson, Gustaf M., Newark, N. J., assignor to United States Butter Extractor Company, New York, N. Y. Centrifugal butter-extractor	487,316	Dec. 6	129	39	61	1346
Andre, Elias C., Bay City, Mich. Extension step-ladder	486,069	Nov. 15	1412	374	61	896
Andrews, George M., Boston, Mass. Calculating-instrument	486,070	Nov. 15	1413	374	61	896
Andrews, James M., Syracuse, N. Y. Journal-bearing	487,815	Dec. 13	952	240, 241	61	1528
Angell, Edwin E. (See Burton and Angell.)						
Angell, Edwin E., Somerville, Mass., assignor to Electrical Forging Company, of Maine. Journal-box	486,175	Nov. 15	1595	422	61	931
Anger, John E., Green Island, N. Y. Car-brake	484,693	Oct. 18	1809	460	61	390
Angerer, Victor. (See Samuel, Angerer, and Pallander.)						
Angerer, Victor, assignor to William Wharton, Jr., and Company, Philadelphia, Pa. Combined foot and brace for railway-rails	483,889	Oct. 4	544	137	61	113
Angerer, Victor, and C. A. Pallander, assignors to William Wharton, Jr., & Company, Incorporated, Philadelphia, Pa. Track structure	488,377	Dec. 20	1894	474	61	1731
Angier, O. M. (See Wilder, Frank E., assignor.)						
Annibale, Allevi, Chicago, Ill. Lever-power engine	483,776	Oct. 4	385	95, 96	61	80
Anthony, Mark, Berkeley, assignor to Golden Gate Safety Faucet Company, San Francisco, Cal. Faucet and bushing	487,206	Nov. 29	3264	834	61	1292
Anthony, Mark, Berkeley, assignor to Golden Gate Safety Faucet Company, San Francisco, Cal. Faucet and bushing	487,207	Nov. 29	3265	834	61	1292
Applegate Electric Light and Power Company. (See Applegate, Eugene W., assignor.)						
Applegate, Eugene W., Omaha, Nebr., assignor to Applegate Electric Light and Power Company, Chicago, Ill. Incandescent electric lamp	487,360	Dec. 6	202	55	61	1360
Applegate, Eugene W., Omaha, Nebr., assignor to Applegate Electric Light and Power Company, Chicago, Ill. Incandescent lamp	488,139	Dec. 13	1488	375	61	1636
Appleman, Mathias M., Rohrsburg, Pa. Sawmill-dog	485,251	Nov. 1	148	43	61	603
Appleton Manufacturing Company. (See Search, Casper F., assignor.)						
Appleyard, Arthur E., Boston, Mass. Electrical heater	483,758	Oct. 4	352	88	61	74
Appleyard, Arthur E., Boston, Mass. Electrical heater	483,759	Oct. 4	353	89	61	74
Armstrong, David H., Long Island City, N. Y. Electric switch	483,704	Oct. 4	274	68	61	57
Armstrong, John B., Guelph, Canada. Apparatus for shaping, hardening, and tempering steel plates, &c	488,301	Dec. 20	1769	444	61	1705
Arnold, Charles N. (See Heumer, Frederick L., assignor.)						
Arnold, Daniel J. C., New London, Ohio. Band-tightener	485,484	Nov. 1	512	135	61	676
Arnold, Everett D., assignor to Troy Steel and Iron Company, Troy, N. Y. Harrow-disk	488,514	Dec. 20	2106	523	61	1775
Arnold, Henry H., Rockland, Mass. Channeling-machine	484,130	Oct. 11	896	229	61	198
Arnold, Vindex, and F. E. Wetmore, assignors of one-third to H. Ryder, Marshall, Mich. Wire fence	484,387	Oct. 18	1321	337	61	293
Aron, Lessar M. (See May and Aron.)						
Arthur, Richard E., *et al.* (See Arthur, William, assignor.)						
Arthur, William, assignor of one-half to R. E. Arthur and W. G. Jones, Delphos, Ohio. Fence	487,208	Nov. 29	3266	834	61	1292
Arvidson, Pier N., Kalamazoo, Mich. Tailor's measuring-square	483,521	Oct. 4	4	1	61	4
Arvine, Freeling W., Port Richmond, N. Y. Crystallizing and setting box	486,015	Nov. 8	1326	352	61	861
Ash, Walter V., Newark, N. J. Treadle-crank for bicycles	485,678	Nov. 8	805	215	61	754
Ashby, Charles M., and H. M. Seybold; said Ashby assignor to H. Schaper, Sioux Falls, S. D. Chocolate-cutter	488,493	Dec. 20	2074	515	61	1769
Ashby, George J. M., Coney Island, N. Y., assignor to A. Brock, London, England. Pyrotechnic device	487,898	Dec. 13	1087	272	61	1554
Ashby, George J. M., Coney Island, N. Y., assignor to A. Brock, London, England. Pyrotechnic device	487,899	Dec. 13	1089	272	61	1554
Ashley, Edward L., and W. H. Camp, Waterbury, Conn. Push-button and thermostat	488,645	Dec. 27	2320	574	61	1832
Ashley, Frank M., Hawthorne, assignor of one-half to W. Wood, Paterson, and W. A. Rosenbaum, Jersey City, N. J. Projectile	486,657	Nov. 22	2349	614	61	1094
Ashley, Henry P. (See Jones and Ashley.)						
Ashley, William A. G., assignor of two-thirds to J. M. Lawton, Jr., and A. T. Howland, New Bedford, Mass. Knob attachment	485,145	Oct. 25	2543	653	61	532
Ashworth, Robert. (See Smith, George B., assignor.)						
Aspinwall, Lewis A., Three Rivers, assignor to Aspinwall Manufacturing Company, Jackson, Mich. Potato-cutter	485,160	Nov. 1	2	1	61	573
Aspinwall Manufacturing Company. (See Aspinwall, Lewis A., assignor.)						
Astrup, William J. O., Cleveland, Ohio. Grass-catching attachment for lawn-mowers	485,599	Nov. 8	685	181	61	729
Atkins, George J., London, England. Separating gold and other metals from their ores	484,869	Oct. 25	2109	543	61	465
Atkinson, Francis F., New York, N. Y. Adjustable feed-bag	485,600	Nov. 8	686	181	61	729
Atkinson, Frederick A., Worcester, England. Interlocking railway point and signal apparatus	484,840	Oct. 25	2071	532	61	457
Atkinson, Llewelyn B. (See Goolden and Atkinson.)						
Atterbury, Thomas B., Pittsburg, Pa. Device for manufacturing hollow glassware	484,131	Oct. 11	897	229, 230	61	198
Atwater, Richard M., Pittsburg, Pa. Glass-furnace	485,340	Nov. 1	288	78	61	631
Atwood, Henry O., Philadelphia, Pa. Convertible furniture	486,749	Nov. 22	2492	651	61	1194
Auer, Louis, Albany, N. Y. Shirt	487,000	Nov. 29	2946	759	61	1280
Ault, Edwin. (See Shone and Ault.)						
Aunkst, Daniel E., Milton, Pa. Pump	486,016	Nov. 8	1327	352	61	861

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Aunspaugh, William, Cairo, Mo. Sliding gate	488,105	Dec. 13	1436	360	61	1625
Austin, Frank F., assignor of one-fourth to H. B. Lyford, Chicago, Ill. Order-holder	484,625	Oct. 18	1695	430	61	367
Austin, Frederick C. (See Bunnell, Morton G., assignor.)						
Austin, Frederick C. (See Chapman, Thomas G., assignor.)						
Austin, John, Burlington, Iowa. Corner for boxes	486,844	Nov. 29	2663	696	61	1173
Automatic Turning Company. (See Tingley, Horace W., assignor.)	487,549	Dec. 6	516	134	61	1423
Aveling, Thomas L., Rochester, England. Wheel-scraper	484,841	Oct. 25	2072	533	61	457
Averell, Oscar J., New York, N. Y. Fire-extinguisher	483,522	Oct. 4	5	2	61	4
Averill, John C., Traer, Iowa. Halter	483,504	Oct. 4	117	29	61	25
Avery, Amos L., Bradford, Pa. Injector-burner	488,646	Dec. 27	2321	574	61	1832
Avery, Andrew J., Lynn, Mass. Blind-hinge	484,351	Oct. 11	1263	322	61	270
Avery, Edward N., and C. A. Slayton, Tecumseh, Mich. Convertible hay and stock rack	483,705	Oct. 4	275	68	61	58
Avery, George H., Easthampton, assignor to Standard Whip Company, Westfield, Mass. Belt-fastener	487,091	Dec. 6	737	188	61	1466
Avery, William G., Chicago, Ill. Bevel	487,010	Nov. 29	2962	763	61	1232
Avery, William G., Cleveland, Ohio. Tote-box	488,259	Dec. 20	1694	423	61	1693
Axell, Charles, Chicago, Ill. Coping	488,993	Dec. 27	2767	683	61	1923
Axtell, Samuel, Elkhart, Ind. Blotter	487,239	Dec. 6	5	2	61	1321
Ayer, George A., New Bedford, Mass. Carding-engine	488 177	Dec. 20	1564	392	61	1668
Ayer, John C., Leicester, assignor to Dutcher Temple Company, Hopedale, Mass. Loom-temple	488,916	Dec. 27	2745	677	61	1918
Ayer, John C., Leicester, assignor to Dutcher Temple Company, Hopedale, Mass. Loom-temple	488,917	Dec. 27	2748	677	61	1918
Ayers, James R., Petersburg, Va. Combined hoe and planter	486,816	Nov. 22	2600	679	61	1147
Ayres, Reuben B., New York, N. Y. Underground electric trolley system	488,596	Dec. 27	2945	556	61	1818
Ayres, Reuben B., New York, N. Y. Means for operating station-indicators	485,252	Nov. 1	149	44	61	604
Ayton, Charles W., New York, N. Y. Dumb-bell	488,415	Dec. 20	1956	489	61	1743
Ayton, Charles W., New York, N. Y. Electric meter	484,352	Oct. 11	1265	323	61	270
B. F. Cummins Company. (See Cummins, Benjamin F., assignor.)	487,703	Dec. 13	755	194	61	1487
B. F. Cummins Company. (See Stenwall, John, assignor.)						
Baader, Stephan, assignor of one-fifth to M. Schuster, Philadelphia, Pa. Steam-engine	487,025	Nov. 29	2984	768	61	1236
Babbitt, Seward S., assignor of one-half to H. Aiken, Pittsburg, Pa. Crane	484,870	Oct. 25	2112	544	61	466
Babcock, George H., Plainfield, N. J. Brick-press	488,049	Dec. 13	1349	{334 / 335}	61	1607
Babcock, George W., Ithaca, N. Y. Spoon-holder	484,081	Oct. 11	836	212	61	136
Babcock, Sylvester P., Adrian, Mich. Brick-machine	488,106	Dec. 13	1437	{361 / 362}	61	1626
Bach, Matthew W., Ottawa, Ill. Fly-net	486,421	Nov. 22	1986	527	61	1023
Bache, William H., assignor of one-half to W. W. Smalley, Bound Brook, N. J. Fifth-wheel	486,060	Nov. 8	1395	369	61	874
Bache, William H., assignor of one-half to W. W. Smalley, Bound Brook, N. J. Bearing	486,061	Nov. 8	1396	370	61	874
Bache, William H., and W. W. Smalley, Bound Brook, N. J. Journal-lubricator	484,512	Oct. 18	1525	387	61	332
Bachelder, Elmer N., and F. E. Lovejoy, Portland, Me. Weighing oil-tank. (Reissue)	11,274	Oct. 4	697	174	61	144
Back, Carl, Vienna, Austria-Hungary. Spool	487,704	Dec. 13	759	195	61	1488
Backof, William C., St. Louis, Mo. Quilting-frame	487,240	Dec. 6	6	2	61	1322
Backus, Frederick E., Philadelphia, Pa. Gas-log fireplace	485,079	Oct. 25	2448	630	61	532
Backus Water Motor Company. (See Shepperd, Sylvanus D., assignor.)						
Bacon, Alfred T., Stevens' Point, Wis. Mail-catcher	486,658	Nov. 22	2350	614	61	1094
Bacon, Henry S., Worcester, Mass., assignor to Bacon-Tylee Company, Berwick, Me. Index	483,595	Oct. 4	118	29	61	25
Bacon, Hiram A., Pontiac, Mich. Bean-picker	483,986	Oct. 11	703	177	61	159
Bacon-Tylee Company. (See Bacon, Henry S., assignor.)						
Badische Anilin and Soda Fabrik. (See Bohn, René, assignor.)						
Badoni, Massimiliano, assignor to A. R. de Muralt, Geneva, Switzerland. Permutation-lock	486,391	Nov. 15	1931	{511 / 512}	61	999
Badt, Francis B., Chicago, Ill. Automatic safety device for dynamo-electric machines	487,816	Dec. 13	953	241	61	1526
Baehr, George, Brooklyn, N. Y. Dynamo-electric machine	486,524	Nov. 22	2132	563	61	1052
Bagby, Walter D. (See Martin, Betsey J., assignor.)						
Baggett, Charles L., Blue Branch, Tex. Plow	485,732	Nov. 8	895	240	61	773
Baglin, William A. (See Yule and Baglin.)						
Ball, Philip V. (See Beall and Ball.)						
Bailey & Brown. (See Bailey, Edward L., assignor.)						
Bailey, Edward L., assignor to Bailey & Brown, Philadelphia, Pa. Trimming for buckets, pails, &c	483,641	Oct. 4	183	46	61	38
Bailey, Elmer E., Sinnamahoning, Pa. Repeating air-gun	487,169	Nov. 29	3210	822	61	1282
Bailey, Frank H., Wilkes-Barré, Pa. Steam-boiler	486,017	Nov. 8	1328	{352 / 353}	61	861
Bailey, Frank H., Wilkes-Barré, Pa. Fire-box	486,018	Nov. 8	1329	353	61	862
Bailey, Frank. M., assignor of one-half to J. A. McKenzie and J. T. Gordon, Lima, N. Y. Rotary engine	484,769	Oct. 25	1943	496	61	431
Bailey, George W., Brooklyn, N. Y. Puzzle	487,063	Nov. 29	3038	780	61	1247
Bailey, Oscar J., Kane, Pa. Ironing-table	488,347	Dec. 20	1844	461	61	1721
Baillie, W. E. (See Godfrey, Jonathan, assignor.)						
Baily, George D., Spiceland, Ind. Body-warmer	485,080	Oct. 25	2450	630	61	533
Baird, Andrew. (See Buckland, Harry W., assignor.)						
Baird, Arlette, Riverhead, N. Y. Combined baby tender and crib	485,081	Oct. 25	2451	631	61	533
Baird, Burr, and T. O. Johnson, Newark, Ohio. Slide for extension-tables	485,521	Nov. 1	558	149	61	686
Baird, George W., U. S. Navy. Steam generator or evaporator	484,946	Oct. 25	2242	578	61	491
Baker, Albert, Fort Wayne, Ind., assignor of one-half to F. D. Bittinger, Dayton, Ohio. Package	483,523	Oct. 4	6	2	61	4
Baker, Albert R., Indianapolis, Ind. Temporary binder	483,706	Oct. 4	276	68	61	58
Baker, Barney R. (See Golin, Peter, assignor.)						
Baker, Benjamin F., Ballston, N. Y. Harness	487,900	Dec. 13	1090	{272 / 273}	61	1554
Baker, Charles R., Malden, Mass. Device for use in the manufacture of leather-bound brushes	488,685	Dec. 27	2388	591	61	1844
Baker, David, Sparrow's Point, Md. Drill	488,050	Dec. 13	1352	335	61	1607
Baker, David B., and M. Laffay, Tacoma, Wash. Steam-transmitter	486,019	Nov. 8	1330	353	61	862
Baker, Frank L., assignor, by mesne assignments, to Diamond Paper Bag Company, Wilmington, Del. Paper-bag machine	484,281	Oct. 11	1156	294	61	248
Baker, Henry B., Dighton, Mass. Lacing-stud	483,680	Oct. 4	237	59	61	49

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Baker, Jacob W., Dover, N. J., assignor to National Hollow Brake Beam Company, Chicago, Ill. Brake-beam. (Reissue)	11,292	Dec. 6	749	191	61	1469
Balbian, Frederick, assignor of one-half to H. Balbian, Louisville, Ky. Steam-coupling and automatic parting and cut-off device	483,987	Oct. 11	704	177	61	159
Balbian, Henry. (See Balbian, Frederick, assignor.)						
Balch, Edward P., *et al.* (See Fargo, William H., assignor.)						
Balch, Gilbert B., *et al.* (See Fargo, William H., assignor.)						
Balch, Samuel W. (See Bracher and Balch.)						
Bald, Peter H., Louisville, Ky. Training-sulky	487,343	Dec. 6	169	47	61	1354
Baldensperger, Philippe, St. Dié, (Vosges,) France. Manual motor	486,020	Nov. 8	1332	354	61	863
Baldridge, Herman, Highlands, Cal. Transplanter	485,812	Nov. 8	1022	274	61	798
Baldwin, Charles H., Glens Falls, N. Y. Horse-shield	484,282	Oct. 11	1158	295	61	249
Baldwin, Frederic E., New York, N. Y. Means for regulating the flow of liquids from vessels	487,817	Dec. 13	954	241	61	1528
Baldwin, Orrin R., Detroit, Mich. Wheel harrow and cultivator	488,597	Dec. 27	2246	557	61	1818
Baldwin, Ozro J., Youngsville, Pa. Rope-clamp	488,348	Dec. 20	1845	461	61	1721
Baldwin, William A., assignor of one-half to R. D. Sawyer, New York, N. Y. Converter	484,770	Oct. 25	1944	496	61	432
Bales, William, Clinton, Ind. Stovepipe-thimble	484,694	Oct. 18	1811	460	61	391
Ball and Socket Fastener Company. (See Rabitte, John M., assignor.)						
Ball, Arthur W., *et al.* (See Wallace and Stemm, assignors.)						
Ball, Charles, assignor to Ball & Jewell, Brooklyn, N. Y. Cotton-picker	483,707	Oct. 4	276	69	61	58
Ball, Charles A. (See Perkins, Richard B., assignor.)						
Ball, Cortland, Indianapolis, Ind. Fuel-oil burner	483,730	Oct. 4	308	77	61	64
Ball, Daniel C. (See Owens and Ball.)						
Ball, Frank H., assignor to Ball & Wood Company, Elizabeth, N. J. Pulley-fastening	486,154	Nov. 15	1569	416	61	926
Ball, George H., Menands, N. Y. Means for and method of designating document-files	485,025	Oct. 25	2373	610	61	516
Ball, George L., Allegheny, Pa. Composition for removing paint or varnish from wood	488,416	Dec. 20	1959	.....	61	1744
Ball & Jewell. (See Ball, Charles, assignor.)						
Ball, Judson O., Mount Pleasant, Iowa. Time-meter for electric-lighting systems	488,107	Dec. 13	1442	362	61	1626
Ball, Lorenzo D. (See Pfouts and Ball.)						
Ball, Robert R., New York, N. Y., assignor to Sphere Manufacturing Company, of New Jersey. Lock	484,392	Oct. 18	1332	339	61	295
Ball & Wood Company. (See Ball, Frank H., assignor.)						
Ballantyne, Peter, Cincinnati, Ohio. Harness-saddle	484,771	Oct. 25	1946	496	61	432
Ballard, John. (See Fellows, Frank, assignor.)						
Band, Otto W., Brooklyn, N. Y. Automatic soap-press	487,818	Dec. 13	955	241	61	1528
Bangert, John D., Baltimore, Md. Apparatus for mixing flour or other materials	487,507	Dec. 6	450	{116 / 117}	61	1410
Bangs, Edwin D., Milwaukee, Wis. Bell-ringer for locomotives	485,445	Nov. 1	456	122	61	665
Bangs, Edwin D., Milwaukee, Wis. Propeller-wheel	486,062	Nov. 8	1398	370	61	874
Banta, William E., Springfield, Ohio. Wire coupling	484,842	Oct. 25	2073	533	61	458
Barber, Arthur J., assignor of one-half to H. A. and W. Tripp, Sodus, N. Y. Fruit-slicing machine	483,731	Oct. 4	309	77, 78	61	65
Barber, Edwin J., assignor of two thirds to W. F. Kyle, Gove City, and H. Ripley, Page City, Kans. Windmill	485,082	Oct. 25	2452	631	61	533
Barber, Edwin L., Chicago, Ill. Soldering-tool	485,161	Nov. 1	4	2	61	573
Barbier, Eugène J., Paris, France. Treating bisulphate of soda	484,546	Oct. 18	1577	400	61	313
Barbour, Stockwell & Co. (See Luther, Henry R., assignor.)						
Barclay, Frank, Beatrice, Nebr. Furnace for steam-boilers	486,923	Nov. 29	2827	732	61	1206
Barclay, Frank, Beatrice, Nebr. Locomotive or marine boiler furnace	486,924	Nov. 29	2829	732	61	1207
Bardill, John, Grant Fork, Ill. Corn-harvester	485,522	Nov. 1	559	{149 / 150}	61	687
Bardon, Prosper, Waco, Tex. Bale-tie	488,302	Dec. 20	1763	444	61	1706
Barker, Irving, Springfield, Ill. Automatic latch for dump-cars	485,403	Nov. 1	396	106	61	653
Barker, James. (See Beimling, Henry F., assignor.)						
Barker, Joel T., *et al.* (See Cox, Jacob R., assignor.)						
Barlow, John H., New Haven, Conn. Decapping and recapping tool	486,659	Nov. 22	2351	614	61	1094
Barlow, William H., Charlottesville, Va. Four-wheeled dog-cart	487,942	Dec. 13	1158	{289 / 290}	61	1567
Barnaby, Sydney W., assignor to J. I. Thornycroft, London, England. Propeller	486,366	Nov. 15	1894	{500 / 501}	61	991
Barnard, Harry M., *et al.* (See Cook, Thomas R., assignor.)						
Barnard, Heman A., assignor to Barnard & Leas Manufacturing Company, Moline, Ill. Grain-scourer	485,525	Nov. 1	563	151	61	688
Barnard, Heman A., assignor to Barnard & Leas Manufacturing Company, Moline, Ill. Air-belt purifier	485,571	Nov. 1	643	171	61	705
Barnard & Leas Manufacturing Company. (See Barnard, Heman A., assignor.)						
Barndollar, Winfield J., Pueblo, Colo. Bridle-bit	488,051	Dec. 13	1354	336	61	1608
Barnes, Dana A., assignor to Westinghouse Company, Schenectady, N. Y. Chuck	485,364	Nov. 1	335	80	61	641
Barnes, Lewis, Philadelphia, assignor to W. A. Nichols, Wayne, Pa. Bridge	487,819	Dec. 13	957	242	61	1529
Barnes, Lorenzo L., Worcester, Mass. Grass-shears	488,647	Dec. 27	2322	574	61	1839
Barnett, David H. (See Vanderpool, Albion A., assignor.)						
Barnett, George, *et al.* (See Gosling, Henry J., assignor.)						
Barnett, Harry T. (See Pyke and Barnett.)						
Barnett, Henry, *et al.* (See Gosling, Henry J., assignor.)						
Barney, Earl, Schenectady, N. Y. Chicken-brooder	488,417	Dec. 20	1959	489	61	1744
Barney & Smith Car Company. (See Haeseler, Emil C., assignor.)						
Barna, George R. (See Thurston and Stenerson, assignors.)						
Barnum, William H., assignor to C. H. Merritt, Danbury, Conn. Machine for stiffening hats	485,601	Nov. 8	687	181	61	729
Barr, William, Detroit, Mich. Dust-guard for car-axle boxes	483,524	Oct. 4	11	3	61	5
Barrett, Charles R. (See Horne and Barrett.)						
Barrett, Frederick W., Springfield, Ohio. Guard-rail	486,541	Nov. 22	2153	569	61	1056
Barrett, Frederick W., Springfield, Ohio. Election-booth	488,747	Dec. 27	2476	615	61	1862
Barrett, Frederick W., Springfield, Ohio. Ballot-box	488,748	Dec. 27	2478	616	61	1863
Barrett, George L., Springfield, Ohio, assignor to J. W. Duncan and T. B. Quinby, Onancock, Va. Smoke-escape	485,523	Nov. 1	561	150	61	687
Barrett, John A., Brooklyn, N. Y., assignor to Standard Underground Cable Company, Pittsburg, Pa. Wire-covering machine	486,270	Nov. 15	1746	460	61	968
Barrett, John A., Brooklyn, N. Y., assignor to Standard Underground Cable Company, Pittsburg, Pa. Machine for covering wires	486,845	Nov. 29	2664	{696 / 697}	61	1173
Barrett, Sam S., Salem, Mo. Box-fastener	485,524	Nov. 1	563	150	61	687
Barron, Martha E. (See Jones, William, assignor.)						
Barron, Walter J., F. X. Wagner, and A. Densmore, New York, N. Y.; said Barron and Wagner assignors to said Densmore. Type-writing machine	484,132	Oct. 11	900	{230 / 231}	61	199

Alphabetical list of patentees, October to December, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Barrow, Jacob, Windfall, assignor to J. S. Moore, Muncie, Ind. Oil-burner	488,108	Dec. 13	1445	362, 363	61	1627
Barrow, Thomas E., Mansfield, Ohio. Store-service apparatus	484,547	Oct. 18	1578	400, 401	61	343
Barrow, Thomas E., Mansfield, Ohio. Store-service apparatus	484,548	Oct. 18	1580	401	61	344
Barrow, Timothy J., Chicago, Ill. Two-way sanitary trap	485,833	Nov. 8	1023	274	61	798
Barry, Patrick H., New York, N. Y. Staircase	486,319	Nov. 15	1820	480	61	977
Bartelmes, Benjamin, Brooklyn, N. Y. Switch-operating device	485,446	Nov. 1	458	122	61	666
Barthelemy, Edward C., New Orleans, La. Manufacturing sugar	487,439	Dec. 6	351	.....	61	1391
Barthelmes, Alexander A., Toronto, Canada. Frasing-machine	485,162	Nov. 1	5	2	61	574
Barthelme, Anton, Baltimore, Md. Album	487,170	Nov. 29	3212	823	61	1282
Bartholomew, George W., Wichita, Kans. Displacement-pump	487,595	Dec. 6	576	148	61	1436
Bartholomew, Gilbert A., Maumee, Ohio. Railway-signal	486,271	Nov. 15	1749	460, 461	61	962
Bartholomew, Sidney W., Castalia, N. C. Fire-tongs	486,963	Nov. 29	2889	746	61	1218
Bartholomew, Thomas W., Danville, Pa. Burner attachment	486,525	Nov. 22	2133	563	61	1052
Bartlett, George T. (See Terrell and Bartlett.)						
Bartlett, James F., Chicago, Ill., assignor to Chicago Cash Carrier Company, of Illinois. Cash-carrier	483,681	Oct. 4	237	59	61	50
Bartlett, Samuel B., Camden, N. C. Roller-bearing	485,083	Oct. 25	2453	631	61	533
Barton, Delbert E., San Francisco, Cal. Wheel-cultivator	484,513	Oct. 18	1526	387	61	332
Basel, John C., and E. Fruehauf, Galveston, Tex. Hot-box alarm	483,682	Oct. 4	239	60	61	50
Bassett, Edward F., Seymour, Conn. Folding table	485,855	Nov. 8	1058	282	61	805
Bassett, Edward W., Stockwell, Ind. Check-punch	485,733	Nov. 8	897	240	61	773
Bassett, George R., New York, N. Y. Bicycle-tire	487,596	Dec. 6	579	148	61	1436
Bassett, Norman C., Lynn, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Armature for motors and generators	483,708	Oct. 4	277	69	61	58
Bassett, Norman C., Lynn, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Commutator for electric machines	483,732	Oct. 4	311	78	61	65
Bassett, Norman C., Lynn, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Gearing for elevators	485,163	Nov. 1	8	2, 3	61	574
Batcheller, Birney C., assignor of seventeen-twentieths to S. D. Schuyler, New York, N. Y., and W. M. Cramp, Philadelphia, Pa. Drier	486,806	Nov. 22	2584	674	61	1142
Bates, Edwin G., New York, N. Y., assignor to Bates Manufacturing Company, of New York. Consecutive-numbering machine	484,389	Oct. 18	1322	338	61	294
Bates, Edwin G., New York, N. Y., assignor to Bates Manufacturing Company, of New York. Machine for consecutively numbering checks, bonds, &c., in sheets	484,390	Oct. 18	1326	338	61	294
Bates, Edwin G., New York, N. Y., assignor to Bates Manufacturing Company, of New York. Consecutive-numbering machine	484,391	Oct. 18	1329	339	61	295
Bates, Edwin G., New York, N. Y., assignor to Bates Manufacturing Company, of New York. Machine for printing stencil characters consecutively	486,964	Nov. 29	2890	747	61	1219
Bates, Edwin G., New York, N. Y., assignor to Bates Manufacturing Company, of New York. Check-punch	488,052	Dec. 13	1354	336	61	1608
Bates, James H., Hoboken, N. J. Electric annunciator	488,536	Dec. 27	2149	531	61	1797
Bates, John H., Santa Barbara, Cal. Washing-machine	484,871	Oct. 25	2115	544	61	466
Bates Manufacturing Company. (See Bates, Edwin G., assignor.)						
Bates, Milford L. (See Johnson, Hiram S., assignor.)						
Batt, Charles F., Brooklyn, N. Y. Combined stand and step-ladder	486,320	Nov. 15	1820	480	61	977
Batt, John B., Martinsville, N. Y. Merry-go-round	488,686	Dec. 27	2389	591	61	1845
Battle, Marcus L., Cairo, Ga. Plow	486,021	Nov. 8	1333	354	61	863
Bauer, Max, L. Harry, and J. Bunger, Greenville, N. J. Lamp-shade support	484,695	Oct. 18	1812	461	61	391
Baugh, Frederick, Alliance, Ohio. Molder's flask	483,596	Oct. 4	119	29	61	25
Bauhard, Alvin L., Bristol, Tenn. Middlings-purifier	487,597	Dec. 6	580	148	61	1437
Baum, Jacob, assignor to Victor Safe and Lock Company, Cincinnati, Ohio. Riveting-machine	486,071	Nov. 15	1416	374	61	896
Baumann, Robert, assignor to Electric Alarm Lock Company, St. Louis, Mo. Combination lock and alarm	484,577	Oct. 18	1617	411	61	351
Baumener, Alonso A., and J. B. Harting, Roanoke, Va. Punch	485,164	Nov. 1	10	3	61	575
Baumgartel, Henry. (See Harris, George W., assignor.)						
Baumgartner, William H., *et al.* (See Sarton, Harry J., assignor.)						
Baur, William, *et al.* (See Kayser, William J., assignor.)						
Bavier, Charles S., New York, N. Y. Valve and joint	484,843	Oct. 25	2074	533, 534	61	458
Baxter, Whitfield W., Boston, Mass. Car fender or guard	484,969	Oct. 25	2310	596	61	504
Beaerque, Victor H., Washington, D. C., assignor of one-twentieth to B. Storer, Cincinnati, Ohio. Cigarette-machine	485,146	Oct. 25	2544	653, 654	61	552
Beach, Henry O., Livingston, N. J. Skiving heel-lifts	488,303	Dec. 20	1765	444, 445	61	1706
Beach, Oscar W., South Riverside, Cal., assignor to J. P. Curry, Fort Morgan, Colo. Vehicle-axle	483,975	Oct. 4	683	170	61	141
Beall, Alpheus B., and P. V. Bail, Sioux City, Iowa. Track-cleaning machine	486,526	Nov. 22	2134	563	61	1052
Beam, Amanda L. (See Beam, Jacob B., assignor.)						
Beam, Aron M. (See Calhoun and Beam.)						
Beam, Henry J., Lebanon, Va. Fence	484,872	Oct. 25	2115	545	61	466
Beam, Jacob B., assignor to A. L. Beam, Big Run, Pa. Necktie	485,447	Nov. 1	459	122, 123	61	666
Beard, Lina, Flushing, N. Y. Clothes-basket protector	486,527	Nov. 22	2135	563	61	1053
Beardsley, Frank W. (See Tallmadge, James W., assignor.)						
Beardsley, Oscar E. and O., Trempealeau, Wis. Corn-husker	487,241	Dec. 6	7	2, 3	61	1322
Beardsley, Otto. (See Beardsley, Oscar E. and O.)						
Beart, William F., Godmanchester, England. Leak-stopper	485,121	Oct. 25	2505	643	61	545
Beauchien, Edward, Chicago, Ill. Hame-fastener	484,283	Oct. 11	1159	295	61	249
Beauchamp, Aimé, assignor of one-half to J. J. Girard, Fitchburg, Mass. Folding umbrella	485,905	Nov. 8	1141	303	61	822
Beaudry, Alexander, Boston, Mass., assignor to Beaudry Tool Company, Portland, Me. Power-hammer	487,692	Dec. 6	738	189	61	1466
Beaudry, Alexander, Somerville, and P. F. King, Malden, Mass., assignors to Beaudry Tool Company, Portland, Me. Device for securing rails	488,749	Dec. 27	2479	616	61	1863
Beaudry Tool Company. (See Beaudry, Alexander, assignor.)						
Beaudry Tool Company. (See Beaudry and King, assignors.)						
Beaumont, Thomas C., assignor to Henry Huber Company, New York, N. Y. Siphon flushing-tank	487,464	Dec. 6	387	101	61	1397
Beauregard, Victor. (See Bryant and Beauregard.)						
Beck, Herman. (See Gross and Beck.)						
Beck, John E. (See Carlin, Seth, assignor.)						
Beck, Joseph, Thomasville, N. C., and O. A. Nenninger, Newark, N. J. Apparatus for making gun-cotton	483,709	Oct. 4	279	69	61	59

Alphabetical list of patentees, October to December, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Becker, Anthony W., and E. Henry, Jacksonville, Ill. Street-sprinkler	487,508	Dec. 6	451	117	61	1411
Becker, Margaret J., Cohoes, N. Y. Window-cleaner	484,284	Oct. 11	1160	295	61	249
Becket, George E., Providence, R. I. Letter-box	483,525	Oct. 4	12	3	61	5
Beckley, Edward. (See Knight and Beckley.)						
Beckwith, Francis E., Jr., assignor to Newell Brothers Manufacturing Company, Springfield, Mass. Tool-holder for button-cutting machines, &c	485,147	Oct. 25	2549	655	61	553
Bederman, Henry. (See Mellon, Arnold A., assignor.)						
Beebe, Charles F., Orion, assignor of one-half to O. F. Knowles, Oxford, Mich. Bicycle-support	485,572	Nov. 1	645	172	61	706
Beecher, Walter H., Cincinnati, Ohio. Liquid-measuring device	485,026	Oct. 25	2375	610	61	517
Beecher, Zina A., Marysville, Ohio. Attachment for cultivators	485,165	Nov. 1	11	3	61	575
Beecroft, Clement, Philadelphia, Pa. Racket	484,578	Oct. 18	1620	411	61	352
Beehler, Charles W., assignor of two-thirds to A. Kuehne and F. Hausperger, St. Louis, Mo. Box-fastener	483,953	Oct. 4	639	160	61	131
Beekman, Gerard, New York, N. Y. Picker for cotton-harvesters	487,509	Dec. 6	452	117, 118	61	1411
Beers, Franklin H., Newark, assignor to himself, and W. M. Tallman, Plainfield, N. J., E. Hayes, and A. R. Brandly, New York, N. Y. Electric motor	487,242	Dec. 6	10	3	61	1323
Beers, Louis J. (See Hulett and Beers.)						
Beery, Samuel M., assignor of one-half to J. H. Brown, Chicago, Ill. Coupler-head for air-brake hose	485,365	Nov. 1	337	89	61	641
Begg, Henry A. (See Gilbert, James, assignor.)						
Begg, William, Glasgow, Scotland. Loom let-off motion	483,626	Oct. 4	163	40	61	34
Behlen, Charles A., Cincinnati, Ohio. Vehicle-spring	487,598	Dec. 6	582	149	61	1437
Behlen, Charles A., Cincinnati, Ohio. Vehicle running-gear	487,599	Dec. 6	583	149	61	1437
Behmer, Rudolf, Berlin, Germany. Measuring-band	483,642	Oct. 4	184	46	61	38
Behringer, Edward A. (See Chadbourne, Behringer, and McCoy.)						
Beilby, George T., Slateford, Scotland. Making cyanides	484,579	Oct. 18	1621	411, 412	61	352
Beilmann, Frederick, Philadelphia, Pa. Eye-shade	485,448	Nov. 1	461	123	61	666
Beimling, Henry F., assignor to J. Barker, Philadelphia, Pa. Centrifugal liquid-separator	487,943	Dec. 13	1160	290	61	1567
Bell, Alonzo, Philadelphia, Pa. Woven-wire mattress	488,378	Dec. 20	1895	474	61	1731
Bell, Alonzo, assignor to C. T. Bell, New York, N. Y. Safety-guard for printing-press platens	484,751	Oct. 18	1902	485	61	411
Bell, Charles N. (See Bosse, Eugene, assignor.)						
Bell, Charles T. (See Bell, Alonzo, assignor.)						
Bell, Frank. (See Taylor, Samuel S., assignor.)						
Bell, Oro A., Brooklyn, N. Y., assignor to Western Electric Company, Chicago, Ill. Test-circuit for multiple switchboards	488,053	Dec. 13	1357	337	61	1609
Bell, William C., Syracuse, N. Y. Roofing-machine	487,361	Dec. 6	204	56	61	1361
Bell, William H., San Francisco, Cal. Producing stencils	485,602	Nov. 8	689	181	61	730
Bellamy, Leon, Arlington, N. J. Damper-regulator	484,529	Oct. 18	1550	393, 394	61	337
Bellean, Aaron A., Brooklyn, N. Y. Automatic faucet	487,384	Dec. 6	236	64	61	1368
Bellows, Benjamin F., assignor to E. T. Lufkin, Cleveland, Ohio. Feeding mechanism for sewing-machines	483,800	Oct. 4	417	103	61	87
Beltman, Arnold A. (See Wegner and Beltman.)						
Bement, Arthur O., Lansing, Mich. Fastening for harrow-teeth	486,072	Nov. 15	1418	375	61	897
Bement & Sons, E. (See Molitor, Aaron F., assignor.)						
Bement & Sons, E. (See Ovenshire, Elijah A., assignor.)						
Bemus, Emmett H. (See Thomas, John C., assignor.)						
Benbow, Henry, Plymouth, England. Tubular boiler	484,696	Oct. 18	1813	461	61	391
Bender, Frederick M. (See Kirker and Bender.)						
Bendure, William H., and S. Tilbery, assignors of one-third to J. H. Hartman, Fort Wayne, Ind. Sleigh attachment for baby-carriages	485,781	Nov. 8	953	256	61	785
Benedict, Hiram A., New York, N. Y. Cable-crossing	484,712	Oct. 25	1947	497	61	432
Benedict, Maurice G., Detroit, assignor to Coldwater Oil Stove Company, Coldwater, Mich. Oil-stove	486,063	Nov. 8	1398	370	61	874
Benedict, Maurice G., Detroit, assignor to Coldwater Oil Stove Company, Coldwater, Mich. Oil-stove	486,422	Nov. 22	1987	527	61	1023
Benham, Elijah B., Providence, R. I. Multiple-cylinder engine	487,084	Nov. 29	3072	788, 789, 790, 791	61	1254
Benjamin, George V., Ithaca, N. Y. Telephone-support	485,027	Oct. 25	2377	610, 611	61	517
Benjamin Machine Company. (See Hackney, Herbert, assignor.)						
Benner, Willis, Long Island City, N. Y. Lamp	486,022	Nov. 8	1335	354, 355	61	863
Bennett, Albert J., Woonsocket, R. I. Photographic-negative retoucher	488,705	Dec. 27	2415	569	61	1850
Bennett, Benjamin, Scranton, Pa. Railway-switch	487,705	Dec. 13	760	195	61	1488
Bennett, Caroline, and A. E. Parkinson, Kansas City, Mo.; said Parkinson assignor to said Bennett. House letter-box	486,423	Nov. 22	1989	528	61	1024
Bennett, Edwin H., Bayonne, N. J. Header for steam-boilers	484,393	Oct. 18	1334	340	61	295
Bennett, Francis E., Philadelphia, Pa. Garment-fastener	483,968	Oct. 11	705	177	61	159
Bennett, Francis E., Philadelphia, Pa. Garment-fastener	488,178	Dec. 20	1565	392	61	1668
Bennett, George W. (See Wiley, Charles D., assignor.)						
Bennett, Harry J., San Francisco, Cal. Broom-guard	483,733	Oct. 4	313	78	61	66
Bennett, Harwell L., and R. B. Adams, Westerville, Ohio. Power-windlass	486,073	Nov. 15	1418	375	61	897
Bennett, Henry P., assignor of one-half to S. C. Symonds, Phœnix, Ariz. Ter. Excavator	485,044	Oct. 25	2454	632	61	534
Bennett, John H., Worcester, Mass. Knife-handle	485,166	Nov. 1	12	3	61	575
Bennett, Monroe A., and V. V. Haidacher, Wilkes-Barré, Pa. Wood-turning machine	483,760	Oct. 4	355	89, 90	61	74
Bennett, Thomas G., assignor to Winchester Repeating Arms Company, New Haven, Conn. Means for separably uniting barrels to stocks of guns	487,465	Dec. 6	389	101	61	1397
Bennett, Thomas G., assignor to Winchester Repeating Arms Company, New Haven, Conn. Means for separably uniting gun-barrels to the stocks	487,466	Dec. 6	390	101	61	1398
Bennitt, Mark, Buffalo, N. Y. Stereotype plate and holder	484,062	Oct. 11	837	212	61	186
Bennor, Joseph, Philadelphia, Pa. Knitting-machine	485,316	Nov. 1	242	66, 67	61	631
Bennor, Joseph, Philadelphia, Pa. Knitting-machine	485,317	Nov. 1	247	68, 69	61	632
Benoit, Fredrick, Chicago, Ill. Combined cane and stool	486,074	Nov. 15	1420	375	61	897
Benoit, Fredrick, Chicago, Ill. Folding stool	486,075	Nov. 15	1422	375	61	897
Benson, Erastus A. (See Hoeschen, Henry, assignor.)						
Benson, Joseph R., Sonora, Tex. Automatic railway or farm gate	483,890	Oct. 4	545	136	61	113
Benson, Peter, Minneapolis, Minn. Music-rack attachment for guitars, &c	487,890	Dec. 13	958	242	61	1569

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Bentley, Alfred and T. W., Paterson, N. J. Jacquard-card wire	488,418	Dec. 20	1960	489	61	1744
Bentley, Charles E., New York, N. Y. Toy	488,537	Dec. 27	2150	531	61	1797
Bentley, Edward M., Boston, Mass. Trolley-stand for electric cars	488,179	Dec. 20	1566	393	61	1668
Bentley, Thomas W. (See Bentley, Alfred and T. W.)						
Benton, Charles A., Aurelius, Mich. Apple parer and corer	486,424	Nov. 22	1991	528	61	1024
Benton, Francis E., Stoughton, Mass. Whip-socket fastener	488,109	Dec. 13	1446	363	61	1627
Berberich, Valentine, Frankfort, Ky. Telescopic sight for cannon	484,285	Oct. 11	1161	295	61	249
Berg, George F., assignor of two-thirds to S. L. Berg and J. M. Mann, De Witt, Nebr. Mechanical motor	488,260	Dec. 20	1695	423, 424	61	1693
Berg, Per Torsten. (See Potter and Berg.)						
Berg, Peter V. P., Aakor-Vejen Station, Denmark, assignor, by mesne assignments, to O. K. Weedfald, Perth Amboy, N. J. and A. J. Preisler, Jersey City, N. J. Centrifugal cream-tester	486,390	Nov. 15	1930	511	61	999
Berg, S. L., *et al.* (See Berg, George F., assignor.)						
Berger Manufacturing Company. (See Berger, Wilson C., assignor.)						
Berger, Wilson C., assignor to Berger Manufacturing Company, Canton, Ohio. Sheet-metal roofing	485,782	Nov. 8	955	256	61	785
Berger, Wilson C., assignor to Berger Manufacturing Company, Canton, Ohio. Sheet-metal elbow	485,783	Nov. 8	956	256	61	785
Bergman, John E. (See Hanson and Bergman.)						
Bergmann & Company. (See Klein, Charles J., assignor.)						
Bergmann, Sigmund, New York, N. Y. Lamp-socket and circuit-closer therefor	484,580	Oct. 18	1623	412	61	352
Bergold, Joseph M., Canton, Ohio. Power-transmitter	485,167	Nov. 1	13	4	61	575
Bergstrom, John H., Brooklyn, N. Y. Holder for grinding twist-drills	488,054	Dec. 13	1360	337	61	1609
Berkey, Julius, Grand Rapids, Mich. Safety drapery or garment hook	487,471	Nov. 29	3214	823	61	1283
Bermel, Joseph, Middle Village, N. Y. Axle-nut	486,023	Nov. 8	1337	355	61	863
Berna, George E., Pelham Manor, N. Y. Conveyer for ice-cakes	487,001	Nov. 29	2947	759, 760	61	1229
Bernard, William A., assignor to William Schollhorn Company, New Haven, Conn. Belt-pliers	488,785	Dec. 27	2534	629	61	1874
Bernstein Electric Company. (See Lean and Burleigh, assignors.)						
Berridge, Isaac L. (See Kerr and Berridge.)						
Berridge, Isaac L. (See Ward and Lancashire, assignors.)						
Berst, Jesse H. (See Carter and Berst.)						
Bertelsen, Rasmus, *et al.* (See Curran, William, assignor.)						
Bertheau, Ferdinand, and A. G. Hoegren, Chicago, Ill. Glove or mitten	486,024	Nov. 8	1339	355	61	864
Berthier, Peter E., Lakeland, La. Pea-vine rake	484,394	Oct. 18	1336	340	61	295
Bertsch, Joseph L. (See Page and Bertsch.)						
Besemer, Andrew A., Harvey, Ill. Steamer	488,515	Dec. 20	2107	523	61	1775
Besson, Hyppolite, assignor of one-half to G. H., A. B., and E. W. Kent, London, England. Apparatus for drilling brooms or brushes	487,362	Dec. 6	205	56, 57	61	1361
Best, Daniel, San Leandro, Cal. Gas-engine	481,727	Oct. 18	1856	472	61	400
Best, Daniel, San Leandro, Cal. Gas-engine motor for cars	484,728	Oct. 18	1859	473	61	400
Best, Daniel, San Leandro, Cal. Lubricator	484,729	Oct. 18	1862	473	61	401
Best, Daniel, San Leandro, Cal. Carburetor	485,526	Nov. 1	566	151	61	689
Best, Henry F. (See Shaw, Irvin A., assignor.)						
Best, John H., Galva, Ill. Display-rack	487,110	Nov. 29	3117	800	61	1265
Best, Peter, Newark, N. J. Coal-loading apparatus	488,304	Dec. 20	1766	445	61	1706
Besthoff, Samuel J., assignor of two-thirds to S. Ottenberg and H. Kahn, New York, N. Y. Cash and parcel carrier	486,750	Nov. 22	2493	652	61	1124
Bettini, Gianni, New York, N. Y. Phonograph	488,379	Dec. 20	1896	475	61	1732
Bettini, Gianni, New York, N. Y. Phonograph	488,380	Dec. 20	1898	475	61	1732
Bettini, Gianni, New York, N. Y. Phonograph	488,381	Dec. 20	1900	475	61	1732
Betts, Edgar K., *et al.* (See McKinney, Samuel C., assignor.)						
Betts, James E., Wilmington, Ohio. Beam-compass	486,553	Nov. 22	2167	572	61	1059
Betts, T. G., *et al.* (See Rose, Robert, assignor.) (Reissue.)						
Betts, William H., assignor to Model Mop, Pail, and Wringer Company, Lincoln, Nebr. Mop-wringer	487,821	Dec. 13	958	242	61	1529
Beuster, Carl. (See Prenslau, Hermann, assignor.)						
Bevier, Andrew J. (See Mayloy, Edward C., assignor.)						
Beyrle, Robert, Los Angeles, Cal. Filtering system	487,467	Dec. 6	392	101, 102	61	1398
Bierce, Will W., Montgomery, Ala. Warehouse	486,367	Nov. 15	1895	501	61	991
Bierer, George W., Allegheny, assignor of one-half to G. W. Bowers, Pittsburg, Pa. Metallurgical furnace	483,985	Oct. 4	696	174	61	144
Bigelow, Jonah H., Worcester, Mass. Wire agitator for flour-sifters	486,576	Nov. 22	2212	580	61	1066
Bildt, Carl W., Worcester, Mass. Lining for Bessemer converters	484,286	Oct. 11	1162	.....	61	250
Billhimer, Levi. (See Cissner, Charles, assignor.)						
Billings, Albert S. (See Haughawout, John W., assignor.)						
Billings, Henry A., Dayton, Ohio. Molding-machine	488,055	Dec. 13	1361	337, 338	61	1609
Bingham, John F. (See Wood and Bingham.)						
Bingham, Wells A. (See Liddell, William, assignor.)						
Biswanger, Gustav, London, England. Electrical switch	485,028	Oct. 25	2379	611	61	518
Birch, James, North Ontario, Cal. Cultivator	487,978	Dec. 13	1206	301	61	1577
Birch, Joseph R. S., San Diego, Cal. Cigar-lighter	483,891	Oct. 4	546	138	61	113
Birdsall, Edward T., New York, N. Y. Coin-controlled theatrical show	487,510	Dec. 6	455	118, 119	61	1411
Birkenbaner, William H., *et al.* (See Weis, William C. and F. N., assignors.)						
Birkholz, Joseph A., Racine, Wis. Lock for the wheels of children's carriages	484,873	Oct. 25	2117	545	61	467
Birkinshaw, William K. (See Mitchell and Birkinshaw.)						
Bishop, Daniel H. (See Reed, George M., assignor.)						
Bishop, George W., deceased; S. E. Bishop, Springfield, Mass., administratrix. Method of and apparatus for making inked ribbon	488,786	Dec. 27	2535	629, 630	61	1874
Bishop, Sarah E., administratrix. (See Bishop, George W.)						
Bishop, Thomas R., Chicago, Ill. Gas-lighting attachment	488,804	Dec. 27	2565	637	61	1881
Bissell Carpet Sweeper Company. (See Drew, Walter J., assignor.)						
Bissell, Thomas A., Buffalo, N. Y. Draw-gear for railway-cars	488,326	Dec. 20	1805	453	61	1714
Bissell, Terrence E., administrator (See Hill, Andrew G.)						
Bitner, David P. (See Colvin, Robert J., assignor.)						
Bittenbender, John K., Bloomsburg, Pa. Composing-stick	484,514	Oct. 18	1528	388	61	333
Bittinger, Frank D. (See Baker, Albert, assignor.)						
Bittman, George M. (See Siegrist and Bittman.)						
Black, Alexander, Toledo, Ohio. Passenger-car cooler and ventilator	483,710	Oct. 4	280	70	61	59

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Black, Charles A. (See Bromwell, John R., assignor.)						
Black & Clawson Company. (See Clawson, Linus P., assignor.)						
Black, David M., Newark, Ohio. Automatic cheese-protector	488,598	Dec. 27	2248	557	61	1818
Black, Ellen A., Beckwith, Cal. Hose-supporter	486,076	Nov. 15	1424	376	61	898
Black, William L., Fort McKavett, Tex. Antifriction-clasp	484,947	Oct. 25	2243	578	61	491
Blackall, Robert C. (See Cory, John L., assignor.)						
Blackman, Charles M., Brooklyn, assignor to S. H. Wetmore Company, New York, N. Y. Atomizer	487,873	Dec. 13	1053	263	61	1547
Blackman, Henry, New York, N. Y. Electrolytic process and apparatus	484,990	Oct. 25	2312	596, 597	61	505
Blackmore, George C., Newark, N. J. Radiator-valve	487,901	Dec. 13	1091	273	61	1555
Blackmore, George C., assignor to Blackmore Heating Company, Newark, N. J. Steam or hot-water heating boiler	484,083	Oct. 11	839	212, 213	61	186
Blackmore Heating Company. (See Blackmore, George C., assignor.)						
Blackmore, Henry S., Mount Vernon, N. Y. Condenser	486,554	Nov. 22	2168	572	61	1059
Blackstock, George T., *et al* (See Bunker, Harman, assignor.)						
Blaine, George E., New Carlisle, Ohio. Window	484,489	Oct. 18	1489	379	61	325
Blair, George M. (See Taylor, Melvin A., assignor.)						
Blair, John C., Louisville, Ky. Dental instrument	484,287	Oct. 11	1163	296	61	250
Blair, John C., Wilmington, Del. Ore-rake	487,511	Dec. 6	458	119	61	1411
Blake, Edward A., Chicago, Ill. Printing-press	487,468	Dec. 6	394	102	61	1398
Blake, Joseph E., *et al.* (See Stewart, Harry B., assignor.)						
Blakeney, Benona A., Grand Haven, Mich. House-door letter-box	488,419	Dec. 20	1961	490	61	1744
Blakeney, Benona A., Grand Haven, Mich. House-door letter-box	488,420	Dec. 20	1962	490	61	1744
Blaker, Paul, Newtown, Pa. Harrow	486,925	Nov. 29	2830	732, 733	61	1207
Blanchard, Allen I. (See Lomax and Anderson, assignors.)						
Blanchard, George R., *et al.* (See Gould, Samuel A., assignor.)						
Blanchard, Horace, Boston, Mass. Street-railway switch and operating device	486,836	Nov. 22	2641	690	61	1154
Blanchard, Myra. (See Minnick, Albert, assignor.)						
Blankenbaker, Silas J., Louisville, Ky. Slat-fence-wire twistor	486,025	Nov. 8	1339	355	61	864
Blankensop, Peter, Jr., assignor of one-half to L. Walter, Wellsburg, W. Va. Mold for glassware	486,392	Nov. 15	1933	512	61	1000
Blesch, August F. (See Wilkins and Blesch.)						
Blessing, Oskar, Dresden, Germany. Motor-car	486,660	Nov. 22	2351	615, 616	61	1094
Bletzer, Henry. (See Wentzel and Bletzer.)						
Blickenstorfer, Diethelm. (See Pearson and Sperle, assignors.)						
Blivan, Alonso P., Brooklyn, N. Y. Construction of ships	484,888	Oct. 25	2145	550	61	472
Bloch, Solomon. (See Wells, George H., Jr., assignor.)						
Block, Louis, New York, N. Y. Refrigerating-machine	487,706	Dec. 13	762	195	61	1489
Bloom, Nicklos H., assignor of one-half to J. F. Loos, Nashua, Iowa. Vehicle-spring	487,414	Dec. 6	307	79	61	1382
Blume, Charles A., Attica, assignor to F. E. Minor, Colfax, Ind., and O. C. Minor, Gardner, Ill. Hay-ricker	486,751	Nov. 22	2497	632, 633	61	1125
Boatman, Frank P., Indianapolis, Ind., assignor to Morris Box Lid Company, Pittsburg, Pa. Car-axle-box lid	483,801	Oct. 4	419	104	61	87
Boatner, Jacob, Township 1, Range 2, East, Amite county, Miss. Tool	485,148	Oct. 25	2551	655	61	553
Bodani, Joseph. (See Lehr and Bodani.)						
Bodding, Andor, Drammen, Norway. Apparatus for drawing maps and plots of ground	484,905	Oct. 25	2171	558, 559	61	478
Bodley, Homer S., Baton Rouge, La. Car starter and brake	488,865	Dec. 27	2661	659	61	1900
Boeckmann, Eduard, St. Paul, Minn. Steriliser for surgical instruments, &c.	484,927	Oct. 25	2216	571	61	486
Boehme, Carl L., Dresden, Germany. Transom-lifter	483,597	Oct. 4	190	29, 30	61	25
Boehringer & Soehne, C. F. (See Ach, Fritz, assignor.)						
Boeklen, Reinhold, Omaha, Nebr., assignor of one-half to I. S. Elkins, New York, N. Y. Water-gas generator	484,730	Oct. 18	1863	474	61	401
Boemermann, George, Brooklyn, N. Y. Cash register, indicator, and check-printer	486,577	Nov. 22	2214	580, 581, 582	61	1066
Bofinger, William H. (See Cook, Gustave, assignor.)						
Bofinger, William H. (See Tannenberg, August O., assignor.)						
Boggess, J. S., agent. (See Grant and Murray, assignors.)						
Bogga, William L., *et al.* (See Grantland, John W., assignor.)						
Bogue, Charles J., New York, N. Y. Dynamo-regulator	488,261	Dec. 20	1697	424	61	1693
Bohn, René, Mannheim, assignor to Badische Anilin and Soda Fabrik, Ludwigshafen, Germany. Blue dye	484,697	Oct. 18	1814	.....	61	392
Boileau, Etienne, St. Louis, Mo., assignor to Improved Zigzag Grate Bar Company, of Missouri. Furnace grate-bar	485,527	Nov. 1	567	152	61	689
Boisvert, Napoleon. (See Hamilton and Boisvert.)						
Bokop, Henry D. (See Sites, Frank B., assignor.)						
Bolenbaugh, Cyrus, and E. B. Wagner, Warsaw, Ind. Bolting-reel	488,866	Dec. 27	2662	659	61	1901
Boles, Jacob E., assignor of one-half to A. Wilson, Alta, Iowa. Band-cutter and feeder	487,363	Dec. 6	208	57	61	1361
Boll, Otto, Lehigh, Iowa. Corn-planter	484,991	Oct. 25	2317	597	61	505
Bolthoff, William H., assignor to Milner Manufacturing Company, Denver, Colo. Permutation-padlock	488,516	Dec. 20	2109	523	61	1776
Bolton, James. (See Rontke, Albert, assignor.)						
Bolton, James, Chicago, Ill. Shuttle for sewing-machines	484,395	Oct. 18	1338	340	61	296
Bolton, James, Chicago, Ill. Feeding mechanism for sewing-machines	484,396	Oct. 18	1338	341	61	296
Bolton, James, Chicago, Ill. Shuttle-operating mechanism for sewing-machines	484,397	Oct. 18	1340	341	61	296
Bolton, James, Chicago, Ill. Take-up for sewing-machines	484,398	Oct. 18	1341	341	61	296
Bolton, James, Chicago, Ill. Dress-guard and driving-wheel support	484,399	Oct. 18	1342	342	61	297
Bolton, James, Chicago, Ill. Shuttle-operating mechanism for sewing-machines	484,400	Oct. 18	1343	342	61	297
Bolton, James, Chicago, Ill. Sewing-machine stand	484,401	Oct. 18	1344	342, 343	61	297
Bolton, James, Chicago, Ill. Feeding mechanism for sewing-machines	484,402	Oct. 18	1345	343	61	298
Boman, Claes W., assignor to Eagle Pencil Company, New York, N. Y. Lead or crayon holder	484,133	Oct. 11	905	232	61	200
Bommer, Lorenz, Brooklyn, N. Y. Spring-hinge	485,366	Nov. 1	338	80	61	641
Bonbrake, Lewis S., Waynesburg, assignor to Fostoria Steel Roofing Company, Fostoria, Ohio. Eaves-trough	485,573	Nov. 1	646	172	61	706
Bonnaffon, Albert L. (See Lindsay, James G., assignor.)						
Bonnaffon, Albert L., Philadelphia, Pa. Fence	486,752	Nov. 22	2501	653	61	1125
Bond, Edward S., Birmingham, England. Detector stop-motion for wire-netting machines	484,992	Oct. 25	2318	597, 598	61	506

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Bond, Nathan O., Fairfax Court-House, Va., assignor of three-fourths to G. B. Mathews, Washington, D. C. Water-receptacle for wash-stands	483,526	Oct. 4	14	3	61	6
Bond, Nathan O., Fairfax Court-House, Va., assignor of one-half to S. J. Meeks, Washington, D. C. Wash-stand	484,649	Oct. 18	1744	443	61	376
Bonnet, Adrien. (See Virgile, Edouard de, assignor.)						
Bonta, James W., Wayne, assignor to J. H. Shakespeare, trustee, Philadelphia, Pa. Machine for grinding glass	483,527	Oct. 4	15	3, 4	61	6
Bookwalter, Francis M. (See Bookwalter, John W. and F. M.)						
Bookwalter, John W. and F. M., Springfield, Ohio. Water-wheel	488,056	Dec. 13	1363	338, 339	61	1610
Boomhour, Eli E., Morrisville, Vt. Truss	486,753	Nov. 22	2502	653	61	1196
Booth, Alonzo, Augusta, Mont. Bundle-carrier and band-cutter	487,707	Dec. 13	764	196	61	1489
Booth, Isaac J. (See Hendrick, Augustus D., assignor.)						
Booth, Thomas C., New York, N. Y. Bottle-stopper	486,391	Nov. 15	1921	481	61	978
Booth, Thomas C., and E. G. Rutty, New York, N. Y. Glove-fastener	487,922	Dec. 13	959	242	61	1529
Bootman, William H., Waterford, assignor to J. Knickerbacker, Troy, N. Y. Hydrant	485,603	Nov. 8	690	182	61	730
Borchardt, Albert, deceased, Brooklyn, N. Y.; L. Borchardt, executrix. Portable cylindrical drier for fabrics	487,600	Dec. 6	585	149, 150	61	1437
Borchardt, Louise, executrix. (See Borchardt, Albert.)						
Borchers, Richard C., Philadelphia, Pa. Friction device	483,892	Oct. 4	548	138	61	114
Borchers, William H., Pheasant Branch, Wis. Car-coupling	486,949	Nov. 29	2870	742	61	1215
Bordner, Jerome M., Palmyra, Pa. Metallic cross-tie	486,077	Nov. 15	1425	376	61	898
Borneman, Herman F. A., and J. Daab, Columbus, Ohio. Spiral stairway	485,449	Nov. 1	461	123	61	666
Bortner, Uriah. (See Schnarr, Henry R., assignor.)						
Bosch, Adam, Newark, N. J. Electrical door-trip for engine-houses	485,367	Nov. 1	339	89	61	642
Bosmann, Nicolas, assignor of one-half to G. H. Sterne, Chicago, Ill. Nut-lock	488,958	Dec. 27	2812	693	61	1932
Bosse, Eugene, St. Paul Park, assignor of one-half to C. N. Bell, St. Paul, Minn. Machine for treating flax or other fiber-yielding plants	485,734	Nov. 8	898	240, 241	61	773
Boston and Lockport Block Company. (See Rusgrove, Henry W., assignor.)						
Boston Cash Register Company. (See Foote, Edward N., assignor.)						
Boston Cash Register Company. (See Webster, Jerome J., assignor.)						
Boston Street Sweeping Machine Company. (See Ethridge, Martin V. B., assignor.)						
Bostwick, Charles E., Du Bois, Pa. Track-cleaner	485,528	Nov. 1	569	152	61	689
Bosworth, Charles B., Everett, assignor to Crosby Steam Gage and Valve Company, Boston, Mass. Pressure-gage	485,404	Nov. 1	397	107	61	654
Bothe, Herman H., St. Louis, Mo. Fifth-wheel	488,110	Dec. 13	1447	363	61	1627
Botsford, George, New Haven, Conn. Hydrocarbon-oil vaporizer and burner	486,026	Nov. 8	1340	356	61	864
Bottome, Turner D., Hoosick, N. Y. Antifriction alloy	484,084	Oct. 11	841	.....	61	187
Bouck, Hiram, and J. H. Lovendale, Salt Lake City, Utah Ter. Balance-wheel	486,754	Nov. 22	2503	653	61	1126
Bourke, Martin, Youngstown, Ohio. Sash-fastener	486,425	Nov. 22	1993	529	61	1094
Bourret, Louis H. (See Bredsvold, Paul A., assignor.)						
Bovet, Armand de, Paris, France. Application of magnetic attraction	486,393	Nov. 15	1935	513	61	1000
Bowden, Fountain P. (See Kirksey and Bowden.)						
Bowerbank, John W., Jersey City, N. J., assignor to E. and S. Tausig, New York, N. Y. Disinfecting device	487,979	Dec. 13	1207	302	61	1577
Bowers, Alphonso B., Washington, D. C. Apparatus for dredging and transporting spoil	484,763	Oct. 18	1921	490	61	414
Bowers, Andrew, Bucklin, Mo. Fire-escape	485,834	Nov. 8	1025	275	61	798
Bowers, Eugene M. (See Van Dyke and Stobaugh, assignors.)						
Bowers, George W. (See Bierer, George W., assignor.)						
Bowers, William, assignor of one-half to C. M. Woolcott, New York, N. Y. Cable-crossing	488,202	Dec. 20	1699	424	61	1693
Bowman, Ezra F. (See Bradshaw, Charles T., assignor.)						
Bowman, Frank, Brooklyn, N. Y. Book	483,893	Oct. 4	549	139	61	114
Bowman, Frank, Brooklyn, N. Y. Index	486,755	Nov. 22	2503	654	61	1126
Bowman, Minard S. (See Ross and Keller, assignors.)						
Boyd, Birt K., *et al.* (See Butcher, John F., assignor.)						
Boyd, John, Elmhurst, Ill. Apparatus for tempering cream	487,708	Dec. 13	765	196	61	1489
Boyd, Lawson A., Indianapolis, Ind. Railway-signal case	483,528	Oct. 4	17	4	61	6
Brace, De Witt B., Lincoln, Nebr. System of electrical distribution	484,549	Oct. 18	1581	401	61	344
Bracey, Smith H., Weston, W. Va. Railway-snike	487,111	Nov. 29	3119	800	61	1265
Bracher, Thomas W., New York, and S. W. Balch, Yonkers, N. Y.; said Balch assignor to said Bracher. Machine for stitching sweat-bands for hats	488,934	Dec. 27	2768	683	61	1923
Brackett, John W., Boston, Mass. Pianoforte	484,403	Oct. 18	1347	344	61	298
Brada, Charles, assignor to Goetz & Brada, Chicago, Ill. Countersinking-machine	485,485	Nov. 1	513	135	61	676
Bradford, Benjamin P., Worcester, Mass. Leather-tanning vat	483,734	Oct. 4	313	79	61	66
Bradford, John, Marcelline, Ill. Car-coupling	487,243	Dec. 6	11	3	61	1321
Bradford, Nelson E., Allegheny, Pa. Vehicle-jack	486,064	Nov. 8	1400	370	61	875
Bradley, Charles S., New York, N. Y. Armature for dynamo-electric machines and electric motors	486,078	Nov. 15	1426	376, 377	61	898
Bradley, Charles S., Yonkers, N. Y. Electric motor	488,305	Dec. 20	1767	445	61	1706
Bradley, Charles S., Avon, N. Y. Alternating-current motor	488,306	Dec. 20	1768	446	61	1707
Bradley, Charles S., Avon, N. Y. System of distribution for polyphase alternating currents	488,307	Dec. 20	1771	446	61	1707
Bradley, Christopher C. (See Faulder, Thomas, assignor.)						
Bradley, Christopher C., Syracuse, N. Y. Thill-coupling	485,368	Nov. 1	340	90	61	642
Bradley, Christopher C., Syracuse, N. Y. Thill-coupling	485,856	Nov. 8	1059	282	61	806
Bradley, Henry L., New Haven, Conn. Shelf-bracket	485,857	Nov. 8	1061	282	61	806
Bradley, Lindsay H., Flushing, Ohio. Truss for mining-machines	488,349	Dec. 20	1846	461	61	1722
Bradshaw, Charles T., Philadelphia, assignor to E. F. Bowman, Lancaster, Pa. Apparatus for cleaning jewelry or like objects	486,756	Nov. 22	2505	654	61	1126
Brailly, Philippe, Ballatre, Ohio. Carriage-brake	487,512	Dec. 6	459	119	61	1411
Brainard, Curtis R., Joliet, Ill. Bale-tie	485,253	Nov. 1	151	44	61	604
Brand, Henry, Duluth, assignor of one-fourth to A. Johnson and R. Davenport, St. Paul, Minn. Belt-tightener	486,155	Nov. 15	1570	416	61	926
Brandenburg, Frederick C. (See Brandenburg, George, assignor.)						
Brandenburg, George, assignor of one-half to F. C. Brandenburg, Philadelphia, Pa. Shears	488,959	Dec. 27	2815	693	61	1933
Brandly, Al. R., *et al.* (See Beers, Franklin H., assignor.)						
Brassfield, James L., *et al.* (See Scott, Matthew T., assignor.)						
Bratolubeff, Alexander, Bielsk Tsertkov, Russia. Means for superheating steam	487,317	Dec. 6	133	39	61	1347
Bray, Charles W., assignor to Lloyd Booth Company, Youngstown, Ohio. Rolling-mill	488,935	Dec. 27	2770	684	61	1923
Bray, Mellen N., Brooklise, and E. M. Pope, Quincy, Mass.; said Pope assignor to said Bray. Rivet-setting machine	483,598	Oct. 4	121	30, 31	61	26
Brayton, Richard, assignor to Michigan Fire Ladder and Engine Company, Grand Rapids, Mich. Fire-ladder	487,235	Nov. 29	3349	851	61	1305
Brazier, Edwin, assignor to E. J. Brazier, M. B. Watt, North Topeka, and T. B. Peacock, Topeka, Kans. Counter-stiffener	485,604	Nov. 8	691	182	61	730

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Brazier, Eleanor J., *et al.* (See Brazier, Edwin, assignor.)						
Breck, George E. (See Welch, Thomas, assignor.)						
Bredsvold, Paul A., assignor of one-half to L. H. Bourret, Chicago, Ill. Adjustable chair or stool	483,777	Oct. 4	387	96	61	81
Breed, David R., Chicago, Ill. Magic lantern	488,057	Dec. 13	1365	339	61	1611
Breed, David R., Chicago, Ill. Clamp for binding the edges of lantern-slides	488,058	Dec. 13	1368	389	61	1611
Breed, Edwin S., Paterson, N. J. Oil-filter	483,599	Oct. 4	124	31	61	26
Breese, Herbert J., Olean, N. Y. Embalming apparatus	487,244	Dec. 6	12	4	61	1323
Brennaman, Jacob W., Abilene, Kans. Fence-building tool	485,835	Nov. 8	1025	275	61	799
Brennan, Daniel, Jr., Bayonne, N. J. Crushing-roll	488,867	Dec. 27	2664	660	61	1901
Brennan, Matthew, *et al.* (See Klenha, Vaclav, assignor.)						
Brenner, David H., assignor to J. T. Phillips, Grand Rapids, Mich. Miter-cutting machine	484,874	Oct. 25	2117	545	61	467
Brentano, Simon, *et al.* (See De Kalb, Courtenay, assignor.)						
Bressler, Frederick. (See Ilbery, William, assignor.)						
Brewing Improvement Company. (See Fringe, Charles H., assignor.)						
Brewster, James N., Coney Island, N. Y. Hose-nozzle guide for walls	488,684	Dec. 27	2289	567	61	1895
Breyer, Johannes F., Hamburg, Germany. Aquatic velocipede	485,369	Nov. 1	342	90, 91	61	642
Brickell, Edward N., Winton, N. C. Cotton-chopper	486,661	Nov. 22	2354	616	61	1095
Brierley, William, Rochdale, England. Confectioner's kettle	484,134	Oct. 11	907	232	61	200
Brigg, Thomas H., Bradford, England. Means for connecting draft-animals to vehicles	486,837	Nov. 22	2643	690	61	1155
Briggs, Alfred, Ottumwa, Iowa, assignor to himself and J. T. Hackworth. Friction-clutch	487,245	Dec. 6	13	4	61	1323
Briggs, Frank H., Cleveland, Ohio, assignor to American Water Transportation Company, Chicago, Ill. Conveyer-barge storage-vessel	485,836	Nov. 8	1026	275, 276	61	799
Briggs, Jerome C. (See Winget, Marion A., assignor.)						
Briggs, Thomas A., Arlington, Mass. Paper-feeding machine	487,513	Dec. 6	460	120, 121	61	1412
Briggs, Thomas A., Arlington, Mass. Paper-separating mechanism	487,514	Dec. 6	463	121, 122	61	1412
Brigham, Arthur A., Weston, Mass. Spindle	484,698	Oct. 18	1815	461	61	392
Bright, William H. (See Packham, William H., assignor.)						
Brill, George M., Philadelphia, Pa. Brake mechanism for car-trucks	485,858	Nov. 8	1062	282, 283	61	806
Brinkerhoff, Warren M. (See Markham, De Witt C., assignor.)						
Brintnall, Thomas M., Medina, Ohio. Safe	488,960	Dec. 27	2815	694	61	1933
Brintnall, Thomas M., Medina, Ohio. Safe	488,961	Dec. 27	2817	695	61	1934
Brintnall, Thomas M., Medina, Ohio. Safe	488,962	Dec. 27	2818	695	61	1934
Brinton, John H., Jr., Philadelphia Pa. Lathe-dog	485,405	Nov. 1	398	107	61	654
Brittain, Arlington D. (See Brittain and Shrum, assignors.)						
Brittain, Herbert C., and P. J. Shrum; said Shrum assignor to A. D. Brittain, Beaver Falls, Pa. Wire mat	487,700	Dec. 6	747	191	61	1468
Britton, Louis H., assignor of one-half to J. B. Warner, New Lisbon, Ohio. Sheet-metal roof	487,172	Nov. 29	3215	823	61	1283
Broadbent, Robert, Stalybridge, England. Machine for winding yarn or thread	484,171	Oct. 11	975	240	61	213
Broadbooks, Peter, Batavia, N. Y. Thill-coupling	484,566	Oct. 18	1602	407	61	348
Broadbooks, Peter, Batavia, N. Y. Pocket-gage	484,567	Oct. 18	1603	407	61	348
Broadfoot, Peter M., Decatur, Ala. Wheeled scraper	485,085	Oct. 25	2456	632	61	534
Brock, Arthur. (See Ashby, George J. M., assignor.)						
Brock, Charles, *et al.* (See Morrell, Robert, assignor.)						
Brockie, James, London, England. Electric-arc lamp	486,757	Nov. 22	2507	654	61	1126
Brodbeck, George W., Los Angeles, Cal. Bee-smoker	484,172	Oct. 11	976	250	61	213
Brolin, Peter, assignor of one-half to J. H. Edinger, Ransom, Mich. Wrench	484,288	Oct. 11	1164	296	61	250
Bromley, Daniel W., assignor of one-half to M. T. McEldowney and S. P. Kerr, Winchester, Ky. Press	486,662	Nov. 22	2355	616, 617	61	1095
Bromwell, John R., assignor to C. A. Black, Nashville, Tenn. Animal-trap	488,111	Dec. 13	1447	364	61	1627
Bronder, Gaston A., New York, N. Y. Steam steering-gear	487,401	Dec. 6	281	72, 73	61	1376
Brook, James W., Lynchburg, Va. Elevator	483,894	Oct. 4	550	139	61	114
Brooke, Isaac, Pottstown, assignor to Floyd, Wells & Company, Royer's Ford, Pa. Oven-plate	487,911	Dec. 13	1109	277	61	1558
Brooke, William E., assignor to American Saw Company, Trenton, N. J. Wrench	486,758	Nov. 22	2508	655	61	1127
Brooke, William E., assignor to American Saw Company, Trenton, N. J. Combined wrench and screw-driver	486,759	Nov. 22	2510	655	61	1127
Brooks, Chapin C., Cape Elizabeth, Me. Knife	486,426	Nov. 22	1994	529	61	1094
Brooks, Edward J., East Orange, N. J., assignor to E. J. Brooks & Company, New York, N. Y. Seal-press	485,370	Nov. 1	343	91, 92	61	643
Brooks, Edward J., East Orange, N. J., assignor to E. J. Brooks & Company, New York, N. Y. Registering hand-stamp	487,657	Dec. 6	677	174	61	1455
Brooks, George W. (See Brooks, Texas, assignor.)						
Brooks, Henry M., Everett, Mass. Cordage-manufacturing apparatus	483,665	Oct. 4	217	54	61	44
Brooks, John B., Birmingham, England. Cycle-saddle	484,289	Oct. 11	1165	296	61	250
Brooks, John B., Birmingham, England. Cycle-saddle	484,290	Oct. 11	1166	297	61	250
Brooks, Luther F., Boston, Mass. Cuff-button	484,291	Oct. 11	1168	297	61	251
Brooks, Texas, Harwood, assignor of one-half to G. W. Brooks, Luling, Tex. Plow-stock	485,254	Nov. 1	152	44	61	604
Brooks, Wash W. (See Crisp, James E., assignor.)						
Brooksbank, Frederick C., *et al.* (See Glossop, Gilbert, assignor.)						
Brooksbank, Frederick C., Cleveland, Ohio. Power-hammer	485,168	Nov. 1	14	4	61	576
Brooksbank, Frederick C., Cleveland, Ohio. Power-hammer	485,169	Nov. 1	16	5	61	576
Broom, Henry, assignor to A. Whiteley, Springfield, Ohio. Lawn-mower	487,711	Dec. 13	769	197, 198	61	1490
Brophy, Owen, assignor of one-third to J. J. Rooney, New Bedford, Mass. Clearer-roll for drawing-frames	487,693	Dec. 6	740	189	61	1467
Brorby, Jacob I. (See Opperud and Brorby.)						
Broughton, Charles A., Conway, N. H. Method of and machine for forming spool-blanks	488,421	Dec. 20	1963	490, 491	61	1745
Brouwer, Theophilus A., Jr., East Hampton, N. Y. Artist's sketching-screen	486,322	Nov. 15	1892	481	61	978
Brouwer, Theophilus A., Jr., East Hampton, N. Y. Screen for lamps or gas-lights	486,323	Nov. 15	1894	481	61	978
Brower, Thaddeus B., Templeton, assignor of one-half to W. H. Scott, San Francisco, Cal. Car-coupling	487,694	Dec. 6	740	189	61	1467
Brown, Alexander O., San Francisco, Cal. Book or music-leaf holder	484,292	Oct. 11	1169	298	61	251
Brown, Alexander T., Syracuse, N. Y. Type-making machine	484,135	Oct. 11	908	232, 233	61	200
Brown, Alexander T., Syracuse, N. Y. Type-writer cabinet	484,136	Oct. 11	911	234	61	201
Brown, Alexander T., and G. F. Stillman, Syracuse, N. Y. Pneumatic tire for vehicles	488,494	Dec. 20	2075	516	61	1760

Alphabetical list of patentees, October to December, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Brown, Alfred H., *et al.* (See Gould, Samuel A., assignor.)						
Brown, Arthur F., assignor to Stoddard Manufacturing Company, Dayton, Ohio. Harrow	486,307	Nov. 15	1638	433, 434	61	939
Brown, Augustus P., Fort Madison, Iowa. Machine for slitting and winding paper	484,173	Oct. 11	978	250	61	214
Brown, Carver C., El Paso, Tex. Railway-construction car	487,045	Nov. 29	3011	775	61	1242
Brown, Charles F., trustee. (See Keith, Thomas K., assignor.)						
Brown, Charles M., Chicago, Ill. Process of and machine for soldering	485,906	Nov. 8	1143	303	61	822
Brown, Charles M., Chicago, Ill. Process of and machine for soldering	485,907	Nov. 8	1146	304	61	823
Brown, Gust A., Manley, Nebr. Trace-carrier	486,846	Nov. 29	2667	697	61	1174
Brown, Irving A., assignor to Malin & Company, Cleveland, Ohio. Sash-fastener	485,606	Nov. 8	694	183	61	731
Brown, James D., Philadelphia, Pa. Machinery bearing	484,993	Oct. 25	2320	599	61	506
Brown, James S., Eureka, Cal. Neck-yoke	487,112	Nov. 29	3120	800	61	1265
Brown, John H. (See Beery, Samuel M., assignor.)						
Brown, John H., New York, N. Y., assignor to American Fiber Association, of Georgia. Apparatus for pressing and disintegrating fibrous material	485,837	Nov. 8	1028	276	61	799
Brown, John S., Jersey City, N. J. Printer's chase	487,710	Dec. 13	768	197	61	1490
Brown, Julius C., Kansas City, Mo., assignor of one-half to T. R. Dawe, Santa Barbara, Cal. Nut-lock	484,731	Oct. 18	1865	474	61	401
Brown, Kirk, Philadelphia, Pa. Inflatable tire for vehicle-wheels	485,605	Nov. 8	692	182	61	730
Brown, Lincoln F., Xenia, Ohio. Bridle-bit	484,994	Oct. 25	2321	509	61	506
Brown, Linus W., New Orleans, La. System for protecting riparian lands from overflow	488,422	Dec. 20	1965	491	61	1745
Brown, Linus W., New Orleans, La. Bagasse-carrier	488,423	Dec. 20	1967	491	61	1745
Brown, Mary. (See Toney, Squire, assignor.)						
Brown, Nehemiah H., Norwich, N. Y. Chimney-rack	487,601	Dec. 6	586	150	61	1438
Brown, Orlando, trustee. (See Molloy, Frank, assignor.)						
Brown, Patrick, Buffalo, N. Y. Locomotive	486,555	Nov. 22	2170	573	61	1059
Brown, Perry, Sharonville, Ohio. Draw-bar attachment for cars	486,427	Nov. 22	1995	529, 530	61	1025
Brown, Samuel, Quincy, Ohio. Snap-hook	487,980	Dec. 13	1208	302	61	1578
Brown & Sharpe Manufacturing Company. (See Phillips, Charles H., assignor.)						
Brown & Sharpe Manufacturing Company. (See Sylvia, George, assignor.)						
Brown, Stephen J., *et al.* (See Gibbons, John, assignor.)						
Brown, Theodore H., assignor of one-half to E. S. Goodell, Viroqua, Wis. Gang band-saw	487,658	Dec. 6	678	174	61	1456
Brown, Thomas E., Jr., New York, N. Y., assignor, by mesne assignments, to National Company, Chicago, Ill. Hydraulic elevator	487,709	Dec. 13	766	196	61	1490
Brown, Thomas S., assignor to Adriance, Platt & Company, Poughkeepsie, N. Y. Mowing-machine	488,496	Dec. 20	2077	516	61	1769
Brown, William E., Wilawana, Pa., and L. H. Smith, assignors of one-third to A. G. Miller, Elmira, N. Y. Railway-switch	488,263	Dec. 20	1701	425	61	1694
Brown, William H., Worcester, Mass. Instrument for drawing chords	488,327	Dec. 20	1807	453	61	1714
Brown, William J., Philadelphia, Pa. Staple-inserting device	488,308	Dec. 20	1773	446, 447	61	1707
Browne, Arthur W. (See Johnston and Browne.)						
Browne, Benjamin F., assignor of one-half to A. C. Strickland, Anderson, S. C. Saw-gin	484,906	Oct. 25	2175	559	61	479
Browne, William L., Worcester, Mass. Trolley-catcher	488,706	Dec. 27	2417	599	61	1850
Brownell, Frederick B., St. Louis, Mo. Street-car. (Reissue)	11,289	Nov. 29	3348	852	61	1306
Browning, John M., Ogden, Utah Ter., assignor to Winchester Repeating Arms Company, New Haven, Conn. Magazine-gun	486,274	Nov. 15	1759	463	61	965
Browning, John M. and M. S., Ogden, Utah Ter., assignors to Winchester Repeating Arms Company, New Haven, Conn. Breech-loading firearm	486,272	Nov. 15	1750	461, 462	61	963
Browning, John M. and M. S., Ogden, Utah Ter., assignors to Winchester Repeating Arms Company, New Haven, Conn. Breech-loading firearm	486,273	Nov. 15	1754	462, 463	61	964
Browning, John M. and M. S., Ogden, Utah Ter., assignors to Winchester Repeating Arms Company, New Haven, Conn. Magazine-firearm	487,659	Dec. 6	679	175	61	1456
Browning, John M. and M. S., Ogden, Utah Ter., assignors to Winchester Repeating Arms Company, New Haven, Conn. Holder for cartridge-packs	487,660	Dec. 6	685	175	61	1457
Browning, Matthew S. (See Browning, John M. and M. S.)						
Bruening, William, East Orange, N. J. Telephony	485,859	Nov. 8	1064	283	61	806
Bruening, William, East Orange, N. J. Apparatus for recording speech or other sounds	486,394	Nov. 15	1936	513	61	1000
Bruening, William, East Orange, N. J. Apparatus for recording speech or other sounds	486,606	Nov. 22	2270	592	61	1077
Bruninghausen, Edward W. (See Mahoney, James T., assignor.)						
Bruhn, Friedrich W. G., Hamburg, Germany. Fare-registering apparatus for vehicles	485,529	Nov. 1	570	152, 153	61	690
Brumfield, Alonzo L., Paterson, N. J. Sign	484,174	Oct. 11	979	251	61	214
Bruner, Andrew J., Madison, Mo. Garden-cultivator	487,113	Nov. 29	3122	801	61	1265
Brüngger, Hermann, Cunnersdorf, assignor to F. Salomon, Berlin, Germany. Lining digesters	483,826	Oct. 4	459	114, 115	61	95
Brüngger, Hermann, Cunnersdorf, assignor to F. Salomon, Berlin, Germany. Lining digesters	483,827	Oct. 4	461	115	61	95
Brüngger, Hermann, Cunnersdorf, assignor to F. Salomon, Berlin, Germany. Digester	483,828	Oct. 4	463	115, 116	61	95
Brunner, Andrew, New York, N. Y. Clothes-line supporting-link	488,868	Dec. 27	2666	660	61	1902
Bruns, Henry H. (See Droste and Bruns.)						
Brush Electric Company. (See Pfannkuche, Gustav, assignor.)						
Bryant, Charles A., Wakefield, Mass., assignor to A. A. Wright, New York, N. Y. Hook and eye	487,209	Nov. 29	3967	835	61	1292
Bryant, Charles K. (See Doebler and Bryant.)						
Bryant, George H., Newton, and V. Beauregard, Boston, Mass. Lifting-jack	486,528	Nov. 22	2136	564	61	1053
Bryant, Sallie P., Baltimore, Md. Cigarette-holder	486,429	Nov. 22	1999	530	61	1026
Bryant, William H., North Amherst, Ohio. Stone-channeling machine	486,847	Nov. 29	2668	698	61	1174
Bryner, Isaac, Callaway, Nebr. Photographic dark-chamber	484,699	Oct. 18	1815	461	61	392
Bryon, William J. O., Jr., New York, N. Y. Air-cylinder	483,529	Oct. 4	18	4	61	7
Bryon, William J. O., Jr., New York, N. Y. Air-cylinder	483,929	Oct. 4	465	116	61	96
Bryon, William J. O., Jr., New York, N. Y. Combined pressure gage and register	487,515	Dec. 6	465	122	61	1413
Buchanan, John H., Ilkeston, England. Hymn-indicator	485,122	Oct. 25	2507	644	61	545
Buchanan, John W., Smithville, Ohio. Wire-reel	483,830	Oct. 4	467	116	61	96
Buchanan, John W., Smithville, Ohio. Wire fence	483,831	Oct. 4	467	116	61	96
Buchman, William M., Columbia, Tenn. Thill-support	488,180	Dec. 20	1567	393	61	1668
Buchterkirchen, Henry C. W., Staunton, Ill. Car-loader	486,079	Nov. 15	1428	377	61	899
Buck, Henry C., Somerville, Mass. Coil for electrical apparatus	486,926	Nov. 29	2831	733	61	1204
Buckhalter, Frederick, *et al.* (See Diebel, William, assignor.)						
Buckingham, Charles L., New York, N. Y. Printing-telegraph	487,981	Dec. 13	1209	302, 303	61	1578
Buckingham, Charles L., New York, N. Y. Printing-telegraph	487,982	Dec. 13	1216	303, 304, 305	61	1579
Buckingham, Charles L., New York, N. Y. Printing-telegraph	487,983	Dec. 13	1222	305	61	1580
Buckingham, Charles L., New York, N. Y. Synchronous multiple telegraph	487,984	Dec. 13	1225	306	61	1581
Buckingham, Charles L., New York, N. Y. Printing-telegraph	487,985	Dec. 13	1228	306, 307	61	1582
Buckingham, Charles L., New York, N. Y. Printing-telegraph	487,986	Dec. 13	1233	307	61	1582
Buckland, Harry W., assignor of one-half to A. Baird, Waterbury, Conn. Drill and eccentric chuck	488,382	Dec. 20	1901	476	61	1732
Buckley, Alfred P., Philadelphia, Pa. Game apparatus	483,895	Oct. 4	552	139	61	114
Buckley, Robert C., Peoria, Ill. Straddle-row cultivator	486,027	Nov. 8	1341	356	61	864
Buckner, James, assignor of one-half to G. W. Hollis, Boston, Mass. Apparatus for manufacturing ice	485,149	Oct. 25	2552	655, 656	61	554
Buddenberg, Henry C., Cincinnati, Ohio. Catch-basin water-closet	486,428	Nov. 22	1997	530	61	1025
Buehl, Hermann, Philadelphia, Pa. Confectionery or other box	487,085	Nov. 29	3979	791	61	1256
Buell, Samuel K., Worcester, Mass. Brake-shoe	484,404	Oct. 18	1349	344	61	298
Buese, Louis, and J. Cowling, Republic, Mich. Rod-coupling	483,896	Oct. 4	553	140	61	115
Buff, Joseph, Columbus, Ohio. Hand-stamp	486,080	Nov. 15	1429	378	61	899
Buffalo Automatic Machine Company. (See Dutton, William H., assignor.)						
Buffham, Louis L., Racine, Wis. Vehicle-pole	483,531	Oct. 4	22	5	61	7
Buford, Jefferson L., Birmingham, Ala. Roundabout	483,530	Oct. 4	20	5	61	7
Buhlmann, Georg, Berlin, Germany. Warp-knitting machine	484,844	Oct. 25	2077	534	61	458
Buhoup, Henry C., Chicago, Ill., assignor to W. McConway, Pittsburg, Pa. Car coupling and buffing mechanism	488,496	Dec. 20	2079	516, 517	61	1770
Buhrman, Edward R., Cincinnati, Ohio. Automatic air-vent for casks	488,160	Dec. 13	1530	384	61	1644
Buisson, Ignace, New York, N. Y. Latch and lock combined	488,750	Dec. 27	2480	616	61	1863
Bullard, Frederick H., Chicopee, Mass., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Safe-boltwork	486,817	Nov. 22	2610	679, 680	61	1148
Bumann, Theodore, Bunker Hill, Ill. Oil-can and siphon-pump	486,760	Nov. 22	2511	655	61	1127
Bundy Manufacturing Company. (See Bundy, Willard L., assignor.)						
Bundy, Willard L., Binghamton, N. Y., assignor to Bundy Manufacturing Company. Workman's time-recorder	486,028	Nov. 8	1342	356, 357	61	864
Bundy, Willard L., assignor to Bundy Manufacturing Company, Binghamton, N. Y. Watchman's time-recorder	488,687	Dec. 27	2390	592, 593	61	1845
Bunger, John. (See Bauer, Harry, and Bunger.)						
Bunker, Harman, assignor of one-half to J. H. McKeggie, Barrie, Canada. Clutch	488,383	Dec. 20	1903	476	61	1733
Bunker, Harman, Barrie, Canada, assignor to M. J. Althouse, Waupun, Wis., G. T. Blackstock and J. C. McKeggie, Toronto, and J. H. McKeggie, Barrie, Canada. Door-closer	483,989	Oct. 11	706	178	61	160
Bunker, William I., La Grange, Ill. Spring	488,060	Dec. 13	1371	340	61	1612
Bunker, William I., La Grange, Ill. Vehicle-tire	488,061	Dec. 13	1372	341	61	1612
Bunker, William O., Nevada, Mo. Swing	487,246	Dec. 6	15	5	61	1324
Bunnell, Morton G., assignor to F. C. Austin, Chicago, Ill. Machine for making and repairing roads	488,112	Dec. 13	1448	364	61	1628
Burbridge, William R., Danbury, Nebr. Weed-cutting cultivator	484,405	Oct. 18	1351	345	61	299
Burgess, Charles M., assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Sash-cord guide	487,712	Dec. 13	772	198	61	1491
Burgess, James S., Marathon, N. Y. Extension-ladder	487,469	Dec. 6	398	102	61	1399
Burgner, Daniel F., Horse Creek, Tenn. Violin	483,897	Oct. 4	555	140	61	115
Burke, James E., assignor to J. W. Sefton Manufacturing Company, Anderson, Ind. Paper-box	488,059	Dec. 13	1370	340	61	1612
Burke, James V., Chicago, Ill. Steam-boiler furnace	487,602	Dec. 6	586	150, 151	61	1438
Burke, William P., Edina, Mo. Band-cutter and feeder	487,987	Dec. 13	1237	308	61	1583
Burks, Thomas J. (See Elkins, William F., assignor.)						
Burleigh, Charles B. (See Lean and Burleigh.)						
Burlingham, Samuel. (See Lee, Joseph W., assignor.)						
Burnam, Felder A., Medina, N. Y. Umbrella	484,773	Oct. 25	1949	497	61	432
Burnett, William P., assignor of one-half to H. E. Twitchell, Hamilton, Ohio. Napkin-adjuster	488,140	Dec. 13	1490	375	61	1636
Burns, David, Muskegon, Mich. Roller-case for sawmills, &c	484,490	Oct. 18	1490	379	61	325
Burns, John, Los Angeles, Cal. Fruit-cutting machine	484,995	Oct. 25	2322	599	61	506
Burns, Thomas. (See Pavyer and Burns.)						
Burr, George W., and M. Malony, Webster, Mass. Machine for napping cloth	484,700	Oct. 18	1817	462	61	392
Burr, William. (See Murray, Stephen D., assignor.)						
Burrell & Co., D. H. (See Hart, Frederick, assignor.)						
Burrell, Presto, Blackfoot, Idaho. Hay-elevator	486,848	Nov. 29	2669	698	61	1175
Burris, Edward, *et al.* (See Ford, Charles S., Jr., assignor.)						
Burroughs, Silas M., *et al.* (See Slater, Stanley R., assignor.)						
Burt, George. (See Dawson, Edward, assignor.)						
Burt, George R., Dalton, N. Y. Cash indicator and recorder	485,086	Oct. 25	2457	632, 633	61	535
Burton, Clarence A., assignor of two-thirds to L. G. Rowell, Kansas City, Kans., and A. R. Klebba, St. Louis, Mo. Journal-bearing	487,236	Nov. 29	3344	851	61	1305
Burton, George D., Boston, Mass., assignor to Electrical Forging Company, of Maine. Electric metal-heating apparatus	486,025	Nov. 22	2298	599, 600	61	1064
Burton, George D., assignor to Electrical Forging Company, Boston, Mass. Electrical metal-working apparatus	486,818	Nov. 22	2612	680, 681	61	1148
Burton, George D., Boston, and E. E. Angell, Somerville, Mass., assignors to Electrical Forging Company, of Maine. Electric forge	486,029	Nov. 8	1345	357	61	865
Burton, George D., Boston, and E. E. Angell, Somerville, Mass., assignors to Electrical Forging Company, of Maine. Electric forge	486,176	Nov. 15	1596	422, 423	61	931
Burton, George D., Boston, and E. E. Angell, Somerville, Mass., assignors to Electrical Forging Company, of Maine. Electrical method of and apparatus for forming tubes	486,624	Nov. 22	2297	599	61	1063
Burton, George D., Boston, and E. E. Angell, Somerville, Mass., assignors to Electrical Forging Company, of Maine. Electric forging apparatus	486,626	Nov. 22	2300	600, 601	61	1064
Burton, George D., Boston, and E. E. Angell, Somerville, Mass., assignors to Electrical Forging Company, of Maine. Electric forge	486,627	Nov. 22	2302	601	61	1065
Burton, George D., Boston, and E. E. Angell, Somerville, Mass., assignors to Electrical Forging Company, of Maine. Electric forge	488,466	Dec. 20	2029	506	61	1759
Burton, George D., Boston, and E. E. Angell, Somerville, Mass., assignors to Electrical Forging Company, of Maine. Electric metal-heating apparatus	488,467	Dec. 20	2030	507	61	1759
Burton, George D., Boston, and E. E. Angell, Somerville, Mass., assignors to Electrical Forging Company, of Maine. Electric metal-working apparatus	488,468	Dec. 20	2032	507	61	1760
Burton, George D., Boston, and E. E. Angell, Somerville, Mass., assignors to Electrical Forging Company, of Maine. Electric metal-heating apparatus	488,469	Dec. 20	2034	507	61	1760

Alphabetical list of patentees, October to December, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Burton, Wingfield, assignor of one-half to F. E. Sankey, Bilston, England. Press for drawing through and forming up sheet metal	486,065	Nov. 8	1401	371	61	875
Burwell, George A., Highlandville, Mass. Tire for bicycle-wheels	483,990	Oct. 11	708	178	61	160
Burwell, George A., Toledo, Ohio. Pneumatic-tired wheel	486,556	Nov. 22	2171	573	61	1060
Busfield, James, Haverhill, Mass. Buffing-roll	487,415	Dec. 6	308	79	61	1382
Bushee, Adolphus C., Clearport, assignor of one-half to C. M. Strickler, Lancaster, Ohio. Spoke-socket	485,170	Nov. 1	17	5	61	576
Business Men's Manufacturing Company. (See Miller, Edward I., assignor.)	488,113	Dec. 13	1450	365	61	1622
Busking, Henry F., assignor of one-half to G. D. Mitten, Indianapolis, Ind. Shaft-straightener	485,735	Nov. 8	901	241	61	774
Busse, Leopold, San Francisco, Cal. Dumping-wagon	484,732	Oct. 18	1866	475	61	401
Butcher, George J., *et al.* (See Butcher, John F., assignor.)	484,293	Oct. 11	1169	298	61	251
Butcher, John F., Fenton, assignor of two-thirds to G. J. Butcher and B. K. Boyd, Mount Pleasant, Mich. Window-screen frame	486,761	Nov. 22	2513	656	61	1127
Butler, Henry G. and W., assignors to Davy Clay Ballast Company, Kenosha, Wis. Burning clay to make ballast	483,600	Oct. 4	125	31	61	26
Butler, Henry S., Des Moines, Iowa. Race-course for horses	486,275	Nov. 15	1761	463	61	965
Butler, Janet N., Asbury Park, N. J. Back-rest	488,424	Dec. 20	1968	492	61	1746
Butler, Louis W., Brooklyn, N. Y. Safety attachment for elevators						
Butler, William. (See Butler, Henry G. and W.)						
Butler, William H. (See Westwood and Butler.)						
Büttel, Johann, Newark, N. J. Making ultramarine-blue	484,388	Oct. 18	1322	337	61	293
Byerly, Frank E., Philadelphia, Pa. Molding-cutter and head therefor	487,402	Dec. 6	283	73	61	1377
Byng, Frederick O., London, England. Photographic-printing frame	484,175	Oct. 11	980	251	61	214
Byof, Gustav A., Edgar, Nebr. Corn-husker	488,538	Dec. 27	2151	531	61	1798
Byrnes, Daniel J. (See Enos, John A., assignor.)						
C. F. Gessert Company. (See Gessert, Charles F., assignor.)						
Cabannis, G. A., *et al.* (See Jones and Ashley, assignors.)						
Cable, Austin D., Montreal, Canada. Sign or guide board	487,603	Dec. 6	589	151	61	1438
Cable, Frank D. (See Kenney and Cable.)						
Cabot, Samuel, Boston, Mass. Packing for builders' use	488,869	Dec. 27	2667	660	61	1902
Cade, James R., *et al.* (See Sneddon, William, assignor.)						
Cady, Francis D., Waterbury, Conn. Writing-tablet	484,406	Oct. 18	1352	345	61	299
Cady, Horace G., Scott, N. Y. Carpet-stretcher	485,406	Nov. 1	399	107	61	654
Cahall, H. E., *et al.* (See Cahall, John, assignor.)						
Cahall, John, assignor, by mesne assignments, to H. E. and W. H. Cahall, Mansfield, Ohio. Boiler	485,087	Oct. 25	2462	634	61	535
Cahall, John, assignor, by mesne assignments, to H. E. and W. H. Cahall, Mansfield, Ohio. Boiler	485,088	Oct. 25	2464	634	61	536
Cahall, W. H., *et al.* (See Cahall, John, assignor.)						
Cahill, Mortimer. (See Martin and Cahill.)						
Cain, Cornelius T., Owensborough, Ky. Breast-collar	487,604	Dec. 6	590	151	61	1439
Cain, Frederick, St. Paul, Minn. Garbage drier and burner	484,774	Oct. 25	1950	497, 498	61	433
Cain, James A., Markham, Cal. Box-nailer	485,530	Nov. 1	573	154	61	690
Caldwell, Alexander, Essex, Iowa. Agricultural implement	486,849	Nov. 29	2670	698, 699	61	1175
Caldwell, Alexander, Essex, Iowa. Agricultural implement	486,850	Nov. 29	2672	699	61	1175
Caldwell Manufacturing Company. (See Rosentreter, Frank L., assignor.)						
Caldwell, William E., Louisville, Ky. Tower	487,902	Dec. 13	1093	273	61	1555
Calhoun, Hugh, Hot Springs, and A. M. Beam, Bear, Ark. Chloridizing muffle-furnace	483,532	Oct. 4	23	6	61	7
Callahan, Cornelius, Boston, Mass. Relief-valve	487,991	Dec. 13	1243	309	61	1584
Calvert, Charlee E., assignor of one-half to D. R. Creecy, Jr., Portsmouth, Va. House-door letter-box	487,210	Nov. 29	3268	835	61	1292
Camden, John S., Parkersburg, W. Va. Measuring-vessel	486,762	Nov. 22	2515	656	61	1128
Cameron, Angus, Chicago, Ill., assignor, by mesne assignments, to Cameron Manufacturing Company, Milwaukee, Wis. Printer's quoin	484,907	Oct. 25	2177	560	61	479
Cameron, George W., Poplar Bluff, Mo. Watchmaker's tool	487,988	Dec. 13	1239	308	61	1583
Cameron Manufacturing Company. (See Cameron, Angus, assignor.)						
Camp, James N., Atlanta, Ga. Music-leaf turner	485,255	Nov. 1	153	45	61	604
Camp, Wallace H. (See Ashley and Camp.)						
Campbell, Andrew C. (See Lamb and Campbell.)						
Campbell, Henry, Baltimore, Md. Device for affixing stamps and labels	486,430	Nov. 22	1999	530	61	1026
Campbell, James M., Montague, Mich. Washing-machine	486,763	Nov. 22	2516	656	61	1128
Campbell, James M. E., New Palestine, and R. P. Rankin, Clayton, Ind. Dumping-wagon	484,491	Oct. 18	1492	379	61	326
Campbell, Joseph H., Chicago, Ill. Rail joint and chair	483,698	Oct. 4	556	140	61	115
Campbell, Lawrence S., assignor of one-half to J. M. Heath and A. Ostrander, Allegan, Mich. Feed-regulator	486,851	Nov. 29	2673	699, 700	61	1176
Campbell, Robert, Lostock, near Northwich, England. Fumigator	487,173	Nov. 29	3216	823	61	1283
Canedy, William E., Downer's Grove, Ill. Clutch	483,533	Oct. 4	25	6	61	8
Canning, James, Montpelier, Vt. Power-hammer	484,775	Oct. 25	1952	498	61	433
Canning, William P., assignor to Lowell Machine Shop, Lowell, Mass. Grinding mechanism for the flats of traveling-flat carding-machines	483,534	Oct. 4	26	6, 7	61	8
Canning, William P., assignor to Lowell Machine Shop, Lowell, Mass. Grinding mechanism for flats of traveling-flat carding-engines	483,535	Oct. 4	29	7, 8	61	9
Canning, William P., assignor to Lowell Machine Shop, Lowell, Mass. Belt-shipping device	484,407	Oct. 18	1353	345	61	299
Canning, William P., assignor to Lowell Machine Shop, Lowell, Mass. Stop-motion device for fly-frames	484,776	Oct. 25	1955	499	61	434
Canning, William P., assignor to Lowell Machine Shop, Lowell, Mass. Bottom-cone-lifting device for fly-frames	484,845	Oct. 25	2078	534, 535	61	458
Canning, William P., assignor to Lowell Machine Shop, Lowell, Mass. Protector for the ends of the clothing of the flats of carding-engines	484,846	Oct. 25	2080	535	61	459
Canning, William P., assignor to Lowell Machine Shop, Lowell, Mass. Carding-engine	484,928	Oct. 25	2218	571, 572	61	486
Canning, William P., assignor to Lowell Machine Shop, Lowell, Mass. Mechanism connected with the lifting or traverse rails of fly-frames	485,171	Nov. 1	18	5, 6, 7, 8, 9, 10	61	577
Canning, William P., assignor to Lowell Machine Shop, Lowell, Mass. Device for supporting and adjusting screens or undercasings for the cylinders or rollers of carding-engines	485,679	Nov. 8	806	215	61	754

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Canning, William P., assignor to Lowell Machine Shop, Lowell, Mass. Carding-engine	485,680	Nov. 8	807	216	61	755
Canning, William P., assignor to Lowell Machine Shop, Lowell, Mass. Traveling-flat carding-engine	485,681	Nov. 8	810	216	61	755
Cantwell, Edward L., Calcutta, India. Machine for hulling rice	483,809	Oct. 4	558	140, 141	61	116
Capewell, George J., Cheshire, Conn. Button	487,344	Dec. 6	170	48	61	1354
Capewell, George J., Cheshire, Conn. Button	487,345	Dec. 6	171	48	61	1354
Capewell, George J., Hartford, Conn. Alarm attachment for watches	488,062	Dec. 13	1373	341	61	1612
Capp, Charles J. (See Overfelt, Evans, and Capp.)						
Carel, Frederick, and W. F. Davidson, Charleston, W. Va. Grate	485,450	Nov. 1	463	123, 124	61	667
Carey, Augustus C., Lake Pleasant, Mass. Incandescent electric lamp	485,682	Nov. 8	811	216	61	755
Carey, Philip, Cincinnati, Ohio. Machine for making paper tubes	488,384	Dec. 20	1903	476	61	1733
Carhart, Henry S., Ann Arbor, Mich. Standard cell for electric batteries	485,069	Oct. 25	2465	634	61	536
Carichoff, Eugene R., Richmond, Ky. Voltmeter	485,826	Nov. 8	1013	272	61	796
Carleton, Ezra C., Port Huron, Mich. Reflector for water-gages	485,451	Nov. 1	464	124	61	667
Carleton, Roswell. (See Ramsey and Carleton.)						
Carlinet, John G., assignor of seven-tenths to J. Wolstencroft, W. O'Neill, and W. H. Sotley, Philadelphia, Pa. Pneumatic tool	487,086	Nov. 29	3080	791	61	1256
Carlson, Gabriel, Minneapolis, Minn. Lawn-sprinkler	484,294	Oct. 11	1171	298	61	251
Carman, Charles L., Chicago, Ill. Clutch	483,601	Oct. 4	125	31, 32	61	27
Carmell, Willis G., Columbus, Ohio. Tramway-switch	488,599	Dec. 27	2250	558	61	1818
Carmichael, Henry, Malden, Mass. Thermostatic vessel	487,713	Dec. 13	774	198	61	1491
Carmichael, John W. (See Taylor, Charles H., assignor.)						
Carnes, John, Lima, Ohio. Paper-folding machine	484,295	Oct. 11	1173	298, 299	61	252
Carnes, Samuel T. (See Stokely, Lewis W., assignor.)						
Carney, Sydney H. (See Hollingshead, William B., assignor.)						
Carney, Thomas, assignor to National Cash Register Company, Dayton, Ohio. Cash register and indicator	484,296	Oct. 11	1176	299	61	252
Carney, Thomas, assignor to National Cash Register Company, Dayton, Ohio. Cash register, indicator, and recorder	484,297	Oct. 11	1178	300, 301	61	252
Carney, Thomas, assignor to National Cash Register Company, Dayton, Ohio. Coin-display	484,650	Oct. 18	1745	444	61	376
Carney, Thomas, assignor to National Cash Register Company, Dayton, Ohio. Cash indicator and recorder	488,063	Dec. 13	1374	341, 342	61	1613
Carpenter, Alfonso H., Springfield, Vt. Vaporizer	487,247	Dec. 6	16	5	61	1324
Carpenter, Charles F., Louisville, Ky. Non-magnetic watch-balance	487,550	Dec. 6	517	134	61	1423
Carpenter, Charles W., *et al.* (See Crowell, Luther C., assignor.)						
Carpenter, Conrad H., assignor of one-fourth to S. L. Willyerd and G. W. Wolf, Lannius, Tex. Car-coupling	488,963	Dec. 27	2819	695	61	1934
Carpenter, Daniel H., Orlando, Fla. Wrench	486,764	Nov. 22	2517	657	61	1128
Carpenter, Daniel H., Orlando, Fla. Wrench	487,087	Nov. 29	3081	791	61	1257
Carr, Albert C. (See Dillion and Carr.)						
Carr, Charles, Boston, Mass. Cash register and indicator	486,979	Nov. 29	2912	752	61	1223
Carr, Charles, Boston, Mass. Cash-register	486,980	Nov. 29	2915	753	61	1224
Carr, Obed W., *et al.* (See Vernon, Archer T., assignor.)						
Carr, Sylvester L., Chicago, Ill. Trousers-supporter	488,181	Dec. 20	1568	393	61	1068
Carr, William M., assignor of one-half to E. S. Slaughter, Tyrone, Ky. Screw-driver	486,395	Nov. 15	1938	513	61	1001
Carrico, Henry F. (See Hewlett and Cecil, assignors.)						
Carrier, David, Fond du Lac, Wis. Machine for grinding the teeth of harvester-sickles	485,607	Nov. 8	695	183	61	731
Carroll, Edgar J., assignor to W. T. Carroll, Worcester, Mass. Spindle-step	488,688	Dec. 27	2394	593	61	1846
Carroll, William T. (See Carroll, Edgar J., assignor.)						
Carson, George, Council Bluffs, Iowa. Ore separator and concentrator	487,248	Dec. 6	17	5	61	1324
Carstairs, John T., Wellington, Canada. Hydraulic propeller	484,651	Oct. 18	1748	444	61	377
Carter, Franklin S., Burlington, N. J., and G. P. Stumpf, Philadelphia, Pa. Electrical annunciator	486,243	Nov. 15	1694	448	61	950
Carter, Franklin S., Burlington, N. J., assignor to F. S. Carter, C. M. and E. W. Wilkins, Philadelphia, Pa. Electrical annunciator	486,820	Nov. 22	2615	681, 682	61	1149
Carter, George S., Minneapolis, Minn. Knockdown box	486,819	Nov. 22	2614	681	61	1148
Carter, Henry and T. A., Bristol, England, assignors, by mesne assignments, to Holmes Manufacturing Company, Providence, R. I. Apparatus for the ventilating, refrigerating, heating, &c., of carriages, halls, and rooms	484,353	Oct. 11	1256	323	61	270
Carter, John B., Kokomo, Ind. Apparatus for producing pulp	485,090	Oct. 25	2467	634	61	537
Carter, John B., and J. H. Berst, Kokomo, Ind. Process of and apparatus for disintegrating fibrous substances	487,912	Dec. 13	1110	278	61	1558
Carter, John B., and J. H. Berst, Kokomo, Ind. Fiber-disintegrating machine	487,913	Dec. 13	1113	278	61	1558
Carter, McIon J. D., London, England. Producing letters or designs in relief	485,608	Nov. 8	696	183	61	731
Carter, Russell H., Laconia, assignor to S. Hodgson, Meredith, N. H. Transferring mechanism for producing tape-narrowings on knitting-machines	486,431	Nov. 22	2001	531	61	1026
Carter, Thomas A. (See Carter, Henry and T. A.)						
Carthy, Florence M., and T. F. Flynn, Orange, N. J. Window-shade fixture	487,714	Dec. 13	775	199	61	1492
Cartwright, David J. (See Potter and Cartwright.)						
Carty, John J., New York, N. Y., assignor to Western Electric Company, Chicago, Ill. Telephone-exchange apparatus	484,696	Oct. 18	1696	430	61	367
Carver, James E., Gara, Mo. Gravity-motor	487,715	Dec. 13	776	199	61	1492
Cary, Spencer C., Baldwin, assignor to W. H. Vanderbilt, Brooklyn, N. Y. Metal box-strap	485,150	Oct. 25	2555	656	61	554
Case, Cromwell O., assignor to P. & F. Corbin, New Britain, Conn. Knob attachment	487,416	Dec. 6	309	79	61	1382
Case, Frank E., Canton, Ohio. Surgical chair	483,900	Oct. 4	559	141, 142	61	116
Case, Frank J., and G. T. Challiss, Atchison, Kans. Car-coupling	485,452	Nov. 1	465	124	61	667
Case, George F. (See Hicks, Thomas H., assignor.)						
Casebeer, Howard M., Lincoln, Nebr. Mouth-holding apparatus for dentists and surgeons	485,609	Nov. 8	697	183	61	731
Casey, Harvey J., Durham, N. C. Sash-operating mechanism	486,765	Nov. 22	2517	657	61	1128
Cason, James W., Blackburn, La. Harrow	484,425	Dec. 20	1969	492	61	1746
Caspar, Henry, New Orleans, La. Collar, cuff, and garment rack	484,085	Oct. 11	843	213	61	187
Caspar, Henry, Chicago, Ill. Toy	486,965	Nov. 29	2883	747	61	1219
Cassidy & Adler. (See Herdegen, Eduard, assignor.)						
Cassidy, Isabel, New York, N. Y. Complexion-steamer	486,081	Nov. 15	1431	378	61	899
Cassidy, John T., Harrison, N. J. Portable bridge	484,086	Oct. 11	843	213	61	187
Castner, Hamilton Y., London, England. Bleaching compound	486,188	Nov. 15	1009	.....	61	934
Catherinet, Victor E. (See Guillard and Catherinet.)						
Catlin, Ida V., *et al.* (See House, John, assignor.)						
Caulfield, Luke F., Ashtabula, Ohio. Leather-frame	484,137	Oct. 11	912	234	61	301

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Cavell, William R. (See Morton, Wilson, assignor.)						
Cayton, James C., Thornton, Tex. Planter	488,239	Dec. 20	1665	415	61	1687
Cecil, De John C. (See Hewlett and Cecil.)						
Cero, Alios, Dodge, Nebr. Draw-gage	486,156	Nov. 15	1571	416	61	926
Chabaud, Antoine, L. L. Van Heers, and L. A. Allard, St. Louis, Mo. Combined furnace for treating and reducing ores and for refining the resulting metal	487,605	Dec. 6	591	151, 152	61	1439
Chadbourne, Zebulon L., E. A. Bebringer, Brooklyn, N. Y., and H. J. McCoy, Orange, N. J. Device for applying hose-clamps	484,298	Oct. 11	1185	301	61	253
Chaddick, T. P. (See Herring, James H., assignor.)						
Chaffee, Charles S., A. S. Hoffman, and F. A. Green, Birmingham, Conn. Carpet-beater	486,276	Nov. 15	1762	463, 464	61	965
Chaffee, Louis S., deceased; M. H. Chaffee, administratrix, and assignor of one-half to H. E. Rheubottom, Cortland, N. Y. Guiding device for sewing-machines	486,821	Nov. 22	2616	682	61	1149
Chaffee, Mary H., administratrix. (See Chaffee, Louis S.)						
Challiss, George T. (See Case and Challiss.)						
Chamberlain, Ephraim, Medfield, Mass. Horse-blanket	484,996	Oct. 25	2325	600	61	507
Chamberlin, Charles W. (See Marcotte, Tellis, assignor.)						
Chambers Brothers Company. (See Chambers, Cyrus, Jr., assignor.)						
Chambers, Charles P., New Garden, and G. W. Taft, Kennett Square, Pa. Transom-lifter	488,426	Dec. 20	1970	492	61	1746
Chambers, Cyrus, Jr., Wynnewood, assignor to Chambers Brothers Company, Philadelphia, Pa. Brick-drying car	488,936	Dec. 27	2771	684	61	1924
Chambers, Francis T. (See Harrington, Walter E., assignor.)						
Chambers, John W., assignor to Northwestern Manufacturing Company, Fort Atkinson, Wis. Buggy-boot	485,486	Nov. 1	515	136	61	677
Chance Brothers & Co. (See Chance, Edward F., assignor.)						
Chance, Edward F., assignor to Chance Brothers & Co., Limited, West Smethwick, England. Machinery for rolling glass	488,114	Dec. 13	1451	365	61	1628
Chandler, Charles W., Xenia, Ohio. Combined blotter-pad and ruler	487,364	Dec. 6	209	57	61	1362
Chandler, Frederic A., Somerville, Mass. Adjustable supporting-standard for school desks and seats	486,822	Nov. 22	2618	682	61	1149
Chandler, Josiah C., London, England. Washer or scrubber for gas	486,927	Nov. 29	2833	733	61	1207
Chapin, William G., assignor to Thompson & Norris Company, Brooklyn, N. Y. Package of corrugated packing material	484,627	Oct. 18	1698	431	61	367
Chapin, William G., assignor to Thompson & Norris Company, Brooklyn, N. Y. Packing goods	484,628	Oct. 18	1700	431, 432	61	368
Chaplin, Stephen, Buckley, Wash. Valve-gear	487,249	Dec. 6	18	5	61	1324
Chapman, A. A., *et al.* (See Ward, William H., assignor.)						
Chapman, George T., White Plains, assignor of one-half to W. H. Merritt, New York, N. Y. Horseshoe	483,536	Oct. 4	31	8	61	9
Chapman, George T., White Plains, assignor of one-half to W. H. Merritt, New York, N. Y. Horseshoe	483,537	Oct. 4	32	8	61	9
Chapman, George T., White Plains, assignor of one-half to W. H. Merritt, New York, N. Y. Horseshoe	483,538	Oct. 4	34	8	61	9
Chapman, John A., Milwaukee, Wis. Sleigh	486,368	Nov. 15	1897	502	61	992
Chapman, Joseph L., Haddonfield, N. J. Railway-tie and fastening	486,628	Nov. 22	2303	602	61	1085
Chapman, Lewis W., Grand Ledge, Mich. Chair	483,976	Oct. 4	684	171	61	142
Chapman, Stanley L., Evanston, Ill. Apparatus for molding pulp	488,517	Dec. 20	2110	524, 525	61	1776
Chapman, Thomas G., assignor to F. C. Austin, Chicago, Ill. Well-drilling tool	487,989	Dec. 13	1240	308, 309	61	1584
Charles Parker Company. (See Griswold, Lewis F., assignor.)						
Charles, Samuel M., Topeka, Kans. Sleeping-car	485,151	Oct. 25	2556	657	61	554
Chase, Amos P., Burgh Hill, Ohio. Horse-shield	484,701	Oct. 18	1818	462	61	392
Chase, Edward B., Philadelphia, Pa. Guard for telephones	488,385	Dec. 20	1905	477	61	1733
Chase, Frank B., Chicago, Ill., assignor to Standard Electric Company, of Illinois. Apparatus for winding wire	485,256	Nov. 1	154	45	61	605
Chase, George H., and H. L. Gantt, Philadelphia, Pa. Casting armor	485,784	Nov. 8	957	257	61	786
Chase, George H., and H. L. Gantt, Philadelphia, Pa. Casting armor	485,785	Nov. 8	958	257	61	786
Chase, Harvey S., Boston, Mass., assignor, by mesne assignments, to International Ore Separating Company, of New Jersey. Magnetic separator	488,064	Dec. 13	1379	342, 343	61	1614
Chase, Henry H., Duluth, Minn. Cow-bag protector	486,766	Nov. 22	2519	657	61	1128
Chase, Jefferson, Portland, Me. Packing-case	483,991	Oct. 11	709	178	61	160
Chase, John F., Augusta, Me. Hair-pin	483,832	Oct. 4	468	117	61	96
Chase, John F., Augusta, Me. Attachment for carpet-sweepers	483,833	Oct. 4	469	117	61	97
Chase, Oliver R., Boston, Mass., assignor to Algonquin Manufacturing Company, Portland, Me. Machine for shaping and molding plastic materials	484,777	Oct. 25	1959	500	61	434
Châtenet, Pierre A., Paris, France. Steam-generator	487,551	Dec. 6	518	134	61	1423
Chauvin, Phillip A., Bivina, Tex. Lumber-carrier	486,189	Nov. 15	1610	427	61	934
Cheeseman, Samuel E., assignor of one-half to A. L. France, Milldale, Ky. Seal-press	487,346	Dec. 6	172	48	61	1354
Cheeseman, Sherwood E., Kansas City, Mo. Chemical reagent for use in the manufacture of alleys	485,453	Nov. 1	466	.....	61	668
Chemical Supply Company. (See Dewey, Frederic P., assignor.)						
Chesterton, Arthur W., Boston, Mass. Tool for cutting glass gage-tubes	483,778	Oct. 4	389	96	61	82
Chicago Cash Carrier Company. (See Bartlett, James F., assignor.)						
Chicago Hardware Manufacturing Company. (See Monat and Pratt, assignors.)						
Chicago Heat Storage Company. (See Koneman, William A., assignor.)						
Chicago Iron Works. (See Unsicker and Masel, assignors.)						
Childs & Co., Charles H. (See Durr, Henry H., assignor.)						
Childs, Orlando J., Utica, N. Y. Harrow	486,082	Nov. 15	1432	378, 379	61	900
Childers, John B., *et al.* (See Fields and Duvall, assignors.)						
Chilleen, John, Chicago, Ill. Organ	487,716	Dec. 13	780	200	61	1492
Chipman, J. C. (See Harrison, Wesley T., assignor.)						
Chittick, Thomas, Corning, N. Y. Roller attachment for sleds	487,990	Dec. 13	1242	309	61	1584
Chodsko, Adam E., San Francisco, Cal. Rock-drilling machinery	483,901	Oct. 4	565	142	61	117
Choquette, Joseph H., Fall River, Mass. Pattern for drafting garments	484,138	Oct. 11	913	234	61	201
Christinger, John W., Nevinville, Iowa. Beehive	486,277	Nov. 15	1764	464	61	965
Christiansen, John, Quincy, Mass. Switch-stand	488,189	Dec. 20	1569	393, 394	61	1669
Church & Co (See Sundstrom, Karl J., assignor.)						
Church, Duane H., Newton, Mass. Watch-regulator	484,176	Oct. 11	981	251	61	214
Church, Duane H., Newton, Mass. Watchcase-pendant	484,177	Oct. 11	982	251	61	215
Church, Duane H., Waltham, Mass. Uprighting-lathe	486,609	Nov. 22	2274	593	61	1078

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Church, Duane H., Waltham, Mass. Jewel-setting machine	488,240	Dec. 20	1666	416, 417	61	1687
Church, Dwight M., Willimantic, Conn. Railway-switch	488,161	Dec. 13	1531	384	61	1644
Church, Melvin B., Grand Rapids, Mich. Coating surfaces with plastic material	487,606	Dec. 6	593	152	61	1440
Churchill, Thomas A., Deland, Ill. Farm-gate	484,568	Oct. 18	1605	407	61	349
Cirkel, August, Boyd, Wis. Apparatus for storing, handling, and transporting liquids	486,690	Nov. 22	2400	626	61	1105
Cirkel, August, Boyd, Wis. Apparatus for storing, handling, and transporting liquids	486,691	Nov. 22	2401	627	61	1105
Cissner, Charles, assignor of one-half to L. Billhimer, Red River, Ohio. Car-coupling	485,172	Nov. 1	28	10	61	578
Claflin, Waldo M., Philadelphia, Pa., and K. L. Ames, Chicago, Ill. Shoe	487,250	Dec. 6	19	6	61	1325
Claggett, Robert B., *et al.* (See Clayton, Anna H., assignor.)						
Clair, Benoit. (See Clair, Victor and B.)						
Clair, Victor and B., St. Etienne, France. Firearm with breech operated by gases of explosion	483,539	Oct. 4	35	9	61	10
Clamond, Charles, Paris, France. Microphone	486,244	Nov. 15	1696	449	61	951
Clancy, Albert B., Olivia, Minn. Pump attachment	488,183	Dec. 20	1570	394	61	1669
Clancy, Andrew, San Diego, Cal. Apparatus for connecting pipes	484,408	Oct. 18	1354	346	61	299
Clark, Alexander H., Fond du Lac, Wis. Bicycle	486,432	Nov. 22	2004	531, 532	61	1026
Clark Car Coupler Company. (See Clark, Walter B., assignor.)						
Clark, Edward L., Pittsburg, Pa. Rolling-mill plant. (Reissue)	11,280	Oct. 25	2572	659, 660	61	557
Clark, Finley Y., Saratoga Springs, N. Y. Bottle-stopper fastener	485,173	Nov. 1	29	10	61	578
Clark, Fred E. (See Parker and Clark.)						
Clark, Frederick O. (See Hazard, Dexter, assignor.)						
Clark, James F., Columbia Sulphur Springs, W. Va. Rotary blackboard	488,625	Dec. 27	2290	567	61	1826
Clark, James H., Chicago, Ill. Sewing-machine	485,371	Nov. 1	344	92	61	643
Clark, James W., Etna, Ohio. Post-hole digger	488,918	Dec. 27	2748	678	61	1918
Clark, Jerome B., Allendale, assignor to Allendale Company, Providence, R. I. Machine for multiple-folding wide fabrics	483,735	Oct. 4	314	79	61	66
Clark, Joseph V., Cincinnati, Ohio. Lubricator	485,454	Nov. 1	467	125	61	668
Clark, Melville, Chicago, Ill. Cabinet-organ	484,929	Oct. 25	2221	572	61	487
Clark, Nemiah H., Philadelphia, Pa. Bureau	484,948	Oct. 25	2244	578	61	492
Clark, Troward, Eastry, near Dover, England. Pitman connection for mowing-machines	487,403	Dec. 6	281	73	61	1377
Clark, Walter B., assignor to Clark Car Coupler Company, Chicago, Ill. Car-coupling	484,997	Oct. 25	2326	600	61	507
Clark, William, London, England. Handle for hair-clippers	486,083	Nov. 15	1434	379	61	900
Clarke, Alexander D., St. Louis, Mo. Apparatus for transferring railway-cars	487,717	Dec. 13	786	200, 201, 202	61	1493
Clarke, Charles E., assignor of one-half to G. A. Reynolds, Saginaw, Mich. Puzzle	487,318	Dec. 6	135	39	61	1348
Clarke, Henry, and T. Mawby, Leicester, England. Machine for making lace hosiery	486,767	Nov. 22	2520	657, 658, 659, 660	61	1129
Clarke, William C. (See Griffen and Clarke.)						
Clarken, George M. (See Sorg, Albert A., assignor.)						
Clary, Charles M., Lewistown, Mont. Swinging gate	484,847	Oct. 25	2081	535	61	459
Classen, Mathias, Kalamazoo, Nebr. Door-jamb	484,551	Oct. 18	1583	402	61	345
Claudin, John E., and P. Robert; said John E. Claudin assignor to J. R. Claudin, Roanoke, Ill. Cash register and adder	486,030	Nov. 8	1346	358	61	865
Claudin, Joseph R. (See Claudin and Robert, assignors.)						
Claus, Hubert, Thale, Germany. Enamel for metal articles	485,574	Nov. 1	647	172	61	706
Claus, Hubert, Thale, Germany. Elastic wheel	488,539	Dec. 27	2152	532	61	1798
Clause, John J., Chicago, Ill. Plate-holder for printing-cylinders	487,992	Dec. 13	1244	310	61	1584
Clausnitzer, Max, Breslau, Germany. Setting rough diamonds, &c., in holders or implements of metal	486,084	Nov. 15	1435	379	61	900
Clauss Shear Company. (See Eberhard, John J., assignor.)						
Clawson, Clement C., Newark, N. J. Coin-controlled dice-thrower	488,328	Dec. 20	1808	453	61	1715
Clawson, Linus P., assignor to Black & Clawson Company, Hamilton, Ohio. Paper-making machine	485,575	Nov. 1	648	172	61	706
Clay, Arthur T., Rashick, England. Machine for finishing woven fabrics	488,787	Dec. 27	2538	630	61	1875
Clay, Edwin W., Louisville, Ky. Sign for electric lamps	486,324	Nov. 15	1825	481	61	978
Clay, Henry, assignor to H. Snyder, trustee, Philadelphia, Pa. Armor-plate	485,683	Nov. 8	812	217	61	755
Claydon, James. (See Smith and Claydon.)						
Clayton, Anna H., assignor of one-half to R. B. Claggett and J. H. Stoner, Louisville, Ky. Motor for sewing-machines	485,487	Nov. 1	516	136	61	677
Clayton, James, Brooklyn, N. Y. Valve for air and gas compressors	487,064	Nov. 29	3040	780	61	1248
Clayton, John, Minneapolis, Minn. Wheel-plow	484,652	Oct. 18	1750	445, 446	61	378
Cleaveland, John B., assignor to M. E. Cleaveland, Indianapolis, Ind. Wire-braiding machine	486,823	Nov. 22	2620	683	61	1150
Cleaveland, John B., assignor to M. E. Cleaveland, Indianapolis, Ind. Braided fence wire	486,824	Nov. 22	2621	684	61	1150
Cleaveland, Mary E. (See Cleaveland, John B., assignor.)						
Clegg, Daniel W., Stapleton, N. Y. Lighting and heating apparatus	485,827	Nov. 8	1014	272, 273	61	796
Clegg, James, London, England. Electric-light carbon	487,046	Nov. 29	3014	.....	61	1242
Clements, Samuel L., East Eagle, Ky. Flooring and ceiling tongs	484,299	Oct. 11	1186	302	61	253
Clerc, Jules E., Bordeaux, France. Device for closing bottles or similar vessels	487,385	Dec. 6	237	64	61	1368
Clerk, Ellen, Jefferson City, Mo. Folding book-back	484,653	Oct. 18	1753	446	61	378
Cleveland Faucet Company. (See Weatherhead, Edward H., assignor.)						
Cleveland, George P., Coleman, Tex. Rotary plow	486,325	Nov. 15	1626	482	61	978
Cleveland, Uriah A., Albert Lea, Minn. Plow	484,178	Oct. 11	984	252	61	215
Cleveland, William P., Rounthwaite, Canada. Belt-holder	487,993	Dec. 13	1245	310	61	1585
Cliff, Charles F., Durham, Canada. Differential hoisting-machine	487,994	Dec. 13	1246	310	61	1585
Clifford, John M., Madison, Wis. Toy	486,085	Nov. 15	1436	380	61	900
Climenson, William W., Honey Brook, assignor to Honey-Brook Novelty Company, Lancaster, Pa. Burglar-alarm	488,162	Dec. 13	1533	385	61	1645
Cline, Charles E., and C. H. Kilpatrick, assignors of one-third to G. W. Cline, Abingdon, Ill. Gate	487,718	Dec. 13	790	202	61	1494
Cline, George J., Goshen, Ind. Sickle-grinder	487,552	Dec. 6	520	135	61	1423
Cline, George W. (See Cline and Kilpatrick, assignors.)						
Clingman, John, Dayton, Ohio. Carburetor	484,949	Oct. 25	2245	573	61	492
Clinton, Miles L., Ithaca, N. Y. Steam-boiler	488,689	Dec. 27	2396	593, 594	61	1846

Alphabetical list of patentees, October to December, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Clinton Wire Cloth Company. (See Scarles, Benjamin, assignor.)						
Cloud, Joseph, Philadelphia, Pa. Culinary utensil	486,157	Nov. 15	1572	417	61	927
Cloutier, Samuel, Lewiston, Me. Barber's chair	488,707	Dec. 27	2419	599	61	1851
Clover, A. C., *et al.* (See Curran, William, ass gnor.)						
Coale, Joseph M., Baltimore, Md. Safety-valve	488,309	Dec. 20	1775	447	61	1708
Coates, George H., Worcester, Mass. Flexible shaft	486,852	Nov. 29	2675	700	61	1176
Cobb, Benjamin P., Odessa, Mo. Meat-block attachment	488,870	Dec. 27	2669	661	61	1902
Cobb, Dewey A., Philadelphia, Pa. Machine for compressing and forming the ends of sectional woven-wire springs	486,853	Nov. 29	2676	700	61	1176
Coburn, Alonzo A. (See Wilson, James H., assignor.)						
Cochran, Arthur D., Indianapolis, Ind. Street-car curtain	486,433	Nov. 22	2006	532	61	1027
Cochran, Henry, Chester, Pa. Skylight for electric cars	484,515	Oct. 18	1529	388	61	333
Cochrane, David, assignor to Harrison Safety Boiler Works, Philadelphia, Pa. Separator for steam	483,992	Oct. 11	709	178	61	160
Cockrell, William A., Mount Perry, Ohio. Grain-scourer	485,488	Nov. 1	517	137	61	677
Cockrill, Henry S., Baltimore, Md. Fireproof stage-curtain	487,470	Dec. 6	398	103	61	1399
Cody, Frederick A., and L. T. Lawton, Meriden, Conn., assignors to American Automatic Lighting Company, of New Jersey. Hydrocarbon-lighting device	484,354	Oct. 11	1267	{323 394}	61	270
Coe, John W., Jr., Chicago, Ill. House-door letter-box	485,860	Nov. 8	1066	283	61	807
Coerper, Carl, Coeln, Germany. Electric-arc lamp	484,530	Oct. 18	1551	394	61	337
Coffin, Amory, assignor to Phœnix Iron Company, Phœnixville, Pa. Structural metal work	485,489	Nov. 1	518	137	61	677
Coffin, C. A., *et al.*, executors. (See Van Depoele, Charles J.)						
Coffin, Charles L., Detroit, Mich. Arc and incandescent metal-heating	487,607	Dec. 6	595	152	61	1440
Coffin, Charles L., Detroit, Mich. Electrical soldering-iron	488,871	Dec. 27	2670	661	61	1902
Coffin, Charles L., Detroit, Mich. Electrically-heated soldering-tool	488,872	Dec. 27	2671	661	61	1903
Coffman, Isadore L., and D. P. Denney, Uniontown, Pa. Car-coupling	487,251	Dec. 6	20	6	61	1325
Cogswell, William B., Syracuse, N. Y. Finder attachment for cameras	484,179	Oct. 11	985	252	61	215
Cohen, Reuben, Montreal, Canada. Cigar-tip perforator	485,861	Nov. 8	1067	284	61	807
Colam, William N., assignor of one-half to Dick Kerr & Company, Limited, London, England. Car-coupling	486,086	Nov. 15	1436	380	61	901
Colby, Charles C. (See Ingraham, Harry B., assignor.)						
Coldwater Oil Stove Company. (See Benedict, Maurice G., assignor.)						
Coldwell, Joseph, New Bedford, assignor to Crompton Loom Works, Worcester, Mass. Shedding mechanism for looms for cross-weaving	488,497	Dec. 20	2082	577	61	1770
Cole, John D., Lansing, Iowa. Portable sketching easel and stool	487,553	Dec. 6	521	135	61	1424
Colell, Paul H., assignor of one-half to R. L. Prange, New York, N. Y. Parlor bowling game-board	484,087	Oct. 11	844	214	61	187
Coles, John B., Bayonne, N. J. Slating compound	485,455	Nov. 1	471	.....	61	668
Coley, Joseph, Worcester, Mass. Double-faced woven pile fabric	483,977	Oct. 4	685	171	61	142
Colket, George H. (See Lockwood, George E., assignor.) (Reissue.)						
Coller, Amos M., Woonsocket, R. I. Lap-stick inserter	487,995	Dec. 13	1247	310	61	1585
Colleton, John H. (See De Neut, John H., assignor.)						
Collett, Austin B., Lynn, assignor of one-half to D. F. Kimball, Chelsea, Mass. Car-brake handle	483,779	Oct. 4	390	97	61	80
Collier, Arthur T., St. Albans, England. Telephonic transmitter	484,778	Oct. 25	1961	500	61	435
Collins, David W., Philadelphia, Pa. Device for moistening envelopes, wrappers, &c	488,751	Dec. 27	2481	{616 617}	61	1864
Collins, Charles R., assignor to United Gas Improvement Company, Philadelphia, Pa. Oil-spraying device	485,257	Nov. 1	155	45	61	605
Collins, Judith L., Monongahela City, Pa. Educational appliance	487,695	Dec. 6	741	190	61	1467
Collins, William E., Bethel, Conn. Guard for banjos	483,683	Oct. 4	240	60	61	50
Collins, William H. Malden, Mass. Soda-water apparatus	484,889	Oct. 25	2146	551	61	473
Colton, Arthur L., Cleveland, Ohio. Check-file	488,752	Dec. 27	2482	617	61	1864
Colton, Byron. (See Colton, Milton and B.)	486,434	Nov. 22	2007	532	61	1027
Colton, Milton and B., Lamont, Iowa. Corn-husking machine	485,531	Nov. 1	535	154	61	690
Columbian Electric Light, Power, Heat, and Manufacturing Company. (See Wright, William, assignor.)						
Colvin, Robert J., assignor to D. P. Bitner, Lancaster, Pa. Padlock	487,608	Dec. 6	595	153	61	1440
Comer, John H., *et al.* (See Morse, Cyrus B., assignor.)						
Comes, Keros L., assignor to Meeker Bros., Danbury, Conn. Machine for fitting hat-sweats	487,252	Dec. 6	21	6	61	1325
Comes, Keros L., assignor to Meeker Bros., Danbury, Conn. Machine for joining the meeting ends of hat-sweats	487,253	Dec. 6	22	7	61	1325
Commander, Edward A. (See Miles and Commander.)						
Compagnie de Fives-Lille. (See Duval, Martin L. E., assignor.)						
Compton, S., *et al.* (See Day and Moore, assignors.)						
Computing Scale Company. (See Culmer, John W., assignor.)						
Comstock, Alphonso S., Evanston, Ill. Tent-pin	484,998	Oct. 25	2328	600	61	507
Comstock, Charles, Richmond, Va. Vehicle	485,091	Oct. 25	2469	635	61	537
Comstock, Fred B. (See Hulbert, Ralph D., assignor.)						
Condé, Samuel L., Rockford, Ill. Type-writer cabinet	486,435	Nov. 22	2009	533	61	1028
Condon, Richard, Lyons, Iowa. Harness	485,258	Nov. 1	157	45, 46	61	605
Cone, Henry, Alameda, Cal. Self-fastening rim for jars or vessels	484,779	Oct. 25	1962	500	61	435
Conklin, Franklin. (See Howe, Edwin J., assignor.)						
Conkling, Ira L., Philadelphia, Pa. Game-board	485,029	Oct. 25	2080	{611 612}	61	518
Conley, Joseph, and J. M. Wolfe, Tarkio, Mo. Brick-kiln	487,174	Nov. 29	3217	824	61	1283
Conn, William, Kellogg, Kans. Band-cutter and feeder for thrashing-machines	487,347	Dec. 6	173	48, 49	61	1354
Connell, James C., Simla, India. Harness	483,540	Oct. 4	37	9	61	10
Connell, Patrick J., College Point, N. Y. Wheel-guard	484,300	Oct. 11	1187	302	61	254
Connelly, James, Des Moines, Iowa. Boiler-furnace and smoke-consumer	486,854	Nov. 29	2677	701	61	1176
Connelly, James T., Milton, Pa. Locomotive-boiler	488,919	Dec. 27	2750	678	61	1919
Conner, Benjamin F., *et al.* (See Kenney, Thomas M., assignor.)						
Conner, Charles S., *et al.* (See Kenney, Thomas M., assignor.)						
Conradson, Conrad M., Madison, Wis. Electric locomotive	487,114	Nov. 29	3123	801	61	1266
Consolidated Brake Adjuster Company. (See Marshall, Waldo H., assignor.)						
Consolidated Car Heating Company. (See McElroy, James F., assignor.)						
Consolidated Car Heating Company. (See Sewall, James H., assignor.)						
Consolidated Fastener Company. (See Hall, Frank E., assignor.)						
Consolidated Railway Telegraph Company. (See Edison and Gilliland, assignors.)						
Convers, George G., Salisbury, Pa. Reducing franklinite ores	488,470	Dec. 20	2035	.....	61	1761
Convers, George G., Salisbury, Pa. Treating franklinite and willemite	488,471	Dec. 20	2037	.....	61	1761

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Conway Harrison V., assignor of one-half to I. N. Throckmorton, Boone, Iowa. Axle-lubricator	484,088	Oct. 11	845	214	61	187
Conway, Michael R. (See Harden and Conway.)						
Cook, August D., Lawrenceburg, Ind. Pump	484,139	Oct. 11	915	235	61	202
Cook, David N., Salem, Mass. Window-ventilator	488,920	Dec. 27	2751	678	61	1919
Cook, Edward W. (See Cook, Thomas A., assignor.)						
Cook, Frederick D., Sharpsburg, Pa. Enameled-iron wainscoting	485,259	Nov. 1	159	46	61	605
Cook, Gustave, assignor of one-half to W. H. Bofinger, New Orleans, La. Switch-stand	485,908	Nov. 8	1148	304	61	824
Cook, Hanson, Hyndman, Pa. Washing-machine	488,727	Dec. 27	2447	608	61	1857
Cook, Hugo, Dayton, Ohio. Autographic register	486,768	Nov. 22	2525	{660 661}	61	1130
Cook, Irving, Fall River, Mass. Switch	485,786	Nov. 8	960	257	61	786
Cook, John, New York, N. Y. Keel for boats	486,158	Nov. 15	1573	417	61	927
Cook, Robert, *et al.* (See Tefft, Emory N., assignor.)						
Cook, Sidney, assignor to A. C. Simpson, Pensacola, Fla. Wrench	485,152	Oct. 25	2557	657	61	555
Cook, Thomas A., assignor to E. W. Cook, Ottawa, Canada. Match-splint-cutting machine	483,541	Oct. 4	38	9, 10	61	10
Cook, Thomas R., Irvington, assignor of one-fourth to H. M. Barnard, H. S. Paramore, and G. A. Topp, Indianapolis, Ind. Combined try-square and bevel	485,456	Nov. 1	471	125	61	668
Cook, Thomas W. G., assignor to himself and S. Koffelt, New York, N. Y. Machine for rimming show-cards, &c	487,609	Dec. 6	598	{153 154}	61	1440
Cool, Isaac N., Auburn, Ind. Vehicle-top	485,610	Nov. 8	698	184	61	731
Cooley, Franklin S., assignor of one-half to J. E. Goodrich, Philadelphia, Pa. Liquid-ejecting device for bottles, &c	487,088	Nov. 29	3083	792	61	1257
Coombs, Pierre L. (See Finck, Nicholas, assignor.)						
Cooper, Charles J., Moline, Ill. Harness-machine	485,260	Nov. 1	159	46	61	606
Cooper, Leslie A., Springfield, Mass. Gas-lamp	487,065	Nov. 29	3041	780	61	1248
Cope, George W., Detroit, assignor to H. L. Smith, Jackson, Mich. Oil-stove	485,838	Nov. 8	1029	277	61	800
Copeland, James S., Hartford, Conn., assignor to Pope Manufacturing Company, Boston, Mass. Chain adjustment for bicycles	484,492	Oct. 18	1493	379	61	326
Copeland, William A., New York, N. Y. Eyeglass-holder	485,909	Nov. 8	1149	304	61	824
Coplin, Albert D., Oakland, Cal. Hose-reel	486,692	Nov. 22	2403	627	61	1105
Copper, George C., and D. F. Cox, Sandborn, Ind. Wire-stretching tool	485,611	Nov. 8	699	184	61	732
Coppersmith, John, *et al.* (See Wolf, Josef, assignor.)						
Coppet, Jean de, Paris, France. Treating minerals containing nickel	484,875	Oct. 25	2118	.....	61	467
Coppet, Jean de, Paris, France. Treating minerals, mattes, speiss, or other substances containing nickel	486,594	Nov. 22	2244	.....	61	1073
Coppet, Jean de, Paris, France. Treating minerals, mattes, speiss, or other substances containing nickel	486,595	Nov. 22	2247	.....	61	1073
Corbin Cabinet Lock Company. (See Judd, Edward A., assignor.)						
Corey, Leonel C., Waverly, N. Y. Can, pail, &c	483,902	Oct. 4	569	143	61	118
Corey, Rufus H. (See Stroud and Corey.)						
Corley, James J., deceased; J. L. Orr, administrator, Choccolocco, Ala. Hay-press	488,400	Dec. 20	1924	482	61	1737
Corliss, George F., and L. H. Wattles, Providence, R. I. Steam-engine governor	483,643	Oct. 4	186	46	61	38
Cornell, Frank H. (See Enholm, Oscar A., assignor.)						
Cornell, Joseph, Potsdam, N. Y. Folding chair	488,115	Dec. 13	1452	{365 366}	61	1628
Cornell, William N., Brownsville, N. Y. Means for coloring paper	486,629	Nov. 22	2305	602	61	1085
Cornforth, Joseph T., Denver, Colo. Banana-case	484,355	Oct. 11	1270	324	61	271
Corporan, Charles E., Colorado City, Colo. Slack-adjuster for air-brakes	483,802	Oct. 4	420	104	61	87
Correll, Dennis S., Welton, Iowa. Mechanism for converting reciprocating into rotary motion	486,369	Nov. 15	1898	502	61	992
Cory, John L., Green Island, assignor of one-half to R. C. Blackall, Albany, N. Y. Lubricator	487,661	Dec. 6	686	176	61	1457
Cory, John L., Green Island, assignor of one-half to R. C. Blackall, Albany, N. Y. Lubricator	488,163	Dec. 13	1536	385	61	1645
Corscaden, Thomas, assignor to Stanley Works, New Britain, Conn. Shelf-bracket	483,834	Oct. 4	470	117	61	97
Cortland, Harvey, Toronto, Canada. Electric fire-alarm	484,140	Oct. 11	917	236	61	202
Costa, Joaquin R. da, Havre, France. Motive-power engine	484,629	Oct. 18	1702	{432 433}	61	368
Costellow, Charles W., Waterborough, Me. Egg carrier and holder	484,876	Oct. 25	2121	545	61	467
Coté, Louis P. (See Da Rozir, Levi, assignor.)						
Cott, Charles M., Columbus, Ohio. Index	487,516	Dec. 6	467	122	61	1413
Cottom, James B., assignor of one-half to L. C. Cottom, Dayton, Ohio. Roof-scaffold	485,318	Nov. 1	255	69	61	624
Cottom, Levin C. (See Cottom, James B., assignor.)						
Cotton, Charles A. (See Nichols and Cotton.)						
Cotton, Charles L. (See Nichols and Cotton.)						
Cottrell, Calvert B., Westerly, R. I. Offset mechanism for printing-machines	484,531	Oct. 18	1552	394	61	338
Cottrell, Calvert B., Westerly, R. I. Feeding mechanism for cylinder printing-machines	487,254	Dec. 6	23	7	61	1326
Cottrell, Calvert B., Westerly, R. I. Delivery apparatus for printing-machines	487,386	Dec. 6	239	64, 65	61	1368
Cottrell, Calvert B., Westerly, R. I. Feeding apparatus for printing-machines	487,914	Dec. 13	1115	{278 279}	61	1559
Cottrell, Calvert B., Westerly, R. I. Means for bending electrotype-plates	487,915	Dec. 13	1119	279	61	1559
Couch, Charles A., Columbus, Ohio. Damper	486,855	Nov. 29	2679	701	61	1177
Couch, John P., Henrietta, Tex. Plow	485,457	Nov. 1	472	125	61	668
Coulter, Richard D. (See Lewis, Lorenzo L., assignor.)						
Courcel, Gustave and J., Paris, France. Glove-fastening	487,175	Nov. 29	3218	824	61	1284
Courcel, Jules. (See Courcel, Gustave and J.)						
Courser, Thomas, Lake City, Fla. Car-coupling	486,693	Nov. 22	2404	627	61	1105
Cousins, Henry A., New York, N. Y. Manufacturing inlaid work for decorative purposes	488,540	Dec. 27	2153	.....	61	1798
Cousins, Henry A., New York, N. Y. Manufacturing inlaid work for decorative purposes	488,541	Dec. 27	2154	.....	61	1798
Cousins, Henry A., New York, N. Y. Manufacture of inlaid work for decorative purposes	488,542	Dec. 27	2155	532	61	1798
Couzens, George, Cardiff, England. Gully-trap	486,177	Nov. 15	1598	423	61	931
Covell, Edward T., New Bedford, Mass. Fastening for horseshoes	483,602	Oct. 4	128	32	61	27
Covert, D'Estaing S. (See Withers and Covert.)						
Covert, Louis E., and C. W. McCutchen, Peekskill, N. Y. Stove-leg fastening	487,255	Dec. 6	26	7	61	1326
Covington, John I., Brooklyn, N. Y. Permutation-lock	488,648	Dec. 27	2323	575	61	1833
Cowan, Stephen G., Richmond, Va. Nut-lock	488,184	Dec. 20	1571	394	61	1669
Cowart, Adolphus, Judson, Ala. Cultivator	488,270	Dec. 20	1713	431	61	1696
Cowell, Julius J., Weedsport, N. Y. Vise	488,600	Dec. 27	2251	558	61	1819
Cowley, James T., Lowell, Mass. Drilling apparatus	486,856	Nov. 29	2680	701	61	1177
Cowling, John. (See Buese and Cowling.)						
Cowper-Coles, Sherard O., assignor of one-half to London Metallurgical Company, Limited, London, England. Electro-depositing alloys	487,176	Nov. 29	3219	.....	61	1284
Cox, Augustus G., Gratton, Va. Nut-lock	485,174	Nov. 1	31	11	61	579

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Cox, David F. (See Copper and Cox.)						
Cox, Jacob R., Clayton, assignor of three-fourths to J. A. Downard, Danville, Ind., J. V. Hadley, E. G. Hogate, J. T. Barker, and D. Hadley. Corn-planter	483,736	Oct. 4	317	79, 80	61	66
Coxe, Charles B., assignor to E. E. Esterbrook, Brooklyn, N. Y. Brick-kiln	486,557	Nov. 22	2174	573	61	1060
Coxe, Eckley B., and S. Salmon, Drifton, Pa.; said Salmon assignor to said Coxe. Mechanism for drilling	483,903	Oct. 4	571	143, 144	61	118
Cozens, Lizzie C., Philadelphia, Pa. Trunk	485,612	Nov. 8	700	184	61	732
Craddock, Patrick H., Leadville, Colo. Snow-plow	486,694	Nov. 22	2406	628	61	1106
Craft, Percy R. (See Farquhar, John F. C., assignor.)						
Crafts, Samuel L., Boston, Mass. Car-fender	488,386	Dec. 20	1906	477	61	1734
Craig, James D., Rogers Park, assignor to Keyless Lock Company, Chicago, Ill. Combination-lock	488,518	Dec. 20	2121	525	61	1776
Craig, William, Brooklyn, N. Y. Valve for direct-acting engines	485,787	Nov. 8	961	258	61	786
Craig, William B. (See Walsh, William E., assignor.)						
Craine, Edwin W., Missouri Valley, Iowa. Check-valve	483,603	Oct. 4	129	32	61	27
Cramer, George P. (See Galloway and Cramer.)						
Cramp, William M., *et al.* (See Batcheller, Birney C., assignor.)						
Crane Company. (See Doolittle, William W., assignor.)						
Crane, Thomas R., Heathsville, Va. Grain-drill	484,630	Oct. 18	1706	433	61	369
Crane, Thomas R., Heathsville, Va. Fertilizer-distributer	487,719	Dec. 13	791	202	61	1494
Crane, Thomas R., Heathsville, Va. Feed device for seed-hoppers	487,720	Dec. 13	792	203	61	1495
Craney, Thomas, Bay City, Mich. Electrolytic apparatus	487,996	Dec. 13	1248	311	61	1585
Craney, Thomas, Bay City, Mich. Condenser	487,997	Dec. 13	1250	311	61	1586
Craney, Thomas, Bay City, Mich. Electrolytic apparatus	488,708	Dec. 27	2420	600	61	1851
Crannell, Charles W., assignor of one-half to D. E. Grobe, Oberlin, Kans. Nailless horse-shoe	487,177	Nov. 29	3220	824, 825	61	1284
Craw, Joseph T., Jersey City, N. J. Smoking toy	484,180	Oct. 11	986	252	61	215
Crawford, R. F. (See Scott, George W., assignor.)						
Cresser, Robert, Maryborough, Queensland, Australia. Machine for dressing flour, middlings, semolina, grain, seeds, &c	483,542	Oct. 4	39	10	61	11
Creecy, David R., Jr. (See Calvert, Charles E., assignor.)						
Creighton, Frederick L., Somerville, Mass. Presser foot or bar for molding-machines	485,153	Oct. 25	3558	657	61	555
Creighton, William G., Norwood Park, Ill. Closed conduit for electric railways	483,761	Oct. 4	360	90	61	76
Crepeau, Henry T., Portland, Me. Traveling lawn-sprinkler	485,532	Nov. 1	576	155	61	690
Crepeau, Henry T., Portland, Me. Traveling lawn-sprinkler	485,533	Nov. 1	578	155	61	691
Cribbins, John W., Shelton, Conn. Bed-motion for printing-presses	485,458	Nov. 1	473	125, 126	61	669
Crighton, William, assignor of two-thirds to S. Swann and E. D. Rogers, Fort Wayne, Ind. Measuring-pump	486,596	Nov. 22	2249	588, 589	61	1073
Crippen, Ira W., Ypsilanti, Mich. Checkrein-spring	483,762	Oct. 4	361	90	61	76
Criss, Julia A., Akron, Ohio. Marine roundabout	488,472	Dec. 20	2038	507	61	1761
Criswell, Charles E., *et al.* (See Schaeffer, Henry, assignor.)	484,409	Oct. 18	1355	346	61	299
Criswell, Mary E., *et al.* (See Schaeffer, Henry, assignor.)						
Critchley, James S., Ilkley, I. Singer, Keighley, and H. A. A. Dombrain, Addingham, near Leeds, England. Machine for pressing and finishing fabrics	484,702	Oct. 18	1819	462, 463	61	393
Crocker, George H., Campello, assignor of one-half to G. C. Hall, Greenfield, Mass. Sole	485,459	Nov. 1	475	126	61	669
Crompton Loom Works. (See Coldwell, Joseph, assignor.)	483,543	Oct. 4	41	10	61	11
Crompton Loom Works. (See Wyman and Gordon, assignors.) (Reissue.)						
Cronenberg, William L. (See Perkins and Cronenberg.)						
Crook, John H. (See Williams and Crook.)						
Crook, William, Sr., Winnipeg, Canada. Auxiliary motor for cars	486,631	Nov. 8	1348	358	61	865
Crook, William H., Washington, D. C. Bicycle-brake	486,630	Nov. 22	2306	602	61	1086
Crooks, Thomas. (See O'Carroll, Patrick, assignor.)						
Crory, Samuel, Cambridge, Mass. Sand-box for cars	488,387	Dec. 20	1907	477	61	1734
Crosby, George S., Buffalo, N. Y. Kite	487,471	Dec. 6	400	103	61	1399
Crosby, George S., assignor to Pratt & Letchworth, Buffalo, N. Y. Toy	487,472	Dec. 6	401	103	61	1400
Crosby Steam Gage and Valve Company. (See Bosworth, Charles B., assignor.)	487,473	Dec. 6	402	104	61	1400
Cross, Elroy F. (See Fuller and Perkins, assignors.)						
Cross, Gerome L., assignor of two-thirds to D. W. Mellen and W. D. McKenzie, Springfield, Mass. Smoke-consuming furnace	487,823	Dec. 13	960	243	61	1530
Cross, Jerome A., Fultonville, assignor of one-half to Lauer & Hagarman, Rochester, N. Y. Apparatus for excavating and laying sewers	487,517	Dec. 6	468	122, 123	61	1413
Cross, Thomas, Taunton, Mass. Loom-shuttle	486,087	Nov. 15	1438	381	61	901
Crossley, Eli, Jr., Manchester, England, assignor to C. A. Goslett, Chicago, Ill. Pulley	486,631	Nov. 22	2307	602	61	1086
Crotty, John S., New York, N. Y. Dress-stay	483,835	Oct. 4	471	117	61	97
Crow, William G. (See Turk, Thomas, assignor.)						
Crowdus, Walter A., assignor to B. M. Stratton, Memphis, Tenn. Galvanic battery	485,319	Nov. 1	256	69	61	624
Crowe, George W., and W. K. Massam, Hull, England. Pencil-case	485,261	Nov. 1	161	47	61	606
Crowell, Luther C., Brooklyn, assignor to R. Hoe, S. D. Tucker, T. H. Mead, and C. W. Carpenter, New York, N. Y. Feeding mechanism	484,141	Oct. 11	919	236, 237, 238	61	202
Crowell, Luther C., Brooklyn, assignor to R. Hoe, S. D. Tucker, T. H. Mead, and C. W. Carpenter, New York, N. Y. Folding mechanism	484,142	Oct. 11	924	238, 239	61	203
Crowell, Luther C., Brooklyn, assignor to R. Hoe, S. D. Tucker, T. H. Mead, and C. W. Carpenter, New York, N. Y. Newspaper-wrapping machine	486,088	Nov. 15	1439	381, 382, 383, 384	61	901
Crowell, Luther C., Brooklyn, assignor to R. Hoe, S. D. Tucker, T. H. Mead, and C. W. Carpenter, New York, N. Y. Method of and means for feeding sheets from a pile	486,089	Nov. 15	1455	384	61	903
Crowell, Luther C., Brooklyn, assignor to R. Hoe, S. D. Tucker, T. H. Mead, and C. W. Carpenter, New York, N. Y. Newspaper-wrapping machine	486,090	Nov. 15	1459	384, 385, 386	61	904
Crowell, Luther C., Brooklyn, assignor to R. Hoe, S. D. Tucker, T. H. Mead, and C. W. Carpenter, New York, N. Y. Combined printing-press and folding mechanism	486,558	Nov. 22	2175	574, 575	61	1060
Crowell, Luther C., Brooklyn, assignor to R. Hoe, S. D. Tucker, T. H. Mead, and C. W. Carpenter, New York, N. Y. Combined printing-press and folding mechanism	486,559	Nov. 22	2182	575, 576	61	1061
Crumb, John H., Burlingame, Kans. Car-coupling	488,873	Dec. 27	2672	661	61	1903
Crutsinger, C. W. (See Smith, Albert D. and F. W., assignors.) (Reissue.)						
Crutsinger, C. W., *et al.* (See Smith, Frank W., assignor.)						
Culmer, John W., New Brighton, Pa., assignor to Computing Scale Company, Dayton, Ohio. Computing-scale	486,663	Nov. 22	2356	617, 618	61	1095

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Culmer, John W., New Brighton, Pa., assignor to Computing Scale Company, Dayton, Ohio. Computing-scale	486,695	Nov. 22	2410	629	61	1106
Culmer, John W., New Brighton, Pa., assignor to Computing Scale Company, Dayton, Ohio. Computing scale-poise	487,824	Dec. 13	961	243	61	1530
Cultra, Thomas B., Omaha, Nebr. Vehicle-pole	486,857	Nov. 29	2683	702	61	1178
Culver, Elijah, Grand Rapids, Mich., and C. A. Hascall, Hurley, Wis. Shirt	485,480	Nov. 1	518	137	61	677
Culver, Orris, Grand Rapids, Minn. Road-rut cutter	488,185	Dec. 20	1573	394	61	1669
Cuming, Alfred A., Hingham, Mass. Feeding mechanism for sewing-machines	485,175	Nov. 1	31	11	61	579
Cuming, Alfred A., Hingham, Mass. Sewing-machine	485,176	Nov. 1	33	11, 12	61	579
Cummings, Edward J., Quincy, Mass. Trunk-tray	488,753	Dec. 27	2482	617	61	1864
Cummings, Edward N., Lynn, Mass. Toilet or wrapping paper	487,026	Nov. 29	2085	769	61	1236
Cummings, Henry H., Malden, Mass. Pump	483,666	Oct. 4	218	54	61	45
Cummings, John R., assignor to American Press Association, Chicago, Ill. Stereotype-plate and base	483,544	Oct. 4	43	11	61	11
Cummins, Benjamin F., assignor to B. F. Cummins Company, Chicago, Ill. Perforating-stamp	486,858	Nov. 29	2684	702	61	1178
Cunningham, James, *et al.* (See Shaw, Henry R., assignor.)						
Cunningham, Peter N., Newcastle, assignor of one-half to R. Gray, Pittsburg, Pa. Ingot-manipulator	483,644	Oct. 4	188	47	61	39
Cunny, Alexander D., Cincinnati, Ohio. Metallic casing	488,601	Dec. 27	2253	559	61	1849
Cupler, Jacob C., Chicago, Ill. Adjustable pattern for drafting garments	487,237	Nov. 29	3345	851, 852	61	1305
Cupples, Samuel. (See West, James, assignor.)						
Curlin, Seth, assignor of one-half to J. E. Beck, Union City, Tenn. Air bed or pillow	486,696	Nov. 22	2415	629, 630	61	1108
Curran, William, assignor of four-fifths to R. Bertelsen, H. Lorenz, F. Roehl, and A. C. Clover, Chicago, Ill. Journal-bearing	484,143	Oct. 11	927	249	61	204
Curry, Alexander D., Istachatta, Fla. Road-cart	487,998	Dec. 13	1251	311	61	1586
Curry, James P. (See Beach, Oscar W., assignor.)						
Curtis, A. W., *et al.* (See Abbott, George F., assignor.)						
Curtis, Andrew J., East Williamson, N. Y. Washing-machine	488,543	Dec. 27	2156	532	61	1798
Curtis, Andrew J., East Williamson, N. Y., assignor of one-half to H. H. and W. Ponnd. Wrench	486,697	Nov. 22	2417	630	61	1108
Curtis, Charles, Newton, Mass., and N. M. Jones, Bangor, Me. Paper-pulp digester	484,999	Oct. 25	2328	601	61	508
Curtis, Charles, Newton, Mass., and N. M. Jones, Bangor, Me. Paper-pulp digester	485,000	Oct. 25	2330	601	61	508
Curtis, Charles, Newton, Mass., and N. M. Jones, Bangor, Me. Paper-pulp digester	485,808	Nov. 8	986	265	61	791
Curtis, Charles, Newton, Mass., and N. M. Jones, Bangor, Me. Paper-pulp digester	485,809	Nov. 8	987	265	61	792
Curtis, Charles, Newton, Mass., and N. M. Jones, Bangor, Me. Paper-pulp digester	485,810	Nov. 8	989	265	61	792
Curtis, George H., New York, N. Y., assignor to Singer Manufacturing Company of New Jersey. Sewing-machine guide	488,186	Dec. 20	1575	395	61	1670
Curtis, George H., New York, N. Y., assignor to Singer Manufacturing Company of New Jersey. Sewing-machine guide	488,187	Dec. 20	1576	395	61	1670
Curtis, Greely S., Jr., Boston, and J. M. Hallowell, West Medford, Mass. Mechanical ball game	487,825	Dec. 13	966	243, 244	61	1531
Curtis, James B., *et al.* (See Rinderknecht, Charles J., assignor.)						
Curtis, John D., Worcester, Mass. Barbed wire	484,890	Oct. 25	2148	551	61	473
Curtis, William A., *et al.* (See Weaver, William, assignor.)						
Curtis, Winfield, Oakland, assignor of one-half to E. F. May, San Francisco, Cal. Rail-joint	483,993	Oct. 11	710	179	61	160
Cushing, George W., Evanston, Ill., assignor to American Steel Wheel Company, Jersey City, N. J. Car-wheel	486,326	Nov. 15	1832	483	61	979
Cushing, George W., Evanston, Ill., and J. W. Rampe, Boston, Mass., assignors to American Steel Wheel Company, Jersey City, N. J. Mold for casting car-wheels	486,327	Nov. 15	1833	483	61	979
Cushing, Ira B., Brookline, Mass. Process of and apparatus for purifying and maturing liquors or distilled spirits	485,341	Nov. 1	292	78, 79	61	631
Cushman, Henry D., Three Rivers, Mich. Inhaler	488,427	Dec. 20	1972	492	61	1746
Cushman, Joseph W. (See Denison, Sylvester P., assignor.)						
Cuson, Michel, Spring Lake, Mich. Swing	488,602	Dec. 27	2253	559	61	1819
Custis, J. B. Gregg. (See Diver, Jerome B., assignor.)						
Cutmore, Hahnemann A., London, England. Speaking-tube	484,516	Oct. 18	1531	388, 389	61	393
Cutten, Elisha B., New York, N. Y. Electric fan	483,545	Oct. 4	44	11	61	11
Cutter, Charles, *et al.* (See Rice, Joel T., assignor.)						
Cutter, George, Chicago, Ill. Safety device for electric circuits	487,002	Nov. 29	2949	760	61	1230
Cutter, Solomon M., assignor to W. A. Marsh, Quebec, Canada. Shoe-slugging machine	487,404	Dec. 6	285	74	61	1377
Cuttriss, Charles, New York, N. Y., assignor to Knudson-Cuttriss Wire Company, Limited, of New York. Insulating electric conductors	488,141	Dec. 13	1491	375	61	1636
Cwerdinski, Alphonse T., Chicago, Ill. Paper can	485,158	Oct. 25	2570	659	61	557
D. M. Osborne & Company. (See Sharp, Charles S., assignor.)						
D'Arcy-Irvine, John, Howth, Ireland. Apparatus for saving life at sea	483,667	Oct. 4	219	54, 55	61	45
Da Rozir Levi, assignor of one-half to L. P. Coté, West Somerville, Mass. Balance	488,142	Dec. 13	1492	375	61	1636
Daab, Jacob. (See Borneman and Daab.)						
Daggett, Byron H., Buffalo, N. Y. Surgical table	488,649	Dec. 27	2325	575	61	1833
Daggett, Henry S., Monument, Colo. Animal-shears	483,904	Oct. 4	572	144	61	119
Daily, Charles T., *et al.* (See Lincoln, David B., assignor.)						
Daily, William E., Morristown, Tenn. Screw-driver	484,654	Oct. 18	1754	446	61	379
Daimler Motor Company. (See Wattles, Cyra B., assignor.)						
Dake, George W., and E. U. Loose; said Dake assignor to said Loose; said Loose assignor of one-half to A. B. Robbins, Minneapolis, Minn. Gang lawn-mower	488,669	Dec. 27	2361	584	61	1840
Dallmann, William F. (See Momburg and Dallmann.)						
Dancyger, Simon, Dayton, Ohio. Marking-tag	486,208	Nov. 15	1640	434	61	939
Dangerfield, Henry. (See Potter and Dangerfield.)						
Daniels, Henry E. C., Chicago, Ill. Slate-frame	487,554	Dec. 6	523	135	61	1424
Daniels, Levi B., Jr., *et al.* (See Nelson and Heuett, assignors.)						
Danielson, Frank W., Portsmouth, N. H. Shoemaker's tool	488,728	Dec. 27	2448	608	61	1857
Danz, William, Detroit, Mich. Thill-coupling	486,436	Nov. 22	2010	533	61	1028
Darby, John H., Brymbo, near Wrexham, England. Basic-lined furnace	484,161	Oct. 11	987	252	61	215
Darby, John O. (See Woodbury, Amasa O., assignor.)						
Darling, D. H. (See Harrington, George W., assignor.)						
Darling, E. L. (See Darling, William H., assignor.)						
Darling, Robert F., assignor to E. C. Stearns & Co., Syracuse, N. Y. Velocipede	485,839	Nov. 8	1030	277, 278	61	800
Darling, Welcome B. (See Mason, John, assignor.)						
Darling, William H., assignor of one-third to E. L. Darling, Bryan, Ohio. Car-replacer	487,864	Dec. 13	1034	259	61	1544

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Dasha, John F. (See Haub and Dasha.)						
Danchy, Arthur H., San Diego, Cal. Valve and faucet	485,828	Nov. 8	1016	273	61	797
Daumas, Louis C., Paris, France. Process of and apparatus for treating ores of gold	486,698	Nov. 22	2418	630	61	1108
Davenport, Rufus, *et al.* (See Brand, Henry, assignor.)						
Davidson, Alexander, Springfield, Mass., assignor to Yost Writing Machine Company, New York, N. Y. Type-writing machine	487,047	Nov. 29	3016	775	61	1242
Davidson, Alexander, Springfield, Mass., assignor to Yost Writing Machine Company, New York, N. Y. Type-writing machine	487,066	Nov. 29	3042	781	61	1248
Davidson, Solomon J., Vinita, Indian Ter. Tool-holder	486,664	Nov. 22	2361	618	61	1096
Davidson, Wayland F. (See Carel and Davidson.)						
Davies, Preston, London, England. Elastic tire	486,542	Nov. 22	2154	569	61	1056
Davies, Preston, London, England. Attachment for rims of wheels	488,670	Dec. 27	2363	584	61	1840
Davies, Robert, Birkenhead, England. Boiler	486,700	Nov. 22	2421	631	61	1109
Davis, Augustus G., Baltimore, Md. Fire-alarm apparatus	488,388	Dec. 20	1908	477 / 478	61	1734
Davis, Charles L., New York, N. Y. Instrument for drawing geometrical curves	486,699	Nov. 22	2420	630	61	1108
Davis, Edgar C., Earlville, Ill. Cistern-cleaning device	485,092	Oct. 25	2470	645	61	537
Davis, Emry, New York, N. Y. Suspenders	485,123	Oct. 25	2509	644	61	545
Davis, Emry, New York, N. Y. Combined inkstand-support and pen-rack	486,278	Nov. 15	1765	464	61	966
Davis, Francis G., assignor to H. H. Babcock Company, Watertown, N. Y. Spring-vehicle	486,279	Nov. 15	1766	464	61	966
Davis, Herbert L., Washington, D. C. Puzzle	488,690	Dec. 27	2398	594	61	1846
Davis, Jeptha P., and G. B. Harwell, Mansfield, Ark. Flour bin and sifter	488,074	Dec. 27	2837	699	61	1939
Davis, John, Albany, N. Y. Feed-roller for woodworking-machines	484,780	Oct. 25	1963	500	61	425
Davis, John B., Moline, assignor of one-half to L. Rosenstein, Rock Island county, Ill. Pipe clamp and holder	483,711	Oct. 4	281	70	61	59
Davis, John T., assignor of one-half to C. J. Moffett, St. Louis, Mo. Type-writer letter-copier	484,410	Oct. 18	1357	346	61	300
Davis, Joseph, San Francisco, Cal. Water-filter	488,143	Dec. 13	1493	376	61	1637
Davis, Joseph, San Francisco, Cal. Water-filter	486,859	Nov. 29	2690	703	61	1179
Davis, Lydia L., Mendon, Mass. Tent	486,860	Nov. 29	2693	703	61	1180
Davis, Miles L. (See Singer and Davis.)	487,319	Dec. 6	136	40	61	1348
Davis, Nathan H. and T. C., Philadelphia, Pa. Car-spring	488,754	Dec. 27	2484	617	61	1864
Davis, Robert C., and D. A. Ripley, assignors of one-third to B. C. Graham, Columbus, Ohio. Tramway-switch	486,769	Nov. 22	2531	661	61	1131
Davis, Thomas C. (See Davis, Nathan H. and T. C.)						
Davis, William W., Ashland Centre, Mich. Plow	483,994	Oct. 11	711	179	61	160
Davison, Augustine C., London, England. Lamp for velocipedes	488,626	Dec. 27	2291	567	61	1826
Davy Clay Ballast Company. (See Butler, Henry G. and W., assignors.)						
Daw, Albert W. and Z. W., Lanrvig, Norway. Construction of stands or tripods for rock-drills, &c	487,256	Dec. 6	27	8, 9	61	1326
Daw, Zacharias W. (See Daw, Albert W. and Z. W.)						
Dawe, Thomas R. (See Brown, Julius C., assignor.)						
Dawson, Edward, assignor of one-half to G. Burt, Terre Haute, Ind. Loose-pulley lubricator	487,257	Dec. 6	28	9	61	1327
Dawson, John, Huddersfield, England. Water-heater	488,709	Dec. 27	2421	600 / 601	61	1851
Day, Calvin K. (See Rossman, William W., assignor.)						
Day, Charles S., *et al.* (See Morrell, Robert, assignor.)						
Day, James R. M., and L. Moore, assignors of one-third to J. Lawrence and S. Compton, Winfield, Kans. Grain-drill	487,258	Dec. 6	30	9, 10	61	1327
Day, Richard H., Philadelphia, Pa. Pressing and drying plants and press adapted therefor	484,301	Oct. 11	1188	302 / 303	61	254
Dayton Manufacturing Company. (See Kirby, John, Jr., assignor.)						
Dayton, William H., assignor to Excelsior Needle Company, Torrington, Conn. Tempering-furnace	487,944	Dec. 13	1162	290	61	1568
De Camp, Eliphalet, Newark, N. J. Folding square	488,544	Dec. 27	2157	533	61	1798
De Camp, Eliphalet, Newark, N. J. Folding square	488,545	Dec. 27	2158	533	61	1799
De Ford, Franklin, Stuart, assignor of one-third to L. H. De Ford, Valley Junction, Iowa. Car-coupling	485,736	Nov. 8	902	242	61	774
De Ford, L. H. (See De Ford, Franklin, assignor.)						
De Forest, Wyatte F., St. Louis, Mo. Pressure-recorder for air-brakes, &c	484,411	Oct. 18	1357	347	61	300
De Golyer, E. W., administrator. (See De Golyer, Norman T.)						
De Golyer, Everard W. (See De Golyer, Norman T., assignor.)						
De Golyer, Norman T., deceased, (E. W. De Golyer, administrator,) assignor of one-half to E. W. De Golyer, Beaver Dam, Wis. Steam-boiler	487,696	Dec. 6	743	190	61	1467
De Graff, James W., Plainfield, N. J., assignor to Howard Manufactoring Company, of Massachusetts. Razor-strop	487,826	Dec. 13	968	244	61	1531
De Graff, William L. (See Maret and De Graff.)						
De Grow, Samuel. (See Hopkins, Edwin F., assignor.)						
De Kalb, Courtenay, assignor to S. Brentano, New York, N. Y., and L. E. De Kalb, Boston, Mass. Adjustable connection for machinery	487,721	Dec. 13	794	203	61	1495
De Kalb, L. Engenie, *et al.* (See De Kalb, Courtenay, assignor.)						
De La Mare, Thomas, and J. Mecham, Tooele, Utah Ter.; said Mecham assignor to said De La Mare. Apparatus for drilling wells	488,116	Dec. 13	1454	366	61	1629
De Land, Frank A., Memphis, Mich. Fence	486,632	Nov. 22	2308	603	61	1086
De Lany, Ellsworth, Syracuse, and J. Dooley, Jr., Camillus, N. Y. Drier	485,911	Nov. 8	1152	305	61	824
De Mars, Joseph, assignor of one-fourth to F. E. McKinley, Albuquerque, N. Mex. Ter. Bottle-stopper	485,093	Oct. 25	2471	635	61	538
De Neut, John H., assignor of one-half to J. H. Colleton, Grand Rapids, Mich. School-slate	487,178	Nov. 29	3222	825	61	1284
De Puydt, Albert, Liege, Belgium. Electric-arc lamp	488,529	Dec. 20	1812	454	61	1715
De Rycke, Jules J. J., Brooklyn, N. Y. Exhaust-head	487,723	Dec. 13	796	203	61	1495
De Rycke, Jules J. J., Brooklyn, N. Y. Feed-water heater and purifier	487,724	Dec. 13	797	204	61	1496
De Witt, Melville L., Easton, Me. Crank-axle for forward wheels of wagons	485,492	Nov. 1	521	138	61	678
Deal, Josiah J., Canton, Ohio. Permutation-padlock	486,665	Nov. 22	2362	618	61	1097
Deal, Josiah J., Canton, Ohio. Combination-padlock	486,666	Nov. 22	2364	618	61	1097
Dean, Cyrus S., Fort Erie, Canada, assignor of two-thirds to C. O. Rano, Buffalo, N. Y. Gas-burner	485,910	Nov. 8	1150	305	61	824
Dean, James C. A., assignor of one-half to W. R. Mahan, Chicago, Ill. Truck	485,262	Nov. 1	163	47	61	606
Deane, Robert, Brooklyn, N. Y. Hinge-lock	485,613	Nov. 8	701	184	61	732
Dearing, James W., Brooklyn, N. Y. Lock-hinge	485,460	Nov. 1	476	126	61	669
Death, Ephraim, Leicester, England. Machine for scutching and cleaning fibrous stems or leaves	483,984	Oct. 4	695	174	61	143

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Deck, Frederick R., assignor to Prahar & Brother, Brooklyn, N. Y. Lock for the frames of bags, purses, and pocket-books	486,701	Nov. 22	2423	631	61	1109
Decker, Alexander C., Keokuk, Iowa. Currycomb	484,848	Oct. 25	2082	535	61	459
Decker, Alexander C., Keokuk, Iowa. Currycomb	484,849	Oct. 25	2083	536	61	459
Decker, Mark M., New York, N. Y. Car-coupling	486,091	Nov. 15	1467	386 / 387	61	905
Deckert, James W., assignor to American Leather and Membranoid Company, Newark, N. J. Membranoid	487,067	Nov. 29	3044	781	61	1248
Decrow, William E., Boston, Mass. Successive non-interference signal box	486,702	Nov. 22	2424	632	61	1109
Dedermick, Coulder C., Nashville, Tenn. Whiffletree-hook	486,280	Nov. 15	1767	465	61	966
Defiance Machine Works. (See Seymour, Charles, assignor.)						
Deitz, Henry, Denver, Colo. Car-coupling	487,662	Dec. 6	689	176	61	1458
Deitz, Henry, Denver, Colo. Car-coupling	487,663	Dec. 6	690	176	61	1458
Deitz, Henry, Denver, Colo. Car-coupling	487,664	Dec. 6	691	176	61	1458
Deitz, Henry, Denver, Colo. Car-coupling	487,665	Dec. 6	693	177	61	1459
Deitz, Henry, Denver, Colo. Car-coupling	487,666	Dec. 6	694	177 / 178	61	1459
Del Valle, Eliseo, assignor of three-tenths to G. Martens, Brooklyn, N. Y. Cash register and indicator	486,825	Nov. 22	2622	684 / 685 / 686	61	1150
Delaney, Elmer A., Warren, Pa. Weather-strip	483,995	Oct. 11	712	179	61	160
Delaney, John, and A. D. Reaume, Trenton, Mich. Rail-joint	485,862	Nov. 8	1008	284	61	807
Delaware Hard Fibre Company. (See Frist, Robert P., assignor.)						
Delia, Eugene, Chicago, Ill. Bridge-gate	488,755	Dec. 27	2484	618	61	1864
Dellwik, Carl. (See Fahnehjelm and Dellwik.)						
Deling, Alois, Munich, Germany. Clip for use in photographic copying	485,758	Nov. 8	925	248	61	779
Demarest, Zachariah, Paterson, N. J. Waist	485,001	Oct. 25	2331	601	61	508
Demaurez, Charles, Portland, Me. Car-coupling	486,826	Nov. 22	2628	686	61	1152
Dempsey, Louis H. (See Folk, Nairn, and Dempsey.)						
Denfeld, Frank F., *et al.* (See Dolloff, Orville C., assignor.)						
Denison, Charles L., Corning, N. Y. Wall-plaster	485,177	Nov. 1	37	.....	61	580
Denison, Sylvester P., Brooklyn, assignor of one-half to J. W. Cushman, New York, N. Y. Paper-fastener	487,440	Dec. 6	352	90	61	1391
Denislon, Thomas B., Peru, Ind. Trawl-line	488,874	Dec. 27	2673	662	61	1903
Denney, David P. (See Coffman and Denney.)						
Denney, Harmer, New York, N. Y. Valve for steam-engines	483,996	Oct. 11	713	179	61	161
Dennis, George S., Kalamazoo, Mich. Hand cultivator-hoe	485,372	Nov. 1	347	93	61	643
Densmore, Amos. (See Barron, Wagner, and Densmore.)						
Densmore, Edwin, Coronado, Cal. Surgical splint	485,178	Nov. 1	37	12	61	580
Denton, David J., W. L. Simpson, and S. W. Denton, Bronwood, Ga. Bagging-measuring machine	485,491	Nov. 1	519	138	61	678
Denton, Samuel W. (See Denton, Simpson, and Denton.)						
Dény, Charles E., Paris, France. Lock	487,945	Dec. 13	1163	290 / 291	61	1568
Depuy, Frank and L. S., Portland, Pa. Bag-lock	486,159	Nov. 15	1575	417	61	927
Depuy, Lewis S. (See Depuy, Frank and L. S.)						
Derby, Charles G., Laona, N. Y. Trellis	485,912	Nov. 8	1156	305	61	825
Derby, John N., Brooklyn, assignor to Hayden & Derby Manufacturing Company, New York, N. Y. Steam injector	484,302	Oct. 11	1191	303	61	254
Derby, John N., Brooklyn, assignor to Hayden & Derby Manufacturing Company, New York, N. Y. Steam-injector	484,303	Oct. 11	1194	304	61	255
Dernell, Herman F., Athens, N. Y. Combined clod-crusher and land-roller	487,722	Dec. 13	795	203	61	1495
Derr, John P., Greenville, Pa. Car-coupling	488,875	Dec. 27	2675	662	61	1904
Deroin, Frank X. (See Fontaine, Isaac, assignor.)						
Des Chapelles, Joseph O., Havana, Cuba. Reversing-gear for engines	487,115	Nov. 29	3126	801	61	1266
Despres, Stanislaus C., Traverse City, Mich. Feed-water heater and circulating system	483,905	Oct. 4	574	144	61	119
Detroit Paper Package Company. (See Thomson, William B., assignor.)						
Deuss, Joseph, Gladbach, Germany. Oil-filter	488,264	Dec. 20	1702	425	61	1694
Dentsch, William M., Elizabeth, N. J. Filter	484,781	Oct. 25	1964	501	61	435
Devine, Charles E. (See La Chapelle, George, assignor.)						
Devine, William P., assignor of one-half to W. D. Donovan, Newark, N. J. Automatic device for feeding blanks	488,389	Dec. 20	1909	478	61	1734
Devlin, Francis H. A., Manch Chunk, Pa. Valve-gear	486,437	Nov. 22	2011	533	61	1022
Devore, John A. (See Lang, Evans, and Devore.)						
Devore, Levi M., and C. E. Forry, Freeport, Ill. Bicycle	488,603	Dec. 27	2254	559	61	1819
Dewey, Alvin P., Gilbert's, Ill. Ticket-holder	485,002	Oct. 25	2332	601	61	508
Dewey Corporation. (See Dewey, Mark W., assignor.)						
Dewey, Frederic P., Washington, D. C., assignor to Chemical Supply Company, of New York. Obtaining alumina and acetic acid	485,461	Nov. 1	477	.....	61	669
Dewey, Mark W., assignor to Dewey Corporation, Syracuse, N. Y. Electrical refrigeration	484,182	Oct. 11	988	253	61	215
Dexter, Pardon N., Jr., Salmon Falls, N. H. Spinning-mule	483,906	Oct. 4	576	144 / 145	61	119
Dexter, Talbot C., Fulton, N. Y. Paper folding and pasting machine	488,271	Dec. 20	1713	431 / 432	61	1696
Dey, Harry E., Brooklyn, N. Y., and F. B. Griswold, Hartford, Conn. Bicycle	485,094	Oct. 25	2472	635	61	538
Diamond Paper Bag Company. (See Baker, Frank L., assignor.)						
Dick Kerr & Company. (See Colam, William N., assignor.)						
Dickey, Aaron F. (See Stahl and Dickey.)						
Dickey, Foster, assignor to himself, H. C. Wright, N. W. Wells, H. W. Nieman, and C. Abbott, Schuyler, Nebr. Car-coupling	484,412	Oct. 18	1361	347 / 348	61	300
Dickey, John S., Blanket, Tex. Quilting attachment for sewing-machines	488,350	Dec. 20	1847	462	61	1722
Dickinson, Charles H., Coldwater, Mich. Wire-stretching device	488,729	Dec. 27	2449	608	61	1857
Dickinson, Dwight L., *et al.* (See Hupp, George N., assignor.)						
Dickinson, J. C., *et al.* (See Merry, George G., assignor.)						
Dickson, William D., Peoria, Ill. Dry closet	483,997	Oct. 11	715	180	61	161
Diebel, William, Philadelphia, Pa., assignor to F. Buckhalter and V. C. Driesbach. Circular-knitting machine	483,954	Oct. 4	640	161 / 162	61	131
Diebel, William, Philadelphia, Pa., assignor to F. Buckhalter and V. C. Driesbach. Knitting stockings	483,955	Oct. 4	650	162	61	135
Diederich, Charles W., Concord, N. H. Car-coupling	487,916	Dec. 13	1120	279	61	1560
Diek, Henry W., Baltimore, Md. Light for Christmas-trees	484,304	Oct. 11	1196	304	61	256
Dienelt & Eisenhardt. (See Eisenhardt, George F., assignor.)						
Dietrich, John, Yellow Creek, Ill. Wire-stretcher	486,221	Nov. 15	1661	439	61	944
Dietz, Emil, Indianapolis, Ind. Box-fastener	487,667	Dec. 6	696	178	61	1459

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Dikeman, Henry E., Berkeley, Cal. Track-brake	487,555	Dec. 6	524	135	61	1424
Dillenbeck, Noah and N. E., Syracuse, N. Y. Cash-carrier	487,048	Nov. 29	3019	775	61	1243
Dillenbeck, Norman E. (See Dillenbeck, Noah and N. E.)						
Dillion, William R., and A. C. Carr, Dillion, Ky. Hay-boom	486,438	Nov. 22	2012	534	61	1028
Dillon, Peter, assignor of one-half to J. H. Horne, Lawrence, Mass. Paper-calendering machine	485,534	Nov. 1	579	156	61	691
Dillon, William S., assignor to North Pacific Indicator Company, Portland, Oreg. Automatic station-indicator	486,543	Nov. 22	2155	570	61	1056
Dilworth & Poling. (See Nester, Horshel M., assignor.)						
Dimovich, Ivancin. (See Scandracof and Dimovich.)						
Dingee, William W., Racine, Wis. Thrashing-machine	488,730	Dec. 27	2450	609	61	1857
Dinkel, James S., Longwood, Fla. Fruit clipping and holding shears	486,560	Nov. 22	2187	576	61	1062
Dinsmore, John B. (See Little, Frank J., assignor.)						
Dion, Charles J., St. Paul, Minn. Drying brick	487,827	Dec. 13	969	244	61	1592
Dion, Léon O., Natick, Mass. Closed conduit for electric railways	488,351	Dec. 20	1849	{462 463}	61	1792
Diss, Albert B., Brooklyn, N. Y. Caster-wheel	484,305	Oct. 11	1197	304	61	256
Dissinger, Castor H. A., Wrightsville, Pa. Metal-seaming tool	487,320	Dec. 6	137	40	61	1348
Dittenhoefer, Myer, New York, N. Y. Atomizer	483,546	Oct. 4	46	11	62	12
Dittrich, Julius C., and F. M. Grumbacher, New York, N. Y., assignors to Ozone Manufacturing Company, of New Jersey. Still	487,027	Nov. 29	2987	769	61	1236
Dittrich, Julius C., and F. M. Grumbacher, New York, N. Y., assignors to Ozone Manufacturing Company, of New Jersey. Treating liquids with ozone	487,089	Nov. 29	3083	792	61	1257
Diver, Jerome B., assignor of one-half to J. B. G. Custis, Washington, D. C. Apparatus for applying paper-fastenings	486,190	Nov. 15	1611	428	61	934
Divine, Anna E., Devon, Pa. Safety-pin	485,263	Nov. 1	165	48	61	606
Dobbel, Frederick W., Purissima, Cal. Wagon-brake	486,245	Nov. 15	1700	449	61	951
Dobson, Alexander, Beaverton, Canada. Reel	483,907	Oct. 4	578	145	61	120
Dockstader, Dennis S., Meadville, Pa. Wrecking-frog	484,703	Oct. 18	1820	462	61	393
Dodd, Charles E., assignor to G. Stiger, Williamsport, Pa. Curtain-shade holder	487,311	Nov. 29	3270	835	61	1293
Dodd, John A., Galva, Ill. Seed-planter	486,650	Dec. 27	2398	576	61	1833
Doddrell, Thomas, Slough, England. Clamp for drawing together wooden joints	488,546	Dec. 27	2158	533	61	1799
Dodge, Charles, Jr., Fort Bayard, N. Mex. Ter. Blanket-roll support for soldiers	486,370	Nov. 15	1900	502	61	992
Dodge, Isaac F., assignor of one-half to V. C. Thompson, Gowin, Mich. Potato-coverer	486,861	Nov. 29	2695	703	61	1180
Dodge, James M., assignor to Link-Belt Engineering Company, Philadelphia, Pa. Gate for conveyer-troughs	485,913	Nov. 8	1157	306	61	825
Doebler, Charles F., and C. K. Bryant, Hartford, Conn. Knob attachment	485,154	Oct. 25	2560	657	61	555
Doelger, Charles, and O. Kirsten, Milwaukee, Wis. Sprinkler	486,667	Nov. 22	2365	619	61	1097
Doersom, Philip, Columbia, assignor to J. A. Livers, Gettysburg, Pa. Car-coupling	487,885	Dec. 13	1067	268	61	1550
Dolby, Ernest R. (See Allam, Edwin P., assignor.)						
Dole, Charles P., West Superior, Wis., assignor of one-half to C. R. Heneage, St. Paul, Minn. Automatic latch-opener for buckets	484,782	Oct. 25	1967	{501 502}	61	436
Dolese, John, *et al.* (See Patnoe, George W., assignor.)						
Dolloff, Orville C., Chelsea, assignor of two-thirds to J. Goettel, Boston, and F. F. Denfeld, Westborough, Mass. Sewing-machine	488,864	Dec. 27	2820	{605 606}	61	1935
Dombrain Henry A. A. (See Critchley, Singer, and Dombrain.)						
Donahoe, John F., Paola, Kans. Radiator	488,756	Dec. 27	2486	{618 619}	61	1865
Donaldson, Richard A., *et al.* (See Hipperling, William, assignor.)						
Donnadieu, Clement H. J. (See Kness, Victor J., assignor.)						
Donnelly, Ellen, New York, N. Y. Bust-form	488,876	Dec. 27	2676	662	61	1904
Donnelly, John, Brockley, England. Car-axle box	488,877	Dec. 27	2677	{662 663}	61	1904
Donner, Jacob H., Aurora, Nebr. Listed-corn cultivator	487,612	Dec. 6	600	154	61	1441
Donovan, William D. (See Devine, William P., assignor.)						
Doolan, Thomas, Chicago, Ill. Feed-trough	487,003	Nov. 29	2951	760	61	1230
Dooley, James, Jr. (See De Lany and Dooley.)						
Dooley, Mason B., Decatur, Mo. Lifting-jack	484,655	Oct. 18	1755	446	61	379
Doolittle, George W., Chicago, Ill. Street-crossing	488,117	Dec. 13	1455	367	61	1629
Doolittle, Irvin P., Redlands, Cal. Coupling	484,656	Oct. 18	1756	447	61	379
Doolittle, William W., assignor to Crane Company, Chicago, Ill. Back-pressure valve	486,950	Nov. 29	2872	742	61	1215
Doran, William, Skowhegan, Me. Device for raising or lowering electric lamps	488,878	Dec. 27	2678	663	61	1904
Dore, William, and J. P. Tapley, assignors of one-third to J. H. Parr, Manchester, England. Wringing and mangling machine	486,222	Nov. 15	1662	{439 440}	61	944
Dorward, David, assignor to Risdon Iron and Locomotive Works, San Francisco, Cal. Tubular metallic pole	484,144	Oct. 11	928	239	61	204
Doss, John. (See Sullivan and Doss.)						
Doty, James, assignor of one-half to A. Trossen and A. S. McDonald, Marion, Wis. Cover for kettles, &c	485,095	Oct. 25	2474	636	61	538
Dougan, Kennedy, assignor to Montana Vote Registering Machine Company, Missoula, Mont. Ballot-holder for voting-machines	488,937	Dec. 27	2772	{684 685}	61	1924
Dougan, Kennedy, assignor to Montana Vote Registering Machine Company, Missoula, Mont. Vote-registering machine	488,938	Dec. 27	2775	685	61	1924
Doughten, Henry W., Moorestown, N. J. Furrower and coverer	484,581	Oct. 18	1625	412	61	353
Douglas, James. (See Hunt and Douglas.)						
Douglas, John, Elizabeth, N. J., assignor to Singer Manufacturing Company of New Jersey. Plaiting attachment for sewing-machines	488,547	Dec. 27	2159	{533 534}	61	1799
Douglas, William H., Stourbridge, England. Stop-watch	488,710	Dec. 27	2424	601	61	1851
Douthit, Albert G., Elkhart, Tex. Seal-press	487,321	Dec. 6	138	40	61	1348
Douthit, Albert G., Elkhart, Tex. Toy wagon	487,613	Dec. 6	601	{154 155}	61	1441
Dow, Alexander, Elgin, Ill. Regulator for dynamo-electric machines	486,417	Nov. 15	1974	524	61	1007
Dow, George B. N., Manchester, N. H. Filler attachment for lamp-burners	488,164	Dec. 13	1538	{385 386}	61	1645
Dowdall, James B., Manchester, England. Automatic safety-extinguisher for lamps	486,439	Nov. 22	2013	534	61	1029
Downard, James A., *et al.* (See Cox, Jacob B., assignor.)						
Downes, James F., New York, N. Y. Fire-escape	485,914	Nov. 8	1158	306	61	825
Downing, George, Jr., and W. F. Hall; said Hall assignor to T. Ryan, Lincoln, Nebr. Rocker-tooth grate	488,548	Dec. 27	2161	534	61	1800
Dowse, W. B. H., trustee. (See Mead, Albert G., assignor.)						
Doxford, Charles D., Sunderland, England. Construction of hulls of vessels	485,462	Nov. 1	479	{126 127}	61	669
Drader, Joseph, and A. B. McKay, London, Canada; said McKay assignor to said Drader. Spade-harrow	487,322	Dec. 6	139	40, 41	61	1349

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Drake, Ambrose F., and W. Wonn, Audubon, Iowa. Gravity-motor	483,645	Oct. 4	190	47, 48	61	39
Drake, Francis E., Columbus, Ohio. Helmet attachment	488,188	Dec. 20	1577	395	61	1670
Drake, Francis M., Waldo, Ohio. Grain-scourer	487,259	Dec. 6	31	10, 11	61	1327
Draper & Sons, George. (See Draper, William F., assignor.)						
Draper & Sons, George. (See Heflin, Henry M., assignor.)						
Draper, William F., assignor to G. Draper & Sons, Hopedale, Mass. Spindle-support	484,356	Oct. 11	1271	324	61	271
Dreux, Louis, Presles, France. Boiler-feeder	483,668	Oct. 4	221	55	61	46
Drew, Julius, Chattanooga, Tenn. Office-door indicator	483,908	Oct. 4	579	145	61	120
Drew, Walter J., assignor to Bissell Carpet Sweeper Company, Grand Rapids, Mich. Carpet-sweeper	486,371	Nov. 15	1901	{502 503}	61	992
Drew, Walter J., assignor to Bissell Carpet Sweeper Company, Grand Rapids, Mich. Carpet-sweeper	487,212	Nov. 29	3271	836	61	1293
Driesbach, Victor C., *et al.* (See Diebel, William, assignor.)						
Driggs, Gertrude, *et al.* (See Lorce, Manfred U., assignor.)						
Drinkwater, James C. (See Drinkwater, William L. and J. C.)						
Drinkwater, William L. and J. C., Mount Clemens, Mich. Parturition-shears	487,068	Nov. 29	3045	781	61	1249
Dromgold, Walker A. (See Richey, Hench, and Dromgold.)						
Droste, August H. W., and H. H. Bruns, St. Charles, Mo. Grain-weighing machine	483,909	Oct. 4	580	146	61	120
Dronet, Gustave, Paris, France. Bolt	485,373	Nov. 1	348	93, 94	61	644
Druen, Bernard D., New Haven, Conn. Whiffletree-coupling	485,003	Oct. 25	2333	602	61	509
Drury, Charles E., Girard, Pa. Clothes-drier	484,517	Oct. 18	1533	380	61	334
Du Pont, Antoine B., Louisville, Ky. Car-truck	487,518	Dec. 6	470	123	61	1414
Duckham, Frederic E., London, England. Separating grain and dust or stive from air laden therewith	485,915	Nov. 8	1159	306	61	826
Dudley, George B., assignor of one-half to T. B. Peacock, Topeka, Kans. Cartridge-punch	487,556	Dec. 6	525	136	61	1425
Dudley, Plimmon H., New York, N. Y. Railway-rail	486,633	Nov. 22	2310	603	61	1086
Duffy, John F., assignor to National Ice Machine Company, Brooklyn, N. Y. Beer-cooler	487,405	Dec. 6	988	75	61	1378
Dugan, James, Bristol, Pa. Support for umbrellas, &c., on bicycles, &c	488,549	Dec. 27	2162	534	61	1800
Dugan, Rees W., Covington, Ky. Steam condenser and purifier	485,004	Oct. 25	2334	602	61	509
Duhme, Edward H., New Orleans, La. Sugar-gage for vacuum-pans	484,145	Oct. 11	920	239	61	204
Dukes, Abraham S., Branchville, S. C. Saw cotton-gin	488,921	Dec. 27	2752	679	61	1919
Dulin, H. R. (See Dulin, William, assignor.)						
Dulin, William, assignor of one-half to H. R. Dulin, Avoca, Iowa. Wire-reel	486,928	Nov. 29	2833	734	61	1208
Dull, Casper, *et al.* (See Galvin, James A., assignor.)						
Dull, Newton A., and A. H. Moore, Santa Fé, Mo. Tilting gate	487,179	Nov. 29	2920	{825 826}	61	1285
Dummer, Bessie P., *et al.* (See Morse, Cyrus B., assignor.)						
Dunbar, John W., New London, Conn., assignor to H. A. Penrose. Machine for making composition targets	486,396	Nov. 15	1939	{513 514}	61	1001
Duncan, John W., *et al.* (See Barrett, George L., assignor.)						
Duncan, John W., and T. B. Quinby, Onancock, Va. Smoke stack and conductor	485,535	Nov. 1	581	156	61	692
Duncan, Thomas J., *et al.* (See Ford, Charles S., Jr., assignor.)						
Dungey, Edward, Detroit, Mich. Game apparatus	484,950	Oct. 25	2246	579	61	492
Dunlap, Fred T. (See Evans and Dunlap.)						
Dunlap, Will W., Detroit, Mich. Gearing for propelling cars	485,179	Nov. 1	28	13	61	580
Dunn, William, New York, N. Y. Holdback for vehicles	487,828	Dec. 13	971	245	61	1532
Dunn, William J., Ben Avon, Pa. Extensible brace	485,342	Nov. 1	293	79	61	692
Dunn, William T., Pittsburg, Pa. Brace for excavations	483,737	Oct. 4	319	80	61	67
Dunne, John J., Philadelphia, Pa. Nitrogenous fertilizer and making the same	484,631	Oct. 18	1707	.....	61	369
Durand & Co., Homer. (See Durand, Homer, assignor.)						
Durand, Homer, assignor to H. Durand & Co., Starkville, Colo. Mine-car	488,879	Dec. 27	2679	663	61	1904
Durand, Louis, New York, N. Y. Dough-kneading machine	485,096	Oct. 25	2474	636	61	538
Durant, Léon, and A. Lencauchez, Paris, France. Steam-engine	485,614	Nov. 8	702	185	61	732
Durfee, Walter H. (See Harrington, John, assignor.)						
Durkee, Edward H., Kenosha, Wis. Head-rest	485,374	Nov. 1	350	94	61	644
Durkee, George B., and D. Lanterman, Chicago, Ill. Harp	485,737	Nov. 8	903	242	61	774
Durr, Henry H., assignor to C. H. Childs & Co., Utica, N. Y. Hay-carrier	488,330	Dec. 20	1813	454	61	1716
Dutcher Temple Company. (See Ayer, John C., assignor.)						
Dutcher Temple Company. (See Hatch, Charles J., assignor.)						
Dutchess Tool Company. (See Van Houten, Frank H., assignor.)						
Dutton, Samuel T., Worcester, England. Signal and switch interlocking apparatus	488,805	Dec. 27	2567	637	61	1881
Dutton, William H., Rochester, assignor to Buffalo Automatic Machine Company, Buffalo, N. Y. Coin-controlled machinery	484,908	Oct. 25	2178	{560 561}	61	479
Duval, Martin L. E., assignor to Compagnie de Fives-Lille, Paris, France. Automatic regulator for air-brakes	486,703	Nov. 22	2427	632	61	1110
Duvall, William S. (See Fields and Duvall.)						
Dye, John Y., Knowles, La. Cotton-chopper	487,725	Dec. 13	799	204	61	1496
Dyer, Arthur H. S., Schenectady, assignor to E. Munsell & Co., New York, N. Y. Making artificial mica sheets for electrical insulation	483,646	Oct. 4	192	48	61	40
E. Howard Watch and Clock Company. (See James, William H., assignor.)						
E. J. Brooks & Company. (See Brooks, Edward J., assignor.)						
E. N. Gates Heating Company. (See Gates, Fannie A. and E. N., assignors.)						
Eagle Lock Company. (See Roche, James, assignor.)						
Eagle Pencil Company. (See Boman, Claes W., assignor.)						
Eagle Pencil Company. (See Fischer, Frederick J. W., assignor.)						
Eagle Pencil Company. (See Kaiser, August, assignor.)						
Eagleson, William H., Hopedale, Ohio. Brake mechanism for wagons	485,916	Nov. 8	1160	307	61	826
Eames, Henry H., Baltimore county, Md., assignor to Eames Purifying and Separating Company, of West Virginia. Separating iron from ores	484,877	Oct. 25	2122	.....	61	467
Eames Purifying and Separating Company. (See Eames, Henry H., assignor.)						
Earl, William S., *et al.* (See McKinney, Samuel C., assignor.)						
Eason, Henry K. (See Fitzgibbons and Eason.)						
Eastman, George, assignor, by mesne assignments, to Eastman Kodak Company, Rochester, N. Y. Camera-shutter	486,397	Nov. 15	1941	514	61	1001
Eastman, Joseph H., *et al.* (See Ethridge, Martin V. B., assignor.)						
Eastman Kodak Company. (See Eastman, George, assignor.)						
Eastman Kodak Company. (See Pierce, Arthur M., assignor.)						
Eastman, Lucius R., Boston, Mass. Ventilated shoe	485,180	Nov. 1	40	13	61	580
Eastwood, Benjamin. (See Risk, Robert J., assignor.)						
Eaton, Howard F. (See Neal and Eaton.)						
Eaton, Marshall F., Chicago, Ill. Boiler-setting	484,878	Oct. 25	2123	546	61	467
Eaton, William A., Marcellus, Mich. Sectional desk	484,357	Oct. 11	1272	324	61	271
Eberhard, John J., assignor to Clauss Shear Company, Fremont, Ohio. Knife	485,264	Nov. 1	165	48	61	607

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Ebersohl, Philip J., Centreville Station, Ill. Turning-plow	488,880	Dec. 27	2680	663, 664	61	1905
Ecker, James S., assignor of five-eighths to J. S. and J. Laidlaw, Portland, Oreg. Furnace	486,704	Nov. 22	2129	633	61	1110
Eckerle, Charles E. (See Simms, Alonzo H., assignor.)						
Eclipse Bicycle Company. (See Morrow, Alexander P., assignor.)						
Edgar, Butler, Sunbury, Pa. Lubricating-packing	485,265	Nov. 1	166	48	61	607
Edgar, Charles F., Wilkes-Barré, Pa. Torpedo-placer	487,917	Dec. 13	1121	279	61	1560
Edgar, Charles H., trustee. (See Young, Josiah L., assignor.)						
Edgar, John, Rochester, Minn. Whiffletree	483,604	Oct. 4	131	32, 33	61	28
Edgar, John, Rochester, Minn. Whiffletree	486,092	Nov. 15	1468	387	61	906
Edge, William C., Montrose, N. J. Link attachment for buttons, &c	485,320	Nov. 1	258	70	61	625
Edge, William C., Montrose, N. J. Buckle for reins	487,474	Dec. 6	403	104	61	1400
Edinger, Joseph H. (See Brolin, Peter, assignor.)						
Edison Phonograph Company. (See Edison, Thomas A., assignor.)						
Edison, Thomas A., Llewellyn Park, N. J. Electrical depositing-meter	484,183	Oct. 11	990	253	61	216
Edison, Thomas A., Llewellyn Park, N. J. Manufacture of carbon filaments	484,184	Oct. 11	991	253	61	216
Edison, Thomas A., Llewellyn Park, N. J. Manufacture of carbon filaments	484,185	Oct. 11	992	254	61	216
Edison, Thomas A., Llewellyn Park, N. J. Phonograph cutting-tool	484,583	Oct. 18	1627	413	61	353
Edison, Thomas A., Llewellyn Park, N. J. Phonograph-reproducer	484,584	Oct. 18	1628	413	61	353
Edison, Thomas A., Llewellyn Park, N. J. Phonograph	484,585	Oct. 18	1629	413	61	353
Edison, Thomas A., Llewellyn Park, N. J. Manufacture of carbon filaments	485,615	Nov. 8	703	185	61	733
Edison, Thomas A., Llewellyn Park, N. J. Manufacture of carbon filaments	485,616	Nov. 8	704	......	61	733
Edison, Thomas A., Llewellyn Park, N. J. Incandescent-lamp filament	485,617	Nov. 8	705	......	61	733
Edison, Thomas A., Llewellyn Park, N. J. Bricking fine iron ores	485,840	Nov. 8	1036	......	61	801
Edison, Thomas A., Llewellyn Park, N. J. Magnetically separating ores	485,841	Nov. 8	1037	......	61	801
Edison, Thomas A., Llewellyn Park, N. J. Magnetic-ore separation	485,842	Nov. 8	1038	......	61	801
Edison, Thomas A., Llewellyn Park, N. J. Phonogram-blank	488,191	Dec. 20	1580	396	61	1671
Edison, Thomas A., Llewellyn Park, N. J., assignor to Edison Phonograph Company, of New Jersey. Duplicating phonograms	484,582	Oct. 18	1625	413	61	353
Edison, Thomas A., Llewellyn Park, N. J., assignor to Edison Phonograph Company, of New Jersey. Phonograph	488,189	Dec. 20	1578	395	61	1670
Edison, Thomas A., Llewellyn Park, N. J., assignor to Edison Phonograph Company, of New Jersey. Phonograph-reproducer	488,190	Dec. 20	1579	396	61	1670
Edison, Thomas A., Menlo Park, N. J., and E. T. Gilliland, Boston, Mass., assignors, by mesne assignments, to Consolidated Railway Telegraph Company, of New York. System of railway signaling	486,634	Nov. 22	2311	603, 604	61	1087
Edler, Francis, Chicago, Ill. Tobacco-pipe	486,093	Nov. 15	1469	387	61	906
Edlin, Robert, Leicester, England. Wheel-tire	486,191	Nov. 15	1613	428	61	935
Edsall, William H. (See Steele, Elijah F., assignor.)						
Edward Miller & Company. (See Johnson, John L., assignor.)						
Edward Miller & Company. (See Rhind, Frank, assignor.)						
Edward P. Allis Company. (See Gray, William D., assignor.)						
Edwards, Daniel, Morriston, England. Apparatus for manufacturing tin-plate	486,635	Nov. 22	2313	604, 605	61	1087
Edwards, Edgar A., Cincinnati, Ohio. Steam-motor	485,536	Nov. 1	584	156, 157	61	692
Edwards, Edgar A., Cincinnati, Ohio. Electric-arc lamp	485,537	Nov. 1	588	157, 158	61	693
Edwards, John J. (See Edwards, Thomas, Jr., and J. J.)						
Edwards, Thomas, Jr., and J. J., Grand Rapids, Mich. Screw-driver	487,946	Dec. 13	1165	291	61	1569
Edwards, William S., Charleston, W. Va. Car-coupling	488,065	Dec. 13	1381	343	61	1614
Ehle, Homer F., assignor of one-half to A. C. Shilling, Helena, Mont. Artificial limb	487,697	Dec. 6	743	190	61	1467
Ehlers, William H., *et al.* (See Wilson, William C., assignor.)						
Ehrhardt, Gustave, Pittsburg, Pa. Self-adjusting feed mechanism	487,116	Nov. 29	3126	802	61	1266
Eick, Otto, Philadelphia, Pa. Bottle washer and rinser	487,999	Dec. 13	1252	311, 312	61	1586
Eickemeyer, Rudolf, Yonkers, N. Y. Secondary battery	486,094	Nov. 15	1471	387, 388	61	906
Eisenhardt, George F., assignor to Dienelt & Eisenhardt, Philadelphia, Pa. Oil-cloth-printing machine	487,365	Dec. 6	210	57, 58	61	1362
Eisenhart, Henry W., assignor to A. B. Farquhar, York, Pa. Spring-tooth harrow	485,493	Nov. 1	522	138	61	678
Eklund, Lewis N. (See Gylfe, Alexander, assignor.)						
Ekström, Axel, Lynn, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Electric switch	483,712	Oct. 4	282	70	61	59
Ekström, Axel, Lynn, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Electric snap-switch	483,713	Oct. 4	283	71	61	60
Elbers, Alexander D., Hoboken, N. J. Treating clay and products thereof	485,917	Nov. 8	1161	......	61	826
Elder, Benjamin W., New Orleans, La. Apparatus for boring Artesian wells	484,764	Oct. 18	1927	490	61	416
Electric Alarm Lock Company. (See Baumann, Robert, assignor.)						
Electrical Forging Company. (See Angell, Edwin E., assignor.)						
Electrical Forging Company. (See Burton, George D., assignor.)						
Electrical Forging Company. (See Burton and Angell, assignors.)						
Electrical Reflector Company. (See Hofheimer, Maurice, assignor.)						
Electrical Supply Company. (See Wirt, Charles, assignor.)						
Elgin National Watch Company. (See Hunter, George E., assignor.)						
Elgin National Watch Company. (See Smith, Carlos H., assignor.)						
Elkins, Ira S. (See Boeklen, Reinhold, assignor.)						
Elkins, William F., assignor of one-half to T. J. Burks, Comanche, Tex. Washing-machine	483,547	Oct. 4	47	12	61	12
Elkins, William H., Cambridge, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Dynamo	485,181	Nov. 1	40	13	61	580
Ellard, Jonathan A., Birmingham, Ala. Dental regulator	487,726	Dec. 13	800	204	61	1496
Ellery, Robert L., assignor of one-half to F. E. Fuller, Taunton, Mass. Running-gear for vehicles	484,186	Oct. 11	993	254	61	217
Elliott, Charles B., assignor to Revere Rubber Company, Boston, Mass. Incandescent-lamp socket	487,213	Nov. 29	3273	836	61	1293
Elliott, Franklin O., Catawba, N. C. Thermostat	487,519	Dec. 6	471	123	61	1414
Elliott, Gilbert R., Boston, Mass. Car-brake	484,783	Oct. 25	1969	502	61	437
Elliott Hickory Cycle Company. (See Elliott, Sterling, assignor.)						
Elliott, Sterling, Newton, Mass. Ball-bearing for axles	483,836	Oct. 4	472	118	61	97
Elliott, Sterling, Newton, assignor to Elliott Hickory Cycle Company, Watertown, Mass. Pneumatic tire	487,874	Dec. 13	1054	264	61	1547
Elliott, Walter P. (See Hearne, John, assignor.)						
Ellis, Augustin, Bedford, Ind. Safety attachment for cars and trucks	485,918	Nov. 8	1163	307	61	826

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Ellis, Charles H., Hanover, Mass. Vehicle-shaft support	488,000	Dec. 13	1254	312	61	1587
Ellis, Emmett A., Sartartia, Tex. Apparatus for separating molasses from sugar	487,323	Dec. 6	143	41	61	1349
Ellis, Ferrand F., Oneida, assignor to Oneida Community, Limited, Kenwood, N. Y. Chain-making machine	484,909	Oct. 25	2181	561, 562, 563	61	480
Ellis, Henry, Ramsgate, England. Inhaler	486,951	Nov. 29	2873	742	61	1215
Ellis, Willard H., Columbus, Nebr., assignor of one-half to Sheffield Velocipede Car Company, Three Rivers, Mich. Mail-crane	486,032	Nov. 8	1349	359	61	866
Ellithorp, Orren S., assignor to William Deering & Company, Chicago, Ill. Self-binder	486,440	Nov. 22	2015	534	61	1029
Ellstrom, John P. (See Smades and Ellstrom.)						
Elmes, Charles F., Chicago, Ill. Fluid-motor	486,095	Nov. 15	1473	388	61	907
Elmore, Alexander S., Leeds, assignor to Elmore's American and Canadian Patent Copper Depositing Company, Limited, London, England. Apparatus for the manufacture of metallic articles by electrolysis	484,704	Oct. 18	1821	464	61	393
Elmore, Francis E., Leeds, assignor to Elmore's American and Canadian Patent Copper Depositing Company, Limited, London, England. Manufacture of mandrels for electrolytic deposit of tubes	485,919	Nov. 8	1165	307	61	827
Elmore's American and Canadian Patent Copper Depositing Company. (See Elmore, Alexander S., assignor.)						
Elmore's American and Canadian Patent Copper Depositing Company. (See Elmore, Francis E., assignor.)						
Else, Harry G., Erie, Pa. Folding hammock-frame	488,272	Dec. 20	1716	432	61	1697
Elsinger, Sigmund, assignor of one-half to J. C. Reuter, Savannah, Ga. Fire-kindler	486,966	Nov. 29	2894	......	61	1219
Elston, Charles C., Elmira, N. Y. Table attachment for bedsteads	484,187	Oct. 11	994	254	61	217
Eltonhead, William B., West Point, assignor of nine-sixteenths to S. A. Murray, Jr., Philadelphia, Pa. Window	486,223	Nov. 15	1663	440	61	944
Emerson, Ralph, Rockford, Ill. Knitting-machine	485,738	Nov. 8	904	242	61	774
Emerson, Ralph W., *et al.* (See Snyder, William D., assignor.)						
Emery, Thomas J., Boston, Mass. Car-coupling	487,475	Dec. 6	404	104	61	1400
Emmens, Stephen H., London, England. Steam-jacketed kettle	484,784	Oct. 25	1972	502, 503	61	438
Empire Car Coupler Company. (See Tower, Clinton A., assignor.)						
Empire Portable Forge Company. (See Melius, Walter, assignor.)						
Empson, John H., Longmont, Colo. Pea huller or sheller	486,441	Nov. 22	2016	535	61	1029
Emrich, Samuel, Reno, Nev. Railway-spike	486,328	Nov. 15	1835	483	61	980
Engelhard, Friedericke, Hofheim-on-Taunus, Germany. Buttonhole-reinforce for collars	488,806	Dec. 27	2568	637	61	1881
Engelhardt, Frederick, St. Johnsville, N. Y. Piano-action	486,096	Nov. 15	1475	388	61	907
England, William R., Chicago, Ill. Pipe-coupling	487,829	Dec. 13	972	245	61	1532
Engle, John H. (See Turner and Engle.)						
English, Henry R., Jackson, Mo. Plaster compound	486,329	Nov. 15	1836	......	61	980
English, Samuel M., *et al.* (See Green, John, assignor.)						
Engquist, Nicholas, assignor of two-thirds to E. G. and G. C. Whitesides, Philadelphia, Pa. Spigot for refrigerators, &c	486,705	Nov. 22	2431	633	61	1110
Enholm, Oscar A., assignor to F. H. Cornell, New York, N. Y. Boiler oil-injector	485,920	Nov. 8	1166	307	61	827
Ennis, George H., assignor to J. D. Ennis, Troy, N. Y. Ventilator	484,879	Oct. 25	2125	546	61	468
Ennis, Jessie D. (See Ennis, George H., assignor.)						
Ennis, John E., Duluth, Minn. Brick-marking machine	483,910	Oct. 4	582	146, 147	61	121
Ennis, John E., Duluth, Minn. Builder's scaffold	485,463	Nov. 1	481	127, 128	61	670
Enos, Fred, Bridgeport, Conn. Car-coupling	486,578	Nov. 22	2220	582, 583	61	1067
Enos, Henry B., Corpus Christi, Tex. Piano tuning-pin	486,561	Nov. 22	2188	576	61	1062
Enos, John A., Boston, Mass., assignor of one-half to D. J. Byrnes, Washington, D. C. Carburetor	486,442	Nov. 22	2017	535	61	1030
Enricht, Louis, Chicago, Ill., assignor to United States Durolithic Company, West Union, Iowa. Manufacture of artificial stone	486,443	Nov. 22	2018	......	61	1030
Enricht, Louis, Chicago, Ill., assignor to United States Durolithic Company, West Union, Iowa. Manufacture of cement	486,444	Nov. 22	2019	......	61	1030
Enricht, Louis, Chicago, Ill., assignor to United States Durolithic Company, West Union, Iowa. Manufacture of artificial stone	486,445	Nov. 22	2020	......	61	1030
Enricht, Louis, Chicago, Ill., assignor to United States Durolithic Company, West Union, Iowa. Manufacture of artificial stone	486,446	Nov. 22	2021	......	61	1030
Enricht, Louis, Chicago, Ill., assignor to United States Durolithic Company, West Union, Iowa. Manufacture of artificial stone	486,447	Nov. 22	2022	......	61	1030
Enricht, Louis, Chicago, Ill., assignor to United States Durolithic Company, West Union, Iowa. Manufacture of artificial stone	486,448	Nov. 22	2023	......	61	1030
Enricht, Louis, Chicago, Ill., assignor to United States Durolithic Company, West Union, Iowa. Manufacture of artificial stone	486,449	Nov. 22	2024	......	61	1030
Enricht, Louis, Chicago, Ill., assignor to United States Durolithic Company, West Union, Iowa. Manufacture of cement	486,450	Nov. 22	2025	......	61	1030
Enterprise Manufacturing Company of Pennsylvania. (See Woodruff, Oliver D., assignor.)						
Eppenstein & Co., M. C. (See Hopkins, Thomas A., assignor.)						
Eppler, Andrew, Newton, Mass. Sewing-machine	487,214	Nov. 29	3274	836, 837	61	1293
Eppler, Andrew, Jr., Newton, assignor to Eppler Welt Machine Company, Boston, Mass. Shoe	487,011	Nov. 29	2963	763, 764	61	1232
Eppler, John, Philadelphia, Pa. Sausage-stuffing machine	485,576	Nov. 1	649	173	61	707
Eppler Welt Machine Company. (See Eppler, Andrew, Jr., assignor.)						
Epstein, Moritz, Berlin, Germany. Filtering-tube	485,788	Nov. 8	963	258	61	787
Erath, Charles W., Wilkes-Barré, Pa. Hitching-post	487,727	Dec. 13	801	205	61	1497
Erhard, Karl T., Brooklyn, N. Y. Holder for erasers, chalk, or crayons	488,604	Dec. 27	2256	559	61	1820
Ericson, Richard W., Aurora, assignor to Pettibone-Mulliken & Company, Chicago, Ill. Counterbalance for the discharge apparatus for coal or ore bins	485,789	Nov. 8	964	258, 259	61	787
Ernold, Edward, New York, N. Y. Bottle-corking machine	487,387	Dec. 6	242	65	61	1369
Ernert, Paul, Ludwigshafen, Germany. Making salicylate of phenyl	486,770	Nov. 22	2332	......	61	1131
Ertel, Charles M. (See Sheer, Henry M., assignor.)						
Ervin, Elijah O., New Virginia, Iowa. Combined mounted hay stacker and rake	484,493	Oct. 18	1494	380	61	326
Ervin, George M. (See Huber and Ervin.)						
Eshleman, John W., Mount Joy, Pa. Combined meat-tenderer and ice-pick and making the same	484,518	Oct. 18	1534	389	61	334
Esmond, William V., assignor of one-half to A. C. Kemper, Chicago, Ill. Combined camera and photograph-exhibitor	488,331	Dec. 20	1814	454	61	1716
Espel, Ferdinand, San Francisco, Cal. Measuring-canister	486,451	Nov. 22	2026	536	61	1031

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Espitallier, George, Chalon, France. Card barracks	484,413	Oct. 18	1362	348, 349	61	301
Estell, Samuel F., Chicago, Ill. Toy	484,850	Oct. 25	2084	536	61	460
Ester, George L., *et al.* (See Ester, Henry J. C., assignor.)						
Ester, Henry J. C., assignor of two-thirds to G. L. and W. W. Ester, Erie, Pa. Lamp-black-machine	486,097	Nov. 15	1476	389	61	907
Ester, William W., *et al.* (See Ester, Henry J. C., assignor.)						
Esterbrook, Edward E. (See Coxe, Charles B., assignor.)						
Estes, William A., Boston, Mass. Plow	487,142	Nov. 29	3167	811, 812	61	1273
Ethridge, Frank N., assignor of one-third to G. A. Peterson, Boston, Mass. Piston-packing	484,188	Oct. 11	995	254	61	217
Ethridge, Frank N., assignor of one-third to G. A. Peterson, Boston, Mass. Piston-packing	485,407	Nov. 1	401	107	61	654
Ethridge, Martin V. B., Everett, assignor to Boston Street Sweeping Machine Company, Lynn, Mass. Street-sweeping machine	485,577	Nov. 1	650	173	61	707
Ethridge, Martin V. B., Everett, assignor of two-thirds to H. E. Waite, Newton, and J. H. Eastman, Boston, Mass. Electric clock	486,838	Nov. 22	2644	691	61	1155
Ette, Charles G., St. Louis, Mo. Lawn-sprinkler	486,771	Nov. 22	2533	661	61	1131
Ettlinger, Frederick V., West Brighton, N. Y. Cover for boxes	485,790	Nov. 8	965	259	61	787
Eubank, A. (See Smith, William B. and J. R., assignors.)						
Eubank, Thomas, Little Rock, Ark. Car-door	486,562	Nov. 22	2189	576	61	1062
Euchler, Otto, assignor to A. Featherstone, Chicago, Ill. Cone-bearing and ball-lock for bicycles	486,452	Nov. 22	2028	536	61	1031
Eureka Coupler and Buffer Company. (See McMichael, George C., assignor.)						
Eustace, Thomas F., St. Louis, Mo. Cartridge	488,627	Dec. 27	2292	567	61	1826
Eva, Addison H., Austin, Tex. Mosquito-canopy for folding beds	485,494	Nov. 1	523	139	61	679
Evans, Arthur G., Westminster, England. Bearing for signal and switch rods	483,518	Oct. 4	48	12	61	12
Evans, Charles H., and F. T. Dunlap, Manchester, N. H. Whiffletree-hook	486,929	Nov. 29	2834	734	61	1208
Evans, D. Walter. (See Lang, Evans, and Devore.)						
Evans, David, Eureka, Cal. Logging-roadway	487,557	Dec. 6	527	136	61	1125
Evans, Edwin W., Philadelphia, Pa., assignor to Evans Gas Engine Company, of New Jersey. Gas-engine	488,165	Dec. 13	1539	386	61	1645
Evans Gas Engine Company. (See Evans, Edwin W., assignor.)						
Evans, George W., Baltimore, Md. Milk-can	486,281	Nov. 15	1767	465	61	966
Evans, Ira C. (See Evans, Phelps, assignor.)						
Evans, John A., Richmond, Ind. Support for shafting	484,148	Oct. 11	935	240	61	205
Evans, John R. (See Overfelt, Evans, and Capp.)						
Evans, John W., Cleveland, Ohio. Percolator	486,246	Nov. 15	1701	449, 450	61	952
Evans, Joseph, assignor of one-half to A. W. Wills, Birmingham, England. Power-hammer	486,772	Nov. 22	2535	661, 662	61	1131
Evans, Louis C., Springfield, Ohio. Spreader for harrows	488,352	Dec. 20	1851	463	61	1723
Evans, Phelps, Bond Head, Canada, assignor to I. C. Evans, Tacoma, Wash. Draft-equalizer	483,911	Oct. 4	584	147	61	121
Evans, Warren R., Portland, Me. Filter	487,614	Dec. 6	603	155	61	1442
Evans, William, Philadelphia, Pa. Machine for treating hides or skins	484,146	Oct. 11	930	240	61	204
Evans, William, Philadelphia, Pa. Machine for treating hides or skins	484,147	Oct. 11	932	240	61	205
Evans, William E. (See Vaughan and Evans.)						
Everett, Mary S., Brooklyn, N. Y. Cover for ironing-boards	484,951	Oct. 25	2247	579	61	492
Evershed, Sydney, London, England. Magneto-electric generator	484,785	Oct. 25	1973	503	61	438
Eves, Joshua V., Belfast, Ireland. Manufacturing yarn from scutched flax	487,875	Dec. 13	1055	264	61	1547
Excelsior Needle Company. (See Dayton, William H., assignor.)						
F. M. Weiler's Liberty Machine Works. (See Almén, Karl, assignor.)						
F. P. Schlosser Electric Signal and Alarm Company. (See Schlosser, Frank P., assignor.)						
Faber, Eberhard, New Brighton, N. Y. Lead or crayon holder. (Reissue)	11,285	Nov. 22	2650	692	61	1156
Fager, Anthony, assignor to F. E. Kohler & Co., Canton, Ohio. Currycomb	486,827	Nov. 22	2629	686	61	1152
Fahnehjelm, Otto B., Stockholm, Sweden, and C. Dellwik, Rogers Park, Ill. Machine for securing incandescing bodies for gas-burners and their holders	485,321	Nov. 1	259	70	61	625
Fahnehjelm, Otto B., Stockholm, Sweden, and C. Dellwik, Rogers Park, Ill. Machine for manufacturing lamellæ or needles for incandescent gas-burners	485,322	Nov. 1	260	70	61	625
Fahrner, Theodor, Pforzheim, Germany. Pin-fastening	485,005	Oct. 25	2337	602	61	509
Fahrney, Callo D., Manitowoc, Wis. Coupling for air-brake pipes	485,182	Nov. 1	41	14	61	581
Fairbank Canning Company. (See Hopper, George B., assignor.)						
Fairfield, John M., Hartford, Conn. Punch	484,891	Oct. 25	2149	551	61	473
Fairman, Simon, assignor to B. G. Harris, Baltimore, Md. Car-brake	488,118	Dec. 13	1456	367	61	1629
Faist, Kraus & Co. (See Faist and Fux, assignors.)						
Faist, William, and J. Fux, assignors to Faist, Kraus & Co., Milwaukee, Wis. Machine for sifting and sorting flour or meal	484,306	Oct. 11	1198	305	61	256
Fales, Edward, Beachmont, Mass. Grate	485,684	Nov. 8	813	217	61	756
Falk, Gustav, New York, N. Y. Hand of leaf-tobacco	484,930	Oct. 25	2223	573	61	487
Falley, James. (See Falley, William and J.)						
Falley, William and J., Lafayette, Ind. Carburetor	488,881	Dec. 27	2682	664	61	1905
Fallis, Richard, Pontypool, assignor of one-half to R. H. Staples, Bethelamy, Canada. Car-brake	488,965	Dec. 27	2823	697	61	1935
Fane, Thomas, and C. F. Lavender, Toronto, Canada. Tire for cycles	484,786	Oct. 25	1975	503	61	438
Farbwerke, vormals Meister, Lucius & Brüning. (See Küzel, Hans, assignor.)						
Fargo, William H., assignor of two-thirds to G. B. and E. P. Balch, Boston, Mass. Piano	488,731	Dec. 27	2452	609	61	1858
Farmer, John J., Nokomis, Ill. Step for shelves	487,117	Nov. 29	3128	802	61	1266
Farnham, John N., Waltham, Mass. Shutter-worker	485,811	Nov. 8	990	266	61	792
Farnsworth, Enoch, Utahville, Pa. Automatic car-brake	486,453	Nov. 22	2029	536	61	1032
Farquhar, Arthur B. (See Eisenhart, Henry W., assignor.)						
Farquhar, John F. C., Sydney, New South Wales, assignor to P. R. Craft, London, England. Knife cleaner and polisher	487,728	Dec. 13	802	205	61	1497
Farquharson, James, Tacoma, Wash. Reversible window	487,118	Nov. 29	3129	802, 803	61	1267
Farrand & Votey Organ Company. (See Hunter, Robert, assignor.)						
Farrand, William K., Brooklyn, N. Y. Feed-regulating valve	486,398	Nov. 15	1943	514	61	1002
Farrar, R. M., *et al.* (See Jones and Ashley, assignors.)						
Farrel, Franklin, Ansonia, Conn. Apparatus for and process of refining copper by electricity	485,618	Nov. 8	706	185	61	733
Farrell, John A. (See Farrell, John R., assignor.)						
Farrell, John R., assignor of one-half to J. A. Farrell, Boston, Mass. Shoulder-knot	487,698	Dec. 6	745	190	61	1468
Farrior, J. D., *et al.* (See Nolley, David D., assignor.)						
Farrow, Thomas L. (See Miller and Farrow.)						
Fasoldt, Ernest C., assignor of one-half to J. B. Thacher, Albany, N. Y. Pressure-regulator for compressed-air machines	485,578	Nov. 1	653	174	61	707

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Fasoldt, Ernest C., assignor of one-half to J. B. Thacher, Albany, N. Y. Valve-operating mechanism for engines	485,579	Nov. 1	655	174	61	708
Faulder, Thomas, assignor to C. C. Bradley, Syracuse, N. Y. Vehicle-body	484,089	Oct. 11	846	214	61	188
Faulder, Thomas, assignor to C. C. Bradley, Syracuse, N. Y. Clamping device for vehicle-seats	486,636	Nov. 22	2315	605, 606	61	1087
Faulhaber, Friedrich A. H., and C. F. Koch, Schwäbisch Hall, Germany. Hinge	487,476	Dec. 6	406	105	61	1401
Faulkner, James J., Memphis, Tenn. Spring-motor	488,192	Dec. 20	1581	396	61	1671
Faulkner, Morris G., Homer, N. Y. Paper carpet	485,921	Nov. 8	1167	.....	61	827
Faulkner, William J., Chicago, Ill. Toy ball	484,189	Oct. 11	996	255	61	217
Faulkner, William J., Chicago, Ill. Locket	486,033	Nov. 8	1351	359	61	866
Faust, Matthew, Munich, Germany. Inkstand	485,375	Nov. 1	351	94	61	644
Faust, Peter, Brooklyn, N. Y. Paint-mixer	484,851	Oct. 25	2085	536	61	460
Favets, John, London, England. Cover for shoes	484,705	Oct. 18	1822	464	61	393
Fawcett, Richard, Salem, Ohio. Shifting seat for vehicles	484,414	Oct. 18	1365	349	61	301
Fawcett, Thomas C., Leeds, England. Brick-machine	485,323	Nov. 1	262	71, 72	61	625
Fawkes, Wilbert C., Chicago, Ill. Picture-exhibitor	485,464	Nov. 1	483	128	61	671
Fay, Charles S., San Francisco, Cal. Sash-fastener	484,149	Oct. 11	936	240	61	205
Fay, Herman W., St. Louis, Mo. Bottle	486,418	Nov. 15	1976	524	61	1008
Fay, Rimmon C., assignor to Remington Arms Company, Ilion, N. Y. Wheel for cycles	484,952	Oct. 25	2248	579	61	493
Fay, Rimmon C., assignor to Remington Arms Company, Ilion, N. Y. Bicycle-brake	484,953	Oct. 25	2249	579	61	493
Fay, Thornton W., Philadelphia, Pa. Rail-fastening	485,097	Oct. 25	2475	636	61	539
Fearon, Thomas, Yonkers, N. Y. Steam-heater	484,787	Oct. 25	1976	504	61	438
Fearon, Thomas, Yonkers, N. Y. Steam-generator	486,098	Nov. 15	1477	389, 390	61	908
Featherstone, Alfred. (See Euchler, Otto, assignor.)						
Featherstone, Alfred. (See Haag, Paul, assignor.)						
Featherstone, Alfred, Chicago, Ill. Parasol for baby-carriages	486,454	Nov. 22	2032	537	61	1032
Feige, Ernest, Saginaw, Mich. Drawer-fastener	486,455	Nov. 22	2033	537	61	1032
Feldt, Ferdinand J., Peoria, Ill. Key-seating attachment for metal planing and shaping machines	483,714	Oct. 4	285	71	61	60
Fell, Charles J., assignor of one-half to A. J. Schuler, Wilkes-Barré, Pa. Umbrella-runner	486,209	Nov. 15	1640	434	61	939
Fell, James W., Cambridge, Ill. Washing-machine	485,791	Nov. 8	966	259	61	788
Felland, Andrew G. (See Starks and Felland.)						
Fellows, Frank, assignor of one-half to J. Ballard, Boston, Mass. Shaft-tug	484,415	Oct. 18	1366	349	61	301
Fender, John M., Liberty, and J. L. Ritter, Brownsville, Ind. Seeding-machine	486,637	Nov. 22	2317	606	61	1088
Fenn, Charles W. (See Stagg, Fenn, and Schoen.)						
Ferguson, Clayton C., New York, N. Y. Automatic feed-regulator	486,668	Nov. 22	2367	619	61	1097
Ferguson, George, Los Angeles, Cal. Hose-band	484,190	Oct. 11	998	255	61	217
Ferguson, John. (See James and Ferguson.)						
Ferguson, Robert G., Lakewood, N. J., assignor of two-thirds to W. A. Williams, Scarborough, N. Y. Packing	487,260	Dec. 6	33	11	61	1328
Ferguson, Samuel, Cedar Rapids, Iowa. Hay-loader	488,782	Dec. 27	2453	610	61	1858
Ferguson, William B., *et al.* (See Ward, William H., assignor.)						
Fergusson, Osmond, London, England. Lamp	488,711	Dec. 27	2425	601	61	1852
Ferrin, Frank M. (See Roberts, Henry P., assignor.)						
Ferris, Fred H., Ketchum's Corners, N. Y. Spring-tooth harrow	485,324	Nov. 1	265	72	61	626
Ferriss, Edward, assignor of one-half to N. A. Jones, Alta, Cal. Machine for reducing brasses of journals	483,956	Oct. 4	651	162	61	135
Fickes, Isaac N., Holland, Kans. Corn-harvester	487,558	Dec. 6	528	136	61	1425
Fickett, William S., Rochester, N. Y. Soap-bubble pipe	486,967	Nov. 29	2894	747	61	1219
Fickett, William S., assignor to C. L. Stowell, Rochester, N. Y. Caustic-soda distributer	487,720	Dec. 13	801	205	61	1497
Field, Benjamin F., Chicago, Ill. Self-purifying superheating steam-generator	488,519	Dec. 20	2124	525, 526	61	1777
Field, Rogers, London, England. Intermittent siphon	485,759	Nov. 8	926	248	61	779
Field, Stephen D., Yonkers, N. Y. Electrically-repeating signal	488,550	Dec. 27	2163	534, 535	61	1800
Fields, Charles C., Bristol, Tenn., and W. S. Duvall, Washington, D. C.; said Fields assignor of three-eighths to A. D. Reynolds and J. B. Childers, Bristol, Tenn. Wrench	484,307	Oct. 11	1200	306	61	257
Fien, George H., Oneida, N. Y. Veil-pin	483,605	Oct. 4	132	33	61	28
Fiene, Henry, and J. E. Kroencke, Concordia, Mo. Seed-planter	486,669	Nov. 22	2369	619	61	1098
Fiester, John C., Reading, Pa. Split pulley	483,647	Oct. 4	193	48	61	40
Fife, Lillian R. (See Nelson, George, assignor.)						
Filmer, William, San Francisco, Cal. Clamp for securing stereotype-plates	486,160	Nov. 15	1577	417	61	627
Finch, Byron L., Saginaw, Mich. Washing-machine	485,812	Nov. 8	991	266	61	792
Finck, Nicholas, Elizabeth, N. J., assignor to P. L. Coombs, St. Joseph, Mo. Carburetor	486,224	Nov. 15	1665	440	61	945
Findling, Valentine, Tipton, Ind. Fence-post	486,544	Nov. 22	2157	570	61	1057
Fink, Conrad, St. Louis, Mo. Smoke-purifier	486,247	Nov. 15	1706	450	61	953
Finkler, Henry C., San Francisco, Cal. Roller-brake	488,066	Dec. 13	1363	343	61	1614
Finn, Edwin, Elkhart, Ind. Boring and screw-driving machine	487,441	Dec. 6	354	90, 91	61	1391
Finn, Edwin, Elkhart, Ind. Riser for wagon-bodies	488,671	Dec. 27	2363	584	61	1840
Firestone, Elmer A., Spencer, Ohio. Animal-dipper	486,372	Nov. 15	1903	503	61	993
Firth, John P., Titusville, Pa. Weighing-scale	488,882	Dec. 27	2683	664	61	1905
Fisch, Joseph. (See Hall and Gottschalk, assignors.)						
Fischer, Engelbert, Chicago, Ill. Automatic cut-off sawing-machine	483,998	Oct. 11	717	180, 181	61	102
Fischer, Frederick J. W., assignor to Eagle Pencil Company, New York, N. Y. Pen	487,143	Nov. 29	3171	812	61	1274
Fischer, Gustav, Chemnitz, assignor to A. Vieweg, Siegmar, Germany. Thermostat and alarm	485,739	Nov. 8	905	242	61	775
Fischer, Herman, Brooklyn, N. Y. Machine for pasting vamps to uppers	487,388	Dec. 6	244	66	61	1369
Fischer, Hermann, Prairieville, Ill. Metallic fence-post	488,193	Dec. 20	1583	397	61	1671
Fischer, John F., Philadelphia, Pa. Manufacture of paper frames for slates, &c	483,648	Oct. 4	194	48	61	40
Fisher, Andrew S., assignor of one-half to M. H. Valentine, Bedford, Pa. Sash-fastener	483,837	Oct. 4	473	118	61	98
Fisher, Ebenezer. (See McBride and Fisher.)						
Fisher, Edmond T., assignor of one-third to F. K. Parker, Boston, Mass. Paper-dampening machine	483,738	Oct. 4	320	80, 81	61	67
Fisher, George H., South Bend, Ind. Card game-counter	483,715	Oct. 4	286	71	61	60
Fisher, Jacob H. (See Hess, John R., assignor.)						
Fisher, John V. (See Gilham, William C., assignor.)						
Fisher, Leanora E., *et al.* (See Fisher, Thomas N., assignor.)						
Fisher, Louis F., Willow Springs, Mo. Safety attachment for car-trucks	486,968	Nov. 29	2895	748	61	1220
Fisher, Michel J. (See Snyder and Fisher.)						
Fisher, Thomas N., assignor to G. H. Smith and L. E. Fisher, Cleveland, Ohio. Coffin-protector	483,780	Oct. 4	391	97	61	82
Fisher, William T., Prigmore, Tenn. Egg-crate	487,144	Nov. 29	3171	812	61	1274

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Fisk, Horace H., Florence, Oreg. Barrel-stand	483,973	Oct. 4	687	171	61	142
Fisk, John F., Jr., Cincinnati, Ohio. Valve-nozzle for oil-cans	486,374	Nov. 15	1905	503	61	993
Fiske, Bradley A., U. S. Navy. Range and position finder	483,999	Oct. 11	720	181, 182	61	162
Fiske, Jonathan P. B., Lynn, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Rheostatic controller for electric motors	485,619	Nov. 8	709	186	61	733
Fiske, Jonathan P. B., Lynn, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Electric-motor controller	485,620	Nov. 8	711	186	61	734
Fitch, Asa M., Seymour, Ind. Combined riding and walking gang-plow	484,000	Oct. 11	723	182	61	163
Fitch, Charles T., and A. Schantz, Perth Amboy, N. J. Brick-cutting machine	488,883	Dec. 27	2685	664, 665	61	1905
Fitch, Ellsworth E., *et al.* (See Wall, Charles W., assignor.)						
Fitz, Amos G., Auburn, Me. Lathe for roughing lasts	485,621	Nov. 8	714	187	61	734
Fitzgerald, James, Duluth, Minn. Clutch	484,308	Oct. 11	1202	306	61	257
Fitzgerald, James E., Fall River, Mass. Top roll for twisting-machines	485,266	Nov. 1	167	49	61	607
Fitzgibbons, Patrick, and H. K. Eason, Oswego, N. Y. Steam-generator	485,183	Nov. 1	45	14	61	581
Fitzsimons, Thomas J., Rapidan, Minn. Wheel-cultivator	488,884	Dec. 27	2686	665	61	1906
Flagg, George H. P. (See Warren, Frank H., assignor.)						
Flaglor, Amasa P., assignor to H. Flaglor, San Francisco, Cal. Device for modifying and controlling rays of light for photographic purposes	483,606	Oct. 4	133	33	61	28
Flaglor, Helen. (See Flaglor, Amasa P., assignor.)						
Flajole, John A., Bay City, Mich. Steam-heater	486,862	Nov. 29	2696	704	61	1180
Flamm, William, Denver, Colo. Sofa	488,332	Dec. 20	1816	454, 455	61	1716
Flanders, Henry M., Ashland, Nebr. Post-hole auger	484,519	Oct. 18	1535	390	61	334
Flanders, John J., assignor to C. E. Milliken, Portland, Me. Pulp-screen	488,166	Dec. 13	1540	386	61	1646
Flatau, Louis S., Pittsburg, assignor to Flatau Manufacturing Company, Dallas, Tex. Whiffletree	485,622	Nov. 8	717	188	61	735
Flatau, Louis S., Pittsburg, assignor to Flatau Manufacturing Company, Dallas, Tex. Whiffletree	486,863	Nov. 29	2697	704	61	1180
Flatau Manufacturing Company. (See Flatau, Louis S., assignor.)						
Fleet, Lindley M. (See Nickerson and Fleet.)						
Fleisher, Ida M. Philadelphia, Pa. Carrier for umbrellas	485,922	Nov. 8	1168	308	61	827
Fleming, Harvey E. (See McAnlis and Fleming.)						
Fleming, John W., Brooklyn, N. Y. Boiler-tube cutter	484,852	Oct. 25	2086	536	61	460
Flemming, James, Buffalo, N. Y. Shifting device for elevators	487,559	Dec. 6	530	136	61	1426
Fleshman, Benjamin F., Alvon, W. Va. Wagon-brake	484,001	Oct. 11	725	182	61	163
Fletcher, Charles R., Boston, Mass. Apparatus for refining metals by electricity	484,416	Oct. 18	1367	350	61	301
Fletcher, Charles R., Boston, Mass. Method of and apparatus for electro-deposition of metals	485,343	Nov. 1	295	79	61	632
Fletcher, George, Derby, England, and W. P. Abell, Essequebo, British Guiana. Cut-off mechanism for slide-valves	485,267	Nov. 1	168	49, 50	61	607
Fletcher, Wendell C. (See Johnston and Fletcher.)						
Fligelman, Fred A., *et al.* (See Wein, John H., assignor.)						
Fligelman, Herman, *et al.* (See Wein, John H., assignor.)						
Flohr, Otto, Buffalo, N. Y. Hoisting-machine	484,358	Oct. 11	1273	325	61	272
Flook, William A., Des Moines, Iowa, assignor of one-half to J. C. Hamrick, Princeton, Ill. Car-coupling	486,864	Nov. 29	2698	704	61	1181
Florence, Eva M. (See Hunter, Rudolph M., assignor.)						
Flower, Albert H., Transfer, Pa. Saw-jointing machine	484,494	Oct. 18	1496	380	61	326
Flowers, William J., Chicago, Ill. Fire-escape	488,966	Dec. 27	2823	697	61	1936
Floyd, Wells & Company. (See Brooke, Isaac, assignor.)						
Flurey, James, and A. O'Leary, Lindsay, Canada; said O'Leary assignor to J. C. O'Brien. Feed-trough	485,580	Nov. 1	656	174	61	709
Flury, Paul, El Paso, Tex. Treating speiss	486,330	Nov. 15	1837	.....	61	980
Flynn Business Envelope Company. (See Flynn, Peter H., assignor.)						
Flynn, Peter. (See Oldfield and Flynn.)						
Flynn, Peter H., assignor to Flynn Business Envelope Company, Syracuse, N. Y. Envelope	484,733	Oct. 18	1868	475	61	402
Flynn, Thomas F. (See Carthy and Flynn.)						
Flynn, Thomas H., Cleveland, Ohio. Iron railing	485,268	Nov. 1	170	50	61	607
Folk, Jesse E., Brooklyn, N. Y., assignor to Aktiebolaget Separator, Stockholm, Sweden. Centrifugal liquid-separator	488,672	Dec. 27	2365	585	61	1840
Folk, Lawrence I., J. W. Nairn, and L. H. Dempsey, Dubuque, Iowa. Wrench	483,803	Oct. 4	421	104	61	88
Folkerth, Esty. (See Oaks, Isaiah, assignor.)						
Fondu, Jean B., Vilvorde, Belgium. Lubricator	486,969	Nov. 29	2896	748	61	1220
Fontaine, Isaac, assignor of one-half to F. X. Deroin, Chicopee, Mass. Let-off mechanism for looms	484,002	Oct. 11	727	182, 183	61	163
Foote, Edward N., assignor to Boston Cash Register Company, Northampton, Mass. Cash registering and indicating machine	487,215	Nov. 29	3278	837	61	1294
Foote, John B., Hamilton, Ohio. Stamping-press	487,730	Dec. 13	805	206	61	1498
Foran, John R., *et al.* (See Wilson, William C., assignor.)						
Forbes, Alexander G., and G. W. Kemp, Montgomery, Ala. Trimming attachment for sewing-machines	485,538	Nov. 1	591	158	61	694
Forbes, Charles S., London, England. Magnetic telephone	484,150	Oct. 11	937	241	61	205
Force, William A., Brooklyn, N. Y. Composition for stereotype-plates	483,716	Oct. 4	287	.....	61	60
Ford, Charles, Lowell, Mass. Pile-wire for looms	487,417	Dec. 6	309	80	61	1382
Ford, Charles S., Jr., assignor to E. Burria, Philadelphia, and T. J. Duncan, Eden, Pa. Puzzle	483,912	Oct. 4	585	147	61	121
Ford, Edward P., and A. B. Moffitt, Irving College, Tenn. Harrow	485,623	Nov. 8	718	188	61	735
Ford, Matthew S., Blackburn, La. Index	484,151	Oct. 11	939	241	61	206
Ford-Washburn Storelectro Company. (See Washburn, George A., assignor.)						
Forde, Frank, *et al.* (See Pruner, Thomas H., assignor.)						
Fordham, Arthur, Chicago, Ill. Railway-car	487,918	Dec. 13	1123	280	61	1560
Forell, Carl von, Brunswick, Germany. Artificial Portland cement	486,706	Nov. 22	2432	.....	61	1111
Forell, Carl von, Brunswick, Germany. Artificial Roman cement	486,707	Nov. 22	2432	.....	61	1111
Forney, Matthias N., New York, N. Y. Locomotive-engine	485,344	Nov. 1	297	79, 80	61	632
Forry, Charles E. (See Devore and Forry.)						
Forshew, Mary J., New York, N. Y. Nursery-bag	485,098	Oct. 25	2476	636	61	539
Forsyth, Joseph E., and E. R. Merrell, Chicago, Ill. Car-coupling	488,551	Dec. 27	2165	535	61	1800
Fortin, Michel, Stillwater, Minn. Bag-holder	486,708	Nov. 22	2433	633	61	1111
Fosburgh, Robert L., and J. F. Milligan, St. Louis, Mo. Brake-handle	484,954	Oct. 25	2251	580	61	493
Foster Bros. (See Foster, William S., assignor.)						
Foster, Charles H., Omaha, Nebr. Warm-air register	486,865	Nov. 29	2700	704	61	1181

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Foster, Charles J., Westbrook, assignor to C. R. Milliken, Portland, Me. Pulp-screening machine	488,067	Dec. 13	1384	344	61	1615
Foster Engineering Company. (See Foster, John M., assignor.)						
Foster, John E., Monmouth, Ill. Street-car	486,034	Nov. 8	1354	359	61	866
Foster, John M., Cranford, assignor to Foster Engineering Company, Newark, N. J. Automatic regulating-valve	483,979	Oct. 4	688	172	61	142
Foster, William S., assignor to Foster Bros., Utica, N. Y. Combined spiral spring and support	486,773	Nov. 22	2538	662	61	1132
Fostoria Steel Roofing Company. (See Bonbrake, Lewis S., assignor.)						
Fountain, Vincent, assignor of one-sixteenth to T. F. Ryder, West New Brighton, N. Y. Bell-buoy	488,552	Dec. 27	2166	535	61	1801
Fouquet & Franz. (See Lieb, Robert, assignor.)						
Fowler, Charles S., Brooklyn, N. Y. Valve mechanism for cracker-machines	485,863	Nov. 8	1068	284	61	807
Fowler, Charles W., Baltimore, Md. Elevator	486,709	Nov. 22	2434	634	61	1111
Fowler, John W. (See Grady, James, assignor.)						
Fowler, John W., Brooklyn, N. Y. Fare-register	487,731	Dec. 13	810	206, 207	61	1498
Fowler, William, Colorado Springs, Colo. Electrical hose signaling apparatus	486,807	Nov. 22	2587	674	61	1142
Fowlkes, Mary R., Selma, Ala. Adjustable palette for artists	486,710	Nov. 22	2435	634	61	1112
Fox, Cyrus D., Roscoe, Ill. Riding attachment for plows, harrows, &c	485,184	Nov. 1	47	15	61	582
Fox Machine Company. (See Fox, William R., assignor.)						
Fox, William R., assignor to Fox Machine Company, Grand Rapids, Mich. Milling-machine	483,838	Oct. 4	474	118	61	98
Fraleigh, Isaac, and F. L. Hemmer, Poughkeepsie, N. Y. Rotary stock-cutter	485,792	Nov. 8	967	259	61	788
Fralinger, Joseph F., Atlantic City, N. J. Roundabout	485,495	Nov. 1	524	139	61	679
France, A. L. (See Cheeseman, Samuel E., assignor.)						
Francis, Henry A., Toronto, Canada. Garment-fastening	488,068	Dec. 13	1386	344	61	1615
Francis, Samuel H., Houston, Tex. Vine-cutter	483,627	Oct. 4	164	40	61	34
Frank, Johnston H., Eden, Ind. Picket-wiring fence-machine	488,310	Dec. 20	1777	447, 448	61	1708
Franke, Charles S., Brooklyn, N. Y. Button	487,389	Dec. 6	247	66	61	1369
Frasch, Hans A., assignor to Grasselli Chemical Company, Cleveland, Ohio. Method or process of treating sludge	488,628	Dec. 27	2293	568	61	1826
Frasch, Herman, London, Canada, assignor to Solar Refining Company, of Ohio. Refining Canadian or similar petroleum-oils	487,119	Nov. 29	3130	803	61	1267
Frasch, Herman, Cleveland, Ohio, assignor to Solar Refining Company, of Ohio. Purifying petroleum	487,216	Nov. 29	3279	837	61	1294
Fraser, Andrew, San Francisco, Cal. Ore-concentrating machine	487,261	Dec. 6	34	11, 12	61	1328
Fraser, John, Reuton, Canada, assignor to American Harrow Company, Detroit, Mich. Fertilizer-distributer	485,269	Nov. 1	171	51	61	607
Frazee, Fremont, and J. L. Wintersteen, Chicago, Ill. One-wheeled vehicle	486,456	Nov. 22	2034	537, 538	61	1032
Frazeur, David C., New Market, assignor of one-half to J. A. Frech, Somerville, N. J. Power-transmitting mechanism	487,615	Dec. 6	604	155	61	1442
Frech, John A. (See Frazeur, David C., assignor.)						
Freeman, E. F., *et al.* (See St. John, James E., assignor.)						
Freeman, Horace L., Lexington, N. C. Lawn-mower	483,913	Oct. 4	586	147, 148	61	121
Freeman, Horace L., assignor to B. Shemwell, Lexington, N. C. Furniture-brace tightener	488,333	Dec. 20	1817	455	61	1716
Freeman, Oscar F., Drifton, Pa. Method of and apparatus for making leaf-springs	488,553	Dec. 27	2168	536	61	1801
Frei, Gustav A., Springfield, Mass. Incandescent electric lamp	486,457	Nov. 22	2035	508	61	1033
Frei, Gustav A., Springfield, Mass. Incandescent electric lamp	487,477	Dec. 6	407	105	61	1401
Frei, Gustav A., Springfield, Mass. Mercurial air-pump	487,478	Dec. 6	408	105	61	1401
Frei, Gustav A., Springfield, Mass. Incandescent electric lamp	487,479	Dec. 6	410	106	61	1402
Frelinghuysen, Theodore, New York, N. Y. Spool-holder	486,866	Nov. 29	2701	705	61	1181
French, Adams C., Rapid City, S. D. Stump-puller	486,248	Nov. 15	1708	450, 451	61	953
French, Adams C., Rapid City, S. D. Stump puller	488,001	Dec. 13	1255	313	61	1587
Friant, Thomas, *et al.* (See Raymond, Silas H., assignor.)						
Friar, John, Hartford, Conn. King-bolt	485,496	Nov. 1	526	139	61	679
Friedrichs, Joseph, St. Louis, Mo. Crowning floor-joists and apparatus therefor	487,406	Dec. 6	290	75	61	1378
Friendlich, Emanuel, Kansas City, Mo. Show-fixture	488,757	Dec. 27	2489	619	61	1865
Frierson, Luther L. (See Rich, Charles W., assignor.)						
Frings, Charles H., New York, N. Y., assignor to Brewing Improvement Company, Maywood, N. J. Apparatus for impregnating liquids with carbonic acid	486,225	Nov. 15	1667	440, 441	61	945
Frink, Urban W., assignor of one-half to C. W. Spalding, Chicago, Ill. Watchmaker's tool	488,069	Dec. 13	1387	344	61	1615
Frisbie, Hamlin F., Covington, Ky. Valve for steam-engines	486,099	Nov. 15	1480	390	61	866
Frisbie, Melvin T., Lincoln, Nebr. Rubber-overshoe retainer	488,194	Dec. 20	1584	397	61	1677
Frisbie, William L., assignor of one-half to W. E. Lape, Syracuse, N. Y. Bench-hook	483,684	Oct. 4	241	59	61	50
Frisbie, William L., assignor of one-half to W. E. Lape, Syracuse, N. Y. Lawn-mower	483,685	Oct. 4	242	60, 61	61	51
Frist, Robert P., assignor, by mesne assignments, to Delaware Hard Fibre Company, Wilmington, Del. Manufacture of parchmentized fiber tubes	485,408	Nov. 1	402	108	61	655
Frölich, Oscar, assignor to Siemens & Halske, Berlin, Germany. Ozone-tube	487,390	Dec. 6	248	67	61	1369
Fronheiser, James J., and C. S. Price, Johnstown, Pa. Manufacture of coke	486,100	Nov. 15	1482	.....	61	909
Frost, Edward J., and W. C. Squire, Philadelphia, Pa. Apparatus for carbureting air or gas	485,185	Nov. 1	48	15	61	582
Frost, George, *et al.* (See Smith, Edward S., assignor.)						
Frost, George A., *et al.* (See Smith, Edward S., assignor.)						
Frost, James H. (See Marsden and Frost.)						
Fruehauf, Eduard. (See Basel and Fruehauf.)						
Fruen, William H., Minneapolis, Minn. Water-cooler	488,473	Dec. 20	2039	508	61	1761
Fry, Frederick D., Danbury, Conn. Machine for blocking hats	487,442	Dec. 6	357	91, 92	61	1392
Frye, John H., and B. Pitman, Cincinnati, Ohio. Ladder	488,428	Dec. 20	1973	493	61	1746
Fryer, Charles H., *et al.* (See Tefft, Emory N., assignor.)						
Fuchs, Oscar J., assignor of one-half to S. E. Mosher, Chillicothe, Ohio. Speed-recorder and odometer	484,152	Oct. 11	940	241, 242	61	206
Fuchs, Peter. (See Reuber, Stone, and Fuchs.)						
Fuchs, Rudolph, Chicago, Ill. Watch-holder	484,003	Oct. 11	730	183	61	164
Fulghum, Elisha J., assignor of one-half to L. Roberts, Traverse City, Mich. Log-loader	484,788	Oct. 25	1979	505	61	439
Fullen, James, Pawtucket, R. I. Wash-boiler	484,417	Oct. 18	1369	350	61	302
Fuller, Alexander, and W. B. Hohenshell, Streator, Ill. Tool-holder for lathes	488,554	Dec. 27	2169	536	61	1801
Fuller, Francis E. (See Ellery, Robert L., assignor.)						
Fuller, Frank H., Springfield, and C. B. Perkins, Holyoke; said Fuller assignor, by mesne assignments, to E. F. Cross, West Springfield, Mass. Messenger-call system for buildings	486,282	Nov. 15	1768	465	61	966
Fuller, Herbert M., Philadelphia, Pa. Plumb-bob	485,376	Nov. 1	352	94	61	645

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Fuller, James C., and W. A. Lee, Winfield, Kans. Grain-drill	486,035	Nov. 8	1353	360	61	866
Fuller, James W., St. Paul, Minn. Means for sealing jars or similar vessels	487,366	Dec. 6	211	58	61	1362
Fuller & Johnson Manufacturing Company. (See Starks and Felland, assignors.)						
Fuller, Joseph W. (See Marble, James E., assignor.)						
Fuller, Louis T., *et al.* (See Tanner, David W., assignor.)						
Fulton, Henry T. (See Weymouth and Fulton.)						
Fulton, John R., Wa Keeney, Kans. Coffee-pot	483,839	Oct. 4	475	119	61	98
Fulton, Joseph H., West Lebanon, Pa. Straw-carrier for thrashing-machines	485,099	Oct. 25	2477	637	61	539
Fultz, John E., Centerville, Ind. Stem winding and setting watch	484,359	Oct. 11	1274	325	61	272
Furgason, Charlie O. (See Raynor, Irwin H., assignor.)						
Furnas, Robert W., Indianapolis, Ind. Street-cleaning machine	484,191	Oct. 11	999	255	61	218
Furnas, Robert W., Indianapolis, Ind. Street-cleaning machine	484,192	Oct. 11	1001	256	61	218
Furnas, Walter S., Lisbon, Iowa. Apparatus for killing poultry	487,180	Nov. 29	3225	826	61	1285
Furnas, Walter S., and T. Kenderdine, Lisbon, Iowa; said Kenderdine assignor to said Furnas. Apparatus for killing poultry	487,560	Dec. 6	531	137	61	1426
Fustian Cutting Machine Company. (See Smith, James H., assignor.)						
Fux, Joseph. (See Faist and Fux.)						
Gabriel, Elizabeth, administratrix. (See Gabriel, Peter.)						
Gabriel, Peter, deceased, Helena, Mont.; E. Gabriel, administratrix. Window-screen	484,418	Oct. 18	1370	350	61	302
Gage, Charles M., Pepperell, Mass. Machine for surface-coating paper	486,638	Nov. 22	2319	606 / 607	61	1088
Gagle, John H., Seattle, Wash. Tramway-switch	485,923	Nov. 8	1168	308	61	827
Gaines, Micajah D., Colorado Springs, Colo. Curtain-fixture	484,706	Oct. 18	1823	464	61	394
Gallacher, James, and G. Lang, Chickasaw, Ala. Coal-washing machine	485,270	Nov. 1	172	51	61	608
Gallagher, Henry, Savannah, Ga. Car-coupling	488,429	Dec. 20	1974	493	61	1747
Gallatin, Oliver A., Galt, Mo. Weather-strip	488,685	Dec. 27	2687	665	61	1906
Gallon, John P., Albert, Kans. Check-valve	487,830	Dec. 13	973	245	61	1533
Galloway, Emmet L., assignor of one-half to A. F. Skeer, Jr., La Grange, Ind. Reclining-chair	485,740	Nov. 8	906	243	61	775
Galloway, John C., Ballinger, Tex. Quilting attachment for sewing-machines	487,919	Dec. 13	1124	281	61	1561
Galloway, Samuel J., and G. P. Cramer, Plainview, Oreg. Car-coupling	485,100	Oct. 25	2479	637	61	539
Galvin, James A., Steelton, assignor of two-thirds to C. Dull, Harrisburg, and J. A. Weimer, Lebanon, Pa. Compressing or blowing engine	488,922	Dec. 27	2752	679	61	1919
	484,495	Oct. 18	1498	380 / 381	61	327
Gamage, Henry A., and W. N. Schmidt, Boston, Mass. Fender for cars	488,353	Dec. 20	1853	463	61	1733
Gambetta, John, Stockton, Cal. Axle-nut	485,497	Nov. 1	527	140	61	679
Gambetta, John, and C. D. Harsin, Stockton, Cal. Compound rotary engine	487,217	Nov. 29	3281	838	61	1295
Gamble, James. (See Saxton, Harry J., assignor.)						
Gamble, William H., and D. H. Allen, Miamisburg, Ohio. Collapsible pneumatic boat	486,597	Nov. 22	2251	589	61	1074
Gammeter, Harry C., Akron, Ohio. Sled	484,632	Oct. 18	1708	433	61	369
Ganey, Jeremiah, Chicago, Ill. Folding bed	486,867	Nov. 29	2702	705	61	1181
Ganss, Jacob, Brooklyn, N. Y. Time-stamp	486,458	Nov. 22	2036	538 / 539	61	1033
Gantt, Henry L. (See Chase and Gantt.)						
Ganzlin, Paul, Schwerin, Mecklenburg, Germany. Combined book-case and desk	483,669	Oct. 4	221	55	61	46
Garbutt, Henry J., London, England. Portable shampooing apparatus	485,924	Nov. 8	1169	308	61	828
Gardinier, Barney, Chippewa Falls, Wis. Book or copy holder	487,561	Dec. 6	532	137	61	1426
Gardner, Andrew D., Lynn, Mass. Electrical curling-iron	484,532	Oct. 18	1554	394	61	338
Gardner, David, White Wright, Tex. Washing-machine	484,592	Oct. 25	2150	552	61	474
Gardner, Fulton, assignor of one-half to S. T. White, Chicago, Ill. Boring apparatus	488,354	Dec. 20	1854	464	61	1721
Gardner, George, Bolivar, Mo. Oil-stove	485,539	Nov. 1	592	158	61	694
Gardner, Henry C., Nashville, Tenn. Current-wheel	485,624	Nov. 8	719	188	61	736
Gardner, Horace C., assignor to himself and G. F. Swift, Chicago, Ill. Liquid-cooler	484,955	Oct. 25	2252	580	61	493
Gardner, William. (See Mosher, Charles D., assignor.)						
Garee, Albert, New Cumberland, W. Va. Device for handling sewer-pipe	484,707	Oct. 18	1825	464	61	394
Garford, Arthur L., Elyria, Ohio. Velocipede-saddle	485,186	Nov. 1	49	15	61	582
Garn, Franz von, Cologne, Germany. Car-coupling	484,419	Oct. 18	1371	351	61	302
Garner, Aubrey D., Lansing, Mich. Bank check, draft, &c.	485,925	Nov. 8	1171	308	61	828
Garner, John M. (See Todd, Jefferson D., assignor.)						
Garnett, Charles J., and A. Moore, Keighley, England, assignors to T. Horn, Toronto, Canada. Workman's time-recorder	486,399	Nov. 15	1945	515	61	1002
Garrettson, Miles F. (See Lawrence and Garrettson.)						
Garrison, George H., Sumas City, Wash. Gun-swab	486,331	Nov. 15	1837	483	61	980
Garsed, Robert P., Norristown, Pa. Pneumatic pump	487,090	Nov. 29	3085	792	61	1258
Garton, William R., Keokuk, Iowa. Lightning-arrester	488,002	Dec. 13	1257	313	61	1588
Garwood, Sarah H., Southsea, England. Spout attachment for bottles	483,670	Oct. 4	222	55	61	46
Gas Lighting Improvement Company. (See Maxim, Hiram S., assignor.)						
Gas-Motoren-Fabrik-Deutz. (See Schumm, Hermann, assignor.)						
Gasche, Ferd G., Chicago, Ill. Boiler-setting	488,241	Dec. 20	1669	417	61	1687
Gaskill, William H., Wilson, N. Y. Knot-tying mechanism for harvesters	483,914	Oct. 4	588	148 / 149	61	122
Gaskins, Hatten, Morrisonville, Ill. Pump	484,496	Oct. 18	1499	381	61	327
Gateley, John H., Janesville, Wis. Circular sawing machine	487,947	Dec. 13	1168	291	61	1569
Gates, Calvin M. (See Johnston and Gates.)						
Gates, Eugene N. (See Gates, Fannie A. and E. N.)						
Gates, Fannie A. and E. N., assignors to E. N. Gates Heating Company, Fitchburg, Mass. Water-heating system	484,193	Oct. 11	1002	256	61	218
Gates, Henry L., Milwaukee, Wis. Sheet-metal coal-hod	488,758	Dec. 27	2491	619 / 620	61	1865
Gates Iron Works. (See Gates, Philetus W., assignor.)						
Gates Iron Works. (See Gates, Ryerson D., assignor.)						
Gates, Philetus W., assignor to Gates Iron Works, Chicago, Ill. Removable tread for screening and assorting machines	488,760	Dec. 27	2493	620	61	1866
Gates, Ryerson D., Ridgeland, assignor to Gates Iron Works, Chicago, Ill. Ore-pulverizer	485,864	Nov. 8	1071	285	61	807
Gates, Ryerson D., assignor to Gates Iron Works, Chicago, Ill. Stone breaking or crushing machine	488,759	Dec. 27	2493	620	61	1866
Gates, William. Upton Manor, England. Stair-rod and securer	484,708	Oct. 18	1836	465	61	394
Gatfield, James A., Durham, Canada. Device for automatically closing and opening sliding doors	485,926	Nov. 8	1172	309	61	828
Gaudie, William R., Jarrow, England. Pie raising and lidding machine	483,549	Oct. 4	50	12, 13	61	12
Gaudrie, Francis X., Port Hope, Canada. Can-labeling machine	488,273	Dec. 20	1717	433	61	1697
Gauthier, Paul. (See Rotté and Gauthier.)						
Gauthier, Pierre. (See Rotté and Gauthier.)						
Gawley, Hector, Le Roy, Mich. Set-works for sawmills	484,360	Oct. 11	1276	325	61	272

Alphabetical list of patentees, October to December, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Gay, George E., and J. H. Parsons, Augusta, Me. Screw-driver	484,004	Oct. 11	731	183	61	164
Gay, Isaac E., Camden, S. C. Cotton-chopper	487,831	Dec. 13	974	246	61	1533
Gee, Fannie L., Burnsville, Ala. Side-saddle	488,733	Dec. 27	2455	610	61	1858
Geib, Bernard D., Cleveland, Ohio. Toe-weight	488,311	Dec. 20	1779	448	61	1708
Geiger, John J., Sr., Chicago, Ill. Registering device for photographic cameras	487,262	Dec. 6	36	12	61	1328
Geldowsky, Martha C., St. Louis, Mo. Belt for women's undergarments	488,866	Dec. 27	2688	665	61	1906
Geldowsky, Martha C., St. Louis, Mo. Undergarment	488,867	Dec. 27	2689	666	61	1907
Gelin, Peter, assignor of one-half to B. R. Baker, Toledo, Ohio. Metal wheel	484,586	Oct. 18	1630	414	61	354
Gellhaus, Frank. (See Guethler and Gellhaus.)						
Geneva Optical Company. (See Gilbert, Benjamin A., assignor.)						
George, Jacob H., White Pigeon, Ill. Crane	486,283	Nov. 15	1770	465	61	967
George, Walter L., Camden, Ind. Pile or fence-post driver	487,920	Dec. 13	1127	281 / 282	61	1561
Gerard, John J., Minneapolis, Minn. Dust-collector	484,090	Oct. 11	847	215	61	188
Gérard, Joseph, Dôle, France. Pinchers	483,550	Oct. 4	51	13	61	13
Gerber, Edward J., Paterson, N. J. Apparatus for dyeing	483,607	Oct. 4	135	34	61	98
Gere, George H., Grand Rapids, Mich. Wash-stand	484,956	Oct. 25	2253	580	61	494
Gerhard, William, Milwaukee, Wis. Supporting-rack for trousers	486,459	Nov. 22	2040	540	61	1033
Gerrish, Samuel S., Wilsonville, Nebr. Cultivator	485,271	Nov. 1	173	51, 52	61	608
Gessert, Charles F., New York, N. Y., assignor to C. F. Gessert Company, of New Jersey, Radiator	486,400	Nov. 15	1946	515 / 516	61	1002
Gethins Electrical Manufacturing Company. (See Gethins, James L., assignor.)						
Gethins, James L., Boston, Mass., assignor to Gethins Electrical Manufacturing Company, of Maine. Galvanic battery	487,324	Dec. 6	145	42	61	1349
Getten, Albert C., Chicago, Ill. Mechanism for delivering bags from paper-bag machines, and for other purposes	485,006	Oct. 25	2338	602 / 603	61	510
Gevers, Christopher A., Cedar Rapids, Iowa. Horse-blanket	483,980	Oct. 4	689	172	61	142
Gibbons, John, West Troy, assignor of three-fourths to S. J. Brown, J. H. Reynolds, and G. E. Waldron, Troy, N. Y. Roller-bearing	487,699	Dec. 6	746	191	61	1468
Gibbons, Nelson, Tiskilwa, Ill. Halter	487,145	Nov. 29	3172	813	61	1274
Gibbs, George, Milwaukee, Wis. Car-spring	488,474	Dec. 20	2041	508	61	1702
Gibbs, William E., New York, N. Y. Valve for pneumatic tires	485,540	Nov. 1	594	158	61	695
Gibbs, William E., New York, N. Y. Pneumatic percussion-tool	486,774	Nov. 22	2539	663	61	1132
Gibson, Francis M., Good Hope, Ohio. Scoop-board for wagons	486,529	Nov. 22	2138	564	61	1053
Gibson, Gerolt, St. Louis, Mo. Sash-fastener	484,709	Oct. 18	1827	465	61	394
Gibson, Gerolt, St. Louis, Mo. Sash-fastener	484,710	Oct. 18	1829	465	61	395
Gibson, Myron B., Ukiah, Cal. Ice-velocipede	485,345	Nov. 1	302	81	61	633
Gibson, Thomas C., Washington, D. C. Car-coupling	487,367	Dec. 6	213	58, 59	61	1362
Gibson, Wyatt, assignor of one-half to J. F. Sadler, Dodd, Tex. Beer-cooler	488,144	Dec. 13	1494	376	61	1637
Gierding, Thomas N. (See Russell and Gierding.)						
Giesey, James H., Highland, Ohio. Window	488,761	Dec. 27	2494	620 / 621	61	1866
Giesler, Franklin B., Milwaukee, Wis. Malt-kiln floor	483,781	Oct. 4	392	97, 98	61	82
Gifford, John H., Springfield, Mass. Inkstand	483,840	Oct. 4	477	119	61	99
Gilbert, Benjamin A., Boston, Mass., assignor to Geneva Optical Company, of Illinois. Eyeglasses	488,312	Dec. 20	1780	448	61	1709
Gilbert, Henry G., Dayton, Ohio. Nutmeg-grater	484,880	Oct. 25	2126	546	61	468
Gilbert, James, Crystal Brook, assignor of one-half to H. A. Begg, Semaphore, South Australia. Share attachment	487,120	Nov. 29	3135	804	61	1267
Gilcher, Henry J., Cleveland, Ohio. Door-mat	486,178	Nov. 15	1599	424	61	931
Gildard, Henry. (See Scringeour and Gildard.)						
Gildersleeve, Ezra B., New York, N. Y. Window-chair	483,608	Oct. 4	137	34	61	29
Giles, Edwin A., Chicago, Ill. Button-fastening	484,853	Oct. 25	2086	537	61	460
Giles, Frederick, South Yarra, near Melbourne, Victoria. Propeller for boats	487,012	Nov. 29	2965	764	61	1232
Giles, Jason, Indian Orchard, Mass. Valve-indicator	486,610	Nov. 22	2275	593	61	1078
Gilfillan, William, New Britain, Conn. Combined door check and spring	488,651	Dec. 27	2330	576 / 577	61	1834
Gilham, William C., assignor to J. V. Fisher, Morristown, Ohio. Fruit-evaporator	484,910	Oct. 25	2185	563	61	480
Gill, John. (See Howe, Daniel K., assignor.)						
Gill, Thomas, assignor of one-half to J. Stark, Waltham, Mass. Machine for truing jewel settings	485,410	Nov. 1	406	109 / 110	61	655
Gillespie, Charles S., *et al.* (See Gillespie, Cyrus E., assignor.)						
Gillespie, Cyrus E., assignor of two-thirds to C. E. Tindall and C. S. Gillespie, Edwardsville, Ill. Lock-hinge	484,361	Oct. 11	1277	325 / 326	61	272
Gillespie, William S., Bath Beach, N. Y. Hinge	486,952	Nov. 29	2874	742	61	1215
Gillette, Thomas S., Evanston, Ill. Photographic roll-holder	487,520	Dec. 6	472	124	61	1414
Gilliam, John W. T., Baltimore, Md. Inside window-blind	484,957	Oct. 25	2254	581	61	494
Gilliland, Ezra T. (See Edison and Gilliland.)						
Gilman, Willard H., Boston, Mass. Electrically-operated stringed musical instrument	488,520	Dec. 20	2126	526	61	1777
Gilman, Willard H., Boston, assignor to W. S. Reed Toy Company, Leominster, Mass. Coin-holder	486,639	Nov. 22	2321	607	61	1089
Gilmore, Robert J., Providence, R. I. Automatic fire-extinguisher	488,003	Dec. 13	1258	313	61	1588
Gilmour, Alexander J. (See Morden and Gilmour.)						
Giltner, Amos C. (See Rourke, John, assignor.)						
Ginalsky, Vladislav, Kiev, Russia. Gun-cartridge	487,028	Nov. 29	2982	769	61	1237
Gingras, Timothy, Buffalo, N. Y. Rack for axle-washers	486,640	Nov. 22	2322	608	61	1089
Ginna, Stephen A., *et al.* (See Hipperling, William, assignor.)						
Gipperich, Adolphus, Richmond, Va. Telegraph system	486,332	Nov. 15	1839	484	61	980
Girard, Charles L. (See Krouse, Myers, and Girard.)						
Girard, Jules J. (See Beauchamp, Aimé, assignor.)						
Giraud, Louis H., Boston, Mass. Building-cell	486,284	Nov. 15	1770	466	61	967
Giraud, Paul, Chantilly, France. Thermo-electric battery	483,782	Oct. 4	394	98	61	83
Giroux, Joseph E., Alpena, Mich. Holder for tools	486,285	Nov. 15	1772	466	61	967
Giroux, Joseph L., Jerome, Ariz. Ter. Cable tramway	488,734	Dec. 27	2456	610 / 611	61	1858
Gist, Grant G. G., Wilmington, Del., assignor to McLoughlin Brothers, New York, N. Y. Game apparatus	488,762	Dec. 27	2496	621	61	1866
Githens, George M., Brooklyn, N. Y. Rock drilling and splitting	486,101	Nov. 15	1483	391	61	909
Githens, Joseph C., New York, N. Y. Mechanical movement	485,625	Nov. 8	721	189	61	736
Given, Charles E., *et al.* (See Rodecker, Peter W., assignor.)						
Given, John F., *et al.* (See Rodecker, Peter W., assignor.)						
Glascock, Giles T., Greensborough, N. C. Combined fire-dog and grate	484,091	Oct. 11	849	215	61	188
Glattly, Charles, Buck Creek, Iowa. Equalizer for buggy-springs	484,309	Oct. 11	1203	306	61	257
Glauber, Joseph H., Cleveland, Ohio. Basin-clamp	483,804	Oct. 4	422	104	61	88

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Gleason, Francis, Philadelphia, Pa. Variable-pitch sprocket-wheel	484,005	Oct. 11	732	183	61	164
Gleason, Francis, Philadelphia, Pa. Sectional pneumatic tire	484,420	Oct. 18	1372	351	61	302
Gleeson, John R., Chico, Cal. Elastic cushion for hubs	484,552	Oct. 18	1584	402	61	345
Gleissner, August J. (See Reisa, George, assignor.)						
Glen Cove Machine Company. (See Welch, James F., assignor.)						
Glendinning, David W., Denver, Colo. Automatic damper for furnaces, &c	487,521	Dec. 6	473	124	61	1414
Glenn, Dayton W. (See Morrow and Glenn.)						
Glenn, James F., Glenham, N. Y. Bookbinder's extensible glue-block	485,760	Nov. 8	928	{248 249}	61	780
Glisson, Amos A., Memphis, Tenn. Baggage-check	488,004	Dec. 13	1260	314	61	1568
Globe Furniture Company. (See Lancaster, Morris, assignor.)	488,334	Dec. 20	1818	455	61	1717
Globig, John, Spokane, Washington. Car-coupling	486,460	Nov. 22	2042	540	61	1034
Gloekler, Charles A., Pittsburg, Pa. Gate-operating device for elevators	488,605	Dec. 27	2256	560	61	1820
Gloninger, John H., Pittsburg, Pa. Hose-bridge	488,888	Dec. 27	2690	666	61	1907
Glossop, Gilbert, Sheffield, England, assignor to F. C. Brooksbank and J. B. Perkins, Cleveland, Ohio. Pneumatic hammer	485,498	Nov. 1	529	140	61	680
Glover, James M., Richmond, Ind. Molding	485,377	Nov. 1	353	95	61	645
Gnehm, Robert, and J. Schmid, assignors to Society of Chemical Industry in Basle, Basle, Switzerland. Basic yellow dye	488,430	Dec. 20	1975	.....	61	1747
Godfrey, Charles B., Milford, assignor to Library Bureau, Boston, Mass. Type-writing-machine card-holder	486,036	Nov. 8	1355	361	61	867
Godfrey, Jonathan, assignor of one-half to W. E. Baillie, Bridgeport, Conn. Box-machine	483,649	Oct. 4	195	49	61	40
Godfrey, Jonathan, assignor of one-half to W. E. Baillie, Bridgeport, Conn. Machine for making paper boxes	483,957	Oct. 4	652	163	61	135
Godfrey, Jonathan, assignor of one-half to W. E. Baillie, Bridgeport, Conn. Making boxes from paste or straw board	483,958	Oct. 4	654	164	61	136
Goelze, Frank A., Chicago, Ill. Burglar-alarm	485,101	Oct. 25	2480	638	61	540
Goerte, Frederick, New York, N. Y. Postage-stamp moistener	486,611	Nov. 22	2277	594	61	1078
Goertz, August. (See Langfeld, Solomon C., assignor.)						
Goertz, August, Newark, N. J. Stamp and match box	484,092	Oct. 11	850	216	61	189
Goesel, John G. (See Kletzker and Goesel.)						
Goettel, John, *et al.* (See Dolloff, Orville C., assignor.)						
Goeta & Brada. (See Brada, Charles, assignor.)						
Goetze, Max, Sturgis, S. D. Lamp-extinguisher	484,362	Oct. 11	1278	326	61	272
Goff, Darius L., Pawtucket, R. I. Mechanism for delivering and cutting roll-paper	486,102	Nov. 15	1484	391	61	909
Goff, Darius L., Pawtucket, R. I. Mechanism for delivering and cutting roll-paper	486,103	Nov. 15	1486	391	61	910
Gogerty, John, Decatur, Ill. Gutter-protector	486,868	Nov. 29	2703	705	61	1182
Gold, Samuel F., Englewood, N. J. Valve	485,626	Nov. 8	723	189	61	737
Goldberg, Jacob, Chicago, Ill. Machine for casting sash-weights	487,263	Dec. 6	37	12	61	1329
Golden Gate Safety Faucet Company. (See Anthony, Mark, assignor.)						
Golder, Evan R., *et al.* (See Keene, George A., assignor.)						
Goldie, William, West Bay City, Mich. Tie-plate	485,030	Oct. 25	2381	612	61	518
Goldie, William, West Bay City, Mich. Railway-rail fastening	488,195	Dec. 20	1585	397	61	1671
Golding, William, assignor to C. Macintosh & Company, Limited, Manchester, England. Pneumatic tire	487,522	Dec. 6	476	124	61	1415
Goldsmith, Edwin M., Philadelphia, Pa. Bank	484,310	Oct. 11	1204	306	61	257
Goldstein, Joseph, New York, N. Y. Oil-stove	485,378	Nov. 1	354	95	61	645
Golling, Robert. (See Thompson and Golling.)						
Gollins, Edwin, Columbus, Ohio. Dado or molding bit	487,921	Dec. 13	1128	282	61	1561
Goltermann, Ada V., New York, N. Y. Fire-escape	484,093	Oct. 11	851	216	61	189
Gonzalez, Alfred, San Francisco, Cal. Ore-concentrator	487,523	Dec. 6	477	125	61	1415
Good, George W., Renovo, Pa. Gate-hinge	488,070	Dec. 13	1388	344	61	1616
Goodall, Joshua H., Castleford, England. Middlings-purifier	484,633	Oct. 18	1709	434	61	369
Goodell, Albert D., Worcester, Mass. Bit-brace	488,691	Dec. 27	2399	594	61	1846
Goodell, Emilus S. (See Brown, Theodore H., assignor.)						
Goodell, Gorham B., Cheyenne, Wyo., and B. S. Hopkins, Lexington, Ky. Bridle	485,685	Nov. 8	815	217	61	756
Goodell, Henry C., Atchison, Kans. Ventilated refrigerator-car	483,551	Oct. 4	52	13	61	13
Goodell, Henry C., Atchison, Kans. Combined refrigerator and fruit car	483,552	Oct. 4	54	13, 14	61	13
Goodenberger, John, and L. Akins, Akron, Ohio. Cash-register	487,922	Dec. 13	1129	282	61	1561
Goodhue, Frank M. and J. E., St. Charles, Ill. Bicycle	485,187	Nov. 1	51	16	61	582
Goodhue, James E. (See Goodhue, Frank M. and J. E.)						
Gooding, Charles S., Brookline, Mass. Button	486,461	Nov. 22	2043	540	61	1034
Gooding, Charles S., Brookline, assignor to Seaver Sewing Machine Company, Boston, Mass. Work-compressing mechanism for sewing-machines	488,629	Dec. 27	2295	568	61	1827
Gooding, Charles S., Brookline, and T. K. Keith, Boston, Mass., assignors to Seaver Sewing Machine Company, of Maine. Boot or shoe sewing machine	484,958	Oct. 25	2256	{581 582 583}	61	494
Goodkind, Milton B., New York, N. Y. Coin-operated device	488,196	Dec. 20	1588	397	61	1672
Goodman, Henry M., Louisville, Ky. Axle-lubricator	487,181	Nov. 29	3226	826	61	1285
Goodman, Louis, New York, N. Y. Jacket, &c	483,686	Oct. 4	245	61	61	51
Goodnow, Frank E., Northville, Mich. Device for detachably securing desks, seats, &c., to floors	483,841	Oct. 4	479	119	61	99
Goodrich, Benjamin F., Homer, Mich. Wick-fastener for oil-burners	488,788	Dec. 27	2540	630	61	1875
Goodrich, Henry T., Peoria, Ill. Running-gear for vehicles	483,717	Oct. 4	288	71, 72	61	60
Goodrich, John E. (See Cooley, Franklin S., assignor.)						
Goodson, William T., assignor of one-half to B. F. Allen, Homer, La. Planter	485,188	Nov. 1	52	16	61	583
Goodyear Shoe Machinery Company. (See La Chapelle, Israel, assignor.)						
Goodyear Shoe Machinery Company. (See Spencer, Alvah C., assignor.)						
Goolden, Walter T., and L. B. Atkinson, London, England. Machine for working coal or other minerals	488,606	Dec. 27	2257	560	61	1820
Gooley, Ella, New Holland, Ohio. Spring-bolster	486,462	Nov. 22	2044	541	61	1034
Gordon, Albert A. (See Wyman and Gordon.) (Reissue.)						
Gordon, Alexander, Detroit, Mich. Cigar-bunching machine	486,249	Nov. 15	1710	451	61	954
Gordon, Edward F., Concord, N. H. Driving-pulley	488,390	Dec. 20	1911	478	61	1735
Gordon, Elonso J., assignor to Gordon Hollow Blast Grate Company, Greenville, Mich. Furnace-grate	484,497	Oct. 18	1500	382	61	328
Gordon Hollow Blast Grate Company. (See Gordon, Elonso J., assignor.)						
Gordon, J. T., *et al.* (See Bailey, Frank. M., assignor.)						
Gore, William G., *et al.* (See Scott, Matthew T., assignor.)						
Görges, Johannes H. F., assignor to Siemens & Halske, Berlin, Germany. Incandescent lamp	487,049	Nov. 29	3020	776	61	1244
Gorman, Thomas J., Boston, Mass. Paper-file	483,609	Oct. 4	138	35	61	29
Gornall, Richard, Baltimore, Md., assignor to Lamson Consolidated Store Service Company, Boston, Mass. Store-service apparatus	483,610	Oct. 4	139	35	61	29

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Goslett, Charles A. (See Crossley, Eli, Jr., assignor.)						
Gosling, Henry J., assignor to G. and H. Barnett, Philadelphia, Pa. Machine for stripping files	488,652	Dec. 27	2334	577	61	1834
Gosling, Henry J., assignor to G. and H. Barnett, Philadelphia, Pa. Holder and turner for stripping-machines	488,653	Dec. 27	2335	577	61	1834
Goss Printing Press Company. (See Goss, Samuel G., assignor.)						
Goss, Samuel G., assignor to Goss Printing Press Company, Chicago, Ill. Printing-press	483,687	Oct. 4	246	61, 62	61	51
Gosslin, William G., *et al.* (See Rush, Ulysses S., assignor.)						
Gottschalk, Henry. (See Hall and Gottschalk.)						
Gould, Aaron P., *et al.* (See Pynchon, Edwin, assignor.)						
Gould, Aaron P., *et al.* (See Stuck, Levi, assignor.)						
Gould, Aaron P., Canton, Ohio. Lowering-jack	484,587	Oct. 18	1631	414	61	354
Gould, Bert L. (See Hathorn, Oliver B., assignor.)						
Gould, Samuel A., assignor of two-thirds to G. R. Blanchard and A. H. Brown, Chicago, Ill. Boring-machine	487,407	Dec. 6	292	76	61	1379
Gould, William F., Des Moines, Iowa. Metal shim and railway-rail joint	487,832	Dec. 13	976	246	61	1533
Gowing, Daniel H., assignor to H. A. Moyer, Syracuse, N. Y. Hub-boring machine	486,869	Nov. 29	2704	706	61	1182
Grace, Robert W. (See Potter, John A., assignor.)						
Grady, James, assignor of one-half to J. W. Fowler, Brooklyn, N. Y. Combined wheel and rail brake for cars	486,037	Nov. 8	1356	361	61	867
Graesser, Albert A., Pittsburg, Pa. Securing designs on glass articles	487,013	Nov. 29	2966	.....	61	1233
Graf, Anton, assignor of one-half to S. Osgood, Georgetown, Mass. Furnace-door	485,189	Nov. 1	53	16	61	583
Graf, Anton, assignor of one-half to S. Osgood, Georgetown, Mass. Heater	485,190	Nov. 1	54	17	61	583
Graf, Henry J., St. Louis, Mo., assignor to Graf Iron Melting and Manufacturing Company, East St. Louis, Ill. Melting iron	485,927	Nov. 8	1173	309	61	828
Graf Iron Melting and Manufacturing Company. (See Graf, Henry J., assignor.)						
Graff, Jakob, Paterson, N. J. Locket	487,480	Dec. 6	411	106	61	1402
Graham, Arthur N. (See Tracy and Graham.)						
Graham, Ben C. (See Davis and Ripley, assignors.)						
Graham & Co., James. (See Sweeney, John, assignor.)						
Grand Detour Plow Company. (See Ruef, Charles S., assignor.)						
Grand Rapids Folding Bed Company. (See Herrinton and Smith, assignors.)						
Grandy, Henry E., Somerville, Mass. Color-printing press	484,421	Oct. 18	1375	{351 352}	61	303
Grant, Frank, and A. H. Murray, assignors of one-half to J. S. Boggess, agent, Middleport, Ohio. Machine for re-pressing bricks	485,191	Nov. 1	55	17, 18	61	584
Grant, Henry B., Pleasant Mound, Tenn. Car-coupling	485,928	Nov. 8	1174	309	61	828
Grantland, John W., Philadelphia, Pa. Camera-shutter	487,833	Dec. 13	976	{246 247}	61	1533
Grantland, John W., assignor to A. J. Ingraham and W. L. Boggs, Philadelphia, Pa. Combined portable bill and letter file and perforating appliance	485,102	Oct. 25	2481	638	61	540
Grantland, John W., assignor to A. J. Ingraham and W. L. Boggs, Philadelphia, Pa. Combined bill and letter file and perforating appliance	488,930	Dec. 27	2778	686	61	1925
Grantland, John W., assignor of one-half to W. H. Mattison, Philadelphia, Pa. Hook	486,641	Nov. 22	2324	608	61	1089
Grapewine, Charles E. (See Smith and Grapewine.)						
Grasselli Chemical Company. (See Frasch, Hans A., assignor.)						
Grau, Christian F. (See Keeler, William E., assignor.)						
Graumlich, Solomon M., Duvall, Ohio. Cultivator-shovel	484,789	Oct. 25	1981	505	61	440
Graves, Charles W. (See Verpillier, Emil, assignor.)						
Graves, John F., Ellsworth, Minn. Whiffletree-hook	488,391	Dec. 20	1912	479	61	1735
Gray, Isaac C., Ilon, Ind., assignor of one-half to J. S. Tilton, Norwalk, Ohio. Ratchet pipe and nut wrench	484,634	Oct. 18	1713	435	61	370
Gray, James, Lima, Ohio. Apparatus for manufacturing gas	487,616	Dec. 6	606	{155 156}	61	1442
Gray, John H., Chicago, Ill. Metal column	488,274	Dec. 20	1719	433	61	1698
Gray, Ralph, Anderson, Ind. Glass-melting furnace	483,915	Oct. 4	590	149	61	122
Gray, Robert. (See Cunningham, Peter N., assignor.)						
Gray, William D., Milwaukee, Wis., assignor to Edward P. Allis Company, of Wisconsin. Flour-bolt	487,004	Nov. 29	2952	{760 761}	61	1230
Gray, William L., and J. Rivers, Evanston, Wyo. Pop safety-valve	487,020	Nov. 29	2959	769	61	1237
Greaves, Charles. (See Greaves, William, assignor.)						
Greaves, William, assignor to C. Greaves, St. Louis, Mo. Routing-machine	483,671	Oct. 4	223	56	61	46
Green, Charles, Toronto, Canada. Door-lock switch for electric lights	483,739	Oct. 4	323	81	61	68
Green, Charles F., and G. A. Haley, National Soldiers' Home, Va. Duplex penholder	488,119	Dec. 13	1458	367	61	1630
Green, Duff, and R. M. Herron, Dalton, Ga. Revolving exhibitor for the display of goods	486,545	Nov. 22	2158	570	61	1057
Green, Frank A. (See Chaffee, Hoffman, and Green.)						
Green, Hermann, assignor to Hertz & Green, New York, N. Y. Loop-fastener	483,672	Oct. 4	225	56	61	47
Green, Ira L., St. Regis Falls, N. Y. Watch-oiler	487,732	Dec. 13	812	207	61	1499
Green, John, assignor of two-thirds to S. M. English and A. E. Stagren, Renovo, Pa. Harness tug-hook	483,959	Oct. 4	656	165	61	136
Green, John J., Boonton, assignor to Security Insulator Company, Elizabeth, N. J. Ceiling-block	484,911	Oct. 25	2186	563	61	481
Green, Joseph W., Jr. (See Moore, George C., assignor.)						
Green, Paul E., Georgetown, Colo. Advertising-board	484,194	Oct. 11	1005	257	61	219
Green, Stith, Jackson, Miss. Metallic fence	486,463	Nov. 22	2045	541	61	1034
Greenebaum, Michael, Chicago, Ill. Combined refrigerator and water-cooler	486,286	Nov. 15	1772	466	61	967
Greenfield, Edwin T., New York, N. Y. Paper-binding machine	488,735	Dec. 27	2457	611	61	1859
Greenwald, Louis, Leadville, Colo. Necktie-fastener	488,275	Dec. 20	1720	434	61	1698
Greenwell, Robert E., Waco, Tex. Railway-joint	486,775	Nov. 22	2540	663	61	1132
Greenwood, Enoch, and R. M. Wise, Jamestown, N. Y. Belt-fastener	486,374	Nov. 15	1906	504	61	994
Greenwood, Samuel, Lowell, Mass. Picker-check for looms	485,686	Nov. 8	815	218	61	756
Greer, John, Greensborough, N. C. Lubricator	484,195	Oct. 11	1006	257	61	219
Greer, John, Greensborough, N. C. Lubricator	484,196	Oct. 11	1007	257	61	219
Greer, John R., and W. D. Thomas, Auxvasse, Mo.; said Thomas assignor to said Greer. Combined ink-bottle holder and pen-rack	484,498	Oct. 18	1503	382	61	328
Gregg, Henry T., Milwaukee, Wis. Thill or pole prop for vehicles	485,843	Nov. 8	1039	278	61	801
Gregg, John A., West Bay City, Mich. Hydrant	484,197	Oct. 11	1008	258	61	220
Gregory, John H., assignor to himself and J. Newman, Ione, Cal. Wrench	488,431	Dec. 20	1976	493	61	1747
Gregson, George, Cambridge, Mass. Match-lighter	484,311	Oct. 11	1205	307	61	257
Grenfell, Hubert H., London, and J. G. Accles, Birmingham, England. Projectile	486,598	Nov. 22	2253	589	61	1074
Griffen, Arthur B., Newark, and W. C. Clarke, Bloomfield, N. J. Carburreting air	487,617	Dec. 6	609	157	61	1443
Griffin, Charles H., assignor of one-half to L. Kafka, Lake City, Colo. Cap-attacher	487,562	Dec. 6	535	137	61	1427
Griffin, Edwin J., Zion, Ky. Hedge-fence stay	488,498	Dec. 20	2084	518	61	1771
Griffin, Elvin H., South Boston, Va. Loop-riveting machine	487,618	Dec. 6	613	157	61	1443

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Griffin, La Roy F., North Granville, N. Y. Composition for wall-coverings	486,870	Nov. 29	2705	.....	61	1182
Griffith, Franklin H., Philadelphia, Pa. Impervious case for containing strings for musical instruments	488,005	Dec. 13	1261	314	61	1589
Grigsby, Melvin, *et al.* (See Pruner, Thomas H., assignor.)						
Gripp, Jacob. (See Morrison and Gripp.)						
Griscom, William W., Haverford, Pa. Manufacture of secondary-battery electrodes	487,834	Dec. 13	980	247	61	1534
Grist, Benjamin W., assignor to Pennsylvania Iron Works Company, Philadelphia, Pa. Power-transmitting mechanism	486,287	Nov. 15	1774	466 / 467	61	967
Grist, Benjamin W., assignor to Pennsylvania Iron Works Company, Philadelphia, Pa. Adjustable shaft-bearing	486,401	Nov. 15	1949	516 / 517	61	1003
Grist, Benjamin W., assignor to Pennsylvania Iron Works Company, Philadelphia, Pa. Adjustable sheave-support	486,402	Nov. 15	1950	517	61	1003
Griswold, Frederick B. (See Dey and Griswold.)						
Griswold, John W., Troy, N. Y. Barbed-wire fence	486,179	Nov. 15	1599	424	61	932
Griswold, Lewis F., assignor to Charles Parker Company, Meriden, Conn. Lamp	486,038	Nov. 8	1358	362	61	867
Grobe, D. E. (See Crannell, Charles W., assignor.)						
Grohman, Charles, Carteret, N. J. Condenser and feed-water heater	485,031	Oct. 25	2383	612	61	519
Groom, Wallace P., Brooklyn, N. Y. Machine for opening and cleaning cotton	485,272	Nov. 1	175	52	61	609
Grosh, Silas W., Decatur, Ill. Car-door	485,007	Oct. 25	2342	603	61	510
Gross, Ferdinand, Montreal, Canada. Telephone-receiver	483,718	Oct. 4	389	73	61	61
Gross, George M., Chicago, Ill. Operating mechanism for mining drills and stamps	483,842	Oct. 4	480	119	61	99
Gross, John, and H. Beck, assignors of one-third to J. Weiss, New York, N. Y. Ventilator	483,650	Oct. 4	197	49	61	41
Grosselin, Nicolas H., fils, Sedan, France. Gig-mill	485,929	Nov. 8	1175	309 / 310	61	829
Grossman, George, assignor to M. M. Grossman, Lancaster, Pa. Stock-car	487,668	Dec. 6	697	178	61	1459
Grossman, Mary M. (See Grossman, George, assignor.)						
Grouleff, Albert, assignor of one-half to N. P. Salling, Grayling, Mich. Hat-case	486,828	Nov. 22	2630	686	61	1152
Groux, Henry A., West Orange, N. J. Thill-coupling	486,579	Nov. 22	2222	583	61	1068
Grove, George W., Washington, D. C. Book-holder	483,611	Oct. 4	140	35	61	29
Grove, George W., assignor to National Cash Register Company, Dayton, Ohio. Register-ing-lock for cash-registers	485,930	Nov. 8	1179	310	61	829
Groves, William. (See Parks, David O., assignor.)						
Gruenhagen, Charles H., San Francisco, Cal. Adjustable stand for show-windows	486,981	Nov. 29	2917	753	61	1224
Grumbacher, Frederick M. (See Dittrich and Grumbacher.)						
Grund, Emil, Cologne, Germany. Car-coupling	486,375	Nov. 15	1906	504	61	994
Grundy, William S. (See Lever and Grundy.)						
Grundy, William S., *et al.* (See Hofbauer, Frank, assignor.)						
Grusonwerk. (See Mantey, Henry, assignor.)						
Guérin, Paul, Paris, France. Apparatus for automatically compressing chocolate, &c	484,790	Oct. 25	1981	505 / 506	61	440
Guethler, William, and F. Gellhaus; said Guethler assignor to W. Neilsen, Philadelphia, Pa. Ice-velocipede	485,844	Nov. 8	1039	278	61	802
Guilbert, John C. N., New York, N. Y. Hose rack	483,673	Oct. 4	296	56	61	47
Guild, Arthur E., Walpole, N. H. Plow-clevis	485,931	Nov. 8	1181	311	61	830
Guild, George M., assignor to L. A. Guild, Boston, Mass. Upright-piano action	486,808	Nov. 22	2589	675	61	1142
Guild, L. A. (See Guild, George M., assignor.)						
Gulley, Augustus H. R., assignor to himself and W. B. Solliday, South Easton, Pa. Trol-ley for electric railways	486,333	Nov. 15	1843	484	61	981
Guillard, Théoline C., and V. E. Catherinet, Saint-Mandé, near Paris, France. Finger-ex-ercising device	486,546	Nov. 22	2159	570	61	1057
Gunderson, Ole. (See Larson and Gunderson.)						
Gunkel, Caspar, Jefferson, Iowa. Tailor's measure	486,670	Nov. 22	2370	619	61	1098
Gunn, John M., assignor to R. E. and E. C. Taylor, Findlay, Ohio. Tumbler-washer	484,422	Oct. 18	1378	352	61	303
Gunsendorfer, Abe B., Monterey, Cal. Cash-carrier	486,250	Nov. 15	1713	452	61	954
Gustafson, Axel R., Chicago, Ill., assignor of one-half to W. F. Anderson, Negaunee, Mich. Ironing-machine	485,465	Nov. 1	486	129	61	671
Gustafson, Charles J., Mobile, Ala. Car-coupling	486,930	Nov. 29	2835	734 / 735	61	1208
Gustin, John S. (See Lindahl, Henry, assignor.)						
Gutberlet, Edward T., and W. R. Isard, St. Louis, Mo. Electric cigar-lighter	488,889	Dec. 27	2692	666 / 667	61	1907
Gutbier, Louis K. F., and E. H. Koch, Elberfeld, Germany. Tun	484,312	Oct. 11	1207	307	61	258
Gutenkunst, Charles A., Milwaukee, Wis. Track for hay-carriers	486,711	Nov. 22	2436	634	61	1112
Guthrie, Thomas M., Hutchinson, Mo. Harness-buckle	487,619	Dec. 6	615	158	61	1444
Guthrie, William L., Laddonia, Mo. Bridle attachment	486,376	Nov. 15	1907	504	61	994
Gutmann, Ludwig, Fort Wayne, Ind. Electric converter	484,959	Oct. 25	2258	583 / 584	61	495
Gwyn, Walter B., Asheville, N. C. Mucilage-holder	487,182	Nov. 29	3227	826	61	1285
Gylfe, Alexander, assignor to himself and L. N. Eklund, South Bend, Wash. Musical in-strument	485,932	Nov. 8	1181	311	61	830
H. H. Babcock Company. (See Davis, Francis G., assignor.)						
Haag, Paul, assignor to A. Featherstone, Chicago, Ill. Bicycle-brake	486,464	Nov. 22	2046	541	61	1034
Haas, Benjamin, Jr., and G. Trouvé, Paris, France. Illuminated timepiece	486,563	Nov. 22	2191	577	61	1062
Haas, Samuel H., Philadelphia, Pa. Whiffletree	487,264	Dec. 6	38	12	61	1329
Hacke, Karl W., Dürkheim, Germany, assignor of two-thirds to E. M. and H. Tillmann, Dallas, Tex. Washing-machine	485,687	Nov. 8	817	218	61	757
Hacklaender, Charles H., Allegheny, Pa. Reclining-chair	485,273	Nov. 1	177	53	61	609
Hackney, Herbert, South Evanston, Ill., assignor to Benjamin Machine Company, of Illi-nois. Belt-tightener	488,197	Dec. 20	1589	398	61	1672
Hackworth, James T. (See Briggs, Alfred, assignor.)						
Hadaway, John B., Brockton, assignor, by mesne assignments, to J. S. Turner, Rockland, Mass. Channeling-machine	484,363	Oct. 11	1280	326 / 327	61	273
Hadley, Charles E., assignor to Overman Wheel Company, Chicopee, Mass. Post for cy-cle-saddles	485,865	Nov. 8	1072	285	61	808
Hadley, David, *et al.* (See Cox, Jacob R, assignor.)						
Hadley, John V., *et al.* (See Cox, Jacob R., assignor.)						
Hadley, Joshua A., Brazil, assignor of one-half to R. L. Kennedy, Centre Point, Ind. Shatter-worker	484,734	Oct. 18	1869	475 / 476	61	402
Haeseler, Emil C., assignor to Barney & Smith Car Company, Dayton, Ohio. Seat	488,555	Dec. 27	2171	536	61	1802
Hafely, Alfred C., New York, N. Y. Making corners, covers, and like parts for books, boxes, and similar articles of celluloid or kindred material	484,006	Oct. 11	733	184	61	165
Hafely, Alfred C., New York, N. Y. Making corners, covers, and like parts for books, boxes, and similar articles of celluloid or kindred material	488,630	Dec. 27	2266	568	61	1827
Hafurtop, Theodore B., Chicago, Ill. Automatic advertising device	487,563	Dec. 6	536	138	61	1427

Alphabetical list of patentees, October to December, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Hageman, Robert, Mullan, Idaho. Musical instrument	488,890	Dec. 27	2693	667	61	1907
Haggenmuller, Franklin F., New York, N. Y. Lithographic plate	487,121	Nov. 29	3137	804	61	1267
Hagler, Charles H., Hackett, Ark. Kitchen-cabinet	488,807	Dec. 27	2569	638	61	1881
Hague, Luke G., Bloomington, Ill. Attachment for vehicle-shafts	487,324	Dec. 6	479	125	61	1416
Haidacher, Vitus V. (See Bennett and Haidacher.)						
Haifley, David, Amboy, Ind. Feed-stable	484,791	Oct. 25	1983	506	61	440
Haines, Spencer, and W. B. Mathis, Rancocas, N. J. Disk furrower	486,776	Nov. 22	2541	663	61	1132
Hainsworth, Frederick, Chicago, Ill. Printing-plate holder	484,588	Oct. 18	1632	414	61	354
Hale, James W., Newburyport, Mass. Valve mechanism for wash-basins	484,423	Oct. 18	1378	352	61	304
Hale, John P., Mulvane, Kans. Washing-machine	486,564	Nov. 22	2192	577	61	1063
Haley, Abraham G., Gardiner, Me. Composition of matter for journal-bearings	485,688	Nov. 8	819	.....	61	757
Haley, George A. (See Green and Haley.)						
Haley, Jonathan, Fostoria, Ohio. Ornamental pressed glassware	485,032	Oct. 25	2385	612	61	519
Hall, Albert, Brooklyn, N. Y. Button	486,871	Nov. 29	2706	706	61	1182
Hall, Alexander V., and W. S. Holmes, Baton Rouge, La. Idler for driving-belts	487,564	Dec. 6	537	136	61	1427
Hall, Arnold, Altcar and Hill House Station, England. Railway signaling apparatus	486,335	Nov. 15	1845	485 / 486	61	981
Hall, Cofran I., San Francisco, Cal. Hydraulic elevator	488,891	Dec. 27	2695	667	61	1908
Hall, Edwin W., Whitehall, N. Y. Safety fastening or seal for envelopes	484,711	Oct. 18	1831	465	61	395
Hall, Frank E., Newton, Mass., assignor to Consolidated Fastener Company, Portland, Me. Glove and garment fastener	484,792	Oct. 25	1984	506	61	440
Hall, George C. (See Crocker, George H., assignor.)						
Hall, George F., and H. Gottschalk; said Hall assignor to J. Fisch, Newark, N. J. Pool-rack	484,533	Oct. 18	1555	395 / 396	61	338
Hall, George T., Monrovia, assignor of one-half to E. F. Spence, deceased, Los Angeles, Cal.; A. M. Spence, executrix. Street-car fender	488,276	Dec. 20	1721	434	61	1698
Hall, George W., Washington, D. C. House-door letter-box	488,556	Dec. 27	2171	536 / 537	61	1802
Hall, George W., and J. J. De Marr, Georgetown, Colo. Regulable electric lamp	486,334	Nov. 15	1844	485	61	981
Hall, Hamilton. (See Norton and Hall.)						
Hall, James G., Kentland, assignor of one-half to M. M. Hall, Monticello, and L. B. Reed, Idaville, Ind. Trip device for cultivators	487,218	Nov. 29	3283	838	61	1295
Hall, Maggie M., *et al.* (See Hall, James G., assignor.)						
Hall, Samuel P., and J. W. Wood, Oakland, Cal. Bituminous-rock-reducing machine	484,735	Oct. 18	1870	476	61	402
Hall Signal Company. (See Wilson, Adoniram J., assignor.)						
Hall, W. W., *et al.* (See Rose, Robert, assignor.) (Reissue.)						
Hall, William F. (See Downing and Hall.)						
Hallahan, James J., Brooklyn, N. Y. Scarf-clasp	483,783	Oct. 4	397	98	61	83
Hallenstein, Reuben, Melbourne, Australia. Door-opening device	483,916	Oct. 4	591	149	61	122
Hallett Boiler Company. (See Hallett, Charles, assignor.)						
Hallett, Charles, Riverhead, N. Y., assignor to Hallett Boiler Company, of New Jersey. Boiler	483,612	Oct. 4	142	36	61	30
Hallings, John C. (See O'Neill, James A., assignor.)						
Hallowell, James M. (See Curtis and Hallowell.)						
Hambay, James T., Pittsburg, Pa. Art of and machine for manufacturing jaws for coup-ling-rods	483,740	Oct. 4	394	81, 82	61	68
Hamble, Anthony W., Allen, Kans. Bedclothes-clamp	483,628	Oct. 4	165	41	61	34
Hamblin, Floyd, Mohawk, N. Y. Folding plant-stand	485,627	Nov. 8	725	189	61	737
Hamill, Joseph H., and P. J. Johnson, Globe, Ariz. Ter. Shoe-fastener	484,313	Oct. 11	1208	307	61	258
Hamilton, Charles L. (See Newhall and Hamilton.)						
Hamilton, Herbert E., and N. Boisvert, Salmon Falls, N. H. Shuttle-guard for looms	487,183	Nov. 29	3228	827	61	1286
Hamilton, John H., assignor of one-half to B. E. Woodruff, Eureka Springs, Ark. Clothes-pin	485,274	Nov. 1	179	53	61	609
Hamilton, John R., New York, N. Y. Rotary engine	488,277	Dec. 20	1723	434 / 435	61	1698
Hamilton, John W., Springfield, Ohio. Chair	485,325	Nov. 1	266	72	61	626
Hamilton, William M., Pittsburg, Pa. Steam-boiler	484,736	Oct. 18	1871	476	61	402
Hammon, Charles T. (See Martin and Hammon.)						
Hammond, George A., Bennett, Mich. Device for securing desks and seats to the floor	484,657	Oct. 18	1758	447	61	379
Hammond, Henry, Ashbourne, Pa., assignor to J. H. Williams & Co., Brooklyn, N. Y. Wrench. (Reissue)	11,277	Oct. 18	1933	491	61	418
Hamrick, John C. (See Flook, William A., assignor.)						
Hand Method Finishing Machine Company. (See Phelps, Eugene M., assignor.)						
Hand Method Finishing Machine Company. (See Thomson and Phelps, assignors.)						
Hand Stitch Broom Sewing Machine Company. (See McCombs, George F., assignor.)						
Haney, William H., Elmwood Place, Ohio. Combined whip-socket and rein-holder	486,547	Nov. 22	2160	571	61	1058
Hanke, Carl G. F., Ratibor, and E. Richter, Czekalski, Germany. Musical-game apparatus	484,589	Oct. 18	1632	414	61	354
Hanley, William H. (See Rouse and Hanley.)						
Hanna, Manuel J., New York, assignor to W. H. Quick, Brooklyn, N. Y. Pipe-hanger	485,033	Oct. 25	2385	613	61	519
Hanna, Michael. (See Martin and Hanna.)						
Hannan, John B., Widowsville, Ohio. Bouquet and badge holder	483,719	Oct. 4	289	72	61	61
Hannan, William H. (See Hannan, William H., assignor.)						
Hannan, William H., assignor to W. H. Hannan, Syracuse, N. Y. Thill-coupling	486,251	Nov. 15	1715	452	61	955
Hannan, William H., assignor to W. H. Hannan, Syracuse, N. Y. Thill-coupling	487,005	Nov. 29	2953	761	61	1231
Hanner, George W., Holbrook, Ariz. Ter. Railway-rail joint	484,424	Oct. 18	1380	353	61	304
Hansel, Andrew. (See Howell, William H., assignor.)						
Hansen, Niels C., Flensburg, Germany. Lathe for turning oval objects	487,525	Dec. 6	480	125 / 126	61	1416
Hanson, Hans, Mankato, Minn. Wire-reel holder	485,275	Nov. 1	180	53	61	610
Hanson, Harry, and J. E. Bergman, Chicago, Ill. Elevator	485,034	Oct. 25	2386	613	61	519
Hanson, Walter T., Macon, Ga. Twine-holder	486,465	Nov. 22	2047	541	61	1035
Harbold, Alfred, *et al.* (See Nugent, Richard C., assignor.)						
Harcourt, John R. (See Osborn and Harcourt.)						
Hard, John R., New York, N. Y. Electric bell	485,379	Nov. 1	355	95	61	645
Harden, Edward W., assignor to F. C. Weir, Cincinnati, Ohio. Governor	486,404	Nov. 15	1953	518	61	1004
Harden, Edward W., and M. R. Conway, assignors to F. C. Weir, Cincinnati, Ohio. Valve.	486,403	Nov. 15	1951	517 / 518	61	1003
Harder, Charles N. (See Sagendorph, Longley L., assignor.)						
Hardesty, James F., Cambridge, Ohio. Truss-bridge	485,689	Nov. 8	819	219	61	757
Hardin, Bettie, *et al.* (See Nelson and Heuett, assignors.)						
Harding, Fred D., Baldwin, Me. Dish-cleaner	485,690	Nov. 8	821	219	61	757
Hardsocg, Martin, Ottumwa, Iowa. Coal or rock drilling machine	484,425	Oct. 18	1381	353	61	304
Hardy, John J., assignor of one-half to C. Ropp, Chicago, Ill. Gyroscopic top	484,960	Oct. 25	2261	584	61	495
Hardy, Walter B., assignor to Revere Rubber Company, Boston, Mass. Pneumatic tire	487,669	Dec. 6	700	178	61	1460

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Name, residence, and invention.	No.	Date.	Monthly volume.		Official Gazette.	
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Hardy, Walter B., assignor to Revere Rubber Company, Boston, Mass. Pneumatic tire	488,392	Dec. 20	1913	479	61	1735
Hare, Robert W., Allegheny, Pa. Means for operating elevator-doors	486,953	Nov. 29	2875	743	61	1215
Harger, K. D., *et al.* (See Leach, William H., assignor.)						
Harger, Lucy A., *et al.* (See Leach, William H., assignor.)						
Haring, William N., Nyack, assignor of one-half to F. J. Hasbrouck, New York, N. Y. Car-brake	487,391	Dec. 6	250	67	61	1370
Haring, William N., Nyack, assignor of one-half to F. J. Hasbrouck, New York, N. Y. Car-truck	487,923	Dec. 13	1131	282	61	1562
Haring, William N., Nyack, assignor of one-half to F. J. Hasbrouck, New York, N. Y. Car-coupling	487,924	Dec. 13	1132	283	61	1562
Haring, William N., Nyack, assignor of one-half to F. J. Hasbrouck, New York, N. Y. Car-body	487,925	Dec. 13	1133	283	61	1562
Harmon, John W., Cromwell, Iowa. Combined hay rake and loader	483,917	Oct. 4	591	150	61	122
Harmsen, Hans C. W., Luneburg, Germany. Separating tin from tin-plate waste	485,035	Oct. 25	2389	.....	61	120
Harper, Alfred E., Chicago, Ill. Oil-burner	488,355	Dec. 20	1855	464	61	1724
Harper, James M., Peoria, Ill. Hose-pipe carrier	484,961	Oct. 25	2263	584	61	495
Harper, John, Fairfield, Iowa. Wire reeling and stretching machine	485,541	Nov. 1	595	150	61	295
Harper, John, Fairfield, Iowa. Wire-fence machine	487,184	Nov. 29	3230	827	61	1296
Harper, Nathan, Newark, N. J. Drier-car for brick	486,931	Nov. 29	2839	735	61	1208
Harrah, Akens S., and J. N. Nichols, deceased; E. A. Harrah, administratrix, Mulvane, W. Va. Trigger	488,557	Dec. 27	2174	537	61	1803
Harrah, Emily A., administratrix. (See Harrah and Nichols.)						
Harrelson, Marcellous D., Raleigh, Miss. Bed-slat holder	488,558	Dec. 27	2176	537	61	1803
Harrington, George W., assignor of one-half to D. H. Darling, Wakefield, Mass. Method of and apparatus for lining pipes with lead	485,691	Nov. 8	822	219 220	61	758
Harrington, George W., assignor of one-half to D. H. Darling, Wakefield, Mass. Swage for forming beads on the ends of lead-lined pipes	485,692	Nov. 8	825	220	61	758
Harrington, George W., assignor of one-half to D. H. Darling, Wakefield, Mass. Forming beads on the ends of lead-lined iron pipes	485,693	Nov. 8	826	221	61	758
Harrington, Hiram A., Anoka, Minn. Metallic fencing	485,741	Nov. 8	907	243	61	775
Harrington, John, Coventry, England, assignor to W. H. Durfee, Providence, R. I. Musical instrument	485,542	Nov. 1	596	159	61	695
Harrington, Walter E., Atlantic City, N. J., assignor to F. T. Chambers, Philadelphia, Pa. Device for transmitting motion for electric street-car motors	487,069	Nov. 29	3047	781 782	61	1249
Harrington, Walter E., Atlantic City, N. J., assignor to F. T. Chambers, Philadelphia, Pa. Electro-magnetic pulley	487,070	Nov. 29	3049	782	61	1249
Harriott, John W., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Post-office lock-drawer	486,777	Nov. 22	2542	663 664	61	1132
Harris, B. G. (See Fairman, Simon, assignor.)						
Harris, Charles R., Williamsport, Pa. Wire buckle	485,411	Nov. 1	409	110	61	656
Harris, Charles R., Williamsport, Pa. Buckle	485,628	Nov. 8	726	189	61	737
Harris, Edward L., Red Banks, Miss. Spittoon for railway-cars	483,918	Oct. 4	595	151	61	123
Harris, Edward S. (See Pyke and Barnett, assignors.)						
Harris, Edward S. (See Pyke and Harris.)						
Harris, Frank, Guildhall, Vt. Railway-switch signal	488,654	Dec. 27	2335	578	61	1835
Harris, George W., assignor of one-half to H. Baumgartel, Sturgis, Mich. Watchmaker's depthing and adjusting tool	483,960	Oct. 4	657	165	61	136
Harris, Ira F., Nashua, N. H. Hinge	486,104	Nov. 15	1488	392	61	910
Harris, Joseph. (See Michelson, Max J., assignor.)						
Harris, Richard C., Jr., Roselle, N. J. Marking-stamp	484,534	Oct. 18	1559	397	61	339
Harris, Samuel. (See Murrey, Jasper, assignor.)						
Harris, William T., assignor to B. F. Southworth, Defiance, Ohio. Gate	484,198	Oct. 11	1010	258	61	220
Harrison, Mary B., *et al.* (See Saxton, Harry J., assignor.)						
Harrison Safety Boiler Works. (See Cochrane, David, assignor.)						
Harrison, Thomas J., Brooklyn, N. Y. Wind-wheel	485,380	Nov. 1	357	96	61	646
Harrison, Wesley T., Williamstown, Ky., assignor of one-half to J. C. Chipman, Sterling, Colo. Pendant for watches	486,105	Nov. 15	1489	392	61	910
Harry, Louis. (See Baner, Harry, and Bunger.)						
Harsh, Samuel E., assignor of one-half to J. M. Harter, Wabash, Ind. Overdraw check-loop	488,789	Dec. 27	2541	631	61	1875
Harsin, Charles D. (See Gambetta and Harsin.)						
Hart, Charles E. (See Hart, William H. and C. E.)						
Hart, Emanuel I. S., New York, N. Y. Magic lantern	484,854	Oct. 25	2088	537	61	460
Hart, Frederick, Poughkeepsie, N. Y., assignor to Aktiebolaget Separator, Stockholm, Sweden. Steam-turbine	486,829	Nov. 22	2631	687	61	1152
Hart, Frederick, Poughkeepsie, assignor to D. H. Burrell & Co., Little Falls, N. Y. Paper-feeder	487,526	Dec. 6	481	126 127	61	1416
Hart, Frederick, Poughkeepsie, assignor to D. H. Burrell & Co., Little Falls, N. Y. Paper-feeding machine	488,006	Dec. 13	1262	315	61	1589
Hart, Thomas J., assignor to Sherwood Manufacturing Company, Buffalo, N. Y. Injector	488,313	Dec. 20	1781	448 449	61	1709
Hart, William H., Brooklyn, N. Y. Electrical distribution-box	488,198	Dec. 20	1590	398	61	1672
Hart, William H., assignor to Stanley Works, New Britain, Conn. Drive-chain	483,843	Oct. 4	482	120	61	100
Hart, William H. and C. E., assignors to Stanley Works, New Britain, Conn. Drive-chain	488,808	Dec. 27	2570	638	61	1882
Harter, John M. (See Harsh, Samuel E., assignor.)						
Hartford, Arthur J., New York, N. Y., assignor to A. J. Hartford Steel Railway Tie Manufacturing Company, of West Virginia. Metallic railway-tie	487,733	Dec. 13	814	207	61	1499
Hartford Silver Plate Company. (See Maschmeyer, Charles H., assignor.)						
Harting, Jesse B. (See Banmener and Harting.)						
Hartley, Asa M., Bentonville, Ark. Wire-coiling machine	484,426	Oct. 18	1384	353 354	61	304
Hartley, Herbert E. (See Hartley, John E. and H. E.)						
Hartley, John E. and H. E., Birmingham, England. Attachable letter for signs	488,655	Dec. 27	2336	578	61	1835
Hartley, Richard K. (See Smith, Hartley, and McDougall.)						
Hartley, Richard K., Chadderton, England. Bicycle	484,712	Oct. 18	1832	466	61	395
Hartman, John H. (See Bendure and Tilbery, assignors.)						
Hartman, John M., Philadelphia, Pa. Tuyere	485,381	Nov. 1	359	96	61	646
Hartmann, Christian, Hanover, Germany. Horseshoe	484,713	Oct. 18	1834	466	61	395
Hartness, James, Springfield, Vt. Clutch-operating mechanism	483,741	Oct. 4	326	82	61	68
Hartshorn, Edmund F., Newark, assignor to S. Hartshorn, Short Hills, N. J. Spring shade-roller	483,553	Oct. 4	56	14	61	13
Hartshorn, Edmund F., Newark, assignor to S. Hartshorn, Short Hills, N. J. Attaching window-shades to rollers	484,962	Oct. 25	2264	584	61	496
Hartshorn, Stewart. (See Hartshorn, Edmund F., assignor.)						
Harvey, George, San Francisco, Cal. Snatch-block	487,734	Dec. 13	815	208	61	1500

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Harwell, George B. (See Davis and Harwell.)						
Hasbrouck, Frances J. (See Haring, William N., assignor.)						
Hascall, Charles A. (See Culver and Hascall.)						
Haskell, Charles S. and W. E., Philadelphia, Pa. Organ	488,559	Dec. 27	2177	538 539	61	1803
Haskell, Frank, Westbrook, Me. Machine for drying warps	485,694	Nov. 8	827	221 222	61	758
Haskell, Frank H., Revere, Mass. Duplex pressure-gage	483,613	Oct. 4	144	36	61	30
Haskell, James R., assignor to J. W. Haskell, Passaic, N. J. Multicharge-gun	484,007	Oct. 11	735	184	61	165
Haskell, James R., assignor to J. W. Haskell, Passaic, N. J. Projectile	484,008	Oct. 11	736	184	61	165
Haskell, James R., assignor to J. W. Haskell, Passaic, N. J. Multicharge or accelerating gun	484,009	Oct. 11	737	184 185	61	166
Haskell, James R., assignor to J. W. Haskell, Passaic, N. J. Multicharge-gun	484,010	Oct. 11	740	185 186	61	166
Haskell, James R., assignor to J. W. Haskell, Passaic, N. J. Multicharge-gun	484,011	Oct. 11	742	186	61	167
Haskell, James R., assignor to J. W. Haskell, Passaic, N. J. Ordnance	484,012	Oct. 11	743	186	61	167
Haskell, Julia W. (See Haskell, James R., assignor.)						
Haskell, William E. (See Haskell, Charles S. and W. E.)						
Haskin, Samuel E., Avoca, N. Y. Process of and apparatus for vulcanizing wood	488,967	Dec. 27	2324	607	61	1936
Haskins, L. S. (See Williams, Florance, assignor.)						
Hassall, Samuel J. K., Penrith, New South Wales. Automatic signal and brake mechanism for locomotives	488,892	Dec. 27	2696	667 668	61	1908
Hasselbauer, Alexander and L., New York, N. Y. Bridle	487,565	Dec. 6	538	138	61	1428
Hasselbauer, Louis. (See Hasselbauer, Alexander and L.)						
Hasson, Robert, Gadsden, Ala. Combined cultivator and planter	486,712	Nov. 22	2436	634	61	1112
Hasson, Robert, Gadsden, Ala. Planter and fertilizer-distributer	488,356	Dec. 20	1857	465	61	1724
Hastings, Matthew E., assignor of one-half to W. S. Walcott, New York Mills, N. Y. Sheet-metal-folding machine	485,192	Nov. 1	58	18	61	584
Hatch, Charles J., Augusta, Me., assignor to Dutcher Temple Company, Hopedale, Mass. Loom-temple	484,364	Oct. 11	1283	327	61	273
Hatch, John, San Francisco, Cal. Dredging implement	485,193	Nov. 1	61	19	61	585
Hatch, Walter P., Chicago, Ill. Pruning implement	485,793	Nov. 8	969	260	61	788
Hatchett, Pink G. (See McKee and Hatchett.)						
Hatfield, James, Cincinnati, Ohio. Fireback for stoves	488,199	Dec. 20	1592	398	61	1673
Hathorn, Oliver B., assignor of one-third to B. L. Gould, Milo, Me. Rein-holder	488,975	Dec. 27	2538	700	61	1939
Haub, Charles C., and J. F. Dasha, San Francisco, Cal. Car-coupling	488,120	Dec. 13	1459	368	61	1630
Haughawout, John W., assignor to A. S. Billings, Omaha, Nebr. Rubber-dam clamp	487,670	Dec. 6	701	179	61	1460
Hausmann, Caspar F., St Gallen, Switzerland. Capsule-filler	487,886	Dec. 13	1069	268	61	1550
Hausperger, Frank, *et al.* (See Beehler, Charles W., assignor.)						
Hausaner, Konrad, Ingolstadt, Germany. Vehicle-wheel	486,106	Nov. 15	1490	392	61	910
Hawes, Alonzo A., Wallingford, Conn. Tool for setting plants	486,713	Nov. 22	2438	635	61	1112
Hawes, Jacob H., Boston, Mass. Apparatus for creasing and shaping coat-collars	488,560	Dec. 27	2185	539 540	61	1805
Hawkins, Frank F., Troy, N. Y. Eyelet	483,784	Oct. 4	398	99	61	83
Hawley, Melville C., St. Louis, Mo. Furnace	488,893	Dec. 27	2698	668	61	1908
Haworth, Joseph, Church, England. Apparatus for washing fabrics	485,695	Nov. 8	829	222 223	61	759
Hay, Walter, assignor to E. B. Towne, Chicago, Ill. Cuff-holder	487,527	Dec. 6	485	127	61	1416
Hayden & Derby Manufacturing Company. (See Derby, John N., assignor.)						
Hayden, Henry F. (See Rossell and Hayden.)						
Hayden, Henry F., Washington, D. C. Fire-hydrant	485,409	Nov. 1	403	108	61	655
Hayden, John W., Fort Wayne, Ind. Conduit for electric railways	487,735	Dec. 13	816	208	61	1500
Hayes, Eli B., Oshkosh, Wis. Molding and blind-slat-planing machine	487,348	Dec. 6	176	49	61	1355
Hayes, Erastus, *et al.* (See Beers, Franklin H., assignor.)						
Hayes, George, New York, N. Y. Fireproof ceiling	486,982	Nov. 29	2919	753	61	1225
Hayes, George D., Chetek, Wis. Combined buckle and snap-hook	487,325	Dec. 6	146	42	61	1349
Hayes, Hammond V., Cambridge, and W. L. Richards, Malden, assignors to American Bell Telephone Company, Boston, Mass. Telephone	487,219	Nov. 29	3284	838	61	1295
Hayes, Hulbert, Elizabethtown, Ohio. Boiler-cleaner	483,919	Oct. 4	595	151	61	123
Hayes, Joel A., Carson City, Nev. Electric-arc lamp	484,199	Oct. 11	1011	258 259	61	220
Haynes, Thomas J. (See Pugh, John W., assignor.)						
Hayter, William. (See Terry and Hayter.)						
Hazard, Dexter, assignor of one-half to F. O. Clark, Marquette, Mich. Saw	486,226	Nov. 15	1668	441	61	945
Hazard, Willet E., Buffalo, assignor to H. F. McCann and W. S. Wickham, Salamanca, N. Y. Machine for sharpening matcher-heads	484,094	Oct. 11	853	216	61	189
Hazeltine, Charles W., assignor to Hazeltine Electric Company, St. Louis, Mo. Electrode for arc lamps	487,220	Nov. 29	3286	839	61	1296
Hazeltine Electric Company. (See Hazeltine, Charles W., assignor.)						
Heagerty, Micheal, Baltimore, Md. Toe-weight	486,671	Nov. 22	2371	620	61	1098
Healea, George G. (See Healea, John and G. G.)						
Healea, John and G. G., Farmer City, Ill. Corn-conveyer	486,466	Nov. 22	2048	542	61	1035
Healy, James A., Nashville, Tenn. Car heating and ventilating system	485,036	Oct. 25	2389	614	61	520
Hearne, John, New York, N. Y., assignor of one-half to W. P. Elliott, New Brunswick, N. J. Center seal	485,629	Nov. 8	727	190	61	737
Heath, John M., *et al.* (See Campbell, Lawrence S., assignor.)						
Heaton Peninsular Button Fastener Company. (See Ray, Frederick A., assignor.)						
Hecht, Jonas. (See Swiss, Morris R., assignor.)						
Hedgeland, Frederick W., Chicago, Ill. Pneumatic action for organs	488,607	Dec. 27	2259	560	61	1820
Heepe, Conrad, Frankfort-on-the-Main, assignor to Vereinigte Holzindustrie, Fabrik Frankenthal, Frankenthal, Germany. Substitute for wood and leather	488,809	Dec. 27	2571	638	61	1882
Heflin, Henry M., Baltimore, Md., assignor of one-half to G. Draper & Sons, Hopedale, Mass. Sliver-tension regulator for roving-machines	486,252	Nov. 15	1716	452	61	955
Hegemann, Henry F., Milwaukee, Wis. Folding square	488,242	Dec. 20	1670	417	61	1688
Heidel, Gustavos, assignor to L. Krieckhaus and R. Merkle, St. Louis, Mo. Gasoline-torch	486,039	Nov. 8	1361	362	61	868
Heimann, Salomon, assignor to E. B. Amend, New York, N. Y. Lubricant	484,635	Oct. 18	1714	.....	61	370
Heine, August, Silver Creek, N. Y. Grain-cleaner	485,845	Nov. 8	1041	279	61	802
Heine, August, Silver Creek, N. Y. Grain-cleaner	485,866	Nov. 8	1073	285 286	61	808
Heine, August, Silver Creek, N. Y. Bran-duster	485,867	Nov. 8	1077	286	61	809
Heineke, Martin, Springfield, Ill. Straw-stacker	484,427	Oct. 18	1386	354	61	305
Heintz, Lewis J., Buffalo, N. Y. Finger-ring	484,793	Oct. 25	1985	507	61	441
Heisler, Charles, Altoona, Pa. Coffee-pot	483,554	Oct. 4	57	14	61	14
Heiss, Frank A., Port Jervis, N. Y. Type-writing machine	485,761	Nov. 8	929	249 250	61	780

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Heister, Peter, *et al.* (See Heister, William, assignor.)						
Heister, William, assignor of two-thirds to P. Heister and H. B. Wittkamper, Bellevue, Ky. Joist-lifter	484,365	Oct. 11	1285	328	61	274
Held, August S., Freeport, Ill., and L. Patterson, Allegheny, Pa.; said Patterson assignor to said Held. Spring-hinge	484,200	Oct. 11	1014	259	61	221
Heller, Frank, and K. Hirsch, New York, N. Y. Child's carriage	487,050	Nov. 29	3021	776	61	1244
Hellums, William L. (See Whitford, Clark, assignor.)						
Helmer, Oscar. (See Japy and Helmer.)						
Hemmer, Frederick L. (See Fraleigh and Hemmer.)						
Hemmer, Frederick L., assignor to C. N. Arnold, Poughkeepsie, N. Y. Nursery-chair	485,382	Nov. 1	360	96, 97	61	646
Hempel, Henry A., Gotha, Fla. Suspenders	484,095	Oct. 11	855	217	61	189
Hemsley, Alexander. (See Lawson, Joseph B., assignor.)						
Hench, Samuel N. (See Richey, Hench, and Dromgold.)						
Henderer, Augustus L., Wilmington, Del. Tool for expanding the ends of boiler-tubes	483,920	Oct. 4	596	151	61	123
Henderson, John C., New York, N. Y. Governor	487,265	Dec. 6	40	13	61	1329
Henderson, William, Chicago, Ill. Rail for securing glass	484,590	Oct. 18	1633	415	61	355
Henderson, Yandell, New Haven, Conn. Skate	486,872	Nov. 29	2707	706	61	1182
Hendey Machine Company. (See Homan, William C., assignor.)						
Hendrick, Augustus D., assignor to I. J. Booth, Birmingham, Conn. Fishing-reel	485,794	Nov. 8	970	260	61	788
Hendricks, Frank P., Winterburn, assignor of two-thirds to J. S. Hoy and G. W. Tozier, Penfield, Pa. Clothes-drier	484,931	Oct. 25	2223	571	61	487
Heneage, Charles R. (See Dole, Charles P., assignor.)	487,481	Dec. 6	412	106	61	1402
Henkle Dental Chair Company. (See Henkle, Samuel T., assignor.)						
Henkle, Samuel T., Baltimore, Md., assignor to Henkle Dental Chair Company, Chicago, Ill. Dental chair	485,383	Nov. 1	361	97	61	647
Henning, Abel, Los Angeles, Cal. Diaphragm for gas-meters	487,051	Nov. 29	3022	776	61	1244
Henrich, Louis A. (See Wallace and Henrich.)						
Henry, Catharine M., administratrix. (See Moore and Henry.)						
Henry, Charles A., Monticello, Iowa. Hay-loader	488,561	Dec. 27	2186	540	61	1805
Henry, Dorwin A. (See Moore and Henry.)						
Henry, Edward. (See Becker and Henry.)						
Henry, Frank, assignor to Pennsylvania Industrial Development Company, Philadelphia, Pa. Hem folder and presser	484,366	Oct. 11	1285	328	61	274
Henry Huber Company. (See Beaumont, Thomas C., assignor.)						
Henry McShane Manufacturing Company. (See Quinn, William J., assignor.)						
Henry McShane Manufacturing Company of Baltimore. (See Schmidt, Charles R., assignor.)						
Henry, William J., Portland, Me. Trunk-lock	486,227	Nov. 15	1670	442	61	946
Heppe, Christopher J., *et al.* (See Wuest, Philip, Jr., assignor.)						
Heppe, Florence J., *et al.* (See Wuest, Philip, Jr., assignor.)						
Herbert, Henry J., Detroit, Mich. Umbrella-runner retainer	486,778	Nov. 22	2543	664	61	1133
Herbert, Michael E., St. Joseph, Mo. Steam-boiler furnace	484,153	Oct. 11	946	242, 243	61	207
Herbert, Michael E., St. Joseph, Mo. Hot-water heater	487,620	Dec. 6	616	158	61	1444
Herbert, Samuel, Detroit, Mich. Roofing compound	484,794	Oct. 25	1986	.....	61	441
Herdegen, Eduard, assignor to Cassidy & Adler, New York, N. Y. Flush-valve for water-closets	485,155	Oct. 25	2561	658	61	555
Herdman, Frank E., Indianapolis, Ind. Elevator	487,266	Dec. 6	42	13	61	1329
Herdman, Frank E., Indianapolis, Ind. Elevator	487,267	Dec. 6	42	14	61	1330
Herdman, Frank E., Indianapolis, Ind. Elevator	487,268	Dec. 6	43	14	61	1330
Hering, John J., Seattle, Wash. Double piano-stool	486,405	Nov. 15	1955	519	61	1004
Herman, David C., St. Louis, Mo. Wind and current wheel	485,933	Nov. 8	1182	311	61	830
Herndon, George P., Birmingham, Ala. Shoe	485,543	Nov. 1	598	159	61	695
Herr, Homer A., Philadelphia, Pa. Cash-register	487,903	Dec. 13	1094	274	61	1555
Herrick, Frank J., assignor to North and Judd Manufacturing Company, New Britain, Conn. Soap-hook	485,037	Oct. 25	2390	614	61	520
Herring, James H., assignor of one-half to T. P. Chaddick, Murphy, Tex. Shade and curtain fixture	486,040	Nov. 8	1362	362	61	868
Herrington, David C. (See Sanders and Herrington.)						
Herrinton, Edward E., and I. C. Smith, assignors to Grand Rapids Folding Bed Company, Grand Rapids, Mich. Folding bed	485,276	Nov. 1	181	53	61	610
Herrmann, Paul, New York, N. Y. Advertising device	484,314	Oct. 11	1209	307	61	258
Herron, Robert M. (See Green and Herron.)						
Hersey, Fred E., Wolfeborough, N. H. Machine for punching and trimming belts	483,555	Oct. 4	58	15	61	14
Hersey Manufacturing Company. (See Tilden, James A., assignor.)						
Hersom, Ernest L., New Bedford, Mass. Weft-fork for looms	485,346	Nov. 1	305	81	61	634
Herts & Green. (See Green, Hermann, assignor.)						
Hersberg, Morris, Chambers county, Ala., S. T. Whitaker and W. C. Lanier, West Point, Ga. Barrel-stand	485,742	Nov. 8	908	243	61	775
Hess, John A., Benton Harbor, Mich. Door operator and supporter	485,934	Nov. 8	1183	311, 312	61	830
Hess, John R., assignor of one-half to J. H. Fisher, Solon, Iowa. Wagon-reach	488,894	Dec. 27	2699	668	61	1909
Hess, Meyer S., *et al.* (See Meyer, August, assignor.)						
Hess, Otto G. (See Zimmer and Hess.)						
Hetherington, Frederick A., Indianapolis, Ind. Photographic camera	483,688	Oct. 4	248	62	61	52
Heuett, Francis M. (See Nelson and Heuett.)						
Hewitt, Horace B., Indianapolis, Ind. Mail-pouch-releasing device	484,499	Oct. 18	1503	382	61	328
Hewitt, William M., Chattanooga, Tenn. Railway cross-tie	484,855	Oct. 25	2089	537	61	461
Hewitt William R., San Francisco, Cal. Electric releasing device	486,612	Nov. 22	2278	594	61	1078
Hewlett, Maddra J., and D. C. Cecil, Paducah; said Hewlett assignor to H. F. Carrico, Graves County, Ky. Water-purifier	488,673	Dec. 27	2366	585	61	1841
Hewson, Robert, San Francisco, Cal. Rotary motor	487,221	Nov. 29	3290	839	61	1296
Heyden, F. von, Nachfolger. (See Seifert, Bruno R., assignor.)						
Hibbard, Henry D., Pittsburg, Pa. Apparatus for casting pig-iron	486,714	Nov. 22	2438	635, 636	61	1112
Hibbs, Thomas, Osage City, Kans. Nut-lock	483,921	Oct. 4	597	151	61	124
Hickey, Michael, Boston, Mass. Apparatus for and method of recovering waste alcohol from liquor-casks	484,963	Oct. 25	2265	585	61	496
Hicks, Nehemiah, Wilkinsonville, Mass. Regulating device for warping-machines	488,432	Dec. 20	1977	493, 494	61	1747
Hicks, Oliver H., Chicago, Ill. Paper box	487,598	Dec. 6	485	127	61	1417
Hicks, Thomas H., assignor of one-half to G. F. Case, Detroit, Mich. Seat	484,367	Oct. 11	1286	328	61	274
Hidden, Edward S., Milburn, N. J. Machine for cutting rags	487,621	Dec. 6	617	158	61	1444

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Hien, Phillip, Chicago, Ill. Car-coupling	487,926	Dec. 13	1135	283, 284	61	1502
Higgins, Charles S., Brooklyn, N. Y. Soap-holder	486,599	Nov. 22	2254	589, 590	61	1074
Higgins, Werter C., Norwich, Conn. Steam-generator	486,467	Nov. 22	2051	542, 543, 544	61	1035
Higginson, Henry C., Newburg, N. Y. Chasing-mill	487,146	Nov. 29	3173	813	61	1275
Higginson, Montagu, *et al.* (See Westrup, Oliver F., assignor.)						
Higham, Daniel, Boston, Mass., assignor, by mesne assignments, to Higham Electric Company, Portland, Me. Electric-arc lamp	486,377	Nov. 15	1908	505	61	994
Higham Electric Company. (See Higham, Daniel, assignor.)						
Hill, Andrew G., deceased, Prescott, Canada; T. E. Bissell, administrator. Disk harrow	487,622	Dec. 6	621	159	61	1445
Hill, Arthur G. (See Ulrich, Max, assignor.)						
Hill, Charles E., *et al.* (See Reinhardt, James H., assignor.)						
Hill, Edward, Keighley, England. Loom pattern-chain and barrel therefor	486,337	Nov. 15	1848	486	61	992
Hill, Frank R., Rose Station, Tex. Band-cutter and feeder for thrashing-machines	485,499	Nov. 1	531	140, 141	61	680
Hill, George M., and F. P. Alter, Centralia, Wis. Change maker and receiver	488,007	Dec. 13	1267	315, 316	61	1590
Hill, George W., Oberlin, Ohio. Trunk-carrier	488,357	Dec. 20	1859	465	61	1725
Hill, Henry. (See Jefferson, John, assignor.)						
Hill, James, Keighley, England. Loom pattern-chain	486,336	Nov. 15	1847	486	61	992
Hill, John J., Chicago, Ill. Railway-switch apparatus	485,868	Nov. 8	1078	286	61	809
Hill, John T., and B. Mehring, Cleveland, Ohio. Track-rail	484,315	Oct. 11	1211	308	61	258
Hill, Walter S., Boston, Mass. Fireproof paint	484,714	Oct. 18	1835	.....	61	395
Hill, William E., Kalamazoo, Mich. Log loader and turner	484,013	Oct. 11	745	186, 187	61	167
Hill, William E., Kalamazoo, Mich. Log-turner	485,696	Nov. 8	830	223	61	759
Hillerscheidt, Oscar, Berlin, Germany. Self-locking hoisting device	484,932	Oct. 25	2224	573, 574	61	488
Hills, James D., Menomonee, Wis. Lumber puller and washer	485,935	Nov. 8	1185	312, 313	61	831
Hills, James D., Menomonee, Wis. Lumber pulling, washing, and assorting machine	485,936	Nov. 8	1188	313, 314, 315, 316	61	831
Hills, Louis, New York, N. Y. Electric search-light	484,964	Oct. 25	2267	585	61	496
Hilton, Henry R., Jersey City, N. J., and J. E. Wilson, New York, N. Y. Clam or oyster rake or dredge	484,615	Oct. 18	1836	467	61	396
Hilts, George S., assignor of two-thirds to D. McLachlan, Groton, N. Y. Pipe-wrench	483,785	Oct. 4	399	99	61	83
Hinckley, Howard, Trenton, N. J. Car-brake	488,314	Dec. 20	1783	449	61	1709
Hinkle, Leonard, Indianapolis, Ind. Bed-bottom	484,912	Oct. 25	2187	563	61	481
Hinote, E. T. (See Moomaw, Henry E., assignor.)						
Hinson, James A., Chicago, Ill. Draft-rigging for railway-cars	487,269	Dec. 6	44	14	61	1330
Hipperling, William, New York, N. Y., assignor to S. A. Ginna, Plainfield, N. J., and R. A. Donaldson, Brooklyn, N. Y. Machine for manufacturing tin cans	487,270	Dec. 6	46	15	61	1331
Hipperling, William, New York, N. Y., assignor to S. A. Ginna, Plainfield, N. J., and R. A. Donaldson, Brooklyn, N. Y. Machine for manufacturing tin cans	488,674	Dec. 27	2366	585, 586	61	1841
Hipperling, William, New York, N. Y., assignor to S. A. Ginna, Plainfield, N. J., and R. A. Donaldson, Brooklyn, N. Y. Machine for the manufacture of tin cans	488,675	Dec. 27	2370	586, 587, 588	61	1841
Hipwell, Thomas, Long Island City, assignor to Manhattan Brass Company, New York, N. Y. Wick-raiser for Argand lamps	488,968	Dec. 27	2827	697	61	1936
Hirsch, Kallman. (See Heller and Hirsch.)						
Hirschfelder, Salomon, Munich, Germany. Photographic camera	488,810	Dec. 27	2572	638, 639	61	1882
Hirt, Louis J., Arlington, Mass. Friction-clutch	487,736	Dec. 13	818	208	61	1500
Hirt, Louis J., Arlington, Mass. Trolley-wheel	488,811	Dec. 27	2573	639	61	1883
Hitchcock, Dexter, *et al.* (See Weaver, William, assignor.)						
Hoag, William H., Amsterdam, N. Y. Covering for fire-door openings	484,636	Oct. 18	1714	435	61	370
Hocken, Richard, *et al.* (See Oldfield, Joseph, assignor.)						
Hodgdon, Lue S., Bangor, Me. Fire-escape	486,041	Nov. 8	1363	362	61	868
Hodgson, Isaac and M. A., Springfield, Mass. Geographical globe	488,071	Dec. 13	1389	345	61	1616
Hodgson, John G. (See Moore and Hodgson.)						
Hodgson, John G. (See Norton and Hodgson.)						
Hodgson, John G., assignor to E. Norton, Maywood, and O. W. Norton, Chicago, Ill. Sheet-metal-stamping press	487,271	Dec. 6	50	16	61	1331
Hodgson, Mary A. (See Hodgson, Isaac and M. A.)						
Hodgson, Sam. (See Carter, Russell H., assignor.)						
Hoe, Robert, *et al.* (See Crowell, Luther C., assignor.)						
Hoeffer, Albert, *et al.* (See Pynchon, Edwin, assignor.)						
Hoeffer, Albert, *et al.* (See Stuck, Levi, assignor.)						
Hoegren, Anders G. (See Bertheau and Hoegren.)						
Hoeninghausen, Adolph, and C. R. Mueller, Jr., Detroit, Mich. Lamp attachment	487,482	Dec. 6	413	106	61	1402
Hoenscheid, Peter, assignor to Whitman & Barnes Manufacturing Company, Akron, Ohio. Twist-drill milling-machine	486,970	Nov. 29	2898	748	61	1220
Hoersch, Gottlieb, assignor to H. Hoersch, Philadelphia, Pa. Reversible window-sash	483,763	Oct. 4	362	91	61	76
Hoersch, Henry. (See Hoersch, Gottlieb, assignor.)						
Hoeschen, Henry, assignor to E. A. Benson, Omaha, Nebr. Coin-controlled phonograph	488,278	Dec. 20	1795	435	61	1699
Hoeveler, William A., and T. J. McTighe, Pittsburg, Pa.; said McTighe assignor to said Hoeveler. System for distributing gas under pressure. (Reissue)	11,283	Nov. 15	1979	525	61	1008
Hoeveler, William A., and T. J. McTighe, Pittsburg, Pa.; said McTighe assignor to said Hoeveler. System for distributing gas under pressure. (Reissue)	11,284	Nov. 15	1981	526	61	1009
Hofbauer, Frank, assignor of two-thirds to O. Lever and W. S. Grundy, Philadelphia, Pa. Machine for forming and cutting fringe loops on edges of fabrics	486,253	Nov. 15	1748	452, 453	61	955
Hofe, Julius vom, Brooklyn, N. Y. Fishing-reel	488,408	Dec. 20	1935	495	61	1740
Hoffman, Alvan S. (See Chaffee, Hoffman, and Green.)						
Hoffman, Austin D., assignor to Hoffman Manufacturing Company, Minneapolis, Minn. Price-scale	487,272	Dec. 6	52	16	61	1332
Hoffman, Austin D., Minneapolis, Minn., assignor to Standard Syndicate, of Minnesota. Box-lid holder	487,566	Dec. 6	539	138	61	1428
Hoffman, Henry C., assignor of one-half to D. Hogan, Mound City, Ill. Gate-latch	484,752	Oct. 18	1904	485	61	411
Hoffman, John W., Chicago, Ill. Galvanic battery	484,096	Oct. 11	855	217	61	189

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Hoffman Manufacturing Company. (See Hoffman, Austin D., assignor.)						
Hoffman, William H., Brewster, N. Y. Attrition-mill	486,580	Nov. 22	2223	583	61	1068
Hoffman, William H., Brewster, N. Y. Bushing for attrition-mills	486,581	Nov. 22	2224	584	61	1068
Hoffmann, Francis H. (See Hoffmann, Hermann H. and F. H.)						
Hoffmann, Hermann H. and F. H., Chicago, Ill. Blank-book	487,014	Nov. 29	2967	764	61	1233
Hoffmann, Louis, *et al.* (See Kayser, William J., assignor.)						
Hofheimer, Maurice, New York, N. Y., assignor to Electrical Reflector Company, of New Jersey. Street-sign	484,097	Oct. 11	856	217	61	190
Hofmann, Johann, assignor to Mollenkamp & Binne, Cincinnati, Ohio. Washing-machine	486,468	Nov. 22	2053	544	61	1036
Hogan, Daniel. (See Hoffman, Henry C., assignor.)						
Hogate, Enoch G., *et al.* (See Cox, Jacob R., assignor.)						
Hogg, Alexander, Akron, Ohio. Fruit-picker	488,243	Dec. 20	1671	417	61	1688
Hohenshell, Walter B. (See Fuller and Hohenshell.)						
Holdam, James F., Crab Orchard, Ky. Gage-cock	484,316	Oct. 11	1212	308	61	259
Holden, Daniel L., New York, N. Y. Refrigerating apparatus	484,913	Oct. 25	2188	564	61	481
Holden, George R. (See Ross, James J., assignor.)						
Holden, Martha B., Chicago, Ill. Carpet-sweeper	488,562	Dec. 27	2190	541	61	1806
Holden, William H., Detroit, Mich. Bottle-corking machine	484,591	Oct. 18	1635	415	61	355
Holden, William H., Hamilton, Canada. Lamp-kettle	487,326	Dec. 6	147	42	61	1349
Holder, Alfredo R., Barcelona, Spain, assignor to Society Edoux et Cie., Paris, France. Elevator	486,161	Nov. 15	1577	418	61	928
Holding, Charles, Urbana, Ohio. Register and stop-motion mechanism therefor for weaving-machines	485,869	Nov. 8	1081	287	61	810
Holdship, George I., Allegheny, Pa. Apparatus for beading and curling sheet-metal vessels	487,529	Dec. 6	487	127, 128	61	1417
Holladay, William M., Houlka, Miss. Planter	486,971	Nov. 29	2900	749	61	1221
Holland, Curtis, Millis, Mass. Skate-sharpener	484,201	Oct. 11	1016	259	62	221
Holland, James M., assignor to Mount Pleasant Road Grader Company, Mount Pleasant, Iowa. Road-grader	484,428	Oct. 18	1358	355	61	305
Holland, James M., assignor to Mount Pleasant Road Grader Company, Mount Pleasant, Iowa. Road-scraper	484,429	Oct. 18	1390	355, 356	61	305
Holland, John, Cincinnati, Ohio. Fountain-pen	485,795	Nov. 8	971	260	61	788
Holland, William, South Bend, Ind., assignor of one-half to J. Zachnle. Pitch-gage for bevel-gears	486,042	Nov 8	1365	363	61	868
Hollands Manufacturing Company. (See Parnall, Alfred N., assignor.)						
Hollandt, Herman, Jersey City, N. J., assignor to Silver & Company, New York, N. Y. Pan cover	487,443	Dec. 6	359	93	61	1392
Hollerith, Herman, Washington, D. C. Keyboard-punch	487,737	Dec. 13	820	208, 209	61	1501
Hollingshead, William B., Bronxville, assignor of one-half to S. H. Carney, New York, N. Y. Compound sheet-metal plate	488,499	Dec. 20	2085	518	61	1771
Hollingsworth, Jeptha G., Kansas City, Mo. Forming dental crowns	488,008	Dec. 13	1269	316	61	1590
Hollis, George W. (See Buckner, James, assignor.)						
Hollister, Edgar J., Tecumseh, Mich. Vegetable-washer	486,180	Nov. 15	1600	424	61	932
Hollweg, Carl, Barmen, Germany. Clasping-buckle	485,544	Nov. 1	599	160	61	695
Holly, Peter B., *et al.* (See Seip, Thomas A., assignor.)						
Holly, Willis, Washington, D. C. Car-coupling	484,430	Oct. 18	1394	356	61	306
Holman, Daniel F., Chicago, Ill. Combined rail-brace and tie-plate	485,384	Nov. 1	364	98	61	647
Holmes, Britain. (See Holmes, Edward and B.)						
Holmes, Daniel M., Arlington, N. J., assignor to J. R. Van Derveer, New York. Machine for applying chocolate to cream-drops	485,326	Nov. 1	268	73	61	626
Holmes, Edward and B., Buffalo, N. Y. Gang edging-machine	484,431	Oct. 18	1396	357	61	307
Holmes Manufacturing Company. (See Carter, Henry and T. A., assignors.)						
Holmes Manufacturing Company. (See Lynch, George D., assignor.)						
Holmes, Waldo E. (See McFarlane, Robert, assignor.)						
Holmes, William S. (See Hall and Holmes.)						
Holt, Dudley T., Harrold, Tex. Combined measure and funnel	485,545	Nov. 1	600	160	61	696
Holt, Herbert L., Ellsworth, Me. Adjustable electric-light hanger	483,556	Oct. 4	59	15	61	14
Holt, Noah W., Manchester, Mich. Combined scalper, purifier, and grader	484,202	Oct. 11	1017	260, 261	61	221
Homan, William C., Meriden, assignor to Hendey Machine Company, Torrington, Conn. Tool-holder for lathes	484,317	Oct. 11	1213	308	61	259
Hombach, Peter W. (See McCann, Patrick, assignor.)						
Homes, Gustave A., St. Louis, Mo. Wagon-drag	488,812	Dec. 27	2754	639	61	1883
Honey-Brook Novelty Company. (See Climenson, William W., assignor.)						
Honigmann, Moritz, Grevenberg, near Aix-la-Chapelle, Germany. Apparatus for superheating vapors and gases	485,796	Nov. 8	972	260	61	789
Hood, Horace W., Nashua, N. H. Sash-fastener	488,358	Dec. 20	1860	496	61	1725
Hoogerzeil, Peter, Beverly, Mass. Wheelbarrow	486,469	Nov. 22	2054	541	61	1036
Hooker, John, Beccles, England. Machinery for setting up type	488,265	Dec. 20	1702	425, 426, 427, 428, 429, 430	61	1694
Hooper, George B., Stoughton, Mass. Boot or shoe	485,813	Nov. 8	992	266	61	793
Hooper, William H., Moscow, Idaho. Car-coupling	487,030	Nov. 29	2991	770	61	1237
Hooper, William J., Baltimore, Md. Machine for making nets	484,893	Oct. 25	2151	552, 553, 554	61	474
Hoopes Bro. & Darlington. (See Hoopes, Russell, assignor.)						
Hoopes, Russell, assignor of one-half to Hoopes Bro. & Darlington, West Chester, Pa. Machine for trimming wheel-rims	485,156	Oct. 25	2362	658	61	556
Hoops, Henry A. (See Mundt and Hoops.)						
Hope, John, Providence, R. I. Pantograph engraving-machine	486,210	Nov. 15	1642	435	61	940
Hopedale Machine Company (See Rhoades, Alonzo E., assignor.)						
Hopkins, Byron S. (See Goodell and Hopkins.)						
Hopkins, Edwin F., assignor to S. De Grow, Cleveland, Ohio. Thill-coupling	485,194	Nov. 1	62	19	61	585
Hopkins, Henry S., *et al.* (See Schiemer, Jacob, assignor.)						
Hopkins, Henry T., Cape Vincent, assignor of one-half to E. M. Parmelee, Dansville, N. Y. Grain-drier	487,738	Dec. 13	822	210	61	1501
Hopkins, Hiland E., assignor of one-half to W. W. Miles, Barton, Vt. Compound for tempering steel	488,433	Dec. 20	1979	.....	61	1748

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Hopkins, James D., Midway, Ky. Flue stopper	487,327	Dec. 6	148	42	61	1350
Hopkins, Nevil M., Washington, D. C. Burglar-alarm contact	483,844	Oct. 4	483	120	61	100
Hopkins, Samuel M., Frankfort, Kans. Windmill	484,795	Oct. 25	1987	507	61	441
Hopkins, Thomas A., Elgin, assignor to M. C. Eppenstein & Co., Chicago, Ill. Watchcase-pendant	485,581	Nov. 1	657	174	61	708
Hopkins, Thomas A., Elgin, assignor to M. C. Eppenstein & Co., Chicago, Ill. Pendant for watchcases	487,052	Nov. 29	3023	776	61	1244
Hopkins, William H., assignor to W. Thompson & Co., Chicago, Ill. Ice-cream freezer	486,779	Nov. 22	2544	664	61	1133
Hopper, George B., assignor to Fairbank Canning Company, Chicago, Ill. Machine for making sheet-metal cans	484,014	Oct. 11	746	187, 188	61	167
Hoppes, John J., Springfield, Ohio, assignor, by mesne assignments, to Thomson-Houston Electric Company, of Connecticut. Trolley-catcher	483,689	Oct. 4	250	62	61	52
Horgan, Dennis A., Boston, Mass. Trap for sinks, &c.	483,961	Oct. 4	659	166	61	137
Horn, Schooler C., Bladensburg, Ohio. Ironing-board	483,922	Oct. 4	598	152	61	124
Horn, Thomas. (See Garnett and Moore, assignors.)						
Horne, John H. (See Dillon, Peter, assignor.)						
Horne, John H., and C. E. Barrett, assignors to J. H. Horne & Sons Company, Lawrence, Mass. Paper-cutting machine	487,739	Dec. 13	824	210, 211	61	1501
Horne-Payne, Georgiana, London, England. Tray	486,780	Nov. 22	2545	665	61	1133
Horner, Elwood T., assignor of one-half to J. A. Spence, Cambridge City, Ind. Metal-shears	484,203	Oct. 11	1025	261	61	222
Horner, Elwood T., assignor of one-half to J. A. Spence, Cambridge City, Ind. Metal-rolling machine	484,368	Oct. 11	1287	328, 329	61	274
Horner, Elwood T., assignor of one-half to J. A. Spence, Cambridge City, Ind. Combined metal punching and shearing machine	484,369	Oct. 11	1289	329	61	275
Horner, Elwood T., assignor of one-half to J. A. Spence, Cambridge City, Ind. Metal-shears	484,370	Oct. 11	1290	329	61	275
Hornig, Julius L., St. Louis, Mo. Exhaust-head	485,195	Nov. 1	63	19	61	585
Hornig, Julius L., St. Louis, Mo. Smoke-consumer	486,781	Nov. 22	2546	665	61	1133
Hornsby, Richard O., *et al.* (See Whitley, Albert, assignor.)						
Horton, Charles H., Wellington, Ohio. Brick-truck	487,835	Dec. 13	982	247	61	1534
Hosford, William B., Mishawaka, Ind. Feed-water purifier	488,813	Dec. 27	2575	639	61	1883
Hosmer, Francis E., Boston, Mass. Steam-generator	484,716	Oct. 18	1438	467	61	396
Hotchkiss, Arthur E., Cheshire, Conn. Elevated railway	488,200	Dec. 20	1593	399	61	1673
Hotchkiss, Arthur E., Mount Holley, N. J. Vehicle	488,201	Dec. 20	1598	399	61	1675
Hotchkiss, Charles A., assignor of one-half to H. C. Ires, Bridgeport, Conn. Lamp-bracket for pianos	488,608	Dec. 27	2260	561	61	1821
Hottes, Charles, Dayton, Ohio. Shutter-worker	487,071	Nov. 29	3050	782	61	1250
Hough, Azel C., South Butler, N. Y. Cash-recorder	484,501	Oct. 18	1506	383	61	329
Hough, Azel C., South Butler, N. Y. Lock	486,107	Nov. 15	1491	392, 393	61	910
Houghton, Charles E., assignor of one-half to H. R. Johnson, Northumberland, Pa. Nail-machine	483,720	Oct. 4	290	72, 73	61	61
Houghton, Charles E., assignor of one-half to H. R. Johnson, Northumberland, Pa. Nail-machine	487,567	Dec. 6	541	139	61	1428
Houghton, Edward J., and W. White, London, England. Automatic regulator	488,121	Dec. 13	1460	368	61	1630
Houghton, Levi W., Bath, Me. Car-coupling	487,568	Dec. 6	542	140	61	1428
Houlbrook, Edward, Rossall, England. Tool-sharpener	487,328	Dec. 6	149	43	61	1350
Houlihan, John A., Rochester, N. Y. Violin-bow frog	485,038	Oct. 25	2391	614	61	520
House, John, assignor of two-thirds to I. V. Catlin, Chestertown, and J. Smith, Annapolis, Md. Portable safety-heater	485,008	Oct. 25	2342	603	61	511
House, Louis, Syracuse, N. Y. Horse-hitching device	488,475	Dec. 20	2042	508, 509	61	1762
Houseman, Harry A., assignor to Standard Machine Company, Philadelphia, Pa. Automatic circular-knitting machine	484,737	Oct. 18	1872	477, 478	61	403
Houseman, Harry A., assignor to Standard Machine Company, Philadelphia, Pa. Circular-knitting machine	484,738	Oct. 18	1877	478, 479, 480	61	404
Housh, Frank E., Boston, Mass. Toilet-paper slot-machine	488,500	Dec. 20	2086	518	61	1771
Houssser, Isaac W., Winnipeg, Canada. Pen-rack	488,009	Dec. 13	1271	316	61	1590
Houston, John B., San Francisco, Cal. Piston-rod packing	488,434	Dec. 20	1979	494	61	1748
Houston, John V., Linkville, Oreg. Scrap-book	485,937	Nov. 8	1195	316	61	834
Houze, W. P., *et al.* (See Wood, William T., assignor.)						
Hovendick, John E., near Blair, Nebr. Machine for distributing and reeling fence-wire	488,563	Dec. 27	2191	541	61	1806
Howard, Charles D., assignor to Howard Thermostat Company, Syracuse, N. Y. Automatic damper-regulator	488,895	Dec. 27	2700	609	61	1909
Howard, Frank H., Irvington, N. J. Apparatus for electroplating	484,535	Oct. 18	1560	397	61	339
Howard, Herbert R. (See Howard, James and H. R.)						
Howard, James and H. R., New York, N. Y. Car-brake	485,385	Nov. 1	365	98	61	647
Howard, John E., Altoona, Pa. Device for heating railway-cars by steam	488,202	Dec. 20	1601	399, 400	61	1675
Howard Manufacturing Company. (See De Graff, James W., assignor.)						
Howard, Rufus P., La Crosse, Wis. Seed-drill	488,072	Dec. 13	1391	345, 346	61	1616
Howard Thermostat Company. (See Howard, Charles D., assignor.)						
Howarth, Alfred. (See Meagher and Howarth.)						
Howarth, John T., Beaver Falls, Pa. Wire mat	488,335	Dec. 20	1824	456	61	1717
Howe, Daniel K., assignor of one-half to J. Gill, Portland, Oreg. Fishing-fly hook	485,582	Nov. 1	658	175	61	708
Howe, Edwin J., assignor of one-half to F. Conklin, Newark, N. J. Combined forceps and tractor	485,039	Oct. 25	2392	614	61	520
Howe, Eugene L., Cleveland, Ohio. Hame-tug	486,378	Nov. 15	1909	505	61	994
Howe, Eugene L., Cleveland, Ohio. Fifth-wheel	488,010	Dec. 13	1271	316	61	1591
Howe, George. (See Waters, Frank J., assignor.)						
Howe, John C., assignor to J. J. and J. M. Warren, Worcester, Mass. Air-gun	483,651	Oct. 4	197	49	61	41
Howell, George B., Philadelphia, Pa. Coupling for water-closets	484,318	Oct. 11	1215	308	61	259
Howell, George C., Alameda, Cal. Fruit-pitter	484,154	Oct. 11	948	243	61	207
Howell, John A., Washington, D. C. Torpedo-launching apparatus	484,058	Oct. 18	1759	447, 448	61	380
Howell, Richard, Troy Hills, N. J. Fire-escape	487,569	Dec. 6	543	140	61	1428
Howell, William B., Albany, Mo. Cattle-dehorner	483,557	Oct. 4	61	15	61	14
Howell, William H., assignor of one-half to A. Hansel, Thorold, Canada. Apparatus for making bisulphite of lime	487,887	Dec. 13	1070	268	61	1550
Howland, Austin T., *et al.* (See Ashley, William A. G., assignor.)						
Hoxie, Edmund, Everett, Mass. Ballot-box	488,203	Dec. 20	1602	400	61	1675
Hoy, John S., *et al.* (See Hendricks, Frank P., assignor.)						
Hoyt, Fred J., Chicago, Ill. Ore separator and amalgamator	484,933	Oct. 25	2227	574	61	488

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Hoz, Adolf, Lindau, Germany, assignor of one-half to A. Westermann, Hottingen, Switzerland, and J. Zervas, New York, N. Y. Colors for printing on textile fabrics	486,873	Nov. 29	2708	.....	61	1182
Hubbard, Arthur O., Robbinsdale, assignor to W. R. Sweatt, Minneapolis, Minn. Wheelbarrow	487,053	Nov. 29	3024	777	61	1245
Hubbard, Charles W., Jr., Pittsburg, Pa. Manufacture of axes	487,948	Dec. 13	1169	291	61	1569
Hubbard, Eber., Chicago, Ill. Molded pail from fibrous pulp	487,031	Nov. 29	2992	770	61	1238
Hubbard, Moses G., Philadelphia, Pa. Car-truck	487,273	Dec. 6	54	17	61	1332
Hubbard, Moses G., Chicago, Ill. Car-truck	487,740	Dec. 13	827	211	61	1502
Hubbell, Myron R., Wolcott, Vt. Reversible plow	486,530	Nov. 22	2139	564	61	1053
Hubbell, Thomas J., assignor of one-third to G. H. Smith, San Bernardino, Cal. Harrow and cultivator	484,739	Oct. 18	1883	480	61	406
Huber, John H., and G. M. Ervin, Johnstown, Pa. Nut-lock	484,204	Oct. 11	1026	261	61	223
Hübner, Paul, Milwaukee, Wis. Life-boat	484,592	Oct. 18	1637	415	61	355
Hudgins, George E., assignor of one-half to R. M. and W. S. Anderson, Charleston, S. C. Switch-stand	488,204	Dec. 20	1606	401	61	1676
Hudson, Charlie A., Schroon Lake, N. Y., assignor to Leach, Roaster & Baker Company. Broom-support	488,501	Dec. 20	2088	519	61	1771
Hudson, George E., Pittsburg, Pa. Apparatus for registering the number of words written on type-writers	488,521	Dec. 20	2128	527	61	1778
Huebner, Julius, Newark, N. J. Device for grinding button-blanks	487,741	Dec. 13	828	211 212	61	1502
Huffman, William C., and J. Le Favour, Albany, Ind. Trousers	484,015	Oct. 11	748	188	61	168
Huffman, Margaret J., Ashland, Pa. Sash-cord fastener	487,570	Dec. 6	544	140	61	1429
Hughes, James, Boston, Mass. Car-brake	488,676	Dec. 27	2375	588	61	1842
Hughes, James E., *et al.* (See Landon, William E., assignor.)						
Hughes, Robert. (See Knickerbacker and Hughes.)						
Hughson, Caleb S. (See Hulbert, Charles B., assignor.)						
Huizer, Samuel L., The Hague, Holland. Apparatus for drying coffee, &c	483,923	Oct. 4	599	152	61	124
Hulbert, Charles B., Ironia, assignor of one-half to C. S. Hughson, Randolph, N. J. Horseshoe with removable calks	484,740	Oct. 18	1884	480	61	407
Hulbert, Ralph D., assignor of one-half to F. B. Comstock, Indianapolis, Ind. Washing-machine	483,721	Oct. 4	293	73	61	61
Hulett, George H., Cleveland, Ohio. Hoisting and conveying apparatus	483,558	Oct. 4	62	15, 16	61	15
Hulett, George H., Cleveland, Ohio. Coal-storage conveyer	487,865	Dec. 13	1035	259	61	1544
Hulett, Joseph B., and L. J. Beers, Middletown, N. Y. Car-coupling	488,814	Dec. 27	2576	640	61	1883
Hulings, John D., Hulings, W. Va. Steam-boiler	483,805	Oct. 4	424	105	61	88
Hull, Abijah H., Odebolt, Iowa. Shutter-opener	484,098	Oct. 11	857	217 218	61	190
Hull, Abijah H., Odebolt, Iowa. Shutter-worker	486,108	Nov. 15	1493	393	61	910
Hull, Henry A., New Brunswick, N. J. Electric alarm	486,338	Nov. 15	1849	486	61	982
Hull, John W., Dublin, Ind. Collar for animals	485,630	Nov. 8	729	190	61	738
Hull, William S., Sheffield, Ala. Insulated rivet	483,806	Oct. 4	424	105	61	88
Hultgren, William H., assignor of one-half to Michigan Elevator and Engine Company, Detroit, Mich. Automatic stop-valve for hydraulic elevators	488,763	Dec. 27	2497	621	61	1867
Humbert, Cecil J., Philadelphia, Pa. Gem-setting	487,623	Dec. 6	623	159	61	1445
Hume, Robert D., Gold Beach, Oreg. Can-lacquering machine	487,571	Dec. 6	545	140	61	1429
Hume, Robert D., San Francisco, Cal. Can-body-forming machine	488,476	Dec. 20	2050	509	61	1763
Humphries, George S. N., Philadelphia, Pa. Slate-pencil sharpener	486,470	Nov. 22	2055	515	61	1036
Hunicke, Henry A., St. Louis, Mo. Smelting ores containing zinc	487,444	Dec. 6	360	94	61	1392
Hunn, Robert E., Vallejo, Cal. Tile	484,741	Oct. 18	1886	481	61	407
Hunsberger, Abram C., Portland, Pa. Game apparatus	486,471	Nov. 22	2056	515	61	1036
Hunt, Alonzo B. (See Reynolds, Frank, assignor.)						
Hunt, Charles B., London, England. Tension device for sewing-machines	485,546	Nov. 1	601	160	61	696
Hunt, Charles W., West New Brighton, N. Y. Driving mechanism for cars	484,914	Oct. 25	2189	564	61	481
Hunt, Edwin N. (See Hunt, John P., assignor.)						
Hunt, James H., Massillon, Ohio. Cover-plate for lamp-chimneys	487,624	Dec. 6	624	159	61	1445
Hunt, John P., assignor of one-half to E. N. Hunt, London, Canada. Nut or pipe wrench	487,742	Dec. 13	831	212	61	1503
Hunt, Jonathan A., Westborough, Mass. Velocipede-saddle	483,559	Oct. 4	63	16	61	15
Hunt, Thomas S., deceased, and J. Douglas, New York, N. Y.; J. Douglas, executor of said Hunt. Separating copper from cupriferous nickel ores	483,924	Oct. 4	601	.....	61	124
Hunter, David C., Chicago, Ill. Perspective gage	486,782	Nov. 22	2548	665	61	1134
Hunter, Gaylord S., Pawtucket, R. I. Ball-cock	487,671	Dec. 6	702	179	61	1460
Hunter, George E., Elgin, assignor to Elgin National Watch Company, Chicago, Ill. System for adjusting to temperature watch-balances and hair-springs	484,796	Oct. 25	1988	507 508 509 510	61	441
Hunter, George E., Elgin, assignor to Elgin National Watch Company, Chicago, Ill. Mechanism for timing and adjusting watch-balances and hair-springs	484,797	Oct. 25	1992	510 511 512 513	61	441
Hunter, John S. (See Smith, Walton D., assignor.)						
Hunter, Joseph, assignor, by mesne assignments, to W. F. Meader, J. E. Phillips, Chicago, Ill., A. Powell, and M. Sahlin, Curryoomb	488,923	Dec. 27	2755	680	61	1920
Hunter, Joseph H., Pittsburg, Pa. Apparatus for annealing wire or metallic rods by electricity	484,637	Oct. 18	1716	435	61	370
Hunter, Joseph H., Pittsburg, and J. S. Lucock, Allegheny, Pa. Apparatus for indicating the positions of railway-cars	484,205	Oct. 11	1027	261 262	61	221
Hunter, Robert, London, England, assignor, by mesne assignments, to Farrand & Votey Organ Company, Detroit, Mich. Organ	487,222	Nov. 29	3291	839 840	61	1296
Hunter, Robert G. (See Parker and Hunter.)						
Hunter, Rudolph M., Philadelphia, Pa. Apparatus for holding and sewing fabrics	488,969	Dec. 27	2827	698	61	1936
Hunter, Rudolph M., Philadelphia, Pa., assignor to E. M. Florence, New York, N. Y. Chair for theatrical or other purposes	485,277	Nov. 1	182	54	61	610
Hunter, Rudolph M., Philadelphia, assignor to Johnson Company, Johnstown, Pa. Girder-rail and manufacturing the same	486,211	Nov. 15	1643	435	61	940
Hunting, Eben B. (See Mahaffey, James B., assignor.)						
Huntington, Frank A., San Francisco, Cal. Ore-car	487,572	Dec. 6	546	141	61	1429
Huntington, George M. (See Anderson and Huntington.)						
Hupp, George N., Bourbon, assignor of one-half to T. B Lee and D. L. Dickinson, Plymouth, Ind. Ratchet-wrench	487,072	Nov. 29	3051	783	61	1250
Hurdle, John, Polo, Ill. Feed-trough	483,925	Oct. 4	603	152	61	124
Hurley, James H., assignor of one-half to W. J. Shea, Hartford, Conn. Lathe-tool	488,145	Dec. 13	1496	376	61	1637
Hurst, John C. F., Holton, Kans. Hog-trough	487,896	Dec. 13	983	247	61	1534
Husbands, Bernard A., assignor to Husbands & Werkheiser, Indianapolis, Ind. Baby-jumper	488,609	Dec. 27	2261	561	61	1821

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Husbands & Werkheiser. (See Husbands, Bernard A., assignor.)						
Huson, Cornelius W., Nevada City, Cal. Water-wheel	485,196	Nov. 1	65	19, 20	61	585
Huss Brothers Company. (See Huss, William C., assignor.)						
Huss, William C., assignor to Huss Brothers Company, Cincinnati, Ohio. Bottle and glass tray for counters	485,743	Nov. 8	909	244	61	776
Hussey, John E. A. (See Allen, Herbert B., assignor.)						
Hussey, Silvanus, Brant, N. Y. Ratchet-wrench	484,753	Oct. 18	1905	486	61	411
Hustis, Eda F., Milwaukee, Wis. Sewing-machine brake	485,631	Nov. 8	730	190	61	738
Huston, J. N. (See McIlwain, Henry C., assignor.)						
Huston, John B., assignor to himself, J. B. Parsons, E. P. Williams, Cleveland, Ohio, and S. B. Lamoreaux, Whiting, Ind. Removing sulphurous compounds from oils	486,406	Nov. 15	1956	519	61	1004
Hutchins, Carleton B., Detroit, Mich. Railway-car	484,593	Oct. 18	1638	415 416	61	356
Hutchins, Carleton B., Detroit, Mich. Freight-car	487,743	Dec. 13	832	212	61	1503
Hutchinson, Joseph, New York, N. Y. Lamp-socket and terminal therefor	488,205	Dec. 20	1607	401	61	1676
Huther, Angus E. (See Huther, Warren B., assignor.)						
Huther, Warren B., assignor of one-half to A. E. Huther, Rochester, N. Y. Cutting-head	486,874	Nov. 29	2709	706	61	1183
Hutton, Homer F., Ennis, Mont. Halter	485,278	Nov. 1	184	54	61	611
Huvelle, Hector, assignor of one-half to G. A. Tandy, Weatherford, Tex. Process of and apparatus for making essences	487,837	Dec. 13	984	248	61	1534
Huyette & Smith Manufacturing Company. (See Smith, Wright D., assignor.)						
Hyatt, John W., Newark, N. J. Playing-card	484,798	Oct. 25	1998	513	61	443
Hyatt, John W., Newark, N. J. Roller-box for shaft-hangers	485,938	Nov. 8	1196	316	61	834
Hyatt, John W., Newark, N. J. Spring-roll for roller-bearings	487,530	Dec. 6	488	128	61	1417
Hyde, Edward H., Lancaster, Wis. Game	484,432	Oct. 18	1398	357	61	307
Hyndman, Nathan P. (See Wilson, John R., assignor.)						
Ianson, Alfred J., Waverly, Wash. Tire setter and cooler	486,932	Nov. 29	2841	735	61	1209
Ibach, Gideon R., and J. H. Schultz, Brooklyn, N. Y. Attachment for lathes	488,815	Dec. 27	2578	640	61	1883
Ideal Manufacturing Company. (See Whittingham, David L., assignor.)						
Ilanor, Carl S. von, See Villa, near Attersee, Austria-Hungary. Device for locking spikes	485,939	Nov. 8	1198	316	61	834
Ilbery, William, assignor of one-half to F. Bressler, St. Louis, Mo. Vise	486,228	Nov. 15	1671	442	61	946
Iles, Malvern W., Denver, Colo. Device for catching and saving fumes from metallurgical furnaces	484,017	Oct. 11	750	188 189	61	168
Iles, Malvern W., Denver, Colo. Blast-furnace top	484,018	Oct. 11	752	189	61	168
Iles, Malvern W., Denver, Colo. Dumping-car	484,019	Oct. 11	754	190	61	169
Iles, Malvern W., Denver, Colo. Blast-furnace	484,020	Oct. 11	755	190	61	169
Iles, Malvern W., Denver, Colo. Recovering metals from copper alloys	484,021	Oct. 11	756	190	61	170
Iles, Malvern W., Denver, Colo. Screen for metallic fumes	485,797	Nov. 8	973	261	61	789
Iles, Malvern W., and D. Sheedy, Denver, Colo. Fume-arrester	484,016	Oct. 11	749	188	61	168
Ill, Edward J. (See Nenninger, Robert F., assignor.)						
Imlay, William L., Camden, N. J. Electric device for vibrating tables	486,715	Nov. 22	2440	636	61	1112
Imperial Manufacturing Company. (See Merwin and Stirckler, assignors.)						
Improved Zigzag Grate Bar Company. (See Boileau, Etienne, assignor.)						
Ince, William, Hayle, England. Dust-collector	484,717	Oct. 18	1839	467 468	61	396
Ingal, Joseph. (See Ingal, Robert and J.)						
Ingal, Robert and J., Chicago, Ill. Bracket	488,692	Dec. 27	2400	595	61	1847
Ingalls, Joseph A., Evanston, Wyo. Coal loader and distributer for box-cars	488,564	Dec. 27	2193	541 542	61	1806
Ingersoll Sergeant Drill Company. (See Saunders, William L., assignor.)						
Ingersoll-Sergeant Drill Company. (See Sergeant, Henry C., assignor.)						
Ingersoll, Simon, Glenbrook, Conn. Antifriction thrust-bearing	488,816	Dec. 27	2583	641	61	1884
Ingraham, Arthur J., *et al.* (See Grantland, John W., assignor.)						
Ingraham, Harry B., Worcester, Mass., assignor to C. C. Colby, London, England. Heel-nailing machine	486,288	Nov. 15	1776	467	61	968
International Ore Separating Company. (See Chase, Harvey S., assignor.)						
International Ore Separating Company. (See Lovett, Thomas J., assignor.)						
Ireland, Elias, Winters, Cal. Apparatus for bleaching fruit	485,940	Nov. 8	1198	317	61	834
Ireland, Lewis N., *et al.* (See Landon, William E., assignor.)						
Ires, Harry C. (See Hotchkiss, Charles A., assignor.)						
Isaacs, George, St. Louis, Mo. Brick-machine	484,319	Oct. 11	1216	309	61	259
Isaacs, Jacob L., St. Louis, Mo. Combined work-stand, desk, game-board, and table	484,718	Oct. 18	1841	468	61	397
Isachson, Norman, Marion, Idaho. Hay-carrier	483,845	Oct. 4	485	120	61	100
Isard, William R. (See Gutberlet and Isard.)						
Isbell, Charles W., New York, N. Y. Apparatus for generating gas	485,009	Oct. 25	2344	604	61	511
Isham, Arlington D. (See Svensson, Claes A., assignor.)						
Isherwood, Alfred, New Bedford, Mass. Loom-shuttle	486,109	Nov. 15	1495	393	61	911
Iske, Anthony, assignor to J. W. Miller, Lancaster, Pa. Door-bell	488,244	Dec. 20	1672	418	61	1688
Ivers & Pond Piano Company. (See Ivers, William H., assignor.)						
Ivers, William H., Dedham, assignor to Ivers & Pond Piano Company, Boston, Mass. Piano pedal	484,500	Oct. 18	1505	383	61	329
Iversen, Anton, Chicago, Ill. Lap-seam guide for sewing-machines	488,073	Dec. 13	1393	346	61	1617
Iwan, Henry and L., Streator, Ill. Rotary chimney-cowl	488,074	Dec. 13	1394	346	61	1617
Iwan, Louis. (See Iwan, Henry and L.)						
J. C. Lake & Son Company of Baltimore City. (See Lake, John C. and S., assignors.)						
J. H. Horne & Sons Company. (See Horne and Barrett, assignors.)						
J. I. Case Plow Works. (See Sobey, William, assignor.)						
J. R. Alsing Company. (See Abbé, Richard W. F., assignor.)						
J. W. Sefton Manufacturing Company. (See Burke, James E., assignor.)						
Jackson, Charles A., Reading, Mass. Electric motor for cars	487,329	Dec. 6	149	43	61	1350
Jackson, J. M., *et al.* (See St. John, James E., assignor.)						
Jackson, Jacob, Fort Howard, Wis. Stool for tables, counters, &c	484,719	Oct. 18	1844	469	61	397
Jackson, John, Lonsdale, R. I. Bottle-filling apparatus	485,942	Nov. 8	1201	317	61	835
Jackson, John H. (See Oakes and Jackson.)						
Jackson, John P., Liverpool, England. Machine for manufacturing and dispensing aerated water	485,386	Nov. 1	367	98	61	648
Jackson, Samuel R., Huntingdon Valley, Pa. Plow	485,941	Nov. 8	1200	317	61	835
Jackson, Thomas B., Shonstown, Pa. Attachment for breast-straps	484,433	Oct. 18	1402	357 358	61	308
Jackson, Wallace E., assignor to Patent Button Company, Waterbury, Conn. Button	483,674	Oct. 4	227	57	61	47
Jackson, William J., Philadelphia, Pa. Radiator	488,764	Dec. 27	2499	621	61	1867
Jacob, Alfred P., Brooklyn, N. Y. Self-lighting gas-burner	487,744	Dec. 13	833	212	61	1504
Jacobs, Jacob, Brooklyn, N. Y. Illuminating-tile	488,122	Dec. 13	1461	368	61	1630
Jacobs, Jacob, New York, N. Y. Illuminating-tile	488,435	Dec. 20	1981	494	61	1748

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Jacoba, William J., Bargersville, Ind. Fence	485,197	Nov. 1	66	20	61	586
Jacobson, John, Boston, Mass. Spectrum-colored stone or body	484,934	Oct. 25	2228	574	61	488
Jacques, William W., Newton, assignor to American Bell Telephone Company, Boston, Mass. Combined telegraphy and telephony	485,279	Nov. 1	186	54	61	641
Jaeger, Gustav L., New York, N. Y. Pulp-drainer	483,847	Oct. 4	489	121	61	101
Jaeger, Julius, Rutherford, N. J. Toy kitchen and stove	486,672	Nov. 22	2372	620	61	1098
Jaeger, Ludwig, *et al.* (See Rinderknecht, Charles J., assignor.)						
Jaekel, Ferdinand A., Memphis, Tenn. Coin-wrapper	486,716	Nov. 22	2441	636	61	1113
James, Andrew J., and J. Ferguson, Santa Cruz, Cal. Lazy-tong gate	486,531	Nov. 22	2140	565	61	1053
James, Christopher, Swansea, England. Reducing zinc	483,652	Oct. 4	200	.....	61	41
James, Christopher, Swansea, England. Smelting complex silver ores	483,962	Oct. 4	600	.....	61	137
James, David. (See James, John A. and D.)						
James, Frederick R., *et al.* (See Oldfield, Joseph, assignor.)						
James, John A. and D., Coffeyville, Kans. Grain-weigher	485,632	Nov. 8	731	191	61	738
James, William H., Denver, Colo. Method of and apparatus for treating the smoke and fumes of metallurgical furnaces	488,245	Dec. 20	1673	418	61	1688
James, William H., assignor to E. Howard Watch and Clock Company, Boston, Mass. Device for preventing accidental closing of electric circuits in signal-boxes	484,206	Oct. 11	1029	262	61	223
Jamison, Alcinous B., New York, N. Y. Sitz-bath	485,943	Nov. 8	1202	318	61	835
Janes, Malissa, *et al.* (See Nelson and Henett, assignors.)						
Janeway, John L., Phœnixville, and F. Logan, Corner Stores, Pa. Process of and apparatus for the manufacture of gas	483,981	Oct. 4	690	172, 173	61	143
Janzon, August, Chicago, Ill. Wash-stand	485,040	Oct. 25	2393	615	61	520
Japy, Henri, Beaucort, and O. Helmer, Paris, France. Electric-arc lamp	485,347	Nov. 1	306	81, 82	61	634
Jaqui, Frederick W., Jr., Cleveland, Ohio. Affixing manufactured asbestus	483,560	Oct. 4	66	.....	61	16
Jarrett, George L., Des Moines, Iowa. Flour-bolting reel	487,838	Dec. 13	986	248	61	1535
Jaynes, Alfonso L., St. Louis, Mo. Workman's time-recorder	483,629	Oct. 4	165	41, 42	61	35
Jean, George W. (See Payne, John R., assignor.)						
Jeanes, Elisha A., Laupasas, Tex. Crate	485,466	Nov. 1	488	129	61	671
Jefferson, Charles W., Schenectady, assignor to E. Munsell & Co., New York, N. Y. Molding mica forms for electrical insulators	483,653	Oct. 4	201	50	61	41
Jefferson, John, Columbus, assignor of one-half to H. Hill, Marion, Ohio. Meat-tenderer	487,672	Dec. 6	703	179	61	1450
Jeffreys, Lemuel A. (See Williams, Henry B., assignor.)						
Jellison, William H., Petrolia, Pa. Roofing-joint	484,320	Oct. 11	1217	310	61	259
Jenkins, Charles E., *et al.* (See Pitts, William W., assignor.)						
Jenkins, David, assignor to Jenkins Machine Company, Sheboygan, Wis. Mortising-machine	486,473	Nov. 22	2059	545, 546	61	1037
Jenkins, Edward W., Durbin, N. D. Thrashing-machine	487,274	Dec. 6	55	18	61	1333
Jenkins, Herbert L., *et al.* (See Rush, Ulysses S., assignor.)						
Jenkins, James, *et al.* (See Nugent, Richard C., assignor.)						
Jenkins, John J., Chicago, Ill. Puzzle	485,798	Nov. 8	973	261	61	789
Jenkins, Lancaster Z., Philadelphia, Pa. Ferrule for brushes	485,467	Nov. 1	489	130	61	672
Jenkins Machine Company. (See Jenkins, David, assignor.)						
Jenkins, Thomas, assignor to J. H. Rogers, Llanelly, England. Apparatus for cleaning tin and terne plates	485,387	Nov. 1	370	99	61	648
Jenks, Llywellynn H., New York, N. Y. Valve	487,673	Dec. 6	704	179	61	1461
Jenks, Sumner W., Dayton, Ohio. Bench-stop	486,472	Nov. 22	2057	545	61	1037
Jenne, Karl F., *et al.* (See Richter, Ernst, assignor.)						
Jennings, Charles C., Chicago, Ill., assignor to C. H. Thompson and G. A. Sheley, Detroit, Mich. Telephone system	488,502	Dec. 20	2088	519	61	1571
Jennings, Stephen A., assignor to A. S. Kirk, Evanston, Ill. Car construction	485,198	Nov. 1	67	20, 21, 22	61	586
Jensen, Peter E., Blair, Nebr. Double suspended sliding gate	483,614	Oct. 4	146	36	61	31
Jenson, James B., Sandy, Utah Ter. Folding seat	487,876	Dec. 13	1056	264	61	1547
Jerome, Charles C., Chicago, Ill. Toe-weight	484,022	Oct. 11	756	191	61	170
Jeschke, Wladyslaus, Brooklyn, N. Y. Paper or music file	486,875	Nov. 29	2711	707	61	1183
Jessup, Anna V. (See Wilson, Charles C., assignor.)						
Jewell, Herbert S., Brooklyn, N. Y. Apparatus for steaming grain	484,099	Oct. 11	858	218	61	190
Jewell, Major R. (See Mosher and Jewell.)						
Jewett, Nathan, Chicago, Ill. Soap cake	488,393	Dec. 20	1915	479	61	1735
Jewett, Stanley A., Cleveland, Ohio. Piano-action	483,561	Oct. 4	68	17	61	16
Jobe, Warren, Sr., Hawkins, Tex. Plank fence	487,573	Dec. 6	547	141	61	1430
Jobson, John B., Macon, Ga. Cannon-pinion	486,933	Nov. 29	2841	736	61	1209
Johanson, Emil, assignor of one-half to R. H. Nabring, Miami Station, Mo. Nut-lock	484,894	Oct. 25	2157	554	61	474
John A. Roebling's Sons Company. (See Perrin, Frederic A. C., assignor.)						
John M. Waddell Manufacturing Company. (See Thompson, Ralph P., assignor.)						
Johns-Pratt Company. (See Lee, Charles T., assignor.)						
Johnson, Archibald, *et al.* (See Brand, Henry, assignor.)						
Johnson, Arthur H. (See Johnson, Henry and A. H.)						
Johnson, Benjamin F., McComb, Miss. Safety-cage for cars	487,746	Dec. 13	837	213	61	1504
Johnson, Charles F., assignor of one-half to H. M. Soule, Boston, Mass. Vaporizer	488,790	Dec. 27	2542	631	61	1875
Johnson, Christ, and N. Olander, Wausau, Wis. Car-coupling	485,042	Oct. 25	2395	615	61	521
Johnson, Claude M., Lexington, Ky. Shoe-lace fastener	483,764	Oct. 4	362	91	61	76
Johnson Company. (See Hunter, Rudolph M., assignor.)						
Johnson, Edward H. (See Lundell, Robert, assignor.)						
Johnson, Franklin C. (See Toucey, Ferris D., assignor.)						
Johnson, Ferdinand, New London, Pa. Hydraulic motor	485,412	Nov. 1	410	110	61	656
Johnson, Harry T., New York, N. Y. Galvanic battery	483,654	Oct. 4	202	50	61	42
Johnson, Harry T., New York, N. Y. Galvanic battery	487,839	Dec. 13	968	248	61	1535
Johnson, Henry and A. H., Rahway, N. J. Interlocking apparatus for railway switches and signals	485,799	Nov. 8	974	261, 262	61	789
Johnson, Hiram S., Canaan Four Corners, assignor of one-half to M. L. Bates, Canaan, N. Y. Lock-valve faucet	487,674	Dec. 6	704	180	61	1461
Johnson, Horace R. (See Houghton, Charles E., assignor.)						
Johnson, John H., Dodgeville, Wis. Electric belt	487,185	Nov. 29	3232	827	61	1286
Johnson, John H., and J. Moran, Orange, Tex. Furnace	485,762	Nov. 8	933	250	61	781
Johnson, John L., assignor to Edward Miller & Company, Meriden, Conn. Suspending device	483,615	Oct. 4	148	36	61	31
Johnson, Ozro P., Detroit, Mich. Chamber	487,747	Dec. 13	838	213	61	1505
Johnson, Paul J. (See Hamill and Johnson.)						
Johnson, Samuel A., London, England. Self-extinguishing hydrocarbon-lamp	485,041	Oct. 25	2393	615	61	521
Johnson, Samuel A., London, England. Lamp for burning hydrocarbon or other oils	487,147	Nov. 29	3176	814	61	1275
Johnson, Thomas O. (See Baird and Johnson.)						
Johnson, William B., assignor of one-half to J. S. Yates, Peoria, Tex. Tongue-support	484,856	Oct. 25	2090	538	61	461

Alphabetical list of patentees, October to December, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Johnson, William E., New York, N. Y. Centrifugal extractor	486,876	Nov. 29	2711	707	61	1183
Johnston, Allen, Ottumwa, Iowa. Grinding cutlery or other tempered steel articles	485,697	Nov. 8	831	223	61	759
Johnston, Frank, L., and W. C. Fletcher, St. Louis, Mo. Speed-indicator	487,275	Dec. 6	58	18, 19	61	1333
Johnston, George. (See Johnston, James and G.)						
Johnston, James, Peter Culter, and G. Johnston, Denny, Scotland. Treating fibrous material for making pulp	486,339	Nov. 15	1851	487	61	983
Johnston, John S., Chicago, Ill. Reversible car-seat	484,434	Oct. 18	1403	358	61	308
Johnston, Micajah, assignor of one-half to L. W. Savage, Evergreen, Ala. Animal-trap	484,799	Oct. 25	1999	513	61	443
Johnston, Oliver P., and C. M. Gates, Butte City, Mont. Letter-box	487,574	Dec. 6	548	141	61	1430
Johnston, Robert. (See Peifer and Johnston.)						
Johnston, William A., and A. W. Browne, Prince's Bay, N. Y., assignors to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Dentist's chair	483,807	Oct 4	426	105	61	88
Johnston, William C., Melrose, Mass. Spring-motor	487,745	Dec. 13	835	213	61	1504
Jolitz, Charles F., Caroline, assignor of one-half to A. Menting, Phlox, Wis. Insect-trap	488,394	Dec. 20	1916	479	61	1735
Jones, Alfred. (See Ridsdale and Jones.)						
Jones, Charles S. (See Perkins and Jones.)						
Jones, Charles W., St. Paul, Minn. Dental instrument	485,010	Oct. 25	2346	604	61	511
Jones, David A., assignor to J. A. Jones, Beeton, and A. N. Macdonald, Toronto, Canada. Means for clearing apartments of flies, &c	486,044	Nov. 8	1367	363	61	869
Jones, Francis W., New York, N. Y. Electrical circuit for telegraph apparatus	488,940	Dec. 27	2781	686	61	1925
Jones, Griffith W., Reading, Pa. Rolling-mill	483,926	Oct. 4	603	153	61	124
Jones, Harry, Ypsilanti, Mich. Force-feed oiler	483,690	Oct. 4	252	62, 63	61	53
Jones, James E., Kankakee, Ill. Lawn-weeder	488,817	Dec. 27	2583	641	61	1884
Jones, Jessie A., *et al.* (See Jones, David A., assignor.)						
Jones, John, Wilkes-Barré, Pa. Steam-blower	486,162	Nov. 15	1578	418	61	928
Jones, John R., Minneapolis, Minn., assignor to Russ Jones Desk Company. Roll-top desk	486,474	Nov. 22	2063	546, 547	61	1038
Jones, John T., Toronto, Canada. Car-coupling	483,848	Oct. 4	490	122	61	101
Jones, Laban E., Chicago, Ill. Cloth-cutting machine	486,532	Nov. 22	2140	565	61	1054
Jones, Lewis L., Brooklyn, N. Y. Electrode and incandescent electrical conductor	484,563	Oct. 18	1585	402	61	345
Jones, Nathaniel M. (See Curtis and Jones.)						
Jones, Nelson A. (See Ferries, Edward, assignor.)						
Jones, Otis, Senois, and H. P. Ashley, assignors of fifteen thirty-seconds to J. P. Woodson, R. M. Farrar, R. L. Sibley, G. A. Cabannis, and W. G. Paschall, Atlanta, Ga. Steam-generator	488,970	Dec. 27	2830	698	61	1937
Jones, Rees, Kaufman, Tex. Grapple	485,944	Nov. 8	1204	318	61	836
Jones, Samuel M., Springfield, Mass. Fruit or vegetable slicer	484,155	Oct. 11	949	243, 244	61	208
Jones, Sylvanus H., assignor of one-half to B. F. Maul, Denver, Colo. Butter-mold	486,043	Nov. 8	1366	363	61	869
Jones, William, assignor of one-half to M. E. Barron, St. Louis, Mo. Sleeve-holder	488,522	Dec. 20	2129	527	61	1778
Jones, William G., *et al.* (See Arthur, William, assignor.)						
Jonson, Lars, Escanaba, Mich. Lock for firearms	485,043	Oct. 25	2396	616	61	521
Jönsson, Johan L., assignor to Aktiebolaget Separator, Stockholm, Sweden. Apparatus for heating and cooling milk	486,642	Nov. 22	2325	608, 609	61	1089
Joosten, Christian H., New York, N. Y. Insect-powder distributer	487,122	Nov. 29	3137	804	61	1268
Jordan, Arthur C., Emporia, Va. Trunk-tray	486,475	Nov. 22	2064	547	61	1039
Jordan, Frank, New York, N. Y. Stopper-lock for bottles	487,748	Dec. 13	839	214	61	1505
Jordan, John R., assignor to Jordan Multiplex Table Manufacturing Company, Baltimore, Md. Table	484,965	Oct. 25	2270	585	61	497
Jordan, Llewellyn E., Bellevue, assignor of one-half to C. Wells, Allegheny, Pa. Shaking-grate	486,045	Nov. 8	1368	364	61	869
Jordan Multiplex Table Manufacturing Company. (See Jordan, John R., assignor.)						
Jordan, Robert H., Jefferson, Pa. Sled-shoe	488,266	Dec. 20	1709	430	61	1695
Judd, Charles D., Bridgeport, Conn. Adding-pencil	488,206	Dec. 20	1699	401	61	1677
Judd, Edward A., assignor to Corbin Cabinet Lock Company, New Britain, Conn. Padlock	484,895	Oct. 25	2158	555	61	475
Judge, Arthur J., St. Louis, Mo. Wall, floor, or roof of buildings	483,927	Oct. 4	605	153	61	125
Judkins, Arthur G. (See McCart and Judkins.)						
Judkins, Edward S., East Providence, R. I. Cutter-head	487,015	Nov. 29	2969	765	61	1233
Judson L. Thomson Manufacturing Company. (See Unbehend, Jacob J., assignor.)						
Justice, William M., Pittsburg, Pa. Cycle-stand	488,395	Dec. 20	1917	480	61	1736
Jüterbock, Gustav, Berlin, Germany. Amalgam for dentists' use	485,280	Nov. 1	188	.....	61	611
Kafka, L. (See Griffin, Charles H., assignor.)						
Kahn, Herman, *et al.* (See Besthoff, Samuel J., assignor.)						
Kaiser, August, assignor to Eagle Pencil Company, New York, N. Y. Lead-pencil	488,818	Dec. 27	2584	641	61	1885
Kaiser, Joseph A., St. Louis, Mo. Butter-cutter	484,023	Oct. 11	758	191	61	170
Kaiser, Pieter J., Leyden, Noorderlende, Netherlands. Compass	487,330	Dec. 6	151	44	61	1350
Kales, John W., Franklinville, N. Y. Sash-holder	486,340	Nov. 15	1852	487	61	983
Kales, John W., Franklinville, N. Y. Physician's table	487,625	Dec. 6	624	160, 161	61	1445
Kallbreier, Charles H., Tell City, Ind. Road-cart	485,413	Nov. 1	412	110	61	656
Kane, Albert, Buffalo, N. Y. Vise	488,315	Dec. 20	1785	449	61	1709
Kane, Frank H., Riverside, Ohio. Barrel-head machine	488,167	D c. 13	1542	386, 387	61	1646
Kane, John, Philadelphia, Pa. Automatic sprinkler	484,321	Oct. 11	1218	310	61	260
Kane, Maurice, Chicago, Ill. Harvester-elevator	487,223	Nov. 29	3203	840	61	1297
Kane, William E., Syracuse, assignor of one-half to W. F. Morris, Baldwinsville, N. Y. Hub-boring machine	486,407	Nov. 15	1957	519, 520	61	1004
Karfiol, Benzion, assignor, by mesne assignments, to Karfiol Lace Paper Company, New York, N. Y. Machine for the manufacture of lace-paper	484,966	Oct. 25	2271	586	61	497
Karfiol Lace Paper Company. (See Karfiol, Benzion, assignor.)						
Karr, James K., La Crosse, Wis. Grain-carrier	486,717	Nov. 22	2442	636	61	1113
Kasmirsky, Ollie, *et al.* (See Loree, Manfred U., assignor.)						
Kastenhuber, William P., P. H. Wnagueux, and R. I. States, Jersey City, N. J. Perforator for printing-presses	485,547	Nov. 1	602	160	61	696
Kaufman, Charles, New York, N. Y. Cloth-cutting machine	487,840	Dec. 13	989	248, 249, 250	61	1535
Kaul, Carl F., Madison, Nebr. Continuous brick-kiln	486,972	Nov. 29	2901	749	61	1221
Kayser, William J., assignor to L. Hoffmann, and W. Baur, Milwaukee, Wis. Chimney-cowl	486,830	Nov. 22	2633	687	61	1152
Kea, Zachariah R., Shongaloo, La. Plow	487,749	Dec. 13	840	214	61	1505
Keane Novelty Company. (See Smith, Frank H., assignor.)						
Keany, James B. (See Thurell, John, assignor.)						
Keasey, Enos A., F. S., and H. G., Ligonier, Ind. Road-cart	485,763	Nov. 8	935	250	61	781

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Keasey, Fred S. (See Keasey, Enos A., F. S., and H. G.)						
Keasey, Harry G. (See Keasey, Enos A., F. S., and H. G.)						
Keating, Cecil A., Dallas, Tex. Method of and apparatus for recording the location and character of business	486,192	Nov. 15	1614	428	61	935
Keating, Henry S., London, England. Electrical safety cut-out	488,123	Dec. 13	1462	369	61	1631
Keating, Robert M., Springfield, Mass. Cushion-tire and rim therefor	485,633	Nov. 8	732	191	61	738
Keeler, Howard L., Mount Holly, N. J. Moistening-pad	486,783	Nov. 22	2550	665	61	1134
Keeler, William E., assignor to himself, and C. F. Grau, Beaver Falls, Pa. Making shovels	488,503	Dec. 20	2092	519	61	1772
Keen, Charles J. (See Ryland, Marion W., assignor.)						
Keen Manufacturing Company. (See Whelpley, James A., assignor.)						
Keen, Maria L. H., Chicago, Ill. Trunk	486,254	Nov. 15	1721	453, 454	61	956
Keenan, George J., Buffalo, N. Y. Molder's flask	485,764	Nov. 8	936	250	61	781
Keenan, James, Chicago, Ill. Furnace	487,675	Dec. 6	708	180	61	1461
Keene, George A., Lynn, assignor of one-half to E. R. Golder, Swampscott, and W. C. Stilphen, Lynn, Mass. Bath-tub seat	488,011	Dec. 13	1272	317	61	1591
Keidel, Charles, Jr., assignor to Wm. Knabe & Co. Manufacturing Company, Baltimore, Md. Upright piano or organ	485,414	Nov. 1	413	111	61	656
Keil, Henry F., New York, N. Y. Puzzle	488,819	Dec. 27	2584	641, 642	61	1885
Keiper, John F., Denver, Colo. Slag-separator	484,659	Oct. 18	1764	448	61	381
Keith, Thomas K. (See Gooding and Keith.)						
Keith, Thomas K., Boston, Mass. Sewing-machine for lasting boots or shoes	488,523	Dec. 20	2130	527	61	1778
Keith, Thomas K., Boston, assignor to C. F. Brown, trustee, Reading, Mass. Sewing-machine for lasting boots or shoes	488,279	Dec. 20	1728	435, 436	61	1699
Kellam, Julius W., assignor to M. E. Kellam, Brooklyn, N. Y. Adjustable flange-wrench	487,331	Dec. 6	152	44	61	1351
Kellam, Minnie E. (See Kellam, Julius W., assignor.)						
Keller, Constantine. (See Keller, Henry and C.)						
Keller, Heinrich, Zurich, Switzerland. Regulator	487,392	Dec. 6	251	67, 68	61	1370
Keller, Henry and C., New York, N. Y. Piano-action	487,483	Dec. 6	414	107	61	1403
Keller, Henry and C., New York, N. Y. Center-pin fastening for piano-actions	487,484	Dec. 6	416	107	61	1403
Keller, Henry H. (See Ross and Keller.)						
Keller, Moses A., Batavia, N. Y. Automatic shell-ejector for breech-loading guns	488,316	Dec. 20	1786	449, 450	61	1710
Keller, Theodore, Trim Belle, Wis., assignor of one-half to V. Reeves, Minneapolis, Minn. Draft-equalizer	484,371	Oct. 11	1292	330	61	275
Kelley, Harry E., Niagara Falls, N. Y. Making harness check-hooks	488,677	Dec. 27	2377	589	61	1843
Kelley, Harry H., Willoughby, Ohio. Car-brake	486,718	Nov. 22	2443	637	61	1113
Kelley, John W., St. Louis, Mo. Water-heater	484,322	Oct. 11	1219	310, 311	61	260
Kelley, Thomas J., Avenue City, Mo. Portable hay or grain shed	487,927	Dec. 13	1138	284	61	1563
Kelliher, Alfred T., Bethel, Me. Track for log-carriers	484,436	Oct. 18	1406	358, 359	61	309
Kelliher, Alfred T., Bethel, Me. Elevated carrier	487,485	Dec. 6	417	107, 108	61	1403
Kelliher, Alfred T., Bethel, Me. Elevated carrier	488,765	Dec. 27	2500	622	61	1867
Kellogg, Edwin M., Chicago, Ill. Grain-binder	485,157	Oct. 25	2564	658, 659	61	556
Kellogg, James M., Bozeman, Mont. Hay-sling	487,575	Dec. 6	549	141, 142	61	1430
Kelly, George B., Boston, Mass. Reed-organ	488,820	Dec. 27	2587	642	61	1885
Kelly, John F. (See Stanley and Kelly.)						
Kelman, John H. (See Stanley and Kelman.)						
Kelsey, Charles D., Des Moines, Iowa. Sash-holder	486,476	Nov. 22	2065	547	61	1039
Kelsey, David B., St. Louis, Mo. Car-coupling	487,148	Nov. 29	3177	814	61	1275
Kelso, Robert G., Cleveland, Ohio. Eaves-trough fastener	488,075	Dec. 13	1395	347	61	1617
Kelting, Ernst P. H., Oldeslohe, Germany. Heating apparatus	485,388	Nov. 1	372	100	61	649
Kemp, George W. (See Forbes and Kemp.)						
Kempe, Arnold H., Oakland, Cal. Bicycle	484,857	Oct. 25	2091	538	61	461
Kemper, Alfred C. (See Esmond, William V., assignor.)						
Kemper, Granville G. (See Nevel, William A., assignor.)						
Kempster, Daniel E., Boston, Mass. Steam-actuated valve	485,945	Nov. 8	1205	318, 319	61	836
Kempter Ernest W. (See Rochford and Kempter.)						
Kendall, Isaac N. and J. O., Vancouver, Canada. Removable saw-tooth	488,336	Dec. 20	1825	456	61	1717
Kendall, James O. (See Kendall, Isaac N. and J. O.)						
Kenderdine, Theodore. (See Furnas and Kenderdine.)						
Kennedy, Henry C., Philadelphia, Pa. Lady's handkerchief-holder	486,613	Nov. 22	2374	621	61	1099
Kennedy, Julian, Pittsburg, Pa. Crane	484,437	Oct. 18	1407	359	61	309
Kennedy, Julian, Pittsburg, Pa. Blast-furnace	486,110	Nov. 15	1496	394	61	911
Kennedy, Rufus L. (See Hadley, Joshua A., assignor.)						
Kenney, Owen E., and F. D. Cable, assignors to Toledo Bicycle Company, Toledo, Ohio. Bicycle	485,583	Nov. 1	658	175	61	709
Kenney, Thomas M., Cambridge, Mass., assignor to C. S. and B. F. Conner, New York, N. Y. Type-finishing machine	484,915	Oct. 25	2191	564, 565	61	482
Kent, Arthur B., *et al.* (See Besson, Hyppolite, assignor.)						
Kent, Ernest W., *et al.* (See Besson, Hyppolite, assignor.)						
Kent, George H., *et al.* (See Besson, Hyppolite, assignor.)						
Kent, George H., Cambridge, Mass. Cover for manuscripts	485,814	Nov. 8	993	266	61	793
Kenworthy, Edward N., Oldham, England. Combined curtain-stretcher and clothes-horse	484,660	Oct. 18	1765	449	61	382
Kenyon, Louis A., Fairwater, Wis. Metallic railway-tie and fastening	487,016	Nov. 29	2969	765	61	1233
Kenyon, William D., Omaha, Nebr. Seal for bags	485,415	Nov. 1	414	111	61	657
Keogh, John M., assignor of one-half to B. G. Segog, Duluth, Minn. Car-coupling	485,500	Nov. 1	533	141	61	681
Kerfoot, William A., Des Moines, Iowa. Device for artificially feeding young animals	486,163	Nov. 15	1579	418	61	928
Kern, Albert L., York, assignor of one-half to Keystone Wagon Company, Reading, Pa. Machine for forging vehicle-clips	486,784	Nov. 22	2552	666	61	1134
Kern, Frank P., Missoula, Mont. Pruning implement	483,928	Oct. 4	605	153	61	125
Kern, Ludwig, Hamburg, Germany. Production of adhesives	487,928	Dec. 13	1139	294	61	1563
Kerr, Benjamin, and I. L. Berridge, Leicester, England. Circular-knitting machine	483,616	Oct. 4	150	37	61	31
Kerr, Smith P., *et al.* (See Bromley, Daniel W., assignor.)						
Kersenbrock, John H., Columbus, Nebr. Apparatus for bottling beer	484,024	Oct. 11	759	191, 192	61	170
Kersenbrock, John H., Columbus, Nebr. Beer apparatus	484,025	Oct. 11	761	192	61	171
Kershaw, Charles S., Rome, N. Y. Separable link	487,841	Dec. 13	996	251	61	1536

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Kessler, John C., Milwaukee, Wis. Furnace for burning garbage	488,168	Dec. 13	1544	387	61	1646
Kessler, John C., Milwaukee, Wis. Garbage-crematory	488,169	Dec. 13	1546	388	61	1647
Ketchum, David W., Evanston, Ill. Package for bleaching and packing rosin	487,091	Nov. 29	3066	792	61	1258
Ketchum, Frank S., New York, N. Y. Duplex syringe	485,698	Nov. 8	832	224	61	760
Keyless Lock Company. (See Craig, James D., assignor.)						
Keystone Wagon Company. (See Kern, Albert L., assignor.)						
Kibele, Cuno, Bluffton, Ind. Hatch-door	486,341	Nov. 15	1853	487	61	983
Kidder, Claude, Carlton, Minn. Machine for measuring and registering the measurement of lumber	485,946	Nov. 8	1210	319, 320	61	836
Kiefer, Karl, Cincinnati, Ohio. Barrel-filler	487,531	Dec. 6	490	129	61	1418
Kiefer, Karl, Cincinnati, Ohio. Faucet	487,866	Dec. 13	1036	259	61	1544
Kiehl, Hermann, Halle-on-the-Saale, Germany, assignor to J. Meyerfeld, San Francisco, Cal. Manual cash-recorder	484,742	Oct. 18	1887	481	61	407
Kilburn, Lucien M., Council Bluffs, Iowa, and S. Van Etten, Omaha, Nebr. Electric gas-lighter	488,012	Dec. 13	1273	317	61	1591
Kilgore, John S., Salida, Colo. Folding seat	488,436	Dec. 20	1982	495	61	1748
Killinger, John, Wayne, Pa. Garment-hook	485,389	Nov. 1	373	100	61	649
Kilpatrick, Charles H. (See Cline and Kilpatrick.)						
Kimball, Charles F., Chicago, Ill. Vehicle-pole socket	485,947	Nov. 8	1213	320	61	837
Kimball, David F. (See Collett, Austin B., assignor.)						
Kimball, Stephen H., Everett, Mass. Wheel	487,017	Nov. 29	2971	765	61	1234
Kimball, Stephen H., Everett, Mass. Bicycle	487,018	Nov. 29	2973	765, 766	61	1234
Kimberly, Peter L., Sharon, Pa. Rolling-mill	483,929	Oct. 4	606	154	61	125
Kimbrell, William P., Beaver City, Nebr. Windmill	487,750	Dec. 13	841	214, 215	61	1506
Kimerly, William L., Grand Rapids, Mich. Combined folding bed and dressing-case	484,765	Oct. 18	1928	491	61	417
Kincaid, Charles T., Decatur, Ill. Car-coupling	487,751	Dec. 13	844	215	61	1506
King, Chauncy P. (See Leggett, Walter I., assignor.)						
King, Edward C. (See Smith, George W., assignor.)						
King, Eustachius, and C. L. Tuch, Philadelphia, Pa. Car-coupling	486,342	Nov. 15	1854	488	61	983
King, Ferdinand, New York, N. Y. Counter and pencil-holder	488,736	Dec. 27	2460	611	61	1859
King, Frederick J., London, England. Apparatus for making metal boxes	487,186	Nov. 29	3233	828	61	1286
King, George W., Helena, Mont. Fracture apparatus	488,631	Dec. 27	2298	568, 569	61	1827
King, Justus W., Helena, Mont. Lace-fastener	484,661	Oct. 18	1767	449	61	382
King, Lincoln, New York, N. Y. Safety-hook	486,181	Nov. 15	1601	425	61	932
King, Lincoln, New York, N. Y. Indicator-lock	487,276	Dec. 6	61	19	61	1334
King, Phineas F. (See Beaudry and King.)						
King, Richard T., Appleton City, Mo. Washing-machine	485,785	Nov. 8	937	251	61	781
King, Samuel R., Cambridge, Mass. Bottle-washer	487,842	Dec. 13	997	251	61	1537
King, William E., Newark, N. J. Hame-tug	486,379	Nov. 15	1910	505	61	995
Kingsbury, William G., *et al.* (See Vogt, August G., assignor.)						
Kinipple, Walter R., London, England. Apparatus for carrying ships, &c., upon railways	485,044	Oct. 25	2399	616, 617	61	522
Kinney, Amos P., assignor to American Steam Gauge Company, Boston, Mass. Safety-valve	485,699	Nov. 8	833	224	61	760
Kinsman, Frank E., Plainfield, N. J. Insulating-chair for rails	486,477	Nov. 22	2065	547	61	1039
Kinsman, Frank E., Plainfield, N. J. Contact-rail	487,752	Dec. 13	845	215	61	1506
Kinsman, James W., San Francisco, Cal. Swinging crane	488,076	Dec. 13	1396	347	61	1617
Kinsman, Thomas H., Omaha, Nebr. Bread-board	488,712	Dec. 27	2426	601	61	1852
Kinzel, John C., Knoxville, Tenn. Drying and burning brick	485,199	Nov. 1	71	22	61	587
Kipp, A. B. (See Morris, George W., assignor.)						
Kipp, Abraham, Jr., Sing Sing, N. Y. Clutch	488,821	Dec. 27	2589	642	61	1885
Kirby, John, Jr., assignor to Dayton Manufacturing Company, Dayton, Ohio. Lamp	484,323	Oct. 11	1220	311, 312	61	260
Kirchhoff, Adolf, Long Island City, N. Y. Flexible ladder	487,393	Dec. 6	252	68	61	1371
Kirchner, Henry W., Denver, Colo. Elevated railway	485,700	Nov. 8	834	224	61	760
Kirk, Arthur S. (See Jennings, Stephen A., assignor.)						
Kirk, Edward, Jr., Chicago, Ill. Deflector for radiators	484,638	Oct. 18	1718	435	61	371
Kirkegaard, Georg, Brooklyn, N. Y. Electric-arc lamp	485,744	Nov. 8	910	244	61	776
Kirker, James M., and F. M. Bender, Louisville, Ky. Fire appliance	487,418	Dec. 6	310	80	61	1383
Kirkham, Thomas C., Highland Creek, Canada. Vending-machine	488,610	Dec. 27	2263	561	61	1821
Kirkpatrick, George W., Macedon, N. Y. Grain-drill	486,343	Nov. 15	1856	488	61	983
Kirkpatrick, George W., Macedon, N. Y., and J. B. Ralston, Vernon, Tex.; said Ralston assignor to H. M. Kirkpatrick, Macedon, N. Y. Seeding-machine	485,948	Nov. 8	1214	320	61	837
Kirkpatrick, Helen M. (See Kirkpatrick and Ralston, assignors.)						
Kirkacey, Cicero L., and F. P. Bowden, Dover, Ark. Drag-sawing machine	483,630	Oct. 4	168	42	61	35
Kirsch, Francis, East St. Louis, Ill. Roll-paper printer and cutter	485,701	Nov. 8	835	224	61	761
Kirst, William P., *et al.* (See Wall, Charles W., assignor.)						
Kirsten, Oscar. (See Doelger and Kirsten.)						
Kiser, Alvie V., West Liberty, Ohio. Corn-harvester	486,255	Nov. 15	1823	454, 455	61	956
Kitson, John, St. Louis, Mo. Furnace for melting glass	485,390	Nov. 1	374	101	61	649
Kjorstad, Ole, Eau Claire, Wis. Electric belt	488,013	Dec. 13	1275	317	61	1591
Klahr, Joseph, Hamburg, Pa. Wood-bending machine	485,800	Nov. 8	976	262	61	790
Klebba, Alexander R., *et al.* (See Burton, Clarence A., assignor.)						
Klein, Charles J., assignor to Bergmann & Company, New York, N. Y. Incandescent-electric-lamp socket	484,207	Oct. 11	1031	262	61	223
Klein, Jacob, New York, N. Y. Match-heading composition	485,103	Oct. 25	2483	...	61	540
Kleinberger, Isaak, New Haven, Conn. Safety-pocket	484,435	Oct. 18	1406	358	61	309
Kleitz, Alois and C. L., Sigourney, Iowa. Rope take-up	488,565	Dec. 27	2195	542	61	1807
Kleitz, Carl L. (See Kleitz, Alois and C. L.)						
Klenha, Vaclav, assignor of two-thirds to M. Brennan and J. Lenoch, Chicago, Ill. Undertaker's convertible stand	485,801	Nov. 8	978	262, 263	61	790
Kletzker, Albert J., and J. G. Goesel, St. Louis, Mo. Matrix-making machine	485,702	Nov. 8	836	225, 226, 227	61	761
Kline, Frank W., and G. G. Thomas, Edison, Ohio. Neck-yoke	487,977	Dec. 6	62	19	61	1334
Kline, Henry R., Ashtabula, Ohio. Dental plugger	487,843	Dec. 13	998	251	61	1537
Kline, John R., assignor of one-half to G. Wogaman, Salem, Ohio. Wire fence	484,554	Oct. 18	1587	403	61	345
Kline, Winfield S., and J. C. Parks, Bolivar, Ohio. Dough-raiser and fruit-drier	488,014	Dec. 13	1276	317	61	1302
Kling, Peter M., St. Louis, Mo. Ratchet-brake for cars	485,548	Nov. 1	603	161	61	696
Klingler, Joseph W., Beaver Springs, Pa. Car-coupling	487,532	Dec. 6	492	129	61	1418
Klock, Frank B., Little Falls, N. Y. Stop-motion for knitting-machines	484,594	Oct. 18	1640	416	61	356

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Klug, Paul, Crimmitzschau, Germany. Apparatus for smoothing and hardening threads	488,267	Dec. 20	1710	430	61	1696
Knapp, George W., Baltimore, Md. Attaching spouts and lips to sheet-metal vessels	487,032	Nov. 29	2992	770	61	1238
Knapp, Oscar, Brooklyn, N. Y. Speed-measure	483,846	Oct. 4	486	121	61	100
Knapp, Shepard, *et al.* (See Saxton, Harry J., assignor.)						
Knapp, William H., Kalamazoo, Mich. Grain-carrier	483,617	Oct. 4	152	37	61	32
Kneeland, Charles L., Lansing, Mich. Butter-package	485,011	Oct. 25	2347	604	61	511
Knickerbacker, John. (See Bootman, William H., assignor.)						
Knickerbacker, Thomas A., Troy, and R. Hughes, Waterford, N. Y. Fire hydrant or plug	488,015	Dec. 13	1277	318	61	1592
Knickerbocker, James B., assignor to Knickerbocker Meter Company, Indianapolis, Ind. Diaphragm meter	488,504	Dec. 20	2093	520	61	1772
Knickerbocker Meter Company. (See Knickerbocker, James B., assignor.)						
Knight, Abram C., Philadelphia, Pa. Hammock-stretcher	483,930	Oct. 4	609	154	61	126
Knight, Moses G., Oak Cliff, Tex. Railway-crossing	484,100	Oct. 11	860	218, 219	61	190
Knight, Nute B., Dallas, Tex. Coin-operated boot or shoe blacking machine	484,324	Oct. 11	1221	312, 313	61	261
Knight, Thaddeus W., Taylor, Tex. Combined corn and cotton planter	486,478	Nov. 22	2067	548	61	1039
Knight, Thomas L., and E. Beckley, London, England. Check issuing and recording apparatus	486,344	Nov. 15	1857	488, 489, 490	61	984
Knight, William R., and W. R. Ownby, assignors of one-third to D. W. McPherson, Rector, Ark. Car-coupling	485,200	Nov. 1	72	22	61	587
Knoeller, Charles E., assignor to J. A. Sutherland, Jersey City, N. J. Clothes-drier	487,533	Dec. 6	494	129	61	1418
Knott, Charles G., Hamilton, Canada. Inkstand	488,822	Dec. 27	2590	642	61	1886
Knowles, Edward R., Brooklyn, N. Y. Storage-battery	483,562	Oct. 4	68	17	61	16
Knowles, Edward R., Brooklyn, N. Y. Storage-battery	483,563	Oct. 4	70	17	61	16
Knowles, Edward R., Middletown, Conn. Electric-arc lamp	485,327	Nov. 1	270	73, 74	61	627
Knowles, Louis T., assignor of one-half to J. M. Pullman and G. Taylor, Minneapolis, Minn. Car-brake adjuster	488,359	Dec. 20	1861	466	61	1728
Knowles, Otis F. (See Beebe, Charles F., assignor.)						
Knowlton, George W., Boston, Mass. Rod-packing	487,019	Nov. 29	2974	766	61	1234
Knox, George A., Lynn, Mass. Heel-burnishing machine	486,229	Nov. 15	1673	442, 443	61	946
Knox, Orville M., Oneida, N. Y. Metallic post or base for fences	486,973	Nov. 29	2904	749	61	1221
Knox, Orville M., Oneida, N. Y. Telegraph-pole	486,974	Nov. 29	2905	750	61	1221
Knudsen, Andrew, Tucson, Ariz. Ter. Bit-brace	487,123	Nov. 29	3139	805	61	1262
Knudson-Cuttriss Wire Company. (See Cuttriss, Charles, assignor.)						
Koch, Christoph F. (See Faulhaber and Koch.)						
Koch, Ernst H. (See Gutbier and Koch.)						
Koehler, William H., Bellefonte, Pa. Napkin-supporter	488,924	Dec. 27	2755	680	61	1920
Koecher, Edmund, assignor to L. Nelke, New York, N. Y. Insect-trap	485,815	Nov. 8	994	267	61	793
Koelker, Henry W., *et al.* (See Weis, William C. and F. N., assignors.)						
Koenig, Christian, Stockton, Cal. Tricycle	487,753	Dec. 13	847	215, 216	61	1506
Koenig, Ernst, Moulton, Tex. Plow-stock	484,520	Oct. 18	1537	390	61	334
Koffelt, Samuel. (See Cook, Thomas W. G., assignor.)						
Kohler & Co., F. E. (See Fager, Anthony, assignor.)						
Kohler, Richard, Brooklyn, N. Y. Slate-muffler	485,802	Nov. 8	980	263	61	790
Kohn, Jacob W., Newark, N. J. Envelope	484,572	Oct. 11	1293	330	61	276
Kolb, August R., New York, N. Y. Window-cleaner	487,888	Dec. 13	1071	269	61	1551
Koneman, William A., Chicago, Ill. Brick-kiln	484,595	Oct. 18	1642	416, 417	61	357
Koneman, William A., Chicago, Ill. Gas-producer	484,596	Oct. 18	1646	417, 418	61	358
Koneman, William A., assignor to Chicago Heat Storage Company, Chicago, Ill. Gas-producer	485,391	Nov. 1	376	101	61	649
Koneman, William A., assignor of one-half to C. G. Singer, Chicago, Ill. Method of and apparatus for recarburizing metals	485,392	Nov. 1	378	102	61	650
Konz, Sebastian, Louisville, Ky. Spring chair-bottom	486,046	Nov. 8	1369	364	61	869
Koon, Charles, assignor of one-half to W. A. Koon, Whiting, Iowa. Door-spring	486,975	Nov. 29	2906	750	61	1222
Koon, Washington A. (See Koon, Charles, assignor.)						
Koonce, John W., Kinston, N. C., assignor of one-half to Oettinger Brothers. Combined rake and broom	484,156	Oct. 11	950	244	61	208
Koopman, Elias B., New York, N. Y. Toy	488,566	Dec. 27	2196	542	61	1807
Kopp, Albert, *et al.* (See Rinderknecht, Charles J., assignor.)						
Korn, Louis, New York, N. Y. Builder's scaffold	488,437	Dec. 20	1983	495	61	1749
Korsmeyer, Ernst H., Kansas City, Mo. Electro-magnetic mechanism for operating printing-presses	483,564	Oct. 4	71	17, 18	61	16
Korupkat, Frederick, Glenwood Springs, Colo. Horseshoe	487,368	Dec. 6	215	59	61	1363
Koss, Louis, Indianapolis, Ind. Machine for making ornamental wire	488,941	Dec. 27	2734	686, 687	61	1926
Koster, Charles C., New York, N. Y. Damper-regulator	486,345	Nov. 15	1662	490	61	984
Kramer, William H., Allegheny, Pa. Pattern for casting brake-shoes	485,949	Nov. 8	1216	321	61	838
Kremer, Franklin W., Cleveland, Ohio. Coin-controlled striking and strength tester	487,033	Nov. 29	2994	771	61	1238
Krempelhuber, Fritz von, and J. von Schmaedel, Munich, Germany. Blowpipe soldering device	485,766	Nov. 8	938	251	61	781
Kreppa, Virgil A., Kensico, N. Y. Coin receiver and register	486,111	Nov. 15	1497	394, 395	61	911
Kress, John, New York, N. Y. Hoof-pad	483,691	Oct. 4	253	63	61	53
Kreusler, Arnold, Kreischerville, assignor to himself, and A. Zinsser, New York, N. Y. Treating beer	485,012	Oct. 25	2348	605	61	512
Kreuter, Adam. (See Nelson and Kreuter.)						
Krieckhaus, Louis, *et al.* (See Heidel, Gustavos, assignor.)						
Kroencke, Jacob E. (See Flens and Kroencke.)						
Krogh, Emil C. C., assignor of one-half to S. D. and T. B. McGovern, Monmouth, Ill. Thermostatic indicator and adjuster	488,611	Dec. 27	2264	562	61	1821
Krouse, Charles C., H. E. Myers, and C. L. Girard, Williamsport, Pa.; said Myers and Girard assignors to said Krouse. Suspenders	487,149	Nov. 29	3179	814	61	1276
Krueger, Theodore F., New York, N. Y. Button-hook	487,054	Nov. 29	3024	777	61	1245
Krulis, Zdenko, Chicago, Ill. Signaling device for railways	487,904	Dec. 13	1096	275	61	1556
Kruse, John H., and M. K. Shipley, Oswego, Oreg. Feeder for baling-presses	485,045	Oct. 25	2402	617	61	522
Kubitski, Johann, La Crosse, Wis. Shovel	487,534	Dec. 6	495	129	61	1418
Kuehn, Lucas M., Wabasha, Minn. Elevator	487,576	Dec. 6	551	142	51	1430

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Kuehn, Michael. (See Snitzer and Kuehn.)						
Kuehne, Albert, *et al.* (See Beehler, Charles W., assignor.)						
Kuess, Victor J., Paris, assignor to C. H. J. Donnadieu, Bordeaux, France. Alembic	488,766	Dec. 27	2592	629	61	1867
Kuhbacher, Paul J., Ashland, Ky. Automatic electric scale	485,950	Nov. 8	1217	321	61	838
Kuhlmann, John P. F., Seattle, Wash. Railway system	486,719	Nov. 22	2445	637	61	1114
Kuhner, Louis, Decatur, Ill. Incubator	484,325	Oct. 11	1227	313	61	262
Kulage, Joseph J., St. Louis, Mo. Brick-press	484,896	Oct. 25	2159	555, 556	61	475
Kulage, Joseph J., St. Louis, Mo. Brick and tile machine	484,897	Oct. 25	2161	556	61	475
Kulage, Joseph J., St. Louis, Mo. Brick-press	485,549	Nov. 1	604	161	61	696
Kuns, Nathaniel, Fairbury, Nebr. Rubber-dam clamp	484,800	Oct. 25	2000	513	61	443
Kuns, Nathaniel, Fairbury, Nebr. Dental spacer	486,112	Nov. 15	1500	395	61	919
Kuntze, Paul, Aschersleben, Germany. Process of and apparatus for making ammonia	488,207	Dec. 20	1610	402	61	1677
Kunzer, Emil, Chicago, Ill. Smoke-consuming device	486,582	Nov. 22	2225	584	61	1069
Kurts, Ephraim. (See Kurts, Henry and E.)						
Kurts, Henry and E., Bangor, Pa. Slate-shaving machine	484,802	Oct. 25	2002	514	61	444
Kurts, Stewart S., Canton, Ohio. Harness-saddle	484,801	Oct. 25	2001	514	61	443
Küzel, Hans, assignor to Farbwerke, vormals Meister, Lucius & Brüning, Höchst, Germany. Yellow dye-stuff	484,521	Oct. 18	1538	.....	61	335
Kyle, William F., *et al.* (See Barber, Edwin J., assignor.)						
La Chapelle, George, assignor of one-half to C. E. Devine, Williamsport, Pa. Buckle	485,104	Oct. 25	2484	638	61	540
La Chapelle, Israel, Haverhill, Mass., assignor to Goodyear Shoe Machinery Company, Hartford, Conn. Tension device for sewing-machines	488,505	Dec. 20	2095	520	61	1773
La Dow, Charles, Albany, N. Y. Harrow	488,942	Dec. 27	2787	687, 688	61	1927
La Dow, Charles, Albany, N. Y. Harrow	488,943	Dec. 27	2790	688	61	1927
La Due, Charles H., New York, N. Y. Street-sweeper	487,754	Dec. 13	849	216	61	1507
La France, Truckson S., Elmira, N. Y. Upright tubular steam-boiler	487,124	Nov. 29	3142	805	61	1268
La Purl, Traffley, Medford, Mass. Folding bedstead	485,502	Nov. 1	535	142	61	681
Labois, Léon, Paris, France. Apparatus for extracting sulphur	485,634	Nov. 8	734	191, 192, 193	61	739
Lacey, Fred, Adams, Mass. Shedding mechanism for looms	484,326	Oct. 11	1228	313, 314	61	262
Lachmann, Emil, Berlin, Germany. Alarm apparatus	486,380	Nov. 15	1911	505	61	995
Lachmann, Emil, Berlin, Germany. Boat	486,381	Nov. 15	1913	506	61	995
Ladenburg, Adolph, *et al.* (See Pauthonier, Casimir, assignor.)						
Laffaw, Moses. (See Baker and Laffaw.)						
Lahm, John P., Reeseville, Wis. Pump	484,898	Oct. 25	2162	556	61	476
Laidlaw, James, *et al.* (See Ecker, James S., assignor.)						
Laidlaw, John S., *et al.* (See Ecker, James S., assignor.)						
Lain, David E., Yonkers, N. Y. Trolley-wire hanger	486,583	Nov. 22	2226	585	61	1069
Laing, John, Edinburgh, Scotland. Destructive distillation of mineral oils	488,767	Dec. 27	2503	623	61	1868
Lake, John C. and S., assignors to J. C. Lake & Son Company of Baltimore City, Baltimore, Md. Oyster-dredge windlass	485,635	Nov. 8	735	193	61	739
Lake, Sidney A., Lake View, Wash. Nut-lock	488,337	Dec. 20	1826	456	61	1717
Lake, Simon. (See Lake, John C. and S.)						
Lamb, George B., and A. C. Campbell, assignors to Waterbury Machine Company, Waterbury, Conn. Wire-drawing machine	487,844	Dec. 13	999	251, 252	61	1537
Lamb, James, San José, Cal. Horseshoeing apparatus	488,077	Dec. 13	1397	347	61	1617
Lambert, George E., *et al.* (See Ward, William H., assignor.)						
Lambert, Robert, Fayette Springs, Pa. Hame-fastener	484,327	Oct. 11	1232	314	61	262
Lamme, Benjamin G., assignor to Westinghouse Electric and Manufactnring Company, Pittsburg, Pa. Armature for electric machines	488,016	Dec. 13	1279	318, 319, 320	61	1592
Lammedee, August, South Bend, Ind. Straw-stacking machine	486,346	Nov. 15	1864	491	61	985
Lamont, Robert, Kilmarnock, Scotland. Cash register, indicator, and check-printer	485,951	Nov. 8	1220	322	61	838
Lamoreaux, Sullivan B., *et al.* (See Huston, John B., assignor.)						
Lamplongh, Arthur, assignor to P. Wood, London, England. Sash-fastener	488,360	Dec. 20	1863	466	61	1725
Lamson Consolidated Store Service Company. (See Gornall, Richard, assignor.)						
Lancashire, Herbert F. (See Ward and Lancashire.)						
Lancaster, Morris, assignor of one-half to Globe Furniture Company, Northville, Mich. Making built-up work for pew-backs, &c	486,479	Nov. 22	2069	548	61	1040
Landfear, William R., Brooklyn, N. Y., assignor of two-thirds to T. Merrick and G. N. Tyner, Holyoke, Mass. Mail-canceling and postmarking machine	487,278	Dec. 6	63	19, 20	61	1334
Landfear, William R., Brooklyn, N. Y., assignor of two-thirds to T. Merrick and G. N. Tyner, Holyoke, Mass. Stamp-canceling machine	487,626	Dec. 6	626	161	61	1446
Landin, John, Stockholm, Sweden. Incandescent lighting	485,281	Nov. 1	188	54	61	612
Landon, William E., Philipsburg, assignor to J. E. Hughes, Pittsburg, and L. N. Ireland, Allegheny, Pa. Radiator	486,480	Nov. 22	2071	548	61	1040
Lane, Fred H., Wallingford, Conn. Gas-washer	487,279	Dec. 6	65	20	61	1334
Lane, Louis, Newark, Ohio. Calendar	487,929	Dec. 13	1140	284	61	1564
Lanergan, Henry, North Cambridge, Mass. Crutch-foot	483,931	Oct. 4	509	154	61	126
Laney, Thomas G., Lima, Ohio. Steam-actuated valve	485,046	Oct. 25	2403	618	61	523
Lang, Alois, Macon, Ga. Cotton-seed planter	483,655	Oct. 4	203	50	61	42
Lang, George. (See Gallacher and Lang.)						
Lang, Jules, D. W. Evans, and J. A. Devore, Chicago, Ill. Clasp	488,017	Dec. 13	1282	320	61	1503
Lang, Matthew, East Akron, Ohio. Machine for molding marbles or other articles from clay, &c	485,282	Nov. 1	191	55	61	612
Lang, William, Brooklyn, N. Y. Pocket-lighter	487,845	Dec. 13	1002	252	61	1538
Langberg, Oscar, Brooklyn, N. Y., assignor to American Light and Fuel Company, of New Jersey. Apparatus for generating gas	488,208	Dec. 20	1614	403, 404	61	1677
Lange, Emil, *et al.* (See Ward, William H., assignor.)						
Langer, Edward W., and R. Peterson, Diamond Bluff, Wis.; said Peterson assignor to said Langer. Holdback for vehicles	485,550	Nov. 1	606	162	61	697
Langfeld, Solomon C., New York, N. Y., assignor, by mesne assignments, to A. Goertz. Purse	484,101	Oct. 11	862	219	61	191
Langford, Ernest A., Grass Valley, Cal. Ore-feeder	485,501	Nov. 1	534	142	61	681
Langguth, Werner, Deadwood, S. D. Refining gold and silver matte	486,613	Nov. 22	2280	594	61	1079
Langhammer, John F. (See McClintock, Langhammer, and Lowell.)						
Langlée, Justin J., New Orleans, La., assignor to American Biscuit and Manufacturing Company, of Illinois. Cake-machine	485,201	Nov. 1	73	23	61	587
Lanier, Ward C. (See Hersberg, Whitaker, and Lanier.)						
Lanterman, Daniel. (See Durkee and Lanterman.)						
Lantz, Harvey E., and S. L. Neely, Vera, Ill. Nut-lock	486,565	Nov. 22	2192	577	61	1063

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Lanway, J. H. (See Sweet, James C., assignor.)						
Lape, Willard E. (See Frisbie, William L., assignor.)						
Lapham, Charles, *et al.* (See Weaver, William, assignor.)						
Lapham, Joseph H. (See Lapham, Owen T. and J. H.)						
Lapham, Owen T. and J. H., Cleveland, Ohio. Breast-rest for washboards	483,786	Oct. 4	400	99	61	84
Lapham, Owen T. and J. H., Cleveland, Ohio. Washboard	488,209	Dec. 20	1621	404	61	1679
Larimer, Joseph M., Chicago, Ill. Architectural column	484,026	Oct. 11	762	192, 193	61	171
Larimer, Joseph M., Chicago, Ill. Metal framework for buildings	485,870	Nov. 8	1083	287, 288	61	810
Larimer, Joseph M., Chicago, Ill. Structural work for buildings	485,871	Nov. 8	1084	288	61	811
Larish, Wilbur F., Oshkosh, Wis. Jointing and sanding machine	484,639	Oct. 18	1719	436, 437	61	371
Larman, William H., Sligo, Md., assignor to J. W. Penfield & Son, Willoughby, Ohio. Disintegrating-roller	485,283	Nov. 1	192	55	61	612
Larrabee, Charles S., trustee. (See Smith, William J., assignor.)						
Larson, William, and O. Gunderson, Lake Mills, Iowa. Power-transmitter	485,952	Nov. 8	1224	322	61	839
Lascar, Ferdinand, assignor to F. Spiegelberg, New York, N. Y. Filtering material	488,317	Dec. 20	1789	.....	61	1710
Lässig, Theodor, and A. Pfretzschner, Markneukirchen, Germany. Clarinet	488,656	Dec. 27	2337	578	61	1835
Laster, Harry W., Chicago, Ill. Steam road-roller	486,481	Nov. 22	2072	549	61	1040
Latimer, William, Wilmington, N. C. Railway	484,027	Oct. 11	763	193	61	171
Latouche, Jacques A. C. de, Paris, France. Cartridge	487,125	Nov. 29	3143	805	61	1269
Lattig, Jacob W., Easton, Pa. Railway signal apparatus and system	486,047	Nov. 8	1370	364, 365	61	869
Laubin, Charles W., Meridian, Miss. Finger-nail cleaner	488,657	Dec. 27	2338	578	61	1835
Lauer & Hagarman. (See Cross, Jerome A., assignor.)						
Laughton, George L., Reno, Nev. Derrick-fork	483,765	Oct. 4	364	91	61	76
Lauth, John N., assignor to Lauth Patent Furnace Company, St. Louis, Mo. Furnace for metallurgical purposes	484,328	Oct. 11	1233	314	61	263
Lauth, John N., assignor to Lauth Patent Furnace Company, St. Louis, Mo. Furnace for metallurgical operations	484,329	Oct. 11	1234	314	61	263
Laval, Carl G. P. de, assignor to Aktiebolaget Separator, Stockholm, Sweden. Separating butter from milk	484,916	Oct. 25	2195	565, 566	61	482
Lavender, Charles F. (See Fane and Lavender.)						
Lavigne, Joseph P., New Haven, Conn. Micrometer-gage	488,280	Dec. 20	1730	436	61	1699
Lavigne, Joseph P., New Haven, Conn. Micrometer-gage	488,281	Dec. 20	1732	436	61	1700
Law, John, Madelia, Minn. Hay-carrier	486,164	Nov. 15	1581	419	61	928
Lawbaugh, George W., Geneseo, Ill. Ironing-table	486,482	Nov. 22	2073	549	61	1040
Lawrence, Charles D., assignor of one-half to V. M. Mayo, Fairfield, Me. Door-hanger	484,157	Oct. 11	951	244	61	208
Lawrence, Charles W., New York, N. Y. Combined socket and bracket for curtain-rods	484,028	Oct. 11	765	193	61	171
Lawrence, Frank, San Francisco, Cal. Safety-lock for gas-cocks	488,737	Dec. 27	2460	612	61	1859
Lawrence, George R. (See Stockdale and Lawrence.)						
Lawrence, J., *et al.* (See Day and Moore, assignors.)						
Lawrence, Orville H., Waverly, N. Y. Pipe-elbow	485,124	Oct. 25	2510	644	61	546
Lawrence, Patrick J., and M. F. Garrettson, Wellston, Mo. Car-brake	486,785	Nov. 22	2353	666	61	1135
Lawrence, William H., Newburyport, Mass. Engine-governor	487,224	Nov. 29	3295	840	61	1297
Lawson, Joseph B., assignor of one-half to A. Hemsley, Philadelphia, Pa. Flash-light apparatus	486,831	Nov. 22	2034	687	61	1153
Lawson, William, assignor of one-half to E. Smith, Hartford, Conn. Tool-holder	488,361	Dec. 20	1864	467	61	1725
Lawton, James M., Jr., *et al.* (See Ashley, William A. G., assignor.)						
Lawton, Lyman T. (See Cody and Lawton.)						
Laycock, Adam C., Kingston, Pa. Thill-coupling	488,396	Dec. 20	1918	480	61	1736
Layer, William C., Milwaukee, and E. U. Taylor, Fond du Lac, Wis. Carving-machine	484,102	Oct. 11	863	219	61	191
Layman, Hiram D., Little Rock, Ark. Railway pump or water-elevator	488,362	Dec. 20	1865	467	61	1726
Le Count, Charles J., Henry, S. D. Animal-poke	486,483	Nov. 22	2074	549	61	1041
Le Favour, Joseph. (See Huffman and Le Favour.)						
Le Grande, William W., deceased, Louisville, Ky.; T. W. Moran, administrator. Railway switch stand and distant signal	487,877	Dec. 13	1057	264, 265	61	1547
Le Gros, Alfred P., Louisville, Ky. Fence	488,823	Dec. 27	2591	643	61	1886
Le Vesconte, George L., Minneapolis, Minn. Die-stock oiler	487,847	Dec. 13	1005	253	61	1538
Leach, Roaster & Baker Company. (See Hudson, Charlie A., assignor.)						
Leach, William H., Chenoa, assignor, by mesne assignments, of one-half to K. D. Harger, Elgin, Ill., and L. A. Harger, Pontiac, Mich. Machine for labeling cans	488,791	Dec. 27	2543	631	61	1876
Leadbeater, Frederick, Detroit, Mich. Steam and air injector for locomotives	486,934	Nov. 29	2843	736	61	1209
Leamy, Edward, Syracuse, N. Y. Exercising-machine	485,047	Oct. 25	2405	618	61	525
Lean, George R., Boston, and C. B. Burleigh, Chelsea, Mass., assignors to Bernstein Electric Company, of Maine. Casing for bases of incandescent lamps	487,846	Dec. 13	1003	252	61	1538
Learoyd, Lewis E., Danvers, Mass. Leather dressing or finishing machine	484,029	Oct. 11	765	193, 194	61	171
Leber, Victor, assignor of one-half to F. J. Weichert, Danbury, Conn. Fire-escape	484,536	Oct. 18	1502	397	61	340
Lechner, Frank C., Timinonsville, S. C. Smoke arrester and conductor	487,949	Dec. 13	1109	292	61	1570
Lee, Charles, San Antonio, Tex. Car-coupling	487,490	Dec. 6	313	80, 81	61	1383
Lee, Charles E., assignor of one-half to A. Meinberg, Omaha, Nebr. Coin-slot envelope-delivery box	484,502	Oct. 18	1508	383	61	329
Lee, Charles T., Boston, Mass., assignor to Johns-Pratt Company, Hartford, Conn. Insulator for electric-railway conductors	485,105	Oct. 25	2485	638	61	541
Lee, Charles T., Boston, Mass., assignor to Johns-Pratt Company, Hartford, Conn. Insulator	485,106	Oct. 25	2486	639	61	541
Lee, Henry A., Plainfield, N. J. Salt-holder	485,328	Nov. 1	272	74	61	627
Lee, Henry N., London, England. India-rubber tire	487,419	Dec. 6	312	80	61	1383
Lee, Joseph W., Cambridge, assignor of one-half to S. Burlingham, Hitchin, England. Vehicle-starter	485,125	Oct. 25	2511	645	61	546
Lee, Theodore G., Cutler, Ohio. Hay-rake	488,713	Dec. 27	2427	602	61	1852
Lee, Thomas B., *et al.* (See Hupp, George N., assignor.)						
Lee, William A. (See Fuller and Lee.)						
Leedy, John K., Tom's Brook, Va. Siphonic water-distributing apparatus	485,953	Nov. 8	1225	323	61	839
Leehey, Timothy J., Indianapolis, and J. O'Connell, Bedford, Ind. Combined umbrella-lock and satchel-fastener	486,256	Nov. 15	1728	455	61	957
Leeman, Henry, Louisiana, Mo. Horse-detacher	487,126	Nov. 29	3144	806	61	1269
Lees & Co., Asa. (See Stark, John, assignor.)						
Leeson, Joseph R. (See Wardwell, Simon W., Jr., assignor.)						
Leet, Daniel W., Milwaukee, Wis. Bath-room drying companion	486,674	Nov. 22	2374	621	61	1099
Leger, Edward, assignor of one-third to H. B. Leger, Chicago, Ill. Shoe-holder	483,808	Oct. 4	420	106	61	89
Leger, Edward, assignor of one-third to H. B. Leger, Chicago, Ill. Shoe-holder	483,963	Oct. 4	662	166	61	137

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Leger, Harry B. (See Leger, Edward, assignor.)						
Leggett, Walter I., assignor of one-half to C. P. King, Galesburg, Ill. Keg or barrel tilter	486,484	Nov. 22	2075	550	61	1041
Lehberger, George, assignor of one-half to F. W. Stammler, Johnstown, Pa. Wire-rod mill	486,382	Nov. 15	1913	506, 507	61	996
Lehman, Anton J., New York, N. Y. Electrolytic diaphragm	483,692	Oct. 4	254	.....	61	53
Lehman, Anton J., New York, N. Y. Armature-core for electric motors and dynamos	485,284	Nov. 1	194	55	61	613
Lehman, Isador, Cleveland, Ohio. Finger-ring	486,720	Nov. 22	2446	638	61	1114
Lehman, William B. (See Neff, Abraham J., assignor.)						
Lehmann, Anthony A., Baltimore, Md. Pneumatic fire-alarm	486,675	Nov. 22	2376	621, 622	61	1099
Lehmann, Anthony A., Baltimore, Md. Pneumatic fire-alarm	488,018	Dec. 13	1283	320, 321	61	1593
Lehmann, Fritz, Berlin, Germany. Apparatus for cleaning forks	485,048	Oct. 25	2406	619	61	523
Lehr, Joseph, and J. Bodani, Rochester, N. Y. Pressure-regulator	486,485	Nov. 22	2076	550	61	1041
Leigh, William H., Beaver Falls, Pa. Track-sweeper	485,348	Nov. 1	308	89	61	635
Leighton, Arthur M., assignor of one-half to J. H. Livermore, Port Townsend, Wash. Last	487,697	Dec. 6	628	161	61	1446
Leischer, Charles, East Pierre, S. D. Car-coupling	488,078	Dec. 13	1400	348	61	1618
Leitch, William B., Allerton, Iowa. Sanding device for railway-cars	485,703	Nov. 8	849	228	61	763
Lejeune, Henry E., Thibodeaux, La. Lubricator	488,438	Dec. 20	1984	495	61	1749
Leland, Carrie, Fremont, Nebr. Pressing-frame	486,347	Nov. 15	1866	491	61	985
Leland, Harry W., Jersey City, N. J. Circuit-controller	486,212	Nov. 15	1645	435	61	940
Lemman, John, Wakefield, Mass. Car-seat	487,034	Nov. 29	2997	772	61	1238
Lemmon, Emma J., assignor to J. A. Lemmon, Huntingburg, Ind. Flour-safe	486,048	Nov. 8	1374	365	61	870
Lemmon, John A. (See Lemmon, Emma J., assignor.)						
Lencauchez, Alexandre. (See Durant and Lencauchez.)						
Lenoch, Jaroslav, *et al.* (See Klenha, Vaclav, assignor.)						
Lenoir, Samuel F., Sumter, S. C. Car-coupling	488,792	Dec. 27	2547	632	61	1877
Lentz, Gustav, Dusseldorf, Germany. Bogie-frame for locomotive-engines	487,187	Nov. 29	3235	828	61	1287
Lentz, Otto, Culm, Germany. Boring apparatus	486,877	Nov. 29	2712	707	61	1183
Leonard, Harry W., New York, N. Y. System of electrical distribution	484,208	Oct. 11	1032	262	61	224
Leonard, John N., Northampton, Mass. Rolls for doubling and twisting machines	483,809	Oct. 4	430	106	61	89
Leprohon, Pantaléon M., Brooklyn, N. Y. Fishing-reel	488,678	Dec. 27	2378	589	61	1843
Lesh, John A., Markelsville, Pa. Shaft-tug	487,950	Dec. 13	1171	292	61	1570
Leslie Brothers Manufacturing Company. (See Metzger, Jules P., assignor.)						
Lester, Lucretia, Cuba, N. Y. Fire-escape	485,954	Nov. 8	1226	323	61	840
Lestina, Otto, Chicago, Ill. Soft-stop attachment for pianos	483,872	Nov. 8	1066	268	61	811
Leatina, Otto, Chicago, Ill. Piano-action	485,873	Nov. 8	1067	269	61	811
Lever, Oswald, *et al.* (See Hofbauer, Frank, assignor.)						
Lever, Oswald, and W. S. Grundy, Philadelphia, Pa. Cop-winding machine	486,257	Nov. 15	1730	455	61	958
Lever, Oswald, and W. S. Grundy, Philadelphia, Pa. Driving mechanism for cop and bobbin winders	486,258	Nov. 15	1733	456	61	958
Levy, Joseph B. (See Smith, William, assignor.)						
Lewinsohn, Simon, Berlin, Germany. Making imitation long heron-feathers	485,329	Nov. 1	273	74	61	628
Lewis, Aaron D., Canton, Mo. Electric perforating-pen	485,767	Nov. 8	939	251	61	782
Lewis, Everett C., assignor of one-half to L. B. Pease, Woonsocket, R. I. Telephone-holder	487,369	Dec. 6	216	59	61	1363
Lewis, George E. (See Pierce, Chester C., assignor.)						
Lewis, Henry R., London, and C. B. Phillips, Chester, England. Extracting metals from refractory ores	487,188	Nov. 29	3236	828, 829	61	1287
Lewis, Lorenzo L., assignor of one-half to R. D. Coulter, Orange City, Fla. Tubular inserted saw-tooth	485,503	Nov. 1	536	142	61	682
Lewis, Nathan P., Hutchins, Miss. Combined harrow and cultivator	487,848	Dec. 13	1005	253	61	1538
Lewis, Samuel R., Raton, N. Mex. Ter. Feeder-lifter	486,486	Nov. 22	2078	550	61	1041
Lewis, Samuel W., Brooklyn, N. Y. Hydrant-valve	488,079	Dec. 13	1401	348	61	1619
Lewis, Walter, assignor of one-half to G. T. Turner, Philadelphia, Pa. Supporting and locking attachment for bicycles	485,285	Nov. 1	195	56	61	613
Lewis, William E., Corry, Pa. Ink-well	484,803	Oct. 25	2003	514	61	441
Lewis, William H., *et al.* (See Morrell, Robert, assignor.)						
Lewis, William M., New Castle, Colo. Boiler water-level recorder	483,722	Oct. 4	293	73	61	61
Lewis, William T., Peoria, Ill. Bicycle-brake	486,935	Nov. 29	2845	736	61	1209
Libby, Augustus F., *et al.* (See Morrell, Robert, assignor.)						
Libby, Frederic M., Portland, Me. Perforated penholder	484,967	Oct. 25	2272	586	61	497
Library Bureau. (See Godfrey, Charles B., assignor.)						
Librowicz, Julius, New York, N. Y. Protective bottle-stopper	484,330	Oct. 11	1235	315	61	263
Liddell, William, Brooklyn, N. Y., assignor to W. A. Bingham, Bloomfield, N. J. Paper-bag machine	487,225	Nov. 29	3296	841	61	1297
Liddle, Robert Z., Albany, N. Y. Oil stove	484,030	Oct. 11	767	194	61	172
Lieb, Robert, assignor to Fouquet & Franz, Rottenburg, Germany. Method of and apparatus for making colored figures in knit goods	488,019	Dec. 13	1287	321, 322	61	1591
Lightford, James G. (See Stacey and Lightford.)						
Lillie, Samuel M., assignor to Sugar Apparatus Manufacturing Company, Philadelphia, Pa. Utilizing heat in the manufacture of sugar and salt	486,983	Nov. 29	2920	.....	61	1225
Lincoln, David B., Aurora, Ill., assignor to J. A. Manly, Grand Rapids, Mich., and C. T. Daily, Kansas City, Mo. Advertising-cabinet	486,113	Nov. 15	1501	395, 396	61	912
Lincoln, Marshall, Boston, Mass. Ticket-holder	485,202	Nov. 1	75	23, 24	61	586
Lindahl, Henry, assignor of one-half to J. S. Gustin, Chicago, Ill. Clamp for electric conductors	487,332	Dec. 6	154	44	61	1351
Lindberg, Oskar, Helsingborg, Sweden, assignor of one-half to J. E. Sandelin, New York, N. Y. Oil-filter	487,421	Dec. 6	315	81	61	1383
Lindgren, August, assignor to Moline Plow Company, Moline, Ill. Beet-cultivator	486,614	Nov. 22	2282	595	61	1079
Lindhorst, Frank. (See Weinmann and Lindhorst.)						
Lindsay, James G., assignor of one-half to A. L. Bonnaffon, Philadelphia, Pa. Metallic fence	488,210	Dec. 20	1622	404	61	1679
Lindsay, Walter M., West Derby, Vt. Tennis-marker	487,951	Dec. 13	1172	292	61	1570
Lindsey, Matthew G., Anderson, S. C. Hydraulic motor	488,246	Dec. 20	1676	419	61	1649
Lingford, Edward. (See Lingford, Henry B. and E.)						
Lingford, Henry B. and E., Ripon, England. Apparatus for feeding calves	488,693	Dec. 27	2401	595	61	1847
Linhardt, John A. (See Masterson, Herbert, assignor.)						
Link-Belt Engineering Company. (See Dodge, James M., assignor.)						
Linn, Charles, Sioux City, Iowa. Dump-wagon	486,114	Nov. 15	1502	396	61	912
Linscott, John M., Worcester, Mass. Let-off motion for looms	485,330	Nov. 1	274	74	61	628
Lister, Joseph, Chicago, Ill. Pipe-coupling	486,936	Nov. 29	2845	736	61	1210
Little, Charles R., West Duluth, Minn. Lumber-sorter	486,584	Nov. 22	2229	585	61	1069
Little, Ezekiel C., St. Louis, Mo., assignor of one-half to M. F. Williams. Clay drying and sifting apparatus	485,636	Nov. 8	736	193, 194	61	739

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Little, Frank J., assignor of one-half to J. B. Dinsmore, Portland, Mich. Plate for vapor-stoves	483,932	Oct. 4	610	154	61	126
Little, James R., Quincy, Ill. Metal wheel	487,280	Dec. 6	66	20	61	1335
Little, James R., Quincy, Ill. Metal wheel	487,281	Dec. 6	67	20	61	1335
Little, James R., Quincy, Ill. Manufacturing metal wheels	487,282	Dec. 6	67	21	61	1335
Little, James R., Quincy, Ill. Manufacturing metal wheels	487,283	Dec. 6	69	21	61	1335
Little, James R., Quincy, Ill. Machine for making metal wheels	488,124	Dec. 13	1463	369	61	1631
Little, James R., Quincy, Ill. Hub-blank for metal wheels	488,125	Dec. 13	1465	370	61	1631
Little, James R., Quincy, Ill. Making metal wheels	488,126	Dec. 13	1467	370	61	1632
Little, James R., Quincy, Ill. Die for making metal wheels	488,127	Dec. 13	1470	371	61	1632
Little, James R., Quincy, Ill. Metal wheel	488,439	Dec. 20	1984	495, 496	61	1749
Little, James R., Quincy, Ill. Manufacture of metal wheels	488,440	Dec. 20	1987	496	61	1749
Little, William H., Picture Rocks, Pa. Ironing-table	486,878	Nov. 29	2715	707	61	1184
Littlejohn, Joseph E. (See Thomas and Littlejohn.)						
Livengood, Winfield S., assignor, by mesne assignments, to Midland Manufacturing Company, Kansas City, Mo. Bale-tie machine	486,615	Nov. 22	2284	595	61	1080
Livermore, James H. (See Leighton, Arthur M., assignor.)						
Livers, John A. (See Doerson, Philip, assignor.)						
Livingston, Ferris S., Philadelphia, Pa. Lubricator	486,676	Nov. 22	2379	622	61	1100
Livingston, Henry J., New Orleans, La. Composition of matter for producing Portland cement	486,165	Nov. 15	1583	.....	61	929
Livingston, Joseph R., Velasco, Tex. Oar-lock attachment	488,318	Dec. 20	1790	450	61	1710
Lizotte, Albert, Quincy, Mass. Shoe-lace fastener	484,438	Oct. 18	1411	360	61	310
Lloyd Booth Company. (See Bray, Charles W., assignor.)						
Lloyd, Thomas, Boston, Mass. Burnisher	485,416	Nov. 1	415	111	61	657
Lloyd, William A., Pittsburg, Pa. Knife for cutting the rope used in boring Artesian and oil wells	484,804	Oct. 25	2004	515	61	444
Lloyd, William A., Pittsburg, Pa. Sand-rope reel	485,203	Nov. 1	76	24	61	588
Locke, Daniel W., Bucyrus, Ohio. Shaft attachment	485,874	Nov. 8	1087	289	61	811
Locke, Fred M., Victor, N. Y. Insulator	484,209	Oct. 11	1034	263	61	224
Lockett, Joseph C., Boston, assignor to C. S. Pierce, Brockton, Mass. Crimping-machine	485,204	Nov. 1	77	24, 25	61	588
Lockhart, William C., Waterloo, Ind. Spray-nozzle	487,628	Dec. 6	629	162	61	1446
Lockstaedt, Charles C., Chicago, Ill. Split pulley	484,935	Oct. 25	2229	575	61	488
Lockstaedt, Charles C., Chicago, Ill. Can	484,936	Oct. 25	2230	575	61	489
Lockstaedt, Charles C., Chicago, Ill. Combined sofa and bed	485,637	Nov. 8	738	194	61	740
Lockwood, Charles L., Covington, Ky., assignor to himself, J. W. and G. A. Shrague, Cincinnati, Ohio. State-room for cars or ships	486,049	Nov. 8	1375	365, 366	61	870
Lockwood, De Witt C., Shelton, Conn. Fishing rod and reel	484,439	Oct. 18	1412	360	61	310
Lockwood, Fred. (See Snyder and Lockwood.)						
Lockwood, George E., assignor to G. H. Colket, Philadelphia, Pa. Can-soldering machine. (Reissue)	11,297	Dec. 27	2844	700, 701, 702	61	1940
Loeba, Edward A., Rochester, N. Y. Stovepipe-shelf	488,247	Dec. 20	1678	419	61	1689
Loewer, Henry, Rochester, N. Y. Scalloping-machine	486,408	Nov. 15	1960	521	61	1005
Logan, Ferdinand. (See Janeway and Logan.)						
Logan, John, and M. H. Stevens, Waltham, Mass. Apparatus for hardening strips of metal	484,968	Oct. 25	2274	586, 587	61	497
Lohbiller, Anton, Boston, Mass. Safety-valve and muffler	488,020	Dec. 13	1289	322	61	1594
Lomax, Edward L., Omaha, Nebr., and B. B. Anderson, assignors of one-third to A. I. Blanchard, Chicago, Ill. Railway-ticket	484,331	Oct. 11	331	315	61	264
London Metallurgical Company. (See Cowper-Coles, Sherard O., assignor.)						
Long, Eugene F., assignor of one-half to E. H. Rippie, Scranton, Pa. Coal-separator	488,211	Dec. 20	1622	405	61	1679
Long, Frances G. (See Long, Sumner C. and F. G.)						
Long, Frank H., Manning, Iowa. Sod-cutting harrow	484,440	Oct. 18	1412	360	61	310
Long, Nathan H., Muncie, Ind. Washing-machine	486,721	Nov. 22	2447	638	61	1114
Long, Samuel R., Springtown, Pa. Lock	487,878	Dec. 13	1059	265	61	1548
Long, Sumner C. and F. G., Dayton, Ohio. Baking-pan	486,259	Nov. 15	1734	457	61	959
Lonsdale, Richard A. (See Lonsdale, William and R. A.)						
Lonsdale, William and R. A., Chicago, Ill. Curling-iron	484,743	Oct. 18	1889	481	61	408
Loomis, Alfred E. (See Schryver, Washington I., assignor.)						
Loomis, Reuben, Batavia, N. Y. Car-coupling	488,768	Dec. 27	2505	623	61	1868
Loos, John F. (See Bloom, Nicklos H., assignor.)						
Loose, Edward U. (See Dake and Loose.)						
Lord, Daniel W., Malden, Mass. Buoyant propeller	484,503	Oct. 18	1509	383	61	329
Lord, Silvie, New York, N. Y. Flower-holder	485,417	Nov. 1	416	111	61	657
Lorce, Manfred U., Miamisburg, assignor of two-thirds to G. Driggs and O. Kaamirsky, Dayton, Ohio. Folding boat	486,260	Nov. 15	1735	457	61	959
Lorce, Perry E., assignor to National Cash Register Company, Dayton, Ohio. Autographic register	485,955	Nov. 8	1227	323	61	840
Lorcan, Herman, *et al.* (See Curran, William, assignor.)						
Loss, Henry W., Philadelphia, Pa. Stop-valve for high pressures	486,722	Nov. 22	2448	638	61	1115
Loss, Henry W., Philadelphia, Pa. Gripping device for forging-machines	486,723	Nov. 22	2450	638, 639	61	1115
Lothrop, George H., Detroit, Mich. Railway-signal	488,441	Dec. 20	1989	496, 497	61	1750
Loughridge Brake and Car Company. (See Loughridge, Jacob E., assignor.)						
Loughridge, Jacob E., Philadelphia, Pa. Car-brake mechanism	484,597	Oct. 18	1647	418	61	358
Loughridge, Jacob E., Philadelphia, Pa., assignor to Loughridge Brake and Car Company, Camden, N. J. Brake mechanism for cars	484,598	Oct. 18	1649	418	61	358
Lovejoy, Fred E. (See Bachelder and Lovejoy.) (Reissue.)						
Loveland, Walter S., assignor to Standard Manufacturing Company, Hartford, Conn. Renewable check-valve	485,745	Nov. 8	913	244	61	776
Loveland, Walter S., assignor to Standard Manufacturing Company, Hartford, Conn. Check-valve	485,746	Nov. 8	914	244	61	777
Loveland, Walter S., assignor to Standard Manufacturing Company, Hartford, Conn. Cock	486,533	Nov. 22	2142	565	61	1054
Lovendale, Julius H. (See Bouck and Lovendale.)						
Lovett, Thomas J., Chicago, Ill., assignor, by mesne assignments, to International Ore Separating Company, of New Jersey. Magnetic separator	486,879	Nov. 29	2715	708	61	1184
Lovett, Thomas J., Chicago, Ill., assignor, by mesne assignments, to International Ore Separating Company, of New Jersey. Magnetic separator	487,073	Nov. 29	3052	783, 784	61	1250
Lovett, Thomas J., Chicago, Ill., assignor, by mesne assignments, to International Ore Separating Company, of New Jersey. Magnetic separator	487,074	Nov. 29	3055	784	61	1251
Lowden, William, Middleville, Mich. Fence-weaving machine	485,418	Nov. 1	417	112	61	658

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Lowell, John W. (See McClintock, Langhammer, and Lowell.)						
Lowell Machine Shop. (See Canning, William P., assignor.)						
Lowman, John W., Vicksburg, Miss. Pile-protector	488,896	Dec. 27	2702	689	61	1909
Lowney, Walter M. (See Meigs, James L., assignor.)						
Loyd, Alexander T., Chicago, Ill. Car-truck	485,286	Nov. 1	197	56	61	613
Lucas, John T., Gillivan, Ohio. Fence	484,158	Oct. 11	952	244, 245	61	209
Lucas, Olever T. (See Smith and Lucas.)						
Luce, Bartlett P., Boston, Mass. Lamp-burner	487,020	Nov. 29	2976	766	61	1234
Luce, Letitia V., New Orleans, La. Sunshade for vehicles	483,933	Oct. 4	611	155	61	126
Lucius, Charles W., Hartwell, Ohio. Toy cannon	484,805	Oct. 25	2005	515	61	445
Lucksinger, John, Ballwin, Mo. Brake for hay-wagons	486,786	Nov. 22	2556	666, 667	61	1135
Lucock, John S. (See Hunter and Lucock.)						
Ludde, Elard, Maspeth, N. Y. Taper for night-lights	484,210	Oct. 11	1035	263	61	224
Ludlow, Rodney F., Springfield, Ohio. Car-coupling	488,769	Dec. 27	2506	623, 624	61	1868
Ludwig, Carl P. (See Smith and Ludwig.)						
Lueneburg, John C., Lakefield, Minn. Motor	485,419	Nov. 1	418	112	61	658
Lufkin, Edward T. (See Bellows, Benjamin F., assignor.)						
Luger, John, Sr., North St. Paul, Minn. Glue-heater	484,032	Oct. 11	771	194	61	173
Luger, John, Sr., and L., North St. Paul, Minn. Glue-applying apparatus	484,031	Oct. 11	769	194	61	172
Luger, Joseph, Lansing, Mich. Windmill-tower	484,103	Oct. 11	864	220	61	191
Luger, Louis. (See Luger, John, Sr. and L.)						
Lukens, Richard L., Peoria, Ill. Harrow and pulverizer blade	484,969	Oct. 25	2275	587	61	498
Lumaghi, Octavius, St. Louis, Mo. Zinc-furnace	483,934	Oct. 4	612	155	61	126
Lund, John, Woodstock, Canada. Harvester-binder	485,956	Nov. 8	1229	324	61	840
Lundberg, Gustave, Logan, Utah Ter. Weighing and price scale	486,787	Nov. 22	2557	667	61	1136
Lundell, Robert, assignor of one-half to E. H. Johnson, New York, N. Y. Governing electric motors	486,213	Nov. 15	1646	435, 436	61	941
Lundell, Robert, assignor of one-half to E. H. Johnson, New York, N. Y. Governing electric motors	486,214	Nov. 15	1649	436	61	941
Lundell, Robert, assignor of one-half to E. H. Johnson, New York, N. Y. Double snap switch	486,215	Nov. 15	1651	436, 437	61	941
Lundell, Robert, assignor of one-half to E. H. Johnson, New York, N. Y. Armature for electro-magnetic machines	482,755	Dec. 13	851	217	61	1507
Lundy, Joseph, Rancocas, N. J. Potato-coverer	486,534	Nov. 22	2143	566	61	1054
Lunge, George, Zurich, Switzerland. Apparatus for treating liquids with gases	485,126	Oct. 25	2512	646	61	546
Lupton, David D., Philadelphia, Pa. Metallic shingle	484,211	Oct. 11	1036	263	61	225
Lurker, Edward P., Evansville, Ind. Construction of bureaus, &c	484,662	Oct. 18	1767	449	61	382
Luscombe, Thomas T., Carthage, Mo., and W. O. Luscombe, Chicago, Ill. Filter	485,551	Nov. 1	607	162	61	697
Luscombe, William O. (See Luscombe, Thomas T. and W. O.)						
Luther, Henry R., assignor to Barbour, Stockwell & Co., Cambridge, Mass. Frog	483,964	Oct. 4	602	166	61	137
Luther, Martin A., U. S. Army. Intrenching-tool	484,806	Oct. 25	2006	515	61	445
Luther, Powell, *et al.* (See McConnell, Frances S., assignor.)						
Lyford, H. B. (See Austin, Frank F., assignor.)						
Lyle, Robert W., New York, N. Y., assignor of one-half to A. M. Strusholm, Woodbridge, N. J. Pulverizer or mixer	486,937	Nov. 29	2847	737	61	1210
Lyman, Adelvin B., Cleveland, Ohio. Electric annunciator	488,567	Dec. 27	2197	543	61	1807
Lynch, Bernard F., Brooklyn, N. Y. Shoe-lace fastener	484,699	Oct. 25	2163	556	61	476
Lynch, George D., Providence, assignor to Holmes Manufacturing Company, Auburn, R. I. Vaporizer	485,127	Oct. 25	2515	646	61	546
Lynch, Robert L., Leeport, Ky. Safety attachment for cars	488,477	Dec. 20	2051	510	61	1763
Lynn Lasting Machine Company. (See Patten, Enos, assignor.)						
Lyon & Healy. (See Peloubet, Jarvis, assignor.)						
Lyon, James W., Brooklyn, N. Y. Electrical switchboard	488,532	Dec. 20	2142	530	61	1780
Lyons, Joel, Buffalo, N. Y. Boot-stretcher	485,331	Nov. 1	276	75	61	628
Lytle, Alton A., assignor of one-half to A. Allgier Grand Rapids, Mich. Pen and pencil holder	485,552	Nov. 1	608	162	61	697
Lytle, Andrew J., Hillsborough, Ohio. Pillow	484,441	Oct. 18	1413	360	61	310
M. Ohmer's Sons' Company. (See Ohmer, Wilfred I., assignor.)						
M. Ohmer's Sons' Company. (See Ohmer and Wayne, assignors.)						
Maardt, Jörgen G., Copenhagen, Denmark. Artificial marble	483,565	Oct. 4	72	.....	61	17
MacCollom, John, Ballston, N. Y. Automatic car-stop	487,867	Dec. 13	1039	260	61	1544
MacDonald, David L., Fairview, N. J. Apparatus for displaying signs	487,394	Dec. 6	253	69	61	1371
MacDonald, James, assignor of one-half to M. MacDonald, Los Angeles, Cal. Feed-water heater and purifier	488,524	Dec. 20	2131	527	61	1778
MacDonald, Mary. (See MacDonald, James, assignor.)						
MacFarlane, James, Malden, Mass. Machine for making hollow cylinders of strips of sheet material and process thereof	483,742	Oct. 4	328	83	61	69
MacFarlane, Robert, Magog, Canada. Tubular water-grate	488,170	Dec. 13	1547	388	61	1647
MacKay, William H., Roanoke, Va. Electric-lighting system	485,287	Nov. 1	199	56	61	613
MacNaughton, James. (See Rossi, Auguste J., assignor.)						
Macdonald, Alexander N., *et al.* (See Jones, David A., assignor.)						
Macdonald, Thomas A., Paterson, N. J. Toy wheel	488,944	Dec. 27	2791	688	61	1928
Macdonald, William R., Allegheny, Pa. Generator	488,824	Dec. 27	2592	643	61	1886
Macfarlane, Thomas, Ottawa, Canada. Extracting nickel from ores	484,033	Oct. 11	772	.....	61	173
Macintosh & Company, Charles. (See Golding, William, assignor.)						
Macintosh, Robert M., Boston, Mass. Apparatus for forming a knotless thread	484,212	Oct. 11	1037	263, 264	61	225
Macintosh, Robert M., Boston, Mass. Apparatus for forming knotless thread. (Reissue)	11,296	Dec. 27	2839	700	61	1939
Mack, William B., Boston, Mass. Boiler	487,535	Dec. 6	496	130	61	1419
Mackey, Isaac, Hollansburg, Ohio. Hand corn-planter	487,849	Dec. 13	1007	254	61	1539
Macqueen, William N., Baltimore, Md. Canning apparatus	485,957	Nov. 8	1232	325	61	841
Madarasz, L. W., *et al.* (See Vogt, August G., assignor.)						
Madden, Albert F., Newark, N. J. Finishing grids for secondary batteries	485,128	Oct. 25	2516	647	61	546
Maddox, Jacob, Jr., Auxvasse, Mo. Bridle-bit	485,638	Nov. 8	740	194	61	740
Maddox, R. E. (See Turner, Ephraim M., assignor.)						
Maddux, Thomas H., Baker, La. Vaginal syringe	485,107	Oct. 25	2487	639	61	541
Magoon, Egbert R. (See Magoon, Marius L., assignor.)						
Magoon, Marius L., assignor to E. R. Magoon, Malone, N. Y. Horse-feeding device	484,442	Oct. 18	1414	361	61	311
Mahaffey, James B., assignor of one-half to E. B. Hunting, Baltimore, Md. Cable railway	483,965	Oct. 4	663	166	61	138

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Mahan, William R. (See Dean, James C. A., assignor.)						
Mahle, Albert W. (See McBride, Edward H., assignor.)						
Mahon, Terrence P., Philadelphia, Pa. Furnace	488,171	Dec. 13	1548	388, 389	61	1647
Mahon, William L. (See Ward, Alexander F., assignor.)						
Mahoney, James T., Philadelphia, Pa., assignor, by mesne assignments, to E. W. Bruninghausen, New York, N. Y. Bottle-stopper	486,261	Nov. 15	1737	457	61	960
Main, William, Brooklyn, N. Y. Secondary battery	485,013	Oct. 25	2349	605	61	512
Malin & Company. (See Brown, Irving A., assignor.)						
Malm, Alexander, assignor to T. W. & C. B. Sheridan, New York, N. Y. Paper-cutting machine	483,935	Oct. 4	614	155	61	127
Malony, Michael. (See Burr and Malony.)						
Manchester, Isaac A., Fall River, Mass. Portable ice-run	488,080	Dec. 13	1402	348	61	1619
Manchester, Isaac A., Fall River, Mass. Wagon-body	488,081	Dec. 13	1404	348	61	1619
Mandt, Targe G., Stoughton, Wis. Running-gear for vehicles	486,677	Nov. 22	2380	622	61	1100
Manhattan Brass Company. (See Hipwell, Thomas, assignor.)						
Manly John A., *et al.* (See Lincoln, David B., assignor.)						
Mann, J. M., *et al.* (See Berg, George F., assignor.)						
Mann, John J., Salford, England. Machine for cutting the pile of fustians or other pile fabrics	486,050	Nov. 8	1378	366	61	870
Mann, John J., Manchester, and J. H. Smith, Eccles, England. Machine for cutting fustians or other weft-pile fabrics	485,958	Nov. 8	1234	326	61	841
Mann, William, Cleveland, Ohio. Vise	484,213	Oct. 11	1041	264	61	226
Mannheim, Joseph, New York, N. Y. Safety fire-escape	487,395	Dec. 6	254	69	61	1371
Manning, Bowman & Co. (See Manning and Seips, assignors.)						
Manning, Edward B., and M. Seips, assignors to Manning, Bowman & Co., Meriden, Conn. Attachment of covers to tea or coffee pots or other vessels	488,793	Dec. 27	2548	632	61	1877
Manning, Reuben A. (See Zempter, Manning, and Overall.)						
Mansfield, Frank, New York, N. Y. Closed conduit for electric railways	488,738	Dec. 27	2462	612	61	1860
Mantey, Henry, Orizava, Mexico. Edge-runner or vertical millstone	487,930	Dec. 13	1142	285	61	1564
Mantey, Henry, assignor to Grusonwerk, Magdeburg, Germany. Edge-runner or vertical millstone	488,146	Dec. 13	1497	376	61	1637
Marangos, Apostolos, Marseilles, France. Grain-elevator	483,566	Oct. 4	74	18, 19	61	17
Marble, Edwin H. (See Marble, Edwin T. and E. H.)						
Marble, Edwin T. and E. H., Worcester, Mass. Cloth-napping machine	486,115	Nov. 15	1503	396, 397	61	913
Marble, James R., Albany, N. Y., assignor, by mesne assignments, of one-half to J. W. Fuller. Air-brake coupling	484,034	Oct. 11	773	195	61	173
Marcee, John, U. S. Army. Cooking-stove	485,049	Oct. 25	2406	610	61	523
Marcotte, Telils, assignor of one-half to C. W. Chamberlin, Worcester, Mass. Lumber-measuring machine	484,555	Oct. 18	1588	403	61	346
Maret, James, Mount Vernon, Ky., and W. L. De Graff, Homer, Mich. Telegraph-sounder	486,051	Nov. 8	1379	366	61	871
Marga, Uldarique, Brussels, Belgium. Cartridge for firearms	483,656	Oct. 4	204	51	61	42
Marion, Barney, Vicksburg, Miss. Device for setting semaphore-signals	488,825	Dec. 27	2593	643	61	1886
Maris, Jared, Cincinnati, Ohio. Dust and mud cap for vehicle-hubs	487,189	Nov. 29	3240	829	61	1287
Markee, Reuel T., Philadelphia, Pa. Spider for wheels	488,319	Dec. 20	1791	450	61	1711
Markham, De Witt C., Collinsville, assignor, by mesne assignments, to W. M. Brinkerhoff, Auburn, N. Y. Spring-tooth harrow	488,714	Dec. 27	2428	602	61	1852
Markham, Hiram L., Greenleaf, Kans. Listing-plow-cultivator attachment	485,959	Nov. 8	1236	326	61	842
Marquard, Charles F., Cleveland, Ohio. Mitering-machine	486,724	Nov. 22	2451	639	61	1115
Marriott, Thomas A., Newberry, Mich. Car-brake	487,868	Dec. 13	1040	261	61	1545
Marriott, William, Norfolk, England. Car-spring	485,553	Nov. 1	609	162, 163	61	697
Marsden, Luther H., Droylsden, and J. H. Frost, Eccles, England. Woven fabric	484,537	Oct. 18	1564	398	61	340
Marsden, Mark W., Philadelphia, Pa. Advertising or business cabinet	483,849	Oct. 4	492	129	61	102
Marsh, George A., Jr., Sandusky, Ohio. Grinding, smoothing, and polishing glass	488,925	Dec. 27	2756	680	61	1920
Marsh, William A. (See Cutter, Solomon M., assignor.)						
Marshall, Anderson C., Corunna, Mich. Thill-tug	488,021	Dec. 13	1291	322	61	1594
Marshall, Edgar Y., Garden City, Kans. Railway-rail-straightening machine	485,768	Nov. 8	940	252	61	782
Marshall, James, Fall River, Mass. Hat-blocking machine	485,349	Nov. 1	310	82, 83	61	635
Marshall, Oliver. (See Marshall, William P. and O.)						
Marshall, Waldo H., assignor to Consolidated Brake Adjuster Company, Chicago, Ill., Slack-adjuster for cars	484,858	Oct. 25	2092	538, 539	61	461
Marshall, Waldo H., assignor to Consolidated Brake Adjuster Company, Chicago, Ill. Slack-adjuster for car-brakes	484,859	Oct. 25	2093	539	61	462
Marshall, Waldo H., assignor to Consolidated Brake Adjuster Company, Chicago, Ill. Slack-adjuster for car-brakes	484,860	Oct. 25	2095	540	61	462
Marshall, William P. and O., Dayton, Ohio. Tobacco-hiller	483,567	Oct. 4	76	19	61	18
Marshfield, Maggie, Chicago, Ill. Culinary apparatus	484,599	Oct. 18	1650	419	61	358
Martens, George. (See Del Valle, Eliseo, assignor.)						
Marthens, Allen, Pittsburg, Pa. Bicycle attachment	487,577	Dec. 6	553	142	61	1431
Martin, Betsey J., assignor of one-third to W. D. Bagby, Pomona, Kans. Fireproof garment	488,148	Dec. 13	1500	377	61	1638
Martin, Charles B., Wanpun, Wis. Car-coupling	488,339	Dec. 20	1828	457	61	1718
Martin, Charles C., Denver, Colo. Box-fastener	484,373	Oct. 11	1294	330	61	276
Martin, Charles C., Denver, Colo. Box-fastener	484,663	Oct. 18	1769	450	61	362
Martin, Edwin, *et al.* (See Martin, Thomas J., assignor.)						
Martin, Frank, Cincinnati, Ohio. Joiner's clamp	484,104	Oct. 11	865	220	61	191
Martin, Frank, assignor to Samuel C. Tatum Company, Cincinnati, Ohio, Floor-clamp	488,147	Dec. 13	1499	377	61	1638
Martin, Henri, Sotteville, near Rouen, France. Boiler	486,116	Nov. 15	1506	397, 398, 399	61	913
Martin, Isaac A., and C. T. Hammon, Ouray, Colo. Water-closet attachment	485,960	Nov. 8	1236	326	61	842
Martin, Jerome W., Kansas City, Mo., and M. Cahill, Hays City, Kans. Hand fence-machine	486,487	Nov. 22	2079	550	61	1042
Martin, Lazarus C., Greencastle, Pa. Car-coupling	485,829	Nov. 8	1018	273	61	797
Martin, Morris, Malden, Mass., assignor to Municipal Signal Company, Portland, Me. Electric signaling apparatus	487,676	Dec. 6	709	180, 181	61	1461
Martin, Robert, Pittsburg, Pa. Broiler or toaster	486,880	Nov. 29	3716	708	61	1184
Martin, Robert, Philadelphia, Pa. Guide for use in gaining stair-stringers	487,889	Dec. 13	1073	269	61	1551
Martin, Samuel H. (See Ziegler, Adam J., assignor.)						
Martin, Samuel M., Sidney, Ohio. Horseshoeing-rack	487,190	Nov. 29	3241	829	61	1287
Martin, Samuel Z., Lock Haven, Pa. Foul-air ventilator	483,631	Oct. 4	169	42, 43	61	35
Martin, Taylor, Fairmont, W. Va. Embalming	488,338	Dec. 20	1827	456	61	1718

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Martin, Thomas E., Des Moines, Iowa. Furnace	484,600	Oct. 18	1652	419	61	359
Martin, Thomas J., assignor of two-thirds to E. and W. L. Martin, Philadelphia, Pa. Machine for printing fabrics	488,897	Dec. 27	2702	669	61	1910
Martin, Vanburon, and M. Hanna, Clinton, Mo. Sawmill-dog	484,332	Oct. 11	1238	315	61	264
Martin, William H., Providence, R. I., assignor to Accurate Time Stamp Company. Time-stamp	485,639	Nov. 8	740	195	61	740
Martin, William L., *et al.* (See Martin, Thomas J., assignor.)						
Martindale, Ambrose B. (See Alexander and Martindale.)						
Martinez, Richard P., Brooklyn, N. Y. Elastic vehicle-tire	486,230	Nov. 15	1676	443	61	946
Martini, Frederick W., Brooklyn, N. Y. Lining for jewelry-exhibitors	488,568	Dec. 27	2198	543	61	1807
Maschmeyer, Charles H., assignor to Hartford Silver Plate Company, Hartford, Conn. Handle	485,846	Nov. 8	1044	279	61	803
Masel, Theodore. (See Unzicker and Masel.)						
Maskelyne, John N., Jr., London, England. Type-writing machine	484,035	Oct. 11	774	195	61	173
Mason, David, assignor to Sprague Electric Railway and Motor Company, New York, N. Y. Electric-railway trolley	488,022	Dec. 13	1291	322, 323	61	1595
Mason, David, assignor to Sprague Electric Railway and Motor Company, New York, N. Y. Electric-railway trolley	488,023	Dec. 13	1293	323	61	1595
Mason, George S., *et al.* (See Abbott, George F., assignor.)						
Mason, George W., Eau Claire, Wis. Car-coupling	487,536	Dec. 6	497	130	61	1419
Mason, James H., Chicago, Ill. Steam drop-press	488,128	Dec. 13	1472	371	61	1633
Mason, John, assignor to W. B. Darling, Providence, R. I. Car-coupling	485,468	Nov. 1	489	130	61	672
Mason, William, assignor to Winchester Repeating Arms Company, New Haven, Conn. Means for separably uniting gun-barrels to the stocks	487,486	Dec. 6	418	108	61	1404
Mason, William, assignor to Winchester Repeating Arms Company, New Haven, Conn. Means for separably attaching gun-barrels to the stocks	487,487	Dec. 6	420	108	61	1404
Mason, William, assignor to Winchester Repeating Arms Company, New Haven, Conn. Means for separably attaching gun-barrels to the stocks	487,488	Dec. 6	422	109	61	1404
Mason, William, assignor to Winchester Repeating Arms Company, New Haven, Conn. Means for separably attaching gun-barrels to the stocks	487,489	Dec. 6	424	109	61	1405
Mason, William, assignor to Winchester Repeating Arms Company, New Haven, Conn. Means for attaching magazines to firearms	487,677	Dec. 6	712	182	61	1462
Massam, Walter K. (See Crowe and Massam.)						
Master, James W., Charleston, Ill. Well or cistern cleaner	484,214	Oct. 11	1042	264	61	226
Masterson, Herbert, assignor to himself and J. A. Linhardt, Jefferson City, Mo. Skiving-machine	488,212	Dec. 20	1023	405	61	1679
Mathews, George, *et al.* (See Schenck, John D. P., assignor.)						
Mathews, George B. (See Bond, Nathan O., assignor.)						
Mathewson, Edward P., Pueblo, Colo. Furnace-tap	483,936	Oct. 4	615	155	61	127
Mathis, William B. (See Haines and Mathis.)						
Mathison, Joseph, Somerville, Mass. Attaching buttons	484,105	Oct. 11	866	220	61	192
Matson, Jeptha L., Dunbarton, Wis. Car-coupling	486,193	Nov. 15	1615	429	61	935
Matteson, Elias L., Randolph, N. Y. Belt-fastener	487,021	Nov. 29	2976	766	61	1235
Matthews, Edward P., Indianapolis, Ind. Exhibiting-case	488,715	Dec. 27	2430	602	61	1853
Matthews, Jeremiah H., South Bend, Ind. Door-securer	485,205	Nov. 1	79	25	61	588
Matthews & Willard Manufacturing Company. (See Miller, John C., assignor.)						
Matthiesen, Conrad H., Odell, Ill. Car-seat	484,215	Oct. 11	1044	264	61	226
Mattijetz, Andreas, Giddings, Tex. Metallic railway-tie	487,952	Dec. 13	1173	293	61	1570
Mattson, W. Harry. (See Grantland, John W., assignor.)						
Mattson, William H., Philadelphia, Pa. Bather's appliance	486,348	Nov. 15	1867	491	61	985
Maul, Benjamin F. (See Jones, Sylvanus H., assignor.)						
Maule, Francis I., Philadelphia, Pa. Long-joint coupling	485,961	Nov. 8	1238	327	61	842
Maurer, Alexander C. (See Maurer, Joseph W. and A. C.)						
Maurer, Joseph W. and A. C., assignors to F. W. Maurer & Sons, Philadelphia, Pa. Loom	488,569	Dec. 27	2199	544	61	1808
Maurer & Sons, F. W. (See Maurer, Joseph W. and A. C., assignors.)						
Mauser, Alfons, Oberndorf, Germany. Hat and brush therefor	485,640	Nov. 8	742	195	61	740
Mauser, Paul, assignor to Waffenfabrik Mauser, Oberndorf, Germany. Safety-trigger for breech-loading bolt-guns	488,694	Dec. 27	2402	595	61	1847
Mawby, Thomas. (See Clarke and Mawby.)						
Maxim, Hiram S., assignor to Gas Lighting Improvement Company, Limited, London, England. Method of and apparatus for carbureting gas	485,288	Nov. 1	200	57	61	614
Maxwell, David, assignor to D. Maxwell & Sons, St. Mary's, Canada. Root-cutter	483,743	Oct. 4	330	83	61	69
Maxwell, Evan B., Pinckneyville, Ill. Fence	485,641	Nov. 8	743	195	61	741
Maxwell, James R., Cincinnati, Ohio. Valve and valve-support	487,408	Dec. 6	296	77	61	1379
Maxwell, John S. (See O'Lalor, John J., assignor.)						
Maxwell & Sons, David. (See Maxwell, David, assignor.)						
Maxwell, William W., Champaign, Ill. Account-keeping device	487,953	Dec. 13	1174	293	61	1570
May, E. F. (See Curtis, Winfield, assignor.)						
May, Robert G., Grand View, Ind. Kitchen-cabinet	487,629	Dec. 6	630	162	61	1446
May, Simon, and L. M. Aron, Brooklyn, N. Y. Souvenir medallion or plaque	488,826	Dec. 27	2595	644	61	1887
Mayer, Edward L., Chicago, Ill. Dress-form	483,618	Oct. 4	153	38	61	32
Mayer & Grammelspacher. (See Wich, Johann, assignor.)						
Mayers, Henry, San Francisco, Cal. Ice-cream freezer	487,370	Dec. 6	217	60	61	1363
Mayhew, J. Erwin, Hartford, Conn. Ink-eraser	486,976	Nov. 29	2907	750	61	1222
Mayloy, Edward C., assignor of one-half to A. J. Bevier, Rochester, N. Y. Fountain-ink-stand	484,106	Oct. 11	866	220	61	192
Maynes, Alexander W. (See Ransom and Maynes.)						
Mayo, L. U. (See Olliver, Gaston, assignor.)						
Mayo, Vaughn M. (See Lawrence, Charles D., assignor.)						
Mays, Roseanna, Strasburg, Ohio. Fruit-picker	487,931	Dec. 13	1144	286	61	1564
Mazza, Ralph, Niles, Cal. Horse-taming apparatus	484,216	Oct. 11	1045	265	61	226
McAdam, Alexander J., San Francisco, Cal. Auxiliary valve for elevators	484,223	Oct. 11	1054	268	61	229
McAdams, John S., Ashland, Pa. Railway-frog	487,957	Dec. 13	1179	294	61	1571
McAllister, Arthur W., administrator. (See Williams, Charles A. and L. K.)						
McAnlis, James D., and H. E. Fleming, Beaver Falls, Pa. Electric clock	485,645	Nov. 8	747	196, 197	61	742
McBride, Edward H., Springfield, Mo., assignor of one-half to A. W. Mahle. Electrode for medicinal purposes	484,522	Oct. 18	1538	390	61	335
McBride, Thomas, Philadelphia, Pa., and E. Fisher, Kincardine, Canada. Steam-generator	487,195	Nov. 29	3247	830, 831	61	1288
McBurneit, Milford J., Wedowee, Ala. Plow	486,492	Nov. 22	2085	552	61	1043
McCague, Frank K., Shell Rock, Iowa. Flour bin and sifter	485,210	Nov. 1	85	26	61	590
McCann, Henry F., *et al.* (See Hazard, Willet E., assignor.)						
McCann, Patrick, assignor of three-eighths to P. W. Hombach, St. Ignace, Mich. Straightener for switch-rail rods or braces	487,958	Dec. 13	1181	294	61	1572

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
McCardell, James R., C. H. West, and M. J. McDonald, Trenton, N. J. Running-gear	485,875	Nov. 8	1088	289	61	811
McCart, James, and A. G. Judkins, Trenton, Mich. Electric danger-signal for moving trains	485,473	Nov. 1	498	131	61	673
McCaslin, George W., Montclair, N. J. Conveyer	486,789	Nov. 22	2560	667, 668	61	1136
McCaslin, George W., Hoboken, N. J. Conveyer	486,809	Nov. 22	2592	675	61	1143
McCauley, Reuben A., Baltimore, Md. Chute for coal-wagons	484,754	Oct. 18	1907	486	61	412
McClain, Edward L., Greenfield, Ohio. Harness-pad	486,679	Nov. 22	2322	623	61	1101
McClarran, Robert C., Wooster, Ohio. Tension device for wire fences	486,385	Nov. 15	1918	508	61	997
McClave, William, Scranton, Pa. Means for burning solid carbonaceous fuels	485,820	Nov. 8	999	268	61	794
McClave, William, Scranton, Pa. Compound steam-jet blower	485,821	Nov. 8	1003	269	61	794
McClellan, Charles H., New York, N. Y. Type-writing machine	487,761	Dec. 13	861	218, 219	61	1509
McClellan, Charles W., Chicago, Ill. District alarm-box	485,351	Nov. 1	313	83, 84	61	636
McClintock, Robert, J. F. Laughammer, and J. W. Lowell, Baltimore, Md. Cable railway	486,262	Nov. 15	1738	458	61	960
McClymonds, Louis K., assignor to Peerless Manufacturing Company, Cleveland, Ohio. Tire for vehicle-wheels	485,110	Oct. 25	2491	640	61	542
McCollam, William J., Paterson, N. J. Fire-escape	486,493	Nov. 22	2086	552	61	1043
McCollum, David A., Eagleville, Mo. Car-coupling	486,291	Nov. 15	1780	468	61	969
McCollum, James C., assignor of one-half to W. W. Murphy, Los Angeles, Cal. Milking-machine	484,505	Oct. 18	1513	384	61	330
McCombs, George F., Allegheny, assignor to Hand Stitch Broom Sewing Machine Company, Limited, Pittsburg, Pa. Broom-sewing machine	487,196	Nov. 29	3251	831, 832	61	1289
McCombs, George F., Allegheny, assignor to Hand Stitch Broom Sewing Machine Company, Limited, Pittsburg, Pa. Broom-sewing machine	487,197	Nov. 29	3252	832	61	1289
McConnell, Frances S., Altoona, assignor of one-half to G. P. Roeser, Baldwin township, and P. Luther, Pittsburg, Pa. Car-coupling	488,173	Dec. 13	1552	389	61	1648
McConnell, William H., Wilsonville, Ohio. Clutch	484,224	Oct. 11	1056	268	61	229
McConway, William. (See Buhoup, Henry C., assignor.)						
McCool, William A., Beaver Falls, Pa. Duplex drilling-machine	488,658	Dec. 27	2339	579	61	1835
McCool, William A., and W. G. Algeo, Beaver Falls, Pa. Machine for shearing metal bars	488,659	Dec. 27	2342	579, 580	61	1836
McCoole, Gabriel W., St. Louis, Mo. Clothes-pin	486,954	Nov. 29	2877	743	61	1216
McCorkle, John W., Lexington, Wash. Lubricator	486,292	Nov. 15	1782	468	61	969
McCormick, Charles H., *et al.* (See Wilson, William H., assignor.)						
McCormick Harvesting Machine Company. (See Pridmore, Henry E., assignor.)						
McCormick, Isaac R., Logansport, Ind. Car-brake	488,695	Dec. 27	2404	595	61	1848
McCowatt, David, Chicago, Ill. Furnace-damper	486,733	Nov. 22	2467	644	61	1118
McCoy, Henry J. (See Chadbourne, Behringer, and McCoy.)						
McCreary, John L., Lamar, Mo. Hay-loader	485,769	Nov. 8	941	252	61	782
McCrory, J. C., *et al.* (See Wood, William T., assignor.)						
McCulloch, Alfred H., Boston, Mass., assignor, by mesne assignments, to Western Electric Company, of Illinois. Multiple-switchboard circuit	487,852	Dec. 13	1010	255	61	1539
McCullum, William W., *et al.* (See Morrell, Robert, assignor.)						
McCutchan, John J., Lynn, Mass. Apparatus for cleaning ships' bottoms	487,198	Nov. 29	3253	832	61	1289
McCutchen, Charles W. (See Covert and McCutchen.)						
McDade, John J., San Francisco, Cal. Coin-operated opera-glass receptacle	483,939	Oct. 4	619	156	61	128
McDermott, George L., Neenah, Wis. Steam-boiler indicator	487,634	Dec. 6	639	164	61	1448
McDonald, Ambrose S., *et al.* (See Doty, James, assignor.)						
McDonald, James S., Chicago, Ill. Carbon-sheet holder	487,959	Dec. 13	1162	295	61	1572
McDonald, James S., Jr., Chicago, Ill. Order-holder	487,960	Dec. 13	1163	295	61	1572
McDonald, Martin J. (See McCardell, West, and McDonald.)						
McDonald, R. T., *et al.* (See Panthonier, Casimir, assignor.)						
McDonald, Van Buren, Coytee, Tenn. Car-coupling	485,969	Nov. 8	1247	329	61	844
McDonough, Frank, Eau Claire, Wis. Band-saw mill	485,970	Nov. 8	1248	329, 330	61	844
McDonough, James W., New York, N. Y. Telephone	485,876	Nov. 8	1090	290	61	812
McDougall, Alexander, Duluth, Minn. Wrecking-boat	488,574	Dec. 27	2206	546	61	1810
McDougall, Isaac S. (See Smith, Hartley, and McDougall.)						
McDowell, Albert, assignor of one-half to J. A. Stroud, Selma, Cal. Refrigerator	487,199	Nov. 29	3255	833	61	1290
McDowell, Ernest L., assignor of one-half to K. B. McDowell, Arkansas City, Kans. Bouquet-holder	484,602	Oct. 18	1655	420	61	359
McDowell, Kittie B. (See McDowell, Ernest L., assignor.)						
McEldowney, Morgan T., *et al.* (See Bromley, Daniel W., assignor.)						
McElhiney, Harrison H., assignor to McElhiney Manufacturing Company, Nebraska City, Nebr. Caster	485,706	Nov. 8	853	229	61	764
McElhiney Manufacturing Company. (See McElhiney, Harrison H., assignor.)						
McElroy, James F., assignor to Consolidated Car-Heating Company, Albany, N. Y. Apparatus for regulating the intensity of incandescent lights	484,110	Oct. 11	871	221	61	193
McElroy, James F., assignor to Consolidated Car-Heating Company, Albany, N. Y. Hose-coupling	486,118	Nov. 15	1510	400	61	914
McElroy, James F., Albany, N. Y., assignor to Consolidated Car Heating Company, Wheeling, W. Va. Current-director	486,643	Nov. 22	2326	609	61	1090
McElroy, James F., Albany, N. Y., assignor to Consolidated Car Heating Company, Wheeling, W. Va. Current-regulator	486,644	Nov. 22	2328	609	61	1090
McEntarfer, Jeremiah M., *et al.* (See Sapp, Samuel M., assignor.)						
McEntarfer, John G., *et al.* (See Sapp, Samuel M., assignor.)						
McEwan, Peter H., Windsor, Canada, assignor of one-fourth to F. M. Allman, Detroit, Mich. Cash register and indicator	486,119	Nov. 15	1512	400	61	914
McFarlane, John, Wiota, Wis. Car-coupling	487,424	Dec. 6	320	82	61	1384
McFarlane, Robert, assignor of one-half to W. E. Holmes, Minneapolis, Minn. Weighing and recording scale	483,675	Oct. 4	228	57	61	47
McGall, William J., West Orange, N. J. Hat-brim-ironing machine	483,746	Oct. 4	336	84	61	70
McGarrell, John L., Westfield, N. Y. Vine-holder	483,858	Oct. 4	503	125	61	104
McGee, George W., Chicago, Ill. Treating gold and silver ores	487,579	Dec. 6	556	.....	61	1432
McGlasson, Daniel W., Creston, Ohio. Tension device	485,770	Nov. 8	943	253	61	783
McGovern, Stephen D., *et al.* (See Krogh, Emil C. C., assignor.)						
McGovern, Thomas B., *et al.* (See Krogh, Emil C. C., assignor.)						
McGowan, John H., Cincinnati, Ohio. Valve-seat	486,600	Nov. 22	2257	590	61	1075
McGown, George H., Lynn, Mass. Hammer	487,635	Dec. 6	640	164	61	1448
McGray, Arthur, Yarmouth, Canada. Apparatus for shipping lobsters	485,422	Nov. 1	422	113	61	659
McGuigan, Michael J., Ashland, Wis. Leggin	487,226	Nov. 29	3301	842	61	1298
McGuire, James P., Atchison, Kans. Railway fish-plate, set-screw, and nut-lock therefor	484,809	Oct. 25	2012	517	61	446
McGuire, William R., Fort Dodge, Iowa. Railway-gate	487,538	Dec. 6	500	131	61	1419

Alphabetical list of patentees, October to December, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
McIlwain, Henry C., Nail's Mills, assignor of one half to J. N. Huston, Connersville, Ind. Eyepiece for telescopes	488,506	Dec. 20	2096	520	61	1773
McIntire, Bartlett, assignor to Vulcan Iron Works, San Francisco, Cal. Clip for wire rope-ways	488,085	Dec. 13	1407	349	61	1620
McIntosh, Colin. (See Vogel and McIntosh.)						
McIntosh, George, Stonington, Conn. Electric signal	485,352	Nov. 1	315	84	61	636
McIntyre, D. Stuart. (See McIntyre, Duncan T., assignor.)						
McIntyre, Duncan T., Mattoon, Ill., assignor to himself, and D. S. McIntyre, Knoxville, Tenn. Metallic riprap	486,885	Nov. 29	2726	711	61	1186
McIntyre, Joseph J., Brooklyn, N. Y. Projectile	484,802	Oct. 25	2098	540	61	463
McKay, Andrew B. (See Drader and McKay.)						
McKee, James A., and P. G. Hatchett, Alexander, Tex. Automatic brake	486,886	Nov. 29	2727	711	61	1186
McKee, Martin E., St. Paul, Minn. Automatic brake-adjuster	487,636	Dec. 6	641	164, 165	61	1449
McKee, William, Chicago, Ill. Grain-drier	488,770	Dec. 27	2509	624	61	1869
McKeggie, James H., *et al.* (See Bunker, Harman, assignor.)						
McKeggie, John C., *et al.* (See Bunker, Harman, assignor.)						
McKenney, George F., Laconia, assignor to O. Twombly, Lakeport, N. H. Knitting-machine	488,575	Dec. 27	2208	546, 547, 548	61	1810
McKenzie, J. A., *et al.* (See Bailey, Frank. M., assignor.)						
McKenzie, William D., *et al.* (See Cross, Gerome L., assignor.)						
McKeown, Hugh J., Newport, Ky. Hoisting machinery	488,447	Dec. 20	2001	500	61	1753
McKerlie, Alexander, Hamilton, Canada. Window-screen	484,540	Oct. 18	1568	399	61	341
McKesson & Robbins. (See Morehouse, Charles L., assignor.)						
McKiernan, Samuel G., Paterson, N. J. Rock-drill	488,269	Dec. 20	1712	431	61	1696
McKinley, Frederick E. (See De Mars, Joseph, assignor.)						
McKinney, Samuel C., West Troy, assignor of one-half to W. S. Earl, W. and A. R. Wilson, and E. K. Betts. Folding-machine	485,130	Oct. 25	2518	648	61	547
McLachlan, Duncan. (See Hilts, George S., assignor.)						
McLain, Peter J., Denver, Colo. Illuminated badge	485,748	Nov. 8	915	245	61	777
McLain, Ralph, La Grange, Ind. Grain-cleaning attachment for clover hullers and separators	485,971	Nov. 8	1252	330, 331	61	845
McLandsborough, Joseph, Station Fifteen, Ohio. Post-driver	485,051	Oct. 25	2408	620	61	524
McLane, Edwin P., Mount Carmel, Conn. Game-board	487,447	Dec. 6	364	95	61	1393
McLellan, Charles T., Easton, Pa. Sectional steam-boiler	485,556	Nov. 1	613	164	61	698
McLellan, Michael. (See Morrison and McLellan.)						
McLeran, Thomas G. (See Munson, Anson L., assignor.)						
McLoughlin Brothers. (See Gist, Grant G. G., assignor.)						
McMaster, Arthur H., Fowler, Colo. Connection for steam-engines	485,557	Nov. 1	615	164	61	699
McMichael, George C., St. Paul, Minn., assignor to Eureka Coupler and Buffer Company, of West Virginia. Car-coupling	485,211	Nov. 1	286	26, 27	61	590
McMullan, James H. (See Morgan and McMullan.)						
McMullen, Peter, Buffalo, N. Y. Car-brake	487,681	Dec. 6	721	184	61	1463
McNabb, John B., Salem, Ohio. Closure for vessels	483,575	Oct. 4	86	23	61	20
McNally, Edward P. (See Tomlinson, Jonas, assignor.)						
McNary, Thomas T., Hailey, Idaho. Ore-concentrator	485,972	Nov. 8	1254	331	61	846
McNaughton, James. (See Porter, John W., assignor.)						
McNeil, Murdock, Boston, Mass. Steam-pressure gage	486,839	Nov. 22	2647	691	61	1155
McNicol, Archie, Norwich, Conn. Rein-support	484,444	Oct. 18	1417	361	61	311
McPartland, John, Wakefield, R. I. Vehicle-spring	488,795	Dec. 27	2551	633	61	1877
McPherson, Daniel W. (See Knight and Ownby, assignors.)						
McQuarrie, James L., Boston, Mass., assignor, by mesne assignments, to Western Electric Company, of Illinois. Multiple-switchboard busy-test circuit and apparatus	487,853	Dec. 13	1015	255	61	1540
McQuarrie, James L., Boston, Mass., assignor, by mesne assignments, to Western Electric Company, of Illinois. Busy-test apparatus for multiple switchboards	487,854	Dec. 13	1020	256	61	1540
McRoberts, Charles H., St. Louis, Mo. Dumping-wagon	485,294	Nov. 1	209	60	61	615
McTighe, Thomas J. (See Hoeveler and McTighe.) (Reissue.)						
McWane, Charles P., Graham, Va. Hillside-plow	484,043	Oct. 11	785	198	61	175
Mead, Albert G., Boston, assignor to W. B. H. Dowse, trustee, Newton, Mass. Glove-fastener	484,807	Oct. 25	2007	515	61	445
Mead, Archabald F., Philadelphia, Pa. Pattern for drafting trousers	485,014	Oct. 25	2355	605	61	513
Mead, Theodore H., *et al.* (See Crowell, Luther C., assignor.)						
Meader, Wilber F., *et al.* (See Hunter, Joseph, assignor.)						
Meagher, William E., and A. Howarth, Providence, R. I. Switch attachment for cars	483,744	Oct. 4	332	84	61	70
Mealer, James A., Lampasas, Tex. Hay-press	484,504	Oct. 18	1512	384	61	330
Mecham, Joseph. (See De La Mare and Mecham.)						
Mechwart, Andreas, Buda-Pesth, Austria-Hungary. Axial-flow double-wheel turbine	484,601	Oct. 18	1633	419, 420	61	359
Medcraft, George E. (See O'Connell and Medcraft.)						
Meech, Harrison B., Chicago, Ill. Apparatus for treating ores	484,801	Oct. 25	2007	510	61	463
Meeker Bros. (See Comes, Keros L., assignor.)						
Meeker, Randolph B., Detroit, Mich. Tackle-block	485,504	Nov. 1	538	112	61	662
Meeks, Samuel J. (See Bond, Nathan O., assignor.)						
Mefford, David M., Toledo, Ohio. Shaded lamp-chimney	487,850	Dec. 13	1008	254	61	1539
Megson, Richard, Cambridge, Mass. Baker's and confectioner's depositing apparatus	484,937	Oct. 25	2232	575	61	489
Mehring, William M., York Road, Md. Cow-milker	488,282	Dec. 20	1734	436	61	1700
Meier, Emil, New York, N. Y. Attachment for printing-presses	485,704	Nov. 8	851	228	61	764
Meier, Joseph, Newark, N. J. Pulley for transmitting power	486,585	Nov. 22	2233	586	61	1071
Meiga, James L., assignor to W. M. Lowney, Boston, Mass. Elevated-railway structure	488,283	Dec. 20	1736	437	61	1700
Meinberg, Alfred. (See Lee, Charles E., assignor.)						
Meinhard, Henry, Chicago, Ill. Bottle-filling device	485,803	Nov. 8	980	263	61	790
Meinicke, Carl A. E., Clausthal, Germany. Ore-separator	485,962	Nov. 8	1238	327	61	842
Meiring, Bernard. (See Hill and Meiring.)						
Meisner, William O., Chicago, Ill. Electric-arc lamp	486,488	Nov. 22	2080	551	61	1042
Meister, Christian A., Allentown, Pa. Rubber-dam clamp	485,963	Nov. 8	1240	327	61	843
Melius, Jacob A., Lansing, Mich. Sporting-trap	488,827	Dec. 27	2595	644	61	1887
Melius, Walter, Albany, N. Y. Brush	485,816	Nov. 8	995	267	61	793
Melius, Walter, Albany, assignor to Empire Portable Forge Company, Lansingburg, N. Y. Brush	485,642	Nov. 8	744	196	61	741
Mellen, Arnold A., assignor to H. Bederman, Canton, Ohio. Building-block	485,289	Nov. 1	202	57	61	614
Mellen, Daniel W., *et al.* (See Cross, Gerome L., assignor.)						
Mellor, George, Newcastle-upon-Tyne, England. Ear appliance or instrument for use of teachers of music, &c.	486,725	Nov. 22	2452	639	61	1115

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Mendenhall, Walter S., Covington, Ky., assignor to Samuel C. Tatum Company, Cincinnati, Ohio. Inkstand	487,630	Dec. 6	632	162	61	1447
Mendenhall, Walter S., Covington, Ky., assignor to Samuel C. Tatum Company, Cincinnati, Ohio. Roll-paper cutter	488,129	Dec. 13	1474	372	61	1633
Mendelson, David, New York, N. Y. Pendant set screw-driver	485,420	Nov. 1	420	112	61	658
Mendelson, David, New York, N. Y. Ear-wire-forming device	485,964	Nov. 8	1241	328	61	843
Mendelson, David, New York, N. Y. Window-washer	486,726	Nov. 22	2453	640	61	1116
Mengel, Joseph A., McKeansburg, Pa. Washing-machine	483,723	Oct. 4	295	74	61	62
Menting, Albert. (See Jolitz, Charles F., assignor.)						
Mentley, William F., Defiance, Ohio. Road-scraper	486,566	Nov. 22	2194	578	61	1063
Menzies, John. (See Morgan and Menzies.)						
Menzies, John, and R. Morgan, New Haven, Conn. Water-closet cistern	485,469	Nov. 1	492	130	61	672
Mercader, Camille, Braddock, Pa. Pipe connection for hydraulic mechanisms	486,383	Nov. 15	1915	507	61	996
Mercader, Camille, Braddock, Pa. Crane-turning mechanism	487,954	Dec. 13	1176	293	61	1571
Mercer, Alfonso, Norfolk, Va. Rapid-fire breech mechanism	487,631	Dec. 6	633	163	61	1447
Merchant, Clarke. (See Montross, Levi H., assignor.)						
Merchant & Co. (See Montross, Levi H., assignor.)						
Merchant, Francis W., London, Canada. Automatic cut-off for gas-burners	488,082	Dec. 13	1404	349	61	1619
Merkle, Richard, *et al.* (See Heidel, Gustavos, assignor.)						
Merrell, Erskine R. (See Forsyth and Merrell.)						
Merrick, Frank M., Attica, Ind. Shaft attachment for vehicles	483,568	Oct. 4	78	19	61	18
Merrick, Timothy, *et al.* (See Landfear, William R., assignor.)						
Merrill, Edwin C., Allegheny, Pa. Thermostatic regulator	486,727	Nov. 22	2455	640 641	61	1116
Merrill, Harvie M., Marshall, Mich. Platform-balance	483,937	Oct. 4	616	156	61	127
Merrill, Henry D., Middlebury, Ind. Flood-fence	486,349	Nov. 15	1868	492	61	985
Merrill, Jabez H., Salem, Mass. Lasting-machine	488,442	Dec. 20	1991	497 498	61	1750
Merritt, Amos C., Allentown, N. Y. Car-coupling	487,756	Dec. 13	854	217	61	1508
Merritt, Charles H. (See Barnum, William H., assignor.)						
Merritt, William H. (See Chapman, George T., assignor.)						
Merry, George G., Boston, assignor to I. E. Williams, Woburn, Mass., and J. C. Dickinson, Brooklyn, N. Y. Coin-operated weighing-scale	483,787	Oct. 4	401	100	61	84
Merwin, Edward P., and J. D. Stirckler, Boston, Mass., assignors to Imperial Manufacturing Company, Portland, Me. Button-setting machine	487,678	Dec. 6	712	182 183	61	1402
Mesker & Bro. (See Mesker, Frank, assignor.)						
Mesker, Frank, assignor to Mesker & Bro., St. Louis, Mo. Shutter-fastener	488,478	Dec. 20	2052	510	61	1764
Messer, George E., Concord, Mass. Stop for throttle-valve levers	484,938	Oct. 25	2233	575	61	489
Messner, Jacob, Calumet, Mich. Safety attachment for elevators	483,569	Oct. 4	79	20	61	18
Mesta, George, Pittsburg, Pa. Apparatus for pickling and washing metal plates, &c	484,664	Oct. 18	1769	450	61	383
Metcalf, Charles W., Santa Paula, Cal. Centrifugal honey-extractor	486,728	Nov. 22	2456	641	61	1116
Meteesser, Lewis, New Orleans, La. Furnace	483,570	Oct. 4	81	20, 21	61	19
Meta, John D., Dubuque, Iowa. Guard for blank or other books	487,191	Nov. 29	3242	829	61	1288
Mettler, Frank W. (See Mettler, James I., assignor.)						
Mettler, James I., Creston, Ill., assignor of one-half to F. W. Mettler, Helena, Mont. Hand-plow	488,397	Dec. 20	1919	480	61	1736
Metzger, Edward, Pittsburg, assignor of one-half to J. Peters, Latrobe, Pa. Machine for making tubes from paper-pulp	488,149	Dec. 13	1501	377	61	1638
Metzger, Jules P., assignor to Leslie Brothers Manufacturing Company, Paterson, N. J. Slide-valve	488,525	Dec. 20	2133	528	61	1778
Meyer, August, assignor to D. H. Miller, Jr., and M. S. Hess, Baltimore, Md. Shoe-lace fastener	488,268	Dec. 20	1711	430	61	1606
Meyer, Gustav, Prague, Austria-Hungary. Interest-calculating apparatus	484,538	Oct. 18	1565	398	61	341
Meyerfeld, Jesse. (See Kiehl, Hermann, assignor.)						
Meyers, Frederick, Brooklyn, N. Y., and M. Stoveken, Hoboken, N. J. Hook and eye	484,720	Oct. 18	1845	469	61	397
Michelson, Max J., assignor of one-half to J. Harris, Chicago, Ill. Trunk	484,217	Oct. 11	1046	265	61	227
Michigan Elevator and Engine Company. (See Hultgren, William H., assignor.)						
Michigan Fire Ladder and Engine Company. (See Brayton, Richard, assignor.)						
Mickey, David W., White City, Kans. Check-hook	484,665	Oct. 18	1773	451	61	383
Middlebrooke, Hobart C., Rock Rapids, Iowa. Tail-piece for banjos or violins	487,879	Dec. 13	1060	265	61	1548
Midland Manufacturing Company. (See Livengood, Winfield S., assignor.)						
Miggett, William, Philadelphia, Pa. Car-coupling	484,939	Oct. 25	2234	576	61	490
Miland, Theodor J., White, S. D. Draft-equalizer	483,938	Oct. 4	617	156	61	127
Milburn, Gustave D., assignor to Photo Materials Company, Rochester, N. Y. Film-holder for cameras	485,393	Nov. 1	380	102	61	650
Miles, Arthur W., and E. A. Commander, Livingston, Mont. Wrench	484,218	Oct. 11	1049	265	61	227
Miles, George B., Washington, D. C. Type-case stand	487,932	Dec. 13	1145	286	61	1564
Miles, Melvin T., Le Mars, Iowa. Car-coupling	485,965	Nov. 8	1242	328	61	843
Miles, Robert P. (See Ravenel and Miles.)						
Miles, Willard W. (See Hopkins, Hiland E., assignor.)						
Miller, Aaron, Midland, Mich. Hay-rack for farm-wagons	487,333	Dec. 6	155	44	61	1351
Miller, Albert G. (See Brown and Smith, assignors.)						
Miller, Andrew G., Estill Springs, Tenn. Cockle-separator	488,443	Dec. 20	1994	498 499	61	1751
Miller, Charles J., assignor to Novelty Electric Company, Philadelphia, Pa. Electric-lamp shade	486,729	Nov. 22	2459	641	61	1117
Miller, Decatur H., Jr., *et al.* (See Meyer, August, assignor.)						
Miller, Edward I., assignor to Business Men's Manufacturing Company, Westfield, N. Y. Brush	484,107	Oct. 11	867	221	61	192
Miller, Fred. (See Stone and Miller.)						
Miller, Fredrick C., Newport, Ky. Cigar-bunch machine	484,219	Oct. 11	1049	266	61	227
Miller, George W., Lucas, Mich. Flooring or siding tongs	483,571	Oct. 4	82	21	61	19
Miller, George W., Bryan, Tex. Fan attachment for sewing-machines	485,554	Nov. 1	611	163	61	698
Miller, Horace E., Newark, N. J. Die for forming articles from plastic material	488,570	Dec. 27	2202	544	61	1809
Miller, J. Walter. (See Iske, Anthony, assignor.)						
Miller, John A., St. Louis, Mo. Combined rigid and ratchet wrench	485,290	Nov. 1	203	58	61	614
Miller, John C., assignor to Matthews & Willard Manufacturing Company, Waterbury, Conn. Wick-carrier	483,850	Oct. 4	493	122	61	102
Miller, John C., assignor to Matthews & Willard Manufacturing Company, Waterbury, Conn. Central-draft-lamp burner	487,955	Dec. 13	1177	294	61	1571
Miller, John H., Bridgeport, Conn. Spring-setting machine	486,832	Nov. 22	2635	687 688	61	1153
Miller, John W., Penfield, Pa. Crosscut-saw handle	487,371	Dec. 6	219	60	61	1364
Miller, John W., Bellmore, Ind. Grate-shelf	487,422	Dec. 6	317	81	61	1384

Alphabetical list of patentees, October to December, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Miller, Joseph M., Chicago, Ill. Fire-extinguisher	483,632	Oct. 4	170	43	61	36
Miller, Joseph M., Chicago, Ill. Fire-bucket	488,321	Dec. 20	1795	451	61	1711
Miller, Lewis, Akron, Ohio. Grain-binding harvester	488,398	Dec. 20	1920	480 481 482	61	1736
Miller, Nelson A., Elmira, N. Y. Indicator	487,445	Dec. 6	363	94	61	1393
Miller, Stanley G., assignor of one-half to W. F. Miller, Philadelphia, Pa. Lingo or heddle-weight for Jacquard looms	487,537	Dec. 6	500	130	61	1419
Miller, Thomas, Jersey City, N. J. Coffee or tea urn	486,881	Nov. 29	2717	708	61	1184
Miller, Thomas, Jersey City, N. J. Hot-water urn	488,320	Dec. 20	1792	450	61	1711
Miller, William E., Brooklyn, N. Y. Vehicle attachment	488,083	Dec. 13	1405	349	61	1620
Miller, William F. (See Miller, Stanley G., assignor.)						
Miller, William H. (See Steele, Benjamin M., assignor.)						
Miller, William H., and T. L. Farrow, assignors of one-third to E. D. Rich, Winston, N. C. Box screw and clamp	484,159	Oct. 11	954	245	61	209
Miller, Wilson B., Round Rock, Tex. Farm-gate	486,289	Nov. 15	1778	467	61	968
Miller, Winfield S., Milpitas, Cal. Cultivator	485,108	Oct. 25	2488	639	61	541
Miller's Falls Company. (See Rogers, George E., assignor.)						
Miller's Falls Company. (See Smith, Hiram B., assignor.)						
Millican, Finly C. (See Millican, Joel W., assignor.)						
Millican, Joel W., assignor of one-half to F. C. Millican, Grapevine, Tex. Car-coupling	488,571	Dec. 27	2203	545	61	1809
Millidge, John, Bailey's Harbor, Wis. Horse-collar	488,572	Dec. 27	2205	545	61	1809
Milligan, John F. (See Fosburgh and Milligan.)						
Milligan, Madison M. (See Stone, Benjamin F., assignor.)						
Milliken, Charles R. (See Flanders, John J., assignor.)						
Milliken, Charles R. (See Foster, Charles J., assignor.)						
Mills, Edward L., Erie, Pa. Steam-engine governor	485,817	Nov. 8	996	267	61	793
Mills, Edward L., Erie, Pa. Balanced slide-valve	485,818	Nov. 8	997	268	61	794
Mills, Frank W., Chicago, Ill. Railway-gate	488,322	Dec. 20	1796	451	61	1711
Mills, Lloyd M., Grand Rapids, Mich. Cash recorder and drawer	487,284	Dec. 6	70	21, 22	61	1336
Mills, Melvin A., Lawrence, Mass. Core-box	484,940	Oct. 25	2236	576	61	490
Mills, Webster L., Condit, Ohio. Axle-box	484,556	Oct. 18	1591	403	61	346
Milne, James. (See Thoeni, Martin, assignor.)						
Milner Manufacturing Company. (See Bolthoff, William H., assignor.)						
Miner, William W., New Haven, assignor to New Process Nail Company, Torrington, Conn. Die for swaging blanks for horseshoe-nails	484,220	Oct. 11	1051	266	61	228
Miner, William W., New Haven, assignor to New Process Nail Company, Torrington, Conn. Blank-feeding device	488,084	Dec. 13	1406	349	61	1620
Minnesota Thresher Manufacturing Company. (See Wilson, George E., assignor.)						
Minnick, Albert, Colton, assignor of one-half to M. Blanchard, San Bernardino, Cal. Ventilating device for railway-cars	483,851	Oct. 4	495	123	61	102
Minor, Frederick E., *et al.* (See Blume, Charles A., assignor.)						
Minor, Oscar C., *et al.* (See Blume, Charles A., assignor.)						
Minor, Peter W., Springville, N. Y. Machine for hammering leather	486,194	Nov. 15	1617	429	61	936
Mitchell, Charles H., Oxford, Ohio. Shifting device for vehicle-bodies	488,444	Dec. 20	1995	499	61	1751
Mitchell, Elma M. (See Mitchell, John E. and E. M.)						
Mitchell, John E. and E. M., Salem, Iowa. Plow	485,394	Nov. 1	383	103	61	651
Mitchell, Joseph, Sheffield, and W. K. Birkinshaw, Derby, England. Pick	484,333	Oct. 11	1241	316	61	265
Mitchell, Mancell W., New Albany, Ind. Anchor for joists	484,666	Oct. 18	1773	451	61	383
Mitchell, Ransom Y., Findlay, Ohio. Car-coupling	487,632	Dec. 6	636	163	61	1447
Mitchell, Willis, Malden, assignor, by mesne assignments, to American Electric Heating Company, Boston, Mass. Electrical heater	487,285	Dec. 6	74	22	61	1336
Mitten, George D. (See Busking, Henry F., assignor.)						
Mix, Edward C., Jersey City, N. J. Clip for supporting dresses, &c	487,757	Dec. 13	856	217	61	1508
Moak, Judson, Utica, N. Y. Attachment for heating apparatus	487,192	Nov. 29	3244	830	61	1288
Model Mop, Pail, and Wringer Company. (See Betts, William H., assignor.)						
Modes, William F., Streator, Ill. Glass tank-furnace	487,286	Dec. 6	76	23	61	1336
Moe, George T., Philadelphia, Pa. Furnace	485,966	Nov. 8	1244	328	61	843
Moffet, James. (See Taylor, Benjamin F., assignor.)						
Moffett, Charles J. (See Davis, John T., assignor.)						
Moffitt, Aaron B. (See Ford and Moffitt.)						
Mohan, Michael J. (See Mohan, William J. and M. J.)						
Mohan, William J. and M. J., Covington, Ky. Horseshoe	485,470	Nov. 1	494	131	61	672
Mohme, Henry J., Sigourney, Iowa. Rope-clamp	487,287	Dec. 6	78	23	61	1337
Moldenhauer, Carl, Frankfort-on-the-Main, Germany. Extracting gold from its ores	483,766	Oct. 4	365	.....	61	77
Molière, James W., San Francisco, Cal. Electro-therapeutical instrument	483,745	Oct. 4	334	84	61	70
Moline Plow Company. (See Lindgren, August, assignor.)						
Molitor, Aaron F., assignor to E. Bement & Sons, Lansing, Mich. Fastening for spring-tooth harrows	483,852	Oct. 4	496	123	61	103
Mollenkamp & Binne. (See Hofmann, Johann, assignor.)						
Mollnau, Martin M., Halle-on-the-Saale, Germany. Platform-scale	488,284	Dec. 20	1737	437 438	61	1701
Molloy, Frank, assignor to himself and O. Brown, trustees, Haverhill, Mass. Lasting-machine	486,730	Nov. 22	2459	642	61	1117
Momburg, Louis, and W. F. Dallmann, Milwaukee, Wis. Gear-guard for wringers	484,970	Oct. 25	2278	587	61	498
Monday, Newton, assignor of one-half to J. M. O'Carr, Lathrop, Mo. Rock-drill	486,567	Nov. 22	2196	578	61	1064
Monier, Pierre A. J., Plaine St. Denis, France. Construction of tanks, reservoirs, silos, &c	486,535	Nov. 22	2144	566	61	1055
Montague, John R., and J. A. Pross, Syracuse, N. Y. Roller cotton-gin	485,015	Oct. 25	2356	605 606 607	61	513
Montana Vote Registering Machine Company. (See Kennedy, Dougan, assignor.)						
Montgomery, George A. (See Stone, Allison R., assignor.)						
Montgomery, Peter T., Mound Bayou, Miss. Ditching-plow	487,869	Dec. 13	1043	261	61	1545
Montgomery, Roderick N., Melbourne, Victoria. Billiard scorer and register	488,480	Dec. 20	2054	510	61	1764
Monto, Joseph, Needham, assignor to Steel Edge Stamping and Retinning Company, Boston, Mass. Pliers	486,616	Nov. 22	2286	596	61	1081
Montross, Levi H., Camden, N. J., assignor to C. Merchant, Philadelphia, Pa. Roof	483,966	Oct. 4	665	167	61	138
Montross, Levi H., Camden, N. J., assignor to Merchant & Co., Philadelphia, Pa. Roofing plate or shingle	487,372	Dec. 6	220	60	61	1364
Monzel, John, Chicago, assignor of one-half to B. F. Windsor, Joliet, Ill. Bed-spring	487,288	Dec. 6	78	24	61	1337
Moog, Fritz, Mülhelm-on-the-Mosel, Germany. Apparatus for decanting bottles	485,050	Oct. 25	2407	619	61	524
Moomaw, Henry E., Newton, Ala., assignor of one-half to E. T. Hinote, Caryville, Fla. Car-coupling	486,409	Nov. 15	1963	521	61	1005

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Moon, Hermon, Grove City, Pa. Slide-valve	485,505	Nov. 1	539	143	61	622
Moor, George, La Fayette, Oreg. Gopher-trap	485,421	Nov. 1	421	112	61	658
Moore, Alfred. (See Garnett and Moore.)						
Moore, Andrew H. (See Dull and Moore.)						
Moore, Benjamin, Brooklyn, N. Y. Wall-finish and making same	488,024	Dec. 13	1295	.....	61	1596
Moore, Charles E., Boston, Mass. Operating mechanism for elevators	488,526	Dec. 20	2135	528	61	1779
Moore, David T., Brooklyn, N. Y. Banjo	484,222	Oct. 11	1053	267	61	228
Moore, Edward F., Argentine, Kans. Suspenders	487,758	Dec. 13	857	218	61	1508
Moore, Edward J., Philadelphia, Pa. Steam-boiler	486,731	Nov. 22	2462	643	61	1117
Moore, Edward J., Philadelphia, Pa. Steam-boiler	487,075	Nov. 29	3057	{784 785}	61	1251
Moore, Enoch P. (See Wilson, David Y., assignor.)						
Moore, Frederick S., Hanford, Cal. Plow	487,578	Dec. 6	554	142	61	1431
Moore, George C., assignor of one-half to J. W. Green, Jr., Easthampton, Mass. Shuttle-operating mechanism for narrow-ware looms	488,213	Dec. 20	1625	406	61	1680
Moore, George C., assignor of one-half to J. W. Green, Jr., Easthampton, Mass. Loom-shuttle	488,214	Dec. 20	1628	406	61	1680
Moore, George W., assignor of one-fourth to E. J. Moses, Burnet, Tex. Safety-truck for cars	486,833	Nov. 22	2637	688	61	1153
Moore, Hubert S., London, England. Sash-holder	486,788	Nov. 22	2559	667	61	1136
Moore, Jacob W., Oxford, Ark. Combined feed trough and rack	484,037	Oct. 11	778	195	61	174
Moore, John A. C., Sewickley, Pa. Hose-support	484,557	Oct. 18	1592	404	61	346
Moore, John J., and D. A. Henry, deceased; C. M. Henry, administratrix, New York, N. Y., assignors to Thomson-Houston Electric Company, of Connecticut. Switchboard for electric-light circuits	485,613	Nov. 8	744	196	61	741
Moore, John S. (See Barrow, Jacob, assignor.)						
Moore, John W., Washington, D. C. House-door letter-box	487,633	Dec. 6	637	163	61	1442
Moore, Luzern. (See Day and Moore.)						
Moore, Prentice B., North Wilbraham, Mass. Anti-filling valve for bottles	485,395	Nov. 1	384	103	61	651
Moore, Richard H., Great Barrington, Mass. Glove-package holder	487,127	Nov. 29	3145	806	61	1269
Moore, Robert B., San Francisco, Cal. Rosette-turning cutter-head	484,221	Oct. 11	1052	267	61	228
Moore, Solon E., Putnam, Conn. Pen and letter rack	483,572	Oct. 4	83	21	61	19
Moore, Thomas B., Philadelphia, Pa., and J. G. Hodgson, Maywood, Ill. Railway-tie and fastening	484,036	Oct. 11	776	195	61	174
Moore, Waverly C., Greer's Depot, S. C. Cultivator	485,705	Nov. 8	852	229	61	764
Moore, William, and J. W. Parker, Owosso, Mich. Lathe-dog	486,166	Nov. 15	1583	419	61	929
Moran, James. (See Johnson and Moran.)						
Moran, Robert, Seattle, Wash. Coin-actuated vending-machine	487,409	Dec. 6	298	77	61	1380
Moran, T. W., administrator. (See Le Grande William W.)						
Morden, Walter H., and A. J. Gilmour, Toronto, Canada. Ink-well for school-desks	485,595	Nov. 1	674	179	61	712
More, Edward A., trustee. (See Yard, Frank A., assignor.)						
More, Richard T., Dayton, Ohio. Combined cane and stool	484,334	Oct. 11	1242	316	61	265
Morehouse, Charles L., Brooklyn, assignor to McKesson & Robbins, New York, N. Y. Atomizer	485,396	Nov. 1	385	103	61	651
Morency, Pierre, Montreal, Canada. Fire-kindler	485,644	Nov. 8	746	196	61	742
Morey, Roswell E., Oakland, Cal. Machine for forming berry-baskets	486,617	Nov. 22	2486	596	61	1081
Morgan, Alfred F., Clinton, Wis. Spool-holder	485,206	Nov. 1	79	25	61	588
Morgan, Daniel B., Wabash, Ind. Thill-support	488,130	Dec. 13	1475	372	61	1633
Morgan, Eustis P., Saco, and J. H. McMullan, Portland, Me. Roving-frame	483,573	Oct. 4	84	22	61	19
Morgan, Franklin P., Orono, La. Cultivator	487,933	Dec. 13	1146	286	61	1565
Morgan, Harry W., Rochester, N. Y. Label-attaching machine	486,882	Nov. 29	2719	709	61	1185
Morgan, John B., Middleborough, Mass. Concentric steam-joint	485,506	Nov. 1	676	179	61	713
Morgan, John B., Middleborough, assignor, by mesne assignments, of one-half to Rotary Steam Joint Company, Rockland, Mass. Tool-heating device	485,584	Nov. 1	659	175	61	709
Morgan, John R., assignor of three-fourths to T. R. Morgan, Sr. and Jr., and W. H. Morgan, Alliance, Ohio. Chain-block	484,038	Oct. 11	779	196	61	174
Morgan, John R., assignor of three-fourths to T. R. Morgan, Sr. and Jr., and W. H. Morgan, Alliance, Ohio. Overhead traveling crane	486,117	Nov. 15	1508	{399 400}	61	913
Morgan, John R., assignor of three-fourths to T. R. Morgan, Sr. and Jr., and W. H. Morgan, Alliance, Ohio. Overhead traveling crane	488,716	Dec. 27	2431	603	61	1853
Morgan, Robert. (See Menzies and Morgan.)						
Morgan, Robert, and J. Menzies, New Haven, Conn. Siphon for water-closets	488,794	Dec. 27	2549	632	61	1877
Morgan, Ruben D., Cleveland, Ohio. Workman's time-recorder	486,977	Nov. 29	2907	{750 751}	61	1222
Morgan, Samuel E., Jasper, Ala. Churn	488,573	Dec. 27	2205	545	61	1809
Morgan, Thomas R., Sr., *et al.* (See Morgan, John R., assignor.)						
Morgan, William H., *et al.* (See Morgan, John R., assignor.)						
Moriarty, Charles A., Brooklyn, N. Y. Automatic medicine-stand	483,574	Oct. 4	86	22	61	20
Morison-Allen Company. (See Thurston, Henry C., assignor.)						
Morison, George S., Chicago, Ill. Expansion-bearing for bridges	484,971	Oct. 25	2277	{587 588}	61	498
Morral, John. (See Morral, Samuel E., J., and W. W.)						
Morral, Samuel E., J., and W. W., Morral, Ohio. Corn-husking machine	484,808	Oct. 25	2009	{516 517}	61	445
Morral, William W. (See Morral, Samuel E., J., and W. W.)						
Morrell, Robert, assignor of fourteen-twentieths to C. S. Day, A. F. Libby, C. F. Wood, G. H. Williams, Summit, W. W. McCullum, Millburn, J. Neafie, C. Brock, Boonton, W. H. Lewis, A. Reasoner, Hoboken, F. Nishwitz, Millington, and C. Siedler, Morristown, N. J. Metallic railway-tie	483,853	Oct. 4	497	123	61	103
Morrell, Robert, assignor of fourteen-twentieths to C. S. Day, A. F. Libby, C. F. Wood, G. H. Williams, Summit, W. W. McCullum, Millburn, J. Neafie, C. Brock, Boonton, W. H. Lewis, A. Reasoner, Hoboken, F. Nishwitz, Millington, and C. Siedler, Morristown, N. J. Rail-joint fastening	483,854	Oct. 4	498	124	61	103
Morrell, Robert, assignor of fourteen-twentieths to C. S. Day, A. F. Libby, C. F. Wood, G. H. Williams, Summit, W. W. McCullum, Millburn, J. Neafie, C. Brock, Boonton, W. H. Lewis, A. Reasoner, Hoboken, F. Nishwitz, Millington, and C. Siedler, Morristown N. J. Railway-rail fastening	483,855	Oct. 4	499	124	61	103
Morrill, George B., East Orange, N. J. Penholder	487,035	Nov. 29	2998	772	61	1239
Morris, Alfred A., Sandy Hill, N. Y. Regulator for feed-boxes	484,039	Oct. 11	780	196	61	174
Morris Box Lid Company. (See Boatman, Frank P., assignor.)						
Morris, Frank, Alliance, Ohio. Molder's flask	487,851	Dec. 13	1009	{254 255}	61	1539
Morris, George W., assignor of one-half to A. B. Kipp, Minonk, Ill. Weather-strip	485,747	Nov. 8	915	245	61	777

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Morris Manufacturing Company. (See Tinsman, Samuel H., assignor.)						
Morris, Nat. R., *et al.* (See Sours, Charles D., assignor.)						
Morris, Robert J., and R. L. Wiggins, Alexanderville, Ga. Manure-distributer	488,445	Dec. 20	1997	499	61	1752
Morris, William F. (See Kane, William E., assignor.)						
Morris, William S., Grand Rapids, Mich. Roofing for box-cars	487,193	Nov. 29	3245	830	61	1288
Morrison, James F., and J. Gripp, Pittsburg, Pa. Steam-generator	485,291	Nov. 1	205	58	61	614
Morrison, Kenneth J., and M. McLellan, Stellarton, Canada; said McLellan assignor to said Morrison. Pick	486,732	Nov. 22	2467	644	61	1118
Morrison, Walter G., Willimantic, Conn. Spindle	486,231	Nov. 15	1676	443	61	947
Morrison, William H., Philadelphia, Pa. Ball-and-socket joint for book-supports	485,471	Nov. 1	495	131	61	672
Morrow, Alexander P., Indianapolis, Ind., assignor to Eclipse Bicycle Company, Beaver Falls, Pa. Crank arm and shaft	485,350	Nov. 1	312	83	61	635
Morrow, Frank M., Altoona, Pa. Show-stand	485,109	Oct. 25	2490	639	61	542
Morrow, Robert S., and D. W. Glenn, Cleveland, Ohio. Car-coupling	486,489	Nov. 22	2081	551	61	1042
Morse, Cyrus B., assignor to J. H. Comer, New York, and B. P. Dummer, Flushing, N. Y. Machine for making package-carriers	487,679	Dec. 6	717	183	61	1462
Morton, Alice R. P., New York, N. Y. Sewing or embroidery table	486,502	Nov. 22	2260	590	61	1076
Morton, Wilson, assignor to W. R. Cavell, Toronto, Canada. Duplicating memorandum-book or sale-slip	487,680	Dec. 6	720	184	61	1463
Mosby, Syvert T., Chicago, Ill. Safety attachment	486,490	Nov. 22	2082	551	61	1043
Moseley, William G., Grain Valley, Mo. Canceling and dating stamp	485,472	Nov. 1	497	131	61	673
Moses, Ealy J. (See Moore, George W., assignor.)						
Moses, Theodore B., Jr., Boston, Mass. Wagon	485,292	Nov. 1	206	58	61	614
Mosher, Charles D., Amesbury, Mass. Steam-engine	486,883	Nov. 29	2722	710	61	1185
Mosher, Charles D., assignor of one-half to W. Gardner, New York, N. Y. Thrust-bearing for shafting	485,207	Nov. 1	80	25	61	589
Mosher, John A., Chicago, Ill. Electric-arc lamp	485,293	Nov. 1	206	59	61	614
Mosher, John J., and M. R. Jewell, Rochester, N. Y.; said Mosher assignor to said Jewell. Registering and indicating device	485,967	Nov. 8	1244	328	61	843
Mosher, Samuel E. (See Fuchs, Oscar J., assignor.)						
Moss, George A., San Francisco, Cal. Suspension-hook	484,335	Oct. 11	1243	316	61	265
Moss, John S., Martinsburg, W. Va. Underground electric conduit and trolley-bar for electric railways	485,555	Nov. 1	612	163	61	698
Mossberg, Frank, assignor to Mossberg Manufacturing Company, Attleborough, Mass. Jeweler's turk's-head roll	484,108	Oct. 11	868	221	61	192
Mossberg, Frank, assignor to Mossberg Manufacturing Company, Attleborough, Mass. Antifriction-bearing	486,052	Nov. 8	1380	367	61	871
Mossberg, Frank, assignor to Mossberg Manufacturing Company, Attleborough, Mass. Making cages for antifriction-bearings	487,194	Nov. 29	3246	830	61	1288
Mossberg Manufacturing Company. (See Mossberg, Frank, assignor.)						
Motley, Peter, Philadelphia, Pa. Sash-holder	487,934	Dec. 13	1147	287	61	1565
Mott, Joseph T., New York, N. Y. Fruit-transporting package	486,618	Nov. 22	2288	597	61	1081
Motte, Henri P., Paris, France. Panorama	487,490	Dec. 6	426	{109 110}	61	1405
Mouat, Laurence, Jr., and E. W. Pratt, assignors to Chicago Hardware Manufacturing Company, Chicago, Ill. Lock	484,443	Oct. 18	1415	361	61	311
Mount, James H., Jamesburg, N. J. Fishing-reel	485,208	Nov. 1	81	26	61	589
Mount Pleasant Road Grader Company. (See Holland, James M., assignor.)						
Mowrer, Isaac S., Xenia, Ohio. Steam-cooker	485,819	Nov. 8	999	268	61	794
Moyer, Harvey A. (See Gowing, Daniel H., assignor.)						
Muckenhirn, Charles H., Detroit, Mich. Water-closet	488,363	Dec. 20	1866	467	61	1726
Mudge, Clark S., Bettsville, Ohio. Musical instrument	488,428	Dec. 27	2597	644	61	1887
Muehleisen, Carl, Baltimore, Md. Child's carriage	486,678	Nov. 22	2380	623	61	1100
Muehlstein Manufacturing Company. (See Muhlstein, Adolph O., assignor.)						
Mueller, Charles R., Jr. (See Hoeninghausen and Mueller.)						
Mueller, Philip, Decatur, Ill. Privy	484,040	Oct. 11	781	{196 197}	61	175
Mueller, Philip, Decatur, Ill. Pipe-rod coupling	486,290	Nov. 15	1779	468	61	969
Muhlstein, Adolph O., assignor to Muehlstein Manufacturing Company, Pittsburg, Pa. Apparatus for elevating hose	485,129	Oct. 25	2517	647	61	547
Muir, Thomas, Margaretville, N. Y. Butter worker and weigher	485,968	Nov. 8	1245	329	61	844
Mulcahy, Thomas. (See Quinn, John J., assignor.)						
Mulford, Clarence C., Galva, assignor to W. H. Ryon, Streator, Ill. Radiator	487,880	Dec. 13	1060	266	61	1548
Müller, John H., Bridgeport, Conn. Machine for crushing springs	486,734	Nov. 22	2639	669	61	1154
Müller, Joseph J., Lucerne, Switzerland. Bicycle-support	484,941	Oct. 25	2237	576	61	490
Mullin, Daniel A. (See Sheehan and Mullin.)						
Mullins, John W., Fariston, Ky. Firearm	487,423	Dec. 6	318	81	61	1384
Municipal Signal Company. (See Martin, Morris, assignor.)						
Municipal Signal Company. (See Wilson, John C., assignor.)						
Mundt, Henry, and H. A. Hoops, Detroit, Mich. Safety device for elevators	484,109	Oct. 11	870	221	61	192
Munger, Robert S., Birmingham, Ala. Duplex cotton-press	483,633	Oct. 4	173	43	61	36
Munson, Anson L., East Oakland, assignor of one-half to T. G. McLeran, San Francisco, Cal. Anti-fouling paint	488,479	Dec. 20	2053	.....	61	1764
Munsell & Co., Eugene. (See Dyer, Arthur H. S., assignor.)						
Munsell & Co., Eugene. (See Jefferson, Charles W., assignor.)						
Munsell, William W., Dodge City, Kans. Car-heating	485,209	Nov. 1	84	26	61	589
Munson, Katharine C., Winthrop, Mass. Shield for baking-ovens	484,539	Oct. 18	1568	398	61	341
Münster, Nichlas. (See Stenger and Münster.)						
Muralt, Aloys R. de. (See Badoni, Massimiliano, assignor.)						
Murdock, Edwin H., Cincinnati, Ohio. Cash register and indicator	484,917	Oct. 25	2198	{566 567}	61	492
Murphy, Edward, New York, N. Y. Cash register and indicator	488,150	Dec. 13	1503	{378 379 380}	61	1638
Murphy, Frank J., assignor of one-half to A. M. Rundle, Danbury, Conn. Machine for plucking hairs from skins	487,349	Dec. 6	179	50	61	1356
Murphy, John D., Chicago, Ill. Tube-flanging machine	486,984	Nov. 29	2922	754	61	1225
Murphy, Joseph, and F. M. Rankin, Covington, Ohio. Fire-escape	484,042	Oct. 11	784	197	61	175
Murphy, Robert T., Gainesville, Ga. Safety-switch	488,172	Dec. 13	1551	389	61	1648
Murphy, Robert W., Seattle, Wash. Ink-roller for printing-presses	487,759	Dec. 13	859	218	61	1509
Murphy, Thomas, Deal, England. Knife-cleaner	487,446	Dec. 6	364	94	61	1383
Murphy, William G., Jr., Marysville, Cal. Electric railway	483,856	Oct. 4	500	124	61	104
Murphy, William W. (See McCollum, James C., assignor.)						
Murr, William, Fountain City, Wis. Horse-collar	487,956	Dec. 13	1179	294	61	1571

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Murray, Albert M., and D. N. Stutsman, near Goshen, Ind. Box-machine	484,041	Oct. 11	782	197	61	175
Murray, Alexander H. (See Grant and Murray.)						
Murray, Alexander K., Bradford, Pa. Lamp-filling tank or can	483,857	Oct. 4	501	125	61	104
Murray, Alexander K., Bradford, Pa. Gas-producer	486,491	Nov. 22	2083	552	61	1043
Murray, Charles H. (See Noble and Murray.)						
Murray, Edward J. B. (See Murray, Thomas E., assignor.)						
Murray, Samuel A., Jr. (See Eltonhead, William B., assignor.)						
Murray, Stephen D., assignor to W. Burr, Dallas, Tex. Apparatus for feeding seed-cotton to gins	488,446	Dec. 20	1998	499, 500	61	1751
Murray, Thomas E., assignor of one-half to E. J. B. Murray, Albany, N. Y. Combined cock and coupling for barrels, &c.	485,847	Nov. 8	1045	279	61	803
Murrey, Jasper, assignor of one-half to S. Harris, Cleveland, Ohio. Brake mechanism for cars	486,384	Nov. 15	1917	507, 508	61	997
Musse, Bertha, New York, N. Y. Adjustable pattern	487,760	Dec. 13	860	218	61	1509
Mussey, George D., Detroit, Mich. Ice-creeper	488,215	Dec. 20	1630	406	61	1680
Myers, George P., assignor of one-half to H. G. Pott, Sheboygan, Wis. Band sawing-machine	488,364	Dec. 20	1867	467, 468	61	1726
Myers, Harry E. (See Krouse, Myers, and Girard.)						
Myers, Luther, Maumee, Ohio. Vehicle	486,884	Nov. 29	2755	711	61	1186
Myers, Philip A., Ashland, Ohio. Pump	486,350	Nov. 15	1869	492	61	986
Mynard, Frank T., Dushore, Pa. Wagon-spoke	487,289	Dec. 6	80	24	61	1337
Naber, Joseph, Jr., Hamburg, N. Y. Tea-kettle	485,016	Oct. 25	2360	607	61	514
Nabring, Richard H. (See Johanson, Emil, assignor.)						
Nadorff, Henry, Louisville, Ky. Ammonia-still	484,667	Oct. 18	1774	451	61	383
Nairn, John W. (See Folk, Nairn, and Dempsey.)						
Napoles, Pedro de, San Francisco, Cal. Ore-concentrator	486,232	Nov. 15	1677	444	61	947
Nate, John J., Chicago, Ill. Electric switch	487,092	Nov. 29	3087	793, 794	61	1258
National Cash Register Company. (See Carney, Thomas, assignor.)						
National Cash Register Company. (See Grove, George W., assignor.)						
National Cash Register Company. (See Loree, Perry E., assignor.)						
National Cash Register Company. (See Pfeifer, John, assignor.)						
National Company. (See Brown, Thomas E., Jr., assignor.)						
National Company. (See Smith, Rudolph C., assignor.)						
National Hollow Brake Beam Company. (See Baker, Jacob W., assignor.) (Reissue.)						
National Ice Machine Company. (See Duffy, John F., assignor.)						
National Key-Opening Can Company. (See Zimmerman, John, assignor.)						
Neafie, James, *et al.* (See Morrell, Robert, assignor.)						
Neal, Albert D., Boston, and H. F. Eaton, Cambridge, Mass.; said Eaton assignor to said Neal. Electrical transmitting apparatus	486,888	Nov. 29	2729	712	61	1187
Neal, Albert D., Boston, and H. F. Eaton, Quincy, Mass.; said Eaton assignor to said Neal. Type-writing and printing instrument	486,889	Nov. 29	2735	712, 713, 714	61	1188
Neal, Albert D., Boston, and H. F. Eaton, Quincy, Mass.; said Eaton assignor to said Neal. Electrical type-writer	487,227	Nov. 29	3302	842, 843	61	1298
Neal, Albert D., Boston, and H. F. Eaton, Quincy, Mass.; said Eaton assignor to said Neal. Electric type-writer	487,228	Nov. 29	3307	843, 844, 845	61	1299
Neal, Albert D., Boston, and H. F. Eaton, Quincy, Mass.; said Eaton assignor to said Neal. Printing-telegraph	487,229	Nov. 29	3313	845, 846, 847, 848	61	1300
Neal, Andrew J., assignor of one-half to L. H. Swaney and C. M. Neal, Miles, Iowa. Horse-shoe-calk-sharpening device	485,585	Nov. 1	661	175	61	709
Neal, Charles M., *et al.* (See Neal, Andrew J., assignor.)						
Neal, William A., Bunger's, W. Va. Portable fence	488,632	Dec. 27	2300	569	61	1827
Neale, David, Fort Calhoun, Nebr. Anchor-riprap	486,887	Nov. 29	2728	711	61	1187
Neeff, John, Akron, Ohio. Box-machine	488,086	Dec. 13	1408	350	61	1620
Neefus, David, Jr., Elizabeth, N. J. Egg-box	484,863	Oct. 25	2099	541	61	463
Neely, Samuel L. (See Lantz and Neely.)						
Neer, Charles F., Catawba, Ohio. Thill-coupling	488,771	Dec. 27	2511	624	61	1869
Neff, Abraham J., assignor to W. B. Lehman, Goshen, Ind. Sickle-grinder	485,973	Nov. 8	1255	331	61	846
Negley, William R., Pittsburg, Pa. Game-board	484,558	Oct. 18	1593	404	61	346
Nell, William S., Enon, W. Va. Self-locking nut	483,676	Oct. 4	231	58	61	48
Neilsen, Wilhelm. (See Guethler and Gellhaus, assignors.)						
Nelke, Louis. (See Koecher, Edmund, assignor.)						
Nelson, Alexander M., Birkenhead, assignor of one-half to J. Wilson, Liverpool, England. Writing device	488,945	Dec. 27	2792	689	61	1928
Nelson, Charles, Brooklyn, N. Y. Torpedo	485,974	Nov. 8	1257	331	61	846
Nelson, George, assignor of one-half to L. R. Fife, Livingston, Tex. Mole-trap	488,448	Dec. 20	2002	500	61	1754
Nelson, Hayden S., and F. M. Heuett, assignors of one-half to B. Hardin, M. Janes, and L. B. Daniels, Jr., Beirne, Ark. Combined seeder and harrow	486,494	Nov. 22	2088	553	61	1043
Nelson, John, Brooklyn, N. Y. Heater	488,131	Dec. 13	1477	372	61	1634
Nelson, Robert S., and A. Kreuter, Chicago, Ill. Ironing-machine	485,707	Nov. 8	853	229	61	764
Nenninger, Oscar A. (See Beck and Nenninger.)						
Nenninger, Robert F., assignor to E. J. Ill, Newark, N. J. Treating materials containing metals	488,808	Dec. 27	2705	669	61	1910
Neracher, Charles, Cleveland, Ohio. Wood-trimming machine. (Reissue)	11,286	Nov. 22	2651	692	61	1156
Nesmith, Joseph A., Paxson, Va. Convertible chair	483,810	Oct. 4	431	106, 107	61	89
Nester, Hershel M., assignor of one-half to Dilworth & Poling, Hendricks, W. Va. Button	485,111	Oct. 25	2492	640	61	542
Neuls, George W., Kane, Pa. Currycomb	487,580	Dec. 6	556	143	61	1432
Neumann, John W., and J. R. Pflanz, Louisville, Ky. Car-brake	483,859	Oct. 4	504	125	61	104
Neumann, John W., and J. R. Pflanz, Louisville, Ky. Car-brake	487,151	Nov. 29	3181	815	61	1276
Nevel, William A., Will's Point, assignor of one-half to G. G. Kemper, Leonard, Tex. Cotton-chopper	487,935	Dec. 13	1147	287	61	1565
Neville, Asa G. (See Young and Neville.)						
New Haven Clock Company. (See Porter, Wilson E., assignor.)						
New Process Nail Company. (See Miner, William W., assignor.)						
Newbill, James, Tresevant, Tenn. Wagon-brake	485,332	Nov. 1	277	75	61	628
Newbury, Alfred J., New York, N. Y. Envelope-fastener	486,586	Nov. 22	2234	586	61	1071
Newcomb, Albert E., Philadelphia, Pa. Button	484,810	Oct. 25	2014	517	61	446
Newell Brothers Manufacturing Company. (See Beckwith, Francis E., Jr., assignor.)						
Newell, John, assignor of one-half to Sweet, Wallach & Co., Chicago, Ill. Scene-shifting apparatus	484,506	Oct. 18	1515	385	61	330

Alphabetical list of patentees, October to December, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Newell, Otis K., Boston, Mass. Nursing-bottle	484,811	Oct. 25	2015	517	61	446
Newey, James C., Birmingham, England. Spring-hook	484,336	Oct. 11	1244	317	61	265
Newhall, George M., and C. L. Hamilton, Philadelphia, Pa. Wood-pulp drainer	488,399	Dec. 20	1923	482	61	1737
Newhouse, John E., Magnetic Springs, Ohio. Ice-cream freezer	485,646	Nov. 8	748	197	61	742
Newman, Horace J., Fort Wayne, Ind. Hat-box	484,812	Oct. 25	2016	518	61	447
Newman, Jacob. (See Gregory, John H., assignor.)						
Newman, Nelson, assignor of two-thirds to S. J. Willett and G. A. Sanders, Springfield, Ill. Automatic switch	487,881	Dec. 13	1061	266	61	1549
Newman, Prentice A., Runge, Tex. Boiler feeder and indicator	485,976	Nov. 8	1258	332	61	847
Newman, Samuel, Cincinnati, Ohio. Display-stand	485,975	Nov. 8	1257	332	61	847
Newport, John J., *et al.* (See Wiley, Horace B., assignor.)						
Newton, George M., Sharon, Ala. Pick-handle protector	485,977	Nov. 8	1260	332	61	847
Newton, James A., Kingston, Tenn. Sliding gate	485,212	Nov. 1	88	27	61	590
Newton, Robert, Providence, R. I. Sewer-trap	488,365	Dec. 20	1870	468	61	1727
Ney Manufacturing Company. (See Taylor, Bruce, assignor.)						
Nibellius, Axel W., Hackettstown, N. J. Method of and apparatus for separating graphite or like substances from crushed rock	486,495	Nov. 22	2091	553	61	1044
Nichols, Abel P., Jordan Village, assignor of one-half to W. H. Troth, Vandalia, Ind. Fan attachment for chairs	484,603	Oct. 18	1656	420, 421	61	359
Nichols, Bradford W. (See Streeter and Nichols.)						
Nichols, Danton H., Boston, C. L. and C. A. Cotton, Dedham, Mass. System of lighting railway cars and platforms	485,647	Nov. 8	750	197, 198	61	742
Nichols, James N. (See Harrah and Nichols.)						
Nichols, John B., Milwaukee, Wis. Attachment for mortising-machines	484,225	Oct. 11	1058	268, 269	61	289
Nichols, William A. (See Barnes, Lewis, assignor.)						
Nicholson, Francis T., assignor to C. Wolf, Philadelphia, Pa. Envelope-machine	486,233	Nov. 15	1680	444, 445	61	948
Nickerson, Charles F., Reading, and L. M. Fleet, Boston, Mass. Shutter-worker	484,972	Oct. 25	2278	588	61	498
Nicklès, Rodolphe, Petit Quevilly, France. Apparatus for dyeing	488,216	Dec. 20	1631	406, 407	61	1681
Niekamp, John G., Fort Recovery, Ohio. Trousers-pattern	484,445	Oct. 18	1418	362	61	311
Nieman, Henry W., *et al.* (See Dickey, Foster, assignor.)						
Nieman, Hiram H., Cincinnati, Ohio, assignor to American Fire Engine Company, Seneca Falls, N. Y. Fire-protector for steam-boilers	485,112	Oct. 25	2493	640	61	542
Niermann, Frans H., Jefferson, Mo. Wood turning and working machine	487,637	Dec. 6	645	165, 166	61	1449
Niese, Elise. (See Niese, Julius, assignor.)						
Niese, Julius, assignor to E. Niese, St. Louis, Mo. Soap	485,113	Oct. 25	2494	.....	61	543
Nightingale, Joseph O., Paterson, N. J. Neckscarf	483,693	Oct. 4	256	63	61	54
Nikirk, John H., Sharon, Pa. Walking-stick and flag	484,446	Oct. 18	1420	362	61	312
Niles, Arthur J., Lancaster, N. H. Water-closet	484,559	Oct. 18	1594	404	61	346
Niles, Milton C., Oak Park, Ill. Rail-joint	484,226	Oct. 11	1059	269	61	230
Niles, Milton C., Oak Park, Ill. Rail-joint	484,227	Oct. 11	1062	270	61	230
Niles, Milton C., Oak Park, Ill. Rail-joint	484,228	Oct. 11	1064	270	61	231
Niles, Milton C., Oak Park, Ill. Rail-joint	484,229	Oct. 11	1067	271	61	231
Niles, Peter H., Topeka, Kans. Sash-balance	487,290	Dec. 6	81	24	61	1338
Nilson, Olof, Salt Lake City, Utah Ter. Stove	484,230	Oct. 11	1069	271	61	232
Nishwitz, Frederick, *et al.* (See Morrell, Robert, assignor.)						
Noble, Andrew, and C. H. Murray, assignors to Sir W. G. Armstrong, Mitchell & Company, Limited, Newcastle-upon-Tyne, England. Apparatus for working disappearing guns	484,374	Oct. 11	1295	330, 331, 332	61	276
Noble, Cyrus F., West Baldwin, Me. Device for coupling chain-links	486,587	Nov. 22	2235	586	61	1071
Noble, Samuel C., Overpeck, assignor of one-half to N. B. Tubbs, Hamilton, Ohio. Car-coupling	486,601	Nov. 22	2259	590	61	1075
Nock, George W., Philadelphia, Pa. Pulley	487,491	Dec. 6	428	110	61	1406
Nolan, William F., San Francisco, Cal. Ratchet-drill brace	484,231	Oct. 11	1071	272	61	232
Noll, Charles, *et al.* (See Trendley, John, assignor.)						
Nolley, David D., assignor to E. K. Wright, F. Rountree, and J. D. Farrior, Wilson, N. C. Portable burglar-alarm	484,232	Oct. 11	1073	272	61	233
Nolley, David D., assignor to E. K. Wright, F. Rountree, and J. D. Farrior, Wilson, N. C. Combined electric burglar and fire alarm	484,233	Oct. 11	1074	272	61	233
Nordyke & Marmon Company. (See Thompson, Evert M., assignor.)						
Norman, Green B., Batesville, Ark. Bench dog or clamp	487,762	Dec. 13	802	219	61	1509
Norris, William H., Spokane, Wash. Non-heat-conducting covering	488,248	Dec. 20	1679	419	61	1689
North, Alfred C., Benton Harbor, Mich. Tag-making machine	484,973	Oct. 25	2280	588, 589, 590	61	499
North and Judd Manufacturing Company. (See Herrick, Frank J., assignor.)						
North Pacific Indicator Company. (See Dillon, William S., assignor.)						
North Western Toy and Manufacturing Company. (See Sharpneck, William S., assignor.)						
Northwestern Manufacturing Company. (See Chambers, John W., assignor.)						
Norton, Edwin, *et al.* (See Hodgson, John G., assignor.)						
Norton, Edwin, Maywood, Ill. Elevated-railway system	485,708	Nov. 8	854	229, 230	61	764
Norton, Edwin, Maywood, assignor to himself, and O. W. Norton, Chicago, Ill. Sheet-metal roofing	484,640	Oct. 18	1721	437	61	371
Norton, Edwin, Maywood, assignor to himself, and O. W. Norton, Chicago, Ill. Pouring-nozzle for cans	485,295	Nov. 1	211	60	61	615
Norton, Edwin, Maywood, assignor to himself, and O. W. Norton, Chicago, Ill. Pouring-nozzle for cans	485,296	Nov. 1	213	60	61	615
Norton, Edwin, Maywood, assignor to himself, and O. W. Norton, Chicago, Ill. Tinning iron and steel plates	486,496	Nov. 22	2093	.....	61	1045
Norton, Edwin, Maywood, assignor to himself, and O. W. Norton, Chicago, Ill. Cleaning tin-plate or metallic sheets	487,763	Dec. 13	863	219	61	1509
Norton, Edwin, assignor to himself and O. W. Norton, Maywood, Ill. Device for seaming the heads upon cans	487,764	Dec. 13	865	220	61	1510
Norton, Edwin, Maywood, assignor to himself, and O. W. Norton, Chicago, Ill. Sheet-metal plate for tinning and its manufacture	488,151	Dec. 13	1515	380	61	1641
Norton, Edwin, Maywood, assignor to himself, and O. W. Norton, Chicago, Ill. Coating sheet metal	488,527	Dec. 20	2136	529	61	1779
Norton, Edwin, and J. G. Hodgson, Maywood, assignors to said Norton and O. W. Norton, Chicago, Ill. Machine for drying and fluxing metal sheets	488,025	Dec. 13	1296	323, 324	61	1586

Alphabetical list of patentees, October to December, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Norton, George W., Yuma, Ariz. Ter. Automatic water-gate	487,961	Dec. 13	1184	295	61	1572
Norton, Lawrence A., Chicago, Ill. Screw-nozzle for cans	486,293	Nov. 15	1783	468	61	970
Norton, Oliver W. (See Norton, Edwin, assignor.)						
Norton, Oliver W. (See Norton and Hodgson, assignors.)						
Norton, Oliver W., *et al.* (See Hodgson, John G., assignor.)						
Norton, Robert R., and H. Hall, Sandy Hill, N. Y. Skate	486,120	Nov. 15	1513	401	61	914
Norwood, John E., Sykesville, Md. Portable railway-switch	486,497	Nov. 22	2094	554	61	1045
Noteman, Alonzo, Toledo, Ohio. Apparatus for making gas	485,877	Nov. 8	1091	290	61	812
Novelty Electric Company. (See Miller, Charles J., assignor.)						
Noxon, Charles P. L., Syracuse, N. Y. Electric-current indicator	487,093	Nov. 29	3090	794	61	1259
Noyes, Walter B., San Francisco, Cal. Folding bed	483,724	Oct. 4	296	74	61	62
Nugent, Richard C., assignor of two-thirds to J. Jenkins and A. Harbold, Harrisburg, Pa. Inside callipers	484,813	Oct. 25	2017	518	61	447
Nye, Harold B., Cleveland, Ohio. Utilizing tin-scrap	488,796	Dec. 27	2552	......	61	1878
Nyquist, John Z., Tacoma, Wash. Journal-box	485,213	Nov. 1	88	27, 28	61	591
O'Brien, E. S. (See Schofield, James M., assignor.)						
O'Brien, John C. (See Flurey and O'Leary, assignors.)						
O'Brien, John G. (See Rosentreter and O'Brien.)						
O'Carr, James M. (See Monday, Newton, assignor.)						
O'Carroll, Patrick, assignor of one-half to T. Crooks, Milwaukee, Wis. Game-board	483,788	Oct. 4	403	100	61	84
O'Connell, James. (See Leehey and O'Connell.)						
O'Connell, James, and G. E. Medcraft, Mount Sterling, Ky. Belting	487,855	Dec. 13	1022	256	61	1541
O'Donnell, Timothy J., Lawrence, Mass. Envelope or wrapper	487,581	Dec. 6	557	143	61	1432
O'Gorman, Michael, Jersey City, N. J. Heater, furnace, &c	486,121	Nov. 15	1515	401	61	915
O'Haire, John, Cambridge, Mass. Car-coupling	485,878	Nov. 8	1092	290	61	812
O'Lalor, John J., Boston, assignor of one-half to J. S. Maxwell, Medford, Mass. Electric battery	486,264	Nov. 15	1741	458	61	961
O'Leary, Arthur. (See Flurey and O'Leary.)						
O'Meara, George E. (See Peck and O'Meara.)						
O'Neal, Elizabeth F., Philadelphia, Pa. Washing-powder	483,634	Oct. 4	174	......	61	36
O'Neil, Hugh J., Rochester, N. Y. Bracket	485,215	Nov. 1	92	29	61	591
O'Neil, James C., Cleveland, Ohio. Electric switch	485,558	Nov. 1	617	164, 165	61	699
O'Neill, Henry G., Louisville, Ky., assignor to Standard Electric Heat, Light, and Power Company, of Maine. Alloy	485,423	Nov. 1	424	......	61	659
O'Neill, Henry G., Louisville, Ky., assignor to Standard Electric Heat, Light, and Power Company, of Maine. Electrical heater	485,424	Nov. 1	424	113	61	659
O'Neill, Henry G., Louisville, Ky., assignor to Standard Electric Heat, Light, and Power Company, of Maine. Electric intermutator	485,425	Nov. 1	426	113, 114	61	659
O'Neill, James A., assignor of one-half to J. C. Hallings, Boston, Mass. Coupling for light-fixtures	488,946	Dec. 27	2793	689	61	1928
O'Neill, William, *et al.* (See Carlinet, John G., assignor.)						
Oakes, Ben. (See Oakes, Henry, and B.)						
Oakes, Chandler A., New York, N. Y., and J. H. Jackson, Pen Argyl, Pa. Adding-machine	485,214	Nov. 1	89	28	61	591
Oakes, Henry, Silver City, N. Mex. Ter., and B. Oakes, Chicago, Ill. Car-coupling	484,900	Oct. 25	2164	557	61	476
Oakman, Samuel, Melrose, Mass. Glass-mold	486,182	Nov. 15	1602	425	61	932
Oaks, Isaiah, assignor of one-half to E. Folkerth, Union, Ohio. Wire fence	486,588	Nov. 22	2236	587	61	1071
Obermann, August W., Pittsburg, Pa. Cooking utensil	487,291	Dec. 6	82	25	61	1338
Obermeyer, Alexander, Barmen, Germany. Lubricator	483,860	Oct. 4	505	126	61	105
Odell, Henry M., Detroit, Mich. Duplex arc lamp	488,696	Dec. 27	2405	596	61	1848
Odkolek, Adolf, Vienna, Austria-Hungary. Quick-fire gun	486,938	Nov. 29	2848	737, 738	61	1210
Oefinger, Michael, Bridgeport, Conn. Holder for soap cakes	487,094	Nov. 29	3092	794	61	1259
Oettinger Brothers. (See Koonce, John W., assignor.)						
Ogden, John W., Brooklyn, N. Y. Valve-operating mechanism	486,263	Nov. 15	1739	458	61	960
Ogden, Robert A., Walton, Kans. Mail-crane	484,641	Oct. 18	1722	438	61	372
Ogden, William P., Denver, Colo. Concentrator	488,528	Dec. 20	2137	529	61	1779
Ohio Valley China Company. (See Zimmer and Hess, assignors.)						
Ohl, George A., Newark, N. J. Machine for profiling sheet metal	488,576	Dec. 27	2212	548	61	1811
Ohlsson, Olaf, Newark, N. J. Centrifugal butter-extractor	487,055	Nov. 29	3025	777	61	1245
Ohlweiler, John, *et al.* (See Ward, William H., assignor.)						
Ohmer, Wilfred I., Dayton, Ohio. Paper-file	487,230	Nov. 29	3333	849	61	1303
Ohmer, Wilfred I., assignor to M. Ohmer's Sons' Company, Dayton, Ohio. File-box	487,150	Nov. 29	3180	814	61	1276
Ohmer, Wilfred I., and T. L. Wayne, assignors to M. Ohmer's Sons' Company, Dayton, Ohio. File-box	487,006	Nov. 29	2955	762	61	1231
Okey, Joseph B., assignor of one-half to J. W. Redman, Indianapolis, Ind. Sash-holder	485,131	Oct. 25	2520	648	61	547
Olander, Nils. (See Johnson and Olander.)						
Olbricht, Benjamin, Brooklyn, N. Y. Trolley for conduit-railways	486,985	Nov. 29	2924	754	61	1225
Oldenbusch, Ernest, Jersey City, assignor to W. Schimper & Co., Hoboken, N. J. Frame for pocket-books, &c	484,111	Oct. 11	872	222	61	193
Oldershaw, John B., Baltimore, Md. Chimney-cowl	483,619	Oct. 4	155	38	61	32
Oldfield, Edwin, and P. Flynn, Norwich, Conn. Kink-preventer for silk-spinning machinery	487,334	Dec. 6	156	45	61	1351
Oldfield, Joseph, assignor to R. J. Oldfield and F. R. James, Toronto, Canada. Duplicating check-book	488,926	Dec. 27	2758	681	61	1921
Oldfield, Joseph, assignor to F. R. James, R. J. Oldfield, Toronto, and R. Hocken, Chatham, New Brunswick, Canada. Duplicating check-book	485,132	Oct. 25	2522	648	61	548
Oldfield, Rosa J., *et al.* (See Oldfield, Joseph, assignor.)						
Oliver, David B., Allegheny, Pa. Bolster-plate	486,890	Nov. 29	2751	714	61	1191
Oliver, Doctor F., Oakland, Cal. Lamp-support	488,971	Dec. 27	2831	698	61	1937
Oliver, Samuel A., Houston, Tex. Substructure	487,582	Dec. 6	558	143	61	1432
Ollendorff, Carl, Bonn, Germany. Closure for bottles	485,052	Oct. 25	2409	620	61	524
Olliver, Gaston, assignor of three-fourths to L. U. Mayo, Coleman's Falls, Va. Railway nut-lock	484,755	Oct. 18	1908	486	61	412
Olsen, Englebrecht, Walkerville, Mont. Signal-bell	485,297	Nov. 1	214	60	61	616
Olson, Andrew B., Kansas City, Mo. Corn-popper. (Reissue)	11,290	Nov. 29	3350	853	61	1306
Onderdonk Charles S. Philadelphia, Pa. Condenser-head	487,036	Nov. 29	2999	772	61	1239
Onderdonk, Frank A. Grand Rapids, Mich. Paper-jogger	487,152	Nov. 29	3183	815	61	1277
Oneida Community (See Ellis, Ferrand F., assignor.)						
Operti, Albert, New York, N. Y. Folding picture	486,216	Nov. 15	1654	437	61	942
Opperud, Joseph, and J. I. Brorby, Madison, S. D. Windmill	488,087	Dec. 13	1410	350, 351	61	1620
Ormerod, John, Brooklyn, N. Y., assignor to American Soda Fountain Company, of New Jersey Acid-feeder for soda-water apparatus	484,604	Oct. 18	1658	421	61	360

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Ormerod, John, Brooklyn, N. Y., assignor to American Soda Fountain Company, of New Jersey. Sectional supporting-frame	487,765	Dec. 13	866	220	61	1510
Orr, Jonathan G., Danville, Ala. Portable fence	488,217	Dec. 20	1632	407	61	1681
Orr, Joseph L., administrator. (See Corley, James J.)						
Orth, Claus, Grand Rapids, Mich. Latch	487,153	Nov. 29	3184	815	61	1277
Ortmann, John H. W., Hamburg, Germany. Machine for making loops for wiring bottles	488,612	Dec. 27	2265	562	61	1822
Ortmann, Paul, Zittau, assignor of one-half to M. Rost, Dresden, Germany. Suspenders	488,529	Dec. 20	2139	529	61	1779
Orton, Wilber B., Nickerson, Kans. Draw-bar attachment for cars	487,583	Dec. 6	559	143	61	1432
Orvis, Orel D. (See Orvis, Orland D. and O. D.)						
Orvis, Orland D. and O. D., Chicago, Ill. Downdraft-furnace	486,122	Nov. 15	1518	401, 402	61	915
Osbon, Calvin, Flagstaff, Ariz. Ter. Washing-machine	483,861	Oct. 4	506	126	61	105
Osborn, Benjamin F., Nora and J. R. Harcourt, Augusta, Ind. Farrowing-pen for swine	488,739	Dec. 27	2465	612	61	1860
Osborn, Francis C., Detroit, Mich. Calculating-machine	484,814	Oct. 25	2019	518	61	447
Osborne & Co., D. M. (See Stroud and Corey, assignors.)						
Osbourne, David K., St. Paul, Minn. Jail or vault construction	485,506	Nov. 1	540	143, 144	61	682
Osbourne, David K., St. Paul, Minn. Construction of jails	485,559	Nov. 1	618	165	61	699
Osbourne, David K., St. Paul, Minn. Jail	487,448	Dec. 6	365	95, 96	61	1393
Osburn, Harry G., Chicago, Ill. Lightning-arrester	486,498	Nov. 22	2095	554	61	1045
Osgood, Everett B., Vineland, N. J. Baking-pan	486,734	Nov. 22	2469	644	61	1119
Osgood, Stephen. (See Graf, Anton, assignor.)						
Ostertag, John, Jr., Chicago, Ill. Barrel or keg counter	486,735	Nov. 22	2470	645	61	1119
Ostrander, Allen, *et al.* (See Campbell, Lawrence S., assignor.)						
Ostrander Repeating Gun Company. (See Ostrander, Willis H., assignor.) (Reissue.)						
Ostrander, Willis H., Merced, assignor to Ostrander Repeating Gun Company, San Francisco, Cal. Repeating breech-loading gun. (Reissue)	11,295	Dec. 13	1554	390	61	1649
Otis, William F., Norwalk, Ohio. Oil-burner	488,660	Dec. 27	2344	580	61	1836
Ottenberg, Simon, *et al.* (See Besthoff, Samuel J., assignor.)						
Otto, August, Saginaw, Mich. Animal-catcher	486,939	Nov. 29	2857	739	61	1212
Ovenshire, Elijah A., assignor to E. Bement & Sons, Lansing, Mich. Wheel-cultivator	487,882	Dec. 13	1063	267	61	1549
Overall, George W. (See Zempter, Manning, and Overall.)						
Overfelt, William S., J. R. Evans, and C. J. Capp, Duncan's Bridge, Mo. Device for supporting vehicles	486,790	Nov. 22	2564	668	61	1137
Overlin, Thomas W., Benjamin, Mo. Corn-planter	485,560	Nov. 1	619	165	61	699
Overman, George E., Rock Island, Ill. Coffee-steeper	484,447	Oct. 18	1421	362	61	312
Overman Wheel Company. (See Hadley, Charles E., assignor.)						
Owells, Frank S., Morrison, Ill. Faucet	488,401	Dec. 20	1924	482	61	1737
Owen, Robert A., Coral, Mich. Cylinder and cylinder-cap	486,680	Nov. 22	2383	623	61	1101
Owen, Theodore M., Alexandria, Ohio. Locking-rod for end-gates	487,766	Dec. 13	867	220	61	1511
Owens, Ira B., and D. C. Ball, Glen Elder, Kans. Wagon running-gear	486,351	Nov. 15	1870	492	61	986
Ownby, William R. (See Knight and Ownby.)						
Ozbirn, Marshal M. (See Reasons and Ozbirn.)						
Ozone Manufacturing Company. (See Dittrich and Grumbacher, assignors.)						
P. & F. Corbin. (See Case, Cromwell O., assignor.)						
Pabst, Charles, Philadelphia, Pa. Wick-raiser for lamp-burners	487,076	Nov. 29	3060	785	61	1252
Packham, William H., assignor of one-half to W. H. Bright, Buffalo, N. Y. Damper	485,053	Oct. 25	2410	620	61	524
Paddack, James R., Cincinnati, Ohio. Machine for the manufacture of sheet-metal articles	488,633	Dec. 27	2301	570	61	1828
Page, Albert A., assignor to Sargent & Company, New Haven, Conn. Sash-fastener	485,474	Nov. 1	499	132	61	673
Page, Albert N. (See Page, Daniel S., assignor.)						
Page, Albert N. (See Page and Bertsch, assignors.)						
Page, Daniel S., assignor to himself and A. N. Page, Malden, Mass. Electric-light fixture	484,450	Oct. 18	1425	364	61	313
Page, Daniel S., Malden, and J. L. Bertsch, Cambridge, assignors to D. S. and A. N. Page, Malden, Mass. Lantern for electric lighting	484,449	Oct. 18	1424	363	61	313
Page, Enoch, Lancaster, Pa. Belt-stretcher	485,216	Nov. 1	93	29	61	592
Page, James C., Akron, Kans. Terret	488,249	Dec. 20	1680	420	61	1690
Page, Truman E., La Crosse, Wis. Combined buckle and snap-hook	486,536	Nov. 22	2146	566	61	1055
Pain, Robert W., New York, N. Y. Musical instrument	488,482	Dec. 20	2057	511	61	1765
Painter, Gwynne E., Baltimore, Md. Non-sparking electric switch	488,899	Dec. 27	2706	670	61	1910
Paiste, Harry T., West Chester, Pa. Electric switch	483,862	Oct. 4	507	126, 127	61	105
Palmer, Austin D., Coshocton, Ohio. Combined paper-weight and calendar	485,133	Oct. 25	2523	649	61	518
Palmer, Edwin C., Cleveland, Ohio. Stamp-affixing machine	484,448	Oct. 18	1422	362, 363	61	312
Palmer, Henry H., deceased, Rockford, Ill.; S. D. Palmer, administrator. Crupper	486,537	Nov. 22	2147	567	61	1055
Palmer, Herbert R., Cleveland, Ohio. Hoisting and conveying apparatus	486,645	Nov. 22	2330	610	61	1091
Palmer, Irenas J., assignor of one-half to T. Storrs, Olean, N. Y. Stair-curve	486,940	Nov. 29	2858	739	61	1212
Palmer, John C. (See Parsons, Richmond, assignor.)						
Palmer, Marc V. (See Wilkinson and Palmer.)						
Palmer, Samuel D., administrator. (See Palmer, Henry H.)						
Palmer, Stephen. (See Thompson, Charles E., assignor.)						
Palmer, Wesley, assignor of one-half to J. Williams, Dayton, Ohio. Lamp-lighter	483,967	Oct. 4	667	167	61	138
Papot, James A., Baker's Mill, Fla. Churn	485,749	Nov. 8	916	245	61	777
Paramore, Heber S., *et al.* (See Cook, Thomas R., assignor.)						
Parcelle, Albert L., Boston, Mass. Armature for dynamo-electric machines	486,234	Nov. 15	1683	445	61	948
Pardee, William H., Antigo, Wis. Thill-coupling	485,978	Nov. 8	1261	333	61	847
Parenteau, Maxime O., Springfield, Mass. Antifriction-bearing	488,697	Dec. 27	2408	596	61	1848
Park, Allan G., Madison, Wis. Bill-holder	485,750	Nov. 8	917	245	61	777
Park, Charles S., Deerfield, Mass. Car-coupling	485,804	Nov. 8	981	263	61	791
Parker, Arthur A., Jersey City, N. J. Fence-stay	487,374	Dec. 6	222	61	61	1364
Parker, Arthur J., and R. G. Hunter, Williamston, Mich. Gasoline-heater	487,373	Dec. 6	221	60	61	1364
Parker, Edward P., Archdale, N. C. Holdback for vehicles	488,613	Dec. 27	2267	562	61	1822
Parker, Francis H., Grapeland, Tex. Combined cotton chopper and planter	484,337	Oct. 11	1244	317	61	266
Parker, Fred K. (See Fisher, Edmond T., assignor.)						
Parker, James J., Fulton, N. Y. Dice-caster	485,709	Nov. 8	855	230	61	765
Parker, John, Clinton, Conn. Invalid's adjustable back-rest	484,974	Oct. 25	2287	590, 591	61	500
Parker, John, and F. E. Clark, Sturgeon Falls, Canada. Balanced slide-valve	487,962	Dec. 13	1185	295, 296	61	1573
Parker, John M., Pawtucket, R. I. Spool-boring machine	483,576	Oct. 4	88	23	61	20
Parker, John W. (See Moore and Parker.)						
Parker, Josiah A., St. Louis, Mo., and L. L. Summers, Chicago, Ill.; said Summers assignor to said Parker. Telegraphic apparatus	487,154	Nov. 29	3185	816	61	1277

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Parker, Stearns & Sutton. (See Sutton, Benjamin F., assignor.						
Parkes, Florence M., *et al.* (See Parkes, John F., assignor.)						
Parkes, John F., North Tonawanda, assignor to F. M. and J. L. Parkes, Buffalo, N. Y. Split pulley	488,947	Dec. 27	2794	689	61	1928
Parkes, John L., *et al.* (See Parkes, John F., assignor.)						
Parkinson, Arthur E. (See Bennett and Parkinson.)						
Parks, David O., Denver, Colo., assignor of one-half to W. Groves, Camden, N. J. Collar-button	488,026	Dec. 13	1302	324	61	1598
Parks, James C. (See Kline and Parks.)						
Parks, William R., Palmer, Mass. Boiler-furnace	486,955	Nov. 29	2878	743	61	1216
Parmelee, Arthur W., assignor to Wire Goods Company, Worcester, Mass. Wire coat and hat hook	486,791	Nov. 22	2565	669	61	1137
Parmelee, Erskine M. (See Hopkins, Henry T., assignor.)						
Parmelee, Wilbur F., Middletown, Conn. Combined wash-bench and wringer-support	484,160	Oct. 11	956	246	61	209
Parmenter, William H., *et al.* (See Schiemer, Jacob, assignor.)						
Parmley, Joseph W., Ipswich, S. D. Pocket-protector	486,352	Nov. 15	1872	493	61	986
Parnall, Alfred N., assignor to Hollands Manufacturing Company, Erie, Pa. Pipe-wrench	486,235	Nov. 15	1686	446	61	949
Parpart, Otto, Akron, Ohio. Clearance-cutting machinery for twist-drills	488,218	Dec. 20	1635	407	61	1681
Parr, John H. (See Dore and Tapley, assignors.)						
Parris, James J., Beaver Falls, Pa. Carbureting apparatus	484,721	Oct. 18	1846	469	61	397
Parrow, Edward W., Plymouth, Mass. Car-coupling	484,451	Oct. 18	1427	364	61	313
Parshall, Charles H., Detroit, Mich. Refrigerating apparatus	485,217	Nov. 1	94	29	61	592
Parsons, J. Burton, *et al.* (See Huston, John B., assignor.)						
Parsons, John H. (See Gay and Parsons.)						
Parsons, Richmond, Philadelphia, assignor to J. C. Palmer, Ridley Park, Pa. Lathe-dog	484,668	Oct. 18	1776	452	61	383
Partridge, Benjamin S., Jacksonville, Fla. Motor	487,584	Dec. 6	560	144	61	1432
Paschall, W. G., *et al.* (See Jones and Ashley, assignors.)						
Patenall, Thomas H., Rahway, N. J. Signal-repeater	488,285	Dec. 20	1739	438	61	1701
Patent Button Company. (See Jackson, Wallace E., assignor.)						
Paterson, Edward L., Chicago, Ill. Railway safety-gate	485,771	Nov. 8	943	253	61	783
Patnoe, George W., assignor to himself, J. H. Shepard, and J. Dolese, Chicago, Ill. Turn-table	486,589	Nov. 22	2236	587	61	1072
Patten, Enos, assignor to Lynn Lasting Machine Company, Lynn, Mass. Tack-driving machine	483,747	Oct. 4	337	85	61	70
Patterson, James W., New York, N. Y. Auditorium-chair	488,533	Dec. 20	2144	530	61	1780
Patterson, Lemuel. (See Held and Patterson.)						
Patterson, William R., Manistee, Mich. Draft-indicator for vessels	484,642	Oct. 18	1723	438	61	372
Pattison, Charles E., Boston, Mass. Electrical switch	488,740	Dec. 27	2466	613	61	1860
Pattison, Thomas P., St. Joseph, Mo. Bookkeeping apparatus	486,386	Nov. 15	1919	509 and 510	61	997
Patton, Charles W., Clarksville, Ind., assignor of two-thirds to J. J. and T. J. Ramsey, Shelbyville, Ky. Car-coupling	485,218	Nov. 1	96	29	61	592
Paul, George J. F., assignor of one-half to H. Paul, Sr., Philadelphia, Pa. Wagon-shaft	488,772	Dec. 27	2512	624	61	1869
Paul, Henry, Sr. (See Paul, George J. F., assignor.)						
Paulsen, Erik, Larchwood, Iowa. Plow	487,539	Dec. 6	502	131	61	1420
Panthonier, Casimir, Boston, Mass., assignor to A. Ladenburg, New York, N. Y., and R. T. McDonald, Fort Wayne, Ind. Manufacture of incandescent electric lamps	487,890	Dec. 13	1074	269	61	1551
Pavyer, Benjamin J., and T. Burns, St. Louis, Mo.; said Burns assignor to said Pavyer. Paper-cutter	485,586	Nov. 1	662	176	61	709
Pawling, William M., Hagaman's Mills, N. Y., assignor to G. J. Torrance, Harrison, N. J. Machine for balling slivers	487,891	Dec. 13	1076	269 and 270	61	1552
Payne, Augustus F., Hamilton, N. Y. Wall-paper exhibitor	485,648	Nov. 8	752	198	61	743
Payne, Benjamin N., Elmira, N. Y. Railway-chair	485,298	Nov. 1	215	61	61	616
Payne, Benjamin N., Elmira, N. Y. Belt-tightener	488,698	Dec. 27	2409	597	61	1848
Payne, John R., assignor of one-half to G. W. Jean, Freedom, Ind. Sliding gate	488,481	Dec. 20	2056	511	61	1764
Peabody, William W., *et al.* (See Schenck, John D. P., assignor.)						
Peacock, Dred., *et al.* (See Vernon, Archer T., assignor.)						
Peacock, Thomas B. (See Dudley, George B., assignor.)						
Peacock, Thomas B., *et al.* (See Brazier, Edwin, assignor.)						
Pearce, Richard, Denver, Colo. Ore-roasting furnace	488,797	Dec. 27	2554	633 and 634	61	1878
Pearl, Coroden E., North Bangor, N. Y. Vehicle-spring	485,649	Nov. 8	753	198 and 199	61	743
Pearson, Fred, Philadelphia, Pa. Woven pile fabric	484,541	Oct. 18	1569	399	61	341
Pearson, Fred, Philadelphia, Pa. Woven pile fabric	484,605	Oct. 18	1659	421	61	360
Pearson, Fred, Philadelphia, Pa. Woven pile fabric	484,606	Oct. 18	1661	421	61	361
Pearson, Fred, Philadelphia, Pa. Double pile fabric	484,607	Oct. 18	1663	422	61	361
Pearson, James B., Pittsburg, and V. Sperle, Allegheny, assignors of one-third to D. Blickenstorfer, Pittsburg, Pa. Watch-chain holder and badge	486,419	Nov. 15	1977	524	61	1008
Pease, Leroy B. (See Lewis, Everett C., assignor.)						
Pease, Roger S., Rose, Minn. Melting-pot	484,161	Oct. 11	958	246	61	210
Pease, Roger S., Rose, Minn. Preparing glass metal	487,495	Dec. 6	321	82	61	1385
Pease, Roger S., Rose, Minn. Apparatus for molding glass, metal, &c.	487,496	Dec. 6	323	82, 83	61	1385
Peck, Edmund E., Brooklyn, N. Y. Reclining-chair	488,773	Dec. 27	2513	625	61	1870
Peck, Edward G., and G. E. O'Meara, Seymour, Conn. Fountain-pen	484,542	Oct. 18	1571	399	61	342
Peck, Melinda. (See Peck, Orrin B., assignor.)						
Peck, Melvin D., *et al.* (See Ridley, Matthew S., assignor.)						
Peck, Orrin B., assignor to M. Peck, Chicago, Ill. Apparatus for separating molten materials of different specific gravity	484,452	Oct. 18	1428	364	61	314
Peck, Orrin B., assignor to M. Peck, Chicago, Ill. Centrifugal ore-separator	485,475	Nov. 1	500	132	61	673
Peck, Orrin B., assignor to M. Peck, Chicago, Ill. Belt	485,476	Nov. 1	502	132	61	674
Peckham, Edgar, New York, N. Y. Car-axle box	485,219	Nov. 1	97	30	61	593
Peckham Seamless Ring Manufacturing Company. (See Peckham, William H., assignor.)						
Peckham, William H., Jersey City, N. J., assignor to Peckham Seamless Ring Manufacturing Company, New York, N. Y. Machine for marking or stamping finger-rings	484,918	Oct. 25	2201	567	61	483
Pedder, John, Pittsburg, Pa. Furnace for treating steel	483,577	Oct. 4	92	24	61	21
Pedder, John, Pittsburg, Pa. Furnace for treating steel	483,578	Oct. 4	96	24	61	21
Pedrick, Joseph B., Columbus, Ind. Corn-planter attachment	485,710	Nov. 8	858	230	61	765
Peel, Benjamin W., Chicago, Ill. Draft-regulator for fireplaces	485,772	Nov. 8	945	253	61	783
Peer, John, Claremont, Ill. Device for holding bags	488,449	Dec. 20	2004	500 and 501	61	1754
Peerless Manufacturing Company. (See McClymonds, Louis K., assignor.)						
Pegues, William T., *et al.* (See Pitts, William W., assignor.)						
Peifer, George W., Jr., and R. Johnston, Wilkes-Barré, Pa. Torpedo-placer	484,864	Oct. 25	2100	541	61	464

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Peirce, Charles L., Milwaukee, Wis., assignor to D. S. Wegg, Chicago, Ill. Speaking-tube	486,681	Nov. 22	2385	623	61	1102
Peirce, Charles L., Milwaukee, Wis., assignor to D. S. Wegg, Chicago, Ill. Speaking-tube	486,682	Nov. 22	2387	624	61	1102
Peisler, Gustave, Paris, France. Apparatus for feeding poultry	484,453	Oct. 18	1428	364 and 365	61	314
Pellican, Levi, Southborough, Mass. Ash-sifter	487,350	Dec. 6	183	50	61	1357
Pelonbet, Jarvis, assignor to Lyon & Healy, Chicago, Ill. Pneumatic action for organs	487,767	Dec. 13	868	220 and 221	61	1511
Penberthy, William, Leadville, Colo. Automatic restarting-injector	484,044	Oct. 11	786	198	61	176
Pendleton, Bradford H., Chicago, Ill. Lighting device	486,499	Nov. 22	2097	554	61	1045
Pendleton, John H., Brooklyn, N. Y. Electric-railway system	484,919	Oct. 25	2204	567 and 568	61	483
Pendleton, John T., and J. S. Wilson, Buffalo, Mo. Blank form for warranty-deeds, tax-receipts, &c.	485,561	Nov. 1	622	166	61	700
Penfield & Son, J. W. (See Larman, William H., assignor.)						
Penney, Joseph, Grand Rapids, Mich. Folding bed	484,722	Oct. 18	1847	470	61	398
Pennsylvania Industrial Development Company. (See Henry, Frank, assignor.)						
Pennsylvania Iron Works Company. (See Grist, Benjamin W., assignor.)						
Penrose, Hallack A. (See Dunbar, John W., assignor.)						
Pepper, David, Jr., Philadelphia, Pa. Dynamo-electric machine	485,220	Nov. 1	100	30	61	593
Peregrine, Seymour W. (See Stockwell, Millard E., assignor.)						
Perkins, Charles B. (See Fuller and Perkins.)						
Perkins, Charles H., Providence, R. I., assignor to Rhode Island Perkins Horse Shoe Company, Jersey City, N. J. Horseshoe-blank bar	487,056	Nov. 29	3027	778	61	1245
Perkins, Charles H., Providence, R. I., assignor to Rhode Island Perkins Horse Shoe Company, Jersey City, N. J. Roll for making horseshoe-blank bars	487,057	Nov. 29	3030	778	61	1246
Perkins, Fred B., and C. S. Jones, assignors to Toledo Electric Heating Company, Toledo, Ohio. Electric heater	483,940	Oct. 4	619	157	61	128
Perkins, George A., Cambridge, Mass. Saddle-spring for velocipedes	486,294	Nov. 15	1784	469	61	970
Perkins, Jacob B., *et al.* (See Glossop, Gilbert, assignor.)						
Perkins, John O., *et al.* (See Stovall, Philip, assignor.)						
Perkins, Nelson W., *et al.* (See Stovall, Philip, assignor.)						
Perkins, Palmer C., Mishawaka, Ind. Metal tower	485,879	Nov. 8	1094	291	61	813
Perkins, Richard B., Hornellsville, assignor of one-half to C. A. Ball, Wellsville, N. Y. Wire fence	484,756	Oct. 18	1909	486	61	412
Perkins, Shadrick F., *et al.* (See Stovall, Philip, assignor.)						
Perkins, Williard H., and W. L. Cronenberg, Long Beach, Cal. Cultivator	484,815	Oct. 25	2022	518	61	448
Perpente, William, New Haven, Conn. Speaking-tube	485,979	Nov. 8	1262	333	61	848
Perrine, Frederic A. C., assignor to John A. Roeblings Sons Company, Trenton, N. J. Electric-cable splice	484,045	Oct. 11	788	198	61	176
Perrine, George H., Waterbury, Conn. Button	485,848	Nov. 8	1047	280	61	803
Perry, James, Brooklyn, N. Y. Folding crib	484,975	Oct. 25	2289	591	61	500
Perry, John, London, England. Electric meter	486,123	Nov. 15	1521	402	61	916
Perry, Joseph R., Wilkes-Barré, Pa. Piano-action	485,650	Nov. 8	753	199	61	743
Perry, Joseph R., Wilkes-Barré, Pa. Violin-bow	485,651	Nov. 8	755	199	61	743
Perry, Thomas O., Chicago, Ill. Pneumatic pump	485,880	Nov. 8	1095	291 and 292	61	813
Perry, Thomas O., Chicago, Ill. Windmill air-compressor	485,881	Nov. 8	1100	292 and 293	61	814
Perry, Thomas O., Chicago, Ill. Pneumatic pumping-engine	485,882	Nov. 8	1105	293 and 294	61	815
Perry, Thomas O., Chicago, Ill. Tilting-tower for windmills	485,883	Nov. 8	1111	294	61	816
Perry, Thomas O., Chicago, Ill. Valve-operating mechanism for pneumatic pumps	485,884	Nov. 8	1114	294 and 295	61	816
Pessano, Antonio C. (See Stirling, Archibald, assignor.)						
Peters, Harry T., Woodland, Pa. Shaving-case	483,579	Oct. 4	99	24	61	22
Peters, James. (See Metzger, Edward, assignor.)						
Peters, William A., San Francisco, Cal. Apparatus for making malt	483,748	Oct. 4	338	85	61	71
Peterson, George A. (See Ethridge, Frank N., assignor.)						
Peterson, George W., Leonardville, Kans. Broom-corn harvester	485,711	Nov. 8	859	230 and 231	61	765
Peterson, Ole H., Grove City, Minn. Grindstone-hanger	486,217	Nov. 15	1655	437	61	942
Peterson, Robert. (See Langer and Peterson.)						
Petrie, Charles. (See Squires and Petrie.)						
Pettet, Robert S., Atlantic City, N. J. Coupling and conduit for railway-train-heating apparatus	488,717	Dec. 27	2434	604	61	1854
Pettibone, John C., Ansonia, Conn. Garment-supporter	488,088	Dec. 13	1412	351	61	1621
Pettibone-Mulliken & Company. (See Ericson, Richard W., assignor.)						
Pfannkuche, Gustav, assignor to Brush Electric Company, Cleveland, Ohio. Regulation of alternating-current generators	485,054	Oct. 25	2410	620	61	525
Pfeifer, John, assignor to National Cash Register Company, Dayton, Ohio. Autographic register	484,643	Oct. 18	1725	438 and 439	61	372
Pfeifer, John, assignor to National Cash Register Company, Dayton, Ohio. Autographic register	484,644	Oct. 18	1732	440	61	374
Pfeifer, John, assignor to National Cash Register Company, Dayton, Ohio. Autographic register	488,900	Dec. 27	2708	670	61	1911
Pfeifer, John, assignor to National Cash Register Company, Dayton, Ohio. Autographic register	488,901	Dec. 27	2711	670 and 671	61	1911
Pfeifer, John, assignor to National Cash Register Company, Dayton, Ohio. Autographic register	488,902	Dec. 27	2713	671	61	1912
Pfeifer, John, assignor to National Cash Register Company, Dayton, Ohio. Cash register, indicator, recorder, and check-printer	488,903	Dec. 27	2715	671, 672, and 673	61	1912
Pfeiffer, George L., Williamstown, N. J. Fruit-jar	488,614	Dec. 27	2268	563	61	1892
Pfingst, Louis, Boston, Mass. Car-spring	485,652	Nov. 8	756	199	61	744
Pfingst, Louis, Boston, Mass. Car-brake	487,768	Dec. 13	870	221	61	1511
Pfiuns, John R. (See Neumann and Pfiuns.)						
Pfleiderer, Paul, London, England, and H. Werner, Cannstatt, near Stuttgart, Germany. Baking-oven	487,638	Dec. 6	648	166 and 167	61	1450
Pfleiger, Jacob K., Richland Centre, Pa. Thill-coupling	485,426	Nov. 1	427	114	61	660
Pflieger, John H., Johnstown, Pa. Car-brake	486,792	Nov. 22	2566	669	61	1138
Pfluneger, Ernest F., Akron, Ohio. Fish scaler and dresser	486,295	Nov. 15	1784	469	61	970
Pfortner, Ignatz, New York, N. Y. Tobacco-pipe	486,296	Nov. 15	1785	469	61	970
Pfouts, George L., Philadelphia, Pa. Holder for metallic staples	484,608	Oct. 18	1665	422	61	361
Pfouts, Leroy S., Canton, Ohio. Adjustable electric-light holder	487,022	Nov. 29	2977	767	61	1235

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Pfouts, Leroy S., and L. D. Ball, Canton, Ohio. Sole	483,580	Oct. 4	100	25	61	22
Pfretzschner, Adolf. (See Lässig and Pfretzschner.)						
Phelps, Augustus, Newark, N. J. Button-machine	484,976	Oct. 25	2290	591	61	500
Phelps, Edwin S., Leavenworth, Kans. Time-lock	486,603	Nov. 22	2261	591	61	1076
Phelps, Eugene M. (See Thomson and Phelps.)						
Phelps, Eugene M., Lynn, Mass., assignor to Hand Method Finishing Machine Company, Nashua, N. H. Sewing-machine for overstitching buttonhole-thrums	484,744	Oct. 18	1889	481, 482	61	408
Phelps, George H., *et al.* (See Smith, Edward S., assignor.)						
Phelps, James H., Sharon, Wis. Pianoforte-action	486,500	Nov. 22	2098	555	61	1045
Phelps, Lucius J., Passaic, N. J. Gas-machine	485,134	Oct. 25	2524	649	61	548
Philbrick, Frank A., Chicago, Ill. Drawbridge-gate	486,793	Nov. 22	2568	669	61	1139
Philipson, William. (See Swain and Philipson.)						
Phillippi, Frank A., Philadelphia, Pa. Check-valve	486,501	Nov. 22	2099	555	61	1046
Phillips, Charles B. (See Lewis and Phillips.)						
Phillips, Charles H., assignor to Brown & Sharpe Manufacturing Company, Providence, R. I. Milling-machine	484,455	Oct. 18	1430	365	61	314
Phillips, Edwin G., assignor of one-half to S. Weiskopf, Charleston, S. C. Table-leaf support	484,723	Oct. 18	1850	470	61	398
Phillips, Francis V., assignor to Smith & Phillips Manufacturing Company, Chicago, Ill. Window-frame pocket	483,968	Oct. 4	668	167	61	138
Phillips, James T. (See Brenner, David H., assignor.)						
Phillips, Jennie E., *et al.* (See Hunter, Joseph, assignor.)						
Phillips, John, Williamstown, Pa. Weather-strip	484,454	Oct. 18	1429	365	61	335
Phillips, John, London, England. Drawing and stippling pen	484,523	Oct. 18	1540	390, 391	61	314
Phlegar, Jacob, De Witt, Mo. Wire-reel carrier	486,538	Nov. 22	2148	567	61	1055
Phœnix Iron Company. (See Coffin, Amory, assignor.)						
Photo Materials Company. (See Milburn, Gustave D., assignor.)						
Pickett, Albert J. (See White, Frederick L., assignor.)						
Picot, Max, Paris, France. Elastic woven fabric	484,977	Oct. 25	2292	591	61	501
Pieper, Henri, Liege, Belgium. Gun-lock	488,366	Dec. 20	1872	468, 469	61	1727
Pierce, Arthur M., Brooklyn, assignor to Eastman Kodak Company, Rochester, N. Y. Photographic-plate holder	484,569	Oct. 18	1605	408	61	349
Pierce, Charles S. (See Lockett, Joseph C., assignor.)						
Pierce, Chester C., Clayton, assignor of one-half to G. E. Lewis, Carthage, N. Y. Axle-lubricator	484,234	Oct. 11	1077	273	61	233
Pierce, Erastus E., assignor to Standard Horse Nail Company, New Brighton, Pa. Machine for forging horseshoe-nails	486,195	Nov. 15	1617	429, 430	61	936
Pierce Steam Heating Company. (See Anderson, John, assignor.)						
Pierce, Ward E., Pulaski, N. Y. Window-screen	483,789	Oct. 4	404	100	61	85
Pierling, Franz S., Munich, Germany. Magic-lantern kiosk	486,236	Nov. 15	1686	446	61	949
Pine, Wilber J., Waukau, Wis. Ice-cutting machine	485,114	Oct. 25	2495	641	61	543
Pinke, Alexander, St. Louis, Mo. Saw setting and filing machine	488,829	Dec. 27	2598	644, 645	61	1888
Pinkerman, James, Columbus, Ohio. Toe-weight	488,450	Dec. 20	2005	501	61	1754
Pistorius, Herman, Saginaw, Mich. Boot-blacking kit	487,963	Dec. 13	1186	296	61	1573
Pistorius, Herman, Saginaw, Mich. Cabinet-easel	487,964	Dec. 13	1187	296	61	1573
Pitchford, John R., San Francisco, Cal. Water-wheel bucket	485,477	Nov. 1	502	133	61	674
Pitman, Benn. (See Frye and Pitman.)						
Pitman, Charles P., Freehold, N. J. Rubber dam	484,046	Oct. 11	789	198	61	176
Pittler, Wilhelm von, Leipsic, Germany. Lathe	485,773	Nov. 8	946	253, 254	61	783
Pittrich, Carl, Dresden, Germany. Apparatus for turning over the leaves of music	487,769	Dec. 13	872	221	61	1511
Pitts, William W., San Luis Potosi, Mexico, assignor of one-half to W. T. Pegues and C. E. Jenkins, Mansfield, La. Metal tie and automatic clamp for fastening same	488,904	Dec. 27	2730	673	61	1915
Piver, John W., Americus, Ga. Lumber-drier	487,965	Dec. 13	1187	296, 297	61	1573
Platt, Henry C., Nantucket, Mass. Camera-shutter	484,456	Oct. 18	1431	366	61	315
Platt, Joseph F., Waterbury, Conn. Bachelor-button	488,219	Dec. 20	1636	408	61	1681
Platts, Henry C., London, England. Furnace	483,863	Oct. 4	509	127, 128	61	106
Player, John, Topeka, Kans. Dumping-car	483,790	Oct. 4	405	101	61	85
Plotner, Albert L., New Bedford, Mass. Hoisting device	485,774	Nov. 8	947	254	61	783
Plunkett, J. C. (See Reynolds, Christopher C., assignor.)						
Plunkett, James C., Oakland, Cal. Sash-fastener	484,235	Oct. 11	1078	273	61	234
Poage, James F., Kirksville, Mo. Cuff button and fastener	484,669	Oct. 18	1777	452	61	384
Pocock, Francis A., Lynn, Mass., assignor to Thomson Van Depoele Electric Mining Company, of Maine. Automatic governing device for electric pumps	485,291	Nov. 1	101	30	61	594
Pohle, Edwin C., Denver, Colo. Separating matte from slag	484,570	Oct. 18	1606	408	61	349
Pohlé, Julius G., Jersey City, N. J. Elevating liquids	487,639	Dec. 6	649	167	61	1450
Poland, John C., Boston, Mass. Starching-machine	485,980	Nov. 8	1263	333, 334	61	848
Polkowski, John, New York, N. Y. Feathering paddle-wheel	486,502	Nov. 22	2100	555	61	1046
Pollard, Edward, deceased, Cambridge, Mass.; M. W. Pollard, administratrix. Incandescent electric lamp	485,478	Nov. 1	504	133	61	674
Pollard, Martha W., administratrix. (See Pollard, Edward.)						
Polle, Friederich W., Washington, D. C. Vent for liquid-receptacles	484,816	Oct. 25	2023	519	61	448
Polleck, Charles V., Des Moines, Iowa. Nozzle	488,220	Dec. 20	1637	408	61	1681
Poole, Nathaniel D., North Attleborough, Mass. Level-hanger for shafting	487,427	Dec. 6	325	83	61	1386
Pooley Bros. (See Pooley, Edward F., assignor.)						
Pooley, Edward F., Media, assignor to Pooley Bros., Philadelphia, Pa. Desk	483,864	Oct. 4	511	129	61	106
Pope, Everett M. (See Bray and Pope.)						
Pope, John L., Cleveland, Ohio. Adjustable walking-stilt	486,891	Nov. 29	2752	715	61	1191
Pope Manufacturing Company. (See Copeland, James S., assignor.)						
Pope, Thomas E., Oakland, Cal. Railway-car	485,562	Nov. 1	623	166	61	700
Porteous, William, Elmwood Place, Ohio. Chuck	487,292	Dec. 6	84	25	61	1338
Porter, Henry K., Boston, Mass. Bolt-clipper	484,670	Oct. 18	1778	452, 453	61	384
Porter, John W., assignor of one-half to J. McNaughton, Waukesha, Wis. Automatic indicating-calipers	486,810	Nov. 22	2595	676	61	1144
Porter, Joseph E., Ottawa, Ill. Track for hay carriers and elevators	487,966	Dec. 13	1189	297	61	1573
Porter, Stephen, Boston, Mass. Suspension device for incandescent lamps	486,604	Nov. 22	2264	591	61	1076
Porter, William D., Providence, R. I. Dental filling	488,634	Dec. 27	2303	570	61	1828

Alphabetical list of patentees, October to December, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Porter, William S., Washington, Pa. Attachment for the brakes of bicycles	486,683	Nov. 22	2388	624	61	1102
Porter, Wilson E., assignor to New Haven Clock Company, New Haven, Conn. Alarm-clock	484,236	Oct. 11	1079	273	61	234
Porttens, Anson, Marion, Ind. Milk-bucket	483,581	Oct. 4	101	25	61	22
Poschinger, Mathias, assignor to Sulzervogt Machine Company, Louisville, Ky. Liquid-regulator	485,563	Nov. 1	624	166	61	701
Poston, Joseph W., Holly Springs, Miss. Car-coupling	485,333	Nov. 1	278	75, 76	61	629
Pott, Henry G. (See Myers, George P., assignor.)						
Potter, Gideon, and H. Dangerfield, Osceola, Ill. Tool-handle	483,865	Oct. 4	512	129	61	106
Potter, Hobert B., Hillburn, N. Y. Toilet-soap server	485,653	Nov. 8	757	200	61	744
Potter, Howard, New York, N. Y. Circular letter of credit	488,221	Dec. 20	1638	408	61	1682
Potter, John A., Munhall, assignor of one-half to R. W. Grace, Pittsburg, Pa. Art of and machine for cutting flanged beams	485,981	Nov. 8	1267	334	61	848
Potter, John A., and P. T. Berg, Homestead, Pa. Rolling-mill	485,982	Nov. 8	1268	334, 335	61	849
Potter, John S., Newton, and D. J. Cartwright, Boston, Mass.; said Cartwright assignor to said Potter. Socket for incandescent electric lamps	485,567	Nov. 1	662	176	61	710
Potts, Charles A., Trenton, N. J. Combined clothes-line prop and clothes-hanger	484,162	Oct. 11	959	246	61	210
Pound, Harvey H., *et al.* (See Curtis, Andrew J., assignor.)						
Pound, William, *et al.* (See Curtis, Andrew J., assignor.)						
Powell, Adolph, *et al.* (See Hunter, Joseph, assignor.)						
Powell, Charles E., Gloversville, N. Y. Paper-box machine	487,771	Dec. 13	876	222	61	1512
Powell, John B. and M. C., Parker, S. D. Combined chart and blackboard	484,338	Oct. 11	1246	317, 318	61	266
Powell, Mary C. (See Powell, John B. and M. C.)						
Powell, Robert, Cleveland, Ohio. Construction and laying of subaqueous tunnels	485,983	Nov. 8	1270	335, 336	61	849
Powers, Lyman A., Fennimore, Wis. Clothes-drier	485,222	Nov. 1	102	31	61	594
Prahar & Brother. (See Deck, Frederick R., assignor.)						
Prange, Robert L. (See Colell, Paul H., assignor.)						
Pratt, Austin A., Independence, Oreg. Potato-digger	484,817	Oct. 25	2024	519	61	448
Pratt, Edward W. (See Mouat and Pratt.)						
Pratt & Letchworth. (See Crosby, George S., assignor.)						
Pratt & Letchworth. (See Wiedrich, Charles L., assignor.)						
Pratt, Nat. W., Brooklyn, N. Y. Revolving stoker	485,223	Nov. 1	103	31, 32	61	594
Pratt, Nat. W., Brooklyn, N. Y. Revolving stoker	485,224	Nov. 1	106	32, 33	61	595
Pratt, Wilbur M., New York, N. Y. Tobacco-pipe	485,654	Nov. 8	759	200	61	744
Pratt, William H., Mount Vernon, Ohio. Telegraph-pole	488,830	Dec. 27	2600	645	61	1888
Preisler, Adolph J., *et al.* (See Berg, Peter V. P., assignor.)						
Preisler, Reinhold J., *et al.* (See Berg, Peter V. P., assignor.)						
Prentiss, Frederick H., New York, N. Y. Incandescent electric lamp	488,635	Dec. 27	2304	571	61	1828
Prentiss, Frederick H., New York, N. Y. Incandescent lamp	488,636	Dec. 27	2305	571	61	1828
Prentiss, Henry S., Elizabeth, N. J. Automatic keyboard-operator	487,936	Dec. 13	1149	287, 288	61	1565
Prenzlau, Hermann, Hamburg, assignor of one-half to C. Beuster, Berlin, Germany. Vehicle-shafts	487,037	Nov. 29	3001	772	61	1239
Prescott, Edwin, Arlington, Mass. Dough-kneader	485,822	Nov. 8	1006	269	61	795
Prest, John E., Whitinsville, Mass. Beam-doffer for warpers	485,225	Nov. 1	109	33	61	595
Prewitt, William Q., Lexington, Ky. Portable mirror	484,818	Oct. 25	2026	519	61	449
Price, Charles S. (See Fronheiser and Price.)						
Price, Courtleon R., Prescott, Wis. Cuspidor	486,892	Nov. 29	2753	715	61	1191
Price, John B., Wollaston, Mass. Padlock	483,866	Oct. 4	513	129	61	107
Price, John B., Wollaston, Mass. Seal-lock	483,867	Oct. 4	515	129	61	107
Price, John B., Wollaston, Mass. Mechanical movement	484,645	Oct. 18	1735	440, 441	61	374
Price, Joseph F., Exeter, Nebr. Wire stretcher and splicer	484,881	Oct. 25	2127	546	61	468
Price, Russell D., Parkside, Pa. Railway-tie and track-fastening	487,351	Dec. 6	185	51	61	1357
Pridmore, Henry E., Chicago, Ill., assignor to McCormick Harvesting Machine Company. Mowing-machine	488,905	Dec. 27	2731	674	61	1915
Prince, Samuel F., Jr., Reading, Pa. Check-valve	483,635	Oct. 4	175	44	61	36
Pringle, Eugene, Gloversville, N. Y. Device for supporting and holding cartridges in fire-arms	484,457	Oct. 18	1433	366	61	315
Prinzlau, Wilhelm, Hamburg, Germany. Car starter and brake	485,353	Nov. 1	317	84	61	636
Priser, Orion T., Brookville, Ohio. Support for stew-pans or like utensils in a domestic boiler	488,831	Dec. 27	2602	646	61	1888
Prochaska, George B., New Orleans, La. Polishing rice or other grains	483,868	Oct. 4	518	130	61	107
Proctor, George E., Washington, D. C. Air cooling and purifying apparatus	488,798	Dec. 27	2556	634, 635	61	1879
Proctor, William R., Redding, Iowa. Lifting-jack	487,770	Dec. 13	874	222	61	1512
Prosa, John A. (See Montague and Prosa.)						
Prouty, Nelson H., Charlton, Mass. Handle	488,679	Dec. 27	2380	589	61	1843
Pruitt, John H., Marlton, Ala. Burglar-alarm	486,893	Nov. 29	2754	715	61	1191
Pruner, Thomas H., assignor of one-half to M. Grigsby and F. Forde, Sioux Falls, S. D. Thill-coupling	486,410	Nov. 15	1964	521	61	1006
Psilander, Charles A. (See Angerer and Psilander.)						
Psilander, Charles A. (See Samuel, Angerer, and Psilander.)						
Pugh, John W., assignor of one-third to T. J. Haynes, Grand Rapids, Mich. Nut-lock	484,745	Oct. 18	1893	482	61	409
Pugh, William H., Minneapolis, Minn. Axle-lubricator	488,402	Dec. 20	1925	483	61	1737
Pugsley, John G., South Norwalk, Conn. Ankle-supporter	487,492	Dec. 6	429	110	61	1406
Pullar, William, Ithaca, N. Y. Sod-trimming machine	487,058	Nov. 29	3032	778	61	1246
Pullman, Albert B., assignor to A. B. Pullman Company, Chicago, Ill. Car-door	485,588	Nov. 1	664	176, 177	61	710
Pullman, Herbert S., Meriden, Conn., assignor of one-half to H. L. Allen. Necktie-fastener	486,956	Nov. 29	2879	744	61	1217
Pullman, James M., *et al.* (See Knowles, Louis T., assignor.)						
Punteney, Archibald, and E. C. Sooy, Kansas City, Mo. Combined hay rake and loader	487,640	Dec. 6	651	167, 168	61	1450
Purcell, John J., assignor of one-half to W. H. Allen, Washington, D. C. Electric coupling	488,027	Dec. 13	1303	324	61	1598
Purdon, William, Hull, England. Sash-holder	487,155	Nov. 29	3190	817	61	1278
Purefoy, Addison F., Wake Forest, N. C. Spring bed-bottom	486,183	Nov. 15	1603	426	61	932
Purefoy, Addison F., Wake Forest, N. C. Spring bed-bottom	486,184	Nov. 15	1605	426	61	933
Purifoy, William S., Furman, Ala. Automatic fire-extinguisher	488,832	Dec. 27	2603	646	61	1888
Pursell, David E., Mauch Chunk, Pa. Time-recording mechanism	483,767	Oct. 4	365	91	61	77
Putnam, Joseph W., New Orleans, La. Steam-boiler	487,641	Dec. 6	652	168	61	1451

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Pye, James F., Baldwinville, assignor of one-half to J. A. Spain, Talbotton, Ga. Lap-ring	487,156	Nov. 29	3191	817	61	1278
Pye, James F., Baldwinville, assignor of one-half to J. A. Spain, Talbotton, Ga. Hame	487,157	Nov. 29	3192	817	61	1278
Pyke, Lazarus S. M., and H. T. Barnett, assignors to said Pyke and E. S. Harris, London, England. Electrical inductorium	484,543	Oct. 18	1573	399	61	342
Pyke, Lazarus S. M., and E. S. Harris, London, England. Electrical inductorium	484,544	Oct. 18	1574	400	61	343
Pyle, Alice A., Richmond, Va. Carpet-cleaning apparatus	488,323	Dec. 20	1798	451	61	1712
Pynchon, Edwin, Chicago, Ill., assignor to A. Hoeffer, J. C. Skelton, and A. P. Gould, Canton, Ohio. Adjustable chair	484,571	Oct. 18	1607	408	61	349
Pyper, Mitchel, New York, N. Y. Saw-handle attachment	486,736	Nov. 22	2471	645	61	1119
Q. and C. Company. (See Reece, Benjamin, assignor.)						
Quatermass, Reuben, Moline, Kans. Building	488,451	Dec. 20	2007	501	61	1755
Quick, William H. (See Hanna, Manuel J., assignor.)						
Quickel, Edwin G., York, Pa. Whiffletree-hook	484,746	Oct. 18	1894	482	61	409
Quinby, Thomas B., *et al.* (See Barrett, George L., assignor.)						
Quinby, Thomas B. (See Duncan and Quinby.)						
Quinn, John J., assignor of one-half to T. Mulcahy, Rochester, N. Y. Shaper and cutter head	485,427	Nov. 1	428	114	61	660
Quinn, William J., assignor to Henry McShane Manufacturing Company, Baltimore, Md. Globe-valve	485,055	Oct. 25	2413	621	61	525
Rabb, Philip J., Frankfort, Ill. Draft-equalizer	486,265	Nov. 15	1741	459	61	961
Rabbidge, Parnell, Sydney, New South Wales. Telephone	488,367	Dec. 20	1876	469, 470	61	1728
Rabitts, John M., Boston, Mass., assignor to Ball and Socket Fastener Company, of New Hampshire. Catch for garment-supporters	484,819	Oct. 25	2026	519	61	449
Rachelman, Max. (See Rachelman, Samuel and M.)						
Rachelman, Samuel and M., St. Paul, Minn. Trousers	486,894	Nov. 29	2757	716	61	1191
Radcliffe, Charles, Newark, N. J. Button-attaching machine	486,895	Nov. 29	2759	716, 717, 718, 719	61	1192
Radcliffe, Charles, Newark, N. J. Button-attaching machine	486,896	Nov. 29	2770	719, 720, 721, 722	61	1195
Radermacher, John, Kaukauna, Wis. Potato-harvester	488,948	Dec. 27	2795	689, 690	61	1928
Radford, Benjamin F., Hyde Park, Mass. Belt-shifter	483,620	Oct. 4	156	38	61	33
Radford, Benjamin F., Hyde Park, Mass. Friction-clutch	483,941	Oct. 4	621	157	61	128
Radford, Benjamin F., Hyde Park, Mass. Digester	483,942	Oct. 4	622	157	61	128
Radford, William, San José, Cal. Continuous kiln	484,237	Oct. 11	1081	274	61	214
Rager, Adolphus S., Frederick, Md. Combined pipe-holder and pipe-vise	486,124	Nov. 15	1522	402	61	916
Rahn, Charles A., Cleveland, Ohio. Horse-boot	484,820	Oct. 25	2028	520	61	449
Rahn, Charles A., Cleveland, Ohio. Stallion-shield	487,293	Dec. 6	85	25, 26	61	1338
Ralph, Martin, Queens, N. Y. Combination-ticket	487,540	Dec. 6	502	131	61	1420
Ralston, James B. (See Kirkpatrick and Ralston.)						
Ramapo Iron Works. (See Wright, Abram W., assignor.)						
Rampe, John W. (See Cushing and Rampe.)						
Ramsey, Archie H., Rutland, Fla. Crate	486,297	Nov. 15	1786	469	61	970
Ramsey, John J., *et al.* (See Patton, Charles W., assignor.)						
Ramsey, Jonathan, and R. Carleton, Boston, Mass. Soda-water apparatus	486,548	Nov. 22	2161	571	61	1058
Ramsey, Thomas J., *et al.* (See Patton, Charles W., assignor.)						
Rand, McNally & Company. (See Reid, John, assignor.)						
Randall, Amelia A. (See Randall, Silas G., assignor.)						
Randall, John W., New York, N. Y. Disk-holder for valves	485,984	Nov. 8	1272	337	61	850
Randall, Silas G., assignor to A. A. Randall, Greene, N. Y. Seed-planter	485,226	Nov. 1	110	33, 34	61	596
Randall, Victor E., Marshall, Mich. Harrow	484,047	Oct. 11	789	199	61	176
Randle, Alexander E., Grayville, Ill. Mortising device	483,869	Oct. 4	519	130	61	107
Randolph, William J., Millersville, La. Grain-harvesting machine	488,833	Dec. 27	2604	646, 647	61	1889
Rank, Erdmann, St. Paul, Minn. Fire-escape	485,656	Nov. 8	774	205	61	746
Rankin, Francis M. (See Murphy and Rankin.)						
Rankin, Robert P. (See Campbell and Rankin.)						
Rano, Charles O. (See Dean, Cyrus S., assignor.)						
Ransom, Louis, and A. W. Maynes, assignors to C. W. Seiberling, trustee, Akron, Ohio. Type-line-forming machine	485,655	Nov. 8	760	200, 201, 202, 203, 204, 205	61	744
Ransome, Ernest L., Oakland, Cal. Concrete-mixing machine	485,428	Nov. 1	430	115	61	660
Ranton, William J., Syracuse, N. Y. Steam-generator	484,339	Oct. 11	1247	318	61	266
Rappleye, Hannibal W., Philadelphia, Pa. Drying apparatus	484,821	Oct. 25	2028	520	61	449
Rapson, Philip T., Bad Axe, Mich. Gate-latch	487,077	Nov. 29	3061	786	61	1252
Rath, Charles, Chicago, Ill. Automatic cut-off for gas-burners	488,949	Dec. 27	2797	690	61	1929
Rath, Jack, Jackson, Mich. Harp	485,354	Nov. 1	317	85	61	637
Rathbun, Elihu, Cable, Ill. Chimney or flue lining	485,479	Nov. 1	505	133	61	675
Rathmann, Johann H. E., Buffalo, N. Y. Apparatus for drying and germinating malt	485,355	Nov. 1	319	85, 86	61	637
Rausch, Rudolf, Vienna, Austria-Hungary. Producing inlaid work on stones	486,590	Nov. 22	2237	......	61	1072
Ravenel, Daniel, Jr., and R. P. Miles, Charleston, S. C. Adjustable bracket	485,589	Nov. 1	666	177	61	710
Rawson, Abel M., San Francisco, Cal. Hydraulic-mining engineering method and apparatus	486,897	Nov. 29	2783	722	61	1198
Ray, Edwin R. (See Alderson and Allen, assignors.)						
Ray, Frederick A., Chicago, Ill., assignor to Heaton Peninsular Button Fastener Company, Providence, R. I. Button-setting machine	483,694	Oct. 4	257	63, 64	61	54
Ray, Frederick A., Chicago, Ill., assignor to Heaton Peninsular Button Fastener Company, Providence, R. I. Button-setting tool	483,695	Oct. 4	260	64	61	54
Rayne, Louis H., and W. L. Woods, Baltimore, Md. Salesman's sample-trunk	487,493	Dec. 6	430	111	61	1406
Raymond, George E. and George E., Jr., Chicago, Ill. Barrel-cover	485,227	Nov. 1	113	35	61	596
Raymond, John W., San Francisco, Cal. Gas-engine	488,483	Dec. 20	2050	512	61	1765
Raymond, Silas H., assignor to T. S. White and T. Friant, Grand Rapids, Mich. Box-lid support	486,503	Nov. 22	2102	556	61	1047
Raymond, Silas H., assignor to T. S. White and T. Friant, Grand Rapids, Mich. Carpet-sweeper	488,950	Dec. 27	2798	690	61	1929

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Raynor, Irwin H., assignor of one-half to C. O. Furgason, Cleburne, Tex. Feed apparatus for locomotives	485,056	Oct. 25	2414	621	61	525
Read, Charles C., Mandarin, Fla. Berry-picker	485,057	Oct. 25	2416	621	61	525
Read, James A., Norfolk, Nebr. Coin-tray	485,228	Nov. 1	114	35	61	597
Reagan, Harry C., Jr., Philadelphia, Pa. Compound engine	488,250	Dec. 20	1681	420	61	1690
Reagan, Paul M., Chicago, Ill. Car-coupling	485,356	Nov. 1	322	86	61	638
Reamy, Thomas J., Auburn, Ind. Intermittent grip device for machinery	485,058	Oct. 25	2417	621, 622	61	525
Reaney, David L., Bradford, England. Brake for bicycles	483,621	Oct. 4	158	39	61	33
Reasoner, Andrew, *et al.* (See Morrell, Robert, assignor.)						
Reasons, Robert W., and M. M. Ozbirn, Campbell, Mo. Gate	488,834	Dec. 27	2608	647	61	1889
Reaume, Albert D. (See Delaney and Reaume.)						
Rebmann, William, Chicago, Ill. Melting-furnace	488,661	Dec. 27	2346	581	61	1837
Recht, Frederick, Brooklyn, N. Y. Metal bracket and its manufacture	488,741	Dec. 27	2468	613	61	1861
Redman, James W. (See Okey, Joseph B., assignor.)						
Redmayne, Robert N., Newcastle-on-Tyne, England. Apparatus for the manufacture of paper-pulp	483,870	Oct. 4	520	130	61	108
Redpath, Charles, Pembina, N. D. Ventilator	485,059	Oct. 25	2419	622	61	526
Reece, Benjamin, assignor to Q. and C. Company, Chicago, Ill. Wear-plate for railway-ties	488,662	Dec. 27	2348	581	61	1837
Reece, John, Boston, Mass. Sewing-machine	484,671	Oct. 18	1779	453, 454	61	384
Reece, John, Boston, Mass. Buttonhole sewing-machine	488,028	Dec. 13	1304	324, 325, 326	61	1598
Reed, Calvin M., Hoppenville, Pa. Railway-tie and rail-fastener	487,642	Dec. 6	654	169	61	1451
Reed, Eli S., Chattanooga, Tenn. Motor for machines	484,238	Oct. 11	1083	274	61	234
Reed, George M., Waltham, assignor to D. H. Bishop, Boston, Mass. Placer-machine	488,452	Dec. 20	2008	502	61	1755
Reed, J. Van D. (See Stowe, Benjamin L., assignor.)						
Reed, Joseph V., Jeffersonville, Ind. Combined sign and price-current	485,229	Nov. 1	115	35	61	597
Reed, Laura B., *et al.* (See Hall, James G., assignor.)						
Reese, Abram L. (See Reese, Mary I. and A. L.)						
Reese, Edwin M., Santa Paula, Cal. Wooden vessel	486,737	Nov. 22	2472	645	61	1120
Reese, Frederick W., Paris, Ill. Broom-corn cleaner	488,251	Dec. 20	1683	420, 421	61	1690
Reese, Mary I. and A. L., Chase, Kans. Stove-kettle cover	486,539	Nov. 22	2149	567	61	1055
Reese, Reese T., and D. Williams, Scranton, Pa. Commode	484,672	Oct. 18	1782	454	61	385
Reeves, Fred. W. (See Roat, George M., assignor.)						
Reeves, Vincent. (See Keller, Theodore, assignor.)						
Rego, Frank I., Allston, Mass. Car-brake	485,135	Oct. 25	2529	650	61	549
Reichling, Oscar E. H. N., Marion, Ind. Wrench	485,657	Nov. 8	776	206	61	747
Reid, Charles E., Kansas City, Mo. Elevator	486,794	Nov. 22	2569	670	61	1139
Reid, Edwin B., Barrie, Canada. Car-coupling	487,772	Dec. 13	878	223	61	1513
Reid, John, assignor to Rand, McNally & Company, Chicago, Ill. Railway-ticket	487,294	Dec. 6	86	26	61	1339
Reigh, Mark B., Boston, Mass., assignor to Willimantic Linen Company, Hartford, Conn. Thread-unwinding device for sewing-machines	485,136	Oct. 25	2531	650	61	549
Reilley, James M., *et al.* (See Reilley, Matthew S., assignor.)						
Reilley, Matthew S., assignor to M. D. Peck and J. M. Reilley, Washington, D. C. Railway-train telegraph	484,375	Oct. 11	1297	332	61	276
Reilly, John, assignor of one-half to T. A. Symington, Baltimore, Md. Controller for elevators	483,943	Oct. 4	623	157	61	128
Reimers, Jeronimus, Toronto, Canada. Piano-case	483,811	Oct. 4	433	107	61	90
Reinhardt, James H., Newark, N. J., assignor of two-thirds to P. Van Alstyne and C. E. Hill, New York, N. Y. Tramway-switch	488,132	Dec. 13	1478	372	61	1634
Reisert, Michael E., Hennef-on-the-Sieg, Germany. Automatic weighing apparatus	483,636	Oct. 4	176	44	61	37
Reiss, George, assignor of one-half to A. J. Gleissner, Brooklyn, N. Y. Timepiece-dial	483,696	Oct. 4	261	64	61	55
Reminder Lock Company. (See Stiner, Clarence M., assignor.)						
Remington Arms Company. (See Fay, Rimmon C., assignor.)						
Rendle, Arthur E., Philadelphia, Pa. Glazed structure	488,663	Dec. 27	2350	581	61	1838
Reppell, Louis H., Kansas City, Mo. Brick-kiln	487,158	Nov. 29	3193	818	61	1279
Requa, Elias B., Jersey City, N. J. Lamp-burner	488,972	Dec. 27	2832	699	61	1938
Requa, Elias B., Jersey City, N. J. Lamp-burner	488,973	Dec. 27	2834	699	61	1938
Reuber, Mathias J., E. G. Stone, Pittsburg, and P. Fuchs, Lower St. Clair, Pa. Condensing apparatus	488,664	Dec. 27	2351	582	61	1838
Reuter, John C. (See Elsinger, Sigmund, assignor.)						
Revere Rubber Company. (See Elliott, Charles B., assignor.)						
Revere Rubber Company. (See Hardy, Walter B., assignor.)						
Rex, David J., Pittsburg, Pa. Crate	483,871	Oct. 4	521	131	61	108
Reynolds, Abram D., *et al.* (See Fields and Duvall, assignors.)						
Reynolds, Christopher C., Kelseyville, assignor of one-half to J. C. Plunkett, Oakland, Cal. Cultivator and pulveriser	484,239	Oct. 11	1084	275	61	235
Reynolds, David R., Philadelphia, Pa. Automatic toy savings-bank	487,773	Dec. 13	879	221	61	1513
Reynolds, Edwin, Milwaukee, Wis. Boiler-furnace	484,507	Oct. 18	1517	385, 386	61	331
Reynolds, Edwin, Milwaukee, Wis. Steam-boiler	485,299	Nov. 1	216	61	61	616
Reynolds, Frank, assignor of one-half to A. B. Hunt, Omaha, Nebr. Smoke-consuming steam-boiler furnace	486,167	Nov. 15	1584	419, 420	61	929
Reynolds, George A. (See Clarke, Charles E., assignor.)						
Reynolds, George F. (See Thomas and Reynolds.)						
Reynolds, Harry W., Long Branch, N. J. Burglar-alarm	487,128	Nov. 29	3146	806	61	1269
Reynolds, John H., *et al.* (See Gibbons, John, assignor.)						
Reynolds, Mary B., Tacoma, Wash. Strainer	484,459	Oct. 18	1437	367	61	316
Rheubottom, Homer E. (See Chaffee, Louis S., assignor.)						
Rhind, Frank, assignor to Edward Miller & Company, Meriden, Conn. Wick-lifting device	485,429	Nov. 1	431	115	61	660
Rhoades, Alonzo E., assignor to Hopedale Machine Company, Hopedale, Mass. Warping-machine	487,682	Dec. 6	722	184, 185	61	1463
Rhoads, Solomon J., Metropolis, Ill. Invalid-supporter	483,657	Oct. 4	206	51	61	42
Rhode Island Perkins Horse Shoe Company. (See Perkins, Charles H., assignor.)						
Rhodes, Harry A., Denver, Colo. Thermal circuit-changer and protective appliance	484,822	Oct. 25	2030	521	61	450
Rhodes, Marcus J., Dayton, N. Y. Float-valve for evaporating-pans	484,560	Oct. 18	1595	405	61	347
Rice, Edwin W., Jr., Lynn, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Electric transmission of power	485,658	Nov. 8	777	206	61	747
Rice, Edwin W., Jr., Lynn, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Electric transmission of power	485,659	Nov. 8	779	207	61	747

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Rice, George W., Des Moines, Iowa. Anvil attachment	486,504	Nov. 22	2103	556	61	1047
Rice, Harvey D., Brooklyn, assignor to Abendroth & Root Manufacturing Company, New York, N. Y. Machine for making sheet-metal pipes	484,112	Oct. 11	873	222	61	193
Rice, Joel T., assignor of one-half to C. Cutter and J. J. Sumpter, Hot Springs, Ark. Sawmill set-works	485,564	Nov. 1	625	167	61	701
Rice, S. P., *et al.* (See Tanner, David W., assignor.)						
Rich, Charles W., Summertown, assignor of one-half to L. L. Frierson, Mount Pleasant, Tenn. Stave trimming or jointing machine	484,460	Oct. 18	1438	367	61	316
Rich, Charles W., Summertown, assignor to himself, and L. L. Frierson, Mount Pleasant, Tenn. Machine for cutting barrel-staves	485,565	Nov. 1	627	167 / 168	61	702
Rich, Charles W., Summertown, assignor to himself, and L. L. Frierson, Mount Pleasant, Tenn. Machine for cutting barrel-staves	485,566	Nov. 1	630	168 / 169	61	702
Rich, Edwin D. (See Miller and Farrow, assignors.)						
Rich, Jerome, Jackson, Mich. Window-screen	484,978	Oct. 25	2293	592	61	501
Rich, Watson W., Minneapolis, Minn. Dry-dock	483,697	Oct. 4	263	64, 65	61	55
Richards Balanced Engine Company of Maine. (See Richards, Jackson, assignor.)						
Richards, David L., St. John, Canada. Car-coupling	483,945	Oct. 4	625	158	61	129
Richards, Francis H., Hartford, Conn. Clock-lathe	484,673	Oct. 18	1783	454	61	385
Richards, Francis H., Hartford, Conn. Knob attachment	485,137	Oct. 25	2532	650	61	550
Richards, Francis H., assignor to W. Wood, Hartford, Conn. Duplex feed mechanism	487,428	Dec. 6	326	83, 84	61	1386
Richards, Jackson, assignor to Richards Piston Packing Company, Limited, Philadelphia, Pa. Piston-packing	487,775	Dec. 13	884	224	61	1514
Richards, Jackson, Philadelphia, Pa., assignor to Richards Balanced Engine Company of Maine. Locomotive-engine	487,494	Dec. 6	431	111	61	1406
Richards Piston Packing Company. (See Richards, Jackson, assignor.)						
Richards, Wilton L. (See Hayes and Richards.)	488,774	Dec. 27	2514	625	61	1870
Richardson, Dwight S., Brooklyn, N. Y. Sectional steam-boiler	487,774	Dec. 13	880	223 / 224	61	1513
Richardson, Fred L., Milford, Mass. Sole-staining machine	483,944	Oct. 4	624	158	61	129
Richey, James N., Carmichael's, S. N. Hench, and W. A. Dromgold, York, Pa.; said Richey assignor to said Hench and Dromgold. Sawmill-dog	488,906	Dec. 27	2733	674	61	1915
Richmond, Stirling P., Weatherford, Tex. Plow	487,643	Dec. 6	655	169	61	1451
Richter, Alexander, Hollyrood, Kans. Churn	487,870	Dec. 13	1044	261	61	1545
Richter, Emil. (See Hanke and Richter.)						
Richter, Ernst, assignor of two-thirds to A. Schaefer and K. F. Jenne, New York, N. Y. Machine for cleaning malt	488,403	Dec. 20	1927	483	61	1738
Ricker & Montgomery. (See Ricker, Wentworth G., assignor.)						
Ricker, Wentworth G., assignor to Ricker & Montgomery, Rochester, N. Y. Hay-carrier	487,856	Dec. 13	1023	256 / 257	61	1541
Ricker, William H., Cambridge, Mass. Valved cap or stopper for bottles	486,298	Nov. 15	1787	470	61	970
Rickert, Charles H., Reading, Pa. Puzzle	484,882	Oct. 25	2128	547	61	468
Rider, Ebenezer W., Racine, Wis. Carriage-pole tip	488,133	Dec. 13	1479	363	61	1634
Ridsdale, Charles H., Guisborough, and A. Jones, Middlesborough, England. Lubricant	486,196	Nov. 15	1620	.....	61	936
Rieckert, Herman A. J., New York, N. Y. Folding chair	484,240	Oct. 11	1086	275	61	235
Ries Electric Specialty Company. (See Ries, Elias E., assignor.)						
Ries, Elias E., assignor to Ries & Henderson, Baltimore, Md. Electric soldering	485,017	Oct. 25	2361	607 / 608	61	514
Ries, Elias E., assignor to Ries Electric Specialty Company, Baltimore, Md. Regulating-socket for incandescent electric lamps	488,835	Dec. 27	2609	647	61	1890
Ries, Elias E., assignor to Ries Electric Specialty Company, Baltimore, Md. Regulating-socket for incandescent electric lamps	488,951	Dec. 27	2799	690	61	1929
Ries & Henderson. (See Ries, Elias E., assignor.)						
Riester, George P., Salem, Ind. Wagon-brake lever	485,060	Oct. 25	2420	622	61	526
Riker, Andrew L., New York, N. Y. Motor-mounting for electrically-driven fans	483,582	Oct. 4	102	25	61	22
Riley, Michael, London, Ohio. Guard for railway tracks and switches	484,461	Oct. 18	1442	368	61	317
Riley, Michael, London, Ohio. Foot-guard for railway-tracks	485,480	Nov. 1	506	133	61	675
Rinderknecht, Charles J., Indianapolis, Ind., assignor to A. Kopp, L. Jaeger, J. Schuler, and J. B. Curtis. Fluid-pressure regulator	484,458	Oct. 18	1435	366	61	315
Riner, William W., Los Angeles, Cal. Faucet	485,430	Nov. 1	432	115	61	661
Ringen, John, St. Louis, Mo. Coin-controlled stereoscope	485,567	Nov. 1	635	169	61	703
Ripley, David A. (See Davis and Ripley.)						
Ripley, Herman, *et al.* (See Barber, Edwin J., assignor.)						
Ripley, Robert A., Stamford, Conn. Camera	487,159	Nov. 29	3195	818	61	1279
Ripple, Ezra H. (See Long, Eugene F., assignor.)						
Risdon Iron and Locomotive Works. (See Dorward, David, assignor.)						
Risk, Robert J., assignor to B. Eastwood, Paterson, N. J. Harness-leveling device for looms	488,286	Dec. 20	1740	438	61	1701
Ristedt, Albert H., Cleveland, Ohio. Clothes-drainer	484,340	Oct. 11	1249	318	61	267
Riter, John L. (See Fender and Riter.)						
Rivers, Joseph. (See Gray and Rivers.)						
Rivett, Edward, Boston, Mass. Milling-machine	487,160	Nov. 29	3196	818 / 819	61	1279
Rix, Benjamin F., Kalamazoo, Mich. Fertilizer-distributer	488,680	Dec. 27	2381	590	61	1843
Roach, Richard G., Lebanon, Tex. Plow	488,287	Dec. 20	1741	439	61	1702
Roat, George M., assignor of one-half to F. W. Reeves, Pillar Point, N. Y. Hame-fastener	485,751	Nov. 8	918	246	61	778
Robbins, Andrew B. (See Dake and Loose, assignors.)						
Roberge, David, Sr., and David, Jr., New York, N. Y. Car-axle	486,898	Nov. 29	2785	723	61	1198
Robert, Paul. (See Claudin and Robert.)						
Roberts, Charles W., Lawrence, Kans. Box-machine	487,967	Dec. 13	1190	297	61	1573
Roberts, Cyrus, Three Rivers, Mich. Track gage and level	487,375	Dec. 6	922	61	61	1364
Roberts, Cyrus, Three Rivers, Mich. Hand-car	487,376	Dec. 6	923	61	61	1365
Roberts, Cyrus, Three Rivers, Mich. Hand-car	487,377	Dec. 6	925	61, 62	61	1365
Roberts, Edward F., assignor to Roberts Manufacturing Company, Columbus, Ohio. Car-heating apparatus	487,378	Dec. 6	927	62	61	1366
Roberts, Edward F., assignor to Roberts Manufacturing Company, Columbus, Ohio. Cash-register	483,698	Oct. 4	265	66	61	56
Roberts, Edward F., assignor to Roberts Manufacturing Company, Columbus, Ohio. Cash-register	483,946	Oct. 4	627	158 / 159	61	129
Roberts, Edward F., assignor to Roberts Manufacturing Company, Columbus, Ohio. Cash-register	484,376	Oct. 11	1301	332 / 333	61	277
Roberts y Fernandez, Hugo, Havana, Cuba. Envelope	487,683	Dec. 6	724	185	61	1463
Roberts, George J., Dayton, Ohio. Steam-pump	484,674	Oct. 18	1787	455	61	386
	484,241	Oct. 11	1087	276	61	235

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Roberts, Henry P., Jamestown, N. Y., assignor to F. M. Ferrin, Boston, Mass. Vaporizer	488,530	Dec. 20	2140	530	61	1780
Roberts, Lorin. (See Fulghum, Elisha J., assignor.)						
Roberts Manufacturing Company. (See Roberts, Edward F., assignor.)						
Roberts, William L., San Francisco, Cal. Banjo attachment	486,053	Nov. 8	1381	367	61	871
Robertson, John H., New York, N. Y. Grip mechanism for cable railways	484,920	Oct. 25	2206	568	61	484
Robertson, Oliver H., Forestville, Conn. Nut-cracker	484,049	Oct. 11	793	200	61	177
Robertson, Peter C., Phillipsburg, Mont. Guide-holder for stamp-mills	488,453	Dec. 20	2010	502	61	1755
Robertson, Soren, Cleveland, Ohio. Car-axle box	487,231	Nov. 29	3336	849	61	1303
Robertson, Thomas, Toronto, Canada. Confectionery-machine	488,404	Dec. 20	1928	483 / 484	61	1738
Robertson, Thomas W., Dublin, Ireland. Pneumatic tire	483,583	Oct. 4	104	25	61	22
Robinson, Arthur W., Sheldon, England. Vehicle or other wheel	484,675	Oct. 18	1788	455	61	386
Robinson, Dighton A., Minneapolis, Minn. Means for transmitting power to grain-elevators	484,048	Oct. 11	791	199 / 200	61	177
Robinson, Frank S., *et al.* (See Whitley, Albert, assignor.)						
Robinson, James, Newark, N. J. Advertising novelty or display-card	486,899	Nov. 29	2786	723	61	1199
Robinson, Thomas C., assignor of three-fourths to R. Stephenson and E. B. Welch, Boston, Mass. Guide for sewing-machines	486,811	Nov. 22	2597	676	61	1144
Robinson, William D., assignor of one-third to W. H. Savage, El Paso, Tex. Nut-lock	487,684	Dec. 6	728	186	61	1461
Robinson, William S., Chicago, Ill. Beam-compasses	487,892	Dec. 13	1079	270	61	1552
Robinson, William T., Birmingham, Ala. Wheel	486,125	Nov. 15	1523	402	61	916
Robischung, Henry B., Kalamazoo, Mich. Brake-beam	485,823	Nov. 8	1007	270	61	795
Robischung, Henry B., Kalamazoo, Mich. Brake-beam	486,218	Nov. 15	1656	438	61	942
Robischung, Henry B., Kalamazoo, Mich. Brake-beam	486,568	Nov. 22	2199	578	61	1064
Robison, Lena. (See Robison, Ralph E., assignor.)						
Robison, Ralph E., assignor to L. Robison, Atoka, Tenn. Animal-tether	484,377	Oct. 11	1305	334	61	278
Roche, Edward P., Bath, Me. Urethral syringe	488,080	Dec. 13	1413	351	61	1621
Roche, James, assignor to Eagle Lock Company, Terryville, Conn. Lock-case	485,885	Nov. 8	1117	295	61	817
Roche, James, assignor to Eagle Lock Company, Terryville, Conn. Trunk-lock	487,449	Dec. 6	368	96	61	1393
Rochford, Walter J., and E. W. Kempter, Chicago, Ill. Elevator	484,766	Oct. 18	1929	491	61	417
Rockwell, Frederick C., Hartford, Conn. Incandescent-electric-lamp base	488,222	Dec. 20	1641	409	61	1682
Rodecker, Peter W., assignor of one-half to C. E. Given, J. C. Royon, and J. F. Given, Sidney, Ohio. Leather-punching machine	488,324	Dec. 20	1799	451 / 452	61	1712
Rodes, Joseph, San Diego, Cal. Camera-tripod	487,295	Dec. 6	87	26	61	1339
Rodgers, William H., Bay Side, N. Y. Water-indicator for boilers	486,054	Nov. 8	1382	367	61	871
Roehl, Frederick, *et al.* (See Curran, William, assignor.)						
Roelker, Hugo B., New York, N. Y. Return-air cooler	484,979	Oct. 25	2294	592	61	501
Roemer, William, Newark, N. J. Frame for traveling-bags. (Reissue)	11,278	Oct. 18	1934	492	61	418
Roeser, George P., *et al.* (See McConnell, Frances S., assignor.)						
Rogers, Charles W., Chicago, Ill. Hygrometric valve-controller	483,725	Oct. 4	298	74	61	62
Rogers, David J., assignor of two-thirds to M. W. Rogers, Lebanon, Ky., and T. T. Rogers, Perry, Mo. Picture-exhibitor	488,134	Dec. 13	1480	373	61	1634
Rogers, Edgar D., *et al.* (See Crighton, William, assignor.)						
Rogers, Edward E. (See Wright and Rogers.)						
Rogers, George E., Greenfield, assignor to Miller's Falls Company, Miller's Falls, Mass. Auger-handle	484,050	Oct. 11	794	200	61	177
Rogers, Ichabod R., Lynn, Mass. Heel-packer	484,609	Oct. 18	1666	422	61	362
Rogers, J. S., New York, N. Y. Process of and apparatus for generating electricity	487,644	Dec. 6	657	169	61	1451
Rogers, John, Elkhart, Ind. Grinding-machine	483,749	Oct. 4	340	85	61	71
Rogers, John H. (See Jenkins, Thomas, assignor.)						
Rogers, Lebbeus H., assignor to Rogers Manifold and Carbon Paper Company, New York, N. Y. Box for type-writer ribbons	485,712	Nov. 8	862	231	61	766
Rogers Manifold and Carbon Paper Company. (See Rogers, Lebbeus H., assignor.)						
Rogers, Mike W., *et al.* (See Rogers, David J., assignor.)						
Rogers, Silas M. N., Bell's, Tex. Fire-kindler	488,223	Dec. 20	1643	409	61	1682
Rogers, Thompson T., *et al.* (See Rogers, David J., assignor.)						
Rogers, William H., Amherst, Canada. Fishway	484,676	Oct. 18	1789	455	61	386
Rohlf, Henry J., Chicago, Ill. Safety-gate for bridges	486,738	Nov. 22	2473	645	61	1120
Roitman, Natan, St. Louis, Mo. Central-draft lamp	484,242	Oct. 11	1089	276	61	236
Rolfe, Charles A., Chicago, Ill. Police-telegraph system	483,768	Oct. 4	367	92, 93	61	77
Roll, Albert, South Amboy, N. J. Coal-lifter	483,791	Oct. 4	406	101	61	85
Rollins, Joseph B., Memphis, Tenn., assignor of one-third to O. Seyppels, Seyppels Landing, Ark. Bale-tie	486,795	Nov. 22	2571	670	61	1139
Römer, Peter, Bernburg, Germany. Making potassium carbonate	484,921	Oct. 25	2207	568	61	484
Rontke, Albert, assignor to J. Bolton, Chicago, Ill. Oscillating hook for sewing-machines	484,462	Oct. 18	1443	368	61	317
Rood, Albert O., assignor to V. P. Travers, New York, N. Y. Producing hammock-bodies	487,857	Dec. 13	1026	257	61	1542
Rooney, John J. (See Brophy, Owen, assignor.)						
Root, William B., Springfield Centre, N. Y. Thill-coupling	487,450	Dec. 6	370	97	61	1394
Roper, George D. (See Warren, Edrick C., assignor.)						
Ropp, Christian. (See Hardy, John J., assignor.)						
Rosa, Edgar C., assignor to himself, R. and L. Vierling, Chicago, Ill. Vestibule connection for passenger-cars	487,776	Dec. 13	885	224	61	1515
Rose, Joseph, Memphis, Tenn. Elevator-brake	486,168	Nov. 15	1586	420	61	929
Rose, Robert, Calliope, assignor to W. W. Hall, F. E. Watkins, and T. G. Betts, Hawarden, Iowa. Furnace-grate. (Reissue)	11,291	Nov. 29	3352	853	61	1307
Rose, Rufus E., Kissimmee, Fla. Process of and apparatus for washing and drying phosphate rock, &c	485,660	Nov. 8	781	207 / 208	61	748
Roseburry, Lewis H., Philadelphia, Pa. Steam-boiler	484,463	Oct. 18	1445	368	61	317
Rosenbaum, William A., *et al.* (See Ashley, Frank M., assignor.)						
Rosenstein, Louis. (See Davis, John B., assignor.)						
Rosentreter, Albert J., and J. G. O'Brien, Rochester, N. Y. Sash-balance	488,699	Dec. 27	2409	597	61	1849
Rosentreter, Frank L., assignor to Caldwell Manufacturing Company, Rochester, N. Y. Sash-balance	487,335	Dec. 6	158	45	61	1352
Rosier, Charles S., Chaffee, N. Y. Cattle-stanchion	486,353	Nov. 15	1873	493	61	987
Ross, James J., assignor of one-half to G. R. Holden, Detroit, Mich. Electro-magnetic bell	486,354	Nov. 15	1874	493	61	987
Ross, James J., assignor of one-half to G. R. Holden, Detroit, Mich. Electric signaling device	486,569	Nov. 22	2200	579	61	1065
Ross, John P., Waterloo, Ala. Tire-tightener	487,777	Dec. 13	886	225	61	1515
Ross, Robert N., and H. H. Keller, assignors of one-half to M. S. Bowman, St. Louis, Mo. Brick-machine	487,161	Nov. 29	3198	819 / 820	61	1280
Rosse, James M., Nyack, N. Y. Ice-forming and preserving room	485,805	Nov. 8	992	264	61	791
Rossell, William T., and H. F. Hayden, Washington, D. C. Garbage-receptacle	486,619	Nov. 22	2290	597	61	1062
Rossi, Auguste J., New York, assignor of one-half to J. MacNaughton, Albany, N. Y. Reducing ores	486,941	Nov. 29	2861	.....	61	1213

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Rossman, William W., assignor of one-half to C. K. Day, Detroit, Minn. Turbine water-wheel	488,029	Dec. 13	1310	327	61	1599
Rost, Maximilian. (See Ortmann, Paul, assignor.)						
Rotary Steam Joint Company. (See Morgan, John B., assignor.)						
Rothacker, George F., Jr. (See Schultze, Frederick W., assignor.)						
Rothe, Anton, Chicago, Ill. Shirt-bosom	484,943	Oct. 11	1092	277	61	236
Rothwell, John H., *et al.* (See Sneddon, William, assignor.)						
Rotté, Alexandre, P. and P. Gauthier, Blois, France. Crimping-machine	488,252	Dec. 20	1685	421	61	1691
Rountree, Frank, *et al.* (See Nolley, David D., assignor.)						
Rourke, John, assignor of one-half to A. C. Giltner, Denver, Colo. Smelting or reducing plant	484,942	Oct. 25	2238	576, 577	61	490
Rouse, George. (See Rouse and Hanley.)						
Rouse, John H., assignor of one-half to J. T. Stratman, Jr., Advance, Mo. Rail-joint	484,341	Oct. 11	1250	319	61	267
Rouse, Lewis and G., and W. H. Hanley, Baldwinsville, N. Y. Sulky-plow	486,266	Nov. 15	1742	459	61	961
Rowan, John K., North Washington, Pa. Carriage-guide	486,299	Nov. 15	1789	470	61	971
Rowell, James H., Minneapolis, Minn. Horse-boot	487,296	Dec. 6	88	27	61	1339
Rowell, Loren G., *et al.* (See Burton, Clarence A., assignor.)						
Rowland, Charles L., Brooklyn, N. Y. Valve-operating mechanism	486,219	Nov. 15	1658	438	61	943
Rowland, Thomas F., New York, N. Y. Hydraulic elevating machinery	488,836	Dec. 27	2613	647, 648	61	1890
Rowland, Thomas F., New York, N. Y. Hydraulic elevating machinery	488,837	Dec. 27	2616	648, 649	61	1891
Rowland, Thomas F., New York, N. Y. Mechanism for operating ordnance	488,838	Dec. 27	2617	649, 650	61	1891
Roy, Freeand M. S., New York, N. Y. Thermocauter	488,454	Dec. 20	2012	502	61	1756
Royer, Joseph R., assignor to M. S. Royer, Lancaster, Pa. Door-securer	485,661	Nov. 8	783	208	61	749
Royer, Leander K., Anderson, Ind. Preserving-can	488,839	Dec. 27	2623	650	61	1892
Royer, Milton S. (See Royer, Joseph R., assignor.)						
Royon, Joseph C., *et al.* (See Rodecker, Peter W., assignor.)						
Ruble American Blower and Injector Company. (See Ruble, Martin R., assignor.)						
Ruble, Martin R., assignor to Ruble American Blower and Injector Company, Newark, N. J. Centrifugal blower	487,883	Dec. 13	1065	267	61	1549
Rudd, Charles R. (See Rudd, Harrison and C. R.)						
Rudd, Harrison and C. R., Fulton, N. Y. Split pulley	488,253	Dec. 20	1688	421	61	1691
Rudd, Peter C. H., Chicago, Ill. Rotary oven	485,300	Nov. 1	217	61, 62	61	617
Rudert, George K., Pittsburg, Pa. Chain gate	484,572	Oct. 18	1610	409	61	350
Rudge, Frederick S., Brooklyn, N. Y. Adjustable button and buttonhole	488,090	Dec. 13	1414	351	61	1621
Rudyard, Clarence A., New York, N. Y. Attachment for canes, umbrellas, &c	485,806	Nov. 8	984	264	61	791
Ruede, James H., Woodville, Mo. Clothes-drier	487,429	Dec. 6	329	84	61	1386
Ruef, Charles S., assignor to Grand Detour Plow Company, Dixon, Ill. Draft-equalizer	485,138	Oct. 25	2533	650	61	550
Ruehle, Friedrich O., and A. G. Schmidt, assignors to American Art Stove and Mantel Company, Newark, N. J. Stove	484,113	Oct. 11	874	222	61	193
Ruffin, Powhattan. (See Tolliver and Ruffin.)						
Ruger, Nelson, Elmira, N. Y. Churn	483,584	Oct. 4	105	26	61	23
Ruhlow, August F., Pierce, Nebr. Bridle-bit	484,342	Oct. 11	1250	319	61	267
Rumpf, Martin H., Paris, France. Fabric-guiding device for embroidering-machines	486,355	Nov. 15	1876	493, 494	61	987
Rundle, Anthony M. (See Murphy, Frank J., assignor.)						
Rundle, William O., De Smet, S. D. Corn-planter	483,872	Oct. 4	522	131	61	108
Runyon, Charles, Rochester, Pa. Packing glassware for shipment	485,985	Nov. 8	1273	337	61	850
Rusden, Ethelbert A., Providence, R. I. Oxidizing apparatus	485,357	Nov. 1	323	86, 87	61	638
Rusgrove, Henry W., Everett, Mass., assignor to Boston and Lockport Block Company, Jersey City, N. J. Differential block	485,115	Oct. 25	2496	641	61	543
Rush, Ulysses S., assignor of two-thirds to H. L. Jenkins and W. G. Gosslin, Tacoma, Wash. Photographic-printing apparatus and process	487,937	Dec. 13	1152	288	61	1566
Russ Jones Desk Company. (See Jones, John R., assignor.)						
Russell, Jacob B., Willow Street, Pa. Bed-spring	488,030	Dec. 13	1311	327	61	1599
Russell, Benjamin, Portsmouth, N. H. Construction of buildings	484,244	Oct. 11	1092	277	61	236
Russell & Erwin Manufacturing Company. (See Burgess, Charles M., assignor.)						
Russell, Francis T., Minneapolis, Minn. Car-coupling	485,061	Oct. 25	2421	622	61	526
Russell, Frank R. (See Russell and Gierding, assignors.)						
Russell, George B., Fort Payne, Ala. Machine for pointing pickets and shingles	485,431	Nov. 1	432	115	61	661
Russell, George F., Lawrence, assignor to American Sulphite Pulp Company, Boston, Mass. Pulp-digester. (Reissue)	11,282	Nov. 15	1978	525	61	1008
Russell, John T., and J. D. Williams, Rogers, Ark. Hay-press	484,757	Oct. 18	1910	487, 488	61	412
Russell, William N., and T. N. Gierding, assignors of one-third to F. R. Russell, New Haven, Conn. Coin-controlled fortune-wheel	487,968	Dec. 13	1191	297	61	1574
Russmann, Claus H. F., Hamburg, Germany. Apparatus for transmitting motion	485,597	Nov. 1	679	180	61	714
Rutter, Nathaniel P., Waltham, Mass. Bolt for milk-cans	483,962	Oct. 4	693	173	61	143
Rutty, Ernest G. (See Booth and Rutty.)						
Ryan, Frank M., assignor of one-half to C. Smith, San Francisco, Cal. Car-coupling	488,718	Dec. 27	2436	604	61	1854
Ryan, James, Atlanta, Ga. Card-attacher	486,840	Nov. 22	2648	691	61	1156
Ryan, Thomas. (See Downing and Hall, assignors.)						
Ryder, Hiram. (See Arnold and Wetmore, assignors.)						
Ryder, Thomas F. (See Fountain, Vincent, assignor.)						
Ryder, William W., Alsea, Oreg. Saw-tooth swage	484,163	Oct. 11	960	246, 247	61	210
Ryland, Marion W., Warsaw, Ind., assignor to C. J. Keen, Toledo, Ohio. Hame-tug	487,379	Dec. 6	229	62	61	1366
Rynders, A., *et al.* (See Stalts, William H., assignor.)						
Ryon, Wallace H. (See Mulford, Clarence C., assignor.)						
S. A. Woods Machine Company. (See Thomas, John R., assignor.)						
S. H. Sinclair Company. (See Walker, Frederick A., assignor.)						
S. H. Wetmore Company. (See Blackman, Charles M., assignor.)						
S. S. White Dental Company. (See Johnston and Browne, assignors.)						
Saalmiller, George, South Chicago, Ill. Railway-switch	486,196	Nov. 15	1524	403	61	916
Sabold, John, Boyertown, Pa. Sad-iron	483,769	Oct. 4	373	93	61	78
Sabourin, David C. and J., Lowell, Mass. Vise	488,308	Dec. 20	1877	470	61	1728
Sabourin, Joseph. (See Sabourin, David C. and J.)						
Sacket, S. F. (See Sommerfeld, Heinrich, assignor.)						
Sadler, James F. (See Gibson, Wyatt, assignor.)						
Safety Car Heating and Lighting Company. (See Shinn, Joseph A., assignor.)						
Safety Oil Stove Company. (See Stinson, Charles K., assignor.)						
Safford, Alfred G., Washington, D. C. Electro-magnetic telegraph apparatus	485,334	Nov. 1	280	76	61	629

Alphabetical list of patentees, October to December, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Safford, Larkin S., Kelso, N. D. Fence	484,245	Oct. 11	1094	277	61	236
Sagendorph, Longley L., assignor of one-half to C. N. Harder, Philmont, N. Y. Manufacture of metallic facing-plates	484,508	Oct. 18	1518	386	61	331
Sagendorph, Longley L., Philadelphia, Pa., assignor of one-half to C. N. Harder, Philmont, N. Y. Metallic ceiling-plate	488,254	Dec. 20	1689	422	61	1691
Sageng, Halvor O., Dalton, Minn. Horseshoe with self-sharpening calks	487,645	Dec. 6	658	169	61	1458
Sahlin, Max, *et al.* (See Hunter, Joseph, assignor.)						
Saladee, Cyrus W., Cleveland, Ohio, assignor to W. N. Woodruff, Hartford, Conn. Velocipede	486,055	Nov. 8	1384	367, 368	61	872
Saladee, Cyrus W., Cleveland, Ohio, assignor to W. N. Woodruff, Hartford, Conn. Cycle-vehicle	486,056	Nov. 8	1388	368	61	872
Saladee, Cyrus W., Cleveland, Ohio, assignor to Whitten-Godding Cycle Company, Providence, R. I. Saddle for cycle-vehicles	486,197	Nov. 15	1621	430	61	936
Saladin, Jules, Nancy, France. Malting apparatus	485,986	Nov. 8	1274	337	61	850
Salberg, Swain, Ridgway, Pa. Apparatus for making lampblack	486,127	Nov. 15	1598	403	61	917
Salisbury, Wilbur S., Chicago, Ill. Boat-propelling apparatus	486,684	Nov. 22	2389	634	61	1102
Sallenger, Matthew. (See Walshe and Sallenger.)						
Salling, N. P. (See Gronleff, Albert, assignor.)						
Salmon, Samuel. (See Coxe and Salmon.)						
Salomon, Ferdinand. (See Brünigger, Hermann, assignor.)						
Salzman, Christian A., *et al.* (See Seip, Thomas A., assignor.)						
Sampson, Lewis S., New York, N. Y. Cuff-holder	484,346	Oct. 11	1096	277	61	237
Samuel C. Tatum Company. (See Martin, Frank, assignor.)						
Samuel C. Tatum Company. (See Mendenhall, Walter S., assignor.)						
Samuel, Edward, Philadelphia, Pa. Combined foot and brace for railway-rails	483,873	Oct. 4	524	131, 132	61	108
Samuel, Edward, Philadelphia, Pa. Joint-plate for railway-rails	487,078	Nov. 29	3062	786	61	1253
Samuel, Edward, V. Angerer, and C. A. Pailander, assignors to William Wharton, Jr., & Company, Incorporated, Philadelphia, Pa. Switch and frog	488,405	Dec. 20	1932	484	61	1739
Sanborn, Benjamin F., Flatlands, assignor to A. V. Whiteman, Port Chester, N. Y. Bottle-stopper	485,139	Oct. 25	2535	651	61	550
Sanborn, William W. (See Thomas and Reynolds, assignors.)						
Sandelin, Johan E. (See Lindberg, Oskar, assignor.)						
Sanders, Adolphus M. and R. J., Reedsburg, Wis. Metallic tenon	487,778	Dec. 13	1587	225	61	1515
Sanders, David P., Williamsport, Pa. Artificial block for pavements	486,356	Nov. 15	1878	494	61	988
Sanders, Frank, Brooklyn, N. Y., assignor to J. Wetter, Memphis, Tenn. Consecutive-numbering head	488,577	Dec. 27	2214	549	61	1811
Sanders, George A., *et al.* (See Newman, Nelson, assignor.)						
Sanders, Jasper N., and D. C. Herrington, Grain Valley, Mo. Cane-mill	488,031	Dec. 13	1313	327, 328	61	1600
Sanders, Roscoe J. (See Sanders, Adolphus M. and R. J.)						
Sanders, William, Liverpool, England. Photographic camera	488,799	Dec. 27	2558	635	61	1879
Sandgren, Arvid J., Hartford, Conn. Signal apparatus for bicycles	483,585	Oct. 4	107	26	61	23
Sanford, Charles E., Brooklyn, N. Y. Automatic cut-out	484,865	Oct. 25	2102	541, 542	61	464
Sankey, Frederick E. (See Burton, Wingfield, assignor.)						
Sapp, Joseph R., Cuyahoga Falls, Ohio. Vapor-burner	484,114	Oct. 11	875	222	61	193
Sapp, Samuel M., assignor of one-half to J. G. and J. M. McEntarfer, Geneseo, Kans. Surgical apparatus	486,198	Nov. 15	1625	430	61	937
Sargent & Company. (See Page, Albert A., assignor.)						
Sargent & Company. (See Sargent, Russell, assignor.)						
Sargent, Henry C., Machias, Me. Cinder-conductor	484,164	Oct. 11	961	247	61	210
Sargent, John W., Scranton, Pa. Steam-engine	485,432	Nov. 1	433	116	61	661
Sargent, John W., Scranton, Pa. Steam-engine valve-gear	485,433	Nov. 1	437	117	61	662
Sargent, Russell, assignor to Sargent & Company, New Haven, Conn. Cylinder-lock	487,969	Dec. 13	1193	298	61	1574
Sargert, Charles A., Rochester, Pa. Apparatus for inserting or withdrawing casing for oil or like wells	484,051	Oct. 11	795	200, 201	61	177
Sarvis, John E., Newburg, N. Y. Rail-joint	486,605	Nov. 22	2267	592	61	1077
Saul, Warren A., Steelton, Pa. Curtain-fixture	487,970	Dec. 13	1194	298	61	1574
Saunders, William L., North Plainfield, N. J., assignor of one-half to Ingersoll Sergeant Drill Company, New York, N. Y. Increasing the efficiency of motor fluids	486,411	Nov. 15	1965	522	61	1006
Saurbrey, George J., Columbus, Ohio. Steam-propelled vehicle	488,224	Dec. 20	1643	409, 410, 411	61	1683
Savage, Luman W. (See Johnston, Micajah, assignor.)						
Savage, William H. (See Robinson, William D., assignor.)						
Sawyer, Harry, assignor to Shaw Electric Crane Company, Muskegon, Mich. Crane	486,412	Nov. 15	1968	522	61	1006
Sawyer, Herbert L., Springfield, Ohio. Letter-file	484,247	Oct. 11	1096	278	61	237
Sawyer, Roswell D. (See Baldwin, William A., assignor.)						
Saxon, Frank, Worthington, Minn. Cog-wheel	487,129	Nov. 29	3147	806	61	1269
Saxton, Harry J., St. Louis, Mo., assignor to J. Gamble, New York, N. Y. Game apparatus	484,115	Oct. 11	876	223	61	194
Saxton, Harry J., assignor to W. H. Baumgartner, M. B. Harrison, and S. Knapp, St. Louis, Mo. Combined tobacco box and cutter	487,162	Nov. 29	3200	820	61	1290
Sayre, Winthrop M., South Orange, N. J. Thill-coupling	484,052	Oct. 11	797	201	61	178
Scace, John B., Albany, N. Y. Wire-support on drawbridges	485,662	Nov. 8	785	209	61	749
Scallen, Daniel A., Ellicott City, Md. Roller grinding-mill	488,455	Dec. 20	2013	502	61	1756
Scandlin, William I., Brooklyn, N. Y. Photographer's background-holder	484,165	Oct. 11	962	247	61	211
Scandracof, Petre, and I. Dimovich, Brahilor, Roumania. Seed-drill	488,775	Dec. 27	2516	626	61	1870
Scarles, Benjamin, Clinton, Mass. Wire-netting	488,032	Dec. 13	1315	328	61	1600
Scarles, Benjamin, assignor to Clinton Wire Cloth Company, Clinton, Mass. Wire-netting machine	483,969	Oct. 4	669	168	61	139
Scarlett, Alfred, West Superior, Wis. Prop for poles or shafts	488,406	Dec. 20	1933	485	61	1739
Scarritt, Sanford G., St. Louis, Mo. Spring-seat	483,699	Oct. 4	266	66	61	56
Scates, George R., Knoxville, Tenn. Open-fireplace heater	485,301	Nov. 1	218	62	61	617
Schaaf, Frederick. (See Scott and Schaaf.)						
Schaefer, Adam, *et al.* (See Richter, Ernst, assignor.)						
Schaefer, Charles W., Cleveland, Ohio. Cloth-shrinking machine	486,739	Nov. 22	2477	646	61	1120
Schaefer, Edmund, Lynchburg, Va. Railway-signal	488,225	Dec. 20	1646	411	61	1683
Schaeffer, Henry, Ridgway, Colo., assignor of two-thirds to M. E. and C. E. Criswell and J. L. Smith. Car-coupling	488,507	Dec. 20	2098	521	61	1773
Schaffer, John, Kirkwood, Mo. Deepening rivers or other water-channels	486,957	Nov. 29	3080	744	61	1217
Schantz, Andrew. (See Fitch and Schantz.)						
Schaper, Henry. (See Ashby and Seybold, assignors.)						
Scharf, Samuel R., Washington, D. C. Fastening for railway-rails	488,578	Dec. 27	2216	549	61	1811

Alphabetical list of patentees, October to December, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Scharff, Charles A., San Francisco, Cal. Water-wheel nozzle	486,663	Nov. 8	785	209	61	749
Scharr, Jonathan, Philadelphia, Pa. Soap compound	486,967	Nov. 15	1743	.....	61	961
Schaum, Otto W., Philadelphia, Pa. Batten for looms	485,886	Nov. 8	1118	295	61	817
Schaum, Otto W., Philadelphia, Pa. Griff-guide for Jacquard mechanism	488,226	Dec. 20	1648	412	61	1683
Schaum & Uhlinger. (See Wagner, August, assignor.)						
Scheid, George W., Fort Recovery, Ohio. Wrench	486,300	Nov. 15	1790	470	61	971
Scheiderelter, Carl, Ottensen, Germany. Ink blotter or pad	483,874	Oct. 4	525	132	61	109
Scheillein, John. (See Seebick, George, assignor.)						
Schenck, John D. P., Nashville, Tenn., assignor of one-half to G. Mathews, Cincinnati, and W. W. Peabody, Madisonville, Ohio. Governor for air-brakes	488,369	Dec. 20	1880	470, 471	61	1729
Schenck, John D. P., Nashville, Tenn., assignor of one-half to G. Mathews, Cincinnati, and W. W. Peabody, Madisonville, Ohio. Pressure-regulator	488,370	Dec. 20	1882	471	61	1729
Schenck, William A., Richmond, Va. Safe-hinge	486,237	Nov. 15	1687	446	61	949
Schenck, William T., Marcoa, Ill. Check-hook	486,700	Dec. 27	2411	598	61	1849
Scheizel, Marx. P., San Francisco, Cal. Covering for buildings	487,585	Dec. 6	563	144	61	1433
Scheuer, Max, New York, N. Y. Purse or pocket-book	488,742	Dec. 27	2469	613	61	1861
Scheuer, Simon, New York, N. Y. Frame for pocket-books, purses, or satchels	485,230	Nov. 1	116	35	61	597
Scheuer, Simon, New York, N. Y. Frame for pocket-books	486,128	Nov. 15	1528	404	61	917
Schiemer, Jacob, Detroit, Mich., assignor of two-thirds to H. S. Hopkins, St. Louis, Mo., and W. H. Parmenter, Boston, Mass. Cash-carrier apparatus	484,248	Oct. 11	1099	278	61	238
Schimper & Co., William. (See Oldenbusch, Ernest, assignor.)						
Schimper, Fredrick, Weehawken, N. J., and C. Zoller, New York, N. Y. Hose-coupling	487,893	Dec. 13	1080	270	61	1552
Schinke, Max G., Milwaukee, Wis. Submerged pipe	486,986	Nov. 29	2925	754	61	1226
Schirmer, Valentine, New York, N. Y. Swinging jack for window-sashes	486,740	Nov. 22	2478	646	61	1121
Schlener, Adolph G. (See Allan, John W., assignor.)						
Schlosser, Frank P., assignor to F. P. Schlosser Electric Signal and Alarm Company, Birmingham, Ala. Electric railway-signal	488,615	Dec. 27	2269	563	61	1822
Schloestein, John F., Buffalo, Wis. Lock	488,091	Dec. 13	1414	352	61	1621
Schmaedel, Joseph von. (See Krempelhuber and von Schmaedel.)						
Schmid, Adolph G. (See Schmid, Ernst A. and A. G.)						
Schmid, Ernst A. and A. G., Peoria, Ill. Printer's quoin	483,792	Oct. 4	407	101	61	85
Schmid, Jakob. (See Gnehm and Schmid.)						
Schmidt, Albert G. (See Ruehle and Schmidt.)						
Schmidt, Charles R., assignor to Henry McShane Manufacturing Company of Baltimore, Baltimore, Md. Joint or coupling for pipes and pipe-fittings	485,116	Oct. 25	2497	642	61	543
Schmidt, Fritz G., New York, N. Y. Eyeglasses	483,812	Oct. 4	434	107	61	90
Schmidt, Gottlieb, Philadelphia, Pa. Reversible window-sash	485,887	Nov. 8	1119	295	61	817
Schmidt, William N. (See Gamage and Schmidt.)						
Schmitt, Johann R., Bingen, Germany. Cigar-bunching machine	485,987	Nov. 8	1275	337, 338, 339	61	850
Schmitz, Egon L., New York, N. Y. Safety-razor	4-3,116	Oct. 11	877	223	61	194
Schmitz, Egon L., New York, N. Y. Razor-stropping device	485,849	Nov. 8	1049	280	61	803
Schnarr, Henry R., Rock Island, assignor of one-fourth to U. Bortner, Moline, Ill. Holdback for carriages	484,464	Oct. 18	1446	368	67	317
Schneible, Carl A., New York, and J. Schneible, Brooklyn, N. Y. Art of and apparatus for carbonating liquids	484,901	Oct. 25	2166	557	61	477
Schneible, Joseph. (See Schneible, Carl A. and J.)						
Schneider, Adolph F., New York, N. Y. Vending-machine	488,840	Dec. 27	2624	651	61	1892
Schneider, Albert F., St. Louis, Mo. Apparatus for condensing fumes	487,971	Dec. 13	1195	298	61	1574
Schneider, William R. (See Schuster and Schneider.)						
Schneller, George O., Ansonia, Conn. Machine for covering dress-stays	488,288	Dec. 20	1743	439, 440	61	1702
Schnippering, Carl, Cassel, Germany. Cartridge-magazine for breech-loading small-arms	488,456	Dec. 20	2014	503	61	1756
Schnoor, Christian F., Gano, Ill. Coin-operated vending apparatus	484,573	Oct. 18	1610	409	61	350
Schock, Gustav, New York, N. Y. Mash-stirrer	484,883	Oct. 25	2128	547	61	469
Schock, Gustav, New York, N. Y. Grinding-mill	484,884	Oct. 25	2131	548	61	469
Schoeb, Albert W., Saratoga, Kans. Car-coupling	488,907	Dec. 27	2734	674	61	1916
Schoen, Charles T. (See Stagg, Fenn, and Schoen.)						
Schoen, Charles T., Allegheny, Pa. Art of and apparatus for making brake-shoes	484,866	Oct. 25	2103	542	61	464
Schoen, Charles T., Allegheny, Pa. Draw-bar carrier and face-plate	487,779	Dec. 13	888	225	61	1515
Schoen, George, New York, N. Y. Urinal attachment	487,130	Nov. 29	3148	807	61	1270
Schoen, Paul, Hoboken, N. J. Machine for sewing on buttons	487,972	Dec. 13	1197	299, 300	61	1575
Schoenberg, Friedrick E., St. Louis, Mo. Combined sign bracket and frame	488,092	Dec. 13	1416	352	61	1621
Schofield, Albert B., Brooklyn, N. Y. Chopping-knife	488,289	Dec. 20	1749	440	61	1703
Schofield, George W., Jacksonville, Ill. Fence-post with applied holder	487,780	Dec. 13	889	225	61	1515
Schofield, James M., assignor of one-half to E. S. O'Brien, Merced, Cal. Wooden liquid-containing vessel	484,249	Oct. 11	1102	279	61	238
Scholes, Thomas A., *et al.* (See Washington, Samuel, assignor.)						
Scholfield, Joseph J. (See Scholfield, Socrates, assignor.)						
Scholfield, Joseph J., Providence, R. I. Machine for guiding the edges of textile webs	487,352	Dec. 6	187	51, 52	61	1357
Scholfield, Socrates, Providence, R. I. Means for driving bobbins in roving-frames	488 952	Dec. 27	2804	691	61	1930
Scholfield, Socrates, assignor to J. J. Scholfield, Providence, R. I. Means for driving bobbins in speeder-frames	488,681	Dec. 27	2383	590	61	1844
Schollenberger, Jacob M., Chicago, Ill. Cloth-cutting machine	485,898	Nov. 6	1120	296	61	818
Scholz, Samuel G., Billings, Mo. Attachment for straw-stackers. (Reissue)	11,281	Nov. 1	681	160	61	714
Schon, Carl, Toledo, Ohio. Rotary water-meter	484,465	Oct. 18	1447	369	61	317
Schorr, John W., *et al.* (See Trendley, John, assignor.)						
Schott, William, Brooklyn, N. Y. Scalpel	488,616	Dec. 27	2271	563	61	1822
Schrade, George, New York, N. Y. Feeding mechanism for sewing-machines	487,079	Nov. 29	3064	787	61	1253
Schrader, George H. F., New York, N. Y. Valve	484,509	Oct. 18	1519	386	61	331
Schrader, Henry C., Wheeling, W. Va. Machine for grinding drinking-glasses	486,591	Nov. 22	2238	587, 588	61	1072
Schroeder, August, Weston, N. J. Car-coupling	485,062	Oct. 25	2423	623	61	527
Schroeder, Conrad, Milwaukee, Wis. Corking bottles	487,452	Dec. 6	372	97	61	1394
Schroeder, Conrad, assignor of nine-twentieths to A. Stollenwerk, Milwaukee, Wis. Corking bottles	487,451	Dec. 6	370	97	61	1394
Schroeffel, John, and F. L. Voegtly, Allegheny, Pa.; said Schroeffel assignor to said Voegtly. Stove	487,541	Dec. 6	504	131	61	1490
Schroll, Carl, Chicago, Ill. Boiler-furnace	486,505	Nov. 22	2104	556	61	1047
Schryver, Washington I., assignor of one-half to A. E. Loomis, Prophetstown, Ill. Pole-tip	486,942	Nov. 29	3063	739	61	1213
Schubert, Charles W., Cottonwood, Iowa. Belt-reel	485,664	Nov. 8	786	200	61	750
Schubert, George, Walnut, Tex. Conveyer-gearing for harvesters	486,900	Nov. 29	2787	732, 734	61	1199

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Schuler, August J. (See Fell, Charles J., assignor.)						
Schuler, Bartholomew A., Chicago, Ill. Crupper-stuffing machine	485,231	Nov. 1	117	36	61	597
Schuler, Julius, *et al.* (See Rinderknecht, Charles J., assignor.)						
Schultz, Carl H., New York, N. Y. Process of and apparatus for aerating liquids	485,665	Nov. 8	787	209	61	750
Schultz, John H. (See Ibach and Schultz.)						
Schultz, William J., Detroit, Mich. Electric switch	486,987	Nov. 29	2926	755	61	1226
Schultze, Frederick W., assignor of one-half to G. F. Rothacker, Jr., Philadelphia, Pa. Padlock	486,685	Nov. 22	2391	625	61	1103
Schumacher, Gerhard, Milwaukee, Wis. Switch-operating device	484,250	Oct. 11	1102	279	61	238
Schumacher, John H., Saugatuck, Mich. Shearing-machine for fruit-packages	487,781	Dec. 13	890	226	61	1516
Schumm, Hermann, assignor to Gas-Motoren-Fabrik-Deutz, Cologne, Germany. Valve apparatus for gas or petroleum motor engines	486,301	Nov. 15	1791	470	61	971
Schumm, Hermann, assignor to Gas-Motoren-Fabrik-Deutz, Cologne, Germany. Igniting apparatus for gas-engines	488,093	Dec. 13	1416	352	61	1621
Schuster, Frederick W., and W. R. Schneider, St. Louis, Mo. Washing-machine	488,094	Dec. 13	1417	353	61	1622
Schuster, Martin. (See Baader, Stephan, assignor.)						
Schuyler, Spencer D., *et al.* (See Batcheller, Birney C., assignor.)						
Schweim, Claus J., Glückstadt, and W. Schweim, Krempdorf, Germany. Currycomb	488,291	Dec. 20	1751	440	61	1703
Schweim, Wilhelm. (See Schweim, Claus J. and W.)						
Schwer, Theodore, *et al.* (See Stewart, Harry B., assignor.)						
Schwerdt, Charles F. G. R., London, England. Sale-card for buttons	484,677	Oct. 18	1790	455	61	387
Scigliano, Emmannel P., Boston, Mass. Nut-wrench	485,775	Nov. 8	947	254	61	784
Scofield, Frederick R., Penfield, Pa. Necktie-fastener	483,947	Oct. 4	632	159	61	130
Scott, Allen E., and J. W. Wright, San Francisco, Cal. Billiard-table	488,743	Dec. 27	2470	613	61	1861
Scott, Charles D., Sanford, Pa. Propelling-gear for tramway-locomotives	488,484	Dec. 20	2062	512	61	1766
Scott, Gabriel B. (See Allison and Scott.)						
Scott, George W., assignor of one-half to R. F. Crawford, Santa Rosa, Cal. Hinge-seat cutter	483,677	Oct. 4	232	58	61	48
Scott, Henry C., and F. Schaaf, St. Louis, Mo. Knockdown folding chair	488,095	Dec. 13	1421	353	61	1622
Scott, Isaac, Chrisman, Ill. Grave-box cover	486,943	Nov. 29	2864	739	61	1213
Scott, Jacob R., New York, N. Y. Sole-trimming machine	488,841	Dec. 27	2627	651	61	1893
Scott, James, Bethany, Cal. Hame-clip	484,053	Oct. 11	798	201	61	178
Scott, Matthew T., assignor of two-thirds to J. L. Brassfield and W. G. Gore, Blue Springs, Mo. Car-coupling	485,752	Nov. 8	919	246	61	778
Scott, Robert W. (See Williams, Louis N. D., assignor.)						
Scott, Robert W., and L. N. D. Williams, Philadelphia, Pa. Knitting-machine	484,610	Oct. 18	1667	422, 423, 424, 425	61	362
Scott, Walter, Plainfield, N. J. Sheet-delivery mechanism	484,251	Oct. 11	1104	279, 280	61	239
Scott, Walter, Plainfield, N. J. Machine for bending electrotype and stereotype plates. (Reissue)	11,279	Oct. 18	1936	492, 493	61	418
Scott, Walter, Plainfield, N. J. Printing-machine	486,129	Nov. 15	1529	404	61	917
Scott, Walter, Plainfield, N. J. Oscillating-cylinder printing-press	487,495	Dec. 6	432	111, 112	61	1406
Scott, Walter, Plainfield, N. J. Printing-machine	488,637	Dec. 27	2306	571	61	1828
Scott, William, Detroit, Mich. Radiator	485,018	Oct. 25	2365	608	61	515
Scott, William H. (See Brower, Thaddeus B., assignor.)						
Scott, William H., San Francisco, Cal. Bed-bottom	487,430	Dec. 6	330	84	61	1386
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Regulator for dynamo-electric machines	484,611	Oct. 18	1673	425, 426	61	363
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Multiple-switch-board system	484,612	Oct. 18	1675	426	61	363
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Sub-station apparatus for telephone systems	484,613	Oct. 18	1678	426	61	364
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Test-circuit for multiple-switchboard systems	484,867	Oct. 25	2105	543	61	464
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Electric switch-board	486,506	Nov. 22	2105	557	61	1047
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Test system for multiple switchboards	486,507	Nov. 22	2106	557	61	1048
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Electric-arc lamp	486,958	Nov. 29	2882	745	61	1217
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Auxiliary fire-alarm-signal apparatus	487,095	Nov. 29	3093	794, 795	61	1250
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Multiple-switch-board system	487,096	Nov. 29	3094	795	61	1250
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Telephone-exchange system	487,097	Nov. 29	3096	795	61	1250
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Telephone-switchboard apparatus	487,098	Nov. 29	3100	796	61	1250
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Means for preventing induction in cables of multiple switchboards	488,034	Dec. 13	1317	329	61	1600
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Multiple-switch-board system for telephone-exchanges	488,035	Dec. 13	1320	329	61	1601
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Multiple-switch-board system for telephone-exchanges	488,036	Dec. 13	1323	329	61	1602
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Telephone-switchboard apparatus	488,037	Dec. 13	1326	329	61	1602
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Multiple-switch-board system for telephone-exchanges	488,038	Dec. 13	1329	330	61	1603
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. District signal-box	488,579	Dec. 27	2217	549	61	1812
Scribner, Charles E., and E. P. Warner, assignors to Western Electric Company, Chicago, Ill. Spring-jack switch	488,033	Dec. 13	1316	328	61	1600
Scrimgeour, Charles E., and H. Gildard, Lewiston, Me. Mechanism for unwinding warp-threads	485,776	Nov. 8	948	254, 255	61	784
Scruby, Ernest E., Epping, England. Apparatus for purifying sewage	484,823	Oct. 25	2033	521	61	450
Scruggs, Loyd, Dalton City, Ill. Flour-sifter	484,960	Oct. 25	2296	593	61	501
Scudder, James N., Canton, Pa. Sheep-rack	486,508	Nov. 22	2109	557	61	1048
Seabury, Samuel, U. S. Navy. Gas-check for breech-loading ordnance	487,380	Dec. 6	230	63	61	1366
Search, Casper F., assignor to Appleton Manufacturing Company, Appleton, Wis. Shaft-bearing	485,890	Nov. 8	1121	296	61	818

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Searing, Lewis, Denver, Colo. Lightning-arrester	484,466	Oct. 18	1450	370	61	318
Sears, Cyrus. (See Williams, Elkanah G., assignor.)						
Sears, George, assignor of one-half to W. H. Underwood, Onslow, Iowa. Plow-point	484,758	Oct. 18	1914	488	61	413
Seaton, Benjamin C., Nashville, Tenn. Electrical railway-signal	484,614	Oct. 18	1679	427	61	364
Seaver, Augustus, Boston, Mass. Sewing-machine for lasting boots or shoes	487,023	Nov. 29	2980	767, 768	61	1235
Seaver Sewing Machine Company. (See Gooding, Charles S., assignor.)						
Seaver Sewing Machine Company. (See Gooding and Keith, assignors.)						
Seavey, Frank P. (See Utley, Milton R., assignor.)						
Security Insulator Company. (See Green, John J., assignor.)						
Seddon, Edward H., Brooklands, England. Inflatable tire	486,509	Nov. 22	2110	557	61	1048
See, Horace, New York, N. Y. Apparatus for ejecting ashes from vessels	483,770	Oct. 4	374	93	61	78
Seebick, George, Pittsburg, assignor of one-half to J. Scheillein, Allegheny, Pa. Ice-velocipede	485,335	Nov. 1	282	76	61	629
Seebold, Moritz, Berlin, Germany. Stove	486,665	Dec. 27	2352	582	61	1838
Sefton, William E., Canton, Ohio. Colter	486,457	Dec. 20	2015	503	61	1757
Segog, Byron G. (See Keogh, John M., assignor.)						
Segundo, Edward C. de, London, England. Word-counting appliance for type-writers	488,458	Dec. 20	2017	504	61	1757
Seiberling, Charles W., trustee. (See Ransom and Maynes, assignors.)						
Seiberling, John F., Akron, Ohio. Mowing-machine	485,891	Nov. 8	1122	297	61	818
Seidel, Joseph H., Philadelphia, Pa. Car-coupling	485,232	Nov. 1	118	36	61	598
Seifert, Bruno R., assignor to F. von Heyden Nachfolger, Radebeul, near Dresden, Germany. Making oxyuvitic acid	488,290	Dec. 20	1750	.....	61	1703
Seigneuret, Hyppolyte J., Henderson, Minn. Gas-engine exhaust-furnace	485,988	Nov. 8	1278	339	61	851
Seip, Thomas A., Dayton, assignor of one-half to P. B. Holly and C. A. Salzman, Hamilton, Ohio. Rolling screen	486,592	Nov. 22	2241	588	61	1073
Seipp, Max, Berlin, Germany. Multitubular boiler	485,507	Nov. 1	543	144	61	683
Seipa, Michael. (See Manning and Seipa.)						
Selden, Arthur T., New York, N. Y. Cabinet for displaying sample goods	484,166	Oct. 11	964	248	61	211
Selkirk, Alexander, Albany, assignor, by mesne assignments, to R. Whitehill and D. S. Waring, Newburg, N. Y. Digesting apparatus	486,130	Nov. 15	1533	404, 405	61	918
Selkirk, Alexander, Albany, assignor, by mesne assignments, to R. Whitehill and D. S. Waring, Newburg, N. Y. Disintegrating vegetable substances	487,782	Dec. 13	891	226, 227	61	1516
Selkirk, Alexander, Albany, assignor, by mesne assignments, to R. Whitehill and D. Waring, Newburg, N. Y. Digesting apparatus	487,783	Dec. 13	896	227	61	1517
Selkirk, Alexander, Albany, assignor, by mesne assignments, to R. Whitehill and D. Waring, Newburg, N. Y. Digesting apparatus	487,784	Dec. 13	900	227, 228	61	1517
Sellers, George H., Ridley Park, Pa. Rail-tie	486,950	Nov. 29	2883	745	61	1217
Sellheim, Henry, New York, N. Y. Hoisting device and support	484,252	Oct. 11	1107	280	61	239
Seltzer, Uriah D., Lebanon, Pa. Egg-beater	487,024	Nov. 29	2903	768	61	1236
Senderling, Martin L., Jersey City, N. J. Dump-wagon	488,292	Dec. 20	1751	441	61	1703
Senner, Rudolf, Pforzheim, Germany. Automatic match-ignitor	484,253	Oct. 11	1108	280	61	239
Sequeira, John C., *et al.* (See Washington, Samuel, assignor.)						
Sergeant, Henry C., Westfield, N. J., assignor to Ingersoll-Sergeant Drill Company, New York, N. Y. Bar for quarry-frames	484,117	Oct. 11	878	223	61	194
Sergeant, Henry C., Westfield, N. J., assignor to Ingersoll-Sergeant Drill Company, New York, N. Y. Drill-chuck	484,118	Oct. 11	879	223	61	195
Serrell, James E., deceased, New York, N. Y.; M. J. Thomson, administratrix. Derrick	487,453	Dec. 6	373	97	61	1394
Settle, David W., Paducah, Ky. Sinker	484,254	Oct. 11	1109	280	61	240
Settle, James M., South Jacksonville, Fla. Fruit conductor or conveyer	486,357	Nov. 15	1879	494	61	968
Sevier, Moses N., Vernon, Tex. Milk-stool	487,099	Nov. 29	3101	796	61	1261
Sewall, James H., Portland, Me., assignor to Consolidated Car Heating Company, Wheeling, W. Va. Car-heating apparatus	483,813	Oct. 4	436	107, 108	61	90
Sexton, Isaac, Somerville, Mass. Jacket for sheet-metal cans	483,750	Oct. 4	341	85	61	71
Sexton, Stephen H., Tucson, Ariz. Ter. Fifth-wheel	484,378	Oct. 11	1306	334	61	278
Seybold, Henry M. (See Ashby and Seybold.)						
Seymour, Albert P., Syracuse, N. Y. Insulator	483,771	Oct. 4	376	93	61	78
Seymour, Charles, assignor to Defiance Machine Works, Defiance, Ohio. Polishing-machine	487,785	Dec. 13	902	228	61	1518
Seymour, Charles E., Hurley, Wis. Process of and device for reducing volatilized metals	487,100	Nov. 29	3102	796	61	1261
Seymour, Charles E., Lake Geneva, Wis. Device for operating ore-concentrators and allied machines	487,542	Dec. 6	505	132	61	1420
Seymour, Charles J., Brookline, Mass. Railway-car	484,119	Oct. 11	879	224	61	195
Seymour, Francis, Paterson, N. J. Apparatus for producing scenic effects	486,606	Nov. 22	2267	592	61	1077
Seyppel, Otto. (See Rollins, Joseph B., assignor.)						
Shafer, Henry. (See Steinbach and Shafer.)						
Shaffer, Henry E., Rochester, N. Y. Lamp	486,510	Nov. 22	2111	558	61	1048
Shakespeare, James H., trustee. (See Bonta, James W., assignor.)						
Shallenberger, Oliver B., Rochester, assignor, by mesne assignments, to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. System of electrical distribution	487,543	Dec. 6	508	132	61	1421
Sharp, Charles S., Auburn, N. Y., assignor to D. M. Osborne & Company, of New York. Disk harrow	485,666	Nov. 8	788	210	61	750
Sharp, Edward J., Stockport, England. Hat-ventilating device	487,786	Dec. 13	903	228, 229	61	1518
Sharpe, John W., Lowell, Mass. Chimney-holder	483,596	Oct. 4	108	26	61	23
Sharples, William E., Fall River, Mass. Belting	488,617	Dec. 27	2272	563	61	1823
Sharpneck, Eliel L., Chicago, Ill. Car-axle box	484,054	Oct. 11	798	201	61	178
Sharpneck, William S., Evanston, assignor of one-half to North Western Toy and Manufacturing Company, Chicago, Ill. Cane	486,131	Nov. 15	1535	405	61	919
Shattuck, William P., Minneapolis, Minn. Toy	485,713	Nov. 8	863	231	61	767
Shaut, Frederick E., assignor of one-half to J. E. Shaut, Canistee, N. Y. Belt-fastener	486,570	Nov. 22	2003	579	61	1065
Shaut, Joseph E. (See Shaut, Frederick E., assignor.)						
Shaw, Edgar, Swampscott, Mass. Hitching-strap	484,646	Oct. 18	1737	441	61	375
Shaw Electric Crane Company. (See Sawyer, Harry, assignor.)						
Shaw, Henry F., Boston, Mass. Truck for street-cars	488,255	Dec. 20	1690	422	61	1692
Shaw, Henry R., assignor of two-thirds to E. Wright and J. Cunningham, St. Catharines, Ontario, Canada. Feed for roller-mills	483,963	Oct. 4	694	173	61	143
Shaw, Irvin A., assignor to himself and H. F. Best, Kinsley, Kans. Sash-holder	487,131	Nov. 29	3149	807	61	1270
Shaw, Riley W., Lapeer, Mich. Milk-stool	486,944	Nov. 29	2965	740	61	1213
Shea, William J. (See Hurley, James H., assignor.)						
Sheedy, Dennis. (See Iles and Sheedy.)						
Sheehan, George F., and D. A. Mullin, Manchester, N. H. Window-jack	484,467	Oct. 18	1452	370	61	318
Sheer, Henry H., assignor to C. M. Ertel, Quincy, Ill. Incubator	488,953	Dec. 27	2905	691	61	1931
Sheets, Joshua S., Philadelphia, Pa. Cover for kettles, &c.	486,185	Nov. 15	1607	496	61	934

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Sheffield, George V., New York, N. Y., assignor to American Rapid Motor Company. Power-motor	485,989	Nov. 8	1279	340	61	851
Sheffield Velocipede Car Company. (See Ellis, Willard H., assignor.)						
Sheldon, Eulins B., New Haven, Conn. Block for printers' use	483,814	Oct. 4	437	108	61	91
Sheley, George A., *et al.* (See Jennings, Charles C., assignor.)						
Shelley, David B. M., Montgomery Station, Pa. Attachment for molding-machines	487,007	Nov. 29	2957	762	61	1231
Shemwell, Baxter. (See Freeman, Horace L., assignor.)						
Shepard, Edgar T., Fulton, N. Y. Pulley	487,454	Dec. 6	375	98	61	1395
Shepard, Henry W., assignor to United States Chemical Company, Camden, N. J., and Philadelphia, Pa. Apparatus for making alumina	488,580	Dec. 27	2219	550	61	1812
Shepard, Jason H., *et al.* (See Patnoe, George W., assignor.)						
Shepardson, Samuel, La Grange, Ind. Car-coupling	487,297	Dec. 6	90	27	61	1339
Shepperd, Sylvanus D., assignor to Backus Water Motor Company, Newark, N. J. Supporting-frame for rotary fans	488,293	Dec. 20	1752	441	61	1703
Sherburne, Charles W., Boston, Mass. Track-sanding device	486,646	Nov. 22	2332	610	61	1091
Sherburne, Charles W., Boston, Mass. Track-sanding apparatus	487,496	Dec. 6	438	113	61	1408
Sherburne, Charles W., Boston, Mass. Track-sanding apparatus	487,497	Dec. 6	439	113	61	1408
Sheridan, T. W. & C. B. (See Malm, Alexander, assignor.)						
Sherman, Henry A., Peachton, Ohio. Pocket-lamp and cigar-lighter	485,990	Nov. 8	1283	341	61	852
Sherman, Jacob S., Cassopolis, Mich. Focal-center optometer	484,055	Oct. 11	799	202	61	179
Sherman, Jacob S., Cassopolis, Mich. Optometer	484,615	Oct. 18	1681	427	61	364
Sherman, Lewis P., Biddeford, Me. Machine for drawing in warp-threads	487,938	Dec. 13	1153	288	61	1566
Sherman, Louis A., Peoria, Ill. Fastener for rubbers	485,302	Nov. 1	290	62	61	617
Sherwood, Frederick A. (See Wood, William H., assignor.)						
Sherwood Manufacturing Company. (See Hart, Thomas J., assignor.)						
Sherwood, Marvin W., Meriden, Conn. Cash-carrier apparatus	487,905	Dec. 13	1099	275	61	1556
Shields, James H., Chicago, Ill. Cutter for gaskets, &c.	487,894	Dec. 13	1081	270	61	1553
Shilling, Albert C. (See Ehle, Homer F., assignor.)						
Shilling, Jesse, Jr., Troy, Ohio. Kettle-cover	484,824	Oct. 25	2034	521	61	450
Shimer Bearing Company. (See Shimer, Samuel J., assignor.)						
Shimer, Samuel J., Milton, Pa. Cutter-head knife	486,901	Nov. 29	2792	724	61	1200
Shimer, Samuel J., Milton, assignor to Shimer Bearing Company, South Bethlehem, Pa. Journal-bearing	486,199	Nov. 15	1626	430	61	937
Shingleton, William, London, England. Riding-habit	488,776	Dec. 27	2517	626	61	1871
Shinn, Joseph A., New York, N. Y., assignor, by mesne assignments, to Safety Car Heating and Lighting Company, of New Jersey. System of and apparatus for heating railway-cars or similar vehicles	484,343	Oct. 11	1251	319, 320	61	267
Shipley, Milton K. (See Kruse and Shipley.)						
Shivell, David, Arlington, Ind. Buggy-top	488,459	Dec. 20	2018	504	61	1757
Shivlar, John H., Beloit, Kans. Water-heater	485,892	Nov. 8	1124	297	61	818
Shone, Isaac, and E. Ault, London, England. Apparatus for raising and forcing water or other liquids	485,714	Nov. 8	864	232	61	767
Shrague, Gustavus A., *et al.* (See Lockwood, Charles L., assignor.)						
Shrague, John W., *et al.* (See Lockwood, Charles L., assignor.)						
Shrum, Peter J. (See Brittain and Shrum.)						
Shults, John W., Wichita, Kans. Galvanic body-battery	486,902	Nov. 29	2792	724	61	1200
Shults, Louis, Brownville, N. Y. Fish-hook	484,678	Oct. 18	1792	456	61	387
Shultz, Llewellyn B., assignor to St. Louis Steel Wire Brush Company, St. Louis, Mo. Boiler-flue cleaner	488,842	Dec. 27	2692	651	61	1893
Shure, Arthur E., Shure's Landing, Md. Railway-car window	486,220	Nov. 15	1659	439	61	943
Sibley, R. L., *et al.* (See Jones and Ashley, assignors.)						
Siedler, Charles, *et al.* (See Morrell, Robert, assignor.)						
Siegert, Hugo, Breslau, Germany. Combined inkstand and penholder	487,396	Dec. 6	256	70	61	1372
Siegrist, Henry A., and G. M. Bittman, St. Louis, Mo. Water-filter	486,413	Nov. 15	1970	523	61	1007
Siemens, Frederick, Dresden, Germany. Gas-furnace	486,540	Nov. 22	2150	568, 569	61	1055
Siemens & Halske. (See Frölich, Oscar, assignor.)						
Siemens & Halske. (See Görges, Johannes H. F., assignor.)						
Siemens & Halske. (See Wörner, Adolf, assignor.)						
Siemens & Halske Electric Company of America. (See Wright, Augustine W., assignor.)						
Sigourney, Albert M., *et al.* (See Abbott, George F., assignor.)						
Sigourney, Frank W., *et al.* (See Abbott, George F., assignor.)						
Silva, José Y da. (See Almeida and da Silva.)						
Silver & Company. (See Hollandt, Herman, assignor.)						
Silverson, Nathan, New York, N. Y. Convertible carriage, chair, or rocker	485,991	Nov. 8	1284	341, 342	61	852
Silvey, William L., Lima, Ohio. Secondary battery	484,120	Oct. 11	882	224	61	195
Simeral, Clarence J., Macleay, Oreg. Gate	487,336	Dec. 6	159	45	61	1352
Simmons, James D., Hagerstown, Md. Fertilizing composition	484,679	Oct. 18	1793	.....	61	387
Simms, Alonzo H., assignor of one-half to C. E. Eckerle, Birmingham, Ala. Pneumatic water-elevator	484,255	Oct. 11	1109	281	61	240
Simon, Ernst, Chicago, Ill. Wagon-cover	487,544	Dec. 6	510	132, 133	61	1421
Simonet, Maxime H., Quintin, France. Grinding-machine for paper-stock	484,056	Oct. 11	800	202	61	179
Simons, Benjamin, Charleston, S. C. Dental separator	487,973	Dec. 13	1201	300	61	1576
Simons, Julius, New York, N. Y. Safety-guard for cars	485,598	Nov. 1	680	180	61	714
Simons, Marks. (See Stromberg, Alfred, assignor.)						
Simons, Mark. (See Stromberg, Alfred, assignor.)						
Simpson, Arthur C. (See Cook, Sidney, assignor.)						
Simpson, James, McKeesport, Pa. Skelp-tang	485,893	Nov. 8	1125	298	61	819
Simpson, William L. (See Denton, Simpson, and Denton.)						
Sinclair, Edward J., Omaha, Nebr. Check-valve	487,298	Dec. 6	91	27	61	1340
Singer, Benjamin F., and M. L. Davis, Lancaster, Pa. Permutation-lock	488,777	Dec. 27	2518	626	61	1871
Singer, Charles G. (See Koneman, William A., assignor.)						
Singer, George S., Cardington, Ohio. Drinking-trough	484,057	Oct. 11	802	203	61	179
Singer, Ignatius. (See Critchley, Singer, and Dombrain.)						
Singer Manufacturing Company of New Jersey. (See Curtis, George H., assignor.)						
Singer Manufacturing Company of New Jersey. (See Douglas, John, assignor.)						
Singer, Samuel S., *et al.* (See Wein, John H., assignor.)						
Singley, Joseph J., El Dorado, Kans. Corn-harvester	486,132	Nov. 15	1536	405, 406	61	919
Sinsabaugh, David A., Utica, Ohio. Folding chair	484,058	Oct. 11	802	203	61	179
Sir W. G. Armstrong, Mitchell & Company. (See Noble and Murray, assignors.)						
Sisson, Isaac H., Providence, R. I. Shoe-lace fastening	483,622	Oct. 4	159	39	61	33

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Sisum, William H. H., Brooklyn, N. Y. Twisting or winding machine	488,227	Dec. 20	1649	412	61	1684
Sites, Frank B., assignor of one-half to H. D. Bokop, Defiance, Ohio. Crate	484,059	Oct. 11	804	203	61	179
Skeer, Albert F., Jr. (See Galloway, Emmet I., assignor.)						
Skelton, John C., *et al.* (See Pynchon, Edwin, assignor.)						
Skelton, John C., *et al.* (See Stuck, Levi, assignor.)						
Skidmore, Frederick R., Milwaukee, Wis. Balanced slide-valve	484,060	Oct. 11	806	204	61	180
Skillman, George R., Baltimore, Md. Baker's oven	487,431	Dec. 6	330	84, 85, 86	61	1387
Skinner, Joseph W. (See Terslose, Anders C., assignor.)						
Skog, August W., Minneapolis, Minn. Inkstand	486,686	Nov. 22	2392	625	61	1103
Skoglund, Gust, Kersey, Pa. Pocket-knife	488,340	Dec. 20	1829	457	61	1718
Skoglund, Jean V., Stockholm, Sweden. Explosive powder	487,080	Nov. 29	3066	.....	61	1254
Sladoslawek, Anton, Chicago, Ill. Artificial stone	488,682	Dec. 27	2384	.....	61	1844
Slater, George L., Buchanan, Mich., assignor to L. G. Tong, South Bend, Ind. Coin-controlled vending-machine	485,140	Oct. 25	2536	651	61	550
Slater, Stanley R., assignor to S. M. Burroughs and H. S. Wellcome, London, England. Hypodermic syringe	486,057	Nov. 8	1392	369	61	873
Slaughter, Edmund S. (See Carr, William M., assignor.)						
Slaughter, John, Goldsborough, N. C. Hand attachment for sewing-machines	486,358	Nov. 15	1879	495	61	988
Slawson, Marcus D., Grayling, Mich. Animal-trap	485,303	Nov. 1	221	63	61	618
Slaymaker, Barry & Co. (See Troast and Slaymaker, assignors.)						
Slaymaker, Samuel R. (See Troast and Slaymaker.)						
Slayton, Charles A. (See Avery and Slayton.)						
Sloan, Joseph A., Toledo, Ohio. Puzzle	483,772	Oct. 4	377	94	61	79
Sloan, Jules, Paris, France. Decorticating grain	484,258	Oct. 11	1115	282	61	241
Slocum, Fitz M., Erie, Pa. Velocipede-saddle	483,875	Oct. 4	526	132	61	109
Sloper, Thomas B., Devizes, England. Electric telephonic switch and system	488,666	Dec. 27	2354	582, 583	61	1838
Slyker, Alfred S., Laflin, Pa. Valve	488,228	Dec. 20	1692	412	61	1684
Smades, Myron W., and J. P. Ellstrom, Minneapolis, Minn. Claw-bar	488,581	Dec. 27	2220	550	61	1812
Small, Frederick A., Blue Island, Ill. Rotary steam-engine	483,726	Oct. 4	299	75	61	63
Smalley, William W. (See Bache, William H., assignor.)						
Smalley, William W. (See Bache and Smalley.)						
Smart, Charles, San Francisco, Cal. Sanitary seal for covers of toilet vessels	483,948	Oct. 4	634	159	61	130
Smeal, George W., Osceola Mills, Pa. Stamp-extractor	485,508	Nov. 1	544	145	61	653
Smelser, James M., Richmond, Ind. Sash-balance	488,294	Dec. 20	1753	441	61	1704
Smiley, John G., Hampton, Nebr. Cattle-washing device	488,778	Dec. 27	2522	627	61	1871
Smith, Albert, New York, N. Y. Saw	488,844	Dec. 27	2630	652	61	1894
Smith, Albert D., *et al.* (See Smith, Frank W., assignor.)						
Smith, Albert D. and F. W., assignors of part to C. W. Crutsinger, St. Louis, Mo. Automatic release for cable-grips. (Reissue)	11,275	Oct. 4	699	175	61	144
Smith, Albert U., Seymour, Conn. Machine for shaping anger-heads	486,239	Nov. 15	1689	447	61	950
Smith, Albert W., San Francisco, Cal. Electric motor or dynamo	484,734	Oct. 18	1851	470	61	399
Smith, Andrew, Salem, Ohio. Folding stool	487,200	Nov. 29	3256	833	61	1290
Smith, Anthony P., Newark, N. J. Apparatus for tapping water-mains	485,715	Nov. 8	866	232	61	767
Smith, Anthony P., Newark, N. J. Tapping apparatus	485,716	Nov. 8	867	232	61	768
Smith, Anthony P., Newark, N. J. Tapping apparatus	485,717	Nov. 8	868	233	61	768
Smith, Austin J., Coal City, Ill. Bridge-gate	484,470	Oct. 18	1455	371	61	318
Smith, Benjamin C., Brooklyn, N. Y. Water-closet	484,617	Oct. 18	1684	427, 428	61	365
Smith, Benjamin F., assignor of one-half to C. G. Smith, Somerville, Mass. Sand-trap for Artesian wells	485,064	Oct. 25	2436	623	61	527
Smith, Burton. (See Snell and Smith.)						
Smith, Carlos H., Elgin, assignor to Elgin National Watch Company, Chicago, Ill. Watch-movement box	488,097	Dec. 13	1424	355	61	1623
Smith, Celia M., Ithaca, N. Y. Toy animal figure	483,727	Oct. 4	303	75	61	63
Smith, Charles, Mount Carmel, Ill. Watchmaker's tool	484,680	Oct. 18	1793	456	61	387
Smith, Charles G. (See Smith, Benjamin F., assignor.)						
Smith, Charles G., Detroit, Mich. Bolt and nut lock	484,616	Oct. 18	1683	427	61	365
Smith, Charles W., Woburn, Mass. Coin-controlled vending-machine	487,008	Nov. 29	2959	762, 763	61	1232
Smith, Christopher A., Philadelphia, Pa. Hame-fastener	486,903	Nov. 29	2794	725	61	1200
Smith, Crowson. (See Ryan, Frank M., assignor.)						
Smith, Daniel A., and C. E. Grapewine, Kokomo, Ind. Watch-charm	483,949	Oct. 4	634	159	61	130
Smith, Edward. (See Lawson, William, assignor.)						
Smith, Edward S., Waterbury, Conn., assignor to G. Frost, G. H. Phelps, and G. A. Frost, Newton, Mass. Making garment-catches	488,135	Dec. 13	1482	373	61	1635
Smith, Emory E., Palo Alto, Cal. Label-holder	484,902	Oct. 25	2168	558	61	477
Smith, Ernest B., South Amherst, Mass. Trolley-wire cleaner	484,344	Oct. 11	1253	320	61	267
Smith, Eugene F., Stockton, Cal. Kitchen-cabinet	485,718	Nov. 8	870	233	61	768
Smith Exhaust Pipe Company. (See Smith, John Y., assignor.)						
Smith, Frank H., assignor to Keane Novelty Company, Chicago, Ill. Cigar-cutter	485,234	Nov. 1	119	36	61	598
Smith, Frank S., Pittsburg, Pa. Incandescent lamp	484,825	Oct. 25	2035	521	61	450
Smith, Frank W. (See Smith, Albert D. and F. W.) (Reissue.)						
Smith, Frank W., assignor of five-eighths to C. W. Crutsinger and A. D. Smith, St. Louis, Mo. Automatic release for cable-crossings	484,346	Oct. 11	1257	321	61	268
Smith, Fred P., Worcester, assignor to Smith Heating and Ventilating Company, Boston, Mass. System of house ventilation	485,141	Oct. 25	2538	651	61	551
Smith, Frederick I., Charleston, S. C., assignor of three-fourths to G. S. Valentine, New York, N. Y. Railway-rail	487,133	Nov. 29	3151	807, 808	61	1270
Smith, George B., assignor of one-half to R. Ashworth, St. Cloud, Minn. Fusible fire-alarm	484,469	Oct. 18	1454	370	61	318
Smith, George E., Glastonbury, Conn. Hardening cutlery	487,337	Dec. 6	161	46	61	1352
Smith, George H. (See Hubbell, Thomas J., assignor.)						
Smith, George H., *et al.* (See Fisher, Thomas N., assignor.)						
Smith, George H., Rhodes, R. K. Hartley, Chadderton, and I. S. McDougall, High Broughton, England. Adjustable seat-support for bicycles	484,681	Oct. 18	1794	456	61	387
Smith, George W., assignor of one-half to E. C. King, Darlington, Wis. Vehicle axle and box	488,486	Dec. 20	2064	513	61	1766
Smith, Harris K., Brooklyn, N. Y. Safety-catch for dumb-waiters	485,569	Nov. 1	639	170	61	704
Smith Heating and Ventilating Company. (See Smith, Fred P., assignor.)						
Smith, Hiram. (See Tuller, Willis E., assignor.)						
Smith, Hiram B., Atlanta, Ga., assignor to Millers Falls Company, Erving, Mass. Saw-set	483,793	Oct. 4	408	101	61	85

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Smith, Hugh L. (See Cope, George W., assignor.)						
Smith, Hugh L., Jackson, Mich. Wick-raising device	484,981	Oct. 25	2296	593	61	501
Smith, Ira T., Mount Carmel, Conn. Machine for swaging needles	483,815	Oct. 4	439	109	61	91
Smith, Israel C. (See Herrinton and Smith.)						
Smith, James, Dresden, N. Y. Engine	487,132	Nov. 29	3150	807	61	1270
Smith, James H. (See Mann and Smith.)						
Smith, James H., Eccles, assignor to Fustian Cutting Machine Company, Limited, Salford, England. Knife for cutting the pile of velvets, &c	487,974	Dec. 13	1202	300	61	1576
Smith, James L., *et al.* (See Schaeffer, Henry, assignor.)						
Smith, James R. (See Smith, William B. and J. R.)						
Smith, James T., Oroville, Cal. Safety-harness	486,238	Nov. 15	1688	447	61	949
Smith, James T., and O. T. Lucas, Shaw, Kans. Wire-splicer	487,646	Dec. 6	659	170	61	1452
Smith, Job, *et al.* (See House, John, assignor.)						
Smith, John E., Shiloh, Ohio. Grain-separator	486,414	Nov. 15	1971	523	61	1007
Smith, John J., Winfield, Iowa. Calf-muzzle	488,719	Dec. 27	2437	605	61	1854
Smith, John T., New York, N. Y. Treating cork	484,345	Oct. 11	1255	320	61	268
Smith, John Y., assignor to Smith Exhaust Pipe Company, Doylestown, Pa. Triple-exhaust nozzle	487,299	Dec. 6	92	28	61	1340
Smith, Kirk A., and A. M. Wead, assignors to Smith & Pomeroy, Kalamazoo, Mich. Tower for windmills	487,787	Dec. 13	904	229	61	1518
Smith, Lewis H. (See Brown and Smith.)						
Smith, Menzo A., Cooperstown, N. Y. Hoe	488,582	Dec. 27	2221	550	61	1813
Smith, Millage M., Stockdale, Tex. Pump	483,637	Oct. 4	178	45	61	37
Smith, Nathan R., Baltimore, Md. Slatted structure for floors, stairs, &c	488,371	Dec. 20	1803	471	61	1729
Smith, Noah B., and C. P. Ludwig, Birmingham, Ala. Producing paint-pigment from ores	485,063	Oct. 25	2425	623	61	527
Smith, Peter, Mount Pleasant, Iowa. Fence	484,468	Oct. 18	1454	370	61	318
Smith & Phillips Manufacturing Company. (See Phillips, Francis V., assignor.)						
Smith & Pomeroy. (See Smith and Wead, assignors.)						
Smith, Robert D. O., Mishawaka, Ind. Lubricating journal-box	488,800	Dec. 27	2561	636	61	1880
Smith, Roswell T., Nashua, N. H. Making butt-hinges	487,939	Dec. 13	1154	288	61	1567
Smith, Rudolph C., Yonkers, N. Y., assignor, by mesne assignments, to National Company, Chicago, Ill. Compound engine	485,568	Nov. 1	637	170	61	704
Smith, Stephen D., Milwaukee, Wis. Electric appliance for canes	484,618	Oct. 18	1685	428	61	365
Smith, Theophilus O., Oxford, England. Attachment for brace-bits	488,701	Dec. 27	2411	598	61	1849
Smith, Thomas B., Bridgeport, Ohio. Safety-plate for railways	486,741	Nov. 22	2481	647	61	1121
Smith, Thomas J., Providence, R. I. Trace-fastener	486,571	Nov. 22	2204	579	61	1065
Smith, Walter M., Newcastle-upon-Tyne, England. Piston-valve	488,096	Dec. 13	1422	354, 355	61	1622
Smith, Walton D., assignor of one-half to J. S. Hunter, Prophetstown, Ill. Box-supporter	483,751	Oct. 4	342	86	61	71
Smith, Walton D., assignor of one-half to J. S. Hunter, Prophetstown, Ill. Box-suport	488,485	Dec. 20	2064	513	61	1766
Smith, Wesley, Toledo, Ohio. Railway-gate	485,894	Nov. 8	1126	298	61	819
Smith, William, assignor of one-half to J. B. Levy, Bastrop, La. Cotton-chopper	483,794	Oct. 4	409	102	61	86
Smith, William, and J. Claydon, London, England. Machine for cutting or slicing vegetables	485,590	Nov. 1	667	177	61	711
Smith, William A., Butte City, Mont. Tuning-pin	488,843	Dec. 27	2629	652	61	1894
Smith, William B. and J. R., assignors of one-half to A. Eubank, Birmingham, Ala. Boiler-tube cleaner	486,133	Nov. 15	1538	406	61	919
Smith, William E., Watkins, N. Y. Spring-tooth harrow	486,796	Nov. 22	2572	671	61	1139
Smith, William H., Bolivar, Mo. Combined latch and lock	485,667	Nov. 8	790	210	61	750
Smith, William J., assignor to C. S. Larrabee, trustee, Boston, Mass. Machine for boring non-circular holes	485,233	Nov. 1	118	36	61	598
Smith, William J., assignor to C. S. Larrabee, trustee, Boston, Mass. Caster	488,954	Dec. 27	2807	692	61	1931
Smith, William T., Philadelphia, Pa. Chenille-cutting machine	485,777	Nov. 8	949	255	61	784
Smith, Wilson R., Beloit, Wis. Friction-clutch	487,545	Dec. 6	511	133	61	1422
Smith, Wright D., assignor to Huyette & Smith Manufacturing Company, Detroit, Mich. Steam-generator	487,300	Dec. 6	95	28, 29	61	1341
Smitten, Thomas W. F., Brooklyn, N. Y. Sleeve-link	486,904	Nov. 29	2795	725	61	1200
Smouse, William M., Gettysburg, S. D. Signal-whistle	488,845	Dec. 27	2631	652	61	1894
Snaith, Thomas, South Stockton, England. Punching, shearing, &c., machine	486,387	Nov. 15	1922	510	61	998
Sneddon, William, assignor of one-half to J. H. Rothwell and J. R. Cade, Houston, Tex. Journal-box	488,720	Dec. 27	2438	605	61	1855
Snell, Robert B., and B. Smith, Monument, Kans., assignors, by mesne assignments, to said Smith. Seed-planting machine	488,846	Dec. 27	2634	652, 653	61	1895
Snider, Columbus A., Greencastle, Ind. Railway-gate	484,256	Oct. 11	1111	281	61	240
Sniffin, Charles A. (See Waller and Sniffin.)						
Snitzer, Drikus, and M. Kuehn, St. Louis, Mo. Take-up for sewing-machines	485,019	Oct. 25	2366	608	61	515
Snorf, John, Fairland, Mich. Measuring-vessel	485,992	Nov. 8	1290	343	61	853
Snow, Charles A., Brick Haven, Va. Brick-kiln	483,638	Oct. 4	180	45	61	38
Snow, George B., Buffalo, N. Y. Dental vulcanizer	487,647	Dec. 6	660	170	61	1452
Snow, Levi T. (See Woodruff and Snow.)						
Snow, William H., Campbell County, Va. Car-coupling	487,353	Dec. 6	189	52	61	1358
Snyder, Harrison, trustee. (See Clay, Henry, assignor.)						
Snyder, Homer P., and M. J. Fisher, Little Falls, N. Y. Stop mechanism for circular-knitting machines	488,039	Dec. 13	1334	330, 331	61	1604
Snyder, Jennie, and F. Lockwood, Mianus, Conn. Culinary vessel	485,993	Nov. 8	1292	343	61	854
Snyder, John H., Des Moines, Iowa. Car-coupling	486,905	Nov. 29	2796	725	61	1200
Snyder, Pius S., Jacobus, Pa. Hedge-fence trainer	488,955	Dec. 27	2807	692	61	1931
Snyder, William D., Chicago, assignor to R. W. Emerson and W. F. Woodruff, Rockford, Ill. Folding bed	487,685	Dec. 6	729	186	61	1464
Sobey, William, assignor to J. I. Case Plow Works, Racine, Wis. Harrow	485,020	Oct. 25	2368	609	61	515
Sobotka, Gustav, New York, and W. Ahrens, Long Island City, N. Y. Apparatus for separating solid matter from liquids	488,583	Dec. 27	2222	550	61	1813
Sobotka, Gustave, New York, and W. Ahrens, Long Island City, N. Y. Apparatus for separating solid matter from liquids	488,956	Dec. 27	2808	692	61	1931
Society Edoux et Cie. (See Holder, Alfredo R., assignor.)						
Society of Chemical Industry in Basle. (See Gnehm and Schmid, assignors.)						
Söderin, Jonas S., assignor to C. W. Stuart, New York, N. Y. Ruling-pen	485,358	Nov. 1	325	87	61	638
Solar Refining Company. (See Frasch, Herman, assignor.)						
Soley, William H., *et al.* (See Carlinet, John G., assignor.)						
Solliday, Wilson R. (See Guiley, Augustus H. R., assignor.)						
Sommerfeld, Heinrich, Canton, assignor of one-half to S. F. Sacket, Marion, Kans. Combined plow and seeder	487,871	Dec. 13	1046	262	61	1546
Sooy, Ephraim C. (See Puntoney and Sooy.)						
Sorg, Albert A., assignor of one-half to G. M. Clarken, Ann Arbor, Mich. Extension-ladder	487,301	Dec. 6	98	29	61	1341

Alphabetical list of patentees, October to December, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Soule, Henry M. (See Johnson, Charles F., assignor.)						
Soure, Charles D., assignor of one-half to N. R. Morris and J. H. Spencer, Martinsville, Va. Plug-tobacco shaper	486,302	Nov. 15	1792	471	61	971
Southard, William D., Peekskill, N. Y. Stove-grate	486,797	Nov. 22	2573	671	61	1139
Southworth, Benjamin F. (See Harris, William T., assignor.)						
Soutter, Robert, Chicago, Ill. Axle-box lid	484,471	Oct. 18	1457	371	61	319
Spain, James A. (See Pye, James F., assignor.)						
Spalding, Charles W. (See Frink, Urban W., assignor.)						
Spalding, Edward M., and G. E. Willsie, Fremont, Nebr. Oil-burner	488,744	Dec. 27	2471	614	61	1862
Sparks, William H., Camden, N. J. Carriage	487,788	Dec. 13	906	229	61	1518
Sparr, Benjamin F. and M. F., Brooklyn, N. Y. Metallic railway-tie	483,773	Oct. 4	378	94	61	79
Sparr, Millard F. (See Sparr, Benjamin F. and M. F.)						
Spaulding, Charles C. and W. C., Whiting, Iowa. Combined cultivator and weed-cutter	488,779	Dec. 27	2523	627	61	1872
Spaulding, William C. (See Spaulding, Charles C. and W. C.)						
Spear, Wickham B., Philadelphia, Pa. Producing definite patterns on zinc-coated plates	484,472	Oct. 18	1459	371	61	319
Speck, Conrad, Jr., Detroit, Mich. Tag-holder	484,682	Oct. 18	1795	456	61	387
Speed, Anna G., Grand Rapids, Mich. Envelopment for clothing	485,509	Nov. 1	545	145	61	684
Spence, Anna M., executrix. (See Hall, George T., assignor.)						
Spence, John A. (See Horner, Elwood T., assignor.)						
Spencer, Alvah C., Boston, Mass., assignor to Goodyear Shoe Machinery Company, Hartford, Conn. Tension device for sewing-machines	488,508	Dec. 20	2099	521	61	1774
Spencer, James E. and J. L., Des Moines, Iowa. Hot-air furnace	486,134	Nov. 15	1539	406, 407	61	920
Spencer, James H., *et al.* (See Soure, Charles D., assignor.)						
Spencer, Joseph L. (See Spencer, James E. and J. L.)						
Sperle, Valentine. (See Pearson and Sperle.)						
Sphere Manufacturing Company. (See Ball, Robert R., assignor.)						
Spiegelberg, Frederick. (See Lascar, Ferdinand, assignor.)						
Spillinger, Joseph, Philadelphia, Pa. Wire-stretcher	484,061	Oct. 11	807	204	61	180
Spillinger, Joseph, Philadelphia, Pa. Fence	485,304	Nov. 1	222	63	61	618
Spitzer, Leopold, New York, N. Y. Shade-holder	487,858	Dec. 13	1027	257	61	1542
Spofford, Charles, New York, N. Y. Machine for sawing metal	486,169	Nov. 15	1588	421	61	930
Sponsel, Charles W., Hartford, Conn. Magazine for firearms	487,432	Dec. 6	333	86, 87	61	1387
Sprague Electric Railway and Motor Company. (See Mason, David, assignor.)						
Sprague, James H., Norwalk, Ohio. Umbrella-stick	485,719	Nov. 8	870	233	61	768
Sprague, James H., Norwalk, Ohio. Umbrella-stick	488,638	Dec. 27	2308	571	61	1829
Springer, Anton, Kasten, Austria-Hungary. Rotating motor	485,235	Nov. 1	120	37	61	598
Sprinkle, David A., Pennsborough, W. Va. Wood split pulley	484,167	Oct. 11	965	248	61	211
Sprowles, Christian B. M., Philadelphia, Pa. Knitting-machine needle	485,021	Oct. 25	2370	609	61	516
Spruance, Alexander P., *et al.* (See Wilson, William H., assignor.)						
Squire, Willis C. (See Frost and Squire.)						
Squires, John, and C. Petrie, St. John's, Newfoundland. Device for cutting ships' cables	488,847	Dec. 27	2636	653	61	1895
St. John, James E., Hopewell, assignor of two-thirds to J. M. Jackson and E. F. Freeman, Tingley, Iowa. Machine for gathering and baling hay	483,678	Oct. 4	233	58, 59	61	48
St. John, Moses W., Cedar Falls, Iowa. Wire fence	487,354	Dec. 6	191	52	61	1358
St. John, Roswell H., assignor to Standard Sewing Machine Company, Cleveland, Ohio. Shuttle-actuating mechanism for sewing-machines	485,897	Nov. 8	1132	300	61	820
St. Louis Polar Plush Lined Sock Company. (See Whitelaw, James, assignor.)						
St. Louis Steel Wire Brush Company. (See Shultz, Llewellyn B., assignor.)						
Staub, Mary K., Milwaukee, Wis. Dress	484,257	Oct. 11	1114	282	61	241
Stacey, Henry, and J. G. Lightford, Indianapolis, Ind. Refrigerating apparatus	483,876	Oct. 4	526	132	61	109
Staedeli, Felix, New York, N. Y. Window-chair	487,859	Dec. 13	1028	257	61	1542
Stafford, George W., Providence, R. I. Shedding mechanism for looms	484,922	Oct. 25	2209	568	61	484
Stafford, William E., Shedden, Canada. Plow riding attachment	488,848	Dec. 27	2637	653, 654	61	1896
Stager, Henry E., assignor of one-half to J. E. Woodworth, Milwaukee, Wis. Steam-radiator attachment	484,619	Oct. 18	1686	428	61	365
Stagg, John L., C. W. Fenn, Chicago, Ill., and C. T. Schoen, Allegheny, Pa. Ventilated car-door	487,163	Nov. 29	3202	820	61	1280
Stagren, Anders E., *et al.* (See Greer, John, assignor.)						
Stahl, Herman, and A. F. Dickey, Friedens, Pa. Wire-stretcher	487,101	Nov. 29	3104	796	61	1262
Stahlberg, Charles, New York, N. Y., assignor to Accurate Time Stamp Company, of West Virginia. Time-stamp	487,433	Dec. 6	336	87, 88	61	1388
Stammler, Fred. W. (See Lehberger, George, assignor.)						
Standard Electric Company. (See Chase, Frank B., assignor.)						
Standard Electric Heat, Light, and Power Company. (See O'Neill, Henry G., assignor.)						
Standard Horse Nail Company. (See Pierce, Erastus E., assignor.)						
Standard Horse Shoe Company. (See Wike, John, assignor.)						
Standard Machine Company. (See Houseman, Harry A., assignor.)						
Standard Manufacturing Company. (See Loveland, Walter S., assignor.)						
Standard Sewing Machine Company. (See St. John, Roswell H., assignor.)						
Standard Syndicate. (See Hoffman, Austin D., assignor.)						
Standard Underground Cable Company. (See Barrett, John A., assignor.)						
Standard Whip Company. (See Avery, George H., assignor.)						
Stanfield, Edwin L., Belden, Nebr. End-gate for wagons	488,584	Dec. 27	2224	551	61	1813
Stanhope, Philip W., Jr., Peoria, Ill. Wheel-plow	485,994	Nov. 8	1293	343	61	854
Stanley Laboratory Company. (See Stanley, William, Jr., assignor.)						
Stanley, Robert L., Somerville, assignor of one-half to F. E. Whitney, Melrose, Mass. Lathe-dog	488,927	Dec. 27	2758	681	61	1921
Stanley, Sara E., Portland, Me. Dress-pad	487,164	Nov. 29	3203	821	61	1280
Stanley, William, Jr., and J. F. Kelly, Pittsfield, Mass. Alternating-current motor	483,816	Oct. 4	442	110	61	91
Stanley, William, Jr., and J. H. Kelman, Pittsfield, Mass. Electric-fuse box	484,545	Oct. 18	1575	400	61	343
Stanley, William, Jr., assignor to Stanley Laboratory Company, Pittsfield, Mass. Self-induction device	485,336	Nov. 1	283	77	61	630
Stanley Works. (See Corscaden, Thomas, assignor.)						
Stanley Works. (See Hart, William H., assignor.)						
Stanley Works. (See Hart, William H. and C. E., assignors.)						
Stansel, Alonzo, Yorkville, Ill. Broadcast seeder	484,983	Oct. 18	1796	457	61	388
Stanwood, James B., Cincinnati, Ohio. Cross-head	487,895	Dec. 13	1082	271	61	1553
Staples, Elial M., Elizabeth, N. J. Support for bicycle-saddles	487,081	Nov. 29	3067	787	61	1254
Staples, Roswell H. (See Fallis, Richard, assignor.)						
Staren, Joseph, Chicago, Ill. Spoon-holding attachment	485,510	Nov. 1	546	145	61	684

Alphabetical list of patentees, October to December, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Stark, John. (See Gill, Thomas, assignor.)						
Stark, John, Droylsden, assignor to A. Lees & Co., Limited, Oldham, England. Self-acting spinning-mule	486,945	Nov. 29	2866	740	61	1214
Stark, John D., New York, N. Y. Slide-valve for engines	484,903	Oct. 25	2169	558	61	477
Starks, Nils O., and A. G. Felland, assignors to Fuller & Johnson Manufacturing Company, Madison, Wis. Transplanter	486,200	Nov. 15	1627	431	61	937
States, Robert I. (See Kastenhuber, Wuagneux, and States.)						
Stauber, Benjamin T., Concordia, Kans. Windmill	484,826	Oct. 25	2036	522	61	450
Stave Jointer and Planer Company. (See Wright, William J., assignor.)						
Steacy, William H., Ogden, Utah Ter. Convertible car-seat	486,742	Nov. 22	2482	647	61	1121
Stearns & Co., E. C. (See Darling, Robert F., assignor.)						
Steber, Bernard T., Utica, N. Y. Burner-fastening	487,455	Dec. 6	376	98	61	1395
Steel Edge Stamping and Retinning Company. (See Monto, Joseph, assignor.)						
Steele, Benjamin M., assignor of one-half to W. H. Miller, Peoria, Ill. Vise-stand for sustaining bicycles	486,511	Nov. 22	2112	558	61	1049
Steele, Elijah F., Wallingford, Conn., assignor of one-half to W. H. Edsall, Brooklyn, N. Y. Jointed axle for vehicles	487,059	Nov. 29	3033	779	61	1246
Steele, William H., Newark, N. J. Printing-plate and making the same	486,572	Nov. 22	2205	.....	61	1065
Steelow, Frederick H., Los Angeles, Cal. Riveting-machine	484,473	Oct. 18	1460	371, 372, 373	61	319
Steen, Edward T., San Francisco, Cal. Pipe-coupling	487,434	Dec. 6	344	88	61	1389
Steers, James R., New York, N. Y. Electric-arc lamp	485,895	Nov. 8	1128	299	61	820
Stein, Charles, Meadville, Pa. Bicycle-saddle	485,434	Nov. 1	438	117	61	662
Stein, John, New York, N. Y. Cabinet	484,121	Oct. 11	884	225	61	196
Steinbach, George, and H. Shafer, Bethel, Mo. Harness-machine	485,065	Oct. 25	2427	624	61	527
Steiner, John, Norwich, Conn. Car-coupling	483,658	Oct. 4	207	51	61	42
Steinert, Robert A., Washburn, Wis. Gun	487,586	Dec. 6	564	144, 145	61	1433
Steinle, Rudolf, Philadelphia, Pa. Scalpel	485,236	Nov. 1	121	37	61	598
Stemm, John W. (See Wallace and Stemm.)						
Stempel, Edward, Alameda, Cal. Batter-cake mixer and depositor	488,721	Dec. 27	2439	605	61	1855
Stenberg, John A., La Vergne, Ill. Bicycle-saddle	487,789	Dec. 13	907	230	61	1518
Stenersen, Erik. (See Thuraton and Stenersen.)						
Stengle, Guatave, *et al.* (See Ward, William H., assignor.)						
Stenger, Joseph, and N. Münster, Sheboygan, Wis. Snow-shoe for vehicle-wheels	486,988	Nov. 29	2927	755	61	1226
Stenwall, John, assignor to B. F. Cummins Company, Chicago, Ill. Perforating canceling-stamp	486,906	Nov. 29	2798	725	61	1201
Stephens, Edward A., Jonesville, Mich. Harness-pad	485,305	Nov. 1	221	63	61	618
Stephens, Jesse D., Jasper, Ala. Liquid-agitator	485,753	Nov. 8	920	246	61	778
Stephens, Thomas B., Sedalia, Mo. Device for feeding salt to animals	485,142	Oct. 25	2539	652	61	551
Stephenson, John, New York, N. Y. Tram-car door	488,722	Dec. 27	2440	605, 606	61	1855
Stephenson, Richard, *et al.* (See Robinson, Thomas C., assignor.)						
Stephenson, Robert E., Indianapolis, Ind. Valve-operating mechanism	488,780	Dec. 27	2525	627, 628	61	1872
Stern, David H., Philadelphia, Pa. Means for keeping stock-record of certain merchandise in retail establishments	483,659	Oct. 4	208	52	61	43
Stern, Harris W., La Salle, Ill. Combined easy, rocking, and invalid chair	485,435	Nov. 1	439	117, 118	61	662
Sternberg, Lothar, assignor to American Sugar Refining Company, Jersey City, N. J. Obtaining ammonia or other salts from molasses	486,647	Nov. 22	2333	.....	61	1091
Sterne, George W. (See Bosmann, Nicolas, assignor.)						
Sterry, George E., Jr., assignor to E. Van Schaick, New York, N. Y. Boxer's ring	485,896	Nov. 8	1131	299	61	820
Stetler, Daniel D., Minneapolis, Kans. Compound wire-fencing tool	481,684	Oct. 18	1797	457	61	388
Stevens, Fred A., Brookton, N. Y. Trip-fastener	485,511	Nov. 1	546	145	61	684
Stevens, Lucious O., assignor to Stevens Manufacturing Company, Peoria, Ill. Oat-clipping machine	487,686	Dec. 6	730	187	61	1465
Stevens Manufacturing Company. (See Stevens, Lucious O., assignor.)						
Stevens, Milton H. (See Logan and Stevens.)						
Stevens, Nathan P., Concord, N. H. Uniting broken pieces of arc-light carbons	488,256	Dec. 20	1691	422	61	1692
Stevens, Oscar, Clear Lake, Iowa. Incinerating-furnace	486,512	Nov. 22	2114	558	61	1049
Stevens, Paul R., Portland, Me. Bodkin	487,134	Nov. 29	3152	808	61	1271
Stevens, William H. (See Ayer, Melville C., assignor.)						
Stevens, William X., Washington, D. C. Fancet	483,795	Oct. 4	410	102	61	86
Steward, John F., Chicago, Ill. Corn-harvester	484,561	Oct. 18	1596	405, 406	61	347
Stewart, Charles, Washington, D. C. Implement for cutting grass	488,667	Dec. 27	2359	583	61	1839
Stewart, David S., Morris, Wis. Link belt	484,827	Oct. 25	2037	522	61	451
Stewart, David S., Morris, Wis. Traction-engine	484,828	Oct. 25	2038	522, 523	61	451
Stewart, David S., Morris, Wis. Traction-engine	484,829	Oct. 25	2041	523	61	452
Stewart, David S., Morris, Wis. Traction-engine	484,830	Oct. 25	2043	524	61	452
Stewart, Harry B., assignor of two-thirds to T. Schwer and J. E. Blake, St. Louis, Mo. Bottle-stopper	486,359	Nov. 15	1880	495	61	968
Stifel, Otto, *et al.* (See Trendley, John, assignor.)						
Stiger, George. (See Dodd, Charles E., assignor.)						
Stillman, George F. (See Brown and Stillman.)						
Stillman, Oscar B., Natick, Mass. Evaporating apparatus	483,817	Oct. 4	443	110	61	91
Stillman, Oscar B., Natick, Mass. Evaporating apparatus	484,831	Oct. 25	2044	524	61	453
Stilphen, Williard C., *et al.* (See Keene, George A., assignor.)						
Stine, Lafayette P., Roseville, Ohio. Hopple	488,849	Dec. 27	2640	654	61	1896
Stiner, Clarence M., New York, N. Y., assignor to Reminder Lock Company, of New York. Lock	484,759	Oct. 18	1915	488	61	413
Stinson, Charles K., Chelsea, assignor to Safety Oil Stove Company, Boston, Mass. Oil-stove	488,957	Dec. 27	2811	692, 693	61	1932
Stirckler, John D. (See Merwin and Stirckler.)						
Stirling, Archibald, assignor of one-half to A. C. Pessano, Philadelphia, Pa. Packingless valve	486,268	Nov. 15	1744	459	61	961
Stirn, Henry J., Milwaukee, Wis. Bank-account book	487,456	Dec. 6	377	98	61	1395
Stobaugh, Harry. (See Van Dyke and Stobaugh.)						
Stock, Denis N., St. Louis, Mo. Feed-bag support	488,850	Dec. 27	2641	654	61	1896
Stock, Denis N., St. Louis, Mo. Feed-bag support	488,851	Dec. 27	2643	654	61	1896
Stockdale, Laura E., and G. R. Lawrence, Englewood, Ill. Umbrella suspender and carrier	486,135	Nov. 15	1542	407	61	920

Alphabetical list of patentees, October to December, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Stocker, Charles, Jr., Saginaw, Mich. Bridge-gate	484,122	Oct. 11	884	225	61	196
Stockheim, Heinrich, Mannheim, Germany. Beer-filling apparatus	487,790	Dec. 13	910	230	61	1519
Stockwell, Millard E., assignor of one-half to S. W. Peregrine, Grand Rapids, Mich. Automatic car-brake	484,620	Oct. 18	1688	428	61	366
Stoddard Manufacturing Company. (See Brown, Arthur F., assignor.)						
Stoddard, Ralph, Rutland, Vt. Centrifugal milk-tester	484,685	Oct. 18	1799	457	61	388
Stoelting, Christian H., assignor to W. A. Vawter, Chicago, Ill. Binder	486,989	Nov. 29	2928	755	61	1226
Stokely, Lewis W., assignor of one-half to S. T. Carnes, Memphis, Tenn. Wire-stretcher	485,066	Oct. 25	2129	624	61	528
Stokely, Wells R., Anastasia, Fla. Fruit-box	488,040	Dec. 13	1335	331	61	1604
Stollenwerk, Anton. (See Schroeder, Conrad, assignor.)						
Stolzenberg, Friedrich, Berlin, Germany. Turret-head	488,152	Dec. 13	1517	380	61	1641
Stone, Allison R., assignor to himself and G. A. Montgomery, Chicago, Ill. Newspaper-elevator	487,791	Dec. 13	911	{230 / 231}	61	1519
Stone, Benjamin F., assignor of one-half to M. M. Milligan, East Las Vegas, N. Mex. Ter. Car-coupling	485,512	Nov. 1	546	146	61	684
Stone, Charles A., Newton, and E. S. Webster, Boston, Mass. Electrically-operated railway-switch	484,123	Oct. 11	885	{225 / 226}	61	196
Stone, Charles A., and E. S. Webster, Boston, Mass. Electric-railway switch	485,668	Nov. 8	791	211	61	751
Stone, Dudley G., Negaunee, Mich. Tie for bags, boxes, &c	485,067	Oct. 25	2430	624	61	528
Stone, Edwin G. (See Reuber, Stone, and Fuchs.)						
Stone, Frank G., Bridgeport, Conn. Mold for casting metal around internal cores	484,124	Oct. 11	888	226	61	197
Stone, Joel H., Dallas City, Ill. Truss-bridge	484,086	Oct. 18	1800	458	61	388
Stone, John D., Syracuse, N. Y. Switch-operating device	487,457	Dec. 6	378	98	61	1395
Stone, John S., assignor to American Bell Telephone Company, Boston, Mass. Development and distribution of electricity	487,102	Nov. 29	3105	797	61	1262
Stoner, John H., *et al.* (See Clayton, Anna H., assignor.)	487,397	Dec. 6	956	70	61	1372
Storer, Bellamy. (See Bazerque, Victor H., assignor.)						
Storey Electric Drill and Power Company. (See Storey, Imle E., assignor.)						
Storey, Imle E., Boulder, Colo., assignor to Storey Electric Drill and Power Company. Electric motor	488,041	Dec. 13	1337	331	61	1604
Storm, Edward, Poughkeepsie, N. Y. Vehicle running-gear	484,259	Oct. 11	1116	283	61	241
Storrs, Aaron P., Owego, N. Y. Ice-cream freezer	488,325	Dec. 20	1804	452	61	1714
Storrs, Thomas. (See Palmer, Ireuas J., assignor.)						
Story, William M. (See Taylor, Horace H., assignor.)						
Stott, Jonathan B., Aurora, S. D. Fire-escape	487,135	Nov. 29	3153	808	61	1271
Stovall, Philip, assignor of one-half to J. O., N. W., and S. F. Perkins, Atlanta, Ga. Variable friction-feed for sawmills	488,618	Dec. 27	2272	564	61	1823
Stove, Alfred E., London, England. Diving dress and helmet	484,885	Oct. 25	2132	548	61	409
Stoveken, Matthias. (See Meyers and Stoveken.)						
Stover, Edward C., Trenton, N. J. Flushing-tank	487,906	Dec. 13	1101	275	61	1556
Stover, Edward C., Trenton, N. J. Flushing-tank	487,940	Dec. 13	1155	289	61	1567
Stowe, Benjamin L., Brooklyn, assignor to J. V. Reed, New York, N. Y. Tubular woven fabric	486,620	Nov. 22	2291	597	61	1082
Stowe, Benjamin L., Brooklyn, assignor to J. V. Reed, New York, N. Y. Tubular woven fabric	486,621	Nov. 22	2292	598	61	1082
Stowe, Benjamin L, assignor to J. V. Reed, New York, N. Y. Warp-knitting machine	486,648	Nov. 22	2335	{610 / 611}	61	1091
Stowell, Calvin L. (See Fickett, William S., assignor.)						
Straley, Henry C., Granite, Mont. Music-stand attachment	487,165	Nov. 29	3203	821	61	1280
Strange, John F., assignor to himself and J. B. Winslow, New Bedford, Mass. Top roll for spinning-machines	484,760	Oct. 18	1917	489	61	413
Strap, Jules, Paris, France. Treating copper and nickel pyrites	483,639	Oct. 4	182	.....	61	38
Stratman, John T., Jr. (See Rouse, John H., assignor.)						
Stratton, B. M. (See Crowdus, Walter A., assignor.)						
Straughn, Charles R., Fernwood, Pa. Self-closing inkstand	485,397	Nov. 1	386	103	61	651
Streator, Henry D., Galesburg, Mich. Cheese-case	485,359	Nov. 1	326	87	61	634
Street, Albert F., Rockville, Conn. Nail-puller	483,587	Oct. 4	109	26	61	23
Street, Albert F., Rockville, Conn. Marking attachment for carpenters' pencils	486,513	Nov. 22	2115	558	61	1049
Streeter, Emma A., New York, and B. W. Nichols, Herkimer, N. Y. Spike	487,587	Dec. 6	567	145	61	1434
Strickland, A. C. (See Browne, Benjamin F., assignor.)						
Strickler, C. M. (See Bushee, Adolphus C., assignor.)						
Stringer, Thomas W. (See Wilkins, John B., assignor.)						
Stroh, Charles O., Freeland, Pa. Coal-jig	486,907	Nov. 29	2801	726	61	1202
Strom, Axel A., Austin, assignor to Strom Manufacturing Company, Chicago, Ill. Switch-rail-adjusting attachment	487,458	Dec. 6	379	99	61	1396
Strom Manufacturing Company. (See Strom, Axel A., assignor.)						
Stromberg, Alfred, Chicago, Ill. Burglar-alarm	484,761	Oct. 18	1917	489	61	413
Stromberg, Alfred, assignor of one-half to M. Simons, Chicago, Ill. Electric burglar-alarm	483,728	Oct. 4	304	75, 76	61	64
Stromberg, Alfred, assignor of one-half to M. Simons, Chicago, Ill. Burglar-alarm cabinet	486,908	Nov. 29	2801	{726 / 727}	61	1202
Strong, John N., Philadelphia, Pa. Railway-switch	483,818	Oct. 4	446	111	61	92
Strong, Robert J., Shiremanstown, Pa. Seed-sower	486,388	Nov. 15	1926	{510 / 511}	61	998
Stroud, Edward, New York, N. Y. Sounding-board for pianos	487,060	Nov. 29	3034	779	61	1247
Stroud, John A. (See McDowell, Albert, assignor.)						
Stroud, Wiley N., Waxahachie, Tex., and R. H. Corey, assignors to D. M. Osborne & Co., Auburn, N. Y. Discharge mechanism for harvesters	484,923	Oct. 25	2210	569	61	485
Stroup, Samuel, Elmwood, Nebr. Corn-sheller	484,474	Oct. 18	1465	{373 / 374}	61	320
Strouse, Leopold, Baltimore, Md. Speaking-tube	484,982	Oct. 25	2297	593	61	501
Strowger, Almon B., assignor to Strowger Automatic Telephone Exchange, Chicago, Ill. Automatic telephone or other electrical exchange	486,909	Nov. 29	2803	{727 / 728}	61	1202
Strowger Automatic Telephone Exchange. (See Strowger, Almon B., assignor.)						
Strusholm, Anders M. (See Lyle, Robert W., assignor.)						
Stuart, C. W. (See Söderin, Jonas S., assignor.)						
Stuart, John C., Dalark, Ark. Car-coupling	483,640	Oct. 4	182	45	61	38
Stubblebine Furnace Company. (See Stubblebine, William, assignor.)						
Stubblebine, William, Bethlehem, assignor to Stubblebine Furnace Company, Philadelphia, Pa. Furnace	487,103	Nov. 29	3107	{797 / 798}	61	1262
Stuck, Levi, Bad Axe, Mich., assignor to A. P. Gould, J. C. Skelton, and A. Hoeffer, Canton, Ohio. Dental chair	484,747	Oct. 18	1895	483	61	409
Stuckey, Sydney J., Danbury, Conn. Automatic block-signal for railways	484,062	Oct. 11	808	204	61	180
Stadte, Heinrich, Inowrazlaw-Kruk, Germany. Manufacture of parquetry or inlaid wood	484,063	Oct. 11	810	205	61	181

Alphabetical list of patentees, October to December, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Stuff, John A., Bellville, Ohio. Fertilizer-distributer attachment for check-row corn-planters	483,877	Oct. 4	528	133	61	109
Stults, William H., assignor of one-half to A. Rynders and B. A. Witherbee, Waverly, Ill. Car-coupling	488,153	Dec. 13	1518	381	61	1641
Stumpf, George P. (See Carter and Stumpf.)						
Stupakoff, Sinion II., Pittsburg, assignor to Union Switch and Signal Company, Swissvale, Pa. Compensator for signals	486,303	Nov. 15	1794	471	61	972
Sturtevant, Thomas J. (See Sturtevant, Thomas L. and T. J.)						
Sturtevant, Thomas L. and T. J., Framingham, Mass. Steam-generator	487,792	Dec. 13	918	232	61	1521
Sturtevant, Thomas L. and T. J., Framingham, Mass. Boiler	487,793	Dec. 13	920	232	61	1521
Sturtevant, Thomas L. and T. J., Framingham, Mass. Vertical tubular boiler	487,794	Dec. 13	922	233	61	1522
Sturtevant, Thomas L. and T. J., Framingham, Mass. Boiler	488,229	Dec. 20	1654	413	61	1684
Stutsman, Daniel N. (See Murray and Stutsman.)						
Stuver, Stephen T., Puyallup, Wash. Window-shade supporter	483,796	Oct. 4	412	102	61	86
Suffrins, Charles D., Pickwick, Minn. Box-fastener	487,082	Nov. 29	3069	788	61	1254
Sugar Apparatus Manufacturing Company. (See Lillie, Samuel M., assignor.)						
Sugg, William H., Tuscaloosa, Ala. Folding book-rack	485,068	Oct. 25	2431	625	61	529
Sullivan, Dennis P. (See Wright, William, assignor.)						
Sullivan, Marvin E., and J. Doss, Denver, Colo. Circuit-switch	485,337	Nov. 1	284	77	61	630
Sullivan, Philip B., Tuscarora, Nev. Fire-escape	484,260	Oct. 11	1117	283	61	242
Sulzervogt Machine Company. (See Poschinger, Mathias, assignor.)						
Summers, Leland L. (See Parker and Summers.)						
Sumner, John F., Marblehead, Mass. Spectacles	484,725	Oct. 18	1853	471	61	399
Sumpter, John J., *et al.* (See Rice, Joel T., assignor.)						
Sundberg, Per Theodor, Domnarfoet, Sweden. Rope-clutch	487,061	Nov. 29	3035	779	61	1247
Sunderland, William H., Miller, S. D. Pump	486,136	Nov. 15	1543	407	61	920
Sunderlin, William D., Green Island, N. Y. Pruning implement	483,588	Oct. 4	110	27	61	23
Sundstrom, Charles F., Michigamme, Mich. Braid-case	485,995	Nov. 8	1295	344	61	855
Sundstrom, Karl J., assignor to Church & Co., Brooklyn, N. Y. Apparatus for washing sodium bicarbonate	488,702	Dec. 27	2412	598	61	1849
Suppiger, Joseph A., Hirslanden, near Zurich, Switzerland. Stove	486,910	Nov. 29	2810	728	61	1203
Sutcliffe, William W., New Orleans, La. Hollow grate-bar	483,797	Oct. 4	413	{102 / 103}	61	86
Suter, Jacob, New York, N. Y. Water or wind wheel	487,381	Dec. 6	232	63	61	1367
Sutherland, John A. (See Knoeller, Charles E., assignor.)						
Sutton, Benjamin F., Brooklyn, assignor to Parker, Stearns & Sutton, New York, N. Y. Closed conduit for electric railways	484,924	Oct. 25	2211	570	61	485
Sutton, Frederick E., assignor to M. Sutton, Lawrence, Kans. Sad-iron heater	483,878	Oct. 4	530	133	61	110
Sutton, Mary. (See Sutton, Frederick R., assignor.)						
Svensson, Alfred, Rockford, Ill. Picture-exhibitor	488,042	Dec. 13	1338	331	61	1605
Svensson, Claes A., assignor to A. D. Isham, Buffalo, N. Y. Lineman's wire-grip	486,911	Nov. 29	2811	728	61	1203
Swain & Fuller Manufacturing Company. (See Washburn, Albion K., assignor.)						
Swain, Walter, and W. Philipson, Astley Bridge, near Bolton, England. Tire for bicycles	488,852	Dec. 27	2645	655	61	1897
Swan, Lyman A., Freeman, N. Y. Hay-rack	486,978	Nov. 29	2911	752	61	1223
Swan, Phineas W., Winchester, Mass. Automatic sprinkler	488,257	Dec. 20	1692	423	61	1692
Swaney, Lemuel H., *et al.* (See Neal, Andrew J., assignor.)						
Swann, Scott, *et al.* (See Crighton, William, assignor.)						
Swarthout, Albert S., Poughkeepsie, N. Y. Bicycle	486,687	Nov. 22	2393	{625 / 626}	61	1103
Swartz, Samuel, Detroit, Mich. Bending-press	487,435	Dec. 6	345	88	61	1389
Swartz, William B., Buckeye City, Ohio. Horse-power	484,524	Oct. 18	1542	391	61	336
Sweatt, William R. (See Hubbard, Arthur O., assignor.)						
Sweeney, John, assignor of one-half to J. Graham & Co., New Haven, Conn. Awning-blind hinge	488,509	Dec. 20	2100	521	61	1774
Sweeney, Vardiman T., Springfield, Ky. Wagon-brake	484,687	Oct. 18	1801	458	61	388
Sweet, James C., assignor of one-half to J. H. Lanway, South Arm, Mich. Folding square	484,261	Oct. 11	1118	283	61	242
Sweet, Wallach & Co. (See Newell, John, assignor.)						
Sweet, William A., Syracuse, N. Y. Pool-ball frame	484,562	Oct. 18	1598	406	61	347
Sweetland, Jerome B., Pontiac, Mich. Mop-wringer	484,688	Oct. 18	1803	458	61	389
Sweeting, Thomas H., Philadelphia, Pa. Tire for bicycle-wheels	485,898	Nov. 8	1133	300	61	821
Swetland, Irvin S., Glenalpin, Nebr. Feed-trough	485,022	Oct. 25	2370	609	61	516
Swift, Gustavus F. (See Gardner, Horace C., assignor.)						
Swigert, John, Blanchester, Ohio. Hame	485,996	Nov. 8	1296	344	61	855
Swing, Marcus A., Washington, Ind. Feed-regulator	484,064	Oct. 11	810	205	61	181
Swiss, Morris R., assignor of one-third to J. Hecht, New York, N. Y. Ignition-cap for cigars or cigarettes	487,232	Nov. 29	3340	850	61	1304
Sykes, John B., Dawson, Pa. Adjustable shingle-gage	485,436	Nov. 1	441	118	61	662
Sylvia, George, Waltham, Mass., assignor to Brown & Sharpe Manufacturing Company, Providence, R. I. Automatic stop for micrometer-gages	487,410	Dec. 6	302	78	61	1381
Syllwasschy, Elise, Magdeburg-Neustadt, Germany. Spool-holder	484,563	Oct. 18	1599	406	61	348
Symington, Thomas A. (See Reilly, John, assignor.)						
Symonds, S. C. (See Bennett, Henry P., assignor.)						
Synnott, Thomas W., Wenonah, N. J. Bottle-mold	487,498	Dec. 6	440	113	61	1408
Sypher, Abraham J., Chicago, Ill. Rock-drill	485,720	Nov. 8	872	234	61	769
Sypher, Abraham J., Chicago, Ill. Rock-drill	485,721	Nov. 8	876	234	61	769
Sypher, Abraham J., Chicago, Ill. Rock-drill	485,722	Nov. 8	879	235	61	770
Taber, Clark, Sumpter, Oreg. Water-wheel	488,723	Dec. 27	2442	606	61	1855
Taber, Orrin, Nashua, N. H. Harness-saddle	486,912	Nov. 29	2813	{728 / 729}	61	1203
Tackitt, Louis L., Kasoga, Tex. Guard for horned stock	486,743	Nov. 22	2483	647	61	1122
Taft, Cyrus A., assignor to Whitin Machine Works, Whitinsville, Mass. Stop-motion for drawing-frames	485,997	Nov. 8	1297	344	61	855
Taft, Cyrus A., assignor to Whitin Machine Works, Whitinsville, Mass. Separator for spinning-machines	486,798	Nov. 22	2574	671	61	1139
Taft, Cyrus A., assignor to Whitin Machine Works, Whitinsville, Mass. Yarn-separator for spinning-machines	488,136	Dec. 13	1482	373	61	1635
Taft, George W. (See Chambers and Taft.)						
Taft, Walter E., assignor, by mesne assignments, to Anchor Pearl Company, Providence, R. I. Tool for making pearl buttons, &c	487,233	Nov. 29	3341	850	61	1304
Taft, Walter E., assignor to Anchor Pearl Company of Portland, Me., Providence, R. I. Making pearl buttons	487,234	Nov. 29	3342	850	61	1305
Taggart, Rollin C., Defiance, Ohio. Saw-handle fastening	488,703	Dec. 27	2413	598	61	1849
Taintor, Giles, Keene, N. H., assignor, by mesne assignments, to Western Electric Company, of Illinois. Multiple-switchboard signal	487,795	Dec. 13	923	233	61	1522

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Taitte, Annet, Leigneux, France. Velocipede	488,745	Dec. 27	2473	614, 615	61	1862
Takken, Evert, Holland, Mich. Wagon-gear	486,304	Nov. 15	1795	472	61	972
Talbot, George, Aix-la-Chapelle, Germany. Railway dumping-car	488,295	Dec. 20	1754	441, 442	61	1704
Tallmadge, James W., Albany, N. Y., assignor to F. W. Beardsley, Bayonne, N. J. Apparatus for the manufacture of carbureted hydrogen	484,475	Oct. 18	1467	374	61	321
Tallmage, Horace K., Buffalo, N. Y. Furnace	486,990	Nov. 29	2931	756	61	1227
Tallman, Harry E., Cleveland, Ohio. Apparatus for photographic printing	486,913	Nov. 29	2814	729	61	1204
Tallman, William M., *et al.* (See Beers, Franklin H., assignor.)						
Tandy, Gustavus A. (See Huvelle, Hector, assignor.)						
Tannenberg, August O., assignor to W. H. Bofinger, New Orleans, La. Lock	485,899	Nov. 8	1133	300	61	821
Tannenberg, August O., assignor to W. H. Bofinger, New Orleans, La. Combined side and center brace attachment for step-ladders	485,900	Nov. 8	1135	301	61	821
Tanner, David W., assignor of one-half to S. P. Rice, Marlin, and L. T. Fuller, Calvert, Tex. Thill-coupling	488,908	Dec. 27	2734	674	61	1916
Tannrath, Fritz, Chicago, Ill. Combined coal-scuttle and ash-sifter	486,360	Nov. 15	1881	495	61	988
Tapley, John P. (See Dore and Tapley.)						
Tardy, Jules H., Glencoe, Minn. Elevator	487,104	Nov. 29	3110	798	61	1263
Tartt, Pembroke S., Wingo, Ky. Side-bar vehicle	484,689	Oct. 18	1804	459	61	389
Tate, Robert, Toronto, Canada. Hot-air furnace	483,819	Oct. 4	448	111	61	92
Tatro, Joseph A., Beaver Falls, Pa. Machine for making wire fencing-bands	485,723	Nov. 8	881	235, 236, 237	61	770
Tausig, Emil, *et al.* (See Bowerbank, John W., assignor.)						
Tausig, Solomon, *et al.* (See Bowerbank, John W., assignor.)						
Tausaig, Emil and S., New York, N. Y. Disinfecting apparatus	487,588	Dec. 6	567	145	61	1434
Tausaig, Salomon. (See Tausaig, Emil and S.)						
Taylor, Albert J., Silver City, Nev. Grinding-pan	485,069	Oct. 25	2432	625	61	529
Taylor, Andrew W., Wayne, Nebr. Swinging gate	486,799	Nov. 22	2576	671, 672	61	1140
Taylor, Bayard E., Chicago, Ill. Safety gas-burner	486,991	Nov. 29	2933	756	61	1227
Taylor, Benjamin F., Newark, N. J., assignor of one-half to J. Moffet, New York, N. Y. Pneumatic stack for steam-boilers	483,589	Oct. 4	111	27	61	24
Taylor, Bruce, Wooster, assignor to Ney Manufacturing Company, Canton, Ohio. Track for hay-carriers	486,812	Nov. 22	2598	676	61	1145
Taylor, Charles C., New York, N. Y. Suspensory garment	484,065	Oct. 11	812	205	61	181
Taylor, Charles H., Montreal, Canada, assignor of one-half to J. W. Carmichael, Wilmington, N. C. Tool to fish out drills, &c., from Artesian wells	488,909	Dec. 27	2735	675	61	1916
Taylor, E. C., *et al.* (See Gunn, John M., assignor.)						
Taylor, Edward T., Oakland, Cal. Cash-register	485,998	Nov. 8	1298	344, 345	61	855
Taylor, Edward U. (See Layer and Taylor.)						
Taylor, George, *et al.* (See Knowles, Louis T., assignor.)						
Taylor, Horace H., assignor of one-half to W. M. Story, Fresno, Cal. Tray for drying fruit	486,137	Nov. 15	1544	407	61	921
Taylor, Isaiah H., Baltimore, Md. Sheet-metal can-body	483,660	Oct. 4	210	52	61	43
Taylor, Melvin A., assignor of one-half to G. M. Blair, Oakland, Cal. Routing-machine	487,589	Dec. 6	568	145, 146	61	1434
Taylor, Phillips T., San Francisco, Cal. Cable-railway grip	485,237	Nov. 1	123	37	61	599
Taylor, R. E., *et al.* (See Gunn, John M., assignor.)						
Taylor, Samuel S., Schooley's Mountain, assignor of one-half to F. Bell, Jersey City, N. J. Tension device	488,230	Dec. 20	1655	413	61	1685
Taylor, Warren H., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Tool for forming key-slots	487,701	Dec. 6	748	191	61	1468
Tefft, Emory N., assignor of one-half to R. Cook and C. H. Fryer, Iola, Kans. Electric belt	485,754	Nov. 8	921	246	61	778
Tench, George H., Pottsville, Pa. Conveyer	488,460	Dec. 20	2020	504	61	1757
Terrell, Charles M., and G. T. Bartlett, San Antonio, Tex. Press	488,296	Dec. 20	1755	442	61	1704
Terry, Edward, and W. Hayter, London, England. Stocking	488,487	Dec. 20	2066	513	61	1766
Terskoee, Anders C., St. Paul, Minn., assignor of one-half to J. W. Skinner, La Crosse, Wis. Easel	486,549	Nov. 22	2102	571	61	1058
Terstegen, Fred, Elizabeth, N. J. Timepiece repeating mechanism	487,398	Dec. 6	258	70, 71	61	1372
Terstegen, Fred, Elizabeth, N. J. Timepiece repeating mechanism	487,399	Dec. 6	270	71, 72	61	1375
Tesla Electric Company. (See Tesla, Nikola, assignor.)						
Tesla, Nikola, assignor to Tesla Electric Company, New York, N. Y. System of electrical transmission of power	487,796	Dec. 13	925	233, 234	61	1522
Tessaro, Angelo, Padua, Italy. Apparatus for writing music	484,262	Oct. 11	1120	284, 285, 286, 287	61	242
Thacher, John B. (See Fasoldt, Ernest C., assignor.)						
Therien, Nelson, Hammond, Ind. Ceiling ornament	488,531	Dec. 20	2141	530	61	1780
Thissell, Earl A., Northampton, Mass. Scissors-sharpener	488,043	Dec. 13	1339	332	61	1605
Thoeat, Martin, Monticello, assignor of one-half to J. Milne, Scotch Grove, Iowa. Bail-ear for buckets	483,798	Oct. 4	415	103	61	87
Thomas, Carlyle W., Boston, Mass., assignor to Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Power-transmitting friction clutch-pulley	485,513	Nov. 1	548	146	61	685
Thomas, Carroll, Omaha, Nebr. Umbrella	488,407	Dec. 20	1934	485	61	1739
Thomas, Daniel M., Columbia, Pa. Stove	486,946	Nov. 29	2867	740	61	1214
Thomas, Edmund M., Little Rock, Ark. Device for treating patients by electricity	485,238	Nov. 1	124	38	61	599
Thomas, Edward S., and J. E. Littlejohn, Cedar Rapids, Iowa. Car-coupling	483,879	Oct. 4	531	134	61	110
Thomas, George, Royersford, Pa. Fence-post	488,724	Dec. 27	2443	606	61	1856
Thomas, George G. (See Kline and Thomas.)						
Thomas, John C., assignor of one-half to E. H. Bemus, Jamestown, N. Y. Washing-machine	485,143	Oct. 25	2540	652	61	551
Thomas, John E., assignor to S. A. Woods Machine Company, Boston, Mass. Planing-machine	483,970	Oct. 4	674	169	61	139
Thomas, John W., Jr., Nashville, Tenn. Switch and signal mechanism	488,853	Dec. 27	2646	655	61	1897
Thomas, Joshua, Cleveland, Ohio. Feed-water regulator	488,619	Dec. 27	2274	564	61	1823
Thomas, William D. (See Grear and Thomas.)						
Thomas, William H., and G. F. Reynolds, assignors to W. W. Sanborn, Lewiston, Me. Crimping-machine	484,510	Oct. 18	1522	386, 387	61	332
Thomas, William R., Catasauqua, Pa. Mixing alloys	487,338	Dec. 6	162	46	61	1353

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Thompson, Albert A., Leadville, Colo. File for bills, periodicals, &c	485,514	Nov. 1	549	146	61	685
Thompson, Charles E., assignor to S. Palmer, Lansingburg, N. Y. Apparatus for inserting plugs in brush-heads	485,670	Nov. 8	795	212	61	752
Thompson, Charles H., *et al.* (See Jennings, Charles C., assignor.)						
Thompson & Co., William. (See Hopkins, William H., assignor.)						
Thompson, Evert M., assignor to Nordyke & Marmon Company, Indianapolis, Ind. Sack-case for packing-machines	486,960	Nov. 29	2885	745	61	1218
Thompson, Evert M., assignor to Nordyke & Marmon Company, Indianapolis, Ind. Packing-machine	487,355	Dec. 6	192	52, 53	61	1359
Thompson, Fred. W., Brooklyn, assignor to Twist Pipe Company, New York, N. Y. Drop-hammer	488,620	Dec. 27	2275	564	61	1823
Thompson, George A., Brooklyn, N. Y. Screening device for coal-pockets	483,799	Oct. 4	416	103	61	87
Thompson, George R., Brockton, Mass. Car-coupling	488,586	Dec. 27	2228	552	61	1814
Thompson, George W., Sag Harbor, N. Y. Rein-holder	487,975	Dec. 13	1203	300	61	1576
Thompson, James W., and R. Golling, Lenoir City, Tenn. Table-leg fastener	486,305	Nov. 15	1796	472	61	972
Thompson, Joseph T., Oneida, N. Y. Rake	486,361	Nov. 15	1882	495	61	989
Thompson & Norris Company. (See Chapin, William G., assignor.)						
Thompson, Ralph P., assignor to John M. Waddel Manufacturing Company, Greenfield, Ohio. Cash register and indicator	485,240	Nov. 1	129	39	61	599
Thompson, Valdemar C. (See Dodge, Isaac F., assignor.)						
Thomson, Alexander, Lake Charles, La. Stereotype-plate and holder	486,240	Nov. 15	1691	448	61	950
Thomson Electric Welding Company. (See Thomson, Elihu, assignor.)						
Thomson, Elihu, Swampscott, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Armature for dynamos and motors	483,700	Oct. 4	267	66	61	56
Thomson, Elihu, Swampscott, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Continuous-current transformer	485,669	Nov. 8	793	211, 212	61	751
Thomson, Elihu, Swampscott, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Electrical transformer	486,916	Nov. 29	2818	730	61	1205
Thomson, Elihu, Swampscott, Mass., assignor to Thomson Electric Welding Company, of Maine. Electric welding	487,302	Dec. 6	99	30	61	1341
Thomson, Elihu, Lynn, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Regulator for dynamo-electric machines	485,239	Nov. 1	126	38	61	599
Thomson, Elihu, New Britain, Conn., assignor to Thomson-Houston Electric Company, Boston, Mass. Electric-arc lamp	488,585	Dec. 27	2225	551, 552	61	1813
Thomson-Houston Electric Company. (See Bassett, Norman C., assignor.)						
Thomson-Houston Electric Company. (See Ekström, Axel, assignor.)						
Thomson-Houston Electric Company. (See Elkins, William H., assignor.)						
Thomson-Houston Electric Company. (See Fiske, Jonathan P. B., assignor.)						
Thomson-Houston Electric Company. (See Hoppes, John J., assignor.)						
Thomson-Houston Electric Company. (See Moore and Henry, assignors.)						
Thomson-Houston Electric Company. (See Rice, Edwin W., Jr., assignor.)						
Thomson-Houston Electric Company. (See Thomson, Elihu, assignor.)						
Thomson-Houston Electric Company. (See Van Depoele, Charles J., assignor.)						
Thomson Hydraulic Company. (See Thomson, John, assignor.)						
Thomson, John, Brooklyn, N. Y., assignor to Thomson Hydraulic Company, Newark, N. J. Disk water-meter	485,437	Nov. 1	443	118, 119	61	663
Thomson, John, Brooklyn, N. Y., assignor to Thomson Hydraulic Company, Newark, N. J. Positive proportional water-meter	485,438	Nov. 1	444	119	61	663
Thomson, John, Brooklyn, N. Y., assignor to Thomson Hydraulic Company, Newark, N. J. Multiple proportional meter	485,439	Nov. 1	446	119	61	663
Thomson, Mary J., administratrix. (See Serrell, James E.)						
Thomson, Robert W., and E. M. Phelps, Lynn, Mass., assignors to Hand Method Finishing Machine Company, Nashua, N. H. Machine for overstitching buttonhole-thrums	484,647	Oct. 18	1739	441, 442, 443	61	375
Thomson Van Depoele Electric Mining Company. (See Pocock, Francis A., assignor.)						
Thomson, William B., assignor to Detroit Paper Package Company, Detroit, Mich. Pail	486,800	Nov. 22	2577	672	61	1140
Thorén, Emil G., Kristianstad, Sweden. Sowing-machine	483,623	Oct. 4	160	39	61	33
Thornbeck, John, Malvern, Canada. Folding rocking-chair	488,704	Dec. 27	2414	599	61	1850
Thorne, Joel W., New York, N. Y. Puzzle	483,820	Oct. 4	449	112	61	93
Thornhill, Herbert E., Lyons, N. Y. Pen or pencil carrier	485,440	Nov. 1	447	120	61	663
Thornton, Chester B., assignor of one-half to W. E. Thornton, Kaintuck, Idaho. Plow attachment	484,943	Oct. 25	2240	577	61	491
Thornton, John, Melbourne, Victoria. Spark-arrester	485,901	Nov. 8	1135	301	61	821
Thornton, William E. (See Thornton, Chester B., assignor.)						
Thornton, Winfield G., Minneapolis, Minn. T-square	486,186	Nov. 15	1608	426, 427	61	934
Thornycroft, John I. (See Barnaby, Sydney W., assignor.)						
Thorp, Charles, Trenton, Wis. Thill-coupling	488,781	Dec. 27	2529	628	61	1873
Thorp, Charles, Trenton, Wis. Thill-coupling	488,782	Dec. 27	2530	628	61	1873
Thurell, John, North Adams, assignor of one-half to J. B. Keany, Milford, Mass. Furnace-grate	487,648	Dec. 6	661	170	61	1452
Thowless, Arthur J., assignor to O. M. Thowless, Newark, N. J. Process of and apparatus for forming solid metal ingots	484,476	Oct. 18	1470	374	61	321
Thowless, Orlando M. (See Thowless, Arthur J., assignor.)						
Threlkeld, Calvert W. and C. H., Alfred Centre, N. Y. Chain propeller	485,241	Nov. 1	131	39, 40	61	600
Threlkeld, Colin H. (See Threlkeld, Calvert W. and C. H.)						
Throckmorton, Isaac N. (See Conway, Harrison V., assignor.)						
Thron, John E., Philadelphia, Pa. Electric bell	484,762	Oct. 18	1919	489	61	414
Throop, Josephine L., Greencastle, Ind. Universal adjustable lifter	487,105	Nov. 29	3112	798	61	1263
Thum, Otto and W., Grand Rapids, Mich. Sticky fly-paper. (Reissue)	11,276	Oct. 11	1316	336	61	280
Thum, Otto and W., Grand Rapids, Mich. Book of sticky fly-paper	486,138	Nov. 15	1545	408	61	921
Thum, William. (See Thum, Otto and W.)						
Thum, William. (See Thum, Otto and W.) (Reissue.)						
Thurston, Edwin L., Cleveland, Ohio, assignor to L. Watson, Denver, Colo. Puzzle	487,797	Dec. 13	928	234	61	1523
Thurston, Edwin L., Cleveland, Ohio, assignor to L. Watson, Denver, Colo. Puzzle	487,798	Dec. 13	930	235	61	1523
Thurston, Henry C., Norwich, Conn., assignor to Morison-Allen Company, New York, N. Y. Distributing feed-nozzle for filters	488,297	Dec. 20	1756	442	61	1704
Thurston, Henry W., Woodside, N. Y., and E. Stenersen, Rockaway, N. J., assignors of one-third to G. R. Barss, Brooklyn, N. Y. Bicycle	483,661	Oct. 4	211	52	61	43
Tighe, Lewis, Detroit, Mich. Device for the transmission of power	487,303	Dec. 6	102	30	61	1342
Tilbery, Scott. (See Beadure and Tilbery.)						
Tilden, James A., Hyde Park, assignor to Hersey Manufacturing Company, Boston, Mass. Watchman's electric time-recorder	485,591	Nov. 1	668	177, 178	61	711
Tilden, James A., Hyde Park, Mass., assignor to Hersey Manufacturing Company, Portland, Me. Disk water-meter	486,992	Nov. 29	2934	756, 757	61	1227

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Tilden, James A., Hyde Park, Mass., assignor to Hersey Manufacturing Company, Portland, Me. Rotary water-meter	488,587	Dec. 27	2230	552	61	1814
Tileston, Henry M., Kansas City, Mo. Girth-fastener	485,481	Nov. 1	507	134	61	675
Tileston, Henry M., Kansas City, Mo. Band-fastener	485,482	Nov. 1	508	134	61	675
Tillinghast, Pardon W., Providence, R. I. Velocipede	486,914	Nov. 29	2815	729	61	1204
Tillinghast, Pardon W., Providence, R. I. Pneumatic tire	486,915	Nov. 29	2817	729	61	1205
Tillmann, E. M., *et al.* (See Hacke, Karl W., assignor.)						
Tillmann, H., *et al.* (See Hacke, Karl W., assignor.)						
Tilton, Josephus S. (See Gray, Isaac C., assignor.)						
Timby, Theodore R., Washington, D. C. Process of and apparatus for aging liquors	485,999	Nov. 8	1300	345, 346	61	856
Timby, Theodore R., Washington, D. C. Apparatus for aging wines, spirits, or other liquors	486,000	Nov. 8	1303	346, 347	61	856
Timken, Henry, San Diego, Cal. Vehicle-spring	487,201	Nov. 29	3256	833	61	1291
Timken, Henry, San Diego, Cal. Vehicle-spring	487,202	Nov. 29	3259	834	61	1291
Tindall, Charles E., *et al.* (See Gillespie, Cyrus E., assignor.)						
Tingley, Horace W., Michigan City, Ind., assignor to Automatic Turning Company, Chicago, Ill. Rotary lathe	488,372	Dec. 20	1885	471, 472, 473	61	1729
Tinnemeyer, Frederick C., Evansville, Ind. Roof-valley	484,263	Oct. 11	1128	287	61	243
Tinsley, Rufus W., Union, S. C. Coupling for pneumatic car-brakes	486,001	Nov. 8	1304	347	61	856
Tinsley, Rufus W., Union, S. C. Water-elevator	486,002	Nov. 8	1306	347, 348	61	856
Tinsman, Samuel H., assignor to Morris Manufacturing Company, Morris, Ill. Draft-equalizer	485,144	Oct. 25	2542	652	61	551
Tipson, William A., San Francisco, Cal. Pipe-making machine	485,242	Nov. 1	132	40	61	600
Titzel, John A., Glenshaw, Pa. Saturating articles or substances	486,744	Nov. 22	2483	648	61	1122
Tloczynski, Apollonius A. (See Wurzburg and Tloczynski.)						
Tobey, Henry A., Toledo, Ohio. Gas-meter	487,907	Dec. 13	1103	276	61	1557
Tobey, Henry A., Toledo, Ohio. Gas-meter register	487,908	Dec. 13	1106	276	61	1557
Tobey, Henry A., Toledo, Ohio. Art of and mechanism for recording the state of meter-registers	487,909	Dec. 13	1107	277	61	1557
Toble, Charles E., Hiawatha, Kans. Automatic regulator for windmills	486,688	Nov. 22	2395	626	61	1104
Todd, Edmund N., Newark, N. J. Apparatus for the manufacture of transparent sheets of pyroxyline	483,701	Oct. 4	269	66	61	56
Todd, Jefferson D., assignor of one-half to J. M. Garner, Chico, Cal. Sheep-shears	484,379	Oct. 11	1307	334	61	278
Todd, John R., Glenrock, Wyo. Branding-tool	487,304	Dec. 6	103	30	61	1342
Todd, Samuel G., New Haven, Conn. Releasing device	487,062	Nov. 29	3037	779	61	1247
Toledo Bicycle Company. (See Kenney and Cable, assignors.)						
Toledo Electric Heating Company. (See Perkins and Jones, assignors.)						
Toliver, Charles T., and P. Ruffin, Boston, Mass. Odor-removing device for cooking-stoves	486,550	Nov. 22	2164	571	61	1058
Tomlinson, Jonas, assignor of one-half to E. P. McNally, Brinkley, Ark. Lamp-chimney protector	484,564	Oct. 18	1600	406	61	348
Tomlinson, Thomas, London, England. Apparatus for distribution of electricity	487,356	Dec. 6	194	53, 54	61	1359
Toney, Squire, assignor of one-half to M. Brown, Viroqua, Wis. Lath	487,166	Nov. 29	3205	821	61	1281
Tong, Lucius G. (See Slater, George L., assignor.)						
Tonks, Harry and T., Newark, N. J. Pearl-button machine	485,338	Nov. 1	286	77, 78	61	630
Tonks, Thomas. (See Tonks, Harry and T.)						
Toole, Oswald E., Hunnewell, Mo. Tobacco-cutter	488,588	Dec. 27	2232	552	61	1815
Toone, Benjamin, Nottingham, England. Jacquard punch-selecting apparatus	487,499	Dec. 6	441	113, 114	61	1408
Toops, John W., Kiousville, Ohio. Gravity-latch	485,724	Nov. 8	884	237	61	771
Toops, John W., Kiousville, Ohio. Key	485,725	Nov. 8	885	237	61	771
Topp, George A., *et al.* (See Cook, Thomas R., assignor.)						
Torrance, George J. (See Pawling, William M., assignor.)						
Toucey, Ferris D., assignor of three-fourths to F. C. Johnson, Minneapolis, Minn. Rotary valve	487,687	Dec. 6	732	187	61	1465
Toucey, Ferris D., assignor of three-fourths to F. C. Johnson, Minneapolis, Minn. Balanced slide-valve	488,488	Dec. 20	2066	513	61	1767
Touch, John E., Christchurch, New Zealand. Gearing	488,373	Dec. 20	1899	473	61	1730
Tower, Clinton A., Cleveland, Ohio. Car-coupling	487,546	Dec. 6	512	133	61	1422
Tower, Clinton A., Cleveland, Ohio. Car-coupling	487,649	Dec. 6	663	171	61	1453
Tower, Clinton A., Cleveland, Ohio. Car-coupling	487,650	Dec. 6	666	171, 172	61	1453
Tower, Clinton A., Cleveland, Ohio, assignor to Empire Car Coupler Company, Weehawken, N. J. Car-coupling	484,125	Oct. 11	890	226, 227	61	197
Tower, Daniel L., Brooklyn, N. Y. Change making and delivering device	486,201	Nov. 15	1628	431	61	937
Towler, Maximilian J. L., Detroit, Mich. Detachable calk for horseshoes	487,038	Nov. 29	3002	773	61	1240
Towne, E. B. (See Hay, Walter, assignor.)						
Townsend, John R., Bloomsburg, Pa. Lead-pencil attachment for fountain-pens	487,799	Dec. 13	932	235	61	1524
Townsend, Louis, Evansville, Ind. Harness-suspending device	488,854	Dec. 27	2647	655	61	1897
Townsend, Ralph, New York, N. Y. Recoil attachment for gun-stocks	488,855	Dec. 27	2648	656	61	1897
Tozier, G. W., *et al.* (See Hendricks, Frank P., assignor.)						
Tracy, John E., and A. N. Graham, Chicago, Ill. Twine-holder	488,856	Dec. 27	2650	656	61	1897
Tragethon, Arne S., Kensett, Iowa. Power-transmitter	484,066	Oct. 11	813	206	61	181
Tragethon, Arne S., Kensett, Iowa. Grinding-mill	486,003	Nov. 8	1307	348	61	857
Tramblay, Felix, Chicago, Ill. Check-file	486,993	Nov. 29	2935	757	61	1227
Travera, Vincent P. (See Rood, Albert O., assignor.)						
Travis, Albert P., Grundy Centre, Iowa. Car-seal	485,070	Oct. 25	2433	625	61	529
Treadwell, Wellington C., Adrian, Mich. Ice-cream mold	486,362	Nov. 15	1883	496	61	989
Treadley, John, assignor of three-fourths to J. W. Schorr, O. Stifel, and C. Noll, St. Louis, Mo. Car-brake	486,801	Nov. 22	2578	672	61	1140
Tribbett, Francis M., Abingdon, Ill. Sawbuck	486,415	Nov. 15	1973	523	61	1007
Trillich, Heinrich, Munich, Germany. Coffee substitute and preparing the same	488,801	Dec. 27	2562	636	61	1880
Tripp, Henry A., *et al.* (See Barber, Arthur J., assignor.)						
Tripp, Walter, *et al.* (See Barber, Arthur J., assignor.)						
Trist, Nicholas B., Pittsburg, Pa. Means for shaping metal plates, bars, &c.	484,264	Oct. 11	1129	287, 288	61	243
Tritz, Joseph, Burlington, Iowa. Meat-mixing machine	488,098	Dec. 13	1425	356	61	1623
Trix, John, assignor to American Injector Company, Detroit, Mich. Injector	488,099	Dec. 13	1426	356	61	1623
Troast, William F., and S. R. Slaymaker, assignors to Slaymaker, Barry & Co., Lancaster, Pa. Padlock	488,231	Dec. 20	1655	413	61	1685
Troll, Joseph, Belleville, Ill. Apparatus for delineating the moon's orbit	487,800	Dec. 13	933	235	61	1524

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Trossen, August, *et al.* (See Doty, James, assignor.)						
Troth, William H. (See Nichols, Abel P., assignor.)						
Trout, Carver C., Sharon, Pa. Fence	487,083	Nov. 29	3070	788	61	1254
Trouvé, Gustave. (See Haas and Trouvé.)						
Trowbridge, Munn, Hackensack, N. J. Belt-holder	488,639	Dec. 27	2309	572	61	1829
Troy Steel and Iron Company. (See Arnold, Everett D., assignor.)						
Truax, Charles H., Chicago, Ill. Surgical pump	487,136	Nov. 29	3154	808, 809	61	1271
Truax, George E., Denver, Colo. Steam-boiler cleaner	487,651	Dec. 6	669	172	61	1454
Truitt, Owen K., Washington, D. C. Device for moistening the leaves of press-copy books	485,592	Nov. 1	671	178	61	712
Trussell Automatic Freezer Company. (See Trussell, Wilburt C., assignor.)						
Trussell, Wilburt C., Boston, Mass., assignor to Trussell Automatic Freezer Company, of Maine. Refrigerating compound	484,983	Oct. 25	2299	.....	61	502
Trussell, Wilburt C., Boston, Mass., assignor to Trussell Automatic Freezer Company, of Maine. Refrigerator	486,841	Nov. 22	2649	692	61	1156
Tschantz, Abraham J., Orville, Ohio. Oil-can	487,500	Dec. 6	444	114	61	1409
Tubbs, N. B. (See Noble, Samuel C., assignor.)						
Tuch, Charles L. (See King and Tuch.)						
Tuck, Josiah H. L., San Francisco, assignor of one-half to E. E. Tucker, Stockton, Cal. Cable	488,640	Dec. 27	2310	572	61	1829
Tucker, E. E. (See Tuck, Josiah H. L., assignor.)						
Tucker, Stephen D., *et al.* (See Crowell, Luther C., assignor.)						
Tuller, Willis E., assignor of one-half to H. Smith, Willink, N. Y. Eaves-trough hanger	484,347	Oct. 11	1259	321	61	268
Tulloch, James, Angels, Cal. Concentrator	486,622	Nov. 22	2293	598	61	1092
Turk, Frank W., *et al.* (See Violett, Ashford W., Jr., assignor.)						
Turk, Thomas, assignor of one-half to W. G. Crow, London, England. Boat-detaching apparatus	484,648	Oct. 18	1742	443	61	375
Turley, Leslie C., Portsmouth, Ohio. Paving-brick	487,652	Dec. 6	670	172	61	1454
Turner, Adelaide S., London, England. Ear-compressing cap	488,802	Dec. 27	2563	636	61	1880
Turner, Ephraim M., St. Louis, Mo., assignor of one-half to R. E. Maddox, Fort Worth, Tex. Elevated railway	488,154	Dec. 13	1519	381	61	1642
Turner, Ephraim M., St. Louis, Mo., assignor of one-half to R. E. Maddox, Fort Worth, Tex. Elevated railway	488,155	Dec. 13	1521	381	61	1642
Turner, Ephraim M., St. Louis, Mo., assignor of one-half to R. E. Maddox, Fort Worth, Tex. Elevated railway	488,156	Dec. 13	1521	382	61	1643
Turner, Ephraim M., St. Louis, Mo., assignor of one-half to R. E. Maddox, Fort Worth, Tex. Double-track elevated railway	488,157	Dec. 13	1524	382, 383	61	1643
Turner, George T. (See Lewis, Walter, assignor.)						
Turner, Jessee W., and J. H. Engle, Louisiana, Mo. Ventilated boot or shoe	485,243	Nov. 1	134	40	61	601
Turner, Joseph S. (See Hadaway, John B., assignor.)						
Turner, William A., assignor to American Indicator Company, San Francisco, Cal. Street or station indicator	486,514	Nov. 22	2116	559	61	1049
Turner, William H., Indianapolis, Ind. Heating apparatus	487,653	Dec. 6	671	173	61	1454
Turner, Willis H., Jackson, Mich. Newspaper-holder	486,139	Nov. 15	1546	408	61	921
Turpin, William J., Oakdale Station, Pa. Stove-mat	483,880	Oct. 4	533	134	61	110
Tuttle, Edwin N., Beverly, Mass. Whip-socket	484,067	Oct. 11	814	206	61	182
Tverdal, Ole, assignor to United States Cash Register Company, Stoughton, Wis. Cash-register	486,306	Nov. 15	1797	472, 473, 474, 475	61	972
Tweeden, Ole, West Superior, Wis. Car-coupling	484,477	Oct. 18	1471	375	61	321
Twist Pipe Company. (See Thompson, Fred. W., assignor.)						
Twitchell, Herbert E. (See Burnett, William P., assignor.)						
Twitchell, Myron A., Moville, assignor of three-fifths to J. S. Wheeler, Sioux City, Iowa. Cartridge-crimping machine	484,868	Oct. 25	2108	543	61	465
Twombly, Orison. (See McKenney, George F., assignor.)						
Tyler, Alfred H., and J. S. E. de Vesian, London, England. Apparatus for raising sunken vessels	485,398	Nov. 1	387	104, 105	61	652
Tyner, George N., *et al.* (See Landfear, William R., assignor.)						
Uhrig, Emil, Westend, near Berlin, Germany. Meat-chopper	484,525	Oct. 18	1543	391, 392	61	336
Uhlig, Franz, Topkowitz, near Badenbach, Austria-Hungary. Hauling-windlass	485,515	Nov. 1	550	146, 147	61	685
Ulin, John O., Ludington, Mich. Cigar-case	486,004	Nov. 8	1309	348	61	857
Ullmann, George F., Brooklyn, N. Y. Roof	485,516	Nov. 1	551	147	61	685
Ullmann, Moritz, Stuttgart, Germany. Caliper-joint	485,339	Nov. 1	288	78	61	631
Ullmann, William, *et al.* (See Ward, William H., assignor.)						
Ulrich, Max, assignor to A. G. Hill, Northampton, Mass. Steam-engine	484,069	Oct. 11	818	207	61	182
Umholtz, Charles W., Bristol, Va. Exhaust-nozzle	487,137	Nov. 29	3156	809	61	1271
Umphrey, Henry, and J. Weekes, Carleton Place, Canada. Sleigh	487,501	Dec. 6	444	114, 115	61	1409
Unbehend, Jacob J., assignor to Judson L. Thomson Manufacturing Company, Waltham, Mass. Rivet-holder	488,510	Dec. 20	2102	522	61	1774
Underkircher, Christian A., Allegan, Mich. Tool for twisting wire	487,459	Dec. 6	380	99	61	1396
Underwood, William H. (See Sears, George, assignor.)						
Union Switch and Signal Company. (See Stupakoff, Simon H., assignor.)						
Union Switch and Signal Company. (See Young, John V., assignor.)						
United Gas Improvement Company. (See Collins, Charles R., assignor.)						
United States Butter Extractor Company. (See Andersson, Gustaf M., assignor.)						
United States Cash Register Company. (See Tverdal, Ole, assignor.)						
United States Chemical Company. (See Shepard, Henry W., assignor.)						
United States Durolithic Company. (See Enricht, Louis, assignor.)						
Unzicker, Hermann, and T. Masel; said Masel assignor to Chicago Iron Works, Chicago, Ill. Valve-gear	485,360	Nov. 1	327	87, 88	61	639
Urbain, Eugene, Brooklyn, N. Y. Railway-signal	484,068	Oct. 11	815	206, 207	61	182
Uren, Richard, Ripley, assignor of one-half to M. Van Orden, Houghton, Mich. Safety appliance for elevators	488,137	Dec. 13	1484	374	61	1635
Urrutia, Claudio, Guatemala, Guatemala. Surveyor's target	486,202	Nov. 15	1630	431	61	938
Utley, Milton R., assignor of one-third to F. P. Seavey, Minneapolis, Minn. Electric switch	484,380	Oct. 11	1308	334	61	279
Utley, Thomas, Liverpool, England. Ship's ventilator	484,348	Oct. 11	1260	321, 322	61	269
Vail, Charles E., Salt Lake City, Utah Ter. Coat-hook	486,187	Nov. 15	1608	427	61	934

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Vail, Charles E., Salt Lake City, Utah Ter. Shoe-horn	487,860	Dec. 13	1029	257	61	1543
Valentine, Charles J., Newark, N. J. Automatic valve for steam-heaters	484,526	Oct. 18	1545	392	61	336
Valentine, George S. (See Smith, Frederick I., assignor.)						
Valentine, Milton H. (See Fisher, Andrew S., assignor.)						
Van Alstyne, Pierre, *et al.* (See Reinhardt, James H., assignor.)						
Van Altena, John, Milwaukee, Wis. Tool for turning fruit-jar covers	484,070	Oct. 11	820	207	61	183
Van Altena, John G., Milwaukee, Wis. Fruit-jar holder	485,850	Nov. 8	1049	280	61	803
Van Auken, Clarence E., Chicago, Ill. Boiler-feeder	487,305	Dec. 6	104	31	61	1342
Van Benschoten, Adelbert L., Danbury, Conn. Hat-rack	484,886	Oct. 25	2133	548	61	469
Van Coughnet, Charles B., Watertown, N. Y. Mechanical moving-power	483,881	Oct. 4	534	134	61	111
Van Depoele, Charles J., deceased, Lynn; C. A. Coffin and A. Wahl, executors, and assignors to Thomson-Houston Electric Company, Boston, Mass. System of electrical distribution	488,928	Dec. 27	2759	681	61	1921
Van Depoele, Charles J., deceased, Lynn; C. A. Coffin and A. Wahl, executors, and assignors to Thomson-Houston Electric Company, Boston, Mass. Electric-railway trolley	488,929	Dec. 27	2761	682	61	1922
Van Depoele, Charles J., deceased, Lynn; C. A. Coffin and A. Wahl, executors, and assignors to Thomson-Houston Electric Company, Boston, Mass. Electric locomotive	488,930	Dec. 27	2763	682	61	1922
Van Derveer, John R. (See Holmes, Daniel M., assignor.)						
Van Dorn, James H., Cleveland, Ohio. Portable building	485,306	Nov. 1	223	63	61	618
Van Dyke, James E., and H. Stobaugh, assignors of one-third to E. M. Bowers, Clarksville, Tex. Cotton-press	488,641	Dec. 27	2311	572	61	1829
Van Etten, Scott. (See Kilburn and Van Etten.)						
Van Heers, L. Leopold. (See Chabaud, Van Heers, and Allard.)						
Van Heusen, John M., Albany, N. Y. Sterilizer for surgical bandages	488,725	Dec. 27	2444	607	61	1856
Van Houten, Frank H., Matteawan, assignor to Dutchess Tool Company, Fishkill-on-the-Hudson, N. Y. Rotary cutter-head	487,436	Dec. 6	346	89	61	1390
Van Orden, Matthew. (See Uren, Richard, assignor.)						
Van Schaick, Eugene. (See Sterry, George E., Jr., assignor.)						
Van Vradenburg, Peter D., Binghamton, N. Y. Car brake and starter	486,140	Nov. 15	1547	408, 409	61	921
Van Wagenen, George, New York, N. Y. Combined shearing and punching machine	484,832	Oct. 25	2048	524, 525	61	453
Van Wagoner, Benjamin B., Waldwick, N. J. Checkrein	488,642	Dec. 27	2313	573	61	1830
Vanderbilt, William H. (See Cary, Spencer C., assignor.)						
Vanderpool, Albion A., assignor of one-half to D. H. Barnett, Newark, N. J. Closed conduit for electric railways	483,702	Oct. 4	270	67	61	57
Vannauker, George N., Shickshinny, Pa. Folding umbrella	487,654	Dec. 6	672	173	61	1454
Vansant, William R., Philadelphia, Pa. Implement for withdrawing photograph-cards from album-leaves	488,341	Dec. 20	1831	457	61	1718
Vanwart, Edwin, Port Madison, Wash. Combination-lock	486,170	Nov. 15	1589	421	61	930
Varley, James A., Toronto, Canada. Combined broiler and toaster	487,138	Nov. 29	3156	809	61	1272
Vassar, George, Jr., New York, N. Y. Steam-generator	483,882	Oct. 4	535	135	61	111
Vaughan, David M., *et al.* (See Westrup, Oliver F., assignor.)	487,382	Dec. 6	233	63	61	1367
Vaughan, Louis H., and W. E. Evans, London, England. Type-writing machine	485,593	Nov. 1	672	178	61	712
Vawter, William A. (See Stoelting, Christian H., assignor.)						
Vawter, William A. (See Weber, George W., assignor.)						
Vayre, Henri, San Francisco, Cal. Awning	483,950	Oct. 4	635	160	61	131
Venker, John B., St. Louis, Mo. Electrically-heated hand-stamp	484,574	Oct. 18	1613	410	61	351
Ventski, August J., Graudenz, Germany. Feed-steaming apparatus for animals	485,399	Nov. 1	390	105	61	652
Vereinigte Holzindustrie, Fabrik Frankenthal. (See Heep, Conrad, assignor.)						
Verhaven, Frank T., Spencer, Iowa. Fish or game carrier	486,649	Nov. 22	2339	611	61	1092
Vernon, Archer T., assignor of one-half to O. W. Carr and D. Peacock, Greensborough, N. C. Mosquito-canopy	485,117	Oct. 25	2498	642	61	543
Veronee, George W., Ten Mile Hill, S. C. Rock-catcher. (Reissue)	11,293	Dec. 6	750	192	61	1469
Verpillier, Emil, assignor of one-half to C. W. Graves, Newark, N. J. Joint for dolls	487,801	Dec. 13	1030	258	61	1543
Verrill, Edgar F., San Francisco, Cal. Copying-press	484,748	Oct. 18	1897	484	61	409
Very, Alpha O., Boston, Mass. Feeding mechanism for sewing-machines	486,961	Nov. 29	2886	746	61	1218
Vesian, John S. E. de. (See Tyler and de Vesian.)						
Viau, Benjamin, New York, N. Y. Dress-chart	487,801	Dec. 13	934	235	61	1524
Victor Safe and Lock Company. (See Banm, Jacob, assignor.)						
Vierling, Louis, *et al.* (See Rosa, Edgar C., assignor.)						
Vierling, Robert, *et al.* (See Rosa, Edgar C., assignor.)						
Vieweg, Arno. (See Fischer, Gustav, assignor.)						
Vinton, John H., Boston, Mass. Method of and apparatus for charging soda-water	485,244	Nov. 1	135	41	61	601
Viol, Reinhard, Frankfort-on-the-Main, Germany. Device for removing corns	485,726	Nov. 8	886	238	61	771
Violett, Ashford W., Jr., assignor of two-thirds to R. H. Webb and F. W. Turk, Bardwell, Ky. Wood-sawing machine	485,755	Nov. 8	922	247	61	778
Virgile, Edouard de, assignor to A. Bonnet, New York, N. Y. Toy or puzzle	486,141	Nov. 15	1548	409	61	922
Voegtly, Frank L. (See Schroeffel and Voegtly.)						
Vogel Cable Construction Company. (See Vogel and McIntosh, assignors.)						
Vogel, Charles, San Anselmo, Cal. Grip for cable railways	483,775	Oct. 4	382	95	61	80
Vogel, Charles, San Anselmo, Cal., and C. McIntosh, Tacoma, Wash., assignors to Vogel Cable Construction Company, of Colorado. Grip for cable railways	483,774	Oct. 4	379	94	61	79
Vogt, August G., Boerne, assignor of one-third to L. W. Madaraez and W. G. Kingsbury, San Antonio, Tex. Car-coupling	488,857	Dec. 27	2651	656	61	1898
Vogt, Frank A., Anderson, Ind. Can-opener	486,307	Nov. 15	1805	475	61	973
Volgt, Ferdinand F., Chicago Ill. Screw-threading machine	485,245	Nov. 1	137	41	61	601
Volk, John, *et al.* (See Ward, William H., assignor.)						
Vollrath, Carl A. W., Sheboygan, Wis. Producing enameled iron ware	488,683	Dec. 27	2385	.....	61	1844
Vols, Adam. (See Vols, John, A., and H.)						
Vols, Henry. (See Vols, John, A., and H.)						
Vols, John, A., and H., Baltimore, Md. Portable tower-platform fire-escape	487,039	Nov. 29	3003	773	61	1240
Voorhees, Charles. (See Voorhees, Richard D., P., and C.)						
Voorhees, Philip. (See Voorhees, Richard D., P., and C.)						
Voorhees, Richard D., P., and C., Flora, Ind. Ironing-table	488,858	Dec. 27	2653	657	61	1899
Voree, Albert F., Frankfort, Mich. Music-leaf turner	486,573	Nov. 22	2206	580	61	1065
Vose, Charles W., Chatham, Mass. Ink-holder for pens	486,623	Nov. 22	2295	599	61	1083
Vulcan Iron Works. (See McIntire Bartlett, assignor.)						
W. S. Reed Toy Company. (See Gilman, Willard H., assignor.)						
Waechtler, Bruno. (See Weigel and Waechtler.)						
Waffenfabrik Mauser. (See Mauser, Paul, assignor.)						
Waggoner, James G., Columbus, Ind. Car-coupling	486,516	Nov. 22	2120	559	61	1050
Wagner, August, assignor to Schaum & Uhlinger, Philadelphia, Pa. Swivel-loom	488,511	Dec. 20	2103	522	61	1774

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Wagner, August, assignor to Schaum & Uhlinger, Philadelphia, Pa. Swivel-loom	488,512	Dec. 20	2104	522	61	1775
Wagner, Chapin, Vernon, Ind. Plow	486,515	Nov. 22	2118	559	61	1050
Wagner, Ezra B. (See Bolenbaugh and Wagner.)						
Wagner, Franz X. (See Barron, Wagner, and Densmore.)						
Wagner, George F., Philadelphia, Pa. Sod-cutter	485,441	Nov. 1	447	120	61	663
Wagner, Jacob, Sidney, Ohio. Valve-operating mechanism	484,965	Oct. 11	1131	289	61	244
Wagner, Peter, New York, N. Y. Electric bell	487,437	Dec. 6	347	89, 90	61	1390
Wahl, Albert, *et al.*, executors. (See Van Depoele, Charles J.)						
Wahlstrom, John A., Salem, Oreg. Flour-reel machine	484,478	Oct. 18	1472	375	61	321
Waibel, Carl, Neustadt-on-the-Hardt, Bavaria, Germany. Process of and machine for manufacturing wadding from cellulose and cotton	483,590	Oct. 4	114	27	61	24
Waide, Daniel, San Francisco, Cal. Bookbinding	484,349	Oct. 11	1261	322	61	269
Wainwright, Jacob T., Pittsburg, Pa. Working heat-regenerators	483,752	Oct. 4	343	86	61	72
Wait, Philip H., Sandy Hill, N. Y. Machine for disintegrating jute, &c.	485,246	Nov. 1	141	42	61	602
Waite, Henry E., *et al.* (See Ethridge, Martin V. B., assignor.)						
Walcott, W. Stuart. (See Hastings, Matthew E., assignor.)						
Walden, Joseph, Orange, N. J. Lace-fastening hook	485,247	Nov. 1	142	42	61	602
Waldron, George E., *et al.* (See Gibbons, John, assignor.)						
Wales, Simeon W., North Abington, Mass. Protector for shoe-uppers	486,171	Nov. 15	1590	421	61	930
Walfard, Armand, Rheims, France. Treatment of sparkling wine	485,248	Nov. 1	143	42	61	602
Walker, Charles W., Strang, Nebr. Type-writing machine	487,802	Dec. 13	935	236	61	1524
Walker, Edward A., Canajoharie, N. Y. Baling-machine	485,824	Nov. 8	1009	270, 271, 272	61	795
Walker, Frederick A., Evanston, assignor to S. H. Sinclair Company, Chicago, Ill. Ironing-machine clamp	486,650	Nov. 22	2340	611, 612	61	1092
Walker, Frederick J., Milton, Pa. Pencil-sharpener	484,071	Oct. 11	821	208	61	183
Walker, James S., Denver, Colo. Coin-case	485,778	Nov. 8	950	255	61	784
Walker, Lewis C., Indianapolis, Ind. Sash-fastener. (Reissue)	11,287	Nov. 22	2653	693	61	1157
Walker, Nelson A., Chicago, Ill. Buttercup-cutter	486,917	Nov. 29	2920	730	61	1305
Walker, Sarah L., Bloomville, Ohio. Lamp-stove	483,591	Oct. 4	115	28	61	24
Walkup, Andrew E., Omaha, Nebr. Court-file-cover fastener	486,962	Nov. 29	2888	746	61	1218
Wall, Charles W., assignor of two-thirds to E. E. Fitch and W. P. Kirst, Buffalo, N. Y. Combined ash pan and sifter	484,621	Oct. 18	1689	429	61	366
Wall, Joseph, Seaforth England. Signal-lantern	485,071	Oct. 25	2434	625, 626	61	529
Wall, Michael V. (See West, Harley E., assignor.)						
Wallace, Eugene, Minneapolis, Minn. Street-sweeping machine	485,727	Nov. 8	887	238	61	771
Wallace, John B., and J. W. Stemm, assignors of one-half to C. A. Allen and A. W. Ball, Galion, Ohio. Antifriction lubricating compound	487,903	Nov. 29	3260	.....	61	1291
Wallace, Robert J., and L. A. Henrich, Denver, Colo. Coin-holder	487,438	Dec. 6	350	90	61	1391
Waller, Elwyn, and C. A. Sniffin, New York, N. Y. Making white lead	488,374	Dec. 20	1890	.....	61	1731
Wallin, Joseph, Boston, Mass. Calendar	488,461	Dec. 20	2021	505	61	1758
Walsh, Edward, Jr., St. Louis, Mo. Apparatus for rolling plate-glass	487,803	Dec. 13	936	236, 237	61	1525
Walsh, Francis A., Milwaukee, Wis. Sheet-metal vessel	485,851	Nov. 8	1051	280	61	804
Walsh, John E., New York, N. Y. Hoisting apparatus	488,044	Dec. 13	1340	332	61	1605
Walsh, William E., assignor of one-half to W. B. Craig, San Francisco, Cal. Means for transmitting power	487,805	Dec. 13	939	237	61	1525
Walshe, Henry T., and M. Sallenger, Boston, Mass. Street-sprinkler	487,804	Dec. 13	937	237	61	1525
Walter, Charles F. (See Walter, Henry G. and C. F.)						
Walter, Henry G. and C. F., Scranton, Pa. Cash register and indicator	485,307	Nov. 1	226	64	61	619
Walter, Lucas. (See Blankensop, Peter, Jr., assignor.)						
Walton, Jacob G., Davilla, Tex. Horse-power	486,142	Nov. 15	1549	409	61	922
Wangler, Joseph F., St. Louis, Mo. Downdraft-furnace for steam-boilers	487,896	Dec. 13	1083	271	61	1553
Ward, Alexander F., assignor to W. L. Mahon, Detroit, Mich. Machine for pointing and lapping hoops	484,126	Oct. 11	891	227, 228	61	197
Ward, Barton B., New York, N. Y. Electric-lighting system	484,479	Oct. 18	1474	375	61	322
Ward, Barton B., New York, N. Y. Hanger-board for electric-arc lamps	484,480	Oct. 18	1476	376	61	322
Ward, Flavius N., Springfield, Mo. Car-coupling	487,357	Dec. 6	198	55	61	1360
Ward, Oring S., Los Gatos, Cal. Animal-trap	488,232	Dec. 20	1657	413	61	1685
Ward, Susan E., Phelps, N. Y. Thermometer-scale	483,662	Oct. 4	212	52	61	43
Ward, William H., Topeka, Kans., assignor, by mesne assignments, to W. B. Ferguson, J. Weyerhaeuser, J. Volk, J. Ohlweiler, G. Stengle, G. E. Lambert, Rock Island, Ill., E. Lange, Davenport, Iowa, W. Ulmann, Moline, and A. A. Chapman, Galesburg, Ill. Axle-lubricator	483,624	Oct. 4	161	40	61	33
Ward, William S., and H. F. Lancashire, Nottingham, assignors to I. L. Berridge, Leicester, England. Circular-knitting machine	488,100	Dec. 13	1428	356, 357	61	1624
Wardell, Joshua M., Cadillac, Mich. Electro-therapeutic process and apparatus	487,655	Dec. 6	674	173	61	1455
Warden, Henry, Philadelphia, Pa. Gas-engine	486,143	Nov. 15	1550	409, 410, 411	61	922
Warden, Henry, Philadelphia, Pa. Boiler-tube expander	488,589	Dec. 27	2233	553	61	1815
Wardwell, Simon W., Jr., Boston, assignor to J. R. Leeson, Newton, Mass. Cop	486,745	Nov. 22	2485	648, 649	61	1122
Waring, Daniel S., *et al.* (See Selkirk, Alexander, assignor.)						
Waring, John, Manchester, Conn. Resistance-box	487,306	Dec. 6	107	31	61	1343
Warner, Ernest P. (See Scribner and Warner.)						
Warner, Ernest P., assignor to Western Electric Company, Chicago, Ill. Armature-winding for dynamo-electric machines	483,729	Oct. 4	306	76, 77	61	64
Warner, Ernest P., assignor to Western Electric Company, Chicago, Ill. Electric switch	486,241	Nov. 15	1693	448	61	950
Warner, Ernest P., assignor to Western Electric Company, Chicago, Ill. Connection for commutators and armature-wires	487,307	Dec. 6	108	32	61	1343
Warner, Jacob B. (See Britton, Louis H., assignor.)						
Warner, Warren E., Rochester, N. Y. Mold for casting can-openers	488,590	Dec. 27	2237	553, 554	61	1816
Warren, Benjamin F., Brooklyn, N. Y. Box for holding cigarettes, &c.	488,910	Dec. 27	2737	675	61	1916
Warren, Edrick C., assignor of one-half to G. D. Roper, Rockford, Ill. Gas-stove	485,852	Nov. 8	1052	281	61	804
Warren, Frank H., Lynn, assignor to G. H. P. Flagg, Boston, Mass. Inseam-trimming machine	488,591	Dec. 27	2238	554	61	1816
Warren, Governor D., Coal Gate, Indian Ter. Mine-door	483,863	Oct. 4	536	135	61	111
Warren, Henry C., Boston, Mass. Machine for molding articles from plastic compounds	483,663	Oct. 4	213	53	61	44
Warren, James J., *et al.* (See Howe, John C., assignor.)						
Warren, John M., *et al.* (See Howe, John C., assignor.)						
Washburn, Albion K., Bridgewater, assignor to Swain & Fuller Manufacturing Company, Boston, Mass. Leather-skiving machine	486,813	Nov. 22	2599	677	61	1145

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Washburn, Christian, Bridgewater, Mass. Hammock-swinging apparatus	483,753	Oct. 4	345	86	61	72
Washburn, George A., assignor, by mesne assignments, to Ford-Washburn Storelectro Company, Cleveland, Ohio. Storage-battery	488,233	Dec. 20	1658	414	61	1685
Washburn, Samuel N., Little Falls, Wash. Potato-digger	485,118	Oct. 25	2500	642	61	544
Washer, William H., Grand Rapids, Mich. Folding table	486,517	Nov. 22	2120	560	61	1050
Washington, Samuel, Harpurhey, assignor to himself, J. C. Sequeira, Manchester, and T. A. Scholes, Eccles, England. Feeding and weighing apparatus	488,101	Dec. 13	1429	{357 358	61	1624
Waterbury Machine Company. (See Lamb and Campbell, assignors.)						
Waterhouse, Thomas, Cornish, Me. Roll-carriage	486,203	Nov. 15	1632	432	61	938
Waterman, John H., Detroit, Mich. Boiler	484,350	Oct. 11	1262	322	61	269
Waters, Frank J., assignor of one-half to G. Howe, Providence, R. I. Engine-governor	485,361	Nov. 1	330	88	61	640
Watkins, F. E., *et al.* (See Rose, Robert, assignor.) (Reissue.)						
Watkins, Frank W., New Bedford, Mass. Trousers-stretcher	488,234	Dec. 20	1660	414	61	1686
Watson, Abram P., Lake City, Minn. Pneumatic chair	484,072	Oct. 11	822	208	61	183
Watson, George W., Boston, Mass. Shoe-fastening	484,381	Oct. 11	1309	335	61	279
Watson, Leonard. (See Thurston, Edwin L., assignor.)						
Watson, Lewis H., Newark, N. J. Ironing-machine	484,925	Oct. 25	2213	570	61	485
Watson, Thomas G., Paris, Canada. Attachment for varnish or similar bottles	487,502	Dec. 6	445	115	61	1409
Watson, William D., Rochdale, England. Machine for raising the pile of woven fabrics	485,400	Nov. 1	391	{105 106	61	652
Watt, Mary B., *et al.* (See Brazier, Edwin, assignor.)						
Watt, Robert, Akron, Ohio. Puzzle	486,308	Nov. 15	1805	476	61	974
Wattles, Cyrs B., Elizabeth, N. J., assignor of one-half to Daimler Motor Company, Long Island City, N. Y. Screw-propeller	484,382	Oct. 11	1310	335	61	279
Wattles, Luther H. (See Corliss and Wattles.)						
Way, Harry A., Burlington, Vt. Screen-frame	487,656	Dec. 6	675	174	61	1455
Wayland, Columbus A., Middlesborough, Ky. Bench-dog	487,106	Nov. 29	3112	798	61	1263
Wayne, Thomas L. (See Ohmer and Wayne.)						
Wead, Andrew M. (See Smith and Wead.)						
Weatherhead, Edward H., assignor to Cleveland Faucet Company, Cleveland, Ohio. Pump	484,383	Oct. 11	1313	336	61	279
Weatherman, James P., Highlandville, Mo. Grub-plow	485,308	Nov. 1	230	64	61	619
Weaver, Solomon F., Downs, Kans. Feed-box	487,308	Dec. 6	109	32	61	1343
Weaver, William, Westport, assignor to himself, W. A. Curtis, A. C. Wheeler, D. Hitchcock, and C. Lapham, Norwalk, Conn. Car-starter	488,462	Dec. 20	2023	505	61	1758
Webb, George B., Kinston, N. C. Ice-shaving machine	487,339	Dec. 6	162	46	61	1353
Webb, George H., Pawtucket, R. I. Center piece for the grates of forge-furnaces	488,235	Dec. 20	1660	414	61	1686
Webb, Henry C., Russiaville, Ind. Saw attachment	483,971	Oct. 4	677	169	61	140
Webb, Robert H., *et al.* (See Violett, Ashford W., Jr., assignor.)						
Webb, William J., Sabine Pass, Tex. Trunk-strap fastener	485,671	Nov. 8	797	212	61	752
Webber, William O., Erie, Pa. Steam-separator	486,144	Nov. 15	1553	411	61	923
Weber, Annie H. (See Weber, George A., assignor.)						
Weber, George, New York, N. Y. Reclining-chair	488,911	Dec. 27	2738	675	61	1916
Weber, George A., assignor to A. H. Weber, New York, N. Y. Roller and roller-bearing	487,884	Dec. 13	1066	267	61	1549
Weber, George W., assignor to W. A. Vawter, Chicago, Ill. Paper bag or envelope	488,783	Dec. 27	2532	628	61	1874
Weber, Henry C., Chicago, Ill. Flushing device for water-closets	486,994	Nov. 29	2938	757	61	1228
Webster, Charles S., Marysville, Kans. Fracture apparatus	485,672	Nov. 8	798	213	61	752
Webster, Edwin S. (See Stone and Webster.)						
Webster, Jerome J., Somerville, Mass., assignor, by mesne assignments, to Boston Cash Register Company, Portland, Me. Cash register and indicator	484,887	Oct. 25	2134	{549 550	61	470
Webster, Lewis T., Northfield, Mass. Hydraulic ram	484,266	Oct. 11	1132	289	61	244
Weed, Clinton A., Racine, Wis. Heater for stock-tanks	487,806	Dec. 13	941	238	61	1525
Weedfald, Ovidius K., *et al.* (See Berg, Peter V. P., assignor.)						
Weekes, James. (See Umphrey and Weekes.)						
Weeks, George, Oakland, Cal. Rail-joint	487,340	Dec. 6	165	46, 47	61	1353
Weems, Frank H., Quincy, Ill. Dampening-machine	488,102	Dec. 13	1431	358	61	1624
Wegg, David S. (See Peirce, Charles L., assignor.)						
Wegner, Dëtlef F., and A. A. Beltman, Tower City, N. D. Wagon-brake	488,489	Dec. 20	2069	514	61	1768
Wehrschmidt, John, Cleveland, Ohio. Gas-engine	484,168	Oct. 11	966	{248 249	61	211
Weichert, Frederick J. (See Leber, Victor, assignor.)						
Weidner, Phillip, Sailor Springs, Ill. Running-gear for vehicles	485,673	Nov. 8	799	213	61	753
Weigel, Robert, and B. Waechtler, New York, N. Y. Barrel-heater	484,073	Oct. 11	823	208	61	183
Weightman, David B., Grand Rapids, Mich. Wardrobe	485,309	Nov. 1	231	64	61	620
Weimer, John A., *et al.* (See Galvin, James A., assignor.)						
Wein, John H., assignor of seven-tenths to H. and F. A. Fligelman and S. S. Singer, Helena, Mont. Safety-pin	488,931	Dec. 27	2766	683	61	1923
Weinmann, Ernest, and F. Lindhorst, St. Louis, Mo. Protecting-plate for spoke-sockets	486,995	Nov. 29	2940	758	61	1228
Weir, Frederic C. (See Harden, Edward W., assignor.)						
Weir, Frederic C. (See Harden and Conway, assignors.)						
Weis, Frank N. (See Weis, William C. and F. N.)						
Weis, William C. and F. N., assignors of two-thirds to W. H. Birkenhauer and H. W. Koelker, Toledo, Ohio. Game-counter	486,918	Nov. 29	2821	730	61	1205
Weishanpt, Frederick W. H., Washington, D. C. Machine for the manufacture of bridles for paint-brushes	487,309	Dec. 6	111	{32 33 34	61	1344
Weiskopf, Samuel. (See Phillips, Edwin G., assignor.)						
Weiss, Joseph. (See Gross and Beck, assignors.)						
Weiss, Louis T., Brooklyn, N. Y. Speed-indicator	486,651	Nov. 22	2341	612	61	1092
Weitzel, Herbert L., Oakland, Cal. Auxiliary steering-gear	488,746	Dec. 27	2474	615	61	1862
Welch, E. B., *et al.* (See Robinson, Thomas C., assignor.)						
Welch, James F., assignor to Glen Cove Machine Company, Limited, Brooklyn, N. Y. Worm-gear	486,304	Nov. 15	1632	432	61	938
Welch, James H., Pittsburg, Pa. Furnace plant	486,310	Nov. 15	1807	476	61	974
Welch, Thomas, assignor of one-half to G. E. Breck, Paw Paw, Mich. Car-coupling	486,159	Dec. 13	1528	383	61	1644
Wellcome, Henry S., *et al.* (See Slater, Stanley R., assignor.)						
Weller, Giles W., Baker City, Oreg. Rock-crushing machine	485,517	Nov. 1	552	{147 148	61	685
Wells, Calvin. (See Jordan, Llewellyn E., assignor.)						
Wells, George H., Jr., assignor of one-half to S. Bloch, Lake Charles, La. Animal-trap	486,005	Nov. 8	1310	349	61	857
Wells, Nathan W., *et al.* (See Dickey, Foster, assignor.)						
Welmer, John E., Hiawatha, Kans. Pinking device	483,884	Oct. 4	537	136	61	112
Welsh, Franklin P., Omaha, Nebr. Device for raising or lowering suspended electric lights	488,298	Dec. 20	1757	442	61	1704
Wendel, John H., North Topeka, Kans. Cultivator	487,807	Dec. 13	941	238	61	1525

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Wendell, Menzo E. (See Wiles and Wendell.)						
Wendell, Menzo E., Troy, N. Y. Mangle	487,872	Dec. 13	1050	263	61	1546
Wentworth, William C., Dexter, Me. Whiffletree-hook	486,551	Nov. 22	2164	572	61	1058
Wentzel, Philippe, and H. Bletzer, Boston, Mass. Car-fender	487,547	Dec. 6	514	133	61	1422
Werling, Joseph, and J. F. Agnew, Minneapolis, Minn. Trolley-catcher	487,808	Dec. 13	943	238	61	1526
Werner, August, Brooklyn, N. Y. Vessel	486,006	Nov. 8	1311	349	61	857
Werner, Hermann. (See Pfleiderer and Werner.)						
Werner, Michael, Allegheny, Pa. Car-coupling	487,590	Dec. 6	570	146	61	1435
Wernicke, Otto H. L., Minneapolis, Minn. Sectional stock-case	487,460	Dec. 6	381	99	61	1396
Wesel, Ferdinand, New York, N. Y. Machine for cutting printers' rules and leads	484,984	Oct. 25	2299	{593 594	61	502
Weser, John A., New York, N. Y. Music-rack for musical-instrument cases	484,481	Oct. 18	1477	376	61	322
West, Charles H. (See McCardell, West, and McDonald.)						
West, Harley E., assignor of one-fourth to M. V. Wall, Toledo, Ohio. Metal wheel	483,703	Oct. 4	273	67	61	57
West, James, assignor of one-half to S. Cupples, St. Louis, Mo. Manufacture of paper bags	487,862	Dec. 13	1032	258	61	1543
West, Simeon L., Washington, D. C. Filter	488,621	Dec. 27	2276	565	61	1824
West, William S., Temple, Ga. Cotton-seed planter	485,518	Nov. 1	553	148	61	686
Westen, William H., Traverse City, Mich. Hupple	487,863	Dec. 13	1034	258	61	1543
Westerbeck, Frederick, St. Louis, Mo. Reinforced shipping-can	485,119	Oct. 25	2502	643	61	544
Westermann, Albert, *et al.* (See Hos, Adolf, assignor.)						
Western Electric Company. (See Bell, Oro A., assignor.)						
Western Electric Company. (See Carty, John J., assignor.)						
Western Electric Company. (See McCulloch, Alfred H., assignor.)						
Western Electric Company. (See McQuarrie, James L., assignor.)						
Western Electric Company. (See Scribner, Charles E., assignor.)						
Western Electric Company. (See Scribner and Warner, assignors.)						
Western Electric Company. (See Taintor, Giles, assignor.)						
Western Electric Company. (See Warner, Ernest P., assignor.)						
Westervelt, George C., South Bend, Ind. Plow-culter	484,127	Oct. 11	893	228	61	198
Westervelt, George C., South Bend, Ind. Side-hill plow	484,128	Oct. 11	894	229	61	198
Westervelt, George C., South Bend, Ind. Plow	484,129	Oct. 11	896	229	61	198
Westinghouse Company. (See Barnes, Dana A., assignor.)						
Westinghouse Electric and Manufacturing Company. (See Lamme, Benjamin G., assignor.)						
Westinghouse Electric and Manufacturing Company. (See Shallenberger, Oliver B., assignor.)						
Weston, Edward, Newark, N. J. Electrical measuring-instrument	486,689	Nov. 22	2398	626	61	1104
Weston, Thomas A., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Worm-wheel mechanism	486,814	Nov. 22	2601	677	61	1145
Westphal, Henry, Chicago, Ill. Coin-controlled umbrella-stand	486,145	Nov. 15	1554	{411 412 413	61	923
Westrup, Oliver F., Liverpool, England. Paper-file	484,267	Oct. 11	1135	{289 290	61	245
Westrup, Oliver F., assignor of one-half to M. Higginson and D. M. Vaughan, Liverpool, England. Binding device for periodicals, newspapers, &c	484,268	Oct. 11	1138	290	61	245
Westwood, Frederick, and W. H. Butler, Birmingham, England. Wheel for velocipedes	486,146	Nov. 15	1558	413	61	924
Wetherill, William C., Joplin, Mo. Reduction of complex ores	484,269	Oct. 11	1139	.....	61	245
Wetmore, Frank E. (See Arnold and Wetmore.)						
Wetter, Joseph. (See Sanders, Frank, assignor.)						
Wetterhahn, Eduard, St. Louis, Mo. Mechanic's square	484,575	Oct. 18	1614	410	61	351
Weyerhaeuser, John, *et al.* (See Ward, William H., assignor.)						
Weymouth, Richard W., and H. T. Fulton, Pueblo, Colo. Car-coupling	487,341	Dec. 6	167	47	61	1353
Wharton, William, Jr., Philadelphia, Pa. Railway-chair	483,592	Oct. 4	116	28	61	24
Wheat, James H., Dayton, Ohio. Steam-engine valve	486,148	Nov. 15	1560	{413 414	61	924
Wheaton, Orson E., Grundy Centre, Iowa. Seal-lock	487,591	Dec. 6	571	146	61	1435
Wheaton, William R., Springfield, Mass. Sewing-machine	487,383	Dec. 6	234	63	61	1367
Wheeler, Arthur C., *et al.* (See Weaver, William, assignor.)						
Wheeler, Charles E., Cleveland, Ohio. Label-holder	485,310	Nov. 1	231	64, 65	61	620
Wheeler, Joseph S. (See Twitchell, Myron A., assignor.)						
Wheeler, Milo L. G., North Yakima, Wash. Force-pump and water-elevator	484,169	Oct. 11	972	249	61	213
Wheeler, Reuben A., Sioux City, Iowa. Cake-griddle	484,482	Oct. 18	1479	377	61	323
Wheeler & Wilson Manufacturing Company. (See Thomas, Carlyle W., assignor.)						
Whelpley, James A., assignor to Keen Manufacturing Company, Keene, N. H. Hack-saw frame	487,358	Dec. 6	200	55	61	1360
Whipple, Alice A., Providence, R. I. Apparatus for sanding railway-tracks	484,926	Oct. 25	2214	571	61	486
Whipple, Eugene D., Creston, Iowa. Car-coupling	485,249	Nov. 1	143	43	61	603
Whitaker, Herschel, Detroit, Mich. Fishing-rod	486,802	Nov. 22	2581	672	61	1141
Whitaker, Samuel T. (See Merzberg, Whitaker, and Lanier.)						
White, Anthony C., assignor to American Bell Telephone Company, Boston, Mass. Telephone	485,311	Nov. 1	234	65	61	620
White, Bruce C., Chicago, Ill. Brick-machine	488,622	Dec. 27	2277	{565 566	61	1824
White, Bruce C., Chicago, Ill. Steam-heater for brick-presses	488,623	Dec. 27	2286	566	61	1825
White, Clermont A., Marcellus, Mich. Machine for addressing mail-matter	488,912	Dec. 27	2740	676	61	1917
White, Frederick L., Milwaukee, Wis., assignor of one-half to A. J. Pickett, Chicago, Ill. Heating by metal bath	487,310	Dec. 6	115	34, 35	61	1344
White, Harry K., U. S. Navy, assignor to White Magazine Rifle Company, Alexandria, Va. Recoil-operated magazine-firearm	488,409	Dec. 20	1936	{485 486	61	1740
White, James, Brooklyn, N. Y. Sheet-metal tile. (Reissue)	11,294	Dec. 13	1552	{389 390	61	1648
White, James, Chicago, Ill. Color-chart	488,375	Dec. 20	1892	473	61	1731
White, James G., Kansas City, Mo. Safety-valve	487,809	Dec. 13	944	238	61	1526
White Magazine Rifle Company. (See White, Harry K., assignor.)						
White, Nelson J., Lawrence, Mass. Sniping-machine	485,401	Nov. 1	392	106	61	653
White, Norman, Bay Ridge, N. Y. Surgical antiseptic thread-holder	485,674	Nov. 8	800	213	61	753
White, Otis A., Boston, Mass. Tube-expander	488,376	Dec. 20	1893	474	61	1731
White, Samuel T. (See Gardner, Fulton, assignor.)						
White, T. Stewart, *et al.* (See Raymond, Silas H., assignor.)						
White, William. (See Houghton and White.)						
White, William, Cleveland, Ohio. Flask for casting pipe	487,810	Dec. 13	944	239	61	1526
White, William J., Cleveland, Ohio. Safety attachment for elevators	486,518	Nov. 22	2121	560	61	1050
White, William W., Forest City, Ill. Derrick	485,756	Nov. 8	923	247	61	779

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Whitefield, George W., Evanston, Ill. Electrical device for preventing cribbing in horses	487,461	Dec. 6	382	100	61	1396
Whitehead, Benjamin S., Newark, N. J. Badge	484,527	Oct. 18	1546	392	61	336
Whitehead, Cabell, Washington, D. C. Treating mixtures containing sulphides of precious metals and copper	483,972	Oct. 4	677	.....	61	140
Whitehill, David B., North Clarendon, Pa. Auger-handle	486,463	Dec. 20	2025	505	61	1758
Whitehill, Robert, *et al.* (See Selkirk, Alexander, assignor.)						
Whitelaw, James, assignor to St. Louis Polar Plush Lined Sock Company, St. Louis, Mo. Attachment for knitting-machines	484,749	Oct. 18	1900	484	61	410
Whiteley, Amos. (See Broom, Henry, assignor.)						
Whiteman, Abram V. (See Sanborn, Benjamin F., assignor.)						
Whitesides, Edward G., *et al.* (See Engquist, Nicholas, assignor.)						
Whitesides, George C., *et al.* (See Engquist, Nicholas, assignor.)						
Whitford, Clark, assignor to himself and W. L. Hellums, Water Valley, Miss. Hub for vehicle-wheels	486,996	Nov. 29	2941	758	61	1228
Whitin Machine Works. (See Taft, Cyrus A., assignor.)						
Whiting, Amos C., Ladoga, Wis. Curd-cutter	487,811	Dec. 13	947	239	61	1527
Whitley, Albert, assignor of one-half to F. S. Robinson and R. O. Hornaby, Woodville, Miss. Cotton-chopper	488,592	Dec. 27	2238	554	61	1816
Whitman & Barnes Manufacturing Company. (See Hoenscheid, Peter, assignor.)						
Whitman, Charles E., St. Louis, Mo. Baling-press	485,072	Oct. 25	2436	626	61	530
Whitman, Russell, Oakland, Cal. Harness-saddle pad	483,754	Oct. 4	346	87	61	72
Whitney, Frank E. (See Stanley, Robert L., assignor.)						
Whitney, Willie D., Clarendon, N. Y. Wire-fabric machine	484,528	Oct. 18	1548	393	61	337
Whitten-Godding Cycle Company. (See Saladee, Cyrus W., assignor.)						
Whittingham, David L., Detroit, Mich., assignor to Ideal Manufacturing Company, of Michigan. Valve	484,384	Oct. 11	1315	336	61	280
Whittle, James H., Worcester, Mass. Screen for carding-engines	488,684	Dec. 27	2386	590 591	61	1844
Wich, Johann, Rothenfels, assignor to Mayer & Grammelspacher, Baden, Germany. Grater for culinary purposes	486,058	Nov. 8	1393	369	61	873
Wickey, Andrew, Chicago, Ill. Horse-power	486,652	Nov. 22	2343	612	61	1092
Wickey, Andrew, Chicago, Ill. Baling-press	486,997	Nov. 29	2942	758	61	1229
Wickey, Andrew, Chicago, Ill. Baling-press	487,503	Dec. 6	446	115	61	1409
Wickey, Edward W., Chicago, Ill. Bale-tie	487,504	Dec. 6	447	116	61	1410
Wickham, Dennis, Ware, England. Apparatus for filling and stoppering bottles	488,859	Dec. 27	2655	657	61	1899
Wickham, William S., *et al.* (See Hazard, Willet E., assignor.)						
Widick, Albert, Argonia, Kans. Grain-weigher	485,779	Nov. 8	951	255	61	784
Widmann, Albert V., *et al.* (See Wolf, Josef, assignor.)						
Wiedeke, Gustave, Dayton, Ohio. Cut-off and flue-tightener	485,442	Nov. 1	449	120	61	664
Wiedenmann, Herman C., Philadelphia, Pa. Stand for bicycles	488,464	Dec. 20	2026	506	61	1759
Wiedrich, Charles L., assignor to Pratt & Letchworth, Buffalo, N. Y. Hub-band	486,653	Nov. 22	2343	612 613	61	1093
Wieseckel, John, Brooklyn, N. Y. Needle	487,040	Nov. 29	3004	773	61	1240
Wiest, Daniel C., Mohrsville, Pa. Wrench	488,158	Dec. 13	1526	383	61	1643
Wiggers, Johann F., Hanover, Germany. Extension-table	488,465	Dec. 20	3028	506	61	1759
Wiggins, Richard L., Willimantic, Conn. Machine for reaming holes in spool-blocks	488,643	Dec. 27	2313	573	61	1830
Wiggins, Robert L. (See Morris and Wiggins.)						
Wike, John, Providence, R. I., assignor to Standard Horse Shoe Company, Wareham, Mass. Horseshoe-bending machine	484,750	Oct. 18	1901	485	61	410
Wilbor, Albert G., Jr., Chicago, Ill. Stable-gutter	487,548	Dec. 6	515	134	61	1423
Wilbur, Alfred, Indianapolis, Ind. Pipe-coupling	483,593	Oct. 4	117	28	61	95
Wilcox, Benajah, Gibson, N. Y. Automatic wagon-brake	488,644	Dec. 27	2319	574	61	1831
Wilcox, Camden L., West Williamsfield, Ohio. Fence-post	486,309	Nov. 15	1806	476	61	974
Wild, Annie L., Providence, R. I. Lacing-string	487,411	Dec. 6	304	78	61	1381
Wilder, Charles H., Boston, Mass., assignor of one-half to L. A. Wilder, Chicago, Ill. Apparatus for cooling and washing gas	486,150	Nov. 15	1563	414	61	924
Wilder Duplex Electric Burglar Alarm and Messenger Company. (See Wilder, Edmund R., assignor.)						
Wilder, Edmund R., Kansas City, Mo., assignor to Wilder Duplex Electric Burglar Alarm and Messenger Company, of West Virginia. Test-circuit for burglar-alarm systems	486,149	Nov. 15	1562	414	61	924
Wilder, Frank E., Salem, assignor to O. M. Angier, Boston, Mass. Machine for beveling heel-blanks	484,833	Oct. 25	2051	525 526	61	454
Wilder, Luke A. (See Wilder, Charles H., assignor.)						
Wilder, Moses G., Philadelphia, Pa. Gas heating-stove	486,205	Nov. 15	1633	432 433	61	938
Wilder, Moses G., Philadelphia, Pa. Group-governor	486,574	Nov. 22	2207	580	61	1066
Wilder, William H., Northampton, Mass. Oil-stove	486,311	Nov. 15	1810	477	61	975
Wilderman, Hugh H., Belleville, Ill. Drilling-machine	484,270	Oct. 11	1141	290	61	246
Wildi, Emil, Highland, Ill. Can-filling machine	486,746	Nov. 22	2487	649 650	61	1123
Wiles, Thomas S., Albany, and M. E. Wendell, Troy, N. Y. Compound doffer for manglea	487,592	Dec. 6	572	146	61	1435
Wiley, Charles D., assignor of one-sixteenth to G. W. Bennett, St. Louis, Mo. Brake-beam	486,835	Nov. 22	2640	689	61	1154
Wiley, Horace B., assignor of two-thirds to T. W. Wiley and J. J. Newport, St. Louis, Mo. Kitchen utensil	485,312	Nov. 1	235	65	61	620
Wiley, Thomas W., *et al.* (See Wiley, Horace B., assignor.)						
Wilgus, Daniel C., Los Angeles, Cal. Lawn-sprinkler	484,074	Oct. 11	824	208	61	183
Wilkie, Frederick, New York, N. Y. Implement for cutting pearl, &c	484,075	Oct. 11	825	209	61	184
Wilkins, Alexander G., assignor to Wilkins Shoe Button Fastener Company, Meadville, Pa. Button-setting machine	484,835	Oct. 25	2057	527	61	455
Wilkins, Charles L., Columbus, Ohio. Water-motor	484,271	Oct. 11	1143	290 291	61	246
Wilkins, Charles L., and A. F. Blesch, Columbus, Ohio. Siphon for water-closet tanks	484,834	Oct. 25	2055	526	61	454
Wilkins, Charles M., *et al.* (See Carter, Franklin S., assignor.)						
Wilkins, E. Ward, *et al.* (See Carter, Franklin S., assignor.)						
Wilkins, James S., Jr., Keene, N. H. Wheel toy	488,342	Dec. 20	1833	458	61	1719
Wilkins, John B., Farmington, Mo., assignor of one-half to T. W. Stringer, Vicksburg, Miss. Agricultural machine	484,690	Oct. 18	1805	459	61	389
Wilkins Shoe Button Fastener Company. (See Wilkins, Alexander G., assignor.)						
Wilkinson, Alfred, Bridgeport, Pa., assignor to Wilkinson Manufacturing Company, of Pennsylvania. Steam-boiler furnace	486,747	Nov. 22	2490	650	61	1123
Wilkinson, Asbury, Lake Charles, La. Sliding gate	486,803	Nov. 22	2581	673	61	1141
Wilkinson, Charles E., New Haven, and M. V. Palmer, Willimantic, Conn. Cop-holder for sewing-machine shuttles	487,910	Dec. 13	1109	277	61	1557

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Wilkinson Manufacturing Company. (See Wilkinson, Alfred, assignor.)						
Willard, Frederick G., Austin, Ill. Job-printing press	486,312	Nov. 15	1811	477 478	61	975
Willcock, Stephen, Toronto, Canada. Repeating-clock	488,103	Dec. 13	1432	359	61	1625
Willett, Samuel J., *et al.* (See Newman, Nelson, assignor.)						
Willey, George W., Brockton, Mass. Method of and means for making patterns for individual lasts	486,607	Nov. 22	2268	592	61	1077
Willgeroth, August, Stadtoldendorf, Germany. Heating and ventilating apparatus	484,272	Oct. 11	1146	291	61	246
William Deering & Company. (See Ellithorp, Orren S., assignor.)						
William Schollhorn Company. (See Bernard, William A., assignor.)						
William Wharton, Jr., and Company. (See Angerer, Victor, assignor.)						
William Wharton, Jr., and Company. (See Angerer and Pallander, assignors.)						
William Wharton, Jr., and Company. (See Samuel, Angerer, and Pallander, assignors.)						
Williams, A. Zeliff, Chicago, Ill. Brick or tile cutter	488,343	Dec. 20	1833	458 459	61	1719
Williams, Charles A., and L. K. Williams, deceased, Chicago, Ill.; A. W. McAllister, administrator. Pattern-table for sheet-metal-shearing machines	488,344	Dec. 20	1839	459 460	61	1720
Williams, Charles E., Milford, Mass. Upper-folding machine	488,593	Dec. 27	2240	555	61	1816
Williams & Co., J. H. (See Hammond, Henry, assignor.) (Reissue.)						
Williams, David. (See Reese and Williams.)						
Williams, David F., assignor to Albany Horse Nail Company, Albany, N. Y. Machine for making horseshoe-nails	484,836	Oct. 25	2059	528 529 530 531	61	455
Williams, Edward P., *et al.* (See Huston, John B., assignor.)						
Williams, Elkanah G., assignor of one-half to C. Sears, Harpster, Ohio. Bag-fastener	485,675	Nov. 8	801	214	61	753
Williams, Ezra T., Chicago, Ill. Fluid-fuel feeder	486,998	Nov. 29	2943	758	61	1229
Williams, Florance, assignor of one-half to L. S. Haskins, Seneca, Wis. Centrifugal honey-extractor	486,151	Nov. 15	1564	414	61	925
Williams, George H., *et al.* (See Morrell, Robert, assignor.)						
Williams, Henry B., assignor of one-half to L. A. Jeffreys, Rochester, N. Y. Water-meter	483,951	Oct. 4	636	160	61	131
Williams, Henry B., assignor of one-half to L. A. Jeffreys, Rochester, N. Y. Automatic marine speed and direction indicator	486,008	Nov. 8	1314	349 350	61	858
Williams, Irving E., *et al.* (See Merry, George G., assignor.)						
Williams, Jefferson D. (See Russell and Williams.)						
Williams, John. (See Palmer, Wesley, assignor.)						
Williams, John, Patricroft, England. Device for receiving coin and delivering tickets	487,139	Nov. 29	3159	810	61	1272
Williams, John A. and L. R., Ozark, Mo. Car-coupling	488,490	Dec. 20	3071	514	61	1768
Williams, John S., Trenton, N. J. Game-board	487,976	Dec. 13	1204	301	61	1577
Williams, Leonidas R. (See Williams, John A. and L. R.)						
Williams, Levi K. (See Williams, Charles A. and L. K.)						
Williams, Louis N. D. (See Scott and Williams.)						
Williams, Louis N. D., assignor of one-half to R. W. Scott, Philadelphia, Pa. Knitted stocking	485,073	Oct. 25	2438	627	61	530
Williams, Milton F. (See Little, Ezekiel C., assignor.)						
Williams, Richard G., L'Anse, Mich. Automatic bottle-stopper	485,443	Nov. 1	451	121	61	664
Williams, Robert T., St. Louis, Mo. Animal-trap	487,593	Dec. 6	574	147	61	1435
Williams, William, and J. H. Crook, Philadelphia, Pa. Hose and wire bridge	488,258	Dec. 20	1693	423	61	1692
Williams, William A. (See Ferguson, Robert G., assignor.)						
Williamson, George W., *et al.* (See Williamson, William C., assignor.)						
Williamson, John D., *et al.* (See Williamson, William C., assignor.)						
Williamson, Luther C., Union City, Ind. Refrigerating apparatus	486,655	Nov. 22	2345	613	61	1093
Williamson, William C., assignor to himself, G. W. and J. D. Williamson, Philadelphia, Pa. Steering apparatus for ships	486,007	Nov. 8	1312	349	61	858
Willimantic Linen Company. (See Reigh, Mark B., assignor.)						
Willms, Charles, Baltimore, Md. Induction apparatus	488,299	Dec. 20	1758	443	61	1705
Wills, Arthur W. (See Evans, Joseph, assignor.)						
Willsie, George E. (See Spalding and Willsie.)						
Willson, Thomas L., Brooklyn, N. Y. Electric locomotive	483,922	Oct. 4	451	112 113	61	93
Willson, Thomas L., Leaksville, N. C. Electrically reducing refractory compounds	486,575	Nov. 22	2209	.....	61	1066
Willyerd, S. L., *et al.* (See Carpenter, Conrad H., assignor.)						
Wilson, A. (See Boles, Jacob E., assignor.)						
Wilson, Adoniram J., Port Chester, N. Y., assignor to Hall Signal Company, of Maine. Electric railway-signal	485,728	Nov. 8	889	239	61	772
Wilson, Arthur R., *et al.* (See McKinney, Samuel C., assignor.)						
Wilson, Charles C., assignor of one-half to A. V. Jessup, Greensborough, N. C. Water-motor	488,860	Dec. 27	2656	657	61	1899
Wilson, David Y., Gum Tree, assignor of one-half to E. P. Moore, Parkesburg, Pa. Whiffletree-hook	488,491	Dec. 20	2072	514	61	1768
Wilson, George E., assignor to Minnesota Thresher Manufacturing Company, Stillwater, Minn. Rotating grain-meter	484,691	Oct. 18	1807	459	61	390
Wilson, Harriett D. T., New York, N. Y. One-wheel vehicle	487,359	Dec. 6	901	55	61	1360
Wilson, Homer T., Louisville, Ky. Electric burglar-alarm	483,695	Oct. 4	162	40	61	34
Wilson, James E. (See Hilton and Wilson.)						
Wilson, James E., New York, N. Y. Type-writing machine	487,897	Dec. 13	1085	271 272	61	1553
Wilson, James H., assignor of one-half to A. A. Coburn, Lowell, Mass. Automatic fire-extinguisher or sprinkler	485,519	Nov. 1	554	148	61	686
Wilson, John. (See Nelson, Alexander M., assignor.)						
Wilson, John A. L., Woodland, Ill. Grain-elevator	485,590	Nov. 1	555	149	61	686
Wilson, John B., Brooklyn, N. Y. Machine for cutting veneers	486,152	Nov. 15	1565	405	61	925
Wilson, John C., Boston, Mass., assignor to Municipal Signal Company, Portland, Me. Police signal system	486,206	Nov. 15	1635	433	61	939
Wilson, John R., assignor of one-half to N. P. Hyndman, Pittsburg, Pa. Automatic brake	487,412	Dec. 6	304	78	61	1381
Wilson, John S. (See Pendleton and Wilson.)						
Wilson, Joshua H., Todmorden, England. Bobbin used in spinning and twisting frames	488,045	Dec. 13	1341	332	61	1605
Wilson, Lucindia J., Hardy, Tex. Washing-machine	487,107	Nov. 29	3113	799	61	1263
Wilson, Matthew, Garrison, Iowa. Corn-husker	484,076	Oct. 11	827	209 210	61	184
Wilson, Robert E., Unionville, Ga. Agricultural scraper	484,273	Oct. 11	1147	292	61	247
Wilson, Robert M., Newberry, Pa. Suspender-buckle	484,274	Oct. 11	1148	292	61	247
Wilson, Samuel H., Webster, Mass. Metal railway-tie	488,821	Oct. 4	450	112	61	93
Wilson, Sarah E. L., Baltimore, Md. Hat or bonnet stand	486,654	Nov. 22	2345	613	61	1093

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Wilson, Washington, *et al.* (See McKinney, Samuel C., assignor.)						
Wilson, William C., assignor of two-thirds to J. R. Foran and W. H. Ehlers, Kansas City, Mo. Inhaler	486,519	Nov. 22	2123	560	61	1051
Wilson, William H., assignor of two-thirds to A. P. Spruance and C. H. McCormick, Indianapolis, Ind. Incrustation-preventer	484,837	Oct. 25	2067	531	61	457
Wimpee, George C., Rome, Ga. Lifting-jack	485,902	Nov. 8	1136	301	61	821
Winchester Repeating Arms Company. (See Bennett, Thomas G., assignor.)						
Winchester Repeating Arms Company. (See Browning, John M., assignor.)						
Winchester Repeating Arms Company. (See Browning, John M. and M. S., assignors.)						
Winchester Repeating Arms Company. (See Mason, William, assignor.)						
Windsor, B. F. (See Monzel, John, assignor.)						
Winget, Marion A., assignor of one-half to J. C. Briggs, Columbus, Ohio. Hopper for cigar-machines	486,919	Nov. 29	2822	731	61	1206
Winget, Marion A., assignor of one-half to J. C. Briggs, Columbus, Ohio. Cigar-mold	487,108	Nov. 29	3114	799	61	1264
Winship, William W., Washington, D. C. Torpedo-net	485,074	Oct. 25	2439	627	61	531
Winslow, George H., Pittsburg, Pa. Binder for leaves	484,275	Oct. 11	1149	292	61	247
Winslow, Joshua B. (See Strange, John F., assignor.)						
Winslow, William A., Watertown, N. Y. Passenger-car	486,313	Nov. 15	1813	478	61	975
Winters, Serdinia and S. A., Portland, Ind. Bodkin and stitch-ripper	488,861	Dec. 27	2657	658	61	1899
Winters, Serdinia and S. A., Portland, Ind. Guide for sewing-machines	488,862	Dec. 27	2658	658	61	1900
Winters, Seth A. (See Winters, Serdinia and S. A.)						
Winterateen, Jacob L. (See Frazee and Winterateen.)						
Wintjen, John G., Mount Vernon, N. Y. Dress-elevator	485,780	Nov. 8	952	256	61	785
Wintrode, Charles E., Huntington, Ind. Adjustable wire-twisting wrench	484,692	Oct. 18	1808	460	61	390
Wire Goods Company. (See Parmelee, Arthur W., assignor.)						
Wirt, Charles, Chicago, Ill. Insulating-joint	484,483	Oct. 18	1481	377	61	323
Wirt, Charles, Chicago, Ill. Insulator	488,046	Dec. 13	1342	332	61	1665
Wirt, Charles, Chicago, Ill., assignor to Electrical Supply Company, of Illinois. Rosette	484,077	Oct. 11	831	210	61	185
Wirt, Reuben D., Independence, Mo. Combined button and fastener	486,009	Nov. 8	1316	350	61	858
Wirt, Reuben D., Independence, Mo. Hose-reel	486,010	Nov. 8	1317	350	61	859
Wise, Morris, New York, N. Y. Heel	487,311	Dec. 6	117	35	61	1344
Wise, Morris, New York, N. Y. Interchangeable heel	487,312	Dec. 6	118	35	61	1345
Wise, Reuben M. (See Greenwood and Wise.)						
Witherbee, Benjamin A., *et al.* (See Stults, William H., assignor.)						
Withers, Samuel, London, England, and D. S. Covert, Chicago, Ill. Gas-engine	487,313	Dec. 6	118	36	61	1345
Withington, Charles B., Janesville, Wis. Automatic ejecting mechanism for breakdown guns	485,313	Nov. 1	236	65	61	620
Wittemann, Jacob F., Yonkers, N. Y. Apparatus for charging portable fountains with carbonated beverages	484,078	Oct. 11	832	210 / 211	61	185
Wittemann, Jacob F., Yonkers, N. Y. Carbonating fermented beverages	487,342	Dec. 6	168	47	61	1354
Witter, George, Storm Lake, Iowa. Wire bed-bottom	484,484	Oct. 18	1482	377	61	323
Wittkamper, H. B., *et al.* (See Heister, William, assignor.)						
Wladimiroff, Nicholas, St. Petersburg, Russia. Secondary battery	488,726	Dec. 27	2445	607	61	1856
Wm. Knabe & Co. Manufacturing Company. (See Keidel, Charles, Jr., assignor.)						
Wogaman, George. (See Kline, John R., assignor.)						
Wohlfert, Frederick W., New York, N. Y. Separable square	485,402	Nov. 1	394	106	61	653
Wolcott, Clayton, Hartford, Conn. Sash-fastener	487,314	Dec. 6	121	37	61	1345
Wolcott, Clayton, Hartford, Conn. Sash-cord guide	487,812	Dec. 13	948	239 / 240	61	1527
Wolcott, Henry, Providence, R. I. Display-card for jewelry	488,932	Dec. 27	2767	683	61	1923
Wolf, Clarence. (See Nicholson, Francis T., assignor.)						
Wolf, G. W., *et al.* (See Carpenter, Conrad H., assignor.)						
Wolf, Josef, assignor to A. V. Widmann and J. Coppersmith, Newark, N. J. Door spring and check	484,838	Oct. 25	2067	531 / 532	61	457
Wolf, Josef, assignor to A. V. Widmann and J. Coppersmith, Newark, N. J. Spring-hinge	484,839	Oct. 25	2069	532	61	457
Wolfe, Israel, Goshen, Ind. Nut-lock	485,120	Oct. 25	2504	643	61	545
Wolfe, James M. (See Conley and Wolfe.)						
Wolfsheimer, Joel H., Leesburg, Va. House-door letter-box	484,985	Oct. 25	2101	594 / 595	61	502
Woll, Peter, Jr., Philadelphia, Pa. Manufacturing curled hair	486,593	Nov. 22	2242	588	61	1073
Wollheim, Hugo, London, England. Disinfecting sewage	486,172	Nov. 15	1591	.....	61	930
Wolstencroft, James, *et al.* (See Carlinet, John G., assignor.)						
Wonn, William. (See Drake and Wonn.)						
Wood, Amos L., Boston, Mass. Apparatus for aging and purifying liquors	488,104	Dec. 13	1434	359 / 360	61	1625
Wood, Bertini T. (See Wood, Thomas W. and B. T.)						
Wood, Charles F., *et al.* (See Morrell, Robert, assignor.)						
Wood, Frank L., Racine, Wis. Adjustable wagon-pole	488,410	Dec. 20	1947	487	61	1742
Wood, Fredrick W., Norwich, Conn., and J. F. Bingham, Lawrence, Mass. Handle for utensils	487,688	Dec. 6	734	188	61	1466
Wood, Horatio G., Newport, R. I. Car-coupling	486,011	Nov. 8	1318	350	61	859
Wood, Isaac, Minneapolis, Minn. Sulky	488,236	Dec. 20	1662	415	61	1686
Wood, James J., Fort Wayne, Ind. Carbon-brush holder for dynamo-electric machines and motors	486,656	Nov. 22	2347	613 / 614	61	1093
Wood, James J., Fort Wayne, Ind. Electric-arc lamp	487,315	Dec. 6	122	37, 38	61	1345
Wood, James J., Fort Wayne, Ind. Connection-plate for dynamos	487,462	Dec. 6	384	100	61	1397
Wood, James W. (See Hall and Wood.)						
Wood, John H., Charleston, Ill. Damper-regulator for stoves	486,314	Nov. 15	1815	478	61	976
Wood, Joseph M., Albion, Wis. Holder for tobacco-laths	486,804	Nov. 22	2582	673	61	1141
Wood, Joseph S., Philadelphia, Pa. Vapor-burner	483,885	Oct. 4	538	136	61	112
Wood, Montraville M., Chicago, Ill. Trolley-pole catcher	484,986	Oct. 25	2303	595	61	503
Wood, Percy. (See Lamplough, Arthur, assignor.)						
Wood, Thomas W. and B. T., Berlin, Wis. Milk-aerator	487,413	Dec. 6	305	78	61	1382
Wood, Walter. (See Richards, Francis H., assignor.)						
Wood, Warren, *et al.* (See Ashley, Frank M., assignor.)						
Wood, William H., assignor of one-half to F. A. Sherwood, Rochester, N. Y. Clamp for uppers	488,913	Dec. 27	2741	676	61	1917
Wood, William T., assignor to J. C. McCrory and W. P. Houze, Nashville, Tenn. Hydrostatic air-compressor	485,853	Nov. 8	1054	281	61	804
Woodbury, Amasa O., Lampasas, assignor of one-half to J. O. Darby, Florence, Tex. Heel attachment for plows	486,416	Nov. 15	1973	521	61	1007
Woodruff, Benjamin E. (See Hamilton, John H., assignor.)						
Woodruff, George M., Colony, Kans. Corn-harvester	483,755	Oct. 4	347	87	61	72

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Woodruff, Oliver D., Southington, and L. T. Snow, New Haven, Conn. Meat-cutter	484,987	Oct. 25	2305	595	61	503
Woodruff, Oliver D., Southington, and L. T. Snow, New Haven, Conn. Meat-cutter	484,988	Oct. 25	2308	596	61	504
Woodruff, Oliver D., Southington, Conn., assignor to Enterprise Manufacturing Company of Pennsylvania, Philadelphia, Pa. Meat-cutter	485,854	Nov. 8	1055	281	61	805
Woodruff, William F., *et al.* (See Snyder, William D., assignor.)						
Woodruff, William N. (See Saladee, Cyrus W., assignor.)						
Woods, Charles T., Randolph, Kans. Washing-machine	486,805	Nov. 22	2583	673 / 674	61	1141
Woods, Henry J., Muskegon, Mich. Boat-launching carriage	486,012	Nov. 8	1320	351	61	859
Woods, William L. (See Raymo and Woods.)						
Woodson, J. P., *et al.* (See Jones and Ashley, assignors.)						
Woodstock, Warren Z., Wytheville, Va. Nut-lock	486,147	Nov. 15	1559	413	61	924
Woodward, Mary S., Chicago, Ill. Inhaler	484,944	Oct. 25	2241	577	61	491
Woodward, Theodore B., Norway, Pa. Thill-support	485,023	Oct. 25	2371	609	61	516
Woodworth, James E. (See Stager, Henry E., assignor.)						
Woody, Sidney F., Kansas City, Mo. Bill-holder	484,904	Oct. 25	2170	558	61	477
Woolcott, Charles M. (See Bowers, William, assignor.)						
Woolf, Alfred E., St. Louis, Mo. Puzzle	485,314	Nov. 1	238	66	61	620
Woolley, Leonidas G., Grand Rapids, Mich. Automatic electric-lighting apparatus	487,109	Nov. 29	3115	800	61	1264
Woolnough, William, London, England. Apparatus for double-seaming metal cans, tins, &c.	486,999	Nov. 29	2944	759	61	1229
Woolstoncroft, Abraham, Centralia, Kans. Listed-corn cultivator	488,345	Dec. 20	1840	460	61	1720
Worden, Charles A., U. S. Army. Machine for sharpening razors	487,140	Nov. 29	3162	810 / 811	61	1272
Wörner, Adolf, Buda-Pesth, Austria-Hungary, assignor to Siemens & Halske, Berlin, Germany. Drive-chain	486,920	Nov. 29	2823	731	61	1206
Wörner, Adolf, Buda-Pesth, Austria-Hungary, assignor to Siemens & Halske, Berlin, Germany. Electric-railway trolley	487,813	Dec. 13	949	240	61	1527
Worrest, Alfred H., Lancaster, Pa. Fifth-wheel	488,227	Dec. 20	1663	415	61	1686
Worthington, Charles C., Irvington, N. Y. Feed-water heater for steam-boilers	485,570	Nov. 1	640	170 / 171	61	704
Wren, Charles A., Coral, Me. Plow-cutter	488,663	Dec. 27	2660	658	61	1900
Wright, Abram W., assignor to Ramapo Iron Works, Hillburn, N. Y. Switch-clip	484,622	Oct. 18	1691	429	61	366
Wright, Alfred A. (See Bryant, Charles A., assignor.)						
Wright, Augustine W., Chicago, Ill., assignor to Siemens & Halske Electric Company of America, of Illinois. Electric-railway conduit	486,315	Nov. 15	1816	479	61	976
Wright, Benjamin, Hudson, Mich. Pump	485,250	Nov. 1	147	43	61	603
Wright, Beverly W., and E. E. Rogers, Preston, Md. Can-labeling machine	488,346	Dec. 20	1841	460 / 461	61	1720
Wright, E. K., *et al.* (See Nolley, David D., assignor.)						
Wright, Eliza M., Brooklyn, N. Y. Hook-and-eye safety-pin	483,886	Oct. 4	540	136	61	112
Wright, Emerson, *et al.* (See Shaw, Henry R., assignor.)						
Wright, Frederic W., Great Neck, N. Y. Hose coupling	485,729	Nov. 8	891	239	61	772
Wright, Gilbert, Newton, Mass. Check punching and marking machine	485,444	Nov. 1	452	121	61	665
Wright, Henry C., *et al.* (See Dickey, Foster, assignor.)						
Wright, Henry M., Aspen, Colo. Whiffletree	486,947	Nov. 29	2868	741	61	1214
Wright, James A., and J. B., Rockingham, N. C. Advertising device	485,676	Nov. 8	809	214	61	753
Wright, John B. (See Wright, James A. and J. B.)						
Wright, John G., Spring Valley, Ill. Chain propeller	484,485	Oct. 18	1483	378	61	323
Wright, John M., Fayetteville, N. C. Railway-track jack	486,389	Nov. 15	1928	511	61	909
Wright, John W. (See Scott and Wright.)						
Wright, Rezin C., Colorado Springs, Colo. Car-brake	484,486	Oct. 18	1484	378	61	324
Wright, Samuel H., Dublin, Ireland. Clip for holding papers or for other purposes	486,316	Nov. 15	1817	479	61	976
Wright, William, New York, N. Y., assignor to Columbian Electric Light, Power, Heat, and Manufacturing Company, of New Jersey. Battery compound	484,385	Oct. 11	1316	.....	61	280
Wright, William, assignor to D. P. Sullivan, Boston, Mass. Strainer for mixed drinks	484,276	Oct. 11	1150	293	61	247
Wright, William J., Cooperstown, assignor to Stave Jointer and Planer Company, Oil City, Pa. Stave-jointing machine	488,914	Dec. 27	2742	676	61	1917
Wuagneux, Philip H. (See Kastenhuber, Wuagneux, and States.)						
Wuelfing, Paul, Indianapolis, Ind. Car starter and brake	486,520	Nov. 22	2124	561	61	1051
Wuest, Philip, Jr., assignor to C. J. and F. J. Heppe, Philadelphia, Pa. Sounding-board for pianos	486,013	Nov. 8	1323	351	61	860
Wuest, Philip, Jr., assignor to C. J. and F. J. Heppe, Philadelphia, Pa. Piano-key coupler	486,317	Nov. 15	1817	479 / 480	61	976
Wunderlich, Charles W., Washington, Mo. Gun-cleaner	484,487	Oct. 18	1485	378	61	324
Wurzburg, W. F., *et al.* (See Wurzburg and Tloczynski, assignors.)						
Wurzburg, W. M., *et al.* (See Wurzburg and Tloczynski, assignors.)						
Wurzburg, William F. and W. M., and A. A. Tloczynski, assignors to W. F. and W. M. Wurzburg, Grand Rapids, Mich. Cash register and indicator	486,815	Nov. 22	2603	678 / 679	61	1146
Wurzburg, William M. (See Wurzburg and Tloczynski.)						
Wyman, Horace, and A. A. Gordon, assignors to Crompton Loom Works, Worcester, Mass. Friction let-off for looms. (Reissue)	11,288	Nov. 29	3347	852	61	1306
Wyman, Maud, San Francisco, Cal. Slate attachment	488,411	Dec. 20	1948	487	61	1742
Wynkoop, Jehiel F., Corsica, Pa. Trace-holder	485,825	Nov. 8	1012	272	61	798
Yale, Charles O., New York, N. Y. Safe	488,803	Dec. 27	2564	636	61	1880
Yale & Towne Manufacturing Company. (See Bullard, Frederick H., assignor.)						
Yale & Towne Manufacturing Company. (See Harriott, John W., assignor.)						
Yale & Towne Manufacturing Company. (See Taylor, Warren H., assignor.)						
Yale & Towne Manufacturing Company. (See Weston, Thomas A., assignor.)						
Yard, Frank A., assignor to E. A. More, trustee, St. Louis, Mo. Cable-grip	483,952	Oct. 4	538	160	61	131
Yaryan Company. (See Yaryan, Homer T., assignor.)						
Yaryan, Homer T., Toledo, Ohio, assignor to Yaryan Company, Mechanicsville, N. Y. Vacuum evaporating apparatus	485,315	Nov. 1	239	66	61	621
Yates, John S. (See Johnson, William B., assignor.)						
Yoder, Simon P., Ligonier, Ind. Harrow attachment for sulky-plows	485,830	Nov. 8	1018	273 / 274	61	797
Yost, William L., Wytheville, Va. Revolving case	488,594	Dec. 27	2243	556	61	1817
Yost Writing Machine Company. (See Davidson, Alexander, assignor.)						
Young, Andrew, Union City, Pa. Bag-holder	484,079	Oct. 11	835	211	61	186
Young, Harlan P., Lowell, Mass. Horn	488,238	Dec. 20	1664	415	61	1686
Young, John V., Boston, Mass., assignor to Union Switch and Signal Company, Swissvale, Pa. Electric signal-circuit	488,138	Dec. 13	1486	374	61	1635
Young, Josiah L., Tarrytown, assignor to C. H. Edgar, trustee, Brooklyn, N. Y. Typewriter for stencil-making	486,059	Nov. 8	1394	369	61	874

Alphabetical list of patentees, October to December, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Young, William A., Mandeville, Mo. Corn-harvester	486,014	Nov. 8	1324	351, 352	61	860
Young, William A., and A. G. Neville, Blairsville, Pa. Manufacturing central-draft lamps	484,277	Oct. 11	1152	293	61	247
Young, William J., Lynn, Mass. Heel-press	486,921	Nov. 29	2825	731	61	1206
Youngs, Fred E., Allegheny, Pa. Air or gas meter	485,075	Oct. 25	2441	627, 628	61	531
Youngs, Fred E., Allegheny, Pa. Air or gas meter	485,076	Oct. 25	2443	628, 629	61	531
Yule, George, Newark, N. J., and W. A. Baglin, New York, N. Y. Machine for wringing hats	483,823	Oct. 4	455	113	61	94
Yule, John S., Glasgow, Scotland. Automatic advertising apparatus	484,576	Oct. 18	1616	410	61	351
Zahule, Joseph. (See Holland, William, assignor.)						
Zahringer, Frank X., Bell Air, Mo. Nail-extractor	488,595	Dec. 27	2244	556	61	1817
Zalinski, Edmund L., U. S. Army. Artillery-cartridge	487,406	Dec. 6	279	72	61	1376
Zappert, Hermann C., St. Louis, Mo. Drying-kiln for lumber	488,412	Dec. 20	1949	487	61	1742
Zauner, Alexander, San Antonio, Tex. Floor-clamp	484,488	Oct. 18	1487	378	61	324
Zelp, John H. E., St. Louis, Mo. Feed-bag holder	484,278	Oct. 11	1153	293	61	248
Zempter, George H., R. A. Manning, and G. W. Overall, Memphis, Tenn. Cotton-harvester	483,824	Oct. 4	457	114	61	94
Zervas, Josef, *et al.* (See Hoz, Adolf, assignor.)						
Ziegler, Adam J., assignor of one-half to S. H. Martin, Lincoln, Ill. Veterinary instrument	486,153	Nov. 15	1568	416	61	925
Ziegler, Alfred M., Boston, Mass. Suspender-end	487,041	Nov. 29	3005	774	61	1240
Ziegler, Alfred M., Boston, Mass. Elastic cord and making the same	487,042	Nov. 29	3007	774	61	1241
Ziegler, Alfred M., Boston, Mass. Buckle	487,043	Nov. 29	3008	774	61	1241
Ziegler, Alfred M., Boston, Mass. Suspender-buckle	487,044	Nov. 29	3010	774	61	1241
Ziegler, Josef, Biebrich, Germany. Chinolinchinophenol-sulphate and obtaining the same	486,363	Nov. 15	1885	.....	61	989
Zillessen, Ernst, Crefeld, Germany. Dyeing	484,080	Oct. 11	835	.....	61	186
Zimmer, Werner H., and O. G. Hess, assignors to Ohio Valley China Company, Wheeling, W. Va. Pottery-kiln	488,413	Dec. 20	1952	488	61	1743
Zimmerling, Lissette F., Jackson, Mich. Stove	486,948	Nov. 29	2869	741	61	1214
Zimmerman, Charles, Brooklyn, N. Y., assignor of two-thirds to G. F. S. and M. J. C. Zimmerman, Frederick, Md. Shutter-worker	488,492	Dec. 20	2073	515	61	1768
Zimmerman, Charles A., St. Paul, Minn. Drawbridge	486,552	Nov. 22	2165	572	61	1059
Zimmerman, Cyrus J., Manor Station, Pa. Marking attachment for tenoning-machines	483,887	Oct. 4	541	136	61	112
Zimmerman, George F. S., *et al.* (See Zimmerman, Charles, assignor.)						
Zimmerman, John, assignor to National Key-Opening Can Company, Chicago, Ill. Key-opening can	486,521	Nov. 22	2126	561, 562	61	1051
Zimmerman, John, assignor to National Key-Opening Can Company, Chicago, Ill. Key-opening can	486,522	Nov. 22	2129	562	61	1052
Zimmerman, John, assignor to National Key-Opening Can Company, Chicago, Ill. Key-opening sheet-metal can	486,523	Nov. 22	2131	562	61	1052
Zimmerman, John E., Trinidad, Colo. Spark-arrester	488,864	Dec. 27	2660	659	61	1900
Zimmerman, Mary J. C., *et al.* (See Zimmerman, Charles, assignor.)						
Zimmermann, Charles E., Syracuse, N. Y. Rotary cutter for woodwork	486,269	Nov. 15	1745	460	61	962
Zink, George, Clear Spring, Md. Well-drilling machine	483,756	Oct. 4	349	88	61	73
Zink, George, Clear Spring, Md. Well-drilling machine	483,888	Oct. 4	543	137	61	112
Zinsser, August. (See Krenzler, Arnold, assignor.)						
Zoller, Charles. (See Schimper and Zoller.)						
Zolper, Anton, Cramer's Hill, N. J. Bottle-brush	488,784	Dec. 27	2533	629	61	1874
Zunner, John H. G., Boston, Mass. Apparatus for heating tar	488,414	Dec. 20	1955	489	61	1743
Zwietusch, Otto, Milwaukee, Wis. Impregnating beer, &c., with carbonic-acid gas and apparatus therefor	485,362	Nov. 1	332	88	61	640

ALPHABETICAL LIST OF PATENTEES OF DESIGNS.

Name, residence, and design.	No.	Date.	Official Gazette. Volume.	Official Gazette. Page.
Allen, Alonzo W., Philadelphia, Pa. Bracket-arm	22,055	Dec. 6	61	1473
Aucaigne, Eugene F. (See Merritt and Aucaigne.)				
Bascom, Henry C., Lansingburg, and F. Ritchie, Troy, N. Y., assignors to Channon-Emery Stove Company, Quincy, Ill. Cooking-stove	21,897	Oct. 11	61	282
Bassett Jewelry Co. (See Roehr, Ludwig J., assignor.)				
Bates, Thomas H., and A. O. Quimby, Fresno, Cal. Spoon	21,952	Nov. 1	61	717
Bell, Harold J., assignor to T. Devlin, L. J. McGrath, W. K. Brown, and C. A. McGrath, executors, Philadelphia, Pa. Radiator	21,986	Nov. 8	61	880
Bell's Sons, H. H. (See Ohle, August C., assignor.)				
Benlisa, Samuel. (See Feder, Harry N., assignor.)				
Bernheim, Eugene C., assignor to J. H. Flanagan, Washington, D. C. Spoon	22,062	Dec. 27	61	1941
Berry, Henry, assignor to Derby Silver Company, Shelton, Conn. Sugar-bowl	21,921	Oct. 25	61	560
Berry, Henry, assignor to Derby Silver Company, Shelton, Conn. Sugar-bowl	21,922	Oct. 25	61	560
Best, Daniel, San Leandro, Cal. Engine-frame	21,887	Oct. 11	61	281
Bidwell, Julius A., Pomona, Cal. Cuff-button	21,902	Oct. 18	61	419
Bigelow Carpet Company. (See Brown, William F., assignor.)				
Bigler, William A., Chicago, Ill. Handle for spoons, &c.	22,035	Dec. 6	61	1471
Billings, Oscar L., Philadelphia, Pa. Dial	22,054	Dec. 6	61	1473
Birge & Sons, M. H. (See Booze, Charles, assignor.)				
Black, Estell M., Harper's Ferry, W. Va. Spoon	21,920	Oct. 25	61	559
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,908	Oct. 25	61	558
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,909	Oct. 25	61	558
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,910	Oct. 25	61	558
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,911	Oct. 25	61	558
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,912	Oct. 25	61	558
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,913	Oct. 25	61	558
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,914	Oct. 25	61	558
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,915	Oct. 25	61	559
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,916	Oct. 25	61	559
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,917	Oct. 25	61	559
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,936	Nov. 1	61	714
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,937	Nov. 1	61	715
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,938	Nov. 1	61	715
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,939	Nov. 1	61	715
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,940	Nov. 1	61	715
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,941	Nov. 1	61	715
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,942	Nov. 1	61	715
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,943	Nov. 1	61	716
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,944	Nov. 1	61	716
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,945	Nov. 1	61	716
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,946	Nov. 1	61	716
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,947	Nov. 1	61	716
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,948	Nov. 1	61	716
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,949	Nov. 1	61	716
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,958	Nov. 8	61	876
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,959	Nov. 8	61	876
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,960	Nov. 8	61	876
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,961	Nov. 8	61	876
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,962	Nov. 8	61	876
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,963	Nov. 8	61	876
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,964	Nov. 8	61	877
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,965	Nov. 8	61	877
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,966	Nov. 8	61	877
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,967	Nov. 8	61	877
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,968	Nov. 8	61	877
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,969	Nov. 8	61	877
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,970	Nov. 8	61	878
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,971	Nov. 8	61	878
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	21,972	Nov. 8	61	878
Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper	22,018	Nov. 29	61	1307
Boynton, Nathan S., Port Huron, Mich. Badge	21,975	Nov. 8	61	878
Brandt, Oscar E., assignor to W. W. Kimball Company, Chicago, Ill. Top of an organ-case	21,881	Oct. 4	61	146
Brandt, Oscar E., assignor to W. W. Kimball Company, Chicago, Ill. Top of an organ-case	21,882	Oct. 4	61	146
Brokaw, John G., Somerville, N. J. Scarf-pin	22,036	Dec. 6	61	1471
Brown, William F., Newark, N. J., assignor to Bigelow Carpet Company, Hartford, Conn. Carpet	21,994	Nov. 15	61	1011
Brown, William K., *et al.*, executors. (See Bell, Harold J., assignor.)				
Burbank, Gardner E. (See Hopkins, Edwin F., assignor.)				
Burlington Carpet Company. (See Lawton, Thomas L., assignor.)				
C. F. Monroe Company. (See Helmschmied, Carl V., assignor.)				
Cameron, Mary E., Albany, N. Y. Game-board	21,880	Oct. 4	61	146
Carranza, Manuel, Havana, Cuba. Fan	22,072	Dec. 20	61	1783
Casiraghi, Augustus, New York, N. Y. Chair	22,088	Dec. 27	61	1942
Channon-Emery Stove Company. (See Bascom and Ritchie, assignors.)				
Cheney Brothers. (See Thyng, Annie G., assignor.)				
Chipman, Calley & Co. (See Sisson, Charles, assignor.)				
Cohen, Adolph, New York, N. Y. Ruffling	21,993	Nov. 15	61	1010
Combes, Theodore C., Philadelphia, Pa. Spoon	21,900	Oct. 18	61	419
Connolly, William, and A. A. Sealy, Brooklyn, N. Y. Badge	21,885	Oct. 11	61	281
Cooper, Henrietta L., Philadelphia, Pa. Pincushion or sachet	22,050	Dec. 6	61	1473
Crabb, Frederick G., New Haven, Conn. Thimble	22,000	Nov. 22	61	1158
Cromlinger, Edward H., Covington, Ky. Bar-pin	22,073	Dec. 20	61	1783

Alphabetical list of patentees of designs, October to December, inclusive—Continued.

Name, residence, and design.	No.	Date.	Official Gazette. Vol.	Page.
Curtis, Charles, Newton, Mass., and N. M. Jones, Bangor, Me. Lining-tile	22,077	Dec. 20	61	1783
D'Arcy, Frank P., Kalamazoo, Mich. Spoon	22,029	Dec. 6	61	1470
Decker, William F., New York, N. Y. Casing for upright pianofortes	21,995	Nov. 15	61	1011
Derby Silver Company. (See Berry, Henry, assignor.)				
Desauniers, Philip A., St. Paul, Minn. Siding-plate	22,091	Dec. 27	61	1942
Devlin, Thomas, *et al.*, executors. (See Bell, Harold J., assignor.)				
Dewey, Mark W., Syracuse, N. Y. Electric-heater casing	22,017	Nov. 22	61	1160
Dexheimer, Julius G., Milwaukee, Wis. Snap-hook	21,982	Nov. 8	61	880
Dueber, John C., Canton, Ohio. Watch-case	22,056	Dec. 13	61	1650
Fairchild & Co., Leroy W. (See Hurd, Louis F., assignor.)				
Farnham, Paulding, assignor to Tiffany & Co., New York, N. Y. Spoon, &c	21,988	Nov. 15	61	1009
Feder, Harry N., Washington, D. C., assignor of one-half to S. Benlisa, Jacksonville, Fla. Ink-stand	22,084	Dec. 27	61	1941
Fink, Joseph H., New York, N. Y. Finger-ring	21,926	Oct. 25	61	560
Flanagan, John H. (See Bernheim, Eugene C., assignor.)				
Fraley, George B., San Francisco, Cal. Frame for electric dynamos	21,906	Oct. 18	61	420
Frank, Abraham, New York, N. Y. Plastron or waist	22,040	Dec. 6	61	1472
Frank, Abraham, New York, N. Y. Cape	22,041	Dec. 6	61	1471
Frank, Henry C., New York, N. Y. Cuff-holder stand	21,876	Oct. 4	61	145
Fuchs, Henry F. G., Jersey City, N. J. Badge	21,898	Oct. 18	61	419
Gardner, Thomas W., Indianapolis, Ind. Cane	22,009	Nov. 22	61	1159
Gérard, Emile, Limoges, France, assignor to Haviland & Abbot, New York, N. Y. Dish	21,989	Nov. 15	61	1010
Gilhuly, Stephen B., Long Branch, N. J. Bicycler's bag	22,057	Dec. 13	61	1650
Graham, William H., assignor to N. O. Nelson Manufacturing Company, St. Louis, Mo. Valve for basins and bath-tubs	21,933	Oct. 25	61	561
Girsch, Charles W., New York, and C. F. Roehsler, Brooklyn, N. Y. Postal-card	21,950	Nov. 1	61	717
Griffith Manufacturing Company. (See Griffith, William M., assignor.)				
Griffith, William M., assignor to Griffith Manufacturing Company, Baltimore, Md. Necktie	21,977	Nov. 8	61	879
Goessling, William, St. Louis, Mo. Sigh-board	22,053	Dec. 6	61	1473
H. M. Moses Company. (See Moses, Harry M., assignor.)				
Hammann, Edward, Brooklyn, assignor to J. L. Mott Iron Works, New York, N. Y. Urinal	21,957	Nov. 1	61	718
Hanna, William C., Jr., New York, N. Y. Railing	21,980	Nov. 8	61	879
Harvey, William, Philadelphia, Pa., and E. Osborn, New York, N. Y., assignors to themselves and J. and J. Watts, Philadelphia, Pa. Handle for canes	23,083	Dec. 27	61	1941
Hatch, Augustus T., San Francisco, Cal. Badge	21,875	Oct. 4	61	145
Haviland & Abbot. (See Gérard, Emile, assignor.)				
Haviland, Theodore, Ambazac, France. Sirup-jug	22,028	Dec. 6	61	1469
Hine, William C., Youngstown, Ohio. Oil-can	21,984	Nov. 8	61	880
Heinig, Friedrich O., assignor to M. W. Lipper & Co., Philadelphia, Pa. Trimming	22,044	Dec. 6	61	1472
Heinz, Henry J., Pittsburg, Pa. Spoon	21,895	Oct. 11	61	282
Helmschmied, Carl V., assignor to C. F. Monroe Company, Meriden, Conn. Table-vessel	21,878	Oct. 4	61	145
Herrick, Frank J., assignor to North & Judd Manufacturing Company, New Britain, Conn. Heel-protector	21,888	Oct. 11	61	281
Herrick, Frank J., assignor to North & Judd Manufacturing Company, New Britain, Conn. Heel-protector	21,889	Oct. 11	61	281
Hirner, Eugene H., Philadelphia, Pa. Relief bust of Columbus	22,005	Nov. 22	61	1159
Hopkins, Edwin F., assignor of one-half to G. E. Burbank, Woodstock, Ill. Medal	22,037	Dec. 6	61	1471
Hough, Axel C., South Butler, N. Y. Desk-railing	22,024	Nov. 29	61	1308
Hull, Gurdon W., Wallingford, Conn. Castanet	21,953	Nov. 1	61	717
Huntington Glass Company. (See Proeger, Julius, assignor.)				
Hurd, Louis F., Newark, N. J., assignor to L. W. Fairchild & Co., New York, N. Y. Match-box	21,890	Oct. 11	61	281
Hurd, Louis F., Newark, N. J., assignor to L. W. Fairchild & Co., New York, N. Y. Match-box	21,891	Oct. 11	61	281
Hurd, Louis F., Newark, N. J., assignor to L. W. Fairchild & Co., New York, N. Y. Match-box	21,892	Oct. 11	61	282
Husa Brothers Company. (See Huss, William C., assignor.)	21,893	Oct. 11	61	282
Huss, William C., Cincinnati, Ohio. Wall-fixture for counters	21,907	Oct. 18	61	420
Huss, William C., assignor to Huss Brothers Company, Cincinnati, Ohio. Wall-fixture for counters	21,979	Nov. 8	61	879
Hussey, Cyrus, assignor to Toledo Moulding Company, Toledo, Ohio. Curtain-pole	22,078	Dec. 20	61	1783
Ihlenburg, Herman, assignor to MacKellar, Smiths & Jordan Company, Philadelphia, Pa. Font of type ornaments	22,007	Nov. 22	61	1159
Ihlenburg, Herman, assignor to MacKellar, Smiths & Jordan Company, Philadelphia, Pa. Font of printing-type	22,019	Nov. 29	61	1307
Ihlenburg, Herman, assignor to MacKellar, Smiths & Jordan Company, Philadelphia, Pa. Font of printing-type	22,020	Nov. 29	61	1307
Ihlenburg, Herman, assignor to MacKellar, Smiths & Jordan Company, Philadelphia, Pa. Font of printing-type	22,021	Nov. 29	61	1308
J. L. Mott Iron Works. (See Hammann, Edward, assignor.)				
Jackson, Austin F., assignor to Reed & Barton Corporation, Taunton, Mass. Handle for spoons, &c.	22,061	Dec. 20	61	1781
Jackson, Austin F., assignor to Reed & Barton Corporation, Taunton, Mass. Handle for spoons, &c.	22,062	Dec. 20	61	1781
Jackson, Austin F., assignor to Reed & Barton Corporation, Taunton, Mass. Handle for spoons, &c.	22,063	Dec. 20	61	1781
Jackson, Austin F., assignor to Reed & Barton Corporation, Taunton, Mass. Handle for spoons, &c.	22,064	Dec. 20	61	1781
Jackson, Austin F., assignor to Reed & Barton Corporation, Taunton, Mass. Handle for spoons, &c.	22,065	Dec. 20	61	1781
Jackson, Austin F., assignor to Reed & Barton Corporation, Taunton, Mass. Handle for spoons, &c.	22,066	Dec. 20	61	1782
Jackson, Austin F., assignor to Reed & Barton Corporation, Taunton, Mass. Handle for spoons, &c.	22,067	Dec. 20	61	1782
Jones, Nathaniel M. (See Curtis and Jones.)	22,068	Dec. 20	61	1782
Joy, John M., Waterbury, Conn. Banner	21,927	Oct. 25	61	560
Kayser, Julius, New York, N. Y. Glove	21,918	Oct. 25	61	559
Koenig, Francis, assignor to R. G. Ledig, Philadelphia, Pa. Table	22,013	Nov. 22	61	1160
Koenig, Francis, assignor to R. G. Ledig, Philadelphia, Pa. Table	22,014	Nov. 22	61	1160
Koenig, Francis, assignor to R. G. Ledig, Philadelphia, Pa. Table	22,015	Nov. 22	61	1160
Kops, Daniel, assignor to L. Schiele & Co., New York, N. Y. Corset	21,978	Nov. 8	61	879
Laplante, Francis, Boston, Mass. Brick or stone	22,076	Dec. 20	61	1783
Lawton, Thomas L., Philadelphia, Pa., assignor to Burlington Carpet Company, of New Jersey. Rug	21,904	Oct. 18	61	419
Lawton, Thomas L., Philadelphia, Pa., assignor to Burlington Carpet Company, of New Jersey. Rug	21,905	Oct. 18	61	420
Lazarus, Augustus A., *et al.* (See Lipper, Benjamin, assignor.)				
Ledig, Reinhold G. (See Koenig, Francis, assignor.)				
Lehmann, Karl L., Chicago, Ill. Monument	21,956	Nov. 1	61	718
Lighton, John B., Syracuse, N. Y. Case for a coin-operated machine	22,080	Dec. 20	61	1784
Lipper, Benjamin, assignor to himself, A. A. Lazarus, and I. A. Schwartz, Philadelphia, Pa. Dress-trimming	22,071	Dec. 20	61	1782

Alphabetical list of patentees of designs, October to December, inclusive—Continued.

Name, residence, and design.	No.	Date.	Official Gazette. Vol.	Page.
Lipper & Co., M. W. (See Heinig, Friedrich O., assignor.)				
Lipper & Co., M. W. (See Robinson, Edwin, assignor.)				
Lippincott, Jason E., Alexandria, Ind. Lamp-chimney	21,983	Nov. 8	61	880
Ludwig, Adolph, Brooklyn, N. Y. Spoon	21,879	Oct. 4	61	146
Lux, Samuel D., New York, N. Y. Box-cover	21,923	Oct. 25	61	560
MacKellar, Smiths & Jordan Company. (See Ihlenburg, Herman, assignor.)				
Mapother, Dillon E., Louisville, Ky. Glass vessel	22,075	Dec. 20	61	1783
Markell, Jacob, Brooklyn, assignor to H. Tappan, New York, N. Y. Perfumery-holder	21,925	Oct. 25	61	560
Matthews, Marshall J., Olean, N. Y. Curtain-roller bracket	21,929	Oct. 25	61	561
Maurer, Alexander C., Philadelphia, Pa. Fringe	22,049	Dec. 6	61	1472
McGrath, Catharine A., *et al.*, executors. (See Bell, Harold J., assignor.)				
McGrath, Louis J., *et al.*, executors. (See Bell, Harold J., assignor.)				
Merritt, Arthur, and E. F. Aucaigne, New York, N. Y. Clock-case	22,011	Nov. 22	61	1159
Miller, Edwin L., Scranton, Pa. Badge	21,899	Oct. 18	61	419
Moses, Harry M., assignor to H. M. Moses Company, Richmond, Va. Spoon	21,987	Nov. 15	61	1009
Murphy, William T., New York, N. Y. Bottle or flask	22,085	Dec. 27	61	1941
Myers, Theodore B., St. Paul, Minn. Spoon	21,894	Oct. 11	61	282
N. O. Nelson Manufacturing Company. (See Graham, William H., assignor.)				
Nicholas, Harry R. H., Newark, N. J. Cigar and match holder	21,991	Nov. 15	61	1010
North & Judd Manufacturing Company. (See Herrick, Frank J., assignor.)				
Ohle, August C., assignor to H. H. Bell's Sons, New York, N. Y. Napped fabric	21,999	Nov. 22	61	1158
Oppenheimer, Simon, New York, N. Y. Veil	22,042	Dec. 6	61	1472
Oppenheimer, Simon, New York, N. Y. Veil	22,043	Dec. 6	61	1472
Osborn, Edward. (See Harvey and Osborn.)				
Palmer, Charles H., Jr., Amesbury, Mass. Carriage-body	21,935	Oct. 25	61	561
Palmer, Stephen, Lansingburg, N. Y. Sash-pulley case	22,026	Nov. 29	61	1308
Pangborn, Frederic W., Jersey City, N. J. Piano-case	22,089	Dec. 27	61	1942
Patterson, William F., Jersey City, N. J. Window-shade	22,087	Dec. 27	61	1942
Pegler, Charles, Elgin, Ill. Book-rest and holder for umbrellas, &c	22,010	Nov. 22	61	1159
Perkins, Stephen W. (See Putnam, Henry O., assignor.)				
Pettibone, Charles, Chicago, Ill. Badge	21,886	Oct. 11	61	281
Pinkus, Frederick S., New York, N. Y. Table-cloth	21,928	Oct. 25	61	561
Pinkus, Frederick S., New York, N. Y. Sheet	22,051	Dec. 6	61	1473
Pistorius, Henry A., assignor of two-thirds to C. and G. E. Stickney, Newburyport, Mass. Breast-pin	22,081	Dec. 27	61	1940
Pitkin, Lorraine J., Chicago, Ill. Badge	22,038	Dec. 6	61	1471
Proeger, Julius, Greensburg, Pa., assignor to Huntington Glass Company, Huntington, W. Va. Glass vessel	22,001	Nov. 22	61	1158
Putnam, Henry O., assignor of one-half to S. W. Perkins, Sunfield, Mich. Fork for potato-diggers	21,934	Oct. 25	61	561
Pullman's Palace Car Company. (See Rapp, August, assignor.)				
Quimby, Albert O. (See Bates and Quimby.)				
Rapp, August, assignor to Pullman's Palace Car Company, Chicago, Ill. Ornamentation of car interiors	21,996	Nov. 15	61	1011
Rathbone, John S., Mystic, Conn. Spoon	22,030	Dec. 6	61	1470
Rathbone, John S., Mystic, Conn. Spoon	22,031	Dec. 6	61	1470
Reading Hardware Company. (See Schwendner, Max, assignor.)				
Reed & Barton Corporation. (See Jackson, Austin F., assignor.)				
Reenstierna, Gustaf L., Boston, Mass. Paper-weight	22,002	Nov. 22	61	1158
Richardson, Henry C., Merrimac, Mass. Lady's boot	21,954	Nov. 1	61	717
Ritchie, Francis. (See Bascom and Ritchie.)				
Robinson, Edwin, Camden, N. J., assignor to M. W. Lipper & Co., Philadelphia, Pa. Trimming	22,045	Dec. 6	61	1472
Robinson, Edwin, Camden, N. J., assignor to M. W. Lipper & Co., Philadelphia, Pa. Trimming	22,046	Dec. 6	61	1472
Robinson, Edwin, Camden, N. J., assignor to M. W. Lipper & Co., Philadelphia, Pa. Trimming	22,047	Dec. 6	61	1472
Rockwood, Frank B. (See Rockwood, Frederick S. and F. B.)				
Rockwood, Frederick S. and F. B., Elmhurst, Ill. Bottle	22,058	Dec. 13	61	1650
Rodiger, William, Chicago, Ill. Inkstand	22,003	Nov. 22	61	1158
Rodiger, William, Chicago, Ill. Inkstand	22,004	Nov. 22	61	1158
Roehr, Ludwig J., Newark, N. J., assignor to Bassett Jewelry Co., New York, N. Y. Locket	22,074	Dec. 20	61	1783
Roehsler, Charles F. (See Girsch and Roehsler.)				
Rosenblatt, Emil H., New York, N. Y. Spoon	22,032	Dec. 6	61	1470
Roulet, George U., Toledo, Ohio. Spoon, &c	22,059	Dec. 20	61	1781
Sachs, Joseph, New York, N. Y. Auxiliary fire-alarm box	22,090	Dec. 27	61	1942
Sadler, Samuel, St. Louis, Mo. Washing-machine tub	21,997	Nov. 15	61	1011
Scheuer, Max, New York, N. Y. Purse or pocket-book	21,974	Nov. 8	61	878
Scheuer, Max, New York, N. Y. Pocket-book or purse	22,039	Dec. 6	61	1471
Schiele & Co., Lewis. (See Kops, Daniel, assignor.)				
Schimmel, Gustav R., Detroit, Mich. Nursing-bottle	22,052	Dec. 6	61	1473
Schlechter, Gustavus A., Reading, Pa. Spoon	22,033	Dec. 6	61	1470
Schloss, Joseph W., New York, N. Y. Dress-trimming	22,048	Dec. 6	61	1472
Schneider, Henry W., Little Oley, Pa. Inkstand	21,990	Nov. 15	61	1010
Schwartz, Isaac A., *et al.* (See Lipper, Benjamin, assignor.)				
Schwarz, Louis, Brooklyn, N. Y. Box	21,955	Nov. 1	61	717
Schwendner, Max, assignor to Reading Hardware Company, Reading, Pa. Escutcheon-plate	22,025	Nov. 29	61	1308
Scott, George W., Washington, D. C. Cane-handle	21,976	Nov. 8	61	879
Sealy, Alvin A. (See Connolly and Sealy.)				
Shafer, Mary C., Elgin, Ill. Badge	21,951	Nov. 1	61	717
Sisson, Charles, Providence, R. I., assignor to Chipman, Calley & Co., Rockland, Mass. Tape	22,027	Nov. 29	61	1308
Smith, Charles W., Norwalk, Ohio. Curtain-pole bracket	21,930	Oct. 25	61	561
Smith, Charles W., Norwalk, Ohio. Curtain-pole bracket	21,931	Oct. 25	61	561
Smith, Charles W., Norwalk, Ohio. Curtain-pole bracket	21,932	Oct. 25	61	561
Snyder, Harry B., Chicago, Ill. Handle for canes, &c	22,069	Dec. 20	61	1782
Snyder, Harry B., Chicago, Ill. Handle for canes, &c	22,070	Dec. 20	61	1782
Sommer, William C., Springfield, Ill. Spoon, &c	22,034	Dec. 6	61	1470
Southard, Barron D., Chicago, Ill. Electric-motor frame	21,981	Nov. 8	61	880
Starkey, Sydney, East Liverpool, Ohio. Vase, &c	21,877	Oct. 4	61	145
Steere, George N., Wickford, R. I. Tape	21,903	Oct. 18	61	419
Stickney, Caleb, *et al.* (See Pistorius, Henry A., assignor.)				
Stickney, George E., *et al.* (See Pistorius, Henry A., assignor.)				
Stocking, George B., Tacoma, Wash. Spoon, &c	22,060	Dec. 20	61	1781
Strich, William, and P. M. Zeidler, New York, N. Y. Piano-case	22,079	Dec. 20	61	1784
Tappan, Herman. (See Markell, Jacob, assignor.)				
Tappan, Herman. (See Warren, John E., Jr., assignor.)				
Thissell, Earl A., and W. H. Wilder, Florence, Mass. Stove	21,896	Oct. 11	61	282
Thissell, Earl A., and W. H. Wilder, Northampton, Mass. Oil or gas stove	21,985	Nov. 8	61	880

Alphabetical list of patentees of designs, October to December, inclusive—Continued.

Name, residence, and design.	No.	Date.	Official Gazette. Vol.	Page.
Thonet, August, assignor to Thonet Brothers, Vienna, Austria-Hungary. Chair	22,012	Nov. 22	61	1160
Thonet, August, assignor to Thonet Brothers, Vienna, Austria-Hungary. Chair	22,022	Nov. 29	61	1308
Thonet, August, assignor to Thonet Brothers, Vienna, Austria-Hungary. Chair	22,023	Nov. 29	61	1308
Thonet Brothers. (See Thonet, August, assignor.)				
Thyng, Annie G., New York, N. Y., assignor to Cheney Brothers, South Manchester, Conn. Textile fabric	21,998	Nov. 22	61	1157
Tiffany & Co. (See Farnham, Paulding, assignor.)				
Toledo Moulding Company. (See Hussey, Cyrus, assignor.)				
Traun, Heinrich, Hamburg, Germany. Sign	22,006	Nov. 22	61	1159
Ullrich, Albert H., Evanston, Ill. Handle for spoons, &c	21,919	Oct. 25	61	559
W. W. Kimball Company. (See Brandt, Oscar E., assignor.)				
Warner, De Ver H., Bridgeport, Conn. Corset	21,883	Oct. 4	61	146
Warner, De Ver H., Bridgeport, Conn. Corset	21,884	Oct. 4	61	146
Warren, John E., Jr., Newark, N. J., assignor to H. Tappan, New York, N. Y. Perfumery-holder	21,973	Nov. 8	61	878
Watts, John, *et al.* (See Harvey and Osborn, assignors.)				
Watts, Joseph, *et al.* (See Harvey and Osborn, assignors.)				
West, Augustine C., Cambridge, Mass. Oil or gas stove	22,016	Nov. 22	61	1160
Wilder, William H. (See Thissell and Wilder.)				
Willet, Samuel R., Philadelphia, Pa. Swab-cup	22,086	Dec. 27	61	1941
Wixon, George R., Fairhaven, Mass. Handle for swords or the like	22,008	Nov. 22	61	1159
Wood, Warwick W., Winston, N. C. Tobacco plug	21,992	Nov. 15	61	1010
Wood, William A., Montreal, Canada. Thimble	21,901	Oct. 18	61	419
Zeidler, Paul M. (See Strich and Zeidler.)				
Zinn, Simon, New York, N. Y. Match-box	21,924	Oct. 25	61	560

ALPHABETICAL LIST OF REGISTRANTS OF TRADE-MARKS.

Name, residence, and title.	No.	Date.	Official Gazette. Volume.	Page.
A. M. Collins Manufacturing Company, Philadelphia, Pa. Photographic-card mounts	21,932	Nov. 8	61	881
Abegg & Rusch, New York, N. Y. Rugs and carpetings	22,235	Dec. 27	61	1943
Actien-Gesellschaft Für Anilin-Fabrikation, Berlin, Germany. Photographic developers	22,153	Dec. 13	61	1651
Actien-Gesellschaft Für Anilin-Fabrikation, Berlin, Germany. Photographic developers	22,154	Dec. 13	61	1651
Aigler, David, St. Louis, Mo. Desiccated raw vegetables and foods prepared thereof	22,081	Nov. 29	61	1310
Albaugh Nursery and Orchard Company, Tadmor, Ohio. Nursery-grown plum-trees	22,097	Nov. 29	61	1312
Albemarle Chemical Company, New York, N. Y., and Nashville, Tenn. Proprietary preparations embodying a coal-tar derivative	22,036	Nov. 22	61	1163
Albion Company, Providence, R. I., and New York, N. Y. Textile fabrics, such as cotton, linen, worsted, and silk goods and velvets and velveteens	22,232	Dec. 27	61	1943
Alexander, John W. and T. W., Burlington, Iowa. Laundry soap	21,839	Oct. 4	61	149
Alexander, Theophilus W. (See Alexander, John W. and T. W.)				
Allaire, Woodward & Company, Peoria, Ill. Medicinal tonics	22,257	Dec. 27	61	1945
Allaire, Woodward & Company, Peoria, Ill. Antiseptics	22,263	Dec. 27	61	1946
Altschul, Ernst, Cleveland, Ohio. Blackberry tonic	22,255	Dec. 27	61	1945
American Evaporated Codfish Co., Red Bank, N. J. Prepared codfish	22,130	Dec. 6	61	1477
American Lead Pencil Company, New York, N. Y. Lead-pencils	22,273	Dec. 27	61	1946
American Optical Company, Southbridge, Mass. Spectacles and eyeglasses	22,012	Nov. 22	61	1161
American Safety Fuel Company, Jersey City, N. J., and New York, N. Y. Certain chemically-prepared fuel	22,160	Dec. 13	61	1652
American Shaft Holder Co., Wabash, Ind. Lubricants	22,206	Dec. 20	61	1787
American Shearer Manufacturing Company, Nashua, N. H. Hair and wool clippers	22,050	Nov. 22	61	1164
American Shearer Manufacturing Company, Nashua, N. H. Certain hair-clippers for toilet use	22,067	Nov. 29	61	1309
American Tobacco Company, Newark, N. J., and New York, N. Y. Tobacco, cigars, cigarettes, cheroots, and snuff	22,094	Nov. 29	61	1312
American Wringer Company, Providence, R. I., and New York and Auburn, N. Y. Wringers	22,224	Dec. 20	61	1788
American Wringer Company, Providence, R. I., and New York and Auburn, N. Y. Wringers	22,225	Dec. 20	61	1788
American Wringer Company, Providence, R. I., and New York and Auburn, N. Y. Wringers	22,226	Dec. 20	61	1788
Ames & Frost Company, Chicago, Ill. Velocipedes and parts thereof and wheels for use in light vehicles	21,828	Oct. 4	61	149
Anderson, A. & J. M., Boston, Mass. Electric insulators	22,148	Dec. 6	61	1478
Arduvini, Raffaele, New Orleans, La. Remedy for the toothache	21,829	Oct. 4	61	149
Ashburnham Tin Plate Company, (Limited,) Burry Port, England. Tin plates	22,144	Dec. 6	61	1478
Assau, Baines Company, Cheswold, Del., and Baltimore, Md. Canned fruits and vegetables	21,943	Nov. 8	61	882
Atlas Tack Corporation, Boston, Mass. Spring-beds	22,222	Dec. 20	61	1788
Auchampaugh, Julius C., Syracuse, N. Y. Remedy for diseases of the kidneys and genital organs	21,850	Oct. 4	61	150
Ault & Wiborg Company, Cincinnati, Ohio. Printers' and lithographers' ink	21,933	Nov. 8	61	881
Avenarius & Co., R., Stuttgart, Germany. Mineral water	22,220	Dec. 20	61	1788
Aymé, Louis H., Chicago, Ill. Statuettes	21,931	Nov. 8	61	881
Baker Manufacturing Company, Evansville, Wis. Windmills	22,056	Nov. 22	61	1164
Ball, Webster C., Cleveland, Ohio. Watches and portable clocks	22,181	Dec. 20	61	1785
Banning, Frederick D., Charleston, S. C. Sheep-dip or cattle-wash	21,830	Oct. 4	61	149
Barry, William B., Indianapolis, Ind. Saws	21,902	Nov. 1	61	719
Bartholomay Brewery Company, Rochester, N. Y. Lager-beer	22,254	Dec. 27	61	1945
Benner, Clarence A., Philadelphia, Pa. Toy	21,852	Oct. 4	61	150
Benson, Christian L., Chicago, Ill. Canned fish, fruits, and vegetables	21,856	Oct. 11	61	283
Benswanger, Emanuel, Philadelphia, Pa. Lager-beer	21,985	Nov. 15	61	1013
Beuthner, Edward W., Montreal, Canada. Rainproof fabrics for garments	22,233	Dec. 27	61	1943
Binder, Fredrick H., Chicago, Ill. Bitters	22,258	Dec. 27	61	1946
Black & Sons, Joseph, Philadelphia, Pa. Hosiery	21,831	Oct. 4	61	149
Blake & Johnson, Waterbury, Conn. Piano and organ hardware	21,965	Nov. 8	61	884
Blank & Co., Barmen, Germany. Braids, cords, and bindings	22,089	Nov. 29	61	1311
Blood, Henry B., Virginia City, Nev. Capsules for medicinal use	21,851	Oct. 4	61	150
Bloomington Canning Company, Bloomington, Ill. Canned fruits and vegetables	22,082	Nov. 29	61	1311
Bloomington Canning Company, Bloomington, Ill. Canned vegetables and fruits	22,132	Dec. 6	61	1477
Bluffton Manufacturing Co., Bluffton, Ind. Washing-machines	22,006	Nov. 15	61	1014
Boas Brothers, New York, N. Y. Enameled hollow ware	22,221	Dec. 20	61	1788
Boehm & Co., Saml. C., New York, N. Y. Whisky	21,807	Oct. 4	61	147
Boehm & Co., Saml. C., New York, N. Y. Whisky	21,808	Oct. 4	61	147
Bomar, William A., Metropolis, Ill. Sash locks and fasteners	21,840	Oct. 4	61	149
Bonesteel & Turner, Springfield, S. D. Flour and meal	21,925	Nov. 1	61	720
Booth, George, Detroit, Mich. Bath-tubs	21,806	Oct. 4	61	147
Boston Woven Hose and Rubber Company, Boston, Mass. Pneumatic tires for bicycles	21,967	Nov. 8	61	884
Botania Co., New York, N. Y. Medical remedy for internal and external use	22,112	Dec. 6	61	1475
Bowes, William M., New York, N. Y. Razor-strops	22,237	Dec. 27	61	1944
Breese, Alfred, London, England. Braces and hose-holders	21,968	Nov. 8	61	884
Brievogelle, Eugene Z., New York, N. Y. Remedies for rheumatism and gout	22,178	Dec. 13	61	1654
Bronson & Fitzgerald, Hartford, Conn. Meats and fish	22,239	Dec. 27	61	1944
Brown Co., J. L., Pittsburg, Pa. Stove-mats	22,002	Nov. 15	61	1014
Brown, Maynard D., Glasgow, Scotland. Proprietary medicine for the cure of rheumatism, dyspepsia, and diseases of the blood	21,878	Oct. 18	61	422
Bryant, Frank, Stoneham, Mass. Leather boots and shoes	22,093	Nov. 29	61	1312
Bryden Horse Shoe Company, Catasauqua, Pa. Animal-shoes	21,866	Oct. 18	61	421
Buffalo Milling Company, Limited, Lewisburg, Pa. Wheat-flour	21,906	Nov. 1	61	719
Burns, Samuel F., New York, N. Y. Ale	21,867	Oct. 18	61	421
Burt & Co., Edwin C., New York, N. Y. Boots, shoes, and slippers	21,975	Nov. 15	61	1012
Burton Bros. & Co., New York, N. Y. Cotton goods, such as silesias, sateens, cambrics, and twills	21,937	Nov. 8	61	881
Burton Bros. & Co., New York, N. Y. Linings embracing silesias, sateens, cambrics, and twills	22,158	Dec. 13	61	1651
Cahill & Hall Elevator Company, San Francisco, Cal. Operating machinery for passenger and freight elevators	22,001	Nov. 15	61	1014
Candy Bros., St. Louis, Mo. Candies	22,191	Dec. 20	61	1786
Capital Drug Company, Augusta, Me. Medicinal remedies in the form of tablets, plasters, pills, ointments, suppositories, and powders	21,962	Nov. 8	61	883
Challenge Corn Planter Company, Grand Haven, Mich. Ice-chests, coolers, and refrigerators	21,810	Oct. 4	61	147
Champion Chemical Works, Chicago, Ill. Powdered lye	21,809	Oct. 4	61	147

Alphabetical list of registrants of trade-marks, October to December, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Chancellor, Charles W., Baltimore, Md. Deodorizing-powder	21,963	Nov. 8	61	883
Chandler & Co., Hannibal H., Chicago, Ill. Periodical publications	22,228	Dec. 27	61	1943
Chicago Consolidated Bottling Company, Chicago, Ill. Ginger-ale	22,124	Dec. 6	61	1476
Cincinnati Soap Co., Cincinnati, Ohio. Medicated soap	21,832	Oct. 4	61	149
Colebrookdale Iron Company, Pottstown, Pa. Sad-irons for domestic use	22,139	Dec. 6	61	1477
Conklin Manufacturing Co., Charles A., Atlanta, Ga. Tin or terne plates	21,999	Nov. 15	61	1014
Cook's Sons, Adam, New York, N. Y. Lubricating oil for bicycles	21,891	Oct. 25	61	562
Co-Operative Foundry Company, Rochester, N. Y. Stoves, ranges, and furnaces	22,052	Nov. 22	61	1164
Cockle & Co., James, London, England. Pills for human use	22,047	Nov. 22	61	1164
Cohn, Alfred I., New York, N. Y. Photographic paper	22,009	Nov. 22	61	1161
Coulter, Charles L., New York, N. Y. Vaporizers, volatilizers, and inhalers	22,155	Dec. 13	61	1651
Crescent Orange Grove Company, Citra, Fla., and Steubenville, Ohio. Oranges	21,982	Nov. 15	61	1013
Crolley, Harry W., Cincinnati, Ohio. Remedy for gonorrhea, gleet, and like diseases	22,268	Dec. 27	61	1946
Crozer & Son, Samuel A., Upland, Pa. Cheviots	22,087	Nov. 29	61	1311
Curtis, Daniel W., Syracuse, N. Y. Polishing-powder, not including stove-polish	21,989	Nov. 15	61	1013
Dachn, Charles, Milwaukee, Wis. Cigars	21,893	Oct. 25	61	562
David B. Crockett Company, Bridgeport, Conn., and New York, N. Y. Liquid-pigment filler	21,879	Oct. 18	61	422
Davis, Estes H., Elmira, N. Y. Remedy for gonorrhea and gleet	21,961	Nov. 8	61	883
Davis, Francis P., New York, N. Y. Tonics, remedies for diseases of the liver and blood and for bilious disorders	22,195	Dec. 20	61	1786
Davison, Henry C., New York, N. Y. Impression-paper	21,868	Oct. 18	61	421
Davison, Otto G., Peoria, Ill. Chewing-gum	21,955	Nov. 8	61	883
Delafield, McGovern & Co., New York, N. Y. Whisky, rum, gin, cordials, and California wines and brandy	21,811	Oct. 4	61	147
Delnow, Merrill F., Lynn, Mass. Soap for belt-dressing	21,923	Nov. 1	61	720
Diamond, Patrick, Philadelphia, Pa. Washing-blue	21,903	Nov. 1	61	719
Diamond, Patrick, Philadelphia, Pa. Washing-blue	22,136	Dec. 6	61	1477
Dicks, Firm of F. A., Natchez, Miss. Ague cure	22,110	Dec. 6	61	1475
Dienelt & Co., Julius, Alexandria, Va. Tonic preparations, pills, and powders	22,032	Nov. 22	61	1163
Dixon, George E., St. Paul, Minn. Antipyretic	21,841	Oct. 4	61	149
Doble, William H., Quincy, Mass. Dried currants	21,869	Oct. 18	61	421
Domestic Sewing Machine Company, New York, N. Y. Monthly fashion paper or magazine	21,880	Oct. 18	61	422
Dougherty, Andrew, New York, N. Y. Playing-cards	22,010	Nov. 22	61	1161
Draper, Oscar M., North Attleborough, Mass. Ornamental watch and neck chains	21,870	Oct. 18	61	421
Drexler, William. (See Spitteler and Drexler.)				
Driscoll & Co., John T., Boston, Mass. Carbonated drinks	21,950	Nov. 8	61	882
Driscoll & Co., John T., Boston, Mass. Carbonated drinks	21,983	Nov. 15	61	1013
Duffy, Mountfort & Greene Cider Company, Newark, N. Y. Cider vinegar	21,944	Nov. 8	61	882
Dyarman, George W., Columbus, Ohio. Soft or liquid soap	22,204	Dec. 20	61	1787
Dyson, Arthur, London, England. Printed tickets	22,179	Dec. 20	61	1785
E. P. Gleason Manufacturing Company, New York and Brooklyn, N. Y., and Chicago, Ill. Liquid enamel for use on glass	22,024	Nov. 22	61	1162
E. P. Gleason Manufacturing Company, New York and Brooklyn, N. Y., and Chicago, Ill. Liquid enamel for use on glass	22,025	Nov. 22	61	1162
Eaton, Frederic, Boston, Mass. Preparations for the cure of piles and kindred diseases	21,857	Oct. 11	61	283
Eberhardt & Ober Brewing Company, Allegheny, Pa. Lager-beer	21,881	Oct. 18	61	422
Elsner & Mendelson Company, New York, N. Y. Hydraulic and other cements	21,853	Oct. 4	61	150
Electrolibration Company, Birmingham, Ala. Electro-curative apparatus	21,892	Oct. 25	61	562
Electro Silicon Company, New York, N. Y. Silver polish in the form of powder and soap	21,820	Oct. 4	61	148
Engelhard & Sons, A., Louisville, Ky. Plug-tobacco	21,953	Nov. 8	61	883
Eskridge, Solomon, Rockwood, Tenn. Liniment	21,958	Nov. 8	61	883
Estes, Webster C., New York, N. Y. Painter's smalt	21,887	Oct. 25	61	562
Excelsior Rubber Works, New York, N. Y. Dental rubber	21,882	Oct. 18	61	422
Fairweather, William, Chicago, Ill. Ointments	22,043	Nov. 22	61	1163
Fait & Winebrenner, Baltimore, Md. Canned oysters	22,084	Nov. 29	61	1311
Färberei Glanchau, vormals Otto Seyfert, Glauchau, Germany. Dyes or colors	21,842	Oct. 4	61	150
Ferraz Sobrinho & Co., Rio Janeiro, Brazil, and New York, N. Y. Petroleum	22,161	Dec. 13	61	1652
Ferraz Sobrinho & Co., Rio Janeiro, Brazil, and New York, N. Y. Salted and pickled meats	22,169	Dec. 13	61	1653
Ferris, Frank A., New York, N. Y. Smoked meats such as hams and bacon	22,129	Dec. 6	61	1477
Fischer & Burnett Lumber Company, Renovo, Miss., Memphis, Tenn., and New York, N. Y. Sawed lumber	22,098	Nov. 29	61	1312
Fisher, Alexander M., Chilicothe, Mo. Medicated snuff	21,930	Nov. 1	61	720
Foltz, Frederick P., Abingdon, Ill. Liniments and ointments	22,121	Dec. 6	61	1476
Foster-Hilson Company, New York, N. Y. Cigars	21,843	Oct. 4	61	150
Forster, William, New York, N. Y. Beer	21,858	Oct. 11	61	283
Forster, William, New York, N. Y. Beer	21,859	Oct. 11	61	283
Fould, Herman B., New York, N. Y. Dentifrices	22,259	Dec. 27	61	1946
Fowler, Frank C., Moodus, Conn. Pills for diseases of the digestive organs and kindred diseases	22,120	Dec. 6	61	1476
Fowler, Frank C., Moodus, Conn. Suppositories	22,123	Dec. 6	61	1476
Fowler, Green L., Clarksburg, Mo. Medicines for the cure of blood diseases	22,114	Dec. 6	61	1475
Gerstle, Leopold, Highland Park, Tenn. Medical preparation of sarsaparilla	22,059	Nov. 29	61	1309
Gerstle, Leopold, Highland Park, Tenn. Remedy for the diseases of women	22,060	Nov. 29	61	1309
Gillingham Portland Cement Company, Limited, London and Gillingham, England. Portland cement	22,244	Dec. 27	61	1944
Glastenbury Knitting Company, Addison, Conn. Knitted underwear	22,188	Dec. 20	61	1785
Goddard & Sons, J. W., New York, N. Y. Italian cloths, mohair serges, and similar goods	21,889	Oct. 25	61	562
Goodbar, White, Branch & Co., St. Louis, Mo. Men's hats	21,883	Oct. 18	61	422
Gossage & Sons, Wm., Widnes and Liverpool, England. Soap	21,917	Nov. 1	61	720
Gossage & Sons, Wm., Widnes and Liverpool, England. Soap	21,918	Nov. 1	61	720
Gossage & Sons, Wm., Widnes and Liverpool, England. Soap	21,919	Nov. 1	61	720
Gossage & Sons, Wm., Widnes and Liverpool, England. Soap	21,920	Nov. 1	61	720
Gossage & Sons, Wm., Widnes and Liverpool, England. Soap	21,921	Nov. 1	61	720
Gossage & Sons, Wm., Widnes and Liverpool, England. Soap	21,945	Nov. 8	61	882
Gossage & Sons, Wm., Widnes and Liverpool, England. Soap	21,946	Nov. 8	61	882
Gossage & Sons, Wm., Widnes and Liverpool, England. Laundry and toilet soap	22,201	Dec. 20	61	1786
Gossage & Sons, Wm., Widnes and Liverpool, England. Laundry and toilet soap	22,202	Dec. 20	61	1787
Graves & Sons, C. H., Boston, Mass. Whisky	22,076	Nov. 29	61	1310
Green, Shipton, New York, N. Y. Flour	21,871	Oct. 18	61	421
Green, Shipton, New York, N. Y. Flour	21,872	Oct. 18	61	421
Green, Shipton, New York, N. Y. Flour	22,242	Dec. 27	61	1944
Gribble & Nash, New York, N. Y. Camphor	21,956	Nov. 8	61	883
Grobet Frères, Vallorbe, Switzerland. Files, chisels, scopers, gravers, and similar tools	21,904	Nov. 1	61	719
Gyne Vita Manufacturing Co., Philadelphia, Pa. Medicine for the local treatment of diseases peculiar to women	21,884	Oct. 18	61	422

Alphabetical list of registrants of trade-marks, October to December, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Habne & Co., Newark, N. J. Games, game-boards, puzzles, dolls, rattles, balls, bats, and the like, excluding toy wheels	21,978	Nov. 15	61	1012
Hake, Edward G., New Cumberland, Pa. Cosmetics, both liquid and powder, and a liquid dentifrice	22,018	Nov. 22	61	1162
Hall, William H., New York, N. Y. Soap	21,812	Oct. 4	61	147
Hampden Watch Company, Canton, Ohio. Watches	22,180	Dec. 20	61	1785
Hance Bros. & White, Philadelphia, Pa. Flavoring extracts	22,133	Dec. 6	61	1477
Hance Bros. & White, Philadelphia, Pa. Flavoring extracts	22,134	Dec. 6	61	1477
Hanes & Co., P. H., Winston, N. C. Chewing-tobacco	22,058	Nov. 22	61	1164
Hann & Bro., Otto, New York, N. Y. Chemical preservative	21,854	Oct. 4	61	150
Harrod Milling Co., Harrod, Ohio. Wheat-flour	22,086	Nov. 29	61	1311
Haviland, Theodore, Limoges, France. China-ware	22,160	Dec. 6	61	1474
Hedges, James, Chicago, Ill. Pig and hog bladders	22,272	Dec. 27	61	1946
Heffernan, Edward, Lynn, Mass. Remedy for colds and throat and lung troubles	22,116	Dec. 6	61	1475
Heinzerling, John, Baltimore, Md. Ginger ale	22,227	Dec. 20	61	1788
Henderson, Harvey M., Chicago, Ill. Cough balsam	22,193	Dec. 20	61	1786
Henry Sears Company, Chicago, Ill. Safety-bicycles	22,223	Dec. 20	61	1788
Hermsdorf, Louis, Chemnitz, Germany. Hosiery, textile gloves, and underwear	22,231	Dec. 27	61	1943
Heyden, F. von, Nachfolger, Radebeul, near Dresden, Germany. Chemical products	21,846	Oct. 4	61	150
Hickman, Herbert, Jersey City, N. J. Fire-lighters	22,208	Dec. 20	61	1787
Hite, James F., Owensborough, Ky. Toilet cream for the skin	21,964	Nov. 8	61	883
Hollenden Hotel Company, Cleveland, Ohio. Cigars	21,896	Oct. 25	61	562
Hotchkiss, Edward G., Gloucester, Mass. Whole, cut, and boneless fish	22,083	Nov. 29	61	1311
Howard Furnace Company, Syracuse, N. Y. Heating-furnaces	22,003	Nov. 15	61	1014
Irwin, Arthur A., Boston, Mass. Base-ball players' gloves and mitts	22,230	Dec. 27	61	1943
Jackson, Joseph, Paris, France. Dressing for the hair	21,987	Nov. 15	61	1013
Jacobs & McCafferty, Brooklyn, N. Y. White lead	22,066	Nov. 29	61	1309
John R. Dickey Drug Company, Bristol, Va. Medicinal eye-water	22,261	Dec. 27	61	1946
Johnston, Willis, Washington, D. C. Rolled oats	22,167	Dec. 13	61	1652
Johnston, Willis, Washington, D. C. Ground coffee	22,240	Dec. 27	61	1944
Katharmon Chemical Company, St. Louis, Mo. Proprietary medicines	21,996	Nov. 15	61	1014
Keasbey & Mattison, Ambler, Pa. Remedy for rheumatism, cystitis, and other diseases resulting from excess of acid in the secretions	22,037	Nov. 22	61	1163
Keasbey & Mattison, Ambler, Pa. Remedy for dyspepsia	22,117	Dec. 6	61	1475
Kemp & Co., W. H., New York, N. Y. Powdered paints	22,026	Nov. 22	61	1162
Kendall Manufacturing Company, Providence, R. I. Laundry soap	22,164	Dec. 13	61	1652
Kentucky Veterinary Medicine Company, Mount Sterling, Ky. Veterinary remedies	22,271	Dec. 27	61	1946
Kerr Thread Company, East Newark, N. J. Thread of cotton, silk, flax, and other fibrous material	21,976	Nov. 15	61	1012
Kerr Thread Company, East Newark, N. J. Thread of cotton, silk, flax, and other fibrous materials for machine and hand sewing	22,103	Dec. 6	61	1474
Ketchum, David W., Evanston, Ill. Rosin	22,243	Dec. 27	61	1944
Keyless Lock Company, Indianapolis, Ind. Post-office letter-boxes, drawers, and the like	22,057	Nov. 22	61	1164
King Manufacturing Co., New York, N. Y. Axle-grease	22,096	Nov. 29	61	1312
Klein, Aron, Hamilton, Ohio. Remedy for diseases of the liver, kidneys, and stomach	22,038	Nov. 22	61	1163
Kleindienst, Henry, Detroit, Mich. Medicinal compounds the basis of which is formed of vegetable extracts	22,113	Dec. 6	61	1475
Klindtworth, Adolph C., New York, N. Y. Flour	21,979	Nov. 15	61	1012
Knowles, Henry, London, England. Earthen sanitary pipes	21,898	Oct. 25	61	562
Koch & Co., N., Milwaukee, Wis. Shoes and analogous articles of foot-wear	22,107	Dec. 6	61	1474
Koch & Co., N., Milwaukee, Wis. Boots, shoes, slippers, rubbers, sandals, and analogous footwear	22,189	Dec. 20	61	1786
Koch Sons & Company, New York, N. Y., and Berlin, Germany. Photograph and autograph albums and scrap-books	22,007	Nov. 22	61	1161
Kollock, Logan & Co., Lynn, Mass. Shoes for children's wear	22,017	Nov. 22	61	1162
Kunkelmann & Co., Rheims, France. Champagne	22,247	Dec. 27	61	1945
Kunkelmann & Co., Rheims, France. Champagne	22,248	Dec. 27	61	1945
Kunkelmann & Co., Rheims, France. Champagne	22,249	Dec. 27	61	1945
Kunkelmann & Co., Rheims, France. Champagne	22,250	Dec. 27	61	1945
Kunkelmann & Co., Rheims, France. Champagne	22,251	Dec. 27	61	1945
Kunkelmann & Co., Rheims, France. Champagne	22,252	Dec. 27	61	1945
Kunkelmann & Co., Rheims, France. Champagne	22,253	Dec. 27	61	1945
Kuschewsky, Solomon L., New York, N. Y. Whisky	22,125	Dec. 6	61	1476
L. A. Weyburn Company, Rockford, Ill. Plowshares	21,826	Oct. 4	61	148
Lamy, Ferdinand C., Saranac Lake, N. Y. Metal spoons, forks, knife-handles, and the like	21,899	Oct. 25	61	562
Lary, Morris, New York, N. Y. Pillows	22,236	Dec. 27	61	1944
Leary, William A., Holyoke, Mass. Fountain-pens	22,151	Dec. 13	61	1651
Lehn & Fink, New York, N. Y. Saccharate similar to saccharine	22,171	Dec. 13	61	1653
Lehn & Fink, New York, N. Y. Antipyretics and antineuralgics	22,264	Dec. 27	61	1946
Leprince, Maurice, Bourges, France. Pills	21,926	Nov. 1	61	720
Lester & Wasley, Norwich, Conn. Machinery for pasting and folding envelopes and making paper boxes	22,074	Nov. 29	61	1310
Levy & Co., A., New York, N. Y. Boys' and children's suits	21,927	Nov. 1	61	720
Levy & Co., A., New York, N. Y. Boys' and children's suits	21,935	Nov. 8	61	881
Lewinson, Isidore, New York, N. Y. Washing-blue	21,948	Nov. 8	61	882
Liberty Manufacturing Company, New York, N. Y. Single-keyed type-writers	21,998	Nov. 15	61	1014
Livura Manufacturing Co., Nashville, Tenn. Ointments, pills, and medicated soap	21,860	Oct. 11	61	283
Lockwood, Frederick J., Bridgeport, Conn. Salves, ointments, and liniments	22,122	Dec. 6	61	1476
Loeb & Co., William, Providence, R. I. Finger-rings	22,101	Dec. 6	61	1474
Loring, Abbott, Boston, Mass. Medicated belts, pills, and salts	21,845	Oct. 4	61	150
Lowell Manufacturing Company, Boston, Mass. Carpets	22,234	Dec. 27	61	1943
Lueders, George H., St. Paul, Minn. Liquid for flavoring tobacco and cigar-boxes	21,954	Nov. 8	61	883
Magie Brothers, Chicago, Ill. Lubricating oil and grease	22,159	Dec. 13	61	1651
Magnesia Sectional Covering Co., Ambler, Pa. Non-heat-conducting coverings for steam and other pipes and boilers	22,005	Nov. 15	61	1014
Majestic Manufacturing Company, St. Louis, Mo. Heaters, ranges, and stoves	22,004	Nov. 15	61	1014
Mansfield, Lott, Boston, Mass. Medicinal tonic	22,033	Nov. 22	61	1163
Maple City Soap Works, Monmouth, Ill. Soap for laundry and household use	22,163	Dec. 13	61	1652
Marshall, Ernest C., Boston, Mass. Remedies for coughs, colds, and all diseases of the throat and lungs	22,269	Dec. 27	61	1946
Massanetta Park and Springs Company, Washington, D. C. Mineral water	22,080	Nov. 29	61	1310
Maxim, Jennie A., Pittsfield, Mass. Dermal preparations, dermal soaps, curling cream, hair tonic, and tooth-powders	22,267	Dec. 27	61	1946
Mayer & Loewenstein, New York, N. Y. Varnish	21,949	Nov. 8	61	882
Mayer, Sons & Co., Philadelphia, Pa. Rye whisky	22,127	Dec. 6	61	1476

Alphabetical list of registrants of trade-marks, October to December, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
McAllister, Francis W., Baltimore, Md. Eyeglasses and spectacles	22,102	Dec. 6	61	1474
McBride & Hall, Brooklyn, N. Y. Worm-powders	22,041	Nov. 22	61	1163
McClain, Edward L., Greenfield, Ohio. Sweat collars or pads	22,071	Nov. 29	61	1310
McClellan, Charles H., Troy, N. Y. Shirts, collars, cuffs, and blouses	21,821	Oct. 4	61	148
McIntosh-Huntington Company, Cleveland, Ohio. Bicycles, velocipedes, and accessory articles	21,873	Oct. 18	61	421
McKesson & Robbins, New York, N. Y. Boxes, bottles, atomizers, tubes, and distributers for dispensing powders, liquids, and semi-liquids	21,905	Nov. 1	61	719
Meikleham, William J., Highlands, Colo., and Cohoes, N. Y. Bread, biscuits, cakes, and crackers	21,861	Oct. 11	61	283
Mereness, Lyman D., Sharon Springs, N. Y. Pills and granules	22,198	Dec. 20	61	1786
Mexican Amole Soap Company, Peoria, Ill. Soap and soap powders	22,203	Dec. 20	61	1787
Meyer Brothers Drug Company, St. Louis and Kansas City, Mo., and Dallas, Tex. Bourbon whisky	22,126	Dec. 6	61	1476
Miller, Frank J., Buffalo, N. Y. Tea and coffee	21,942	Nov. 8	61	882
Miller, George M., Detroit, Mich. Liquid anæsthetic for dentists' use	22,100	Dec. 6	61	1475
Minkota Milling Company, Duluth, Minn. Wheat-flour	21,940	Nov. 8	61	881
Moki Herb Remedy Company, Tempe, Ariz. Ter. Medicinal herb-teas	21,922	Nov. 1	61	720
Moore, James W., New York, N. Y. Medicinal teas	22,115	Dec. 6	61	1475
Mülheus & Kropff, New York, N. Y. Toilet soap	22,063	Nov. 29	61	1309
Mulot, Otto L., Astoria, N. Y. Remedy for diseases of the liver and skin	21,862	Oct. 11	61	283
Munroes, Packard & Linscott, Auburn, Me. Boots and shoes	22,157	Dec. 13	61	1651
Murphy, Hibben & Co., Indianapolis, Ind. Knit fabrics	22,014	Nov. 22	61	1161
National Cigarette and Tobacco Company, New York, N. Y. Cigarettes	21,894	Oct. 25	61	562
Nazareth Manufacturing Company, Nazareth, Pa. Knit under vests or waists	22,106	Dec. 6	61	1474
Nebraska City Cereal Mills, Nebraska City, Nebr. Rolled oats, velvet meal, corn grits, and self-rising griddle-cake flour	22,212	Dec. 20	61	1787
Neff, Charles J. (See Neff, George A., C. J., and W. J.)				
Neff, George A., C. J., and W. J., Kansas City, Mo. Chewing and smoking tobacco and cigars	21,855	Oct. 4	61	150
Neff, William J. (See Neff, George A., C. J., and W. J.)				
Nehls, Carle, Cleveland, Ohio. Remedies for neurotic and similar complaints	22,270	Dec. 27	61	1946
Netter Bros., Philadelphia, Pa. Wines and liquors	21,984	Nov. 15	61	1013
New England Whalebone Manufacturing Company, New York, N. Y. Raw and manufactured whalebone	21,939	Nov. 8	61	881
New Process Nail Company, Torrington, Conn. Horseshoe-nails	22,072	Nov. 29	61	1310
New York Belting and Packing Company, Limited, New York, N. Y. Articles of vulcanized rubber, including mats and matting	22,108	Dec. 6	61	1474
New York Consolidated Card Company, New York, N. Y. Playing-cards	22,011	Nov. 22	61	1161
New York Quinine and Chemical Works, (Limited,) New York, N. Y. Remedies for internal use which contain quinine	22,061	Nov. 29	61	1309
New York Sewing Machine and Manufacturing Company, Plattsburg, N. Y. Sewing-machines	21,897	Oct. 25	61	562
Norcross, John H., Boston, Mass. Certain under and outer wearing-apparel	22,092	Nov. 29	61	1311
Norddeutsche Wollkämmerei & Kammgarnspinnerei, Bremen, Germany. Wool-fat	22,095	Nov. 29	61	1312
North Packing and Provision Company, Boston, Mass. Meat products, including packed and smoked beef and pork, hams, shoulders, sides, bacon, and sausage	22,128	Dec. 6	61	1476
Northrop, Arthur C., Waterbury, Conn. Books, pamphlets, and periodicals	22,008	Nov. 22	61	1161
O'Connor, Denis J., Springfield, Ohio. Baking-powder	22,135	Dec. 6	61	1477
Oakley Soap and Perfumery Company, New York, N. Y. Toilet soap	22,022	Nov. 22	61	1162
Oblinger, John W., Troy, Ohio. Baking and roasting pans	22,051	Nov. 22	61	1164
Odorless Disinfectant Co., Washington, D. C., New York, N. Y., and Jersey City, N. J. Disinfectants	21,988	Nov. 15	61	1013
Oettinger & Co., E. R., New York, N. Y. Steel and other pens	21,907	Nov. 1	61	719
Oettinger & Co., E. R., New York, N. Y. Steel and other pens	21,908	Nov. 1	61	719
Oettinger & Co., E. R., New York, N. Y. Steel and other pens	21,909	Nov. 1	61	719
Oettinger & Co., E. R., New York, N. Y. Steel and other pens	21,910	Nov. 1	61	719
Oettinger & Co., E. R., New York, N. Y. Steel and other pens	21,911	Nov. 1	61	719
Oettinger & Co., E. R., New York, N. Y. Steel and other pens	21,912	Nov. 1	61	719
Oettinger & Co., E. R., New York, N. Y. Steel and other pens	21,913	Nov. 1	61	719
Oettinger & Co., E. R., New York, N. Y. Steel and other pens	21,914	Nov. 1	61	719
Oettinger & Co., E. R., New York, N. Y. Steel and other pens	21,915	Nov. 1	61	719
Oettinger & Co., E. R., New York, N. Y. Steel and other pens	21,916	Nov. 1	61	720
Oettinger & Co., E. R., New York, N. Y. Steel and other pens	22,068	Nov. 29	61	1309
Oettinger & Co., E. R., New York, N. Y. Steel and other pens	22,069	Nov. 29	61	1309
Ogborn, Marshall E., San Francisco, Cal. Laxative medicine	22,196	Dec. 20	61	1786
Ohio Soap Company, Cincinnati, Ohio. White soap for the toilet and laundry	22,021	Nov. 22	61	1162
Olwell & Co., James, New York, N. Y. Whisky	22,219	Dec. 20	61	1788
Oppenheimer & Levy, S., New York, N. Y. Ladies' face-veils	22,104	Dec. 6	61	1474
Orlando Medicine Company, Orlando, Fla. Medicine for fowls	21,833	Oct. 4	61	149
Osborne, Frank N., New York, N. Y. Finger-rings	21,885	Oct. 18	61	422
Osborne, Frank N., New York, N. Y. Finger-rings	21,972	Nov. 15	61	1012
Osborne, Frank N., New York, N. Y. Finger-rings	21,973	Nov. 15	61	1012
P. J. Willis & Bro., Galveston, Tex. Plaids for dresses	22,016	Nov. 22	61	1162
Page Belting Company, Concord, N. H. Certain named rubber and leather goods	21,924	Nov. 1	61	720
Page Bros. & Co., Boston, Mass. Oil or gas stoves	22,075	Nov. 29	61	1310
Palmer, Austin D., Coshocton, Ohio. Calendars and paper-weights	22,152	Dec. 13	61	1651
Palmer, Charles H., Jr., Amesbury, Mass. Top-buggies	21,837	Oct. 4	61	149
Palmer & Rey, San Francisco, Cal. Gas and gasoline engines	21,834	Oct. 4	61	149
Palmer & Rey, San Francisco, Cal. Gas and gasoline engines	21,835	Oct. 4	61	149
Palmer & Rey, San Francisco, Cal. Gas and gasoline engines	21,836	Oct. 4	61	149
Palmer, Thomas, New York, N. Y. Baking-powder	22,166	Dec. 13	61	1652
Parker & Co., E. L., Baltimore, Md. All sheet metal and solder	22,140	Dec. 6	61	1477
Parker & Co., E. L., Baltimore, Md. All sheet metal and solder	22,141	Dec. 6	61	1478
Parker & Co., E. L., Baltimore, Md. All sheet metal and solder	22,142	Dec. 6	61	1478
Parker & Co., E. L., Baltimore, Md. All sheet metal	22,143	Dec. 6	61	1478
Parker, Henry J., Clayton, Ill. Powder for allaying fevers, for the treatment of febrile affections, and the cure of headache arising from fever	21,960	Nov. 8	61	883
Paxton & Gallagher, Omaha, Nebr. Tea	21,847	Oct. 4	61	150
Paxton & Gallagher, Omaha, Nebr. Tea	21,941	Nov. 8	61	881
Pearl, Eugene, New York, N. Y. Corset shields or supports	22,187	Dec. 20	61	1785
Peek, Frederic M., Hartford, Conn. Butter and cheese	22,168	Dec. 13	61	1653
Perrin Frères et Cie., New York, N. Y. Gloves	22,182	Dec. 20	61	1785
Perrin Frères et Cie., New York, N. Y. Gloves	22,183	Dec. 20	61	1785
Perrin Frères et Cie., New York, N. Y. Gloves	22,184	Dec. 20	61	1785
Perrin Frères et Cie., New York, N. Y. Gloves	22,185	Dec. 20	61	1785
Peters & Company, Limited, Chicago, Ill. Preparations of sulphur in liquid form	22,035	Nov. 22	61	1163
Philadelphia Hardware and Malleable Iron Works, Philadelphia, Pa. Steam and hot-water radiators	21,966	Nov. 8	61	884
Pidgeon, Albert J., Kansas City, Mo. Remedy for acute and chronic inflammation	22,174	Dec. 13	61	1653

Alphabetical list of registrants of trade-marks, October to December, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Piowaty, Max, St. Paul, Hutchinson, and Glencoe, Minn. Poultry and eggs	21,822	Oct. 4	61	148
Piowaty, Max, St. Paul, Hutchinson, and Glencoe, Minn. Dairy products	22,085	Nov. 29	61	1311
Plasterer, Purl C., Fort Wayne, Ind. Silver-polish	21,947	Nov. 8	61	882
Planten, John R., New York, N. Y. Capsules filled with medicine	22,040	Nov. 22	61	1163
Planten, John R., New York, N. Y. Capsules for medicine	22,045	Nov. 22	61	1164
Planten, John R., New York, N. Y. Capsules for medicine	22,046	Nov. 22	61	1164
Plume & Atwood Manufacturing Company, Waterbury, Conn., and New York, N. Y. Straight pins	21,888	Oct. 25	61	562
Pomeroy & Van Deusen, Westfield, Mass. Whips	21,844	Oct. 4	61	150
Port Huron Engine and Thresher Company, Port Huron, Mich. Thrashing, stacking, and weighing machine, and a steam-engine	21,991	Nov. 15	61	1013
Porter, Joseph E., Ottawa, Ill. Hay-carriers	22,055	Nov. 22	61	1164
Powers, Edward S., Brockton, Mass. Remedy for rheumatism	22,175	Dec. 13	61	1653
Price, C. H. & J., Salem, Mass. Medicated toilet preparation for the skin	22,111	Dec. 6	61	1475
Price, Henry O., Cleveland, Ohio. Prepared medicine for rheumatism, gout, and lumbago	21,995	Nov. 15	61	1014
Price & Walters, Buffalo, N. Y. Waterproof liquid blacking for shoes	22,023	Nov. 22	61	1162
Prinz, Heinrich, Freien Steinau, Germany. Cheeses	22,210	Dec. 20	61	1782
Quirye Company, Chicago, Ill. Medicated beverages or tonics	22,172	Dec. 13	61	1653
Quirye Company, Chicago, Ill. Medicated beverages or tonics	22,256	Dec. 27	61	1945
Raymond, Jean M., Paris, France. Disinfectant	22,044	Nov. 22	61	1164
Reade Manufacturing Co., Chicago, Ill. Laundry soap	21,813	Oct. 4	61	147
Reading Hardware Company, Reading, Pa. Builders' hardware, including locks and latches	22,000	Nov. 15	61	1014
Reliance Manufacturing Company, New York, N. Y. Clothes-cleaning preparations	22,205	Dec. 20	61	1787
Reliance Manufacturing Company, New York, N. Y. Shoe-blacking	22,207	Dec. 20	61	1787
Richards & Co., R., Allegan, Mich. Remedies for diseases of the stomach, blood, liver, and kidneys, and nervous affections, and general debility	22,119	Dec. 6	61	1476
Richter, Robert, Philadelphia, Pa. Filling or cement for teeth	22,260	Dec. 27	61	1946
Ricqlès et Cie., E. de, Lyons and Paris, France. Mint-alcohol	21,900	Nov. 1	61	719
Ridley, George W., Danville, Ill. Remedies for diseases of the stomach, blood, liver, and kidneys	22,118	Dec. 6	61	1476
Riedel, Max, New York, N. Y. All-wool henriettas	21,865	Oct. 11	61	284
Rieger, Firm of William, Frankfort-on-the-Main, Germany. Cosmetics, lotions, perfumery, cream, and soap	22,062	Nov. 29	61	1309
Robins, William B., Cincinnati, Ohio. Lamps and burners	22,049	Nov. 22	61	1164
Robinson, James S., Memphis, Tenn. Medicinal preparation for diseases of the liver, stomach, or bowels	22,266	Dec. 27	61	1946
Rockey, Walter S., New York, N. Y. Internal and external remedies for coughs, colds, cramps, bruises, and sprains	21,993	Nov. 15	61	1013
Rosenthal, Lewis, New York, N. Y. Weekly periodicals	21,928	Nov. 1	61	720
Rowbotham, John, Merchantville, N. J. Compounds for destroying insects and other pests, for disinfecting purposes, for curing diseases, and healing wounds	22,039	Nov. 22	61	1163
Royal Phosphoric Coffee Co., North Bloomfield, Ohio. Coffee	22,241	Dec. 27	61	1944
Rubber Paint Company, Chicago, Ill. Chewing-gum	21,874	Oct. 18	61	421
Ruff Brewing Company, Quincy, Ill. Lager-beer	22,170	Dec. 13	61	1653
Ruge & Sons, Herman, Apalachicola, Fla. Fish, oysters, and other shell-fish packed in tin and glass	21,863	Oct. 11	61	283
Ruhl, Andrew W., Baltimore, Md. Baking-powder	22,027	Nov. 22	61	1162
Ruhl, Andrew W., Baltimore, Md. Baking-powder	22,028	Nov. 22	61	1163
Ruhl, Andrew W., Baltimore, Md. Baking-powder	22,165	Dec. 13	61	1652
S. C. Herbst Importing Company, Milwaukee, Wis. Cigars, cheroots, and cigarettes, and smoking, fine-cut, and plug tobacco	22,213	Dec. 20	61	1787
S. C. Herbst Importing Company, Milwaukee, Wis. Cigars, cheroots, and cigarettes, and smoking, fine-cut, and plug tobacco	22,214	Dec. 20	61	1788
S. C. Herbst Importing Company, Milwaukee, Wis. Cigars, cheroots, and cigarettes, and smoking, fine-cut, and plug tobacco	22,215	Dec. 20	61	1788
S. C. Herbst Importing Company, Milwaukee, Wis. Cigars, cheroots, and cigarettes, and smoking, fine-cut, and plug tobacco	22,216	Dec. 20	61	1788
S. C. Herbst Importing Company, Milwaukee, Wis. Cigars, cheroots, and cigarettes, and smoking, fine-cut, and plug tobacco	23,217	Dec. 20	61	1788
S. C. Herbst Importing Company, Milwaukee, Wis. Cigars, cheroots, and cigarettes, and smoking, fine-cut, and plug tobacco	22,218	Dec. 20	61	1788
Samson Cordage Works, Boston, Mass. Cords, lines, twines, and ropes	21,938	Nov. 8	61	881
Schering & Glatz, New York, N. Y. Chemical products derived from sugar	21,864	Oct. 11	61	284
Schering & Glatz, New York, N. Y. Antiseptics and disinfectants	22,265	Dec. 27	61	1946
Schmidt & Sons, C., Philadelphia, Pa. Lager-beer	22,078	Nov. 29	61	1310
Schmidt & Sons, C., Philadelphia, Pa. Lager-beer	22,079	Nov. 29	61	1310
Schuch & Co., John, Cincinnati, Ohio. Preparation for the prevention of diseases caused by infectious air	22,173	Dec. 13	61	1653
Schweinburg, Emil, New York, N. Y. Corsets	21,934	Nov. 8	61	881
Schweinburg, Emil, New York, N. Y. Corsets	22,186	Dec. 20	61	1785
Scott, Eliza L., London, England. Medicine for dogs and other animals	21,997	Nov. 15	61	1014
Senn & Ackermann, Louisville, Ky. Lager-beer	21,951	Nov. 8	61	882
Sessler, Arnold, New York, N. Y. Overgaiters and leggins	21,936	Nov. 8	61	881
Shaw Leather Company, Boston, Mass. Calf-skins, goat-skins, sole-leather, and sheep-skins	21,974	Nov. 15	61	1012
Sharples, Philip M., West Chester, Pa. Centrifugal creamers	22,149	Dec. 6	61	1478
Siegel, Cooper & Company, Chicago, Ill. Pianos	22,176	Dec. 13	61	1654
Silver, John S., New York, N. Y. Saponaceous compound for cleansing carpets and for laundry purposes	22,162	Dec. 13	61	1652
Silver State Cigar Company, Denver, Colo. Cigars	21,890	Oct. 25	61	562
Smalley, Albert G., Boston, Mass. Bottles	22,156	Dec. 13	61	1651
Smith Bros., Boston, Mass. Boots and shoes	21,815	Oct. 4	61	147
Smith, Freeborn G., New York, N. Y., Jersey City, N. J., Washington, D. C., Saratoga Springs, N. Y., Chicago, Ill., Brooklyn, N. Y., Philadelphia, Pa., and Kansas City, Mo. Pianos	21,895	Oct. 25	61	562
Smith, Freeborn G., New York, N. Y., Jersey City, N. J., Washington, D. C., Saratoga Springs, N. Y., Chicago, Ill., Brooklyn, N. Y., Philadelphia, Pa., and Kansas City, Mo. Pianos	22,048	Nov. 22	61	1164
Smith, Millard F., Cleveland, Ohio. Laundry soap and washing-powder	22,064	Nov. 29	61	1309
Sobrinho & Co., Ferraz, Rio Janeiro, Brazil, and New York, N. Y. Lard	22,030	Nov. 22	61	1163
Sobrinho & Co., Ferraz, Rio Janeiro, Brazil and New York, N. Y. Lard	22,031	Nov. 22	61	1163
South Bend Iron Works, South Bend, Ind. Plows	22,073	Nov. 29	61	1310
Spitteler, John, and W. Drexler, Paterson, N. J. Salve for eye diseases	22,197	Dec. 20	61	1786
Spring Curry Comb Company, South Bend, Ind. Spring curry-combs	21,969	Nov. 8	61	884
Stapenhorst, Jacob, New York, N. Y. Zwieback, (a twice-baked bread)	22,029	Nov. 22	61	1163
Stein & Co., Bernhard, Chicago, Ill. Books, magazines, and periodicals	22,229	Dec. 27	61	1943
Steinhart, Heidelberg & Co., New York, N. Y. Outside garments worn by men and boys	22,091	Nov. 29	61	1311
Sternbergh & Son, J. H., Reading, Pa. Bolts, nuts, rivets, and screws	22,177	Dec. 13	61	1654
Stimson, Fred. T., Ann Arbor, Mich. Graham flour	21,886	Oct. 18	61	422
Stokes, William H., Watertown, S. D. Wheat-flour	21,817	Oct. 4	61	147

Alphabetical list of registrants of trade-marks, October to December, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Stokes, William H., Watertown, S. D. Wheat-flour	21,818	Oct. 4	61	148
Stokes, William H., Watertown, S. D. Wheat-flour	21,875	Oct. 18	61	421
Strong, William T., London, Canada. Remedy for the piles	21,814	Oct. 4	61	147
Sylvan Remedy Co., Peoria, Ill. Medicated gum drops	22,192	Dec. 20	61	1786
Syndicate Trading Company, New York, N. Y. Ladies' French corsets	21,816	Oct. 4	61	147
Taylor, Charlotte E., New York, N. Y., Chicago, Ill., Boston, Mass., and Philadelphia, Pa. Hats and bonnets for ladies, misses, and young boys, and trimmings therefor	22,090	Nov. 29	61	1311
Taylor Co., N. & G., Philadelphia, Pa. Tin-plate, terne-plate, and sheet metal, coated and uncoated	21,876	Oct. 18	61	421
Taylor Co., N. & G., Philadelphia, Pa. Tin-plate, terne-plate and sheet metal, coated and uncoated	21,877	Oct. 18	61	421
Taylor Co., N. & G., Philadelphia, Pa. Tin-plate, terne-plate, and sheet metal, coated and uncoated	22,145	Dec. 6	61	1478
Taylor Co., N. & G., Philadelphia, Pa. Tin-plate, terne-plate, and sheet metal, coated and uncoated	22,146	Dec. 6	61	1478
Taylor Co., N. & G., Philadelphia, Pa. Tin-plate, terne-plate, and sheet metal coated with tin	22,238	Dec. 27	61	1944
Taylor, Herbert J., New York, N. Y., and Chicago, Ill. Hats and bonnets for ladies, misses, and young boys, and trimmings therefor	22,013	Nov. 22	61	1161
Taylor, Horace B., Philadelphia, Pa. Furniture varnish or polish	22,137	Dec. 6	61	1477
Thaddeus Davids Company, New York, N. Y. Compositions applied with a brush in making ornamental cards	21,990	Nov. 15	61	1013
Thompson & Co., Lucas, New York, N. Y. Linen goods	22,088	Nov. 29	61	1311
Thornton, Frank L., Providence, R. I. Buckwheat, Graham flour, cornmeal, rolled oats, and similar manufactured cereals	21,823	Oct. 4	61	148
Tillson, Davis, Orange Bend, Fla. Oranges	21,824	Oct. 4	61	148
Truslow & Co., New York, N. Y. Liquefied carbonic-acid gas	21,848	Oct. 4	61	150
Tucker & Cook Manufacturing Company, Conway and Springfield, Mass. Knitting and mending cotton yarns	21,901	Nov. 1	61	719
Turner-Shaker Medicine Co., St. Louis, Mo., and Union Village, Ohio. Certain named line of proprietary medicines	22,194	Dec. 20	61	1786
United Knitting Works Company, Limited, Aarburg, Switzerland. Knit underwear	22,105	Dec. 6	61	1474
United States Printing Company, Cincinnati, Ohio. Playing-cards	21,977	Nov. 15	61	1012
Van Arsdale, Martha E., Yuba City, Cal. Liquid cough-sirup	22,042	Nov. 22	61	1163
Van Dyk Manufacturing Company, Rutherford, N. J. Face and skin powder	22,019	Nov. 22	61	1162
Van Every, Martin, Buffalo, N. Y. Remedies for diseases of the throat, lungs, and kidneys	21,992	Nov. 15	61	1013
Van Rensselaer, Henry D., Waukesha, Wis. Line of medicines	21,994	Nov. 15	61	1014
Vandergrift Manufacturing Company, Jamestown, N. Y. Hand washing-machines	22,053	Nov. 22	61	1164
Vandergrift Manufacturing Company, Jamestown, N. Y. Hand washing-machines	22,054	Nov. 22	61	1164
Vautier & Fils, Sl., Carouge, Switzerland. Files, chisels, gouge-chisels, sometimes known as scoopers, and gravers	22,147	Dec. 6	61	1478
Villari, Giuseppe, New York, N. Y. Lemons and oranges	22,209	Dec. 20	61	1787
Volk Hat Company, South Norwalk, Conn. Hats	21,825	Oct. 4	61	148
W. J. Wilcox Lard and Refining Company, Guttenburg, N. J., and New York, N. Y. Lard and its substitutes	21,980	Nov. 15	61	1012
W. J. Wilcox Lard and Refining Company, Guttenburg, N. J., and New York, N. Y. Lard and its substitutes	22,211	Dec. 20	61	1787
Wagner, George, Washington, D. C. Skin ointment or cream	22,262	Dec. 27	61	1946
Walsmann, William, New York, N. Y. Whisky	21,986	Nov. 15	61	1013
Walter A. Wood Harvester Company, St. Paul and Minneapolis, Minn. Harvesters and harvester-binders	22,150	Dec. 6	61	1478
Walter, Georg, Appleton, Wis. Lager-beer	22,077	Nov. 29	61	1310
Walter M. Lowney Company, Boston, Mass. Fruit-confections	21,981	Nov. 15	61	1012
Waterbury Watch Company, Waterbury, Conn. Watches	22,070	Nov. 29	61	1309
Weber, A. C. & G. F., Albany, N. Y. Sarsaparilla tonics	21,959	Nov. 8	61	883
Weir & Co., J. D., New York, N. Y. Certain named dry goods	22,015	Nov. 22	61	1162
Wellman & Dwire Tobacco Company, Quincy, Ill. Smoking and chewing tobacco	21,952	Nov. 8	61	883
Wellman & Dwire Tobacco Company, Quincy, Ill. Plug, smoking, and fine-cut tobacco	22,246	Dec. 27	61	1944
Western Union Chemical Company, Cleveland, Ohio. Manufactured fertilizers	21,970	Nov. 8	61	884
Westfälisch-Anhaltische Sprengstoff-Act.-Ges., Coswig, Germany. Explosives	22,099	Nov. 29	61	1312
Wheatley, William A., Baltimore, Md. Raw and processed oysters	22,131	Dec. 6	61	1477
Whicher & Co., T. A., Boston, Mass. Boots and shoes	21,838	Oct. 4	61	149
Wilbert, Lida, Chicago, Ill. Preparations for the complexion, including soaps, lotions, powder, and cream	22,020	Nov. 22	61	1162
Wilkinson, Harris C., Chicago, Ill. Pills	21,957	Nov. 8	61	883
Willard, Samuel L., San Angustine, Tex. Remedies for external use	21,849	Oct. 4	61	150
Williams, Frederick D., Providence, R. I. Collar-buttons	21,971	Nov. 15	61	1012
Wilson, George M. S., Toronto, Canada. Manufactured gas for heating and lighting purposes	22,138	Dec. 6	61	1477
Winchester, William A., Medford, Mass. Medicinal preparation for the cure of piles, dysentery, and kindred complaints	22,034	Nov. 22	61	1163
Wm. Zahn Leather Company, Newark, N. J. Kid-leather	22,190	Dec. 20	61	1786
Woodcock, Hartwell L. and J. E., Belfast, Me. Sarsparilla compound	21,827	Oct. 4	61	149
Woodcock, John E. (See Woodcock, Hartwell L. and J. E.)				
Wright Brothers Tobacco Company, St. Charles, Mo. Plug-tobacco	22,245	Dec. 27	61	1944
Wyckoff, Seamans & Benedict, Ilion and New York, N. Y. Type-writing machines	21,819	Oct. 4	61	148
Wythe & Co., W. H., Orange, N. J. Bronzing liquid or gold paint	21,929	Nov. 1	61	720
Zixelman & Bartlett, Cleveland, Ohio. Cleansing compound	22,065	Nov. 29	61	1309

DISCLAIMER.

Name, residence, and invention.	No.	Filed.	Official Gazette. Vol.	Page.
Kennedy, Julian, Latrobe, and Henry Aileen, Pittsburg, Pa.; disclaimer filed by patentee. Hydraulic cranes. (Reissue)	11,164	May 5, 1891	61	1666

ALPHABETICAL LIST OF INVENTIONS.

Invention.	Name.	No.	Date.	Monthly volume. Specification.	Monthly volume. Drawing.	Official Gazette. Volume.	Official Gazette. Page.
Account-keeping device	W. W. Maxwell	487,953	Dec. 13	1174	293	61	1570
Acid. Making oxyuvitic	B. R. Seifert	488,290	Dec. 20	1750	.....	61	1703
Adding-machine	C. A. Oakes and J. H. Jackson	485,214	Nov. 1	89	98	61	591
Addressing mail-matter. Machine for	C. A. White	488,912	Dec. 27	2740	676	61	1917
Adhesives. Production of	L. Kern	487,928	Dec. 13	1139	284	61	1563
Adjustable bracket	D. Ravenel, Jr., and R. P. Miles	485,589	Nov. 1	666	177	61	710
Adjustable chair	E. Pynchon	484,571	Oct. 18	1607	408	61	340
Adjustable chair or stool	P. A. Bredsvold	483,777	Oct. 4	387	96	61	81
Advertising apparatus. Automatic	J. S. Yule	484,576	Oct. 18	1616	410	61	351
Advertising-board	P. E. Green	484,194	Oct. 11	1005	257	61	219
Advertising-cabinet	D. B. Lincoln	486,113	Nov. 15	1501	395, 396	61	912
Advertising device	P. Herrmann	484,314	Oct. 11	1209	307	61	258
Advertising device	J. A. and J. B. Wright	485,676	Nov. 8	802	214	61	753
Advertising device. Automatic	T. B. Hafertep	487,563	Dec. 6	536	138	61	1427
Advertising novelty or display-card	J. Robinson	486,899	Nov. 29	2786	723	61	1199
Advertising or business cabinet	M. W. Marsden	483,849	Oct. 4	492	122	61	102
Aerated water. Machine for manufacturing and dispensing	J. P. Jackson	485,386	Nov. 1	367	98	61	648
Aerating liquids. Process of and apparatus for	C. H. Schultz	485,665	Nov. 8	787	209	61	750
Aerator. Milk	T. W. and B. T. Wood	487,413	Dec. 6	305	78	61	1382
Aging and purifying liquors. Apparatus for	A. L. Wood	488,104	Dec. 13	1434	359, 360	61	1625
Aging liquors. Process of and apparatus for	T. R. Timby	485,999	Nov. 8	1300	345, 346	61	856
Aging wines, spirits, or other liquors. Apparatus for	T. R. Timby	486,000	Nov. 8	1303	346, 347	61	856
Agricultural implement	A. Caldwell	486,849	Nov. 29	2670	698, 699	61	1175
Agricultural implement	A. Caldwell	486,850	Nov. 29	2672	699	61	1175
Agricultural machine	J. B. Wilkins	484,690	Oct. 18	1805	459	61	389
Air-belt purifier	H. A. Barnard	485,571	Nov. 1	643	171	61	705
Air-brake coupling	J. E. Marble	484,034	Oct. 11	773	195	61	173
Air-brake hose. Coupler-head for	S. M. Beery	485,365	Nov. 1	337	89	61	641
Air-brake pipe coupling	C. D. Fahrney	485,182	Nov. 1	41	14	61	581
Air-brake slack-adjuster	C. E. Corporan	483,802	Oct. 4	420	104	61	87
Air-brakes. Automatic regulator for	M. L. E. Duval	486,703	Nov. 22	2427	632	61	1110
Air-compressor. Hydrostatic	W. T. Wood	485,853	Nov. 8	1054	281	61	804
Air-compressor. Windmill	T. O. Perry	485,881	Nov. 8	1100	292, 293	61	814
Air cooler. Return	H. B. Roelker	484,979	Oct. 25	2294	592	61	501
Air cooling and purifying apparatus	G. E. Proctor	488,798	Dec. 27	2556	634, 635	61	1879
Air-cylinder	W. J. O. Bryon, Jr	483,529	Oct. 4	18	4	61	7
Air-cylinder	W. J. O. Bryon, Jr	483,829	Oct. 4	465	116	61	96
Air laden therewith. Separating grain and dust or stive from	F. E. Duckham	485,915	Nov. 8	1159	306	61	826
Air or gas meter	F. E. Youngs	485,075	Oct. 25	2441	627, 628	61	531
Air or gas meter	F. E. Youngs	485,076	Oct. 25	2443	628, 629	61	531
Air ventilator. Foul	S. Z. Martin	483,631	Oct. 4	169	42, 43	61	35
Alarm: *See* Burglar-alarm. Burglar and fire alarm. Electric alarm. Fire-alarm. Hot-box alarm.							
Alarm apparatus	E. Lachmann	486,380	Nov. 15	1911	505	61	995
Alarm-box. District	C. W. McClellan	485,351	Nov. 1	313	83, 84	61	636
Album	A. Bartholme	487,170	Nov. 29	3212	823	61	1282
Alcohol from liquor-casks. Apparatus for and method of recovering waste	M. Hickey	484,963	Oct. 25	2265	585	61	494
Alembic	V. J. Kuess	488,766	Dec. 27	2502	622	61	1867
Alloy	H. G. O'Neill	485,423	Nov. 1	424	.....	61	659
Alloy. Antifriction	T. D. Bottome	484,084	Oct. 11	841	.....	61	187
Alloys. Chemical reagent for use in the manufacture of	S. E. Cheeseman	485,453	Nov. 1	466	.....	61	606
Alloys. Electro-depositing	S. O. Cowper-Coles	487,176	Nov. 29	3219	.....	61	1284
Alloys. Mixing	W. R. Thomas	487,338	Dec. 6	162	46	61	1353
Alumina and acetic acid. Obtaining	F. P. Dewey	485,461	Nov. 1	477	.....	61	669
Alumina. Apparatus for making	H. W. Shepard	488,580	Dec. 27	2219	550	61	1812
Amalgam for dentists' use	G. Jüterbock	485,280	Nov. 1	188	.....	61	611
Ammonia. Process of and apparatus for making	P. Kuntze	488,307	Dec. 20	1610	402	61	1677
Ammonia-still	H. Nadorff	484,667	Oct. 18	1774	451	61	383
Animal-catcher	A. Otto	486,939	Nov. 29	2857	739	61	1212
Animal-dipper	E. A. Firestone	486,372	Nov. 15	1903	503	61	993
Animal-shears	H. S. Daggett	483,904	Oct. 4	572	144	61	119
Animal-trap	J. R. Bromwell	488,111	Dec. 13	1447	364	61	1627
Animal-trap	M. Johnston	484,799	Oct. 25	1999	513	61	447

Alphabetical list of inventions, October to December, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Animal-trap	M. D. Slawson	485,303	Nov. 1	221	63	61	618
Animal-trap	O. S. Ward	488,232	Dec. 20	1657	413	61	1685
Animal-trap	G. H. Wells, Jr	486,005	Nov. 8	1310	349	61	857
Animal-trap	R. T. Williams	487,593	Dec. 6	574	147	61	1435
Ankle-supporter	J. G. Pugsley	487,492	Dec. 6	429	110	61	1406
Annealing wire or metallic rods by electricity. Apparatus for	J. H. Hunter	484,637	Oct. 18	1716	435	61	370
Annunciator. Electric	J. H. Bates	488,536	Dec. 27	2149	531	61	1797
Annunciator. Electric	A. B. Lyman	488,567	Dec. 27	2197	543	61	1807
Annunciator. Electrical	F. S. Carter	486,820	Nov. 22	2615	{681 682}	61	1149
Annunciator. Electrical	F. S. Carter and G. P. Stumpf	486,343	Nov. 15	1694	448	61	950
Antifriction-clasp	W. L. Black	484,947	Oct. 25	2243	578	61	491
Anvil attachment	G. W. Rice	486,504	Nov. 22	2103	556	61	1047
Armature-core for electric motors and dynamos	A. J. Lehman	485,284	Nov. 1	194	55	61	613
Armature. Electric-machine	B. G. Lamme	488,016	Dec. 13	1279	{318 319 320}	61	1592
Armature for dynamo-electric machines	A. L. Parcelle	486,234	Nov. 15	1683	445	61	948
Armature for dynamo-electric machines and motors	C. S. Bradley	486,078	Nov. 15	1426	{376 377}	61	898
Armature for dynamos and motors	E. Thomson	483,700	Oct. 4	267	66	61	56
Armature for electro-magnetic machines	R. Lundell	487,755	Dec. 13	851	217	61	1507
Armature for motors and generators	N. C. Bassett	483,708	Oct. 4	277	69	61	58
Armature-winding for dynamo-electric machines	E. P. Warner	483,729	Oct. 4	306	76, 77	61	64
Armor-plate	H. Clay	485,683	Nov. 8	812	217	61	755
Artist's sketching-screen	T. A. Brouwer, Jr	486,332	Nov. 15	1822	481	61	978
Asbestus. Affixing manufactured	F. W. Jaqui, Jr	483,560	Oct. 4	66	.....	61	16
Ash pan and sifter. Combined	C. W. Wall	484,021	Oct. 18	1689	429	61	366
Atomizer	C. M. Blackman	487,873	Dec. 13	1053	263	61	1547
Atomizer	M. Dittenhoefer	483,546	Oct. 4	46	11	61	12
Atomizer	C. L. Morehouse	485,396	Nov. 1	385	103	61	651
Attrition-mill	W. H. Hoffman	486,580	Nov. 22	2223	{583 584}	61	1068
Attrition-mill bushing	W. H. Hoffman	486,581	Nov. 22	2224	584	61	1068
Auditorium-chair	J. W. Patterson	488,533	Dec. 20	2144	530	61	1790
Auger-handle	G. E. Rogers	484,050	Oct. 11	794	200	61	177
Auger-handle	D. B. Whitehill	488,463	Dec. 20	2025	505	61	1758
Auger-heads. Machine for shaping	A. U. Smith	486,239	Nov. 15	1669	447	61	950
Auger. Post-hole	H. M. Flanders	484,519	Oct. 18	1535	390	61	334
Autographic register	H. Cook	486,768	Nov. 22	2525	{660 661}	61	1130
Autographic register	W. H. Glennon	488,004	Dec. 13	1260	314	61	1588
Autographic register	P. E. Loree	485,955	Nov. 8	1227	323	61	840
Autographic register	J. Pfeifer	484,643	Oct. 18	1725	{438 439}	61	372
Autographic register	J. Pfeifer	484,644	Oct. 18	1732	440	61	374
Autographic register	J. Pfeifer	488,900	Dec. 27	2708	670	61	1911
Autographic register	J. Pfeifer	488,901	Dec. 27	2711	{670 671}	61	1911
Autographic register	J. Pfeifer	488,902	Dec. 27	2713	671	61	1912
Automatic brake	J. A. McKee and P. G. Hatchett	486,886	Nov. 29	2727	711	61	1186
Automatic brake	J. R. Wilson	487,413	Dec. 6	304	78	61	1381
Automatic regulator	E. J. Houghton and W. White	488,121	Dec. 13	1460	368	61	1630
Automatic sprinkler	J. Kane	484,321	Oct. 11	1218	310	61	260
Automatic sprinkler	P. W. Swan	488,257	Dec. 20	1692	423	61	1692
Automatic switch	N. Newman	487,881	Dec. 13	1061	266	61	1549
Awning	H. Vayre	483,950	Oct. 4	635	160	61	131
Axes. Manufacture of	C. W. Hubbard, Jr	487,948	Dec. 13	1169	291	61	1569
Axle and box. Vehicle	G. W. Smith	488,486	Dec. 20	2064	513	61	1766
Axle-box	W. L. Mills	484,556	Oct. 18	1591	403	61	346
Axle box. Car	J. Donnelly	488,877	Dec. 27	2675	{662 663}	61	1904
Axle box. Car	E. Peckham	485,219	Nov. 1	97	30	61	293
Axle box. Car	S. Robertson	487,231	Nov. 29	3336	849	61	1303
Axle box. Car	E. L. Sharpneck	484,054	Oct. 11	798	201	61	178
Axle-box lid	R. Soutter	484,471	Oct. 18	1457	371	61	319
Axle-box lid. Car	F. P. Boatman	483,801	Oct. 4	419	104	61	87
Axle boxes. Dust-guard for car	W. Barr	483,524	Oct. 4	11	3	61	5
Axle. Car	D., Sr., and D. Roberge, Jr	486,898	Nov. 29	2785	723	61	1198
Axle for forward wheels of wagons. Crank	M. L. De Witt	485,492	Nov. 1	521	138	61	678
Axle-lubricator	H. V. Conway	484,088	Oct. 11	845	214	61	187
Axle-lubricator	H. M. Goodman	487,181	Nov. 29	3226	826	61	1285
Axle-lubricator	C. C. Pierce	484,234	Oct. 11	1077	273	61	233
Axle-lubricator	W. H. Pugh	488,402	Dec. 20	1925	493	61	1737
Axle-lubricator	W. H. Ward	483,624	Oct. 4	161	40	61	33
Axle. Vehicle	O. W. Beach	483,975	Oct. 4	663	170	61	141
Axle. Vehicle jointed	E. F. Steele	487,059	Nov. 29	3033	779	61	1246
Axle-washer rack	T. Gingras	486,640	Nov. 22	2322	608	61	1089
Axles. Ball-bearing for	S. Elliott	483,836	Oct. 4	472	118	61	97
Baby-jumper	B. A. Husbands	488,609	Dec. 27	2261	561	61	1821
Baby tender and crib. Combined	A. Baird	485,081	Oct. 25	2451	631	61	533
Back-rest	J. N. Butler	486,275	Nov. 15	1761	463	61	965
Badge	B. S. Whitehead	484,527	Oct. 18	1546	392	61	336
Badge. Illuminated	P. J. McLain	485,748	Nov. 8	915	245	61	777
Bag: *See* Feed-bag. Nursery-bag.							
Bag-fastener	E. G. Williams	485,675	Nov. 8	801	214	61	753
Bag frame. Traveling	W. Roemer. (Reissue)	11,278	Oct. 18	1934	492	61	418
Bag-holder	M. Fortin	486,708	Nov. 22	2433	633	61	1111
Bag-holder	A. Young	484,079	Oct. 11	835	211	61	186
Bag-holding device	J. Peer	488,449	Dec. 20	2004	{500 501}	61	1754
Bag-lock	F. and L. S. Depuy	486,159	Nov. 15	1575	417	61	927

Alphabetical list of inventions, October to December, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Bagasse-carrier	L. W. Brown	488,423	Dec. 20	1967	491	61	1745
Baker's and confectioner's depositing apparatus	R. Megson	484,937	Oct. 25	2232	575	61	489
Baking-pan	S. C. and F. G. Long	486,259	Nov. 15	1734	457	61	959
Baking-pan	E. B. Osgood	486,734	Nov. 22	2469	644	61	1119
Balance	L. Da Rozir	488,142	Dec. 13	1492	375	61	1636
Balance. Platform	H. M. Merrill	483,937	Oct. 4	616	156	61	127
Balance-wheel	H. Bouck and J. H. Lovendale	486,754	Nov. 22	2503	653	61	1126
Bale-tie	P. Bardon	488,302	Dec. 20	1763	444	31	1706
Bale-tie	C. B. Brainard	485,253	Nov. 1	151	44	61	604
Bale-tie	J. B. Rollins	486,795	Nov. 22	2571	670	61	1139
Bale-tie	E. W. Wickey	487,504	Dec. 6	447	116	61	1410
Bale-tie machine	W. S. Livengood	486,615	Nov. 22	2284	595	61	1080
Baling-machine	E. A. Walker	485,824	Nov. 8	1009	{270 271 272}	61	795
Baling-press	C. E. Whitman	485,072	Oct. 25	2436	626	61	530
Baling-press	A. Wickey	486,997	Nov. 29	2942	758	61	1229
Baling-press	A. Wickey	487,503	Dec. 6	446	115	61	1409
Baling-press feeder	J. H. Kruse and M. K. Shipley	485,045	Oct. 25	2402	617	61	522
Balling slivers. Machine for	W. M. Pawling	487,891	Dec. 13	1076	{269 270}	61	1552
Ballot-box	F. W. Barrett	488,748	Dec. 27	2478	616	61	1863
Ballot-box	E. Hoxie	488,203	Dec. 20	1602	400	61	1675
Ballot-holder for voting-machines	K. Dougan	488,937	Dec. 27	2772	{684 685}	61	1924
Banana-case	J. T. Cornforth	484,355	Oct. 11	1270	324	61	271
Band-cutter and feeder	J. E. Boles	487,363	Dec. 6	208	57	61	1361
Band-cutter and feeder	W. P. Burke	487,987	Dec. 13	1237	308	61	1583
Band-fastener	H. M. Tileston	485,482	Nov. 1	508	134	61	675
Band-tightener	D. J. C. Arnold	485,484	Nov. 1	512	135	61	676
Banjo	D. T. Moore	484,222	Oct. 11	1053	267	61	228
Banjo attachment	W. L. Roberts	486,053	Nov. 8	1381	367	61	871
Banjo-guard	W. E. Collins	483,663	Oct. 4	240	60	61	50
Banjos or violins. Tail-piece for	H. C. Middlebrooke	487,879	Dec. 13	1060	265	61	1548
Bank	E. M. Goldsmith	484,310	Oct. 11	1204	306	61	257
Bar: *See* Claw-bar.							
Barber's chair	S. Clontier	488,707	Dec. 27	2419	599	61	1851
Barracks. Card	G. Espitallier	484,413	Oct. 18	1362	{348 349}	61	301
Barrel-cover	G. E. and G. E. Raymond, Jr	485,227	Nov. 1	113	35	61	596
Barrel-filler	K. Kiefer	487,531	Dec. 6	490	129	61	1418
Barrel-head machine	F. H. Kane	488,167	Dec. 13	1542	{386 387}	61	1646
Barrel-heater	R. Weigel and B. Waechtler	484,073	Oct. 11	823	208	61	183
Barrel-stand	H. H. Fisk	483,978	Oct. 4	687	171	61	142
Barrel-stand	M. Herzberg, S. T. Whitaker, and W. C. Lanier.	485,742	Nov. 8	9088	243	61	775
Basic-lined furnace	J. H. Darby	484,181	Oct. 11	987	252	61	215
Basin-clamp	J. H. Glauber	483,804	Oct. 4	422	104	61	88
Basket protector. Clothes	L. Beard	486,527	Nov. 22	2135	563	61	1053
Baskets. Machine for forming berry	R. E. Morey	486,617	Nov. 22	2286	596	61	1081
Bath: *See* Sitz-bath.							
Bath-room drying companion	D. W. Leet	486,674	Nov. 22	2374	621	61	1099
Bath-tub seat	G. A. Keene	488,011	Dec. 13	1272	317	61	1591
Bather's appliance	W. H. Mattson	486,348	Nov. 15	1867	491	61	985
Batteries. Finishing grids for secondary	A. F. Madden	485,128	Oct. 25	2516	647	61	546
Batteries. Standard cell for electric	H. S. Carhart	485,089	Oct. 25	2465	634	61	536
Battery: *See* Electric battery. Secondary battery. Galvanic battery. Storage-battery. Galvanic body-battery.							
Battery compound	W. Wright	484,385	Oct. 11	1316	.....	61	280
Beams. Art of and apparatus for cutting flanged	J. A. Potter	485,981	Nov. 8	1267	334	61	848
Bean-picker	H. A. Bacon	483,986	Oct. 11	703	177	61	159
Bearing	W. H. Bache	486,061	Nov. 8	1396	370	61	874
Bearing. Antifriction	F. Mossberg	486,052	Nov. 8	1380	367	61	871
Bearing. Antifriction	M. O. Parenteau	488,697	Dec. 27	2408	596	61	1848
Bearing. Antifriction thrust	S. Ingersoll	488,816	Dec. 27	2583	641	61	1894
Bearing for shafting. Thrust	C. D. Mosher	485,207	Nov. 1	80	25	61	589
Bearing for signal and switch rods	A. G. Evans	483,548	Oct. 4	48	12	61	12
Bearing. Machinery	J. D. Brown	484,993	Oct. 25	2320	599	61	506
Bearing. Roller	S. B. Bartlett	485,083	Oct. 25	2453	631	61	533
Bearing. Roller	J. Gibbons	487,699	Dec. 6	746	191	61	1468
Bearing. Shaft	C. F. Search	485,890	Nov. 8	1121	296	61	818
Bearings. Making cages for antifriction	F. Mossberg	487,194	Nov. 29	3246	830	61	1288
Bearings. Spring-roll for roller	J. W. Hyatt	487,530	Dec. 6	488	128	61	1417
Bed and dressing-case. Combined folding	W. L. Kimerly	484,765	Oct. 18	1922	491	61	417
Bed-bottom	L. Hinkle	484,912	Oct. 25	2187	563	61	481
Bed-bottom	W. H. Scott	487,430	Dec. 6	330	84	61	1386
Bed-bottom. Spring	A. F. Purefoy	486,183	Nov. 15	1603	426	61	932
Bed-bottom. Spring	A. F. Purefoy	486,184	Nov. 15	1605	426	61	933
Bed-bottom. Wire	G. Witter	484,484	Oct. 18	1482	377	61	323
Bedclothes-clamp	A. W. Hamble	483,628	Oct. 4	165	41	61	34
Bed. Folding	J. Ganey	486,867	Nov. 29	2702	705	61	1181
Bed. Folding	E. E. Herrinton and I. C. Smith	485,276	Nov. 1	181	53	61	610
Bed. Folding	W. B. Noyes	483,724	Oct. 4	296	74	61	62
Bed. Folding	J. Penney	484,722	Oct. 18	1847	470	61	398
Bed. Folding	W. D. Snyder	487,685	Dec. 6	729	186	61	1464
Bed or pillow. Air	S. Curlin	486,696	Nov. 22	2415	{629 630}	61	1108
Bed-slat holder	M. D. Harrelson	488,558	Dec. 27	2176	537	61	1803
Bed-spring	J. Monzel	487,288	Dec. 6	78	24	61	1337

Alphabetical list of inventions, October to December, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Bed-spring	J. B. Russel	488,030	Dec. 13	1311	327	61	1599
Bedstead. Folding	O. Alexander	485,159	Nov. 1	1	1	61	573
Bedstead. Folding	T. La Purl	485,502	Nov. 1	535	142	61	681
Beehive	J. W. Chrisinger	486,277	Nov. 15	1764	464	61	965
Bee-smoker	G. W. Brodbeck	484,172	Oct. 11	976	250	61	213
Beer apparatus	J. H. Kersenbrock	484,025	Oct. 11	761	192	61	171
Beer-bottling apparatus	J. H. Kersenbrock	484,024	Oct. 11	759	191, 192	61	170
Beer-cooler	J. F. Duffy	487,405	Dec. 6	288	75	61	1378
Beer-cooler	W. Gibson	488,144	Dec. 13	1494	376	61	1637
Beer-filling apparatus	H. Stockheim	487,790	Dec. 13	910	230	61	1519
Beer. Treating	A. Kreusler	485,012	Oct. 25	2348	605	61	512
Beer, &c., with carbonic-acid gas and apparatus therefor. Impregnating	O. Zwietusch	485,302	Nov. 1	332	88	61	640
Bell. Door	A. Iske	488,244	Dec. 20	1672	418	61	1688
Bell. Electric	J. R. Hard	485,379	Nov. 1	355	95	61	645
Bell. Electric	J. E. Thron	484,762	Oct. 18	1919	489	61	414
Bell. Electric	P. Wagner	487,437	Dec. 6	347	89, 90	61	1390
Bell. Electro-magnetic	J. J. Rosa	486,354	Nov. 15	1874	493	61	987
Bell. Signal	E. Olsen	485,297	Nov. 1	214	60	61	616
Belt	O. B. Peck	485,476	Nov. 1	502	132	61	674
Belt. Electric	J. H. Johnson	487,185	Nov. 29	3232	827	61	1286
Belt. Electric	O. Kjorstad	488,013	Dec. 13	1275	317	61	1591
Belt. Electric	E. N. Tefft	485,754	Nov. 8	921	246	61	778
Belt-fastener	G. H. Avery	487,691	Dec. 6	737	188	61	1466
Belt-fastener	E. Greenwood and R. M. Wise	486,374	Nov. 15	1906	504	61	994
Belt-fastener	E. L. Matteson	487,021	Nov. 29	2976	766	61	1235
Belt-fastener	F. E. Shaut	486,570	Nov. 22	2203	579	61	1065
Belt for women's undergarments	M. C. Geldowsky	488,886	Dec. 27	2668	665	61	1906
Belt-holder	W. F. Cleveland	487,993	Dec. 13	1245	310	61	1585
Belt-holder	M. Trowbridge	488,639	Dec. 27	2309	572	61	1829
Belt. Link	D. S. Stewart	484,827	Oct. 25	2037	522	61	450
Belt punching and trimming machine	F. E. Hersey	483,555	Oct. 4	58	15	61	14
Belt-reel	C. W. Schubert	485,664	Nov. 8	786	209	61	750
Belt-shifter	B. F. Radford	483,620	Oct. 4	156	38	61	33
Belt-shipping device	W. P. Canning	484,407	Oct. 18	1353	345	61	299
Belt-stretcher	E. Page	485,216	Nov. 1	93	29	61	592
Belt-tightener	H. Brand	486,155	Nov. 15	1570	416	61	926
Belt-tightener	H. Hackney	488,197	Dec. 20	1589	398	61	1672
Belt-tightener	B. N. Payne	488,698	Dec. 27	2409	597	61	1848
Belts. Idler for driving	A. V. Hall and W. S. Holmes	487,564	Dec. 6	537	138	61	1427
Belting	J. O'Connell and G. E. Medcraft	487,855	Dec. 13	1022	256	61	1541
Belting	W. E. Sharples	488,617	Dec. 27	2272	563	61	1823
Bench: *See* Wash-bench.							
Bench-dog	C. A. Wayland	487,106	Nov. 29	3112	798	61	1263
Bench dog or clamp	G. B. Norman	487,762	Dec. 13	862	219	61	1509
Bench-hook	W. L. Frisbie	483,684	Oct. 4	241	60	61	50
Bench-stop	S. W. Jenks	486,472	Nov. 22	2057	545	61	1037
Bending-press	S. Swartz	487,435	Dec. 6	345	88	61	1389
Berry-picker	C. C. Read	485,057	Oct. 25	2416	621	61	525
Bevel	W. G. Avery	487,010	Nov. 29	2962	763	61	1232
Beverages. Carbonating fermented	J. F. Wittemann	487,342	Dec. 6	168	47	61	1354
Beverages. Charging portable fountains with carbonated	J. F. Wittemann	484,078	Oct. 11	832	210, 211	61	185
Bicycle	A. H. Clark	486,432	Nov. 22	2004	531, 532	61	1026
Bicycle	L. M. Devore and C. E. Forry	488,603	Dec. 27	2254	559	61	1819
Bicycle	H. E. Dey and F. B. Griswold	485,094	Oct. 25	2472	635	61	538
Bicycle	F. M. and J. E. Goodhue	485,187	Nov. 1	51	16	61	582
Bicycle	R. K. Hartley	484,712	Oct. 18	1832	466	61	395
Bicycle	A. H. Kempe	484,857	Oct. 25	2091	538	61	461
Bicycle	E. E. Kenney and F. D. Cable	485,583	Nov. 1	658	175	61	709
Bicycle	S. H. Kimball	487,018	Nov. 29	2973	765, 766	61	1234
Bicycle	A. S. Swarthout	486,687	Nov. 22	2393	625, 626	61	1103
Bicycle	H. W. Thurston and E. Stenersen	483,661	Oct. 4	211	52	61	43
Bicycle attachment	A. Marthens	487,577	Dec. 6	553	142	61	1431
Bicycle-brake	W. H. Crook	486,630	Nov. 22	2306	602	61	1086
Bicycle-brake	R. C. Fay	484,953	Oct. 25	2249	579	61	493
Bicycle-brake	P. Haag	486,464	Nov. 22	2046	541	61	1034
Bicycle-brake	W. T. Lewis	486,935	Nov. 29	2845	736	61	1209
Bicycle-brake	D. L. Reaney	483,621	Oct. 4	158	39	61	33
Bicycle-brake attachment	W. S. Porter	486,683	Nov. 22	2388	624	61	1102
Bicycle chain-adjustment	J. S. Copeland	484,492	Oct. 18	1493	379	61	326
Bicycle-saddle	C. Stein	485,434	Nov. 1	438	117	61	602
Bicycle-saddle	J. A. Stenberg	487,789	Dec. 13	907	230	61	1518
Bicycle-saddle support	E. M. Staples	487,081	Nov. 29	3067	787	61	1254
Bicycle signal apparatus	A. J. Sandgren	483,585	Oct. 4	107	26	61	23
Bicycle-stand	G. S. Crosby	487,473	Dec. 6	402	104	61	1400
Bicycle-stand	H. C. Wiedenmann	488,464	Dec. 20	2026	506	61	1759
Bicycle-support	C. F. Beebe	485,572	Nov. 1	645	172	61	706
Bicycle-support	J. J. Müller	484,941	Oct. 25	2237	576	61	490
Bicycle supporting and locking attachment	W. Lewis	485,285	Nov. 1	195	56	61	613
Bicycle treadle-crank	W. V. Ash	485,678	Nov. 8	805	215	61	754
Bicycles. Adjustable seat-support for	G. H. Smith, R. K. Hartley, and I. S. McDougall.	484,681	Oct. 18	1794	456	61	387
Bicycles. Cone-bearing and ball-lock for	O. Euchler	486,452	Nov. 22	2028	536	61	1031
Bicycles. Vise-stand for sustaining	B. M. Steele	486,511	Nov. 22	2112	558	61	1049
Bill-holder	A. G. Park	485,750	Nov. 8	917	245	61	777
Bill-holder	S. F. Woody	484,904	Oct. 25	2170	558	61	477
Billiard scorer and register	R. N. Montgomery	488,480	Dec. 20	2054	510	61	1764
Billiard-table	A. E. Scott and J. W. Wright	488,743	Dec. 27	2470	613	61	1861

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Bin: *See* Flour-bin.							
Binder	C. H. Stoelting	486,989	Nov. 29	2928	755	61	1226
Binder for leaves	G. H. Winslow	484,275	Oct. 11	1149	292	61	247
Binder. Self	O. S. Ellithorp	486,440	Nov. 22	2015	534	61	1029
Binder. Temporary	A. R. Baker	483,706	Oct. 4	276	68	61	58
Binding device for periodicals, newspapers, &c	O. F. Westrup	484,268	Oct. 11	1138	290	61	245
Bit: *See* Bridle-bit. Dado or molding bit.							
Bit-brace	A. D. Goodell	488,691	Dec. 27	2399	594	61	1846
Bit-brace	A. Knudsen	487,121	Nov. 29	3139	805	61	1268
Bituminous-rock-reducing machine	S. P. Hall and J. W. Wood	484,735	Oct. 18	1870	476	61	402
Blackboard. Rotary	J. F. Clark	488,025	Dec. 27	2290	567	61	1826
Blacking kit. Boot	H. Pistorius	487,963	Dec. 13	1186	296	61	1573
Blacking machine. Coin-operated boot or shoe	N. B. Knight	484,324	Oct. 11	1223	312, 313	61	261
Blank-feeding device	W. W. Miner	488,084	Dec. 13	1406	349	61	1620
Blank form for warranty-deeds, tax-receipts, &c	J. T. Pendleton and J. S. Wilson	485,561	Nov. 1	622	168	61	700
Blanks. Automatic device for feeding	W. P. Devine	488,389	Dec. 20	1909	478	61	1734
Blanket-roll support for soldiers	C. Dodge, Jr.	486,370	Nov. 15	1900	502	61	992
Blast-furnace	M. W. Iles	484,020	Oct. 11	755	190	61	169
Blast-furnace	J. Kennedy	486,110	Nov. 15	1496	394	61	911
Bleaching compound	H. Y. Castner	486,188	Nov. 15	1609	.....	61	934
Blind. Inside window	J. W. T. Gilliam	484,957	Oct. 25	2254	581	61	494
Block: *See* Building-block. Pavement-block. Ceiling-block. Snatch-block. Chain-block. Tackle-block. Differential block.							
Blotter	S. Axtell	487,239	Dec. 6	5	2	61	1321
Blotter or pad. Ink	C. Scheidereiter	483,874	Oct. 4	525	132	61	109
Blotter-pad and ruler. Combined	C. W. Chandler	487,364	Dec. 6	209	57	61	1362
Blower. Centrifugal	M. R. Ruble	487,883	Dec. 13	1065	267	61	1549
Blower. Compound steam-jet	W. McClave	485,821	Nov. 8	1003	269	61	794
Blower. Steam	J. Jones	486,162	Nov. 15	1578	418	61	928
Blue. Making ultramarine	J. Büttel	484,388	Oct. 18	1322	337	61	293
Board: *See* Advertising-board. Ironing-board. Game-board.							
Boat: *See* Folding boat. Pneumatic boat. Life-boat. Wrecking-boat.							
Boat	E. Lachmann	486,381	Nov. 15	1913	506	61	995
Boat-detaching apparatus	T. Turk	484,648	Oct. 18	1742	443	61	375
Boat-keel	J. Cook	486,158	Nov. 15	1573	417	61	927
Boat-launching carriage	H. J. Woods	486,012	Nov. 8	1320	351	61	859
Bobbin used in spinning and twisting frames	J. H. Wilson	488,045	Dec. 13	1341	332	61	1605
Bobbin winder. Shuttle	A. W. Allen	488,176	Dec. 20	1560	391, 392	61	1667
Bodkin	P. R. Stevens	487,134	Nov. 29	3152	808	61	1271
Bodkin and stitch-ripper	S. and S. A. Winters	488,861	Dec. 27	2657	658	61	1899
Boiler: *See* Locomotive-boiler. Tubular boiler. Multitubular boiler. Wash-boiler. Steam-boiler.							
Boiler	J. Caball	485,087	Oct. 25	2462	634	61	535
Boiler	J. Caball	485,088	Oct. 25	2464	634	61	536
Boiler	R. Davies	486,700	Nov. 22	2491	631	61	1109
Boiler	C. Hallett	483,612	Oct. 4	142	36	61	30
Boiler	W. B. Mack	487,535	Dec. 6	496	130	61	1419
Boiler	H. Martin	486,116	Nov. 15	1506	397, 398, 399	61	913
Boiler	T. L. and T. J. Sturtevant	487,793	Dec. 13	920	232	61	1521
Boiler	T. L. and T. J. Sturtevant	488,229	Dec. 20	1654	413	61	1684
Boiler	J. H. Waterman	484,350	Oct. 11	1262	322	61	269
Boiler-cleaner	H. Hayes	483,919	Oct. 4	595	151	61	123
Boiler cleaner. Steam	G. E. Truax	487,651	Dec. 6	669	172	61	1454
Boiler-feeder	L. Dreux	483,668	Oct. 4	221	55	61	46
Boiler-feeder	C. E. Van Auken	487,305	Dec. 6	104	31	61	1342
Boiler feeder and indicator	P. A. Newman	485,976	Nov. 8	1258	332	61	847
Boiler-flue cleaner	L. B. Shultz	488,842	Dec. 27	2628	651	61	1893
Boiler flue-protector. Steam	H. H. Nieman	485,112	Oct. 25	2493	640	61	542
Boiler-furnace	W. R. Parks	486,955	Nov. 29	2878	743	61	1216
Boiler-furnace	E. Reynolds	484,507	Oct. 18	1517	385, 386	61	331
Boiler-furnace	C. Schroll	486,505	Nov. 22	2104	556	61	1047
Boiler-furnace and smoke-consumer	J. Connelly	486,854	Nov. 29	2677	701	61	1176
Boiler furnace. Locomotive or marine	F. Barclay	486,924	Nov. 29	2829	732	61	1207
Boiler furnace. Smoke-consuming steam	F. Reynolds	486,167	Nov. 15	1584	419, 420	61	929
Boiler furnace. Steam	F. Barclay	486,923	Nov. 29	2827	732	61	1206
Boiler furnace. Steam	J. V. Burke	487,602	Dec. 6	586	150, 151	61	1438
Boiler furnace. Steam	M. E. Herbert	484,153	Oct. 11	946	242, 243	61	207
Boiler furnace. Steam	A. Wilkinson	486,747	Nov. 22	2490	650	61	1123
Boiler header. Steam	E. H. Bennett	484,393	Oct. 18	1334	340	61	295
Boiler indicator, Steam	G. L. McDermott	487,634	Dec. 6	639	164	61	1448
Boiler oil-injector	O. A. Enholm	485,920	Nov. 8	1166	307	61	827
Boiler-setting	M. F. Eaton	484,878	Oct. 25	2124	546	61	467
Boiler-setting	F. G. Gasche	488,241	Dec. 20	1669	417	61	1667
Boiler-tube cleaner	W. B. and J. R. Smith	486,133	Nov. 15	1538	406	61	919
Boiler-tube cutter	J. W. Fleming	484,852	Oct. 25	2086	536	61	460
Boiler-tube expander	H. Warden	488,589	Dec. 27	2233	553	61	1815

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Boiler-tubes. Tool for expanding the ends of	A. L. Henderer	483,920	Oct. 4	596	151	61	123
Boiler water-indicator	W. H. Rodgers	486,054	Nov. 8	1382	367	61	871
Boiler water-level recorder	W. M. Lewis	483,722	Oct. 4	293	73	61	61
Boilers. Downdraft-furnace for steam-	J. F. Waugler	487,896	Dec. 13	1083	271	61	1552
Boilers. Expanding device for use in making wash-	G. W. Anderson and G. M. Huntington.	485,078	Oct. 25	2447	630	61	582
Boilers. Feed-water heater for steam-	C. C. Worthington	485,570	Nov. 1	640	{170 / 171	{61	704
Boilers. Pneumatic stack for steam-	B. F. Taylor	483,589	Oct. 4	111	27	61	24
Boilers. Support for stew-pans or like utensils in domestic	O. T. Priser	488,831	Dec. 27	2602	646	61	1888
Bolster-plate	D. B. Oliver	486,890	Nov. 29	2751	714	61	1191
Bolster. Spring-	E. Gooley	486,462	Nov. 22	2044	541	61	1034
Bolt: *See* King-bolt. Milk-can bolt.							
Bolt	G. Dronet	485,373	Nov. 1	348	93, 94	61	644
Bolt and nut lock	C. G. Smith	484,616	Oct. 18	1683	427	61	365
Bolt-clipper	H. K. Porter	484,670	Oct. 18	1778	{452 / 453	{61	384
Boltwork. Safe-	F. H. Bullard	486,817	Nov. 22	2610	{679 / 680	{61	1148
Bolting-reel	C. Bolenbaugh and E. B. Wagner	488,866	Dec. 27	2662	659	61	1901
Bolting reel. Flour-	G. L. Jarrett	487,838	Dec. 13	986	248	61	1535
Book	F. Bowman	483,893	Oct. 4	549	139	61	114
Book-back. Folding	E. Clerk	484,653	Oct. 18	1753	446	61	378
Book-back. Folding	W. H. Sngg	485,068	Oct. 25	2431	625	61	529
Book. Bank-account	H. J. Stirn	487,456	Dec. 6	377	98	61	1395
Bookbinder's extensible glue-block	J. F. Glenn	485,700	Nov. 8	928	{248 / 249	{61	780
Bookbinding	D. Waide	484,349	Oct. 11	1261	322	61	269
Book. Blank-	H. H. and F. H. Hoffmann	487,014	Nov. 29	2967	764	61	1233
Book-case and desk. Combined	P. Ganzlin	483,669	Oct. 4	221	55	61	46
Book. Duplicating check-	J. Oldfield	485,132	Oct. 25	2522	648	61	548
Book. Duplicating check-	J. Oldfield	488,926	Dec. 27	2758	681	61	1921
Book guard. Blank or other	J. D. Mets	487,191	Nov. 29	3242	829	61	1288
Book-holder	G. W. Grove	483,611	Oct. 4	140	35	61	29
Bookkeeping apparatus	T. P. Pattison	486,386	Nov. 15	1919	{509 / 510	{61	967
Book or copy holder	B. Gardinier	487,561	Dec. 6	532	137	61	1426
Book or music-leaf holder	A. O. Brown	484,292	Oct. 11	1169	298	61	251
Book or sale-slip. Duplicating memorandum-	W. Morton	487,680	Dec. 6	720	184	61	1463
Book. Scrap-	J. V. Honston	485,937	Nov. 8	1195	316	61	834
Book-supports. Ball-and-socket joint for	W. H. Morrison	485,471	Nov. 1	495	131	61	672
Boot or shoe	G. B. Hooper	485,813	Nov. 8	992	266	61	793
Boot or shoe. Ventilated	J. W. Turner and J. H. Engle	485,243	Nov. 1	134	40	61	601
Boot-stretcher	J. Lyons	485,331	Nov. 1	276	75	61	628
Boring and screw-driving machine	E. Finn	487,441	Dec. 6	354	90, 91	61	1391
Boring apparatus	F. Gardner	488,354	Dec. 20	1854	464	61	1723
Boring apparatus	O. Lentz	486,877	Nov. 29	2712	707	61	1183
Boring-machine	S. A. Gonld	487,407	Dec. 6	292	76	61	1379
Boring non-circular holes. Machine for	W. J. Smith	485,233	Nov. 1	118	36	61	598
Bottle	H. W. Fay	486,418	Nov. 15	1976	524	61	1008
Bottle-closure	C. Ollendorff	485,052	Oct. 25	2409	620	61	524
Bottle-corking machine	E. Ermold	487,387	Dec. 6	242	65	61	1369
Bottle-corking machine	W. H. Holden	484,591	Oct. 18	1635	415	61	355
Bottle filling and stoppering apparatus	D. Wickham	488,859	Dec. 27	2655	657	61	1899
Bottle-filling apparatus	J. Jackson	485,942	Nov. 8	1201	317	61	835
Bottle-filling device	H. Meinhard	485,803	Nov. 8	980	263	61	790
Bottle-mold	T. W. Synnott	487,498	Dec. 6	440	113	61	1408
Bottle. Nursing-	O. K. Newell	484,811	Oct. 25	2015	517	61	446
Bottle spout attachment	S. H. Garwood	483,670	Oct. 4	222	55	61	46
Bottle-stopper	T. C. Booth	486,321	Nov. 15	1821	481	61	978
Bottle-stopper	J. De Mars	485,093	Oct. 25	2471	635	61	538
Bottle-stopper	J. T. Mahoney	486,261	Nov. 15	1737	457	61	960
Bottle-stopper	B. F. Sanborn	485,139	Oct. 25	2535	651	61	550
Bottle-stopper. Automatic	H. B. Stewart	486,359	Nov. 15	1880	495	61	988
Bottle-stopper fastener	R. G. Williams	485,443	Nov. 1	451	121	61	664
Bottle-stopper lock	F. Y. Clark	485,173	Nov 1	29	10	61	578
Bottle-stopper. Protective	F. Jordan	487,748	Dec. 13	839	214	61	1505
Bottle valved cap or stopper	J. Librowics	484,330	Oct. 11	1235	315	61	263
Bottle-washer	W. H. Ricker	486,298	Nov. 15	1787	470	61	970
Bottle washer and rinser	S. R. King	487,842	Dec. 13	997	251	61	1537
Bottles. Anti-filling valve for	O. Eick	487,999	Dec. 13	1252	{311 / 312	{61	1586
Bottles. Attachment for varnish or similar	P. B. Moore	485,395	Nov. 1	384	103	61	651
Bottles. Corking	T. G. Watson	487,502	Dec. 6	445	115	61	1409
Bottles. Corking	C. Schroeder	487,451	Dec. 6	370	97	61	1394
Bottles, &c. Liquid-ejecting device for	C. Schroeder	487,452	Dec. 6	372	97	61	1394
Bottles. Machine for making loops for wiring	F. S. Cooley	487,088	Nov. 29	3083	792	61	1257
Bottles or similar vessels. Device for closing	J. H. W. Ortmann	488,612	Dec. 27	2265	562	61	1822
Bouquet and badge holder	J. E. Clerc	487,385	Dec. 6	237	64	61	1368
Bouquet-holder	J. B. Hannan	483,719	Oct. 4	289	72	61	61
Box: *See* Alarm-box. Fruit-box. Axle-box. Fuse-box. Ballot-box. Hat-box. Confectionery or other box. Journal-box. Knockdown box. Core-box. Letter-box. Egg-box. Paper box. Envelope-delivery box. Signal-box. Stamp and match box. Feed-box. Tote-box.	E. L. McDowell	484,602	Oct. 18	1655	420	61	359
Box-corner	J. Austin	486,844	Nov. 29	2663	696	61	1173

Alphabetical list of inventions, October to December, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Box-cover	F. V. Ettlinger	485,790	Nov. 8	965	259	61	787
Box-fastener	S. S. Barrett	485,524	Nov. 1	563	150	61	687
Box-fastener	C. W. Beehler	483,953	Oct. 4	639	160	61	131
Box-fastener	E. Dietz	487,667	Dec. 6	696	178	61	1459
Box-fastener	C. C. Martin	484,373	Oct. 11	1294	330	61	276
Box-fastener	C. C. Martin	484,663	Oct. 18	1769	450	61	382
Box-fastener	C. D. Suffrins	487,082	Nov. 29	3069	788	61	1254
Box for holding cigarettes, &c	B. F. Warren	488,910	Dec. 27	2737	675	61	1916
Box-lid holder	A. D. Hoffman	487,566	Dec. 6	539	138	61	1428
Box-lid support	S. H. Raymond	486,503	Nov. 22	2102	556	61	1047
Box-machine	J. Godfrey	483,649	Oct. 4	195	49	61	40
Box-machine	A. M. Murray and D. N. Stotsman	484,041	Oct. 11	782	197	61	175
Box-machine	J. Neeff	488,086	Dec. 13	1408	350	61	1620
Box-machine	C. W. Roberts	487,967	Dec. 13	1190	297	61	1573
Box-nailer	J. A. Cain	485,530	Nov. 1	573	154	61	690
Box-strap. Metal	S. C. Cary	485,150	Oct. 25	2555	656	61	554
Box-supporter	W. D. Smith	483,751	Oct. 4	342	86	61	71
Box-support	W. D. Smith	488,485	Dec. 20	2064	513	61	1766
Boxes. Apparatus for making metal	F. J. King	487,196	Nov. 29	3233	828	61	1296
Boxes from paste or straw board. Making	J. Godfrey	483,958	Oct. 4	654	164	61	136
Boxer's ring	G. E. Sterry, Jr	485,896	Nov. 8	1131	299	61	820
Brace: *See* Bit-brace. Extensible brace. Excavation-brace. Ratchet-drill brace.							
Brace-bit attachment	T. O. Smith	488,701	Dec. 27	2411	598	61	1849
Bracket: *See* Metal bracket. Shelf-bracket. Piano lamp-bracket. Sign-bracket.							
Bracket	R. and J. Ingal	488,692	Dec. 27	2400	595	61	1847
Bracket	H. J. O'Neil	485,215	Nov. 1	92	29	61	591
Braid-case	C. F. Sundstrom	485,995	Nov. 8	1295	344	61	855
Brake: *See* Automatic brake. Elevator-brake. Bicycle-brake. Roller-brake. Car-brake. Track-brake. Car ratchet-brake. Wagon-brake. Carriage-brake.							
Brake-adjuster. Automatic	M. E. McKee	487,636	Dec. 6	641	{164 / 165	{61	1449
Brake-beam	J. W. Baker. (Reissue)	11,292	Dec. 6	749	191	61	1469
Brake-beam	H. B. Robischung	485,823	Nov. 8	1007	270	61	795
Brake-beam	H. B. Robischung	486,218	Nov. 15	1656	438	61	942
Brake-beam	H. B. Robischung	486,568	Nov. 22	2199	578	61	1064
Brake-beam	C. D. Wiley	486,835	Nov. 22	2640	689	61	1154
Brake-handle	R. L. Fosburgh and J. F. Milligan	484,954	Oct. 25	2251	580	61	493
Brake-shoe	S. K. Buell	484,404	Oct. 18	1349	344	61	298
Brake-shoes. Art of and apparatus for making	C. T. Schoen	484,866	Oct. 25	2103	542	61	464
Bran-duster	A. Heine	485,767	Nov. 8	1077	286	61	809
Branding-tool	J. R. Todd	487,304	Dec. 6	103	30	61	1342
Bread-board	T. H. Kinsman	488,712	Dec. 27	2426	601	61	1852
Breast-strap attachment	T. B. Jackson	484,433	Oct. 18	1402	{357 / 358	{61	308
Breech mechanism. Rapid-fire	A. Mercer	487,631	Dec. 6	633	163	61	1447
Brick and tile machine	J. J. Kulage	484,807	Oct. 25	2161	556	61	475
Brick-cutting machine	C. T. Fitch and A. Schantz	488,863	Dec. 27	2685	{664 / 665	{61	1905
Brick drier-car	N. Harper	486,931	Nov. 29	2839	735	61	1208
Brick. Drying	C. J. Dion	487,827	Dec. 13	969	244	61	1532
Brick. Drying and burning	J. C. Kinzel	485,199	Nov. 1	71	22	61	587
Brick-drying car	C. Chambers, Jr	488,936	Dec. 27	2771	684	61	1924
Brick in kilns. Setting	F. Alsip	484,170	Oct. 11	974	249	61	213
Brick-kiln	J. Conley and J. M. Wolfe	487,174	Nov. 29	3217	824	61	1283
Brick-kiln	C. B. Coxe	486,557	Nov. 22	2174	573	61	1060
Brick-kiln	W. A. Koneman	484,595	Oct. 18	1642	{416 / 417	{61	357
Brick-kiln	L. H. Reppell	487,158	Nov. 29	3193	818	61	1279
Brick-kiln	C. A. Snow	483,638	Oct. 4	180	45	61	38
Brick-kiln. Continuous	C. F. Kaul	486,972	Nov. 29	2901	749	61	1221
Brick-machine	S. P. Babcock	488,106	Dec. 13	1437	{361 / 362	{61	1626
Brick-machine	T. C. Fawcett	485,324	Nov. 1	202	71, 72	61	625
Brick-machine	G. Isaacs	484,319	Oct. 11	1216	309	61	259
Brick-machine	R. N. Ross and H. H. Keller	487,161	Nov. 29	3198	{819 / 820	{61	1280
Brick-machine	B. C. White	488,622	Dec. 27	2277	{565 / 566	{61	1824
Brick-marking machine	J. E. Ennis	483,910	Oct. 4	582	{146 / 147	{61	121
Brick or tile cutter	A. Z. Williams	488,343	Dec. 20	1833	{458 / 459	{61	1719
Brick. Paving-	L. C. Turley	487,652	Dec. 6	670	172	61	1454
Brick-press	G. H. Babcock	488,049	Dec. 13	1349	{334 / 335	{61	1607
Brick-press	J. J. Kulage	484,806	Oct. 25	2159	{555 / 556	{61	475
Brick-press	J. J. Kulage	485,549	Nov. 1	604	161	61	696
Brick-press steam-heater	B. C. White	488,623	Dec. 27	2286	566	61	1825
Brick-re-pressing machine	F. Grant and A. H. Murray	485,191	Nov. 1	55	17, 18	61	584
Bridge	L. Barnes	487,819	Dec. 13	957	242	61	1529
Bridge. Draw-	C. A. Zimmerman	486,552	Nov. 22	2165	572	61	1859
Bridge-gate	E. Delia	488,755	Dec. 27	2484	618	61	1864
Bridge-gate	A. J. Smith	484,470	Oct. 18	1455	371	61	318
Bridge-gate	C. Stocker, Jr	484,122	Oct. 11	884	225	61	196
Bridge gate. Draw-	A. G. Anderson	486,483	Nov. 29	2658	{695 / 696	{61	1173

Alphabetical list of inventions, October to December, inclusive—Continued.

Invention.	Name	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Bridge gate. Draw	F. A. Philbrick	486,793	Nov. 22	2568	669	61	1138
Bridge gate. Safety	H. J. Rohlf	486,738	Nov. 22	2473	645	61	1120
Bridge. Portable	J. T. Cassidy	484,086	Oct. 11	843	213	61	187
Bridge. Truss	J. F. Hardesty	485,689	Nov. 8	819	219	61	757
Bridge. Truss	J. H. Stone	484,686	Oct. 18	1800	458	61	388
Bridges. Expansion-bearing for	G. S. Morison	484,971	Oct. 25	2277	{587, 588}	61	498
Bridges. Wire-support on draw	J. B. Seace	485,662	Nov. 8	785	209	61	749
Bridle	G. B. Goodell and B. S. Hopkins	485,685	Nov. 8	815	217	61	756
Bridle	A. and L. Hasselbauer	487,565	Dec. 6	538	138	61	1428
Bridle attachment	W. L. Guthrie	486,376	Nov. 15	1907	504	61	994
Bridle-bit	W. J. Barndollar	488,051	Dec. 13	1354	336	61	1608
Bridle-bit	L. F. Brown	484,994	Oct. 25	2321	599	61	506
Bridle-bit	J. Maddox, Jr	485,638	Nov. 8	740	194	61	740
Broiler and toaster. Combined	A. F. Ruhlow	484,342	Oct. 11	1250	319	61	267
Broiler or toaster	J. A. Varley	483,882	Oct. 4	535	135	61	111
Brooder. Chicken	R. Martin	486,880	Nov. 29	2716	708	61	1184
Broom attachment	E. Barney	488,417	Dec. 20	1959	489	61	1744
Broom-corn cleaner	G. H. Abrams	486,066	Nov. 8	1403	371	61	875
Broom-guard	F. W. Reese	488,251	Dec. 20	1683	{420, 421}	61	1690
Broom or brush drilling apparatus	H. J. Bennett	483,733	Oct. 4	313	78	61	66
Broom-support	H. Besson	487,362	Dec. 6	205	56, 57	61	1361
Brush	C. A. Hudson	488,501	Dec. 20	2088	519	61	1771
Brush	W. Melius	485,642	Nov. 8	744	196	61	741
Brush	W. Melius	485,816	Nov. 8	995	267	61	793
Brush. Bottle	E. I. Miller	484,107	Oct. 11	867	221	61	192
Brush bridles. Machine for the manufacture of paint	A. Zolper	488,784	Dec. 27	2533	629	61	1874
Brush-ferrule	F. W. H. Weishaupt	487,309	Dec. 6	111	{32, 33, 34}	61	1344
Brush-heads. Apparatus for inserting plugs in	L. Z. Jenkins	485,467	Nov. 1	489	130	61	672
Brushes. Device for use in the manufacture of leather-bound	C. E. Thompson	485,670	Nov. 8	795	212	61	752
Bucket. Fire	C. R. Baker	488,685	Dec. 27	2388	591	61	1844
Bucket. Milk	J. M. Miller	488,321	Dec. 20	1795	451	61	1711
Buckets. Automatic latch-opener for	A. Porttens	483,581	Oct. 4	101	25	61	22
Buckets. Bail-ear for	C. P. Dole	484,782	Oct. 25	1967	{501, 502}	61	436
Buckets, pails, &c. Trimming for	M. Thoeni	483,798	Oct. 4	415	103	61	87
Buckle	E. L. Bailey	483,641	Oct. 4	183	46	61	38
Buckle	G. E. Adams	484,279	Oct. 11	1154	294	61	248
Buckle	G. E. Adams	488,174	Dec. 20	1559	391	61	1667
Buckle	G. E. Adams	488,175	Dec. 20	1560	391	61	1667
Buckle	C. R. Harris	485,698	Nov. 8	726	189	61	737
Buckle	G. La Chapelle	485,104	Oct. 25	2484	638	61	540
Buckle and snap-hook. Combined	A. M. Ziegler	487,043	Nov. 29	3008	774	61	1241
Buckle and snap-hook. Combined	G. D. Hayes	487,325	Dec. 6	146	42	61	1349
Buckle. Clasping	T. E. Page	486,536	Nov. 22	2146	566	61	1055
Buckle. Harness	C. Hollweg	485,544	Nov. 1	599	160	61	695
Buckle. Hitching	T. M. Guthrie	487,619	Dec. 6	615	158	61	1444
Buckle. Rein	S. B. Burwell	487,415	Dec. 6	308	79	61	1382
Buckle. Snspender	W. C. Edge	487,474	Dec. 6	403	104	61	1400
Buckle. Suspender	R. M. Wilson	484,274	Oct. 11	1148	292	61	247
Buckle. Wire	A. M. Ziegler	487,044	Nov. 29	3010	774	61	1241
Buffing-roll	C. R. Harris	485,411	Nov. 1	409	110	61	656
Buggy-boot	J. Busfield	485,170	Nov. 1	17	5	61	576
Buggy-spring equalizer	J. W. Chambers	485,486	Nov. 1	515	136	61	677
Buggy-top	C. Glattly	484,309	Oct. 11	1203	306	61	257
Building	D. Shivell	488,459	Dec. 20	2018	504	61	1757
Building-block	R. Quatermass	488,451	Dec. 20	2007	501	61	1755
Building-cell	A. A. Mellen	485,289	Nov. 1	202	57	61	614
Building-covering	L. H. Giraud	486,284	Nov. 15	1770	466	61	967
Building. Portable	M. P. Schetzel	487,585	Dec. 6	563	144	61	1433
Buildings. Construction of	J. H. Van Dorn	485,306	Nov. 1	223	63	61	618
Buildings. Metal framework for	B. Russell	484,244	Oct. 11	1092	277	61	236
Buildings. Structnral work for	J. M. Larimer	485,870	Nov. 8	1083	{287, 288}	61	810
Built-up work for pew-backs, &c. Making	J. M. Larimer	485,871	Nov. 8	1084	288	61	811
Bundle-carrier and band-cutter	M. Lancaster	486,479	Nov. 22	2069	548	61	1040
Buoy. Bell	A. Booth	487,707	Dec. 13	764	196	61	1489
Bureau	V. Fountain	488,552	Dec. 27	2166	535	61	1801
Bureaus, &c. Construction of	N. H. Clark	484,948	Oct. 25	2344	578	61	492
Burglar-alarm	E. P. Lurker	484,662	Oct. 18	1767	449	61	382
Burglar-alarm	W. W. Climenson	488,162	Dec. 13	1533	385	61	1645
Burglar-alarm	F. A. Goelze	485,101	Oct. 25	2480	638	61	540
Burglar-alarm	J. H. Pruitt	486,893	Nov. 29	2754	715	61	1191
Burglar-alarm	H. W. Reynolds	487,128	Nov. 29	3146	806	61	1269
Burglar-alarm cabinet	A. Stromberg	484,761	Oct. 18	1917	489	61	413
Burglar-alarm contact	A. Stromberg	486,908	Nov. 29	2801	{726, 727}	61	1202
Burglar-alarm. Electric	N. M. Hopkins	483,844	Oct. 4	483	130	61	100
Burglar-alarm. Electrical	A. Stromberg	483,728	Oct. 4	304	75, 76	61	61
Burglar-alarm. Portable	H. T. Wilson	483,625	Oct. 4	162	40	61	34
Burglar-alarm systems. Test-circuit for	D. D. Nolley	484,232	Oct. 11	1073	272	61	233
Burglar and fire alarm. Combined electric	E. R. Wilder	486,149	Nov. 15	1562	414	61	924
Burner:	D. D. Nolley	484,233	Oct. 11	1074	272	61	233
See Gas-burner. Injector-burner. Lamp-burner. Oil-burner. Vapor-burner.							
Burner attachment	T. W. Bartholomew	486,525	Nov. 22	2133	563	61	1052
Burner-fastening	B. T. Steber	487,455	Dec. 6	376	98	61	1395
Burning solid carbonaceous fuels. Means for	W. McClave	485,820	Nov. 8	999	268	61	794
Burnisher	T. Lloyd	485,416	Nov. 1	415	111	61	657

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Butter-cutter	J. A. Kaiser	484,023	Oct. 11	758	191	61	170
Butter-extractor. Centrifugal	G. M. Anderson	487,316	Dec. 6	120	39	61	1346
Butter-extractor. Centrifugal	O. Ohlson	487,055	Nov. 29	3025	777	61	1945
Butter from milk. Separating	C. G. P. de Laval	484,916	Oct. 25	2195	{565, 566}	61	482
Butter-mold	S. H. Jones	486,043	Nov. 8	1466	363	61	869
Butter-package	C. L. Kneeland	485,011	Oct. 25	2347	604	61	511
Butter worker and weigher	T. Mnir	485 968	Nov. 8	1245	329	61	844
Buttercup-cutter	N. A. Walker	486,917	Nov. 29	2820	730	61	1205
Button	G. J. Capewell	487,344	Dec. 6	170	48	61	1354
Button	G. J. Capewell	487,345	Dec. 6	171	48	61	1354
Button	C. S. Franke	487,389	Dec. 6	247	66	61	1369
Button	C. S. Gooding	486,461	Nov. 22	2043	540	61	1034
Button	A. Hall	486,871	Nov. 29	2706	706	61	1182
Button	W. E. Jackson	483,674	Oct. 4	227	57	61	47
Button	H. M. Nester	485,111	Oct. 25	2492	640	61	542
Button	A. E. Newcomb	484,810	Oct. 25	2014	517	61	446
Button	G. H. Perrine	485,848	Nov. 8	1047	280	61	803
Button and buttonhole. Adjustable	F. S. Rudge	488,090	Dec. 13	1414	351	61	1621
Button and fastener. Combined	R. D. Wirt	486,009	Nov. 8	1316	350	61	858
Button and fastener. Cuff	J. F. Poage	484,669	Oct. 18	1777	452	61	384
Button-attaching machine	C. Radcliffe	486,895	Nov. 29	2759	{716, 717, 718, 719}	61	1192
Button-attaching machine	C. Radcliffe	486,896	Nov. 29	2770	{719, 720, 721, 722}	61	1195
Button. Bachelor	J. F. Platt	488,219	Dec. 20	1636	408	61	1681
Button-blanks. Device for grinding	J. Huebner	487,741	Dec. 13	828	{211, 212}	61	1502
Button. Collar	D. O. Parks	488,026	Dec. 13	1302	324	61	1598
Button. Cuff	L. F. Brooks	484,291	Oct. 11	1168	297	61	251
Button-cutting machines, &c. Tool-holder for	F. E. Beckwith, Jr	485,147	Oct. 25	2549	655	61	553
Button-fastening	E. A. Giles	484,853	Oct. 25	2086	537	61	460
Buttonhole-reinforce for collars	F. Engelhard	488,806	Dec. 27	2568	637	61	1881
Buttonhole-thrums. Machine for overstitching	R. W. Thomson and E. M. Phelps	484,647	Oct. 18	1739	{441, 442, 443}	61	375
Button-hook	T. F. Krueger	487,054	Nov. 29	3024	777	61	1245
Button-machine	A. Phelps	484,976	Oct. 25	2290	591	61	500
Button machine. Pearl	H. and T. Tonks	485,338	Nov. 1	286	77, 78	61	630
Button sale-card	C. F. G. R. Schwerdt	484,677	Oct. 18	1790	455	61	387
Button-setting machine	E. P. Merwin and J. D. Stirckler	487,678	Dec. 6	712	{182, 183}	61	1462
Button-setting machine	F. A. Ray	483,694	Oct. 4	257	63, 64	61	54
Button-setting machine	A. G. Wilkins	484,835	Oct. 25	2057	527	61	455
Button-setting tool	F. A. Ray	483,695	Oct. 4	260	64	61	54
Buttons. Attaching	J. Mathison	484,105	Oct. 11	966	220	61	192
Buttons, &c. Link attachment for	W. C. Edge	485,320	Nov. 1	258	70	61	625
Buttons. Making pearl	W. E. Taft	487,234	Nov. 29	3342	850	61	1305
Buttons, &c. Tool for making pearl	W. E. Taft	487,233	Nov. 29	3341	850	61	1304
Cabinet	J. Stein	484,121	Oct. 11	884	225	61	196
Cabinet for displaying sample goods	A. T. Selden	484,166	Oct. 11	964	248	61	211
Cable	J. H. L. Tuck	488,640	Dec. 27	2310	572	61	1829
Cable-crossing	H. A. Benedict	484,772	Oct. 25	1947	497	61	432
Cable-crossing	W. Bowers	488,262	Dec. 20	1699	424	61	1693
Cable-crossings. Automatic release for	F. W. Smith	484,346	Oct. 11	1257	321	61	268
Cable-grip	F. A. Yard	483,952	Oct. 4	638	160	61	131
Cable-grips. Automatic release for	A. D. and F. W. Smith. (Reissue)	11,275	Oct. 4	699	175	61	144
Cable splice. Electric	F. A. C. Perrine	484,045	Oct. 11	788	198	61	176
Cake-machine	J. J. Langlés	485,201	Nov. 1	73	23	61	587
Calculating apparatus. Interest	G. Meyer	484,538	Oct. 18	1565	398	61	311
Calculating-instrument	G. M. Andrews	486,070	Nov. 15	1413	374	61	896
Calculating-machine	F. C. Osborn	484,814	Oct. 25	2019	518	61	447
Calendar	L. Lane	487,929	Dec. 13	1140	284	61	1564
Calendar	J. Wallin	488,461	Dec. 20	2021	505	61	1758
Caliper-joint	M. Ullmann	485,339	Nov. 1	288	78	61	631
Calipers. Automatic indicating	J. W. Porter	486,810	Nov. 22	2595	676	61	1144
Calipers. Inside	R. C. Nugent	484,813	Oct. 25	2017	518	61	447
Call system for buildings. Messenger	F. H. Fuller and C. B. Perkins	486,282	Nov. 15	1768	465	61	966
Camera: *See* Photographic camera.							
Camera	R. A. Ripley	487,159	Nov. 29	3195	818	61	1279
Camera and photograph-exhibitor. Combined	W. V. Esmond	488,331	Dec. 20	1814	454	61	1716
Camera film-holder	G. D. Millburn	485,393	Nov. 1	380	102	61	650
Camera-shutter	G. Eastman	486,397	Nov. 15	1941	514	61	1601
Camera-shutter	J. W. Grantland	487,823	Dec. 13	976	{246, 247}	61	1533
Camera-shutter	H. C. Platt	484,456	Oct. 18	1431	366	61	315
Camera-tripod	J. Rodes	487,295	Dec. 6	87	26	61	1339
Cameras. Finder attachment for	W. B. Cogswell	484,179	Oct. 11	985	252	61	215
Can: *See* Key-opening can. Key-opening sheet-metal can. Milk-can. Oil-can. Paper can. Preserving-can. Shipping-can.							
Can	C. C. Lockstaedt	484,936	Oct. 25	2230	575	61	489
Can-body-forming machine	R. D. Hume	488,476	Dec. 20	2050	509	61	1763
Can-body. Sheet-metal	I. H. Taylor	483,660	Oct. 4	210	52	61	43
Can-filling machine	E. Wildl	486,746	Nov. 22	2487	{649, 650}	61	1123
Can-jacket. Sheet-metal	I. Sexton	483,750	Oct. 4	341	85	61	71

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Can-labeling machine	F. X. Gaudrie	488,273	Dec. 20	1717	433	61	1697
Can-labeling machine	W. H. Leach	488,791	Dec. 27	2543	631	61	1876
Can-labeling machine	B. W. Wright and E. E. Rogers	488,346	Dec. 20	1841	460, 461	61	1720
Can-lacquering machine	R. D. Hume	487,571	Dec. 6	545	140	61	1429
Can-opener	F. A. Vogt	486,307	Nov. 15	1805	475	61	973
Can, pail, &c	L. C. Corey	483,902	Oct. 4	569	143	61	118
Cans. Pouring-nozzle for	E. Norton	485,295	Nov. 1	211	60	61	615
Cans. Screw-nozzle for	E. Norton	485,296	Nov. 1	213	60	61	615
Cans. Valve-nozzle for oil	L. A. Norton	486,293	Nov. 15	1783	468	61	970
Canning apparatus	J. F. Fisk, Jr	486,373	Nov. 15	1905	503	61	993
Cane	W. N. Macqueen	485,957	Nov. 8	1232	325	61	841
Cane and stool. Combined	W. S. Sharpneck	486,131	Nov. 15	1535	405	61	919
Cane and stool. Combined	F. Benoit	486,074	Nov. 15	1420	375	61	897
Cane-mill	R. T. More	484,334	Oct. 11	1242	316	61	265
Canes. Electric appliance for	J. N. Sanders and D. C. Herrington	488,031	Dec. 13	1313	327	61	1600
Canes, umbrellas, &c. Attachment for	S. D. Smith	484,618	Oct. 18	1685	428	61	365
Cannon-pinion	C. A. Rudyard	485,806	Nov. 8	984	264	61	791
Cannon. Telescopic sight for	J. B. Jobson	486,933	Nov. 29	2841	736	61	1209
Cap-attacher	V. Berberich	484,285	Oct. 11	1161	295	61	690
Caps and cap. Combined	C. H. Griffin	487,562	Dec. 6	535	137	61	249
Capsule-filler	A. T. Aldrich	484,945	Oct. 25	2241	577	61	1427
Car and truck safety attachment	C. F. Hausmann	487,886	Dec. 13	1069	268	61	491
Car-body	A. Ellis	485,918	Nov. 8	1163	307	61	1550
Car-brake	W. N. Haring	487,925	Dec. 13	1133	283	61	826
Car-brake	J. E. Anger	484,693	Oct. 18	1809	460	61	1502
Car-brake	G. R. Elliott	484,783	Oct. 25	1969	502	61	690
Car-brake	S. Fairman	488,118	Dec. 13	1456	367	61	437
Car-brake	R. Fallis	488,965	Dec. 27	2823	697	61	1629
Car-brake	W. N. Haring	487,391	Dec. 6	250	67	61	1935
Car-brake	H. Hinckley	488,314	Dec. 20	1783	449	61	1370
Car-brake	J. and H. R. Howard	485,385	Nov. 1	365	98	61	1709
Car-brake	J. Hughes	488,676	Dec. 27	2375	588	61	647
Car-brake	H. H. Kelley	486,718	Nov. 22	2443	637	61	1842
Car-brake	P. J. Lawrence and M. F. Garrettson.	486,785	Nov. 22	2553	666	61	1135
Car-brake	T. A. Marriott	487,868	Dec. 13	1040	261	61	1545
Car-brake	I. R. McCormick	488,695	Dec. 27	2404	595	61	1818
Car-brake	P. McMullen	487,681	Dec. 6	721	184	61	1463
Car-brake	J. W. Neumann and J. R. Pfanz	483,859	Oct. 4	504	125	61	104
Car-brake	J. W. Neumann and J. R. Pfanz	487,151	Nov. 29	3181	815	61	1276
Car-brake	L. Püngst	487,768	Dec. 13	870	221	61	1511
Car-brake	J. H. Pflieger	486,792	Nov. 22	2566	669	61	1138
Car-brake	F. I. Rego	485,135	Oct. 25	2529	650	61	549
Car-brake	J. Trendley	486,801	Nov. 22	2578	672	61	1140
Car-brake	R. C. Wright	484,486	Oct. 18	1484	378	61	324
Car-brake adjuster	L. T. Knowles	488,359	Dec. 20	1861	466	61	1725
Car brake and starter	P. D. Van Vradenburg	486,140	Nov. 15	1547	408, 409	61	921
Car-brake. Automatic	E. Farnsworth	486,453	Nov. 22	2029	536	61	1032
Car-brake. Automatic	M. E. Stockwell	484,620	Oct. 18	1688	428	61	366
Car-brake handle	A. B. Collett	483,779	Oct. 4	390	97	61	82
Car-brake mechanism	J. E. Loughridge	484,597	Oct. 18	1647	418	61	358
Car-brake mechanism	J. E. Loughridge	484,598	Oct. 18	1649	418	61	358
Car-brake mechanism	J. Murrey	486,384	Nov. 15	1917	507, 508	61	997
Car-brakes. Coupling for pneumatic	R. W. Tinsley	486,001	Nov. 8	1304	347	61	856
Car-brakes. Slack-adjuster for	W. H. Marshall	484,859	Oct. 25	2093	539	61	462
Car-brakes. Slack-adjuster for	W. H. Marshall	484,860	Oct. 25	2095	540	61	462
Car construction	S. A. Jennings	485,198	Nov. 1	67	20, 21, 22	61	586
Car cooler and ventilator. Passenger	A. Black	483,710	Oct. 4	280	70	61	59
Car-coupling	W. H. Borchers	486,949	Nov. 29	2870	742	61	1215
Car-coupling	J. Bradford	487,243	Dec. 6	11	3	61	1329
Car-coupling	T. B. Brower	487,694	Dec. 6	740	189	61	1467
Car-coupling	C. H. Carpenter	488,963	Dec. 27	2819	695	61	1934
Car-coupling	F. J. Case and G. T. Challiss	485,459	Nov. 1	465	124	61	667
Car-coupling	C. Cissner	485,172	Nov. 1	28	10	61	578
Car-coupling	W. B. Clark	484,997	Oct. 25	2326	600	61	507
Car-coupling	I. L. Coffman and D. P. Denney	487,251	Dec. 6	20	6	61	1325
Car-coupling	W. N. Colam	486,086	Nov. 15	1436	380	61	901
Car-coupling	T. Courser	486,693	Nov. 22	2404	627	61	1105
Car-coupling	J. H. Crumb	488,873	Dec. 27	2672	661	61	1903
Car-coupling	F. De Ford	485,736	Nov. 8	902	242	61	774
Car-coupling	M. M. Decker	486,091	Nov. 15	1467	386, 387	61	905
Car-coupling	H. Deitz	487,662	Dec. 6	689	176	61	1458
Car-coupling	H. Deitz	487,663	Dec. 6	690	176	61	1458
Car-coupling	H. Deitz	487,664	Dec. 6	691	176	61	1458
Car-coupling	H. Deitz	487,665	Dec. 6	693	177	61	1459
Car-coupling	H. Deitz	487,666	Dec. 6	694	177, 178	61	1459
Car-coupling	C. Demaurez	486,826	Nov. 22	2628	686	61	1152
Car-coupling	J. P. Derr	488,875	Dec. 27	2675	662	61	1904
Car-coupling	F. Dickey	484,412	Oct. 18	1361	347, 348	61	300
Car-coupling	C. W. Diederich	487,916	Dec. 13	1120	279	61	1560
Car-coupling	P. Doersom	487,885	Dec. 13	1067	268	61	1550
Car-coupling	W. S. Edwards	488,065	Dec. 13	1381	343	61	1614
Car-coupling	T. J. Emery	487,475	Dec. 6	404	104	61	1400
Car-coupling	F. Enos	486,578	Nov. 22	2220	582, 583	61	1067
Car-coupling	W. A. Flook	486,864	Nov. 29	2698	704	61	1181

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Car-coupling	J. E. Forsyth and E. R. Merrell	488,551	Dec. 27	2165	535	61	1800
Car-coupling	H. Gallager	488,885	Dec. 27	2687	665	61	1906
Car-coupling	S. J. Galloway and G. P. Cramer	488,922	Dec. 27	2752	679	61	1919
Car-coupling	F. von Garn	484,419	Oct. 18	1371	351	61	302
Car-coupling	T. C. Gibson	487,367	Dec. 6	213	58, 59	61	1362
Car-coupling	J. Globig	486,460	Nov. 22	2042	540	61	1034
Car-coupling	H. B. Grant	485,928	Nov. 8	1174	309	61	828
Car-coupling	E. Grund	486,375	Nov. 15	1906	504	61	994
Car-coupling	C. J. Gustafson	486,930	Nov. 29	2835	734, 735	61	1208
Car-coupling	W. N. Haring	487,924	Dec. 13	1132	283	61	1562
Car-coupling	C. C. Haub and J. F. Dasha	488,120	Dec. 13	1459	368	61	1630
Car-coupling	P. Hien	487,926	Dec. 13	1135	283, 284	61	1562
Car-coupling	W. Holly	484,430	Oct. 18	1394	356	61	306
Car-coupling	W. H. Hooper	487,030	Nov. 29	2991	770	61	1237
Car-coupling	L. W. Houghton	487,568	Dec. 6	542	140	61	1428
Car-coupling	J. B. Hulett and L. J. Beers	488,814	Dec. 27	2576	640	61	1883
Car-coupling	C. Johnson and N. Olander	485,049	Oct. 25	2395	615	61	521
Car-coupling	J. T. Jones	483,848	Oct. 4	490	122	61	101
Car-coupling	D. B. Kelsey	487,148	Nov. 29	3177	814	61	1275
Car-coupling	J. M. Keogh	485,500	Nov. 1	533	141	61	681
Car-coupling	C. T. Kincaid	487,751	Dec. 13	844	215	61	1506
Car-coupling	E. King and C. L. Tuch	486,342	Nov. 15	1854	488	61	983
Car-coupling	J. W. Klingler	487,532	Dec. 6	492	129	61	1418
Car-coupling	W. R. Knight and W. R. Ownby	485,200	Nov. 1	72	22	61	587
Car-coupling	C. Lee	487,420	Dec. 6	313	80, 81	61	1383
Car-coupling	C. Leischer	488,078	Dec. 13	1400	348	61	1618
Car-coupling	S. F. Lenoir	488,792	Dec. 27	2547	632	61	1877
Car-coupling	R. Loomis	488,768	Dec. 27	2505	623	61	1868
Car-coupling	R. F. Ludlow	488,769	Dec. 27	2506	623, 624	61	1868
Car-coupling	C. B. Martin	486,339	Dec. 20	1828	457	61	1718
Car-coupling	L. C. Martin	485,929	Nov. 8	1018	273	61	797
Car-coupling	G. W. Mason	487,536	Dec. 6	497	130	61	1419
Car-coupling	J. Mason	485,468	Nov. 1	489	130	61	672
Car-coupling	J. L. Matson	486,193	Nov. 15	1615	429	61	935
Car-coupling	D. A. McCollum	486,291	Nov. 15	1780	468	61	969
Car-coupling	F. S. McConnell	488,173	Dec. 13	1552	389	61	1642
Car-coupling	V. McDonald	485,969	Nov. 8	1247	329	61	844
Car-coupling	J. McFarlane	487,424	Dec. 6	320	82	61	1384
Car-coupling	G. C. McMichael	485,211	Nov. 1	86	26, 27	61	590
Car-coupling	A. C. Merritt	487,756	Dec. 13	854	217	61	1508
Car-coupling	W. Miggett	484,939	Oct. 25	2234	576	61	490
Car-coupling	M. T. Miles	485,965	Nov. 8	1242	328	61	843
Car-coupling	J. W. Millican	488,571	Dec. 27	2203	545	61	1809
Car-coupling	R. Y. Mitchell	487,632	Dec. 6	636	163	61	1447
Car-coupling	H. E. Moomaw	486,409	Nov. 15	1963	521	61	1005
Car-coupling	R. S. Morrow and D. W. Glenn	486,489	Nov. 22	2081	551	61	1042
Car-coupling	S. C. Noble	486,601	Nov. 22	2259	590	61	1075
Car-coupling	J. O'Haire	485,878	Nov. 8	1092	290	61	812
Car-coupling	H. and B. Oakes	484,900	Oct. 25	2164	557	61	476
Car-coupling	C. S. Park	485,804	Nov. 8	981	263	61	791
Car-coupling	E. W. Parrow	481,451	Oct. 18	1427	364	61	313
Car-coupling	C. W. Patton	485,218	Nov. 1	96	29	61	592
Car-coupling	J. W. Poston	485,333	Nov. 1	278	75, 76	61	629
Car-coupling	P. M. Reagan	485,356	Nov. 1	322	86	61	638
Car-coupling	E. B. Reid	487,772	Dec. 13	878	223	61	1513
Car-coupling	D. L. Richards	483,945	Oct. 4	625	158	61	129
Car-coupling	F. T. Russell	485,061	Oct. 25	2421	622	61	526
Car-coupling	F. M. Ryan	488,718	Dec. 27	2436	604	61	1854
Car-coupling	H. Schaeffer	488,507	Dec. 20	2098	521	61	1773
Car-coupling	A. W. Schoeb	488,907	Dec. 27	2734	674	61	1916
Car coupling	A. Schroeder	485,062	Oct. 25	2423	623	61	527
Car-coupling	M. T. Scott	485,752	Nov. 8	919	246	61	778
Car-coupling	J. H. Seidel	485,232	Nov. 1	118	36	61	598
Car-coupling	S. Shepardson	487,297	Dec. 6	90	27	61	1339
Car-coupling	W. H. Snow	487,353	Dec. 6	189	52	61	1358
Car-coupling	J. H. Snyder	486,905	Nov. 29	2796	725	61	1200
Car-coupling	J. Steiner	483,658	Oct. 4	207	51	61	42
Car-coupling	B. F. Stone	485,512	Nov. 1	547	146	61	684
Car-coupling	J. C. Stuart	483,640	Oct. 4	182	45	61	38
Car-coupling	W. H. Stulta	488,153	Dec. 13	1518	381	61	1641
Car-coupling	E. S. Thomas and J. E. Littlejohn	483,879	Oct. 4	531	134	61	110
Car-coupling	G. R. Thompson	488,586	Dec. 27	2228	552	61	1814
Car-coupling	C. A. Tower	484,125	Oct. 11	890	226, 227	61	197
Car-coupling	C. A. Tower	487,546	Dec. 6	512	133	61	1422
Car-coupling	C. A. Tower	487,649	Dec. 6	663	171	61	1453
Car-coupling	C. A. Tower	487,650	Dec. 6	666	171, 172	61	1453
Car-coupling	O. Tweeden	484,477	Oct. 18	1471	375	61	321
Car-coupling	A. G. Vogt	488,857	Dec. 27	2651	656	61	1898
Car-coupling	J. G. Waggoner	486,516	Nov. 22	2120	559	61	1050
Car-coupling	F. N. Ward	487,357	Dec. 6	198	55	61	1360
Car-coupling	T. Welch	488,159	Dec. 13	1528	383	61	1644
Car-coupling	M. Werner	487,590	Dec. 6	570	146	61	1435
Car-coupling	R. W. Weymouth and H. T. Fulton.	487,341	Dec. 6	167	47	61	1353
Car-coupling	E. D. Whipple	485,249	Nov. 1	143	43	61	603
Car-coupling	J. A. and L. R. Williams	488,490	Dec. 20	2071	514	61	1768
Car-coupling	H. G. Wood	486,011	Nov. 8	1318	350	61	859
Car coupling and buffing mechanism	H. C. Buhoup	488,496	Dec. 20	2079	516, 517	61	1770

Alphabetical list of inventions, October to December, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Car curtain. Street	A. D. Cochran	486,433	Nov. 22	2006	532	61	1027
Car-door	T. Eubank	486,562	Nov. 22	2189	576	61	1062
Car-door	S. W. Grosh	485,007	Oct. 25	2342	603	61	510
Car-door	A. B. Pullman	485,588	Nov. 1	664	176, 177	61	710
Car door. Tram	J. Stephenson	488,722	Dec. 27	2440	605, 606	61	1855
Car-door. Ventilated	J. L. Stagg, C. W. Fenn, and C. T. Schoen.	487,161	Nov. 29	3202	820	61	1280
Car draft-rigging. Railway	J. A. Hinson	487,269	Dec. 6	44	14	61	1330
Car draw-bar attachment	P. Brown	486,427	Nov. 22	1995	529, 530	61	1025
Car draw-bar attachment	W. B. Orton	487,583	Dec. 6	559	143	61	1432
Car draw-gear. Railway	T. A. Bissell	488,326	Dec. 20	1805	453	61	1714
Car driving mechanism	C. W. Hunt	484,914	Oct. 25	2189	564	61	481
Car. Dumping	M. W. Iles	484,019	Oct. 11	754	190	61	169
Car. Dumping	J. Player	483,790	Oct. 4	405	101	61	85
Car-fender	S. I. Crafts	488,386	Dec. 20	1906	477	61	1734
Car-fender	H. A. Gamage and W. N. Schmidt	488,353	Dec. 20	1853	463	61	1723
Car fender or guard	P. Wentzel and H. Bletzer	487,547	Dec. 6	514	133	61	1422
Car fender. Street	W. W. Baxter	484,989	Oct. 25	2310	596	61	504
Car. Freight	G. T. Hall	488,276	Dec. 20	1721	434	61	1698
Car. Hand	C. B. Hutchins	487,743	Dec. 13	852	212	61	1503
Car. Hand	C. Roberts	487,376	Dec. 6	223	61	61	1365
Car. Hand	C. Roberts	487,377	Dec. 6	225	61, 62	61	1365
Car. Hand	C. Roberts	487,378	Dec. 6	227	62	61	1366
Car-heating	W. W. Munsell	485,209	Nov. 1	84	26	61	589
Car heating and ventilating system	J. A. Healy	485,036	Oct. 25	2389	614	61	520
Car-heating apparatus	E. F. Roberts	483,698	Oct. 4	265	66	61	56
Car-heating apparatus	J. H. Sewall	483,813	Oct. 4	436	107, 108	61	90
Car-loader	H. C. W. Buchterkirchen	486,079	Nov. 15	1428	377	61	899
Car. Mine	H. Durand	488,879	Dec. 27	2679	663	61	1904
Car. Motor	O. Blessing	486,660	Nov. 22	2351	615, 616	61	1094
Car motor. Electric	C. A. Jackson	487,329	Dec. 6	149	43	61	1350
Car motors. Device for transmitting motion for electric street	W. E. Harrington	487,069	Nov. 29	3047	781, 782	61	1249
Car. Ore	F. A. Huntington	487,572	Dec. 6	546	141	61	1429
Car. Passenger	W. A. Winslow	486,313	Nov. 15	1813	478	61	975
Car. Railway	A. Fordham	487,918	Dec. 13	1123	280	61	1560
Car. Railway	C. B. Hutchins	484,593	Oct. 18	1638	415, 416	61	356
Car. Railway	T. E. Pope	485,562	Nov. 1	623	166	61	700
Car. Railway	C. J. Seymour	484,119	Oct. 11	879	224	61	195
Car. Railway-construction	C. C. Brown	487,045	Nov. 29	3011	775	61	1242
Car. Railway dumping	G. Talbot	488,295	Dec. 20	1754	441, 442	61	1704
Car ratchet-brake	P. M. Kling	485,542	Nov. 1	603	161	61	696
Car-replacer	W. H. Darling	487,864	Dec. 13	1034	259	61	1544
Car roofing. Box	W. S. Morris	487,193	Nov. 29	3245	830	61	1288
Car safety attachment	R. L. Lynch	488,477	Dec. 20	2051	510	61	1763
Car safety-cage	B. F. Johnson	487,746	Dec. 13	837	213	61	1504
Car safety-guard	J. Simons	485,598	Nov. 1	680	180	61	714
Car sand-box	S. Crory	488,387	Dec. 20	1907	477	61	1734
Car-seal	A. P. Travis	485,070	Oct. 25	2433	625	61	529
Car-seat	J. Lemman	487,034	Nov. 29	2997	772	61	1238
Car-seat	C. H. Matthiessen	484,215	Oct. 11	1044	264	61	226
Car-seat. Convertible	W. H. Steacy	486,742	Nov. 22	2482	647	61	1121
Car-seat. Reversible	J. S. Johnston	484,434	Oct. 18	1403	358	61	308
Car slack-adjuster	W. H. Marshall	484,858	Oct. 25	2092	538, 539	61	461
Car. Sleeping	S. M. Charles	485,151	Oct. 25	2556	657	61	554
Car-spring	N. H. and T. C. Davis	488,754	Dec. 27	2484	617	61	1864
Car-spring	G. Gibbs	488,474	Dec. 20	2041	508	61	1762
Car-spring	W. Marriott	485,553	Nov. 1	609	162, 163	61	697
Car-spring	L. Pflugat	485,652	Nov. 8	756	199	61	744
Car-starter	W. Weaver	488,462	Dec. 20	2023	505	61	1758
Car starter and brake	H. S. Bodley	488,865	Dec. 27	2661	659	61	1900
Car starter and brake	W. Prinzlau	485,353	Nov. 1	317	84	61	636
Car starter and brake	P. Wuelfing	486,520	Nov. 22	2124	561	61	1051
Car. Street	F. B. Brownell. (Reissue)	11,289	Nov. 29	3348	852	61	1306
Car. Street	J. E. Foster	486,034	Nov. 8	1352	359	61	866
Car-step. Automatic	J. MacCollom	487,867	Dec. 13	1039	260	61	1544
Car. Stock	G. Grossman	487,668	Dec. 6	697	178	61	1459
Car switch attachment	W. E. Meagher and A. Howarth	483,744	Oct. 4	332	84	61	70
Car trolley-stand. Electric	E. M. Bentley	488,179	Dec. 20	1566	393	61	1668
Car ventilating device. Railway	A. Minnick	483,851	Oct. 4	495	123	61	102
Car-wheel	G. W. Cushing	486,326	Nov. 15	1832	483	61	979
Car window. Railway	A. E. Shure	486,220	Nov. 15	1659	439	61	943
Cars and platforms. System of lighting railway	D. H. Nichols, C. L. and C. A. Cotton.	485,647	Nov. 8	750	197, 198	61	742
Cars. Apparatus for indicating the positions of railway	J. H. Hunter and J. S. Lucock	484,205	Oct. 11	1027	261, 262	61	223
Cars. Apparatus for transferring railway	A. D. Clarke	487,717	Dec. 13	786	200, 201, 202	61	1493
Cars. Automatic latch for dump	I. Barker	485,403	Nov. 1	396	106	61	653
Cars. Auxiliary motor for	W. Crook, Sr	486,031	Nov. 8	1348	354	61	865
Cars by steam. Device for heating railway	J. E. Howard	488,202	Dec. 20	1601	399, 400	61	1675
Cars. Coal loader and distributer for box	J. A. Ingalls	488,564	Dec. 27	2193	541, 542	61	1806

Alphabetical list of inventions, October to December, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Cars. Combined wheel and rail brake for	J. Grady	486,037	Nov. 8	1356	361	61	867
Cars. Gas-engine motor for	D. Best	484,728	Oct. 18	1859	473	61	400
Cars. Gearing for propelling	W. W. Dunlap	485,179	Nov. 1	38	13	61	580
Cars or similar vehicles. System of and apparatus for heating railway	J. A. Shinn	484,343	Oct. 11	1251	319, 320	61	267
Cars. Sanding device for railway	W. B. Leitch	485,703	Nov. 8	849	228	61	763
Cars. Skylight for electric	H. Cochran	484,515	Oct. 18	1529	388	61	333
Cars. Vestibule connection for passenger	E. C. Rosa	487,776	Dec. 13	885	224	61	1515
Carbon-brush holder for dynamo-electric machines and motors.	J. J. Wood	486,656	Nov. 22	2347	613, 614	61	1093
Carbon. Electric-light	J. Clegg	487,046	Nov. 29	3014	.....	61	1242
Carbon filaments. Manufacture of	T. A. Edison	484,184	Oct. 11	991	253	61	216
Carbon filaments. Manufacture of	T. A. Edison	484,185	Oct. 11	992	254	61	216
Carbon filaments. Manufacture of	T. A. Edison	485,615	Nov. 8	703	185	61	733
Carbon filaments. Manufacture of	T. A. Edison	485,616	Nov. 8	704	.....	61	733
Carbon-sheet holder	J. S. McDonald	487,959	Dec. 13	1182	295	61	1572
Carbons. Uniting broken pieces of arc-light	N. P. Stevens	488,256	Dec. 20	1691	422	61	1692
Carbonating liquids. Art of and apparatus for	C. A. and J. Schneible	484,901	Oct. 25	2166	557	61	477
Carbureted hydrogen. Apparatus for the manufacture of	J. W. Tallmadge	484,475	Oct. 18	1467	374	61	321
Carbureting air	A. B. Griffen and W. C. Clarke	487,617	Dec. 6	609	157	61	1442
Carbureting air or gas. Apparatus for	E. J. Frost and W. C. Squire	485,185	Nov. 1	48	15	61	582
Carbureting apparatus	J. J. Parris	484,721	Oct. 18	1846	469	61	397
Carbureting gas. Method of and apparatus for	H. S. Maxim	485,288	Nov. 1	200	57	61	614
Carburetor	D. Best	485,526	Nov. 1	566	151	61	689
Carburetor	J. Clingman	484,949	Oct. 25	2245	578	61	492
Carburetor	J. A. Enos	486,442	Nov. 22	2017	535	61	1030
Carburetor	W. and J. Falley	488,881	Dec. 27	2682	664	61	1905
Carburetor	N. Finck	486,224	Nov. 15	1665	440	61	945
Card-attacher	J. Ryan	486,840	Nov. 22	2048	691	61	1156
Card. Playing	J. W. Hyatt	484,798	Oct. 25	1998	513	61	443
Cards, &c. Machine for rimming show	T. W. G. Cook	487,609	Dec. 6	598	153, 154	61	1440
Carding-engine	G. A. Ayer	488,177	Dec. 20	1564	392	61	1668
Carding-engine	W. P. Canning	484,928	Oct. 25	2218	571, 572	61	486
Carding-engine	W. P. Canning	485,680	Nov. 8	807	216	61	755
Carding-engine flats. Protector for the ends of the clothing of	W. P. Canning	484,846	Oct. 25	2080	535	61	459
Carding-engine screen	J. H. Whittle	488,684	Dec. 27	2386	590, 591	61	1844
Carding-engine. Traveling-flat	W. P. Canning	485,681	Nov. 8	810	216	61	755
Carding-engines. Device for supporting and adjusting screens or undercasings for the cylinders or rollers of	W. P. Canning	485,679	Nov. 8	806	215	61	754
Carding-engines. Grinding mechanism for flats of traveling-flat	W. P. Canning	483,535	Oct. 4	29	7, 8	61	9
Carding-machines. Grinding mechanism for the flats of traveling-flat	W. P. Canning	483,534	Oct. 4	26	6, 7	61	8
Carpet-beater	C. S. Chaffee, A. S. Hoffman, and F. A. Green.	486,276	Nov. 15	1762	463, 464	61	965
Carpet-cleaning apparatus	A. A. Pyle	488,323	Dec. 20	1798	451	61	1712
Carpet-stretcher	H. G. Cady	485,406	Nov. 1	399	107	61	654
Carpet-sweeper	W. J. Drew	486,371	Nov. 15	1901	502, 503	61	992
Carpet-sweeper	W. J. Drew	487,212	Nov. 29	3271	836	61	1293
Carpet-sweeper	M. B. Holden	488,562	Dec. 27	2140	541	61	1806
Carpet-sweeper	S. H. Raymond	488,950	Dec. 27	2798	690	61	1929
Carpet-sweeper attachment	J. F. Chase	483,833	Oct. 4	469	117	61	97
Carriage	W. H. Sparks	487,788	Dec. 13	906	229	61	1518
Carriage-brake	P. Brailly	487,512	Dec. 6	459	119	61	1411
Carriage, chair, or rocker. Convertible	N. Silverson	485,991	Nov. 8	1284	341, 342	61	852
Carriage. Child's	F. Helle and K. Hirsch	487,050	Nov. 29	3021	776	61	1244
Carriage. Child's	C. Muehlsen	486,678	Nov. 22	2380	623	61	1100
Carriage-guide	J. K. Rowan	486,299	Nov. 15	1789	470	61	971
Carriage sleigh attachment. Baby	W. H. Benoure and S. Tilbery	485,781	Nov. 8	953	256	61	785
Carriages. Lock for the wheels of children's	J. A. Birkholz	484,873	Oct. 25	2117	545	61	467
Carriages. Parasol for baby	A. Featherstone	486,454	Nov. 22	2032	537	61	1032
Carrier: *See* Bundle-carrier. Cash-carrier. Egg-carrier. Elevated carrier. Grain-carrier. Hay-carrier. Hose-pipe carrier. Pen or pencil carrier. Thrashing-machine straw-carrier. Wick-carrier.							
Cart. Four-wheeled dog	W. H. Barlow	487,942	Dec. 13	1158	289, 290	61	1567
Cart. Road	A. D. Curry	487,998	Dec. 13	1251	311	61	1586
Cart. Road	C. H. Kallbreier	485,413	Nov. 1	412	110	61	656
Cart. Road	E. A., F. S., and H. G. Keasey	485,763	Nov. 8	935	250	61	781
Cartridge	T. F. Eustace	488,027	Dec. 27	2292	567	61	1826
Cartridge	J. A. C. de Latouche	487,125	Nov. 29	3143	805	61	1269
Cartridge. Artillery	E. L. Zalinski	487,400	Dec. 6	379	72	61	1376
Cartridge-crimping machine	M. A. Twitchell	484,868	Oct. 25	2108	543	61	465
Cartridge for firearms	U. Marga	483,656	Oct. 4	204	51	61	42
Cartridge. Gun	V. Ginalsky	487,028	Nov. 29	2988	789	61	1237
Cartridge-magazine for breech-loading small-arms	C. Schnippering	488,456	Dec. 20	2014	503	61	1756
Cartridge-pack holder	J. M. and M. S. Browning	487,660	Dec. 6	685	175	61	1457
Cartridge-pouch	G. B. Dudley	487,556	Dec. 6	525	136	61	1425
Carving-machine	H. H. Adams	488,047	Dec. 13	1343	333	61	1606
Carving-machine	W. C. Layer and E. U. Taylor	484,102	Oct. 11	863	219	61	191

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Case: *See* Banana-case. Book-case. Braid-case. Cheese-case. Cigar-case. Coin-case. Exhibiting-case. Hat-case. Packing-case. Packing-machine sack-case. Pencil-case. Revolving case. Shaving-case. Stock-case.							
Cash and parcel carrier	S. J. Besthoff	486,750	Nov. 22	2493	652	61	1124
Cash-carrier	J. F. Bartlett	483,681	Oct. 4	237	59	61	50
Cash-carrier	N. and N. E. Dillenbeck	487,048	Nov. 29	3019	775	61	1243
Cash-carrier	A. B. Gunzendorfer	486,250	Nov. 15	1713	452	61	954
Cash-carrier apparatus	J. Schiemer	484,248	Oct. 11	1099	278	61	298
Cash-carrier apparatus	M. W. Sherwood	487,905	Dec. 13	1099	275	61	1556
Cash indicator and recorder	G. R. Burt	485,086	Oct. 25	2457	632, 633	61	535
Cash indicator and recorder	T. Carney	488,063	Dec. 13	1374	341, 342	61	1613
Cash-recorder	A. C. Hough	484,501	Oct. 18	1506	383	61	329
Cash recorder and drawer	L. M. Mills	487,284	Dec. 6	70	21, 22	61	1336
Cash-recorder. Manual	H. Kiebl	484,742	Oct. 18	1887	481	61	407
Cash-register	C. Carr	486,980	Nov. 29	2915	753	61	1224
Cash-register	J. Goodenberger and L. Akins	487,922	Dec. 13	1129	282	61	1561
Cash-register	H. A. Herr	487,903	Dec. 13	1094	274	61	1555
Cash-register	E. F. Roberts	483,946	Oct. 4	627	158, 159	61	129
Cash-register	E. F. Roberts	484,376	Oct. 11	1301	332, 333	61	277
Cash-register	E. F. Roberts	487,683	Dec. 6	724	185	61	1463
Cash-register	E. T. Taylor	485,998	Nov. 8	1298	344, 345	61	855
Cash-register	O. Tverdal	486,306	Nov. 15	1797	472, 473, 474, 475	61	972
Cash register and adder	J. E. Claudin and P. Robert	486,030	Nov. 8	1346	358	61	865
Cash register and indicator	T. Carney	484,296	Oct. 11	1176	299	61	252
Cash register and indicator	C. Carr	486,979	Nov. 29	2912	752	61	1223
Cash register and indicator	E. Del Valle	486,825	Nov. 22	2622	684, 685, 686	61	1150
Cash register and indicator	P. H. McEwan	486,119	Nov. 15	1512	400	61	914
Cash register and indicator	E. H. Murdock	484,917	Oct. 25	2198	566, 567	61	482
Cash register and indicator	E. Murphy	488,150	Dec. 13	1503	378, 379, 380	61	1638
Cash register and indicator	R. P. Thompson	485,240	Nov. 1	129	39	61	599
Cash register and indicator	H. G. and C. F. Walter	485,307	Nov. 1	226	64	61	619
Cash register and indicator	J. J. Webster	484,887	Oct. 25	2134	549, 550	61	470
Cash register and indicator	W. F. and W. M. Wurzburg and A. A. Tloczynski.	486,815	Nov. 22	2603	678, 679	61	1146
Cash register, indicator, and check-printer	G. Boemermann	486,577	Nov. 22	2214	580, 581, 582	61	1066
Cash register, indicator, and check-printer	R. Lamont	485,951	Nov. 8	1220	322	61	838
Cash register, indicator, and recorder	T. Carney	484,297	Oct. 11	1178	300, 301	61	252
Cash register, indicator, recorder, and check-printer	J. Pfeifer	488,903	Dec. 27	2715	671, 672, 673	61	1912
Cash registering and indicating machine	E. N. Foote	487,215	Nov. 29	3278	837	61	1294
Caster	H. H. McElhiney	485,706	Nov. 8	853	229	61	764
Caster	W. J. Smith	488,954	Dec. 27	2807	692	61	1931
Caster-wheel	A. B. Diss	484,305	Oct. 11	1197	304	61	256
Casting armor	G. H. Chase and H. L. Gantt	485,781	Nov. 8	957	257	61	786
Casting armor	G. H. Chase and H. L. Gantt	485,785	Nov. 8	958	257	61	786
Casting brake-shoes. Pattern for	W. H. Kramer	485,949	Nov. 8	1216	321	61	838
Casting can-openers. Mold for	W. E. Warner	488,590	Dec. 27	2237	553, 554	61	1816
Casting car-wheels. Mold for	G. W. Cushing and J. W. Rampe	486,327	Nov. 15	1833	4-3	61	979
Casting metal around internal cores. Mold for	F. G. Stone	484,124	Oct. 11	888	226	61	197
Casting pig-iron. Apparatus for	H. D. Hibbard	486,714	Nov. 22	2438	635, 636	61	1112
Casting pipe. Flask for	W. White	487,810	Dec. 13	944	239	61	1526
Casting sash-weights. Machine for	J. Goldberg	487,263	Dec. 6	37	12	61	1329
Cattle-dehorner	W. B. Howell	483,557	Oct. 4	61	15	61	14
Cattle-washing device	J. G. Smiley	488,778	Dec. 27	2522	627	61	1871
Ceiling-block	J. J. Green	484,911	Oct. 25	2186	563	61	481
Ceiling. Fireproof	G. Hayes	486,962	Nov. 29	2919	753	61	1225
Ceiling-plate. Metallic	L. L. Sagendorph	488,254	Dec. 20	1689	422	61	1691
Cement. Artificial Portland	C. von Forell	486,706	Nov. 22	2432	.....	61	1111
Cement. Artificial Roman	C. von Forell	486,707	Nov. 22	2432	.....	61	1111
Cement. Composition of matter for producing Portland	H. J. Livingston	486,165	Nov. 15	1583	.....	61	929
Cement. Manufacture of	L. Enricht	486,444	Nov. 22	2019	.....	61	1030
Cement. Manufacture of	L. Enricht	486,450	Nov. 22	2025	.....	61	1030
Centrifugal extractor	W. E. Johnson	486,876	Nov. 29	2711	707	61	1183
Chain-block	J. R. Morgan	484,038	Oct. 11	779	196	61	174
Chain. Drive	W. H. Hart	483,843	Oct. 4	482	120	61	100
Chain. Drive	W. H. and C. E. Hart	488,808	Dec. 27	2570	638	61	1882

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Chain. Drive	A. Wörner	486,920	Nov. 29	2823	731	61	1206
Chain gate	G. K. Rudert	484,572	Oct. 18	1610	409	61	350
Chain-link-coupling device	C. F. Noble	486,587	Nov. 22	2235	586	61	1071
Chain-making machine	F. F. Ellis	484,909	Oct. 25	2181	561, 562, 563	61	480
Chair: *See* Adjustable chair. Auditorium-chair. Barber's chair. Convertible chair. Dental chair. Dentist's chair. Folding chair. Insulating-chair. Nursery-chair. Pneumatic chair. Railway-chair. Reclining-chair. Rocking-chair. Surgical chair. Window-chair.							
Chair	L. W. Chapman	483,976	Oct. 4	684	171	61	142
Chair	J. W. Hamilton	485,925	Nov. 1	266	72	61	626
Chair-bottom. Spring	S. Konz	486,046	Nov. 8	1369	364	61	869
Chair. Combined easy, rocking, and invalid	H. W. Stern	485,435	Nov. 1	439	117, 118	61	662
Chair fan attachment	A. P. Nichols	484,603	Oct. 18	1656	420, 421	61	359
Chair for theatrical or other purposes	R. M. Hunter	485,277	Nov. 1	182	54	61	610
Chamber	O. P. Johnson	487,747	Dec. 13	838	213	61	1505
Change maker and receiver	G. M. Hill and F. P. Alter	488,007	Dec. 13	1267	315, 316	61	1590
Change making and delivering device	D. L. Tower	486,201	Nov. 15	1628	431	61	937
Channeling-machine	H. H. Arnold	484,130	Oct. 11	896	229	61	198
Channeling-machine	J. B. Hadaway	484,363	Oct. 11	1280	326, 327, 317, 318	61	273
Chart and blackboard. Combined	J. B. and M. C. Powell	484,338	Oct. 11	1246	339	61	266
Chart. Dress	B. Viau	487,801	Dec. 13	934	235	61	1524
Chasing-mill	H. C. Higginson	487,146	Nov. 29	3173	813	61	1275
Check. Baggage	A. A. Glisson	488,334	Dec. 20	1818	455	61	1717
Check, draft, &c. Bank	A. D. Garner	485,925	Nov. 8	1171	308	61	828
Check-hook	D. W. Mickey	484,665	Oct. 18	1773	451	61	383
Check-hook	W. T. Schenck	488,700	Dec. 27	2411	598	61	1849
Check-hooks. Making harness	H. E. Kelley	488,677	Dec. 27	2377	589	61	1843
Check issuing and recording apparatus	T. L. Knight and E. Beckley	486,344	Nov. 15	1857	488, 489, 490	61	984
Check-loop. Overdraw	S. E. Harsh	488,789	Dec. 27	2541	631	61	1875
Checkrein	B. B. Van Wagoner	488,642	Dec. 27	2313	573	61	1830
Checkrein-spring	I. W. Crippen	483,762	Oct. 4	361	90	61	76
Cheese-case	H. D. Streator	485,359	Nov. 1	326	87	61	638
Cheese-protector. Automatic	D. M. Black	488,598	Dec. 27	2248	557	61	1818
Chenille-cutting machine	W. T. Smith	485,777	Nov. 8	949	255	61	784
Chimney-cowl	W. J. Kayser	486,930	Nov. 22	2633	687	61	1152
Chimney-cowl	J. B. Oldershaw	483,619	Oct. 4	155	38	61	32
Chimney-cowl. Rotary	H. and L. Iwan	488,074	Dec. 13	1394	346	61	1617
Chimney-holder	J. W. Sharpe	483,586	Oct. 4	108	26	61	23
Chimney or flue lining	E. Rathbun	485,479	Nov. 1	505	133	61	675
Chimney-rack	N. H. Brown	487,601	Dec. 6	586	150	61	1438
Chinolinchinophenol-sulphate and obtaining the same	J. Ziegler	486,363	Nov. 15	1885	.....	61	989
Chloridizing muffle-furnace	H. Calhoun and A. M. Beam	483,532	Oct. 4	23	6	61	7
Chocolate, &c. Apparatus for automatically compressing	P. Guérin	484,790	Oct. 25	1981	505, 506	61	440
Chocolate-cutter	C. M. Ashby and H. M. Seybold	488,493	Dec. 20	2074	515	61	1763
Chocolate to cream-drops. Machine for applying	D. M. Holmes	485,326	Nov. 1	268	73	61	626
Chopper: *See* Cotton-chopper. Meat-chopper.							
Chopping-knife	A. B. Schofield	488,289	Dec. 20	1749	440	61	1703
Chords. Instrument for drawing	W. H. Brown	488,327	Dec. 20	1807	453	61	1714
Christmas-tree light	H. W. Diek	484,304	Oct. 11	1196	304	61	256
Chuck	D. A. Barnes	485,364	Nov. 1	335	89	61	641
Chuck	W. Porteous	487,292	Dec. 6	84	25	61	1338
Chuck. Drill	H. C. Sergeant	484,118	Oct. 11	879	223	61	195
Churn	S. E. Morgan	488,573	Dec. 27	2205	545	61	1809
Churn	J. A. Papot	485,740	Nov. 8	916	245	61	777
Churn	A. Richter	487,870	Dec. 13	1044	261	61	1545
Churn	N. Ruger	483,584	Oct. 4	105	26	61	23
Chute for coal-wagons	R. A. McCauley	484,754	Oct. 18	1907	486	61	412
Cigar-bunch machine	F. C. Miller	484,219	Oct. 11	1049	266	61	227
Cigar-bunching machine	A. Gordon	486,249	Nov. 15	1710	451	61	954
Cigar-bunching machine	J. R. Schmitt	485,987	Nov. 8	1275	337, 338, 339	61	850
Cigar-case	J. O. Ullin	486,004	Nov. 8	1309	348	61	857
Cigar-cutter	F. H. Smith	485,234	Nov. 1	119	36	61	598
Cigar-lighter	J. R. S. Birch	483,891	Oct. 4	546	138	61	113
Cigar-lighter. Electric	E. T. Gutberlet and W. R. Isard	488,889	Dec. 27	2692	666, 667	61	1907
Cigar-machine hopper	M. A. Winget	486,919	Nov. 29	2822	731	61	1206
Cigar-mold	M. A. Winget	487,108	Nov. 29	3114	799	61	1264
Cigar-tip perforator	R. Cohen	485,861	Nov. 8	1067	284	61	807
Cigars or cigarettes. Ignition-cap for	M. R. Swiss	487,232	Nov. 29	3340	850	61	1304
Cigarette-holder	S. P. Bryant	486,429	Nov. 22	1999	530	61	1026
Cigarette-machine	V. H. Bazorque	485,146	Oct. 25	2544	653, 654	61	552
Cinder-conductor	H. C. Sargent	484,164	Oct. 11	961	247	61	210
Circuit-controller	H. W. Leland	486,212	Nov. 15	1645	435	61	940
Circuit-switch	M. E. Sullivan and J. Doss	485,337	Nov. 1	284	77	61	630
Cistern-cleaning device	E. C. Davis	485,092	Oct. 25	2470	635	61	537

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Clam or oyster rake or dredge	H. R. Hilton and J. E. Wilson	484,715	Oct. 18	1836	467	61	396
Clamp: *See* Basin-clamp. Bedclothes-clamp. Electric-conductor clamp. Floor-clamp. Ironing-machine clamp. Joiner's clamp. Pipe-clamp. Rope-clamp. Rubber-dam clamp. Upper-clamp.							
Clamp	W. N. B. Alderson and J. W. Allen	483,925	Oct. 4	458	114	61	94
Clamp for drawing together wooden joints	T. Doddrell	488,546	Dec. 27	2158	533	61	1799
Clarinet	T. Lassig and A. Pfretzachner	488,656	Dec. 27	2337	578	61	1835
Clasp: *See* Antifriction-clasp. Scarf-clasp.							
Clasp	G. E. Adams	486,242	Nov. 15	1693	448	61	950
Clasp	J. Lang, D. W. Evans, and J. A. Devore.	488,017	Dec. 13	1282	320	61	1593
Claw-bar	M. W. Smades and J. P. Ellstrom	488,581	Dec. 27	2220	550	61	1812
Clay and products thereof. Treating	A. D. Elbers	485,917	Nov. 8	1161	.....	61	826
Clay drying and sifting apparatus	E. C. Little	485,636	Nov. 8	736	{193 {194	61	739
Clay, &c. Machine for molding marbles, &c., from	M. Lang	485,282	Nov. 1	191	55	61	612
Clay to make ballast. Burning	H. G. and W. Butler	486,761	Nov. 22	2513	656	61	1127
Cleaner: *See* Boiler-cleaner. Broom-corn cleaner. Dish-cleaner. Grain-cleaner. Gun-cleaner. Knife-cleaner. Track-cleaner. Window-cleaner. Well or cistern cleaner.							
Clevis. Plow	A. E. Guild	485,931	Nov. 8	1181	311	61	830
Clip: *See* Hame-clip. Switch-clip.							
Clip for holding papers or for other purposes	S. H. Wright	486,316	Nov. 15	1817	479	61	976
Clip for supporting dresses, &c	E. C. Mix	487,757	Dec. 13	856	217	61	1508
Clock. Alarm	W. E. Porter	484,236	Oct. 11	1079	273	61	234
Clock. Electric	M. V. B. Ethridge	486,838	Nov. 22	2644	691	61	1155
Clock. Electric	J. D. McAnlis and H. E. Fleming	485,645	Nov. 8	747	{196 {197	61	742
Clock. Repeating	S. Willcock	488,103	Dec. 13	1432	359	61	1625
Clod-crusher and land-roller. Combined	H. F. Dernell	487,722	Dec. 13	795	203	61	1495
Closet: *See* Dry closet.							
Cloth-cutting machine	L. E. Jones	486,532	Nov. 22	2140	565	61	1054
Cloth-cutting machine	C. Kaufman	487,840	Dec. 13	989	{248 {249 {250	61	1535
Cloth-napping machine	J. M. Schollenberger	485,888	Nov. 8	1120	296	61	818
Cloth-napping machine	G. W. Burr and M. Malony	484,700	Oct. 18	1817	462	61	392
Cloth-shrinking machine	E. T. and E. H. Marble	486,115	Nov. 15	1503	{396 {397	61	913
Clothes-drainer	C. W. Schaefer	486,739	Nov. 22	2477	646	61	1120
Clothes-drier	A. H. Ristedt	484,340	Oct. 11	1249	318	61	267
Clothes-drier	C. E. Drury	484,517	Oct. 18	1533	389	61	334
Clothes-drier	F. P. Hendricks	484,931	Oct. 25	2223	573	61	487
Clothes-drier	C. E. Knoeller	487,533	Dec. 6	494	129	61	1418
Clothes-drier	L. A. Powers	485,222	Nov. 1	102	31	61	594
Clothes-line prop and clothes-hanger. Combined	J. H. Ruede	487,429	Dec. 6	329	84	61	1386
Clothes-line supporting-link	C. A. Potts	484,162	Oct. 11	959	246	61	210
Clothes-pin	A. Brunner	488,868	Dec. 27	2666	660	61	1902
Clothes-pin	J. H. Hamilton	485,274	Nov. 1	179	53	61	609
Clothing. Envelopment for	G. W. McCoole	486,954	Nov. 29	2877	743	61	1216
Clover hullers and separators. Grain-cleaning attachment for	A. G. Speed	485,509	Nov. 1	545	145	61	684
Clutch	R. McLain	485,971	Nov. 8	1952	{330 {331	61	845
Clutch	H. Bunker	488,383	Dec. 20	1903	476	61	1733
Clutch	W. E. Canedy	483,533	Oct. 4	25	6	61	8
Clutch	C. L. Carman	483,601	Oct. 4	125	31, 32	61	27
Clutch	J. Fitzgerald	484,308	Oct. 11	1202	306	61	257
Clutch	A. Kipp, Jr	488,821	Dec. 27	2589	642	61	1885
Clutch	W. H. McConnell	484,224	Oct. 11	1056	268	61	229
Clutch. Friction	A. Briggs	487,245	Dec. 6	13	4	61	1323
Clutch. Friction	L. J. Hirt	487,736	Dec. 13	818	208	61	1500
Clutch. Friction	B. F. Radford	483,941	Oct. 4	621	157	61	128
Clutch. Friction	W. R. Smith	487,545	Dec. 6	511	133	61	1422
Clutch-operating mechanism	J. Hartness	483,741	Oct. 4	326	82	61	68
Clutch. Rope	P. T. Sundberg	487,061	Nov. 29	3035	779	61	1247
Coal or ore bins. Counterbalance for the discharge apparatus for	R. W. Ericson	485,789	Nov. 8	964	{258 {259	61	787
Coal-hod. Sheet-metal	H. L. Gates	488,758	Dec. 27	2491	{619 {620	61	1865
Coal-jig	C. O. Stroh	486,907	Nov. 29	2801	726	61	1202
Coal-lifter	A. Roll	483,791	Oct. 4	406	101	61	85
Coal-loading apparatus	P. Best	488,304	Dec. 20	1766	445	61	1706
Coal or other minerals. Machine for working	W. T. Goolden and L. B. Atkinson	488,606	Dec. 27	2257	560	61	1820
Coal-pockets. Screening device for	G. H. Thompson	483,799	Oct. 4	416	103	61	87
Coal-scuttle and ash-sifter. Combined	F. Tannrath	486,360	Nov. 15	1881	495	61	988
Coal-separator	E. F. Long	488,211	Dec. 20	1622	405	61	1679
Coal-storage conveyer	G. H. Hulett	487,865	Dec. 13	1035	259	61	1544
Coal-washing machine	J. Gallacher and G. Lang	488,429	Dec. 20	1974	493	61	1747
Coat and hat hook. Wire	A. W. Parmelee	486,791	Nov. 22	2565	669	61	1137
Coat-collars. Apparatus for creasing and shaping	J. H. Hawes	488,560	Dec. 27	2185	{539 {540	61	1805
Coat-hook	C. E. Vail	486,187	Nov. 15	1608	427	61	934
Cock	W. S. Loveland	486,533	Nov. 22	2142	565	61	1054

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Cock and coupling for barrels, &c. Combined	T. E. Murray	485,847	Nov. 8	1045	279	61	803
Cock. Ball	G. S. Hunter	487,671	Dec. 6	702	179	61	1460
Cock. Gage	J. F. Holdam	484,316	Oct. 11	1212	308	61	259
Cocks. Safety-lock for gas	H. Lawrence	488,737	Dec. 27	2460	612	61	1859
Cockle-separator	A. G. Miller	488,443	Dec. 20	1994	{498 {499	61	1751
Coffee-pot	J. R. Fulton	483,839	Oct. 4	475	119	61	98
Coffee-pot	C. Helaler	483,554	Oct. 4	57	14	61	14
Coffee-steeper	G. E. Overman	484,447	Oct. 18	1421	362	61	312
Coffee substitute and preparing same	H. Trillich	488,801	Dec. 27	2562	636	61	1880
Coffin-protector	T. N. Fisher	483,780	Oct. 4	391	97	61	82
Cog-wheel	F. Saxon	487,129	Nov. 29	3147	806	61	1269
Coin and delivering tickets. Device for receiving	J. Williams	487,139	Nov. 29	3159	810	61	1272
Coin-case	J. S. Walker	485,778	Nov. 8	950	255	61	784
Coin-controlled machinery	W. H. Dutton	484,908	Oct. 25	2178	{560 {561	61	479
Coin-controlled theatrical show	E. T. Birdsall	487,510	Dec. 6	455	{118 {119	61	1411
Coin-displacer	T. Carney	484,650	Oct. 18	1745	444	61	376
Coin-holder	W. H. Gilman	486,639	Nov. 22	2321	607	61	1089
Coin-holder	R. J. Wallace and L. A. Henrich	487,438	Dec. 6	350	90	61	1391
Coin-operated device	M. B. Goodkind	488,196	Dec. 20	1588	397	61	1672
Coin receiver and register	V. A. Krepps	486,111	Nov. 15	1497	{394 {395	61	911
Coin-tray	J. A. Read	485,228	Nov. 1	114	35	61	597
Coin-wrapper	F. A. Jaekel	486,716	Nov. 22	2441	636	61	1113
Coke. Manufacture of	J. J. Fronheiser and C. S. Price	486,100	Nov. 15	1482	.....	61	909
Coke. Manufacturing or burning	J. C. Anderson	485,904	Nov. 8	1139	302	61	822
Collar. Animal	J. W. Hull	485,630	Nov. 8	729	190	61	738
Collar. Breast	C. T. Cain	487,604	Dec. 6	590	151	61	1439
Collar, cuff, and garment rack	H. Caspar	484,085	Oct. 11	843	213	61	187
Collar. Horse	J. Millidge	488,572	Dec. 27	2205	545	61	1809
Collar. Horse	W. Murr	487,956	Dec. 13	1179	294	61	1571
Color-chart	J. White	488,375	Dec. 20	1892	473	61	1731
Color for printing on textile fabrics	A. Hoz	486,873	Nov. 29	2708	.....	61	1182
Colter	W. E. Sefton	488,457	Dec. 20	2015	503	61	1756
Colter. Plow	G. C. Westervelt	484,127	Oct. 11	893	228	61	198
Column. Architectural	J. M. Larimer	484,026	Oct. 11	762	{192 {193	61	171
Column. Metal	J. H. Gray	488,274	Dec. 20	1719	433	61	1698
Combination-lock	J. D. Craig	488,518	Dec. 20	2121	525	61	1776
Combination-lock	E. Vanwart	487,138	Nov. 29	3156	809	61	1272
Commode	R. T. Reese and D. Williams	484,672	Oct. 18	1782	454	61	385
Commutators and armature-wires. Connection for	E. P. Warner	487,307	Dec. 6	108	32	61	1343
Compass	P. J. Kaiser	487,330	Dec. 6	151	44	61	1350
Compass. Beam	J. E. Betts	486,553	Nov. 22	2167	572	61	1059
Compasses. Beam	W. S. Robinson	487,892	Dec. 13	1079	270	61	1552
Complexion-steamer	I. Cassidy	486,081	Nov. 15	1431	378	61	899
Composing-stick	J. K. Bittenbender	484,514	Oct. 18	1528	388	61	333
Compound engine	H. C. Reagan, Jr	488,250	Dec. 20	1681	420	61	1690
Compound engine	R. C. Smith	485,568	Nov. 1	637	170	61	704
Compressing or blowing engine	J. A. Galvin	484,495	Oct. 18	1498	{380 {381	61	327
Concentrator	W. P. Ogden	488,528	Dec. 20	2137	529	61	1779
Concentrator	J. Tulloch	486,622	Nov. 22	2393	598	61	1082
Concrete-mixing machine	E. L. Ransome	485,428	Nov. 1	430	115	61	660
Condenser	H. S. Blackmore	486,554	Nov. 22	2168	572	61	1059
Condenser	T. Craney	487,997	Dec. 13	1250	311	61	1586
Condenser and feed-water heater	C. Grohman	485,031	Oct. 25	2383	612	61	519
Condenser and purifier. Steam	R. W. Dugan	485,004	Oct. 25	2334	602	61	509
Condenser-head	C. S. Onderdonk	487,036	Nov. 29	2999	772	61	1239
Condensing apparatus	M. J. Reuber, E. G. Stone, and P. Fuchs.	488,664	Dec. 27	2351	582	61	1838
Confectioner's tool	G. S. Collum	488,752	Dec. 27	2482	617	61	1864
Confectionery-machine	T. Robertson	488,404	Dec. 20	1928	{483 {484	61	1738
Confectionery or other box	H. Buehl	487,085	Nov. 29	3079	791	61	1256
Converter	W. A. Baldwin	484,770	Oct. 25	1944	496	61	432
Converters. Lining for Bessemer	C. W. Bildt	484,286	Oct. 11	1162	.....	61	250
Convertible chair	J. A. Nesmith	483,810	Oct. 4	431	{106 {107	61	89
Conveyer	G. W. McCaslin	486,789	Nov. 22	2560	{667 {668	61	1136
Conveyer	G. W. McCaslin	486,809	Nov. 22	2592	675	61	1143
Conveyer	G. H. Tench	488,460	Dec. 20	2020	504	61	1757
Conveyer-trough gate	J. M. Dodge	485,913	Nov. 8	1157	306	61	825
Cooker. Steam	I. S. Mowrer	485,819	Nov. 8	999	268	61	794
Cooking utensil	A. W. Obermann	487,291	Dec. 6	82	25	61	1348
Cooler: *See* Air-cooler. Beer-cooler. Liquid-cooler. Water-cooler.							
Cop	S. W. Wardwell, Jr	486,745	Nov. 22	2485	{648 {649	61	1122
Coping	C. Axell	488,933	Dec. 27	2767	683	61	1923
Copper and nickel pyrites. Treating	J. Strap	483,639	Oct. 4	182	.....	61	38
Copper by electricity. Apparatus for and process of refining	F. Farrel	485,618	Nov. 8	706	185	61	733
Copper from cupriferous nickel ores. Separating	T. S. Hunt and J. Douglas	483,924	Oct. 4	601	.....	61	194
Copy books. Device for moistening the leaves of	O. K. Truitt	485,592	Nov. 1	671	178	61	712
Copying appliance	O. W. Anderson	483,679	Oct. 4	236	59	61	49
Copying-press	E. F. Verrill	484,748	Oct. 18	1897	484	61	409
Cordage-manufacturing apparatus	H. M. Brooks	483,665	Oct. 4	217	54	61	44
Core-box	M. A. Mills	484,940	Oct. 25	2236	576	61	490

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Cork. Treating	J. T. Smith	484,345	Oct. 11	1255	320	61	268
Corn-conveyer	J. and G. G. Healea	486,466	Nov. 22	2048	542	61	1035
Corn-husker	O. E. and O. Beardsley	487,241	Dec. 6	7	2, 3	61	1322
Corn-husker	G. A. Byor	488,538	Dec. 27	2151	531	61	1798
Corn-husker	M. Wilson	484,076	Oct. 11	827	209, 210	61	184
Corn-husking machine	M. and B. Colton	485,531	Nov. 1	575	154	61	690
Corn-husking machine	S. E., J., and W. W. Morral	484,808	Oct. 25	2009	516, 517	61	445
Corn-popper	A. B. Olson. (Reissue)	11,290	Nov. 29	3350	853	61	1306
Corn-sheller	S. Stroup	484,474	Oct. 18	1465	373, 374	61	320
Corners, covers, and like parts for books, boxes, &c., of celluloid or kindred material. Making	A. C. Hafely	484,006	Oct. 11	733	184	61	165
Corners, covers, and like parts for books, boxes, and similar articles of celluloid or kindred material. Making	A. C. Hafely	488,630	Dec. 27	2296	568	61	1827
Corns. Device for removing	R. Viol	485,726	Nov. 8	886	238	61	771
Cotton-chopper	E. N. Brickell	486,661	Nov. 22	2354	616	61	1095
Cotton-chopper	J. Y. Dye	487,725	Dec. 13	799	204	61	1496
Cotton-chopper	I. E. Gay	487,831	Dec. 13	974	246	61	1533
Cotton-chopper	W. A. Nevel	487,935	Dec. 13	1147	287	61	1565
Cotton-chopper	W. Smith	483,794	Oct. 4	409	102	61	86
Cotton-chopper	A. Whitley	488,592	Dec. 27	2238	554	61	1816
Cotton chopper and planter. Combined	F. H. Parker	484,337	Oct. 11	1244	317	61	266
Cotton-gin. Roller	J. R. Montague and J. A. Pross	485,015	Oct. 25	2356	605, 606, 607	61	513
Cotton-gin. Saw	A. S. Dukes	488,921	Dec. 27	2752	679	61	1919
Cotton opening and cleaning machine	W. P. Groom	485,272	Nov. 1	175	52	61	609
Cotton-picker	C. Ball	483,707	Oct. 4	276	69	61	58
Cotton-press	J. E. Van Dyke and H. Stobaugh	488,641	Dec. 27	2311	572	61	1829
Cotton-press. Duplex	R. S. Munger	483,633	Oct. 4	173	43	61	36
Cotton to gins. Apparatus for feeding seed-	S. D. Murray	488,446	Dec. 20	1998	499, 500	61	1752
Counter and pencil-holder	F. King	488,736	Dec. 27	2460	611	61	1859
Counter. Barrel and keg	J. Ostertag, Jr	486,735	Nov. 22	2470	645	61	1119
Counter-stiffener	E. Brazier	485,604	Nov. 8	691	182	61	730
Countersinking-machine	C. Brada	485,485	Nov. 1	513	135	61	676
Coupling: *See* Air-brake-pipe coupling. Car-coupling. Electric coupling. Hose-coupling. Joint-coupling. Light-fixture coupling. Pipe-coupling. Pipe-rod coupling. Rod-coupling. Steam-coupling. Thill-coupling. Whiffletree-coupling. Wire coupling.							
Coupling	I. P. Doolittle	484,656	Oct. 18	1756	447	61	379
Coupling-rods. Art of and machine for manufacturing jaws for	J. T. Hambay	483,740	Oct. 4	324	81, 82	61	68
Cover for kettles, &c	J. Doty	485,095	Oct. 25	2474	636	61	538
Cover for kettles, &c	J. S. Sheets	486,185	Nov. 15	1607	426	61	934
Cover. Kettle-	J. Shilling, Jr	484,824	Oct. 25	2034	521	61	450
Cover. Stove-kettle	M. I. and A. L. Reese	486,539	Nov. 22	2149	567	61	1055
Cow-bag protector	H. H. Chase	486,766	Nov. 22	2519	657	61	1128
Cracker-machine valve mechanism	C. S. Fowler	485,863	Nov. 8	1068	284	61	807
Crane	S. S. Babbitt	484,870	Oct. 25	2112	544	61	466
Crane	J. H. George	486,283	Nov. 15	1770	465	61	967
Crane	J. Kennedy	484,437	Oct. 18	1407	359	61	309
Crane	H. Sawyer	486,412	Nov. 15	1968	522	61	1006
Crane. Overhead traveling	J. R. Morgan	486,117	Nov. 15	1508	399, 400	61	913
Crane. Overhead traveling	J. R. Morgan	488,716	Dec. 27	2431	603	61	1853
Crane. Swinging	J. W. Kinsman	488,076	Dec. 13	1396	347	61	1617
Crane-turning mechanism	C. Mercáder	487,954	Dec. 13	1176	293	61	1571
Crank arm and shaft	A. P. Morrow	485,350	Nov. 1	312	83	61	635
Crate	E. A. Jeanes	485,466	Nov. 1	488	129	61	671
Crate	A. H. Ramsey	486,297	Nov. 15	1786	469	61	970
Crate	D. J. Rex	483,871	Oct. 4	521	131	61	108
Crate	F. B. Sites	484,059	Oct. 11	804	203	61	179
Crate. Egg-	W. T. Fisher	487,144	Nov. 29	3171	812	61	1274
Cream-tempering apparatus	J. Boyd	487,708	Dec. 13	765	196	61	1489
Cream-tester. Centrifugal	P. V. P. Berg	486,390	Nov. 15	1930	511	61	999
Crematory. Garbage-	J. C. Kessler	488,169	Dec. 13	1546	388	61	1647
Crib. Folding	J. Perry	484,975	Oct. 25	2289	591	61	500
Crimping-machine	J. C. Lockett	485,204	Nov. 1	77	24, 25	61	588
Crimping-machine	W. H. Thomas and G. F. Reynolds	484,510	Oct. 18	1522	386, 387	61	332
Crimping-machine	A. Rotté, P. and P. Gauthier	488,252	Dec. 20	1685	421	61	1691
Cross-head	J. B. Stanwood	487,895	Dec. 13	1082	271	61	1553
Cross-tie. Metallic	J. M. Bordner	486,077	Nov. 15	1425	376	61	898
Crupper	H. H. Palmer	486,537	Nov. 22	2147	567	61	1055
Crupper-stuffing machine	B. A. Schuler	485,231	Nov. 1	117	36	61	597
Crusher: *See* Clod-crusher.							
Crushing-roll	D. Brennan, Jr	488,867	Dec. 27	2664	660	61	1901
Crutch-foot	H. Lanergan	483,931	Oct. 4	609	154	61	126
Crystallizing and setting box	F. W. Arvine	486,015	Nov. 8	1326	352	61	861
Cuff-holder	W. Hay	487,527	Dec. 6	485	127	61	1416
Cuff-holder	L. S. Sampson	484,246	Oct. 11	1096	277	61	237
Culinary apparatus	M. Marshfield	484,599	Oct. 18	1650	419	61	358
Culinary utensil	J. Cloud	486,157	Nov. 15	1572	417	61	927
Culinary vessel	J. Snyder and F. Lockwood	485,993	Nov. 8	1292	343	61	854

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Cultivator	J. Birch	487,978	Dec. 13	1206	301	61	1577
Cultivator	A. Cowart	488,270	Dec. 20	1713	431	61	1696
Cultivator	S. S. Gerrish	485,271	Nov. 1	173	51, 52	61	608
Cultivator	W. S. Miller	485,108	Oct. 25	2488	639	61	541
Cultivator	W. C. Moore	485,705	Nov. 8	852	229	61	764
Cultivator	F. P. Morgan	487,933	Dec. 13	1146	286	61	1565
Cultivator	W. H. Perkins and W. L. Cronenberg	484,815	Oct. 25	2022	518	61	448
Cultivator	J. H. Wendel	487,807	Dec. 13	941	238	61	1525
Cultivator and planter. Combined	R. Hasson	486,712	Nov. 22	2436	634	61	1112
Cultivator and pulverizer	C. C. Reynolds	484,239	Oct. 11	1084	275	61	235
Cultivator and weed-cutter. Combined	C. C. and W. C. Spaulding	488,779	Dec. 27	2523	627	61	1872
Cultivator attachment	Z. A. Beecher	485,165	Nov. 1	11	3	61	575
Cultivator. Beet-	A. Lindgren	486,614	Nov. 22	2282	595	61	1079
Cultivator. Garden-	A. J. Bruner	487,113	Nov. 29	3122	801	61	1265
Cultivator-hoe. Hand	G. S. Dennis	485,372	Nov. 1	347	93	61	643
Cultivator. Listed-corn	J. H. Donner	487,612	Dec. 6	600	154	61	1441
Cultivator. Listed-corn	A. Woolstoncroft	488,345	Dec. 20	1840	460	61	1720
Cultivator-shovel	S. M. Graumlich	484,789	Oct. 25	1981	505	61	440
Cultivator. Straddle-row	R. C. Buckley	486,027	Nov. 8	1341	356	61	864
Cultivator trip device	J. G. Hall	487,218	Nov. 29	3283	838	61	1295
Cultivator. Weed-cutting	W. R. Burbridge	484,405	Oct. 18	1351	345	61	299
Cultivator. Wheel-	D. E. Barton	484,513	Oct. 18	1526	387	61	332
Cultivator. Wheel-	T. J. Fitzsimons	488,684	Dec. 27	2686	665	61	1906
Cultivator. Wheel-	E. A. Ovenshire	487,882	Dec. 13	1063	267	61	1549
Curd-cutter	A. C. Whiting	487,811	Dec. 13	947	239	61	1527
Curling-iron	W. and R. A. Lonsdale	484,743	Oct. 18	1889	481	61	408
Curling-iron. Electrical	A. D. Gardner	484,532	Oct. 18	1554	394	61	338
Current-director	J. F. McElroy	486,643	Nov. 22	2326	609	61	1090
Current generators. Regulation of alternating-	G. Pfannkuche	485,054	Oct. 25	2410	620	61	524
Current motor. Alternating-	C. S. Bradley	488,306	Dec. 20	1768	446	61	1707
Current motor. Alternating-	W. Stanley, Jr., and J. F. Kelly	483,816	Oct. 4	442	110	61	91
Current-regulator	J. F. McElroy	486,644	Nov. 22	2328	609	61	1090
Current transformer. Continuous-	E. Thomson	485,669	Nov. 8	793	211, 212	61	751
Current-wheel	H. C. Gardner	485,624	Nov. 8	719	188	61	736
Currents. System of distribution for polyphase alternating	C. S. Bradley	488,307	Dec. 20	1771	446	61	1707
Currycomb	A. C. Decker	484,848	Oct. 25	2082	535	61	459
Currycomb	A. C. Decker	484,849	Oct. 25	2083	536	61	459
Currycomb	A. Fager	486,827	Nov. 22	2629	686	61	1152
Currycomb	J. Hunter	488,923	Dec. 27	2755	680	61	1920
Currycomb	G. W. Neuls	487,580	Dec. 6	556	143	61	1432
Currycomb	C. J. and W. Schweim	488,291	Dec. 20	1751	440	61	1703
Curtain-fixture	M. D. Gaines	485,270	Nov. 1	172	51	61	608
Curtain-fixture	W. A. Saul	487,970	Dec. 13	1194	298	61	1574
Curtain-rods. Combined socket and bracket for	C. W. Lawrence	484,028	Oct. 11	765	193	61	171
Curtain-stretcher and clothes-horse. Combined	E. N. Kenworthy	484,660	Oct. 18	1765	449	61	382
Cuspidor	C. R. Price	486,892	Nov. 29	2753	715	61	1191
Cut-off and flue-tightener	G. Wiedeke	485,442	Nov. 1	449	120	61	664
Cut-out. Automatic	C. E. Sanford	484,865	Oct. 25	2102	541, 542	61	464
Cutlery. Hardening	G. E. Smith	487,337	Dec. 6	161	46	61	1352
Cutter: *See* Band-cutter. Boiler-tube cutter. Butter-cutter. Buttercup-cutter. Cigar-cutter. Curd-cutter. Meat-cutter. Molding-cutter. Paper-cutter. Potato-cutter. Root-cutter. Rotary cutter. Rotary stock-cutter. Sod-cutter. Tobacco-cutter. Vine-cutter.							
Cutter for gaskets, &c	J. H. Shields	487,894	Dec. 13	1081	270	61	1553
Cutter-head	E. S. Judkins	487,015	Nov. 29	2969	765	61	1233
Cutter-head knife	S. J. Shimer	486,901	Nov. 29	2792	724	61	1200
Cutter-head. Rosette-turning	R. B. Moore	484,221	Oct. 11	1052	267	61	228
Cutter-head. Rotary	F. H. Van Houten	487,436	Dec. 6	346	89	61	1390
Cutting fustians or other weft-pile fabrics. Machine for	J. J. Mann and J. H. Smith	485,958	Nov. 8	1234	326	61	841
Cutting-head	W. B. Huther	486,874	Nov. 29	2709	706	61	1183
Cutting the pile of fustian or other pile fabrics. Machine for	J. J. Mann	486,050	Nov. 8	1378	366	61	870
Cyanides. Making	G. T. Beilby	484,579	Oct. 18	1621	411, 412	61	352
Cycle-saddle	J. B. Brooks	484,289	Oct. 11	1165	296	61	250
Cycle-saddle	J. B. Brooks	484,290	Oct. 11	1166	297	61	250
Cycle-saddle post	C. E. Hadley	485,865	Nov. 8	1072	285	61	808
Cycle-stand	W. M. Justice	488,395	Dec. 20	1917	480	61	1736
Cycle-vehicle	C. W. Saladee	486,056	Nov. 8	1388	368	61	872
Cycle-vehicle saddle	C. W. Saladee	486,197	Nov. 15	1621	430	61	936
Cycle-wheel	R. C. Fay	484,952	Oct. 25	2248	579	61	493
Cylinder and cylinder-cap	R. A. Owen	486,680	Nov. 22	2383	623	61	1101
Cylinder engine. Multiple-	E. B. Benham	487,084	Nov. 29	3072	788, 789, 790, 791	61	1254
Cylinder-lock	R. Sargent	487,969	Dec. 13	1193	298	61	1574
Cylinders of strips of sheet material and the process thereof. Machine for making hollow	J. MacFarlane	483,742	Oct. 4	328	83	61	69
Dado or molding bit	E. Gollins	487,921	Dec. 13	1128	282	61	1561
Dampening-machine	F. H. Weems	488,102	Dec. 13	1431	358	61	1624
Damper	C. A. Couch	486,855	Nov. 29	2679	701	61	1177
Damper	W. H. Packham	485,053	Oct. 25	2410	620	61	524
Damper for furnaces, &c. Automatic	D. W. Glendinning	487,521	Dec. 6	473	124	61	1414

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Alphabetical list of inventions, October to December, inclusive—Continued.

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Pages.
Damper. Furnace	D. McCowatt	486,733	Nov. 22	2467	644	61	1118
Damper-regulator	L. Bellamy	484,529	Oct. 18	1550	393, 394	61	337
Damper-regulator	C. C. Koster	486,345	Nov. 15	1862	490	61	984
Damper-regulator. Automatic	C. D. Howard	488,895	Dec. 27	2700	669	61	1909
Damper regulator. Stove	J. H. Wood	486,314	Nov. 15	1815	478	61	976
Decanting bottles. Apparatus for	F. Moog	485,050	Oct. 25	2407	619	61	524
Decapping and recapping tool	J. H. Barlow	486,650	Nov. 22	2351	614	61	1094
Decorticating grain	J. Sloan	484,254	Oct. 11	1115	289	61	241
Dental chair	S. T. Henkle	485,383	Nov. 1	361	97	61	647
Dental chair	L. Stuck	484,747	Oct. 18	1895	493	61	409
Dental crowns. Forming	J. G. Hollingsworth	488,006	Dec. 13	1969	316	61	1590
Dental filling	W. D. Porter	488,634	Dec. 27	2303	570	61	1938
Dental instrument	J. C. Blair	484,287	Oct. 11	1163	296	61	250
Dental instrument	C. W. Jones	485,010	Oct. 25	2346	604	61	511
Dental plugger	H. R. Kline	487,843	Dec. 13	998	251	61	1537
Dental regulator	J. A. Ellard	487,726	Dec. 13	900	204	61	1496
Dental separator	B. Simons	487,973	Dec. 13	1301	300	61	1576
Dental spacer	N. Kuns	486,112	Nov. 15	1500	395	61	912
Dental vulcanizer	G. B. Snow	487,647	Dec. 6	660	170	61	1452
Dentists and surgeons. Mouth-holding apparatus for	H. M. Casebeer	485,609	Nov. 8	697	183	61	731
Dentist's chair	W. A. Johnston and A. W. Browne	483,807	Oct. 4	426	105	61	88
Derrick	J. E. Serrell	487,453	Dec. 6	373	97	61	1394
Derrick	W. W. White	485,756	Nov. 8	923	247	61	779
Derrick-fork	G. L. Laughton	483,765	Oct. 4	364	91	61	76
Desk	F. P. Pooley	483,864	Oct. 4	511	129	61	106
Desk. Roll-top	J. R. Jones	486,474	Nov. 22	2063	546, 547	61	1038
Desk. Sectional	W. A. Eaton	484,357	Oct. 11	1272	324	61	271
Desks and seats. Adjustable supporting-standard for school	F. A. Chandler	486,822	Nov. 22	2618	682	61	1149
Desks and seats to the floor. Device for securing	G. A. Hammond	484,657	Oct. 18	1758	447	61	379
Desks, seats, &c., to floors. Device for detachably securing	F. E. Goodnow	483,841	Oct. 4	479	119	61	99
Diamonds, &c., in holders or implements of metal. Setting rough	M. Clausnitzer	486,084	Nov. 15	1435	379	61	900
Diaphragm meter	J. B. Knickerbocker	488,504	Dec. 20	2093	520	61	1772
Dice-caster	J. J. Parker	485,709	Nov. 8	855	230	61	765
Dice-thrower. Coin-controlled	C. C. Clawson	488,328	Dec. 20	1806	453	61	1715
Differential block	H. W. Rusgrove	485,115	Oct. 25	2496	641	61	543
Digester	H. Brüngger	483,828	Oct. 4	463	115, 116	61	95
Digester	B. F. Radford	483,942	Oct. 4	622	157	61	128
Digesters. Lining	H. Brüngger	483,826	Oct. 4	459	114, 115	61	95
Digesters. Lining	H. Brüngger	483,827	Oct. 4	461	115	61	95
Digesting apparatus	A. Selkirk	486,130	Nov. 15	1533	404, 405	61	918
Digesting apparatus	A. Selkirk	487,783	Dec. 13	896	227	61	1517
Digesting apparatus	A. Selkirk	487,784	Dec. 13	900	227, 228	61	1517
Digger: *See* Post-hole digger. Potato-digger.							
Dish-cleaner	F. D. Harding	485,690	Nov. 8	891	219	61	757
Disinfecting apparatus	E. and S. Tanzsig	487,588	Dec. 6	567	145	61	1434
Disinfecting device	J. W. Bowerbank	487,979	Dec. 13	1207	302	61	1577
Disintegrating fibrous substances. Process of and apparatus for	J. B. Carter and J. H. Berst	487,912	Dec. 13	1110	278	61	1558
Disintegrating jute, &c. Machine for	P. H. Wait	485,246	Nov. 1	141	42	61	602
Disintegrating machine. Fiber	J. B. Carter and J. H. Berst	487,913	Dec. 13	1113	278	61	1558
Disintegrating-roller	W. H. Larman	485,283	Nov. 1	199	55	61	612
Disintegrating vegetable substances	A. Selkirk	487,782	Dec. 13	891	226, 227	61	1516
Disk furrower	S. Haines and W. B. Mathis	486,776	Nov. 22	2541	663	61	1132
Display-card for jewelry	H. Wolcott	488,932	Dec. 27	2767	683	61	1923
Display-rack	J. H. Best	487,110	Nov. 29	3117	800	61	1265
Display-stand	S. Newman	485,975	Nov. 8	1257	332	61	847
Distillation of mineral oil. Destructive	J. Laing	488,767	Dec. 27	2503	623	61	1868
Diving dress and helmet	A. E. Stove	484,885	Oct. 25	2132	548	61	469
Dock. Dry	W. W. Rich	483,697	Oct. 4	263	64, 65	61	55
Doll-joint	E. Verpillier	487,861	Dec. 13	1030	258	61	1543
Door check and spring. Combined	W. Gilfillan	488,651	Dec. 27	2330	576, 577	61	1834
Door-closer	H. Bunker	483,989	Oct. 11	706	178	61	160
Door-hanger	C. D. Lawrence	484,157	Oct. 11	951	244	61	208
Door-jamb	M. Classen	484,551	Oct. 18	1583	402	61	345
Door-mat	H. J. Gilcher	486,178	Nov. 15	1599	424	61	931
Door-operating device	R. Hallenstein	483,916	Oct. 4	591	149	61	122
Door operator and supporter	J. A. Hess	485,934	Nov. 8	1183	311, 312	61	830
Door-securer	J. H. Matthews	485,205	Nov. 1	79	25	61	588
Door-securer	J. R. Royer	485,661	Nov. 8	783	208	61	749
Door-spring	C. Koon	486,975	Nov. 29	2906	750	61	1222
Door spring and check	J. Wolf	484,838	Oct. 25	2067	531, 532	61	457
Doors. Device for automatically closing and opening sliding	J. A. Gatfield	485,926	Nov. 8	1172	309	61	828
Doubling and twisting machines. Rolls for	J. N. Leonard	483,809	Oct. 4	430	106	61	89
Dough-raiser and fruit-drier	W. S. Kline and J. C. Parks	488,014	Dec. 13	1976	317	61	1592
Draft-equalizer	P. Evans	483,911	Oct. 4	584	147	61	121
Draft-equalizer	T. Keller	484,371	Oct. 11	1292	330	61	275
Draft-equalizer	T. J. Miland	483,938	Oct. 4	617	156	61	127
Draft-equalizer	P. J. Rabb	486,965	Nov. 15	1741	459	61	961
Draft-equalizer	C. S. Ruef	485,138	Oct. 25	2533	650	61	550

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Pages.
Draft-equalizer	S. H. Tinsman	485,144	Oct. 25	2542	652	61	551
Drapery or garment hook. Safety	J. Berkey	487,171	Nov. 29	3214	823	61	1983
Draw-bar carrier and face-plate	C. T. Schoen	487,779	Dec. 13	888	225	61	1515
Draw-gage	A. Cero	486,156	Nov. 15	1571	416	61	996
Drawer-fastener	E. Feige	486,455	Nov. 22	2033	537	61	1039
Drawing-frame clearer-roll	O. Brophy	487,693	Dec. 6	740	189	61	1467
Drawing-frame stop-motion	C. A. Taft	485,997	Nov. 8	1297	344	61	855
Drawing geometrical curves. Instrument for	C. L. Davis	486,699	Nov. 22	2490	630	61	1108
Drawing maps and plots of ground. Apparatus for	A. Bodding	484,905	Oct. 25	2171	558, 559	61	478
Dredging and transporting spoil. Apparatus for	A. B. Bowers	484,763	Oct. 18	1921	490	61	414
Dredging implement	J. Hatch	485,193	Nov. 1	61	19	61	585
Dress	M. K. Staab	484,257	Oct. 11	1114	282	61	241
Dress-elevator	J. G. Wintjen	485,780	Nov. 8	952	256	61	785
Dress-form	E. L. Mayer	483,618	Oct. 4	153	38	61	32
Dress-guard and driving-wheel support	J. Bolton	484,399	Oct. 18	1342	342	61	297
Dress-pad	S. E. Stanley	487,164	Nov. 29	3203	821	61	1220
Dress-stay	J. S. Crotty	483,835	Oct. 4	471	117	61	97
Drier: *See* Clothes-drier. Grain-drier. Garbage-drier. Lumber-drier.							
Drier	B. C. Batcheller	486,806	Nov. 22	2584	674	61	1142
Drier	E. De Lany and J. Dooley, Jr	485,911	Nov. 8	1152	305	61	824
Drier for fabrics. Portable cylindrical	A. Borchardt	487,600	Dec. 6	585	149, 150	61	1437
Drill: *See* Grain-drill. Seed-drill. Rock-drill.							
Drill	D. Baker	488,050	Dec. 13	1352	335	61	1607
Drill and eccentric chuck	H. W. Buckland	488,392	Dec. 20	1901	476	61	1732
Drills. Clearance-cutting machinery for twist	O. Parpart	488,218	Dec. 20	1635	407	61	1681
Drilling apparatus	J. T. Cowley	486,856	Nov. 29	2680	701	61	1177
Drilling-machine	H. H. Wilderman	484,270	Oct. 11	1141	290	61	246
Drilling machine. Coal and rock	M. Hardsocg	484,425	Oct. 18	1381	353	61	304
Drilling-machine. Duplex	W. A. McCool	488,658	Dec. 27	2339	579	61	1835
Drilling mechanism	E. B. Core and S. Salmon	483,903	Oct. 4	571	143, 144	61	118
Drinking-trough	G. S. Singer	484,057	Oct. 11	802	203	61	179
Drop-press. Steam	J. H. Mason	488,128	Dec. 13	1472	371	61	1633
Dry closet	W. D. Dickson	483,997	Oct. 11	715	180	61	161
Drying apparatus	H. W. Rappleye	484,821	Oct. 25	2028	520	61	449
Drying coffee, &c. Apparatus for	S. L. Hulzer	483,923	Oct. 4	599	152	61	124
Dumb-bell	C. W. Ayton	484,352	Oct. 11	1265	323	61	270
Dumb-waiter safety-catch	H. K. Smith	485,569	Nov. 1	639	170	61	704
Dust-collector	J. J. Gerard	484,090	Oct. 11	847	215	61	188
Dust-collector	W. Ince	484,717	Oct. 18	1839	467, 468	61	396
Dye. Basic yellow	R. Gnehm and J. Schmid	488,430	Dec. 20	1975	.....	61	1747
Dye. Blue	R. Bohn	484,697	Oct. 18	1814	.....	61	392
Dye-stuff. Yellow	H. Kützel	484,521	Oct. 18	1538	.....	61	335
Dyeing	E. Zillessen	484,080	Oct. 11	835	.....	61	186
Dyeing apparatus	E. J. Gerber	483,607	Oct. 4	135	34	61	28
Dyeing apparatus	R. Nicklès	488,216	Dec. 20	1631	406, 407	61	1681
Dynamo	W. H. Elkins	485,181	Nov. 1	40	13	61	580
Dynamo-regulator	C. J. Bogue	488,261	Dec. 20	1697	424	61	1693
Dynamos. Connection-plate for	J. J. Wood	487,462	Dec. 6	384	100	61	1397
Ear appliance or instrument for teachers of music, &c.	G. Mellor	486,725	Nov. 22	2452	639	61	1115
Ear-compressing cap	A. S. Turner	488,802	Dec. 27	2563	636	61	1880
Ear-wire-forming device	D. Mendelson	485,964	Nov. 8	1941	328	61	843
Easel	A. C. Terslose	486,549	Nov. 22	2162	571	61	1058
Easel and stool. Portable sketching	J. D. Cole	487,553	Dec. 6	521	135	61	1424
Easel. Cabinet	H. Pistorius	487,964	Dec. 13	1187	296	61	1573
Eaves-trough	L. S. Boubrake	485,573	Nov. 1	646	172	61	706
Eaves-trough fastener	R. G. Kelso	488,075	Dec. 13	1395	347	61	1617
Eaves-trough hanger	W. E. Tuller	484,347	Oct. 11	1259	321	61	268
Edge-runner or vertical millstone	H. Mantey	487,930	Dec. 13	1149	285	61	1564
Edge-runner or vertical millstone	H. Mantey	488,146	Dec. 13	1497	376	61	1637
Edging machine. Gang	E. and B. Holmes	484,431	Oct. 18	1396	357	61	307
Educational appliance	J. L. Collins	487,695	Dec. 6	741	190	61	1467
Egg-beater	U. D. Seltzer	487,024	Nov. 29	2983	768	61	1236
Egg-box	D. Neefus, Jr	484,863	Oct. 25	2099	541	61	463
Egg carrier and holder	C. W. Costellow	484,876	Oct. 25	2121	545	61	467
Elastic cord and making the same	A. M. Ziegler	487,042	Nov. 29	3007	774	61	1241
Elastic wheel	H. Claüs	488,539	Dec. 27	2152	532	61	1798
Election-booth	F. W. Barrett	488,747	Dec. 27	2476	615	61	1892
Electric alarm	H. A. Hull	486,338	Nov. 15	1849	486	61	962
Electric battery	J. J. O'Lalor	486,264	Nov. 15	1741	458	61	961
Electric battery. Thermo	P. Giraud	483,782	Oct. 4	394	98	61	83
Electric-circuit safety device	G. Cutter	487,002	Nov. 29	2949	760	61	1230
Electric-conductor clamp	H. Lindahl	487,332	Dec. 6	154	44	61	1351
Electric converter	L. Gutmann	484,959	Oct. 25	2258	563, 564	61	495
Electric coupling	J. J. Purcell	488,027	Dec. 13	1303	324	61	1588
Electric-current indicator	C. P. L. Noxon	487,093	Nov. 29	3090	794	61	1259
Electric generator. Magneto	S. Evershed	484,785	Oct. 25	1973	503	61	438
Electric heater	F. B. Perkins and C. S. Jones	483,940	Oct. 4	619	157	61	128
Electric intermutator	H. G. O'Neill	485,425	Nov. 1	498	113, 114	61	659
Electric-light circuits. Switchboard for	J. J. Moore and D. A. Henry	485,643	Nov. 8	744	196	61	741
Electric-light fixture	D. S. Page	484,450	Oct. 18	1425	364	61	313
Electric-light hanger. Adjustable	H. L. Holt	488,566	Oct. 4	59	15	61	14
Electric-light holder. Adjustable	L. S. Pfonts	487,028	Nov. 29	2977	767	61	1235
Electric-light poles. Mast-arm for	A. B. Allison and G. B. Scott	484,565	Oct. 18	1601	407	61	349

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Electric lights. Device for raising or lowering suspended	F. P. Welsh	488,298	Dec. 20	1757	442	61	1704
Electric lights. Door-lock switch for	C. Green	483,739	Oct. 4	323	81	61	68
Electric-lighting apparatus. Automatic	L. G. Woolley	487,109	Nov. 29	3115	800	61	1264
Electric-lighting system	W. H. MacKay	485,287	Nov. 1	199	56	61	613
Electric-lighting system	B. B. Ward	484,479	Oct. 18	1474	375	61	322
Electric-lighting systems. Time-meter for	J. O. Ball	486,107	Dec. 13	1442	362	61	1636
Electric machine. Dynamo-	G. Baehr	486,524	Nov. 22	2132	563	61	1052
Electric machine. Dynamo-	D. Pepper, Jr	485,220	Nov. 1	100	30	61	593
Electric-machine regulator. Dynamo-	A. Dow	486,417	Nov. 15	1974	524	61	1007
Electric-machine regulator. Dynamo-	C. E. Scribner	484,611	Oct. 18	1673	{425 426}	61	363
Electric-machine regulator. Dynamo-	E. Thomson	485,239	Nov. 1	126	38	61	599
Electric machines. Automatic safety device for dynamo-	F. B. Badt	487,816	Dec. 13	953	241	61	1528
Electric machines. Commutator for	N. C. Bassett	483,732	Oct. 4	311	78	61	65
Electric meter	C. W. Ayton	487,703	Dec. 13	755	194	61	1487
Electric meter	J. Perry	486,123	Nov. 15	1521	402	61	916
Electric motor	F. H. Beers	487,242	Dec. 6	10	3	61	1393
Electric motor	C. S. Bradley	488,305	Dec. 20	1767	445	61	1706
Electric motor	I. E. Storey	488,041	Dec. 13	1337	331	61	1604
Electric-motor controller	J. P. B. Fiske	485,620	Nov. 8	711	186	61	734
Electric motor or dynamo	A. W. Smith	484,724	Oct. 18	1851	470	61	399
Electric motors. Governing	R. Lundell	486,213	Nov. 15	1646	{435 436}	61	941
Electric motors. Governing	R. Lundell	486,214	Nov. 15	1649	436	61	941
Electric motors. Rheostatic controller for	J. P. B. Fiske	485,619	Nov. 8	709	186	61	733
Electric search-light	L. Hills	484,964	Oct. 25	2267	585	61	496
Electric signal	G. McIntosh	485,352	Nov. 1	315	84	61	636
Electric signal-circuit	J. Y. Young	488,138	Dec. 13	1486	374	61	1635
Electric snap-switch	A. Ekström	483,713	Oct. 4	283	71	61	60
Electric switch	D. H. Armstrong	483,704	Oct. 4	274	68	61	57
Electric switch	A. Ekström	483,712	Oct. 4	282	70	61	59
Electric switch	J. J. Nate	487,092	Nov. 29	3087	{793 794}	61	1258
Electric switch	J. C. O'Neil	485,538	Nov. 1	617	{164 165}	61	699
Electric switch	H. T. Paiste	483,862	Oct. 4	507	{126 127}	61	105
Electric switch	W. J. Schultz	486,987	Nov. 29	2926	755	61	1226
Electric switch	M. R. Utley	484,380	Oct. 11	1308	334	61	279
Electric switch	E. P. Warner	486,241	Nov. 15	1693	448	61	950
Electric switch. Non-sparking	C. E. Scribner	486,506	Nov. 22	2105	557	61	1047
Electric trolley system. Underground	G. E. Painter	488,899	Dec. 27	2706	670	61	1910
Electrical apparatus. Coil for	R. B. Ayres	485,252	Nov. 1	149	44	61	604
Electrical depositing-meter	H. C. Buck	486,926	Nov. 29	2831	733	61	1207
Electrical distribution-box	T. A. Edison	484,183	Oct. 11	990	253	61	216
Electrical distribution. System of	W. H. Hart	488,198	Dec. 20	1590	398	61	1672
Electrical distribution. System of	D. B. Brace	484,549	Oct. 18	1561	401	61	344
Electrical distribution. System of	H. W. Leonard	484,208	Oct. 11	1032	262	61	224
Electrical distribution. System of	O. B. Shallenberger	487,543	Dec. 6	508	132	61	1421
Electrical heater	C. J. Van Depoele	488,928	Dec. 27	2759	681	61	1921
Electrical heater	A. E. Appleyard	483,758	Oct. 4	352	88	61	74
Electrical heater	A. E. Appleyard	483,759	Oct. 4	353	89	61	74
Electrical heater	W. Mitchell	487,285	Dec. 6	74	22	61	1336
Electrical safety cut-out	H. G. O'Neill	485,424	Nov. 1	424	113	61	659
Electrical switch	H. S. Keating	488,123	Dec. 13	1462	369	61	1631
Electrical switch	G. Binswanger	485,028	Oct. 25	2379	611	61	518
Electrical switchboard	C. E. Pattison	488,740	Dec. 27	2466	613	61	1860
Electrical transformer	J. W. Lyon	488,532	Dec. 20	2142	530	61	1780
Electrical transmitting apparatus	E. Thomson	486,916	Nov. 29	2818	730	61	1205
Electrically reducing refractory compounds	A. D. Neal and H. F. Eaton	486,888	Nov. 29	2729	712	61	1187
Electrically-repeating signal	T. L. Willson	486,575	Nov. 22	2209	.....	61	1066
Electricity. Apparatus for distribution of	S. D. Field	488,550	Dec. 27	2163	{534 535}	61	1800
Electricity. Development and distribution of	T. Tomlinson	487,356	Dec. 6	194	53, 54	61	1359
Electricity. Device for treating patients by	J. S. Stone	487,102	Nov. 29	3105	797	61	1262
Electricity. Process of and apparatus for generating	E. M. Thomas	485,238	Nov. 1	124	38	61	599
Electro-therapeutical instrument	J. S. Rogers	487,644	Dec. 6	957	169	61	1451
Electrode and incandescent electrical conductor	J. W. Molière	483,745	Oct. 4	334	84	61	70
Electrode. Arc-lamp	L. L. Jones	484,553	Oct. 18	1585	402	61	345
Electrode for medicinal purposes	C. W. Hazeltine	487,220	Nov. 29	3286	839	61	1296
Electrodes. Manufacture of secondary-battery	E. H. McBride	484,522	Oct. 18	1538	390	61	395
Electrolytic apparatus	W. W. Griscom	487,834	Dec. 13	980	247	61	1534
Electrolytic apparatus	T. Craney	487,996	Dec. 13	1248	311	61	1585
Electrolytic diaphragm	T. Craney	488,708	Dec. 27	2420	600	61	1851
Electrolytic process and apparatus	A. J. Lehman	483,692	Oct. 4	254	.....	61	53
Electroplating apparatus	H. Blackman	484,990	Oct. 25	2312	{596 597}	61	505
Electrotype and stereotype plates. Machine for bending	F. H. Howard	484,535	Oct. 18	1560	397	61	339
Electrotype-plates. Means for bending	W. Scott. (Reissue)	11,279	Oct. 18	1936	{492 493}	61	418
Elevated carrier	C. B. Cottrell	487,915	Dec. 13	1119	279	61	1559
Elevated carrier	A. T. Kelliher	487,485	Dec. 6	417	{107 108}	61	1403
Elevating machinery. Hydraulic	A. T. Kelliher	488,765	Dec. 27	2500	622	61	1867
Elevating machinery. Hydraulic	T. F. Rowland	488,836	Dec. 27	2613	{647 648}	61	1890
Elevator: *See* Grain-elevator. Hay-elevator. Hydraulic elevator. Newspaper-elevator. Water-elevator.	T. F. Rowland	488,837	Dec. 27	2616	{648 649}	61	1891
Elevator	J. W. Brook	483,894	Oct. 4	550	139	61	114

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Elevator	C. W. Fowler	486,709	Nov. 22	2434	634	61	1111
Elevator	H. Hanson and J. E. Bergman	485,034	Oct. 25	2386	613	61	519
Elevator	F. E. Herdman	487,266	Dec. 6	42	16	61	1329
Elevator	F. E. Herdman	487,267	Dec. 6	42	14	61	1330
Elevator	F. E. Herdman	487,268	Dec. 6	43	14	61	1330
Elevator	A. R. Holder	486,161	Nov. 15	1577	418	61	938
Elevator	L. M. Kuehn	487,576	Dec. 6	551	142	61	1430
Elevator	C. E. Reid	486,794	Nov. 22	2569	670	61	1139
Elevator	W. J. Rochford and E. W. Kempter	484,760	Oct. 18	1929	491	61	417
Elevator	J. H. Tardy	487,104	Nov. 29	3110	798	61	1263
Elevator-brake	J. Rose	486,168	Nov. 15	1586	420	61	929
Elevator-controller	J. Reilly	483,943	Oct. 4	623	157	61	128
Elevator-doors. Means for operating	R. W. Hare	486,953	Nov. 29	2875	743	61	1215
Elevator-gate-operating device	C. A. Gloekler	488,605	Dec. 27	2256	560	61	1820
Elevator-gearing	N. C. Bassett	485,161	Nov. 1	8	2, 3	61	574
Elevator-operating mechanism	C. E. Moore	488,526	Dec. 20	2135	528	61	1779
Elevator safety appliance	R. Uren	488,137	Dec. 13	1481	374	61	1635
Elevator safety attachment	L. W. Butler	488,424	Dec. 20	1968	492	61	1746
Elevator safety attachment	J. Messner	483,569	Oct. 4	79	20	61	18
Elevator safety attachment	W. J. White	486,518	Nov. 22	2121	560	61	1050
Elevator safety device	H. Mundt and H. A. Hoops	484,109	Oct. 11	870	221	61	192
Elevator shifting device	J. Flemming	487,559	Dec. 6	530	136	61	1426
Elevators. Means for transmitting power to grain-	D. A. Robinson	484,048	Oct. 11	791	{199 200}	61	177
Embalming	T. Martin	488,338	Dec. 20	1827	456	61	1718
Embalming apparatus	H. J. Breeze	487,244	Dec. 6	12	4	61	1323
Embroidering-machines. Fabric-guiding device for	M. H. Rumpf	486,355	Nov. 15	1876	{493 494}	61	987
Enamel for metal articles	H. Clans	485,574	Nov. 1	647	172	61	706
End-gate locking-rod	T. M. Owen	487,766	Dec. 13	867	220	61	1511
End-gate. Wagon	E. L. Stanfield	488,584	Dec. 27	2224	551	61	1813
Engine: *See* Carding-engine. Compound engine. Compressing or blowing engine. Cylinder-engine. Gas-engine. Lever-power engine. Locomotive-engine. Motive-power engine. Pumping-engine. Rotary engine. Steam-engine. Traction-engine.							
Engine	J. Smith	487,132	Nov. 29	3150	807	61	1270
Engine-houses. Electrical door-trip for	A. Bosch	485,367	Nov. 1	339	89	61	642
Engine reversing-gear	J. O. Des Chapelles	487,115	Nov. 29	3126	801	61	1266
Engines. Bogie-frame for locomotive	G. Lentz	487,187	Nov. 29	3235	828	61	1987
Engraving-machine. Pantograph	J. Hope	486,210	Nov. 15	1642	435	61	940
Envelope	P. H. Flynn	484,733	Oct. 18	1868	475	61	402
Envelope	J. W. Kohn	484,372	Oct. 11	1293	330	61	276
Envelope	H. Roberts y Fernandez	484,674	Oct. 18	1787	455	61	386
Envelope-delivery box. Coin-slot	C. E. Lee	484,502	Oct. 18	1508	383	61	329
Envelope-fastener	A. J. Newbury	486,586	Nov. 22	2234	586	61	1071
Envelope-machine	F. T. Nicholson	486,233	Nov. 15	1680	{444 445}	61	948
Envelope or wrapper	T. J. O'Donnell	487,581	Dec. 6	557	143	61	1432
Envelopes. Safety fastening or seal for	E. W. Hall	484,711	Oct. 18	1831	465	61	395
Envelopes, wrappers, &c. Device for moistening	D. W. Collins	488,751	Dec. 27	2481	{616 617}	61	1864
Eraser, chalk, or crayon holder	K. T. Erhard	488,604	Dec. 27	2256	559	61	1820
Eraser. Ink-	J. E. Mayhew	486,976	Nov. 29	2907	750	61	1222
Essences. Process of and apparatus for making	H. Huvelle	487,837	Dec. 13	984	248	61	1534
Eugenol benzyl-ether and preparing the same	F. Ach	487,167	Nov. 29	3205	.....	61	1281
Evaporating apparatus	O. B. Stillman	483,817	Oct. 4	443	110	61	91
Evaporating apparatus	O. B. Stillman	484,831	Oct. 25	2044	524	61	453
Evaporating apparatus. Vacuum	H. T. Yaryan	485,315	Nov. 1	239	66	61	621
Evaporator: *See* Fruit-evaporator.							
Excavating and laying sewers. Apparatus for	J. E. Cross	487,517	Dec. 6	468	{122 123}	61	1413
Excavation-brace	W. T. Dunn	483,737	Oct. 4	319	80	61	67
Excavator	H. P. Bennett	485,084	Oct. 25	2454	632	61	534
Exercising device. Finger-	T. C. Gulliard and V. E. Catherinet	486,546	Nov. 22	2159	570	61	1057
Exercising-machine	E. Leamy	485,047	Oct. 25	2405	618	61	523
Exhaust-head	J. J. J. De Rycke	487,793	Dec. 13	796	203	61	1495
Exhaust-head	J. L. Hornig	485,195	Nov. 1	63	19	61	595
Exhibiting-case	E. P. Matthews	488,715	Dec. 27	2430	602	61	1853
Exhibitor for the display of goods. Revolving	D. Green and R. M. Herron	486,545	Nov. 22	2158	570	61	1057
Exhibitor. Picture-	W. C. Fawkes	485,464	Nov. 1	483	128	61	671
Exhibitor. Rocking-chair	H. Albin	485,831	Nov. 8	1021	274	61	798
Exhibitors. Lining for jewelry-	F. W. Martini	488,568	Dec. 27	2198	543	61	1807
Explosive	J. F. Alexander	488,534	Dec. 27	2147	.....	61	1797
Explosive powder	J. V. Skoglund	487,080	Nov. 29	3066	.....	61	1254
Extensible brace	W. J. Dunn	485,342	Nov. 1	293	79	61	632
Extension-table	J. F. Wiggers	488,465	Dec. 20	2028	506	61	1759
Extractor: *See* Butter-extractor. Centrifugal extractor. Honey-extractor. Nail-extractor. Stump-extractor.							
Eye-shade	F. Beilmann	485,448	Nov. 1	461	123	61	666
Eyeglass-holder	W. A. Copeland	485,909	Nov. 8	1149	304	61	894
Eyeglasses	B. A. Gilbert	488,312	Dec. 20	1780	448	61	1709
Eyeglasses	F. G. Schmidt	483,812	Oct. 4	434	107	61	90
Eyelet	F. F. Hawkins	483,784	Oct. 4	398	99	61	83
Fabric: *See* Pile fabric. Woven fabric.							
Fabric holding and sewing apparatus	R. M. Hunter	488,969	Dec. 27	2827	698	61	1936
Fabric pressing and finishing machine	J. S. Critchley, I. Singer, and H. A. A. Dombrain.	484,702	Oct. 18	1819	{462 463}	61	393

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Fan. Electric	E. B. Cutten	483,545	Oct. 4	44	11	61	11
Fans. Motor-mounting for electrically-driven	A. L. Riker	483,582	Oct. 4	102	25	61	22
Fans. Supporting-frame for rotary	S. D. Shepperd	488,293	Dec. 20	1752	441	61	1703
Fare receiver and register. Portable	J. E. Allison	487,168	Nov. 29	3206	821, 822	61	1231
Fare-register	J. W. Fowler	487,731	Dec. 13	810	206, 207	61	1498
Fare-registering apparatus for vehicles	F. W. G. Bruhn	485,529	Nov. 1	570	152, 153	61	690
Farm-gate	T. A. Churchill	484,568	Oct. 18	1605	407	61	349
Farm-gate	W. B. Miller	486,289	Nov. 15	1778	467	61	968
Faucet	K. Kiefer	487,866	Dec. 13	1036	259	61	1544
Faucet	F. S. Owells	488,401	Dec. 20	1924	482	61	1737
Faucet	W. W. Riner	485,430	Nov. 1	432	115	61	661
Faucet	W. X. Stevens	483,795	Oct. 4	410	102	61	86
Faucet and bushing	M. Anthony	487,206	Nov. 29	3264	834	61	1292
Faucet and bushing	M. Anthony	487,207	Nov. 29	3265	834	61	1292
Faucet. Automatic	A. A. Belleau	487,384	Dec. 6	236	64	61	1368
Faucet. Lock-valve	H. S. Johnson	487,674	Dec. 6	704	180	61	1461
Feathers. Making imitation long heron	S. Lewinsohn	485,329	Nov. 1	273	74	61	628
Feed-bag. Adjustable	F. F. Atkinson	485,600	Nov. 8	686	181	61	729
Feed-bag holder	J. H. E. Zelp	484,278	Oct. 11	1152	293	61	248
Feed-bag support	D. N. Stock	488,850	Dec. 27	2641	654	61	1896
Feed-bag support	D. N. Stock	488,851	Dec. 27	2643	654	61	1896
Feed-box	S. F. Weaver	487,308	Dec. 6	109	32	61	1343
Feed-box regulator	A. A. Morris	484,039	Oct. 11	780	196	61	174
Feed mechanism	F. H. Richards	487,428	Dec. 6	326	83, 84	61	1386
Feed mechanism. Duplex	F. H. Richards	487,775	Dec. 13	884	224	61	1514
Feed mechanism. Self-adjusting	G. Ehrhardt	487,116	Nov. 29	3126	802	61	1266
Feed-regulator	L. S. Campbell	486,851	Nov. 29	2673	699, 700	61	1176
Feed-regulator. Automatic	M. A. Swing	484,064	Oct. 11	810	205	61	181
Feed-steaming apparatus for animals	C. C. Ferguson	486,668	Nov. 22	2367	619	61	1097
Feed-trough	A. J. Ventzki	485,399	Nov. 1	390	195	61	652
Feed-trough	T. Doolan	487,003	Nov. 29	2951	760	61	1220
Feed-trough	J. Flurey and A. O'Leary	485,580	Nov. 1	656	174	61	708
Feed-trough	J. Hurdle	483,925	Oct. 4	603	152	61	124
Feed-trough and rack. Combined	I. S. Swetland	485,022	Oct. 25	2370	609	61	516
Feed-water heater	J. W. Moore	484,037	Oct. 11	778	195	61	174
Feed-water heater and circulating system	W. J. Austin	487,549	Dec. 6	516	134	61	1423
Feed-water heater and purifier	S. C. Despres	483,905	Oct. 4	574	144	61	119
Feed-water heater and purifier	J. J. J. De Rycke	487,724	Dec. 13	797	204	61	1496
Feed-water purifier	J. MacDonald	488,524	Dec. 20	2131	527	61	1778
Feed-water regulator	W. B. Hosford	488,813	Dec. 27	2575	619	61	1883
Feeder-lifter	J. Thomas	488,619	Dec. 27	2274	564	61	1823
Feeding and weighing apparatus	S. R. Lewis	486,486	Nov. 22	2078	550	61	1041
Feeding apparatus. Calf	S. Washington	488,101	Dec. 13	1429	357, 358	61	1624
Feeding apparatus. Poultry	H. B. and E. Lingford	488,693	Dec. 27	2401	595	61	1847
Feeding device. Horse	G. Peisier	484,453	Oct. 18	1428	364, 365	61	314
Feeding mechanism	M. I. Magoon	484,442	Oct. 18	1414	361	61	311
Feeding salt to animals. Device for	L. C. Crowell	484,141	Oct. 11	919	236, 217, 238	61	202
Feeding young animals. Device for artificially	T. B. Stephens	485,142	Oct. 25	2539	652	61	551
Fence	W. A. Kerfoot	486,163	Nov. 15	1579	418	61	928
Fence	W. Arthur	487,208	Nov. 29	3266	834	61	1292
Fence	H. J. Beam	484,872	Oct. 25	2115	545	61	466
Fence	A. L. Bonnaffon	486,752	Nov. 22	2501	653	61	1125
Fence	F. A. De Land	486,632	Nov. 22	2308	603	61	1086
Fence	W. J. Jacoba	485,197	Nov. 1	66	20	61	586
Fence	A. P. Le Gros	488,823	Dec. 27	2591	643	61	1886
Fence	J. T. Lucas	484,158	Oct. 11	952	244, 245	61	209
Fence	E. B. Maxwell	485,641	Nov. 8	743	195	61	741
Fence	L. S. Safford	484,245	Oct. 11	1094	277	61	236
Fence	P. Smith	484,468	Oct. 18	1454	370	61	318
Fence	J. Spillinger	485,304	Nov. 1	222	63	61	618
Fence	C. C. Trout	487,083	Nov. 29	3070	788	61	1254
Fence. Barbed-wire	J. W. Griswold	486,179	Nov. 15	1589	424	61	932
Fence-building tool	J. W. Brennaman	485,835	Nov. 8	1025	275	61	799
Fence. Flood	H. D. Merrill	486,349	Nov. 15	1868	492	61	985
Fence-machine. Hand	J. W. Martin and M. Cahill	486,487	Nov. 22	2079	550	61	1042
Fence-machine. Picket-wiring	J. H. Frank	488,310	Dec. 20	1777	447, 448	61	1706
Fence machine. Wire	J. Harper	487,184	Nov. 29	3230	827	61	1286
Fence. Metallic	S. Green	486,463	Nov. 22	2045	541	61	1034
Fence. Metallic	J. G. Lindsay	488,210	Dec. 20	1622	404	61	1679
Fence. Plank	W. Jobe, Sr	487,573	Dec. 6	547	141	61	1430
Fence. Portable	W. A. Neal	488,632	Dec. 27	2300	569	61	1837
Fence. Portable	J. G. Orr	488,217	Dec. 20	1632	407	61	1681
Fence-post	V. Findling	486,544	Nov. 22	2157	570	61	1057
Fence-post	G. Thomas	488,724	Dec. 27	2443	606	61	1856
Fence-post	C. L. Wilcox	486,309	Nov. 15	1806	476	61	974
Fence-post. Metallic	H. Fischer	488,193	Dec. 20	1583	397	61	1671
Fence-post or base. Metallic	O. M. Knox	486,973	Nov. 29	2904	749	61	1221
Fence-post with applied holder	G. W. Schofield	487,760	Dec. 13	889	225	61	1515
Fence-stay	A. A. Parker	487,374	Dec. 6	222	61	61	1364
Fence stay. Hedge	E. J. Griffin	488,498	Dec. 20	2084	518	61	1771
Fence-weaving machine	W. Lowden	485,418	Nov. 1	417	112	61	658
Fence. Wire	V. Arnold and F. E. Wetmore	484,387	Oct. 18	1321	337	61	293
Fence. Wire	J. W. Buchanan	483,831	Oct. 4	467	116	61	96
Fence. Wire	J. R. Kline	484,554	Oct. 18	1587	403	61	345
Fence. Wire	I. Oaks	486,588	Nov. 22	2236	587	61	1071

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Fence. Wire	R. B. Perkins	484,756	Oct. 18	1909	486	61	412
Fence. Wire	M. W. St. John	487,354	Dec. 6	191	52	61	1358
Fence-wire. Braided	J. B. Cleaveland	486,894	Nov. 22	2621	684	61	1150
Fence-wire. Machine for distributing and reeling	J. E. Hovendick	488,563	Dec. 27	2191	541	61	1806
Fence-wire twister. Slat	S. J. Blankenbaker	486,025	Nov. 8	1339	355	61	864
Fences. Tension device for wire	R. C. McClarran	486,385	Nov. 15	1918	508	61	997
Fencing-bands. Machine for making wire	J. A. Tatro	485,723	Nov. 8	881	235, 236, 237	61	770
Fencing. Metallic	T. V. Allis	486,173	Nov. 15	1593	421	61	930
Fencing. Metallic	H. A. Harrington	485,741	Nov. 8	907	243	61	775
Fencing tool. Compound wire	D. D. Stetler	484,684	Oct. 18	1797	457	61	388
Fender: *See* Car-fender.							
Fertilizer and making the same. Nitrogenous	J. J. Dunne	484,631	Oct. 18	1707	.....	61	369
Fertilizer-distributer	T. R. Crane	487,719	Dec. 13	791	202	61	1494
Fertilizer-distributer	J. Fraser	485,269	Nov. 1	171	51	61	607
Fertilizer-distributer	B. F. Rix	488,680	Dec. 27	2381	590	61	1843
Fertilizing composition	J. D. Simmons	484,679	Oct. 18	1793	.....	61	387
Fiber-preparing machine	J. L. Acosta	485,903	Nov. 8	1138	301, 302	61	892
Fibrous material for making pulp. Treating	J. and G. Johnston	486,339	Nov. 15	1851	487	61	983
Fibrous materials. Apparatus for pressing and disintegrating	J. H. Brown	485,837	Nov. 8	1028	276	61	799
Fibrous stems or leaves. Machine for scutching and cleaning	E. Death	483,984	Oct. 4	695	174	61	143
Fifth-wheel	W. H. Bache	486,060	Nov. 8	1395	369	61	874
Fifth-wheel	H. H. Bothe	488,110	Dec. 13	1447	363	61	1627
Fifth-wheel	E. L. Howe	488,010	Dec. 13	1271	316	61	1591
Fifth-wheel	S. H. Sexton	484,378	Oct. 11	1306	334	61	278
Fifth-wheel	A. H. Worrest	488,237	Dec. 20	1663	415	61	1686
File and perforating appliance. Combined bill and letter	J. W. Grantland	488,939	Dec. 27	2778	686	61	1925
File and perforating appliance. Combined portable bill and letter	J. W. Grantland	485,102	Oct. 25	2481	638	61	540
File-box	W. I. Ohmer	487,150	Nov. 29	3180	814	61	1276
File-box	W. I. Ohmer and T. L. Wayne	487,006	Nov. 29	2955	762	61	1231
File. Check	A. L. Colton	486,434	Nov. 22	2007	532	61	1027
File. Check	F. Tremblay	486,993	Nov. 29	2935	757	61	1227
File-cover fastener. Court	A. E. Walkup	486,962	Nov. 29	2888	746	61	1218
File for bills, periodicals, &c	A. A. Thompson	485,514	Nov. 1	549	146	61	685
File. Letter	H. L. Sawyer	484,247	Oct. 11	1096	278	61	237
File. Paper	T. J. Gorman	483,609	Oct. 4	138	35	61	29
File. Paper	W. I. Ohmer	487,230	Nov. 29	3333	849	61	1303
File. Paper	O. F. Westrup	484,267	Oct. 11	1135	289, 290	61	245
File. Paper or music	W. Jeschke	486,875	Nov. 29	2711	707	61	1183
File-stripping machine	H. J. Gosling	488,652	Dec. 27	2334	577	61	1834
Files. Means for and method of designating document	G. H. Ball	485,025	Oct. 25	2373	610	61	516
Filter	W. M. Deutsch	484,781	Oct. 25	1964	501	61	435
Filter	W. R. Evans	487,614	Dec. 6	603	155	61	1442
Filter	T. T. and W. O. Luscombe	485,551	Nov. 1	607	162	61	697
Filter	S. L. West	488,021	Dec. 27	2276	565	61	1824
Filter. Faucet	G. F. Aishton	485,024	Oct. 25	2372	610	61	516
Filter. Oil	E. S. Breed	483,599	Oct. 4	124	31	61	26
Filter. Oil	J. Deuss	488,264	Dec. 20	1702	425	61	1694
Filter. Oil	O. Lindberg	487,421	Dec. 6	315	81	61	1383
Filter. Water	J. Davis	486,859	Nov. 29	2690	703	61	1179
Filter. Water	J. Davis	486,900	Nov. 29	2693	703	61	1180
Filter. Water	H. A. Siegrist and G. M. Bittman	486,413	Nov. 15	1970	523	61	1007
Filters. Distributing feed-nozzle for	H. C. Thurston	488,297	Dec. 20	1756	442	61	1704
Filtering material	F. Lascar	488,317	Dec. 20	1789	.....	61	1710
Filtering system	R. Beyrle	487,467	Dec. 6	392	101, 102	61	1398
Filtering-tube	M. Epstein	485,788	Nov. 8	963	258	61	787
Finger-nail cleaner	C. W. Laubin	488,657	Dec. 27	2338	578	61	1835
Finger-ring	L. J. Heintz	484,793	Oct. 25	1985	507	61	441
Finger-ring	I. Lehman	486,720	Nov. 22	2446	638	61	1114
Finger-rings. Machine for marking or stamping	W. H. Peckham	484,918	Oct. 25	2301	567	61	483
Fire-alarm apparatus	A. G. Davis	488,388	Dec. 20	1908	477, 478	61	1734
Fire-alarm. Electric	J. J. d'Almeida and J. Y da Silva	484,396	Oct. 18	1319	337	61	293
Fire-alarm. Electric	H. Cortland	484,140	Oct. 11	917	246	61	202
Fire-alarm. Fusible	G. B. Smith	484,469	Oct. 18	1454	370	61	318
Fire-alarm. Pneumatic	A. A. Lehmann	486,675	Nov. 22	2376	621, 622	61	1099
Fire-alarm. Pneumatic	A. A. Lehmann	488,018	Dec. 13	1283	320, 321	61	1593
Fire-alarm signal apparatus. Auxiliary	C. E. Scribner	487,095	Nov. 29	3093	794, 795	61	1250
Fire appliance	J. M. Kirker and F. M. Bender	487,418	Dec. 6	310	80	61	1383
Fire-box	F. H. Bailey	486,018	Nov. 8	1329	353	61	188
Fire-dog and grate. Combined	G. T. Glascock	484,091	Oct. 11	849	215	61	186
Fire-door openings. Covering for	W. H. Hoag	484,636	Oct. 18	1714	435	61	370
Fire-escape	A. Bowers	485,834	Nov. 8	1025	275	61	798
Fire-escape	J. F. Downes	485,914	Nov. 8	1158	306	61	895
Fire-escape	W. J. Flowers	488,906	Dec. 27	2823	697	61	1906
Fire-escape	A. V. Goltermann	484,093	Oct. 11	851	216	61	189
Fire-escape	L. S. Hodgdon	486,041	Nov. 8	1363	362	61	808
Fire-escape	R. Howell	487,569	Dec. 6	543	140	61	1426
Fire-escape	V. Leber	484,536	Oct. 18	1562	397	61	340
Fire-escape	L. Lester	485,954	Nov. 8	1226	323	61	840
Fire-escape	W. J. McCollom	486,493	Nov. 22	2086	552	61	1043

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Fire-escape	J. Murphy and F. M. Rankin	484,042	Oct 11	784	197	61	175
Fire-escape	E. Rank	485,656	Nov 0	774	205	61	746
Fire-escape	J. B. Stott	487,135	Nov 29	3153	808	61	1271
Fire-escape	P. B. Sullivan	484,260	Oct. 11	1117	283	61	241
Fire-escape. Portable tower-platform	J., A., and H. Volz	487,039	Nov. 29	3003	773	61	1240
Fire-escape. Safety	J. Mannheim	487,395	Dec. 6	254	69	61	1371
Fire-extinguisher	O. J. Averell	483,592	Oct. 4	5	2	61	4
Fire-extinguisher	R. J. Gilmore	488,003	Dec. 13	1958	313	61	1588
Fire-extinguisher	J. M. Miller	483,632	Oct. 4	170	43	61	36
Fire-extinguisher. Automatic	W. S. Purifoy	488,832	Dec. 27	2603	646	61	1888
Fire-extinguisher or sprinkler. Automatic	J. H. Wilson	485,519	Nov. 1	554	148	61	686
Fire-kindler	S. Elsinger	486,966	Nov. 29	2894	.....	61	1319
Fire-kindler	P. Morency	485,644	Nov. 8	746	196	61	742
Fire-kindler	S. M. N. Rogers	488,223	Dec. 20	1643	409	61	1682
Fire-pot. Auxiliary	J. W. Allan	486,067	Nov. 15	1407	373	61	895
Firearm	J. W. Mullins	487,423	Dec. 6	318	81	61	1384
Firearm. Breech-loading	J. M. and M. S. Browning	486,272	Nov. 15	1750	461, 462	61	963
Firearm. Breech-loading	J. M. and M. S. Browning	486,273	Nov. 15	1754	462, 463	61	964
Firearm-lock	L. Jonson	485,043	Oct. 25	2396	616	61	521
Firearm. Magazine	J. M. and M. S. Browning	487,659	Dec. 6	679	175	61	1456
Firearm. Recoil-operated magazine	H. K. White	488,409	Dec. 20	1936	485, 486	61	1740
Firearm with breech operated by gases of explosion	V. and B. Clair	483,539	Oct. 4	35	9	61	10
Firearms. Device for supporting and holding cartridges in	E. Pringle	484,457	Oct. 18	1433	366	61	315
Firearms. Means for attaching magazines to	W. Mason	487,677	Dec. 6	712	182	61	1462
Fireplace draft-regulator	B. W. Peel	485,772	Nov. 8	945	253	61	783
Fireplace. Gas-log	F. E. Backus	485,079	Oct. 25	2448	630	61	532
Fireplace heater. Open	G. R. Scates	485,301	Nov. 1	218	62	61	617
Fireproof garment	B. J. Martin	488,148	Dec. 13	1500	377	61	1638
Fish-hook	L. Shulte	484,678	Oct. 18	1792	456	61	387
Fish or game carrier	F. T. Verhaven	486,649	Nov. 22	2339	611	61	1092
Fish scaler and dresser	E. F. Pfiueger	486,295	Nov. 15	1784	469	61	970
Fishing-fly book	D. K. Howe	485,582	Nov. 1	658	175	61	708
Fishing-reel	A. D. Hendrick	485,794	Nov. 8	970	260	61	788
Fishing-reel	A. B. Hendryx	487,481	Dec. 6	412	106	61	1402
Fishing-reel	J. vom Hofe	488,408	Dec. 20	1935	485	61	1740
Fishing-reel	P. M. Leprohon	488,678	Dec. 27	2378	589	61	1843
Fishing-reel	J. H. Mount	485,208	Nov. 1	81	26	61	589
Fishing-rod	H. Whitaker	486,802	Nov. 22	2581	672	61	1141
Fishing rod and reel	D. C. Lockwood	484,439	Oct. 18	1412	360	61	310
Fishway	W. H. Rogers	484,676	Oct. 18	1789	455	61	386
Flange-wrench. Adjustable	J. W. Kellam	487,331	Dec. 6	152	44	61	1351
Flash-light apparatus	J. B. Lawson	486,831	Nov. 22	2634	687	61	1153
Flask: *See* Molder's flask.							
Flax or other fiber-yielding plants. Machine for treating	E. Bosse	485,734	Nov. 8	898	240, 241	61	773
Flies, &c. Means for clearing apartments of	D. A. Jones	486,044	Nov. 8	1367	363	61	869
Floor-clamp	F. Martin	488,147	Dec. 13	1499	377	61	1638
Floor clamp	A. Zauner	484,488	Oct. 18	1487	378	61	324
Floor-joists and apparatus therefor. Crowning	J. Friedrichs	487,406	Dec. 6	290	75	61	1378
Flour bin and sifter	J. P. Davis and G. B. Harwell	484,780	Oct. 25	1963	500	61	435
Flour bin and sifter	F. K. McCague	485,210	Nov. 1	85	26	61	590
Flour-bolt	W. D. Gray	487,004	Nov. 29	2952	760, 761	61	1230
Flour, middlings, semolina, grain, seeds, &c. Machine for dressing	R. Creaser	483,542	Oct. 4	39	10	61	11
Flour or other materials. Apparatus for mixing	J. D. Bangert	487,507	Dec. 6	450	116, 117	61	1410
Flour-reel machine	J. A. Wahlstrom	484,478	Oct. 18	1472	375	61	321
Flour-safe	E. J. Lemmon	486,048	Nov. 8	1374	365	61	870
Flower-holder	S. Lord	485,417	Nov. 1	416	111	61	657
Flue-stopper	J. D. Hopkins	487,327	Dec. 6	148	42	61	1350
Fluid-motor	C. F. Elmes	486,095	Nov. 15	1473	388	61	907
Flushing-tank	E. C. Stover	487,906	Dec. 13	1101	275	61	1556
Flushing-tank	E. C. Stover	487,940	Dec. 13	1155	289	61	1567
Flushing-tank. Siphon	T. C. Beanmont	487,464	Dec. 6	387	101	61	1397
Fly-frame stop-motion device	W. P. Canning	484,776	Oct. 25	1935	499	61	434
Fly-frames. Bottom-cone-lifting device for	W. P. Canning	484,845	Oct. 25	2078	534, 535	61	458
Fly-frames. Mechanism connected with the lifting or traverse rails of	W. P. Canning	485,171	Nov. 1	18	5, 6, 7, 8, 9, 10	61	577
Fly-paper. Book of sticky	O. and W. Thum	486,138	Nov. 15	1545	408	61	921
Fly-paper holder	W. H. Allen	487,505	Dec. 6	448	116	61	1410
Fly-paper. Sticky	O. and W. Thum. (Reissue)	11,276	Oct. 11	1316	336	61	280
Folding boat	M. U. Loree	486,260	Nov. 15	1735	457	61	959
Folding chair	J. Cornell	488,115	Dec. 13	1452	365, 366	61	1628
Folding chair	H. A. J. Rieckert	484,240	Oct. 11	1086	275	61	235
Folding chair	D. A. Sinsabaugh	484,058	Oct. 11	803	203	61	179
Folding chair. Knockdown	H. C. Scott and F. Schaaf	488,095	Dec. 13	1421	353	61	1622
Folding-machine	S. C. McKinney	485,130	Oct. 25	2518	648	61	547
Folding mechanism	L. C. Crowell	484,142	Oct. 11	924	238, 239	61	903
Folding seat	J. B. Jenson	487,676	Dec. 13	1056	264	61	1547
Folding seat	J. S. Kilgore	488,436	Dec. 20	1982	495	61	1748
Folding table	E. F. Bassett	485,855	Nov. 8	1058	282	61	805

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Folding table	W. H. Washer	486,517	Nov. 22	2120	560	61	1050
Folding wide fabrics. Machine for multiple	J. B. Clark	483,735	Oct. 4	314	79	61	66
Forceps and tractor. Combined	E. J. Howe	485,039	Oct. 25	2392	614	61	590
Forge. Electric	G. D. Burton and E. E. Angell	486,029	Nov. 8	1345	357	61	865
Forge. Electric	G. D. Burton and E. E. Angell	486,176	Nov. 15	1596	422, 423	61	931
Forge. Electric	G. D. Burton and E. E. Angell	486,627	Nov. 22	2302	601	61	1085
Forge. Electric	G. D. Burton and E. E. Angell	488,466	Dec. 20	2029	506	61	1759
Forge-furnaces. Center piece for the grates of	G. H. Webb	488,235	Dec. 20	1660	414	61	1686
Forging apparatus. Electric	G. D. Burton and E. E. Angell	486,626	Nov. 22	2300	600, 601	61	1084
Forging horseshoe-nails. Machine for	E. E. Pierce	486,195	Nov. 15	1617	429, 430	61	936
Forging-machine gripping device	H. W. Loss	486,723	Nov. 22	2450	638, 639	61	1115
Forging vehicle-clips. Machine for	A. L. Kern	486,784	Nov 22	2552	666	61	1134
Forks. Apparatus for cleaning	F. Lehmann	485,048	Oct. 25	2406	619	61	523
Form. Bust	E. Donnelly	488,876	Dec. 27	2676	682	61	1904
Fortune-wheel. Coin-controlled	W. N. Russell and T. N. Gierding	487,968	Dec. 13	1191	297	61	1574
Fracture apparatus	G. W. King	488,631	Dec. 27	2298	568, 569	61	1827
Fracture apparatus	C. S. Webster	485,672	Nov. 8	798	213	61	752
Frame: *See* Leather-frame. Pressing-frame. Pool-ball frame. Supporting-frame.							
Franklinite and willemite. Treating	G. G. Convers	488,471	Dec. 20	2037	.....	61	1761
Franklinite ores. Reducing	G. G. Convers	488,470	Dec. 20	2035	.....	61	1761
Frasing-machine	A. A. Barthelmes	485,162	Nov. 1	5	2	61	574
Friction device	R. C. Borchers	483,892	Oct. 4	548	138	61	114
Fringe loops on edges of fabrics. Machine for forming and cutting	F. Hofbauer	486,253	Nov. 15	1718	452, 453	61	955
Frog	H. R. Luther	483,964	Oct. 4	662	166	61	137
Frog. Wrecking	D. S. Dockstader	484,703	Oct. 18	1820	463	61	393
Fruit-bleaching apparatus	E. Ireland	485,940	Nov. 8	1198	317	61	834
Fruit-box	W. R. Stokely	488,040	Dec. 13	1335	331	61	1604
Fruit clipping and holding shears	J. S. Dinkel	486,560	Nov. 22	2187	576	61	1062
Fruit conductor or conveyer	J. M. Settle	486,357	Nov. 15	1879	494	61	988
Fruit-cutting machine	J. Burns	484,995	Oct. 25	2322	599	61	506
Fruit-drying tray	H. H. Taylor	486,137	Nov. 15	1544	407	61	921
Fruit-evaporator	W. C. Gilham	484,910	Oct. 25	2185	563	61	480
Fruit-jar	G. L. Pfeiffer	488,614	Dec. 27	2268	563	61	1822
Fruit-packages. Shearing-machine for	J. H. Schumacher	487,781	Dec. 13	890	226	61	1516
Fruit-picker	A. Hogg	488,243	Dec. 20	1671	417	61	1688
Fruit-picker	R. Mays	487,931	Dec. 13	1144	286	61	1564
Fruit-pitter	G. C. Howell	484,154	Oct. 11	948	243	61	207
Fruit-slicing machine	A. J. Barber	483,731	Oct. 4	309	77, 78	61	65
Fruit-transporting package	J. Y. Mott	486,618	Nov. 22	2288	597	61	1081
Fuel feeder. Fluid	E. T. Williams	486,998	Nov. 29	2943	758	61	1229
Fume-arrester	M. W. Iles and D. Sheedy	484,016	Oct. 11	749	188	61	168
Fumes. Apparatus for condensing	A. F. Schneider	487,971	Dec. 13	1195	298	61	1574
Fumes from metallurgical furnaces. Device for catching and saving	M. W. Iles	484,017	Oct. 11	750	186, 189	61	168
Fumes. Screen for metallic	M. W. Iles	485,797	Nov. 8	973	261	61	789
Fumigator	R. Campbell	487,173	Nov. 29	3216	823	61	1283
Furnace: *See* Basic-lined furnace. Glass-melting furnace. Blast-furnace. Glass tank-furnace. Boiler-furnace. Hot-air furnace. Chloridising muffle-furnace. Incinerating-furnace. Garbage-burning furnace. Melting-furnace. Gas-furnace. Metallurgical furnace. Gas-engine exhaust-furnace. Ore-roasting furnace. Glass-furnace. Smoke-consuming furnace. Tempering-furnace. Zinc-furnace.							
Furnace	J. S. Ecker	486,704	Nov. 22	2429	633	61	1110
Furnace	M. C. Hawley	488,893	Dec. 27	2698	668	61	1908
Furnace	J. H. Johnson and J. Moran	485,762	Nov. 8	933	250	61	781
Furnace	J. Keenan	487,675	Dec. 6	708	180	61	1461
Furnace	T. P. Mahon	488,171	Dec. 13	1548	388, 389	61	1647
Furnace	T. E. Martin	484,600	Oct. 18	1652	419	61	359
Furnace	L. Metesser	483,570	Oct. 4	81	20, 21	61	19
Furnace	G. T. Moe	485,966	Nov. 8	1244	324	61	843
Furnace	H. C. Platts	483,863	Oct. 4	509	127, 128	61	106
Furnace	W. Stubblebine	487,103	Nov. 29	3107	797, 798	61	1262
Furnace	H. K. Tallmage	486,990	Nov. 29	2931	756	61	1227
Furnace-door	A. Graf	485,189	Nov. 1	53	16	61	583
Furnace. Downdraft	O. D. and O. D. Orvis	486,122	Nov. 15	1518	401, 402	61	915
Furnace for metallurgical operations	J. N. Lauth	484,329	Oct. 11	1234	314	61	263
Furnace for metallurgical purposes	J. N. Lauth	484,328	Oct. 11	1233	314	61	263
Furnace for treating and reducing ores and for refining the resulting metals. Combined	A. Chabaud, L. L. Van Heers, and L. A. Allard.	487,605	Dec. 6	591	151, 152	61	1439
Furnace for treating steel	J. Pedder	483 577	Oct. 4	92	24	61	21
Furnace for treating steel	J. Pedder	483,578	Oct. 4	96	24	61	21
Furnace-grate	E. J. Gordon	484,497	Oct. 18	1500	382	61	328
Furnace-grate	R. Rose. (Reissue)	11,291	Nov. 29	3352	853	61	1307
Furnace-grate	J. Thurell	487,648	Dec. 6	661	170	61	1452
Furnace grate-bar	E. Boileau	485,527	Nov. 1	567	152	61	689
Furnace plant	J. H. Welch	486,310	Nov. 15	1807	476	61	974

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol	Official Gazette. Page.
Furnace-tap	E. P. Mathewson	483,936	Oct. 4	615	155	61	127
Furnace top. Blast	M. W. Iles	484,618	Oct. 11	752	189	61	168
Furnaces. Method of and apparatus for treating the smoke and fumes of metallurgical	W. H. James	488,945	Dec. 20	1673	418	61	1688
Furniture-brace tightener	H. L. Freeman	488,333	Dec. 20	1817	455	61	1716
Furniture. Convertible	H. O. Atwood	486,749	Nov. 22	2492	651	61	1194
Furrower and coverer	H. W. Doughten	484,581	Oct. 18	1625	412	61	353
Fuse box. Electric	W. Stanley, Jr., and J. H. Kelman	484,545	Oct. 18	1575	400	61	343
Gage: *See* Draw-gage. Micrometer-gage. Perspective-gage. Pocket-gage. Pressure-gage. Shingle-gage. Sugar-gage. Track-gage.							
Galvanic battery	W. A. Crowdus	485,319	Nov. 1	256	69	61	624
Galvanic battery	J. L. Gethins	487,324	Dec. 6	145	42	61	1349
Galvanic battery	J. W. Hoffman	484,096	Oct. 11	855	217	61	189
Galvanic battery	H. T. Johnson	483,654	Oct. 4	202	50	61	42
Galvanic battery	H. T. Johnson	487,839	Dec. 13	988	248	61	1535
Galvanic body-battery	J. W. Shults	486,902	Nov. 29	2792	734	61	1200
Game	E. H. Hyde	484,432	Oct. 18	1398	357	61	307
Game apparatus	A. P. Buckley	483,895	Oct. 4	552	139	61	114
Game apparatus	E. Dungey	484,950	Oct. 25	2246	579	61	492
Game apparatus	G. G. G. Gist	488,762	Dec. 27	2496	631	61	1866
Game apparatus	A. C. Hunsberger	486,471	Nov. 22	2056	545	61	1036
Game apparatus	H. J. Saxton	484,115	Oct. 11	876	223	61	194
Game apparatus. Musical	C. G. F. Hanke and E. Richter	484,589	Oct. 18	1632	414	61	354
Game-board	P. O'Carroll	483,798	Oct. 4	403	100	61	84
Game-board	I. L. Conkling	485,029	Oct. 25	2380	611, 612	61	518
Game-board	E. P. McLane	487,447	Dec. 6	364	95	61	1393
Game-board	W. R. Negley	484,558	Oct. 18	1593	404	61	346
Game-board	J. S. Williams	487,976	Dec. 13	1204	301	61	1577
Game-board. Parlor bowling	P. H. Colell	484,067	Oct. 11	844	214	61	187
Game-counter	W. C. and F. N. Weis	486,918	Nov. 29	2821	730	61	1205
Game-counter. Card	G. H. Fisher	483,715	Oct. 4	286	71	61	60
Game. Mechanical ball	G. S. Curtis, Jr., and J. M. Hallowell	487,825	Dec. 13	966	243, 244	61	1531
Garbage-burning furnace	J. C. Kessler	488,168	Dec. 13	1544	387	61	1646
Garbage drier and burner	F. Cain	484,774	Oct. 25	1950	497, 498	61	433
Garbage-receptacle	W. T. Rossell and H. F. Hayden	486,619	Nov. 22	2290	597	61	1092
Garment-catches. Making	E. S. Smith	488,135	Dec. 13	1482	373	61	1635
Garment-fastener	F. E. Bennett	483,988	Oct. 11	705	177	61	159
Garment-fastener	F. E. Bennett	488,178	Dec. 20	1565	392	61	1668
Garment-fastening	H. A. Francis	488,068	Dec. 13	1386	344	61	1615
Garment-hook	J. Killinger	485,389	Nov. 1	373	100	61	649
Garment-supporter	G. E. Adams	487,689	Dec. 6	735	188	61	1466
Garment-supporter	J. C. Pettibone	488,068	Dec. 13	1412	351	61	1621
Garment-supporter catch	J. M. Rabitte	484,819	Oct. 25	2096	519	61	449
Garment. Suspensory	C. C. Taylor	484,065	Oct. 11	812	205	61	181
Gas. Apparatus for manufacturing	J. Gray	487,616	Dec. 6	606	155, 156	61	1442
Gas. Apparatus for the manufacture of	A. L. Allen	484,624	Oct. 18	1692	429, 430	61	367
Gas-burner	C. S. Dean	485,910	Nov. 8	1150	305	61	824
Gas-burner. Safety	B. E. Taylor	486,991	Nov. 29	2933	756	61	1227
Gas-burner. Self-lighting	A. P. Jacob	487,744	Dec. 13	833	212	61	1504
Gas-burners. Automatic cut-off for	F. W. Merchant	488,082	Dec. 13	1404	349	61	1619
Gas-burners. Automatic cut-off for	C. Rath	488,949	Dec. 27	2797	690	61	1929
Gas-burners in their holders. Machine for securing incandescing bodies for	O. B. Fahnehjelm and C. Dellwik	485,321	Nov. 1	259	70	61	625
Gas-burners. Machine for manufacturing lamellæ or needles for incandescent	O. B. Fahnehjelm and C. Dellwik	485,322	Nov. 1	260	70	61	625
Gas cooling and washing apparatus	C. H. Wilder	486,150	Nov. 15	1563	414	61	924
Gas-engine	D. Best	484,727	Oct. 18	1656	472	61	400
Gas-engine	E. W. Evans	488,165	Dec. 13	1539	396	61	1645
Gas-engine	J. W. Raymond	488,483	Dec. 20	2059	512	61	1765
Gas-engine	H. Warden	486,143	Nov. 15	1550	409, 410, 411	61	922
Gas-engine	J. Wehrschmidt	484,168	Oct. 11	966	248, 249	61	211
Gas-engine	S. Withers and D. S. Covert	487,313	Dec. 6	118	36	61	1345
Gas-engine exhaust-furnace	H. J. Seigneuret	485,988	Nov. 8	1278	339	61	851
Gas-engine igniting apparatus	H. Schumm	486,093	Dec. 13	1416	352	61	1691
Gas-furnace	F. Siemens	486,540	Nov. 22	2150	568, 569	61	1055
Gas-generating apparatus	C W. Isbell	485,009	Oct. 25	2344	604	61	511
Gas-generating apparatus	O. Langberg	488,208	Dec. 20	1614	403, 404	61	1677
Gas generator. Water	R. Boeklen	484,730	Oct. 18	1863	474	61	401
Gas-lighter. Electric	L. M. Kilburn and S. Van Etten	488,012	Dec. 13	1273	317	61	1591
Gas-lighting attachment	T. R. Bishop	488,804	Dec. 27	2565	637	61	1881
Gas-machine	L. J. Phelps	485,134	Oct. 25	2594	649	61	548
Gas-making apparatus	A. Noteman	485,877	Nov. 8	1091	290	61	812
Gas-meter	H. A. Tobey	487,907	Dec. 13	1103	276	61	1557
Gas-meter diaphragm	A. Henning	487,051	Nov. 29	3022	776	61	1944
Gas-meter register	H. A. Tobey	487,908	Dec. 13	1106	276	61	1557
Gas. Process of and apparatus for the manufacture of	J. L. Janeway and F. Logan	483,981	Oct. 4	690	172, 173	61	143
Gas-producer	W. A. Koneman	484,586	Oct. 18	1646	417, 418	61	357
Gas-producer	W. A. Koneman	485,391	Nov. 1	376	101	61	649
Gas-producer	A. K. Murray	486,491	Nov. 22	2063	568	61	1063

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Invention.	Name	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Gas under pressure. System for distributing	W. A. Hoeveler and T. J. McTighe. (Reissue.)	11,983	Nov. 15	1979	525	61	1008
Gas under pressure. System for distributing	W. A. Hoeveler and T. J. McTighe. (Reissue.)	11,984	Nov. 15	1981	526	61	1009
Gas-washer	F. H. Lane	487,279	Dec. 6	65	20	61	1334
Gas washer or scrubber	J. C. Chandler	486,927	Nov. 29	2833	733	61	1207
Gasoline-heater	A. J. Parker and R. G. Hunter	487,373	Dec. 6	221	60	61	1364
Gaseous fuel. Burner for burning	H. Adler	485,594	Nov. 1	673	179	61	712
Gate: *See* Bridge-gate. Chain gate. Farm-gate. Lazy-tong gate. Railway-gate. Railway or farm gate. Railway safety-gate. Sliding gate. Swinging gate. Tilting gate. Water-gate.							
Gate	C. E. Cline and C. H. Kilpatrick	487,718	Dec. 13	790	202	61	1494
Gate	W. T. Harris	484,198	Oct. 11	1010	258	61	220
Gate	R. W. Reasons and M. M. Ozbirn	488,834	Dec. 27	2608	647	61	1889
Gate	C. J. Simeral	487,336	Dec. 6	159	45	61	1352
Gate	C. E. Albro	486,318	Nov. 15	1819	480	61	977
Gear. Worm	J. F. Welch	486,904	Nov. 15	1639	432	61	938
Gear. Worm	W. Holland	486,042	Nov. 8	1365	363	61	968
Gears. Pitch-gage for bevel	J. E. Touch	488,373	Dec. 20	1899	473	61	1730
Gearing	C. J. Humbert	487,623	Dec. 6	623	159	61	1445
Gem-setting							
Generator: *See* Electric generator. Gas-generator. Steam-generator.							
Generator	W. R. Macdonald	488,824	Dec. 27	2592	643	61	1886
Gig-mill	N. H. Grosselin, Fils	485,929	Nov. 8	1175	309, 310	61	889
Gate	H. M. Tileston	485,481	Nov. 1	507	134	61	675
Girth-fastener	E. Walsh, Jr	487,803	Dec. 13	936	236, 237	61	1525
Glass. Apparatus for rolling plate	A. A. Graeser	487,013	Nov. 29	2966	.....	61	1223
Glass articles. Securing designs on	R. M. Atwater	485,340	Nov. 1	288	78	61	631
Glass-furnace	A. W. Chesterton	483,778	Oct. 4	389	96	61	* 89
Glass gage-tubes. Tool for cutting	J. W. Bonta	483,527	Oct. 4	15	3, 4	61	6
Glass-grinding machine	G. A. Marsh, Jr	488,925	Dec. 27	2756	680	61	1920
Glass. Grinding, smoothing, and polishing	R. Gray	483,915	Oct. 4	590	149	61	122
Glass-melting furnace	J. Kitson	485,390	Nov. 1	374	101	61	649
Glass-melting furnace	R. S. Pease	487,496	Dec. 6	323	82, 83	61	1385
Glass, metal, &c. Apparatus for molding	R. S. Pease	487,495	Dec. 6	321	82	61	1385
Glass metal. Preparing	S. Oakman	486,193	Nov. 15	1602	425	61	932
Glass-mold	W. Henderson	484,500	Oct. 18	1633	415	61	355
Glass. Rail for securing	E. F. Chance	488,114	Dec. 13	1451	365	61	1628
Glass-rolling machinery	W. F. Modes	487,286	Dec. 6	76	23	61	1336
Glass tank-furnace	H. C. Schrader	486,591	Nov. 22	2238	587, 588, 229, 230	61	1072
Glasses. Machine for grinding drinking	T. B. Atterbury	484,131	Oct. 11	897	229, 230	61	198
Glassware. Device for manufacturing hollow	C. Runyon	485,965	Nov. 8	1273	337	61	850
Glassware for shipment. Packing	P. Blankensop, Jr	486,392	Nov. 15	1933	512	61	1000
Glassware-mold	J. Haley	485,032	Oct. 25	2385	612	61	519
Glassware. Ornamental pressed	A. E. Rendle	488,663	Dec. 27	2350	581	61	1838
Glazed structure	I. and M. A. Hodgson	488,071	Dec. 13	1389	345	61	1616
Globe. Geographical	F. E. Hall	484,792	Oct. 25	1984	506	61	440
Glove and garment fastener	T. C. Booth and E. G. Rutty	487,822	Dec. 13	959	242	61	1529
Glove-fastener	A. G. Mead	484,807	Oct. 25	2007	515	61	445
Glove-fastener	G. and J. Courcel	487,175	Nov. 29	3018	824	61	1284
Glove-fastening	F. Berthean and A. G. Hoegren	486,024	Nov. 8	1329	355	61	864
Glove or mitten	R. H. Moore	487,127	Nov. 29	3145	806	61	1269
Glove-package holder	J., Sr., and L. Luger	484,031	Oct. 11	769	194	61	172
Glue-applying apparatus	J. Luger, Sr.	484,032	Oct. 11	771	194	61	173
Glue-heater	G. J. Atkins	484,869	Oct. 25	2109	543	61	465
Gold and other metals from their ores. Separating	W. Langguth	486,613	Nov. 22	2260	594	61	1079
Gold and silver matte. Refining	G. W. McGee	487,579	Dec. 6	556	.....	61	1432
Gold and silver ores. Treating	C. Moldenhauer	483,766	Oct. 4	365	.....	61	77
Gold from its ores. Extracting	L. C. Daumas	486,694	Nov. 22	2418	630	61	1108
Gold ores. Process of and apparatus for treating	G. Moor	485,421	Nov. 1	421	112	61	658
Gopher-trap	E. W. Harden	486,404	Nov. 15	1953	518	61	1004
Governor	J. C. Henderson	487,965	Dec. 6	40	13	61	1339
Governor	J. D. P. Schenck	488,389	Dec. 20	1890	470, 471	61	1739
Governor. Air-brake	W. H. Lawrence	487,294	Nov. 29	3295	840	61	1297
Governor. Engine	F. J. Waters	485,361	Nov. 1	330	88	61	640
Governor. Engine	M. G. Wilder	486,574	Nov. 22	2307	580	61	1066
Governor. Group	G. F. Corliss and L. H. Watiles	483,643	Oct. 4	186	46	61	38
Governor. Steam-engine	E. L. Mills	485,217	Nov. 8	996	267	61	783
Governor. Steam-engine	J. M. Holland	484,498	Oct. 18	1388	355	61	305
Grader. Road	E. M. Kellogg	485,157	Oct. 25	2564	658, 659	61	556
Grain-binder	J. K. Karr	486,717	Nov. 22	2442	636	61	1113
Grain-carrier	W. H. Knapp	483,617	Oct. 4	152	37	61	33
Grain-carrier	A. Heine	485,845	Nov. 8	1041	279	61	893
Grain-cleaner	A. Heine	485,866	Nov. 8	1073	285, 286	61	898
Grain-drier	H. T. Hopkins	487,728	Dec. 13	928	240	61	1501
Grain-drier	W. McKee	488,770	Dec. 27	2599	694	61	1889
Grain-drill	T. R. Crane	484,630	Oct. 18	1706	433	61	369
Grain-drill	J. R. M. Day and L. Moore	487,258	Dec. 6	30	9, 10	61	1337
Grain-drill	J. C. Fuller and W. A. Lee	486,035	Nov. 8	1352	360	61	886
Grain-drill	G. W. Kirkpatrick	486,343	Nov. 15	1856	488	61	989
Grain-elevator	A. Marangos	483,566	Oct. 4	74	18, 19	61	17
Grain-elevator	J. A. L. Wilson	485,590	Nov. 1	555	149	61	686

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Grain-meter. Rotating	G. E. Wilson	484,691	Oct. 18	1807	459	61	390
Grain-scourer	H. A. Barnard	485,525	Nov. 1	563	151	61	668
Grain-scourer	W. A. Cockrell	485,488	Nov. 1	517	137	61	677
Grain-scourer	F. M. Drake	487,259	Dec. 6	31	10, 11	61	1327
Grain-separator	J. E. Smith	486,414	Nov. 15	1971	523	61	1007
Graphite or like substances from crushed rock. Method of and apparatus for separating	A. W. Nibelius	486,495	Nov. 22	2091	553	61	1044
Grapple	R. Jones	485,944	Nov. 8	1204	318	61	836
Grass-cutting implement	C. Stewart	488,667	Dec. 27	2359	583	61	1839
Grass-shears	L. L. Barnes	488,647	Dec. 27	2322	574	61	1832
Grate	F. Carel and W. F. Davidson	485,450	Nov. 1	463	123	61	667
Grate	E. Fales	485,684	Nov. 8	813	124 217	61	756
Grate-bar. Hollow	W. W. Sutcliffe	483,797	Oct. 4	413	102 103	61	86
Grate. Rocker-tooth	G. Downing, Jr., and W. F. Hall	488,548	Dec. 27	2161	534	61	1800
Grate. Shaking	L. E. Jordan	486,045	Nov. 8	1368	364	61	869
Grate-shelf	J. W. Miller	487,422	Dec. 6	317	81	61	1384
Grate. Tubular water	R. MacFarlane	488,170	Dec. 13	1547	388	61	1647
Grater for culinary purposes	J. Wich	486,058	Nov. 8	1393	369	61	873
Grater. Nutmeg	H. G. Gilbert	484,880	Oct. 25	2196	546	61	468
Grave-box cover	I. Scott	486,943	Nov. 29	2864	739	61	1213
Gravity-motor	J. E. Carver	487,715	Dec. 13	776	199	61	1492
Gravity-motor	A. F. Drake and W. Wonn	483,645	Oct. 4	190	47, 48	61	39
Griddle. Cake	R. A. Wheeler	484,482	Oct. 18	1479	377	61	323
Grinder. Sickle	G. J. Cline	487,552	Dec. 6	520	135	61	1423
Grinder. Sickle	A. J. Neff	485,973	Nov. 8	1255	331	61	846
Grinding cutlery or other tempered steel articles	A. Johnston	485,697	Nov. 8	831	223	61	759
Grinding-machine	J. Rogers	483,749	Oct. 4	340	85	61	71
Grinding-mill	G. Schock	484,884	Oct. 25	2131	548	61	469
Grinding-mill	A. S. Tragethon	486,003	Nov. 8	1307	346	61	857
Grinding-mill. Roller	D. A. Scallen	488,455	Dec. 20	2013	502	61	1756
Grinding-pan	A. J. Taylor	485,069	Oct. 25	2132	925	61	589
Grinding the teeth of harvester-sickles	D. Carrier	485,607	Nov. 8	995	183	61	731
Grinding twist-drills. Holder for	J. H. Bergstrom	488,054	Dec. 13	1360	337	61	1609
Grindstone-hanger	O. H. Peterson	486,217	Nov. 15	1655	437	61	942
Grip device for machinery. Intermittent	T. J. Reamy	485,058	Oct. 25	2417	021 022	61	525
Guard: *See* Book-guard. Stock-guard. Dress-guard. Telephone-guard.							
Guard-rail	F. W. Barrett	486,541	Nov. 22	2153	569	61	1056
Gully-trap	G. Couzens	486,177	Nov. 15	1598	423	61	931
Gun	R. A. Steinert	487,580	Dec. 6	564	144 145	61	1433
Gun. Air	J. C. Howe	483,651	Oct. 4	197	49	61	41
Gun-barrels to the stocks. Means for separably attaching	W. Mason	487,487	Dec. 6	420	108	61	1404
Gun-barrels to the stocks. Means for separably attaching	W. Mason	487,488	Dec. 6	422	109	61	1404
Gun-barrels to the stocks. Means for separably attaching	W. Mason	487,489	Dec. 6	424	109	61	1405
Gun-barrels to the stocks. Means for separably uniting	T. G. Bennett	487,465	Dec. 6	389	101	61	1397
Gun-barrels to the stocks. Means for separably uniting	T. G. Bennett	487,466	Dec. 6	390	101	61	1398
Gun-barrels to the stocks. Means for separably uniting	W. Mason	487,486	Dec. 6	418	108	61	1404
Gun-cleaner	C. W. Wunderlich	484,487	Oct. 18	1485	378	61	324
Gun-cotton. Apparatus for making	J. Beck and O. A. Nenninger	483,709	Oct. 4	279	69	61	59
Gun-lock	H. Pieper	488,366	Dec. 20	1872	458 459	61	1727
Gun. Magazine	J. M. Browning	486,274	Nov. 15	1759	463	61	965
Gun. Multicharge	J. R. Haskell	484,007	Oct. 11	735	184	61	165
Gun. Multicharge	J. R. Haskell	484,010	Oct. 11	740	185 186	61	166
Gun. Multicharge	J. R. Haskell	484,011	Oct. 11	742	186	61	167
Gun. Multicharge or accelerating	J. R. Haskell	484,009	Oct. 11	737	184 185	61	166
Gun. Quick-fire	A. Odkolek	486,938	Nov. 29	2848	737 738	61	1210
Gun. Repeating air	E. E. Bailey	487,169	Nov. 29	3210	822	61	1282
Gun. Repeating breech-loading	W. H. Ostrander. (Reissue)	11,295	Dec. 13	1554	390	61	1649
Gun-stock recoil attachment	R. Townsend	488,855	Dec. 27	2648	656	61	1897
Gun-swab	G. H. Garrison	486,331	Nov. 15	1637	483	61	980
Guns. Apparatus for working disappearing	A. Noble and C. H. Murray	484,374	Oct. 11	1295	330 331 332 333	61	976
Guns. Automatic ejecting mechanism for breakdown	C. B. Withington	485,313	Nov. 1	236	65	61	620
Guns. Automatic shell-ejector for breech-loading	M. A. Keller	488,316	Dec. 20	1786	449 450	61	1710
Guns. Feed mechanism for machine	J. G. Accles	487,238	Dec. 6	1	1, 2	61	1321
Guns. Safety-trigger for breech-loading bolt	P. Mauser	488,694	Dec. 27	2402	595	61	1847
Gutter-protector	J. Gogerty	486,968	Nov. 29	2703	705	61	1182
Gutter. Stable	A. G. Wilbor, Jr	487,548	Dec. 6	515	134	61	1423
Habit. Riding	W. Shingleton	488,776	Dec. 27	2517	626	61	1871
Hair-clipper handle	W. Clark	486,083	Nov. 15	1434	379	61	900
Hair. Manufacturing curled	P. Woll, Jr	486,593	Nov. 22	2242	588	61	1073
Hair-pin	J. F. Chase	483,572	Oct. 4	468	117	61	96
Halter	J. C. Averill	483,594	Oct. 4	117	29	61	25
Halter	N. Gibbons	487,145	Nov. 29	3172	813	61	1274
Halter	H. F. Hutton	485,278	Nov. 1	184	54	61	611
Hame	J. F. Pye	487,157	Nov. 29	3192	817	61	1278
Hame	J. Swigert	485,996	Nov. 8	1296	344	61	855

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Hame-clip	J. Scott	484,053	Oct. 11	798	201	61	178
Hame-fastener	E. Beaublen	484,283	Oct. 11	1159	295	61	249
Hame-fastener	R. Lambert	484,327	Oct. 11	1232	314	61	262
Hame-fastener	G. M. Roat	485,751	Nov. 8	918	246	61	778
Hame-fastener	C. A. Smith	486,903	Nov. 29	2794	725	61	1200
Hammer	G. H. McGown	487,635	Dec. 6	640	164	61	1448
Hammer. Drop	F. W. Thompson	488,620	Dec. 27	2275	564	61	1823
Hammer. Pneumatic	G. Glossop	485,498	Nov. 1	529	140	61	680
Hammer. Power	A. Beandry	487,092	Dec. 6	738	189	61	1466
Hammer. Power	F. C. Brooksbank	485,168	Nov. 1	14	4	61	576
Hammer. Power	F. C. Brooksbank	485,169	Nov. 1	16	5	61	576
Hammer. Power	J. Evans	486,772	Nov. 22	2535	661 662	61	1131
Hammer. Power	J. Canning	484,775	Oct. 25	1952	498	61	433
Hammock-bodies. Producing	A. O. Rood	487,857	Dec. 13	1026	257	61	1542
Hammock-frame. Folding	H. G. Else	488,272	Dec. 20	1716	432	61	1697
Hammock-stretcher	A. C. Knight	483,930	Oct. 4	609	154	61	126
Hammock-swinging apparatus	C. Washburn	483,753	Oct. 4	345	86	61	72
Handkerchief-holder. Lady's	H. C. Kennedy	486,673	Nov. 22	2374	621	61	1099
Handle: *See* Auger-handle. Saw-handle. Brake-handle. Tool-handle. Knife-handle.							
Handle	C. H. Maschmeyer	485,846	Nov. 8	1044	279	61	803
Handle	N. H. Prouty	488,679	Dec. 27	2380	589	61	1843
Handle for utensils	F. W. Wood and J. F. Bingham	487,688	Dec. 6	734	188	61	1466
Handle protector. Pick	G. M. Newton	485,977	Nov. 8	1260	332	61	847
Hanger: *See* Door-hanger. Electric-light hanger. Eaves-trough hanger. Grindstone-hanger. Pipe-hanger.							
Harness	B. F. Baker	487,900	Dec. 13	1090	272 273	61	1554
Harness	R. Condon	485,258	Nov. 1	157	45, 46	61	605
Harness	J. C. Connell	483,540	Oct. 4	37	9	61	10
Harness-machine	C. J. Cooper	485,260	Nov. 1	159	46	61	606
Harness-machine	G. Steinbach and H. Shafer	485,065	Oct. 25	2427	624	61	527
Harness-pad	E. L. McClain	486,679	Nov. 22	2382	623	61	1101
Harness-pad	E. A. Stephens	485,305	Nov. 1	223	63	61	618
Harness. Safety	J. T. Smith	486,238	Nov. 15	1688	447	61	949
Harness-suspending device	L. Townsend	488,254	Dec. 27	2647	655	61	1897
Harp	G. B. Durkee and D. Lanterman	485,737	Nov. 8	903	242	61	774
Harp	J. Rath	485,354	Nov. 1	317	85	61	637
Harrow	N. Anderson	485,677	Nov. 8	804	214 215	61	754
Harrow	P. Blaker	486,925	Nov. 29	2830	732 733	61	1207
Harrow	A. F. Brown	486,207	Nov. 15	1638	433 434	61	939
Harrow	J. W. Cason	488,425	Dec. 20	1969	492	61	1746
Harrow	O. J. Childs	486,082	Nov. 15	1432	378 379	61	900
Harrow	E. P. Ford and A. B. Moffitt	485,623	Nov. 8	718	188	61	735
Harrow	C. La Dow	488,942	Dec. 27	2787	687 688	61	1927
Harrow	C. La Dow	488,943	Dec. 27	2790	688	61	1927
Harrow	V. E. Randall	484,047	Oct. 11	789	199	61	176
Harrow	W. Sobey	485,020	Oct. 25	2368	609	61	515
Harrow and cultivator	T. J. Hubbell	484,739	Oct. 18	1483	480	61	406
Harrow and cultivator. Combined	N. P. Lewis	487,848	Dec. 13	1005	253	61	1538
Harrow and cultivator. Wheel	O. R. Baldwin	488,597	Dec. 27	2246	557	61	1818
Harrow and pulverizer blade	R. L. Lukens	484,969	Oct. 25	2275	587	61	498
Harrow-disk	E. D. Arnold	488,514	Dec. 20	2106	523	61	1775
Harrow. Disk	A. G. Hill	487,022	Dec. 6	621	159	61	1445
Harrow. Disk	C. S. Sharp	485,666	Nov. 8	788	210	61	750
Harrow. Sod-cutting	F. H. Long	484,440	Oct. 18	1412	360	61	310
Harrow. Spade	J. Drader and A. B. McKay	487,332	Dec. 6	139	40, 41	61	1349
Harrow-spreader	L. C. Evans	486,352	Dec. 20	1851	463	61	1723
Harrow. Spring-tooth	H. W. Eisenhart	485,493	Nov. 1	522	138	61	678
Harrow. Spring-tooth	F. H. Ferris	485,394	Nov. 1	265	72	61	696
Harrow. Spring-tooth	D. C. Markham	488,714	Dec. 27	2428	602	61	1852
Harrow. Spring-tooth	W. E. Smith	486,796	Nov. 22	2572	671	61	1139
Harrow-tooth fastening	A. O. Bement	486,072	Nov. 15	1418	375	61	897
Harrows. Fastening for spring-tooth	A. F. Molitor	483,852	Oct. 4	496	123	61	103
Harvester-binder	J. Lund	485,956	Nov. 8	1229	324	61	840
Harvester. Broom-corn	G. W. Peterson	485,711	Nov. 8	859	230 231	61	765
Harvester conveyer-gearing	G. Schubert	486,900	Nov. 29	2787	723 724	61	1199
Harvester. Corn	J. Bardill	485,522	Nov. 1	559	149 150	61	687
Harvester. Corn	I. N. Fickes	487,558	Dec. 6	528	136	61	1425
Harvester. Corn	A. V. Kiser	486,255	Nov. 15	1793	454 455	61	956
Harvester. Corn	J. J. Singley	486,132	Nov. 15	1536	405 406	61	919
Harvester. Corn	J. F. Steward	484,561	Oct. 18	1596	405 406	61	347
Harvester. Corn	G. M. Woodruff	483,755	Oct. 4	347	87	61	72
Harvester. Corn	W. A. Young	486,014	Nov. 8	1394	351 352	61	880
Harvester. Cotton	G. H. Zempter, R. A. Manning, and G. W. Overall.	483,894	Oct. 4	457	114	61	94
Harvester discharge mechanism	W. N. Stroud and R. H. Corey	484,923	Oct. 25	2210	569	61	485

Alphabetical list of inventions, October to December, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Harvester-elevator	M. Kane	487,223	Nov. 29	3293	340	61	1297
Harvester. Grain-binding	L. Miller	488,398	Dec. 20	1990	480, 481, 482	61	1736
Harvester knot-tying mechanism	W. H. Gaskill	488,914	Oct. 4	588	148, 149	61	122
Harvester picker. Cotton	G. Beckman	487,509	Dec. 6	452	117, 118	61	1411
Harvester. Potato	J. Radermacher	488,948	Dec. 27	2795	689, 690	61	1928
Harvesting machine. Grain	W. J. Randolph	488,833	Dec. 27	2604	646, 647	61	1889
Hat and brush therefor	A. Mauser	485,640	Nov. 8	742	195	61	640
Hat-blocking machine	F. D. Fry	487,442	Dec. 6	357	91, 92	61	1392
Hat-blocking machine	J. Marshall	485,349	Nov. 1	310	82, 83	61	635
Hat-box	H. J. Newman	484,812	Oct. 25	2016	518	61	447
Hat-brim-ironing machine	W. J. McGall	483,746	Oct. 4	336	84	61	70
Hat-case	A. Grouleff	486,828	Nov. 22	2630	666	61	1152
Hat or bonnet stand	S. E. L. Wilson	486,654	Nov. 22	2345	613	61	1093
Hat-rack	A. L. Van Benschoten	484,886	Oct. 25	2133	548	61	469
Hat-stiffening machine	W. H. Barnum	485,601	Nov. 8	687	181	61	729
Hat-sweats. Machine for fitting	K. L. Comes	487,252	Dec. 6	21	6	61	1325
Hat-sweats. Machine for joining the meeting ends of	K. L. Comes	487,253	Dec. 6	22	7	61	1325
Hat-ventilating device	E. J. Sharp	487,786	Dec. 13	903	228, 229	61	1518
Hat-wringing machine	G. Yule and W. A. Baglin	483,823	Oct. 4	455	113	61	94
Hats. Machine for stitching sweat-bands for	T. W. Bracher and S. W. Balch	488,934	Dec. 27	2768	683	61	1923
Hatch-door	C. Kibele	486,341	Nov. 15	1853	487	61	983
Hay and stock rack. Convertible	E. N. Avery and C. A. Slayton	483,705	Oct. 4	275	68	61	58
Hay-boom	W. R. Dillion and A. C. Carr	486,438	Nov. 22	20012	534	61	1028
Hay-carrier	H. H. Durr	488,330	Dec. 20	1813	454	61	1716
Hay-carrier	N. Isachson	483,845	Oct. 4	485	120	61	100
Hay-carrier	J. Law	486,164	Nov. 15	1581	419	61	928
Hay carrier and elevator track	W. G. Ricker	487,856	Dec. 13	1023	256, 257	61	1541
Hay-carrier track	J. E. Porter	487,966	Dec. 13	1189	297	61	1573
Hay-carrier track	C. A. Gutzenkunst	486,711	Nov. 22	2436	634	61	1119
Hay-elevator	B. Taylor	486,812	Nov. 22	2598	676	61	1145
Hay gathering and baling machine	P. Burrell	486,848	Nov. 29	2669	698	61	1175
Hay-loader	J. E. St. John	483,678	Oct. 4	233	58, 59	61	48
Hay-loader	S. Ferguson	488,732	Dec. 27	2453	610	61	1858
Hay-loader	C. A. Henry	488,561	Dec. 27	2186	540	61	1805
Hay-press	J. L. McCreary	485,769	Nov. 8	941	252	61	782
Hay-press	J. J. Corley	488,400	Dec. 20	1924	482	61	1737
Hay-press	J. A. Mealer	484,504	Oct. 18	1512	384	61	330
Hay-rack	J. T. Russell and J. D. Williams	484,757	Oct. 18	1910	487, 488	61	412
Hay-rack for farm-wagons	L. A. Swan	486,978	Nov. 29	2911	752	61	1223
Hay-rake	A. Miller	487,333	Dec. 6	155	44	61	1351
Hay rake and loader. Combined	T. G. Lee	488,713	Dec. 27	2427	602	61	1852
Hay rake and loader. Combined	J. W. Harmon	483,917	Oct. 4	591	150	61	122
Hay-ricker	A. Punteney and E. C. Sooy	487,640	Dec. 6	651	167, 168	61	1450
Hay-sling	C. A. Blume	486,751	Nov. 22	2497	652, 653	61	1125
Hay stacker and rake. Combined mounted	J. M. Kellogg	487,575	Dec. 6	549	141, 142	61	1430
Head-rest	E. O. Ervin	484,493	Oct. 18	1494	380	61	326
Heat-regenerators. Working	E. H. Durkee	485,374	Nov. 1	350	94	61	644
Heater:	J. T. Wainwright	483,752	Oct. 4	343	86	61	72
See Barrel-heater. Brick-press steam-heater. Electrical heater. Feed-water heater. Fireplace-heater. Gasoline-heater. Glue-heater. Portable safety-heater. Sad-iron heater. Steam-heater. Tank-heater. Water-heater.							
Heater	A. Graf	485,190	Nov. 1	54	17	61	583
Heater	J. Nelson	488,131	Dec. 13	1477	372	61	1634
Heater, furnace, &c	M. O'Gorman	486,121	Nov. 15	1515	401	61	915
Heating and cooling milk. Apparatus for	J. L. Jönsson	486,642	Nov. 22	2325	608, 609	61	1089
Heating and ventilating apparatus	A. Willgeroth	484,272	Oct. 11	1146	291	61	246
Heating apparatus	E. P. H. Kelting	485,388	Nov. 1	372	100	61	649
Heating apparatus	W. H. Turner	487,653	Dec. 6	671	173	61	1454
Heating-apparatus attachment	J. Moak	487,192	Nov. 29	3944	830	61	1988
Heating boiler. Steam or hot-water	G. C. Blackmore	484,083	Oct. 11	839	212, 213	61	186
Heating by metal bath	F. L. White	487,310	Dec. 6	116	34, 35	61	1344
Heating device. Tool	J. B. Morgan	485,584	Nov. 1	659	175	61	709
Hedge-fence trainer	P. S. Snyder	486,955	Dec. 27	2807	692	61	1931
Heel	M. Wise	487,311	Dec. 6	117	35	61	1344
Heel-blank-beveling machine	F. E. Wilder	484,833	Oct. 25	2051	525, 526	61	454
Heel-burnishing machine	G. A. Knox	486,229	Nov. 15	1673	442, 443	61	946
Heel. Interchangeable	M. Wise	487,312	Dec. 6	118	35	61	1345
Heel-lifts. Skiving	H. O. Beach	488,303	Dec. 20	1765	444, 445	61	1706
Heel-nailing machine	H. B. Ingraham	486,288	Nov. 15	1776	467	61	968
Heel-packer	I. R. Rogers	484,609	Oct. 18	1666	422	61	368
Heel-press	W. J. Young	486,921	Nov. 29	2925	731	61	1206
Helmet attachment	F. E. Drake	488,188	Dec. 20	1577	395	61	1670
Hem folder and presser	F. Henry	484,366	Oct. 11	1285	328	61	274
Hides or skins. Machine for treating	W. Evans	484,146	Oct. 11	930	240	61	204
Hides or skins. Machine for treating	W. Evans	484,147	Oct. 11	932	240	61	205
Hinge	F. A. H. Faulhaber and C. F. Koch	487,476	Dec. 6	406	105	61	1401
Hinge	W. S. Gillespie	486,952	Nov. 29	2874	742	61	1215
Hinge	I. F. Harris	486,104	Nov. 15	1488	392	61	910
Hinge. Awning-blind	J. Sweeney	488,509	Dec. 20	2100	521	61	1774
Hinge. Blind	A. J. Avery	484,351	Oct. 11	1263	322	61	270
Hinge. Gate	G. W. Good	488,070	Dec. 13	1388	344	61	1616
Hinge-lock	R. Deane	485,613	Nov. 8	701	184	61	732
Hinge. Lock	J. W. Dearing	485,460	Nov. 1	476	126	61	669
Hinge. Lock	C. E. Gillespie	484,361	Oct. 11	1277	325, 326	61	272
Hinge. Safe	W. A. Schenck	486,237	Nov. 15	1667	446	61	949
Hinge-seat cutter	G. W. Scott	483,677	Oct. 4	232	58	61	48
Hinge. Spring	L. Bommer	485,366	Nov. 1	338	89	61	641
Hinge. Spring	A. S. Held and L. Patterson	484,200	Oct. 11	1014	259	61	221
Hinge. Spring	J. Wolf	484,839	Oct. 25	2069	532	61	457
Hinges. Making butt	R. T. Smith	487,939	Dec. 13	1154	288	61	1567
Hitching device	E. E. Albin	486,842	Nov. 29	2657	695	61	1173
Hitching-post	C. W. Erath	487,727	Dec. 13	801	205	61	1497
Hitching-strap	E. Shaw	484,646	Oct. 18	1737	441	61	375
Hoe	M. A. Smith	488,582	Dec. 27	2921	550	61	1813
Hoe and planter. Combined	J. R. Ayers	488,596	Dec. 27	2945	556	61	1818
Hog-trough	J. C. F. Hurst	487,836	Dec. 13	963	247	61	1534
Hoisting and conveying apparatus	G. H. Hulett	483,558	Oct. 4	62	15, 16	61	15
Hoisting and conveying apparatus	H. R. Palmer	486,645	Nov. 22	2330	610	61	1091
Hoisting apparatus	J. E. Walsh	488,044	Dec. 13	1340	332	61	1605
Hoisting device	A. L. Plotner	485,774	Nov. 8	947	254	61	783
Hoisting device and support	H. Sellheim	484,252	Oct. 11	1107	280	61	239
Hoisting device. Self-locking	O. Hillerscheidt	484,932	Oct. 25	2224	573, 574	61	488
Hoisting-machine	O. Flohr	484,358	Oct. 11	1273	325	61	272
Hoisting-machine. Differential	C. F. Cliff	487,994	Dec. 13	1246	310	61	1585
Hoisting machinery	H. J. McKeown	488,447	Dec. 20	2001	500	61	1753
Holdback. Carriage	H. R. Schnarr	484,464	Oct. 18	1446	368	61	317
Holdback. Vehicle	W. Dunn	487,828	Dec. 13	971	245	61	1532
Holdback. Vehicle	E. W. Langer and R. Peterson	485,550	Nov. 1	606	162	61	697
Holdback. Vehicle	E. P. Parker	488,613	Dec. 27	2267	562	61	1822
Holder: *See* Bag-holder. Bill-holder. Book-holder. Bouquet-holder. Bouquet and badge holder. Chimney-holder. Cuff-holder. Flower-holder. Ink-bottle holder. Label-holder. Lamp-holder. Lead or crayon holder. Order-holder. Pen-holder. Photographic-plate holder. Printing-plate holder. Salt-holder. Sash-holder. Shade-holder. Shoe-holder. Soap-cake holder. Spool-holder. Staple-holder. Tag-holder. Ticket-holder. Vine-holder. Watch-holder.							
Hoof-pad	J. Kress	483,691	Oct. 4	253	63	61	53
Honey-extractor. Centrifugal	C. W. Metcalf	486,798	Nov. 22	2456	641	61	1116
Honey-extractor. Centrifugal	F. Williams	486,151	Nov. 15	1564	414	61	925
Hook: *See* Bench-hook. Button-hook. Check-hook. Coat-hook. Coat and hat hook. Drapery or garment hook. Fish-hook. Garment-hook. Lace-fastening hook. Safety-hook. Snap-hook. Tug-hook. Whiffletree-hook.							
Hook	J. W. Grantland	486,641	Nov. 22	2324	606	61	1089
Hook and eye	C. A. Bryant	487,209	Nov. 29	3967	835	61	1292
Hook and eye	F. Meyers and M. Stoveken	484,730	Oct. 18	1845	469	61	397
Hoop pointing and lapping machine	A. F. Ward	484,126	Oct. 11	891	227, 228	61	197
Hopple	L. P. Stine	488,849	Dec. 27	2640	654	61	1806
Hopple	W. H. Westen	487,863	Dec. 13	1034	258	61	1543
Horn	H. P. Young	488,238	Dec. 20	1664	415	61	1686
Horse-blanket	E. Chamberlain	484,996	Oct. 25	2325	600	61	507
Horse-blanket	C. A. Gevers	483,990	Oct. 4	689	172	61	142
Horse-boot	C. A. Rahn	484,820	Oct. 25	2028	530	61	449
Horse-boot	J. H. Rowell	487,296	Dec. 6	88	27	61	1339
Horse-detacher	H. Leeman	487,126	Nov. 29	3144	806	61	1969
Horse-hitching device	L. House	488,475	Dec. 20	2042	508, 509	61	1762
Horse-power	W. B. Swarts	484,594	Oct. 18	1542	391	61	336
Horse-power	J. G. Walton	486,142	Nov. 15	1549	400	61	922
Horse-power	A. Wickey	486,659	Nov. 22	2343	612	61	1092
Horse-shield	C. H. Baldwin	484,282	Oct. 11	1158	295	61	949
Horse-shield	A. P. Chase	484,701	Oct. 18	1818	462	61	302
Horse-taming apparatus	R. Masza	484,216	Oct. 11	1045	265	61	226
Horses. Electrical device for preventing cribbing in	G. W. Whitefield	487,461	Dec. 6	382	100	61	1396
Horses' hoofs. Shoe for expanding	G. F. Altoft	488,535	Dec. 27	2148	531	61	1797
Horseshoe	G. T. Chapman	483,586	Oct. 4	31	8	61	9
Horseshoe	G. T. Chapman	483,587	Oct. 4	32	8	61	9
Horseshoe	G. T. Chapman	483,588	Oct. 4	34	8	61	9
Horseshoe	C. Hartmann	484,713	Oct. 18	1834	466	61	305
Horseshoe	F. Korupkat	487,368	Dec. 6	215	59	61	1363

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Horseshoe	W. J. and M. J. Mohan	485,470	Nov. 1	494	131	61	672
Horseshoe-blank bar	C. H. Perkins	487,056	Nov. 29	3027	778	61	1945
Horseshoe-blank bars. Roll for making	C. H. Perkins	487,057	Nov. 29	3030	778	61	1946
Horseshoe-bending machine	J. Wike	484,750	Oct. 18	1901	485	61	410
Horseshoe-calk. Detachable	M. J. L. Towler	487,038	Nov. 29	3002	773	61	1940
Horseshoe-calk sharpening device	A. J. Neal	485,585	Nov. 1	661	175	61	709
Horseshoe-fastening	E. T. Covell	483,602	Oct. 4	128	32	61	27
Horseshoe-nail blanks. Die for swaging	W. W. Miner	484,220	Oct. 11	1051	266	61	228
Horseshoe-nails. Machine for making	D. F. Williams	484,836	Oct. 25	2059	528, 529, 530, 531	61	455
Horseshoe. Nailless	C. W. Crannell	487,177	Nov. 29	3220	824, 825	61	1284
Horseshoe with removable calks	C. B. Hulbert	484,740	Oct. 18	1884	480	61	407
Horseshoe with self-sharpening calks	H. O. Sageng	487,645	Dec. 6	658	160	61	1452
Horseshoeing apparatus	J. Lamb	488,077	Dec. 13	1397	347	61	1617
Horseshoeing-rack	S. M. Martin	487,190	Nov. 29	3241	820	61	1287
Hose and wire bridge	W. Williams and J. H. Crook	488,258	Dec. 20	1693	423	61	1692
Hose-band	G. Ferguson	484,190	Oct. 11	998	253	61	217
Hose-bridge	J. H. Glosinger	488,888	Dec. 27	2690	666	61	1907
Hose-clamps. Device for applying	Z. L. Chadbourne, E. A. Behringer, and H. J. McCoy.	484,298	Oct. 11	1185	301	61	253
Hose-coupling	J. F. McElroy	486,118	Nov. 15	1510	400	61	914
Hose-coupling	F. Schimper and C. Zoller	487,893	Dec. 13	1080	270	61	1552
Hose-coupling	F. W. Wright	485,729	Nov. 8	891	239	61	772
Hose-elevating apparatus	A. O. Muhlstein	485,129	Oct. 25	2517	647	61	547
Hose-nozzle guide for walls	J. N. Brewster	488,624	Dec. 27	2289	567	61	1895
Hose-pipe carrier	J. M. Harper	484,961	Oct. 25	2263	584	61	495
Hose-rack	J. C. N. Guibert	483,673	Oct. 4	226	56	61	47
Hose-reel	A. D. Coplin	486,692	Nov. 22	2403	627	61	1105
Hose-reel	R. D. Wirt	486,010	Nov. 8	1317	350	61	859
Hose-support	J. A. C. Moore	484,557	Oct. 18	1592	404	61	346
Hose-supporter	E. A. Black	486,076	Nov. 15	1424	376	61	898
Hosiery. Machine for making lace	H. Clarke and T. Mawby	486,767	Nov. 22	2520	657, 658, 659, 660	61	1129
Hot-air furnace	J. E. and J. L. Spencer	486,134	Nov. 15	1539	406, 407	61	920
Hot-air furnace	R. Tate	483,819	Oct. 4	448	111	61	92
Hot-box alarm	J. C. Basel and E. Fruehauf	483,682	Oct. 4	239	60	61	50
Hot-water heater	M. E. Herbert	487,690	Dec. 6	616	158	61	1444
Hub-band	C. L. Wiedrich	486,653	Nov. 22	2343	612, 613	61	1093
Hub-blank for metal wheels	J. R. Little	488,125	Dec. 13	1465	370	61	1631
Hub-boring machine	D. H. Gowing	486,869	Nov. 29	2704	706	61	1182
Hub-boring machine	W. E. Kane	486,407	Nov. 15	1957	519, 590	61	1004
Hub. Vehicle-wheel	C. Whitford	486,996	Nov. 29	2941	758	61	1298
Hubs. Dust and mud cap for vehicle	J. Maris	487,189	Nov. 29	3240	829	61	1287
Hubs. Elastic cushion for	J. R. Gleeson	484,552	Oct. 18	1584	402	61	345
Huller: *See* Pea-huller.							
Hydrant	W. H. Bootman	485,603	Nov. 8	690	182	61	730
Hydrant	J. A. Gregg	484,197	Oct. 11	1008	258	61	220
Hydrant. Fire	H. F. Hayden	485,409	Nov. 1	403	108	61	655
Hydrant or plug. Fire	T. A. Knickerbacker and R. Hughes	488,015	Dec. 13	1277	318	61	1592
Hydraulic elevator	T. E. Brown, Jr	487,709	Dec. 13	766	196	61	1490
Hydraulic elevator	C. I. Hall	488,891	Dec. 27	2695	667	61	1908
Hydraulic motor	F. Johnson	485,412	Nov. 1	410	110	61	656
Hydraulic motor	M. G. Lindsey	488,946	Dec. 20	1676	419	61	1689
Hyam-indicator	J. H. Buchanan	485,122	Oct. 25	2507	644	61	545
Ice-cake conveyer	G. E. Berna	487,001	Nov. 29	2947	759, 760	61	1229
Ice-cream freezer	W. H. Hopkins	486,779	Nov. 22	2544	664	61	1133
Ice-cream freezer	H. Mayers	487,370	Dec. 6	217	60	61	1363
Ice-cream freezer	J. E. Newhouse	485,646	Nov. 8	748	197	61	742
Ice-cream mold	A. P. Storrs	486,325	Dec. 20	1804	452	61	1714
Ice-creeper	W. C. Treadwell	486,362	Nov. 15	1883	496	61	989
Ice-cutting machine	G. D. Mussey	488,215	Dec. 20	1630	406	61	1680
Ice-forming and preserving room	W. J. Pine	485,114	Oct. 25	2495	641	61	543
Ice-manufacturing apparatus	J. M. Rosse	485,805	Nov. 8	982	264	61	791
Ice-run. Portable	J. Buckner	485,149	Oct. 25	2552	655, 656	61	554
Ice-shaving machine	I. A. Manchester	488,080	Dec. 13	1402	348	61	1619
Incinerating-furnace	G. B. Webb	487,339	Dec. 6	162	46	61	1353
Incrustation-preventer	O. Stevens	486,512	Nov. 22	2114	558	61	1049
Incubator	W. H. Wilson	484,837	Oct. 25	2067	531	61	457
Incubator	L. Kuhner	484,325	Oct. 11	1227	313	61	262
Index	H. M. Sheer	488,953	Dec. 27	2805	691	61	1931
Index	H. S. Bacon	483,595	Oct. 4	118	29	61	25
Index	F. Bowman	486,755	Nov. 22	2503	654	61	1126
Index	C. M. Cott	487,516	Dec. 6	467	122	61	1413
Index	M. S. Ford	484,151	Oct. 11	939	241	61	306
Indicator: *See* Boiler water-indicator. Speed-indicator. Station-indicator. Cash-indicator. Streetcar station indicator. Electric-current indicator. Thermostatic indicator. Valve-indicator. Hyam-indicator. Vessel draft-indicator. Office-door indicator.							
Indicator	N. A. Miller	487,445	Dec. 6	363	94	61	1393

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Indicator-lock	L. King	487,276	Dec. 6	61	19	61	1334
Induction apparatus	C. Willms	488,299	Dec. 20	1758	443	61	1705
Induction device. Self	W. Stanley, Jr	485,336	Nov. 1	283	77	61	630
Inductorium. Electrical	L. S. M. Pyke and H. T. Barnett	484,543	Oct. 18	1573	399	61	342
Inductorium. Electrical	L. S. M. Pyke and E. S. Harris	484,544	Oct. 18	1574	400	61	343
Ingot-manipulator	P. N. Cunningham	483,644	Oct. 4	188	47	61	39
Ingots. Process of and apparatus for forming solid-metal	A. J. Thowless	484,476	Oct. 18	1470	374	61	321
Inhaler	H. D. Cushman	488,427	Dec. 20	1972	492	61	1746
Inhaler	H. Ellis	486,951	Nov. 29	2873	742	61	1215
Inhaler	W. C. Wilson	486,519	Nov. 22	2123	560	61	1051
Inhaler	M. S. Woodward	484,944	Oct. 25	2241	577	61	491
Injector	T. J. Hart	488,313	Dec. 20	1781	448, 449	61	1709
Injector	J. Trix	488,099	Dec. 13	1426	356	61	1623
Injector. Automatic restarting	W. Penberthy	484,044	Oct. 11	786	198	61	176
Injector-burner	A. L. Avery	488,646	Dec. 27	2321	574	61	1832
Injector for locomotives. Steam and air	F. Leadbeater	486,934	Nov. 29	2843	736	61	1209
Injector. Steam	J. N. Derby	484,302	Oct. 11	1191	303	61	254
Injector. Steam	J. N. Derby	484,303	Oct. 11	1194	304	61	255
Ink-bottle holder and pen-rack. Combined	J. R. Greer and W. D. Thomas	484,498	Oct. 18	1503	382	61	328
Ink-well	W. E. Lewis	484,803	Oct. 25	2003	514	61	444
Ink-well for school-desks	W. H. Morden and A. J. Gilmour	485,595	Nov. 1	674	179	61	712
Inked ribbons. Method of and apparatus for making	G. W. Bishop	488,786	Dec. 27	2535	629, 630	61	1874
Inkstand	M. Faust	485,375	Nov. 1	351	94	61	644
Inkstand	J. H. Gifford	483,840	Oct. 4	477	119	61	99
Inkstand	C. G. Knott	488,822	Dec. 27	2590	642	61	1886
Inkstand	W. S. Mendenhall	487,630	Dec. 6	632	162	61	1447
Inkstand and penholder. Combined	A. W. Skog	486,686	Nov. 22	2392	625	61	1103
Inkstand. Fountain	H. Siegert	487,396	Dec. 6	256	70	61	1372
Inkstand. Self-closing	E. C. Mayloy	484,106	Oct. 11	866	220	61	192
Inkstand-support and pen-rack. Combined	C. R. Straughn	485,397	Nov. 1	386	103	61	651
Inkstand-support and pen-rack. Combined	E. Davis	486,278	Nov. 15	1765	464	61	966
Inlaid work for decorative purposes. Manufacture of	E. Davis	486,279	Nov. 15	1766	464	61	966
Inlaid work for decorative purposes. Manufacturing	H. A. Cousins	488,542	Dec. 27	2155	532	61	1798
Inlaid work for decorative purposes. Manufacturing	H. A. Cousins	488,540	Dec. 27	2153	.....	61	1798
Inseam-trimming machine	H. A. Cousins	488,541	Dec. 27	2154	.....	61	1798
Insect-powder distributer	F. H. Warren	488,591	Dec. 27	2238	554	61	1816
Insect-trap	C. H. Joosten	487,122	Nov. 29	3137	804	61	1268
Insect-trap	W. Amos	485,077	Oct. 25	2447	630	61	532
Insect-trap	E. Koecher	485,815	Nov. 8	994	267	61	793
Insulated rivet	C. F. Jolitz	488,394	Dec. 20	1916	479	61	1735
Insulating-chair for rails	W. S. Hull	483,806	Oct. 4	424	105	61	88
Insulating electric conductors	F. E. Kinsman	486,477	Nov. 22	2065	547	61	1039
Insulating-joint	C. Cuttriss	488,141	Dec. 13	1491	375	61	1636
Insulation. Making artificial mica sheets for electrical	C. Wirt	484,483	Oct. 18	1481	377	61	323
Insulator	A. H. S. Dyer	483,646	Oct. 4	192	48	61	40
Insulator	C. T. Lee	485,106	Oct. 25	2486	639	61	541
Insulator	F. M. Locke	484,209	Oct. 11	1034	263	61	224
Insulator	A. P. Seymour	483,771	Oct. 4	376	93	61	78
Insulator for electric-railway conductors	C. Wirt	488,046	Dec. 13	1342	332	61	1605
Insulator. Trolley-wire	C. T. Lee	485,105	Oct. 25	2485	638	61	541
Insulators. Molding mica forms for electrical	A. Anderson	484,280	Oct. 11	1155	294	61	248
Intrenching-tool	C. W. Jefferson	483,653	Oct. 4	201	50	61	41
Invalid-supporter	M. A. Luther	484,806	Oct. 25	2006	515	61	445
Invalid's adjustable back-rest	S. J. Rhoads	483,657	Oct. 4	206	51	61	42
Iron: *See* Curling-iron. Sad-iron.	J. Parker	484,974	Oct. 25	2287	590, 591	61	500
Iron from ore. Separating	H. H. Eames	484,877	Oct. 25	2122	.....	61	467
Iron. Melting	H. J. Graf	485,927	Nov. 8	1173	309	61	828
Iron ware. Producing enameled	C. A. W. Vollrath	488,683	Dec. 27	2385	.....	61	1844
Ironing-board	S. C. Horn	483,922	Oct. 4	598	152	61	124
Ironing-board cover	M. S. Everett	484,951	Oct. 25	2247	579	61	492
Ironing-machine	A. R. Gustafson	485,465	Nov. 1	486	120	61	671
Ironing-machine	R. S. Nelson and A. Kreuter	485,707	Nov. 8	853	229	61	764
Ironing-machine	L. H. Watson	484,925	Oct. 25	2213	570	61	485
Ironing-machine clamp	F. A. Walker	486,650	Nov. 22	2340	611, 612	61	1092
Ironing-table	O. J. Bailey	488,347	Dec. 20	1844	461	61	1721
Ironing-table	G. W. Lawbaugh	486,482	Nov. 22	2073	549	61	1040
Ironing-table	W. H. Little	486,878	Nov. 29	2715	707	61	1184
Ironing-table	R. D., P., and C. Voorhees	488,858	Dec. 27	2653	657	61	1899
Isoeugenol benzyl-ether and preparing the same	F. Ach	487,905	Nov. 29	3263	.....	61	1291
Jack: *See* Lifting-jack. Vehicle-jack. Lowering-jack. Window-jack. Railway-track jack.							
Jack	J. J. Adgate	488,300	Dec. 20	1759	443	61	1705
Jacket, &c	L. Goodman	483,686	Oct. 4	245	61	61	51
Jacquard-card wire	A. and T. W. Bentley	488,418	Dec. 20	1960	489	61	1744
Jacquard-mechanism griff-guide	O. W. Schaum	488,226	Dec. 20	1648	412	61	1683
Jacquard punch-selecting apparatus	B. Toone	487,499	Dec. 6	441	113, 114	61	1406
Jail	D. K. Osbourne	487,448	Dec. 6	365	95, 96	61	1393
Jail or vault construction	D. K. Osbourne	485,506	Nov. 1	540	143, 144	61	668
Jails. Construction of	D. K. Osbourne	485,559	Nov. 1	618	165	61	669

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Jar: *See* Fruit-jar.							
Jar covers. Tool for turning fruit-	J. Van Altena	484,070	Oct. 11	820	207	61	183
Jar holder. Fruit-	J. G. Van Altena	485,850	Nov. 8	1049	280	61	803
Jars or similar vessels. Means for sealing	J. W. Fuller	487,366	Dec. 6	211	58	61	1362
Jars or vessels. Self-fastening rim for	H. Cone	484,779	Oct. 25	1962	500	61	435
Jewel-setting machine	D. H. Church	488,240	Dec. 20	1666	{416 417}	61	1687
Jewel-settings. Machine for truing	T. Gill	485,410	Nov. 1	406	{109 110}	61	655
Jeweler's turk's-head roll	F. Mossberg	484,108	Oct. 11	868	221	61	192
Jewelry, &c. Apparatus for cleaning	C. T. Bradshaw	486,756	Nov. 22	2505	654	61	1126
Joiner's clamp	F. Martin	484,104	Oct. 11	865	220	61	191
Joint: *See* Insulating-joint. Railway-rail joint. Rail-joint.							
Joint coupling. Long-	F. I. Maule	485,961	Nov. 8	1238	327	61	842
Jointing and sanding machine	W. F. Larish	484,639	Oct. 18	1719	{436 437}	61	371
Joist-anchor	M. W. Mitchell	484,666	Oct. 18	1773	451	61	383
Joist-lifter	W. Heister	484,365	Oct. 11	1285	328	61	274
Journal-bearing	J. M. Andrews	487,815	Dec. 13	952	{240 241}	61	1528
Journal-bearing	C. A. Burton	487,236	Nov. 29	3344	851	61	1309
Journal-bearing	W. Curran	484,143	Oct. 11	927	239	61	204
Journal bearings. Composition of matter for	S. J. Shimer	486,199	Nov. 15	1626	430	61	937
Journal-box	A. G. Haley	485,688	Nov. 8	819	.....	61	757
Journal-box	E. E. Angell	486,175	Nov. 15	1595	422	61	931
Journal-box	J. Z. Nyquist	485,213	Nov. 1	88	21, 28	61	591
Journal-box. Lubricating	W. Sneddon	488,720	Dec. 27	2438	605	61	1855
Journal-braces. Machine for reducing	R. D. O. Smith	488,800	Dec. 27	2561	636	61	1880
Journal-lubricator	E. Ferriss	483,956	Oct. 4	651	162	61	135
Keg or barrel tilter	W. H. Bache and W. W. Smalley	484,512	Oct. 18	1525	387	61	332
Kettle. Confectioner's	W. I. Leggett	486,484	Nov. 22	2075	550	61	1041
Kettle. Lamp-	W. Brierley	484,134	Oct. 11	907	232	61	200
Kettle. Steam-jacketed	W. H. Holden	487,326	Dec. 6	147	42	61	1349
Key	S. H. Emmens	484,784	Oct. 25	1972	{502 503}	61	438
Key-opening can	J. W. Toops	485,725	Nov. 8	885	237	61	771
Key-opening can	J. Zimmerman	486,521	Nov. 22	2126	{561 562}	61	1051
Key-opening sheet-metal can	J. Zimmerman	486,522	Nov. 22	2129	562	61	1052
Key-slot-forming tool	J. Zimmerman	486,523	Nov. 22	2131	562	61	1052
Keyboard-operator. Automatic	W. H. Taylor	487,701	Dec. 6	748	191	61	1468
Kiln: *See* Brick-kiln. Pottery-kiln. Lumber-drying kiln.	H. S. Prentiss	487,936	Dec. 13	1149	{287 288}	61	1565
Kiln. Continuous	W. Radford	484,237	Oct. 11	1081	274	61	234
King-bolt	J. Friar	485,496	Nov. 1	596	139	61	679
Kitchen-cabinet	C. H. Hagler	488,807	Dec. 27	2569	638	61	1881
Kitchen-cabinet	R. G. May	487,629	Dec. 6	630	162	61	1446
Kitchen utensil	E. F. Smith	485,718	Nov. 8	870	223	61	768
Kite	H. B. Wiley	485,312	Nov. 1	235	65	61	620
Kneader. Dough-	G. S. Crosby	487,471	Dec. 6	400	103	61	1399
Kneading machine. Dough-	E. Prescott	485,822	Nov. 8	1006	260	61	795
Knife: *See* Chopping-knife. Paper-knife. Cutter-head knife. Pocket-knife.	L. Durand	485,096	Oct. 25	2474	636	61	538
Knife	C. C. Brooks	486,426	Nov. 22	1994	529	61	1024
Knife-cleaner	J. J. Eberhard	485,264	Nov. 1	165	48	61	607
Knife cleaner and polisher	T. Murphy	487,446	Dec. 6	364	94	61	1393
Knife for cutting the rope used in boring Artesian and oil wells.	J. F. C. Farquhar	487,728	Dec. 13	802	205	61	1497
Knife-handle	W. A. Lloyd	484,804	Oct. 25	2004	515	61	444
Knit goods. Method of and apparatus for making colored figures in	J. H. Bennett	485,166	Nov. 1	12	3	61	575
Knitting-machine	R. Lieb	488,019	Dec. 13	1287	{321 322}	61	1594
Knitting-machine	J. Bennor	485,316	Nov. 1	242	66, 67	61	621
Knitting-machine	J. Bennor	485,317	Nov. 1	247	68, 69	61	622
Knitting-machine	R. Emerson	485,738	Nov. 8	904	242	61	774
Knitting-machine	G. F. McKenney	488,575	Dec. 27	2208	{546 547 548}	61	1810
Knitting-machine	R. W. Scott and L. N. D. Williams	484,610	Oct. 18	1667	{422 423 424 425}	61	362
Knitting-machine attachment	J. Whitelaw	484,749	Oct. 18	1900	484	61	410
Knitting machine. Automatic circular-	H. A. Houseman	484,737	Oct. 18	1872	{477 478}	61	403
Knitting machine. Circular-	W. Diebel	483,954	Oct. 4	640	{161 162}	61	131
Knitting machine. Circular-	H. A. Houseman	484,738	Oct. 18	1877	{478 479 480}	61	404
Knitting machine. Circular-	B. Kerr and I. L. Berridge	483,616	Oct. 4	150	37	61	31
Knitting machine. Circular-	W. S. Ward and H. F. Lancashire	488,100	Dec. 13	1428	{356 357}	61	1624
Knitting-machine needle	C. B. M. Sprowles	485,021	Oct. 25	2370	609	61	516
Knitting-machine stop mechanism. Circular-	H. P. Snyder and M. J. Fisher	488,039	Dec. 13	1334	{330 331}	61	1604

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Knitting-machine stop-motion	F. B. Klock	484,594	Oct. 18	1640	416	61	356
Knitting machine. Warp-	G. Buhlmann	484,844	Oct. 25	2077	534	61	458
Knitting machine. Warp-	B. L. Stowe	486,648	Nov. 22	2335	{610 611}	61	1091
Knitting-machines. Transferring mechanism for producing tape-narrowings on	R. H. Carter	486,431	Nov. 22	2001	531	61	1096
Knitting stockings	W. Diebel	483,955	Oct. 4	650	162	61	135
Knob attachment	W. A. G. Ashley	485,145	Oct. 25	2543	653	61	552
Knob attachment	C. O. Case	487,416	Dec. 6	308	79	61	1382
Knob attachment	C. F. Doebler and C. K. Bryant	485,154	Oct. 25	2560	657	61	555
Knob attachment	F. H. Richards	485,137	Oct. 25	2532	650	61	550
Knockdown box	G. S. Carter	486,819	Nov. 22	2614	681	61	1148
Label-attaching machine	H. W. Morgan	486,882	Nov. 29	2719	709	61	1185
Label-holder	E. E. Smith	484,902	Oct. 25	2168	558	61	477
Label-holder	C. E. Wheeler	485,310	Nov. 1	231	64, 65	61	620
Lace-fastener	J. W. King	484,661	Oct. 18	1767	449	61	382
Lace fastener. Shoe-	C. M. Johnson	483,764	Oct. 4	362	91	61	76
Lace fastener. Shoe-	A. Lizotte	484,438	Oct. 18	1411	360	61	310
Lace fastener. Shoe-	B. F. Lynch	484,899	Oct. 25	2163	556	61	476
Lace fastener. Shoe-	A. Meyer	488,268	Dec. 20	1711	430	61	1096
Lace-fastening hook	J. Walden	485,247	Nov. 1	142	42	61	602
Lace fastening. Shoe-	I. H. Sisson	483,622	Oct. 4	159	39	61	33
Lacing-string	A. L. Wild	487,411	Dec. 6	304	76	61	1381
Lacing-stud	H. B. Baker	483,680	Oct. 4	237	59	61	49
Ladder	J. H. Frye and B. Pitman	488,428	Dec. 20	1973	493	61	1746
Ladder. Extension-	J. S. Burgess	487,469	Dec. 6	398	102	61	1399
Ladder. Extension-	A. A. Sorg	487,301	Dec. 6	98	29	61	1341
Ladder. Extension step-	E. C. Andre	486,069	Nov. 15	1412	374	61	896
Ladder. Fire-	R. Brayton	487,235	Nov. 29	3342	851	61	1305
Ladder. Flexible	A. Kirchhoff	487,393	Dec. 6	252	68	61	1371
Ladders. Combined side and center brace attachment for step-	A. O. Tannenberg	485,900	Nov. 8	1135	301	61	821
Lamp	W. Benner	486,022	Nov. 8	1335	{354 355}	61	863
Lamp	O. Ferguason	488,711	Dec. 27	2425	601	61	1852
Lamp	L. F. Griswold	486,038	Nov. 8	1358	362	61	867
Lamp	J. Kirby, Jr	484,323	Oct. 11	1220	{311 312}	61	260
Lamp	H. E. Shaffer	486,510	Nov. 22	2111	558	61	1048
Lamp and cigar-lighter. Pocket-	H. A. Sherman	485,990	Nov. 8	1283	341	61	852
Lamp attachment	A. Hoeninghausen and C. R. Mueller, Jr.	487,482	Dec. 6	413	106	61	1402
Lamp base. Incandescent-electric-	F. C. Rockwell	488,222	Dec. 20	1641	409	61	1682
Lamp-burner	B. P. Luce	487,020	Nov. 29	2976	766	61	1234
Lamp-burner	E. B. Requa	488,972	Dec. 27	2832	699	61	1938
Lamp-burner	E. B. Requa	488,973	Dec. 27	2834	699	61	1938
Lamp burner. Central-draft-	J. C. Miller	487,955	Dec. 13	1177	294	61	1571
Lamp-burner filler attachment	G. B. N. Dow	488,164	Dec. 13	1538	{385 386}	61	1645
Lamp-burner wick-raiser	C. Pabst	487,076	Nov. 29	3060	785	61	1252
Lamp. Central-draft	N. Roitman	484,242	Oct. 11	1089	276	61	236
Lamp-chimney cover-plate	J. H. Hunt	487,624	Dec. 6	624	159	61	1445
Lamp-chimney protector	J. Tomlinson	484,564	Oct. 18	1600	406	61	348
Lamp chimney. Shaded	D. M. Mefford	487,850	Dec. 13	1008	254	61	1539
Lamp. Duplex arc	H. M. Odell	488,606	Dec. 27	2405	596	61	1848
Lamp. Electric-arc	J. Brockie	486,757	Nov. 22	2507	654	61	1126
Lamp. Electric-arc	C. Coerper	484,530	Oct. 18	1551	394	61	337
Lamp. Electric-arc	A. De Puydt	488,329	Dec. 20	1812	454	61	1715
Lamp. Electric-arc	E. A. Edwards	485,537	Nov. 1	588	{157 158}	61	693
Lamp. Electric-arc	D. Higham	486,377	Nov. 15	1908	505	61	994
Lamp. Electric-arc	J. A. Hayes	484,199	Oct. 11	1011	{258 259}	61	220
Lamp. Electric-arc	H. Japy and O. Helmer	485,347	Nov. 1	306	81, 82	61	634
Lamp. Electric-arc	G. Kirkegaard	485,744	Nov. 8	910	244	61	776
Lamp. Electric-arc	E. R. Knowles	485,327	Nov. 1	270	73, 74	61	627
Lamp. Electric-arc	W. O. Meissner	486,488	Nov. 22	2080	551	61	1042
Lamp. Electric-arc	J. A. Mosher	485,293	Nov. 1	206	59	61	614
Lamp. Electric-arc	C. E. Scribner	486,958	Nov. 29	2882	745	61	1217
Lamp. Electric-arc	J. R. Steers	485,895	Nov. 8	1128	299	61	820
Lamp. Electric-arc	E. Thomson	488,585	Dec. 27	2225	{551 552}	61	1813
Lamp. Electric-arc	J. J. Wood	487,315	Dec. 6	122	37, 38	61	1345
Lamp-extinguisher	M. Goetze	484,362	Oct. 11	1278	326	61	272
Lamp filament. Incandescent-	T. A. Edison	485,617	Nov. 8	705	.....	61	733
Lamp-filling tank or can	A. K. Murray	483,857	Oct. 4	501	125	61	104
Lamp for burning hydrocarbon or other oils	S. A. Johnson	487,147	Nov. 29	3176	814	61	1275
Lamp. Gas-	L. A. Cooper	487,065	Nov. 29	3041	780	61	1248
Lamp-hanger	G. Albee	487,977	Dec. 13	1205	301	61	1577
Lamp holder. Incandescent-	E. P. Allam	483,974	Oct. 4	682	170	61	141
Lamp. Incandescent	E. W. Applegate	488,139	Dec. 13	1468	375	61	1636
Lamp. Incandescent	J. H. F. Görges	487,049	Nov. 29	3020	776	61	1244
Lamp. Incandescent	F. H. Prentiss	488,636	Dec. 27	2305	571	61	1828
Lamp. Incandescent	F. S. Smith	484,925	Oct. 25	2035	521	61	450
Lamp. Incandescent electric	E. W. Applegate	487,360	Dec. 6	202	55	61	1360
Lamp. Incandescent electric	A. C. Carey	485,582	Nov. 8	811	216	61	755
Lamp. Incandescent electric	G. A. Frei	486,457	Nov. 22	2035	538	61	1033
Lamp. Incandescent electric	G. A. Frei	487,477	Dec. 6	407	105	61	1401
Lamp. Incandescent electric	G. A. Frei	487,479	Dec. 6	410	106	61	1402
Lamp. Incandescent electric	E. Pollard	485,478	Nov. 1	504	133	61	674
Lamp. Incandescent electric	F. H. Prentiss	488,635	Dec. 27	2304	571	61	1828
Lamp-lighter	W. Palmer	483,967	Oct. 4	667	167	61	138
Lamp or gas-light screen	T. A. Brouwer, Jr	486,323	Nov. 15	1824	481	61	978
Lamp. Regulable electric	G. W. Hall and J. J. De Marr	486,334	Nov. 15	1844	485	61	981

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Lamp. Self-extinguishing hydrocarbon	S. A. Johnson	485,041	Oct. 25	2393	615	61	521
Lamp shade. Electric	C. J. Miller	486,729	Nov. 22	2459	641	61	1117
Lamp-shade support	M. Bauer, L. Harry, and J. Bunger	484,695	Oct. 18	1812	461	61	391
Lamp-socket and circuit-closer therefor	S. Bergmann	484,580	Oct. 18	1833	412	61	352
Lamp-socket and terminal therefor	J. Hutchinson	488,905	Dec. 20	1607	401	61	1676
Lamp socket. Incandescent	C. B. Elliott	487,213	Nov. 29	3273	836	61	1293
Lamp socket. Incandescent-electric	C. J. Klein	484,907	Oct. 11	1031	969	61	223
Lamp socket. Incandescent-electric	J. S. Potter and D. J. Cartwright	485,587	Nov. 1	662	176	61	710
Lamp-support	D. F. Oliver	488,971	Dec. 27	2831	698	61	1937
Lamp. Velocipede	A. C. Davison	488,696	Dec. 27	2291	567	61	1826
Lamp wick-raiser. Argand	T. Hipwell	488,968	Dec. 27	2827	697	61	1936
Lamps. Automatic safety-extinguisher for	J. B. Dowdall	486,439	Nov. 22	2013	534	61	1029
Lamps. Casing for bases of incandescent	G. R. Lean and C. B. Burleigh	487,846	Dec. 13	1003	259	61	1538
Lamps. Device for raising or lowering electric	W. Doran	488,878	Dec. 27	2678	663	61	1904
Lamps. Hanger-board for electric-arc	B. B. Ward	484,480	Oct. 18	1476	376	61	322
Lamps. Manufacture of incandescent electric	C. Panthonier	487,890	Dec. 13	1074	269	61	1551
Lamps. Manufacturing central-draft	W. A. Young and A. G. Neville	484,277	Oct. 11	1152	293	61	247
Lamps. Regulating-socket for incandescent electric	E. E. Ries	488,835	Dec. 27	2609	647	61	1890
Lamps. Regulating-socket for incandescent electric	E. E. Ries	488,951	Dec. 27	2799	690	61	1929
Lamps. Suspension device for incandescent	S. Porter	486,604	Nov. 22	2264	591	61	1076
Lampblack. Apparatus for making	S. Salberg	486,127	Nov. 15	1526	403	61	917
Lampblack-machine	H. J. C. Eater	486,097	Nov. 15	1476	389	61	907
Lands from overflow. System for protecting riparian	L. W. Brown	488,422	Dec. 20	1965	491	61	1745
Lantern for electric lighting	D. S. Page and J. L. Bertsch	484,449	Oct. 18	1424	363	61	313
Lantern kiosk. Magic	F. S. Pierling	486,236	Nov. 15	1686	446	61	949
Lantern. Magic	D. R. Breed	488,057	Dec. 13	1365	339	61	1611
Lantern. Signal	E. I. S. Hart	484,854	Oct. 25	2088	537	61	460
Lantern-slides. Clamp for binding the edges of	J. Wall	485,071	Oct. 25	2434	{625 626	{61	529
Lap-ring	D. R. Breed	488,058	Dec. 13	1368	339	61	1611
Lap-stick inserter	J. F. Pye	487,156	Nov. 29	3191	817	61	1278
Last	A. M. Coller	487,995	Dec. 13	1247	310	61	1585
Lasts. Method of and means for making patterns for individual	A. M. Leighton	487,627	Dec. 6	628	161	61	1446
Lasting-machine	G. W. Willey	486,607	Nov. 22	2268	592	61	1077
Lasting-machine	J. H. Merrill	488,442	Dec. 20	1991	{497 498	{61	1750
Latch	F. Molloy	486,730	Nov. 22	2459	642	61	1117
Latch and lock combined	C. Orth	487,153	Nov. 29	3184	815	61	1277
Latch and lock. Combined	I. Buisson	488,750	Dec. 27	2480	616	61	1863
Latch. Gate	W. H. Smith	485,667	Nov. 8	790	210	61	750
Latch. Gate	H. C. Hoffman	484,752	Oct. 18	1904	485	61	411
Latch. Gravity	P. T. Rapson	487,077	Nov. 29	3061	786	61	1252
Lath	J. W. Toops	485,724	Nov. 8	884	237	61	771
Lathe	S. Toney	487,166	Nov. 29	3205	821	61	1281
Lathe attachment	W. von Pittler	485,773	Nov. 8	946	{253 254	{61	783
Lathe. Clock	G. R. Ibach and J. H. Schultz	488,815	Dec. 27	2578	640	61	1883
Lathe-dog	F. H. Richards	484,673	Oct. 18	1783	454	61	385
Lathe-dog	J. H. Brinton, Jr	485,405	Nov. 1	398	107	61	654
Lathe-dog	W. Moore and J. W. Parker	486,166	Nov. 15	1583	419	61	929
Lathe-dog	R. Parsons	484,668	Oct. 18	1776	452	61	383
Lathe for roughing lasts	R. L. Stanley	488,927	Dec. 27	2758	681	61	1921
Lathe for turning oval objects	A. G. Fits	485,621	Nov. 8	714	187	61	734
Lathe. Rotary	N. C. Hansen	487,525	Dec. 6	440	{125 126	{61	1416
Lathe-tool	H. W. Tingley	488,372	Dec. 20	1885	{471 472 473	{61	1729
Lathe tool-holder	J. H. Hurley	488,145	Dec. 13	1496	376	61	1637
Lathe-tool holder	A. Fuller and W. B. Hohenshell	488,554	Dec. 27	2169	536	61	1801
Lathe. Uprighting	W. C. Homan	484,317	Oct. 11	1213	308	61	259
Lawn-sprinkler	D. H. Church	486,609	Nov. 22	2274	593	61	1078
Lawn-sprinkler	G. Carlson	484,294	Oct. 11	1171	298	61	251
Lawn-sprinkler	C. G. Ette	486,771	Nov. 22	2533	661	61	1131
Lawn-sprinkler. Traveling	D. C. Wilgus	484,074	Oct. 11	824	208	61	183
Lawn-sprinkler. Traveling	H. T. Crepeau	485,539	Nov. 1	576	155	61	690
Lazy-tong gate	H. T. Crepeau	485,533	Nov. 1	578	155	61	691
Lead. Making white	A. J. James and J. Ferguson	486,531	Nov. 22	2140	565	61	1053
Lead or crayon holder	E. Waller and C. A. Sniffin	488,374	Dec. 20	1890	.....	61	1731
Lead or crayon holder	C. W. Boman	484,133	Oct. 11	905	232	61	200
Lead. Treating oxidized or corroded	E. Faber. (Reissue)	11,985	Nov. 22	2650	692	61	1156
Leak-stopper	R. W. F. Abbé	485,730	Nov. 8	893	239	61	772
Leather dressing or finishing machine	W. F. Beart	485,121	Oct. 25	2505	642	61	545
Leather-frame	L. E. Learoyd	484,029	Oct. 11	765	{193 194	{61	171
Leather-hammering machine	L. F. Canffield	484,137	Oct. 11	912	234	61	201
Leather-punching machine	P. W. Minor	486,194	Nov. 15	1617	429	61	936
Leather-skiving machine	P. W. Rodecker	488,324	Dec. 20	1799	{451 452	{61	1712
Leggin	A. K. Washburn	486,813	Nov. 22	2599	677	61	1145
Letter-box	M. J. McGuigan	487,226	Nov. 29	3301	842	61	1298
Letter-box	G. E. Becket	483,525	Oct. 4	12	3	61	5
Letter-box. House	O. P. Johnston and C. M. Gates	487,574	Dec. 6	548	141	61	1430
Letter-box. House-door	C. Bennett and A. E. Parkinson	486,423	Nov. 22	1989	528	61	1024
Letter-box. House-door	B. A. Blakeney	488,419	Dec. 20	1961	490	61	1744
Letter-box. House-door	B. A. Blakeney	488,420	Dec. 20	1962	490	61	1744
Letter-box. House-door	C. E. Calvert	487,210	Nov. 29	3268	835	61	1292
Letter-box. House-door	J. W. Coe, Jr	485,860	Nov. 8	1066	283	61	807
Letter-box. House-door	G. W. Hall	488,556	Dec. 27	2171	{536 537	{61	1802
Letter-box. House-door	J. W. Moore	487,633	Dec. 6	637	163	61	1448
Letter-box. House-door	J. H. Wolfsheimer	484,985	Oct. 25	2301	{594 595	{61	502

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Letter for signs. Attachable	J. E. and H. E. Hartley	488,655	Dec. 27	2336	578	61	1835
Letter of credit. Circular	H. Potter	488,921	Dec. 20	1638	408	61	1682
Letters or designs in relief. Producing	M. J. D. Carter	485,608	Nov. 8	696	183	61	731
Lever-power engine	A. Annibale	483,776	Oct. 4	385	95, 96	61	50
Life at sea. Apparatus for saving	J. D'Arcy-Irvine	483,667	Oct. 4	219	54, 55	61	45
Life-boat	P. Hübner	484,592	Oct. 18	1637	415	61	355
Lifter: *See* Coal-lifter. Joist-lifter. Feeder-lifter. Transom-lifter.							
Lifter. Universal adjustable	J. L. Throop	487,105	Nov. 29	3112	798	61	1263
Lifting-jack	E. E. Albin	486,922	Nov. 29	2826	731	61	1206
Lifting-jack	G. H. Bryant and V. Beauregard	486,528	Nov. 22	2136	564	61	1053
Lifting-jack	M. B. Dooley	484,655	Oct. 18	1755	446	61	379
Lifting-jack	W. R. Proctor	487,770	Dec. 13	874	222	61	1512
Lifting-jack	G. C. Wimpee	485,902	Nov. 8	1136	301	61	821
Light: *See* Electric search-light.							
Light-fixture coupling	J. A. O'Neill	488,946	Dec. 27	2793	689	61	1928
Lights. Apparatus for regulating the intensity of incandescent	J. F. McElroy	484,110	Oct. 11	871	221	61	193
Lighter. Pocket	W. Lang	487,845	Dec. 13	1002	252	61	1538
Lighting and heating apparatus	D. W. Clegg	485,827	Nov. 8	1014	{272 273	{61	796
Lighting device	B. H. Pendleton	486,499	Nov. 22	2097	554	61	1045
Lighting device. Hydrocarbon	F. A. Cody and L. T. Lawton	484,354	Oct. 11	1267	{323 324	{61	270
Lighting. Incandescent	J. Landin	485,281	Nov. 1	188	54	61	612
Lightning-arrester	W. R. Garton	488,002	Dec. 13	1257	313	61	1588
Lightning-arrester	H. G. Osburn	486,498	Nov. 22	2095	554	61	1045
Lightning-arrester	L. Searing	484,466	Oct. 18	1450	370	61	318
Limb. Artificial	H. F. Ehle	487,697	Dec. 6	743	190	61	1467
Lime. Apparatus for making bisulphite of	W. H. Howell	487,887	Dec. 13	1070	268	61	1550
Link. Separable	C. S. Kershaw	487,841	Dec. 13	996	251	61	1536
Link. Sleeve	T. W. F. Smitten	486,904	Nov. 29	2795	725	61	1200
Liquid-agitator	J. D. Stephens	485,753	Nov. 8	920	246	61	778
Liquid-cooler	H. C. Gardner	484,955	Oct. 25	2252	580	61	493
Liquid-regulator	M. Poschinger	485,563	Nov. 1	624	166	61	701
Liquid-separator. Centrifugal	H. F. Beimling	487,943	Dec. 13	1160	290	61	1567
Liquid-separator. Centrifugal	J. E. Folk	488,672	Dec. 27	2365	585	61	1840
Liquids. Apparatus for separating solid matter from	G. Sobotka and W. Ahrens	488,583	Dec. 27	2222	550	61	1813
Liquids. Apparatus for separating solid matter from	G. Sobotka and W. Ahrens	488,956	Dec. 27	2808	692	61	1931
Liquids. Apparatus for storing, handling, and transporting	A. Cirkel	486,690	Nov. 22	2400	626	61	1105
Liquids. Apparatus for storing, handling, and transporting	A. Cirkel	486,691	Nov. 22	2401	627	61	1105
Liquors or distilled spirits. Process of and apparatus for purifying and maturing	I. B. Cushing	485,341	Nov. 1	292	78, 79	61	631
Liquids. Elevating	J. G. Pohlé	487,639	Dec. 6	649	167	61	1450
Liquids from vessels. Means for regulating the flow of	F. E. Baldwin	487,817	Dec. 13	954	241	61	1528
Liquids with carbonic acid. Apparatus for impregnating	C. H. Frings	486,225	Nov. 15	1667	{440 441	{61	945
Liquids with gases. Apparatus for treating	G. Lunge	485,126	Oct. 25	2512	646	61	546
Liquids with ozone. Treating	J. C. Dittrich and F. M. Grumbacher	487,089	Nov. 29	3083	792	61	1257
Lithographic plate	F. F. Haggenmuller	487,121	Nov. 29	3137	804	61	1267
Lobster-shipping apparatus	A. McGray	485,422	Nov. 1	422	113	61	659
Lock: *See* Bag-lock. Bolt and nut lock. Bottle-stopper lock. Combination-lock. Cylinder-lock. Hinge-lock. Indicator-lock. Nut-lock. Permutation-lock. Railway nut-lock. Registering-lock. Seal-lock. Trace-lock. Time-lock. Trunk-lock.							
Lock	G. F. Abbott	486,420	Nov. 22	1985	527	61	1023
Lock	R. R. Ball	484,392	Oct. 18	1332	339	61	295
Lock	C. E. Dény	487,945	Dec. 13	1163	{290 291	{61	1568
Lock	A. C. Hough	486,107	Nov. 15	1491	{392 393	{61	910
Lock	S. R. Long	487,878	Dec. 13	1059	265	61	1548
Lock	L. Monat, Jr., and E. W. Pratt	484,443	Oct. 18	1415	361	61	311
Lock	J. F. Schlossstein	488,091	Dec. 13	1414	352	61	1691
Lock	C. M. Stiner	484,759	Oct. 18	1915	488	61	413
Lock	A. O. Tannenberg	485,899	Nov. 8	1133	300	61	821
Lock and alarm. Combination	R. Baumann	484,577	Oct. 18	1617	411	61	351
Lock-case	J. Roche	485,585	Nov. 8	1117	295	61	817
Lock for bag, purse, and pocket-book frames	F. R. Deck	486,701	Nov. 22	2423	631	61	1109
Locket	W. J. Faulkner	486,033	Nov. 8	1351	359	61	866
Locket	J. Graff	487,480	Dec. 6	411	106	61	1402
Locomotive	E. Brown	486,555	Nov. 22	2170	573	61	1059
Locomotive bell-ringer	E. D. Bangs	485,445	Nov. 1	456	122	61	665
Locomotive-boiler	J. T. Connelly	488,919	Dec. 27	2750	678	61	1919
Locomotive. Electric	W. E. Allington	486,068	Nov. 15	1408	{373 374	{61	895
Locomotive. Electric	C. M. Conradson	487,114	Nov. 29	3123	801	61	1206
Locomotive. Electric	C. J. Van Depoele	488,930	Dec. 27	2763	682	61	1923
Locomotive. Electric	T. L. Willson	483,822	Oct. 4	451	{112 113	{61	93
Locomotive-engine	M. N. Forney	485,344	Nov. 1	297	79, 80	61	632
Locomotive-engine	J. Richards	488,774	Dec. 27	2514	625	61	1870
Locomotive feed apparatus	I. H. Raynor	485,056	Oct. 25	2414	621	61	585
Locomotives. Automatic signal and brake mechanism for	S. J. K. Hassall	488,892	Dec. 27	2696	{667 668	{61	1908

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Locomotives. Propelling-gear for tramway	C. D. Scott	488,484	Dec. 20	2062	512	61	1766
Log-carrier track	A. T. Kelliher	484,436	Oct. 18	1406	358, 359	61	309
Log-loader	E. J. Fulghum	484,788	Oct. 25	1979	505	61	439
Log loader and turner	W. E. Hill	484,013	Oct. 11	745	186, 187	61	167
Log-turner	W. E. Hill	485,696	Nov. 8	830	223	61	759
Loom	J. W. and A. C. Maurer	488,569	Dec. 27	2199	544	61	1808
Loom-batten	O. W. Schaum	485,886	Nov. 8	1113	295	61	817
Loom harness-leveling device	R. J. Risk	488,286	Dec. 20	1740	434	61	1701
Loom let-off mechanism	I. Fontaine	484,002	Oct. 11	727	182, 183	61	163
Loom let-off motion	W. Begg	483,026	Oct. 4	163	40	61	34
Loom let-off motion	J. M. Linscott	485,330	Nov. 1	274	74	61	628
Loom pattern-chain	J. Hill	486,336	Nov. 15	1847	486	61	982
Loom pattern-chain and barrel therefor	E. Hill	486,337	Nov. 15	1848	486	61	982
Loom picker-check	S. Greenwood	485,686	Nov. 8	815	218	61	756
Loom pile-wire	C. Ford	487,417	Dec. 6	309	80	61	1382
Loom shedding mechanism	F. Lacey	484,326	Oct. 11	1228	313, 314	61	262
Loom shedding mechanism	G. W. Stafford	484,922	Oct. 25	2209	568	61	484
Loom-shuttle	T. Cross	486,087	Nov. 15	1438	381	61	901
Loom-shuttle	A. Isherwood	486,109	Nov. 15	1495	393	61	911
Loom-shuttle	G. C. Moore	488,214	Dec. 20	1628	406	61	1680
Loom shuttle-guard	H. E. Hamilton and N. Boisvert	487,183	Nov. 29	3228	827	61	1286
Loom. Swivel	A. Wagner	488,511	Dec. 20	2103	522	61	1774
Loom. Swivel	A. Wagner	488,512	Dec. 20	2104	522	61	1775
Loom-temple	J. C. Ayer	488,916	Dec. 27	2745	677	61	1918
Loom-temple	J. C. Ayer	488,917	Dec. 27	2746	677	61	1918
Loom-temple	C. J. Hatch	484,364	Oct. 11	1283	327	61	273
Loom weft-fork	E. L. Hersom	485,346	Nov. 1	305	81	61	634
Looms for cross-weaving. Shedding mechanism for	J. Coldwell	488,497	Dec. 20	2082	517	61	1770
Looms. Friction let-off for	H. Wyman and A. A. Gordon. (Reissue.)	11,288	Nov. 29	3347	852	61	1306
Looms. Lingo or heddle-weight for Jacquard	S. G. Miller	487,537	Dec. 6	500	130	61	1419
Looms. Shuttle-operating mechanism for narrow-ware	G. C. Moore	488,213	Dec. 20	1625	406	61	1680
Loop-fastener	H. Green	483,672	Oct. 4	225	56	61	47
Lowering-jack	A. P. Gould	484,587	Oct. 18	1631	414	61	354
Lubricant	S. Heimann	484,635	Oct. 18	1714	.....	61	370
Lubricant	C. H. Ridsdale and A. Jones	486,196	Nov. 15	1620	.....	61	936
Lubricating compound. Antifriction	J. B. Wallace and J. W. Stemm	487,203	Nov. 29	3260	.....	61	1291
Lubricator: *See* Axle-lubricator. Pulley-lubricator. Journal-lubricator.							
Lubricator	D. Best	484,729	Oct. 18	1662	473	61	401
Lubricator	J. V. Clark	485,454	Nov. 1	467	125	61	668
Lubricator	J. L. Cory	487,661	Dec. 6	686	176	61	1457
Lubricator	J. L. Cory	488,163	Dec. 13	1536	385	61	1645
Lubricator	J. B. Fondu	486,969	Nov. 29	2496	748	61	1220
Lubricator	J. Greer	484,195	Oct. 11	1006	257	61	219
Lubricator	J. Greer	484,196	Oct. 11	1007	257	61	219
Lubricator	H. E. Lejeune	488,438	Dec. 20	1984	495	61	1749
Lubricator	F. S. Livingston	486,676	Nov. 22	2379	622	61	1100
Lubricator	J. W. McCorkle	486,292	Nov. 15	1782	468	61	969
Lubricator	A. Obermeyer	483,860	Oct. 4	505	126	61	105
Lumber-carrier	P. A. Chauvin	486,189	Nov. 15	1610	427	61	934
Lumber-drier	J. W. Piver	487,965	Dec. 13	1187	296, 297	61	1573
Lumber-drying kiln	H. C. Zappert	488,412	Dec. 20	1949	487	61	1742
Lumber puller and washer	J. D. Hills	485,935	Nov. 8	1185	312, 313	61	831
Lumber pulling, washing, and assorting machine	J. D. Hills	485,936	Nov. 8	1188	313, 314, 315, 316	61	831
Lumber-sorter	C. R. Little	486,584	Nov. 22	2229	585, 586	61	1069
Machine-motor	E. S. Reed	484,238	Oct. 11	1083	274	61	234
Machinery. Adjustable connection for	C. De Kalb	487,721	Dec. 13	794	203	61	1495
Magazine. Firearm	C. W. Sponsel	487,432	Dec. 6	333	86, 87	61	1387
Magnetic attraction. Application of	A. de Bovet	486,393	Nov. 15	1935	513	61	1000
Magnetic separator	H. S. Chase	488,064	Dec. 13	1379	342, 343	61	1614
Magnetic separator	T. J. Lovett	486,879	Nov. 29	2715	708	61	1184
Magnetic separator	T. J. Lovett	487,073	Nov. 29	3052	783, 784	61	1250
Magnetic separator	T. J. Lovett	487,074	Nov. 29	3055	784	61	1251
Mail-canceling and postmarking machine	W. R. Landfear	487,278	Dec. 6	63	19, 20	61	1334
Mail-catcher	A. T. Bacon	486,658	Nov. 22	2350	614	61	1094
Mail-crane	W. H. Ellis	486,032	Nov. 8	1349	359	61	866
Mail-crane	R. A. Ogden	484,641	Oct. 18	1722	438	61	372
Mail-pouch-releasing device	H. B. Hewitt	484,499	Oct. 18	1503	382	61	328
Malt-cleaning machine	E. Richter	488,403	Dec. 20	1927	483	61	1738
Malt drying and germinating apparatus	J. H. E. Rathmann	485,355	Nov. 1	319	85, 86	61	637
Malt-kiln floor	F. B. Gleaser	483,781	Oct. 4	392	97, 98	61	82
Malt-making apparatus	W. A. Peters	483,748	Oct. 4	338	85	61	71
Malting apparatus	J. Saladin	485,986	Nov. 8	1274	337	61	850
Mandrels for electrolytic deposit of tubes. Manufacture of	F. E. Elmore	485,919	Nov. 8	1165	307	61	827
Mangle	M. E. Wendell	487,872	Dec. 13	1050	263	61	1546
Mangles. Compound doffer for	T. S. Wiles and M. E. Wendell	487,592	Dec. 6	572	146	61	1435
Manual motor	P. Baldensperger	486,020	Nov. 8	1332	354	61	863
Manure-distributer	R. J. Morris and R. L. Wiggins	488,445	Dec. 20	1997	499	61	1752

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Manuscript-cover	G. H. Kent	485,814	Nov. 8	993	266	61	793
Marble. Artificial	J. G. Maardt	483,565	Oct. 4	73	.....	61	17
Mash-stirrer	G. Schock	484,883	Oct. 25	2128	547	61	469
Mat: *See* Door-mat. Wire mat. Stove-mat.							
Match-heading composition	J. Klein	485,103	Oct. 25	2483	.....	61	540
Match-igniter. Automatic	R. Senner	484,253	Oct. 11	1108	280	61	239
Match-lighter	G. Gregson	484,311	Oct. 11	1205	307	61	257
Match-safe. Feeding	H. Croggon	483,543	Oct. 4	41	10	61	11
Match-splint-cutting machine	T. A. Cook	483,541	Oct. 4	38	9, 10	61	10
Matrix-making machine	A. J. Kletzker and J. G. Goesel	485,702	Nov. 8	836	225, 226, 227	61	761
Matte from slag. Separating	E. C. Pohle	484,570	Oct. 18	1606	408	61	349
Mattress. Woven-wire	A. Bell	488,378	Dec. 20	1895	474	61	1731
Measure and funnel. Combined	D. T. Holt	485,545	Nov. 1	600	160	61	696
Measure. Tailor's	C. Gunkel	486,670	Nov. 22	2370	619	61	1098
Measures. Rack for holding and draining liquid	A. R. Aborn	483,664	Oct. 4	216	53, 54	61	44
Measuring and registering the measurement of lumber. Machine for	C. Kidder	485,946	Nov. 8	1210	319, 320	61	836
Measuring-band	R. Behmer	483,642	Oct. 4	184	46	61	38
Measuring-canister	F. Espel	486,451	Nov. 22	2026	536	61	1031
Measuring device. Liquid	W. H. Beecher	485,026	Oct. 25	2375	610	61	517
Measuring-instrument. Electrical	E. Weston	486,689	Nov. 22	2398	626	61	1104
Measuring machine. Bagging	D. J. Denton, W. L. Simpson, and S. W. Denton.	485,491	Nov. 1	519	138	61	678
Measuring machine. Lumber	T. Marcotte	484,555	Oct. 18	1588	403	61	346
Measuring-vessel	J. S. Camden	486,762	Nov. 22	2515	656	61	1128
Measuring-vessel	J. Snorf	485,992	Nov. 8	1200	343	61	853
Measuring-vessel	B. P. Cobb	488,870	Dec. 27	2669	661	61	1902
Meat-block attachment	E. Ubrig	484,525	Oct. 18	1543	391, 392	61	336
Meat-chopper	O. D. Woodruff	485,854	Nov. 8	1055	281	61	805
Meat-cutter	O. D. Woodruff and L. T. Snow	484,987	Oct. 25	2305	595	61	503
Meat-cutter	O. D. Woodruff and L. T. Snow	484,988	Oct. 25	2308	596	61	504
Meat-mixing machine	J. Tritz	488,098	Dec. 13	1425	356	61	1623
Meat-tenderer	J. Jefferson	487,672	Dec. 6	703	179	61	1460
Meat-tenderer and ice-pick and making the same. Combined	J. W. Eshleman	484,518	Oct. 18	1534	389	61	334
Mechanical motor	G. F. Berg	488,260	Dec. 20	1695	423, 424	61	1693
Mechanical movement	J. C. Githens	485,625	Nov. 8	721	189	61	736
Mechanical movement	J. B. Price	484,645	Oct. 18	1735	440, 441	61	374
Mechanical moving-power	C. B. Van Coughnet	483,881	Oct. 4	534	134	61	111
Medallion or plaque. Souvenir	S. May and L. M. Aron	488,926	Dec. 27	2595	644	61	1887
Medicine-stand. Automatic	C. A. Moriarty	483,574	Oct. 4	86	22	61	20
Melting-furnace	W. Rebmann	488,661	Dec. 27	2346	581	61	1837
Melting-pot	R. S. Pease	484,161	Oct. 11	958	246	61	210
Membranoid	J. W. Deckert	487,067	Nov. 29	3044	781	61	1248
Merry-go-round	J. B. Batt	488,686	Dec. 27	2389	591	61	1845
Metal bars. Machine for shearing	W. A. McCool and W. G. Algeo	488,659	Dec. 27	2342	579, 580	61	1836
Metal beams and rails. Cooling-bed for	H. Aiken	486,364	Nov. 15	1886	496, 497, 498, 499	61	989
Metal bracket and its manufacture	F. Recht	488,741	Dec. 27	2468	613	61	1861
Metal by electricity. Apparatus for refining	C. R. Fletcher	484,416	Oct. 18	1367	350	61	301
Metal-heating apparatus. Electric	G. D. Burton	486,625	Nov. 22	2298	599, 600	61	1084
Metal-heating apparatus. Electric	G. D. Burton and E. E. Angell	488,467	Dec. 20	2030	507	61	1759
Metal-heating apparatus. Electric	G. D. Burton and E. E. Angell	488,469	Dec. 20	2034	507	61	1760
Metal-heating. Arc and incandescent	C. L. Coffin	487,607	Dec. 6	595	152	61	1440
Metal planing and shaping machines. Key-seating attachment for	F. J. Feldt	483,714	Oct. 4	285	71	61	60
Metal plates, &c. Apparatus for pickling and washing	G. Mesta	484,664	Oct. 18	1769	450	61	383
Metal plates, bars, &c. Means for shaping	N. B. Trist	484,264	Oct. 11	1129	287, 288	61	243
Metal-sawing machine	C. Spofford	486,169	Nov. 15	1588	421	61	930
Metal-shears	E. T. Horner	484,203	Oct. 11	1025	261	61	222
Metal-shears	E. T. Horner	484,370	Oct. 11	1290	329	61	275
Metal sheets. Machine for drying and fluxing	E. Norton and J. G. Hodgson	488,025	Dec. 13	1296	323, 324	61	1506
Metal strips. Apparatus for hardening	J. Logan and M. H. Stevens	484,968	Oct. 25	2274	586, 587	61	497
Metal tie and automatic clamp for fastening same	W. W. Pitts	488,904	Dec. 27	2730	673	61	1915
Metal wheel	P. Gelin	484,586	Oct. 18	1630	414	61	354
Metal wheel	J. R. Little	487,280	Dec. 6	66	20	61	1335
Metal wheel	J. R. Little	487,281	Dec. 6	67	20	61	1335
Metal wheel	J. R. Little	488,439	Dec. 20	1984	495, 496	61	1749
Metal wheel	H. E. West	483,703	Oct. 4	273	67	61	57
Metal wheels. Die for making	J. R. Little	488,127	Dec. 13	1470	371	61	1632
Metal wheels. Machine for making	J. R. Little	488,124	Dec. 13	1463	369	61	1631
Metal wheels. Making	J. R. Little	488,126	Dec. 13	1467	370	61	1632
Metal wheels. Manufacture of	J. R. Little	488,440	Dec. 20	1987	496	61	1749
Metal wheels. Manufacturing	J. R. Little	487,282	Dec. 6	67	21	61	1335
Metal wheels. Manufacturing	J. R. Little	487,283	Dec. 6	69	21	61	1335
Metal work. Structural	A. Coffin	485,489	Nov. 1	518	137	61	677
Metal-working apparatus. Electric	G. D. Burton and E. E. Angell	488,468	Dec. 20	2032	507	61	1760
Metal-working apparatus. Electrical	G. D. Burton	486,818	Nov. 22	2612	680, 681	61	1148

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Metals from copper alloys. Recovering	M. W. Iles	484,021	Oct. 11	756	190	61	170
Metals. Method of and apparatus for electro-deposition of	C. R. Fletcher	485,343	Nov. 1	295	79	61	632
Metals. Method of and apparatus for recarburizing	W. A. Koneman	485,392	Nov. 1	378	102	61	650
Metals. Process of and device for reducing volatilized	C. E. Seymour	487,100	Nov. 29	3102	796	61	1261
Metals. Treating materials containing	R. F. Nenninger	488,898	Dec. 27	2705	669	61	1910
Metallic articles by electrolysis. Apparatus for the manufacture of	A. S. Elmore	484,704	Oct. 18	1821	464	61	393
Metallic casing	A. D. Cunny	488,601	Dec. 27	2253	559	61	1819
Metallic facing-plates. Manufacture of	L. L. Sagendorph	484,508	Oct. 18	1518	386	61	331
Metallic stripe. Method of and apparatus for twisting	T. V. Allis	486,174	Nov. 15	1593	422	61	931
Metallurgical furnace	G. W. Bierer	483,985	Oct. 4	696	174	61	144
Meter: *See* Air or gas meter. Diaphragm meter. Electric meter. Gas-meter. Grain-meter. Water-meter.							
Meter-registers. Art of and mechanism for recording the state of	H. A Tobey	487,909	Dec. 13	1107	277	61	1557
Micrometer-gage	J. P. Lavigne	488,280	Dec. 20	1730	436	61	1699
Micrometer-gage	J. P. Lavigne	488,281	Dec. 20	1732	436	61	1700
Micrometer-gages. Automatic stop for	G. Sylvia	487,410	Dec. 6	302	78	61	1381
Microphone	C. Clamond	486,244	Nov. 15	1696	449	61	951
Middlings-purifier	A. L. Bauhard	487,597	Dec. 6	580	148	61	1437
Middlings-purifier	J. H. Goodall	484,633	Oct. 18	1709	434	61	369
Milk-can	G. W. Evans	486,281	Nov. 15	1767	465	61	966
Milk-can bolt	N. P. Rutter	483,982	Oct. 4	693	173	61	143
Milk-tester. Centrifugal	R. Stoddard	484,685	Oct. 18	1799	457	61	388
Milker. Cow	W. M. Mehring	488,282	Dec. 20	1734	436	61	1700
Milking-machine	J. C. McCollum	484,505	Oct. 18	1513	384	61	330
Mill: *See* Attrition-mill. Cane-mill. Chasing-mill. Gig-mill. Grinding-mill. Rolling-mill. Sawmill. Windmill. Wire-rod mill.							
Milling-machine	W. R. Fox	483,838	Oct. 4	474	118	61	98
Milling-machine	C. H. Phillips	484,455	Oct. 18	1430	365	61	314
Milling-machine. Twist-drill	E. Rivett	487,160	Nov. 29	3196	818 819	61	1279
Mine-door	P. Hoenscheid	486,970	Nov. 29	2898	748	61	1220
Mining drills and stamps. Operating mechanism for	G. D. Warren	483,883	Oct. 4	536	135	61	111
Mining engineering method and apparatus. Hydraulic	G. M. Gross	483,842	Oct. 4	480	119	61	99
Mining-machine truss	A. M. Rawson	486,897	Nov. 29	2783	722	61	1198
Minerals, mattes, speiss, or other substances containing nickel. Treating	L. H. Bradley J. de Coppet	488,349 486,594	Dec. 20 Nov. 22	1846 2244	461	61 61	1722 1073
Minerals, mattes, speiss, or other substances containing nickel. Treating	J. de Coppet	486,595	Nov. 22	2247	.....	61	1073
Mirror. Portable	W. Q. Prewitt	484,818	Oct. 25	2026	519	61	449
Miter-cutting machine	D. H. Brenner	484,874	Oct. 25	2117	545	61	467
Mitering-machine	C. F. Marquard	486,724	Nov. 22	2451	639	61	1115
Mixer: *See* Paint-mixer.							
Mixer and depositor. Batter-cake	E. Stempel	488,721	Dec. 27	2439	605	61	1855
Moistening-pad	H. L. Keeler	486,783	Nov. 22	2550	665	61	1134
Molasses from sugar. Separating	E. A. Ellis	487,323	Dec. 6	143	41	61	1349
Mold: *See* Bottle-mold. Butter-mold. Glass-mold. Glassware-mold. Ice-cream mold.							
Mold flask-weight	J. Anderson	488,513	Dec. 20	2105	522	61	1775
Molder's flask	F. Baugh	483,596	Oct. 4	119	29	61	25
Molder's flask	G. J. Keenan	485,764	Nov. 8	936	250	61	781
Molder's flask	F. Morris	487,851	Dec. 13	1009	254 255	61	1539
Molding	J. M. Glover	485,377	Nov. 1	353	95	61	645
Molding and blind-slat-planing machine	E. B. Hayes	487,348	Dec. 6	176	49	61	1355
Molding-cutter and head therefor	F. E. Byerly	487,402	Dec. 6	283	73	61	1377
Molding-machine	H. A. Billings	489,055	Dec. 13	1361	337 338	61	1609
Molding-machine attachment	D. B. M. Shelley	487,007	Nov. 29	2957	762	61	1231
Molding-machine presser foot or bar	F. L. Creighton	485,153	Oct. 25	2558	657	61	555
Mole-trap	G. Nelson	488,448	Dec. 20	2002	500	61	1754
Molten materials of different specific gravity. Apparatus for separating	O. B. Peck	484,452	Oct. 18	1428	364	61	314
Money-changer	J. Adams	483,973	Oct. 4	679	169 170	61	140
Moon's orbit. Apparatus for delineating the	J. Troll	487,800	Dec. 13	933	235	61	1524
Mop-wringer	W. H. Betts	487,821	Dec. 13	952	242	61	1529
Mop-wringer	J. B. Sweetland	484,688	Oct. 18	1803	458	61	389
Mortising device	A. E. Randle	483,869	Oct. 4	519	130	61	107
Mortising-machine	D. Jenkins	486,473	Nov. 22	2059	545 546	61	1037
Mortising-machine attachment	J. B. Nichols	484,225	Oct. 11	1058	268 269	61	229
Mosquito-canopy	A. T. Vernon	485,117	Oct. 25	2498	642	61	543
Mosquito-canopy for folding beds	A. H. Eva	485,494	Nov. 1	523	139	61	679
Motion. Apparatus for transmitting	C. H. F. Russmann	485,597	Nov. 1	679	180	61	714
Motion. Mechanism for converting reciprocating into rotary	D. S. Correll	486,369	Nov. 15	1898	502	61	992
Motive-power engine	J. R. da Costa	484,629	Oct. 18	1702	432 433	61	368

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Motor: *See* Car-motor. Current-motor. Electric motor. Fluid-motor. Gravity-motor. Hose-motor. Hydraulic motor. Machine-motor. Manual motor. Mechanical motor. Powder-motor. Rotary motor. Rotating motor. Sewing-machine motor. Spring-motor. Steam-motor. Water-motor.							
Motor	J. C. Lueneburg	485,419	Nov. 1	418	112	61	658
Motor	B. S. Partridge	487,584	Dec. 6	560	144	61	1432
Motor fluids. Increasing the efficiency of	W. L. Saunders	486,411	Nov. 15	1965	522	61	1006
Mower cutter-bar	M. C. Ayer	486,816	Nov. 22	2609	679	61	1147
Mower. Gang lawn	G. W. Dake and E. U. Loose	488,669	Dec. 27	2361	584	61	1840
Mower. Lawn	H. Broom	487,711	Dec. 13	769	197 198	61	1490
Mower. Lawn	H. L. Freeman	483,913	Oct. 4	586	147 148	61	121
Mower. Lawn	W. L. Frisbie	483,685	Oct. 4	243	60, 61	61	51
Mowers. Grass-catching attachment for lawn	W. J. O. Aatrup	485,599	Nov. 8	685	181	61	729
Mowing-machine	T. S. Brown	488,495	Dec. 20	2077	516	61	1769
Mowing-machine	H. E. Pridmore	488,905	Dec. 27	2731	674	61	1915
Mowing-machine	J. F. Seiberling	485,891	Nov. 8	1122	297	61	818
Mowing-machine pitman connection	T. Clark	487,403	Dec. 6	284	73	61	1377
Mucilage-holder	W. B. Gwyn	487,182	Nov. 29	3227	826	61	1285
Multiple-switchboard busy-test apparatus	J. L. McQuarrie	487,854	Dec. 13	1020	256	61	1510
Multiple-switchboard busy-test circuit and apparatus	J. L. McQuarrie	487,853	Dec. 13	1015	255	61	1540
Multiple-switchboard circuit	A. H. McCulloch	487,852	Dec. 13	1010	255	61	1539
Multiple-switchboard signal	G. Taintor	487,795	Dec. 13	923	233	61	1522
Multiple-switchboard system	C. E. Scribner	484,612	Oct. 18	1675	426	61	363
Multiple-switchboard system	C. E. Scribner	487,096	Nov. 29	3094	795	61	1259
Multiple-switchboard systems. Test-circuit for	C. E. Scribner	484,867	Oct. 25	2105	543	61	464
Multiple-switchboard test-circuit	O. A. Bell	488,053	Dec. 13	1357	337	61	1609
Multiple switchboards. Means for preventing induction in cables of	C. E. Scribner	488,034	Dec. 13	1317	329	61	1600
Multiple switchboards. Test system for	C. E. Scribner	486,507	Nov. 22	2106	557	61	1048
Multitubular boiler	M. Selpp	485,507	Nov. 1	543	144	61	683
Music. Apparatus for turning over the leaves of	C. Pittrich	487,769	Dec. 13	872	221	61	1511
Music. Apparatus for writing	A. Tessaro	484,262	Oct. 11	1120	284 285 286 287	61	242
Music-leaf turner	J. N. Camp	485,255	Nov. 1	153	45	61	604
Music-leaf turner	A. F. Vorce	486,573	Nov. 22	2206	580	61	1085
Music-rack attachment for guitars, &c	P. Benson	487,820	Dec. 13	958	242	61	1529
Music-rack for musical-instrument cases	J. A. Weser	484,481	Oct. 18	1477	376	61	322
Music-stand attachment	H. C. Straley	487,165	Nov. 29	3203	821	61	1280
Musical instrument	A. Gylfe	485,932	Nov. 8	1181	311	61	830
Musical instrument	R. Hageman	488,890	Dec. 27	2693	667	61	1907
Musical instrument	J. Harrington	485,542	Nov. 1	596	159	61	695
Musical instrument	C. S. Mudge	488,928	Dec. 27	2597	644	61	1687
Musical instrument	R. W. Pain	488,489	Dec. 20	2057	511	61	1765
Musical instrument. Electrically-operated stringed	W. H. Gilman	488,520	Dec. 20	2196	526	61	1777
Musical-instrument strings. Impervious case for containing	F. H. Griffith	488,005	Dec. 13	1961	314	61	1589
Muzzle. Calf	J. J. Smith	488,719	Dec. 27	2437	605	61	1854
Nail-extractor	F. X. Zahringer	488,595	Dec. 27	2244	556	61	1817
Nail-machine	C. E. Houghton	483,720	Oct. 4	290	72, 73	61	61
Nail-machine	C. E. Houghton	487,567	Dec. 6	541	139	61	1428
Nail-puller	A. F. Street	483,587	Oct. 4	109	26	61	23
Napkin-adjuster	W. P. Burnett	488,140	Dec. 13	1490	375	61	1636
Napkin-supporter	W. H. Kochler	488,924	Dec. 27	2755	680	61	1920
Neckscarf	J. O. Nightingale	483,693	Oct. 4	256	63	61	4
Necktie	J. B. Beam	485,447	Nov. 1	459	122 123	61	606
Necktie-fastener	L. Greenwald	488,275	Dec. 20	1720	434	61	1698
Necktie-fastener	H. S. Pullman	486,956	Nov. 29	2879	744	61	1217
Necktie-fastener	F. R. Scofield	483,947	Oct. 4	632	159	61	130
Needle-swaging machine	I. T. Smith	483,815	Oct. 4	439	109	61	91
Needle	J. Wieseckel	487,040	Nov. 29	3004	773	61	1240
Net. Fly	M. W. Bach	486,421	Nov. 22	1986	527	61	1023
Net-making machine	W. J. Hooper	484,893	Oct. 25	2151	552 553 554	61	474
Newspaper-elevator	A. R. Stone	487,791	Dec. 13	911	230 231	61	1519
Newspaper-holder	W. H. Turner	486,139	Nov. 15	1546	408	61	921
Newspaper-wrapping machine	L. C. Crowell	486,088	Nov. 15	1439	381 382 383 384	61	901
Newspaper-wrapping machine	L. C. Crowell	486,090	Nov. 15	1459	384 385 386	61	904
Nickel from ores. Extracting	T. Macfarlane	484,033	Oct. 11	772	.....	61	173
Nickel. Treating minerals containing	J. de Coppet	484,875	Oct. 25	2118	.....	61	467
Non-heat-conducting covering	W. H. Norris	488,248	Dec. 20	1679	419	61	1688
Nozzle	C. V. Pollock	488,220	Dec. 20	1637	408	61	1681
Nozzle. Exhaust	C. W. Umholtz	487,137	Nov. 29	3156	809	61	1271
Nozzle. Spray	W. C. Lockhart	487,628	Dec. 6	629	162	61	1446
Nozzle. Triple-exhaust	J. Y. Smith	487,299	Dec. 6	92	28	61	1340
Numbering checks, bonds, &c., in sheets. Machine for consecutively	E. G. Bates	484,390	Oct. 18	1396	338	61	294

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Numbering head. Consecutive	F. Sanders	488,577	Dec. 27	2214	549	61	1811
Numbering machine. Consecutive	E. G. Bates	484,389	Oct. 18	1322	338	61	294
Numbering machine. Consecutive	E. G. Bates	484,391	Oct. 18	1329	339	61	295
Nursery-bag	M. J. Forshew	485,098	Oct. 25	2476	636	61	539
Nursery-chair	F. L. Hemmer	485,382	Nov. 1	360	96, 97	61	646
Nut. Axle	J. Bermel	486,023	Nov. 8	1337	355	61	863
Nut. Axle	J. Gambetta	485,497	Nov. 1	527	140	61	679
Nut-cracker	O. H. Robertson	484,049	Oct. 11	793	200	61	177
Nut-lock	N. Bosmann	488,958	Dec. 27	2812	693	61	1932
Nut-lock	J. C. Brown	484,731	Oct. 18	1865	474	61	401
Nut-lock	A. G. Cox	485,174	Nov. 1	31	11	61	579
Nut-lock	S. G. Cowan	488,184	Dec. 20	1571	394	61	1669
Nut-lock	J. E. Crisp	488,472	Dec. 20	2038	507	61	1761
Nut-lock	T. Hibbs	483,921	Oct. 4	597	151	61	124
Nut-lock	J. H. Huber and G. M. Ervin	484,204	Oct. 11	1026	261	61	223
Nut-lock	E. Johanson	484,894	Oct. 25	2157	554	61	474
Nut-lock	S. A. Lake	488,337	Dec. 20	1826	456	61	1717
Nut-lock	H. E. Lantz and S. L. Neely	486,565	Nov. 22	2192	577	61	1063
Nut-lock	J. W. Pugh	484,745	Oct. 18	1893	482	61	409
Nut-lock	W. D. Robinson	487,684	Dec. 6	728	186	61	1464
Nut-lock	I. Wolfe	485,120	Oct. 25	2504	643	61	545
Nut or pipe wrench	W. Z. Woodatock	486,147	Nov. 15	1559	413	61	924
Nut. Self-locking	J. P. Hunt	487,742	Dec. 13	831	212	61	1563
Nut-wrench	W. S. Nell	483,676	Oct. 4	231	58	61	48
Oar-lock attachment	E. P. Scigliano	485,775	Nov. 8	947	254	61	784
Oat-clipping machine	J. R. Livingston	488,318	Dec. 20	1790	450	61	1710
Office-door indicator	L. O. Stevens	487,686	Dec. 6	730	187	61	1465
Oil-burner	J. Drew	483,908	Oct. 4	579	145	61	120
Oil-burner	J. Barrow	488,108	Dec. 13	1445	362, 363	61	1627
Oil-burner	A. E. Harper	488,355	Dec. 20	1855	464	61	1724
Oil-burner	W. F. Otis	488,660	Dec. 27	2344	580	61	1836
Oil-burner	E. M. Spalding and G. E. Willsie	488,744	Dec. 27	2471	614	61	1862
Oil burner. Fuel	C. Ball	483,730	Oct. 4	308	77	61	64
Oil-burner wick-fastener	B. F. Goodrich	488,788	Dec. 27	2540	630	61	1875
Oil-can	A. J. Tschantz	487,500	Dec. 6	444	114	61	1409
Oil-can and siphon-pump	T. Bumann	486,760	Nov. 22	2511	655	61	1127
Oil-spraying device	C. R. Collins	485,257	Nov. 1	155	45	61	605
Oils. Refining Canadian or similar petroleum	H. Frasch	487,119	Nov. 29	3130	803	61	1267
Oils. Removing sulphurous compounds from	J. B. Huston	486,406	Nov. 15	1956	519	61	1004
Oiler. Die-stock	G. L. Lo Vesconte	487,847	Dec. 13	1005	253	61	1538
Oiler. Force-feed	H. Jones	483,690	Oct. 4	252	62, 63	61	53
Oiler. Watch	I. L. Green	487,732	Dec. 13	812	207	61	1499
Opera-glass receptacle. Coin-operated	J. J. McDade	483,939	Oct. 4	619	156	61	128
Optometer	J. S. Sherman	484,615	Oct. 18	1681	427	61	364
Optometer. Focal-center	J. S. Sherman	484,055	Oct. 11	799	202	61	179
Order-holder	F. F. Austin	484,625	Oct. 18	1695	430	61	367
Order-holder	J. S. McDonald, Jr	487,960	Dec. 13	1183	295	61	1572
Ordnance	J. R. Haskell	484,012	Oct. 11	743	186	61	167
Ordnance. Gas-check for breech-loading	S. Seabury	487,380	Dec. 6	230	63	61	1366
Ordnance-operating mechanism	T. F. Rowland	488,838	Dec. 27	2617	649, 650	61	1891
Ore-concentrating machine	A. Fraser	487,261	Dec. 6	34	11, 12	61	1328
Ore-concentrator	A. Gonzalez	487,523	Dec. 6	477	125	61	1415
Ore-concentrator	T. T. McNary	485,972	Nov. 8	1254	331	61	846
Ore-concentrator	P. de Napoles	486,232	Nov. 15	1677	444	61	947
Ore-concentrators and allied machines. Device for operating	C. E. Seymour	487,542	Dec. 6	505	132	61	1420
Ore-feeder	E. A. Langford	485,501	Nov. 1	534	142	61	681
Ore-pulverizer	R. D. Gates	485,864	Nov. 8	1071	285	61	807
Ore-rake	J. C. Blair	487,511	Dec. 6	458	119	61	1411
Ore-roasting furnace	R. Pearce	488,797	Dec. 27	2554	633, 634	61	1878
Ore separation. Magnetic	T. A. Edison	485,842	Nov. 8	1038		61	801
Ore-separator	C. A. E. Meinicke	485,962	Nov. 8	1238	327	61	842
Ore separator and amalgamator	F. J. Hoyt	484,933	Oct. 25	2227	574	61	488
Ore separator and concentrator	G. Carson	487,248	Dec. 6	17	5	61	1324
Ore-separator. Centrifugal	O. B. Peck	485,475	Nov. 1	500	132	61	673
Ore-treating apparatus	H. B. Meech	484,861	Oct. 25	2097	540	61	463
Ores. Bricking fine iron	T. A. Edison	485,840	Nov. 8	1036	.....	61	801
Ores. Extracting metals from refractory	H. R. Lewis and C. B. Phillips	487,188	Nov. 29	3236	828, 829	61	1287
Ores. Magnetically separating	T. A. Edison	485,841	Nov. 8	1037	.....	61	801
Ores. Reducing	A. J. Rossi	486,941	Nov. 29	2861	.....	61	1213
Ores. Reduction of complex	W. C. Wetherill	484,269	Oct. 11	1139	.....	61	245
Organ	J. Chilleen	487,716	Dec. 13	780	200	61	1492
Organ	C. S. and W. E. Haskell	488,559	Dec. 27	2177	538, 539	61	1803
Organ	R. Hunter	487,222	Nov. 29	3291	839, 840	61	1296
Organ. Cabinet	M. Clark	484,929	Oct. 25	2221	572	61	487
Organ. Reed	G. B. Kelly	488,820	Dec. 27	2587	642	61	1885
Organs. Pneumatic action for	F. W. Hedgeland	488,607	Dec. 27	2259	560	61	1820
Organs. Pneumatic action for	J. Peloubet	487,767	Dec. 13	868	220, 221	61	1511
Ornament. Ceiling	N. Therien	488,531	Dec. 20	2141	530	61	1780
Oven. Baker's	G. R. Skillman	487,431	Dec. 6	330	84, 85, 86	61	1387
Oven. Baking	P. Pfeiderer and H. Werner	487,638	Dec. 6	648	166, 167	61	1450
Oven-plate	I. Brooke	487,911	Dec. 13	1109	277	61	1558
Oven. Rotary	P. C. H. Ruid	485,300	Nov. 1	217	61, 62	61	617
Oven shield. Baking	K. C. Munson	484,539	Oct. 18	1568	398	61	341

Alphabetical list of inventions, October to December, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Ore-shoe retainer. Rubber	M. T. Frisbie	488,194	Dec. 20	1584	397	61	1671
Oxidizing apparatus	E. A. Rusden	485,357	Nov. 1	321	86, 87	61	638
Oyster-dredge windlass	J. C. and S. Lake	485,535	Nov. 8	735	193	61	739
Ozone-tube	O. Frölich	487,390	Dec. 6	248	67	61	1369
Package	A. Baker	483,523	Oct. 4	6	2	61	4
Package-carriers. Machine for making	C. B. Morse	487,679	Dec. 6	717	183	61	1462
Packing	R. G. Ferguson	487,260	Dec. 6	33	11	61	1328
Packing case	J. Chase	483,991	Oct. 11	709	178	61	160
Packing for builders' use	S. Cabot	488,869	Dec. 27	2667	660	61	1902
Packing goods	W. G. Chapin	484,628	Oct. 18	1700	431, 432	61	368
Packing. Lubricating	B. Edgar	485,265	Nov. 1	166	48	61	607
Packing-machine	E. M. Thompson	487,355	Dec. 6	102	52, 53	61	1359
Packing-machine sack-case	E. M. Thompson	486,960	Nov. 29	2885	745	61	1218
Packing material. Package of corrugated	W. G. Chapin	484,627	Oct. 18	1698	431	61	367
Packing. Piston	F. N. Ethridge	484,188	Oct. 11	995	254	61	217
Packing. Piston	F. N. Ethridge	485,407	Nov. 1	401	107	61	654
Packing. Piston	J. Richards	487,494	Dec. 6	431	111	61	1406
Packing. Piston-rod	J. B. Houston	488,434	Dec. 20	1979	494	61	1748
Packing. Rod	G. W. Knowlton	487,019	Nov. 29	2974	766	61	1234
Pad: *See* Dress-pad. Harness-pad. Hoof-pad. Moistening-pad. Saddle-pad.							
Paddle-wheel. Feathering	J. Polkowski	486,502	Nov. 22	2100	555	61	1046
Padlock	R. J. Colvin	487,608	Dec. 6	595	153	61	1440
Padlock	E. A. Judd	484,895	Oct. 25	2158	555	61	475
Padlock	J. B. Price	483,866	Oct. 4	513	129	61	107
Padlock	F. W. Schultze	486,685	Nov. 22	2391	625	61	1103
Padlock	W. F. Troast and S. R. Slaymaker	488,231	Dec. 20	1655	413	61	1685
Padlock	J. J. Deal	486,666	Nov. 22	2364	618	61	1097
Padlock. Combination	W. H. Bolthoff	486,516	Dec. 20	2109	523	61	1776
Padlock. Permutation	J. J. Deal	486,665	Nov. 22	2362	618	61	1097
Padlock. Permutation	W. B. Thomson	486,800	Nov. 22	2577	672	61	1140
Pail	A. L. Munson	488,479	Dec. 20	2053	.....	61	1764
Paint. Anti-fouling	W. S. Hill	484,714	Oct. 18	1835	.....	61	395
Paint. Fireproof	P. Faust	484,851	Oct. 25	2085	536	61	460
Paint-mixer	G. L. Ball	488,416	Dec. 20	1959	.....	61	1744
Paint or varnish from wood. Composition for removing	N. B. Smith and C. P. Ludwig	485,063	Oct. 25	2425	623	61	527
Paint-pigment from ores. Producing	M. R. Fowlkes	486,710	Nov. 22	2435	634	61	1112
Palette. Artist's adjustable	H. Hollandt	487,443	Dec. 6	359	93	61	1392
Pan: *See* Ash-pan. Baking-pan. Grinding-pan.							
Pan-cover	H. P. Motte	487,490	Dec. 6	426	109, 110	61	1405
Panorama	F. L. Baker	484,281	Oct. 11	1156	294	61	248
Paper-bag machine	W. Liddell	487,225	Nov. 29	3296	841	61	1297
Paper-bag machine	A. C. Getten	485,006	Oct. 25	2338	602, 603	61	510
Paper-bag machines, &c. Mechanism for delivering bags from	G. W. Weber	488,783	Dec. 27	2532	628	61	1874
Paper bag or envelope	J. Weat	487,862	Dec. 13	1032	258	61	1543
Paper bags. Manufacture of	E. T. Greenfield	488,735	Dec. 27	2457	611	61	1859
Paper-binding machine	J. E. Burke	488,059	Dec. 13	1370	340	61	1612
Paper box	O. H. Hicks	487,528	Dec. 6	485	127	61	1417
Paper-box machine	C. E. Powell	487,771	Dec. 13	876	222	61	1512
Paper boxes. Machine for making	J. Godfrey	483,957	Oct. 4	652	163	61	135
Paper-calendering machine	P. Dillon	485,534	Nov. 1	579	156	61	691
Paper can	A. T. Cwerdinski	485,158	Oct. 25	2570	659	61	557
Paper carpet	M. G. Faulkner	485,921	Nov. 8	1167	.....	61	827
Paper-cutter	B. J. Pavyer and T. Burns	485,586	Nov. 1	662	176	61	709
Paper cutter. Roll	W. S. Mendenhall	488,129	Dec. 13	1474	372	61	1633
Paper-cutting machine	J. H. Horne and C. E. Barrett	487,739	Dec. 13	824	210, 211	61	1501
Paper-cutting machine	A. Malm	483,935	Oct. 4	614	155	61	127
Paper-dampening machine	E. T. Fisher	483,738	Oct. 4	320	80, 81	61	67
Paper-fastener	S. P. Denison	487,440	Dec. 6	372	99	61	1391
Paper-fasteninga. Apparatus for applying	J. B. Diver	486,190	Nov. 15	1711	428	61	934
Paper-feeder	F. Hart	487,526	Dec. 6	471	126, 127	61	1416
Paper-feeding machine	T. A. Briggs	487,513	Dec. 6	430	120, 121	61	1412
Paper-feeding machine	F. Hart	488,006	Dec. 13	1262	315	61	1589
Paper folding and pasting machine	T. C. Dexter	488,271	Dec. 20	1713	431, 432	61	1696
Paper-folding machine	J. Carnes	484,295	Oct. 11	1173	298, 299	61	252
Paper frames for slates, &c. Manufacture of	J. F. Fischer	483,648	Oct. 4	194	48	61	40
Paper-jogger	F. A. Onderdonk	487,152	Nov. 29	3183	815	61	1277
Paper-knife	H. B. Allen	483,519	Oct. 4	2	1	61	3
Paper. Machine for surface-coating	C. M. Gage	486,638	Nov. 22	2319	606, 607	61	1088
Paper. Machine for the manufacture of lace	B. Karfiol	484,966	Oct. 25	2271	586	61	497
Paper-making machine	L. P. Clawson	485,575	Nov. 1	648	172	61	706
Paper. Means for coloring	W. N. Cornell	486,629	Nov. 22	2305	602	61	1085
Paper. Mechanism for delivering and cutting roll	D. L. Goff	486,102	Nov. 15	1464	391	61	909
Paper. Mechanism for delivering and cutting roll	D. L. Goff	486,103	Nov. 15	1486	391	61	910
Paper-pulp. Apparatus for the manufacture of	R. N. Redmayne	483,870	Oct. 4	520	130	61	108
Paper-pulp digester	C. Curtis and N. M. Jones	484,999	Oct. 25	2328	601	61	508
Paper-pulp digester	C. Curtis and N. M. Jones	485,000	Oct. 25	2330	601	61	508
Paper-pulp digester	C. Curtis and N. M. Jones	485,808	Nov. 8	986	265	61	791
Paper-pulp digester	C. Curtis and N. M. Jones	485,809	Nov. 8	987	265	61	792
Paper-pulp digester	C. Curtis and N. M. Jones	485,810	Nov. 8	989	265	61	792

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Dr'g.	Official Gazette. Vol.	Page.
Paper-pulp. Machine for making tubes from	E. Metzger	488,149	Dec. 13	1501	377	61	1638
Paper-separating mechanism	T. A. Briggs	487,514	Dec. 6	463	121, 122	61	1412
Paper slitting and winding machine	A. P. Brown	484,173	Oct. 11	978	250	61	214
Paper slot-machine. Toilet	F. E. Housh	488,500	Dec. 20	2086	518	61	1771
Paper-stock grinding-machine	M. H. Simonet	484,056	Oct. 11	800	202	61	179
Paper. Toilet or wrapping	E. N. Cummings	487,026	Nov. 29	2985	769	61	1246
Paper tubes. Machine for making	P. Carey	488,384	Dec. 20	1903	476	61	1733
Paper-weight and calendar. Combined	A. D. Palmer	485,133	Oct. 25	2523	649	61	548
Parchmentized-fiber tubes. Manufacture of	R. P. Friat	485,408	Nov. 1	402	108	61	855
Parer and corer. Apple	C. A. Benton	486,424	Nov. 22	1991	528	61	1024
Parturition-shears	W. L. and J. C. Drinkwater	487,068	Nov. 29	3045	781	61	1249
Pattern: *See* Trousers-pattern.							
Pattern. Adjustable	B. Musse	487,760	Dec. 13	860	218	61	1509
Pattern for drafting garments	J. H. Choquette	484,138	Oct. 11	913	234	61	201
Pattern for drafting garments. Adjustable	J. C. Cupler	487,237	Nov. 29	3345	851, 852	61	1305
Patterns on zinc-coated plates. Producing definite	W. B. Spear	484,472	Oct. 18	1459	371	61	319
Pavement-block. Artificial	D. P. Sanders	486,356	Nov. 15	1878	494	61	988
Pea huller or sheller	J. H. Empson	486,441	Nov. 22	2016	535	61	1029
Pearl, &c. Implement for cutting	F. Wilkie	484,075	Oct. 11	825	209	61	184
Pen	F. J. W. Fischer	487,143	Nov. 29	3171	812	61	1274
Pen and letter rack	S. E. Moore	483,572	Oct. 4	83	21	61	19
Pen and pencil holder	A. A. Lytle	485,552	Nov. 1	608	162	61	697
Pen. Drawing and stippling	J. Phillips	484,521	Oct. 18	1540	390, 391	61	335
Pen. Electric perforating	A. D. Lewis	485,767	Nov. 8	939	251	61	782
Pen for swine. Farrowing	B. F. Osborn and J. R. Harcourt	488,739	Dec. 27	2465	612	61	1860
Pen. Fountain	J. Holland	485,795	Nov. 8	971	260	61	788
Pen. Fountain	E. G. Peck and G. E. O'Meara	484,542	Oct. 18	1571	399	61	342
Penholder	G. B. Morrill	487,035	Nov. 29	2998	772	61	1239
Penholder. Duplex	C. F. Green and G. A. Haley	488,119	Dec. 13	1458	367	61	1630
Penholder. Perforated	F. M. Libby	484,967	Oct. 25	2272	586	61	497
Pen or pencil carrier	H. E. Thornhill	485,440	Nov. 1	447	120	61	663
Pen-rack	I. W. Housser	488,009	Dec. 13	1271	316	61	1590
Pen. Ruling	J. S. Söderin	485,358	Nov. 1	325	87	61	638
Pens. Ink-holder for	C. W. Vose	486,623	Nov. 22	2295	599	61	1083
Pens. Lead-pencil attachment for fountain	J. R. Townsend	487,799	Dec. 13	932	235	61	1524
Pencil. Adding	C. D. Judd	488,206	Dec. 20	1609	401	61	1677
Pencil-case	G. W. Crowe and W. K. Massam	485,261	Nov. 1	161	47	61	606
Pencil. Lead	A. Kaiser	488,818	Dec. 27	2584	641	61	1885
Pencil-sharpener	F. J. Walker	484,071	Oct. 11	821	208	61	183
Pencil sharpener. Slate	G. S. N. Humphries	486,470	Nov. 22	2055	545	61	1036
Pencils. Marking attachment for carpenters'	A. F. Street	486,513	Nov. 22	2115	558	61	1049
Percolator	J. W. Evans	486,246	Nov. 15	1701	449, 450	61	952
Percussion-tool. Pneumatic	W. E. Gibbs	486,774	Nov. 22	2539	663	61	1132
Permutation-lock	M. Badoni	486,391	Nov. 15	1931	511, 512	61	999
Permutation-lock	J. I. Covington	488,648	Dec. 27	2823	575	61	1833
Permutation-lock	B. F. Singer and M. L. Davis	488,777	Dec. 27	2518	626	61	1871
Perspective-gage	D. C. Hunter	486,782	Nov. 22	2548	665	61	1134
Petroleum. Purifying	H. Frasch	487,216	Nov. 29	3279	837	61	1294
Phonogram-blank	T. A. Edison	488,191	Dec. 20	1580	396	61	1671
Phonograms. Duplicating	T. A. Edison	484,582	Oct. 18	1625	413	61	353
Phonograph	G. Bettini	488,379	Dec. 20	1896	475	61	1732
Phonograph	G. Bettini	488,380	Dec. 20	1897	475	61	1732
Phonograph	G. Bettini	488,381	Dec. 20	1900	475	61	1732
Phonograph	T. A. Edison	484,585	Oct. 18	1629	413	61	353
Phonograph	T. A. Edison	488,189	Dec. 20	1578	395	61	1670
Phonograph. Coin-controlled	H. Hoeschen	488,278	Dec. 20	1725	435	61	1699
Phonograph cutting-tool	T. A. Edison	484,583	Oct. 18	1627	413	61	353
Phonograph-reproducer	T. A. Edison	484,584	Oct. 18	1628	413	61	353
Phonograph-reproducer	T. A. Edison	488,190	Dec. 20	1579	396	61	1670
Phosphate rock, &c. Process of and apparatus for washing and drying	R. E. Rose	485,660	Nov. 8	781	207, 208	61	748
Photograph-cards from album-leaves. Implement for withdrawing	W. R. Vansant	486,170	Nov. 15	1589	421	61	930
Photograph-display rack	J. H. Abram	486,748	Nov. 22	2491	651	61	1124
Photographer's background-holder	W. I. Scandlin	484,165	Oct. 11	962	247	61	211
Photographic camera	F. A. Hetherington	483,688	Oct. 4	248	62	61	52
Photographic camera	S. Hirschfelder	488,810	Dec. 27	2572	638, 639	61	1882
Photographic camera	W. Sanders	486,799	Dec. 27	2558	635	61	1879
Photographic cameras. Registering device for	J. J. Gelger, Sr	487,262	Dec. 6	36	12	61	1328
Photographic copying. Clip for use in	A. Delug	485,758	Nov. 8	925	248	61	779
Photographic dark-chamber	I. Bryner	484,699	Oct. 18	1815	461	61	392
Photographic-negative retoucher	A. J. Bennett	488,705	Dec. 27	2415	599	61	1850
Photographic-plate holder	A. M. Pierce	484,569	Oct. 18	1605	408	61	349
Photographic-printing apparatus	H. E. Tallman	486,913	Nov. 29	2814	729	61	1204
Photographic-printing apparatus and process	U. S. Rush	487,937	Dec. 13	1152	288	61	1566
Photographic-printing frame	F. O. Joyce	484,175	Oct. 11	980	251	61	214
Photographic purposes. Device for modifying and controlling rays of light for	A. P. Flaglor	483,606	Oct. 4	133	33	61	28
Photographic roll-holder	T. S. Gillette	487,590	Dec. 6	472	124	61	1414
Physician's table	J. W. Kales	487,625	Dec. 6	694	160, 161	61	1445
Piano	P. Anderson	488,915	Dec. 27	2744	677	61	1918
Piano	W. H. Fargo	488,731	Dec. 27	2452	609	61	1858
Piano-action	F. Engelhardt	486,096	Nov. 15	1475	388	61	907
Piano-action	S. A. Jewett	483,561	Oct. 4	68	17	61	16
Piano-action	H. and C. Keller	487,483	Dec. 6	414	107	61	1403
Piano-action	O. Lestina	485,673	Nov. 8	1067	289	61	811

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Dr'g.	Official Gazette. Vol.	Page.
Piano-action	J. R. Perry	485,650	Nov. 8	753	199	61	748
Piano action. Upright	G. M. Guild	486,808	Nov. 22	2589	675	61	1142
Piano-actions. Center-pin fastening for	H. and C. Keller	487,484	Dec. 6	416	107	61	1403
Piano-case	J. Reimers	483,811	Oct. 4	433	107	61	90
Pianoforte	J. W. Brackett	484,403	Oct. 18	1347	344	61	298
Pianoforte-action	J. H. Phelps	486,500	Nov. 22	2098	555	61	1045
Piano-key coupler	P. Wuest, Jr	486,317	Nov. 15	1817	479, 480	61	976
Piano lamp-bracket	C. A. Hotchkiss	488,608	Dec. 27	2260	561	61	1821
Piano or organ. Upright	C. Keidel, Jr	485,414	Nov. 1	413	111	61	656
Piano pedal	W. H. Ivers	484,500	Oct. 18	1505	383	61	329
Piano soft-stop attachment	O. Lestina	485,872	Nov. 8	1086	288	61	811
Piano sounding-board	E. Stroud	487,060	Nov. 29	3034	779	61	1247
Piano sounding-board	P. Wuest, Jr	486,013	Nov. 8	1323	351	61	860
Piano tuning-pin	H. B. Enos	486,561	Nov. 22	2188	576	61	1062
Pick	J. Mitchell and W. K. Birkinshaw	484,333	Oct. 11	1241	316	61	265
Pick	K. J. Morrison and M. McLellan	486,732	Nov. 22	2467	644	61	1118
Picker: *See* Bean-picker. Cotton-picker. Berry-picker. Fruit-picker.							
Picket and shingle pointing machine	G. B. Russell	485,431	Nov. 1	432	115	61	661
Picture-exhibitor	D. J. Rogers	488,134	Dec. 13	1480	373	61	1634
Picture-exhibitor	A. Svenseon	488,042	Dec. 13	1338	331	61	1605
Picture. Folding	A. Operti	486,216	Nov. 15	1654	437	61	942
Pie raising and lidding machine	W. R. Gaudie	483,549	Oct. 4	50	12, 13	61	12
Pile fabric. Double	F. Pearson	484,607	Oct. 18	1663	422	61	361
Pile fabric. Double-faced woven	J. Coley	483,977	Oct. 4	685	171	61	142
Pile fabric. Woven	F. Pearson	484,541	Oct. 18	1569	399	61	341
Pile fabric. Woven	F. Pearson	484,605	Oct. 18	1659	421	61	360
Pile fabric. Woven	F. Pearson	484,606	Oct. 18	1661	421	61	361
Pile of velvets, &c. Knife for cutting	J. H. Smith	487,974	Dec. 13	1202	300	61	1576
Pile of woven fabrics. Machine for raising the	W. D. Watson	485,400	Nov. 1	391	105, 106	61	652
Pile or fence-post driver	W. L. George	487,920	Dec. 13	1127	281, 282	61	1561
Pile-protector	J. W. Lowman	488,896	Dec. 27	2702	669	61	1909
Pillow	A. J. Lytle	484,441	Oct. 18	1413	361	61	310
Pin: *See* Clothes-pin. Tent-pin. Hair-pin. Veil-pin. Safety-pin.							
Pin-fastening	T. Fahrner	485,005	Oct. 25	2337	602	61	509
Pinchers	J. Gérard	483,550	Oct. 4	51	13	61	13
Pinking device	J. E. Welmer	483,884	Oct. 4	537	136	61	112
Pipe: *See* Soap-bubble pipe. Tobacco-pipe. Submerged pipe.							
Pipe and nut wrench. Ratchet	I. C. Gray	484,634	Oct. 18	1713	435	61	370
Pipe clamp and holder	J. B. Davis	484,410	Oct. 18	1357	346	61	300
Pipe-connecting apparatus	A. Clancy	484,408	Oct. 18	1354	346	61	299
Pipe connection for hydraulic mechanisms	C. Mercader	486,383	Nov. 15	1915	507	61	996
Pipe-coupling	W. R. England	487,829	Dec. 13	972	245	61	1532
Pipe-coupling	J. Lister	486,936	Nov. 29	2845	736	61	1210
Pipe-coupling	E. T. Steen	487,434	Dec. 6	344	88	61	1389
Pipe-coupling	A. Wilbur	483,593	Oct. 4	117	28	61	25
Pipe-elbow	O. H. Lawrence	485,124	Oct. 25	2510	644	61	546
Pipe-hanger	M. J. Hanna	485,033	Oct. 25	2385	613	61	519
Pipe-holder and pipe-vise. Combined	A. S. Rager	486,124	Nov. 15	1522	402	61	916
Pipe-making machine	W. A. Tipson	485,942	Nov. 1	152	40	61	600
Pipe-rod coupling	P. Mueller	486,260	Nov. 15	1779	468	61	969
Pipe-wrench	G. S. Hilts	483,785	Oct. 4	399	99	61	83
Pipe-wrench	A. N. Parnall	486,235	Nov. 15	1686	446	61	949
Pipes and pipe-fittings. Joint or coupling for	C. R. Schmidt	485,116	Oct. 25	2497	642	61	543
Pipes. Forming beads on the ends of lead-lined iron	G. W. Harrington	485,693	Nov. 8	826	221	61	758
Pipes. Swage for forming beads on the ends of lead-lined	G. W. Harrington	485,692	Nov. 8	825	220	61	758
Pipes with lead. Method of and apparatus for lining	G. W. Harrington	485,691	Nov. 8	822	219, 220	61	758
Placer-machine	G. M. Reed	488,452	Dec. 20	2008	502	61	1755
Plane truing device. Bench	J. P. Gage	485,923	Nov. 8	1168	308	61	827
Planing-machine	J. R. Thomas	483,970	Oct. 4	674	169	61	139
Plant-setting tool	A. A. Hawes	486,718	Nov. 22	2438	635	61	1112
Plant-stand. Folding	F. Hamblin	485,627	Nov. 8	725	189	61	737
Plants and press adapted therefor. Pressing and drying	R. H. Day	484,301	Oct. 11	1188	302, 303	61	254
Planter	J. C. Cayton	488,239	Dec. 20	1665	415	61	1687
Planter	W. T. Goodson	485,188	Nov. 1	52	16	61	583
Planter	W. M. Holladay	486,971	Nov. 29	2900	749	61	1221
Planter and fertilizer-distributer	R. Hasson	488,356	Dec. 20	1857	465	61	1724
Planter attachment. Corn	J. B. Pedrick	485,710	Nov. 8	858	230	61	765
Planter attachment. Corn or cotton	S. J. Adkins	487,941	Dec. 13	1157	289	61	1567
Planter. Check-row	G. Ames	487,506	Dec. 6	449	116	61	1410
Planter. Combined corn and cotton	T. W. Knight	486,478	Nov. 22	2067	548	61	1039
Planter. Corn	O. Boll	484,991	Oct. 24	2317	597	61	505
Planter. Corn	J. R. Cox	483,736	Oct. 4	317	79, 80	61	66
Planter. Corn	T. W. Overlin	485,560	Nov. 1	619	165	61	699
Planter. Corn	W. O. Rundle	483,872	Oct. 4	522	131	61	106
Planter. Cotton-seed	A. Lang	483,655	Oct. 4	203	50	61	42
Planter. Cotton-seed	W. S. West	485,518	Nov. 1	553	148	61	686
Planter. Hand corn	I. Mackey	487,849	Dec. 13	1007	254	61	1539
Planter. Seed	J. A. Dodd	488,650	Dec. 27	2328	576	61	1833
Planter. Seed	H. Fiene and J. E. Kroenecke	486,069	Nov. 22	2369	619	61	1098
Planter. Seed	S. G. Randall	485,236	Nov. 1	110	33, 34	61	596

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Planters. Fertilizer-distributer attachment for check-row corn	J. A. Stuff	483,877	Oct. 4	528	133	61	109
Planting machine. Seed	R. B. Snell and B. Smith	488,846	Dec. 27	2634	652, 653	61	1895
Plaster compound	H. R. English	486,329	Nov. 15	1836	.....	61	980
Plaster. Wall	C. L. Denison	485,177	Nov. 1	37	.....	61	580
Plastic compounds. Machine for molding articles from	H. C. Warren	483,663	Oct. 4	213	53	61	44
Plastic material. Die for forming articles from	H. E. Miller	488,570	Dec. 27	2802	544	61	1809
Plastic materials. Coating surfaces with	M. B. Church	487,606	Dec. 6	593	152	61	1440
Plastic materials. Machine for shaping and molding	O. R. Chase	484,777	Oct. 25	1959	500	61	434
Pliers	J. Monto	486,616	Nov. 22	2286	596	61	1081
Pliers. Belt	W. A. Bernard	486,785	Dec. 27	2534	629	61	1874
Plow	C. L. Baggett	485,732	Nov. 8	895	240	61	773
Plow	M. L. Battle	486,021	Nov. 8	1333	354	61	863
Plow	U. A. Cleveland	484,178	Oct. 11	984	252	61	215
Plow	J. P. Couch	485,457	Nov. 1	472	125	61	668
Plow	W. W. Davis	483,994	Oct. 11	711	179	61	160
Plow	W. A. Estes	487,142	Nov. 29	3167	811, 812	61	1273
Plow	S. R. Jackson	485,941	Nov. 8	1200	317	61	835
Plow	Z. R. Kea	487,749	Dec. 13	840	214	61	1505
Plow	M. J. McBurnett	486,492	Nov. 22	2085	552	61	1043
Plow	J. E. and E. M. Mitchell	485,394	Nov. 1	388	103	61	651
Plow	F. S. Moore	487,578	Dec. 6	554	142	61	1431
Plow	E. Paulsen	487,539	Dec. 6	502	131	61	1420
Plow	S. P. Richmond	487,643	Dec. 6	655	169	61	1451
Plow	R. G. Roach	488,287	Dec. 20	1741	439	61	1702
Plow	C. Wagner	486,515	Nov. 22	2118	559	61	1050
Plow and seeder. Combined	G. C. Westervelt	484,129	Oct. 11	896	229	61	198
Plow attachment	H. Sommerfeld	487,871	Dec. 13	1046	262	61	1546
Plow. Combined riding and walking gang	C. B. Thornton	484,943	Oct. 25	2240	577	61	491
Plow-cultivator attachment. Listing	A. M. Fitch	484,009	Oct. 11	723	182	61	163
Plow-cutter	H. L. Markham	485,959	Nov. 8	1236	326	61	842
Plow. Ditching	C. A. Wren	488,863	Dec. 27	2660	658	61	1900
Plow. Grub	P. T. Montgomery	487,869	Dec. 13	1043	261	61	1545
Plow. Hand	J. P. Weatherman	485,308	Nov. 1	230	64	61	619
Plow harrow attachment. Sulky	J. I. Mettler	488,397	Dec. 20	1919	480	61	1736
Plow heel attachment	S. P. Yoder	485,830	Nov. 8	1018	273, 274	61	797
Plow. Hillside	A. O. Woodbury	486,416	Nov. 15	1973	524	61	1007
Plow-point	C. P. McWane	484,043	Oct. 11	785	198	61	175
Plow. Reversible	G. Sears	484,758	Oct. 18	1914	488	61	413
Plow riding attachment	M. R. Hubbell	486,530	Nov. 22	2139	564	61	1053
Plow. Rotary	W. E. Stafford	488,848	Dec. 27	2637	653, 654	61	1896
Plow. Side-hill	G. P. Cleveland	486,525	Nov. 15	1826	482	61	978
Plow-stock	G. C. Westervelt	484,128	Oct. 11	894	229	61	198
Plow-stock	T. Brooks	485,254	Nov. 1	159	44	61	604
Plow. Sulky	E. Koenig	484,520	Oct. 18	1537	396	61	334
Plow. Turning	L. and G. Rouse and W. H. Hanley	486,266	Nov. 15	1742	459	61	961
Plow. Wheel	P. J. Ebersohl	488,880	Dec. 27	2680	663, 664	61	1905
Plow. Wheel	J. Clayton	484,652	Oct. 18	1750	445, 446	61	378
Plows, harrows, &c. Riding attachment for	P. W. Stanhope, Jr	485,994	Nov. 8	1293	343	61	854
Plumb-bob	C. D. Fox	485,184	Nov. 1	47	15	61	582
Pneumatic boat. Collapsible	H. M. Fuller	485,376	Nov. 1	352	94	61	645
Pneumatic chair	W. H. Gamble and D. H. Allen	486,597	Nov. 22	2251	589	61	1074
Pneumatic-tired wheel	A. P. Watson	484,072	Oct. 11	822	208	61	183
Pneumatic tool	G. A. Burwell	486,556	Nov. 22	2171	573	61	1060
Pocket-book frame	J. G. Carlinet	487,086	Nov. 29	3080	791	61	1256
Pocket-book, purse, or satchel frame	S. Scheuer	486,128	Nov. 15	1526	404	61	917
Pocket-books, &c. Frame for	S. Scheuer	485,230	Nov. 1	116	35	61	597
Pocket-gage	E. Oldenbusch	484,111	Oct. 11	879	222	61	193
Pocket-knife	P. Broadbooks	484,567	Oct. 18	1603	407	61	348
Pocket-protector	G. Skoglund	488,340	Dec. 20	1829	457	61	1718
Pocket. Safety	J. W. Parmley	486,352	Nov. 15	1872	493	61	986
Poke. Animal	I. Kleinberger	484,435	Oct. 18	1406	358	61	309
Pole. Adjustable wagon	C. J. Le Count	486,483	Nov. 22	2074	549	61	1041
Pole or shaft prop	F. L. Wood	488,410	Dec. 20	1947	487	61	1742
Pole socket. Vehicle	A. Scarlett	488,406	Dec. 20	1933	485	61	1739
Pole-tip	C. F. Kimball	485,947	Nov. 8	1213	320	61	837
Pole tip. Carriage	W. I. Schryver	486,942	Nov. 29	2863	739	61	1213
Pole. Tubular metallic	E. W. Rider	488,133	Dec. 13	1479	373	61	1634
Pole. Vehicle	D. Dorward	484,144	Oct. 11	928	239	61	204
Pole. Vehicle	L. L. Buffham	483,531	Oct. 4	22	5	61	7
Police signal system	T. B. Cultra	486,857	Nov. 29	2683	702	61	1178
Polishing-machine	J. C. Wilson	486,206	Nov. 15	1635	433	61	939
Pool-ball frame	C. Seymour	487,785	Dec. 13	902	228	61	1518
Pool-rack	W. A. Sweet	484,562	Oct. 18	1598	406	61	347
Portable safety-heater	G. F. Hall and H. Gottschalk	484,533	Oct. 18	1555	395, 396	61	338
Post: *See* Fence-post. Hitching-post.	J. House	485,008	Oct. 25	2342	603	61	511
Post-driver	J. McLandsborough	485,051	Oct. 25	2408	620	61	524
Post-hole digger	J. W. Clark	488,918	Dec. 27	2748	678	61	1918
Post-office lock-drawer	J. W. Harriott	486,777	Nov. 22	2542	663, 664	61	1132
Pot: *See* Coffee-pot. Melting-pot.							
Potassium carbonate. Making	P. Römer	484,921	Oct. 25	2207	568	61	484
Potato-coverer	I. F. Dodge	486,861	Nov. 29	2695	703	61	1180
Potato-coverer	J. Lundy	486,534	Nov. 22	2143	566	61	1051

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Potato-cutter	L. A. Aspinwall	485,160	Nov. 1	2	1	61	573
Potato-digger	A. A. Pratt	484,817	Oct. 25	2024	519	61	448
Potato-digger	S. N. Washburn	485,118	Oct. 25	2500	642	61	544
Potato-masher	A. M. Amos	488,668	Dec. 27	2359	584	61	1839
Pottery-kiln	W. H. Zimmer and O. G. Hess	488,413	Dec. 20	1952	488	61	1743
Poultry-killing apparatus	W. S. Furnas	487,180	Nov. 29	3225	826	61	1285
Poultry-killing apparatus	W. S. Furnas and T. Kenderdine	487,560	Dec. 6	531	137	61	1426
Powder: *See* Explosive powder. Washing-powder.							
Powder-motor	G. V. Sheffield	485,989	Nov. 8	1279	340	61	851
Power: *See* Horse-power. Mechanical moving-power.							
Power. Device for the transmission of	L. Tighe	487,303	Dec. 6	102	30	61	1342
Power. Electric transmission of	E. W. Rice, Jr	485,658	Nov. 8	777	206	61	747
Power. Electric transmission of	E. W. Rice, Jr	485,659	Nov. 8	779	207	61	747
Power. Means for transmitting	W. E. Walsh	487,805	Dec. 13	939	237	61	1525
Power. System of electrical transmission of	N. Tesla	487,796	Dec. 13	925	233, 234	61	1522
Power-transmitter	J. M. Bergold	485,167	Nov. 1	13	4	61	575
Power-transmitter	W. Larson and O. Gunderson	485,952	Nov. 8	1224	322	61	839
Power-transmitter	A. S. Tragethon	484,066	Oct. 11	813	206	61	181
Power-transmitting mechanism	D. C. Frazeur	487,615	Dec. 6	604	155	61	1442
Power-transmitting mechanism	B. W. Grist	486,287	Nov. 15	1774	466, 467	61	967
Precious metals and copper. Treating mixtures containing sulphides of	C. Whitehead	483,972	Oct. 4	677	.....	61	140
Preserving-can	L. K. Royer	488,839	Dec. 27	2623	650	61	1892
Press: *See* Baling-press. Hay-press. Bending-press. Heel-press. Brick-press. Printing-press. Copying-press. Seal-press. Cotton-press. Soap-press. Drop-press. Stamping-press.							
Press	D. W. Bromley	486,662	Nov. 22	2355	616, 617	61	1095
Press	C. M. Terrell and G. T. Bartlett	488,296	Dec. 20	1755	442	61	1704
Pressing-frame	C. Leland	486,347	Nov. 15	1866	491	61	985
Pressure-gage	C. B. Bosworth	485,404	Nov. 1	397	107	61	654
Pressure gage and register. Combined	W. J. O. Bryon, Jr	487,515	Dec. 6	465	122	61	1413
Pressure-gage. Duplex	F. H. Haskell	483,613	Oct. 4	144	36	61	30
Pressure gage. Steam	M. McNeil	486,839	Nov. 22	2647	691	61	1155
Pressure-recorder for air-brakes, &c	W. F. De Forest	484,411	Oct. 18	1357	347	61	300
Pressure-regulator	J. Lehr and J. Bodani	486,485	Nov. 22	2076	550	61	1041
Pressure-regulator	J. D. P. Schenck	488,370	Dec. 20	1882	471	61	1729
Pressure regulator. Fluid	C. J. Rinderknecht	484,458	Oct. 18	1435	366	61	315
Pressure-regulator for compressed-air machines	E. C. Fasoldt	485,578	Nov. 1	653	174	61	707
Printer and cutter. Roll-paper	F. Kirsch	485,701	Nov. 8	835	224	61	761
Printer's chase	J. S. Brown	487,710	Dec. 13	768	197	61	1490
Printer's quoin	A. Cameron	484,907	Oct. 25	2177	560	61	479
Printer's quoin	E. A. and A. G. Schmid	483,792	Oct. 4	407	101	61	85
Printers' rules and leads. Machine for cutting	F. Wesel	484,984	Oct. 25	2299	593, 594	61	502
Printers' use. Block for	E. B. Sheldon	483,814	Oct. 4	437	108	61	91
Printing-cylinder plate-holder	J. J. Clause	487,992	Dec. 13	1244	310	61	1584
Printing fabrics. Machine for	T. J. Martin	488,897	Dec. 27	2702	669	61	1910
Printing-machine	W. Scott	486,129	Nov. 15	1529	404	61	917
Printing-machine	W. Scott	488,637	Dec. 27	2306	571	61	1828
Printing-machine delivery apparatus	C. B. Cottrell	487,386	Dec. 6	239	64, 65	61	1368
Printing-machine feeding apparatus	C. B. Cottrell	487,914	Dec. 13	1115	278, 279	61	1559
Printing-machine feeding mechanism. Cylinder	C. B. Cottrell	487,254	Dec. 6	23	7	61	1336
Printing machine. Oil-cloth	G. F. Eisenhardt	487,365	Dec. 6	210	57, 58	61	1362
Printing-machines. Offset mechanism for	C. B. Cottrell	484,531	Oct. 18	1552	394	61	338
Printing-plate and making the same	W. H. Steele	486,572	Nov. 22	2205	.....	61	1065
Printing-plate holder	F. Hainsworth	484,588	Oct. 18	1632	414	61	354
Printing-press	K. Almén	486,365	Nov. 15	1890	499, 500	61	990
Printing-press	E. A. Blake	487,468	Dec. 6	394	102	61	1398
Printing-press	S. G. Goss	483,687	Oct. 4	246	61, 62	61	51
Printing-press and folding mechanism. Combined	L. C. Crowell	486,558	Nov. 22	2175	574, 575	61	1060
Printing-press and folding mechanism. Combined	L. C. Crowell	486,559	Nov. 22	2182	575, 576	61	1061
Printing-press attachment	E. Meier	485,704	Nov. 8	851	228	61	764
Printing-press bed-motion	J. W. Cribbins	485,458	Nov. 1	473	125, 126	61	669
Printing press. Color	H. E. Grandy	484,421	Oct. 18	1375	351, 352	61	303
Printing-press ink-roller	R. W. Murphy	487,759	Dec. 13	859	218	61	1509
Printing press. Job	F. G. Willard	486,312	Nov. 15	1811	477, 478	61	975
Printing-press. Oscillating-cylinder	W. Scott	487,495	Dec. 6	432	111, 112	61	1406
Printing-press perforator	W. P. Kastenhuber, P. H. Wuagneux, and R. I. States.	485,547	Nov. 1	602	160	61	696
Printing-press platens. Safety-guard for	A. Bell	484,751	Oct. 18	1902	485	61	411
Printing-presses. Electro-magnetic mechanism for operating	E. H. Korsmeyer	483,564	Oct. 4	71	17, 18	61	16
Printing stencil characters consecutively. Machine for	E. G. Bates	486,964	Nov. 29	2890	747	61	1219
Privy	P. Mueller	484,040	Oct. 11	781	196, 197	61	175
Projectile	F. M. Ashley	486,657	Nov. 22	2349	614	61	1094

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Projectile	H. H. Grenfell and J. G. Accles	486,598	Nov. 29	2253	589	61	1074
Projectile	J. R. Haskell	484,006	Oct. 11	736	184	61	165
Projectile	J. J. McIntyre	484,862	Oct. 25	2098	540	61	463
Propeller	J. Q. Adams	484,511	Oct. 18	1524	387	61	332
Propeller	S. W. Barnaby	486,366	Nov. 15	1894	500 / 501	61	991
Propeller. Boat	F. Giles	487,019	Nov. 29	2965	764	61	1232
Propeller. Buoyant	D. W. Lord	484,503	Oct. 18	1509	383	61	329
Propeller. Chain	C. W. and C. H. Threlkeld	485,241	Nov. 1	131	39, 40	61	660
Propeller. Chain	J. G. Wright	484,485	Oct. 18	1483	378	61	323
Propeller. Hydraulic	J. T. Carstairs	484,651	Oct. 18	1748	444	61	377
Propeller. Screw	C. B. Wattles	484,382	Oct. 11	1310	335	61	277
Propeller-wheel	E. D. Bangs	486,062	Nov. 8	1398	370	61	874
Propelling apparatus. Boat	W. S. Salisbury	486,684	Nov. 22	2389	694	61	1102
Proportional meter. Multiple	J. Thomson	485,439	Nov. 1	446	119	61	663
Protector: *See* Basket-protector. Coffin-protector. Gutter-protector. Lamp-chimney protector. Pile-protector. Pocket-protector.							
Pruning implement	W. P. Hatch	485,793	Nov. 8	969	260	61	788
Pruning implement	F. P. Kern	483,928	Oct. 4	605	153	61	125
Puller: *See* Nail-puller. Stump-puller.	W. D. Sunderlin	483,588	Oct. 4	110	27	61	23
Pulley	E. Crossley, Jr	486,631	Nov. 22	2307	602	61	1086
Pulley	G. W. Nock	487,491	Dec. 6	428	110	61	1406
Pulley	E. T. Shepard	487,454	Dec. 6	375	98	61	1395
Pulley. Driving	E. F. Gordon	488,390	Dec. 20	1911	478	61	1735
Pulley. Electro-magnetic	W. E. Harrington	487,070	Nov. 29	3049	782	61	1249
Pulley-fastening	F. H. Ball	486,154	Nov. 15	1569	416	61	926
Pulley for transmitting power	J. Meier	486,585	Nov. 22	2233	586	61	1071
Pulley lubricator. Loose	E. Dawson	487,257	Dec. 6	28	9	61	1327
Pulley. Power-transmitting friction clutch	C. W. Thomas	485,513	Nov. 1	548	146	61	685
Pulley. Split	J. C. Fiester	483,647	Oct. 4	193	48	61	40
Pulley. Split	C. C. Lockstaedt	484,935	Oct. 25	2229	575	61	488
Pulley. Split	J. F. Parkes	488,947	Dec. 27	2794	689	61	1928
Pulley. Split	H. and C. R. Rudd	488,253	Dec. 20	1688	421	61	1691
Pulley. Wood split	D. A. Sprinkle	484,167	Oct. 11	965	248	61	211
Pulp-digester	G. F. Russell. (Reissue)	11,282	Nov. 15	1978	525	61	1008
Pulp-drainer	G. L. Jaeger	483,847	Oct. 4	459	121	61	101
Pulp. Molded pail from fibrous	E. Hubbard	487,031	Nov. 29	2992	770	61	1238
Pulp-molding apparatus	S. L. Chapman	488,517	Dec. 20	2110	524 / 525	61	1776
Pulp-producing apparatus	J. B. Carter	485,090	Oct. 25	2467	634	61	537
Pulp-screen	J. J. Flanders	488,166	Dec. 13	1540	386	61	1646
Pulp-screening machine	C. J. Foster	488,067	Dec. 13	1384	344	61	1615
Pulverizer or mixer	R. W. Lyle	486,937	Nov. 29	2847	737	61	1210
Pump	D. E. Aunkst	486,016	Nov. 8	1327	352	61	860
Pump	A. D. Cook	484,139	Oct. 11	915	235	61	202
Pump	H. H. Cummings	483,666	Oct. 4	218	54	61	45
Pump	H. Gaskine	484,496	Oct. 18	1499	381	61	327
Pump	J. P. Lahm	484,898	Oct. 25	2162	556	61	476
Pump	P. A. Myers	486,350	Nov. 15	1869	492	61	981
Pump	M. M. Smith	483,637	Oct. 4	178	45	61	37
Pump	J. F. Stone and F. Miller	487,397	Dec. 6	256	70	61	1372
Pump	W. H. Sunderland	486,136	Nov. 15	1543	407	61	926
Pump	E. H. Weatherhead	484,383	Oct. 11	1313	336	61	279
Pump	B. Wright	485,250	Nov. 1	147	43	61	603
Pump and dripper for barrels. Combined	C. B. Allgood	483,757	Oct. 4	351	88	61	73
Pump and water-elevator. Force	M. L. G. Wheeler	484,169	Oct. 11	972	249	61	213
Pump attachment	A. B. Clancy	488,183	Dec. 20	1570	394	61	1669
Pump. Displacement	G. W. Bartholomew	487,595	Dec. 6	576	147	61	1436
Pump. Measuring	W. Crighton	486,596	Nov. 22	2249	588 / 589	61	1073
Pump. Mercurial air	G. A. Frei	487,478	Dec. 6	408	105	61	1401
Pump. Pneumatic	R. P. Garsed	487,090	Nov. 29	3085	792	61	1258
Pump. Pneumatic	T. O. Perry	485,880	Nov. 8	1095	291 / 292	61	813
Pump. Steam	G. J. Roberts	484,241	Oct. 11	1067	276	61	235
Pumps. Automatic governing device for electric	F. A. Pocock	485,221	Nov. 1	101	30	61	594
Pumps. Valve-operating mechanism for pneumatic	T. O. Perry	485,884	Nov. 8	1114	294 / 295	61	816
Pumping-engine. Pneumatic	T. O. Perry	485,8-2	Nov. 8	1105	293 / 294	61	815
Punch	A. A. Baumener and J. B. Harting	485,164	Nov. 1	10	3	61	575
Punch	J. M. Fairfield	484,891	Oct. 25	2149	551	61	473
Punch. Check	E. W. Bassett	485,733	Nov. 8	897	240	61	773
Punch. Check	E. G. Bates	488,052	Dec. 13	1354	336	61	1608
Punch. Keyboard	H. Hollerith	487,737	Dec. 13	820	308 / 309	61	1501
Punching and marking machine. Check	G. Wright	485,444	Nov. 1	452	121	61	665
Punching and shearing machine. Combined metal	E. T. Horner	484,369	Oct. 11	1289	329	61	275
Punching, shearing, &c., machine	T. Smaith	486,387	Nov. 15	1922	510	61	998
Purse	S. C. Langfeld	484,101	Oct. 11	862	219	61	191
Purse or pocket-book	M. Scheuer	488,742	Dec. 27	2469	613	61	1861
Push-button and thermostat	E. L. Ashley and W. H. Camp	488,645	Dec. 27	2320	574	61	1832
Puzzle	G. W. Bailey	487,063	Nov. 29	3038	780	61	1247
Puzzle	C. E. Clarke	487,318	Dec. 6	135	39	61	1348
Puzzle	H. L. Davis	488,974	Dec. 27	2837	699	61	1939
Puzzle	C. S. Ford	483,912	Oct. 4	585	147	61	121
Puzzle	J. J. Jenkins	485,798	Nov. 8	973	261	61	789
Puzzle	H. F. Keil	488,819	Dec. 27	2584	641 / 642	61	1885
Puzzle	C. H. Rickert	484,882	Oct. 25	2128	547	61	468

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Puzzle	J. A. Sloan	483,772	Oct. 4	377	94	61	79
Puzzle	J. W. Thorne	483,890	Oct. 4	449	112	61	93
Puzzle	E. L. Thurston	487,797	Dec. 13	998	254	61	1582
Puzzle	E. L. Thurston	487,798	Dec. 13	980	235	61	1582
Puzzle	R. Watt	486,308	Nov. 15	1865	476	61	974
Puzzle	A. E. Woolf	485,314	Nov. 1	238	66	61	620
Pyrotechnic device	G. J. M. Ashby	487,898	Dec. 13	1067	272	61	1554
Pyrotechnic device	G. J. M. Ashby	487,899	Dec. 13	1069	272	61	1554
Pyroxyline. Apparatus for the manufacture of transparent sheets of	E. N. Todd	483,701	Oct. 4	969	66	61	56
Quarry-frame bar	H. C. Sergeant	484,117	Oct. 11	878	223	61	194
Quilting-frame	W. C. Backof	487,940	Dec. 6	6	2	61	1329
Race-course for horses	H. S. Butler	483,600	Oct. 4	125	31	61	26
Rack: *See* Collar, cuff, and garment rack. Display-rack. Hat-rack. Hay-rack. Hay and stock rack. Horseshoeing-rack. Hose-rack. Music-rack. Pen and letter rack. Photograph-display rack. Pool-rack. Sheep-rack. Trousers-supporting rack.							
Rack	H. U. Ackerman	487,594	Dec. 6	576	147	61	1436
Racket	C. Beecroft	484,578	Oct. 18	1620	411	61	352
Radiator	J. F. Donahoe	488,756	Dec. 27	2486	618 / 619	61	1865
Radiator	C. F. Gessert	486,400	Nov. 15	1946	515 / 516	61	1002
Radiator	W. J. Jackson	488,764	Dec. 27	2499	621	61	1867
Radiator	W. E. Landon	486,480	Nov. 22	2071	548	61	1040
Radiator	C. C. Mulford	487,860	Dec. 13	1060	266	61	1548
Radiator	W. Scott	485,018	Oct. 25	2365	608	61	515
Radiator attachment. Steam	H. E. Stager	484,619	Oct. 18	1686	428	61	365
Radiator-deflector	E. Kirk, Jr	484,638	Oct. 18	1718	435	61	371
Radiators. Construction of cast-iron	G. L. Allen	485,757	Nov. 8	924	248	61	779
Rags. Machine for cutting	E. S. Hidden	487,621	Dec. 6	617	158	61	1444
Rail and manufacturing the same. Girder	R. M. Hunter	486,211	Nov. 15	1643	436	61	949
Rail-brace and tie-plate. Combined	D. F. Holman	485,381	Nov. 1	364	98	61	647
Rail. Contact	F. E. Kinsman	487,752	Dec. 13	845	215	61	1508
Rail-fastening	H. Alexy	483,518	Oct. 4	1	1	61	3
Rail-fastening	T. W. Fay	485,097	Oct. 25	2475	636	61	539
Rail-joint	W. Curtis	483,983	Oct. 11	710	179	61	160
Rail-joint	J. Delaney and A. D. Reaume	485,862	Nov. 8	1068	284	61	807
Rail-joint	M. C. Niles	484,226	Oct. 11	1059	269	61	240
Rail-joint	M. C. Niles	484,227	Oct. 11	1062	270	61	240
Rail-joint	M. C. Niles	484,228	Oct. 11	1064	270	61	231
Rail-joint	M. C. Niles	484,229	Oct. 11	1067	271	61	231
Rail-joint	J. H. Rouse	484,341	Oct. 11	1250	319	61	267
Rail-joint	J. E. Sarvis	486,605	Nov. 22	2267	592	61	1077
Rail-joint	G. Weeks	487,340	Dec. 6	165	46, 47	61	1353
Rail joint and chair	J. H. Campbell	483,898	Oct. 4	556	140	61	115
Rail-joint fastening	R. Morrell	483,854	Oct. 4	498	124	61	103
Rail-securing device	A. Beaudry and P. F. King	488,749	Dec. 27	2479	616	61	1862
Rail-tie	G. H. Sellers	486,959	Nov. 29	2863	745	61	1217
Rail. Track	J. T. Hill and B. Meiring	484,315	Oct. 11	1211	308	61	256
Railing. Iron	T. H. Flynn	485,268	Nov. 1	170	50	61	607
Railway	W. Latimer	484,027	Oct. 11	763	193	61	171
Railway. Cable	J. B. Mahaffey	483,965	Oct. 4	663	166	61	130
Railway. Cable	R. McClintock, J. F. Langhammer, and J. W. Lowell.	486,262	Nov. 15	1738	458	61	960
Railway-chair	B. N. Payne	485,298	Nov. 1	215	61	61	616
Railway-chair	W. Wharton, Jr	483,593	Oct. 4	116	28	61	24
Railway conduit. Electric	J. W. Hayden	487,735	Dec. 13	816	208	61	1500
Railway conduit. Electric	A. W. Wright	486,315	Nov. 15	1616	479	61	976
Railway cross-tie	W. M. Hewitt	484,855	Oct. 25	2060	537	61	461
Railway-crossing	M. G. Knight	484,100	Oct. 11	860	218 / 219	61	190
Railway. Double-track elevated	E. M. Turner	488,157	Dec. 13	1524	382 / 383	61	1643
Railway. Electric	W. G. Murphy, Jr	483,856	Oct. 4	500	124	61	104
Railway. Elevated	A. E. Hotchkiss	488,200	Dec. 20	1563	389	61	1673
Railway. Elevated	H. W. Kirchner	485,700	Nov. 8	834	224	61	760
Railway. Elevated	E. M. Turner	488,154	Dec. 13	1519	381	61	1642
Railway. Elevated	E. M. Turner	488,155	Dec. 13	1521	381	61	1642
Railway. Elevated	E. M. Turner	488,156	Dec. 13	1523	382	61	1643
Railway fish-plate, set-screw, and nut-lock therefor	J. P. McGuire	484,009	Oct. 25	2012	517	61	446
Railway-frog	J. S. McAdams	487,957	Dec. 13	1179	294	61	1571
Railway-gate	W. R. McGuire	487,538	Dec. 6	500	131	61	1419
Railway-gate	F. W. Mills	488,322	Dec. 20	1796	451	61	1711
Railway-gate	W. Smith	485,894	Nov. 8	1126	288	61	819
Railway-gate	C. A. Snider	484,956	Oct. 11	1111	281	61	240
Railway grip. Cable	P. T. Taylor	485,237	Nov. 1	123	37	61	589
Railway grip. Cable	C. Vogel	483,775	Oct. 4	362	85	61	89
Railway grip. Cable	C. Vogel and C. McIntosh	483,776	Oct. 4	379	94	61	79
Railway grip mechanism. Cable	J. H. Robertson	484,980	Oct. 25	2296	569	61	494
Railway-joint	R. E. Greenwell	486,775	Nov. 22	2240	563	61	1122
Railway nut-lock	G. Olliver	484,755	Oct. 18	1606	406	61	412
Railway or farm gate. Automatic	J. R. Benson	483,990	Oct. 4	545	139	61	143
Railway point and signal apparatus. Interlocking	F. A. Atkinson	484,840	Oct. 25	2071	530	61	427
Railway pump or water-elevator	H. D. Layman	488,302	Dec. 20	1985	467	61	1783
Railway-rail	P. H. Dudley	486,683	Nov. 22	2510	603	61	1060
Railway-rail	F. I. Smith	487,133	Nov. 29	3151	807 / 808	61	1270
Railway-rail fastening	W. Goldie	488,195	Dec. 20	1585	397	61	1671

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Railway-rail fastening	R. Morrell	483,855	Oct. 4	499	124	61	103
Railway-rail fastening	S. R Scharf	488,578	Dec. 27	2216	549	61	1811
Railway-rail joint	G. W. Hanner	484,421	Oct. 18	1380	353	61	304
Railway-rail joint-plate	E. Samuel	487,079	Nov. 29	3062	786	61	1253
Railway-rail-straightening machine	E. Y. Marshall	485,768	Nov. 8	940	252	61	782
Railway-rails. Combined foot and brace for	V. Angerer	483,889	Oct. 4	544	137	61	113
Railway-rails. Combined foot and brace for	E. Samuel	483,873	Oct. 4	524	131, 132	61	108
Railway safety-gate	E. L. Paterson	485,771	Nov. 8	943	253	61	783
Railway safety-plate	T. B. Smith	486,741	Nov. 22	2481	647	61	1121
Railway-signal	G. A. Bartholomew	486,271	Nov. 15	1749	460, 461	61	962
Railway-signal	G. H. Lothrop	488,441	Dec. 20	1999	496, 497	61	1750
Railway-signal	E. Schaefer	486,225	Dec. 20	1646	411	61	1663
Railway-signal	E. Urbain	484,068	Oct. 11	815	206, 207	61	182
Railway signal apparatus and system	J. W. Lattig	486,047	Nov. 8	1370	364, 365	61	869
Railway-signal case	L. A. Boyd	483,528	Oct. 4	17	4	61	6
Railway-signal. Electric	F. P. Schlosser	488,615	Dec. 27	2269	563	61	1822
Railway-signal. Electric	A. J. Wilson	485,728	Nov. 8	889	239	61	772
Railway-signal. Electrical	B. C. Seaton	484,614	Oct. 18	1679	426	61	364
Railway signaling apparatus	A. Hall	486,335	Nov. 15	1845	485, 486	61	981
Railway signaling device	Z. Krulis	487,904	Dec. 13	1098	275	61	1556
Railway signaling system	T. A. Edison and E. T. Gilliland	486,634	Nov. 22	2311	603, 604	61	1087
Railway-spike	S. H. Bracey	487,111	Nov. 29	3119	800	61	1965
Railway-spike	S. Emrich	486,528	Nov. 15	1835	483	61	980
Railway structure. Elevated	J. L. Meigs	488,283	Dec. 20	1736	437	61	1700
Railway-switch	B. Bennett	487,705	Dec. 13	760	195	61	1486
Railway-switch	W. E. Brown and L. H. Smith	488,263	Dec. 20	1701	425	61	1694
Railway-switch	D. M. Church	488,161	Dec. 13	1531	384	61	1644
Railway-switch	G. Saalmiller	486,126	Nov. 15	1524	403	61	916
Railway switch and operating device. Street	J. N. Strong	483,818	Oct. 4	446	111	61	92
Railway-switch apparatus	H. Blanchard	486,836	Nov. 22	2641	690	61	1154
Railway switch. Electric	J. J. Hill	485,868	Nov. 8	1078	286	61	809
Railway-switch. Electrically-operated	C. A. Stone and E. S. Webster	485,668	Nov. 8	791	211	61	751
Railway-switch. Portable	C. A. Stone and E. S. Webster	484,123	Oct. 11	885	225, 226	61	196
Railway-switch signal	J. E. Norwood	486,497	Nov. 22	2094	554	61	1045
Railway-switch stand and distant signal	F. Harris	488,654	Dec. 27	2335	578	61	1835
Railway switches and signals. Interlocking apparatus for	W. W. Le Grande	487,877	Dec. 13	1057	264, 265	61	1547
Railway system	H. and A. H. Johnson	485,799	Nov. 8	974	261, 262	61	789
Railway system. Electric	J. P. F. Kuhlmann	486,719	Nov. 22	2445	637	61	1114
Railway system. Elevated	J. H. Pendleton	484,919	Oct. 25	2204	567, 568	61	483
Railway-tie and fastening	E. Norton	485,708	Nov. 8	854	229, 230	61	764
Railway-tie and fastening	J. L. Chapman	486,628	Nov. 22	2303	602	61	1085
Railway-tie and fastening. Metallic	T. B. Moore and J. G. Hodgson	484,036	Oct. 11	776	195	61	174
Railway-tie and rail-fastener	L. A. Kenyon	487,016	Nov. 29	2969	765	61	1233
Railway-tie and track-fastening	C. M. Reed	487,642	Dec. 6	654	169	61	1451
Railway-tie. Metal	R. D. Price	487,351	Dec. 6	185	51	61	1357
Railway-tie. Metallic	S. H. Wilson	483,821	Oct. 4	450	119	61	93
Railway-tie. Metallic	A. J. Hartford	487,733	Dec. 13	814	207	61	1499
Railway-tie. Metallic	A. Mattljetz	487,952	Dec. 13	1173	293	61	1570
Railway-tie. Metallic	R. Morrell	483,853	Oct. 4	497	123	61	103
Railway-tie wear-plate	B. F. and M. F. Sparr	483,773	Oct. 4	378	94	61	79
Railway track and switch guard	B. Reece	488,662	Dec. 27	2348	581	61	1837
Railway-track foot-guard	M. Riley	484,461	Oct. 18	1442	368	61	317
Railway-track jack	M. Riley	485,480	Nov. 1	506	133	61	675
Railway-track-sanding apparatus	J. M. Wright	486,389	Nov. 15	1928	511	61	999
Railway-train-heating apparatus. Coupling and conduit for	A. A. Whipple	484,926	Oct. 25	2214	571	61	486
Railway trolley. Conduit	R. S. Pettet	488,717	Dec. 27	2434	604	61	1854
Railway trolley. Electric	B. Olbricht	486,985	Nov. 29	2924	754	61	1225
Railway trolley. Electric	A. H. R. Guiley	486,333	Nov. 15	1843	484	61	981
Railway trolley. Electric	D. Mason	488,022	Dec. 13	1291	322, 323	61	1505
Railway trolley. Electric	D. Mason	488,023	Dec. 13	1293	323	61	1505
Railway trolley. Electric	C. J. Van Depoele	488,929	Dec. 27	2761	682	61	1922
Railway trolley. Electric	A. Wörner	487,813	Dec. 13	949	240	61	1527
Railways. Apparatus for carrying ships, &c., upon	W. R. Kinipple	485,044	Oct. 25	2399	616, 617	61	582
Railways. Automatic block-signal for	S. J. Stuckey	484,062	Oct. 11	808	204	61	180
Railways. Closed conduit for electric	W. G. Creighton	483,761	Oct. 4	360	90	61	76
Railways. Closed conduit for electric	L. O. Dion	488,351	Dec. 20	1849	462, 463	61	1722
Railways. Closed conduit for electric	F. Mansfield	488,738	Dec. 27	2462	612	61	1860
Railways. Closed conduit for electric	B. F. Sutton	484,924	Oct. 25	2211	570	61	485
Railways. Closed conduit for electric	A. A. Vanderpool	487,654	Dec. 6	672	173	61	1454
Railways. Underground electric conduit and trolley-bar for electric	J. S. Moss	485,555	Nov. 1	612	163	61	698
Rake: *See* Clam or oyster rake. Hay-rake. Ore-rake. Vine-rake.							
Rake	J. T. Thompson	486,361	Nov. 15	1882	495	61	969
Rake and broom. Combined	J. W. Koonce	484,156	Oct. 11	950	244	61	206
Ram. Hydraulic	L. T. Webster	484,966	Oct. 11	1139	289	61	244
Range and position finder	B. A. Fiske	483,999	Oct. 11	790	181, 182	61	162

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Range-finder	C. M. Allen	484,796	Oct. 18	1854	471, 472	61	309
Ratchet-drill brace	W. P. Nolan	484,231	Oct. 11	1071	272	61	232
Ratchet-wrench	G. N. Hupp	487,072	Nov. 29	3051	783	61	1250
Ratchet-wrench	S. Hussey	484,753	Oct. 18	1905	486	61	411
Razor, Safety	E. L. Schmitz	484,116	Oct. 11	877	223	61	194
Razor-strop	J. W. De Graff	487,896	Dec. 13	998	244	61	1531
Razor-stropping device	E. L. Schmitz	485,849	Nov. 8	1049	260	61	803
Razors. Machine for sharpening	C. A. Worden	487,140	Nov. 29	3102	810, 811	61	1275
Reclining-chair	E. I. Galloway	487,919	Dec. 13	1124	281	61	1561
Reclining-chair	C. H. Hacklaender	485,273	Nov. 1	177	53	61	609
Reclining-chair	E. E. Peck	488,773	Dec. 27	2513	625	61	1870
Reclining-chair	G. Weber	488,911	Dec. 27	2738	675	61	1916
Record of certain merchandise in retail establishments. Means for keeping stock	D. H. Stern	483,659	Oct. 4	208	52	61	43
Recorder: *See* Cash-recorder. Pressure-recorder. Speed-recorder. Time-recorder.							
Recording the location and character of business. Method of and apparatus for	C. A. Keating	486,192	Nov. 15	1614	428	61	935
Reel: *See* Belt-reel. Bolting-reel. Fishing-reel. Hose-reel. Sand-rope reel. Wire-reel.							
Reel	A. Dobson	483,907	Oct. 4	578	145	61	120
Refrigerating apparatus	D. L. Holden	484,913	Oct. 25	2188	564	61	481
Refrigerating apparatus	C. H. Parshall	485,217	Nov. 1	94	29	61	592
Refrigerating apparatus	H. Stacey and J. G. Lightford	483,876	Oct. 4	596	132	61	100
Refrigerating apparatus	L. C. Williamson	486,655	Nov. 22	2345	613	61	1093
Refrigerating compound	W. C. Trussell	484,963	Oct. 25	2299	.....	61	502
Refrigerating-machine	L. Block	487,706	Dec. 13	762	195	61	1489
Refrigeration. Electrical	M. W. Dewey	484,182	Oct. 11	988	253	61	215
Refrigerator	A. McDowell	487,199	Nov. 29	3255	833	61	1290
Refrigerator	W. C. Trussell	486,841	Nov. 22	2649	692	61	1156
Refrigerator and fruit car. Combined	H. C. Goodell	483,552	Oct. 4	54	13, 14	61	13
Refrigerator and water-cooler. Combined	M. Greenebaum	486,296	Nov. 15	1772	466	61	967
Refrigerator-car. Ventilated	H. C. Goodell	483,551	Oct. 4	52	13	61	13
Register: *See* Autographic register. Cash-register. Current-register. Fare-register. Gas-meter register. Warm-air register.							
Registering and indicating device	J. J. Mosher and M. R. Jewell	485,967	Nov. 8	1244	338	61	843
Registering-lock for cash-registers	G. W. Grove	485,930	Nov. 8	1179	310	61	839
Regulator: *See* Automatic regulator. Damper-regulator. Dental regulator. Dynamo-regulator. Electric-machine regulator. Feed-regulator. Feed-box regulator. Feed-water regulator. Pressure-regulator. Thermostatic regulator. Watch-regulator. Windmill-regulator.							
Regulator	H. Keller	487,392	Dec. 6	251	67, 68	61	1370
Rein-holder	O. B. Hathorn	488,975	Dec. 27	2838	700	61	1939
Rein-holder	G. W. Thompson	487,975	Dec. 13	1203	300	61	1576
Rein-support	A. McNicol	484,444	Oct. 18	1417	361	61	311
Releasing device	S. G. Todd	487,062	Nov. 29	3037	779	61	1247
Releasing device. Electric	W. R. Hewitt	486,612	Nov. 22	2278	594	61	1078
Resistance-box	J. Waring	487,306	Dec. 6	107	31	61	1343
Revolving case	W. L. Yost	488,594	Dec. 27	2243	556	61	1817
Rice-hulling machine	E. L. Cantwell	483,899	Oct. 4	558	140, 141	61	116
Rice, &c. Polishing	G. B. Prochaska	483,868	Oct. 4	518	130	61	107
Rigid and ratchet wrench. Combined	J. A. Miller	485,290	Nov. 1	203	58	61	614
Ring: *See* Finger-ring. Lap-ring.							
Riprap. Anchor	D. Neale	486,887	Nov. 29	2728	711	61	1187
Riprap. Metallic	D. T. McIntyre	486,885	Nov. 29	2726	711	61	1186
Rivers or other water-channels. Deepening	J. Schaffer	486,957	Nov. 29	2880	744	61	1217
Rivet-holder	J. J. Unbehend	488,510	Dec. 20	2102	522	61	1774
Rivet-setting machine	M. N. Bray and E. M. Pope	483,598	Oct. 4	121	30, 31	61	26
Riveting-machine	J. Baum	486,071	Nov. 15	1416	374	61	896
Riveting-machine	F. H. Steelow	484,473	Oct. 18	1460	371, 372, 373	61	319
Riveting machine. Loop	E. H. Griffin	487,618	Dec. 6	612	157	61	1443
Road making and repairing machine	M. G. Bunnell	488,112	Dec. 13	1448	364	61	1686
Road-roller. Steam	H. W. Laster	486,481	Nov. 22	3072	549	61	1040
Road-rut cutter	O. Culver	488,185	Dec. 20	1673	394	61	1689
Roadway. Logging	D. Evans	487,557	Dec. 6	527	136	61	1425
Rock-catcher	G. W. Veronee. (Reissue)	11,293	Dec. 6	750	192	61	1469
Rock-crushing machine	G. W. Weller	485,517	Nov. 1	552	147, 148	61	685
Rock-drill	S. G. McKiernan	488,209	Dec. 20	1712	431	61	1686
Rock-drill	N. Monday	486,567	Nov. 22	2196	578	61	1054
Rock-drill	A. J. Sypher	485,720	Nov. 8	872	234	61	769
Rock-drill	A. J. Sypher	485,721	Nov. 8	876	234	61	769
Rock-drill	A. J. Sypher	485,722	Nov. 8	879	235	61	770
Rock-drills, &c. Construction of stands or tripods for	A. W. and Z. W. Daw	487,256	Dec. 6	27	8, 9	61	1336
Rock drilling and splitting	G. M. Githens	486,101	Nov. 15	1483	391	61	989
Rock-drilling machinery	A. E. Chodsko	483,901	Oct. 4	565	142	61	117
Rocking-chair. Folding	J. Thornbeck	488,704	Dec. 27	2414	599	61	1859

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Invention.	Name	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Rod:							
See Fishing-rod. Stair-rod.							
Rod-coupling	L. Buese and J. Cowling	483,896	Oct. 4	553	140	61	115
Roll-carriage	T. Waterhouse	486,903	Nov. 15	1632	432	61	938
Roller:							
See Disintegrating-roll. Road-roller. Shade-roller.							
Roller and roller-bearing	G. A. Weber	487,884	Dec. 13	1068	267	61	1540
Roller-brake	H. C. Finkler	488,066	Dec. 13	1363	343	61	1614
Roller-mill feed	H. R. Shaw	483,963	Oct. 4	694	173	61	143
Rolling machine. Metal	J. J. Anderson	488,048	Dec. 13	1347	334	61	1606
Rolling machine. Metal	E. T. Horner	484,368	Oct. 11	1987	{328 {329	{61	274
Rolling-mill	H. Aiken	484,767	Oct. 25	1939	495	61	431
Rolling-mill	C. W. Bray	486,935	Dec. 27	2770	684	61	1992
Rolling-mill	G. W. Jones	483,996	Oct. 4	603	153	61	194
Rolling-mill	P. L. Kimberly	483,999	Oct. 4	606	154	61	195
Rolling-mill guide device	J. A. Potter and P. T. Berg	485,992	Nov. 8	1268	{334 {335	{61	849
Rolling-mill plant	H. Aiken	484,768	Oct. 25	1940	{495 {496	{61	431
Rolling screen	E. L. Clark. (Reissue)	11,280	Oct. 25	2572	{659 {660	{61	557
Roof	T. A. Seip	486,592	Nov. 22	2241	588	61	1073
Roof	L. H. Montross	483,966	Oct. 4	665	167	61	138
Roof. Sheet-metal	G. F. Ullmann	485,516	Nov. 1	551	147	61	685
Roof-valley	L. H. Britton	487,179	Nov. 29	3215	823	61	1283
Roofing compound	F. C. Tinnemeyer	484,263	Oct. 11	1128	287	61	243
Roofing-joint	S. Herbert	484,794	Oct. 25	1996	.....	61	441
Roofing-machine	W. H. Jellison	484,320	Oct. 11	1217	310	61	259
Roofing plate or shingle	W. C. Bell	487,361	Dec. 6	204	56	61	1361
Roofing. Sheet-metal	L. H. Montross	487,379	Dec. 6	220	60	61	1364
Roofing. Sheet-metal	W. C. Berger	485,789	Nov. 8	955	256	61	785
Root-cutter	E. Norton	484,640	Oct. 18	1721	437	61	371
Rope-clamp	D. Maxwell	483,743	Oct. 4	330	83	61	69
Rope-clamp	O. J. Baldwin	488,348	Dec. 20	1845	461	61	1721
Rope take-up	H. J. Mohme	487,287	Dec. 6	78	23	61	1337
Ropeway clip. Wire	A. and C. L. Kleitz	488,565	Dec. 27	2195	549	61	1807
Rosette	B. McIntire	488,085	Dec. 13	1407	349	61	1620
Rosin. Package for bleaching and packing	C. Wirt	484,077	Oct. 11	831	210	61	185
Rotary cutter for woodwork	D. W. Ketchum	487,091	Nov. 29	3088	792	61	1258
Rotary engine	C. E. Zimmermann	486,989	Nov. 15	1745	460	61	962
Rotary engine	F. M. Bailey	484,769	Oct. 25	1943	496	61	431
Rotary engine. Compound	J. R. Hamilton	488,277	Dec. 20	1723	{434 {435	{61	1698
Rotary motor	J. Gambetta and C. D. Harsin	487,217	Nov. 29	3281	838	61	1995
Rotary steam-engine	R. Hewson	487,221	Nov. 29	3290	839	61	1996
Rotary stock-cutter	F. A. Small	483,726	Oct. 4	299	75	61	63
Rotating motor	I. Fraleigh and F. L. Hemmer	485,792	Nov. 8	967	259	61	788
Roundabout	A. Springer	485,235	Nov. 1	190	37	61	598
Roundabout	J. L. Buford	483,530	Oct. 4	20	5	61	7
Roundabout. Marine	J. F. Fralinger	485,495	Nov. 1	594	139	61	679
Routing-machine	J. A. Criss	484,409	Oct. 18	1355	346	61	299
Routing-machine	W. Greaves	483,671	Oct. 4	223	56	61	46
Roving-frame	M. A. Taylor	487,589	Dec. 6	568	{145 {146	{61	1434
Roving-frames. Means for driving bobbins in	E. P. Morgan and J. H. McMullan	483,573	Oct. 4	84	22	61	19
Roving-machines. Sliver-tension regulator for	S. Scholfield	488,252	Dec. 27	2804	691	61	1930
Rubber dam	H. M. Heflin	486,252	Nov. 15	1716	452	61	955
Rubber-dam clamp	C. P. Pitman	484,046	Oct. 11	789	198	61	176
Rubber-dam clamp	J. W. Haughawout	487,670	Dec. 6	701	179	61	1460
Rubber-dam clamp	N. Kuns	484,800	Oct. 25	2000	513	61	443
Rubber-fastener	C. A. Meister	485,963	Nov. 8	1940	327	61	843
Running-gear	L. A. Sherman	485,302	Nov. 1	220	62	61	617
	J. R. McCardell, C. H. West, and M. J. McDonald.	485,875	Nov. 8	1068	289	61	811
Sad-iron	J. Sabold	483,769	Oct. 4	373	93	61	78
Sad-iron heater	F. R Sutton	483,878	Oct. 4	530	133	61	110
Saddle. Harness	P. Ballentyne	484,771	Oct. 25	1946	496	61	432
Saddle. Harness	S. S. Kurts	484,801	Oct. 25	2001	514	61	443
Saddle. Harness	O. Taber	486,912	Nov. 29	2813	{728 {729	{61	1903
Saddle pad. Harness	R. Whitman	483,754	Oct. 4	346	87	61	72
Saddle. Side	F. L. Gee	488,733	Dec. 27	2455	610	61	1858
Safe	T. M. Brintnall	488,800	Dec. 27	2815	694	61	1933
Safe	T. M. Brintnall	488,961	Dec. 27	2817	695	61	1934
Safe	T. M. Brintnall	488,962	Dec. 27	2818	695	61	1934
Safety attachment	C. O. Yale	488,863	Dec. 27	2564	636	61	1880
Safety-hook	S. T. Mosby	486,490	Nov. 22	2089	551	61	1043
Safety-pin	L. King	486,181	Nov. 15	1601	425	61	838
Safety-pin	A. E. Divine	485,263	Nov. 1	185	48	61	606
Safety-pin. Hook-and-eye	J. H. Wein	488,981	Dec. 27	2786	683	61	1923
Safety-switch	E. M. Wright	483,886	Oct. 4	540	136	61	112
Salicylate of phenyl. Making	R. T. Murphy	486,172	Dec. 13	1551	389	61	1648
Salt-holder	P. Ernest	486,770	Nov. 22	2529	.....	61	1131
Salts from molasses. Process of obtaining ammonia or other	H. A. Lee	485,398	Nov. 1	272	74	61	627
Sand-rope reel	L. Sternberg	486,647	Nov. 22	2333	.....	61	1091
Sanitary seal for covers of toilet vessels	W. A. Lloyd	486,203	Nov. 1	76	24	61	566
Sanitary trap. Two-way	C. Smart	483,946	Oct. 4	634	159	61	130
Sash-balance	T. J. Barrow	485,533	Nov. 8	1023	274	61	786
Sash-balance	P. H. Niles	487,280	Dec. 6	81	24	61	1339
Sash-balance	F. L. Rosenstreter	487,336	Dec. 6	158	45	61	1362
	A. J. Rosenstreter and J. G. O'Brien	488,699	Dec. 27	2409	597	61	1349

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Sash-balance	J. M. Smelser	488,294	Dec. 20	1753	441	61	1704
Sash-cord fastener	M. J. Hufman	487,570	Dec. 6	544	140	61	1439
Sash-cord guide	C. M. Burgess	487,712	Dec. 13	772	198	61	1491
Sash-cord guide	C. Wolcott	487,812	Dec. 13	948	{339 {340	{61	1567
Sash-fastener	M. Bourke	486,425	Nov. 22	1993	529	61	1094
Sash-fastener	I. A. Brown	485,806	Nov. 8	694	183	61	731
Sash-fastener	C. S. Fay	484,149	Oct. 11	936	240	61	205
Sash-fastener	A. S. Fisher	483,837	Oct. 4	473	118	61	98
Sash-fastener	G. Gibson	484,709	Oct. 18	1827	465	61	394
Sash-fastener	G. Gibson	484,710	Oct. 18	1829	465	61	395
Sash-fastener	H. W. Hood	488,358	Dec. 20	1860	465	61	1725
Sash-fastener	A. Lamplough	488,360	Dec. 20	1863	466	61	1725
Sash-fastener	A. A. Page	485,474	Nov. 1	499	132	61	672
Sash-fastener	J. C. Plunkett	484,235	Oct. 11	1078	273	61	224
Sash-fastener	L. C. Walker. (Reissue)	11,267	Nov. 22	2653	693	61	1157
Sash-fastener	C. Wolcott	487,314	Dec. 6	121	37	61	1345
Sash-holder	J. W. Kales	486,340	Nov. 15	1652	437	61	963
Sash-holder	C. D. Kelsey	486,476	Nov. 22	2065	547	61	1039
Sash-holder	H. S. Moore	486,788	Nov. 22	2559	667	61	1138
Sash-holder	P. Motley	487,934	Dec. 13	1147	287	61	1565
Sash-holder	J. B. Okey	485,131	Oct. 25	2520	648	61	547
Sash-holder	W. Purdon	487,155	Nov. 29	3190	817	61	1278
Sash-holder	I. A. Shaw	487,131	Nov. 29	3149	807	61	1270
Sash-operating mechanism	H. J. Casey	486,765	Nov. 22	2317	657	61	1128
Sash. Reversible window	G. Hoersch	483,763	Oct. 4	362	91	61	76
Sash. Reversible window	G. Schmidt	485,887	Nov. 8	1119	295	61	817
Sashes. Swinging jack for window	V. Schirmer	486,740	Nov. 22	2478	646	61	1121
Saturating articles or substances	J. A. Titzel	486,744	Nov. 22	2483	648	61	1122
Sausage-stuffing machine	J. Eppler	485,576	Nov. 1	649	173	61	707
Saw	D. Hazard	486,226	Nov. 15	1668	441	61	945
Saw	A. Smith	488,844	Dec. 27	2630	652	61	1894
Saw attachment	H. C. Webb	483,971	Oct. 4	677	169	61	140
Sawbuck	F. M. Tribbett	486,415	Nov. 15	1973	523	61	1007
Saw frame. Hack	J. A. Whelpley	487,358	Dec. 6	200	55	61	1360
Saw. Gang hand	T. H. Brown	487,658	Dec. 6	678	174	61	1456
Saw-gin	B. F. Browne	484,906	Oct. 25	2175	559	61	479
Saw-handle attachment	M. Pyper	486,736	Nov. 22	2471	645	61	1119
Saw handle. Crosscut	J. W. Miller	487,371	Dec. 6	219	60	61	1364
Saw-handle fastening	R. C. Taggart	488,703	Dec. 27	2413	598	61	1849
Saw-jointing machine	A. H. Flower	484,494	Oct. 18	1496	380	61	306
Saw mill. Band	F. McDonough	485,970	Nov. 8	1248	{329 {330	{61	844
Sawmill-dog	M. M. Appleman	485,251	Nov. 1	148	43	61	603
Sawmill-dog	V. Martin and M. Hanna	484,332	Oct. 11	1238	315	61	264
Sawmill-dog	J. N. Richey, S. N. Hench, and W. A. Dromgold.	488,906	Dec. 27	2733	674	61	1915
Sawmill-setworks	H. Gawley	484,360	Oct. 11	1276	325	61	272
Sawmill-setworks	J. T. Rice	485,564	Nov. 1	625	167	61	701
Sawmills, &c. Roller-case for	D. Burns	484,490	Oct. 18	1490	379	61	325
Sawmills. Variable friction-feed for	P. Stovall	488,618	Dec. 27	2272	564	61	1823
Saw-set	H. B. Smith	483,798	Oct. 4	408	101	61	85
Saw setting and filing machine	A. Pinke	488,899	Dec. 27	2598	{644 {645	{61	1888
Saw-tooth. Removable	I. N. and J. O. Kendall	488,336	Dec. 20	1825	456	61	1717
Saw-tooth swage	W. W. Ryder	484,163	Oct. 11	960	{346 {347	{61	210
Saw-tooth. Tubular inserted	L. L. Lewis	485,503	Nov. 1	536	142	61	662
Sawing-machine. Automatic cut-off	E. Fischer	483,998	Oct. 11	717	{180 {181	{61	162
Sawing-machine. Band	G. P. Myers	488,364	Dec. 20	1867	{467 {468	{61	1736
Sawing machine. Circular	J. H. Gateley	487,947	Dec. 13	1168	291	61	1569
Sawing machine. Drag	C. L. Kirkscey and F. P. Bowden	483,630	Oct. 4	166	42	61	35
Sawing machine. Wood	A. W. Violett, Jr.	485,755	Nov. 8	922	247	61	778
Scaffold. Builder's	J. E. Ennis	485,463	Nov. 1	481	{127 {128	{61	670
Scaffold. Builder's	L. Korn	488,437	Dec. 20	1963	495	61	1749
Scaffold. Reef	J. B. Cottom	485,318	Nov. 1	255	69	61	604
Scale. Automatic electric	P. J. Kuhbacher	485,950	Nov. 8	1217	301	61	838
Scale. Coin-operated weighing	G. G. Merry	483,787	Oct. 4	401	100	61	94
Scale. Computing	J. W. Culmer	486,633	Nov. 22	2356	{617 {618	{61	1095
Scale. Computing	J. W. Culmer	486,695	Nov. 22	2410	629	61	1106
Scale. Platform	M. M. Molinau	488,284	Dec. 20	1737	437	61	1701
Scale-poise. Computing	J. W. Culmer	487,694	Dec. 13	961	243	61	1539
Scale. Price	A. D. Hoffman	487,372	Dec. 6	52	16	61	1338
Scale. Weighing	J. P. Firth	488,868	Dec. 27	2663	684	61	1905
Scale. Weighing and price	G. Lundberg	486,787	Nov. 22	2557	667	61	1139
Scale. Weighing and recording	R. McFarlane	483,675	Oct. 4	235	57	61	47
Scalloping-machine	H. Loewer	486,408	Nov. 15	1940	521	61	1005
Scalpel	W. Schott	488,618	Dec. 27	2271	563	61	1822
Scalpel	R. Steinle	485,236	Nov. 1	121	27	61	590
Scalper, purifier, and grader. Combined	N. W. Holt	484,308	Oct. 11	1017	{209 {261	{61	221
Scarf-clasp	J. J. Hallahan	483,783	Oct. 4	397	98	61	89
Scene-shifting apparatus	J. Newell	484,506	Oct. 18	1515	386	61	330
Scenic effects. Apparatus for producing	F. Seymour	488,696	Nov. 22	2867	592	61	1077
Scissors-sharpener	E. A. Thissell	488,643	Dec. 13	1239	332	61	1585
Scourer:							
See Grain-scourer.							
Scraper. Agricultural	R. E. Wilson	484,378	Oct. 11	1147	298	61	247
Scraper. Road	J. M. Holland	484,429	Oct. 18	1289	{255 {256	{61	205

Alphabetical list of inventions, October to December, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Scraper. Road	W. F. Mentley	486,566	Nov. 22	2194	578	61	1063
Scraper. Wheeled	P. M. Broadfoot	485,085	Oct. 25	2456	632	61	534
Screen:							
See Artist's sketching screen.	Pulp-screen.						
	Rolling screen.						
Carding-engine screen.	Stove-screen.						
	Window-screen.						
Lamp or gas-light screen.							
Screen-frame	H. A. Way	487,656	Dec. 6	675	174	61	1455
Screening and assorting machines. Removable tread for	P. W. Gates	488,760	Dec. 27	2493	620	61	1866
Screw and clamp. Box	W. H. Miller and T. L. Farrow	484,159	Oct. 11	954	245	61	209
Screw-driver	W. M. Carr	486,395	Nov. 15	1938	513	61	1001
Screw-driver	W. E. Daily	484,654	Oct. 18	1754	446	61	379
Screw-driver	T., Jr., and J. J. Edwards	487,946	Dec. 13	1165	291	61	1569
Screw-driver	G. E. Gay and J. H. Parsons	484,004	Oct. 11	731	183	61	164
Screw-driver. Pendant set	D. Mendelson	485,420	Nov. 1	420	112	61	658
Screw-threading machine	F. F. Voigt	485,245	Nov. 1	137	41	61	601
Seal. Bag	W. D. Kenyon	485,415	Nov. 1	414	111	61	657
Seal. Center	J. Hearne	485,629	Nov. 8	727	190	61	737
Seal-lock	J. B. Price	483,867	Oct. 4	515	129	61	107
Seal-lock	O. E. Wheaton	487,591	Dec. 6	571	146	61	1435
Seal-press	E. J. Brooks	485,370	Nov. 1	343	91, 92	61	649
Seal-press	S. E. Cheeseman	487,346	Dec. 6	172	48	61	1354
Seal-press	A. G. Douthit	487,321	Dec. 6	138	40	61	1348
Seaming metal cans, tins, &c. Apparatus for double-	W. Woolnough	486,999	Nov. 29	2944	759	61	1923
Seaming the heads upon cans. Device for	E. Norton	487,764	Dec. 13	865	220	61	1510
Seaming tool. Metal-	C. H. A. Disainger	487,320	Dec. 6	137	40	61	1348
Seat:							
See Car-seat.	Spring-seat.						
Folding seat.	Vehicle shifting seat.						
Seat	E. C. Haeseler	488,555	Dec. 27	2171	536	61	1802
Seat	T. H. Hicks	484,367	Oct. 11	1286	328	61	274
Secondary battery	R. Elckemeyer	486,094	Nov. 15	1471	{387 388}	61	906
Secondary battery	W. Main	485,013	Oct. 25	2349	605	61	512
Secondary battery	W. L. Silvey	484,120	Oct. 11	882	224	61	195
Secondary battery	N. Wladimiroff	488,796	Dec. 27	2445	607	61	1856
Seed-drill	R. P. Howard	488,072	Dec. 13	1391	{345 346}	61	1616
Seed-drill	P. Scandracof and I. Dimovich	488,775	Dec. 27	2516	696	61	1870
Seed-hopper feed device	T. R. Crane	487,720	Dec. 13	792	203	61	1495
Seeder and harrow. Combined	H. S. Nelson and F. M. Heuett	486,494	Nov. 22	2088	553	61	1043
Seeder. Broadcast	A. Stansel	484,663	Oct. 18	1796	457	61	388
Seeding-machine	J. M. Fender and J. L. Riter	486,637	Nov. 22	2317	606	61	1068
Seeding-machine	G. W. Kirkpatrick and J. B. Ralston	485,948	Nov. 8	1214	320	61	837
Separator:							
See Coal-separator.	Magnetic separator.						
Cockle-separator.	Ore-separator.						
Dental separator.	Slag-separator.						
Grain-separator.	Steam-separator.						
Liquid-separator.							
Sewage. Disinfecting	H. Wollheim	486,172	Nov. 15	1591	.....	61	930
Sewage-purifying apparatus	E. E. Scruby	484,823	Oct. 25	2033	521	61	450
Sewer-pipe. Device for handling	A. Garee	484,707	Oct. 18	1825	464	61	394
Sewer-trap	R. Newton	488,365	Dec. 20	1870	468	61	1727
Sewing-machine	J. H. Clark	485,371	Nov. 1	344	92	61	643
Sewing-machine	A. A. Cuming	485,176	Nov. 1	33	11, 12	61	579
Sewing-machine	O. C. Dolloff	488,964	Dec. 27	2220	{695 696}	61	1935
Sewing-machine	A. Eppler	487,214	Nov. 29	3274	{836 837}	61	1293
Sewing-machine	J. Reece	484,671	Oct. 18	1779	{453 454}	61	384
Sewing-machine	W. R. Wheaton	487,383	Dec. 6	234	63	61	1367
Sewing machine. Boot or shoe	C. S. Gooding and T. K. Keith	484,958	Oct. 25	2256	{581 582 583}	61	494
Sewing-machine brake	E. F. Hustis	485,631	Nov. 8	730	190	61	738
Sewing machine. Broom-	G. F. McCombs	487,196	Nov. 29	3251	{831 832}	61	1289
Sewing machine. Broom-	G. F. McCombs	487,197	Nov. 29	3252	833	61	1289
Sewing-machine. Buttonhole	J. Reece	488,098	Dec. 13	1304	{324 325 326}	61	1598
Sewing-machine fan attachment	G. W. Miller	485,554	Nov. 1	611	163	61	696
Sewing-machine feeding mechanism	B. F. Bellows	483,900	Oct. 4	417	103	61	67
Sewing-machine feeding mechanism	J. Bolton	484,396	Oct. 18	1338	341	61	296
Sewing-machine feeding mechanism	J. Bolton	484,402	Oct. 18	1345	343	61	298
Sewing-machine feeding mechanism	A. A. Cuming	485,175	Nov. 1	31	11	61	579
Sewing-machine feeding mechanism	G. Schrade	487,079	Nov. 29	3064	787	61	1253
Sewing-machine feeding mechanism	A. O. Very	486,961	Nov. 29	2986	746	61	1218
Sewing-machine for lasting boots or shoes	T. K. Keith	488,279	Dec. 20	1728	{435 436}	61	1699
Sewing-machine for lasting boots or shoes	T. K. Keith	488,523	Dec. 20	2130	527	61	1778
Sewing-machine for lasting boots or shoes	A. Seaver	487,023	Nov. 29	2980	{767 768}	61	1235
Sewing-machine for overstitching buttonhole-thrums	E. M. Phelps	484,744	Oct. 18	1809	{481 482}	61	408
Sewing-machine guide	G. H. Curtis	488,186	Dec. 20	1575	395	61	1670
Sewing-machine guide	G. H. Curtis	488,187	Dec. 20	1576	396	61	1670
Sewing-machine guide	T. C. Robinson	486,811	Nov. 22	2597	676	61	1144
Sewing-machine guide	S. and S. A. Winters	488,993	Dec. 27	2656	658	61	1900
Sewing-machine guiding device	L. S. Chaffee	486,891	Nov. 22	2616	682	61	1149

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Sewing-machine hand attachment	J. Slaughter	486,358	Nov. 15	1879	495	61	988
Sewing-machine lap-seam guide	A. Iversen	488,073	Dec. 13	1393	346	61	1617
Sewing-machine motor	A. H. Clayton	485,487	Nov. 1	516	136	61	677
Sewing-machine oscillating hook	A. Rontke	484,462	Oct. 18	1443	368	61	317
Sewing-machine plaiting attachment	J. Douglas	488,547	Dec. 27	2159	{533 534}	61	1799
Sewing-machine quilting attachment	J. S. Dickey	488,350	Dec. 20	1847	462	61	1782
Sewing-machine quilting attachment	J. C. Galloway	485,100	Oct. 25	2479	637	61	539
Sewing-machine shuttle	J. Bolton	484,395	Oct. 18	1338	340	61	296
Sewing-machine shuttle-actuating mechanism	R. H. St. John	485,897	Nov. 8	1132	300	61	820
Sewing-machine shuttle cop-holder	C. E. Wilkinson and M. V. Palmer	487,910	Dec. 13	1109	277	61	1557
Sewing-machine shuttle-operating mechanism	J. Bolton	484,397	Oct. 18	1340	341	61	296
Sewing-machine shuttle-operating mechanism	J. Bolton	484,400	Oct. 18	1343	342	61	297
Sewing-machine stand	J. Bolton	484,401	Oct. 18	1344	{342 343}	61	297
Sewing-machine take-up	J. Bolton	484,398	Oct. 18	1341	341	61	296
Sewing-machine take-up	D. Snitzer and M. Kuehn	485,019	Oct. 25	2366	608	61	515
Sewing-machine tension device	C. B. Hunt	485,546	Nov. 1	601	160	61	696
Sewing-machine tension device	I. La Chapelle	488,505	Dec. 20	2095	530	61	1773
Sewing-machine tension device	A. C. Spencer	488,508	Dec. 20	2099	531	61	1774
Sewing-machine thread-unwinding device	M. B. Reigh	485,136	Oct. 25	2531	650	61	549
Sewing-machine trimming attachment	A. G. Forbes and G. W. Kemp	485,538	Nov. 1	591	158	61	694
Sewing-machine work-compressing mechanism	C. S. Gooding	488,629	Dec. 27	2295	588	61	1827
Sewing on buttons. Machine for	P. Schoen	487,972	Dec. 13	1197	{299 300}	61	1575
Sewing or embroidery table	A. R. P. Morton	486,602	Nov. 22	2260	590	61	1076
Shade and curtain fixture	J. H. Herring	486,040	Nov. 8	1302	362	61	868
Shade fixture. Window-	F. M. Carthy and T. F. Flynn	487,714	Dec. 13	775	199	61	1492
Shade-holder	L. Spitzer	487,858	Dec. 13	1027	257	61	1542
Shade holder. Curtain-	C. E. Dodd	487,211	Nov. 29	3270	835	61	1293
Shade-roller. Spring	E. F. Hartshorn	483,553	Oct. 4	56	14	61	12
Shade supporter. Window-	S. T. Stuver	483,796	Oct. 4	412	102	61	86
Shades to rollers. Attaching window-	E. F. Hartshorn	484,962	Oct. 25	2264	584	61	496
Shaft attachment	D. W. Locke	485,874	Nov. 8	1087	289	61	811
Shaft attachment. Vehicle-	L. G. Hague	487,524	Dec. 6	479	125	61	1416
Shaft attachment. Vehicle-	F. M. Merrick	483,568	Oct. 4	78	19	61	18
Shaft-bearing. Adjustable	B. W. Grist	486,401	Nov. 15	1949	{516 517}	61	1003
Shaft. Flexible	G. H. Coates	486,852	Nov. 29	2675	700	61	1176
Shaft-hangers. Roller-box for	J. W. Hyatt	485,938	Nov. 8	1196	316	61	834
Shaft-straightener	H. F. Busking	485,735	Nov. 8	901	241	61	774
Shaft support. Vehicle-	C. H. Ellis	488,000	Dec. 13	1254	312	61	1567
Shafts. Vehicle-	H. Prenslau	487,037	Nov. 29	3001	772	61	1239
Shaft. Wagon-	G. J. F. Paul	488,772	Dec. 27	2512	624	61	1869
Shafting. Level-hanger for	N. D. Poole	487,427	Dec. 6	325	83	61	1396
Shafting-support	J. A. Evans	484,148	Oct. 11	935	240	61	205
Shampooing apparatus. Portable	H. J. Garbutt	485,994	Nov. 8	1169	308	61	826
Shaper and cutter head	J. J. Quinn	485,427	Nov. 1	498	114	61	660
Share attachment	J. Gilbert	487,120	Nov. 29	3135	804	61	1267
Sharpening matcher-heads. Machine for	W. E. Hazard	484,094	Oct. 11	853	216	61	189
Shaving-case	H. T. Peters	483,579	Oct. 4	99	24	61	22
Shearing and punching machine. Combined	G. Van Wagenen	484,832	Oct. 25	2048	{524 525}	61	453
Shears:							
See Animal-shears.	Grass-shears.						
Fruit clipping and holding shears.	Metal-shears.						
	Sheep-shears.						
Shears	G. Brandenburg	488,959	Dec. 27	2815	693	61	1933
Sheave-support. Adjustable	B. W. Grist	486,402	Nov. 15	1950	517	61	1003
Shed. Portable hay or grain	T. J. Kelley	487,927	Dec. 13	1138	284	61	1563
Sheep-rack	J. N. Scudder	486,508	Nov. 22	2109	557	61	1046
Sheep-shears	J. D. Todd	484,379	Oct. 11	1307	334	61	278
Sheet-delivery mechanism	W. Scott	484,251	Oct. 11	1104	{279 280}	61	239
Sheet-metal articles. Machine for the manufacture of	J. R. Paddack	488,633	Dec. 27	2301	570	61	1838
Sheet metal. Coating	E. Norton	488,527	Dec. 20	2136	529	61	1779
Sheet-metal cans. Machine for making	G. B. Hopper	484,014	Oct. 11	746	{187 188}	61	167
Sheet-metal elbow	W. C. Berger	485,783	Nov. 8	956	256	61	785
Sheet-metal folding machine	M. E. Hastings	485,192	Nov. 1	58	18	61	584
Sheet metal. Machine for profiling	G. A. Ohl	488,576	Dec. 27	2212	548	61	1811
Sheet-metal pipes. Machine for making	H. D. Rice	484,112	Oct. 11	873	222	61	193
Sheet-metal plate. Compound	W. B. Hollingshead	488,499	Dec. 20	2085	518	61	1771
Sheet-metal plate for tinning and its manufacture	E. Norton	488,151	Dec. 13	1515	380	61	1641
Sheet metal. Press for drawing through and forming up	W. Burton	486,065	Nov. 8	1401	371	61	875
Sheet-metal-shearing machines. Pattern-table for	C. A. and L. K. Williams	488,344	Dec. 20	1839	{459 460}	61	1720
Sheet-metal-stamping press	J. G. Hodgson	487,271	Dec. 6	50	16	61	1231
Sheet-metal vessel	F. A. Walsh	485,851	Nov. 8	1051	280	61	804
Sheet-metal vessels. Apparatus for beading and curling	G. I. Holdship	487,589	Dec. 6	487	{127 128}	61	1417
Sheet-metal vessels. Attaching spouts and lips to	G. W. Knapp	487,032	Nov. 29	2992	770	61	1238
Sheets from a pile. Method of and means for feeding	L. C. Crowell	486,069	Nov. 15	1455	384	61	902
Shim and railway-rail joint. Metal	W. F. Gould	487,832	Dec. 13	976	246	61	1533
Shelf-bracket	H. L. Bradley	485,857	Nov. 8	1051	282	61	806
Shelf-bracket	T. Corscaden	483,634	Oct. 4	470	117	61	97
Shingle-gage. Adjustable	J. B. Sykes	485,436	Nov. 1	441	118	61	662
Shingle. Metallic	D. D. Lupton	484,211	Oct. 11	1036	263	61	225
Shipping-can. Reinforced	F. Westerbeck	485,119	Oct. 25	2502	643	61	544
Ships' bottoms. Apparatus for cleaning	J. J. McCutchan	487,198	Nov. 29	3253	842	61	1289
Ships' cables. Device for cutting	J. Squires and C. Petrie	486,847	Dec. 27	3036	653	61	1895
Ships. Construction of	A. P. Bliven	484,868	Oct. 25	2145	550	61	478

Alphabetical list of inventions, October to December, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Ship's ventilator	T. Utley	484,348	Oct. 11	1900	321	61	989
Shirt	L. Auer	487,000	Nov. 29	2946	328	61	1229
Shirt	E. Culver and C. A. Hascall	485,480	Nov. 1	516	759	61	1229
Shirt-bosom	A. Rothe	484,943	Oct. 11	1092	137	61	677
Shoe	W. M. Claflin and K. L. Ames	487,250	Dec. 6	19	277	61	936
Shoe	A. Eppler, Jr	487,011	Nov. 29	2963	6	61	1325
Shoe	G. P. Herndon	485,543	Nov. 1	598	763	61	1232
Shoe-cover	J. Favets	484,705	Oct. 18	1892	159	61	695
Shoe-fastener	J. H. Hamill and P. J. Johnson	484,313	Oct. 11	1908	464	61	393
Shoe-fastening	G. W. Watson	484,381	Oct. 11	1309	307	61	958
Shoe-holder	E. Leger	483,808	Oct. 4	429	335	61	979
Shoe-holder	E. Leger	483,963	Oct. 4	662	106	61	89
Shoe-horn	C. E. Vail	487,860	Dec. 13	1029	166	61	137
Shoemaker's tool	F. W. Danielson	488,738	Dec. 27	2448	257	61	1543
Shoe-slugging machine	S. M. Cutter	487,404	Dec. 6	285	608	61	1857
Shoe-upper protector	S. W. Wales	486,171	Nov. 15	1590	74	61	1377
Shoe. Ventilated	L. R. Eastman	485,180	Nov. 1	40	421	61	930
Shoulder-knot	J. R. Farrell	487,098	Dec. 6	745	13	61	580
Shovel	J. Kubitzki	487,534	Dec. 6	495	190	61	1468
Shovels. Making	W. E. Kesler	488,503	Dec. 20	2092	129	61	1418
Show-fixture	E. Friendlich	488,757	Dec. 27	2469	519	61	1772
Show-stand	F. M. Morrow	485,109	Oct. 25	2490	619	61	1865
Show-windows. Adjustable stand for	C. H. Gruenhagen	488,981	Nov. 29	2917	639	61	542
Shutter-fastener	F. Meeker	488,478	Dec. 20	2052	753	61	1224
Shutter-opener	A. H. Hull	484,098	Oct. 11	857	510	61	1764
Shutter-opener	A. H. Hull	486,108	Nov. 15	1493	217	61	190
Shutter-worker	J. N. Farnham	485,811	Nov. 8	990	393	61	910
Shutter-worker	J. A. Hadley	484,734	Oct. 18	1869	266	61	792
Shutter-worker	C. Hottes	487,071	Nov. 29	3050	475	61	402
Shutter-worker	C. F. Nickerson and L. M. Fleet	484,972	Oct. 25	2278	769	61	1250
Shutter-worker	C. Zimmerman	488,492	Dec. 20	2073	588	61	498
Sifter. Ash	C. F. Abbott	487,009	Nov. 29	2961	515	61	1768
Sifter. Ash	L. Pellican	487,350	Dec. 6	183	763	61	1232
Sifters. Flour	L. Scrugge	484,980	Oct. 25	2296	50	61	1357
Sifters. Wire agitator for flour	J. H. Bigelow	486,576	Nov. 22	2213	593	61	501
Sifting and sorting flour or meal. Machine for	W. Falst and J. Fux	484,306	Oct. 11	1198	580	61	1098
Sign	A. L. Brumfield	484,174	Oct. 11	979	305	61	256
Sign and price-current. Combined	J. V. Reed	485,229	Nov. 1	115	251	61	214
Sign bracket and frame. Combined	F. E. Schoenberg	488,092	Dec. 13	1416	35	61	597
Sign. Electric-lamp	E. W. Clay	486,324	Nov. 15	1825	352	61	1021
Sign or guide board	A. D. Cable	487,603	Dec. 6	589	481	61	978
Sign. Street	M. Hofheimer	484,097	Oct. 11	856	151	61	1438
Signs. Apparatus for displaying	D. L. MacDonald	487,394	Dec. 6	253	217	61	190
Signal:					69	61	1371
See Electric signal. Railway-signal. Multiple-switch-board signal. Railway-switch signal.							
Signal and switch interlocking apparatus	S. T. Dutton	488,805	Dec. 27	2567	637	61	1881
Signal-box. District	C. E. Scribner	488,579	Dec. 27	2217	549	61	1812
Signal box. Successive non-interference	W. R. Decrow	486,702	Nov. 22	2424	632	61	1109
Signal-boxes. Device for preventing accidental closing of electric circuits in	W. H. James	484,206	Oct. 11	1029	262	61	223
Signal-compensator	S. H. Stupakoff	486,303	Nov. 15	1794	471	61	972
Signal-repeater	T. H. Patenall	488,285	Dec. 20	1739	438	61	1701
Signals. Device for setting semaphore	B. Marion	488,825	Dec. 27	2593	643	61	1886
Signaling apparatus. Electric	M. Martin	487,676	Dec. 6	709	180	61	1461
Signaling apparatus. Electrical hose	W. Fowler	486,807	Nov. 22	2587	181	61	1142
Signaling device. Electric	J. J. Ross	486,569	Nov. 22	2200	674	61	1065
Silver ores. Smelting complex	C. James	483,962	Oct. 4	660	579	61	137
Sinker	D. W. Settle	484,254	Oct. 11	1109	.....	61	240
Siphon. Intermittent	R. Field	485,759	Nov. 8	996	230	61	940
Sitz-bath	A. B. Jamison	485,948	Nov. 8	1902	948	61	779
Skate	Y. Henderson	486,879	Nov. 29	2707	318	61	835
Skate	R. R. Norton and H. Hall	486,189	Nov. 15	1513	706	61	1189
Skate-sharpener	C. Holland	484,201	Oct. 11	1016	401	61	914
Skein-tarp	J. Simpson	485,883	Nov. 8	1125	259	61	921
Skins. Machine for plucking hairs from	F. J. Murphy	487,349	Dec. 6	179	298	61	819
Skiving-machine	H. Masterson	488,212	Dec. 20	1622	50	61	1356
Slag-separator	J. F. Kelper	484,650	Oct. 18	1764	405	61	1679
Slate attachment	M. Wyman	488,411	Dec. 20	1948	448	61	381
Slate-frame	H. E. C. Daniels	487,554	Dec. 6	593	487	61	1742
Slate-muffler	R. Kohler	485,802	Nov. 8	980	135	61	1494
Slate. School	J. H. De Neut	487,178	Nov. 29	3222	263	61	790
Slate-shaving machine	H. and E. Kurtz	484,892	Oct. 25	2002	885	61	1984
Sleeting compound	J. B. Coles	485,455	Nov. 1	471	514	61	444
Slotted structure for doors, stairs, &c	N. R. Smith	488,371	Dec. 20	1883	.....	61	668
Sled	H. C. Gammeter	484,632	Oct. 18	1708	471	61	1729
Sled roller attachment	T. Chittick	487,990	Dec. 13	1342	433	61	369
Sled-shoe	R. H. Jordan	488,986	Dec. 20	1709	309	61	1584
Sleeve-holder	W. Jones	488,523	Dec. 20	2129	430	61	1695
Sleigh	J. A. Chapman	488,366	Nov. 15	1897	527	61	1778
Sleigh	H. Umphrey and J. Weekes	487,501	Dec. 6	444	509	61	992
Slicer. Fruit or vegetable	S. M. Jones	484,155	Oct. 11	949	124	61	1409
Sliding gate	W. Aunspaugh	488,105	Dec. 13	1436	115	61	598
Sliding gate	J. A. Newton	485,212	Nov. 1	88	943	61	208
Sliding gate	J. R. Payne	488,481	Dec. 20	2056	244	61	590
Sliding gate	A. Wilkinson	486,803	Nov. 22	2581	97	61	1784
					673	61	1141

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Sliding gate. Double suspended	P. E. Jensen	483,614	Oct. 4	146	36	61	31
Sludge. Treating	H. A. Frasch	488,628	Dec. 27	2293	508	61	1896
Smelting ores containing zinc	H. A. Hunicke	487,444	Dec. 6	360	94	61	1292
Smelting or reducing plant	J. Rourke	484,942	Oct. 25	2218	576	61	490
Smoke arrester and conductor	F. C. Lechner	487,949	Dec. 13	1189	292	61	1570
Smoke-consumer	J. L. Hornig	486,781	Nov. 22	2546	665	61	1133
Smoke-consuming device	E. Kunzer	486,582	Nov. 22	2225	584	61	1069
Smoke-consuming furnace	G. L. Cross	487,823	Dec. 13	960	243	61	1530
Smoke-escape	G. L. Barrett	485,523	Nov. 1	561	150	61	667
Smoke-purifier	C. Fink	486,947	Nov. 15	1706	450	61	953
Smoke stack and conductor	J. W. Duncan and T. B. Quinby	485,535	Nov. 1	581	156	61	692
Snap-hook	S. Brown	487,980	Dec. 13	1508	302	61	1578
Snap-hook	F. J. Herrick	485,037	Oct. 25	2390	614	61	880
Snap-switch. Double	R. Lundell	486,215	Nov. 15	1651	436	61	941
Snatch-block	G. Harvey	487,734	Dec. 13	815	908	61	1500
Sniping-machine	N. J. White	485,401	Nov. 1	392	106	61	653
Snow-plow	P. H. Craddock	486,694	Nov. 22	2406	628	61	1106
Snow-shoe for vehicle-wheels	J. Stenger and N. Münster	486,988	Nov. 29	2927	755	61	1296
Soap	J. Niese	485,113	Oct. 25	2494	.....	61	543
Soap-bubble pipe	W. S. Fickett	486,967	Nov. 29	2894	747	61	1219
Soap cake	N. Jewett	486,393	Dec. 20	1915	479	61	1735
Soap-cake holder	M. Oefinger	487,094	Nov. 29	3092	794	61	1250
Soap compound	J. Scharr	486,267	Nov. 15	1743	.....	61	961
Soap-holder	C. S. Higgins	486,599	Nov. 22	2254	589	61	1074
Soap-press. Automatic	O. W. Band	487,818	Dec. 13	955	241	61	1508
Soap server. Toilet	H. B. Potter	485,653	Nov. 8	757	200	61	744
Sod-cutter	G. F. Wagner	485,441	Nov. 1	447	120	61	663
Sod-trimming machine	W. Pullar	487,058	Nov. 29	3032	778	61	1246
Soda distributer. Caustic	W. S. Fickett	487,729	Dec. 13	804	205	61	1497
Soda. Treating bisulphate of	E. J. Barlsier	484,546	Oct. 18	1577	400	61	343
Soda-water apparatus	W. H. Collins	484,889	Oct. 25	2146	551	61	473
Soda-water apparatus	J. Ramsey and R. Carleton	486,548	Nov. 22	2161	571	61	1058
Soda-water apparatus. Acid-feeder for	J. Ormerod	484,604	Oct. 18	1658	421	61	360
Soda-water. Method of and apparatus for charging	J. H. Vinton	485,244	Nov. 1	135	41	61	801
Sodium bicarbonate. Apparatus for washing	K. J. Sundstrom	488,702	Dec. 27	2412	508	61	1849
Sofa	W. Flamm	488,332	Dec. 20	1816	454	61	1716
Sofa and bed. Combined	C. C. Lockstaedt	485,637	Nov. 8	738	194	61	749
Soldering device. Blowpipe	F. von Krempelhuber and J. von Schmaedel.	485,766	Nov. 8	938	251	61	761
Soldering. Electric	E. E. Ries	485,017	Oct. 25	2361	607	61	514
Soldering-iron. Electrical	C. L. Coffin	488,671	Dec. 27	2670	661	61	1902
Soldering machine. Can-	G. E. Lockwood. (Reissue)	11,297	Dec. 27	2844	700	61	1940
Soldering. Process of and machine for	C. M. Brown	485,906	Nov. 8	1143	303	61	893
Soldering. Process of and machine for	C. M. Brown	485,907	Nov. 8	1146	304	61	893
Soldering-tool	E. L. Barber	485,161	Nov. 1	4	2	61	573
Soldering-tool. Electrically-heated	C. L. Coffin	486,872	Dec. 27	2671	661	61	1903
Sole	G. H. Crocker	485,439	Nov. 1	475	196	61	669
Sole	L. S. Pouts and L. D. Ball	483,580	Oct. 4	100	25	61	98
Sole-staining machine	F. L. Richardson	483,944	Oct. 4	624	158	61	120
Sole-trimming machine	J. R. Scott	488,841	Dec. 27	2627	651	61	1893
Sower. Seed	R. J. Strong	486,388	Nov. 15	1926	510	61	998
Sowing-machine	E. G. Thorén	483,623	Oct. 4	160	39	61	33
Spark-arrester	J. Thorston	485,901	Nov. 8	1135	301	61	891
Spark-arrester	J. E. Zimmerman	488,864	Dec. 27	2660	659	61	1900
Speaking-tube	H. A. Cutmore	484,516	Oct. 18	1531	388	61	333
Speaking-tube	C. L. Peirce	486,681	Nov. 22	2385	622	61	1102
Speaking-tube	C. L. Peirce	486,682	Nov. 22	2387	624	61	1102
Speaking-tube	W. Perpente	485,979	Nov. 8	1262	333	61	848
Speaking-tube	L. Strouse	484,962	Oct. 25	2297	503	61	501
Spectacles	J. F. Sumner	484,725	Oct. 18	1853	471	61	360
Speech or other sounds. Apparatus for recording	W. Bruening	486,394	Nov. 15	1936	513	61	1000
Speech or other sounds. Apparatus for recording	W. Bruening	486,606	Nov. 22	2270	592	61	1077
Speed and direction indicator. Automatic marine	H. B. Williams	486,008	Nov. 8	1314	349	61	956
Speed-indicator	W. H. Abbott	487,702	Dec. 13	753	850	61	1457
Speed-indicator	F. L. Johnston and W. C. Fletcher	487,275	Dec. 6	58	193	61	1333
Speed-indicator	L. T. Weise	486,651	Nov. 22	2341	194	61	1082
Speed-measure	O. Knapp	483,846	Oct. 4	486	612	61	100
Speed-recorder and odometer	O. J. Fuchs	484,159	Oct. 11	940	941	61	206
Speeder-frames. Means for driving bobbins in	S. Scholfield	488,661	Dec. 27	2383	948	61	1844
Spelss. Treating	P. Flury	486,330	Nov. 15	1687	590	61	990
Spigot for refrigerators, &c	N. Engquist	486,705	Nov. 22	2431	.....	61	1110
Spike	E. A. Streeter and B. W. Nichols	487,567	Dec. 6	567	633	61	1434
Spike-looking device	C. S. von Lasor	485,820	Nov. 8	1198	145	61	1434
Spindle	A. A. Brigham	484,696	Oct. 18	1815	316	61	834
Spindle	W. G. Merrison	486,231	Nov. 15	1676	461	61	998
Spindle-step	E. J. Carroll	488,688	Dec. 27	2394	443	61	947
Spindle-support	W. F. Draper	484,856	Oct. 11	1271	503	61	1846
Spinning-machine separator	C. A. Taft	486,786	Nov. 22	2574	394	61	977
Spinning-machine top roll	J. F. Strange	484,709	Oct. 18	1917	671	61	1139
Spinning-machine yarn-separator	C. A. Taft	486,136	Dec. 13	1488	489	61	413
Spinning machinery. Kink-preventer for silk	E. Oldfield and P. Flynn	487,334	Dec. 6	154	373	61	1695
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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Spinning-mule	P. N. Dexter, Jr	483,906	Oct. 4	576	144, 145	61	119
Spinning-mule. Self-acting	J. Stark	486,945	Nov. 29	2866	740	61	1214
Spittoon for railway-cars	E. L. Harris	483,918	Oct. 4	595	151	61	123
Spoke-socket	A. C. Bushee	488,113	Dec. 13	1450	365	61	1698
Spoke-socket protecting-plate	E. Weinmann and F. Lindhorst	486,995	Nov. 29	2940	758	61	1228
Spoke. Wagon	F. T. Mynard	487,299	Dec. 6	80	34	61	1337
Spool	C. Back	487,704	Dec. 13	750	195	61	1488
Spool-blanks. Method of and machine for forming	C. A. Broughton	488,421	Dec. 20	1963	490, 491	61	1745
Spool-blocks. Machine for reaming holes in	R. L. Wiggins	488,643	Dec. 27	2313	573	61	1830
Spool-boring machine	J. M. Parker	483,576	Oct. 4	88	23	61	20
Spool-holder	T. Frelinghuysen	486,866	Nov. 29	2701	705	61	1121
Spool-holder	A. F. Morgan	485,206	Nov. 1	79	25	61	588
Spool-holder	E. Sylwassehy	484,563	Oct. 18	1599	406	61	348
Spoon-holder	G. W. Babcock	484,081	Oct. 11	836	212	61	186
Spoon-holding attachment	J. Staren	485,510	Nov. 1	546	145	61	684
Sporting-trap	J. A. Mellus	488,827	Dec. 27	2595	644	61	1887
Spring: *See* Bed-spring. Door-spring. Car-spring. Vehicle-spring. Checkrein-spring.							
Spring	W. I. Bunker	488,060	Dec. 13	1371	340	61	1612
Spring and support. Combined spiral	W. S. Foster	486,773	Nov. 22	2538	662	61	1132
Spring-hook	J. C. Newey	484,336	Oct. 11	1244	317	61	265
Spring-jack switch	C. E. Scribner and E. P. Warner	488,033	Dec. 13	1316	328	61	1600
Spring-crushing machine	J. H. Müller	486,834	Nov. 22	2639	669	61	1154
Spring-motor	J. J. Faulkner	488,192	Dec. 20	1581	396	61	1671
Spring-motor	W. C. Johnston	487,745	Dec. 13	835	213	61	1504
Spring-seat	S. G. Scarritt	483,699	Oct. 4	266	66	61	56
Spring-setting machine	J. H. Miller	486,832	Nov. 22	2635	687, 688	61	1153
Springs. Method of and apparatus for making leaf	O. F. Freeman	488,553	Dec. 27	2168	536	61	1801
Sprinkler: *See* Automatic sprinkler. Street-sprinkler. Lawn-sprinkler.							
Sprinkler	C. Doelger and O. Kirsten	486,667	Nov. 22	2365	619	61	1097
Sprocket-wheel. Variable-pitch	F. Gleason	484,005	Oct. 11	732	183	61	164
Square and bevel. Combined try	T. R. Cook	485,456	Nov. 1	471	125	61	668
Square. Folding	E. De Camp	488,544	Dec. 27	2157	533	61	1798
Square. Folding	E. De Camp	488,545	Dec. 27	2158	533	61	1799
Square. Folding	H. F. Hegemann	488,242	Dec. 20	1670	417	61	1688
Square. Folding	J. C. Sweet	484,261	Oct. 11	1118	283	61	242
Square. Mechanic's	E. Wetterhahn	484,575	Oct. 18	1614	410	61	351
Square. Separable	F. W. Wohlfert	485,402	Nov. 1	394	106	61	653
Square. T	W. G. Thornton	486,186	Nov. 15	1608	426, 427	61	934
Square. Tailor's measuring	P. N. Arvidson	483,521	Oct. 4	4	1	61	4
Stable. Feed	D. Halfley	484,791	Oct. 25	1983	506	61	440
Stage-curtain. Fireproof	H. S. Cockrill	487,470	Dec. 6	398	103	61	1399
Staircase	P. H. Barry	486,319	Nov. 15	1820	480	61	977
Stair-curve	I. J. Palmer	486,940	Nov. 29	2858	739	61	1212
Stair-rod and securer	W. Gates	484,708	Oct. 18	1826	465	61	394
Stair-stringers. Guide for use in gaining	R. Martin	487,869	Dec. 13	1073	269	61	1551
Stairway. Spiral	H. F. A. Borneman and J. Daab	485,449	Nov. 1	461	123	61	666
Stallion-shield	C. H. Rahn	487,293	Dec. 6	85	25, 26	61	1338
Stamp-affixing machine	E. C. Palmer	484,448	Oct. 18	1422	362, 363	61	312
Stamp and match box	A. Goerts	484,092	Oct. 11	850	216	61	189
Stamp. Canceling and dating	W. G. Moseley	485,472	Nov. 1	497	131	61	673
Stamp-canceling machine	W. R. Landfear	487,626	Dec. 6	626	161	61	1446
Stamp. Electrically-heated hand	J. B. Venker	484,574	Oct. 18	1613	410	61	351
Stamp. Hand	J. Buff	486,080	Nov. 15	1429	378	61	899
Stamp. Marking	R. C. Harris, Jr	484,534	Oct. 18	1559	397	61	339
Stamp-mill guide-holder	P. C. Robertson	488,453	Dec. 20	2010	502	61	1755
Stamp moistener. Postage	F. Goerte	486,611	Nov. 22	2277	564	61	1078
Stamp. Perforating	B. F. Cummins	486,858	Nov. 29	2684	702	61	1173
Stamp. Perforating canceling	J. Stenwall	486,906	Nov. 29	2798	725	61	1201
Stamp. Registering hand	E. J. Brooks	487,657	Dec. 6	677	174	61	1455
Stamp. Time	J. Ganss	486,458	Nov. 22	2036	538, 539	61	1033
Stamp. Time	W. H. Martin	485,639	Nov. 8	740	195	61	740
Stamp. Time	C. Stahlberg	487,433	Dec. 6	336	87, 88	61	1388
Stamps and labels. Device for affixing	H. Campbell	486,430	Nov. 22	1979	530	61	1026
Stamping-press	J. B. Foote	487,730	Dec. 13	805	206	61	1498
Stanchion. Cattle	C. S. Roster	486,353	Nov. 15	1873	493	61	987
Stand: *See* Barrel-stand. Umbrella-stand. Display-stand. Undertaker's convertible Hat or bonnet stand. stand. Medicine-stand. Wash-stand. Plant-stand. Work-stand. Show-stand.							
Stand and step-ladder. Combined	C. F. Batt	486,390	Nov. 15	1820	480	61	977
Staple holder. Metallic	G. L. Pfouts	484,606	Oct. 18	1665	422	61	361
Staple-inserting device	W. J. Brown	488,306	Dec. 20	1773	446, 447	61	1707
Starching-machine	J. C. Poland	485,980	Nov. 8	1963	333, 334	61	848
State-room for cars or ships	C. L. Lockwood	486,049	Nov. 8	1375	365, 366	61	870
Station-indicator. Automatic	W. S. Dillon	486,543	Nov. 22	2155	570	61	1056
Station-indicators. Means for operating	R. B. Ayres	488,415	Dec. 20	1956	489	61	1743

Alphabetical list of inventions, October to December, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Stave-cutting machine. Barrel	C. W. Rich	485,565	Nov. 1	627	167, 168	61	702
Stave-cutting machine. Barrel	C. W. Rich	485,566	Nov. 1	630	168, 169	61	702
Stave-jointing machine	W. J. Wright	488,914	Dec. 27	2742	676	61	1917
Stave trimming or jointing machine	C. W. Rich	484,460	Oct. 18	1438	367	61	316
Stays. Machine for covering dress	G. O. Schneller	488,288	Dec. 20	1743	439, 440	61	1702
Steam-boiler	F. H. Bailey	486,017	Nov. 8	1328	352, 353	61	181
Steam-boiler	M. L. Clinton	488,689	Dec. 27	2396	593, 594	61	1846
Steam-boiler	N. T. De Golyer	487,696	Dec. 6	743	190	61	1467
Steam-boiler	W. M. Hamilton	484,736	Oct. 18	1871	476	61	402
Steam-boiler	J. D. Hulings	483,805	Oct. 4	424	105	61	88
Steam-boiler	E. J. Moore	486,731	Nov. 22	2402	643	61	1117
Steam-boiler	E. J. Moore	487,075	Nov. 29	3057	784, 785	61	1951
Steam-boiler	J. W. Putnam	487,641	Dec. 6	652	168	61	1451
Steam-boiler	E. Reynolds	485,299	Nov. 1	216	61	61	616
Steam-boiler	L. H. Roseburry	484,463	Oct. 18	1445	368	61	317
Steam-boiler. Sectional	C. T. McLellan	485,556	Nov. 1	613	164	61	698
Steam-boiler. Sectional	D. S. Richardson	487,774	Dec. 13	890	223, 224	61	1513
Steam-boiler. Upright tubular	T. S. La France	487,124	Nov. 29	3142	805	61	1968
Steam-coupling and automatic parting and cut-off device	F. Balbian	483,987	Oct. 11	704	177	61	159
Steam-engine	S. Baader	487,025	Nov. 29	2984	768	61	1236
Steam-engine	L. Durant and A. Lencauchez	485,614	Nov. 8	702	185	61	732
Steam-engine	C. D. Mosher	486,883	Nov. 29	2722	710	61	1185
Steam-engine	J. W. Sargent	485,432	Nov. 1	433	116	61	661
Steam-engine	M. Ulrich	484,069	Oct. 11	818	207	61	182
Steam-engine connection	A. H. McMaster	485,557	Nov. 1	615	164	61	699
Steam-generator	P. A. Châtenet	487,551	Dec. 6	518	134	61	1423
Steam-generator	T. Fearon	486,098	Nov. 15	1477	389, 390	61	908
Steam-generator	P. Fitzgibbons and H. K. Eason	485,183	Nov. 1	45	14	61	581
Steam-generator	W. C. Higgins	486,467	Nov. 22	2051	542, 543, 544	61	1035
Steam-generator	F. E. Hosmer	484,716	Oct. 18	1838	467	61	396
Steam-generator	O. Jones and H. P. Ashley	488,970	Dec. 27	2830	698	61	1937
Steam-generator	T. McBride and E. Fisher	487,195	Nov. 29	3247	830, 831	61	1288
Steam-generator	J. F. Morrison and J. Gripp	485,291	Nov. 1	205	58	61	614
Steam-generator	W. J. Ranton	484,339	Oct. 11	1247	318	61	266
Steam-generator	W. D. Smith	487,300	Dec. 6	95	28, 29	61	1346
Steam-generator	T. L. and T. J. Sturtevant	487,792	Dec. 13	918	232	61	1591
Steam-generator	G. Vassar, Jr	487,382	Dec. 6	233	63	61	1367
Steam-generator or evaporator	G. W. Baird	484,946	Oct. 25	2242	578	61	491
Steam-generator. Self-purifying superheating	B. F. Field	488,519	Dec. 20	2124	525, 526	61	1777
Steam-heater	T. Fearon	484,787	Oct. 25	1976	504	61	438
Steam-heater	J. A. Flajole	486,862	Nov. 29	2696	704	61	1180
Steam-joint. Concentric	J. B. Morgan	485,596	Nov. 1	676	179	61	713
Steam. Means for superheating	A. Bratoluboff	487,317	Dec. 6	133	39	61	1347
Steam-motor	E. A. Edwards	485,536	Nov. 1	584	156, 157	61	692
Steam-separator	D. Cochrane	483,992	Oct. 11	709	178	61	160
Steam-separator	W. O. Webber	486,144	Nov. 15	1553	411	61	923
Steam-transmitter	D. B. Baker and M. Laffaw	486,019	Nov. 8	1330	353	61	892
Steamer	A. A. Besemer	488,515	Dec. 20	2107	523	61	1775
Steaming apparatus. Grain	H. S. Jewell	484,099	Oct. 11	858	218	61	190
Steel plates, &c. Apparatus for shaping, hardening, and tempering	J. B. Armstrong	488,301	Dec. 20	1760	444	61	1705
Steel-tempering compound	H. E. Hopkins	488,433	Dec. 20	1979	.....	61	1743
Steering apparatus. Ship's	W. C. Williamson	486,007	Nov. 8	1312	349	61	858
Steering-gear. Auxiliary	H. L. Weitzel	488,746	Dec. 27	2474	615	61	1862
Steering-gear. Steam	G. A. Bronder	487,401	Dec. 6	281	72, 73	61	1376
Stencils. Producing	W. H. Bell	485,602	Nov. 8	689	181	61	730
Step for shelves	J. J. Farner	487,117	Nov. 29	3128	802	61	1926
Stereoscope. Coin-controlled	J. R. Cummings	485,567	Nov. 1	635	169	61	703
Stereotype-plate and base	M. Bennitt	483,544	Oct. 4	43	11	61	11
Stereotype-plate and holder	A. Thomson	484,082	Oct. 11	837	212	61	186
Stereotype-plate and holder	W. Filmer	486,940	Nov. 15	1691	448	61	950
Stereotype-plates. Clamp for securing	W. A. Force	486,160	Nov. 15	1577	417	61	927
Stereotype-plates. Composition for	J. C. Dittrich and F. M. Grumbacher	483,716	Oct. 4	287	.....	61	60
Still	J. L. Pope	487,027	Nov. 29	2987	760	61	1236
Stilt. Adjustable walking	O. H. L. Wernicke	486,891	Nov. 29	2732	715	61	1191
Stock-case. Sectional	L. L. Tackitt	487,460	Dec. 6	381	99	61	1396
Stock guard. Horned	E. Terry and W. Hayter	486,743	Nov. 22	2483	647	61	1122
Stocking	L. N. D. Williams	488,487	Dec. 20	2066	513	61	1760
Stockings. Knitted	N. W. Pratt	485,073	Oct. 25	2438	627	61	530
Stoker. Revolving	N. W. Pratt	485,223	Nov. 1	103	31, 32	61	594
Stoker. Revolving	A. Sladoslawek	485,224	Nov. 1	106	32, 33	61	595
Stone. Artificial	R. D. Gates	488,688	Dec. 27	2384	.....	61	1844
Stone breaking or crushing machine	W. H. Bryant	488,750	Dec. 27	2403	600	61	1868
Stone-channeling machine	L. Enricht	488,847	Nov. 29	2668	606	61	1174
Stone. Manufacture of artificial	L. Enricht	486,443	Nov. 22	2018	.....	61	1030
Stone. Manufacture of artificial	L. Enricht	486,445	Nov. 22	2020	.....	61	1030
Stone. Manufacture of artificial	L. Enricht	486,446	Nov. 22	2021	.....	61	1030
Stone. Manufacture of artificial	L. Enricht	486,447	Nov. 22	2022	.....	61	1030
Stone. Manufacture of artificial	L. Enricht	486,448	Nov. 22	2023	.....	61	1030
Stone. Manufacture of artificial	L. Enricht	486,449	Nov. 22	2024	.....	61	1030

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Stone or body. Spectrum-colored	J. Jacobson	484,934	Oct. 25	2228	574	61	488
Stones. Producing inlaid work on	R. Ransch	486,590	Nov. 22	2287	.....	61	1072
Stool. Double piano	J. J. Hering	486,405	Nov. 15	1935	519	61	1004
Stool. Folding	F. Benoit	486,075	Nov. 15	1432	375	61	897
Stool. Folding	A. Smith	487,200	Nov. 29	3256	833	61	1290
Stool for tables, counters, &c	J. Jackson	484,719	Oct. 18	1844	469	61	397
Stool. Milk	M. N. Sevier	487,099	Nov. 29	3101	796	61	1261
Stool. Milk	R. W. Shaw	486,944	Nov. 29	2865	740	61	1213
Stopper: *See* Bottle-stopper. Leak-stopper. Fine-stopper.							
Storage-battery	E. R. Knowles	483,562	Oct. 4	68	17	61	16
Storage-battery	E. R. Knowles	483,563	Oct. 4	70	17	61	16
Storage-battery	G. A. Washburn	488,233	Dec 20	1658	414	61	1685
Store-service apparatus	T. E. Barrow	484,547	Oct. 18	1378	{400 401	61	343
Store-service apparatus	T. E. Barrow	484,548	Oct. 18	1380	401	61	344
Store service apparatus	R. Gornall	483,610	Oct. 4	139	35	61	29
Stove	O. Nilson	484,230	Oct. 11	1069	271	61	232
Stove	F. O. Ruehle and A. G. Schmidt	484,113	Oct. 11	874	222	61	193
Stove	J. Schroeffel and F. L. Voegtly	487,541	Dec. 6	504	131	61	1490
Stove	M. Scebold	488,065	Dec. 27	2352	592	61	1838
Stove	J. A. Suppiger	486,910	Nov. 29	2810	728	61	1203
Stove	D. M. Thomas	486,946	Nov. 29	2867	740	61	1214
Stove	L. F. Zimmerling	486,948	Nov. 29	2869	741	61	1214
Stove. Cooking	J. Marcee	485,049	Oct. 25	2406	619	61	523
Stove-fireback	J. Hatfield	488,199	Dec. 20	1592	398	61	1673
Stove. Gas	E. C. Warren	485,852	Nov. 8	1052	281	61	804
Stove. Gas heating	M. G. Wilder	486,905	Nov. 15	1633	{432 433	61	938
Stove-grate	W. D. Southard	486,797	Nov. 22	2573	671	61	1139
Stove. Lamp	S. L. Walker	483,581	Oct. 4	115	28	61	24
Stove-leg fastening	L. E. Covert and C. W. McCutchen	487,355	Dec. 6	26	7	61	1326
Stove-mat	W. J. Turpin	483,880	Oct. 4	533	134	61	110
Stove. Oil	M. G. Benedict	486,063	Nov. 8	1306	370	61	874
Stove. Oil	M. G. Benedict	486,422	Nov. 22	1967	527	61	1022
Stove. Oil	G. W. Cope	485,838	Nov. 8	1029	277	61	800
Stove. Oil	G. Gardner	485,539	Nov. 1	592	158	61	694
Stove. Oil	J. Goldstein	485,378	Nov. 1	354	95	61	645
Stove. Oil	R. Z. Liddle	484,030	Oct. 11	767	194	61	172
Stove. Oil	C. K. Stinson	488,957	Dec. 27	2811	{602 603	61	1932
Stove. Oil	W. H. Wilder	486,311	Nov. 15	1810	477	61	975
Stovepipe-shelf	E. A. Loeba	488,247	Dec. 20	1678	419	61	1689
Stovepipe-thimble	W. Bales	481,694	Oct. 18	1811	460	61	391
Stove plate. Vapor	F. J. Little	483,932	Oct. 4	610	154	61	196
Stove screen and fender	J. Adriaanson	485,363	Nov. 1	334	88	61	641
Stoves. Odor-removing device for cooking	C. T. Tolliver and P. Ruffin	486,550	Nov. 22	2164	571	61	1058
Strainer	M. B. Reynolds	484,459	Oct. 18	1437	367	61	316
Strainer for mixed drinks	W. Wright	484,276	Oct. 11	1150	293	61	247
Strap: *See* Box-strap. Hitching-strap.							
Straw-stacker	M. Heineke	484,427	Oct. 18	1386	354	61	305
Straw-stacker attachment	S. G. Schols. (Reissue)	11,281	Nov. 1	681	180	61	714
Straw-stacking machine	A. Lammedee	486,346	Nov. 15	1864	491	61	985
Street-cleaning machine	R. W. Furnas	484,191	Oct. 11	990	255	61	218
Street-cleaning machine	R. W. Furnas	484,192	Oct. 11	1001	256	61	218
Street-crossing	G. W. Doolittle	488,117	Dec. 13	1455	367	61	1699
Street or station indicator	W. A. Turner	486,514	Nov. 22	2116	550	61	1049
Street-sprinkler	A. W. Becker and E. Henry	487,586	Dec. 6	451	117	61	1411
Street-sprinkler	H. T. Walshe and M. Sallenger	487,804	Dec. 13	937	237	61	1525
Street-sweeper	C. H. La Due	487,754	Dec. 13	849	216	61	1507
Street-sweeper	A. B. Vandemark	483,702	Oct. 4	270	67	61	57
Street-sweeping machine	M. V. B. Ethridge	485,577	Nov. 1	650	173	61	707
Street-sweeping machine	E. Wallace	485,727	Nov. 8	887	228	61	771
Striking and strength tester. Coin-controlled	F. W. Kremer	487,033	Nov. 29	2994	771	61	1238
Stripping-machine holder and turner	H. J. Gosling	488,653	Dec. 27	2335	577	61	1834
Stump-extractor	G. W. Smeal	485,508	Nov. 1	544	145	61	683
Stump-puller	A. C. French	486,948	Nov. 15	1708	{450 451	61	953
Stump-puller	A. C. French	488,001	Dec. 13	1255	313	61	1587
Submerged pipe	M. G. Schinke	486,986	Nov. 29	2925	754	61	1226
Substructure	S. A. Oliver	487,582	Dec. 6	556	143	61	1432
Sugar and salt. Utilizing heat in the manufacture of	S. M. Little	486,982	Nov. 29	2920	.....	61	1225
Sugar-gage for vacuum-pans	E. H. Duhme	484,145	Oct. 11	929	239	61	204
Sugar. Manufacturing	E. C. Bartholemy	487,439	Dec. 6	351	.....	61	1391
Sulky	I. Wood	488,236	Dec. 20	1602	415	61	1686
Sulky. Training	P. H. Bald	487,343	Dec. 6	169	47	61	1354
Sulphur. Apparatus for extracting	L. Labois	485,634	Nov. 8	734	{191 192 193	61	739
Sunshade. Vehicle	L. V. Luce	483,933	Oct. 4	611	155	61	126
Supporter: *See* Ankle-supporter. Invalid-supporter. Box-supporter. Shade-supporter. Garment-supporter. Trousers-supporter. Hose-supporter.							
Supporting-frame. Sectional	J. Ormerod	487,765	Dec. 13	866	220	61	1510
Surgical antiseptic thread-holder	N. White	485,674	Nov. 8	800	213	61	753
Surgical apparatus	S. M. Sapp	486,198	Nov. 15	1625	430	61	937
Surgical bandages. Sterilizer for	J. M. Van Heusen	488,725	Dec. 27	2444	607	61	1856
Surgical chair	F. E. Case	483,900	Oct. 4	539	{141 142	61	116
Surgical instruments, &c. Sterilizer for	E. Boeckmann	484,927	Oct. 25	2216	571	61	486

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Surgical pump	C. H. Truax	487,136	Nov. 29	3154	{806 809	61	1271
Surgical splint	E. Densmore	485,178	Nov. 1	37	12	61	590
Surgical table	B. H. Daggett	488,649	Dec. 27	2395	575	61	1833
Suspender cast-off	G. E. Adams	487,600	Dec. 6	736	188	61	1446
Suspender-end	A. M. Ziegler	487,041	Nov. 29	3005	774	61	1240
Suspenders	E. Davis	485,123	Oct. 25	2509	644	61	545
Suspenders	H. A. Hempel	484,095	Oct. 11	855	217	61	189
Suspenders	C. C. Krouse, H. E. Myers, and C. L. Girard.	487,149	Nov. 29	3179	814	61	1276
Suspenders	E. F. Moore	487,758	Dec. 13	857	218	61	1508
Suspenders	P. Ortmann	488,529	Dec. 20	2139	529	61	1779
Suspending device	J. I. Johnson	483,615	Oct. 4	148	36	61	31
Suspension-hook	G. A. Moss	484,335	Oct. 11	1243	316	61	265
Swing	I. Z. Alexander and A. B. Martindale.	487,141	Nov. 29	3166	811	61	1273
Swing	W. O. Bunker	487,946	Dec. 6	15	5	61	1324
Swing	M. Cason	488,602	Dec. 27	2253	559	61	1810
Swinging gate	C. M. Clary	484,847	Oct. 25	2081	535	61	459
Swinging gate	A. W. Taylor	486,799	Nov. 22	2576	{671 672	61	1140
Switch: *See* Automatic switch. Railway-switch. Circuit-switch. Safety-switch. Electric switch. Snap-switch. Electric snap-switch. Spring-jack switch. Electrically-operated switch. Telephonic switch. Tramway-switch.							
Switch	I. Cook	485,786	Nov. 8	960	257	61	786
Switch and frog	E. Samuel, V. Angerer, and C. A. Pailander.	488,405	Dec. 20	1932	484	61	1739
Switch and signal mechanism	J. W. Thomas, Jr.	488,853	Dec. 27	2646	655	61	1897
Switch-clip	A. W. Wright	484,622	Oct. 18	1691	429	61	366
Switch-operating device	B. Bartelmes	485,446	Nov. 1	458	122	61	666
Switch-operating device	G. Schumacher	484,250	Oct. 11	1102	279	61	238
Switch-operating device	J. D. Stone	487,457	Dec. 6	378	98	61	1395
Switch-rail-adjusting attachment	A. A. Strom	487,458	Dec. 6	379	99	61	1396
Switch-rail rods or braces. Straightener for	P. McCann	487,958	Dec. 13	1181	294	61	1573
Switch-stand	J. Christiansen	488,182	Dec. 20	1569	{393 394	61	1669
Switch-stand	G. Cook	485,908	Nov. 8	1148	304	61	824
Switch-stand	G. E. Hudgins	488,204	Dec. 20	1606	401	61	1676
Syringe. Duplex	F. S. Ketchum	485,696	Nov. 8	852	224	61	760
Syringe. Hypodermic	S. R. Slater	486,057	Nov. 8	1392	369	61	873
Syringe. Urethral	E. P. Roche	488,069	Dec. 13	1413	351	61	1691
Syringe. Vaginal	T. H. Maddux	485,107	Oct. 25	2487	639	61	541
Table: *See* Billiard-table. Sewing or embroidery table. Extension-table. Folding table. Surgical table. Ironing-table. Turn-table. Physician's table.							
Table	J. R. Jordan	484,965	Oct. 25	2270	585	61	497
Table attachment for bedsteads	C. C. Elston	484,187	Oct. 11	994	254	61	217
Table-leaf support	E. G. Phillips	484,723	Oct. 18	1850	470	61	398
Table-leg fastener	J. W. Thompson and R. Golling	486,305	Nov. 15	1796	472	61	973
Table slide. Extension	B. Baird and T. O. Johnson	485,521	Nov. 1	558	149	61	686
Tables. Electric device for vibrating	W. L. Imlay	486,715	Nov. 22	2440	636	61	1112
Tablet. Writing	F. D. Cady	484,406	Oct. 18	1352	345	61	299
Tack-driving machine	E. Patten	483,747	Oct. 4	337	85	61	70
Tackle-block	R. B. Meeker	485,504	Nov. 1	538	142	61	682
Tag-holder	C. Speck, Jr.	484,682	Oct. 18	1795	456	61	387
Tag-making machine	A. C. North	484,973	Oct. 25	2280	{588 589 590	61	490
Tag. Marking	S. Dancyger	486,208	Nov. 15	1640	434	61	939
Tank: *See* Flushing-tank. Weighing oil-tank. Lamp-filling tank.							
Tank heater. Stock	C. A. Weed	487,806	Dec. 13	941	238	61	1565
Tanks, reservoirs, silos, &c. Construction of	P. A. J. Monier	486,535	Nov. 22	2144	566	61	1065
Tanning vat. Leather	B. P. Bradford	483,734	Oct. 4	313	79	61	66
Taper for night-lights	E. Ludde	484,210	Oct. 11	1035	263	61	224
Tapping apparatus	A. P. Smith	485,716	Nov. 8	867	238	61	788
Tapping apparatus	A. P. Smith	485,717	Nov. 8	868	233	61	788
Tapping water-mains. Apparatus for	A. P. Smith	485,715	Nov. 8	866	232	61	787
Tar-heating apparatus	J. H. G. Zunner	488,414	Dec. 20	1955	489	61	1743
Target. Surveyor's	C. Urrutia	486,302	Nov. 15	1630	431	61	936
Targets. Machine for making composition	J. W. Dunbar	486,396	Nov. 15	1939	{513 514	61	1001
Tea-kettle	J. Naber, Jr	483,016	Oct. 25	2360	607	61	514
Tea or coffee pots or other vessels. Attachment of covers to	E. B. Manning and M. Seips	488,703	Dec. 27	2548	632	61	1877
Telegraph apparatus. Electrical circuit for	F. W. Jones	488,940	Dec. 27	2761	698	61	1925
Telegraph apparatus. Electro-magnetic	A. G. Safford	485,334	Nov. 1	280	76	61	629
Telegraph-pole	O. M. Knox	486,974	Nov. 29	2905	750	61	1221
Telegraph-pole	W. H. Pratt	488,830	Dec. 27	2600	645	61	1808
Telegraph. Printing	C. L. Buckingham	487,961	Dec. 13	1209	{302 303	61	1578
Telegraph. Printing	C. L. Buckingham	487,962	Dec. 13	1216	{303 304 305	61	1579
Telegraph. Printing	C. L. Buckingham	487,963	Dec. 13	1222	305	61	1580

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Telegraph. Printing	C. L. Buckingham	487,965	Dec. 13	1228	306, 307	61	1582
Telegraph. Printing	C. L. Buckingham	487,966	Dec. 13	1233	307	61	1582
Telegraph. Printing	A. D. Neal and H. F. Eaton	487,229	Nov. 29	3313	845, 846, 847, 848	61	1310
Telegraph. Railway-train	M. S. Reiley	484,375	Oct. 11	1297	332	61	276
Telegraph-sounder	J. Maret and W. L. De Graff	486,051	Nov. 8	1379	366	61	871
Telegraph. Synchronous multiple	C. L. Buckingham	487,984	Dec. 13	1225	306	61	1581
Telegraph system	A. Gipperich	486,332	Nov. 15	1839	484	61	980
Telegraph system. Police	C. A. Rolfe	483,768	Oct. 4	367	92, 93	61	77
Telegraphic apparatus	J. A. Parker and L. L. Summers	487,154	Nov. 29	3185	816	61	1277
Telegraphy and telephony. Combined	W. W. Jacques	485,279	Nov. 1	186	54	61	611
Telephone	H. V. Hayes and W. L. Richards	487,219	Nov. 29	3284	838	61	1295
Telephone	J. W. McDonough	485,676	Nov. 8	1010	290	61	812
Telephone	P. Rabbidge	488,367	Dec. 20	1876	469, 470	61	1728
Telephone	A. C. White	485,311	Nov. 1	234	65	61	620
Telephone-exchange apparatus	J. J. Carty	484,626	Oct. 18	1696	430	61	367
Telephone-exchange system	C. E. Scribner	487,097	Nov. 29	3096	795	61	1260
Telephone-exchanges. Multiple-switchboard system for	C. E. Scribner	488,035	Dec. 13	1320	329	61	1601
Telephone-exchanges. Multiple-switchboard system for	C. E. Scribner	488,036	Dec. 13	1323	329	61	1602
Telephone-exchanges. Multiple-switchboard system for	C. E. Scribner	488,038	Dec. 13	1329	330	61	1603
Telephone-guard	E. B. Chase	488,385	Dec. 20	1905	477	61	1733
Telephone-holder	E. C. Lewis	487,369	Dec. 6	216	59	61	1363
Telephone. Magnetic	C. S. Forbes	484,150	Oct. 11	937	241	61	205
Telephone or other electrical exchange. Automatic	A. B. Strowger	486,909	Nov. 29	2803	727, 728	61	1202
Telephone-receiver	F. Gross	483,718	Oct. 4	289	72	61	61
Telephone-support	G. V. Benjamin	485,027	Oct. 25	2377	610, 611	61	517
Telephone-switchboard apparatus	C. E. Scribner	487,098	Nov. 29	3100	796	61	1260
Telephone-switchboard apparatus	C. E. Scribner	488,037	Dec. 13	1326	329	61	1602
Telephone system	C. C. Jennings	488,502	Dec. 20	2088	519	61	1771
Telephone systems. Sub-station apparatus for	C. E. Scribner	484,613	Oct. 18	1678	426	61	364
Telephonic switch and system. Electric	T. B. Sloper	488,666	Dec. 27	2354	582, 583	61	1838
Telephonic transmitter	A. T. Collier	484,778	Oct. 25	1961	500	61	435
Telephony	W. Bruening	485,859	Nov. 8	1064	283	61	806
Telescope-eyepiece	H. C. McIlwain	488,506	Dec. 20	2096	520	61	1773
Tempering-furnace	W. H. Dayton	487,944	Dec. 13	1162	290	61	1568
Tenoning-machine marking attachment	C. J. Zimmerman	483,887	Oct. 4	541	136	61	112
Tennis-marker	W. M. Lindsay	487,951	Dec. 13	1172	292	61	1570
Tenon. Metallic	A. M. and R. J. Sanders	487,778	Dec. 13	887	225	61	1515
Tension device	D. W. McGlenen	485,770	Nov. 8	943	253	61	783
Tension device	S. S. Taylor	488,230	Dec. 20	1655	413	61	1045
Tent	L. L. Davis	487,319	Dec. 6	136	40	61	1348
Tent-pin	A. S. Comstock	484,998	Oct. 25	2328	600	61	507
Terret	J. C. Page	488,249	Dec. 20	1680	420	61	1690
Tether. Animal	R. E. Robison	484,377	Oct. 11	1305	334	61	278
Therapeutic process and apparatus. Electro-	J. M. Wardell	487,655	Dec. 6	674	173	61	1455
Thermal circuit-changer and protective appliance	H. A. Rhodes	484,822	Oct. 25	2030	521	61	450
Thermocauter	F. M. S. Roy	488,454	Dec. 20	2012	502	61	1756
Thermometer-scale	S. E. Ward	483,668	Oct. 4	212	52	61	43
Thermostat	F. O. Elliott	487,519	Dec. 6	471	123	61	1414
Thermostat and alarm	G. Fischer	485,739	Nov. 8	905	242	61	775
Thermostatic indicator and adjuster	E. C. C. Krogh	488,611	Dec. 27	2264	562	61	1821
Thermostatic regulator	E. C. Merrill	486,727	Nov. 22	2455	640, 641	61	1116
Thermostatic vessel	H. Carmichael	487,713	Dec. 13	774	198	61	1491
Thill-coupling	C. C. Bradley	485,368	Nov. 1	340	90	61	642
Thill-coupling	C. C. Bradley	485,856	Nov. 8	1059	282	61	806
Thill-coupling	P. Broadbooks	484,566	Oct. 18	1602	407	61	348
Thill-coupling	W. Dana	486,436	Nov. 22	2010	533	61	1028
Thill-coupling	H. A. Groux	486,579	Nov. 22	2222	583	61	1068
Thill-coupling	W. H. Hannan	486,251	Nov. 15	1715	452	61	955
Thill-coupling	W. H. Hannan	487,005	Nov. 29	2953	761	61	1231
Thill-coupling	E. F. Hopkins	485,194	Nov. 1	69	19	61	585
Thill-coupling	A. C. Laycock	488,396	Dec. 20	1918	480	61	1736
Thill-coupling	C. F. Neer	488,771	Dec. 27	2511	624	61	1889
Thill-coupling	W. H. Pardee	485,978	Nov. 8	1061	333	61	847
Thill-coupling	J. K. Pfeiger	485,426	Nov. 1	427	114	61	600
Thill-coupling	T. H. Pruner	486,410	Nov. 15	1964	521	61	1006
Thill-coupling	W. B. Root	487,450	Dec. 6	370	97	61	1394
Thill-coupling	W. M. Sayre	484,052	Oct. 11	797	201	61	178
Thill-coupling	D. W. Tanner	488,008	Dec. 27	2734	674	61	1916
Thill-coupling	C. Thorp	488,781	Dec. 27	2529	628	61	1673
Thill-coupling	C. Thorp	488,782	Dec. 27	2530	628	61	1673
Thill or pole prop for vehicles	H. T. Gregg	485,843	Nov. 8	1039	278	61	801
Thill-support	W. M. Buchnan	488,180	Dec. 20	1567	393	61	1668
Thill-support	D. B. Morgan	488,130	Dec. 13	1475	372	61	1633
Thill-support	T. B. Woodward	485,023	Oct. 25	2371	609	61	516
Thrashing-machine	W. W. Dingee	488,730	Dec. 27	2450	609	61	1857
Thrashing-machine	E. W. Jenkins	487,274	Dec. 6	55	18	61	1333
Thrashing-machine band-cutter and feeder	W. Conn	487,347	Dec. 6	173	48, 49	61	1354
Thrashing-machine band-cutter and feeder	F. R. Hill	485,499	Nov. 1	531	140, 141	61	680
Thrashing-machine straw-carrier	J. H. Fulton	485,099	Oct. 25	2477	637	61	539
Thread. Apparatus for forming a knotless	R. M. Macintosh	484,212	Oct. 11	1037	263, 264	61	225

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Thread. Apparatus for forming a knotless	R. M. Macintosh. (Reissue)	11,296	Dec. 27	2839	700	61	1939
Thread smoothing and hardening apparatus	P. Klug	488,267	Dec. 20	1710	430	61	1696
Ticket. Combination	M. Ralph	487,540	Dec. 6	502	131	61	1490
Ticket-holder	A. P. Dewey	485,002	Oct. 25	2332	601	61	508
Ticket-holder	M. Lincoln	485,202	Nov. 1	75	23, 24	61	588
Ticket. Railway	E. L. Lomax and B. B. Anderson	484,331	Oct. 11	1237	315	61	264
Ticket. Railway	J. Reid	487,294	Dec. 6	86	26	61	1339
Tie: *See* Bale-tie. Rail-tie. Cross-tie. Railway-tie. Metal tie.							
Tie for bags, boxes, &c	D. G. Stone	485,067	Oct. 25	2430	624	61	528
Tie-plate	W. Goldie	485,030	Oct. 25	2381	612	61	518
Tile	R. E. Hunn	484,741	Oct. 18	1886	481	61	407
Tile. Illuminating	J. Jacobs	488,122	Dec. 13	1461	368	61	1630
Tile. Illuminating	J. Jacobs	488,435	Dec. 20	1981	494	61	1748
Tile. Sheet-metal	J. White. (Reissue)	11,294	Dec. 13	1552	389, 390	61	1648
Tilting gate	N. A. Dull and A. H. Moore	487,179	Nov. 29	3223	825, 826	61	1285
Time-lock	E. S. Phelps	486,603	Nov. 22	2261	591	61	1076
Time-recorder. Watchman's	W. L. Bundy	488,687	Dec. 27	2390	592, 593	61	1845
Time-recorder. Watchman's electric	J. A. Tilden	485,501	Nov. 1	668	177, 178	61	711
Time-recorder. Workman's	W. L. Bundy	486,028	Nov. 8	1342	356, 357	61	864
Time-recorder. Workman's	A. L. Jaynes	483,629	Oct. 4	165	41, 42	61	35
Time-recorder. Workman's	R. D. Morgan	486,977	Nov. 29	2907	750, 751	61	1222
Time-recording mechanism	D. E. Pursell	483,767	Oct. 4	365	91	61	77
Time-register. Workman's	C. J. Garnett and A. Moore	486,399	Nov. 15	1945	515	61	1002
Tin cans. Machine for manufacturing	W. Hipperling	487,270	Dec. 6	46	15	61	1331
Timepiece-dial	G. Reiss	483,696	Oct. 4	261	64	61	55
Timepiece. Illuminated	B. Haas, Jr., and G. Trouvé	486,563	Nov. 22	2191	577	61	1069
Timepiece repeating mechanism	F. Terstegen	487,398	Dec. 6	258	70, 71	61	1372
Timepiece repeating mechanism	F. Terstegen	487,399	Dec. 6	270	71, 72	61	1375
Tin and terne plates. Apparatus for cleaning	T. Jenkins	485,387	Nov. 1	370	99	61	648
Tin cans. Machine for manufacturing	W. Hipperling	488,674	Dec. 27	2366	585, 586	61	1841
Tin cans. Machine for the manufacture of	W. Hipperling	488,675	Dec. 27	2370	586, 587, 588	61	1841
Tin from tin-plate waste. Separating	H. C. W. Harmsen	485,035	Oct. 25	2389	.....	61	520
Tin-plate. Apparatus for manufacturing	D. Edwards	486,635	Nov. 22	2313	604, 605	61	1087
Tin-plate or metallic sheets. Cleaning	E. Norton	487,763	Dec. 13	863	219	61	1509
Tin-scrap. Utilizing	H. B. Nye	488,796	Dec. 27	2552	.....	61	1878
Tinning iron and steel plates	E. Norton	486,496	Nov. 22	2093	.....	61	1045
Tire and rim therefor. Cushion	R. M. Keating	485,633	Nov. 8	732	191	61	738
Tire. Bicycle	G. R. Bassett	487,596	Dec. 6	579	148	61	1436
Tire. Bicycle	W. Swain and W. Philipson	488,852	Dec. 27	2645	655	61	1897
Tire. Bicycle-wheel	G. A. Burwell	483,990	Oct. 11	708	178	61	160
Tire. Bicycle-wheel	T. H. Sweeting	485,898	Nov. 8	1133	300	61	821
Tire. Cycle	T. Fane and C. F. Lavender	484,786	Oct. 25	1975	503	61	438
Tire. Elastic	P. Davies	486,542	Nov. 22	2154	569	61	1056
Tire. Elastic vehicle	R. P. Martines	486,230	Nov. 15	1676	443	61	946
Tire for vehicle-wheels. Inflatable	K. Brown	485,605	Nov. 8	692	182	61	730
Tire for vehicles. Pneumatic	A. T. Brown and G. F. Stillman	488,494	Dec. 20	2075	516	61	1769
Tire. India-rubber	H. N. Lee	487,419	Dec. 6	312	80	61	1383
Tire. Inflatable	E. H. Seddon	486,509	Nov. 22	2110	557	61	1048
Tire. Pneumatic	S. Elliott	487,874	Dec. 13	1054	264	61	1547
Tire. Pneumatic	W. Golding	487,523	Dec. 6	476	124	61	1415
Tire. Pneumatic	W. B. Hardy	487,669	Dec. 6	700	178	61	1440
Tire. Pneumatic	W. B. Hardy	488,392	Dec. 20	1913	479	61	1735
Tire. Pneumatic	T. W. Robertson	483,563	Oct. 4	104	25	61	22
Tire. Pneumatic	P. W. Tillinghast	486,915	Nov. 29	2817	729	61	1205
Tire. Sectional pneumatic	F. Gleason	484,420	Oct. 18	1372	351	61	302
Tire setter and cooler	A. J. Ianson	486,932	Nov. 29	2841	735	61	1209
Tire-tightener	J. P. Ross	487,777	Dec. 13	886	225	61	1515
Tire. Vehicle	W. I. Bunker	488,061	Dec. 13	1372	341	61	1612
Tire. Vehicle-wheel	L. K. McClymonds	485,110	Oct. 25	2491	640	61	542
Tire. Wheel	R. Edlin	486,191	Nov. 15	1613	428	61	935
Tobacco box and cutter. Combined	H. J. Saxton	487,102	Nov. 29	3200	820	61	1280
Tobacco-cutter	O. E. Toole	488,588	Dec. 27	2232	552	61	1815
Tobacco for cigarettes. Machine for preparing or reducing and comminuting	S. Abejador	485,483	Nov. 1	510	134	61	676
Tobacco. Hand of leaf	G. Falk	484,930	Oct. 25	2223	573	61	487
Tobacco-hiller	W. P. and O. Marshall	483,567	Oct. 4	76	19	61	18
Tobacco-lath holder	J. M. Wood	486,804	Nov. 22	2582	673	61	1141
Tobacco-pipe	F. Edler	486,093	Nov. 15	1469	387	61	906
Tobacco-pipe	I. Pfortner	486,296	Nov. 15	1785	469	61	970
Tobacco-pipe	W. M. Pratt	485,654	Nov. 8	750	200	61	744
Tobacco shaper. Plug	C. D. Soure	486,302	Nov. 15	1792	471	61	971
Toe-weight	B. D. Geib	488,311	Dec. 20	1779	448	61	1708
Toe-weight	M. Heagerty	486,671	Nov. 22	2271	620	61	1088
Toe-weight	C. C. Jerome	484,022	Oct. 11	756	191	61	179
Toe-weight	J. Pinkerman	488,450	Dec. 20	2005	501	61	1754
Tongs. Fire	S. W. Bartholomew	486,903	Nov. 29	2889	746	61	1218
Tongs. Flooring and ceiling	S. L. Clements	484,299	Oct. 11	1186	302	61	223
Tongs. Flooring and siding	G. W. Miller	483,571	Oct. 4	89	21	61	19
Tongue-support	W. B. Johnson	484,656	Oct. 25	2099	538	61	461
Tool	J. Boatner	485,148	Oct. 25	2551	655	61	553
Tool-handle	G. Potter and H. Dangerfield	483,885	Oct. 4	512	129	61	106

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Tool-holder	S. J. Davidson	486,664	Nov. 22	2361	618	61	1096
Tool-holder	J. E. Giroux	486,985	Nov. 15	1772	466	61	967
Tool-holder	W. Lawson	488,361	Dec. 20	1864	467	61	1725
Tool-sharpener	E. Houlbrook	487,398	Dec. 6	149	43	61	1350
Top. Gyroscopic	J. J. Hardy	484,960	Oct. 25	2261	544	61	495
Torch. Gasoline	G. Heidel	486,039	Nov. 8	1361	362	61	868
Torpedo	C. Nelson	485,974	Nov. 8	1257	331	61	846
Torpedo-launching apparatus	J. A. Howell	484,658	Oct. 18	1759	{447 448}	61	380
Torpedo-net	W. W. Winship	485,074	Oct. 25	2439	697	61	531
Torpedo-placer	C. F. Edgar	487,917	Dec. 13	1131	279	61	1560
Torpedo-placer	G. W. Peifer, Jr., and R. Johnston	484,864	Oct. 25	2100	541	61	464
Tote-box	W. G. Avery	488,259	Dec. 20	1694	423	61	1693
Tower	W. R. Caldwell	487,902	Dec. 13	1093	273	61	1555
Tower. Metal	P. C. Perkins	485,879	Nov. 8	1094	291	61	813
Toy	C. E. Bentley	488,537	Dec. 27	2150	531	61	1797
Toy	H. Casper	486,965	Nov. 29	2893	747	61	1219
Toy	J. M. Clifford	486,085	Nov. 15	1436	380	61	900
Toy	G. S. Crosby	487,472	Dec. 6	401	103	61	1400
Toy	S. F. Estell	484,850	Oct. 25	2084	536	61	460
Toy	E. B. Koopman	488,566	Dec. 27	2196	542	61	1807
Toy	W. P. Shattuck	485,713	Nov. 8	863	231	61	767
Toy animal figure	C. M. Smith	483,727	Oct. 4	303	75	61	63
Toy ball	W. J. Faulkner	484,189	Oct. 11	996	255	61	217
Toy cannon	C. W. Lucius	484,805	Oct. 25	2005	515	61	445
Toy kitchen and stove	J. Jaeger	486,672	Nov. 22	2372	620	61	1098
Toy or puzzle	E. de Virgile	486,141	Nov. 15	1548	409	61	922
Toy savings-bank. Automatic	D. R. Reynolds	487,773	Dec. 13	879	223	61	1513
Toy. Smoking	J. T. Craw	484,180	Oct. 11	986	252	61	215
Toy wagon	A. G. Douthit	487,613	Dec. 6	601	{154 155}	61	1441
Toy wheel	T. A. Macdonald	488,944	Dec. 27	2791	648	61	1928
Toy. Wheel	J. S. Wilkins, Jr	488,342	Dec. 20	1833	458	61	1719
Trace-carrier	G. A. Brown	486,846	Nov. 29	2667	697	61	1174
Trace-fastener	T. J. Smith	486,571	Nov. 22	2304	579	61	1065
Trace-holder	J. F. Wynkoop	485,825	Nov. 8	1012	272	61	796
Trace-lock	G. T. Alpress	487,463	Dec. 6	395	100	61	1397
Track-brake	H. E. Dikeman	487,535	Dec. 6	594	135	61	1494
Track-cleaner	C. E. Bostwick	485,598	Nov. 1	569	152	61	689
Track-cleaning machine	A. B. Beall and P. V. Bail	486,526	Nov. 22	2134	563	61	1052
Track gage and level	C. Roberts	487,375	Dec. 6	222	61	61	1364
Track-sanding apparatus	C. W. Sherburne	487,496	Dec. 6	438	113	61	1408
Track-sanding apparatus	C. W. Sherburne	487,497	Dec. 6	439	113	61	1408
Track-sanding device	C. W. Sherburne	486,646	Nov. 22	2332	610	61	1091
Track structure	V. Angerer and C. A. Pallander	488,377	Dec. 20	1894	474	61	1731
Track-sweeper	W. H. Leigh	485,348	Nov. 1	308	82	61	635
Traction-engine	D. S. Stewart	484,828	Oct. 25	2038	{522 523}	61	451
Traction-engine	D. S. Stewart	484,829	Oct. 25	2041	523	61	452
Traction-engine	D. S. Stewart	484,830	Oct. 25	2043	524	61	452
Trains. Electric danger-signal for moving	J. McCart and A. G. Judkins	485,473	Nov. 1	498	131	61	673
Tramway. Cable	J. L. Giroux	488,734	Dec. 27	2456	{610 611}	61	1858
Tramway-switch	W. G. Carmell	488,599	Dec. 27	2250	558	61	1818
Tramway-switch	R. C. Davis and D. A. Ripley	486,769	Nov. 22	2531	661	61	1131
Tramway-switch	J. H. Gagle	484,706	Oct. 18	1823	464	61	394
Tramway-switch	J. H. Reinhardt	488,132	Dec. 13	1478	372	61	1634
Transom-lifter	C. L. Boehme	483,597	Oct. 4	190	29, 30	61	25
Transom-lifter	C. P. Chambers and G. W. Taft	488,496	Dec. 20	1970	492	61	1746
Transplanter	H. Baldridge	485,832	Nov. 8	1052	274	61	798
Transplanter	N. O. Starks and A. G. Folland	486,200	Nov. 15	1637	431	61	937
Trap: *See* Animal-trap. Mole-trap. Gopher-trap. Sanitary trap. Gully-trap. Sewer-trap. Insect-trap. Sporting-trap.							
Trap for sinks, &c	D. A. Horgan	483,961	Oct. 4	659	166	61	137
Trawl-line	T. B. Denniston	488,874	Dec. 27	2673	662	61	1903
Tray	G. Horne-Payne	486,780	Nov. 22	2545	665	61	1132
Tray for counters. Bottle and glass	W. C. Huss	485,743	Nov. 8	909	244	61	776
Trellis	C. G. Derby	485,912	Nov. 8	1156	305	61	825
Tricycle	C. Koenig	487,753	Dec. 13	847	{215 216}	61	1506
Trigger	A. S. Harrah and J. N. Nichols	488,557	Dec. 27	2174	537	61	1803
Trip-fastener	F. A. Stevens	485,511	Nov. 1	546	145	61	684
Trimming. Dress	E. Allen	485,731	Nov. 8	894	240	61	772
Trolley-catcher	W. L. Browne	488,706	Dec. 27	2417	599	61	1850
Trolley-catcher	J. J. Heppes	483,689	Oct. 4	256	62	61	52
Trolley-catcher	J. Werling and J. F. Agnew	487,808	Dec. 13	943	238	61	1526
Trolley-pole catcher	M. M. Wood	484,986	Oct. 25	2303	595	61	503
Trolley-wheel	L. J. Hirt	486,811	Dec. 27	2573	639	61	1883
Trolley-wire cleaner	E. B. Smith	484,344	Oct. 11	1253	320	61	267
Trolley-wire hanger	D. E. Lain	486,563	Nov. 22	2226	585	61	1069
Trough: *See* Drinking-trough. Hog-trough. Feed-trough.							
Trousers	W. C. Huffman and J. Le Favour	484,015	Oct. 11	748	188	61	168
Trousers	S. and M. Rachelman	486,884	Nov. 29	2787	716	61	1191
Trousers-pattern	J. G. Niekamp	484,445	Oct. 18	1418	362	61	311
Trousers. Pattern for drafting	A. F. Mead	485,014	Oct. 25	2355	605	61	513
Trousers-protector	I. M. Zarocson	485,807	Nov. 8	985	264	61	791
Trousers-stretcher	F. W. Watkins	488,234	Dec. 20	1660	414	61	1686
Trousers-supporter	S. L. Carr	488,181	Dec. 20	1568	393	61	1668
Trousers-supporting rack	W. Gerhard	486,459	Nov. 22	2040	540	61	1033

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Truck	J. C. A. Dean	485,202	Nov. 1	163	47	61	606
Truck brake mechanism. Car	G. M. Brill	485,858	Nov. 8	1062	{282 283}	61	806
Truck. Brick	C. H. Horton	487,835	Dec. 13	988	247	61	1534
Truck. Car	A. B. Du Pont	487,518	Dec. 6	470	123	61	1414
Truck. Car	W. N. Haring	487,922	Dec. 13	1131	282	61	1562
Truck. Car	M. G. Hubbard	487,273	Dec. 6	54	17	61	1332
Truck. Car	M. G. Hubbard	487,740	Dec. 13	897	211	61	1502
Truck. Car	A. T. Loyd	485,288	Nov. 1	197	56	61	613
Truck safety attachment. Car	L. F. Fisher	488,969	Nov. 29	2895	748	61	1220
Truck. Safety car	G. W. Moore	486,833	Nov. 22	2637	688	61	1153
Truck. Street-car	H. F. Shaw	488,255	Dec. 20	1690	422	61	1692
Trunk	L. C. Cosens	485,612	Nov. 8	700	184	61	739
Trunk	M. L. H. Keen	486,254	Nov. 15	1781	{453 454}	61	956
Trunk	M. J. Michelson	484,217	Oct. 11	1046	265	61	227
Trunk-carrier	G. W. Hill	488,357	Dec. 20	1859	465	61	1725
Trunk-lock	W. J. Henry	486,227	Nov. 15	1670	442	61	946
Trunk-lock	J. Roche	487,449	Dec. 6	368	96	61	1393
Trunk. Salesman's sample	L. H. Raymo and W. L. Woods	487,493	Dec. 6	430	111	61	1406
Trunk-strap fastener	W. J. Webb	485,671	Nov. 8	797	212	61	732
Trunk-tray	E. J. Cummings	488,753	Dec. 27	2482	617	61	1864
Trunk-tray	A. C. Jordan	486,475	Nov. 22	2064	547	61	1039
Truss	E. E. Boomhower	486,753	Nov. 22	2502	653	61	1126
Tube: *See* Filtering-tube. Speaking-tube. Ozone-tube.							
Tube-expander	O. A. White	488,376	Dec. 20	1893	474	61	1731
Tube-flanging machine	J. D. Murphy	486,984	Nov. 29	2922	754	61	1225
Tubes. Electrical method of and apparatus for forming	G. D. Burton and E. E. Angell	486,694	Nov. 22	2297	599	61	1083
Tubular boiler	H. Benbow	484,696	Oct. 18	1813	461	61	391
Tubular boiler. Vertical	T. L. and T. J. Sturtevant	487,794	Dec. 13	942	233	61	1523
Tug. Hame	E. L. Howe	486,378	Nov. 15	1909	505	61	994
Tug. Hame	W. E. King	486,379	Nov. 15	1910	505	61	995
Tug. Hame	M. W. Ryland	487,379	Dec. 6	229	62	61	1366
Tug-hook. Harness	J. Green	483,950	Oct. 4	656	165	61	136
Tug. Shaft	F. Fellows	484,415	Oct. 18	1366	349	61	301
Tug. Shaft	J. A. Leah	487,950	Dec. 13	1171	292	61	1570
Tug. Thill	A. C. Marshall	488,843	Dec. 13	1291	322	61	1594
Tumbler-washer	J. M. Gunn	484,428	Oct. 18	1378	352	61	303
Tun	L. K. F. Gutbier and E. H. Koch	484,312	Oct. 11	1207	307	61	256
Tuning-pin	W. A. Smith	488,021	Dec. 27	2029	652	61	1894
Tunnels. Construction and laying of subaqueous	R. Powell	485,983	Nov. 8	1270	{335 336}	61	849
Turbine. Axial-flow double-wheel	A. Mechwart	484,601	Oct. 18	1653	{419 420}	61	350
Turbine. Steam	F. Hart	486,229	Nov. 22	2631	687	61	1158
Turn-table	G. W. Patnoe	486,589	Nov. 22	2236	587	61	1073
Turning and working machine. Wood	F. H. Niermann	487,637	Dec. 6	645	{165 166}	61	1449
Turning machine. Wood	M. A. Bennett and V. V. Haidacher	483,760	Oct. 4	355	89, 90	61	74
Turret-head	F. Stolzenberg	488,159	Dec. 13	1517	380	61	1641
Tuyere	J. M. Hartman	485,381	Nov. 1	359	96	61	648
Twine-holder	W. T. Hanson	488,465	Nov. 22	2047	541	61	1085
Twine-holder	J. E. Tracy and A. N. Graham	488,856	Dec. 27	2650	656	61	1897
Twisting-machine top roll	J. E. Fitzgerald	485,266	Nov. 1	167	49	61	607
Twisting or winding machine	W. H. H. Sisum	488,227	Dec. 20	1649	412	61	1684
Type-case stand	G. B. Miles	487,932	Dec. 13	1145	286	61	1564
Type-finishing machine	T. M. Kenney	484,915	Oct. 25	2191	{564 565 200 201 202 203 204 205}	61	482
Type-line-forming machine	L. Ransom and A. W. Maynes	485,655	Nov. 8	760		61	744
Type-making machine	A. T. Brown	484,135	Oct. 11	908	{232 233 425 426}	61	209
Type-setting-up machinery	J. Hooker	488,265	Dec. 20	1702	{427 428 429 430}	61	1694
Type-writer cabinet	A. T. Brown	484,136	Oct. 11	911	234	61	201
Type-writer cabinet	S. L. Condé	486,435	Nov. 22	2000	533	61	1088
Type-writer. Electric	A. D. Neal and H. F. Eaton	487,228	Nov. 29	3207	{843 844 845}	61	1299
Type-writer. Electrical	A. D. Neal and H. F. Eaton	487,227	Nov. 29	3202	{842 843}	61	1298
Type-writer for stencil-making	J. L. Young	486,059	Nov. 8	1304	309	61	874
Type-writer letter-copier	J. T. Davis	488,143	Dec. 13	1493	376	61	1637
Type-writer-ribbon box	L. H. Rogers	485,712	Nov. 8	898	231	61	766
Type-writer word-counting appliance	E. C. de Segundo	488,456	Dec. 20	2017	504	61	1757
Type-writers. Apparatus for registering the number of words written on	G. E. Hudson	488,521	Dec. 20	2128	527	61	1778
Type-writing and printing instrument	A. D. Neal and H. F. Eaton	486,869	Nov. 29	2735	{712 713 714}	61	1188
Type-writing machine	W. J. Barron, F. X. Wagner, and A. Desemore	484,132	Oct. 11	900	{230 231}	61	199

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Type-writing machine	A. Davidson	487,047	Nov. 29	3016	775	61	1242
Type-writing machine	A. Davidson	487,066	Nov. 29	3042	781	61	1248
Type-writing machine	F. A. Heiss	485,761	Nov. 8	929	249, 250	61	780
Type-writing machine	J. N. Maskelyne, Jr	484,035	Oct. 11	774	195	61	173
Type-writing machine	C. H. McClellan	487,761	Dec. 13	861	218, 219	61	1509
Type-writing machine	L. H. Vanghan and W. E. Evans	485,593	Nov. 1	672	178	61	712
Type-writing machine	C. W. Walker	487,802	Dec. 13	935	236	61	1524
Type-writing machine	J. E. Wilson	487,897	Dec. 13	1085	271, 272	61	1553
Type-writing-machine card-holder	C. B. Godfrey	486,036	Nov. 8	1355	361	61	867
Umbrella	F. A. Burnam	484,773	Oct. 25	1949	497	61	432
Umbrella	C. Thomas	488,407	Dec. 20	1934	485	61	1739
Umbrella-carrier	I. M. Fleisher	485,922	Nov. 8	1168	308	61	927
Umbrella, Folding	A. Beauchamp	485,905	Nov. 8	1141	303	61	922
Umbrella, Folding	G. N. Vannauker	488,341	Dec. 20	1831	457	61	1718
Umbrella-lock and satchel-fastener. Combined	T. J. Leehey and J. O'Connell	486,256	Nov. 15	1728	455	61	957
Umbrella-runner	C. J. Fell	486,909	Nov. 15	1640	434	61	939
Umbrella-runner retainer	H. J. Herbert	486,778	Nov. 22	2543	664	61	1133
Umbrella-stand. Coin-controlled	H. Westphal	486,145	Nov. 15	1554	411, 412, 413	61	923
Umbrella-stick	J. H. Sprague	485,719	Nov. 8	870	233	61	768
Umbrella-stick	J. H. Sprague	488,638	Dec. 27	2308	571	61	1829
Umbrella suspender and carrier	L. E. Stockdale and G. R. Lawrence	486,135	Nov. 15	1542	407	61	920
Umbrellas, &c., on bicycles, &c. Support for	J. Dugan	488,549	Dec. 27	2162	534	61	1800
Undergarment	M. C. Geldowsky	488,887	Dec. 27	2689	666	61	1907
Undertaker's convertible stand	V. Klenha	485,801	Nov. 8	978	262, 263	61	790
Upper-clamp	W. H. Wood	488,913	Dec. 27	2741	676	61	1917
Upper-folding machine	C. E. Williams	488,593	Dec. 27	2240	555	61	1816
Urinal attachment	G. Schoen	487,130	Nov. 29	3148	807	61	1270
Urn. Coffee or tea	T. Miller	486,881	Nov. 29	2717	708	61	1184
Urn. Hot-water	T. Miller	488,320	Dec. 20	1792	450	61	1711
Valve	S. F. Gold	485,626	Nov. 8	723	189	61	737
Valve	E. W. Harden and M. R. Conway	486,403	Nov. 15	1951	517, 518	61	1003
Valve	L. H. Jenks	487,673	Dec. 6	704	179	61	1461
Valve	G. H. F. Schrader	484,509	Oct. 18	1519	386	61	331
Valve	A. S. Slyker	488,228	Dec. 20	1652	412	61	1684
Valve	D. L. Whittingham	484,384	Oct. 11	1315	336	61	280
Valve and faucet	A. H. Dauchy	485,828	Nov. 8	1016	273	61	797
Valve and joint	C. S. Bavier	484,843	Oct. 25	2074	533, 534	61	458
Valve and muffler. Safety	A. Lohbiller	488,020	Dec. 13	1289	322	61	1594
Valve and valve-support	J. R. Maxwell	487,408	Dec. 6	296	77	61	1379
Valve apparatus for gas or petroleum motor engines	H. Schumm	486,301	Nov. 15	1791	470	61	971
Valve. Automatic regulating	J. M. Foster	483,979	Oct. 4	688	172	61	142
Valve. Back-pressure	W. W. Doolittle	486,950	Nov. 29	2872	742	61	1215
Valve. Balanced slide	E. L. Mills	485,818	Nov. 8	997	268	61	794
Valve. Balanced slide	J. Parker and F. E. Clark	487,962	Dec. 13	1185	295, 296	61	1573
Valve. Balanced slide	F. R. Skidmore	484,060	Oct. 11	806	204	61	180
Valve. Balanced slide	F. D. Toncey	488,486	Dec. 20	2066	513	61	1767
Valve. Check	E. W. Craine	483,603	Oct. 4	129	32	61	27
Valve. Check	J. P. Gallon	485,740	Nov. 8	906	243	61	775
Valve. Check	W. S. Loveland	485,746	Nov. 8	914	244	61	777
Valve. Check	F. A. Phillippi	486,501	Nov. 22	2099	555	61	1046
Valve. Check	S. F. Prince, Jr	483,635	Oct. 4	175	44	61	36
Valve. Check	E. J. Sinclair	487,298	Dec. 6	91	27	61	1340
Valve-controller. Hygrometric	C. W. Rogers	483,725	Oct. 4	298	74	61	62
Valve. Direct-acting-engine	W. Craig	485,787	Nov. 8	961	258	61	786
Valve disk-holder	J. W. Randall	485,984	Nov. 8	1272	337	61	850
Valve. Elevator auxiliary	A. J. McAdam	484,223	Oct. 11	1054	268	61	229
Valve. Engine slide	J. D. Stark	484,903	Oct. 25	2169	558	61	477
Valve. Feed-regulating	W. K. Farrand	486,398	Nov. 15	1943	514	61	1002
Valve for air and gas compressors	J. Clayton	487,064	Nov. 29	3040	780	61	1248
Valve for evaporating-pans. Float	M. J. Rhodes	484,560	Oct. 18	1595	405	61	347
Valve for high pressures. Stop	H. W. Loss	486,722	Nov. 22	2448	632	61	1115
Valve for hydraulic elevators. Automatic stop	W. H. Hultgren	488,763	Dec. 27	2497	621	61	1867
Valve for pneumatic tires	W. E. Gibbs	485,540	Nov. 1	594	158	61	695
Valve for steam-heaters. Automatic	C. J. Valentine	484,526	Oct. 18	1545	392	61	336
Valve-gear	S. Chaplin	487,949	Dec. 6	18	5	61	1324
Valve-gear	F. H. A. Devlin	486,437	Nov. 22	2011	533	61	1028
Valve-gear	H. Unsicker and T. Masel	485,360	Nov. 1	327	87, 88	61	639
Valve-gear. Steam-engine	J. W. Sargent	485,433	Nov. 1	437	117	61	692
Valve. Globe	W. J. Quinn	485,055	Oct. 25	2413	621	61	595
Valve. Hydrant	S. W. Lewis	488,079	Dec. 13	1401	348	61	1619
Valve-indicator	J. Giles	486,610	Nov. 22	2275	593	61	1078
Valve levers. Stop for throttle	G. E. Messer	484,938	Oct. 25	2233	575	61	489
Valve mechanism for wash-basins	J. W. Hale	484,423	Oct. 18	1378	352	61	304
Valve-operating mechanism	J. W. Ogden	486,263	Nov. 15	1739	458	61	960
Valve-operating mechanism	C. L. Rowland	486,219	Nov. 15	1658	438	61	943
Valve-operating mechanism	R. E. Stephenson	488,780	Dec. 27	2525	627, 628	61	1872
Valve-operating mechanism	J. Wagner	484,965	Oct. 11	1131	289	61	244
Valve-operating mechanism. Engine	E. C. Fasoldt	485,579	Nov. 1	655	174	61	706
Valve. Packingless	A. Stirling	486,268	Nov. 15	1744	459	61	961
Valve. Piston	W. M. Smith	488,096	Dec. 13	1492	354, 355	61	1623
Valve. Pop safety	W. L. Gray and J. Rivers	487,029	Nov. 29	2989	769	61	1237
Valve. Radiator	G. C. Blackmore	487,901	Dec. 13	1091	273	61	1555

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Valve. Relief	C. Callahan	487,991	Dec. 13	1243	309	61	1564
Valve. Removable check	W. S. Loveland	485,745	Nov. 8	913	244	61	776
Valve. Rotary	F. D. Toncey	487,687	Dec. 6	732	187	61	1465
Valve. Safety	J. M. Coale	488,309	Dec. 20	1775	447	61	1708
Valve. Safety	A. P. Kinney	485,699	Nov. 8	833	224	61	760
Valve. Safety	J. G. White	487,800	Dec. 13	944	238	61	1526
Valve-seat	J. H. McGowan	486,690	Nov. 22	2257	590	61	1075
Valve. Slide	J. P. Metzger	488,525	Dec. 26	2133	528	61	1778
Valve. Slide	H. Moon	485,505	Nov. 1	539	143	61	682
Valve. Steam-actuated	D. E. Kempster	485,945	Nov. 8	1205	318, 319	61	830
Valve. Steam-actuated	T. G. Laney	485,046	Oct. 25	2403	618	61	523
Valve. Steam-engine	H. Denney	483,996	Oct. 11	713	179	61	161
Valve. Steam-engine	H. F. Frisbie	486,099	Nov. 15	1480	390	61	909
Valve. Steam engine	J. H. Wheat	486,148	Nov. 15	1560	413, 414	61	924
Valves. Cut-off mechanism for slide	G. Fletcher and W. P. Abell	485,267	Nov. 1	168	49, 50	61	607
Vamps to uppers. Machine for pasting	H. Fischer	487,388	Dec. 6	244	66	61	1369
Vanillin. Preparing	F. Ach	487,304	Nov. 29	3961	.....	61	1291
Vapor-burner	J. R. Sapp	484,114	Oct. 11	875	222	61	193
Vapor-burner	J. S. Wood	483,865	Oct. 4	538	136	61	112
Vaporizer	A. H. Carpenter	487,247	Dec. 6	16	5	61	1324
Vaporizer	C. F. Johnson	488,790	Dec. 27	2542	631	61	1875
Vaporizer	G. D. Lynch	485,127	Oct. 25	2515	646	61	546
Vaporizer	H. P. Roberts	488,830	Dec. 20	2140	530	61	1780
Vaporizer and burner. Hydrocarbon-oil	G. Botsford	486,096	Nov. 8	1340	356	61	864
Vapors and gases. Apparatus for superheating	M. Honigmann	485,796	Nov. 8	972	260	61	789
Vat. *See* Tanning-vat.							
Vegetable cutting or slicing machine	W. Smith and J. Claydon	485,580	Nov. 1	667	177	61	711
Vegetable-washer	E. J. Hollister	486,180	Nov. 15	1600	424	61	932
Vehicle	C. Comstock	485,091	Oct. 25	2469	635	61	537
Vehicle	A. E. Hotchkiss	488,201	Dec. 20	1598	399	61	1675
Vehicle	L. Myers	486,884	Nov. 29	2725	711	61	1186
Vehicle attachment	W. F. Miller	488,083	Dec. 13	1405	349	61	1620
Vehicle-body	T. Faulder	484,089	Oct. 11	846	214	61	188
Vehicle-body shifting device	C. H. Mitchell	488,444	Dec. 20	1995	499	61	1751
Vehicle-jack	N. E. Bradford	486,064	Nov. 8	1400	370	61	875
Vehicle. One-wheel	F. Frazee and J. L. Wintersteen	486,456	Nov. 22	2034	537, 538	61	1032
Vehicle. One-wheel	H. D. T. Wilson	487,359	Dec. 6	201	55	61	1360
Vehicle running-gear	C. A. Behlen	487,599	Dec. 6	583	149	61	1437
Vehicle running-gear	R. L. Ellery	484,186	Oct. 11	993	254	61	217
Vehicle running-gear	H. T. Goodrich	483,717	Oct. 4	288	71, 72	61	60
Vehicle running-gear	T. G. Mandt	486,677	Nov. 22	2180	622	61	1100
Vehicle running-gear	E. Storm	484,259	Oct. 11	1116	283	61	241
Vehicle running-gear	P. Weidner	485,673	Nov. 8	799	213	61	753
Vehicle-seat clamping device	T. Faulder	486,636	Nov. 22	2315	605, 606	61	1087
Vehicle shifting seat	R. Fawcett	484,414	Oct. 18	1365	349	61	301
Vehicle. Side-bar	P. S. Tartt	484,689	Oct. 18	1804	459	61	389
Vehicle. Spring	F. G. Davis	488,690	Dec. 27	2398	504	61	1846
Vehicle-spring	C. A. Behlen	487,598	Dec. 6	582	149	61	1437
Vehicle-spring	N. H. Bloom	487,414	Dec. 6	307	79	61	1382
Vehicle-spring	J. McPartland	488,795	Dec. 27	2551	633	61	1877
Vehicle-spring	C. E. Pearl	485,649	Nov. 8	753	198, 199	61	743
Vehicle-spring	H. Timken	487,201	Nov. 29	3258	833	61	1291
Vehicle-spring	H. Timken	487,202	Nov. 29	3259	834	61	1291
Vehicle-starter	J. W. Lee	485,125	Oct. 25	2511	645	61	546
Vehicle. Steam-propelled	G. J. Saurbrey	488,224	Dec. 20	1643	409, 410, 411	61	1683
Vehicle-supporting device	W. S. Overfelt, J. R. Evans, and C. J. Capp.	486,790	Nov. 22	2564	668	61	1137
Vehicle-top	I. N. Cool	485,610	Nov. 8	698	184	61	731
Vehicle-wheel	K. Haussner	486,106	Nov. 15	1490	392	61	910
Vehicles. Means for connecting draft-animals to	T. H. Brigg	486,837	Nov. 22	2643	690	61	1155
Veil-pin	G. H. Flen	483,605	Oct. 4	132	33	61	28
Velocipede	R. F. Darling	485,839	Nov. 8	1030	277, 278	61	800
Velocipede	C. W. Saladee	486,055	Nov. 8	1384	367, 368	61	872
Velocipede	A. Taitte	488,745	Dec. 27	2473	614, 615	61	1862
Velocipede	P. W. Tillinghast	486,914	Nov. 29	2815	729	61	1204
Velocipede. Aquatic	J. F. Breyer	485,369	Nov. 1	342	90, 91	61	642
Velocipede. Ice	M. B. Gibson	485,345	Nov. 1	302	81	61	633
Velocipede. Ice	W. Guethler and F. Gellhaus	485,844	Nov. 8	1039	278	61	803
Velocipede. Ice	G. Seebick	485,335	Nov. 1	289	76	61	629
Velocipede-saddle	A. L. Garford	485,186	Nov. 1	49	15	61	582
Velocipede-saddle	J. A. Hunt	483,559	Oct. 4	63	16	61	15
Velocipede-saddle	F. M. Slocum	483,875	Oct. 4	526	132	61	109
Velocipede-saddle	G. A. Perkins	486,294	Nov. 15	1784	469	61	970
Velocipede-saddle spring	F. Westwood and W. H. Butler	486,146	Nov. 15	1558	413	61	924
Velocipede-wheel	C. F. Schnoor	484,573	Oct. 18	1610	409	61	350
Vending apparatus. Coin-operated	T. C. Kirkham	488,610	Dec. 27	2263	561	61	1891
Vending-machine	A. F. Schneider	488,840	Dec. 27	2694	651	61	1892
Vending-machine. Coin-actuated	R. Moran	487,409	Dec. 6	298	77	61	1380
Vending-machine. Coin-controlled	G. L. Slater	485,140	Oct. 25	2536	651	61	550
Vending-machine. Coin-controlled	C. W. Smith	487,008	Nov. 29	2959	762, 763	61	1238
Veneer-cutting machine	E. Adler	484,623	Oct. 18	1691	429	61	396
Veneer-cutting machine	J. B. Wilson	486,152	Nov. 15	1585	415	61	925

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Vent for casks. Automatic air	E. R. Buhrman	488,160	Dec. 13	1530	384	61	1644
Vent for liquid-receptacles	F. W. Polle	484,816	Oct. 25	2023	519	61	448
Ventilating, refrigerating, heating, &c., carriages, halls, or rooms. Apparatus for	H. and T. A. Carter	484,353	Oct. 11	1266	323	61	270
Ventilation. System of house	F. P. Smith	485,141	Oct. 25	2538	651	61	551
Ventilator: *See* Air-ventilator. Window-ventilator. Ship's ventilator.							
Ventilator	G. H. Ennis	484,879	Oct. 25	2125	546	61	468
Ventilator	J. Gross and H. Beck	483,650	Oct. 4	197	49	61	40
Ventilator	C. Redpath	485,059	Oct. 25	2419	622	61	526
Vessel-closure	A. Werner	486,008	Nov. 8	1311	349	61	857
Vessel-closure	J. B. McNabb	483,575	Oct. 4	86	23	61	20
Vessel. Conveyer-barge storage	F. H. Briggs	485,836	Nov. 8	1096	275 / 276	61	799
Vessel draft-indicator	W. R. Patterson	484,642	Oct. 18	1723	438	61	372
Vessel-hulls. Construction of	C. D. Doxford	485 462	Nov. 1	479	126 / 127	61	669
Vessel. Wooden liquid-containing	J. M. Schofield	484,949	Oct. 11	1109	279	61	238
Vessels. Apparatus for ejecting ashes from	H. See	483,770	Oct. 4	374	93	61	78
Vessels. Apparatus for raising sunken	A. H. Tyler and J. S. E. de Vesian	485,398	Nov. 1	387	104 / 105	61	652
Veterinary instrument	A. J. Ziegler	486,153	Nov. 15	1568	416	61	925
Vine-cutter	S. H. Francis	483,627	Oct. 4	164	40	61	34
Vine-holder	J. L. McGarrell	483,856	Oct. 4	503	125	61	104
Vine rake. Pea	P. E. Berthier	484,394	Oct. 18	1336	340	61	285
Violin	D. F. Burgner	483,897	Oct. 4	555	140	61	115
Violin-bow	J. R. Perry	485,651	Nov. 8	755	199	61	743
Violin-bow frog	J. A. Houlihan	485,038	Oct. 25	2391	614	61	520
Vise	J. J. Cowell	488,600	Dec. 27	2251	558	61	1819
Vise	W. Ilbery	486,228	Nov. 15	1671	442	61	946
Vise	A. Kane	488,315	Dec. 20	1785	449	61	1709
Vise	W. Mann	484,213	Oct. 11	1041	264	61	226
Vise	D. C. and J. Sabourin	488,368	Dec. 20	1877	470	61	1728
Vise	E. R. Carichoff	485,896	Nov. 8	1013	272	61	796
Vise	K. Dougan	488,938	Dec. 27	2775	685	61	1924
Vulcanising wood. Process of and apparatus for	S. E. Haskin	488,967	Dec. 27	2894	697	61	1936
Wadding from cellulose and cotton. Process of and machine for manufacturing	C. Waibel	483,590	Oct. 4	114	27	61	24
Wagon	T. B. Moses, Jr.	485,209	Nov. 1	906	58	61	614
Wagon-body	I. A. Manchester	488,061	Dec. 13	1404	348	61	1619
Wagon-body riser	E. Finn	488,671	Dec. 27	2363	584	61	1840
Wagon-brake	F. W. Dobbel	486,945	Nov. 15	1700	449	61	951
Wagon-brake	B. F. Fleshman	484,001	Oct. 11	725	182	61	163
Wagon-brake	J. Newbill	485,332	Nov. 1	377	75	61	628
Wagon-brake	V. T. Sweeney	484,687	Oct. 18	1801	458	61	388
Wagon-brake	D. F. Wegner and A. A. Beltman	488,489	Dec. 20	2069	514	61	1768
Wagon-brake. Automatic	B. Wilcox	488,644	Dec. 27	2319	574	61	1831
Wagon brake. Hay	J. Luckainger	486,786	Nov. 22	2556	666 / 667	61	1135
Wagon-brake lever	G. P. Riester	485,060	Oct. 25	2420	622	61	526
Wagon brake mechanism	W. H. Eagleson	485,916	Nov. 8	1160	307	61	896
Wagon-cover	E. Simon	487,544	Dec. 6	510	132 / 133	61	1421
Wagon-drag	G. A. Homes	488,612	Dec. 27	2574	639	61	1883
Wagon. Dump	C. Linn	486,114	Nov. 15	1502	396	61	912
Wagon. Dump	M. L. Senderling	488,292	Dec. 20	1751	441	61	1703
Wagon. Dumping	L. Busse	484,732	Oct. 18	1806	475	61	401
Wagon. Dumping	J. M. E. Campbell and R. P. Rankin	484,491	Oct. 18	1492	379	61	396
Wagon. Dumping	C. H. McRoberts	485,294	Nov. 1	209	60	61	615
Wagon-gear	E. Takken	486,304	Nov. 15	1795	472	61	972
Wagon running-gear	J. R. Hess	488,894	Dec. 27	2609	668	61	1909
Wagon scoop-board	I. B. Owens and D. C. Ball	486,351	Nov. 15	1670	492	61	986
Wainscoting. Enameled-iron	F. M. Gibson	486,599	Nov. 29	2138	564	61	1053
Waist	F. D. Cook	485,259	Nov. 1	159	46	61	605
Walking-stick and flag	Z. Demarest	485,001	Oct. 25	2331	601	61	508
Wall-coverings. Composition for	J. H. Nikirk	484,446	Oct. 18	1490	392	61	319
Wall-finish and making same	L. F. Griffin	486,870	Nov. 29	2705	.....	61	1182
Wall, floor, or roof of buildings	B. Moore	488,094	Dec. 13	1295	.....	61	1596
Wall-paper exhibitor	A. J. Judge	488,927	Oct. 4	605	153	61	125
Wardrobe	A. F. Payne	485,648	Nov. 8	752	196	61	743
Warehouse	D. B. Weightman	485,309	Nov. 1	231	64	61	620
Warm-air register	W. W. Bierce	486,367	Nov. 15	1895	501	61	991
Warmer. Body	C. H. Foster	486,865	Nov. 29	2700	704	61	1181
Warp-drying machine	G. D. Bally	485,080	Oct. 25	2450	636	61	533
Warp-threads. Machine for drawing in	F. Haskell	485,694	Nov. 8	827	221 / 222	61	758
Warp-threads. Mechanism for unwinding	L. P. Sherman	487,938	Dec. 13	1153	288	61	1566
Warpers. Beam-doffer for	C. E. Scrimgeour and H. Gildard	485,776	Nov. 8	948	254 / 255	61	784
Warping-machine	J. E. Prest	485,225	Nov. 1	109	33	61	595
Warping-machine regulating device	A. E. Rhoades	487,682	Dec. 6	722	184 / 185	61	1463
Wash-bench and wringer-support. Combined	N. Hicks	488,432	Dec. 20	1977	492 / 494	61	1747
Washboard	W. F. Parmelee	484,160	Oct. 11	956	246	61	209
Washboard breast-rest	A. T. and J. H. Lapham	488,309	Dec. 20	1691	404	61	1679
Wash-boiler	O. T. and J. H. Lapham	483,796	Oct. 4	400	99	61	84
Wash-stand	J. Fullen	484,417	Oct. 18	1369	350	61	302
Wash-stand	N. O. Bond	484,549	Oct. 18	1744	443	61	376
Wash-stand	G. H. Gere	484,956	Oct. 25	2253	580	61	494
Wash-stand	A. Janson	485,040	Oct. 25	2393	615	61	530
Wash-stand water-receptacle	N. O. Bond	483,596	Oct. 4	14	3	61	6

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Washer: *See* Bottle-washer. Vegetable-washer. Tumbler-washer. Window-washer.							
Washing fabrics. Apparatus for	J. Haworth	485,695	Nov. 8	899	222 / 223	61	759
Washing-machine	J. H. Bates	484,671	Oct. 25	2115	544	61	466
Washing-machine	J. M. Campbell	488,763	Nov. 22	2516	656	61	1128
Washing-machine	H. Cook	488,727	Dec. 27	2447	608	61	1857
Washing-machine	A. J. Curtis	488,543	Dec. 27	2156	532	61	1796
Washing-machine	W. F. Elkins	483,547	Oct. 4	47	12	61	12
Washing-machine	J. W. Fell	485,791	Nov. 8	966	259	61	788
Washing-machine	B. L. Finch	485,813	Nov. 8	991	266	61	792
Washing-machine	D. Gardner	484,892	Oct. 25	2150	552	61	474
Washing-machine	K. W. Hacke	485,667	Nov. 8	817	218	61	757
Washing-machine	J. P. Hale	486,564	Nov. 22	2192	577	61	1063
Washing-machine	J. Hofmann	486,468	Nov. 22	2053	544	61	1036
Washing-machine	R. D. Hulbert	483,721	Oct. 4	293	73	61	61
Washing-machine	R. T. King	485,765	Nov. 8	937	251	61	781
Washing-machine	N. H. Long	486,721	Nov. 22	2447	638	61	1114
Washing-machine	J. A. Mengel	483,723	Oct. 4	295	74	61	62
Washing-machine	C. Osbon	483,861	Oct. 4	506	126	61	105
Washing-machine	F. W. Schuster and W. R. Schneider.	488,094	Dec. 13	1417	353	61	1632
Washing-machine	J. C. Thomas	485,143	Oct. 25	2540	652	61	551
Washing-machine	L. J. Wilson	487,107	Nov. 29	3113	799	61	1963
Washing-machine	C. T. Woods	486,905	Nov. 22	2583	673 / 674	61	1141
Washing-powder	E. F. O'Neal	483,634	Oct. 4	174	.....	61	36
Watch alarm attachment	G. J. Capewell	488,062	Dec. 13	1373	341	61	1612
Watch-balance. Non-magnetic	C. F. Carpenter	487,550	Dec. 6	517	134	61	1423
Watch-balances and hair-springs. Mechanism for timing and adjusting	G. E. Hunter	484,797	Oct. 25	1992	510 / 511 / 512 / 513	61	441
Watch-balances and hair-springs. System for adjusting to temperature	G. E. Hunter	484,796	Oct. 25	1988	507 / 508 / 509 / 510	61	441
Watchcase-pendant	D. H. Church	484,177	Oct. 11	982	251	61	215
Watchcase-pendant	T. A. Hopkins	485,581	Nov. 1	657	174	61	708
Watchcase-pendant	T. A. Hopkins	487,052	Nov. 29	3023	776	61	1944
Watch-chain holder and badge	J. B. Pearson and V. Sperle	486,419	Nov. 15	1977	594	61	1008
Watch-charm	D. A. Smith and C. E. Grapewine	483,949	Oct. 4	634	159	61	130
Watch-holder	R. Fuchs	484,003	Oct. 11	730	183	61	164
Watchmaker's depthing and adjusting tool	G. W. Harris	483,980	Oct. 4	657	165	61	136
Watchmaker's tool	G. W. Cameron	487,998	Dec. 13	1239	308	61	1583
Watchmaker's tool	U. W. Frink	488,089	Dec. 13	1387	344	61	1615
Watchmaker's tool	C. Smith	484,680	Oct. 18	1793	456	61	387
Watch-movement box	C. H. Smith	488,097	Dec. 13	1494	355	61	1623
Watch-pendant	W. T. Harrison	486,105	Nov. 15	1489	392	61	916
Watch-regulator	D. H. Church	484,176	Oct. 11	981	251	61	214
Watch. Stem winding and setting	J. E. Fultz	484,859	Oct. 11	1274	325	61	272
Watch. Stop	W. H. Douglas	488,710	Dec. 27	2424	601	61	1851
Water-closet	C. H. Muckenhirn	488,363	Dec. 20	1866	467	61	1736
Water-closet	A. J. Niles	484,559	Oct. 18	1594	404	61	346
Water-closet	B. C. Smith	484,617	Oct. 18	1684	427 / 428	61	365
Water-closet attachment	I. A. Martin and C. T. Hammon	485,960	Nov. 8	1236	326	61	842
Water-closet. Catch-basin	H. C. Buddenberg	486,428	Nov. 22	1997	530	61	1025
Water-closet cistern	J. Mensies and R. Morgan	485,469	Nov. 1	492	130	61	672
Water-closet coupling	G. B. Howell	484,318	Oct. 11	1215	308	61	259
Water-closet flush-valve	E. Herdegen	485,155	Oct. 25	2561	658	61	555
Water-closet flushing device	H. C. Weber	486,994	Nov. 29	2838	757	61	1202
Water-closet siphon	R. Morgan and J. Menzies	488,794	Dec. 27	2549	632	61	1877
Water-closet-tank siphon	C. L. Wilkins and A. F. Bleach	484,534	Oct. 25	2055	526	61	454
Water-cooler	W. H. Fruen	488,473	Dec. 20	2039	506	61	1761
Water-distributing apparatus. Siphonic	J. K. Leedy	485,953	Nov. 8	1295	323	61	839
Water-elevator	R. W. Tinsley	486,002	Nov. 8	1306	347 / 348	61	856
Water-elevator. Pneumatic	A. H. Simms	484,955	Oct. 11	1109	281	61	240
Water-gage reflector	E. C. Carleton	485,451	Nov. 1	464	124	61	657
Water-gate. Automatic	G. W. Norton	487,981	Dec. 13	1184	295	61	1572
Water-heater	J. Dawson	488,709	Dec. 27	2421	600 / 601	61	1851
Water-heater	J. W. Kelley	484,322	Oct. 11	1219	310 / 311	61	280
Water-heater	J. H. Shivlar	485,892	Nov. 8	1124	297	61	818
Water-heating system	F. A. and E. N. Gates	484,193	Oct. 11	1002	256	61	218
Water-meter	H. B. Williams	483,951	Oct. 4	636	160	61	131
Water-meter. Disk	J. Thomson	485,437	Nov. 1	443	118 / 119	61	663
Water-meter. Disk	J. A. Tilden	488,992	Nov. 29	2934	756 / 757	61	1287
Water-meter. Positive proportional	J. Thomson	485,438	Nov. 1	444	119	61	663
Water-meter. Rotary	C. Schon	484,465	Oct. 18	1447	369	61	317
Water-meter. Rotary	J. A. Tilden	488,587	Dec. 27	2230	558	61	1814
Water-motor	C. L. Wilkins	484,271	Oct. 11	1143	290 / 291	61	246
Water-motor	C. C. Wilson	488,869	Dec. 27	2656	657	61	1889
Water or other liquids. Apparatus for raising and forcing	I. Shone and E. Ault	485,714	Nov. 8	864	232	61	767
Water or wind wheel	J. Suter	487,381	Dec. 6	232	63	61	1367
Water-purifier	M. J. Hewlett and D. C. Cecil	488,673	Dec. 27	2366	565	61	1861

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Water-wheel	J. W. and F. M. Bookwalter	488,056	Dec. 13	1363	338, 339	61	1610
Water-wheel	C. W. Huson	485,196	Nov. 1	65	19, 20	61	585
Water-wheel	C. Taber	488,723	Dec. 27	2442	606	61	1855
Water-wheel bucket	J. B. Pitchford	485,477	Nov. 1	502	133	61	674
Water-wheel nozzle	C. A. Scharff	485,063	Nov. 8	785	209	61	749
Water-wheel. Turbine	W. W. Rossman	488,029	Dec. 13	1310	327	61	1509
Weather-strip	E. A. Delaney	483,905	Oct. 11	712	179	61	160
Weather-strip	O. A. Gallatin	487,830	Dec. 13	973	245	61	1533
Weather-strip	G. W. Morris	485,747	Nov. 8	915	245	61	777
Weather-strip	J. Phillips	484,454	Oct. 18	1429	365	61	314
Weaving-machines. Register and stop-motion mechanism therefor for	C. Holding	485,869	Nov. 8	1061	287	61	810
Webs. Machine for guiding the edges of textile	J. J. Scholfield	487,352	Dec. 6	187	51, 52	61	1357
Weeder. Lawn	J. E. Jones	488,817	Dec. 27	2583	641	61	1884
Weigher. Grain	J. A. and D. James	485,632	Nov. 8	731	191	61	738
Weighing apparatus. Automatic	A. Widick	485,779	Nov. 8	951	255	61	784
Weighing machine. Grain	M. E. Reisert	483,636	Oct. 4	176	44	61	37
Weighing oil-tank	A. H. W. Droste and H. H. Bruns	483,909	Oct. 4	580	146	61	190
	E. N. Bachelder and F. E. Lovejoy. (Reissue.)	11,274	Oct. 4	697	174	61	144
Welding. Electric	E. Thomson	487,309	Dec. 6	99	30	61	1341
Well-boring apparatus. Artesian	B. W. Elder	484,764	Oct. 18	1927	490	61	416
Well-drilling apparatus	T. De La Mare and J. Mecham	488,116	Dec. 13	1454	366	61	1629
Well-drilling machine	G. Zink	483,756	Oct. 4	349	86	61	73
Well-drilling machine	G. Zink	483,688	Oct. 4	543	137	61	112
Well-drilling tool	T. G. Chapman	487,989	Dec. 13	1240	308, 309	61	1584
Well or cistern cleaner	J. W. Master	484,214	Oct. 11	1042	264	61	226
Wells. Apparatus for inserting or withdrawing casing for oil or like	C. A. Sargert	484,051	Oct. 11	795	200, 201	61	177
Wells. Sand-trap for Artesian	B. F. Smith	485,064	Oct. 25	2426	623	61	597
Wells. Tool to fish out drills, &c., from Artesian	C. H. Taylor	488,909	Dec. 27	2735	675	61	1916
Wheel:							
See Balance-wheel. Cog-wheel. Cycle-wheel. Elastic wheel. Fifth-wheel. Fortune-wheel. Metal wheel. Paddle-wheel. Pneumatic-tired wheel. Propeller-wheel. Sprocket-wheel. Toy wheel. Trolley-wheel. Vehicle-wheel. Water-wheel. Water and wind wheel. Wind-wheel. Wind and current wheel.							
Wheel	S. H. Kimball	487,017	Nov. 29	2971	765	61	1234
Wheel	W. T. Robinson	486,195	Nov. 15	1523	402	61	916
Wheel-guard	P. J. Connell	484,300	Oct. 11	1187	302	61	254
Wheel mechanism. Worm	T. A. Weston	486,814	Nov. 22	2601	677	61	1146
Wheel-rim attachment	P. Davies	488,670	Dec. 27	2363	584	61	1840
Wheel-rim-trimming machine	R. Hoopes	485,156	Oct. 25	2562	658	61	556
Wheel-scraper	T. L. Aveling	484,841	Oct. 25	2072	533	61	457
Wheel-spider	R. T. Markee	488,319	Dec. 20	1791	450	61	1711
Wheel. Vehicle or other	A. W. Robinson	484,675	Oct. 18	1788	455	61	386
Wheelbarrow	P. Hoogerwell	486,469	Nov. 22	2054	544	61	1036
Wheelbarrow	A. O. Hubbard	487,053	Nov. 29	3094	777	61	1245
Whiffletree	J. Edgar	483,604	Oct. 4	131	32, 33	61	98
Whiffletree	J. Edgar	486,092	Nov. 15	1468	387	61	906
Whiffletree	L. S. Flatau	485,692	Nov. 8	717	188	61	735
Whiffletree	L. S. Flatau	486,863	Nov. 29	2697	704	61	1180
Whiffletree	S. H. Hase	487,264	Dec. 6	38	13	61	1329
Whiffletree	H. M. Wright	486,947	Nov. 29	2868	741	61	1214
Whiffletree-coupling	B. D. Druen	485,003	Oct. 25	2333	602	61	509
Whiffletree-hook	C. C. Dedermick	486,280	Nov. 15	1767	465	61	966
Whiffletree-hook	C. H. Evans and F. T. Dunlap	486,929	Nov. 29	2834	734	61	1208
Whiffletree-hook	J. F. Graves	486,391	Dec. 20	1912	479	61	1735
Whiffletree-hook	E. G. Quickel	484,746	Oct. 18	1894	482	61	409
Whiffletree-hook	W. C. Wentworth	486,551	Nov. 22	2164	572	61	1058
Whiffletree-hook	D. Y. Wilson	488,491	Dec. 20	2072	514	61	1768
Whip-socket	F. A. Ames	487,814	Dec. 13	951	240	61	1527
Whip-socket	E. N. Tuttle	484,067	Oct. 11	814	206	61	182
Whip-socket and rein-holder. Combined	W. H. Haney	486,547	Nov. 22	2160	571	61	1058
Whip-socket fastener	F. E. Benton	488,169	Dec. 13	1446	363	61	1627
Whistle. Signal	W. M. Smouse	488,845	Dec. 27	2831	652	61	1894
Wick-carrier	J. C. Miller	483,850	Oct. 4	493	122	61	102
Wick-lifting device	F. Rhind	485,429	Nov. 1	431	115	61	660
Wick-raising device	H. L. Smith	484,981	Oct. 25	2296	593	61	501
Wind and current wheel	D. C. Herman	485,933	Nov. 8	1182	311	61	830
Wind-wheel	T. J. Harrison	485,380	Nov. 1	357	96	61	646
Winders. Driving mechanism for cop and bobbin	O. Lever and W. S. Grundy	486,258	Nov. 15	1733	456	61	958
Winding machine. Cop	O. Lever and W. S. Grundy	486,257	Nov. 15	1730	455	61	958
Winding yarn or thread. Machine for	R. Broadbent	484,171	Oct. 11	975	249	61	213
Windlass. Hauling	F. Uhlig	485,515	Nov. 1	550	146, 147	61	685
Windlass. Power	H. L. Bennett and R. B. Adams	486,073	Nov. 15	1418	375	61	897
Windmill	E. J. Barber	485,082	Oct. 25	2452	631	61	533
Windmill	S. M. Hopkins	484,795	Oct. 25	1987	507	61	441
Windmill	W. P. Kimbrell	487,750	Dec. 13	841	214, 215	61	1506
Windmill	J. Opperud and J. I. Brorby	488,087	Dec. 13	1410	350, 351	61	1630
Windmill	B. T. Stauber	484,896	Oct. 25	2036	522	61	450
Windmill-regulator. Automatic	C. E. Tobie	486,668	Nov. 22	2395	626	61	1104
Windmill tilting-tower	T. O. Perry	485,863	Nov. 8	1111	294	61	816

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Windmill-tower	J. Luger	484,103	Oct. 11	864	220	61	191
Windmill-tower	K. A. Smith and A. M. Wead	487,787	Dec. 13	904	229	61	1518
Windmill-towers, &c. Adjustable brace for	M. J. Althouse	483,520	Oct. 4	2	1	61	3
Window	G. E. Blaine	484,489	Oct. 18	1489	379	61	325
Window	W. B. Eltonhead	486,223	Nov. 15	1663	440	61	944
Window	J. H. Giesey	488,761	Dec. 27	2494	620, 621	61	1866
Window-chair	E. B. Gildersleeve	483,608	Oct. 4	137	34	61	29
Window-chair	F. Staedeli	487,859	Dec. 13	1028	257	61	1548
Window-cleaner	M. J. Becker	484,294	Oct. 11	1160	295	61	249
Window-cleaner	A. R. Kolb	487,866	Dec. 13	1071	269	61	1551
Window-frame pocket	F. V. Phillips	483,908	Oct. 4	668	167	61	138
Window-jack	G. F. Sheehan and D. A. Mullin	484,467	Oct. 18	1452	370	61	318
Window. Reversible	J. Farquharson	487,118	Nov. 29	3139	802, 803	61	1987
Window-screen	P. Gabriel	484,418	Oct. 18	1370	350	61	302
Window-screen	A. McKerlie	484,540	Oct. 18	1568	399	61	341
Window-screen	W. E. Pierce	483,789	Oct. 4	404	100	61	85
Window-screen	J. Rich	484,978	Oct. 25	2283	592	61	501
Window-screen frame	J. F. Butcher	484,293	Oct. 11	1169	298	61	251
Window-ventilator	D. N. Cook	488,920	Dec. 27	2751	678	61	1919
Window-washer	D. Mendelson	486,726	Nov. 22	2453	640	61	1116
Wine. Treatment of sparkling	A. Walfard	485,248	Nov. 1	143	42	61	602
Wire. Barbed	J. D. Curtis	484,890	Oct. 25	2148	551	61	473
Wire-braiding machine	J. B. Cleaveland	486,823	Nov. 22	2620	683	61	1150
Wire-coiling machine	A. M. Hartley	484,496	Oct. 18	1384	353, 354	61	304
Wire coupling	W. E. Banta	484,842	Oct. 25	2073	533	61	458
Wire-covering machine	J. A. Barrett	486,270	Nov. 15	1746	460	61	962
Wire-covering machine	J. A. Barrett	486,845	Nov. 29	2664	606, 607	61	1173
Wire-drawing machine	G. B. Lamb and A. C. Campbell	487,844	Dec. 13	999	251, 252	61	1537
Wire-fabric machine	W. D. Whitney	484,528	Oct. 18	1548	393	61	337
Wire-grip. Lineman's	C. A. Svensson	486,911	Nov. 29	2811	728	61	1903
Wire. Machine for making ornamental	L. Koss	488,941	Dec. 27	2784	686, 687	61	1926
Wire mat	H. C. Brittain and P. J. Shrum	487,700	Dec. 6	747	191	61	1468
Wire mat	J. T. Howarth	488,335	Dec. 20	1824	456	61	1717
Wire-netting	B. Scarles	488,032	Dec. 13	1315	328	61	1600
Wire-netting machine	B. Scarles	483,969	Oct. 4	669	168	61	139
Wire-netting machines. Detector stop-motion for	E. S. Bond	484,992	Oct. 25	2318	597, 598	61	506
Wire-reel	J. W. Buchanan	483,830	Oct. 4	467	116	61	96
Wire-reel	W. Dulin	486,928	Nov. 29	2833	734	61	1208
Wire-reel carrier	J. Phleegar	486,538	Nov. 22	2148	567	61	1055
Wire-reel holder	H. Hanson	485,275	Nov. 1	180	53	61	610
Wire reeling and stretching machine	J. Harper	485,541	Nov. 1	595	159	61	695
Wire-rod mill	G. Lehberger	486,383	Nov. 15	1913	506, 507	61	996
Wire-splicer	J. T. Smith and O. T. Lucas	487,646	Dec. 6	659	170	61	1492
Wire springs. Machine for compressing and forming the ends of sectional woven	D. A. Cobb	486,853	Nov. 29	2676	700	61	1176
Wire-stretcher	J. Dietrich	486,221	Nov. 15	1661	439	61	944
Wire-stretcher	J. Spillinger	484,061	Oct. 11	807	204	61	180
Wire-stretcher	H. Stahl and A. F. Dickey	487,101	Nov. 29	3104	796	61	1282
Wire-stretcher	L. W. Stokely	485,066	Oct. 25	2429	624	61	528
Wire stretcher and splicer	J. F. Price	484,881	Oct. 25	2127	546	61	468
Wire-stretching device	C. H. Dickinson	488,729	Dec. 27	2449	606	61	1857
Wire-stretching tool	G. C. Copper and D. F. Cox	485,611	Nov. 8	699	184	61	732
Wire-twisting tool	C. A. Underkircher	487,459	Dec. 6	380	99	61	1396
Wire-twisting wrench. Adjustable	C. E. Wintrode	484,692	Oct. 18	1808	460	61	399
Wire-winding apparatus	F. B. Chase	485,256	Nov. 1	154	45	61	605
Wood and leather substitute	C. Heepe	488,809	Dec. 27	2571	638	61	1888
Wood-bending machine	J. Klahr	485,800	Nov. 8	976	262	61	790
Wood. Manufacture of parquetry or inlaid	H. Studte	484,063	Oct. 11	810	205	61	181
Wood-pulp drainer	G. M. Newhall and C. L. Hamilton	488,399	Dec. 20	1992	493	61	1737
Wood-trimming machine	C. Neracher. (Reissue)	11,286	Nov. 22	2651	692	61	1156
Woodworking-machines. Feed-roller for	J. Davis	483,711	Oct. 4	281	70	61	59
Wooden vessel	E. M. Reese	486,737	Nov. 22	2472	645	61	1120
Work-stand, desk, game-board, and table. Combined	J. L. Isaacs	484,718	Oct. 18	1841	468	61	397
Woven fabric	L. H. Marsden and J. H. Frost	484,537	Oct. 18	1564	398	61	340
Woven fabric. Elastic	M. Picot	484,977	Oct. 25	2292	591	61	500
Woven fabric. Tubular	B. L. Stowe	486,620	Nov. 22	2291	597	61	1082
Woven fabric. Tubular	B. L. Stowe	486,621	Nov. 22	2292	598	61	1082
Woven fabrics. Machine for finishing	A. T. Clay	488,787	Dec. 27	2538	630	61	1875
Wrecking-boat	A. McDougall	488,574	Dec. 27	2206	546	61	1810
Wrench:							
See Flange-wrench. Nut-wrench. Nut or pipe wrench. Pipe-wrench. Pipe and nut wrench. Ratchet-wrench. Rigid and ratchet wrench. Wire-twisting wrench.							
Wrench	P. Brolin	484,988	Oct. 11	1164	296	61	250
Wrench	W. E. Brooke	486,758	Nov. 22	2508	655	61	1127
Wrench	D. H. Carpenter	486,764	Nov. 22	2517	657	61	1128
Wrench	D. H. Carpenter	487,067	Nov. 29	3081	791	61	1257
Wrench	S. Cook	485,152	Oct. 25	2557	657	61	556
Wrench	A. J. Curtis	486,697	Nov. 22	2417	630	61	1108
Wrench	C. C. Fields and W. S. Duvall	484,307	Oct. 11	1200	306	61	257
Wrench	L. I. Folk, J. W. Nairn, and L. H. Dempsey.	483,803	Oct. 4	491	104	61	88
Wrench	J. H. Gregory	488,431	Dec. 20	1976	493	61	1747
Wrench	H. Hammond. (Reissue)	11,277	Oct. 18	1933	491	61	419

Alphabetical list of inventions, October to December, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Wrench	A. W. Miles and E. A. Commander	484,218	Oct. 11	1049	265	61	227
Wrench	O. E. H. N. Reichling	485,657	Nov. 8	776	206	61	747
Wrench	G. W. Scheid	486,300	Nov. 15	1790	470	61	971
Wrench and screw-driver. Combined	D. C. Wiest	486,158	Dec. 13	1526	383	61	1643
Wringer:	W. E. Brooke	486,759	Nov. 22	2510	655	61	1127
See Mop-wringer.							
Wringer gear-guard	L. Momburg and W. F. Dallmann	484,970	Oct. 25	2276	587	61	498
Wringing and mangling machine	W. Dore and J. P. Tapley	486,222	Nov. 15	1669	439 / 440	61	944
Writing device	A. M. Nelson	486,945	Dec. 27	2793	699	61	1938
Yarn from scutched flax. Manufacturing	J. V. Eves	487,875	Dec. 13	1055	264	61	1547
Yoke. Neck	J. S. Brown	487,112	Nov. 29	3120	800	61	1965
Yoke. Neck	F. W. Kline and G. G. Thomas	487,977	Dec. 6	69	19	61	1334
Zinc-furnace	O. Sumaghi	483,934	Oct. 4	612	155	61	126
Zinc. Reducing	C. James	483,652	Oct. 4	200	.....	61	41

ALPHABETICAL LIST OF DESIGNS.

Design.	Name.	No.	Date.	Official Gazette. Volume.	Official Gazette. Page.
Badge	N. S. Boynton	21,975	Nov. 8	61	878
Badge	W. Connolly and A. A. Sealy	21,885	Oct. 11	61	281
Badge	H. F. G. Fuchs	21,898	Oct. 18	61	419
Badge	A. T. Hatch	21,875	Oct. 4	61	145
Badge	E. L. Miller	21,899	Oct. 18	61	419
Badge	C. Pettibone	21,886	Oct. 11	61	281
Badge	L. J. Pitkin	22,038	Dec. 6	61	1471
Badge	M. C. Shafer	21,951	Nov. 1	61	717
Banner	J. M. Joy	21,927	Oct. 25	61	560
Bar-pin	E. H. Croninger	22,073	Dec. 20	61	1783
Bicycler's bag	S. B. Gilbuly	22,057	Dec. 13	61	1650
Book-rest and holder for umbrellas, &c	C. Pegler	22,010	Nov. 22	61	1159
Boot. Lady's	H. C. Richardson	21,954	Nov. 1	61	717
Bottle	F. S. and F. R. Rockwood	22,058	Dec. 13	61	1650
Bottle. Nursing	G. R. Schimmel	22,059	Dec. 6	61	1473
Bottle or flask	W. T. Murphy	22,085	Dec. 27	61	1941
Bowl. Sugar	H. Berry	21,921	Oct. 25	61	560
Bowl. Sugar	H. Berry	21,922	Oct. 25	61	560
Box	L. Schwars	21,955	Nov. 1	61	717
Box-cover	S. D. Lux	21,923	Oct. 25	61	560
Bracket-arm	A. W. Allen	22,055	Dec. 6	61	1473
Breastpin	H. A. Pistorius	22,081	Dec. 27	61	1940
Brick or stone	F. Laplante	22,076	Dec. 20	61	1783
Bust of Columbus. Relief	E. H. Hirner	22,005	Nov. 22	61	1159
Button. Cuff	J. A. Bidwell	21,902	Oct. 18	61	419
Cane	T. W. Gardner	22,009	Nov. 22	61	1159
Cane-handle	G. W. Scott	21,976	Nov. 8	61	879
Cape	A. Frank	22,041	Dec. 6	61	1471
Car interiors. Ornamentation of	A. Rapp	21,996	Nov. 15	61	1011
Carpet	W. F. Brown	21,994	Nov. 15	61	1011
Carriage-body	C. H. Palmer, Jr	21,925	Oct. 25	61	561
Castanet	G. W. Hull	21,953	Nov. 1	61	717
Chair	A. Casiraghi	22,088	Dec. 27	61	1942
Chair	A. Thonet	22,012	Nov. 22	61	1160
Chair	A. Thonet	22,022	Nov. 29	61	1308
Chair	A. Thonet	22,023	Nov. 29	61	1308
Cigar and match holder	H. R. H. Nicholas	21,991	Nov. 15	61	1010
Clock-case	A. Merritt and E. F. Aucaigne	22,011	Nov. 22	61	1159
Coin-operated machine-case	J. B. Lighton	22,080	Dec. 20	61	1784
Corset	D. Kops	21,978	Nov. 8	61	879
Corset	D. H. Warner	21,883	Oct. 4	61	146
Corset	D. H. Warner	21,884	Oct. 4	61	146
Counter wall-fixture	W. C. Huss	21,907	Oct. 18	61	420
Counter wall-fixture	W. C. Huss	21,979	Nov. 8	61	879
Cuff-holder stand	H. C. Frank	21,876	Oct. 4	61	145
Curtain-pole	C. Hussey	22,078	Dec. 20	61	1783
Curtain-pole bracket	C. W. Smith	21,930	Oct. 25	61	561
Curtain-pole bracket	C. W. Smith	21,931	Oct. 25	61	561
Curtain-pole bracket	C. W. Smith	21,932	Oct. 25	61	561
Curtain-roller bracket	M. J. Matthews	21,929	Oct. 25	61	561
Desk-railing	A. C. Hough	22,024	Nov. 29	61	1308
Dial	A. L. Billings	22,054	Dec. 6	61	1473
Dish	E. Gérard	21,989	Nov. 15	61	1010
Dynamo-frame. Electric	G. B. Fraley	21,906	Oct. 18	61	420
Electric-motor frame	B. D. Southard	21,981	Nov. 8	61	880
Engine-frame	D. Best	21,887	Oct. 11	61	281
Escutcheon-plate	M. Schwendner	22,025	Nov. 29	61	1308
Fan	M. Carranza	22,072	Dec. 20	61	1783
Finger-ring	J. H. Fink	21,926	Oct. 25	61	560
Fire-alarm box. Auxiliary	J. Sachs	22,090	Dec. 27	61	1942
Fringe	A. C. Maurer	22,049	Dec. 6	61	1474
Game-board	M. E. Cameron	21,880	Oct. 4	61	146
Glass vessel	D. E. Mapother	22,075	Dec. 20	61	1783
Glass vessel	J. Proeger	22,001	Nov. 22	61	1158
Glove	J. Kayser	21,918	Oct. 25	61	559
Handle for canes	W. Harvey and E. Osborn	22,063	Dec. 27	61	1941
Handle for canes, &c	H. B. Snyder	22,069	Dec. 20	61	1782
Handle for canes, &c	H. B. Snyder	22,070	Dec. 20	61	1783
Handle for spoons, &c	W. A. Bigler	22,035	Dec. 6	61	1471
Handle for spoons, &c	A. F. Jackson	22,061	Dec. 20	61	1781
Handle for spoons, &c	A. F. Jackson	22,062	Dec. 20	61	1781
Handle for spoons, &c	A. F. Jackson	22,063	Dec. 20	61	1781
Handle for spoons, &c	A. F. Jackson	22,064	Dec. 20	61	1781
Handle for spoons, &c	A. F. Jackson	22,065	Dec. 20	61	1781
Handle for spoons, &c	A. F. Jackson	22,066	Dec. 20	61	1782
Handle for spoons, &c	A. F. Jackson	22,067	Dec. 20	61	1782
Handle for spoons, &c	A. F. Jackson	22,068	Dec. 20	61	1782
Handle for swords or the like	A. H. Ulrich	21,919	Oct. 25	61	559
Heater-casing. Electric	G. B. Wixon	22,008	Nov. 22	61	1159
Heel-protector	M. W. Dewey	22,017	Nov. 22	61	1160
	F. J. Herrick	21,888	Oct. 11	61	281

Alphabetical list of designs, October to December, inclusive—Continued.

Design.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Heel-protector	F. J. Herrick	21,889	Oct. 11	61	281
Inkstand	H. N. Feder	22,084	Dec. 27	61	1941
Inkstand	W. Rodiger	22,003	Nov. 22	61	1158
Inkstand	W. Rodiger	22,004	Nov. 22	61	1158
Jug. Sirup	H. W. Schneider	21,990	Nov. 15	61	1010
Lamp-chimney	T. Haviland	22,028	Dec. 6	61	1469
Locket	J. E. Lippincott	21,983	Nov. 8	61	880
Match-box	L. J. Roehr	22,074	Dec 20	61	1783
Match-box	L. F. Hurd	21,890	Oct. 11	61	281
Match-box	L. F. Hurd	21,891	Oct. 11	61	281
Match-box	L. F. Hurd	21,892	Oct. 11	61	282
Match-box	L. F. Hurd	21,893	Oct. 11	61	282
Medal	S. Zinn	21,994	Oct. 25	61	560
Monument	E. F. Hopkins	22,037	Dec. 6	61	1471
Napped fabric	K. L. Lehmann	21,956	Nov. 1	61	718
Necktie	A. C. Ohle	21,999	Nov. 22	61	1158
Oil-can	W. M. Griffith	21,977	Nov. 8	61	879
Organ-case top	W. C. Hine	21,984	Nov. 8	61	880
Organ-case top	O. E. Brandt	21,881	Oct. 4	61	146
Paper-weight	O. E. Brandt	21,882	Oct. 4	61	146
Perfumery-holder	G. L. Reeustierna	22,002	Nov. 22	61	1158
Perfumery-holder	J. Markell	21,925	Oct. 25	61	560
Piano-case	J. E. Warren, Jr.	21,973	Nov. 8	61	878
Piano-case	F. W. Pangborn	22,089	Dec. 27	61	1942
Pianofortes. Casing for upright	W. Strich and P. M. Zeidler	22,079	Dec. 20	61	1784
Pincushion or sachet	W. F. Decker	21,995	Nov. 15	61	1011
Plastron or waist	H. L. Cooper	22,050	Dec. 6	61	1473
Pocketbook or purse	A. Frank	22,040	Dec. 6	61	1471
Postal-card	M. Schener	22,039	Dec. 6	61	1471
Potato-digger fork	C. W. Girsch and C. F. Roehsler	21,950	Nov. 1	61	717
Purse or pocket-book	H. O. Putnam	21,934	Oct. 25	61	561
Radiator	M. Schener	21,974	Nov. 8	61	878
Railing	H. J. Bell	21,986	Nov. 8	61	880
Ruffling	W. C. Hanna, Jr.	21,980	Nov. 8	61	879
Rug	A. Cohen	21,993	Nov. 15	61	1010
Rug	T. L. Lawton	21,904	Oct. 18	61	419
Sash-pulley case	T. L. Lawton	21,905	Oct. 18	61	420
Scarf-pin	S. Palmer	22,096	Nov. 29	61	1308
Shade. Window	J. G. Brokaw	22,036	Dec. 6	61	1471
Sheet	W. F. Patterson	22,087	Dec. 27	61	1942
Siding-plate	F. S. Pinkus	22,051	Dec. 6	61	1473
Sign	P. A. Deslauriers	22,091	Dec. 27	61	1942
Sign-board	H. Traun	22,006	Nov. 22	61	1159
Snap-hook	W. Goessling	22,053	Dec. 6	61	1473
Spoon	J. G. Dexheimer	21,982	Nov. 8	61	880
Spoon	T. H. Bates and A. O. Quinby	21,959	Nov. 1	61	717
Spoon	E. C. Bernheim	22,069	Dec. 27	61	1941
Spoon	E. M. Black	21,920	Oct. 25	61	559
Spoon	T. C. Combes	21,900	Oct. 18	61	419
Spoon, &c	F. P. D'Arcy	22,029	Dec. 6	61	1470
Spoon	P. Farnham	21,988	Nov. 15	61	1009
Spoon	H. J. Heinz	21,895	Oct. 11	61	282
Spoon	A. Ludwig	21,879	Oct. 4	61	146
Spoon	H. M. Moses	21,987	Nov. 15	61	1009
Spoon	T. B. Myers	21,894	Oct. 11	61	282
Spoon	J. S. Rathbone	22,030	Dec. 6	61	1470
Spoon	J. S. Rathbone	22,031	Dec. 6	61	1470
Spoon, &c	E. H. Rosenblatt	22,032	Dec. 6	61	1470
Spoon	G. U. Roulet	22,059	Dec. 20	61	1781
Spoon, &c	G. A. Schlechter	22,033	Dec. 6	61	1470
Spoon, &c	W. C. Sommer	22,034	Dec. 6	61	1470
Stove	G. B. Stocking	22,060	Dec. 20	61	1781
Stove. Cooking	E. A. Thissell and W. H. Wilder	21,896	Oct. 11	61	282
Stove. Oil or gas	H. C. Bascom and F. Ritchie	21,897	Oct. 11	61	282
Stove. Oil or gas	E. A. Thissell and W. H. Wilder	21,985	Nov. 8	61	880
Swab-cup	A. C. West	22,016	Nov. 22	61	1160
Table	S. R. Willet	22,086	Dec. 27	61	1941
Table	F. Koenig	22,013	Nov. 22	61	1160
Table	F. Koenig	22,014	Nov. 22	61	1160
Table-cloth	F. Koenig	22,015	Nov. 22	61	1160
Table-vessel	F. S. Pinkus	21,928	Oct. 25	61	561
Tape	C. V. Helmschmied	21,878	Oct. 4	61	145
Tape	C. Sisson	22,027	Nov. 29	61	1308
Textile fabric	G. N. Steere	21,903	Oct. 18	61	419
Thimble	A. G. Thyng	21,998	Nov. 22	61	1157
Thimble	F. G. Crabb	22,000	Nov. 22	61	1158
Tile. Lining	W. A. Wood	21,901	Oct. 18	61	419
Tobacco plug	C. Curtis and N. M. Jones	22,077	Dec. 20	61	1783
Trimming	W. W. Wood	21,992	Nov. 15	61	1010
Trimming	F. O. Heinig	22,044	Dec. 6	61	1472
Trimming	E. Robinson	22,045	Dec. 6	61	1472
Trimming	E. Robinson	22,046	Dec. 6	61	1472
Trimming	E. Robinson	22,047	Dec. 6	61	1472
Trimming. Dress	R. Lipper	22,071	Dec. 20	61	1782
Trimming. Dress	J. W. Schloss	22,048	Dec. 6	61	1472
Type. Font of printing	H. Ihlenburg	22,019	Nov. 29	61	1307
Type. Font of printing	H. Ihlenburg	22,020	Nov. 29	61	1307
Type. Font of printing	H. Ihlenburg	22,021	Nov. 29	61	1308
Type ornaments. Font of	H. Ihlenburg	22,007	Nov. 22	61	1159
Urinal	E. Hammann	21,957	Nov. 1	61	718
Valve for basins and bath-tubs	W. H. Graham	21,933	Oct. 25	61	561
Vase, &c	S. Starkey	21,877	Oct. 4	61	145
Veil	S. Oppenheimer	22,042	Dec. 6	61	1472
Veil	S. Oppenheimer	22,043	Dec. 6	61	1472

Alphabetical list of designs, October to December, inclusive—Continued.

Design.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Wall-paper	C. Booze	21,908	Oct. 25	61	558
Wall-paper	C. Booze	21,909	Oct. 25	61	558
Wall-paper	C. Booze	21,910	Oct. 25	61	558
Wall-paper	C. Booze	21,911	Oct. 25	61	558
Wall-paper	C. Booze	21,912	Oct. 25	61	558
Wall-paper	C. Booze	21,913	Oct. 25	61	558
Wall-paper	C. Booze	21,914	Oct. 25	61	558
Wall-paper	C. Booze	21,915	Oct. 25	61	559
Wall-paper	C. Booze	21,916	Oct. 25	61	559
Wall-paper	C. Booze	21,917	Oct. 25	61	559
Wall-paper	C. Booze	21,936	Nov. 1	61	714
Wall-paper	C. Booze	21,937	Nov. 1	61	715
Wall-paper	C. Booze	21,938	Nov. 1	61	715
Wall-paper	C. Booze	21,939	Nov. 1	61	715
Wall-paper	C. Booze	21,940	Nov. 1	61	715
Wall-paper	C. Booze	21,941	Nov. 1	61	715
Wall-paper	C. Booze	21,942	Nov. 1	61	715
Wall-paper	C. Booze	21,943	Nov. 1	61	716
Wall-paper	C. Booze	21,944	Nov. 1	61	716
Wall-paper	C. Booze	21,945	Nov. 1	61	716
Wall-paper	C. Booze	21,946	Nov. 1	61	716
Wall-paper	C. Booze	21,947	Nov. 1	61	716
Wall-paper	C. Booze	21,948	Nov. 1	61	716
Wall-paper	C. Booze	21,949	Nov. 1	61	716
Wall-paper	C. Booze	21,958	Nov. 8	61	876
Wall-paper	C. Booze	21,959	Nov. 8	61	876
Wall-paper	C. Booze	21,960	Nov. 8	61	876
Wall-paper	C. Booze	21,961	Nov. 8	61	876
Wall-paper	C. Booze	21,962	Nov. 8	61	876
Wall-paper	C. Booze	21,963	Nov. 8	61	876
Wall-paper	C. Booze	21,964	Nov. 8	61	877
Wall-paper	C. Booze	21,965	Nov. 8	61	877
Wall-paper	C. Booze	21,966	Nov. 8	61	877
Wall-paper	C. Booze	21,967	Nov. 8	61	877
Wall-paper	C. Booze	21,968	Nov. 8	61	877
Wall-paper	C. Booze	21,969	Nov. 8	61	877
Wall-paper	C. Booze	21,970	Nov. 8	61	878
Wall-paper	C. Booze	21,971	Nov. 8	61	878
Wall-paper	C. Booze	21,972	Nov. 8	61	878
Washing-machine tub	S. Sadler	21,997	Nov. 15	61	1011
Watchcase	J. C. Dueber	22,056	Dec. 13	61	1650

ALPHABETICAL LIST OF TRADE-MARKS.

Title.	Name.	No.	Date.	Official Gazette. Volume.	Page.
Albums and scrap-books. Photograph and autograph	Koch Sons & Company	22,007	Nov. 22	61	1161
Alcohol. Mint	E. de Ricqlès et Cie	21,900	Nov. 1	61	719
Ale	S. F. Burns	21,867	Oct. 18	61	421
Ale. Ginger	Chicago Consolidated Bottling Company.	22,194	Dec. 6	61	1476
Ale. Ginger	J. Heinserling	22,227	Dec. 20	61	1788
Anæsthetic for dentists' use. Liquid	G. M. Miller	22,109	Dec. 6	61	1475
Animal-shoes	Bryden Horse Shoe Company	21,806	Oct. 18	61	421
Antipyretic	G. E. Dixon	21,841	Oct. 4	61	149
Antipyretics and antineuralgics	Lehn & Fink	22,264	Dec. 27	61	1946
Antiseptics	Allaire, Woodward & Company	22,263	Dec. 27	61	1946
Antiseptics and disinfectants	Schering & Glatz	22,265	Dec. 27	61	1946
Apparel. Certain under and outer wearing	J. H. Norcross	22,092	Nov. 29	61	1311
Baking and roasting pans	J. W. Oblinger	22,051	Nov. 22	61	1164
Baking-powder	D. J. O'Connor	22,135	Dec. 6	61	1477
Baking-powder	T. Palmer	22,166	Dec. 13	61	1652
Baking-powder	A. W. Ruhl	22,027	Nov. 22	61	1162
Baking-powder	A. W. Ruhl	22,028	Nov. 22	61	1163
Baking-powder	A. W. Ruhl	22,165	Dec. 13	61	1652
Bath-tubs	G. Booth	21,806	Oct. 4	61	147
Beds. Spring	Atlas Tack Corporation	22,222	Dec. 20	61	1788
Beer	W. Forster	21,858	Oct. 11	61	283
Beer	W. Forster	21,859	Oct. 11	61	283
Beer. Lager	Bartholomay Brewery Company	22,254	Dec. 27	61	1945
Beer. Lager	E. Benswanger	21,985	Nov. 15	61	1013
Beer. Lager	Eberhardt & Ober Brewing Company.	21,881	Oct. 18	61	422
Beer. Lager	Ruff Brewing Company	22,170	Dec. 13	61	1653
Beer. Lager	C. Schmidt & Sons	22,078	Nov. 29	61	1310
Beer. Lager	C. Schmidt & Sons	22,079	Nov. 29	61	1310
Beer. Lager	Senn & Ackermann	21,951	Nov. 8	61	882
Beer. Lager	G. Walter	22,077	Nov. 29	61	1310
Bicycles. Safety	Henry Sears Company	22,223	Dec. 20	61	1788
Bicycles, velocipedes, and accessory articles	McIntosh-Huntington Company	21,873	Oct. 18	61	421
Bitters	F. H. Binder	22,258	Dec. 27	61	1946
Blacking for shoes. Waterproof liquid	Price & Walters	22,023	Nov. 22	61	1162
Blacking. Shoe	Reliance Manufacturing Company	22,207	Dec. 20	61	1787
Bladders. Pig and hog	J. Hedges	22,272	Dec. 27	61	1946
Blue. Washing	P. Diamond	21,903	Nov. 1	61	719
Blue. Washing	P. Diamond	22,136	Dec. 6	61	1477
Blue. Washing	I. Lewinson	21,948	Nov. 8	61	883
Bolts, nuts, rivets, and screws	J. H. Sternbergh & Son	22,177	Dec. 13	61	1654
Books, magazines, and periodicals	B. Stein & Co	22,229	Dec. 27	61	1943
Books, pamphlets, and periodicals	A. C. Northrop	22,008	Nov. 22	61	1161
Boots and shoes	Munroes, Packard & Linscott	22,157	Dec. 13	61	1651
Boots and shoes	Smith Bros	21,815	Oct. 4	61	147
Boots and shoes	T. A. Wicher & Co	21,838	Oct. 4	61	149
Boots and shoes. Leather	F. Bryant	22,093	Nov. 29	61	1312
Boots, shoes, and slippers	E. C. Burt & Co	21,975	Nov. 15	61	1012
Boots, shoes, slippers, rubbers, sandals, and analogous footwear.	N. Koch & Co	22,189	Dec. 20	61	1786
Bottles	A. G. Smalley	22,156	Dec. 13	61	1651
Boxes, bottles, atomisers, tubes, and distributers for dispensing powders, liquids, and semi-liquids.	McKesson & Robbins	21,905	Nov. 1	61	719
Braces and hose-holders	A. Breese	21,968	Nov. 8	61	884
Braids, cords, and bindings	Blank & Co	22,089	Nov. 29	61	1311
Bread, biscuits, cakes, and crackers	W. J. Meikleham	21,861	Oct. 11	61	283
Bronzing liquid or gold paint	W. H. Wythe & Co	21,929	Nov. 1	61	720
Buckwheat, Graham flour, cornmeal, rolled oats, and similar manufactured cereals.	F. L. Thornton	21,833	Oct. 4	61	148
Buggies. Top	C. H. Palmer, Jr	21,837	Oct. 4	61	149
Butter and cheese	P. M. Peck	22,168	Dec. 13	61	1653
Buttons. Collar	F. D. Williams	21,971	Nov. 15	61	1012
Calf-skins, goat-skins, sole-leather, and sheep-skins	Shaw Leather Company	21,974	Nov. 15	61	1013
Calendars and paper-weights	A. D. Palmer	22,152	Dec. 13	61	1651
Camphor	Gribble & Nash	21,956	Nov. 8	61	883
Candles	Candy Bros	22,191	Dec. 20	61	1786
Canned fish, fruits, and vegetables	C. L. Benson	21,856	Oct. 11	61	283
Canned fruits and vegetables	Assau, Baines Company	21,943	Nov. 8	61	882
Canned fruits and vegetables	Bloomington Canning Company	22,086	Nov. 29	61	1311
Canned oysters	Fait & Winebrenner	22,084	Nov. 29	61	1311
Canned vegetables and fruits	Bloomington Canning Company	22,132	Dec. 6	61	1477
Capsules filled with medicine	J. R. Planten	22,040	Nov. 22	61	1163
Capsules for medicinal use	H. H. Blood	21,851	Oct. 4	61	150
Capsules for medicine	J. R. Planten	22,045	Nov. 22	61	1164
Capsules for medicine	J. R. Planten	22,046	Nov. 22	61	1164
Carbonated drinks	J. T. Driscoll & Co	21,950	Nov. 8	61	882
Carbonated drinks	J. T. Driscoll & Co	21,968	Nov. 15	61	1013
Cards. Compositions applied with a brush in making ornamental	Thaddeus Davids Company	21,990	Nov. 15	61	1013
Cards. Playing	A. Dougherty	22,010	Nov. 22	61	1161
Cards. Playing	New York Consolidated Card Company.	22,011	Nov. 22	61	1161
Cards. Playing	United States Printing Company	21,977	Nov. 15	61	1013
Carpets	Lowell Manufacturing Company	22,234	Dec. 27	61	1943

Alphabetical list of trade-marks, October to December, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Cement. Portland	Gillingham Portland Cement Company.	22,244	Dec. 27	61	1944
Cements. Hydraulic and other	Eimer & Mendelson Company	21,853	Oct. 4	61	150
Chains. Ornamental watch and neck	O. M. Draper	21,870	Oct. 18	61	421
Champagne	Kunkelmann & Co	22,247	Dec. 27	61	1945
Champagne	Kunkelmann & Co	22,248	Dec. 27	61	1945
Champagne	Kunkelmann & Co	22,249	Dec. 27	61	1945
Champagne	Kunkelmann & Co	22,250	Dec. 27	61	1945
Champagne	Kunkelmann & Co	22,251	Dec. 27	61	1945
Champagne	Kunkelmann & Co	22,252	Dec. 27	61	1945
Champagne	Kunkelmann & Co	22,253	Dec. 27	61	1945
Cheese	H. Prinz	22,210	Dec. 20	61	1787
Chemical products	F. von Heyden	21,846	Oct. 4	61	150
Chemical products derived from sugar	Schering & Glatz	21,864	Oct. 11	61	284
Cheviots	S. A. Crozer & Son	22,087	Nov. 29	61	1311
China-ware	T. Haviland	22,100	Dec. 6	61	1474
Cigarettes	National Cigarette and Tobacco Company.	21,894	Oct. 25	61	562
Cigars	C. Daehn	21,893	Oct. 25	61	562
Cigars	Foster-Hilson Company	21,843	Oct. 4	61	150
Cigars	Hollenden Hotel Company	21,896	Oct. 25	61	562
Cigars	Silver State Cigar Company	21,890	Oct. 25	61	562
Cigars, cheroots, and cigarettes, and smoking, fine-cut, and plug tobacco.	S. C. Herbst Importing Company	22,213	Dec. 20	61	1787
Cigars, cheroots, and cigarettes, and smoking, fine-cut, and plug tobacco.	S. C. Herbst Importing Company	22,214	Dec. 20	61	1788
Cigars, cheroots, and cigarettes, and smoking, fine-cut, and plug tobacco.	S. C. Herbst Importing Company	22,215	Dec. 20	61	1788
Cigars, cheroots, and cigarettes, and smoking, fine-cut, and plug tobacco.	S. C. Herbst Importing Company	22,216	Dec. 20	61	1788
Cigars, cheroots, and cigarettes, and smoking, fine-cut, and plug tobacco.	S. C. Herbst Importing Company	22,217	Dec. 20	61	1788
Cigars, cheroots, and cigarettes, and smoking, fine-cut, and plug tobacco.	S. C. Herbst Importing Company	22,218	Dec. 20	61	1788
Cleansing compound	Zieelman & Bartlett	22,065	Nov. 29	61	1309
Cleaning preparations. Clothes	Reliance Manufacturing Company	22,205	Dec. 20	61	1787
Codfish. Prepared	American Evaporated Codfish Co	22,130	Dec. 6	61	1477
Coffee	Royal Phosphoric Coffee Co	22,241	Dec. 27	61	1944
Coffee. Ground	W. Johnston	22,240	Dec. 27	61	1944
Collars or pads. Sweat	E. L. McClain	22,071	Nov. 29	61	1310
Compounds for destroying insects and other pests, for disinfecting purposes, for curing diseases, and healing wounds.	J. Rowbotham	22,039	Nov. 22	61	1163
Confections. Fruit	Walter M. Lowney Company	21,961	Nov. 15	61	1012
Cords, lines, twines, and ropes	Samson Cordage Works	21,938	Nov. 8	61	881
Corset	E. Schweinburg	22,186	Dec. 20	61	1785
Corset shields or supports	E. Pearl	22,187	Dec. 20	61	1785
Corsets	E. Schweinburg	21,934	Nov. 8	61	881
Corsets. Ladies' French	Syndicate Trading Company	21,816	Oct. 4	61	147
Cosmetics, both liquid and powder, and a liquid dentifrice	E. G. Hake	22,018	Nov. 22	61	1162
Cosmetics, lotions, perfumery, cream, and soap	Firm of William Rieger	22,062	Nov. 29	61	1309
Cotton goods, such as silesias, sateens, cambrics, and twills	Burton Bros. & Co	21,937	Nov. 8	61	881
Cough balsam	H. M. Henderson	22,193	Dec. 20	61	1786
Creamers. Centrifugal	P. M. Sharples	22,149	Dec. 6	61	1478
Cure. Ague	Firm of F. A. Dicks	22,110	Dec. 6	61	1475
Currants. Dried	W. H. Doble	21,869	Oct. 18	61	421
Currycombs. Spring	Spring Curry Comb Company	21,949	Nov. 8	61	884
Dairy products	M. Plowaty	22,065	Nov. 29	61	1311
Dental rubber	Excelsior Rubber Works	21,882	Oct. 18	61	422
Dentifrices	H. B. Fould	22,259	Dec. 27	61	1946
Deodorising-powder	C. W. Chancellor	21,963	Nov. 8	61	883
Dermal preparations, dermal soaps, curling cream, hair tonic, and tooth-powders.	J. A. Maxim	22,267	Dec. 27	61	1946
Disinfectant	J. M. Raymond	22,044	Nov. 22	61	1164
Disinfectants	Odoriess Disinfectant Co	21,988	Nov. 15	61	1013
Dry goods. Certain named	J. D. Weir & Co	22,015	Nov. 22	61	1162
Dyes or colors	Färberei Glauchau, vormals O. Seyfert.	21,842	Oct. 4	61	150
Electro-curative apparatus	Electrolibration Company	21,892	Oct. 25	61	562
Elevators. Operating machinery for passenger and freight	Cahill & Hall Elevator Company	22,001	Nov. 15	61	1014
Enamel for use on glass. Liquid	E. P. Gleason Manufacturing Company.	22,024	Nov. 22	61	1162
Enamel for use on glass. Liquid	E. P. Gleason Manufacturing Company.	22,025	Nov. 22	61	1162
Envelopes and making paper boxes. Machinery for pasting and folding	Lester & Wasley	22,074	Nov. 29	61	1310
Eyeglasses and spectacles	F. W. McAllister	22,102	Dec. 6	61	1474
Explosives	Westfälisch-Anhaltische Sprengstoff-Act.-Ges.	22,069	Nov. 29	61	1312
Extracts. Flavoring	Hance Bros. & White	22,133	Dec. 6	61	1477
Extracts. Flavoring	Hance Bros. & White	22,134	Dec. 6	61	1477
Fertilizers. Manufactured	Western Union Chemical Company	21,970	Nov. 8	61	884
Files, chisels, gouge-chisels, sometimes known as scoopers, and gravers.	S. Vantier & Fils	22,147	Dec. 6	61	1478
Files, chisels, scopers, gravers, and similar tools	Grobet Frères	21,904	Nov. 1	61	719
Finger-rings	W. Loeb & Co	22,101	Dec. 6	61	1474
Finger-rings	F. A. Osborne	21,885	Oct. 18	61	422
Finger-rings	F. N. Osborne	21,972	Nov. 15	61	1012
Finger-rings	F. N. Osborne	21,973	Nov. 15	61	1012
Fire-lighters	H. Hickman	22,208	Dec. 20	61	1787
Fish, oysters, and other shell-fish packed in tin and glass	H. Ruge & Sons	21,863	Oct. 11	61	283
Fish. Whole, cut, and boneless	E. G. Hotchkiss	22,063	Nov. 29	61	1311
Flour	S. Green	21,871	Oct. 18	61	421
Flour	S. Green	21,872	Oct. 18	61	421
Flour	S. Green	22,243	Dec. 27	61	1944
Flour	A. C. Klindtworth	21,879	Nov. 15	61	1012

Alphabetical list of trade-marks, October to December, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Flour and meal	Bonesteel & Turner	21,925	Nov. 1	61	720
Flour. Graham	F. T. Stimson	21,886	Oct. 18	61	422
Flour. Wheat	Buffalo Milling Company	21,906	Nov. 1	61	719
Flour. Wheat	Harrod Milling Co	22,086	Nov. 29	61	1311
Flour. Wheat	Minkota Milling Company	21,940	Nov. 8	61	881
Flour. Wheat	W. H. Stokes	21,817	Oct. 4	61	147
Flour. Wheat	W. H. Stokes	21,818	Oct. 4	61	148
Flour. Wheat	W. H. Stokes	21,875	Oct. 18	61	421
Fuel. Certain chemically-prepared	American Safety Fuel Company	22,160	Dec. 13	61	1652
Furnaces. Heating	Howard Furnace Company	22,003	Nov. 15	61	1076
Games, game-boards, puzzles, dolls, rattles, balls, bats, and the like, excluding toy wheels.	Hahne & Co	21,978	Nov. 15	61	1012
Garments worn by men and boys. Outside	Steinhart, Heidelberg & Co	22,091	Nov. 29	61	1311
Gas and gasoline engines	Palmer & Rey	21,834	Oct. 4	61	149
Gas and gasoline engines	Palmer & Rey	21,835	Oct. 4	61	149
Gas and gasoline engines	Palmer & Rey	21,836	Oct. 4	61	149
Gas for heating and lighting purposes. Manufactured	G. M. S. Wilson	22,138	Dec. 6	61	1477
Gas. Liquefied carbonic-acid	Truslow & Co	21,848	Oct. 4	61	150
Gloves	Perrin Frères et Cie	22,182	Dec. 20	61	1785
Gloves	Perrin Frères et Cie	22,183	Dec. 20	61	1785
Gloves	Perrin Frères et Cie	22,184	Dec. 20	61	1785
Gloves	Perrin Frères et Cie	22,185	Dec. 20	61	1785
Gloves and mitts. Base-ball players'	A. A. Irwin	22,230	Dec. 27	61	1943
Grease. Axle	King Manufacturing Co	22,096	Nov. 29	61	1312
Gum. Chewing	O. G. Davison	21,955	Nov. 8	61	883
Gum. Chewing	Rubber Paint Company	21,874	Oct. 18	61	421
Hair and wool clippers	American Shearer Manufacturing Company.	22,050	Nov. 22	61	1164
Hair-clippers for toilet use. Certain	American Shearer Manufacturing Company.	22,067	Nov. 29	61	1309
Hair-dressing	J. Jackson	21,987	Nov. 15	61	1013
Hardware, including locks and latches. Builders'	Reading Hardware Company	22,000	Nov. 15	61	1014
Harvesters and harvester-binders	Walter A. Wood Harvester Company	22,150	Dec. 6	61	1478
Hats	Volk Hat Company	21,825	Oct. 4	61	148
Hats and bonnets for ladies, misses, and young boys, and trimmings therefor.	C. E. Taylor	22,090	Nov. 29	61	1311
Hats and bonnets for ladies, misses, and young boys, and trimmings therefor.	H. J. Taylor	22,013	Nov. 22	61	1161
Hats. Men's	Goodbar, White, Branch & Co	21,883	Oct. 18	61	422
Hay-carriers	J. E. Porter	22,055	Nov. 22	61	1164
Heaters, ranges, and stoves	Majestic Manufacturing Company	22,004	Nov. 15	61	1014
Henriettas. All-wool	M. Riedel	21,865	Oct. 11	61	284
Hollow ware. Enameled	Boas Brothers	22,221	Dec. 20	61	1788
Horseshoe-nails	New Process Nail Company	22,072	Nov. 29	61	1310
Hosiery	J. Black & Sons	21,831	Oct. 4	61	149
Hosiery, textile gloves, and underwear	L. Hermsdorf	22,231	Dec. 27	61	1943
Ice-chests, coolers, and refrigerators	Challenge Corn Planter Company	21,810	Oct. 4	61	147
Ink. Printers' and lithographers'	Ault & Wiborg Company	21,933	Nov. 8	61	881
Insulators. Electric	A. & J. M. Anderson	22,148	Dec. 6	61	1478
Italian cloths, mohair serges, and similar goods	J. W. Goddard & Sons	21,889	Oct. 25	61	562
Knit fabrics	Murphy, Hibben & Co	22,014	Nov. 22	61	1161
Knit under vests or waists	Nazareth Manufacturing Company	22,106	Dec. 6	61	1474
Knit underwear	United Knitting Works Company	22,105	Dec. 6	61	1474
Knitted underwear	Glastenbury Knitting Company	22,188	Dec. 20	61	1785
Lamps and burners	W. B. Robins	22,049	Nov. 22	61	1164
Lard	F. Sobrinho & Co	22,030	Nov. 22	61	1163
Lard	F. Sobrinho & Co	22,031	Nov. 22	61	1163
Lard and its substitutes	W. J. Wilcox Lard and Refining Company.	21,980	Nov. 15	61	1012
Lard and its substitutes	W. J. Wilcox Lard and Refining Company.	22,211	Dec. 20	61	1787
Lead. White	Jacobs & McCafferty	22,066	Nov. 29	61	1309
Leather. Kid	Wm. Zahn Leather Company	22,190	Dec. 20	61	1786
Lemons and oranges	G. Villard	22,209	Dec. 20	61	1787
Letter-boxes, drawers, and the like. Post-office	Keyless Lock Company	22,057	Nov. 22	61	1164
Linen goods	L. Thompson & Co	22,088	Nov. 29	61	1311
Liniment	S. Eskridge	21,958	Nov. 8	61	883
Liniments and ointments	F. P. Foltz	22,121	Dec. 6	61	1476
Linings embracing silesia, sateens, cambrics, and twills	Burton Bros. & Co	22,156	Dec. 13	61	1651
Lubricants	American Shaft Holder Co	22,206	Dec. 20	61	1787
Lumber. Sawed	Fischer & Burnett Lumber Company	22,098	Nov. 29	61	1312
Lye. Powdered	Champion Chemical Works	21,809	Oct. 4	61	147
Meat products, including packed and smoked beef and pork, hams, shoulders, sides, bacon, and sausage.	North Packing and Provision Company.	22,128	Dec. 6	61	1476
Meats and fish	Bronson & Fitzgerald	22,239	Dec. 27	61	1944
Meats. Salted and pickled	Ferraz Sobrinho & Co	22,169	Dec. 13	61	1653
Meats, such as hams and bacon. Smoked	F. A. Ferris	22,129	Dec. 6	61	1477
Medical preparation of sarsaparilla	L. Gerstle	22,060	Nov. 29	61	1309
Medical remedy for internal and external use	Botania Co	22,112	Dec. 6	61	1475
Medicated belts, pills, and salts	A. Loring	21,845	Oct. 4	61	150
Medicated beverages or tonics	Quirye Company	22,172	Dec. 13	61	1653
Medicated beverages or tonics	Quirye Company	22,256	Dec. 27	61	1945
Medicated gum drops	Sylvan Remedy Co	22,192	Dec. 20	61	1786
Medicated snuff	A. M. Fisher	21,930	Nov. 1	61	720
Medicated soap	Cincinnati Soap Co	21,832	Oct. 4	61	149
Medicated toilet preparation for the skin	C. H. & J. Price	22,111	Dec. 6	61	1475
Medicinal compounds the basis of which is formed of vegetable extracts.	H. Kleindienst	22,113	Dec. 6	61	1475
Medicinal eye-water	John R. Dickey Drug Company	22,261	Dec. 27	61	1946
Medicinal herb-teas	Moki Herb Remedy Company	21,929	Nov. 1	61	720
Medicinal preparation for the cure of piles, dysentery, and kindred complaints.	W. A. Winchester	22,034	Nov. 22	61	1163
Medicinal preparation for diseases of the liver, stomach, or bowels.	J. S. Robinson	22,266	Dec. 27	61	1946

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Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Medicinal remedies in the form of tablets, plasters, pills, ointments, suppositories, and powders.	Capital Drug Company	21,902	Nov. 8	61	883
Medicinal teas	J. W. Moore	22,115	Dec. 6	61	1475
Medicinal tonic	L. Mansfield	22,033	Nov. 22	61	1163
Medicinal tonics	Allaire, Woodward & Company	22,257	Dec. 27	61	1945
Medicine for dogs and other animals	E. L. Scott	21,997	Nov. 15	61	1014
Medicine for fowls	Orlando Medicine Company	21,833	Oct. 4	61	149
Medicine for rheumatism, gout, and lumbago. Prepared	H. O. Price	21,995	Nov. 15	61	1014
Medicine for the cure of rheumatism, dyspepsia, and diseases of the blood. Proprietary	M. D. Brown	21,878	Oct. 18	61	422
Medicine for the local treatment of diseases peculiar to women	Gyne Vita Manufacturing Co	21,884	Oct. 18	61	422
Medicine. Laxative	M. E. Ogborn	22,196	Dec. 20	61	1786
Medicines. Certain named line of proprietary	Turner-Shaker Medicine Co	22,194	Dec. 20	61	1786
Medicines for the cure of blood diseases	G. L. Fowler	22,114	Dec. 6	61	1475
Medicines. Line of	H. D. Van Rensselaer	21,994	Nov. 15	61	1014
Medicines. Proprietary	Katharmon Chemical Company	21,996	Nov. 15	61	1014
Mineral water	R. Avemarius & Co	22,220	Dec. 20	61	1788
Mineral water	Maesanetta Park and Springs Company.	22,060	Nov. 29	61	1310
Monthly fashion paper or magazine	Domestic Sewing Machine Company	21,880	Oct. 18	61	422
Oats. Rolled	W. Johnston	22,167	Dec. 13	61	1652
Oats, velvet meal, corn grits, and self-rising griddle-cake flour	Nebraska City Cereal Mills	22,212	Dec. 20	61	1787
Oil and grease. Lubricating	Magic Brothers	22,159	Dec. 13	61	1651
Oil for bicycles. Lubricating	A. Cook's Sons	21,891	Oct. 25	61	562
Ointment or cream. Skin	G. Wagner	22,209	Dec. 27	61	1946
Ointments	W. Fairweather	22,043	Nov. 22	61	1163
Ointments, pills, and medicated soap	Livura Manufacturing Co	21,860	Oct. 11	61	283
Oranges	Crescent Orange Grove Company	21,992	Nov. 15	61	1013
Oranges	D. Tillson	21,894	Oct. 4	61	148
Overgaiters and leggins	A. Sessler	21,936	Nov. 8	61	881
Painter's smalt	W. A. Wheatley	22,131	Dec. 6	61	1477
Paints. Powdered	W. C. Estes	21,887	Oct. 25	61	562
Paper. Impression	W. H. Kemp & Co	22,026	Nov. 22	61	1162
Pencils. Lead	H. C. Davison	21,868	Oct. 18	61	421
Pens. Fountain	American Lead Pencil Company	22,273	Dec. 27	61	1946
Pens. Steel and other	W. A. Leary	22,151	Dec. 13	61	1651
Pens. Steel and other	E. R. Oettinger & Co	21,907	Nov. 1	61	719
Pens. Steel and other	E. R. Oettinger & Co	21,908	Nov. 1	61	719
Pens. Steel and other	E. R. Oettinger & Co	21,909	Nov. 1	61	719
Pens. Steel and other	E. R. Oettinger & Co	21,910	Nov. 1	61	719
Pens. Steel and other	E. R. Oettinger & Co	21,911	Nov. 1	61	719
Pens. Steel and other	E. R. Oettinger & Co	21,912	Nov. 1	61	719
Pens. Steel and other	E. R. Oettinger & Co	21,913	Nov. 1	61	719
Pens. Steel and other	E. R. Oettinger & Co	21,914	Nov. 1	61	719
Pens. Steel and other	E. R. Oettinger & Co	21,915	Nov. 1	61	719
Pens. Steel and other	E. R. Oettinger & Co	21,916	Nov. 1	61	720
Pens. Steel and other	E. R. Oettinger & Co	22,068	Nov. 29	61	1309
Pens. Steel and other	E. R. Oettinger & Co	22,069	Nov. 29	61	1309
Periodicals. Weekly	L. Rosenthal	21,922	Nov. 1	61	720
Petroleum	Ferras Sobrinho & Co	22,161	Dec. 13	61	1652
Photographic-card mounts	A. M. Collins Manufacturing Company.	21,932	Nov. 8	61	881
Photographic developers	Actien-Gesellschaft Für Anilin Fabrikation.	22,153	Dec. 13	61	1651
Photographic developers	Actien-Gesellschaft Für Anilin Fabrikation.	22,154	Dec. 13	61	1651
Photographic paper	A. I. Cohn	22,009	Nov. 22	61	1161
Piano and organ hardware	Blake & Johnson	21,965	Nov. 8	61	884
Pianos	Siegel, Cooper &Company	22,176	Dec. 13	61	1654
Pianos	F. G. Smith	21,895	Oct. 25	61	562
Pianos	F. G. Smith	22,048	Nov. 22	61	1164
Pigment filler. Liquid	David B. Crockett Company	21,879	Oct. 18	61	422
Pillows	M. Lary	22,236	Dec. 27	61	1944
Pills	M Leprince	21,926	Nov. 1	61	720
Pills	H. C. Wilkinson	21,957	Nov. 8	61	883
Pills and granules	L. D. Mereness	22,198	Dec. 20	61	1786
Pills for diseases of the digestive organs and kindred diseases.	F. C. Fowler	22,120	Dec. 6	61	1476
Pills for human use	J. Cockle & Co	22,047	Nov. 22	61	1164
Pins. Straight	Plume & Atwood Manufacturing Company.	21,888	Oct. 25	61	562
Pipes and boilers. Non-heat-conducting coverings for steam and other	Magnesia Sectional Covering Co	22,005	Nov. 15	61	1014
Pipes. Earthen sanitary	H. Knowles	21,886	Oct. 25	61	562
Plaids for dresses	P. J. Willis & Bro	22,016	Nov. 22	61	1162
Plows	South Bend Iron Works	22,073	Nov. 29	61	1310
Plowshares	L. A. Weyburn Company	21,896	Oct. 4	61	148
Polishing-powder, not including stove-polish	D. W. Curtis	21,989	Nov. 15	61	1013
Poultry and eggs	M. Plowaty	21,893	Oct. 4	61	148
Powder. Face and skin	Van Dyk Manufacturing Company	22,010	Nov. 22	61	1162
Powder for allaying fevers, for the treatment of febrile affections, and the cure of headache arising from fever.	H. J. Parker	21,960	Nov. 8	61	883
Powders. Worm	McBride & Hall	22,041	Nov. 22	61	1163
Preparation for prevention of diseases caused by infectious air.	J. Schuch & Co	22,173	Dec. 13	61	1653
Preparations embodying a coal-tar derivative. Proprietary	Albemarle Chemical Company	22,038	Nov. 22	61	1163
Preparations for the complexion, including soaps, lotions, powder, and cream.	L. Wilbert	22,030	Nov. 22	61	1162
Preparations for the cure of piles and kindred diseases	F. Eaton	21,857	Oct. 11	61	283
Preparations of sulphur in liquid form	Peters & Company	22,035	Nov. 22	61	1163
Preservative. Chemical	O. Haan & Bro	21,854	Oct. 4	61	150
Publications. Periodical	H. H. Chandler & Co	22,222	Dec. 27	61	1943
Radiators. Steam and hot-water	Philadelphia Hardware and Malleable Iron Works.	21,966	Nov. 8	61	884

Alphabetical list of trade-marks, October to December, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Rainproof fabrics for garments	E. W. Benthner	22,233	Dec. 27	61	1943
Razor-strops	W. M. Bowes	22,237	Dec. 27	61	1944
Remedies for coughs, colds, and all diseases of the throat and lungs.	E. C. Marshall	22,269	Dec. 27	61	1946
Remedies for coughs, colds, cramps, bruises, and sprains. Internal and external	W. S. Rockey	21,993	Nov. 15	61	1013
Remedies for diseases of the stomach, blood, liver, and kidneys.	G. W. Ridley	22,118	Dec. 6	61	1476
Remedies for diseases of the stomach, blood, liver, and kidneys, and nervous affections, and general debility.	R. Richards & Co	22,119	Dec. 6	61	1476
Remedies for diseases of the throat, lungs, and kidneys	M. Van Every	21,992	Nov. 15	61	1013
Remedies for external use	S. L. Willard	21,849	Oct. 4	61	150
Remedies for internal use which contain quinine	New York Quinine and Chemical Works.	22,061	Nov. 29	61	1309
Remedies for neurotic and similar complaints	C. Nehls	22,270	Dec. 27	61	1946
Remedies for rheumatism and gout	E. Z. Brievogelle	22,178	Dec. 13	61	1654
Remedy for acute and chronic inflammation	A. J. Pidgeon	22,174	Dec. 13	61	1653
Remedy for colds and throat and lung troubles	E. Heffernan	22,116	Dec. 6	61	1475
Remedy for diseases of the kidneys and genital organs	J. C. Auchampaugh	21,850	Oct. 4	61	150
Remedy for diseases of the liver and skin	O. L. Mnlot	21,862	Oct. 11	61	283
Remedy for diseases of the liver, kidneys, and stomach	A. Klein	22,038	Nov. 22	61	1163
Remedy for dyspepsia	Keasbey & Mattison	22,117	Dec. 6	61	1475
Remedy for gonorrhœa and gleet	E. H. Davis	21,961	Nov. 8	61	883
Remedy for gonorrhœa, gleet, and like diseases	H. W. Crolley	22,268	Dec. 27	61	1946
Remedy for rheumatism	E. S. Powers	22,175	Dec. 13	61	1653
Remedy for rheumatism, cystitis, and other diseases resulting from excess of acid in the secretions.	Keasbey & Mattison	22,037	Nov. 22	61	1163
Remedy for the diseases of women	L. Gerstle	22,060	Nov. 29	61	1309
Remedy for the piles	W. T. Strong	21,814	Oct. 4	61	147
Remedy for the toothache	R. Arduvini	21,829	Oct. 4	61	149
Rosin	D. W. Ketchum	22,243	Dec. 27	61	1944
Rubber and leather goods. Certain named	Pago Belting Company	21,924	Nov. 1	61	720
Rubber, including mats and matting. Articles of vulcanized	New York Belting and Packing Company.	22,108	Dec. 6	61	1474
Rugs and carpetings	Abegg & Rusch	22,235	Dec. 27	61	1943
Saccharate similar to saccharine	Lohn & Fink	22,171	Dec. 13	61	1653
Sad-irons for domestic use	Colebrookdale Iron Company	22,139	Dec. 6	61	1477
Salve for eye diseases	J. Spitteler and W. Drexler	22,197	Dec. 20	61	1786
Salves, ointments, and liniments	F. J. Lockwood	22,122	Dec. 6	61	1476
Saponaceous compound for cleansing carpets and for laundry purposes.	J. S. Silver	22,162	Dec. 13	61	1652
Sarsaparilla compound	H. L. and J. E. Woodcock	21,827	Oct. 4	61	149
Sash locks and fasteners	W. A. Bomar	21,840	Oct. 4	61	149
Saws	W. B. Barry	21,902	Nov. 1	61	719
Sewing-machines	New York Sewing Machine and Manufacturing Company.	21,897	Oct. 25	61	562
Sheep-dip or cattle-wash	F. D. Banning	21,830	Oct. 4	61	149
Sheet metal. All	E. L. Parker & Co	22,143	Dec. 6	61	1478
Sheet metal and solder. All	E. L. Parker & Co	22,140	Dec. 6	61	1477
Sheet metal and solder. All	E. L. Parker & Co	22,141	Dec. 6	61	1478
Sheet metal and solder. All	E. L. Parker & Co	22,142	Dec. 6	61	1478
Shirts, collars, cuffs, and blouses	C. H. McClellan	21,891	Oct. 4	61	148
Shoes and analogous articles of foot-wear	N. Koch & Co	22,107	Dec. 6	61	1474
Shoes for children's wear	Kollock, Logan & Co	22,017	Nov. 22	61	1162
Silver-polish	P. C. Plasterer	21,947	Nov. 8	61	882
Silver polish in the form of powder and soap	Electro Silicon Company	21,830	Oct. 4	61	148
Sirup. Liquid cough	M. E. Van Arsdale	22,042	Nov. 22	61	1163
Soap	W. Gossage & Sons	21,917	Nov. 1	61	720
Soap	W. Gossage & Sons	21,918	Nov. 1	61	720
Soap	W. Gossage & Sons	21,919	Nov. 1	61	720
Soap	W. Gossage & Sons	21,920	Nov. 1	61	720
Soap	W. Gossage & Sons	21,921	Nov. 1	61	720
Soap	W. Gossage & Sons	21,945	Nov. 8	61	882
Soap	W. Gossage & Sons	21,946	Nov. 8	61	882
Soap	W. H. Hall	21,812	Oct. 4	61	147
Soap and soap powders	Mexican Amole Soap Company	22,203	Dec. 20	61	1787
Soap and washing-powder. Laundry	M. F. Smith	22,064	Nov. 29	61	1309
Soap for belt-dressing	M. F. Delnow	21,923	Nov. 1	61	720
Soap for laundry and household use	Maple City Soap Works	22,163	Dec. 13	61	1652
Soap for the toilet and laundry. White	Ohio Soap Company	22,021	Nov. 22	61	1162
Soap. Laundry	J. W. and T. W. Alexander	21,839	Oct. 4	61	149
Soap. Laundry	Kendall Manufacturing Company	22,164	Dec. 13	61	1652
Soap. Laundry	Reade Manufacturing Co	21,813	Oct. 4	61	147
Soap. Laundry and toilet	W. Gossage & Sons	22,201	Dec. 20	61	1786
Soap. Laundry and toilet	W. Gossage & Sons	22,202	Dec. 20	61	1787
Soap. Soft or liquid	G. W. Dyarman	22,204	Dec. 20	61	1787
Soap. Toilet	Mülheus & Kropff	22,063	Nov. 29	61	1309
Soap. Toilet	Oakley Soap and Perfumery Company.	22,022	Nov. 22	61	1162
Spectacles and eyeglasses	American Optical Company	22,019	Nov. 22	61	1161
Spoons, forks, knife-handles, and the like. Metal	F. C. Lamy	21,899	Oct. 25	61	562
Statuettes	L. H. Aymé	21,931	Nov. 8	61	881
Stove-mats	J. L. Brown Co	22,002	Nov. 15	61	1014
Stoves. Oil or gas	Page Bros. & Co	22,075	Nov. 29	61	1310
Stoves, ranges, and furnaces	Co-Operative Foundry Company	22,052	Nov. 22	61	1164
Suits. Boys' and children's	A. Levy & Co	21,927	Nov. 1	61	720
Suits. Boys' and children's	A. Levy & Co	21,935	Nov. 8	61	881
Suppositories	F. C. Fowler	22,123	Dec. 6	61	1476
Tea	Paxton & Gallagher	21,847	Oct. 4	61	150
Tea	Paxton & Gallagher	21,941	Nov. 8	61	881
Tea and coffee	F. J. Miller	21,942	Nov. 8	61	882
Teeth. Filling or cement for	R. Richter	22,200	Dec. 27	61	1946
Textile fabrics, such as cotton, linen, worsted, and silk goods and velvets and velveteens.	Allston Company	22,232	Dec. 27	61	1943

Alphabetical list of trade-marks, October to December, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Threshing, stacking, and weighing machine, and a steam-engine.	Port Huron Engine and Thresher Company.	21,891	Nov. 15	61	1013
Thread of cotton, silk, flax, and other fibrous material	Kerr Thread Company	21,976	Nov. 15	61	1012
Thread of cotton, silk, flax, and other fibrous materials for machine and hand sewing.	Kerr Thread Company	22,103	Dec. 6	61	1474
Tickets. Printed	A. Dyson	22,179	Dec. 20	61	1785
Tin or terne plates	C. A. Conklin Manufacturing Co.	21,949	Nov. 15	61	1014
Tin-plate, terne-plate, and sheet metal, coated and uncoated	N. & G. Taylor Co	21,876	Oct. 18	61	421
Tin-plate, terne-plate, and sheet metal, coated and uncoated	N. & G. Taylor Co	21,877	Oct. 18	61	421
Tin-plate, terne-plate, and sheet metal, coated and uncoated	N. & G. Taylor Co	22,145	Dec. 6	61	1478
Tin-plate, terne-plate, and sheet metal coated with tin	N. & G. Taylor Co	22,146	Dec. 6	61	1478
Tin plates	Ashburnham Tin Plate Company	22,238	Dec. 27	61	1944
Tires for bicycles. Pneumatic	Boston Woven Hose and Rubber Company.	22,144	Dec. 6	61	1478
Tobacco and cigars. Chewing and smoking	G. A., C. J., and W. J. Neff	21,967	Nov. 8	61	884
Tobacco and cigar-boxes. Liquid for flavoring	G. H. Lueders	21,855	Oct. 4	61	150
Tobacco. Chewing	P. H. Hanes & Co	21,954	Nov. 8	61	883
Tobacco, cigars, cigarettes, cheroots, and snuff	American Tobacco Company	22,058	Nov. 22	61	1164
Tobacco. Plug	A. Engelhard & Sons	22,094	Nov. 29	61	1312
Tobacco. Plug	Wright Brothers Tobacco Company	21,953	Nov. 8	61	883
Tobacco. Plug, smoking, and fine-cut	Wellman & Dwire Tobacco Company	22,245	Dec. 27	61	1944
Tobacco. Smoking and chewing	Wellman & Dwire Tobacco Company	22,246	Dec. 27	61	1944
Toilet cream for the skin	J. F. Hite	21,952	Nov. 8	61	883
Tonic. Blackberry	E. Altschul	21,964	Nov. 8	61	883
Tonic preparations, pills, and powders	J. Dienelt & Co	22,255	Dec. 27	61	1945
Tonics, remedies for diseases of the liver and blood and for bilious disorders.	F. P. Davis	23,039	Nov. 22	61	1163
Tonics. Sarsaparilla	A. C. & G. F. Weber	22,195	Dec. 20	61	1786
Toy	C. A. Benner	21,950	Nov. 8	61	883
Trees. Nursery-grown plum	Albaugh Nursery and Orchard Company.	21,852	Oct. 4	61	150
Type-writers. Single-keyed	Liberty Manufacturing Company	22,097	Nov. 29	61	1312
Type-writing machine	Wyckoff, Seamans & Benedict	21,908	Nov. 15	61	1014
Vaporizers, volatilizers, and inhalers	C. L. Coulter	21,819	Oct. 4	61	148
Varnish	Mayer & Loewenstein	22,155	Dec. 13	61	1651
Varnish or polish. Furniture	H. B. Taylor	21,949	Nov. 8	61	882
Vegetables and foods prepared thereof. Desiccated raw	D. Aigler	22,137	Dec. 6	61	1477
Veils. Ladies' face	S. Oppenheimer & Levy	22,081	Nov. 29	61	1310
Velocipedes and parts thereof and wheels for use in light vehicles.	Ames & Frost Company	22,104	Dec. 6	61	1474
Veterinary remedies	Kentucky Veterinary Medicine Company.	21,828	Oct. 4	61	149
Vinegar. Cider	Duffy, Mountfort & Greene Cider Company.	22,271	Dec. 27	61	1946
Washing-machines	Bluffton Manufacturing Co	21,944	Nov. 8	61	882
Washing-machines. Hand	Vandergrift Manufacturing Company.	22,006	Nov. 15	61	1014
Washing-machines. Hand	Vandergrift Manufacturing Company.	22,053	Nov. 22	61	1164
Watches	Hampden Watch Company	22,054	Nov. 22	61	1164
Watches	Waterbury Watch Company	22,189	Dec. 20	61	1785
Watches and portable clocks	W. C. Ball	22,070	Nov. 29	61	1309
Whalebone. Raw and manufactured	New England Whalebone Manufacturing Company.	22,181	Dec. 20	61	1785
Whips	Pomeroy & Van Deusen	21,989	Nov. 8	61	881
Whisky	S. C. Beehm & Co	21,844	Oct. 4	61	150
Whisky	S. C. Beehm & Co	21,807	Oct. 4	61	147
Whisky	C. H. Graves & Sons	21,808	Oct. 4	61	147
Whisky	S. L. Kraschewsky	22,070	Nov. 29	61	1310
Whisky	J. Oswell & Co	22,125	Dec. 6	61	1476
Whisky	W. Walsmann	22,219	Dec. 20	61	1788
Whisky. Bourbon	Meyer Brothers Drug Company	21,996	Nov. 15	61	1013
Whisky, rum, gin, cordials, and California wines and brandy	Delafield, McGovern & Co	22,126	Dec. 6	61	1476
Whisky. Rye	Mayer, Sons & Co	21,811	Oct. 4	61	147
Wine-mills	Baker Manufacturing Company	22,127	Dec. 6	61	1476
Wines and liquors	Netter Bros	22,056	Nov. 22	61	1164
Wool-fat	Norddeutsche Wollkämmerei & Kammgarnspinnerei.	21,994	Nov. 15	61	1013
Wringers	American Wringer Company	22,095	Nov. 29	61	1312
Wringers	American Wringer Company	22,234	Dec. 20	61	1788
Wringers	American Wringer Company	22,235	Dec. 20	61	1788
Yarns. Knitting and mending cotton	Tucker & Cook Manufacturing Company.	22,236	Dec. 20	61	1788
Zwieback, (a twice-baked bread)	J. Stapenhorst	21,901	Nov. 1	61	719
		22,039	Nov. 22	61	1163

DISCLAIMER.

Invention.	Patentee.	No. of patent.	Date of patent.	Disclaimer filed.	Official Gazette. Vol.	Page.
Hydraulic engine	J. Kennedy and H. Aiken. (Reissue.)	11,164	May 5, 1891	Dec. 12, 1892	61	1656